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ROBBMC GEN II POWERSURGE

General Information: The RobbMc PowerSurge is used to boost your stock (OEM) fuel system so that it will support as much as 1000 horsepower. The PowerSurge is recommended for carbureted or fuel injected engines, naturally aspirated, supercharged or turbocharged, that require no more than 75 psi of fuel pressure (90 psi intermittent). Recommended for gasoline or gasoline/ethanol mixed fuels including E85 (methanol not recommended).

Part Numbers:
PN 4002: Gen II PowerSurge 500 (PS500)
PN 4003: Gen II PowerSurge 750 (PS750)
PN 4004: Gen II PowerSurge 1000 (PS1000)

Horsepower Ratings: The amount of crank horsepower (HP) each PowerSurge can support depends on the maximum fuel pressure required. The more fuel pressure required, the less horsepower that can be supported.

Fuel Pressure (PSI)	Max HP PS500	Max HP PS750	Max HP PS1000	Notes:
7	700	900	1000	All ratings @ 13.5 volts
25	625	850	975	Subtract 75 HP @12 volts
40	575	750	950	
60	500	650	850	All ratings for gasoline.
70	450	600	800	Subtract 30% for E85
90	325	450	600	

Refer to the drawings on page 3 while following the steps below.

Step 1: MOUNT THE POWERSURGE

Find a place to mount the PowerSurge. Somewhere in the engine compartment is usually easiest. The unit must be mounted vertically (within 15 degrees), with the aluminum port plate at the top. Use three screws to attach the supplied mounting bracket to the chosen mounting surface. Use the two supplied worm-drive clamps to hold the PowerSurge to the mounting bracket. The PowerSurge can be rotated to any angle by loosening the two clamps.

CAUTION! : The PowerSurge must be mounted at least 12" from the exhaust and at least 6" from the radiator and engine. If the temperature inside the PowerSurge exceeds 150F, the fuel may boil which will cause erratic fuel pressure and eventual pump failure. Wrapping the PowerSurge tank and fuel lines with insulating material (such as that available from DEI or Thermo-Tec) is good insurance, especially if the PowerSurge is mounted close to a heat source.

Step 2: WIRE FOR 12V POWER

The PowerSurge needs a dependable electrical power supply whenever the engine is running. The 1/4" stud in the red junction block is positive, the black wire is negative. Maximum draw is 12 amps for the PS500, 18 amps for the PS750, and 20 amps for the PS1000. The use of a fuse and a relay are *highly* recommended.

Step 3: ADD FUEL TO THE POWERSURGE

Before installing the fittings, pour one to two quarts of fuel into the PowerSurge. Adding fuel to the PowerSurge at this point will allow the system to be tested for leaks (and the fuel pressure to be set) before the engine is started. It also ensures that the carb or FI has fuel before cranking the engine. After fuel has been added, install the fittings in the PowerSurge.
NOTE: Use Teflon thread sealant on the threads of all tapered pipe (NPT) fittings.

Step 4: CONNECT A FUEL LINE FROM THE STOCK FUEL PUMP TO THE POWERSURGE

Connect a fuel line from the outlet of the stock fuel pump to the "IN" port (1/4 NPT) on the PowerSurge. This fuel line will not be subjected to high pressure so fuel injection type hose is not required. Make sure to install a fuel filter in this line. A small, low cost, low pressure, stock type filter (available at any auto parts store) is fine.

CAUTION! : The "IN" port of the PowerSurge has a .055" diameter restriction. DO NOT increase the size of this restriction. The restriction is sized so that the fuel cannot enter the PowerSurge faster than the 1/4" return line can send the unused fuel back to the fuel tank. If you are using a return line that is larger than 1/4" and wish to increase the size of the restriction, contact RobbMc Performance BEFORE making the restriction larger.

Step 5: CONNECT A RETURN LINE FROM THE POWERSURGE TO THE FUEL TANK

A ¼" or larger return line *must* be connected between the "R2" port (1/8 NPT) on the PowerSurge and the fuel tank. Many cars built in the 1960's or later came from the factory with a ¼" return line connected to the fuel pump or fuel filter. If your car has such a return line, disconnect it from the stock fuel pump or filter and connect it to the "R2" port on the PowerSurge. Then cap the ¼" barb on the stock pump or filter so it doesn't leak fuel. If your car does not have a return line to the fuel tank, add one. Our 1965 Falcon test car did not have a return line. We made one from ¼" steel brake line (available at most auto parts stores). It comes in 6 ft lengths and is easy to bend. Low cost, stock type, replacement sending units with provisions for a 1/4" return line are available for many cars. This fuel line will not be subjected to high pressure so fuel injection type hose is not required.

