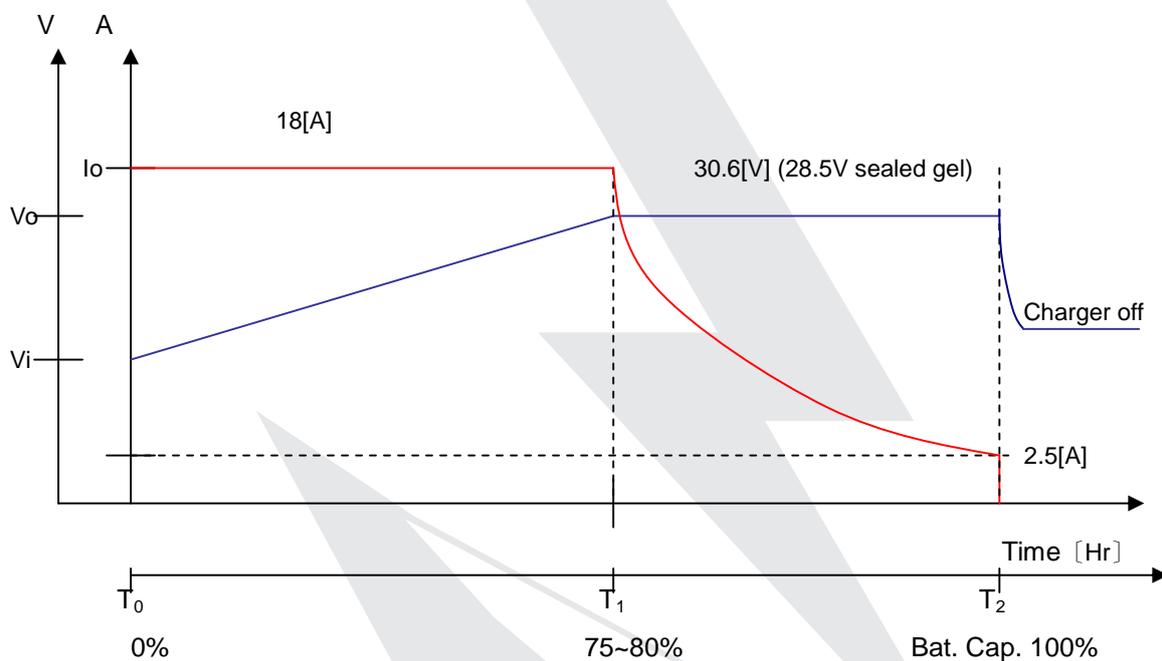


Specifications for AQHF 24 – 18 JLG

| | | |
|-----------------------------------|---|--|
| Model | | AQHF 24 – 18 JLG |
| Max. Output Power/Nominal Voltage | | 550Watt / 24Volt |
| Main Technology | | Switching Mode |
| Mechanical Max. Size, Weight | | 161L*180W*165H(mm), 5.2kG |
| The Number of Charging Profiles | | 2 |
| AC Input | Input Voltage | Single Phase, Automatic range switching 85~132VAC / 170 ~264VAC |
| | Frequency | 45-65Hz |
| | Input Current | Max. 8A |
| DC Output | Charging Mode | Modified two-stage charging (bulk->absorption->off) 2 curves – one flooded, one sealed gel |
| | Output Voltage | 30.6V, for Flooded Lead-acid Batteries 28.5V, for GEL Batteries |
| | Output Current | 18.0A _{dc_max} |
| | Current ripple | Less than 5% |
| Efficiency | | More than 85% |
| Features | Current limiting | Yes |
| | No spark | Yes |
| | Maintenance mode | Yes |
| | Bad cell discrimination | Yes |
| | AC line connection interlock | 20A, normally closed contact |
| Protective Function | Reverse polarity | Yes |
| | Short circuit protection | Yes |
| | Over temperature protection | Yes |
| | Input Fuse protection | Yes |
| | Input and Output Over voltage /Under voltage | Yes |
| | Output connection open | Yes |
| LED Display | | Charging cycle progress / Alarm display (3) |
| Connector / Lines | Input (3) | 1.1m long, , AWG16 |
| | Output (2) | 2m long, AWG12 |
| | AC Interlock (2) | 2m long AWG16 |

| | | |
|--|-----------------------|---|
| | Selecting profile (2) | 24AWG, Yellow, 80mm, 2-conductor pigtail loop One yellow wire loop – supplied closed for wet battery charge curve, cut loop for sealed gel battery charge curve |
| | Cooling & Sealing | Convection cooling/Water-tight |
| | Operating Temperature | -25°C ~ +40°C |
| | Approvals | CE |

Modified two stage charging cycle (I-V-S)



Voltage V_i is initial battery voltage when battery is connected with charger.

