HAWKER

Hawker Batteries Handbook

STANDBY BATTERIES FOR TELECOMMUNICATIONS

INTRODUCTION

Through leadership in battery technology and a commitment to innovation, Hawker offers the widest possible choice of standby power solutions.

Applications include main exchanges, repeater stations, PABX systems, remote transmitting stations, satellite ground stations, cellular network base stations, cable TV and 'fibre in the loop' applications.

As telecom and IT activities draw closer together and internet and wireless technologies evolve, the need for dependable power supplies becomes even more important. By anticipating these developments and responding with batteries for the next generation, Hawker is playing its part in securing the future of global communications.

SBS

APPLICATION

SBS utilises unique and proven technology to provide a superior range of valve regulated batteries with an extended service life in compact and energy dense configurations. SBS is manufactured to the highest international standards, and is suited for reliable use in GSM, PCS & CDMA outdoor communication cabinets.

SBS is also widely used in cable TV, emergency lighting, power generation, offshore and engine starting applications.

CONSTRUCTION

Positive Electrode	Pure lead grid using a unique manufacturing process
Negative Electrode	Pure lead grid
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

SBS can be mounted in any orientation except inverted.

The unique footprint makes the range particularly well suited to installation in cabinets (either indoor or outdoor).

The rugged construction ensures particularly durable performance even at higher ambient temperatures.

FEATURES

- Extremely high power density
- 2V, 6V and 12V configurations
- Proven long service
- Very low ventilation requirement
- Approved to Bellcore TR-NWT-000-766 and BS 6290 pt 4
- Unique compact footprint

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
SBS 8	12	7	135	86	101	2.7
SBS 15	12	13	200	77	137	5.0
SBS 30	12	25	250	97	152	9.0
SBS 40	12	37	250	97	204	12.5
SBS 60	12	49	220	121	256	17.5
SBS 110	6	109	198	206	237	20.0
SBS 130	6	127	198	206	237	23.0
SBS 300	2	294	198	206	237	20.0
SBS 390	2	347	198	206	237	23.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
SBS 8	12	7	5.3	3.4	4.0	6.0
SBS 15	12	14	7.9	3.0	5.4	11.0
SBS 30	12	26	9.8	3.8	6.0	19.8
SBS 40	12	36	9.8	3.8	8.0	27.6
SBS 60	12	50	8.7	4.8	10.1	38.6
SBS 110	6	110	7.8	8.1	9.3	44.1
SBS 130	6	128	7.8	8.1	9.3	50.7
SBS 300	2	293	7.8	8.1	9.3	44.1
SBS 390	2	348	7.8	8.1	9.3	50.7

C_8 Capacity data is calculated at 25°C (77°F)

SBS Front Terminal

APPLICATION

The SBS front terminal range is the latest addition to the highly successful high energy density range from Hawker. Smaller than the competition it offers design flexibility where space is limited and will easily fit 23″ and 19″ cabinet configurations.

The unique technology offers extended life even at raised ambient temperatures.

INSTALLATION

Designed for easy installation into cabinets, the SBS front terminal product conveniently allows one 48V battery per shelf and with its reduced size and weight can save cost in system design.

For sealed cabinets the SBS front terminal bloc is available with a manifold for exhausting any gas evolved in charging (usually negligible).

CONSTRUCTION

Positive Electrode	Pure lead grid using a unique manufacturing process
Negative Electrode	Pure lead grid
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

FEATURES

- Extremely high power density
- 4 sizes available
- Very durable, proven technology
- Front connection terminals
- Approved to BS 6290 pt 4
- Unique compact footprint

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
SBS B8	12	29.5	280	97	150	9.6
SBS B10	12	36.9	280	97	175	11.5
SBS B14	12	60.6	280	97	255	19.0
SBS C11	12	91.2	395	105	255	30.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
SBS B8	12	29.9	11.0	3.8	5.9	21.2
SBS B10	12	37.1	11.0	3.8	6.9	25.4
SBS B14	12	61.2	11.0	3.8	10.0	41.9
SBS C11	12	91.9	15.6	4.1	10.0	66.1

C_8 Capacity data is calculated at 25°C (77°F)

PDF Issue No.1/Tel/July 99

Powersafe VA/VB

APPLICATION

Powersafe utilises proven gas recombination technology to provide one of the largest ranges of VRLA batteries. Originally engineered in partnership with British Telecom (BT) to meet the highest international standards, Powersafe is totally reliable for use in telecommunications, computer back-up (UPS), emergency lighting, power generation, offshore applications, alarms and engine starting.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Powersafe can be installed on racks or in cabinets. The battery blocs can be installed either upright or on their sides (plates must be vertical) and are suitable for use in office environments. Powersafe is classified as safe for air transportation by the FAA and CAA.

FEATURES

- Extremely high power density
- 2V, 4V, 6V, 10V and 12V bloc batteries
- Very safe, can withstand its own short circuit
- Proven long life
- Very low ventilation requirement
- Approved to Bellcore TR-NWT-000-766 and BS 6290 pt 4

