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# Unicad

## Nickel Cadmium Alkaline Batteries



**KXP Type** (Ultra High Discharge Rate Cells)

**KHP Type** (High Discharge Rate Cells)

**KMP Type** (Medium Discharge Rate Cells)

**KLP Type** (Low Discharge Rate Cells)



**A-Kor Co., Ltd.**

# UNICAD

Nickel Cadmium Alkaline Batteries





## Introduction

Unicad Batteries are manufactured in basic range to match specific operating conditions and provide different performance characteristics.

Unicad Batteries will combine maximum performance with minimum maintenance and optimum life.

The nickel cadmium batteries use relatively expensive material they are carefully designed to obtain maximum utilization from them.

Thus the nickel cadmium batteries may be more expensive in first cost than the lead acid batteries and considerably less expensive in the long time.



## Benefits of Unicad Batteries

- Excellent high rate discharge performance
- Very long life
- Wide operating temperature range
- Lowest self discharge
- Resistance to mechanical and electrical abuse
- Low internal resistance
- Absolute reliability





# Applications of Unicad Series

## KXP Type(Ultra High Discharge Rate Cells)

KXP Series Ultra high rate nickel cadmium battery which made of sintered plate is characterized by compact construction, low internal resistance, high reliability, high capacity, long service life and excellent low temperature performance. The battery is suitable for ultra high rate discharging such as AGV, engine starting, switch tripping and closing and any special purpose.

## KHP Type(High Discharge Rate Cells)

KHP Series High rate nickel cadmium battery is made of pocket plate with the characteristics of thin plate, High porosity and low internal resistance. The battery is particular suitable for short discharge periods such as switchgear tripping and closing, UPS, etc.

## KMP Type(Medium Discharge Rate Cells)

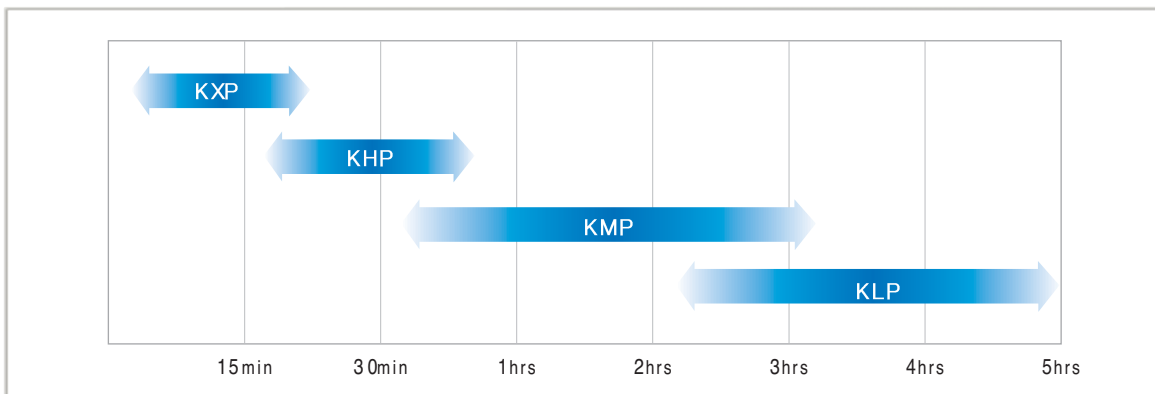
KMP Series Medium rate nickel cadmium battery is made of pocket plate. The battery is suitable for medium discharge periods between 30minutes and 3hours such as stand-by for ups, gas turbine control, etc.

## KLP Type(Low Discharge Rate Cells)

KLP Series Low rate nickel-cadmium battery is made of pocket plate. The battery is designed for general purpose and stand-by applications such as lighting on train and operation of circuit breaker, etc.

## Recommended Type Selection of Unicad Series

- according to back up time -



MODEL	Discharge rate	Plate type	Application
KXP	Ultra High Discharge rate	Sintered plate	AGV, gas turbine generator, engine starting, operating/control of computer systems, transportation networks, airport, etc.
KHP	High Discharge rate	Pocket plate	Engine starting, UPS(up to 30mins), operation and control of DC motor, Water treatment plants, etc.
KMP	Medium Discharge rate	Pocket plate	UPS(over 30min), railway DC power sources, auxiliary power sources for power stations, chemical plants, oil refineries, iron works.
KLP	Low Discharge rate	Pocket plate	Emergency lighting, telecommunications, operation of communication equipment on a ship, lighting and air conditioner control on a train.



## Charging



The most common form of charging for stationary batteries is modified constant voltage, usually with current limitation to C/5 or C/10. The battery is permanently connected to the charger which applies a constant voltage across the battery terminals.

### Recommended charging voltage

The following per-cell charge voltage are recommended.

Cell type	Floating charge	Equalizing charge
KXP	1.41 ± 0.01 V/Cell	1.60 V/Cell~
KHP	1.41 ± 0.01 V/Cell	1.63 ± 0.02 V/Cell
KMP	1.42 ± 0.01 V/Cell	1.63 ± 0.02 V/Cell
KLP	1.43 ± 0.01 V/Cell	1.67 ± 0.02 V/Cell

### Initial charging

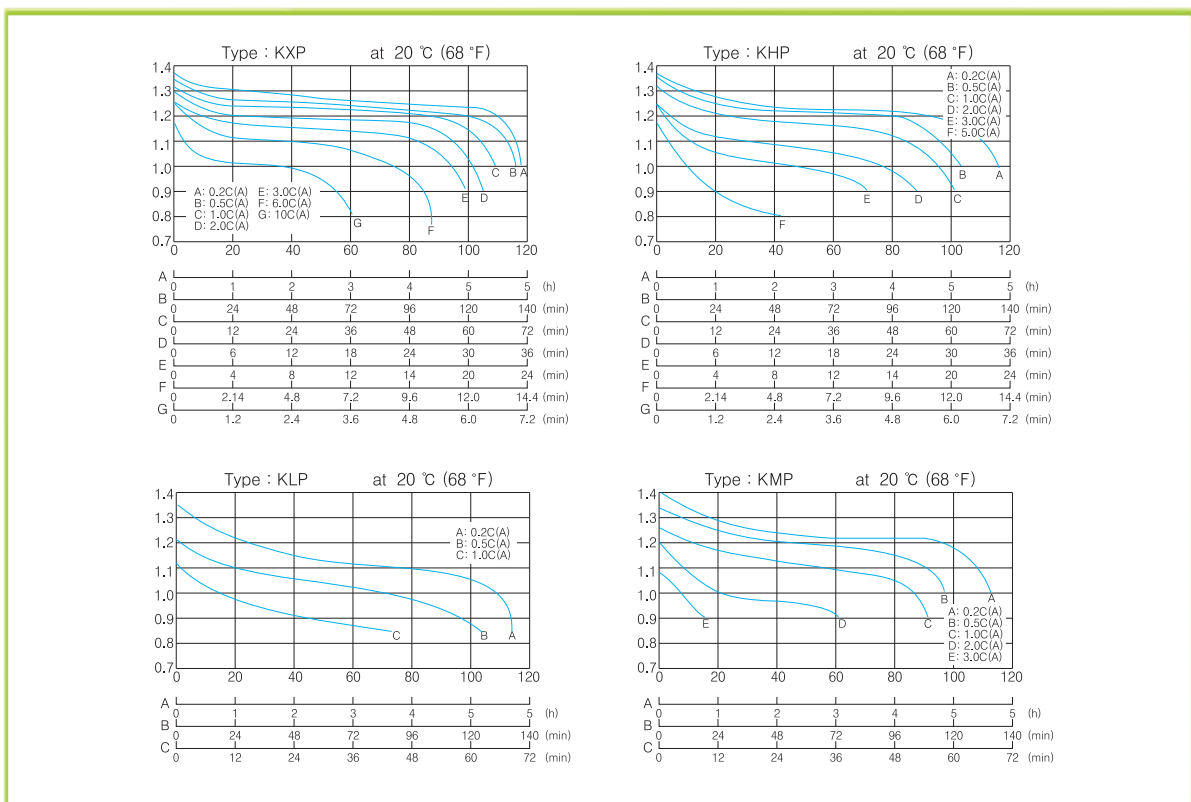
The whole charge should preferable be carried out at constant current. The charging time is inversely proportional to the current which is set by the current limit of the charging equipment. Recommended rates for the first charging :

