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SOS1

SOS2

SOS SERIES

Spares On Site
Battery Cabinet
Installation Guide

5-1-2015rEV3

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the SOS1/SOS2 battery cabinet.

This specification is designed to be a guide to help install the SOS1/SOS2 battery cabinet safely.

SOS1/SOS2 battery cabinet installation should only be performed by qualified, experienced personnel, following these instructions step-by-step, adopting normal safety precautions for electrical installations, paying particular attention to those highlighted in this specification. Compliance with all applicable codes and regulations is the ultimate responsibility of the personnel who is installing the equipment.

WARNING: Lethal voltages may be present within this unit even when it is apparently not operating. Observe all cautions and warnings in this manual. Failure to do so MAY result in serious injury or death. Never work alone.

This product is designed for Commercial or Industrial use only. This product is not intended for use with life support and other U.S. FDA designated “critical” devices.

Observe the following safety precautions when working on the external battery cabinet or the batteries:

- **NOTE:** Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.
- **NOTE:** When replacing batteries, use the same number and type originally used in the system. The batteries should be valve-regulated, lead-acid type.
- **CAUTION:** DO NOT dispose of battery or batteries in a fire. The battery or batteries may explode.
- **CAUTION:** DO NOT open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- **CAUTION:** A battery can present a risk of electrical shock and high short circuit current. Observe proper precautions.
- **CAUTION:** Lead-acid batteries contain hazardous toxic materials. Handle, transport and properly dispose or recycle the batteries in accordance with your local codes and regulations.

The following safety procedures shall be followed when working on the external battery cabinet:

- Have available the following equipment for safe handling of the batteries and protection of personnel:
  - Goggles and face shields.
  - Acid resistant insulated gloves.
  - Protective aprons and overshoes.
  - Lifting devices of adequate capacity, when required.
  - Insulated tools.
  - Rubber mats for the floor.
- Remove watches, rings or other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- DO NOT lay tools or metal parts on top of batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
  CAUTION/WARNING: Use extreme caution when making connections. Do not allow cables to touch anything except the intended connection spot.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove the source of ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shocks will be reduced if such grounds are removed during installation and maintenance.

- Inspect all lifting equipment for functional adequacy and to make sure it is of sufficient capacity to lift the weight involved (725 lbs SOS1 & 1350 lbs SOS2.). These weights are listed as maximum worse case with batteries installed. Weights can vary dependent upon battery model and quantity. Units are shipped empty and batteries are installed on site.
- Prohibit smoking and open flame, and avoid arcing in the immediate vicinity of the battery.
- Ensure that adequate illumination requirements for inside the cabinet are met.
- Always make sure there is an unobstructed path from the battery area to the exit.
- Avoid static build up by having personnel contact ground prior to working on batteries.
- This external battery cabinet is designed for use on a properly grounded (earthed), 100-240 VAC, 50-60 Hz supply.
- To maximize battery performance and life, operate the external battery cabinet in an indoor environment only in an ambient temperature range of 15°C to 25°C (59°F to 77°F).
- Install the cabinet in a clean environment, free from conductive contaminants, moisture, flammable liquids, gasses or corrosive substances.
- Keep all vents free of dust accumulation that could restrict airflow.
- Never block or insert any object into the ventilation holes or other openings.

ELECTROMAGNETIC COMPATIBILITY

The SOS1/SOS2 battery cabinet comply with the limits for a Class A digital device, pursuant to Part 15 of FCC rules. These limits provide reasonable protection against harmful interference in a commercial environment. This device generates, uses, and radiates radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operating this device in a residential area is likely to cause harmful interference, which the user must correct at their own expense.

CAUTION LABEL USED

1). Dangerous voltages exist across the battery and/or load terminals. Take necessary safety precautions.
2). Risk of electrical shock.

