

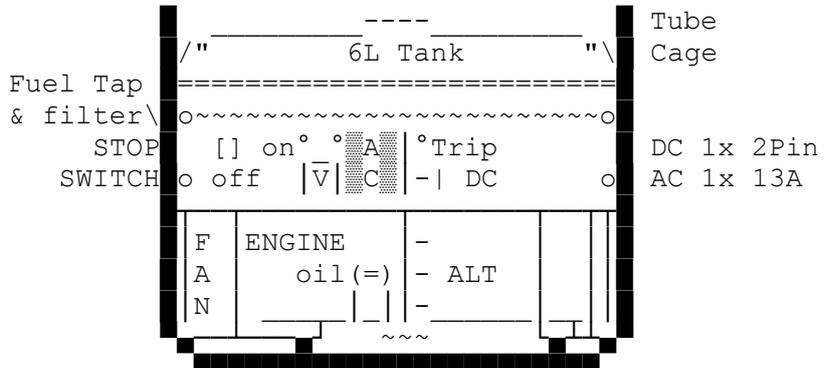
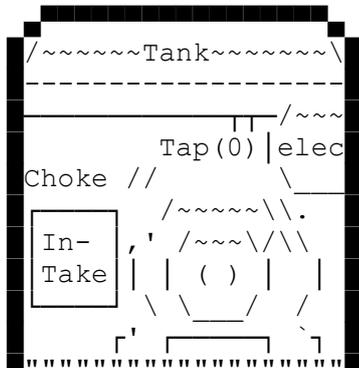
PERFORMANCE POWER 1kW Genny

By G8MNY

(Updated Jul 17)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I was given this 87cc genny, it was very clean & hardly used, but been garage stored (some corrosion) for a few years. It was supplied by NuTools. In layout it is very similar to my much bigger well-used MEDUSA SIP2300 2.3kW one.

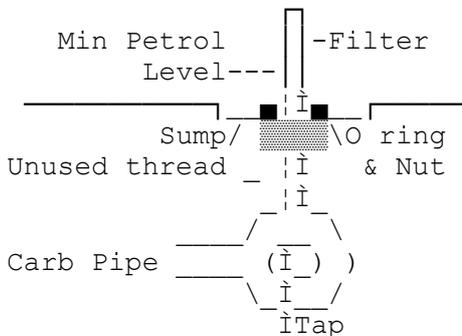


STARTING ENGINE

It started on "easy start" ether spray OK. But the mixture was very lean & need the choke partly on, to run for several minutes. (old Petrol?) I striped down the carb & clean the main jet, then it was a little better.

PETROL TAP

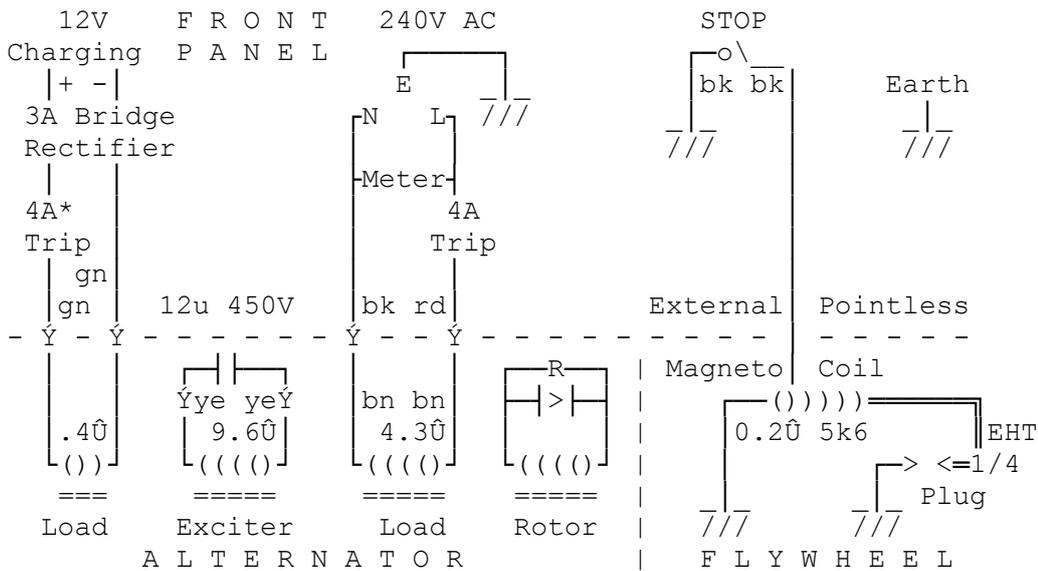
There is next to no tank sump, so an unlevelled ground may result in fuel starvation, despite there being quite a bit of fuel left. This not helped by the "in the tank" hidden fuel filter & a fully "screwed in" tap!