- 1) At bulk mode from T_0 to T_1 , approximately 80% of battery capacity is returned. This is also called the “constant current” stage of charging. The charging current I_{cc} generally varies between 17A to 18A with most batteries during this portion of charging and there is some variation of charging current due to AC input voltage.
- 2) At absorption mode from T_1 to T_2 , approximately 20% of battery capacity is returned.
- 3) At float mode after T_2 , charger is turned off and goes into maintenance mode. The batteries are maintained above the 85% charge condition when the batteries are in storage for long periods of time. If the voltage drops below 25V due to self-discharge during storage, the charger will restart and complete a charge cycle.

Procedure Selecting Charging Profile

Manual charger profile is selectable by connecting two lines before power-up and the selected profile is valid until power is turned off.

Before power on, keep two lines short for wet gassing or flooded lead acid batteries. For sealed valve regulated, gelled/AGM type lead acid batteries, keep two lines open. And then, turn on power. Selected charge profile is identified by lamp “Charger Profile” on front panel. If the lamp is off, charger is operated in a charging profile for flooded lead acid batteries.

Normal operation

1. Connect the DC output wires to the battery.
2. Connect the power supply cord to a properly grounded 115V/60Hz or 230V/60 or 50Hz socket. This charger automatically senses and adjusts to 115V/230V.
3. The charger will start automatically within a few seconds. Once the charging starts, the LED's indicate the charging progress as described in the following Charging State & LED display table. If all 3 LED's blink together there is a problem. Take proper action according to the protection and fault display found later in this manual. The charger will start even with severely discharged batteries (down to 2V terminal voltage).
4. The charger goes into SHUT OFF mode after the batteries are fully charged, and then all 3 LED's are “ON”, indicating the charge is complete. At this mode, the charger no longer supplies power to the batteries, but it continues to monitor battery voltage. If the voltage drops due to self-discharge during storage, the charger will re-start and complete a charge cycle.

5. Turn off the charger by disconnecting AC cord.

Note1) Abnormal cycle: If a charge cycle does not finish in 18 hours, 100% LED blinks while 50% and 75% LED stay off.

Note 2) The charger is not damaged if the equipment is operated while charging. The charger's current limit function and over voltage protection allows this operation. Any and all safety issues related to operation of the equipment while charging must be examined before use.

Note 3) The charging time is affected by numerous factors including battery Amp-Hour capacity, depth of discharge, battery temperature, and battery condition (new, old, or defective).

Table 1. Charging State & LED Display

| | 50% | 75% | 100% | GEL |
|-----------------------------------|---|---|---|---|
| LED |  |  |  |  |
| Charging State | | | | |
| 0 to 50% charged | Blinking | Off | Off | X |
| 50% to 75% charged | On | Blinking | Off | X |
| 75% to 100% charged | On | On | Blinking | X |
| 100% charged | On | On | On | X |
| Charge for flooded type batteries | X | X | X | Off |
| Charge for Sealed type batteries | X | X | X | On |
| Abnormal Cycle | Off | Off | Blinking | X |

Note1) X in the table means “don’t care”.

Note2) Abnormal cycle means the charge cycle is not finished within specific period.

Protection and Fault Display

| | LED status | Description |
|---------|---|---|
| Fault | 3 LED lamps blink once simultaneously. | Output is open or short, or output voltage is over a limit. Otherwise, output terminals are reversed. |
| | 3 LED lamps blink twice simultaneously. | Input voltage is out of the range |
| | 3 LED lamps blink three times simultaneously. | The internal temperature of the charger exceeds a limit. |
| | 3 LED lamps blink four times simultaneously. | Output current exceeds a limit. |
| Warning | 100% LED lamp blinks. | Charger 18 hour timer has timed out due to battery problem. |

Note) "3LED lamp" means green LED marked as 50%,75% and 100%