

Rittling Cabinet Unit Heater

Submittal Data,
English Language, IP Units

Submittal data

Unit designation
Job name
Architect
Engineer
Contractor

Electrical data

Power supply		
Volts	Phase	Hz
Minimum circuit ampacity		
Maximum overcurrent protection		

Performance data

Heating capacity
BTU/hr
Entering water temperature
°F
Entering air temperature
°F
Water flow
GPM
Airflow
CFM
Fan speed or motor/RPM/turns
Operating weight
lb.



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Standard unit features

Summary of all features, some features may not be specific to every project.

Construction

- All units
 - ♦ Galvannealed steel construction
 - ♦ Integral 1" throwaway filter
- Exposed units
 - ♦ Stamped louver supply grille
 - ♦ Durable epoxy powder coat paint
 - ♦ 8" end pockets with removable front panel
 - ♦ 16-gauge exterior panel construction

Coils

- 1 row hot water or steam
- 1/2" nominal O.D. seamless copper tubes
- 0.016" tube wall thickness
- High efficiency aluminum fins, 12 FPI
- Left or right hand, same end connections
- Manual air vents

Fan assemblies

- Forward curved, DWDI centrifugal type
- 115 volt, single phase, three speed PSC motors
- Removable for service

Electrical

- _cETL_{us} listed for safety compliance
- Electrical junction box for field wiring terminations
- Unit or remote mounted three speed fan switch

Optional unit features

Summary of all features, some features may not be specific to every project.

Construction

- All units
 - ♦ 1/2" thick fiberglass insulation on front panel
 - ♦ 1/2" thick fiberglass insulation on front panel and chassis
 - ♦ 0-25% manual and motorized outside air dampers (RF, RS only)
 - ♦ Spare 1" throwaway filters
 - ♦ 1" MERV 8 pleated filters
 - ♦ Leveling legs (RF, RS only)
 - Exposed units
 - ♦ Anodized aluminum bar grille
 - ♦ 14-gauge front panel
 - ♦ 14-gauge cabinet
 - ♦ Return air louver grille (RF, RS only)
 - ♦ 6" extended end pockets
 - ♦ Tamper proof fasteners
 - ♦ Wall seal
- (RFRW, RFRWI, RRW, RRWI, RFRC, RRC only)

Coils

- Automatic air vents
- 2 row coil
- 3 row coil
- 4 row coil

Fan assemblies

- Motor quick connect
- EC motor (Electronically commutated motors)
 - ♦ 208-230 & 277 volt, 60 Hz and 220 volt
 - ♦ High-efficiency, programmable, brushless DC motors that utilize a permanent magnet rotor and built-in inverter.
 - ♦ Provide low operating cost and ultra-quiet operation.

Electrical

- Fan relay packages
- Toggle disconnect switch
- Manual motor starter with thermal overload protection

Piping packages

- Factory assembled, shipped loose for field installation
- 1/2", 2-way and 3-way normally closed, two position electric motorized valves
- Isolation ball valves
- Fixed and adjustable flow control devices
- Unions and P/T ports

Controls

- Analog
- Unit and remote mounted, with integral three speed fan switch
- Remote temperature sensor
- Aquastat, pipe mounted, shipped loose
- Return air thermostat

Cabinet Unit Heater Submittal Data

English, IP Units

General data

Specifications		02	03	04	06	08	10	12
Steam capacity	MBH	18.7	25.5	34.8	51.0	62.8	73.4	90.7
	EDR	76	104	144	212	260	304	376
Hot water capacity (1 row coil)	MBH	16.2	22.4	30.7	45.5	54.8	64.5	80.1
	GPM	1.7	2.3	3.2	4.8	5.7	6.7	8.4
	WPD	0.2	0.4	0.8	2.2	0.5	0.7	1.2
Hot water capacity (2 row coil)	MBH	25.0	34.3	47.2	69.5	86.6	101.2	125.8
	GPM	2.6	3.6	4.9	7.3	9.0	10.5	13.1
	WPD	0.8	1.7	3.6	9.3	2.2	3.3	5.6
Heating capacity (3 row main coil)	MBH	21.7	30.1	40.8	60.4	75.5	88.1	108.2
	GPM	1.5	2.1	2.8	4.1	5.2	6.0	7.4
	WPD	0.5	1.1	2.2	5.5	9.0	13.2	21.4
Heating capacity (4 row main coil)	MBH	19.9	25.5	46.3	65.8	87.0	100.7	119.9
	GPM	1.9	2.5	4.3	5.8	7.5	10.3	12.3
	WPD	6.2	11.8	35.8	15.2	26.1	19.6	28.4
CFM: standard PSC	High	220	300	420	620	810	940	1180
	Medium	150	200	310	450	600	720	875
	Low	125	140	220	350	440	480	660
CFM: high static PSC (@ 0.2" ESP)	High	250	345	490	640	920	1020	1150
	Medium	210	290	425	550	780	870	980
	Low	160	230	320	420	590	660	750
1/2 Row 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"



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Cabinet Unit Heater Submittal Data

English, IP Units

Electrical data

	Motor Type		02	03	04	06	08	10	12
HP	PSC	Standard	1/30	1/30	1/25	1/15	1/30, 1/15	(2) 1/15	(2) 1/15
		High-Static	1/12	1/12	1/10	1/7	1/12, 1/7	(2) 1/7	(2) 1/7
	ECM	Standard	1/4	1/4	1/4	1/4	(2) 1/4	(2) 1/4	(2) 1/4
		High-Static	1/4	1/4	1/4	1/4	(2) 1/4	(2) 1/4	(2) 1/4
RPM High	PSC	Standard	985	995	900	1150	1150	1250	1200
		High-Static	1505	1510	1550	1550	1550	1550	1550
	ECM	Standard	1050	1025	920	1120	1150	1250	1200
		High-Static	1550	1550	1550	1550	1550	1550	1550
RPM Medium	PSC	Standard	833	754	720	900	900	860	950
		High-Static	1390	1320	1320	1320	1320	1320	1320
	ECM	Standard	875	700	720	870	900	850	950
		High-Static	1320	1320	1320	1320	1320	1320	1320
RPM Low	PSC	Standard	620	575	530	710	625	650	550
		High-Static	1300	1200	1000	1000	1000	1000	1000
	ECM	Standard	750	600	530	685	625	640	550
		High-Static	1000	1000	1000	1000	1000	1000	1000
Motor FLA 120V	PSC	Standard	0.60	0.60	0.68	1.13	1.73	2.26	2.26
		High-Static	1.05	1.05	1.2	1.7	2.8	3.4	3.4
	ECM	Standard	0.92	0.84	1.12	1.70	2.85	3.04	3.58
Power Input: Watts 120V	PSC	Standard	57	61	75	130	200	240	250
		High-Static	117	120	130	180	325	368	368
	ECM	Standard	38	38	45	80	125	147	157

Notes:

- Maximum circuit ampacity (MCA) =
1.25 x (FLA motor 1 + FLA motor 2 + FLA electric heat)
- Maximum overcurrent protection (MOP) =
(2.25 x FLA motor 1) + FLA motor 2 + FLA electric heat
- If the calculated MOP is within 10% of the next smaller available fuse size, that fuse size shall be used. If not, the next larger fuse size above the calculated MOP must be used.
- If the selected MOP is smaller than the MCA, the selected MOP must be increased to the next larger available fuse size above the MCA.
- If the MOP is less than 15, it shall be rounded up to 15 amps. This is the minimum fuse or circuit breaker permitted by code.
- EC motor nameplate amperage indicates the motor hardware peak amperage while the motor full load amperage (FLA) is limited by the motor's factory programmed operating range, programmed specifically for each unit size. The programmed operating range is generally only a portion of the motor hardware full potential resulting in the motor FLA being lower than the nameplate FLA. Motor FLA will be reflected on the Fan Coil serial tag and should be used when sizing building electrical requirements.

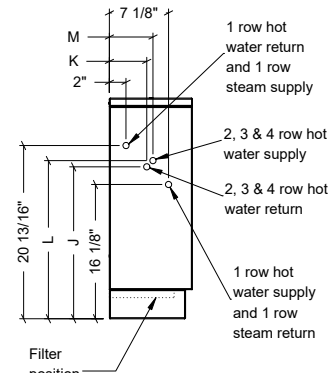
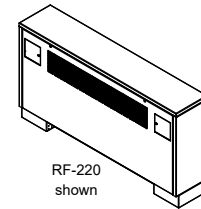
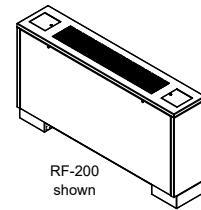
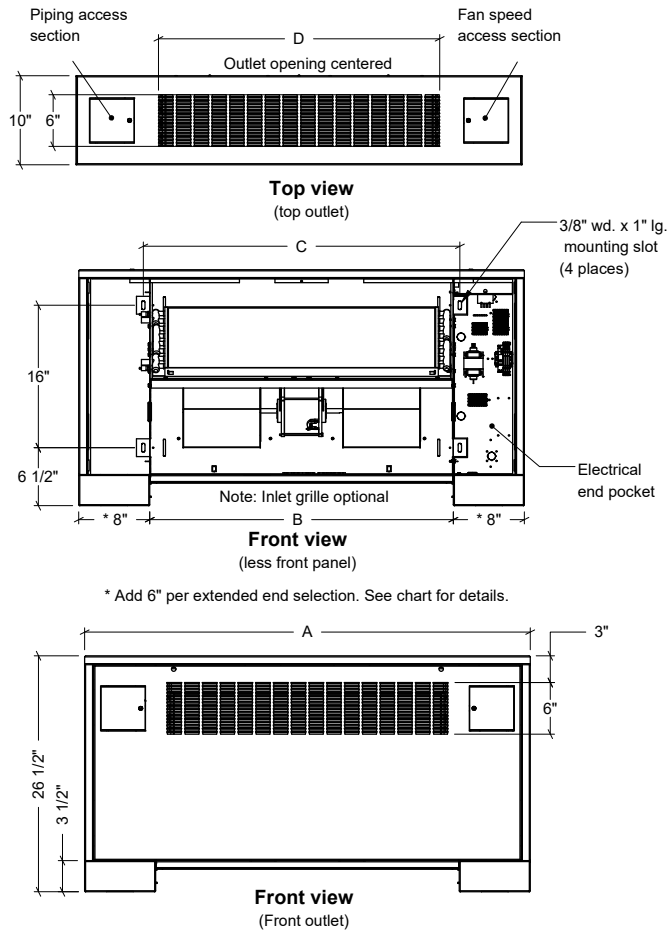


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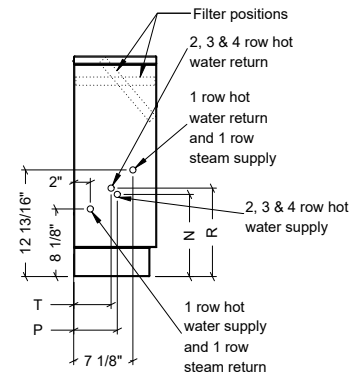
English, IP Units

Dimensions and data

Models RF and RFI



Side view: Model RF



Side view: Model RFI

Dimensional data

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

Coil	J	K	L	M	N	P	R	T
2 Row	18-1/4	4-7/16	19-1/16	5-3/16	9-7/8	5-3/16	10-11/16	4-7/16
3 Row	19-1/16	3-1/16	20-3/8	4-13/16	8-9/16	4-13/16	9-7/8	3-1/16
4 Row	19-1/16	3-1/16	20-3/8	4-13/16	8-9/16	4-13/16	9-7/8	3-1/16

Notes:

