

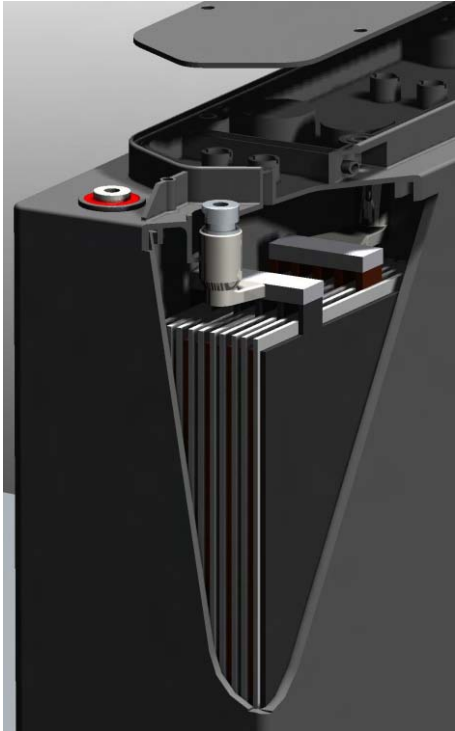
Apollo



**Sealed Lead Acid 12 Volt
Monobloc**

Front Access Range - AGM & Gel

AGM Front Access



Front Access AGM Construction - AGM battery construction is as shown in the above diagram. The positive and negative grids are cast from a calcium/tin lead alloy to reduce grid growth and corrosion.

The active material is manufactured from a high purity lead (99.9999%) to minimize the impurities, which would cause corrosion and self-discharge.

AGM battery construction is as shown in the above diagram. The positive and negative grids are cast from a calcium/tin lead alloy to reduce grid growth and corrosion. The active material is manufactured from a high purity lead (99.9999%) to minimize the impurities, which would cause corrosion and self-discharge.

The separator is mat of random woven glass fibres, they are completely acid resistant and act as a sponge soaking up and immobilizing the acid whilst keeping the acid available when it is needed during periods of battery discharge. "S Wrapping" is employed to reduce the risk of short circuit due to mossing or debris at the bottom of the cell.

The purpose of the separator is to maintain a constant distance between the positive and negative plates, totally eliminating the possibility of short circuits whilst allowing the active materials to fully react with the electrolyte. The separator also has an open construction, which offers little resistance to the flow of the electrolyte during filling.

AGM Technology - AGM technology has a number of advantages over the equivalent Gel battery range, the main advantages for the Telecommunication applications are as follows:

- ✎ Increased capacity over shorter discharge times.
- ✎ Lower initial cost.
- ✎ Ideal for starting and stationary applications.
- ✎ More suitable for UPS stand-by where power outages are uncommon.
- ✎ Smaller size battery can be used for higher rate discharges.

Apollo only employ "S wrapping" in our AGM construction to further reduce the possibility of short circuits due to mossing. Closely controlled plate density and thickness results in excellent consistent performance when placed in a string (series connection) Batteries are manufactured under a quality system designed to meet and exceed ISO 9002.



Applications

- Float service
- Uninterruptible Power Supplies
- Medical
- Telecommunications
- Switch Gear
- Photovoltaic
- Solar
- Wind
- Control Systems
- Cellular Radio Stations
- Cathodic Protection
- Navigation Aids
- Marine equipment
- Electric Power Systems

Gel Front Access

Front Access Gel Construction - is as shown in the diagram. The positive and negative grids are cast from a calcium/tin lead alloy to reduce grid growth and corrosion. The active material is manufactured from a high purity lead (99.9999%) to minimize the detrimental effects of impurities, e.g. corrosion and self-discharge.

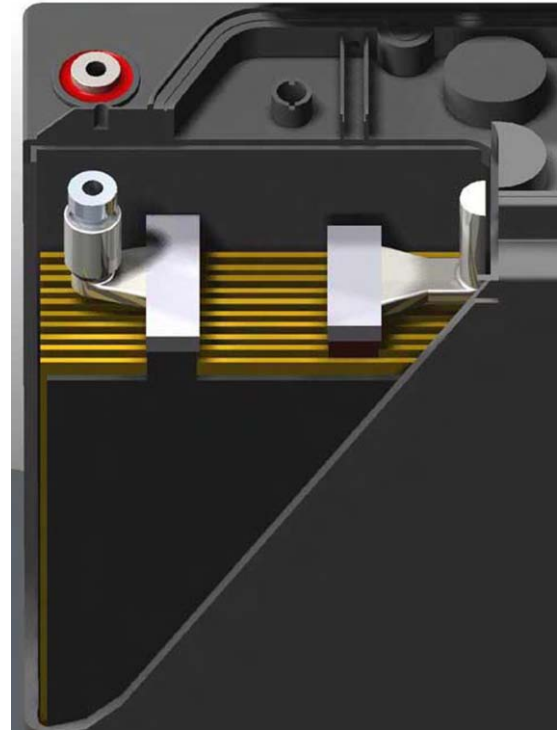
Separator is manufactured by a world leader in the field, utilizing the latest German technology. The base material is a microporous duroplastic exhibiting excellent high temperature stability and mechanical strength, resulting in very good resistance to vibration and mechanical shock. The integrity of the battery will be maintained under extreme conditions.

Typical properties are:
 Acid displacement - 150ml/sqm
 Pore volume - 70%
 Average pore size - 0.5 μm
 Maximum pore Diameter - 1 μm

The purpose of the separator is to maintain a constant distance between the positive and negative plates, totally eliminating the possibility of short circuits whilst allowing the active materials to fully react with the gelled electrolyte.

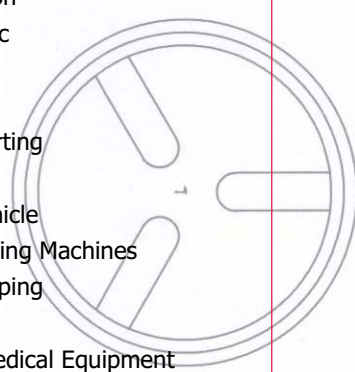
The separator also has an open construction, which allows little resistance to the flow of the electrolyte during filling. A thin layer (typically 0.4mm) of non-woven glass mat is an integral part of the separator and is placed against the positive plate for improved surface contact.

The purpose of the separator is to maintain a constant distance between the positive and negative plates, totally eliminating the possibility of short circuits whilst allowing the active materials to fully react with the electrolyte. The separator also has an open construction, which offers little resistance to the flow of the electrolyte during filling.



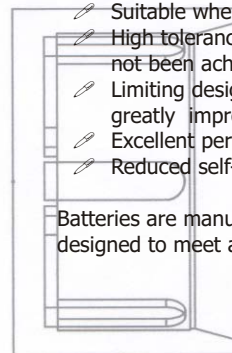
Applications

- ✍ Cycling / Float service
 - ✍ Residential
 - ✍ Telecommunications
 - ✍ Refrigeration
 - ✍ Photovoltaic
 - ✍ Solar
 - ✍ Wind
 - ✍ Engine Starting
 - ✍ Wheelchair
 - ✍ Electric Vehicle
 - ✍ Floor Cleaning Machines
 - ✍ Water Pumping
 - ✍ Golf Caddy
 - ✍ Portable Medical Equipment
 - ✍ Cathodic Protection
 - ✍ Boats
 - ✍ General Marine
 - ✍ Navigation Aids
- Many other deep cycle applications



Gel Technology has a number of advantages over the equivalent AGM battery range, the main advantages for the Telecommunication applications are as follows:

- ✍ Increased durability and deep cycle ability for heavy demand applications.
- ✍ Full recovery from deep discharge, even when not charged immediately
- ✍ Suitable where mains power is unstable
- ✍ High tolerance to discharge when full charge has not been achieved
- ✍ Limiting design protects the positive plates to greatly improve cycle life
- ✍ Excellent performance over longer discharges
- ✍ Reduced self-discharge



Batteries are manufactured under a quality system designed to meet and exceed ISO 9002.



ELECTROLYTE FILLING -Special production and QC systems are utilised to ensure the electrolyte saturation is optimised for each battery. The battery design and construction negates the need for electrolyte addition and the battery remains maintenance free throughout its design life.

