Product Data

42S Fan Coil Air Conditioners

300 to 2000 cfm

42S Series
Vertical Stack Fan Coil Air Conditioners

Features/Benefits

Carrier's extensive range of superior fan-coil units combine design flexibility with easy, low-cost installation.

Carrier's 42S Series vertical stack fan coil units offer:

- design flexibility, occupying minimum space
- easy, low-cost installation
- ECM (Electronically commutated motors) delivers peak operating efficiency
- high performance
- greater zone comfort control

Versatility

With Carrier's 42S Series fan coils, you can select from 5 stack models; in 300 through 2000 cfm capacities. Coils are available with up to 5 rows (depending on model), to satisfy a variety of application requirements. The units are ideal for installation in high rise buildings such as hotels, apartments, and dormitories. Many optional control packages are available to facilitate the following modes of operation: 2-pipe heating and cooling, 2-pipe heating and cooling with auxiliary electric heat, 2-pipe cooling with total electric heat, and 4-pipe heating and cooling. The control package offering includes 24-v thermostats and BACnet®[1] communicating controls. Casings and frame are fabricated from tough, heavy gage galvanized steel. Custom decorative colors allow the unit to blend with any interior design.

Low-cost installation and operation

Each unit is designed to occupy a minimum space. No complex system controls are required for Carrier fan coil units. Piping, drain, and wiring connections are readily accessible and mounting holes and slots are pre-drilled to save installation time and field labor expense.

42S series quality reduces service and maintenance expenses

All coils are factory leak tested at 350, 400, or 450 psig for an operation pressure of 300, 350, and 400 psig respectively. For testing, coils are submerged in water and the appropriate test air pressure is applied. Condensate drain pans are available in stainless steel or heavy gage galvanized steel constructions, along with optional condensate overflow switches complying to the latest building codes. A variety of insulation types are available for energy savings, sound absorption and indoor air quality (IAQ) preservation.

Efficient operation

Blower wheels are centrifugal-type, forward curved, double width, and double inlet sized for maximum efficiency.

Quiet, dependable performance

All units are built to operate unobtrusively with quiet motors and fans. In addition, 1/2 in. thick sound-absorbing, insulation is used to line the cabinet.

Quality and safety

Every unit is tested and inspected at the factory for trouble free start-up. Carrier's 42S fan coil units are Engineered Testing Laboratory (ETL) and Canadian Engineered Testing Laboratory (CETL) listed. Performance ratings are AHRI (Air-Conditioning, Heating, and Refrigeration Institute) certified.

1. Third-party trademarks and logos are property of their respective owners.

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Features/Benefits (cont)

42S stacked units

Carrier units can be factory equipped with insulated supply, return, and drain risers. The design of the 42S units allows them to be set one on top of the other in a vertical column, rising floor to floor up the building. Each riser has a 3 in. belled section at the top, so the riser piping can be connected by only one sweat connection per riser. Field-installed couplings or internal pipe connections are not needed.

Each stack unit is constructed of heavy gage galvanized steel and factory pre-wired with all control, motor, and optional electric heat wiring conveniently terminating in a single, accessible junction box. Each stack unit requires only one field power connection.

Field-mounted accessories, such as the 3-speed switch/thermostat package for furred-in units, are equipped with a pre-wired quick disconnect plug for easy installation.

The riser size for the stack units can be specified to match building requirements so that cutting, sorting, and handling of the risers is not necessary. All units arrive tagged as specified by the customer for efficient delivery to the correct building location.

Units can be loaded onto delivery trucks so that they can be off-loaded in the proper installation sequence.

The 42SG furred-in-stack is a single unit, designed for concealed applications in corners or along room walls. The return-air grille is removable to allow access for servicing major components.

The 42SG is also available in primary/secondary unit pairs, shipped individually, installed and piped together in the field. The primary unit includes risers with stub out for field piping connections to the secondary unit which has no risers of its own.

The 42SJ ditto furred-in stack is designed for installation in the separation wall between 2 rooms. The unit consists of 2 units factory assembled together with a common riser chase, piped to a set of common risers. Each unit has its own valves and controls.

The return-air grille is removable to allow access for servicing major components.

The 42SH cabinet stack unit is designed for applications where concealed installations are not possible or practical. This model features a powder coat painted cabinet with a double-deflection supply-air grille and an integral return-air grille access panel. Controls are normally mounted on the unit but may also be remote wall mounted.

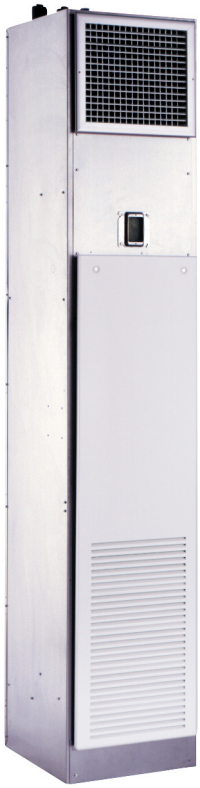
The 42SU universal furred-in stack is designed for easy field configuration utilizing laser cut knockouts. Riser, drain, supply, and outside-air knockouts have been strategically located on the unit for field configuration. Prior to unit installation, all risers are shipped separately from the units for pre-installation and testing purposes.

The 42SM mega furred-in stack unit is designed for applications requiring units with increased capacity. The 42SM is designed to deliver 1400 to 2000 cfm at 0.5 in. ESP (external static pressure). Although usually installed in a small mechanical closet, the unit also features an optional decorative return air panel to allow for a classic high-rise type application. The unit's high static capability will easily handle high-efficiency air filters and decorative supply grilles, while the modular design provides quiet operation.

Features/Benefits (cont)

42SG

Furred-In Stack (300-1200 cfm)



42SJ

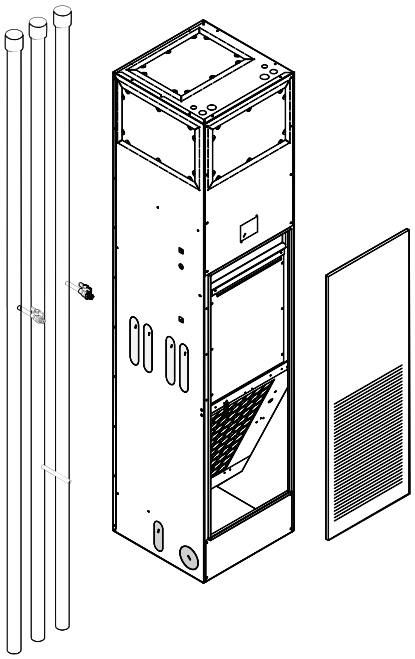
Ditto Furred-In Stack (300-1200 cfm)

42SH

Cabinet Stack (300-1200 cfm)

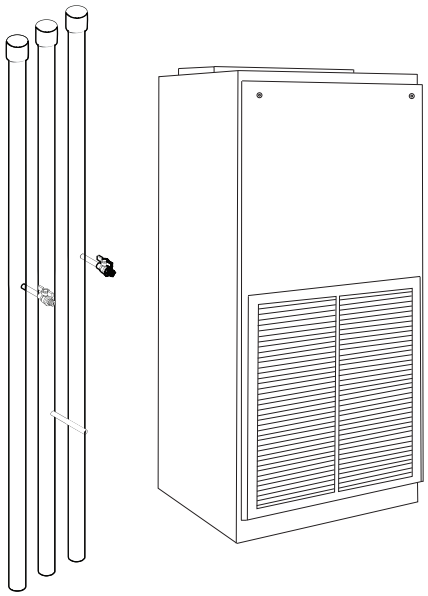
42SU

Universal Furred-In Stack (300-1200 cfm)



42SM

Mega Furred-In Stack (1400-2000 cfm)



Model number nomenclature

42S GA 06 B A Y A A F Y YY

42S – Vertical Stack Unit

Product Type
GA – Furred-In Single
GM – Furred-In Primary
GS – Furred-In Secondary
HA – Cabinet / Exposed
JA – Furred-In Ditto Primary
JB – Furred-In Ditto Secondary
MA – Furred-In Mega
UB – Furred-In Universal

Unit Size – Airflow (cfm)
03 – 300
04 – 400
06 – 600
08 – 800
10 – 1000
12 – 1200
14 – 1400
16 – 1600
20 – 2000

Coil
A – 3 Row (Std)
B – 4 Row
C – 5 Row
D – 3/1 Same End
F – 3/2 Same End
H – 4/1 Same End

Motors
A – 277-v ECM with Control Option 1
K – 115-v ECM with Control Option 1
L – 208-v ECM with Control Option 1
M – 230-v ECM with Control Option 1
O – 115-v ECM with Control Option 3
P – 208-v ECM with Control Option 3
Q – 230-v ECM with Control Option 3
R – 277-v ECM with Rheostat Field Speed Adjustment
S – 115-v ECM with Control Option 2
T – 208-v ECM with Control Option 2
U – 230-v ECM with Control Option 2
W – 277-v ECM with Control Option 3
Z – 277-v ECM with Control Option 2
4 – 115-v ECM with Rheostat Field Speed Adjustment
5 – 208-v ECM with Rheostat Field Speed Adjustment
6 – 230-v ECM with Rheostat Field Speed Adjustment
Control Option 1 – 3-Discrete Potentiometer Field Speed Adjustment
Control Option 2 – Variable Flow 0-10 vdc or 4-20 mA
Control Option 3 – 4-Discrete Potentiometer Field Speed Adjustment

Thermostat Package[1]
YY – No Controls

Riser Piping, Cabinet Height and Upsizing[2]
A – Std Riser Piping, 1-Cabinet Upsize, Std Cabinet Height
B – Std Riser Piping, 2-Cabinet Upsize, Std Cabinet Height
C – Std Riser Piping, Std Cabinet Size, Short Cabinet Height
D – Std Riser Piping, 1-Cabinet Upsize, Short Cabinet Height
E – Std Riser Piping, 2-Cabinet Upsize, Short Cabinet Height
R – Reverse Riser Piping, Std Cabinet Size, Std Cabinet Height
S – Reverse Riser Piping, 1-Cabinet Upsize, Std Cabinet Height
T – Reverse Riser Piping, 2-Cabinet Upsize, Std Cabinet Height
U – Reverse Riser Piping, Std Cabinet Size, Short Cabinet Height
V – Reverse Riser Piping, 1-Cabinet Upsize, Short Cabinet Height
W – Reverse Riser Piping, 2-Cabinet Upsize, Short Cabinet Height
Y – Std Riser Piping, Std Cabinet Size, Std Cabinet Height

Cabinet Insulation
F – 1 / 2 in. Foil Face
P – 1 / 4 in. Closed Cell (Unit)
Y – 1 / 2 in. Fiberglass (Std)

Filters
A – 1 in. Throwaway (Std)
B – 1 in. Permanent
C – 1 in. Pleated (MERV 8)
D – 1 in. Pleated (MERV 13)

Arrangement[1]

Heaters[1]
Y – None

NOTE(S):
1. Contact your local Carrier representative for further options.
2. An upsized cabinet is one size bigger than the standard cabinet.

LEGEND
ECM — Electronically Commutated Motor
MERV — Minimum Efficiency Reporting Value
Std — Standard

AHRI capacity ratings

The 42S Series fan coil units are certified in compliance with the Air-Conditioning, Heating and Refrigeration Institute (AHRI) Industry Standard 440 for room fan coil units. Approved standard ratings are tabulated in table below.

ECM Standard Motor Rating[a,b,c,d]

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (scfm)	WATER PRESSURE DROP (ft. water)	TOTAL CAP. (btuh)	SENSIBLE CAP. (btuh)	POWER INPUT (watts)
42SJA 42SJB 42SGM 42SGS	03	3	360	28.0	11,500	7,000	85
		4	360	6.3	12,200	7,300	85
	04	3	440	35.2	13,600	9,000	115
		4	430	10.5	15,600	9,600	115
	06	3	590	15.6	21,900	14,000	135
		4	590	34.3	26,000	15,300	135
	08	3	800	25.0	27,500	17,800	250
		4	800	40.4	31,400	19,500	250
	10	3	1,050	20.3	37,700	24,500	325
		4	1,000	18.6	42,200	25,600	325
	12	3	1,250	18.9	43,100	28,400	440
		4	1,240	17.3	46,500	30,500	440
		5	1,200	38.0	48,000	31,000	440
42SGA	03	3	360	6.0	11,500	7,000	75
		4	360	12.0	12,200	7,300	85
	04	3	430	10.0	13,600	9,000	105
		4	420	15.0	15,600	9,600	105
	06	3	590	15.6	21,900	14,000	70
		4	590	20.0	25,400	15,300	90
	08	3	800	17.0	27,500	17,800	165
		4	800	28.0	31,400	19,500	175
	10	3	1,050	25.0	37,700	24,500	300
		4	1,000	20.0	42,200	25,600	345
	12	3	1,250	32.0	43,100	28,400	400
		4	1,240	30.0	46,500	30,500	455
		5	1,200	38.0	48,000	31,000	440
42SHA	03	3	345	7.0	10,700	7,000	85
		4	345	10.0	12,200	7,300	85
	04	3	430	10.0	13,400	8,900	115
		4	430	10.5	15,600	9,600	115
	06	3	590	15.6	19,500	12,500	135
		4	590	15.0	23,900	14,900	135
	08	3	800	15.0	25,300	17,100	185
		4	800	25.0	31,400	19,500	250
	10	3	1,000	25.0	37,700	24,500	325
		4	1,000	20.0	42,000	25,600	325
	12	3	1,150	28.0	42,700	28,400	465
		4	1,100	25.0	46,500	30,500	440
		5	1,150	33.0	48,000	31,000	475

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/1/60, and airflow underdry coil conditions.
b. Ratings shown for Ditto, Siamese Ditto and primary/secondary configurations are for each unit in the two-unit system.
c. For all application ratings, use Carrier's computer selection program or the quick-selection ratings provided in this catalog.
d. For additional information, please consult AHRI's website at www.ahrinet.org.

AHRI capacity ratings (cont)

ECM Standard Motor Rating (cont)[a,b,c]

MODEL	SIZE	COIL ROWS	AIR FLOW RATING (scfm)	WATER PRESSURE DROP (ft water)	TOTAL CAP (btuh)	SENSIBLE CAP (btuh)	POWER INPUT (watts)
42SMA[d]	14	3	1,400	15.0	38,300	27,900	515
		4	1,400	7.5	45,200	32,400	670
	16	3	1,600	11.0	42,900	31,600	675
		4	1,600	12.0	49,900	36,000	730
	20	3	2,000	15.0	49,000	35,600	800
		4	2,000	15.0	58,700	42,000	715

NOTE(S):

a. Ratings are based on 80°F DB and 67°F WB EAT, 45°F EWT, 10°F water temperature rise, high fan speed, motor voltage 115/1/60, and airflow underdry coil conditions.
b. For all application ratings, use Carrier's computer selection program or the quick-selection ratings provided in this catalog.
c. For additional information, please consult AHRI's website at www.ahrinet.org.
d. Sizes 14-20 only available with 42SM unit.

Physical data

Physical Data — 42S Units

UNIT SIZE 42S	03	04	06	08	10	12	14	16	20
NOMINAL AIRFLOW (cfm)	300	400	600	800	1000	1200	1400	1600	2000
SHIPPING WEIGHT lb (kg)[a]									
42SGA,SGM,SU	180 (82)	225 (102)	240 (109)	260 (118)	280 (127)	305 (138)	—	—	—
42SH	202 (92)	247 (112)	262 (119)	286 (130)	311 (141)	336 (152)	—	—	—
42SJ	360 (163)	450 (204)	480 (217)	520 (236)	560 (254)	610 (276)	—	—	—
42SGS	162 (73)	203 (92)	216 (98)	234 (106)	252 (114)	275 (125)	—	—	—
42SM	—	—	—	—	—	—	390	390	390
COIL WATER WEIGHT (approx lb per row of coil)	1.79		2.63		3.45		4.09	4.09	4.39
COILS									
FPI	14 fins/inch								
BLOWER (qty)									
42SGA,SH,SU,SGM,SGS,SM	1	1	1	1	1	1	1	1	1
42SJ	2	2	2	2	2	2	—	—	—
FILTERS									
Nominal Size (in.) (1 in. thick)	12-1/2 (316) x 24-1/4 (616)		16-1/4 (413) x 26-3/4 (679)		20-1/2 (521) x 29-1/4 (743)		24.5 (622) x 29-1/2 (749)		24.5" (622) x 29-1/2 (749)
Qty	1[b]								
PIPING CONNECTIONS									
Inlet (in. OD)	1/2, unless larger size valve package is selected								

NOTE(S):

a. Calculate operating weight of unit: shipping weight plus coil water weight times number of coil rows.
b. 42SJ units require two filters: one for the 42SJA side and one for the 42SJB side.

Options and accessories

Available Options

OPTIONS OR STANDARD FEATURES[a]	UNIT SERIES — 42 Stack, Vertical				
	SG	SH	SJ	SM	SU
AIR VENT					
Automatic Air Vent	X	X	X	X	—
Manual Air Vent	Std	Std	Std	Std	Std
COILS					
3-Row (Cooling/Heating Only)	Std	Std	Std	X	Std
4-Row (3-Row Cooling,1-Row Heating)	X	X	X	X	X
4-Row (Cooling/Heating Only)	X	X	X	Std	X
5-Row (Cooling/Heating Only)	—	—	—	X	—
5-Row (4-Row Cooling,1-Row Heating)	X	X	X	X	X
5-Row (3-Row Cooling, 2-Row Heating)	X	X	X	X	X
Stainless Steel Coil Wrapper	X	X	X	X	—
Heating Coil in Preheat Position	X	X	X	X	—
OUTSIDE AIR OPTIONS					
Manual Damper	X	X	X	X	—
Outside-Air Knockouts	—	—	—	—	Std
DECORATIVE COLORS					
Bright White Powder Coat Paint	Std	Std	Std	Std	Std
Custom Colors Available Upon Request	X	X	X	X	X
Arctic White	X	X	X	X	—
Ermine Gray	X	X	X	X	—
Champagne Beige	X	X	X	X	—
Flat Black	X	X	X	X	—
Polar White	X	X	X	X	—
Toffee Brown	X	X	X	X	—
DISCHARGE OPTIONS					
Double Deflection Grille[b]	X	Std	X	X	Std
Discharge Duct Collar	Std	—	Std	Std	—
Discharge Knockouts	X	X	X	—	Std
DRAIN PANS					
Galvanized Drain Pan	Std	Std	Std	—	—
Stainless Steel Standard Drain Pan	X	X	X	Std	Std

Available Options (cont)

OPTIONS OR STANDARD FEATURES[a]	UNIT SERIES — 42 Stack, Vertical				
	SG	SH	SJ	SM	SU
HEATING OPTIONS					
Electric Heater	X	X	X	X	—
Hot Water	X	X	X	X	X
FILTERS					
1 in. Permanent Filters	X	X	X	—	—
1 in. Throwaway Filters	Std	Std	Std	Std	Std
1 in. MERV 8 Pleated	X	X	X	X	X
INSULATION					
Foil Faced Insulation	X	X	X	X	—
Fiberglass Insulation	Std	Std	Std	Std	Std
Closed Cell Insulation	X	X	X	X	—
MOTORS - EC	Std	Std	Std	Std	Std
115-1-60	X	X	X	X	X
208-1-60	X	X	X	X	X
230-1-60	X	X	X	X	X
277-1-60	X	X	X	X	X
MOTOR QUICK-DISCONNECT PLUG	Std	Std	Std	Std	Std
INTEGRAL THERMAL OVERLOAD PROTECTION	Std	Std	Std	Std	Std
RETURN AIR GRILLE[b]					
Stamped Return Grille	Std	Std	Std	X	Std
CONDENSATE OVERFLOW SWITCH	X	X	X	X	X
SERVICE SWITCH					
Without Fusing	X	X	X	X	X
With Fusing	X	X	X	X	X
TAMPERPROOF LOCKS					
Access Panels	Std	Std	Std	Std	Std
VALVE PACKAGES	X	X	X	X	X
WIRING PACKAGES	X	X	X	X	X

NOTE(S):

a. All options are factory-installed unless noted as shipped loose.
b. Standard grille is steel; option is available as steel or aluminum. Shipped loose on all models except SH.

EC — Electronically Commutated
Std — Standard
X — Available as Options
— — Not Available

Options and accessories (cont)

Common ETO (Engineered To Order)[a,b]

OPTIONS	UNIT AVAILABILITY
Bottom Return	SG, SH, SJ, SM
Third Party Controls	SG, SH, SJ, SM
Third Party Valve Components (recommend due to space limitations)	SG, SH, SJ, SM
Custom Cabinet Height and Size	SG, SH, SJ, SM
Unit and Return Air Panel Color Options	SG, SH, SJ, SM
Return Air Debris Panel	SG, SH, SJ, SM
Sound or Sight Baffle	SG, SH, SJ, SM
Piping Termination Locations	SG, SH, SJ, SM
2-Stage Electric Heat	SG, SH, SJ, SM
2 in. Filter Rack	SG, SH, SJ, SM
Condensate Pump and GFCI Outlet	SG, SH, SJ, SM
Dual Point Power	SG, SH, SJ, SM
2-Position Motorized Outside Air Damper (not available with 0-10v ECM)	SG, SH, SJ, SM
Modulating Outside Air Damper	SG, SH, SJ, SM
Capped Risers	SG, SH, SJ, SM
SCR controller for Electric Heat	SG, SH, SJ, SM
Solid State Relay for Electric Heat	SG, SH, SJ, SM
Riser Extensions	SG, SH, SJ, SM
Ceiling Skirt	SG, SH, SJ, SM
2-Row Coil	SG, SH, SJ, SM
PSC Motor	SG, SH, SJ, SM
Line Voltage Controls	SG, SH, SJ, SM
2 in. MERV 13 Filter	SG, SH, SJ, SM
1 in. MERV 13 Filter	SG, SH, SJ, SM
Premium IAQ Fiberglass	SG, SH, SJ, SM

NOTE(S):

a. Please contact application team for ETO availability.
b. ETOs are not available for 42SU units.

Factory-installed options

Condensate overflow switch

This switch shuts down the unit when the water level in the drain pan reaches an unsafe level. Building code changes in many locales now require this type of device.

Decorative colors

Standard color is bright white. Other colors are available. See available options table on page 9. Custom colors may be provided when matched with a provided paint chip. Special quote required for custom colors.

Electric heaters

Coils are of high grade single-phase, nichrome resistance wire, insulated by ceramic insulators in plated steel brackets. Heater sizes available are shown in the application data section for the respective units.

Filters

Each unit includes a non-woven synthetic throwaway filter sized for low velocity and maximum efficiency. The standard option will filter both return and outside air. For optional filters, please refer to available option table on page 10.

Fusing

Incoming power fusing, as well as blower motor and control sub-fusing for units that use electric heat. The blower motor and control sub-fusing (single power source wiring) is required when single source power with electric heat is specified.

