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TIPM Plug-In Fuel Pump Power Bypass/Test System

**PATENT
PENDING**

Thank you for your purchase. Please visit our website for the current list of compatible vehicles (new models are regularly added) and contact us via telephone or email with any questions you may have. Installation should take 10-15 minutes.

Centered around a printed circuit board with six terminals (male pins), the system plugs into an existing TIPM-7 fuse box to test and bypass a faulty fuel pump relay. It intelligently makes the connections required by the dealer installed Dodge/Jeep external relay 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, run/start signal, fuel pump relay output, power output to the fuel pump, and a wired chassis ground. Once the system is installed, your vehicle will operate normally with full remote start capabilities, fuel pump power removal during a crash, and no limitations.

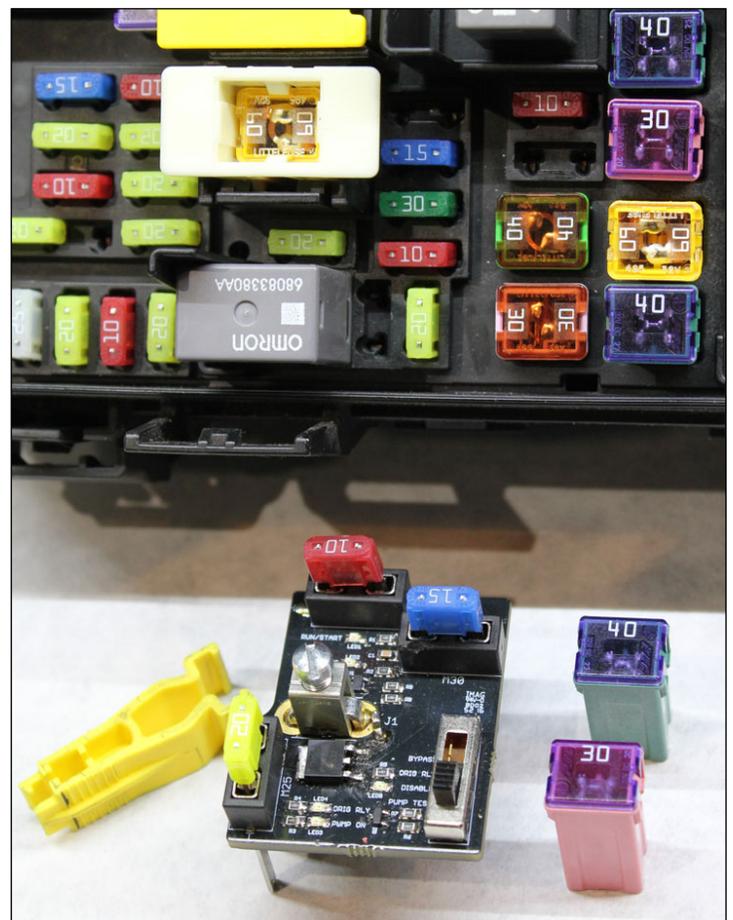
Tools Required

- 1) Open end or adjustable wrench
- 2) Flat head screwdriver
- 3) Pliers or crimping tool

Installation Instructions

- 1) Turn vehicle off.
- 2) We highly recommend that you remove your negative battery terminal to disconnect power to the TIPM and prevent accidental short circuits.
- 3) Using the yellow mini-blade/cartridge fuse removal tool located above your J11 fuse slot, remove three existing mini-blade fuses (M25, M30, and M37 - shown below in **red**) from your TIPM and insert them into the corresponding fuse slots in the circuit board.
- 4) Using the yellow mini-blade/cartridge fuse removal tool, remove two cartridge fuses (J3 and J15 - shown below in **yellow**) from your TIPM and replace them with the low profile cartridge fuses included with your shipment. Make sure the fuse amp ratings are identical after replacement. The lower profile cartridge fuses allow the circuit board to fit in your TIPM. Note that some vehicles contain only one cartridge fuse that needs replaced (J15) since J3 is empty.
- 5) Move the four position circuit board switch to the "DISABLE" position, then 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, you can lift up on the J13 fuse bezel (shown below in **blue**). J13 is your Ignition Off Draw (IOD) fuse, which is normally used to prevent battery drainage when the vehicle is not driven for long periods of time. The circuit board is fully inserted when to top of the circuit board's M25 fuse is nearly flush with the Omron grey plug-in relay located next to it. Close and then open the TIPM lid to ensure the circuit board is full seated.

