



Operating Instruction – range MVR

Stationary valve regulated batteries, type VRLA

Before starting up the charger or rectifier, always check that the installation is completed according to the installation instruction, provided from the manufacturer. Make sure that the temperature differences between individual units do not exceed 3°C.

The recommended operating mode of the batteries is constant float charge, where the load, battery and battery charger are connected in parallel.

1. Discharge

The cut off voltage should not be lower than 1.6 Vpc. Discharge below this limit is considered as deep discharge, harmful for the battery and shortening its service life.

Recharge the battery as soon as possible after discharge.

2. Charging

The MVR range VRLA batteries have to be operated mainly under IU float charge conditions (according to DIN 41773).

2.1. Float charge

The charging equipment should be set for float voltage of 2.27 Vpc (at 20°C) multiplied by the number of cells. If the average battery operating temperature is likely to be outside a 15°C to 25°C window, then it is advisable to adjust the float voltage with -0.003 Vpc per degree centigrade above and +0.003 Vpc per degree centigrade below the temperature window.

Under conditions of full charge, a float current of about 20 to 100 mA per 100 Ah unit capacity will be observed.

The MVR range VRLA batteries accept without damage large charging currents so that only under high battery temperature conditions ($T > 30^\circ\text{C}$) a current limitation to $3 \times I_{10}$ is recommended.

2.2. Accelerated recharge

When reduction of the recharge time is necessary, the battery can be charged at increased voltage level of 2.35 – 2.40 Vpc. In this case the fully charge state can be reached within 12 to 24 hours.

2.2. Boost charge treatment

The battery does not require periodic boost or equalization charges to operate properly. In the case that such a treatment is desirable, then set the charge voltage to 2.35 Vpc for a duration of not more than 12 hours. Do not boost charge at elevated battery temperature ($T > 30^\circ\text{C}$). Watch for increased gas emission.

3. Operating temperatures

The nominal temperature range for the VRLA batteries is from -20°C to $+55^\circ\text{C}$ (for best performance $20^\circ\text{C} \pm 5^\circ\text{C}$). It is highly recommended to avoid high operating temperatures, so not to further accelerate battery life reduction.

If temperatures above $+55^\circ\text{C}$ are encountered, discontinue charging. Search for reasons like loss of ventilation or improper voltage settings and contact manufacturer for additional support.

4. Ventilation

Hydrogen gas is emitted from the units via the vent valve under all operating conditions and is explosive at concentrations levels above 4% in air.

Hydrogen gas is very light and tends to rise to the top of cubicles and rooms, so place vent openings accordingly.

For safety purposes and lower battery operating temperatures, ensure adequate airflow and air exchange in the vicinity of the battery. Airflow volumes are specified by national and international standards (i.e. EN 50272-2:2001, DIN VDE 0510).

Do not operate in cubicles and rooms where air exchange is null or insufficient.

5. Monitoring and maintenance

Ensure that only qualified and protected personnel accesses the battery installation. Watch for high voltages and do not create sparks or other unsafe conditions in vicinity of the battery. Clean with water damp cloth only.

Check and verify the proper functioning of the battery installation periodically and in accordance with the importance of the equipment.

At least every 6 months measure and record:

- Battery voltage;
- Individual cells/monoblocs voltages;
- Surface temperature of several cells/monoblocs;
- Battery room temperature.

If the cell voltages differ from the average float charge voltage by more than 0.2 V, the service agent should be contacted.

6. Decommissioning a battery installation

Dismantle a battery with appropriate attention to hazards outlined above. When storing or shipping the battery to the battery recycling plant, make sure that the terminals of the batteries are protected against accidental short circuits.

Performance data for constant current and constant power discharge of MVR range VRLA batteries at 20°C.

