INSTALLER'S GUIDE

18-GJ09D1-10A-EN

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

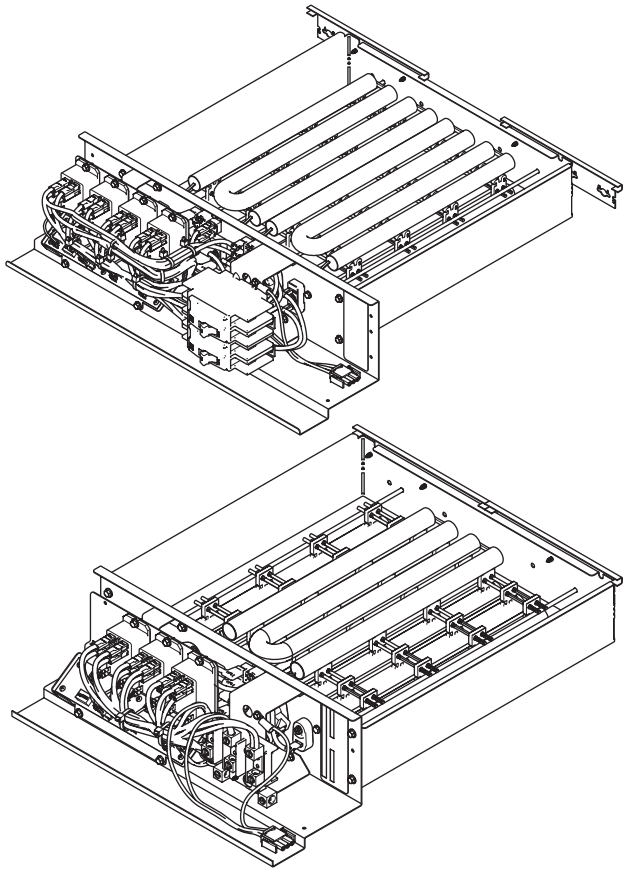
Models:

BAYEVAC04BK1B
BAYEVAC04LG1B
BAYEVAC05BK1B
BAYEVAC05LG1B
BAYEVAC08BK1B
BAYEVAC08LG1B
BAYEVAC10BK1B
BAYEVAC10LG1B
BAYEVBC15BK1B
BAYEVBC20BK1B
BAYEVAC10LG3B
BAYEVBC15LG3B

Supplementary Electric Heaters

for Air Handler Installations

IMPORTANT *— This Document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.*



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Section 1. Safety Information

⚠ WARNING

SAFETY HAZARD! This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

⚠ WARNING

HAZARDOUS VOLTAGE! Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

⚠ WARNING

LIVE ELECTRICAL COMPONENTS! During installation, testing, servicing, and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

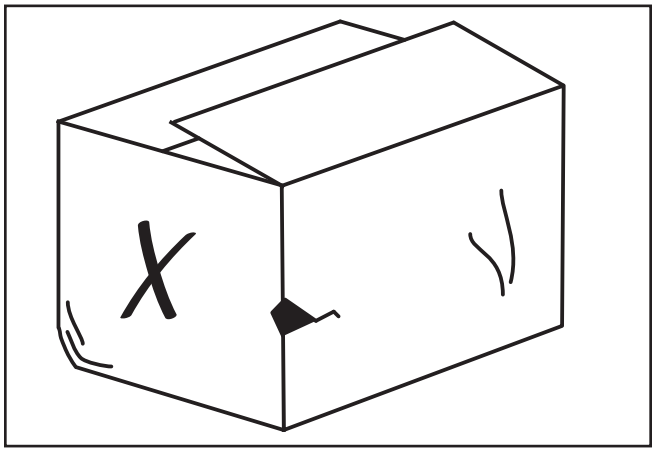
⚠ CAUTION

SAFETY HAZARD! Sharp Edge Hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.

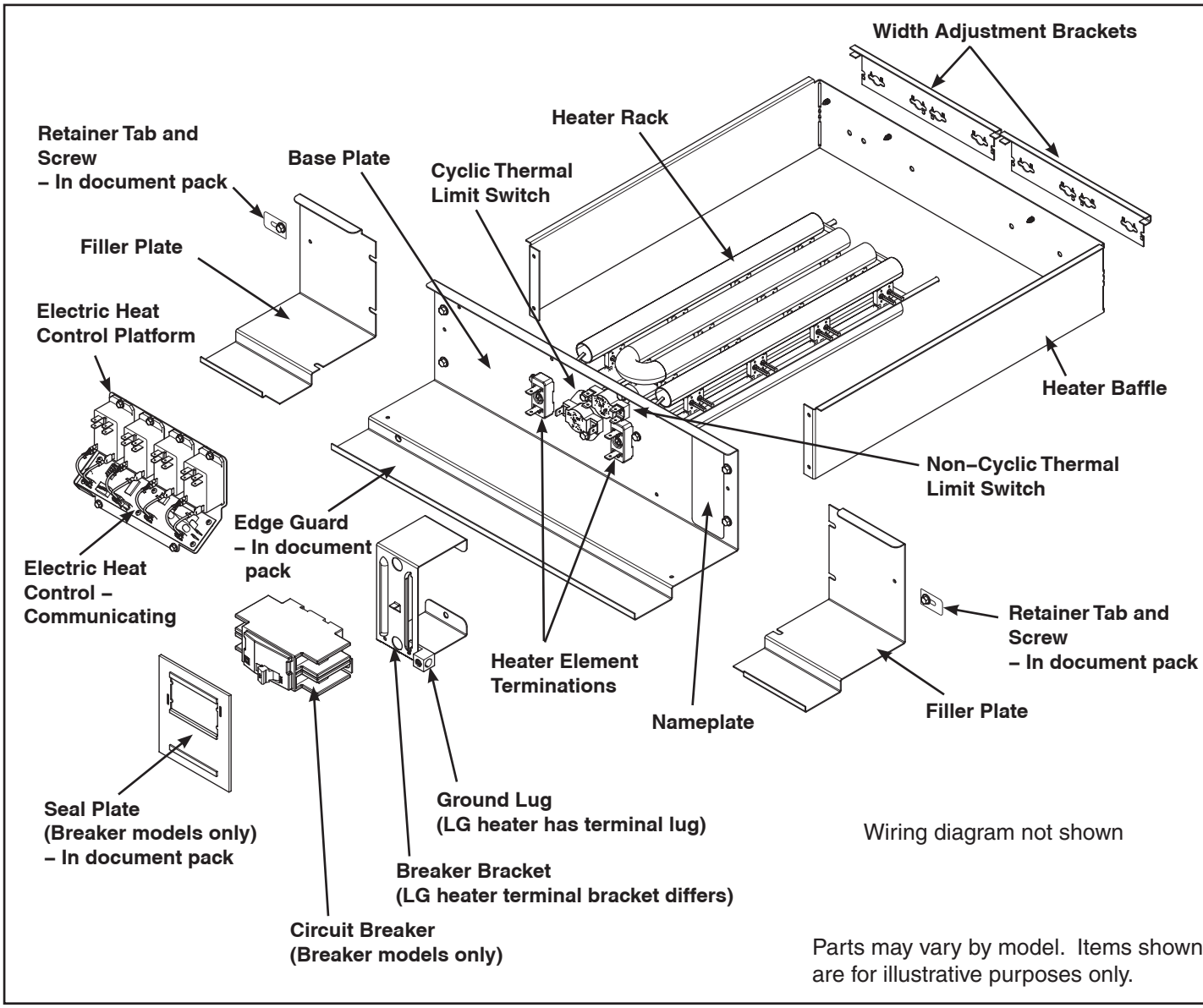
Section 2. General Information

This electric heater accessory is designed to provide power directly to the air handler from the accessory heater's power supply, eliminating the need for additional circuits. The power and control wiring each use a single wire harness to connect the heater and the air handler.