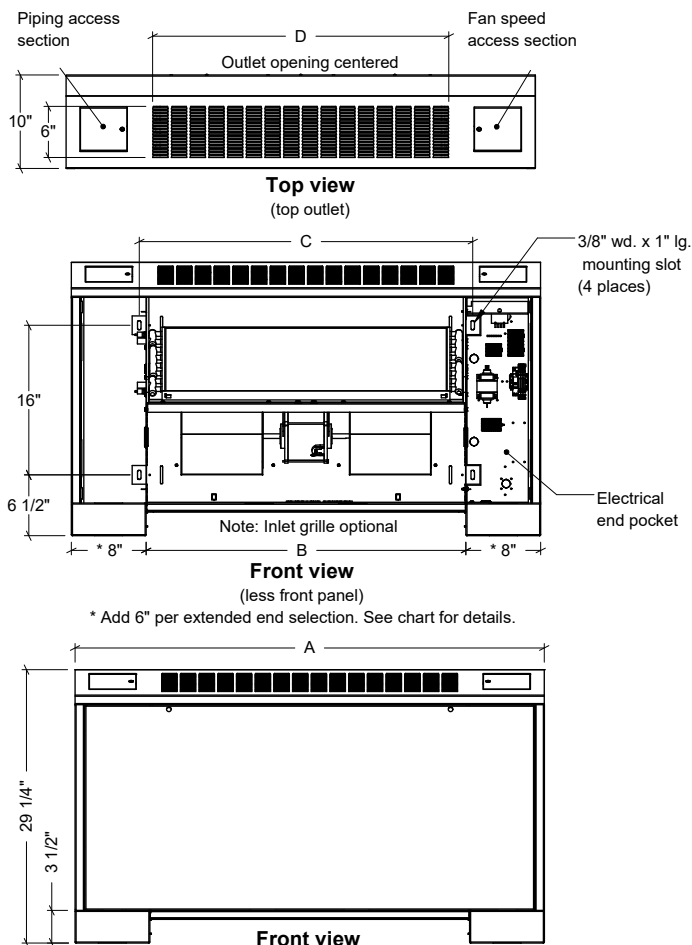
- 1 and 2 row coil supply and return 1/2" nominal (5/8" OD) all sizes
- Inlet grill optional
- Unit shown with left hand piping connections and right hand electrical connections as standard
- Right hand piping connections with left hand electrical connections available as an option
- Piping hand determined when facing the air outlet
- All listed dimensions are approximate and are subject to change without notice
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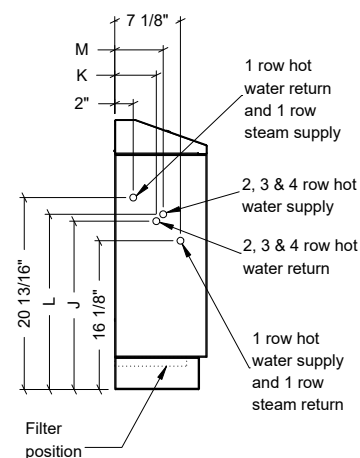
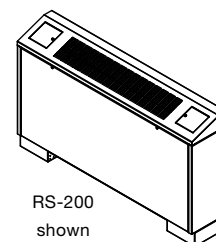
Cabinet Unit Heater Submittal Data

English, IP Units

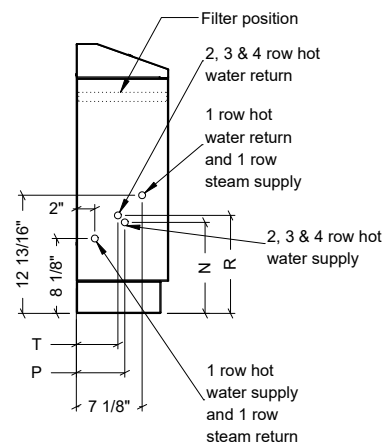
Dimensions and data



Models RS and RSI



Side view: Model RS



Side view: Model RSI

Dimensional data

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

Coil	J	K	L	M	N	P	R	T
2 Row	18-1/4	4-7/16	19-1/16	5-3/16	9-7/8	5-3/16	10-11/16	4-7/16
3 Row	19-1/16	3-1/16	20-3/8	4-13/16	8-9/16	4-13/16	9-7/8	3-1/16
4 Row	19-1/16	3-1/16	20-3/8	4-13/16	8-9/16	4-13/16	9-7/8	3-1/16

Notes:

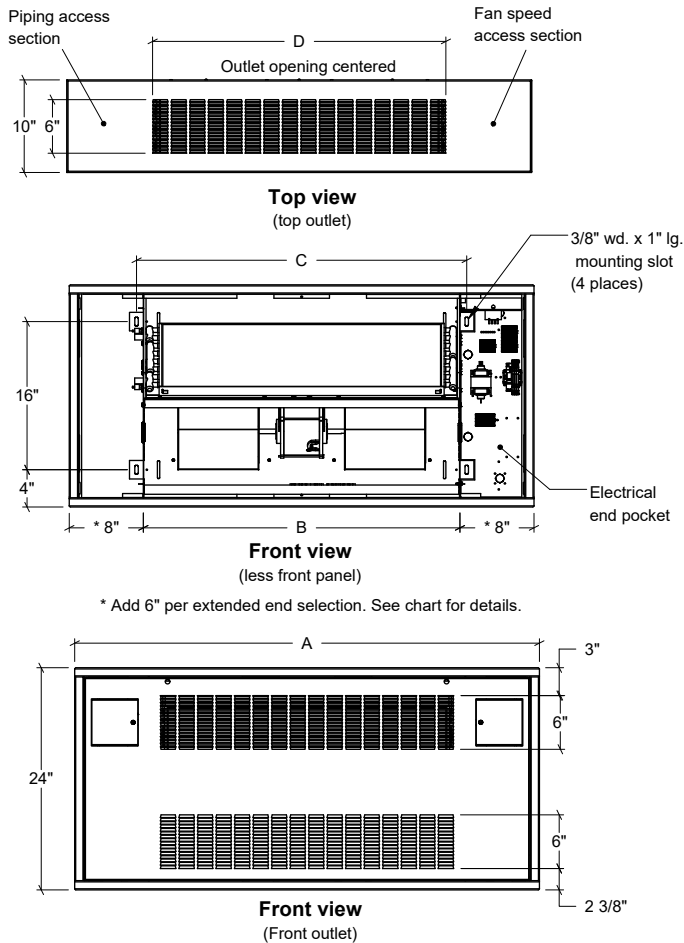
- 1 and 2 row coil supply and return 1/2" nominal (5/8" OD) all sizes
- Inlet grill optional
- Unit shown with left hand piping connections and right hand electrical connections as standard
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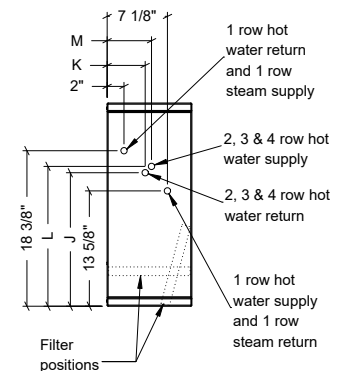
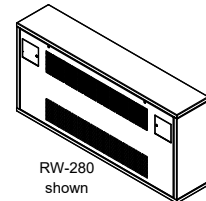
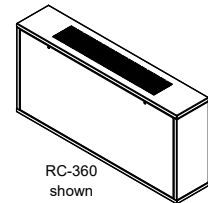
Cabinet Unit Heater Submittal Data

English, IP Units

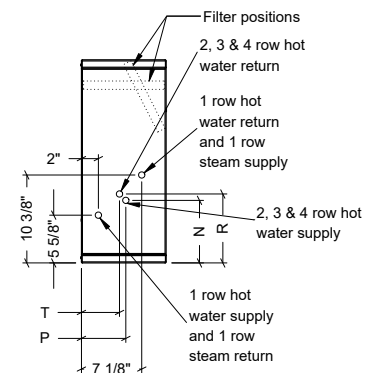
Dimensions and data



Model RW, RWI and RC



Side view: Model RW and RC



Side view: Model RWI

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

Coil	J	K	L	M	N	P	R	T
2 Row	15-3/4	4-7/16	16-9/16	5-3/16	7-7/16	5-3/16	8-1/4	4-7/16
3 Row	16-9/16	3-1/16	17-1/8	4-13/16	6-1/8	4-13/16	4-13/16	3-1/16
4 Row	16-9/16	3-1/16	17-1/8	4-13/16	6-1/8	4-13/16	4-13/16	3-1/16

Notes:

- 1 and 2 row coil supply and return 1/2" nominal (5/8" OD) all sizes
- Inlet grill optional
- Unit shown with left hand piping connections and right hand electrical connections as standard
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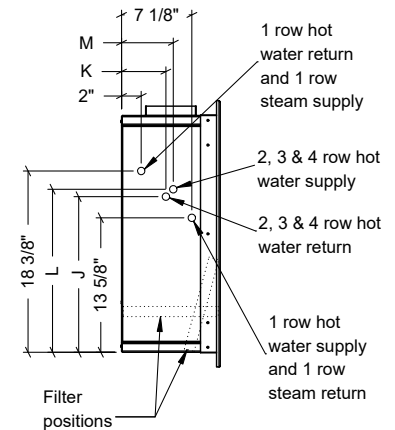
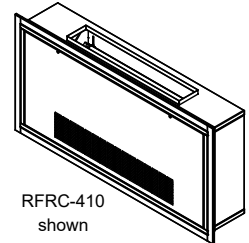
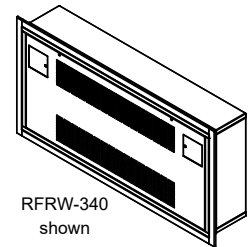
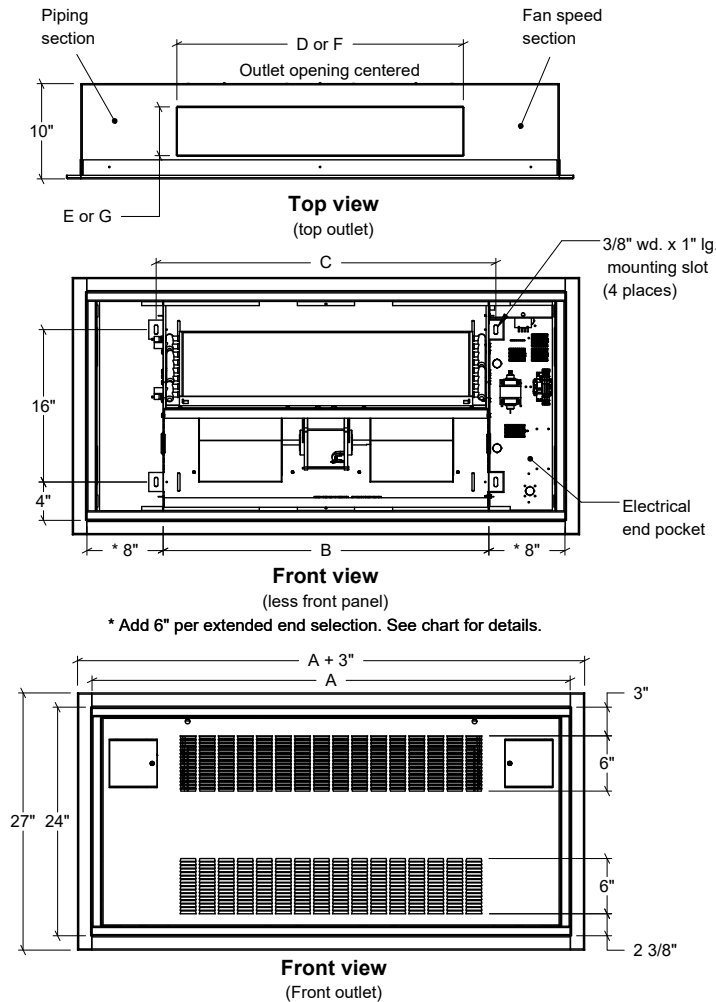
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Cabinet Unit Heater Submittal Data

