

HG Series Electric Heaters

Auxiliary Electric Heat

Installation, Operation & Maintenance Instructions

Overview

The HG Series Auxiliary Electric Heat mounts externally to the blower outlet of all HP and HE. For the HT Series it mounts externally on the horizontals and internally on the vertical upflow and downflow units. It mounts internally on all WDG units. Note model compatibility Table 1. Units are rated for zero clearance at the unit and 1" clearance for first three feet of duct. The discharge plenum should make a 90° turn after leaving the unit and be constructed from non combustible material. The HG electric heat contains a four stage relay control board which activates the elements directly via an internally wired low voltage harness. Low voltage signals (W1 and W2) are staged from the CXM (AXM on WDG Series) control of the unit.

Figure 1: Typical Vertical External Mount Installation

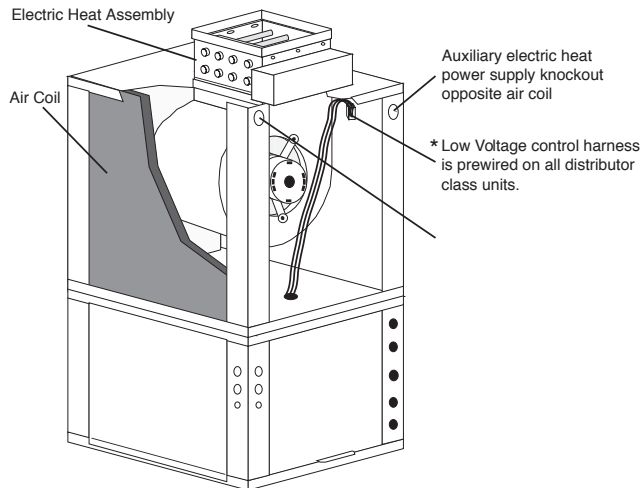
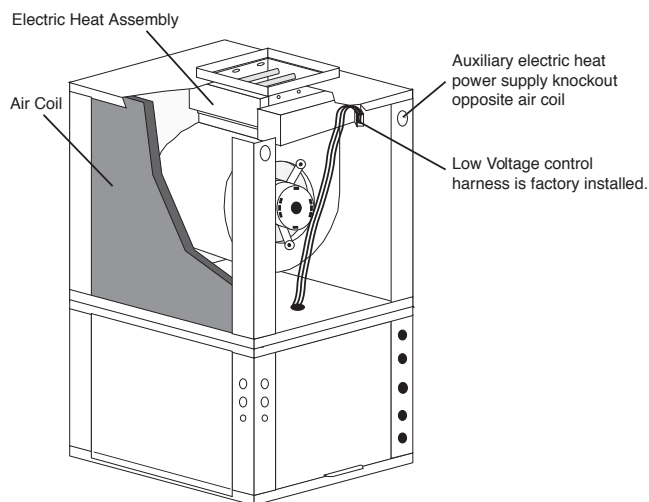


Figure 1a: Typical Vertical Internal Mount



HG Installation - External Mount

1. Disconnect power to the unit.
2. Remove blower access panel(s) from the unit and control box and element covers from the electric heater.
3. Locate remove and discard blower discharge flanges from the unit but save the screws. Flanges will be packaged loose inside the blower compartment of vertical upflow units and will be factory installed on horizontal units, downflow units have none. HE036 and 042 units require a transition bracket between the cabinet panel and the electric heater. This bracket is packaged inside the blower compartment for field installation.
4. Position the electric heater as illustrated herein. Heater control box should be facing the front access panel of vertical units. For horizontal units notice that the discharge air opening is off centered in the blower panel. The electric heater must be positioned so that its control box is located vertically over the wide side of this panel.
The electric heater air inlet dimensions should match the unit air outlet, installer should stop and refer to the unit/heater compatibility chart later in this instruction or consult factory if they do not match.
5. Use the saved blower flange screws to attach the heater by its flanges to the unit panel except do not fasten flange on control box side.
6. Use aluminum tape (not provided) to seal all four heater flanges to the blower panel.
7. Locate and route the low voltage control harness through one of the unit corner post or blower panel knockout(s). Seal the penetration 'air tight'.
8. Route the control harness through one of the 'pie' bushings in the heater control box and plug on to the P2 connector. See figure 3.
9. Install power conduit and attach directly to the electric heater control box. See figures 5a-c.
10. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

HG Installation - Internal Mount

1. Disconnect power to the unit.
2. Remove blower access panel(s) from the unit and control box cover from the electric heater.
3. Remove blower mounting bolts and drop blower assembly as shown in figure 1b. Removal of electrical wiring should not be necessary.
4. Position the electric heater as illustrated in figure 1c with its control box facing the front access panel of the unit. Attach heater to unit using the support pins on the back and bolts on the front.

