

Thank you for your purchase of our **TIPM Plug-In Fuel Pump Power Bypass/Test System** (Patent #10,139,450), which is designed to be used with a Totally Integrated Power Module (TIPM) fuse box. Please visit our website for a current list of applicable tested vehicles. Installation requires no special skills and should take less than 15 minutes.

Centered around a printed circuit board with six terminals (male pins), this advanced system plugs into an existing TIPM-7 fuse box to test and bypass a faulty fuel pump relay using Metal-Oxide Semiconductor Field-Effect Transistors (MOSFETs). It intelligently makes the same connections required by the dealer-installed Dodge/Jeep external fuel pump relay, but does so without the need to cut harness wires or remove the TIPM. The following electrical connections to the vehicle's fuse slots are used: +12 VDC power (M30), run/start signal (M37), fuel pump relay output (M25 far side), power output to the fuel pump (M25 near side), and ground. Once the system is installed, your vehicle will operate normally with full remote start capabilities and no limitations.



TIPM Plug-In Fuel Pump Power Bypass/Test System v4.0

Tool Required:

- 1) Open end or adjustable wrench to disconnect your negative battery terminal and prevent accidental short circuits.
- 2) Crimping tool or pliers to attach the ring or fork terminal to the included black ground wire.

Installation Instructions:

1) Turn vehicle off and remove your negative battery terminal to disconnect power to the TIPM. This will prevent accidental short circuits.

2) Using the mini-blade/cartridge fuse removal tool located near the top of your TIPM (see Figure 1 - shown in yellow), remove three existing mini-blade fuses M25, M30, and M37 (see Figure 1 - shown in red). Insert the three fuses into the corresponding fuse slots in the circuit board.

3) Using the mini-blade/cartridge fuse removal tool, remove two cartridge fuses J3 and J15 (see Figure 1 - shown in green) from your TIPM. Replace these two cartridge fuses with the equivalent low profile cartridge fuses included with your shipment. Make sure the fuse amp ratings are identical after replacement. For example, remove your J15 40 amp cartridge fuse and replace it with the included 40 amp low profile cartridge fuse. The included low profile cartridge fuses allow the circuit board to fit in your TIPM. Note that some vehicles, such as the Dodge Ram, contain only one cartridge fuse that needs replaced (J15) since J3 is empty.

4) Insert the circuit board into the TIPM so the six male terminals slide into the M25, M30, and M37 fuse slots at the same time. If required, lift up the J13 fuse bezel around 1/4" (see Figure 1 - shown in light blue). J13 is your Ignition Off Draw (IOD) fuse, which is normally used to prevent battery drainage when the vehicle is not driven for many weeks. The circuit board is fully inserted when the top of the yellow M25 fuse is nearly flush with the Omron grey plug-in relay located directly to the left. Close and then open the TIPM lid to ensure the circuit

5) The included black ground wire must be connected from the circuit board's green ground terminal (TB1) to your vehicle's chassis ground or negative battery terminal. Chassis ground is any conductive connection between the vehicle frame and the car battery's negative terminal. Push the orange lever down on the green ground terminal and simultaneously insert one stripped end of the black ground wire into the opening (see Figure 2). Release the orange lever and pull on the black ground wire to make sure it is secured.

