FULLRIVER ®

SINCE 1995

Your CLEAN-GREEN Energy Solution

FAT SERIES

Front Access Terminal Batteries for Telecom/IT Applications

ISO9001

EMC tested

MH27867

A Brief History of Fullriver Battery Mfg. Co., Ltd. Product Development…

Fullriver Battery Manufacture Co., Ltd. was founded in **1995** and launched the **HGL series**. The HGL series batteries are mainly for general use purposes, i.e. low power UPS, Security & Alarm Systems, Emergency Lighting, Office machines, etc.
The normal voltages for the HGL series are 6V and 12V; the capacity is ranged from 0.8Ah to 260Ah.

In 2001, the **HGXL series** was launched. This series is a 2V stationary maintenance-free battery, designed as high capacity, long life and high power batteries. These are mainly used for high capacity UPS systems, telecommunications and solar battery systems applications. The capacity of this series is ranged from 50 AH to 3000 AH.

In 2003, the **HGHL series** was launched. This series performs well in both high rate discharge and float service applications. This series was specially designed for UPS standby power supply. It is also available for other float service applications, such as emergency power supply, communication power supply, etc. the power of this series is ranged from 35W to 910W.

In 2004, the **FAT series** and the **DC series** were launched .The **FAT series** also has the characteristics of high rate discharge. They are widely used in UPS systems and telecommunications. The FAT series features front terminal connections for fast and easy installation and maintenance. The monobloc's compact design is suitable for 19", 23"and ETSI racking. The capacity of FAT series is ranged from 55Ah to 175Ah.

The **DC series** is specially designed and used for deep cycle applications, which may require many more cycles. This series also has excellent recovery from deep discharge. The DC series is mainly used in golf trolley, golf caddy, forklift, electric wheelchairs, floor cleaning machines, marine, photovoltaic systems, and more.

In 2006, the **SPV series** was launched. This series has a much higher current discharge at lower temperatures and offers a surprisingly high current capability. These models can also be fitted with a protective steel case and TP brass terminals. They are mainly used for car audio accessories or as an engine start power source.

In 2008, we started research, development, and manufacturing of the **HC series.** This series is especially used for engine starting, which requires superior cranking performance at lower temperatures, for high current discharge. These batteries can also be fitted with the protective steel case and TP brass terminals.

Fullriver Batteries Qualifications, Approvals, and Certifications

ISO9001 · EMC tested (Germany) · CE · MH27867 · VdS · son · PCT

- **Network Access License for Telecommunications Equipment** (Ministry of information Industry.PRC)
- **DOT 49CFR173.159 (d) (i) and (ii)** (Non-hazardous shipping)
- **IEC 61056-1; 2004** (General purpose lead-acid batteries, valve regulated types)
- **IEC 60896-2: 2004** (Stationary lead-acid batteries, valve regulated types)
- **JIS C8704-2: 2006** (Stationary lead-acid batteries, valve regulated types)
- **JIS C8702-1: 2003** (Small-sized valve regulated lead-acid batteries)

FAT SERIES

Key Features

- Absorbent Glass Mat technology for efficient gas recombination
- Special lead calcium alloy, good corrosion resistance and high recovery capacity.
- Front terminal connections for fast and easy installation and maintenance.
- Carry handles for ease of installation
- Suitable for 19″, 23″and ETSI racking
- One way self resealing safety vent for long life guarantee
- Low self discharge rate
- ABS case and cover on request.
- Compliant with BS 6290 Part 4.
- Designed to be compliant with Telcordia SR-4228

