

AG Series Electric Heaters



Auxiliary Electric Heat

Installation, Operation &
Maintenance Instructions

97B0005N02

Revision: 1/14/13

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Overview

Overview

The AG Series Auxiliary Electric Heat mounts internally on TS, TE and TT upflow (Figure 1b) or downflow units and all TAH units. It mounts directly to the blower outlet of TS, TE and TT horizontal units (Figure 8) and on all TZ units. Note the model compatibility Table 1. Horizontal units are rated for zero clearance at the unit and 1" clearance for first three feet of duct, vertical units rated for zero clearance for both unit and duct. Downflow units can not be located directly over a discharge register. The discharge plenum must be constructed from non combustible material. The AG 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 or DXM control of the unit.

TS ,TT and TE Vertical Upflow or Downflow and TAH Installation - Internal

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 2. Removal of electrical wiring should not be necessary.
 4. Position the electric heater as illustrated in figure 3 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 6.
 7. Install power conduit through the unit cabinet as shown in figure 7 and attach directly to the electric heater control box. See figures 9a-c.
 8. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

Figure 1a: Typical air handler installation

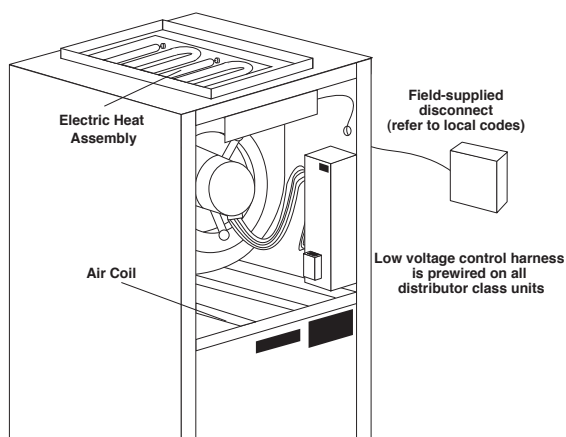


Figure 1b: Typical vertical unit installation

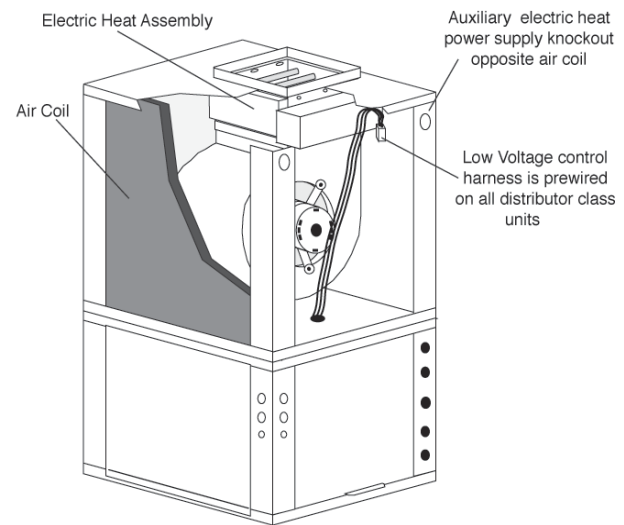


Figure 2: Blower removal

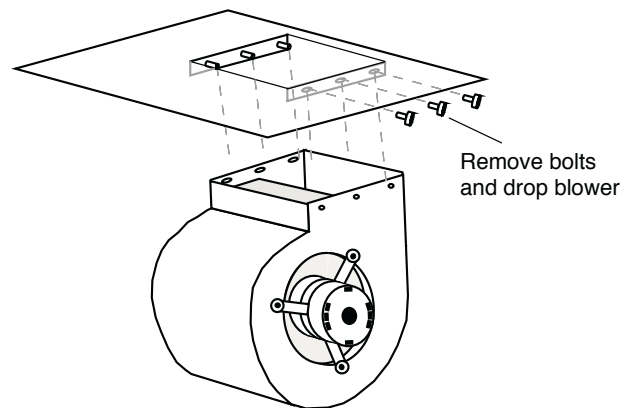
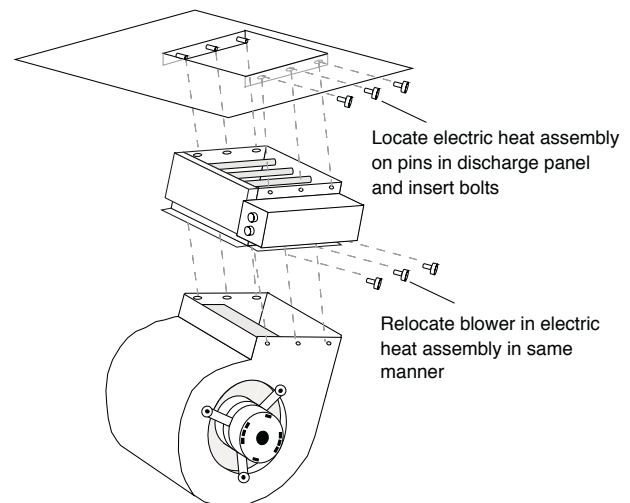


