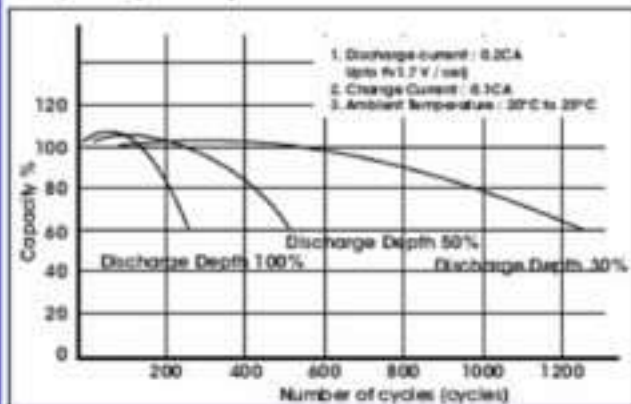


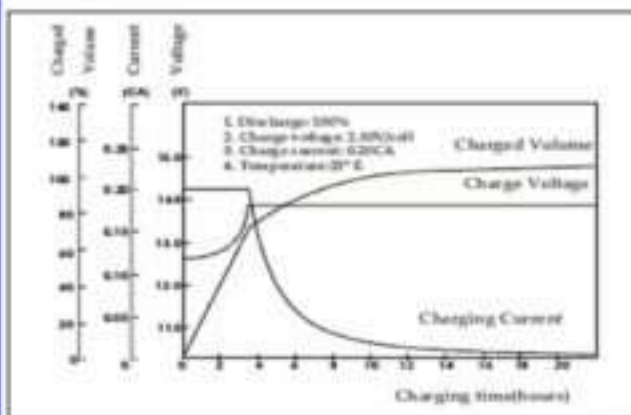
SPB 50 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		50 Ah
Dimension	Length (mm)	350
	Width (mm)	167
	Height (mm)	179
	Total Height (mm)	179
Approx. Weight		16.5 kg
Internal Resistance (Fully charged 25°C)		~6-8 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature Range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		12.0 A
Maximum Discharging Current (A)		400 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

♦ Cycle(25°C)



♦ Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	117.0	80.0	40.0	20.0	13.3	9.2	6.2	4.3	3.6	2.0
10.20 V	109.0	75.0	38.0	19.2	12.5	9.0	6.0	4.2	3.5	1.9
10.80 V	101.0	70.2	36.0	18.0	12.1	8.7	5.8	4.1	3.3	1.8

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	1228	878	448	240	153	108	76	50	42	23
10.20 V	1144	823	426	234	144	106	72	49	41	22
10.80 V	1060	770	403	223	139	101	69	48	40	21

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

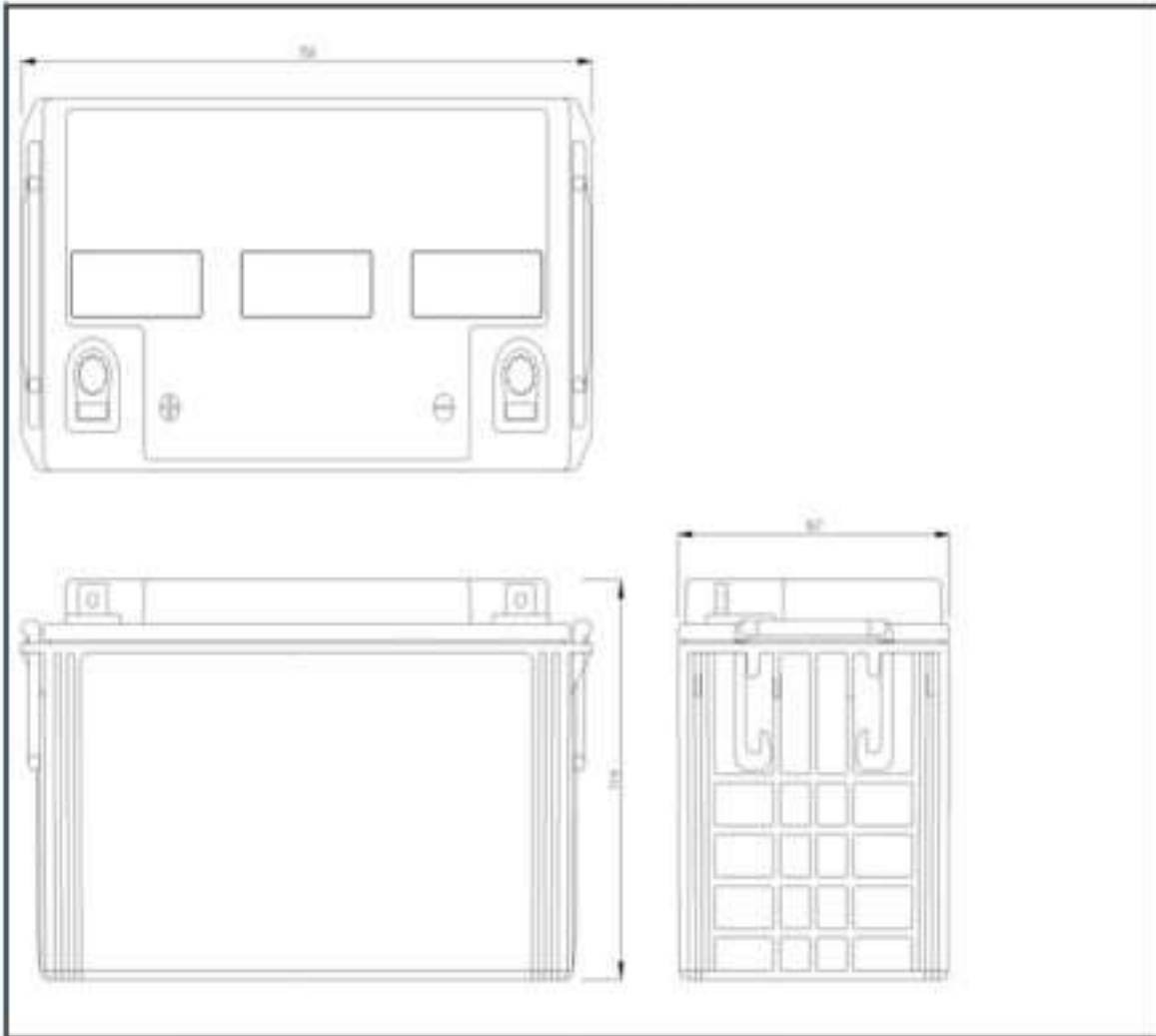
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

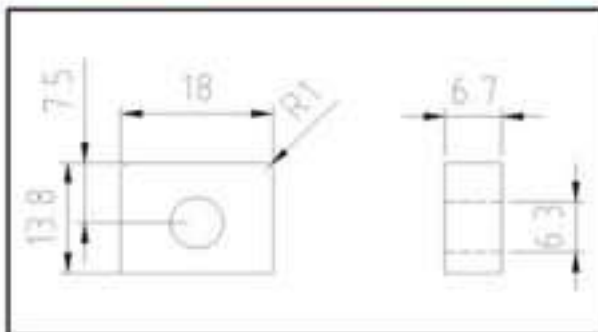
Cycle Service:

- Avoid battery over discharge, especially when battery connected in series.
- Charge with recommended voltage, ensure full recharge of battery. In general, recharge capacity shall be 1.05- 1.10 times of discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAY OUT OF SPB 50 BATTERY



TERMINAL LAYOUT OF SPB 50 BATTERY



TERMINAL SIZE = M6

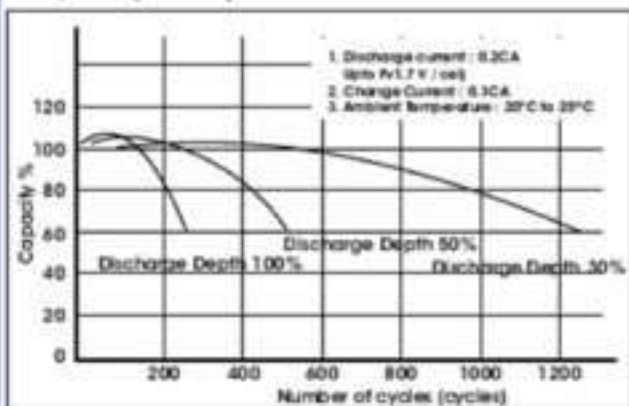
Page 1 of 3

NOTE: ALL DIMENSIONS ARE IN MM.