GAS RECOMBINATION - The gasses generated during normal operation of the battery are internally recombined. In fact more than 99% of the gas achieves recombination.

SAFETY RELEASE VALVE- The battery will operate above atmospheric pressure under normal operating conditions, however the maximum pressure is governed by the safety release valve. Open is activated by pressures in excess of approx. 2 psi (14 Kpa), resealing at approx 1.2 psi (8.4 Kpa).



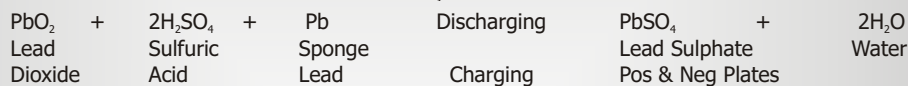
TERMINAL CONSTRUCTION - The contact quality between the insert terminal and the lead post is of vital importance during short duration / high Amp discharges. Elevated terminal temperatures are the result of poor contact, eventually causing seal degradation and electrolyte leaks. Apollo design and assembly technique for terminal casting ensures trouble free operation for the design life of the battery.



Apollo keenly encourages environmental awareness; PLEASE follow guidelines for the recycling /disposal of lead.

Capacity temperature correction Factor to be applied to Data at 20 Degrees C									
Discharge Time	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C
5 minutes to 59 minutes	0.8	0.86	0.91	0.96	1	1.037	1.063	1.085	1.1
1 Hour to 100 Hours	0.86	0.9	0.93	0.97	1	1.028	1.05	1.063	1.07

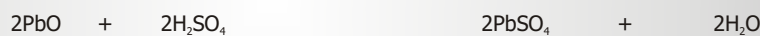
CHEMICAL REACTION- The chemical reaction for the Discharge / Recharge process is represented by the following formula:



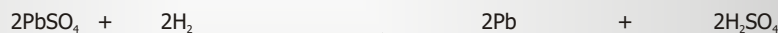
Under normal float charge conditions the oxygen passes through the separator from the positive to the negative plate where it reacts with the negative active material to form lead oxide.



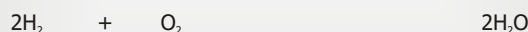
In the acid conditions the lead oxide reacts with the sulfuric acid to form lead sulphate.



The lead sulphate formed on the negative is then reduced to lead and sulfuric acid by the evolving hydrogen.



If the equations are resolved and like terms cancelled out on both sides of the equation the result is:



This reaction summarises what is meant by GAS RECOMBINATION. The process can never be 100% efficient, normal recombination efficiency is 95 - 99%.

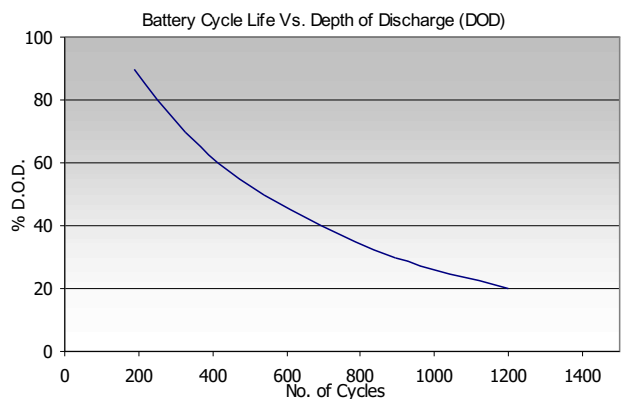
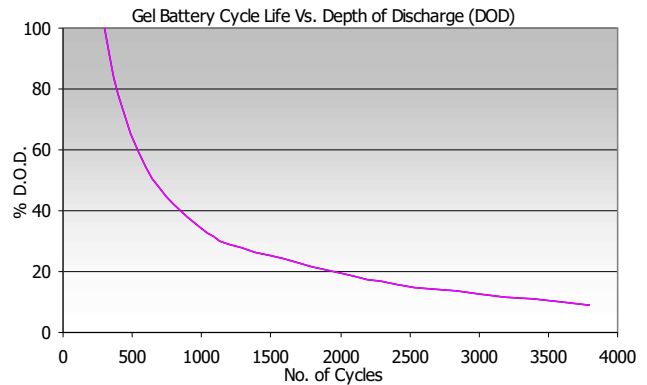
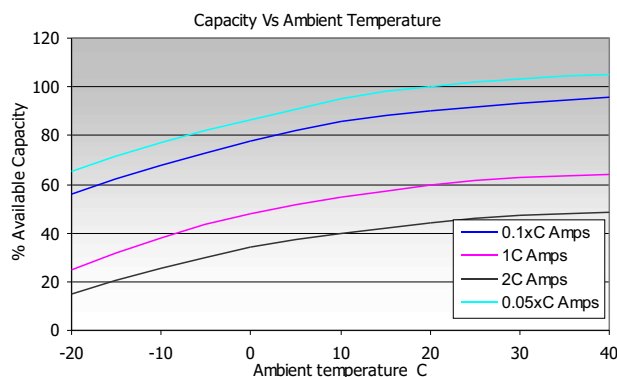
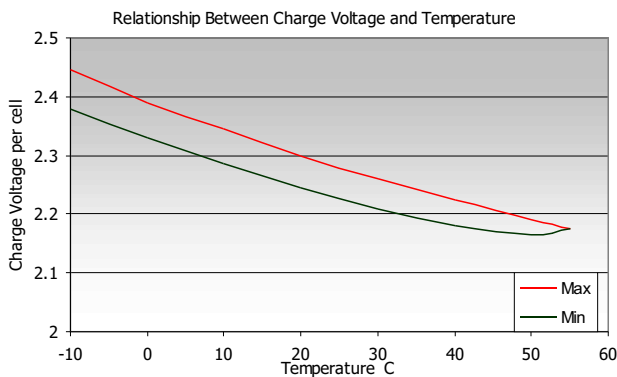
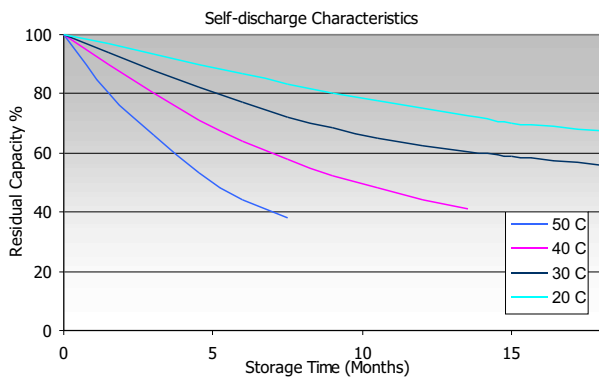
Features - Designed to meet the future needs of the Tele-communications industry for - mobile, wired, access, transmission, switching, integrated power applications etc.

Resulting in the following benefits to the customer:

- Compactness
- ETSI / 19" / 23" Integration
- Modularity
- Rackable Standard component
- Long life
- Use under extreme conditions
- High power volume ratio
- Maintenance free utilising VRLA technology
- Low Installation costs
- Front Connections and terminal access
- Long Design Life - 12 years
- Rope handles on 100Ah upwards
- Central gassing system and hinged front covers on all models
- Integral flame arrestor
- Low Internal resistance
- Recyclable lead and plastics
- Designed to meet BELLCORE recommendations
- Utilising Gel technology
- Excellent Cycling ability
- Low self discharge rates
- Compression plate absorbs grid expansion

Specifications

Nominal Voltage	12 Volts
Design Life	12 Years
Operating Temperature	-20 °C to 50 °C
Grid alloy	Calcium / Tin lead alloy
Plates	Flat Pasted
Separator	Gel - Microporous Duroplastic AGM - Absorbant Glass Mat
Active material	Very high purity lead
Case and cover	ABS (VO on request)
Charge Voltage	Float 2.27 - 2.30 VPC @20 °C Cycling 2.4 @20 °C Max. 2.4 VPC Max ripple 0.05C (A)
Electrolyte	Sulphuric acid Analytical grade purity
Venting Valve	EPDM Rubber 1.5 to 2 psi (10.5 - 14 KPa) release pressure. Resealing at 1 psi (7 KPa)
Terminal	Epoxy sealed by extended mechanical paths
Torque setting	The recommended torque value is 5-7 Nm
Connectors	Supplied as standard