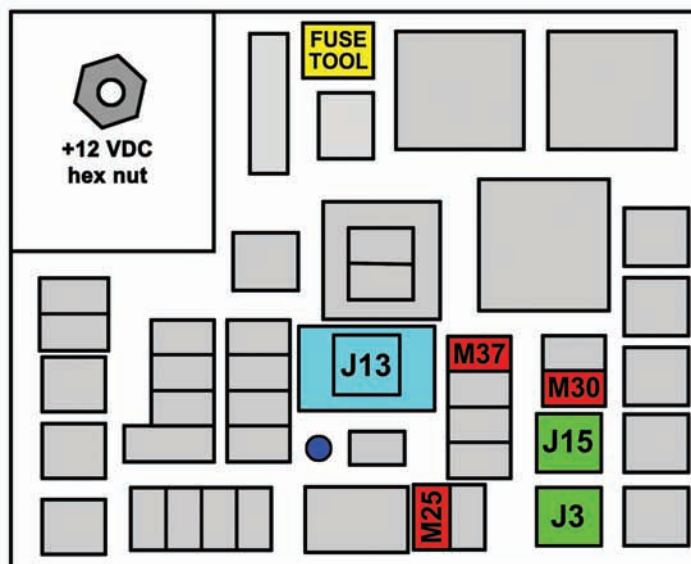


Figure 1 - Fuse locations for use with the TIPM Plug-In Fuel Pump Power Bypass/Test System

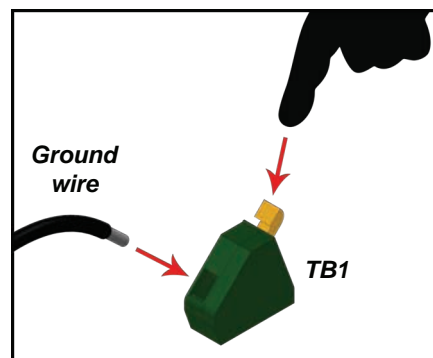


Figure 2 - With your finger, push downward on the terminal block orange lever, then insert one end of the stripped (bare) black ground wire into the hole.

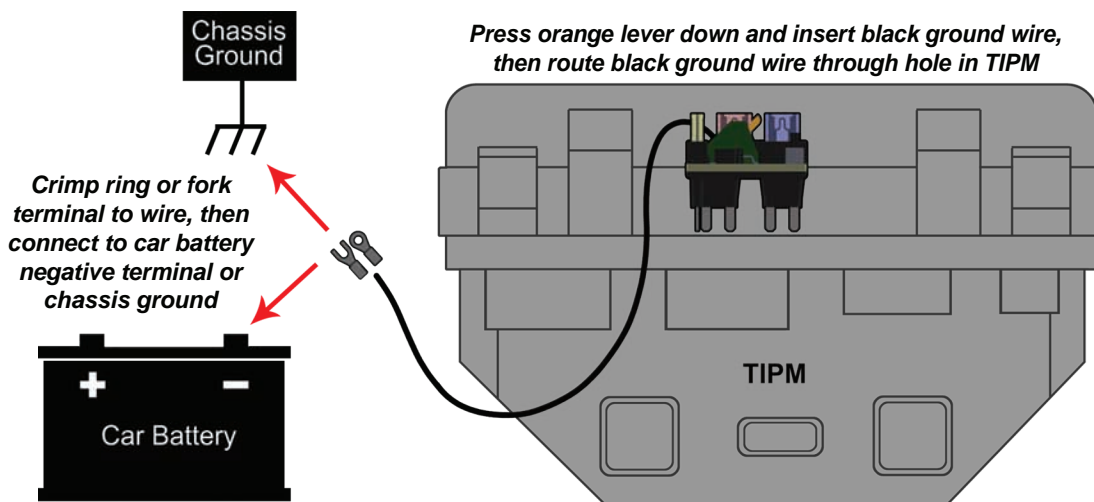


Figure 3 - Ground wire routing from TB1 to negative battery terminal or chassis ground

6) Straighten the free end of the ground wire and insert it through the **blue** hole in the TIPM shown in Figure 1. The wire will exit under the TIPM where it can be retrieved. Using a crimping tool or pliers, attach the included ring terminal to the free end of the 20 AWG ground wire as shown in Figures 3 and 4. The included fork terminal can be used instead of the ring terminal in situations where the chassis ground screw can only be loosened. The ring or fork terminal can then be connected to the vehicle's chassis ground or negative battery terminal to complete the connection. See Figure 3 for details.

