

NCPP

Nickel Cadmium Pocket Plate Batteries



Block Battery Catalogue



Introduction:

HBL's Nickel Cadmium Pocket Plate battery designs are based on the superior pocket plate technology.

A fully integrated modern factory, supported by strong process management and quality controls makes HBL one of the best Nickel Cadmium battery production facilities in the world.

HBL's block batteries are offered in multiple voltage choices and in wide capacity range.

NCPP block battery range is designed to comply with IS 10918 & IEC 60623.

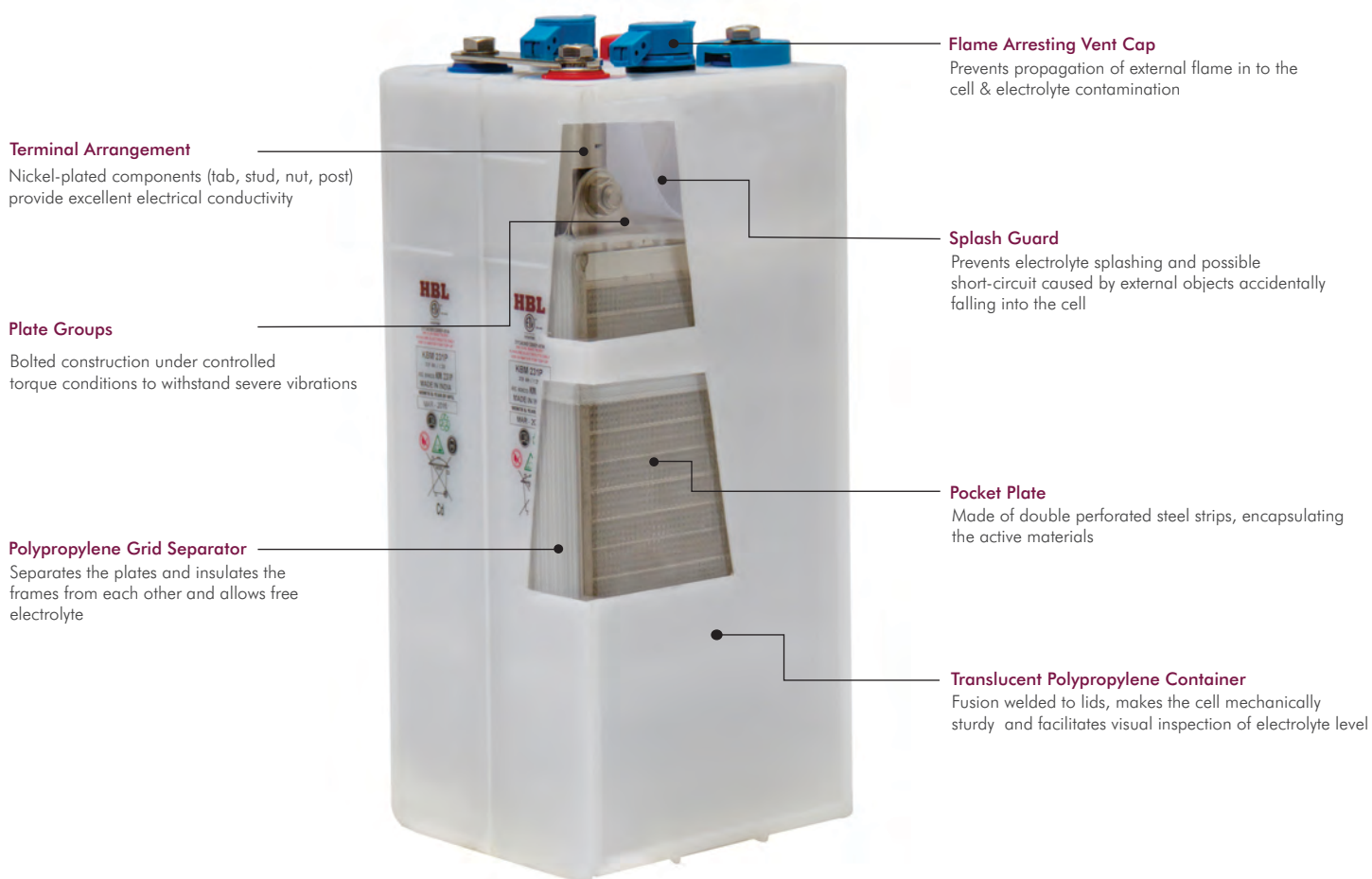
Construction

The internal mechanical structure is made of nickel plated steel making it highly rugged and capable of withstanding mechanical abuses. The active materials are encapsulated between specially designed folded steel strips, which are perforated on both sides. This design increases the effective surface area by 30% which in turn results in effective utilization of active material and makes the battery more efficient.

