MOSEBACH MANUFACTURING COMPANY

X100P Load Bank Operation and Service Manual

Read all instructions before using the load bank

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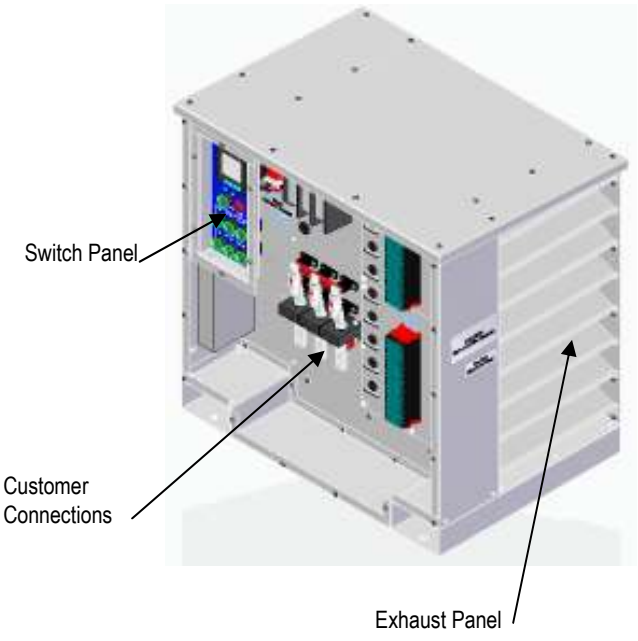

Figure 1a

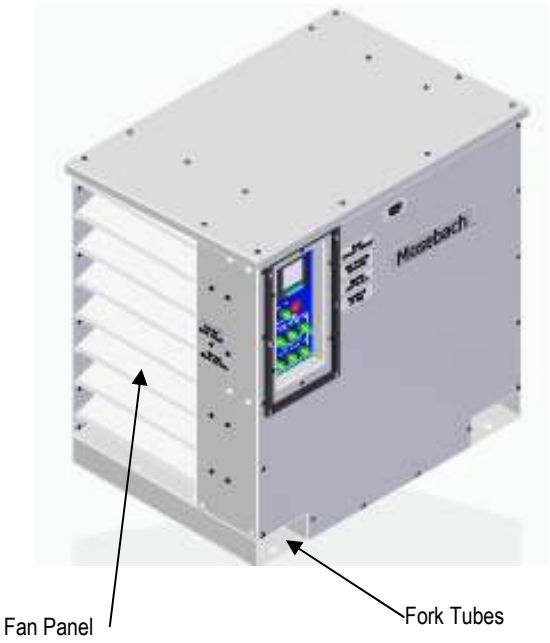

Figure 1b

Total Assembly

X100P

2) Specifications

Blower	24VDC, powered from control
Control power	120VAC, single phase, 60 Hz
Rating	Continuous duty
Power factor	1.0
Load elements	Each circuit is connected in delta. The kW at each step is subject to a manufacturing tolerance of ±5%.
Enclosure	Electro-statically powder coat, Blue: PPG PCUP70103 Air inlet and outlet are covered by metal screens. Heat is discharged horizontally.
Environmental	Quantity two 24VDC, 1900CFM fans to bring outside air into the load bank.

a) X100P Load Bank

Input Voltage	Volt. Mode	kW Steps	kW Steps	kW Steps	kW Steps	kW Steps	Total Power	Amps
480vAC, 3Ø Resistive	480	5	10	10	25	50	100	120.3

3) Receiving

WARNING! ELECTRIC SHOCK HAZARD. Electric shock can lead to severe injury or death. If the load bank has been damaged in transit, do not operate until a competent technician inspects the unit and determines that it can be operated safely.

1. Check the equipment for obvious damage.
2. Document and report any exterior damage to the carrier immediately.

4) Safety

This Load Bank is designed for a variety of loads. Because of this, it is possible that voltages higher that those applied can be present inside the load bank and at external connections of the load bank. Work on load bank internal systems should only be attempted by highly trained technicians and only when power has been disconnected and cannot be reconnected to the unit.

