PHOENIX MINI-GUARDIAN
H. E. P. A. SYSTEM

Therma-Stor Products
A Division of DEC International
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PHOENIX MINI-GUARDIAN Operation & Service Instructions

Table of Contents

Serial No. _____

Purchase Date _____

Dealer's Name _____

Read the operation and maintenance instructions carefully before using this unit. Proper adherence to these instructions is essential to obtain maximum benefit from your Phoenix Mini-Guardian HEPA system.

1 Specifications

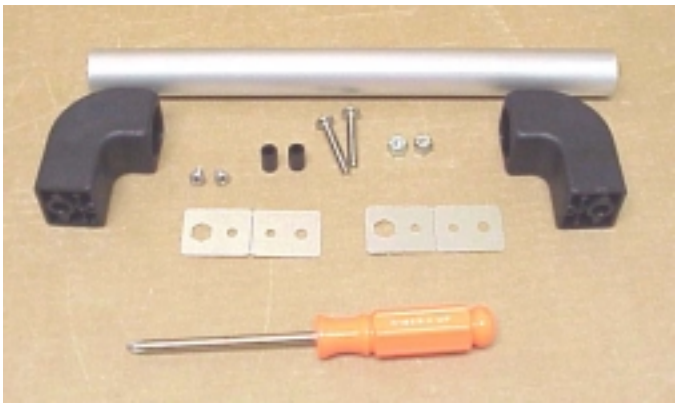
Model: Phoenix Mini-Guardian
Electrical: 110-120 Vac, 2 Amps, grounded
Airflow: 0-400 CFM Variable (w/o external ducting)
Duct Connections:
Inlet: Tabs for 12” diameter flexible duct
Outlet: Rectangular collar for 10” lay-flat plastic ducting
Size: 16” wide (19-1/2” over axle)
19-3/8" deep (outlet collar and handle)
40" tall
Weight: 65 lbs.
Shipping Dimensions: 20-1/2” Wide
20-1/2” Deep
47” Tall
Shipping Weight: 70 lbs.

2 Operation

2.1 Handle Assembly Procedure

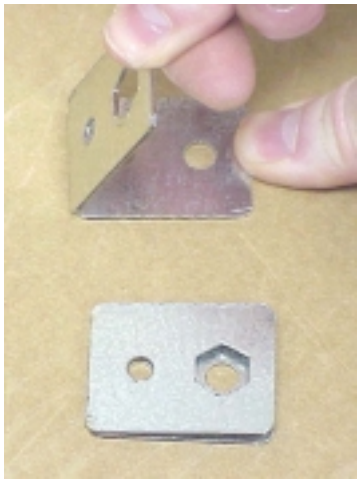
Tools Required: #2 Phillips Screwdriver

1. Remove the two handle brackets, handle tube, two nut retainers, two spacers, two #10 X 5/8” thread forming screws, two ¼” X 1-1/4” machine screws, and two ¼” lock nuts from the packed parts.



Lit. No. TS-261-0502

2. Fold the nut retainers in half along the perforated line. Leave the nut retainer slightly spread apart.

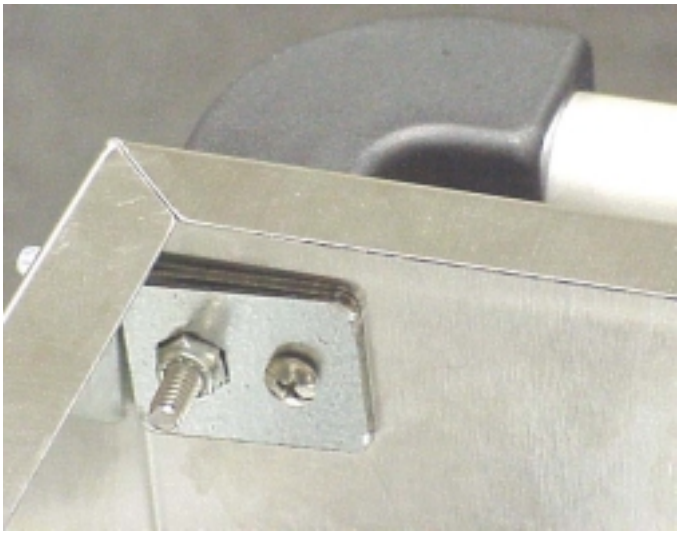


3. Place the nut retainers inside the back of the cabinet, as shown below. Using a Phillips screwdriver, thread a #10 x 5/8" screw through a nut retainer, the cabinet, and into the small boss on a handle bracket. Do not tighten completely.

