



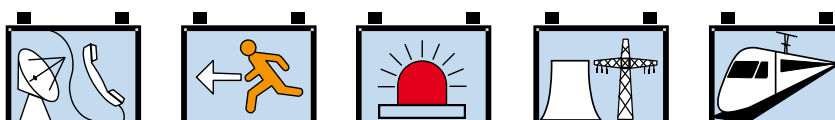
EverExceed®
power your applications

V4.4

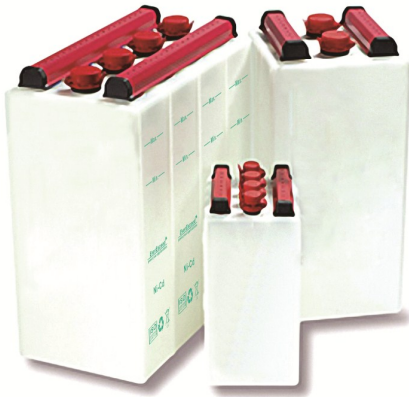
NiCd Sintered Plate Range **XHP 5-300Ah**



**»Premium quality for
uninterrupted communication«**



www.everexceed.com



NiCd Sintered Plate Range
XHP 5-300Ah

Powerful Assurance Critical Applications

Depend upon Everexceed XHP series where vital UPS, engine starting and emergency back-up duties need guaranteed power in an instant. The built-in reliability of sintered technology and alkaline electrolyte provides up to 20+ years of cost-effective trouble-free service.

Future-proof Construction

Everexceed XHP series' steel superstructure and tough polypropylene casing hold sintered electrodes with copious amounts of alkaline electrolyte. As none of these materials are corrosive, EverExceed XHP series confidently outperforms lead acid batteries by several years. On-going maintenance, unexpected downtime and replacement costs are completely eliminated with Ni-Cd.

Best for Engines - Perfect for UPS

Electrical abuses such as AC ripple, over-discharging, voltage reversal or high overcharge currents have no effect upon Everexceed XHP series.

The battery's plate and separator format make recharging quick and efficient at either single or dual rate.

Delivery of high power within a narrow voltage window perfectly suits XHP for UPS duties. There is no risk of sudden death, and because Ni-Cd batteries do not produce corrosive fumes, they can be installed next to sensitive electronic equipment. Even when partially discharged Everexceed XHP series is capable of providing repeated high currents up to 20 times its nominal capacity to make short work of starting your diesel engine or gas turbine.

Reliable in all Conditions

Everexceed XHP series is specified onshore for hospitals, traffic control, power generation and process control, and offshore in oil and gas exploration and other hazardous marine installations, where the implications of main power supply interruption cannot be contemplated.

Generally operating between temperatures of -20°C to $+60^{\circ}\text{C}$ (-4°F to $+140^{\circ}\text{F}$), XHP batteries can tolerate extremes of -50°C to $+70^{\circ}\text{C}$ (-58°F to $+158^{\circ}\text{F}$) for short periods. They can also remain in storage for many years before commissioning without affecting subsequent performance.

Predictable Cost and Long Life

Owing to its reliability, unique electrochemistry and sturdy construction, accurately predicting your battery's life-cost is now possible. Everexceed XHP series can easily repay your investment within 3-6 years well within the lifetime of your application.

Battery Sizing Made Easy

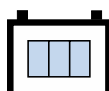
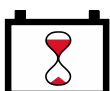
An Everexceed XHP series battery can be designed to exactly match your installation criteria. With BattSize sizing software, calculations are quick and easy. Engineers are always available when you require additional expert advice.

