# FLA Deep Cycle Battery DATA/SPEC SHEETS



Handcrafted in the USA WWW.USBATTERY.COM



At U.S. Battery, we pride ourselves on providing our distributors and global partners with dependable products and reliable support information that will allow each end user to feel confident they've made the right choice when using any of our world-class deep-cycle flooded lead acid and AGM batteries.

This booklet represents U.S. Battery's most comprehensive data compilation to date. With a history of excellence spanning from our humble beginnings in 1926 to the present, we feel confident that this data will further demonstrate the validity of the industry's trust in our battery line. We offer a variety of power solutions to a wide range of applications and industries all backed by a solid worldwide warranty.

All information in this book is up-to-date as of 3/19, for the most current information please visit www.usbattery.com.

## DATA & SPECIFICATION SHEETS

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DEEP CYCLE Flooded Lead Acid 6-VOL	Τ `
US 1800, 2000 & 2200 XC2 US 125 XC2 US 145 XC2 US 250 XC2 - SERIES US 305 XC2 - SERIES US L16 XC2 - SERIES US 100DIN XC2	
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6 -Volt Deep Cycle Batteries

## US 1800 XC2, US 2000 XC2, US 2200 XC2



DATA SHEET Deep Cycle 6 -Volt

**Application:** Wherever Deep Cycle 6-volt batteries are needed.

#### **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-1/4 (286)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed





#### US 1800 XC2, US 2000 XC2, US 2200 BCI Standard AMP MINUTES MINUTES MINUTES Wet 48-hr 72-hr 100-hr Voltage Terminal Model Group 1-hr 2-hr 5-hr 6-hr 10-hr 20-hr **HOURS** Width Height Length Weight Rate Size Rate Rate Rate Rate Rate Rate Rate Rate 75 AMPS 56 AMPS 25 AMPS Type (20 HR. RATE Lbs (kg) US 1800 XC2 107 GC2 122 136 161 179 208 220 226 231 UTL 208 151 392 55 (25) 10-1/4 7-1/8 11-1/4 GC2 US 2000 XC2 126 144 172 178 194 220 229 235 240 UTL 445 57 (26) 220 115 164 (286)(260)(181) GC2 US 2200 XC2 133 152 181 187 206 232 246 252 258 6 UTL 232 122 175 474 62 (28)







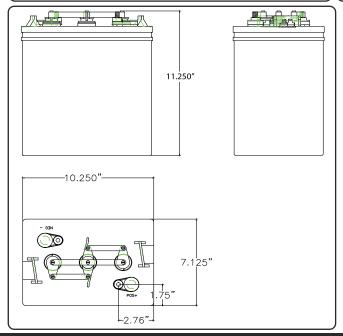


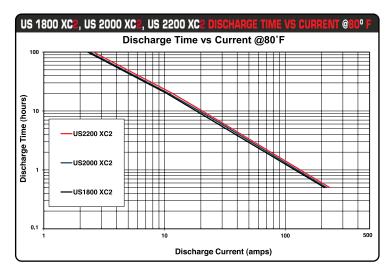














# US 125 XC2 -DATA SHEET

Deep Cycle 6 -Volt

**Application:** Wherever Deep Cycle 6-volt batteries are needed.

#### **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-1/4 (286)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

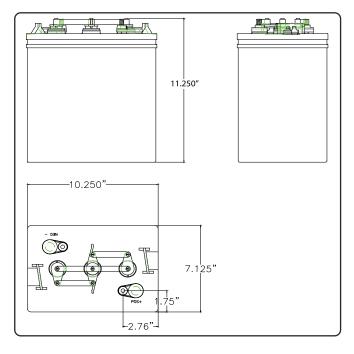


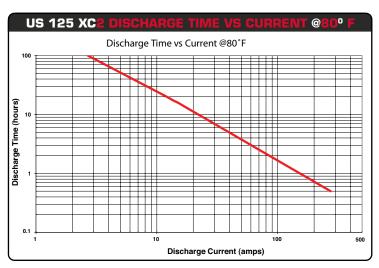


		U	S	1	2	5	X	C	2	-	SI	PE	CIF	FIC.	AT		VIS			
BCI												Standard	AMP	MINUTES	MINUTES	MINUTES				Wet
Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage	Terminal	HOURS	@	@	@	Length	Width	Height	Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Type	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	10-1/4	7-1/8	11-1/4	Lbs (kg)
GC2	US 125 XC2	153	171	198	203	220	242	256	263	269	6	UTL	242	140	198	517	(260)		(286)	66 (30)



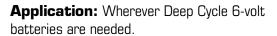






# **US 145 XC2 -DATA SHEET**

Deep Cycle 6 -Volt



## **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-7/8 (302)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

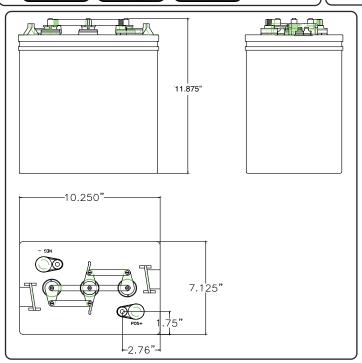


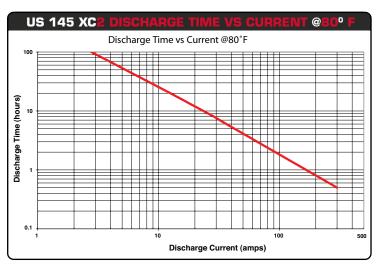


														-10						
		U	5		4	5		U	2		51	PE	GII	-16	AT		ME			
BCI												Standard	AMP	MINUTES	MINUTES	MINUTES				Wet
Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage	Terminal	HOURS	@	@	@			Height	Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	10-1/4	7-1/8	11-7/8	Lbs (kg)
GC2	US 145 XC2	167	185	213	225	236	251	266	273	279	6	UTL	251	154	217	562		(181)	(302)	70 (32)









BCI

Group

Size

Model

US 250 XC2

US 250HC XC2

## US 250 XC2, US 250HC XC2

DATA SHEET Deep Cycle 6 -Volt

**Application:** Wherever Deep Cycle 6-volt batteries are needed.

#### **Dimensions:**

11-5/8 (295)L x 7-1/8 (181)W x 11-5/8 (295)H

Type: Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



11-5/8

(295)

