Brown's Gas (aka BG or HHO) Powered Pistonless Water Pump Notes (version 141129)

Open source collaboration moderated by George Wiseman of Eagle-Research.com
http://www.eagle-research.com/cms/node/3957

These are my notes to reconstruct / duplicate the Lord's Pump project.

I got Al's verbal permission to tell people (and promote replication) of this technology (and quote the figures he told me as per the video posted below)

Introduction:

A old time acquaintance of mine, Al Throckmorton, brought his Brown's Gas powered pump to the recent Tesla Tech Conference (he calls it Lord's Pump).

He showed it to me and stated that it was using 250 watts (from solar panels) to produce 30 gallons per minute at 260 psi.

I knew that was seriously overunity without even doing the math, so I pulled Sterling Allen aside and explained it to him (he made this video).

http://pesn.com/2014/08/05/9602523_George-Wiseman_Describes_Al-Throckmortons_Overunity-Water-Pump_at_TeslaTech-2014/

30 gallons of water at 264 psi comes out to 1800 useable watts output if you power a Pelton wheel. Obviously if you took 250 watts from 1800 watts you could close loop the system and have over 1500 continuous watts FREE output from an apparatus small enough to put in your basement with enough excess power to run a modern home (may require a battery bank to allow for power surges).

I'm skeptical but I trust Al.

Worst case is a measurement miss-understanding or miss-measurement (his older video shows only 0.62 GPM at 264 PSI = 37 watts output) so as I'm trusting AL, I'm thinking this needs to be followed up on.

The first thing to do is confirm the steady state input / output characteristics of the system. So we don't get fooled by using energy 'stored' in the system, (for example, as compressed BG).

The apparatus is within the reach (financial and skills) of most garage tinkerers and, if OU is true, would provide a power supply that would work continuously (and secretly) without requiring fuel and with minimum yearly maintenance.

Historically Yull Brown used Brown's Gas to pump water but only using the gas pressure and vacuum, he didn't use the pressure of the explosion to pump water; Yull's system was VERY inefficient (used 19 times more energy to pump water than a conventional pump).

Al is using the electrolyzer gas pressure, explosion, steam pressure and implosion (vacuum) characteristics of BG combustion to pump water in a 'pistonless' chamber. The idea was to create a simple water pump that would work nearly maintenance free in Uganda.

http://www.lordspumpproject.com/home.html

Brown's Gas (HHO) as a pump fuel:

Using BG as a 'pistonless' pump fuel has some advantages not shared by most carbon-based fuels.

1. It can be 'created' on demand with electricity (hopefully using feedback electricity from the system).

2. BG is 100% environmentally friendly, with ONLY water as it's exhaust. It won't contaminate the water being pumped or anything else.

3. It is the perfect stoichiometric ratio for maximum explosion power pulses, without complicated mixture controls.

4. It has a high pressure spike (how high depends on gas density when ignited) as BG converts to water (as steam), then a lower pressure 'steam' phase and finally collapses into a vacuum as the steam condenses to water (I'll have a video showing these 'stages' up soon).

5. The vacuum state can be used to 'refill' the chamber from a reservoir lower than the chamber (almost an atmosphere lower).

6. BG allows a 2 cycle operation, which is faster, (in this case) more efficient and requires fewer moving parts than 2 and 4 cycle internal combustion engines.

7. There is a possibility that a combination of BG, Plasma Spark and Cold Fog will be OU.

Test Circuit 1

The test circuit 1 'cycle' would look something like this:

a. Initial 'priming' (Use a vacuum pump to put a vacuum on the chamber to remove the air and draw in the first charge of water, up to the desired height in the combustion chamber.
~ Alternatively, the chamber could just be filled with BG and ignited, which would (after the pressure phases) create the vacuum needed to suck in the first charge of water through the large water intake check valve.
~ But it'd likely be best to initially remove all the air from the combustion chamber (by water flooding), because any air in there is likely to reduce the 'pump's' overall efficiency.

b. When water reaches the designed height, a timed injection of BG is introduced from a slightly pressurized source (bubbler or storage tank?) through a solenoid valve (likely combined with the bubbler to prevent the explosion shockwave from igniting the BG on the other side of the solenoid). BG source 'stored' pressure and solenoid valve 'open' timing to be optimized with experimentation.

c. BG input solenoid shuts off and then (after waiting a fraction of a second) the Plasma Spark plug is fired.
Note: If we incorporate a Backfire Arrester and a check valve onto the chamber cap, just before the solenoid, we shouldn't need a 'delay' to shut off the solenoid before the Plasma Spark fires.

Note: Plasma Spark ignition 'flame' works exponentially better (more powerful) in a humid environment (whereas ordinary ignition shorts out if there is water between the electrodes) and Plasma Spark will fire even if the electrodes have water moisture between them (an issue in a 'pistonless pump').

b. The resulting explosion pressure pushes the water out through a large check valve (into a pressure tank in 'our' system). The pressure tank would absorb the pumps surges and allow a steady pressure to feed a Pelton wheel.
c. Note: it'll be interesting to see how much pressure a Plasma Spark system can generate WITHOUT the BG. Can we drive the pump with Plasma Spark alone?

d. After the initial pressure spike (that gets everything moving) the BG 'steam' phase will continue to push water down and out.
The input BG (pressure and volume) will have been calculated to lower the water level in the chamber but NOT EMPTY IT.
~ The combustion chamber can be designed to be fairly tall to assist this.
~ There can be a free floating foamed ceramic disk on the surface of the water to help prevent the steam from turning into water too quickly.
~ Thought can be put into how to optimally keep the steam pressure and when to allow (encourage) it to condense for the highest efficiency.
~ Could be a sort of free floating piston. I know this is supposed to be a pistonless pump, but some way to prevent the steam from condensing too soon may help increase efficiency,

e. The combustion chamber will now go into the vacuum phase as the steam condenses to liquid water. This creates the vacuum needed to suck in the next charge of water, through the input check valve (making the pump self-priming).

f. Repeat b. through e.

When using the vacuum phase of BG combustion, the cycles per minute will be 'slower' than Al's design where he uses a 'bleed' valve to exhaust pressure (allowing the combustion chamber to fill sooner, from a water source located above the pump); but the overall efficiency of using vacuum to fill the chamber will make the overall 'pump efficiency' significantly higher and will allow the input water reservoir to be below the pump.
Using a 'bleed' valve causes a loss in pressure that could be being used to pump water and NOT taking advantage of vacuum to pull water into the chamber 'wastes' atmospheric energy that could be used to pump water.

If more pulses per minute are required (or desired) to maintain output pressure, then more combustion chambers can be added, timed to fire one after another.

Test Circuit 2

I developed this second circuit to speed up the ‘cycling’ of the pump; without reducing efficiency.

I realized that waiting for all the steam to condense to water and form a vacuum was a waste of time. Once the pressure is reduced enough that it won’t move any more water, we might as well dump the remaining steam and allow the vacuum phase to occur quicker.

Yes this ‘wastes’ some steam heat but that heat wasn’t going to be of any more use to pump water anyway; the water had stopped moving. Maybe it could be used for some other process, like space heating.

The test circuit 2 'cycle' would look something like this:

a. Initial 'priming' (Use a vacuum pump to put a vacuum on the chamber to remove the air and draw in the first charge of water, up to the desired height in the combustion chamber.
~ Alternatively, the chamber could just be filled with BG and ignited, which would (after the pressure phases) create the vacuum needed to suck in the first charge of water.
~ But it'd likely be best to initially remove all the air from the combustion chamber (by water flooding), because any air in there is likely to reduce the 'pump's' overall efficiency.

b. When water reaches the designed height, a timed injection of BG is introduced from a slightly pressurized source (bubbler or storage tank?) through a solenoid valve.

BG to be introduced into the chamber in a manner to prevent backfires. One way is to inject it from well below water level. Another way is to use inline backfire arrester and/or bubbler. In any case, you need to protect the solenoid valve from the BG shockwave or the shockwave will travel through the valve and ignite the BG on the other side, allowing a backfire to travel right back to the electrolyzer.

BG source 'stored' pressure and solenoid valve 'open' timing to be optimized with experimentation.

c. BG input solenoid shuts off and then (after waiting a fraction of a second) the Plasma Spark plug is fired.

Note: If we introduce the BG into the chamber well below the water level and add a check valve just before the BG intro. solenoid, we shouldn’t need a ‘delay’ after shutting off the solenoid before the Plasma Spark fires. The check valve will keep pressurized water from flowing backwards to the electrolyzer. But a check valve will increase the pressure needed in the electrolyzer by whatever is needed to overcome the forward action of the check valve and the pressure of the level of water in the chamber.

Note: Plasma ignition 'flame' works exponentially better (more powerful) in a humid environment and will fire even if the electrodes have water moisture between them (an issue in a 'pistonless pump').

d. The resulting explosion pressure pushes the water out through a check valve (into a pressure tank in 'our' system). The pressure tank would absorb the pumps surges and allow a steady pressure to feed a Pelton wheel.

e. After the initial pressure spike (that gets everything moving) the BG 'steam' phase will continue to push water down and out.

The input BG (pressure and volume) will have been calculated to lower the water level in the chamber but NOT EMPTY IT.
~ The combustion chamber can be designed to be fairly tall to assist this.
~ There can be a free floating foamed ceramic disk on the surface of the water to help prevent the steam from turning into water too quickly; optimizing conversion of heat into mechanical motion.
~ Thought can be put into how to optimally keep the steam pressure and when to allow (encourage) it to condense for the highest efficiency.

f. When the motion of water stops flowing out of the pump, a flow switch is activated to open a pressure relief solenoid. Residual steam pressure is released through a check valve. The check valve prevents atmosphere from flowing back into the pump as the remaining steam finishes condensing.

g. The combustion chamber will now go into the vacuum phase as the steam condenses to liquid water. This creates the vacuum needed to suck in the next charge of water, through the input check valve (making the pump self-priming).

h. Repeat b. through g.