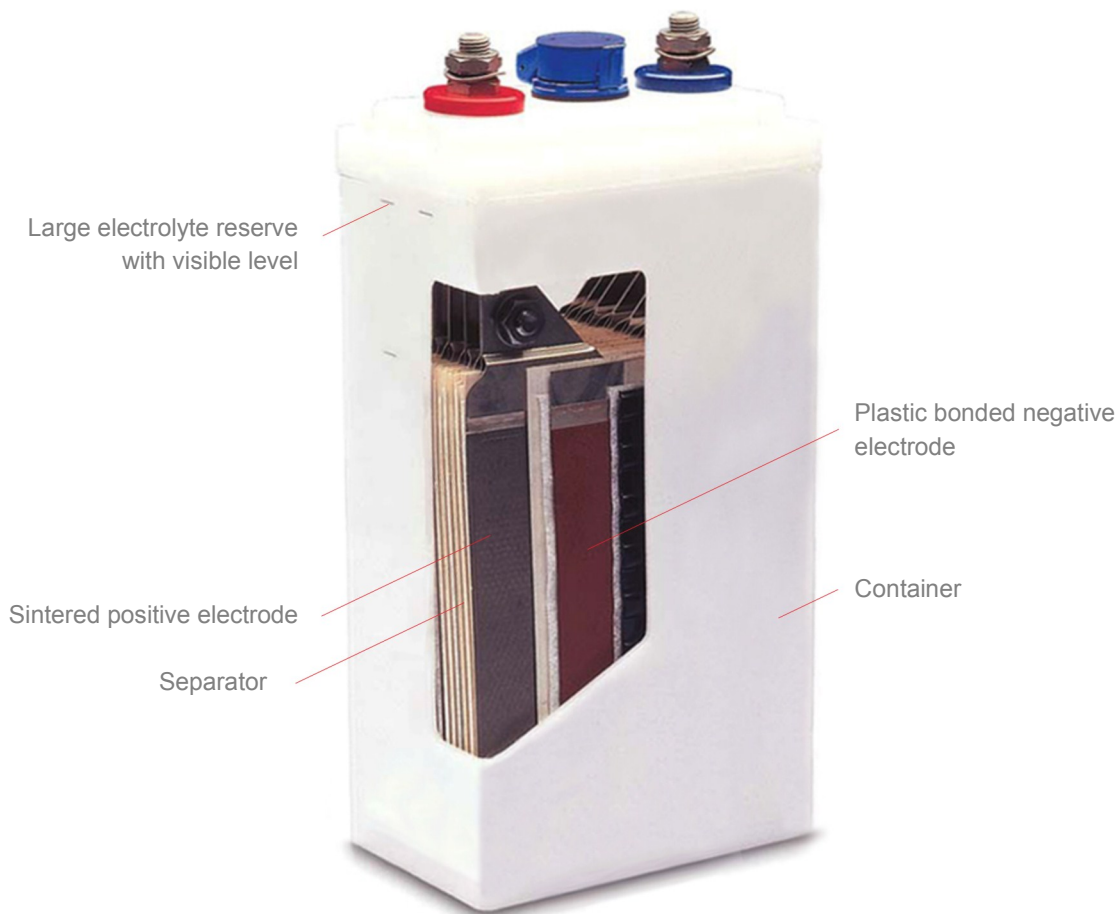
Original Equipment or Replacement

From a broad range of sizes, weights and performances available, Everexceed XHP series can perfectly meet your requirement for guaranteed power.

Setting Standards Worldwide

Everexceed XHP series batteries satisfy all major electrical industry standards and are approved for operation on board ships and offshore installations





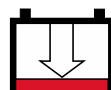
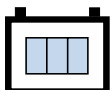
Application

XHP Series nickel cadmium batteries are designed for industrial high power applications. Sintered-plate technology used on both positive and negative electrodes provides unrivaled performance in power and energy density. The technology and the production line were acquired from VARTA in Germany.

XHP Series batteries are suitable for ultra high power or high energy density applications such as locomotive diesel engine starting, UPS, rolling stock, automatic guided vehicles (AGV), trucks, etc.

Performance Data

- ◆ 20+ years design life;
- ◆ Proven VARTA sintered-plate electrode;
- ◆ Trouble-free long cycle life technology;
- ◆ 3C charging current;
- ◆ Over 20C cranking current;
- ◆ High tolerance to electrical abuses such as overcharge and over discharge;
- ◆ Wide operating temperature: -50°C to 70°C;
- ◆ High tolerance to rough handling and mechanical abuse due to strong components and robust construction;
- ◆ No risk of sudden death due to the chemistry and the cell structure;
- ◆ Generous electrolyte reserve for long maintenance intervals;
- ◆ Clear cell case for easy electrolyte level inspection;
- ◆ Custom cell dimensions available;
- ◆ Conforms to IEC60623;



Battery Charging

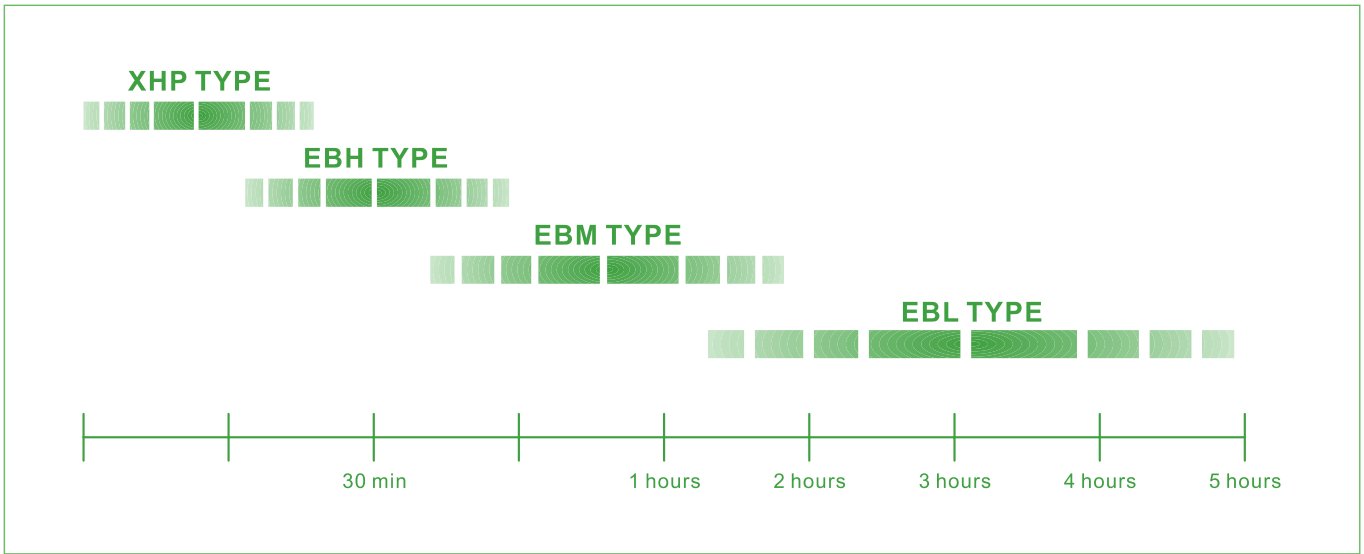
It is recommended to use Constant Voltage method of charging for Nickel Cadmium Batteries, usually with current limitation to C/5 or C/10. Charging voltages must be regularly checked. To optimize the battery performance, it is necessary to ensure that the voltage is kept within the following limits:

Recommended Charging Voltage Per Cell

Cell Type	IEC Type	Floating Charge	Equalizing Charge
XHP	KXP	1.40 ~ 1.42	1.45 ~ 1.60
EBH	KHP	1.42 ~ 1.45	1.60 ~ 1.70
EBM	KMP	1.42 ~ 1.45	1.60 ~ 1.70
EBL	KLP	1.42 ~ 1.45	1.60 ~ 1.75

Recommended Type Selection

According to backup time required by application:



Initial Charging

The whole charge should preferably be carried out at constant current according to IEC 60623. The charging time is inversely proportional to the current which is set by the current limit of the charging equipment.

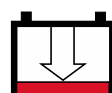
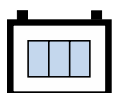
Recommended rates for the initial charging: 0.2C₅ ampere for 8 to 10 hours or 0.1C₅ ampere for 16 to 20 hours



NiCd Sintered Plate XHP Range Electrical Specifications & Dimensions

Model	Nominal Voltage (V)	Capacity (C5 Ah)	Dimensions						Max. Weight		Terminal	Volume of Electrolyte (L)	Container Material
			Length		Width		Height						
			mm	inch	mm	inch	mm	inch	kg	lb.			
XHP5	1.2	5	25	1.0	80	3.1	165	6.5	0.50	1.10	M8	0.05	ABS
XHP10	1.2	10	25	1.0	80	3.1	165	6.5	0.62	1.40	M8	0.05	ABS
XHP20	1.2	20	35	1.4	80	3.1	245	9.6	1.25	2.80	M10	0.12	ABS
XHP30	1.2	30	43	1.7	80	3.1	265	10.4	1.75	3.90	M10	0.20	PP
XHP40	1.2	40	43	1.7	80	3.1	265	10.4	1.85	4.10	M10	0.20	PP
XHP40-(1)	1.2	40	50	2.4	80	5.4	265	10.4	2.10	4.60	M10	0.30	PP
XHP50	1.2	50	50	2.0	80	3.1	265	10.4	2.14	4.70	M10	0.25	ABS
XHP50-(2)	1.2	50	60	2.4	138	5.4	265	10.4	3.50	7.70	M16	0.50	PP
XHP60	1.2	60	71	2.7	141	5.5	295	11.6	4.00	8.80	M16	0.40	PP
XHP60-(2)	1.2	60	60	2.4	138	5.4	265	10.4	3.80	8.40	M16	0.50	PP
XHP70	1.2	70	60	2.4	138	5.4	265	10.4	4.00	8.80	M16	0.40	PP
XHP70-(1)	1.2	70	71	2.7	141	5.5	295	11.6	4.65	10.23	M16	0.50	PP
XHP80	1.2	80	60	2.4	138	5.4	265	10.4	4.20	9.20	M16	0.40	PP
XHP80-(1)	1.2	80	71	2.7	141	5.5	295	11.6	4.70	10.34	M16	0.50	PP
XHP90	1.2	90	60	2.4	138	5.4	265	10.4	4.30	9.50	M16	0.40	PP
XHP90-(1)	1.2	80	71	2.7	141	5.5	295	11.6	4.80	10.56	M16	0.50	PP
XHP100	1.2	100	60	2.4	138	5.4	265	10.4	4.40	9.70	M16	0.40	PP
XHP100-(1)	1.2	100	71	2.7	141	5.5	295	11.6	4.82	10.6	M16	0.50	PP
XHP100-(3)	1.2	100	80	3.1	138	5.4	295	11.6	5.50	12.1	M16	1.40	ABS
XHP110	1.2	110	60	2.4	138	5.4	265	10.4	4.50	9.90	M16	0.40	PP
XHP110-(2)	1.2	110	80	3.1	138	5.4	295	11.6	5.50	12.1	M16	1.40	ABS

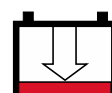
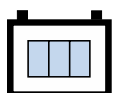
EverExceed XHP batteries fulfill all requirements specified by IEC publication 60623.