AGM - Amp & Ampere Hour Data

20 °C

Battery Model	Time in Minutes - Amps to 1.85 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	139	111	96.0	83.4	72.7	64.4	57.5	51.8	47.1	37.4	27.2
HZB12-80FA	194	157	140	120	105	93.6	84.2	76.5	70.0	56.0	40.3
HZB12-95FA	229	193	167	143	123	108	96.0	86.6	79.1	62.9	45.4
HZB12-100FA	247	198	171	146	126	110	97.9	87.9	80.1	63.7	46.5
HZB12-125FA	307	230	191	164	144	129	115	105	96.3	78.3	58.6
HZB12-150FA	320	256	229	200	177	159	145	132	122	99.0	71.3
HZB12-180FA	372	288	241	210	187	168	152	140	130	112	82.7

Battery Model	Time in Hours												Amps to 1.85 VPC			
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	
HZB12-55FA	21.7	15.6	12.2	10.0	8.5	7.4	6.56	5.39	4.58	2.90	2.45	31.8	22.6	17.7	14.6	
HZB12-80FA	31.8	22.6	17.7	14.6	12.5	11.0	9.78	8.01	6.82	4.34	3.68	36.4	26.7	21.5	18.2	
HZB12-95FA	36.4	26.7	21.5	18.2	15.7	13.8	12.3	10.1	8.63	5.52	4.67	37.7	27.9	22.3	18.6	
HZB12-100FA	37.7	27.9	22.3	18.6	15.8	13.9	12.3	10.1	8.59	5.54	4.70	47.7	35.7	29.0	24.8	
HZB12-125FA	47.7	35.7	29.0	24.8	21.7	19.3	17.4	14.5	12.5	7.99	6.76	56.2	39.7	31.3	26.0	
HZB12-150FA	56.2	39.7	31.3	26.0	22.4	19.8	17.7	14.6	12.3	7.60	6.36	65.8	47.1	37.3	31.1	
HZB12-180FA	65.8	47.1	37.3	31.1	26.8	23.7	21.2	17.6	15.0	9.44	7.93					

Battery Model	Time in Hours Ah to 1.85 VPC															
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	6
HZB12-55FA	43.3	46.7	48.6	49.9	50.8	51.7	52.5	53.9	55.0	58.0	58.9	63.6	67.8	70.6	73.1	
HZB12-80FA	63.6	67.8	70.6	73.1	75.0	76.8	78.2	80.1	81.8	86.9	88.2	72.8	80.2	86.0	90.8	
HZB12-95FA	72.8	80.2	86.0	90.8	94.4	96.9	98.7	101	104	110	112	75.3	83.8	89.0	92.8	
HZB12-100FA	75.3	83.8	89.0	92.8	95.0	97.0	98.5	101	103	111	113	95.4	107	116	124	
HZB12-125FA	95.4	107	116	124	130	135	139	145	150	160	162	112	119	125	130	
HZB12-150FA	112	119	125	130	135	138	142	146	148	152	153	132	141	149	155	
HZB12-180FA	132	141	149	155	161	166	170	176	180	189	190					

Battery Model	Time in Minutes - Amps to 1.80 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	158	118	100	86.7	75.1	66.1	59.1	53.2	48.4	38.3	27.7
HZB12-80FA	227	182	152	129	111	98.2	87.5	79.1	72.1	57.6	41.3
HZB12-95FA	268	218	179	151	128	112	99.1	89.4	81.5	64.7	46.7
HZB12-100FA	289	225	185	154	132	115	102	91.5	83.3	66.1	47.9
HZB12-125FA	355	265	220	186	162	144	130	118	108	86.6	63.8
HZB12-150FA	375	309	264	226	195	174	157	142	130	104	74.0
HZB12-180FA	439	337	281	242	215	195	176	161	150	122	87.6

Battery Model	Time in Hours												Amps to 1.80 VPC			
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	
HZB12-55FA	22.1	15.9	12.4	10.1	8.6	7.5	6.67	5.48	4.66	2.95	2.49	32.5	23.0	18.0	14.9	
HZB12-80FA	32.5	23.0	18.0	14.9	12.7	11.1	9.9	8.09	6.89	4.39	3.71	37.3	27.2	21.9	18.5	
HZB12-95FA	37.3	27.2	21.9	18.5	16.0	14.1	12.6	10.3	8.78	5.61	4.75	38.8	28.6	22.9	19.0	
HZB12-100FA	38.8	28.6	22.9	19.0	16.2	14.2	12.6	10.3	8.79	5.65	4.80	51.3	37.8	30.4	25.7	
HZB12-125FA	51.3	37.8	30.4	25.7	22.4	19.8	17.9	15.0	12.8	8.2	6.9	57.9	41.1	32.4	26.9	
HZB12-150FA	57.9	41.1	32.4	26.9	23.1	20.4	18.2	15.0	12.7	7.9	6.6	68.6	49.0	38.7	32.2	
HZB12-180FA	68.6	49.0	38.7	32.2	27.7	24.4	21.9	18.2	15.4	9.7	8.1					

Battery Model	Time in Hours Ah to 1.80 VPC															
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	6
HZB12-55FA	44.1	47.6	49.4	50.7	51.8	52.6	53.4	54.8	55.9	58.9	59.8	64.9	69.0	71.8	74.3	
HZB12-80FA	64.9	69.0	71.8	74.3	76.3	77.9	79.1	80.9	82.7	87.8	89.0	74.5	81.6	87.4	92.3	
HZB12-95FA	74.5	81.6	87.4	92.3	96.0	98.6	101	103	105	112	114	77.5	85.8	91.5	95.2	
HZB12-100FA	77.5	85.8	91.5	95.2	97.4	99.1	101	103	105	113	115	103	113	122	129	
HZB12-125FA	103	113	122	129	135	139	143	150	154	163	166	116	123	130	135	
HZB12-150FA	116	123	130	135	139	143	146	150	152	157	159	137	147	155	161	
HZB12-180FA	137	147	155	161	166	171	176	182	185	194	195					

Battery Model	Time in Minutes - Amps to 1.75 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	170	124	103	88.5	76.3	66.9	60.1	54.1	49.1	38.8	28.1
HZB12-80FA	245	193	159	133	114	100	89.5	80.7	73.6	58.4	41.7
HZB12-95FA	289	230	186	154	131	114	101	90.8	82.5	65.6	47.1
HZB12-100FA	312	238	192	158	135	117	104	93.5	84.9	67.2	48.9
HZB12-125FA	406	296	239	201	173	153	137	125	114	90.5	66.1
HZB12-150FA	404	324	274	233	201	179	161	145	133	106	75.0
HZB12-180FA	490	365	299	258	227	204	184	169	157	126	90.5

Battery Model	Time in Hours												Amps to 1.75 VPC			
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	
HZB12-55FA	22.4	16.0	12.5	10.2	8.7	7.6	6.75	5.54	4.72	2.99	2.53	32.8	23.2	18.2	15.0	
HZB12-80FA	32.8	23.2	18.2	15.0	12.8	11.2	10.0	8.18	6.96	4.43	3.76	37.6	27.5	22.1	18.6	
HZB12-95FA	37.6	27.5	22.1	18.6	16.2	14.3	12.7	10.4	8.87	5.67	4.80	39.4	29.0	23.2	19.2	
HZB12-100FA	39.4	29.0	23.2	19.2	16.4	14.4	12.8	10.5	8.93	5.72	4.85	52.9	38.7	31.1	26.1	
HZB12-125FA	52.9	38.7	31.1	26.1	22.8	20.1	18.2	15.2	13.0	8.23	6.98	58.7	41.8	33.0	27.3	
HZB12-150FA	58.7	41.8	33.0	27.3	23.5	20.7	18.5	15.2	12.9	7.98	6.68	70.8	50.2	39.6	32.9	
HZB12-180FA	70.8	50.2	39.6	32.9	28.2	24.9	22.3	18.5	15.7	9.87	8.29					

