



## **FN Mustang GT calibration Notes**

The 18+ FN mustang has a factory PWM fuel pump controller that will only allow a max average switched voltage of 12V to the fuel pump. This is true even with KPM Fuel Systems 1500HP/2200HP/2700HP modules and PWM controlling the system by mimicking the factory PWM.

The KPM Fuel Systems pump module WILL NOT achieve its highest fuel flow rate if this is left at factory settings.

As the Mustang PCM actually controls the PWM there are numerous parameters in the calibration. From factory the lowest average voltage is 5v. This is the minimum set point. On KPM twin pump systems this will leave our rail pressure around 460-500KPA during idle, cruise, and deceleration. This is normal and acceptable operation of the systems. For achieving max flow from the KPM Fuel Systems total fuel solution in the higher load range we set the max allowed voltage to 15 to get the most out of the system. This will cause fuel pressure to rise above our desired pressure set point during some conditions. This is normal and acceptable operation. As the fuel pressure starts to lower under power conditions the PCM will allow this until it reaches the desired pressure then start ramping pump duty cycle up to keep pressure where it has been set. Limitations in the PCM and factory PWM are unable to pull the duty cycle down to reach commanded pressures with the allowable voltage clamp lifted which is normal and acceptable operation. The PCM is only capable of sending out a signal to the factory PWM once per second (1Hz) thus being the limitation in response to changes in pressure. However, the volume of the fuel lines and rails provides enough reserve fuel to not have a negative effect.

\*The KPM Fuel Systems PWM can also be run as a standalone unit with use of its own fuel pressure sensor and will control fuel pressure faster that will ensure no pressure fluctuations happen at all.\* For more information - [enquiries@kpmfuelsystems.com.au](mailto:enquiries@kpmfuelsystems.com.au)

You can find the parameter files for these settings on the calibration parameter files page [HERE](#).

Or follow the instructions on the next page to see what needs to be adjusted.



The following instructions are where to make the calibration changes.

## PCMTEC

Tables auF61311 – auF61313 – auF61321 Are our pressure set points. Set these to 67 PSI / 460 KPA.

Temperature - °C	Pressure - psi		ulbm	Pressure - psi		Engine speed - rpm	Temperature - °C								
		0			0			-40	20	50	60	70	80	90	100
	▶ -50	67		▶ 0	67		▶ 0	67	67	67	67	67	67	67	67
	-10	67		20000	67		50	67	67	67	67	67	67	67	67
	0	67		20000	67		400	67	67	67	67	67	67	67	67
	20	67		20000	67		500	67	67	67	67	67	67	67	67
	50	67		20000	67		1000	67	67	67	67	67	67	67	67
	80	67		20000	67		2000	67	67	67	67	67	67	67	67
	150	67		20000	67		3000	67	67	67	67	67	67	67	67
	200	67		20000	67		3500	67	67	67	67	67	67	67	67

Table auF30958 is a Max Voltage vs Flow vs Pressure table. Set the table as shown.

\*This table CAN be adjusted to finely tune duty cycle control based on vehicle modification but not necessary.

		lb/min			
		0	1	3	6
Pressure - psi	55	5	7	10	15
	56	5	7	10	15
	72	5	7	10	15
	73	5	7	10	15

Scalar auF61353 is a Max Voltage final Clamp. Raise this to 15V.

auF42185	Max positive delta from ending sync speed to run normal max detect	0	0	rpm
auF45186	Max positive delta from ending sync speed to run normal max detect	0	0	rpm
auF61353	Max pump control voltage acceptable to PEM.	15	12	v
auF47704	Max Pump displacement (cc/rev)	24.25	24.25	

Scalar auF32741 adjusting the slope for the output DC to be closer to the command.

auF32855	Slope for the FRP transfer function (from v to PSI).	1033	1033	PSI/v
auF32741	Slope for transfer function between FPC command DC and actual fuel pump voltage DC	1.5	2	
auF0117	Stoichiometric Air Fuel Ratio	14.08	14.08	

Scalar auF41728 reduce the deadband to allow faster response.

auF37167	OVI Enable RPM Min	1000	1000	rpm
auF41728	Returnless fuel pump feedforward deadband.	0.001	0.125	v
auF32777	RFP feedback gain for derivative of delta-P error.	0	0	V*s/PSI

## HP Tuners

13295 – 13289 – 13287 Are our pressure set points. Set these to 67 PSI / 460 KPA.