0.2C<sub>5</sub> A for 7 ~ 8 hours

0.1C<sub>5</sub> A for 14 ~ 16 hours

### Discharging Curves

Nominal voltage : 1.2V/Cell





## Calculation Methods

### Information required for battery capacity calculation

- We need below basic information for a precise battery capacity calculation
- nominal voltage for the system
  - stand-by period
  - minimum voltage
  - battery layout and available space
  - load current
  - maximum voltage(for charging)
  - temperature range
  - 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.

$$\text{Number of cells required} = \frac{\text{Circuit voltage}}{\text{Cell Float voltage}} \quad \text{Minimum cell voltage} = \frac{\text{Minimum DC voltage}}{\text{Number of cells}}$$

The most commonly used float voltages are 1.40-1.44 voltage per cell, but the exact figure has to be related carefully to the circumstances.

### Example

An Unicad battery is required to maintain an inverter load of 50KVA at 0.8 power factor for a back up time of 30minutes at normal temperature. The DC voltage to the inverter operates within the limit of 265 voltage with the battery on float charge to a Number of Cells (at recommended float of 1.42v.p.c)

$$\begin{aligned} \text{- Number of cells} &= \frac{265}{1.42} \approx 186\text{cells} \\ \text{- Minimum cell voltage} &= \frac{202}{186} \approx 1.10\text{voltage per cell} \\ \text{- Maximum Battery Current} &= \frac{\text{Inverter load in KVA} \times \text{power factor}}{\text{min. cell voltage} \times \text{number of cells} \times \text{inv. efficiency}} \\ &= \frac{50\text{KVA} \times 0.8}{1.10 \times 186 \times 0.85} = 230\text{Amps} \end{aligned}$$

We shall select the battery with capacity equal or just above.  
Determination Battery Capacity ; KMP range  
From our catalog date (PAGE 8) the cell type is KMP300.

➤ Battery would comprise 186cells Unicad type KMP300.

### The number of cells in a battery bank

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

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





# Cell capacities and dimensions

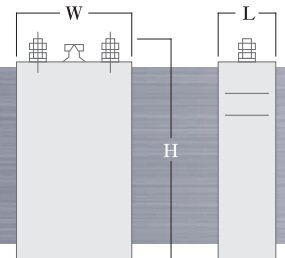
★ We can supply special tailor-made versions according to customer's demands.



KXP (Ultra High Rate Type) Sintered-Sintered								
Cell Type	Nominal Capacity (Ah)	Dimensions(mm)			Cell Weight (filled) (kg)	Electrolyte volume( ℓ )	Container material	Pole
		W	L	H				
KXP10	10	81	29	218	1.1	0.16	PA	M 10 ×2
KXP20	20	81	37	244	1.3	0.15	AS	M 10 ×2
KXP30	30	82	43	255	1.7	0.22	AS	M 10 ×2
KXP30-3	30	81	37	235	1.5	0.20	PA	M 10 ×2
KXP40	40	82	43	255	1.8	0.21	AS	M 10 ×2
KXP40-2	40	81	67	175	1.9	0.21	PA	M 10 ×2
KXP50	50	82	49	244	2.0	0.20	AS	M 10 ×2
KXP60	60	139	62	267	4.5	0.91	MBS	M 16 ×2
KXP60-2	60	81	50	250	2.8	0.25	PA	M 10 ×2
KXP80	80	139	62	267	5.1	0.90	MBS	M 16 ×2
KXP80-2	80	134	70	285	5.2	0.90	MBS	M 16 ×2
KXP80-3	80	81	75	243	3.1	0.45	PA	M 12 ×2
KXP90	90	81	75	243	3.4	0.45	PA	M 12 ×2
KXP100	100	134	70	285	5.5	0.85	MBS	M 16 ×2
KXP120	120	139	79	365	7.5	1.09	MBS	M 16 ×2
KXP140	140	139	79	365	7.9	1.08	MBS	M 16 ×2
KXP170	170	139	79	365	8.0	1.07	MBS	M 16 ×2
KXP190	190	139	79	365	8.5	1.06	MBS	M 16 ×2
KXP200	200	167	107	348	11.0	1.70	MBS	M 20 ×2
KXP220	220	167	107	348	13.0	1.65	MBS	M 20 ×2

KHP (High Rate Type) Pocket-Pocket								
Cell Type	Nominal Capacity (Ah)	Dimensions(mm)			Cell Weight (filled) (kg)	Electrolyte volume( ℓ )	Container material	Pole
		W	L	H				
KHP10	10	81	48	245	1.8	0.30	MBS	M 10 ×2
KHP20	20	134	68	240	2.6	0.70	PP/MBS	M 10 ×2
KHP30	30	134	70	285	3.8	0.70	PP/MBS	M 16 ×2
KHP35	35	134	70	285	4.0	0.65	PP/MBS	M 16 ×2
KHP40	40	134	70	285	4.2	0.60	PP/MBS	M 16 ×2
KHP50	50	141	80	365	6.2	1.45	PP/MBS	M 16 ×2
KHP60	60	141	80	365	6.5	1.25	PP/MBS	M 16 ×2
KHP70	70	164	106	345	8.9	2.00	PP/MBS	M 20 ×2
KHP80	80	164	106	345	9.2	1.45	PP/MBS	M 20 ×2
KHP90	90	164	106	345	9.5	1.15	PP/MBS	M 20 ×2
KHP100	100	167	164	345	13.0	3.40	PP/MBS	M 20 ×2
KHP120	120	167	164	345	13.6	2.60	PP/MBS	M 20 ×2
KHP130	130	167	164	345	14.0	2.20	PP/MBS	M 20 ×2
KHP140	140	167	164	345	14.5	1.80	PP/MBS	M 20 ×2
KHP150	150	167	164	345	14.0	2.10	PP/MBS	M 20 ×2
KHP180	180	200	162	450	22.5	5.50	PP	M 16 ×4
KHP200	200	200	162	450	23.5	5.00	PP	M 16 ×4
KHP250	250	200	162	450	24.0	4.60	PP	M 16 ×4
KHP300	300	291	174	510	37.0	9.00	MBS	M 20 ×4
KHP350	350	291	174	510	38.0	7.50	MBS	M 20 ×4
KHP400	400	398	185	570	58.0	18.3	MBS	M 20 ×6
KHP500	500	398	185	570	59.0	15.8	MBS	M 20 ×6