1). RISK OF ELECTRICAL SHOCK. Hazardous live parts inside energized from the battery supply even when AC power is disconnected.
2). SHIELD EYES. Explosive gases, can cause blindness or injury.
3). Flush eyes immediately with water. Get medical help fast.
4). Sulfuric acid can cause blindness or severe burns.
5). No sparks, flames, smoking.

Preparation

This installation guide provides information needed for positioning the SOS1/SOS2 battery cabinet (including environmental requirements) and for connecting the AC input and DC output power cables.

Inspection

Upon receiving the SOS1/SOS2 battery cabinet, examine the packaging for any signs of mishandling or damage. If any damage is noted, call your local MGE representative and/or notify your carrier.

Environment

Note: Operating in temperatures above 77°F (25°C) will reduce battery life. The external battery cabinet environment must be free of conductive contaminants and excessive moisture (water condensation, flammable vapors, chemical fumes, or corrosive gasses and liquids).

Required Setup Equipment

The tools below are required to properly setup your SOS1/SOS2 battery cabinet:

- Pallet jack
- Torque wrench (in-lb.)
- Flathead screwdriver
- #2 Phillips head screwdriver

Site Preparation

When deciding where to locate your SOS1/SOS2 battery cabinet, consider the weight and size of the unit. Make sure the structural integrity of the floor can withstand the weight of the SOS1/SOS2 battery cabinet. Following are the dimensions for the SOS1/SOS2 battery cabinets.

SOS1: Weight: 725 lbs. (329 kg)
(with Max. quantity of heaviest battery)
Height: 17.75” (451 mm)
Width: 16.00” (407 mm)
Depth: 33.50” (851 mm)

SOS2: Weight: 1350 lbs. (613 kg)
(with Max. quantity of heaviest battery)
Height: 35.25” (896 mm)
Width: 18.00” (458 mm)
Depth: 33.50” (851 mm)

Check to be sure that the SOS1/SOS2 battery cabinet will be in a well-ventilated area with the ability to access it for battery removal, or ability to move it for battery removal.

The SOS1/SOS2 battery cabinet is strapped to the shipping pallet to ensure safety. It is recommended that a pallet jack be used to transport the unit to its operating location (prior to unbolting the SOS1/SOS2).

Unloading

Unloading the SOS1/SOS2 Battery Cabinet

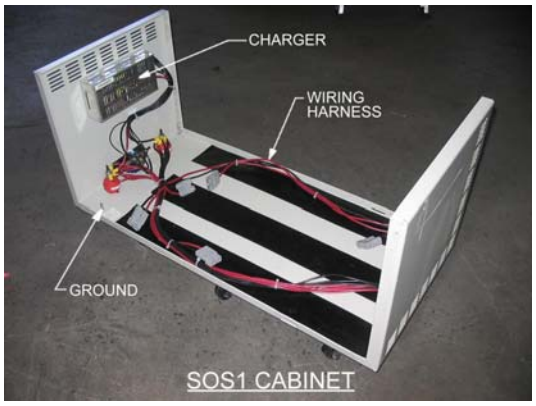
CAUTION: The SOS1/SOS2 battery cabinet shipped empty weighs approximately (75 lbs./34 kg for the SOS1 and 175 lbs./ 80 kg for the SOS2). At least two people should be present to unload it off of the pallet.

1. Once the SOS1/SOS2 battery cabinet is near the desired operating location, remove the packaging protecting the outer cabinet surfaces.

