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**GEET Fuel Processor Plans**



**WARNING: This information is classified as EXPERIMENTAL!**

## Bubbler

- 1 - 1 gallon Anti-Freeze Jug
  - 4 - 1/2" Galvanized Hose Clamps
  - 6' - 1/2" ID Clear Vinyl Hose - (cut in half)
  - 2 - 3" x 1/4" Galvanized Pipe Nipples - (cut in half)
  - 4 - 9/16" Galvanized Bushing Washers - (1/8" thick)
  - 1 - 1/4" Galvanized Pipe Elbow
  - 2 - 3/4" x 1/4" Galvanized Pipe Nipples
  - 1 - 1/4" Galvanized Pipe Connector
  - 1 - 10 3/4" x 1/2" Copper Water Pipe
  - 1 - 1/2" Copper Pipe Cap
  - 2 - 1/2" x 1/4" NPT Copper Pipe Adapters
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### Step 1

Tools needed - pipe wrench, crescent wrench, spring tube benders, pipe cutter, pipe flaring tool, allen wrench, soldering equipment, file, and screw driver. Obtain all your parts and tools needed for the conversion ahead of time.

Most professional plumbing supply stores stock higher quality parts compared to large home centers cheap plumbing parts. The savings aren't that much on a small project like this. The most crucial quality part is on the inner pipe, problems arise from inconsistent wall thickness, out of roundness, thick weld seams, etc on low quality pipe.



### Step 2

Strip down the engine removing the gas tank, muffler, and carburetor. Remove the mower blade and replace with a 12" diameter steel disk flywheel of the same thickness as the blade for safety.

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### Step 3

Take the 1"x1/2"x1/2" reducing tees and mount them on a 1" nipple (short pipe), and then using a lathe, machine the end smooth and fly cut (bore out) the hole in the end 27/32" (21mm) so that the 1/2" inner pipe will slide inside. This procedure can also be done by using a drill press to drill a 27/32" or 7/8" hole in the end of the tee and then use a file to smooth the roughness off.

The 1/2" pipe connector and 1/2" tee will each need to have one end smoothed off as well to receive the copper washers as a tight seal. If anyone has a machine shop that would like to do this for others, contact GEET. We might also offer a complete kit that has all the parts ready to be assembled in minutes if there's enough interest



#### **Step 4**

Have a plumber or plumbing center cut your inner reactor 1/2" pipe to 16 + 7/16" and thread both ends. Use Black Pipe here because galvanized pipe gives off toxic fumes if heated too much. File the 12" x 1/2" multi-fuel steel rod to a bullet point on one end only. (7 + 3/8" x 1/2" for gasoline only) This will keep you out of trouble later if you can't remember which way the rod points. The engine will not run if the rod is put in backwards after it has a magnetic signature.

Assemble the parts in order as in the above picture using the 7/8" / 22mm copper washers used in oil drain plugs for cars. (2 - 1"x1/2"x1/2" machined reducing tees joined by the 12" long 1" nipple, slide the 16 + 7/16" long 1/2" reactor pipe inside, add a copper washer on each end and then add the 1/2" connector and 1/2" tee.)



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#### **Step 5**

Assemble the other valve component subassemblies above. The 1/2" thick steel intake / exhaust adapter plate above is used only on some engines like "Tecumseh" and Overhead Valve Engines (picture 9).

Some "Briggs and Stratton" engines, etc usually already have the exhaust threaded for 1/2" pipe, but the intake is on the other side of the engine causing longer hose runs. Also a compression pipe connector or a piece of rubber hose with clamps will need to be connected from the engine intake to the Bubbler pipe.

