OFF-GASSING

During the normal charging and discharging of VRLA batteries, the electrolysis of water into hydrogen and oxygen is recombined at an efficiency of 95% to 99%. Consequently, only a very small amount of gas is ever emitted from a VRLA battery.

The overcharging of any VRLA battery, on the other hand, will result in a greater electrolysis rate of water and the generation of excess hydrogen and oxygen. The internal pressure of the battery will then rise. If the pressure within a Jupiter battery, like most VRLA batteries, reaches between 1 and 2 psig, it will vent to relieve the excess pressure and then reseal. A hydrogen concentration of 4% in air has the potential to explode if an ignition source is provided. Therefore, most battery systems are designed to keep the hydrogen concentration in air below 2%.

The float voltage recommended for Jupiter batteries is 2.275 V/C (volts per cell), which is equivalent to 13.65 volts per battery. If this voltage is increased above 2.3 V/C, the amount of hydrogen that is generated and then vented begins to increase significantly. Please see the table below.

Jupiter Battery	Vent Rate at 2.3V/C
	(cc/hr/battery)
JB12-050	5
JB12-075	8
JB12-100	10
JB12-134	13

An increase in voltage to 2.5 V/C would likewise increase hydrogen venting by a factor of 20 or more. Therefore, it is critically important to insure that VRLA batteries are charged only at their recommended voltage.

As noted, the amount of hydrogen emitted from a Jupiter battery is normally very low under normal float charging voltages. Additionally, hydrogen is a very light gas and quickly disperses in air. Therefore, in systems consisting of open racks and naturally ventilated cabinets, any additional mechanical ventilation is seldom required. It is important to note, here, that the use of any lead-acid battery should never occur in sealed containers.