FIAMM

Industrial Batteries

ENERLITE

SP

Applications and Key Benefits

- Designed to achieve optimal performance and to protect from power disturbances ideal for:
  - UPS application
  - Emergency lighting
  - Signaling
  - Security & alarm systems
  - Light traction applications
  - Camping & yachting
- 6 volt and 12 volt monoblocs
- Optimized for discharge from 15min up to 20hours
- Easy installation in cabinets or racks
- Non-spillable
- Flame retardant plastics FV0
- VRLA AGM and gas recombination technology with 99% internal recombination
- Maintenance free without topping-up
- Non-hazardous for air/sea/rail/ road transportation
- 100% Recyclable

Applicable Standards

- IEC 60896 Part 21 - VRLA methods of testing
- IEC 60896 Part 22 - VRLA requirements
- BS 6290 Part 4 - specifications for VRLA classification
- Eurobat “High Performance” - 10 -12 years

FIAMM Manufacturing

- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System
- OHSAS18001 - Workplace Safety & Health

Technical Features

- Gravity casted grids with high purity lead calcium tin alloy
- Minimal grid growth and corrosion resistant for prolonged service life
- Electrolyte fully absorbed in glass mat “AGM” separators with extremely high micro porosity
- Threaded female M6/M8 terminal posts guarantee highest conductivity, maximum torque retention and easy installation
- Leak-resistant post seals prevent acid seepage over a wide temperature range
- Cells equipped with one-way safety valves to allow excess gas to escape when overcharging
- Flame arrestors prevent sparks or flames from entering the battery
- ABS IEC 707 FV0 flame retardant plastics
- Container and lid designed for unsurpassed mechanical strength made of thick walled plastics
- < 2% self-discharge per month at 20°C allows 6 months shelf life

ENERLITE

SP

FIAMM SP range

BATTERY TYPE	NOMINAL VOLTAGE (V)	CAPACITY(AH) Ah at 20°C	SHORT CIRCUIT CURRENT(A)	INTERNAL RESISTANCE(mohm)	DIMENSIONS(mm)			WEIGHT (kg)	TERMINAL TYPE
		20 hrs to 1.75 VPC	IEC 60896-21	IEC 60896-21	Length	Width	H/TH		
12 SP 26	12	26	630	19.5	166	175	125/125	9.0	Female M6
12 SP 33	12	33	925	13.5	196	130	159/164	12.0	Female M6
12 SP 42	12	42	910	13.9	197	165	170/170	13.8	Female M6
12 SP 55	12	55	1400	8.9	229	138	207/212	18.2	Female M6
12 SP 70	12	70	2020	6.2	272	166	191/195	23.2	Female M8
12 SP 72	12	70	1530	8.5	350	166	175/175	22.0	Female M8
12 SP 80	12	80	2150	5.8	259	168	209/213	27.0	Female M8
12 SP 90	12	90	2300	5.6	305	168	207/212	31.4	Female M8
12 SP 100	12	100	2390	5.4	329	172	214/221	32.5	Female M8
12 SP 120	12	120	2510	5.0	407	173	220/225	38.0	Female M8
12 SP 135	12	135	2920	4.3	345	172	276/281	46.3	Female M8
12 SP 150	12	150	3230	3.8	483	170	220/220	46.2	Female M8
12 SP 205	12	205	3940	3.2	500	226	235/235	66.0	Female M8
12 SP 235	12	235	4480	2.8	500	260	235/235	75.0	Female M8
6 SP 200	6	200	3940	1.6	321	177	224/227	32.0	Female M8
6 SP 300	6	300	6970	0.9	500	192	235/237	50.0	Female M8
6 SP 350	6	350	7750	0.8	500	192	235/237	57.0	Female M8

Note: dimensions may have a natural tolerance of ± 2 mm.

Electrical Characteristics

- FLOAT VOLTAGE CHARGE AT 20-25°C: Standby use 2.27~2.28 V/cell
- BOOST CHARGE: 2.35 V/cell
- MAXIMUM CHARGE CURRENT: 0.25 C_{20} A (i.e.:for a 100Ah bloc maximum charge current is 25 Amps)
- FLOAT VOLTAGE TEMPERATURE COMPENSATION: -2.5 mV/°C/cell
- SELF-DISCHARGE AT 20°C: < 2% / month
- WARNING: in order for the warranty to be valid in all critical, frequent discharge and hybrid applications, please coordinate with Fiamm Group to clarify required operating and charging settings

FIAMM S.p.A.
Industrial Batteries
www.fiamm.com
email: info.standby.asia@fiamm.com

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SP RANGE - CONSTANT POWER DISCHARGE DATA