4. Insert the handle tube into the remaining handle bracket and into the attached handle bracket. Attach the second handle bracket as described above.

6. Slide one spacer over a ¼" x1¼" machine screw and insert them into the hole in the handle bracket.

6. Place a ¼" lock nut into the hexagonal hole in the nut retainer and tighten with a Phillips screwdriver. Now tighten the small screw. Repeat this procedure on the other side.



2.2 Transporting the Phoenix

The Phoenix Mini-Guardian should be upright when transported by vehicle. It may be tipped on to its back for loading and moving by hand or for use on location.

2.3 Location

Note the following precautions when locating the Phoenix Mini-Guardian:

- It is designed to be used INDOORS ONLY.
- If used in a wet area, plug it into a GROUND FAULT INTERRUPTER.
- DO NOT use the Phoenix Mini-Guardian as a bench or table.

- The air inlet on top & the side outlets should be at least 1 foot from walls and other obstructions to airflow.

2.4 Electrical Requirements

The Phoenix Mini-Guardian can be plugged into a grounded 15 Amp circuit. It draws about 2 Amps with clean filters and no ducting. The amp draw will decrease slightly with added ducting and as the filters load with particulate.

If an extension cord is required, it must have a minimum of 18 gauge conductors if 25 feet long or less and 16 gauge conductors if greater than 25 feet long.

2.5 Air Ducting

2.5a Inlet Ducting

Occasionally the area to be filtered is difficult to access and/or the unit cannot be located in the area. In such cases, the air can be ducted to the unit's inlet.

A round 12" diameter flexible duct can be attached to the unit inlet on top. It connects by placing the wire in the duct under the four tabs on the top. It may be removed after use for easier transport and storage. Flexible 12" duct is available from Therma-Stor Products.

2.5b Outlet Ducting

A detachable rectangular exhaust collar is supplied that will allow 10" round lay-flat plastic duct to be attached to the Phoenix Mini-Guardian outlet. Lay-flat plastic ducting is available from Therma-Stor Products.

To attach ducting to a collar, remove the collar from the unit by sliding the collar upward out of the guide. Put the plastic duct end through the collar center. Roll the duct end outward so that it over-laps the outside of the collar. The duct will hook over the collar, preventing it from slipping off.

2.6 Negative Air Ducting

The Phoenix Mini-Guardian can be used to filter and exhaust air from a space. By exhausting to outside the space, the space will be under a slight negative pressure. This will help prevent airborne particles from leaving the space, since the negative pressure will draw air in through openings in the space's exterior.

The quantity of air exhausted depends on how the unit is ducted and what speed is used. A duct can be directed outside. Cover the other exhaust openings to direct all the filtered air outside. This would result in up to 400 CFM being exhausted on high speed and an equal amount of fresh air being drawn in.

CAUTION: Exhausting too much air from a space with open combustion devices (e.g. furnace, fireplace or water heater) can cause those devices to backdraft. This can contaminate the space with potentially fatal gases. In such cases, the Phoenix Mini-Guardian must be used in one of the following three ways:

A. As a filtering unit only. Exhausting no air from the space and thus causing no negative pressure or backdrafting.
B. Exhausting a very limited amount of air which does not cause backdrafting. In case B, the open combustion devices must be thoroughly checked to guarantee that they do not backdraft while the Phoenix Mini-Guardian is running.
C. Direct the outlet duct from the Mini-Guardian to the room with the open combustion device(s). This will positively pressurize the room, thus preventing backdrafting. As in case B, those combustion devices must be checked after the Mini-Guardian is running to guarantee that they are not backdrafting.

The duct can be directed outside, exhausting a portion of the filtered air. The rest of the filtered air is recirculated inside the space. Blocking the other supply holes will determine the amount of air that is exhausted. By adjusting the blocking plates over the supply openings, the quantity exhausted can be adjusted down to no flow.

To determine the exact amount exhausted, an airflow meter is required.