Battery Model	Time in Hours Ah to 1.75 VPC															
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	6
HZB12-55FA	44.8	48.0	49.9	51.2	52.2	53.1	54.0	55.4	56.6	59.9	60.8	65.5	69.7	72.6	75.0	
HZB12-80FA	65.5	69.7	72.6	75.0	77.0	78.6	79.9	81.8	83.5	88.6	90.2	75.2	82.5	88.2	93.1	
HZB12-95FA	75.2	82.5	88.2	93.1	96.9	99.8	102	104	106	113	115	78.7	86.9	92.6	96.2	
HZB12-100FA	78.7	86.9	92.6	96.2	98.5	101	102	105	107	114	117	106	116	124	131	
HZB12-125FA	106	116	124	131	137	141	145	152	156	165	168	117	125	132	136	
HZB12-150FA	117	125	132	136	141	145	148	152	155	160	160	142	151	159	164	
HZB12-180FA	142	151	159	164	169	174	179	185	189	197	199					

Battery Model	Time in Minutes - Amps to 1.70 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	183	128	106	89.7	77.5	67.9	60.8	54.6	49.6	39.1	28.4
HZB12-80FA	263	203	164	137	116	102	90.2	81.6	74.4	58.9	41.9
HZB12-95FA	310	242	191	157	133	116	102	92.0	83.6	66.2	47.6
HZB12-100FA	335	246	196	161	137	119	106	94.8	86.0	68.0	49.3
HZB12-125FA	434	308	249	208	179	157	141	128	118	93.3	67.5
HZB12-150FA	434	338	282	240	205	182	163	148	135	107	75.7
HZB12-180FA	518	378	311	266	234	208	189	173	159	128	91.3

Battery Model	Time in Hours												Amps to 1.70 VPC			
	2	3	4	5	6	7	8	10	12	20	24	2	3	4	5	
HZB12-55FA	22.7	16.2	12.6	10.3	8.8	7.6	6.80	5.57	4.74	3.01	2.55	32.9	23.4	18.3	15.1	
HZB12-80FA	32.9	23.4	18.3	15.1	12.9	11.3	10.0	8.22	6.99	4.46	3.79	38.0	27.7	22.2	18.8	
HZB12-95FA	38.0	27.7	22.2	18.8	16.3	14.3	12.8	10.5	8.94	5.71	4.83	39.7	29.2	23.4	19.4	
HZB12-100FA	39.7	29.2	23.4	19.4	16.5	14.5	12.9	10.6	8.97	5.77	4.88	53.9	39.5	31.7	26.5	
HZB12-125FA	53.9	39.5	31.7	26.5	23.0	20.4	18.4	15.3	13.1	8.30	7.05	59.4	42.0	33.2	27.5	
HZB12-150FA	59.4	42.0	33.2	27												

Battery Model	Time in Minutes - Amps to 1.85 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	107	91.8	81.3	71.1	63.8	57.9	52.8	48.0	44.0	34.8	24.5
HZY12-70FA	164	138	122	107	96.0	86.2	77.5	70.0	63.5	50.3	36.2
HZY12-90FA	193	167	149	132	119	107	98.2	90.2	82.7	65.3	45.7
HZY12-100FA	209	169	141	127	113	105	97.0	89.6	82.4	65.5	46.4
HZY12-125FA	252	188	156	136	121	109	99.1	91.1	84.7	69.7	52.7
HZY12-150FA	282	229	205	178	156	141	129	118	110	89.3	64.1
HZY12-170FA	335	259	217	189	168	151	139	129	121	101	74.9

Battery Model	Time in Hours				Amps to 1.85 VPC							
	2	3	4	5	6	7	8	10	12	20	24	
HZY12-50FA	19.0	13.4	10.5	8.73	7.55	6.67	5.95	4.94	4.21	2.67	2.25	
HZY12-70FA	28.5	20.2	16.0	13.3	11.5	10.1	9.11	7.53	6.44	4.11	3.47	
HZY12-90FA	35.6	25.2	19.9	16.6	14.4	12.7	11.4	9.49	8.11	5.19	4.38	
HZY12-100FA	36.0	25.4	20.1	16.8	14.6	12.9	11.6	9.60	8.22	5.27	4.43	
HZY12-125FA	43.4	32.8	27.0	23.3	20.4	18.3	16.5	14.0	12.1	7.83	6.66	
HZY12-150FA	50.1	35.6	28.3	23.9	20.8	18.5	16.7	14.0	11.9	7.55	6.36	
HZY12-170FA	59.5	42.6	33.6	28.2	24.4	21.5	19.3	16.0	13.7	8.50	7.15	

Battery Model	Time in Hours Ah to 1.85 VPC													
	2	3	4	5	6	7	8	10	12	20	24			
HZY12-50FA	37.9	40.2	42.1	43.7	45.3	46.7	47.6	49.4	50.5	53.4	54.1			
HZY12-70FA	57.0	60.6	63.8	66.5	68.9	70.9	72.9	75.3	77.3	82.2	83.3			
HZY12-90FA	71.1	75.5	79.5	82.9	86.3	88.9	91.3	94.9	97.4	104	105			
HZY12-100FA	72.0	76.3	80.2	83.9	87.4	90.2	92.4	96.0	98.7	105	106			
HZY12-125FA	86.8	98.5	108	116	123	128	132	140	145	157	160			
HZY12-150FA	100	107	113	120	125	130	134	140	143	151	153			
HZY12-170FA	119	128	135	141	146	151	155	160	164	170	172			

Battery Model	Time in Minutes - Amps to 1.80 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	126	104	88.1	75.4	67.3	60.5	55.0	49.8	45.4	35.8	25.0
HZY12-70FA	192	148	129	113	100	88.7	79.3	71.5	65.0	51.5	37.0
HZY12-90FA	227	185	161	140	124	112	102	93.2	85.3	67.0	47.0
HZY12-100FA	245	203	170	145	127	114	105	95.3	87.1	68.4	48.0
HZY12-125FA	291	217	181	155	136	122	112	102	94.7	77.1	57.4
HZY12-150FA	330	276	231	194	169	151	136	125	115	92.9	66.5
HZY12-170FA	395	303	253	218	193	175	159	145	135	108	78.8

Battery Model	Time in Hours				Amps to 1.80 VPC							
	2	3	4	5	6	7	8	10	12	20	24	
HZY12-50FA	19.4	13.6	10.8	8.98	7.75	6.83	6.12	5.04	4.30	2.73	2.31	
HZY12-70FA	29.2	20.7	16.4	13.7	11.8	10.4	9.34	7.72	6.58	4.20	3.55	
HZY12-90FA	36.6	26.0	20.5	17.1	14.8	13.1	11.8	9.77	8.35	5.31	4.48	
HZY12-100FA	37.3	26.3	20.7	17.3	15.0	13.2	11.8	9.81	8.38	5.38	4.54	
HZY12-125FA	46.7	34.8	28.3	24.2	21.2	18.9	17.0	14.4	12.4	8.00	6.83	
HZY12-150FA	52.0	37.0	29.4	24.7	21.5	19.1	17.3	14.4	12.3	7.78	6.55	
HZY12-170FA	61.7	44.1	34.8	29.0	25.0	22.1	19.8	16.4	14.0	8.71	7.35	

Battery Model	Time in Hours Ah to 1.80 VPC													
	2	3	4	5	6	7	8	10	12	20	24			
HZY12-50FA	38.7	40.9	43.0	44.9	46.5	47.8	48.9	50.4	51.6	54.7	55.3			
HZY12-70FA	58.4	62.2	65.5	68.4	70.8	73.0	74.7	77.2	78.9	84.0	85.2			
HZY12-90FA	73.1	77.9	82.0	85.6	88.8	91.6	94.2	97.7	100	106	108			
HZY12-100FA	74.6	78.8	82.9	86.5	89.7	92.4	94.7	98.1	101	108	109			
HZY12-125FA	93.4	104	113	121	127	132	136	144	149	160	164			
HZY12-150FA	104	111	118	124	129	134	138	144	148	156	157			
HZY12-170FA	123	132	139	145	150	155	158	164	168	174	176			

