TROUBLESHOOTING GUIDE

SKYPRO, HELIOS, SLT, SLTW, and SHYB MODELS

Tip: New units (2023 and newer) that have Victron components may provide insight by using the Victron App that can connect to your mobile device by Bluetooth. The pin for these components will be listed on the inside of the control box door. If no pin is listed inside your control box, pin is six zeros (000000).

Lights

Q) Why are all 4 of my lights are not working?

- A**) First check circuit breaker and battery disconnect:**
  - Breaker should be set in the ON position (which is UP).
  - Battery disconnect should be set in the ON position (if applicable with unit)

- B) **Check Toggle Switch position:**
  - Toggle switch needs to be in the correct position for which component you are trying to use either Timer or Photocell/dusk to dawn. Refer to Label at the toggle switch for correct positioning.

- C) **Check the Battery Voltage of the unit**:

  - ***IF Below 23.5 Volts*:**

    - Low Voltage Disconnect is set at 23.5 volts to protect the battery bank. Lights will not function below that level, but unit will stay on to allow it to charge.
      - If it is below 23.5 Volts unit needs to be charged. Leave unit in the sun with both sets of panels facing south and ensure the circuit breakers on. AC charging is also available and can be done in parallel with solar charging. If sun is plentiful solar charging is faster.
    - If State of Charge meter (Victron or Delta Fuel Guage) does not read voltage check with a multimeter if qualified person is available.
      - Place it on the main connection for the positive. This will be one of the parallel connections on the batteries and the other lead should be on the main negative parallel connection.
      - If the Battery voltage is close or at the LVD set point (23 - 24.5volts)
        - The Unit has a LVD which will disconnect the lights if the battery voltage goes below the set point.
        - Units LVD set at 23.5 volts:

- Trick turn off breaker for the lights, this will reset LVD, this allows you to see if the lights work, if not past the set point.
- Then this would be the reason why your unit's lights aren't working. You will need to charge the unit back up. Either using solar, a/c charger or generator, if possible or equipped with one.
- You will need to get the resting voltage of the unit above 25.5 volts before the lights will be able to be turned back on.

- ***IF battery voltage is above the 23.5v fellow the steps below**:*

- D) **Check the connections:**
  - Check the junction box which is located between the lights. Make sure all connections are free for corrosion and making a clean connection.
  - Check plugs on both ends of the stretching self-coiling cable that runs up and down the tower.

- E) **Check if you have continuity:**
  - You will want to check the continuity going from the front box going to the lights to make sure you don't have a cut wire somewhere on the 12/4 coil cable.
    - To do this locate the color wires in the J-Box in between the lights. Using 1 lead place it on 1 colored wire and the other lead on the same-colored wire in the control box. You will need a co-worker to help with this and listen for the tone on your multimeter. If you don't hear the tone, then you have a cut wire. You will need to either replace the cable or fix it before the lights will work again.
  - If you have continuity in all the wires, then check continuity in the breakers.
    - To do this, Place one lead of the multimeter on the top side of the breaker and the other one on the bottom side. With the breaker on (up position) you should get a tone. If not then you may have a bad breaker.
  - If you still have continuity read below

- F) **Check if the voltage is getting to your lights:**
  - If you checked the voltage on the batteries with you multimeter and say you have 26.5 volts DC, then you should be getting 25.5 volts DC to your lights. (1 volt drop because of wire travel) Check the connections inside the J-Box located between the lights for the voltage.

Q) Why are my lights are flashing

- A) **Check Plug Connections:**
  - Make sure corresponding plugs have pins seated correctly
  - Make sure no corrosion/water intrusion in the plugs

- B) **Check Battery Disconnect:**
  - Battery Disconnect should be set in the ON position (if applicable with unit). If during the day the toggle and breakers are on, but battery disconnect is off, lights will flash with minimal power through solar.

- C) **Check Individual Lights:**
  - Unplug all lights from junction box. Plug one light in. If flashing, unplug and try a different light until all have been tested or one is not flashing
  - If one is not flashing and is solid, plug in another light. Continue until lights start flashing. The light plugged in when flashing began should be replaced due to internal issues.

- D) **Check Battey Voltage:**
  - If voltage of unit is around 23.5V, lights may flash due to LVD (Low Voltage Disconnect) turning on and off from the power draw of the lights fluctuating with the lights turning off and on rapidly causing the "flashing".

Q) Timer not working?