When using the vacuum phase of BG combustion to ‘recharge’ the pump chamber, the cycles per minute will be 'slower' than Al's design where he uses a 'bleed' valve to exhaust pressure (allowing the combustion chamber to fill sooner, from a water source located **above the pump**); but the method of using vacuum to fill the chamber will make the overall 'pump efficiency' higher and will allow the input water reservoir to be below the pump.
Using a 'bleed' valve causes a loss in pressure that could be being used to pump water and NOT taking advantage of vacuum to pull water into the chamber 'wastes' atmospheric energy that could be used to pump water.

If more pulses per minute are required (or desired) to maintain output pressure, then more combustion chambers can be added, timed to fire one after another.

Steps Again for circuit 2, as 'seen' by the electronics:

Step 1: Float switch closes, 358-1 pin 3 goes lower than setting on pin 2; pin 1 goes low; N1 turns off, allowing C5 to charge, P2 turns on charging C5 through R1 and R2; P1 is turned on, feeding power to BG input solenoid.

Step 2: R1/R2/C5 charge 'slowly' (time delay for BG to enter chamber) until voltage at pin 5 is > pin 6 setting, pin 7 goes high turning on N2, which closes RY3 and allows Plasma Spark from discharge of C8/C9.

Step 3: Plasma Spark ignites BG and pressure forces water down and out.

Step 4: Flow switch opens, 358-2 pin 3 goes higher than setting at pin 2 causing pin 1 to go high, N3 discharges C10 through R9; voltage through D8 keeps P1 and P2 off as P5 turns off. P5 is turned off when C10 is discharged and voltage at pin 6 falls below setting at pin 5, which causes pin 7 to go high.

Step 5: Float switch opens, 358-1 pin 1 goes higher than setting of pin 2, pin 1 goes high, N1 turns on and bleeds C5 to ground state through R3, which causes pin 5 to go lower than setting of pin 6 and shuts off N2, allowing C8/C9 to recharge; high pin 1 voltage also shuts off P1, shutting off flow of BG into chamber and shuts off P2 which prevents C5 from charging. This part of the circuit is now reset, waiting for the next float switch close.

Step 6: Flow switch closes (when BG pressure has pushed as much water out as it can), 358-2 pin 3 goes lower than setting at pin 2 causing pin 1 to go low, which shuts off N3 (allowing C10 to charge). R13 drains charge from gates of P3 and P4; low charge turns on P3 (which turns on Pressure Relief Solenoid) and turns on P4 which starts charging C10 through R7/R8.

Step 7: R7/R8/C10 charge 'slowly' (time delay for pressure purge) until voltage at pin 6 is > pin 5 setting; pin 7 goes low turning on P5, which turns off P3 (closing purge solenoid valve) and turns off P4 (stopping charging of C10). C5 stays charged so pin 7 stays high and keeps P3 and P4 turned off.

Step 8: Water is sucked in to fill vacuum and cycle repeats starting with Step 1.

Physical layout of the system:

ER50 electrolyzer (set up with WaterTorch type control system).
Lower water tank (reservoir to suck water from and a place for water from the Pelton Wheel to drain to),
BG Pump (with electronics and Plasma Spark).
Pressure Tank (ordinary bladder type used for jet pump systems).
Pelton wheel (with throttle valve and induction motor or generator).

BG Pump Chamber design:

I'm thinking the spark plug could be centrally located at the top of the dome.

I'm thinking that the chamber should be tall and thin, to minimize steam contact with water and allow the steam explanation to push the most water.

I'm thinking the test chamber should be as transparent as possible, so we can really see what's happening inside it… Allowing us to optimize the design.

Right now I'm visualizing a 2" Transparent Tee with a 2" chamber tower and 1" transparent check valves for water input and output.

I'm thinking a removable flat topped metal cap or plate (chamber head) that has the Plasma Spark plug, a ground terminal, the negative water level probe and the BG in hole (fitted with Backfire arrester, check valve and shutoff solenoid).

I'm thinking of some sort of free floating disk inside the chamber, to keep the BG steam away from the water as much as possible. This disk can't seal tight to the cylinder walls because the water formed by the condensation of the steam has to go somewhere. Also, if you are introducing the BG from below the water level, the BG would have to get past the disk. Maybe add this disk later, after doing the initial tests, to see if it increases efficiency.

Looking at the Lord's Pump CAD drawing, having a curved inlet is good, but a curved outlet is actually more important (going in the correct direction).
If anything, the outlet needs to be curved even more than the inlet, since the water will be under higher pressure and velocity. The inlet water could just be sucked directly up into the center of the chamber.

For initial experimentation, I'd vote to go with less overall pressure (260 psi is pretty high for plastic components) which may be more efficient considering losses via the 'bleed valve' (or eliminate the bleed valve if possible).
Also the CPVC plastic Al is using must be approaching it's maximum pressure rating and, for safeties sake, that isn't good.

I've seen the Lord's Pump plans and video and I see how, using a low pressure BG input, the high pressure explosion empties the entire chamber out into a stream/mist. Very impressive.
Higher backpressure (could use a restriction valve) would result in less water flow. I saw (but didn't mention at the time) a kind of pressure regulator on the output of the unit Al brought to the conference.

ER50 Brown's Gas Electrolyzer:

The ER50 electrolyzer is designed to operate at low pressure (about 1 psi), doesn't have 'storage' space and has a short duty cycle (about 1/2 hour). So it can be used to test a BG Pump that only needs 1 psi BG input pressure (the explosion / steam will pump to much higher pressures).

For higher pressure pumps, I can design (and provide critical components for) an ER50 to be built out of schedule 80 CPVC. Schedule 80 CPVC can take the pressure (20 psi) and temperatures needed for a slightly higher pressure prototype that could go to higher temperatures (have a longer operation duty cycle).
For practical, once prototyping is complete, we'd use a plastic lined steel shelled electrolyzer (Like my ER1200 WaterTorch).

My electrolyzer thoughts veer from Al's design in one particular. For this project I'd use a high voltage, low amperage electrolyzer. Al is powering his project from solar panels because that's the only power he has available in Uganda; but that requires a low voltage, high amperage electrolyzer.

Since our (at least my) purpose is to use the pump to provide 120 VAC power for a home, I'd propose to power our electrolyzer with 120 VAC (or 240 VAC) for a lower cost and higher efficiency electrolyzer. Low cost and high efficiency is KEY here, to make this project practical.

BG Pump electrical and electronics:

If we do go to metal pump chamber, one consideration is the water level probes. I designed really nice ones for my ER1150 WaterTorch bubbler. I used a 1/8" NPT brass fitting (cut off the barbed end) and inserted a thin ready rod (all thread) into (through) the center. I epoxied (JB Weld) the area between the thread and the fitting so that there was no electrical connection.
A couple of nuts could then be put on the (outside) all thread to fasten a wire terminal.

Then I could just use the metal chamber at ground state and the conductivity of water at the probe height to signal a MosFet gate and it worked GREAT!

If we use a plastic chamber, we can use bolts as probes or we can make an 'adjustable' water level strip/probe setup. I have a design in mind and will make a drawing of it.

BG Pump operating characteristics:

I was also thinking that I wasn't as correct as I originally thought. When Al first told me of his pump, I thought it wouldn’t work because once BG explodes, it collapses to a vacuum fairly quickly.
BG does collapse to a vacuum once exploded, but not instantly, depending on the chamber operating conditions.
The BG goes through a 'steam pressure' phase that lasts as long as the steam doesn't condense. So it would be providing pressure onto the water for much longer than I originally thought.

See links at end of this document for YouTube videos showing this effect, and some ‘practical’ applications.

Steam condenses on water pretty fast, so the steam pressure could be maintained longer if a free floating piston of insulating material could be placed on the water (just a disk of foamed ceramic).

BG Pump and Pelton Wheel Plumbing:

I'm thinking that there may be a way to increase overall efficiency by using the 'vacuum effect' of the BG to draw in the water, thus eliminating the need for the efficiency robbing 'bleed valve'. I can see that the pressurized steam may take awhile to condense, so the key might be to have multiple cylinders.

Assuming that the input / output energies are positive, we'd need to design the system so that the BG pump sucks in the output water from the Pelton wheel. I'm assuming that we'd put the Pelton wheel higher than the BG pump, so that the Pelton Wheel drain water tank would be the water that feeds the BG pump.

Pelton Wheel

http://en.wikipedia.org/wiki/Pelton_wheel

http://www.ebay.com/itm/PMA-Generator-with-Pelton-Wheel-for-Water-Power-0-240-VAC-4000-Watt-Micro-Hydro-/201082043553

This is a new Permanent Magnet Generator for use in Water Generation Projects designed by Motenergy, Inc. It is rated at 2000 watts at 1400 rpm, and up to 4000 watts at 2800 rpm. Motenergy Part Number ME1112. Comes with a Pelton Wheel. Part Number ME0903. The product has a stainless steel shaft that is designed to fit the Motenergy ME0903 Pelton Wheel. The output is 3-phase, Y-connected AC, and it can be converted to DC with the use of a 3-phase Bridge Rectifier. It has a 7/8 Inch diameter shaft with a 3/16" key way.

The output is set for over 11.5 amps AC per phase, which means you can get 16.3 amps DC from a 3-phase bridge rectifier. This is a continuous 16 Amps DC, 24 hours per day, 7 days per week.

There are two windings on the alternator. The main 3-phase winding (A-B-C), and a second single phase winding (D-D) good for 10 amps. The second winding has 1/10th the turns and 1/10th the output voltage of the main winding. It is labeled D-D in the drawing below, and good for about 100 watts to run 12VDC lamps or indicator lights.The 3-phase voltage (A-B-C) is set to provide 12 VAC at 140 rpm and 200 watts, 120 VAC at 1400 rpm and 2000 watts. At 2800 rpm, you will get 240 VAC and 4000 watts.

