



Nickel Cadmium Batteries



Low, Medium & High Range

BS EN 60623:2001



Nickel Cadmium Batteries



GENERAL

GST Nickel Cadmium Batteries are manufactured with German technology under strict quality control and supervision to produce a quality finished product. The proven design minimizes water top-up of up to 2 years using standard vent plugs and virtually 'maintenance free' when continuously operating at float voltage using flame arresting gas recombination valve regulating vent plugs. Life expectancy is up to 25 years at operating temperature of 20°~ 25°C.

CONSTRUCTION

GST Nickel cadmium batteries comes in single cells with encased lifting handles for large cells for ease of handling. Containers are made from high impact translucent plastic. Plates are welded to terminal poles to ensure maximum conductivity and terminal poles are maximized to ensure quick energy transfer. The generous water level between minimum and maximum provides for long top-up duration. The construction and mechanical strength of perforated steel nickel plated plates in high impact plastic containers ensure the batteries to withstand high resistance to electrical abuse as well as shock and vibration.

The standard screw-in vent plugs are designed to prevent 'electrolyte spray' while enabling release of gases during overcharge.

VALVE REGULATED VENT PLUGS/ CLEAN ROOM OPERATION

*Optional low pressure flame arresting gas recombination valve regulating vent plugs are available on request. The vent 'prevents' any gas release during normal charge and act as a one way valve releasing small quantities of hydrogen and oxygen when the internal pressure exceeds its fixed safety value and recloses when the pressure falls below the release pressure. Gases released are non-corrosive and makes GST nickel cadmium batteries suitable for 'Clean Room Operation'. Integral flame arresting porous disk prevents any possible ignition from external sources to the cell. Gas recombination is up to 90%.

APPLICATION

The ranges available are suitable for a wide range of standby applications due to its wide operating temperatures from -40°C to +60°C and namely for;

- Switch Tripping/ Closing
- Emergency Lighting
- Railway Lighting/ Starting
- Fire Alarm Standby
- Telecommunications/ Emergency Lights
- Uninterruptible Power Supply (UPS) System
- Solar Standby

MANUFACTURING STANDARDS

Gabungan Sumber Tenaga (GST) are presently undergoing strict quality management system to ISO 9001- 2000. GST Nickel Cadmium batteries comply/ conform to BS/ IEC 60623:2001.



HKP Range

(IEC type KP...L)

HKP type cells are designed for general purpose applications where discharge is infrequent but for long periods of more than 3 hours. This makes this range of batteries suitable for emergency lighting, alarms, railway signaling, switch tripping and closing, solar, etc.

HKP cells are available from 10~1000Ah

HKM Range

(IEC type KP...M)

HKM type cells are designed for medium discharge periods of between 30 minutes and 3 hours. This makes the battery ideal for standby power supplies industry including UPS, off-shore, gas turbines, etc.

HKM cells are available from 30~800Ah

HKH Range

(IEC type KP...H)

HKH type cells have excellent high rate discharge capabilities due to its thin plate, high porosity and low internal resistance design.

Applications include engine starting, switch closing and UPS where high rate of discharge between 1 second and 30 minutes are required.

HKH cells are available from 30~500Ah

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TECHNICAL CHARACTERISTICS

20°C±5°C

Charging

Our GST Nickel Cadmium cells can be charged by all normal methods including:

- Taper
- Constant Current
- Constant Voltage
- Pulse

Moreover our GST Nickel Cadmium cells may be operated satisfactorily in any state of charge. For operating conditions other than fully charged, consult the company.

Capacity

The rated capacity (C_5) of a cell is the capacity available in ampere hours (Ah) at the 5 hour discharge rate to an end voltage of 1.00 volt per cell.

Nominal Voltage

The nominal voltage is 1.2 volts per cell (vpc).

1. Constant Current Charging

- Standard Charge : 0.2 C_5 amperes for 8 hours
- Fast Recharge : 0.4 C_5 amperes for 2.5 hours followed by 0.2 C_5 amperes for 2.5 hours
- Minimum effective rate : 1.3 ~ 1.7 mA per Ah

2. Constant Voltage Charging

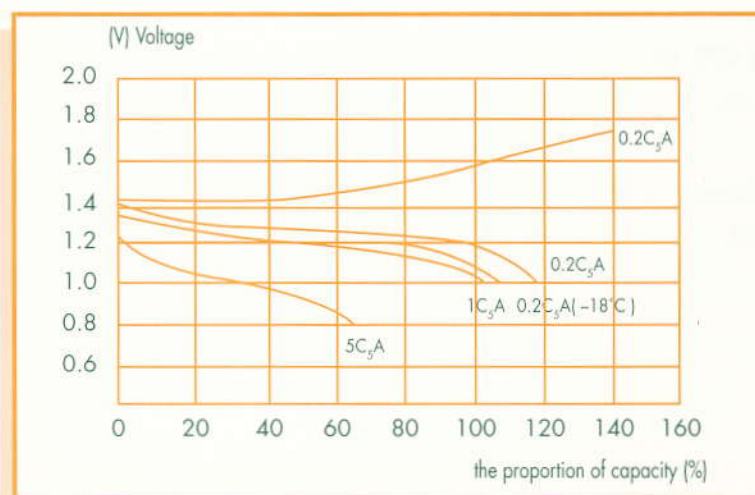
- With Boost
- Float Voltage Range : 1.40 ~ 1.45 V/Cell
- Boost Voltage Range : 1.55 ~ 1.70 V/Cell

3. Cell Data

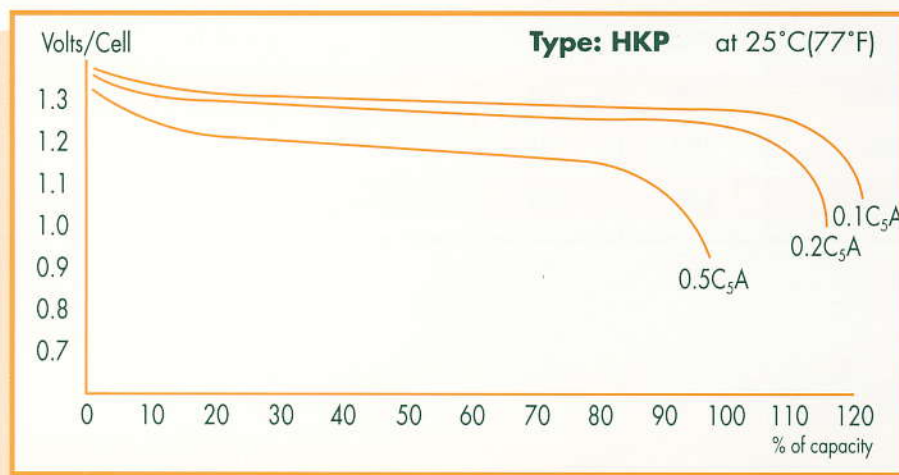
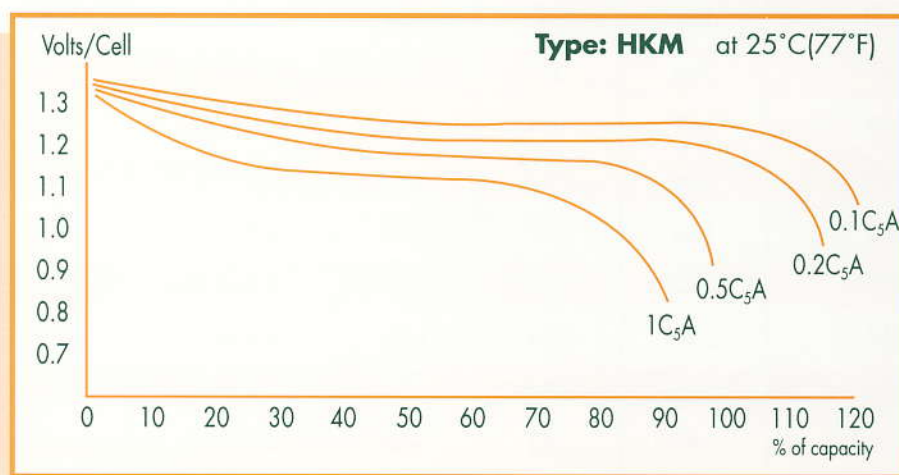
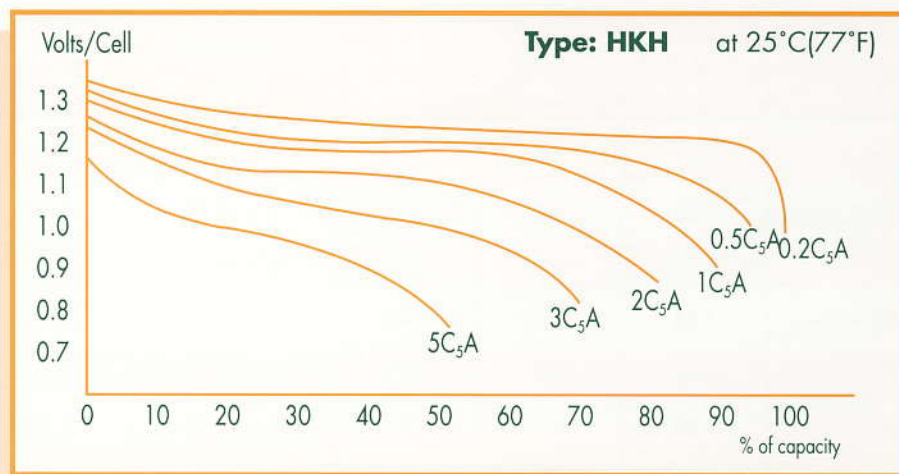
- Maximum Short Circuit Current : 10 x C_5 Amps

