

# FRONT ACCESS GEL



**HAZE**

Haze Battery Company Ltd

The Haze Front Access - GEL range covers Ah capacities from 30Ah to 180Ah (C<sub>10</sub>) with dimensions suitable for racking systems for maximum space utilisation. Specially designed racks and cabinets are available with cables and connectors to suit. GEL is especially suited for non-premium sites with medium to frequent outage rates and non-climate controlled environments, for less extreme temperature variations and reduced cyclic demands please consult the Haze Front Access - AGM range. Haze facilities are fully accredited to ISO 14001 and the management system fully accredited to ISO 9001.



**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
- Low self discharge rates

### 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	Microporous polymer Gel separator
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. 2.45 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 (4 hr rate)



End of Discharge Voltage = 1.85										DISCHARGE CURRENT in A							20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	81.3	71.1	63.8	57.9	52.5	48.0	44.0	34.8	24.5	19.0	13.4	10.5	8.73	7.55	6.67	5.92	4.94	4.21	2.67	2.25
HZY12-70FA	122	107	96.0	86.2	77.1	70.0	63.5	50.3	36.2	28.5	20.2	16.0	13.3	11.5	10.1	9.07	7.53	6.44	4.11	3.47
HZY12-90FA	149	132	119	108	97.8	90.2	82.7	65.3	45.7	35.6	25.2	19.9	16.6	14.4	12.7	11.4	9.49	8.11	5.19	4.38
HZY12-100FA	141	127	113	105	96.6	89.6	82.4	65.5	46.4	36.0	25.4	20.1	16.8	14.6	12.9	11.5	9.60	8.22	5.27	4.43
HZY12-125FA	156	136	121	109	99.1	91.1	84.7	69.7	52.7	43.4	32.8	27.0	23.3	20.4	18.3	16.5	14.0	12.1	7.83	6.66
HZY12-150FA	205	178	156	139	128	118	110	89.3	64.1	50.1	35.6	28.3	23.9	20.8	18.5	16.6	14.0	11.9	7.55	6.36
HZY12-170FA	217	189	168	151	138	129	121	101	74.9	59.5	42.6	33.6	28.2	24.4	21.5	19.2	16.0	13.7	8.50	7.15

End of Discharge Voltage = 1.80										DISCHARGE CURRENT in A							20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	88.1	75.4	67.3	60.5	54.7	49.8	45.4	35.8	25.0	19.4	13.6	10.8	8.98	7.75	6.83	6.09	5.04	4.30	2.73	2.31
HZY12-70FA	129	113	100	88.7	79.0	71.5	65.0	51.5	37.0	29.2	20.7	16.4	13.7	11.8	10.4	9.29	7.72	6.58	4.20	3.55
HZY12-90FA	161	140	124	113	101	93.2	85.3	67.0	47.0	36.6	26.0	20.5	17.1	14.8	13.1	11.7	9.77	8.35	5.31	4.48
HZY12-100FA	170	145	127	114	104	95.3	87.1	68.4	48.0	37.3	26.3	20.7	17.3	15.0	13.2	11.8	9.81	8.38	5.38	4.54
HZY12-125FA	181	155	136	122	112	102	94.7	77.1	57.4	46.7	34.8	28.3	24.2	21.2	18.9	17.0	14.4	12.4	8.00	6.83
HZY12-150FA	231	194	169	149	135	125	115	92.9	66.5	52.0	37.0	29.4	24.7	21.5	19.1	17.2	14.4	12.3	7.78	6.55
HZY12-170FA	253	218	193	175	158	145	135	108	78.8	61.7	44.1	34.8	29.0	25.0	22.1	19.7	16.4	14.0	8.71	7.35

End of Discharge Voltage = 1.75										DISCHARGE CURRENT in A							20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	91.4	77.8	69.1	62.1	55.8	50.7	46.1	36.1	25.2	19.5	13.8	10.8	9.04	7.80	6.90	6.13	5.10	4.34	2.76	2.33
HZY12-70FA	133	116	101	90.0	80.1	72.4	65.8	52.1	37.4	29.6	21.0	16.5	13.8	11.9	10.5	9.40	7.85	6.70	4.27	3.61
HZY12-90FA	166	143	126	114	103	94.2	86.1	67.7	47.4	36.8	26.2	20.7	17.3	15.0	13.2	11.8	9.88	8.43	5.37	4.53
HZY12-100FA	178	151	132	118	107	97.3	88.5	69.2	48.5	37.7	26.5	20.9	17.5	15.1	13.4	11.9	10.0	8.48	5.45	4.59
HZY12-125FA	196	167	146	130	118	109	101	80.5	59.5	48.1	35.6	28.9	24.6	21.5	19.1	17.3	14.6	12.5	8.06	6.88
HZY12-150FA	239	200	173	153	139	128	117	94.3	67.3	52.6	37.5	29.8	25.0	21.8	19.3	17.3	14.6	12.5	7.85	6.61
HZY12-170FA	269	232	205	183	166	152	141	112	81.5	63.7	45.2	35.5	29.5	25.4	22.4	20.0	16.7	14.2	8.88	7.48