Battery Model	Time in Minutes - Amps to 1.75 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	136	109	91.4	77.8	69.1	62.1	56.1	50.7	46.1	36.1	25.2
HZY12-70FA	207	158	133	116	101	90.0	80.4	72.4	65.8	52.1	37.4
HZY12-90FA	245	193	166	143	126	113	103	94.2	86.1	67.7	47.4
HZY12-100FA	264	213	178	151	132	118	107	97.3	88.5	69.2	48.5
HZY12-125FA	333	243	196	167	146	130	118	109	101	80.5	59.5
HZY12-150FA	356	289	239	200	173	155	139	128	117	94.3	67.3
HZY12-170FA	441	328	269	232	205	183	167	152	141	112	81.5

Battery Model	Time in Hours				Amps to 1.75 VPC							
	2	3	4	5	6	7	8	10	12	20	24	
HZY12-50FA	19.5	13.8	10.8	9.04	7.80	6.90	6.16	5.10	4.34	2.76	2.33	
HZY12-70FA	29.6	21.0	16.5	13.8	11.9	10.5	9.45	7.85	6.70	4.27	3.61	
HZY12-90FA	36.8	26.2	20.7	17.3	15.0	13.2	11.9	9.88	8.43	5.37	4.53	
HZY12-100FA	37.7	26.5	20.9	17.5	15.1	13.4	12.0	9.95	8.48	5.45	4.59	
HZY12-125FA	48.1	35.6	28.9	24.6	21.5	19.1	17.3	14.6	12.5	8.06	6.88	
HZY12-150FA	52.6	37.5	29.8	25.0	21.8	19.3	17.4	14.6	12.5	7.85	6.61	
HZY12-170FA	63.7	45.2	35.5	29.5	25.4	22.4	20.1	16.7	14.2	8.88	7.48	

Battery Model	Time in Hours Ah to 1.75 VPC													
	2	3	4	5	6	7	8	10	12	20	24			
HZY12-50FA	39.0	41.3	43.3	45.2	46.8	48.3	49.3	51.0	52.1	55.2	56.0			
HZY12-70FA	59.1	62.9	66.0	68.9	71.4	73.7	75.6	78.5	80.4	85.4	86.7			
HZY12-90FA	73.7	78.5	82.7	86.5	89.7	92.6	95.1	98.8	101.2	107	109			
HZY12-100FA	75.3	79.6	83.6	87.3	90.6	93.5	95.8	99.5	101.7	109	110			
HZY12-125FA	96.2	107	116	123	129	134	138	146	150	161	165			
HZY12-150FA	105	112	119	125	131	135	139	146	150	157	159			
HZY12-170FA	127	136	142	147	153	157	161	167	171	178	180			

Battery Model	Time in Minutes - Amps to 1.70 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	146	114	94.7	80.2	70.7	63.1	56.8	51.3	46.6	36.3	25.3
HZY12-70FA	223	164	137	118	103	91.3	81.3	73.2	66.4	52.6	37.7
HZY12-90FA	263	201	169	146	128	115	104	95.0	86.9	68.1	47.7
HZY12-100FA	283	222	184	156	136	121	109	98	89.1	69.7	48.7
HZY12-125FA	356	253	204	173	151	134	121	112	103	83.0	60.7
HZY12-150FA	382	303	248	207	178	158	142	130	119	95.3	67.7
HZY12-170FA	467	340	280	239	210	187	171	156	143	115	82.2

Battery Model	Time in Hours				Amps to 1.70 VPC							
	2	3	4	5	6	7	8	10	12	20	24	
HZY12-50FA	19.6	13.8	10.9	9.10	7.84	6.92	6.20	5.13	4.38	2.78	2.36	
HZY12-70FA	29.8	21.2	16.6	13.9	12.0	10.6	9.51	7.91	6.76	4.30	3.63	
HZY12-90FA	37.0	26.3	20.8	17.4	15.1	13.3	12.0	9.94	8.50	5.41	4.56	
HZY12-100FA	37.9	26.6	21.0	17.6	15.2	13.4	12.1	10.0	8.55	5.49	4.65	
HZY12-125FA	49.0	36.3	29.4	25.0	21.8	19.4	17.5	14.7	12.7	8.14	6.93	
HZY12-150FA	53.0	37.7	29.9	25.1	21.9	19.5	17.6	14.7	12.6	7.92	6.66	
HZY12-170FA	64.3	45.6	35.8	29.8	25.7	22.6	20.3	16.9	14.4	9.00	7.60	

Battery Model	Time in Hours Ah to 1.70 VPC													
	2	3	4	5	6	7	8	10	12	20	24			
HZY12-50FA	39.2	41.4	43.5	45.5	47.1	48.5	49.6	51.3	52.6	55.5	56.6			
HZY12-70FA	59.6	63.5	66.5	69.3	72.0	74.2	76.1	79.1	81.1	85.9	87.2			
HZY12-90FA	74.0	78.9	83.1	87.0	90.4	93.1	95.8	99.4	102	108	110			
HZY12-100FA	75.7	79.9	84.1	87.9	91.2	94.1	96.5	100	103	110	112			
HZY12-125FA	98.1	109	118	125	131	136	140	147	152	163	166			
HZY12-150FA	106	113	120	126	131	136	141	147	151	158	160			
HZY12-170FA	129	137	143	149	154	159	162	169	173	180	182			

Battery Model	Time in Minutes - Amps to 1.65 VPC													
	5	10	15	20	25	30	35	40	45	60	90	120	180	
HZY12-50FA	151	117	96	80.9	71.2	63.8	57.4	51.7	46.9	36.6	25.4	19.7	13.9	
HZY12-70FA	230	170	140	120	105	92.2	82.0	73.8	67.0	52.8	37.9	30.0	21.3	
HZY12-90FA	272	207	172	149	130	116	105	95.7	87.6	68.4	47.9	37.2	26.4	
HZY12-100FA	293	227	187	157	139	123	110	99.3	89.8	70.1	49.0	38.0	26.7	
HZY12-125FA	377	261												

Battery Model	Time in Minutes - Watts per cell to 1.85 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	241	201	178	156	137	123	109	100	90.9	72.3	52.5
HZB12-80FA	350	281	242	213	189	170	155	142	131	106	77.0
HZB12-95FA	389	330	287	252	224	199	177	161	147	119	87.7
HZB12-100FA	432	349	303	266	237	213	193	177	163	129	92.1
HZB12-125FA	551	419	365	318	277	247	225	208	194	162	123
HZB12-150FA	595	484	417	366	323	290	264	242	222	179	129
HZB12-180FA	729	593	491	418	368	331	300	278	258	217	160

Battery Model	Time in Hours Watts per cell to 1.85 VPC											
	2	3	4	5	6	7	8	10	12	20	24	
HZB12-55FA	41.8	29.9	23.6	19.5	16.7	14.6	12.9	10.6	9.0	5.7	4.8	
HZB12-80FA	60.5	43.1	33.9	27.9	23.8	20.7	18.4	15.2	13.0	8.3	7.1	
HZB12-95FA	71.2	52.4	42.0	35.2	30.3	26.7	23.8	19.9	16.9	10.8	9.2	
HZB12-100FA	73.6	52.8	41.9	35.1	30.3	26.8	24.0	20.1	17.1	11.0	9.3	
HZB12-125FA	100	74.7	59.6	51.8	42.0	36.8	34.4	28.6	24.5	15.9	13.5	
HZB12-150FA	102	73.7	58.7	49.4	42.8	37.9	33.8	28.3	24.2	15.2	12.8	
HZB12-180FA	128	91.9	73.2	60.9	52.7	46.6	41.7	34.9	29.8	18.7	15.8	

Battery Model	Time in Minutes - Watts per cell to 1.80 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	278	221	188	162	142	126	112	102	93.0	73.8	53.3
HZB12-80FA	404	311	260	225	198	177	160	147	136	109	79.0
HZB12-95FA	444	367	310	270	236	207	184	167	152	122	90.7
HZB12-100FA	499	394	330	286	251	224	203	185	169	134	95
HZB12-125FA	598	455	396	345	298	264	239	221	205	170	128
HZB12-150FA	680	548	460	393	343	307	277	253	232	185	134
HZB12-180FA	841	674	558	474	416	375	340	314	290	233	169