1. Check the unit heater label to confirm that the selected heater is approved for use with the air handler in the installed configuration. For some heaters, a corresponding secondary nameplate label is included. Place the label within the heater data table on the air handler nameplate.
2. Check the components received for damage. Report any defects or shortages to the transportation company immediately.
3. Be sure the power supply matches the listing shown on the heater nameplate.



Section 3. Heater Assembly Labeled



Wiring diagram not shown

Parts may vary by model. Items shown are for illustrative purposes only.

Section 4. Heater Selection

Determine which heater best fits your application needs. In addition to electrical considerations, you must know your cabinet size and the range of heaters which fit that cabinet.

4.1 Air Handler Model Number Matrix

Step 1 - Measure your cabinet and use the Air Handler Model Number Matrix to determine your cabinet size.

Air Handler Model Number Matrix

	Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Example	**T**	**A**	**M**	**7**	**A**	**0**	**B**	**3**	**0**	**H**	**2**	**1**	**S**	**A**	**A**
Brand		**T**														
Product Type	Air Handler		**A**													
Convertibility	Multi-poise 4-way			**M**												
Product Tier	Multi-speed				**7**											
Major Design Modifications	Letter Sequence					**A**										
No Descriptor	~~Air Handler / Coil~~						**0**									
Size (Footprint)	17.5 x 21.5							**A**								
	21.0 x 21.5							**B**								
	23.5 x 21.5							**C**								
Cooling Size: Air Handler	AH Coil - 1,000 BTU's (18, 24, 30, 36, 42, 48, 60)								**0–9**	**0–9**						
Electric Heat Input	Electric Heat - kW (05, 08, 10, 15, 20, 25)								**0–9**	**0–9**						
Airflow Type & Capability	H - Hi Effy, Multi-speed, 1-5 - nom. Tonnage (cfm/ton)										**H**	**1–5**				
Power Supply	208-230/1/60												**1**			
System Control Type	Standard - 24 VAC													**S**		
Minor Design Modifications	Letter Sequence														**A**	
Unit Parts Identifier	Letter Sequence															**A**

The cabinet size in this example is **B**.

Record Your Cabinet Size = _____

This matrix is provided as an example only.

Step 2 - Use the Heater Model Number Matrix to determine which heaters will fit in your cabinet and to determine if you will have to modify the heater to fit the cabinet.

Electric Heat Model Number																
	Digit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Example	**B**	**A**	**Y**	**E**	**V**	**A**	**C**	**1**	**5**	**B**	**K**	**1**	**A**	**A**	**A**
Brand	Both Brands	B														
Product Type	Accessory		A	Y												
Heat Type	Electric Heater				E											
Product Tier	Air Handler Tier (7 and 8)					V										
Size (Footprint)	Minimum Cabinet Width (A,B,C)						A									
	Maximum Cabinet Width (A,B,C)							C								
Electric Heat Input	Electric Heat - kW (04, 05, 08, 10, 15, 20, 25)								0-9	0-9						
Connection	Breaker										B	K				
	Lugs										L	G				
Power Supply	208-230/1/60												1			
	200/1/50												A			
	208-230/3/60												3			
Major Design Modifications	Letter Sequence													A		
Minor Design Modifications	Letter Sequence														A	
Unit Parts Identifier	Letter Sequence															A

The heater in this example will fit into cabinets A, B, & C. From Step 1 we know that the heater needs to be sized to fit in a B cabinet.

See Section 5 for instructions for modifying your heater to fit various cabinet sizes.

Record Your Heater Size = _____

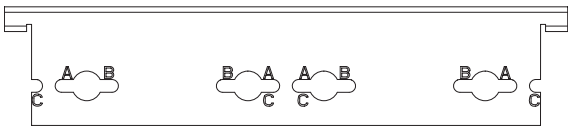
This matrix is provided as an example only.

Section 5. Adjust Heater

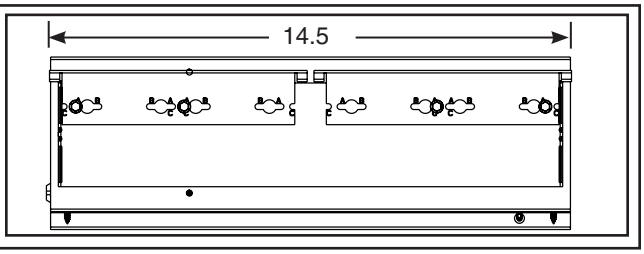
STEP 1 – Position Width Adjustment Brackets. Two Width Adjustment Brackets are located at the back of the heater assembly. The heater comes sized for the smallest cabinet it will fit in. For this example our heater fits cabinets A, B, and C. It came sized for an A cabinet and we are sizing it for a B cabinet.

1. Loosen the screws that hold the Width Adjustment Brackets to the back of the heater.
2. Reposition each Width Adjustment Bracket until the correct holes line up with the loosened screws as illustrated in this step.
3. Tighten screws to hold Width Adjustment Bracket securely in place.

Width Adjustment Brackets
(two per unit)

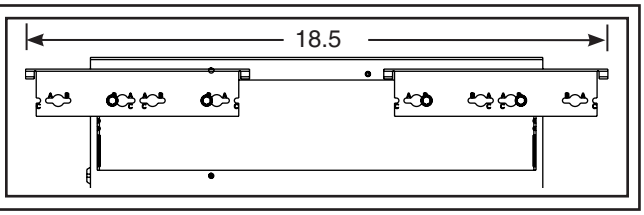


Cabinet A
The heater comes from the factory sized for cabinet A. No modifications to the Width Adjustment Brackets are required.



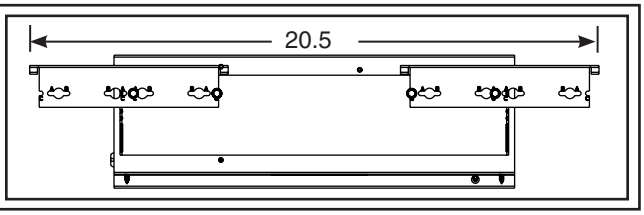
Cabinet B

Prepare the heater for cabinet B by modifying the Width Adjustment Brackets to align with the holes labeled B.