The electric heater air inlet dimensions should match the unit blower outlet, installer should stop and refer to the unit/heater compatibility chart later in this instruction or consult factory if they do not match.

5. Re-install blower assembly on to electric heater using pins and bolts as before. Check blower electrical wiring for proper connection and remedy any pinched wire(s) or contact with sharp edges.
6. Route the low voltage control harness through one of the 'pie' bushings in the heater control box and plug on to the P2 connector. See figure 3.
7. Install power conduit through the unit corner post as shown in figure 4a and attach directly to the electric heater control box. See figures 5a-c.
8. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

Figure 1b: Blower removal

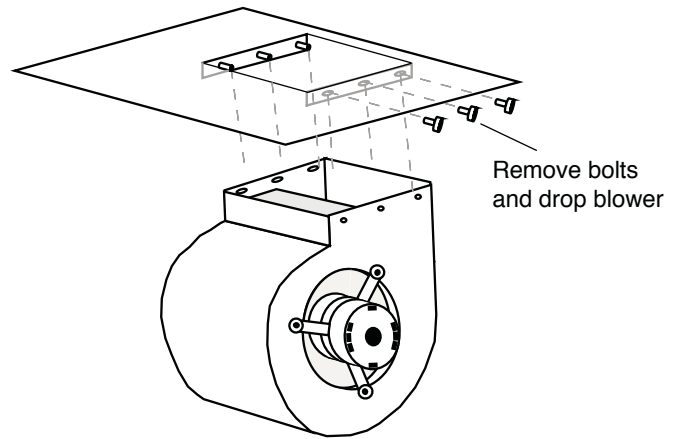
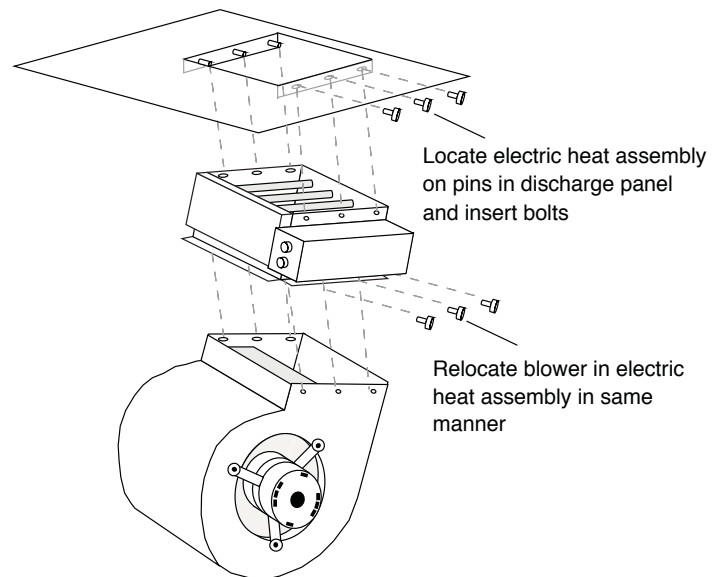


Figure 1c: HG electric heat mounting and blower re-installation



Wiring and Setup

1. Install power wiring and connect to power block or circuit breakers. For 12, 15 or 20 kW models, two power circuits may be used to reduce wiring and breaker costs as in Figure 5a. If a single circuit supply is desired, install the optional single circuit accessory kit (part number 16B0002N02), as shown in Figure 5b. Optional for WDG: HG**C kits only. Blower power may be supplied from T3 and T4 CB5 breaker. Refer to wiring diagram.
2. Check unit CFM to insure airflow setting is above minimum airflow rating for the electric heat model from Table 1. Low speed blower not allowed with electric heat.
3. Check heat staging for the application. Table 4 contained later in this IOM shows the factory default staging and the alternate field selectable staging where applicable. Staging changes are made by dip switch settings. See figure 6. These are identified as either ER1, ER2, ER3 or ER4 depending on the heater size.
4. Mark the appropriate box of the electric heat model installed on the additional serial plate on the exterior of the unit.
5. Turn on the power to the unit and the auxiliary electric heat. Wiring installation is complete.