Block batteries use special polypropylene separator system, which is chemically inert and highly immune to wear and tear. Batteries come in tough, shock resistant, fusion welded polypropylene containers and lids. A unique flame arresting flip type vent cap in the batteries prevents any unusual event and electrolyte contamination.

Block batteries are supplied either in filled condition (charged or discharged) or dry & discharged condition with inter-cell connectors, cable connectors, associated hardware and accessories that are required for normal operation and maintenance. Powder coated Mild Steel racks to house the batteries can be provided as an option.

Cut-view of cell:



Benefits

- ❖ High reliability
- ❖ Long float life - 20 years+ at 20° C for standby applications
- ❖ Long shelf life - 5 years+ for the cells supplied in dry condition & 1 year in filled condition
- ❖ Quick charging - More than 90 % capacity available within 6 hours of charging
- ❖ Low internal resistance - For enhanced battery performance
- ❖ Resistant to mechanical & electrical abuses - Making it ideal for deployment in harsh environments
- ❖ Wide operating temperature range (-20° C to +50° C)
- ❖ Application specific designs (KBH, KBM & KBL)
- ❖ Easy installation & low maintenance
- ❖ Best TCO (Total Cost of Ownership) for demanding application needs
- ❖ No risk of sudden death failure

Capacity Range

High Discharge - KBH:

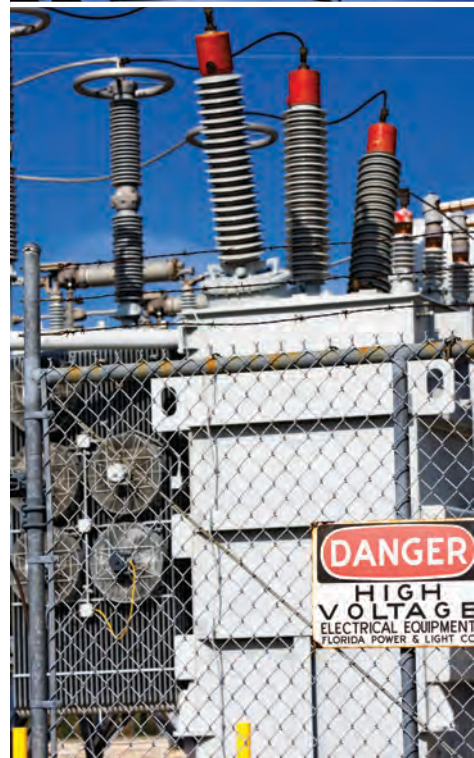
- ❖ Thin plates with more plate surface area
- ❖ For high discharge applications with less than 1 hour backup time requirements
- ❖ 9 Ah to 990 Ah
- ❖ 77 standard cell models to choose from

Medium Discharge - KBM:

- ❖ Optimized plate thickness
- ❖ For medium discharge applications, between 1 to 3 hours backup time requirements which involves high and long discharges
- ❖ 12 Ah to 1460 Ah
- ❖ 72 standard cell models to choose from

Long Discharge - KBL:

- ❖ Thick plates with more amount of active material
- ❖ For long discharge applications, with more than 3 hours backup time requirements
- ❖ 8 Ah to 1680 Ah
- ❖ 73 standard cell models to choose from



Applications

Block battery range is specially designed for industrial markets considering the reliability, cost-optimization and low-maintenance requirements for the following applications and segments

- ❖ Fire alarm systems
- ❖ Signaling and Telecommunications
- ❖ Solar Photovoltaic
- ❖ Instrumentation & Process control
- ❖ Switchgear protection
- ❖ Emergency lighting
- ❖ Switchyard
- ❖ UPS
- ❖ Genset starting
- ❖ Diesel Locomotive cranking
- ❖ Electromagnetic lifters (EOT crane)

Battery Charging

Following are recommended charge conditions:

Commissioning Charge:

- ❖ Constant current charge of 10 hours at $0.2 C_5$ A (20 amps for 100 Ah battery)

Quick Charging:

- ❖ Constant current charge at $0.4 C_5$ A for first 2.5 hours followed by $0.2 C_5$ A for next 2.5 hours

Charging in Operation:

The recommended charging voltages for continuous parallel operation, with occasional battery discharges:

Two Level Charging:

- ❖ Float level:
 - 1.40 V/cell for KBH & KBM
 - 1.42 V/cell for KBL
 - Float charging current: 1 to 2 mA per Ah
- ❖ *Boost level:
 - 1.45 to 1.70 V/cell for KBH & KBM
 - 1.47 to 1.70 V/cell for KBL
 - Current limit: $0.2C_5$ A

Single Level Charging:

- ❖ 1.43 – 1.50 V/cell
(may increase water consumption)

* Refer charge curves at page#13

(A higher voltage will keep the battery at high state of charge)



