

## VMP Fuel Pump voltage booster - Instructions

The VMP fuel pump voltage booster “AMP” amplifies and regulates the power going to the FPDM (Fuel Pump Driver Module). The FPDM provides Pulse Width Modulated (PWM) variable voltage to the fuel pump, when higher voltage is available to the FPDM it is able to supply more power to the fuel pump and increase fuel flow when the PCM commands it.

Due to the variable-voltage nature of the FPDM, the pump only runs as hard as it needs to, the booster supplies the voltage full-time so it is available when needed. Our booster was specifically designed to be used on late-model Ford applications.

The booster should be mounted in the trunk near the FPDM. It can be attached with double sided tape, Velcro, or self-taping screws.



**FUSES: Always replace the factory mini ATC fuel-pump fuse with the supplied higher-amp fuse. Most factory fuses are 15 amp or 20 amp, we recommend a 30 or 40 amp fuse. A fuse has already been installed in the fuse holder on the AMP.**

### FUSE LOCATIONS(engine bay):

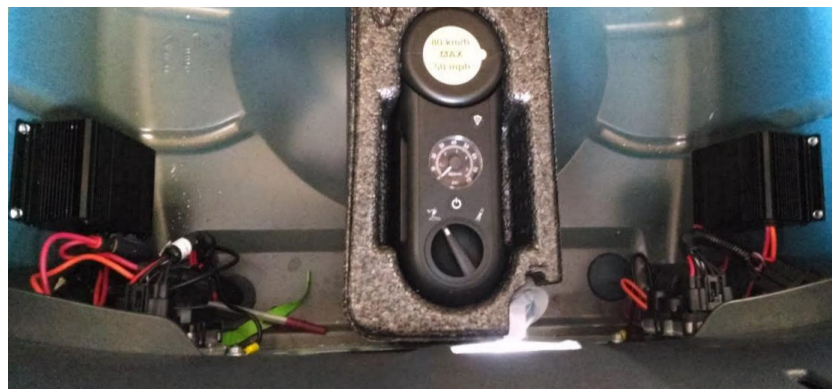
- 11-14 Mustang GT/V6 – F13
- 11-12 GT500 – F13 (single circuit for two FPDM/Pumps, use Y harness)
- 13-14 GT500 – F13 and F14
- 07-09 GT500 – F41 and F6 on the strut tower, F66 feeds the strut tower
- 05-09 Mustang GT/V6 – F41
- 2010 GT500 – F13 and F14
- 2010 Mustang GT/V6 – F13

## Installation for Single Plug and Play unit for GT/V6 and 11-12 GT500

- Mount the unit as pictured above, if you have a spare tire make sure it clears.
- Ground the black wire, the best ground location is the factory ground bolt behind the rear trunk plastic.
- Connect the 2-pin harness on the AMP to the VMP Plug and Play harness, install in-line with factory FPDM connector.
- \*11-12 GT500 have one power circuit feeding both FPDMs. Our specific kit for 11-12 GT500 uses one AMP and includes a Y harness and and two PnP harnesses. Connect the Y harness to the AMP, connect each PnP harness to the end of the Y harness, then connect in-line with factory FPDM.

## Installation for Dual Plug and Play units for GT500: 07-09, 10, and 13-14

- Same as above except mount two units and connect one to each FPDM with a PNP harness for each.



## Installation for wire-in units

If you purchased a VMP AMP without the plug and play harnesses it will have to be spliced into the existing wiring. See our diagrams to determine the pin location and color of that wire. You will need to cut the 2-pin connector off the AMP. The fused red wire is power input into the AMP, the orange wire is the 17v output of the AMP which will go towards the FPDM. Attach the black wire to an existing ground. **The AMP is installed inline or in a series with the power wire that currently feeds the FPDM. The diagrams below will show which wire you need to cut depending on the year and model of your car.**

### 99-04 Mustang GT/V6/Cobra

- Cut the wire going to Pin 9 on the connector and splice in the booster.

### 05-10 Mustang GT/V6/GT500

- Cut the white wire going to pin 5 and splice in the booster.
- 07-09 GT500 use a Red wire for pin 5 on FPDM#2 (passenger side)
- 2010 GT uses a VT/WH wire on Pin 5
- 2010 GT500 uses a VT/WH wire on both sides
- *\*A single booster may be used on 07-10 GT500 but it must only be powered from the drivers side and the output T'eed off to both FPDMs. This leaves the factory passenger side circuit un-used.*

### 11-14 Mustang GT/V6/GT500 FPDM connector

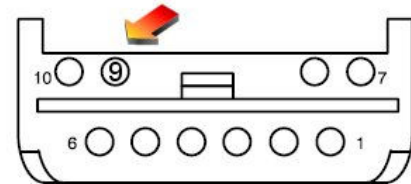
- Cut pin 1 and splice in the booster.
- The wire color is the same on all models.