Figure 2: Typical Horizontal Installation

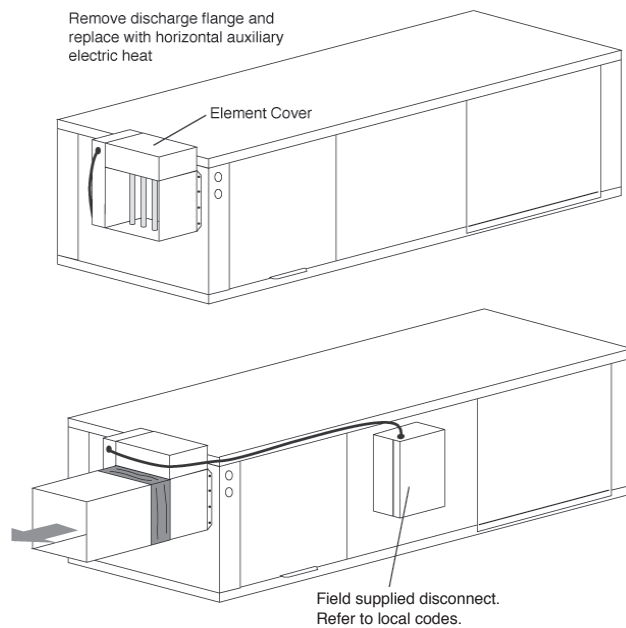


Figure 3: Low Voltage Harness Connection

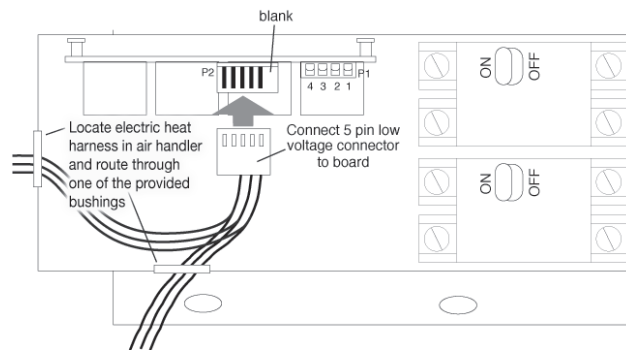


Figure 4: Power Conduit And Wire Routing (external mount)

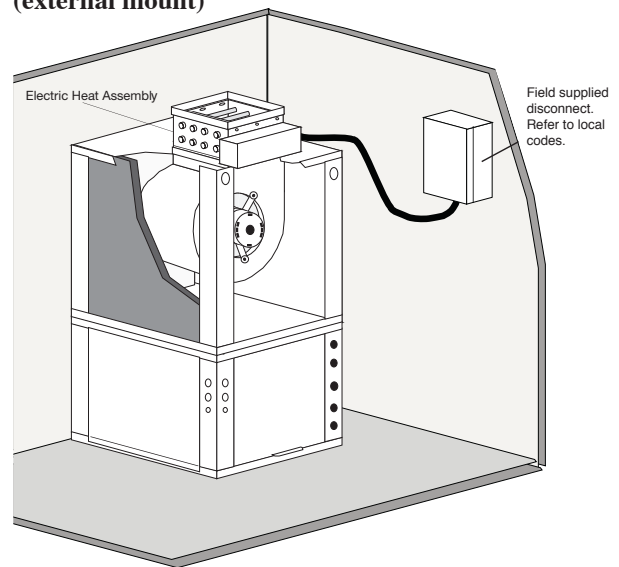
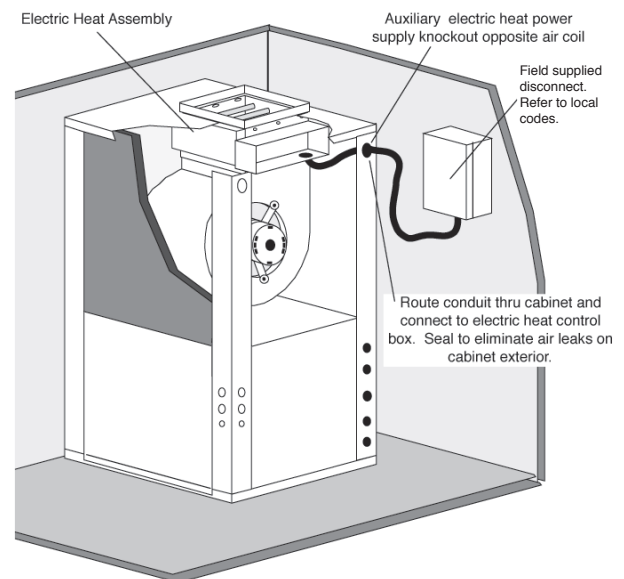