Specifications

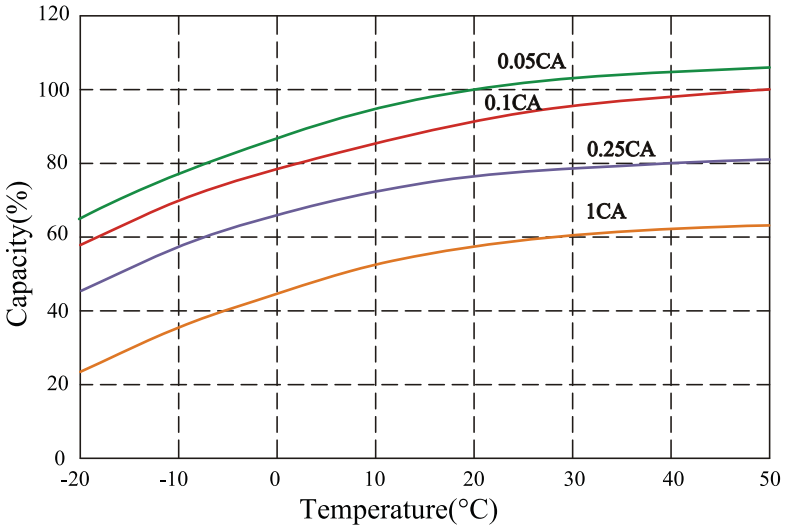
Nominal Voltage	12Volts
Design Life	10 years @25℃
Operating Temperature	-15℃ to 50 ℃
Grid alloy	Calcium/Tin lead alloy
Plates	Flat pasted
Separator	AGM (Absorbent Glass Mat)
Active material	Very high purity lead (>99.99)
Case and cover	ABS(V0 on request)
Charge Voltage	Float use: 2.27-2.30 VPC@25℃ Cycle use:2.40-2.49VPC@25℃ Max. Charge current: 0.25C20
Electrolyte	Sulphuric acid (A/R.)
Safety Vent	Opening pressure 10-35 Kpa

Application

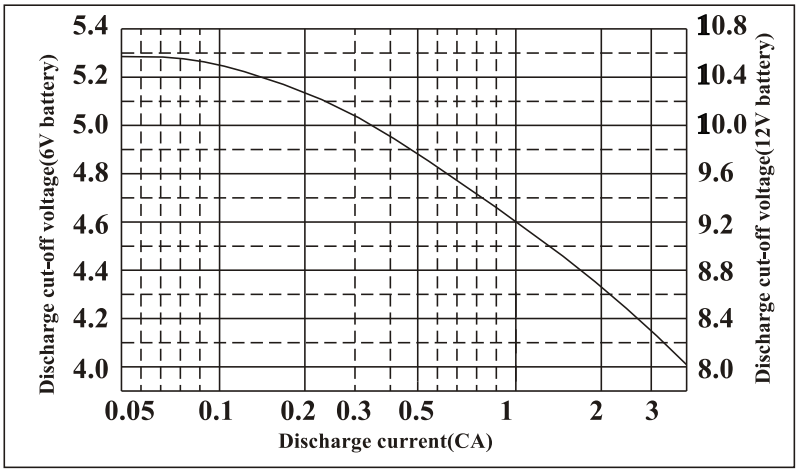
- Telecom
- UPS
- Broadband
- Electric Utility
- Railroad Signal
- Central Office