English, IP Units

Dimensions and data

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



Side view: Model RRW, RFRW, RRC and RFRC

Dimensional data

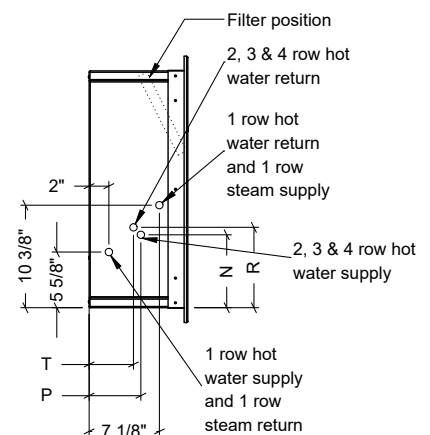
Unit size	A			B	C	Louvers		Duct opening		H		
	Std.	6" Ext.	6" Ext. x2			D	E	F	G	Std.	6" Ext.	6" Ext. x2
02	38-3/16	44-3/16	50-3/16	22-3/16	24	20	6	18-3/8	5-1/8	41-3/16	47-3/16	53-3/16
03	44-3/16	50-3/16	56-3/16	28-3/16	30	26	6	24-3/16	5-1/8	47-3/16	53-3/16	59-3/16
04	50-3/16	56-3/16	62-3/16	34-3/16	36	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

Coil	J	K	L	M	N	P	R	T
2 Row	15-3/4	4-7/16	16-9/16	5-3/16	7-7/16	5-3/16	8-1/4	4-7/16
3 Row	16-9/16	3-1/16	17-1/8	4-13/16	6-1/8	4-13/16	4-13/16	3-1/16
4 Row	16-9/16	3-1/16	17-1/8	4-13/16	6-1/8	4-13/16	4-13/16	3-1/16

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 at its base office
- See www.zehnder-ritting.com for any recent updates or changes

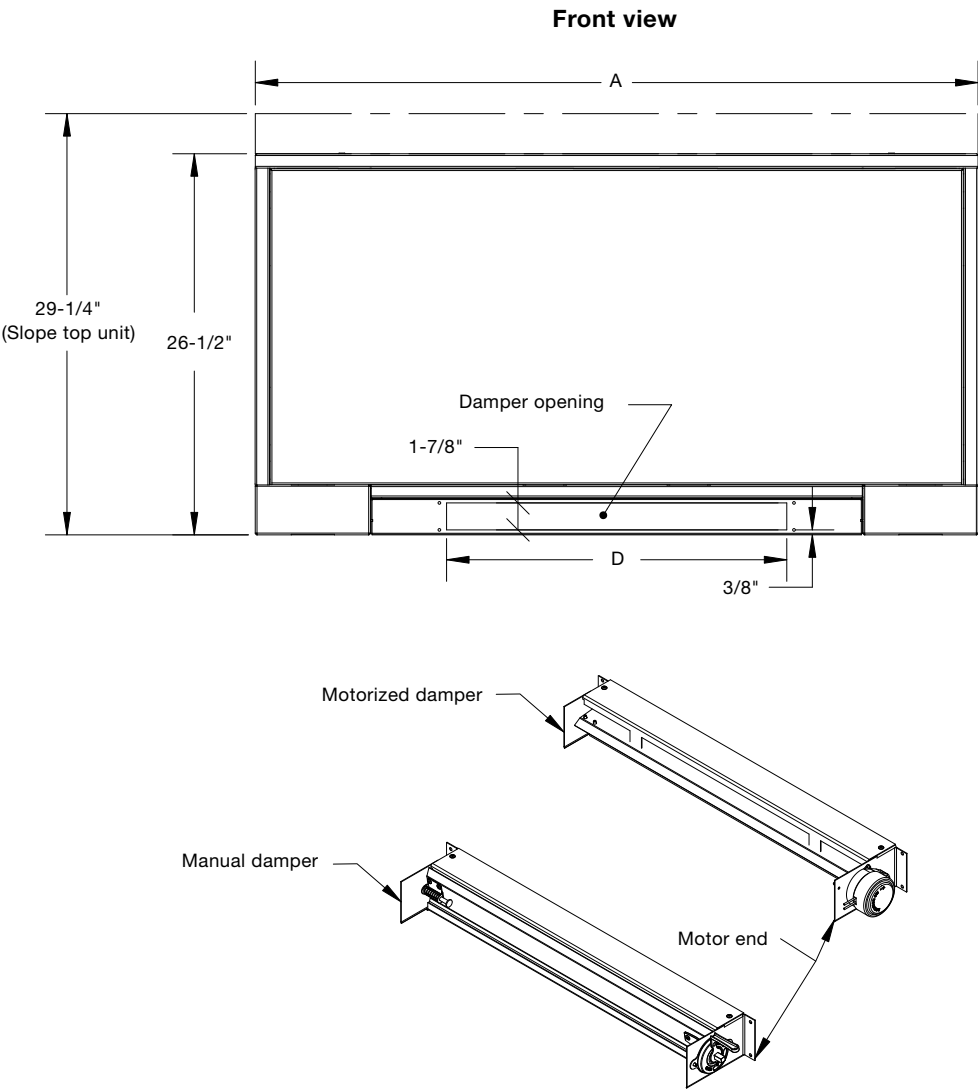
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Side view: Model RRWI and RFRWI

Dimensions and data

Damper



Dimensional data

Unit size	A	B	C	D
02	38-3/16	22-3/8	24	18-5/8
03	44-3/16	28-3/8	30	18-5/8
04	50-3/16	34-3/8	36	23-5/8
06	62-3/16	46-3/8	48	23-5/8
08	68-3/16	52-3/8	54	33-5/8
10	76-3/16	60-3/8	62	33-5/8
12	86-3/16	70-3/8	72	33-5/8

Notes:

- Damper motor always on right side when viewing unit from front side.
- 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.
- Available for models RF and RS only.

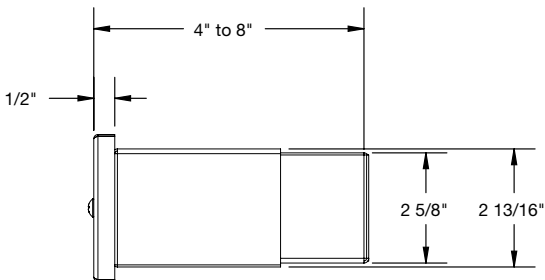
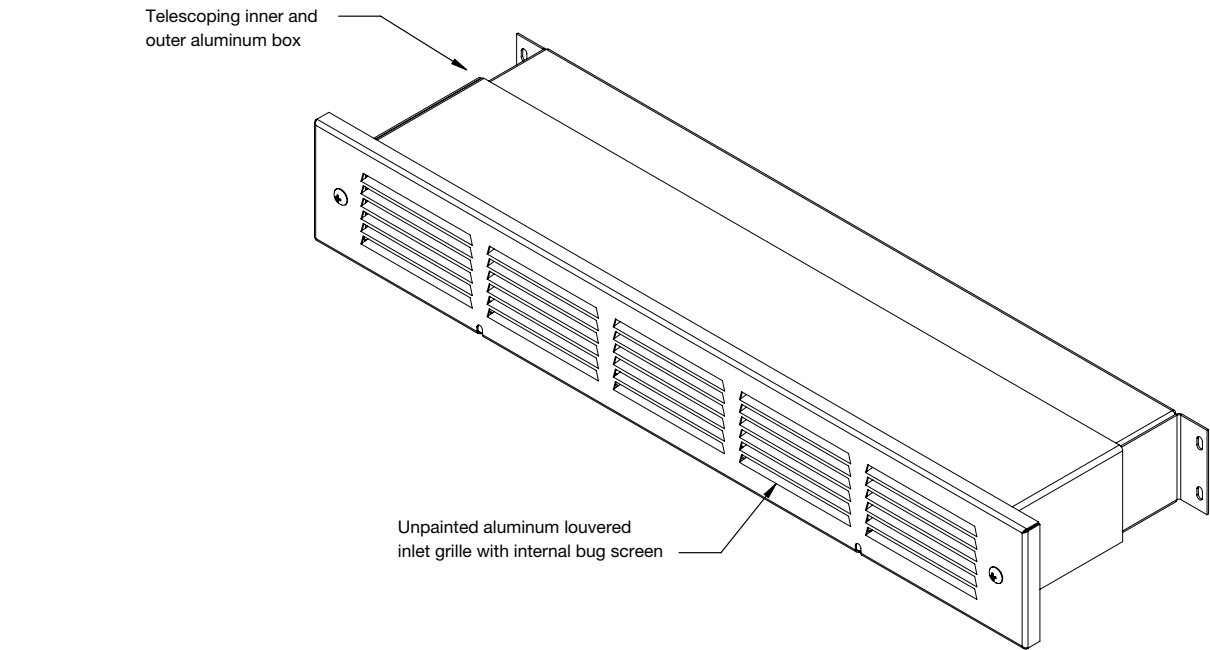
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Cabinet Unit Heater Submittal Data

English, IP Units

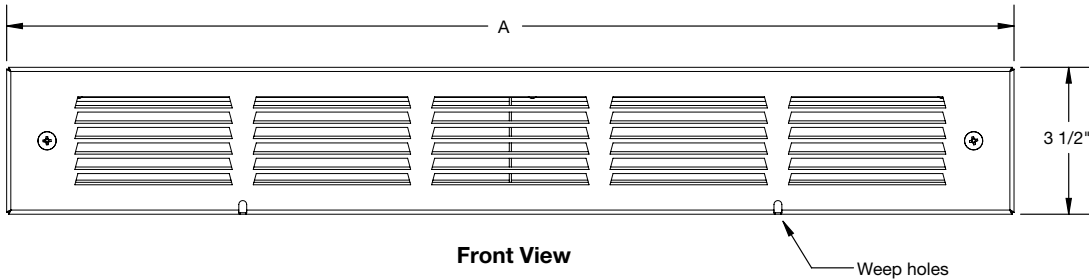
Dimensions and data

Outside air wall box



Side View

Dimensional data		
Model	A	Rough opening
WB-0203	24	22-1/2 x 3
WB-0406	29	27-1/2 x 3
WB-081012	39	37-1/2 x 3



Front View

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Cabinet Unit Heater Submittal Data

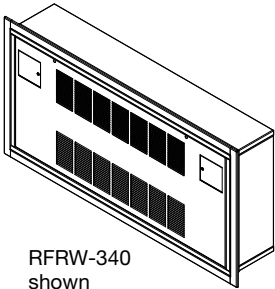
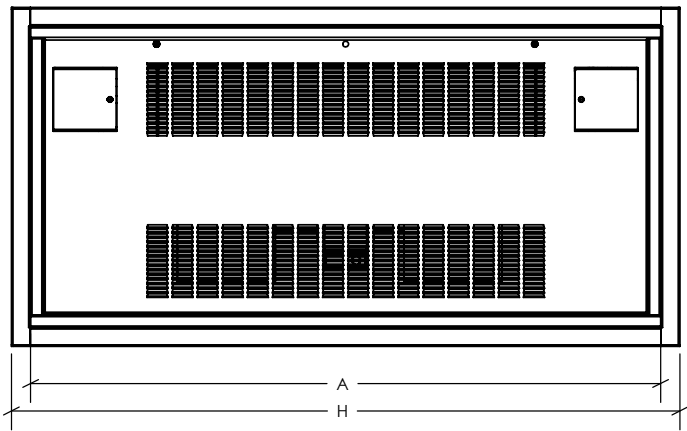
English, IP Units

Dimensions and data

Wall seal kit

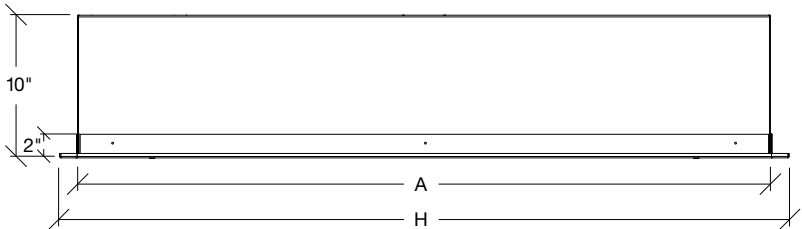
Ships loose for field mounting

Front view



RFRW-340
shown

Top view



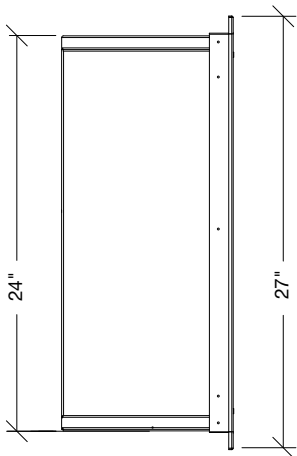
Dimensional data

Unit size	A	H
02	38-3/16	41-3/16
03	44-3/16	47-3/16
04	50-3/16	53-3/16
06	62-3/16	65-3/16
08	68-3/16	71-3/16
10	76-3/16	79-3/16
12	86-3/16	89-3/16

Notes:

- For fully recessed units locate frame flush with front
- For partially recessed units locate frame as needed
- Use sheet metal screws (by others) to secure trimframe to the unit.