Watt per cell to 1.60 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	142	108	87.1	71.2	60.0	52.1	37.9	30.1	21.5	17.4	14.3	12.4	9.79	8.23	7.11	5.65	4.75	4.05	2.53
12 SP 33	166	125	101	85.3	73.8	64.9	48.1	38.3	27.1	21.8	17.9	15.8	12.4	10.5	9.02	7.18	6.01	5.15	3.22
12 SP 42	212	159	129	109	93.9	82.6	61.2	48.8	34.5	27.7	22.8	20.1	15.8	13.3	11.5	9.13	7.65	6.55	4.09
12 SP 55	277	212	174	144	124	109	80.1	63.7	45.3	36.7	30.2	26.3	20.7	17.4	15.0	12.0	10.0	8.58	5.36
12 SP 70	353	263	217	181	157	138	102	80.9	57.5	46.4	38.2	33.5	26.4	22.2	19.1	15.2	12.7	10.9	6.82
12 SP 72	353	263	217	181	157	138	102	80.9	57.5	46.4	38.2	33.5	26.4	22.2	19.1	15.2	12.7	10.9	6.82
12 SP 80	430	330	262	215	183	160	117	92.8	66.0	53.5	44.0	38.3	30.0	25.1	21.6	17.3	14.6	12.5	7.80
12 SP 90	484	371	295	242	206	180	132	104	74.3	60.1	49.5	43.1	33.7	28.2	24.3	19.5	16.4	14.0	8.77
12 SP 100	504	376	310	259	224	197	145	116	82.1	66.3	54.6	47.9	37.7	31.7	27.3	21.7	18.2	15.6	9.75
12 SP 120	605	451	371	311	269	237	174	139	98.5	79.6	65.5	57.4	45.2	38.0	32.8	26.1	21.9	18.7	11.7
12 SP 135	737	552	432	360	306	267	196	156	111	89.6	73.7	64.6	50.9	42.8	36.9	29.4	24.7	21.0	13.2
12 SP 150	'-----	613	480	401	340	297	218	173	123	99.5	81.9	71.8	56.5	47.5	41.0	32.6	27.4	23.4	14.6
12 SP 205	827	752	635	515	440	387	289	236	173	143	118	107	81.5	66.6	56.5	44.3	37.8	31.9	20.7
12 SP 235	948	862	728	591	504	444	331	270	198	164	135	122	93.4	76.4	64.8	50.8	43.4	36.6	23.7

Watt per cell to 1.65 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	138	106	86.2	70.2	59.4	51.7	37.6	29.9	21.3	17.2	14.2	12.4	9.75	8.19	7.07	5.61	4.71	4.04	2.53
12 SP 33	162	122	99.6	84.0	73.0	64.3	47.8	38.0	26.9	21.7	17.9	15.7	12.4	10.4	8.97	7.15	5.98	5.11	3.21
12 SP 42	207	156	127	107	92.9	81.9	60.9	48.4	34.3	27.6	22.7	20.0	15.8	13.3	11.4	9.10	7.61	6.50	4.08
12 SP 55	271	208	172	142	123	108	79.6	63.4	45.2	36.6	30.1	26.3	20.7	17.4	15.0	11.9	9.97	8.51	5.34
12 SP 70	344	258	215	179	155	137	101	80.5	57.2	46.2	38.1	33.3	26.3	22.1	19.0	15.2	12.7	10.8	6.80
12 SP 72	344	258	215	179	155	137	101	80.5	57.2	46.2	38.1	33.3	26.3	22.1	19.0	15.2	12.7	10.8	6.80
12 SP 80	415	317	257	212	179	157	115	91.8	65.5	53.1	43.7	38.1	29.8	25.0	21.6	17.3	14.5	12.4	7.77
12 SP 90	467	356	289	238	202	177	129	103	73.6	59.7	49.2	42.8	33.6	28.1	24.3	19.4	16.3	13.9	8.74
12 SP 100	492	369	308	256	221	196	144	115	81.7	66.0	54.4	47.6	37.5	31.6	27.2	21.7	18.1	15.5	9.72
12 SP 120	574	431	359	299	265	235	173	134	95.3	77.1	63.4	55.6	43.8	36.9	31.7	25.3	21.2	18.1	11.3
12 SP 135	684	526	425	352	301	264	195	155	110	89.2	73.4	64.3	50.7	42.7	36.7	29.2	24.5	21.0	13.1
12 SP 150	'-----	584	472	391	335	294	216	173	123	99.1	81.6	71.4	56.3	47.4	40.8	32.5	27.2	23.3	14.6
12 SP 205	824	750	625	509	436	386	289	236	173	143	118	103	80.7	67.4	57.6	44.8	36.9	31.5	19.7
12 SP 235	945	859	717	584	500	443	331	270	198	164	135	119	92.5	77.2	66.1	51.4	42.4	36.2	22.6

Watt per cell to 1.67 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	134	104	85.1	69.7	59.1	51.5	37.5	29.8	21.2	17.1	14.1	12.4	9.72	8.16	7.05	5.60	4.70	4.03	2.52
12 SP 33	158	120	97.9	83.1	72.5	64.0	47.5	37.5	26.6	21.5	17.7	15.7	12.4	10.4	8.96	7.13	5.97	5.11	3.20
12 SP 42	201	153	125	106	92.2	81.4	60.5	47.8	33.9	27.3	22.5	20.0	15.7	13.2	11.4	9.08	7.60	6.50	4.07
12 SP 55	264	204	169	141	122	107	79.3	63.2	45.0	36.5	30.0	26.2	20.6	17.3	14.9	11.9	9.95	8.51	5.33
12 SP 70	337	256	212	178	154	136	101	80.3	57.1	46.1	38.0	33.2	26.2	22.1	19.0	15.1	12.7	10.8	6.79
12 SP 72	337	256	212	178	154	136	101	80.3	57.1	46.1	38.0	33.2	26.2	22.1	19.0	15.1	12.7	10.8	6.79
12 SP 80	407	312	253	209	178	156	114	91.4	65.2	52.9	43.6	38.0	29.8	24.9	21.5	17.2	14.5	12.4	7.76
12 SP 90	458	351	284	235	200	175	129	103	73.4	59.5	49.0	42.8	33.5	28.1	24.2	19.4	16.3	13.9	8.73
12 SP 100	481	365	303	254	220	195	144	115	81.5	65.9	54.3	47.5	37.4	31.5	27.2	21.6	18.1	15.5	9.70
12 SP 120	561	426	353	297	264	234	173	134	95.1	76.9	63.3	55.4	43.7	36.8	31.7	25.2	21.1	18.0	11.3
12 SP 135	668	517	417	347	299	263	194	155	110	89.0	73.3	64.1	50.5	42.6	36.7	29.2	24.4	20.9	13.1
12 SP 150	'-----	574	464	385	332	292	216	172	122	98.9	81.4	71.2	56.1	47.3	40.7	32.4	27.1	23.2	14.5
12 SP 205	823	749	621	507	435	385	289	236	173	143	118	103	80.7	67.3	57.6	44.8	36.9	31.5	19.7
12 SP 235	944	858	711	581	499	442	331	270	198	164	135	118	92.5	77.2	66.0	51.4	42.3	36.1	22.6

