



Option PH Electric Pre-Heater Cabinet

INSTALLATION FORM RGM 480-PH
New

APPLIES TO: **Model ERSA**

Description/Application

When the outside air temperature is below 32°F and the exhaust air drybulb temperature is below the dewpoint, frosting may occur on the wheel. If the relative humidity in the space exceeds 30% when the outdoor air temperature is below 5°F, the application should be evaluated to see if preheating the inlet air is required to prevent frosting. To prevent frost from developing on the energy recovery wheel, the outside air entering the unit may be pre-heated with an electric heater. The heater is mounted in a cabinet and shipped separately for field installation. The pre-heater cabinet requires its own electrical supply connection.

The electric heater is controlled by a field-adjustable temperature control (-30 to 100°F) located in the pre-heater control compartment. The sensor is located at the pre-heater discharge. When the temperature of the air leaving the pre-heater cabinet is below the setpoint, the heater will activate to pre-heat the air before it reaches the wheel.

The pre-heater cabinet is also equipped with an airflow proving safety switch to verify blower operation. The pre-heater will not activate unless the blower is operating. The pressure switch used for airflow proving is located in the pre-heater control compartment; the airflow proving sensor requires field installation.

Installation Instructions

All electrical wiring and connections, including electrical grounding MUST be made in accordance with the National Electric Code ANSI/NFPA No. 70 (latest edition) or, in Canada, the Canadian Electrical Code, Part I-C.S.A. Standard C22.1. In addition, the installer should be aware of any local ordinances that might apply.

A separate line voltage supply should be run directly from the main electrical panel in the building to a disconnect switch. All external wiring must be within approved conduit and have a minimum temperature rise of 63°F.

WARNING: The standard 30 amp disconnect switch that is included as part of the ERSA unit cannot be used for electrical service for the pre-heater. Either replace the factory-installed disconnect switch with a larger disconnect or install a switch to service only the pre-heater. See the amp requirements in the table below.

Size of Pre-Heater	208V* Amps	230V Amps	460V Amps
10KW	26.6	24.0	12.0
20KW	53.4	48.1	24.1
30KW	80.1	72.2	36.1
40KW	106.8	96.2	48.1
Unit Amps @ Maximum HP (without the pre-heater)			
ERSA 3	17.5	16.4	8.2
ERSA 4	21.7	19.9	10.0
ERSA 5	30.0	29.6	14.8

* The 230 volt electric pre-heater can be operated with a 208 supply voltage at a 25% derating.

Verify that the pre-heater is the correct size and voltage and that the disconnect is adequate. **Do not install the pre-heater cabinet while the unit is in operation. On units with an outside air hood, install the pre-heater cabinet in the ERSA cabinet outside air opening before installing the air hood.** After the pre-heater is installed, install the outside air hood in the pre-heater cabinet opening.

Pre-Heater Packages

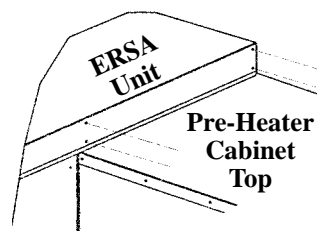
Pre-Heater Size/Voltage	Pkg P/N by Size			Same as Opt
	3	4	5	
10KW-230V	158079	158080	158081	PH1
20KW-230V	158082	158083	158084	PH2
30KW-230V	--	158086	158087	PH3
40KW-230V	--	--	158090	PH4
10KW-460V	158091	158092	158093	PH5
20KW-460V	158094	158095	158096	PH6
30KW-460V	--	158098	158099	PH7
40KW-460V	--	--	158102	PH8

Locate the parts bag shipped in the pre-heater control compartment. The bag contains:

Qty	P/N	Description
1	158212	12' length of 3/16 x 1/16 plastic tubing
4	132065	Cable Clamps, Heyco #3306
1	111733	Sensor Tube Assembly
4	29871	Bushings, Heyco SB-500-6 #2053
8	37661	Self-drilling screws, 1/2" long

1. Install the Pre-Heater Cabinet

- Remove the duct connector assembly that is factory-installed in the opening.
- Refer to the illustration below. Above the outside air inlet opening, remove the four factory-installed screws attaching the cabinet top. Slide the edge of the pre-heater cabinet underneath the filter cabinet top and the sides of the cabinet into the "slots" in the filter cabinet. **The pre-heater top panel edge must be between the filter cabinet top and end panel.** Reinsert the four sheet metal screws in the cabinet top.