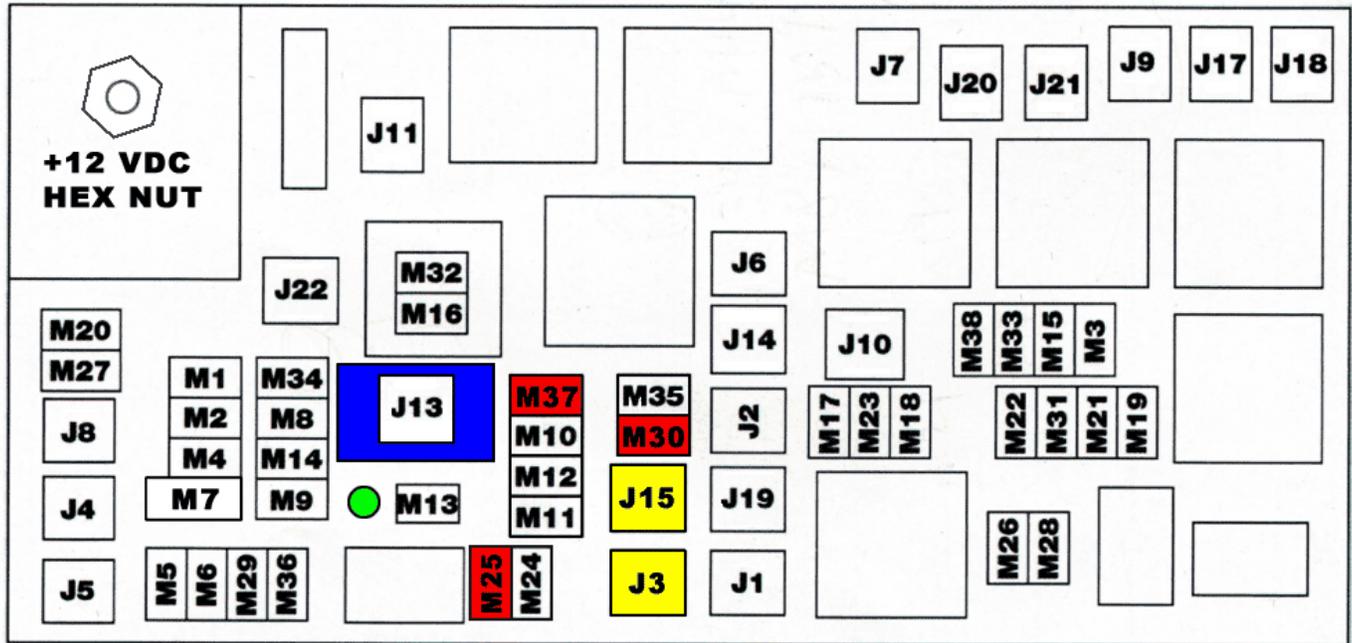
- 6) The included green ground wire must be connected from the circuit board's ground screw terminal J1 to your vehicle's chassis ground. Chassis ground is defined as any conductive connection between the vehicle frame and the car battery's negative terminal, typically completed via the use of a wire placed under the head of a fastener. Straighten the ground wire and insert it through the hole in the TIPM shown in **green** below. The wire will exit under the TIPM where it can be retrieved. One end of the wire must be connected to the circuit board's J1 screw terminal while the other end must be connected to chassis ground. We've included a ring terminal that you can crimp onto the free end of the ground wire to facilitate this connection. The



TIPM shown with mini-blade fuses removed and inserted into circuit board, cartridge fuses removed and replaced.

included fork terminal can be used instead of the ring terminal in situations where the chassis ground screw can only be loosened. Crimping of the terminal onto the end of the green ground wire can be performed with a crimping tool or pliers.