Watt per cell to 1.70 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	131	103	84.0	69.1	58.7	51.1	37.3	29.7	21.1	17.1	14.0	12.3	9.69	8.14	7.02	5.58	4.70	4.01	2.52
12 SP 33	154	118	96.2	82.2	71.7	63.4	47.0	37.0	26.3	21.2	17.5	15.7	12.4	10.4	8.95	7.12	5.96	5.10	3.19
12 SP 42	196	150	122	105	91.2	80.7	59.8	47.2	33.5	27.0	22.2	20.0	15.7	13.2	11.4	9.06	7.59	6.49	4.06
12 SP 55	258	200	166	140	121	106	78.8	62.9	44.9	36.4	30.0	26.2	20.6	17.3	14.9	11.9	9.94	8.50	5.32
12 SP 70	329	253	208	177	153	136	100	80.1	56.9	46.0	37.9	33.1	26.1	22.0	19.0	15.1	12.6	10.8	6.77
12 SP 72	329	253	208	177	153	136	100	80.1	56.9	46.0	37.9	33.1	26.1	22.0	19.0	15.1	12.6	10.8	6.77
12 SP 80	400	307	248	206	175	154	114	91.1	65.0	52.8	43.4	37.9	29.7	24.9	21.5	17.2	14.5	12.4	7.74
12 SP 90	450	345	279	232	197	173	128	102	73.1	59.4	48.9	42.7	33.5	28.0	24.2	19.3	16.3	13.9	8.71
12 SP 100	470	361	298	253	219	194	143	114	81.3	65.8	54.1	47.3	37.3	31.5	27.1	21.6	18.1	15.5	9.68
12 SP 120	548	421	347	295	262	233	172	133	94.9	76.7	63.2	55.2	43.6	36.7	31.6	25.2	21.1	18.0	11.3
12 SP 135	652	508	409	342	295	262	193	154	110	88.8	73.1	63.9	50.4	42.5	36.6	29.1	24.4	20.8	13.1
12 SP 150	'-----	565	455	380	328	291	215	172	122	98.6	81.2	71.0	56.0	47.2	40.7	32.4	27.1	23.1	14.5
12 SP 205	810	748	616	504	433	385	288	236	173	143	118	103	80.6	67.3	57.6	44.8	36.9	31.5	19.6
12 SP 235	930	857	706	578	497	441	331	270	198	164	135	118	92.4	77.2	66.0	51.3	42.3	36.1	22.5

Watt per cell to 1.75 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	126	99.2	81.4	67.5	57.6	50.4	36.7	29.3	20.9	17.0	14.0	12.3	9.63	8.09	6.98	5.56	4.66	3.98	2.50
12 SP 33	145	113	92.7	80.1	69.9	62.2	45.2	37.0	26.2	21.1	17.3	15.5	12.3	10.4	8.90	7.06	5.92	5.06	3.17
12 SP 42	184	144	118	102	89.0	79.1	57.5	47.2	33.3	26.8	22.1	19.7	15.6	13.2	11.3	8.98	7.53	6.44	4.04
12 SP 55	246	190	158	134	117	104	77.5	62.2	44.5	36.1	29.8	26.0	20.5	17.3	14.8	11.8	9.87	8.43	5.29
12 SP 70	313	242	201	171	150	133	98.9	79.5	56.6	45.8	37.7	32.9	26.0	22.0	18.9	15.0	12.6	10.7	6.73
12 SP 72	313	242	201	171	150	133	98.9	79.5	56.6	45.8	37.7	32.9	26.0	22.0	18.9	15.0	12.6	10.7	6.73
12 SP 80	368	283	227	190	166	147	108	88.1	63.7	52.1	42.9	37.7	29.6	24.8	21.4	17.1	14.4	12.3	7.70
12 SP 90	413	318	255	214	187	165	122	99.1	71.6	58.7	48.3	42.4	33.3	27.9	24.1	19.3	16.1	13.8	8.66
12 SP 100	447	346	287	244	214	190	141	114	80.9	65.5	53.9	47.0	37.2	31.4	27.0	21.4	17.9	15.3	9.62
12 SP 120	521	403	334	285	257	228	170	132	94.3	76.4	62.9	54.9	43.4	36.6	31.5	25.0	20.9	17.9	11.2
12 SP 135	632	494	399	338	289	257	191	153	109	88.4	72.8	63.5	50.2	42.4	36.4	28.9	24.2	20.7	13.0
12 SP 150	'-----	548	444	375	321	285	212	170	121	98.2	80.9	70.6	55.8	47.1	40.4	32.1	26.9	23.0	14.4
12 SP 205	800	746	588	486	421	377	286	234	172	143	117	102	80.0	66.8	57.2	44.5	36.6	31.2	19.5
12 SP 235	916	855	674	558	482	432	328	268	197	163	135	117	91.7	76.6	65.5	51.0	42.0	35.8	22.4