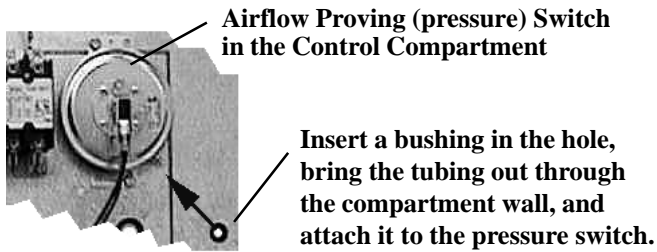


Remove the four screws; slide the edge of the top of the pre-heater cabinet under the edge of the cabinet top; and re-insert the screws.

- Underneath the pre-heater cabinet, attach each corner using #10-16x1/2" long self-drilling screws.

2. Install the Airflow Proving Switch Sensor - To verify blower operation, the airflow proving switch sensor must be mounted on the blower housing.

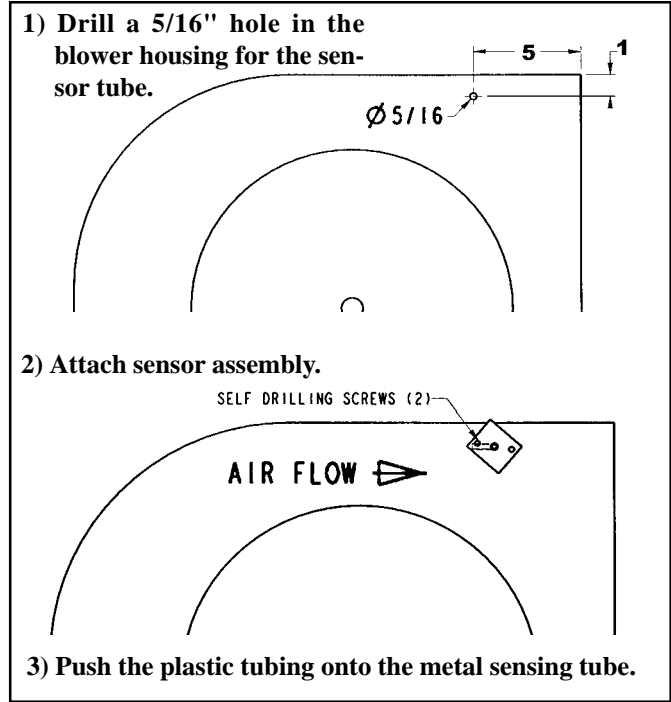
a) Locate the airflow proving (pressure) switch in the pre-heater control compartment and attach the tubing.



b) Inside the unit, route the tubing, using bushings and cable clamps as needed (**IMPORTANT NOTE: Attach cable clamps through inner panel only.**)

