

### Applications and Key Benefits

- + 2V cells - 80Ah to 2320Ah nominal capacity
  - Ideal for:
    - Power generation and distribution
    - Electrical Utilities /Switchgear
    - UPS & datacenter systems
    - Railway crossing, signal & communications
    - Emergency lighting
- + Pasted flat plate design
- + 20 years design life in float operation in temperature controlled environments
- + Excellent for high current discharge (1 to 60 min), and medium to long discharge (2 to 10 hours)
- + Up to 36 month watering intervals when operated under float condition
- + Also available in dry charged version
- + 100% Recyclable

### Applicable Standards

- IEC 60896 part 11 - vented types requirements & tests
- BS 6290 part 2 - British Standard specification

### FIAMM Manufacturing

- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System

### Technical Features

- **Positive Pasted Plates:** cast grids designed with low selenium lead alloy to reduce water loss and increase intervals between watering (36 months when operated under float condition).
- **Negative Flat Plates:** rugged pasted grid construction with a service life compatible with the positive plates. The alloy and curing process are designed to maintain the porosity of the active material during operation.
- **Electrolyte:** high purity sulfuric acid solution with specific gravity of 1.24 at 77°F (± 0.01) when fully charged.
- **Separators:** made from microporous plastic matched with fiberglass mats for efficient electrolyte utilization and lowest internal resistance.
- **Container:** injection molded from high quality transparent SAN (styrene acrylonitrile) for mechanical strength and easy cell status inspection.
- **Cover:** made from opaque ABS and permanently tongue-and-groove sealed to the container for leak free operation.
- **Terminal Posts:** Square terminal pillars cast in lead with solid copper insert for improved conductivity.
- **Post seals:** developed with a high integrity design to prevent electrolyte leakage and eliminate terminal corrosion.
- **Vent Caps:** effectively prevents acid spray from the cell when 'gassing' during boost charge. Caps are provided with a ceramic filter and bayonet lock, designed to prevent any errant spark or flame from entering the cell.
- **Connectors:** inter-cell connectors are tin plated solid copper.
- **Stainless Steel Hardware:** supplied as standard.
- **Shelf life:** < 2% self-discharge per month at 77°F allows 4 months shelf life before boosting is required.
- **External Recombination Plugs:** available as an option.
- **Seismic Racks:** UBC zone 4 are available as an option.



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## SD / SDH



### FIAMM SD / SDH range

Model	Capacity (Ah) at 77°F	Dimensions (in)			Weight (lbs)	Electrolyte Volume Sg 1.24 (Gals)	Terminals	
	8 hrs to 1.75 Vpc	Length	Width	Total Height			+	-
SD 5	80	4	8.1	16.6	31.9	1.16	1	1
SD 7	120	4	8.1	16.6	34.1	1.06	1	1
SD 9	160	4.9	8.1	16.6	41.8	1.37	1	1
SD 11	200	4.9	8.1	16.6	45.1	1.27	1	1
SD 13	240	5.7	8.1	16.6	51.7	1.59	1	1
SD 15	280	5.7	8.1	16.6	55	1.59	1	1
SD 17	320	7.4	8.1	16.6	64.9	2.11	1	1
SD 19	360	7.4	8.1	16.6	67.3	2.03	1	1
SD 21	400	7.4	8.1	16.6	70.4	2.01	1	1
SD 23	440	7.4	8.1	16.6	73.1	1.95	1	1
SDH 13	480	5.7	8.1	28.1	93.7	2.88	1	1
SDH 15	560	5.7	8.1	28.1	100	2.77	1	1
SDH 17	640	7.5	8.3	28.1	125	4.02	2	2
SDH 19	720	7.5	8.3	28.1	131	3.80	2	2
SDH 21	800	7.5	8.3	28.1	137	3.80	2	2
SDH 23	880	9.2	8.3	28.1	156	4.86	2	2
SDH 25	960	9.2	8.3	28.1	162	4.65	2	2
SDH 27	1040	9.2	8.3	28.1	167	4.44	2	2
SDH 29	1120	10.8	8.3	28.1	185	5.49	2	2
SDH 31	1200	10.8	8.3	28.1	191	5.39	2	2
SDH 33	1280	10.8	8.3	28.1	197	5.28	2	2
SDH 35	1360	10.8	8.3	28.1	203	5.18	2	2
SDH 37	1440	14.5	8.6	27.1	277	9.72	3	3
SDH 39	1520	14.5	8.6	27.1	279	9.19	3	3
SDH 41	1600	14.5	8.6	27.1	282	8.74	3	3
SDH 43	1680	14.5	8.6	27.1	284	8.14	3	3
SDH 45	1760	14.5	8.6	27.1	286	7.71	3	3
SDH 47	1840	14.5	8.6	27.1	286	6.55	3	3
SDH 49	1920	14.5	8.6	27.1	288	7.16	3	3
SDH 51	2000	17.6	8.6	27.1	330	9.51	3	3
SDH 53	2080	17.6	8.6	27.1	334	9.30	3	3
SDH 55	2160	17.6	8.6	27.1	339	8.88	3	3
SDH 57	2240	17.6	8.6	27.1	343	8.66	3	3
SDH 59	2320	17.6	8.6	27.1	348	8.32	3	3