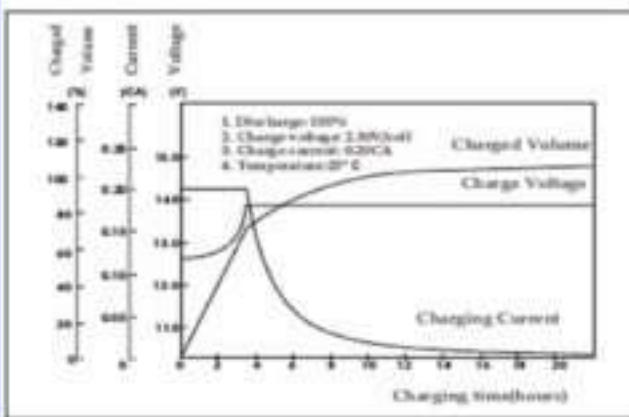
SPB 70 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		70 Ah
Dimension	Length (mm)	350
	Width (mm)	167
	Height (mm)	179
	Total Height (mm)	179
Approx. Weight		23.0 kg
Internal Resistance (Fully charged 25°C)		~6-8 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		21.0 A
Maximum Discharging Current (A)		630 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

♦ Cycle(25°C)



♦ Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	201.6	134.4	68.6	35.7	22.8	15.6	10.5	7.4	6.3	3.5
10.20 V	171.6	122.4	60.6	30.7	20.8	13.6	8.5	5.9	5.3	3.3
10.80 V	161.6	112.4	50.6	25.7	19.8	12.6	7.5	4.9	4.3	3.2

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	2116.8	1475.7	769.7	407.0	262.8	183.7	123.9	88.5	75.0	41.7
10.20 V	1801.8	1344.0	679.9	350.0	239.7	160.2	100.3	70.7	63.1	39.3
10.80 V	1696.8	1234.2	567.7	293.0	228.1	148.4	88.5	58.8	51.2	38.6

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

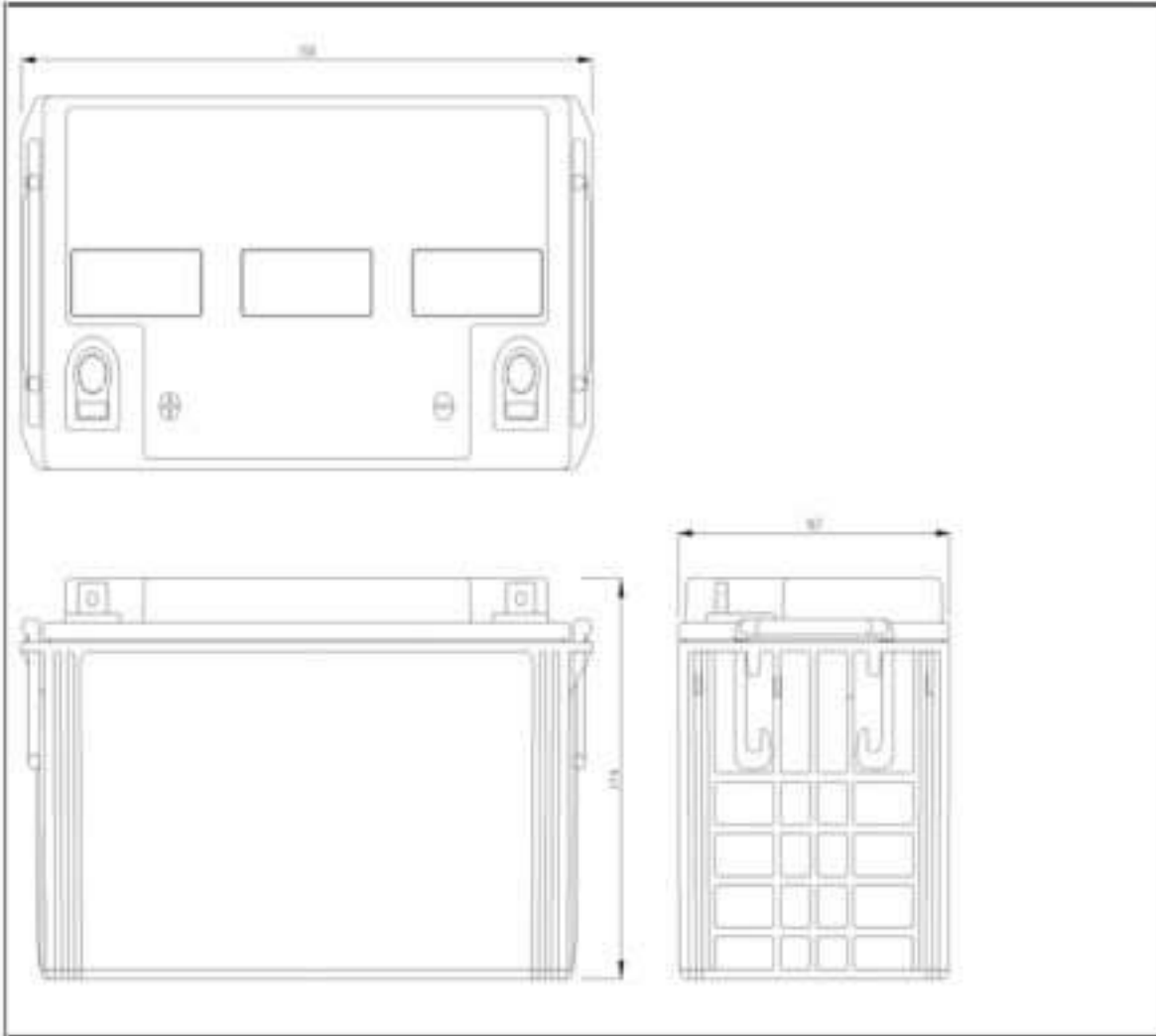
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

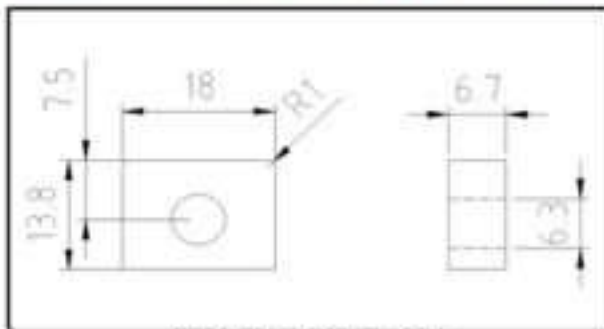
Cycle Service:

- Avoid battery over discharge, especially when battery connected in series.
- Charge with recommended voltage, ensure full recharge of battery. In general, recharge capacity shall be 1.05- 1.10 times of discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAY OUT OF SPB 70 BATTERY



TERMINAL LAYOUT OF SPB 70 BATTERY



TERMINAL SIZE = M6

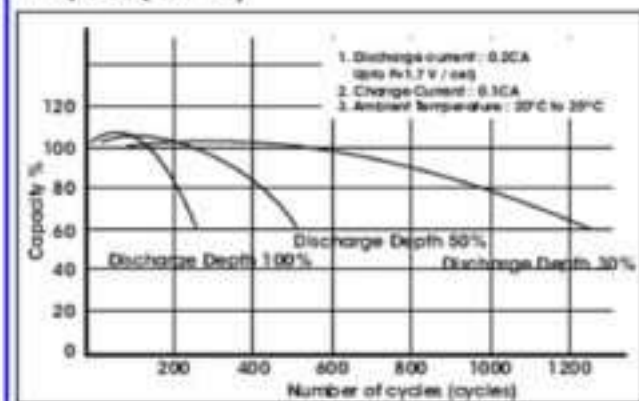
Data 1 of 2

NOTE: ALL DIMENSIONS ARE IN MM.

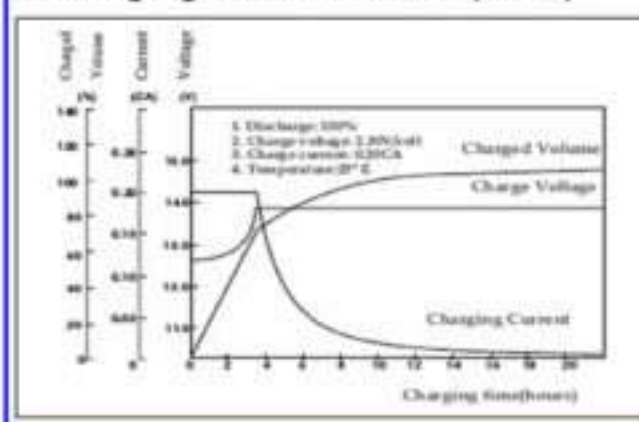
SPB 90 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR,25°C)		90 Ah
Dimension	Length (mm)	350
	Width (mm)	167
	Height (mm)	179
	Total Height (mm)	179
Approx. Weight		25.0 kg
Internal Resistance (Fully charged 25°C)		~6-8 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		21.0 A
Maximum Discharging Current (A)		700 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	210.0	140.0	71.4	37.1	23.8	16.3	10.9	7.7	6.6	4.5
10.20 V	180.0	128.0	63.4	32.1	21.8	14.3	8.9	6.2	5.6	4.2
10.80 V	170.0	118.0	53.4	27.1	20.8	13.3	7.9	5.2	4.6	3.9

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	2205.0	1537.0	801.1	422.9	274.9	191.9	128.9	91.6	78.3	53.6
10.20 V	1890.0	1405.3	711.3	365.9	251.8	168.4	105.3	73.8	66.4	50.0
10.80 V	1785.0	1295.5	599.1	308.9	240.2	156.7	93.5	61.9	54.5	46.4