Watt per cell to 1.80 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	119	94.9	77.7	65.2	56.0	49.3	35.9	28.6	20.5	16.6	13.7	12.1	9.50	7.98	6.89	5.52	4.63	3.95	2.48
12 SP 33	133	106	89.0	77.3	67.4	60.1	45.0	36.4	25.4	20.2	16.6	15.4	12.1	10.2	8.82	7.01	5.88	5.02	3.14
12 SP 42	169	135	113	98.3	85.8	76.5	57.3	46.3	32.3	25.7	21.2	19.5	15.4	13.0	11.2	8.92	7.48	6.39	4.00
12 SP 55	230	179	151	130	114	101	75.9	61.0	43.7	35.5	29.2	25.6	20.2	17.0	14.7	11.7	9.80	8.36	5.24
12 SP 70	293	228	192	166	146	130	97.2	78.3	55.9	45.4	37.4	32.6	25.7	21.6	18.7	14.9	12.5	10.6	6.67
12 SP 72	293	228	192	166	146	130	97.2	78.3	55.9	45.4	37.4	32.6	25.7	21.6	18.7	14.9	12.5	10.6	6.67
12 SP 80	315	244	198	168	147	132	103	84.5	61.8	51.1	42.1	37.2	29.3	24.7	21.3	17.0	14.3	12.2	7.62
12 SP 90	355	274	222	189	166	148	116	95.0	69.5	57.5	47.4	41.9	33.0	27.8	23.9	19.1	16.0	13.7	8.57
12 SP 100	418	326	275	237	209	186	139	112	79.9	64.9	53.4	46.5	36.7	30.9	26.7	21.2	17.8	15.2	9.52
12 SP 120	488	380	321	276	251	223	167	130	93.2	75.7	62.3	54.3	42.8	36.0	31.2	24.8	20.8	17.7	11.1
12 SP 135	567	451	377	325	282	251	187	151	108	87.6	72.1	62.8	49.5	41.7	36.1	28.7	24.1	20.5	12.9
12 SP 150	'-----	501	418	361	313	279	208	168	120	97.3	80.2	69.8	55.0	46.3	40.1	31.9	26.7	22.8	14.3
12 SP 205	746	631	520	443	389	356	277	230	167	138	113	100	78.4	65.6	56.2	43.9	36.2	30.9	19.3
12 SP 235	855	723	596	507	446	408	318	263	192	158	130	115	89.9	75.2	64.4	50.3	41.5	35.4	22.2

Watt per cell to 1.85 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	108	86.8	71.8	60.9	52.8	46.5	34.4	27.5	19.7	16.0	13.1	11.6	9.13	7.65	6.62	5.30	4.42	3.77	2.38
12 SP 33	120	99.2	83.0	71.9	63.1	56.3	42.5	34.3	24.6	20.1	16.5	14.6	11.7	9.91	8.57	6.81	5.71	4.88	3.02
12 SP 42	153	126	106	91.4	80.3	71.6	54.0	43.6	31.3	25.6	21.0	18.6	14.8	12.6	10.9	8.67	7.26	6.21	3.84
12 SP 55	203	165	141	121	106	94.5	72.1	58.1	41.9	34.3	28.2	24.8	19.6	16.5	14.3	11.3	9.51	8.13	5.03
12 SP 70	258	210	180	158	139	125	93.4	75.2	54.0	44.0	36.2	31.5	24.9	21.0	18.2	14.4	12.1	10.3	6.40
12 SP 72	258	210	180	158	139	125	93.4	75.2	54.0	44.0	36.2	31.5	24.9	21.0	18.2	14.4	12.1	10.3	6.40
12 SP 80	265	204	168	146	130	118	93.3	77.8	57.8	48.4	39.8	35.7	28.2	23.9	20.6	16.3	13.6	11.6	7.31
12 SP 90	298	229	189	164	147	132	105	87.6	65.0	54.4	44.8	40.2	31.8	26.8	23.2	18.4	15.3	13.1	8.23
12 SP 100	369	301	258	226	198	179	133	107	77.1	62.8	51.7	45.0	35.6	30.0	26.0	20.6	17.3	14.8	9.14
12 SP 120	431	351	300	263	238	214	160	125	89.9	73.3	60.3	52.5	41.5	35.0	30.3	24.1	20.2	17.2	10.7
12 SP 135	509	416	357	310	274	254	183	147	105	84.8	69.8	60.8	48.0	40.5	35.1	27.9	23.0	19.6	12.3
12 SP 150	'-----	463	396	344	305	282	203	163	116	94.2	77.5	67.5	53.4	45.0	39.0	31.0	25.5	21.8	13.7
12 SP 205	648	532	457	399	358	324	261	218	158	130	107	94.2	73.9	62.1	53.6	41.9	34.5	29.4	18.5
12 SP 235	743	610	524	457	410	372	300	250	182	149	123	108	84.8	71.1	61.4	48.0	39.6	33.7	21.3