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
5VA5	10	19	250	119	238	11.8
6VA5	12	19	250	119	238	13.2
5VA7	10	29	250	119	238	14.9
6VA7	12	29	250	119	238	17.0
2VA9	4	39	250	119	238	7.6
3VA9	6	39	250	119	238	11.6
2VA11	4	48	250	119	238	9.8
3VA11	6	48	250	119	238	13.4
2VA13	4	58	250	119	238	11.3
3VA13	6	58	250	119	238	15.4
2VB9	4	82	206	210	239	13.8
3VB9	6	82	206	210	239	19.3
2VB11	4	103	206	210	239	16.2
3VB11	6	103	206	210	239	23.0
2VB13	4	116	204	204	225	18.2
3VB13	6	116	292	202	228	27.0
2VB15	4	135	204	204	225	20.8
3VB15	6	135	292	202	228	30.0
2VB17	4	154	204	204	225	23.0
3VB17	6	154	292	202	228	33.0
2VB21	4	193	300	204	225	28.1
2VB23	4	212	300	204	225	30.8
2VB25	4	231	300	204	225	33.4
VB26	2	231	204	204	225	18.2
VB30	2	270	204	204	225	20.8
VB34	2	308	204	204	225	23.0
VB39	2	347	292	202	228	27.0
VB42	2	385	300	204	225	28.5
VB45	2	404	292	202	228	30.0
VB46	2	424	300	204	225	31.5
VB50	2	462	300	204	225	33.1
VB51	2	462	292	202	228	33.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
5VA5	10	20	9.8	4.7	9.4	26.0
6VA5	12	20	9.8	4.7	9.4	29.1
5VA7	10	30	9.8	4.7	9.4	32.9
6VA7	12	30	9.8	4.7	9.4	37.5
2VA9	4	39	9.8	4.7	9.4	16.7
3VA9	6	39	9.8	4.7	9.4	25.6
2VA11	4	49	9.8	4.7	9.4	21.6
3VA11	6	49	9.8	4.7	9.4	29.5
2VA13	4	58	9.8	4.7	9.4	24.9
3VA13	6	58	9.8	4.7	9.4	34.0
2VB9	4	82	8.1	8.3	9.4	30.4
3VB9	6	82	8.1	8.3	9.4	42.5
2VB11	4	103	8.1	8.3	9.4	35.7
3VB11	6	103	8.1	8.3	9.4	50.7
2VB13	4	116	8.0	8.0	8.9	40.1
3VB13	6	116	11.5	7.9	9.0	59.5
2VB15	4	135	8.0	8.0	8.9	45.9
3VB15	6	135	11.5	7.9	9.0	66.1
2VB17	4	155	8.0	8.0	8.9	50.7
3VB17	6	155	11.5	7.9	9.0	72.7
2VB21	4	193	11.8	8.0	8.9	62.0
2VB23	4	212	11.8	8.0	8.9	67.9
2VB25	4	232	11.8	8.0	8.9	73.6
VB26	2	232	8.0	8.0	8.9	40.1
VB30	2	271	8.0	8.0	8.9	45.9
VB34	2	309	8.0	8.0	8.9	50.7
VB39	2	348	11.5	7.9	9.0	59.5
VB42	2	387	11.8	8.0	8.9	62.8
VB45	2	405	11.5	7.9	9.0	66.1
VB46	2	425	11.8	8.0	8.9	69.4
VB50	2	464	11.8	8.0	8.9	73.0
VB51	2	464	11.5	7.9	9.0	72.8

C_8 Capacity data is calculated at 25°C (77°F)

Powersafe VJ/VF

APPLICATION

Powersafe utilises proven gas recombination technology to provide one of the largest ranges of front connected VRLA batteries. Engineered to the highest international standards, Powersafe is totally reliable for use in telecommunications, emergency lighting, power generation, offshore applications and alarms.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Powersafe VJ/VF is designed to be installed in cabinets. Convenient handles and front facing terminals make connection and maintenance extremely easy. Powersafe is classified as safe for air transportation by the FAA and CAA.

FEATURES

- Extremely high power density
- Easy front connection
- Proven long service life
- Very low ventilation requirement
- Approved to Bellcore TR-NWT-000-766 and BS 6290 pt 4
- 8V, 10V and 12V bloc batteries
- 12V blocs with rope handles

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
6VJ5	12	26	362	65	227	12.0
6VJ7	12	39	362	85	227	18.0
6VJ8	12	50	280	105	280	25.0
6VJ9	12	52	390	105	227	24.0
6VJ11	12	65	390	125	227	31.0
6VF9	12	80	558	105	227	41.0
6VF10	12	80	390	125	256	37.0
4VF11	8	100	384	125	227	34.0
5VF11	10	100	558	125	227	41.0
6VF11	12	100	558	125	227	48.0
6VF16	12	156	561	125	315	67.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
6VJ5	12	26.3	14.2	2.6	8.9	26.5
6VJ7	12	39.4	14.2	3.4	8.9	39.7
6VJ8	12	50.0	11.0	4.1	11.0	55.1
6VJ9	12	52.6	15.3	4.1	8.9	52.9
6VJ11	12	65.7	15.3	4.9	8.9	68.3
6VF9	12	79.7	22.0	4.1	8.9	90.4
6VF10	12	80.0	15.3	4.9	10.0	81.5
4VF11	8	100.3	15.1	4.9	8.9	75.0
5VF11	10	100.3	22.0	4.9	8.9	90.4
6VF11	12	100.3	22.0	4.9	8.9	105.8
6VF16	12	156.0	22.1	4.9	12.4	147.7

C_8 Capacity data is calculated at 25°C (77°F)

Powersafe VH

APPLICATION

Powersafe VH utilises proven gas recombination technology to provide large capacity VRLA batteries. Engineered to the highest international standards, Powersafe VH is totally reliable for use in telecommunications, emergency lighting, power generation, offshore applications, alarms and engine starting.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Powersafe VH is designed to be installed horizontally on racks. Convenient front facing terminals make connection and maintenance extremely easy. Powersafe is classified as safe for air transportation by the FAA and CAA.

FEATURES

- Extremely high power density
- Easy front connection
- Proven long service life
- Very low ventilation requirement
- Approved to BS 6290 pt 4
- 2V, 4V and 6V configurations

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
2VH11	4	328	527	266	215	49.5
2VH13	4	393	527	266	215	58.0
2VH15	4	459	527	266	215	66.5
2VH17	4	524	527	266	215	75.0
3VH17	6	524	527	431	215	117.0
3VH19	6	590	527	431	215	125.8
VH22	2	655	527	266	215	49.5
VH26	2	786	527	266	215	58.0
VH30	2	917	527	266	215	66.5
VH34	2	1050	527	266	215	75.0
VH51	2	1570	527	431	215	117.0
VH57	2	1770	527	431	215	125.8

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
2VH11	4	332	20.7	10.5	8.5	109.1
2VH13	4	399	20.7	10.5	8.5	127.9
2VH15	4	465	20.7	10.5	8.5	146.6
2VH17	4	532	20.7	10.5	8.5	165.3
3VH17	6	532	20.7	17.0	8.5	257.9
3VH19	6	599	20.7	17.0	8.5	277.3
VH22	2	665	20.7	10.5	8.5	109.1
VH26	2	799	20.7	10.5	8.5	127.9
VH30	2	929	20.7	10.5	8.5	146.6
VH34	2	1061	20.7	10.5	8.5	165.3
VH51	2	1595	20.7	17.0	8.5	257.9
VH57	2	1793	20.7	17.0	8.5	277.3

C_8 Capacity data is calculated at 25°C (77°F)

Espace HI

APPLICATION

Espace HI utilises proven gas recombination technology to provide a comprehensive range of robust and reliable, quality VRLA batteries.

Espace HI has been designed to meet the highest international standards and is suited for operation in telecommunications systems, computer back-up (UPS), emergency lighting, power generation, offshore applications, alarms and engine starting.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS, flame-retardant to UL 94 B, FV0
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Espace HI can be installed on racks or in cabinets and can be operated either upright or on their sides (plates must be in the vertical plane) and are suitable for use in office environments. Espace HI is classified as safe for air transportation by the FAA and CAA.