NiCd Sintered Plate XHP Range Electrical Specifications & Dimensions

Model	Nominal Voltage (V)	Capacity (C5 Ah)	Dimensions						Max. Weight		Terminal	Volume of Electrolyte (L)	Container Material
			Length		Width		Height						
			mm	inch	mm	inch	mm	inch	kg	lb.			
XHP120-(1)	1.2	120	71	2.7	141	5.5	295	11.6	4.9	10.8	M16	0.5	PP
XHP120-(2)	1.2	120	80	3.1	138	5.4	295	11.6	5.6	12.3	M16	1.4	ABS
XHP130	1.2	130	80	3.1	138	5.4	295	11.6	5.7	12.5	M16	1.4	ABS
XHP140-(1)	1.2	140	71	2.7	136	5.35	430	11.6	6.5	14.3	M20	1.2	PP
XHP140-(2)	1.2	140	80	3.1	138	5.4	360	14.2	9.0	19.8	M16	1.7	PP
XHP140-(3)	1.2	140	80	3.1	138	5.4	295	11.6	6.0	13.2	M16	1.3	ABS
XHP150-(2)	1.2	150	80	3.1	138	5.4	360	14.2	6.5	14.3	M16	1.0	PP
XHP150-(3)	1.2	150	80	3.1	138	5.4	295	11.6	6.1	13.4	M16	1.2	ABS
XHP160-(2)	1.2	160	80	3.1	138	5.4	360	14.2	9.4	20.7	M16	1.6	PP
XHP170-(1)	1.2	170	71	2.7	136	5.35	430	11.6	7.5	16.5	M20	1.1	PP
XHP170-(2)	1.2	170	80	3.1	138	5.4	360	14.2	9.5	20.9	M16	1.6	PP
XHP180	1.2	180	105	4.1	165	6.5	345	13.6	9.7	21.5	M20	1.8	PP
XHP180-(1)	1.2	180	80	3.1	138	5.4	360	14.2	7.8	17.1	M16	1.2	PP
XHP190	1.2	190	105	4.1	165	6.5	345	13.6	10.0	22.0	M20	1.7	PP
XHP200	1.2	200	105	4.1	165	6.5	345	13.6	10.5	23.1	M20	1.6	PP
XHP210-(1)	1.2	200	71	2.7	136	5.35	430	11.6	8.2	18.0	M20	1.0	PP
XHP210	1.2	210	105	4.1	165	6.5	345	13.6	10.8	23.8	M20	1.6	PP
XHP220	1.2	220	105	4.1	165	6.5	345	13.6	11.0	24.2	M20	1.5	PP
XHP230	1.2	230	165	6.5	168	6.6	345	13.6	13.0	28.6	M16	2.8	PP
XHP230-(2)	1.2	230	128	5.0	145	5.7	365	14.4	10.0	22.0	M20	3.0	ABS
XHP240	1.2	250	165	6.5	168	6.6	345	13.6	12.5	27.5	M16	2.7	ABS
XHP240-(1)	1.2	240	128	5.0	145	5.7	365	14.4	11.0	22.0	M20	3.0	ABS
XHP250	1.2	250	165	6.5	168	6.6	345	13.6	13.1	24.2	M16	2.4	ABS
XHP300	1.2	300	165	6.5	168	6.6	345	13.6	14.5	31.9	M16	3.0	ABS

EverExceed XHP batteries fulfill all requirements specified by IEC publication 60623.



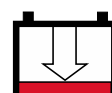
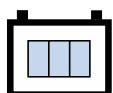
Discharge Date Table For Stationary Applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.14 V/ Cell