H Range

Cell dimensions and weight details

Cell type	Capacity (C _s Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBH 9 P	9	264	123		69	100	1.40	M6	B21-1	90
KBH 13 P	13	264	123		79	115	1.60	M6	B22-1	110
KBH 17 P	17						1.80			
KBH 21 P	21	264	123		103	151	2.20	M6	B23-1	145
KBH 30 P	30	264	123		127	187	2.90	M6	B24-1	185
KBH 34 P	34						2.80			
KBH 40 P	40	405	195		79	115	4.40	M10	B45-1	280
KBH 50 P	50						4.80			
KBH 54 P	54	349	195		103	151	5.20	M10	B33-1	380
KBH 59 P	59						5.30			
KBH 64 P	64	349	195		127	187	6.20	M10	B32-1	515
KBH 69 P	69						6.40			
KBH 79 P	79						6.60			
KBH 88 P	88	349	195		159	232	7.90	M10	B31B-1	650
KBH 98 P	98						8.30			
KBH 103 P	103						8.40			
KBH 110 P	110	349	195		183	268	9.20	M10	B31-1	745
KBH 118 P	118						9.30			
KBH 127 P	127	349	195	132	252	372	12.5	2 x M10	B32-2	1030
KBH 137 P	137						12.9			
KBH 147 P	147						13.0			
KBH 157 P	157						13.1			
KBH 170 P	170	349	195	159	304		15.2	2 x M10	B31B-2	1300
KBH 177 P	177						15.7			
KBH 185 P	185						15.8			
KBH 196 P	196						16.7			
KBH 206 P	206						16.8			
KBH 218 P	218	349	195	183	352		18.4	2 x M10	B31-2	1490
KBH 236 P	236						18.5			
KBH 245 P	245						18.5			
KBH 255 P	255	405	195	159	304		19.0	2 x M10	B41B-2	1300
KBH 265 P	265						19.1			
KBH 275 P	275						20.0			
KBH 290 P	290	405	195	183	352		22.9	2 x M10	B41-2	1490
KBH 300 P	300						22.1			
KBH 315 P	315						22.2			
KBH 330 P	330						22.3			
KBH 353 P	353	349	195	268			27.5	3 x M10	B31-3	2235
KBH 362 P	362						27.6			

H Range

Cell dimensions and weight details

Cell type	Capacity (C ₅ Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBH 375 P	375	405	195	232			28.3	3 x M10	B41B-3	1950
KBH 393 P	393						28.4			
KBH 410 P	410						29.6			
KBH 420 P	420	405	195	268			31.5	3 x M10	B41-3	2235
KBH 430 P	430						32.9			
KBH 450 P	450						33.0			
KBH 471 P	471						33.2			
KBH 481 P	481						33.3			
KBH 491 P	491						33.4			
KBH 510 P	510	405	195	304			37.6	4 x M10	B41B-4	2600
KBH 530 P	530						37.7			
KBH 540 P	540						39.3			
KBH 560 P	560						39.5			
KBH 575 P	575	405	195	352			43.6	4 x M10	B41-4	2980
KBH 590 P	590						43.7			
KBH 600 P	600						43.8			
KBH 615 P	615						43.9			
KBH 630 P	630						44.0			
KBH 640 P	640						44.1			
KBH 655 P	655	44.3								
KBH 670 P	670	405	195	377			47.3	5 x M10	B41B-5	3250
KBH 680 P	680						49.1			
KBH 690 P	690						49.3			
KBH 705 P	705	405	195	437			52.6	5 x M10	B41-5	3725
KBH 725 P	725						54.4			
KBH 755 P	755						54.6			
KBH 765 P	765						54.8			
KBH 785 P	785						55.0			
KBH 800 P	800						55.1			
KBH 825 P	825						55.3			
KBH 840 P	840	405	195	522			62.8	6 x M10	B41-6	4470
KBH 865 P	865						65.4			
KBH 890 P	890						65.5			
KBH 910 P	910						65.6			
KBH 920 P	920						65.6			
KBH 930 P	930						65.9			
KBH 950 P	950						66.1			
KBH 990 P	990						66.3			

