

**Model BX-903, BX-904 and BX-906  
Environmental Enclosure  
For BAM-1020  
Operation Manual**

BX-903-9800 Rev C



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### Introduction:

The Environmental Enclosure Model BX-903, BX-904 and BX-906 provides a small self-contained enclosure with internal environmental controls to maintain a constant temperature inside the enclosure. The unit is primarily designed for use with the BAM-1020 Particulate Monitor, with additional room available for other rack-mounted equipment. The unit contains an air conditioner as well as a set of heaters to maintain the temperature inside the enclosure. BX-904 is the same only with a larger A/C unit. BX-906 is a double wide unit to enclose 2 of the BAM-1020.

Access doors are located on the back and front of the enclosure, providing easy access to the equipment contained in the enclosure. A weatherproof gland seal is located on the top of the enclosure for the inlet tube connection on the BAM-1020. See the BAM manual for complete setup instructions.

**Note:** The actual supplied enclosure may vary slightly from the photos shown here, due to normal variations in component supplies. Inspect your unit for the location of controls and mounting features if different than shown here.

### Installation:

For installation, see Appendix A for power requirements. The BX-903 and BX-904 Enclosure is provided with an aluminum mounting base that should be anchored to a solid mounting base or concrete pad. The base has four 1/2" diameter mounting holes located on a bolt pattern that is approximately 19-1/2" x 35-5/8".



**BX-903 Environmental Enclosure  
Figure 1**

Once the enclosure has been secured to the foundation, the instruments can be installed in the enclosure. Two mounting channels based on the RETMA 19" rack standard, are located inside the enclosure. The rails require 10-32 mounting screws for securing the BAM-1020 inside the enclosure. A bag of screws has been provided for installation of equipment onto the rack rails.

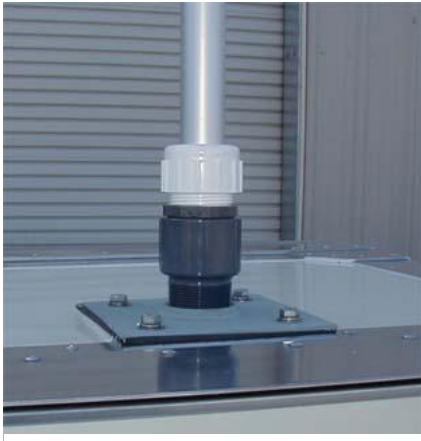


**BX-903 Front View  
Figure 2**

When installing the BAM-1020, be sure that the unit is installed in the correct hole pattern on the support rails. Care should be taken to make sure that the BAM is level in the rack rails, or the inlet tube will not fit properly. Most BAMs will be installed at the **lowest position in the rack**, just above the shelf. This will result in a PM10 inlet height of about two meters, and will allow space above the BAM for the BX-827/830 Smart Inlet Heater (if supplied).

In some cases, the BAM may be installed higher in the rack to allow other rack equipment to be installed underneath (without BX-827 heater as shown in Figure 2), but adequate space above the BAM must be maintained for inlet tube access.

Once the BAM-1020 has been secured in the rack rails, the pipe seal parts for the inlet tube can be installed in the threaded fitting at the top of the enclosure (Figure 3). It is recommended that a silicone-sealing compound or Teflon



**Sealing Gland Assembly  
Figure 3**

tape be used to seal the threads of the gland as they enter the threaded plate. The gland should be hand tightened, and if a pipe wrench is used, a protective layer of material or a rag should be used to prevent damage to the gland. **Do Not Over Tighten!**

Once the gland has been installed, remove the white top threaded section and the barrel-shaped rubber seal. Insert the short inlet tube through the top of the gland and into the BAM-1020. Wet the rubber seal with water to lubricate it and make sliding the rubber seal down over the top of the inlet tube easier. Slide the seal down and into the sealing gland, then slip the white thread ring over the top of the inlet tube and secure it on the top of the sealing gland.