(1/2" valve (Air Mixture Valve), 1 1/2" x 1/2" nipple, 1/2" tee, 1 1/2" x 1/2" nipple, 1/2" valve (Throttle Valve), 1/2" to 1/4" pipe reducer bushing, half of 3" x 1/4" nipple.) and (Muffler, 1/2" ball valve (Optional - Back pressure valve), 3" x 1/2" nipple, 1/2" tee, 1/2" to 1/4" pipe reducer bushing, half of 3" x 1/4" nipple, 1 1/2" nipple.)

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### Step 6

Assemble the sub-assemblies onto the reaction chamber above making sure to install the 12" rod inside pointed away from the engine. Now it's time to start on the bubbler.



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### Step 7

Take 10 3/4" x 1/2" copper pipe and solder a copper 1/4" NPT - 1/2" pipe adaptor on one end and a 1/2" cap on the other. Drill a 1/16" hole through the cap, turn 90 degrees and drill through again, also one up through the bottom. Take the other 1/4" NPT - 1/2" adaptor and cut off the thinwall portion to make a pipe nut and file smooth for inside the Anti-Freeze jug.

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### Step 8

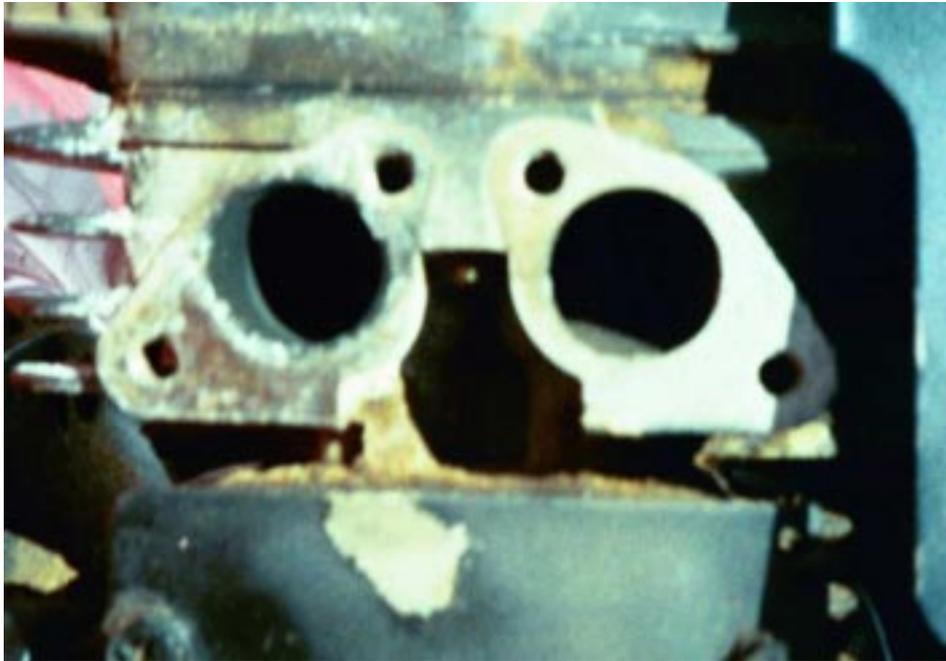
Take a 1 gallon anti-freeze jug and drill a 1/2" hole near the top of the jug and through the cap as illustrated. Assemble the parts together in the following order. (Hose, half of 3" x 1/4" nipple, 1/4" pipe connector, short 3/4" nipple, bushing, hole in jug, bushing, and pipe nut.) and ( (Optional - Back Pressure Hose), half of 3" x 1/4" nipple, 1/4" pipe elbow, short 3/4" nipple, bushing, hole in jug cap, bushing, and soldered pipe.)