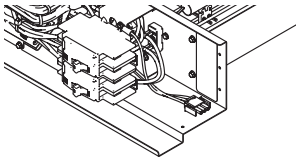
Cabinet C

Prepare the heater for cabinet C by modifying the Width Adjustment Brackets to align with the holes labeled C.



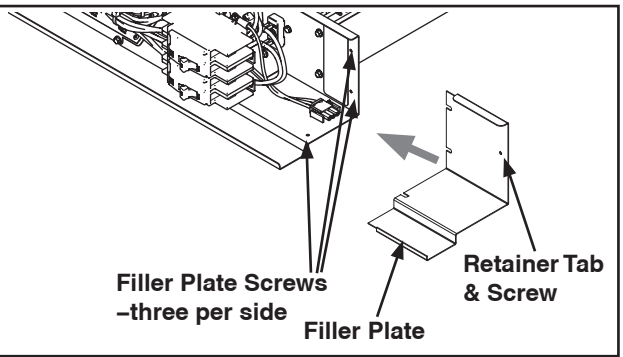
STEP 2 – Adjust Filler Plates.

Cabinet A
NOTE: No Filler Plates are required for the A cabinet.



Cabinet B or C

1. Loosen the Filler Plate screws on each side of Base Plate (four total).
2. Slide in the correct Filler Plate on each side. Filler Plates are marked for the cabinet size they match with, for example, the Filler Plate for cabinet B is marked "B-CAB".
3. Tighten the Filler Plate screws loosened previously and add a screw (provided) to the bottom of each plate to hold Filler Plates in place.



STEP3 – Attach Retainer Tabs and Edge Guard

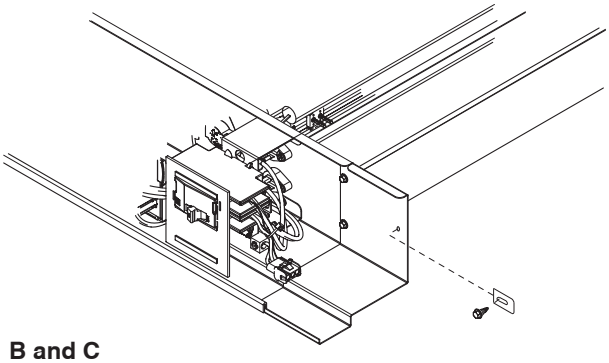
Note: For A cabinet widths, only the right side retainer tab must be installed.

1. Add the Retainer tabs using the screws provided (both tabs and screws are located in the documentation packet).

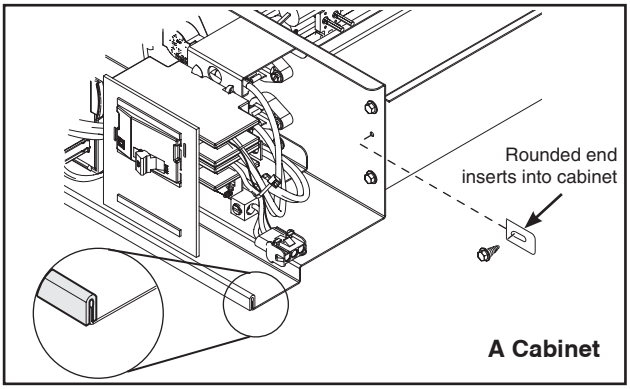
   Leave the screws slightly loose so that the tab can slide to the left or right as needed. The tab will be used later to engage in a slot within the air handler cabinet.

Note: If no filler plates are needed, the retainer tabs must be attached to the heater coil flange. Leave the screws slightly loose so they can be slid to the left or right as needed.

2. The edge guard is located in the document pack. Cut the edge guard to the length needed for the heater width, including the filler plates.
3. Install the edge guard on the front of the heater flange as shown.



B and C Cabinet



A Cabinet

STEP 4 - (Optional) Rotate Circuit Breaker Assembly.

Note: *For LG (lug) heater models the terminal block bracket does not rotate.*

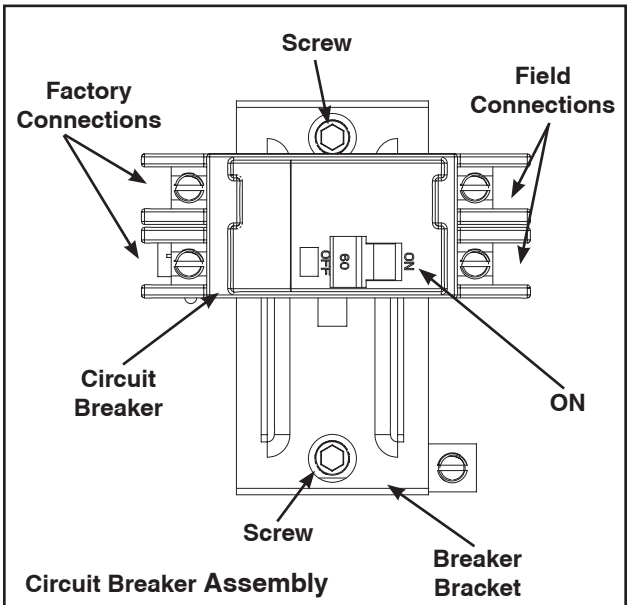
The need to reorient the Circuit Breaker Assembly depends upon the orientation of your application and which of the high voltage electrical conduit entry points you use for high voltage wiring.

Important: *For air handler units installed in the horizontal right position, the circuit breakers on the heater must be rotated in order to comply with National Electric Code (NEC Section 240.81). The NEC requires that circuit breakers operated vertically must be oriented so that the "on" position of the breaker is upward.*

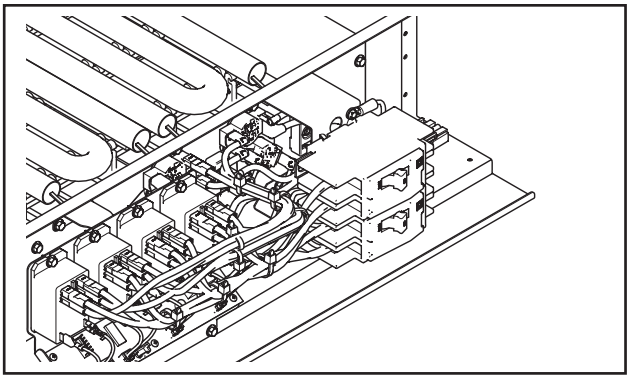
⚠ CAUTION

SAFETY HAZARD! Sharp Edge Hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.

1. Unscrew the Breaker Bracket from the Base Plate using a magnetic 1/4" hex driver with an extension. The extension allows for easier access to the screws which are located at the back of the bracket.
2. Rotate the bracket with circuit breaker(s) 180 °.
3. Use the screws removed in action 2 (above) to secure the bracket to the Base Plate.

