KORDA

Submittal ID: 89325

Shop Drawing Submittal

Send To: **MOODY NOLAN, INC.**
300 SPRUCE STREET, SUITE 300
COLUMBUS , OH 43215-

Attention: Tanya Anderson

Project Id: **2018-0217** **Project Name:** **Dayton Charter School-Connor Group**

Discipline: HVAC **Spec Description:** 238239 CABINET UNIT HEATERS

Submittal Description: PRODUCT DATA FOR UNIT HEATERS

Date Recv'd: 2/17/2022 **Date Sent:** 2022-03-17

Copies Recv'd: 1 E-COPY **Copies Sent:** 1 E-COPY

Action Taken

- ☐ Approved
- ☑ Approved As Noted
- ☐ Revise and Resubmit
- ☐ Reviewed
- ☐ Returned without review per "Submittals" Specification

Comments:

Logged In By:: AMS **Marked/Logged Out By:** AMS

Checked By: ~~Edwartoski, Dan~~ Ledford, Caleb **Initials:** CJL **Date:** 02.23.2022

Coordinated By: Jones, Rob **Initials:** RRJ **Date:** 2022-03-16

Coordinated By: _____ **Initials:** _____ **Date:** _____

Signature: Caleb Ledford

DAIMLER
Development • Leasing • Construction • Sales

SUBMITTAL SHEET

Job: 1521. - GREATER DAYTON SCHOOL

DATE: 1/26/2022
SPEC #: 23 92 39
REV #: 0

To: **Bernard Costantino**
MOODY NOLAN INC
300 SPRUCE ST
COLUMBUS, OH 43215

From: **Holly Morrow**
THE DAIMLER GROUP INC
1533 LAKE SHORE DRIVE
COLUMBUS, OH 43204

Submittal Title: 23.07-239239 Unit Heaters-TPM-26JAN22

Submittal Item:	**Sent Date:**	**Due Date:**
23.07-239239 Unit Heaters-TPM-26JAN22	1/26/2022	02/02/2022

THE DAIMLER GROUP
SHOP DRAWING REVIEW

REVIEWED ☒

SUBMIT CORRECTED COPIES FOR DISTRIBUTION

Review is for general conformance with the design concept and contract documents. Notations shall not relieve the contractor from compliance with said documents. Contractor is responsible for intended detail and accuracy, confirmation of dimensions and quantities, selecting fabrication processes, techniques of assembly, performing work in a safe manner and coordinating work with other trades.

ARCHITECT STAMP

MOODY•NOLAN
SHOP DRAWING REVIEW
This review is for general conformance with the design concept and the contractor remains responsible for:
a. Compliance with the contract documents.
b. Confirming and correlating quantities and dimensions.
c. Selecting fabrication process and techniques of construction.
d. Coordination of the work with the other trades.

☐ REVIEWED WITH NO CORRECTIONS ☐ REVISE AND RESUBMIT
☑ REVIEWED WITH CORRECTIONS NOTED ☐ NOT REVIEWED

This review neither extends nor alters any contractual obligations of the architect or contractor, and does not authorize changes in the contract sum or contract time.

BY: BJC DATE: 03/17/22

ENGINEER STAMP

JOB NO. 2018-0217 DATE 2022-02-17

SUBMITTALS HAVE BEEN REVIEWED FOR CONFORMANCE WITH THE DESIGN PRINCIPLES AND CONTRACT DOCUMENTS OF THE PROJECT. CONTRACTOR IS NOT RELIEVED FROM HIS SOLE RESPONSIBILITY REGARDING CHECKING OF DIMENSIONS, COORDINATION OF THE WORK OF ALL TRADES, CORRELATION OF DESIGN DOCUMENTS THAT MAY CONTAIN CONTRADICTORY INFORMATION AND FOR INFORMATION THAT PERTAINS TO THE FABRICATION OR CONSTRUCTION PROCESSES, OR TO SAFETY REQUIREMENTS.

DEVIATIONS, IF ANY FROM THE CONTRACT DOCUMENTS NOT CLEARLY NOTED AS SUCH BY THE CONTRACTOR, HAVE NOT BEEN REVIEWED, ARE NOT APPROVED AND CAN BE AUTHORIZED ONLY BY A PROPERLY EXECUTED CHANGE ORDER.

☐ SEE WRITTED COMMENTS DATED

☐ APPROVED
☑ APPROVED AS NOTED
☐ REVISE AND RESUBMIT
☐ REVIEWED
DATE 2022-03-17
BY CJL

KORDA/NEMETH ENGINEERING, INC
1650 WATERMARK DRIVE, SUITE 200, COLUMBUS, OHIO 43215-1094

Additional Notes:

TP Mechanical
CONTRACTORS | SERVICE | FABRICATION

SUBMITTAL DATA

Project:	**The Greater Dayton School**
Bid Category :	**HVAC**
Project No.:	**E1000110**
TP Tab No.:	**209, 227, 232**
Construction Manager:	**Daimler Group**
Architect/Engineer:	**Moody Nolan**
Submittal For:	**Unit Heaters**
Specification #:	**238239**
Manufacturer:	**Various**
Project Manager:	**Travis Rowlette 859-743-8916**

The attached submittal data has been reviewed by TP Mechanical Contractors for compliance with the Architect/Engineer's specifications and plan schedule for this project.

In order to maintain the project schedule, we request that this submittal be returned to TP Mechanical Contractors **within 7 days**.

NOTE: Material cannot be released without Architect/Engineer's approval of submittal.

(Please place stamp of approval here)

X PRODUCT DATA

_____ DRAWINGS

1/18/22 DATE SUBMITTED

_____ DATE RESUBMITTED

T. P. MECHANICAL CONTRACTORS

BY Travis Rowlette TJ

This drawing or brochure has been checked to quality or proper components only. Approval of this drawing or brochure shall not relieve the supplier of responsibility for accuracy or dimensions of full compliance with plans and specifications and purchase order.

1500 Kemper Meadow Drive ♦ Cincinnati, OH 45240 ♦ 513-851-8881 ♦ FAX 513-851-0612

RAYWALL ELECTRIC CABINET UNIT HEATERS

SPEC SECTION: 23 82 39

JOB: **THE GREATER DAYTON SCHOOL**
171 DEEDS PARK DRIVE
DAYTON, OHIO 45404

ENGINEER: **KORDA NEMETH ENGINEERING, INC.**
1650 WATERMARK DRIVE, SUITE 200
COLUMBUS, OHIO 43215

FOR: **TP MECHANICAL CONTRACTORS, INC.**
1500 KEMPER MEADOW DRIVE
CINCINNATI, OHIO 45240

BY: **SPEARS MECHANICAL SYSTEMS, INC.**
123 WEST NATIONAL ROAD
ENGLEWOOD, OHIO 45322

DATE: **JANUARY 14, 2022**

ELECTRIC CABINET UNIT HEATER SCHEDULE

General Note:
Quantities and sizes are the responsibility of the contractor.
-CJL (KORDA)

QTY	TAG	MODEL	KW	VOLTS
2	ECUH1	T33D054833B3DOF	5.0	480v/3ph
1	ECUH2	T33D054833B3DOF	5.0	480v/3ph

Remarks:

1. Heavy ga. steel cabinet w/ durable powder coated paint-color to be selected from manufacturer's standard color chart
2. Two-speed w/ automatic thermal reset overload protection
3. Thermal safety cutout
4. 24-volt control system
5. Built-in low voltage thermostat provided (**ECUH1 only**)
6. Remote wall mounted low voltage thermostat provided (**ECUH2 only**)
7. Unit mounted disconnect switch (factory installed)
8. Throwaway filters provided (one set only)
9. Recessing trim frames provided (field installed)

Product Specifications

The electric cabinet unit heater is designed for mounting in any position, fully recessed, semi-recessed or surface mounted. All capacities, voltages, physical sizes, grille arrangements and options shall be as specified on the plans. All units must be field convertible to the following:

1. For control by a field supplied remote thermostat.
2. Load management control with an external dry switch. When closed unit operates under control of either the internal or the external thermostat. When open, unit turns off.
3. Any grille arrangement.

CABINET & CONSTRUCTION: The cabinet shall be constructed of heavy duty 16 gauge Zinc coated steel. The heater shall have a removable front door for easy access to the control panel, elements, motor-blower assembly, filters and all internal components. The grill configuration must be easily field convertible to any air flow configuration (by removal of no more than four fasteners). The cabinet shall have a textured finish of two coats of powder coat epoxy and be suitable for use with optional kick space base. Made in U.S.A.

HEATING ELEMENTS: The heating elements shall be warranted for 1 year and shall be non-glowing design consisting of special high temperature resistance wire enclosed in an incoloy sheath to which steel fins are furnace brazed. The heating elements shall be located directly in front of the blower discharge air for uniform heating. They shall be mounted with a single anchor at one end to minimize effects of thermal expansion and contraction.

SAFETY CUTOUT: Thermal safety limits shall be built into the system to automatically shut off heater in event of overheating due to any cause. The safety cutouts shall be of two types:

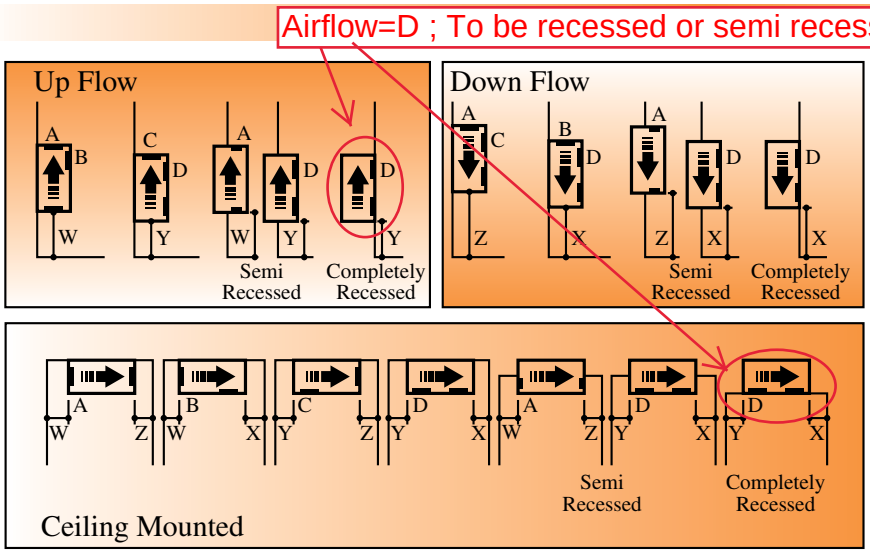
A. The primary limit shall be an automatic capillary type to sense the heat along the full length of the heating elements. It shall de-energize the heaters by opening the coil circuit on the heating contactors.
B. The secondary limit shall be a manual reset thermal device to interrupt power to the heating elements.

MOTOR AND BLOWER ASSEMBLY: The motors and blowers shall be direct drive and resiliently mounted on rigid heavy gauge frame for quiet operation and long life. The motor shall be two-speed, shaded pole type, rated for the voltage (480 to 600 Volts are single speed only). Each shall have built-in automatic reset overload protection and are life time lubricated. The motor shall be vented and mounted in the air stream to provide maximum cooling of the motor.

HIGH AND LOW HEAT RANGES: All units will be supplied as standard with a switch for selecting full heat at high fan speed or reduced heat at low fan speed (On 480 & 600 Volt units the switch changes the heat but not the fan speed).

OVER CURRENT PROTECTION: Circuit breakers shall be provided for branch circuit protection where required by NEC. Circuit breakers are optional on all other heaters.

TEMPERATURE CONTROL: Integral factory installed thermostat shall be tamper resistant, linear capillary type. Optional setback thermostat available.



KEY: **W** = 6" minimum, **X** = 12" minimum, **Y** = 0" or greater, **Z** = 24" minimum

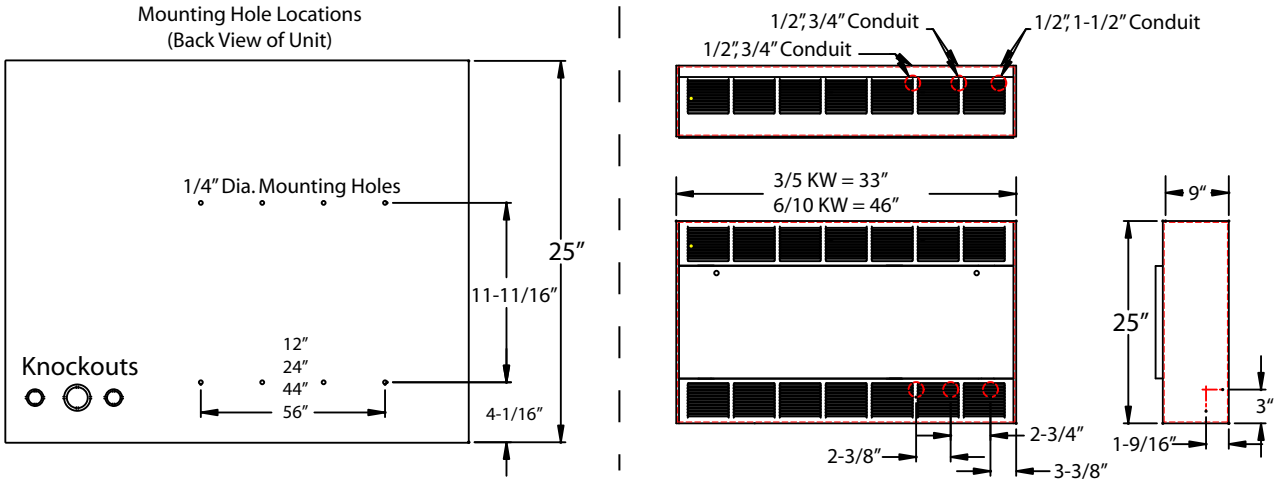
NOTE: Semi-recessed units are to be recessed at a maximum of 3 ½" unless grill configuration is front in and front out.

MOUNTING CLEARANCES: Proper clearances are indicated for each mounting configuration on all positions. Minimum clearance from side of unit to the wall is zero inches. Mounting inches are provided in the back of the cabinet, accessible through the blower compartment, if necessary, remove blower deck if additional mounting screws or bolts are desired. Blower deck may be slipped forward by loosening four screws at the front to provide access to mounting holes.