End of Discharge Voltage = 1.70										DISCHARGE CURRENT in A							20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	94.7	80.2	70.7	63.1	56.6	51.3	46.6	36.3	25.3	19.6	13.8	10.9	9.10	7.84	6.92	6.17	5.13	4.38	2.78	2.36
HZY12-70FA	137	118	103	91.3	81.0	73.2	66.4	52.6	37.7	29.8	21.2	16.6	13.9	12.0	10.6	9.47	7.91	6.76	4.30	3.63
HZY12-90FA	169	146	128	116	104	95.0	86.9	68.1	47.7	37.0	26.3	20.8	17.4	15.1	13.3	11.9	9.94	8.50	5.41	4.56
HZY12-100FA	184	156	136	121	109	98.5	89.1	69.7	48.7	37.9	26.6	21.0	17.6	15.2	13.4	12.0	10.0	8.55	5.49	4.65
HZY12-125FA	204	173	151	134	121	112	103	83.0	60.7	49.0	36.3	29.4	25.0	21.8	19.4	17.5	14.7	12.7	8.14	6.93
HZY12-150FA	248	207	178	156	141	130	119	95.3	67.7	53.0	37.7	29.9	25.1	21.9	19.5	17.5	14.7	12.6	7.92	6.66
HZY12-170FA	280	239	210	187	170	156	143	115	82.2	64.3	45.6	35.8	29.8	25.7	22.6	20.2	16.9	14.4	9.00	7.60

End of Discharge Voltage = 1.65										DISCHARGE CURRENT in A							20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	95.9	80.9	71.2	63.8	57.1	51.7	46.9	36.6	25.4	19.7	13.9	10.9	-	-	-	-	-	-	-	-
HZY12-70FA	140	120	105	92.2	81.6	73.8	67.0	52.8	37.9	30.0	21.3	16.7	-	-	-	-	-	-	-	-
HZY12-90FA	172	149	130	118	105	95.7	87.6	68.4	47.9	37.2	26.4	20.9	-	-	-	-	-	-	-	-
HZY12-100FA	187	157	139	123	110	99.3	89.8	70.1	49.0	38.0	26.7	21.1	-	-	-	-	-	-	-	-
HZY12-125FA	208	176	152	135	123	113	105	84.6	62.0	50.0	36.8	29.9	-	-	-	-	-	-	-	-
HZY12-150FA	251	208	178	157	143	131	120	95.7	68.1	53.2	37.8	30.1	-	-	-	-	-	-	-	-
HZY12-170FA	288	245	215	192	174	159	146	116	83.0	64.5	45.8	36.0	-	-	-	-	-	-	-	-

**IMPORTANT NOTE:** GEL batteries do not deliver full capacity on the first cycle, in fact they take approx. 15 to 20 cycles to reach full capacity. This reduced initial capacity effect is due to the extremely durable crystal structure employed in the Haze GEL range. The capacity quoted in this catalogue is full capacity.

End of Discharge Voltage = 1.60									DISCHARGE CURRENT in A								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	98.3	82.3	72.3	64.4	57.5	52.0	47.1	36.7	25.5	19.7	13.9	11.0	-	-	-	-	-	-	-	-
HZY12-70FA	144	122	106	93.1	82.2	74.3	67.5	53.2	38.2	30.1	21.4	16.9	-	-	-	-	-	-	-	-
HZY12-90FA	175	151	132	119	106	96.9	88.3	68.9	48.1	37.3	26.5	20.9	-	-	-	-	-	-	-	-
HZY12-100FA	191	160	141	124	111	100	90.3	70.4	49.2	38.2	26.8	21.3	-	-	-	-	-	-	-	-
HZY12-125FA	211	177	154	136	123	113	105	85.4	62.6	50.6	37.3	30.2	-	-	-	-	-	-	-	-
HZY12-150FA	257	212	181	159	144	132	121	96.2	68.3	53.4	37.9	30.2	-	-	-	-	-	-	-	-
HZY12-170FA	295	250	218	194	176	160	147	117	83.5	64.9	46.1	36.1	-	-	-	-	-	-	-	-

**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.

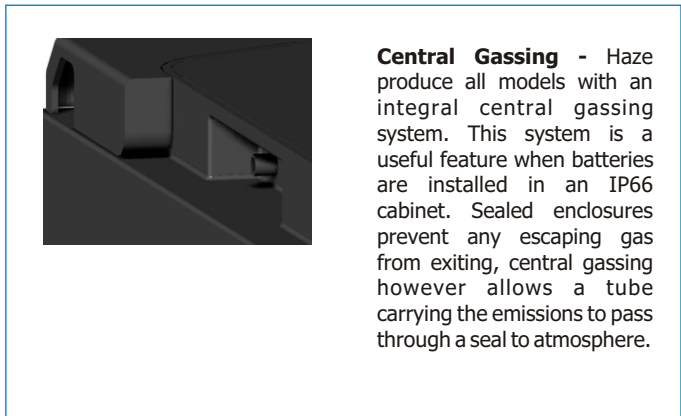
**Gel Technology** has a number of advantages over the equivalent AGM battery range, the main advantages for the Telecommunication applications are as follows:

- 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.