Manual air vents

Each standard coil includes a manual air vent to allow venting at the coil if necessary for quick, complete air elimination.

Motors

ECM (electronically commutated) motors are standard on all units. ECM motors offer programmable features, low sound, and increased energy efficiency. Refer to the Application Data section for more information on ECM control methods.

Outside-air opening/damper

Damper is adjustable and provides up to 25% ventilation air to unit. (Manual/motorized damper available on 42SG, SH, SJ, SM units.)

Service switches

Concealed service switches are available for use by maintenance and service personnel to shut off the power while working on the unit.

Single power source connection

Factory-installed junction box allows use of single power source for motor and heater when they are of the same voltage.

Tamperproof fasteners (allen head)

Tamperproof fasteners are installed on the access panels and are available for all cabinet model units.

Thermostat control packages

We offer a variety of control devices to meet the most basic to the most demanding operating logic. All of our control schemes utilize 3-speed fan control or proportional control to modulate cooling output, maximize the percentage of latent heat removal, and to further reduce the sound level when maximum cooling and heating performance is not required. For thermostat control package options refer to the Controls section.

Field-installed accessories

Automatic air vents

Automatic air vents have fiber washers which allow air in the pipes to pass through, automatically bleeding the system, and eliminating the need to manually remove air from the system. When wet, washers swell and seal the system.

Panels, frames, and grilles

Panels, frames, and grilles on the 42S Series units can be chosen in a wide variety of combinations to suit room decorating requirements and allow access to the unit for maintenance. Discharge grilles are double deflection type, aluminum finish or painted steel. Return-air access panels containing return-air grilles are available in several different types as illustrated on pages 22-26.

Options and accessories (cont)

Panels, Frames and Grilles

PANEL NO.	DESCRIPTION
1	Standard, heavy gage galvanized steel. Coated with powder-coat painted finish. Attached to unit with 1/4 turn fasteners.
2	Heavy gage galvanized steel. Coated with powder-coat painted finish. Includes access door for concealed unit-mounted controls.
3	Bar-type extruded aluminum with frame matching double deflection supply grille. Fastens to wall and unit with 1-1/2 in. long screws.
4 and 5	Heavy gage galvanized steel. Coated with powder-coat painted finish. Frame mounted on sheetrock with screws. Panel mounted in frame with 1/4 turn fasteners.
6	Heavy gage galvanized steel. Coated with powder-coat painted finish. Frame is mounted to unit or drywall and perimeter panel hooks into frame. Each panel provides access to all internal components.

Return-air grilles

Stamped-type return-air grilles are optional on 42SG, SH, SJ, SU, and 42SM units.

Risers

The 42S Series units can accommodate 3/4 in. (supply and return) and 1 in. (drain) to 2-1/2 in. riser sizes in 2-pipe systems. For other applications, such as reverse return risers or 4-pipe systems, it may be necessary to accommodate the additional risers.

Condensate drains are available in sizes down to 1 in. for greater cost economy. Riser size-reducers are factory-installed on 42SG, SJ, and SH. For risers over 119 in. long, extension pieces can be furnished for field installation.

NOTE: Risers for the 42SU, SM, and SG units with universal configurations are shipped separately for field installation and testing before the unit is installed.

Component static resistance

Riser expansion

The 42S Series units are built to accommodate modest expansion of the external riser. This only allows for expansion between the unit and the riser. This allowance for movement within the unit is not intended to replace necessary riser expansion compensation devices that the consulting engineer may deem advisable for the external riser system. External riser expansion/contraction compensation and anchoring are the responsibility of the consulting engineer and the installing contractor.

Risers material and insulation

The 42S Series unit supply, return, and drain risers can be furnished in type M or L copper. All factory-furnished risers are insulated with flexible closed foam insulation of up to 1-1/2 in. thickness.

Discharge grilles

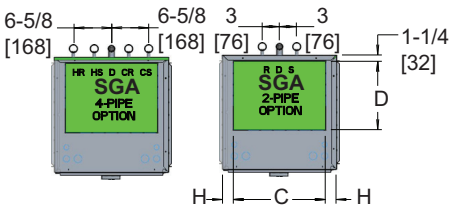
Optional discharge air grilles for 42S Series units are suitable for sidewall application, and available in clear anodized aluminum or painted steel finish. The aluminum discharge grilles are suitable for air dry field painting. The discharge grille frame and blades are 6063 extruded aluminum alloy with 200-R1 satin anodized finish. The frame has a typical wall thickness of 0.050 in. and is separated from the blades with injection-molded nylon bushings. This method of assembly minimizes corrosion and vibration. The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance. All blades are airfoil in design, individually adjustable and spaced 3/4 in. on center. At the outer edge of the frame is a specifically engineered channel which retains an extruded flexible vinyl bulb gasket that produces a positive air seal at the mounting surface, minimizing smudging. An optional opposed blade damper is screwdriver operated through the face of the unit and has the same extruded aluminum construction and injection-molded nylon bushings. The unit achieves an effective area of 80% with the blades set at a 0 degree pattern, thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22 and 45 degree blade settings with slightly increased sound levels.

Filter Pressure Differentials

UNIT DATA		FILTER DATA FILTER PRESSURE DROP — Δ P								
Model	Cfm	Height (in.)	Width (in.)	Area (ft^2)	Face Velocity (ft/m/in.)	Std TA	1 in. Permanent	1 in. MERV 8	1 in. MERV 13	2 in. MERV 13
42S__03	300	12.50	24.3	2.11	142.52	0.034	0.049	0.11	0.11	0.07
42S__04	400	12.50	24.3	2.11	190.02	0.045	0.074	0.13	0.15	0.10
42S__06	600	15.50	29.5	3.18	188.96	0.045	0.074	0.13	0.15	0.10
42S__08	800	15.50	29.5	3.18	251.94	0.058	0.114	0.16	0.21	0.14
42S__10	1000	20.50	29.3	4.16	240.15	0.056	0.106	0.15	0.20	0.13
42S__12	1200	20.50	29.3	4.16	288.18	0.065	0.141	0.17	0.25	0.17
42SM14	1400	24.50	29.3	4.98	281.32	0.064	0.136	0.17	0.24	0.16
42SM16	1600	24.50	29.3	4.98	321.51	0.071	0.168	0.19	0.29	0.19
42SM20	2000	26.50	29.3	5.38	371.55	0.079	0.213	0.23	0.34	0.23

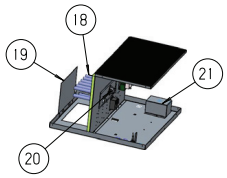
Base unit dimensions

42SGA Furred-In Unit

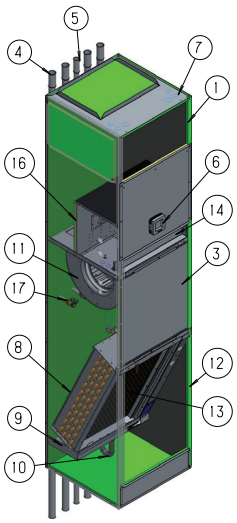


LEGEND

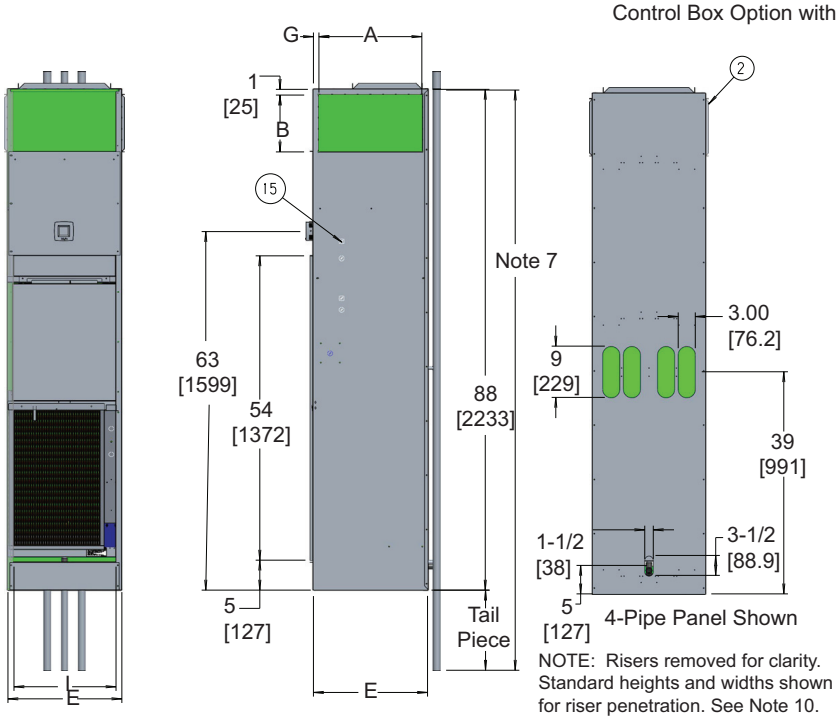
CR — Cold Water Return
CS — Cold Water Supply
D — Drain
HR — Hot Water Return
HS — Hot Water Supply
R — Return
S — Supply



Control Box Option with E-Heat



NOTE: Side panel removed for clarity.



NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

ITEM	DESCRIPTION
1	Supply Opening
2	Duct Colar 1/2 [13] Ext (Typ)
3	RA Acoustical Service Panel
4	Riser, Supply and Return
5	Riser, Drain
6	Thermostat Surface Mnt Location
7	Electrical Knock Outs
8	Coil 1/2 [13] O.D.
9	Drain Pan
10	Flex Drain Tube / P-Trap
11	Motor/Blower Housing
12	Return Air Opening
13	Filter, Throwaway, 1 [25]
14	Access Panel (Control Box)
15	Knockout (Optional Remote Mnt)
16	Control Box
17	1/2 [13] Isolation Valve
18	Strip Heater (Optional E Heat)
19	Heat Limit Switch (Optional E Heat)
20	Heat Shield (Optional E Heat)
21	Service Switch (Optional)

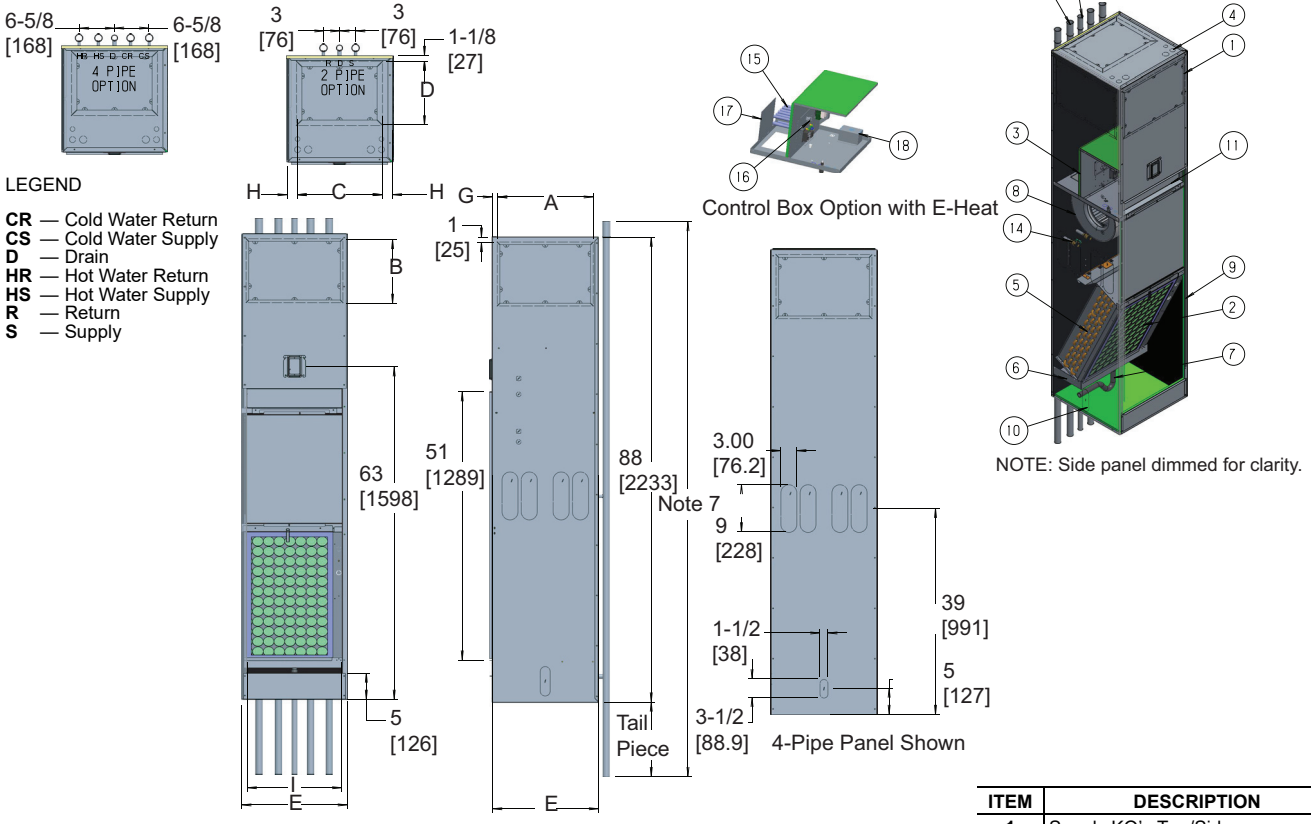
NOTES:

1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valves as specified.
5. Blower, motor, coil, valves, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {(floor to floor) +2 in. [51]}, maximum riser length = 119 in. [3023]. Consult riser submittals for specifications.
8. Maximum riser diameter is 2-1/2 in [64]. If larger diameters are required, consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
11. See unit arrangements for supply and return air orientation.
12. Dimensions are in inches. Dimensions in [ ] are in millimeters.

UNIT SIZE 42SGA	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Single Supply		Double Supply		Top Supply		Dimensions				
	A	B	A	B	C	D	E	G	H	I	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	180 [82]
04		12 [305]									225 [102]
06	18 [457]	10 [254]	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]	240 [109]
08		12 [305]									260 [118]
10	22 [559]	16 [406]	22 [559]	8 [203]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]	280 [127]
12											305 [138]

Base unit dimensions (cont)

42SGA/SGM/SGS Furred-In Stack, Universal Arrangement



NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

ITEM	DESCRIPTION
1	Supply KO's Top/Sides
2	Filter
3	Control Box
4	Electrical Knock Outs
5	Coil 1/2 [13] O.D.
6	Drain Pan
7	Flex Drain Tube / P-Trap
8	Motor / Blower Housing
9	Return Air Opening
10	Drain Knockout(s) Side Panels
11	Access Panel (Control Box)
12	Riser, Supply and Return
13	Riser, Drain
14	Isolation Ball Valves
15	Strip Heater (Optional E Heat)
16	Heat Limit Switch (Optional E Heat)
17	Heat Shield (Optional E Heat)
18	Service Switch (Optional)

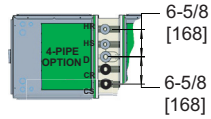
NOTES:

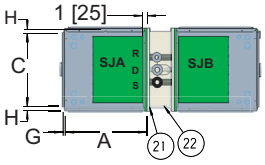
1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valve as specified.
5. Blower, motor, coil, valves, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {(floor to floor) +2 in. [51]}, maximum riser length = 119 in. [3023]. Consult riser submittals for specifications.
8. Maximum riser size is 2-1/2 in. [64] diameter. If larger size is required, consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Riser slots knock-outs provided on 3 sides of cabinet for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
11. Drain knock-outs on 3 sides of cabinet.
12. Dimensions are in inches. Dimensions in [ ] are in millimeters.
13. U0 arrangement also available for SGM and SGS models.

UNIT SIZE 42SGA/SGM/SGS	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Single Supply		Double Supply		Top Supply		Dimensions				
	A	B	A	B	C	D	E	G	H	I	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	180 [82]
04		12 [305]									225 [102]
06	18 [457]	10 [254]	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]	240 [109]
08		12 [305]									260 [118]
10	22 [559]	16 [406]	22 [559]	8 [203]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]	280 [127]
12											305 [138]

Base unit dimensions (cont)

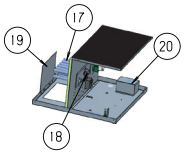
42SJA/SJB Furred-In Stack Ditto Unit (UL-1 Hr. Fire-Rated)



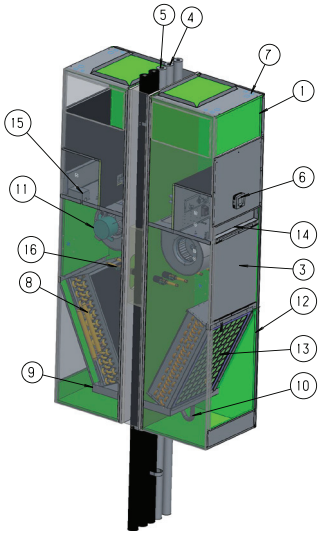


LEGEND

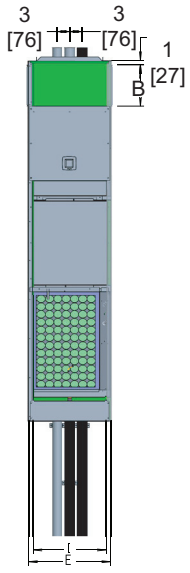
CR — Cold Water Return
CS — Cold Water Supply
D — Drain
HR — Hot Water Return
HS — Hot Water Supply
R — Return
S — Supply

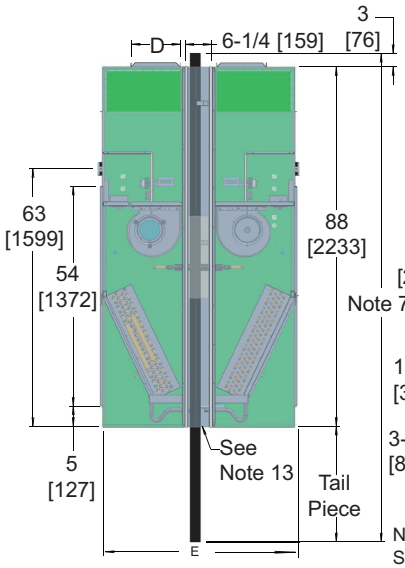


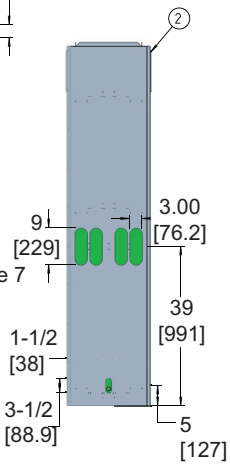
Control Box Option with E-Heat



NOTE: Side panel dimmed for clarity.







4-Pipe Panel Shown

NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

NOTES:

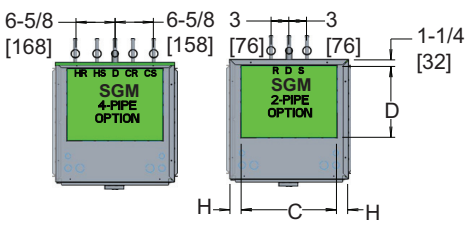
1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valve as specified.
5. Blower, motor, coil, valves, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {(floor to floor) +2 in. [51]}, maximum riser length = 119 in. [3023]. Consult riser submittals for specifications.
8. Maximum riser size is 2-1/2 in. [64] diameter. If larger size is required, consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
11. See unit arrangements for supply and return air orientation.
12. Dimensions are in inches. Dimensions in [ ] are in millimeters.
13. 18 gage rise chase.

ITEM	DESCRIPTION
1	Supply Opening
2	Duct Colar 1/2 [13] Ext (Typ)
3	RA Acoustical Service Panel
4	Riser, Supply and Return
5	Riser, Drain
6	Thermostat Surface Mnt Location
7	Electrical Knockouts
8	Coil 1/2 [13] O.D.
9	Drain Pan
10	Flex Drain Tube / P-Trap
11	Motor/Blower Housing
12	Return Air Opening
13	Filter, Throwaway, 1 [25]
14	Access Panel (Control Box)
15	Control Box
16	1/2 [13] Isolation Valve
17	Strip Heater (Optional E Heat)
18	Heat Limit Switch (Optional E Heat)
19	Heat Shield (Optional E Heat)
20	Service Switch (Optional)
21	Gypsum Board 5/8 [16] Typ "X"
22	Thermafiber Insulation

UNIT SIZE 42SJA/SJB	DIMENSIONS — in. [mm]										
	Single Supply		Double Supply		Top Supply		Dimensions				Filter Sizes
	A	B	A	B	C	D	E	G	H	I	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	12-1/2 x 24-1/4 x 1 [318 x 616 x 25]
04		12 [305]									12-1/2 x 24-1/4 x 1 [318 x 616 x 25]
06	18 [457]	10 [254]	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]	16-1/4 x 26-1/4 x 1 [413x 679 x 25]
08		12 [305]									16-1/2 x 24-1/4 x 1 [413 x 679 x 25]
10	22 [559]	16 [406]	22 [559]	8 [203]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]	20-1/2 x 29-1/4 x 1 [521x 743 x 25]
12											20-1/2 x 29-1/4 x 1 [521x 743 x 25]

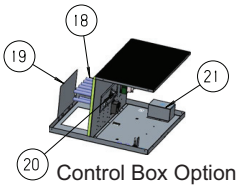
Base unit dimensions (cont)

42SGM Furred-In Stack Primary Unit

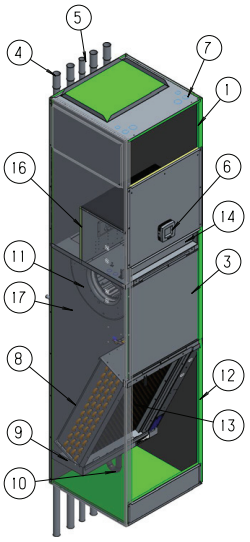


LEGEND

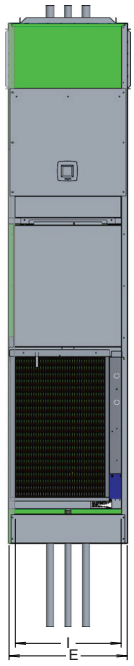
CR — Cold Water Return
CS — Cold Water Supply
D — Drain
HR — Hot Water Return
HS — Hot Water Supply
R — Return
S — Supply

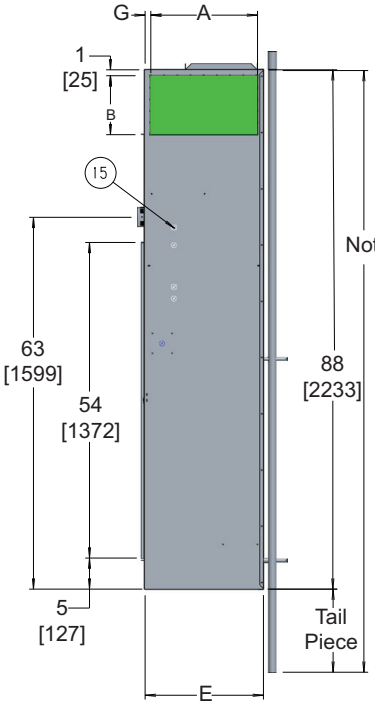


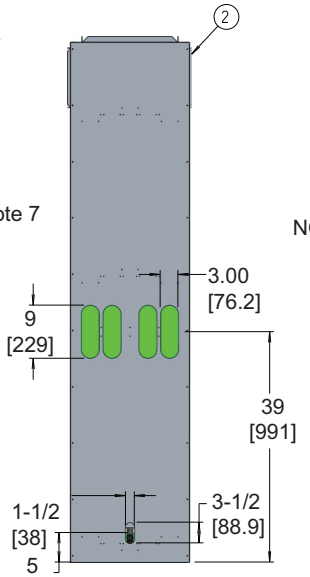
Control Box Option with E-Heat



NOTE: Side panel removed for clarity.