7) Reconnect your vehicle's negative battery terminal and you're ready to use the circuit board to test your existing fuel pump relay, test your fuel pump, bypass a faulty fuel pump relay, or put the system into security mode to prevent it from starting. When the ground wire is properly connected, a green Light Emitting Diode (LED) labeled +12 VOLTS will illuminate. This LED confirms that the vehicle has a battery voltage of +12.0 VDC or more and the circuit board is connected properly. If the LED is not illuminated, change or check your ground connection and verify your battery is fully charged. **Installation is now complete.**

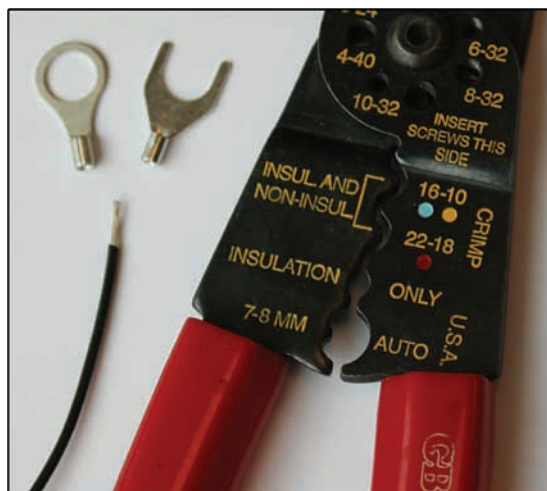


Figure 4 - Crimp ring or fork terminal to free end of ground wire, then attach to chassis ground or battery negative terminal

Operating Modes

A four position switch shown in Figure 5 provides the following functionality:

1) Bypass Mode - Use this mode for normal driving to bypass the fuel pump relay inside your TIPM. It uses the vehicle's run/start +12 VDC signal provided by the M37 fuse terminal to provide power to the fuel pump via the onboard MOSFET.

2) Original Relay - Use this mode if you want to test the fuel pump relay inside your TIPM or allow it to drive the fuel pump. This switch position uses the original +12 VDC fuel pump relay output from the upper M25 terminal to provide power to the fuel pump via the onboard MOSFET. A green "ORIG RELAY" LED will be illuminated when the +12 VDC signal supplied via the original fuel pump relay is detected. If the original fuel pump relay +12 VDC signal is intermittent or not present (an indication it's faulty), this green LED and power output to the fuel pump will duplicate it.

3) Fuel Pump Test - This switch position permits the user to test the fuel pump when the vehicle is on or off in order to confirm proper electrical operation. This mode can also be used to drain/service the fuel tank by pumping fuel out when the vehicle is off. When placed in this mode, +12 VDC is provided to the fuel pump via the onboard MOSFET. You should be able to hear your fuel pump operating by listening for a pumping/motor sound with your ear close to the fuel tank in a quiet environment.

4) Disable Fuel Pump - This switch position completely disables power to the onboard MOSFETs and the fuel pump, serving as an anti-theft device. A red LED is illuminated to indicate the fuel pump is disabled.

LED Feedback

The circuit board contains five LEDs that provide feedback to the user. These LEDs draw very little current, so they won't drain your battery if illuminated when the vehicle is off. See Figures 5 and 7.

1) Green RUN/START LED - Turns on when the +12 VDC run/start signal is available across the M37 fuse, which indicates the engine is starting or running. +12 VDC power is supplied to the fuel pump if the switch is in bypass mode and this LED is illuminated.

2) Green +12.0 VDC LED - Indicates the ground wire is properly connected and +12.0 VDC or greater battery supply is available as the main power source. This LED should be on all the time, unless the ground wire is not properly connected or the battery is below +12.0 VDC. In some vehicles, this LED will not be illuminated during engine cranking due to a temporary voltage drop, which is normal. When the vehicle is powered off, this is the only LED that is illuminated.

3) Green ORIG RLY LED - Will be illuminated when the +12 VDC signal supplied via the original fuel pump relay inside your TIPM is detected and the switch is in the Original Relay position. If the original fuel pump relay +12 VDC signal is intermittent or not present (an indication that it's faulty), this LED and the power supplied to the fuel pump will mimic it. LED feedback is used to determine if the vehicle's original fuel pump relay is faulty.