Disadvantages

- Reduced High rate performance
- Requires cycling to reach full capacity



**Central Gassing** - Haze 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.

End of Discharge Voltage = 1.85				DISCHARGE IN WATTS PER CELL													20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	151	134	121	110	100	91.1	83.1	65.7	46.7	36.8	26.5	21.0	17.6	15.1	13.4	11.9	10.0	8.54	5.42	4.59
HZY12-70FA	235	206	185	167	150	136	125	98.9	70.7	55.7	39.6	31.3	26.2	22.7	20.0	17.9	14.9	12.8	8.18	6.92
HZY12-90FA	281	247	221	201	185	171	157	125	88.3	69.0	49.2	39.1	32.7	28.3	25.0	22.5	18.8	16.1	10.3	8.73
HZY12-100FA	285	254	227	208	189	173	159	127	89.1	70.0	50.0	39.8	33.3	28.8	25.5	22.7	19.0	16.3	10.5	8.84
HZY12-125FA	315	278	245	221	203	190	180	153	117	95.9	72.4	58.4	48.7	41.9	36.8	32.8	27.5	23.7	15.6	13.4
HZY12-150FA	386	334	297	268	244	226	210	170	122	96.7	70.4	56.4	47.4	41.4	36.9	33.1	27.8	23.8	15.1	12.7
HZY12-170FA	442	376	331	298	270	250	232	192	143	114	82.3	65.0	54.0	46.7	41.1	36.7	30.6	26.1	16.5	13.9

End of Discharge Voltage = 1.80				DISCHARGE IN WATTS PER CELL													20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	160	141	125	113	102	93.0	84.7	66.8	47.4	37.5	26.9	21.4	17.8	15.4	13.6	12.1	10.1	8.67	5.52	4.67
HZY12-70FA	249	214	192	172	153	139	127	101	71.7	56.6	40.2	31.8	26.5	23.0	20.3	18.1	15.2	13.0	8.32	7.04
HZY12-90FA	309	265	233	212	192	176	161	128	90.0	70.4	50.4	39.9	33.4	29.0	25.7	23.0	19.3	16.5	10.5	8.89
HZY12-100FA	317	273	242	220	198	180	165	130	91.4	71.6	50.9	40.5	33.9	29.3	25.9	23.1	19.3	16.6	10.7	9.00
HZY12-125FA	342	301	263	237	216	202	190	161	121	99.4	74.5	60.0	50.0	42.8	37.5	33.5	28.1	24.2	15.8	13.6
HZY12-150FA	426	361	314	282	256	237	219	175	126	99.4	72.3	57.7	48.5	42.2	37.5	33.8	28.5	24.3	15.4	13.0
HZY12-170FA	502	427	375	337	304	280	257	208	152	120	86.9	68.6	56.8	48.9	43.2	38.6	32.3	27.6	17.2	14.6

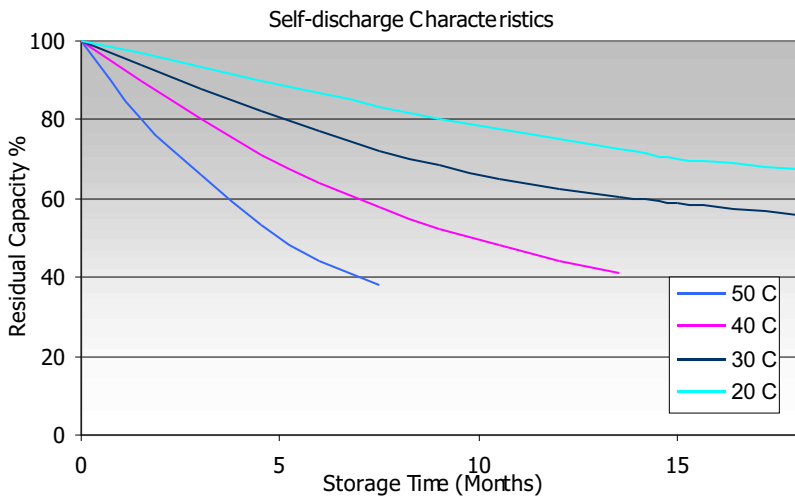
End of Discharge Voltage = 1.75				DISCHARGE IN WATTS PER CELL													20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	165	144	127	115	104	94.1	85.6	67.5	47.8	37.8	27.1	21.5	17.9	15.5	13.6	12.2	10.2	8.72	5.54	4.70
HZY12-70FA	256	219	196	174	155	141	128	101	72.2	57.0	40.5	32.0	26.8	23.1	20.5	18.3	15.4	13.1	8.41	7.12
HZY12-90FA	318	271	238	215	195	179	163	129	90.8	70.8	50.7	40.1	33.6	29.1	25.8	23.1	19.4	16.6	10.6	8.94
HZY12-100FA	326	279	247	223	201	184	168	132	92.4	72.1	51.3	40.7	34.0	29.5	26.1	23.3	19.5	16.7	10.7	9.05
HZY12-125FA	365	314	273	245	223	207	194	165	123	101	75.0	60.5	50.5	43.2	37.9	33.9	28.4	24.5	16.0	13.8
HZY12-150FA	439	370	321	287	261	241	222	177	127	100	72.9	58.1	48.8	42.4	37.8	34.0	28.6	24.5	15.5	13.0
HZY12-170FA	529	449	392	351	316	290	266	213	155	123	88.2	69.6	57.7	49.6	43.8	39.2	32.7	28.0	17.5	14.8