### Electrical Characteristics

- ✦ NOMINAL VOLTAGE: 2 Vpc
- ✦ INTERNAL RESISTANCE: SD range: 0.13/C<sub>8</sub> (Ohm); SDH range: 0.23/C<sub>8</sub> (Ohm)
- ✦ SHORT CIRCUIT CURRENT: SD range: 16 x C<sub>8</sub> (A); SDH range: 10 x C<sub>8</sub> (A)
- ✦ FLOAT CHARGE AT 77°F: 2.23 Vpc
- ✦ BOOST CHARGE: 2.40 Vpc with a maximum current of 0.15 x C<sub>8</sub> (A)

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Industrial Batteries

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**SD / SDH**

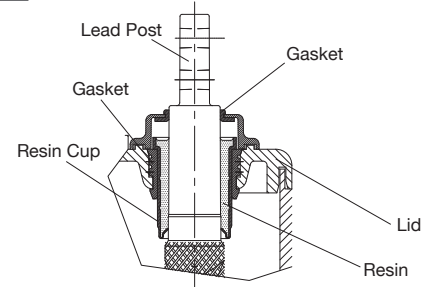


FIAMM Lead Selenium cells are the perfect compromise for the lead acid pasted plate technology.

The lead selenium presents both the advantages of lead calcium and lead antimony alloys while exhibiting none of their disadvantages.

Capacity recovery after discharge is very fast even on float, with recovery of 90 % of 8 hour capacity in less than 15 hours.

**High Reliability Post Seal**

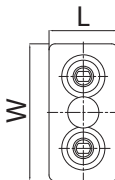


Cell Type	Electrical Characteristics	
	SD	SDH
Nominal Voltage (V)	2	2
Float Voltage at 77°F	2.23 Vpc	2.23 Vpc
Equalization Charge	2.4 Vpc	2.4 Vpc
Max Charge Current (A)	initial 15% C <sub>8</sub> Capacity final 8% of C <sub>8</sub> Capacity	initial 15% C <sub>8</sub> Capacity final 8% of C <sub>8</sub> Capacity
Self Discharge at 77°F	< 2% per month	< 2% per month
Internal Resistance (ohm)	0.13/C <sub>8</sub>	0.21/C <sub>8</sub>
Short Circuit Current (A)	16xC <sub>8</sub>	10xC <sub>8</sub>