7) Reconnect the 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. The circuit board should illuminate a green Light Emitting Diode (LED) labeled "+12 VOLTS" to confirm that the vehicle has a battery voltage of at least +12.0 VDC. If the LED is not illuminated, change your ground connection and make sure your battery is fully charged.



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

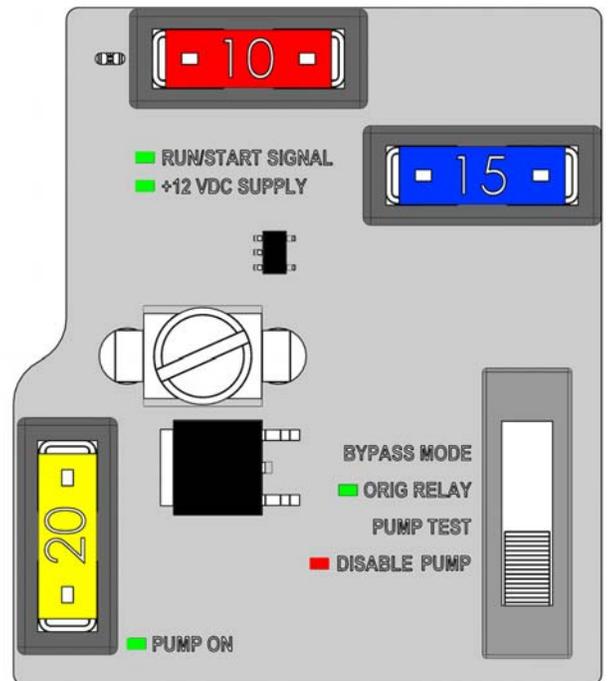
Diagnostics and Usage

A four position switch provides the following functionality:

1) Bypass Mode - This switch position uses the vehicle's run/start +12 VDC signal provided by the M37 fuse terminal to power switch position 1, which then controls two solid state MOSFETs. A green "RUN/START" LED will be illuminated when the run/start +12 VDC signal is present. The larger MOSFET then passes a separate +12 VDC supply from the M30 fuse pin to provide source power across the M25 fuse to the fuel pump. The run/start +12 VDC signal indicates the need for power to be supplied to the fuel pump when attempting to start or operating the vehicle. Bypass mode will be the main use of the device in order to provide power to the fuel pump when an existing faulty fuel pump relay is present.

2) Original relay - This switch position uses the original +12 VDC fuel pump relay output from the upper M25 terminal to provide power to switch position 2, which then powers two MOSFETs. The larger MOSFET then passes a separate +12 VDC supply from the M30 fuse pin to provide source power across the M25 fuse to the fuel pump. This arrangement will only send +12 VDC to the fuel pump if the original fuel pump relay is sending +12 VDC through fuse slot M25. 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, the green LED and two MOSFETs will duplicate it via the +12 VDC supply provided to the fuel pump. Original relay mode is mainly used to determine if the original fuel pump relay is faulty.

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 the proper electrical operation of the fuel pump. This mode can also be used to drain the fuel tank by pumping fuel out when the vehicle is off. When placed in this mode, +12 VDC is sent to switch position 3, which then powers two MOSFETs. The



larger MOSFET then passes a separate +12 VDC supply from the M30 fuse pin to provide source power across the M25 fuse to the fuel pump. 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 while in a quiet environment.

4) Disable fuel pump - This switch position completely disables power to both MOSFETs and the fuel pump, serving as an anti-theft device. A red LED is illuminated when in this mode 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.

