



031-0

VAV Box & Indeeco Heaters

Wilmington Ohio Community-Based Outpatient Clinic (24-045-01)

448 East Main Street
Wilmington, OH 45177

Spec Section

23 00 00 - Heating, Ventilating, and Air-Conditioning (HVAC)

Submittal Package

017-23 00 00 - Heating, Ventilating, and Air-Conditioning (HVAC)-0 - HVAC

Architect Spec Section

Responsible Company

Mechanical Optimizers of Cincinnati Heating and Air LLC

Description

VAV Box & Indeeco Heaters

VAV PAGE 32

Infinity Stamp

Reviewed for General Acceptance only. This review does not relieve the Trade Contractor of the responsibility for making the work conform to the requirements of the contract. The Trade Contractor is responsible for all dimensions, correct fabrication and accurate fit with the work of other trades.

Reviewed By:
Jennifer Kless

Date: 7/17/2024



Architect Stamp

Engineer Stamp

Consultant Stamp



SUBMITTAL TITLE SHEET

PROJECT TITLE:

WILMINGTON OHIO COMMUNITY-BASED OUTPATIENT

SUBMITTAL TYPE:

PRODUCT DATA

SECTION SUBMITTAL NUMBER:

Drawing 2-M5.0

SECTION TITLE:

Indeeco Heaters

DATE PREPARED:

7/16/2024

CONTRACTOR OF RECORD:

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Project Manager: Brian Wayson
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Submittals

Quote #: 434179

Job Name: Wilmington CBOC

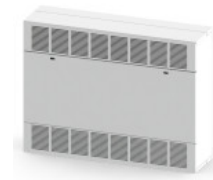
Sales Rep: A M Engineered Sales
7908 Cincinnati Dayton Road
West Chester, OH, 45069
P: 513-759-5611
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Sales Person: Attn: Elam, Roger
P: 616-268-6555 Ext:
E: relam@amengineeredsales.com

Line	Qty	Part #	Description	Factory Options
1	2	922IC-3503203FF1R20SS00L-W	CUI - [922] Cabinet Unit Heater 3KW 208V 3PH 9A Cabinet Heater [Availability Code - AS] Tag: EUH-1 and EUH-2	[A4] Single Stage Remote Wall Mount [B0] 24VAC [C1] No [D0] Disconnect Switch [E0] Heat On/Off Switch [F0] Std. Throw-Away [G0] Std. Lock [H4] Louver Inlet/Louver Outlet
2	2	CIK-35RTK-W	Ceiling or Wall Recess Trim Kit [Availability Code - AS] Tag: EUH-1 and EUH-2	
3	2	933IW-4404-W	WAI - [933] Architect. Wall Heater 1500W 208V 1P WALL HEATER [Availability Code - AS] Tag: EWH-1	
4	2	WIF-SMFL-W	Surface mounting frame for surface installations. Painted to match heater decor, 3 13/16 in. deep, White [Availability Code - AS] Tag: EWH-1	

Catalog Number: 922IC-3503203FF1R20SS00L-W

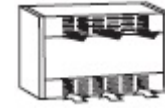
Description: CUI - [922] Cabinet Unit Heater 3KW 208V 3PH 9A Cabinet Heater



Color: White

X		White
		Beige
		Aluminum
		Bronze
		Black

Mounting Option: [FF] - Front Inlet/Front Outlet



Job Name: Wilmington CBOC

Quote #	Line #	Qty	Tag
434179	1	2	EUH-1 and EUH-2

Selected Factory Installed Options:

Option Code	Description	Group
1R	Single Stage Remote Wall Mount	Thermostat
2	24VAC	Control Voltage
0	No	Circuit Breaker
S	Disconnect Switch	Disconnect Switch
S	Heat On/Off Switch	On-Off Switch
0	Std. Throw-Away	Air Intake Filter
0	Std. Lock	Front Cover Lock
L	Louver Inlet/Louver Outlet	Duct Collar/Grille

Selected Field and Thermostat Options:

Line #	Qty	Catalog Number	Description	Tag
2	2	CIK-35RTK-W	Ceiling or Wall Recess Trim Kit	EUH-1 and EUH-2

922I SERIES

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

The electric cabinet unit heaters shall be as manufactured by Indeeco®. Heaters shall be UL/cUL Listed, designed for mounting in any position, including on-end, fully recessed, semi-recessed or surface mounted. All capacities, voltages, physical sizes should be as specified in the heater schedule. All three phase heaters shall have a balanced heating load. Control voltage is to be internally generated by 24 VAC (Optional 120 VAC).

CABINET: The cabinet shall be of heavy duty cold-rolled steel. The heater front covers shall be securely attached to the cabinet with a maximum of two slotted head style spring latches (optional Toolhead Key Lock) and easily removable for access to elements, filters and control panel. Cabinet shall be finished in Beige (Optional - Color by Architect) polyester powder coated.

HEATING ELEMENTS: The heating elements shall be warranted for five years and shall be of non-glowing design consisting of 80/20 NiChi resistance wire enclosed in a steel sheath to which steel plate fins are brazed. The heating element shall be located directly in front of the blower discharge air for uniform heating.

SAFETY THERMAL CUTOUPS: Thermal safety cutouts shall be built into the system to automatically shut off heater in event of overheating due to any cause. The safety cutouts shall directly interrupt power to the elements and not depend on relays to interrupt the power. (Optional backup manual reset thermal safety cutout in the control circuit shall prevent heater reenergizing until cause of overheating has been cleared by a qualified service technician).

MOTOR AND BLOWER ASSEMBLY: The motor(s) and blower(s) shall be direct drive and resiliently mounted on a rigid heavy duty frame for quiet operation and long life. The motor(s) shall be two speed 1/8 H.P. with automatic reset overload protection. The motor shall be vented and mounted in the air stream to provide maximum cooling of the motor(s). Motor(s) fuse protection shall be provided to meet UL, cUL and NEC requirements. The blower(s) shall be forward curved, double inlet, centrifugal type with discharge directly on the full length of the elements to provide uniform discharge air temperatures.

AIR FILTERS: The filter shall be located ahead of the motor and blower assembly to ensure clean air circulation. The filter shall filter both the returning room or the outside air if the optional outside air damper assembly is provided. Filter shall be easily removed for changing or cleaning by removing the front panel and pulling on the filter. A disposable filter is standard and a permanent washable filter is optional.

FRONT COVER INTERLOCK: Heater shall be provided with an electrical interlock to shut down the heater when the front cover is opened to provide safety to the maintenance personnel during filter cleaning (replacement) or other maintenance.

FAN DELAY CONTROL: Fan control shall delay start up of the fan motor(s) until the heating elements have warmed up. It shall maintain motor operation after heating elements have been de-energized to dissipate residual heat.

TEMPERATURE CONTROL: Thermostat shall be built-in, snap-action single stage with remote bulb sensor located in the return air stream. (Optional - built-in two stage remote bulb snap action thermostat, remote mounted single stage wall thermostat). Terminals shall be provided in the control panel for direct connection of the remote wall mounted thermostats. Silent time delay relays shall be provided, rather than contactors, to eliminate the noise of contactor opening and closing.

TERMINALS FOR REMOTE INTERLOCK: Terminals shall be provided in the control panel for connection to Building Automation or Energy Management Systems.

HEAT SELECTION/FAN SPEED: Two fan speeds and high-low heat ranges shall be selectable by means of a single rocker switch located behind the front cover.

CIRCUIT BREAKERS: Circuit breakers shall be provided for branch circuit protection where required by UL, cUL and NEC (Optional - Circuit breakers shall be supplied on all heaters).

INTERCHANGEABLE INTAKE AND DISCHARGE LOUVERS: Heater shall be provided with intake louver that can be changed from front to bottom by removing a maximum of two screws. Discharge louvers shall be able to be changed from front to top by removing a maximum of two screws.

The Following Factory Installed/Prewired Optional Equipment Shall Be Supplied:

- Manual Reset Thermal Cutout
- Circuit Breakers
- 120 Volt Control Supply
- Dead Front Disconnect Switch
- Dead Front Fused (Non Fused Disconnect Switch & Circuit Breaker) Disconnect Switch
- On-Off Switch
- Inlet/Discharge Duct Collars
- Permanent (Washable) Filter

The Following Field Installed Optional Equipment Shall Be Supplied:

- Recess Trim Kit
- Base Kit
- Washable Filter

*Indeeco reserves the right to change specifications without prior notice.

Custom Cabinet Unit Heaters: Models and Specifications

SERIES	KW	BTU/HR	FINAL AIR TEMP	CFM*	AMPERAGE						SHIP WT.
					208 1Ø	208 3Ø	240 1Ø	240 3Ø	277 1Ø	480 3Ø	
922IC-35 35 in. (L)	2	6,826	85° F	250	10	6	9	6	8	3	120 lbs
	3	10,239	98° F		15	9	13	8	12	4	
	4	13,652	111° F		20	12	17	10	15	6	
	5	17,065	123° F		25	15	22	13	19	7	
	6	20,478	136° F		30	17	26	15	22	8	
	7	23,891	148° F		34	20	30	18	26	9	
	8	27,304	161° F		39	23	34	20	30	10	
	922IC-45 45 in. (L)	4	13,652		85° F	500	20	12	18	11	
6		27,478	98° F	30	18		26	16	23	8	
8		27,304	111° F	40	23		34	20	30	11	
10		34,130	123° F	48	29		43	25	37	13	
12		40,956	136° F	59	34		51	30	44	16	
14		47,782	148° F	68	40		59	35	52	18	
922IC-68 68 in. (L)	15	51,195	123° F	750	74	44	64	38	56	20	260 lbs
	21	71,673	148° F		-	60	89	52	78	27	
	24	81,912	161° F		-	69	-	60	-	31	
922IC-78 78 in. (L)	20	68,260	123° F	1,000	-	58	86	50	74	26	300 lbs
	24	81,912	136° F		-	69	-	60	-	31	
	28	95,564	148° F		-	80	-	70	-	36	
	32	109,216	161° F		-	91	-	79	-	41	

NOTE: **BOLD** numbers represent circuit breakers or fused disconnect required. **380V units will operate with a 16% reduction in heating capacity. +Based on 60°F inlet air temperature. *Values shown is high speed. All models operate at 60hz.

Optional Factory-Installed Accessories:

ACCESSORY	DESCRIPTION	
	STANDARD	OPTIONAL
2-Stage Thermostat Built-or Remote	Built-in (or remote-mounted) single-pole, single-stage thermostat that cycles the element(s) and fan. Fan speed and element wattage selected by the built-in HIGH or LOW selector switch.	Built-in (or remote-mounted) two-stage thermostat that cycles 2/3 of the element for during first stage and full heat during second stage. Fan cycles on high speed only.
Dead Front Disconnect Switch	A three pole non-fused disconnect switch disconnects power to the heater. Design prevents entry into the control compartment until disconnect switch is turned to the OFF position.	Supply terminal block in the control compartment.
Dead Front Fused Disconnect Switch*	A three pole non-fused disconnect switch and circuit breaker(s) sized to the heater load protects heater and disconnects power to the heater.	Design prevents entry into the control compartment until disconnect switch is turned to the OFF position.
On/Off Switch	No switch supplied.	Built-in switch provides continuous fan operation with or without heat, or automatic fan cycling as the heat cycles on and off.
Key Lock For Front Cover	Two (2) slotted head spring latches.	Two (2) toolhead key lock style spring latches prevent unauthorized adjustment of controls and provides additional safety from injury due to contact with internal components.
Inlet or Discharge Duct Collar(S)	Standard Architectural Grilles	Collars provide easy connection of field supplied duct work. We do not recommend exceeding 0.2 in. wg external static pressure. Heater with duct collars are supplied with a single speed high static motor.

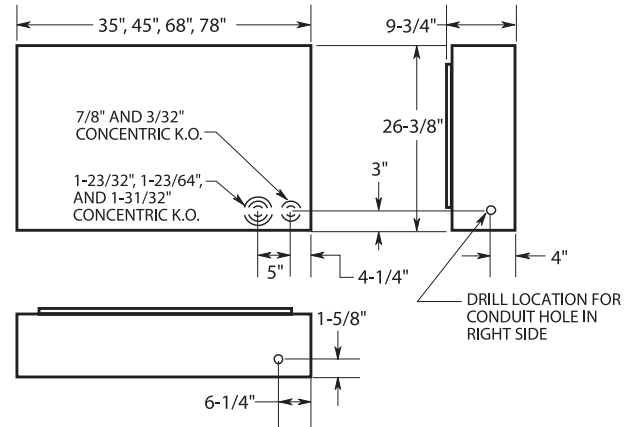
*Plus price of circuit breaker.

Optional Accessories:

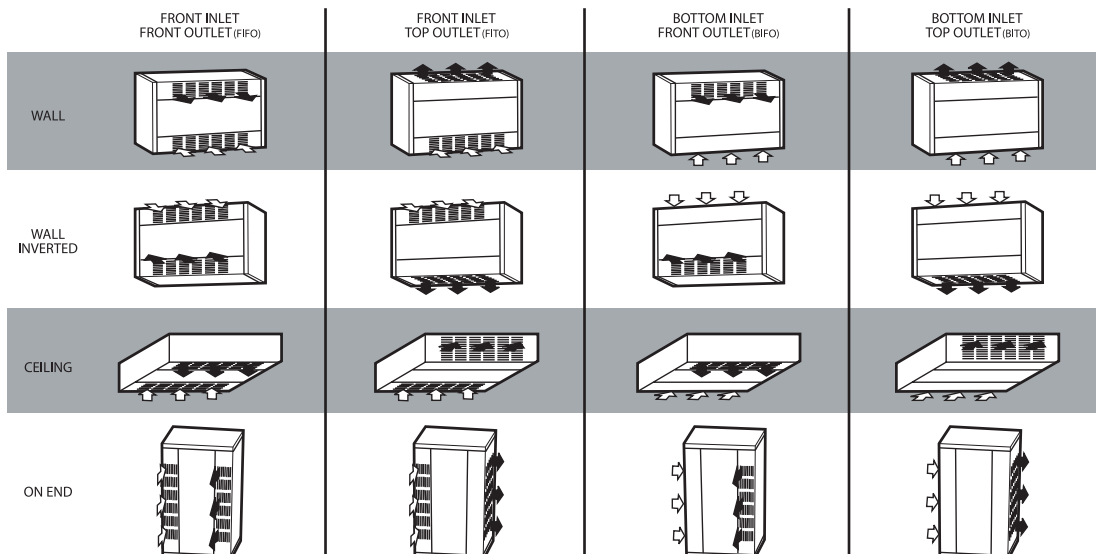
CATALOG NO.	DESCRIPTION	COMPATIBLE WITH	FUNCTION	SHIP WT.
CIK-35RTK-W	Ceiling or Wall Recess Trim Kit	9221-35	Provides a neat finish to semi-recessed or full recessed application.	3 lbs
CIK-45RTK-W		9221-45		4 lbs
CIK-68RTK-W		9221-68		6 lbs
CIK-78RTK-W		9221-78		7 lbs
CIK-35BK-W	Floor/Toe-Space Base Kit	9221-35	16 gauge, muted black base is recessed from the heater front and sides to provide an attractive and practical floor mounting application.	9 lbs
CIK-45BK-W		9221-45		10 lbs
CIK-68BK-W		9221-68		13 lbs
CIK-78BK-W		9221-78		15 lbs
CIK-35WF-W	Permanent, Reusable Washable Filter	9221-35	Replaces standard filter Washable filter can be cleaned and replaced.	4 lbs
CIK-45WF-W		9221-45		6 lbs
CIK-68WF-W		9221-68		10 lbs
CIK-78WF-W		9221-78		12 lbs

For a different finish, replace the suffix *W* on the associated catalog number with the appropriate finish letter: *B* (black), *S* (bronze), *N* (beige), *A* (aluminum). Contact your Indeeco sales representative for more detail.

Dimensions and Clearances:



Multiple Air Flow Combinations:



Clearances:

Heater Wall Mounted:

- Front Discharge, No obstruction within 24" of discharge.
- Top Discharge, No obstruction within 24" of discharge.
- Front Intake, Zero or greater to base of heater.
- Bottom Intake, No obstruction within 24" of discharge.

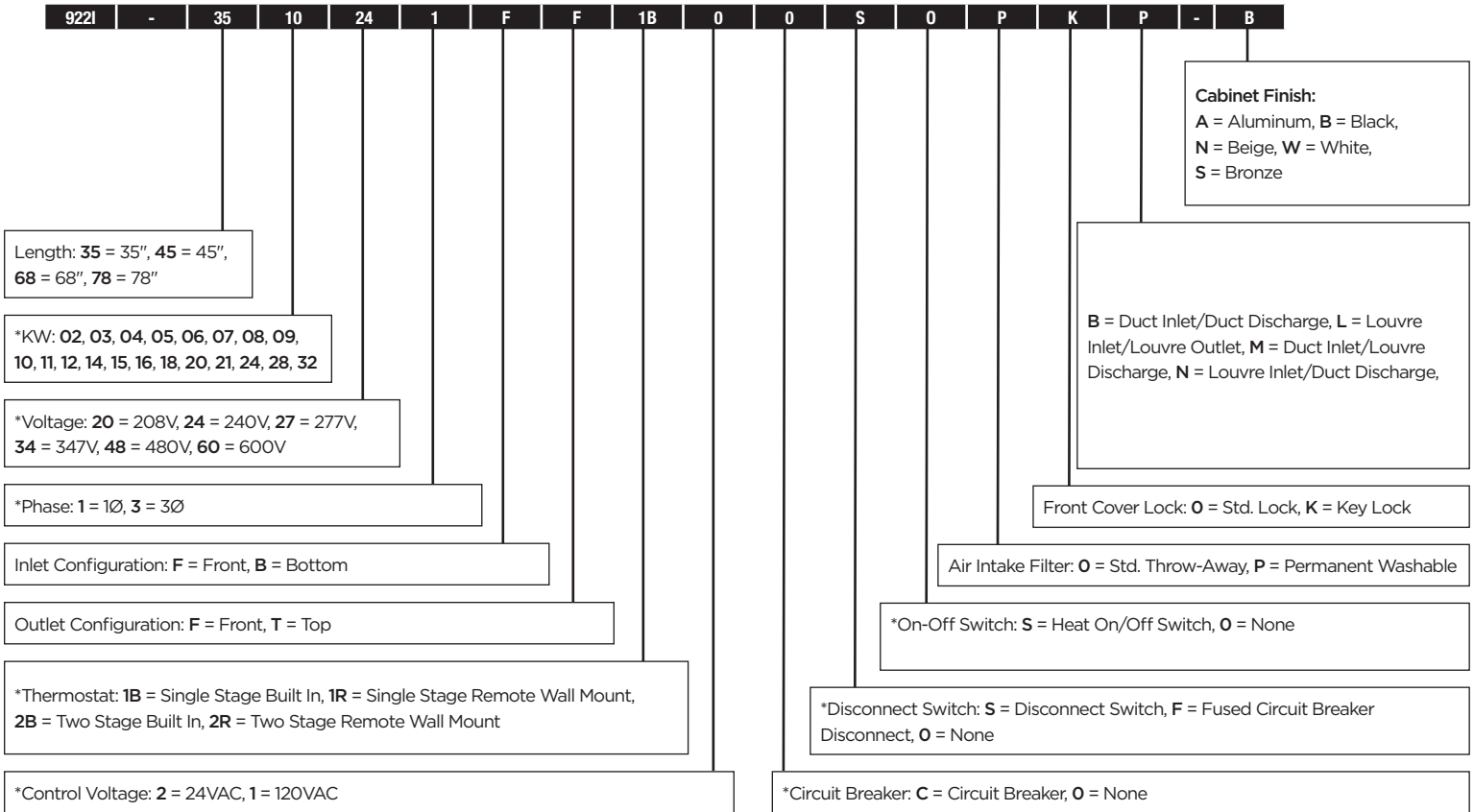
Heater Ceiling Mounted:

- Front Discharge, No obstruction within 24" of discharge.
- Top Discharge, No obstruction within 24" of discharge.
- Front Intake, Zero or greater to base of heater.
- Bottom Intake, No obstruction within 24" of discharge.
- Minimum 2" to side wall.

