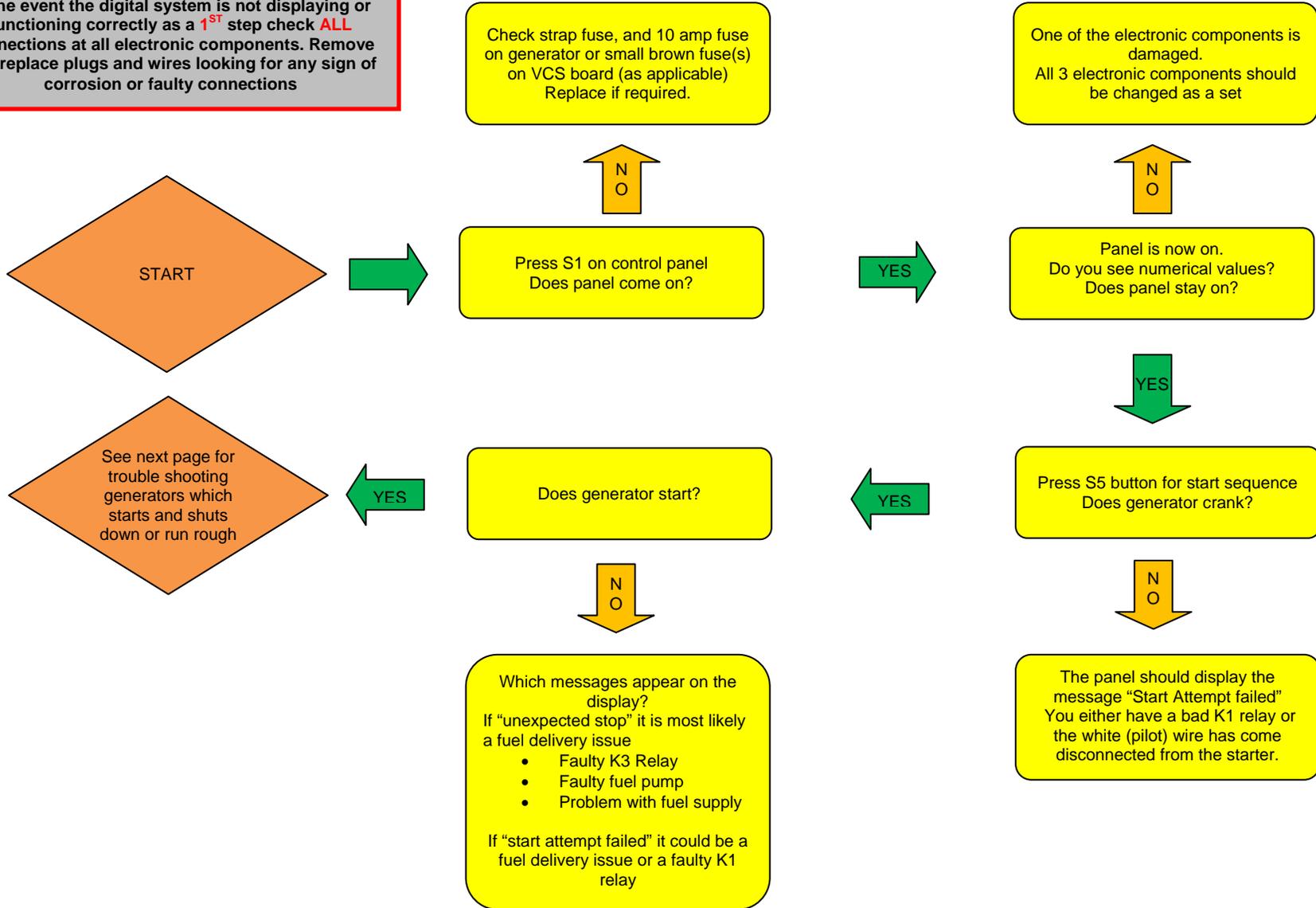




NOTE

In the event the digital system is not displaying or functioning correctly as a 1ST step check **ALL** connections at all electronic components. Remove and replace plugs and wires looking for any sign of corrosion or faulty connections