IMPORTANT INSTRUCTIONS

When using electrical appliances, basic precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons, including the following:

1) Read all instructions before using this heater/load bank.
2) This load bank is hot when in use. To avoid burns, do not let bare skin touch hot surfaces. Use handles when moving this load bank. Keep combustible materials, such as furniture, pillows, bedding, papers, clothes, and curtains at least 6 feet (1.8 meters) from the front of the load bank and keep them away from the sides and rear.
3) Extreme caution is necessary when any load bank is used by or near children or invalids and whenever the load bank is left operating and unattended.
4) Always unplug load bank when not in use.
5) Do not operate any load bank with a damaged cord or plug or after the load bank malfunctions or has been dropped or damaged in any manner. Discard load bank or return to authorized service facility for examination and/or repair.
6) Do not use outdoors.
7) Do not use in wet or moist locations
8) This load bank is not intended for use in wet indoor environments.
9) Do not run cord under carpeting. Do not cover cord with throw rugs, runners, or similar coverings. Do not route cord under furniture or appliances. Arrange cord away from traffic areas and where it will not be tripped over.
10) To disconnect load bank, turn controls off, then remove plug from outlet.
11) Connect to properly grounded outlets only.
12) Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause an electric shock or fire, or damage the heater/load bank.
13) To prevent a possible fire, do not block air intakes or exhaust in any manner. Do not use on soft surfaces, like a bed, where openings may become blocked.
14) A load bank has hot and arcing or sparking parts inside. Do not use it in areas where gasoline, paint, or flammable liquids are used or stored.

15) Use this load bank only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury to persons.

16) Always plug load banks directly into a wall outlet/receptacle. Never use with a re-locatable power tap (outlet/power strip).

17) This load bank includes a visual alarm to warn that parts of the load bank are getting excessively hot. If the alarm light goes on, immediately turn the load bank off and inspect for any objects on or adjacent to the load bank that may cause high temperatures. DO NOT OPERATE THE LOADBANK WITH THE ALARM LIGHT ON.

18) “SAVE THESE INSTRUCTIONS”

a) Grounding

WARNING! ELECTRIC SHOCK HAZARD. The grounding lug must be connected to earth ground. Operating without a grounding connection could lead to injury or death.

When the load bank is in operation the grounding pad must be firmly and electrically connected to earth ground. Failure to do so could allow deadly voltage to be present on the surface of the enclosure. The grounding connection provides a low resistance path to ground. This grounding protects the operator from the possibility of electrical shock.

b) Power connections

WARNING! ELECTRIC SHOCK HAZARD. All power connections must be connected or guarded. Failure to do so will expose operators to possible shock and the possibility of grounding-out or shorting-out of the test power source.

c) Control Power

Cord and service rated to 10 AMP minimum.

d) Air intakes and exhaust ports

Caution! **All air intakes and exhaust ports must be clear and fully open.** This load bank has one air intake designed for proper air flow. Reducing or blocking air flow will lead to overheating and load bank failure.

High volumes of cooling air are needed to prevent load elements from overheating. By their very nature, resistors under load convert electrical energy to heat. This heat must be removed from the unit. The blower, intake, and exhaust ports are sized to provide the proper amount of cooling air. Preventing or limiting air flow will allow the load bank to overheat.

Keep intake at least four feet away from walls and obstructions.

To increase the life of the load elements, allow the fans to run at least three minutes after the load is removed or until exhaust air is cool.

No ductwork is permitted on intake or exhaust of this load bank as this will cause a backpressure and ruin the resistors.

Caution! **Material can be moved by intake air or exhaust air.** Failure to secure material could cause injury to bystanders or damage to the load bank.

Good air flow keeps the load bank cool but can very easily move light debris such as paper, cardboard, and dust with great velocity. Loose materials around the load bank, especially near the intake and exhaust, must be secured to prevent movement. Material on the exhaust side may be blown into and injure a bystander. Material near the intake may be taken into the load bank damaging internal components.

e) Exhaust temperature

WARNING! FIRE AND BURN HAZARD. Keep flammable material at least 40 feet away from the load bank. A great deal of heat is expelled from the load bank. Temperatures inside the load bank are sufficient to ignite flammable fumes or materials. Failure to maintain proper housekeeping and properly securing flammable material could lead to fire, burns, and/or injury.