4) Red DISABLE LED - When the switch is in this position, a red LED will be illuminated showing the user that the anti-theft fuel pump disable mode is selected. No power is provided to the fuel pump and the vehicle will not start.

5) Green PUMP ON LED - If power is supplied across the M25 20 amp fuse and out to the fuel pump, this LED will be illuminated. If no light is present, no power is provided to your fuel pump.

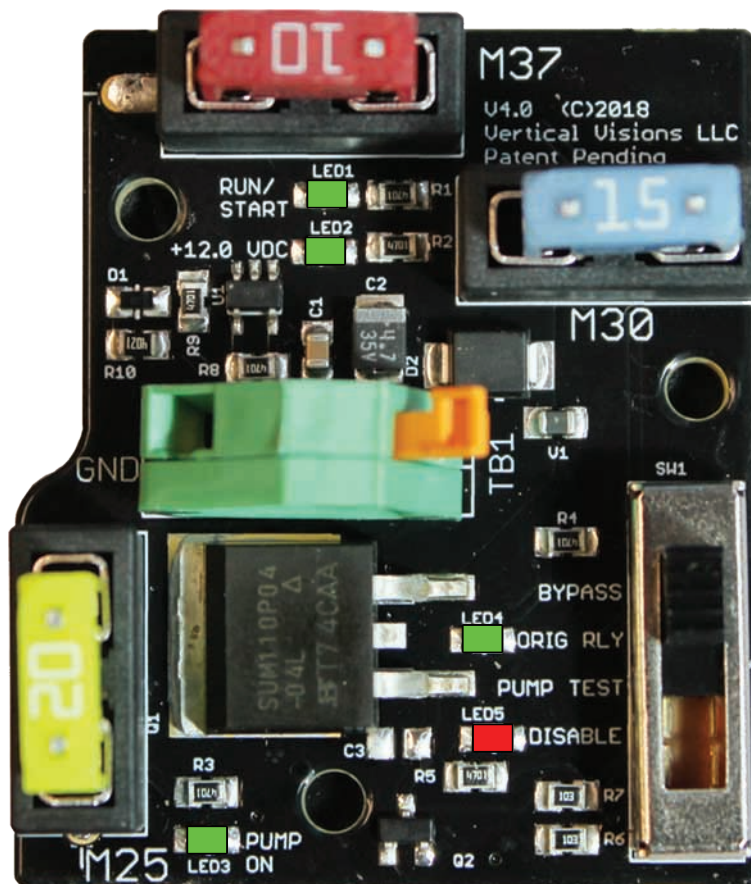


Figure 5 - Switch operating modes (4) and LEDs (5)