2. Position cabinet in desired location and lock front rolling casters.

Battery Installation

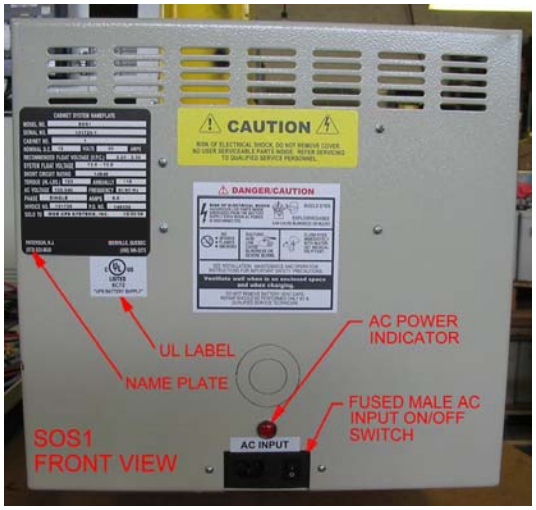
WARNING: Please read this section thoroughly before attempting to install wiring to this unit. Be sure that the unit is not connected to any AC utility power before installing any wiring to the unit. The SOS1/SOS2 battery cabinet should be installed by a qualified / certified electrician. Product is covered under USL to UL 1778 2nd Edition.



Removing the Top Cover (SOS1) or Side Panels (SOS2)

SOS1: Using a Phillips head screwdriver remove the five screws from each side of the cabinet. Top cover can then be lifted off. Keep the top cover off to the side.

SOS2: Using a Phillips head screwdriver remove the eight screws from each side of the cabinet. Both left and right side panels are removable. Keep the side panel(s) off to the side.



AC Connection

SOS Cabinets are supplied with an AC power cord which plugs into a male connect on the cabinet. This also serves as a fused ON/OFF AC power switch.

Use 75°C copper cable for all connections.

DC Connection

Wiring Batteries to charger

Each SOS unit comes with a wiring harness that is mounted inside the cabinet and wired to the internal battery charger. The units also provide a fused battery connector for each battery that allows the battery to be connected in parallel to the wiring harness. Use the following step-by-step procedure to position and connect the batteries to the wiring harness.

1). With top panel (SOS1) or side panels (SOS2) removed, take 10 amp/120vac AC cable, and DC wiring disconnectors from inside the cabinet and put aside. Do not connect cabinet to AC power source yet.

2). Observe supplied system wiring drawing which shows position of batteries. Using this drawing position batteries inside cabinet, noting locations of battery polarities and making sure they match with layout on drawing.

3). Connect DC wiring disconnect to each battery's terminal using torquing specifications listed on batteries. Red cable to positive terminal, black cable to negative terminal.

CAUTION: Be certain that the cable is connected to the proper polarity.

4). Measure and note each batteries Open Circuit Voltage (OCV) using a DC voltmeter.

5). Connect DC wiring harness to DC disconnect.

6). Connect 10 amp/120vac AC power cord's female receptacle into cabinet's AC male receptacle. Be sure ON/OFF switch is in the OFF position. Plug AC male end into 120vac outlet.

7). Turn on ON/OFF switch located on cabinet. Charger will power up and begin charging batteries. Amber light on outside of cabinet will turn on indicating there is AC power going to the charger.

8). While charging, measure each individual battery's voltage at battery terminals. Depending on what the battery's OCV was you should see an increase in voltage for each battery. <u>This will assure that none of the inline fuses are blown from improper wiring and that the batteries are being charged.</u>

9). After completing the system startup, put the top cover (SOS1) or side panels (SOS2) back on using the Phillips head screws.

Charger Specifications:

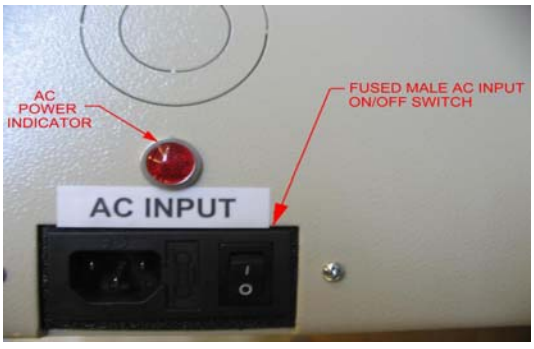
Model: SP-150-13.5

	100-240VAC
Maximum Input AC Current	2.5 A
AC Input Protection	6 A
Maximum Output DC Current	11.2 A
Overload Protection	105-150% Rated Output Power
Operating Humidity	20-90% RH non-condensing
Storage Humidity	10-95% RH