635

7-1/8

(181)

11-5/8

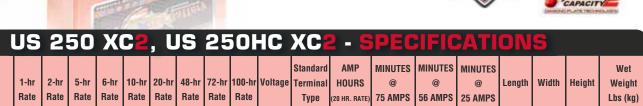
(295)

75 (34)

77 (35)







Offset "S

Offset "S"

280

**US 250HC XC2** 



191

211

192

217

239

245

239

263 280

255 270

296

277

304

284

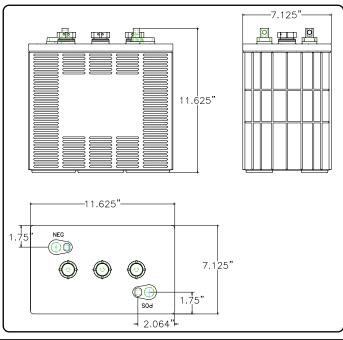
311

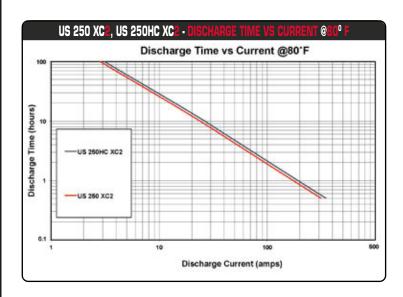
6



250

178





# US 305E XC2, US 305 XC2, US 305HC XC2 US 305E XC2 US 305 XC2 US 305HC XC2

## DATA SHEET Deep Cycle 6 -Volt

**Application:** Wherever Deep Cycle 6-volt batteries are needed.

### **Dimensions:**

11-7/8 (302)L x 7-1/8 (181)W x 14-5/8 (371)H

Type: Flooded Lead Acid (FLA) non-sealed.

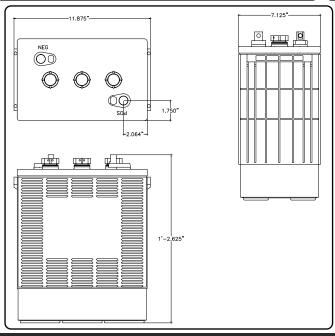


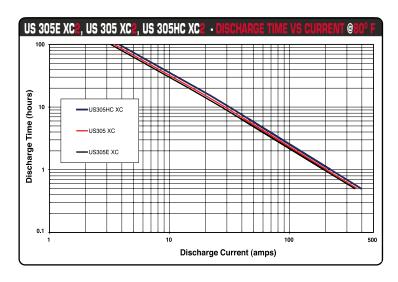


U	S 305	E >	(C	2,	US	3	05	X	C2	, l	JS	305	HC	XC	2 - S	PEC	IFI	CA'	TIO	NS
BCI Group Size	Model	1-hr Rate	2-hr Rate	5-hr Rate	6-hr Rate		20-hr Rate			100-hr Rate	Voltage	Standard Terminal Type	HOURS	MINUTES @ 75 AMPS	@	@	Length	Width	Height	Wet Weight Lbs (kg)
902	US 305E XC2	193	214	245	252	273	290	307	315	322	6	Offset "S"	290	182	256	660	11-7/8	7-1/8	14-5/8	86 (39)
902	US 305 XC2	203	226	261	268	294	310	328	337	345	6	Offset "S"	310	195	276	715	(302)	(181)		90 (41)
902	US 305HC XC2	220	245	283	291	322	340	360	370	378	6	Offset "S"	340	215	304	790	(002)	(101)	(0,1)	96 (43)









## US L16E XC2, US L16 XC2, US L16HC XC2



## DATA SHEET Deep Cycle 6 -Volt

**Application:** Wherever Deep Cycle 6-volt batteries are needed.

**Dimensions: (Without Handles)** 

11-7/8 (302)L x 7-1/8 (181)W x 16-3/4 (425)H (With Handles)

12-7/16 (315)L x 7-1/8 (181)W x 16-3/4 (425)H

Type: Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



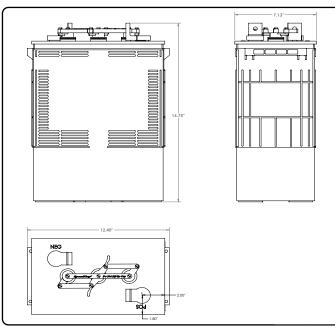


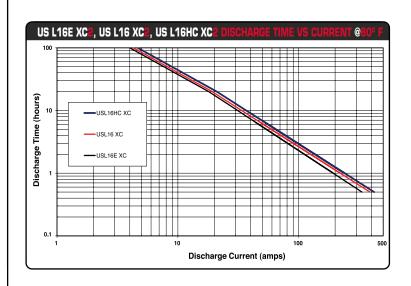
#### US L16E XC2, US L16 XC2, US L16HC XC BCI Standard AMP MINUTES **MINUTES** MINUTES Length Model 72-hr 100-hr Voltage Width Height 20-hr Group 1-hr 6-hr 10-hr 48-hr Terminal **HOURS** with Weight Rate Rate Rate Rate 75 AMPS Size Type (20 HR. RATE) 56 AMPS 25 AMPS Handles Lbs (kg) Large "L" 104 (47) US L16E XC2 223 281 360 381 391 400 360 198 287 903 193 270 312 6 795 12-7/16 7-1/8 16-3/4 **US L16 XC2** 220 251 297 307 337 385 408 419 428 903 Large "L" 385 225 322 865 110 (50) (181)(425)(315)903 US L16HC XC2 239 272 323 335 368 420 445 457 467 Large "L" 420 250 358 965 118 (54)

US L16HC XC2



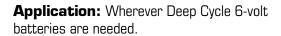






## **US 100DIN XC2 - DATA SHEET**

Deep Cycle 6 -Volt



## **Dimensions:**

9-5/8 (244)L x 7-1/2 (191)W x 10-7/8 (276)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