Figure 3: AG electric heat mounting and blower re-installation



Vertical Installation - External

TZ Vertical Upflow External Installation

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. TZ036 and 042 units require a transition bracket between the cabinet top 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.

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 the top panel knockout(s). Seal the penetration 'air tight'. This harness is factory installed on all TZ units (wire-tied to the fan housing).
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 5.
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.

Figure 4: Typical Vertical External Mount Installation

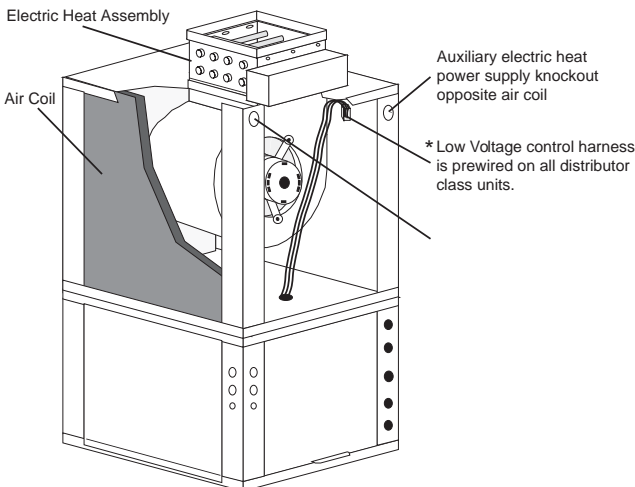
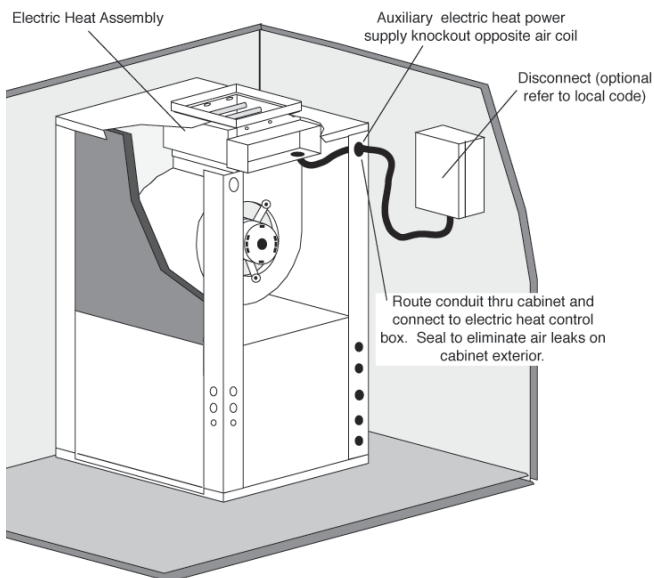


Figure 5: Power Conduit And Wire Routing (internal mount)



Horizontal Installation - External

Horizontal External Installation

1. Disconnect power to the unit.
2. Remove blower access panel from the unit and control box and element covers from the electric heater.
3. Remove and discard blower discharge flanges from the unit but save the screws. TZ036 and 042 units require a transition bracket between the cabinet top and the electric heater. This bracket is packaged inside the blower compartment for field installation.
4. Position the electric heater as illustrated herein. 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'. This harness is factory installed and wire-tied to the fan housing.
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 6.
9. Install power conduit and attach directly to the electric heater control box.
10. Replace all covers and panels, heater installation is complete. Proceed to wiring and setup.