2.7 Power/Speed Control

The power/speed switch is located in the recessed cavity on the unit front. When turned on to any speed, it powers the blower and hour meter.

Occassionally the blower may not start on low speed. If this occurs, rotate the speed control to high speed until the blower starts, then adjust it to a lower speed.

CAUTION: Do not remove the top to access the filters with the unit on. Removing the top and filters while running can: (A) expose potentially fatal high voltage electrical parts, and (B) expose the dangerous rotating blower impeller.

2.8 Hour Meter

A digital hour meter is located near the power/speed control on the unit front. It measures the cumulative time that the unit is turned on to tenths of an hour. It stores its total when the unit is unplugged. The previous total will be displayed when the unit is next turned on. It resets to zero after 99,999.9 hours of operation.

3 Maintenance

3.1 Air Filters

The standard Phoenix Mini-Guardian is equipped with three filters that progressively filter out smaller particles. An optional activated carbon/potassium permanganate filter can be used, giving a fourth stage of filter media (see Section 3.1a). These filters must be checked regularly. Operating the unit with dirty filters will reduce the airflow, but will do no harm to the unit. The unit can be run indefinitely with dirty filters.

The three standard filters used are listed below (as installed in the unit from top to bottom):

A. Polyester media pad pre-filter. Actual size 15-3/4” x 15-3/4” x 1” thick. The white side faces up. This filter should be replaced when the airflow is reduced, it is visibly dirty or when it is contaminated by a previous job.
B. 25 to 30% efficient (per ASHRAE 52.1-1992) pleated fabric filter. Actual size is 15-3/4” x 15-3/4” x 1-3/4”. This filter should be changed when airflow is reduced or it is contaminated by a previous job.
C. 99.97% DOP efficient HEPA filter. Actual size is 13-7/8" OD x 24” x 8-7/8” ID. This filter should be changed when airflow is reduced or it is contaminated by a previous job.

3.1A Activated Carbon/ Potassium Permanganate Filters

Optional gas phase filters are available from Therma-Stor. They use a blend of activated carbon and potassium permanganate. This blend removes the vast majority of contaminants encountered in most filtering applications. The activated carbon removes the heavier volatile organics while the potassium permanganate removes lower molecular weight contaminants. This is well suited to the smoke odors present after fire damage.

The life of the media blend depends upon both the hours used and the contamination level. Another advantage of the blended media versus activated carbon only is that part of the blend changes color as it loads up with contaminants. It starts out black, then turns pink, then brown, and finally white. It is best changed when it passes the brown stage and begins to turn white. It has lost most of its effectiveness at that point. When these filters are installed, the pad filter does not need to be installed above them. This allows the operator to check the media color through the top grill of the unit without removing the top.

The filter is the same size as the pleated fabric filter. Install it above the pleated fabric filter. The pleated fabric filter catches carbon dust that comes off the carbon filter before it reaches the HEPA filter.

The refillable carbon filter is metal-framed and can be refilled with carbon blend media purchased in 5-gallon buckets. The amount of carbon blend media loaded into the filter can be adjusted to the particular amount of gas/ odor removal required.

3.2 Checking Airflow

The airflow is checked using a Phoenix Kestrel 3000 airflow meter placed on the designated area on the top of the unit.

To check airflow:

- Remove any inlet ducting, but leave the top and all filters in place.
- Turn the unit on high. The airflow meter will indicate an air speed. Please set the air meter to read FPM (refer to the meter instructions to set the mode). To determine CFM see the chart below:

Kestrel 3000 FPM											
700	650	600	550	500	450	400	350	300	250	200	150
400	371	343	320	286	263	235	208	182	153	120	87
CFM											

Airflow on high speed with all filters clean and no ducting is about 400 CFM. The unit can be run with very dirty filters and virtually no flow without harming the unit. The operator's decision to change filters should be based on filter cost vs. the unit's filtering effectiveness. If airflow is 200 CFM vs. 400 CFM, the unit will filter particles from a space at half the rate. The operator must judge if that is acceptable.