M Range

Cell dimensions and weight details

Cell type	Capacity (C _s Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBM 12 P	12	264	123		69	100	1.30	M6	B21-1	90
KBM 17 P	17						1.40			
KBM 22 P	22	264	123		79	115	1.80	M6	B22-1	110
KBM 28 P	28						1.90			
KBM 35 P	35	264	123		103	151	2.30	M6	B23-1	145
KBM 44 P	44	264	123		127	187	2.90	M6	B24-1	185
KBM 50 P	50	405	195		79	115	3.30	M10	B45-1	280
KBM 57 P	57						4.20			
KBM 67 P	67						4.25			
KBM 75 P	75						4.50			
KBM 90 P	90						5.00			
KBM 95 P	95	405	195		94	137	5.20	M10	B44-1	350
KBM 100 P	100						5.30			
KBM 112 P	112						5.70			
KBM 118 P	118	405	195		115	169	6.60	M10	B42A-1	450
KBM128 P	128						7.00			
KBM 138 P	138						7.30			
KBM 150 P	150	405	195		127	187	8.20	M10	B42-1	515
KBM 161 P	161						8.40			
KBM 170 P	170						8.60			
KBM 184 P	184	405	195		159	232	9.70	M10	B41B-1	650
KBM 193 P	193						9.80			
KBM 200 P	200	405	195		183	268	10.5	M10	B41-1	745
KBM 208 P	208						10.8			
KBM 218 P	218						11.0			
KBM 231 P	231						11.6			
KBM 241 P	241						11.7			
KBM 250 P	250	405	195	120	228	336	14.0	2 x M10	B42A-2	900
KBM 260 P	260						14.2			
KBM 277 P	277						14.5			
KBM 300 P	300	405	195	132	252	372	16.6	2 x M10	B42-2	1030
KBM 323 P	323						16.7			
KBM 346 P	346						17.3			
KBM 369 P	369	405	195	159	304		19.4	2 x M10	B41B-2	1300
KBM 390 P	390						19.6			
KBM 400 P	400	405	195	183	352		21.0	2 x M10	B41-2	1490
KBM 415 P	415						21.7			
KBM 438 P	438						21.9			
KBM 461 P	461						22.9			
KBM 485 P	485						23.2			

M Range

Cell dimensions and weight details

Cell type	Capacity (C _s Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBM 505 P	505	405	195	232			27.6	3 x M10	B41B-3	1950
KBM 525 P	525						28.4			
KBM 555 P	555						29.0			
KBM 580 P	580						29.3			
KBM 600 P	600	405	195	268			32.5	3 x M10	B41-3	2235
KBM 625 P	625						32.9			
KBM 650 P	650						33.2			
KBM 675 P	675						34.1			
KBM 690 P	690						34.7			
KBM 723 P	723						35.0			
KBM 740 P	740	405	195	304			38.7	4 x M10	B41B-4	2600
KBM 770 P	770						39.1			
KBM 790 P	790	405	195	352			43.4	4 x M10	B41-4	2980
KBM 805 P	805						43.0			
KBM 830 P	830						43.4			
KBM 865 P	865						43.8			
KBM 890 P	890						45.2			
KBM 920 P	920						46.0			
KBM 940 P	940						45.9			
KBM 965 P	965						46.2			
KBM 1000 P	1000	405	195	437			54.1	5 x M10	B41-5	3725
KBM 1040 P	1040						55.4			
KBM 1080 P	1080						56.0			
KBM 1100 P	1100						56.1			
KBM 1150 P	1150						58.4			
KBM 1180 P	1180						58.6			
KBM 1220 P	1220	405	195	522			64.3	6 x M10	B41-6	4470
KBM 1270 P	1270						65.6			
KBM 1320 P	1320						65.9			
KBM 1390 P	1390						69.3			
KBM 1445 P	1445						70.0			
KBM 1460 P	1460						70.1			

L Range

Cell dimensions and weight details

Cell type	Capacity (C _s Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBL 8 P	8	264	123		79	115	1.30	M6	B22-1	110
KBL 17 P	17						1.50			
KBL 23 P	23						2.00			
KBL 34 P	34	264	123		103	151	2.10	M6	B23-1	145
KBL 40 P	40						2.30			
KBL 46 P	46	264	123		127	187	2.70	M6	B24-1	185
KBL 55 P	55						2.90			
KBL 70 P	70	405	195		79	115	4.20	M10	B45-1	280
KBL 80 P	80						4.50			
KBL 90 P	90						4.80			
KBL 100 P	100	349	195		103	151	5.30	M10	B33-1	380
KBL 112 P	112	405	195		103	151	5.80	M10	B43-1	380
KBL 125 P	125						6.00			
KBL 135 P	135	405	195		115	169	7.30	M10	B42A-1	450
KBL 150 P	150	405	195		127	187	7.60	M10	B42-1	515
KBL 160 P	160						7.80			
KBL 170 P	170						8.00			
KBL 180 P	180						8.10			
KBL 200 P	200	405	195		159	232	9.30	M10	B41B-1	650
KBL 214 P	214						9.40			
KBL 225 P	225						9.70			
KBL 240 P	240	405	195		183	268	10.9	M10	B41-1	745
KBL 255 P	255						11.0			
KBL 270 P	270						11.2			
KBL 280 P	280	405	195	120	228	336	14.0	2 x M10	B42A-2	900
KBL 300 P	300	405	195	132	252	372	14.0	2 x M10	B42-2	1030
KBL 320 P	320						15.8			
KBL 340 P	340						16.0			
KBL 360 P	360						16.2			
KBL 380 P	380	405	195	159	304		18.2	2 x M10	B41B-2	1300
KBL 400 P	400						18.5			
KBL 415 P	415						18.6			
KBL 435 P	435						18.9			
KBL 450 P	450						19.1			
KBL 460 P	460						19.2			
KBL 480 P	480	405	195	183	352		24.6	2 x M10	B41-2	1490
KBL 500 P	500						24.7			
KBL 510 P	510						24.8			
KBL 550 P	550						25.5			

