

CALCIUM FLAT PLATE

B A T T E R I E S



Description

The EnerSys ES is an economical lead-calcium flat plate battery. The ES unit is a medium power battery for high performance and short duration rates. Ideal applications are UPS and switchgear.

Features

Application

- UPS
- Switchgear

Economical

- Calcium alloy grids for lowest water loss, resulting in lowest maintenance costs.

Performance

- High 1 - minute rates.
- Computerized selection of number of plates and plate thickness with respect to available "free electrolyte" to ensure optimum performance during short-duration discharges without sacrificing component integrity.

Durable

- 20 year life expectancy in float service at 77°F (25°C) ambient temperature.
- Long Life Slide-Lock™ post seal design.

Installation services and preventative maintenance packages available.

ES
155-1135 Ah
0.422-3.322 Kw/Cell

A P P L I C A T I O N S :

UPS
SWITCHGEAR

Specifications

PLATE DIMENSIONS:

Height Width

Pos: 11.4 in./290mm 9.4 in./239mm

Neg: 11.4 in./290mm 9.4 in./239mm

PLATE THICKNESS:

Pos: 0.20 inches (5.1 mm)

Neg: 0.14 inches (3.6mm)

PLATE SUSPENSION TYPE:

Pos: Bridge hung

Neg: Bottom supported

CONTAINER:

Styrene acrylonitrile copolymer

Container made from Flame Retardant PVC (UL94-V0/L.O.I.28%) optional.

COVER: Made from Flame Retardant

PVC (UL94-V0/L.O.I.28%)

SEPARATORS: Microporous plastic

BOLT CONNECTORS:

Stainless steel, standard English measure, hex-head

INTERUNIT CONNECTORS:

Lead-Plated Copper

ELECTROLYTE OVER PLATES:

2.1 inches (53.3mm)

VENT TYPE:

Flame Arrestor, Fused Alumina

FLOAT VOLTAGE:

ACCEPTABLE MIN/MAX: 2.17/2.26 VPC

RECOMMENDED: 2.25 VPC

SEDIMENT SPACE:

0.75 inches (19.1 mm)

POST TYPE:

Lead-plated copper insert

ES-5 to ES-21 - one positive post and one negative post per cell.

ES-23 to ES-37 - two positive posts and two negative posts per cell.

POST SEAL TYPE:

Slide-Lock™

SPECIFIC GRAVITY:

1.215 (1.250 available upon request)

WITHDRAWAL TUBE:

One per cell (except 37 plate size)

Capacities - Dimensions - Weights

TYPE*	NOM. Ah CAP. ¹	OVERALL DIMENSIONS						WEIGHTS - VOLUMES								OUTLINE DRAWING: SEE CATALOG SECTION
		LENGTH (L)**		WIDTH (W)		HEIGHT (H)		UNPACKED		DOMESTIC PACKED		ELECTROLYTE ONLY 1.215 S.G.				
		in	mm	in	mm	in	mm	lbs	kgs	lbs	kgs	lbs	kgs	gal	L	
ES-5	140	5.10	130	11.06	274	18.7	475	55	24.9	57	25.9	24	10.9	2.4	9.1	
ES-7	200	5.10	130	11.06	274	18.7	475	61	27.7	63	28.6	23	10.5	2.3	8.7	
ES-9	260	5.10	130	11.06	274	18.7	475	68	30.8	70	31.8	22	10.0	2.2	8.3	
ES-11	315	5.10	130	11.06	274	18.7	475	74	33.6	76	34.5	21	9.5	2.1	7.9	
ES-13	375	5.10	130	11.06	274	18.7	475	81	36.7	83	37.6	20	9.1	2.0	7.6	
ES-15	470	6.60	168	11.06	274	18.7	475	98	44.5	101	45.8	30	13.6	3.0	11.4	
ES-17	525	6.60	168	11.06	274	18.7	475	105	47.6	108	49.0	29	13.2	2.9	11.0	
ES-19	580	6.60	168	11.06	274	18.7	475	112	50.8	115	52.2	28	12.7	2.8	10.6	
ES-21	650	6.60	168	11.06	274	18.7	475	119	54.0	123	55.8	27	12.2	2.7	10.2	
ES-23	700	8.10	206	11.06	274	18.7	475	143	64.9	147	66.7	36	16.3	3.6	13.6	
ES-25	740	8.10	206	11.06	274	18.7	475	149	67.6	153	69.5	35	15.9	3.5	13.2	
ES-27	790	8.10	206	11.06	274	18.7	475	155	70.3	160	72.6	34	15.4	3.4	12.9	
ES-29	880	10.10	257	11.06	274	18.7	475	176	79.8	181	82.2	46	20.9	4.5	17.0	
ES-31	915	10.10	257	11.06	274	18.7	475	183	83.0	188	85.4	45	20.4	4.4	16.7	
ES-33	950	10.10	257	11.06	274	18.7	475	190	86.2	196	89.0	44	20.0	4.3	16.3	
ES-35	985	10.10	257	11.06	274	18.7	475	196	88.9	202	91.7	44	20.0	4.3	16.3	
ES-37	1030	10.10	257	11.06	274	18.7	475	203	92.1	209	94.9	43	19.5	4.2	15.9	