Generator Starts but displays the following problems

Generator starts but does not come up to full speed shows no voltage and then shuts down

Generator shuts down if processor does not see voltage
At this point you must verify the cause for not seeing voltage:

- Short in the Boat
- Damaged electronics
- Generator Output problem

Short in Boat or cabling after generator

Disconnect the output cables at phoenix connector located in the lower left section of the VCS control box.
Restart generator.

If generator starts, runs correctly, and displays voltage on the panel the problem is a short in the boat system

- Cable shorted
- Bad circuit breaker
- Shorted electrical consumer

Damaged electronics / Generator Output problem

To check for damaged electronics or generator output problem proceed as follows
Disconnect the VCS actuator. (Separate the plug attached to the actuator with the green and white wires)
Turn the actuator rod anti clockwise retracting the injection pump lever until the lock nut is about ¼" from the spindle block
Turn on Control Panel
Using meter (on AC) place black probe into #1 (neutral) and red into #2 (Hot) Figure1
Press and hold "failure bypass button"
Start generator by pressing the dipswitch (on VCS board) labeled "start" (Figure 2)
With the "failure bypass button" depressed check meter to see if there is voltage present?

YES

If meter reflects voltage but none is shown on panel there is a problem with the electronic components which need to be changed as a set.

NO

No voltage indicates a problem with the generator output

- Shorted backend
- No residual voltage
- Shorted capacitors

See next Page



Generator Output Problems

Defective capacitors

Shorted backend

No residual voltage

Remove ground, all output cables and capacitor banks connections from the terminals located in the AC output box (Figure 4)

Set meter to the uf setting.

- Attach test leads to the terminal connections of each (2) capacitor bank in turn.
- If the reading is more than +5% of the rated capacity for that bank there is a defective capacitor which should be changed. (The rating of each bank is the same and is the sum of the capacity of the capacitors in that bank)
- Each capacitor should be desoldered and individually checked to identify the faulty capacitor.

With all wires disconnected start the generator as follows:-
 Disconnect the VCS actuator motor leads (green & white) Turn the actuator spindle anti clockwise retracting the injection pump lever until the lock nut is about 3/4" from actuator spindle block. Connect meter (setting AC volts) to either output winding terminal posts (Figure 4) Turn on panel. Depress failure bypass button. Start generator by pressing the dipswitch labeled "start" located on the VCS board.(Figure 2). Once a reading on the meter has been observed, stop the generator.

If reading is in milivolts the generator windings have most likely been shorted.

The correct residual voltage at 3600 rpm is between 3 and 6 volts. If these values are not obtained, the generator most likely has lost or has low residual voltage and needs to be "flashed"
 Generators can lose their residual voltage if shut down under a heavy load or if not used for a long time.

Procedure to check if windings are shorted.(60HZ)

The process determines whether there are shorts between any of the windings or between a winding and the backend casing as well as whether there is a break in any of the windings.

Remove the ground as well as both output and excitation connections from the terminal posts in the AC connection box

With all wires disconnected use a meter set on resistance (beep mode) to check the connection between the following

- Z1.1 and (Z2.1, H1.1, H2.1)
- Z2.1 and (H1.1, H2.1)
- H1.1 and (H2.1)
- Backend casing and (Z1.1, Z2.1, H1.1,H2.1)

Continuity with these tests indicates a shorted winding

- (Z1.1 and Z1.2), (Z2.1 and Z2.2), (H1.1 and H1.2), (H2.1 and H2.2)

Continuity with these tests indicates the individual windings are **undamaged**

On occasion the leakage from the winding is so small that the above tests will not reveal the short. In this case a 500V Megohmmeter should be used.