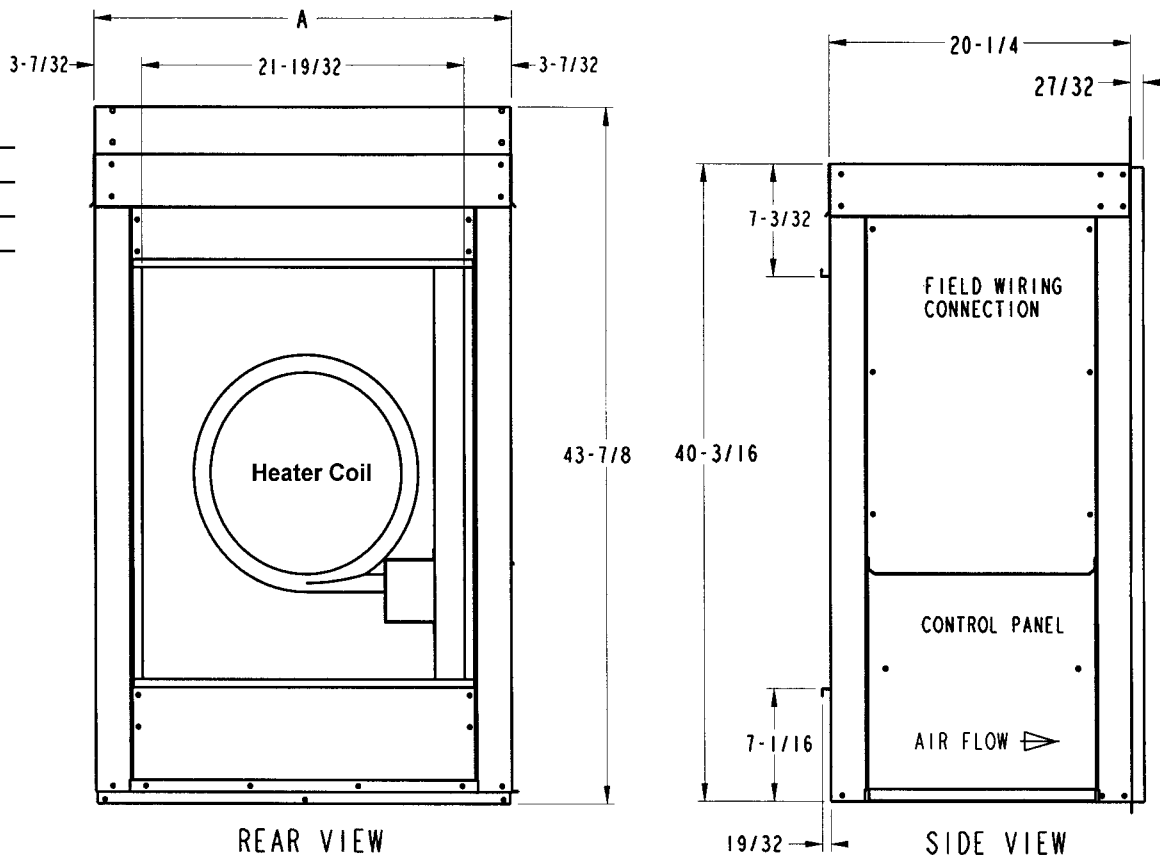
- > up the inside of the pre-heater cabinet (maintain a safe distance from the electric element) toward the top of the ERSA cabinet opening;
- > through the opening and across the top of the filter section, using a bushing to go through the hole in the filter rack and cable holders as needed, to the wheel section;
- > remove the hole plug in the wheel section cabinet wall, insert a bushing, and run the tubing through the hole and across the section **above** the wheel cassette;
- > remove the hole plug in the cabinet wall, insert the last bushing, and run the tubing through the wall;
- > using cable holders as needed, run the tubing across the top and down to the blower housing.

c) Refer to the illustration below and locate the hole position; drill a 5/16" hole in the blower housing. Push the sensing end of the tube through the hole. Position the the sensor opening on the inside of the blower housing **is facing into the blower airstream**. Using the two remaining screws, attach the assembly to the blower housing. On the outside of the blower housing, push the plastic tubing over the metal sensing tube.