L Range

Cell dimensions and weight details

Cell type	Capacity (C _s Ah)	Cell dimensions in mm					Approx. weight per cell in kg	Cell connection bolt size	Container size reference	Approx. reserve electrolyte cc/cell
		Height	Width	Length per block						
				1.2 V L (1)	2.4 V L (2)	3.6 V L (3)				
KBL 575 P	575	405	195	232			27.8	3 x M10	B41B-3	1950
KBL 600 P	600						28.2			
KBL 635 P	635						28.4			
KBL 650 P	650						28.7			
KBL 675 P	675						29.0			
KBL 690 P	690						29.1			
KBL 720 P	720	405	195	268			31.8	3 x M10	B41-3	2235
KBL 750 P	750						32.2			
KBL 770 P	770						32.4			
KBL 800 P	800						33.1			
KBL 830 P	830						33.5			
KBL 860 P	860	405	195	304			37.7	4 x M10	B41B-4	2600
KBL 890 P	890						38.6			
KBL 920 P	920						38.8			
KBL 980 P	980	405	195	352			42.5	4 x M10	B41-4	2980
KBL 1000 P	1000						43.0			
KBL 1020 P	1020						43.2			
KBL 1060 P	1060						44.1			
KBL 1100 P	1100						44.5			
KBL 1125 P	1125	405	195	377			49.5	5 x M10	B41B-5	3250
KBL 1150 P	1150						49.8			
KBL 1200 P	1200	405	195	437			53.9	5 x M10	B41-5	3725
KBL 1225 P	1225						54.1			
KBL 1250 P	1250						54.3			
KBL 1280 P	1280						54.6			
KBL 1320 P	1320						55.7			
KBL 1360 P	1360						56.1			
KBL 1400 P	1400						56.5			
KBL 1450 P	1450	405	195	522			64.5	6 x M10	B41-6	4470
KBL 1500 P	1500						64.8			
KBL 1540 P	1540						65.2			
KBL 1600 P	1600						66.5			
KBL 1660 P	1660						67.3			
KBL 1680 P	1680						67.4			

Battery Arrangement as per Standard Rack Designs

(NORMAL ARRANGEMENT)																
Container size reference	1TIER								2TIER							
	1STEP		2STEP		3STEP		4STEP		1STEP		2STEP		3STEP		4STEP	
	W	H	W	H	W	H	W	H	W	H	W	H	W	H	W	H
B21-1 / B22-1 B23-1 / B24-1			318	703	467	818	616	933			318	1225	467	1425	616	1675
B31-1 / B31B-1 B32-1 / B33-1			440	788	650	903	860	1018			440	1425	650	1645	860	1875
B41-1 / B41B-1 B42-1 / B42A-1 B43-1 / B44-1 B45-1 / B42A-2 B42-2 / B41B-2			440	844	650	959	860	1074			440	1550	650	1800	860	2050

(CROSS - WISE ARRANGEMENT)																
Container size reference	1TIER								2TIER							
	1STEP		2STEP		3STEP		4STEP		1STEP		2STEP		3STEP		4STEP	
	W	H	W	H	W	H	W	H	W	H	W	H	W	H	W	H
B32-2			318	788	467	903	616	1018			318	1425	467	1645	616	1875
B31B-2			376	788	554	903	732	1018			376	1425	554	1645	732	1875
B31-2			440	788	650	903	860	1018			440	1425	650	1645	732	1875
B31-3			586	788	869	903					586	1425	869	1645		
B41B-2			376	844	554	959	732	1074			376	1550	554	1800	732	2050
B41B-3			534	844	791	959					534	1550	791	1800		
B41B-4			658	844	977	959					658	1550	977	1800		
B41B-5			804	844							804	1550				
B41-2			440	844	650	959	860	1074			440	1550	650	1800	860	2050
B41-3			586	844	869	959					586	1550	869	1800		
B41-4			754	844							754	1550				
B41-5			924	844					472	1320	924	1550				
B41-6	557	729	1094	844					557	1320						

(All dimensions in mm. Height is including cells)

Evaluation of Rack Length

Length of Rack = (X + 5) x No. of block cells in a row (for all block cells)

Where X = Length of cell / block cell for length-wise mounting (KBH 9-118 / KBM 12-390 / KBL 8-460)

= Width of cell / block cell for cross-wise mounting (KBH 127 & above / KBM 400 & above / KBL 480 & above)

The value of length should be rounded-off to nearest to 100 mm and 5 mm should be added to arrive at the final length of rack.