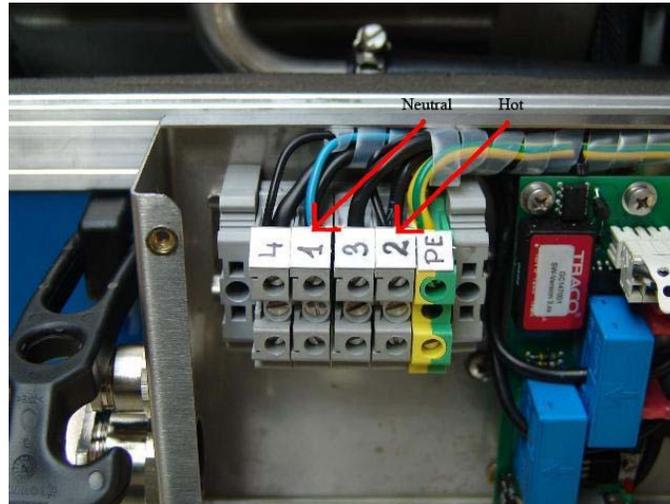
Procedure to restore generator residual voltage.

A source of DC power other than the start battery is required. A 9V battery or the battery from an electric drill will be suitable. (The concern in using a large storage battery is that too long a contact could result in the wires fusing and damage the windings.)

- Connect the battery positive pole to terminal Z1.2 and the negative pole to terminal Z1.1
- This battery power must not be applied for more than 2 seconds and performed with the generator off.
- Immediately start and run generator and check residual voltage.

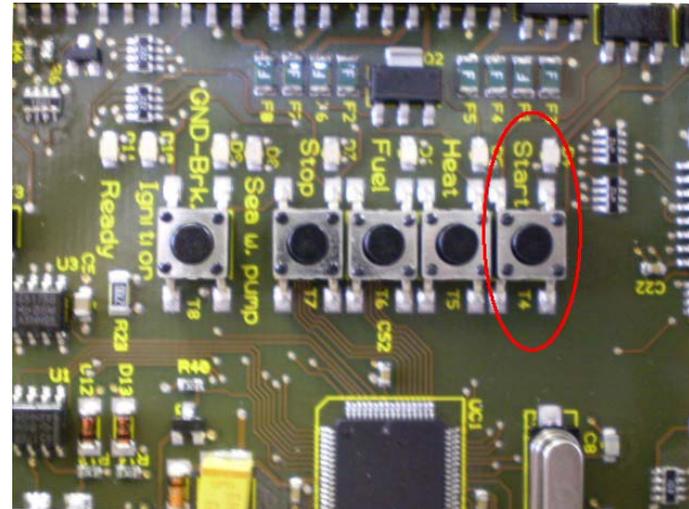
If the residual voltage is still low or zero repeat the above procedure. If after repeating the process residual voltage is not restored the windings are most likely shorted. A 500V Megohmmeter should be used to confirm that the windings are defective.