CAUTION! The fuel tank *must* have a vent. Some factory vent lines vent directly to the atmosphere; others are connected to a charcoal canister or a vent box. Make sure the vent is functional. Do not use the vent line as a return line for the PowerSurge unless the fuel tank has another vent (or at least a vented filler cap).

Step 6: INSTALL A BYPASS/RETURN STYLE PRESSURE REGULATOR

A bypass regulator must be used between the "OUT" port of the PowerSurge and the carb (or fuel injection). Mount the regulator within 3 feet of the engine. For fuel injected applications, use the regulator recommended by the manufacturer of the fuel injection. For carbed applications, use a low pressure bypass regulator such as the RobbMc PN 1051.

NOTE Some fuel injection systems (such as some FITech) have a bypass regulator built into the FI system and no additional regulator is required.

Step 7: CONNECT A FEED LINE FROM THE POWERSURGE TO THE REGULATOR

Connect a fuel line from the "OUT" port (3/8 NPT) on the PowerSurge to an inlet port on the regulator. This line must be 3/8" (-6AN) or larger. If you are running fuel injection, this line must be made from FI hose rated for high pressure.

NOTE If you are using a fuel injection system with a built-in bypass regulator, connect this fuel line directly to the inlet port of the fuel injection.

Step 8: CONNECT A FUEL LINE FROM THE REGULATOR TO THE CARB OR FUEL INJECTION

Connect a fuel line from an outlet port of the regulator to the inlet port of the carb or fuel injection. This fuel line must be 3/8" (-6AN) or larger. If you are running fuel injection, this line must be made from FI hose rated for high pressure.

NOTE If you are using a fuel injection system with a built-in regulator, this line is not used.

Step 9: INSTALL A FUEL FILTER

Install a fuel filter in the fuel line somewhere between the PowerSurge and the carb (or fuel injection). If you are using fuel injection, this filter must be designed for fuel injection.

Carburetors: Use a 40 micron filter such as RobbMc PN 1028 or 1029.

Fuel Injection: Use the filter recommended by the FI manufacturer or a 10 micron filter such as RobbMc PN 1072 or 1073.

Step 10: CONNECT A RETURN LINE FROM THE REGULATOR TO THE POWERSURGE

Connect a fuel line from the return port on the regulator to the "R1" port (3/8 NPT) on the PowerSurge. This line must be 3/8" (-6AN) or larger for the PS500 or PS750; It must be 1/2" (-8AN) or larger for the PS1000. This line will not be under high pressure so fuel injection type hose is not required.

