

NCFP

Nickel Cadmium Fibre Plate Batteries



Dimensional and Electrical Data



Nickel Cadmium Fibre Electrode Batteries

Nickel Cadmium Fibre electrode batteries may be seen as 3rd generation (1980's) technology. Pocket plate is 1st generation (1919) and Sintered Plate is 2nd generation (1950's). The Fibre Electrode Technology has been provided by DAUG, Germany (research venture of Mercedes Benz & Volkswagen).

HBL's NCFP Batteries are available both as Single cells of 1.2 V and as Blocks (of individual cells thermally welded together) of multiple voltages & capacities.



IEC 60623

Construction

Terminal Arrangement

Nickel-plated terminal posts provide good electrical conductivity

Flame arresting flip-open vent cap

Prevents explosion and electrolyte contamination

Splash guard

Prevents electrolyte splashing and possible short-circuit caused by external objects accidentally falling into the cell

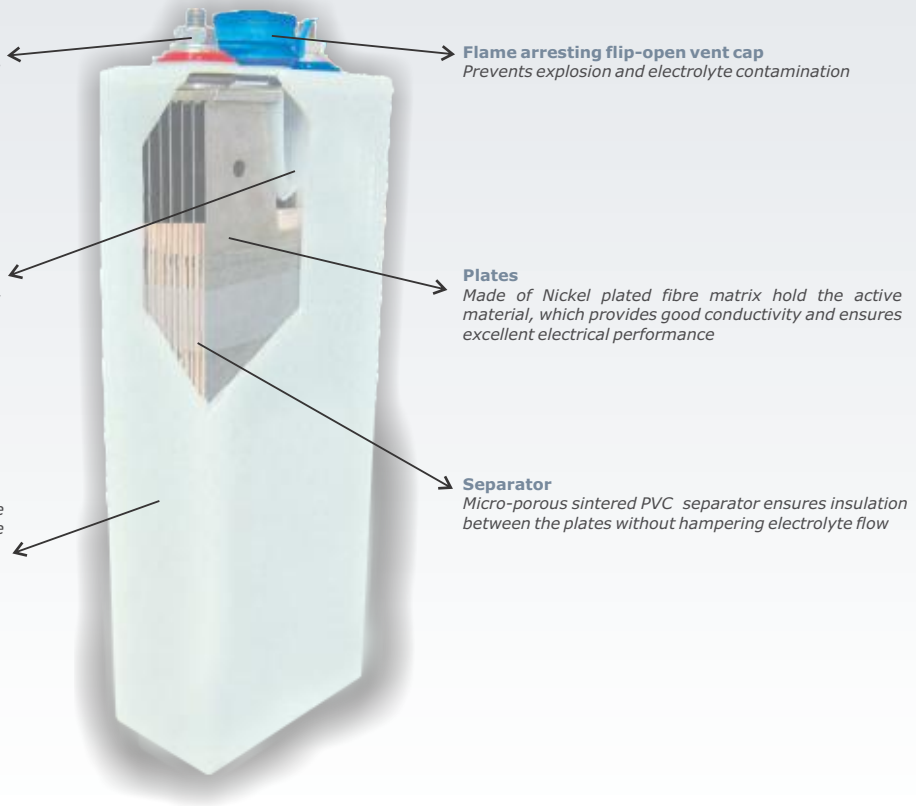
Plates

Made of Nickel plated fibre matrix hold the active material, which provides good conductivity and ensures excellent electrical performance

Separator

Micro-porous sintered PVC separator ensures insulation between the plates without hampering electrolyte flow

Translucent polypropylene cell containers Make the cell mechanically sturdy and facilitates visual electrolyte level checks for ease in maintenance



Product Range

HBL's NCFP Batteries are available as Single Cells and as Blocks in four types designated KFX, KFH, KFM & KFL based on performance characteristics. The wide capacity range in each type permit selection of an optimum battery for any application.

KFX range uses

Very thin plates to provide extremely high discharge currents for short durations.

KFH range uses

Thin plates (thicker than X type) to provide high discharge currents for short durations.

KFM range uses

Optimized plate thickness ideal for medium discharge currents and durations.

KFL range uses

Thick plates to provide low currents for long durations.

Outstanding Advantages of HBL's batteries are:

- ✦ Excellent Cycle life.
- ✦ High energy density.
- ✦ Long storage life.
- ✦ Wide operating temperature range.
- ✦ No change of electrolyte for life time.
- ✦ Minimal maintenance.
- ✦ High resistance to electrical and mechanical abuse.
- ✦ Quick charging.

Built in Performance

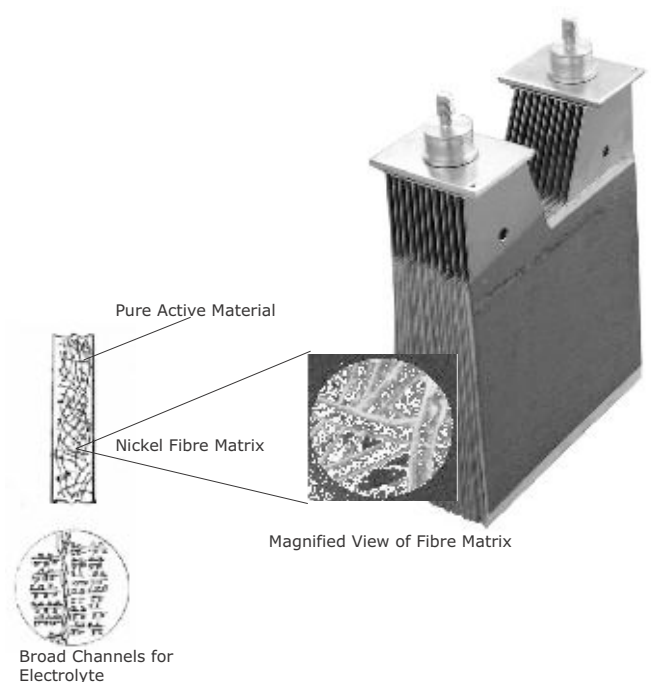
The Nickel Cadmium Fibre Electrode employed in the NCFP batteries allows 90% of the Electrode Volume available for the active material. The three dimensional fibre structure provides a very high conducting density and ensures that the active material is accessed during current collection, thereby giving an excellent electrical performance. The benefits of the above are seen in low internal resistance, high rates of discharge, and improved recharge capability.

The NCFP battery electrode technology uses active material free from Graphite and iron. Absence of graphite prevents internal carbonate formation and absence of iron reduces maintenance.

The elastic nature of NCFP electrode enables it to absorb greater shock and vibration stresses. This includes volume changes during charge and discharge cycles, hence the battery can give more than 3000 cycles. The NCFP is considerably lighter in weight hence has a high energy density.

These cells are available in containers of polypropylene. The polypropylene container can withstand mechanical stresses, shocks and vibrations. It performs in temperature extremes without losing strength, insulates well, resists corrosion. Furthermore, the translucent nature of polypropylene allows visual check of electrolyte level for ease of maintenance. The cells are also available in Structural Foam molded, Stainless Steel containers for special requirements.

The above design features make these batteries rugged and highly reliable.



Governing Standards

HBL's NCFP batteries conform to relevant international standards such as IEC, DIN, BS, KS, etc. The Batteries are tested and certified by Canadian Standards Association for IEC 60623 standards.

Battery Characteristics

Nickel Cadmium Fibre Plate Batteries are the most reliable and rugged batteries available today. The batteries do not suffer from sudden death failure. They can withstand to a great extent any type of abuse like overcharge, deep discharge, even accidental reverse charge and can be stored in any state of charge

Charging

These batteries can be charged by all normal methods (like taper, constant current, constant voltage, float or trickle charging. A Dual mode charger which will recharge a discharged battery in Boost mode (higher voltage and current) and then bring it to Float mode (lower voltage) to keep it in fully charged condition is ideal to get the best performance.

Recommended Charging Parameters

- Current limit - max. $0.2C_5$ A
- Float voltage - 1.40 to 1.42 V/Cell
- Boost voltage - 1.55 to 1.70 V/Cell for L type
 - 1.54 to 1.69 V/Cell for M type
 - 1.53 to 1.67 V/Cell for H type
 - 1.53 to 1.57 V/Cell for X type

However, if single mode charger is already available, like in old systems or in locomotives, the battery can be operated with constant voltage charging. Adequate Recharging time is required in this case. Recommended Charging voltage setting: 1.45 to 1.50V / Cell.

Discharge Performance

The rated capacity of a Nickel Cadmium battery is defined as the Ampere Hours available at 5 hour rate of discharge to an end voltage of 1.00V/Cell at 20°C after charging at constant current of $0.2C_5$ rate for 8 hours. The nominal voltage of a single cell is 1.2 volts.

The discharge performance depends on the battery type. For example, a H type cell at 15 minutes discharge can deliver about twice the discharge current compared to an L type cell of equal rated capacity.

Always use the discharge performance tables to find the proper X, H, M and L type alternatives for a specific application.

The tabulated discharge performance data are valid for cells fully charged.

If the actual conditions differ from standard, the expected performance will be different. Our application engineering department will provide the details and further help you in selecting the optimum battery type for your requirement.

In accordance with its policy of continuous improvement the company reserves the right to change specifications and designs without notice. Illustrations, data, dimensions and weights given in this brochure are for guidance only.

Single Cells

Capacities and Dimensions

KFL-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm			Cell connection bolt(s) size	Approximate weight of the cell (Kg)	Approximate electrolyte volume between the level marks (L)
			Height	Width	Length			
KFL 20P	S1	20	229	86	46	M8	1.1	0.12
KFL 30P	S3	30	239	134	44	M8	1.7	0.18
KFL 38P	S3	38	239	134	44	M8	1.8	0.18
KFL 50P	S4	50	289	134	59	M10	3.1	0.24
KFL 60P	S4	60	289	134	59	M10	3.2	0.24
KFL 70P	S4	70	289	134	59	M10	4.2	0.24
KFL 85P	S5	85	374	134	74	M10	4.9	0.50
KFL 100P	S5	100	374	134	74	M10	5.1	0.50
KFL 125P	S5	125	374	134	74	M10	5.4	0.50
KFL 140P	S6	140	391	134	101	2 X M10	6.9	0.70
KFL 150P	S6	150	391	134	101	2 X M10	7.1	0.70
KFL 175P	S6	175	391	134	101	2 X M10	7.2	0.70
KFL 190P	S6	190	391	134	101	2 X M10	7.4	0.70
KFL 200P	S6	200	391	134	101	2 X M10	7.5	0.70
KFL 230P	S6	230	391	134	101	2 X M10	7.6	0.70
KFL 255P	S6	255	391	134	101	2 X M10	7.7	0.70
KFL 290P	S7	290	417	159	107	2 X M10	10.0	0.82
KFL 330P	S7	330	417	159	107	2 X M10	10.2	0.82
KFL 350P	S7	350	417	159	107	2 X M10	10.3	0.82
KFL 370P	S7	370	417	159	107	2 X M10	10.4	0.82
KFL 410P	S8	410	443	163	166	2 X M10	16.0	1.67
KFL 450P	S8	450	443	163	166	2 X M10	16.2	1.67
KFL 460P	S8	460	443	163	166	2 X M10	16.3	1.67
KFL 500P	S8	500	443	163	166	2 X M10	16.5	1.67
KFL 520P	S8	520	443	163	166	2 X M10	16.6	1.67
KFL 530P	S8	530	443	163	166	2 X M10	16.7	1.67
KFL 540P	S8	540	443	163	166	2 X M10	16.9	1.67

KFM-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm			Cell connection bolt(s) size	Approximate weight of the cell (Kg)	Approximate electrolyte volume between the level marks (L)
			Height	Width	Length			
KFM 11P	S1	11	229	86	46	M8	1.2	0.12
KFM 21P	S1	21	229	86	46	M8	1.3	0.12
KFM 28P	S2	28	229	86	61	M8	1.7	0.16
KFM 35P	S3	35	239	134	44	M8	1.9	0.18
KFM 49P	S4	49	289	134	59	M10	3.4	0.24
KFM 65P	S4	65	289	134	59	M10	3.6	0.24
KFM 72P	S4	72	289	134	59	M10	3.7	0.24
KFM 83P	S5	83	374	134	74	M10	5.5	0.50
KFM 96P	S5	96	374	134	74	M10	5.7	0.50
KFM 120P	S5	120	374	134	74	M10	5.8	0.50
KFM 125P	S5	125	374	134	74	M10	5.9	0.50
KFM 136P	S6	136	391	134	101	2 x M10	7.7	0.70
KFM 145P	S6	145	391	134	101	2 x M10	7.9	0.70
KFM 160P	S6	160	391	134	101	2 x M10	8.0	0.70
KFM 168P	S6	168	391	134	101	2 x M10	8.1	0.70
KFM 192P	S6	192	391	134	101	2 x M10	8.2	0.70
KFM 210P	S6	210	391	134	101	2 x M10	8.3	0.70
KFM 245P	S6	245	391	134	101	2 x M10	8.4	0.70
KFM 255P	S6	255	391	134	101	2 x M10	8.5	0.70
KFM 288P	S7	288	417	159	107	2 x M10	11.0	0.82
KFM 300P	S7	300	417	159	107	2 x M10	11.2	0.82
KFM 315P	S7	315	417	159	107	2 x M10	11.3	0.82
KFM 329P	S7	329	417	159	107	2 x M10	11.4	0.82
KFM 342P	S7	342	417	159	107	2 x M10	11.5	0.82
KFM 365P	S8	365	443	163	166	2 x M10	17.5	1.67
KFM 380P	S8	380	443	163	166	2 x M10	17.7	1.67
KFM 420P	S8	420	443	163	166	2 x M10	17.8	1.67
KFM 455P	S8	455	443	163	166	2 x M10	17.9	1.67
KFM 464P	S8	464	443	163	166	2 x M10	18.0	1.67
KFM 470P	S8	470	443	163	166	2 x M10	18.1	1.67
KFM 490P	S8	490	443	163	166	2 x M10	18.2	1.67
KFM 500P	S8	500	443	163	166	2 x M10	18.4	1.67
KFM 525P	S8	525	443	163	166	2 x M10	18.5	1.67
KFM 530P	S8	530	443	163	166	2 x M10	18.6	1.67
KFM 541P	S8	541	443	163	166	2 x M10	18.7	1.67

Single Cells

Capacities and Dimensions

KFH-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm			Cell connection bolt(s) size	Approximate weight of the cell (Kg)	Approximate electrolyte volume between the level marks (L)
			Height	Width	Length			
KFH 11P	S1	11	229	86	46	M8	1.2	0.12
KFH 12P	S1	12	229	86	46	M8	1.3	0.12
KFH 17P	S2	17	229	86	61	M8	1.6	0.16
KFH 26P	S3	26	239	134	44	M8	2.0	0.18
KFH 35P	S4	35	289	134	59	M10	3.3	0.24
KFH 45P	S4	45	289	134	59	M10	3.4	0.24
KFH 50P	S4	50	289	134	59	M10	3.6	0.24
KFH 56P	S4	56	289	134	59	M10	3.6	0.24
KFH 60P	S4	60	289	134	59	M10	3.7	0.24
KFH 75P	S5	75	374	134	74	M10	5.5	0.50
KFH 80P	S5	80	374	134	74	M10	5.7	0.50
KFH 90P	S6	90	391	134	101	2 X M10	7.4	0.70
KFH 100P	S6	100	391	134	101	2 X M10	7.6	0.70
KFH 120P	S6	120	391	134	101	2 X M10	7.9	0.70
KFH 135P	S7	135	417	159	107	2 X M10	10.2	0.82
KFH 140P	S7	140	417	159	107	2 X M10	10.3	0.82
KFH 145P	S7	145	417	159	107	2 X M10	10.4	0.82
KFH 160P	S7	160	417	159	107	2 X M10	10.5	0.82
KFH 180P	S7	180	417	159	107	2 X M10	10.6	0.82
KFH 200P	S7	200	417	159	107	2 X M10	10.7	0.82
KFH 220P	S8	220	443	163	166	2 X M10	16.5	1.67
KFH 235P	S8	235	443	163	166	2 X M10	16.7	1.67
KFH 250P	S8	250	443	163	166	2 X M10	16.8	1.67
KFH 255P	S8	255	443	163	166	2 X M10	16.9	1.67
KFH 260P	S8	260	443	163	166	2 X M10	17.0	1.67
KFH 276P	S8	276	443	163	166	2 X M10	17.1	1.67
KFH 300P	S8	300	443	163	166	2 X M10	17.5	1.67

KFX-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm			Cell connection bolt(s) size	Approximate weight of the cell (Kg)	Approximate electrolyte volume between the level marks (L)
			Height	Width	Length			
KFX 11 P	S2	11	229	86	61	M8	1.5	0.16
KFX 16 P	S3	16	239	134	44	M8	1.8	0.18
KFX 25 P	S4	25	289	134	59	M10	3.3	0.24
KFX 38 P	S5	38	374	134	74	M10	5.0	0.50
KFX 45 P	S5	45	374	134	74	M10	5.5	0.50
KFX 60 P*	B31-1	60	349	195	183	M10	17.6	1.60
KFX 75 P*	B31-1	75	349	195	183	M10	18.2	1.60
KFX 90 P*	B31-1	90	349	195	183	M10	18.3	1.60
KFX 100 P	S7	100	417	159	107	2 x M10	10.5	0.82
KFX 120 P	S7	120	417	159	107	2 x M10	10.8	0.82