- P (Polypropylene) Container
- MBS Container



KMP (Medium Rate Type) Pocket-Pocket								
Cell Type	Nominal Capacity (Ah)	Dimensions(mm)			Cell Weight (filled) (kg)	Electrolyte volume( ℓ )	Container material	Pole
		W	L	H				
KMP10	10	81	48	245	1.6	0.35	MBS	M 10 ×2
KMP20	20	134	68	240	2.8	1.00	PP/MBS	M 10 ×2
KMP30	30	134	68	240	3.0	0.85	PP/MBS	M 10 ×2
KMP40	40	134	70	285	4.1	0.95	PP/MBS	M 16 ×2
KMP50	50	134	70	285	4.3	0.85	PP/MBS	M 16 ×2
KMP60	60	141	80	365	6.4	1.35	PP/MBS	M 16 ×2
KMP70	70	141	80	365	6.5	1.25	PP/MBS	M 16 ×2
KMP80	80	141	80	365	6.6	2.20	PP/MBS	M 16 ×2
KMP100	100	164	106	345	9.0	2.50	PP/MBS	M 20 ×2
KMP120	120	164	106	345	10.0	2.30	PP/MBS	M 20 ×2
KMP150	150	167	164	345	12.0	3.00	PP/MBS	M 20 ×2
KMP200	200	167	164	345	14.0	2.10	PP/MBS	M 20 ×2
KMP250	250	170	152	385	18.0	2.10	PP	M 20 ×2
KMP300	300	200	162	450	23.5	5.00	PP	M 16 ×4
KMP350	350	200	162	450	24.0	4.60	PP	M 16 ×4
KMP400	400	200	162	450	25.0	4.20	PP	M 16 ×4
KMP500	500	291	174	510	36.0	8.00	MBS	M 20 ×4
KMP600	600	291	174	510	37.0	7.50	MBS	M 20 ×4
KMP700	700	398	185	570	59.0	15.9	MBS	M 20 ×6
KMP800	800	398	185	570	60.0	13.3	MBS	M 20 ×6
KMP900	900	398	185	570	62.0	12.5	MBS	M 20 ×6
KMP1000	1000	398	185	570	64.0	11.7	MBS	M 20 ×6

KLP (Low Rate Type) Pocket-Pocket								
Cell Type	Nominal Capacity (Ah)	Dimensions(mm)			Cell Weight (filled) (kg)	Electrolyte volume( ℓ )	Container material	Pole
		W	L	H				
KLP10	10	84	38	128	0.7	0.08	PP/MBS	M 6 ×2
KLP20	20	113	32	225	1.2	0.17	PP/MBS	M 6 ×2
KLP30	30	134	68	240	2.7	0.85	PP/MBS	M 10 ×2
KLP40	40	134	68	240	2.9	0.65	PP/MBS	M 10 ×2
KLP50	50	134	68	240	3.0	0.50	PP/MBS	M 10 ×2
KLP60	60	134	70	285	4.0	0.70	PP/MBS	M 16 ×2
KLP70	70	134	70	285	4.3	0.60	PP/MBS	M 16 ×2
KLP80	80	141	80	365	5.8	1.50	PP/MBS	M 10 ×2
KLP100	100	141	80	365	6.2	1.45	PP/MBS	M 10 ×2
KLP120	120	141	80	365	6.4	1.20	PP/MBS	M 10 ×2
KLP150	150	164	106	345	9.0	1.85	PP/MBS	M 20 ×2
KLP200	200	164	106	345	10.0	1.70	PP/MBS	M 20 ×2
KLP250	250	167	164	345	13.6	2.20	PP/MBS	M 20 ×2
KLP300	300	167	164	345	15.0	2.50	PP/MBS	M 20 ×2
KLP350	350	170	152	385	16.5	3.00	PP	M 20 ×2
KLP400	400	170	152	385	17.0	2.50	PP	M 20 ×2
KLP500	500	200	162	450	24.0	3.50	PP	M 16 ×4
KLP600	600	291	174	510	38.0	9.20	MBS	M 20 ×4
KLP700	700	291	174	510	39.0	8.50	MBS	M 20 ×4
KLP800	800	398	185	570	59.0	16.7	MBS	M 20 ×6
KLP900	900	398	185	570	60.0	15.6	MBS	M 20 ×6
KLP1000	1000	398	185	570	61.0	14.2	MBS	M 20 ×6

Discharge current is for fully charged cells and allowing 5% for voltage losses associated with connectors