Product Features (2-24 KW; All Voltages)

- For commercial and institutional application such as stores, schools, offices, transportation terminals, churches, entranceways.
- Wall or ceiling mount; surface, semi-recessed or fully recessed.
- (8) air inlet and outlet configurations.
- Capacities from 2-24 KW with 230 to 1,000 CFM
- Motors are two speed, shaded pole, resilient mounted, direct drive. High/low heat and blower speed offer versatility.
- ETL Listed.
- Beige powder coated finish
- Choice of eight standard control options include unit or wall mounted 120 or 24V thermostats, with or without built-in control transformers, setback thermostat option
- Industrial type finned tubular elements.
- Easily removable fan and element decks for simplified maintenance.
- Full length thermal protection.
- Limited warranty-one year.
- Optional locking front cover

Product Dimensions



Stocked Models & Features

HEATER LENGTH	MFG CATALOG NUMBER	MFG MODEL NUMBER	HIGH				LOW				VOLTS	PHASE	WT. (LBS)
			KW	BTUs	AMPS	CFM	KW	BTUs	AMPS	CFM			
33"	06671402	T33D052033B30D0F	5	17065	25.0 / 17.6	250	3	10239	15.4 / 9.2	230	208	1-3*	99
	06671502	T33D052433B30D0F			21.8 / 15.4				13.5 / 8.2		240	1-3*	
	06670802	T33D054833B30D0F			7.8				4.6		480	3	
46"	06671902	T46D102433B30D0F	10	34130	43.6 / 30.7	500	6	20478	26.9 / 16.2	460	240	1-3*	130
	06672002	T46D104833B30D0F			15.4				8.1		480	3	
International Models													
33"	04736202	6333D053834B30D0F1	5	17065	7.6	250	3	10239	4.56	230	380	3 (4-Wire)	99
	04736302	6333D054134B30D0F1			6.97				4.18		415		
46"	04736402	6346D103834B30D0F1	10	34130	15.2	500	6	20478	9.12	460	380		130
	04736502	6346D104134B30D0F1			13.94				8.36		415		

*Factory wired for 3-phase, field convertible to 1-phase.

- 01 / 3 phase field convertible with 24 Volt control circuit.
- 0Disconnect switch, dust filter, & high low operation.
- 0Built-in thermostat and field convertible for remote thermostat.

Accessories

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE	DESCRIPTION
DUCT COLLAR			
04415602	DC-33	33"	The same model is used for the inlet or outlet. If duct collars are required for both inlet & outlet then 2 must be ordered.
04415702	DC-46	46"	
04415802	DC-66	66"	
04415902	DC-79	79"	
RECESSING TRIM FRAMES			
04537802	TF-33	33"	Recessing Trim Frames should be ordered to "trim-out" any recessed or semi-recessed installation.
04537902	TF-46	46"	
04538002	TF-66	66"	
04538102	TF-79	79"	

MFG CATALOG NUMBER	MFG MODEL NUMBER	SIZE
Fresh Air Make-Up Intake Flange & Kickbase		
07715802	FAM33	33"
07715902	FAM46	46"
07716002	FAM66	66"
07716102	FAM79	79"
Kickbase (Pedestal) ONLY		
07715402	KB33	33"
07715502	KB46	46"
07715602	KB66	66"
07715702	KB79	79"

Locking Cover Option

SD Setback Thermostat Option

T SD Series Features

- Multi-stage operation-only using the heat you need, when you need it
- 65 second delay between stages
- Sensor has a 94 degree angular range and a 16' linear range
- 50-90 degree thermostat range
- Setback capability up to 12 degrees - field set. Achieves energy savings when area not occupied and heat not needed
- Purge cycle of 90 seconds allows residual heat to be exhausted from heater
- Factory pre-programmed for system type/voltage
- Easy steps to set thermostat and setback feature
- Occupancy sensor defaults to economy mode after one hour, up to 12 degree setback
- Sensor has a 94 degree angular range and a 16' linear range

LENGTH	KW		Elements per Heat Deck		CFM		1-PHASE UNITS - AMPS (HIGH)				3-PHASE UNITS - AMPS (HIGH)			
							208V	240V	277V	600V	208V	240V	480V	600V
	High	Low	Left	Right	High	Low							3-WIRE	
33"	2	1	2		250	230	10.6	9.3	8.12	3.8	9.2	8.1	4.1	3.3
	3	2	3				15.4	13.5	11.7	5.5	9.2	8.1	4.1	3.4
	4	2	4				20.2	16.7	15.3	7.2	13.4	11.8	6	6.22
	5	3	5				25	21.8	19	8	17.6	15.4	7.8	5.5
	6	3	6				29.9	26	22.6	10.5	17.6	15.4	7.8	6.3
46"	4	2	2		500	460	21.1	18.6	16	7.46	18.7	16.2	8.1	6.5
	6	4	3				30.8	26.9	23.1	10.79	18.4	16.2	8.1	6.5
	8	4	4				40.4	35.2	30.5	14.12	26.7	23.4	11.7	9.4
	10	6	5				50	43.6	37.7	17.5	35.1	30.7	15.4	12.3
	12	6	6				59.6	51.9	44.9	20.8	35.1	30.7	15.4	12.3
66"	6	3	2	2	750	690	31.8	27.9	24.1	11.3	27.6	24.3	12.3	9.8
	9	6	3	3			46.2	40.4	35	16.3	27.6	24.3	12.3	9.9
	12	6	4	4			60.6	52.9	45.8	21.3	40.1	35.2	17.7	15.6
	15	9	5	5			75	65.4	56.7	25.5	52.6	46.1	23.1	15.7
	18	9	6	6			89.4	77.9	67.5	31.3	52.6	46.1	23.1	18.5
79"	8	4	2	2	1000	920	42.3	37.1	32	14.9	36.7	32.3	16.2	13
	12	8	3	3			61.5	53.8	46.5	21.6	36.7	32.3	16.2	13
	16	8	4	4			80.7	70.5	61	28.2	53.4	46.8	23.5	18.8
	20	12	5	5			NA	87.1	75.4	34.9	70.1	61.4	30.7	24.6
	24	12	6	6			NA	NA	89.8	41.6	70.1	61.4	30.7	24.6

Note: Amps include motor Amp loads.

Custom Specified Models

HOW TO DESIGNATE A MODEL:

T	46	D	08	24	1	2	B3	S	D	O	F
Series Number	Cabinet Size 33 = 33" 46 = 46" 66 = 66" 79 = 79"	Air Flow Configuration A = Bottom in / Top out B = Bottom in / Front out C = Front in / Top out D = Front in / Front out	Element KW 2KW through 24KW See model chart for length and KW options.	Element Voltage 20 = 208V 24 = 240V 27 = 277V 41 = 415V 48 = 480V 57 = 600V	Phase 1 = Single Phase 3 = Three Phase	Number of Wires in Electrical Service 2, 3, or 4	Control Options B3, B4, B5, B6 (see control options chart) SD = Setback	Summer Fan Switch S = Included O = Not Included	Disconnect Option C = Circuit Breaker D = Disconnect Switch O = None	Motor Fusing Option M = Required O = Not Required	Disposable Filter Option F = Required O = Not Required L = Locking Front Cover
Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12

Control Option (Step 8 on Model Designator)

SUFFIX	DESCRIPTION
B3	In-Built 1-Stage Stat and Relays which are operated by an internal 24 Volt source. (40 °F-110 °F)
B4*	In-Built 1-Stage Stat and Relays which are operated by an internal 120 Volt source. (40 °F-110 °F)
B5	In-Built 2-Stage Stat & Relays which are operated by an internal 24 Volt source. (40 °F-110 °F)
B6*	In-Built 2-Stage Stat and Relays which are operated by an internal 120 Volt source. (40 °F-110 °F)
SD	Setback Thermostat

*Motor fusing included for units with 120V internal or external control source.

Disconnect Option "C" Circuit Breaker (Step 10 on Model Designator)

KW	SINGLE PHASE				THREE PHASE			
	208V	240V	277V	600V	208V	340V	480V	600V
2	available	available	available	available	available	available	available	available
3								
4								
5								
6								
8								
10	required	required	required		required	required		
12								
15								
16								
18								
20	N/A	N/A						
24								

Circuit breakers shown in shaded areas are required by NEC because unit exceeds 48 Amps, all others listed are optional unless otherwise stated.

Disconnect Option "D" Disconnect Switch (Step 10 on Model Designator)

KW	SINGLE PHASE				THREE PHASE			
	208V	240V	277V	600V	208V	340V	480V	600V
2	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"	available without circuit breaker option "C"
3								
4								
5								
6								
8								
10	N/A	N/A	N/A		N/A			
12								
15								
16								
18								
20						N/A		
24								

Disconnect option is not available on heaters with circuit breaker.

Fan Switch & Motor Fusing (Steps 9 & 11 on Model Designator)

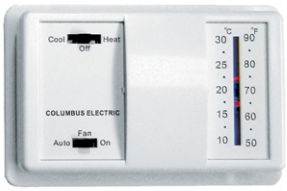
SUFFIX	DESCRIPTION
S	Summer Fan Switch
M	Motor Fusing (when not provided by control option)

Filter Option (Step 12 on Model Designator)

SUFFIX	SIZE	Qty. REQ'D	FILTER TYPE
F	33"	1	Replaceable
	46"	1	
	66"	2	
	79"	2	
W	33"	1	Washable
	46"	1	
	66"	2	
	79"	2	
L	Locking Cover		

Thermostats & Controls

UT Series - Low Voltage



Features

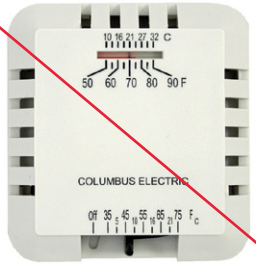
- Vertical or horizontal mounting
- Long life sealed contacts
- Does not contain Mercury
- Leveling not required
- Fahrenheit and Celsius temperature scales
- 2-3°F rated differential
- Anticipator (except UT9001)

Standard Models

ECUH2 Only

UPC# 686334	MODEL	DESCRIPTION	VOLTAGE	TERMINALS	SWITCHES
523059	UT1001	Heat Only	24VAC or MV	R &W	None
523066	UT3001	Cool Only	24 VAC	R, Y & G	Cool/Off Fan/Auto
523127	UT5001	Single Stage Heat Pump	24 VAC	R, Y, G, B, O	Heat/Off/Cool Fan/ Auto
523134	UT6001	Deadband	24 VAC	R, W & Y	None
523073	UT8001	Heat/Cool	24 VAC	RC, RH, W, Y, & G	Heat/Off/Cool Fan/ Auto
523110	UT9001	Heat Only	Millivolt	R & W	None
Master Carton: 50 pcs, 17 lbs, 19" x 11.5" x 9"					

RK Series - Low Voltage



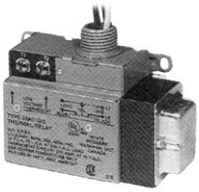
Features

- Heat only models
- Positive off
- Does not contain Mercury
- Leveling not required
- Long life sealed contacts
- Fahrenheit and Celsius temperature scales
- 2-3°F rated differential

Standard Models

UPC # 686334	MODEL	DESCRIPTION	VOLTAGE	RANGE	ANTICIPATOR
526012	RK120EAA	Heat Only	24VAC or MV	50°-90°F	Yes
526203	RK124EAA	Heat Only	24VAC or MV	35°-75°F	Yes
526050	RK130EAA	Heat Only	Millivolt	50°-90°F	No
526326	RK134EAA	Heat Only	Millivolt	35°-75°F	No
526142	RKWP1AA	Wall Plate	NA	NA	NA
Master Carton: 100 Pcs, 24 lbs, 16.5" x 15" x 8"					

Low Voltage Relays



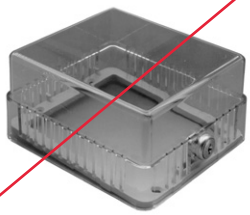
Features

- Snap action switch
- 1/2" male conduit spud
- 45 second average time delay
- Temperature range - 50° - 90°F
- In-Built transformer

Standard Models

UPC# 686334	MODEL	PRIMARY VOLTAGE	DESCRIPTION
260039	24A05A-1	120 Volts	Single Switch, single throw with In-Built Transformer for remote mounting or in a factory provided optional enclosure
260046	24A05E-1	208 Volts	
260053	24A01G-3	240 Volts	
260107	24A06G-1	240 Volts	Two switch, single throw with In-Built Transformer, 25 Amps per switch
562065	R842-277	277 Volts	277 Volt primary to 24 Volt relay.

TG Series Thermostat Guards



Features

- 8 tumbler locks

Standard Models

UPC# 686334	MODEL	DESCRIPTION
589123	TG1	Plastic Stat Guard/ 6 1/4" x 3 5/8" x 3 1/4" Opening
589109	TG1B	Metal Stat Guard/ 5 1/4" x 4 5/8" x 3" Opening
589130	TG2	Plastic Stat Guard/ 5 1/4" x 4 5/8" x 3 1/4" Opening
589161	TG2B	Metal Stat Guard/ 6 1/4" x 3 5/8" x 3 1/4" Opening
589116	TG3	Plastic Stat Guard/ 8 1/8" x 4 5/8" x 3 5/8" Opening
589178	TG3B	Metal Stat Guard/ 6 3/4" x 4 1/2" x 3 1/2" Opening

Raywall/Read

Raywall

Sill Line Cabinet Convector Color Selection Chart

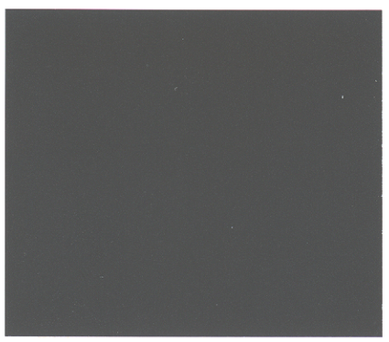
Standard Colors - Powder Coated ***Color to be selected

EGGSHELL WHITE

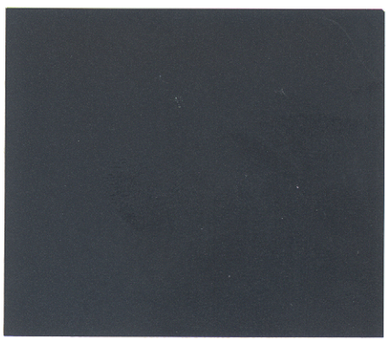
WHITE

STANDARD ANODIZED COLORS
CLEAR ANODIZED

BEIGE

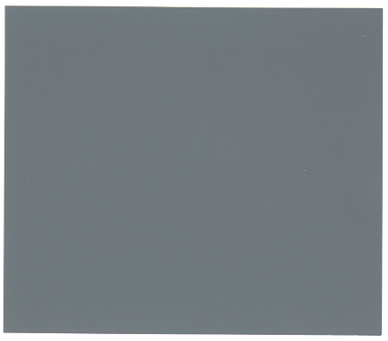


BANKER'S BRONZE

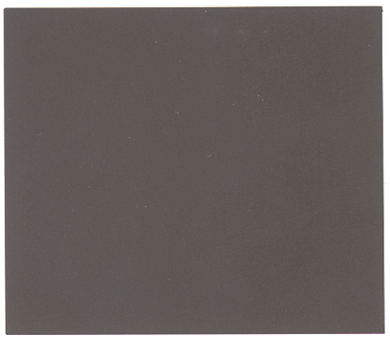


BLACK

IVORY



GRAY



BRONZE ANODIZED

Custom colors available upon request.