Model	Capacity (C5 Ah)	Discharge Time in Hours				Discharge Time in Minutes							Discharge Time in Seconds		
		5	3	2	1.5	60	30	20	15	10	5	1	30	5	1
XHP5	5	0.96	1.54	2.30	2.94	3.95	7.07	8.61	9.7	11.1	12.9	17.5	20.5	25.7	28.7
XHP10	10	1.93	3.12	4.59	5.88	7.90	14.1	17.2	19.5	22.3	25.8	34.9	41.0	51.5	57.4
XHP20	20	3.74	6.25	9.14	11.8	15.9	28.3	34.4	39.0	44.5	51.6	69.8	82.1	103	115
XHP30	30	5.81	9.34	13.7	17.8	23.7	42.5	51.6	58.5	66.8	77.4	105	123	154	172
XHP40	40	7.74	12.5	18.3	23.7	31.6	56.7	68.8	78.1	89.0	103	140	165	205	230
XHP50	50	9.71	15.5	22.8	29.5	39.5	70.8	86.0	97.6	111	129	174	205	257	287
XHP60	60	11.7	18.7	27.4	35.4	47.4	80.1	94.5	104	116	130	192	216	276	299
XHP70	70	13.6	21.8	32.0	41.3	55.3	93.4	110	122	135	151	206	238	290	318
XHP80	80	15.6	24.9	36.6	47.3	63.3	107	126	138	155	173	236	272	331	363
XHP90	90	17.6	28.1	41.1	53.1	71.2	104	123	139	162	198	303	359	443	487
XHP100	100	19.5	31.2	45.7	59.1	79.1	115	137	156	180	219	337	399	492	542
XHP110	110	21.4	34.3	50.2	65.0	87.0	127	151	171	198	241	370	439	542	596
XHP120	120	23.4	37.4	54.8	70.9	95.0	138	164	186	216	263	404	479	591	650
XHP130	130	25.4	40.5	59.4	76.8	103	149	178	202	234	285	438	519	639	704
XHP140	140	27.3	43.6	64.0	82.7	111	161	192	217	252	307	471	559	689	758
XHP150	150	29.3	46.8	68.6	88.6	119	173	205	233	270	330	505	597	738	813
XHP160	160	31.2	49.9	73.2	94.5	127	185	219	248	288	352	538	637	787	867
XHP170	170	33.1	53.0	77.7	100	134	196	233	264	306	373	572	677	837	921
XHP180	180	35.1	56.1	82.2	106	142	207	246	279	324	395	605	717	886	975
XHP190	190	37.1	59.2	86.9	112	150	218	260	295	342	417	640	757	935	1029
XHP200	200	39.0	62.3	91.4	118	158	230	273	310	360	439	673	797	984	1083
XHP210	210	41.0	65.4	96.0	124	166	241	287	326	378	461	707	837	1033	1137
XHP220	220	42.9	68.6	100	130	174	253	301	341	396	483	741	877	1082	1187
XHP230	230	44.9	71.7	105	136	182	265	314	356	413	505	774	917	1131	1240
XHP240	240	46.8	74.8	110	142	190	276	328	372	431	527	808	956	1180	1294
XHP250	250	48.8	78.0	114	147	198	287	342	387	449	549	842	996	1229	1355
XHP300	300	58.5	93.5	137	177	237	345	411	465	539	658	1009	1197	1481	1628



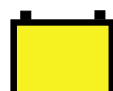
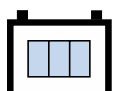
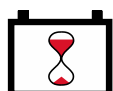
Discharge Date Table For Stationary Applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.10 V/ Cell

Model	Capacity (C5 Ah)	Discharge Time in Hours				Discharge Time in Minutes							Discharge Time in Seconds		
		5	3	2	1.5	60	30	20	15	10	5	1	30	5	1
XHP5	5	0.98	1.56	2.36	3.08	4.41	8.00	10.2	11.7	13.5	15.9	20.5	23.9	29.7	33.0
XHP10	10	1.95	3.10	4.70	6.12	8.78	15.9	20.3	23.3	27.0	31.6	40.8	47.6	59.0	65.7
XHP20	20	3.94	6.54	9.62	12.7	18.2	32.9	42.2	48.3	55.7	65.3	84.4	98.6	122	136
XHP30	30	5.93	9.69	14.4	18.9	27.1	48.9	62.8	71.8	83.0	97.1	126	147	182	202
XHP40	40	7.96	13.0	19.3	25.4	36.4	65.7	84.3	96.5	111	130	169	197	245	272
XHP50	50	9.91	16.2	24.1	31.7	45.5	82.2	106	121	140	163	211	246	306	340
XHP60	60	11.9	19.5	28.9	38.0	54.5	95.4	118	132	146	167	231	264	321	362
XHP70	70	13.8	22.7	33.7	44.3	63.6	111	138	155	171	195	251	287	345	380
XHP80	80	15.9	26.1	38.6	50.7	72.7	128	158	176	196	222	286	329	395	435
XHP90	90	17.8	29.3	43.4	57.0	81.8	131	159	179	206	250	364	429	526	567
XHP100	100	19.8	32.5	48.2	63.3	90.9	146	176	199	229	278	405	477	584	630
XHP110	110	21.8	35.8	53.0	69.7	100	161	194	219	252	306	445	524	642	693
XHP120	120	23.7	39.0	57.9	76.0	110	175	212	239	275	334	485	572	701	756
XHP130	130	25.8	42.3	62.7	82.3	118	190	230	259	298	362	525	620	759	819
XHP140	140	27.7	45.6	67.5	88.6	127	204	247	278	321	389	566	667	818	882
XHP150	150	29.7	48.8	72.3	94.9	136	218	265	299	343	417	607	715	876	945
XHP160	160	31.7	52.0	77.1	101	145	233	282	319	366	445	647	763	934	1008
XHP170	170	33.6	55.3	81.9	108	155	248	300	338	389	473	687	811	993	1071
XHP180	180	35.6	58.6	86.7	114	164	263	317	358	412	501	727	858	1052	1134
XHP190	190	37.7	61.8	91.6	120	173	277	336	378	435	528	768	906	1113	1197
XHP200	200	39.7	65.1	96.4	127	182	292	353	398	458	556	809	954	1172	1260
XHP210	210	41.6	68.3	101	133	191	306	371	418	480	584	849	1002	1230	1323
XHP220	220	43.5	71.6	106	139	200	320	388	438	504	612	890	1049	1281	1386
XHP230	230	45.5	74.9	111	146	209	335	406	458	527	640	930	1097	1339	1449
XHP240	240	47.5	78.1	116	152	218	349	424	478	549	667	971	1144	1397	1512
XHP250	250	49.5	81.3	120	159	227	365	441	497	573	696	1010	1197	1460	1575
XHP300	300	59.4	97.6	144	190	273	438	529	597	687	835	1215	1428	1754	1890