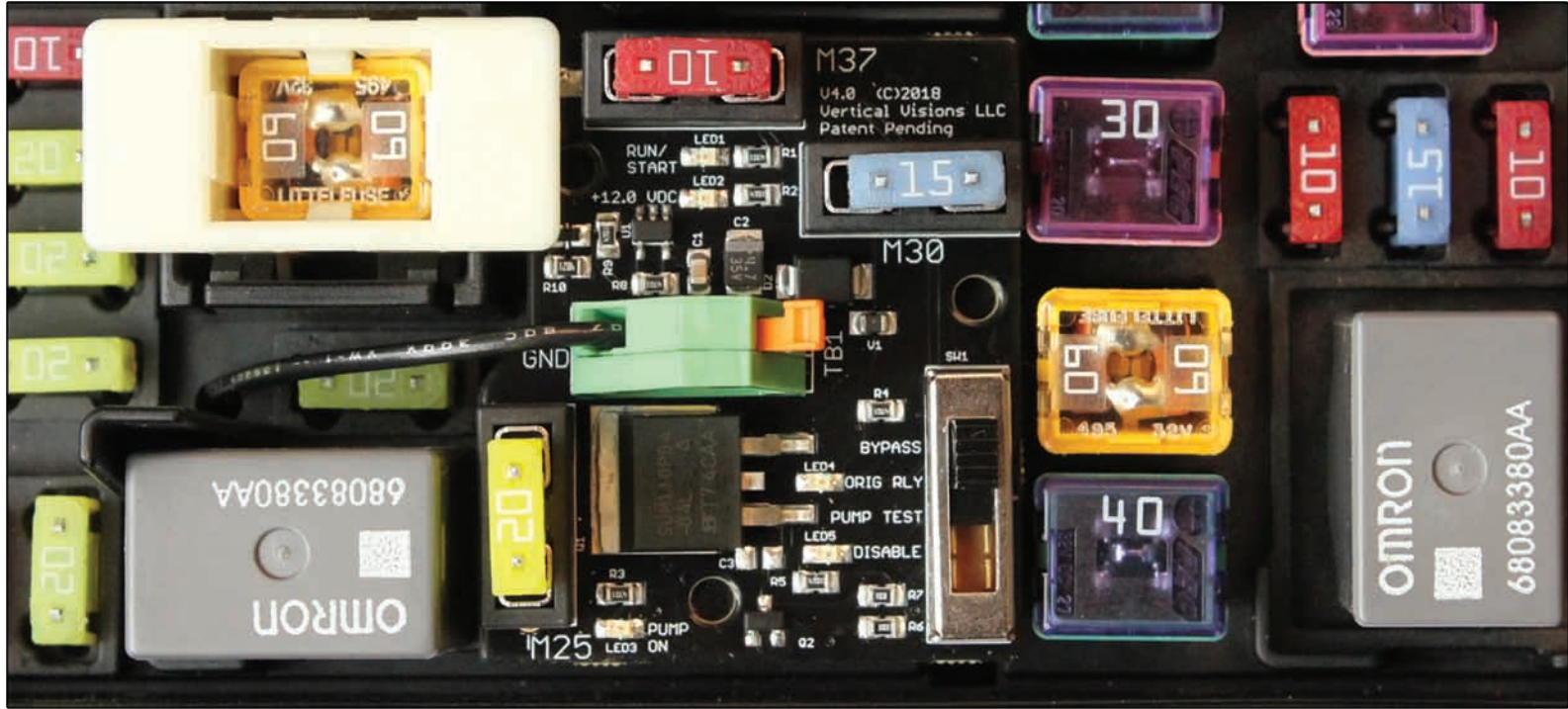


Figure 6 - Circuit board installed in a TIPM (fuse box) with black ground wire shown at left