End of Discharge Voltage = 1.70				DISCHARGE IN WATTS PER CELL													20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	170	147	130	117	105	95.0	86.3	67.9	48.1	38.0	27.3	21.6	18.0	15.5	13.7	12.3	10.3	8.76	5.56	4.73
HZY12-70FA	263	224	200	176	156	142	129	102	72.5	57.1	40.6	32.1	26.8	23.2	20.6	18.4	15.4	13.2	8.47	7.15
HZY12-90FA	325	275	241	218	197	180	164	129	91.3	71.0	50.9	40.4	33.8	29.3	26.0	23.3	19.4	16.7	10.6	8.94
HZY12-100FA	335	286	253	228	204	186	169	133	92.9	72.7	51.6	40.9	34.2	29.6	26.2	23.4	19.6	16.7	10.8	9.13
HZY12-125FA	375	319	278	248	226	209	196	166	124	101	75.6	61.0	50.8	43.6	38.1	34.1	28.6	24.6	16.1	13.8
HZY12-150FA	451	378	326	292	264	243	223	178	128	101	73.3	58.5	48.9	42.6	37.9	34.2	28.8	24.6	15.5	13.1
HZY12-170FA	545	461	400	358	323	295	270	216	157	124	89.0	70.2	58.1	50.0	44.1	39.4	33.0	28.2	17.7	14.9

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End of Discharge Voltage = 1.65								DISCHARGE IN WATTS PER CELL								20 - 25 °C				
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	174	149	132	118	105	95.4	86.9	68.5	48.5	38.3	27.4	21.8	-	-	-	-	-	-	-	-
HZY12-70FA	266	226	200	178	158	143	130	102	72.6	57.2	40.7	32.2	-	-	-	-	-	-	-	-
HZY12-90FA	330	278	243	219	198	180	165	130	91.8	71.4	51.0	40.6	-	-	-	-	-	-	-	-
HZY12-100FA	338	287	254	229	206	187	170	133	93.3	72.9	51.9	41.0	-	-	-	-	-	-	-	-
HZY12-125FA	383	322	279	249	227	211	198	166	124	102	75.8	61.2	-	-	-	-	-	-	-	-
HZY12-150FA	455	380	331	295	266	245	225	179	128	101	73.8	58.9	-	-	-	-	-	-	-	-
HZY12-170FA	553	466	404	361	326	298	273	218	158	125	89.6	70.5	-	-	-	-	-	-	-	-

End of Discharge Voltage = 1.60								DISCHARGE IN WATTS PER CELL								20 - 25 °C				
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	178	152	134	119	106	95.9	87.5	68.9	48.8	38.4	27.6	21.9	-	-	-	-	-	-	-	-
HZY12-70FA	272	229	202	179	159	143	130	102	72.9	57.4	40.9	32.3	-	-	-	-	-	-	-	-
HZY12-90FA	336	280	245	220	199	181	165	130	92.1	71.7	51.2	40.8	-	-	-	-	-	-	-	-
HZY12-100FA	346	292	258	231	207	188	171	134	93.5	73.1	52.0	41.3	-	-	-	-	-	-	-	-
HZY12-125FA	387	323	281	251	228	213	198	167	125	102	76.0	61.5	-	-	-	-	-	-	-	-
HZY12-150FA	466	386	334	297	269	247	226	180	129	102	74.2	59.4	-	-	-	-	-	-	-	-
HZY12-170FA	561	471	408	365	328	300	275	220	159	126	90.1	70.9	-	-	-	-	-	-	-	-



### 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

End of Discharge Voltage = 1.85									DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	20.3	23.7	26.6	28.9	30.8	32.0	33.0	34.8	36.7	37.9	40.2	42.1	43.7	45.3	46.7	47.6	49.4	50.5	53.4	54.1
HZY12-70FA	30.6	35.8	40.0	43.1	45.2	46.6	47.6	50.3	54.3	57.0	60.6	63.8	66.5	68.9	70.9	72.9	75.3	77.3	82.2	83.3
HZY12-90FA	37.3	44.1	49.4	53.3	57.3	60.1	62.0	65.3	68.6	71.1	75.5	79.5	82.9	86.3	88.9	91.3	94.9	97.4	104	105
HZY12-100FA	35.3	42.2	47.0	52.3	56.6	59.8	61.8	65.5	69.7	72.0	76.3	80.2	83.9	87.4	90.2	92.4	96.0	98.7	105	106
HZY12-125FA	39.1	45.2	50.3	54.7	57.8	60.7	63.5	69.7	79.1	86.8	98.5	108	116	123	128	132	140	145	157	160
HZY12-150FA	51.3	59.3	64.9	70.6	75.0	78.8	82.2	89.3	96.2	100	107	113	120	125	130	134	140	143	151	153
HZY12-170FA	54.3	63.0	70.1	75.5	81.1	85.9	90.4	101	112	119	128	135	141	146	151	155	160	164	170	172

End of Discharge Voltage = 1.80									DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	22.0	25.1	28.0	30.2	32.1	33.2	34.1	35.8	37.6	38.7	40.9	43.0	44.9	46.5	47.8	48.9	50.4	51.6	54.7	55.3
HZY12-70FA	32.3	37.6	41.6	44.4	46.3	47.6	48.7	51.5	55.5	58.4	62.2	65.5	68.4	70.8	73.0	74.7	77.2	78.9	84.0	85.2
HZY12-90FA	40.3	46.7	51.8	55.8	59.4	62.2	64.0	67.0	70.4	73.1	77.9	82.0	85.6	88.8	91.6	94.2	97.7	100	106	108
HZY12-100FA	42.4	48.5	53.1	57.2	61.0	63.6	65.3	68.4	72.0	74.6	78.8	82.9	86.5	89.7	92.4	94.7	98.1	101	108	109
HZY12-125FA	45.2	51.5	56.7	61.0	65.2	68.2	71.0	77.1	86.1	93.4	104	113	121	127	132	136	144	149	160	164
HZY12-150FA	57.7	64.8	70.2	75.7	79.2	83.2	86.3	92.9	100	104	111	118	124	129	134	138	144	148	156	157
HZY12-170FA	63.2	72.7	80.5	87.7	92.8	96.5	101	108	118	123	132	139	145	150	155	158	164	168	174	176