Figure 8: Typical Horizontal Installation

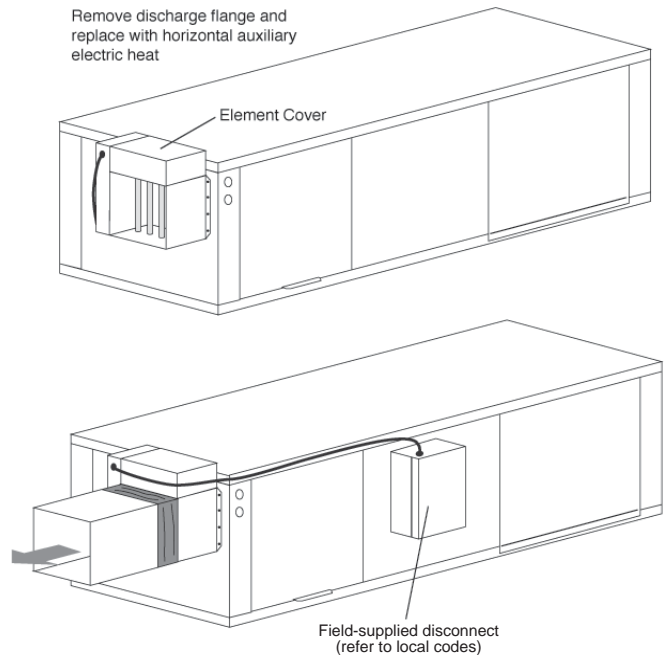
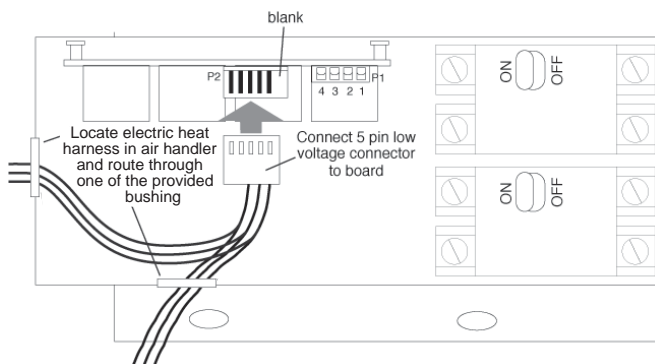


Figure 6: Low Voltage Harness Connection



Wiring

Figure 8a: Power Wiring, Dual Circuits, 15, 20kw

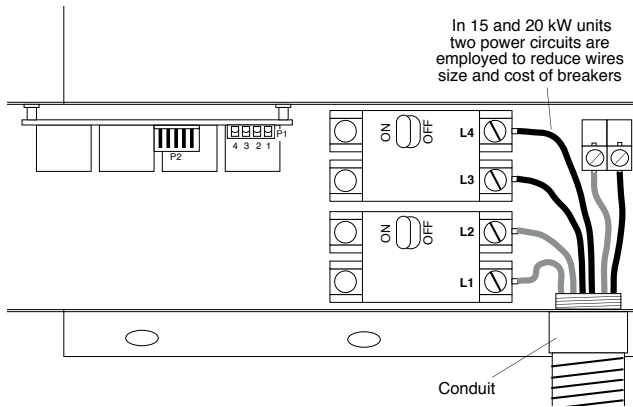
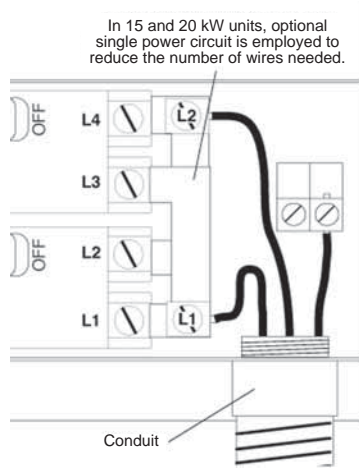


Figure 8b: Power Wiring, Single Circuit, 12, 15, 20kw



Wiring and Setup (all models)

1. Install power wiring and connect to power block or circuit breakers. In 15 or 20kW models two power circuits may be used to reduce wiring and breaker costs as in Figure 8a. If a single circuit supply is desired, install the optional single circuit accessory kit (P/N 16B0002N02), as shown in Figure 8b, that can be obtained from your distributor.
 Optional for TAH: AG**C kits only. Blower power may be supplied from T3 & T4 CB5 breaker. Refer to wiring diagram 96B0143N01.
2. Ensure unit airflow setting is above minimum airflow rating for the electric heat model from Table 1.
3. Check staging jumpers for the application. Typically only 5 kW (factory setting on all models except 10kW on 20kW models) is needed for first stage electric (W1) to minimize electric demand. This staging can be adjusted by moving the staging jumpers as shown in Figure 9. Whatever is jumped to P1 pin 1 will be energized on 1st stage of electric heat, and P1-2 will be energized as stage 2 electric heat. See Table 4 for staging options.
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.