Figure 4a: Power Conduit And Wire Routing (internal mount)



Auxiliary Electric Heat Start-up

Put thermostat in emergency heat mode (or jumper t-stat input R to W and R to G) and setpoint to high setting. Momentarily short the test pins (do not jumper the test pins) of the CXM control to place it in test mode to reduce time delays. Unit will require 15-20 seconds before engaging emergency heat mode stage 1 (W1) and then another 15-20 seconds to engage stage 2 (W2) when in 'Test mode'. Verify proper electric heat operation.

Figure 5a: Power Wiring, Dual Circuits, 12, 15, 20kw

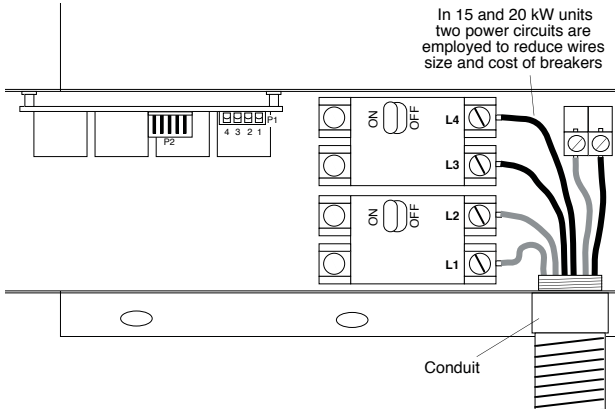


Figure 5b: Power Wiring, Single Circuit, 12, 15, 20kw

In 12, 15 and 20 kW units, optional single power circuit is employed to reduce the number of wires needed. Optional single unit adapter kit part number 16B0002N02.

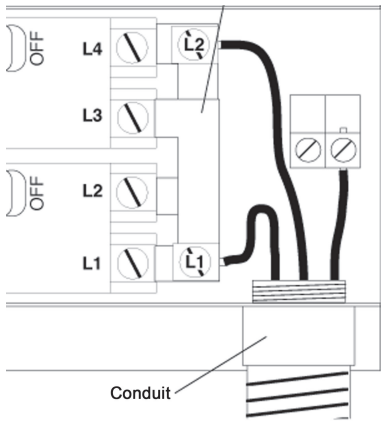
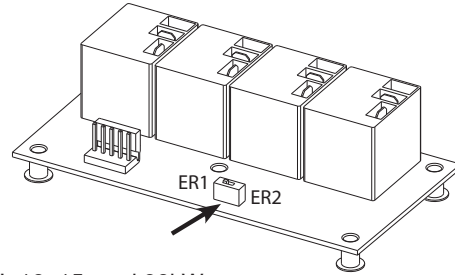


Figure 6: Staging Dip Switches

For HGM/L 4, 5, 8, 10kW.



For HGL 12, 15, and 20kW.