Initial Charging

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



DISCHARGING CURVES



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HKP Range Cell Dimension

TYPE	Capacity at 5hr rate to 1.0V	W (mm)	L (mm)	H (mm)	Terminal bolt	Cell, filled (kg)	Electrolyte Qty. (Liter)
HKP1	10	86	39	122	2 x M 10	0.66	0.12
HKP2	20	144	53	245	2 x M 10	2.30	0.45
HKP3	30	144	53	245	2 x M 10	2.50	0.55
HKP5	40	144	53	245	2 x M 10	3.00	0.60
HKP5.5	45	142	67	227	2 x M 10	3.20	0.60
HKP6	60	139	89	223	2 x M 16	5.00	1.50
HKP7	70	139	79	359	2 x M 16	6.00	1.30
HKP9	80	139	79	359	2 x M 16	6.00	1.30
HKP10	100	139	79	359	2 x M 16	6.50	1.70
HKP12	120	139	89	359	2 x M 16	8.80	3.00
HKP14	140	139	89	359	2 x M 16	13.0	3.30
HKP16	150	162	167	345	2 x M 20	13.0	3.30
HKP18	180	162	167	345	2 x M 20	14.0	3.30
HKP20	200	162	167	345	2 x M 20	14.0	3.30
HKP23	220	280	138	450	4 x M 16	18.0	4.00
HKP26	250	280	138	450	4 x M 16	20.0	4.50
HKP31	300	280	138	450	4 x M 16	21.5	5.50
HKP36	350	280	138	450	4 x M 16	23.0	4.00
HKP43	420	280	138	450	4 x M 20	24.5	5.00
HKP51	500	291	174	505	4 x M 20	39.0	7.50
HKP59	600	291	174	505	4 x M 20	50.0	9.00
HKP67	700	398	184	572	6 x M 16	60.0	17.0
HKP85	800	398	184	572	6 x M 16	63.0	17.0
HKP90	900	398	184	572	6 x M 16	70.0	18.0
HKP100	1000	398	184	572	6 x M 16	73.0	18.3

DISCHARGE Currents and Times – HKP

Tabulated Discharge Data at 20°C (±5°C)

Amperes on Discharge from fully charged cells to 1.14 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes							Hours					
		1	5	30	1	5	10	15	20	30	45	1	2	3	5	8	10
HKP1	10	11.2	10.9	10.5	9.09	7.70	6.79	6.39	6.21	5.71	4.95	4.58	3.29	2.76	1.98	1.27	1.03
HKP2	20	24.6	24.0	21.7	19.8	16.9	14.9	14.0	13.6	12.5	10.9	10.1	7.20	6.08	3.70	2.25	1.85
HKP3	30	33.6	32.7	31.5	27.5	23.0	20.3	19.1	18.6	17.1	14.8	13.7	9.87	8.28	5.8	3.8	3.1
HKP5	40	44.8	43.6	41.9	36.5	30.7	27.1	25.6	24.8	22.8	19.8	18.3	13.2	11.2	7.8	5.1	4.0
HKP5.5	45	50.4	49.1	44.3	40.6	34.6	30.5	28.7	27.9	25.7	22.3	20.6	14.8	12.4	8.9	5.87	5.0
HKP6	60	67.2	64.4	62.9	54.7	46.1	40.7	38.3	37.2	34.2	29.7	27.5	19.7	16.7	11.0	7.1	5.7
HKP7	70	78.4	75.1	73.4	63.8	53.8	47.5	44.7	43.4	39.9	34.6	32.1	23.0	19.5	13.0	8.45	6.8
HKP9	80	89.6	87.3	83.4	72.9	61.5	54.3	51.1	49.6	45.7	39.6	36.6	26.3	22.1	15.0	9.6	7.8
HKP10	100	112.0	109.0	105.0	91.0	76.9	67.9	63.9	62.1	57.1	49.5	45.8	32.9	27.6	18.0	11.7	9.4
HKP12	120	140.0	136.0	123.0	112.0	96.2	84.9	79.8	77.6	71.4	61.9	57.3	41.2	34.5	22.0	14.1	11.4
HKP14	140	158.0	152.0	140.0	128.0	108.0	97.0	90.3	87.0	79.0	67.4	61.5	46.2	38.5	25.0	15.9	12.9
HKP16	150	168.0	163.0	158.0	138.0	115.0	101.0	95.8	93.1	85.7	74.3	68.7	49.4	41.4	28.0	18.0	14.5
HKP18	180	201.0	193.0	187.0	164.0	138.0	121.0	107.0	113.0	102.0	88.3	82.0	55.0	49.0	33.0	21.0	17.1
HKP20	200	224.0	218.0	211.0	183.0	153.0	135.0	127.0	124.0	114.0	99.1	91.6	65.8	55.3	37.0	24.0	19.2
HKP23	220	245.0	238.0	230.0	201.0	168.0	148.0	139.0	136.0	125.0	108.0	100.0	73.3	60.5	40.0	25.4	20.6
HKP26	250	280.0	272.0	263.0	229.0	192.0	169.0	159.0	155.0	142.0	123.0	114.0	82.3	69.1	46.0	29.5	23.9
HKP31	300	336.0	327.0	316.0	276.0	230.0	203.0	191.0	186.0	171.0	148.0	137.0	98.7	82.9	55.0	35.2	28.6
HKP36	350	392.0	381.0	368.0	321.0	269.0	237.0	223.0	217.0	200.0	173.0	160.0	115.0	96.7	63.0	40.0	32.8
HKP43	420	448.0	436.0	419.0	366.0	307.0	271.0	255.0	248.0	228.0	198.0	183.0	131.0	110.0	76.0	48.5	39.3
HKP51	500	560.0	545.0	522.0	457.0	284.0	339.0	319.0	310.0	285.0	247.0	229.0	164.0	138.0	90.0	57.7	46.8
HKP59	600	672.0	654.0	627.0	549.0	461.0	407.0	383.0	372.0	342.0	297.0	275.0	197.0	165.0	104.0	66.4	53.8
HKP67	700	784.0	763.0	731.0	637.0	538.0	475.0	447.0	434.0	400.0	346.0	320.0	230.0	193.0	132.0	91.3	73.0
HKP85	800	896.0	873.0	845.0	729.0	615.0	543.0	511.0	496.0	457.0	396.0	366.0	263.0	221.0	150.0	104.0	83.5
HKP90	900	1008.0	982.0	940.0	820.0	692.0	611.0	575.0	558.0	514.0	445.0	412.0	296.0	248.0	178.0	117.0	93.9
HKP100	1000	1120.0	1091.0	1043.0	911.0	769.0	679.0	639.0	621.0	571.0	495.0	458.0	329.0	276.0	198.0	130.0	104.0