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

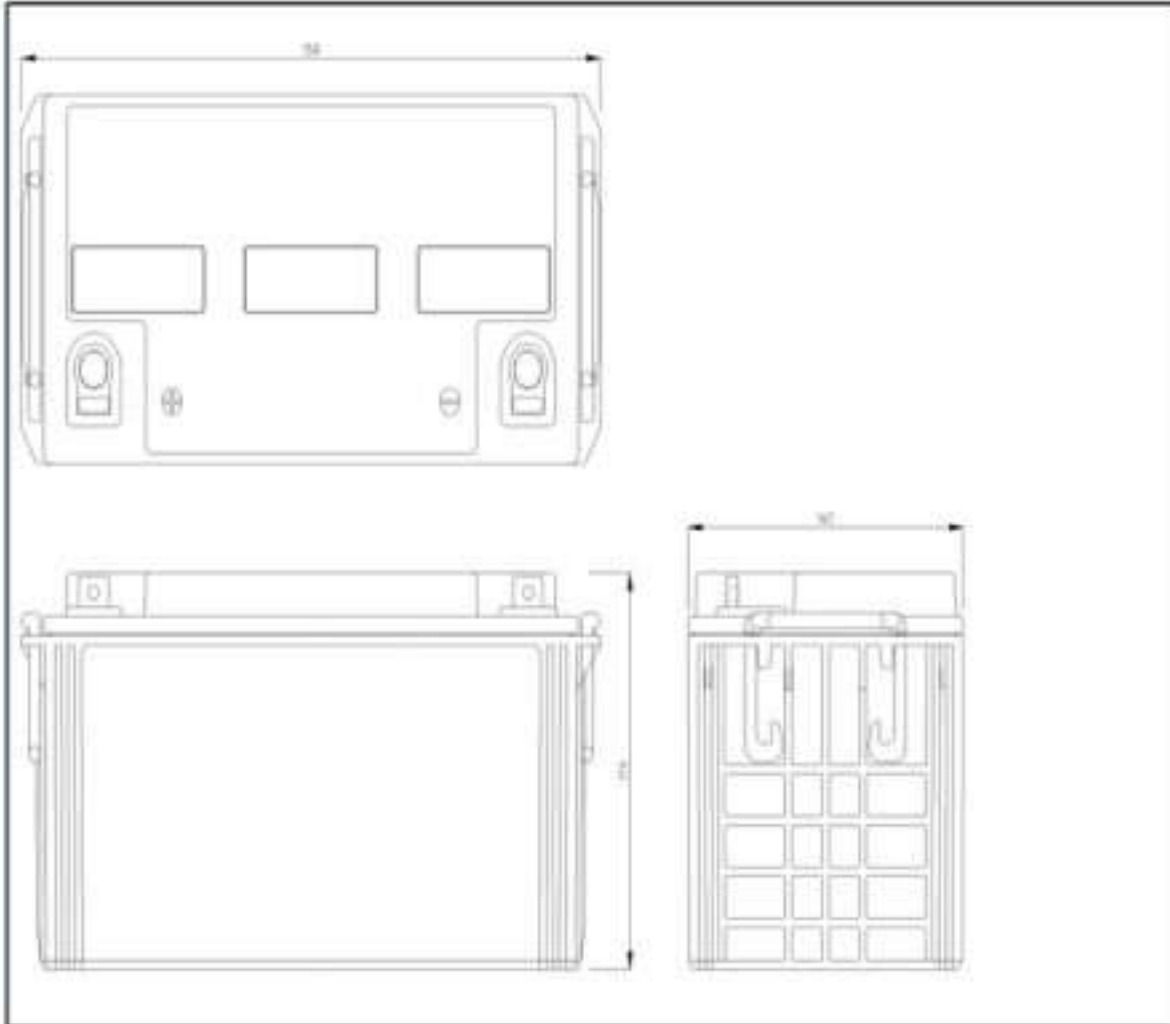
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

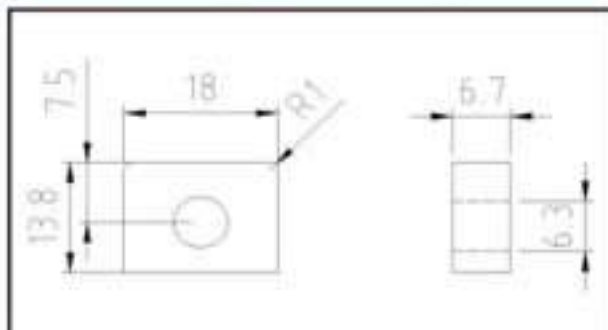
Cycle Service:

- Avoid battery over discharge, especially when battery connected in series.
- Charge with recommended voltage, ensure full recharge of battery. In general, recharge capacity shall be 1.05- 1.10 times of discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAY OUT OF SPB 90 BATTERY



TERMINAL LAYOUT OF SPB 90 BATTERY



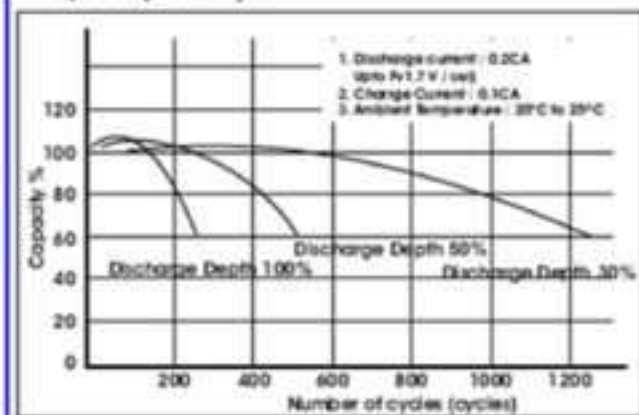
TERMINAL SIZE = M6

NOTE: ALL DIMENSIONS ARE IN MM.

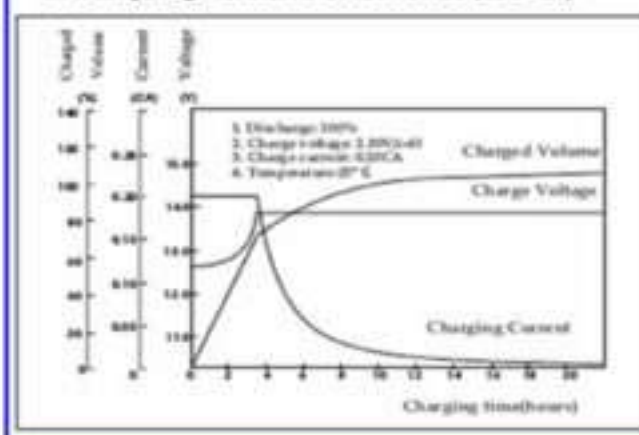
SPB 100 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		100 Ah
Dimension	Length (mm)	408
	Width (mm)	177
	Height (mm)	234
	Total Height (mm)	234
Approx. Weight		34.5 kg
Internal Resistance (Fully charged 25°C)		~6-7.5 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		30.0 A
Maximum Discharging Current (A)		900 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	288.0	192.0	98.0	51.0	32.5	22.3	15.0	10.6	9.0	5.0
10.20 V	258.0	180.0	90.0	46.0	30.5	20.3	13.0	9.1	8.0	4.8
10.80 V	248.0	170.0	80.0	41.0	29.5	19.3	12.0	8.1	7.0	4.7

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	3024.0	2108.2	1099.6	581.4	375.4	262.4	177.0	126.4	126.5	108.0
10.20 V	2709.0	1976.4	1009.8	524.4	352.3	238.9	153.4	108.6	108.7	96.0
10.80 V	2604.0	1866.6	897.6	467.4	340.7	227.2	141.6	96.7	96.8	84.0

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

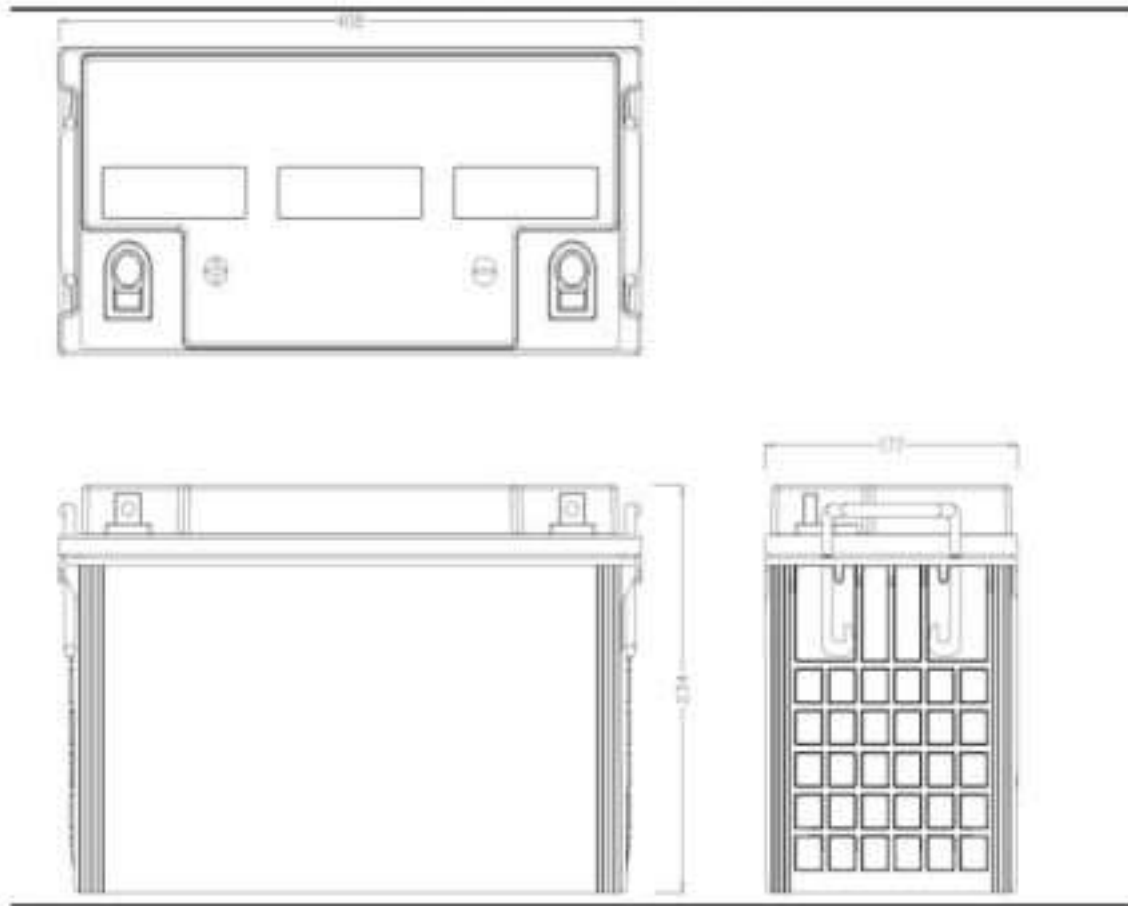
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