A space is provided under the main area of the enclosure for installation of the vacuum pump unit. It will normally not move around during operation, and can just be set in the base of the enclosure as shown in Figure #4. The AC power electrical connections from the pump and the BAM-1020 can be connected to the power strip located in the backside of the enclosure. The electrical connections can be seen in Figure #5 as shown in the rear view of the enclosure. Pump control cable and air hose connections from the BAM to the pump are installed per the BAM-1020 manual.



**Location of Pump in Enclosure  
Figure 4**



**Rear View of Enclosure  
Figure 5**

At the front of the enclosure, and located on the left hand side of the inner wall is the power control circuit breaker. It provides AC power protection and as a power control switch for turning off the power to the equipment in the enclosure as well as the heater and the air conditioning unit. See Figure #6. A switch is also provided on the plug strip at the inside back wall of the enclosure.

Located directly behind the circuit breaker enclosure is the thermostat control for the heater unit. It has been factory set to maintain a constant temperature inside the enclosure and should not require any adjustment. If it becomes necessary to adjust the thermostat, be careful that the heater unit and the air conditioner do not conflict with each other causing rapid cycling between heating and cooling of the enclosure.

**Caution: A protective grill is used to cover the heater elements located in the enclosure. This area can get very hot while the heater is on and should be avoided. Keep the pump and any other materials that might be damaged from heat, away from this area.**



**Circuit Breaker Panel**  
**Figure 6**



**Ground Lug Location**  
**Figure 7**

For lightning protection and electrical noise protection, a ground lug has been provided at the base of the enclosure and is located below the air conditioning unit. A copper ground wire of 00 size should be connected from the terminal block to a ground rod installed next to the BX-903 Enclosure. The ground lug can be seen in Figure #7.

**Maintenance:**

The BX-903, BX-904 AND BX-906 requires minimum maintenance other than periodic removal and cleaning of the air conditioner filter. The filter can be removed from the air conditioner and cleaned. When first installed, this filter should be checked at least each month to determine how often it will need to be cleaned. Review the Air Conditioner manufacturer's manual for additional information.