4-Pipe Panel Shown

NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

NOTES:

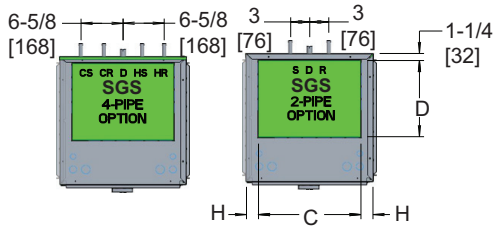
1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valve as specified.
5. Blower, motor, coil, valves, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {(floor to floor) +2 in. [51]}, maximum riser length = 119 in. [3023]. Consult riser submittals for specifications.
8. Maximum riser size is 2-1/2 in. [64] diameter. If larger size is required, consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
11. See unit arrangements for supply and return air orientation.
12. Dimensions are in inches. Dimensions in [ ] are in millimeters.

ITEM	DESCRIPTION
1	Supply Opening
2	Duct Colar 1/2 [13] Ext (Typ)
3	RA Acoustical Service Panel
4	Riser, Supply and Return
5	Riser, Drain
6	Thermostat Surface Mnt Location
7	Electrical Knock Outs
8	Coil 1/2 [13] O.D.
9	Drain Pan
10	Flex Drain Tube / P-Trap
11	Motor/Blower Housing
12	Return Air Opening
13	Filter, Throwaway, 1 [25]
14	Access Panel (Control Box)
15	Knockout (Optional Remote Mnt)
16	Control Box
17	1/2 [13] Isolation Valve
18	Strip Heater (Optional E Heat)
19	Heat Limit Switch (Optional E Heat)
20	Heat Shield (Optional E Heat)
21	Service Switch (Optional)

UNIT SIZE 42SGM	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Single Supply		Double Supply		Top Supply		Dimensions				
	A	B	A	B	C	D	E	G	H	I	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	180 [82]
04		12 [305]									225 [102]
06	18 [457]	10 [254]	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]	240 [109]
08		12 [305]									260 [118]
10	22 [559]	16 [406]	22 [559]	8 [203]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]	280 [127]
12											305 [138]

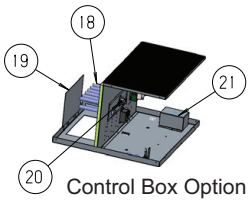
Base unit dimensions (cont)

42SGS Furred-In Secondary Unit

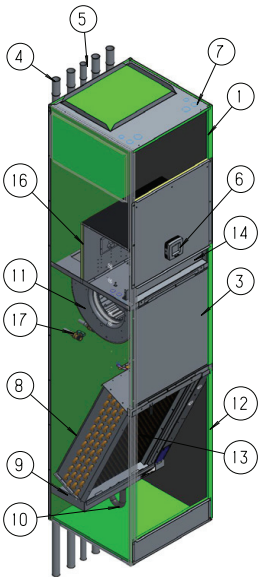


LEGEND

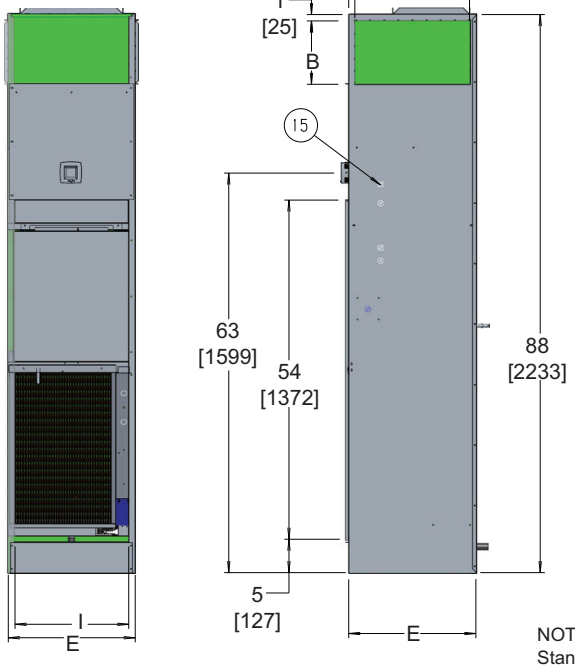
CR — Cold Water Return
CS — Cold Water Supply
D — Drain
HR — Hot Water Return
HS — Hot Water Supply
R — Return
S — Supply

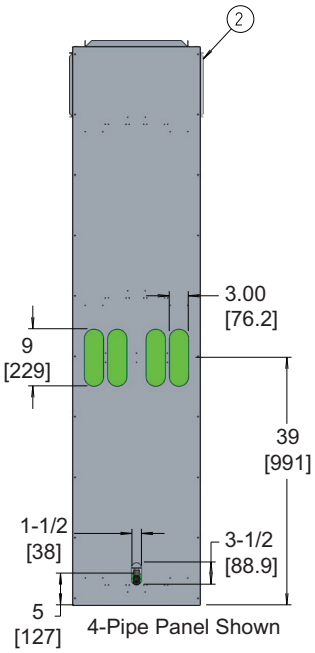


Control Box Option with E-Heat



NOTE: Side panel removed for clarity.





NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 7.

ITEM	DESCRIPTION
1	Supply Opening
2	Duct Colar 1/2 [13] Ext (Typ)
3	RA Acoustical Service Panel
4	Riser, Supply and Return
5	Riser, Drain
6	Thermostat Surface Mnt Location
7	Electrical Knock Outs
8	Coil 1/2 [13] O.D.
9	Drain Pan
10	Flex Drain Tube / P-Trap
11	Motor / Blower Housing
12	Return Air Opening
13	Filter, Throwaway, 1 [25]
14	Access Panel (Control Box)
15	Knockout (Optional Remote Mnt)
16	Control Box
17	1/2 [13] Isolation Valve
18	Strip Heater (Optional E Heat)
19	Heat Limit Switch (Optional E Heat)
20	Heat Shield (Optional E Heat)
21	Service Switch (Optional)

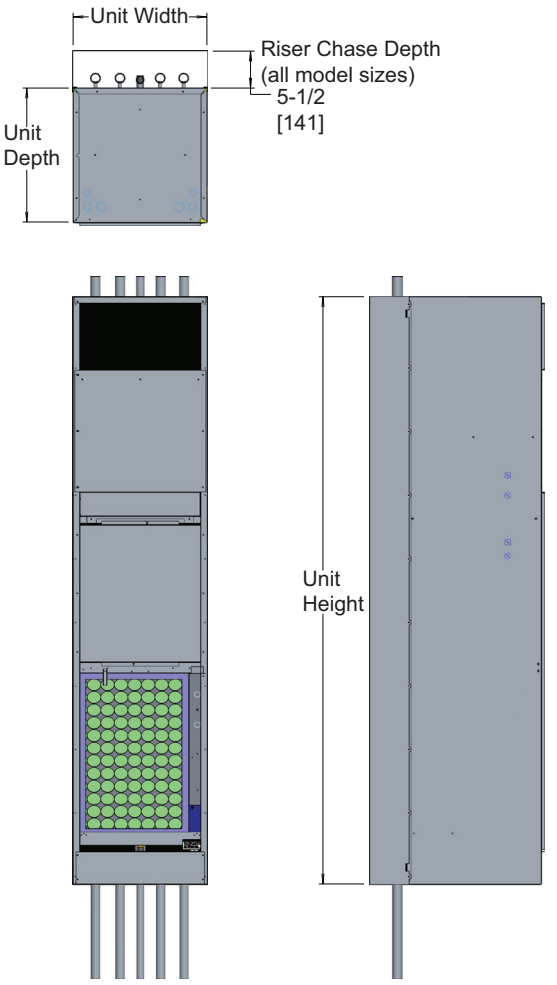
NOTES:

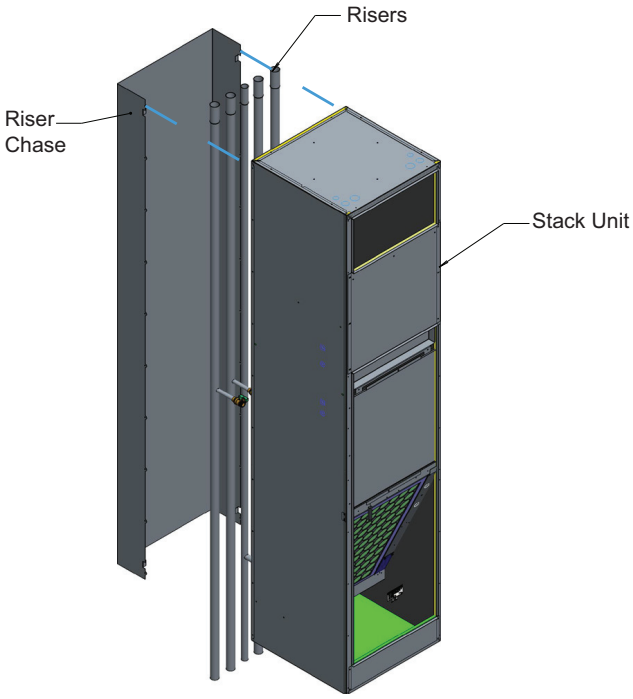
1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Coil with valves is specified.
4. Blower, motor, coil, valves, and filter are accessible through the return air opening.
5. Unit and control box are insulated.
6. Expansion loops in hot water heating circuits as required.
7. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
8. See unit arrangements for supply and return air orientation.
9. Dimensions are in inches. Dimensions in [ ] are in millimeters.

UNIT SIZE 42SGS	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Single Supply		Double Supply		Top Supply		Dimensions				
	A	B	A	B	C	D	E	G	H	I	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	162 [73]
04		12 [305]									203 [92]
06	18 [457]	10 [254]	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]	216 [98]
08		12 [305]									234 [106]
10	22 [559]	16 [406]	22 [559]	8 [203]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]	252 [114]
12											275 [125]

Base unit dimensions (cont)

Riser Chase

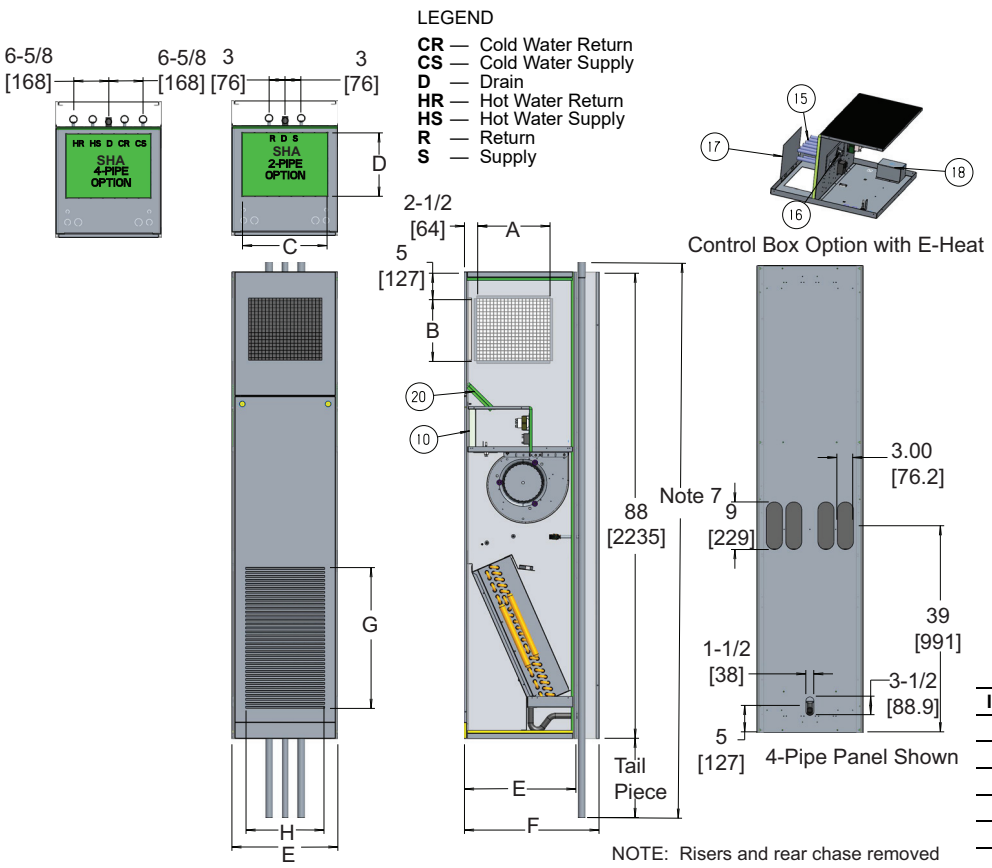


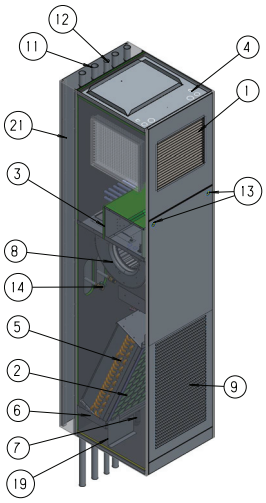


NOTE: Dimensions are inches [mm].

Base unit dimensions (cont)

42SHA Cabinet Stack Unit





NOTE: Side panel dimmed for clarity.

NOTE: Risers and rear chase removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

NOTES:

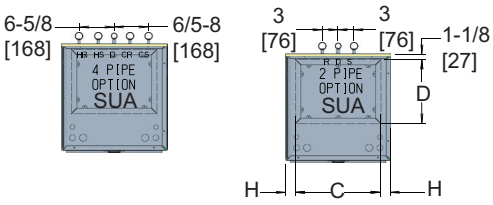
1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valve as specified.
5. Blower, motor, coil, valves, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {(floor to floor) + 2 in. [51]}, maximum riser length = 119 in. [3023]. Consult riser submittals for specifications.
8. Maximum riser size is 2-1/2 in. [64] diameter. If larger size is required, consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots
11. See unit arrangements for supply and return air orientation.
12. Dimensions are in inches. Dimensions in [ ] are in millimeters

ITEM	DESCRIPTION
1	D.D Steel Grille Assy
2	Filter, Throwaway, 1 [25]
3	Control Box
4	Electrical Knock Outs
5	Coil 1/2 [13] O.D.
6	Drain Pan
7	Flex Drain Tube/P-Trap
8	Motor/Blower Housing
9	Return Air Opening
10	Access Panel (Control Box)
11	Riser, Supply and Return
12	Riser, Drain
13	Cabinet Camlocks
14	1/2 [13] Isolation Ball Valves
15	Strip Heater (Optional E Heat)
16	Heat Limit Switch (Optional E Heat)
17	Heat Shield (Optional)
18	Service Switch (Optional)
19	Drain Pan Support
20	Control Air Baffle Assy
21	Riser Chase

UNIT SIZE 42SHA	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Side/Front Supply		Double Supply		Top Supply Single		Dimensions				
	A	B	A	B	C	D	E	F	G	H	
03	14 [356]	8 [203]	14 [356]	6 [152]	14 [356]	10 [254]	17 [432]	22-1/8 [562]	22-1/8 [562]	14-3/4 [375]	202 [92]
04		12 [305]		8 [203]							247 [112]
06					16 [406]	12 [305]	20 [508]	26-5/8 [676]	26-5/8 [676]	17-3/4 [451]	262 [119]
08		16 [406]		10 [254]							286 [130]
10	18 [457]			12 [305]	18 [457]	16 [406]	24 [610]	31-1/8 [791]	31-1/8 [791]		311 [141]
12											336 [162]

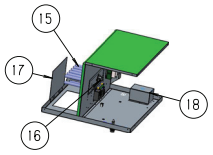
Base unit dimensions (cont)

42SUA Universal Furred-In Stack Unit

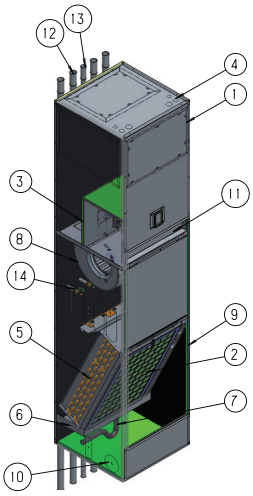


LEGEND

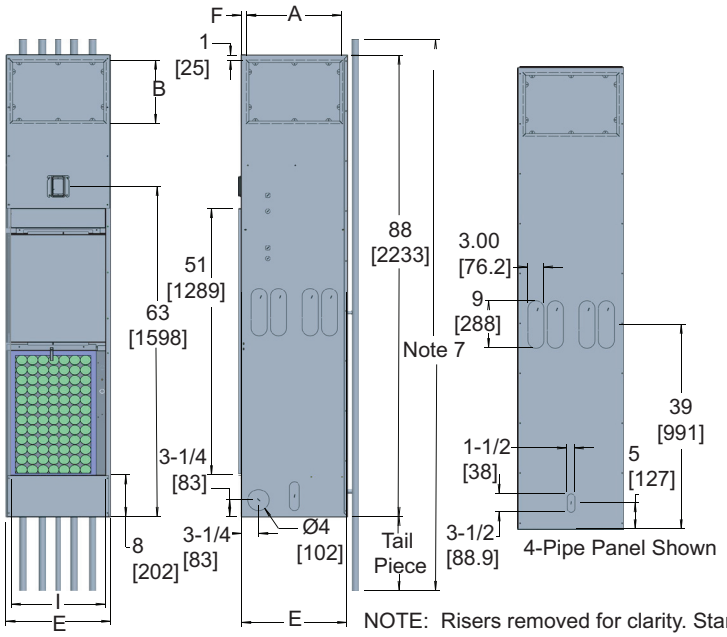
CR — Cold Water Return
CS — Cold Water Supply
D — Drain
HR — Hot Water Return
HS — Hot Water Supply
R — Return
S — Supply



Control Box Option with E-Heat



NOTE: Side panel dimmed for clarity.



NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.

ITEM	DESCRIPTION
1	Supply KO's Top/Sides
2	Filter
3	Control Box
4	Electrical Knock Outs
5	Coil 1/2 in. [13] OD
6	Drain Pan
7	Flex Drain Tube / P-Trap
8	Motor / Blower Housing
9	Return Air Opening
10	Outside Air Knockout(s) Side Panels
11	Access Panel (Control Box)
12	Riser, Supply and Return
13	Riser, Drain
14	Isolation Ball Valves
15	Strip Heater (Optional E Heat)
16	Heat Limit Switch (Optional E Heat)
17	Heat Shield (Optional E Heat)
18	Service Switch (Optional)

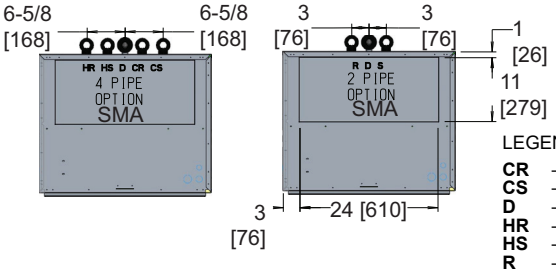
NOTES:

1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field connection.
4. Risers are factory piped to coil with valves as specified.
5. Blower, motor, valves, coil, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = [(floor to floor) + 2 in. (51)], maximum riser length = 119 in. [3023]. Consult project submittal for riser specifications.
8. Maximum riser size is 3 in. (76). If larger sizes are required, please consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. Riser slot knock-outs provided on 3 sides of the cabinet for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of slots.
11. Drain and riser knock-outs on three sides of cabinet.
12. All dimensions are in inches [mm].

UNIT SIZE 42SUA	DIMENSIONS — in. [mm]										UNIT WEIGHT lb [kg]
	Side/Front Supply		Top Supply		Dimensions				Connections		
	A	B	C	D	E	F	H	I	Coil	Drain	
03	14 [356]	12 [305]	14 [356]	10 [254]	17 [432]	1-1/2 [38]	1-1/2 [38]	14 [356]	1/2 [13] SWT x Hose Adapter	7/8 [22] ID EPDM Tube	180 [82]
04											225 [102]
06	18 [457]		16 [406]	12 [305]	20 [508]	1 [25]	2 [51]	18 [457]			240 [109]
08											260 [118]
10	22 [559]	16 [406]	18 [457]	16 [406]	24 [610]		3 [76]	22 [559]			280 [127]
12											305 [138]

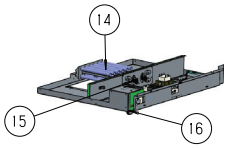
Base unit dimensions (cont)

42SMA Mega Furred-In Stack (Sizes 14-20)

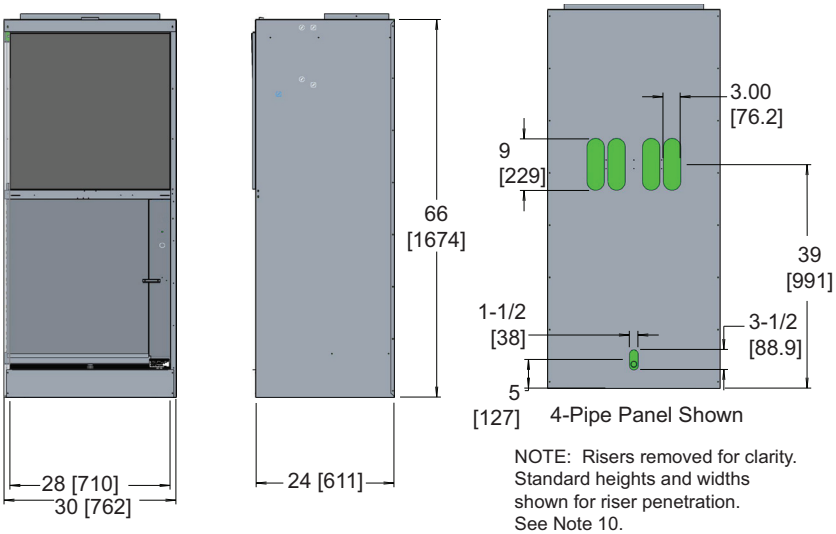


LEGEND

CR	—	Cold Water Return
CS	—	Cold Water Supply
D	—	Drain
HR	—	Hot Water Return
HS	—	Hot Water Supply
R	—	Return
S	—	Supply

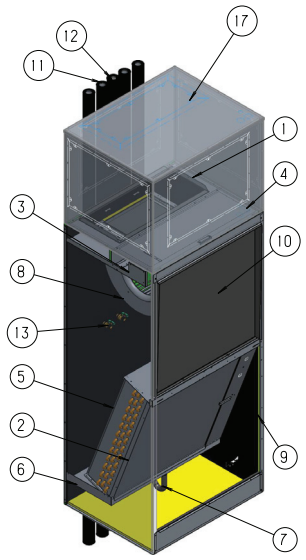


Control Box Option with E Heat



4-Pipe Panel Shown

NOTE: Risers removed for clarity. Standard heights and widths shown for riser penetration. See Note 10.