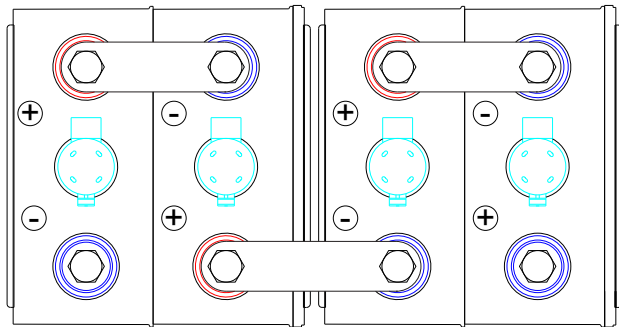


Standard Arrangement of Cells

Following standard arrangement and connection methods of cells are recommended by HBL for optimum efficiency. These configuration methods shall be followed for the cells being installed on racks, cabinets, crates or simply freestanding battery cells.

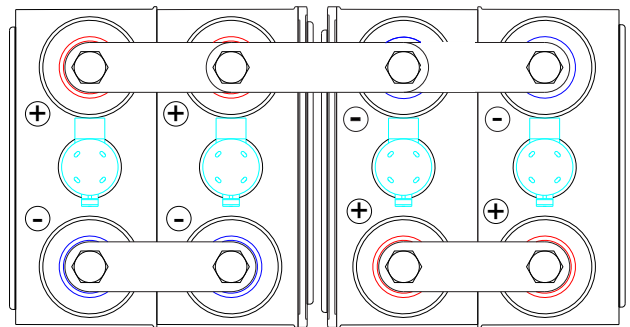
ARRANGEMENT	KBH	KBM	KBL
Normal	9 to 118 Ah	12 to 390Ah	8 to 460 Ah
Cross - wise	127 to 990 Ah	400 to 1460 Ah	480 to 1680 Ah