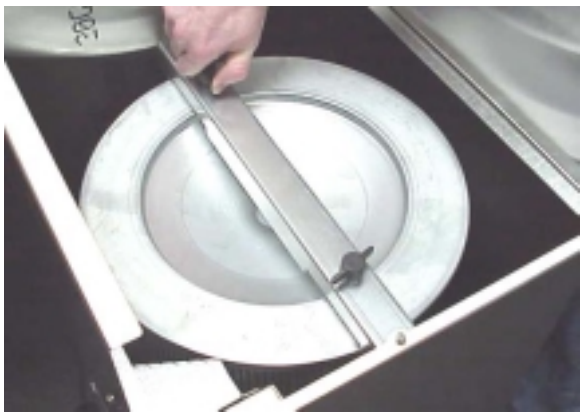
If the operator determines the filters should be changed due to low airflow, it is most economical to change them in the following order:

Change the pad pre-filter (top) first. This is the least expensive filter. Recheck the airflow. If the airflow is acceptable, no other filters need to be changed.

Change the pleated fabric filter (middle) second. It is the second least expensive filter. Recheck the airflow. If acceptable, the HEPA filter does not need changing.

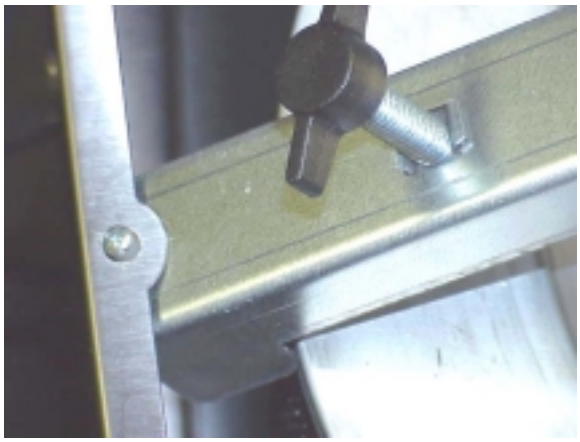
If the airflow is still too low, the HEPA filter must be changed. To remove the HEPA filter, follow these steps:

1. Loosen the two 3/8" thumbscrews that secure the HEPA filter.



2. Push down on the filter hold-down bar and out on the back of the cabinet to disengage the two "ears" from the back of the cabinet. Rock the filter hold-down bar up towards the front of the cabinet.

3. Disengage the screw and spacer from the hole in the front of the cabinet and remove the filter hold-down bar.



4. Lift the old filter straight up and out of the cabinet. Place the new HEPA filter with the open side down, into the cabinet. Be sure the four bumpers on the base center it.

4 Service

CAUTION: Servicing the Phoenix Mini-Guardian with its high voltage circuitry presents a health hazard that could result in death, serious bodily injury, and/or property damage. Only qualified service people should service this unit.

4.1 Warranty

A warranty certificate has been enclosed with this unit. Read it before any repair is initiated. If a warranty repair is required, call the factory first at 1-800-533-7533 for warranty claim authorization and technical assistance.

4.2 Blower Replacement

OCCASSIONALLY THE BLOWER MAY NOT START ON LOW SPEED. IF THIS OCCURS, ROTATE THE SPEED CONTROL TO HIGH SPEED UNTIL THE BLOWER STARTS, THEN ADJUST IT TO LOW SPEED.

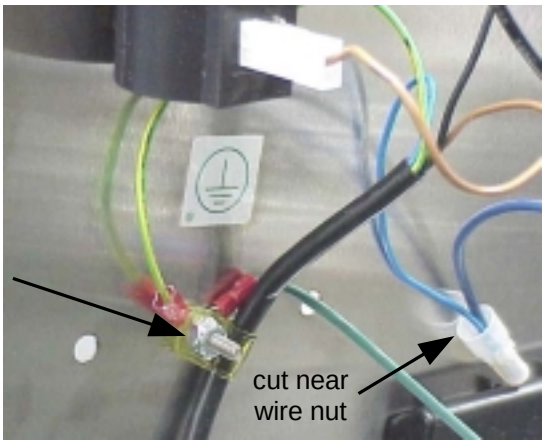
Follow the steps below to change the blower:

1. Unplug the power cord.

2. Remove the top and all air filters.

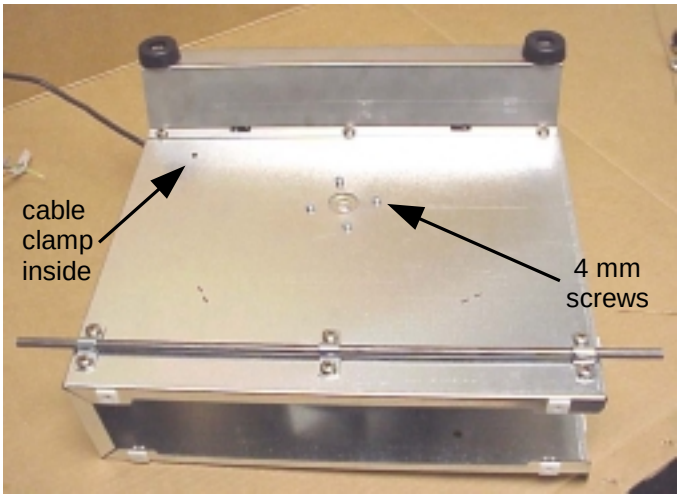
3. Remove the rear electrical guard held inside the unit by four ¼" machine screws and nuts.

4. Remove the cable clamp holding the blower cable and ground terminals. Remove the ground wire from the mounting screw. Disconnect the black and brown wires from the run capacitor, and cut the blue wire near the wire nut.



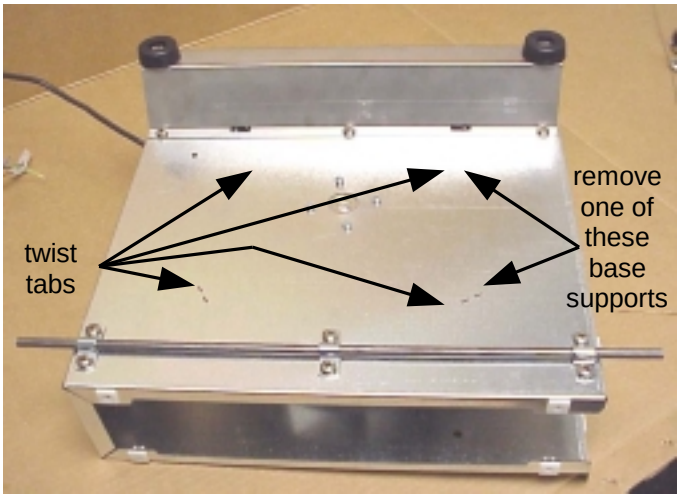
5. Remove the ¼" machine screws holding the base to the cabinet. Remove the base from the cabinet.

6. Remove the four 4 mm machine screws that hold the motor to the lower base. Remove the cable clamp that holds the blower cable to the bottom of the base.



7. Remove the strain relief bushing holding the blower cable in the top of the base.

8. Using a pliers, twist the tabs of the base supports to align with the slots. Remove only one of the base supports (see below). Spread the base apart slightly to remove the blower.