Side panel dimmed for clarity.

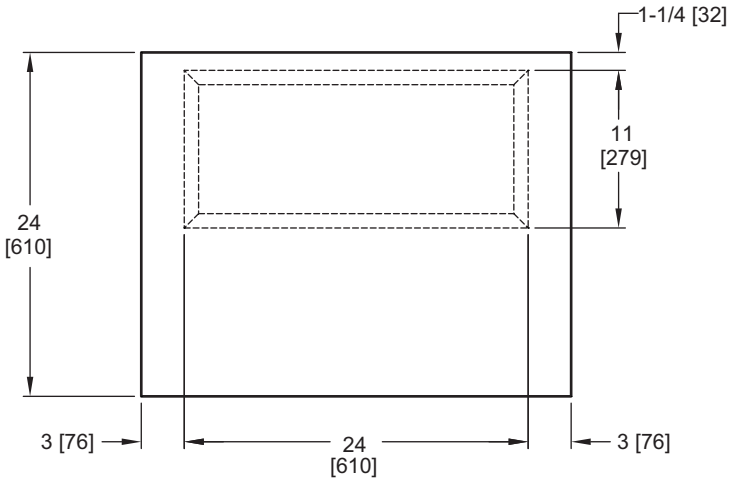
NOTES:

1. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
2. All risers are insulated.
3. Thermostats shipped loose for field installation.
4. Risers are factory piped to coil with valves as specified.
5. Blower, motor, valves, coil, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = {floor to floor + 2 in. [51 mm]}. Maximum riser length is 119 in. [3023 mm].
8. Maximum riser size is 2-1/2 in. [64 mm] diameter. If larger sizes are required, please consult the factory.
9. Expansion loops in hot water heating circuits are required.
10. Slots provided in the back panel for coil connection to permit expansion and contraction of risers. Coil connections to be at the center of the slots.
11. See unit Arrangements for supply and return air orientation.
12. Dimensions are in inches, dimensions in [ ] are in millimeters.

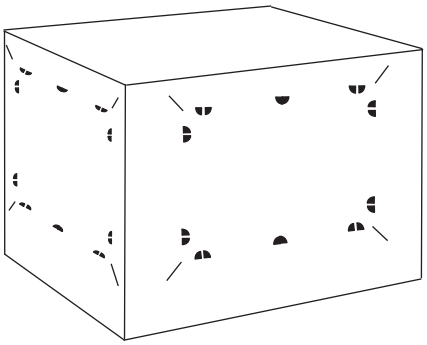
ITEM	DESCRIPTION
1	1 [25] Flanged Supply Air Opening
2	Filter, Throwaway, 1 [25]
3	Control Box Hinged with Slam Latch
4	Electrical Knock Outs
5	Coil 1/2 in. [13] O.D.
6	Drain Pan
7	Flex Drain Tube / P-Trap
8	Motor / Blower Housing
9	Return Air Opening
10	RA Acoustical Service Panel
11	Riser, Supply, and Return
12	Riser, Drain
13	Isolation Ball Valves
14	Strip Heater (Optional E Heat)
15	Heat Limit Switch (Optional E Heat)
16	Disconnect Switch
17	Optional 22 in. Supply Plenum

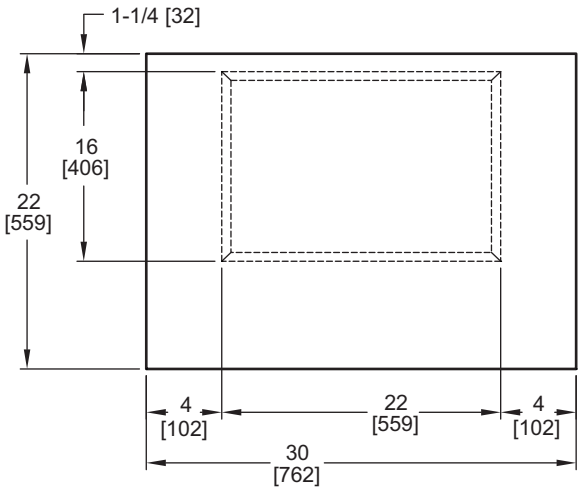
Accessory dimensions

42SM Optional Supply Plenum

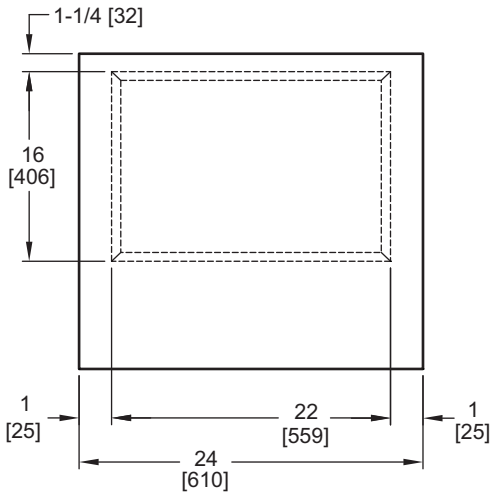


TOP





FRONT



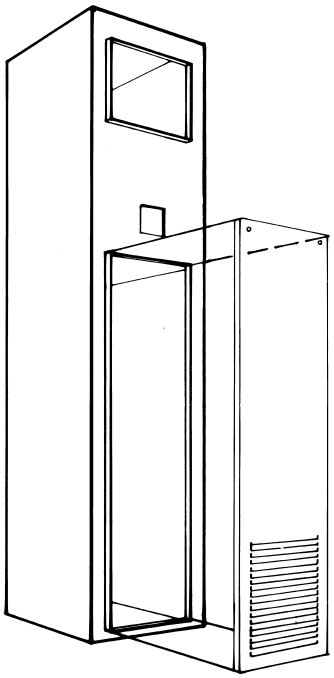
RIGHT

NOTES:

1. Plenum box adds 22 in. [559 mm] to unit height, adds 26 lb (11.8 kg) to unit weight, and is factory installed.
2. 1/4 in. closed cell insulation is standard for the plenum box.
3. Side supply is 22 in. [559 mm] x 16 in. [406 mm] on all four sides.
4. Top supply is 24 in. [610 mm] x 11 in. [279 mm] which matches unit top ducted discharge.
5. All dimensions are in inches [mm].

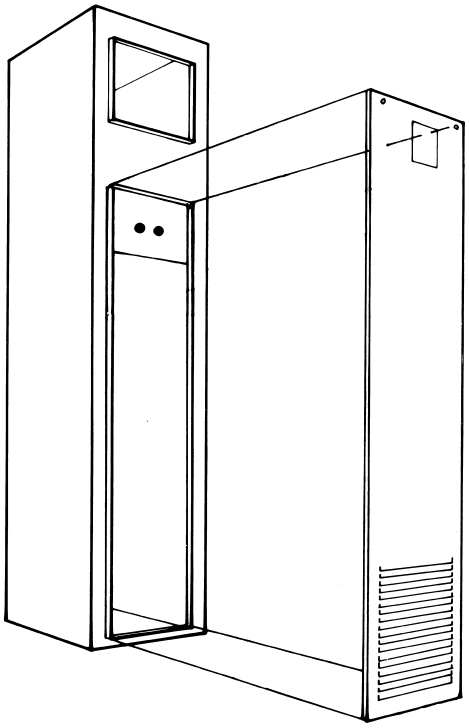
Accessory dimensions (cont)

Panel No. 1



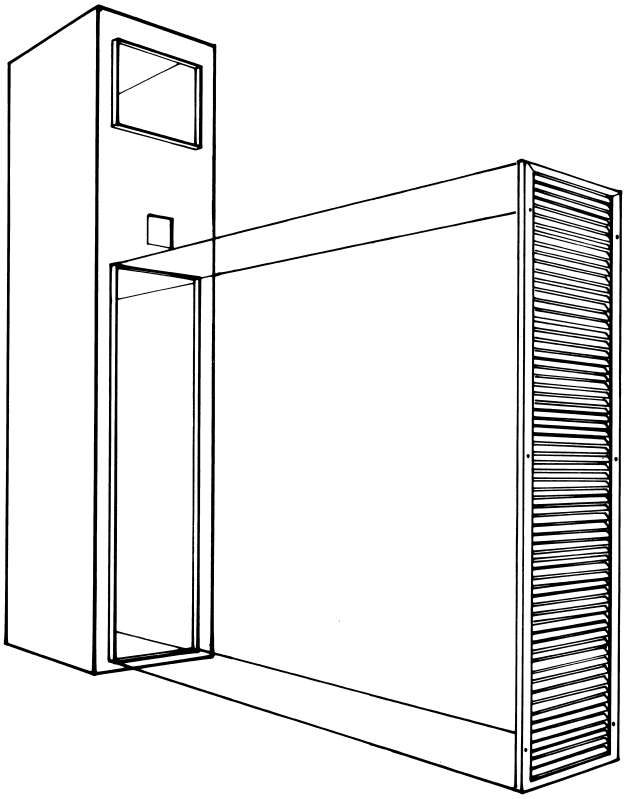
Short Frame — Surface Mounted Grille (for use with surface or wall mounted thermostat applications)

Panel No. 2 with Control Door



Long Frame — Surface Mounted Grille (for use with unit mounted thermostat applications)

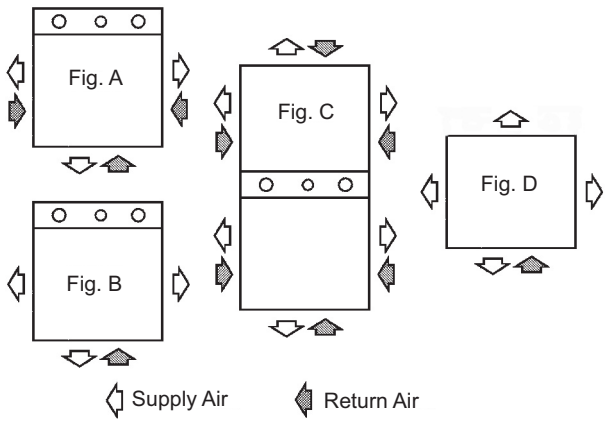
Panel No. 3



Short Frame — Surface Mounted Grille (for use with surface or wall mounted thermostat applications.)

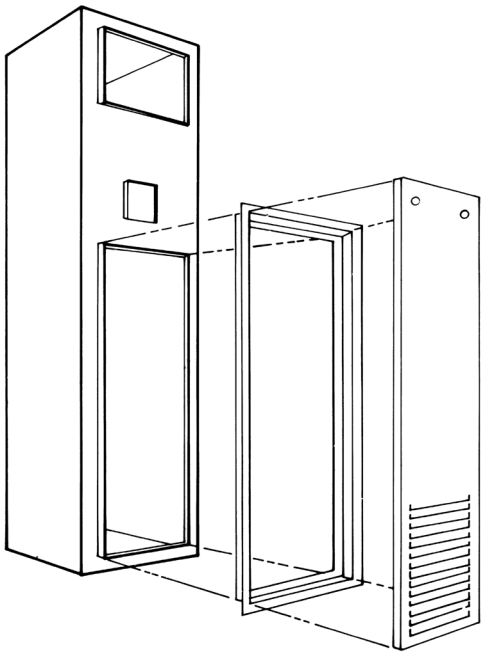
Grille Locations

UNIT	FIG.	GRILLE	ARRANGEMENTS
42SG	A	Supply	Up to 2 grilles located on any of 3 sides shown
		Return	One grille located on any of 3 sides shown
42SH	B	Supply	Up to 2 grilles located on any of 3 sides shown
		Return	One grille located opposite risers
42SJ	C	Supply	Up to 2 grilles located on any of 3 sides shown (per section)
		Return	One grille located on any of 3 sides shown (per section)
42SU	D	Supply	Up to 3 openings from any 5 knockouts available
		Return	One grille location



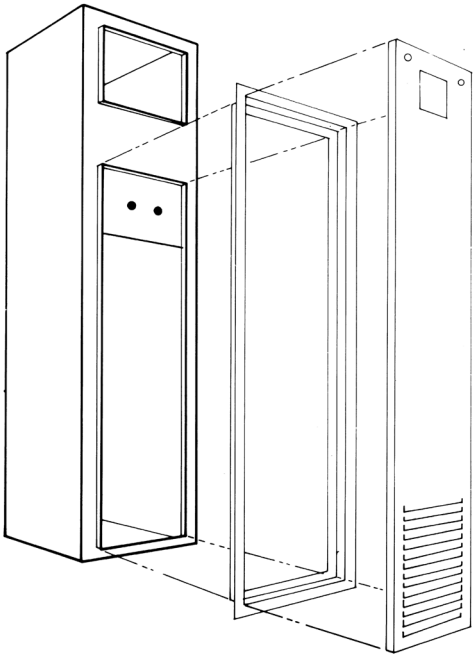
Accessory dimensions (cont)

Panel No. 4



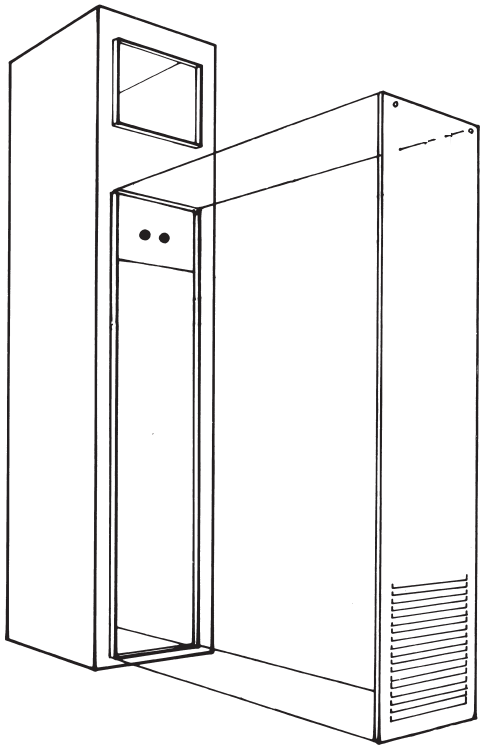
Short Frame — Surface Mounted Grille (for use with surface or wall mounted thermostat applications)

Panel No. 5 with Control Door



Long Frame — Surface Mounted Grille (for use with unit mounted thermostat applications)

Panel No. 2 Without Control Door



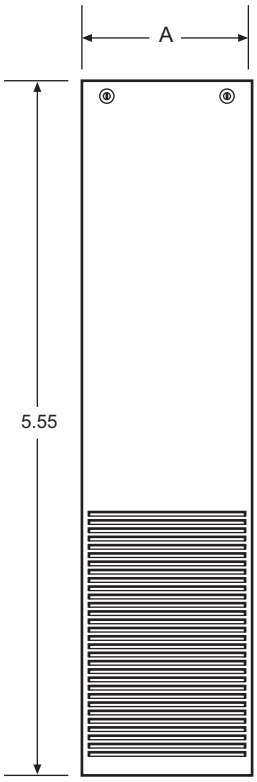
Accessory dimensions (cont)

Return-Air Wall Panels for Furred-In Units — Panels with No Frame

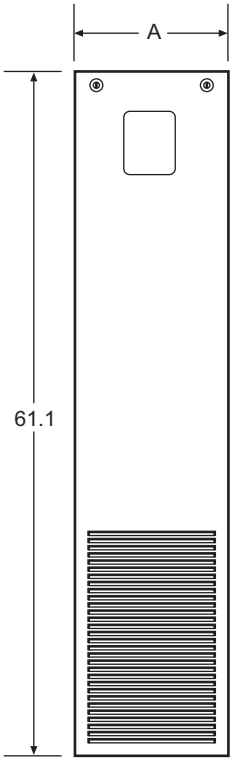
Panel Dimensions (in.)[a]

PANEL NO.	UNIT	UNIT SIZE	A
1	42SG,SJ,SU	03, 04	15.5
		06, 08	19.5
		10, 12	23.5
	42SM	14,16, 20	29.5
2	42SG,SJ	03, 04	15.5
		06, 08	19.5
		10, 12	23.5
3	42SG,SJ	03, 04	15.2
		06, 08	19.2
		10, 12	23.2

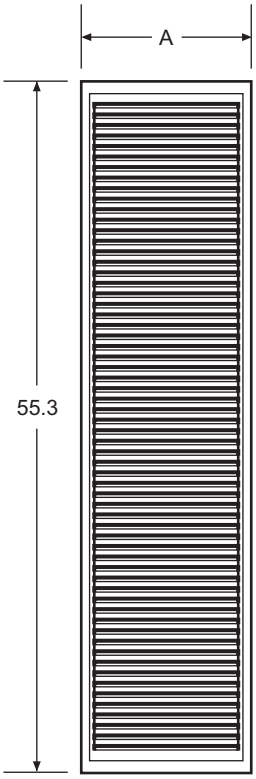
NOTE(S):
a. Dimensions in inches.



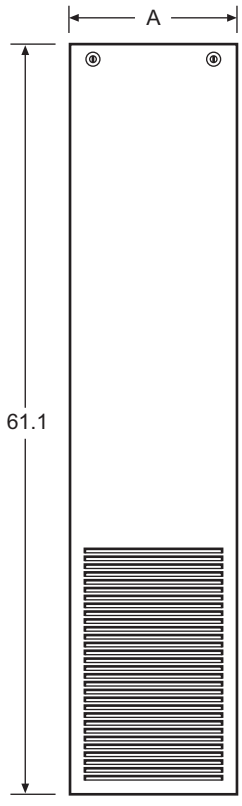
Panel No. 1



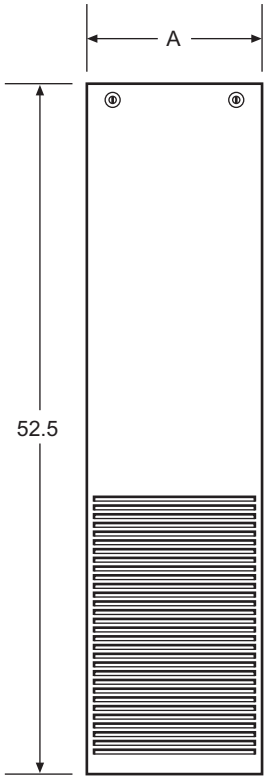
Panel No. 2



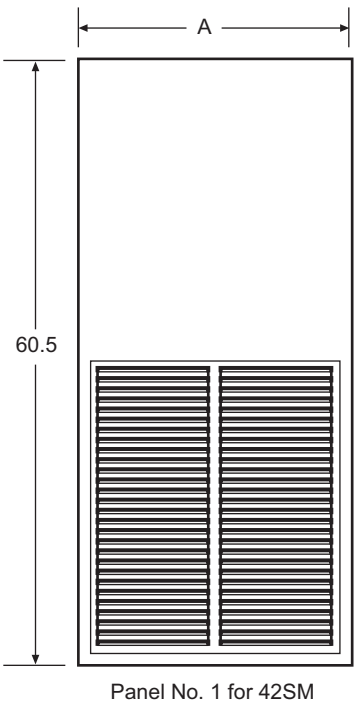
Panel No. 3



Panel No. 2 without Door



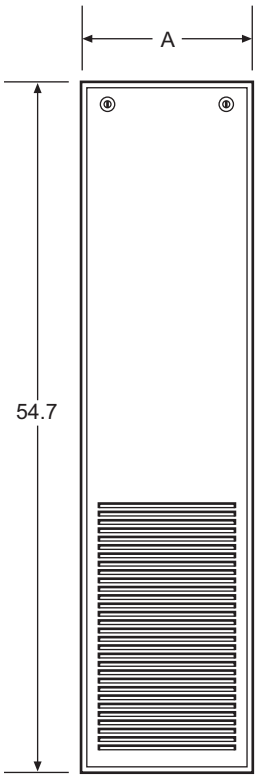
Panel No. 1 for 42SU



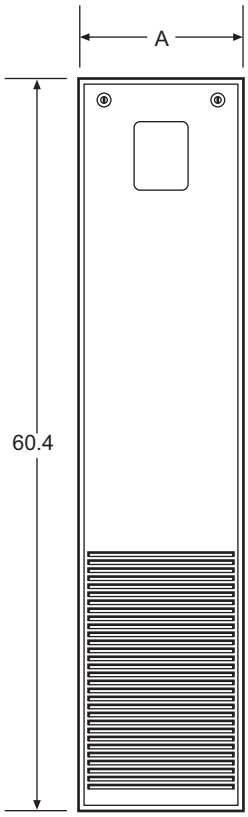
Panel No. 1 for 42SM

Accessory dimensions (cont)

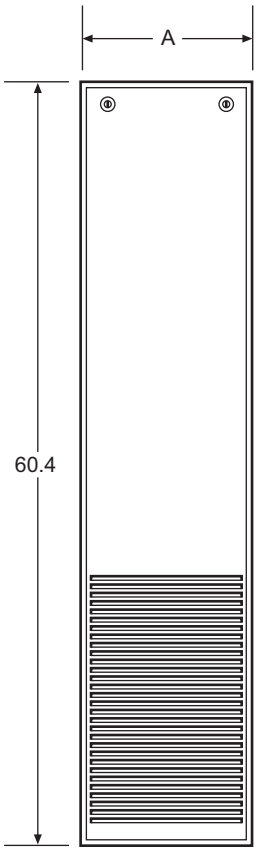
Return-Air Wall Panels for Furred-In Units — Panels with Frame



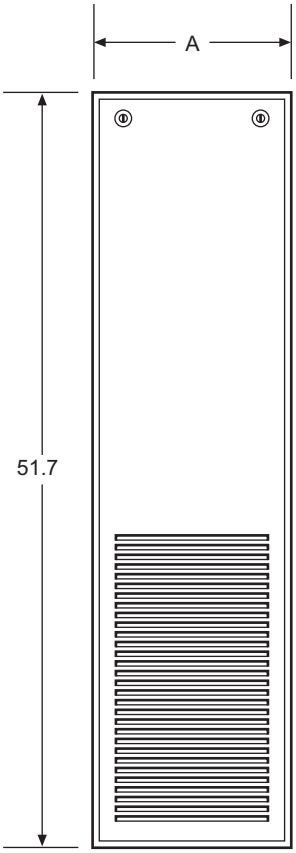
Panel No. 4



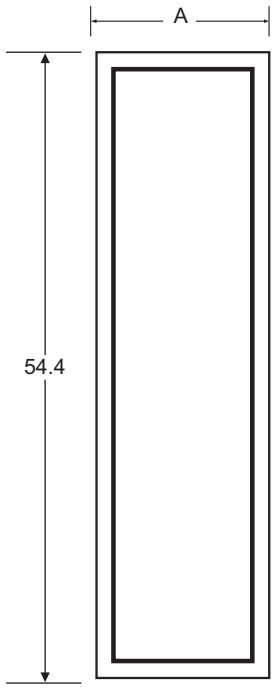
Panel No. 5 with Control Door



Panel No. 5 without Door



Panel No. 4 for 42SU



Panel No. 6

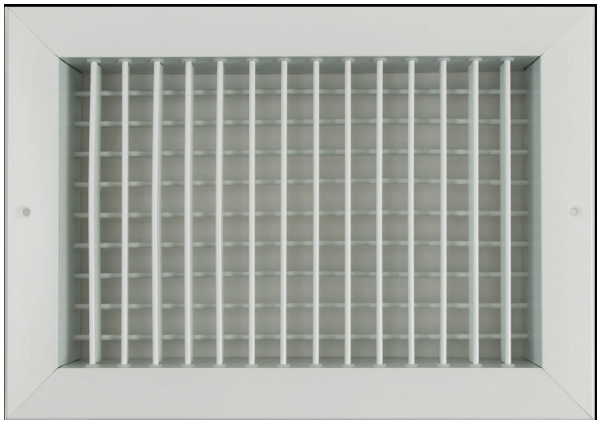
Panel and Frame Dimensions (in.)[a]

PANEL NO.	UNIT	UNIT SIZE	A
4	42SG,SJ, SU	03, 04	15.1
		06, 08	19.1
		10, 12	23.1
5	42SG,SJ	03, 04	15.1
		06, 08	19.1
		10, 12	23.1
6	42SG,SJ	03, 04	16.7
		06, 08	20.7
		10, 12	24.7

NOTE(S):
a. Dimensions in inches.