FEATURES

- Extremely high power density
- 2V, 6V and 12V bloc batteries
- Proven long service life
- Very low ventilation requirement
- Manufactured to ISO 9001 and approved to BS 6290 pt 4

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
12HI20	12	22	166	125	176	9.8
12HI30	12	32	166	156	203	13.6
12HI40	12	42	218	164	220	18.1
12HI50	12	53	271	164	220	22.1
6HI60	6	64	165	165	220	13.2
12HI60	12	64	314	164	220	26.0
12HI75	12	75	360	164	227	29.6
6HI100	6	102	191	206	236	21.4
2HI120	2	121	128	165	220	8.8
6HI130	6	132	243	206	234	27.9
2HI150	2	152	128	165	220	10.2
6HI165	6	165	296	204	234	34.1
2HI175	2	175	110	208	260	12.9
2HI200	2	200	110	208	260	13.9
2HI225	2	225	142	208	260	16.3
2HI250	2	250	142	208	260	17.4
2HI275	2	275	142	208	260	18.5
2HI300	2	300	195	208	260	21.8
2HI350	2	350	195	208	260	24.0
2HIO350	2	350	195	208	260	24.7
2HI400	2	400	195	208	260	26.2
2HIO400	2	400	195	208	260	26.8
2HI500LD	2	500	238	208	260	32.5
2HI500	2	500	296	204	240	34.7

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
12HI20	12	22	6.5	4.9	6.9	21.6
12HI30	12	33	6.5	6.1	8.0	30.0
12HI40	12	42	8.6	6.5	8.7	39.9
12HI50	12	54	10.7	6.5	8.7	48.7
6HI60	6	65	6.5	6.5	8.7	29.1
12HI60	12	65	12.4	6.5	8.7	57.3
12HI75	12	77	14.2	6.5	8.9	65.3
6HI100	6	102	7.5	8.1	9.3	47.2
2HI120	2	125	5.0	6.5	8.7	19.4
6HI130	6	133	9.6	8.1	9.2	61.5
2HI150	2	158	5.0	6.5	8.7	22.5
6HI165	6	166	11.6	8.0	9.2	75.2
2HI175	2	171	4.3	8.2	10.2	28.4
2HI200	2	193	4.3	8.2	10.2	30.6
2HI225	2	214	5.6	8.2	10.2	35.9
2HI250	2	239	5.6	8.2	10.2	38.4
2HI275	2	264	5.6	8.2	10.2	40.8
2HI300	2	290	7.7	8.2	10.2	48.1
2HI350	2	342	7.7	8.2	10.2	52.9
2HIO350	2	342	7.7	8.2	10.2	54.5
2HI400	2	384	7.7	8.2	10.2	57.8
2HIO400	2	384	7.7	8.2	10.2	59.1
2HI500LD	2	481	9.4	8.2	10.2	71.7
2HI500	2	497	11.7	8.0	9.5	76.5

C_8 Capacity data is calculated at 25°C (77°F)

Espace FTR

APPLICATION

Espace FTR utilises proven gas recombination technology to provide one of the largest ranges of front connected VRLA batteries. Engineered to the highest international standards, Espace FTR is totally reliable for use in telecommunications, emergency lighting, power generation, offshore applications and alarms.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS plastic
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Espace FTR is designed to be installed in cabinets. Convenient handles and front facing terminals make connection and maintenance extremely easy.

FEATURES

- Extremely high power density
- Easy front connection
- Proven long service life
- Very low ventilation requirement
- 12V blocs with handles
- Manufactured to ISO 9001

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
12FTR26	12	26	362	65	227	12.0
12FTR40	12	39	362	85	227	18.0
12FTR50	12	50	280	105	280	25.0
12FTR52	12	52	390	105	227	24.0
12FTR65	12	65	390	125	227	31.0
12FTR80	12	80	558	105	227	41.0
12FTR82	12	80	390	125	256	37.0
12FTR105	12	105	561	125	235	46.0
12FTR155	12	156	561	125	315	67.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
12FTR26	12	26	14.2	2.6	8.9	26.5
12FTR40	12	39	14.2	3.4	8.9	39.7
12FTR50	12	50	11.0	4.1	11.0	55.1
12FTR52	12	53	15.3	4.1	8.9	52.9
12FTR65	12	66	15.3	4.9	8.9	68.3
12FTR80	12	80	22.0	4.1	8.9	90.4
12FTR82	12	80	15.3	4.9	10.0	81.5
12FTR105	12	100	22.1	4.9	9.2	101.2
12FTR155	12	156	22.1	4.9	12.4	147.7

C_8 Capacity data is calculated at 25°C (77°F)

Espace RG

APPLICATION

Espace RG utilises proven gas recombination technology to provide a comprehensive range of robust and reliable, quality VRLA batteries.

Espace RG has been designed for operation in computer back-up (UPS), emergency lighting, telecommunications systems, alarms and engine starting.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with high tin content
Negative Electrode	Lead-calcium grid with high tin content
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant ABS
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak-resistant compression seal, proven in service
Charging	2.27V per cell at 25°C (77°F)

INSTALLATION

Espace RG can be installed on racks or in cabinets and can be operated either upright or on their sides (plates must be in the vertical plane) and are suitable for use in office environments. Espace RG is classified as safe for air transportation by the FAA and CAA.

FEATURES

- Extremely high power density
- 2V, 6V and 12V bloc batteries
- Long service life
- Very low ventilation requirement
- Manufactured to ISO 9001

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
12RG24	12	22	166	125	176	9.4
12RG36	12	32	166	156	203	13.4
12RG40	12	42	218	164	220	18.1
12RG52	12	53	271	164	220	22.1
6RG70	6	64	165	165	220	13.2
12RG70	12	64	314	164	220	26.0
12RG85	12	75	360	164	227	29.6
6RG110	6	102	191	206	236	21.4
2RG135	2	121	128	165	220	8.8
6RG140	6	132	243	206	234	27.9
2RG170	2	152	128	165	220	10.2
6RG180	6	165	296	204	234	34.1
2RG200	2	175	110	208	260	12.9
2RG225	2	200	110	208	260	13.9
2RG250	2	225	142	208	260	16.3
2RG280	2	250	142	208	260	17.4
2RG310	2	275	142	208	260	18.5
2RG340	2	300	195	208	260	21.8
2RG400	2	350	195	208	260	24.0
2RGO400	2	350	195	208	260	24.7
2RG450	2	400	195	208	260	26.2
2RG0450	2	400	195	208	260	26.8
2RG540	2	500	296	204	240	34.7
2RG550	2	500	238	208	260	32.1