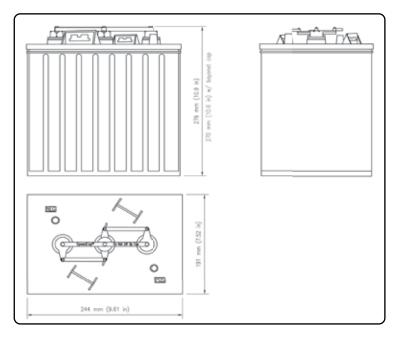


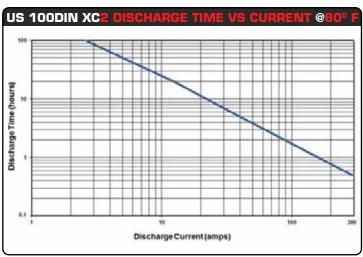
	U!	5	1	0	Ol	DI	N	>	(C	2	-	SF	EC	CIF	IC/	ITA		NS.		
BCI												Standard		MINUTES	MINUTES	MINUTES				Wet
Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage	Terminal	HOURS	@	@	@	Length	Width	Height	Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	9-5/8	7-1/2	10-7/8	Lbs (kg)
DIN GO	2 US 100DIN XC2	160	177	199	205	222	247	254	257	260	6	SAE	247	135	204	520	(244)	(191)	(276)	61 (28)

U\$1000IN









8 -Volt Deep Cycle Batteries

## US 8VGCE XC2, US 8VGC XC2, US 8VGCHC XC2

US 8VGCE XC2

US 8VGC XC2

(US 8VGC XC2 cover option, compatable with select OEM watering kits, also available)

US 8VGCHC XC2

DATA SHEET Deep Cycle 8 -Volt

**Application:** Wherever Deep Cycle 8-volt batteries are needed.

#### **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-1/4 (286)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed

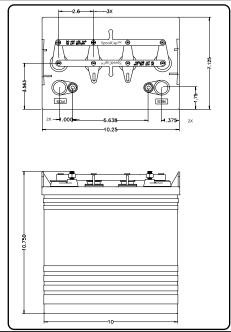


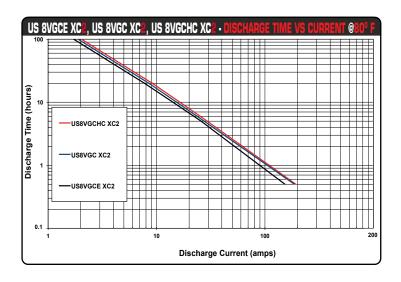


#### US 8VGCE XC2, US 8VGC XC2, US 8VGCHC XC BCI Standard **AMP** MINUTES MINUTES MINUTES Wet Model Voltage Length Width Height 1-hr 100-h Group 2-hr 5-hr 10-hr 20-hr 48-hr 72-hr Terminal HOURS @ Weight Size Rate Rate Rate Rate Rate Rate Rate Rate Type (20 HR. RATE 75 AMPS 56 AMPS 25 AMPS Lbs (kg) US 8VGCE XC2 105 129 132 142 172 8 UTL 75 110 312 GC8 155 164 169 155 60 (27) 10-1/4 7-1/8 11-1/4 US 8VGC XC2 118 GC8 96 111 133 138 151 170 180 185 189 8 UTI 170 82 325 62 (28) (260)(181)(286)GC8 US 8VGCHC XC2 109 124 147 164 183 194 199 203 UTL 95 152 8 183 136 365 67 (30)









## **US 8VHATB XC2 - DATA SHEET**



Deep Cycle 8 -Volt

**Application:** Wherever Deep Cycle 8-volt batteries are needed.

#### **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-7/8 (302)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



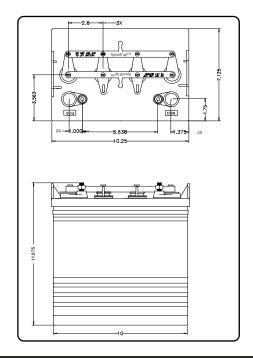


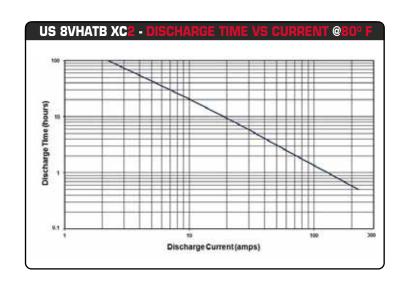
					US	81	/H	ATI	B )	(C	2 - 9	SPE	CIFI	CATI	ONS	3				
BCI												Standard		MINUTES	MINUTES	MINUTES				Wet
Group	Model	1-hr	2-hr	5-hr							Voltage	Terminal		@	@	@	Length		Height	Weight
Size		Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	10-1/4	7-1/8	11-7/8	Lbs (kg)								
GC8H	US 8VHATB	128	145	170	177	188	205	216	221	225	8	UTL	205	115	164	435	(260)		(302)	73 (33)

DEEP CYCLE









12 -Volt Deep Cycle Batteries



Deep Cycle 12 -Volt



Application: Wherever Deep Cycle 12-volt batteries are needed.

## **Dimensions:**

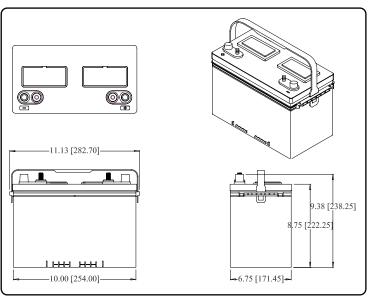
10-7/8 (276)L x 6-3/4 (171)W x 9-3/8 (238)H

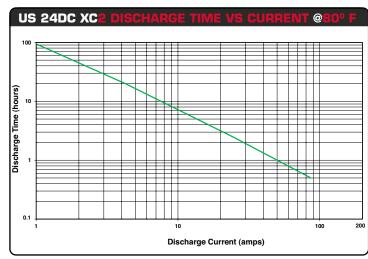
**Type:** Flooded Lead Acid (FLA) non-sealed.