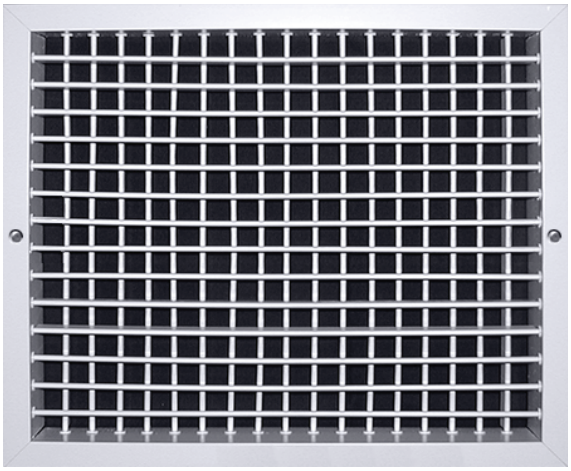
Accessory dimensions (cont)

Supply Air Grille



NOTE: Standard style supply air grille shown.

Framed Aluminum/Supply Air Grille



NOTE: Aluminum style supply air grille shown.

42SG/SJ Filter Sizes in. (mm)

UNIT SIZE	NOMINAL 1 IN. FILTER SIZE
03	12-1/2 (316) x 24-1/4 (616)
04	12-1/2 (316) x 24-1/4 (616)
06	16-1/4 (413) x 26-3/4 (679)
08	16-1/4 (413) x 26-3/4 (679)
10	20-1/2 (521) x 29-1/4 (743)
12	20-1/2 (521) x 29-1/4 (743)
14	24-1/2 (622) x 29-1/2 (749)
16	24-1/2 (622) x 29-1/2 (749)
20	26-1/2 (673) x 29-1/2 (749)

42SG/SJ Recommended Grille Sizes in. (mm)

UNIT SIZE	SINGLE SUPPLY[a]	DOUBLE SUPPLY	TOP SUPPLY
03	14 (356) x 8 (203)	14 (356) x 6 (152)	14 (356) x 10 (254)
04	14 (356) x12 (305)	14 (356) x 6 (152)	14 (356) x 10 (254)
06	18 (457) x10 (254)	18 (457) x 6 (152)	16 (406) x 12 (305)
08	18 (457) x 12 (305)	18 (457) x 6 (152)	16 (406) x 12 (305)
10	22 (559) x 16 (406)	22 (559) x 8 (203)	18 (457) x 16 (406)
12	22 (559) x 16 (406)	22 (559) x 8 (203)	18 (457) x 16 (406)

NOTE(S):

a. Single-side supply units are available with indicated supply openings on 88 in. tall cabinets only. Consult the factory for cabinets less than 88 in.

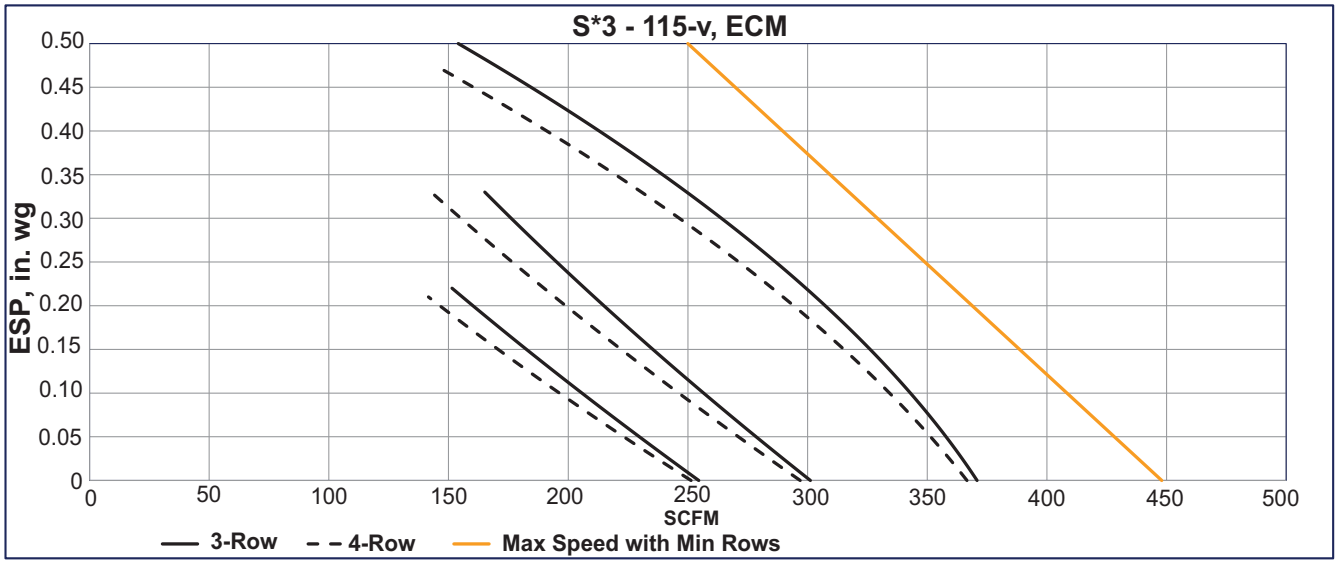
42SU Recommended Grille Sizes in. (mm)

UNIT SIZE	SINGLE SUPPLY	DOUBLE SUPPLY	TOP SUPPLY
03/04	14 (356) x12 (305)		
06/08	18 (457) x 12 (305)		
10/12	22 (559) x 16 (460)		

Performance data

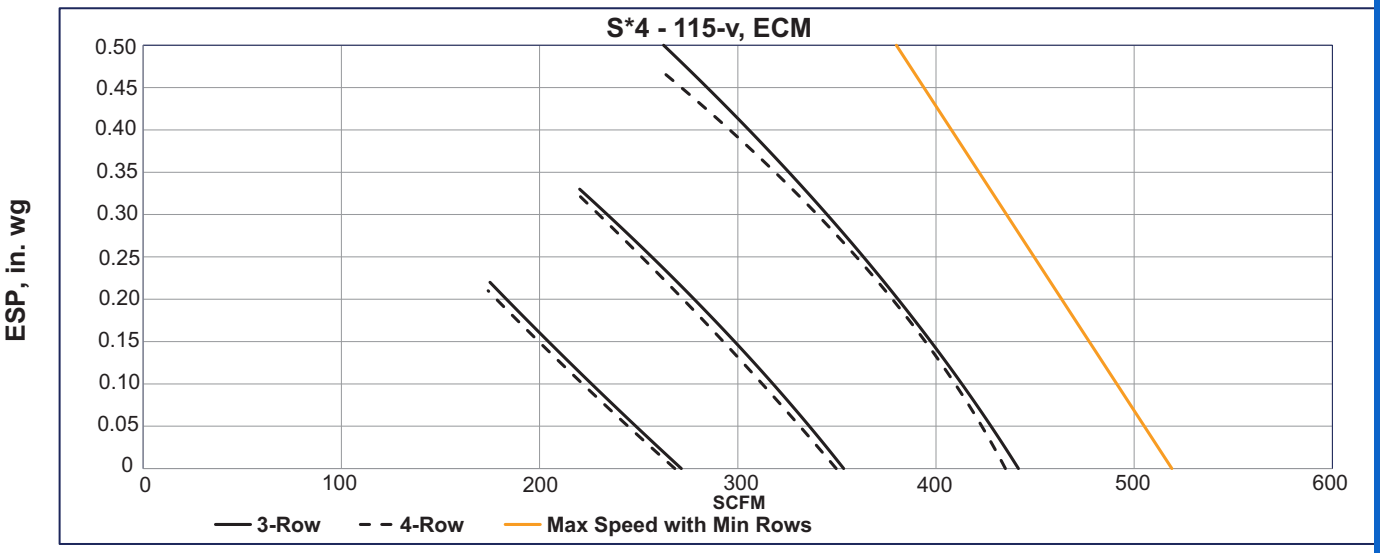
Air Delivery Fan Curves

42S Series — Unit Size 03



NOTE: Supply air grille return air panel and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

42S Series — Unit Size 04



NOTE: Supply air grille return air panel and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

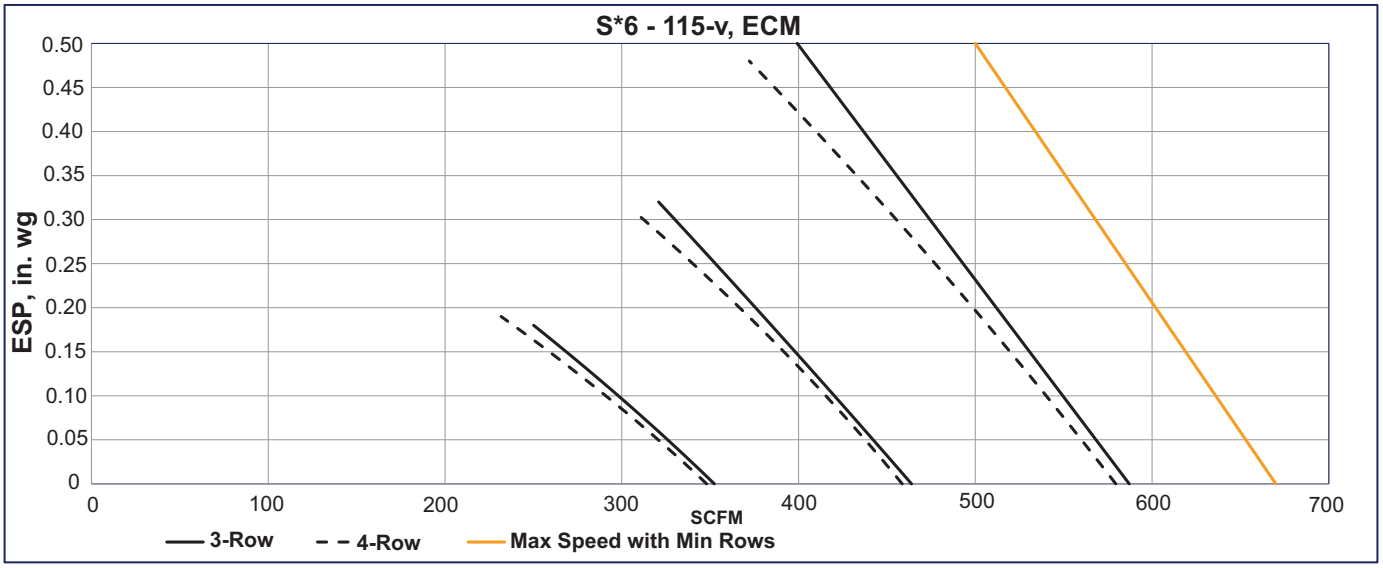
LEGEND

ECM — Electronically Commutated Motor
ESP — External Static Pressure
SCFM — Square Cubic Feet Per Minute

Performance data (cont)

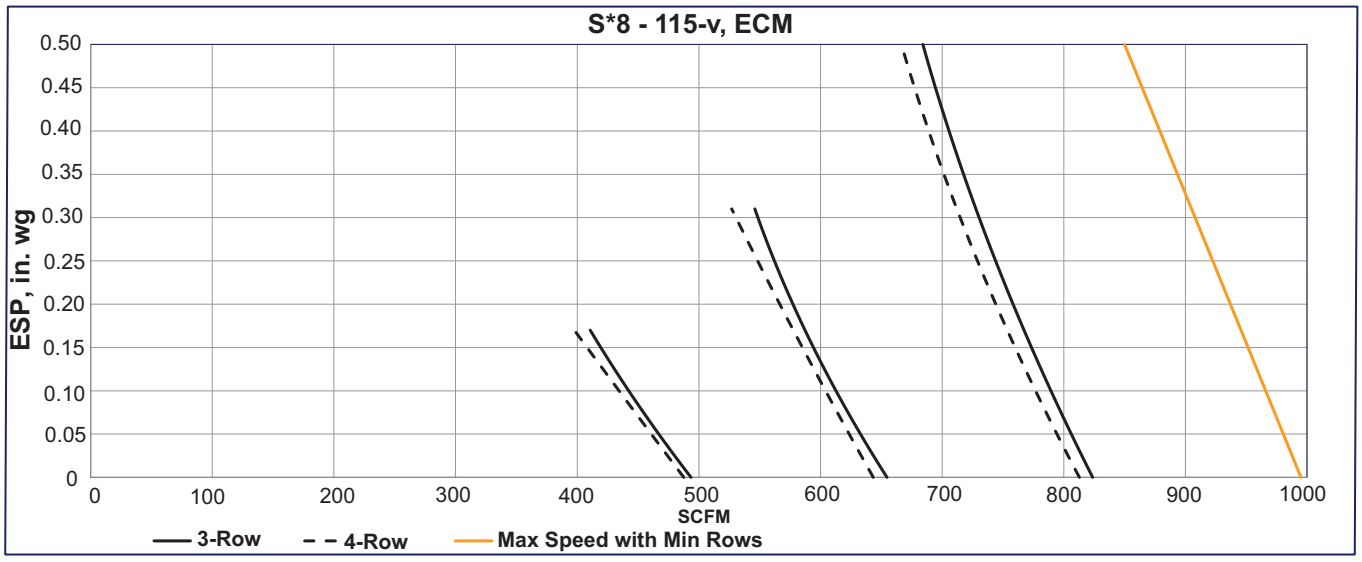
Air Delivery Fan Curves (cont)

42S Series — Unit Size 06



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (page 27-31).

42S Series — Unit Size 08



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

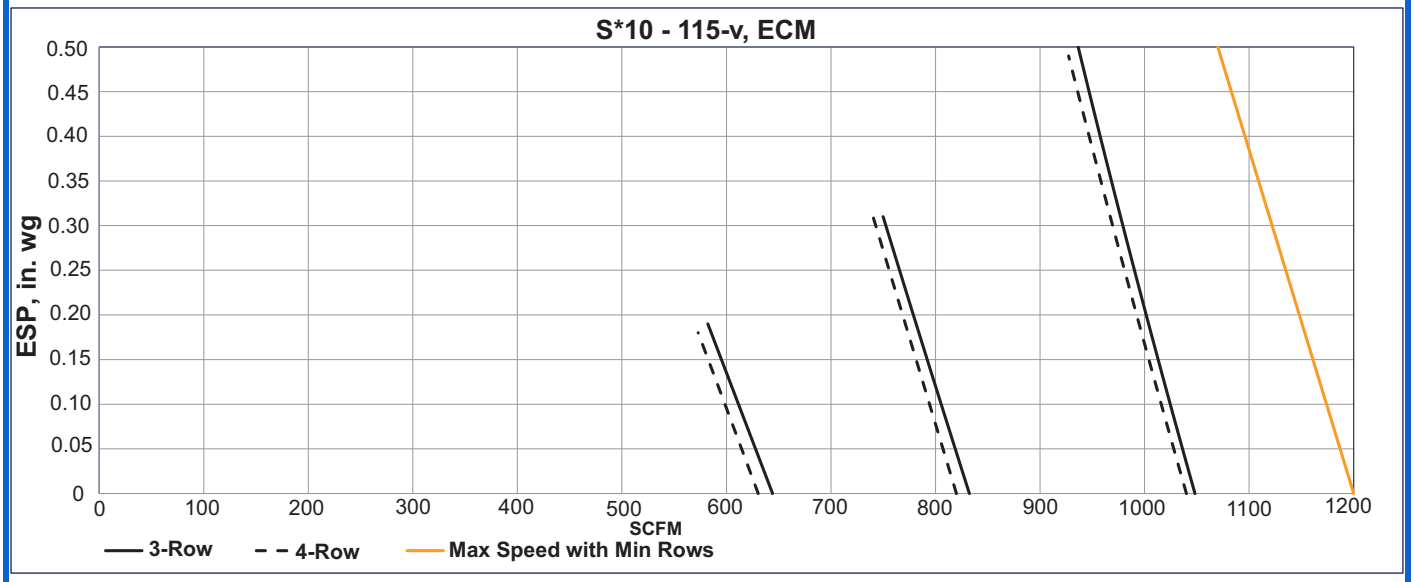
LEGEND

ECM — Electronically Commutated Motor
ESP — External Static Pressure
SCFM — Square Cubic Feet Per Minute

Performance data (cont)

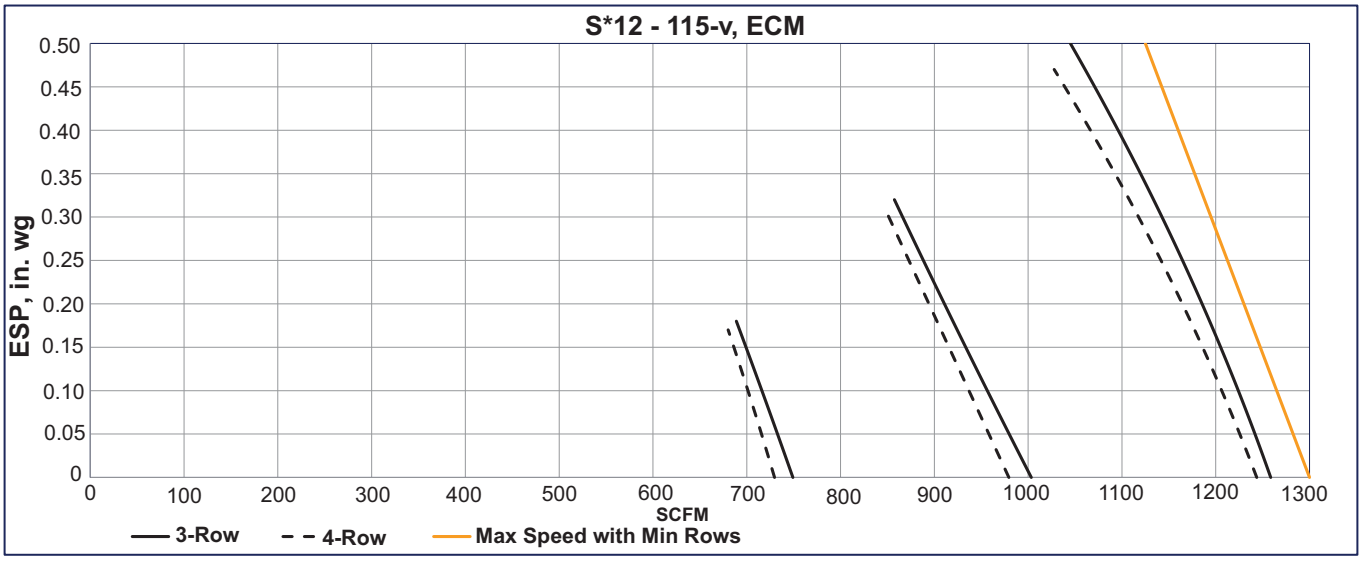
Air Delivery Fan Curves (cont)

42S Series — Unit Size 10



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

42S Series — Unit Size 12



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

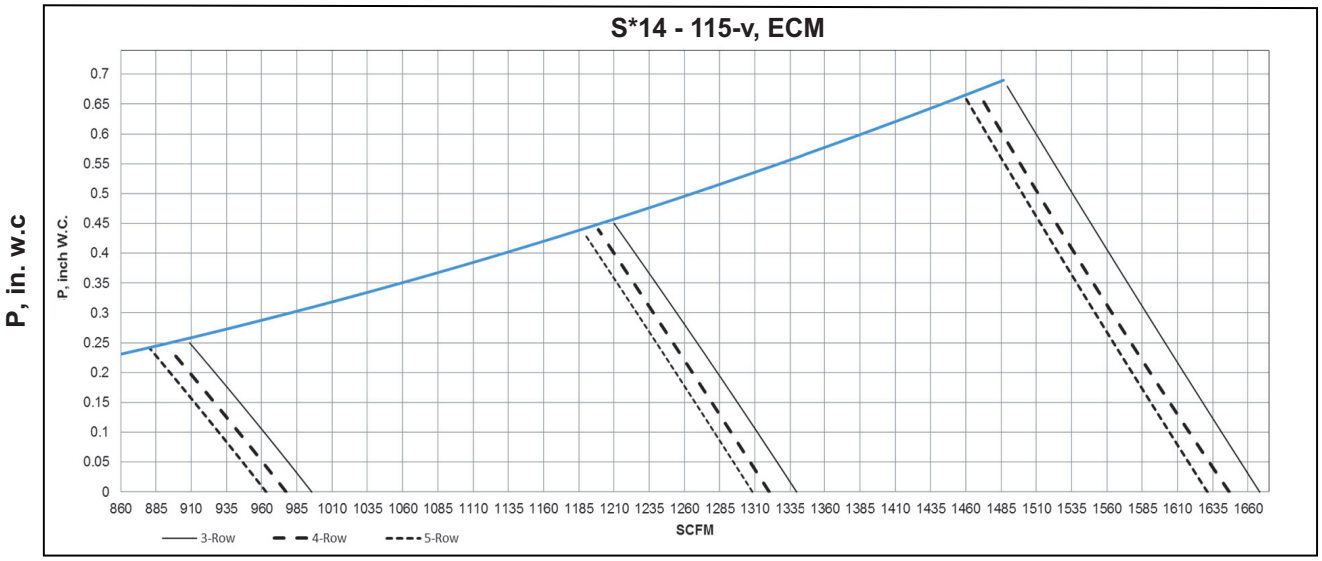
LEGEND

ECM — Electronically Commutated Motor
ESP — External Static Pressure
SCFM — Square Cubic Feet Per Minute