SP RANGE - CONSTANT CURRENT DISCHARGE DATA

Amperes to 1.60 VPC (at 25°C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	150	180	240	300	360	480	600	720	1200
12 SP 26	82.5	61.4	48.9	39.7	33.3	28.7	20.7	16.4	11.6	9.38	7.70	6.62	5.19	4.35	3.75	2.97	2.49	2.12	1.32
12 SP 33	96.8	71.2	57.0	47.5	40.9	35.8	26.3	20.8	14.6	11.7	9.59	8.40	6.59	5.52	4.75	3.77	3.16	2.69	1.67
12 SP 42	123	90.7	72.5	60.5	52.1	45.6	33.5	26.5	18.6	14.9	12.2	10.7	8.38	7.03	6.05	4.79	4.02	3.42	2.13
12 SP 55	161	121	97.8	80.3	68.6	59.9	43.8	34.6	24.4	19.7	16.1	14.0	11.0	9.21	7.92	6.28	5.26	4.48	2.79
12 SP 70	205	150	122	101	86.9	76.3	55.6	43.9	31.0	24.9	20.4	17.8	14.0	11.7	10.1	7.99	6.70	5.71	3.55
12 SP 72	205	150	122	101	86.9	76.3	55.6	43.9	31.0	24.9	20.4	17.8	14.0	11.7	10.1	7.99	6.70	5.71	3.55
12 SP 80	250	187	147	120	101	88.4	64.1	50.4	35.6	28.6	23.5	20.4	15.9	13.2	11.4	9.11	7.65	6.52	4.06
12 SP 90	281	211	166	135	114	99.5	72.1	56.7	40.1	32.2	26.5	22.9	17.9	14.9	12.8	10.2	8.61	7.34	4.56
12 SP 100	293	214	174	144	124	109	79.4	62.8	44.3	35.5	29.2	25.5	20.0	16.7	14.4	11.4	9.57	8.15	5.07
12 SP 120	352	257	209	173	149	131	95.3	75.3	53.1	42.7	35.0	30.6	24.0	20.1	17.3	13.7	11.5	9.78	6.08
12 SP 135	429	314	243	201	170	147	107	84.8	59.8	48.0	39.4	34.4	27.0	22.6	19.4	15.4	12.9	11.0	6.84
12 SP 150	'---	349	270	223	189	164	119	94.2	66.4	53.3	43.8	38.2	30.0	25.1	21.6	17.1	14.3	12.2	7.60
12 SP 205	480	413	350	280	237	207	152	122	89.6	74.3	61.0	53.6	41.9	34.9	29.9	23.4	19.6	16.7	10.4
12 SP 235	550	474	401	321	271	237	174	140	103	85.1	69.9	61.5	48.0	40.1	34.3	26.8	22.5	19.2	11.9

Amperes to 1.65 VPC (at 25°C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	150	180	240	300	360	480	600	720	1200
12 SP 26	78.7	59.3	47.8	38.7	32.5	28.2	20.4	16.2	11.5	9.25	7.60	6.56	5.14	4.30	3.71	2.94	2.46	2.11	1.31
12 SP 33	92.8	68.6	55.2	46.3	40.0	35.1	25.9	20.5	14.4	11.5	9.47	8.33	6.54	5.48	4.71	3.74	3.12	2.67	1.67
12 SP 42	118	87.3	70.3	58.9	50.9	44.7	32.9	26.1	18.3	14.7	12.1	10.6	8.32	6.98	5.99	4.76	3.98	3.40	2.12
12 SP 55	155	117	95.4	78.4	67.2	58.7	43.0	34.1	24.2	19.5	16.0	13.9	10.9	9.14	7.85	6.23	5.21	4.46	2.78
12 SP 70	197	145	119	98.7	84.8	74.7	54.7	43.3	30.6	24.6	20.2	17.6	13.9	11.6	9.99	7.93	6.63	5.67	3.54
12 SP 72	197	145	119	98.7	84.8	74.7	54.7	43.3	30.6	24.6	20.2	17.6	13.9	11.6	9.99	7.93	6.63	5.67	3.54
12 SP 80	237	177	142	116	98.3	85.8	62.2	49.4	35.0	28.2	23.2	20.2	15.7	13.1	11.3	9.04	7.57	6.48	4.04
12 SP 90	267	199	160	131	111	96.6	70.0	55.6	39.4	31.8	26.1	22.7	17.7	14.8	12.7	10.2	8.52	7.29	4.55
12 SP 100	281	207	171	141	121	107	78.1	61.9	43.7	35.1	28.8	25.2	19.8	16.6	14.3	11.3	9.47	8.10	5.05
12 SP 120	328	248	205	169	145	128	93.7	74.3	52.4	42.2	34.6	30.2	23.8	19.9	17.1	13.6	11.4	9.72	6.06
12 SP 135	391	294	236	194	165	144	105	83.6	59.0	47.4	38.9	34.0	26.7	22.4	19.3	15.3	12.8	10.9	6.82
12 SP 150	'-----	327	262	215	183	160	117	92.9	65.6	52.7	43.3	37.8	29.7	24.9	21.4	17.0	14.2	12.2	7.58
12 SP 205	478	405	339	273	232	204	150	121	88.9	73.7	60.5	53.2	41.5	34.6	29.6	23.2	19.4	16.6	10.4
12 SP 235	548	464	388	313	266	233	172	139	102	84.5	69.4	60.9	47.5	39.7	33.9	26.6	22.2	19.0	11.9