End of Discharge Voltage = 1.75									DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	22.8	25.9	28.8	31.0	32.7	33.8	34.6	36.1	37.8	39.0	41.3	43.3	45.2	46.8	48.3	49.3	51.0	52.1	55.2	56.0
HZY12-70FA	33.3	38.6	42.3	45.0	46.9	48.3	49.4	52.1	56.1	59.1	62.9	66.0	68.9	71.4	73.7	75.6	78.5	80.4	85.4	86.7
HZY12-90FA	41.4	47.8	52.7	56.6	60.1	62.8	64.6	67.7	71.1	73.7	78.5	82.7	86.5	89.7	92.6	95.1	98.8	101	107	109
HZY12-100FA	44.5	50.5	55.0	59.2	62.6	64.9	66.3	69.2	72.8	75.3	79.6	83.6	87.3	90.6	93.5	95.8	100	102	109	110
HZY12-125FA	49.0	55.6	60.7	65.0	68.9	72.6	75.4	80.5	89.2	96.2	107	116	123	129	134	138	146	150	161	165
HZY12-150FA	59.9	66.8	72.2	77.7	81.2	85.1	88.0	94.3	101	105	112	119	125	131	135	139	146	150	157	159
HZY12-170FA	67.2	77.4	85.2	91.7	97.2	102	106	112	122	127	136	142	147	153	157	161	167	171	178	180

End of Discharge Voltage = 1.70									DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr
HZY12-50FA	23.7	26.7	29.5	31.5	33.1	34.2	35.0	36.3	38.0	39.2	41.4	43.5	45.5	47.1	48.5	49.6	51.3	52.6	55.5	56.6
HZY12-70FA	34.2	39.5	43.0	45.6	47.5	48.8	49.8	52.6	56.6	59.6	63.5	66.5	69.3	72.0	74.2	76.1	79.1	81.1	85.9	87.2
HZY12-90FA	42.3	48.7	53.4	57.3	60.9	63.3	65.2	68.1	71.5	74.0	78.9	83.1	87.0	90.4	93.1	95.8	99.4	102	108	110
HZY12-100FA	46.1	52.0	56.7	60.4	63.7	65.7	66.9	69.7	73.1	75.7	79.9	84.1	87.9	91.2	94.1	96.5	100	103	110	112
HZY12-125FA	51.1	57.6	62.7	66.9	70.8	74.4	77.6	83.0	91.1	98.1	109	118	125	131	136	140	147	152	163	166
HZY12-150FA	62.0	68.9	74.1	79.0	82.9	86.4	89.2	95.3	102	106	113	120	126	131	136	141	147	151	158	160
HZY12-170FA	69.9	79.8	87.7	93.6	100	104	108	115	123	129	137	143	149	154	159	162	169	173	180	182

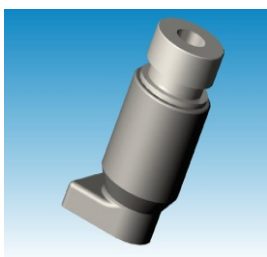
**IMPORTANT NOTE:** GEL batteries do not deliver full capacity on the first cycle, in fact they take approx. 15 to 20 cycles to reach full capacity. This reduced initial capacity effect is due to the extremely durable crystal structure employed in the Haze GEL range. The capacity quoted in this catalogue is full capacity.

End of Discharge Voltage = 1.65										DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr	
HZY12-50FA	24.0	27.0	29.7	31.9	33.5	34.4	35.2	36.6	38.2	39.3	41.6	43.7	-	-	-	-	-	-	-	-	
HZY12-70FA	35.0	40.1	43.6	46.1	47.8	49.2	50.3	52.8	56.9	60.0	63.9	67.0	-	-	-	-	-	-	-	-	
HZY12-90FA	43.1	49.5	54.3	58.2	61.5	63.8	65.7	68.4	71.9	74.5	79.1	83.4	-	-	-	-	-	-	-	-	
HZY12-100FA	46.6	52.5	57.7	61.4	64.3	66.2	67.4	70.1	73.5	76.1	80.2	84.6	-	-	-	-	-	-	-	-	
HZY12-125FA	52.0	58.5	63.5	67.7	71.5	75.2	78.6	84.6	93.0	100	110	119	-	-	-	-	-	-	-	-	
HZY12-150FA	62.8	69.4	74.4	79.7	83.7	87.2	90.0	95.7	102	106	113	120	-	-	-	-	-	-	-	-	
HZY12-170FA	72.0	81.8	89.6	95.8	102	106	109	116	124	129	138	144	-	-	-	-	-	-	-	-	