Performance data (cont)

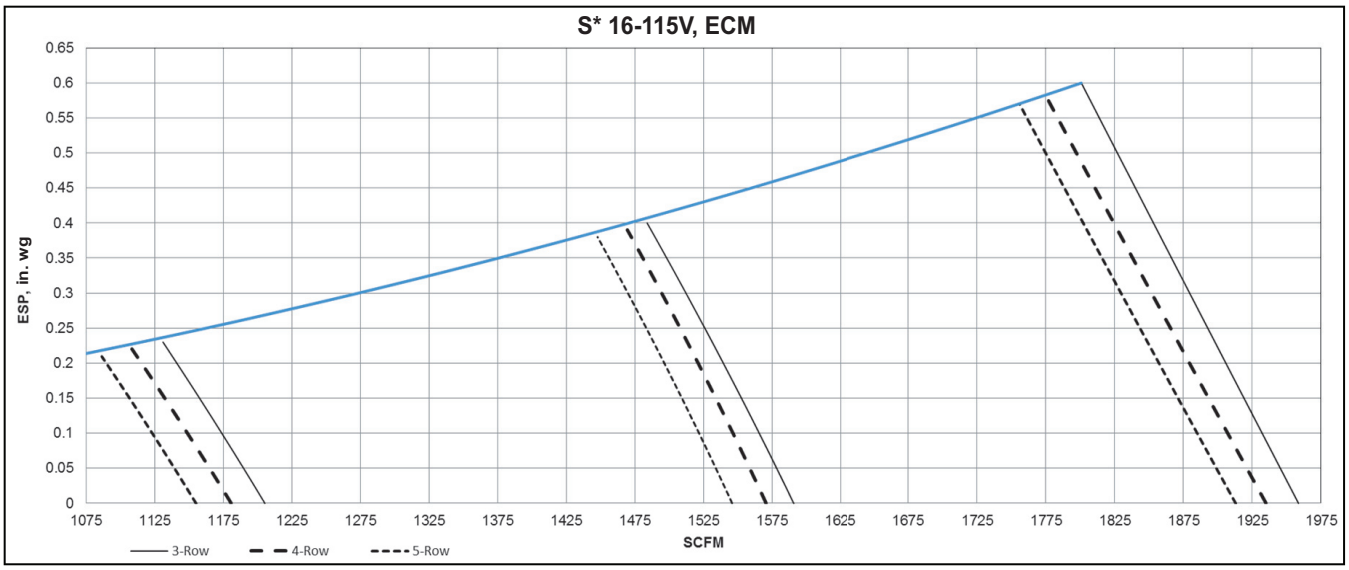
Air Delivery Fan Curves (cont)

42S Series — Unit Size 14 (SMA)



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

42S Series — Unit Size 16 (SMA)



NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

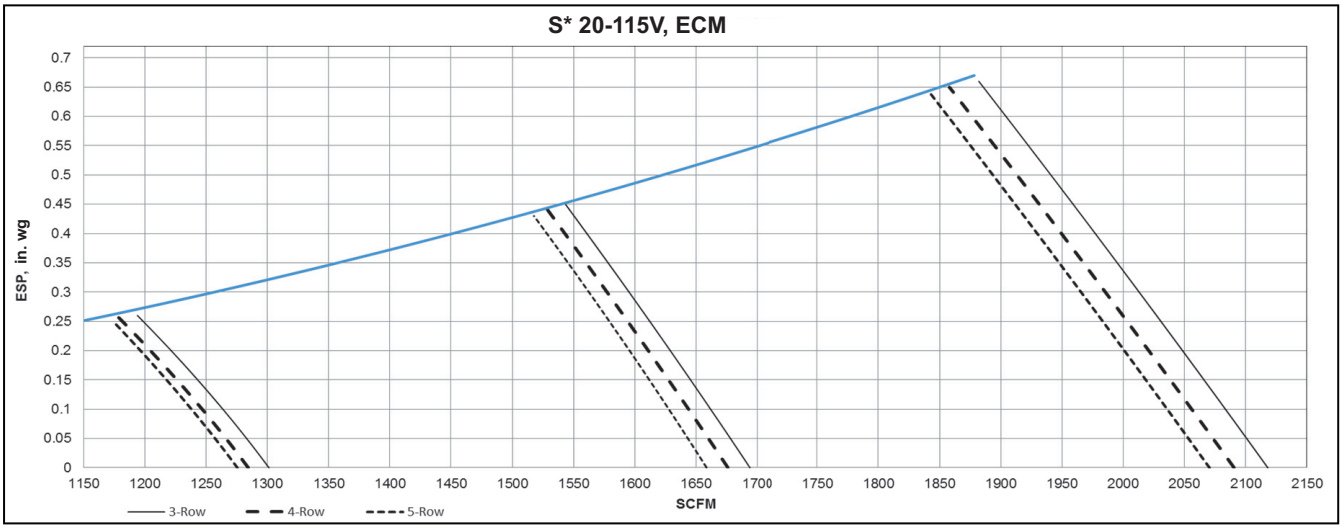
LEGEND

ECM — Electronically Commutated Motor
ESP — External Static Pressure
SCFM — Square Cubic Feet Per Minute

Performance data (cont)

Air Delivery Fan Curves (cont)

42S Series — Unit Size 20 (SMA)

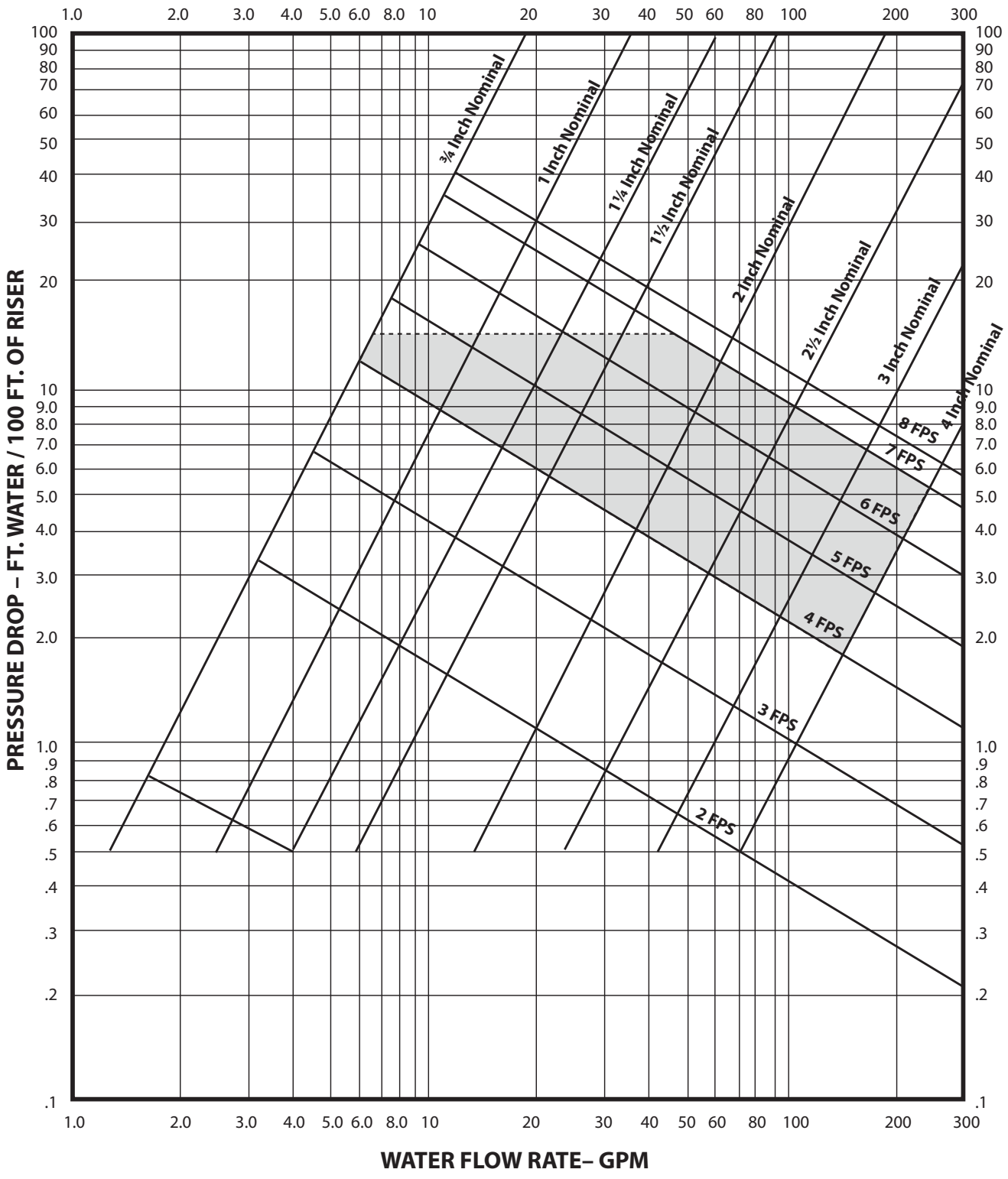


NOTE: Supply air grille, return air panel, and factory-installed throwaway air filter static pressure losses are included in all fan performance curves for all sizes (pages 27-31).

LEGEND

ECM — Electronically Commutated Motor
ESP — External Static Pressure
SCFM — Square Cubic Feet Per Minute

Performance data (cont)



Electrical data

42SM ECM Motor Data[a,b,c]

VOLTAGE	UNIT SIZE	14	16	20
	Nominal Hp	3/4	1	1
120-v	Rated Motor FLA	9.6	12.8	12.8
	Max Program Current	9.6	12.8	12.8
208-v	Rated Motor FLA	7.5	10.1	10.1
	Max Program Current	7.5	10.1	10.1
230-v	Rated Motor FLA	6.8	9.1	9.1
	Max Program Current	6.8	9.1	9.1
277-v	Rated Motor FLA	5.5	6.9	6.9
	Max Program Current	5.5	6.9	6.9

NOTE(S):

a. Total unit Amps and watts shown.
b. UL approves the motor and thermal overload combination at locked rotor conditions only.
c. Consult factory for 50 Hz applications.

42SG/SH/SJ/SU ECM Motor Data[a]

VOLTAGE	FAN SPEED	UNIT SIZE	03	04	06	08	10	12
		Nominal Hp	1/4	1/4	1/4	1/2	1/2	1/2
115-v 60 Hz 1-Phase	High	Amps	0.64	0.94	1.60	2.00	3.20	5.21
		Watts	44	68	120	159	257	461
	Medium	Amps	0.43	0.58	0.92	1.18	1.78	2.97
		Watts	28	40	64	89	136	259
	Low	Amps	0.32	0.37	0.54	0.61	0.96	1.4
		Watts	19	23	35	42	69	129
208-240-v 60 Hz 1-Phase	High	Amps	0.41	0.61	1.02	1.32	1.94	3.27
		Watts	40	67	121	168	253	455
	Medium	Amps	0.30	0.38	0.58	0.79	1.11	1.77
		Watts	25	39	63	96	135	245
	Low	Amps	0.25	0.27	0.34	0.43	0.58	0.83
		Watts	19	23	31	48	65	119
277-v 60 Hz 1-Phase	High	Amps	0.36	0.51	0.78	1.10	1.57	2.61
		Watts	39	67	116	170	260	447
	Medium	Amps	0.29	0.36	0.49	0.64	0.91	1.42
		Watts	24	39	63	95	143	243
	Low	Amps	0.25	0.27	0.33	0.29	0.45	0.65
		Watts	18	22	34	39	64	110

NOTE(S):

a. All data is based on 3R/14 fpi dry coil with return air panel, filter and supply grill at 0.00 in. ESP. These values are based on EC Motors.

Application data

System piping

The following diagrams show some common methods used to pipe the 42S Series units. Only the 2-pipe systems are shown; however, the methods would be the same for 4-pipe systems.

System 1

The "direct return" system, is the most common. It is economical to install since it supplies and returns the water for a riser column from the same location, at the top or the bottom of a building. This type of riser arrangement does require more attention to individual unit water flow balancing. The risers are normally capped at the end as shown in the diagrams.

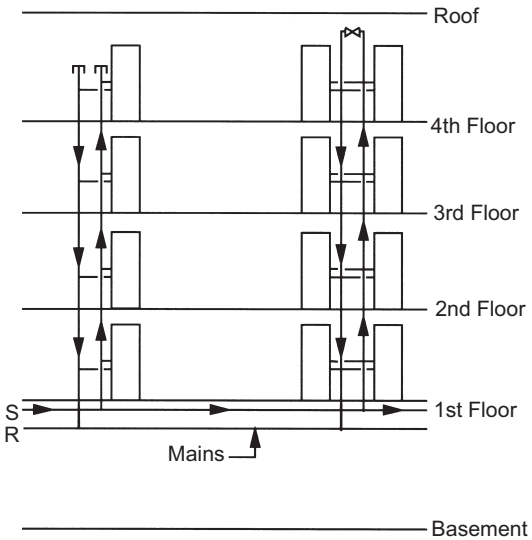
System 2

The "reverse return" system, is used to minimize the requirement for individual unit balancing. This system is usually referred to as the self-balancing system. The arrangement of the risers allows the water flow for each unit in a column to be equalized. In the reverse return system both the supply and return mains are located at the top or the bottom of a building requiring an additional return riser to be furnished in the units.

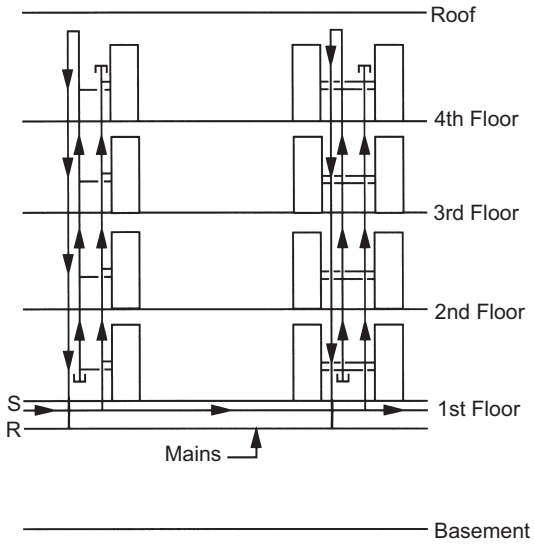
System 3

The "common reverse return" system, typically has the supply and return mains located remotely from each other; such as one at the top and one at the bottom of a building. This eliminates the need for a reverse return riser in the units.

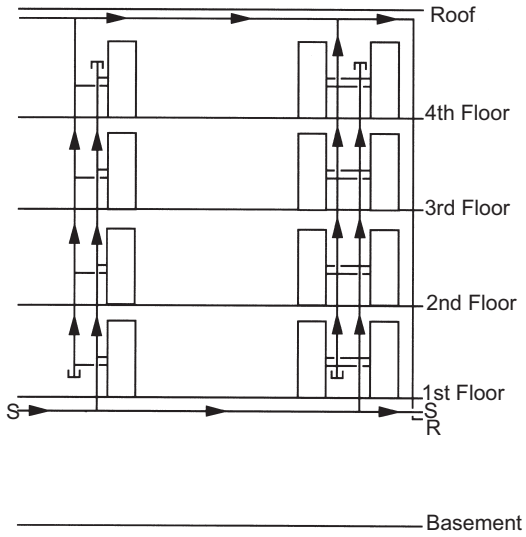
System 1 — Direct Return



System 2 — Reverse Return



System 3 — Common Reverse Return



Application data (cont)

Risers (42S units)

Riser diameter is an important consideration in the design of stack series systems. Standard units can accommodate 3/4 in. to 2-1/2 in. riser sizes in 2-pipe systems. For other applications, such as reverse return risers or 4-pipe systems, it may be necessary to accommodate the additional risers.

Riser size is based on the water flow needed for a given tier of units. Unit risers are sized according to the diameter and length requirements as specified by the customer. To determine riser size, water velocity should be limited to 5 to 8 ft per second. Thus, if 10 units are to be stacked vertically with each unit requiring 3 gpm, the maximum flow in the risers is 30 gpm. Through 1-1/4 in. risers, this is a velocity of 7.5 ft per second. The maximum flow rate of 30 gpm occurs only at the supply and return points. As the water moves upward, the flow in the supply riser is reduced by 3 gpm per floor, so that after 3 floors, the total flow is 21 gpm and riser size can be reduced to 1 in. See the Main Riser Pressure Drops chart on page 32.

Condensate drains are available in sizes down to 1 in. for greater first cost economy.

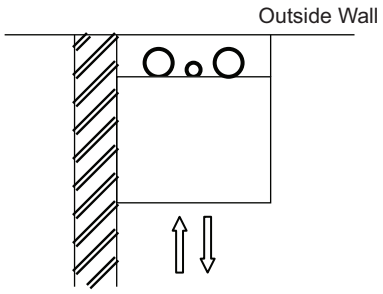
Riser size-reducers are factory installed and caps are provided at customer request except for 42SU units.

For risers of over 119 in. length, extension pieces can be furnished for field installation.

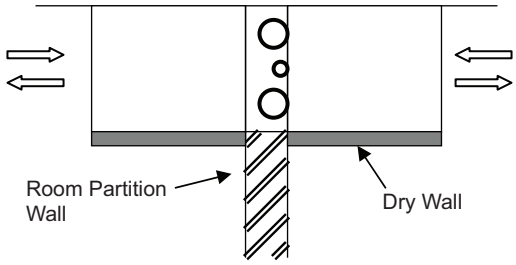
Typical arrangements

Typical arrangement applications for each model type are shown on page 35. The fan coil units feature almost an unlimited number of arrangements to meet the needs of new construction, renovation, or reconstruction. Consult the factory for the arrangement (standard or special) to meet your particular need.

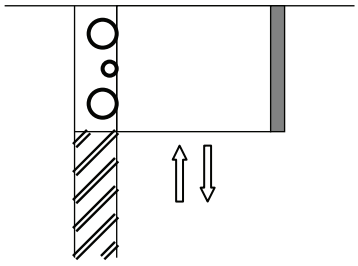
Typical Arrangement Applications



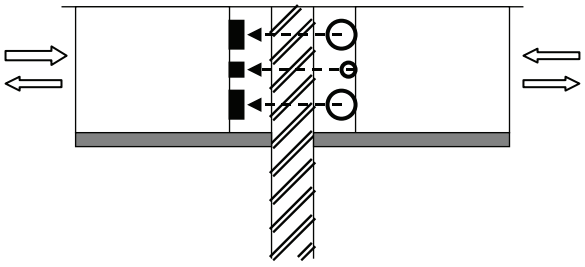
42SH – Exposed Cabinet



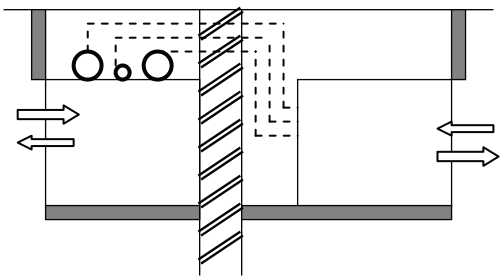
42SJ – Ditto Furred-In Stack



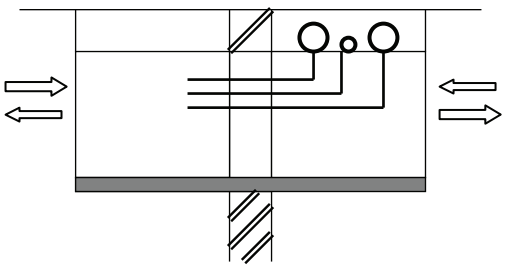
42SG – Furred-In Stack



42SG – Furred-In Stack Primary/Secondary



42SG – Furred-In-Stack X-Primary



42SH – Furred-In-Stack Siamese

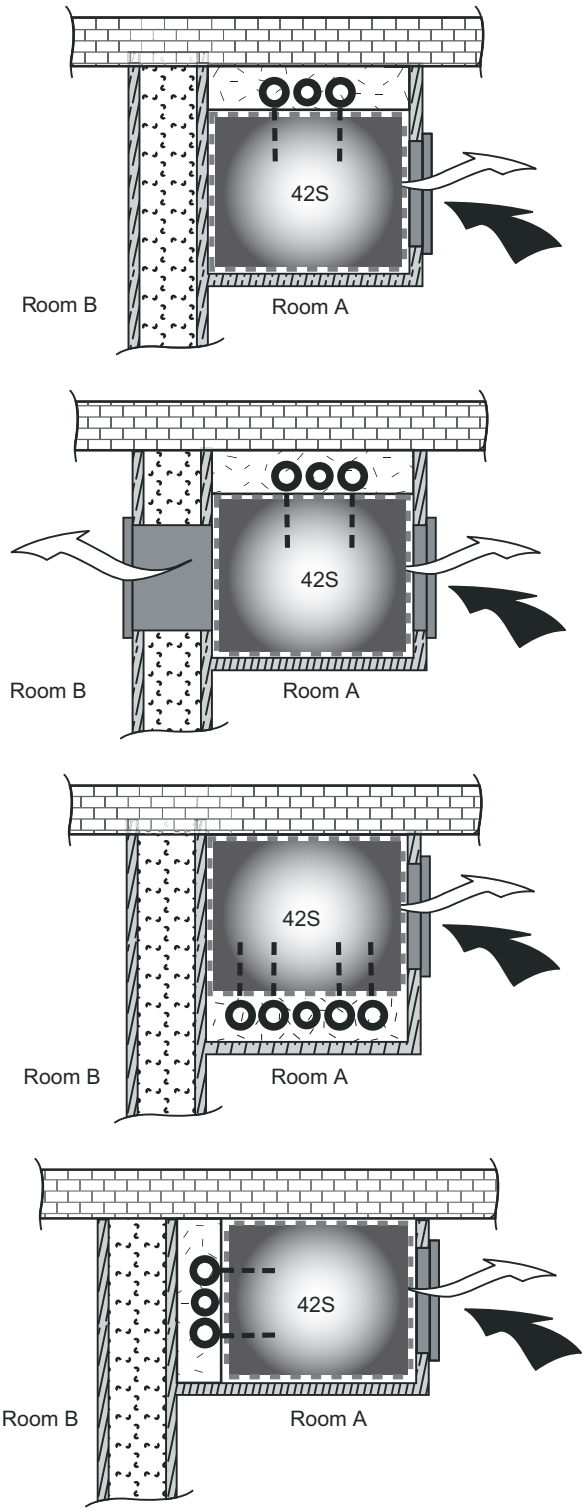
Application data (cont)

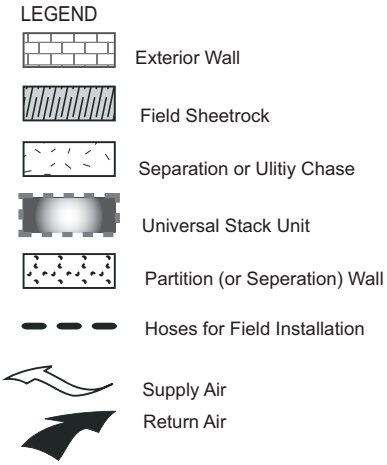
One of the unique traits of the universal arrangement is the variety of possible field configurations. The best unit design configuration can be selected by choosing from numerous unit arrangement options that utilize knockout designs while conserving floor space and reducing installation costs.