The fan works best when the generator is run in the Clockwise direction, looking at the shaft. This is a 12 magnet, 12 pole, (6 pole pair) rotor, so the output frequency is calculated as Speed in RPM/60 * 6.

It has very little cogging torque which means it will provide power with very little water pressure. The magnets are Ceramic and can run at very high temperatures, unlike Neodymium magnets that are only rated for 300-350 F.

This is an air-cooled generator. There is a water seal on the shaft, and the mounting face has plenty of area to put a gasket or RTV sealant. Note that this is an Outer-Rotor design. The shaft and outer-rotor spin, and the center stator (coils) remains stationary.

The generator diameter is 204 mm (about 8 inches). It can be mounted with 4 bolts, 5/16-18 on a 3.75 inch bolt circle. (Bolts not included)The Pelton Wheel is part of this auction and it is in the box with the generator.

http://www.homepower.com/microhydro-power
http://www.microhydropower.net/

http://www.h-hydro.com/
http://www.hydrogenappliances.com/hydro.html

all sizing ..... Calculation and spreadsheet here
http://h-hydro.com/New_Site/technical-information/

http://homehydro.com/charts.html
more:
http://www.smallhydropower.com/thes.html
parts:
http://www.hydrogenappliances.com/pmaparts.html

Pressure Tank with bladder:

After the pump, there would be a pressure tank, which would absorb the pump 'pulses' and provide a steadier pressure to the Pelton wheel.

Backfire Arrester(s):

I can help design a steel tube-in-tube bubbler to prevent the explosions from reaching the electrolyzer, without having the bubbler fluid getting sucked back into the electrolyzer (more efficient and reliable than a check valve). The bubbler can also be of a size to provide the 'surge storage' of BG needed.

I have such bubbler designs in the ER50 and ERxxxx WaterTorch Resources.

To eliminate the need for a backfire arrester, *as previously discussed with Al at the Tesla Tech event*, it may be a good idea to feed the BG into the chamber UNDER the water level.

It's my experience that you need break the gas flow up into tiny bubbles and have at least 4 inches of water to prevent a backfire through the water.

Another option is to provide an inline Backfire Arrester, like I've designed for the ER50 Electrolyzer. This option would be good for designs that introduce the BG above the water level (like through the chamber head)

Plasma Ignition:

A plasma ignition system will be required, to explode the water that will foul the spark electrode. Ordinary spark systems fail (misfire) if water gets into the electrode gap. Plasma Spark systems actually increase their 'explosion' when wet.

There are many Plasma Spark variations in the public domain.
I'm liking the Aaron Murakami/Peter Lindemann Plasma Spark approach. Their version is easy to modify and use in this application.

The biggest Peter Lindemann Plasma Spark 'innovation' is the elimination of a secondary power supply, so you don't need a 12 volt secondary power supply to charge the capacitor, vastly simplifying the system without sacrificing effectiveness. We won't require an inverter, variac or 12 volt input; we can use a Capacitive Power Supply circuit to charge the capacitor(s) directly with 120 VAC.

On YouTube, search for "Peter Lindemann + Plasma Ignition".
https://www.youtube.com/watch?v=vOhNtRhJ5Rw

I also found these links (the link below will lead you to the others).
https://www.youtube.com/watch?v=bFDVCm-pxKw

To buy the Aaron/Peter full details for Plasma Spark, goto:
http://www.whitedragonpress.com/go.php?offer=ghwiseman&pid=11

They also sell a pretty good Water Fuel Secrets package:
http://www.whitedragonpress.com/go.php?offer=ghwiseman&pid=12

I'm thinking that Plasma Spark may be able to drive the BG pump without the BG, or with very little BG, just with capacitive discharge into water vapor (Cold Fog Explosions).
http://tesla3.com/free_websites/water_explosion.html

This video theorizes that BG (HHO) gets extra energy via cold fusion reaction.
https://www.youtube.com/watch?v=foIWltOShO0

Whitepaper proving BG enhances carbon fuel combustion
http://www.eagle-research.com/cms/node/443

Pump Testing Protocols:

You'd need to include the energy required by the electronics / ignition system.

It'd be good to video everything. Most of the guys out here learn by seeing and doing.

One thought I had last night would be to arrange a pressure gauge (and maybe a vacuum gauge) on a check valve(s) so that we could 'record' the highest (and lowest) pressures.

Al's already assembled system should be adequate to provide that data, if he would allow us to use it (thus not having to build a pressure chamber, etc. until the OU figures are proven).

His CPVC chamber and check valves 'as is' will operate long enough to provide 'steady state' figures; if used at a lower water pressure, like 25 psi.
We'd add a pressure tank (with pressure gauge) and 'restriction' valve (simulation of the Pelton Wheel jet) into a reservoir as output (so we can measure water flow over time). We'd convert the spark plug to plasma. We'll be able to measure the electrical energy into the system and the volume of water pumped at any given pressure.
My electrolyzer design and power supply minimizes the electricity needed to make BG, so that'd help too.

Email to Vernon August 12, 2014,

I'm concerned that you might be jumping ahead to the ordering parts stage before thinking this thing through. Thinking it through will also help determine what our project costs will be and help us to get additional funding if needed (my eNews subscribers, kickstarter, gofundme, etc.).

My experience as an inventor shows me the way to keep the costs down is to do a lot of thinking and planning on paper before actually building something.

I'd like to collaborate with you and Al (+Al's team) during this stage.

I have experience with designing and building efficient BG electrolyzers, Al's team has experience with the Pump, and we all have experience prototyping.

I've been doing a lot of thinking about components, pump design and layout. I'm also able to design and build an electrical/electronic circuit for the pump, if Al hasn't been able to provide you with one. I'm also able to upgrade the circuit to include Capacitive Power Supply and Plasma Spark.

Obviously I'd be adding a Pelton Wheel and pressure tank that are not included in Al's pump design. NOTE: Al does NOT want to talk about or imply that the system is OU; I'm thinking that it's not, but that's what we are trying to determine. I appreciate that Al is willing to have/allow this project go 'open source', at least for testing efficiencies.

So we need to collaborate... Talk out each component and design the system before buying parts. Preferably find someone who can make drawings so we all can agree on a starting place.

It's a little frustrating, for me, because I KNOW I could do this project myself. I have the skills and tools.

What I don't have (right now) is a place to work (I'm on an extended writing sabbatical) and the TIME to do it (I have some health issues to deal with).

So I'm ready to help whomever wants to replicate this project, with the purpose of designing a 'home power plant'; assuming that the efficiencies make such a project worthwhile. It will only be worthwhile if the system produces more electricity than it takes to run it.

Our FIRST task is to confirm the 'over unity' pumping of the system. The project stops instantly (as far as I'm concerned) if there is no over unity because I'm in this to have a self powered electrical generator, sized to provide power for a home (between 1 kW and 5 kW continuous).

As for the designed operation pressure, I don't think we need to go over 50 psi hydraulic pressure to the Pelton Wheel. This will allow us to use a 'normal' household pressure tank (designed for jet pump water systems). 50 psi will allow good efficiency from the Pelton Wheel and will keep the pressures needed to be produced by the BG electrolyzer to a minimum. Lower BG pressures are safer.

Once we (or maybe as we) design the system pressure, we should consult a Pelton Wheel expert. I'm conversant with hydro power enough to design a system, but I'm not an expert. There may be considerations that we need to be aware of.

The heights of the components will be important. We may want the Pelton Wheel reservoir to be slightly higher than the pump, so that the pump can 'self-prime'; the height would have to also overcome the check valve resistance.

Conversely, since the ONLY time the pump should need to be primed is for it's first cycle, we might keep the pump above the Pelton Wheel reservoir and use the 'vacuum' created after the BG explosion to 'suck' the water up into the pump.

The reason to use the vacuum is EFFICIENCY. Any pressure lost on the output, to raise water to (even a few feet) Pelton Wheel height, is pressure lost that could have been providing Pelton Wheel power.

On 2014-08-08, at 9:53 PM, George Wiseman wrote:

Hello and good evening.
I have access to some good stainless steel surplus piping. Do you think that perhaps we should jump to a metal reproduction?

That would be a good idea, if funding permits. The pressure rating of the CPVC that Al is using is 240 psi at 75°F. He's running it past it's rating and quite frankly it scares me...

But we don't need to run more than 50 psi to make the Pelton wheel work well, so we could use plastic for prototyping and it'd be OK.

Humphrey Pump email

Sterling,

Thanks for being included in this conversation.

It's true that there have been many 'pistonless' internal combustion pumps in the past and researching them can help us optimize the design of 'our' application.
It'd be interesting to check on the efficiencies of various pistonless 'pumps'

BTW, Hal is right. This system can be used to power boats (water jet), and even vehicles (hybrids).

At the moment though, we are (at least I am) most concerned about proving if there is an OU effect...

May the blessings be

George Wiseman

On 2014-08-12, at 10:08 AM, Sterling Allan wrote:

Hi Hal,

mind if I post this?

Sterling
----- Original Message -----
From: Ya Yarg
To: Sterling D. Allan
Sent: Monday, August 11, 2014 8:55 PM
Subject: A bigger better "swampgas/HHO" waterpump - Combustion Fluidyne

Hi Sterling....

I have been an avid reader of PESwiki for a longtime now...
and I was very pleased to see your recent report on George Wiseman describing Throckmorton's pump..

In 2005 an idea about building a modern version of the Humphrey Pump captured my imagination.
Since then I have developed plans on my computer about building this fluidyne pump system onto a big standard sized ocean going barge 100'x400'.
I visualize this pump-barge to be used as a self-propelled mobile marine base-platform for many different types of industrial applications...
[eg: sewage treatment, environmental detox of rivers & lakes, desalination plant for industrial scale potable water production, mobile environmental laboratory, ocean garbage recovery, mining dredging, pulp&paper, mobile factory ship manufacturing, FLNG, mobile 10-20mw powerplant, etc etc]

In 2005 I connected the dots between the Humphrey Pump and using many different types of alternative fuels such as; Magnegas, BingoGas, Brown's Gas, HHO.. as well as the traditional pyrolitic woodgas & coalgas the Humphrey Pump has been using since 1905.