Amperes to 1.67 VPC (at 25°C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	150	180	240	300	360	480	600	720	1200
12 SP 26	75.5	57.7	46.6	38.0	32.0	27.8	20.1	16.0	11.3	9.14	7.50	6.51	5.10	4.27	3.68	2.92	2.45	2.09	1.31
12 SP 33	88.9	66.4	53.6	45.3	39.2	34.5	25.4	20.0	14.1	11.3	9.30	8.28	6.50	5.45	4.69	3.72	3.11	2.66	1.66
12 SP 42	113	84.4	68.2	57.6	49.9	43.9	32.4	25.5	18.0	14.4	11.8	10.5	8.27	6.93	5.96	4.74	3.96	3.38	2.12
12 SP 55	149	113	92.5	76.9	66.0	57.8	42.5	33.7	23.9	19.3	15.8	13.8	10.8	9.08	7.81	6.20	5.19	4.43	2.77
12 SP 70	189	141	116	97.0	83.5	73.7	54.0	42.9	30.3	24.4	20.0	17.5	13.8	11.6	9.94	7.89	6.60	5.64	3.53
12 SP 72	189	141	116	97.0	83.5	73.7	54.0	42.9	30.3	24.4	20.0	17.5	13.8	11.6	9.94	7.89	6.60	5.64	3.53
12 SP 80	229	172	138	114	96.1	84.0	61.3	48.8	34.7	28.0	23.0	20.0	15.6	13.1	11.3	8.99	7.54	6.44	4.03
12 SP 90	258	194	156	128	108	94.5	69.0	54.9	39.0	31.5	25.8	22.5	17.6	14.7	12.7	10.1	8.48	7.25	4.53
12 SP 100	271	202	166	139	119	105	77.1	61.3	43.3	34.9	28.6	25.0	19.6	16.5	14.2	11.3	9.43	8.06	5.04
12 SP 120	325	242	199	166	143	126	92.5	73.5	52.0	41.8	34.3	30.0	23.6	19.8	17.0	13.5	11.3	9.67	6.04
12 SP 135	376	286	228	189	162	142	104	82.7	58.5	47.0	38.6	33.7	26.5	22.3	19.2	15.2	12.7	10.9	6.80
12 SP 150	'-----	317	254	210	180	158	116	91.9	65.0	52.3	42.9	37.5	29.5	24.8	21.3	16.9	14.1	12.1	7.56
12 SP 205	473	398	333	269	229	202	149	121	88.5	73.3	60.2	52.9	41.3	34.4	29.4	23.1	19.3	16.5	10.3
12 SP 235	542	457	381	309	263	231	171	138	101	84.0	69.0	60.6	47.3	39.5	33.7	26.5	22.2	18.9	11.8

Amperes to 1.70 VPC (at 25°C)

Time (min.)	5	10	15	20	25	30	45	60	90	120	150	180	240	300	360	480	600	720	1200
12 SP 26	73.4	56.6	45.8	37.5	31.7	27.5	19.9	15.8	11.2	9.07	7.44	6.47	5.08	4.25	3.67	2.91	2.44	2.09	1.31
12 SP 33	86.3	64.8	52.5	44.6	38.7	34.1	25.1	19.7	13.9	11.2	9.18	8.24	6.47	5.42	4.67	3.71	3.10	2.65	1.66
12 SP 42	110	82.5	66.8	56.8	49.3	43.4	32.0	25.1	17.7	14.2	11.7	10.5	8.23	6.90	5.95	4.72	3.95	3.37	2.11
12 SP 55	145	110	90.6	75.8	65.3	57.2	42.1	33.5	23.8	19.2	15.7	13.7	10.8	9.04	7.79	6.18	5.17	4.41	2.77
12 SP 70	184	139	114	95.9	82.7	73.0	53.5	42.6	30.1	24.3	19.9	17.4	13.7	11.5	9.91	7.87	6.58	5.62	3.52
12 SP 72	184	139	114	95.9	82.7	73.0	53.5	42.6	30.1	24.3	19.9	17.4	13.7	11.5	9.91	7.87	6.58	5.62	3.52
12 SP 80	224	169	136	112	94.7	82.8	60.7	48.5	34.4	27.8	22.8	19.9	15.6	13.0	11.2	8.96	7.52	6.42	4.02
12 SP 90	252	190	153	126	106	93.1	68.3	54.5	38.7	31.3	25.7	22.4	17.5	14.6	12.6	10.1	8.46	7.22	4.53
12 SP 100	263	199	162	137	118	104	76.5	60.9	43.1	34.7	28.5	24.8	19.5	16.4	14.2	11.2	9.40	8.02	5.03
12 SP 120	307	238	195	164	142	125	91.8	73.0	51.7	41.6	34.1	29.8	23.5	19.7	17.0	13.5	11.3	9.63	6.03
12 SP 135	366	280	223	185	159	141	103	82.2	58.1	46.8	38.4	33.5	26.4	22.2	19.1	15.2	12.7	10.8	6.79
12 SP 150	'-----	311	248	206	177	156	115	91.3	64.6	52.0	42.7	37.3	29.3	24.6	21.2	16.9	14.1	12.0	7.54
12 SP 205	468	394	329	267	227	200	148	120	88.1	73.0	59.9	52.7	41.1	34.3	29.3	23.0	19.3	16.4	10.3
12 SP 235	536	452	377	306	260	230	170	138	101	83.7	68.7	60.4	47.2	39.4	33.6	26.4	22.1	18.9	11.8