Characteristics

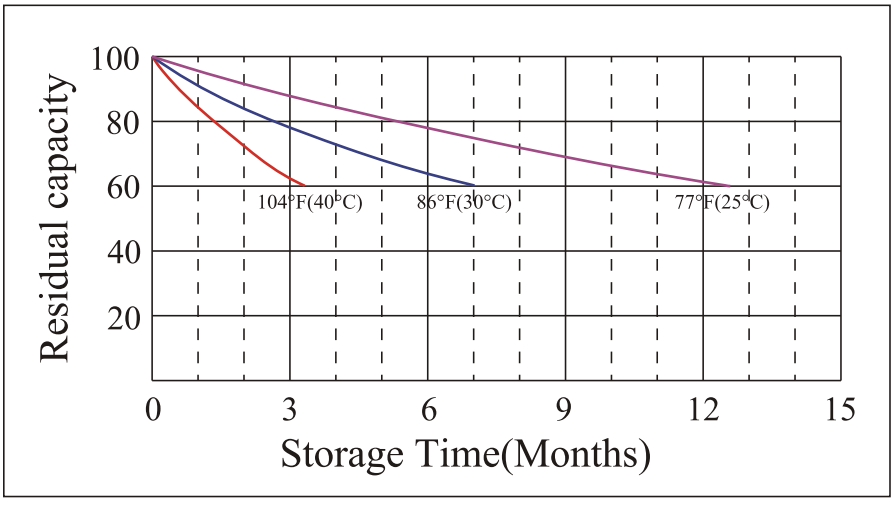
Capacity Vs. Ambient Temperature



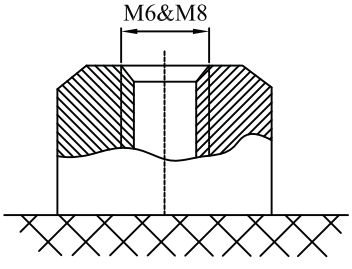
Discharge Current Vs. Cut of Voltage



Residual capacity test result



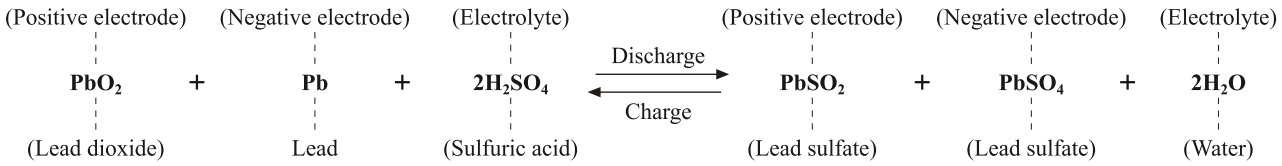
Terminal Configuration



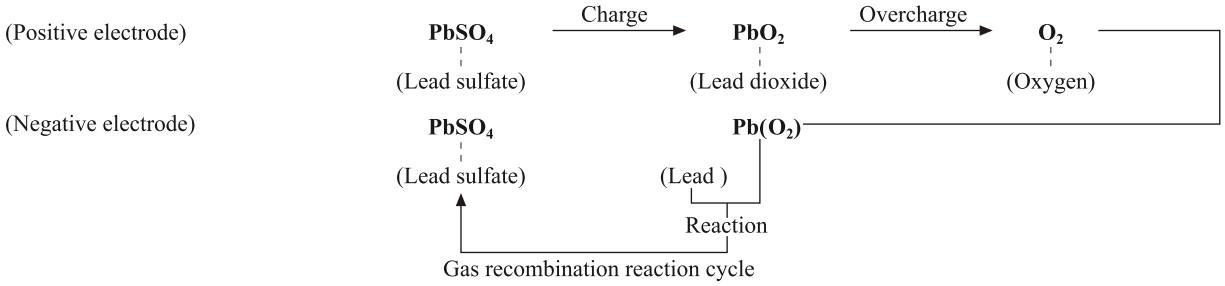
Electrochemical Reactions on Electrodes

The electrochemical reaction processes of the sealed lead-acid battery (negative electrode recombination type) are described below.

Where "charge" is the operation of supplying the rechargeable battery with direct current from an external power source to change the active material in the negative plates chemically, and hence to store in the battery electric energy in the form of chemical energy. "Discharge" is the operation of drawing out electric energy from the battery to operate external equipment.



In the final stage of charging, an oxygen-generating reaction occurs at the positive plates. This oxygen transfers inside the battery, then is absorbed into the surface of the negative plates and consumed. These electrochemical reaction processes are expressed as follows.



General Specifications

Type	Volts	Norminal capacity C8 1.75 V/C 25℃ Ah	Norminal capacity C10 1.75 V/C 25℃ Ah	Norminal capacity C20 1.75 V/C 25℃ Ah	Length		Width		Height		Weight (approx.)		Terminal
					mm	inch	mm	inch	mm	inch	kg	lbs	
FAT55-12	12	51	53	55	278	10.94	106	4.17	223	8.78	17.0	37.48	M6
FAT80-12	12	74.5	77	80	562	22.13	114	4.49	188	7.40	27.2	58.74	M6
FAT95-12	12	86	90	95	395	15.55	105	4.13	266	10.47	29.2	64.37	M6
FAT100-12	12	90	95	100	508	20	111	4.37	227	8.94	32.5	71.65	M8
FAT110-12	12	99	104	110	394	15.51	110	4.33	286	11.26	33.6	74.07	M8
FAT125-12	12	113	120	125	550	21.65	110	4.33	240	9.45	38.7	85.32	M8
FAT160-12	12	146	154	160	550	21.65	110	4.33	287	11.30	48.4	106.70	M8
FAT175-12	12	163	168	175	560	22.05	125	4.92	317	12.48	56.9	125.44	M8

Constant Power Discharge (watts per cell)