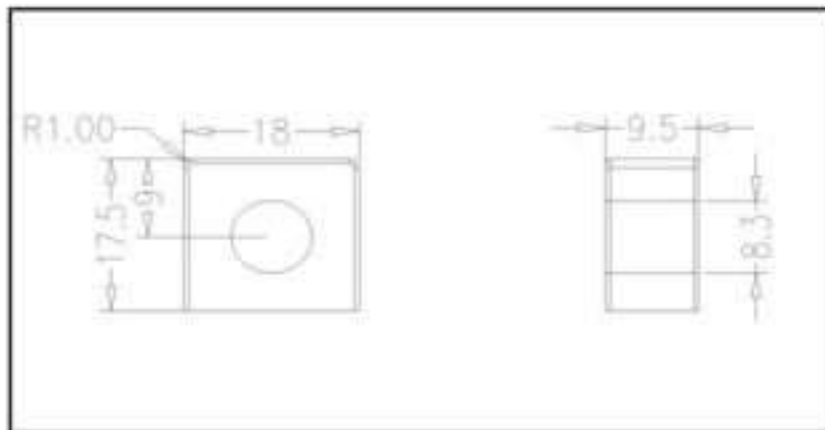
Cycle Service:

- Avoid battery over discharge, especially when battery connected in series.
- Charge with recommended voltage, ensure full recharge of battery. In general, recharge capacity shall be 1.05- 1.10 times of discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 100 BATTERY



TERMINAL LAYOUT OF SPB 100



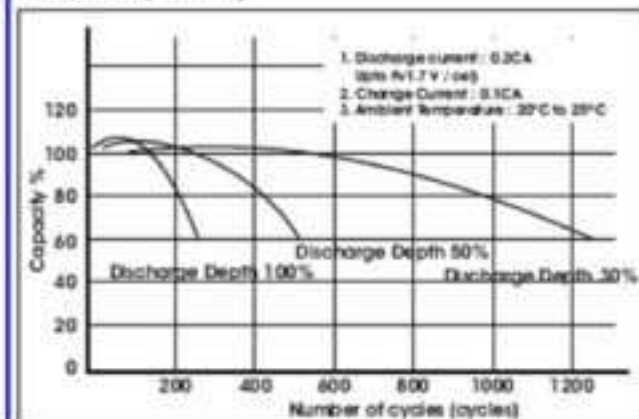
Terminal Size - M6

NOTE : ALL DIMENSIONS ARE IN MM.

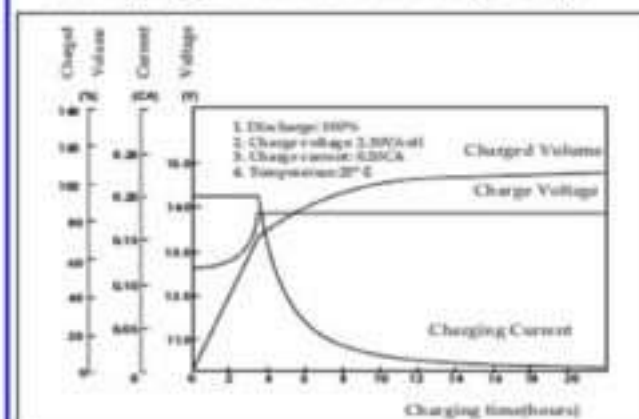
SPB 120 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		120 Ah
Dimension	Length (mm)	408
	Width (mm)	177
	Height (mm)	234
	Total Height (mm)	234
Approx. Weight		34.5 kg
Internal Resistance (Fully charged 25°C)		~6-7.5 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		30.0 A
Maximum Discharging Current (A)		1000 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	300.0	200.0	102.0	53.0	34.0	23.3	15.6	11.0	9.4	6.0
10.20 V	270.0	188.0	94.0	48.0	32.0	21.3	13.6	9.5	8.4	5.7
10.80 V	260.0	178.0	84.0	43.0	31.0	20.3	12.6	8.5	7.4	5.4

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	3150.0	2195.8	1144.4	604.2	392.7	274.2	184.1	130.9	111.9	71.4
10.20 V	2835.0	2064.0	1054.7	547.2	369.6	250.7	160.5	113.1	100.0	67.8
10.80 V	2730.0	1954.2	942.5	490.2	358.1	238.9	148.7	101.2	88.1	64.3

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

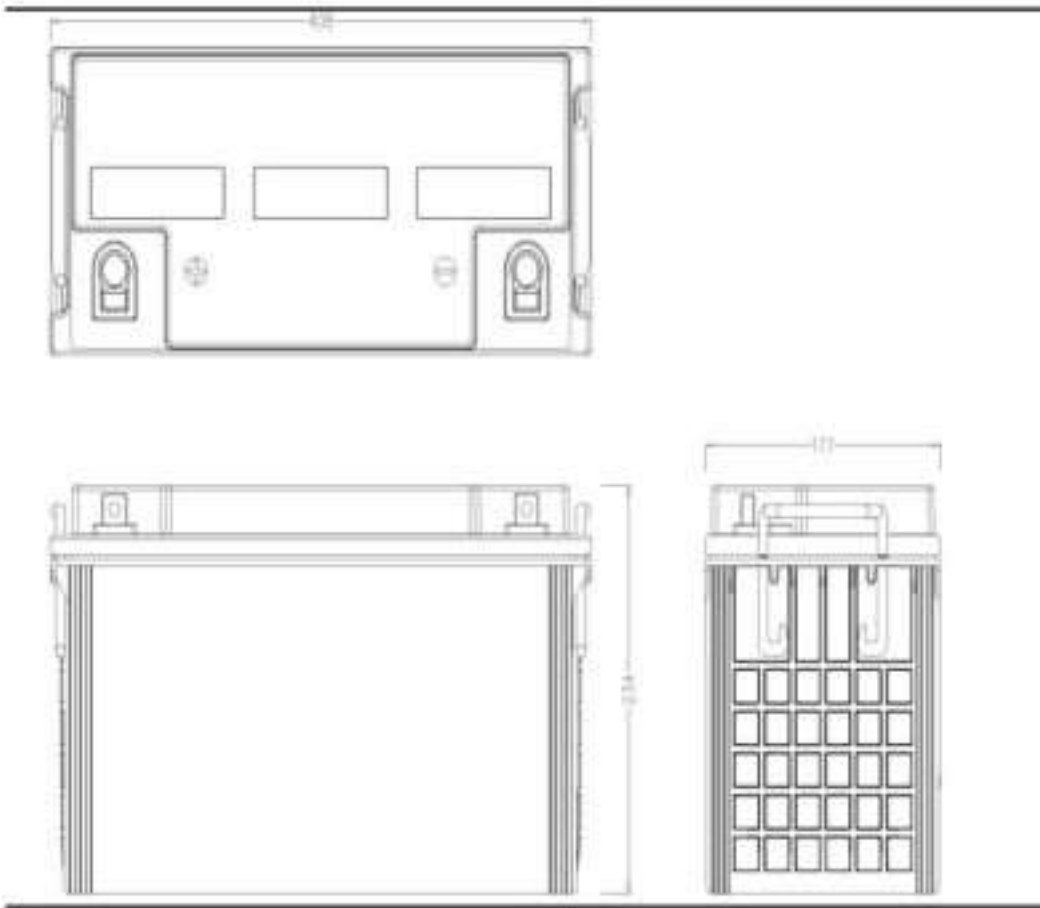
Maintenance & Cautions:

Cycle Service:

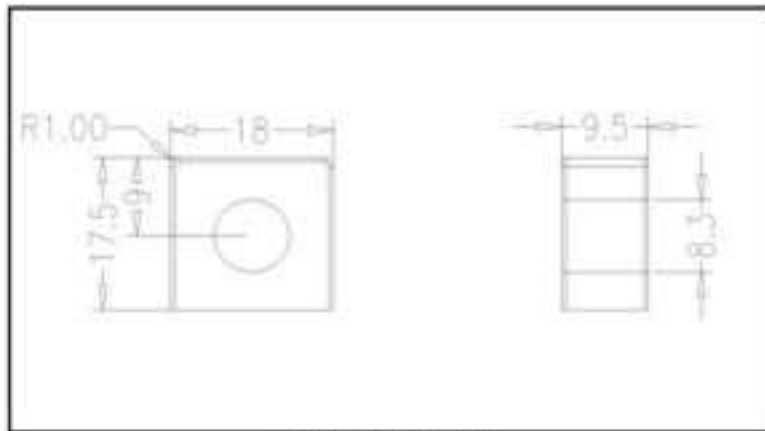
- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^\circ\text{C}/\text{Cell}$.

There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 120 BATTERY



TERMINAL LAYOUT OF SPB 120



Terminal Size – M6

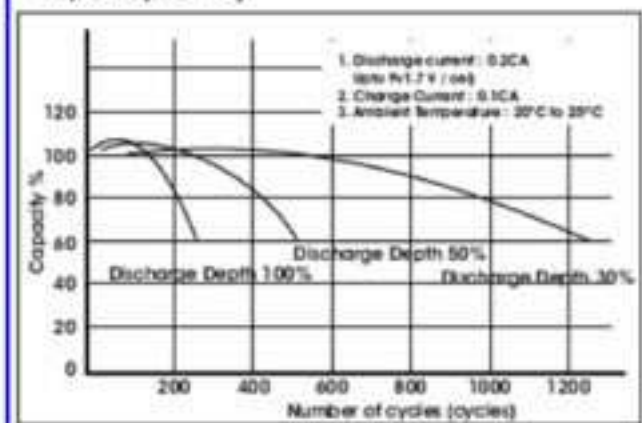
Page 1 of 3

NOTE : ALL DIMENSIONS ARE IN MM.