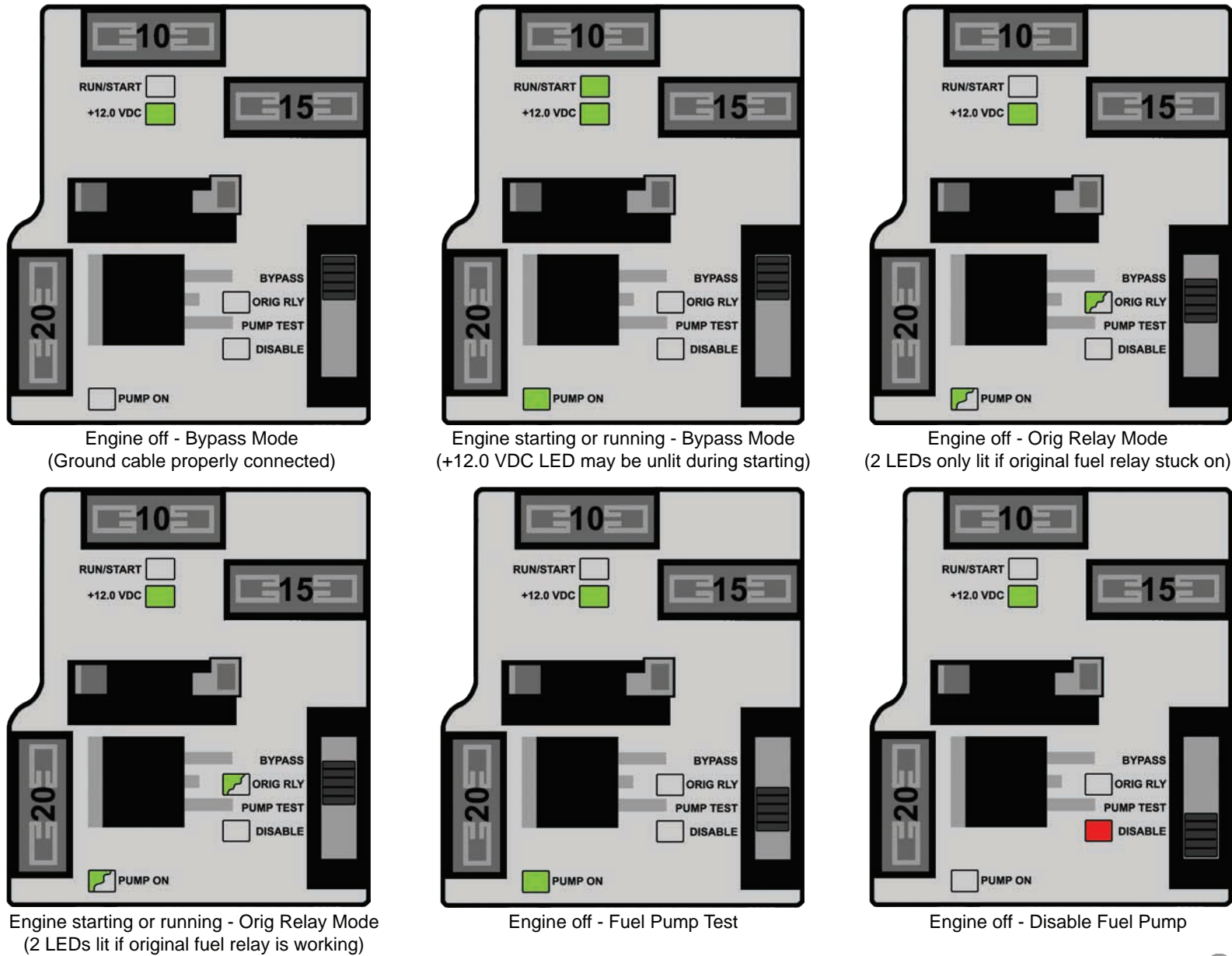


Figure 7 - Normal operation of the TIPM Plug-In Relay System

1) Which switch position should I use?

Answer: Most people will leave the switch in the uppermost position (BYPASS MODE) in order to bypass a faulty fuel pump relay and use the vehicle's run/start signal to power the fuel pump through our device. The dealer installed Dodge/Jeep external relay also relies on these same signals.

2) When I turn my car off, the +12.0 VDC green LED is still lit. Is this a problem?

Answer: It's normal. This LED indicates your battery has at least +12.0 VDC and sufficient battery power to start the car. The LED draws very little current and will not drain your battery.

3) The +12 VDC green LED was illuminated in the past, but it's not currently illuminated. What's wrong?

Answer: The black ground wire likely has a bad connection to chassis ground or the battery negative terminal. If connected to chassis ground, verify that the black ground wire is connected to bare metal (no paint). This adjustment can be performed while the battery is connected to help you find the correct connection. The +12.0 VDC green LED will illuminate when properly connected. If the LED will not illuminate, you may have a battery that is less than +12.0 VDC. Verify battery voltage with a multimeter. Check the black ground wire connection to the circuit board's green terminal block.

4) The fuel pump relay inside my TIPM is faulty and stuck in the on position (draining my battery). When I install the TIPM Plug-In Relay System, will it resolve this issue?