The screenshot shows the 'Fuel System' window with the 'General' tab selected. The settings are as follows:

Category	Parameter	Value
High Pressure Desired	Normal	FFV
	Cranking	Cranking FFV
	Cold	Cold FFV
	Emissions Reduction	CSER
Low Pressure Desired	Time Constant	0.40 s
	Update Time	120.0 s
	Heat Soak	87.0 psi
	Check Valve Pressure	11.0 psi
Monitors	HPFP Maximum	Max
	DI Inlet	PFI Demand
Cranking	Time Limit	5.00 s
	Max ECT	-14.80 °F

43002 is a Max Voltage vs Flow vs Pressure table. Set the table as shown.

\*This table CAN be adjusted to finely tune duty cycle control based on vehicle modification but not necessary.

The screenshot shows the 'Fuel System' window with the 'General' tab selected. The 'Fuel Pump' section is expanded, showing the following settings:

Parameter	Value
Secondary Monitor	Enabled
Minimum On Time	8.00 s
Desired Voltage	

Below the settings is a table titled '[ECM] 43002 - Fuel Pump Desired Voltage'. The table has 4 rows (55, 56, 72, 73) and 5 columns (0, 1, 3, 6). The values are as follows:

	0	1	3	6
55	5.00	7.00	10.00	15.00
56	5.00	7.00	10.00	15.00
72	5.00	7.00	10.00	15.00
73	5.00	7.00	10.00	15.00

At the bottom of the window, the 'Update Time' is set to 2.00000 s and the 'Time Constant' is set to 0.0156 s.

43003 Fuel Pump Max Voltage. Raise this to 15V.

Fuel System	
General	
<b>Fuel Pump</b>	
Secondary Monitor	Enabled <input type="button" value="v"/>
Minimum On Time	8.00 s
Desired Voltage	
Min Voltage	5.00 v
Max Voltage	15.00 v
<b>Duty Cycle</b>	

23033 Fuel ump update time. Set to 1.5 s

23030 Fuel pump voltage deadband. Set to .001 v

Feedback	
Adaptive Voltage	Enabled <input type="button" value="v"/>
Update Time	1.5000 s
Time Constant	0.0156 s
Voltage Deadband	0.0010 v
P Gain	0.0300
I Gain	0.0300
D Gain	0.0000

See next page for Multipliers.



## Injector multipliers

As KPM Fuel Systems fuel modules are rated down to the lowest operating pressure being 51 PSI / 350KPA the Fuel injector slopes, breakpoint and offset multipliers should be adjusted slightly to scale the injectors correctly when running down to 51 PSI / 350KPA.

*\*For aftermarket calibrations such as Whipple where the port injectors are scaled at different pressures we recommend not adjusting. As those multipliers are scaled to go far lower in fuel pressure than recommended for any vehicle and not high enough for even factory pressures.*

*\*If you are using different fuel injectors and have the fuel injector tuning data that is using the factory multipliers then adjust the following.*

## PCMTEC

**auF30941** Injector High slope multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**auF30942** Injector Low slope multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**auF30940** Injector Break point multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**auF30943** Injector Offset multiplier

change pressure 55.1 to 50.76 and the multiplier .936 to .9189

## HP Tuners

**32060** Injector High slope multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**32062** Injector Low slope multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**32064** Injector Break point multiplier

change pressure 55.1 to 50.76 and the multiplier .88 to .84

**32052** Injector Offset multiplier

change pressure 55.1 to 50.76 and the multiplier .936 to .9189



### **DTC removal**

As the factory PWM no longer can see a load from the fuel pump you will need to switch off P0627