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
12RG24	12	22	6.5	4.9	6.9	20.7
12RG36	12	33	6.5	6.1	8.0	29.5
12RG40	12	42	8.6	6.5	8.7	39.9
12RG52	12	54	10.7	6.5	8.7	48.7
6RG70	6	65	6.5	6.5	8.7	29.0
12RG70	12	65	12.4	6.5	8.7	57.3
12RG85	12	77	14.2	6.5	8.9	65.3
6RG110	6	102	7.5	8.1	9.3	47.2
2RG135	2	125	5.0	6.5	8.7	19.4
6RG140	6	133	9.6	8.1	9.2	61.5
2RG170	2	158	5.0	6.5	8.7	22.5
6RG180	6	166	11.6	8.0	9.2	75.2
2RG200	2	171	4.3	8.2	10.2	28.4
2RG225	2	193	4.3	8.2	10.2	30.6
2RG250	2	214	5.6	8.2	10.2	35.9
2RG280	2	239	5.6	8.2	10.2	38.4
2RG310	2	264	5.6	8.2	10.2	40.8
2RG340	2	290	7.7	8.2	10.2	48.1
2RG400	2	342	7.7	8.2	10.2	52.9
2RGO400	2	342	7.7	8.2	10.2	54.5
2RG450	2	384	7.7	8.2	10.2	57.8
2RGO450	2	384	7.7	8.2	10.2	59.1
2RG540	2	497	11.7	8.0	9.5	76.5
2RG550	2	481	9.4	8.2	10.2	71.7

C_8 Capacity data is calculated at 25°C (77°F)

HAWKER XT™

APPLICATION

Hawker XT™ VRLA batteries are designed to perform in high performance applications where raised temperatures or harsh environments are possible. The application of plate technology and manufacturing methods enhanced by Hawker make XT™ the choice for long and trouble-free service.

INSTALLATION

Hawker XT™ is available in packaging formats, with or without metal jacket for superior high temperature tolerance. The XT™ range will operate down to -40°C (-40°F). Its industry standard footprint allows easy retro-fit into applications where ordinary batteries have failed.

CONSTRUCTION

Positive Electrode	Lead-tin grid with unique manufacturing process
Negative Electrode	Lead-tin grid
Separation	Glass mat separator with high absorption and stability
Casing Material	Impact resistant, flame-retardant to UL94 B, V-0 (Noryl)
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak resistant compression, seal proven in service
Charging	Float charge voltage: 2.27V per cell at 25°C (77°F)

FEATURES

- 6 sizes available
- Wide temperature range
- Proven long service
- Extremely high power density
- Excellent cycling tolerance
- Industry standard JIS footprint
- Safe for air-transportation

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
XT13	12	11.8	178	87	132	5.7
XT16	12	14.8	186	79	171	6.7
XT30	12	26.0	178	168	127	11.8
XT35	12	35.0	198	166	145	13.4
XT35X	12	35.0	200	170	147	14.2
XT40	12	38.7	201	171	173	17.4
XT70	12	63.5	328	166	176	28.8

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
XT13	12	11.9	7.0	3.4	5.2	12.6
XT16	12	15.2	7.3	3.1	6.7	14.8
XT30	12	26.4	7.0	6.6	5.0	26.0
XT35	12	34.0	7.8	6.5	5.7	29.5
XT35X	12	34.0	7.9	6.7	5.8	31.3
XT40	12	39.3	7.9	6.7	6.8	38.2
XT70	12	64.3	12.9	6.5	6.9	63.4

C_8 Capacity data is calculated at 25°C (77°F)

CYCLON®

APPLICATION

Cyclon® is ideal for small capacity (up to 25Ah) applications where a high degree of flexibility and tolerance to abuse is required. Cyclon® will operate between -40°C (-40°F) to +65°C (149°F) and is also exceptionally tolerant to inadvertent over-discharge.

CONSTRUCTION

Positive Electrode	Unique spirally-wound
Negative Electrode	Unique spirally-wound
Separation	Glass mat separator with high absorption and stability
Casing Material	Metal can (single cell) or choice of containers for battery packs/monoblocs
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Choice of terminal configurations
Charging	Float charge voltage: 2.27V per cell at 25°C (77°F)

INSTALLATION

Available as individual 2V cells and as 4V and 6V monoblocs, Cyclon® can be packaged using tape, shrink film or virtually any container into many shapes and configurations.

FEATURES

- 6 sizes available
- Very durable, proven technology
- Proven long service life
- Extremely high power density
- Excellent cycling tolerance
- Wide operational temperature range
- Safe for air-transportation

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Diameter mm	Height mm	Weight kg
D Cell	2	2.6	35	68	0.2
Tall D Cell	2	4.2	35	103	0.3
X Cell	2	4.8	45	82	0.4
E Cell	2	7.6	45	109	0.5
J Cell	2	11.3	52	136	0.8
BC Cell	2	24.4	66	174	1.7

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Diameter ins	Height ins	Weight lbs
D Cell	2	2.6	1.4	2.7	0.4
Tall D Cell	2	4.3	1.4	4.1	0.6
X Cell	2	4.9	1.8	3.2	0.8
E Cell	2	7.8	1.8	4.3	1.1
J Cell	2	11.5	2.0	5.3	1.8
BC Cell	2	24.6	2.6	6.9	3.7

C_8 Capacity data is calculated at 25°C (77°F)

HAWKER OPzV

APPLICATION

Hawker Valve Regulated OPzV batteries are especially suitable for applications with discharge over a long period where maintenance-free operation is required.

The electrolyte is fixed as a gel.

Typical applications include reserve power supplies for telecommunication equipment and industrial plants and also safety power supply equipment for lighting, automation and metering systems.

CONSTRUCTION

Positive Electrode	Tubular plate with Hawker calcium-tin alloy
Negative Electrode	Grid plate with calcium alloy
Separation	Micro-porous separator, combined with corrugated separator
Casing Material	Styrene acrylonitrile (SAN), impact resistant
Electrolyte	Gelled sulphuric acid
Terminal Design	Leakproof safety pole with brass insert, M10
Connectors	Solid copper insulated, bolt-on type. For horizontal installation, optional flexible cable connector is available
Vent Plugs	Safety pressure relief valve
Charging	Float charge voltage: 2.23V per cell at 20°C (68°F)

INSTALLATION

Hawker OPzV batteries are mounted as standard in the upright position on insulated racking. For space saving installation it is also possible to install them in horizontal position (plates must be in the vertical plane, max. 1500 Ah)

The safety provisions of the national and international standards must be observed.