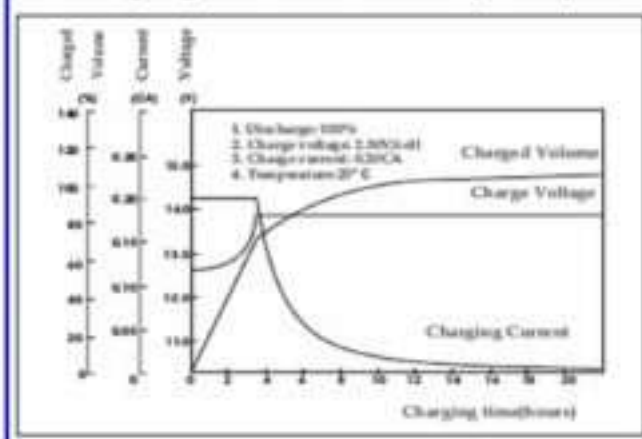
SPB 135 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy designed with radial grid & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		135 Ah
Dimension	Length (mm)	408
	Width (mm)	177
	Height (mm)	234
	Total Height (mm)	234
Approx. Weight		39.5 kg
Internal Resistance (Fully charged 25°C)		~6-7.5 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		40.5 A
Maximum Discharging Current (A)		1215 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	388.8	259.2	132.3	68.9	43.9	30.2	20.3	14.3	12.2	6.8
10.20 V	358.8	247.2	124.3	63.9	41.9	28.2	18.3	12.8	11.2	6.6
10.80 V	348.8	237.2	114.3	58.9	40.9	27.2	17.3	11.8	10.2	6.5

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	4082.4	2846.0	1484.4	784.9	506.8	354.3	239.0	170.7	144.6	80.3
10.20 V	3767.4	2714.3	1394.6	727.9	483.7	330.8	215.4	152.8	132.7	77.9
10.80 V	3662.4	2604.5	1282.4	670.9	472.1	319.0	203.6	140.9	120.8	77.2

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

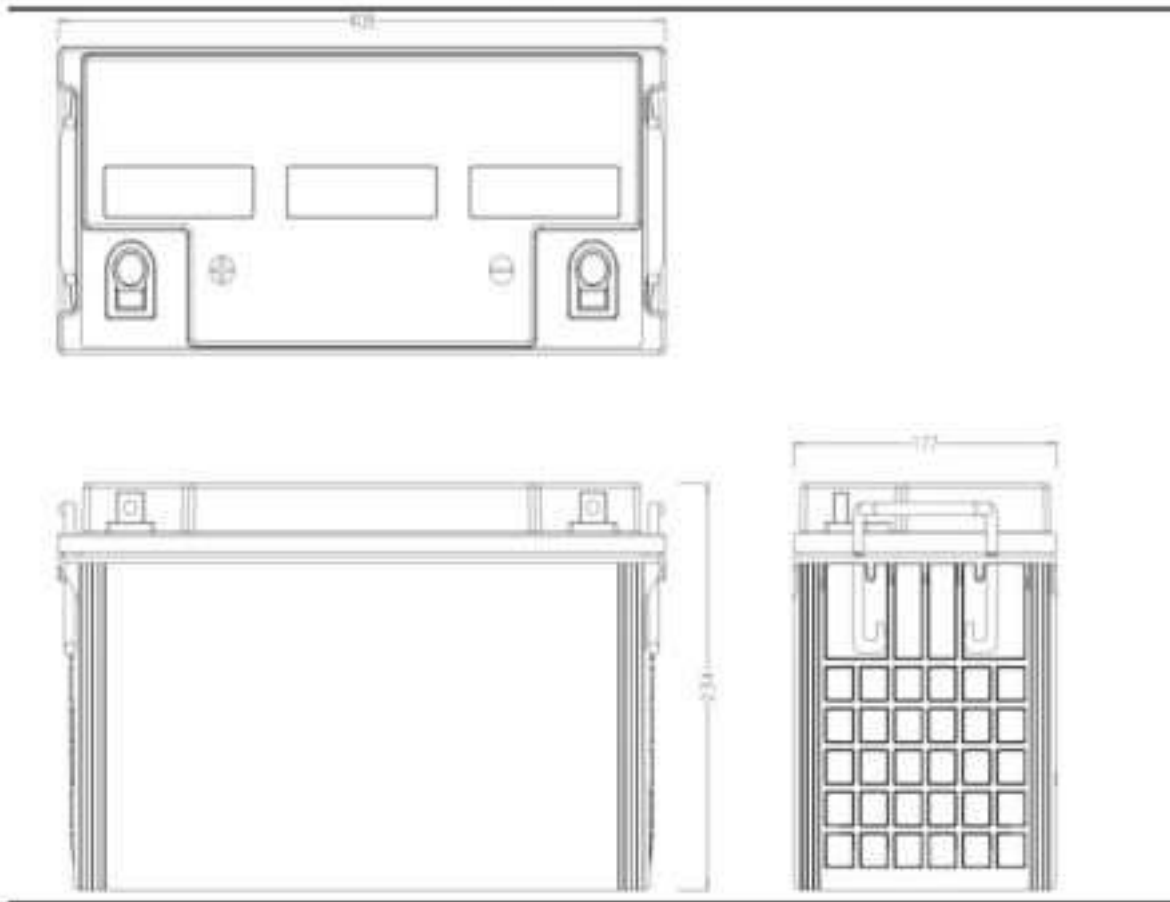
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

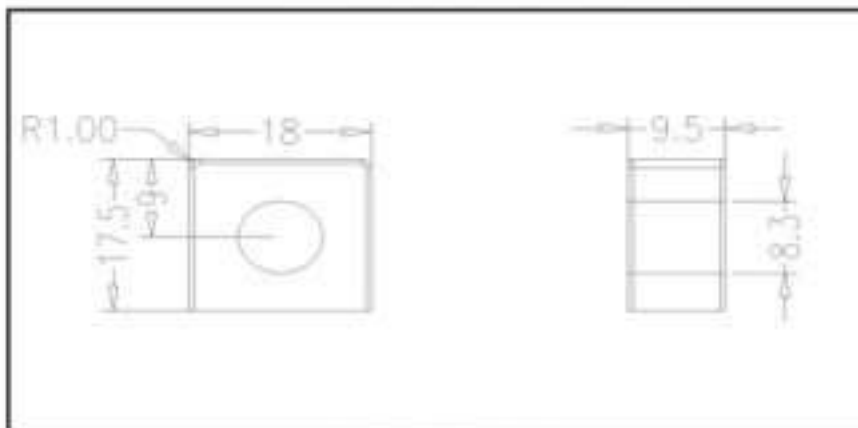
Cycle Service:

- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^\circ\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 135 BATTERY



TERMINAL LAYOUT OF SPB 135

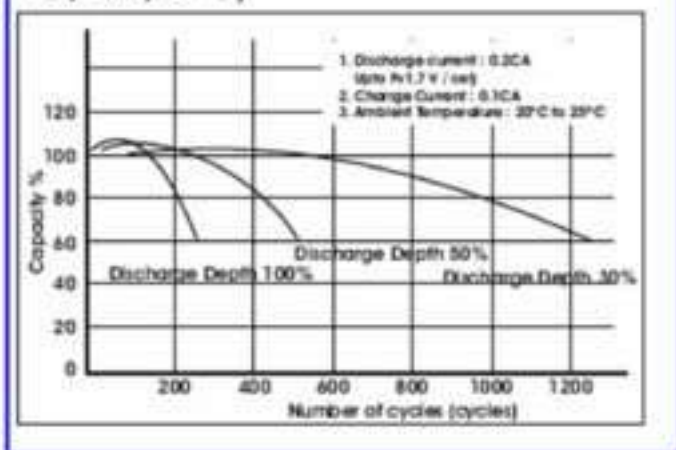


Terminal Size – M6

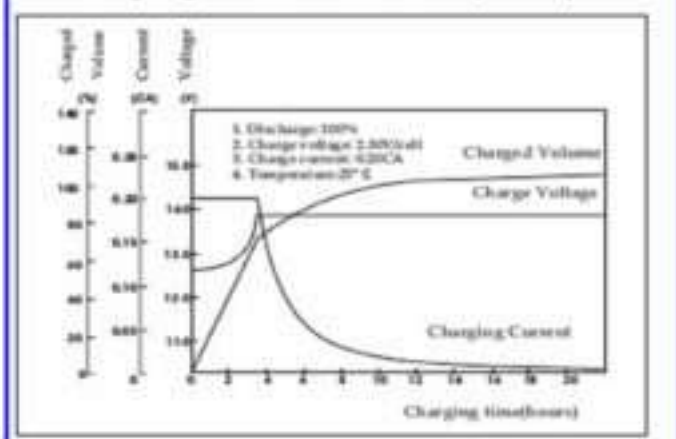
SPB 150 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy with radial grid design & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		150 Ah
Dimension	Length (mm)	408
	Width (mm)	177
	Height (mm)	234
	Total Height (mm)	234
Approx. Weight		40.0 kg
Internal Resistance (Fully charged 25°C)		~6-7.5 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		40.5 A
Maximum Discharging Current (A)		1350 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M6

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	405.0	270.0	137.7	71.6	45.9	31.5	21.1	14.9	12.7	7.5
10.20 V	375.0	258.0	129.7	66.6	43.9	29.5	19.1	13.4	11.7	7.2
10.80 V	365.0	248.0	119.7	61.6	42.9	28.5	18.1	12.4	10.7	6.9

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	4252.5	2964.3	1545.0	815.7	530.1	370.1	248.5	176.7	151.0	89.3
10.20 V	3937.5	2832.5	1455.2	758.7	507.0	346.6	224.9	158.9	139.1	85.7
10.80 V	3832.5	2722.7	1343.0	701.7	495.5	334.9	213.1	147.0	127.2	82.1