● Final discharge voltage 1.14 V per cell

Cell type	C Ah	Hour							Minutes					Second				
		10	8	5	3	2	1.5	1	30	20	15	10	5	1	30	5	1	
KXP10	10							6.25	8.91	15.3	19.0	22.0	24.8	29.6	39.4	43.8	55.8	62.8
KXP20	20							12.5	17.8	30.6	38.0	44.0	49.6	59.2	78.8	87.6	112	126
KXP30	30							18.8	26.7	45.9	57.0	66.0	74.4	88.8	118	131	167	188
KXP40	40							25.0	35.6	61.2	76.0	88.0	99.2	118	158	175	223	251
KXP50	50							31.3	44.6	76.5	95.0	110	124	148	197	219	279	314
KXP60	60							37.5	53.5	91.8	114	132	149	178	236	263	335	377
KXP80	80							50.0	71.3	122	152	176	198	237	315	350	446	502
KXP90	90							56.3	80.2	138	171	198	223	266	355	394	502	565
KXP100	100							62.5	89.1	153	190	220	248	296	394	438	558	628
KXP120	120							75.0	107	184	228	264	298	355	473	526	670	754
KXP140	140							87.5	125	214	266	308	347	414	552	613	781	879
KXP170	170							106	151	260	323	374	422	503	670	745	949	1068
KXP190	190							119	169	291	361	418	471	562	749	832	1060	1193
KXP200	200							125	178	306	380	440	496	592	788	876	1116	1256
KXP220	220							138	196	337	418	484	546	651	867	964	1228	1382
KHP10	10	0.99	1.25	1.98	3.03	4.40	5.67	7.62		10.4	12.4	14.1	16.5	20.9	28.0	32.0	40.0	42.0
KHP20	20	1.98	2.50	3.96	6.06	8.80	11.3	15.2		20.8	24.8	28.2	33.0	41.8	56.0	64.0	80.0	84.0
KHP30	30	2.97	3.75	5.94	9.09	13.2	17.0	22.9		31.2	37.2	42.3	49.5	62.7	84.0	96.0	120	126
KHP35	35	3.47	4.38	6.93	10.6	15.4	19.8	26.7		36.4	43.4	49.4	57.8	73.2	98.0	112	140	147
KHP40	40	3.96	5.00	7.92	12.1	17.6	22.7	30.5		41.6	49.6	56.4	66.0	83.6	112	128	160	168
KHP50	50	4.95	6.25	9.90	15.2	22.0	28.4	38.1		52.0	62.0	70.5	82.5	105	140	160	200	210
KHP60	60	5.94	7.50	11.9	18.2	26.4	34.0	45.7		62.4	74.4	84.6	99.0	125	168	192	240	252
KHP70	70	6.93	8.75	13.9	21.2	30.8	39.7	53.3		72.8	86.8	98.7	116	146	196	224	280	294
KHP80	80	7.92	10.0	15.8	24.2	35.2	45.4	61.0		83.2	99.2	113	132	167	224	256	320	336
KHP90	90	8.91	11.3	17.8	27.3	39.6	51.0	68.6		93.6	112	127	149	188	252	288	360	378
KHP100	100	9.90	12.5	19.8	30.3	44.0	56.7	76.2		104	124	141	165	209	280	320	400	420
KHP120	120	11.9	15.0	23.8	36.4	52.8	68.0	91.4		125	149	169	198	251	336	384	480	504
KHP130	130	12.9	16.3	25.7	39.4	57.2	73.7	99.1		135	161	183	215	272	364	416	520	546
KHP140	140	13.9	17.5	27.7	42.4	61.6	79.4	107		146	174	197	231	293	392	448	560	588
KHP150	150	14.9	18.8	29.7	45.5	66.0	85.1	114		156	186	212	248	314	420	480	600	630
KHP180	180	17.8	22.5	35.6	54.5	79.2	102	137		187	223	254	297	376	504	576	720	756
KHP200	200	19.8	25.0	39.6	60.6	88.0	113	152		208	248	282	330	418	560	640	800	840
KHP250	250	24.8	31.3	49.5	75.8	110	142	191		260	310	353	413	523	700	800	1000	1050
KHP300	300	29.7	37.5	59.4	90.9	132	170	229		312	372	423	495	627	840	960	1200	1260
KHP350	350	34.7	43.8	69.3	106	154	198	267		364	434	494	578	732	980	1120	1400	1470
KHP400	400	39.6	50.0	79.2	121	176	227	305		416	496	564	660	836	1120	1280	1600	1680
KHP500	500	49.5	62.5	99.0	152	220	284	381		520	620	705	825	1045	1400	1600	2000	2100
KMP10	10	0.97	1.20	1.88	2.90	3.89	4.75	5.80		7.47	8.64	9.63	10.9	13.1	18.4	20.5	23.1	24.3
KMP20	20	1.94	2.40	3.76	5.80	7.78	9.50	11.6		14.9	17.3	19.3	21.8	26.2	36.8	41.0	46.2	48.6
KMP30	30	2.91	3.60	5.64	8.70	11.7	14.3	17.4		22.4	25.9	28.9	32.7	39.3	55.2	61.5	69.3	72.9
KMP40	40	3.88	4.80	7.52	11.6	15.6	19.0	23.2		29.9	34.6	38.5	43.6	52.4	73.6	82.0	92.4	97.2
KMP50	50	4.85	6.00	9.40	14.5	19.5	23.8	29.0		37.4	43.2	48.2	54.5	65.5	92.0	103	116	122
KMP60	60	5.82	7.20	11.3	17.4	23.3	28.5	34.8		44.8	51.8	57.8	65.4	78.6	110	123	139	146
KMP70	70	6.79	8.40	13.2	20.3	27.2	33.3	40.6		52.3	60.5	67.4	76.3	91.7	129	144	162	170
KMP80	80	7.76	9.60	15.0	23.2	31.1	38.0	46.4		59.8	69.1	77.0	87.2	105	147	164	185	194
KMP100	100	9.70	12.0	18.8	29.0	38.9	47.5	58.0		74.7	86.4	96.3	109	131	184	205	231	243
KMP120	120	11.6	14.4	22.6	34.8	46.7	57.0	69.6		89.6	104	116	131	157	221	246	277	292
KMP150	150	14.6	18.0	28.2	43.5	58.4	71.3	87.0		112	130	144	164	197	276	308	347	365
KMP200	200	19.4	24.0	37.6	58.0	77.8	95.0	116		149	173	193	218	262	368	410	462	486
KMP250	250	24.3	30.0	47.0	72.5	97.3	119	145		187	216	241	273	328	460	513	578	608
KMP300	300	29.1	36.0	56.4	87.0	117	143	174		224	259	289	327	393	552	615	693	729
KMP350	350	34.0	42.0	65.8	102	136	166	203		261	302	337	382	459	644	718	809	851
KMP400	400	38.8	48.0	75.2	116	156	190	232		299	346	385	436	524	736	820	924	972
KMP500	500	48.5	60.0	94.0	145	195	238	290		374	432	482	545	655	920	1025	1155	1215
KMP600	600	58.2	72.0	113	174	233	285	348		448	518	578	654	786	1104	1230	1386	1458
KMP700	700	67.9	84.0	132	203	272	333	406		523	605	674	763	917	1288	1435	1617	1701
KMP800	800	77.6	96.0	150	232	311	380	464		598	691	770	872	1048	1472	1640	1848	1944
KMP900	900	87.3	108	169	261	350	428	522		672	778	867	981	1179	1656	1845	2079	2187
KMP1000	1000	97.0	120	188	290	389	475	580		747	864	963	1090	1310	1840	2050	2310	2430
KLP10	10	0.92	1.12	1.70	2.80	3.56	4.13	4.70		5.65	6.22	6.61	7.42	8.61	10.6	11.5		
KLP20	20	1.84	2.24	3.40	5.60	7.12	8.26	9.40		11.3	12.4	13.2	14.8	17.2	21.2	23.0		
KLP30	30	2.76	3.36	5.10	8.40	10.7	12.4	14.1		17.0	18.7	19.8	22.3	25.8	31.8	34.5		
KLP40	40	3.68	4.48	6.80	11.2	14.2	16.5	18.8		22.6	24.9	26.4	29.7	34.4	42.4	46.0		
KLP50	50	4.60	5.60	8.50	14.0	17.8	20.7	23.5		28.3	31.1	33.1	37.1	43.1	53.0	57.5		
KLP60	60	5.52	6.72	10.2	16.8	21.4	24.8	28.2		33.9	37.3	39.7	44.5	51.7	63.6	69.0		
KLP70	70	6.44	7.84	11.9	19.6	24.9	28.9	32.9		39.6	43.5	46.3	51.9	60.3	74.2	80.5		
KLP80	80	7.36	8.96	13.6	22.4	28.5	33.0	37.6		45.2	49.8	52.9	59.4	68.9	84.8	92.0		
KLP100	100	9.20	11.2	17.0	28.0	35.6	41.3	47.0		56.5	62.2	66.1	74.2	86.1	106	115		
KLP120	120	11.0	13.4	20.4	33.6	42.7	49.6	56.4		67.8	74.6	79.3	89.0	103	127	138		
KLP150	150	13.8	16.8	25.5	42.0	53.4	62.0	70.5		84.8	93.3	99.2	111	129	159	173		
KLP200	200	18.4	22.4	34.0	56.0	71.2	82.6	94.0		113	124	132	148	172	212	230		
KLP250	250	23.0	28.0	42.5	70.0	89.0	103	118		141	156	165	186	215	265	288		
KLP300	300	27.6	33.6	51.0	84.0	107	124	141		170	187	198	223	258	318	345		
KLP350	350	32.2	39.2	59.5	98.0	125	145	165		198	218	231	260	301	371	403		
KLP400	400	36.8	44.8	68.0	112	142	165	188		226	249	264	297	344	424	460		
KLP500	500	46.0	56.0	85.0	140	178	207	235		283	311	331	371	431	530	575		
KLP600	600	55.2	67.2	102	168	214	248	282		339	373	397	445	517	636	690		





Discharge current is for fully charged cells and allowing 5% for voltage losses associated with connectors