Below are just a few pictorials of the many arrangement possibilities of the universal arrangement option.

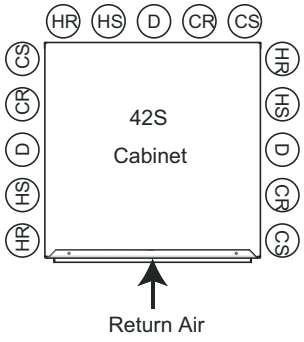
NOTE: Risers ship separately. Units are field connected to risers using factory furnished flex hoses.

Typical Arrangement Applications (cont)



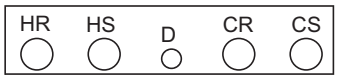


NOTE: The Supply, Return, and Drain Risers (2-pipe or 4-pipe applications) can be oriented on any of three sides of the unit.



R = Return
D = Drain
S = Supply

2-pipe



HR = Hot Water Return
HS = Hot Water Supply
D = Drain
CR = Cold Water Return
CS = Cold Water Supply

4-pipe

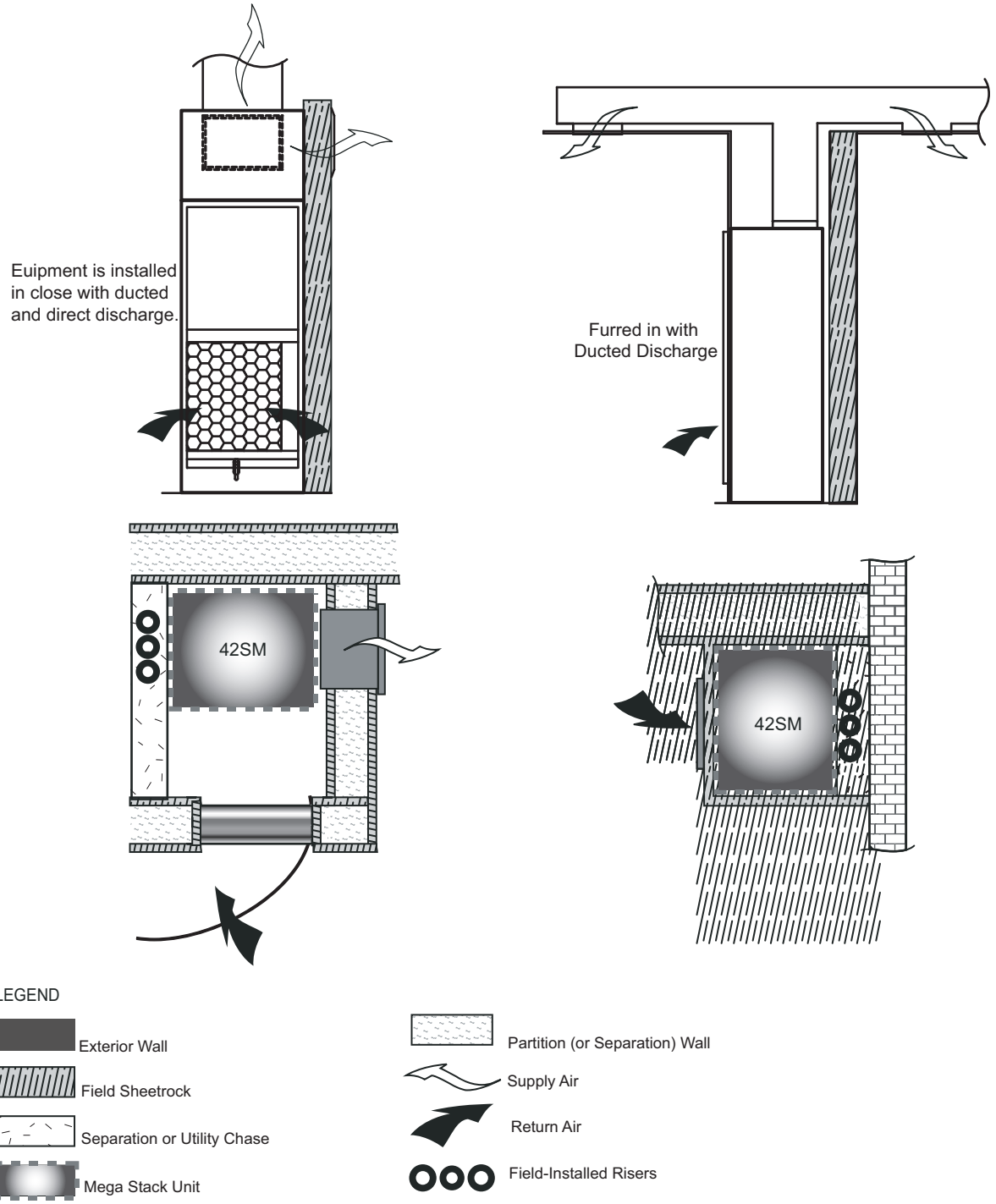
Application data (cont)

Mega Stack units (42SM) are designed to be installed either in a small mechanical closet or furred in with drywall adhered directly to the cabinet. One of the unique traits of the 42SM unit is its optional discharge plenum. The discharge plenum is a factory-installed option that adds 22 in. to the unit height and provides multiple air duct or supply-air grille connections.

The designer is afforded the luxury of specifying a single unit, which can duct to multiple spaces, direct discharge to a single space, or provide a combination of the two. If necessary, the plenum can be added or removed in the field to accommodate design changes.

Below are a few of the many arrangement possibilities of the 42SM fan coil system.

42SM Unit Configuration Options

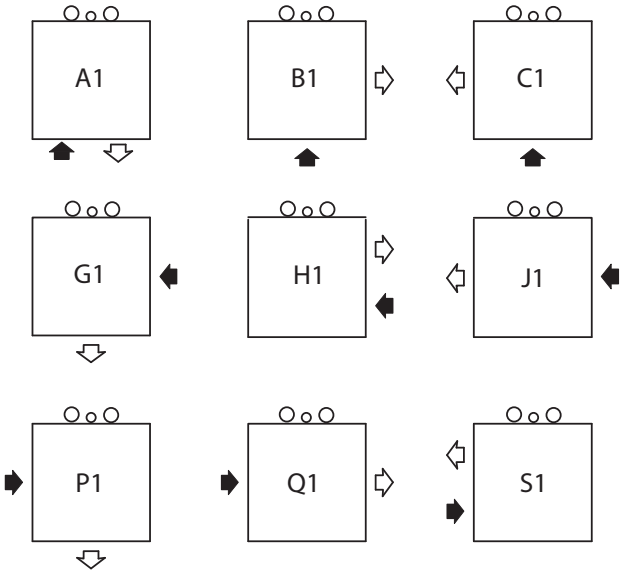


NOTE: Risers ship separately. Units should be field connected using factory furnished flex hoses

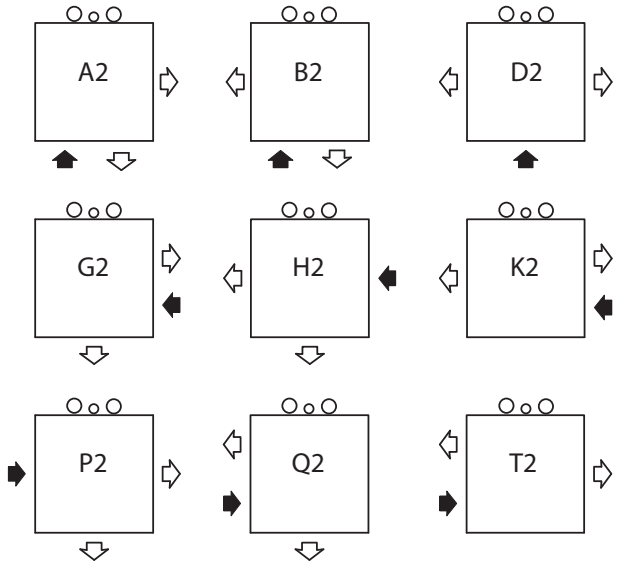
Application data (cont)

42S Unit Configuration Options

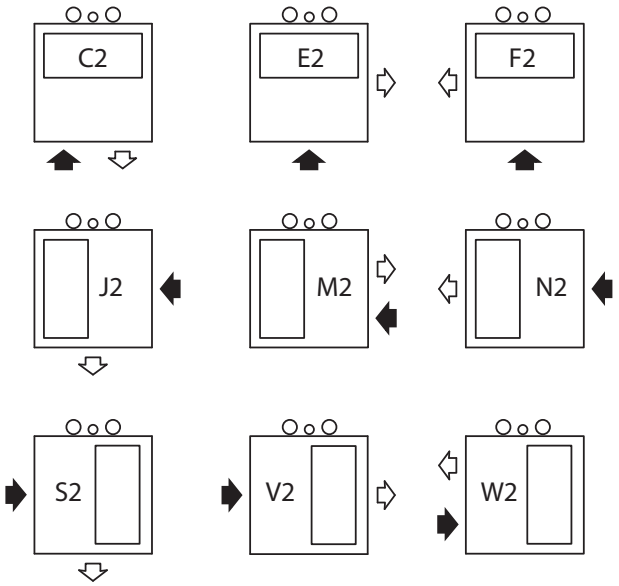
Single Side Supply



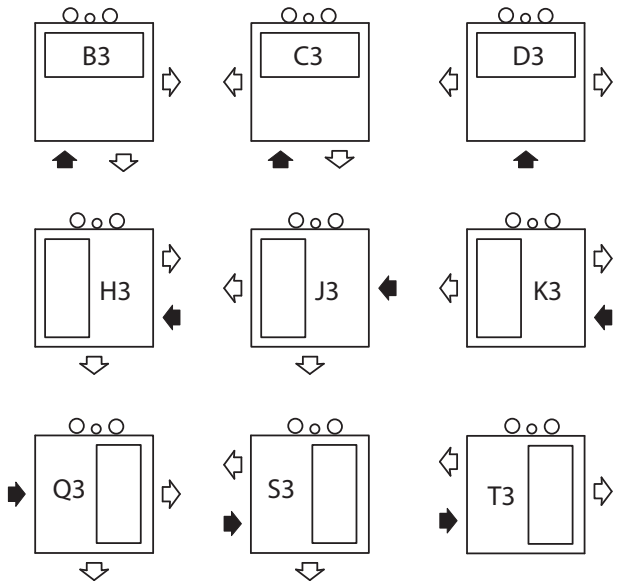
Double Side Supply



Top with One Side Supply

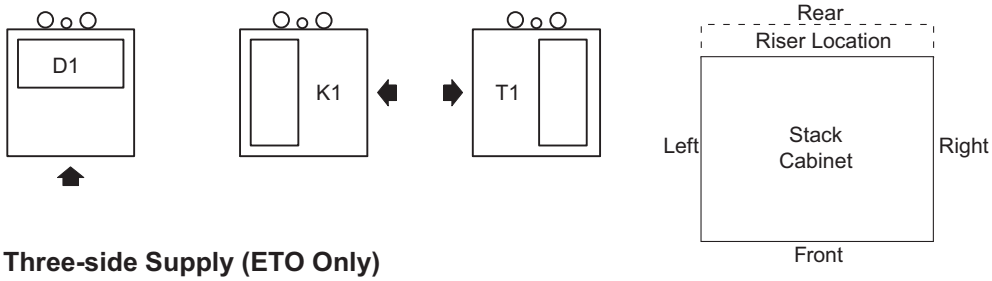


Top with Two Side Supply (ETO Only)

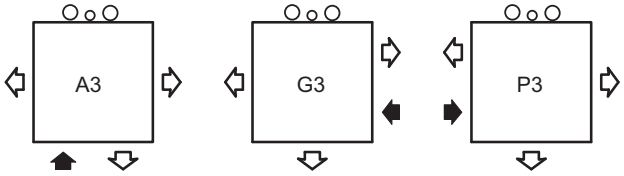


42S Unit Configuration Options (cont)

Top Supply Only



Three-side Supply (ETO Only)



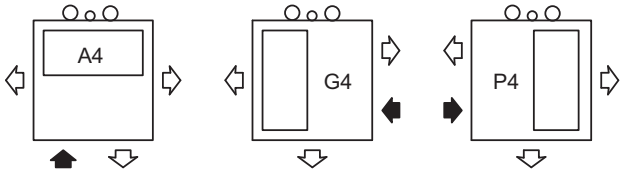
LEGEND

Return

Supply

R = Return
D = Drain
S = Suppy

Top with Three-side Supply (ETO Only)



HR = Hot Water Return
HS = Hot Water Supply
D = Drain
CR = Cold Water Return
CS = Cold Water Supply

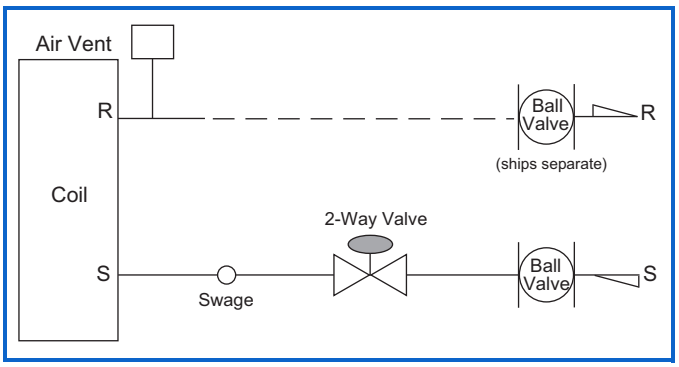
NOTES:

1. The risers (or riser chase) always determines the rear of the unit. The return air/access panel may then be on the left, right or front of the cabinet (as determined by project requirements).
2. 42SHA models are available with front return air only.

Application data (cont)

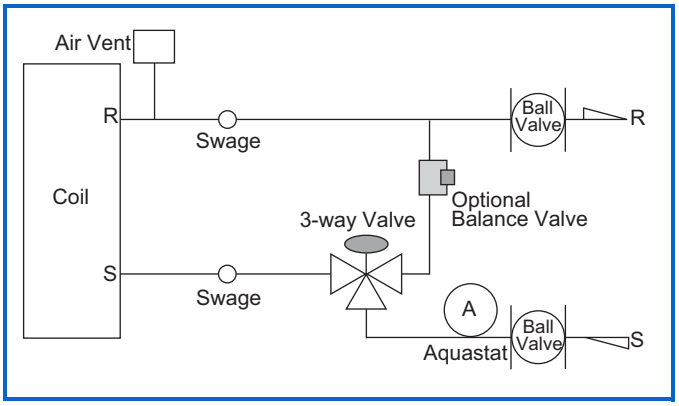
2-way motorized control valve

In a 2-way normally closed motorized control valve package, the motor drives the valve open, and a spring returns the valve to a normally closed position. No water flows with the unit off. The standard supply connection from the coil will accept a swaged copper fitting for field brazing. As an option, this connection may be factory furnished with a union. When a swage is necessary, it becomes part of the valve package. The isolation, or ball, valve in the return piping is shipped loose for field installation.



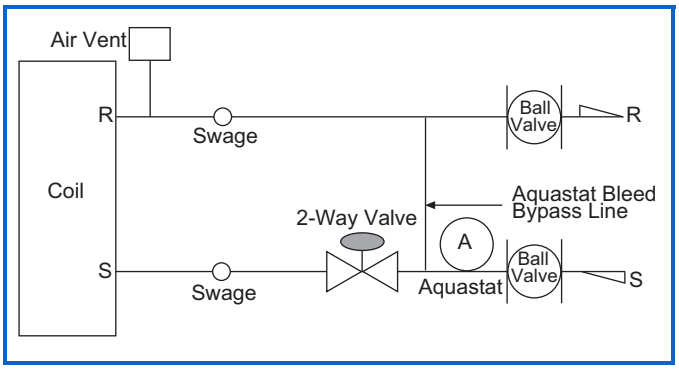
3-way motorized control valve

In a 3-way motorized normally closed control valve package, a diverting valve controls water flow to the coil. When the unit is off, water bypasses the coil and flows directly to the system return. A balancing valve may be specified in the bypass line to permit equal flow balancing.



2-way motorized control valve with changeover

In a 2-way motorized changeover control valve package, the motor drives the valve open, and a spring returns the valve to a normally closed position. No water flows through the coil with the unit off. The aquastat bypass line allows a small amount of water flow from the supply to the return piping when the control valve is closed. The strap-on aquastat senses whether the flowing water is cold or hot and switches a contact closed to provide automatic summer/winter changeover (ACO) for the system.

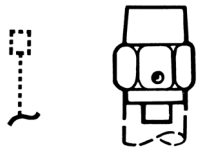
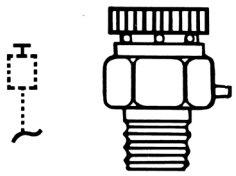
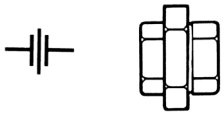
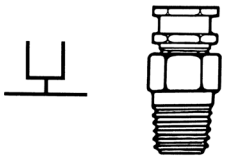
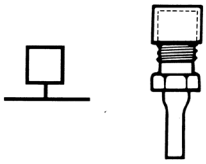
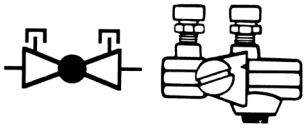


NOTES:

1. Please note that project specifications for system pressure, pressure drop limitations, and flow rate should be checked prior to selecting specific components or the valve package size.
2. The supply and return piping connections of the factory-provided valve package are either swaged for field brazing (standard) or union fitted (optional) for field connection to the coil.
3. Factory-provided valve packages are assembled, brazed, wired electrically, and dry-fit to the coil connections before shipping. Field brazing to the coil completes the installation. Some applications dictate shipping isolation valves loose.

Application data (cont)

Piping Components

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**MANUAL AIR VENT:** Threaded brass needle valve with screwdriver slot for adjustment. Application — Body brazed into high point of heating and cooling coils for bleeding air from coil. Standard item on all hydronic coils. Should not be used in lieu of main system air vents.	N/A	N/A	400	250	No
	**AUTOMATIC AIR VENT:** Nickel plated brass valve, fiber-disc type, with positive shut-off ballcheck and quick vent feature via knurled vent screw. Application — Optional replacement for manual air vent. Automatically passes minute quantities of air through the fiber discs which expand upon contact with water, completely sealing the valve. As air accumulates, the fiber discs dry and shrink, repeating the cycle. Not recommended for removing large quantities of air encountered during initial start-up or subsequent draining and refilling. Should not be used in lieu of main system air vents. NOTE: Not recommended for use in systems with glycol.	N/A	N/A	125	240	No
	**SWAGE:** Copper tube end expanded to accept a copper tube of the same size for factory or field brazing. Application — Used where possible for all tubing joints for best joint integrity.	N/A	N/A	300	200	Yes
	**UNION:** Combination wrought copper/cast brass union assembly, solder by solder. Application — Used for quick connect (and disconnect) of valve package components to minimize field labor and facilitate servicing of unit.	N/A	N/A	300	200	Yes
	**INSERTION TEST PORT:** Brass body valve for acceptance of test probe (up to 1/8 in. diameter). Application — Installed on one (or both) sides of the coil to allow for temperature or pressure sensing. Used for close tolerance water balancing and service analysis.	N/A	N/A	250	250	No
	**PRESSURE TEST PORT:** Brass body 1/4 service access fitting with removable depressor type core. Application — Installed on both sides of the coil to allow for pressure sensing. Attach pressure gages to facilitate close tolerance water balancing.	N/A	N/A	400	210	No
	**CIRCUIT SETTER:** Variable water flow balancing valve with manual adjustment knob, pointer, percent-open scale, memory stop and integral pressure read-out ports. Application — Used for close tolerance water flow balancing. Positive shut-off ball valve feature allows usage as combination balancing and shut-off valve.	With Pressure Ports Only				
		2.12	3.9	300	250	No
		With Pressure And Temperature Ports				
		1.60	3.4	200	250	No

NOTE(S):

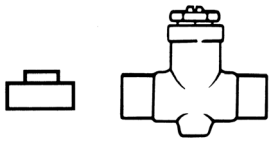
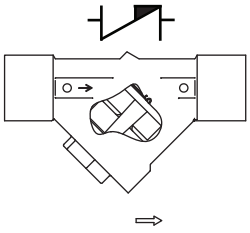
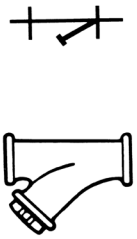
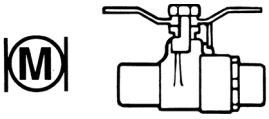
a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
ETO — Engineered to Order

Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**BALANCE VALVE:** Variable water flow manual balancing valve with screwdriver slot adjustment screw. Application — May be used in 3-way valve bypass line to permit equal flow balancing.	3	8.9	150	200	NO
	**FIXED FLOW VALVE:** Flexible orifice type (non-adjustable). Application — Used for water flow balancing. Valve automatically adjusts the flow to within 10% of set point. Operating Range: 2-80 PSID	Valve orifice size determines C_V factor. The orifice of these fixed flow valves changes as flow is regulated. As the water pressure increases, the orifice size decreases, thereby automatically limiting the flow rate to the specified gpm (±10%).		600	220	NO
	**STRAINER:** **Y-type body (optional with blowdown) with 20 mesh stainless steel screen.** Application — Used for removal of small particles from system water during normal system operation. Should not be used in lieu of main system strainers. Strainer screen may have to be removed during initial high pressure system flushing during start-up. Screen should be removed and cleaned per normal maintenance schedule (provisions for strainer blow-down not provided).	5.5 Clean	9.0 Clean	600	325	N/A
	**BALL VALVE WITH MEMORY STOP:** Manual balance and shut-off valve. Application — Used for unit isolation and water flow balancing. The adjustable memory stop feature allows return to the balance point after shut-off. Check specifications for service fittings required when used for water balancing.	Full Port	Full Port	600	325	N/A