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

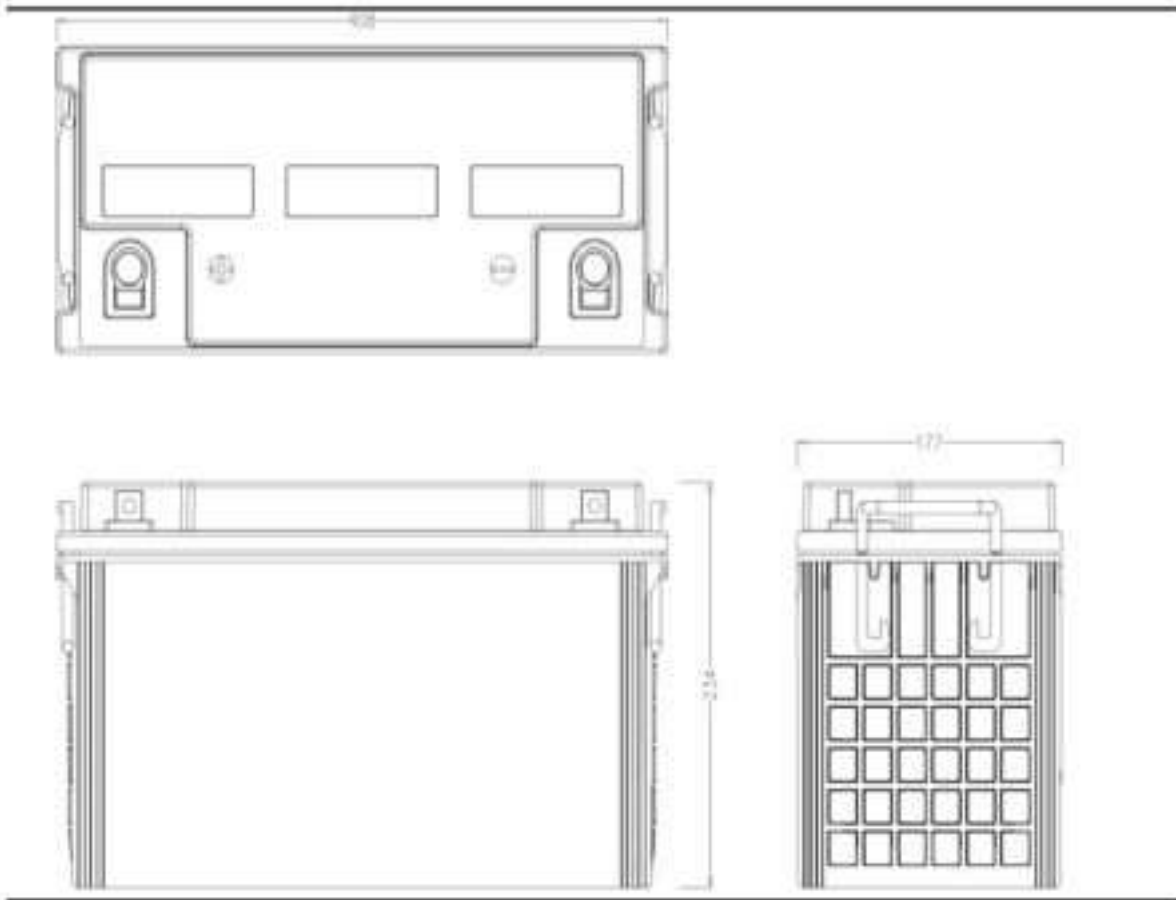
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

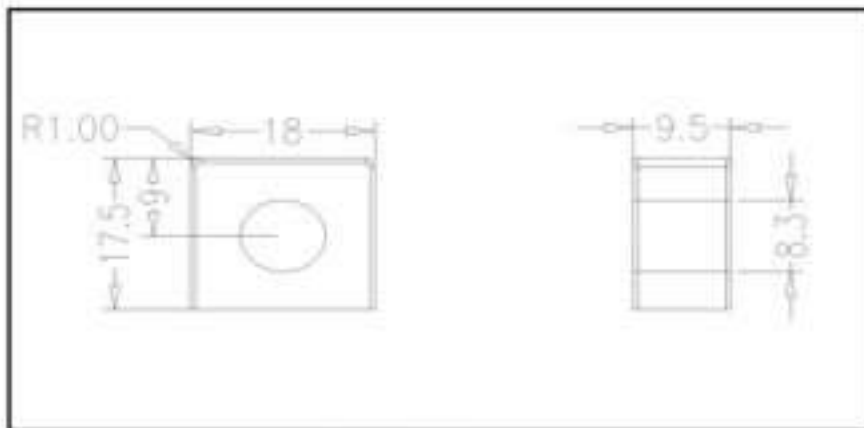
Cycle Service:

- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: -4mv/°C/Cell.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 150 BATTERY



TERMINAL LAYOUT OF SPB 150



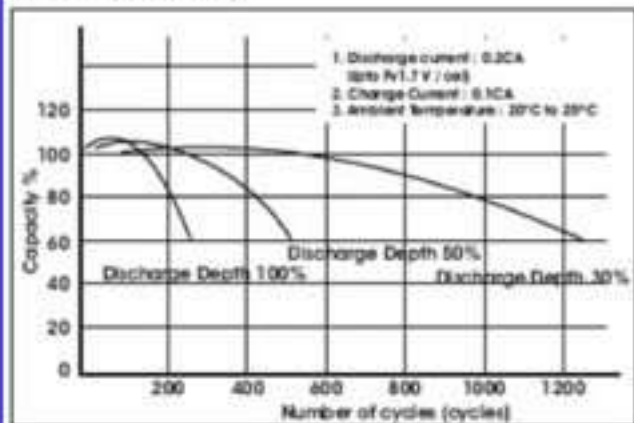
Terminal Size – M6

NOTE : ALL DIMENSIONS ARE IN MM.

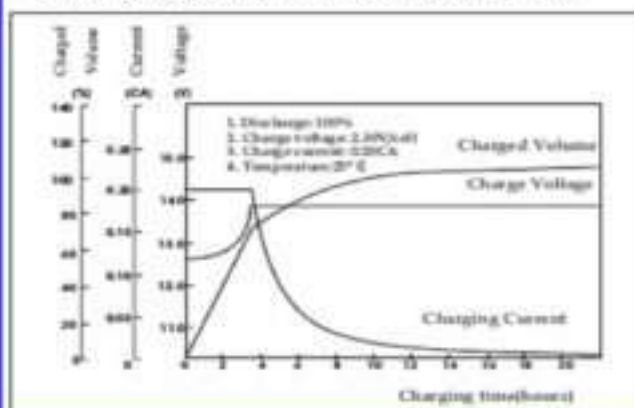
SPB 165 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy designed with radial grid & specific pasted plate make the battery to withstand deep Cycling & to have quick charge characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		165 Ah
Dimension	Length (mm)	488
	Width (mm)	173
	Height (mm)	250
	Total Height (mm)	250
Approx. Weight		51.0 kg
Internal Resistance (Fully charged 25°C)		~5-7 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		49.5 A
Maximum Discharging Current (A)		1485 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M8

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat technology
- Flame retardant PP container

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	475.2	316.8	161.7	84.2	53.6	36.9	24.8	17.5	14.9	8.3
10.20 V	445.2	304.8	153.7	79.2	51.6	34.9	22.8	16.0	13.9	8.1
10.80 V	435.2	294.8	143.7	74.2	50.6	33.9	21.8	15.0	12.9	8.0

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	4989.6	3478.5	1814.3	959.3	619.4	433.0	292.1	208.6	176.7	98.2
10.20 V	4674.6	3346.7	1724.5	902.3	596.3	409.5	268.5	190.8	164.8	95.8
10.80 V	4569.6	3236.9	1612.3	845.3	584.7	397.7	256.7	178.9	152.9	95.1

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20

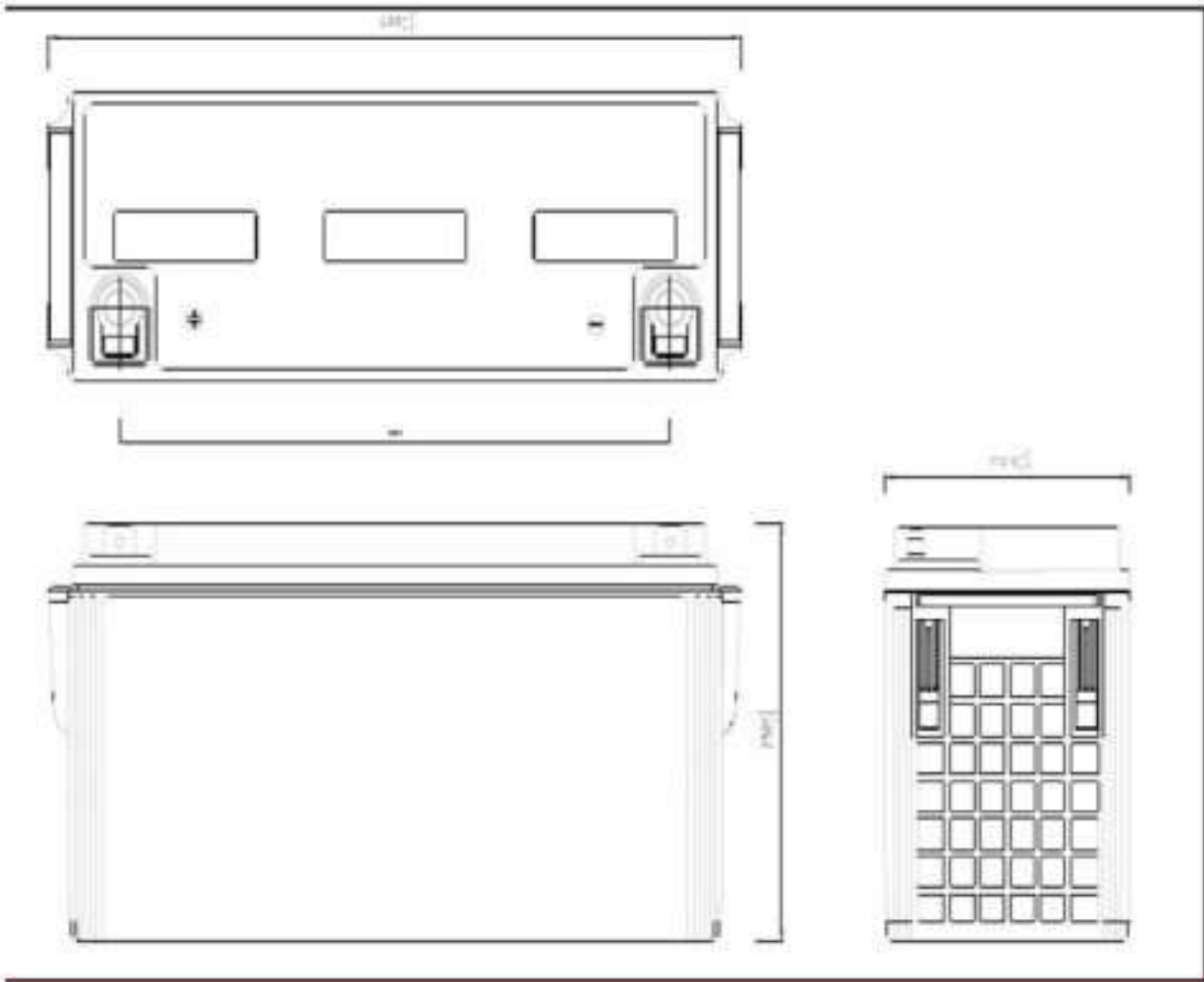
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