57.30

TYPE*	NOM. Ah CAP. ²	OVERALL DIMENSIONS						WEIGHTS - VOLUMES								OUTLINE DRAWING: SEE CATALOG SECTION
		LENGTH (L)**		WIDTH (W)		HEIGHT (H)		UNPACKED		DOMESTIC PACKED		ELECTROLYTE ONLY 1.250 S.G.				
		in	mm	in	mm	in	mm	lbs	kgs	lbs	kgs	lbs	kgs	gal	L	
ES-5B	155	5.10	130	11.06	274	18.7	475	55.7	25.2	57.7	26.2	24.7	11.2	2.4	9.1	
ES-7B	220	5.10	130	11.06	274	18.7	475	61.7	28.0	63.7	28.9	23.7	10.8	2.3	8.7	
ES-9B	285	5.10	130	11.06	274	18.7	475	68.6	31.1	70.6	32.1	22.6	10.3	2.2	8.3	
ES-11B	350	5.10	130	11.06	274	18.7	475	74.6	33.9	76.6	34.8	21.6	9.8	2.1	7.9	
ES-13B	410	5.10	130	11.06	274	18.7	475	81.6	37.0	83.6	37.9	20.6	9.4	2.0	7.6	
ES-15B	515	6.60	168	11.06	274	18.7	475	98.9	44.9	101.9	46.2	30.9	14.0	3.0	11.4	
ES-17B	580	6.60	168	11.06	274	18.7	475	105.8	48.0	108.8	49.4	29.8	13.6	2.9	11.0	
ES-19B	640	6.60	168	11.06	274	18.7	475	112.8	51.2	115.8	52.6	28.8	13.1	2.8	10.6	
ES-21B	715	6.60	168	11.06	274	18.7	475	119.8	54.4	123.8	56.2	27.8	12.6	2.7	10.2	
ES-23B	770	8.10	206	11.06	274	18.7	475	144.0	65.4	148.0	67.2	37.0	16.8	3.6	13.6	
ES-25B	815	8.10	206	11.06	274	18.7	475	150.0	68.1	154.0	70.0	36.0	16.4	3.5	13.2	
ES-27B	870	8.10	206	11.06	274	18.7	475	156.0	70.7	161.0	73.0	35.0	15.8	3.4	12.9	
ES-29B	965	10.10	257	11.06	274	18.7	475	177.3	80.4	182.3	82.8	47.3	21.5	4.5	17.0	
ES-31B	1005	10.10	257	11.06	274	18.7	475	184.3	83.6	189.3	86.0	46.3	21.0	4.4	16.7	
ES-33B	1045	10.10	257	11.06	274	18.7	475	191.3	86.8	197.3	89.6	45.3	20.6	4.3	16.3	
ES-35B	1085	10.10	257	11.06	274	18.7	475	197.3	89.5	203.3	92.3	45.3	20.6	4.3	16.3	
ES-37B	1135	10.10	257	11.06	274	18.7	475	204.2	92.7	210.2	95.5	44.2	20.1	4.2	15.9	

57.30

* Suffix Number indicates Total Plates Per Cell.

** 0.25" must be added between cells for spacing purposes when calculating total battery length.

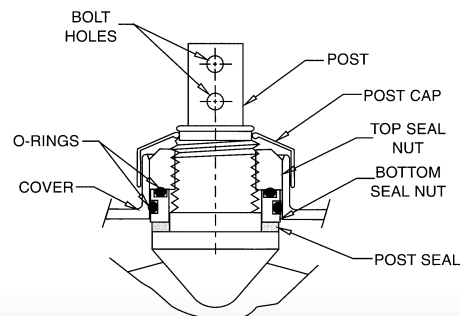
¹Nominal Amp hour capacity at the 8-hour rate for 1.215 S.G.

²Nominal Amp hour capacity at the 8-hour rate for 1.250 S.G.

All data subject to change without notice

Slide-Lock™ Post Seal

- No thermal stresses are introduced to the post seal, as with conventional burned-on posts.
- Slide-Lock™ design allows movement of post as plates grow during the battery's life without stressing the seal.
- O-Rings maintain seal between post and cover.