Side view



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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 galvanized 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 retaining 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 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).

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 ½" OD 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" cleanable Merv 8] 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 (Floor Units Only).

Electrical

Units shall be furnished with single point power connection. Provide a terminal blocks and push fit connections for electrical termination. Provide a 3-speed fan control switch with off, high, medium and low speeds.

- Option: Provide 24 VAC fan relays with 40 VA transformer. 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.
- Option: 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 service disconnect switch to isolate power from the unit during maintenance.
- Option: Provide a manual motor starter to provide overload protection for the motor.
- 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.

Mechanical specifications

- Option: Provide an adjustable flow control device for each piping package.
- 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.

Outside air damper (floor units only)

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.]

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

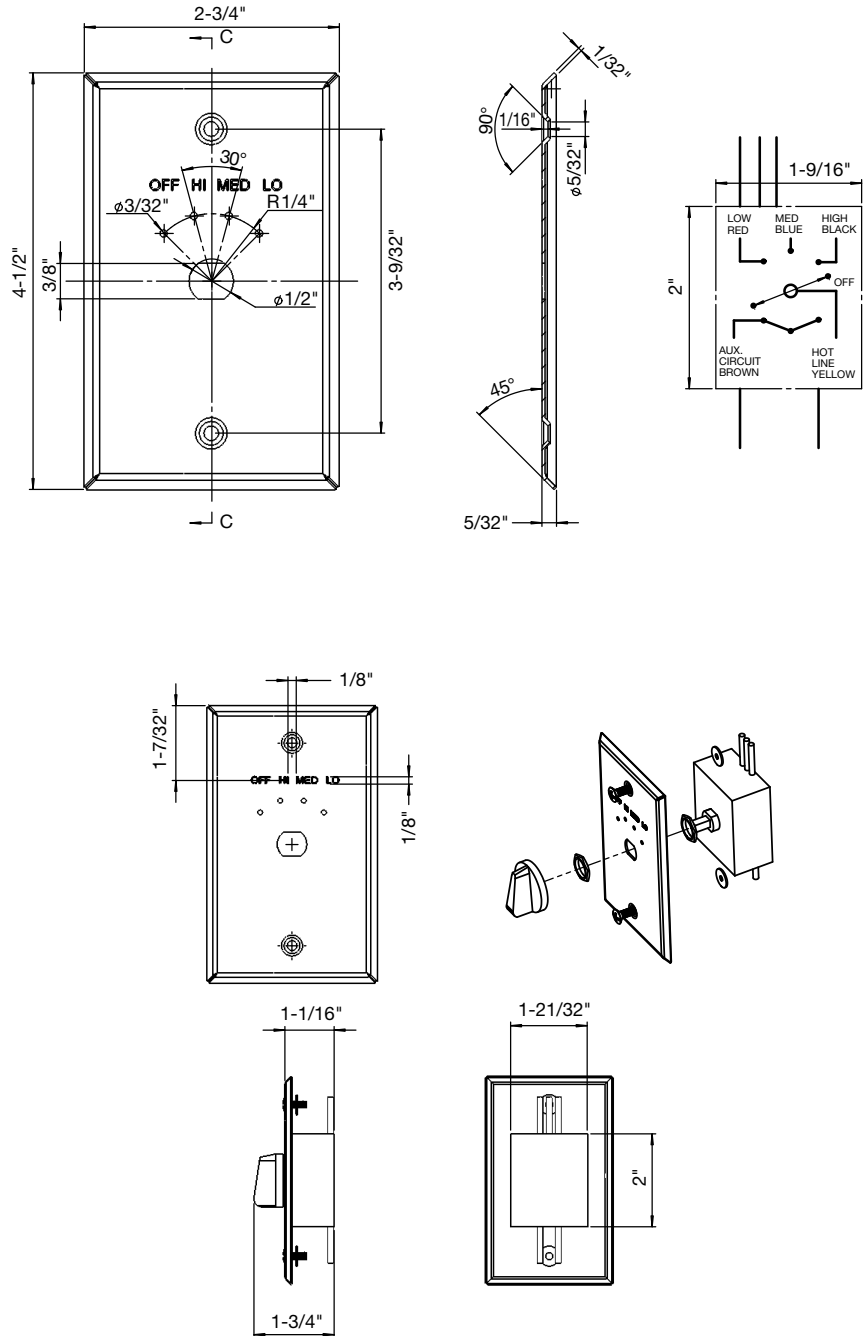
Cabinet Unit Heater Submittal Data

English, IP Units

☐ 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: > 1000M Ω
- Contact resistance: <40M Ω



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☐ Remote temperature sensor

The condensate overflow safety switch installs in the condensate drain pan of air conditioning equipment to shut off the unit if the condensate level in the drain pan approaches overflow.

Materials

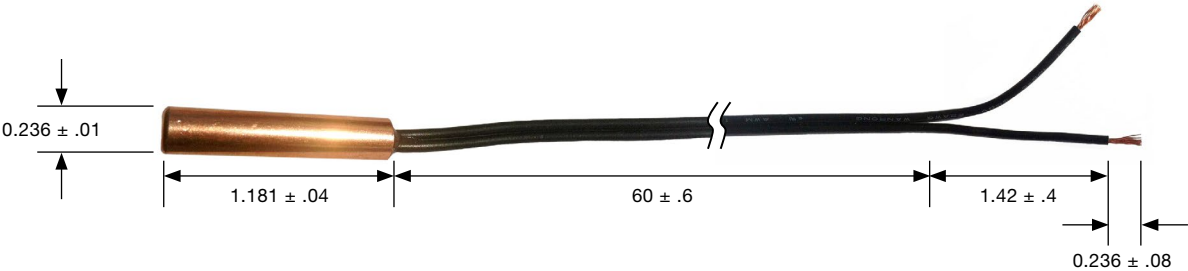
- Thermistor: chip thermistor
- Case: copper
- Filler: epoxy resin
- Leads: UL 2468, 22 AWG, 300 Volt, 105 °C, black zipcord

Electrical characteristics

- Zero power resistance at 77 °F (25 °C): R25=10.0k Ω ±3%
- B-value: B_{25/85}=3960K±2%
- Operating temperature range: -22 °F to +221 °F (-30 °C to +105 °C)

RT table

Temperature	Resistance (k Ω)
32 °F (0 °C)	32.790
50 °F (10 °C)	19.930
68 °F (20 °C)	12.500
86 °F (30 °C)	8.056
104 °F (40 °C)	5.326
122 °F (50 °C)	3.604
140 °F (60 °C)	2.493



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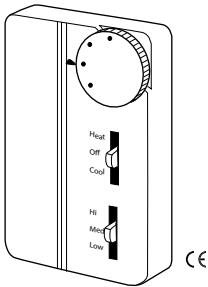
Cabinet Unit Heater Submittal Data

English, IP Units

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 temperature 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

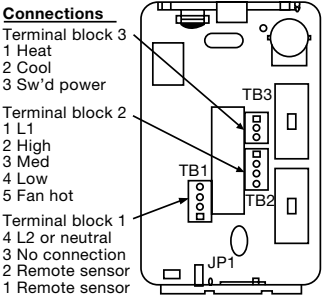
^a Fan and system must share the same voltage

Table 2: Model chart

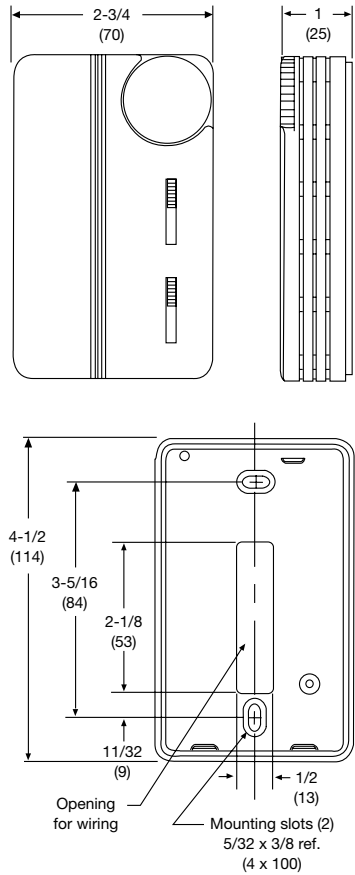
Model	Outputs	Changeover	Fan control	System switches
11100000180A	Dual	Manual	High-medium-low	Heat-off-cool
11100000181A	Dual	Automatic ^a	High-medium-low	On-off
11100000182A	Single	N/A	High-medium-low	On-off

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

Terminal description



Dimensional data



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☐ Wall thermostat

Features and benefits

- Convenient temperature display
 - ♦ View comfort level at-a-glance
- Bimetal temperature sensing
 - ♦ For improved thermal performance
- Mercury-free
 - ♦ No leveling or special disposal required
- J-box compatible
 - ♦ Not only will it meet code, but it speeds up installation
- Positive-off
 - ♦ Assured shutdown of HVAC system
- Universal replacement
 - ♦ Can retrofit most existing electric heat thermostats

Specifications

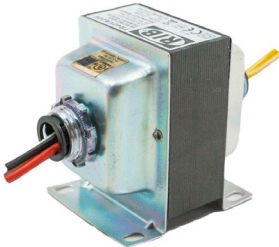
- Heating switch action: DPST
- Electrical rating:
 - ♦ 25 AMP at 250 VAC Res.
 - ♦ 18 AMP at 277 VAC Res.
 - ♦ 1 HP at 125 VAC
 - ♦ 2 HP at 250 VAC
 - ♦ 125 VA pilot duty
- Temperature control range: 50 °F to 90 °F (10 °C to 30 °C)
- Accuracy: ± 2 °F
- Shipping, retail ctn.: 3.18" W x 5" H x 2.87" L



Transformer, 120/208/230/277v

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: 8" leadwires
- Secondary: 8" leadwires

Overcurrent protection

- Inherently limited

Approvals

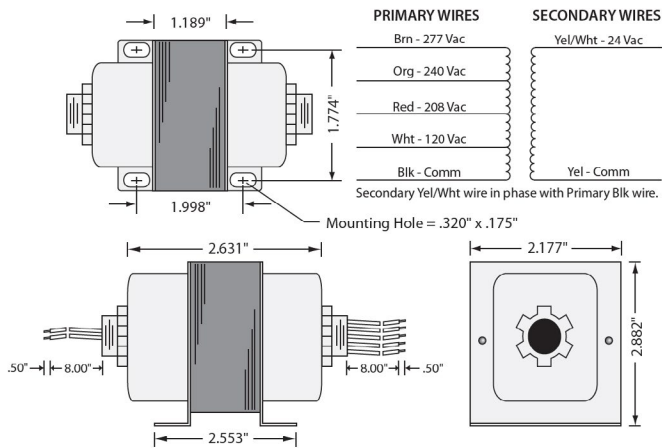
- C-UL
- CE
- ROHS
- National Electrical Code
 - ◆ Class 2 UL5085-3



Transformer dimensions in. (mm)

Model	Dimensions
111600000215A	2.631" x 2.177" x 2.882" (w/500" NPT Hubs)

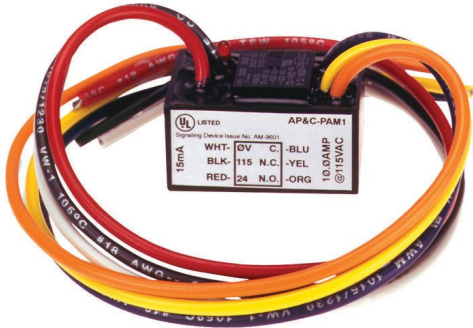
Wiring schematic



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24V relay

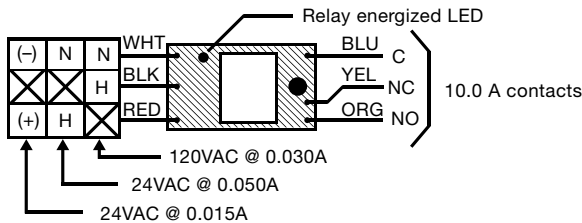
The 24V relays are encapsulated multi-voltage devices with “flying” leads that offer versatile, reliable performance in a convenient package.



