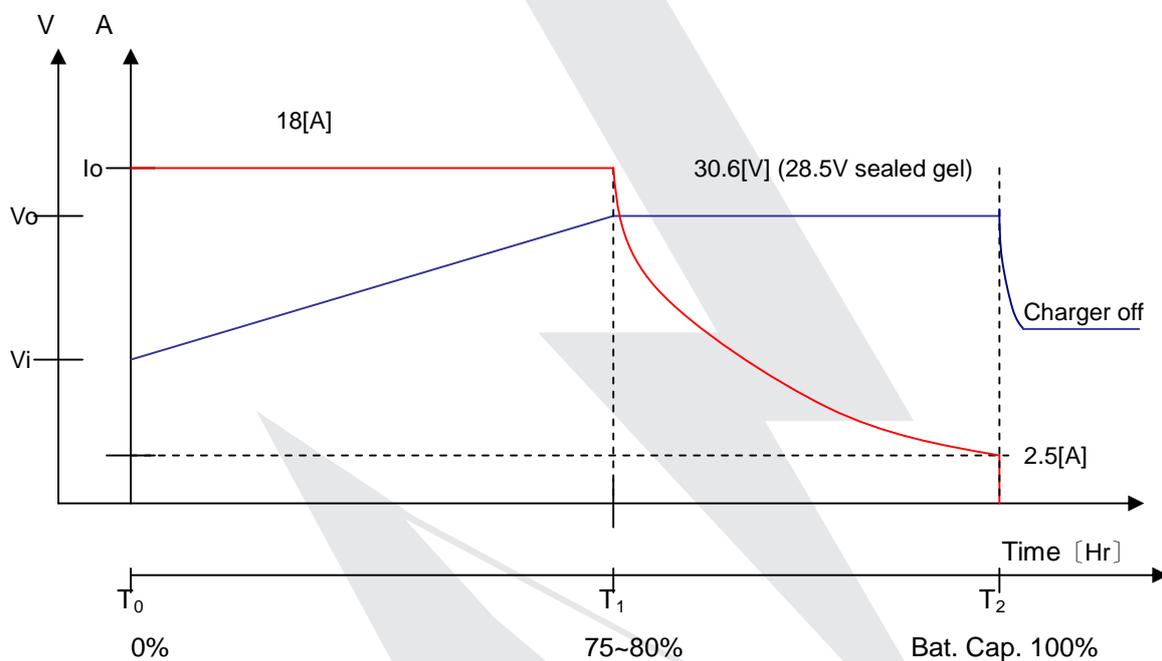


Specifications for AQHF 24 – 18 JLG

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	18.0Adc_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%