9. Remove the four 4mm machine screws and lock washers securing the blower.

10. Reverse this procedure to reassemble with the new blower.

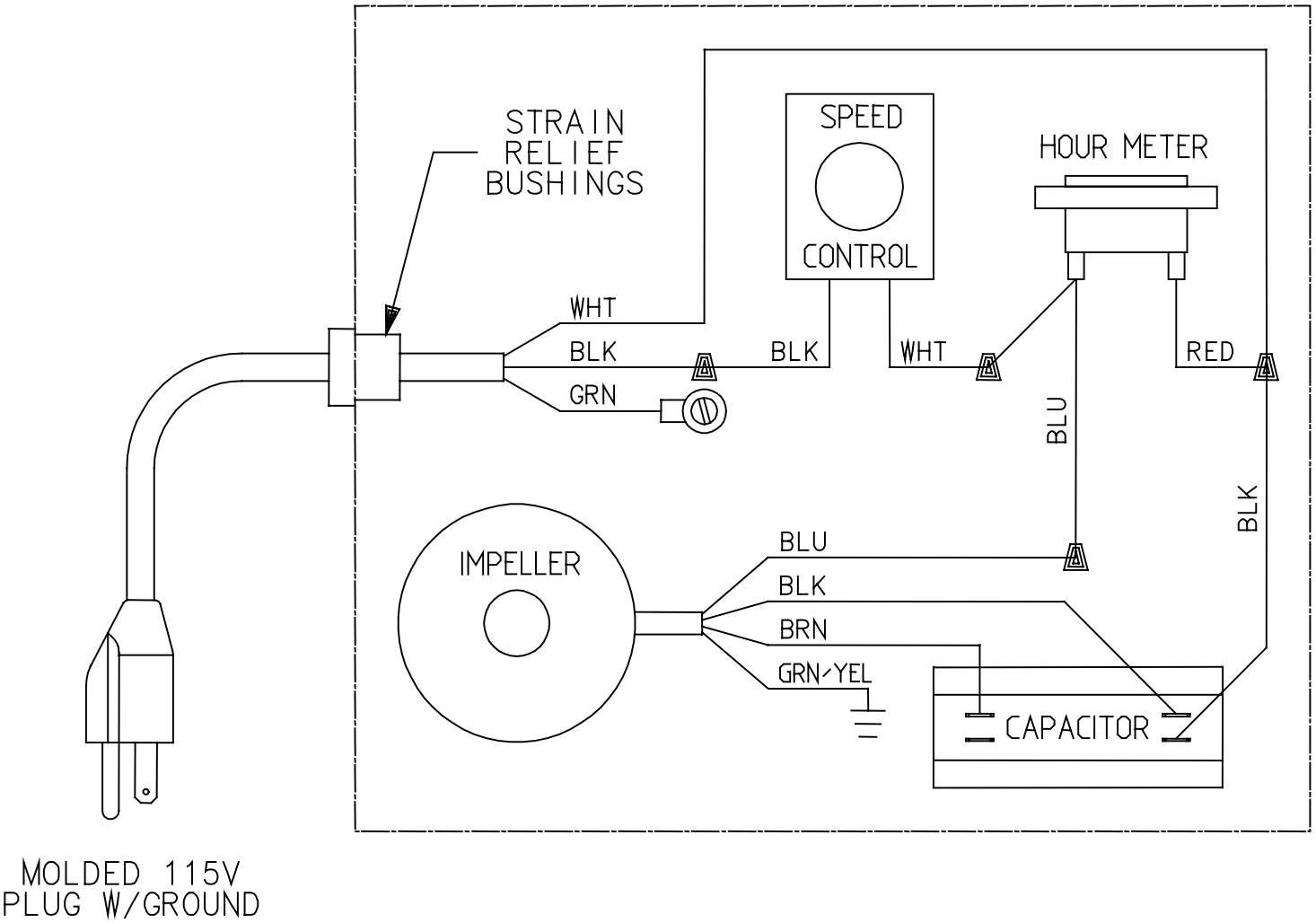


Figure 2: Electrical Schematic

SERVICE PARTS LIST: Phoenix Mini-Guardian

Item	Part No.	Qty.	Description
1	4024824	1	Air Filter, Polyester, 1” x 16” x 16”
2	4021799	1	Air Filter, Pleated, 2” x 16” x 16”
3	4024667	1	Air Filter, 14” OD x 24” (99.97% Efficient Hepa)
4	4024830	1	Axle
5	4024684	1	Blower
6	4024773	1	Blower Speed Control
7	4024825	1	Blower Speed Control Knob
8	4024820	4	Bumper (.59 Dia. X .35 High)
9	4022465	6	Bumper (1.13 Dia. x 1” High)
10	4024775	1	Cord & Wire Harness
11	4024073	2	Foot
12	4024069	2	Handle Bracket
13	4024067	1	Handle Tube
14	4021597	1	Hour Meter
15	4021700	1	Pocket Handle
16	4024692	1	Run Capacitor, 20mFd, 370VAC
17	4024070	2	Outlet Cover, Side

Item	Part No.	Qty.	Description
18	4024078	1	Outlet Duct Collar
19	4024822	1	Outlet Cover/Guard, Rear
20	4024827	6	Thumb Screw, 1/4”
21	4024828	2	Thumb Screw, 3/8”
22	4024066	2	Wheel, 5", Plastic
23	4024821	2	Wheel Center Cap

