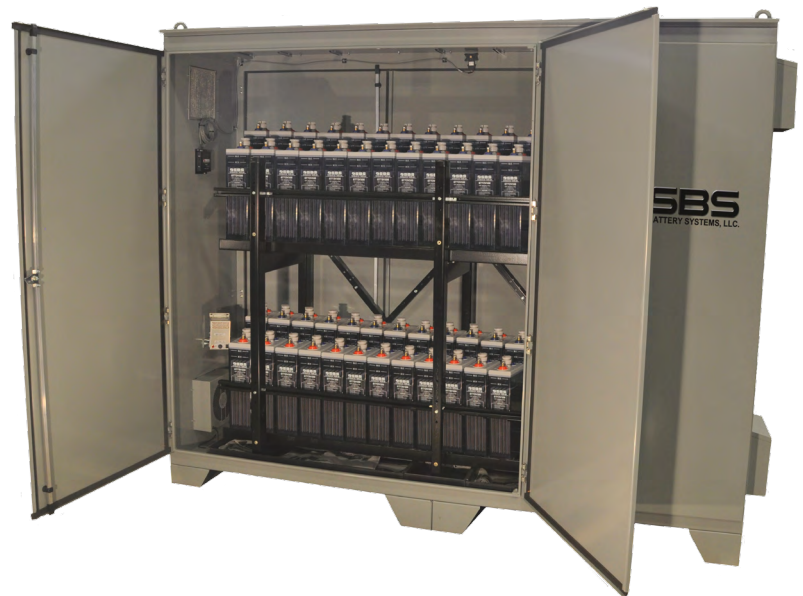


Battery & Charger Enclosures

Custom-Built NEMA 1, 3R and 12 Enclosures

SBS designs and builds custom DC enclosures for battery systems and/or chargers. A typical cabinet integrates batteries, racking and chargers into an indoor (NEMA 1 or 12) or outdoor (NEMA 3R) rated enclosure. There are many different options and accessories available, making every system unique and built to your site-specific needs.



Typical Industry Standards

- NEMA Type 1, 3R, 12
- UL Listed Type 1, 3R, 12
- CSA Type 1, 3R, 12
- IEC 60529

Typical Features

- ANSI-61 gray powder coated finish
- Carbon steel (0.104 – 0.125")
- Continuously welded and ground smooth seams
- Lifting eyes for easy handling
- Concealed door hinges
- Key / Padlocking handle
- 3-point locking mechanism
- Body stiffeners
- Oil resistant gasket
- Ground stud on door
- Print pocket provided on door
- Provision for mounting LED light

Accessories and Options

- Grill and washable filter kit
- Fan kit (includes grill and filter)
- Rain hood (for outdoor NEMA 3R applications)
- Door-activated LED lighting
- NEMA 12 vents and fan kit
- Subpanel
- Heater with built-in thermostat
- Floor stand kit (6" or 12" stands available)
- Drip shield
- Viewing window
- Batteries (Flooded LA, VRLA or NiCd)
- Battery rack and rack installation
- Spill containment
- Battery charger and charger installation
- DC cabling

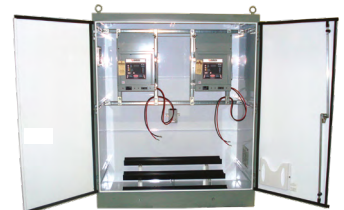
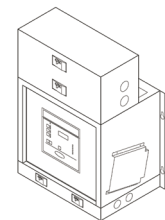
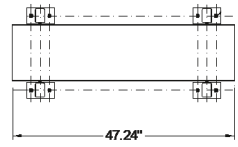
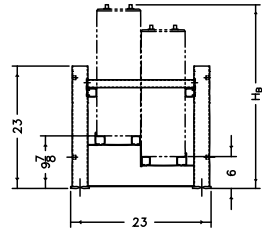
NEMA Type 1 – Enclosures are for indoor use to provide a degree of protection to personnel against access to hazardous parts and to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt). ***This is a basic indoor cabinet that will include venting for batteries.***

NEMA Type 3R – Enclosures are for indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow); and that will be undamaged by the external formation of ice on the enclosure. ***This is a typical outdoor cabinet that will require rain hoods for the vents.***