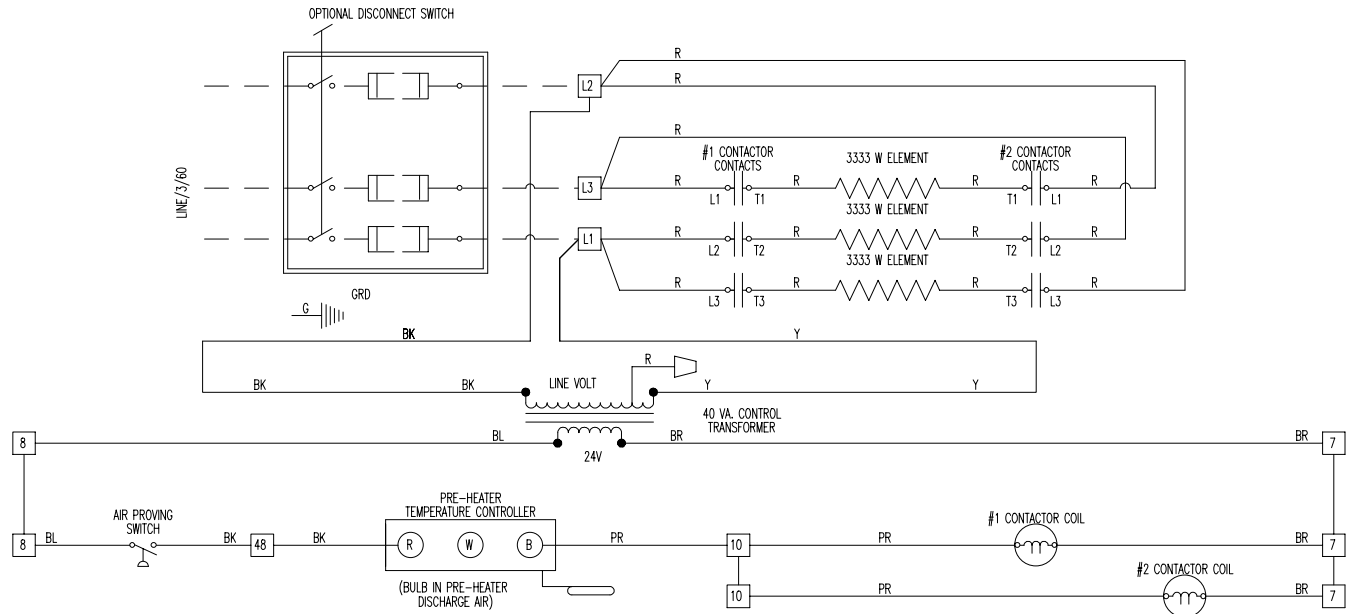


Dimensions of Optional Pre-Heater Cabinet

ERSA	A
3	25-1/32
4	28-1/32
5	34-1/32



Wiring Diagram - 10KW Heater



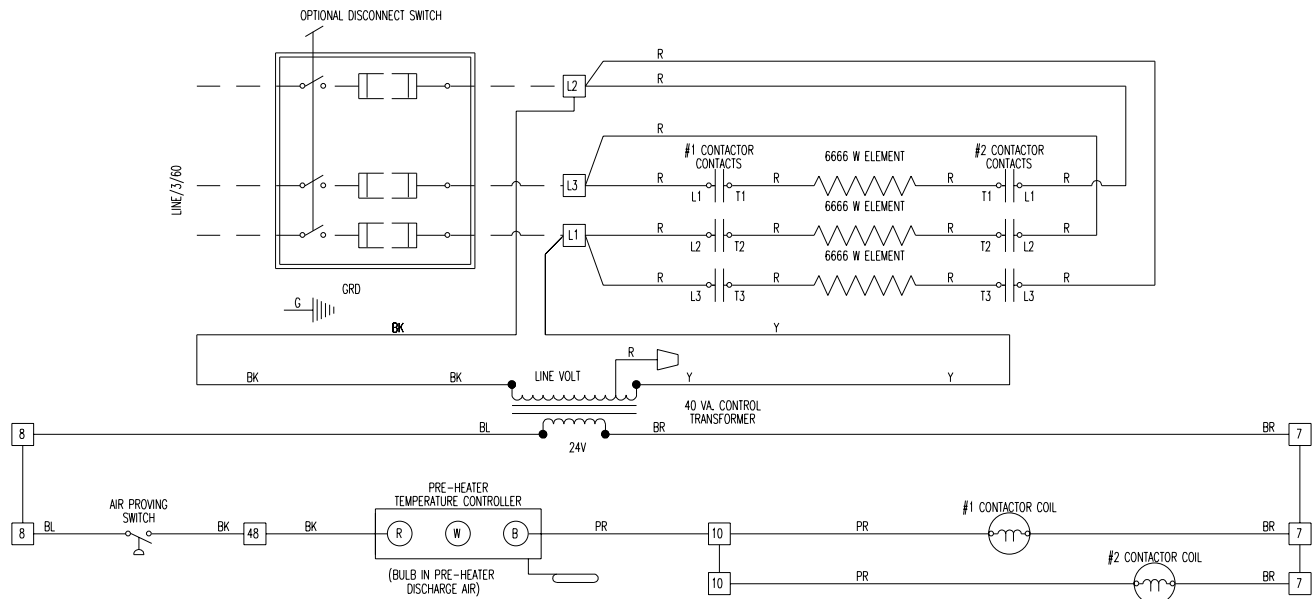
Wiring NOTES:

- On 208/230V units the control transformer has a dual voltage primary.
 - For 230V units, use black and yellow leads (cap red).
 - For 208V units, use black and red leads (cap yellow).
- On 460V units the control transformer is a single voltage primary.
 - For 460V units, use black and yellow leads.