*Two Cell Block (2.4V)

Single Cells

Performance Data

KFL-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.14V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 20P	20	16	14	13	12	8	6	4	2	2.0
KFL 30P	30	25	22	20	18	12	9	6	4	2.9
KFL 38P	38	31	27	25	22	16	11	7	5	3.7
KFL 50P	50	41	36	33	30	21	15	9	6	4.9
KFL 60P	60	49	43	40	35	25	18	11	7	5.9
KFL 70P	70	57	50	47	41	29	21	13	8	6.9
KFL 85P	85	70	61	57	50	35	25	15	10	8.3
KFL 100P	100	81	71	67	59	41	30	19	12	9.8
KFL 125P	125	101	89	83	74	51	37	23	15	12.3
KFL 140P	140	113	99	93	83	57	41	26	17	13.7
KFL 150P	150	122	107	100	89	62	44	28	18	14.7
KFL 175P	175	142	124	117	103	72	52	32	21	17.2
KFL 190P	190	154	135	127	112	78	56	35	23	18.6
KFL 200P	200	162	142	133	118	82	59	37	24	19.6
KFL 230P	230	186	163	153	136	94	68	43	28	22.5
KFL 255P	255	207	181	170	150	105	75	47	31	25.0
KFL 290P	290	235	206	193	171	119	86	54	35	28.4
KFL 330P	330	267	234	220	195	135	98	61	40	32.4
KFL 350P	350	284	249	233	207	144	104	65	42	34.3
KFL 370P	370	300	263	247	218	152	109	69	45	36.3
KFL 410P	410	332	291	273	242	168	121	76	50	40.2
KFL 450P	450	365	320	300	266	185	133	83	54	44.1
KFL 460P	460	373	327	307	271	189	136	85	56	45.1
KFL 500P	500	405	355	333	295	205	148	93	60	49.0
KFL 520P	520	421	369	347	307	213	154	96	63	51.0
KFL 530P	530	429	376	353	313	217	157	98	64	52.0
KFL 540P	540	437	383	360	319	221	160	100	65	52.9

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.10V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 20P	20	18	17	14	13	9	6	4	2	2.0
KFL 30P	30	28	25	22	20	13	9	6	4	3.0
KFL 38P	38	35	32	27	25	16	12	7	5	3.8
KFL 50P	50	46	42	36	33	22	16	10	6	5.0
KFL 60P	60	55	50	43	40	26	19	11	7	6.0
KFL 70P	70	64	58	50	46	30	22	13	9	7.0
KFL 85P	85	78	71	61	56	37	27	16	10	8.5
KFL 100P	100	91	82	72	66	43	32	19	12	10.0
KFL 125P	125	114	103	90	83	54	39	24	15	12.5
KFL 140P	140	127	115	101	92	60	44	27	17	14.0
KFL 150P	150	137	123	108	99	65	47	29	19	15.0
KFL 175P	175	159	144	126	116	75	55	33	22	17.5
KFL 190P	190	173	156	137	125	82	60	36	23	19.0
KFL 200P	200	182	165	144	132	86	63	38	25	20.0
KFL 230P	230	209	189	166	152	99	73	44	28	23.0
KFL 255P	255	232	210	184	168	110	80	48	31	25.5
KFL 290P	290	264	239	209	191	125	91	55	36	29.0
KFL 330P	330	300	272	238	218	142	104	63	41	33.0
KFL 350P	350	319	288	252	231	151	110	67	43	35.0
KFL 370P	370	337	305	266	244	159	117	70	46	37.0
KFL 410P	410	373	337	295	271	176	129	78	51	41.0
KFL 450P	450	410	370	324	297	194	142	86	56	45.0
KFL 460P	460	419	379	331	304	198	145	87	57	46.0
KFL 500P	500	455	412	360	330	215	158	95	62	50.0
KFL 520P	520	473	428	374	343	224	164	99	64	52.0
KFL 530P	530	482	436	382	350	228	167	101	65	53.0
KFL 540P	540	491	444	389	356	232	170	103	67	54.0

Single Cells

Performance Data

KFL-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.05V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 20P	20	21	19	16	14	9	6	4	3	2.0
KFL 30P	30	31	28	23	21	14	10	6	4	3.0
KFL 38P	38	40	35	30	27	17	12	7	5	3.8
KFL 50P	50	52	47	39	36	23	16	10	6	5.0
KFL 60P	60	62	56	47	43	28	19	12	8	6.0
KFL 70P	70	73	65	55	50	32	22	14	9	7.0
KFL 85P	85	88	79	66	60	39	27	17	11	8.6
KFL 100P	100	103	92	78	71	46	32	20	13	10.1
KFL 125P	125	129	115	98	89	58	40	25	16	12.6
KFL 140P	140	144	129	109	99	64	45	28	18	14.1
KFL 150P	150	155	138	117	107	69	48	29	19	15.1
KFL 175P	175	180	161	137	124	81	56	34	22	17.6
KFL 190P	190	196	175	148	135	87	61	37	24	19.1
KFL 200P	200	206	184	156	142	92	64	39	25	20.1
KFL 230P	230	237	212	179	163	106	74	45	29	23.1
KFL 255P	255	263	235	199	181	117	82	50	32	25.7
KFL 290P	290	299	267	226	206	133	93	57	37	29.2
KFL 330P	330	340	304	257	234	152	106	65	42	33.2
KFL 350P	350	361	322	273	249	161	112	69	44	35.2
KFL 370P	370	381	340	289	263	170	119	73	47	37.2
KFL 410P	410	422	377	320	291	189	131	81	52	41.2
KFL 450P	450	464	414	351	320	207	144	88	57	45.3
KFL 460P	460	474	423	359	327	212	147	90	58	46.3
KFL 500P	500	515	460	390	355	230	160	98	63	50.3
KFL 520P	520	536	478	406	369	239	167	102	65	52.3
KFL 530P	530	546	488	413	376	244	170	104	67	53.3
KFL 540P	540	556	497	421	383	248	173	106	68	54.3

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 20P	20	23	20	17	16	10	7	4	3	2.0
KFL 30P	30	35	30	26	24	15	10	6	4	3.1
KFL 38P	38	44	38	32	30	18	12	8	5	3.9
KFL 50P	50	58	50	43	40	24	16	10	6	5.1
KFL 60P	60	70	59	51	47	29	20	12	8	6.1
KFL 70P	70	81	69	60	55	34	23	14	9	7.1
KFL 85P	85	99	84	72	67	41	28	17	11	8.7
KFL 100P	100	115	98	85	79	49	33	20	13	10.2
KFL 125P	125	144	123	106	99	61	41	25	16	12.7
KFL 140P	140	161	137	119	111	68	46	28	18	14.3
KFL 150P	150	173	147	128	117	73	49	30	19	15.1
KFL 175P	175	201	172	149	137	85	57	35	22	17.7
KFL 190P	190	219	186	162	148	92	62	38	24	19.2
KFL 200P	200	230	196	170	156	97	65	40	25	20.2
KFL 230P	230	265	225	196	179	112	75	46	29	23.2
KFL 255P	255	293	250	217	199	124	83	51	32	25.7
KFL 290P	290	334	284	247	226	141	94	58	37	29.3
KFL 330P	330	380	323	281	257	160	107	66	42	33.3
KFL 350P	350	403	343	298	273	170	114	70	44	35.3
KFL 370P	370	426	363	315	289	179	121	74	47	37.3
KFL 410P	410	472	402	349	320	199	134	82	52	41.4
KFL 450P	450	518	441	383	351	218	147	90	57	45.4
KFL 460P	460	529	451	391	359	223	150	92	58	46.4
KFL 500P	500	575	490	425	390	243	163	100	63	50.5
KFL 520P	520	598	510	442	406	252	169	104	66	52.5
KFL 530P	530	610	519	451	413	257	173	106	67	53.5
KFL 540P	540	621	529	459	421	262	176	108	68	54.5

Single Cells

Performance Data

KFM-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.14 V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 11P	11	12	10	8.8	8	5	3	2.1
KFM 21P	21	23	19	16.8	15	9	6	4.0
KFM 28P	28	31	25	22.4	20	12	8	5.3
KFM 35P	35	39	32	28	26	15	11	6.7
KFM 49P	49	54	44	39	36	22	15	9.3
KFM 65P	65	72	59	52	47	29	20	12.4
KFM 72P	72	79	65	58	53	32	22	13.7
KFM 83P	83	91	75	66	61	37	25	15.8
KFM 96P	96	106	86	77	70	42	29	18.2
KFM 120P	120	131	107	96	88	53	36	22.8
KFM 125P	125	136	111	100	91	55	38	23.8
KFM 136P	136	148	121	109	99	60	41	25.8
KFM 145P	145	158	129	116	106	64	44	27.6
KFM 160P	160	174	142	128	117	70	48	30.4
KFM 168P	168	183	150	134	123	74	51	31.9
KFM 192P	192	209	171	154	140	84	58	36.5
KFM 210P	210	229	187	168	153	92	63	39.9
KFM 245P	245	267	218	196	179	108	74	46.6
KFM 255P	255	278	227	204	186	112	77	48.5
KFM 288P	288	314	256	230	210	127	87	54.7
KFM 300P	300	327	267	240	219	132	90	57.0
KFM 315P	315	343	280	252	230	139	95	59.9
KFM 329P	329	359	293	263	240	145	99	62.4
KFM 342P	342	373	304	274	250	150	103	65.0
KFM 365P	365	398	325	292	266	161	110	69.4
KFM 380P	380	414	338	304	277	167	114	72.2
KFM 420P	420	458	374	336	307	185	126	79.8
KFM 455P	455	496	405	364	332	200	137	86.5
KFM 464P	464	506	413	371	339	204	140	88.2
KFM 470P	470	512	418	376	343	207	141	89.3
KFM 490P	490	534	436	392	358	216	147	93.1
KFM 500P	500	545	445	400	365	220	151	95.0
KFM 525P	525	572	467	420	383	231	158	99.8
KFM 530P	530	578	472	424	387	233	160	100.7
KFM 541P	541	590	481	433	395	238	163	102.8

Single Cells

Performance Data

KFM-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.10 V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 11P	11	13	12	9.1	8.6	5	3.4	2.2
KFM 21P	21	26	22	17.4	17	10	7	4.1
KFM 28P	28	34	29	23.2	22	13	9	5.5
KFM 35P	35	43	37	29	28	16	11	6.9
KFM 49P	49	60	51	41	39	23	15	9.6
KFM 65P	65	80	68	54	51	30	20	12.7
KFM 72P	72	88	76	60	57	33	23	14.1
KFM 83P	83	102	87	69	66	38	26	16.3
KFM 96P	96	118	101	80	76	44	30	18.8
KFM 120P	120	146	125	100	95	55	38	23.5
KFM 125P	125	152	130	104	99	58	39	24.5
KFM 136P	136	165	141	113	107	63	43	26.7
KFM 145P	145	176	151	120	115	67	46	28.4
KFM 160P	160	194	166	133	126	74	50	31.4
KFM 168P	168	204	175	139	133	77	53	32.9
KFM 192P	192	233	200	159	152	88	60	37.6
KFM 210P	210	255	218	174	166	97	66	41.2
KFM 245P	245	298	255	203	194	113	77	48.0
KFM 255P	255	310	265	212	201	117	80	50.0
KFM 288P	288	350	300	239	228	132	91	56.4
KFM 300P	300	365	312	249	237	138	95	58.8
KFM 315P	315	383	328	261	249	145	99	61.7
KFM 329P	329	400	342	273	260	151	104	64.5
KFM 342P	342	416	356	284	270	157	108	67.0
KFM 365P	365	443	380	303	288	168	115	71.5
KFM 380P	380	462	395	315	300	175	120	74.5
KFM 420P	420	510	437	349	332	193	132	82.3
KFM 455P	455	553	473	378	359	209	143	89.2
KFM 464P	464	564	483	385	367	213	146	90.9
KFM 470P	470	571	489	390	371	216	148	92.1
KFM 490P	490	595	510	407	387	225	154	96.0
KFM 500P	500	608	520	415	395	230	158	98.0
KFM 525P	525	638	546	436	415	242	165	103.0
KFM 530P	530	644	551	440	419	244	167	104.0
KFM 541P	541	657	563	449	427	249	170	106.0

Single Cells

Performance Data

KFM-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.05 V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 11P	11	16	13	11	10	5	4	2.2
KFM 21P	21	30	26	20	19	10	7	4.2
KFM 28P	28	41	34	27	25	13	9	5.5
KFM 35P	35	51	43	34	31	17	11	6.9
KFM 49P	49	71	60	48	44	24	16	9.7
KFM 65P	65	94	79	63	58	31	21	12.9
KFM 72P	72	104	88	70	64	35	23	14.3
KFM 83P	83	120	101	81	74	40	27	16.4
KFM 96P	96	139	117	93	86	46	31	19.0
KFM 120P	120	173	145	116	107	58	39	23.8
KFM 125P	125	180	151	121	112	60	41	24.8
KFM 136P	136	196	165	132	122	65	44	26.9
KFM 145P	145	209	175	141	130	70	47	28.7
KFM 160P	160	230	194	155	143	77	52	31.7
KFM 168P	168	242	203	163	150	81	54	33.3
KFM 192P	192	276	232	186	172	92	62	38.0
KFM 210P	210	302	254	204	188	101	68	41.6
KFM 245P	245	353	296	238	219	118	79	48.5
KFM 255P	255	367	309	247	228	121	83	50.5
KFM 288P	288	415	348	279	258	137	93	57.0
KFM 300P	300	432	363	291	269	143	97	59.4
KFM 315P	315	454	381	306	282	150	102	62.4
KFM 329P	329	474	398	319	294	156	107	65.1
KFM 342P	342	492	414	332	306	162	111	67.7
KFM 365P	365	526	442	354	327	173	118	72.3
KFM 380P	380	547	460	369	340	181	123	75.2
KFM 420P	420	605	508	407	376	200	136	83.2
KFM 455P	455	655	551	441	407	216	147	90.1
KFM 464P	464	668	561	450	415	220	150	91.9
KFM 470P	470	677	569	456	421	223	152	93.1
KFM 490P	490	706	593	475	439	233	159	97.0
KFM 500P	500	720	605	485	448	238	162	99.0
KFM 525P	525	756	635	509	470	249	170	104.0
KFM 530P	530	763	641	514	474	252	172	105.0
KFM 541P	541	779	655	525	484	257	175	107.0

Single Cells

Performance Data

KFM-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.00 V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 11P	11	18	16	11	10	5	4	2.2
KFM 21P	21	35	30	22	19	10	7	4.2
KFM 28P	28	46	40	29	26	14	9	5.6
KFM 35P	35	58	50	36	32	17	12	7.0
KFM 49P	49	81	70	51	45	24	16	9.8
KFM 65P	65	107	93	67	60	32	21	13.0
KFM 72P	72	119	103	74	66	35	24	14.4
KFM 83P	83	137	119	85	76	41	27	16.6
KFM 96P	96	158	137	99	88	47	32	19.2
KFM 120P	120	197	170	124	110	59	40	24.0
KFM 125P	125	205	178	129	115	61	41	25.0
KFM 136P	136	223	193	140	125	67	45	27.2
KFM 145P	145	238	206	149	133	71	48	29.0
KFM 160P	160	262	227	165	147	78	53	32.0
KFM 168P	168	276	239	173	155	82	55	33.6
KFM 192P	192	315	273	198	177	94	63	38.4
KFM 210P	210	344	298	216	193	103	69	42.0
KFM 245P	245	402	348	252	225	120	81	49.0
KFM 255P	255	418	362	263	235	125	84	51.0
KFM 288P	288	472	409	297	265	141	95	57.6
KFM 300P	300	492	426	309	276	147	99	60.0
KFM 315P	315	517	447	324	290	154	104	63.0
KFM 329P	329	540	467	339	303	161	109	65.8
KFM 342P	342	561	486	352	315	168	113	68.4
KFM 365P	365	599	518	376	336	179	120	73.0
KFM 380P	380	623	540	391	350	186	125	76.0
KFM 420P	420	689	596	433	386	206	139	84.0
KFM 455P	455	746	646	469	419	223	150	91.0
KFM 464P	464	761	659	478	427	227	153	92.8
KFM 470P	470	771	667	484	432	230	155	94.0
KFM 490P	490	804	696	505	451	240	162	98.0
KFM 500P	500	820	710	515	460	245	165	100.0
KFM 525P	525	861	746	541	483	257	173	105.0
KFM 530P	530	869	753	546	488	260	175	106.0
KFM 541P	541	887	768	557	498	265	179	108.0

