

Important

Read these instructions immediately on receipt. Failure to comply with these instructions can render any warranty null and void.€

Caution

| | | | |
|--|--|--|--|
| | No smoking, no naked flames, no sparks | | Clean all acid splash in eyes or on skin with plenty of clean water. Then seek medical help. Acid on clothing is to be washed with water. |
| | Electrical hazard | | Read instructions |
| | Electrolyte is corrosive | | Recycle scrap batteries. Contains lead |
| | Shield eyes | | Warning: Risk of fire, explosion, or burns. Do not disassemble, heat above 60°C, or incinerate. Avoid any short circuit. Metallic parts under voltage on the battery, do not place tools or items on top of the battery. |
| | Danger | | |

California Proposition 65 Warning – Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

PowerSafe® SBS batteries are supplied in a charged condition, and are capable of extremely high short circuit currents. Take care to avoid short-circuiting terminals of opposite polarity.

1. Receiving

1.1 In-Transit Damage or Short Shipments

Upon receipt of a shipment, check that the items delivered are undamaged and match the carrier's Bill of Lading. Report any damage or shortages to the carrier. EnerSys® is not responsible for shipment damage or shortages, which the receiver does not report to the carrier.

1.2 Shipment Damage or Shortages

Open the shipping containers and check the contents for damage and against the packing slip. Immediately inform EnerSys of any damaged or missing items. EnerSys is not responsible for damaged or missing items after a shipment has been in storage.

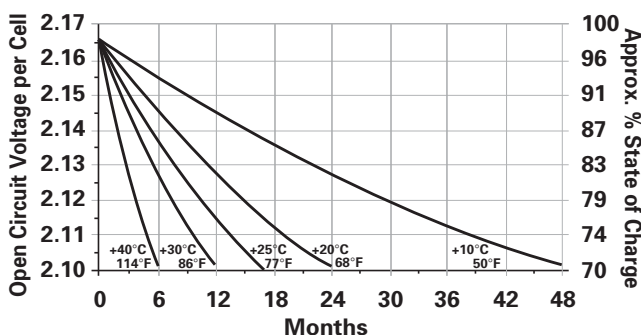
2. Storage

2.1 Storage Conditions and Time

If a battery cannot be immediately installed it should be stored in a clean, cool, dry area.

During storage batteries lose capacity through self-discharge. High temperature increases the rate of self-discharge and reduces the storage life.

The chart below shows the relationship between open-circuit voltage (OCV) and storage time at various temperatures.



PowerSafe® SBS

Instruction Sheet

The maximum storage times before a freshening charge is required and recommended open circuit voltage audit intervals are:

| Temperature °F / °C | Storage Time Months | OCV Audit Interval Months |
|------------------------|------------------------|------------------------------|
| 50 / 10 | 48 | 6 |
| 59 / 15 | 34 | 6 |
| 68 / 20 | 24 | 4 |
| 77 / 25 | 17 | 4 |
| 86 / 30 | 12 | 3 |
| 95 / 35 | 8.5 | 2 |
| 104 / 40 | 6 | 2 |

Monoblocs must be given a freshening charge when bloc voltages approach the equivalent of 2.10 volts per cell or when the maximum storage time is reached, whichever occurs first.

2.2 Freshening Charge

Charge the monoblocs, or string at a constant voltage equivalent to 2.27Vpc with 10% of the C8 current available for a period of at least 24 hours.

3. Battery Location

The battery compartment/room must have adequate ventilation to limit hydrogen accumulation to a maximum of 1% by volume of free air.

4. Installation

Install the batteries in accordance with the instructions and/or layout drawing, taking care to ensure correct terminal location and polarity. On each monobloc the positive terminal is identified by a "+" symbol.

Connect the blocs with the connectors and fasteners provided. The fastener torque value is:

| Type | Fastener Size | Torque lbf in / Nm |
|-----------------|------------------|-----------------------|
| SBS 8 | M4 | 9/1.0 |
| SBS 15 - 60 | M6 | 35 / 3.9 |
| SBS 110 - 390 | M8 | 44 / 5.0 |
| SBS J13 - 70 | M6 | 50 / 5.6 |
| SBS B8 - 14 | M8 | 44 / 5.0 |
| SBS C11 | M8 | 44 / 5.0 |
| SBS 145 | M6 | 44 / 5.0 |
| SBS B8F - 14F | M6 | 44 / 5.0 |
| SBS C11F | M6 | 44 / 5.0 |
| SBS 145F | M6 | 44 / 5.0 |
| SBS 170F - 190F | M6 | 80 / 9.0 |
| SBS 100 | M8 | 44 / 5.0 |
| SBS 100F | M6 | 44 / 5.0 |
| SBS 112F | M6 | 44 / 5.0 |

Place the insulating covers in position immediately after tightening the fasteners.