End of Discharge Voltage = 1.60										DISCHARGE CAPACITY Ah								20 - 25 °C			
Model	15'	20'	25'	30'	35'	40'	45'	1 hr	90'	2 hr	3 hr	4 hr	5 hr	6 hr	7 hr	8 hr	10 hr	12 hr	20 hr	24 hr	
HZY12-50FA	24.6	27.4	30.1	32.2	33.7	34.6	35.3	36.7	38.3	39.4	41.7	43.9	-	-	-	-	-	-	-	-	
HZY12-70FA	35.9	40.7	44.1	46.6	48.2	49.6	50.6	53.2	57.3	60.3	64.3	67.4	-	-	-	-	-	-	-	-	
HZY12-90FA	43.8	50.4	55.2	58.9	62.1	64.6	66.2	68.9	72.1	74.7	79.4	83.8	-	-	-	-	-	-	-	-	
HZY12-100FA	47.8	53.4	58.6	62.1	64.8	66.5	67.7	70.4	73.8	76.3	80.5	85.1	-	-	-	-	-	-	-	-	
HZY12-125FA	52.7	59.0	64.0	68.2	72.0	75.6	79.1	85.4	93.9	101	112	121	-	-	-	-	-	-	-	-	
HZY12-150FA	64.4	70.7	75.4	80.4	84.5	87.9	90.5	96.2	102	107	114	121	-	-	-	-	-	-	-	-	
HZY12-170FA	73.7	83.3	90.7	96.8	103	107	110	117	125	130	138	145	-	-	-	-	-	-	-	-	

**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).



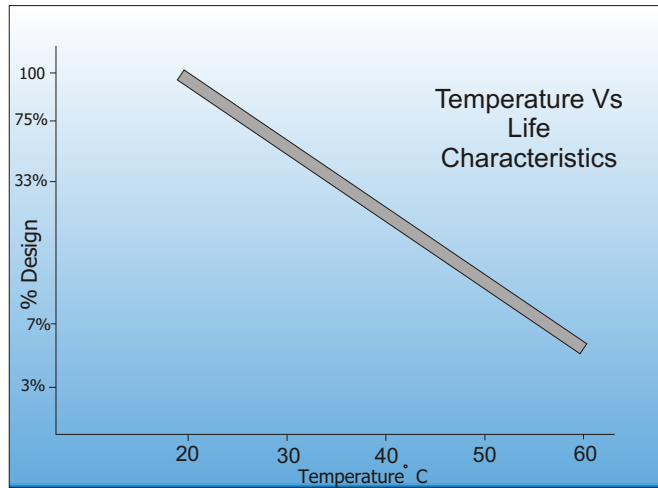
**TERMINAL CONSTRUCTION** - The contact quality between the insert terminal and the lead post is of vital importance during short duration / high Amp discharges. Elevated terminal temperatures are the result of poor contact, eventually causing seal degradation and electrolyte leaks. Haze design and assembly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



Capacity temperature correction Factor to be applied to Data at 20 Degrees C												
Discharge Time	-30 °C	-20 °C	-10 °C	0 °C	5 °C	10 °C	15 °C	20-25 °C	30 °C	35 °C	40 °C	50 °C
5 minutes to 59 minutes	3%	8%	48%	77%	84%	88%	92%	100%	105%	107%	108%	110%
1 Hour to 100 Hours	45%	65%	77%	90%	92%	93%	94%	100%	104%	106%	107%	108%

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			
HZY12-50FA	1	277	105	223	18.2	10.91	4.13	8.78	40.2	M6	4.5	15
HZY12-70FA	1	563	114	182	28.9	22.17	4.49	7.17	63.9	M6	4.1	20
HZY12-90FA	1	507	109	227	32.0	19.96	4.29	8.94	70.7	M6	3.7	25
HZY12-100FA	1	395	110	285	33.2	15.55	4.33	11.22	73.4	M6	3.4	30
HZY12-125FA	1	417	172	240	46.0	16.42	6.77	9.45	101.7	M6	3.3	35
HZY12-150FA	1	550	109	288	48.0	21.65	4.29	11.34	106.1	M6	3.1	40
HZY12-170FA	1	560	125	320	59.0	22.05	4.92	12.60	130.4	M8	2.9	45

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



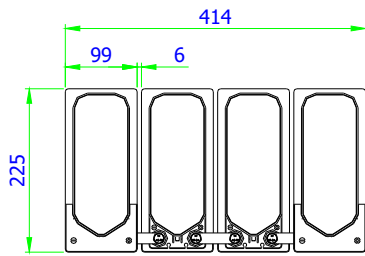
Temperature	Shelf Life
0 °C - 20 °C (32 °F - 68 °F)	12 Months
21 °C - 30 °C (69 °F - 86 °F)	9 Months
31 °C - 40 °C (87 °F - 104 °F)	5 Months
41 °C - 50 °C (105 °F - 1122 °F)	2.5 Months

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

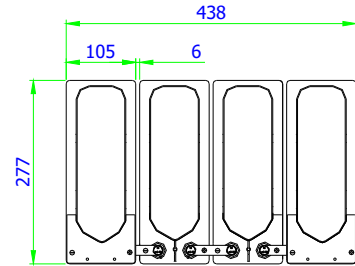
### CHARGING CHARACTERISTICS

**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.

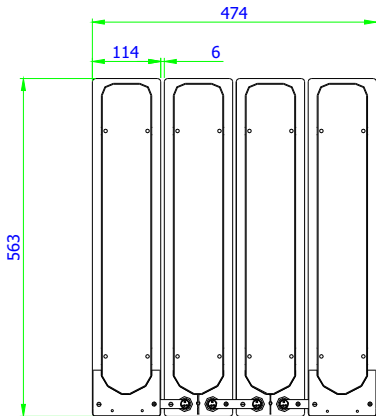
The most suitable charging method for battery life and performance is the constant voltage method with a limited initial current, usually limited to a maximum of  $C_{20}/4$ .