Battery Model	Time in Hours Watts per cell to 1.80 VPC											
	2	3	4	5	6	7	8	10	12	20	24	
HZB12-55FA	42.4	30.4	23.9	19.8	16.9	14.8	13.1	10.8	9.2	5.8	4.9	
HZB12-80FA	62.0	44.1	34.5	28.4	24.3	21.2	18.7	15.5	13.2	8.4	7.2	
HZB12-95FA	73.3	53.6	43.0	36.0	31.0	27.4	24.4	20.3	17.3	11.0	9.3	
HZB12-100FA	76.0	54.4	43.1	36.0	31.2	27.5	24.5	20.6	17.5	11.2	9.5	
HZB12-125FA	104	76.8	61.1	53.2	42.8	39.5	35.1	29.2	25.0	16.1	13.8	
HZB12-150FA	106	76.3	61.2	51.2	44.3	39.1	35.0	29.2	25.0	15.9	13.4	
HZB12-180FA	134	96.5	75.9	63.1	54.4	48.0	42.9	36.0	30.7	19.3	16.3	

Battery Model	Time in Minutes - Watts per cell to 1.75 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	296	229	194	165	144	128	114	103	93.9	74.6	53.9
HZB12-80FA	431	323	271	232	203	182	164	150	138	111	80.0
HZB12-95FA	479	393	325	279	242	213	189	171	156	124	92.1
HZB12-100FA	532	411	343	295	257	230	207	188	172	136	97
HZB12-125FA	645	503	423	359	309	274	247	227	209	173	130
HZB12-150FA	732	575	478	404	353	313	283	258	237	189	137
HZB12-180FA	897	707	588	499	436	390	352	323	297	239	173

Battery Model	Time in Hours Watts per cell to 1.75 VPC											
	2	3	4	5	6	7	8	10	12	20	24	
HZB12-55FA	42.9	30.6	24.1	19.9	17.0	14.9	13.2	10.9	9.2	5.8	4.9	
HZB12-80FA	62.8	44.5	34.9	28.7	24.4	21.3	18.9	15.6	13.3	8.5	7.2	
HZB12-95FA	74.5	54.5	43.5	36.4	31.5	27.8	24.8	20.6	17.6	11.2	9.5	
HZB12-100FA	77.3	55.2	43.8	36.4	31.5	27.9	24.9	20.7	17.6	11.4	9.6	
HZB12-125FA	105	77.5	61.8	53.7	43.4	40.1	35.6	29.6	25.3	16.3	13.9	
HZB12-150FA	108	77.8	62.0	51.9	44.8	39.6	35.4	29.5	25.2	16.0	13.5	
HZB12-180FA	137	98.2	77.1	64.0	55.2	48.7	43.5	36.5	31.1	19.6	16.5	

Battery Model	Time in Minutes - Watts per cell to 1.70 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZB12-55FA	315	236	198	167	145	129	115	104	94.7	75.4	54.4
HZB12-80FA	458	338	278	236	206	184	166	151	139	112	80.7
HZB12-95FA	509	417	337	288	247	217	192	174	158	126	93
HZB12-100FA	566	424	352	301	262	233	209	190	173	137	98
HZB12-125FA	684	533	435	365	314	277	250	228	211	175	131
HZB12-150FA	779	596	492	415	360	320	288	262	240	191	138
HZB12-180FA	955	738	606	512	445	398	359	329	302	242	175

Battery Model	Time in Hours Watts per cell to 1.70 VPC											
	2	3	4	5	6	7	8	10	12	20	24	
HZB12-55FA	43.2	30.8	24.2	20.1	17.1	15.0	13.2	10.9	9.3	5.9	4.9	
HZB12-80FA	63.4	44.8	35.1	28.9	24.6	21.5	19.0	15.7	13.4	8.5	7.3	
HZB12-95FA	75.3	55.1	44.0	36.8	31.8	28.1	25.0	20.7	17.7	11.3	9.6	
HZB12-100FA	77.9	55.7	44.2	36.9	31.8	28.1	25.1	20.9	17.7	11.4	9.7	
HZB12-125FA	106	78.1	62.3	54.1	43.6	40.4	35.8	29.8	25.5	16.4	13.9	
HZB12-150FA	109	78.4	62.4	52.3	45.2	39.9	35.7	29.7	25.4	16.1	13.6	
HZB12-180FA	138	98.8	77.8	64.5	55.7	49.0	43.8	36.7	31.3	19.7	16.7	

Time in Minutes - Watts per cell to 1.65 VPC												
5	10	15	20	25	30	35	40	45	60	90	120	180
325	242	202	170	148	130	116	105	95.6	75.9	54.7	43.4	31.0
472	346	284	240	209	186	167	153	140	113	81.4	63.8	45.2
524	424	345	292	251	219	194	175	159	128	93.8	75.8	55.4
591	438	360	305	265	235	210	192	174	138	98.4	78.4	56.0
726	555	443	368	316	279	251	230	213	176	131	106	78.1
802	613	502	421	365	323	290	265	242	193	139	110	79.0
983	754	614	518	449	401	362	332	305	244	176	139	99.3

Battery Model	Time in Minutes - Watts per cell to 1.60 VPC												
	5	10	15	20	25	30	35	40	45	60	90	120	180
HZB12-55FA	344	249	206	172	149	131	117	106	96	76.2	55.0	43.5	31.1
HZB12-80FA	499	354	289	242	210	187	169	154	141	114	81.8	64.0	45.4
HZB12-95FA	555	440	350	296	254	222	196	177	160	128	94.4	76.3	55.7
HZB12-100FA	617	450	367	309	267	237	212	193	176	139	99.0	79.0	56.3
HZB12-125FA	755	568	448	369	317	280	252	232	214	177	132	106	78.5
HZB12-150FA	849	632	511	426	369	326	292	267	244	194	140	110	79.7
HZB12-180FA	1020	766	624	524	454	405	365	334	308	245	176	140	99.7

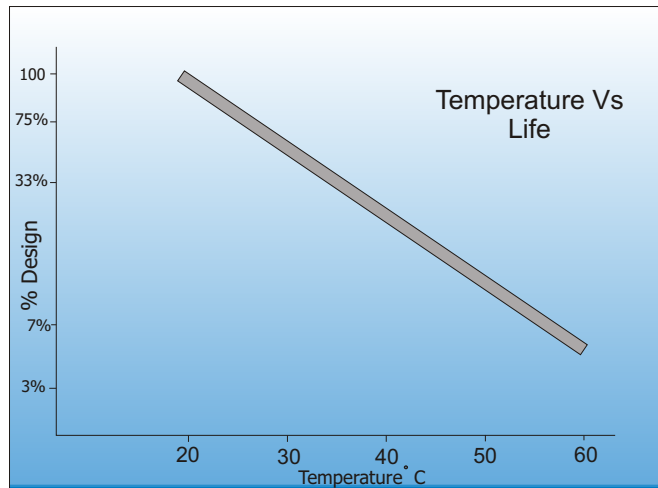
Battery Model	Time in Minutes - Watts per cell to 1.85 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	204	172	151	134	121	110	100	91.1	83.1	65.7	46.7
HZY12-70FA	305	259	235	206	185	167	150	136	125	99	70.7
HZY12-90FA	360	307	281	247	221	201	185	171	157	125	88.3
HZY12-100FA	389	315	285	254	227	208	189	173	159	127	89.1
HZY12-125FA	476	361	315	278	245	221	203	190	180	153	117
HZY12-150FA	524	428	386	334	297	268	244	226	210	170	122
HZY12-170FA	656	533	442	376	331	298	270	250	232	195	143