Answer: Yes. Our system is designed to completely disconnect a faulty fuel pump relay from the fuel pump circuit. If you move the device's switch to BYPASS MODE, the old faulty relay is not connected to the fuel pump. However, our device can optionally use the original faulty fuel pump relay to drive the fuel pump, if you so choose. The ORIG RELAY switch position is often used for testing purposes where a green LED can indicate whether or not the faulty fuel relay inside your TIPM is providing +12 VDC to the fuel pump.

5) After installation, a "NO FUSE" light is illuminated on my instrument panel. Can it be remedied?

Answer: Yes. Simply push down on the white bezel surrounding your J13 fuse (see Figure 1 - shown in **light blue**). This fuse is sometimes lifted up during the installation of the TIPM Plug-In Relay System and it must be pushed down when complete. J13 is your Ignition Off Draw (IOD) fuse that is normally lifted up to prevent battery drainage during long periods of time where the vehicle is not used (i.e. while at the airport during long vacations). Push it down all the way to resolve the problem.

6) Will my remote start and safety mechanisms be affected by this device?

Answer: No. Users will maintain full functionality of their remote start. Additionally, power to the fuel pump will be removed during a crash since it uses the same signals as the dealer installed Dodge/Jeep external relay.

7) After installation, my HVAC fan is not working. Did the device cause this issue?

Answer: No. You likely forgot to install the lower profile J15 cartridge fuse included with your shipment. Since the original J15 and J3 cartridge fuses in your vehicle collide with the circuit board, you must remove them and exchange them with the lower profile versions included with this system.

8) My car still won't start after installing the system. What should I check?

- Verify the Ignition Off Draw (IOD) J13 fuse with a white bezel around it is pushed down all the way. During installation, this fuse may have been lifted up slightly to allow for installation of the TIPM Plug-In Relay System.
- Confirm that you replaced your taller J15 and/or J3 cartridge fuses (see Figure 1 - shown in **green**) with the lower profile versions provided in your shipment. Many Dodge Ram vehicles will not have a J3 fuse installed. Your HVAC system will not work if you fail to install one of these fuses.
- Visually check the three fuses (M25, M37, and M30) that were removed from your TIPM and inserted into our TIPM Plug-In Relay System to ensure they're not blown.
- With the vehicle turned off in the switch in BYPASS MODE, only the green +12.0 VDC LED should be illuminated. This LED indicates that your ground wire is properly attached to the negative battery terminal or chassis ground and you have at least +12.0 VDC present in your battery. If no LEDs are illuminated, reconnect your black ground wire or confirm that your battery voltage is at least +12.0 VDC.
- Have you checked your fuel pump to confirm it is working? Move the switch to the PUMP TEST position. In this position, you should see the green PUMP ON LED illuminate, indicating that +12 VDC power is being provided to the fuel pump. You can also hear the fuel pump if the vehicle is located in a quiet environment.
- Verify that you see the three green LEDs shown in Figure 7 (engine starting or running - Bypass Mode) during the engine cranking process and while driving. The most important thing to remember is that illumination of the green PUMP ON LED is the ultimate goal in delivering +12 VDC power to your fuel pump. If this LED is illuminated, the TIPM Plug-In Relay System is working properly and the problem is likely elsewhere within your vehicle.
- Verify that your TIPM Plug-In Relay System is in BYPASS MODE. In ORIG RELAY mode, a faulty internal fuel relay may cause a no start condition.
- Do you have gas in the vehicle? Is your fuel gauge working properly?
- Make sure you do not have an external relay installed. If so, change the external relay. If you allowed your dealer to cut harness wires under the TIPM, our TIPM Plug-In Relay System will not work properly.
- Check/replace your camshaft and/or crankshaft sensors and perform a fuel pump pressure test. There are dozens of things that can prevent a vehicle from starting, beyond the fuel pump relay issue that your TIPM Plug-In Relay System was designed to solve.

If you find that this part does not solve your fuel pump relay problems, you can return it for a full refund (less shipping) within 30 days of receipt. A one year warranty from the purchase date is standard.