KBH 9 - KBH 118
KBM 12 - KBM 241
KBL 8 - KBL 270



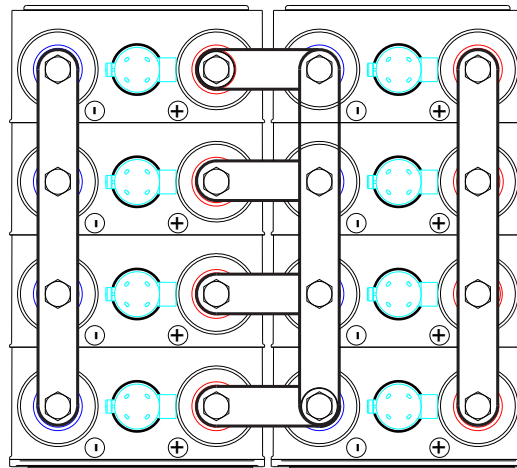
Normal Arrangement

KBM 250 - KBM 390
KBL 280 - KBL 460



Normal Arrangement

KBH 127 - KBH 990
KBM 400 - KBM 1460
KBL 480 - KBL 1680

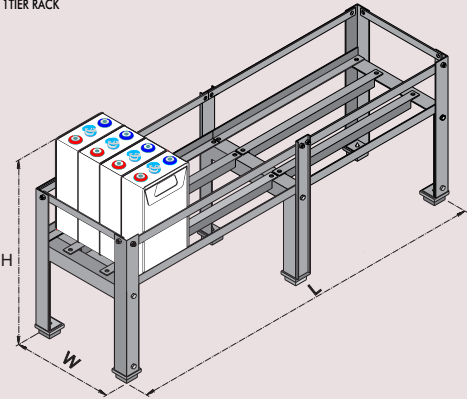


Cross - wise Arrangement

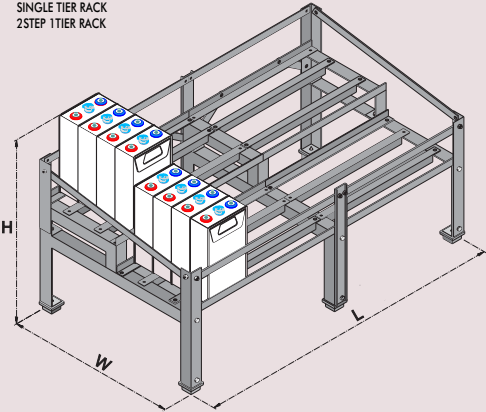


Battery Rack Arrangement

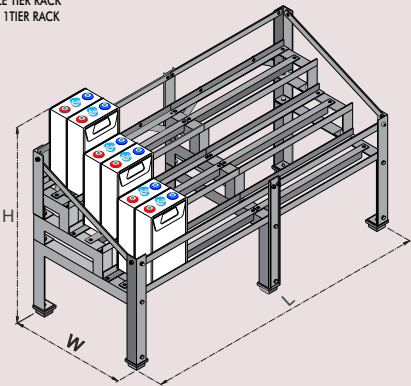
SINGLE TIER RACK
1STEP 1TIER RACK



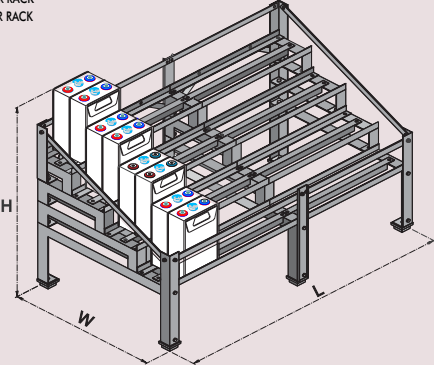
SINGLE TIER RACK
2STEP 1TIER RACK



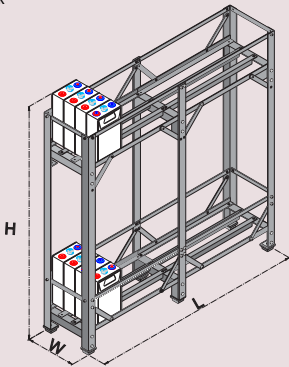
SINGLE TIER RACK
3STEP 1TIER RACK



