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12/24 -VOLT OUTBACK BATTERY CHARGER INSTRUCTIONS

OPERATING INSTRUCTIONS: Note: On 24V models all voltages are in (brackets)

1. Check and **fill** the engine completely **with oil** before starting, fill the oil to the top of the filler hole with the engine on a level surface.
2. The battery charger should be operated on a clean surface, such as the vehicles rubber floor mat.
3. Always **connect** the alligator clamps to the battery in the **correct** order **RED** is positive [+], **BLACK** is negative [-] before starting.
   The readout on the digital display of the equipped model should read about 0.00 to – 0.03
   Never reverse the polarities, as this may cause severe damage, and may cause an explosion due to the hydrogen gases produced during charging.
4. The battery charger {HIGH / OFF / LOW} switch should be in the "OFF" position before starting.
5. Turn the Honda **engine switch on**, turn the **fuel switch on**, then turn the **choke** lever to the **on**, or choke closed position and pull start.
   Run the engine for a few seconds to warm up, then turn the choke off, or place in the open position.
6. **Switch** the {HIGH / OFF / LOW} switch to the **"LOW"** position and accelerate the engine to 2/3rds of the throttle position. This will **excite the fields** in the **alternator** and will **start the charging procedure**. Voltage will be **14Volts (28V)**
7. The models not equipped with a LED Ampmeter/Voltmeter display will be equipped with a **Start Charge switch** to **initiate the field of the alternator.**
8. Observe the digital readout on the battery charger. If the readout is below: (35 amps for the 2.5 hp-55 amp model) or the motor is not labouring on the models without an LED Amp-meter you may **switch to the "HIGH"** position.
   This will increase the **voltage to 14.6 volts (29.2V)**, and will charge the battery faster. Adjust the throttle level to a suitable level, so the engine does not sound overloaded and observe the charge rate.
   If switched to the "HIGH" position too soon, the Honda **engine may stall**.
9. On LED Ampmeter models A lead acid cranking battery should be close to charged when the amp readout comes down to around 5-10 amps, depending on the battery size. It is recommended on **the models not equipped with an Ampmeter** to take note of the charge time or use an external passive DC Amp-Meter to check charge output.
10. On LED Ampmeter/Voltmeter equipped models the **voltage of a battery** can be **checked** by attaching leads to battery and switching **selector switch** to **Volts**. **Default** position is always **Amps.**
11. Some **deep cycle batteries** will **take longer to charge**, as they are designed differently to cranking batteries lasting longer at a slow discharge/recharge rate.
12. Before removing the alligator clamps, switch off the Honda engine, place the battery charger switch to the "OFF" position.
13. Always ensure the **fuel is fully drained** and the **motor run until it stops** before **storing** for lengthy periods, most modern fuels go **"stale"** in a short time and may cause trouble starting.

Note: The 2.5hp charger is not designed to charge large battery banks. Do not use this on large solar installations – the 80A and 120A model chargers are recommended for these applications.

MAINTENANCE:

Refer to the HONDA engine manual for detailed specifications and service procedures.

Always use clean, fresh unleaded fuel, as some fuels deteriorate over time, causing hard starting.
To check the condition of the rubber drive coupling, remove the top and bottom bolts on the bell housing and move the alternator to one side and inspect.

SAFETY:

- Batteries contain a sulphuric acid electrolyte, which is a highly corrosive poison that will produce gasses when recharged and can explode if ignited. This can cause serious injury or possibly death.
- Fuel should be stored in approved sealed containers.
- Do not smoke or have naked flame near the machine.
- Always turn the engine off and cool down before re-fuelling.
- Make sure no dry grass or combustible materials are near the exhaust outlet.
- Use in a well ventilated area, exhaust gases are deadly.
- Do not recharge non-rechargeable batteries.
- Do not use electrical appliances in the rain.
- Never leave your battery charger unattended whilst it is running. Petrol engines may vibrate and fall over, which could cause a fire.
- Disconnect battery charger leads from battery as soon as charging is complete, to avoid battery being discharged slowly.
- Refer to the HONDA engine manual for any problems with the engine.

TROUBLESHOOTING:

- If the alternator becomes noisy, check the condition of the rubber drive coupling by removing the alternator.
  If this is ok, spin the alternator by hand and check the bearing condition, the alternator should spin freely. Check for any foreign objects possibly drawn in by the cooling fan. Run the HONDA engine while the alternator is not connected, to eliminate any problems with the engine.
  (This should be carried out by a qualified technician)
- For the 2.5hp model, **if the battery charger has not been used for some time**, the field magnetism may be lost, causing **no self-excitation** when the throttle is accelerated.
  To solve this problem, connect the alligator clamps to a battery, start the engine, increase the throttle to 2/3rds acceleration and short out the B+ to the D+ terminals (at the rear of the alternator) with a piece of wire. The battery charger should now operate. The more often the charger is used, the less this will happen.
- If the LED display fails through improper use, severe heat or vibration, the battery charger can still be used, contact Christie Engineering for any replacement parts.

BATTERY CARE:

All batteries should be kept fully charged, or recharged every day when running electrical appliances such as fridges or lighting. 80% of all battery failure is related to sulfation build-up. This build up occurs when the sulphur molecules in the electrolyte (battery acid) become so deeply discharged that they begin to coat the battery's lead plates. Before long the plates become so coated that the battery dies. Recharge the batteries as soon as possible to prevent sulfation of the battery plates.
Battery Testing can be done with a hydrometer, testing a measurement of specific gravity, or with a multimeter, testing D.C. voltage (when battery has stabilised).

State of Charge	Specific Gravity	Voltage-12V Battery
100%	1.265	12.7
*75%	1.225	12.4
50%	1.190	12.2
25%	1.155	12.0
Discharged	1.120	11.9

*Sulfation of Batteries starts when specific gravity falls below 1.225 or voltage measures less than 12.4 (12volt Battery when stabilised). Check electrical connections, Keep batteries topped up, Keep batteries clean and dry.

THIS BATTERY CHARGER WILL NOT CHARGE A DEAD BATTERY AND SHOULD NOT BE RELIED ON FOR EMERGENCY SITUATIONS OR RUNNING MEDICAL EQUIPMENT.