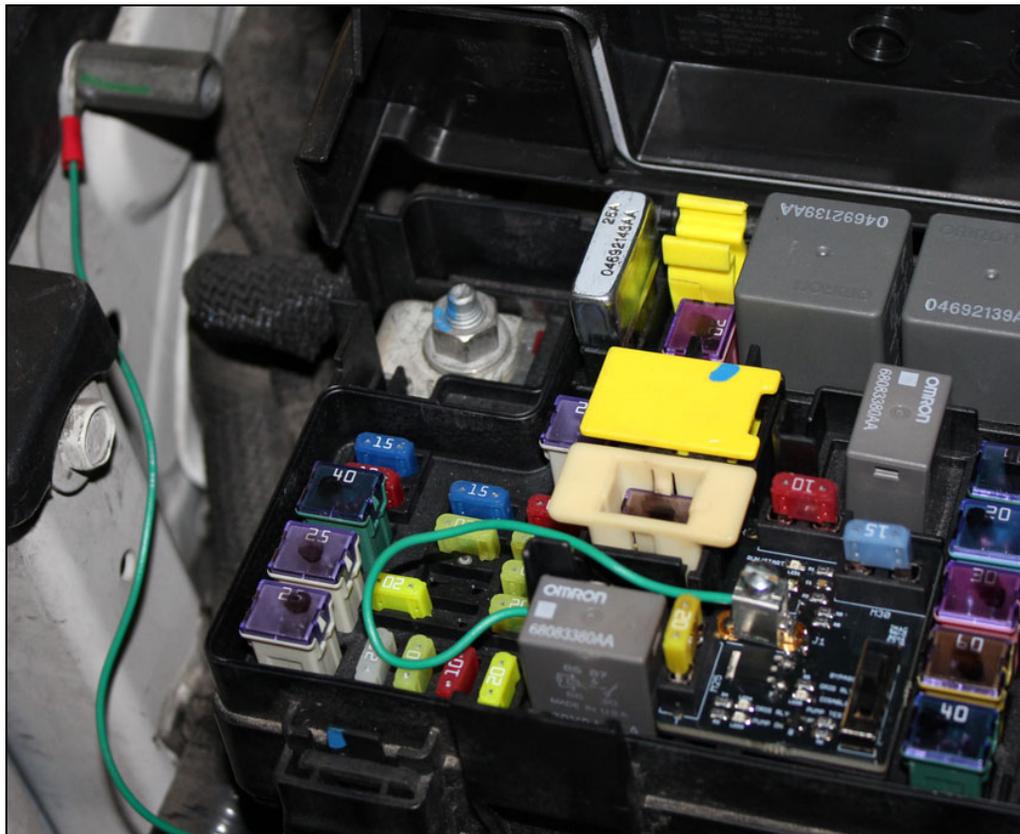
1) Green "RUN/START" LED - Turns on only when the engine is starting or running and +12 VDC is fed across the M37 fuse. This LED shows the user that the vehicle is on and bypass mode can be used. This Run/Start signal feed mimics that used by the 2011-2013 Jeep/Dodge recall where an external relay coil is powered on. During a crash, the run/start signal is turned off and the fuel pump will be disabled.

2) Green "+12 VOLT" Supply" LED - Indicates +12.0 VDC or greater battery supply is available as the main power source used to feed both MOSFETs, the fuel pump, the comparator circuit, all LEDs, and other circuits. This LED should be on all the time, unless the battery is disconnected or below +12 VDC. A comparator circuit determines if battery voltage exceeds 12.0 VDC.

3) Green "ORIG RLY" LED - Will be illuminated when the +12 VDC signal supplied via the original fuel pump relay 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, the green LED and two MOSFETs will mimic it via the +12 VDC supply provided to the fuel pump. LED feedback will be used to determine if the vehicle's fuel pump relay is faulty.

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

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 lit.



Circuit board installed in a TIPM (fuse box) with green ground wire shown at left

We appreciate your business. Please do not hesitate to contact us if you have any questions or comments.