● Final discharge voltage 1.10 V per cell

Cell type	C Ah	Hour							Minutes					Second			
		10	8	5	3	2	1.5	1	30	20	15	10	5	1	30	5	1
KXP10	10						6.50	9.40	16.4	21.3	25.0	31.3	37.5	47.5	50.5	56.3	75.0
KXP20	20						13.0	18.8	32.8	42.6	50.0	62.6	75.0	95.0	101	113	150
KXP30	30						19.5	28.2	49.2	63.9	75.0	93.9	113	143	152	169	225
KXP40	40						26.0	37.6	65.6	85.2	100	125	150	190	202	225	300
KXP50	50						32.5	47.0	82.0	107	125	157	188	238	253	282	375
KXP60	60						39.0	56.4	98.4	128	150	188	225	285	303	338	450
KXP80	80						52.0	75.2	131	170	200	250	300	380	404	450	600
KXP90	90						58.5	84.6	148	192	225	282	338	428	455	507	675
KXP100	100						65.0	94.0	164	213	250	313	375	475	505	563	750
KXP120	120						78.0	113	197	256	300	376	450	570	606	676	900
KXP140	140						91.0	132	230	298	350	438	525	665	707	788	1050
KXP170	170						111	160	279	362	425	532	638	808	859	957	1275
KXP190	190						124	179	312	405	475	595	713	903	960	1070	1425
KXP200	200						130	188	328	426	500	626	750	950	1010	1126	1500
KXP220	220						143	207	361	469	550	689	825	1045	1111	1239	1650
KHP10	10	1.01	1.26	2.00	3.14	4.62	6.06	8.63	13.4	15.4	17.4	20.5	24.7	31.2	35.2	45.5	49.0
KHP20	20	2.02	2.52	4.00	6.28	9.24	12.1	17.3	26.8	30.8	34.8	41.0	49.4	62.4	70.4	91.0	98.0
KHP30	30	3.03	3.78	6.00	9.42	13.9	18.2	25.9	40.2	46.2	52.2	61.5	74.1	94.0	106	137	147
KHP35	35	3.54	4.41	7.00	11.0	16.2	21.2	30.2	46.9	53.9	60.9	71.8	86.5	109	123	159	172
KHP40	40	4.04	5.04	8.00	12.6	18.5	24.2	34.5	53.6	61.6	69.6	82.0	98.8	125	141	182	196
KHP50	50	5.05	6.30	10.0	15.7	23.1	30.3	43.2	67.0	77.0	87.0	103	124	156	176	228	245
KHP60	60	6.06	7.56	12.0	18.8	27.7	36.4	51.8	80.4	92.4	104	123	148	187	211	273	294
KHP70	70	7.07	8.82	14.0	22.0	32.3	42.4	60.4	93.8	108	122	144	173	218	246	319	343
KHP80	80	8.08	10.1	16.0	25.1	37.0	48.5	69.0	107	123	139	164	198	250	282	364	392
KHP90	90	9.09	11.3	18.0	28.3	41.6	54.5	77.7	121	139	157	185	222	281	317	410	441
KHP100	100	10.1	12.6	20.0	31.4	46.2	60.6	86.3	134	154	174	205	247	312	352	455	490
KHP120	120	12.1	15.1	24.0	37.7	55.4	72.7	104	161	185	209	246	296	374	422	546	588
KHP130	130	13.1	16.4	26.0	40.8	60.1	78.8	112	174	200	226	267	321	406	458	592	637
KHP140	140	14.1	17.6	28.0	44.0	64.7	84.8	121	188	216	244	287	346	437	493	637	686
KHP150	150	15.2	18.9	30.0	47.1	69.3	90.9	129	201	231	261	308	371	468	528	683	735
KHP180	180	18.2	22.7	36.0	56.5	83.2	109	155	241	277	313	369	445	562	634	819	882
KHP200	200	20.2	25.2	40.0	62.8	92.4	121	173	268	308	348	410	494	624	704	910	980
KHP250	250	25.3	31.5	50.0	78.5	116	152	216	335	385	435	513	618	780	880	1138	1225
KHP300	300	30.3	37.8	60.0	94.2	139	182	259	402	462	522	615	741	936	1056	1365	1470
KHP350	350	35.4	44.1	70.0	110	162	212	302	469	539	609	718	865	1092	1232	1593	1715
KHP400	400	40.4	50.4	80.0	126	185	242	345	536	616	696	820	988	1248	1408	1820	1960
KHP500	500	50.5	63.0	100	157	231	303	432	670	770	870	1025	1235	1560	1760	2275	2450
KMP10	10	0.98	1.23	1.90	3.05	4.18	5.20	6.74	8.73	10.3	11.2	12.9	15.5	22.2	23.4	28.5	31.5
KMP20	20	1.96	2.46	3.80	6.10	8.36	10.4	13.5	17.5	20.6	22.4	25.8	31.0	44.4	46.8	57.0	63.0
KMP30	30	2.94	3.69	5.70	9.15	12.5	15.6	20.2	26.2	30.9	33.6	38.7	46.5	66.6	70.2	85.5	94.5
KMP40	40	3.92	4.92	7.60	12.2	16.7	20.8	27.0	34.9	41.2	44.8	51.6	62.0	88.8	93.6	114	126
KMP50	50	4.90	6.15	9.50	15.3	20.9	26.0	33.7	43.7	51.5	56.0	64.5	77.5	111	117	143	158
KMP60	60	5.88	7.38	11.4	18.3	25.1	31.2	40.4	52.4	61.8	67.2	77.4	93.0	133	140	171	189
KMP70	70	6.86	8.61	13.3	21.4	29.3	36.4	47.2	61.1	72.1	78.4	90.3	109	155	164	200	221
KMP80	80	7.84	9.84	15.2	24.4	33.4	41.6	53.9	69.8	82.4	89.6	103	124	178	187	228	252
KMP100	100	9.80	12.3	19.0	30.5	41.8	52.0	67.4	87.3	103	112	129	155	222	234	285	315
KMP120	120	11.8	14.8	22.8	36.6	50.2	62.4	80.9	105	124	134	155	186	266	281	342	378
KMP150	150	14.7	18.5	28.5	45.8	62.7	78.0	101	131	155	168	194	233	333	351	428	473
KMP200	200	19.6	24.6	38.0	61.0	83.6	104	135	175	206	224	258	310	444	468	570	630
KMP250	250	24.5	30.8	47.5	76.3	105	130	169	218	258	280	323	388	555	585	713	788
KMP300	300	29.4	36.9	57.0	91.5	125	156	202	262	309	336	387	465	666	702	855	945
KMP350	350	34.3	43.1	66.5	107	146	182	236	306	361	392	452	543	777	819	998	1103
KMP400	400	39.2	49.2	76.0	122	167	208	270	349	412	448	516	620	888	936	1140	1260
KMP500	500	49.0	61.5	95.0	153	209	260	337	437	515	560	645	775	1110	1170	1425	1575
KMP600	600	58.8	73.8	114	183	251	312	404	524	618	672	774	930	1332	1404	1710	1890
KMP700	700	68.6	86.1	133	214	293	364	472	611	721	784	903	1085	1554	1638	1995	2205
KMP800	800	78.4	98.4	152	244	334	416	539	698	824	896	1032	1240	1776	1872	2280	2520
KMP900	900	88.2	111	171	275	376	468	607	786	927	1008	1161	1395	1998	2106	2565	2835
KMP1000	1000	98.0	123	190	305	418	520	674	873	1030	1120	1290	1550	2220	2340	2850	3150
KLP10	10	0.94	1.19	1.80	2.91	4.03	4.75	5.60	6.60	7.42	7.99	8.73	10.3	12.6	13.0		
KLP20	20	1.88	2.38	3.60	5.82	8.06	9.50	11.2	13.2	14.8	16.0	17.5	20.6	25.2	26.0		
KLP30	30	2.82	3.57	5.40	8.73	12.1	14.3	16.8	19.8	22.3	24.0	26.2	30.9	37.8	39.0		
KLP40	40	3.76	4.76	7.20	11.6	16.1	19.0	22.4	26.4	29.7	32.0	34.9	41.2	50.4	52.0		
KLP50	50	4.70	5.95	9.00	14.6	20.2	23.8	28.0	33.0	37.1	40.0	43.7	51.5	63.0	65.0		
KLP60	60	5.64	7.14	10.8	17.5	24.2	28.5	33.6	39.6	44.5	47.9	52.4	61.8	75.6	78.0		
KLP70	70	6.58	8.33	12.6	20.4	28.2	33.3	39.2	46.2	51.9	55.9	61.1	72.1	88.2	91.0		
KLP80	80	7.52	9.52	14.4	23.3	32.2	38.0	44.8	52.8	59.4	63.9	69.8	82.4	101	104		
KLP100	100	9.40	11.9	18.0	29.1	40.3	47.5	56.0	66.0	74.2	79.9	87.3	103	126	130		
KLP120	120	11.3	14.3	21.6	34.9	48.4	57.0	67.2	79.2	89.0	95.9	105	124	151	156		
KLP150	150	14.1	17.9	27.0	43.7	60.5	71.3	84.0	99.0	111	120	131	155	189	195		
KLP200	200	18.8	23.8	36.0	58.2	80.6	95.0	112	132	148	160	175	206	252	260		
KLP250	250	23.5	29.8	45.0	72.8	101	119	140	165	186	200	218	258	315	325		
KLP300	300	28.2	35.7	54.0	87.3	121	143	168	198	223	240	262	309	378	390		
KLP350	350	32.9	41.7	63.0	102	141	166	196	231	260	280	306	361	441	455		
KLP400	400	37.6	47.6	72.0	116	161	190	224	264	297	320	349	412	504	520		
KLP500	500	47.0	59.5	90.0	146	202	238	280	330	371	400	437	515	630	650		
KLP600	600	56.4	71.4	108	175	242	285	336	396	445	479	524	618	756	780		
KLP700	700	65.8	83.3	126	204	282	333	392	462	519	559	611	721	882	910		
KLP800	800	75.2	95.2	144	233	322	380	448	528	594	639	698	824	1008</			