Amperes on Discharge from fully charged cells to 1.10 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes							Hours					
		1	5	30	1	5	10	15	20	30	45	1	2	3	5	8	10
HKP1	10	14.3	13.7	11.5	10.8	9.31	8.46	8.10	7.56	6.84	6.0	5.53	3.73	2.98	1.98	1.3	1.08
HKP2	20	31.5	30.1	25.3	23.9	20.4	18.6	17.8	16.6	15.0	13.2	12.1	8.21	6.57	3.85	2.4	1.92
HKP3	30	43.0	41.1	35.9	32.6	27.9	25.3	24.3	22.6	20.5	18.0	16.6	11.2	8.96	5.90	4.0	3.22
HKP5	40	57.4	54.9	47.5	43.5	37.2	33.8	32.4	30.2	27.3	24.0	22.1	14.9	11.9	7.9	5.3	4.3
HKP5.5	45	64.5	61.7	51.8	49.0	41.9	38.0	36.4	34.0	30.7	27.0	24.9	16.8	13.4	9.15	5.93	4.74
HKP6	60	86.1	82.3	71.5	65.3	55.8	50.7	48.6	45.3	41.0	36.0	33.2	22.4	17.9	11.5	7.3	6.0
HKP7	70	100.0	96.5	83.4	76.0	64.5	59.2	56.5	52.8	47.5	41.4	38.7	26.0	20.9	13.6	8.7	7.2
HKP9	80	114.0	109.0	95.3	87.1	74.5	67.6	64.8	60.4	54.7	48.0	44.2	29.8	23.9	15.7	10.0	8.2
HKP10	100	143.0	137.0	120.0	108.0	93.1	84.6	81.0	75.6	68.4	60.0	55.3	37.3	29.8	19.0	12.0	9.8
HKP12	120	179.0	171.0	144.0	136.0	116.0	105.0	101.0	94.5	85.5	75.0	69.1	46.6	37.3	23.0	14.7	12.0
HKP14	140	201.0	191.0	162.0	152.0	129.0	117.0	112.0	105.0	94.5	82.0	76.2	51.0	41.5	26.2	16.7	13.5
HKP16	150	215.0	205.0	179.0	163.0	139.0	126.0	121.0	113.0	102.0	90.0	83.0	56.0	44.8	29.4	18.7	15.1
HKP18	180	255.0	243.0	201.0	195.0	164.0	149.0	143.0	134.0	122.0	105.6	98.0	66.5	53.2	34.6	22.1	17.9
HKP20	200	287.0	274.0	238.0	217.0	186.0	169.0	162.0	151.0	136.0	120.0	110.0	74.7	59.7	38.8	24.7	20.0
HKP23	220	315.0	305.0	258.0	238.0	206.0	187.0	178.0	168.0	151.0	132.0	122.0	85.5	66.2	42.0	26.8	21.6
HKP26	250	358.0	343.0	288.0	272.0	232.0	211.0	202.0	189.0	171.0	150.0	138.0	93.3	74.7	48.0	30.8	25.0
HKP31	300	430.0	411.0	345.0	326.0	279.0	253.0	243.0	226.0	205.0	180.0	166.0	112.0	89.6	57.5	36.8	30.0
HKP36	350	502.0	480.0	403.0	381.0	326.0	296.0	283.0	264.0	239.0	210.0	193.0	130.0	104.0	66.1	42.2	34.5
HKP43	420	574.0	549.0	460.0	435.0	372.0	338.0	324.0	302.0	273.0	240.0	221.0	149.0	119.0	79.8	50.9	41.4
HKP51	500	717.0	686.0	576.0	544.0	465.0	423.0	405.0	378.0	342.0	300.0	276.0	186.0	149.0	94.5	60.3	49.0
HKP59	600	861.0	823.0	691.0	653.0	558.0	507.0	486.0	453.0	410.0	360.0	332.0	224.0	179.0	109.0	69.6	56.8
HKP67	700	1000.0	959.0	805.0	756.0	652.0	592.0	567.0	529.0	479.0	420.0	387.0	261.0	208.0	135.0	91.7	73.5
HKP85	800	1148.0	1098.0	921.0	872.0	745.0	676.0	648.0	604.0	547.0	480.0	442.0	298.0	239.0	155.0	105.0	84.2
HKP90	900	1291.0	1235.0	1036.0	980.0	838.0	761.0	729.0	680.0	615.0	540.0	498.0	336.0	268.0	183.0	118.0	94.7
HKP100	1000	1435.0	1372.0	1152.0	1089.0	931.0	846.0	810.0	756.0	684.0	600.0	553.0	373.0	298.0	203.0	131.0	105.0

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Amperes on Discharge from fully charged cells to 1.05 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes							Hours						
		1	5	30	1	5	10	15	20	30	45	1	2	3	5	8	10	
HKP1	10	16.8	16.0	14.2	13.1	11.3	10.2	9.36	8.64	7.38	7.30	6.67	4.24	3.08	1.99	1.32	1.06	
HKP2	20	37.1	35.2	31.3	28.9	25.0	22.4	20.5	19.2	16.2	16.0	14.6	9.33	6.77	3.90	2.42	1.96	
HKP3	30	50.6	48.0	42.7	39.4	34.1	30.6	28.0	25.9	22.1	21.6	20.0	12.7	9.23	5.9	4.1	3.32	
HKP5	40	67.5	64.0	57.0	52.5	45.5	40.8	37.4	34.5	29.5	29.0	26.6	16.9	12.3	8.0	5.5	4.43	
HKP5.5	45	75.9	72.0	64.1	59.1	51.2	45.9	42.1	38.8	33.2	32.5	30.0	19.0	13.8	9.22	5.93	4.76	
HKP6	60	101.0	96.0	85.5	78.8	68.2	61.2	56.1	51.8	44.2	43.5	40.0	25.4	18.4	11.9	7.6	6.15	
HKP7	70	118.0	112.0	99.7	92.0	79.6	71.5	65.4	60.4	51.6	50.0	46.7	29.6	21.5	13.9	9.15	7.35	
HKP9	80	135.0	128.0	114.0	105.0	91.0	81.9	74.8	69.1	59.0	58.0	53.5	33.9	24.6	15.9	10.3	8.3	
HKP10	100	168.0	160.0	142.0	131.0	113.0	102.0	93.6	86.4	73.8	73.0	66.6	42.4	30.7	19.5	12.4	10.0	
HKP12	120	210.0	200.0	178.0	164.0	142.0	127.0	117.0	108.0	92.2	91.0	83.3	53.0	38.4	23.8	15.1	12.3	
HKP14	140	224.0	222.0	198.0	181.0	158.0	141.0	130.0	120.0	102.0	102.0	99.0	93.0	59.5	42.5	27.4	17.1	13.9
HKP16	150	253.0	240.0	213.0	197.0	170.0	153.0	140.0	129.0	110.0	107.0	100.0	63.6	46.1	30.0	19.3	15.6	
HKP18	180	300.0	285.0	253.0	235.0	200.0	182.0	167.0	153.0	130.0	125.0	119.0	69.6	55.5	35.5	22.6	18.3	
HKP20	200	337.0	320.0	285.0	262.0	227.0	204.0	187.0	172.0	147.0	145.0	133.0	84.8	61.5	39.5	25.5	20.6	
HKP23	220	373.0	355.0	315.0	289.0	250.0	225.0	207.0	191.0	163.0	159.0	147.0	93.8	66.5	43.0	27.3	22.1	
HKP26	250	421.0	400.0	356.0	328.0	284.0	255.0	234.0	216.0	184.0	180.0	166.6	106.0	76.9	49.5	31.7	25.7	
HKP31	300	506.0	480.0	427.0	394.0	341.0	306.0	280.0	259.0	221.0	215.0	200.0	127.0	92.3	59.6	37.9	30.7	
HKP36	350	590.0	560.0	499.0	459.0	398.0	357.0	327.0	302.0	258.0	250.0	233.0	148.0	107.0	68.4	43.5	35.3	
HKP43	420	675.0	640.0	570.0	525.0	455.0	408.0	374.0	345.0	295.0	290.0	266.0	169.0	123.0	82.0	52.2	42.3	
HKP51	500	843.0	801.0	713.0	657.0	569.0	510.0	468.0	432.0	369.0	360.0	333.0	212.0	153.0	98.0	62.2	50.4	
HKP59	600	1012.0	961.0	855.0	788.0	686.0	612.0	561.0	518.0	442.0	435.0	400.0	254.0	184.0	112.0	71.5	58.0	
HKP67	700	1181.0	1121.0	998.0	919.0	796.0	715.0	655.0	604.0	516.0	510.0	466.0	297.0	215.0	138.0	92.3	74.0	
HKP85	800	1350.0	1281.0	1141.0	1051.0	910.0	817.0	748.0	691.0	590.0	575.0	533.0	339.0	246.0	158.0	105.0	84.6	
HKP90	900	1518.0	1441.0	1283.0	1182.0	1024.0	919.0	842.0	777.0	664.0	650.0	600.0	381.0	277.0	184.0	118.0	95.2	
HKP100	1000	1687.0	1602.0	1426.0	1314.0	1138.0	1021.0	936.0	864.0	738.0	720.0	666.0	424.0	307.0	204.0	131.0	105.0	