Even with sufficient air flow, internal component temperature will exceed 400 °C. Exhaust temperatures of 200°C are common. Flammable materials must not be kept around the load bank. Heat from the load bank could ignite this material.

f) Connecting and disconnecting

WARNING! BURN HAZARD. Attempting to connect or disconnect leads while load bank is in operation can lead to severe injury or death. Connecting or disconnecting plugs and receptacles while current is flowing or voltage is present may cause arcing. Arcing can generate a great deal of light, heat and possibility of electrocution.

5) Operation

NOTE: Contact Mosebach Manufacturing if you are planning operations in ambient temperatures above 46 °C.

Ambient plus heat generated by the resistor can cause electrical components to possibly malfunction.

a) Pre-startup

1. Check housekeeping in the operational area and correct all unsafe conditions.

   Failure to do this may result in debris being blown around and may cause a fire hazard.
2. Connect the load bank's ground cam-lock to a known earth ground.
3. Check the switch panel and move all switches to the OFF position. (see figure 3)
4. Position load bank so that air will flow freely into the intakes and out of the exhaust port.
5. All air intakes and exhaust ports must be clear.
6. **Caution! Test points provided on the switch panel are for voltage testing only. Attempting to monitor current will cause fuses and meter to fail.**

Figure 2. Switch Panel

b) Startup

1. Connect 120VAC control power to the unit.
2. Connect the power lugs to the power bus bar connections.

   Ensure cable size is sufficient to carry the expected current. Failure to size conductors properly will lead to conductor overheating, which will damage conductors and may pose a fire hazard.
3. Turn the MAIN on/off power switch to the ON position with the voltage required. The unit will not run if an acceptable voltage is not supplied. The blowers, meter and green power light will turn on when an acceptable voltage is supplied.

   Caution! **Make sure air is flowing from the exhaust port.** Failure to have proper air flow will cause unit to overheat and fail.

c) Testing

1. Start with the Main Power located in the ON position with the required voltage and Master in the OFF position.
2. Place the desired test step switches in the ON position.
3. Put the Master ON to engage the resistors.
4. Repeat tests as needed.

d) Acuvim II Power Meter

1. Press the “VA” button on the front of the meter to view and cycle through the line voltage and current options.
2. Press the “P’ button on the front of the meter to view and cycle through the Power Reading and Power Factor options.

   You will find more detailed instructions on the use of your meter on the CD disk that was supplied with your load bank manual or by visiting the “accuenergy.com” website.

Figure 3.

Acuvim II Power Meter

e) Shutdown

1. Place all step switches in the OFF position. Put Master in the OFF position.
2. Allow fans to operate at least three minutes or until exhaust air is cool before shutting them off.

   This cooling period will extend the life of your load bank.
3. Turn Main Power Switch to the OFF Position and remove 120v control power.
4. Turn off source power and customer is to confirm prior to disconnection of power cables if applicable.

6) Troubleshooting

Meter/Load Bank Will Not Turn On	Make sure main switch is in the ON position with correct voltage. Make sure 120v control power is connected.
Blower will not turn on.	Check for debris preventing fan from turning. Check blower fuse. See Figure 6.
Load steps will not turn on.	Check if over temp red light is on. Make sure that test source is on. Check control fuses. See Figures 6. Check resistor continuity. See Figure 10 and schematic. Check resistor step fuses. See figure 6 Check Main Switch.
Over temperature light.	This is an indication that the internal cabinet temperature has exceeded 150°F. Make sure the cabinet is ventilated. Check over temperature sensor (OTS) see figure 7.
Voltage Lights	Check that applied voltage is in agreement with selected voltage. Check that applied voltage is no more than 5% in the particular voltage mode that the unit is set in. If the limit is exceeded then the unit will not operate. Check the power cord loss if the cable is long.

