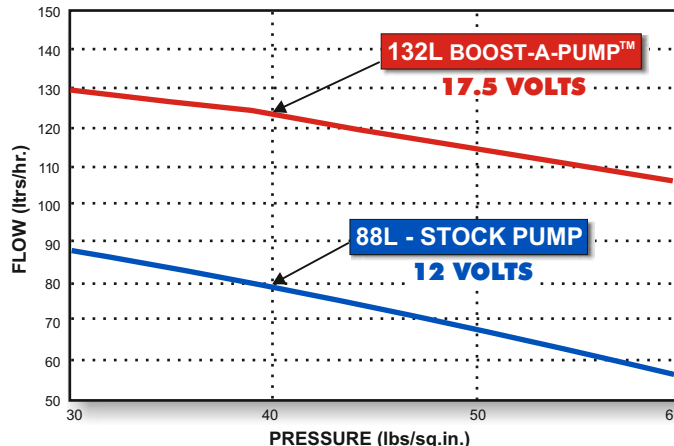
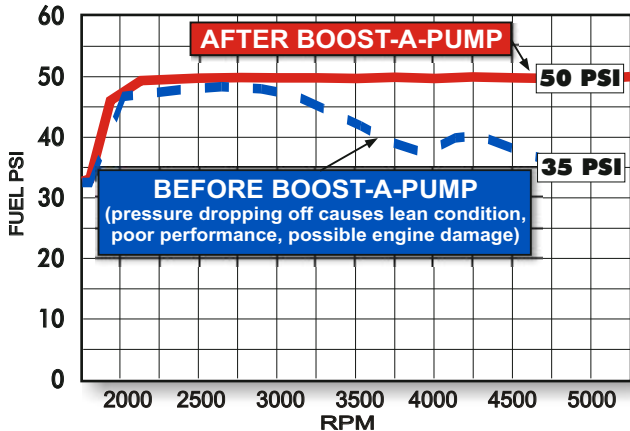


# FUEL PUMP TECH

## FUEL PUMP SIZING

Everyone knows that "You can't make horsepower without fuel." Pump sizing is relatively easy. If your engines output is to be increased 25%, then it's fuel pump output must be capable of supplying 25% more fuel. 40% more power - 40% more fuel. However, the 25-40% increase in HP will occur only at WOT (wide open throttle) and the upper rpm range. The BOOST-A-PUMP is the perfect solution and match as it increases the fuel supply ONLY at WOT. We supply a switch to activate the pump at "0" vacuum (naturally aspirated) or 3 psi (turbocharged or supercharged). At part throttle and cruise when the engine consumes relatively little fuel the BOOST-A-PUMP is not activated. Therein is the basic problem with larger "full time" in line or in tank pumps. They are "active" at all engine speeds and loads pumping all that unused fuel back to the tank - and heating it in the process. Remember that gas begins to boil at 95 degrees. That's why professional drag racers all use cool cans to cool and stabilize their fuel supply. This is an example of where larger and more i.e. bigger in tank pumps aren't better.

ACTUAL TEST ON FUEL PRESSURE BEFORE AND AFTER THE KENNE BELL BOOST-A-PUMP



"Even if the gauge pressure doesn't drop, the best fuel system insurance is the BOOST-A-PUMP." **Jim Bell, President**

### FUEL PRESSURE DROP OFF

Get a fuel gauge. You can't tell what your fuel system is doing without one. Fuel pressure "drop off" can be a serious and expensive problem. If a fuel pump is incapable of supplying an adequate volume at WOT, then the pressure will drop off at the higher rpm levels.

10 psi of fuel pressure will lean or richen an engine 8%. 5 psi is 4%. 20 psi is 16% etc. The BOOST-A-PUMP is your best guarantee against fuel pressure drop off. And since the BOOST-A-PUMP is also a voltage regulator, it automatically adjusts the pre-set voltage to the pump when the accessories lower the input voltage - or even if the alternator fails! In other words, it's also a voltage regulator.

Many racers use the BOOST-A-PUMP without an alternator to insure their pumps and stand alone computer systems are supplied a consistent voltage regardless of battery voltage.

### PUMP CURVES (STOCK vs. + 50% BOOST-A-PUMP)

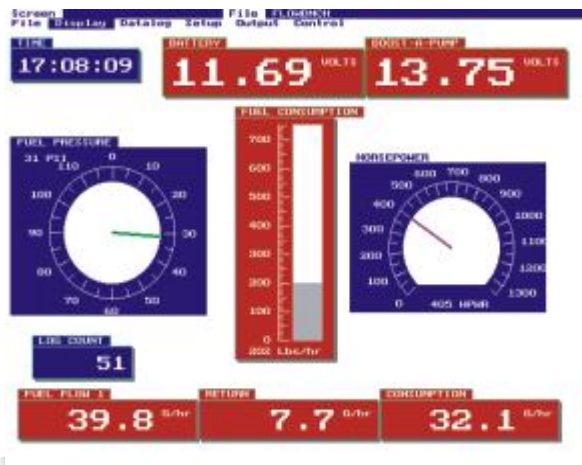
How many times have we heard "I've got plenty of pressure but I need more volume." Wrong analogy. If the desired pressure is there, don't increase or even worry about volume. Pressure is everything to the fuel injectors.

The two pump flow curves above illustrate the operating principle of the BOOST-A-PUMP. The ingenious device merely increases the flow (volume) of any pump up to 50% by raising the voltage supply to the pump from 12V to a maximum of 17.5V in .1V increments (lights, stereo etc.). A 10% voltage variance will affect pump output by 10%.

Study the graph and you'll notice that *as pressure increases, flow decreases - and as pressure decreases, flow increases*. To determine the flow and pressure of any pump, one must look at the pump's "curve." All pump manufacturers rate their pumps this way.

Again, the BOOST-A-PUMP merely spins the pump 1-50% faster allowing it to produce more fuel.

### KENNE BELL COMPUTERIZED FUEL FLOW BENCH



### COMMON FUEL CONVERSION FACTORS (FLOW AND PRESSURE)

TO GO FROM	MULTIPLY BY	TO GET
Litres	0.264	Gallons
Gallons	3.785	Litres
Litres of fuel	1.660	Pounds of fuel
Pounds of fuel	0.600	Litres of fuel
Gallons of fuel	6.300	Pounds of fuel
Grams per sec.	7.930	Gallons per hour
CC per min.	0.016	Gallons per hour
Inches HG	1.133	Inches water (H <sub>2</sub> O)
Pounds per sq. in.	2.310	Feet of water (H <sub>2</sub> O)
Pounds per sq. in.	2.030	Inches mercury (Hg)

### KENNE BELL FUEL SYSTEMS

Kenne Bell utilizes its own in-house fuel flow bench for the evaluation and design of fuel systems and components (pumps, regulators, bypass valves, lines, rails etc.). Unique products such as the Kenne Bell BOOST-A-PUMP™ would not have been possible without this sophisticated equipment. Single, in-line, dual pump flow and even fuel returned to the tank at any voltage or pressure is accurately measured. Boost and regulator pressure, vacuum, voltage, line size etc. may all be varied. All data is displayed on the computer monitor and stored for analysis.