My pre-planning is at the stage of beginning to produce a final set of engineering drawings in AutoCAD...
The entire Fluidyne-Barge is relatively simple compared to the Ship Constructor engineering that creates a typical special purpose ship, but nonetheless it is still very complex in it's full range of applications.

I have been in contact with Vigor Industrial Shipbuilding, they are still mystified and have a hard time wrapping their heads around the concept, but they are open minded and liked my suggestion that if I provide the construction plans in the format they need on the shop floor then they will build what I want according to the blueprints provided.

Based on my description of the many market applications of this Fluidyne-Barge VIGOR sees the great market potential, even if it only uses natural-gas for fuel they still see it will be a very profitable venture. They understand & use Brown's Gas, but that's as far as they go on the road to FreeEnergyStuff.

I went to high-school in Alaska, and have in depth knowledge of many aspects about the geology and ecology of Alaska; as a result I understand the problem & challenge of removing the natural & manmade occurrence of Hg-mercury pollution in the Kuskokwim River and how it affects the entire Bristol Bay Fishery... this Fluidyne-Barge when used as a mercury recovery system might just be the solution to this big EPA-Superfund problem... a water and sediment purification system using graphene and other modern materials with electrochemistry & electrowinning can be a very fish-friendly method of producing purified drinking water from a very polluted river.

The overall spectrum of the market utilization of this Fluidyne-barge is worldwide...
any coastal or river waterway can provide many different opportunities for fluidyne-barges..
We could produce a million of these and supply clean power and water to every corner of the planet.

This Fluidyne-Barge is a radical departure from any known standard marine propulsion system...
it has no oily crankcase, no whirling propellor if so desired, and in fact can operate as a 10-20mw powerplant with less than a gallon of lube-oil required on the vessel. I have designs of it's ability to produce it's own "swampgas syngas" that are a radical departure from Magnegas [but can use Magnegas under license]..
My system design can use any carbonaceous & aqueous solution as a feedstock to produce it's own fuel...
all forms of gasifiers can work with this; pyrolitic, plasma, microwave, and electrochemical gasification..
yup, just flush the toilet and it will run faster...
it can use LRCWF coalwater, plain rainwater, seawater, sewage, biomass-water..
..virtually any kind of clean or filthy water for fuel feedstock.

I have made big improvements in performance..
my new designs have much higher power density..
faster CPM's operation for smoother performance..
multi-cylinder engine..
supercharged combustion..
can operate as both 2-cycle and 4-cycle..
the direction of thrust is in any direction desired, not just an upward bail-pump..
it can pump heavy dredge slurry, or clean water, or any fluid required..
it can drive any type of fluid-turbine, of any size...
it is scalable in size...
it can be produced in poor villages with rudimentary metalworking capacity..
etc etc

This is a very big opportunity for many friends of your free-energy community, and I feel that open collaboration with good business sense can make the whole project fun and fabulous for all players who want to collaborate with me.

---> My current "want this badly" is: I need a copy AutoCAD ShipConstructor software...
...this is typically very expensive, but maybe somebody in your extensive network of wonks can come up with a copy of it for me to use ??

I am currently located in the Seattle area, and needed to take a long afternoon siesta from the hot weather here [104F here today] so I thought it was a good time to cool it and write you an email.

My cellfone just conked-out [needs a new battery]..
so email is the best for now, and we can connect on skype too.

Thanks for all your hardwork Sterling....
Best Regards; Hal Sweren 360-930-9559 voicemail

http://pesn.com/2014/08/05/9602523_George-Wiseman_Describes_Al-Throckmortons_Overunity-Water-Pump_at_TeslaTech-2014/

http://en.wikipedia.org/wiki/Humphrey_pump

http://www.humphreypump.co.uk/egypt2.jpg

Cobdogla Irrigation & Steam Museum
View on www.youtube.com
Preview by Yahoo

Links:

Eagle-Research eNews References:
http://www.eagle-research.com/cms/node/3946?a=5

Water bottle rockets
https://www.youtube.com/watch?v=SdBFo0V4hZs

Clear tube explosion test, with main pressure released.
https://www.youtube.com/watch?v=CkrCCo4Q0cI

Explosion / implosion demo
https://www.youtube.com/watch?v=-iRHE-DzodU

Mini BG pump
https://www.youtube.com/watch?v=OsO-zL0mUlA

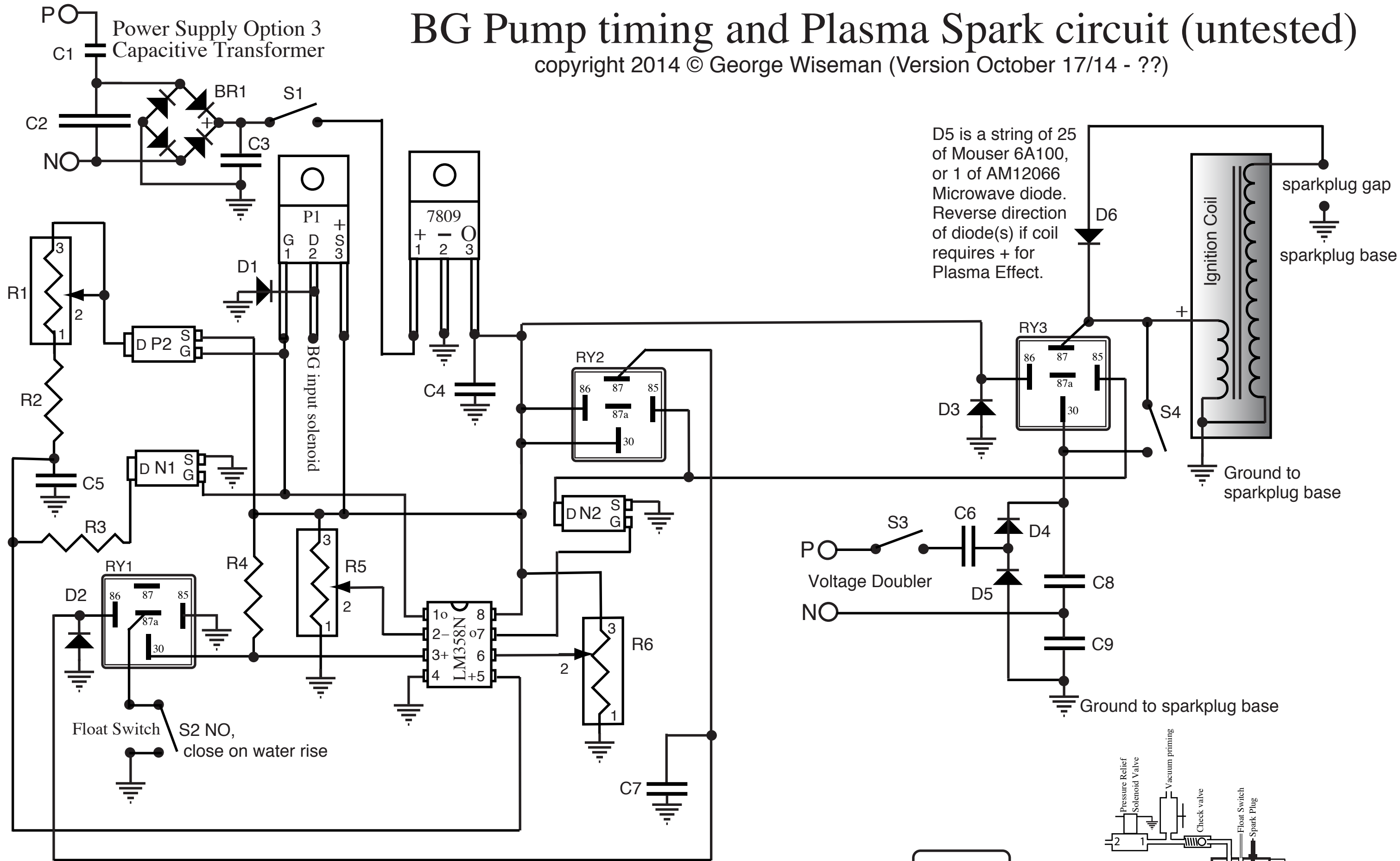
Implosion test, lifting weight.
https://www.youtube.com/watch?v=Bf3ukOTCBX4

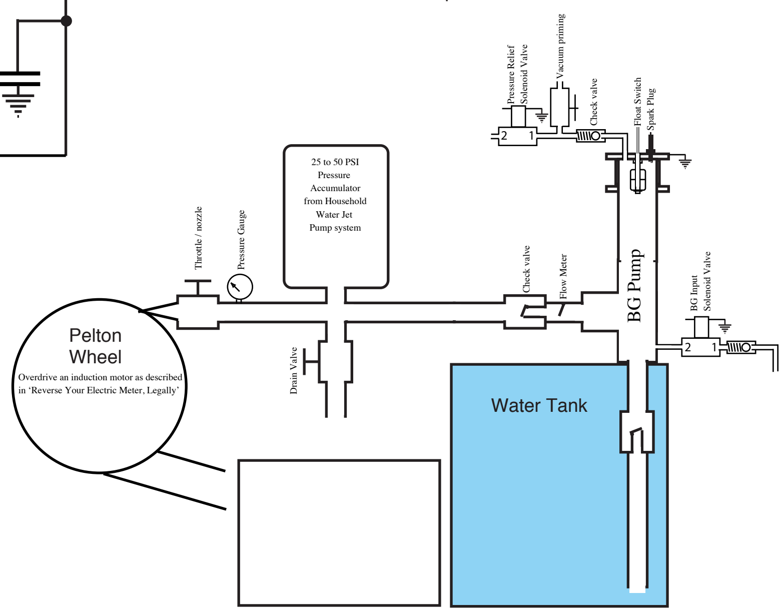
Note: Could ‘power’ an engine using a piston…