FEATURES

- Attractive cabinet enclosure blends into the decorative schemes of commercial areas.
- Ceiling, floor or wall mounted.
- Surface, full recess or semi-recess mounted.
- Heavy duty cold-rolled steel construction.
- Nineteen capacities: 2kW to 32kW; five cabinet styles: 35", 45", 68" and 78" lengths (26 3/8" height x 9 3/4" deep).
- 1/2 hp, PSC, motors are two-speed (1550/1450 rpm).
- Resilient mounted motors with automatic thermal overload protection.
- Steel plate fin elements are copper brazed to low watt density, steel-sheathed tubular heating elements. (80/20 NiCh resistance wire). Element is finished with aluminized paint for corrosion resistance. Fins and elements are arranged in a uniform grid pattern and fit closely into the discharge area to assure that all outgoing air passes through the heating element.
- Thermal safety cutout: installed in direct contact with the heating element. Automatically shuts off the heater in the event of overheating due to any cause and reactivates the heater when operating temperature returns to normal.
- Optional: manual reset thermal safety cutout available.
- Heaters over 48 amps have sub-divided (circuit breaker protected) circuits.
- Circuit breakers are available as an option on heaters of less than 48 amps.
- Built-in thermostat: single pole, snap-action thermostat with remote bulb sensor located directly in the air intake. (Optional - built-in two stage thermostat available). Easy and low cost field installation of a completely packaged heater.
- 24 volt control system: all internal controls, including the thermostat, are operated from a built-in prewired transformer with a 24 volt secondary. (Optional - 120 volt built-in control available.)
- Heaters have a tamper-resistant, two-position selector switch to select full heat at high fan speed and reduced heat at low fan speed.
- Automatic fan delay eliminates cold drafts on start-up and discharges residual heat from the heater body during shut down.
- Silent relays, instead of conventional contractors, eliminate the noise of contactor opening and closing.
- An aluminum wall louver option provides a finished touch to the exterior of masonry or panel walls with thickness of 2 3/4" or greater.
- Optional: inlet and discharge duct collars—UL listed—provide easy field connection to field supplied duct work. We do not recommend exceeding 0.15" wg external static pressure.
- Each heater is supplied with a throw-away air filter mounted in the inlet air stream. Optional permanent (washable) aluminum filters are available.
- A front cover interlock is a standard safety feature that de-energizes the heater when the front cover is removed.
- Optional: dead front disconnect switch or fused dead front disconnect switch, disconnects power to the heater. Control panel access door can not be opened until power is turned off.
- Optional: built-in on/off switch allows the heater to be de-energized when not in use.
- An optional trim kit is available for a neat finish to semi-recessed or full recessed applications.
- An optional kick plate in muted black, which is recessed from the heater front and sides by one inch, makes an attractive and practical off-the-floor installation.
- Optional: inlet and/or discharge duct collars.

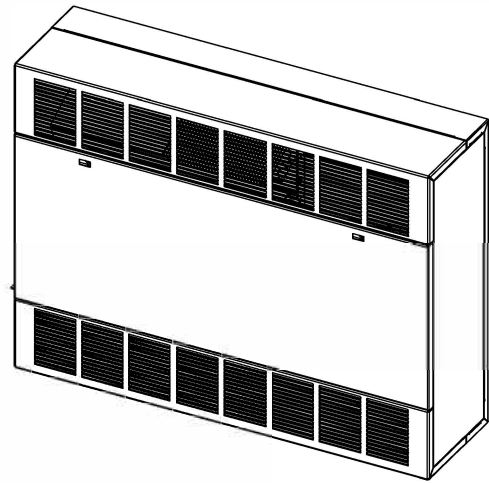
How to Order



Manual Reset now standard on all 9221. Summer Fan Switch - Now order Digital Controls. Night Set Back - Now order Digital Controls. Outside Air Damper - no longer offered. Colors are all monochrome unless special request.
*Consult Indeeco Sales Representative for specific configuration needs



922 Series Cabinet Unit Heaters Model C



Installation & Maintenance Instructions



WARNING



Read carefully - These instructions are written to help you prevent difficulties that might arise during installation of heaters. Studying the instructions first may save you considerable time and money later. Observe the following procedures and cut your installation time to a minimum.

TO REDUCE RISK OF FIRE AND ELECTRIC SHOCK:

1. Disconnect all power coming to the heater at main service panel before wiring or servicing.
Note: More than one disconnect may be required.
2. All wiring must be in accordance with national and local electric codes and the heater must be grounded.
3. Verify the power supply voltage coming to heater matches the ratings printed on the heater nameplate before energizing.
4. This heater is hot when in use. To avoid burns, do not let bare skin touch hot surfaces.
5. Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause electric shock, fire, or damage to heater.
6. Do not block air intakes or exhaust in any manner. Keep combustible materials at least 24" (610 mm) away from heater. Keep drapes at least 6" (153 mm) above top of front discharge grille. Do not use drapes above top discharge units. Do not install behind doors, furniture, towel rack, or boxes.
7. A heater has hot and arcing (sparking) parts inside. Do not use in areas where gasoline, paint, or flammable liquids are used or stored.
8. Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury.
9. This heater is not approved for use in corrosive atmospheres such as marine, green house, or chemical storage areas.
10. **FOR DUCT CONNECTED HEATERS,** Do not exceed 0.2" wg. external static pressure and do not mount heater on end panels.

SAVE THESE INSTRUCTION SHEETS

SPECIFICATIONS

HEATING CAPACITY KW BTU/hr		Series	Cabinet Length (in)	CFM*	Total Line Amperage (includes motor amps)					
					208 1 ph 60Hz	208 3 ph 60Hz	240 1 ph 60Hz	240 3 ph 60Hz	277 1 ph 60Hz	480 3 ph 60Hz
2	6,826	922IC35	35	250	10	6	9	6	8	3
3	10,239				15	9	13	8	12	4
4	13,652				20	12	17	10	15	6
5	17,065				25	15	22	13	19	7
6	20,478				30	17	26	15	22	8
7	23,891				34	20	30	18	26	9
8	27,304				39	23	34	20	30	10
4	13,652	922IC45	45	500	20	12	18	11	16	6
6	20,478				30	18	26	16	23	8
8	27,304				40	23	34	20	30	11
10	34,130				48	29	43	25	37	13
12	40,956				59†	34	51†	30	44	16
14	47,785				68†	40	59†	35	52†	18
16	54,608				78†	46	68†	40	59†	20
6	20,478	922IC68	68	750	31	19	27	16	24	9
9	30,717				45	27	39	24	34	13
12	40,956				60	35	52†	31	45	16
15	51,195				74	44	64†	38	56†	20
18	61,434				88	52†	77†	45	67†	24
21	71,673				n/a	60†	89†	52†	78†	27
24	81,912				n/a	69†	n/a	60†	n/a	31
8	27,304	922IC78	78	1000	41	24	36	21	31	12
12	40,956				60†	36	52†	31	46	17
16	54,608				79†	47	69†	41	60†	21
20	68,260				n/a	58†	86†	50†	74†	26
24	81,912				n/a	69†	n/a	60†	n/a	31
28	95,564				n/a	80†	n/a	70†	n/a	36
32	109,216				n/a	91†	n/a	79†	n/a	41

† - CIRCUIT BREAKERS or FUSED DISCONNECT required
 * - Value shown for HIGH SPEED on two speed units

General Information

922 Series Cabinet Unit Heaters are designed and UL & cUL Listed to be applied as Standard Free Air heaters with louvered intake and discharge panels for recess or surface installation: a) on the floor, with front inlet and up flow air movement in the up flow, down flow, left or right direction or b) on the ceiling, or Ducted (0.2" wg external static pressure) flange for direct connection of field supplied ductwork to the inlet, discharge, or both inlet and discharge. Ducted heaters can be installed for recess or surface installation: a) on the floor, with front inlet and up flow air movement, b) on the wall, with air movement in the up flow or down flow direction or c) on the ceiling. See Figure 1 for Mounting Clearances.

Note: Keep all furniture or any other blocking material at least 24" (610mm) away from front of heater.
 When draperies are used, hang them so that when in use they are at least 6" (153mm) above the top of front discharge heater.
 Do not use draperies with top discharge heaters.
 See Figure 2 for Mounting Dimensions
 See Figure 3 for Duct Collar Dimensions and Installation Details.

FLOOR MOUNTING

1. Heaters with front inlet and up flow air movement may be mounted directly on any floor surface including carpeting. Where wall to wall carpeting is installed after heater installation, the carpeting can be run up to the front and around the heater's body. See Figure 1 for mounting clearances.
2. Heaters can be mounted on either end with air movement left or right directly on any floor surface including carpeting. See Figure 1 for mounting clearances.
3. If optional kick plate is not used, proceed to "HEAT INSTALLATION" section.

INSTALLATION OF OPTIONAL 922 SERIES BASE KIT

1. If desired, the heaters may be mounted off the floor with optional kick plate panel.
2. Align panel on bottom of heater (Inlet side Only)
3. There should be a 1" (25mm) space from the panel to the front and sides of the heater.
4. Match drill .140" (3.55 mm) diameter holes in the bottom of the heater and secure with screws provided.
5. Proceed to "HEATER INSTALLATION" section.

<h1>CAUTION</h1> 
<p>TO PREVENT HEATER FROM FALLING AND CAUSING PERSONAL INJURY, EACH FASTENER, AS APPLIED, SHOULD HAVE THE HOLDING POWER OF AT LEAST 100 POUNDS (45 kg).</p>

WALL OR CEILING RECESS MOUNTING

Note: Your heater has design provisions to keep your front panel secured when used in ceiling applications. This will allow the front panel to swing down and hang in place attached to the unit, out of the way when servicing the unit. The front panels remain secured by a slide and pull design on the hinges. To remove it, simply slide the panel to the left and pull down.



1. Create an opening in the wall 26-5/8" (676mm) high by the length of the heater plus 1/4" (6.4mm). **Example:** If the heater was 68 inches long, the opening should measure 26-5/8" high x 68-1/4" long).
2. The depth of the recess will vary with the desired amount of heater recess.
3. Proceed to "HEATER INSTALLATION" section.

INSTALLATION OF OPTIONAL 922 SERIES RECESS TRIM KIT

1. Determine depth of heater recess.
2. Align recess trim frame so that the trim frame front edge will touch wall when heater is installed.
3. Match drill .140" (3.55mm) diameter holes in all four sides the heater and secure trim frame with screws provided.
4. Proceed to "HEATER INSTALLATION" section.

HEATER INSTALLATION

1. Rough-in electrical wiring. See Figure 2 for knockout location
2. Remove the proper knockout in the heater or punch the proper size hole in the bottom or right side of the heater as shown in Figure 2.
3. Remove the front cover by rotating the lock(s) counter-clockwise (ccw).
4. Remove both louvered discharge panels by removing 2 screws (1 on each end) that attach the louvered panel to the end panels.
5. Refer to Figure 2 for location of mounting holes.
6. Mark and drill holes for heater attachment in wall or ceiling.
7. Install heater in opening and tighten screws (field supplied) to secure tight fit of the heater against the mounting surface
8. **NOTE:** Tightening the heater against an irregular wall will cause distortion of the back panel of the heater. If this is the case, shims should be used behind the back panel to keep it straight.

8. Reinstall the louver panel by sliding the panel into the heater. Position the panel tabs of the louver panel to rest on the top of the lip of the heater back. Position the louver panel top even with the top of the end panels. Tap the louver panel at the top front (both sides) to seat the panel. Reinstall 2 screws (one on each side) that attach louver panel to the end panels.
9. **WIRING** - See wiring section on page 8.
10. After wiring is complete, insure that the control box cover is closed and fastened and that the filter is installed.
11. Adjust the thermostat to the desired set point.
12. Adjust the heat selector to the heat and fan speed desired.
13. Replace front cover and secure by turning the locks clockwise (cw) until tight. Replace plug buttons provided.
14. Leave the heater running a few hours before making further change in thermostat setting.

DUCTED APPLICATIONS

1. See Figure 3 for duct flange size and location.
2. Duct collars have been factory located (Bottom inlet, Front inlet, Top discharge, Front discharge) as ordered.



WARNING

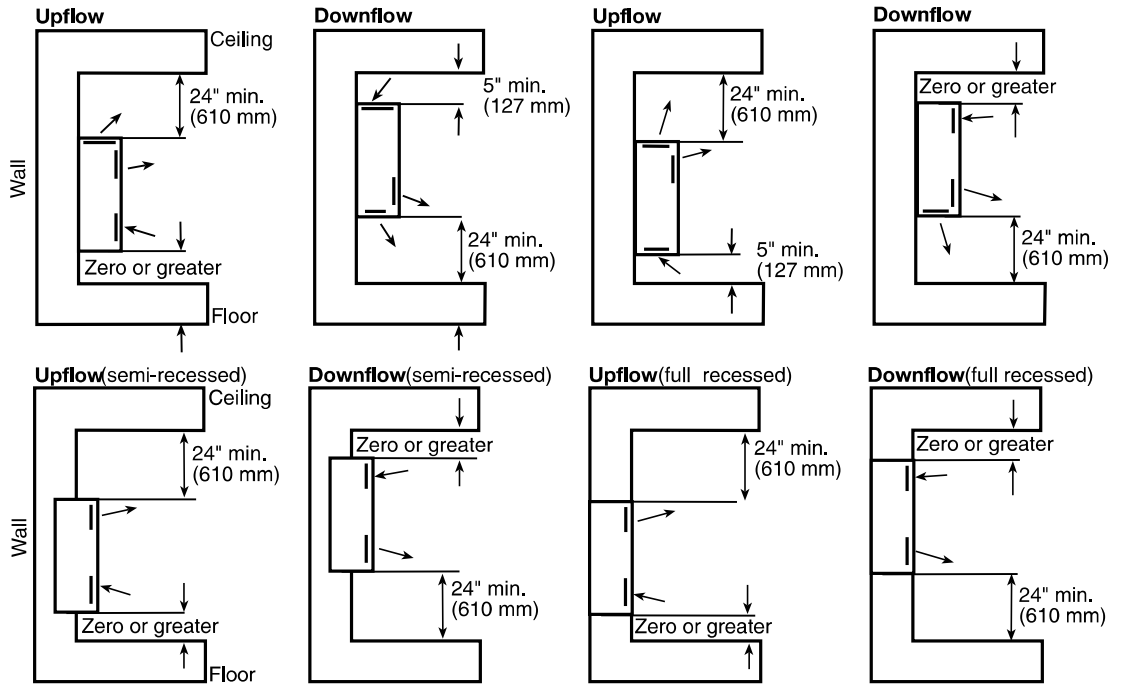


TO REDUCE RISK OF FIRE AND ELECTRICAL SHOCK: DO NOT EXCEED 0.2" WG EXTERNAL STATIC PRESSURE. DO NOT MOUNT HEATER ON END PANEL (LEFT OR RIGHT AIR FLOW).

3. To change duct collar location:
 - A. Heater duct panels are supplied with a duct collar attached to one surface and a blank-off plate attached to the other surface. The location of the duct collar and the blank-off plate can be reversed.
 - B. Remove screws holding blank-off plate and remove blank-off plate.
 - C. Remove screws holding duct collar and remove duct collar.
 - D. Position duct collar to location desired, align screw holes, insert and tighten screws to secure duct collar to duct panel.
 - E. Position blank-off plate to location desired, align screw holes, insert and tighten screws blank-off plate to duct panel.
4. Position field ductwork to outside of heater duct flange.
5. Mark and drill starting holes in duct and flange.
6. Install and tighten screws (field supplied) to provide a secure seal.

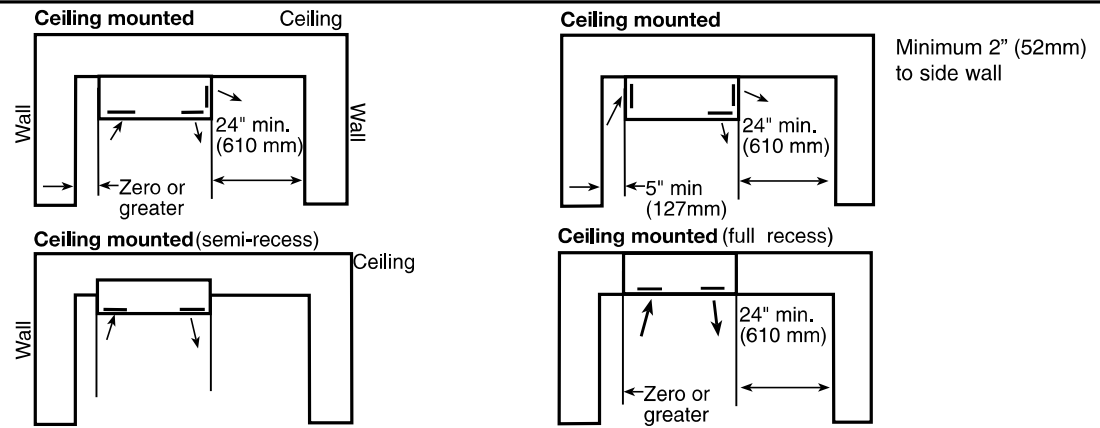
Figure 1

HEATER:
Wall Mounted

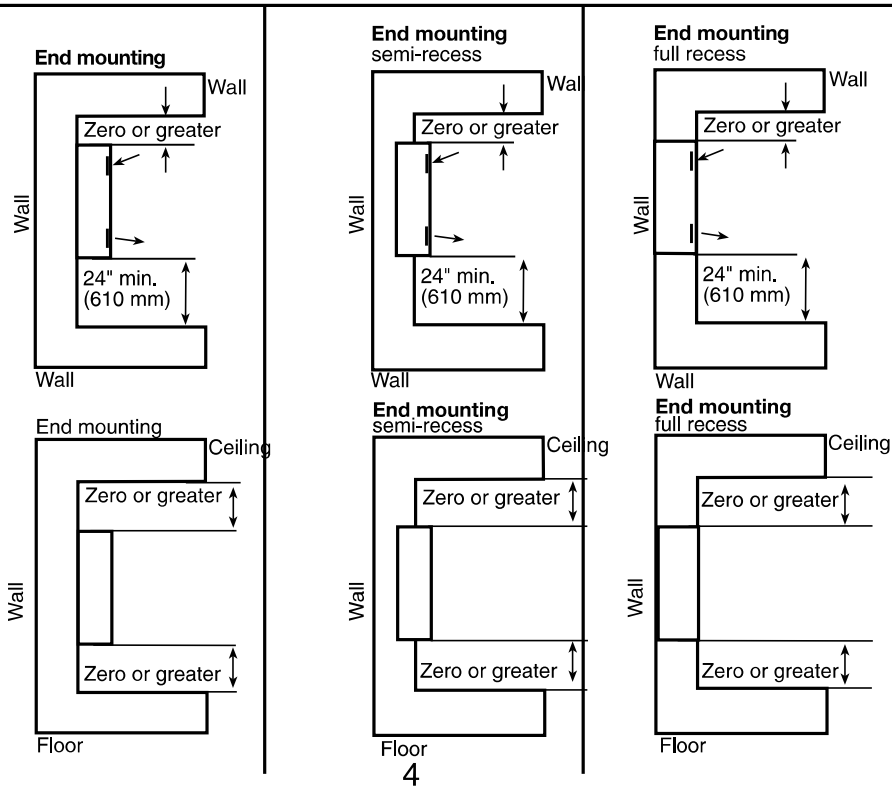


AIR FLOW:
Up or Down

HEATER:
Ceiling Mounted



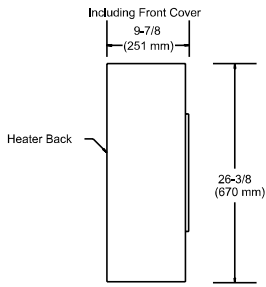
HEATER:
Wall Mounted on
End Panel



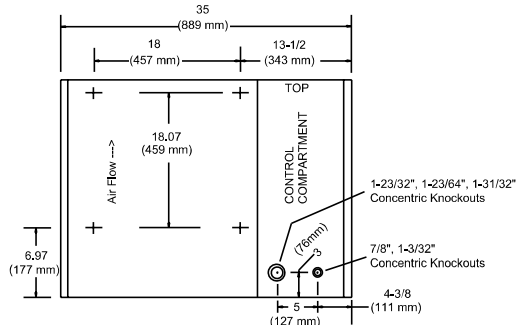
AIR FLOW:
Left or Right

Figure 2

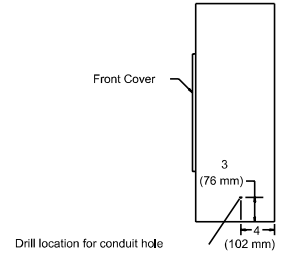
MOUNTING DIMENSIONS



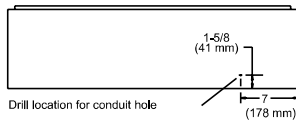
LEFT SIDE VIEW
(Typ. all lengths)