Battery Model	Constant Power discharge (watts per cell) to 1.80V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	259	192	158	129	109	99	89	80	73	61	44.2	34.8	26.0	17.9	11.80	9.61	8.15	4.53
FAT80-12	377	279	230	194	165	144	129	116	107	89	64.3	50.6	37.8	26.0	17.33	14.02	11.78	6.59
FAT95-12	449	331	272	230	196	171	153	138	127	105	76.3	60.2	44.9	31.0	20.46	16.60	14.00	7.82
FAT100-12	472	348	288	247	211	180	162	146	134	111	80.3	63.4	47.3	32.4	21.70	17.56	14.76	8.22
FAT110-12	517	383	317	273	233	198	177	161	147	122	88.3	69.6	52.0	35.7	23.80	19.33	16.23	9.06
FAT125-12	586	435	360	300	261	224	201	183	167	138	100.4	79.4	59.2	40.5	27.00	21.88	18.49	10.29
FAT160-12	750	557	460	389	335	287	257	234	214	177	128.7	101.8	75.5	52.1	34.54	28.09	23.70	13.16
FAT175-12	819	609	504	428	374	314	281	255	234	194	140.5	111.0	82.9	56.8	37.66	30.64	25.81	14.42

Battery Model	Constant Power discharge (watts per cell) to 1.75V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	284	199	163	132	113	102	92	83	76	63	44.3	35.0	26.2	18.0	11.94	9.73	8.21	4.55
FAT80-12	413	292	237	201	172	149	134	120	110	91	64.5	50.9	38.0	26.2	17.38	14.18	11.92	6.62
FAT95-12	490	347	282	238	205	176	159	143	131	108	76.5	60.4	45.3	31.1	20.64	16.83	14.16	7.86
FAT100-12	517	364	297	256	219	186	167	150	138	114	80.6	63.5	47.7	32.8	21.77	17.76	14.92	8.27
FAT110-12	567	402	326	281	241	204	184	165	152	125	88.6	69.9	52.5	36.0	23.97	19.52	16.40	9.10
FAT125-12	640	456	369	310	272	232	209	188	172	142	100.7	79.7	59.7	41.0	27.17	22.15	18.71	10.34
FAT160-12	819	585	474	403	347	297	268	240	221	182	128.7	102.1	76.4	52.5	34.74	28.37	23.97	13.23
FAT175-12	897	638	518	443	388	325	293	263	241	199	140.4	111.2	83.6	57.3	37.82	31.01	26.12	14.49

Battery Model	Constant Power discharge (watts per cell) to 1.70V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	295	209	168	137	115	104	93	84	76	63	44.6	35.2	26.3	18.1	12.05	9.78	8.28	4.57
FAT80-12	429	306	245	208	177	151	136	122	111	92	65.0	51.1	38.2	26.3	17.48	14.28	12.01	6.66
FAT95-12	509	363	291	248	211	180	161	144	132	109	76.9	60.7	45.4	31.2	20.78	16.94	14.26	7.89
FAT100-12	536	383	306	266	225	189	170	152	139	115	81.1	64.0	47.8	32.8	21.88	17.87	15.03	8.30
FAT110-12	588	423	337	293	249	208	187	167	153	126	89.2	70.3	52.6	36.2	24.05	19.60	16.52	9.14
FAT125-12	665	477	383	323	279	237	212	190	174	143	101.4	79.8	59.8	41.1	27.40	22.25	18.84	10.39
FAT160-12	850	613	490	419	357	303	272	243	222	184	129.8	102.2	76.5	52.5	35.02	28.57	24.14	13.30
FAT175-12	928	669	536	460	398	331	297	266	243	201	142.2	111.7	83.6	57.6	38.27	31.20	26.31	14.54

Constant Power Discharge (watts per cell)

Battery Model	Constant Power discharge (watts per cell) to 1.67V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	307	214	171	138	116	106	94	85	77	64	45.0	35.4	26.5	18.1	12.15	9.82	8.31	4.58
FAT80-12	446	311	249	201	171	154	137	123	112	92	65.3	51.4	38.4	26.4	17.63	14.28	12.05	6.69
FAT95-12	530	370	295	238	203	184	163	145	133	110	77.7	61.2	45.7	31.4	20.95	16.97	14.31	7.94
FAT100-12	559	390	311	250	213	193	172	154	140	116	81.7	64.3	48.1	33.0	22.18	17.87	15.09	8.34
FAT110-12	613	428	343	276	235	213	189	168	154	127	89.9	70.8	52.9	36.3	24.38	19.66	16.59	9.17
FAT125-12	695	487	386	313	272	241	215	192	175	145	102.2	80.5	60.2	41.3	27.64	22.36	18.92	10.45
FAT160-12	889	621	494	401	345	309	275	246	224	185	130.8	102.9	77.0	52.9	35.34	28.57	24.18	13.35
FAT175-12	973	682	543	439	381	338	301	269	246	202	143.0	112.8	84.2	57.9	38.73	31.25	26.41	14.56