Product description

The 24V relay provides 10.0A form “C” contacts. The relay may be energized by one of three input voltages: 24VDC, 24VAC or 120VAC. The input voltages are polarity-sensitive and diode-protected. The relay contains a red LED which indicates when the relay coil is energized.

Wiring



Product specifications

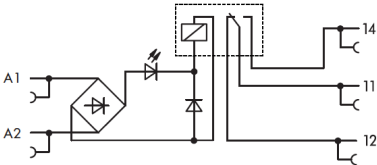
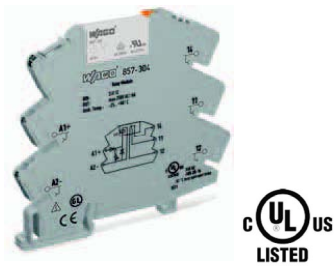
- Coil voltage: 24VAC/24VDC/120VAC
- Polarized: Yes
- Energized LED indicator: Yes
- Current requirement
 - @24VDC: 15mA
 - @24VDC: 50mA
 - @120VAC: 30mA
- Contact configuration: 1 SPDT dry form “C”
- Contact ratings
 - Contact rating/power factor
 - @5VDC: 250mA/0.35 PF
 - @24VDC: 7A/0.35 PF
 - @120VAC: 10A
- Wire leads: 6 “flying” leads 12”/18 AWG
- Ambient temperature @ 100% RH, condensing:
 - 32 °F to 120 °F (0 °C to 49 °C)
- Construction: 100% potted (sealed) with “flying” leads
- Mounting: Pre-drilled mounting screw hole and self tapping screw provided
- Dimensions
 - Height: 1.5" (38 mm)
 - Width: 1.2" (25 mm)
 - Depth: 0.9" (20 mm)
- Listing and approvals
 - UL*: U0XX/7.S3403
 - MEA: 73-92-E Vol. 21
 - CSFM: 7300-1004:101

*U0XX=Control unit accessories, System; /7=also certified for Canada

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24V AC/DC Relay

Relay socket with miniature switching relay, for DIN 35 rail

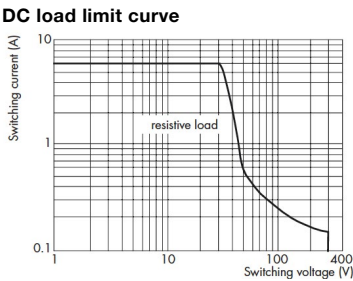


1. Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Specifications

- # relays and contact type
 - One SPDT
- Contact material
 - AgNi
- Max. continous current
 - 6A
- Max. switching voltage
 - 250 VAC
- Max. switching power (resistive)
 - 1500 VA AC; DC see load limit curve
- Pull in/ drop-out/ bounce time
 - 8ms/4ms/-
- Dimensions (mm) W x H x L
 - 6 x 81 x 94
- Wire connection
 - Cage Clamp S
- Approvals
 - UL Listed, UL916, UL864, C-UL
- Mechanical life
 - 5 x 10⁶ switching operations

- Coil voltage
 - 24V AC/DC, -15% / +20%
- Nominal voltage to EN 60664-1
 - 250 V / 4 kV / 2
- Dielectric strength, contact-coil (AC, 1 min)
 - 4 kV_{rms}
- Dielectric strength open contact (AC, 1 min)
 - 1 kV_{rms}
- Ambient operating temperature at V_N
 - 40 °C ... +60 °C
- Cross sections
 - 0.34 ... 2.5 mm² / AWG 22 ... 14
- Strip length
 - 9 ... 10 mm / 0.35 ... 0.39 in



☐ Return air thermostat

Overview

Remote bulb thermostat regulates temperature of air in the room by measuring the temperature of the air returning to the unit.

Features

- Controller can be mounted in any position
- Ambient temperature compensation provides good temperature control
- Fixed differential with an electrical rating of 125 VA at 120/208/240 and 277 Vac

Specifications

- **Dimensions:** 5-5/8" H x 2" W x 2-5/8" D
(143 mm H x 51 mm W x 67 mm D)
- **Includes:** Duct bulb holder
- **Frequency:** 50 Hz; 60 Hz
- **Approvals, Underwriters Laboratories, Inc.:** UL Listed: E4436, Vol. 4, Sec. 11, Guide XAPX
- **Approvals, Canadian Standards Association:** CSA Listed: Report 1
- **Contact ratings:**
 - ◆ 120 Vac, 8.0 AFL, 48.0 ALR
 - ◆ 240 Vac, 5.1 AFL, 30.6 ALR
 - ◆ 277 Vac, 4.2 AFL, 25.2 ALR
- **Voltage:** 120 Vac or 240/277 Vac
- **Setpoint temperature range:** 55 °F to 175 °F (13 °C to 79 °C)
- **Operating temperature range:** 200 °F (93 °C) maximum
- **Type:** Remote bulb
- **Output:** Relay
- **Relay Outputs:** 1 SPDT
- **Sensor Inputs:** 1
- **Sensor Element:** Copper bulb
- **Capillary Length:** 5 ft (1.5 m)
- **Bulb size:** 1/2" x 3-9/16" (13 mm x 90 mm)
- **Differential temperature:** 3.6 °F to 12 °F (2 °C to 6.7 °C)



☐ Aquastat

Overview

A SPDT, strap-on, surface type hot water control for direct or reverse action. Can be used as either an open high control or an open low control.

Features

- Terminals are color-coded to simplify installation
- Can be mounted on either a horizontal or a vertical rise pipe
- The insulated back portion of the case minimizes the effects of ambient temperature
- The SPDT switch action for high or low temperature detection
- Supplied with convertible range adjuster, which provides either knob or screwdriver adjustment

Electrical ratings

Motor Ratings VAC	120	240
AC Full Load Amp	10.0	6.0
AC Locked Rotor Amp	60.0	36.0
AC Non-Inductive Amp	10.0	6.0
Pilot Duty—125 VA, 24 to 240 VAC		

Selection chart

Switch action	Range °F (°C)	Diff °F (°C)	Mounting
SPDT	100 to 240 (38 to 116)	10 (5.6)	Clamp-on strap supplied


Specifications

- Maximum case-ambient temperature: 131 °F (55 °C)
- Maximum sensing element temperature: 250 °F (121 °C)



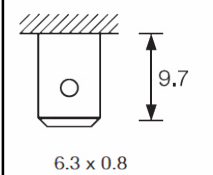


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Disconnect switches

 120/208/230/277v

Features

- Rated at 20A, 277V ac
- Positive switch action
- Distinctive styling
- Illuminated & non-illuminated
- Double pole
- DC LED Illumination Available
- Panel cut out: 30.1 x 22.2mm

Terminal	Function	Rocker
	 ON - OFF	 Softline Matt

Integral Splash Resistance

Current carrying parts are protected from moisture. Droplets which may enter the switch are channelled out through ports in the switch body.



Specifications

- European 16(4)A 250Vac T125, 10A 400Vac T125
- UL CSA (except 6054 & 6055 Switches) 20A 277Vac, 250Vac 11/2hp, 125Vac 1hp
- UL 100°C, file E45221, CSA file LR10990
- 3mm contact gap with Positive Break switching.



Features

- Matte is standard

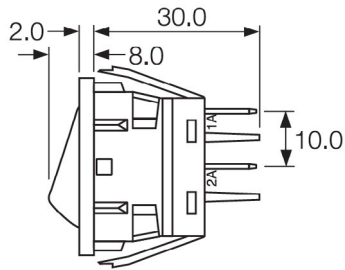
Color

- Black

Legend printing

- White

Dimensions (mm)

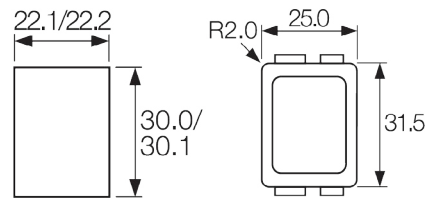


Panel thickness

L 0.75 to 2.5mm

Terminal spacing - Poles 10.5 between centres

Panel cut-out ** Bezel



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Cabinet Unit Heater Submittal Data

English, IP Units

☐ Manual motor starter

Single-phase

1 Hp maximum @ 115V or 230V

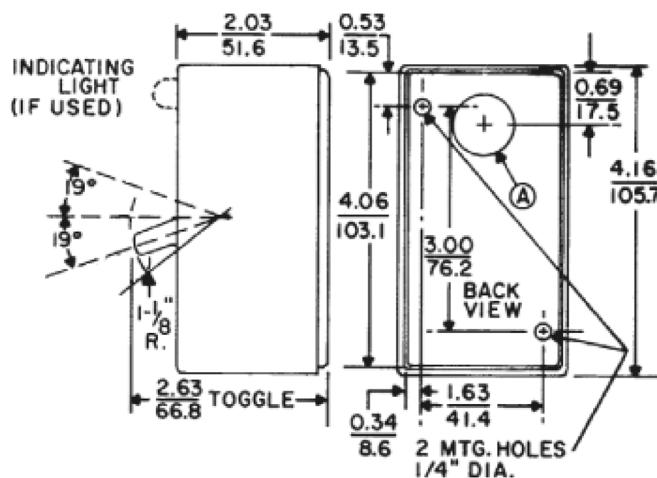
25-60 Hz

The manual motor starter provides dependable overload protection for single-phase motors up to one horsepower (115 or 230 volts), and are the most economical starter choices where undervoltage protection is not required.

Features

- Terminal design; box terminals provide easy access for wiring
- Molded plastic switch housing; protects starter mechanism
- NEMA 1 enclosure
- Small size; open starter fits GEM™ or handy box

Open starters include an unmounted nameplate and are single pole. Each starter includes a heater, sized to trip the switch on approximately 125% motor current.

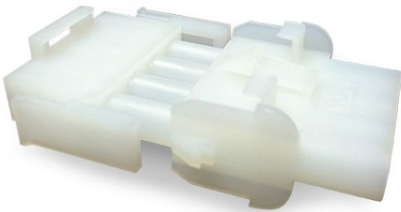


☐ Quick connect

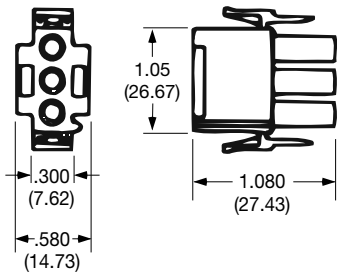
- Positive polarization
- Rear cavity identification
- Pin or socket contact can be hot
- Positive locking housings
- Insulation capability to 0.200" (5.08 mm) diameter
- Removable, crimp snap-in contacts
- Low-contact mating force
- Contacts are on 0.250" (6.35 mm) centerline spacing
- UL recognized file no. E28476
- CSA certified file no. LR 7189
- Rated for 600 VAC or VDC
- Dual locking lances provide optimum contact stability

Universal pins and sockets

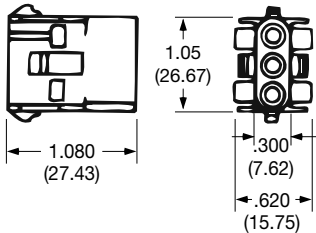
Can be used in either plug or cap housings. Pin diameter: 0.084" (2.13 mm)



Plug



Cap



Pre-tinned brass

Style	AWG	Ins. dia. range (in.)
Pin	20-14	0.06-0.13
Socket		



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☐ 1" spun glass throwaway filter

Construction

Zehnder’s heavy duty, industrial grade filters are designed with a one-piece moisture-resistant chipboard frame enclosing media. Standard frames are nominal 1" thick (3/4" actual). The fiberglass media filter consists of continuous-filament fibers bonded together with thermo-setting resin.