FIGURE 1



OUTPUT TERMINAL BLOCK LOCATED IN VCS BOX

FIGURE 2



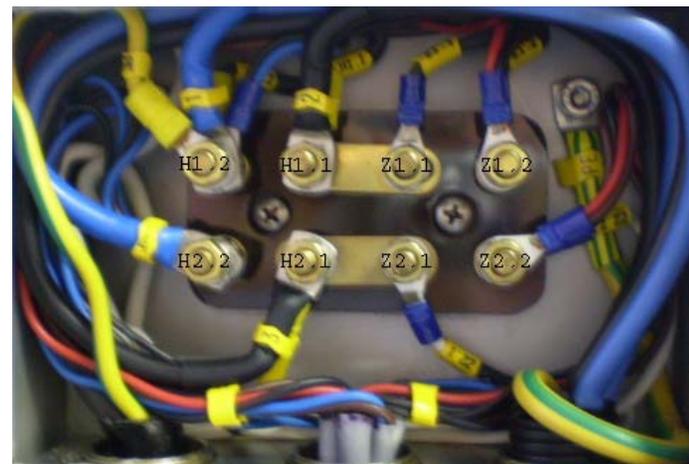
START DIPSWITCH LOCATED ON VCS BOARD

FIGURE 3



VCS BOX SHOWING ELECTRONIC COMPONENTS

FIGURE 4

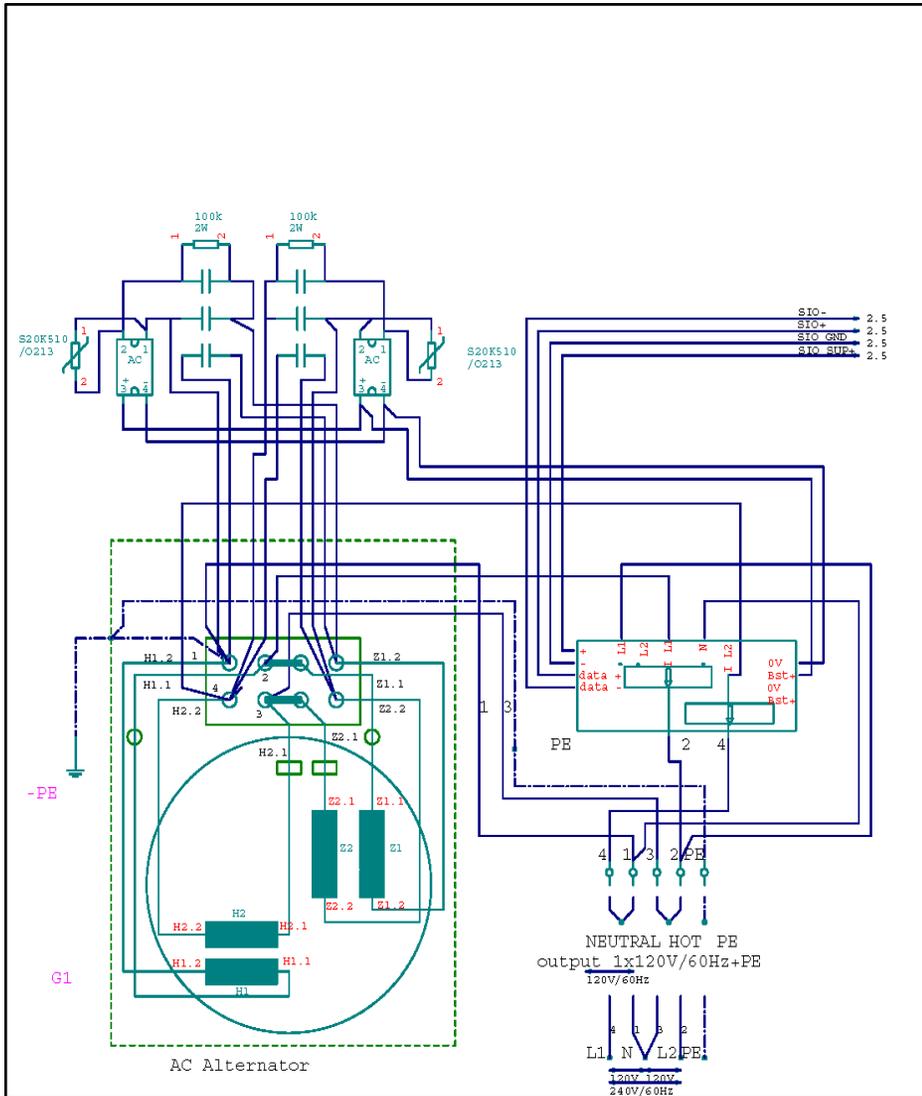


AC CONNECTION BOX SHOWING TERMINAL CONNECTIONS



ELECTRICAL DIAGRAMS

120/240V 60 HERTZ



230V 50 HERTZ