**C433** (BK)

**14A005**

Fuel pump driver module (9D372)

99-04 Mustang FPDM  
\*Cobra Terminator



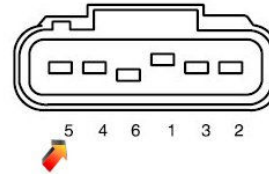
Pin	Circuit	Circuit function
1	922 (WH/RD)	Fuel pump, control, signal
2	1205 (BK)	Ground
3	366 (RD/BK)	Fuel pump, . . .
4	. . .	not used
5	. . .	not used
6	. . .	not used
7	928 (LB/OG)	Fuel pump monitor
8	. . .	not used
9	787 (PK/BK)	Fuel pump, Power
	*238 (DG/YE)	Fuel pump relay, switched power, output
10	513 (BN/PK)	Fuel pump, +

**C4033** (BK)

05-10 Mustang FPDM Connector

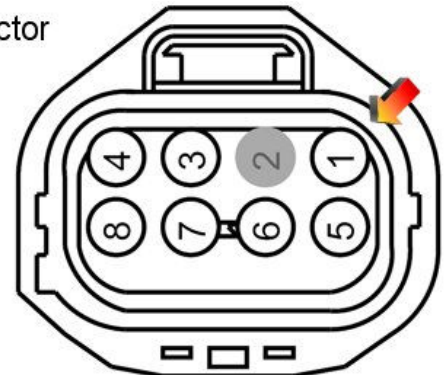
**14A005**

Fuel pump driver module (9D372)



Pin	Circuit	Circuit Function
1	922 (WH/RD)	Fuel pump driver module, monitor
2	57 (BK)	Ground
3	1205 (BK)	Ground
4	787 (PK/BK)	Fuel pump, control, signal
5	(WH, VT/WH or RD)	Inertia Fuel Shutoff (IFS) switch, output
6	928 (LB/OG)	Fuel pump driver module, control

11-14 FPDM connector



Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CE608 (VT-GN)	12	VPWR FUEL	
2	*	*	Not Used	
3	VE225 (YE-OG)	22	FUEL PUMP COMMAND (FPC)	
4	GD109 (BK)	14	GROUND - COMBINED REAR LAMP LEFT	
5	CE515 (YE-GY)	12	FUEL PUMP POWER (FPPWR)	
6	CR113 (BN-YE)	22	EVENT NOTIFICATION SIGNAL	
7	VE518 (BN-WH)	22	MONITOR - FUEL PUMP (FPM)	
8	RE515 (WH-BN)	12	FUEL PUMP RETURN (FPRTN)	

## Calibration Recommendations for 99-04, 05-10, and 11-14 GT500

- We recommend reducing the entire Fuel Pump voltage table by 1-2 volts and fine tuning from there.

Fuel Pump Voltage Table

		fuel_flow								
		0.0450	0.1	0.35	0.75	1.5	3	4.5	6	8
Target R/P	60	7.942	7.974	8.119	8.355	8.807	9.761	10.790	11.918	13.640
	55	7.575	7.606	7.751	7.986	8.436	9.382	10.400	11.512	13.197
	41	6.546	6.577	6.720	6.952	7.395	8.321	9.309	10.374	11.956
	35	6.105	6.137	6.279	6.509	6.949				
	25	5.121	5.152	5.293	5.520	5.955				

Please enter amount to subtract

Amount:

OK Cancel

- Fine tune by data-logging *Actual Fuel Pump Voltage* and *Fuel pump voltage from table*, then modifying the values in the table so the data-logged values are +/- .25v.
- Fuel pump flow rate can be used to determine where you are on the X-axis of the table
- The Y axis may be datalogged but the table can be adjusted quickly and accurately by adjusting only the columns by the difference in Actual vs Table.
- Proper PID values will allow the computer to learn the FPVT. We recommend a Derivative term of 0, Integral term of .3-.4, and Proportional term of .025-.05

## Calibration Recommendations for 11-14 5.0L GT, Boss, and F150

- The 5.0L uses a mechanical-returnless fuel system with the FPDM as a two speed fuel pump controller.
- The fuel flow rate at which the pump switches to high speed is adjustable in the calibration under *Fuel Pump scalars*
- We recommend raising it from .80lb/min to ~3lb/min on supercharged cars.
- On naturally aspirated cars the value may be raised to ~4lb/min so they run low speed most of the time. On the nitrous tune the value can be lowered back down to ~2lb/min.