- A) **Refer to Timer guide with steps on how to setup the timer.**
  - If no lights on are on the timer at all?
    - Make sure the breaker is on (In the UP position)
    - Ensure lights work in Photocell or other manual mode
    - Check the battery on the timer. This is located on the back side of the timer itself.
      - Take a picture before disconnecting the wires to the timer so they can be replaced the same way.
      - Remove the 4 screws holding the timer in place.
      - Remove the battery backing and Replace with a new battery and reinstall the timer.

Q) Why wont my solar wings raise or lower?

- A) **Check Circuit breakers and battery disconnect:**
  - Breaker should be set in the ON position (which is UP).
  - Battery disconnect should be set in the ON position (if applicable with unit)

- B) **Check Plug Connections:**
  - Make sure corresponding plugs have pins seated correctly
  - Make sure no corrosion/water intrusion in the plugs

- C) **Check Battery Voltage:**
  - If unit is dead (<23.5V), wings will go up very slowly, or not go up at all.
  - If low voltage, check individual battery voltage for any low voltage outliers.

- **NOTE:** If unit is dead and wings can not be raised, the unit can be plugged into a wall outlet, or portable generator via the pig tail (SLT models) or the outlet plug (HELIOS models) to raise the wings and allow access to the batteries.

Q) My Tristar controller is reading a fault. What does it mean?

- A) **Refer back to the TriStar owner's manual for fault code**.
  - Troubleshoot from there.
  - Remember if the Tristar is in an error mode it will not allow any solar input to charge the batteries.
  - Try resetting the Tristar.
    - Turn off the breaker, wait for a minute and turn the breaker back on.

Q) Can I charge my unit with a wall outlet or generator?

- A) **Yes, there is an on-board AC battery charger built into your unit**.
  - There is a receptacle located on the rear passenger side that you can plug a power supply to the battery charger.
  - Remember to use a **20amp** circuit if you're getting power from a wall receptacle. The battery charger uses 14 amp of AC current. If you're using a generator, use at least a 3KW (running watts) sized generator.

Q) How long does it take the AC battery charger to recharge my batteries?

- A) **That depends on the depth of discharge of the batterie, size of bank, and if sun is charging the unit in parallel.**
  - The batteries will normally recharge within 18 to 25 hrs. depending on the depth of discharge. (22vdc-24.5vdc). Much shorter if unit is in the sun and able to charge from solar in parallel. Ensure all circuit breakers are on.
  - If your batteries are lower, then the AC charger will take longer to charge the battery bank.
    - **NOTE:** Battery banks that are below **20vdc** may be damaged not come back at all. Therefore, it is very important to keep the solar wings up and breakers on for the solar charge controllers, even when not in use, to maintain the battery bank.

Q) What are some appropriate solar input voltages?

- A) **The solar input voltage will vary depending on what stage of charging your unit is in.**
  - You will see solar input voltages between 80 volts to 12 volts DC. If the unit is in the sunlight, otherwise you may see much lower voltages.
  - It's important to note that is it's about the voltage of the solar panels but about the

amperage going into your batteries.

Q) The solar panels don't seem to be charging according to the remote meter (if equipped), no wattage showing, is there something wrong?

- A) **No, the Tri-Star remote meter will only display what wattage the batteries are expecting.**
  - Exp: one side of the solar panel is showing 113 watts, the other side pointed in the same direction is only showing 30 watts.
    - This is because the voltage of the battery bank is almost topped off and is only allowing (x) number of solar panels to provide power to the battery bank.

Delta Volt Fuel Gauge

Q) My fuel gauge shows my battery capacity in the RED for several days in a row. Is my unit charging?

- A) **YES, once your fuel gauge enters the RED it will not move back up the LED line till your battery voltage reach's 26 volts.**
- If your unit is working 7 days a week and you're in the Fall Winter months, it's hard for the SLT units to recover enough solar input in one day to get the battery voltage above 26 volts. Read the user manual on the delta-volt for more information on LED color code.
  - The new delta-volt fuel gauges reset themselves every 7 mins to give the customer a better accurate reading of battery capacity.

Wind Turbine (SLTW Models)

Q) How do I know the wind turbine is producing power?

- A) **The wind turbine switch must be in the ON position.**
  - When charging the batteries, the AIR wind turbine **solid led light** will be continuously illuminated, on the bottom side of the tail fan.
- Start up speed is 7mph
- The wind turbine will start producing power at 12mph wind speed and above, up to 49mph.