Battery Model	Time in Hours Watts per cell to 1.85 VPC											
	2	3	4	5	6	7	8	10	12	20	24	
HZY12-50FA	36.8	26.5	21.0	17.6	15.1	13.4	11.9	10.0	8.5	5.4	4.6	
HZY12-70FA	55.7	39.6	31.3	26.2	22.7	20.0	17.9	14.9	12.8	8.2	6.9	
HZY12-90FA	69.0	49.2	39.1	32.7	28.3	25.0	22.5	18.8	16.1	10.3	8.7	
HZY12-100FA	70.0	50.0	39.8	33.3	28.8	25.5	22.7	19.0	16.3	10.5	8.8	
HZY12-125FA	95.9	72.4	58.4	48.7	41.9	36.8	32.8	27.5	23.7	15.6	13.4	
HZY12-150FA	96.7	70.4	56.4	47.4	41.4	36.9	33.1	27.8	23.8	15.1	12.7	
HZY12-170FA	114	82.6	65.0	54.0	46.7	41.4	36.7	30.6	26.1	16.5	13.9	

Battery Model	Time in Minutes - Watts per cell to 1.80 VPC										
	5	10	15	20	25	30	35	40	45	60	90
HZY12-50FA	235	186	160	141	125	113	102	93.0	84.7	66.8	47.4
HZY12-70FA	353	293	249	214	192	172	153	139	127	101	71.7
HZY12-90FA	416	364	309	265	233	212	192	176	161	128	90.0
HZY12-100FA	449	373	317	273	242	220	198	180	165	130	91.4
HZY12-125FA	516	392	342	301	262	237	216	202	190	161	121
HZY12-150FA	606	508	426	361	314	282	256	237	219	175	126
HZY12-170FA	757	606	502	427	375	337	306	282	261	210	152

Battery Model	Qty Per Box	Dimensions (mm) & weight (kg)				Dimensions (Inches) & weight (Lbs)				Terminal Layout	Internal Resistance mOhms	Maximum Charge Current
		Length	Width	Height	Weight	Length	Width	Height	Weight			
HZB12-55FA	1	277	105	223	18.9	10.91	4.13	8.78	41.8	M6	4.5	15
HZB12-80FA	1	563	114	182	26.2	22.17	4.49	7.17	57.9	M6	4.1	20
HZB12-100-2FA	1	507	109	227	30.8	19.96	4.29	8.94	68.1	M6	3.7	25
HZB12-100FA	1	395	110	285	35.0	15.55	4.33	11.22	77.4	M6	3.5	30
HZB12-125FA	1	417	172	240	46.3	16.42	6.77	9.45	102.3	M6	3.4	35
HZB12-150FA	1	550	109	288	49.7	21.65	4.29	11.34	109.8	M6	3.2	40
HZB12-180FA	1	560	125	320	60.5	22.05	4.92	12.60	133.7	M8	3.1	45
HZY12-50FA	1	277	105	223	17.6	10.91	4.13	8.78	38.9	M6	4.5	15
HZY12-70FA	1	563	114	182	27.5	22.17	4.49	7.17	60.8	M6	4.1	20
HZY12-90FA	1	507	109	227	32.2	19.96	4.29	8.94	71.2	M6	3.7	25
HZY12-100FA	1	395	110	285	35.1	15.55	4.33	11.22	77.6	M6	3.4	30
HZY12-125FA	1	417	172	240	46.5	16.42	6.77	9.45	102.8	M6	3.3	35
HZY12-150FA	1	550	109	288	48.5	21.65	4.29	11.34	107.2	M6	3.1	40
HZY12-170FA	1	560	125	320	60.0	22.05	4.92	12.60	132.6	M8	2.9	45

The graph shows extrapolated Service Life condition for Apollo batteries at different ambient temperatures. Clearly higher ambient temperatures will reduce service life.



Physical

Temperature	Shelf Life
0 °C - 20 °C (32 °F - 68 °F)	12 Months
21 °C - 30 °C (69 °F - 86 °F)	9 Months
31 °C - 40 °C (87 °F - 104 °F)	5 Months
41 °C - 50 °C (105 °F - 1122 °F)	2.5 Months

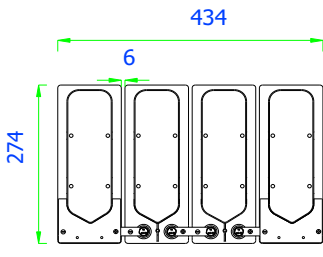
Operating Temperature	Recommended Applied Float Voltage VPC
0-9	2.33 - 2.35
10-14	2.30 - 2.33
15-19	2.27 - 2.30
20-24	2.27 - 2.30
25-29	2.25 - 2.27
30-34	2.23 - 2.25
35-40	2.21 - 2.23

CHARGING CHARACTERISTICS

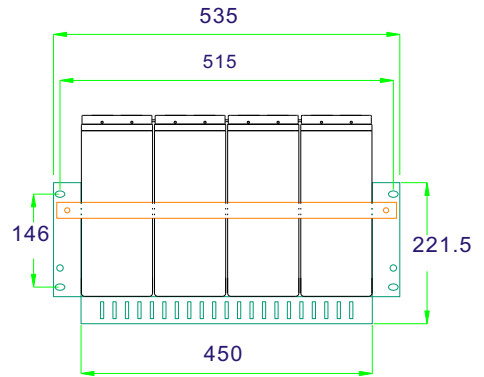
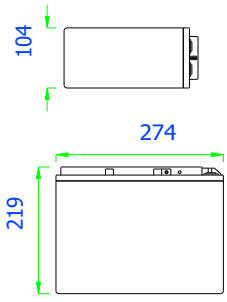
Floating - The optimum float voltage for a battery is temperature dependant, at 15 - 24°C the recommended value is 2.27 - 2.30V. It is recommended that battery installation sites are temperature controlled, however float voltage can be increased or decreased to compensate for temperature variations. Adjustment is calculated at +/- 3 mV per degree C.

The most suitable charging method for battery life and performance is the constant voltage method with a limited initial current, usually limited to a maximum of $C_{20}/4$.

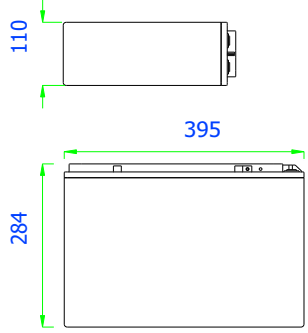
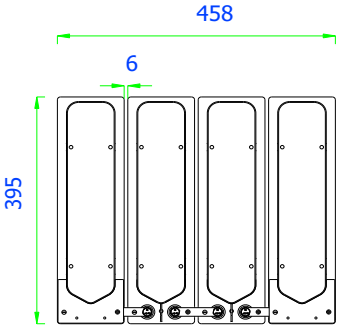




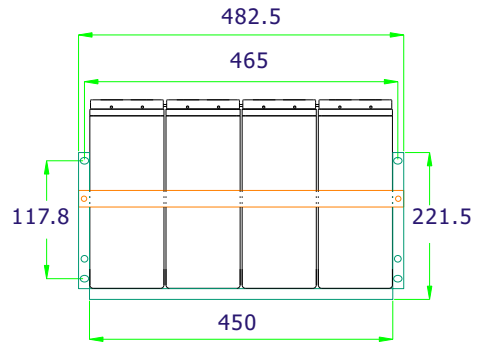
12 50 Front Access



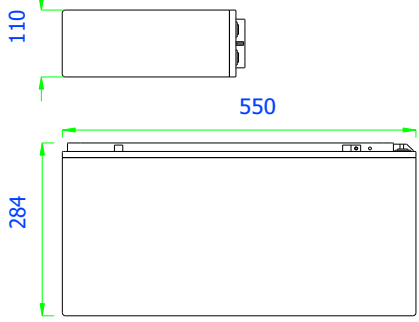
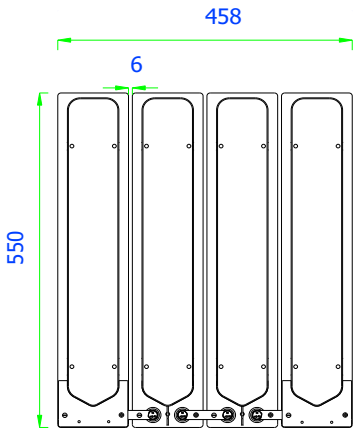
300mm Deep ETSI tray