FRONT VIEW
35" (889 mm) CABINET

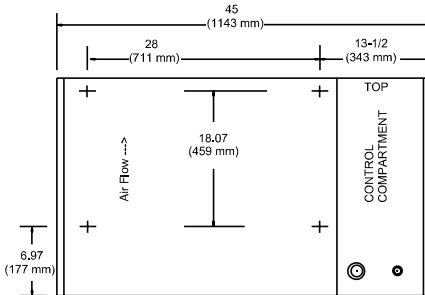


RIGHT SIDE VIEW
(Typ. all lengths)

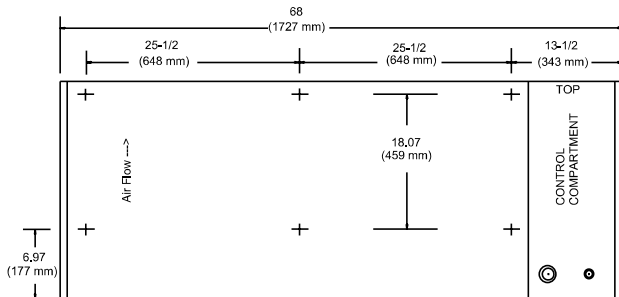


BOTTOM VIEW
(Typ. all lengths)

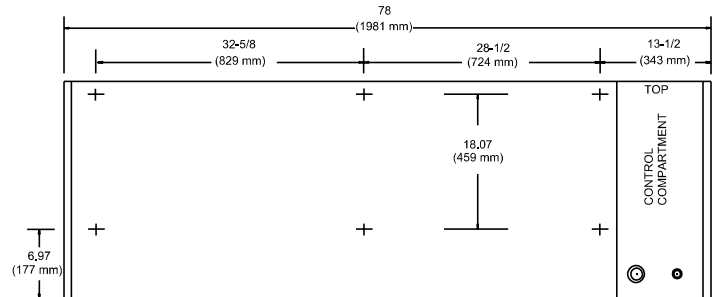
NOTE:
Knockout Size & Location
Typical All Heaters



FRONT VIEW
45" (1143 mm) CABINET



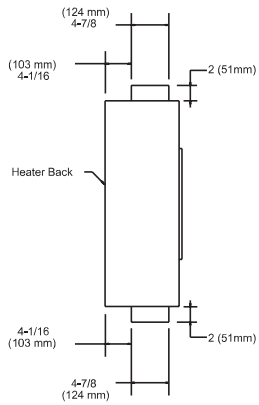
FRONT VIEW
68" (1727 mm) CABINET



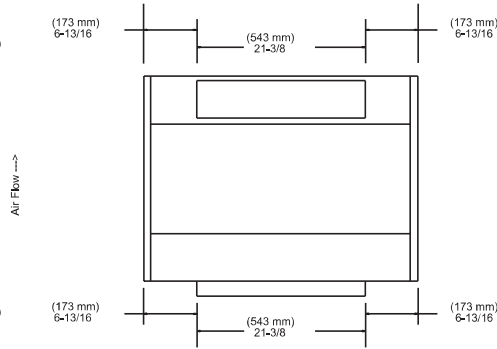
FRONT VIEW
78" (1981 mm) CABINET

Figure 3

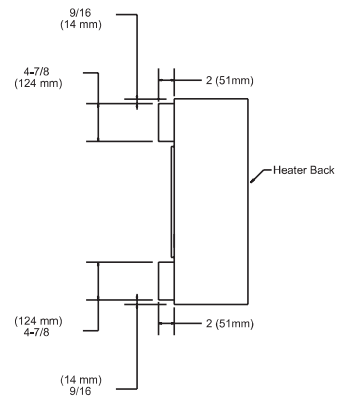
DUCT COLLARS DIMENSIONS and INSTALLATION DETAILS



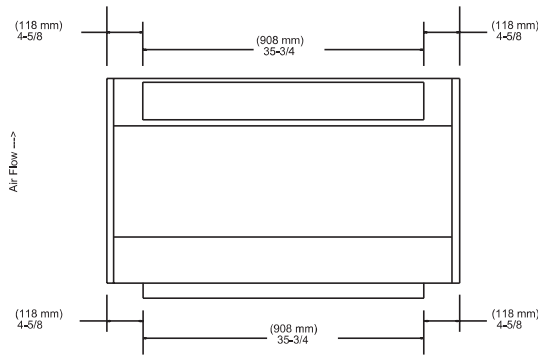
LEFT SIDE VIEW
BOTTOM INLET /
TOP DISCHARGE
(Typ. all lengths)



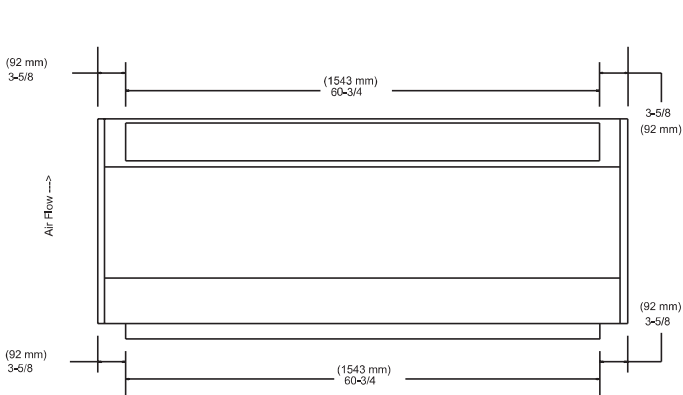
FRONT VIEW
35" (889 mm) CABINET



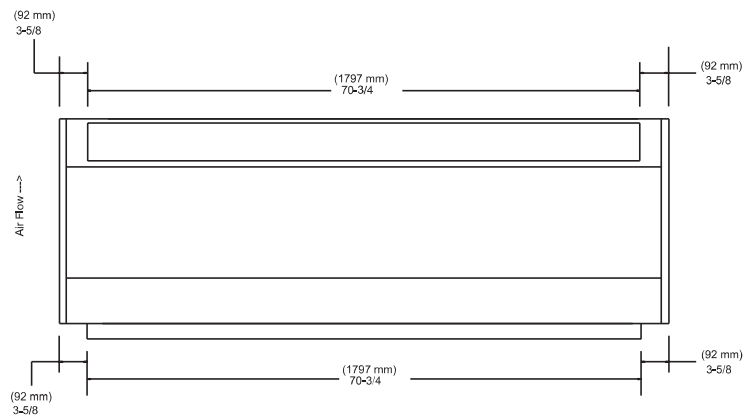
RIGHT SIDE VIEW
FRONT INLET /
FRONT DISCHARGE
(Typ. all lengths)



FRONT VIEW
45" (1143 mm) CABINET



FRONT VIEW
68" (1727 mm) CABINET



FRONT VIEW
78" (1981 mm) CABINET

WIRING

SEE WARNING STEPS 1, 2 & 3 ON PAGE 1 OF THIS INSTRUCTION SHEET.

1. Figure 4 shows a typical wiring diagram.
2. For actual wiring, see the diagram located on the inside of the front cover.
3. All field wiring must be 75° C min.

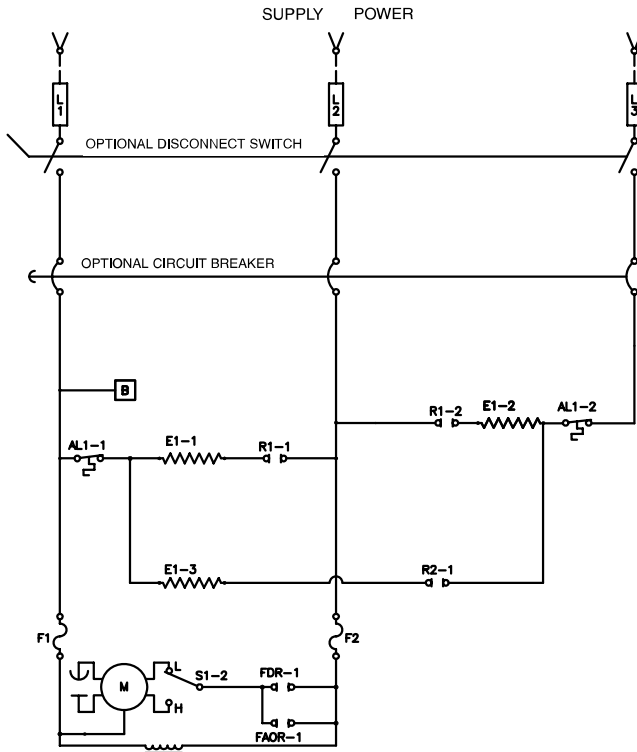
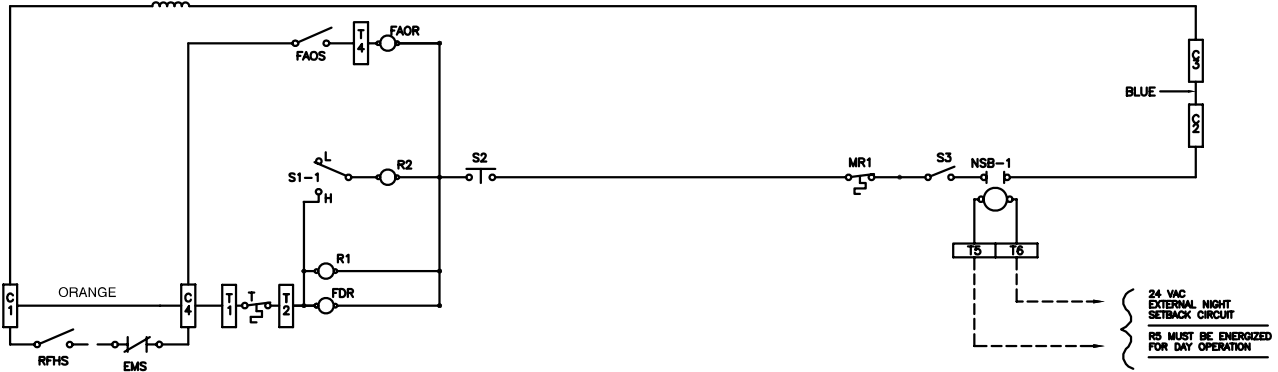


Figure 4

TO CONVERT 208, 240, & 480 VOLT STANDARD STOCK 5 & 10 KW HEATERS From Three Phase to Single Phase

1. Remove front cover.
 2. Refer to wiring diagram located inside front cover.
- NOTE: Terminal block and wires that need to be changed are located in wire way above right hand (RH) blower housing.**
3. Remove two screws holding wireway cover to fan panel.
 4. Rotate wireway cover up and out to remove.
 5. Terminal block is located within wireway.
 6. Relocate wires per wiring diagram located inside front cover.
 7. Reinstall wireway cover and reinstall screws.
 8. Reinstall front cover.



EMS=ENERGY MANAGEMENT SYSTEM TIE-IN (CONTACTS MUST BE CLOSED FOR DAY OPERATION)
 RFHS=REMOTE MOUNTED FAN/HEAT ON-OFF SWITCH (FIELD SUPPLIED)
 NOTE: IF EMS AND/OR RFHS ARE INSTALLED REMOVE ORANGE WIRE BETWEEN C1 AND C4.

FOR EXTERNAL CONTROL SUPPLY:

1. REMOVE BLUE JUMPER BETWEEN C2 AND C3.
2. CONNECT EXTERNAL CONTROL (24 VAC STANDARD, 120 VAC OPTIONAL) TO C1 AND C2.

S1 = FAN/HEAT HIGH-LOW SELECTOR SWITCH
 S2 = DOOR INTERLOCK SWITCH
 S3 = FAN/HEAT ON-OFF SWITCH (FACTORY INSTALLED OPTION)
 NSB = NIGHT SETBACK RELAY (FACTORY INSTALLED OPTION)

AL = AUTO RESET LIMIT
 MR = MANUAL RESET LIMIT
 T = BUILT-IN OR REMOTE MOUNTED SINGLE POLE THERMOSTAT
 FAOS = FAN AUTO-ON SWITCH (BUILT-IN = FACTORY INSTALLED OPTION)
 (REMOTE MOUNTED = FIELD INSTALLED OPTION)

FDR = FAN DELAY RELAY
 FAOR = FAN AUTO-ON RELAY (FACTORY INSTALLED OPTION)

OPERATING INSTRUCTIONS

After the Cabinet Unit Heater is installed, a complete operational checkout should be conducted to verify that it is performing to design standards.

1. Heater must be properly installed before operation.



WARNING



TO REDUCE RISK OF FIRE AND ELECTRIC SHOCK OR INJURY, DISCONNECT ALL POWER COMING TO HEATER AT MAIN SERVICE PANEL BEFORE CHECKING THE FAN SHAFT OR ANY INTERNAL COMPONENTS.

2. Rotate fan shaft to check for binding or clearance problems. All fans should rotate easily and noiselessly.



WARNING



FIRE, ELECTRICAL SHOCK OR SERIOUS DAMAGE TO HEATER MAY RESULT IF SUPPLY AND CONTROL VOLTAGE ARE NOT THE SAME AS HEATER. BEFORE ENERGIZING HEATER, CHECK NAMEPLATE RATING OF REQUIRED POWER AND CONTROL VOLTAGES AND VERIFY THAT CORRECT VOLTAGES HAVE BEEN WIRED TO HEATER.

Note: Wiring can come loose during shipping. Make sure all power and control wiring is secured and tight before start up.

3. Turn power supply to heater "ON" at main switch panel.
4. With front panel in place, allow heater to run several minutes.

Setting the Thermostat:

Integral Mechanical - Rotate thermostat clockwise until it stops (maximum heat setting). Allow heater to operate until room temperature reaches desired comfort level. Then rotate thermostat knob counterclockwise slowly until thermostat clicks off. Heater will cycle on and off to maintain room temperature. It may be necessary to readjust thermostat a time or so until exact comfort level is attained. Rotation in the clockwise direction will increase the amount of time the heater will produce heat. Rotation in the counterclockwise direction will reduce the amount of time the heater is on.

Digital - See instruction manual included with the thermostat for setting procedures.

Note: Fan only mode is accomplished with a digital thermostat only.

5. Even after the heater has been turned off through the heat ON/OFF switch, the fan motor may continue to operate up to 55 seconds due to the Fan Delay Relay in the motor circuit. This is completely normal and is not a sign of malfunction.

- a. Heat and fan turn on approximately 15-55 seconds after unit turn on and turn off approximately 15-55 seconds after unit is turned off.

6. If optional filter is provided, check that it is in place and clean.

Manual Hi-Limit – The heater includes a manual hi-limit that turns the heater off if an internal component is excessively hot. When this situation occurs, immediately turn the heater off and inspect for any objects on or adjacent to the heater that may have blocked the airflow or otherwise caused high temperatures. If no obstructions are visible, the heater must be checked by a qualified person.

7. How to reset the manual hi-limit:

- a. Disconnect the power supply of the heater.
- b. Remove front access panel.

- c. Press the limit firmly until you hear a click (see Figure. 5).

- d. Replace the front access panel.

- e. Turn the power back on.

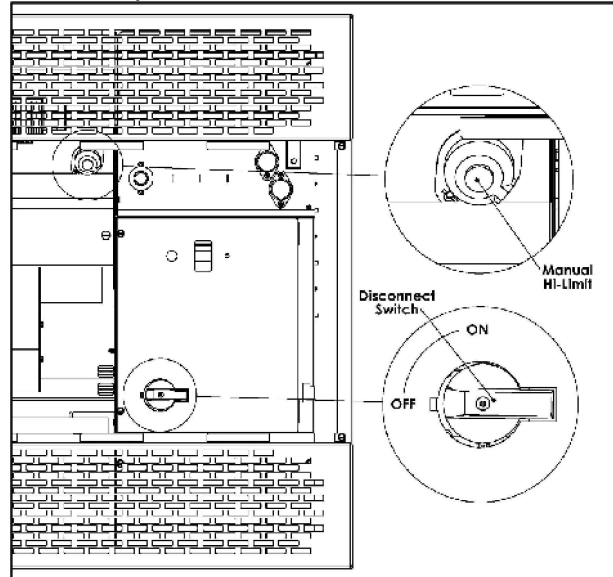


Figure 5

Disconnect Switch – If installed, the disconnect can be used to power off the rest of the heater without cutting power at the main service panel. It is located under the front panel in the controls section of the heater (see Figure. 5).

1. The switch is in the "OFF" position when it has been turned counterclockwise until it clicks.
2. The switch is in the "ON" position when it has been turned clockwise until it clicks.

Note: The "OFF" and "ON" markings shown in Figure. 5 are for reference only. The markings are not present on the panel.



WARNING



USING THE DISCONNECT SWITCH TO POWER OFF THE UNIT DOES NOT PREVENT POWER FROM GETTING TO THE SWITCH. POWER MUST BE DISCONNECTED FROM THE MAIN SERVICE PANEL BEFORE SERVICING.

MAINTENANCE INSTRUCTIONS

Cabinet Unit Heaters should be inspected each year. The heater should be cleaned and serviced by a qualified service person to assure safe and efficient operation. After completing the cleaning and servicing, the heater should be fully reassembled and checked for proper operation.

The following routine maintenance should be performed to insure maximum operating efficiency:



WARNING



ALL SERVICING BEYOND SIMPLE CLEANING THAT REQUIRES DISASSEMBLY SHOULD BE PERFORMED BY A QUALIFIED SERVICE PERSONNEL.



WARNING



TO REDUCE RISK OF FIRE AND ELECTRIC SHOCK OR INJURY, DISCONNECT ALL POWER COMING TO HEATER AT MAIN SERVICE PANEL AND CHECK THAT THE ELEMENT IS COOL BEFORE SERVICING OR PERFORMING MAINTENANCE.

OPERATING INSTRUCTIONS (Cont.)

Cleaning – Remove front access panel for interior cleaning and access to component parts. Remove all accumulated dust and dirt with suction vacuum cleaner, and perform visual check for loose screws, fasteners, etc.

Motor - has sealed bearing and needs no on-going maintenance but should be checked annually for bearing play or resistance.