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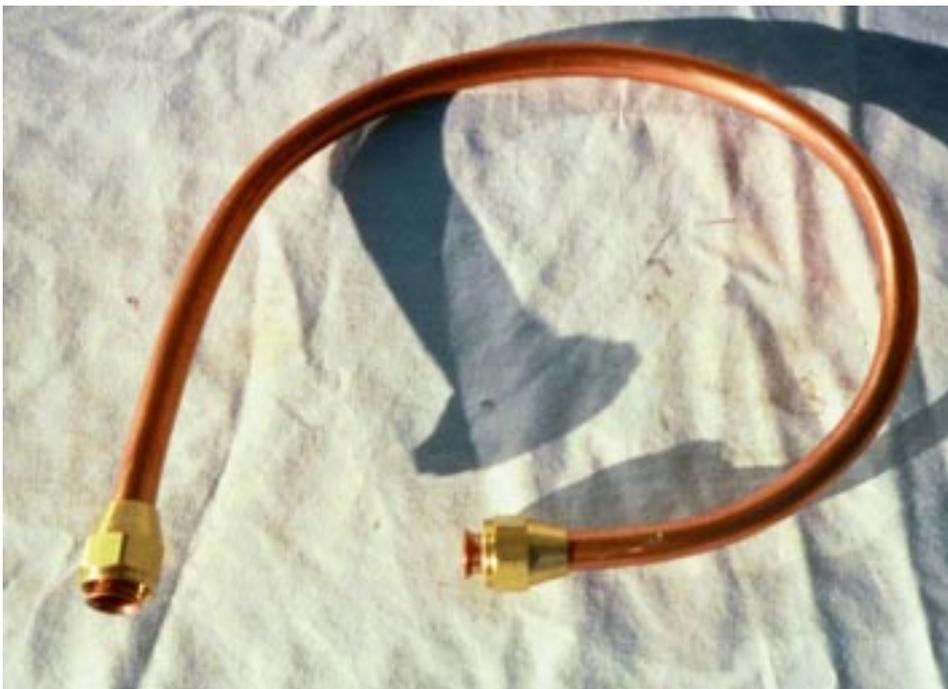
### Step 9

The port adapter was formed by cleaning the intake and exhaust ports off. Then dipping a finger in the exhaust port to get some soot to rub on wide masking tape taped over the ports. This then leaves a perfect template to then tape into a 1/2" thick piece of steel, then drill the mounting and the port holes and tap the ports with a 1/2" NPT thread tap.



### Step 10

Use 1/2" tubing for 10 HP or less (\* 5/8" tubing and flare fittings for 10-20 HP) with a 1/2" tubing spring bender and form a loop, then remove the spring. Slide the flare nuts on each end, and then slide the flaring tool on so that the pipe sticks out about 3/16", make the flared ends. (Air-Conditioning supply houses carry flare fittings if you have difficulty finding them.)



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### **Step 11**

Assemble all the parts onto the engine, and then add a 1" pipe support or 1 1/4" exhaust hangar. Fill the bubbler up no more than 1/4 full till you get used to using it (up to half full later), have someone steady the jug while starting the engine so it doesn't spill into the hoses. If wet fuel gets on the reaction rod it will stop running, you'll have to dry your rod and hoses out. You can hang it from the mower handle if you like later after it's started.

You must point the exhaust end of the rod due North while starting the engine the first time and let it run for 30 min to "burn in the rod". The rod will self center magnetically by itself after it's running or you can weld three bumps on each end to center the rod (file them to fit snugly).

Leave the optional back pressure valve open, open the throttle and mixture valve about halfway, and start the engine by varying the air mixture valve.

Then slowly increase the throttle wide open while adjusting the air mixture valve. Make sure to paint all external pipes and connectors with High Temperature Grill Paint or they will rust very quickly. (Except copper, brass or galvanized)