Single Cells

Performance Data

KFH-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.14 V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 11P	11	58	50	43	28	22	16	13	9	6	5	3	2.0
KFH 12P	12	63	54	47	30	24	18	15	10	7	5	4	2.2
KFH 17P	17	89	77	66	43	34	25	21	14	10	8	5	3.2
KFH 26P	26	137	118	101	65	52	38	32	21	15	11	8	4.8
KFH 35P	35	184	159	137	88	70	52	43	29	20	16	11	6.5
KFH 45P	45	236	204	176	113	90	67	55	37	26	20	14	8.4
KFH 50P	50	263	227	195	125	100	74	61	41	29	22	15	9.3
KFH 56P	56	294	254	218	140	112	83	68	46	32	25	17	10.4
KFH 60P	60	315	272	234	150	120	89	73	49	34	27	18	11.2
KFH 75P	75	394	341	293	188	150	111	92	62	43	33	23	14.0
KFH 80P	80	420	363	312	200	160	118	98	66	46	35	24	14.9
KFH 90P	90	473	409	351	225	180	133	110	74	52	40	27	16.7
KFH 100P	100	525	454	390	250	200	148	122	82	57	44	30	18.6
KFH 120P	120	630	545	468	300	240	178	146	98	69	53	36	22.3
KFH 135P	135	709	613	527	338	270	200	165	111	77	60	41	25.1
KFH 140P	140	735	636	546	350	280	207	171	115	80	62	42	26.1
KFH 145P	145	761	658	566	363	290	215	177	119	83	64	44	27.0
KFH 160P	160	840	726	624	400	320	237	195	131	92	71	48	29.8
KFH 180P	180	945	817	702	450	360	266	220	148	103	80	55	33.5
KFH 200P	200	1008	860	720	480	390	294	242	164	115	89	61	37.4
KFH 220P	220	1155	999	792	550	440	326	268	180	126	97	67	40.9
KFH 235P	235	1234	1067	917	588	470	348	287	193	135	104	71	43.7
KFH 250P	250	1313	1135	975	625	500	370	305	205	143	111	76	46.5
KFH 255P	255	1339	1158	995	638	510	377	311	209	146	113	77	47.4
KFH 260P	260	1365	1180	1014	650	520	385	317	213	149	115	79	48.4
KFH 276P	276	1449	1253	1076	690	552	408	337	226	158	122	84	51.3
KFH 300P	300	1575	1362	1170	750	600	444	366	246	172	133	91	55.8

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.10 V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 11P	11	64	58	51	33	26	19	17	10	7	5	3	2.1
KFH 12P	12	70	64	55	36	29	21	18	10	7	6	4	2.3
KFH 17P	17	99	90	78	51	41	30	26	15	10	8	5	3.2
KFH 26P	26	151	138	120	78	62	46	39	23	16	12	8	5.0
KFH 35P	35	203	186	161	105	84	62	53	30	21	16	11	6.7
KFH 45P	45	261	239	207	135	108	80	68	39	27	21	14	8.6
KFH 50P	50	290	265	230	150	120	89	75	44	30	23	16	9.6
KFH 56P	56	325	297	258	168	134	99	84	49	34	26	18	10.7
KFH 60P	60	348	318	276	180	144	106	90	52	36	28	19	11.5
KFH 75P	75	435	398	345	225	180	133	113	65	45	35	24	14.3
KFH 80P	80	464	424	368	240	192	142	120	70	48	37	25	15.3
KFH 90P	90	522	477	414	270	216	159	135	78	55	42	28	17.2
KFH 100P	100	580	530	460	300	240	177	150	87	61	46	31	19.1
KFH 120P	120	696	636	552	360	288	212	180	104	73	55	38	22.9
KFH 135P	135	783	716	621	405	324	239	203	117	82	62	42	25.8
KFH 140P	140	812	742	644	420	336	248	210	122	85	65	44	26.7
KFH 145P	145	841	769	667	435	348	257	218	126	88	67	46	27.7
KFH 160P	160	928	848	736	480	384	283	240	139	97	74	50	30.6
KFH 180P	180	1044	954	828	540	432	319	270	157	109	83	57	34.4
KFH 200P	200	1100	980	900	580	460	352	290	174	121	92	63	38.2
KFH 220P	220	1276	1166	1012	660	528	389	330	191	133	102	69	42.0
KFH 235P	235	1363	1246	1081	705	564	416	353	204	142	109	74	44.9
KFH 250P	250	1450	1325	1150	750	600	443	375	218	152	116	79	47.8
KFH 255P	255	1479	1352	1173	765	612	451	383	222	155	118	80	48.7
KFH 260P	260	1508	1378	1196	780	624	460	390	226	158	120	82	49.7
KFH 276P	276	1601	1463	1270	828	662	489	414	240	167	128	87	52.7
KFH 300P	300	1740	1590	1380	900	720	531	450	261	182	139	94	57.3

Single Cells

Performance Data

KFH-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.05V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 11P	11	80	68	61	40	33	24	18	10	7	5	4	2
KFH 12P	12	88	74	66	43	36	27	20	11	8	6	4	2
KFH 17P	17	124	105	94	61	51	38	28	15	11	8	6	3
KFH 26P	26	190	161	143	94	78	58	43	24	16	12	8	5
KFH 35P	35	256	217	193	126	105	78	58	32	22	17	11	7
KFH 45P	45	329	279	248	162	135	100	74	41	28	22	15	9
KFH 50P	50	365	310	275	180	150	111	83	46	32	24	16	10
KFH 56P	56	409	347	308	202	168	124	92	51	35	27	18	11
KFH 60P	60	438	372	330	216	180	133	99	55	38	29	20	12
KFH 75P	75	548	465	413	270	225	167	124	68	47	36	24	15
KFH 80P	80	584	496	440	288	240	178	132	73	50	38	26	16
KFH 90P	90	657	558	495	324	270	200	149	82	57	43	29	18
KFH 100P	100	730	620	550	360	300	222	165	91	63	48	33	20
KFH 120P	120	876	744	660	432	360	266	198	109	76	58	39	24
KFH 135P	135	986	837	743	486	405	300	223	123	85	65	44	27
KFH 140P	140	1022	868	770	504	420	311	231	127	88	67	46	28
KFH 145P	145	1059	899	798	522	435	322	239	132	91	70	47	29
KFH 160P	160	1168	992	880	576	480	355	264	146	101	77	52	32
KFH 180P	180	1314	1116	990	648	540	400	297	164	113	86	59	35
KFH 200P	200	1380	1160	1084	680	580	438	326	182	126	96	65	39
KFH 220P	220	1606	1364	1210	792	660	488	363	200	139	106	72	43
KFH 235P	235	1716	1457	1293	846	705	522	388	214	148	113	76	46
KFH 250P	250	1825	1550	1375	900	750	555	413	228	158	120	81	49
KFH 255P	255	1862	1581	1403	918	765	566	421	232	161	122	83	50
KFH 260P	260	1898	1612	1430	936	780	577	429	237	164	125	85	51
KFH 276P	276	2015	1711	1518	994	828	613	455	251	174	132	90	54
KFH 300P	300	2190	1860	1650	1080	900	666	495	273	189	144	98	59

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 11P	11	90	78	68	50	38	26	19	10	7	5	4	2
KFH 12P	12	98	85	74	54	41	28	21	11	8	6	4	2
KFH 17P	17	139	121	105	77	58	40	30	16	11	8	6	3
KFH 26P	26	213	185	161	118	89	61	46	24	17	13	9	5
KFH 35P	35	287	249	217	159	120	82	62	33	23	17	12	7
KFH 45P	45	369	320	279	204	154	106	79	42	29	22	15	9
KFH 50P	50	410	355	310	227	171	118	88	47	32	24	16	10
KFH 56P	56	459	398	347	254	192	132	99	53	36	27	18	11
KFH 60P	60	492	426	372	272	205	141	106	56	39	29	20	12
KFH 75P	75	615	533	465	340	257	176	132	71	48	37	25	15
KFH 80P	80	656	568	496	362	274	188	141	75	51	39	26	16
KFH 90P	90	738	639	558	408	308	212	158	85	58	44	30	18
KFH 100P	100	820	710	620	453	342	235	176	94	64	49	33	20
KFH 120P	120	984	852	744	544	410	282	211	113	77	59	39	24
KFH 135P	135	1107	959	837	612	462	317	238	127	87	66	44	27
KFH 140P	140	1148	994	868	634	479	329	246	132	90	68	46	28
KFH 145P	145	1189	1030	899	657	496	341	255	136	93	71	48	29
KFH 160P	160	1312	1136	992	725	547	376	282	150	103	78	53	32
KFH 180P	180	1476	1278	1116	815	616	423	317	169	116	88	59	36
KFH 200P	200	1584	1400	1230	876	652	460	344	188	129	98	66	40
KFH 220P	220	1804	1562	1364	997	752	517	387	207	141	107	72	44
KFH 235P	235	1927	1669	1457	1065	804	552	414	221	151	115	77	47
KFH 250P	250	2050	1775	1550	1133	843	588	440	235	161	122	82	50
KFH 255P	255	2091	1811	1581	1155	872	599	449	240	164	124	84	51
KFH 260P	260	2132	1846	1612	1178	889	611	458	244	167	127	86	52
KFH 276P	276	2263	1960	1711	1250	944	649	486	259	177	135	91	55
KFH 300P	300	2460	2130	1860	1359	1026	705	528	282	193	146	99	60

Single Cells

Performance Data

KFH-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 0.85V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min
KFH 11P	11	121	105	90	66	46	30	20
KFH 12P	12	132	114	98	72	50	32	22
KFH 17P	17	187	162	139	102	71	46	31
KFH 26P	26	286	247	213	156	109	70	47
KFH 35P	35	385	333	287	210	147	95	64
KFH 45P	45	495	428	369	270	189	122	82
KFH 50P	50	550	475	410	300	210	135	91
KFH 56P	56	616	532	459	336	235	151	102
KFH 60P	60	660	570	492	360	252	162	109
KFH 75P	75	825	713	615	450	315	203	137
KFH 80P	80	880	760	656	480	336	216	146
KFH 90P	90	990	855	738	540	378	243	164
KFH 100P	100	1100	950	820	600	420	270	182
KFH 120P	120	1320	1140	984	720	504	324	218
KFH 135P	135	1485	1283	1107	810	567	365	246
KFH 140P	140	1540	1330	1148	840	588	378	255
KFH 145P	145	1595	1378	1189	870	609	392	264
KFH 160P	160	1760	1520	1312	960	672	432	291
KFH 180P	180	1980	1710	1476	1080	756	486	328
KFH 200P	200	2160	1820	1600	1160	820	520	340
KFH 220P	220	2420	2090	1804	1320	924	594	400
KFH 235P	235	2585	2233	1927	1410	987	635	428
KFH 250P	250	2750	2375	2050	1500	1050	675	455
KFH 255P	255	2805	2423	2091	1530	1071	689	464
KFH 260P	260	2860	2470	2132	1560	1092	702	473
KFH 276P	276	3036	2622	2263	1656	1159	745	502
KFH 300P	300	3300	2850	2460	1800	1260	810	546

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 0.65V/cell

Cell type	Capacity Ah	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min
KFH 11P	11	149	140	121	86	66	32	21
KFH 12P	12	162	152	132	94	72	35	23
KFH 17P	17	230	216	187	133	102	49	33
KFH 26P	26	351	330	286	203	156	75	50
KFH 35P	35	473	445	385	273	210	102	68
KFH 45P	45	608	572	495	351	270	131	87
KFH 50P	50	675	635	550	390	300	145	97
KFH 56P	56	756	711	616	437	336	162	108
KFH 60P	60	810	762	660	468	360	174	116
KFH 75P	75	1013	953	825	585	450	218	145
KFH 80P	80	1080	1016	880	624	480	232	154
KFH 90P	90	1215	1143	990	702	540	261	174
KFH 100P	100	1350	1270	1100	780	600	290	193
KFH 120P	120	1620	1524	1320	936	720	348	232
KFH 135P	135	1823	1715	1485	1053	810	392	261
KFH 140P	140	1890	1778	1540	1092	840	406	270
KFH 145P	145	1958	1842	1595	1131	870	421	280
KFH 160P	160	2160	2032	1760	1248	960	464	309
KFH 180P	180	2430	2286	1980	1404	1080	522	347
KFH 200P	200	2480	2400	2100	1520	1160	560	384
KFH 220P	220	2970	2794	2420	1716	1320	629	425
KFH 235P	235	3173	2985	2585	1833	1410	672	454
KFH 250P	250	3375	3175	2750	1950	1500	715	483
KFH 255P	255	3443	3239	2805	1989	1530	729	492
KFH 260P	260	3510	3302	2860	2028	1560	744	502
KFH 276P	276	3726	3505	3036	2153	1656	789	533
KFH 300P	300	4050	3810	3300	2340	1800	858	579

Single Cells

Performance Data

KFX-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.14V/cell

Cell type	Capacity Ah	1 sec	5 sec	10 sec	30 sec	1 Min	5 min	10 min
KFX 11 P	11	139	124	111	87	73	53	40
KFX 16 P	16	213	190	170	134	112	77	58
KFX 25 P	25	333	296	266	209	176	120	91
KFX 38 P	38	531	468	421	332	269	182	138
KFX 45 P	45	662	583	525	414	335	216	164
KFX 60 P	60	738	673	610	487	416	270	210
KFX 75 P	75	877	799	724	579	494	338	263
KFX 90 P	90	1052	958	869	694	593	405	315
KFX 100 P	100	1169	1065	966	772	659	450	350
KFX 120 P	120	1402	1278	1159	926	791	540	420

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.10V/cell

Cell type	Capacity Ah	1 sec	5 sec	10 sec	30 sec	1 Min	5 min	10 min
KFX 11 P	11	180	164	153	124	105	66	47
KFX 16 P	16	262	238	218	177	150	96	69
KFX 25 P	25	410	373	338	271	232	150	108
KFX 38 P	38	624	556	497	403	341	228	163
KFX 45 P	45	724	645	577	468	396	270	194
KFX 60 P	60	908	809	724	586	497	342	252
KFX 75 P	75	1067	950	850	689	583	428	315
KFX 90 P	90	1253	1122	1009	827	708	513	378
KFX 100 P	100	1357	1219	1102	912	787	570	420
KFX 120 P	120	1518	1363	1230	1016	875	684	504

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity Ah	1 sec	5 sec	10 sec	30 sec	1 Min	5 min	10 min
KFX 11 P	11	262	227	207	172	145	90	52
KFX 16 P	16	380	330	300	250	211	131	75
KFX 25 P	25	594	500	450	375	330	205	118
KFX 38 P	38	898	760	684	570	501	312	179
KFX 45 P	45	1042	882	794	662	581	369	212
KFX 60 P	60	1237	1147	1045	880	750	474	276
KFX 75 P	75	1503	1280	1157	972	861	593	345
KFX 90 P	90	1770	1498	1347	1123	987	711	414
KFX 100 P	100	1883	1594	1434	1196	1050	790	460
KFX 120 P	120	2124	1797	1618	1349	1185	948	552

Single Cells

Performance Data

KFX-range

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 0.85V/cell

Cell type	Capacity Ah	1 sec	5 sec	10 sec	30 sec	1 Min	5 min	10 min
KFX 11 P	11	367	324	296	275	234	104	53
KFX 16 P	16	534	471	431	400	340	152	77
KFX 25 P	25	835	736	673	550	475	237	120
KFX 38 P	38	1269	1119	1023	836	722	360	182
KFX 45 P	45	1505	1325	1211	1019	855	427	216
KFX 60 P	60	1653	1493	1402	1231	1112	552	282
KFX 75 P	75	2066	1867	1753	1539	1389	690	353
KFX 90 P	90	2479	2240	2103	1847	1667	828	423
KFX 100 P	100	2755	2489	2337	2052	1853	920	470
KFX 120 P	120	3306	2987	2804	2462	2223	1104	564

Discharge currents in Amperes at $20 \pm 5^\circ\text{C}$ for a fully charged cell to ECV 0.65V/cell

Cell type	Capacity Ah	1 sec	5 sec	10 sec	30 sec	1 Min	5 min	10 min
KFX 11 P	11	480	435	405	345	280	108	54
KFX 16 P	16	750	640	590	520	440	157	78
KFX 25 P	25	1050	972	908	790	690	245	123
KFX 38 P	38	1600	1480	1380	1220	1050	372	186
KFX 45 P	45	2040	1800	1680	1470	1250	441	221
KFX 60 P	60	2320	2230	2120	1840	1560	570	294
KFX 75 P	75	2800	2650	2500	2100	1840	713	368
KFX 90 P	90	3480	3300	3100	2720	2260	855	441
KFX 100 P	100	3800	3620	3410	3000	2450	950	490
KFX 120 P	120	4500	4300	4000	3600	2900	1140	588

Single Cells

Battery Rack Dimensions

For safe and reliable operation, batteries should be mounted on suitable battery racks. HBL battery racks are made of alkali-resistant, powder coated steel sections. Battery racks are available in multi-step one tier or multi-step two tier configuration. Standard battery racks are supplied in knocked-down condition and can be easily assembled at site.