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

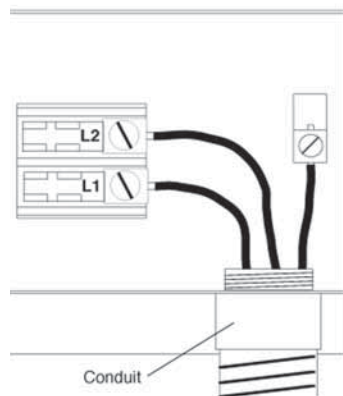
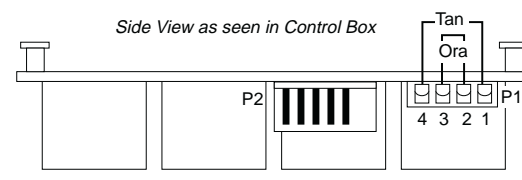
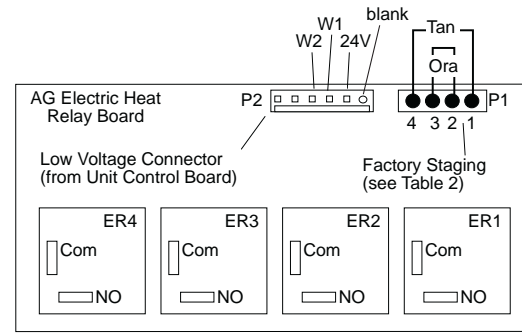


Figure 9: Staging Jumpers

Staging Example on a 15kW unit W1 (first stage) has 5kW ('ER1' 5kW & 'ER4' 0kW) and W2 (second stage) will have 10kW ('ER2 & 3' 5kW each)



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. 'Touch-jumper' the test pins of the CXM or DXM into 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.

Staging Options

Table 1: AG Electric Heat Ratings

Auxiliary Electric Heat Model	TS, TT, TE Models				TZ Models			TAH Models			kW Rating		Btuh Rating		Minimum CFM Required	
	018	024-030	036-038	042-072	024	030-042	048-060	Auxiliary Electric Heat Model*	026	038	049-064	240V	208V	240V		208V
AGM4A								AGM4C				3.8	2.9	13000	9900	500
AGM5A								AGM5C				4.8	3.6	16300	12300	500
AGM8A								AGM8C				7.6	5.7	25900	19400	650
AGM10A								AGM10C				9.6	7.2	32700	24600	650
AGM12A												11.4	8.6	38900	29200	750
AGL4A								AGL4C				3.8	2.9	13000	9900	500
AGL10A								AGL10C				9.6	7.2	32700	24600	1300
AGL15A								AGL15C				14.4	10.8	49100	36900	1350
AGL20A								AGL20C				19.2	14.4	65500	49200	1350

Black area denotes compatibility

Note: Horizontal units rated for zero clearance unit and 1" clearance for the first three feet of duct, Vertical units rated for zero clearance for both unit and duct.

* Can be used on corresponding TZ, TE, TS and TT models

Table 2: AG Electric Heat Electrical Data - TAH

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
TAH026	AGM4C	SINGLE	15.8	14	4.3	25	23	25	25
	AGM 5C	SINGLE	20	17.3	4.3	30	27	30	30
	AGM 8C	SINGLE	31.7	27.5	4.3	45	40	45	40
	AGM 10C	SINGLE	40	34.7	4.3	55	49	60	50
TAH038	AGL4C	SINGLE	15.8	14	4.3	28.5	26.25	30	30
	AGL10C	SINGLE	40	34.7	4.3	59	52	60	60
	AGL15C	DUAL L1/L2	40	34.7	0	50	43	50	45
		L3/L4	20	17.3	4.3	34	30	35	30
TAH049 and TAH060	AGL4C	SINGLE	15.8	14	7	28.5	26.25	30	30
	AGL10C	SINGLE	40	34.7	7.0	59	52	60	60
	AGL15C	DUAL L1/L2	40	34.7	0.0	50	43	50	45
		L3/L4	20	17.3	7.0	34	30	35	30
	AGL20C	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 Fuses UL Class K general purpose