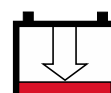
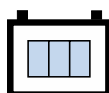
Discharge Date Table For Stationary Applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.05 V/ Cell

Model	Capacity (C5 Ah)	Discharge Time in Hours				Discharge Time in Minutes							Discharge Time in Seconds		
		5	3	2	1.5	60	30	20	15	10	5	1	30	5	1
XHP5	5	0.99	1.62	2.43	3.20	4.73	9.27	12.6	15.0	17.6	20.2	25.4	29.2	36.0	40.1
XHP10	10	1.99	3.26	4.88	6.42	9.50	18.6	25.4	30.2	35.3	40.5	51.0	58.6	72.3	80.5
XHP20	20	4.02	6.60	9.86	12.9	19.1	37.6	51.2	60.9	71.4	81.9	103	118	146	163
XHP30	30	5.98	9.93	14.8	19.5	28.9	56.7	77.3	91.8	107	124	155	179	221	245
XHP40	40	7.97	13.2	19.8	26.0	38.5	75.6	103	122	143	165	207	238	294	327
XHP50	50	10.0	16.6	24.8	32.5	48.1	94.5	129	153	179	206	258	297	368	409
XHP60	60	12.0	19.9	29.7	39.1	57.7	112	149	173	193	223	275	320	392	423
XHP70	70	14.0	23.2	34.6	45.7	67.4	131	174	202	225	247	309	350	419	458
XHP80	80	16.1	26.6	39.6	52.1	77.0	149	199	230	256	282	353	399	479	523
XHP90	90	18.1	29.9	44.5	58.7	86.6	162	208	237	270	316	448	515	630	683
XHP100	100	20.0	33.2	49.5	65.1	96.2	180	232	264	300	351	497	571	700	759
XHP110	110	22.0	36.6	54.4	71.7	106	198	255	290	330	386	547	628	770	835
XHP120	120	24.0	39.8	59.4	78.2	116	216	278	316	360	422	598	686	840	910
XHP130	130	26.1	43.2	64.3	84.7	125	234	301	342	390	457	647	743	910	987
XHP140	140	28.1	46.6	69.3	91.3	135	252	324	368	420	492	697	801	980	1063
XHP150	150	30.1	49.8	74.2	97.8	144	270	347	394	450	527	747	858	1050	1134
XHP160	160	32.1	53.1	79.2	104	154	288	370	421	480	563	797	915	1120	1210
XHP170	170	34.0	56.5	84.1	111	164	306	393	447	510	597	846	971	1187	1292
XHP180	180	36.0	59.8	89.1	118	173	324	417	473	540	633	895	1028	1256	1367
XHP190	190	38.1	63.1	94.0	124	183	342	440	500	570	667	946	1082	1334	1439
XHP200	200	40.1	66.4	99.0	131	192	360	463	526	600	703	995	1138	1404	1514
XHP210	210	42.1	69.8	104	137	202	378	486	552	630	738	1045	1195	1474	1590
XHP220	220	44.1	73.1	109	143	212	396	510	579	660	774	1092	1260	1544	1670
XHP230	230	46.1	76.4	114	150	222	413	533	605	690	809	1141	1317	1614	1745
XHP240	240	48.1	79.8	119	156	231	431	556	631	720	844	1191	1375	1684	1821
XHP250	250	50.1	83.0	124	163	240	449	579	658	750	879	1236	1428	1754	1901
XHP300	300	60.1	99.7	148	196	289	540	695	790	900	1051	1494	1712	2100	2279



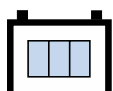
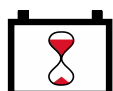
Discharge Date Table For Stationary Applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.0 V/ Cell