REV. 10/01

FIN.S-3

RITTLING HOT WATER CABINET UNIT HEATERS

SPEC SECTION: 23 82 39

JOB: **THE GREATER DAYTON SCHOOL**
171 DEEDS PARK DRIVE
DAYTON, OHIO 45404

ENGINEER: **KORDA NEMETH ENGINEERING, INC.**
1650 WATERMARK DRIVE, SUITE 200
COLUMBUS, OHIO 43215

FOR: **TP MECHANICAL CONTRACTORS, INC.**
1500 KEMPER MEADOW DRIVE
CINCINNATI, OHIO 45240

BY: **SPEARS MECHANICAL SYSTEMS, INC.**
123 WEST NATIONAL ROAD
ENGLEWOOD, OHIO 45322

DATE: **JANUARY 14, 2022**

HOT WATER CABINET UNIT HEATER SCHEDULE

General Note:
Quantities and sizes are the responsibility of the contractor.
-CJL (KORDA)

QTY	TAG	MODEL	VOLTS
1	CUH1	RFRW-340-06	115v/1ph
3	CUH2	RW-280-06	115v/1ph
1	CUH3	RFRC-420-06	115v/1ph
1	CUH4	RFRC-420-10	115v/1ph

Remarks:

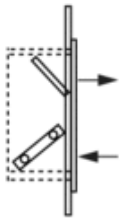
1. Vertical fully recessed wall mounted type w/ recess trim kit (**CUH1 only**)
2. Vertical surface wall mounted type w/ front stamped louver outlet & inlet (**CUH2 only**)
3. Horizontal fully recessed ceiling mounted type w/ recess trim kit (**CUH3&4 only**)
4. 16-gauge steel cabinet construction w/ cabinet insulation
5. Powder coat finish-color selected from standard color chart-selected by Architect
6. **PSC motor** w/ thermal overload protection
7. Hot water coil w/ manual air vent
8. 1" throwaway filter (one set only)
9. 24-volt control transformer included (factory installed)
10. Unit mounted power disconnect switch (factory installed)
11. 3-speed switch (field installed)
12. Unit mounted low voltage thermostats w/ remote temp sensor (**Wall mounted units only**)
13. Remote wall mounted low voltage thermostats included (**Ceiling mounted units only**)

Model

RFRW-340-06

Project:	**The Greater Dayton Connor Group**
Tag:	**CUH1**

Qty	Coil Config	Unit Voltage	Inlet/Outlet	Motor
1	**2-row**	**120/60/1**	**LVR IN, LVR OUT**	**PSC STD**



RFRW-340 - RECESSED, FRONT IN, FRONT OUT

General Information

Air Flow:	**620**	CFM
Fan Speed:	**High**	
ESP:	**0**	in. H2O
Altitude:	**0**	Feet
Filter:	**1" throwaway filter**	

Motors

Motor Voltage	Motor Desc	HP (ea.)	FLA (ea.)
120/60/1	**STANDARD**	**1/15**	**1.13**

Hot Water Heat

Capacity:	**29.0**	MBH
Entering Air Temperature:	**65.0**	°F
Leaving Air Temperature:	**107.8**	°F
Fluid Flow:	**1.9**	GPM
Entering Fluid Temperature:	**140.0**	°F
Leaving Fluid Temperature:	**109.0**	°F
Fluid ΔT:	**31.0**	°F
Fluid Pressure Drop:	**1.3**	ft. H2O
Fluid Type:	**Water**	
Glycol %:	**0**	
Rows / FPI:	**2/12**	

Unit Information

Shipping Weight*:	**155.0**	lbs.
Unit Length:	**62.2**	inches
Unit Width:	**10**	inches
Unit Height:	**24**	inches

* Weight is base unit only, does not include any options or accessories selected

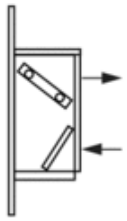
The results reported herein are based on testing by Zehnder Rittling. Variations in the installation and operational environment may alter performance. Zehnder Rittling disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. Continuous research and development may result in a change to an appliances design and specifications, which Zehnder Rittling may change without notice

Model

RW-280-06

Project:	The Greater Dayton Connor Group
Tag:	CUH2

Qty	Coil Config	Unit Voltage	Inlet/Outlet	Motor
3	2-row	120/60/1	LVR IN, LVR OUT	PSC STD



RW-280 - FRONT IN, FRONT OUT

General Information

Air Flow:	620	CFM
Fan Speed:	High	
ESP:	0	in. H2O
Altitude:	0	Feet
Filter:	1" throwaway filter	

Motors

Motor Voltage	Motor Desc	HP (ea.)	FLA (ea.)
120/60/1	STANDARD	1/15	1.13

Hot Water Heat

Capacity:	29.0	MBH
Entering Air Temperature:	65.0	°F
Leaving Air Temperature:	107.8	°F
Fluid Flow:	1.9	GPM
Entering Fluid Temperature:	140.0	°F
Leaving Fluid Temperature:	109.0	°F
Fluid ΔT:	31.0	°F
Fluid Pressure Drop:	1.3	ft. H2O
Fluid Type:	Water	
Glycol %:	0	
Rows / FPI:	2/12	

Unit Information

Shipping Weight*:	155.0	lbs.
Unit Length:	62.2	inches
Unit Width:	10	inches
Unit Height:	24	inches

* Weight is base unit only, does not include any options or accessories selected

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Model

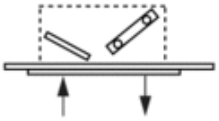
RFRC-420-06

Project:	The Greater Dayton Connor Group
Tag:	CUH3

Qty	Coil Config	Unit Voltage	Inlet/Outlet	Motor
1	2-row	120/60/1	LVR IN, LVR OUT	PSC STD

General Information

Air Flow:	620	CFM
Fan Speed:	High	
ESP:	0	in. H2O
Altitude:	0	Feet
Filter:	1" throwaway filter	



RFRC-420 - RECESSED, BOTTOM IN, BOTTOM OUT

Motors

Motor Voltage	Motor Desc	HP (ea.)	FLA (ea.)
120/60/1	STANDARD	1/15	1.13

Hot Water Heat

Capacity:	29.0	MBH
Entering Air Temperature:	65.0	°F
Leaving Air Temperature:	107.8	°F
Fluid Flow:	1.9	GPM
Entering Fluid Temperature:	140.0	°F
Leaving Fluid Temperature:	109.0	°F
Fluid ΔT:	31.0	°F
Fluid Pressure Drop:	1.3	ft. H2O
Fluid Type:	Water	
Glycol %:	0	
Rows / FPI:	2/12	

Unit Information

Shipping Weight*:	155.0	lbs.
Unit Length:	62.2	inches
Unit Width:	10	inches
Unit Height:	24	inches

* Weight is base unit only, does not include any options or accessories selected

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Model

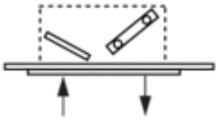
RFRC-420-10

Project:	The Greater Dayton Connor Group
Tag:	CUH4

Qty	Coil Config	Unit Voltage	Inlet/Outlet	Motor
1	2-row	120/60/1	LVR IN, LVR OUT	PSC STD

General Information

Air Flow:	940	CFM
Fan Speed:	High	
ESP:	0	in. H2O
Altitude:	0	Feet
Filter:	1" throwaway filter	



RFRC-420 - RECESSED, BOTTOM IN, BOTTOM OUT

Motors

Motor Voltage	Motor Desc	HP (ea.)	FLA (ea.)
120/60/1	STANDARD	1/15	1.13
120/60/1	STANDARD	1/15	1.13

Hot Water Heat

Capacity:	38.0	MBH
Entering Air Temperature:	65.0	°F
Leaving Air Temperature:	102.1	°F
Fluid Flow:	2.3	GPM
Entering Fluid Temperature:	140.0	°F
Leaving Fluid Temperature:	106.4	°F
Fluid ΔT:	33.6	°F
Fluid Pressure Drop:	0.3	ft. H2O
Fluid Type:	Water	
Glycol %:	0	
Rows / FPI:	2/12	

Unit Information

Shipping Weight*:	185.0	lbs.
Unit Length:	76.2	inches
Unit Width:	10	inches
Unit Height:	24	inches

* Weight is base unit only, does not include any options or accessories selected

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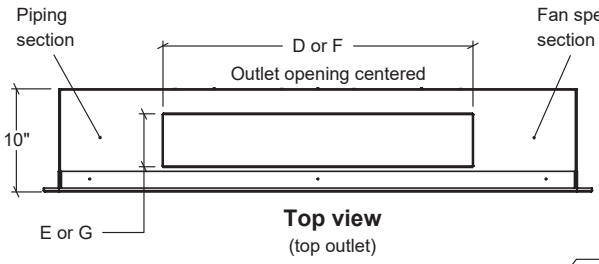
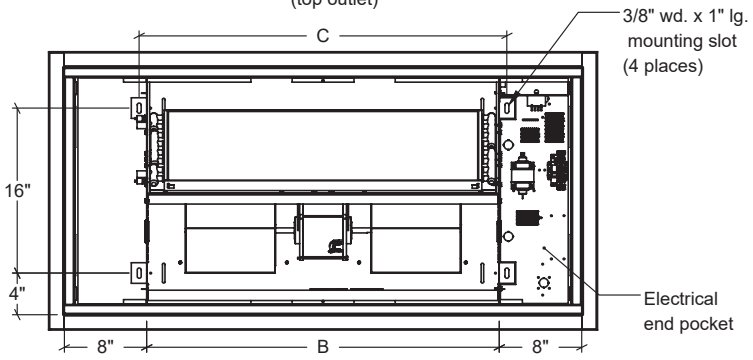
Dimensions and data

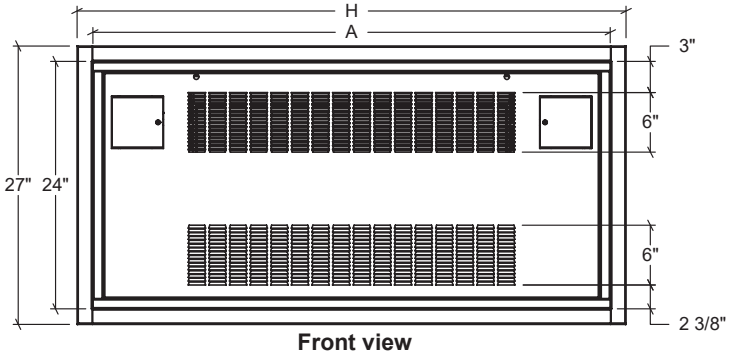
Models RRW, RFRW, RRC, RFRC, RRWI and RFRWI



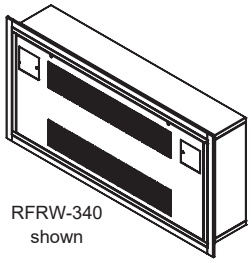
Top view
(top outlet)



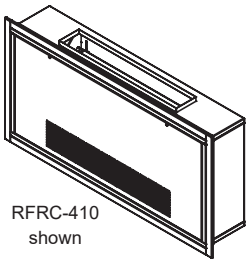
Front view
(less front panel)



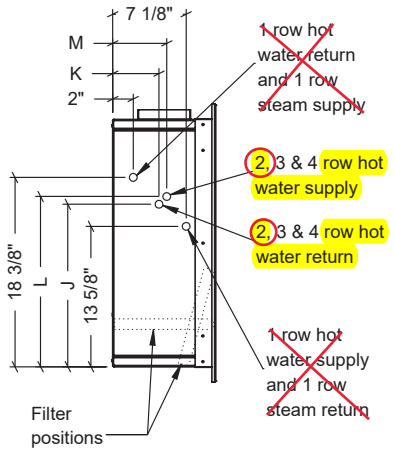
Front view
(Front outlet)



RFRW-340 shown



RFRC-410 shown



Side view: Model RRW, RFRW, RRC and RFRC

CUH1
CUH3

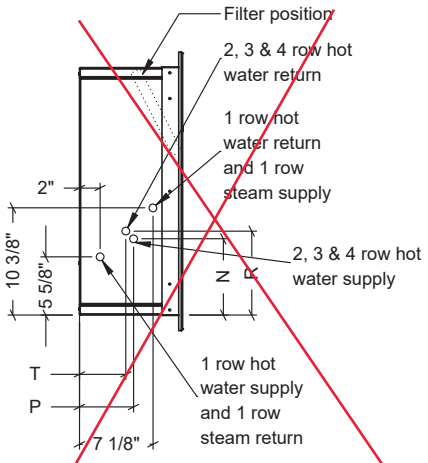
Dimensional data

Unit size	A			B	C	Louvers		Duct opening		H		
	Std.	6" Ext.	6" Ext. x2			D	E	F	G	Std.	6" Ext.	6" Ext. x2
02	38-3/16	44-3/16	50-3/16	22-3/16	24	20	6	18-3/8	5-1/8	41-3/16	47-3/16	53-3/16
03	44-3/16	50-3/16	56-3/16	28-3/16	30	26	6	24-3/16	5-1/8	47-3/16	53-3/16	59-3/16
04	50-3/16	56-3/16	62-3/16	34-3/16	36	32	6	30-3/16	5-1/8	53-3/16	59-3/16	65-3/16
06	62-3/16	68-3/16	74-3/16	46-3/16	48	44	6	42-3/16	5-1/8	65-3/16	71-3/16	77-3/16
08	68-3/16	74-3/16	80-3/16	52-3/16	54	50	6	48-3/16	5-1/8	71-3/16	77-3/16	83-3/16
10	76-3/16	82-3/16	88-3/16	60-3/16	62	58	6	56-3/16	5-1/8	79-3/16	85-3/16	91-3/16
12	86-3/16	92-3/16	98-3/16	70-3/16	72	68	6	66-3/16	5-1/8	89-3/16	95-3/16	101-3/16

CUH4

Notes:

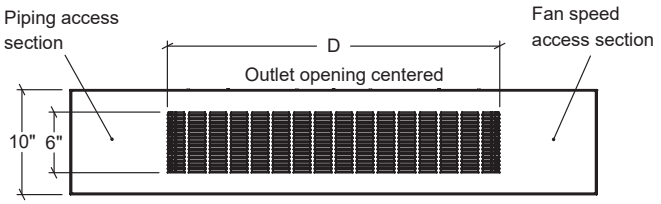
- 1 and 2 row coil supply and return 1/2" nominal (5/8" OD) all sizes
- Unit shown with left hand piping connections and right hand electrical connections as standard
- Right hand piping connections with left hand electrical connections available as an option
- Piping hand determined when facing the air outlet
- All listed dimensions are approximate and are subject to change without notice
- Modifications to the product specifications must be accepted by Zehnder Rittling at its base office
- See www.zehnder-rittling.com for any recent updates or changes



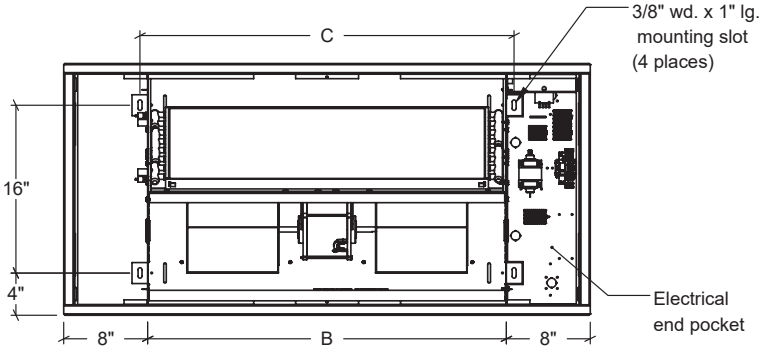
Side view: Model RRWI and RFRWI

Dimensions and data

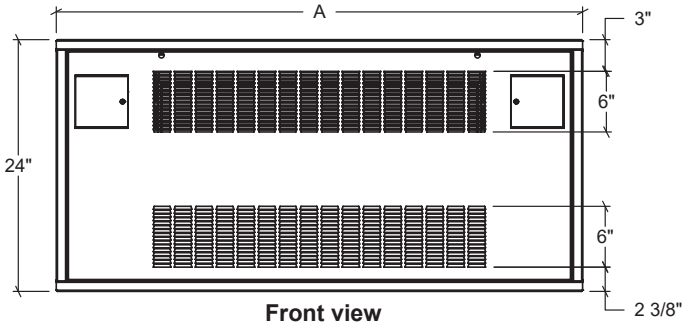
Models RW, RWI and RC



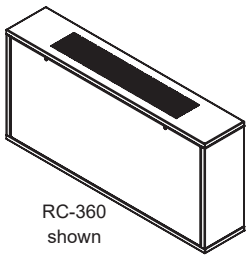
Top view
(top outlet)



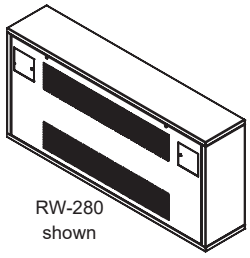
Front view
(less front panel)



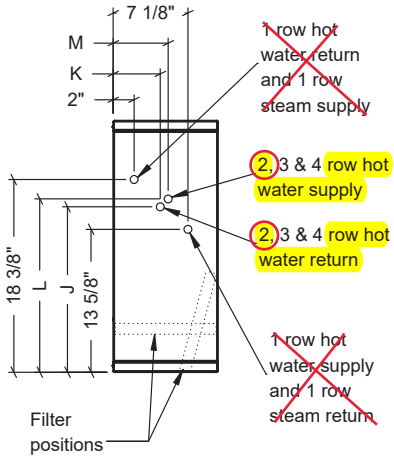
Front view
(Front outlet)



RC-360
shown



RW-280
shown

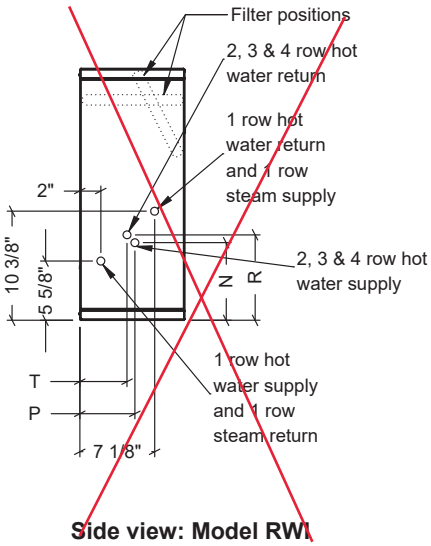


Side view: Model RW and RC

CUH2

Dimensional data

Unit size	A			B	C	Louvers		Ducted opening	
	Std.	6" Ext.	6" Ext. x2			D	E	F	G
02	38-3/16	44-3/16	50-3/16	22-3/16	24	20	6	18-3/8	5-1/8
03	44-3/16	50-3/16	56-3/16	28-3/16	30	26	6	24-3/16	5-1/8
04	50-3/16	56-3/16	62-3/16	34-3/16	36	32	6	30-3/16	5-1/8
06	62-3/16	68-3/16	74-3/16	46-3/16	48	44	6	42-3/16	5-1/8
08	68-3/16	74-3/16	80-3/16	52-3/16	54	50	6	48-3/16	5-1/8
10	76-3/16	82-3/16	88-3/16	60-3/16	62	58	6	56-3/16	5-1/8
12	86-3/16	92-3/16	98-3/16	70-3/16	72	68	6	66-3/16	5-1/8



Side view: Model RWI

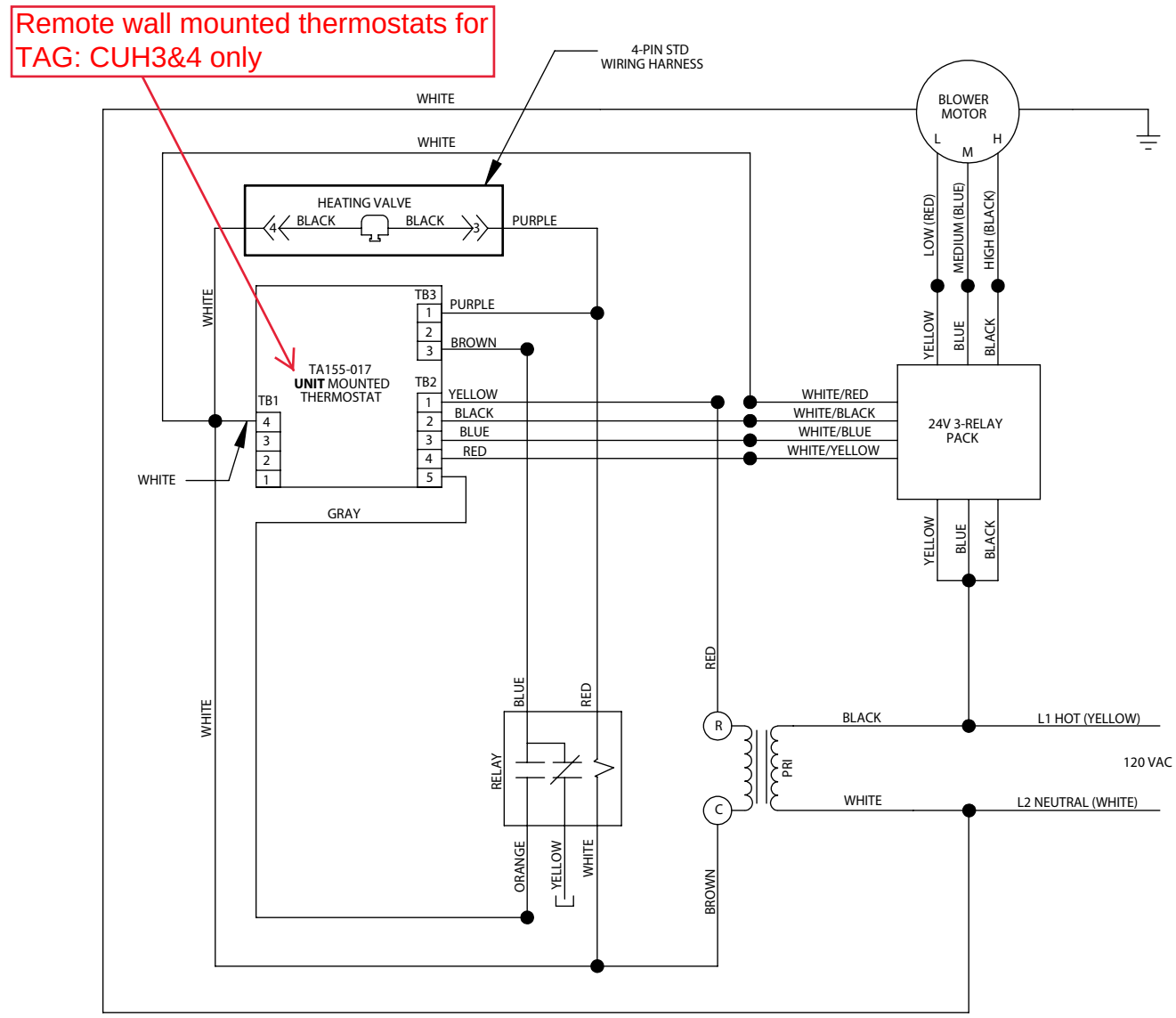
Notes:
- 1 and 2 row coil supply and return 1/2" nominal (5/8" OD) all sizes
- Inlet grille optional
- Unit shown with left hand piping connections and right hand electrical connections as standard
- Right hand piping connections with left hand electrical connections available as an option
- Piping hand determined when facing the air outlet
- All listed dimensions are approximate and are subject to change without notice
- Modifications to the product specifications must be accepted by Zehnder Rittling at its base office
- See www.zehnder-rittling.com for any recent updates or changes

Table A: Standard ratings and specifications

Specifications		02	03	04	06	08	10	12
Coil	FPI	12	12	12	12	12	12	12
	Face area, ft2	1.25	1.67	2.08	2.92	3.33	3.89	4.58
	Coil connections	1/2" Cu	1/2" Cu	1/2" Cu	1/2" Cu	1/2" Cu	1/2" Cu	1/2" Cu
Blower	Quantity	1	1	2	2	1, 2	4	4
	Diameter	5.7"	5.7"	5.7"	5.7"	5.7"	5.7"	5.7"
	Width	7.5"	10.4"	7.5"	10.4"	7.5", 10.4"	7.5"	10.4"
Filter	Number	1	1	1	1	1	1	1
	Length, in.	22	28	34	46	52	60	70
	Width, in. - standard	9.75	9.75	9.75	9.75	9.75	9.75	9.75
	Width, in. - floor with inlet grille	7.25	7.25	7.25	7.25	7.25	7.25	7.25
	Rating	Merv 4	Merv 4	Merv 4	Merv 4	Merv 4	Merv 4	Merv 4
	Thickness, in.	1	1	1	1	1	1	1
Cabinet size	Length, in.	38.2	44.2	50.2	62.2	68.2	76.2	86.2
	Width, in.	10	10	10	10	10	10	10
	Height, in. - wall/ceiling	24	24	24	24	24	24	24
	Height, in. - flat top floor	26.5	26.5	26.5	26.5	26.5	26.5	26.5
	Height, in. - slope top floor	29.25	29.25	29.25	29.25	29.25	29.25	29.25
Shipping weight, lbs.		85	100	115	140	155	170	195

Notes

- Airflows for floor mounted units with 1-row coil. Please check with factory for adjusted outputs on other models
- Heating capacity based on inlet air 60 ˚F DB, 200˚F entering water or 2 psig steam, 180˚F leaving water, standard motor at high fan speed
- Pressure drop (PD) shown in feet of water
- Overall length for fully and partially recessed units is length +3", adding in the trim kit. Wall rough-in hole dimension to be length +1/2" by 24-1/2" minimum. Maximum opening to be length by +2" by 26".



Field wired | Factory wired 18AWG | Factory wired 16AWG | Wire connection | Factory wire, not connected | Wire termination

Contractor _____

Architect _____

Engineer _____

Representative _____

Location _____

Notes:

- Thermostat shipped loose if wall mounted
- Control valve and changeover switch are shipped loose
- Complete the wiring in accordance with national and local codes
- If remote temperature sensor is used, wire to thermostat tb1, terminals 1 and 2.

zehnder Rittling — BUFFALO, NY USA

TITLE

ZR_CUH_2F4J

SIZE	DRAWING NUMBER	REVISION
A		B

Scale: 1:1 | December 6, 2011

CAUTION: Not following proper wiring procedure can cause injury or death

Disconnect switch
Cabinet Unit Heater

120V, 15A

Single pole switch with grounded terminals, has a thermoplastic toggle and frame. It has a smooth, quiet toggle action and is made with high-impact resistant construction.

Features

- Side wire #12 and #14 AWG
- Push wire #14 AWG
- Tri-drive ground, terminal, and mounting screws
- Easy-access green hex head ground screw

Specifications

General

- Type: toggle
- Number of poles: 1-way
- Special features: self-grounding

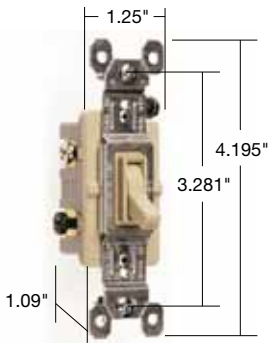
3rd party compliance

- CSA listing info: C22.2 111
- CSA standard: yes

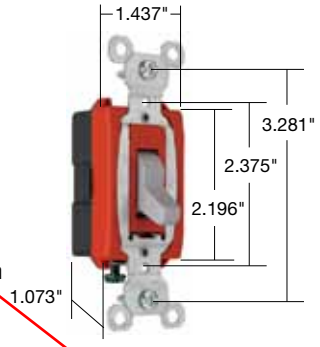
- UL listing no: 20
- UL Standard: yes
- U N SPS C: 39121406

Technical information

- Amps: 15 Amp
- Volts: 120VAC



208/230/277V, 30A



Features

- One-piece nickel-plated brass strap for superior corrosion-resistance
- Cam control and spring actuator for positive “makes and breaks” with a minimum of arcing
- Heavy-duty bumpers for quiet, smooth operation
- Oversized silver-alloy contacts for long life and better heat dissipation
- Heavy-duty, brass alloy, one-piece contact arm virtually eliminates contact bounce
- Auto-ground clip assures positive ground
- Glass-reinforced nylon back body for durability & strength
- Side and external screw-pressure-plate back wire with #14 – #10 AWG copper or copper-clad wire
- Grounding terminal is standard with screw-pressure-plate back wire

3rd party compliance

- UL Listed, File Number E140597, Standard UL20, General Use Snap Switches
- Federal Specification WS896
- cULus Listed, File Number LR17446, Standard CSA-C22.2 No. 111, General Use Snap Switches
- Conforms to NEMA WD-1 and WD-6

Performance

Electrical	
Dielectric withstand voltage	1500V minimum
Maximum working voltage	277VAC
Overload minimum	4.8 times rated current for 100 cycles
Temperature rise	30 °C maximum at rated current
Maximum continuous current	277VAC
Endurance	50,000 cycles min., resistive, inductive, tungsten filament lamp load (fed spec)
Mechanical	
Terminal accommodations	#14 AWG – #10 AWG
Environmental	
Flammability	UL94 V2
Operating temperature	Max. continuous +115 °C, min. -40 °C

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Transformer
120V/24V

Features

- Rated at 40 VA
- Color-coded leadwires for primary connections and screw terminals for secondary connections, fixed 1/4" (6 mm) male quick-connects or color-coded leadwires for both primary and secondary are standard.