	Constant current discharge in Amperes								Constant power discharge in Watts per block							
	15 min	30 min	1 h	2 h	3 h	5 h	8 h	10 h	15 min	30 min	1 h	2 h	3 h	5 h	8 h	10 h
12MVR50TA	106.1	61.1	34.9	21.0	14.4	9.3	6.5	5.3	1115.4	640.8	410.4	232.8	171.6	115.2	78.6	63.0
12MVR65TA	136.0	78.4	44.7	26.9	18.4	12.0	8.3	6.8	1429.8	821.4	525.6	298.2	220.2	148.2	100.8	80.4
12MVR80TA	160.0	92.2	52.6	31.6	21.7	14.1	9.8	8.0	1682.4	966.6	618.6	351.0	259.2	174.0	118.8	94.8
12MVR60	114.7	71.5	40.6	23.7	16.7	10.9	7.6	6.2	1192.2	720.0	459.0	260.4	191.0	129.8	88.1	71.8
12MVR80	153.0	95.3	54.2	31.6	22.2	14.6	10.1	8.2	1589.6	960.0	612.0	346.8	254.7	173.1	117.4	95.7
12MVR100	191.2	119.1	67.7	39.5	27.8	18.2	12.6	10.3	1987.0	1200.0	765.0	433.8	318.4	216.4	146.8	119.6
12MVR125	206.0	130.3	84.7	49.0	35.0	22.9	15.9	13.2	2672.9	1656.0	996.0	566.4	427.5	280.0	190.0	156.0
12MVR150	240.0	156.4	101.7	58.7	42.0	27.5	19.1	15.8	3114.0	1987.2	1195.2	679.8	513.0	336.0	228.0	187.2
6MVR160	302.2	186.7	106.0	60.4	43.9	28.9	20.6	16.4	1351.1	855.9	528.6	320.1	233.8	154.0	107.3	89.5
6MVR180	340.0	210.0	119.3	68.0	49.4	32.5	22.1	18.1	1520.0	963.0	594.6	360.0	263.0	173.3	120.7	100.7
6MVR200	377.8	233.3	132.6	75.6	54.9	36.1	24.6	20.1	1688.9	1070.1	660.9	399.9	292.2	192.6	134.1	111.9
4MVR225	425.0	262.5	149.1	85.0	61.8	40.6	27.6	22.6	1266.7	802.6	495.6	300.0	219.2	144.4	100.6	83.9
4MVR250	472.2	291.7	165.7	94.4	68.6	45.1	30.7	25.1	1407.4	891.6	550.6	333.4	243.5	160.5	111.8	93.2
4MVR275	519.4	320.8	182.3	103.9	75.5	49.7	33.8	27.7	1548.1	980.8	605.8	366.6	267.9	176.5	122.9	102.6
4MVR300	566.7	350.0	198.8	113.3	82.3	54.2	36.8	30.2	1688.9	1070.0	660.8	400.0	292.2	192.6	134.1	111.9
2MVR350	661.1	408.3	232.0	132.2	96.1	63.2	43.0	35.2	985.2	624.2	385.5	233.3	170.5	112.3	78.2	65.3
2MVR400	755.6	466.7	265.1	151.1	109.8	72.2	49.1	40.2	1125.9	713.3	440.5	266.7	194.8	128.4	89.4	74.6
2MVR450	850.0	525.0	298.3	170.0	123.5	81.3	55.3	45.3	1266.7	802.5	495.6	300.0	219.2	144.4	100.6	83.9
2MVR500	944.4	583.3	331.4	188.9	137.2	90.3	61.4	50.3	1407.4	891.7	550.6	333.3	243.5	160.5	111.8	93.2
2MVR550	1038.9	641.7	364.5	207.8	150.9	99.3	67.5	55.3	1548.1	980.8	605.7	366.7	267.9	176.5	122.9	102.6
2MVR600	1133.3	700.0	397.7	226.7	164.7	108.3	73.7	60.3	1688.9	1070.0	660.8	400.0	292.2	192.6	134.1	111.9
$U_{final} / \text{cell, V}$	1.60	1.60	1.60	1.65	1.70	1.75	1.75	1.8	1.60	1.60	1.60	1.65	1.70	1.75	1.75	1.8

NOTE: Stationary valve regulated lead acid batteries do not require topping up water. Pressure valves are used for sealing and cannot be opened without destruction. Non-compliance with installation and operating instructions, repairs made with other than original parts, or repairs made without authorization (e.g. opening of valves) render the warranty void.