FEATURES

- 2V single cells
- Maintenance-free operation throughout its operational life due to valve regulated construction
- High level of operational safety due to pressure relief safety valve, safety pole, insulated connectors and gelled electrolyte
- Economic operation in capacitive discharge over several hours
- Low ventilation requirement

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
4 OPzV200	2	215	103	206	403	19.5
5 OPzV250	2	270	124	206	403	23.5
6 OPzV300	2	325	145	206	403	28.0
5 OPzV350	2	385	124	206	520	31.0
6 OPzV420	2	460	145	206	520	36.5
7 OPzV490	2	540	166	206	520	42.0
6 OPzV600	2	700	145	206	695	50.0
8 OPzV800	2	935	191	210	695	68.0
10 OPzV1000	2	1170	233	210	695	82.0
12 OPzV1200	2	1405	275	210	695	97.0
12 OPzV1500	2	1585	275	210	845	120.0
16 OPzV2000	2	2115	399	214	820	160.0
20 OPzV2500	2	2640	487	212	820	200.0
24 OPzV3000	2	3170	576	212	820	240.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length ins	Width ins	Height ins	Weight lbs
4 OPzV200	2	212	4.1	8.1	15.9	43.0
5 OPzV250	2	265	4.9	8.1	15.9	51.8
6 OPzV300	2	318	5.7	8.1	15.9	61.7
5 OPzV350	2	383	4.9	8.1	20.5	68.3
6 OPzV420	2	459	5.7	8.1	20.5	80.5
7 OPzV490	2	536	6.5	8.1	20.5	92.6
6 OPzV600	2	696	5.7	8.1	27.4	110.2
8 OPzV800	2	930	7.5	8.3	27.4	149.9
10 OPzV1000	2	1159	9.2	8.3	27.4	180.8
12 OPzV1200	2	1395	10.8	8.3	27.4	213.8
12 OPzV1500	2	1559	10.8	8.3	32.3	264.6
16 OPzV2000	2	2081	15.7	8.4	32.3	352.7
20 OPzV2500	2	2603	19.2	8.4	32.3	440.9
24 OPzV3000	2	3125	22.7	8.4	32.3	529.1

C_8 Capacity data is calculated at 25°C (77°F)

VARTA bloc V - VbV 12121 - VbV 4138

APPLICATION

Valve regulated VARTA bloc batteries (VbV) are maintenance free lead-acid batteries. The electrolyte is fixed as a gel. They have been designed for a long service life and for reserve power supply systems with high safety requirements, space saving installation and maintenance-free operation. They can be used universally both for capacitive discharge over a period of hours and for shorter discharge periods. They are used as reserve power supplies in power stations, substations, information technology equipment, UPS systems, for automation and traffic technology, and for emergency power supply systems.

CONSTRUCTION

Positive Electrode	Rod plate with VARTA-calcium-tin-alloy
Negative Electrode	Grid plate with calcium alloy
Separation	Micro-porous separator
Casing Material	Acrylonitrile-butadiene-styrene (ABS), impact resistant, optional: flame retardant (FV0)
Electrolyte	Gelled sulphuric acid
Terminal Design	Leakproof safety pole reinforced with brass insert, M8
Connectors	Solid copper (20 x 3 mm), insulated, bolt-on type
Cell Valve	Safety valve with flame arrestor
Charging	Float charge voltage: 2.23V per cell at 20°C (68°F)

INSTALLATION

VARTA valve regulated lead-acid batteries are mounted on insulated racks in upright position as a standard or built into battery cabinets. For space saving installation it is possible to install them horizontally (plates must be in a vertical position). For use in earthquake zones a special approved rack design is available.

FEATURES

- 4V / 6V / 12V bloc batteries
- Maintenance-free operation throughout its service life due to valve regulated construction.
- Gelled electrolyte
- Leakproof VARTA safety pole design
- Long service life due to VARTA rod plate technology in accordance with EUROBAT guide: 10+ years
- Space-saving installation due to high energy and power densities
- Low ventilation requirement
- VARTA VbV batteries comply with the international standard IEC 896-2

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
VbV12121	12	21.0	221	176	277	22.8
VbV12122	12	42.0	221	176	277	29.5
VbV12123	12	63.0	311	176	277	41.1
VbV12124	12	83.9	389	176	277	51.9
VbV12125	12	105.0	469	176	277	63.9
VbV12126	12	126.0	553	176	277	74.2
VbV6134	6	144.0	284	229	332	49.6
VbV6135	6	180.0	284	229	332	55.1
VbV6136	6	216.0	284	229	332	60.7
VbV4137	4	252.0	249	229	332	48.8
VbV4138	4	288.0	249	229	332	52.5

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length ins	Width ins	Height ins	Weight lbs
VbV12121	12	21.3	8.7	6.9	10.9	50.3
VbV12122	12	42.6	8.7	6.9	10.9	65.0
VbV12123	12	64.0	12.2	6.9	10.9	90.6
VbV12124	12	84.8	15.3	6.9	10.9	114.4
VbV12125	12	106.0	18.5	6.9	10.9	140.9
VbV12126	12	127.0	21.8	6.9	10.9	163.6
VbV6134	6	146.0	11.1	9.0	13.1	109.3
VbV6135	6	183.0	11.1	9.0	13.1	121.5
VbV6136	6	220.0	11.1	9.0	13.1	133.8
VbV4137	4	257.0	9.8	9.0	13.1	107.6
VbV4138	4	293.0	9.8	9.0	13.1	115.7

C_8 Capacity data is calculated at 25°C (77°F)

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HUADA GFM

APPLICATION

Developed from designs originally produced in the USA the HUADA GFM range has been proven in applications where long float life and frequent cycling has been an operating requirement. HUADA GFM is designed to be used in telecoms, solar and general standby applications.

INSTALLATION

HUADA GFM is supplied complete with an integral steel can with easy-to-assemble frame attachments removing the necessity for a separate rack. GFM can be installed lying horizontally with the terminals facing forward allowing easy access for maintenance.