		US	3	2	<b>4</b> E			XC	32	-	S	PE	CI	FIC	CAI	ΓΙΟ		5		
BCI Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr		Standard Terminal		MINUTES @	MINUTES @	MINUTES @		Width	Height	Wet Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	10-7/8	6-3/4	9-3/8	Lbs (kg)
24	US 24DC XC2	52	58	68	70	76	85	90	92	95	12	SAE/bolt	85	38	54	145	(276)	(171)	(238)	51 (23)





# **US 27DC XC2 - DATA SHEET**

Deep Cycle 12 -Volt



**Application:**Wherever Deep Cycle 12-volt batteries are needed.

## **Dimensions:**

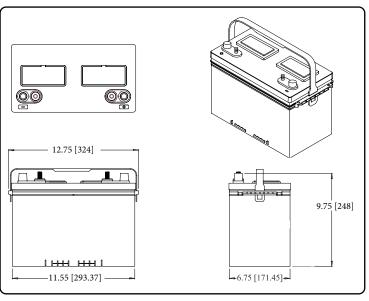
12-3/4 (324)L x 6-3/4 (171)W x 9-3/4 (248)H

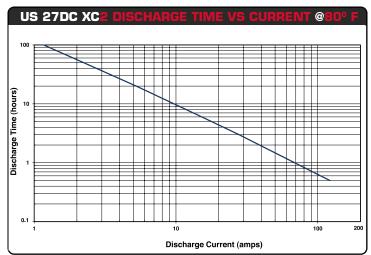
**Type:** Flooded Lead Acid (FLA) non-sealed.





		US	3	2	7 E	C		XC	32	_	S	PE	CI	FIC	CAI	ΓΙΟ		5		
BCI Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage	Standard Terminal	AMP HOURS	MINUTES @	MINUTES @	MINUTES @	Length	Width	Height	Wet Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	12-3/4	6-3/4	9-3/4	Lbs (kg)
27	US 27DC XC2	69	78	89	91	97	105	111	114	117	12	SAE/bolt	105	54	77	205	(324)	(171)	(248)	59 (26.6)





## **US 31DC XC2 - DATA SHEET**





**Application:**Wherever Deep Cycle 12-volt batteries are needed.

## **Dimensions:**

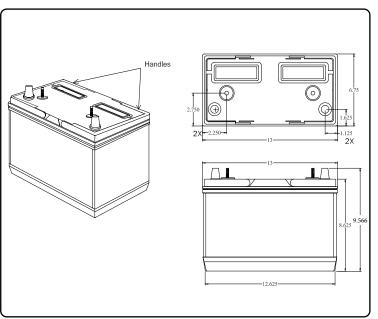
13 (330)L x 6-3/4 (171)W x 9-5/8 (243)H

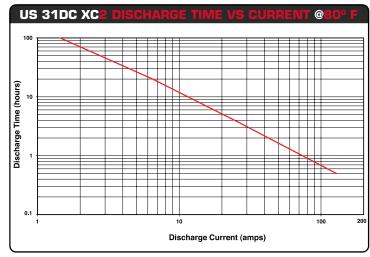
**Type:** Flooded Lead Acid (FLA) non-sealed.





		US	3	3	1 [	C		XC	32	2 -	S	PE	<b>ICI</b>	FIC	CAT	ΓΙΟ		5		
BC Gro	I Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	enstiov i	Standard Terminal		MINUTES @	MINUTES @	MINUTES @	Length	Width	Height	Wet Weight
Siz		Rate	Rate	Rate	Rate		Rate		Rate					_	56 AMPS		13	6-3/4	9-5/8	Lbs (kg)
3.	US 31DC XC2	74	84	99	103	114	130	138	141	144	12	SAE/bolt	130	59	84	225	(330)	(171)	(243)	66 (29.7)





## **US 12VE XC2 - DATA SHEET**

Deep Cycle 12 -Volt

**Application:** Wherever Deep Cycle 12-volt batteries are needed.

## **Dimensions: (Without Handles)**

13-1/8 (333)L x 7-1/16 (179)W x 11-3/8 (289)H (With Handles)

14 (355)L x 7-1/16 (179)W x 11-3/8 (289)H

Type: Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



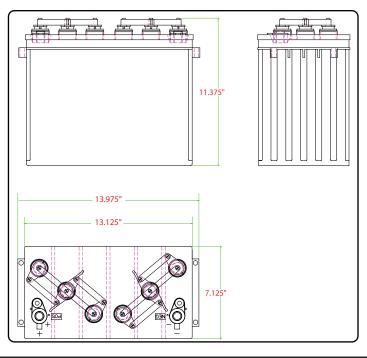


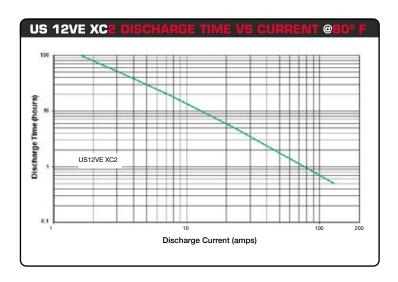
#### AMP MINUTES MINUTES Standard with Wet Voltage Model Width Height Group 10-hr 20-hr 48-hr 72-hr 100-hr HOURS Terminal Weight Rate Size Rate Rate Rate Rate Rate Rate Rate 14 7-1/16 11-3/8 Rate 56 AMPS 75 AMPS 25 AMPS Lbs (kg) (179)(355)GC12 US 12VE XC2 92 115 118 129 145 155 158 161 95 270 81(36.7) UTL 145 62

DEEP CYCLE











## **US 12VRX XC2 - DATA SHEET**

Deep Cycle 12 -Volt

**Application:** Wherever Deep Cycle 12-volt batteries are needed.

**Dimensions:** (Without Handles)

13-1/8 (333)L x 7-1/16 (179)W x 11-3/8 (289)H (With Handles)

14 (355)L x 7-1/16 (179)W x 11-3/8 (289)H

Type: Flooded Lead Acid (FLA) non-sealed.