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	
Single Cells (Normal arrangement)																	
1&2			222	668	323	783	424	898									
3			318	678	467	793	616	908			318	1070	467	1300	616	1550	
4			318	728	467	843	616	958			318	1250	467	1450	616	1700	
5			318	813	467	928	616	1043			318	1450	467	1670	616	1900	
6			318	830	467	945	616	1060			318	1470	467	1700	616	1950	
7			368	856	542	971	716	1086			368	1550	542	1760	716	2000	
8			376	882	554	997	732	1112			376	1650	554	1860	732	2100	

(All dimensions in mm)

Evaluation of length

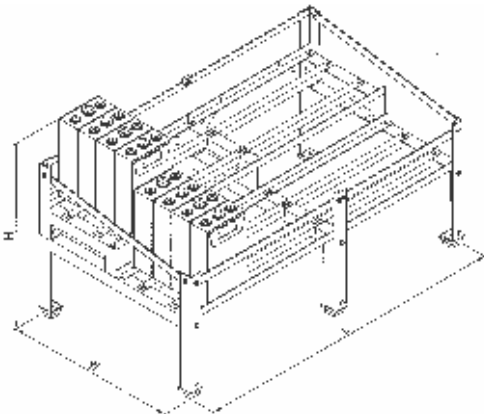
$$\begin{aligned} \text{Length of rack} &= (X + 1) \times \text{No. Of cells in a row for (S1-S5)} \\ &= (X + 2) \times \text{No. Of cells in a row for (S6-S8)} \end{aligned}$$

Where, X = Length of Cell (i.e for S1-S8)

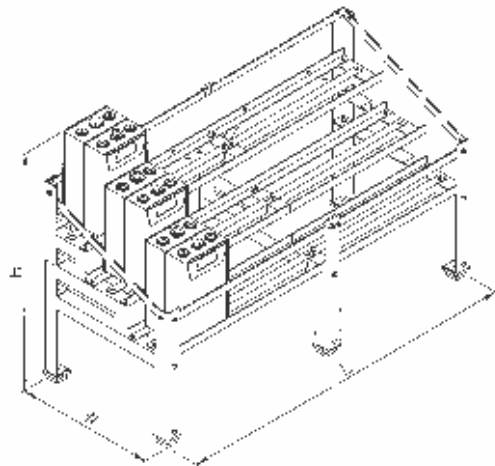
Note : Height is including cells

The value of length should be rounded off to nearest to 50 and 5 mm should be added.

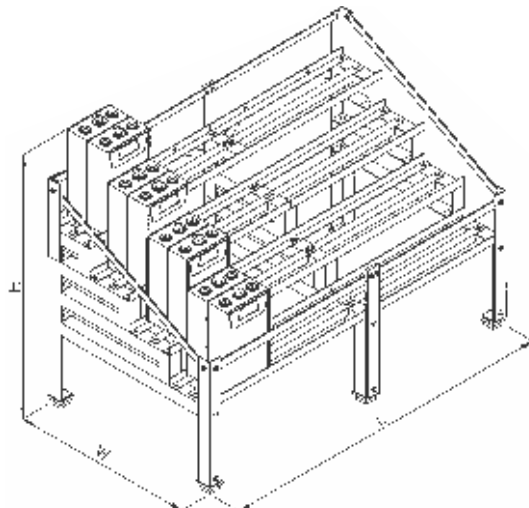
SINGLE TIER RACKS
2STEP 1TIER RACK



SINGLE TIER RACKS
3STEP 1TIER RACK

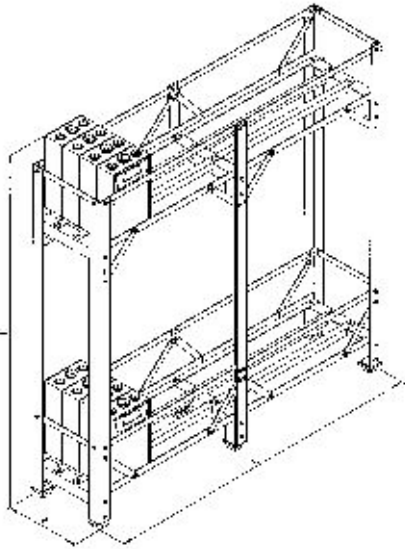


SINGLE TIER RACKS
4STEP 1TIER RACK

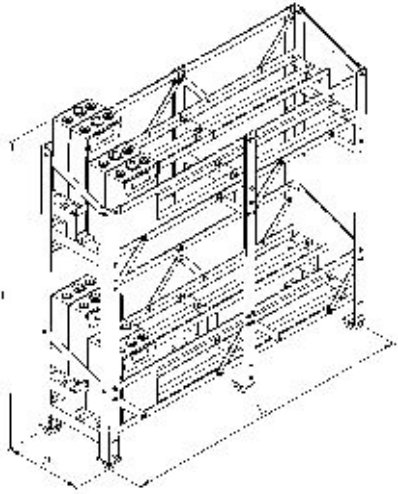


Single Cells

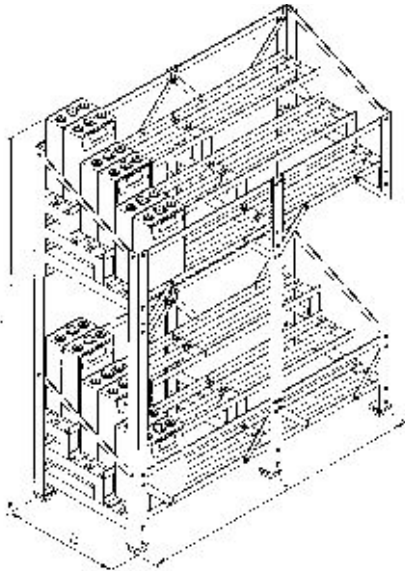
TWO TIER RACKS
1STEP 2TIER RACK



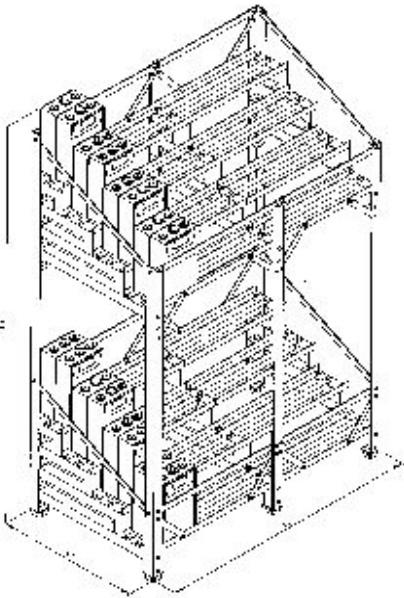
TWO TIER RACKS
2STEP 2TIER RACK



TWO TIER RACKS
3STEP 2TIER RACK



TWO TIER RACKS
4STEP 2TIER RACK



Block Cells

Capacities and Dimensions

KFL-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm					Cell connection bolt(s) size	Approximate weight of the cell (Kg)			Approximate electrolyte volume between the level marks (L)		
			Height	Width	Length				1.2V	2.4V	3.6V	1.2V	2.4V	3.6V
					1.2V	2.4V	3.6V							
KFL 30P	B12-1	30	244	171		82		M8		4.6			0.3	
KFL 38 P	B11-1	38	244	171		110		M8		6.5			0.5	
KFL50 P	B11-1	50	244	171		110		M8		6.8			0.5	
KFL 60P	B11-1	60	244	171		110		M8		7.1			0.5	
KFL 70P	B11-1	70	244	171		110		M8		7.2			0.5	
KFL 85P	B32-1	85	349	195		132		M10		11.5			1.1	
KFL100P	B32-1	100	349	195		132		M10		12.0			1.1	
KFL 125P	B32-1	125	349	195		132		M10		12.5			1.1	
KFL 130P	B32-1	130	349	195		132		M10		12.6			1.1	
KFL 140P	B32-1	140	349	195		132	192	M10		12.7			1.1	
KFL 150P	B32-1	150	349	195		132	192	M10		12.9			1.1	
KFL 175P	B42-1	175	405	195		132	192	M10		14.6			1.1	
KFL 190P	B42-1	190	405	195		132	192	M10		14.7			1.1	
KFL 200P	B31-1	200	349	195		183	267	M10		17.3	26.0		1.6	2.4
KFL 230P	B31-1	230	349	195		183	267	M10		17.8	26.7		1.6	2.4
KFL 255P	B41-1	255	405	195		183	267	M10		20.1	30.2		1.6	2.4
KFL 290P	B41-1	290	405	195		183	267	M10		20.6	31.0		1.6	2.4
KFL 330P	B42-2	330	405	195	132	252	372	2 X M10	14.4	28.9	43.3	1.1	2.2	3.3
KFL 350 P	B42-2	350	405	195	132	252	372	2 X M10	14.6	29.1	43.7	1.1	2.2	3.3
KFL 370 P	B42-2	370	405	195	132	252	372	2 X M10	14.7	29.3	44.0	1.1	2.2	3.3
KFL 410 P	B31-2	410	349	195	183	352		2 X M10	17.1	34.3		1.6	3.2	
KFL 450P	B31-2	450	349	195	183	352		2 X M10	17.8	35.6		1.6	3.2	
KFL 460P	B31-2	460	349	195	183	352		2 X M10	17.9	35.8		1.6	3.2	
KFL 500P	B41-2	500	405	195	183	352		2 X M10	20.1	40.2		1.6	3.2	
KFL 520 P	B41-2	520	405	195	183	352		2 X M10	20.2	40.4		1.6	3.2	
KFL 530 P	B41-2	530	405	195	183	352		2 X M10	20.3	40.6		1.6	3.2	
KFL 540 P	B41-2	540	405	195	183	352		2 X M10	20.5	40.9		1.6	3.2	
KFL 570 P	B41-2	570	405	195	183	352		2 X M10	20.6	41.3		1.6	3.2	
KFL 610P	B41-2	610	405	195	183	352		2 X M10	21.2	42.3		1.6	3.2	
KFL 650 P	B41-2	650	405	195	183	352		2 X M10	21.3	42.6		1.6	3.2	
KFL 660P	B41-2	660	405	195	183	352		2 X M10	21.4	42.8		1.6	3.2	
KFL 685P	B31-3	685	349	195	267			3 X M10	26.7			2.4		
KFL 700P	B31-3	700	349	195	267			3 X M10	26.8			2.4		
KFL 730 P	B41-3	730	405	195	267			3 X M10	29.9			2.4		
KFL 740P	B41-3	740	405	195	267			3 X M10	30.1			2.4		
KFL 765P	B41-3	765	405	195	267			3 X M10	30.2			2.4		
KFL 775P	B41-3	775	405	195	267			3 X M10	30.3			2.4		
KFL 820P	B41-3	820	405	195	267			3 X M10	31.0			2.4		
KFL 860P	B41-3	860	405	195	267			3 X M10	31.1			2.4		
KFL 880P	B41-3	880	405	195	267			3 X M10	31.2			2.4		
KFL 930P	B31-4	930	349	195	352			4 X M10	35.8			3.2		
KFL 970P	B41-4	970	405	195	352			4 X M10	40.2			3.2		
KFL 990P	B41-4	990	405	195	352			4 X M10	40.3			3.2		
KFL 1030P	B41-4	1030	405	195	352			4 X M10	40.5			3.2		
KFL 1100P	B41-4	1100	405	195	352			4 X M10	40.9			3.2		
KFL 1170P	B41-4	1170	405	195	352			4 X M10	41.3			3.2		
KFL 1200P	B41-4	1200	405	195	352			4 X M10	41.4			3.2		
KFL 1235P	B41-4	1235	405	195	352			4 X M10	41.5			3.2		
KFL 1320P	B41-4	1320	405	195	352			4 X M10	42.5			3.2		
KFL 1400P	B41-5	1400	405	195	436			5 X M10	51.6			4.0		
KFL 1480P	B41-5	1480	405	195	436			5 X M10	51.7			4.0		
KFL 1500P	B41-5	1500	405	195	436			5 X M10	51.8			4.0		

Block Cells

Capacities and Dimensions

KFM-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm					Cell connection bolt(s) size	Approximate weight of the cell (Kg)			Approximate electrolyte volume between the level marks (L)		
			Height	Width	Length				1.2V	2.4V	3.6V	1.2V	2.4V	3.6V
					1.2V	2.4V	3.6V							
KFM 28P	B12-1	28	244	171		82		M8		4.6			0.3	
KFM 30P	B12-1	30	244	171		82		M8		4.8			0.3	
KFM 35P	B11-1	35	244	171		110		M8		6.7			0.5	
KFM 49P	B11-1	49	244	171		110		M8		7.1			0.5	
KFM 65P	B11-1	65	244	171		110		M8		7.5			0.5	
KFM 70P	B11-1	70	244	171		110		M8		7.5			0.5	
KFM 83P	B32-1	83	349	195		132	192	M10		12.2	18.2		1.1	1.7
KFM 96P	B32-1	96	349	195		132	192	M10		12.3	18.5		1.1	1.7
KFM 120P	B32-1	120	349	195		132	192	M10		12.7	19.0		1.1	1.7
KFM 125P	B32-1	125	349	195		132	192	M10		12.8	19.2		1.1	1.7
KFM 136P	B32-1	136	349	195		132	192	M10		12.9	19.4		1.1	1.7
KFM 145P	B32-1	145	349	195		132	192	M10		13.0	19.5		1.1	1.7
KFM 160P	B42-1	160	405	195		132	192	M10		15.0	22.5		1.1	1.7
KFM 168P	B42-1	168	405	195		132	192	M10		15.1	22.6		1.1	1.7
KFM 192P	B31-1	192	349	195		183	267	M10		17.6	26.4		1.1	1.7
KFM 210P	B31-1	210	349	195		183	267	M10		18.3	27.4		1.6	2.4
KFM 245P	B31-1	245	349	195		183	267	M10		19.6	29.4		1.6	2.4
KFM 255P	B41-1	255	405	195		183	267	M10		21.2	31.8		1.6	2.4
KFM 288P	B41-1	288	405	195		183	267	M10		21.9	32.9		1.6	2.4
KFM 300P	B32-2	300	349	195	132	252	372	2 x M10	13.4	26.8	40.2	1.1	2.2	3.3
KFM 315P	B42-2	315	405	195	132	252	372	2 x M10	15.1	30.1	45.2	1.1	2.2	3.3
KFM 329P	B42-2	329	405	195	132	252	372	2 x M10	15.2	30.5	45.7	1.1	2.2	3.3
KFM 342P	B42-2	342	405	195	132	252	372	2 x M10	15.3	30.6	45.9	1.1	2.2	3.3
KFM 365P	B42-2	365	405	195	132	252	372	2 x M10	15.4	30.8	46.2	1.1	2.2	3.3
KFM 380P	B42-2	380	405	195	132	252	372	2 x M10	15.5	31.0	46.5	1.1	2.2	3.3
KFM 420P	B31-2	420	349	195	183	352	520	2 x M10	18.3	36.6	54.8	1.6	3.2	4.8
KFM 455P	B31-2	455	349	195	183	352	520	2 x M10	18.9	37.8	56.7	1.6	3.2	4.8
KFM 464P	B31-2	464	349	195	183	352	520	2 x M10	19.0	38.0	57.0	1.6	3.2	4.8
KFM 470P	B31-2	470	349	195	183	352	520	2 x M10	19.1	38.2	57.3	1.6	3.2	4.8
KFM 490P	B41-2	490	405	195	183	352	520	2 x M10	21.2	42.4	63.7	1.6	3.2	4.8
KFM 500P	B41-2	500	405	195	183	352	520	2 x M10	21.4	42.8	64.2	1.6	3.2	4.8
KFM 525P	B41-2	525	405	195	183	352	520	2 x M10	21.4	42.9	64.3	1.6	3.2	4.8
KFM 530P	B41-2	530	405	195	183	352	520	2 x M10	21.5	43.0	64.5	1.6	3.2	4.8
KFM 541P	B41-2	541	405	195	183	352	520	2 x M10	21.9	43.8		1.6	3.2	4.8
KFM 694P	B31-3	694	349	195	267	520		3 x M10	28.4			2.4	4.8	
KFM 890P	B41-3	890	405	195	267	520		3 x M10	32.9			2.4	4.8	
KFM 921P	B31-4	921	349	195	352			4 x M10	37.8			3.2		
KFM 960P	B31-4	960	349	195	352			4 x M10	37.9			3.2		
KFM 1063P	B41-4	1063	405	195	352			4 x M10	42.5			3.2		
KFM 1155P	B41-4	1155	405	195	352			4 x M10	43.8			3.2		
KFM 1167P	B41-4	1167	405	195	352			4 x M10	43.9			3.2		
KFM 1267P	B41-5	1267	405	195	436			5 x M10	53.1			4.0		
KFM 1283P	B41-5	1283	405	195	436			5 x M10	53.2			4.0		
KFM 1288P	B41-5	1288	405	195	436			5 x M10	53.3			4.0		
KFM 1350P	B41-5	1350	405	195	436			5 x M10	54.8			4.0		
KFM 1391P	B41-5	1391	405	195	436			5 x M10	54.9			4.0		