Electrical ratings

Output rating at 100% power factor[a]	Primary input voltage (60 hHz)	Secondary output voltage	
		Open circuit	At rated power output
40 VA	120V	27.0	24.0

[a] Refers to regulation curve

Wiring connections

- Primary: 9" (230 mm) leadwires
- Secondary: screw terminals

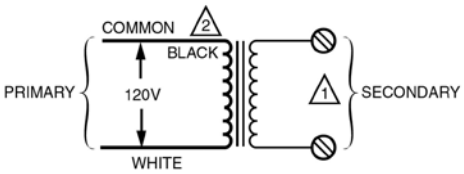
Overcurrent protection

- Inherent

Approvals

- Underwriters Laboratories, Inc. listed
  - File no. E14881, Guide No. XOKV
  - Conforms to Standard UL 1585
- National Electrical Code
  - Class 2 not wet, Class 3 wet

Wiring schematic



1 Secondary connections are screw terminals

2 Black is common with respect to the transformer winding only and not the external circuit

Transformer dimensions in. (mm)

Model	A	B	C	D
11100000216A	3 (76)	2 (51)	3-1/8 (79)	1-9/16 (40)

Plate or outlet box mounted at clamp on end bell

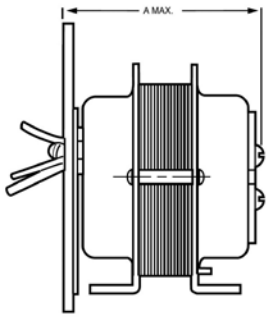
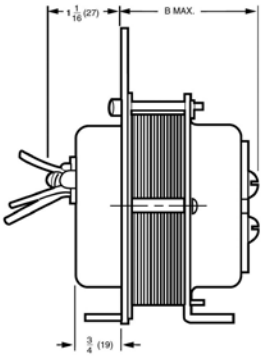
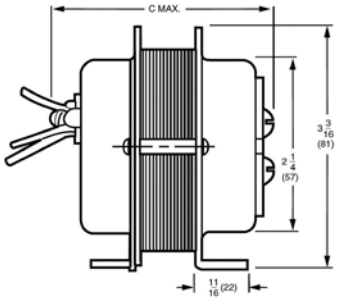
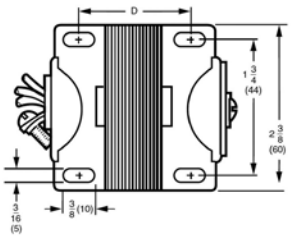


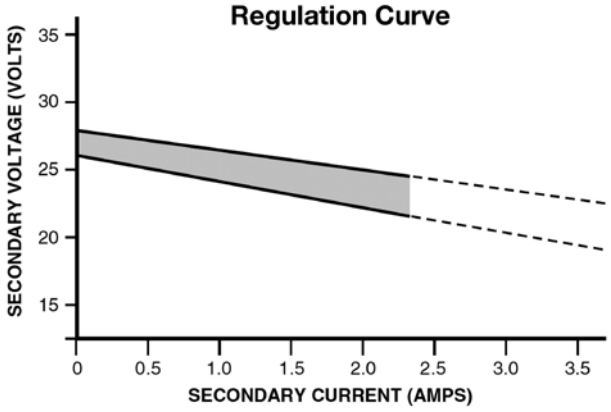
Plate mounted at the laminations







Foot mounted



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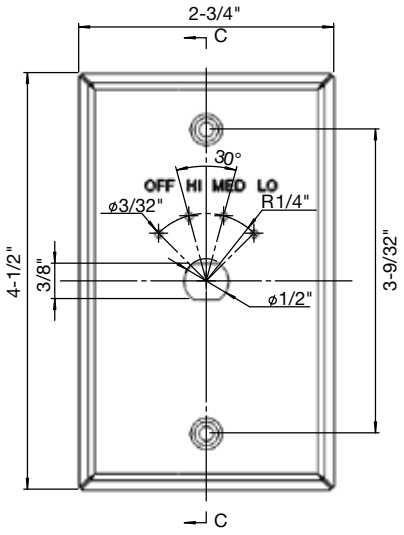
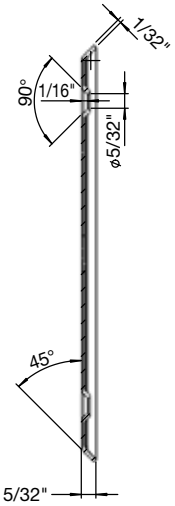
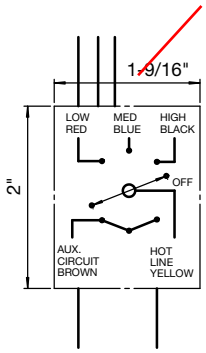
3-speed switch

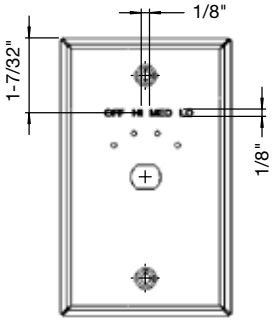
Specifications

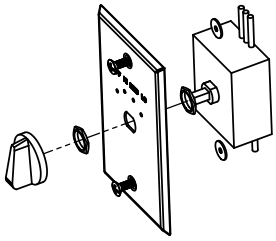
- Main contacts rated current and voltage: 10A 125 Vac, 5A 277 Vac
- Auxiliary contacts rated current and voltage: 0.5A 277 Vac
- Insulation resistance: > 1000MΩ
- Contact resistance: <40M(t)

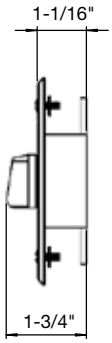


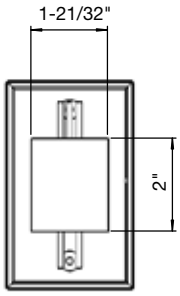












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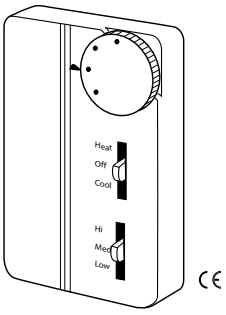
Non-digital thermostat

Application



The non-digital thermostat provides on/off control for low voltage and line voltage valves, relays and fan motors.

Features

- Manual or automatic changeover models
- Line voltage 3-speed fan control
- Continuous or cycling fan operation (cycling fan operation requires additional relay or relays)
- Remote sensor capability for seasonal changeover
- Handles all supply voltages from 24 to 277 Vac at 50/60 Hz (fan and system voltage must be the same)

Theory of operation

All non-digital models are electronic thermostats. A variable resistance device called a thermistor senses the room termperature and sends a resistance value to the thermostat. For example: in heat mode, the thermostat measures the temperature represented by the resistance value of the onboard thermistor (or remote thermistor if used). If the sensed temperature value drops 1 °F (0.6 °C) or more below the set point the heating output will be powered. A valve or damper opens to heat the space. When the temperature reaches the set point the heating output will be turned off, closing the valve or damper. The thermostats maintain temperatures with a 1 °F (0.6 °C) differential in both heating and cooling.

Specifications

Inputs

- Power input: 24 to 277 Vac @ 50/60 Hz
- Power consumption: 0.88 watts at maximum
- Connections
  Power: up to 14 AWG wire
  Control: Up to 14 AWG wire

Outputs

- Electrical; heat/cool output rating: Pilot duty, 10 VA at 24 Vac, 20 VA at 120-277 Vac
- Fan switch: Refer to Table 1

Control

- Deadband: 4 °F (2.2 °C)
  Auto changeover models only
- Operating differential: 1 °F (0.6 °C)
- Setpoint adjustment range: 50 to 90 °F

Enclosure

- Material: Rigid vinyl
- Finish: Cool gray

Environment

- **Temperature limits**
  Shipping and storage: -30 to 130 °F (-34 to 55 °C)
  Operating: 32 to 130 °F (0 to 55 °C)
- Shipping weight: 0.31 lbs. (140 g.)
- Location: NEMA type 1

Agency listings

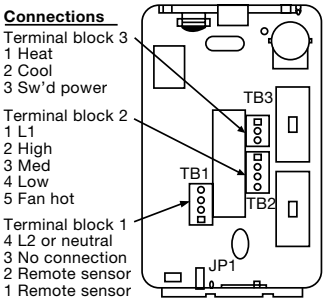
- CE: Compliant

Table 1: Fan switch current ratings (amps)[a]

Voltage	Inductive		Resistive amps	Pilot duty
	FLA	LRA		
24	N/A	N/A	N/A	24 VA
120	5.8	34.8	6.0	125 VA
240	2.9	17.4	5.0	125 VA
277	2.4	14.4	4.2	125 VA

[a] Fan and system must share the same voltage

Terminal description



Dimensional data

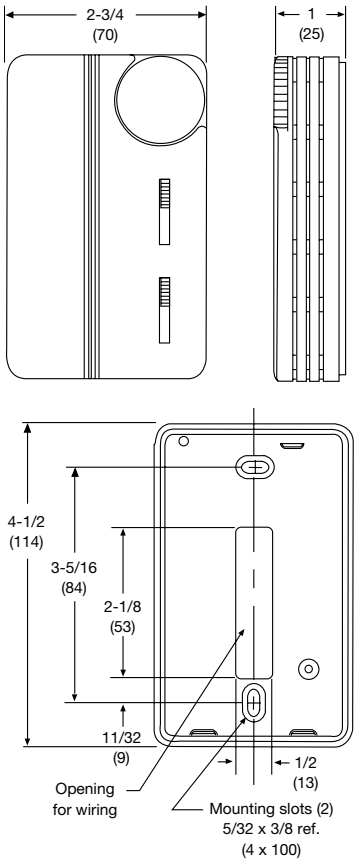


Table 2: Model chart

Model	Outputs	Changeover	Fan control	System switches
11100000180A	Dual	Manual	High-medium-low	Heat-off-cool
11100000181A	Dual	Automatic[a]	High-medium-low	On-off
11100000182A	Single	N/A	High-medium-low	On-off

[a] Automatic changeover models have a 4 °F deadband between heating and cooling

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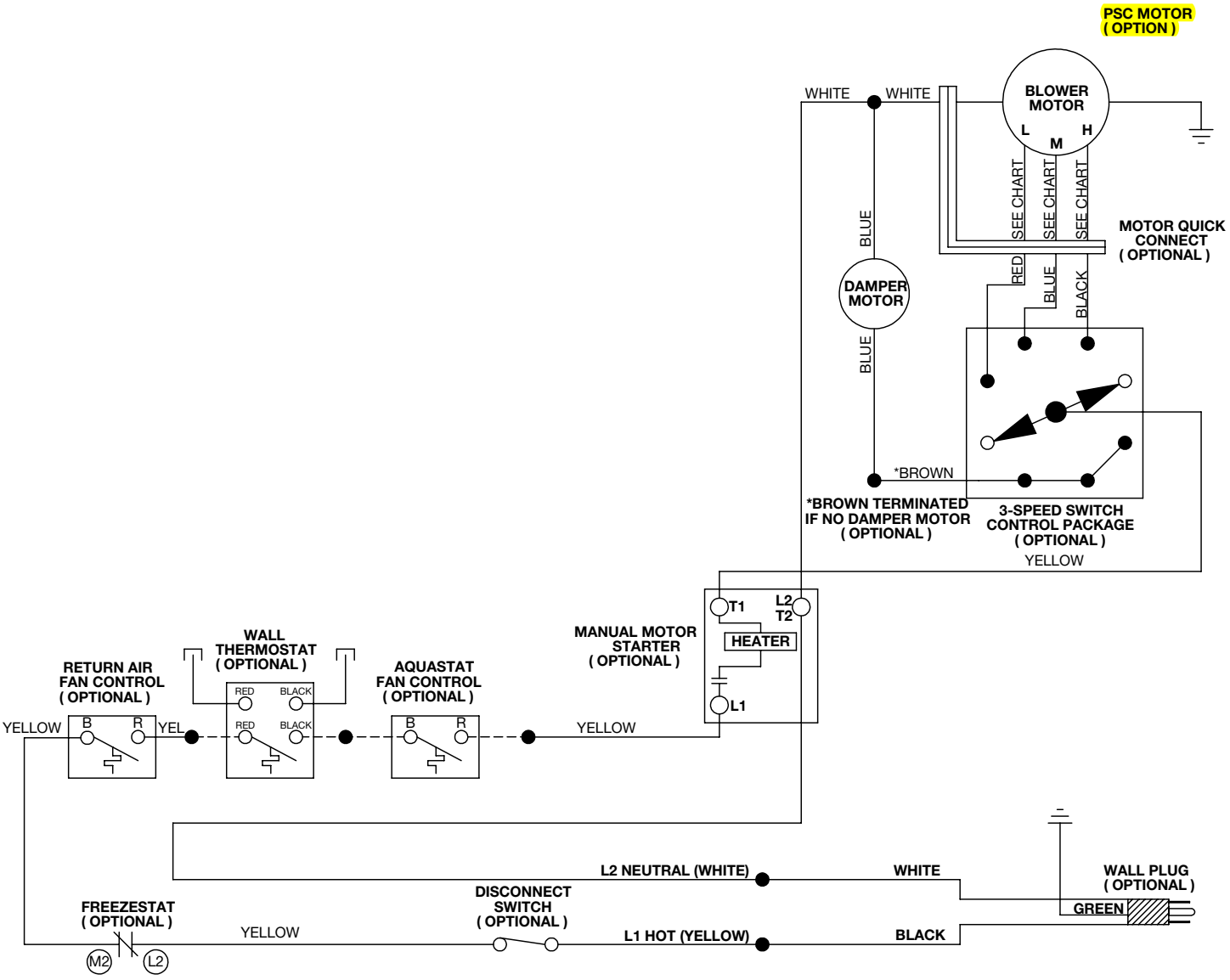
**GENERAL PSC MOTOR OPTION WIRING DIAGRAM

Wiring schematics

120V



FIELD WIRED

FACTORY WIRED 12AWG

FACTORY WIRED 18AWG

FACTORY WIRED 16AWG

WIRE CONNECTION

FACTORY WIRE - NOT CONNECTED

WIRE TERMINATION

Notes:

- Complete the wiring in accordance with national and local codes.
- Wiring diagram is for typical application. If other controls are specified wiring may differ from what is shown.
- Models RC, RRC, RFRC units get 3 speed switches shipped loose for field wiring.