Model	Capacity (C5 Ah)	Discharge Time in Hours				Discharge Time in Minutes							Discharge Time in Seconds		
		5	3	2	1.5	60	30	20	15	10	5	1	30	5	1
XHP5	5	1.01	1.65	2.48	3.31	4.87	9.64	13.9	16.8	21.2	24.7	31.0	34.9	43.0	47.6
XHP10	10	2.02	3.31	4.96	6.61	9.73	19.3	27.7	33.6	42.4	49.4	62.0	69.8	86.0	95.3
XHP20	20	4.04	6.73	10.0	13.2	19.5	38.6	55.4	67.3	84.8	99.1	125	140	173	191
XHP30	30	6.06	10.0	14.9	19.8	29.2	57.9	83.1	101	127	148	185	210	258	287
XHP40	40	8.08	13.4	20.0	26.4	38.9	77.3	111	135	169	198	247	280	344	383
XHP50	50	10.1	16.7	24.9	32.9	48.7	96.6	139	168	212	248	310	349	430	478
XHP60	60	12.1	20.1	29.9	39.6	58.5	115	164	196	232	258	350	386	452	513
XHP70	70	14.1	23.4	34.8	46.2	68.2	134	192	228	271	301	371	414	492	543
XHP80	80	16.2	26.8	39.8	52.7	77.9	153	218	261	309	344	423	471	563	621
XHP90	90	18.2	30.1	44.8	59.3	87.7	170	237	276	327	386	526	603	736	792
XHP100	100	20.2	33.4	49.8	66.0	97.4	188	263	306	363	430	585	670	818	880
XHP110	110	22.2	36.8	54.8	72.5	107	207	289	337	399	472	644	737	900	968
XHP120	120	24.2	40.2	59.8	79.1	117	226	315	368	435	515	702	803	982	1056
XHP130	130	26.3	43.5	64.7	85.7	126	245	342	398	472	558	760	870	1061	1145
XHP140	140	28.3	46.9	69.7	92.3	136	264	368	428	508	601	819	937	1142	1233
XHP150	150	30.3	50.2	74.7	98.9	146	282	394	459	544	644	878	1005	1229	1323
XHP160	160	32.3	53.5	79.7	105	156	301	421	490	580	687	936	1072	1310	1411
XHP170	170	34.3	56.9	84.6	112	166	320	447	520	617	729	994	1134	1386	1491
XHP180	180	36.4	60.2	89.6	119	175	339	473	551	653	772	1052	1201	1468	1579
XHP190	190	38.4	63.6	94.6	125	185	357	500	582	689	815	1112	1271	1554	1670
XHP200	200	40.4	67.0	100	132	195	376	526	613	725	858	1171	1337	1636	1757
XHP210	210	42.4	70.3	105	138	204	395	552	643	762	900	1229	1404	1718	1845
XHP220	220	44.4	73.6	109	144	214	414	578	674	798	943	1288	1470	1796	1932
XHP230	230	46.5	77.0	114	151	224	433	604	704	835	986	1346	1537	1877	2020
XHP240	240	48.5	80.3	119	158	234	452	630	735	871	1029	1405	1604	1959	2108
XHP250	250	50.5	83.6	124	165	243	471	657	765	907	1071	1463	1670	2048	2205
XHP300	300	60.6	100	148	197	292	564	788	919	1092	1288	1751	2006	2457	2636



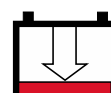
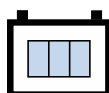
Discharge Date Table for Engine Starting Applications

Discharge performance date after fully charged by constant current according to IEC60623 standard

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 0.85 V/ Cell

Model	Capacity (C5 Ah)	Minutes			Seconds			
		3	1.5	1	30	15	5	1
XHP5	5	44.7	48.6	52.3	56.4	60.5	67.3	73.6
XHP10	10	89.4	97.3	105	113	121	135	147
XHP20	20	178	195	209	226	242	269	294
XHP30	30	269	293	313	339	363	403	442
XHP40	40	358	390	417	452	484	538	589
XHP50	50	447	488	520	565	606	672	736
XHP60	60	536	586	624	678	727	807	883
XHP70	70	625	684	728	792	848	941	1030
XHP80	80	715	782	832	905	969	1075	1177
XHP90	90	730	826	895	997	1090	1210	1290
XHP100	100	811	917	994	1110	1210	1340	1430
XHP110	110	892	1009	1093	1221	1331	1474	1573
XHP120	120	951	1085	1169	1304	1430	1576	1670
XHP130	130	1027	1150	1250	1390	1510	1670	1780
XHP140	140	1106	1238	1346	1497	1626	1798	1917
XHP150	150	1185	1330	1440	1600	1740	1930	2050
XHP160	160	1263	1419	1536	1707	1856	2059	2187
XHP170	170	1380	1560	1690	1880	2050	2280	2430
XHP180	180	1461	1652	1789	1991	2171	2414	2573
XHP190	190	1545	1740	1890	2100	2300	2550	2710
XHP200	200	1626	1832	1989	2211	2421	2684	2853
XHP210	210	1708	1923	2089	2321	2542	2818	2995
XHP220	220	1741	1980	2140	2390	2620	2890	3060
XHP230	230	1820	2070	2237	2499	2739	3021	3199
XHP240	240	1899	2160	2335	2607	2858	3153	3338
XHP250	250	1978	2250	2430	2720	2980	3290	3470
XHP300	300	2369	2660	2870	3210	3480	3857	4100