Block Cells

Capacities and Dimensions

KFH-range

Cell type	Container size reference	Capacity at 5 hour rate	Cell dimension in mm					Cell connection bolt(s) size	Approximate weight of the cell (Kg)			Approximate electrolyte volume between the level marks (L)				
			Height	Width	Length				1.2V	2.4V	3.6V	1.2V	2.4V	3.6V		
					1.2V	2.4V	3.6V									
KFH 20P	B12-1	20	244	171			82		M8		4.3				0.3	
KFH 35P	B11-1	35	244	171			110		M8		6.4				0.5	
KFH 45P	B11-1	45	244	171			110		M8		6.7				0.5	
KFH 60P	B32-1	60	349	195			132		M10		11.5				1.1	
KFH 75P	B32-1	75	349	195			132		M10		11.9				1.1	
KFH 80P	B32-1	80	349	195			132		M10		12.0				1.1	
KFH 90P	B32-1	90	349	195			132		M10		12.3				1.1	
KFH 110P	B31-1	110	349	195			183		M10		16.0				1.6	
KFH 120P	B31-1	120	349	195			183	267	M10		16.7	25.0			1.6	2.4
KFH 135P	B31-1	135	349	195			183	267	M10		17.1	25.6			1.6	2.4
KFH 140P	B31-1	140	349	195			183	267	M10		17.2	25.6			1.6	2.4
KFH 145P	B31-1	145	349	195			183	267	M10		17.3	25.2			1.6	2.4
KFH 160P	B31-1	160	349	195			183	267	M10		17.4	25.8			1.6	2.4
KFH 180P	B31-1	180	349	195			183	267	M10		17.5	26.3			1.6	2.4
KFH 200P	B41-1	200	405	195			183	267	M10		19.9	29.8			1.6	2.4
KFH 220P	B41-1	220	405	195			183	267	M10		20.3	30.4			1.6	2.4
KFH 235P	B41-1	235	405	195			183	267	M10		20.4	30.6			1.6	2.4
KFH 250P	B31-2	250	349	195	183	352	520		2 X M10	16.7	33.4	50.1	1.6	3.2	4.8	
KFH 255P	B31-2	255	349	195	183	352	520		2 X M10	16.8	33.6	50.4	1.6	3.2	4.8	
KFH 260P	B31-2	260	349	195	183	352	520		2 X M10	17.1	34.1	51.2	1.6	3.2	4.8	
KFH 276P	B31-2	276	349	195	183	352	520		2 X M10	17.2	34.4	51.6	1.6	3.2	4.8	
KFH 300P	B31-2	300	349	195	183	352	520		2 X M10	17.3	34.6	51.9	1.6	3.2	4.8	
KFH 316P	B31-2	316	349	195	183	352	520		2 X M10	17.4	34.8	52.2	1.6	3.2	4.8	
KFH 342P	B31-2	342	349	195	183	352	520		2 X M10	17.5	35.0	52.5	1.6	3.2	4.8	
KFH 354P	B31-2	354	349	195	183	352	520		2 X M10	17.6	35.2	52.6	1.6	3.2	4.8	
KFH 390P	B41-2	390	405	195	183				2 X M10	19.7			1.6			
KFH 414P	B41-2	414	405	195	183				2 X M10	19.8			1.6			
KFH 450P	B41-2	450	405	195	183				2 X M10	20.2			1.6			
KFH 474P	B41-2	474	405	195	183				2 X M10	20.3			1.6			
KFH 513P	B31-3	513	349	195	267				3 X M10	25.8			2.4			
KFH 520P	B31-3	520	349	195	267				3 X M10	26.3			2.4			
KFH 552P	B31-3	552	349	195	267				3 X M10	26.4			2.4			
KFH 600P	B41-3	600	405	195	267				3 X M10	29.7			2.4			
KFH 632P	B41-3	632	405	195	267				3 X M10	29.8			2.4			
KFH 650P	B41-3	650	405	195	267				3 X M10	29.9			2.4			
KFH 684P	B41-3	684	405	195	267				3 X M10	30.3			2.4			
KFH 708P	B41-4	708	405	195	352				4 X M10	38.7			3.2			
KFH 750P	B41-4	750	405	195	352				4 X M10	38.8			3.2			
KFH 780P	B41-4	780	405	195	352				4 X M10	38.9			3.2			
KFH 828P	B41-4	828	405	195	352				4 X M10	39.6			3.2			
KFH 855P	B41-4	855	405	195	352				4 X M10	39.7			3.2			
KFH 900P	B41-4	900	405	195	352				4 X M10	40.4			3.2			
KFH 948P	B41-4	948	405	195	352				4 X M10	40.5			3.2			
KFH 1026P	B41-5	1026	405	195	436				5 X M10	49.5			4.0			

Block Cells

Performance Data

KFL-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.14V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 30P	30	25	22	20	18	12	9	6	4	2.9
KFL 38P	38	31	27	25	22	16	11	7	5	3.7
KFL 50P	50	41	36	33	30	21	15	9	6	4.9
KFL 60P	60	49	43	40	35	25	18	11	7	5.9
KFL 70P	70	57	50	47	41	29	21	13	8	6.9
KFL 85P	85	70	61	57	50	35	25	15	10	8.3
KFL 100P	100	82	72	67	59	41	30	19	12	9.8
KFL 125P	125	103	90	83	74	51	37	23	15	12.3
KFL 130P	130	107	94	87	77	53	38	24	16	12.7
KFL 140P	140	115	101	93	83	57	41	26	17	13.7
KFL 150P	150	123	108	100	89	62	44	28	18	14.7
KFL 175P	175	142	124	117	103	72	52	32	21	17.2
KFL 190P	190	154	135	127	112	78	56	35	23	18.6
KFL 200P	200	162	142	133	118	82	59	37	24	19.6
KFL 230P	230	186	163	153	136	94	68	43	28	22.5
KFL 255P	255	207	181	170	150	105	75	47	31	25.0
KFL 290P	290	235	206	193	171	119	86	54	35	28.4
KFL 330P	330	267	234	220	195	135	98	61	40	32.4
KFL 350P	350	284	249	233	207	144	104	65	42	34.3
KFL 370P	370	300	263	247	218	152	109	69	45	36.3
KFL 410P	410	332	291	273	242	168	121	76	50	40.2
KFL 450P	450	365	320	300	266	185	133	83	54	44.1
KFL 460P	460	373	327	307	271	189	136	85	56	45.1
KFL 500P	500	405	355	333	295	205	148	93	60	49.0
KFL 520P	520	421	369	347	307	213	154	96	63	51.0
KFL 530P	530	429	376	353	313	217	157	98	64	52.0
KFL 540P	540	437	383	360	319	221	160	100	65	52.9
KFL 570P	570	462	405	380	336	234	169	106	69	55.9
KFL 610P	610	494	433	407	360	250	180	113	74	59.8
KFL 650P	650	527	462	433	384	267	192	120	79	63.7
KFL 660P	660	535	469	440	389	271	195	122	80	64.7
KFL 685P	685	555	486	457	404	281	203	127	83	67.2
KFL 700P	700	567	497	467	413	287	207	130	85	68.6
KFL 730 P	730	591	518	487	431	299	216	135	88	71.6
KFL 740P	740	599	525	493	437	303	219	137	89	72.5
KFL 765P	765	620	543	510	451	314	226	142	93	75.0
KFL 775P	775	628	550	517	457	318	229	144	94	76.0
KFL 820P	820	664	582	547	484	336	243	152	99	80.4
KFL 860P	860	697	611	573	507	353	254	159	104	84.3
KFL 880P	880	713	625	587	519	361	260	163	106	86.3
KFL 930P	930	753	660	620	549	381	275	172	112	91.2
KFL 970P	970	786	689	647	572	398	287	180	117	95.1
KFL 990P	990	802	703	660	584	406	293	183	120	97.1
KFL 1030P	1030	834	731	687	608	422	305	191	125	101
KFL 1100P	1100	891	781	733	649	451	325	204	133	108
KFL 1170P	1170	948	831	780	690	480	346	217	141	115
KFL 1200P	1200	972	852	800	708	492	355	222	145	118
KFL 1235P	1235	1000	877	823	729	506	365	229	149	121
KFL 1320P	1320	1069	937	880	779	541	391	244	160	129
KFL 1400P	1400	1134	994	933	826	574	414	259	169	137
KFL 1480P	1480	1199	1051	987	873	607	438	274	179	145
KFL 1500P	1500	1215	1065	1000	885	615	444	278	181	147

Block Cells

Performance Data

KFL-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.10V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 30P	30	28	25	22	20	13	9	6	4	3.0
KFL 38P	38	35	32	27	25	16	12	7	5	3.8
KFL 50P	50	46	42	36	33	22	16	10	6	5
KFL 60P	60	55	50	43	40	26	19	11	7	6
KFL 70P	70	64	58	50	46	30	22	13	9	7
KFL 85P	85	78	71	61	56	37	27	16	10	8.5
KFL 100P	100	92	83	72	66	43	32	19	12	10
KFL 125P	125	115	104	90	83	54	39	24	15	12.5
KFL 130P	130	120	108	94	86	56	41	25	16	13
KFL 140P	140	129	116	101	92	60	44	27	17	14
KFL 150P	150	138	124	108	99	65	47	29	19	15
KFL 175P	175	159	144	126	116	75	55	33	22	17.5
KFL 190P	190	173	156	137	125	82	60	36	23	19
KFL 200P	200	182	164	144	132	86	63	38	25	20
KFL 230P	230	209	189	166	152	99	73	44	28	23
KFL 255P	255	232	209	184	168	110	80	48	31	25.5
KFL 290P	290	264	238	209	191	125	91	55	36	29
KFL 330P	330	300	271	238	218	142	104	63	41	33
KFL 350P	350	319	287	252	231	151	110	67	43	35
KFL 370P	370	337	303	266	244	159	117	70	46	37
KFL 410P	410	373	336	295	271	176	129	78	51	41
KFL 450P	450	410	369	324	297	194	142	86	56	45
KFL 460P	460	419	377	331	304	198	145	87	57	46
KFL 500P	500	455	410	360	330	215	158	95	62	50
KFL 520P	520	473	426	374	343	224	164	99	64	52
KFL 530P	530	482	435	382	350	228	167	101	65	53
KFL 540P	540	491	443	389	356	232	170	103	67	54
KFL 570P	570	519	467	410	376	245	180	108	70	57
KFL 610P	610	555	500	439	403	262	192	116	75	61
KFL 650P	650	592	533	468	429	280	205	124	80	65
KFL 660P	660	601	541	475	436	284	208	125	81	66
KFL 685P	685	623	562	493	452	295	216	130	85	68.5
KFL 700P	700	637	574	504	462	301	221	133	86	70
KFL 730P	730	664	599	526	482	314	230	139	90	73
KFL 740P	740	673	607	533	488	318	233	141	91	74
KFL 765P	765	696	627	551	505	329	241	145	94	76.5
KFL 775P	775	705	636	558	512	333	244	147	96	77.5
KFL 820P	820	746	672	590	541	353	259	156	101	82
KFL 860P	860	783	705	619	568	370	271	163	106	86
KFL 880P	880	801	722	634	581	378	278	167	109	88
KFL 930P	930	846	763	670	614	400	293	177	115	93
KFL 970P	970	883	795	698	640	417	306	184	120	97
KFL 990P	990	901	812	713	653	426	312	188	122	99
KFL 1030P	1030	937	845	742	680	443	325	196	127	103
KFL 1100P	1100	1001	902	792	726	473	347	209	136	110
KFL 1170P	1170	1065	959	842	772	503	369	222	144	117
KFL 1200P	1200	1092	984	864	792	516	379	228	148	120
KFL 1235P	1235	1124	1013	889	815	531	383	235	152	124
KFL 1320P	1320	1201	1082	950	871	568	409	251	162	132
KFL 1400P	1400	1274	1148	1008	924	602	434	266	172	140
KFL 1480P	1480	1347	1214	1066	977	636	459	281	182	148
KFL 1500P	1500	1365	1230	1080	990	645	471	285	185	150

Block Cells

Performance Data

KFL-range

Discharge currents in Amperes at 20 ±5°C for a fully charged cell to ECV 1.05V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 30P	30	31	28	23	21	14	10	6	4	3.0
KFL 38P	38	40	35	30	27	17	12	7	5	3.8
KFL 50P	50	52	47	39	36	23	16	10	6	5.0
KFL 60P	60	62	56	47	43	28	19	12	8	6.0
KFL 70P	70	73	65	55	50	32	22	14	9	7.0
KFL 85P	85	88	79	66	60	39	27	17	10	8.6
KFL 100P	100	104	93	78	71	46	32	20	13	10.1
KFL 125P	125	130	116	98	89	58	40	25	16	12.6
KFL 130P	130	135	121	101	92	60	42	26	16	13.1
KFL 140P	140	146	130	109	99	64	45	28	18	14.1
KFL 150P	150	156	140	117	107	69	48	29	19	15.1
KFL 170P	175	180	161	137	124	81	56	34	22	17.6
KFL 190P	190	196	175	148	135	87	61	37	24	19.1
KFL 200P	200	206	184	156	142	92	64	39	25	20.1
KFL 230P	230	237	212	179	163	106	74	45	29	23.1
KFL 255P	255	263	235	199	181	117	82	50	32	25.7
KFL 290P	290	299	267	226	206	133	93	57	37	29.2
KFL 330P	330	340	304	257	234	152	106	65	42	33.2
KFL 350P	350	361	322	273	249	161	112	69	44	35.2
KFL 370P	370	381	340	289	263	170	119	73	47	37.2
KFL 410P	410	422	377	320	291	189	131	81	52	41.2
KFL 450P	450	464	414	351	320	207	144	88	57	45.3
KFL 460P	460	474	423	359	327	212	147	90	58	46.3
KFL 500P	500	515	460	390	355	230	160	98	63	50.3
KFL 520P	520	536	478	406	369	239	167	102	65	52.3
KFL 530P	530	546	488	413	376	244	170	104	67	53.3
KFL 540P	540	556	497	421	383	248	173	106	68	54.3
KFL 570P	570	587	524	445	405	262	183	112	72	57.3
KFL 610P	610	628	561	476	433	281	196	120	77	61.4
KFL 650P	650	670	598	507	462	299	208	128	82	65.4
KFL 660P	660	680	607	515	469	304	212	130	83	66.4
KFL 685P	685	706	630	534	486	315	220	135	86	68.9
KFL 700P	700	721	644	546	497	322	224	138	88	70.4
KFL 730 P	730	752	672	569	518	336	234	143	92	73.4
KFL 740P	740	762	681	577	525	340	237	145	93	74.4
KFL 765P	765	788	704	597	543	352	245	150	96	77.0
KFL 775P	775	798	713	605	550	357	248	152	98	78.0
KFL 820P	820	845	754	640	582	377	263	161	103	82.5
KFL 860P	860	886	791	671	611	396	276	169	108	86.5
KFL 880P	880	906	810	686	625	405	282	173	111	88.5
KFL 930P	930	958	856	725	660	428	298	183	117	93.6
KFL 970P	970	999	892	757	689	446	311	191	122	97.6
KFL 990P	990	1020	911	772	703	455	317	194	125	99.6
KFL 1030P	1030	1061	948	803	731	474	330	202	130	103.6
KFL 1100P	1100	1133	1012	858	781	506	353	216	139	110.7
KFL 1170P	1170	1205	1076	913	831	538	375	230	147	117.7
KFL 1200P	1200	1236	1104	936	852	552	385	236	151	120.7
KFL 1235P	1235	1272	1136	963	877	568	396	243	156	124.2
KFL 1320P	1320	1360	1214	1030	937	607	423	259	166	132.8
KFL 1400P	1400	1442	1288	1092	994	644	449	275	176	140.8
KFL 1480P	1480	1524	1362	1154	1051	681	474	291	186	148.9
KFL 1500P	1500	1545	1380	1170	1065	690	481	295	189	150.9