Blower motor wiring chart				
Size	Motor Sizes	High	Medium	Low
02	12W	Black	Blue	Red
03	12W	Black	Red	Yellow
04	30W	Black	Blue	Red
06	50W	Black	Red	Yellow
08	50W, 25W	Black	Red	Yellow
10	(2) 50W	Black	Yellow	Gray
12	(2) 50W	Black	Red	Yellow

Notes:

- For high static motors use the following 3 speed switch wiring configuration: red / low - blue / med - black / high

Mechanical Specifications

General

- Furnish and install Cabinet Unit Heaters where indicated on the plans and in the specifications, with required mounting components and accessories. All units shall be capable of meeting or exceeding the scheduled capacities for heating and air delivery. Units shall be ETL certified for the United States and Canada in compliance with UL/ANSI Standard 1995 and CSA C22.2 No. 236-95.

Construction

- All unit chassis shall be fabricated of 20-gauge galvannealed steel panels. [Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A.]
- All exposed units shall have exterior front, top and end panels fabricated of not less than 16-gauge cold rolled steel [14-gauge steel]. The front panel shall be attached with tamper-proof Allen-head quarter turn fasteners to allow for easy removal and access for service. The front panel shall be hinged providing full swing through 90° including removable safety chain(s) to prevent the panel from swinging fully open accidentally (RC, RFRC, RRC). Side panels shall be removable for access to controls and piping within the end pockets, if required. End pockets shall be no less than 8" [extended end pockets shall be no less than 14"] in width, located on both sides of the unit.
- [Provide a grille in the return air opening (RF, RFI, RS, RSI).]
- All exposed units shall include a recessed stamped louver discharge grille. Louver discharge grille shall be reverse stamped, leaving a smooth exterior surface. [Provide an architectural aluminum double deflection discharge grille with a powder coated paint finish to match cabinet color. Liquid coat paint shall not be acceptable.] [Provide an architectural aluminum bar grille.]
- Louvered panel shall be supplied with two flush, hinged access doors with slotted cam-lock fasteners. [tamper-proof Allen-head security quarter turn fasteners.]
- Recessed units shall be provided with a wall/ceiling seal assembly. The assembly shall provide a finished appearance to the wall/ceiling.
- All ducted units shall have a minimum 1" duct collar on the discharge or return.
  - Option: Adjustable leveling legs, two on each base leg, shall be provided where indicated on drawings or schedules (RF, RFI, RS, RSI).

Flush-mounted, quarter-turn tamper-resistant fasteners included as standard

Painted finish

- All painted cabinet exterior panels shall be finished with a standard ivory epoxy powder coat paint. Optional colors can be selected from the Zehnder Rittling Color Chart. Liquid coat paint shall not be acceptable.
- Custom colors are also available with the submission of a color chip for color match.

Power

- Units shall not exceed scheduled power consumption.

Fan and motor

- Unit fan shall be dynamically balanced, forward curved, DWDI centrifugal type constructed of galvanized steel for corrosion resistance. Motors shall be permanent split-capacitor [electronically commutated high-efficiency, programmable brushless DC], totally enclosed, tap wound for 3-speed, permanently lubricated sleeve bearing, type with automatic reset integral thermal overload protection. High static motors are available for ducted applications. Shaded pole motors are not acceptable. Single speed motors are not acceptable. Prior to shipping, all motors shall be assembled, factory tested and installed in the unit
- The fan/motor assembly shall be removable and serviceable through the front panel. Each fan/motor assembly shall be fastened by no more than 4 screws. [The motors shall have quick connects to allow service and removal without the need for tools.

Mechanical Specifications

Coils

- All cooling and heating coils shall optimize rows to meet the specified capacity. Coils shall have 5/8" OD, ½" nominal seamless copper tubes and shall be mechanically expanded to provide an efficient, permanent bond between the tube and aluminum fin. Minimum copper tube thickness shall be 0.016".
- Fins shall have high efficiency aluminum surface optimized for heat transfer, air pressure drop and carryover. Minimum fin thickness shall be 0.0045". Lanced fins shall not be acceptable.
- All coils shall be tested at 350 PSIG air pressure under water, and rated for a maximum 300 PSIG working pressure at 200°F. Coils shall be circuited for counter flow to maximize unit efficiency.
- All water coils shall be designed to connect with ½" nominal pipe connections.
- Coil casing shall be fabricated from galvanized steel [stainless steel].
- Steam coils shall be standard single tube steam type suitable for temperatures above 35°F and 15 PSIG steam pressure.
- All water coils shall be provided with a manual air vent [automatic air vent] fitting to allow for coil venting.

Filters

- All units shall be furnished with a minimum 1" nominal glass fiber throwaway [1" pleated MERV 4] [1" cleanable aluminum mesh] filter.
- Filters shall be tight fitting to prevent air bypass.
- Filters shall be easily removable from the return air opening without the need for tools, unless there is an inlet louvered return provided.

Electrical

- Units shall be furnished with single point power connection. Provide an electrical control board for motor and other electrical terminations using spade connectors. Provide a 3-speed fan control switch with off, high, medium and low speeds.
  - Option: Provide 24 VAC fan relays with 40 VA transformer as integral part of control board. Fan relays designed to operate in conjunction with factory provided [field provided] 24 V thermostat. Fan relays designed to accept 120, 208, 220, 230, or 277 V input power. Relays shall operate with generic non-digital [digital, non-programmable] [digital, programmable] thermostat designed to control up to three independently energized fan speeds.
  - Option: Provide a line voltage wall thermostat, shipped loose for remote mounting. Adjustable setpoint dial included.
  - Option: Provide a remote bulb return air thermostat mounted in the end pocket with remote bulb temperature sensor within the air stream, regulating room air temperature by measuring the return air temperature. Adjustable setpoint dial included.
  - Option: Provide a line voltage aquastat, shipped loose for remote mounting on the incoming supply piping. Adjustable setpoint dial included.
  - Option: Provide a line voltage freezestat for coil protection. Adjustable setpoint included.
  - Option: Provide a service disconnect switch to isolate power from the unit during maintenance.
  - Option: Provide a manual motor starter to provide overload protection for the motor.
  - Option: Provide a power supply cord to enable powering of unit from wall outlet.
- Primary internal wiring and testing shall be conducted at the factory. All units shall be shipped with wiring diagrams.

Piping packages

- Provide a standard factory assembled valve piping package to consist of a 2 or 3-way, on/off, motorized electric control valve and two ball isolation valves.
- Control valves shall be piped normally closed to the coil. Control valves shall be wired to junction box or unit mounted thermostat, when provided, through quick connects to allow service and replacement of valves. Maximum entering water temperature on the control valve shall be 200°F, and maximum operating pressure shall be 300 PSIG.
  - Option: Unions shall be provided to allow easy removal of piping package from unit without the need for brazing or cutting pipe.
  - Option: Provide 3-wire floating point modulating control valve (fail-in-place), in lieu of standard 2-position control valve with factory assembled valve piping package.
  - Option: Provide proportional 0-10 VDC modulating control valve, in lieu of standard 2-position control valve with factory assembled valve piping package.
  - Option: Provide high pressure close-off actuator for 2 or 3-way on/off control valve. Maximum close-off pressure is 75 PSIG.
  - Option: Provide an adjustable flow control device for each piping package.

Mechanical Specifications

- Option: Provide a fixed flow control device for each piping package.
- Option: Provide pressure-temperature ports (P/T) for each piping package to allow measurement across the coil.

■ Piping packages shall be completely factory assembled including interconnecting pipe, factory tested for leaks and shipped loose for field installation.

- Option: Piping package will be shipped factory installed.

Outside air damper

■ Provide a manual [two position motorized] outside air single blade damper integral to the unit. [A synchronous motor interlocked with the fan shall open the outside air damper automatically when the fan starts. If there is a loss in power or the blower stops, the damper shall return to a closed position.]

- Option: Provide aluminum outside air wall box with integral insect screen and weep holes for field installation.

Units shall be manufactured in accordance with ISO 9001:2008 standards established and maintained by Zehnder Rittling.

Standard Colors

Color to be Selected

Ivory

Gray

Beige

Dark Gray

Bronze

White

Pricing for standard colors varies by product and color, refer to price lists for detailed information.

Notes

- Slight color variation may exist between actual finish and color chips. All colors are supplied in semi-gloss.
- Variation in color and gloss may occur in the manufacturing process.
- Custom color matching is available at additional cost. Metallic colors are not available.
- All products with a prime finish must have a field-applied topcoat for a consistent color.

ISO 9001 BUREAU VERITAS Certification
No 209940

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RITTLING HOT WATER UNIT HEATERS

SPEC SECTION: 23 82 39

JOB: **THE GREATER DAYTON SCHOOL**
171 DEEDS PARK DRIVE
DAYTON, OHIO 45404

ENGINEER: **KORDA NEMETH ENGINEERING, INC.**
1650 WATERMARK DRIVE, SUITE 200
COLUMBUS, OHIO 43215

FOR: **TP MECHANICAL CONTRACTORS, INC.**
1500 KEMPER MEADOW DRIVE
CINCINNATI, OHIO 45240

BY: **SPEARS MECHANICAL SYSTEMS, INC.**
123 WEST NATIONAL ROAD
ENGLEWOOD, OHIO 45322

DATE: **JANUARY 14, 2022**

RITTLING HOT WATER UNIT HEATER SCHEDULE

General Note:
Quantities and sizes are the responsibility of the contractor.
-CJL (KORDA)

QTY	TAG	MODEL	VOLTS
2	UH1	RH-24	115v/1ph
2	UH2	RH-47	115v/1ph

Remarks:

1. Horizontal type
2. Heavy gauge casing w/ baked-on enamel paint
3. Hot water coil
4. Adjustable louvers w/ 4-way air diffusers
5. Unit mounted disconnect switch included (factory installed)
6. Factory mounted- 24volt control transformer included
7. Unit mounted low voltage thermostat (factory installed)

Model

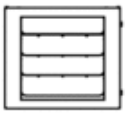
RH-24

Project:	The Greater Dayton Connor Group
Tag:	UH1

Qty	Coil Config	Unit Voltage
2	Hot Water	120/60/1

General Information

Air Flow:	450	CFM
Fan Speed:	High	
Altitude:	0	Feet



HORIZONTAL UNIT HEATERS

Motors

Motor Voltage	HP (ea.)	FLA (ea.)
115/60/1	1/30	0.7

Hot Water Heat

Capacity:	10.9	MBH
Entering Air Temperature:	60.0	°F
Leaving Air Temperature:	82.0	°F
Fluid Flow:	1.9	GPM
Entering Fluid Temperature:	140.0	°F
Leaving Fluid Temperature:	128.5	°F
Fluid ΔT:	11.6	°F
Fluid Pressure Drop:	1.0	ft. H2O
Fluid Type:	Water	
Glycol %:	0	
FPI:	12	

Unit Information

Shipping Weight*:	39.0	lbs.
Unit Length:	12	inches
Unit Width:	16.9	inches
Unit Height:	15	inches

* Weight is base unit only, does not include any options or accessories selected

The results reported herein are based on testing by Zehnder Rittling. Variations in the installation and operational environment may alter performance. Zehnder Rittling disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. Continuous research and development may result in a change to an appliances design and specifications, which Zehnder Rittling may change without notice

Model

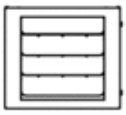
RH-47

Project:	The Greater Dayton Connor Group
Tag:	UH2

Qty	Coil Config	Unit Voltage
2	Hot Water	120/60/1

General Information

Air Flow:	730	CFM
Fan Speed:	High	
Altitude:	0	Feet



HORIZONTAL UNIT HEATERS

Motors

Motor Voltage	HP (ea.)	FLA (ea.)
115/60/1	1/15	0.72

Hot Water Heat

Capacity:	21.3	MBH
Entering Air Temperature:	60.0	°F
Leaving Air Temperature:	86.4	°F
Fluid Flow:	3.6	GPM
Entering Fluid Temperature:	140.0	°F
Leaving Fluid Temperature:	128.2	°F
Fluid ΔT:	11.9	°F
Fluid Pressure Drop:	0.2	ft. H2O
Fluid Type:	Water	
Glycol %:	0	
FPI:	12	

Unit Information

Shipping Weight*:	50.0	lbs.
Unit Length:	12.3	inches
Unit Width:	19.8	inches
Unit Height:	19	inches

* Weight is base unit only, does not include any options or accessories selected

The results reported herein are based on testing by Zehnder Rittling. Variations in the installation and operational environment may alter performance. Zehnder Rittling disclaims all warranties, express and implied, that the performance will be as reported, including the warranty of merchantability and fitness for purpose. Continuous research and development may result in a change to an appliances design and specifications, which Zehnder Rittling may change without notice

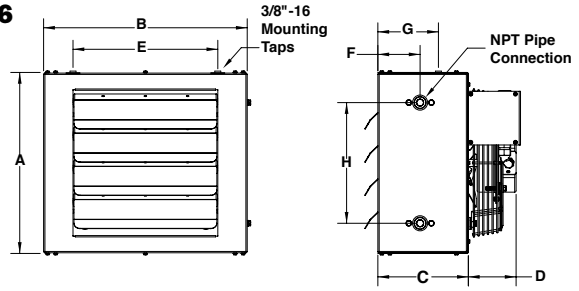
UNIT HEATERS
FOR ~~STEAM OR~~ HOT WATER

Model Number	VOLTAGE, MOTOR TYPE AND POWER CODE				
	~~115 & 230/60/1~~	115/60/1	230/60/1	230/460/60/3	230/460/60/3
	Motor HP	Totally Enclosed w/ Thermal Overload	Totally Enclosed w/ Thermal Overload	Motor HP	Totally Enclosed**
		01	02		05
		Amps	Amps		Amps
RH-18	1/30	0.70	0.22	-	-
RH-24	1/30	0.70	0.22	-	-
RH-33	1/15	0.72	0.50	-	-
RH-47	1/15	0.72	0.50	-	-
RH-63	1/10	1.30	0.59	1/3	1.4/0.7
RH-86	1/10	1.30	0.59	1/3	1.4/0.7
RH-108	1/8	1.58	0.80	1/2	2.2/1.1
RH-121	1/8	1.58	0.80	1/2	2.2/1.1
RH-165	1/4	2.65	1.40	1/2	2.2/1.1
RH-193	1/4	2.75	1.40	1/2	2.2/1.1
RH-258	1/3	3.60	2.00	1/2	2.2/1.1
RH-290	1/2	4.68	2.20	1/2	2.2/1.1
RH-340	1/2	4.68	2.20	1/2	2.2/1.1