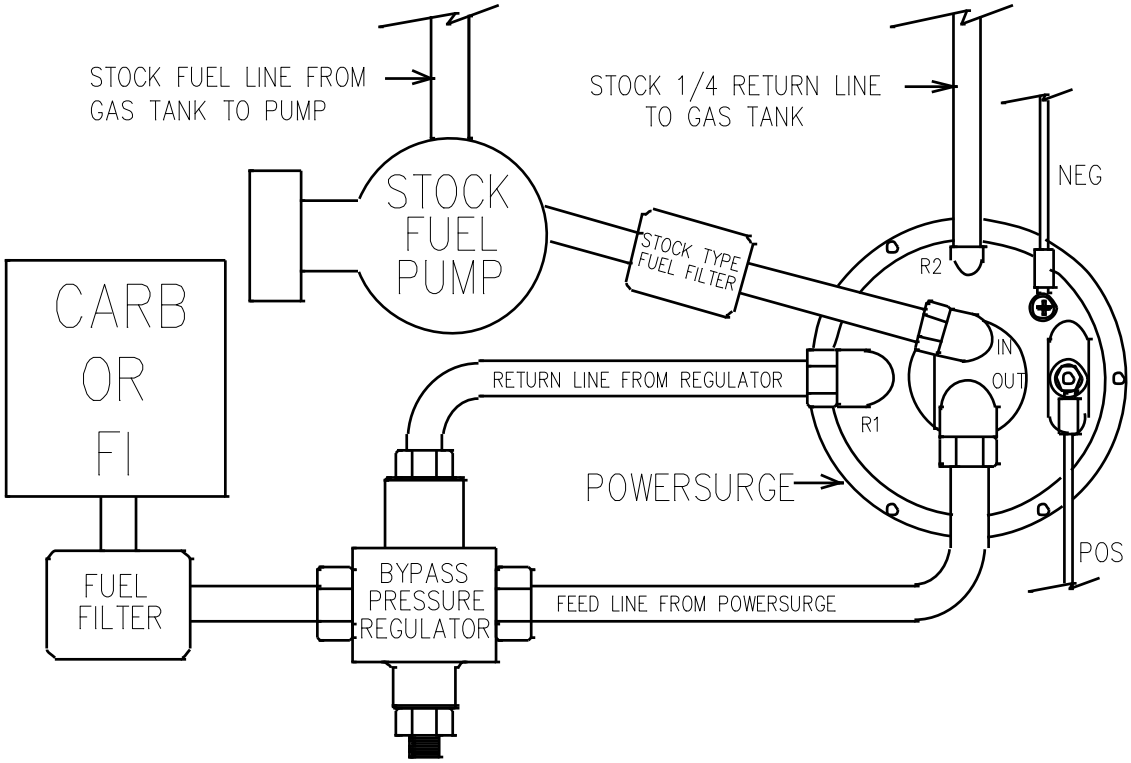
NOTE If you are using a fuel injection system with a built-in regulator, connect this line directly to the outlet port of the fuel injection.

Step 11: TEST FOR LEAKS AND SET THE PRESSURE

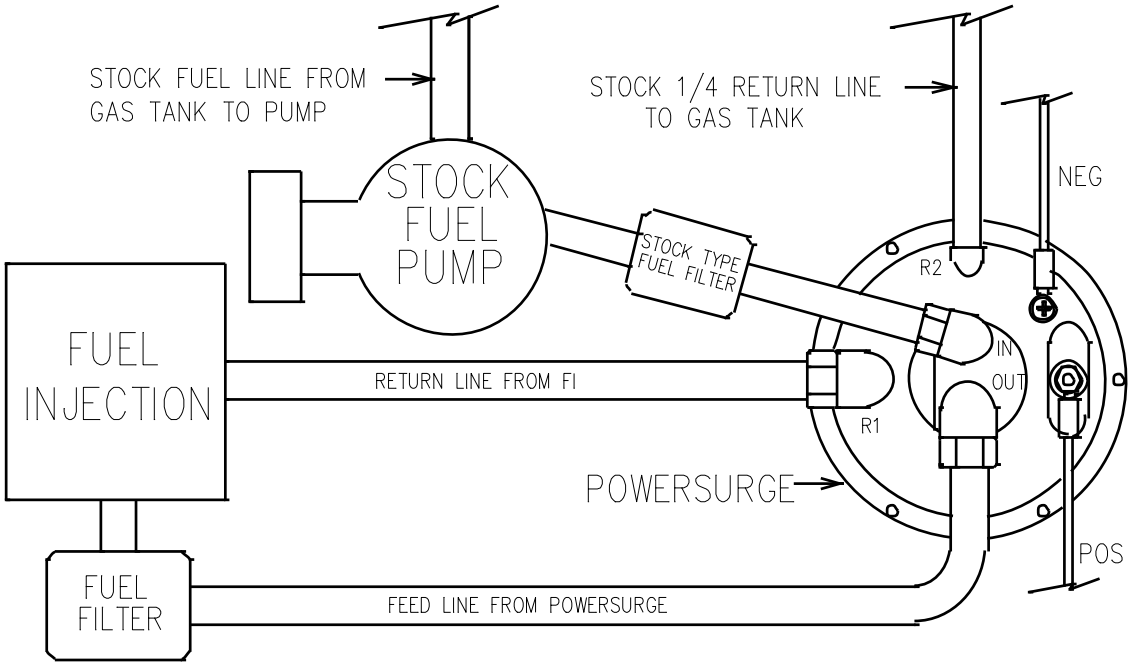
With the engine off, apply 12 volts to the PowerSurge. Find and fix any fuel leaks in the system. Adjust the regulator until the fuel pressure is at that recommended by the manufacturer of the carb or FI (fuel pressure gauge required).