Operating Sequence:

1. On temperature drop below the pre-heater temperature controller setting, the heating elements are energized.
2. On temperature rise above the pre-heater temperature controller setting, the heating elements are de-energized.

Wiring Diagram - 20KW Heater



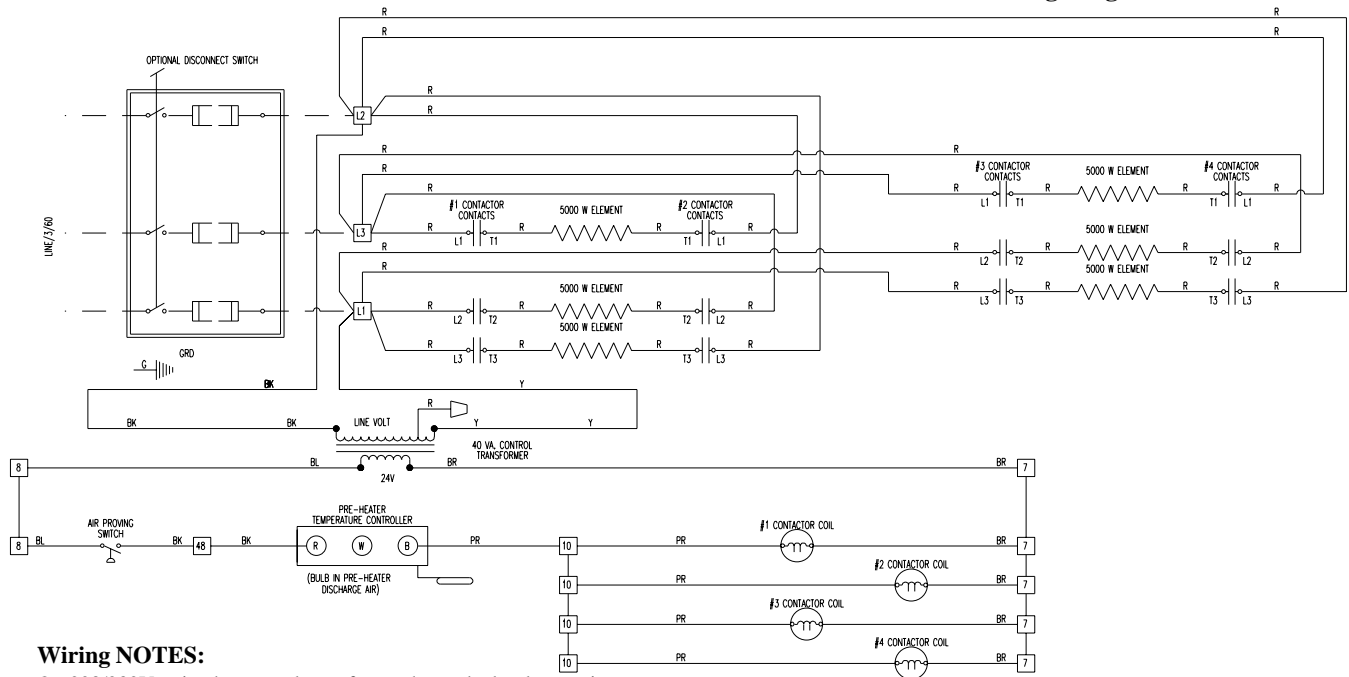
Wiring NOTES:

- On 208/230V units the control transformer has a dual voltage primary.
 - For 230V units, use black and yellow leads (cap red).
 - For 208V units, use black and red leads (cap yellow).
- On 460V units the control transformer is a single voltage primary.
 - For 460V units, use black and yellow leads.