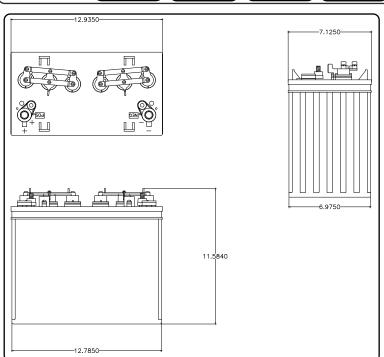


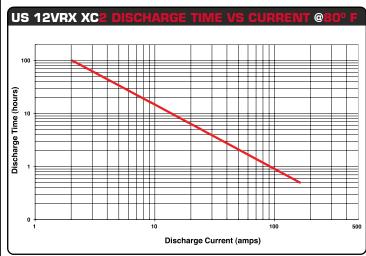


	U	JS	1	12	V	R	X	X	C	2	- 5	SP	EC	IFI	CA	TIC	NC	15		
BCI												Standard	AMP	MINUTES	MINUTES	MINUTES	Length with			Wet
Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage	Terminal		@	@	@	Handles	Width	Height	Weight
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate			(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	14	7-1/16	11-3/8	Lbs (kg)
GC12	US 12VRX XC2	92	104	122	126	138	155	164	169	172	12	Molded-In UTL	155	77	110	292	(355)	(179)	(289)	86 (39)









## US 185E XC2, US 185 XC2, US 185HC XC2



DATA SHEET Deep Cycle 12 -Volt

**Application:** Wherever Deep Cycle 12-volt batteries are needed.

#### **Dimensions:**

15-5/8 (397)L x 7-1/16 (179)W x 14-7/8 (378)H

Type: Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed

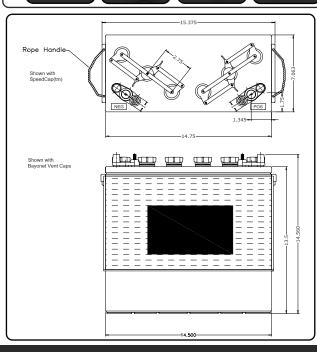


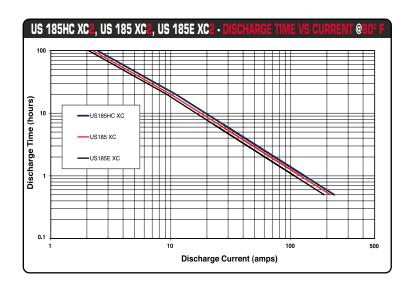


#### 2, US 185 185E XC BCI Standard AMP MINUTES MINUTES MINUTES Wet Group Model 5-hr 10-hr 20-hr 48-hr 72-hr 100-hr Voltage Terminal **HOURS** Length Width Height Weight Size Rate Rate Rate Rate Rate Rate Rate Rate Rate 75 AMPS 56 AMPS 25 AMPS Type (20 HR. RATE) Lbs (kg) US 185E XC2 107 163 206 185 133 921 144 185 196 201 Offset "S 105 (47.8) 7-1/16 14-7/8 15-5/8 921 US 185 XC2 120 135 158 163 178 200 212 217 222 12 Offset "S' 200 106 151 109 (49.4) (179)(378)(397)US 185HC XC2 130 147 172 178 195 220 233 239 244 Offset "S" 220 117 167 443 120 (54.4)









# RE 6 & 2 -Volt Deep Cycle Batteries



## **US REGC2H XC2 - DATA SHEET**

Deep Cycle 6 -Volt

**Application:** Renewable & Wherever Deep Cycle 6-volt batteries are needed.

### **Dimensions:**

10-1/4 (260)L x 7-1/8 (181)W x 11-7/8 (302)H

Type: Flooded Lead Acid (FLA) non-sealed.

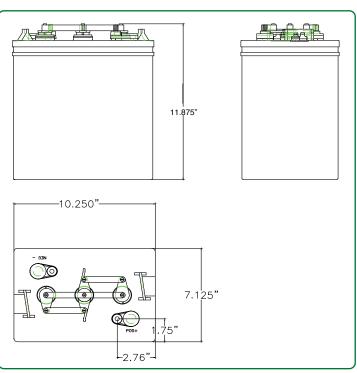


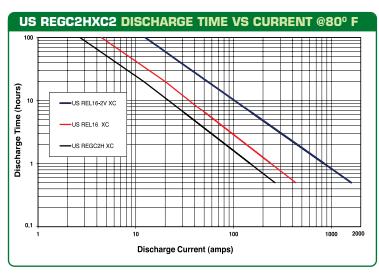


	U	S	G	RE	G	C	21	1	X	Ci	2 9	SP	EC	IFI	CA	TI	<b>N</b> O	IS		
BCI												Standard	AMP	MINUTES	MINUTES	MINUTES				Wet
Group	Model	1-hr	2-hr	5-hr	6-hr	10-hr	20-hr	48-hr	72-hr	100-hr	Voltage		HOURS	@	@	@			Height	
Size		Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate		Туре	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	10-1/4	7-1/8	11-7/8	Lbs (kg)
GC2	US REGC2H XC2	149	167	194	200	217	242	256	263	269	6	UTL	242	136	193	507	(260)	(181)	(302)	68 (30.8)











## **US REL16 XC2 - DATA SH**

Deep Cycle 6 -Volt Application: Renewable & wherever Deep Cycle 6-volt batteries are needed.

**Dimensions: (Without Handles)** 11-7/8 (302)L x 7-1/8 (181)W x 16-3/4 (425)H

(With Handles)

12-7/16 (315)L x 7-1/8 (181)W x 16-3/4 (425)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

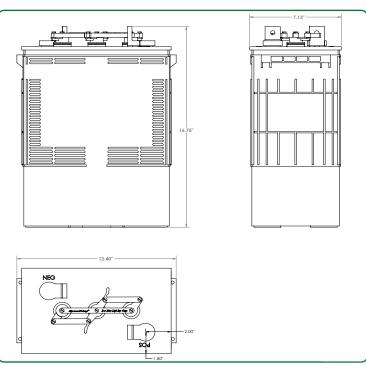


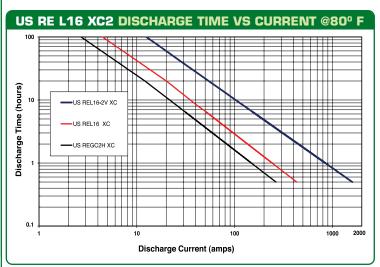


		U	5	R	ΞŪ	_1	6	×	(C	2	S	PE	CI	FIC	(A		N	5		
BCI												Standard	AMP	MINUTES	MINUTES	MINUTES	Length			Wet
Group	Model	1-hr	2-hr	5-hr							Voltage	Terminal	HOURS	@	@	@	with Handles	Width	Height	Weight
Size		Rate		Type	(20 HR. RATE)	75 AMPS	56 AMPS	25 AMPS	12-7/16	7-1/8	16-3/4	Lbs (kg)								
903	US REL16 XC2	242	272	317	326	352	401	425	436	446	6	Large"L"	401	245	348	915	(315)	(181)	(425)	112 (50.8)