Model: SWS150-15

	100-240VAC
Maximum Input AC Current	2.1 A
AC Input Protection	6 A
Maximum Output DC Current	10 A
Overcurrent Protection	>105%, Constant Current Style
Overvoltage Protection	115-135%, Cycle AC line to reset
Operating Humidity	30-90% RH
Storage Humidity	10-95% RH

CBL-8087

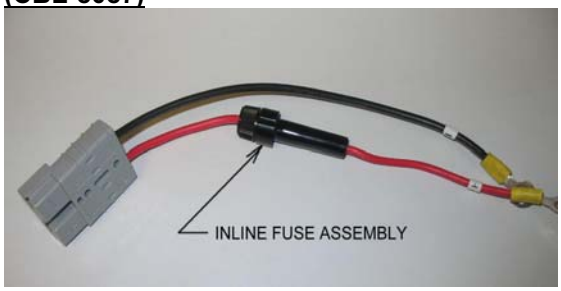


AC/DC INLINE FUSE REPLACEMENT

AC FUSE REPLACEMENT:

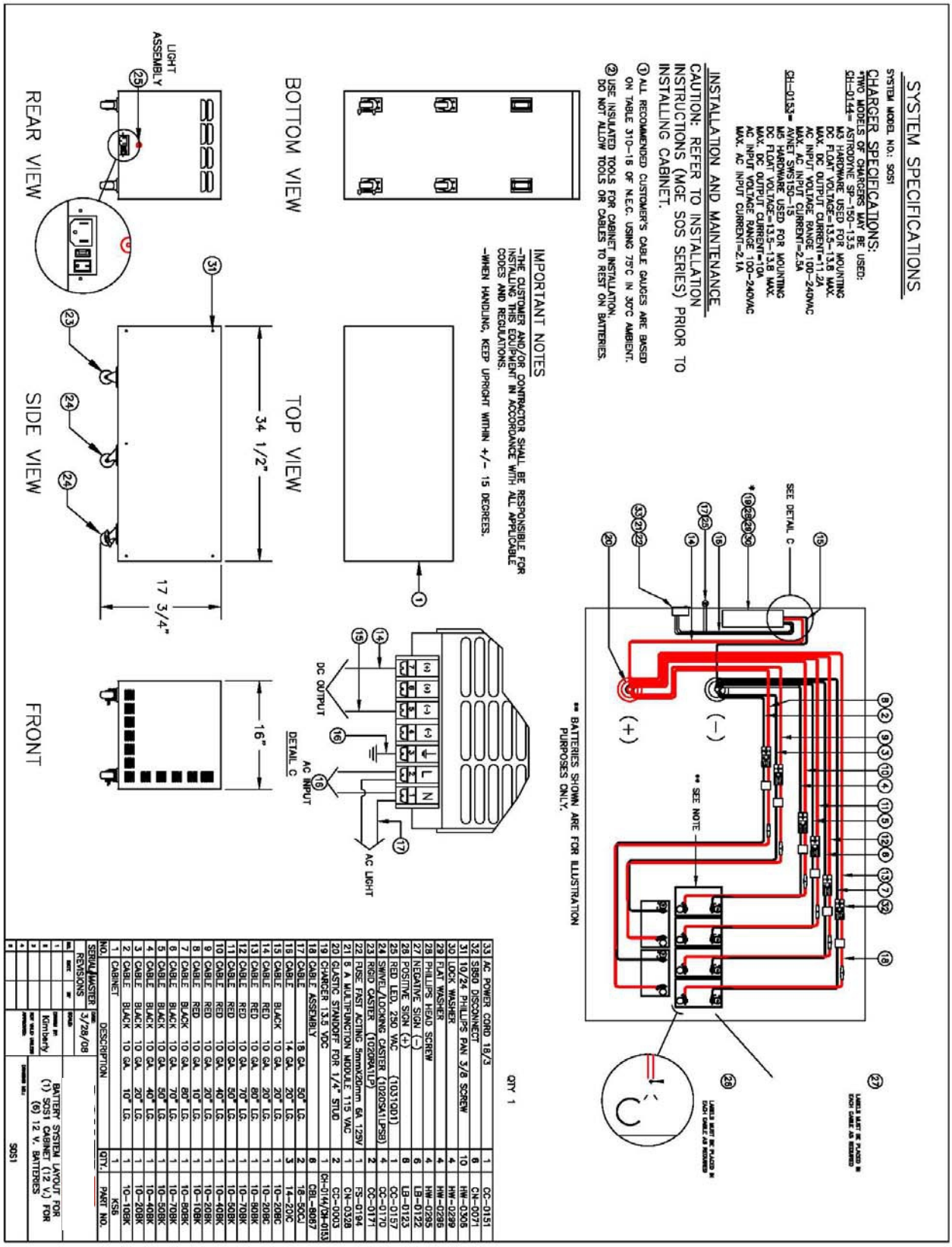
With AC power disconnected remove fuse as shown in above picture. Use a small flat head screwdriver to pop out plastic fuse housing. Fuse type is a BUSS GMA, 6 amp 125 volt. Insert new fuse inside plastic housing and push back into place on fused AC housing. Re-connect AC Power.