Block Cells

Performance Data

KFL-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour	8 hour	10 hour
KFL 30P	30	35	30	26	24	15	10	6	4	3.1
KFL 38P	38	44	38	32	30	18	12	8	5	3.9
KFL 50P	50	58	50	43	40	24	16	10	6	5.1
KFL 60P	60	70	59	51	47	29	20	12	8	6.1
KFL 70P	70	81	69	60	55	34	23	14	9	7.1
KFL 85P	85	99	84	72	67	41	28	17	11	8.7
KFL 100P	100	116	99	85	79	49	33	20	13	10.2
KFL 125P	125	145	124	106	99	61	41	25	16	12.7
KFL 130P	130	151	129	111	103	63	42	26	16	13.3
KFL 140P	140	162	139	119	111	68	46	28	18	14.3
KFL 150P	150	174	149	128	117	73	49	30	19	15.1
KFL 175P	175	201	172	149	137	85	57	35	22	17.7
KFL 190P	190	219	186	162	148	92	62	38	24	19.2
KFL 200P	200	230	196	170	156	97	65	40	25	20.2
KFL 230P	230	265	225	196	179	112	75	46	29	23.2
KFL 255P	255	293	250	217	199	124	83	51	32	25.7
KFL 290P	290	334	284	247	226	141	94	58	37	29.3
KFL 330P	330	380	323	281	257	160	107	66	42	33.3
KFL 350P	350	403	343	298	273	170	114	70	44	35.3
KFL 370P	370	426	363	315	289	179	121	74	47	37.3
KFL 410P	410	472	402	349	320	199	134	82	52	41.4
KFL 450P	450	518	441	383	351	218	147	90	57	45.4
KFL 460P	460	529	451	391	359	223	150	92	58	46.4
KFL 500P	500	575	490	425	390	242	163	100	63	50.5
KFL 520P	520	598	510	442	406	252	169	104	66	52.5
KFL 530P	530	610	519	451	413	257	173	106	67	53.5
KFL 540P	540	621	529	459	421	262	176	108	68	54.5
KFL 570P	570	656	559	485	445	276	186	114	72	57.5
KFL 610P	610	702	598	519	476	296	199	122	77	61.6
KFL 650P	650	748	637	553	507	315	212	130	82	65.6
KFL 660P	660	759	647	561	515	320	215	132	84	66.6
KFL 685P	685	788	671	582	534	332	223	137	87	69.1
KFL 700P	700	805	686	595	546	339	228	140	89	70.7
KFL 730P	730	840	715	621	569	354	238	146	92	73.7
KFL 740P	740	851	725	629	577	359	241	148	94	74.7
KFL 765P	765	880	750	650	597	371	249	153	97	77.2
KFL 775P	775	891	760	659	605	376	252	155	98	78.2
KFL 820P	820	943	804	697	640	398	267	164	104	82.8
KFL 860P	860	989	843	731	671	417	280	172	109	86.8
KFL 880P	880	1012	862	748	686	427	287	176	111	88.8
KFL 930P	930	1070	911	791	725	451	303	186	118	93.9
KFL 970P	970	1116	951	825	757	470	316	194	123	97.9
KFL 990P	990	1139	970	842	772	480	322	198	125	99.9
KFL 1030P	1030	1185	1009	876	803	499	336	206	130	104
KFL 1100P	1100	1265	1078	935	858	533	358	220	139	111
KFL 1170P	1170	1346	1147	995	913	567	381	234	148	118
KFL 1200P	1200	1380	1176	1020	936	582	391	240	152	121
KFL 1235P	1235	1420	1210	1050	963	599	402	247	156	125
KFL 1320P	1320	1518	1294	1122	1030	640	430	264	167	133
KFL 1400P	1400	1610	1372	1190	1092	679	456	280	177	141
KFL 1480P	1480	1702	1450	1258	1154	718	482	296	187	149
KFL 1500P	1500	1725	1470	1275	1170	727	489	300	190	151

Block Cells

Performance Data

KFM-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.14V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 28P	28	31	25	22	20	12	8	5.3
KFM 30P	30	33	27	24	22	13	9	5.7
KFM 35P	35	39	32	28	26	15	11	6.7
KFM 49P	49	54	44	39	36	22	15	9.3
KFM 65P	65	72	59	52	47	29	20	12.4
KFM 70P	70	77	63	56	51	31	21	13.3
KFM 83P	83	91	75	66	61	37	25	15.8
KFM 96P	96	106	86	77	70	42	29	18.2
KFM 120P	120	132	108	96	88	53	36	22.8
KFM 125P	125	138	113	100	91	55	38	23.8
KFM 136P	136	150	122	109	99	60	41	25.8
KFM 145P	145	160	131	116	106	64	44	27.6
KFM 160P	160	174	142	128	117	70	48	30.4
KFM 168P	168	183	150	134	123	74	51	31.9
KFM 192P	192	209	171	154	140	84	58	36.5
KFM 210P	210	229	187	168	153	92	63	39.9
KFM 245P	245	267	218	196	179	108	74	46.6
KFM 255P	255	278	227	204	186	112	77	48.5
KFM 288P	288	314	256	230	210	127	87	54.7
KFM 300P	300	327	267	240	219	132	90	57.0
KFM 315P	315	343	280	252	230	139	95	59.9
KFM 329P	329	359	293	263	240	145	99	62.4
KFM 342P	342	373	304	274	250	150	103	65.0
KFM 365P	365	398	325	292	266	161	110	69.4
KFM 380P	380	414	338	304	277	167	114	72.2
KFM 420P	420	458	374	336	307	185	126	79.8
KFM 455P	455	496	405	364	332	200	137	86.5
KFM 464P	464	506	413	371	339	204	140	88.2
KFM 470P	470	512	418	376	343	207	141	89.3
KFM 490P	490	534	436	392	358	216	147	93.1
KFM 500P	500	545	445	400	365	220	151	95.0
KFM 525P	525	572	467	420	383	231	158	99.8
KFM 530P	530	578	472	424	387	233	160	100.7
KFM 541P	541	590	481	433	395	238	163	102.8
KFM 694P	694	756	618	555	507	305	209	131.9
KFM 890P	890	970	792	712	650	392	268	169.1
KFM 921P	921	1004	820	737	672	405	277	175.0
KFM 960P	960	1046	854	768	701	422	289	182.4
KFM 1063P	1063	1159	946	850	776	468	320	202.0
KFM 1155P	1155	1259	1028	924	843	508	348	219.5
KFM 1167P	1167	1272	1039	934	852	513	351	221.7
KFM 1267P	1267	1381	1128	1014	925	557	381	240.7
KFM 1283P	1283	1398	1142	1026	937	565	386	243.8
KFM 1288P	1288	1404	1146	1030	940	567	388	244.7
KFM 1350P	1350	1472	1202	1080	986	594	406	256.5
KFM 1391P	1391	1516	1238	1113	1015	612	419	264.3

Block Cells

Performance Data

KFM-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.10V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 28P	28	34	29	23	22	13	9	5
KFM 30P	30	37	32	25	24	14	9	6
KFM 35P	35	43	37	29	28	16	11	7
KFM 49P	49	60	51	41	39	23	15	10
KFM 65P	65	80	68	54	51	30	20	13
KFM 70P	70	86	74	58	55	32	22	14
KFM 83P	83	102	87	69	66	38	26	16
KFM 96P	96	118	101	80	76	44	30	19
KFM 120P	120	147	126	100	95	55	38	24
KFM 125P	125	153	131	104	99	58	39	25
KFM 136P	136	167	143	113	107	63	43	27
KFM 145P	145	178	152	120	115	67	46	28
KFM 160P	160	194	166	133	126	74	50	31
KFM 168P	168	204	175	139	133	77	53	33
KFM 192P	192	233	200	159	152	88	60	38
KFM 210P	210	255	218	174	166	97	66	41
KFM 245P	245	298	255	203	194	113	77	48
KFM 255P	255	310	265	212	201	117	80	50
KFM 288P	288	350	300	239	228	132	91	56
KFM 300P	300	365	312	249	237	138	95	59
KFM 315P	315	383	328	261	249	145	99	62
KFM 329P	329	400	342	273	260	151	104	64
KFM 342P	342	416	356	284	270	157	108	67
KFM 365P	365	443	380	303	288	168	115	72
KFM 380P	380	462	395	315	300	175	120	74
KFM 420P	420	510	437	349	332	193	132	82
KFM 455P	455	553	473	378	359	209	143	89
KFM 464P	464	564	483	385	367	213	146	91
KFM 470P	470	571	489	390	371	216	148	92
KFM 490P	490	595	510	407	387	225	154	96
KFM 500P	500	608	520	415	395	230	158	98
KFM 525P	525	638	546	436	415	242	165	103
KFM 530P	530	644	551	440	419	244	167	104
KFM 541P	541	657	563	449	427	249	170	106
KFM 694P	694	843	722	576	548	319	219	136
KFM 890P	890	1081	926	739	703	409	280	174
KFM 921P	921	1119	958	764	728	424	290	181
KFM 960P	960	1166	998	797	758	442	302	188
KFM 1063P	1063	1292	1106	882	840	489	335	208
KFM 1155P	1155	1403	1201	959	912	531	364	226
KFM 1167P	1167	1418	1214	969	922	537	368	229
KFM 1267P	1267	1539	1318	1052	1001	583	399	248
KFM 1283P	1283	1559	1334	1065	1014	590	404	251
KFM 1288P	1288	1565	1340	1069	1018	592	406	252
KFM 1350P	1350	1640	1404	1121	1067	621	425	265
KFM 1391P	1391	1690	1447	1155	1099	640	438	273

Block Cells

Performance Data

KFM-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.05V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 28P	28	41	34	27	25	13	9	5.5
KFM 30P	30	44	37	29	27	14	10	5.9
KFM 35P	35	51	43	34	31	17	11	6.9
KFM 49P	49	71	60	48	44	24	16	9.7
KFM 65P	65	94	79	63	58	31	21	12.9
KFM 70P	70	102	85	68	63	34	23	13.9
KFM 83P	83	120	101	81	74	40	27	16.4
KFM 96P	96	139	117	93	86	46	31	19.0
KFM 120P	120	174	146	116	107	58	39	23.8
KFM 125P	125	181	153	121	112	60	41	24.8
KFM 136P	136	197	166	132	122	65	44	26.9
KFM 145P	145	210	177	141	130	70	47	28.7
KFM 160P	160	230	194	155	143	77	52	31.7
KFM 168P	168	242	203	163	150	81	54	33.3
KFM 192P	192	276	232	186	172	92	62	38.0
KFM 210P	210	302	254	204	188	101	68	41.6
KFM 245P	245	353	296	238	219	116	79	48.5
KFM 255P	255	367	309	247	228	121	83	50.5
KFM 288P	288	415	348	279	258	137	93	57.0
KFM 300P	300	432	363	291	269	143	97	59.4
KFM 315P	315	454	381	306	282	150	102	62.4
KFM 329P	329	474	398	319	294	156	107	65.1
KFM 342P	342	492	414	332	306	162	111	67.7
KFM 365P	365	526	442	354	327	173	118	72.3
KFM 380P	380	547	460	369	340	181	123	75.2
KFM 420P	420	605	508	407	376	200	136	83.2
KFM 455P	455	655	551	441	407	216	147	90.1
KFM 464P	464	668	561	450	415	220	150	91.9
KFM 470P	470	677	569	456	421	223	152	93.1
KFM 490P	490	706	593	475	439	233	159	97.0
KFM 500P	500	720	605	485	448	238	162	99.0
KFM 525P	525	756	635	509	470	249	170	104
KFM 530P	530	763	641	514	474	252	172	105
KFM 541P	541	779	655	525	484	257	175	107
KFM 694P	694	999	840	673	621	330	225	137
KFM 890P	890	1282	1077	863	797	423	288	176
KFM 921P	921	1326	1114	893	824	437	298	182
KFM 960P	960	1382	1162	931	859	456	311	190
KFM 1063P	1063	1531	1286	1031	951	505	344	210
KFM 1155P	1155	1663	1398	1120	1034	549	374	229
KFM 1167P	1167	1680	1412	1132	1044	554	378	231
KFM 1267P	1267	1824	1533	1229	1134	602	411	251
KFM 1283P	1283	1848	1552	1245	1148	609	416	254
KFM 1288P	1288	1855	1558	1249	1153	612	417	255
KFM 1350P	1350	1944	1634	1310	1208	641	437	267
KFM 1391P	1391	2003	1683	1349	1245	661	451	275

Block Cells

Performance Data

KFM-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity	20 min	30 min	45 min	1 hour	2 hour	3 hour	5 hour
KFM 28P	28	46	40	29	26	14	9	5.6
KFM 30P	30	50	43	31	28	15	10	6.0
KFM 35P	35	58	50	36	32	17	11	7.0
KFM 49P	49	81	70	50	45	24	16	9.8
KFM 65P	65	107	93	67	60	32	21	13.0
KFM 70P	70	116	100	72	64	34	23	14.0
KFM 83P	83	137	119	85	76	41	27	16.6
KFM 96P	96	158	137	99	88	47	32	19.2
KFM 120P	120	198	172	124	110	59	40	24.0
KFM 125P	125	206	179	129	115	61	41	25.0
KFM 136P	136	224	194	140	125	67	45	27.2
KFM 145P	145	239	207	149	133	71	48	29.0
KFM 160P	160	262	227	165	147	78	53	32.0
KFM 168P	168	276	239	173	155	82	55	33.6
KFM 192P	192	315	273	198	177	94	63	38.4
KFM 210P	210	344	298	216	193	103	69	42.0
KFM 245P	245	402	348	252	225	120	81	49.0
KFM 255P	255	418	362	263	235	125	84	51.0
KFM 288P	288	472	409	297	265	141	95	57.6
KFM 300P	300	492	426	309	276	147	99	60.0
KFM 315P	315	517	447	324	290	154	104	63.0
KFM 329P	329	540	467	339	303	161	109	65.8
KFM 342P	342	561	486	352	315	168	113	68.4
KFM 365P	365	599	518	376	336	179	120	73.0
KFM 380P	380	623	540	391	350	186	125	76.0
KFM 420P	420	689	596	433	386	206	139	84.0
KFM 455P	455	746	646	469	419	223	150	91.0
KFM 464P	464	761	659	478	427	227	153	92.8
KFM 470P	470	771	667	484	432	230	155	94.0
KFM 490P	490	804	696	505	451	240	162	98.0
KFM 500P	500	820	710	515	460	245	165	100
KFM 525P	525	861	746	541	483	257	173	105
KFM 530P	530	869	753	546	488	260	175	106
KFM 541P	541	887	768	557	498	265	179	108
KFM 694P	694	1138	985	715	638	340	229	139
KFM 890P	890	1460	1264	917	819	436	294	178
KFM 921P	921	1510	1308	949	847	451	304	184
KFM 960P	960	1574	1363	989	883	470	317	192
KFM 1063P	1063	1743	1509	1095	978	521	351	213
KFM 1155P	1155	1894	1640	1190	1063	566	381	231
KFM 1167P	1167	1914	1657	1202	1074	572	385	233
KFM 1267P	1267	2078	1799	1305	1166	621	418	253
KFM 1283P	1283	2104	1822	1321	1180	629	423	256
KFM 1288P	1288	2111	1828	1326	1184	631	425	257
KFM 1350P	1350	2214	1917	1391	1242	662	446	270
KFM 1391P	1391	2281	1975	1433	1280	682	459	278

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.14V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 20P	20	105	91	78	50	40	30	24	16	11	9	6	4
KFH 35P	35	184	159	137	88	70	52	43	29	20	16	11	7
KFH 45P	45	236	204	176	113	90	67	55	37	26	20	14	8
KFH 60P	60	315	272	234	150	120	89	73	49	34	27	18	11
KFH 75P	75	394	341	293	188	150	111	92	62	43	33	23	14
KFH 80P	80	420	363	312	200	160	118	98	66	46	35	24	15
KFH 90P	90	473	409	351	225	180	133	110	74	52	40	27	17
KFH 110P	110	578	499	429	275	220	163	134	90	63	49	33	20
KFH 120P	120	630	545	468	300	240	178	146	98	69	53	36	22
KFH 135P	135	709	613	527	338	270	200	165	111	77	60	41	25
KFH 140P	140	735	636	546	350	280	207	171	115	80	62	42	26
KFH 145P	145	761	658	566	363	290	215	177	119	83	64	44	27
KFH 160P	160	840	726	624	400	320	237	195	131	92	71	48	30
KFH 180P	180	945	817	702	450	360	266	220	148	103	80	55	33
KFH 200P	200	1055	913	784	503	402	297	245	165	115	89	61	38
KFH 220P	220	1155	999	858	550	440	326	268	180	126	97	67	41
KFH 235P	235	1234	1067	917	588	470	348	287	193	135	104	71	44
KFH 250P	250	1313	1135	975	625	500	370	305	205	143	111	76	47
KFH 255P	255	1339	1158	995	638	510	377	311	209	146	113	77	47
KFH 260P	260	1365	1180	1014	650	520	385	317	213	149	115	79	48
KFH 276P	276	1449	1253	1076	690	552	408	337	226	158	122	84	51
KFH 300P	300	1575	1362	1170	750	600	444	366	246	172	133	91	56
KFH 316P	316	1659	1435	1232	790	632	468	386	259	181	140	96	59
KFH 342P	342	1796	1553	1334	855	684	506	417	280	196	152	104	64
KFH 354P	354	1805	1558	1310	881	690	522	421	290	203	157	107	66
KFH 390P	390	1989	1716	1443	971	761	575	464	290	223	173	118	73
KFH 414P	414	2088	1797	1490	1027	787	609	489	335	237	183	125	77
KFH 450P	450	2270	1953	1620	1116	855	662	531	365	258	199	136	84
KFH 474P	474	2389	2057	1706	1176	901	697	559	384	272	210	144	88
KFH 513P	513	2586	2226	1847	1272	975	754	605	416	294	227	155	95
KFH 520P	520	2623	2257	1872	1290	988	764	614	421	298	230	158	97
KFH 552P	552	2782	2396	1987	1369	1049	811	651	447	316	245	167	103
KFH 600P	600	3024	2604	2160	1488	1140	882	708	486	344	266	182	112
KFH 632P	632	3186	2743	2275	1567	1201	929	746	512	362	280	191	118
KFH 650P	650	3276	2821	2340	1612	1235	956	767	527	372	288	197	121
KFH 684P	684	3448	2969	2462	1696	1300	1005	807	554	392	303	207	127
KFH 708P	708	3569	3073	2549	1756	1345	1041	835	573	406	314	215	132
KFH 750P	750	3782	3255	2700	1860	1425	1103	885	608	430	332	227	140
KFH 780P	780	3934	3385	2808	1934	1482	1147	920	632	447	346	236	145
KFH 828P	828	4176	3594	2981	2053	1573	1217	977	671	474	367	251	154
KFH 855P	855	4312	3711	3078	2120	1625	1257	1009	693	490	379	259	159
KFH 900P	900	4539	3906	3240	2232	1710	1323	1062	729	516	399	273	167
KFH 948P	948	4781	4114	3413	2351	1801	1394	1119	768	543	420	287	176
KFH 1026P	1026	5175	4453	3694	2544	1949	1508	1211	841	588	455	311	191