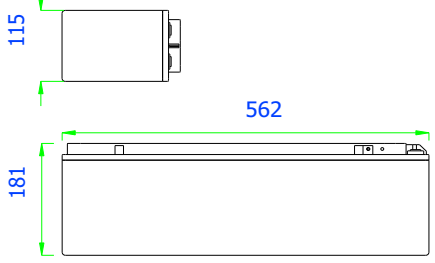
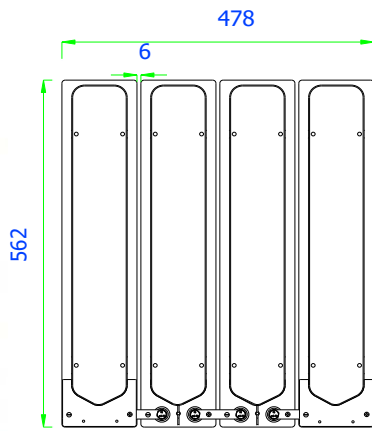
12 100 Front Access



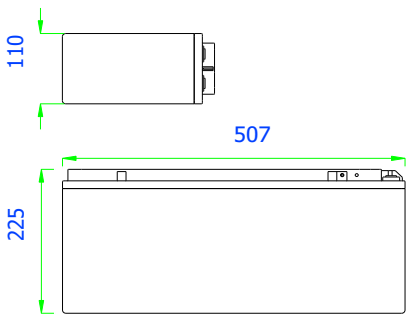
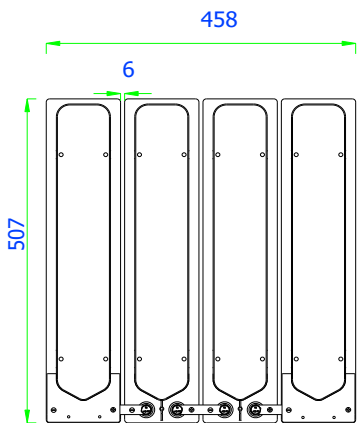
300mm deep 19 inch tray



12 150 Front Access



12 70 Front Access

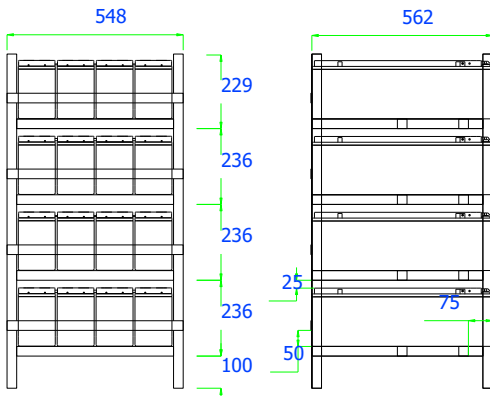


12 90 Front Access

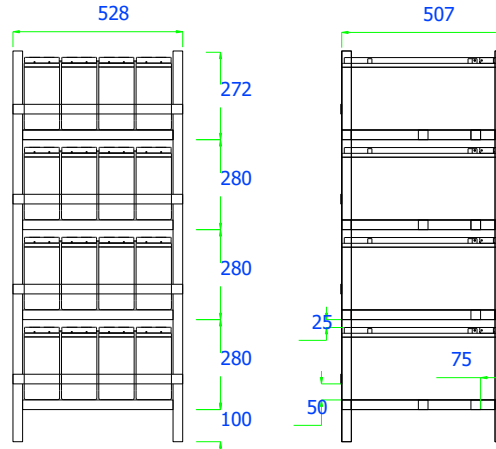
Central Gassing - Apollo produce all models with an integral central gassing system. This system is a useful feature when batteries are installed in an IP66 cabinet. Sealed enclosures prevent any escaping gas from exiting, central gassing however allows a tube carrying the emissions to pass through a seal to atmosphere.



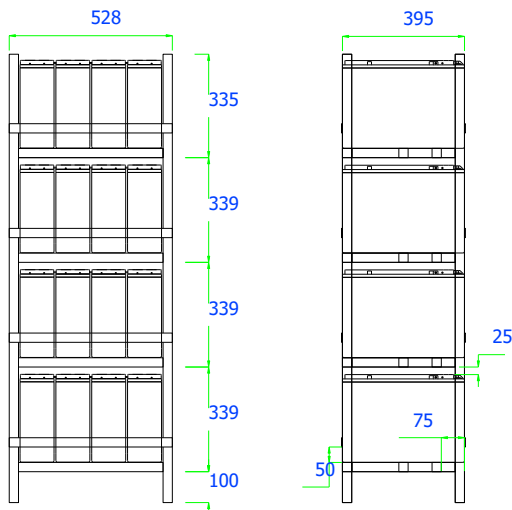
A 90 degree angle bracket can be provided for the end cell terminal connection



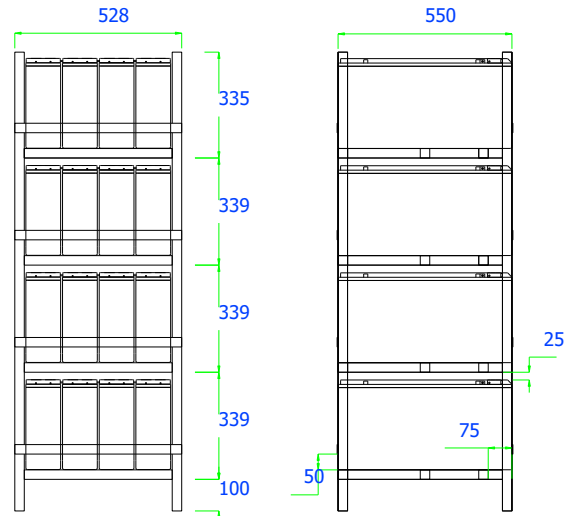
12V 70 FA



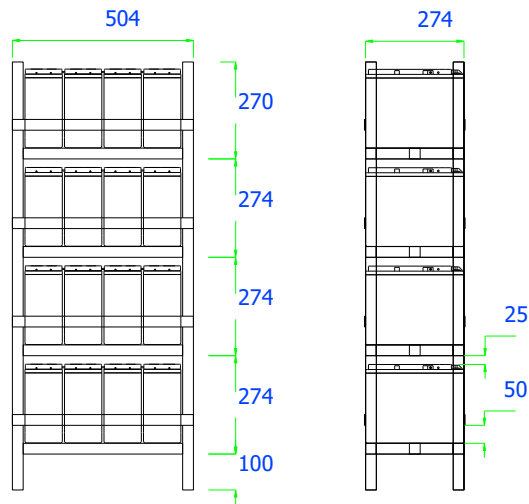
12V 90 FA



12V 100 FA



12V 150 FA



12V 50 FA

Typical Rack

Apollo

As can be seen from the rack diagrams, the Apollo Front Access range are compatible with ETSI and standard 19" and 23" rack configurations, only the HZB/HZY 12 70FA can not be used in the standard ETSI and 19" formats. 300mm or 600mm deep trays can be utilised.

Other racking configurations can be tailored to meet the customers needs for a new installation or indeed to replace an existing arrangement utilising the same footprint.

The Front Access design allows racking clearances to be reduced whilst still allowing easy access for intercell connection and terminal inspectio, all resulting in time and cost savings.

With reduced space requirements the designer has the option of smaller cabinets or more power from the same foot print.

THE LION GROUP is the distributor of **Apollo Batteries** in Australia.

The Lion Group has established a reputation for quality and service second to none in the battery industry. The customer service is provided from warehouse facilities maintained in Sydney, Melbourne, and Brisbane.

The Lion Group utilizes proven technology, coupled with a philosophy of continuous improvement to deliver products sourced via supply alliances from some of the worlds best battery manufacturers (Automotive and Industrial) to meet and exceed customer expectations.

HCB Standby Technologies Pty Ltd

is a member of the Lion Group of battery companies, and is an independent and specialist supplier of quality Standby battery technologies for industrial applications (vented and sealed technologies using both Lead Acid and NiCad).

HCB Standby Technologies objective is to provide cost effective battery solutions (products and services) in accordance with the precise outcomes sought by its client portfolio.

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VRLA Product Range

4, 6 & 12 Volt AGM 1.3 to 230AH
6 & 12 Volt Gel 7.5 to 230AH
12 Volt Front Access AGM
12 Volt Front Access Gel
2 Volt AGM & Gel 50 to 3850AH