Discharge current is for fully charged cells and allowing 5% for voltage losses associated with connectors

● Final discharge voltage 1.05 V per cell

Cell type	C A h	Hour							Minutes					Second				
		10	8	5	3	2	1.5	1	30	20	15	10	5	1	30	5	1	
KXP10	10							6.75	9.69	17.8	24.0	29.4	37.5	46.3	59.3	66.3	71.9	90.9
KXP20	20							13.5	19.4	35.6	48.0	58.8	75.0	92.6	119	133	144	182
KXP30	30							20.3	29.1	53.4	72.0	88.2	113	139	178	199	216	273
KXP40	40							27.0	38.8	71.2	96.0	118	150	185	237	265	288	364
KXP50	50							33.8	48.5	89.0	120	147	188	232	297	332	360	455
KXP60	60							40.5	58.1	107	144	176	225	278	356	398	431	545
KXP80	80							54.0	77.5	142	192	235	300	370	474	530	575	727
KXP90	90							60.8	87.2	160	216	265	338	417	534	597	647	818
KXP100	100							67.5	96.9	178	240	294	375	463	593	663	719	909
KXP120	120							81.0	116	214	288	353	450	556	712	796	863	1091
KXP140	140							94.5	136	249	336	412	525	648	830	928	1007	1273
KXP170	170							115	165	303	408	500	638	787	1008	1127	1222	1545
KXP190	190							128	184	338	456	559	713	880	1127	1260	1366	1727
KXP200	200							135	194	356	480	588	750	926	1186	1326	1438	1818
KXP220	220							149	213	392	528	647	825	1019	1305	1459	1582	2000
KHP10	10	1.02	1.27	2.02	3.24	4.70	6.20	9.13	16.2	20.2	22.1	24.3	30.1	41.2	48.0	52.5	58.2	
KHP20	20	2.04	2.54	4.04	6.48	9.40	12.4	18.3	32.4	40.4	44.2	48.6	60.2	82.4	96.0	105	116	
KHP30	30	3.06	3.81	6.06	9.72	14.1	18.6	27.4	48.6	60.6	66.3	72.9	90.3	124	144	158	175	
KHP35	35	3.57	4.45	7.07	11.3	16.5	21.7	32.0	56.7	70.7	77.4	85.1	105	144	168	184	204	
KHP40	40	4.08	5.08	8.08	13.0	18.8	24.8	36.5	64.8	80.8	88.4	97.2	120	165	192	210	233	
KHP50	50	5.10	6.35	10.1	16.2	23.5	31.0	45.7	81.0	101	111	122	151	206	240	263	291	
KHP60	60	6.12	7.62	12.1	19.4	28.2	37.2	54.8	97.2	121	133	146	181	247	288	315	349	
KHP70	70	7.14	8.89	14.1	22.7	32.9	43.4	63.9	113	141	155	170	211	288	336	368	407	
KHP80	80	8.16	10.2	16.2	25.9	37.6	49.6	73.0	130	162	177	194	241	330	384	420	466	
KHP90	90	9.18	11.4	18.2	29.2	42.3	55.8	82.2	146	182	199	219	271	371	432	473	524	
KHP100	100	10.2	12.7	20.2	32.4	47.0	62.0	91.3	162	202	221	243	301	412	480	525	582	
KHP120	120	12.2	15.2	24.2	38.9	56.4	74.4	110	194	242	265	292	361	494	576	630	698	
KHP130	130	13.3	16.5	26.3	42.1	61.1	80.6	119	211	263	287	316	391	536	624	683	757	
KHP140	140	14.3	17.8	28.3	45.4	65.8	86.8	128	227	283	309	340	421	577	672	735	815	
KHP150	150	15.3	19.1	30.3	48.6	70.5	93.0	137	243	303	332	365	452	618	720	788	873	
KHP180	180	18.4	22.9	36.4	58.3	84.6	112	164	292	364	398	437	542	742	864	945	1048	
KHP200	200	20.4	25.4	40.4	64.8	94.0	124	183	324	404	442	486	602	824	960	1050	1164	
KHP250	250	25.5	31.8	50.5	81.0	118	155	228	405	505	553	608	753	1030	1200	1313	1455	
KHP300	300	30.6	38.1	60.6	97.2	141	186	274	486	606	663	729	903	1236	1440	1575	1746	
KHP350	350	35.7	44.5	70.7	113	165	217	320	567	707	774	851	1054	1442	1680	1838	2037	
KHP400	400	40.8	50.8	80.8	130	188	248	365	648	808	884	972	1204	1648	1920	2100	2328	
KHP500	500	51.0	63.5	101	162	235	310	457	810	1010	1105	1215	1505	2060	2400	2625	2910	
KMP10	10	1.01	1.25	2.00	3.16	4.41	5.60	7.60	10.3	12.2	13.1	15.1	17.9	25.0	27.9	33.1	34.2	
KMP20	20	2.02	2.50	4.00	6.32	8.82	11.2	15.2	20.6	24.4	26.2	30.2	35.8	50.0	55.8	66.2	68.4	