Average Cell Performance Data* Discharge Rates in Amperes**

TYPE	8 HR	7 HR	6 HR	5 HR	4 HR	3 HR	2 HR	90 MIN	60 MIN	30 MIN	15 MIN	5 MIN	1 MIN	1MIN' TO 1.50 VPC
	TO 1.75 END VOLTS PER CELL							1.215 SPECIFIC GRAVITY						
ES-5	17.7	20	23	26	32	39	53	65	87	144	212	265	324	796
ES-7	25.2	28	32	38	45	56	76	93	124	201	294	388	473	1165
ES-9	32.4	37	42	49	59	73	99	122	162	258	375	504	615	1514
ES-11	39.6	45	51	60	72	90	122	149	198	315	456	613	748	1847
ES-13	46.8	53	60	70	84	105	142	175	233	370	534	716	872	2158
ES-15	58.5	66	76	88	106	134	182	224	295	448	617	811	988	2453
ES-17	65.7	74	85	99	119	149	203	250	330	506	699	899	1096	2727
ES-19	72.9	82	94	109	131	163	222	273	363	562	779	981	1196	2983
ES-21	81.0	91	104	122	146	183	249	306	406	625	858	1056	1287	3219
ES-23	87.3	98	113	131	158	197	268	329	437	688	987	1329	1621	4010
ES-25	92.7	105	120	140	168	211	286	352	467	740	1067	1430	1743	4317
ES-27	99.0	112	127	148	176	220	298	368	491	788	1147	1527	1862	4615
ES-29	109.8	124	142	165	197	247	335	412	548	860	1223	1621	1976	4904
ES-31	114.3	129	147	171	205	257	348	429	572	905	1298	1710	2086	5183
ES-33	118.8	134	153	179	214	268	363	446	594	948	1372	1797	2192	5455
ES-35	123.3	139	159	186	222	278	376	463	618	994	1445	1880	2293	5713
ES-37	128.7	145	166	193	230	288	389	479	641	1037	1514	1960	2391	5964
	TO 1.67 END VOLTS PER CELL													
ES-5	17.7	20	23	26	32	39	53	65	90	165	244	365	419	
ES-7	25.2	28	32	38	45	56	76	93	132	228	338	507	613	
ES-9	32.4	37	42	49	59	73	99	122	173	291	432	647	797	
ES-11	39.6	45	51	60	72	90	122	149	212	354	525	789	972	
ES-13	46.8	53	60	70	84	105	142	175	249	414	614	921	1136	
ES-15	58.5	66	76	88	106	134	182	224	313	479	710	1065	1291	
ES-17	65.7	74	85	99	119	149	203	250	352	542	804	1205	1435	
ES-19	72.9	82	94	109	131	163	222	273	389	605	896	1344	1570	
ES-21	81.0	91	104	122	146	183	249	306	423	665	986	1479	1694	
ES-23	87.3	98	113	131	158	197	268	329	456	766	1136	1704	2110	
ES-25	92.7	105	120	140	168	211	286	352	488	829	1228	1841	2272	
ES-27	99.0	112	127	148	176	220	298	368	518	889	1318	1977	2429	
ES-29	109.8	124	142	165	197	247	335	412	581	950	1406	2109	2581	
ES-31	114.3	129	147	171	205	257	348	429	610	1007	1493	2239	2728	
ES-33	118.8	134	153	179	214	268	363	446	638	1065	1577	2366	2870	
ES-35	123.3	139	159	186	222	278	376	463	663	1121	1660	2491	3007	
ES-37	128.7	145	166	193	230	288	389	479	687	1176	1741	2611	3139	
	TO 1.75 END VOLTS PER CELL							1.250 SPECIFIC GRAVITY						
ES-5B	19.4	22	25	29	35	43	58	71	96	158	234	291	356	876
ES-7B	27.7	31	36	41	50	62	83	102	137	221	324	427	521	1282
ES-9B	35.6	40	46	54	64	81	109	134	178	284	413	554	676	1665
ES-11B	43.6	49	54	66	79	99	134	164	218	346	502	674	823	2032
ES-13B	51.5	58	66	77	92	115	156	192	256	407	587	787	959	2374
ES-15B	64.4	73	83	97	117	147	200	246	325	493	679	892	1087	2698
ES-17B	72.3	81	93	109	131	164	223	275	363	557	769	989	1206	3000
ES-19B	80.2	90	103	120	144	180	244	301	399	618	857	1079	1316	3281
ES-21B	89.1	100	115	134	160	201	274	337	446	687	943	1161	1416	3541
ES-23B	96.0	108	124	145	173	217	294	362	481	757	1086	1462	1783	4411
ES-25B	102.0	115	132	154	185	232	315	387	514	814	1174	1573	1918	4749
ES-27B	108.9	123	140	163	194	242	328	404	541	867	1261	1680	2048	5077
ES-29B	120.8	136	156	181	217	271	368	454	603	946	1345	1783	2174	5394
ES-31B	125.7	142	162	189	226	282	383	472	629	996	1428	1881	2295	5701
ES-33B	130.7	147	169	197	236	295	399	491	653	1043	1509	1977	2411	6001
ES-35B	135.6	153	175	204	245	306	414	509	680	1094	1589	2068	2523	6284
ES-37B	141.6	159	182	212	253	317	428	527	705	1141	1665	2156	2630	6560
	TO 1.67 END VOLTS PER CELL													
ES-5B	19.4	22	25	29	35	43	58	71	99	182	268	402	461	
ES-7B	27.7	31	36	41	50	62	83	102	145	251	372	558	674	
ES-9B	35.6	40	46	54	64	81	109	134	190	320	475	712	877	
ES-11B	43.6	49	54	66	79	99	134	164	233	389	578	868	1069	
ES-13B	51.5	58	66	77	92	115	156	192	274	455	675	1013	1250	
ES-15B	64.4	73	83	97	117	147	200	246	344	527	781	1172	1420	
ES-17B	72.3	81	93	109	131	164	223	275	387	596	884	1326	1579	
ES-19B	80.2	90	103	120	144	180	244	301	428	666	986	1478	1727	
ES-21B	89.1	100	115	134	160	201	274	337	465	732	1085	1627	1863	
ES-23B	96.0	108	124	145	173	217	294	362	502	843	1250	1874	2321	
ES-25B	102.0	115	132	154	185	232	315	387	537	912	1351	2025	2499	
ES-27B	108.9	123	140	163	194	242	328	404	570	978	1450	2175	2672	
ES-29B	120.8	136	156	181	217	271	368	454	639	1045	1547	2320	2839	
ES-31B	125.7	142	162	189	226	282	383	472	671	1108	1642	2463	3001	
ES-33B	130.7	147	169	197	236	295	399	491	702	1172	1735	2603	3157	
ES-35B	135.6	153	175	204	245	306	414	509	729	1233	1826	2740	3308	
ES-37B	141.6	159	182	212	253	317	428	527	756	1294	1915	2872	3453	