So make sure the tap in only "just" (2 turns) screwed into the tank, & then do up sealing Nut.

CIRCUIT

No circuit in the handbook etc. So I have reverse engineered this diagram.



ALTERNATOR EXCITATION

This is a brush less alternator, with the excitation of the rotor magnetically charged up each half cycle from circulating 90° out of phase currents from the exciting 12uF capacitor. The rotor winding has a diode across (& back emf R) it to maintain the current half a cycle after the kick (100 times a sec). Excitation starting with the weak residual magnetic rotor field, needs at high enough RPM (2000RPM) to overcome the rotor diode voltage drop, About 10% of the power is needed for excitation of the rotor, hence alternator fan must be kept efficiently working.

This system is more reliable than the DC to brushes & slip rings type, but it does produce a slight kink in the load winding waveform & there is no opportunity for voltage control other than engine RPM.

CHARGING (20V off load)

The genny came with the special DC plug & lead (- |), but the lead is short & the trip was only 4A, & it trips all the time @ it's rated 5-6A charging current, unless the RPM is well reduced. So I swapped the trip for 10A more reasonable rated one.

The rectifier is only made from 4x 3A diodes inside the connector socket, with no heat sink! To improve on this, I doubled up on the diodes, putting 4 more 1N5402 diodes on the copper side of the PCB & flowing lots of solder on the tracks to improve heat dissipation. Note the current trip does not prevent blowing the diodes on wrong battery polarity! So a 13A fuse in the charging lead will help that!

AC REGULATION

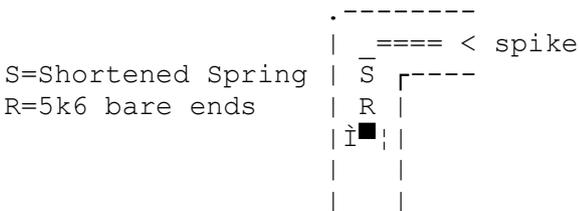
This is a simple bob weight & spring RPM controlled engine governor, with the alternator's capacitor self-exciting winding at 90° to the load winding which gives some load to voltage compensation. On this generator these two features alone seem to give quite good results.

Load	Volts
0W	240
275W	237
500W	235
775W	230
1000W	220
1100W	215 Max Throttle!

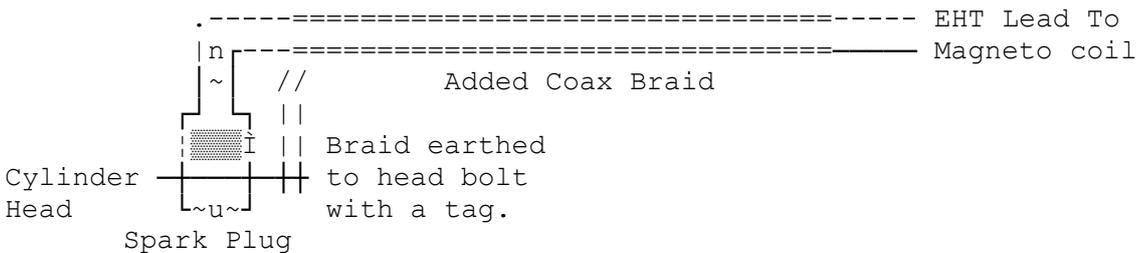
IGNITION NOISE

This was quite high, noticeable on HF - UHF, as there are NO suppression parts, despite the CE compliance markings etc. I did 3 things to get it down 30dB.

- 1/ Change the spark plug for a resistive type (measures between 5K-15K) it must be same reach & ideally same temp type.
- 2/ I added a non-inductive 5K6 in series with spring inside the spark plug cap. (I█, part unscrews)



- 3/ Then I added a coax braid over the EHT lead & earthed it at the cylinder head. The braid is kept insulated other than at the cylinder head end!



OTHER MODIFICATIONS

- A/ Reduced the tappet clearance as it was quite noisy (rattly).
- B/ As with other Gennys, I added an earth lead to clip on earth stakes etc.
- C/ And also the 13A socket rattles any plug out a in a few mins, so a Bungee is needed stretched over the plug to keep it in.

See my TECH buls "Regulating 12V Generator Output", "MEDUSA SIP2300 Generator info", "MEDUSA SIP2300 Generator Repairs", "Cheaper Generators" & "Petrol Generators for /P SSB"

Y Don't U send an interesting bul?

73 de John G8MNY @ GB7CIP

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