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.10V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 20P	20	116	106	92	60	48	35	30	17	12	9	6	3.8
KFH 35P	35	203	186	161	105	84	62	53	30	21	16	11	6.7
KFH 45P	45	261	239	207	135	108	80	68	39	27	21	14	8.6
KFH 60P	60	348	318	276	180	144	106	90	52	36	28	19	11.5
KFH 75P	75	435	398	345	225	180	133	113	65	45	35	24	14.3
KFH 80P	80	464	424	368	240	192	142	120	70	48	37	25	15.3
KFH 90P	90	522	477	414	270	216	159	135	78	55	42	28	17.2
KFH 110P	110	638	583	506	330	264	195	165	96	67	51	35	21
KFH 120P	120	696	636	552	360	288	212	180	104	73	55	38	22.9
KFH 135P	135	783	716	621	405	324	239	203	117	82	62	42	25.8
KFH 140P	140	812	742	644	420	336	248	210	122	85	65	44	26.7
KFH 145P	145	841	769	667	435	348	257	218	126	88	67	46	27.7
KFH 160P	160	928	848	736	480	384	283	240	139	97	74	50	30.6
KFH 180P	180	1044	954	828	540	432	319	270	157	109	83	57	34.4
KFH 200P	200	1160	1060	920	600	480	354	300	174	121	92	63	38.2
KFH 220P	220	1276	1166	1012	660	528	389	330	191	133	102	69	42.0
KFH 235P	235	1363	1246	1081	705	564	416	353	204	142	109	74	44.9
KFH 250P	250	1450	1325	1150	750	600	443	375	218	152	116	79	47.8
KFH 255P	255	1479	1352	1173	765	612	451	383	222	155	118	80	48.7
KFH 260P	260	1508	1378	1196	780	624	460	390	226	158	120	82	49.7
KFH 276P	276	1601	1463	1270	828	662	489	414	240	167	128	87	52.7
KFH 300P	300	1740	1590	1380	900	720	531	450	261	182	139	94	57.3
KFH 316P	316	1833	1675	1454	948	758	559	474	275	191	146	99	60.4
KFH 342P	342	1984	1813	1573	1026	821	605	513	298	207	158	107	65.3
KFH 354P	354	2018	1805	1611	1055	832	623	522	308	215	164	111	67.6
KFH 390P	390	2223	1989	1775	1162	917	686	575	339	236	180	122	74.5
KFH 414P	414	2318	2153	1725	1192	973	725	589	360	251	191	130	79.1
KFH 450P	450	2475	2205	1875	1296	1058	788	641	392	273	208	141	86.0
KFH 474P	474	2607	2323	2133	1408	1090	830	687	412	287	219	149	90.5
KFH 513P	513	2822	2514	2309	1524	1180	898	744	446	311	237	161	98.0
KFH 520P	520	2860	2548	2340	1544	1196	910	754	452	315	240	163	99.3
KFH 552P	552	3036	2705	2484	1639	1270	966	800	480	335	255	173	105.4
KFH 600P	600	3300	2940	2700	1782	1380	1050	870	522	364	277	188	114.6
KFH 632P	632	3476	3097	2844	1877	1454	1106	916	550	383	292	198	120.7
KFH 650P	650	3510	3185	2925	1931	1495	1138	943	566	394	300	204	124.2
KFH 684P	684	3694	3352	3078	2031	1573	1197	992	595	415	316	215	130.6
KFH 708P	708	3823	3469	3186	2103	1628	1239	1027	616	429	327	222	135.2
KFH 750P	750	4050	3675	3375	2228	1725	1313	1088	653	455	347	236	143.3
KFH 780P	780	4212	3822	3510	2317	1794	1365	1131	679	473	360	245	149.0
KFH 828P	828	4471	4057	3726	2459	1904	1449	1201	720	502	383	260	158.1
KFH 855P	855	4617	4190	3848	2539	1967	1496	1240	744	518	395	268	163.3
KFH 900P	900	4770	4410	4050	2673	2070	1575	1305	783	545	416	283	171.9
KFH 948P	948	5024	4645	4266	2816	2180	1659	1375	825	574	438	298	181.1
KFH 1026P	1026	5438	5027	4617	3047	2360	1796	1488	893	622	474	322	196.0

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.05V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 20P	20	146	124	110	72	60	44	33	18	13	10	7	3.9
KFH 35P	35	256	217	193	126	105	78	58	32	22	17	11	6.9
KFH 45P	45	329	279	248	162	135	100	74	41	28	22	15	8.9
KFH 60P	60	438	372	330	216	180	133	99	55	38	29	20	11.8
KFH 75P	75	548	465	413	270	225	167	124	68	47	36	24	14.8
KFH 80P	80	584	496	440	288	240	178	132	73	50	38	26	15.8
KFH 90P	90	657	558	495	324	270	200	149	82	57	43	29	17.7
KFH 110P	110	803	682	605	396	330	244	182	100	69	53	36	22
KFH 120P	120	876	744	660	432	360	266	198	109	76	58	39	23.6
KFH 135P	135	986	837	743	486	405	300	223	123	85	65	44	26.6
KFH 140P	140	1022	868	770	504	420	311	231	127	88	67	46	27.6
KFH 145P	145	1059	899	798	522	435	322	239	132	91	70	47	28.6
KFH 160P	160	1168	992	880	576	480	355	264	146	101	77	52	31.5
KFH 180P	180	1314	1116	990	648	540	400	297	164	113	86	59	35.5
KFH 200P	200	1460	1240	1100	720	600	444	330	182	126	96	65	39.4
KFH 220P	220	1606	1364	1210	792	660	488	363	200	139	106	72	43.3
KFH 235P	235	1716	1457	1293	846	705	522	388	214	148	113	76	46.3
KFH 250P	250	1825	1550	1375	900	750	555	413	228	158	120	81	49.3
KFH 255P	255	1862	1581	1403	918	765	566	421	232	161	122	83	50.2
KFH 260P	260	1898	1612	1430	936	780	577	429	237	164	125	85	51.2
KFH 276P	276	2015	1711	1518	994	828	613	455	251	174	132	90	54.4
KFH 300P	300	2190	1860	1650	1080	900	666	495	273	189	144	98	59.1
KFH 316P	316	2307	1959	1738	1138	948	702	521	288	199	152	103	62.3
KFH 342P	342	2497	2120	1881	1231	1026	759	564	311	215	164	111	67.4
KFH 354P	354	2549	2159	1929	1239	1044	779	581	322	223	170	115	69.7
KFH 390P	390	2808	2379	2126	1365	1151	858	640	355	246	187	127	76.8
KFH 414P	414	2857	2401	2244	1408	1201	907	675	377	261	199	135	81.6
KFH 450P	450	3105	2610	2439	1530	1305	986	734	410	284	216	146	88.7
KFH 474P	474	3271	2749	2569	1612	1375	1038	773	431	299	228	154	93.4
KFH 513P	513	3540	2975	2780	1744	1488	1123	836	467	323	246	167	101.1
KFH 520P	520	3588	3016	2818	1768	1508	1139	848	473	328	250	169	102.4
KFH 552P	552	3809	3202	2992	1877	1601	1209	900	502	348	265	179	108.7
KFH 600P	600	4140	3480	3252	2040	1740	1314	978	546	378	288	195	118.2
KFH 632P	632	4361	3666	3425	2149	1833	1384	1030	575	398	303	205	124.5
KFH 650P	650	4485	3770	3523	2210	1885	1424	1060	592	410	312	211	128.1
KFH 684P	684	4720	3967	3707	2326	1984	1498	1115	622	431	328	222	134.7
KFH 708P	708	4885	4106	3837	2407	2053	1551	1154	644	446	340	230	139.5
KFH 750P	750	5175	4350	4065	2550	2175	1643	1223	683	473	360	244	147.8
KFH 780P	780	5382	4524	4228	2652	2262	1708	1271	710	491	374	254	153.7
KFH 828P	828	5713	4802	4488	2841	2390	1813	1350	753	522	397	269	163.1
KFH 855P	855	5900	4959	4634	2934	2468	1872	1394	778	539	410	278	168.4
KFH 900P	900	6210	5220	4878	3060	2592	1971	1467	819	567	432	293	177.3
KFH 948P	948	6541	5498	5138	3223	2730	2076	1545	863	597	455	308	186.8
KFH 1026P	1026	7079	5951	5561	3488	2955	2247	1672	934	646	492	333	202.1

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 1.00V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min	60 min	90 min	2 hour	3 hour	5 hour
KFH 20P	20	164	142	124	91	68	47	35	19	13	10	7	4.0
KFH 35P	35	287	249	217	159	120	82	62	33	23	17	12	7.0
KFH 45P	45	369	320	279	204	154	106	79	42	29	22	15	9.0
KFH 60P	60	492	426	372	272	205	141	106	56	39	29	20	12.0
KFH 75P	75	615	533	465	340	257	176	132	71	48	37	25	15.0
KFH 80P	80	656	568	496	362	274	188	141	75	51	39	26	16.0
KFH 90P	90	738	639	558	408	308	212	158	85	58	44	30	18.0
KFH 110P	110	902	781	682	498	376	259	194	103	71	54	36	22
KFH 120P	120	984	852	744	544	410	282	211	113	77	59	39	24.0
KFH 135P	135	1107	959	837	612	462	317	238	127	87	66	44	27.0
KFH 140P	140	1148	994	868	634	479	329	246	132	90	68	46	28.0
KFH 145P	145	1189	1030	899	657	496	341	255	136	93	71	48	29.0
KFH 160P	160	1312	1136	992	725	547	376	282	150	103	78	53	32.0
KFH 180P	180	1476	1278	1116	815	616	423	317	169	116	88	59	36.0
KFH 200P	200	1640	1420	1240	906	684	470	352	188	129	98	66	40.0
KFH 220P	220	1804	1562	1364	997	752	517	387	207	141	107	72	44.0
KFH 235P	235	1927	1669	1457	1065	800	552	414	221	151	115	77	47.0
KFH 250P	250	2050	1775	1550	1133	860	588	440	235	161	122	82	50.0
KFH 255P	255	2091	1811	1581	1155	877	599	449	240	164	124	84	51.0
KFH 260P	260	2132	1846	1612	1178	894	611	458	244	167	127	86	52.0
KFH 276P	276	2263	1960	1711	1250	940	649	486	259	177	135	91	55.2
KFH 300P	300	2460	2130	1860	1359	1012	705	528	282	193	146	99	60.0
KFH 316P	316	2591	2244	1959	1431	1066	743	556	297	203	154	104	63.2
KFH 342P	342	2804	2428	2120	1549	1154	804	602	321	220	167	113	68.4
KFH 354P	354	2867	2496	2174	1568	1172	821	612	333	228	173	116	70.8
KFH 390P	390	3159	2750	2395	1728	1291	905	675	367	251	190	128	78.0
KFH 414P	414	3278	2898	2546	1814	1350	953	713	389	266	202	136	82.8
KFH 450P	450	3564	3150	2768	1971	1467	1033	768	423	289	220	148	90.0
KFH 474P	474	3754	3318	2915	2076	1546	1088	809	446	305	231	156	94.8
KFH 513P	513	4062	3591	3155	2247	1673	1178	885	482	330	250	169	103
KFH 520P	520	4118	3640	3198	2278	1696	1194	890	489	334	254	171	104
KFH 552P	552	4371	3864	3395	2418	1800	1267	942	519	355	269	182	110
KFH 600P	600	4751	4200	3690	2628	1957	1377	1024	564	386	293	197	120
KFH 632P	632	5005	4424	3887	2768	2061	1451	1078	594	406	308	208	126
KFH 650P	650	5147	4550	3998	2847	2120	1492	1109	611	418	317	214	130
KFH 684P	684	5417	4788	4207	2996	2230	1571	1167	643	440	334	225	137
KFH 708P	708	5607	4956	4354	3101	2309	1626	1214	666	455	346	233	142
KFH 750P	750	5939	5250	4613	3285	2446	1722	1280	705	482	366	247	150
KFH 780P	780	6177	5460	4797	3416	2543	1791	1331	733	502	381	257	156
KFH 828P	828	6557	5796	5092	3627	2700	1901	1415	778	532	404	272	166
KFH 855P	855	6771	5985	5258	3745	2788	1963	1459	804	550	417	281	171
KFH 900P	900	7127	6300	5535	3942	2935	2025	1536	846	579	439	296	180
KFH 948P	948	7507	6636	5830	4152	3091	2133	1618	891	610	463	312	190
KFH 1026P	1026	8125	7182	6310	4494	3346	2309	1753	964	660	501	338	205

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 0.85V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min
KFH 20P	20	220	190	164	120	84	54	36.4
KFH 35P	35	385	333	287	210	147	95	63.7
KFH 45P	45	495	428	369	270	189	122	81.9
KFH 60P	60	660	570	492	360	252	162	109
KFH 75P	75	825	713	615	450	315	203	137
KFH 80P	80	880	760	656	480	336	216	146
KFH 90P	90	990	855	738	540	378	243	164
KFH 110P	110	1210	1045	902	660	462	297	200
KFH 120P	120	1320	1140	984	720	504	324	218
KFH 135P	135	1485	1283	1107	810	567	365	246
KFH 140P	140	1540	1330	1148	840	588	378	255
KFH 145P	145	1595	1378	1189	870	609	392	264
KFH 160P	160	1760	1520	1312	960	672	432	291
KFH 180P	180	1980	1710	1476	1080	756	486	328
KFH 200P	200	2180	1840	1620	1180	830	537	360
KFH 220P	220	2398	2024	1782	1298	913	591	396
KFH 235P	235	2562	2162	1904	1387	975	631	423
KFH 250P	250	2750	2300	2025	1475	1050	675	450
KFH 255P	255	2805	2423	2091	1530	1071	689	459
KFH 260P	260	2860	2470	2132	1560	1092	702	468
KFH 276P	276	3036	2622	2263	1656	1159	745	497
KFH 300P	300	3300	2850	2460	1800	1260	810	540
KFH 316P	316	3476	3002	2591	1896	1327	853	569
KFH 342P	342	3762	3249	2804	2052	1436	923	616
KFH 354P	354	3894	3363	2903	2124	1487	956	637
KFH 390P	390	4251	3588	3159	2301	1630	1048	702
KFH 414P	414	4513	3809	3271	2443	1731	1112	745
KFH 450P	450	4905	4140	3555	2655	1881	1209	810
KFH 474P	474	5167	4361	3745	2797	1981	1274	853
KFH 513P	513	5592	4720	4053	3027	2144	1378	923
KFH 520P	520	5668	4784	4108	3068	2174	1397	936
KFH 552P	552	6017	5078	4361	3257	2307	1483	994
KFH 600P	600	6540	5520	4740	3540	2508	1612	1080
KFH 632P	632	6889	5814	4993	3729	2642	1698	1138
KFH 650P	650	7085	5980	5135	3835	2717	1747	1170
KFH 684P	684	7456	6293	5404	4036	2859	1838	1231
KFH 708P	708	7717	6514	5593	4177	2959	1902	1274
KFH 750P	750	8175	6900	5925	4425	3135	2015	1350
KFH 780P	780	8502	7176	6162	4602	3260	2096	1404
KFH 828P	828	9025	7618	6541	4885	3461	2225	1490
KFH 855P	855	9320	7866	6755	5045	3574	2297	1539
KFH 900P	900	9810	8280	7110	5310	3762	2418	1620
KFH 948P	948	10333	8722	7489	5593	3963	2547	1706
KFH 1026P	1026	11183	9439	8105	6053	4289	2757	1847

Block Cells

Performance Data

KFH-range

Discharge currents in Amperes at 20 ± 5°C for a fully charged cell to ECV 0.65V/cell