NEMA Type 12 – Enclosures are for indoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and circulating dust, lint, fibers, and flyings); and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing). ***This cabinet will require NEMA 12 vents and/or cooling fans.***

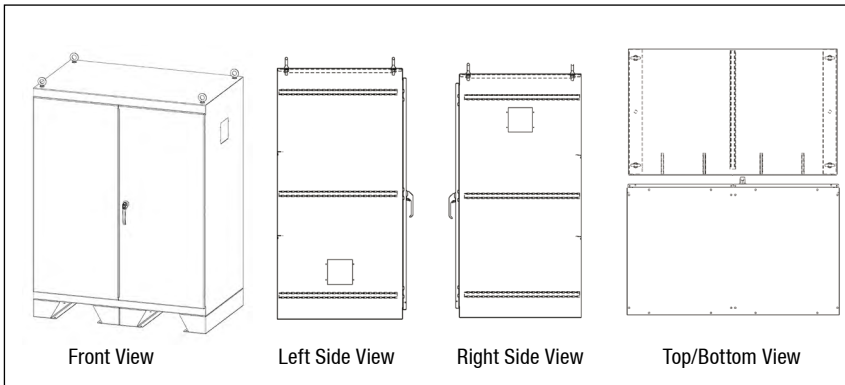
Tips for Designing Enclosures

- What equipment will be installed inside the enclosure? Only a charger? A battery/rack? A battery/rack and charger? Will other equipment such as spill containment or a DC disconnect switch be mounted inside the enclosure?
- After the equipment is decided upon, the details of that equipment must be determined. If the batteries are known, the next step is to determine the rack type and size, and, if required, the spill containment size. If a charger is being installed, what is the cabinet style/size? This is all necessary information for determining the minimum length, width and height of the enclosure.
- There may be multiple ways to configure the cabinet, so consider all possible options. For instance, if a battery, rack and charger are required the system can be designed using a 2-step rack with the charger mounted above, or with a 2-tier rack with the charger mounted to the side of the rack. Depending on the equipment being installed, one solution may be a more logical choice than the other.
- A rack measuring 47.24" L x 23" D cannot be installed in a 48" L x 24" D enclosure. The dimensions of the cabinets are the outside dimensions, so it is important to take into account the thickness of the material and body stiffeners that are attached to the sides and back of the cabinet for support, fans that take up internal length, etc.



Length and Depth (Width) Considerations:

- For the length, if a fan is required, factor in 3" of extra space per side or 6" total.
Example: a 45" L rack will need an extra 3" per side or a minimum cabinet length of 51" L (round up to 60" L).
If a fan is not required, 1" of space per side is acceptable, so a 48" L cabinet could work.
- For the depth, factor in 1" of extra space for the front and back or 2" total.
Example: a 22" D rack will safely fit into a 24" D cabinet.
- If a spill containment system is being installed, use the tray dimensions, rather than the rack dimensions, and the same rules above apply.



Height Considerations:

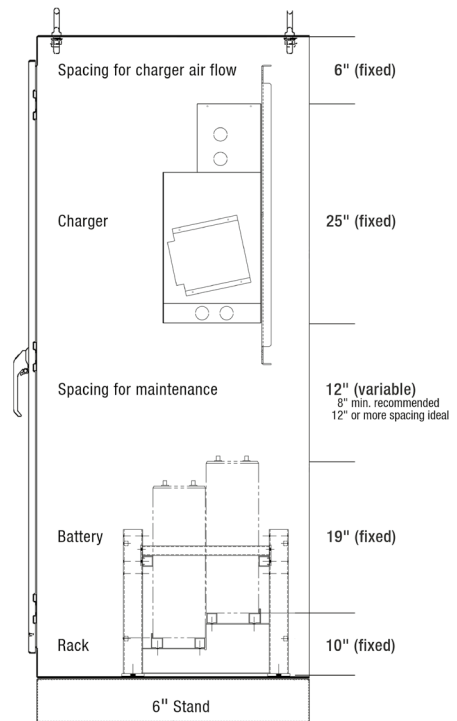
Chargers need room to breathe and batteries need extra room above for maintenance (watering and testing). To calculate the minimum height of the cabinet, use this general information/formula:

$$\text{Minimum Cabinet Height} = \text{Rack height (to top of rail)} + \text{Battery height} + \text{Space above battery (12" ideal)} + \text{Charger height} + \text{6" (for space above charger)}$$

Example: Rack height = 10" Battery height = 19" Charger = 25"

Minimum enclosure height = 10" + 19" + 12" + 25" + 6" = 72" (use 72" H cabinet minimum)

Note: if there is a situation where the above rules cause an issue, contact SBS for possible rack/cabinet customizations.