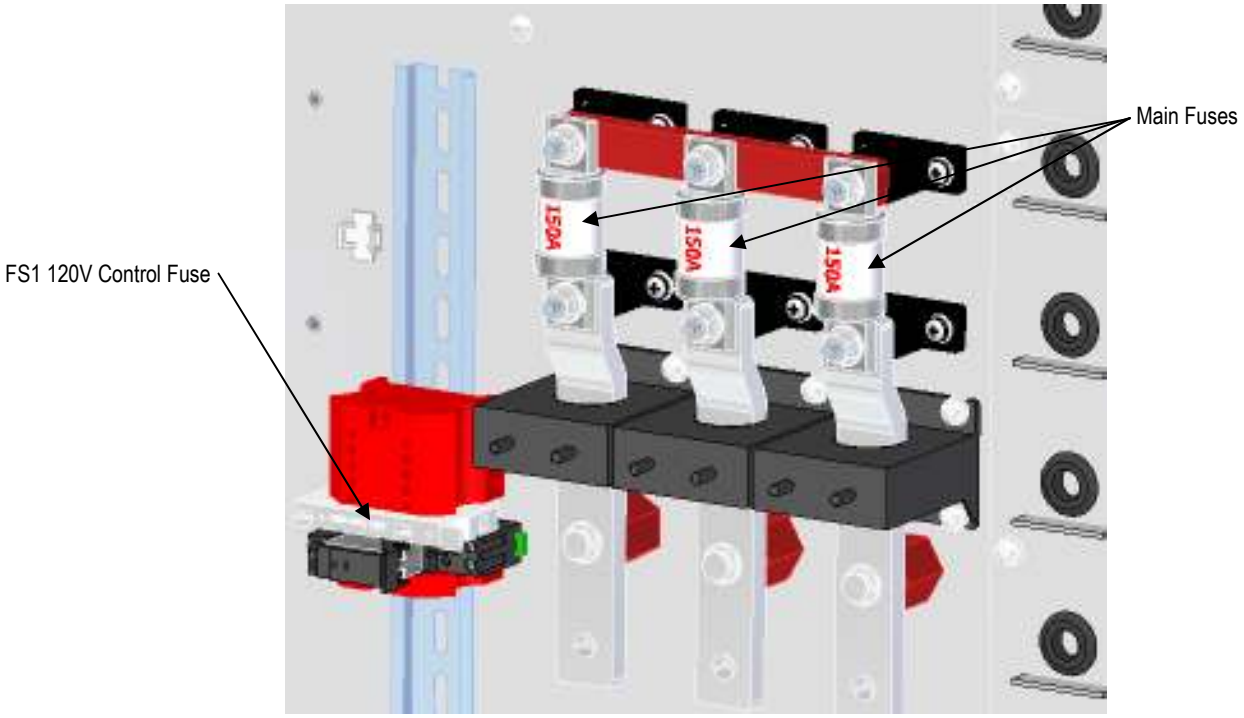

Figure 4 Control/Main Fuses in the Switch Panel

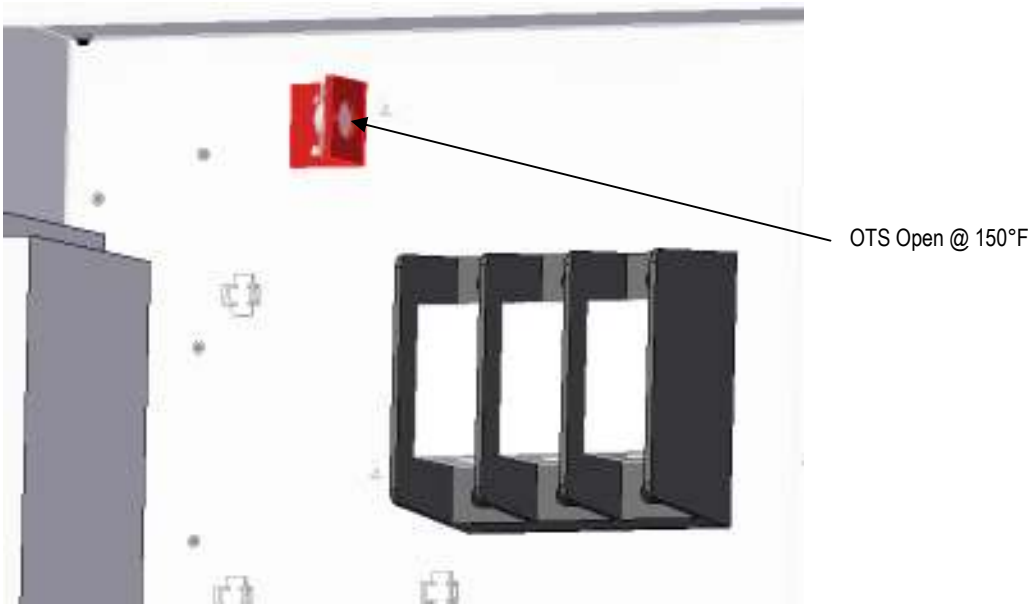

Figure 5. Thermal Switch

7) Replacing Fuses

1. Using a Philips screw driver, remove the 20 bolts from the front of the load bank. (See figure 8)

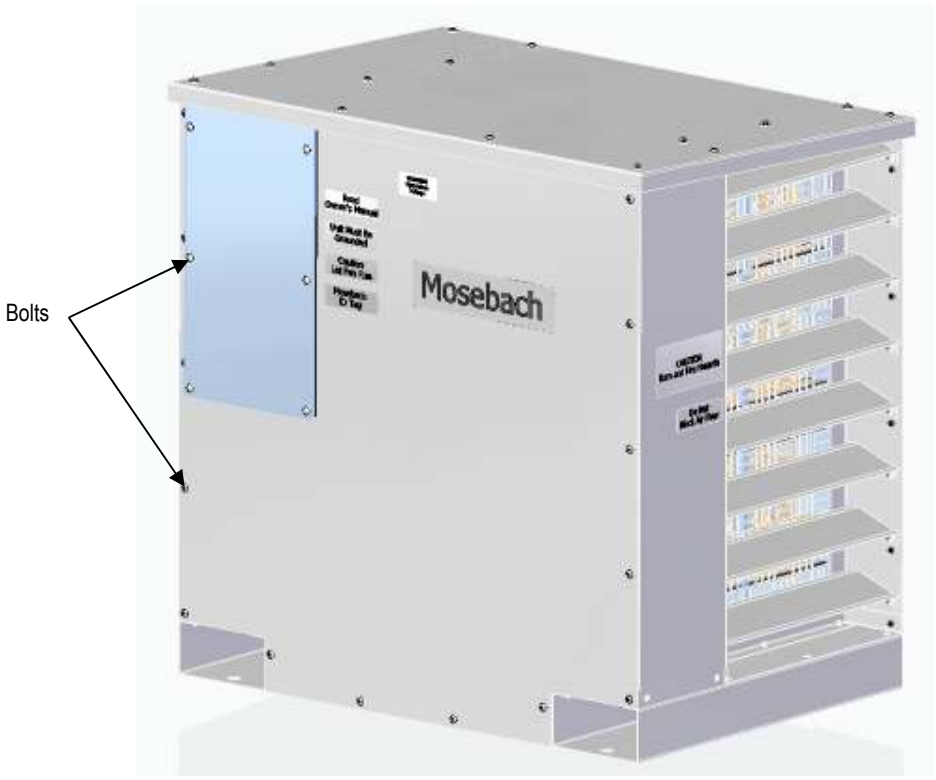

Figure 6

2. Gently remove the front of the unit and rotate it outward to the left. Do this slowly as to not damage the ground wiring. (See Figure 9)
3. Service on fuses can then be performed.

8) Replacing Resistors

Contact Mosebach Manufacturing Co. if there is a problem with the resistors or if a resistor needs to be replaced.

9) Preventative Maintenance of the Load Bank

1. Do not use a power washer to clean off the exterior of the unit. It is high voltage electrical equipment.

Action	**Frequency**
Walk around the unit and inspect for: a) Obvious damage b) Loose hardware	Every use
Cold Resistance Check	Every 6 months
Air Flow Test	Every 6 months
Power Test	Every 6 months
Open Control Panel and Inspect for: a) Loose wire connections b) Visually damaged components	Every 6 months
Inspect Fan	Annually
Inspect Resistors for: a) Damage to coils b) Delamination of the mica	Annually
Contactors are opening and closing	Annually
Meter Calibration	Annually

10) Service Parts

	Part Number
Fan	BLWR-0055-0119
Resistor Elements	RA-0055-0365-01 RA-0055-0365-02 RA-0055-0365-03 RA-0055-0365-04 RA-0055-0365-05 RA-0055-0365-06 RA-0055-0365-07 RA-0055-0365-08 RA-0055-0365-09 RA-0055-0365-10
Fuses	10A Type AGC = AGC-10-R 1A = EC-9500-0247 150A = EC-9500-0744
Meter	EC-9500-1460
Contactors	EC-9500-1875

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