CONSTRUCTION

Positive Electrode	Lead-calcium grid with cycling enhancement
Negative Electrode	Lead-calcium grid
Separation	Glass mat separator with high absorption and stability
Casing Material	Polypropylene or polyethylene, encased in steel can
Electrolyte	High purity dilute sulphuric acid absorbed into separator mat
Terminal Design	Leak resistant epoxy resin. Seal proven in service
Charging	Float charge voltage: 2.27V per cell at 25°C (77°F)

FEATURES

- Up to 1200 cycles to 80% DOD (25°C) (77°F)
- Compact installations with integral rack
- Proven long service life
- Good vibration resistance
- Low ventilation requirement
- Horizontal or vertical installation

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
6GFM1-100	12	98	218	437	330	70.0
6GFM1-200	12	196	218	665	330	100.0
6GFM1-300	12	294	218	893	330	148.0
3GFM1-400	6	392	218	623	330	98.0
3GFM1-500	6	490	218	737	330	120.0
3GFM1-580	6	568	218	851	330	143.0
6GFM2-500	12	490	218	957	516	245.0
6GFM2-580	12	568	218	1071	516	281.0
3GFM2-830	6	814	218	801	516	200.0
3GFM2-1000	6	980	218	915	516	226.0
3GFM2-1080	6	1059	218	972	516	255.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length ins	Width ins	Height ins	Weight lbs
6GFM1-100	12	104	8.6	17.2	13.0	154.3
6GFM1-200	12	200	8.6	26.2	13.0	220.5
6GFM1-300	12	296	8.6	35.2	13.0	326.3
3GFM1-400	6	384	8.6	24.5	13.0	216.0
3GFM1-500	6	488	8.6	29.0	13.0	264.6
3GFM1-580	6	560	8.6	33.5	13.0	315.3
6GFM2-500	12	488	8.6	37.7	20.3	540.1
6GFM2-580	12	560	8.6	42.2	20.3	619.5
3GFM2-830	6	808	8.6	31.5	20.3	440.9
3GFM2-1000	6	976	8.6	36.0	20.3	498.2
3GFM2-1080	6	1048	8.6	38.3	20.3	562.2

C_8 Capacity data is calculated at 25°C (77°F)

HAWKER OPzS

APPLICATION

Hawker OPzS batteries are long life industrial products designed for capacitive discharge over longer periods.

The most important features are a high tolerance to cycling and a long life standby parallel operation.

They are used as reserve power supply in telecommunication systems, in industrial applications and in secure power supply systems.

CONSTRUCTION

Positive Electrode	Tubular plate with Hawker selenium alloy (Sb-content: 1.6%)
Negative Electrode	Grid plate, pasted hard lead grid
Separation	Microporous separator, combined with corrugated separator
Casing Material	Styrene-acrylonitrile (SAN), impact resistant, transparent
Electrolyte	Dilute sulphuric acid d = 1.24 kg/l
Terminal Design	Leakproof safety pole with M10 solid brass insert
Connectors	Solid copper insulated, bolt-on type
Charging	Float charge voltage: 2.23V per cell at 20°C (68°)

INSTALLATION

All standard types of installation are permissible.
For use in earthquake zones special approved stands are available.

FEATURES

- 2V single cells
- Economic operation in capacity use over several hours
- Leakproof Hawker safety pole, proven in operation
- Hawker safety vent plug with flame arrestor, optional: ceramic vent plug
- 3 year service interval (when operated correctly)
- Long service life even with cyclic load

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
4 OPzS200	2	200	103	206	389	17.2
5 OPzS250	2	250	124	206	389	20.8
6 OPzS300	2	300	145	206	389	24.3
5 OPzS350	2	350	124	206	508	26.9
6 OPzS420	2	420	145	206	508	31.5
7 OPzS490	2	490	166	206	508	36.1
6 OPzS600	2	600	145	206	687	44.8
8 OPzS800	2	800	191	210	687	61.3
10 OPzS1000	2	1000	233	210	687	74.6
12 OPzS1200	2	1200	275	210	687	88.0
12 OPzS1500	2	1530	275	210	829	114.3
15 OPzS 1875	2	1920	275	210	837	145.0
16 OPzS2000	2	2040	399	214	813	151.5
20 OPzS2500	2	2560	487	212	813	193.0
24 OPzS3000	2	3070	576	212	813	234.5

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
4 OPzS200	2	204	4.1	8.1	15.3	37.9
5 OPzS250	2	255	4.9	8.1	15.3	45.9
6 OPzS300	2	306	5.7	8.1	15.3	53.6
5 OPzS350	2	356	4.9	8.1	20.0	59.3
6 OPzS420	2	426	5.7	8.1	20.0	69.4
7 OPzS490	2	498	6.5	8.1	20.0	79.6
6 OPzS600	2	613	5.7	8.1	27.1	98.8
8 OPzS800	2	816	7.5	8.3	27.1	135.1
10 OPzS1000	2	1024	9.2	8.3	27.1	164.5
12 OPzS1200	2	1216	10.8	8.3	27.1	194.0
12 OPzS1500	2	1560	10.8	8.3	32.6	252.0
15 OPzS1875	2	1952	10.8	8.3	33.0	319.7
16 OPzS2000	2	2072	15.7	8.4	32.0	334.0
20 OPzS2500	2	2600	19.2	8.4	32.0	425.5
24 OPzS3000	2	3120	22.7	8.4	32.0	517.0

C_8 Capacity data is calculated at 25°C (77°F)

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VARTA bloc - Vb 12101 - Vb 4118

APPLICATION

VARTA bloc batteries are long life industrial batteries and were developed for universal use in reserve power supply equipment where there are high security requirements.

They are suitable for short discharge times at high currents and for capacitive discharge over longer periods.

They are used as reserve power supplies in power stations, nuclear power stations, transformer stations, information technology equipment, UPS, industrial equipment and power storage in solar power installations.

CONSTRUCTION

Positive Electrode	Rod plate with VARTA-Selenium alloy (Sb-content: 1.6%)
Negative Electrode	Grid plate with lead calcium alloy
Separation	Micro-porous separator
Casing Material	Transparent modified acrylonitrile-butadiene-styrene (ABS) with high impact resistance.
Electrolyte	Dilute sulphuric acid d = 1.24 kg/l
Terminal Design	Leakproof VARTA safety pole with brass insert, M8
Connectors	Solid copper (20 x 3 mm), insulated, bolt-on type
Vent Plugs	VARTA safety plugs with flame arrestor, optional ceramic vent plug
Charging	Float charge voltage: 2.23V per cell at 20°C (68°F)

INSTALLATION

All standard types of installation are permissible.

Due to the improved energy density, area required for installation is reduced.

For use in earthquake zones, special approved racking is available. When installing in battery rooms the local safety provisions must be adhered to.