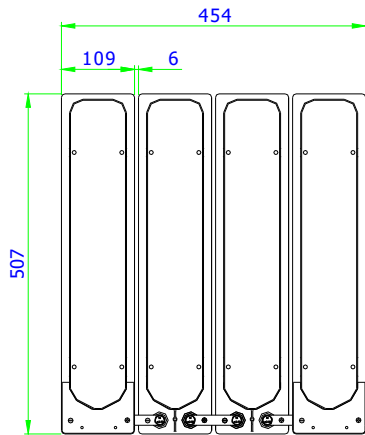
12-30&40 Front Access  
Battery Height: 225mm



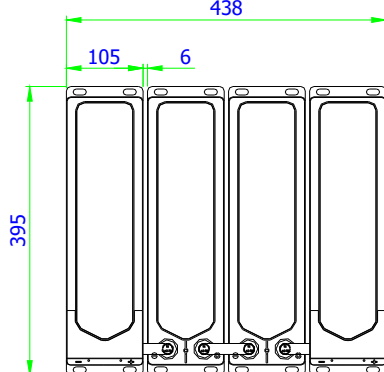
12-50&55 Front Access  
Battery Height: 223mm



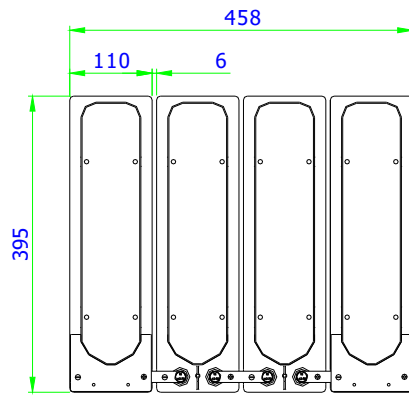
12-70&80 Front Access  
Battery Height: 182mm



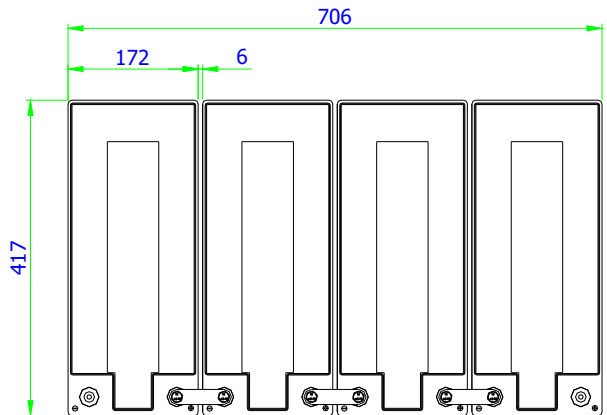
12-90&95 Front Access  
Battery Height: 227mm



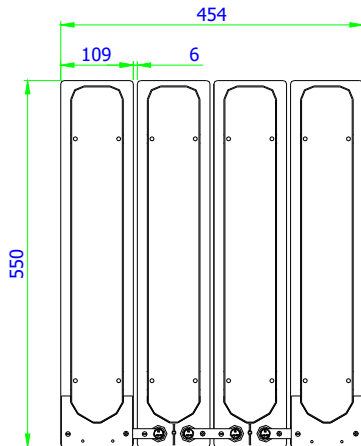
12-95-2 Front Access  
Battery Height: 257mm



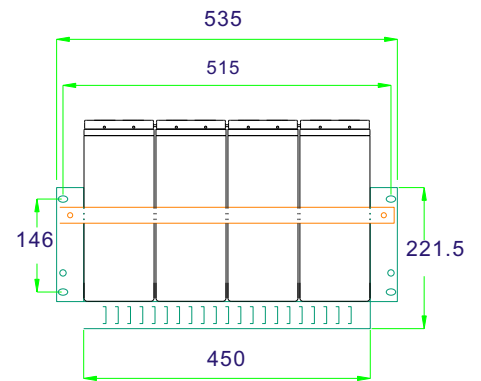
12-100 Front Access  
Battery Height: 285mm



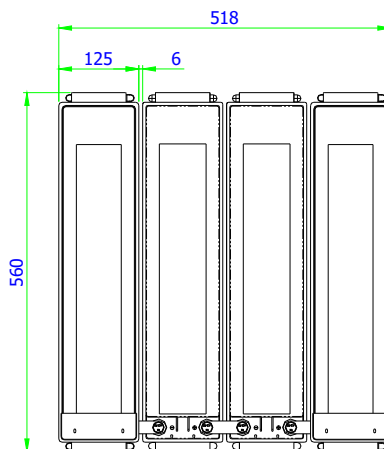
12-125 Front Access  
Battery Height: 240mm



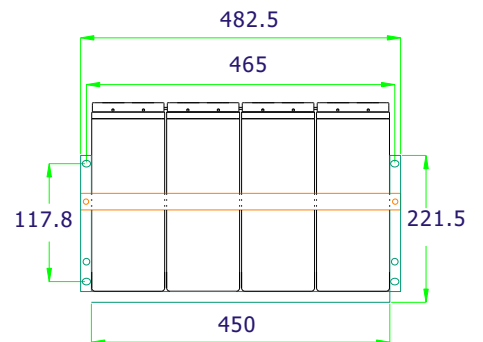
12-150 Front Access  
Battery Height: 285mm