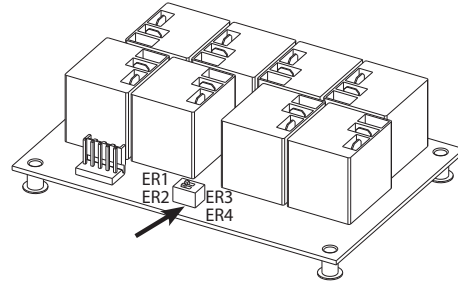


Figure 5c: Power Wiring, 4, 5, 8, and 10kw

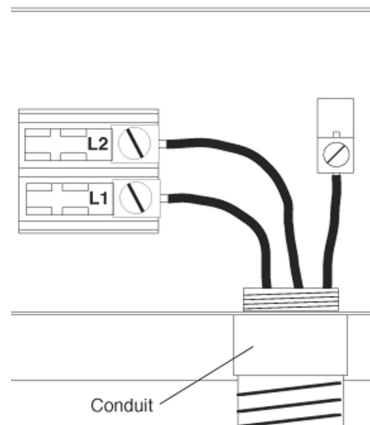


Table 1: HG Electric Heat Ratings and Compatibility

Heater Model	HT Series					HP Series						HE Series						WDG Series				kW Rating		Btuh Rating		Minimum CFM Required		
	24	36	48	60	70	18	24	30	36	42	48	60	24	30	36	42	48	60	24	36	48	60	240V	208V	240V		208V	
HGM4A																							3.8	2.9	13000	9900	500	
HGM5A																								4.8	3.6	16300	12300	500
HGM8A																								7.6	5.7	25900	19400	650
HGM10A																								9.6	7.2	32700	24600	650
HGM12A																								11.4	8.6	38900	29200	750
HGM4B																								3.8	2.9	13000	9900	500
HGM5B																								4.8	3.6	16300	12300	500
HGM8B																								7.6	5.7	25900	19400	650
HGM10B																								9.6	7.2	32700	24600	650
HGM12B																								11.4	8.6	38900	29200	750
HGM4C																								3.8	2.9	13000	9900	500
HGM5C																								4.8	3.6	16300	12300	500
HGM8C																								7.6	5.7	25900	19400	650
HGM10C																								9.6	7.2	32700	24600	650
HGL10A																								9.6	7.2	32700	24600	1300
HGL15A																								14.4	10.8	49100	36900	1350
HGL20A																								19.2	14.4	65500	49200	1350
HGL10C																								9.6	7.2	32700	24600	1300
HGL15C																								14.4	10.8	49100	36900	1350
HGL20C																								19.2	14.4	65500	49200	1350

Shaded areas denote compatibility

Internal mounted heaters are rated for zero clearance (unit and duct). External mounted heaters require 1" clearance for first three feet of duct.

Table 2: HG Electric Heat Electrical Data - HP/HT/HE

HG Series Electric Heat Model	Supply Circuit	Heater Amps		Min Circ Ampacity		Max Fuse		Supply Wire	
		240V	208V	240V	208V	240V	208V	Min AWG	Max Ft
HGM4A/B	Single	15.8	14.0	19.8	17.1	20	20	12	130
HGM5A/B	Single	20.0	17.3	25.0	21.6	25	25	10	70
HGM8A/B	Single	31.7	27.5	39.6	34.4	40	35	8	70
HGM10A/B	Single	40.0	34.7	50.0	43.4	50	45	6	90
HGM12A/B	Single	47.5	41.2	59.4	51.5	60	60	6	70
	Dual - L1/L3	31.7	27.5	39.6	34.4	40	35	8	70
	Dual - L2/L4	15.8	13.7	19.8	17.1	20	20	12	50
HGL10A	Single	40.0	34.7	50.0	43.4	50	45	6	80
HGL15A	Single	60.0	52.0	75.0	65.0	80	70	6	50
	Dual - L1/L3	40.0	34.7	50.0	43.4	50	45	6	80
	Dual - L2/L4	20.0	17.3	25.0	21.6	25	25	10	70
HGL20A	Single	80.0	69.3	100.0	86.6	100	90	2	100
	Dual - L1/L3	40.0	34.7	50.0	43.4	50	45	6	80
	Dual - L2/L4	40.0	34.7	50.0	43.4	50	45	6	80