Support grilles of perforated corrosion resistant steel or expanded metal are provided on both sides of the filter. The media pads and support grilles are continuously glued to the inside perimeter of the frame, resulting in exceptional strength and rigidity. This design virtually eliminates the possibility of media sag within the frame.

Physical data

- Frame: One-piece moisture-resistant chipboard
- Media: Fiberglass
- Support grille: Perforated corrosion-resistant steel or expanded wire on both sides of the filter
- Sealant: Hot-melt resin

Pressure drop

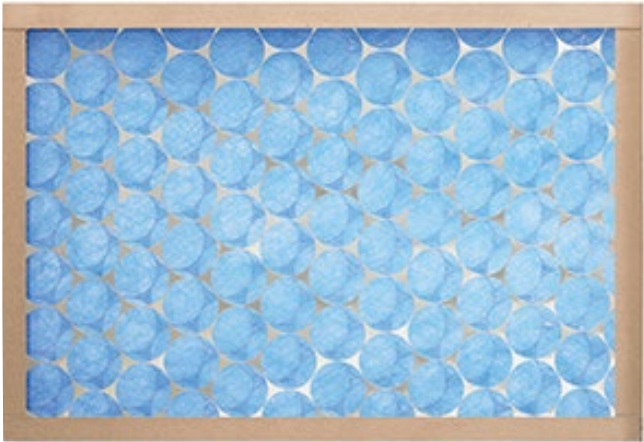
- 0.07" w.g. @ 300 fpm

Features

Dimensions

Model	02	03	04	06	08	10	12
RF, RS	7-1/4" x 22"	7-1/4" x 28"	7-1/4" x 34"	7-1/4" x 46"	7-1/4" x 52"	7-1/4" x 60"	7-1/4" x 70"
RFI, RSI, RW, RWI RRW, RRWI RFRW, RFRWI RC, RFRC, RRC	9-3/4" x 22"	9-3/4" x 28"	9-3/4" x 34"	9-3/4" x 46"	9-3/4" x 52"	9-3/4" x 60"	9-3/4" x 70"

- All dimensions ±1/8"



- One-piece moisture-resistant chipboard frame prevents broken corners
- Support grilles on both sides for exceptional strength
- Media and grilles continuously glued to the inside perimeter of the frame for rigidity
- Filters are UL 900 Class 2 listed
- MERV 4 rating

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Cabinet Unit Heater Submittal Data

English, IP Units

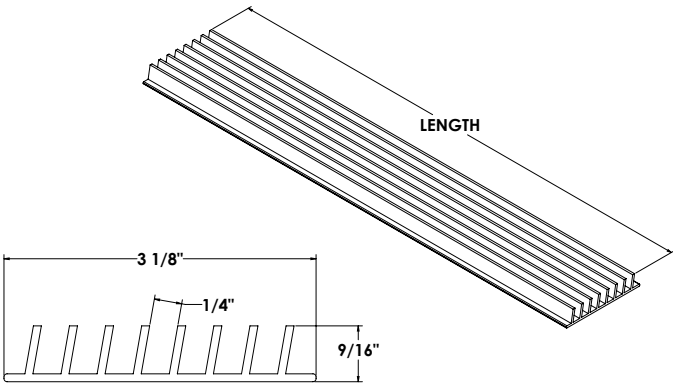
☐ Aluminum bar grille

Materials of construction

- Clear anodized extruded aluminum

Dimensions

Size	Length (in.)	Open area (sq.in.)
02	18	56.3
03	24	75.0
04	30	93.8
06	42	131.3
08	48	150.0
10	54	168.8
12	66	206.3



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Closed cell insulation



Flexible, elastomeric thermal insulation, black in color. It is furnished with a smooth skin on one side which forms the outer exposed insulation surface. It is manufactured without the use of CFC's, HCFC's, or HFC's. It is also formaldehyde-free, low VOCs, dust free, fiber free and resists mold and mildew.

Factory mutual (FM) approvals

Thermal conductivity

- 0.25 BTU=in/hr. ft² °F

Water vapor transmission:

- 0.05 perm-inch

Fire rating

- Will not contribute significantly to fire (simulated end use testing)

As tested by ASTM E 84 "Method of Test for Surface Burning Characteristics for Building Materials" and CAN/ULC S-102, has a flame-spread index of less than 25 and a smoke-developed index of less than 50.

Note: Numerical flammability ratings alone may not define the performance of products under actual fire conditions. They are provided only for use in the selection of products to meet limits specified.

Uses

The recommended temperature usage range is -70 °F to 220 °F (-57 °C to 105 °C) according to method of application. With full adhesive coverage attachment, the surface to which it is applied may operate to a limit of 180°F (82 °C).

Conforms to NFPA 90A and NFPA 90B requirements.

Resistance to moisture vapor flow

The closed-cell structure of the insulation prevents moisture from wicking and makes it an efficient insulation.

Specification compliance

Insulation developed to meet:

- ASTM C 534, Type II — Sheet Grade 1
- ASTM C 1534
- ASTM E 84
- NFPA 255
- UL 723
- CAN/ULC S-102
- UL 94 5V-A, V-0, File E55798
- NFPA 90A, 90B
- UL 181
- ASTM G21/C1338
- ASTM G22
- ASTM D 1056, 2B1
- MIL-P-15280J, FORM S
- MIL-C-3133C (MIL STD 670B), Grade SBE 3
- MEA 107-89M
- City of Los Angeles – RR 7642

Physical data

Physical properties	Test methods	
Thermal conductivity Btu • in./h • ft ² • °F (W/mK)		
■ 75 °F mean temperature (24 °C)	0.25 (0.036)	ASTM C 177 or C 518
■ 90 °F mean temperature (32 °C)	0.256 (0.037)	
Water vapor permeability Perm-in. [Kg/(s•m•Pa)]	0.05 (0.725 x 10 ⁻¹³)	ASTM E 96, Procedure A
Flame spread and smoke developed index through 1" (25 mm)*	25/50	ASTM E 84 CAN/ULC S102
Mold growth	UL181	Meets requirements
Fungi resistance	ASTM G21/C1338	Meets requirements
Bacterial resistance	ASTM G22	Meets requirements
Water absorption, % by volume	0.2%	ASTM C 209
Upper use limit	180/220 °F (82/105 °C)	
Lower use limit ¹	-297 °F (-183 °C)	
Ozone resistance	Good	
Density, typical range ²	3.0 to 6.0 lbs./ft ³	ASTM D 1622 D 1667

Performance approved through continuing supervision by Factory Mutual (FM) approvals.

¹ At temperatures below -20 °F (-29 °C), elastomeric insulation starts to become less flexible. However, this characteristic does not affect thermal efficiency or water vapor permeability of the insulation.

² Reference ONLY.

Cabinet Unit Heater Submittal Data

English, IP Units

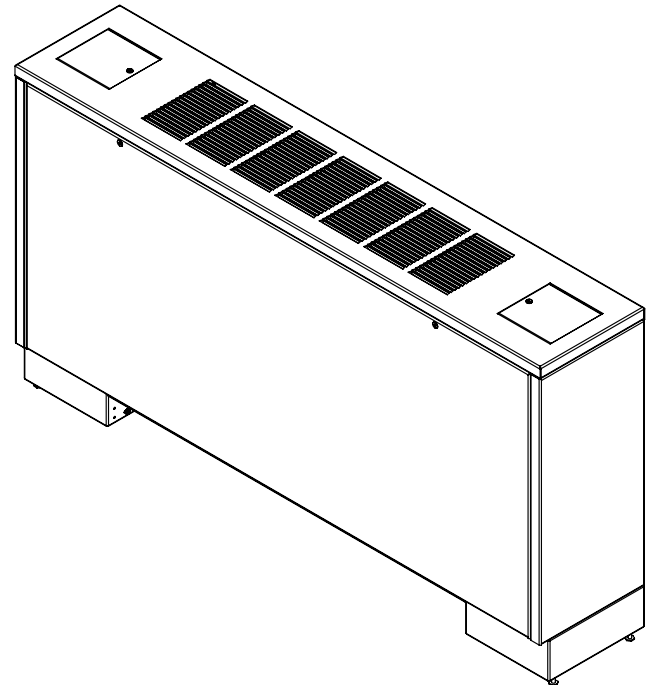
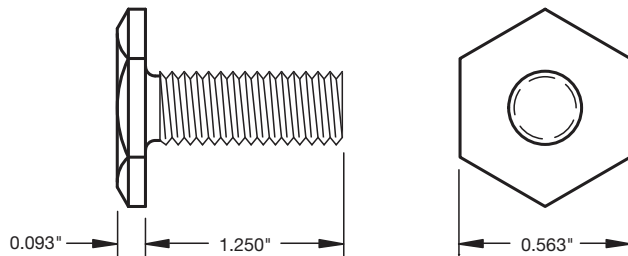
☐ Leveling legs

Features

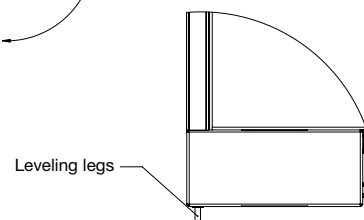
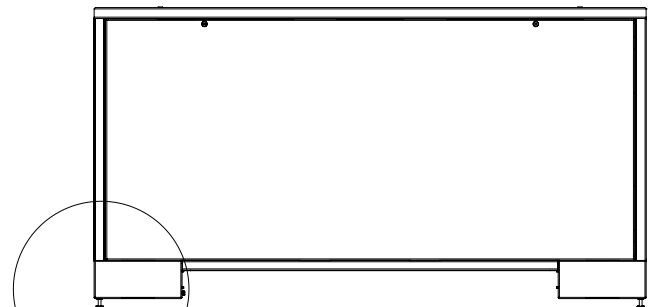
- Four optional leveling legs per unit allow for pitch adjustment and mounting on uneven surfaces
- One-piece construction leveling bolt
- Rolled threads extend full length for maximum adjustment
- Exposed base prevents dirt build-up and offers the advantage of easy cleaning
- Base is beveled to facilitate moving
- Easily adjusted with standard wrenches
- Available on models FF, FS, FLF, RF, RFI, RS and RSI

Specifications

- Leveling bolt length tolerance: + .00" to .06"
- Thread size: 1/4"-20



Model FF shown



Detail A
Scale 1:4

☐ Auto air vent, heating

Automatic air vent for hot water and steam systems. The nickel-plated valve has a quick venting design and a positive shut-off ball check.