Cell type	Capacity	10 sec	30 sec	1 min	5 min	10 min	20 min	30 min
KFH 20P	20	270	254	220	156	120	58	39
KFH 35P	35	473	445	385	273	210	102	68
KFH 45P	45	608	572	495	351	270	131	87
KFH 60P	60	810	762	660	468	360	174	116
KFH 75P	75	1013	953	825	585	450	218	145
KFH 80P	80	1080	1016	880	624	480	232	154
KFH 90P	90	1215	1143	990	702	540	261	174
KFH 110P	110	1485	1397	1210	858	660	319	212
KFH 120P	120	1620	1524	1320	936	720	348	232
KFH 135P	135	1823	1715	1485	1053	810	392	261
KFH 140P	140	1890	1778	1540	1092	840	406	270
KFH 145P	145	1958	1842	1595	1131	870	421	280
KFH 160P	160	2160	2032	1760	1240	960	464	309
KFH 180P	180	2430	2286	1980	1395	1080	522	347
KFH 200P	200	2500	2460	2200	1550	1180	572	385
KFH 220P	220	2750	2706	2354	1705	1298	629	424
KFH 235P	235	2938	2891	2515	1821	1387	672	453
KFH 250P	250	3375	3175	2750	1950	1500	715	482
KFH 255P	255	3443	3239	2805	1989	1530	729	491
KFH 260P	260	3510	3302	2860	2028	1560	744	501
KFH 276P	276	3726	3505	3036	2153	1656	789	532
KFH 300P	300	4050	3810	3300	2340	1800	858	578
KFH 316P	316	4266	4013	3476	2465	1896	904	609
KFH 342P	342	4617	4343	3762	2668	2052	978	659
KFH 354P	354	4779	4354	3894	2761	2124	1012	682
KFH 390P	390	5187	4797	4173	3023	2340	1115	751
KFH 414P	414	5190	4802	4306	3209	2443	1184	797
KFH 450P	450	5641	5220	4680	3488	2655	1287	867
KFH 474P	474	5942	5498	4930	3674	2797	1356	913
KFH 513P	513	6431	5951	5335	3976	3027	1467	988
KFH 520P	520	6519	6032	5408	4030	3068	1487	1002
KFH 552P	552	6920	6403	5741	4278	3257	1579	1063
KFH 600P	600	7522	6960	6240	4650	3540	1716	1156
KFH 632P	632	7923	7331	6573	4898	3729	1808	1217
KFH 650P	650	8149	7540	6760	5038	3835	1859	1252
KFH 684P	684	8575	7934	7114	5301	4036	1956	1317
KFH 708P	708	8876	8213	7363	5487	4177	2025	1364
KFH 750P	750	9402	8700	7800	5813	4425	2145	1445
KFH 780P	780	9778	9048	8112	6045	4602	2231	1502
KFH 828P	828	10380	9605	8611	6417	4885	2368	1595
KFH 855P	855	10719	9918	8892	6626	5045	2445	1647
KFH 900P	900	11283	10440	9360	6975	5310	2574	1733
KFH 948P	948	11884	10997	9859	7347	5593	2711	1826
KFH 1026P	1026	12862	11902	10670	7952	6053	2934	1976

Block Cells

BATTERY RACK DIMENSIONS

For safe and reliable operation, batteries should be mounted on suitable battery racks. HBL battery racks are made of alkali-resistant, powder coated steel sections. Battery racks are available in multi-step one tier or multi-step two tier configuration. Standard battery racks are supplied in knocked-down condition and can be easily assembled at site.

Evaluation of length :

length of rack = (x + 5) x no. of block cells in a row (for all block cells)

Where x = length of cell or block cell for row-wise mounting

(i.e. For B11-1, B12-1, B31-1, B32-1, B41-1, B42-1)

= width of cell or block cell for cross-wise mounting

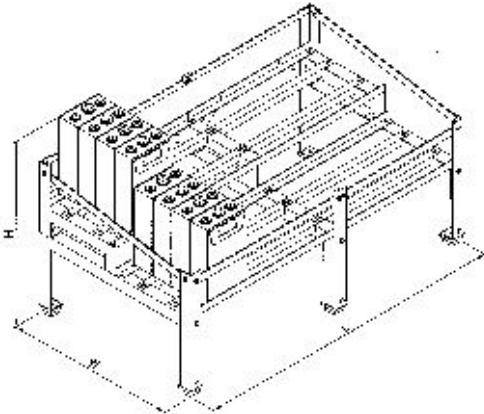
(i.e. For B31/32/41/42-2/3/4/5/6)

The value of length should be rounded-off to nearest to 50 mm and 5mm should be added.

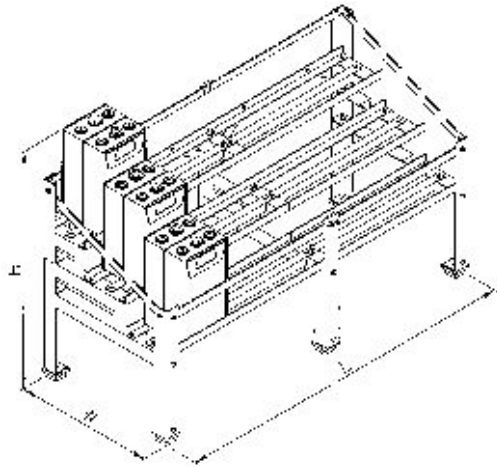
Container size reference	1Tier								2Tier							
	1STEP		2STEP		3STEP		4STEP		1STEP		2STEP		3STEP		4STEP	
	W	H	W	H	W	H	W	H	W	H	W	H	W	H	W	H
B11-1/B12-1			396	683	578	798	764	913			392	1070	578	1300	764	1550
B31-1/B32-1			440	788	650	903	860	1018			440	1400	650	1620	860	1850
B41-1/B42-1			440	844	650	959	860	1074			440	1550	650	1800	860	2050
B31-2			416	788	614	903	812	1018			416	1400	614	1620	812	1850
B31-3			586	788	869	903			586	1400	869	1620				
B31-4			754	788					754	1400						
B31-5			924	788					472	1160	924	1400				
B31-6	557	673	1094	788					557	1160						
B32-2			304	788	446	903	588	1018			304	1400	446	1620	588	1850
B32-3			424	788	626	903	828	1018			424	1400	626	1620	828	1850
B32-4			544	788	806	903			544	1400	806	1620				
B32-5			662	788	983	903			662	1400	983	1620				
B32-6			782	788					782	1400						
B41-2			416	844	614	959	812	1074			416	1550	614	1800	812	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						
B42-2			304	844	446	959	588	1074			304	1550	446	1800	588	2050
B42-3			424	844	626	959	828	1074			424	1550	626	1800		
B42-4			544	844	806	959			544	1550	806	1800				
B42-5			662	844	983	959			662	1550	983	1800				
B42-6			782	844					782	1550						

(All dimensions in mm)

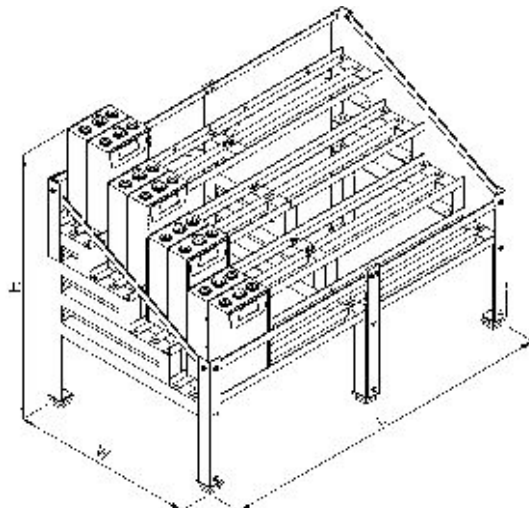
SINGLE TIER RACKS
2STEP 1TIER RACK



SINGLE TIER RACKS
3STEP 1TIER RACK

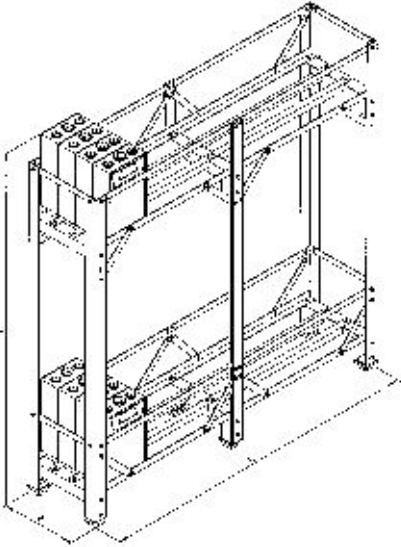


SINGLE TIER RACKS
4STEP 1TIER RACK

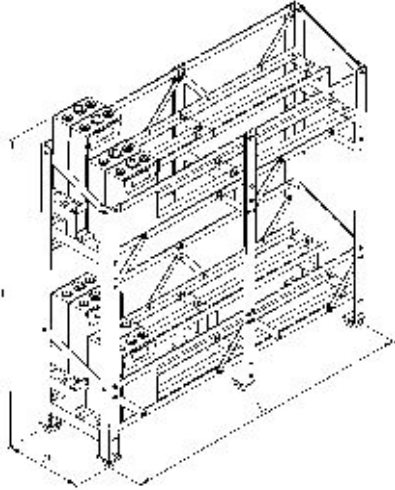


Block Cells

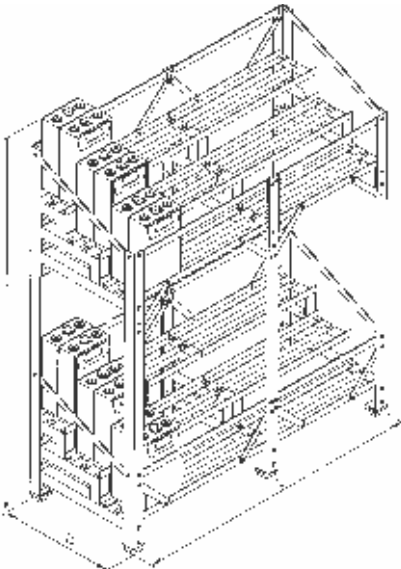
TWO TIER RACKS
1STEP 2TIER RACK



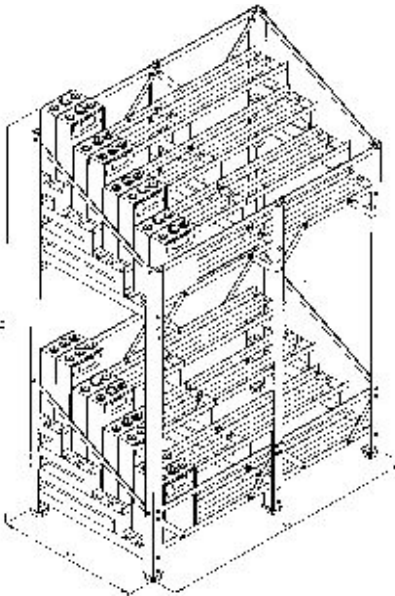
TWO TIER RACKS
2STEP 2TIER RACK



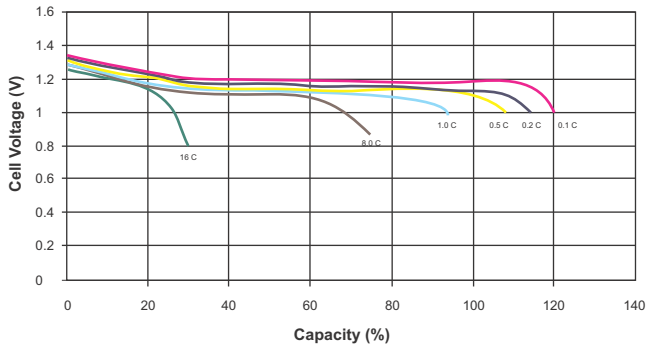
TWO TIER RACKS
3STEP 2TIER RACK



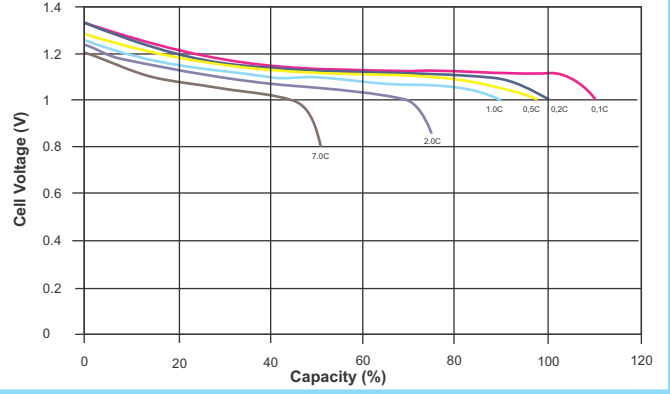
TWO TIER RACKS
4STEP 2TIER RACK



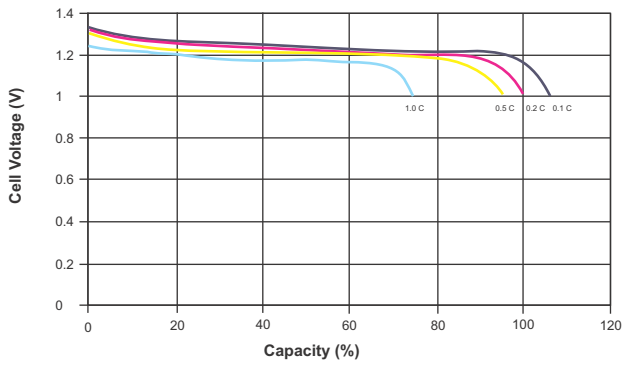
Typical Discharge curves for KFX - type Cell at Different Rates and +20° C



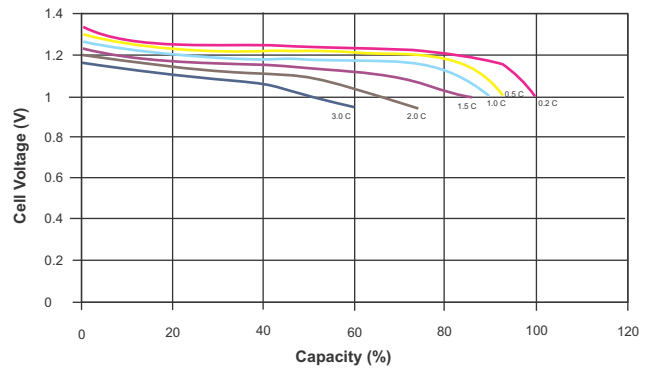
Typical Discharge curves for KFH - type Cell at Different Rates and +20° C



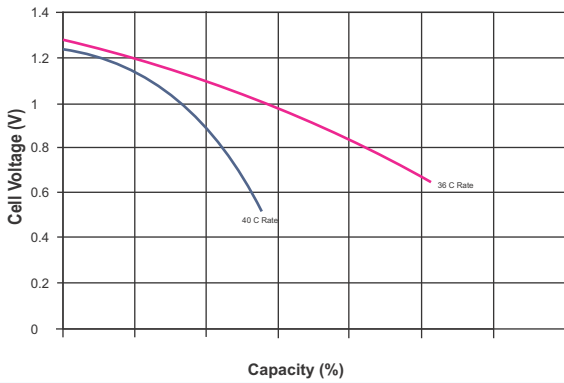
Typical Discharge curves for KFL - type Cell at Different Rates and +20° C



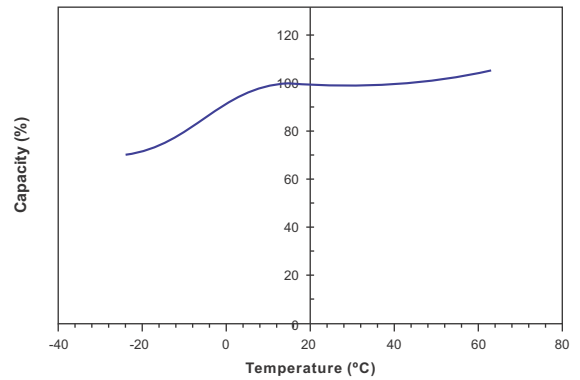
Typical Discharge curves for KFM - type Cell at Different Rates and +20° C



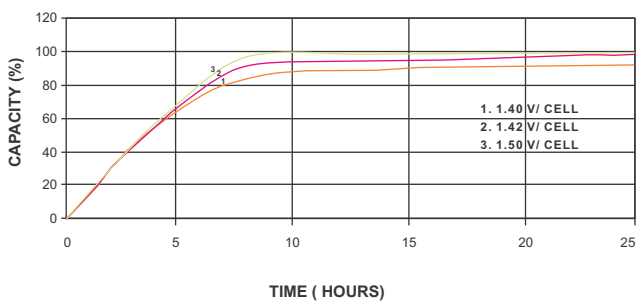
Discharge curves for KFX - type Cell at different rates and +20° C



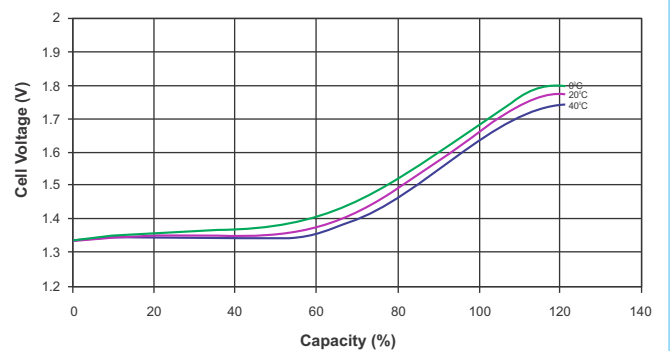
Performance of NCFP cells at different temperatures at 0.2C rate



Typical charge Characteristic Of NCFP cells at Different Constant Voltages at +20° C (Current limit 0.2 C,)



Typical chargecurves for NCFP cells at constant current at 0.2C rate and different temperature



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