Amperes on Discharge from fully charged cells to 1.00 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes							Hours					
		1	5	30	1	5	10	15	20	30	45	1	2	3	5	8	10
HKP1	10	19.5	19.1	15.6	15.0	12.6	11.8	10.8	10.5	9.76	8.58	7.69	4.42	3.12	2.0	1.32	1.07
HKP2	20	43.0	42.0	35.3	33.0	27.8	25.9	23.7	23.1	21.4	18.8	16.9	9.72	6.86	4.0	2.46	2.0
HKP3	30	58.7	57.3	52.7	48.9	37.9	35.4	32.4	31.5	29.2	25.7	23.0	13.2	9.40	6.0	4.16	3.37
HKP5	40	78.3	76.4	70.5	64.7	50.5	47.2	43.2	42.1	39.0	34.3	30.7	17.6	12.8	8.0	5.55	4.49
HKP5.5	45	88.1	85.9	70.2	67.6	56.9	53.1	48.6	47.3	43.9	38.6	34.5	19.8	14.0	9.23	5.95	4.78
HKP6	60	117.0	114.0	107.0	97.2	75.8	70.8	64.8	63.1	58.5	51.4	46.1	26.5	19.1	12.0	7.7	6.2
HKP7	70	136.0	133.0	125.0	113.0	88.4	82.6	75.6	74.6	68.3	60.3	54.8	30.9	22.3	14.0	9.2	7.4
HKP9	80	156.0	152.0	143.0	130.0	101.0	94.5	86.4	84.2	78.0	68.6	61.5	35.3	25.6	16.0	10.4	8.5
HKP10	100	195.0	191.0	177.0	164.0	126.0	118.0	108.0	105.0	97.6	85.8	76.9	44.1	31.4	20.0	12.6	10.2
HKP12	120	244.0	238.0	195.0	187.0	158.0	147.0	135.0	131.0	121.0	107.0	96.1	55.2	38.9	24.0	15.4	12.4
HKP14	140	271.0	256.0	235.0	220.0	175.0	163.0	150.0	146.0	136.0	119.0	108.0	61.7	43.9	28.0	17.4	14.1
HKP16	150	293.0	286.0	265.0	245.0	189.0	177.0	162.0	157.0	146.0	128.0	115.0	66.1	47.4	30.0	19.5	15.8
HKP18	180	350.0	340.0	313.0	293.0	226.0	212.0	192.0	182.0	174.0	152.0	136.0	79.4	56.8	36.0	22.9	18.6
HKP20	200	391.0	382.0	353.0	325.0	252.0	236.0	216.0	210.0	195.0	171.0	153.0	88.3	63.2	40.0	25.9	20.9
HKP23	220	430.0	422.0	368.0	345.0	278.0	260.0	240.0	231.0	215.0	192.0	177.0	96.8	69.6	44.0	27.7	22.5
HKP26	250	489.0	477.0	390.0	375.0	316.0	295.0	270.0	263.0	243.0	214.0	192.0	110.0	79.3	50.0	32.1	26.0
HKP31	300	587.0	573.0	468.0	450.0	379.0	354.0	324.0	315.0	292.0	257.0	230.0	132.0	94.2	60.0	38.4	31.1
HKP36	350	685.0	668.0	546.0	526.0	442.0	413.0	378.0	368.0	341.0	300.0	269.0	154.0	112.0	70.0	44.1	35.7
HKP43	420	783.0	764.0	624.0	601.0	505.0	472.0	432.0	421.0	390.0	343.0	307.0	176.0	129.0	84.0	53.0	42.9
HKP51	500	979.0	955.0	780.0	751.0	632.0	590.0	540.0	526.0	487.0	429.0	384.0	220.0	158.0	100.0	63.1	51.0
HKP59	600	1174.0	1146.0	936.0	901.0	758.0	708.0	648.0	631.0	585.0	514.0	461.0	265.0	189.0	120.0	72.5	58.7
HKP67	700	1370.0	1337.0	1093.0	1062.0	885.0	826.0	758.0	737.0	682.0	600.0	538.0	309.0	224.0	140.0	92.6	74.3
HKP85	800	1566.0	1528.0	1249.0	1202.0	1011.0	945.0	864.0	842.0	780.0	686.0	615.0	353.0	253.0	160.0	105.0	84.9
HKP90	900	1762.0	1719.0	1405.0	1351.0	1138.0	1063.0	972.0	947.0	878.0	772.0	691.0	397.0	286.0	184.0	119.0	95.5
HKP100	1000	1958.0	1910.0	1561.0	1503.0	1264.0	1181.0	1080.0	1035.0	975.0	858	768.0	441.0	317.0	205.0	132.0	106.0

HKM Range Cell Dimension

TYPE	Capacity at 5hr rate to 1.0V	W (mm)	L (mm)	H (mm)	Terminal bolt	Cell, filled (kg)	Electrolyte Qty. (Liter)
HKM3	30	143	52	245	2 x M 10	3.50	0.83
HKM4	40	139	88	222	2 x M 16	4.50	1.00
HKM6	60	139	79	362	2 x M 16	6.00	1.40
HKM7	70	139	79	362	2 x M 16	6.50	1.67
HKM8	80	139	88	362	2 x M 16	8.30	1.55
HKM9	90	139	88	362	2 x M 16	9.00	1.60
HKM10	100	164	104	345	2 x M 20	9.30	1.75
HKM12	120	167	162	343	2 x M 20	12.5	2.92
HKM15	150	167	162	343	2 x M 20	13.5	3.08
HKM20	200	275	138	445	4 x M 20	24.5	5.83
HKM25	250	275	138	445	4 x M 20	26.0	5.83
HKM30	300	173	160	530	4 x M 20	23.0	4.17
HKM35	350	291	174	490	4 x M 20	35.0	6.50
HKM40	400	291	174	490	4 x M 20	37.0	7.20
HKM50	500	291	174	490	4 x M 20	39.0	7.50
HKM60	600	398	184	572	6 x M 20	59.0	13.00
HKM70	700	398	184	572	6 x M 20	62.0	14.00
HKM80	800	398	184	572	6 x M 20	65.0	15.00

Note: Specification are subject to change. * On Page 5 to 13.