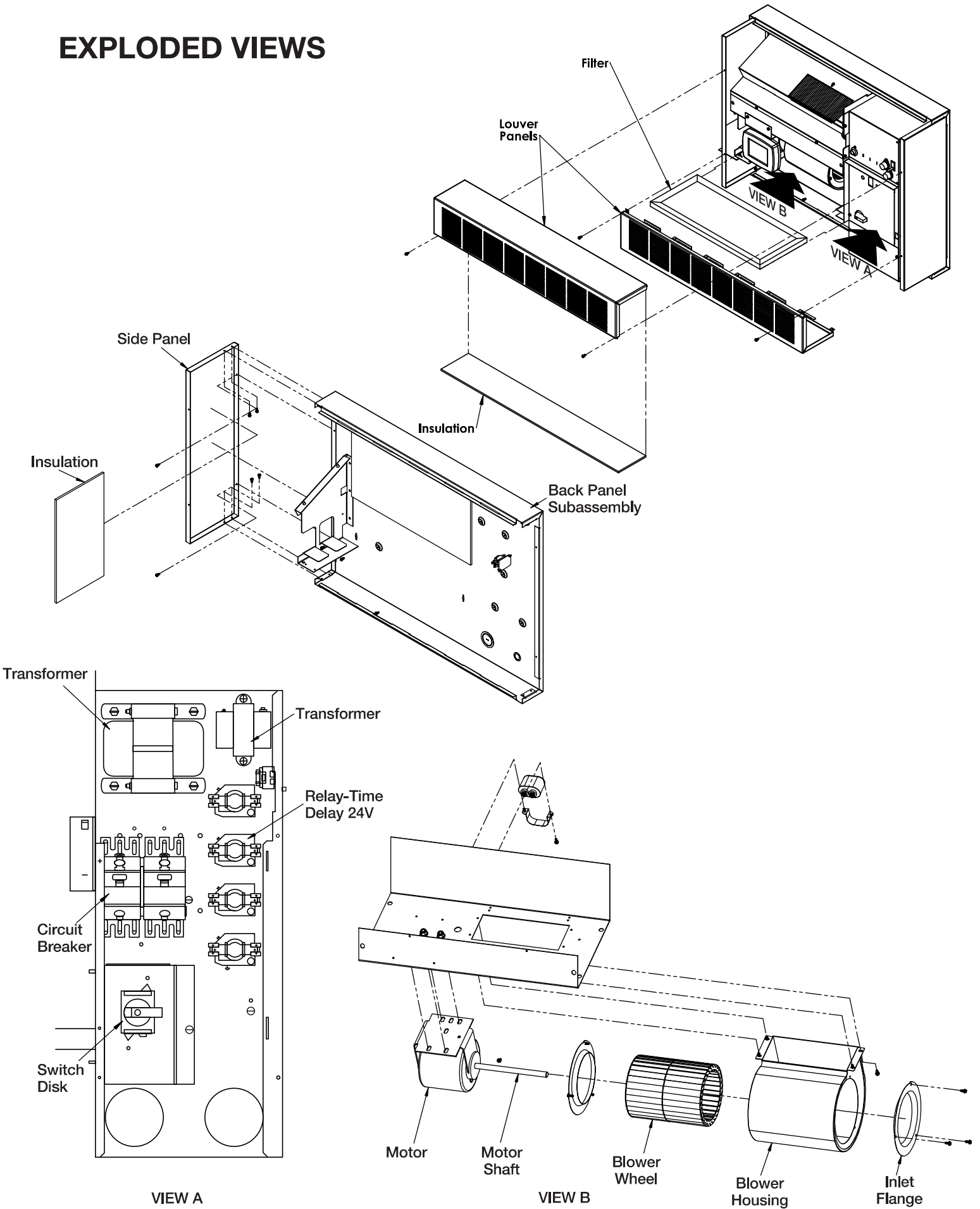
Throwaway Filter – Change or clean filter at maximum 30 day intervals or as needed – more often if air has high dust or lint content. Replacement filters are available at 314-644-4300.

Washable Filter – Clean by immersing in water, shake dry; also can be cleaned with suction attachment of vacuum cleaner.

Control Compartment – Do not open Control Covers for routine maintenance. No adjustments are required unless there is reason to suspect serious malfunction due to control wiring or component failure. Contact a qualified service personnel.

Replacement Parts – Contact Tech Services for Replacement Parts at 314-644-4300.

EXPLODED VIEWS



LIMITED WARRANTY

All products manufactured by Indeeco are warranted against defects in workmanship and materials for one year from the date of purchase, except heating elements which are warranted against defects in workmanship and materials for five years from date of purchase. This warranty does not apply to damage from accident, misuse, or alteration; nor where the connected voltage is more than 5% above the nameplate voltage; nor to equipment improperly installed or wired or maintained in violation of the product's installation instructions. This warranty does not apply to refurbished products. All claims for warranty work must be accompanied by proof of the date of purchase.

The customer shall be responsible for all costs incurred in the removal or reinstallation of products, including labor costs, and shipping costs incurred to return products to Indeeco. Within the limitations of this warranty, inoperative units should be returned to Indeeco, and we will repair or replace, at our option, at no charge to you with return freight paid by Indeeco. It is agreed that such repair or replacement is the exclusive remedy available from Indeeco.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE AFORESAID EXPRESSED WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS AGREEMENT. Indeeco SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES ARISING WITH RESPECT TO THE PRODUCT, WHETHER BASED UPON NEGLIGENCE, TORT, STRICT LIABILITY, OR CONTRACT.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Contact Indeeco in St Louis, MO, at 314-644-4300. Merchandise returned to the factory must be accompanied by a return authorization and service identification tag, both available from Indeeco. When requesting return authorization, include all catalog numbers shown on the products.

HOW TO OBTAIN WARRANTY SERVICE AND WARRANTY PARTS PLUS GENERAL INFORMATION

1. Warranty Service or Parts **314-644-4300**
2. General Product Information **www.indeeco.com**

Note: When obtaining service always have the following:

1. Model number of the product
2. Date of manufacture
3. Part number or description



St Louis, MO 63144 USA

Catalog Number: 933IW-4404-W

Description: WAI - [933] Architect. Wall Heater 1500W 208V 1P WALL HEATER



Color: White

X		White
		Bronze

Job Name: Wilmington CBOC

Quote #	Line #	Qty	Tag
434179	3	2	EWH-1

Selected Factory Installed Options:

No Factory Options Selected

Selected Field and Thermostat Options:

Line #	Qty	Catalog Number	Description	Tag
4	2	WIF-SMFL-W	Surface mounting frame for surface installations. Painted to match heater decor, 3 13/16 in. deep, White	EWH-1

933I SERIES

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS*

The heating equipment shall include electric, automatic fan forced air heater suitable for large area heating, as manufactured by Indeeco®. The heater shall be designed for air recess or surface mounting. Heaters shall be cULus or equivalent cETLus.

HEATER ASSEMBLY: The heater assembly which fits into the back box shall consist of a fan panel upon which is mounted all of the operational parts of the heater.

HEATING ELEMENT: The heating element shall be of the non-glowing design consisting of a special resistance wire enclosed in a steel sheath to which steel plate fins are copper brazed. It shall be warranted for 5 years.

FAN AND MOTOR: Fan shall be five-bladed aluminum. Fan motor shall be totally enclosed.

FAN DELAY SWITCH: Fan control shall be of bi-metallic, snap-action type and shall activate fan after heating element reaches operating temperature. The fan shall continue to operate after the thermostat is satisfied and until the heating element is cool.

THERMOSTAT: The tamper-proof thermostat shall be of the bi-metallic snap-action type with enclosed contacts. It shall be completely concealed behind the front cover to become tamper proof.

THERMAL CUTOUT: A manual-reset thermal cutout shall be built into the system to shut off the heater in the event of overheating.

POWER ON/OFF SWITCH: A double-pole, single throw ON/OFF switch shall be mounted on the back box for positive disconnect of power supply. It will be completely concealed behind the front grille panel.

PNEUMATIC/ELECTRIC SWITCH: An optional pneumatic/electric switch shall be available for use with energy management systems employing pneumatic pressure devices for controlling comfort levels and set-back operations.

LOW VOLTAGE RELAYS: 24-volt and 120 volt low voltage relays shall be available as optional equipment to control 208, 240 or 277 volt heaters in conjunction with central energy control systems. The built-in thermostat can then be used as one of the thermostats in an automatic night set back operation.

BACK BOX: The back box shall be designed for duty as a recessed rough-in box in either masonry or frame installations, and is also used with the surface mounting frame in surface mounting installations. The back box shall be 20-gauge galvanized steel and shall contain knockouts through which power leads are brought.

FRONT PANEL: The front panel shall be of the bar grille type and shall be constructed of 18-gauge cold-rolled steel, welded into a uniform grille to direct the warmed air toward the floor. The front grille shall be surrounded by a decorative satin-finish aluminum "picture" frame.

THREE PIECE DESIGN: The heater shall be made up of a back box, a heater assembly and a front panel.

*Indeeco reserves the right to change specifications without prior notice.

Models & Specifications:

ITEM INFORMATION	ELECTRICAL DATA					SHIP WT.
	CATALOG NO.	VOLTS	PHASE	WATTS	AMPS	
933IW-3150-S	120	1	1500	12.5	5,118	25 lbs
933IW-4307-S*	277	1	3000/1500	10.8/5.4	10,236/5,118	25 lbs
933IW-4404-S*	240	1	4000/2000	16.7/8.3	13,649/6,824	25 lbs
	208	1	3000/1500	14.4/7.2	10,236/5,118	25 lbs
933IW-4407-S*	277	1	4000/2000	14.4/7.2	13,649/6,824	25 lbs
	240	1	3000/1500	12.5/6.3	10,236/5,118	25 lbs
933IW-4408-S*	208	1	4000/2000	19.2/9.6	13,649/6,824	25 lbs
933IW-4504-S	240	1	4800	20	16,378	25 lbs
	208	1	3600	17.3	12,284	25 lbs
933IW-4507-S	277	1	4800	17.3	16,378	25 lbs
	240	1	3600	15	12,284	25 lbs
933IW-4508-S	208	1	4800	23.1	16,378	25 lbs
933IW-3180-S	120	1	1800	15	6,142	25 lbs
933IW-4404-S	240	3	4000	9.6	13,649	25 lbs
933IW-4408-S	208	3	4000	11.1	13,649	25 lbs
933IW-45043-S	240	3	4800	11.6	16,378	25 lbs
933IW-45083-S	208	3	4800	13.3	16,378	25 lbs
933IW-4303-S	347	1	3000	8.6	10,236	25 lbs
933IW-4303-S	347	1	4800	13.8	16,378	25 lbs
933IW-4306-S	600	1	3000	5	10,236	25 lbs
933IW-4506-S	600	1	4800	8	16,378	25 lbs

*Factory-wired for higher wattage, field-convertible to half wattage. Units not available to be wired with remote thermostats.

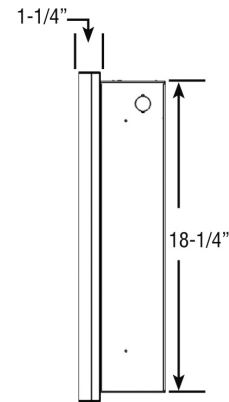
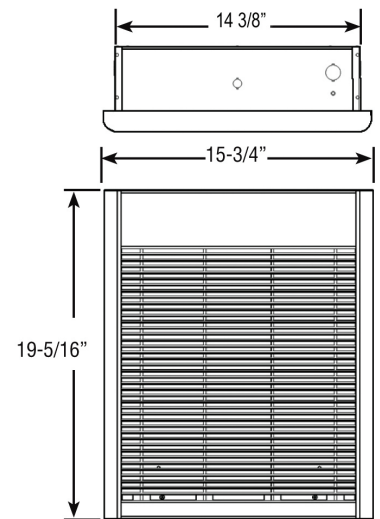
Standard finish is Bronze; For White, replace S with W at the end of the catalog number

Optional Accessories:

CATALOG NO.	DESCRIPTION	SHIP WT.*
WIK-WHPE-X*	Pneumatic/Electric switch. Factory set at 10 psig to "make" on pressure drop. May be field wired to "break" on pressure drop. Pressure set point adjustable to 30 psig. (field-installed)	2 lbs
WIK-WHR2-X (24V)*	Time delay relay 40-60 seconds to close when energized. Use 120V or 24V power supply from remote source (field-installed)	2 lbs
WIK-WHR12-X (120V)*		
WIF-S1F-S	1 in. deep surface mounting frame for semi-recessed installation, Bronze	2 lbs
WIF-S2F-S	2 in. deep surface mounting frame for semi-recessed installation, Bronze	2 lbs
WIF-SMF-S	Surface mounting frame for surface installations. Painted to match heater decor, 3 1/4 in. deep, Bronze	5 lbs
WIF-SMFL-W	Surface Mounting Frame, White	5 lbs
WIF-SMFL1-W	1 in. Semi-Recessed Frame, White	2 lbs
WIF-SMFL2-W	2 in. Semi-Recessed Frame, White	2 lbs
WIC-SFC-W	14-gauge security front cover, White	6 lbs

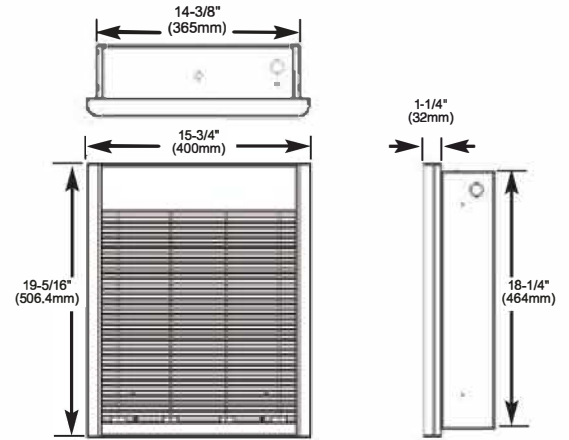
Note: *Will accommodate pneumatic/electric or low-voltage controls commonly used with computerized energy management systems Mounting Limitations: For wall mounting, do not install back box closer than 8 in. from floor or adjacent wall. Do not install heater behind towel rack, behind door, in floor, in closet, in ceiling or where air flow may be obstructed. All controls are concealed behind the front cover making them essentially tamper proof.

Dimensions and Clearances:





933 Series Architectural Heavy-Duty Wall Heaters



Installation, Operation & Maintenance Instructions

Table 1. Specifications

Model Number	Volts	Phase	Watts	Amps	Min. Supply Wire Gauge
933I-3150-#	120	1	1500	12.5	12
933I-3180-#	120	1	1800	15.0	12
933I-4404*-#	240	1	4000/2000	16.7/8.3	10
	208		3000/1500	14.5/7.2	
933I-4407*-#	277	1	4000/2000	14.5/7.2	12
	240		3000/1500	12.5/6.3	
933I-4307*-#	277	1	3000/1500	10.8/5.4	12
933I-4408*-#	208	1	4000/2000	19.2/9.6	10
933I-44083-#	208	3	4000	11.1	14
933I-44043-#	240	3	4000	9.7	14

*NOTE: Factory wired for higher wattage, field convertible to half wattage.
- Grille Color - S = Bronze, W = White

Model Number	Volts	Phase	Watts	Amps	Min. Supply Wire Gauge
933I-4303-#	347	1	3000	8.6	14
933I-4306-#	600	1	3000	5	14
933I-4508-#	208	1	4800	23.1	10
933I-4504-#	240	1	4800	20.0	10
	208		3600	17.3	
933I-4507-#	277	1	4800	17.3	10
	240		3600	15.0	
933I-45083-#	208	3	4800	13.3	12
933I-45043-#	240	3	4800	11.6	14
933I-4503-#	347	1	4800	13.8	12
933I-4506-#	600	1	4800	8	14

- Grille Color - S = Bronze, W = White

IMPORTANT INSTRUCTIONS

⚠ **WARNING** ⚠

WHEN USING ELECTRIC APPLIANCES, BASIC PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, AND INJURY TO PERSONS, INCLUDING THE FOLLOWING:

- Read all instructions before installing or using this heater.
- This heater is hot when in use. To avoid burns, do not let bare skin touch hot surfaces. Keep combustible materials, such as furniture, pillows, bedding, papers, clothes, etc. and curtains at least 3 feet (0.9 m) from the front of the heater.
- Extreme caution is necessary when any heater is used by or near children or invalids and whenever the heater is left operating and unattended.
- Do not operate any heater after it malfunctions. Disconnect power at service panel and have heater inspected by a reputable electrician before using.
- Do not use outdoors.
- To disconnect heater, turn controls to off, and turn off power to heater circuit at main disconnect panel.
- Do not insert or allow foreign objects to enter any ventilation or exhaust opening as this may cause an electric shock, fire, or damage to the heater.
- To prevent a possible fire, do not block air intake or exhaust in any manner.
- A heater has hot and arcing or sparking parts inside. Do not use it in areas where gasoline, paint, or flammable liquids are used or stored.
- Use this heater only as described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury to persons.
- This heater is intended for comfort heating applications and not intended for use in special environments. Do not use in damp or wet locations such as marine or greenhouse or in areas where corrosive or chemical agents are present.
- When installing, see INSTALLATION INSTRUCTIONS for additional warnings and precautions.
- For safe and efficient operation, and to extend the life of your heater, keep your heater clean - See MAINTENANCE INSTRUCTIONS.

SAVE THESE INSTRUCTIONS

INSTALLATION INSTRUCTIONS

⚠ WARNING ⚠

To prevent a possible fire, injury to persons or damage to the heater, adhere to the following:

1. Disconnect all power coming to heater at main service panel before wiring or servicing.
2. All wiring procedures and connections must be in accordance with the National and Local Codes having jurisdiction and the heater must be grounded.
3. Verify the power supply voltage coming to heater matches the ratings as shown on the heater nameplate.

CAUTION: ENERGIZING HEATER AT A VOLTAGE GREATER THAN THE VOLTAGE PRINTED ON THE NAMEPLATE WILL DAMAGE THE HEATER AND VOID THE WARRANTY AND COULD CAUSE A FIRE.

4. **CAUTION** - High temperature, risk of fire, keep electrical cords, drapery, furnishings, and other combustibles at least 3 feet (0.9 m) from front of heater. Do not install heater behind doors, below towel racks, or in an area where it is subject to being blocked by furniture, curtains or storage materials. Hot air from the heater may damage certain fabrics and plastics.
5. To reduce the risk of fire, do not store or use gasoline or other flammable vapors and liquids in the vicinity of the heater.
6. Do NOT use a remote thermostat with this heater. Built in thermostat cycles the heating element only. Fan delay control automatically turns fan ON and OFF, and provides a fan delay OFF feature to remove residual heat after thermostat has turned heating elements off. Wiring of heater in any manner which defeats the fan delay OFF feature can result in overheating and permanent damage to heater, and will void the warranty.
7. For wall mounting only with air discharge downward. Do NOT install in floor, ceiling, upside down (air discharge upward), or sideways.
8. The following minimum clearances must be maintained:
 - Bottom of heater to floor - 8" (203 mm).
 - Sides of heater to adjacent wall - 8" (203 mm).
 - Top of heater to ceiling - 36" (915 mm) - recommended at least 36" (915 mm).
9. Do not operate the heater without the grille installed.
10. This heater is hot when in use. Do NOT install heater behind door, behind towel rack, inside closet, where drapery could touch heater or be damaged by heat, or where airflow to heater may be obstructed. Keep electrical cords, bedding, furniture, and other items away from heater.

Installation of Back Box in New Construction

1. Mounting Back Box (See Figure 1)

- a. Place the back box between two 16" (406 mm) center-to-center wall studs at the desired mounting height but no closer than 8" (203 mm) to adjacent wall or floor.

Note: If wall studs are spaced greater than 16" on center, additional framing supports may be necessary.

- b. Align back box such that the bottom and sides will be flush with finished wall surface (top flange of back box should protrude approximately 1/2" (12.7 mm) from finished wall surface).
- c. Secure the back box in position with wood screws or nails as shown in Figure 1.

2. Power Supply Wiring (See Figure 1)

NOTE: Wire compartment volume - 119in³ (1950cm³).

- a. Run a power supply cable into the knockout area in the upper right hand corner of the back box. All wiring must be in accordance with National and Local Electrical Codes. Refer to Table 1, page 1 for correct wire size.
- b. Remove Power ON/OFF switch bracket by loosening two screws on the right side.
- c. Install a cable clamp in the "knockout" in the top of the back box.
- d. Insert power supply cable through cable clamp, allowing at least 6" (152mm) of leads to extend inside the back box. Connect the blue lead wires of disconnect switch to the supply wire leads using wire connectors (see wiring diagram, pg. 5).
- e. Ground the back box using the green screw located in the inside top of the back box.
- f. Secure Power ON/OFF switch bracket in place by tightening screws.