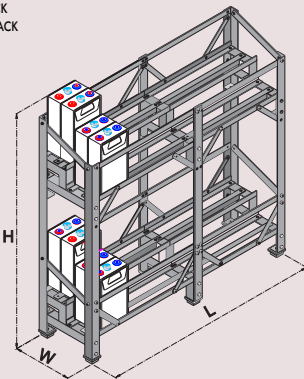
SINGLE TIER RACK
4STEP 1TIER RACK



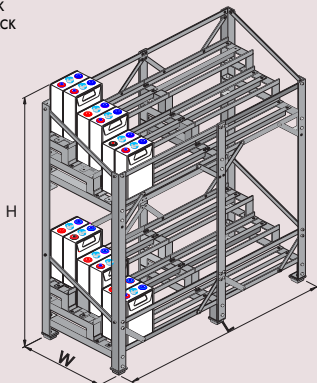
TWO TIER RACK
1STEP 2TIER RACK



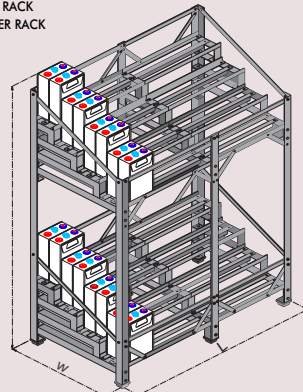
TWO TIER RACK
2STEP 2TIER RACK



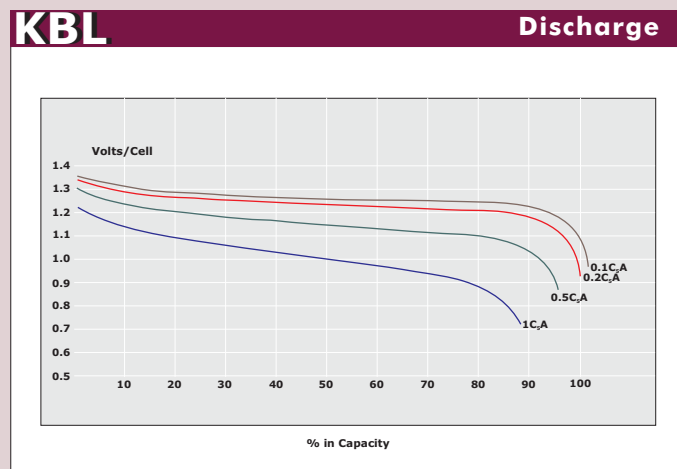
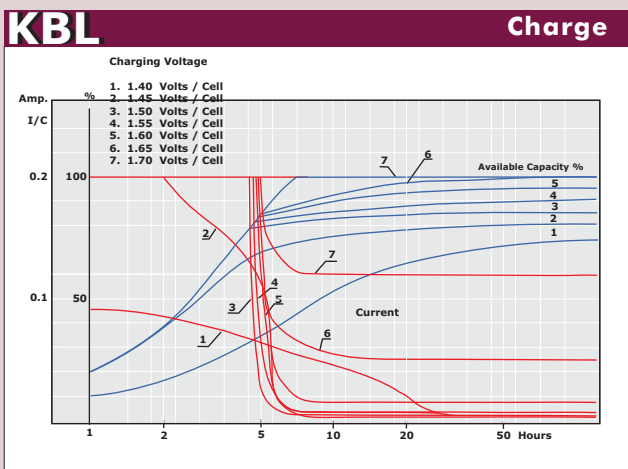
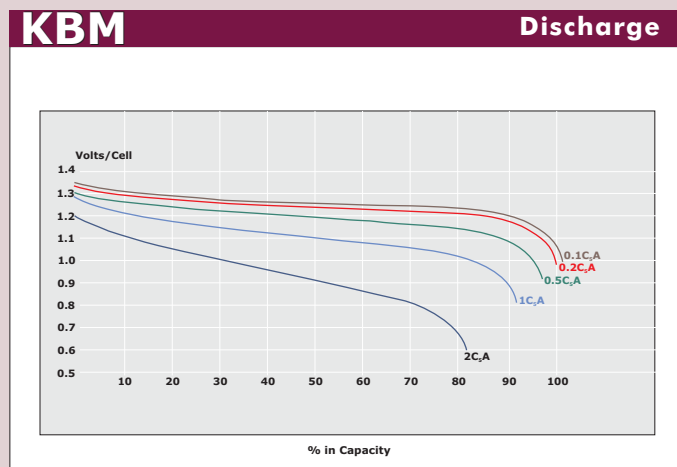
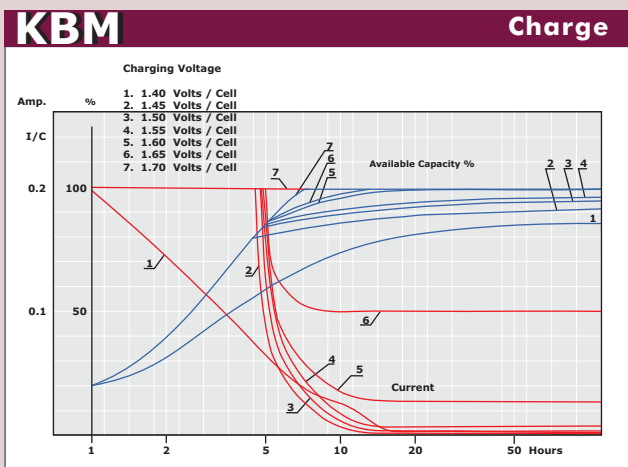
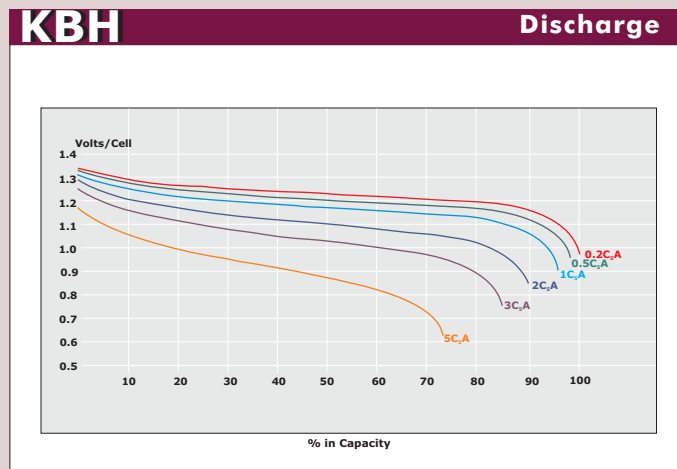
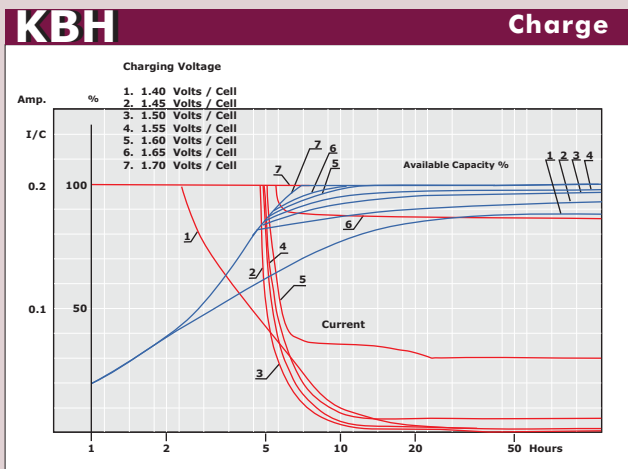
TWO TIER RACK
3STEP 2TIER RACK



TWO TIER RACK
4STEP 2TIER RACK



Typical Characteristics



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