*Ampere values listed represent 100% of the cell's initial capacity.

**At 77°F (25°C) includes intercell connector drop.

†One minute rates to 1.50 volts per cell should only be used for short circuit calculations and not as performance data.

All data subject to change without notice.

Accessories

CATALOG NUMBER

CELL NUMBER SET:	1-12	802360
	1-24	802361
	1-60	802362
	1-120	802363
	1-240	802364
	1-300	802365
CELL LIFTING DEVICE:		
	ES-5,7,9,11,13	62257
	ES-15,17,19,21	80135
	ES-23,25,27	80136
	ES-29,31,33,35,37	80137
†PORTABLE HYDROMETER		81332
†HYDROMETER - WALL MOUNT		27717
†THERMOMETER		
(Portable or flame arrestor mounting)		88330
FLAME ARRESTOR (Supplied with each cell)		96300
†Included with 12 or more cells		

For complete information about these and all other accessories, see catalog **SECTION 80.05**.

NOTE: All inter-cell, inter-tier, inter-step, end-to-end inter-rack, back-to-back inter-rack connectors, and terminal plates are included with every battery. Terminal lugs and across-aisle inter-rack connectors are not included.

All data subject to change without notice.

Represented by:

When ordering new batteries, also remember to properly recycle your old lead-acid batteries. Federal and state regulations require lead-acid batteries be recycled. EnerSys' nationwide service organization can arrange pickup, transportation to and recycling at any one of our company affiliated smelters. Call 1-800-972-7372 for more information.

24 Hour Service or Repair, call:
1-800-423-9602 (U.S.)



Global Headquarters: P.O. Box 14145, Reading, PA 19612-4145
1-610-208-1991 • 1-800-538-3627
FAX 1-610-372-8613

US Sales Offices
Eastern Region: 1-800-346-4402 • 1-215-491-3700
Western Region: 1-800-423-4667 • 1-562-949-4266

Regional Sales Offices
EnerSys Canada: 1-905-790-1212
ESB de Mexico SA DE: 52-818-329-6405

EnerSys Inc. has locations worldwide to serve your needs: for additional information please visit our website at www.enersysinc.com or contact us at 1-800-538-3627.