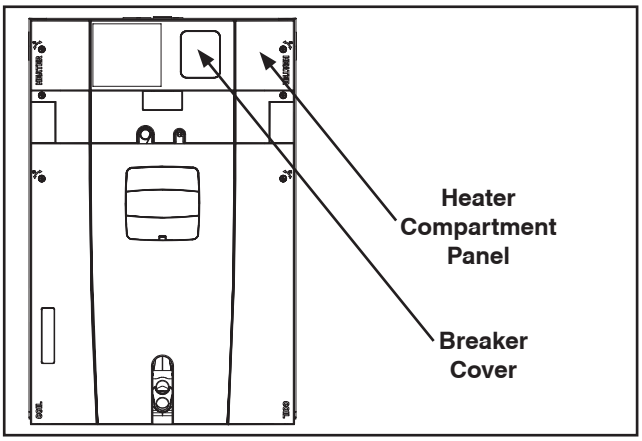


Circuit Breaker Assembly



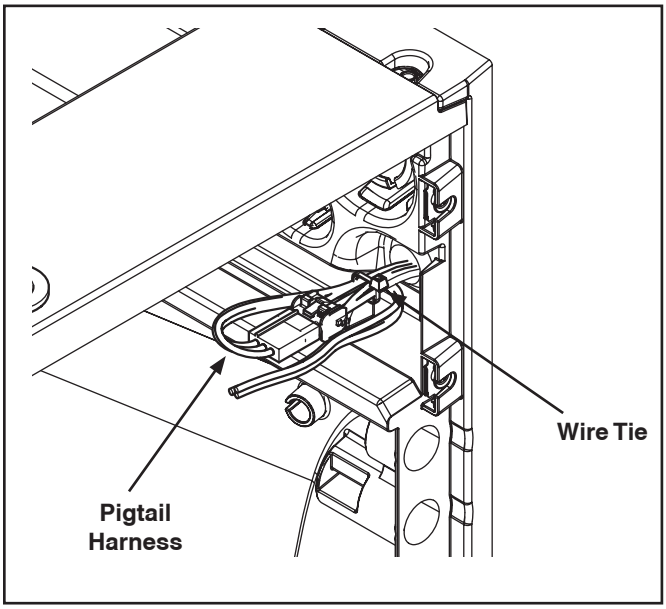
Section 6. Install Heater

STEP 1 - Remove Heater Compartment Panel.



STEP 2 - Disconnect & Dispose of Pigtail Harness.

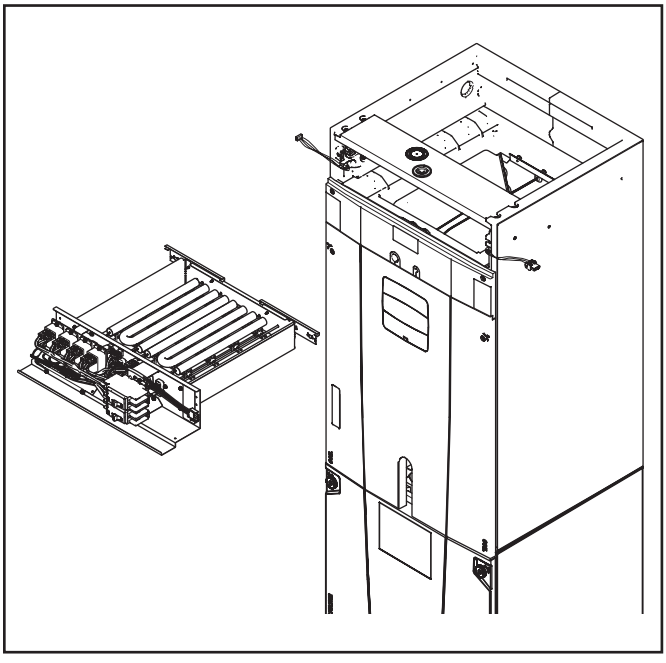
1. Cut the wire tie that is holding the pigtail harness.
2. Unplug and dispose of pigtail harness.



Important: If using a BAYSUPFLGA, B, or C Supply Duct Flange Kit, install the kit before inserting the heater.

STEP 3 - Insert heater assembly into heater compartment.

1. Move factory wiring out of the way and into the grooves provided in cabinet.
2. Slide heater into heater compartment of air handler.

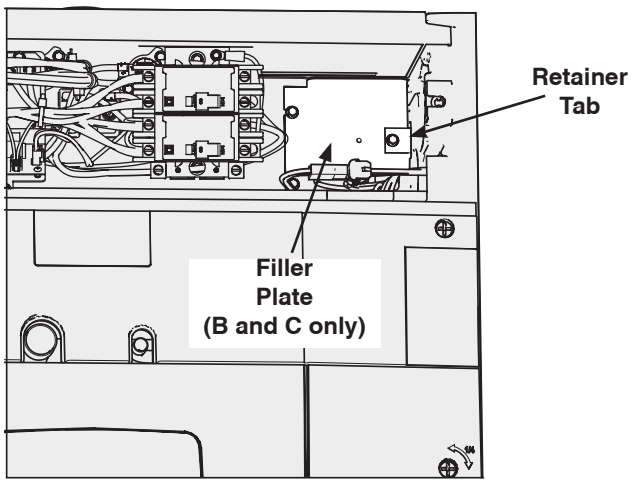


STEP – 4 Lock Retainer tabs.

Note: *Retainer tabs are used to secure the heater inside of the heater compartment.*

1. Slide retainer tab into recess in air handler cabinet.
2. Tighten screws to hold tab securely.
3. Repeat actions to secure the other tab.

Note: For A cabinet widths, only the right side retainer tab must be installed.

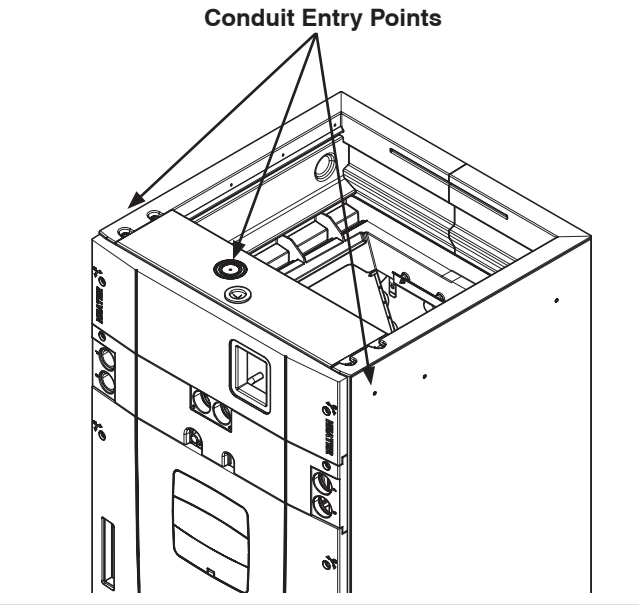


STEP 5 - Route High Voltage wiring to unit.