5. Operation

Constant voltage chargers are recommended. The charging voltage should be set at the equivalent of 2.27Vpc at 77°F/25°C or 2.29Vpc at 68°F/20°C. The minimum charging voltage, at any temperature, is 2.21 volts per cell. The recommended float voltage temperature compensation is:

| | Temperature °F / °C | | | | | | |
|-------------|---------------------|-------|-------|-------|-------|-------|--------|
| | 50/10 | 59/15 | 68/20 | 77/25 | 86/30 | 95/35 | 104/40 |
| Recommended | 2.33 | 2.31 | 2.29 | 2.27 | 2.25 | 2.23 | 2.21 |
| Minimum | 2.31 | 2.29 | 2.27 | 2.25 | 2.23 | 2.21 | 2.21 |

Do not over-discharge the battery. This can be avoided by including a Low Voltage Disconnect switch in the circuit or by disconnecting the battery from the load when the end discharge voltage is reached. The float voltage must be applied to the battery as soon as possible, and not later than 7 days after any discharge.

6. Maintenance

In practice the user usually specifies the maintenance schedule based on site criticality, location and manpower.

The following is a suggested maintenance schedule.

Every Six Months (Record All Readings)

Measure the battery string voltage. If necessary, adjust the float voltage to the correct value.

Measure individual bloc voltages. The blocs should be within 5% of the average.

All readings should be recorded in a format where sudden deviations and trends are easily identifiable. If necessary isolate the string/bloc and clean with a damp soft cloth. Do not use solvents or scouring powders to clean the blocs. Contact EnerSys® if you have any questions regarding maintenance.

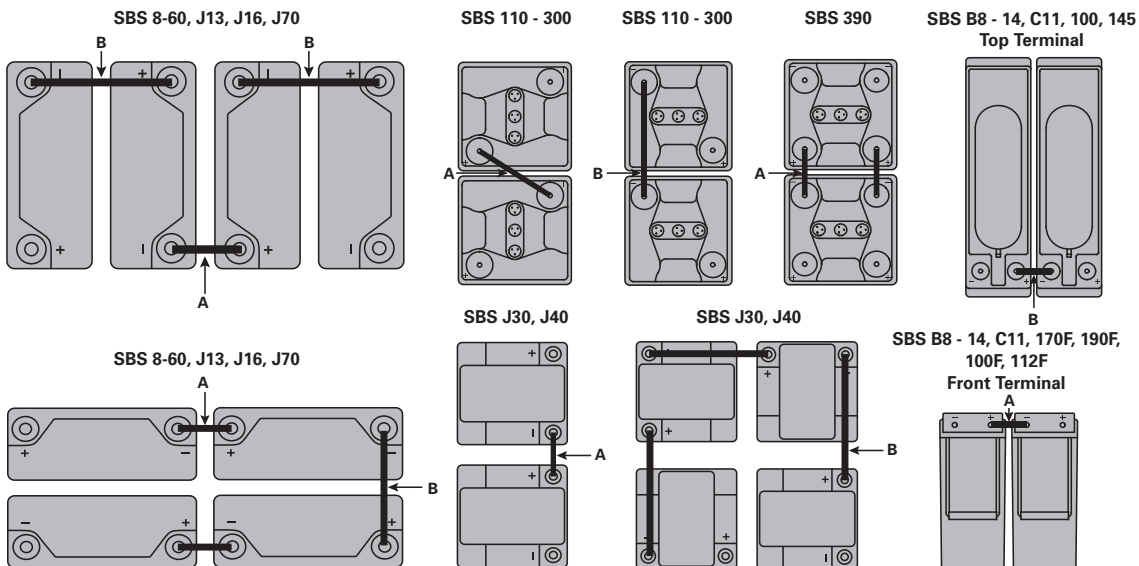
7. Disposal

PowerSafe® SBS batteries are recyclable. Scrap batteries must be packaged and transported in accordance with prevailing transportation rules and regulations.

Scrap batteries must be disposed of in compliance with local and national laws by a licensed or certified lead acid battery recycler.

| Type | Connector Part No. | |
|---------------|--------------------|-----------|
| | A | B |
| SBS 8 | 2205-8982 | 2205-8981 |
| SBS 15 | 2205-9851 | 2205-9850 |
| SBS 30, 40 | 2204-1123 | 2204-1124 |
| SBS 60 | 2204-1123 | 2205-4260 |
| SBS 110 - 300 | 2205-9887 | 2205-8865 |
| SBS 390 | 2205-9759 x 2 | N/A |
| SBS J13, J16 | 2205-9851 | 2205-9850 |
| SBS J30, J40 | 2204-1123 | 2205-4260 |
| SBS J70 | 2204-1123 | 2205-4420 |
| SBS B8 - 14 | N/A | 2205-8919 |

| Type | Connector Part No. | |
|-----------------|--------------------|-----------|
| | A | B |
| SBS C11 | N/A | 2205-8919 |
| SBS 145, 145F-V | 2205-0163 | 2205-0163 |
| SBS B8F-14F | C11CONN | N/A |
| SBS C11F | C11CONN | N/A |
| SBS 145F | 2205-0162 | N/A |
| SBS 170F-190F | VFCOONN | N/A |
| SBS 100 | N/A | 907054 |
| SBS 100F | 907052 | N/A |
| SBS 112F | VFCOONN | N/A |



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