Q) What does it mean when a green light is flashing once per second?

A: Regulation Mode:
If you see **flashing led light**, once per second, then your wind turbine is in regulation mode.

- This is when the battery voltage reaches it's set point and stops charging the batteries, and the blade rpm will lower dramatically (almost stopping). Meaning the battery bank is fully charged and wind power is not needed at this time.

Q) The led light at the bottom of the wind turbine is flashing 10 tens per second, what does this mean?

A: Over Speed Protection:
If you see **Flashing led light**, 10 per second then the wind turbine is in over speed protection mode. The blades will near come to a stop for 30 seconds and then allows them to spin again. This cycle will repeat unlit the wind speed drops below 50mph and then the wind turbine will start rotating again normally, to produce power, if needed.

Q) What do I do if the turbine is wobbling or shaking more than expected?

- Inspect visually the turbine up close to see if there are any reasons it might be out of balance.
- Check the torque on the bolts per the Simple Checks below.
- Review the Technician Level checks below that involve disassembly of the turbine. Without blades you can manually spin the turbine with a drill to see if it still is out of balance. Replacing the blades could solve the problem if the unit wobbles with the blades on, but does not with the blades off.
- If the turbine continues to wobble or shake excessively or very hard to spin by hand, please Contact Progress Solar Solutions tech support. (919-632-4762)

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Additional *Simple* Checks –

1. **Ensure the switch in the control box is in the ON position for the Wind Turbine**
2. **Ensure all the breakers in the Control Box are ON**
3. **Check for Loose wires, plugs fully seated, visible damage to wires or wire jacketing causing a short or in any way disconnected. The cable runs down from the turbine housing down to a plug into the body. Inside the unit you may be able to visually inspect the wires from the plug to where they terminate.**
4. **Check the torque on the bolts for the blades to the hub, the torque is 72 in-lb. If they are torqued down too hard, they will affect the performance.**
5. **Check the torque on the hub to rotor nut, the toque value should be 40 lb.-ft.**

IF the simple checks don't correct the issue try these *Technician Level* Checks

(these steps should only be performed by a qualified person) -

Tools you will need: Ratchet with 5/16" socket, DC Multimeter with leads, a amp meter and a Drill.

- First open the control box door. Once open at the top right-hand side you will find 2 small 5/16" screws, unscrew them in order to access the breakers from the back side.
- Located the single pole 20-amp breaker. On the back side you will find that it has two red wires going to it, when the breaker is on the circuit will be energized.
- Using your multimeter set in DC voltage, place 1 lead on the top screw of the breaker and the over lead in the negative Wago (connector) feed throughs. See if there is voltage above 24Voltages coming out, if there is your wind turbine is producing power and working correctly.

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Q) What if there isn't any voltage after the first test?

- Take the turbine nose cone off and the blades and place aside.
- Use a 5/16" hex key in your drill. Place this in the hex bolt and use your drill to spin the shaft.
- Below 400 RPM's the rotor should spin freely and the LED light should remain off.
- Above 400 RPM's there should be resistance and LED light should turn on. If there is any bumping, wobbling, shaking or very hard to spin STOP! Please Contact Progress Solar Solutions tech support. (919-632-4762)

Gas/LPG Hybrid Generator (SHYB/HELIOS-HYB Models)

- Propane solar hybrid total run time –
  - Full Battery Bank =40 Hrs. (Light Run time)
  - Full 60 Pounds Propane = will charge 170 hrs. of light run time with tanks
  - Total light run time with fully charged batteries and full tanks = 210 hours (excludes solar charging gained)

Q) Why don't I have any power to my generator?

