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.

12V Charging Panel 240V AC STOP
FRONT
3A Bridge Rectifier

4A* Trip
gn
gn

12u 450V bk rd

External Pointless

Load

Exciter

Load

Rotor

ALTERTOR

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.

<table>
<thead>
<tr>
<th>Load (W)</th>
<th>Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>240</td>
</tr>
<tr>
<td>275</td>
<td>237</td>
</tr>
<tr>
<td>500</td>
<td>235</td>
</tr>
<tr>
<td>775</td>
<td>230</td>
</tr>
<tr>
<td>1000</td>
<td>220</td>
</tr>
<tr>
<td>1100</td>
<td>215</td>
</tr>
</tbody>
</table>

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. (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

G4APL GB7CIP 27.10.2017