Battery Model	Constant Power discharge (watts per cell) to 1.65V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	310	217	173	139	121	107	96	85	78	64	45.3	35.6	26.6	18.3	12.21	9.86	8.33	4.60
FAT80-12	452	315	252	203	176	156	139	124	113	93	66.0	51.8	38.7	26.6	17.76	14.34	12.08	6.68
FAT95-12	536	375	300	241	210	185	165	147	134	111	78.3	61.6	46.0	31.6	21.10	17.03	14.35	7.94
FAT100-12	566	395	315	253	221	195	174	155	141	117	82.5	64.8	48.4	33.3	22.24	17.93	15.14	8.35
FAT110-12	620	433	348	279	243	214	192	171	156	129	90.6	71.3	53.3	36.6	24.44	19.73	16.64	9.19
FAT125-12	702	495	394	317	276	244	218	194	177	146	102.9	80.9	60.6	41.6	27.79	22.42	18.97	10.44
FAT160-12	899	631	504	406	353	312	279	249	227	187	131.9	103.6	77.5	53.0	35.54	28.70	24.31	13.37
FAT175-12	987	690	554	443	386	341	304	272	248	205	144.0	113.5	84.9	58.2	38.92	31.36	26.48	14.62

Battery Model	Constant Power discharge (watts per cell) to 1.60V @77℉ (25℃)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	325	223	176	142	124	108	97	86	79	64	45.5	35.8	26.9	18.4	12.33	9.96	8.39	4.63
FAT80-12	476	324	256	206	180	158	140	125	115	94	66.2	52.2	39.2	26.8	17.95	14.48	12.18	6.73
FAT95-12	559	386	304	245	213	187	166	148	136	111	78.7	61.9	46.4	31.8	21.29	17.21	14.47	7.99
FAT100-12	589	405	322	258	225	198	176	157	144	117	82.7	65.1	49.0	33.4	22.43	18.13	15.27	8.41
FAT110-12	646	447	354	283	247	217	193	172	158	129	90.9	71.7	53.7	36.8	24.68	19.89	16.78	9.26
FAT125-12	730	506	400	322	281	247	219	195	180	147	103.4	81.5	61.3	41.9	28.04	22.69	19.13	10.52
FAT160-12	934	649	513	412	360	316	281	251	230	188	132.5	104.3	78.1	53.5	35.89	29.04	24.51	13.46
FAT175-12	1023	712	561	451	394	345	307	274	252	206	144.8	114.1	85.8	58.6	39.22	31.72	26.69	14.73

Constant Current Discharge (Amps)

Battery Model	Constant Current discharge (amps) to 1.80V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	143	105	86	70	59	53	48	43	39	32	23.0	18.0	13.4	9.2	6.05	4.96	4.19	2.31
FAT80-12	208	153	125	105	89	77	69	62	57	46	33.5	26.2	19.5	13.3	8.88	7.23	6.07	3.36
FAT95-12	248	181	148	125	106	92	82	74	67	55	39.7	31.1	23.2	15.9	10.49	8.56	7.21	3.99
FAT100-12	260	191	157	134	114	97	87	78	71	58	41.8	32.8	24.4	16.7	11.12	9.05	7.60	4.20
FAT110-12	286	210	172	148	126	106	95	85	78	64	45.9	36.0	26.9	18.3	12.20	9.97	8.36	4.62
FAT125-12	323	239	196	163	141	121	107	97	88	73	52.2	41.0	30.6	20.8	13.84	11.28	9.52	5.25
FAT160-12	414	305	250	211	181	154	138	124	113	93	66.9	52.6	39.0	26.8	17.70	14.49	12.20	6.71
FAT175-12	452	334	274	232	202	169	150	136	124	101	73.1	57.4	42.8	29.2	19.30	15.80	13.29	7.36