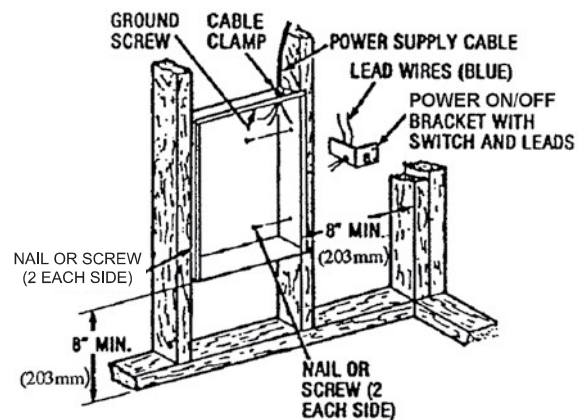


Fig. 1: Locating Back Box in New Construction

Installation of Recessed Back Box in Existing Construction

1. Provide a wall opening 14-1/2" (362mm) wide by 18-1/2" (470mm) high at the desired mounting height, but no closer than 8" (203mm) from floor. (See Figure 2)

NOTE: Locate so at least one side of opening is at wall stud.

2. Power Supply Wiring

NOTE: Wiring Compartment Volume - 119in³ (1950cm³)

- Run a power supply cable into the area above the top of the wall opening. All wiring must be in accordance with National and Local electrical codes. Refer to Table 1, page 1 for correct wire size.
- Remove Power ON/OFF switch bracket by loosening the two screws on the right side.
- Install a cable clamp in the “knockout” in the top of back box.
- Insert power supply cable through cable clamp, allowing approximately 6" (152mm) of cable length to remain inside the back box to facilitate connections.

3. Mounting Back Box

- Place the back box into wall opening flush with finished wall surface on bottom and sides of box. (Top flange of back box should protrude approximately 1/2" or 12.7mm from finished wall surface).
- Secure the back box in place with wood screws or nails.

4. Wiring Power ON/OFF Switch

- Connect the power supply wires to the blue wires of the Power ON/OFF switch using wire connectors (see wiring diagram, pg. 5).
- Ground the back box using the green ground screw located in the inside top of the back box.
- Secure Power ON/OFF switch bracket in place by tightening screws.

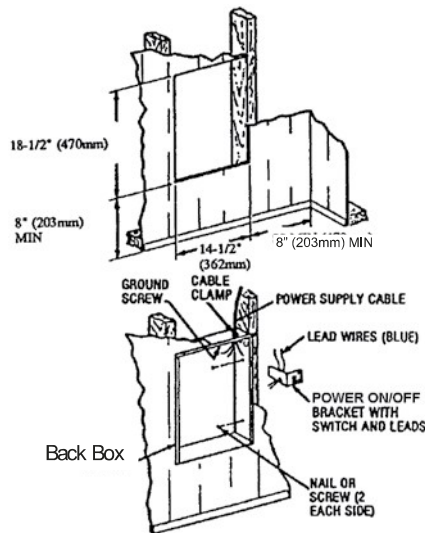


Fig. 2: Locating Back Box in Existing Construction

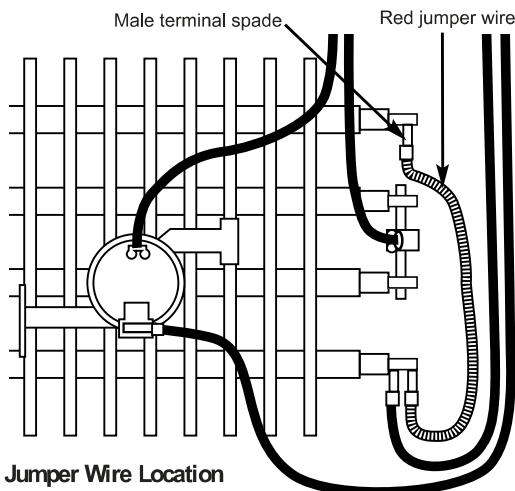


Fig. 3: Jumper Wire Location

Note to Installer: Converting heater to half wattage (Not applicable to 933IW-3150 and 933IW-3180, 120 Volt Models)

The 933 Series wall heaters are manufactured and shipped at the higher rated wattage. Full wattage heaters can be converted to half wattage by doing the following steps.

- Remove the red jumper wire as shown in Figure 3 and discard.
- Mark the wattage of the heater on the white label inside the back box.

Installation of Back Box with Optional Surface-Mounting Frame WIF-SMF-W (See Figure 4)

- Secure back box to wall with knockouts in upper right hand corner using screws and anchors.
- Hang the surface-mounting frame on the back box. Ensure that the back edge of the surface-mounting frame is flush against the wall.

NOTE: If heater is located in a high traffic area, where it may be subject to vandalism or abuse, take extreme care to see that the box is firmly attached to the wall.

3. Power Supply Wiring

NOTE: Wiring Compartment Volume - 119in³ (1950cm³)

- Run a power supply cable into the area to the right of the mounting frame. Arrangement of wiring to this point must be in accordance with National and Local codes. Refer to Table 1 on page 1 for proper wire size.

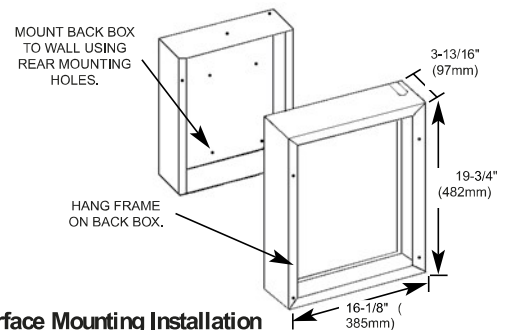


Fig. 4: Surface Mounting Installation

NOTE: If the wiring is to run through the wall, cut a hole in the area of the top of the back box. Run the supply wire through this hole. Then remove the “knockout” from the top of the box and proceed to step C.

- Remove the “knockout” on the top side of the frame.
- Remove Power ON/OFF switch bracket by loosening the two screws on the right side.
- Secure the power supply cable to the back box (using cable clamp, connector, or other suitable strain relief) allowing 6" (152mm) of lead to remain inside the back box.
- Connect supply wires to blue wires of Power On/Off switch using wiring connectors (see wiring diagram, pg. 5)
- Ground the back box by connecting the supply ground leadwire to the green ground screw located in the inside top of the back box.
- Secure Power On/Off switch bracket in place.

Installation of Heater Assembly and Grille

After back box is completely installed and no further construction dirt is expected, clean debris from back box and remove heater assembly from its carton. Then refer to Figure 5 and proceed as follows:

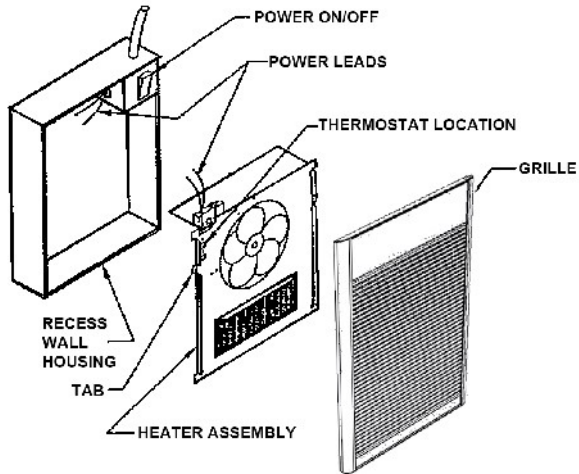


Fig. 5

1. Insert the heater assembly into back box, placing the four mounting holes (with key-hole slots) over the screws in the box. Tighten all screws securely.
2. If surface-mounting frame is used, ensure that the frame is even with all four heater assembly tabs before tightening screws.
3. Connect the two Power ON/OFF switch wires to the heat control circuit leads using wirenuts. After connection, push wires back into the opening. (Applicable diagram on pg. 5).
4. Turn thermostat to the extreme counterclockwise position.
5. Push Power ON/OFF switch into ON position.
6. Mount grille tabs over back box flange (top). Sheet metal flange on top end of grille hooks onto vertical flange on back box.
7. Insert two screws through tabs provided below bottom louver. Tighten screws until grille is pulled flush to the wall (or surface mount frame). **BE CAREFUL, DO NOT OVERTIGHTEN SCREWS.**

OPERATION INSTRUCTIONS

1. Heater must be properly installed before operation.
2. Rotate the thermostat fully clockwise. This should energize the heating elements and cause warm air to flow from the hot air discharge at the openings in the bottom of the grille.
3. After the operation check, rotate the thermostat to the desired position to obtain room comfort.

NOTE: For best results, the heater should be left "ON" constantly during the heating season because the thermostat, when properly set, will maintain the desired temperature.

TO RESET MANUAL RESET LIMIT:

Your heater is equipped with a manual reset safety thermal limit control that will automatically turn the heater off to prevent a fire if the heater overheats. This control is located on the fan panel assembly between the element and fan blade and marked "reset." The red reset button can be seen through the front grille when the heater is installed. To reset, allow the heater to cool, then push the red button that is visible through the hole in the fan panel. The heater should immediately return to normal operation.

MAINTENANCE INSTRUCTIONS

It is important to keep this heater clean. Your heater will give you years of service and comfort with only minimal care. To assure efficient operation follow the simple instructions below.

⚠ WARNING ⚠

ALL SERVICING BEYOND SIMPLE CLEANING THAT REQUIRES DISASSEMBLY SHOULD BE PERFORMED BY QUALIFIED SERVICE PERSONNEL.

⚠ WARNING ⚠

TO REDUCE RISK OF FIRE AND ELECTRIC SHOCK OR INJURY, DISCONNECT ALL POWER COMING TO HEATER AT MAIN SERVICE PANEL AND CHECK THAT THE ELEMENT IS COOL BEFORE SERVICING OR PERFORMING MAINTENANCE.

User Cleaning Instructions:

1. After the heater has cooled, a vacuum cleaner with brush attachment may be used to remove dust and lint from exterior surfaces of the heater including the grille openings.
2. With a damp cloth, wipe dust and lint from grille and exterior surfaces.
3. Return power to heater and check to make sure it is operating properly.

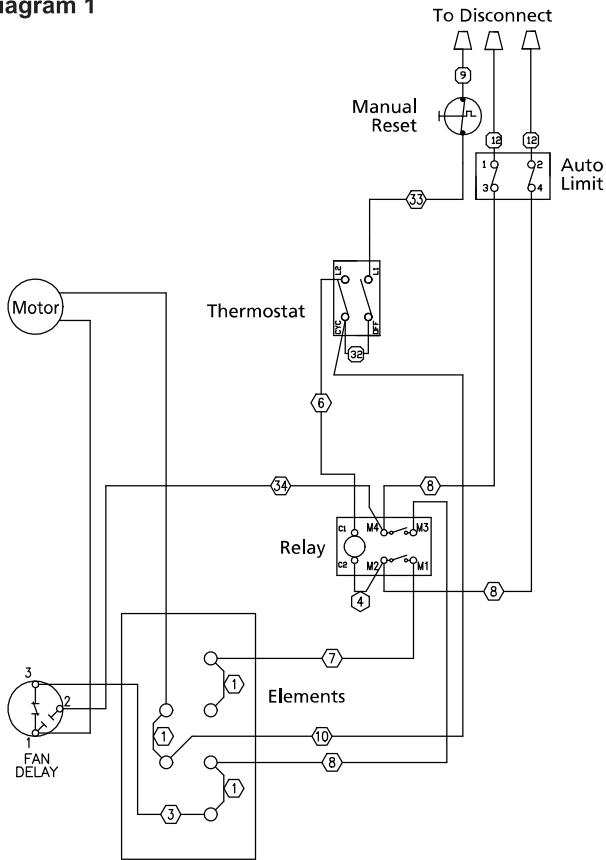
Maintenance Cleaning Instructions:

(To be performed only by Qualified Service Personnel)

At least annually, the heater should be cleaned and serviced by a qualified service person to ensure safe and efficient operation. This should include the removal of the grille and as necessary, the heater from the back box, to clean residue from the unit. After completing the cleaning and servicing, the heater should be fully re-assembled and checked for proper operation.

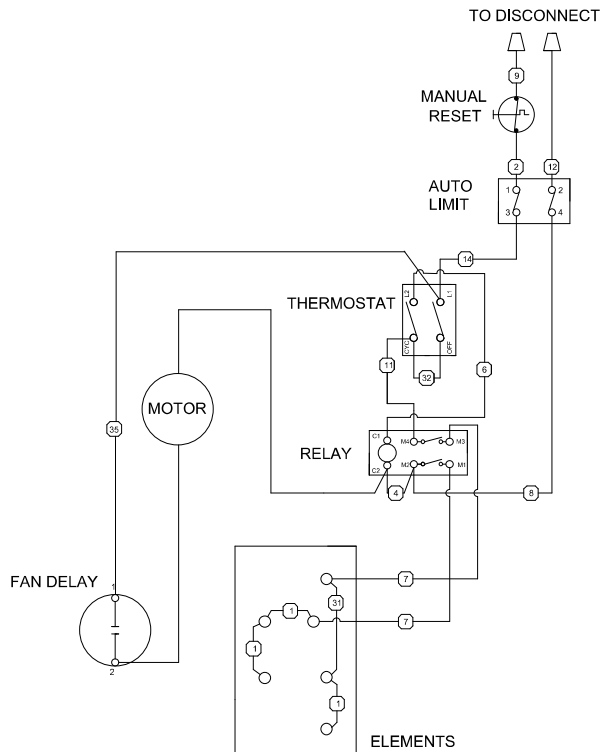
Wiring Diagrams

Diagram 1



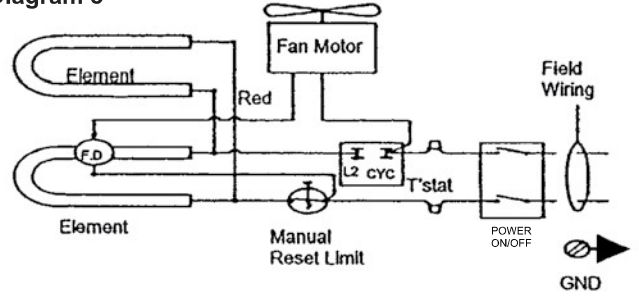
WIRING DIAGRAM FOR THREE PHASE WALL HEATERS

Diagram 2



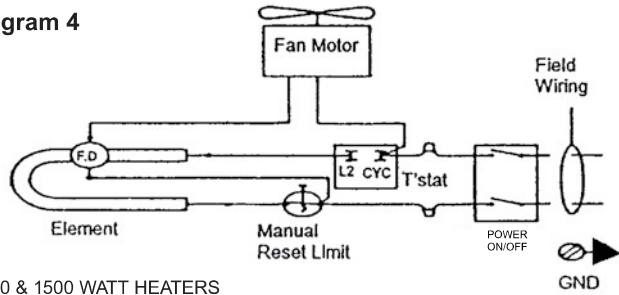
WIRING DIAGRAM FOR 208V, 4800W, SINGLE PHASE WALL HEATERS

Diagram 3



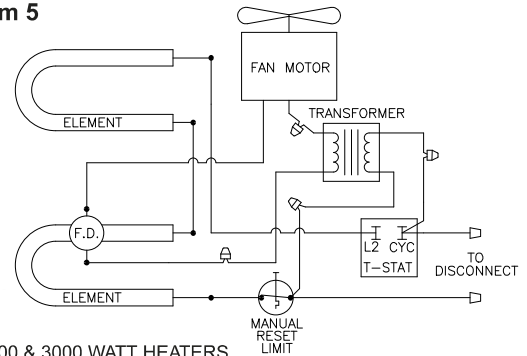
1500, 1800, 4800, 4000, & 3000 WATT HEATERS
 120V, 208V, 240V, OR 277V (See diagram no.2 for 4800W, 208V 1Ph)
 (Full wattage heaters can be converted to half wattage by moving the red jumper wire connecting the top and bottom element terminals.)
 Conversion not applicable for 120V models.

Diagram 4



2000 & 1500 WATT HEATERS
 208V, 240V, OR 277V

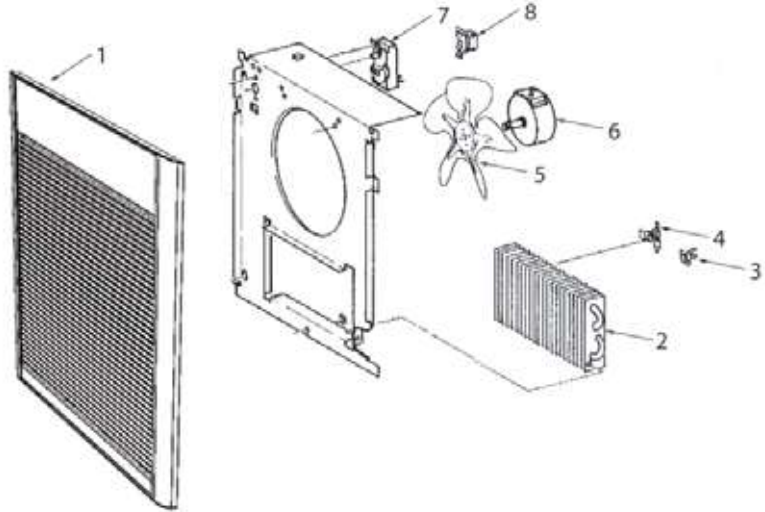
Diagram 5



4800, 4000 & 3000 WATT HEATERS
 347V OR 600V

Replacement Parts

Key No.	Description	Part Number
1	Grille Assembly : Bronze White	1016-11225-000 1016-11225-001
2	Element, Single Phase:	
	208V;4000W	302015807
	208/240V; 3000/4000W	302015808
	240/277V; 3000/4000W	302012809
	277V; 3000W	302012806
	208V; 4800W	1802-2075-801
	208/240V; 3600/4800W	302012810
	240/277V; 3600/4800W	302012811
	120V; 1500W	302012827
	120V; 1800W	302012828
3	Element, 3-Phase:	
	208V; 4000W	1802-2075-800
	208/240V; 3000/4000W	1802-2075-802
	208V; 4800W	1802-2075-801
	208/240V; 3600/4800W	1802-2075-803
4	Limit, Manual Reset	4520-2027-000
4	Fan Delay (933IW-4508)	410740000
	Fan Delay, 3 Phase	4520-2024-000
5	Fan Blade	490030103
6	Motor:	
	277/240V	3900-2010-001
	208/240V	3900-2010-000
	120V	3900-2010-003
7	Thermostat	410168002
		5813-2027-001
		(933IW-4508, 933IW-44083, 933IW-45083, 933IW-44043, 933IW-45043)
8	Power ON/OFF	410170001
9	Relay	410101002
10	Thermo Protector (Auto-Limit)	4520-2048-000



LIMITED WARRANTY

All products manufactured by Indeeco are warranted against defects in workmanship and materials for one year from the date of purchase, except heating elements which are warranted against defects in workmanship and materials for five years from date of purchase. This warranty does not apply to damage from accident, misuse, or alteration; nor where the connected voltage is more than 5% above the nameplate voltage; nor to equipment improperly installed or wired or maintained in violation of the product's installation instructions. This warranty does not apply to refurbished products. All claims for warranty work must be accompanied by proof of the date of purchase.

The customer shall be responsible for all costs incurred in the removal or reinstallation of products, including labor costs, and shipping costs incurred to return products to Indeeco. Within the limitations of this warranty, inoperative units should be returned to Indeeco, and we will repair or replace, at our option, at no charge to you with return freight paid by Indeeco. It is agreed that such repair or replacement is the exclusive remedy available from Indeeco.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED THE AFORESAID EXPRESSED WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS AGREEMENT. Indeeco SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES ARISING WITH RESPECT TO THE PRODUCT, WHETHER BASED UPON NEGLIGENCE, TORT, STRICT LIABILITY, OR CONTRACT.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Contact Indeeco in St Louis, MO, at 314-644-4300. Merchandise returned to the factory must be accompanied by a return authorization and service identification tag, both available from Indeeco. When requesting return authorization, include all catalog numbers shown on the products.