All heaters rated single phase 208-240V 60 Hz

Wire size based on 60°C copper conductor

All models 12kW or larger feature internal circuit breakers

Wire length based on one way measurement with 2% voltage drop

All fuses UL Class K general purpose

Table 3: HG Electric Heat Electrical Data - WDG

Unit Model	Head Kit Model	Supply	Heater Amps 240	Heater Amps 208	Blower FLA	Minimum Circuit Amps		Maximum Breaker Size	
						240 V	208 V	240 V	208 V
024	HGM4C	SINGLE	15.8	14	4.3	25	23	25	25
	HGM 5C	SINGLE	20	17.3	4.3	30	27	30	30
	HGM 8C	SINGLE	31.7	27.5	4.3	45	40	45	40
	HGM 10C	SINGLE	40	34.7	4.3	55	49	60	50
036	HGL10C	SINGLE	40	34.7	4.3	59	52	60	60
	HGL15C	DUAL L1/L2	40	34.7	0	50	43	50	45
		L3/L4	20	17.3	4.3	34	30	35	30
048 and 060	HGL10C	SINGLE	40	34.7	7.0	59	52	60	60
	HGL15C	DUAL L1/L2	40	34.7	0.0	50	43	50	45
		L3/L4	20	17.3	7.0	34	30	35	30
	HGL20C	DUAL L1/L2	40	34.7	0.0	50	43	50	45
		L3/L4	40	34.7	7.0	59	52	60	60

All heaters rated single phase 208-240V 60Hz
 All models 15kW or larger feature internal circuit breakers
 All Fuses UL Class K general purpose

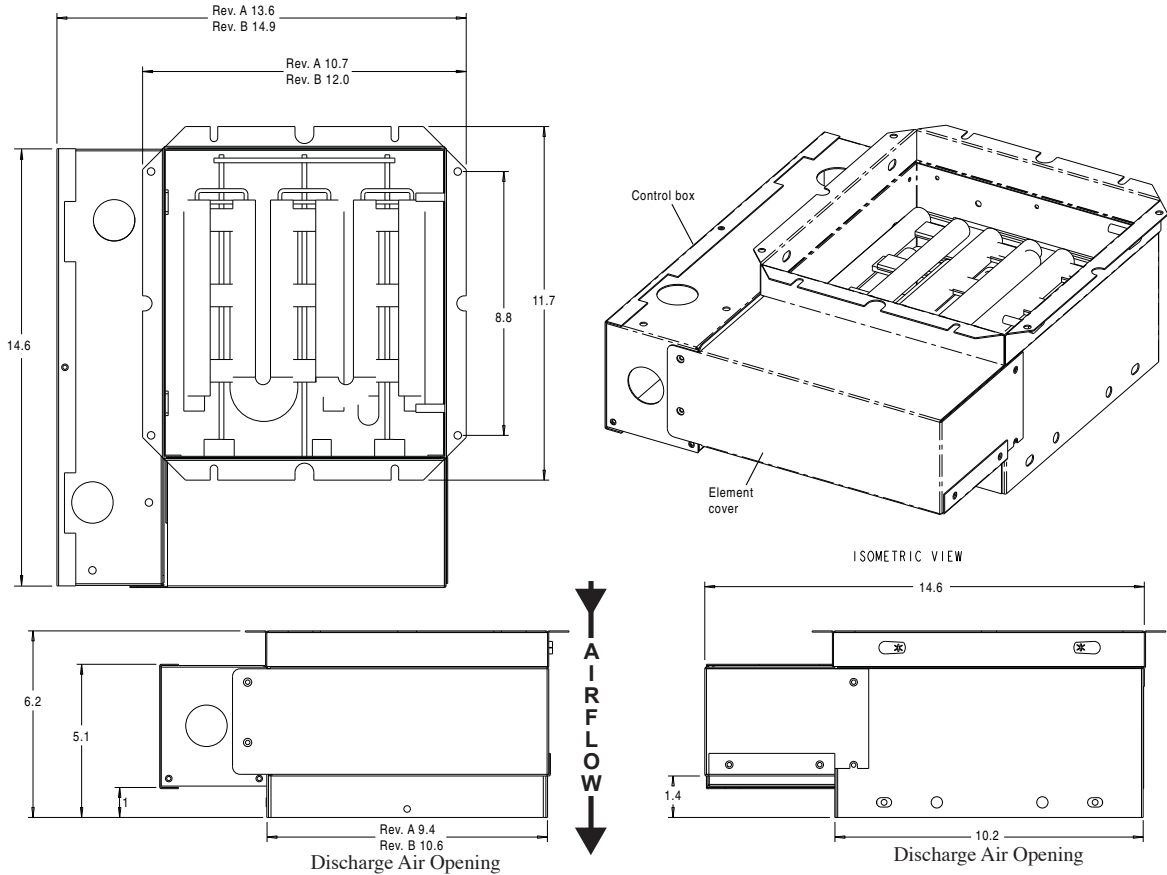
Table 4: HG Electric Heat Staging Options