All models 15kW or larger feature internal circuit breakers

Staging Options

Table 3: AG Electric Heat Electrical Data - TS/TT/TE

Auxiliary Electric Heat Model	Supply Circuit	Heater Amps		Minimum Circuit Amps		Maximum Fuse	
		240V	208V	240V	208V	240V	208V
AGM4A	Single	15.8	14.0	19.8	17.1	20	20
AGM5A	Single	20.0	17.3	25.0	21.6	25	25
AGM8A	Single	31.7	27.5	39.6	34.4	40	35
AGM10A	Single	40.0	34.7	50.0	43.4	50	45
AGM12A	Single	47.5	41.2	59.4	51.5	60	60
	Dual - L1/L2	31.7	27.5	39.6	34.4	40	35
	Dual - L3/L4	15.8	13.7	19.8	17.1	20	20
AGL4A	Single	15.8	14.0	19.8	17.1	20	20
AGL10A	Single	40.0	34.7	50.0	43.4	50	45
AGL15A	Single	60.0	52.0	75.0	65.0	80	70
	Dual - L1/L2	40.0	34.7	50.0	43.4	50	45
	Dual - L3/L4	20.0	17.3	25.0	21.6	25	25
AGL20A	Single	80.0	69.3	100.0	86.6	100	90
	Dual - L1/L2	40.0	34.7	50.0	43.4	50	45
	Dual - L3/L4	40.0	34.7	50.0	43.4	50	45

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: AG Electric Heat Staging Options

Auxiliary Electric Heat Model	Staging Options	Factory Settings Stage 1	Staging in kW					
			Jumper 1-4, 2-3†		Jumper 1-3, 2-4†		Jumper 1-2-3	
			Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2
AGM4A or C	4	4	4	0	4	0	4	0
AGM5A or C	5	5	5	0	5	0	5	0
AGM8A or C	4 or 8	4	4	4	4	4	8	0
AGM10A or C	5 or 10	5	5	5	5	5	10	0
AGM12A or C	4, 8 or 12	4	4	8	8	4	12	0
AGL4A or C	4	4	4	0	4	0	4	0
AGL10A or C	5 or 10	5	5	5	5	5	10	0
AGL15A or C	5, 10 or 15	5	5	10	10	5	15	0
AGL20A or C	5, 10, 15 or 20	10	10	10	10	10	15	5