Battery Model	Constant Current discharge (amps) to 1.75V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	160	111	90	73	62	55	50	44	40	33	23.3	18.3	13.6	9.3	6.19	5.03	4.24	2.32
FAT80-12	232	163	132	111	94	81	72	64	58	48	33.9	26.6	19.7	13.5	9.01	7.33	6.16	3.38
FAT95-12	275	193	157	131	112	96	86	76	70	57	40.2	31.5	23.5	16.0	10.69	8.70	7.32	4.01
FAT100-12	290	202	165	141	120	101	90	80	73	60	42.3	33.2	24.8	16.9	11.28	9.19	7.72	4.22
FAT110-12	318	224	181	155	132	111	99	88	80	66	46.6	36.5	27.2	18.5	12.42	10.09	8.48	4.64
FAT125-12	359	254	205	171	149	126	113	100	91	75	52.9	41.6	31.0	21.1	14.08	11.45	9.67	5.27
FAT160-12	460	325	263	222	190	161	144	128	117	96	67.6	53.3	39.7	27.0	18.00	14.67	12.39	6.75
FAT175-12	503	355	288	244	212	177	158	140	128	105	73.7	58.0	43.4	29.5	19.59	16.04	13.51	7.39

Battery Model	Constant Current discharge (amps) to 1.70V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	167	118	94	76	64	58	51	46	41	34	23.6	18.5	13.8	9.4	6.30	5.08	4.29	2.33
FAT80-12	243	172	137	116	98	84	75	66	60	49	34.3	26.9	20.0	13.6	9.14	7.42	6.23	3.40
FAT95-12	288	205	163	138	117	99	88	78	71	58	40.6	31.9	23.7	16.2	10.86	8.80	7.40	4.03
FAT100-12	303	216	171	148	125	104	93	83	75	62	42.9	33.6	25.0	17.0	11.43	9.28	7.80	4.23
FAT110-12	333	238	189	163	138	115	102	91	82	68	47.1	37.0	27.5	18.8	12.57	10.18	8.57	4.66
FAT125-12	376	269	214	180	155	131	116	104	93	77	53.6	42.0	31.3	21.3	14.32	11.56	9.77	5.30
FAT160-12	482	345	274	233	198	167	149	133	120	98	68.6	53.7	40.0	27.3	18.30	14.84	12.52	6.78
FAT175-12	526	377	300	256	221	183	163	145	131	108	75.1	58.7	43.7	29.9	20.00	16.20	13.65	7.42

Constant Current Discharge (Amps)

Battery Model	Constant Current discharge (amps) to 1.67V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	174	121	96	76	64	58	52	47	42	34	23.9	18.7	13.9	9.5	6.36	5.13	4.31	2.34
FAT80-12	253	175	140	111	94	85	76	68	61	50	34.7	27.2	20.2	13.8	9.22	7.46	6.26	3.42
FAT95-12	301	208	166	132	112	101	90	80	72	59	41.3	32.4	24.0	16.4	10.96	8.86	7.44	4.06
FAT100-12	317	219	175	139	117	106	95	85	76	62	43.4	34.0	25.3	17.2	11.60	9.33	7.84	4.27
FAT110-12	347	241	193	153	129	117	104	93	84	68	47.8	37.4	27.8	18.9	12.75	10.27	8.62	4.69
FAT125-12	394	275	217	174	150	132	118	106	95	78	54.3	42.6	31.6	21.5	14.46	11.68	9.83	5.34
FAT160-12	504	350	277	223	190	170	151	136	122	99	69.5	54.4	40.4	27.6	18.48	14.92	12.56	6.83
FAT175-12	552	384	305	244	210	185	165	148	133	109	76.0	59.7	44.2	30.2	20.26	16.32	13.72	7.45

Battery Model	Constant Current discharge (amps) to 1.65V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	177	123	97	78	68	59	53	47	42	35	24.1	18.9	14.0	9.6	6.40	5.16	4.34	2.36
FAT80-12	258	178	142	113	98	86	77	69	61	50	35.2	27.5	20.4	13.9	9.31	7.51	6.29	3.43
FAT95-12	306	212	169	134	117	102	91	81	73	60	41.7	32.7	24.2	16.6	11.06	8.92	7.47	4.07
FAT100-12	323	223	177	141	123	108	96	86	77	63	44.0	34.4	25.5	17.5	11.66	9.39	7.88	4.28
FAT110-12	354	245	195	156	135	118	106	94	85	69	48.3	37.8	28.1	19.2	12.81	10.33	8.67	4.71
FAT125-12	400	280	222	177	154	135	120	107	96	79	54.9	42.9	31.9	21.8	14.57	11.74	9.88	5.36
FAT160-12	513	357	283	226	197	172	154	137	123	101	70.4	55.0	40.8	27.8	18.63	15.03	12.66	6.86
FAT175-12	563	390	311	247	215	188	168	150	135	111	76.8	60.2	44.7	30.5	20.40	16.42	13.79	7.50