Common Battery Enclosure Sizes

Technical Data					
Part No.	No. of Doors	Length (in.) [w/ rain hoods]	Width/Depth (in.)	Height (in.) [w/ 6" legs & eye bolts]	Vent/Fan Size (in.)
SBS-603624STD	1 door	36 [45]	24	60 [67.75]	6
SBS-723624STD	1 door	36 [44]	24	72 [79.75]	6
SBS-723636STD	1 door	36 [45]	36	72 [79.75]	6
SBS-903636STD	1 door	36 [45]	36	90 [97.75]	6
SBS-724824STD	1 door	48 [57]	24	72 [79.75]	6
SBS-724836STD	1 door	48 [57]	36	72 [79.75]	6
SBS-726024STD	1 door	60 [69]	24	72 [79.75]	6
SBS-726036STD*	1 door	60 [69]	36	72 [79.75]	6
SBS-907224STD*	2 door	72 [81]	24	90 [97.75]	6
SBS-907236STD*	2 door	72 [81]	36	90 [97.75]	6
SBS-8611230STD*	3 door	112 [121]	30	86 [93.75]	10
SBS-8614930STD*	4 door	149 [158]	30	86 [93.75]	10

*These models typically use two sets of legs.



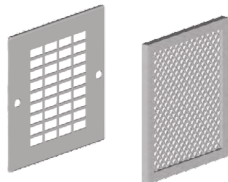
Single door cabinet

Two door cabinet



Three door cabinet

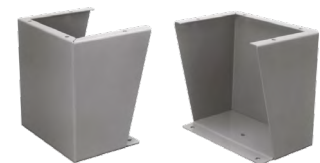
Standard/Typical Accessories



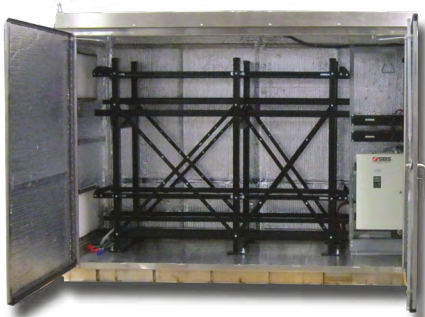
NEMA1 grille & washable aluminum filter kit - Stainless steel grill with thumb screws. Available in 6" and 10" sizes.



Charger subpanel and charger installation - Full or half size subpanels can be installed inside the enclosure to mount the charger and other equipment. This feature is common when a charger is pre-installed inside an enclosure. The subpanel typically mounts to the sides of the cabinets and can telescope towards the front or back of the cabinet.



Floor stand kit (required for NEMA Type 3R applications) - Kit includes two stands. Larger cabinets require two kits (4 stands). Stands measuring 6"H are standard and 12" stands are optional.