Optional Parts

4021950	Ground Fault Interrupter
4024879	Air Filter, Disposable Carbon/Potassium Permanganate
4024891	Air Filter, Refillable Carbon/Potassium Permanganate
4024528	Carbon/Potassium Permanganate, 5 gal Pail
4024750	Duct, Flex, 12” x 25’
4022537	Duct, Lay Flat, 10” x 500’
4024440	Kestrel 3000 Weather Meter

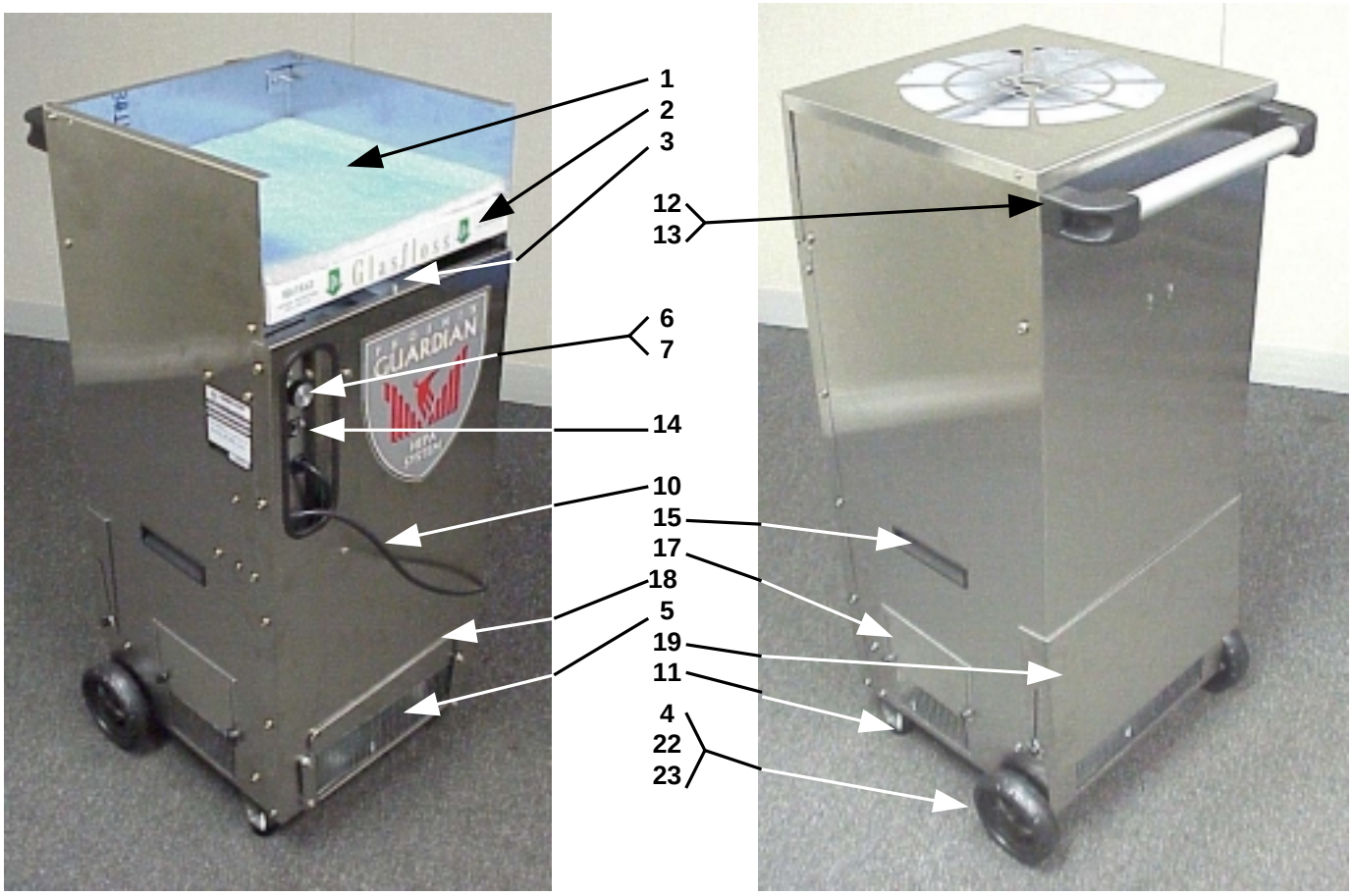


Figure 3.