Heater Model	Staging	Factory Setting			Alternate Setting		
	kW	Dip Position	Stage 1 kW	Stage 2 kW	Dip Position	Stage 1 kW	Stage 2 kW
HGM4	4	ER1	4				
HGM5	5	ER1	5				
HGM8	4 or 8	ER1	4	4	ER2	8	
HGM10, HGL10	5 or 10	ER1	5	5	ER2	10	
HGM12	4, 8, or 12	ER1, ER4	4	8	ER3, ER4	8	4
HGL15	5, 10 or 15	ER1, ER4	5	10	ER3, ER2	10	5
HGL20	10 or 20	ER3, ER4	10	10			

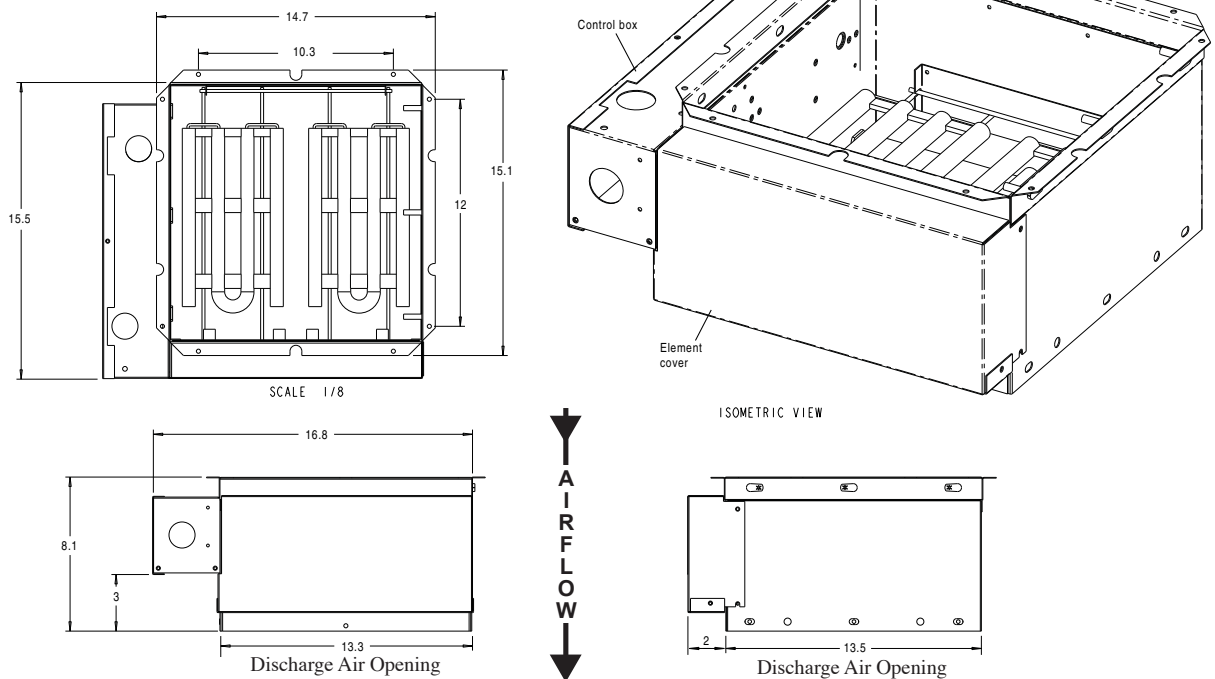
Figure 6: Heater Dimensions

NOTE: The maximum recommended air velocity for a supply plenum is 900 fpm. When connecting a plenum to an external supplemental heater, ensure that the air velocity in the plenum does not exceed 900 fpm. Noise and air distribution issues may occur if supply plenum velocities exceed 900 fpm.

HGM (Medium) Electric Heat Option



HGL (Large) Electric Heat Option



Revision History

Date:	Page:	Action:
12/22/14	External Mount	Edits to number three
11/12/14	All	First Published

Due to ongoing product improvements, specifications and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.

Incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.

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