## **US REL16 2V XC2 - DATA SHEET**

Deep Cycle 2 -Volt

**Application:** Renewable & wherever Deep Cycle 2-volt batteries are needed.

**Dimensions: (Without Handles)** 

11-7/8 (302)L x 7-1/8 (181)W x 16-3/4 (425)H

(With Handles)

12-7/16 (315)L x 7-1/8 (181)W x 16-3/4 (425)H

**Type:** Flooded Lead Acid (FLA) non-sealed.

Case material: Polypropylene / Heat Sealed



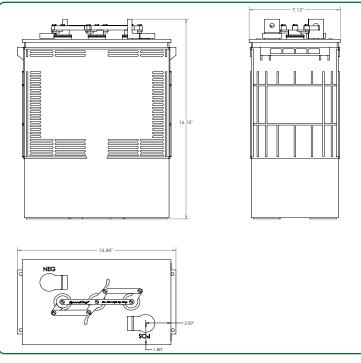


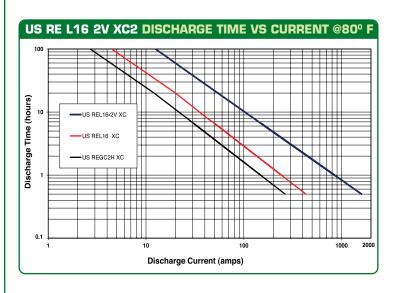
#### 6 Length BCI AMP MINUTES Standard Wet with Model 2-hr 72-hr 100-hr Voltage Width Group 1-hr 5-hr 10-hr 48-hr **HOURS** 20-hr **Terminal** @ Height Weight Handles Rate Rate Rate Rate Rate Rate Rate Rate Rate Size (20 HR. RATE) **75 AMPS** 56 AMPS 25 AMPS Lbs (kg) 16-3/4 12-7/16 7-1/8 US REL16-2V XC2 832 886 1100 903 962 978 1024 1100 1179 1218 1250 Large"L" 845 1177 2826 114 (51.7) (315) (181) (425)











# **Battery Watering Technologies**



**Single Point Watering System** feature innovative valve designs, including the new SENSE SMART VALVE™ available exclusively for U.S. Battery. All BWT valves

are manufactured with the highest quality materials that keep all working parts above the battery cell. The spark arrestor makes this the safest watering system available. The BWT system fits on every FLA battery we manufacture and on every configuration. Water flows through a single connection reducing

labor cost by accurately filling each

**ELECTROLYTE LEVEL** 

battery set in less than 30 seconds!

The innovative clip-in valve makes installation of pre-strung systems fast and easy. BWT also offers several water delivery options, the Gravity Fill System is ideal for a small number of batteries when a water source is not readily available. The 2.5 gallon gravity fill tank should be placed at least three feet above the battery tops to ensure sufficient water flow. The Direct Fill Link features a built-in flow indicator and pressure regulator. The pressure sensitive handle reduces pressure down to 10 psi and will handle incoming pressure up to 100 psi. Allowing it to be connected directly to a water source.





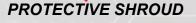
# Flow-Rite Watering System



LARGE FLAME ARRESTORS DE-GAS CHAMBER

# The Pro-Fill On-Board Battery Watering System by Flow-Rite

is specifically designed for use with "golf car" style batteries commonly found in golf cars, sweepers, scrubbers, RVs, pallet jacks, and small solar systems. Based on the same technology as Flow-Rite's Millennium Plus+valves, the Pro-Fill system is compatible with all Millennium water supplies. The Pro-Fill on-board battery watering system works by replacing the battery's existing vent caps with





valves that are interconnected by manifolds and tubing, allowing the user to fill all cells of the battery from a single remote location. Each valve

independently shuts off water flow to it's cell when the proper electrolyte level is reached. This allows the operator to fill the batteries perfectly every time without having to monitor each individual cell.





#### **CHARGING INSTRUCTIONS:**

Following is the charging recommendation and charging profile using 2 stage chargers for US Battery deep cycle products. \*Equalization and float charge modes are not considered to be one of the stages in a charging profile.

1. Bulk Charge Constant current @~10% of C/20 Ah in amps to 2.45+/-0.05 volts per cell

(e.g. 7.35 volts +/-0.15 volts per 6 volt battery)

2. Absorption Charge Constant voltage (2.45+/-0.05 vpc) to 3% of C/20 Ah in amps then hold for 2-3

hours and terminate charge. Charge termination can be by maximum time (2-4

hr) or dV/dt (4 mv/cell per hour)

(Optional Float Charge) Constant voltage 2.17 vpc (6.51 volts per 6 volt battery) for unlimited time

• Equalization Charge Constant voltage (2.55+/-0.05 vpc) extended for 1-3 hours after normal charge cycle (repeat every 30 days)

Notes: Charge time from full discharge is 9-12 hours.

Absorption charge time is determined by the battery but will usually be ~3 hours

at 2.45 volts per cell.

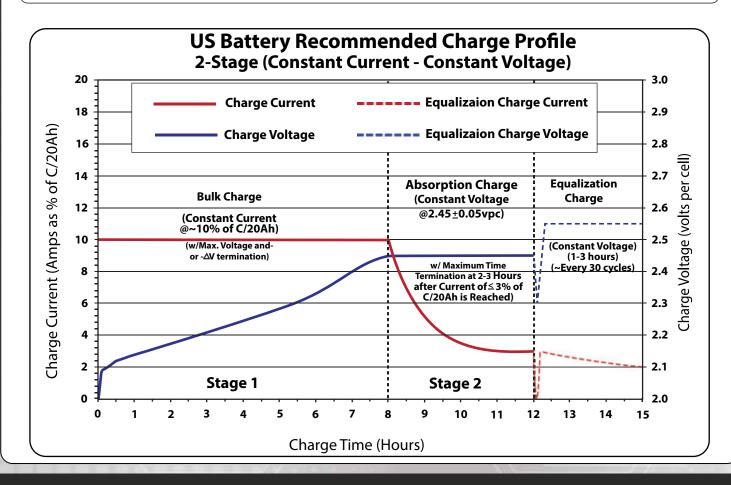
Float time is unlimited at 2.17 volts per cell. Specific gravity at full charge is 1.270 minimum