Specifications

Application

- Hot water or steam

Materials (body)

- Nickel plated

Maximum operating temperature

- 240 °F (115 °C)

Maximum operating pressure

- Water: 125 psi
- Steam: 10 psi

Dimensions, approximate

- Diameter: 1-27/32" (24 mm)
- Length: 3-1/4" (83 mm)



Connection type	Connection size	Weight		Description
		(lb)	(kg)	
Male NPT	1/8"	0.6	0.3	1/8" NPT automatic air vent for hot water or steam

☐ 0-25% manual outside air damper

Features

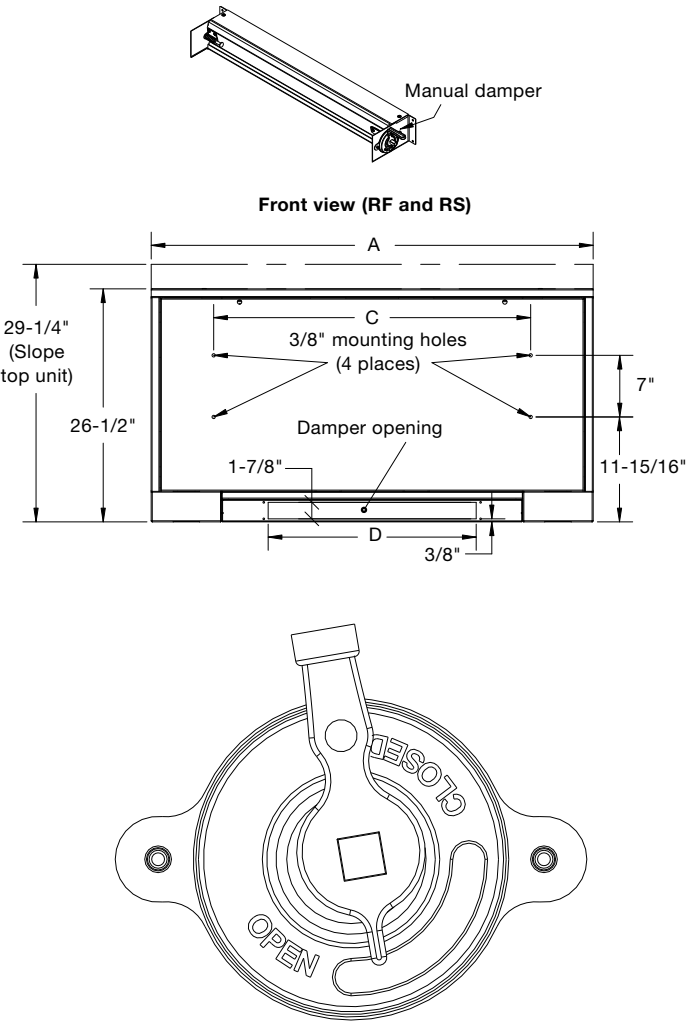
Models RF and RS only

- Operational at 0% to 25% outside air
- Furnished with a 120V/60/1 synchronous motor that is wired to the blower to automatically open the damper when the fan starts
- When the power is off or interrupted, the damper returns to the closed position
- Located in bottom of floor mounted units only
- Damper motor always on right side when viewing unit from front side
- All listed dimensions are approximate and are subject to change without notice
- Modifications to the product specifications must be accepted by Zehnder at its base office

Unit size	A	B	C	D
02	38-3/16	22-3/8	24	18-5/8
03	44-3/16	28-3/8	30	18-5/8
04	50-3/16	34-3/8	36	23-5/8
06	62-3/16	46-3/8	48	23-5/8
08	68-3/16	52-3/8	54	33-5/8
10	76-3/16	60-3/8	62	33-5/8
12	86-3/16	70-3/8	72	33-5/8

Specifications

- 20-gauge galvanized steel
- Foam gasket seal
- Galvanized steel damper handle with wing nut memory setting



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☐ 0-25% motorized outside air damper

Features

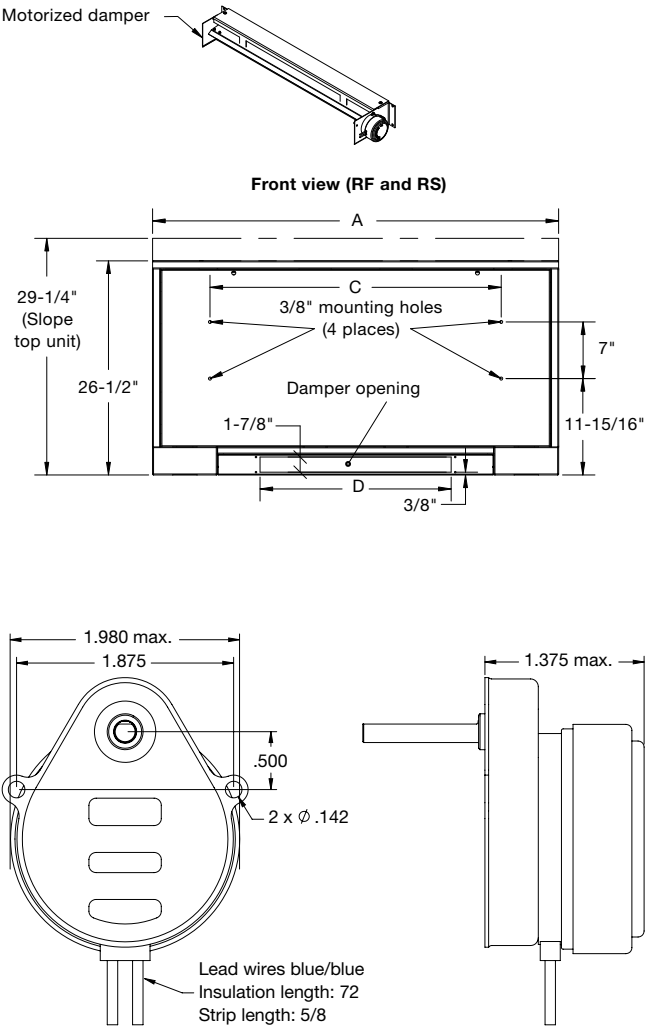
Models RF and RS only

- Operational at 0% or 25% outside air
- Furnished with a 120V/60/1 synchronous motor that is wired to the blower to automatically open the damper when the fan starts
- When the power is off or interrupted, the damper returns to the closed position
- Located in bottom of floor mounted units only
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06	62-3/16	46-3/8	48	23-5/8
08	68-3/16	52-3/8	54	33-5/8
10	76-3/16	60-3/8	62	33-5/8
12	86-3/16	70-3/8	72	33-5/8

Specifications

- 20-gauge galvanized steel
- Foam gasket seal
- Voltage: 120V/60Hz/1Ph
- Power: 5W
- Speed: 60 RPH
- Run torque: 40 in.-oz. (minimum)
- Reset torque: 13 in.-oz. (minimum)
- Insulation: class B



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Cabinet Unit Heater Submittal Data

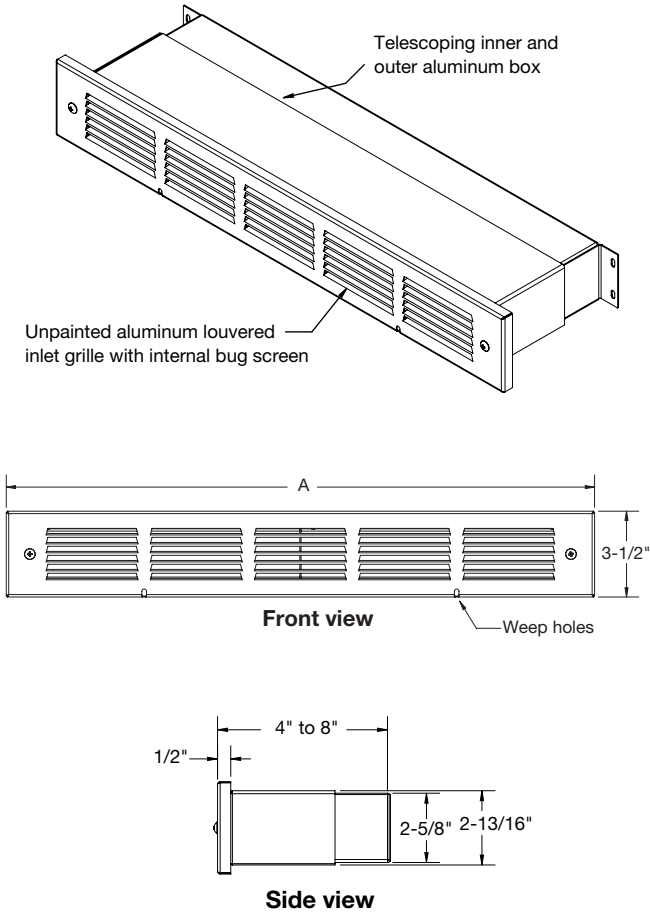
English, IP Units

Outside air wall box

Features

- Aluminum construction
- Stainless steel fasteners used for grille attachment
 - * RF and RS models only *

Model	Dimension A	Rough opening
WB-0203	24"	22-1/2" x 3"
WB-0406	29"	27-1/2" x 3"
WB-081012	39"	37-1/2" x 3"



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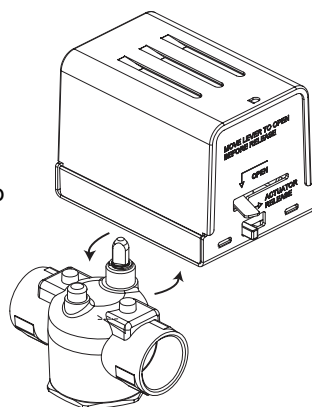
Cabinet Unit Heater Submittal Data

English, IP Units

☐ On/off control valve

Features

- Hysteresis synchronous motor for long life
- Spring return operation provides a fail-safe
- Actuator mounts directly onto valve body without need for linkages or calibration
- Manual override lever
- Actuator can be replaced without any tools, or removal of valve from system



Valve body assembly

- Service: hot and chilled water models, up to 50% glycol
- System static pressure limits: 300 psi (2068.4 kPa)
- Close-off: refer to Table 2
- Fluid/ambient temperature limits: refer to Table 1
- Seat leakage: ANSI class IV (0.01%) with pressure at inlet (B-port/A-port, if 3-way)
- Body: forged brass
- Stem: nickel-plated
- Seat: brass
- Paddle: Buna N

Actuator

- Voltage: 24 Vac @ 50/60 Hz, 120 Vac @ 60 Hz
- Power requirements: 6.5 watts, 7.5 Va
- Control signal: on/off, 2 position, spring return
- Timing, full open to full close: 25 sec. max and 9 sec. max. spring return
- Materials: stainless steel base plate, aluminum cover
- Ambient temperature limits
 - ◆ Shipping & storage: -40 to 160 °F (-40 to 71°C)
 - ◆ Operating: Refer to Table 1
- Humidity: 5 to 95% relative humidity, non-condensing
- Agency listings
 - ◆ UL873: Underwriters Laboratories (File #E9429 Category Temperature Indicating and Regulating Equipment)
 - ◆ CUL: UL Listed for use in Canada by Underwriters Laboratory
 - ◆ Canadian Standards C22.2 No. 24
 - ◆ European Community: EMC Directive (89/336/EEC) Low Voltage Directive (72/23/EEC)

Table 1

Valve body and actuators model chart

Model temperature range	
Valve body	32° to 200 °F (fluid) @ 104 °F (ambient) (0 to 93 °C @ 40 °C)
Actuator	32° to 200 °F (fluid) @ 104 °F (ambient) (0 to 93 °C @ 40 °C)

Table 2

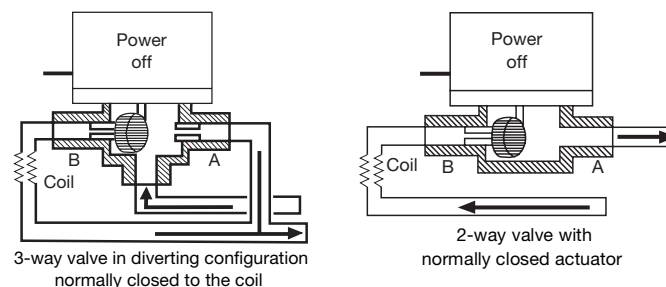
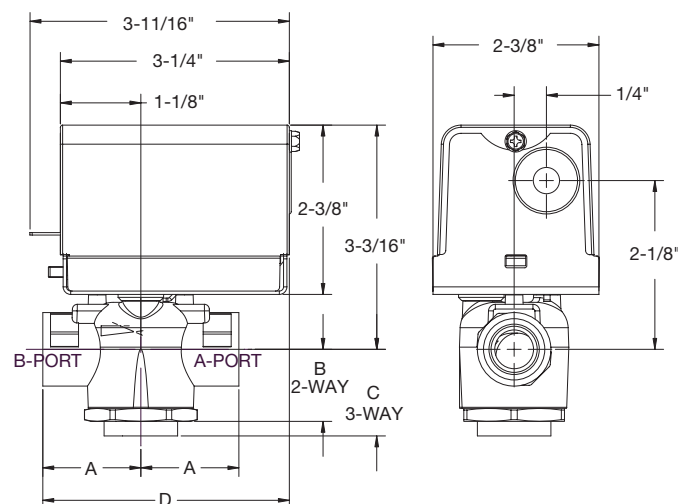
Flow coefficients and maximum close-off pressure differential

Valve size	Connection type	2-way Cv (kv)	3-way Cv (kv)	Close-off ΔP PSI (kPa)
1/2"	SW	3.5 (3.0)	4.0 (3.4)	25 (172)