Select a conduit entry point. Drill a hole for the desired conduit size on units without a plug. A locating target is identified on these units.

Note: Some models may have a pre-molded conduit connection with plug. If a connection hole is already present, remove the plug from the entry point and use as is.

1. Select the entry point you will use to bring in your high voltage wiring.
2. Remove plug from the entry point.

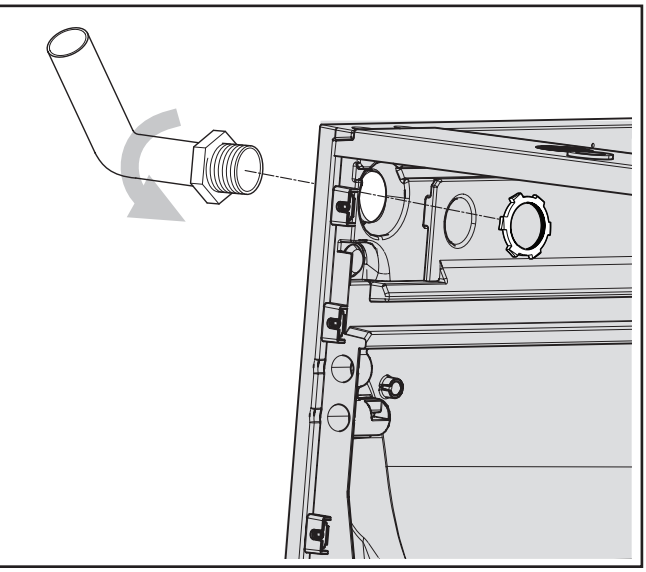


STEP 6 - Route conduit, if used, and wiring to the entry point and connect.

Note: The conduit nut is factory supplied and found in the air handler document pack.

1. Use one hand to secure the factory supplied conduit nut from the inside of heater compartment.
2. Connect field supplied 3/4" or 1-1/2" conduit to conduit nut.

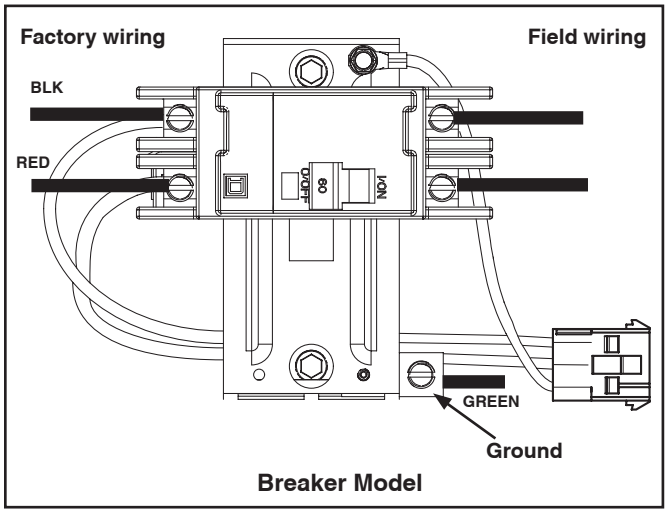
Note: *Reducing bushings may be required for your application.*



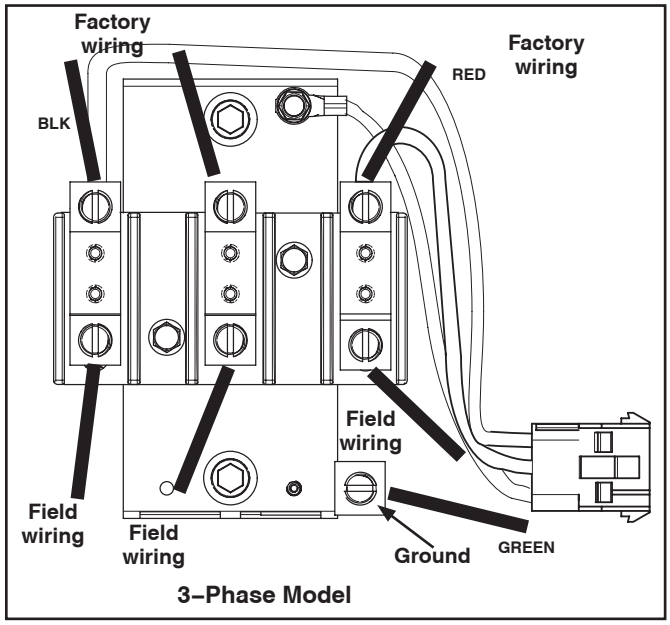
STEP 8 – Connect high voltage wiring

1. Connect the wiring to the lugs on the breaker models or to the terminal block on the lug models as illustrated.
2. Connect the ground wire to the ground lug.
3. Connect the 3-pin plug on the heater to the 3-pin plug in the air handler case.

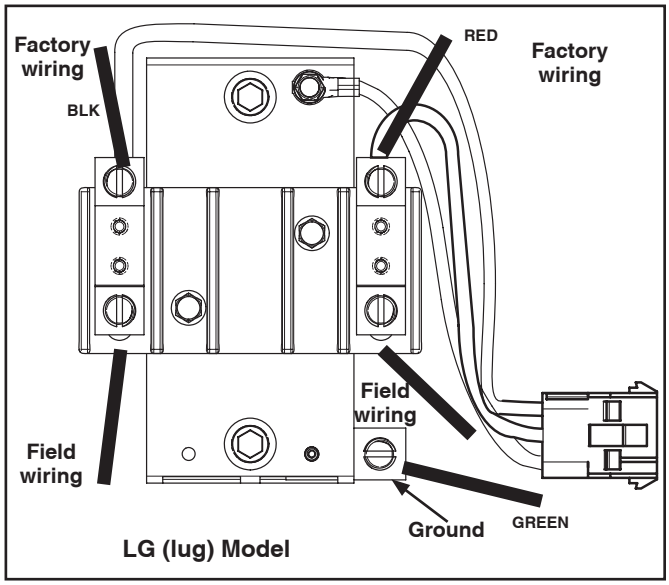
Note: *Minimum terminal screw torque is 45 in-lbs.*