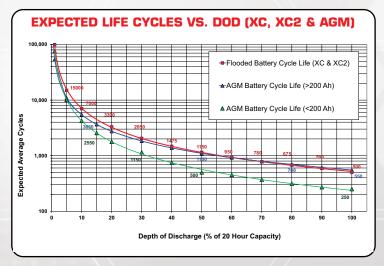
Battery temperature adjustment: Reduce the voltage by 0.028 Volts per cell for every 10°F

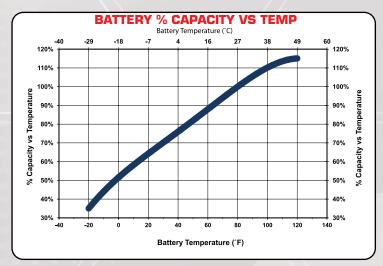
above 80°F, increase by the same amount for temperatures

below 80°F.

Deep cycle batteries need to be equalized periodically. Equalizing is an extended, low current charge performed after the normal charge cycle. This extra charge helps keep all cells in balance. Actively used batteries should be equalized once per month. Manually timed chargers should have the charge time extended approximately 3 hours. Automatically controlled chargers should be unplugged and reconnected after completing a charge.







-	U.S. Battery Recommended Terminal Torque and Connection Hardware									
	U.S. Battery Terminal Type	Recommended Torque (in-lb)	Recommended Torque (ft-lb)	Recommended Connection Hardware						
	UTL	95-105	7.9-8.8	<sup>1</sup> SS Hexnut with Lock Washer						
	Molded-In UTL	95-105	7.9-8.8	<sup>1</sup> SS Hexnut with Lock Washer						
	UT	95-105	7.9-8.8	<sup>1</sup> SS Hexnut with Lock Washer						
4	Flat Block	95-105	7.9-8.8	<sup>1</sup> SS Hexnut with Lock Washer						
	Dual	95-105	7.9-8.8	<sup>1/6</sup> SS Hexnut with Lock Washer						
	DC Marine	95-105	7.9-8.8	<sup>2</sup> SS Hexnut with Lock Washer						
	Off-Set "S"	100-120	8.3-10	<sup>3</sup> Zn or SS Bolt w/Hexnut & Lock Washer						
	Flag	100-120	8.3-10	<sup>4</sup> Zn or SS Bolt w/Hexnut & Lock Washer						
	Large "L"	100-120	8.3-10.0	<sup>4</sup> Zn or SS Bolt w/Hexnut & Lock Washer						
	Small "L"	100-120	8.3-10.0	<sup>4</sup> Zn or SS Bolt w/Hexnut & Lock Washer						
١	Bus Lug	120-180	10.0-15.0	<sup>5</sup> SS Hexnut with Lock Washer						
	SAE	50-70	4.2-5.8	<sup>6</sup> No Hardware Supplied						

Proper connection is to position a lock washer between the nut and the connecto (never between the connector and lead terminal) and apply the recommended torque or enough torque to completely compress the lock washer without deforming the lead terminal

Stainless Steel Hexnut with Stainless Steel Split-Ring Lock Washer (5/16" Positive & Negative) <sup>2</sup>Stainless Steel Hexnut with Stainless Steel Split-Ring Lock Washer (3/8" Positive & 5/16" Negative) 3Square-Head, SS or Zinc-Plated Bolt with SS or Zinc-Plated Hexnut & Split-Ring Lock Washer Square-Head or Hex-Head, SS or Zinc-Plated Bolt with SS or Zinc-Plated Hexnut & Split-Ring Lock Washe <sup>5</sup>Stainless Steel Hexnut with SS Split-Ring Lock Washer (1/2" Positive or 3/8" Positive & 3/8" Negative <sup>6</sup>No Hardware Supplied - Application Uses SAE Clamp for Positive & Negative Tapered Post

Note: The use of flanged nuts and other types of nuts with captive washers or other hardware not listed above is not recommended by US Battery and their use may void the battery warranty.

### **U.S. Battery Operating Temperature Guidelines**

For charging, we recommend staying within O°F to 120°F (-18 to 49°C) to avoid charging frozen batteries at low temperature or going into thermal runaway at high temperature.

For discharging, we recommend -20°F to 120°F (-29 to 49°C). Batteries discharged at temperatures below 32°F (0°C) should be recharged immediately to avoid freezing.

## Batteries discharged at temperatures above 120°F (49°C) should be allowed to cool before recharging.

Extreme temperatures can substantially affect battery performance and charging. Cold reduces battery capacity and retards charging. Heat increases water usage and can result in overcharging. Very high temperatures can cause "thermal run-away" which may lead to an explosion or fire. If extreme temperature is an unavoidable part of an application, consult a battery/charger specialist about ways to deal with the problem.

**75 Amp Rating**Expressed in minutes; the amount of time it takes a battery to go from fully charged to 1.75 volts per cell using a constant 75 amp discharge at 80°F.

#### **20 Hour Rate**

Expressed in Ampere Hours; the total amount of Ampere Hours a fully charged battery can provide in a 20 hour period, reaching a discharge level of 1.75 volts per cell at 80°F. Divide the rating by 20 (hrs) to determine discharge current rate.

Expressed in Ampere Hours; the total amount of Ampere Hours a fully charged battery can provide in a 6 hour period, reaching a discharge level of 1.75 volts per cell at 80°F. Divide the rating by 6 (hrs) to determine discharge current rate.

#### **Convert 20 Hour To 6 Hour Capacity**

Multiply 20 Hr. Ampere Hour Capacity by .84 (Divide result by 6 to determine discharge current rate).

#### Reserve Capacity

Expressed in minutes, the time it takes for a fully charged battery to reach 1.75 volts per cell using a constant 25 amp. discharge at

Expressed in amps., a rating usually applied to S.L.I. (starting, lighting, ignition) batteries; the highest discharge amps, that can be sustained by a fully charged battery over 30 seconds without dropping voltage below 1.2 volts per cell at 0°F.

#### CA/ M.C.A. (Cranking Amps)

Same as above except that the rating is at 32°F rather than 0°F. The higher temperature will result in an approximate increase in the cranking rate of 22%.