FEATURES

- 4V, 6V and 12V bloc batteries
- Economical, universal use for all modes of discharge
- Leakproof VARTA safety pole, proven in operation
- VARTA safety vent plug with flame arrestor, optional ceramic vent plug
- 5 year service interval (when operated correctly)
- Long service life due to VARTA rod plate technology
- Vent plug strip and grip slots integrated in cover, smooth sides, attractive design

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
Vb12101	**12**	20	221	176	277	23.1
Vb12102	**12**	40	221	176	277	24.4
Vb12103	**12**	60	311	176	277	34.5
Vb12104	**12**	80	389	176	277	43.8
Vb12105	**12**	100	469	176	277	53.3
Vb12106	**12**	120	553	176	277	63.0
Vb6114	**6**	134	284	229	332	42.8
Vb6115	**6**	168	284	229	332	47.0
Vb6116	**6**	201	284	229	332	51.3
Vb4117	**4**	235	249	229	332	41.3
Vb4118	**4**	268	249	229	332	44.3

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
Vb12101	**12**	20	8.7	6.9	10.9	50.9
Vb12102	**12**	39	8.7	6.9	10.9	53.8
Vb12103	**12**	59	12.2	6.9	10.9	76.1
Vb12104	**12**	78	15.3	6.9	10.9	96.6
Vb12105	**12**	98	18.5	6.9	10.9	117.5
Vb12106	**12**	118	21.8	6.9	10.9	138.9
Vb6114	**6**	133	11.2	9.0	13.1	94.4
Vb6115	**6**	167	11.2	9.0	13.1	103.6
Vb6116	**6**	201	11.2	9.0	13.1	113.1
Vb4117	**4**	234	9.8	9.0	13.1	91.0
Vb4118	**4**	267	9.8	9.0	13.1	97.7

C_8 Capacity data is calculated at 25°C (77°F)

VARTA bloc - Vb 2305 - Vb 2314+

APPLICATION

VARTA bloc batteries are designed for universal use where there are high safety requirements. Their construction makes them suitable for short discharge times at high current and for capacitive discharge over longer periods.

Their areas of application are reserve power supply equipment in power stations, nuclear power stations, transformer stations, UPS and industrial equipment, safety power supply installations and power storage in solar power installations.

CONSTRUCTION

Positive Electrode	Rod plate with VARTA-Selenium alloy (Sb-content: 1.6%)
Negative Electrode	Grid plate, paste filled antimonial lead grid
Separation	Micro-porous separator, combined with glass-fleece bag for the positive electrode
Casing Material	Styrene-acrylonitrile (SAN), impact resistant, transparent
Electrolyte	Dilute sulphuric acid d = 1.24 kg/l
Terminal Design	Leakproof VARTA safety pole with solid copper insert
Post Screw	Stainless steel, M10
Connector	Solid copper, (30 x 10 mm), insulated, bolt-on type
Vent Plug	VARTA safety plug with flame arrestor, optional ceramic vent plug
Charging	Float charge voltage: 2.23V per cell at 20°C (68°F)

INSTALLATION

All standard types of installation are permitted.

For use in earthquake zones, special approved racking is available.

FEATURES

- 2V single cell
- Economical, universal use for all modes of discharge
- Leakproof VARTA safety pole, proven in operation
- Micropore-VARTA safety flame arrestor vent plug
- 5 year service interval (when operated correctly)
- Long service life due to VARTA rod plate technology

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
Vb 2305	2	254	131	275	440	30.1
Vb 2306	2	305	131	275	440	32.3
Vb 2307	2	356	131	275	440	34.3
Vb 2308	2	406	197	275	440	45.9
Vb 2309	2	457	197	275	440	48.0
Vb 23010	2	508	197	275	440	50.4
Vb 23011	2	559	197	275	440	52.1
Vb 23012	2	610	242	275	440	61.0
Vb 23013	2	660	242	275	440	63.3
Vb 23014	2	711	242	275	440	65.4

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
Vb 2305	2	251	5.2	10.8	17.3	66.4
Vb 2306	2	302	5.2	10.8	17.3	71.2
Vb 2307	2	352	5.2	10.8	17.3	75.6
Vb 2308	2	402	7.8	10.8	17.3	101.2
Vb 2309	2	452	7.8	10.8	17.3	105.8
Vb 23010	2	502	7.8	10.8	17.3	111.1
Vb 23011	2	553	7.8	10.8	17.3	114.9
Vb 23012	2	603	9.5	10.8	17.3	134.5
Vb 23013	2	654	9.5	10.8	17.3	139.6
Vb 23014	2	704	9.5	10.8	17.3	144.2

C_8 Capacity data is calculated at 25°C (77°F)

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VARTA bloc - Vb 2408 - Vb 2421+

APPLICATION

VARTA bloc batteries are designed for universal use where there are high security requirements. Their construction makes them suitable for short discharge times at high current and for capacitive discharge over longer periods.

Their areas of application are reserve power supply equipment in power stations, nuclear power stations, transformer stations, UPS and industrial equipment, safety power supply installations and power storage in solar power installations.

CONSTRUCTION

Positive Electrode	Rod plate with VARTA-Selenium alloy (Sb-content: 1.6%)
Negative Electrode	Grid plate, paste filled antimonial lead grid
Separation	Micro-porous separator, combined with glass-fleece bag for the positive electrode
Casing Material	Styrene-acrylonitrile (SAN), impact resistant, transparent
Electrolyte	Dilute sulphuric acid d = 1.24 kg/l
Terminal Design	Leakproof VARTA safety post with solid copper insert
Post Screw Connector	Stainless steel, M10 Solid copper, (30 x 10 mm), insulated, bolted type
Vent Plug	VARTA safety plug with flame arrestor, optional ceramic vent plug
Charging	Float charge voltage: 2.23V per cell at 20°C (68°F)

INSTALLATION

All standard types of installation are permitted.

For use in earthquake zones, special approved racking is available.