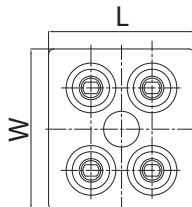
Cell Type	Cell Specifications					
	SD			SDH		
Plate Dimension	Height	Width	Thickness	Height	Width	Thickness
Positive	8.4"	7.1"	0.2"	17.5"	7.1"	0.2"
Negative	8.4"	7.1"	0.15"	17.5"	7.1"	0.16"
Electrolyte SG at 77°F	1.24 ± 0.01			1.24 ± 0.01		
Sediment Space	0.91"			1.26"		
Terminal Post Type	Lead (Copper Insert)			Lead (Copper Insert)		
Plate Support	Positive & Negative : Bottom Supported			Positive & Negative : Bottom Supported		
Intercell Connectors	Tin Plated Copper			Tin Plated Copper		
Connector Hardware	Stainless Steel			Stainless Steel		
Torque Value:	88.5-106.3 inlbs (10-12 Nm)					
Terminal Type:	Bolt (M8)					

**Cell Specifications**

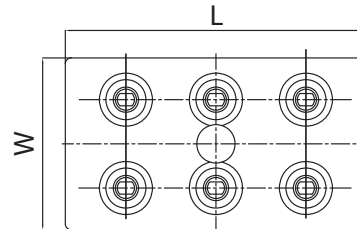
SD 5 TO SD 23  
SDH 13 TO SDH 15



SDH 17 TO SDH 35



SDH 37 TO SDH 59



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**Industrial Batteries**

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**SD / SDH**



Model	Constant Current Discharge Rates Amperes to 1.75 Vpc at 77°F (25°C) Sg 1.24											
	Minutes									Hours		
	1	5	7	10	12	15	20	30	60	2	3	8
SD 5	160	131	120	107	100	92.6	81	65.6	43.8	28	21.2	10
SD 7	240	197	180	161	150	139	122	98.4	65.7	42	31.8	15
SD 9	320	262	240	215	200	185	162	131	87.6	56	42.4	20
SD 11	400	328	300	269	250	232	203	164	110	70	53	25
SD 13	480	393	360	322	300	278	243	197	131	84	63.6	30
SD 15	560	459	420	376	350	324	284	230	153	98	74.2	35
SD 17	640	524	480	430	400	370	324	262	175	112	84.8	40
SD 19	720	590	540	483	450	417	365	295	197	126	95.4	45
SD 21	800	655	600	537	500	463	405	328	219	140	106	50
SD 23	880	721	660	591	550	509	446	361	241	154	117	55
SDH 13	636	576	549	519	498	471	432	372	267	174	132	60
SDH 15	742	672	641	606	581	550	504	434	312	203	154	70
SDH 17	848	768	732	692	664	628	576	496	356	232	176	80
SDH 19	954	864	824	779	747	707	648	558	401	261	198	90
SDH 21	1060	960	915	865	830	785	720	620	445	290	220	100
SDH 23	1166	1056	1007	952	913	864	792	682	490	319	242	110
SDH 25	1272	1152	1098	1038	996	942	864	744	534	348	264	120
SDH 27	1378	1248	1190	1125	1079	1021	936	806	579	377	286	130
SDH 29	1484	1344	1281	1211	1162	1099	1008	868	623	406	308	140
SDH 31	1590	1440	1373	1298	1245	1178	1080	930	668	435	330	150
SDH 33	1696	1536	1464	1384	1328	1256	1152	992	712	464	352	160
SDH 35	1802	1632	1556	1471	1411	1335	1224	1054	757	493	374	170
SDH 37	1908	1728	1647	1557	1494	1413	1296	1116	801	522	396	180
SDH 39	2014	1824	1739	1644	1577	1492	1368	1178	846	551	418	190
SDH 41	2120	1920	1830	1730	1660	1570	1440	1240	890	580	440	200
SDH 43	2226	2016	1922	1817	1743	1649	1512	1302	935	609	462	210
SDH 45	2332	2112	2013	1903	1826	1727	1584	1364	979	638	484	220
SDH 47	2438	2208	2105	1990	1909	1806	1656	1426	1024	667	506	230
SDH 49	2544	2304	2196	2076	1992	1884	1728	1488	1068	696	528	240
SDH 51	2597	2352	2242	2119	2034	1923	1768	1525	1097	716	543	250
SDH 53	2639	2390	2278	2153	2067	1954	1800	1556	1121	733	556	260
SDH 55	2631	2419	2305	2179	2092	1978	1825	1581	1141	749	568	270
SDH 57	2692	2438	2323	2196	2108	1993	1843	1600	1156	764	579	280
SDH 59	2786	2523	2404	2273	2181	2062	1907	1656	1196	790	599	290