NOTE If you are using a FI system with a built-in regulator, the pressure may not be adjustable.

CARB OR FUEL INJECTION WITH EXTERNAL REGULATOR



FUEL INJECTION WITH INTEGRAL/INTERNAL REGULATOR



Troubleshooting and FAQ

What should I do if the fuel pressure drops during hard acceleration, braking, or cornering? Make sure the PowerSurge (PS) is mounted as vertical as possible (tilted no more than 15 degrees) with the aluminum port plate at the top. Make sure the PS has a good power supply (The use of a relay is highly recommended). Make sure the filters are clean. Make sure the lines are large enough and not kinked. Check that the fuel pump feeding the PS is working properly to keep the PS full of fuel. Make sure that the gas tank is vented.

I am using the PowerSurge (PS) with FITech. Can I use the orange wire to power the PS? Can I use the PWM ?
The orange FITech wire can be used to power the PS500 directly but set the PWM to 100%. For the PS750 and PS1000, the orange wire can be used to trigger a relay but be sure to adjust the PWM setting to 100%.

Why is the fuel pressure fluctuating and the PS getting louder? Make sure the PS is not getting too hot. If the temperature inside the PS exceeds 150F, the fuel may boil which will lower performance and eventually cause pump failure. Move the PS farther from any heat source and/or wrap the PS tank with insulating material. Insulating metal fuel lines will also help reduce the temperature of the fuel.

I can hear the PS running but no fuel is delivered to the carb/FI. Why? Make sure your stock fuel pump is working. The stock fuel pump must supply fuel to the PS so the fuel can be boosted to the carb or FI. Also, make sure the .055" diameter restriction hole in the "IN" port of the PS is not plugged with debris.

Can I use an aftermarket pump to feed the PS? Any fuel pump, mechanical or electric, can be used to feed the PS as long as the pump produces less than 8 psi. A stock type fuel pump will work just as well as a high performance pump so there is no need for a special pump to feed the PS.

My car doesn't have a factory ¼" return line running back to the tank. What should I do? A ¼" or larger return line *must* be connected between the PS "R2" port and the fuel tank. Many cars came stock with a return line connected to the fuel pump or the fuel filter. If you car does not have this return line, you must add one. If the sending unit in your tank does not have a place to connect the return line, check with your favorite parts supplier. Many vendors sell sending units with a nipple for a 1/4" return line. If no vendors offer such a sending unit for your car, add one to your existing sending unit or fuel tank. Alternatively, a RobbMc ½" sending unit can be used with reducer fittings.

My car has a return line running back to the tank but it is larger than ¼". Can I still use it? Yes. Simply change the fitting in the "R2" port of the PS to one that will accept your return line.

Must I use a RobbMc regulator? The regulator need not be a RobbMc, but it *must* be a bypass style (also known as a "Return" style) regulator. Examples of bypass regulators for carburetors include RobbMc 1051, Mallory 4309 and Holley 12-841. For fuel injection, use the bypass regulator recommended by the fuel injection company. Some FI systems such as FITech have a bypass pressure regulator built into the throttle body and do not require an additional regulator.

When I am at full throttle for a long time, the fuel pressure suddenly drops sharply. Why? The PS is intended for street and drag racing applications where the engine is not at or near full throttle for more than one mile at a time. If you are using the PS for other applications (speed boat, circle track, road racing, top speed contests, etc), the size of the return line from the PS to fuel tank must be increased and the restriction in the "IN" port of the PS must be enlarged. Contact RobbMc Performance for details.

I'm using the PS1000 with fuel injection and the fuel pressure is too high. What should I do?
First, make sure that the return line connected to the "R1" port on the PS is 1/2" (-8AN) or larger. If the regulator is adjustable, try adjusting it. If the pressure is still too high, the large volume of fuel produced by the PS1000 may be overwhelming the pressure regulator (this is most common when using a regulator that is built into a throttle body). In these cases, it is necessary to use a different pressure regulator. Contact RobbMc Performance for more information.

I need to buy fittings. What are the port sizes in the PowerSurge?

Outlet "OUT" port: 3/8 NPT	Return "R1" port: 3/8 NPT
Inlet: "IN" 1/4 NPT	Return "R2" port: 1/8 NPT

What are the LPH ratings for each PowerSurge?

PS500: 255 LPH	PS750: 340 LPH	PS1000: 450 LPH