Battery Model	Constant Current discharge (amps) to 1.60V @77°F (25°C)																	
	5M	10M	15M	20M	25M	30M	35M	40M	45M	1H	1.5H	2H	3H	5H	8H	10H	12H	24H
FAT55-12	187	127	100	80	69	60	54	48	44	35	24.4	19.0	14.2	9.7	6.45	5.20	4.38	2.36
FAT80-12	273	185	145	116	101	88	78	70	63	51	35.4	27.7	20.7	14.1	9.39	7.57	6.36	3.43
FAT95-12	321	220	172	138	120	105	93	83	75	61	42.1	32.9	24.5	16.7	11.14	9.00	7.55	4.08
FAT100-12	338	231	182	145	126	110	98	88	79	64	44.3	34.6	25.9	17.6	11.74	9.48	7.97	4.29
FAT110-12	370	255	200	160	139	121	107	97	87	71	48.7	38.0	28.3	19.4	12.92	10.40	8.76	4.72
FAT125-12	419	288	227	182	158	138	122	110	99	80	55.4	43.2	32.3	22.0	14.67	11.86	9.99	5.37
FAT160-12	536	370	291	232	202	176	157	141	127	103	70.9	55.3	41.2	28.2	18.78	15.18	12.80	6.87
FAT175-12	586	406	318	254	221	192	171	154	139	113	77.5	60.6	45.3	30.8	20.52	16.58	13.94	7.52

Charging Instructions

To maximize the life of your Fullriver battery, it is important that it is properly charged. As with all lead-acid batteries, both over-and under-charging a Fullriver battery will result in shortened service life. **The best protection from improper charging is the use of a quality charger and routinely checking that the charger current and voltage settings are maintained.**

Please read the following instructions before using your battery.

Charger Inspection

The charger cabling should be insulated and free of breaks or cuts. The cable connectors should be clean and properly mate with the battery terminals to ensure a snug connection. The charger's AC cord should be free of breaks or cuts and the wall plug should be clean.

Charging Guidelines

- Fully charge batteries after each use.
- Charge in a ventilated area as gasses may be released through the pressure relief valve if the batteries are excessively over-charged.
- Never charge a frozen battery.
- Ideal charging temperatures:32°F-104°F(0°C-40°C).

Charging Characteristics

If the charger has a setting for AGM, use this setting to charge your Fullriver battery. **To maximize your battery life a voltage regulated charger with temperature compensation is strongly recommended.** See Figure 1 for the recommended voltage regulated charge profile.