Nickel Cadmium Batteries

DISCHARGE Currents and Times – HKM Tabulated Discharge Data at 20°C (±5°C)

Amperes on Discharge from fully charged cells to 1.14 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKM3	30	69.9	62.6	53.8	47.9	33.8	28.9	26.3	23.8	20.5	18.0	17.1	14.8	12.5	9.56	6.06	3.78	3.02
HKM4	40	93.2	83.4	71.5	63.7	45.1	38.6	34.9	31.7	26.9	24.0	22.8	19.7	16.6	12.7	8.08	5.04	4.03
HKM6	60	143.0	127.0	109.0	95.4	67.6	57.9	52.3	47.5	40.2	36.0	34.2	29.6	24.9	19.1	12.1	7.56	6.04
HKM7	70	169.0	155.0	133.0	117.0	84.6	72.4	64.1	58.9	48.8	45.0	42.8	37.1	31.2	22.0	13.16	8.4	7.02
HKM8	80	178.5	166.5	142.0	126.2	90.1	77.2	68.3	62.8	52.0	48.0	45.5	39.5	33.2	25.0	15.04	9.6	8.02
HKM9	90	200.8	187.3	159.7	141.9	101.3	86.8	76.8	80.6	58.5	54.0	51.1	44.4	37.3	28.0	16.92	10.80	9.02
HKM10	100	235.0	210.0	181.0	160.0	112.0	86.6	87.2	78.9	66.9	60.0	57.0	49.4	41.6	31.8	20.2	12.6	10.1
HKM12	120	279.0	251.0	215.0	192.0	135.0	115.0	105.0	94.6	80.2	72.0	68.4	59.3	49.9	38.3	24.3	15.1	12.1
HKM15	150	352.0	315.0	269.0	240.0	169.0	144.0	132.0	119.0	101.0	90.0	85.5	74.2	62.5	47.8	30.3	18.9	15.1
HKM20	200	467.0	419.0	358.0	319.0	225.0	193.0	175.0	160.0	135.0	120.0	114.0	98.9	83.3	63.7	40.4	25.2	20.2
HKM25	250	588.0	525.0	453.0	400.0	280.0	242.0	218.0	197.0	167.0	150.0	143.0	124.0	104.0	79.5	50.5	31.5	25.3
HKM30	300	699.0	627.0	540.0	476.0	338.0	289.0	264.0	235.0	201.0	180.0	171.0	148.0	125.0	95.6	60.6	37.8	30.2
HKM35	350	815.0	731.0	630.0	558.0	394.0	338.0	305.0	279.0	235.0	210.0	199.0	173.0	145.0	111.0	70.7	44.1	35.2
HKM40	400	932.0	839.0	724.0	637.0	451.0	386.0	349.0	318.0	269.0	240.0	228.0	197.0	166.0	127.0	80.8	50.4	40.3
HKM50	500	1161.0	1041.0	894.0	796.0	564.0	483.0	436.0	397.0	336.0	300.0	285.0	247.0	208.0	159.0	101.0	63.0	50.4
HKM60	600	1402.0	1252.0	1072.0	955.0	676.0	579.0	524.0	473.0	402.0	360.0	342.0	296.0	249.0	191.0	121.0	75.6	60.4
HKM70	700	1631.0	1461.0	1253.0	1111.0	789.0	676.0	611.0	552.0	469.0	420.0	399.0	346.0	291.0	223.0	141.0	88.2	70.5
HKM80	800	1862.0	1672.0	1433.0	1273.0	902.0	772.0	697.0	631.0	535.0	480.0	456.0	395.0	333.0	254.0	161.0	100.0	80.6

Amperes on Discharge from fully charged cells to 1.10 volts per cell

Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKM3	30	84.3	71.8	57.1	54.0	41.2	36.4	32.4	30.7	25.5	22.3	20.3	16.5	13.5	9.84	61.3	3.83	3.10
HKM4	40	115.0	95.7	76.2	72.0	54.9	48.9	43.2	41.0	33.9	29.7	27.1	22.1	18.0	13.1	8.18	5.11	4.10
HKM6	60	140.0	119.0	95.2	90.0	68.7	60.7	54.0	51.3	42.6	37.2	33.9	27.6	22.6	16.4	10.2	6.39	5.10
HKM7	70	171.0	143.0	114.0	108.0	82.4	72.9	64.8	61.5	60.0	44.6	40.7	33.1	27.1	22.2	13.44	8.56	7.03
HKM8	80	201.0	181.0	151.5	140.9	109.1	86.9	76.3	70.0	57.9	53.4	50.3	42.1	36.1	25.2	15.36	9.8	8.03
HKM9	90	226.1	203.6	170.4	158.5	122.7	87.7	85.8	78.7	65.1	60.0	56.5	47.3	40.6	28.2	17.28	11.03	9.03
HKM10	100	282.0	239.0	190.0	180.0	137.0	121.0	108.0	102.0	84.9	74.4	67.9	55.2	45.2	32.8	20.4	12.7	10.2
HKM12	120	335.0	287.0	228.0	216.0	164.0	145.0	129.0	123.0	103.0	89.2	81.5	66.3	54.2	39.3	24.5	15.3	12.3
HKM15	150	421.0	359.0	285.0	270.0	206.0	182.0	162.0	153.0	128.0	111.0	101.0	82.8	67.8	49.2	30.6	19.1	15.3
HKM20	200	559.0	478.0	381.0	360.0	274.0	243.0	216.0	205.0	170.0	148.0	135.0	110.0	90.4	65.6	40.9	25.5	20.5
HKM25	250	705.0	598.0	475.0	450.0	343.0	303.0	270.0	255.0	212.0	186.0	169.0	138.0	113.0	82.0	51.0	31.8	25.5
HKM30	300	839.0	718.0	571.0	540.0	412.0	364.0	324.0	307.0	253.0	223.0	203.0	165.0	135.0	98.4	61.3	38.3	30.7
HKM35	350	978.0	837.0	666.0	630.0	480.0	425.0	378.0	359.0	299.0	260.0	237.0	193.0	158.0	114.0	71.6	44.7	35.9
HKM40	400	1115.0	957.0	762.0	720.0	549.0	486.0	432.0	410.0	343.0	297.0	271.0	221.0	180.0	131.0	81.8	51.1	41.0
HKM50	500	1385.0	1197.0	952.0	900.0	687.0	607.0	540.0	513.0	430.0	372.0	339.0	276.0	226.0	164.0	102.0	63.9	51.3
HKM60	600	1669.0	1436.0	1143.0	1080.0	824.0	729.0	648.0	615.0	511.0	446.0	407.0	331.0	271.0	196.0	122.0	76.6	61.5
HKM70	700	1942.0	1675.0	1333.0	1260.0	961.0	850.0	756.0	718.0	597.0	520.0	475.0	386.0	316.0	229.0	143.0	89.4	71.8
HKM80	800	2225.0	1915.0	1524.0	1440.0	1099.0	972.0	864.0	820.0	679.0	595.0	543.0	442.0	361.0	262.0	163.0	102.0	82.1