HOW TO OBTAIN WARRANTY SERVICE AND WARRANTY PARTS PLUS GENERAL INFORMATION

1. Warranty Service or Parts **314-644-4300**
2. General Product Information **www.indeeco.com**

Note: When obtaining service always have the following:

1. Model number of the product
2. Date of manufacture
3. Part number or description



St Louis, MO 63144 USA

Indeeco new products are warranted against defects in workmanship, material, design, labeling and packaging. No other warranty, expressed or implied, written or oral, applies. No person other than an officer or the general manager of Indeeco is authorized to give any other warranty or assume any liability.

Warranty Period

Unless specified in the table below, the product warranty period is 18 months from the date of shipment from Indeeco’s factory, or 12 months from the date the product is first placed into service, whichever period lapses first.

Conditions of Warranty

Indeeco products must be installed, operated, and maintained in accordance with Indeeco’s instructions. Indeeco is not liable for damage or unsatisfactory performance of the product resulting from accident, negligence, alteration, unauthorized repair, improper application or installation of the product, improper specifications, or corrosion. Indeeco IS NOT LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. Claims against carriers for damage in transit must be filed by the purchaser with the carrier.

Remedy

Contact Indeeco sales department at (314) 644-4300 or sales@Indeeco.com, for a Return Material Authorization Number (RMA#) and return instructions.

If after receipt of the product and the claim, Indeeco finds to its reasonable satisfaction that the product is defective in workmanship, material, design, labeling or packaging, the product will be repaired or replaced, or the purchase price refunded at Indeeco’s option. There will be no charge to the purchaser for parts or labor. Removal and reinstallation of the product, and shipment of the product to Indeeco for repair or inspection, shall be at the purchaser’s risk and expense.

THE REPAIR, REPLACEMENT, OR REFUND PROVIDED FOR IN THIS LIMITED WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE TERMS OF THIS LIMITED WARRANTY.

Indeeco Product Line	Warranty Period	Indeeco Product Line	Warranty Period
BBI (903)	1 year* and 10 years on heating element	WRI (930)	1 year* and 5 years on heating element
BISI/BII (905/907)	1 year* and 5 years on heating element	CCI (931)	1 year* and 5 years on heating element
BCI (906)	1 year* and 5 years on heating element	WCI (932)	1 year* and 5 years on heating element
BASI (908)	1 year* and 5 years on heating element	WAI (933)	1 year* and 5 years on heating element
BAI/BAPI (909/911)	1 year* and 5 years on heating element	WLI (934)	1 year* and 1 year on heating element
LBAI/LBAPI (912/913)	1 year* and 5 years on heating element	CDI (937)	1 year* and 5 years on heating element
BMI (914)	1 year* and 5 years on heating element	TSI (938)	1 year* and 5 years on heating element
BHI (916)	1 year* and 5 years on heating element	FFI (939)	1 year* and 5 years on heating element
RCI (918)	1 year* and 5 years on heating element	CLI (941)	1 year* and 5 years on heating element
CUI (922)	1 year* and 5 years on heating element	950	1 year* and 1 year on heating element
925	1 year* and 5 years on heating element		
All Other Product Lines	18 months from the date of shipment from Indeeco’s factory, or 12 months from the date the product is first placed into service, whichever period lapses first.		

*From date of shipment from Indeeco’s factory.



SUBMITTAL TITLE SHEET

PROJECT TITLE:

WILMINGTON OHIO COMMUNITY-BASED OUTPATIENT

SUBMITTAL TYPE:

PRODUCT DATA

SECTION SUBMITTAL NUMBER:

Drawing 2-M5.0

SECTION TITLE:

Trane VAV Boxes

DATE PREPARED:

7/10/2024

CONTRACTOR OF RECORD:

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Project Manager: Shawn Paige
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SECTION SUBCONTRACTOR:

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2145 Patterson Street
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Project Manager: Brian Wayson
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Wilmington CBOC VariTrane VCEF VAV Units Submittal

Prepared For:

Brian Pastura
Account Manager/ Estimator
(513) 685-2002
Mechanical Optimizers
2145 Patterson St.
Cincinnati, OH 45214

Date: July 15, 2024

**VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106,
VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112,
VAV-113, VAV-114, VAV-115**

Job Name:

Wilmington CBOC

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

15 Variable Air Volume Single Duct Terminal Units

Christian Melson

Trane U.S. Inc.
10300 Springfield Pike
Cincinnati, OH 45215
Office Phone: (513) 771 8884

The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.

Table of Contents

Product Summary 1

Tag Data 3

Product Data 3

Performance Data 5

Mechanical Specifications 6

Dimensional Drawings 8

Accessory 13

Field Wiring 16

Field Installed Options 18

Tag Data - Variable Air Volume Single Duct Terminal Units (Qty: 15)

Item	Tag(s)	Qty	Description	Model Number
A1	VAV-101	1	Variable Air Volume Single Duct Terminal	VCEF08--*M0SY95D**0*0F2W0B04515**0345
A2	VAV-102	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A3	VAV-103	1	Variable Air Volume Single Duct Terminal	VCEF16--*M0SY95D**0*0F2W0B15015**0345
A4	VAV-104	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B07015**0345
A5	VAV-105	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A6	VAV-106	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A7	VAV-107	1	Variable Air Volume Single Duct Terminal	VCEF14--*M0SY95D**0*0F2W0B13015**0345
A8	VAV-108	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B03015**0345
A9	VAV-109	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B03015**0345
A10	VAV-110	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B09015**0345
A11	VAV-111	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B04015**0345
A12	VAV-112	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B07515**0345
A13	VAV-113	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B09015**0345
A14	VAV-114	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B04515**0345
A15	VAV-115	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B02015**0345

Product Data - Variable Air Volume Single Duct Terminal Units

All Units

- Space Temperature Modulating Reheat
- United States
- Single duct with electric heat
- Foil faced insulation - 1" (25 mm)
- SY210 Basic (Electric Heat- Mod SCR)
- MSTP Connection
- Standard actuator
- Air - Fi Wireless Communication Module
- Four point averaging temperature sensor
- Attenuator only
- Standard Air Leakage
- No water valve
- No piping package
- 208/24 volt transformer
- Disconnect switch
- 208 volt, 3 phase
- Stage -1
- SCR Electric Heat Control
- Trane Air-Fi - WCS-SD (display) (Field Installed)
- 1 DDC sensor with occupancy and set point knob (Field Installed)

Item: A1

Qty: 1

Tag(s): VAV-101

- 8" inlet size, 900 cfm (203mm inlet, 425 l/s)
- Electric heater kW - 4.5

Item: A2, A5, A6

Qty: 3

Tag(s): VAV-102, VAV-105, VAV-106

- 6" inlet size, 500 cfm (152mm inlet, 236 l/s)
- Electric heater kW - 1.0

Item: A3

Qty: 1

Tag(s): VAV-103

- 16" inlet size, 4000 cfm (406mm inlet, 1888 l/s)
- Electric heater kW - 15.0

Item: A4

Qty: 1

Tag(s): VAV-104

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
Electric heater kW - 7.0

Item: A7

Qty: 1

Tag(s): VAV-107

14" inlet size, 3000 cfm (356mm inlet, 1416 l/s)
Electric heater kW - 13.0

Item: A8, A9

Qty: 2

Tag(s): VAV-108, VAV-109

6" inlet size, 500 cfm (152mm inlet, 236 l/s)
Electric heater kW - 3.0

Item: A10, A13

Qty: 2

Tag(s): VAV-110, VAV-113

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
Electric heater kW - 9.0

Item: A11

Qty: 1

Tag(s): VAV-111

6" inlet size, 500 cfm (152mm inlet, 236 l/s)
Electric heater kW - 4.0

Item: A12

Qty: 1

Tag(s): VAV-112

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
Electric heater kW - 7.5

Item: A14

Qty: 1

Tag(s): VAV-114

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
Electric heater kW - 4.5

Item: A15

Qty: 1

Tag(s): VAV-115

10" inlet size, 1400 cfm (254mm inlet, 661 l/s)
Electric heater kW - 2.0

Performance Data - Variable Air Volume Single Duct Terminal Units

Tags	VAV-101	VAV-102	VAV-103	VAV-104	VAV-105	VAV-106
Design cooling airflow (cfm)	505	85	2650	635	135	65
Min cooling airflow (cfm)	305	60	2097	635	80	60
Valve heating airflow (cfm)	315	83	2250	635	83	83
Cooling inlet diameter	8"	6"	16"	10"	6"	6"
Cooling inlet velocity (ft/min)	1447	433	1898	1164	688	331
APD @ cooling airflow (in H2O)	0.040	0.010	0.020	0.010	0.020	0.010
Full load amps (A)	12.49	2.78	41.64	19.43	2.78	2.78
Min circuit ampacity (A)	15.61	3.47	52.04	24.29	3.47	3.47
Max fuse size (A)	20.00	15.00	60.00	25.00	15.00	15.00
Operating weight (lb)	84.7	81.7	145.7	101.0	81.7	81.7
Main Unit Weight (lb)	22.0	21.0	51.0	30.0	21.0	21.0
Attenuator Weight (lb)	17.7	14.7	24.7	20.0	14.7	14.7
EH Weight (lb)	45.0	46.0	70.0	51.0	46.0	46.0
Replication Run	284	284	284	284	284	284
Trane Select Assist Version Number	284	284	284	284	284	284
Coil heating capacity (MBh)	15.37	3.42	51.23	23.91	3.42	3.42
Room heat loss (MBh)	9.56	1.88	9.72	12.19	1.88	1.88
Room heating setpoint (F)	72.00	72.00	72.00	72.00	72.00	72.00
Primary EDB (F)	55.00	55.00	55.00	55.00	55.00	55.00
Unit LAT (F)	99.96	92.92	75.98	89.70	92.92	92.92
Electric heater kW (kW)	4.50	1.00	15.00	7.00	1.00	1.00

Tags	VAV-107	VAV-108, VAV-109	VAV-110	VAV-111	VAV-112	VAV-113
Design cooling airflow (cfm)	1450	250	680	320	750	550
Min cooling airflow (cfm)	985	250	680	320	450	550
Valve heating airflow (cfm)	985	250	680	320	580	629
Cooling inlet diameter	14"	6"	10"	6"	10"	10"
Cooling inlet velocity (ft/min)	1356	1273	1247	1630	1375	1008
APD @ cooling airflow (in H2O)	0.010	0.060	0.020	0.090	0.020	0.010
Full load amps (A)	36.08	8.33	24.98	11.10	20.82	24.98
Min circuit ampacity (A)	45.11	10.41	31.23	13.88	26.02	31.23
Max fuse size (A)	50.00	15.00	35.00	15.00	30.00	35.00
Operating weight (lb)	133.7	81.7	101.0	81.7	101.0	101.0
Main Unit Weight (lb)	46.0	21.0	30.0	21.0	30.0	30.0
Attenuator Weight (lb)	25.7	14.7	20.0	14.7	20.0	20.0
EH Weight (lb)	62.0	46.0	51.0	46.0	51.0	51.0
Replication Run	284	284	284	284	284	284
Trane Select Assist Version Number	284	284	284	284	284	284
Coil heating capacity (MBh)	44.40	10.25	30.74	13.66	25.61	30.74
Room heat loss (MBh)	26.23	5.63	18.19	7.76	14.91	19.13
Room heating setpoint (F)	72.00	72.00	72.00	72.00	72.00	72.00
Primary EDB (F)	55.00	55.00	55.00	55.00	55.00	55.00
Unit LAT (F)	96.54	92.77	96.66	94.34	95.70	100.04
Electric heater kW (kW)	13.00	3.00	9.00	4.00	7.50	9.00

Tags	VAV-114	VAV-115
Design cooling airflow (cfm)	680	195
Min cooling airflow (cfm)	410	195
Valve heating airflow (cfm)	410	195
Cooling inlet diameter	10"	10"
Cooling inlet velocity (ft/min)	1247	358
APD @ cooling airflow (in H2O)	0.020	0.010
Full load amps (A)	12.49	5.55

Tags	VAV-114	VAV-115
Min circuit ampacity (A)	15.61	6.94
Max fuse size (A)	20.00	15.00
Operating weight (lb)	101.0	101.0
Main Unit Weight (lb)	30.0	30.0
Attenuator Weight (lb)	20.0	20.0
EH Weight (lb)	51.0	51.0
Replication Run	284	284
Trane Select Assist Version Number	284	284
Coil heating capacity (MBh)	15.37	6.83
Room heat loss (MBh)	7.81	3.23
Room heating setpoint (F)	72.00	72.00
Primary EDB (F)	55.00	55.00
Unit LAT (F)	89.55	87.28
Electric heater kW (kW)	4.50	2.00

Mechanical Specifications - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15

Qty: 15

Tag(s): VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115

1" Foil - Faced Insulation

The interior surface of the unit casing is acoustically and thermally lined with 1", 1.8 lb/cu. ft density glass fiber with foil facing. The insulation is UL listed and meets NFPA-90A, UL 181 standards, and bacteriological standard ASTM C 665. The insulation R-value is 4.2. All cut edges of insulation are completely encapsulated in metal to prevent erosion.

Air Valve Size – 06: Air Valve is 500.0 cfm 6" inlet.

Air Valve Size – 08: Air Valve is 900.0 cfm 8" inlet.

Air Valve Size – 10: Air Valve is 1400.0 cfm 10" inlet.

Air Valve Size – 14: Air Valve is 3000.0 cfm 14" inlet.

Air Valve Size – 16: Air Valve is 4000.0 cfm 16" inlet.

Air Valve Round

The air inlet connection is an 18 gauge galvanized steel cylinder sized to fit standard round duct. A multiple point, averaging flow sensing ring is provided with balancing taps for measuring within +/- 5% of unit cataloged airflow. An airflow versus pressure differential calibration chart is provided. The damper blade is constructed of a closed cell foam seal mechanically locked between two 22 gauge galvanized steel disks. The damper blade assembly is connected through a cast zinc stub axle and shaft supported by self lubricating bearings. The shaft is cast with a damper position indicator. The valve assembly includes a mechanical stop to prevent over stroking. At 4.0" w.g. air valve leakage does not exceed 1% of cataloged airflow.

Power Disconnect Switch (for VCEF)

A factory provided interlocking door disconnect switch located on the electric heater control panel.

SCRH Modulated Electric Heat

An SCR electric control device for use with UC400 & UC210 Programmable BACnet Controller. The SCR serves both as a substitute for magnetic contactors and a RoHS compliant alternative to mercury switches. The SCR allows the operator modulating heat adjustment for precise, silent control of zone temperature.

Slip & Drive Connection

A slip and drive connection has two straight flanges on the top and bottom, and two drive connections on the left and right sides. This is a standard option on all VAV single duct terminal units.

Electric Heat Coil

Factory provided and mounted resistance open-coil type heater with airflow switch, a disc-type automatic pilot duty thermal primary cutoff, and manually resettable pilot-duty thermal secondary cutoff with associated backup contactor. Heater element material is type C nickel-chromium alloy. The heater terminal box is provided with 7/8" knockouts for customer power supply. Terminal connections are plated steel with ceramic insulators. Unit is Flippable for both Left and Right hand control access, except with mercury contactor option.

Electric Heat Transformer

A 50VA or 75VA class 2 transformer will be an integral component of the heater control panel dependent on unit load requirements to provide 24 VAC for controls.

D.D.C. Floating Point Actuator

Trane 3 wire, (open, close, common) 26GA when 6-pos amp connector is used for Tracer UC210, VV550, or VAV UCM, otherwise 18GA wires are used. 3.4 VA, 1.7W, 24 VAC, 50/60 Hz. Quarter turn control actuator with linkage release button. Actuator has a constant drive rate independent of load, a rated torque of 35 in-lb, a 90-second drive time and is non-spring return. Travel is terminated by end stops at fully opened and closed positions. An integral magnetic clutch eliminates motor stall. An integral 3 screw terminal block is provided for field wiring. Operating temperature 32.0 F to 125.0 F.

DDC Zone Sensor w/Setpoint & Occupancy

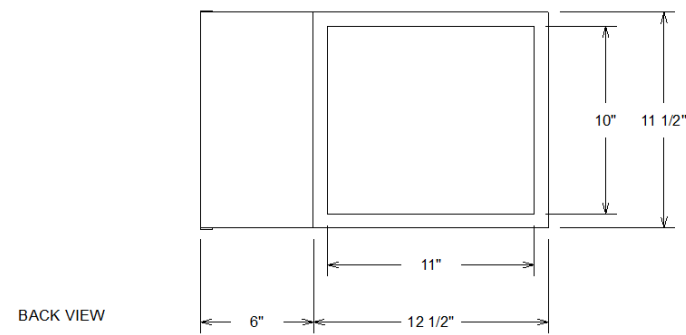
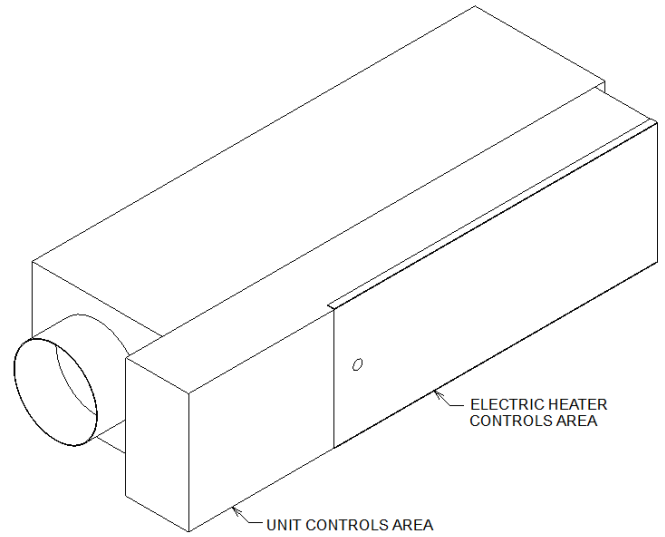
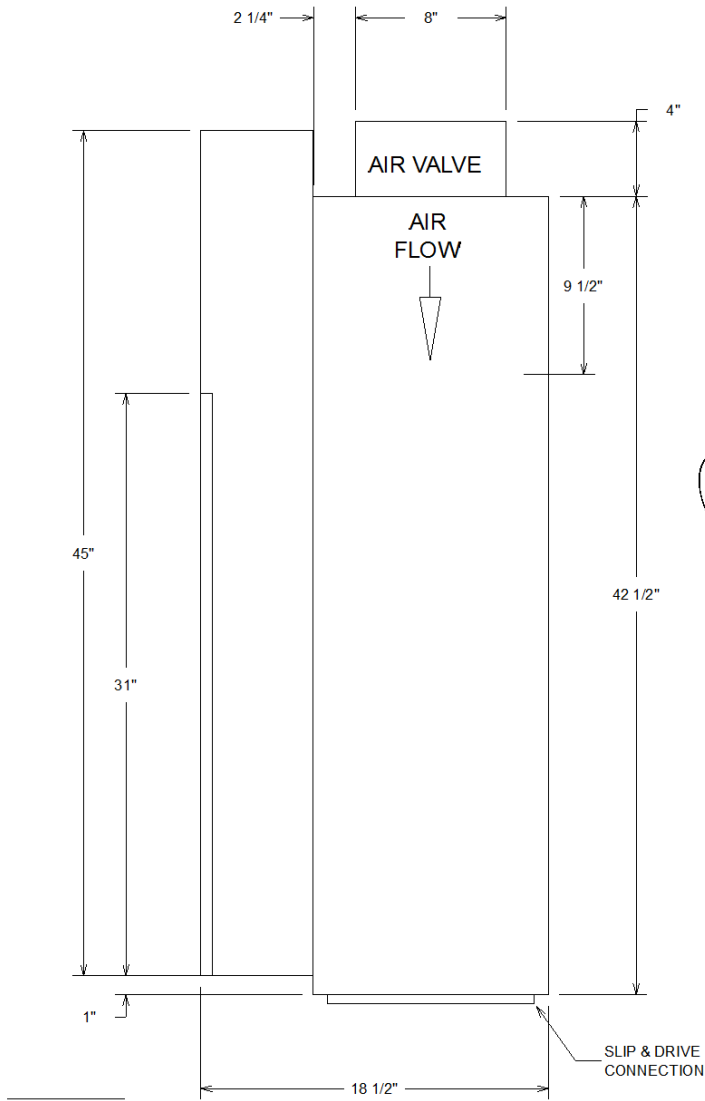
This electronic device utilizes a thermistor to vary the voltage output in response to changes in the zone temperature. Wiring to the U.C.M. controls must be 18 to 22 awg. shielded twisted pair wiring. The setpoint adjustment range is 50.0 F - 88.0 F. This sensor is provided with an externally adjustable set point, a timed override button and a timed override cancel button. An optional communications jack is available which snaps into the enclosure backplate.