Voltage Regulated Charger-IUU

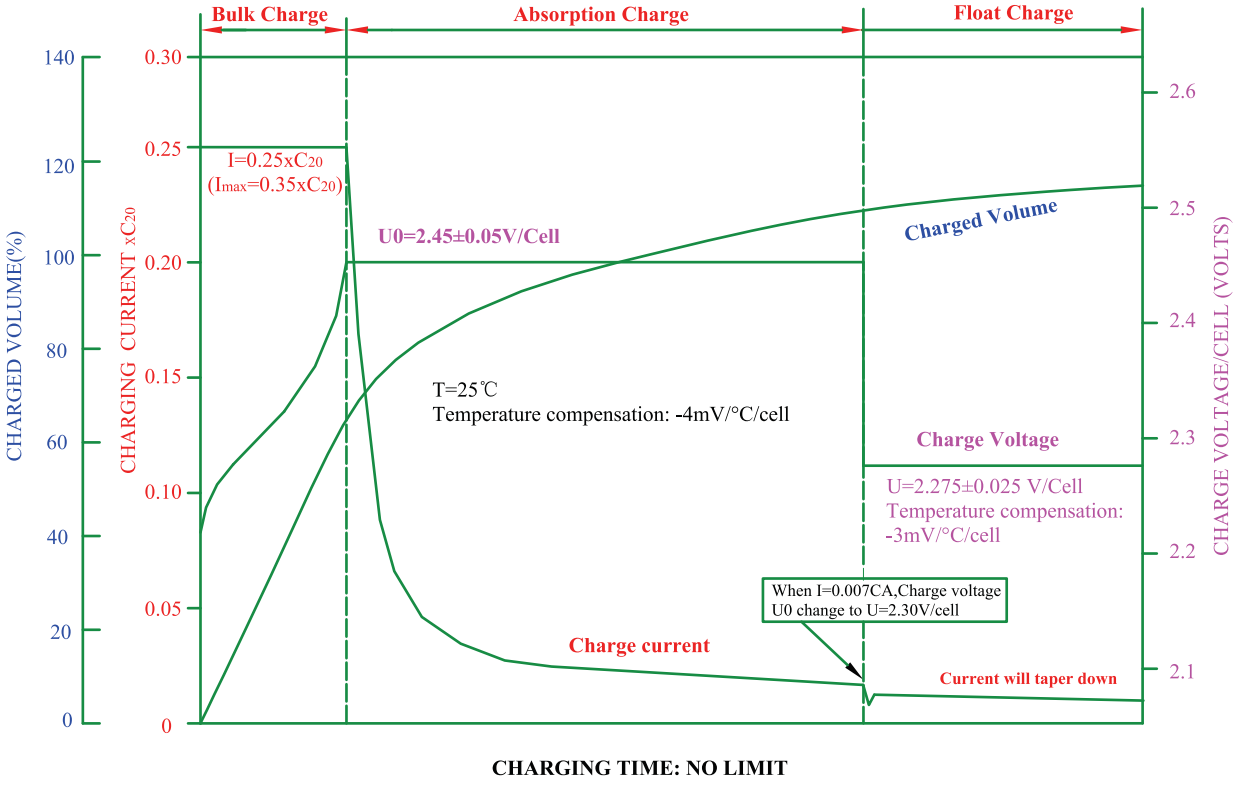


Figure 1

The initial charge current is recommended to be set at I = 0.25 X C (I_{max}= 0.35 X C) in order to fully charge the batteries within a reasonable amount of time. It can be s et lower, however please be aware that charge time will increase so make sure the batteries have enough time to fully charge before being put back into service. Fullriver batteries have a low internal resistance allowing them to be charged at a higher current, therefore faster, than conventional flooded/wet batteries.

Bulk stage - Set the charger to the initial current I until the maximum voltage $U_0$is reached.

Absorption stage - Set the charger to the maximum voltage U_0until the current tapers to I .

Float stage and termination – Set the charger to the float voltage U indefinitely or until the charger is shut off or unplugged. This stage is ideal to maintain battery state of charge.

Make sure the temperature compensation is programmed as specified in Figure 1 (-4mV/℃/cell or -2mV /°F/cell) or manually adjust the voltage setting for temperatures varying from 25°C (77°F). As the temperature decreases, the voltage should be increased and as the temperature increases the voltage should be decreased.

The profile in Figure 1 can be used with or without the float stage. Without the float stage, recharge can be terminated based on time (this will need to be determined as it will vary with depth of discharge and charge current) or percentage recharge (~105%-110%).

Charge Voltage Quick Reference

12V Battery	32℉(0℃)	50℉(10℃)	68℉(20℃)	77℉(25℃)	86℉(30℃)	104℉(40℃)
Charge Voltage	15.30	15.06	14.82	14.70	14.58	14.34
Float Voltage	14.25	14.01	13.77	13.65	13.53	13.29

For a 6V battery divide the voltage by 2.

Refresh Charge

If Fullriver batteries are properly charged they should never require an equalizing charge. If they were not properly charged and there is a decrease in capacity, recharge the batteries and make sure they complete the entire charge cycle. If the batteries are stored for extended periods of time, recharge them as follows:

Storage Temperature	Refresh Charge Interval
Below 68°F (20°C)	9 Months
68°F (20°C) - 86°F (30°C)	6 Months
Higher than 86°F (30°C)	3 Months

Other Chargers

There are many types of chargers and inverters available for charging lead-acid batteries. If you are not sure if your charger meets the recommended charging characteristics or if you need help programming your charger, please contact your local Fullriver Battery distributor for assistance.

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