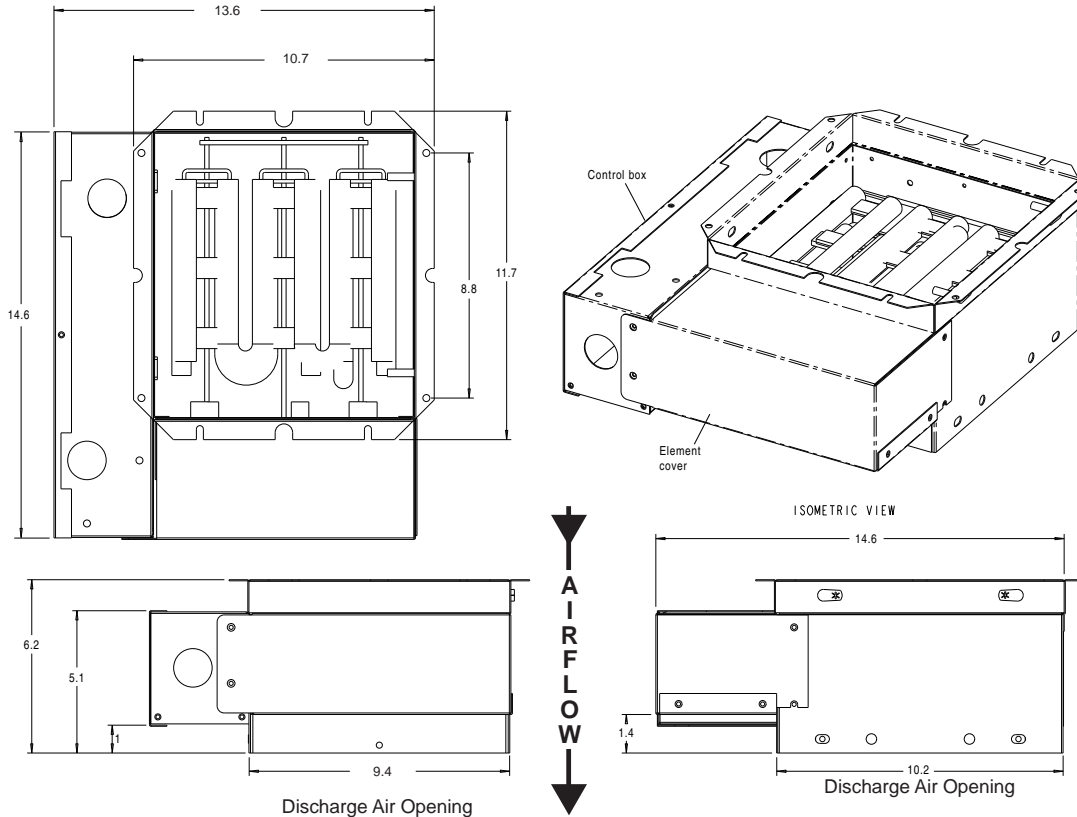
† Factory jumper setting

Accessory Heater Dimensions

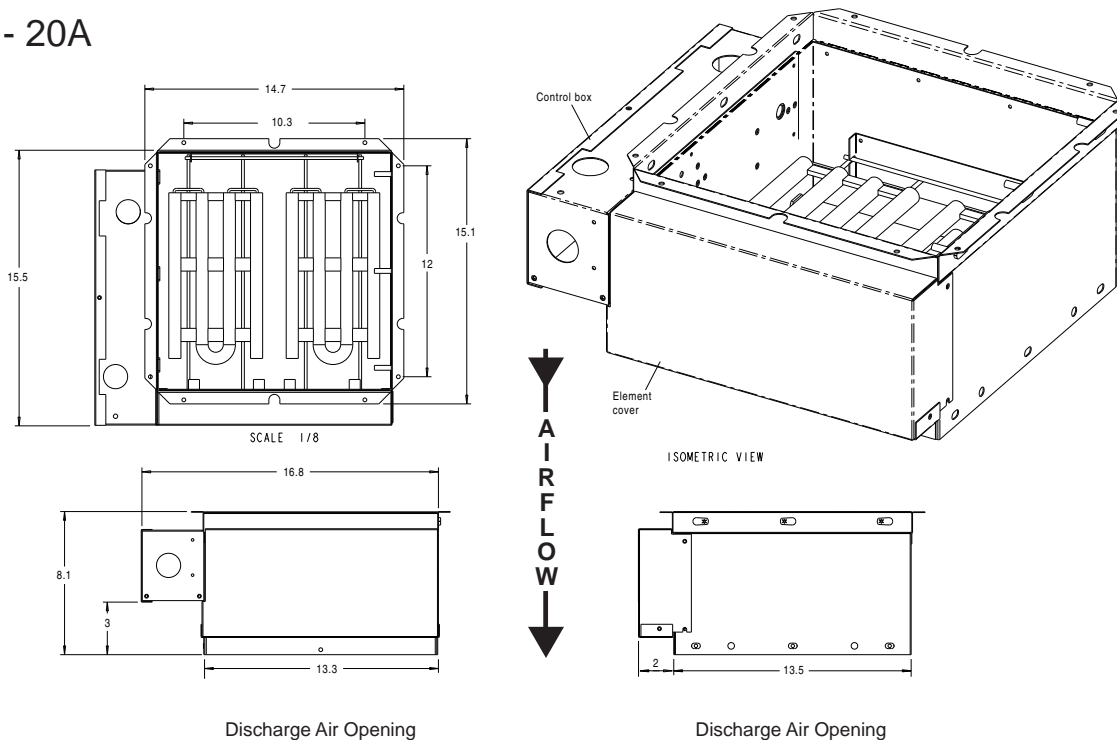
Figure 10: Heater Dimensions

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.

AGM4A - 12A



AGL4A - 20A



Warranty



CLIMATE MASTER, INC. LIMITED EXPRESS WARRANTY/LIMITATION OF REMEDIES AND LIABILITY FOR RESIDENTIAL CLASS PRODUCTS WITH LABOR ALLOWANCE

It is expressly understood that unless a statement is specifically identified as a warranty, statements made by Climate Master, Inc. a Delaware corporation, ("CM") or its representatives, relating to CM's products, whether oral, written or combined in any sales literature, catalog or agreement, are not express warranties and do not form a part of the basis of the bargain, but are merely CM's opinion or commendation of CM's products. **EXCEPT AS SPECIFICALLY SET FORTH HEREIN, THERE IS NO EXPRESS WARRANTY AS TO ANY OF CM'S PRODUCTS. CM MAKES NO WARRANTY AGAINST LATENT DEFECTS. CM MAKES NO WARRANTY OF MERCHANTABILITY OF THE GOODS OR OF THE FITNESS OF THE GOODS FOR ANY PARTICULAR PURPOSE.**