FEATURES

- 2V single cell
- Economical, universal use for all modes of discharge
- Leakproof VARTA safety pole, proven in operation
- Micropore-VARTA safety flame arrestor vent plug
- 5 year service interval (when operated correctly)
- Long service life due to VARTA rod plate technology

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
Vb 2408	2	800	383	222	550	98.1
Vb 2409	2	900	383	222	550	102.4
Vb 2410	2	1000	383	222	550	107.6
Vb 2411	2	1100	383	222	550	112.2
Vb 2412	2	1200	383	307	550	140.5
Vb 2413	2	1300	383	307	550	145.8
Vb 2414	2	1400	383	307	550	150.0
Vb 2415	2	1500	383	307	550	155.3
Vb 2416	2	1600	383	307	550	159.9
Vb 2417	2	1700	383	392	550	189.6
Vb 2418	2	1800	383	392	550	194.7
Vb 2419	2	1900	383	392	550	199.1
Vb 2420	2	2000	383	392	550	204.4
Vb 2421	2	2100	383	392	550	209.0

C_{10} Capacity data is calculated at 20°C (68°F)

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
Vb 2408	2	800	15.1	8.7	21.7	216.3
Vb 2409	2	904	15.1	8.7	21.7	225.7
Vb 2410	2	1000	15.1	8.7	21.7	237.2
Vb 2411	2	1096	15.1	8.7	21.7	247.4
Vb 2412	2	1200	15.1	12.1	21.7	309.7
Vb 2413	2	1296	15.1	12.1	21.7	321.4
Vb 2414	2	1400	15.1	12.1	21.7	330.7
Vb 2415	2	1504	15.1	12.1	21.7	342.4
Vb 2416	2	1600	15.1	12.1	21.7	352.5
Vb 2417	2	1704	15.1	15.4	21.7	418.0
Vb 2418	2	1800	15.1	15.4	21.7	429.2
Vb 2419	2	1896	15.1	15.4	21.7	438.9
Vb 2420	2	2000	15.1	15.4	21.7	450.6
Vb 2421	2	2096	15.1	15.4	21.7	460.8

C_8 Capacity data is calculated at 25°C (77°F)

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PLANTÉ

APPLICATION

Planté is the ultimate in reliable vented cells. Its unique solid pure lead positive plate, cast as one ingot, ensures its reliability. Modern planté has improved energy density and reduced maintenance demands. It is mainly used in larger, high integrity installations such as nuclear power plants but in smaller capacities finds multiple uses such as emergency lighting and general standby in remote or inaccessible locations.

CONSTRUCTION

Positive Electrode	Pure lead positive casting
Negative Electrode	Flat pasted plate
Separation	Tough micro-porous separator
Casing Material	Styrene-acrylonitrile transparent (SAN)
Electrolyte	High purity dilute sulphuric acid. 1210 density at 20°C (68°F)
Terminal Design	Terminal design lead with optional copper insert
Charging	Charging 2.25V per cell at 25°C (77°F).

INSTALLATION

Planté is installed on racks in dedicated battery rooms. Seismic and shock-resistant stands are available for installations at risk from earthquake.

FEATURES

- 3 container sizes available
- Extremely reliable, proven technology
- Long service life up to 25 years
- 100% capacity throughout its life
- Low water consumption
- Wide operational temperature range
- Clear container for easy maintenance

Type	Voltage	Capacity C_{10} to 1.80 Vpc	Length mm	Width mm	Height mm	Weight kg
YAP 5	2	15	76	133	212	3.8
YAP 9	2	30	114	133	212	6.3
YAP 13	2	45	190	133	212	10.0
YAP 17	2	60	190	133	212	11.5
YAP 21	2	75	228	133	212	13.6
YCP 9	2	100	134	203	349	18.6
YCP 11	2	125	172	203	349	22.2
YCP 13	2	150	172	203	349	24.9
YCP 17	2	200	210	203	349	30.6
YCP 21	2	250	248	203	349	36.9
YCP 25	2	300	286	203	349	43.4
YCP 27	2	325	362	203	349	52.6
YCP 29	2	350	362	203	349	54.4
YCP 33	2	400	362	203	349	58.4
YCP 35	2	425	362	203	349	60.3
YHP 11	2	500	230	368	592	95.2
YHP 13	2	600	230	368	592	106.2
YHP 15	2	700	306	368	592	133.5
YHP 17	2	800	306	368	592	144.5
YHP 19	2	900	306	368	592	155.5
YHP 21	2	1000	357	368	592	179.3
YHP 23	2	1100	357	368	592	190.4
YHP 25	2	1200	433	368	592	218.0
YHP 27	2	1300	433	368	592	229.0
YHP 29	2	1400	433	368	592	240.1
YHP 31	2	1500	509	368	592	268.3
YHP 33	2	1600	509	368	592	279.2
YHP 35	2	1700	509	368	592	290.2
YHP 37	2	1800	585	368	592	318.2
YHP 39	2	1900	585	368	592	329.2
YHP 41	2	2000	585	368	592	340.2

C_{10} Capacity data is calculated at 15°C (59°F)
Length is measured at right angles to the plates

Type	Voltage	Capacity C_8 to 1.75 Vpc	Length ins	Width ins	Height ins	Weight lbs
YAP 5	2	17	3.0	5.2	8.3	8.4
YAP 9	2	34	4.5	5.2	8.3	13.9
YAP 13	2	50	7.5	5.2	8.3	22.0
YAP 17	2	67	7.5	5.2	8.3	25.4
YAP 21	2	84	9.0	5.2	8.3	30.0
YCP 9	2	112	5.3	8.0	13.7	41.0
YCP 11	2	140	6.8	8.0	13.7	48.9
YCP 13	2	168	6.8	8.0	13.7	54.9
YCP 17	2	224	8.3	8.0	13.7	67.5
YCP 21	2	280	9.8	8.0	13.7	81.3
YCP 25	2	336	11.3	8.0	13.7	95.7
YCP 27	2	364	14.3	8.0	13.7	116.0
YCP 29	2	392	14.3	8.0	13.7	119.9
YCP 33	2	448	14.3	8.0	13.7	128.7
YCP 35	2	470	14.3	8.0	13.7	132.9
YHP 11	2	577	9.1	14.5	23.3	209.9
YHP 13	2	692	9.1	14.5	23.3	234.1
YHP 15	2	807	12.0	14.5	23.3	294.3
YHP 17	2	923	12.0	14.5	23.3	318.6
YHP 19	2	1035	12.0	14.5	23.3	342.8
YHP 21	2	1153	14.1	14.5	23.3	395.3
YHP 23	2	1269	14.1	14.5	23.3	419.8
YHP 25	2	1384	17.0	14.5	23.3	480.6
YHP 27	2	1500	17.0	14.5	23.3	504.9
YHP 29	2	1615	17.0	14.5	23.3	529.3
YHP 31	2	1730	20.0	14.5	23.3	591.5
YHP 33	2	1845	20.0	14.5	23.3	615.5
YHP 35	2	1960	20.0	14.5	23.3	639.8
YHP 37	2	2077	23.0	14.5	23.3	701.5
YHP 39	2	2192	23.0	14.5	23.3	725.7
YHP 41	2	2307	23.0	14.5	23.3	750.0

C_8 Capacity Data is calculated at 25°C (77°F)
Length is measured at right angles to the plates

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