Amperes to 1.75 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	69.3	53.7	43.8	36.1	30.7	26.8	19.4	15.5	11.0	8.93	7.33	6.38	5.01	4.20	3.62	2.88	2.41	2.06	1.30
12 SP 33	79.6	61.1	49.8	42.9	37.3	33.0	23.9	19.5	13.7	11.0	9.04	8.07	6.37	5.38	4.61	3.66	3.06	2.62	1.65
12 SP 42	101	77.8	63.4	54.5	47.4	42.1	30.4	24.8	17.5	14.0	11.5	10.3	8.11	6.84	5.87	4.65	3.90	3.33	2.10
12 SP 55	135	103	84.7	71.9	62.6	55.4	40.9	32.8	23.3	18.9	15.5	13.6	10.7	8.96	7.69	6.09	5.11	4.37	2.75
12 SP 70	172	131	108	91.4	79.8	70.8	52.2	41.9	29.7	24.0	19.7	17.1	13.5	11.4	9.79	7.75	6.50	5.56	3.50
12 SP 72	172	131	108	91.4	79.8	70.8	52.2	41.9	29.7	24.0	19.7	17.1	13.5	11.4	9.79	7.75	6.50	5.56	3.50
12 SP 80	202	153	122	102	88.5	78.0	57.3	46.4	33.4	27.3	22.4	19.6	15.4	12.9	11.1	8.86	7.43	6.35	4.00
12 SP 90	227	172	137	114	99.5	87.7	64.5	52.2	37.6	30.7	25.2	22.1	17.3	14.5	12.5	9.97	8.36	7.15	4.50
12 SP 100	245	187	154	131	114	101	74.6	59.8	42.4	34.2	28.1	24.5	19.3	16.3	14.0	11.1	9.29	7.94	5.00
12 SP 120	286	225	185	157	137	121	89.6	71.8	50.9	41.1	33.7	29.4	23.2	19.5	16.8	13.3	11.1	9.53	6.00
12 SP 135	347	267	215	181	154	136	101	80.7	57.3	46.2	37.9	33.1	26.1	22.0	18.9	15.0	12.5	10.7	6.75
12 SP 150	'-----	297	238	201	171	152	112	89.7	63.6	51.3	42.1	36.7	29.0	24.4	21.0	16.6	13.9	11.9	7.50
12 SP 205	459	372	309	254	218	194	146	119	87.1	72.3	59.3	51.9	40.5	33.8	28.9	22.7	19.0	16.3	10.3
12 SP 235	527	427	355	291	250	223	168	136	99.9	82.8	68.0	59.5	46.5	38.8	33.2	26.0	21.8	18.7	11.8

Amperes to 1.80 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	64.2	50.5	41.1	34.3	29.4	25.8	18.7	15.0	10.7	8.66	7.11	6.22	4.89	4.10	3.54	2.83	2.37	2.03	1.27
12 SP 33	71.5	56.4	47.1	40.7	35.4	31.5	23.5	18.9	13.1	10.4	8.57	7.91	6.23	5.24	4.53	3.59	3.01	2.57	1.61
12 SP 42	91.1	71.7	59.9	51.8	45.1	40.1	29.9	24.0	16.7	13.3	10.9	10.1	7.93	6.67	5.76	4.57	3.83	3.27	2.05
12 SP 55	124	95.3	79.8	68.3	59.7	52.8	39.6	31.7	22.6	18.3	15.0	13.2	10.4	8.73	7.55	5.99	5.02	4.28	2.69
12 SP 70	157	121	102	87.3	76.8	68.2	50.7	40.7	29.0	23.5	19.3	16.8	13.2	11.1	9.60	7.62	6.39	5.45	3.42
12 SP 72	157	121	102	87.3	76.8	68.2	50.7	40.7	29.0	23.5	19.3	16.8	13.2	11.1	9.60	7.62	6.39	5.45	3.42
12 SP 80	170	130	104	88.4	77.3	69.0	53.5	43.9	32.0	26.4	21.7	19.2	15.1	12.7	10.9	8.71	7.30	6.23	3.91
12 SP 90	191	146	118	99.5	86.9	77.7	60.2	49.4	36.0	29.7	24.4	21.6	17.0	14.3	12.3	9.80	8.22	7.01	4.40
12 SP 100	225	173	145	125	110	97.4	72.4	58.1	41.4	33.5	27.5	24.0	18.9	15.9	13.7	10.9	9.13	7.79	4.89
12 SP 120	262	208	174	150	132	117	86.8	69.7	49.7	40.2	33.0	28.8	22.6	19.0	16.5	13.1	11.0	9.35	5.86
12 SP 135	305	240	199	171	148	132	97.7	78.5	55.9	45.3	37.1	32.4	25.5	21.4	18.5	14.7	12.3	10.5	6.60
12 SP 150	'-----	267	221	190	165	146	109	87.2	62.1	50.3	41.3	36.0	28.3	23.8	20.6	16.3	13.7	11.7	7.33
12 SP 205	382	330	270	228	199	182	140	116	84.1	69.3	56.9	50.4	39.4	33.0	28.2	22.3	18.7	16.0	10.0
12 SP 235	438	378	309	261	229	208	161	133	96.4	79.4	65.2	57.8	45.2	37.8	32.3	25.6	21.5	18.3	11.5