KMP30	30	3.03	3.75	6.00	9.48	13.2	16.8	22.8	30.9	36.6	39.3	45.3	53.7	75.0	83.7	99.3	103	
KMP40	40	4.04	5.00	8.00	12.6	17.6	22.4	30.4	41.2	48.8	52.4	60.4	71.6	100	112	132	137	
KMP50	50	5.05	6.25	10.0	15.8	22.1	28.0	38.0	51.5	61.0	65.5	75.5	89.5	125	140	166	171	
KMP60	60	6.06	7.50	12.0	19.0	26.5	33.6	45.6	61.8	73.2	78.6	90.6	107	150	167	199	205	
KMP70	70	7.07	8.75	14.0	22.1	30.9	39.2	53.2	72.1	85.4	91.7	106	125	175	195	232	239	
KMP80	80	8.08	10.0	16.0	25.3	35.3	44.8	60.8	82.4	97.6	105	121	143	200	223	265	274	
KMP100	100	10.1	12.5	20.0	31.6	44.1	56.0	76.0	103	122	131	151	179	250	279	331	342	
KMP120	120	12.1	15.0	24.0	37.9	52.9	67.2	91.2	124	146	157	181	215	300	335	397	410	
KMP150	150	15.2	18.8	30.0	47.4	66.2	84.0	114	155	183	197	227	269	375	419	497	513	
KMP200	200	20.2	25.0	40.0	63.2	88.2	112	152	206	244	262	302	358	500	558	662	684	
KMP250	250	25.3	31.3	50.0	79.0	110	140	190	258	305	328	378	448	625	698	828	855	
KMP300	300	30.3	37.5	60.0	94.8	132	168	228	309	366	393	453	537	750	837	993	1026	
KMP350	350	35.4	43.8	70.0	111	154	196	266	361	427	459	529	627	875	977	1159	1197	
KMP400	400	40.4	50.0	80.0	126	176	224	304	412	488	524	604	716	1000	1116	1324	1368	
KMP500	500	50.5	62.5	100	158	221	280	380	515	610	655	755	895	1250	1395	1655	1710	
KMP600	600	60.6	75.0	120	190	265	336	456	618	732	786	906	1074	1500	1674	1986	2052	
KMP700	700	70.7	87.5	140	221	309	392	532	721	854	917	1057	1253	1750	1953	2317	2394	
KMP800	800	80.8	100	160	253	353	448	608	824	976	1048	1208	1432	2000	2232	2648	2736	
KMP900	900	90.9	113	180	284	397	504	684	927	1098	1179	1359	1611	2250	2511	2979	3078	
KMP1000	1000	101	125	200	316	441	560	760	1030	1220	1310	1510	1790	2500	2790	3310	3420	
KLP10	10	0.98	1.25	1.90	3.00	4.28	5.26	6.34	7.68	8.58	9.54	10.4	11.9	14.5	15.7			
KLP20	20	1.96	2.50	3.80	6.00	8.56	10.5	12.7	15.4	17.2	19.1	20.8	23.8	29.0	31.4			
KLP30	30	2.94	3.75	5.70	9.00	12.8	15.8	19.0	23.0	25.7	28.6	31.2	35.7	43.5	47.1			
KLP40	40	3.92	5.00	7.60	12.0	17.1	21.0	25.4	30.7	34.3	38.2	41.6	47.6	58.0	62.8			
KLP50	50	4.90	6.25	9.50	15.0	21.4	26.3	31.7	38.4	42.9	47.7	52.0	59.5	72.5	78.5			
KLP60	60	5.88	7.50	11.4	18.0	25.7	31.6	38.0	46.1	51.5	57.2	62.4	71.4	87.0	94.2			
KLP70	70	6.86	8.75	13.3	21.0	30.0	36.8	44.4	53.8	60.1	66.8	72.8	83.3	102	110			
KLP80	80	7.84	10.0	15.2	24.0	34.2	42.1	50.7	61.4	68.6	76.3	83.2	95.2	116	126			
KLP100	100	9.80	12.5	19.0	30.0	42.8	52.6	63.4	76.8	85.8	95.4	104	119	145	157			
KLP120	120	11.8	15.0	22.8	36.0	51.4	63.1	76.1	92.2	103	114	125	143	174	188			
KLP150	150	14.7	18.8	28.5	45.0	64.2	78.9	95.1	115	129	143	156	179	218	236			
KLP200	200	19.6	25.0	38.0	60.0	85.6	105	127	154	172	191	208	238	290	314			
KLP250	250	24.5	31.3	47.5	75.0	107	132	159	192	215	239	260	298	363	393			
KLP300	300	29.4	37.5	57.0	90.0	128	158	190	230	257	286	312	357	435	471			
KLP350	350	34.3	43.8	66.5	105	150	184	222	269	300	334	364	417	508	550			
KLP400	400	39.2	50.0	76.0	120	171	210	254	307	343	382	416	476	580	628			
KLP500	500	49.0	62.5	95.0	150	214	263	317	384	429	477	520	595	725	785			
KLP600	600	58.8	75.0	114	180	257	316	380	461	515	572	624	714	870	942			
KLP700	700	68.6	87.5	133	210	300	368	444	538	601	668	728	833	1015	1099			
KLP800	800	78.4	100	152	240	342	421	507	614	686	763	832	952	116				