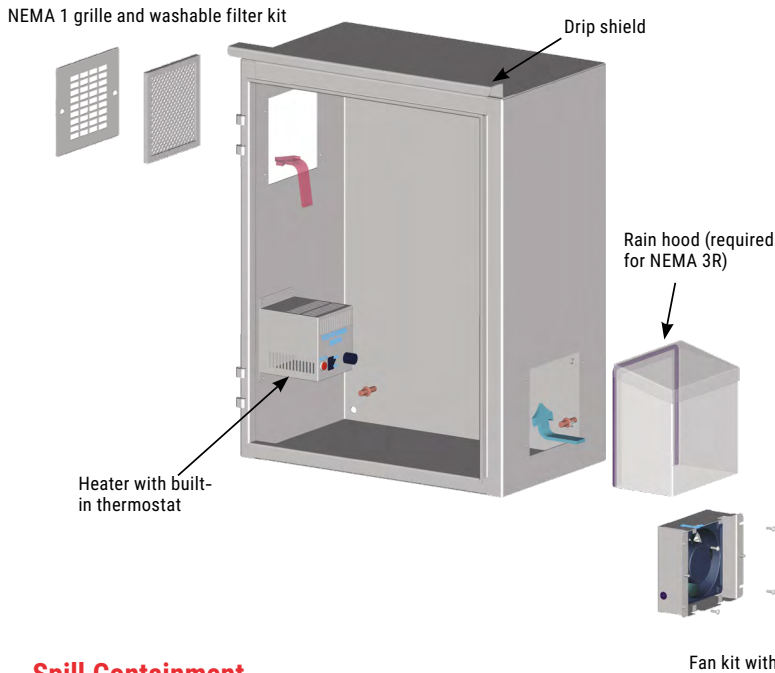


Rack assembly and installation - SBS will assemble and mount the battery rack inside the cabinet so once the enclosure is set in place it can be loaded with the batteries. To permanently mount the rack, the floor stand kit is required.



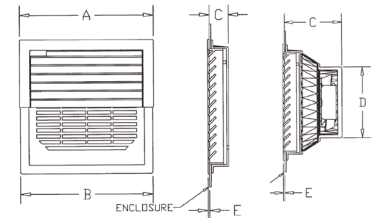
DC cabling - SBS will supply and connect the DC cables to the charger and provide the proper cable, lugs and insulating covers needed to connect to the supplied battery.

Battery Enclosure Options



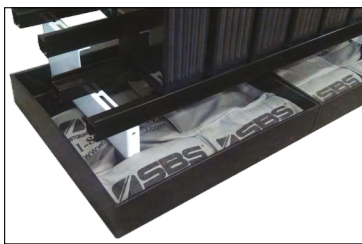
NEMA Type 3R and 12 Applications

- **Rain hoods** - When added to the standard grille/filter kit or to the fan/grille/filter kit, these will prevent rain, sleet, snow or water from being drawn into the enclosure. Rain hoods are necessary for outdoor NEMA Type 3R applications.
- **Drip shield** - Protects door hardware against dripping water and settling dust.
- **NEMA Type 12 grille and washable filter kit** - Housing and grille are made of heat resistant ABS-FR black material.
- **NEMA Type 12 fan kit with grille and filter** - Housing and grille are made of heat resistant ABS-FR black material. 110 Vac 60Hz or 230 Vac 50/60Hz input available.



Spill Containment

- SBS spill containment system can be pre-installed under our standard or seismic rack. They can be supplied with or without acid-absorbing and neutralizing pillows.



Thermal Management/Venting

- **Heater with built-in thermostat** - Models available with either 120 Vac 60Hz or 230 Vac 50/60Hz input from 125–800 Watts. Brushed aluminum housing, thermostat range is 0 to 100° F, fan blows heat upwards, switch for auto or fan setting. UL recognized component.
 - **Fan kit with grille and filter** - This kit is designed to bring outside air into the enclosure from the bottom and force the hot air out of the top of the other side. In a battery application the fan will also help to force built up hydrogen gas out. The fan kit increases the venting efficiency and reduces the temperature inside of the cabinet to the outside ambient temperature. 110 Vac 60Hz or 230 Vac 50/60Hz input options available.
- **Thermostat for fan** - Set point range of 30 to 140° F. Normally Open (NO) contact to operate switch. Switch capacity: 10Amp 120 – 250 Vac resistive load, 1Amp 120 – 250 Vac inductive load, 1.25Amp 24 Vdc 35mm DIN rail mounted.



Other Options

- **Viewing window** - 13" x 8" x 0.25" polycarbonate window typically used for viewing charger without opening the cabinet door(s). NEMA Type 1, 3R or 12.
- **Door activated LED light** - Overhead light turns on when the cabinet door is opened. 120 Vac input option includes AC receptacle and 110–277 Vac input option does not include AC receptacle.
- **Stainless steel** - SS cabinets and accessories available for marine/offshore/coastal environments. Stainless steel provides improved resistance to salt, some acids and high temperatures.
- **Hydrogen detector** - SBS-H2 hydrogen detector can be installed inside cabinet and can operate fan when 1% or greater hydrogen levels are detected. 2nd form C contact can be connected to your alarm/SCADA system.



Note: All AC wiring must be completed on-site by a licensed electrician. SBS does not perform any AC wiring.