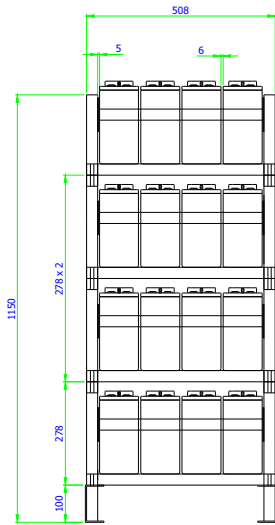
300mm Deep ETSI tray



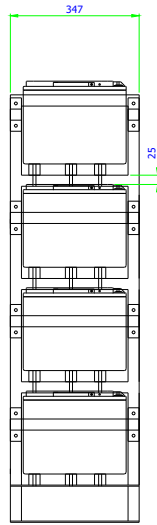
12-170&180 Front Access  
Battery Height: 320mm



300mm deep 19 inch tray

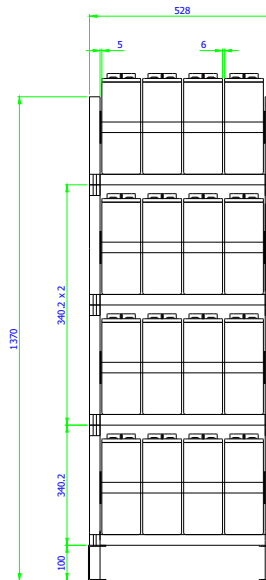


Front View

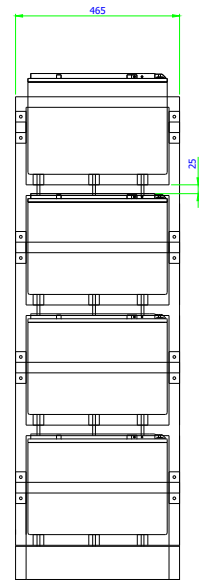


Side View

16 x 12V50FA&55FA Rack

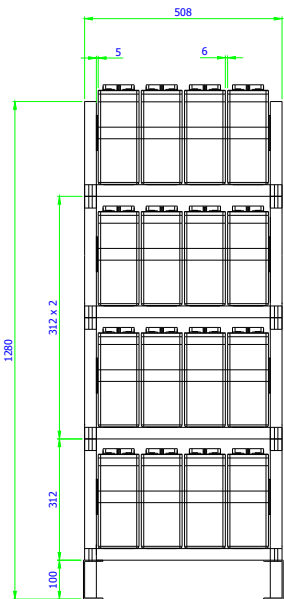


Front View

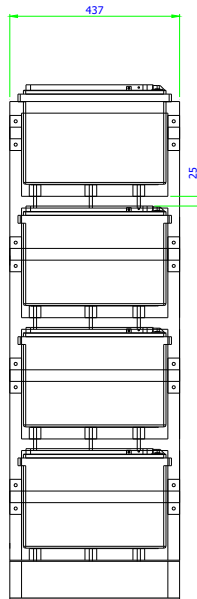


Side View

16 x 12V100FA Rack

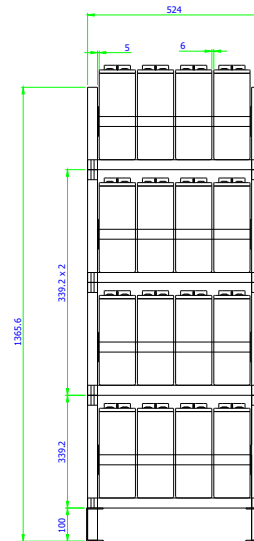


Front View

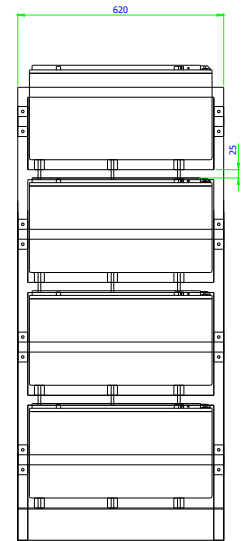


Side View

16 x 12V95FA-2 Rack

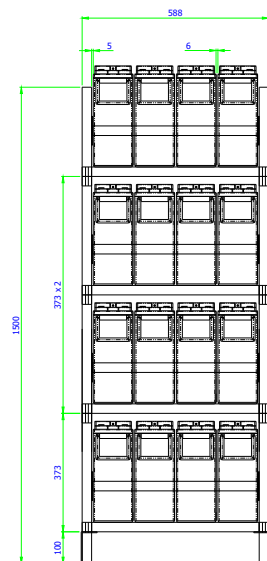


Front View

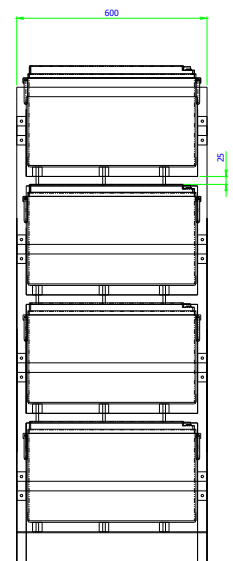


Side View

16 x 12V150FA Rack



Front View



Side View

16 x 12V170FA&180FA Rack

As can be seen from the rack diagrams, the Haze 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 inspection, 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 footprint.



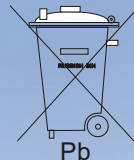
## Haze Battery Company Ltd

### 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  
EV Gel  
EV AGM  
Marine Gel  
Solar  
OPzV  
OPzS

Website: [www.hazebattery.com](http://www.hazebattery.com)  
E mail [sales@hazebattery.com](mailto:sales@hazebattery.com)

161209



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