

	<b>Requirement</b>	<b>Recomm- endation</b>
B1. Notices	<p>1. A <b>warning notice</b> should be fitted on the door of the battery charging room and the wall of the battery charging room to instruct all persons to refrain from smoking and to switch of the charger before disconnecting the leads.</p> <p>2. A further notice should describe correct charging <b>procedures</b> and battery care to encourage good practice.</p>	
B2. Charging room	<p>1. A <b>separate room</b> in the power house, or a separate building altogether, must be provided for battery charging, with a separate outside entrance, and with more <b>ventilation</b> than specified for the turbine room.</p> <p>2. <b>The floor</b> of the battery-charging room must be sloped towards a drain.</p> <p>3. <b>Running water</b> must be available in this room.</p> <p>4. If there is more than one charger, the room must be large enough to allow <b>access</b> to each individual battery. Socket outlets for chargers should be one meter above floor level.</p> <p>5. A <b>main switch</b> should be positioned by the door which isolates all power entering the charging room</p> <p>6. <b>Wooden frames</b> should be placed about 25-50 mm above the floor and batteries charged on these frames, so that any acid spill falls to the floor safely and can be washed away easily.</p> <p>7. <b>The battery charger(s)</b> should be <b>positioned</b> about 300-450 mm above the floor on a short bench(es).</p>	
B3. Chargers and fittings	<p>1. <b>Chargers. Series</b> chargers are cheaper than <b>parallel</b> chargers but can reduce battery life through overcharging. If series chargers are used no more than three batteries should be charged to keep voltages to within safe limits. In general <b>good quality chargers</b> should be used as batteries are expensive and every effort taken to prolong their life</p> <p>2. <b>Voltage and current.</b> In order that the system is safe to handle while connecting and disconnecting batteries, the charging voltage should not exceed <b>40V DC</b>, which requires that a <b>maximum of three</b> 12V batteries are charged by one charger. In general it is recommended that several <b>small or single-battery chargers</b> are used rather than one or more large multiple-battery chargers.</p> <p>3. <b>Both a voltmeter and an ammeter</b> are required on the charging side of each charger.</p>	

	<p>4. <b>Overcurrent protection</b> of each charger is required; a miniature circuit breaker (MCB) is preferred to a fuse.</p> <p>5. <b>Colour coding.</b> Charger wires must be coloured red for positive and black for negative, and leads for interconnection between batteries must each have a red end and a black end.</p>	
B4. Batteries	<p>1. <b>Non-standard batteries.</b> If sealed batteries are brought in by customers they must be charged using a separate constant-voltage charger. Nickel-cadmium batteries require a separate special charger. Emergency lamps with integral chargers can be plugged into a AC socket outlet.</p>	
B5. Procedures	<p>1. All batteries must be <b>status checked</b>, by reading from a voltmeter across the terminals, and a <b>dead battery</b> must be dealt with separately, charging it at a slow rate to avoid excess currents damaging both the charger and the battery.</p> <p>2. All batteries must have their <b>cells opened</b> and the <b>acid level checked</b>. Cells must be left open during charging, to avoid danger of explosion during charging.</p>	
B6. Vehicle alternators	<p>1. <b>Vehicle alternator charging systems.</b> During operation, at least one battery must be connected to the alternator to prevent damage to the alternator. The small size of the turbine-generator unit means that it can usually be housed in a waterproof box rather than a power house.</p>	