‘Extra’ energy of BG (HHO) could be cold fusion
http://www.americanantigravity.com/news/energy/hho-cold-fusion-and-the-papp-engine.html

Shock wave transfer of energy

BG Pump timing and Plasma Spark circuit (untested)

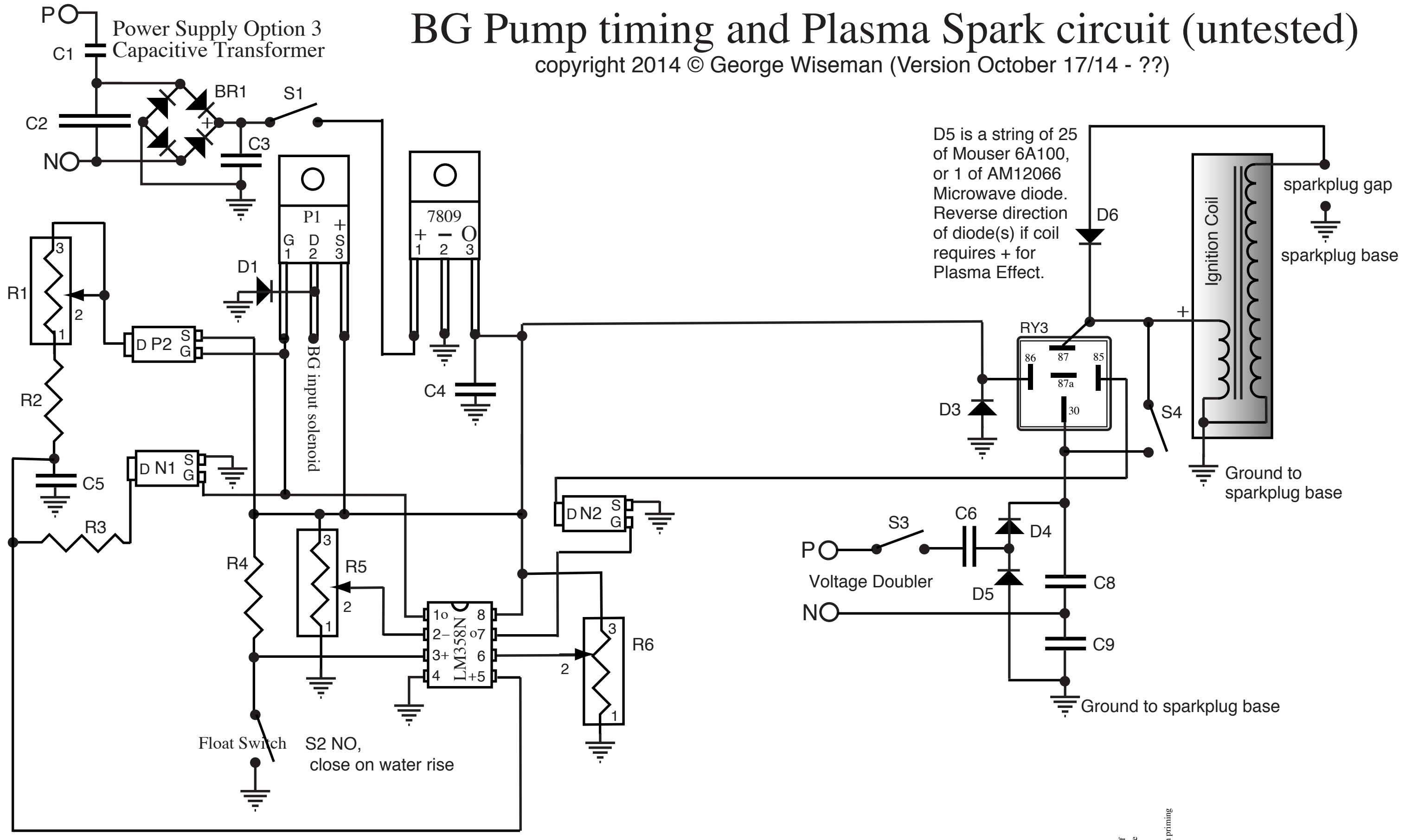


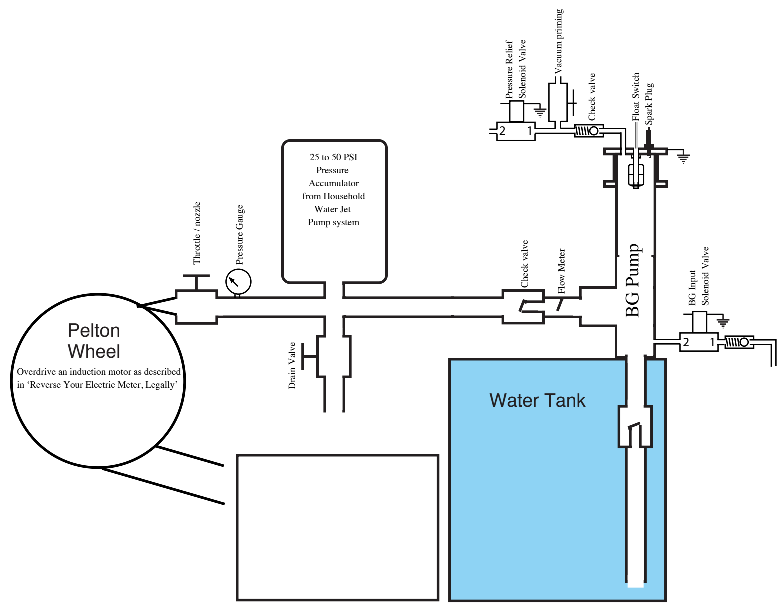


Component Values subject to change when circuit is built and tested
7809 is a TO-220 case voltage regulator
LM358N is a dual op-amp.
As long as pin 3+ is lower voltage than pin 2-,
pin 1 feeds gates of P1, P2 and N1 with positive voltage
keeping P Mosfets OFF and N Mosfet ON
N1 and N2 are board mounted n-channel mosfet, IRFD014
P1 is a TO-220 case p-channel mosfets, IRF??
(P1 pin D = power out to BG input solenoid)
BR1 is a 400 volt, 10 amp full wave bridge rectifier
D1, D2, D3, D4, D5 and D6 are 1 amp, 1000 volt diode IN4007
(D1, D2 and D3 act as wheeling diodes)
(D4 and D5 rectify for voltage doubling,
D4 and D5 may need to be higher amperage and/or
be on heat sinks)
(D6 is Plasma Spark diode(s))
R1, R5 and R6 are 500K 15 turn potentiometers
all set to increase resistance to ground when turned clockwise
R2 and R3 are 1K resisters
R4 is a 500K resistor
(R4 is a pullup resistor, to bring voltage at pin 3 back up)
C1 and C6 are 10 uF at 260 VAC oil filled motor run capacitors
C2 is 1 of 120 uF (or 3 of 40 uF) at 260 VAC oil filled motor run capacitors
C8 and C9 sre 40 uF at 260 VAC oil filled motor run capacitors
C3 and C5 100 uF at 25 VDC electrolytic
C4 and C7 are 1000 uF at 25 VDC electrolytic
C7 may not be needed, it is to keep RY1 closed long enough
for water level to drop and float switch to open
P = AC Power leg, N = AC neutral leg
S1 and S3 are on/off switches for circuits
S2 is water level probe or float switch
S4 is test switch for Plasma Spark
RY1, RY2 and RY3 are DPST 30 amp solenoid relays with 12VDC coils.

X is where wires leave board.

BG Pump timing and Plasma Spark circuit (untested)