Amperes to 1.85 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	57.3	45.4	37.3	31.5	27.3	24.0	17.7	14.1	10.1	8.26	6.78	5.96	4.65	3.89	3.36	2.69	2.24	1.91	1.20
12 SP 33	63.5	51.8	43.2	37.2	32.6	29.0	21.8	17.6	12.6	10.2	8.41	7.44	5.92	5.03	4.35	3.45	2.84	2.43	1.53
12 SP 42	80.8	65.9	54.9	47.4	41.5	36.9	27.7	22.3	16.0	13.0	10.7	9.47	7.54	6.40	5.54	4.40	3.62	3.09	1.95
12 SP 55	107	86.4	73.1	62.5	54.8	48.8	37.0	29.7	21.4	17.5	14.3	12.6	9.95	8.39	7.25	5.76	4.74	4.04	2.55
12 SP 70	136	110	93.7	81.7	71.7	64.5	48.0	38.5	27.6	22.4	18.4	16.0	12.7	10.7	9.23	7.33	6.03	5.15	3.24
12 SP 72	136	110	93.7	81.7	71.7	64.5	48.0	38.5	27.6	22.4	18.4	16.0	12.7	10.7	9.23	7.33	6.03	5.15	3.24
12 SP 80	140	106	87.2	75.4	67.3	60.7	47.9	39.9	29.5	24.7	20.2	18.2	14.4	12.1	10.5	8.29	6.90	5.88	3.71
12 SP 90	158	120	98.1	84.8	75.7	68.3	53.9	44.9	33.2	27.7	22.8	20.4	16.2	13.6	11.8	9.33	7.76	6.62	4.17
12 SP 100	195	157	134	117	102	92.1	68.5	55.1	39.4	32.0	26.3	22.9	18.1	15.2	13.2	10.5	8.62	7.35	4.63
12 SP 120	227	188	161	140	123	110	82.2	66.1	47.3	38.4	31.5	27.5	21.7	18.3	15.8	12.6	10.3	8.82	5.56
12 SP 135	269	218	185	161	142	131	93.9	75.4	53.5	43.2	35.5	30.9	24.4	20.6	17.8	14.1	11.6	9.93	6.25
12 SP 150	'-----	242	206	178	157	146	104	83.7	59.5	48.0	39.4	34.4	27.1	22.9	19.8	15.7	12.9	11.0	6.95
12 SP 205	336	274	234	203	182	164	131	109	79.2	65.1	53.4	47.1	36.9	31.0	26.7	21.5	17.7	15.1	9.50
12 SP 235	385	314	268	233	208	188	151	125	90.8	74.6	61.2	53.9	42.4	35.5	30.7	24.6	20.3	17.3	10.9

Amperes to 1.90 VPC (at 25°C)																			
Time (min.)	**5**	**10**	**15**	**20**	**25**	**30**	**45**	**60**	**90**	**120**	**150**	**180**	**240**	**300**	**360**	**480**	**600**	**720**	**1200**
12 SP 26	48.2	37.7	31.7	26.9	23.5	21.2	15.9	12.7	9.14	7.45	6.11	5.45	4.30	3.62	3.14	2.49	2.06	1.75	1.10
12 SP 33	52.2	42.6	36.5	31.7	28.4	25.4	19.3	15.8	11.3	9.21	7.56	6.81	5.42	4.60	3.98	3.19	2.61	2.22	1.39
12 SP 42	66.4	54.2	46.5	40.3	36.1	32.3	24.6	20.1	14.4	11.7	9.62	8.67	6.89	5.85	5.07	4.06	3.32	2.82	1.77
12 SP 55	88.5	72.9	61.4	53.0	47.5	43.1	32.7	26.9	19.3	15.8	12.9	11.5	9.09	7.66	6.64	5.32	4.35	3.69	2.32
12 SP 70	113	94.3	82.7	73.7	65.6	58.4	43.8	35.2	25.2	20.5	16.9	14.7	11.6	9.75	8.45	6.77	5.54	4.70	2.96
12 SP 72	113	94.3	82.7	73.7	65.6	58.4	43.8	35.2	25.2	20.5	16.9	14.7	11.6	9.75	8.45	6.77	5.54	4.70	2.96
12 SP 80	108	86.3	73.2	64.4	58.9	53.3	42.4	35.4	26.3	22.0	18.0	16.5	13.0	11.0	9.50	7.54	6.33	5.37	3.38
12 SP 90	122	97.1	82.4	72.4	66.3	59.9	47.8	39.8	29.6	24.7	20.3	18.6	14.6	12.3	10.7	8.49	7.12	6.04	3.80
12 SP 100	161	135	118	105	93.7	83.4	62.6	50.3	36.0	29.3	24.1	21.0	16.5	13.9	12.1	9.67	7.91	6.72	4.23
12 SP 120	188	162	142	126	112	100	75.1	60.3	43.2	35.2	28.9	25.2	19.8	16.7	14.5	11.6	9.49	8.06	5.07
12 SP 135	217	182	159	142	126	113	84.5	67.9	48.7	39.6	32.5	28.3	22.3	18.8	16.3	13.1	10.7	9.07	5.70
12 SP 150	'-----	202	177	158	141	125	93.8	75.4	54.1	44.0	36.1	31.5	24.8	20.9	18.1	14.5	11.9	10.1	6.34
12 SP 205	261	226	199	174	157	144	115	95.7	70.7	58.9	48.4	42.8	33.9	28.6	24.7	19.8	16.3	13.8	8.66
12 SP 235	299	259	228	200	180	165	132	110	81.0	67.6	55.5	49.1	38.8	32.8	28.3	22.7	18.7	15.9	9.93