Discharge current is for fully charged cells and allowing 5% for voltage losses associated with connectors

● Final discharge voltage 1.00 V per cell

Cell type	C Ah	Hour							Minutes							Second		
		10	8	5	3	2	1.5	1	30	20	15	10	5	1	30	5	1	
KXP10	10						6.88	10.3	19.0	26.9	33.6	43.7	56.0	77.5	84.0	91.0	107	
KXP20	20						13.8	20.6	38.0	53.8	67.2	87.4	112	155	168	182	214	
KXP30	30						20.6	30.9	57.0	80.7	101	131	168	233	252	273	321	
KXP40	40						27.5	41.2	76.0	108	134	175	224	310	336	364	428	
KXP50	50						34.4	51.5	95.0	135	168	219	280	388	420	455	535	
KXP60	60						41.3	61.8	114	161	202	262	336	465	504	546	642	
KXP80	80						55.0	82.4	152	215	269	350	448	620	672	728	856	
KXP90	90						61.9	92.7	171	242	302	393	504	698	756	819	963	
KXP100	100						68.8	103	190	269	336	437	560	775	840	910	1070	
KXP120	120						82.6	124	228	323	403	524	672	930	1008	1092	1284	
KXP140	140						96.3	144	266	377	470	612	784	1085	1176	1274	1498	
KXP170	170						117	175	323	457	571	743	952	1318	1428	1547	1819	
KXP190	190						131	196	361	511	638	830	1064	1473	1596	1729	2033	
KXP200	200						138	206	380	538	672	874	1120	1550	1680	1820	2140	
KXP220	220						151	227	418	592	739	961	1232	1705	1848	2002	2354	
KHP10	10	1.03	1.28	2.03	3.36	4.87	6.40	9.43	17.2	21.6	26.5	28.3	34.7	50.4	56.7	69.3	73.8	
KHP20	20	2.06	2.56	4.06	6.72	9.74	12.8	18.9	34.4	43.2	53.0	56.6	69.4	101	113	139	148	
KHP30	30	3.09	3.84	6.09	10.1	14.6	19.2	28.3	51.6	64.8	79.5	84.9	104	151	170	208	221	
KHP35	35	3.61	4.48	7.11	11.8	17.0	22.4	33.0	60.2	75.6	92.8	99.1	121	176	198	243	258	
KHP40	40	4.12	5.12	8.12	13.4	19.5	25.6	37.7	68.8	86.4	106	113	139	202	227	277	295	
KHP50	50	5.15	6.40	10.2	16.8	24.4	32.0	47.2	86.0	108	133	142	174	252	284	347	369	
KHP60	60	6.18	7.68	12.2	20.2	29.2	38.4	56.6	103	130	159	170	208	302	340	416	443	
KHP70	70	7.21	8.96	14.2	23.5	34.1	44.8	66.0	120	151	186	198	243	353	397	485	517	
KHP80	80	8.24	10.2	16.2	26.9	39.0	51.2	75.4	138	173	212	226	278	403	454	554	590	
KHP90	90	9.27	11.5	18.3	30.2	43.8	57.6	84.9	155	194	239	255	312	454	510	624	664	
KHP100	100	10.3	12.8	20.3	33.6	48.7	64.0	94.3	172	216	265	283	347	504	567	693	738	
KHP120	120	12.4	15.4	24.4	40.3	58.4	76.8	113	206	259	318	340	416	605	680	832	886	
KHP130	130	13.4	16.6	26.4	43.7	63.3	83.2	123	224	281	345	368	451	655	737	901	959	
KHP140	140	14.4	17.9	28.4	47.0	68.2	89.6	132	241	302	371	396	486	706	794	970	1033	
KHP150	150	15.5	19.2	30.5	50.4	73.1	96.0	141	258	324	398	425	521	756	851	1040	1107	
KHP180	180	18.5	23.0	36.5	60.5	87.7	115	170	310	389	477	509	625	907	1021	1247	1328	
KHP200	200	20.6	25.6	40.6	67.2	97.4	128	189	344	432	530	566	694	1008	1134	1386	1476	
KHP250	250	25.8	32.0	50.8	84.0	122	160	236	430	540	663	708	868	1260	1418	1733	1845	
KHP300	300	30.9	38.4	60.9	101	146	192	283	516	648	795	849	1041	1512	1701	2079	2214	
KHP350	350	36.1	44.8	71.1	118	170	224	330	602	756	928	991	1215	1764	1985	2426	2583	
KHP400	400	41.2	51.2	81.2	134	195	256	377	688	864	1060	1132	1388	2016	2268	2772	2952	
KHP500	500	51.5	64.0	102	168	244	320	472	860	1080	1325	1415	1735	2520	2835	3465	3690	
KMP10	10	1.02	1.26	2.02	3.31	4.54	6.00	8.30	12.0	13.9	15.3	16.9	20.5	28.6	31.9	38.1	39.4	
KMP20	20	2.04	2.52	4.04	6.62	9.08	12.0	16.6	24.0	27.8	30.6	33.8	41.0	57.2	63.8	76.2	78.8	
KMP30	30	3.06	3.78	6.06	9.93	13.6	18.0	24.9	36.0	41.7	45.9	50.7	61.5	85.8	95.7	114	118	
KMP40	40	4.08	5.04	8.08	13.2	18.2	24.0	33.2	48.0	55.6	61.2	67.6	82.0	114	128	152	158	
KMP50	50	5.10	6.30	10.1	16.6	22.7	30.0	41.5	60.0	69.5	76.5	84.5	103	143	160	191	197	
KMP60	60	6.12	7.56	12.1	19.9	27.2	36.0	49.8	72.0	83.4	91.8	101	123	172	191	229	236	
KMP70	70	7.14	8.82	14.1	23.2	31.8	42.0	58.1	84.0	97.3	107	118	144	200	223	267	276	
KMP80	80	8.16	10.1	16.2	26.5	36.3	48.0	66.4	96.0	111	122	135	164	229	255	305	315	
KMP100	100	10.2	12.6	20.2	33.1	45.4	60.0	83.0	120	139	153	169	205	286	319	381	394	
KMP120	120	12.2	15.1	24.2	39.7	54.5	72.0	99.6	144	167	184	203	246	343	383	457	473	
KMP150	150	15.3	18.9	30.3	49.7	68.1	90.0	125	180	209	230	254	308	429	479	572	591	
KMP200	200	20.4	25.2	40.4	66.2	90.8	120	166	240	278	306	338	410	572	638	762	788	
KMP250	250	25.5	31.5	50.5	82.8	114	150	208	300	348	383	423	513	715	798	953	985	
KMP300	300	30.6	37.8	60.6	99.3	136	180	249	360	417	459	507	615	858	957	1143	1182	
KMP350	350	35.7	44.1	70.7	116	159	210	291	420	487	536	592	718	1001	1117	1334	1379	
KMP400	400	40.8	50.4	80.8	132	182	240	332	480	556	612	676	820	1144	1276	1524	1576	
KMP500	500	51.0	63.0	101	166	227	300	415	600	695	765	845	1025	1430	1595	1905	1970	
KMP600	600	61.2	75.6	121	199	272	360	498	720	834	918	1014	1230	1716	1914	2286	2364	
KMP700	700	71.4	88.2	141	232	318	420	581	840	973	1071	1183	1435	2002	2233	2667	2758	
KMP800	800	81.6	101	162	265	363	480	664	960	1112	1224	1352	1640	2288	2552	3048	3152	
KMP900	900	91.8	113	182	298	409	540	747	1080	1251	1377	1521	1845	2574	2871	3429	3546	
KMP1000	1000	102	126	202	331	454	600	830	1200	1390	1530	1690	2050	2860	3190	3810	3940	
KLP10	10	1.01	1.26	2.00	3.27	4.45	5.58	7.12	8.73	9.99	10.8	11.9	13.6	16.7	18.1			
KLP20	20	2.02	2.52	4.00	6.54	8.90	11.2	14.2	17.5	20.0	21.6	23.8	27.2	33.4	36.2			
KLP30	30	3.03	3.78	6.00	9.81	13.4	16.7	21.4	26.2	30.0	32.4	35.7	40.8	50.1	54.3			
KLP40	40	4.04	5.04	8.00	13.1	17.8	22.3	28.5	34.9	40.0	43.2	47.6	54.4	66.8	72.4			
KLP50	50	5.05	6.30	10.0	16.4	22.3	27.9	35.6	43.7	50.0	54.0	59.5	68.0	83.5	90.5			
KLP60	60	6.06	7.56	12.0	19.6	26.7	33.5	42.7	52.4	59.9	64.8	71.4	81.6	100	109			
KLP70	70	7.07	8.82	14.0	22.9	31.2	39.1	49.8	61.1	69.9	75.6	83.3	95.2	117	127			
KLP80	80	8.08	10.1	16.0	26.2	35.6	44.6	57.0	69.8	79.9	86.4	95.2	109	134	145			
KLP100	100	10.1	12.6	20.0	32.7	44.5	55.8	71.2	87.3	99.9	108	119	136	167	181			
KLP120	120	12.1	15.1	24.0	39.2	53.4	67.0	85.4	105	120	130	143	163	200	217			
KLP150	150	15.2	18.9	30.0	49.1	66.8	83.7	107	131	150	162	179	204	251	272			
KLP200	200	20.2	25.2	40.0	65.4	89.0	112	142	175	200	216	238	272	334	362			
KLP250	250	25.3	31.5	50.0	81.8	111	140	178	218	250	270	298	340	418	453			
KLP300	300	30.3	37.8	60.0	98.1	134	167	214	262	300	324	357	408	501	543			
KLP350	350	35.4	44.1	70.0	114	156	195	249	306	350	378	417	476	585	634			
KLP400	400	40.4	50.4	80.0	131	178	223	285	349	400	432	476	544	668	724			
KLP500	500	50.5	63.0	100	164	223	279	356	437	500	540	595	680	835	905			
KLP600	600	60.6	75.6	120	196	267	335	427	524	599	648	714	816	1002	1086			
KLP700	700	70.7	88.2	140	229	312	391	498	611	699	756	833	952	1169	1267			
KLP800	800	80.8	101	160	262	356	446	570	698	799	864	952	1088	1336</				



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