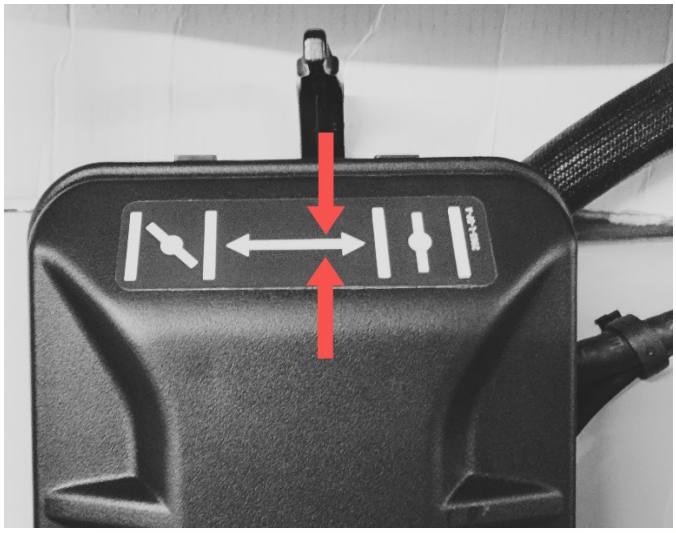
- A) **Check to make sure the main Disconnect Switch located in the front of the unit is in the ON position.**
  - Check to make sure the light for the generator battery is **ON** and the led indicator is lite up.



Verify the fuel dial adjustment for the generator is in the position shown here.



This is the necessary position for the unit to operate as intended.



Verify the choke is a quarter of the way choked.



This is the necessary position for the unit to operate as intended.

- Once you have checked the above steps locate the Dynagen controller in the control panel. It should be on and will say "NOT IN AUTO, WAITING TO START"

Q) How do I manually start the generator?

- A) **Make sure the generator has the proper fuel type you will be using i.e., LPG or Gasoline.**
- Make sure the Oil is full.
- Then on the Dynagen Auto start controller, push the auto button once then the run button, you will see a count down and then the generator will begin trying to start.

Q) If I manually start my generator, will it turn off with the auto start?

- A) **No, if you manually start the generator you need to manually turn off the generator.**

Q) How to I put the generator in auto start?

- A) **To do this all you need to do it make sure the Dynagen controller is on. (IF it isn't push, the off button and wait for it to load and turn on)**
- After it's on, Simply push the Auto button on the controller and it should now read across the screen "IN AUTO WAITING TO START".
- Now it's in the auto mode.

Q) My generator is not cranking.

- A) **There could be several reasons why the generator did not crank.**
  - Check that the propane tanks are open and propane tanks have propane.
  - Check to make sure generator toggle switch is in the ON position.
  - Check the breaker on the generator is ON.
  - Check your oil level, generator has a low oil shut-off which will not allow generator to turn ON if oil level is low.
  - If you have manually cranked generator and it's not cranking over
    - Check starting battery leads make sure these leads are across the main battery bank for only 12V. The Negative lead should be on the main negative i.e., parallel connection. The positive lead should be in the middle of the battery bank across 12V.
  - Check with a multimeter to make sure the starter is getting 12-14 volts only.
  - If while using the multimeter you see 15-19 volts or higher, remove the red lead and place it in the correct spot for 12-14 volts. The red lead should be in the middle of the battery bank.
  - Try starting the generator without using the auto start controller.
    - To due this use, the toggle switch located on the generator itself and see if it starts.
    - If the generator doesn't start check regulator
      - Open the connection between the regulator and then generator. There should be a small 2-foot hose between the regulator and the generator, open the connection slightly and make sure you hear/smell propane.
  - There should be a small cube relay and socket located on the generator, it will have a few green wires, white wires and black wires going to and from it. This relay controls the signal for the auto start controller. Make sure the cube relay is there and isn't blown.
    - If the relay is missing or blown replace and try starting the generator again.

Q) My Dynagen had an error code, "Failure to Start", or "Under Voltage" what may cause this?

- A) **Follow the same procedure listed above.**

Q) My Dynagen had an error code, "Failure to Start", or "Low Frequency" what may cause this?

- **A) Check to make sure you are getting the correct hertz out of the generator (60+ HZ)**
  - If you aren't getting 60+ HZ this is why the generator is shutting down.
    - Check for a plugged or dirty air filter.

- Check for poor fuel or an almost empty propane tank
- Reduce the load from the generator, to see if this helps.
  - If you are trying to charge the battery bank and the battery bank is below 20volts or less this will cause the generator to over work past it's limits.
- Plug the AC (shore power) in and charge the battery bank up past 22Volts dc. This will allow the generator to work within its limits.

Q) I have the generator running but I had to move the choke lever to the left to get it running.

- **A) If you have to close the choke lever to get the generator running, you probably have a leak in the fuel supply.**
- Check all gas fittings and fuel line connections for a leak.

Q) How often do I need to change the oil?

