

AGM Battery State of Charge

Level	Voltage
100%	13.00V
90%	12.75V
80%	12.50V
70%	12.30V
60%	12.15V
50%	12.05V
40%	11.95V
30%	11.81V
20%	11.66V
10%	11.51V
0%	10.50V

LEAD ACID

325+ LBS FOR SET OF LEAD ACID

WATERING, CORROSION CLEAN UP,
MONITORING 50% DISCHARGE LIMIT

33% PER MONTH

SHOULD NOT GO BELOW
50% OF CHARGE

8-10 HOURS

500-750 CYCLES

WEIGHT

MAINTENANCE

SELF DISCHARGE RATE

MAX USAGE

CHARGE TIME

LIFETIME CYCLES

LITHIUM

72 LBS FOR SET OF LITHIUM
1/4TH THE WEIGHT

NONE

2-3% PER MONTH
LEAVE UNPLUGGED ALL OFF SEASON

CAN USE ALL
100% OF CHARGE

2-3 HOURS

5000+ CYCLES
LASTS **5+** TIMES AS LONG AS LEAD-ACID

	Flooded Lead Acid	VRLA AGM	Lithium-Ion (NMC)
Initial Cost per Capacity (\$/kWh)	131	221	530
Cost per Life Cycle (\$/kWh)	\$0.17	\$0.71	\$0.19
Specific Energy (Wh/kg)	30	40	150
Regular Maintenance	Yes	No	No
Number of Cycles to 80% SOH	200 - 1000	200 - 650	1000 - 4000
Typical State of Charge Window	50%	50%	80%
High Temperature Sensitivity	Degrades above 25°C	Degrades above 25°C	Degrades above 45°C
Available Power Constant Current	0.2C	0.3C	1C
Fast Charging Time (hrs)	8 - 16	4 - 8	2 - 4

COMPARISON OF LEAD-ACID AND RELION LiFePO₄

CHARACTERISTIC		GROUP 31 FLA	GROUP 31 AGM	GROUP 31 GEL	RELION LiFePO ₄ GROUP 31 - RB100	BENEFIT OF LiFePO ₄
Voltage		12V (2V per cell)	12V (2V per cell)	12V (2V per cell)	12.8V (3.2V per cell)	More Power
Life Cycles @ 80% DOD		500	400	1000	7082 (to 70% remaining capacity)	Longer Life 6-10X More
Life Cycles @ 50% DOD		900	800	1400	13000 (to 70% remaining capacity)	
Weight		30 kg (66.1 lbs)	32.7 kg (72.1 lbs)	32 kg (70lbs)	13.5 kg (30 lbs)	<1/2 the Weight
Capacity @ 27°C (80°F)	C20	130AH	115AH	102AH	100AH	Constant Power and Energy at any Rate of Discharge
	C5	105AH	91AH	85AH	100AH	
	C1	74AH	62AH	70AH	100AH	
Capacity @ 0°C (32°F)		50%	68%	68%	90%	Superior cold temp performance
Charge Time		6-12 hrs	6-12 hrs	6-12 hrs	1-3 hrs	4-6x Faster
Maintenance		HIGH	LOW	LOW	NONE	No Maintenance
*Real Cost per cycle @ 80% DOD		\$0.67	\$0.92	\$0.57	\$0.31	Cost over life

Battery or Battery Pack Ah Rating	7 Minute Maximum Discharge Current	30 Minute Maximum Discharge Current
5Ah	15 Amps	10 Amps
7Ah	21 Amps	14 Amps
8Ah	24 Amps	16 Amps
9Ah	27 Amps	18 Amps
10Ah	31 Amps	21 Amps
12Ah	36 Amps	24 Amps
14Ah	42 Amps	31 Amps
15Ah	44 Amps	32 Amps
18Ah	57 Amps	40 Amps
22Ah	66 Amps	46 Amps
35Ah	105 Amps	84 Amps