DC FUSE REPLACEMENT: (CBL-8087)



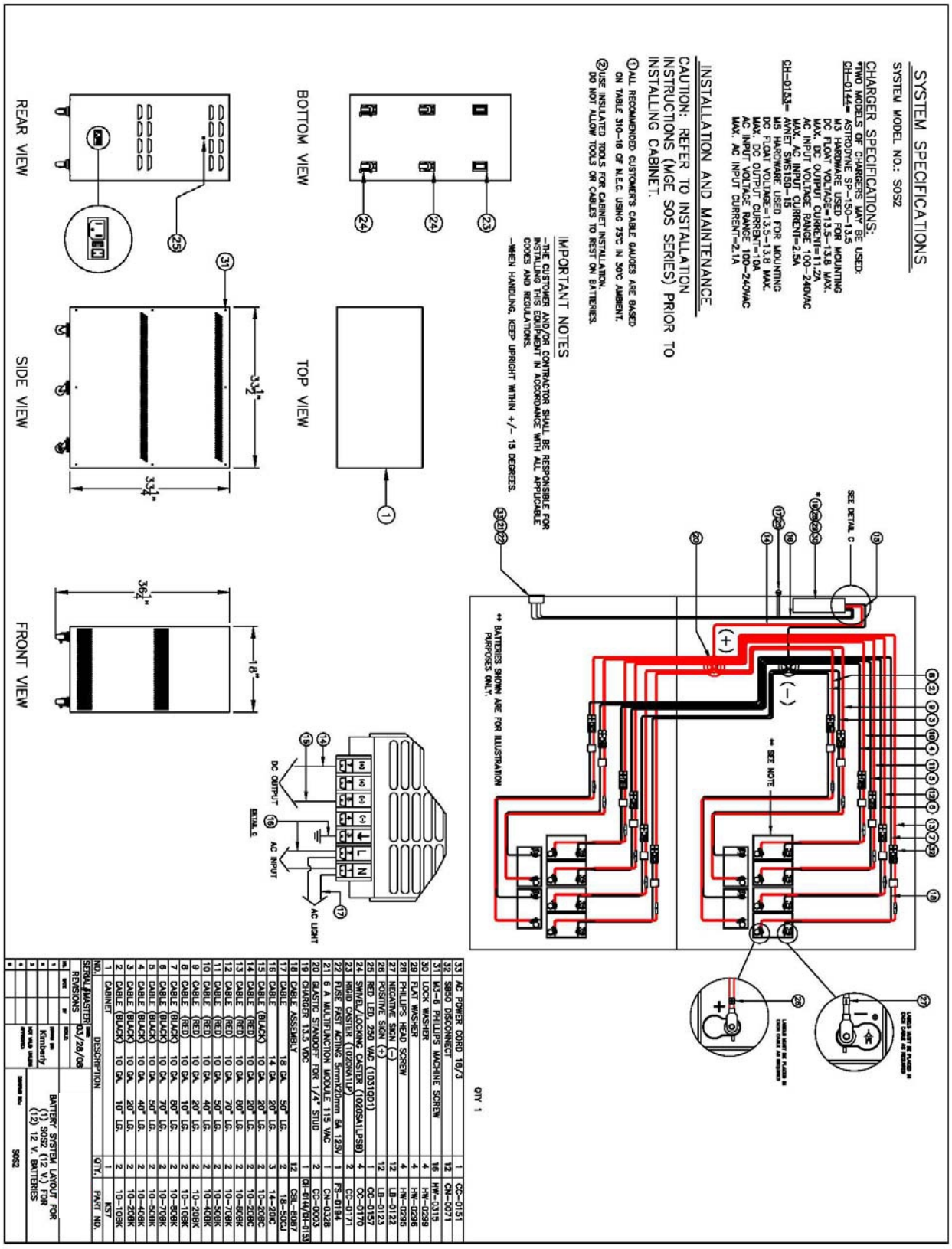
Located on the DC disconnect is a 20 amp inline fuse. Fuse type is a 307 SFE, 20 amp 32 volt. Disconnect from wiring harness. Inline fuse assembly is spring loaded. Push down and twist to open and remove blown fuse. To replace with new fuse, follow procedure in reverse. Reconnect to wiring harness.

