










## 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® V-FT batteries are supplied in a charged condition and are capable of 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 the items delivered are undamaged and match the carrier's Bill of Lading. Report any damages 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 Product Damages 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 product has been in storage.

## 2. Storage

### 2.1 Storage Conditions and Time

Store the batteries in a clean, cool, dry area. Batteries lose capacity during storage.

High temperature increases the rate of capacity loss and reduces the storage life.

The following chart shows the relationship between temperature and storage time.

- 6 months at 68°F / 20°C
- 3 months at 86°F / 30°C
- 6 weeks at 104°F / 40°C

At the end of the end of the storage period or when cell voltages fall to 2.10 (12.60/6.3V per bloc), whichever comes first, the batteries must be given a freshening charge at 2.25 – 2.27Vpc at 77°F / 25°C for 48 – 96 hours.

Failure to comply with these instructions can result in reduced capacity and service life.

# PowerSafe®

## FRONT TERMINAL Instruction Sheet

### 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 bloc the positive and negative terminals are identified with "+" and "-" symbols.

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

Type	Fastener Size	Torque lbf in / Nm
12V30FT	M6	44 / 5
12V38FT	M6	44 / 5
12V62FT	M6	44 / 5
12V92F-FT	M6	44 / 5
12V100FC	F8	44 / 5
12V101F	F8	80 / 9
12V105FS	M6	80 / 9
12V125F	M6	80 / 9
12V155FS	M6	80 / 9
12V170F	M6	80 / 9
12V170FS	M6	80 / 9
12V190F	M6	80 / 9

## 5. Operation

### 5.1 Temperature

Optimum battery operating temperature is 68°F / 20°C to 77°F / 25°C. The operating temperature should not exceed 22°F / -5.6°C to 122°F / 50°C.

### 5.2 Float Charge

Constant voltage chargers are recommended. The charging voltage should be set at the equivalent of 2.27Vpc at 77°F / 25°C. The minimum charging voltage at any temperature is 2.19Vpc.

The charger float voltage should be adjusted when battery temperature deviates by more than 9°F / 5°C. Adjusted string float voltages are:

Temp °F / °C	Nominal 24V String Float Voltage	Nominal 48V String Float Voltage
32 / 0	27.90 – 28.26	55.80 – 56.52
41 / 5	27.72 – 28.08	55.44 – 56.16
50 / 10	27.54 – 27.90	55.08 – 55.80
59 / 15	27.36 – 27.72	54.72 – 55.44
68 / 20	27.18 – 27.54	54.36 – 55.08
77 / 25	27.00 – 27.36	54.00 – 54.72
86 / 30	26.82 – 27.18	53.64 – 54.36
95 / 35	26.64 – 27.00	53.64 – 53.28
104 / 40	26.26 – 26.62	52.52 – 53.24
113 / 45	26.28 – 26.44	52.56 – 52.88

For chargers with automatic temperature compensation the recommended float voltage temperature compensation is:

+3mV per cell per 1.8°F / 1°C below 77°F / 25°C

-3mV per cell per 1.8°F / 1°C above 77°F / 25°C

### 5.3 Discharge

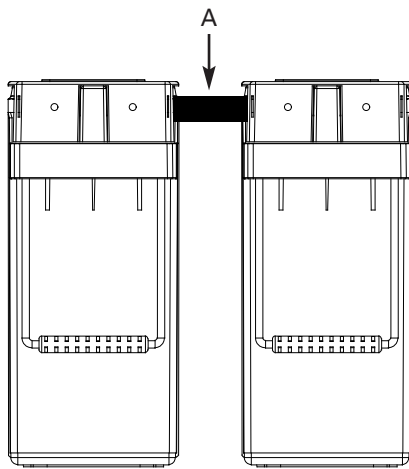
Do not over-discharge the battery. This can be avoided by including a Low Voltage Disconnect switch in the circuit or by disconnecting the battery from the load when the end discharge voltage is reached.

### 5.4 Recharge

After a discharge the battery should be recharged as soon as possible. The battery must not be in a discharged condition for more than 72 hours.

## 6. Maintenance

In practice the user usually specifies the maintenance schedule based on site criticality, location and manpower. The following is the recommended minimum maintenance schedule:



V FRONT TERMINAL

A = VFCONN

### Every Six Months (Record All Readings)

Measure, at the battery terminals, the string voltage. If necessary adjust the charger 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.

Inspect for loose or corroded connectors, acid leaks and dust. If necessary isolate the string/blocs and clean with a soft damp cloth. Do not use solvents or scouring powders to clean the blocs. Contact EnerSys® if you have any questions regarding maintenance.

## 7. Disposal

PoweSafe® V-FT 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.



## Battery Services for Backup Power

- Battery Installation
- Capacity and Acceptance
- Preventative Maintenance

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