Breaker Model



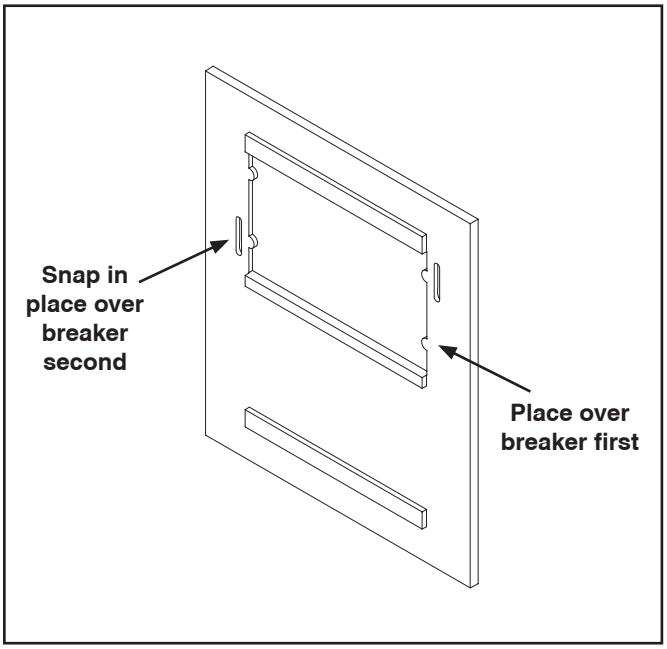
3–Phase Model



LG (lug) Model

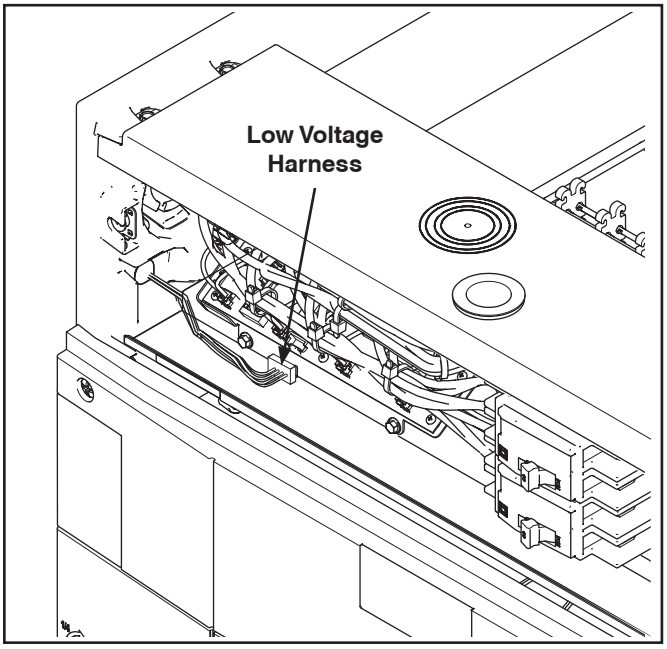
STEP 9 – Install the seal plate. Breaker models only.

1. Place the seal plate over the breaker so the tab on the right side is in place.
2. Snap on the left side of the seal plate that has the slot by the tab.



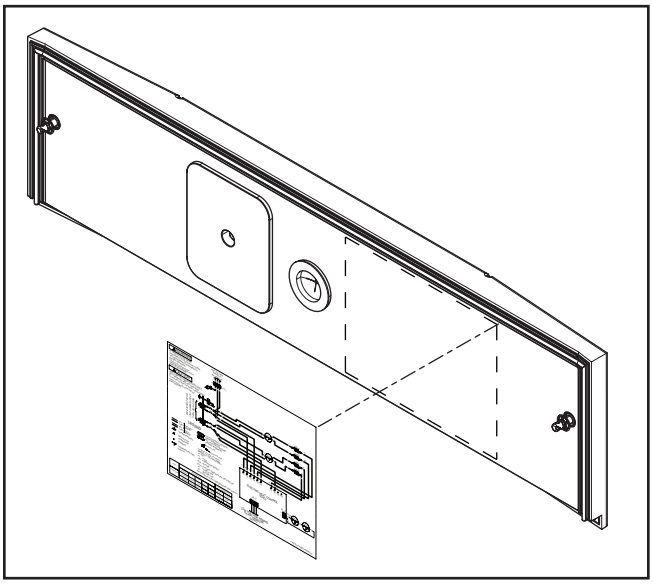
STEP 10 – Connect low voltage wiring.

1. Connect the low voltage harness to Electric Heat Control as shown.



STEP 11 – Place Wiring Diagram.

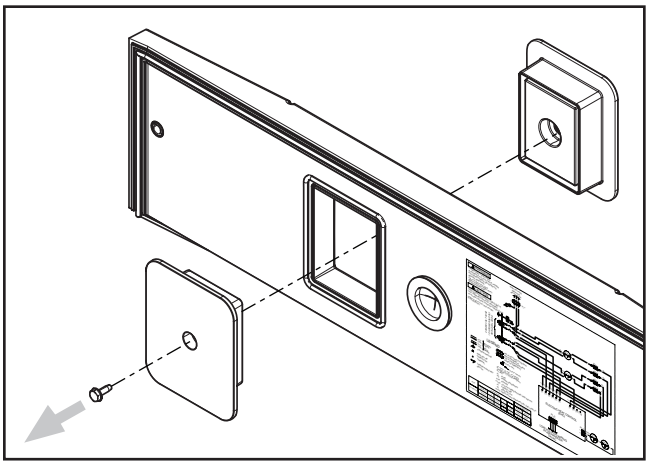
1. Attach the wiring diagram, included in the documentation packet, to the back of the heater compartment panel.



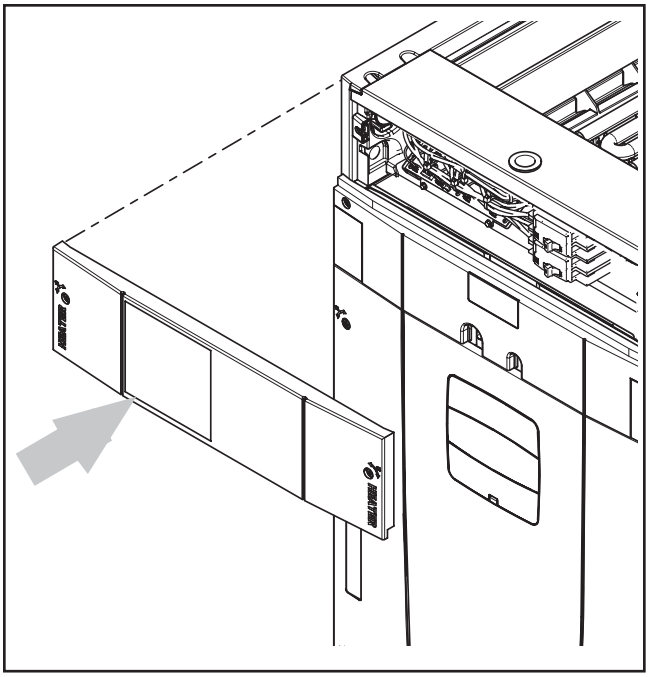
Note: *Breaker models only.*

STEP 12 – Remove breaker cover.