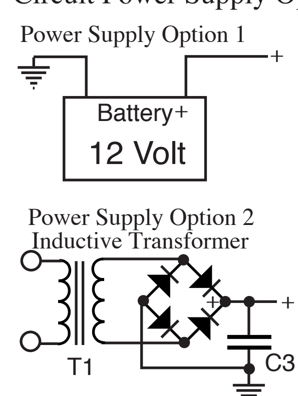




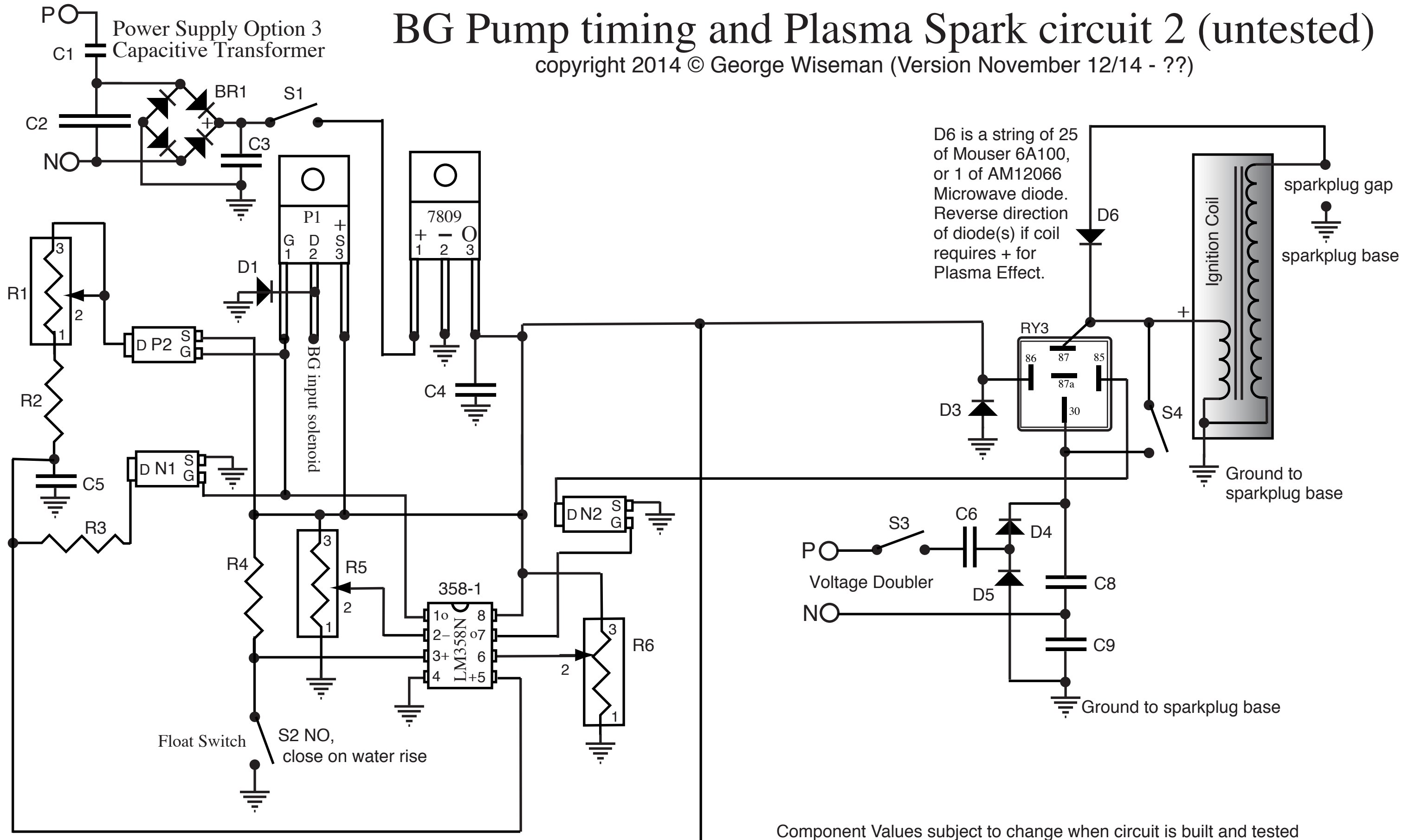
Component Values subject to change when circuit is built and tested
7809 is a TO-220 case voltage regulator
LM358N is a dual op-amp.
    As long as pin 3+ is lower voltage than pin 2-,
    pin 1 feeds gates of P1, P2 and N1 with positive voltage
    keeping P Mosfets OFF and N Mosfet ON
N1 and N2 are board mounted n-channel mosfet, IRFD014
P1 is a TO-220 case p-channel mosfets, IRF??
    (P1 pin D = power out to BG input solenoid)
BR1 is a 400 volt, 10 amp full wave bridge rectifier
D1, D2, D3, D4, D5 and D6 are 1 amp, 1000 volt diode IN4007
    (D1, D2 and D3 act as wheeling diodes)
    (D4 and D5 rectify for voltage doubling,
    D4 and D5 may need to be higher amperage and/or
    be on heat sinks)
    (D6 is Plasma Spark diode(s))
R1, R5 and R6 are 500K 15 turn potentiometers
    all set to increase resistance to ground when turned clockwise
R2 and R3 are 1K resisters
R4 is a 500K resistor
    (R4 is a pullup resistor, to bring voltage at pin 3 back up)
C1 and C6 are 10 uF at 260 VAC oil filled motor run capacitors
C2 is 1 of 120 uF (or 3 of 40 uF) at 260 VAC oil filled motor run capacitors
C8 and C9 sre 40 uF at 260 VAC oil filled motor run capacitors
C3 and C5 100 uF at 25 VDC electrolytic
C4 and C7 are 1000 uF at 25 VDC electrolytic
    C7 may not be needed, it is to keep RY1 closed long enough
    for water level to drop and float switch to open
P = AC Power leg, N = AC neutral leg
S1 and S3 are on/off switches for circuits
S2 is water level probe or float switch
S4 is test switch for Plasma Spark
RY1, RY2 and RY3 are DPST 30 amp solenoid relays with 12VDC coils.

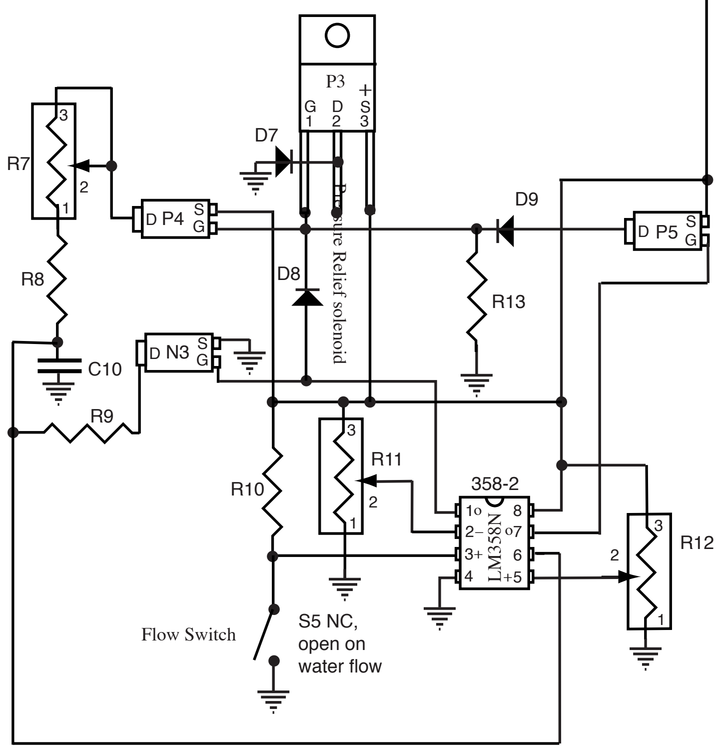
X is where wires leave board.

Circuit Power Supply Options



BG Pump timing and Plasma Spark circuit 2 (untested)

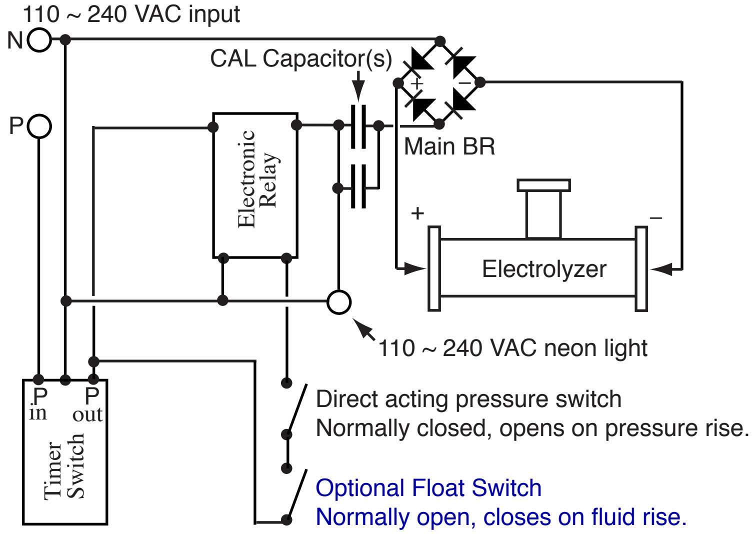




Component Values subject to change when circuit is built and tested
7809 is a TO-220 case voltage regulator
LM358N-1 and LM358-2 are dual op-amps.
P2, P4 and P5 are board mounted p-channel mosfets, IRFD9014
N1, N2 and N3 are board mounted n-channel mosfets, IRFD014
P1 and P3 are TO-220 case p-channel mosfets, IRF??
(P1 pin D = power out to BG input solenoid)
(P3 pin D = power out to Pressure Relief solenoid)
BR1 is a 400 volt, 10 amp full wave bridge rectifier
D1, D2, D3, D4, D5, D6, D7, D8 and D9 are 1 amp, 1000 volt diode IN4007
(D1, D2, D3 and D7 act as wheeling diodes)
(D4 and D5 rectify for voltage doubling, and may need to be higher amperage and/or be on heat sinks)
(D6 is Plasma Spark diode(s))
D8 and D9 control voltage to gates of P3 and P4
R1, R5, R6, R7, R11 and R12 are 500K 15 turn potentiometers all set to increase resistance to ground when turned clockwise
R2, R3, R8 and R9 are 1K resisters
R4, R10 and R13 are 500K resistors
(R4 and R10 are pullup resistors, to bring voltage at pin 3 back up)
C1 is a10 uF at 260 VAC oil filled motor run capacitor
C2 is 1 of 120 uF (or 3 of 40 uF) at 260 VAC oil filled motor run capacitor(s)
C6 is a 5 uF at 260 VAC oil filled motor run capacitor
C8 and C9 sre 40 uF at 260 VAC oil filled motor run capacitors
C3, C5 and C10 are 100 uF at 25 VDC electrolytic
C4 is 1000 uF at 25 VDC electrolytic
P = AC Power leg, N = AC neutral leg
S1 and S3 are on/off switches for circuits
S2 is water level probe or float switch
S3 is an AC shutoff switch for Capacitor Charging Circuit
S4 is test switch for Plasma Spark
S5 is a flow switch, likely incorporated into the check valve
RY3 is a DPST 30 amp solenoid relay with 12VDC coil.

X is where wires leave board.

Simplest ER50 WaterTorch Pressure Control Circuit (AC powered).
(options are shown in blue)



Direct acting pressure switch and CAL capacitors have specifications appropriate to the electrolyzer (see Resources).
An optional float switch, to shut off power when low liquid level, can be added to this circuit; for float switch specifications see Resources.