- **A) Every 100 hrs. of use for most generators. Refer to generator manufacturer's manual for your specific generator.**

Diesel Hybrid Generator (SKYPRO/SHYB/HELIOS-HYB Models)

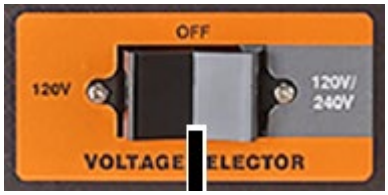
- Diesel solar hybrid Run Time:
  - Full Battery Bank =40 Hrs. (Light Run time)
  - Full Diesel tank = will charge 120 Hrs. of light run time with full tank
  - Total light run time with fully charged batteries and full tanks = 160 hours (excludes solar charging gained)

Q) Why don't I have any power to my generator?

- A) **Check to make sure the main Disconnect Switch located in the front of the unit is in the ON position.**



Make sure the toggle switch for engine Start/Run/Off is in the Run position. (Middle)



Verify the Voltage selector switch 120V/240V is switch to 120V Only



(2) 20Amp 1 P Push button Breakers (1) 30 Amp

Check the Duplex Outlet Push Button Breakers are NOT Popped. (3 In total these are located on the generator near the outlets)

If the Breakers are popped Push them back in.

Q) How do I manually start the generator?

- A) **Make sure the generator has the proper fuel type you will be using i.e., Diesel.**
- Make sure the Oil is full.
- Then on the Dynagen Auto start controller, push the auto button once then the run button, you will see a count down and then the generator will begin trying to start.

Q) If I manually start my generator, will it turn off with the auto start?

- A) **No, if you manually start the generator you need to manually turn off the generator.**

Q) How to I put the generator in auto start?

- A) **To do this all you need to do it make sure the Dynagen controller is on. (IF it isn't push, the off button and wait for it to load and turn on)**
- After it's on, Simply push the Auto button on the controller and it should now read across the screen "IN AUTO WAITING TO START".
- Now it's in the auto mode.

Q) My generator is not cranking.

- A) **There could be several reasons why the generator did not crank.**
  - Check that there is enough Diesel fuel in the tank.
  - Check to make sure generator toggle switch is in the RUN position.
  - Check the Voltage Selector Switch is in 120V ONLY.
  - Check your oil level, generator has a low oil shut-off which will not allow generator to turn ON if oil level is low.
  - If you have manually cranked generator and it's not cranking over
    - Check starting battery leads make sure these leads are across the main battery bank for only 12V. The Negative lead should be on the main negative i.e., parallel connection. The positive lead should be in the middle of the battery bank across 12V.
  - Check with a multimeter to make sure the starter is getting 12-14 volts only.
  - If while using the multimeter you see 15-19 volts or higher, remove the red lead and place it in the correct spot for 12-14 volts. The red lead should be in the middle of the battery bank.
  - Try starting the generator without using the auto start controller.
    - To due this use, the toggle switch located on the generator itself and see if it starts.
    - If the generator doesn't start.
      - Check fuel Filter and or replace.
      - Use the Fuel Primer Blub to make sure your hearing/seeing fuel going into the generator without any air bubbles.
      - IF you see air bubbles, keep compressing the fuel primer blub unit you don't see them anymore.
  - Try and Restart the generator.

Q) My Dynagen had an error code, "Failure to Start", or "Under Voltage" what may cause this?

- A) **Follow the same procedure listed above.**

Q) My Dynagen had an error code, “Failure to Start”, or “Low Frequency” what may cause this?

- **A) Check to make sure you are getting the correct hertz out of the generator (60+ HZ)**
  - If you aren’t getting 60+ HZ this is why the generator is shutting down.
    - Check for a plugged or dirty air filter.

Q) The Generator starts then suddenly stops:

- No or Low Oil – Top of oil to right oil level
- No Fuel – Add more Diesel Fuel
- Fuel Shut-Off Value is in the off position.
  - Located on the underside of fuel tank, Turn to ON position
- Motor Over Heating – Check cooling fan is working while generator is running if not Replace. Clean Back side of unit where the generator is. This generator needs fresh air to keep itself cool.

Q) The Generator will not shut down from auto start controller when pushing off:

- The generator was starting from the Generator start switch NOT the auto-start controller.
  - To turn the generator off use the toggle switch on the side of generator. NOTE: Make sure to put the switch back into the RUN position.

Q) The Generator has low power:

- Incorrect motor operation
- Dirty carburetor
- Dirty Air Filter
- Dirty Fuel Filter
- Dirty /Old Fuel