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**SD / SDH**



Model	Constant Current Discharge Rates Amperes to 1.80 Vpc at 77°F (25°C) Sg 1.24											
	Minutes									Hours		
	1	5	7	10	12	15	20	30	60	2	3	8
SD 5	130	111	103	93.4	87.4	80	71	58	40	26.4	20.2	9.4
SD 7	195	167	140	131	120	107	87	87	60	39.6	30.3	14.1
SD 9	260	222	206	187	175	160	142	116	80	52.8	40.4	18.8
SD 11	325	278	258	234	219	200	178	145	100	66	50.5	23.5
SD 13	390	333	309	280	262	240	213	174	120	79.2	60.6	28.2
SD 15	455	389	361	327	306	280	249	203	140	92.4	70.7	32.9
SD 17	520	444	412	374	350	320	284	232	160	106	80.8	37.6
SD 19	585	500	464	420	393	360	320	261	180	119	90.9	42.3
SD 21	650	555	515	467	437	400	355	290	200	132	101	47
SD 23	715	611	567	514	481	440	391	319	220	145	111	51.7
SDH 13	504	465	450	426	408	393	363	321	240	162	123	57
SDH 15	588	543	525	497	476	459	424	375	280	189	144	66.5
SDH 17	672	620	600	568	544	524	484	428	320	216	164	76
SDH 19	756	698	675	639	612	590	545	482	360	243	185	85.5
SDH 21	840	775	750	710	680	655	605	535	400	270	205	95
SDH 23	924	853	825	781	748	721	666	589	440	297	226	105
SDH 25	1008	930	900	852	816	786	726	642	480	324	246	114
SDH 27	1092	1008	975	923	884	852	787	696	520	351	267	124
SDH 29	1176	1085	1050	994	952	917	847	719	560	378	287	133
SDH 31	1260	1163	1125	1065	1020	983	908	803	600	405	308	143
SDH 33	1344	1240	1200	1136	1088	1048	968	856	640	432	328	152
SDH 35	1428	1318	1275	1207	1156	1114	1029	910	680	459	349	162
SDH 37	1512	1395	1350	1278	1224	1179	1089	963	720	486	369	171
SDH 39	1596	1473	1425	1349	1292	1245	1150	1017	760	513	390	181
SDH 41	1680	1550	1500	1420	1360	1310	1210	1070	800	540	410	190
SDH 43	1764	1628	1575	1491	1428	1376	1271	1124	840	567	431	200
SDH 45	1848	1705	1650	1562	1496	1441	1331	1177	880	594	451	209
SDH 47	1932	1783	1725	1633	1564	1507	1392	1231	920	621	472	219
SDH 49	2016	1860	1800	1704	1632	1572	1452	1284	960	648	492	228
SDH 51	2100	1935	1875	1775	1700	1635	1510	1330	1000	675	513	238
SDH 53	2184	2015	1950	1846	1768	1703	1570	1390	1040	702	533	247
SDH 55	2268	2090	2025	1917	1836	1765	1630	1440	1080	729	554	257
SDH 57	2351	2170	2100	1988	1904	1834	1690	1490	1120	756	574	266
SDH 59	2433	2246	2173	2057	1970	1898	1749	1542	1159	782	594	275

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