Data references within this publication are nominal and should not be considered or construed as maximum or minimum values for specifications or for final design. Data for this product type and model may vary from what is shown in this publication, and U.S. Battery Mfg., Co. makes No warranties, expressed or implied based on the data within this publication.

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## **Proper Care and Maintenance of Deep Cycle Batteries**

- New batteries should be given a full charge before use.
- New deep cycle batteries need to be cycled several times before reaching full capacity (50 - 125 cycles, depending on type). Capacity will be limited during this period. \*XC2 formulation can reach full capacity in as few as 25 cycles.
- Battery cables should be intact, and the connectors kept tight at all times. Always use insulated tools to avoid shorting battery terminals. Regular inspection is recommended.
- Vent caps should be correctly installed and tight during vehicle operation and battery charging.
- Batteries should be kept clean and free of dirt and corrosion at all times.
- Batteries should always be watered after charging unless plates are exposed before charging. If exposed, plates should be covered by approximately 1/8" of electrolyte (add distilled water only). Check electrolyte level after charge. The electrolyte level should be kept 1/4" below the bottom of the fill well in the cell cover.
- Water used to replenish batteries should be distilled or treated not to exceed 200 T.D.S. (total dissolved solids...parts per million). Particular care should be taken to avoid metallic contamination (iron).
- For best battery life, batteries should not be discharged below 80% of their rated capacity. Proper battery sizing will help avoid excessive discharge.
- Battery chargers should be matched to fully charge batteries in an eight hour period. Defective and unmatched chargers will damage batteries or severely reduce their performance. Avoid charging at temperatures above 120°F or ambient, whichever is higher.
- Deep cycle batteries need to be equalized periodically. Equalizing is an extended, low current charge performed after the normal charge cycle. This extra charge helps keep all cells in balance. Actively used batteries should be equalized once per month. Manually timed charger should have the charge time extended approximately 3 hours. Automatically controlled charger should be unplugged and reconnected after completing a charge.
- In situations where multiple batteries are connected in series, parallel or series/parallel, replacement battery(s) should be of the same size, age and usage level as the companion batteries. Do not put a new battery into a pack which has 50 or more cycles. Either replace with all new or use a good used battery(s).

- Periodic battery testing is an important preventative maintenance procedure. Hydrometer readings of each cell (fully charged) gives an indication of balance and true charge level. Imbalance could mean the need for equalizing; is often a sign of improper charging or a bad cell. Voltage checks (open circuit, charged and discharged) can locate a bad battery or weak battery. Load testing will pick out a bad battery when other methods fail. A weak battery will cause premature failure of companion batteries.
- Always use a matched charger and battery pack system. Unmatched chargers will cause potential problems.
- As batteries age, their maintenance requirements change. This means longer charging time and/or higher finish rate (higher amperage at the end of the charge). Usually older batteries need to be watered more often. And, their capacity decreases.
- Lead acid batteries should be brought up to full charge at the earliest opportunity. Avoid continuously operating batteries in a partially charged condition. This will shorten their life and reduce their capacity.
- Extreme temperatures can substantially affect battery performance and charging. Cold reduces battery capacity and retards charging. Discharged batteries may freeze and cause permanent damage. Heat increases water usage and can result in overcharging. Very high temperatures can cause "thermal run-away" which may lead to an explosion or fire. If extreme temperature is an unavoidable part of an application, consult a battery/charger specialist about ways to deal with the problem.
- Inactivity can be extremely harmful to all lead acid batteries. If seasonal use is anticipated, we recommend the following:
- A.) Completely charge the battery before storing.
- B.) Remove all electrical connections from the battery, including series/parallel connectors.
- C.) Store the battery in as cool a place as possible. However, do not store in a location which will consistently be below 32°F. Batteries will discharge when stored, the lower the temperature the lower the self discharge.
- D.) When not in use, boost every two months.



PILOT CELL TEMPERATURE

	U.S. BATTERY - MAINTENANCE LOG											
	CUSTOMER							ADDRESS:				
DATE OF SERVICE							TIME OF SERVICE:					
PUI	RCHASE DATE						DISTRIBUTOR NAME:					
TYPE OF	CONTROLLER						SEF	SERVICE ENGINEER:				
CONTRO	LLER STATUS	Load Sh	red*	Boost*	Float*	Fault*		CELL TYPE:		Battery Voltage:		
CELL NO.	SPECIFIC GF	AVITY	٠	ELL VOLTAGE	CELL NO.	SPECIFIC GRAVITY		CELL VOLTAGE	CELL NO.	SPECIFIC GRAVITY	CELL VOLTAGE	
	SECIFIC OF	IAVIII	U	ELL VOLTAGE		SPECIFIC GIV	AVIII	CELL VOLTAGE		SPECIFIC GRAVITI	CELL VOLTAGE	
1					21				41			
2					22				42			
3					23				43			
4					24				44			
5					25				45			
6					26				46			
7					27				47			
8					28				48			
9					29				49			
10					30				50			
11					31				51			
12					32				53			
13					33				53			

13		33		53	
14		34		54	
15		35		55	
16		36		56	
17		37		57	
18		38		58	
19		39		59	
20		40		60	

PILOT CELL TEMPERATURE

B/	ATTERY CHECK LIS	Т		BOOST CHARGE			
BATTERY TOPS CLEAN	AND DRY		YES	NO	BOOST CURRENT	AI	
ENSURE VENT CAPS AF	RE CLEAN AND TIGHT		YES	NO	DURATION OF BOOST CHARGE	HOURS	
BATTERY TERMINAL CO	ONNECTIONS TIGHT		YES	NO	END OF CHARGE CELL S.G.	MAX	MIN
TERMINAL CONNECTIO	N SAFTY CAPS REPLACED		YES	NO	END OF CHARGE MAX. CELL TEMP	MAX	MIN
ELECTROLYTE LEVELS	AS FOUND	CORRECT	HIGH	LOW	END OF CHARGE MAX. CELL TEMP		ºF/ºC
	AS LEFT	CORRECT	HIGH	LOW			

PILOT CELL TEMPERATURE

NOTES:			
			<u> </u>
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# Power You Can Depend On!



**Quality** 

Value

**Performance**