Amperes on Discharge from fully charged cells to 1.05 volts per cell

Cell Type	Nominal Capacity CS(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKM3	30	94.2	87.3	72.3	65.5	50.1	43.0	39.9	37.2	33.0	27.0	22.6	17.2	14.1	10.0	6.21	3.89	3.11
HKM4	40	126.0	116.0	96.4	87.3	66.8	57.5	53.2	49.6	44.0	36.0	30.2	22.9	18.8	13.3	8.28	5.18	4.15
HKM6	60	192.0	174.0	144.0	131.0	100.0	85.9	79.9	74.5	66.0	54.1	45.3	34.4	28.2	20.2	12.4	7.77	6.22
HKM7	70	235.0	218.0	180.0	163.0	125.0	107.0	99.9	93.1	82.6	67.6	56.7	43.0	35.3	22.3	13.72	8.75	7.04
HKM8	80	220.0	198.1	168.2	152.2	120.2	95.3	83.2	76.0	62.0	57.4	52.3	44.5	37.3	25.3	15.68	10.0	8.04
HKM9	90	247.5	222.8	189.2	171.2	135.0	107.2	93.6	85.5	69.7	64.5	58.7	50.0	41.9	28.4	17.64	11.25	9.04
HKM10	100	315.0	291.0	241.0	218.0	167.0	147.0	133.0	124.0	110.0	90.2	75.6	57.3	47.1	33.4	20.7	12.9	10.3
HKM12	120	381.0	349.0	289.0	262.0	200.0	176.0	159.0	149.0	132.0	108.0	90.7	68.8	56.5	40.1	24.8	15.5	12.4
HKM15	150	475.0	436.0	361.0	327.0	250.0	217.0	199.0	186.0	165.0	135.0	113.0	86.0	70.6	50.2	31.0	19.4	15.5
HKM20	200	626.0	528.0	482.0	436.0	334.0	292.0	266.0	248.0	220.0	180.0	151.0	114.0	94.2	66.9	41.4	25.9	20.7
HKM25	250	788.0	728.0	603.0	545.0	418.0	368.0	333.0	310.0	275.0	226.0	189.0	143.0	118.0	83.5	51.8	32.3	25.8
HKM30	300	939.0	873.0	723.0	655.0	501.0	431.0	399.0	372.0	330.0	270.0	226.0	172.0	141.0	100.0	62.1	38.9	31.1
HKM35	350	1093.0	1018.0	844.0	764.0	584.0	505.0	466.0	434.0	385.0	315.0	264.0	200.0	164.0	117.0	72.4	45.3	36.3
HKM40	400	1255.0	1164.0	964.0	873.0	668.0	572.0	532.0	496.0	440.0	360.0	302.0	229.0	188.0	133.0	82.8	51.8	41.5
HKM50	500	1566.0	1455.0	1206.0	1092.0	835.0	716.0	666.0	621.0	550.0	451.0	378.0	286.0	235.0	167.0	103.0	64.8	51.9
HKM60	600	1871.0	1746.0	1447.0	1310.0	1002.0	859.0	799.0	745.0	660.0	541.0	453.0	344.0	282.0	200.0	124.0	77.7	62.2
HKM70	700	2183.0	2037.0	1688.0	1528.0	1169.0	1002.0	932.0	869.0	771.0	631.0	529.0	401.0	329.0	234.0	144.0	90.7	72.6
HKM80	800	2510.0	2328.0	1929.0	1747.0	1336.0	1145.0	1065.0	993.0	881.0	721.0	604.0	458.0	376.0	267.0	165.0	103.0	83.0

Amperes on Discharge from fully charged cells to 1.00 volts per cell

Cell Type	Nominal Capacity CS(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKM3	30	111.0	94.8	82.8	72.0	58.1	52.2	50.7	46.1	40.5	31.2	24.8	18.7	14.8	10.1	6.28	3.92	3.13
HKM4	40	148.0	126.0	110.0	96.0	77.5	69.9	67.6	61.5	54.0	41.6	33.1	24.9	19.6	13.5	8.37	5.23	4.17
HKM6	60	222.0	189.0	165.0	144.0	116.0	104.0	101.0	92.3	81.0	62.4	49.6	37.2	30.2	20.3	12.5	7.84	6.26
HKM7	70	255.0	237.0	207.0	180.0	145.0	130.0	126.0	115.0	101.0	78.0	62.1	45.2	36.2	22.35	14.0	8.92	7.05
HKM8	80	240.5	221.3	184.2	165.0	131.0	102.0	90.3	82.4	66.5	61.3	53.5	48.3	38.2	25.35	16.0	10.2	8.05
HKM9	90	270.5	248.9	207.2	185.6	147.3	114.7	101.5	92.7	47.8	68.9	60.1	50.9	42.9	28.55	18.0	11.47	9.05
HKM10	100	370.0	316.0	276.0	240.0	193.0	174.0	169.0	153.0	135.0	104.0	82.8	61.9	48.7	33.9	20.9	13.0	10.4
HKM12	120	444.0	379.0	331.0	288.0	232.0	208.0	203.0	184.0	162.0	124.0	99.3	74.3	58.4	40.6	25.1	15.6	12.5
HKM15	150	556.0	474.0	414.0	360.0	290.0	261.0	253.0	230.0	202.0	156.0	124.0	92.7	72.9	50.8	31.4	19.6	15.6
HKM20	200	741.0	632.0	552.0	480.0	387.0	348.0	338.0	307.0	270.0	208.0	165.0	124.0	97.1	67.8	41.8	26.1	20.8
HKM25	250	925.0	790.0	690.0	600.0	483.0	435.0	423.0	383.0	338.0	260.0	207.0	155.0	122.0	84.8	52.3	32.5	26.0
HKM30	300	1110.0	948.0	828.0	720.0	581.0	522.0	507.0	461.0	405.0	312.0	248.0	187.0	147.0	101.0	62.8	39.2	31.3
HKM35	350	1290.0	1106.0	966.0	840.0	678.0	609.0	592.0	538.0	472.0	364.0	289.0	218.0	172.0	118.0	73.2	45.7	36.5
HKM40	400	1480.0	1264.0	1104.0	960.0	775.0	696.0	676.0	615.0	540.0	416.0	331.0	249.0	199.0	135.0	83.7	52.3	41.7
HKM50	500	1850.0	1581.0	1380.0	1200.0	969.0	870.0	846.0	769.0	675.0	520.0	414.0	313.0	248.0	169.0	104.0	65.0	52.2
HKM60	600	2220.0	1897.0	1656.0	1440.0	1162.0	1044.0	1015.0	923.0	810.0	624.0	496.0	373.0	292.0	203.0	125.0	78.4	62.6
HKM70	700	2590.0	2213.0	1932.0	1680.0	1356.0	1218.0	1184.0	1077.0	945.0	728.0	579.0	435.0	343.0	237.0	146.0	91.5	73.0
HKM80	800	2960.0	2529.0	2208.0	1920.0	1550.0	1392.0	1353.0	1231.0	1080.0	832.0	662.0	499.0	389.0	271.0	167.0	104.0	83.5

Nickel Cadmium Batteries

HKH Range Cell Dimension

TYPE	Capacity at 5hr rate to 1.0V	W (mm)	L (mm)	H (mm)	Terminal bolt	Cell, filled (kg)	Electrolyte Qty. (Liter)
HKH3	30	142	67	227	2 x M 16	3.50	0.90
HKH4	40	139	79	291	2 x M 16	4.50	1.30
HKH5	50	139	79	291	2 x M 16	6.00	1.60
HKH6	60	139	79	362	2 x M 20	6.50	1.70
HKH7	70	139	79	362	2 x M 20	9.00	1.80
HKH8	80	164	104	345	2 x M 20	9.50	2.00
HKH10	100	164	104	345	2 x M 20	13.00	3.00
HKH12	120	167	162	343	2 x M 20	13.50	3.50
HKH15	150	286	174	348	4 x M 20	23.00	5.00
HKH20	200	286	174	348	4 x M 20	24.50	5.00
HKH25	250	232	172	410	4 x M 20	27.00	5.50
HKH30	300	291	174	505	4 x M 20	33.00	6.50
HKH35	350	291	174	505	4 x M 20	34.50	7.00
HKH40	400	291	174	505	4 x M 20	36.00	7.50
HKH50	500	398	184	562	6 x M 20	53.00	15.00

DISCHARGE Currents and Times – HKH

Tabulated Discharge Data at 20°C (±5°C)