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To make a claim under this warranty, parts must be returned to CM in Oklahoma City, Oklahoma, freight prepaid, no later than ninety (90) days after the date of the failure of the part, if CM determines the part to be defective and within CM's Limited Express Warranty. CM shall, when such part has been either replaced or repaired, return such to a factory recognized distributor, dealer or service organization, F.O.B. CM, Oklahoma City, Oklahoma, freight prepaid. The warranty on any part replaced or repaired under warranty expires at the end of the original warranty period.

This Limited Express Warranty shall cover the labor incurred by CM authorized service personnel in connection with the installation of a new or repaired warranty part that is covered by this Limited Express Warranty only to the extent specifically set forth in the then existing labor allowance schedule provided by CM's Warranty Department and only as follows: (1) CM Units for five (5) years from the Warranty Inception Date. Actual Labor costs are not covered by this Limited Express Warranty to the extent they exceed the amount allowed under said allowance schedule; they are not specifically provided for in said allowance schedule; they are not the result of work performed by CM authorized service personnel; they are incurred in connection with a part not covered by this Limited Express Warranty, or they are incurred more than the time periods set forth in this paragraph after the Warranty Inception Date.

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This Limited Express Warranty provides the limited labor allowance coverage as set forth above. Otherwise, CM is not responsible for: (1) The costs of any fluids, refrigerant or system components supplied by others, or associated labor to repair or replace the same, which is incurred as a result of a defective part covered by CM's Limited Express Warranty; (2) The costs of labor, refrigerant, material or service incurred in diagnosis and removal of the defective part, or in obtaining and replacing the new or repaired part; (3) Transportation costs of the defective part from the installation site to CM, or of the return of that part if not covered by CM's Limited Express Warranty; or (4) The costs of normal maintenance.

This Limited Express Warranty applies to CM Residential Class products ordered from CM on or after May 1, 2010 (this would generally include CM Units with serial numbers beginning with "N118" and higher) and is not retroactive to any products ordered from CM prior to May 1, 2010 (this would generally include CM Units with serial numbers beginning with "N117" and lower). If you are unsure if this Limited Express Warranty applies to the product you have purchased, contact CM at the phone number or address reflected below.

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In the event of a breach of the Limited Express Warranty, CM will only be obligated at CM's option to repair the failed part or unit, or to furnish a new or rebuilt part or unit in exchange for the part or unit which has failed. If after written notice to CM's factory in Oklahoma City, Oklahoma of each defect, malfunction or other failure, and a reasonable number of attempts by CM to correct the defect, malfunction or other failure, and the remedy fails of its essential purpose, CM shall refund the purchase price paid to CM in exchange for the return of the sold good(s). Said refund shall be the maximum liability of CM. **THIS REMEDY IS THE SOLE AND EXCLUSIVE REMEDY OF THE BUYER OR PURCHASER AGAINST CM FOR BREACH OF CONTRACT. FOR THE BREACH OF ANY WARRANTY OR FOR CM'S NEGLIGENCE OR IN STRICT LIABILITY.**

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Normally, the dealer or service organization who installed the products will provide warranty performance for the owner. Should the installer be unavailable, contact any CM recognized distributor, dealer or service organization. If assistance is required in obtaining warranty performance, write or call:

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Rev.: 4/10
Part No.: RPS81

Revision History

Date	Page #	Description
14 Jan., 13	4-5	Installation Instructions Updated
14 Dec., 12	3, 4	Update TZ Text
8 May, 12	Various	Added TE Mentions
25 Jan. 11	8	Dual Supply Circuit Updated
2 Nov. 11	Various	TZ (Vertical External Install) Information Added
24 Sept, 10	8	Accessory Heater Dimension Information Added
20 July, 10	All	Update Text, Add TAH and Size 4, Remove Size 12
24 June, 10	All	Update Text, Add Size 4 Heater
05 June, 08	All	Reformatted Document Size
03 Mar, 08	Various	Various Minor Corrections
04 Mar, 07	6	Updated Table 1 for TT072 Models
01 Oct, 06	All	First Published



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