Operating Sequence:

1. On temperature drop below the pre-heater temperature controller setting, the heating elements are energized.
2. On temperature rise above the pre-heater temperature controller setting, the heating elements are de-energized.

Wiring Diagram - 30KW Heater

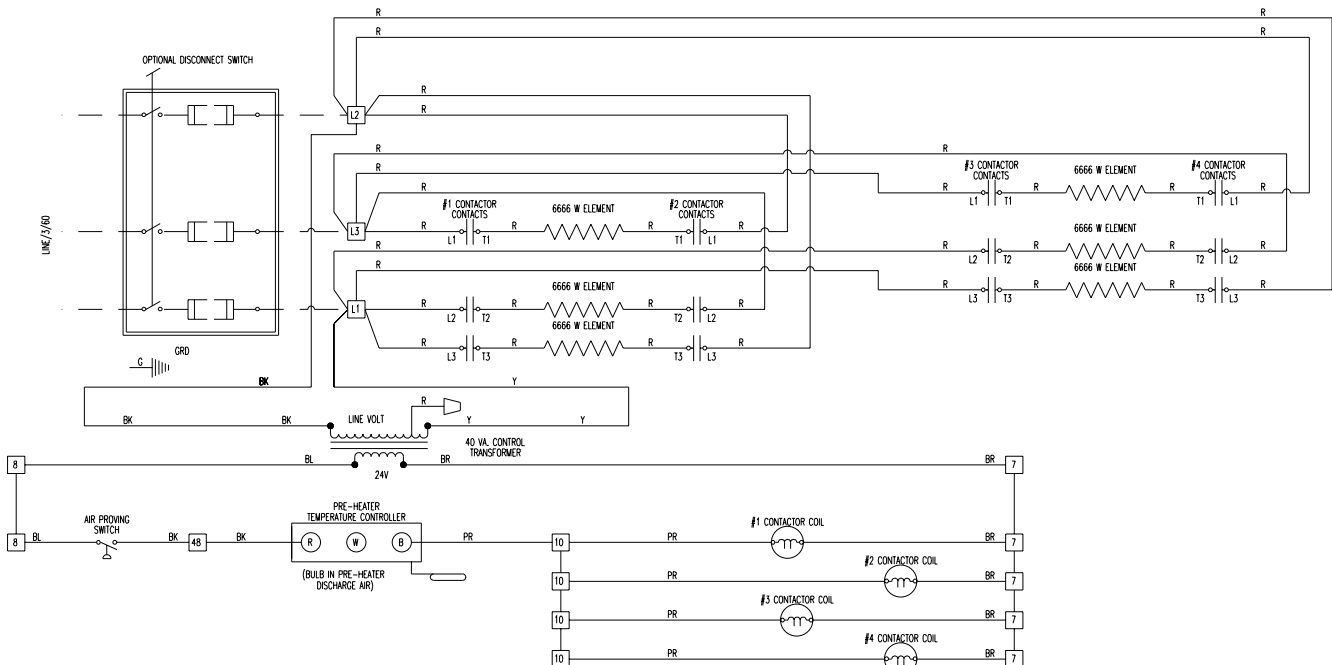


Wiring NOTES:

- On 208/230V units the control transformer has a dual voltage primary.
- For 230V units, use black and yellow leads (cap red).
- For 208V units, use black and red leads (cap yellow).
- On 460V units the control transformer is a single voltage primary.
- For 460V units, use black and yellow leads.

1. On temperature drop below the pre-heater temperature controller setting, the heating elements are energized.
2. On temperature rise above the pre-heater temperature controller setting, the heating elements are de-energized.

Wiring Diagram - 40KW Heater



Wiring NOTES:

- On 208/230V units the control transformer has a dual voltage primary.
- For 230V units, use black and yellow leads (cap red).
- For 208V units, use black and red leads (cap yellow).
- On 460V units the control transformer is a single voltage primary.
- For 460V units, use black and yellow leads.

Operating Sequence:

1. On temperature drop below the pre-heater temperature controller setting, the heating elements are energized.
2. On temperature rise above the pre-heater temperature controller setting, the heating elements are de-energized.