Amperes on Discharge from fully charged cells to 1.14 volts per cell

Cell Type	Nominal Capacity CS(Ah)	Seconds			Minutes							Hours						
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKH3	30	154.0	147.0	115.0	103.0	68.0	58.3	43.3	37.9	32.2	27.3	22.4	15.4	13.0	9.38	5.97	3.73	2.99
HKH4	40	206.0	197.0	153.0	138.0	90.4	77.6	57.6	20.4	42.8	36.4	29.9	20.5	17.4	12.5	7.96	4.96	3.99
HKH5	50	257.0	246.0	191.0	172.0	113.0	97.2	72.1	63.1	53.8	45.5	37.4	25.7	21.7	15.6	9.95	6.23	4.98
HKH6	60	308.0	296.0	230.0	345.0	136.0	116.0	86.4	75.6	64.2	54.6	44.8	30.8	26.0	18.7	11.9	7.46	5.98
HKH7	70	360.0	345.0	268.0	241.0	158.0	136.0	101.0	88.4	75.3	63.7	52.4	36.0	30.4	21.8	13.9	8.72	6.97
HKH8	80	411.0	394.0	306.0	276.0	181.0	155.0	115.0	101.0	85.6	72.8	39.8	41.0	34.8	25.0	15.9	9.92	7.96
HKH10	100	514.0	493.0	383.0	345.0	226.0	194.0	144.0	126.0	107.0	91.0	74.8	51.4	43.5	31.2	19.9	12.4	9.97
HKH12	120	617.0	591.0	460.0	414.0	272.0	233.0	173.0	151.0	129.0	109.0	89.8	61.7	52.2	37.5	23.8	14.9	11.9
HKH15	150	772.0	739.0	575.0	518.0	340.0	291.0	216.0	189.0	161.0	136.0	112.0	77.2	65.3	46.9	29.8	18.6	14.9
HKH20	200	1029.0	986.0	766.0	691.0	453.0	388.0	288.0	252.0	215.0	182.0	149.0	102.0	87.1	62.5	39.8	24.9	19.9
HKH25	250	1285.0	1232.0	957.0	862.0	565.0	485.0	360.0	315.0	268.0	228.0	187.0	129.0	109.0	78.0	49.8	31.0	24.9
HKH30	300	1544.0	1479.0	1150.0	703.0	680.0	583.0	433.0	379.0	322.0	273.0	224.0	154.0	130.0	93.8	59.7	37.3	29.9
HKH35	350	1801.0	1726.0	1341.0	1209.0	793.0	680.0	505.0	442.0	376.0	318.0	262.0	180.0	152.0	109.0	69.6	43.6	34.8
HKH40	400	2059.0	1972.0	1533.0	1382.0	907.0	777.0	577.0	505.0	430.0	364.0	299.0	205.0	174.0	125.0	79.6	49.8	39.8
HKH50	500	2574.0	2466.0	1917.0	1728.0	1134.0	972.0	721.0	631.0	538.0	455.0	374.0	257.0	217.0	156.0	99.5	62.3	49.8

Amperes on Discharge from fully charged cells to 1.10 volts per cell

Cell Type	Nominal Capacity CS(Ah)	Seconds			Minutes							Hours						
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKH3	30	185.0	168.0	140.0	115.0	85.3	69.1	51.8	44.3	35.3	29.3	24.3	17.4	13.7	9.57	6.06	3.79	3.03
HKH4	40	248.0	224.0	187.0	154.0	114.0	92.0	68.8	59.6	47.6	39.2	32.4	23.3	18.3	12.8	8.08	5.04	4.04
HKH5	50	309.0	280.0	234.0	192.0	142.0	115.0	86.4	73.7	59.0	48.9	40.5	29.1	22.8	15.9	10.1	6.32	5.06
HKH6	60	371.0	337.0	281.0	231.0	170.0	138.0	103.0	89.4	71.4	58.7	48.6	35.0	27.4	19.1	12.1	7.56	6.06
HKH7	70	433.0	393.0	327.0	269.0	199.0	161.0	120.0	101.2	82.1	68.5	56.7	40.8	32.0	22.3	14.1	8.84	7.08
HKH8	80	495.0	449.0	374.0	308.0	227.0	184.0	138.0	119.0	95.2	78.3	64.8	46.6	36.6	25.5	16.2	10.1	8.08
HKH10	100	619.0	561.0	468.0	385.0	284.0	230.0	172.0	149.0	119.0	97.9	81.0	58.3	45.7	31.9	20.2	12.6	10.1
HKH12	120	743.0	673.0	561.0	462.0	341.0	276.0	207.0	178.0	142.0	117.0	97.0	69.9	54.8	38.3	24.2	15.1	12.1
HKH15	150	928.0	842.0	702.0	577.0	426.0	345.0	259.0	223.0	177.0	146.0	121.0	87.4	68.5	47.8	30.3	18.9	15.2
HKH20	200	1238.0	1123.0	936.0	770.0	568.0	460.0	345.0	296.0	236.0	195.0	162.0	116.0	91.4	63.8	40.4	25.2	20.2
HKH25	250	1548.0	1402.0	1170.0	962.0	710.0	575.0	430.0	372.0	298.0	245.0	202.0	146.0	114.0	79.8	50.5	31.5	25.2
HKH30	300	1857.0	1684.0	1404.0	1155.0	853.0	691.0	518.0	443.0	355.0	293.0	243.0	174.0	137.0	95.7	60.6	37.9	30.3
HKH35	350	2167.0	1965.0	1638.0	1348.0	995.0	806.0	604.0	517.0	413.0	342.0	283.0	204.0	160.0	111.0	70.8	44.2	35.4
HKH40	400	2476.0	2246.0	1872.0	1540.0	1137.0	921.0	691.0	590.0	473.0	391.0	324.0	233.0	182.0	127.0	80.9	50.5	40.4
HKH50	500	3096.0	2808.0	2340.0	1926.0	1422.0	1152.0	864.0	737.0	589.0	489.0	405.0	291.0	228.0	159.0	101.0	63.2	50.6