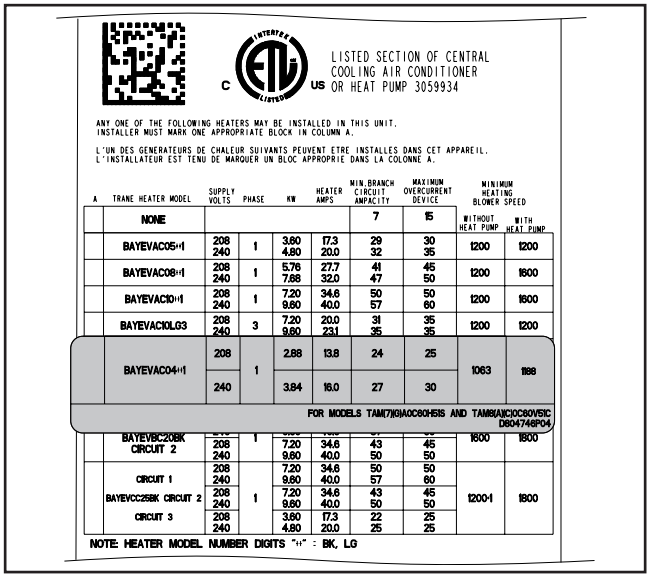
1. Remove 5/16 hex screw on back of breaker cover.
2. Remove and discard the two piece breaker cover from the heater compartment panel.



STEP 13 **–** Replace Heater compartment panel on air handler.



STEP 14 – On the unit nameplate, check off the heater that is being installed or apply the new secondary nameplate label within the heater data table on the air handler nameplate as shown.



LISTED SECTION OF CENTRAL COOLING AIR CONDITIONER OR HEAT PUMP 3059934

ANY ONE OF THE FOLLOWING HEATERS MAY BE INSTALLED IN THIS UNIT.
INSTALLER MUST MARK ONE APPROPRIATE BLOCK IN COLUMN A.

L'UN DES GENERATEURS DE CHALEUR SUIVANTS PEUVENT ETRE INSTALLES DANS CET APPAREIL.
L'INSTALLATEUR EST TENU DE MARQUER UN BLOC APPROPRIE DANS LA COLONNE A.

A	TRANE HEATER MODEL	SUPPLY VOLTS	PHASE	KW	HEATER AMPS	MIN BRANCH CIRCUIT AMPACITY	MAXIMUM OVERCURRENT DEVICE	MINIMUM HEATING BLOWER SPEED	
								WITHOUT HEAT PUMP	WITH HEAT PUMP
	NONE					7	15		
	BAYEVAC05▫1	208	1	3.60	17.3	29	30	1200	1200
		240		4.80	20.0	32	35		
	BAYEVAC08▫1	208	1	5.76	27.7	41	45	1200	1600
		240		7.68	32.0	47	50		
	BAYEVAC10▫1	208	1	7.20	34.6	50	50	1200	1600
		240		9.60	40.0	57	60		
	BAYEVAC10LG3	208	3	7.20	20.0	31	35	1200	1200
		240		9.60	23.1	35	35		
	BAYEVAC04▫1	208	1	2.88	13.8	24	25	1063	1188
		240		3.84	16.0	27	30		
	FOR MODELS TAM(7)(9)A0C60H5I5 AND TAM8(A)(C)0C60V5(C D804748P04								
	BAYEVBC208K CIRCUIT 2	208	1	7.20	34.6	43	45	1600	1600
		240		9.60	40.0	50	50		
	BAYEVCC258K CIRCUIT 1	208	1	7.20	34.6	50	50	1200-1	1600
		240		9.60	40.0	57	60		
	BAYEVCC258K CIRCUIT 2	208		7.20	34.6	43	45		
		240		9.60	40.0	50	50		
	BAYEVCC258K CIRCUIT 3	208		3.60	17.3	22	25		
		240		4.80	20.0	25	25		

NOTE: HEATER MODEL NUMBER DIGITS "▫" : BK, LG

Section 7. Tables

Minimum Heating Airflow Settings

MINIMUM HEATER AIRFLOW CFM - HEATER MATRIX								
MODEL NO.	BAYEVAC04BK1 BAYEVAC04LG1 BAYEVAC05BK1 BAYEVAC05LG1	BAYEVAC08BK1 BAYEVAC08LG1	BAYEVAC10BK1 BAYEVAC10LG1	BAYEVAC10LG3	BAYEVCB15LG3	BAYEVBC15BK1	BAYEVBC20BK1	BAYEVCC25BK1
TAM8C0A24V21	638/713	638/900	675 ① /900	600/713	--	--	--	--
TAM8C0B30V21	723/808	723/1020	765/1020	680/808	765/1063	850/1105	--	--
TAM8C0C36V31	876/979	876/1236	927/1236	824/979	927/1288	1030/1339	1236/1442	--
TAM8C0C42V31	978/1093	978/1380	1035/1380	920/1093	1035/1438	1150/1495	1380/1610	--
TAM8C0C48V41	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625/1813
TAM8C0C60V51	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625 ① /1813
WITHOUT HEAT PUMP / WITH HP SEE AIR HANDLER NAMEPLATE FOR APPROVED COMBINATIONS ① Heater not qualified for 208V when installed in horizontal left position without Heat Pump								

MINIMUM HEATER AIRFLOW CFM - HEATER MATRIX								
MODEL NO.	BAYEVAC04BK1 BAYEVAC04LG1 BAYEVAC05BK1 BAYEVAC05LG1	BAYEVAC08BK1 BAYEVAC08LG1	BAYEVAC10BK1 BAYEVAC10LG1	BAYEVAC10LG3	BAYEVCB15LG3	BAYEVBC15BK1	BAYEVBC20BK1	BAYEVCC25BK1
TAM7A0A24H21	638/713	638/900	675 ① /900	600/713	--	--	--	--
TAM7A0B30H21	723/808	723/1020	765/1020	680/808	765/1063	850/1105	--	--
TAM7A0C36H31	876/979	876/1236	927/1236	824/979	927/1288	1030/1339	1236/1442	--
TAM7A0C42H31	978/1093	978/1380	1035/1380	920/1093	1035/1438	1150/1495	1380/1610	--
TAM7A0C48H41	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625/1813
TAM7B0C60H51	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625 ① /1813
WITHOUT HEAT PUMP / WITH HP SEE AIR HANDLER NAMEPLATE FOR APPROVED COMBINATIONS ① Heater not qualified for 208V when installed in horizontal left position without Heat Pump								

MINIMUM HEATER AIRFLOW CFM - HEATER MATRIX								
MODEL NO.	BAYEVAC04BK1 BAYEVAC04LG1 BAYEVAC05BK1 BAYEVAC05LG1	BAYEVAC08BK1 BAYEVAC08LG1	BAYEVAC10BK1 BAYEVAC10LG1	BAYEVAC10LG3	BAYEVCB15LG3	BAYEVBC15BK1	BAYEVBC20BK1	BAYEVCC25BK1
TAMGA0A24H21	638/713	638/900	675 ① /900	600/713	--	--	--	--
TAMGA0C36H31	876/979	876/1236	927/1236	824/979	927/1288	1030/1339	1236/1442	--
TAMGA0C48H41	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625/1813
TAMGA0C60H51	1063/1188	1063/1500	1125/1500	1000/1188	1125/1563	1250/1625	1500/1750	1625 ① /1813
WITHOUT HEAT PUMP / WITH HP SEE AIR HANDLER NAMEPLATE FOR APPROVED COMBINATIONS ① Heater not qualified for 208V when installed in horizontal left position without Heat Pump								