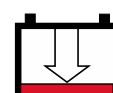
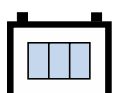
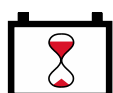
Discharge Date Table for Engine Starting Applications

Discharge performance date after fully charged by constant current according to IEC60623 standard

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 0.65 V/ Cell

Model	Capacity (C5 Ah)	Minutes		Seconds			
		1.5	1	30	15	5	1
XHP5	5	69.8	75.4	84.5	88.3	96.4	107
XHP10	10	140	151	169	177	193	215
XHP20	20	280	301	338	354	385	430
XHP30	30	419	452	507	531	578	646
XHP40	40	558	603	676	708	770	861
XHP50	50	698	754	845	884	963	1080
XHP60	60	837	904	1014	1062	1156	1297
XHP70	70	977	1055	1183	1238	1348	1512
XHP80	80	1118	1206	1352	1415	1541	1728
XHP90	90	1154	1267	1470	1575	1733	1880
XHP100	100	1277	1411	1638	1743	1922	2090
XHP110	110	1405	1552	1802	1917	2114	2298
XHP120	120	1505	1655	1928	2038	2279	2443
XHP130	130	1617	1772	2048	2184	2405	2594
XHP140	140	1741	1908	2205	2352	2589	2793
XHP150	150	1875	2050	2363	2520	2772	2993
XHP160	160	2000	2186	2520	2688	2957	3192
XHP170	170	2173	2390	2783	2972	3276	3549
XHP180	180	2301	2530	2946	3146	3469	3758
XHP190	190	2431	2668	3108	3318	3665	3969
XHP200	200	2559	2808	3272	3493	3857	4178
XHP210	210	2687	2949	3435	3667	4050	4387
XHP220	220	2760	3039	3528	3738	4190	4484
XHP230	230	2886	3177	3688	3908	4380	4687
XHP240	240	3011	3315	3849	4078	4570	4891
XHP250	250	3142	3461	4011	4253	4757	5093
XHP300	300	3739	4089	4725	5040	5555	5996



Calculation Methods

Information required for battery capacity calculation

The following information needed for a precise battery capacity calculation:

- ☐ Nominal voltage of the system
- ☐ Load current required
- ☐ Backup time required
- ☐ Maximum voltage (for charging)
- ☐ Minimum voltage
- ☐ Temperature range
- ☐ Battery layout and available space
- ☐ Physical condition

Float Voltage Operation

In these conditions the float voltage, being the voltage at which the general load circuit will operate, then a decision will have to be reached on the cell float voltage needed to maintain the battery in the required condition.

$$\text{Number of cells required} = \frac{\text{Circuit voltage}}{\text{Cell Float voltage}}$$

$$\text{Minimum cell voltage} = \frac{\text{Minimum D.C. voltage}}{\text{Number of cells}}$$

The most commonly used float voltages are 1.40-1.45 voltage per cell, but the exact figure has to be related carefully to circumstances.

For Example

An EverExceed Nickel Cadmium battery is required to maintain an inverter load of 50KVA at 0.8 power factor for a backup time of 30 minutes, at 20~25°C temperature. The DC voltage to the inverter operates within the limit of 265 volts with the battery on float charge to a minimum of 202 volts at end of back up time. The inverter has an 85% efficiency rate.

-Number of Cells (at recommended float of 1.44VPC) = $265/1.44 \approx 184$ cells

-Minimum Cell Voltage = $202/184 \approx 1.10$ volts per cell

-Maximum Battery Current

$$= \frac{\text{Inverter load in KVA} \times \text{Power factor}}{\text{Min. cell voltage} \times \text{Number of cells} \times \text{Inverter efficiency}}$$

$$= \frac{50\text{KVA} \times 0.80}{1.10 \times 184 \times 0.85} = 232.5 \text{ Amps}$$

We shall choose the battery with capacity equal or just above 232.5Amps.

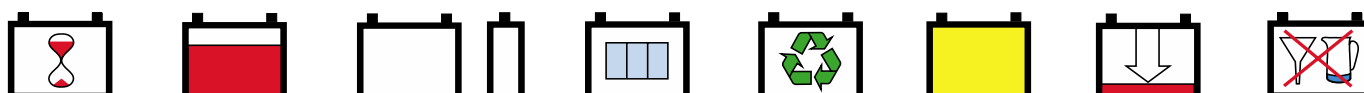
To meet the 30 minutes backup time requirement, we determine to choose the battery size from XHP Range.

From our catalogue data, the cell type is XHP300.

Battery shall comprise 184 cells of EverExceed Nickel Cadmium type XHP300.

System Voltage	Number of Cells	Spread Range Number of Cells
24	20	18 ~ 21
36	30	27 ~ 31
48	40	36 ~ 41
110	92	88 ~ 93
220	184	180 ~ 186

The number of cells in a battery may be determined by simply dividing the nominal voltage of the system by the nominal voltage of a cell (1.2 Volts).



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