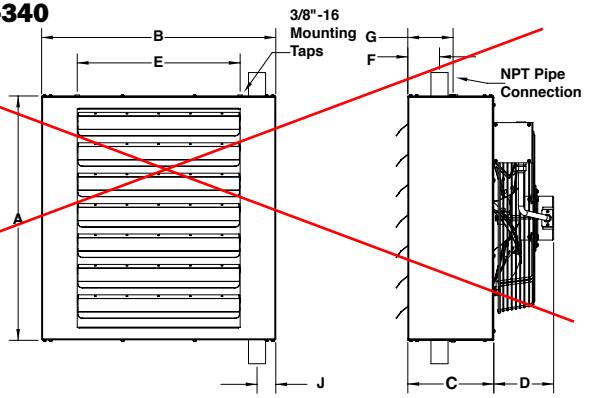
UH1

UH2

RH-18 through RH-86



RH-108 through RH-340



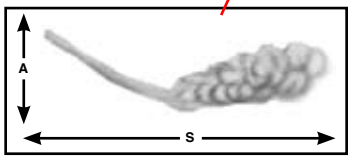
Maximum Mounting Heights

Performance Data for Standard Units at Standard Conditions of 200 °F Entering Water and 60 °F Entering Air

Model Number	Height - Ft.	
	H	S
RH-18	9	18
RH-24	10	20
RH-33	11	22
RH-47	13	26
RH-63	15	30
RH-86	16	31
RH-108	16	33
RH-121	17	36
RH-165	18	38
RH-193	19	40
RH-258	20	42
RH-290	21	46
RH-340	22	50

Performance Data for Standard Units at Standard Conditions of 2lbs. Steam and 60 °F Entering Air

Model Number	Height - Ft.	
	H	S
RH-18	9	17
RH-24	9	18
RH-33	10	20
RH-47	12	25
RH-63	14	29
RH-86	15	31
RH-108	15	32
RH-121	16	33
RH-165	17	34
RH-193	18	37
RH-258	19	40
RH-290	20	44
RH-340	20	46



Model RH Dimensions (in inches)

Model Number	A	B	C	D	E	F	G	H	J	NPT Connections	Fan Diameter	Approx. Shipping Wt. Lb.
RH-18	15	16 7/8	7 1/2	4 1/2	12	3 1/2	5	10	-	3/4	9	37
RH-24	15	16 7/8	7 1/2	4 1/2	12	3 1/2	5	10	-	3/4	9	39
RH-33	19	19 3/4	7 1/2	4 3/4	12	3 1/2	5	14	-	3/4	12	48
RH-47	19	19 3/4	7 1/2	4 3/4	12	3 1/2	5	14	-	3/4	12	50
RH-63	19	25 3/4	8 1/2	4 3/4	18	3 1/2	5	14	-	3/4	14	61
RH-86	19	25 3/4	8 1/2	4 3/4	18	3 1/2	5	14	-	3/4	14	63
RH-108	27	25 7/8	9 1/2	6 1/4	18	3 1/2	5 1/4	-	2	1 1/2	18	88
RH-121	27	25 7/8	9 1/2	6 1/4	18	3 1/2	5 1/4	-	2	1 1/2	18	90
RH-165	27	31 7/8	10	6 1/4	24 7/8	3 1/2	6 1/4	-	2	1 1/2	20	110
RH-193	27	31 7/8	10	8 3/8	24 7/8	3 1/2	6 1/4	-	2	1 1/2	20	115
RH-258	33	40 13/16	11	8 3/8	32 7/8	3 1/2	6 1/4	-	2 1/4	2	22	162
RH-290	33	40 13/16	11	8 3/8	32 7/8	3 1/2	6 1/4	-	2 1/4	2	22	164
RH-340	39	40 13/16	12	8 3/8	32 7/8	3 1/2	7 1/4	-	2 1/4	2	24	210

** RH-18 through RH-86 have side female NPT pipe connections. RH-108 through RH-340 have top and bottom male NPT pipe connections.
*** Units should be mounted a minimum of 5" from wall.

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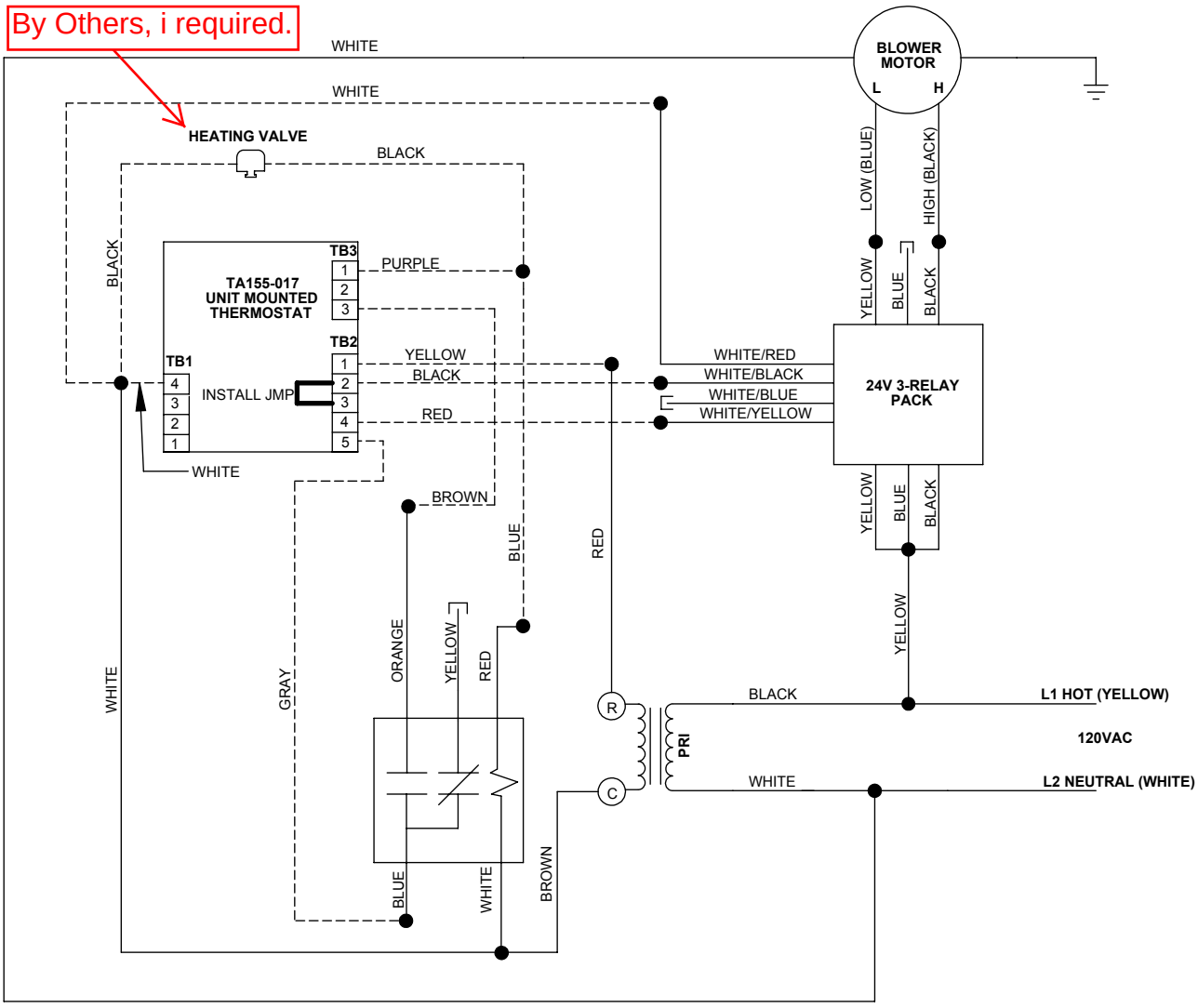
All listed dimensions are approximate and are subject to change without notice.
Modifications to the product specifications must be accepted by Rittling at its base office.



NOTE: WITH THERMOSTAT JUMPER INSTALLED MOTOR WILL RUN ON LOW SPEED IN THERMOSTAT SPEED POSITION LOW AND MEDIUM. MOTOR WILL RUN ON HIGH SPEED IN THERMOSTAT SPEED POSITION HIGH.

NOTES:

- THERMOSTAT SHIPPED LOOSE IF WALL MOUNTED
- CONTROL VALVE AND CHANGEOVER SWITCH ARE SHIPPED LOOSE
- COMPLETE THE WIRING IN ACCORDANCE WITH NATIONAL AND LOCAL CODES
- IF REMOTE TEMPERATURE SENSOR IS USED, WIRE TO THERMOSTAT TB1, TERMINALS 1 AND 2.

- FIELD WIRED
- FACTORY WIRED 12AWG
- FACTORY WIRED 18AWG
- FACTORY WIRED 16AWG
- WIRE CONNECTION
- FACTORY WIRE - NOT CONNECTED
- WIRE TERMINATION

PROPRIETARY AND CONFIDENTIAL

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	NAME	DATE
DRAWN	DHE	12/10/14
CHECKED	DHE	12/10/14
ENG APPR.		
MFG APPR.		
Q.A.		

CAUTION: NOT FOLLOWING PROPER WIRING PROCEDURE CAN CAUSE INJURY OR DEATH

zehnder Rittling

BUFFALO, NEW YORK

TITLE: UNIT HEATER WIRING DIAGRAM

SIZE	DWG. NO.	REV
A	UH-2F4K	-

SCALE: 1:1 | SHEET 1 OF 1

Disconnect switch
Cabinet Unit Heater

120V, 15A

Single pole switch with grounded terminals, has a thermoplastic toggle and frame. It has a smooth, quiet toggle action and is made with high-impact resistant construction.

Features

- Side wire #12 and #14 AWG
- Push wire #14 AWG
- Tri-drive ground, terminal, and mounting screws
- Easy-access green hex head ground screw

Specifications

General

- Type: toggle
- Number of poles: 1-way
- Special features: self-grounding

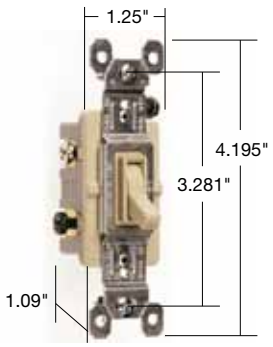
3rd party compliance

- CSA listing info: C22.2 111
- CSA standard: yes

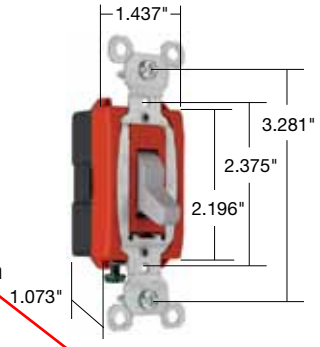
- UL listing no: 20
- UL Standard: yes
- U N SPS C: 39121406

Technical information

- Amps: 15 Amp
- Volts: 120VAC



208/230/277V, 30A



Features

- One-piece nickel-plated brass strap for superior corrosion-resistance
- Cam control and spring actuator for positive “makes and breaks” with a minimum of arcing
- Heavy-duty bumpers for quiet, smooth operation
- Oversized silver-alloy contacts for long life and better heat dissipation
- Heavy-duty, brass alloy, one-piece contact arm virtually eliminates contact bounce
- Auto-ground clip assures positive ground
- Glass-reinforced nylon back body for durability & strength
- Side and external screw-pressure-plate back wire with #14 – #10 AWG copper or copper-clad wire
- Grounding terminal is standard with screw-pressure-plate back wire

3rd party compliance

- UL Listed, File Number E140597, Standard UL20, General Use Snap Switches
- Federal Specification WS896
- cULus Listed, File Number LR17446, Standard CSA-C22.2 No. 111, General Use Snap Switches
- Conforms to NEMA WD-1 and WD-6

Performance

Electrical	
Dielectric withstand voltage	1500V minimum
Maximum working voltage	277VAC
Overload minimum	4.8 times rated current for 100 cycles
Temperature rise	30 °C maximum at rated current
Maximum continuous current	277VAC
Endurance	50,000 cycles min., resistive, inductive, tungsten filament lamp load (fed spec)
Mechanical	
Terminal accommodations	#14 AWG – #10 AWG
Environmental	
Flammability	UL94 V2
Operating temperature	Max. continuous +115 °C, min. -40 °C

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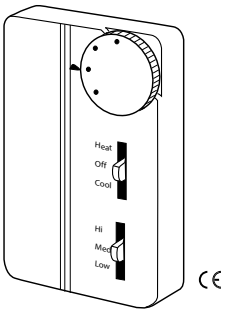
Non-digital thermostat

Application



The non-digital thermostat provides on/off control for low voltage and line voltage valves, relays and fan motors.

Features

- Manual or automatic changeover models
- Line voltage 3-speed fan control
- Continuous or cycling fan operation (cycling fan operation requires additional relay or relays)
- Remote sensor capability for seasonal changeover
- Handles all supply voltages from 24 to 277 Vac at 50/60 Hz (fan and system voltage must be the same)

Theory of operation

All non-digital models are electronic thermostats. A variable resistance device called a thermistor senses the room termperature and sends a resistance value to the thermostat. For example: in heat mode, the thermostat measures the temperature represented by the resistance value of the onboard thermistor (or remote thermistor if used). If the sensed temperature value drops 1 °F (0.6 °C) or more below the set point the heating output will be powered. A valve or damper opens to heat the space. When the temperature reaches the set point the heating output will be turned off, closing the valve or damper. The thermostats maintain temperatures with a 1 °F (0.6 °C) differential in both heating and cooling.