Scalars\* 2011 Mustang GT - GTU6

	Value
<input type="checkbox"/> Duty Cycle when Pump Is Off	0.7500
<input type="checkbox"/> Fuel Flow Threshold for High Pump	3.0000
<input type="checkbox"/> Fuel Level Input Over SCP Switch	1.0000
<input type="checkbox"/> Fuel Pump Max Duty Cycle	0.4799
<input type="checkbox"/> Fuel Pump Min Duty Cycle	0.0700
<input type="checkbox"/> Low Speed Fuel Pump Duty Cycle	0.7500
<input type="checkbox"/> Min High Flow Time	2.0000
<input type="checkbox"/> Min Run Time to Enable High Speed	5.0000
<input type="checkbox"/> P0463 Fault Timer Set High	4.0000
<input type="checkbox"/> Pressure Of In Tank Regulator	55.0000

The VMP Fuel pump booster "AMP" unit is designed to be always on. It is a high efficiency unit and does not require any additional power wires or pressure switches. The AMP is designed to run all the time to prevent any pressure spikes that may occur when a booster is triggered in the middle of a pull by a pressure switch. In the case of 99-10 and 11-14 GT500, the

computer is already modulating fuel pump duty cycle and only giving the car the pressure and flow it needs, 11-14 GT have a similar mechanism built in through the two speed control of the pump.



NAJAY ENGINEERING, INC-



#### Disclaimer

This User License Agreement (the "Agreement") is an agreement between you, (the "Purchaser") as the purchaser of the Fuel Amp unit (the "Unit") and as the manufacturer of the Fuel Amp, Najay Engineering, Inc ("Najay Engineering").

1. Any use of the Fuel Amp Unit by you will constitute your agreement to the terms and conditions contained herein. If you do not agree to the terms and conditions of this Agreement, do not use the Fuel Amp Unit at any time. Contact the Distributor who sold you your purchase in writing to request a refund and return the Fuel Amp Unit at your expense. Any terms and conditions in any purchase order or other instrument issued by the Purchaser in connection with this Agreement which are in addition to or inconsistent with the terms and conditions of this Agreement shall not be binding and shall not be deemed to amend or modify this Agreement.
2. Purchaser acknowledges that Najay Engineering is granting a non-transferable restricted license to you, as the Purchaser of the Unit, to use the Fuel Amp Unit for the sole purpose of installation in the Purchaser's Vehicle. Najay Engineering retains all title, ownership rights, trade secrets and intellectual property rights in and to the Unit. Purchaser agrees that the Purchaser shall not, directly or indirectly, modify, translate, reverse engineer, decompile, disassemble, or create derivative works based on the Unit. Purchaser further agrees not to permit any third party to modify, translate, reverse engineer, decompile, disassemble or create derivative works based on the Unit.
3. This Unit is being sold with no warranties of any kind, expressed or implied to the Purchaser. The Unit is not endorsed by the manufacturer of your vehicle and there is no affiliation between Najay Engineering and the manufacturer of your vehicle. Installation of the Unit in your vehicle or use with your vehicle may limit or void your rights under any warranty provided by the manufacturer of your vehicle and Najay Engineering assumes no responsibility in such event. Any warranty not provided herein, and any remedy which, but for this provision, might arise by implication or operation of law is hereby excluded and disclaimed. The implied warranties of merchantability and of fitness for any particular purpose herein are expressly disclaimed.
4. The Unit carries a 1 year warranty against defects in materials or workmanship from date of purchase from Najay Engineering and/or Najay Authorized Dealer/Distributor where Unit was originally bought, in this case, VMP Tuning Inc
  - a. Najay Engineering's liability under this warranty shall be limited to the correction or replacement of any defective part in the Unit in question which Najay Engineering determines to be necessary.
  - b. Warranty freight charges are the responsibility of the Purchaser and/or the Distributor where the Unit was brought from.
  - c. This warranty is to the original Purchaser (from Najay Engineering or Najay Authorized Dealer/Distributor) and is not transferable.
  - d. This warranty is void unless proof of purchase is submitted and the Unit was purchased from a Najay Engineering Authorized Dealer/Distributor.
  - e. Removal of serial numbers and/or unauthorized alteration of the Unit or packaging will also void all warranties.
5. Najay Engineering shall not be held responsible for direct or indirect failures due to the Unit.
6. Najay Engineering will not credit or repair any Units that have been damaged due to improper installation or use beyond Unit specifications.
7. Najay Engineering Dealer/Distributor should maintain adequate knowledge of the Unit to be able to properly sell and to service the needs of their Customers. Najay Engineering will provide technical assistance to the Dealer/Distributor to enable them to answer and field technical questions with the Purchaser. Contact VMP Tuning at 321-206-9369 or [Sales@VMP Tuning.com](mailto:Sales@VMP Tuning.com) for technical support.
8. It is the Responsibility of the Purchaser to have the Proof of Purchase available for warranty return or repair.