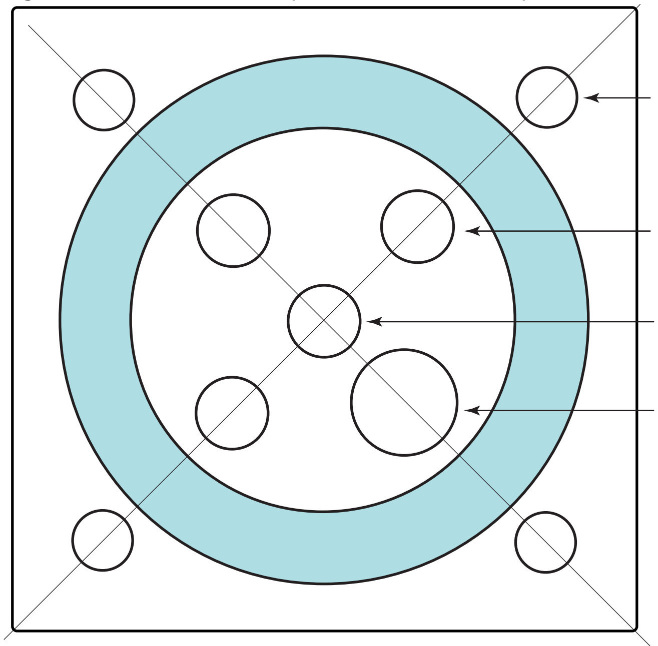
This simple circuit is unique because it uses ***120 VAC to signal it*** (instead of DC).
For this electronic relay, I recommend the Opto 22 #120A10
You may want to mount this relay on a heat sink, using heat sink paste.

ALL my other circuits use a relay signaled by DC because I like to have other options/features that are easiest/simplest to control with low voltage DC.
If you think you might eventually like to have other features, like status indicating LEDs and alarms for low liquid level and high temperature and/or automatic water fill, etc. then I'd recommend using the DC version of this simplest circuit.

YES, all of my 'control' circuits (including this one) are compatible with the main circuit 'CAL efficiency upgrade' option.

BG Pump Head Drawing

Head Plate 3 1/4" (3.25) square; 1/2" (0.5) thick,
groove on bottom of head plate = 1/8" (0.125) deep, 2" inner diameter, 2 3/4" (2.75) outer diameter

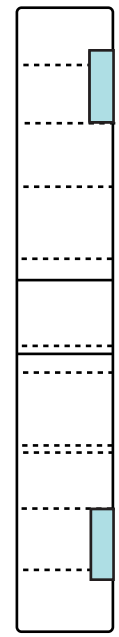


4x 5/16" (0.3125) holes ;
1 5/8" (1.625) from center of head plate

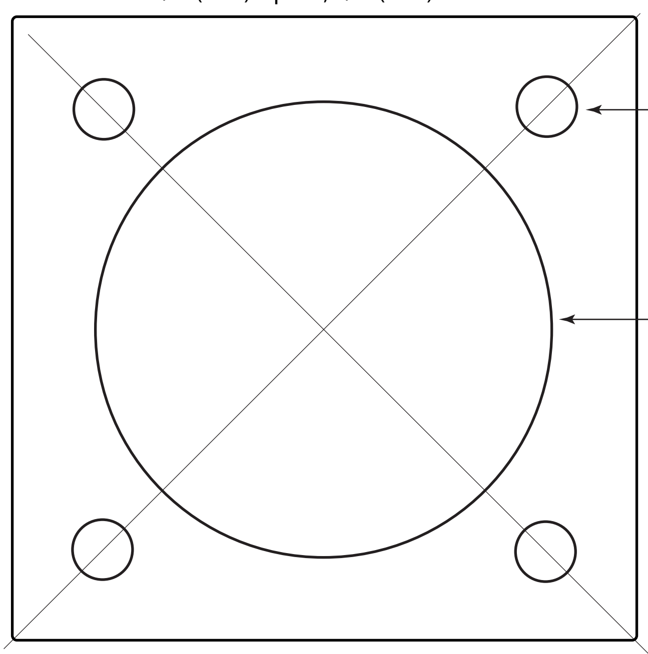
3x "S" (0.3480) drilled holes;
holes centered 11/16" (0.6875) from center of head plate,
holes tapped from top of head plate with 1/8" FPT.

'S' drill, (0.3480); hole centered in head,
tapped for1/8" FPT from bottom of head plate.

14mm hole centered 5/8" (0.625) from center of head
for Spark Plug (NGK B8ES)
20.8mm hex, no resistor, 19mm length, copper core.



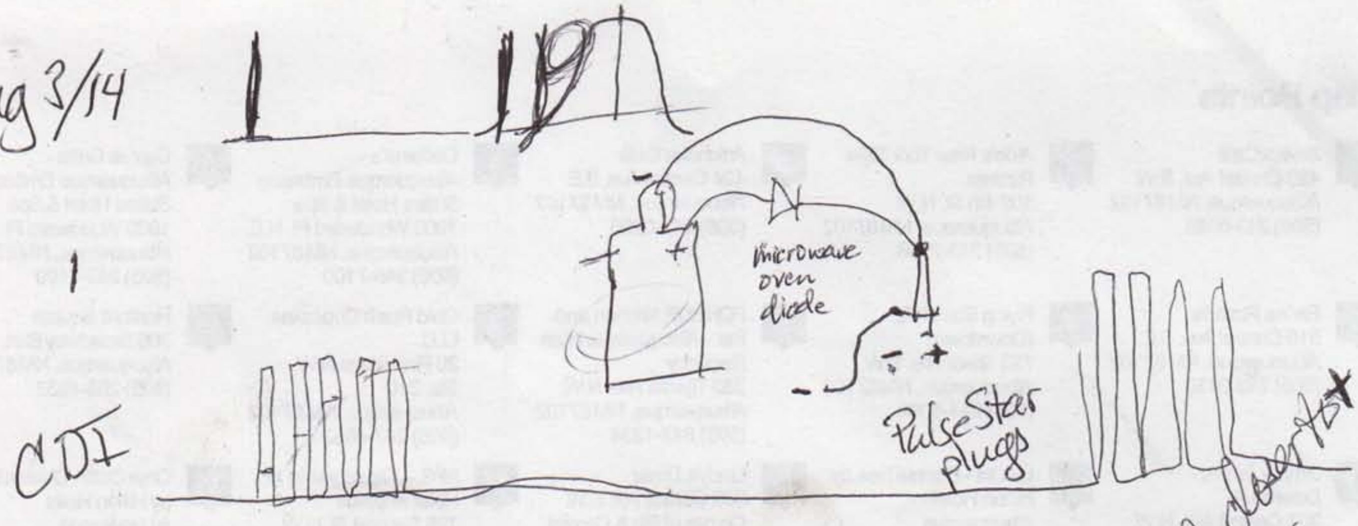
Slide Plate 3 1/4" (3.25) square; 1/4" (0.25) thick.



4x 'F' drill size (0.2570) holes ;
1 5/8" (1.625) from center of head plate
tapped for 5/16" x 18 threads