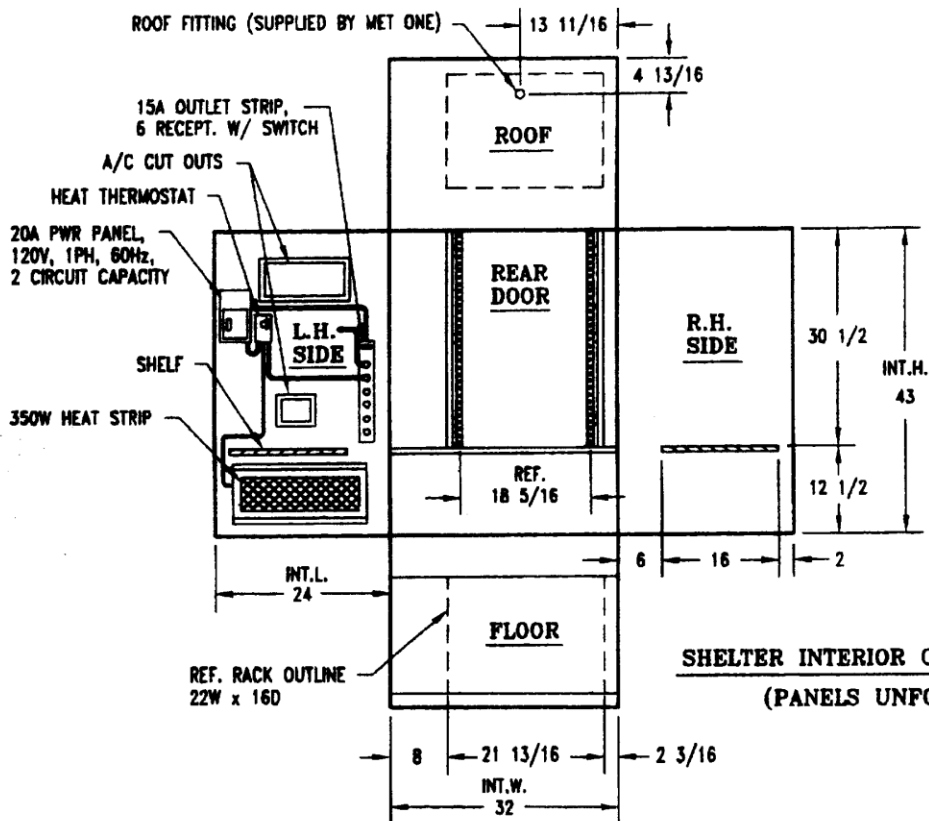
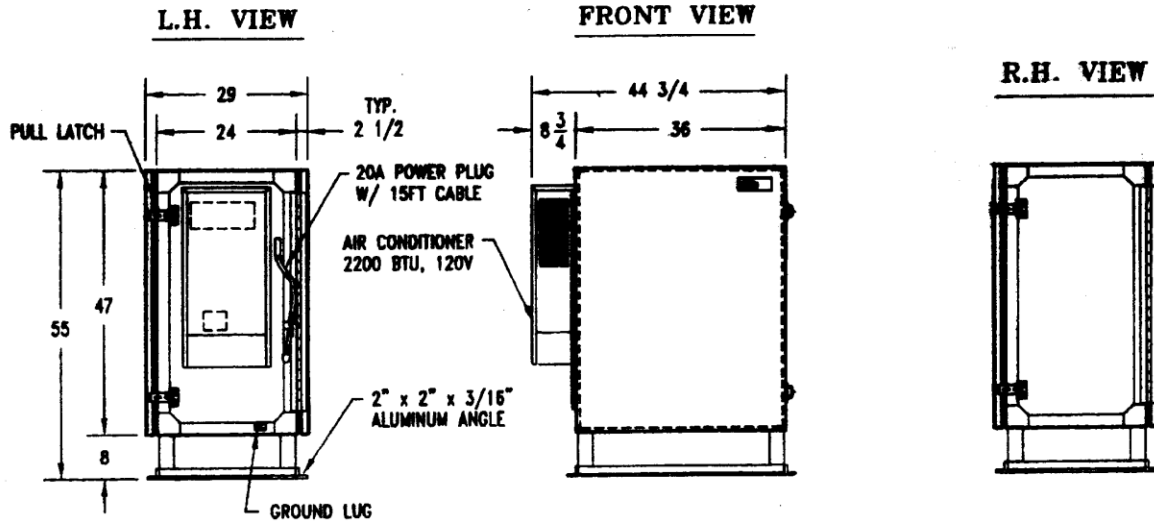
The vents inside the enclosure should also be inspected to make sure that there is not any dust collecting that might prevent proper cooling of the air conditioner.

The outside of the enclosure can be cleaned by washing it down with a low-pressure water hose, sponge and soapy water. If the water pressure is too high, it is possible to break the door seal and cause leakage inside the enclosure.

The door latch assembly and door seals should be regularly inspected and tightened when necessary to prevent entry of water from rainstorms.