Dimensional Drawings - Variable Air Volume Single Duct Terminal Units

Item: A1

Qty: 1

Tag(s): VAV-101



BACK VIEW

Approximate Dry Weight	84.7 lb
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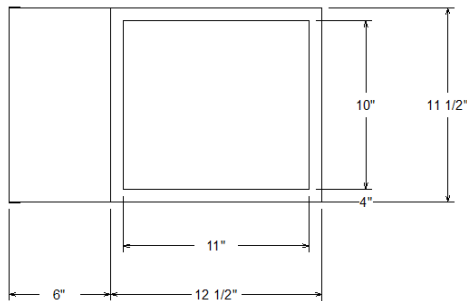
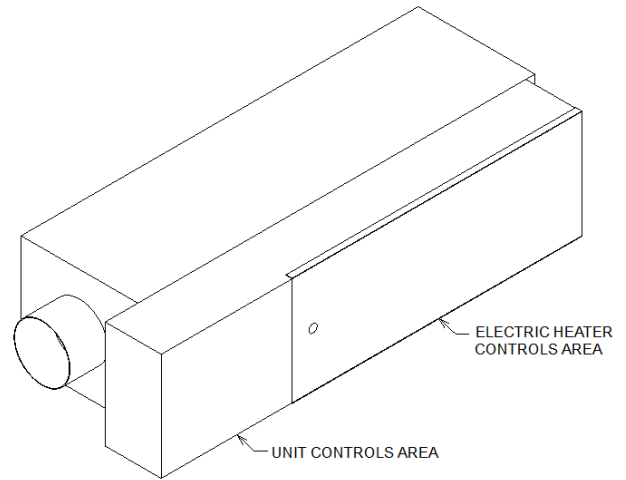
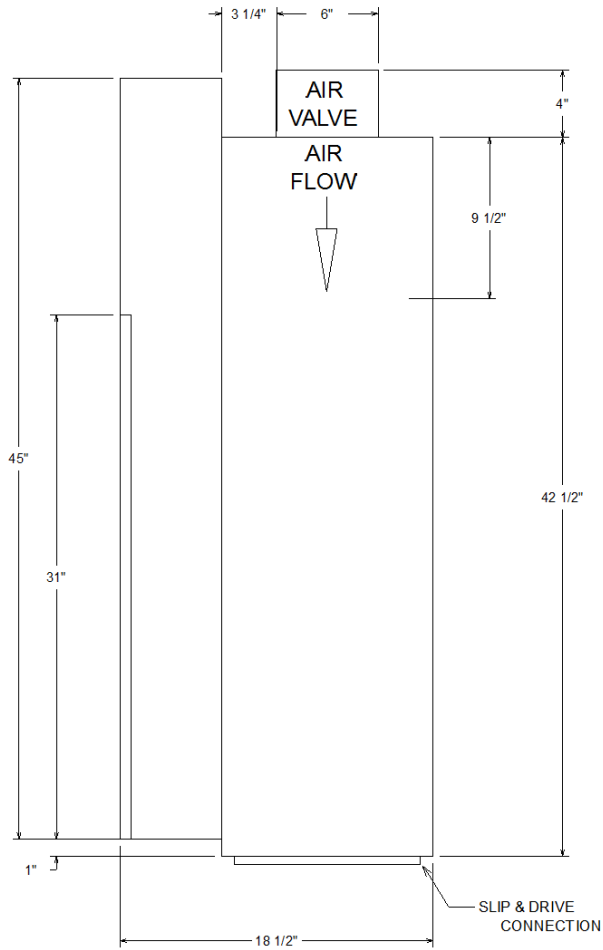
Weights reflected may vary ±5.0 lb based upon options selected.

Dimensional Drawings - Variable Air Volume Single Duct Terminal Units

Item: A2, A5, A6, A8, A9, A11

Qty: 6

Tag(s): VAV-102, VAV-105, VAV-106, VAV-108, VAV-109, VAV-111



BACK VIEW

Approximate Dry Weight	81.7 lb
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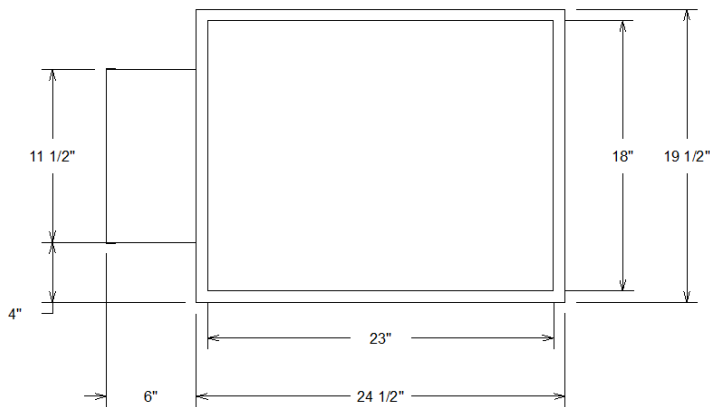
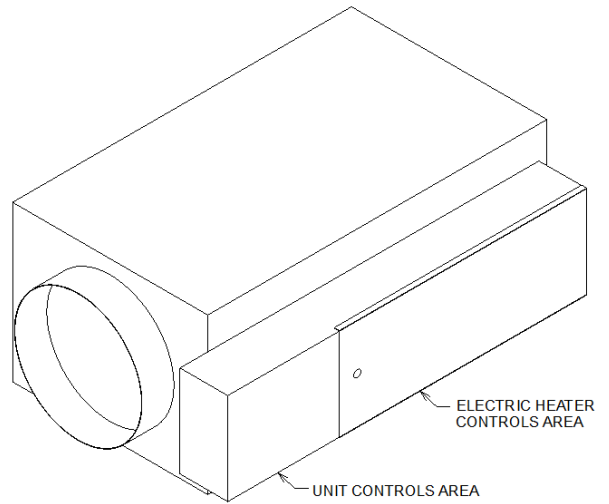
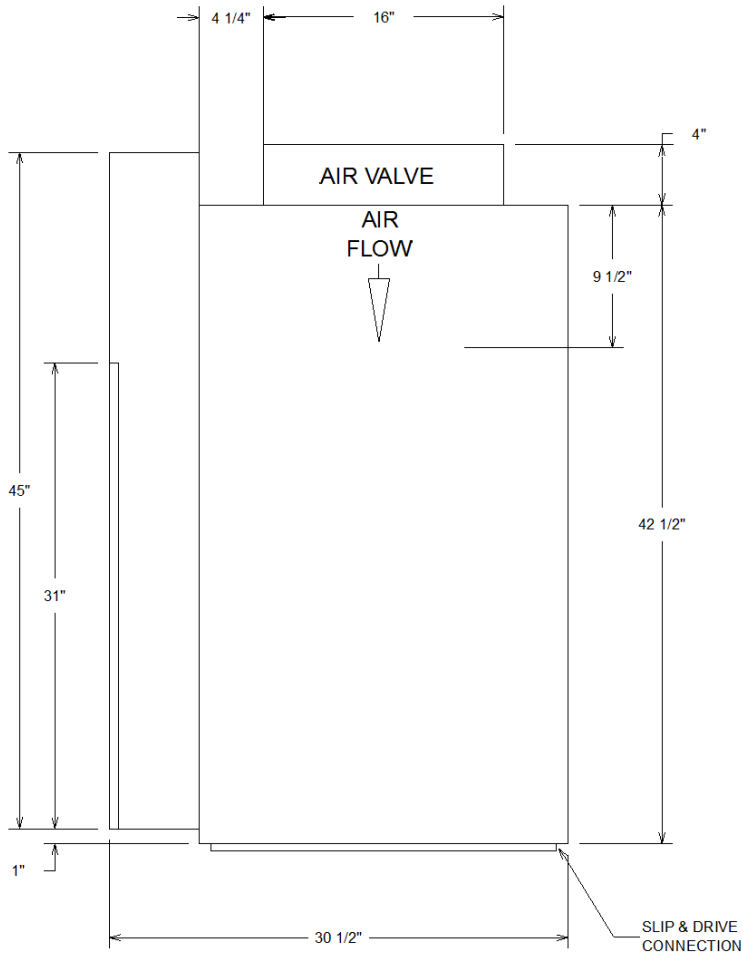
Weight reflected may vary 5 lbs(2.27kgs) based upon options selected.

Dimensional Drawings - Variable Air Volume Single Duct Terminal Units

Item: A3

Qty: 1

Tag(s): VAV-103



BACK VIEW

Approximate Dry Weight	145.7 lb
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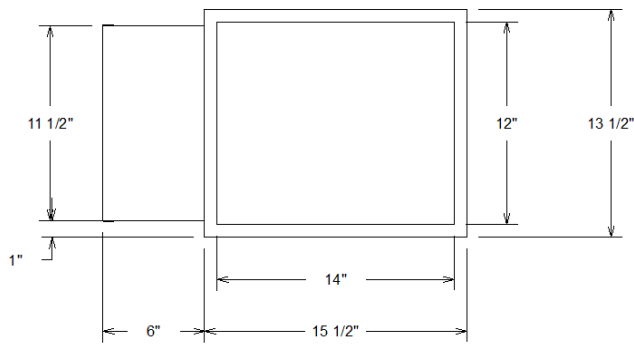
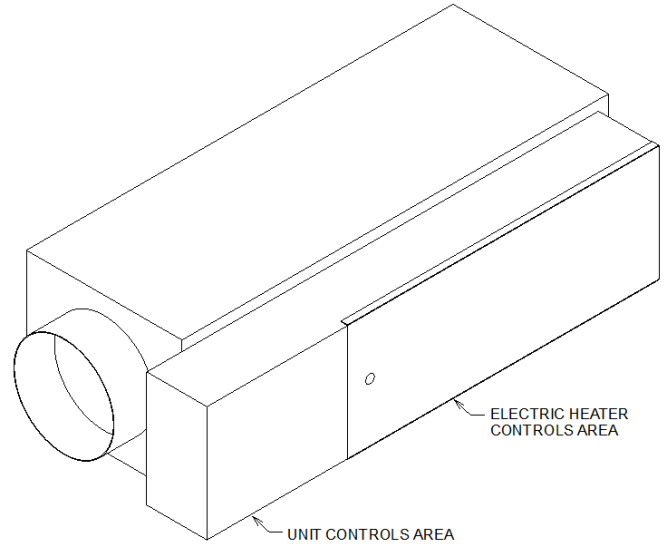
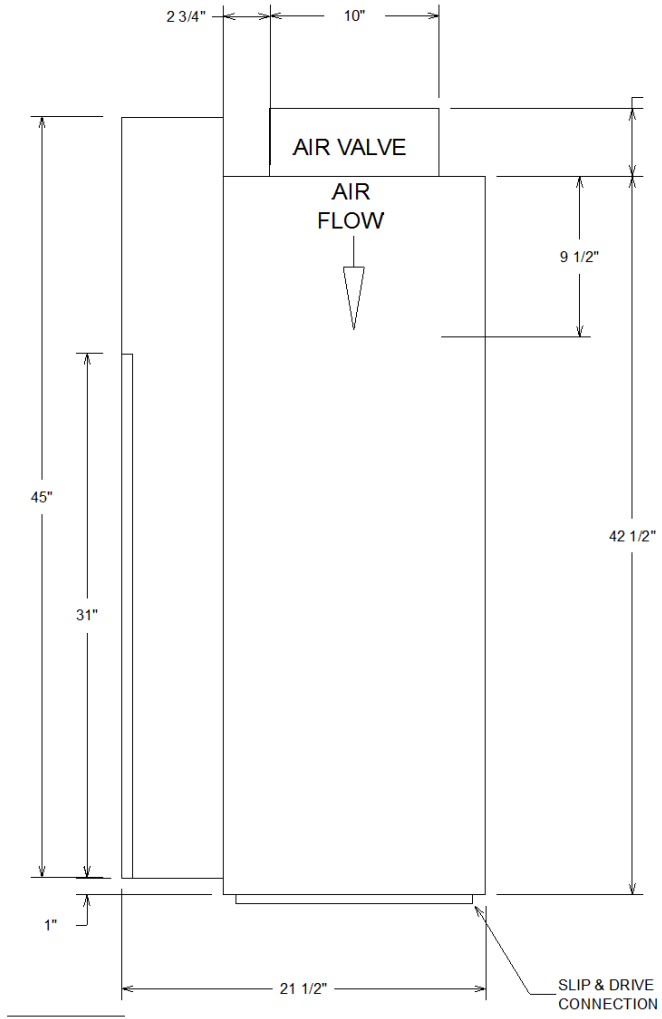
Weights reflected may vary ± 5.0 lb based upon options selected.

Dimensional Drawings - Variable Air Volume Single Duct Terminal Units

Item: A4, A10, A12 - A15

Qty: 6

Tag(s): VAV-104, VAV-110, VAV-112, VAV-113, VAV-114, VAV-115



BACK VIEW

Approximate Dry Weight	101.0 lb
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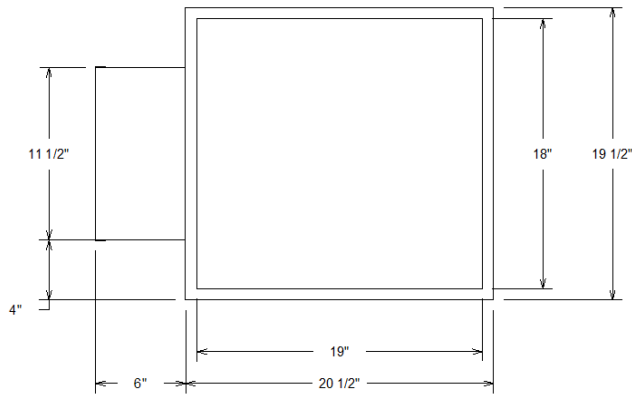
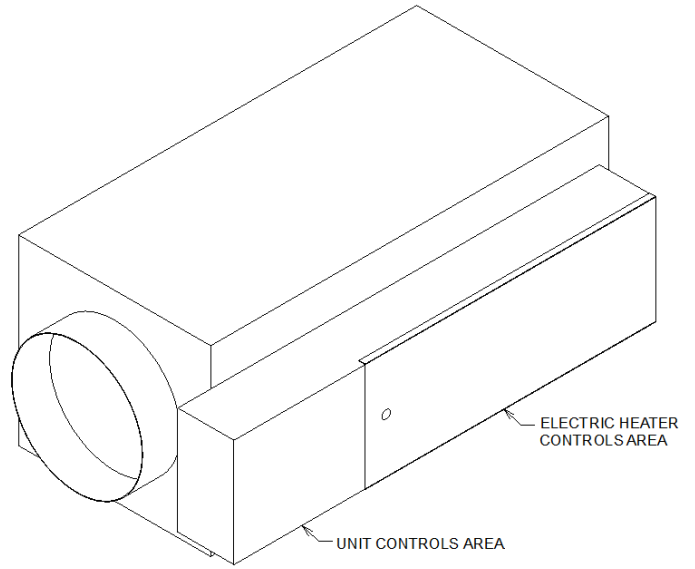
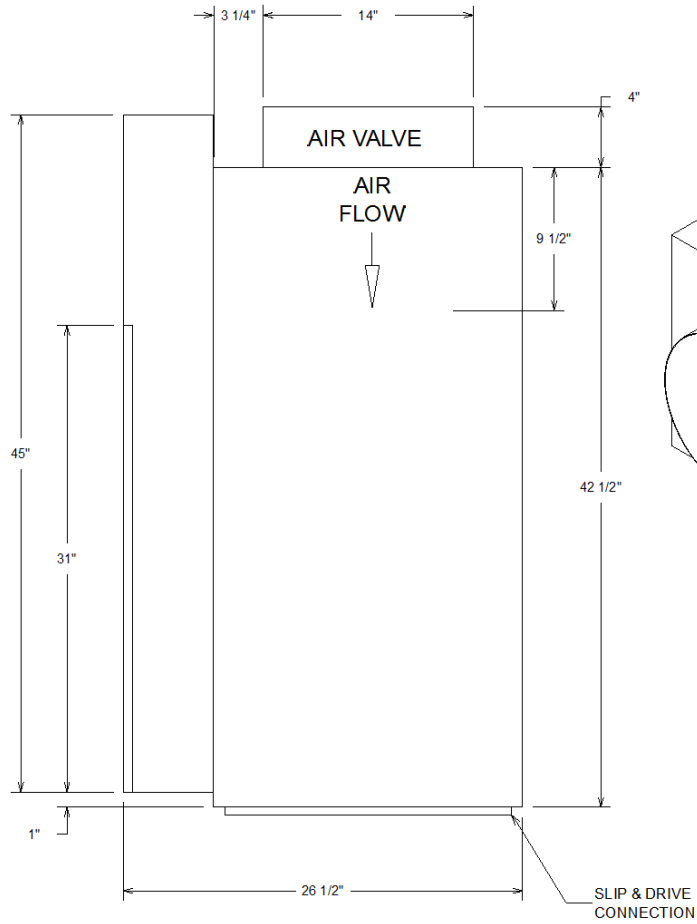
Weights reflected may vary ±5.0 lb based upon options selected.

Dimensional Drawings - Variable Air Volume Single Duct Terminal Units

Item: A7

Qty: 1

Tag(s): VAV-107



BACK VIEW

Approximate Dry Weight	133.7 lb
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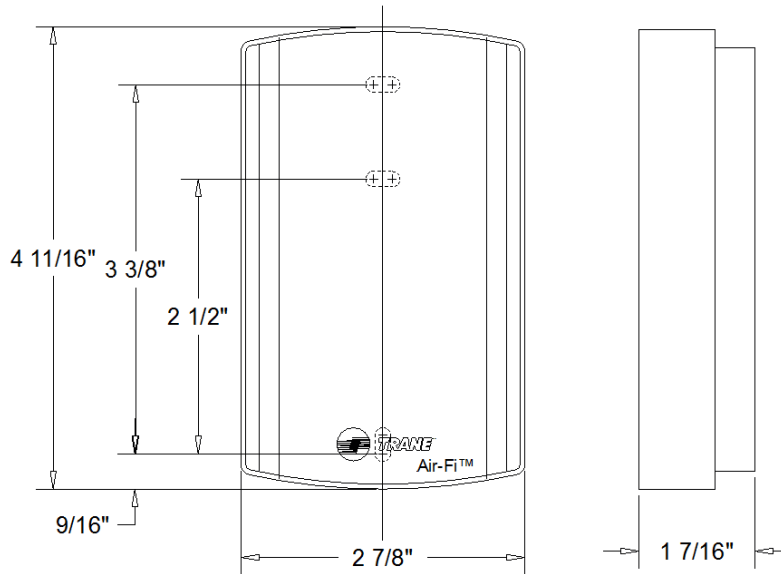
Weights reflected may vary ±5.0 lb based upon options selected.