Nickel Cadmium Batteries

Amperes on Discharge from fully charged cells to 1.05 volts per cell

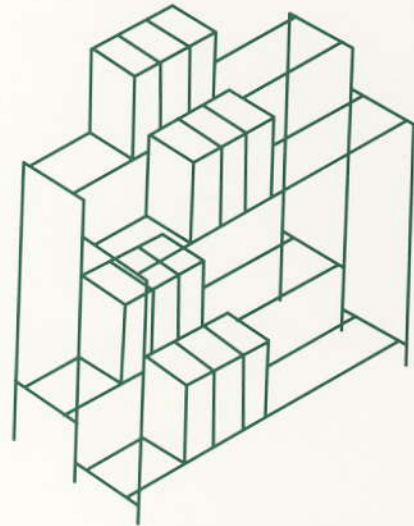
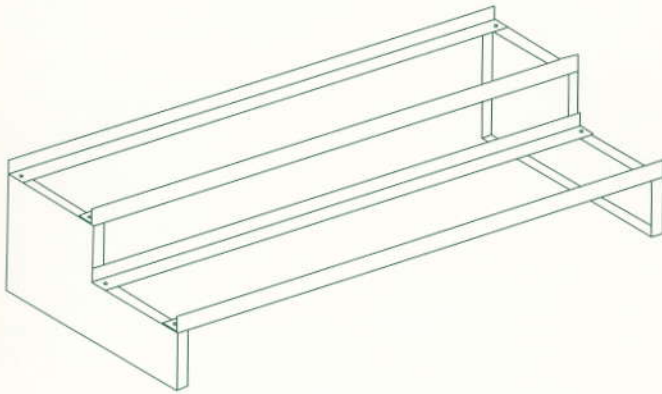
Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKH3	30	228.0	209.0	155.0	144.0	110.0	75.6	58.1	50.5	38.4	30.6	24.9	17.9	13.9	10.7	6.10	3.81	3.04
HKH4	40	305.0	279.0	207.0	193.0	147.0	101.0	77.2	67.2	51.2	40.8	33.2	23.9	18.6	14.4	8.12	5.08	4.05
HKH5	50	381.0	349.0	259.0	241.0	183.0	126.0	96.8	84.2	64.0	51.1	41.5	29.8	23.2	17.9	10.1	6.35	5.07
HKH6	60	458.0	419.0	311.0	289.0	220.0	151.0	116.0	101.0	76.8	61.2	49.9	35.8	27.8	21.5	12.2	7.62	6.07
HKH7	70	534.0	488.0	362.0	337.0	257.0	176.0	135.0	117.0	89.7	71.5	58.2	41.8	32.5	25.1	14.2	8.89	7.10
HKH8	80	610.0	558.0	414.0	386.0	294.0	202.0	154.0	134.0	102.0	81.6	66.5	47.8	37.1	28.7	16.2	10.2	8.09
HKH10	100	763.0	698.0	518.0	482.0	367.0	252.0	193.0	168.0	128.0	102.0	83.1	59.7	46.4	35.9	20.3	12.7	10.1
HKH12	120	915.0	838.0	622.0	578.0	440.0	302.0	232.0	202.0	153.0	122.0	99.7	71.7	55.7	43.1	24.4	15.2	12.1
HKH15	150	1144.0	1047.0	777.0	723.0	550.0	378.0	290.0	252.0	192.0	153.0	124.0	89.6	69.6	53.8	30.5	19.0	15.2
HKH20	200	1526.0	1396.0	1036.0	964.0	734.0	504.0	387.0	336.0	256.0	204.0	166.0	119.0	92.8	71.8	40.6	25.4	20.3
HKH25	250	1908.0	1745.0	1295.0	1205.0	917.0	630.0	483.0	420.0	320.0	255.0	208.0	149.0	116.0	89.8	50.8	31.8	25.3
HKH30	300	2289.0	2095.0	1555.0	1447.0	1101.0	756.0	581.0	505.0	384.0	306.0	249.0	179.0	139.0	107.0	61.0	38.1	30.4
HKH35	350	2671.0	2444.0	1814.0	1688.0	1285.0	882.0	677.0	589.0	448.0	357.0	291.0	207.0	162.0	125.0	71.1	44.4	35.5
HKH40	400	3052.0	2793.0	2073.0	1929.0	1468.0	1008.0	774.0	673.0	512.0	408.0	332.0	239.0	185.0	143.0	81.3	50.8	40.6
HKH50	500	3816.0	3492.0	2592.0	2412.0	1836.0	1260.0	968.0	842.0	640.0	511.0	415.0	293.0	232.0	179.0	101.0	63.5	50.7

Amperes on Discharge from fully charged cells to 1.00 volts per cell

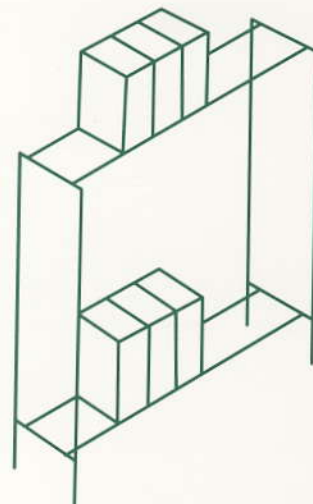
Cell Type	Nominal Capacity C5(Ah)	Seconds			Minutes						Hours							
		1	5	30	1	5	10	15	20	30	45	1	1.5	2	3	5	8	10
HKH3	30	264.0	232.0	184.0	152.0	118.0	88.5	75.2	64.0	48.5	34.2	27.0	18.9	14.1	10.9	6.14	3.84	3.06
HKH4	40	353.0	310.0	246.0	203.0	158.0	118.0	98.4	86.0	65.2	45.6	36.4	25.0	19.7	14.6	8.16	5.12	4.08
HKH5	50	441.0	387.0	307.0	253.0	198.0	147.0	124.0	108.0	80.9	57.0	44.9	32.0	23.5	18.2	10.2	6.41	5.11
HKH6	60	529.0	464.0	369.0	304.0	238.0	177.0	148.0	129.0	97.8	68.4	54.7	37.5	29.5	21.8	12.2	7.68	6.12
HKH7	70	617.0	542.0	430.0	355.0	277.0	206.0	147.0	123.0	98.7	79.8	60.0	43.1	33.0	25.5	14.3	8.97	7.15
HKH8	80	706.0	619.0	492.0	406.0	317.0	236.0	197.0	172.0	130.0	91.2	72.9	50.0	39.4	29.1	16.3	10.2	8.16
HKH10	100	882.0	774.0	615.0	507.0	396.0	295.0	246.0	215.0	163.0	114.0	91.1	62.5	49.2	36.4	20.4	12.8	10.2
HKH12	120	1007.0	929.0	738.0	609.0	475.0	354.0	295.0	257.0	196.0	136.0	109.0	76.2	57.1	43.7	24.5	15.3	12.2
HKH15	150	1323.0	1161.0	923.0	761.0	594.0	442.0	368.0	321.0	245.0	171.0	136.0	94.1	70.9	54.7	30.7	19.2	15.3
HKH20	200	1764.0	1548.0	1231.0	1015.0	792.0	590.0	490.0	427.0	325.0	228.0	181.0	125.0	94.3	72.9	40.9	25.6	20.4
HKH25	250	2205.0	1935.0	1538.0	1268.0	990.0	737.0	615.0	538.0	407.0	285.0	228.0	156.0	123.0	91.0	51.0	32.0	25.5
HKH30	300	2646.0	2323.0	1846.0	1522.0	1188.0	885.0	734.0	639.0	487.0	342.0	270.0	187.0	143.0	109.0	61.4	38.4	30.6
HKH35	350	3087.0	2710.0	2154.0	1776.0	1386.0	1033.0	856.0	746.0	569.0	399.0	315.0	218.0	165.0	127.0	71.6	44.8	35.7
HKH40	400	3528.0	3097.0	2462.0	2030.0	1584.0	1180.0	978.0	855.0	648.0	456.0	359.0	249.0	190.0	145.0	81.9	51.2	40.8
HKH50	500	4410.0	3871.0	3078.0	2538.0	1980.0	1476.0	1213.0	1066.0	808.0	570.0	448.0	311.0	237.0	182.0	102.0	64.1	51.1

Available Steel Stands and Outlook

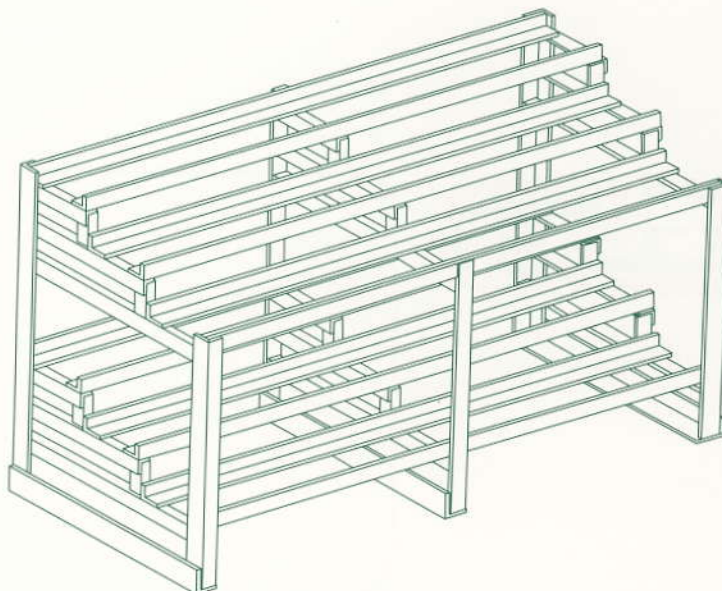
2 Steps Single Row



2 Tiers Single Row



3 Steps 2 Tier



Note: Other configuration including "Earth-quake proof" and available on request.