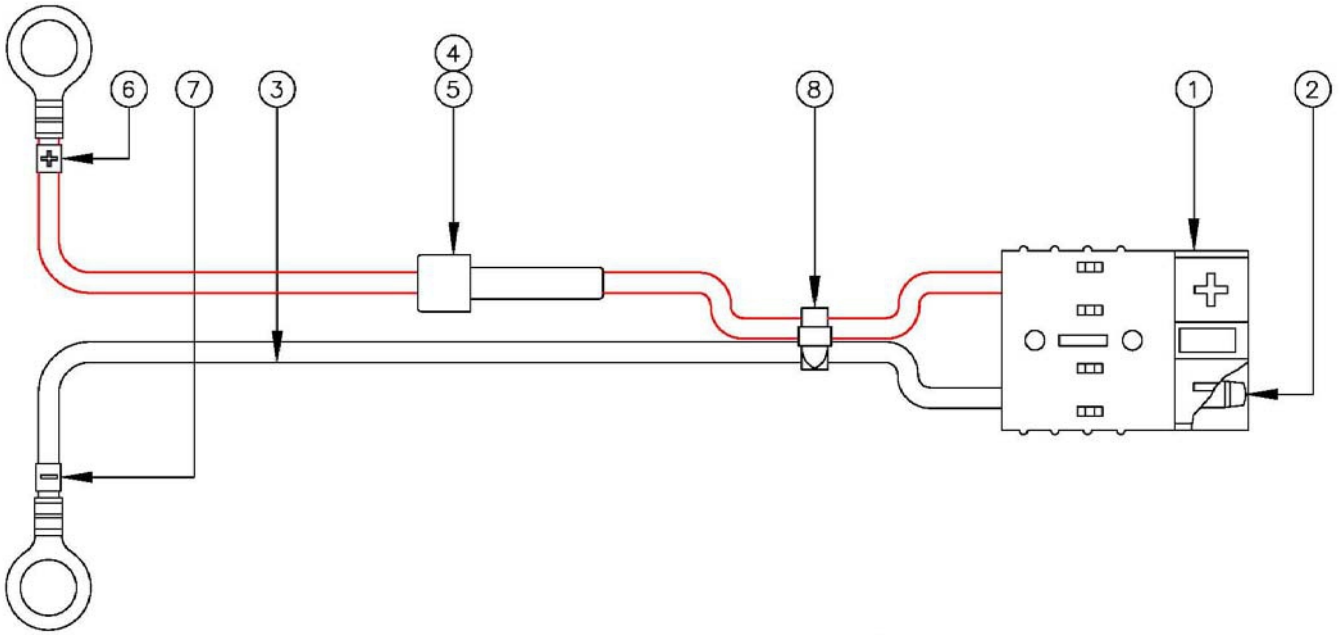
SOS1 SYSTEM DRAWING:



NO.	DESCRIPTION	QTY.	PART NO.
33	AC POWER CORD 18/3	1	CC-0151
32	SB80 DISCONNECT	6	CH-0071
31	10/24 PHILLIPS PAN 3/8 SCREW	10	HW-0308
30	LOCK WASHER	4	HW-0299
29	FLAT WASHER	4	HW-0295
28	PHILLIPS HEAD SCREW	4	HW-0285
27	NEGATIVE SIGN (-)	6	LB-0122
26	POSITIVE SIGN (+)	6	LB-0123
25	RED LED, 250 VAC (1031QD1)	1	CC-0157
24	SWIVEL/LOCKING CASTER (1020SA1LPSB)	4	CC-0170
23	RIGID CASTER (1020RA1LP)	2	CC-0171
22	FUSE FAST ACTING 5mmX20mm 6A 125V	1	FS-0194
21	8 A MULTIFUNCTION MODULE 115 VAC	1	CH-0328
20	PLASTIC STANDOFF FOR 1/4" STUD	2	CC-0003
19	CHARGER 13.5 VDC	1	CH-0144/CH-0163
18	CABLE ASSEMBLY 6 GA. 50" LG.	2	CBL-8087
17	CABLE 18 GA. 50" LG.	2	18-50CU
16	CABLE BLACK 14 GA. 20" LG.	3	14-20C
15	CABLE BLACK 10 GA. 20" LG.	1	10-20BC
14	CABLE RED 10 GA. 20" LG.	1	10-20RC
13	CABLE RED 10 GA. 80" LG.	1	10-80RC
12	CABLE RED 10 GA. 70" LG.	1	10-70RK
11	CABLE RED 10 GA. 50" LG.	1	10-50RK
10	CABLE RED 10 GA. 40" LG.	1	10-40RK
9	CABLE RED 10 GA. 20" LG.	1	10-20RK
8	CABLE RED 10 GA. 10" LG.	1	10-10RK
7	CABLE BLACK 10 GA. 80" LG.	1	10-80BK
6	CABLE BLACK 10 GA. 70" LG.	1	10-70BK
5	CABLE BLACK 10 GA. 50" LG.	1	10-50BK
4	CABLE BLACK 10 GA. 40" LG.	1	10-40BK
3	CABLE BLACK 10 GA. 20" LG.	1	10-20BK
2	CABLE BLACK 10 GA. 10" LG.	1	10-10BK
1	CABINET	1	KS6

SOS2 SYSTEM DRAWING:





NO.	ITEM DESCRIPTION	QTY.	PART NO.
8	CABLE TIE	1	CN-0175
7	WIRE MARKER (NEG.)	1	LB-0122
6	WIRE MARKER (POS.)	1	LB-0123
5	FUSE 3AG FAST ACTING 20A 32V	1	FS-0195
4	INLINE 20A FUSE HOLDER (441-R3328-GR)	1	FS-0193
3	CABLE BLACK 12 GA. 10" LG.	1	12-10BK
2	SB POWERPOLE CONTACTS	2	CN-0272
1	SB HOUSING	1	CN-0071

REVISION		
REV. NO.	BY	DATE

DATE: 05/05/08
SCALE:
DRAWN BY: Luis
NOT VALID UNLESS APPROVED:

PLUG & CABLE ASSY. FOR SOS SYSTEM CABINETS

DWG. NO.: CBL-8087

ATBATSYS
Integrated Critical Power Solutions