Specifications

Inputs

- Power input: 24 to 277 Vac @ 50/60 Hz
- Power consumption: 0.88 watts at maximum
- Connections
  Power: up to 14 AWG wire
  Control: Up to 14 AWG wire

Outputs

- Electrical; heat/cool output rating: Pilot duty, 10 VA at 24 Vac, 20 VA at 120-277 Vac
- Fan switch: Refer to Table 1

Control

- Deadband: 4 °F (2.2 °C)
  Auto changeover models only
- Operating differential: 1 °F (0.6 °C)
- Setpoint adjustment range: 50 to 90 °F

Enclosure

- Material: Rigid vinyl
- Finish: Cool gray

Environment

- **Temperature limits**
  Shipping and storage: -30 to 130 °F (-34 to 55 °C)
  Operating: 32 to 130 °F (0 to 55 °C)
- Shipping weight: 0.31 lbs. (140 g.)
- Location: NEMA type 1

Agency listings

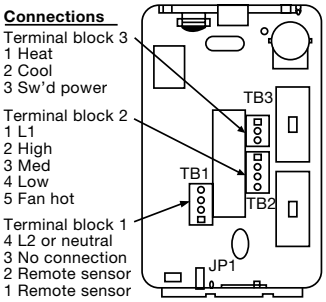
- CE: Compliant

Table 1: Fan switch current ratings (amps)[a]

Voltage	Inductive		Resistive amps	Pilot duty
	FLA	LRA		
24	N/A	N/A	N/A	24 VA
120	5.8	34.8	6.0	125 VA
240	2.9	17.4	5.0	125 VA
277	2.4	14.4	4.2	125 VA

[a] Fan and system must share the same voltage

Terminal description



Dimensional data

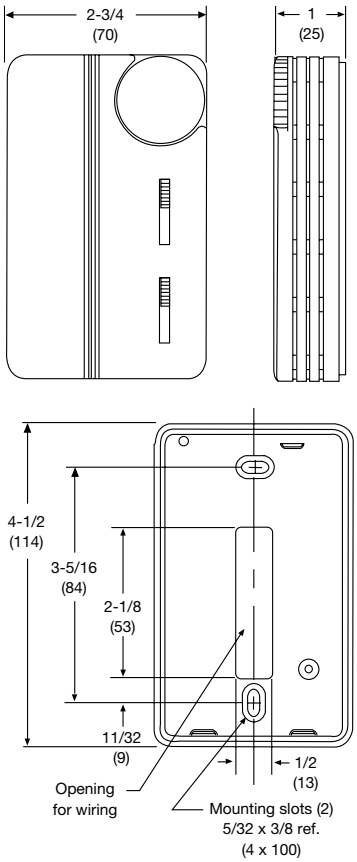


Table 2: Model chart

Model	Outputs	Changeover	Fan control	System switches
11100000180A	Dual	Manual	High-medium-low	Heat-off-cool
11100000181A	Dual	Automatic[a]	High-medium-low	On-off
11100000182A	Single	N/A	High-medium-low	On-off

[a] Automatic changeover models have a 4 °F deadband between heating and cooling

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Transformer
120V/24V

Features

- Rated at 40 VA
- Color-coded leadwires for primary connections and screw terminals for secondary connections, fixed 1/4" (6 mm) male quick-connects or color-coded leadwires for both primary and secondary are standard.

Electrical ratings

Output rating at 100% power factor[a]	Primary input voltage (60 hHz)	Secondary output voltage	
		Open circuit	At rated power output
40 VA	120V	27.0	24.0

[a] Refers to regulation curve

Wiring connections

- Primary: 9" (230 mm) leadwires
- Secondary: screw terminals

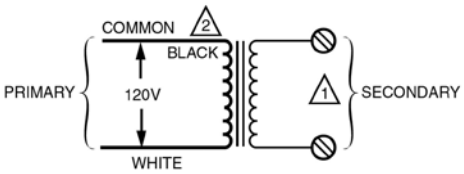
Overcurrent protection

- Inherent

Approvals

- Underwriters Laboratories, Inc. listed
  - File no. E14881, Guide No. XOKV
  - Conforms to Standard UL 1585
- National Electrical Code
  - Class 2 not wet, Class 3 wet

Wiring schematic



1 Secondary connections are screw terminals

2 Black is common with respect to the transformer winding only and not the external circuit

Transformer dimensions in. (mm)

Model	A	B	C	D
11100000216A	3 (76)	2 (51)	3-1/8 (79)	1-9/16 (40)

Plate or outlet box mounted at clamp on end bell

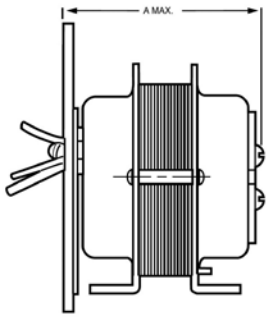
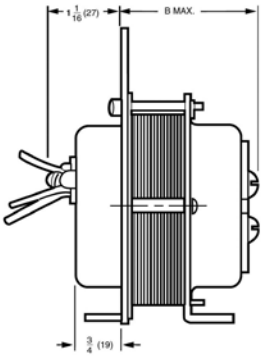
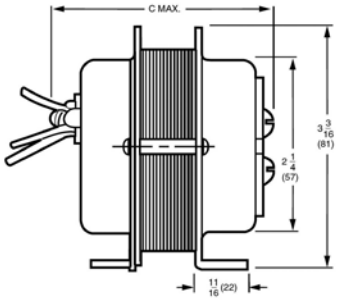
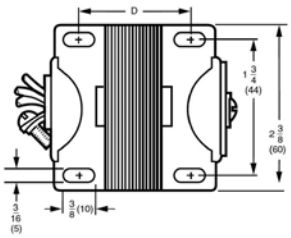


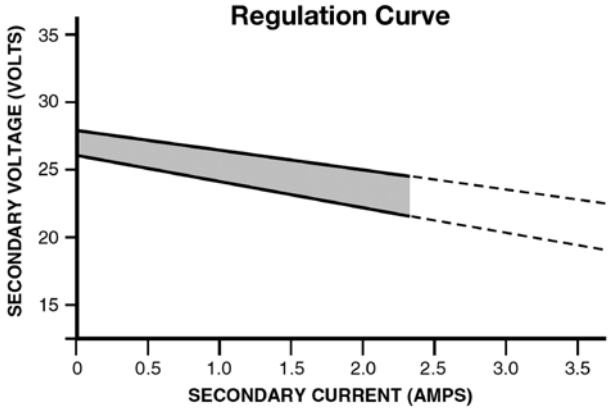
Plate mounted at the laminations







Foot mounted



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Design benefits: Horizontal air delivery

A. Coil

- Sturdy, mechanically bonded copper/aluminum coil with twelve fins per inch with 1/2" nominal tubes and 0.028" tube wall thickness
- High BTU capacity
- Coils are tested at 275 psig air under water. Coils are suitable for operating up to 150 psig steam or 220 psig water and 375 ˚F
- Fins are continuous across width and depth of coil and are vertically oriented to resist collection of dirt and foreign particles

B. Enclosure

- Rugged 18-gauge casing protects against impact and abuse
- Two-piece enclosure allows for ease of maintenance
- Durable and attractive gray textured epoxy powder coating is standard

C. Louvers

- Adjustable horizontal louvers are standard for adjustment of air distribution
- Constructed of rigid 18-gauge steel
- Color matched to enclosure for consistent appearance

D. Piping connection

- NPT connections permit quick and easy piping with no additional components needed
- Mounted to casing for rigidity

E. Mounting hardware

- Heavy duty threaded hardware allows unit to be mounted with threaded rod
- Optional pipe hanger kit available for mounting unit with threaded pipe

F. Formed air inlet/outlet

- Die-formed venturi inlet draws air smoothly into unit for maximum airflow

G. Motor

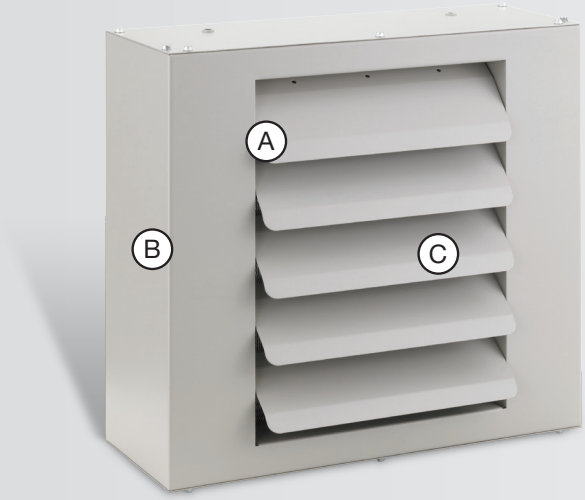
- All motors are totally enclosed, permanently lubricated for extended, reliable motor life
- Low operating cost and quiet operation
- When teamed with optional variable speed control, fan speed adjustment is infinite
- Equipped with thermal overload protection (except 3-phase motors)
- Junction box for field electrical connection

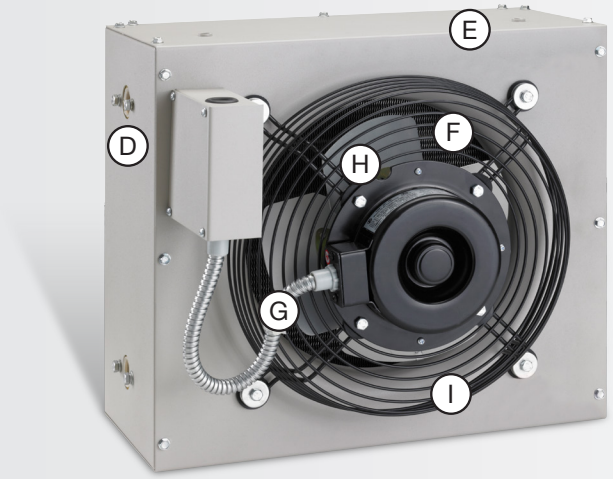
H. Fan

- Lightweight and dynamically balanced
- Designed to move air efficiently with minimum power requirement

I. Finger proof fan guard

- Standard equipment
- Securely mounts motor to unit while absorbing vibration with rubber isolation mounts





Mechanical specifications

General

Furnish and install Rittling Unit Heaters where indicated on the plans and in the specifications, with required mounting components and accessories. All units shall be capable of meeting or exceeding the scheduled capacities for heating and air delivery. Units shall be ETL certified for the United States and Canada in compliance with UL/ANSI Standard 1995 and CSA C22.2 No. 236-95.

Construction

All units shall have panels fabricated of not less than 18-gauge cold rolled steel and consist of top/back and side halves. Both halves are joined on top and back with hex head screws. Top casing is furnished with threaded hanger connections for suspension of unit. Fan venture is die-formed on back half.

Casing on all vertical units are top and bottom pieces joined by corners and additional hardware. Top casing is furnished with threaded hanger connections for suspension of unit.

Units shall be equipped with horizontal, individually adjustable louvers (RH). [Vertical louvers for four-way air control shall be included (RH).]

- Option: Provide a [cone-jet] [truncone] [one-way louver] [two-way louver] [3-cone anemostat] [4-cone anemostat] to provide specific air throw pattern on vertical Rittling Unit Heater.
- Option: Provide a pipe hanging kit that allows the unit to be hung from threaded pipe in lieu of threaded hanger rod.

Painted finish

All painted cabinet exterior panels shall be finished with a standard textured gray epoxy powder coat paint.

Power

Units shall not exceed scheduled power consumption.

Motor

Motors shall be two speed, permanent split-capacitor, totally enclosed, permanently lubricated bearing type with automatic reset integral thermal overload protection (3-phase motors require field supplied motor overload protection), designed to handle up to 104°F maximum constant ambient temperature.

Shaded pole motors are not acceptable. Single speed motors are not acceptable.

[Explosion proof motors have an enclosure designed and constructed to withstand an explosion of a specified gas or vapor which may occur within the motor and to prevent the ignition of this gas or vapor surrounding the unit. Explosion proof motor is suitable for Class I, Div I&II, Groups C&D and Class II, Div I&II, Groups F&G. The explosion proof motors may not be used with a fluid temperature in excess of 329°F and still maintain the explosion proof rating for NEC ignition temperature rating T3B for grain dust. All explosion proof motors are shelf mounted.

- Option: Provide a solid state variable speed controller.

Fan

Fans shall have non-conducting, spark-proof aluminum blades, with a steel hub. Each fan blade is balanced and designed specifically for the unit in which it is installed to assure maximum air delivery and quiet operation.

Fan guard

Fan guard shall be finger-proof, constructed of welded steel rod and finished with a standard black epoxy powder coat paint. Units mounted below 8 feet from the floor must be equipped with an OSHA fan guard to meet ETL and OSHA requirements.

Coils

Heating coil is designed for either two-pipe steam or hot water heating system. Coils shall have ½" nominal diameter seamless copper tubes and shall be mechanically expanded to provide an efficient, permanent bond between the tube and integral collar of the aluminum fin. Minimum copper tube thickness shall be 0.028".

Fins shall be die-formed and have a high efficiency aluminum surface optimized for heat transfer, air pressure drop and carryover. Minimum fin thickness shall be 0.010". Lanced fins shall not be acceptable. Fins are continuous across width and depth of coil and are vertically oriented to resist collection of dirt and foreign particles.

Mechanical specifications

Coils are of non-ferrous construction and serpentine design for RH-18 and RH-24. All other units incorporate brazed steel header tubes. RH-18 through RH-86 units have ¾" female threaded NPT, brass header connections while all other units have male threaded NPT connections.

All coils shall be tested at 275 PSIG air pressure under water, and rated for a maximum 220 PSIG water or 150 PSIG steam and 375°F. Coils have CRN pressure vessel certification for Ontario and Quebec provinces.

Electrical

Units shall be furnished with single point power connection. Provide an electrical junction box for motor and other electrical terminations.

- Option: Provide an explosion proof wall thermostat, shipped loose for remote mounting.
- Option: Provide a line voltage wall thermostat, shipped loose for remote mounting. Adjustable setpoint dial included.
- Option: Provide a clear, plastic locking thermostat guard, shipped loose for remote mounting.
- Option: Provide a service disconnect switch to isolate power from the unit during maintenance.
- Option: Provide a manual motor starter to provide overload protection for the motor.
- Option: Provide a line voltage aquastat, shipped loose for remote mounting on the incoming supply piping. Adjustable setpoint dial included.

Units shall be manufactured in accordance with ISO 9001:2008 standards established and maintained by Zehnder Rittling.

Warranty

Zehnder Rittling guarantees its products to be free from defects in material and workmanship for a period of two years from date of shipment from our factory.

Should there be any defects in the good(s), the purchaser should promptly notify Zehnder Rittling. Upon receipt of written consent from Zehnder Rittling, the purchaser shall return the defective good(s) to the factory for inspection with freight prepaid. If inspection shows the goods to be defective, Zehnder Rittling will at its discretion repair or replace the said item(s).

Defects arising from damage due to shipment, improper installation, negligence or misuse by others are not covered by this warranty.

This warranty is extended only to the original purchaser from Zehnder Rittling.

IMPORTANT: Approved submittal documentation, specific to each project, supersedes the general guidelines contained within this document.

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