2 3/8" (2.375) hole in center of slide plate

Aug 3/14



~~dry cell pump~~

~~Audiolance~~

~~- anions, cations~~

~~Paul Zigouris~~

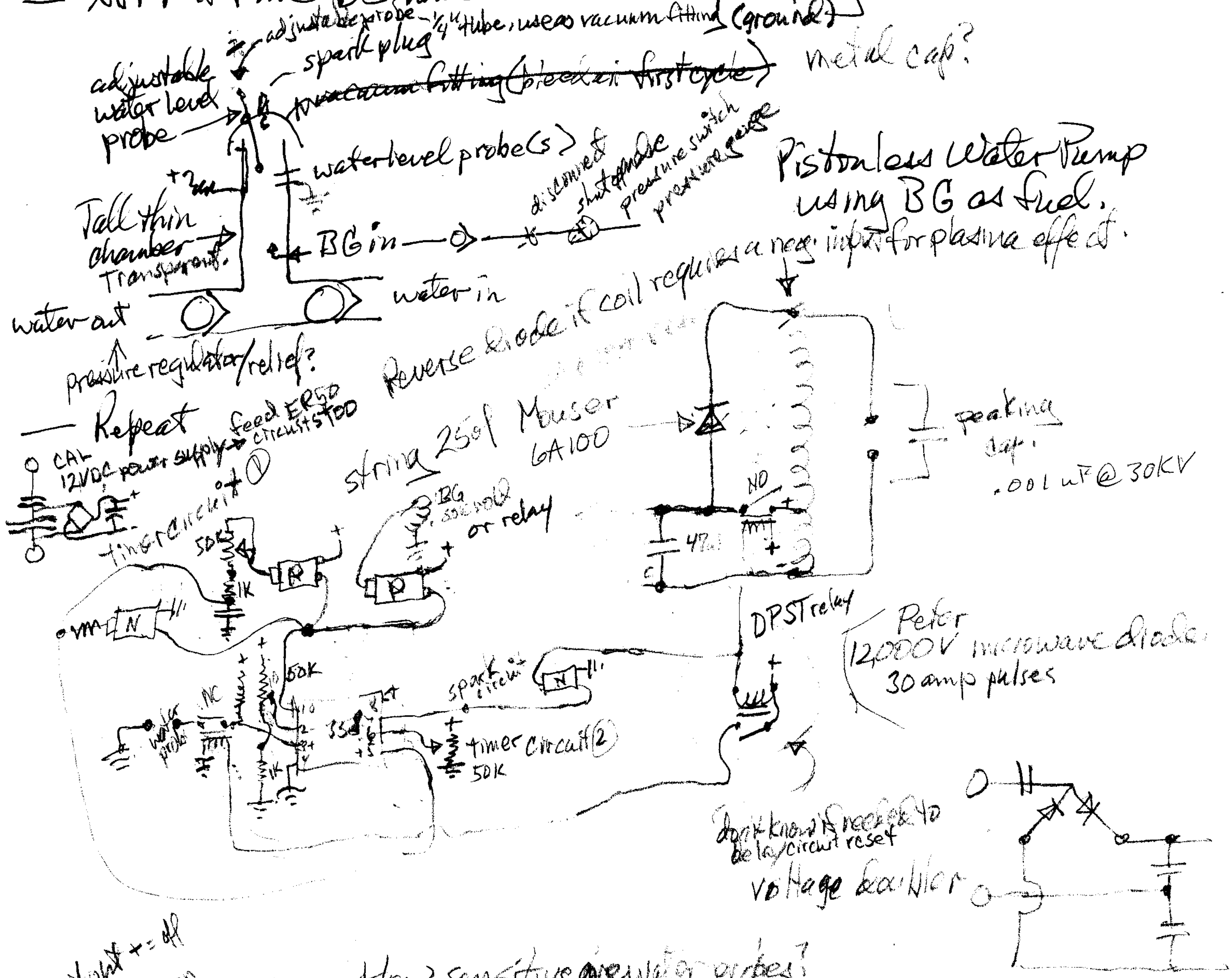
~~barbell gas~~

① Pat Curtis closer to +
② larger PRT
③ ring grooves
④ Defoam

D.W meeting with Al Throckmorton in Albuquerque NM in Hotel Restaurant

Sept 13/14 D.W. BG Pump Schematic

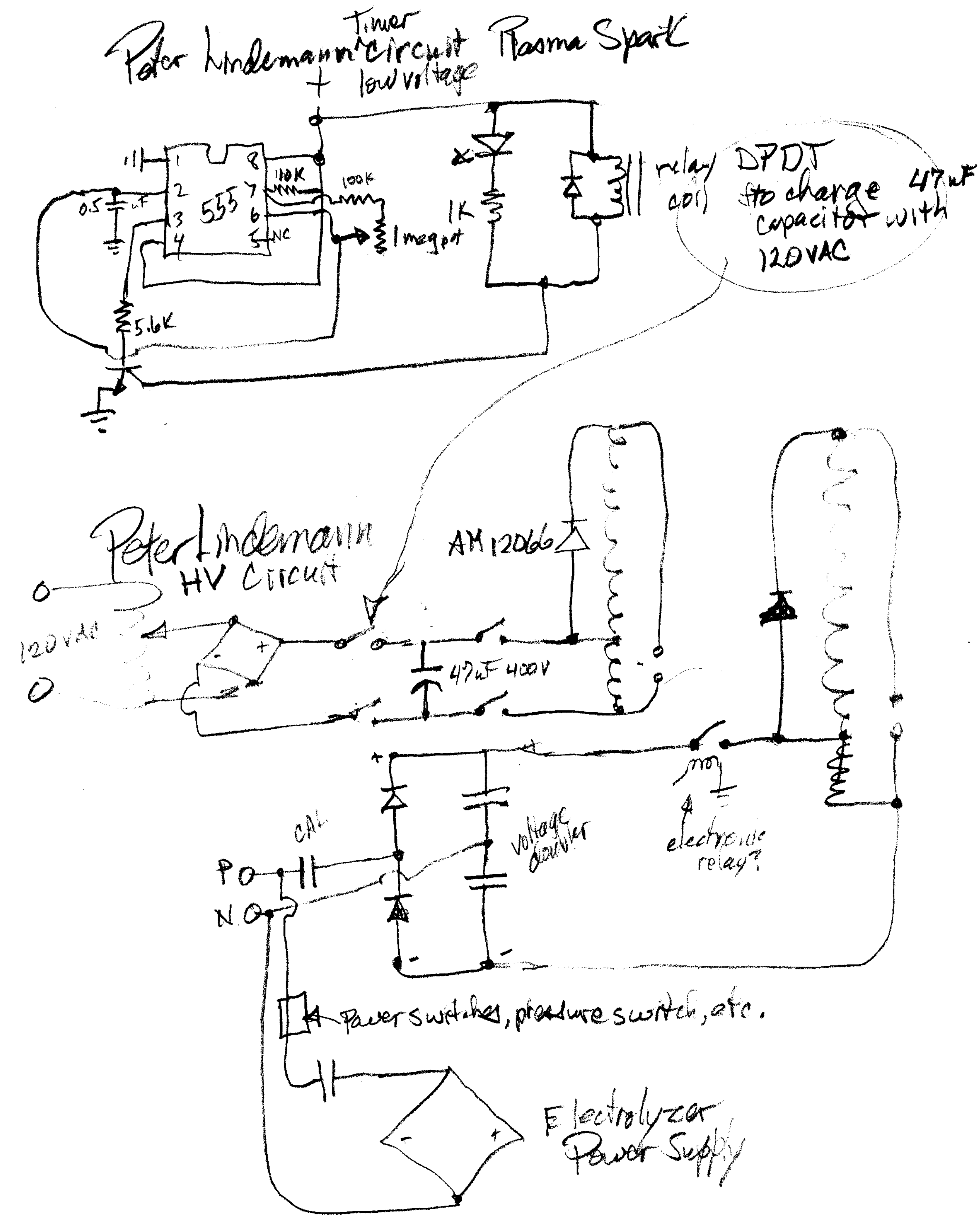
- Build BG pressure, pressure switch shuts off when at pressure.
- Listen to water probes
  - may need to prime pump for first cycle
    - chamber bleed valve, apply vacuum
- when water reaches probes, BG valve opens for x amount of time
  - BG fed in from bottom of chamber so water acts as BF arrester
  - check valve prevents water from back feeding into electrolyzer
- After x time BG valve closes and plasma sparkplug fires
- Repeat

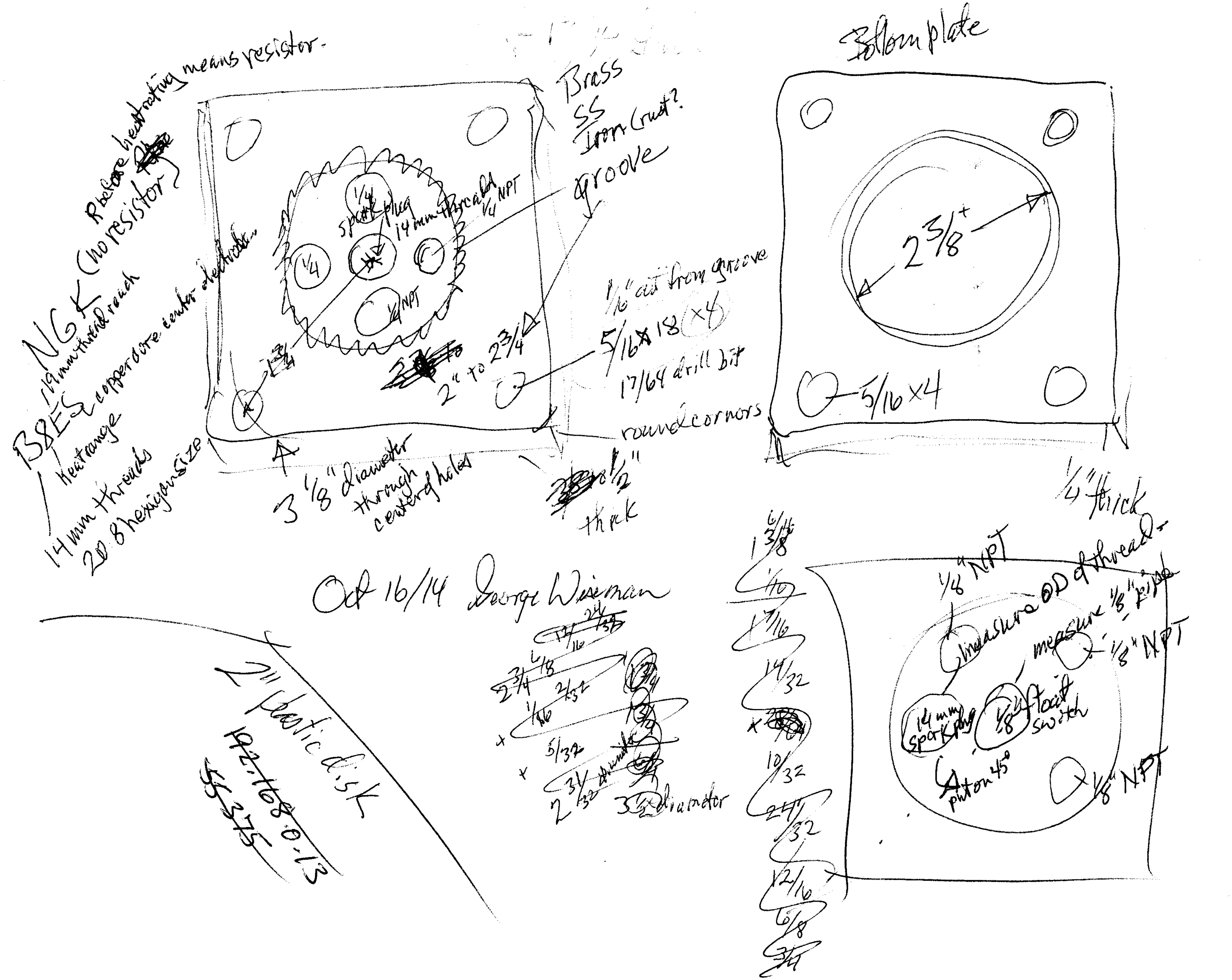


output + = off
output - = on
water connection makes output -
3 + < 2 -

How sensitive are water probes?
- high value pullup resistor

Test voltage doubling plasma spark circuit


Peter Lindemann Timer circuit Plasma Spark
+ low voltage
555
1
2
3
4
8
7
6
5
0.5 uF
110K
100K
NC
1 meg pot
5.6K
1K
relay coil
DPDT to charge 47uF capacitor with 120VAC
Peter Lindemann HV Circuit
120VAC
AM12066
47uF 400V
voltage doubler
CAL
P
N
electronic relay?
Power switches, pressure switch, etc.
Electrolyzer Power Supply


Bottom plate
2 3/8+
5/16 x4
1/4" thick
Brass
SS
Iron Cast?
groove
1/16" cut from groove
5/16 x 18 x4
17/64 drill bit
round corners
1/2" thick
2" to 2 3/4
3 1/8" diameter through center of holes
spark plug
14mm thread
1/4 NPT
1/4
NGK (no resistor)
R before heat rating means resistor.
B8ES
19mm thread reach
copper core center electrode
heat range
14mm threads
20.8 hexagon size
Oct 16/14 George Wiseman
1/8" NPT
measure OD of thread
measure 1/8" pipe
14mm spark plug
1/8" float switch
piston 45°
2" plastic disk
192.168.0.13
55375
3 1/2 diameter