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### **Step 12**

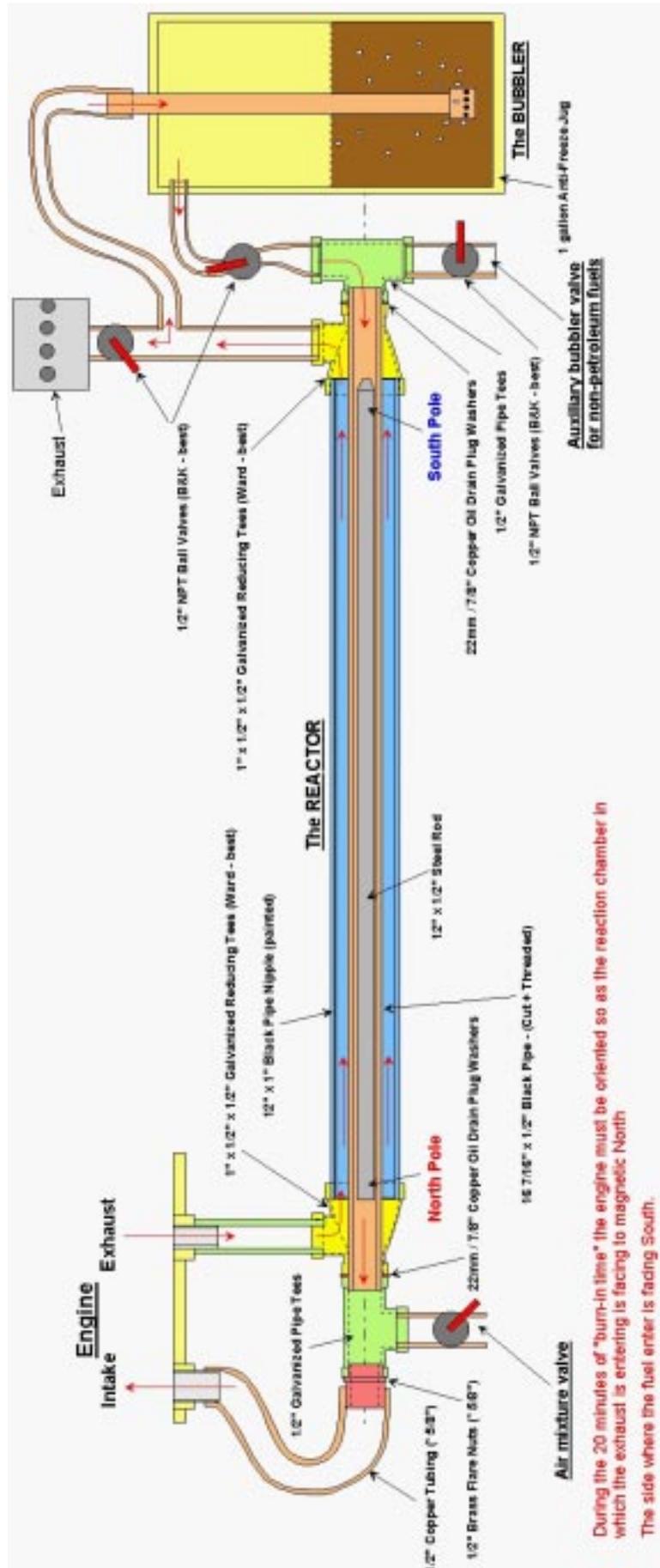
For an installation on a generator, you can also use 90 degree elbows to keep the pipes within the cage. Mount the GEET Fuel Processor as far away as possible from the generator magnetic field so they do not interfere with each other. Also be very careful with credit cards in your pockets or video cameras, etc from getting too close to the engine while it's running so they won't be erased.

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Finally - Experiment with the optional Back Pressure valve to run closed loop on heavy fuels, different materials for the inner pipe and reaction rod. Different rod lengths and also threaded rods, engine side of the reactor locations for the air mixture and/or throttle valves, exhaust heated copper tubing from the bubbler to the throttle valve, 5 gallon bubblers, double bubblers for non-soluble fuels, vacuum gages, etc, etc, and also “alternative fuels”.



During the 20 minutes of "burn-in time" the engine must be oriented so as the reaction chamber in which the exhaust is entering is facing to magnetic North.  
The side where the fuel enter is facing South.