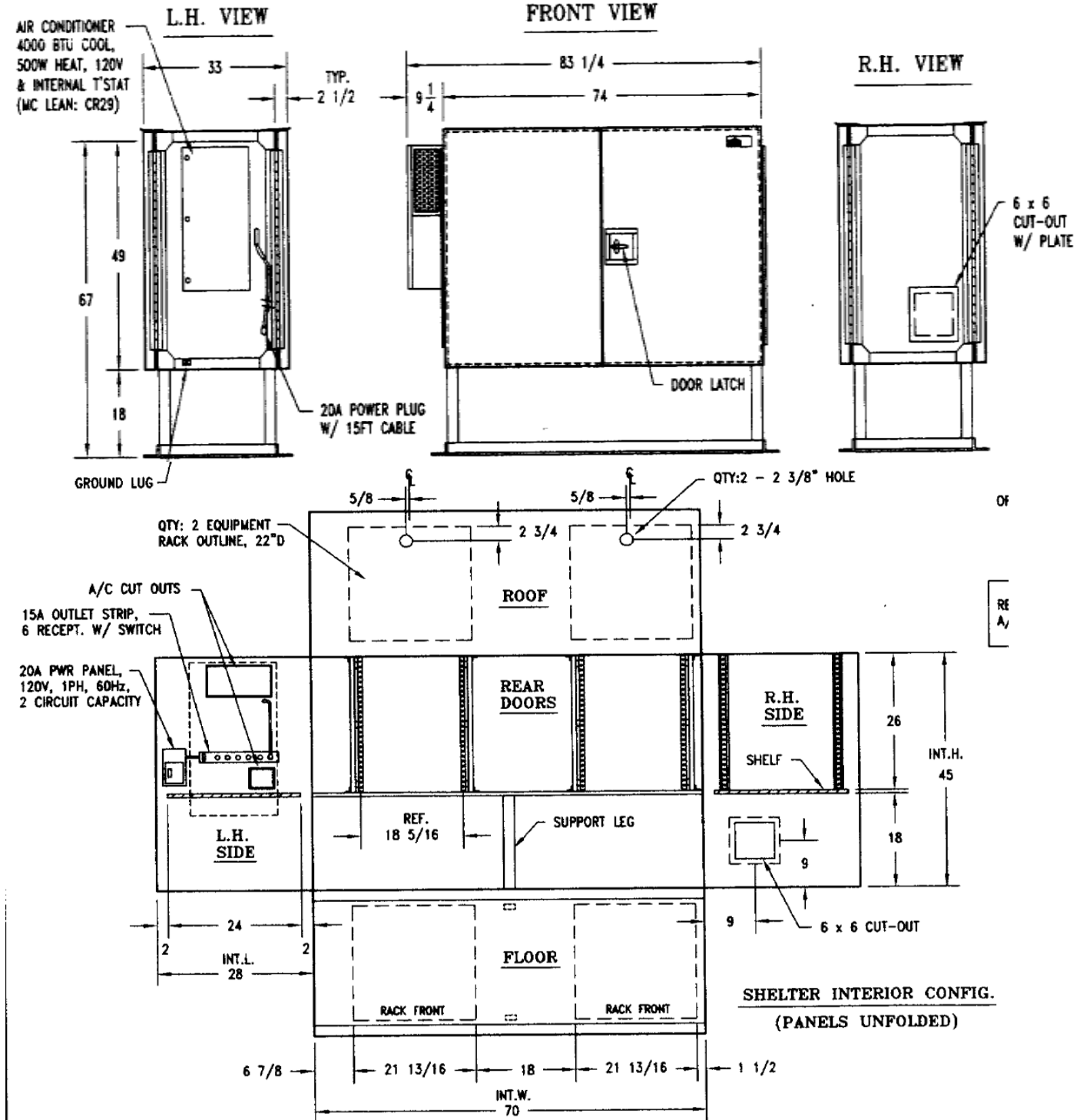
## BX-903 Dimensions and Views

Actual dimensions and accessories may vary slightly from those shown.



# BX-906 Dimensions and Views

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Appendix A  
MODEL DESCRIPTION TABLE

Model #	Power Requirements	AC cooling rating
BX-903-120	110-120 VAC @ 15A	2000 BTUs
BX-903-220	220-240 VAC @ 15A	2000 BTUs
BX-904-120	110-120 VAC @ 15A	4000 BTUs
BX-904-220	220-240 VAC @ 15A	4000 BTUs
BX-906-120	110-120 VAC @ 15A	4000 BTUs
BX-906-220	220-240 VAC @ 15A	4000 BTUs