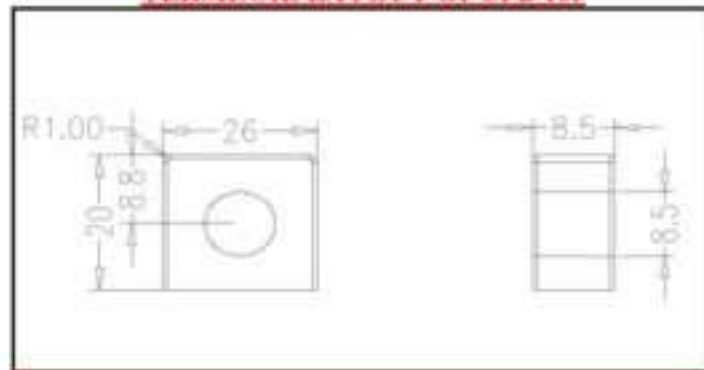
Cycle Service:

- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 165



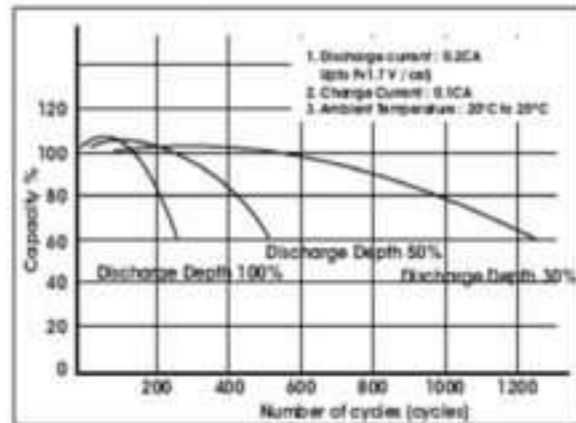
TERMINAL LAYOUT OF SPB 165



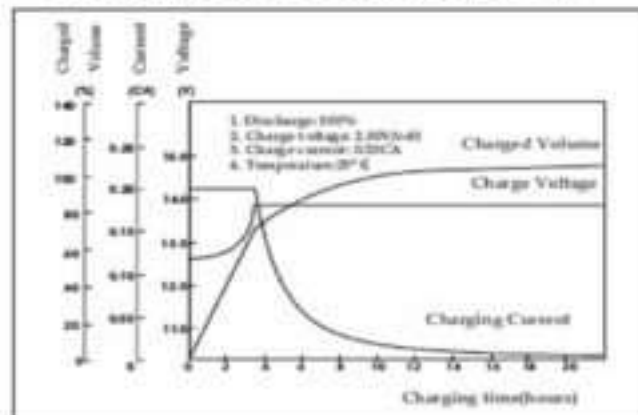
SPB 180 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy designed with radial grid & specific pasted plate make the battery to withstand deep Cycling & to have quick charge characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR,25°C)		180 Ah
Dimension	Length (mm)	488
	Width (mm)	173
	Height (mm)	250
	Total Height (mm)	250
Approx. Weight		52.5 kg
Internal Resistance (Fully charged 25°C)		~5-7 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		49.5 A
Maximum Discharging Current (A)		1650 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		MB

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat technology
- Flame retardant PP container

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	495.0	330.0	168.3	87.5	56.1	38.5	25.7	18.2	15.5	9.0
10.20 V	465.0	318.0	160.3	82.5	54.1	36.5	23.7	16.7	14.5	8.4
10.80 V	455.0	308.0	150.3	77.5	53.1	35.5	22.7	15.7	13.5	8.3

Constant Power Characteristics:

Constant Power Battery Discharge (A) at 20°C										
F.V/Time	5 min.	10 min.	30 min.	1h	2h	3h	5h	8h	10h	20h
9.60 V	5197.5	3623.0	1888.3	996.9	648.0	452.4	303.7	216.0	184.6	107.1
10.20 V	4882.5	3491.3	1798.6	939.9	624.9	428.9	280.1	198.1	172.7	100.0
10.80 V	4777.5	3381.5	1686.4	882.9	613.3	417.1	268.3	186.2	160.8	98.8

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being

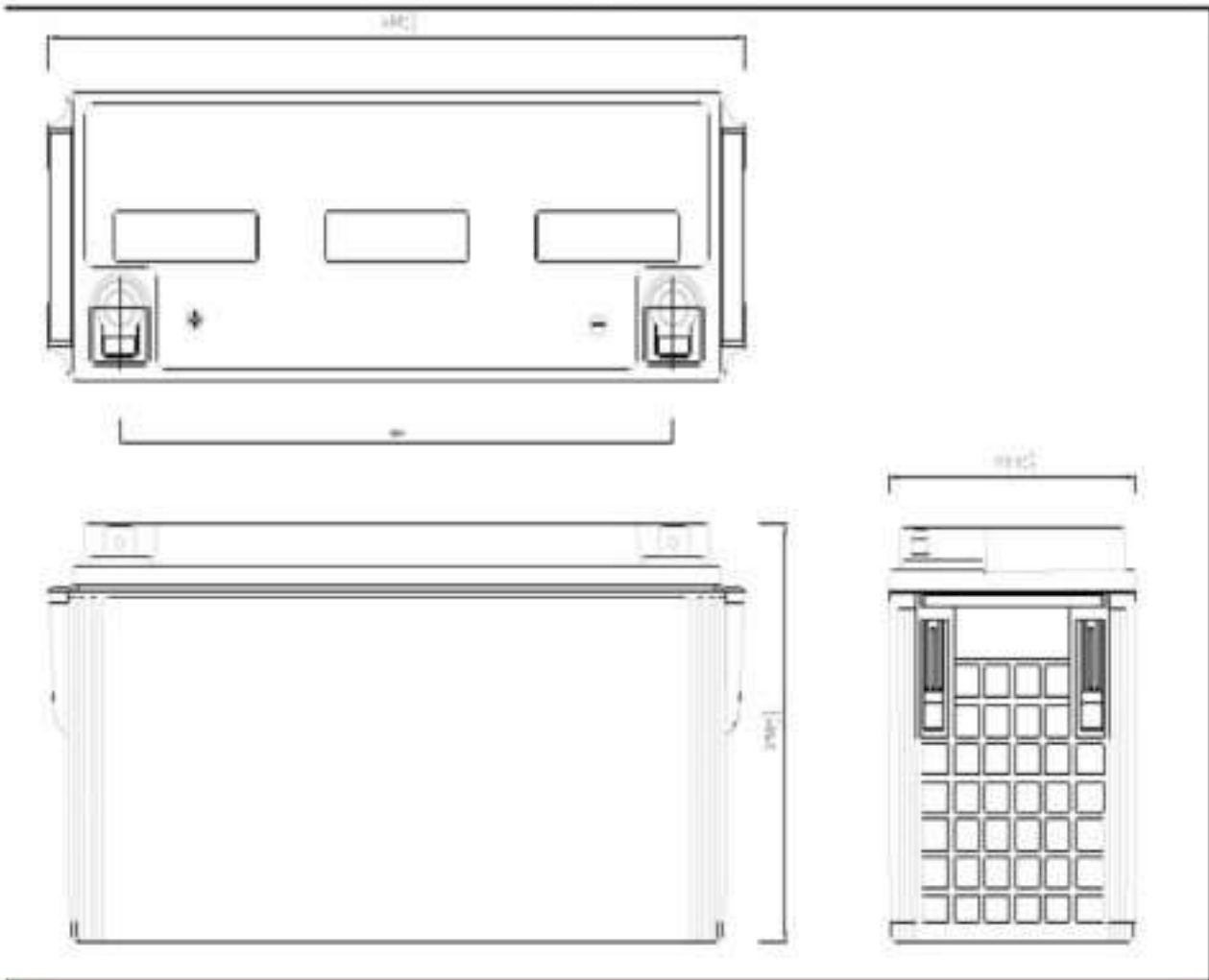
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

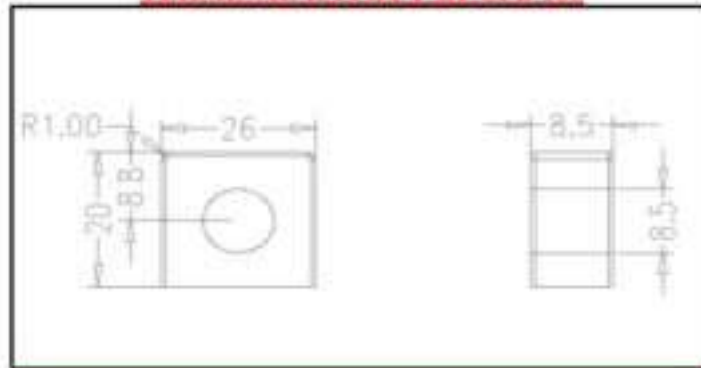
Cycle Service:

- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 180



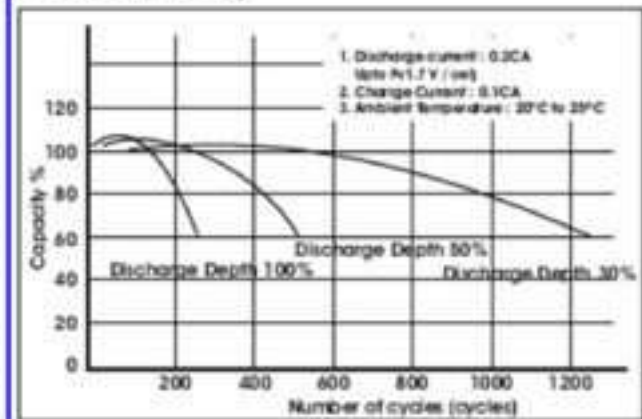
TERMINAL LAYOUT OF SPB 180



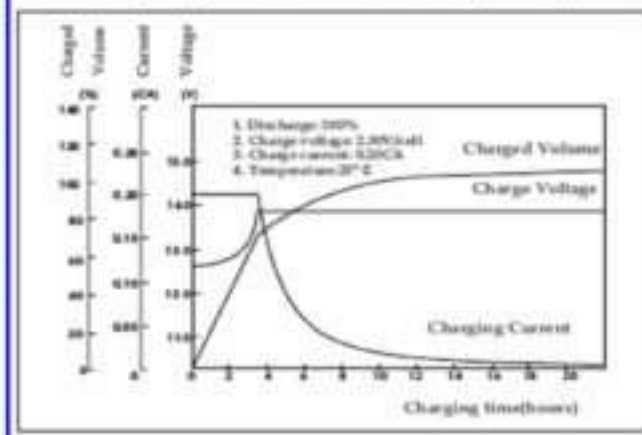
SPB 200 AH is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. Superior alloy designed with radial grid & specific pasted plate make the battery to withstand deep Cycling & to have quick charge Characteristics. The batteries have 30% more cyclic life time than Standby series.

Nominal Voltage		12 V
Capacity (20 HR, 25°C)		200 Ah
Dimension	Length (mm)	580
	Width (mm)	177
	Height (mm)	240
	Total Height (mm)	240
Approx. Weight		56.5 kg
Internal Resistance (Fully charged 25°C)		~5-7 m.ohms
Capacity affected by temperature (10 hr)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Retained capacity (@ 25°C)	3 months	90%
	6 months	80%
	12 months	60%
Normal operating Temperature		25°C±3°C
Operating temperature range		-15°C~50°C
Float operating Voltage(25°C)		13.5-13.8 V
Cyclic charging Voltage(25°C)		14.5-14.9 V
Maximum Charging Current(A)		60.0 A
Maximum Discharging Current (A)		1800 (5 sec.)
Terminal Material		Lead Alloy
Terminal Size		M8

• Cycle(25°C)



• Charging Characteristics(25°C)



- Absorbent glass mat / valve Regulated Technology.
- Flame retardant PP container.

Constant Current Characteristics:

Constant Current Battery Discharge (A) at 20°C									
F.V/Time	5 min.	15 min.	30 min.	1h	2h	3h	5h	10h	20h
9.60 V	600	340	200	102	68	40.0	31.2	18.0	10.0
10.20 V	570	328	192	97	66	39.3	29.2	17.0	9.9
10.80 V	560	313	182	92	65	38.3	28.2	16.0	9.8

Constant Power Characteristics:

Constant Power (W) Battery Discharge at 20°C									
F.V/Time	5 min.	15 min.	30 min.	1h	2h	3h	5h	10h	20h
9.60 V	6300	3733.2	2244	1162.8	785.4	470.0	368.2	214.4	120.0
10.20 V	5985	3601.4	2154.2	1105.8	762.3	461.8	344.6	202.0	118.8
10.80 V	5880	3436.7	2042.0	1048.8	750.8	450.0	332.8	190.0	118.0

Note: The above backup time results shall be obtained within 5 cycles of charge & discharge.

Effect of Temperature on capacity:

Rough Correction factor of the capacity, according to temperature, reference temperature being 20°C.

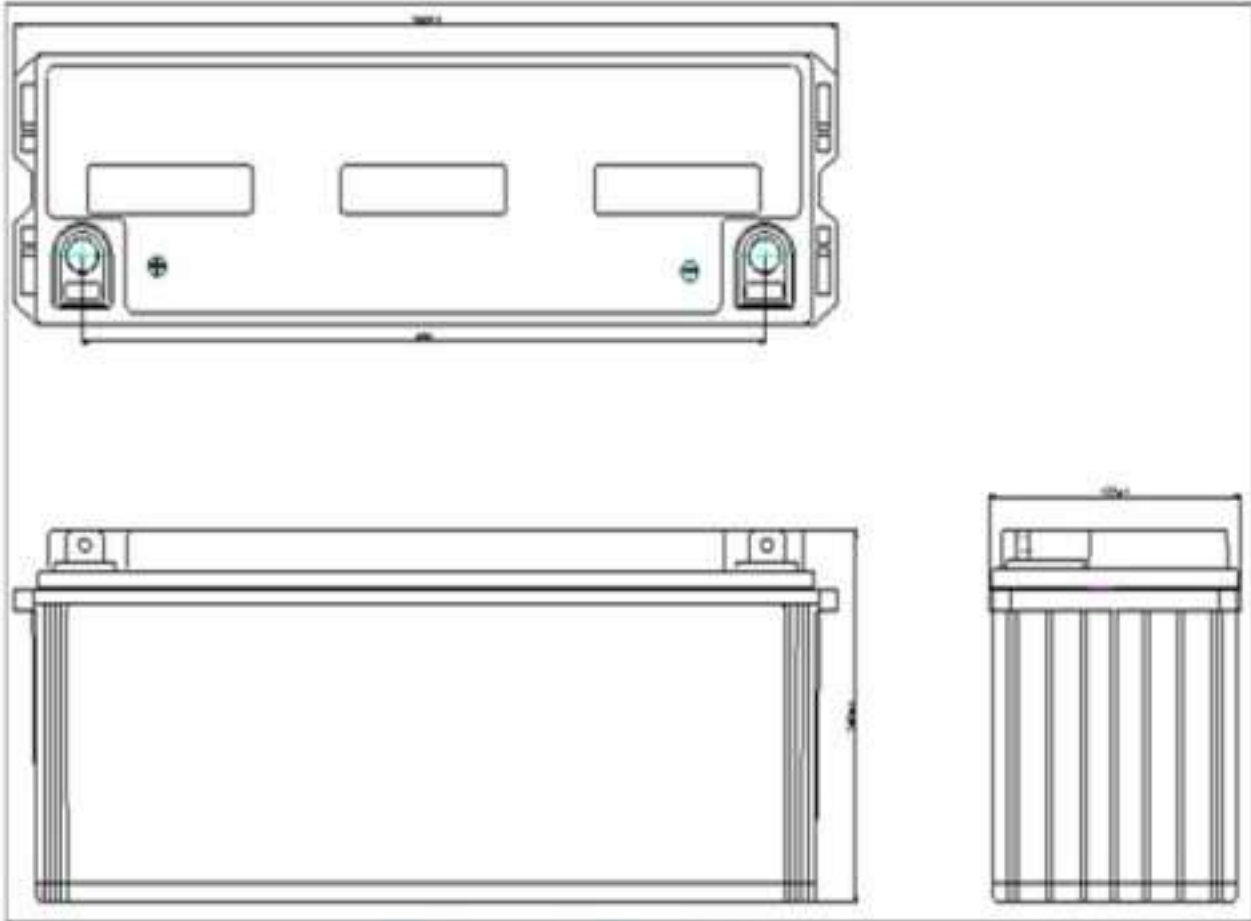
Dch Time	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
10 min	0.46	0.53	0.59	0.67	0.74	0.83	0.91	1.00	1.09	1.18	1.27	1.36
1 hour	0.62	0.67	0.73	0.78	0.84	0.89	0.95	1.00	1.05	1.10	1.15	1.20
20 hour	0.73	0.77	0.81	0.85	0.89	0.93	0.96	1.00	1.03	1.06	1.09	1.11

Maintenance & Cautions:

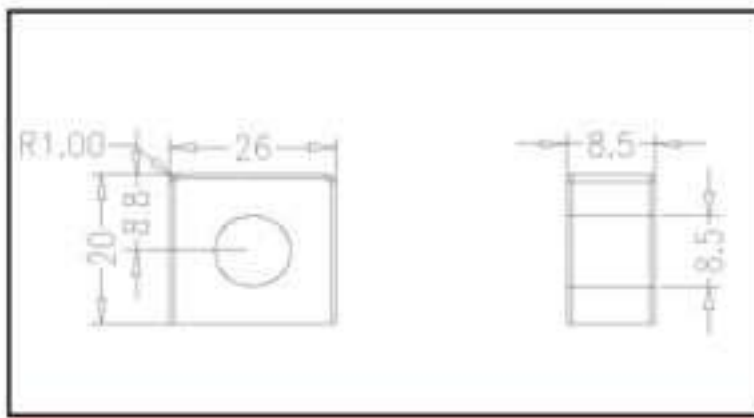
Cycle Service:

- Avoid battery over discharge, especially for batteries connected in series.
- Charged with recommend voltage, ensure full recharge of batteries. In general, recharge capacity should be 1.05- 1.10 times discharge capacity.
- Effect of temperature on cycle charge voltage: $-4\text{mv}/^{\circ}\text{C}/\text{Cell}$.
- There are number of factors that will affect the length of cyclic service. The most significant are depth of discharge, ambient temperature, discharge rate and the manner in which the battery is recharged.

LAYOUT OF SPB 200



TERMINAL LAYOUT OF SPB 200



NOTE : ALL DIMENSIONS ARE IN MM.