Table 3

Dimensions

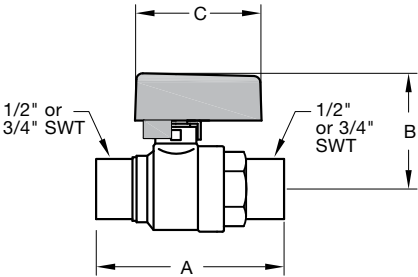
Valve body size	A	B	C	D
1/2" sweat	1-5/16" (33 mm)	15/16" (23 mm)	1-5/16" (33 mm)	3-5/16" (84 mm)



Cabinet Unit Heater Submittal Data

English, IP Units

Ball valve



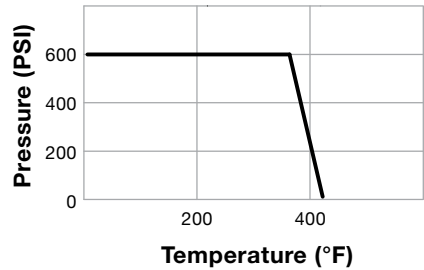
Dimensions (inches)

Size	A	B	C	C _v
1/2	2.3	1.5	1.6	17
3/4	3.0	1.7		40

Design data

- Forged brass body
- O-ring seals
- 600 WOG
- 325 °F
- Blowout-proof shafts
- Dual o-ring shaft seals

Valve seat rating



Materials

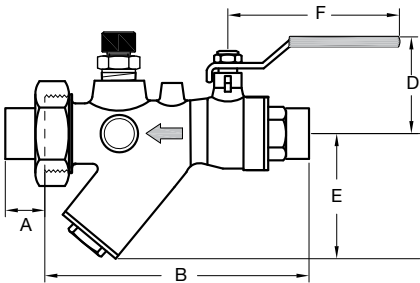
Body, shaft, tail	Brass OT58-UNI-5705-65
Handle and nut	Aluminum
Ball	Chrome plated brass
Ball seals	Teflon
Shaft seals	Dual Viton o-rings
Union seals	Viton o-ring

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Cabinet Unit Heater Submittal Data

English, IP Units

Ball valve, Y-strainer, union end



Design data

- Hot forged brass body
- O-ring seals
- 600 WOG
- 325 °F
- Interchangeable union end
- Blowout-proof shafts
- Double shaft seals
- Removable filter screen

Pressure/temperature test plug

- 325 °F
- 400 PSIG
- 1/4" MNPT
- Side discharge



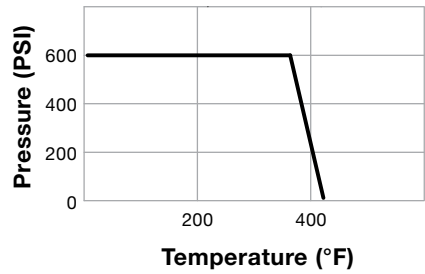
Dimensions (inches)

Size	A	B	D	E	F	Filter area (sq. in.)	C _v	Weight (lbs.)
1/2	0.59	4.1	1.7	1.6	1.9	2.7	5.5	1.1
3/4		4.2						

Materials

Body	Forged brass ASTM B283
Handle and nut	Zinc plated
Ball	Hard chrome plated
Ball seals	Teflon
Shaft seals	Dual Viton o-rings
Union seals	Viton o-ring
Cap seal	Viton o-ring
Filter screen	20 mesh, 304 stainless steel
Tail pieces, nut	Brass

Valve seat rating



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Cabinet Unit Heater Submittal Data

English, IP Units

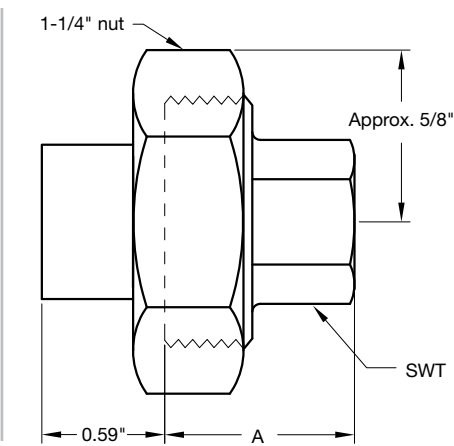
☐ Union

Materials

Body, end pieces	Forged brass ASTM B283
Union seals	EPDM gasket

Dimensions (inches)

Size	A	I.D.
1/2	0.88	0.53
3/4	1.09	0.74



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Manual circuit setter

Description

The manual circuit setter balance valve is a precision machined ball type triple purpose balancing instrument. They are precisely calibrated for use as a presettable balance valve, variable orifice flow meter and positive shut-off service valve.

Valves are furnished with a calibrated nameplate and memory stop indicator which permits a preset to a fixed open position and then closed for service without disturbing valve setting.

Valves are equipped with capped readout valves fitted with internal check valves and 1/4" NPT tapped and plugged drain port.

Construction

- Body: Brass ASTM B283-C69300*
* Contains less than 0.25% lead content by weight on wetted surfaces
- Ball: 304 stainless steel
- Seat rings: Glass and carbon filled TFE
- Readout valves: Brass with EPT check valves
- Stem O-ring: EPDM

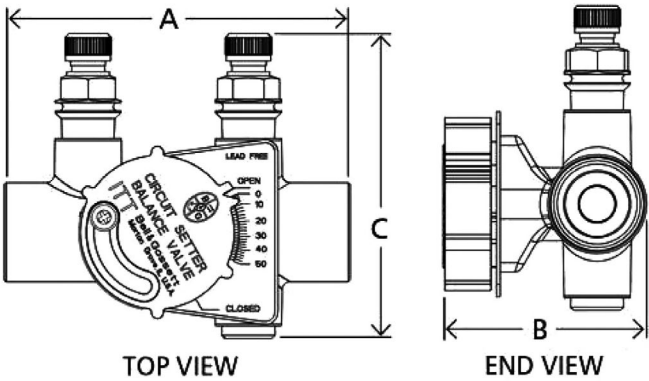
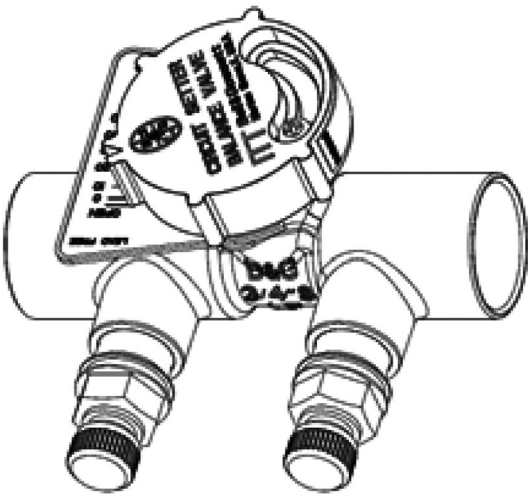
Maximum working pressure

- NPT models: 400 psig (2069 kPa)
- Sweat models: See table below

Maximum operating temperature

- -4 °F (-20 °C) to 250 °F (121 °C)
- ◆
- CSA certified: AB1953; Vermont S152
- Maryland House Bill 372 (statute 12-605)
- ANSI/NSF-61 Annex G compliant

Type solder	Maximum pressure limitations	
	Pressure PSI (KPa)	Temp °F (°C)
95-5 Tin-Antimony	300 (2069)	200 (93)
	250 (1724)	225 (107)
	200 (1379)	250(121)



Dimensions and weights

Size	Connection type	Dimensions in inches (mm)			Weight lbs. (kg)
		A	B	C	
1/2"	Sweat	2.91 (73.9)	1.82 (46.2)	2.85 (72.4)	1.00 (0.5)
3/4"	Sweat	3.51 (89.1)	2.05 (52.1)	3.10 (78.7)	1.25 (0.6)

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English, IP Units

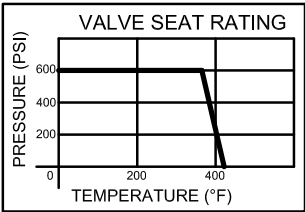
☐ Automatic circuit setter

Construction

- Body, end pieces: Forged brass ASTM B283
- Handle and nut: Zinc plated
- Ball: hard chrome plated brass
- Ball seals: Teflon
- Shaft: Brass
- Shaft seals: Dual FKM O-rings
- Union seals: FKM O-ring
- Cap seal: FKM O-ring
- Flow cartridge: stainless steel/brass
- Tail pieces, nut: Brass

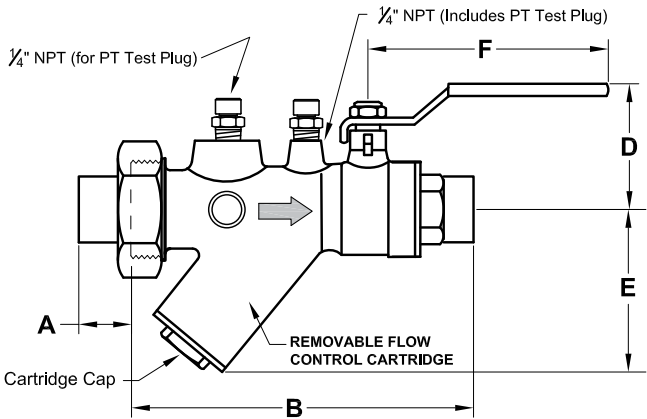
Design data

- Hot forged brass body
- O-ring seals, 600 WOG, 325 °F
- Interchangeable union end
- Blowout-proof shafts
- Double shaft seals
- Removable flow cartridge
- Accuracy ± 5%



Flow rate selections

Size	PSID (range)	GPM (± 5%)
1/2" & 3/4"	2-45	0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 7.0, 8.0
	5-50	9.0, 10.5



Dimensions and weights

Size	Dimensions in inches (mm)						Weight lbs. (kg)
	A	B	D	E	F	Cv	
1/2"	0.60	4.9	1.8	2.4	3.1	14	1.5
3/4"	0.85	5.2	1.8	2.4	3.1	14	2.3

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☐ Balance valve

The balancing valve provides dependable hydronic system balance control utilizing corrosion resistant materials and Made in the USA construction.

Features

- 1/2" or 3/4" solder connections
- 100% factory tested
- Easily adjustable
- Dezincification resistant cast bronze body

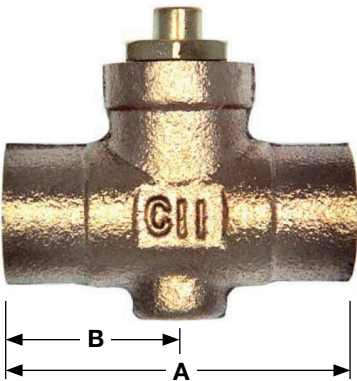
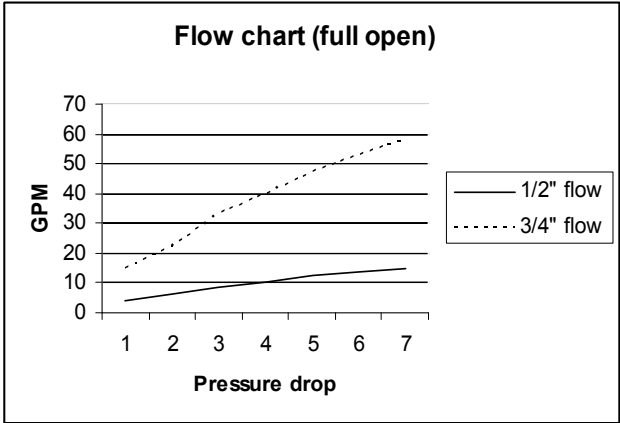
Performance rating

- Maximum operating pressure: 300 psig
- Maximum operating temperature: 250 °F

Specifications

Part name	Material
Packing washer	11-gauge brass
O-ring	EPDM rubber
Stem	Brass, ASTM B16
Gland screw	Brass, ASTM B16
Valve body	Cast bronze, ASTM B584

Capacity



Dimensions

Size	A	B	CV	Wt. (lb.)
1/2"	2.13	1.06	4	.30
3/4"	2.75	1.37	14	.53

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Warranty

Zehnder 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. Upon receipt of written consent from Zehnder, 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 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.