Accessory - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15

Qty: 15

Tag(s): VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115



Air-Fi™ WIRELESS COMMUNICATIONS INTERFACE (Air-Fi™ WCI)
(INSTALLED, WIRED & TESTED ON UNIT)

Wireless specifications

Air-Fi™ WCI works with other Air-Fi™ WCI's for wireless communications and optionally with wireless communications sensor.

(Does not work with non- Air-Fi™ Wireless Zone Sensors)

WCI operating temperature	-40 to 158°F (-40 to 70°C)
Storage temperature	-40 to 185°F (-40 to 85°C)
Storage and operating humidity range	5 % to 95 % relative humidity (RH), non-condensing
Resolution	±0.125°F over a range of 60 to 80°F (15.56 to 26.67°C) ±0.25 °F when outside this range
Receiver voltage	24 V nominal ac/dc ± 10%
Receiver power consumption	<2.5VA
Housing Material	Polycarbonate/ABS blend, suitable for plenum mounting, UV protected, UL 94: 5 VA flammability rating
Mounting	Factory mounted on exterior of control box.
Range(i)	Open range - 2,500 ft (762m) w/ packet error rate of 2 % Indoor: Typical range is 200ft (61mm); actual range is dependent on the environment.
Output power	100 mW - North America
Radio frequency	2.4 GHz (IEEE Std 802.15.4-2003 compliant) (2405-2480 MHz, 5 MHz spacing)
Radio channels	16
Address range	00-99
RoHS compliance	Yes
Agency Listing	UL Listed: UL94, 5VA flammability rating and UL916. CSA - C22.2 No. 205-M1983 Signal Equipment

(i) Range values are estimated transmission distances for satisfactory operation of the 100 mW version. Estimated transmission distance for the 10 mW version will be less. Actual distance is job specific and must be determined during site evaluation.

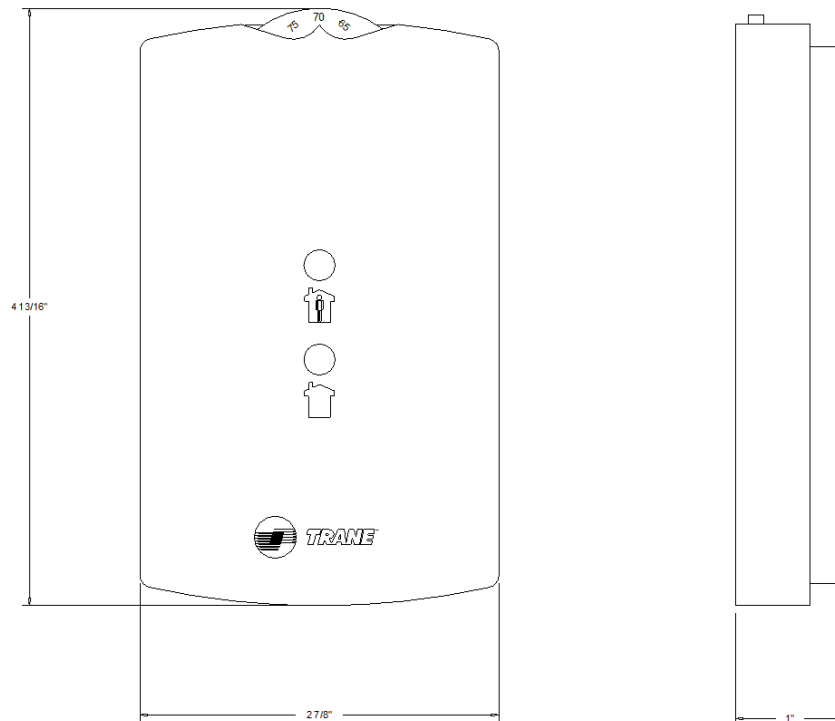
Placement of the receiver and the sensor is critical to proper system operation. In most general office space installations, distance is not the limiting factor for proper radio signal quality. It is more greatly affected by walls, barriers, and general clutter. In general, sheetrock walls and ceiling tiles offer little restriction to the propagation of the radio signal throughout the building as opposed to concrete or metal barriers.

Accessory - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15

Qty: 15

Tag(s): VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115

**Customer Notes:**

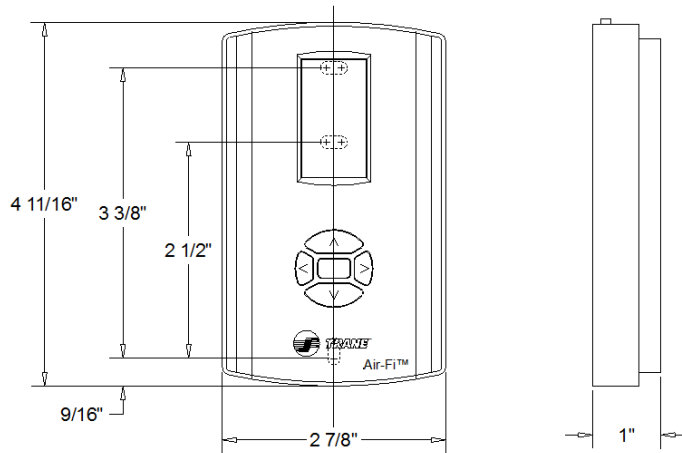
1. Zone Sensor with externally adjustable setpoint, a timed override button & a timed override cancel button.
2. Optional communications jack available.

Accessory - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15

Qty: 15

Tag(s): VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115



Air-Fi™ WIRELESS COMMUNICATIONS SENSOR w/DIGITAL DISPLAY (WCS-SD)

Wireless specifications

Sensor works with Air-Fi™ Wireless Communications Interface.

Sensor operating temperature	32 to 122°F (0 to 50°C)
Storage temperature	-40 to 185°F (-40 to 85°C)
Storage and operating humidity range	5% to 95%, non-condensing
Accuracy	0.5 °F over a range of 55 to 85°F (12.8 to 29.4 °C)
Resolution	±0.125°F over a range of 60 to 80°F (15.56 to 26.67°C) ±0.25 °F when outside this range
Setpoint functional range	45 to 95°F (7.22 to 35°C)
Setpoint/Zone Temperature Display	50 to 90°F (ones, halves or tenths increments) and *, ** 11 to 32°C (ones, halves or tenths increments) and *, **
Housing	Polycarbonate/ABS blend, suitable for plenum mounting, UV protected, UL 94: 5 VA flammability rating
Mounting	3.375 in (82.73 mm) for 2 mounting screws (supplied)
Sensor battery	(2) AA, 1.5 V, 2800 mAh, Lithium, 15-year life
Range(i)	Open range - 2,500 ft (packet error rate = 2) Usable - 200 ft (61 m) Typical - 75 ft (25 m)
Output power	100 mW - North America
Radio frequency	2.4 GHz (IEEE Std 802.15.4-2003 compliant) (2405-2480 MHz, 5 MHz spacing)
Radio channels	16
Address range	000-999
Minimum time between transmissions	30 seconds
Maximum time between transmissions	15 minutes
RoHS compliance	Yes
Agency Listing	UL916 Energy Management Equipment CSA - C22.2 No. 205-M1983 Signal Equipment

(i) Range values are estimated transmission distances for satisfactory operation of the 100 mW version. Estimated transmission distance for the 10 mW version will be less. Actual distance is job specific and must be determined during site evaluation.

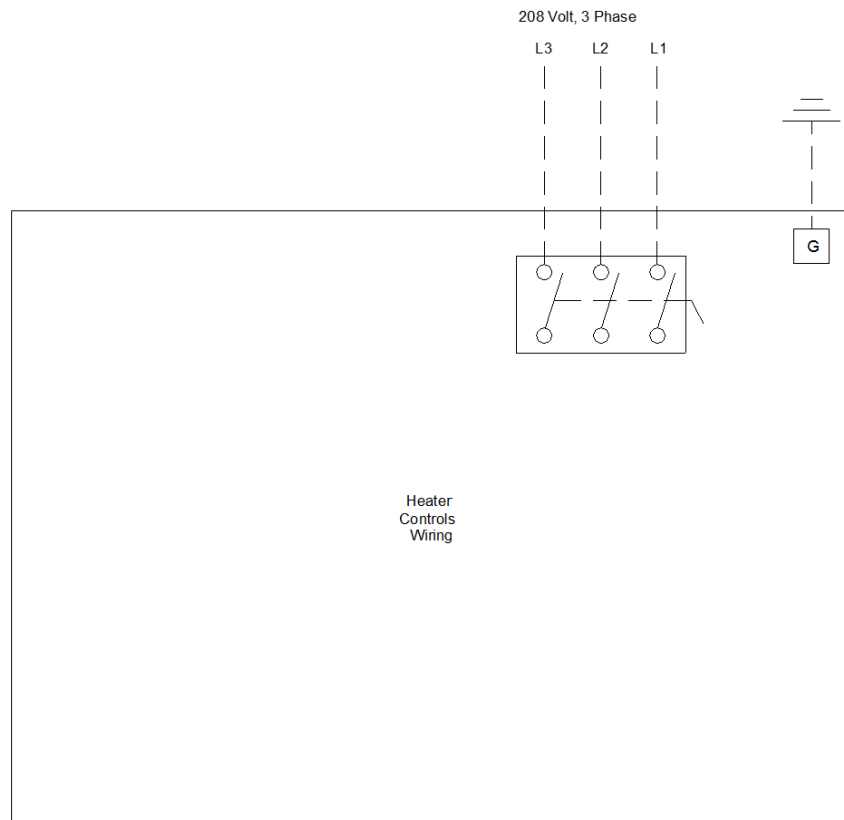
Placement of the receiver and the sensor is critical to proper system operation. In most general office space installations, distance is not the limiting factor for proper radio signal quality. It is more greatly affected by walls, barriers, and general clutter. In general, sheetrock walls and ceiling tiles offer little restriction to the propagation of the radio signal throughout the building as opposed to concrete or metal barriers.

Field Wiring - Variable Air Volume Single Duct Terminal Units

Item: A1 - A15

Qty: 15

Tag(s): VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115

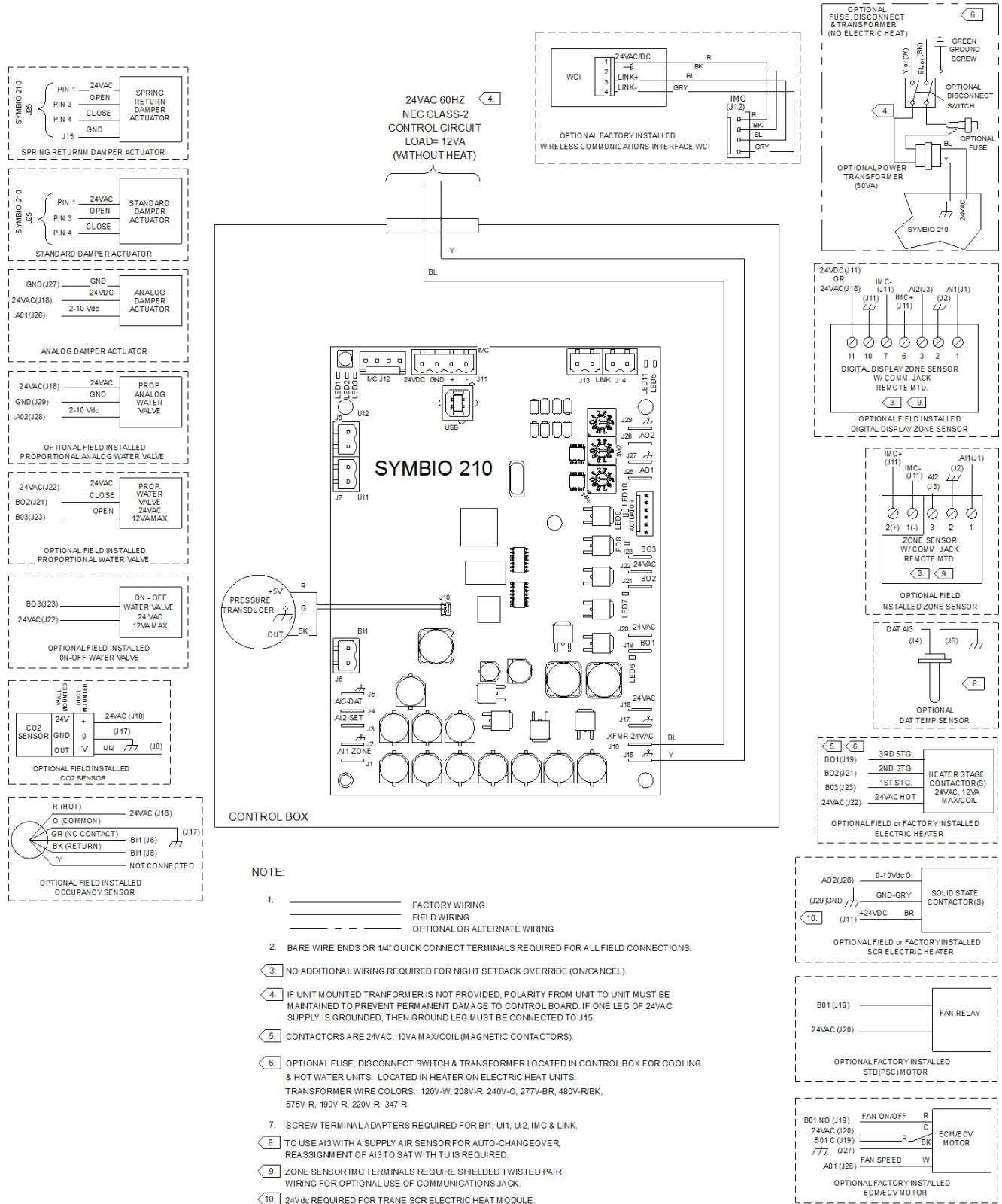


Field Wiring - Variable Air Volume Single Duct Terminal Units

Item: **A1 - A15**

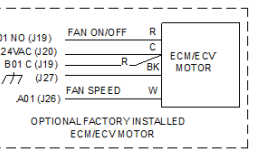
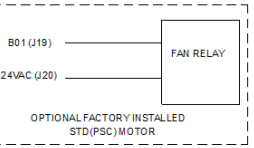
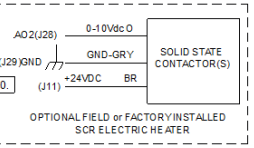
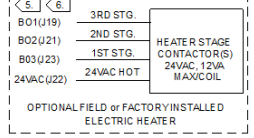
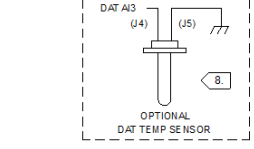
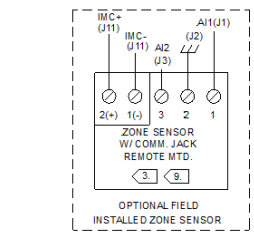
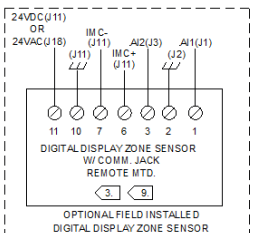
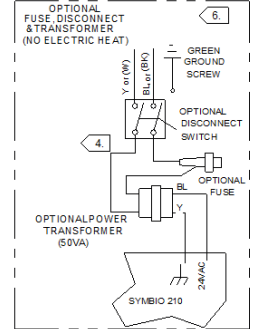
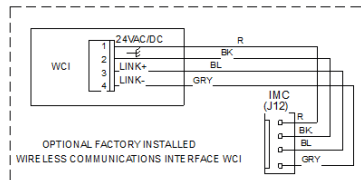
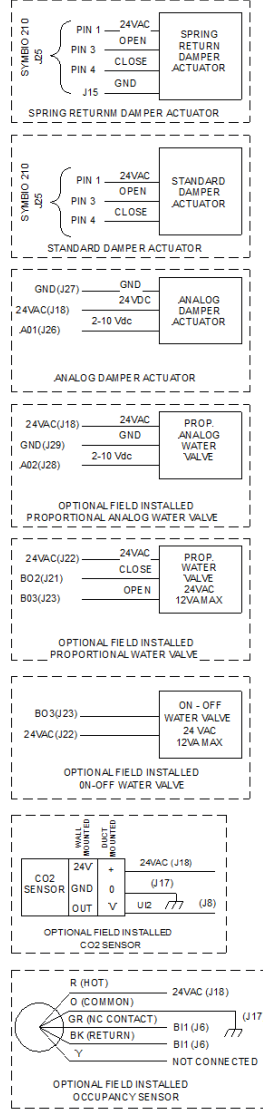
Qty: **15**

Tag(s): **VAV-101, VAV-102, VAV-103, VAV-104, VAV-105, VAV-106, VAV-107, VAV-108, VAV-109, VAV-110, VAV-111, VAV-112, VAV-113, VAV-114, VAV-115**



NOTE:

1. _____ FACTORY WIRING
 _____ FIELD WIRING
 _____ OPTIONAL OR ALTERNATE WIRING
2. BARE WIRE ENDS OR 1/4" QUICK CONNECT TERMINALS REQUIRED FOR ALL FIELD CONNECTIONS.
3. NO ADDITIONAL WIRING REQUIRED FOR NIGHT SETBACK OVERRIDE (ON/CANCEL).
4. IF UNIT MOUNTED TRANSFORMER IS NOT PROVIDED, POLARITY FROM UNIT TO UNIT MUST BE MAINTAINED TO PREVENT PERMANENT DAMAGE TO CONTROL BOARD. IF ONE LEG OF 24VAC SUPPLY IS GROUNDED, THEN GROUND LEG MUST BE CONNECTED TO J15.
5. CONTACTORS ARE 24VAC, 10VA MAX/COIL (MAGNETIC CONTACTORS).
6. OPTIONAL FUSE, DISCONNECT SWITCH & TRANSFORMER LOCATED IN CONTROL BOX FOR COOLING & HOT WATER UNITS. LOCATED IN HEATER ON ELECTRIC HEAT UNITS.
 TRANSFORMER WIRE COLORS: 120V-W, 208V-R, 240V-O, 277V-BR, 480V-RBK, 575V-R, 190V-R, 220V-R, 347-R.
7. SCREW TERMINAL ADAPTERS REQUIRED FOR B11, U1, U2, IMC & LINK.
8. TO USE AI3 WITH A SUPPLY AIR SENSOR FOR AUTO-CHANGEOVER, REASSIGNMENT OF AI3 TO SAT WITH TU IS REQUIRED.
9. ZONE SENSOR IMC TERMINALS REQUIRE SHIELDED TWISTED PAIR WIRING FOR OPTIONAL USE OF COMMUNICATIONS JACK.
10. 24Vdc REQUIRED FOR TRANE SCR ELECTRIC HEAT MODULE.



Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Item	Tag(s)	Qty	Description	Model Number
A1	VAV-101	1	Variable Air Volume Single Duct Terminal	VCEF08--*M0SY95D**0*0F2W0B04515**0345
A2	VAV-102	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A3	VAV-103	1	Variable Air Volume Single Duct Terminal	VCEF16--*M0SY95D**0*0F2W0B15015**0345
A4	VAV-104	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B07015**0345
A5	VAV-105	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A6	VAV-106	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B01015**0345
A7	VAV-107	1	Variable Air Volume Single Duct Terminal	VCEF14--*M0SY95D**0*0F2W0B13015**0345
A8	VAV-108	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B03015**0345
A9	VAV-109	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B03015**0345
A10	VAV-110	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B09015**0345
A11	VAV-111	1	Variable Air Volume Single Duct Terminal	VCEF06--*M0SY95D**0*0F2W0B04015**0345
A12	VAV-112	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B07515**0345
A13	VAV-113	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B09015**0345
A14	VAV-114	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B04515**0345
A15	VAV-115	1	Variable Air Volume Single Duct Terminal	VCEF10--*M0SY95D**0*0F2W0B02015**0345
Field Installed Option Description				Part/Ordering Number
Trane Air-Fi - WCS-SD (display)				X13790955010
DDC sensor with occupancy and set point knob				X13511527010