Important: *The BAYEV* electric heat accessory may include up to a combination of three 60 amp circuit breakers to provide an electrical disconnect for service personnel that is intended to help protect internal electrical components in the event of a short circuit or ground fault. As designed, the circuit breakers supplied in the BAYEV* accessory* ***DO NOT*** *provide overcurrent protection of the branch circuit. Therefore, the branch circuit(s) shall be sized and protected according to the unit nameplate.*

Heater Data

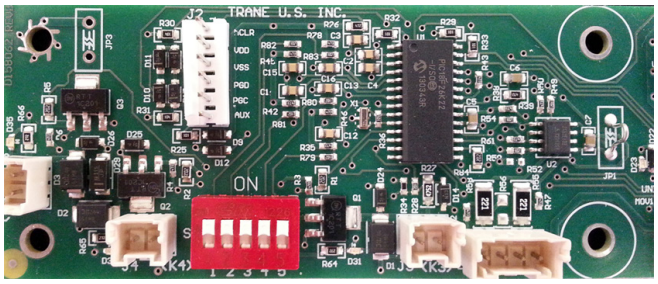
Table 3.1 BAYEV –– HEATER DATA

Heater Model No.	Number of Circuits	240 VOLT			208 VOLT		
		Capacity		Heater Amps per Circuit	Capacity		Heater Amps per Circuit
		kW	BTUH		kW	BTUH	
BAYEVAC04BK1	1	3.84	13100	16.0	2.88	9800	13.8
BAYEVAC04LG1	1	3.84	13100	16.0	2.88	9800	13.8
BAYEVAC05BK1	1	4.80	16400	20	3.60	12300	17.3
BAYEVAC05LG1	1	4.80	16400	20	3.60	12300	17.3
BAYEVAC08BK1	1	7.68	26200	32	5.76	19700	27.7
BAYEVAC08LG1	1	7.68	26200	32	5.76	19700	27.7
BAYEVAC10BK1	1	9.60	32800	40	7.20	24600	34.6
BAYEVAC10LG1	1	9.60	32800	40	7.20	24600	34.6
BAYEVBC15BK1	2	14.40	49200	40/20	10.80	36900	34.6/17.3
BAYEVBC20BK1	2	19.20	65600	40/40	14.40	49200	34.6/34.6
BAYEVAC10LG3	1-3 PH	9.60	32800	23.1	7.20	24600	20.0
BAYEVBC15LG3	1-3 PH	14.40	49200	34.6	10.80	36900	30.0
BAYEVCC25BK1	3	24.00	82000	40/40/20	18.00	61500	34.6/34.6/17.3

Control Board Jumper Settings

When the heater comes from the factory, all dip switches will be in the ON (park) position. The control is already configured for the heater size that is required, so no adjustments are necessary.

NOTE: If the dip switches are changed to another kw rating, the original "Park" programming is not lost;, however the dip switches must be placed in the ON (park) position or the correct kw of the heater model for normal operation.



Heater Wattage Selection Table					
Heater Wattage	S1 SW1	S1 SW2	S1 SW3	S1 SW4	S1 SW5
PARK	ON	ON	ON	ON	ON
4 KW	ON	ON	ON	OFF	OFF
5 KW	OFF	ON	ON	ON	ON
8 KW	ON	OFF	ON	ON	ON
10 KW	ON	ON	OFF	ON	ON
15 KW	ON	ON	ON	OFF	ON
20 KW	ON	ON	ON	ON	OFF
25 KW	OFF	ON	ON	ON	OFF

Section 8. Heater Operation

8.1 TAM7 Heater Operation

Electric Heat

1. R-W contacts close on the comfort control sending 24VAC to W1 of the AFC.
2. R-G contacts close on the comfort control sending 24VAC to G of the AFC.
3. The AFC communicates to the EHC that 1st stage electric heat is being called upon.
4. The EHC determines the number of elements that are used for 1st stage and sends a message to the AFC for that correct cfm. (The EHC determines the amount of heat per stage by either factory programming or by the kw jumper position)
5. The AFC micro-processor sends a command to the serial communicating blower motor to run and close the blower interlock relay on the EHC. The blower motor will now run at the W1 electric heat cfm.
6. On subsequent calls for W2 and/or W3, the EHC will communicate to the AFC the required airflow request and energize the additional relays.

NOTE: *The EHC has "lead-lag" logic built in that energizes the electric heat relays based upon cycle counts.*

For example: BAYEV**15 – The first time W1 only is energized; the K1 relay would close and energize the "A" heater. The second time W1 only is energized; the K2 relay would close and energize the "B" heater. The third time W1 only is energized; the K3 relay would close and energize the "C" heater.

8.2 TAM8 Heater Operation

Electric Heat

1. When a request for electric heat is received, the AFC communicates to the EHC how much demand for auxiliary heat is being requested
2. The EHC determines the number of elements that will be used for this request and sends a message to the AFC for proper airflow. (The EHC determines the amount of heat available per stage by either factory programming or by the kW jumper position)
3. The AFC sends a command to the serial communicating blower motor to run proper airflow and close the blower interlock relay on the EHC.
4. As demand from the thermostat increases, the EHC will communicate to the AFC the required airflow when energizing additional relays.

NOTE: *The EHC has "lead-lag or rotating" logic built in that energizes the electric heat relays based upon cycle counts. To verify operation of all heating elements, switch thermostat to Emergency Heat and raise the setpoint of the thermostat at least 5 degrees above the actual room temperature.*

8.3 TAMG Heater Operation

Electric Heat

1. R-W contacts close on the comfort control sending 24VAC to W1 of the AFC.
2. R-G contacts close on the comfort control sending 24VAC to G of the AFC.
3. The AFC communicates to the EHC that 1st stage electric heat is being called upon.
4. The EHC determines the number of elements that are used for 1st stage and sends a message to the AFC for that correct cfm. (The EHC determines the amount of heat per stage by either factory programming or by the kw jumper position)
5. The AFC micro-processor sends a command to the serial communicating blower motor to run and close the blower interlock relay on the EHC. The blower motor will now run at the W1 electric heat cfm.
6. On subsequent calls for W2 and/or W3, the EHC will communicate to the AFC the required airflow request and energize the additional relays.

NOTE: The EHC has "lead-lag" logic built in that energizes the electric heat relays based upon cycle counts.

For example: BAYEV**15 – The first time W1 only is energized; the K1 relay would close and energize the "A" heater. The second time W1 only is energized; the K2 relay would close and energize the "B" heater. The third time W1 only is energized; the K3 relay would close and energize the "C" heater.

About Trane and American Standard Heating and Air Conditioning

Trane and American Standard create comfortable, energy efficient indoor environments for residential applications. For more information, please visit www.trane.com or www.americanstandardair.com

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