NOTE(S):

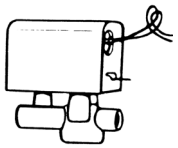
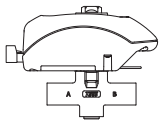
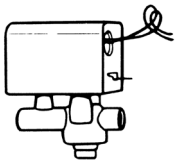
a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
ETO — Engineered to Order

Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
 	**2-WAY MOTORIZED VALVE (25 PSI close off differential pressure):** Electric 2-position flow control valve (open/closed). Normally closed body with manual override lever. Installed in supply line to unit. Application — All standard control and valve packages are based upon normally closed valves (valve electrically powered open and closed by spring return when electric power removed). Manual override lever allows valve to be placed in the open position for secondary (unit) flushing, constant waterflow prior to start-up, etc. Manual override is automatically disengaged when valve is electrically activated. **Consult factory for normally open valve applications.**	3.5	3.5	300	200	with ETO
 	**2-WAY MOTORIZED VALVE (150 PSI close off differential pressure):** Electric 2-position flow control valve (open/closed). Normally closed or normally open body with manual override lever. Installed in supply line to unit. Application — Manual override knob allows the normally closed valve to be placed in the open position for secondary (unit) flushing, constant waterflow prior to start-up, etc. Manual override is automatically disengaged when valve is electrically activated.	4.9	10.3	300	220	NO
 	**3-WAY MOTORIZED VALVE (25 PSI close off differential pressure):** Electric 2-position flow control valve (closed to coil/open to bypass or open to coil/closed to bypass). Normally closed with manual override lever. Installed in supply line to unit. Application — Same comments as 2-way motorized valve except with manual override lever engaged the valve is open to both ports and water flow will take the path of least resistance through the valve package (not necessarily 100% through the coil).	4.0	4.0	300	200	N/A
 	**3-WAY MOTORIZED VALVE (150 PSI close off differential pressure):** Electric 2-position flow control valve (closed to coil/open to bypass for normally closed operation.) Normally closed or normally open with manual override lever. Installed in supply line to unit. Application — Same comments as 2-way motorized valve except with manual override lever engaged the valve is open to both ports and water flow will take the path of least resistance through the valve package (not necessarily 100% through the coil).	4.9	3.3	300	220	N/A

NOTE(S):

a. Check all system component pressure ratings (coils, values, pumps, etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
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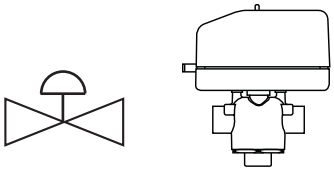
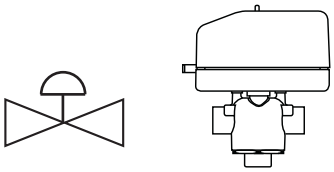
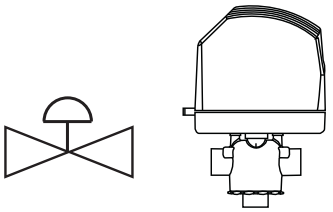
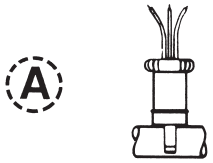
Application data (cont)

Piping Components (cont)

SYMBOL/SKETCH	DESCRIPTION	C_V FACTOR		RATING[a]		STEAM USE
		1/2	3/4	PSI	F	
	**MODULATING VALVE (Optional) (Non-Spring Return, Floating Point Actuator):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — To control fluid flow in fan coil units. On the 42SG,SJ,SH commercial fan coil models, the factory provided modulating valve has application restrictions. In these models, the valve packages are located in the airstream, downstream of the coil. Due to the ambient temperature limitations of the modulating valves, the valves can only be used in the units listed above with 2-pipe cooling only systems.	4.0		300	200	N/A
	**MODULATING VALVE (Optional) (Non-Spring Return, Proportional Type Actuator):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — To control fluid flow in fan coil units. On the 42SG,SJ,SH commercial fan coil models, the factory provided modulating valve has application restrictions. In these models, the valve packages are located in the airstream, downstream of the coil. Due to the ambient temperature limitations of the modulating valves, the valves can only be used in the units listed above with 2-pipe cooling only systems.	4.0		300	200	N/A
	**MODULATING VALVE (Requires ETO) (Spring Return):** Modulating valves are designed to control the flow in the circuit by making incremental adjustments to the flow path within the valve. Application — Same comments as non-spring return except when powered, the actuator moves to the desired position, at the same time tensing the spring return system. When power is removed for more than two minutes the spring returns the actuator to the normal position.	4.0		300	200	N/A
	**AQUASTAT:** Water temperature sensing electrical switch. (Line Voltage Controls) Application — Clips directly on nominal size 1/2 in. or 3/4 in. copper tubing for water temperature sensing. Must be correctly located for proper control operation.	N/A				
	**CHANGEOVER SENSOR:** Water temperature sensor thermistor. Application — Sensor shall clamp on the outside diameter of the pipe. Sensor plate shall bend to allow its radius to be adjusted to fit the pipe. Sensor shall be secured to the pipe with mounting clamp. Insulate the mounting location of sensor on the pipe.	N/A				

NOTE(S):

a. Check all system component pressure ratings (coils, values, pumps,etc.) with manufacturer and any applicable local or national piping codes prior to specifying system pressure rating.

LEGEND

Cv — Coefficient of Velocity
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Application data (cont)

Valve packages

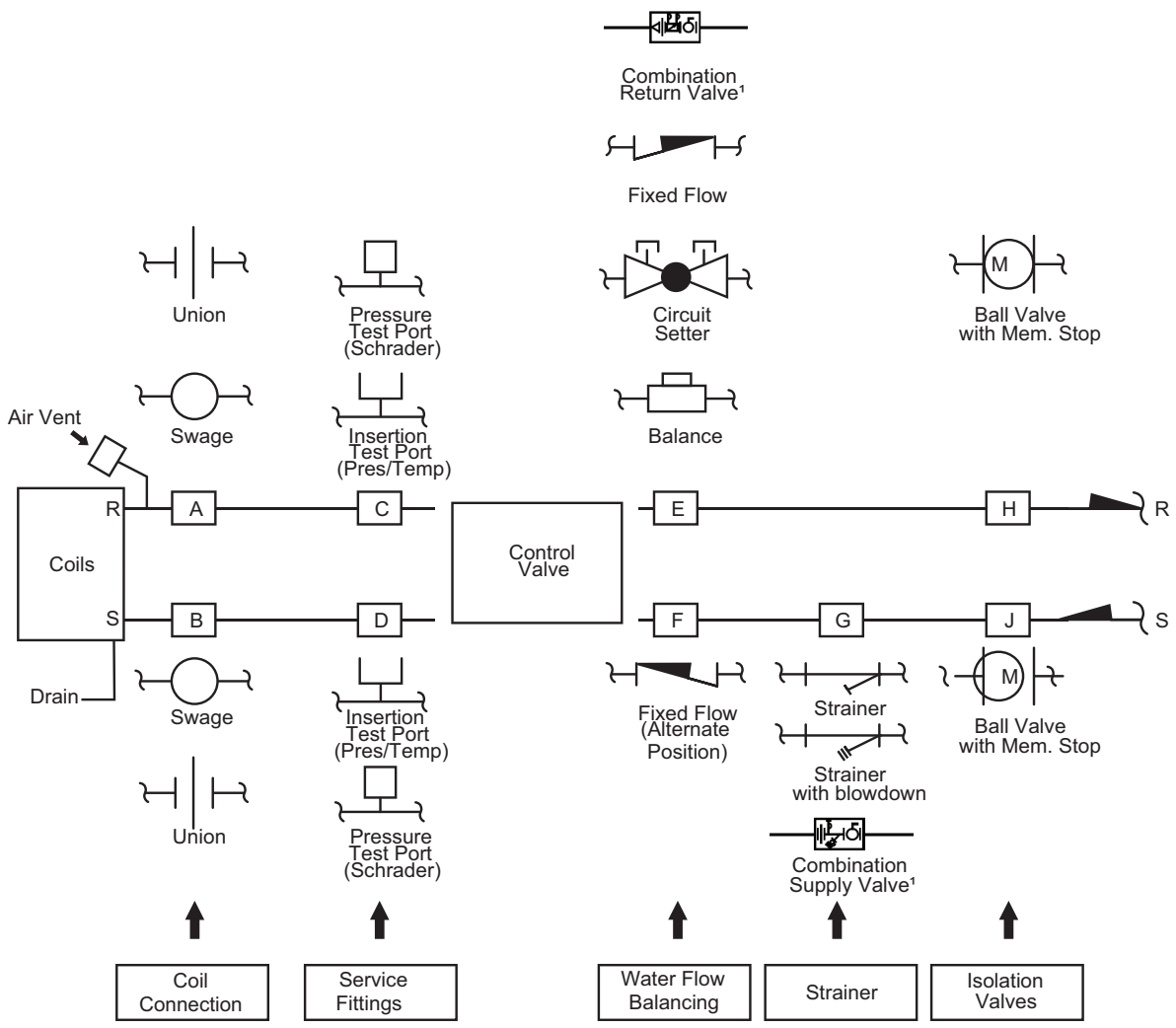
There are limitations on physical size of control valves, quantity and type of matching components, and required control interface. See Symbols and Placement of Valves diagram.

Consult factory before ordering any special valve package components that are not covered in this book.

Valve packages are shipped with the units or in unit cartons. Valve packages include belled ends for field soldering to coil connections.

All factory-furnished cooling valve packages are arranged to position as much of the package as possible over an auxiliary drain pan or drip lip. This helps minimize field piping insulation requirements.

Symbols and Placement of Valves

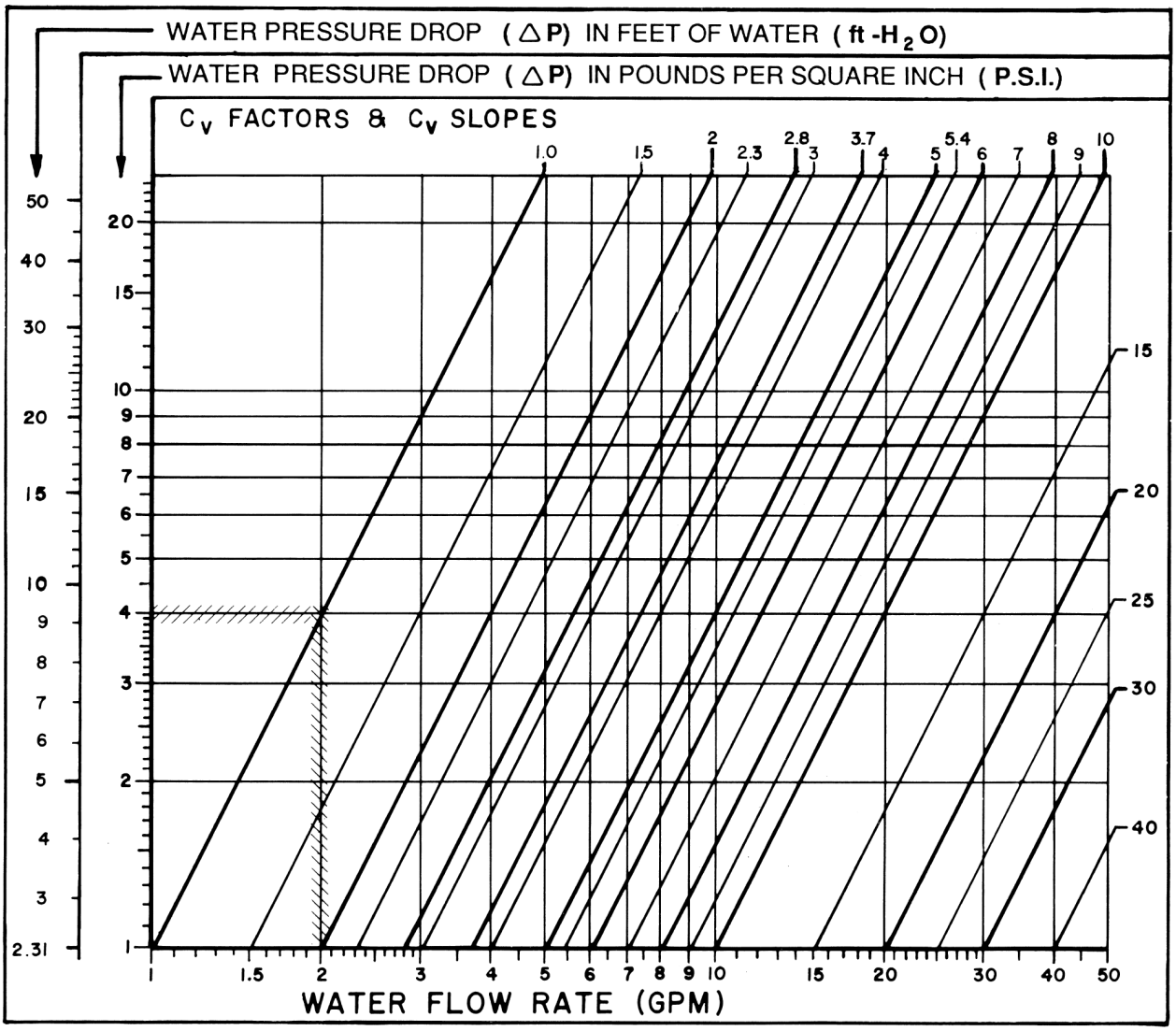


NOTE(S):

1. Available for Horizontal Ceiling Valve Packages. For application in other units, contact factory. Combination valves will also take the place of the ball valve because they include an isloation shut off valve.
2. Coil Connections (Positions A & B) — When isolation valve only is added to supply or return line, the isolation valve will be factory brazed to the coil stub-out. Addition of any other component or connection to the supply or return line will change the respective coil connection(s).
3. Service Fittings (Positions C & D) — Optional fittings for attaching pressure/temperature sensing devices to obtain pressure drop or temperature differential across coil. Used with ball valve or balance valve where extremely accurate water flow balancing is required.
4. Water Flow Balancing (Positions E, F, & H) — Only one device per total valve package to be used for balancing water flow through the coil
5. Strainer (Position G) — Should not be used in lieu of main piping strainers.
6. Isolation Valves (Positions H & J) — Normally requires one each on supply and return line except when combination valves are used. When position H is used for balancing (ball valve or ball valve with memory stop), check specifications for service valve requirements.

Application data (cont)

Cv Factor Vs Water Pressure Drop



C_V FACTOR:

The flow rate in gallons per minute (gpm) through a piping component when the pressure drop (ΔP) in pounds per square inch (psi) across the component is 1.0 (psi).

Pressure drop (ft-H_2O) = 2.31 x psi (pressure drop)

GRAPH EXAMPLE:

ΔP for 2.0 gpm through a component with a C_V of 1.0 is 4.0 psi x 2.31 = 9.24 ft-H_2O

FORMULA EXAMPLE:

$$\Delta P\ (\text{ft-}H_2O) = \frac{(\text{gpm})^2}{(C_v)^2} \times 2.31 = \frac{(2.0)^2}{(1.0)^2} \times 2.31 = 9.24\ \text{ft-}H_2O$$

TOTAL PRESSURE DROP is the **Sum** of the pressure drop of all piping and components in the water flow path.

Application data (cont)

Enthalpy At Saturation

TEMPERATURE (°F)	ENTHALPY AT SATURATION (Btu per lb of dry air)
40	15.230
41	15.697
42	16.172
43	16.657
44	17.149
45	17.650
46	18.161
47	18.680
48	19.211
49	19.751
50	20.301
51	20.862
52	21.436
53	22.020
54	22.615
55	23.220
56	23.840
57	24.480
58	25.120
59	25.780
60	26.460
61	27.150
62	27.850
63	28.570
64	29.310
65	30.060
66	30.830
67	31.620
68	32.420
69	33.250
70	34.090
71	34.950
72	35.830
73	36.740
74	37.660
75	38.610
76	39.570
77	40.570
78	41.580
79	42.620
80	43.690

Altitude Cooling Correction Factors

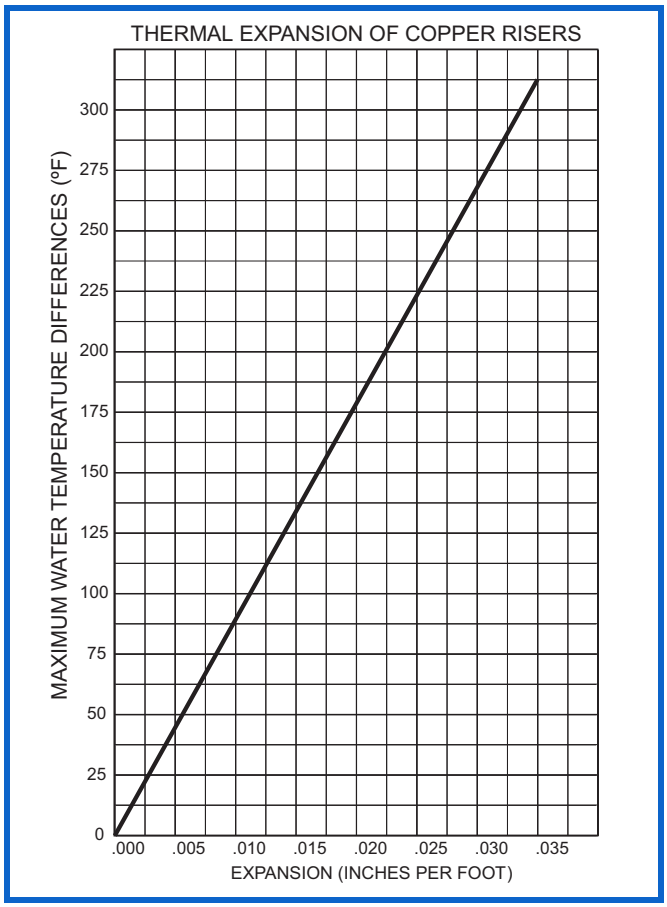
ELEVATION (ft)	TOTAL HEAT	SENSIBLE HEAT
Sea Level	1.00	1.00
1000	.990	.960
2000	.980	.930
3000	.970	.896
4000	.960	.864
5000	.940	.830
6000	.930	.800
7000	.920	.770
8000	.910	.750
9000	.900	.730

Airflow Correction Factors

cfm RATIO (Actual/Base)	TOTAL (Ct)	SENSIBLE (Cs)
1.40	1.25	1.26
1.35	1.22	1.23
1.30	1.19	1.20
1.25	1.16	1.17
1.20	1.13	1.14
1.15	1.10	1.11
1.10	1.07	1.08
1.05	1.04	1.04
1.00	1.00	1.00
0.95	0.97	0.97
0.90	0.94	0.93
0.85	0.90	0.89
0.80	0.86	0.85
0.75	0.82	0.81
0.70	0.78	0.77
0.65	0.74	0.72
0.60	0.70	0.67
0.55	0.66	0.62
0.50	0.62	0.57
0.45	0.58	0.52
0.40	0.53	0.47
0.35	0.48	0.42
0.30	0.43	0.38
0.25	0.38	0.33

LEGEND

Cfm — Cubic Feet Per Minute
Cs — Sensible Airflow Correction Factor
Ct — Total Airflow Correction Factor



Application data (cont)

Electric heat

Electric heaters are available for installation on Carrier fan coil units in the following applications.

Total electric heat

This system provides complete heating during the heating season; no boiler is required. Heating and cooling are now available on an individual basis throughout the year with a 2-pipe system.

Chilled water is used for cooling and the electric heater is used for heating. Individual room controls can be supplied for either manual or automatic changeover.

Auxiliary electric heat

This system is used for heating between seasons or during the cooling season when chilled water is being circulated. Individual room controls are supplied to provide electric heat only when chilled water is being circulated through the system. Water flow through the unit is shut off when the heater is turned on.

During the winter heating season, heating is provided by hot water circulated through the system. A changeover device locks out the electric heat when the hot water is circulated.

Heater construction

Strip heaters

Strip heaters are used with Model 42S stack units. These heaters consist of coils of high grade resistance wire, insulated by ceramic insulators on plated steel brackets. High limit thermal cutouts protect the unit in the event of airflow loss.

The strip heater is located in the fan discharge on the leaving side of the coil.

Heater electrical data

1. Load voltage may be 120, 208, 240 or 277 volts. For unit size and kW limitations, refer to the specific unit catalogs.
2. All heaters are single stage and single phase. 2-stage is available on some units with an ETO.
3. The 42S units use a single power connection to power both the fan and controls along with the electric heater. Fuse protection is added to the motor/control circuit to protect these components. This is separate from the field-furnished total unit overcurrent protection.

Heater Electrical Data — 42S Series

HEATER VOLTAGE	kW	UNIT SIZE								
		03	04	06	08	10	12	14	16	20
120	1.0	*	*	*	*	*	*			
	1.5	*	*	*	*	*	*			
	2.0	*	*	*	*	*	*			
	3.0	*	*	*	*	*	*			
208	1.0	*	*	*	*	*	*			
	1.5	*	*	*	*	*	*			
	2.0	*	*	*	*	*	*			
	3.0	*	*	*	*	*	*			
	4.0		*	*	*	*	*	*	*	*
	5.0			*	*	*	*			
	6.0			*	*	*	*	*	*	*
	8.0				*	*	*	*	*	*
240	1.0	*	*	*	*	*	*			
	1.5	*	*	*	*	*	*			
	2.0	*	*	*	*	*	*			
	3.0	*	*	*	*	*	*			
	4.0		*	*	*	*	*	*	*	*
	5.0			*	*	*	*			
	6.0			*	*	*	*	*	*	*
	8.0				*	*	*	*	*	*
	10.0					*	*	*	*	*
277	1.0	*	*	*	*	*	*			
	1.5	*	*	*	*	*	*			
	2.0	*	*	*	*	*	*			
	3.0	*	*	*	*	*	*			
	4.0		*	*	*	*	*	*	*	*
	5.0			*	*	*	*			
	6.0			*	*	*	*	*	*	*
	8.0				*	*	*	*	*	*
	10.0					*	*	*	*	*
	12.0							*	*	*

Controls

Use the Control Selection Guide table to make sure that all necessary components are provided for and that the components are compatible with the required control system.

NOTE: When thermostatic fan control is selected or when unit outside-air dampers are used, unit-mounted thermostats are not recommended as their use will result in poor room temperature sensing.

Control Selection Guide[a]

SYSTEM		DESCRIPTION	THERMOSTAT	CHANGEOVER ON SUPPLY PIPE	VALVE	FAN SWITCH	NOTES
2-PIPE HEATING-COOLING[b]	2-Position Electric Valves (2-pipe)	Thermostat cycles valve open or closed.	Wall or unit mounted includes heat-cool switch.	None	Motorized (N.C.) 3-way or 2-way, no bypass required	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
		Thermostat cycles valve open or closed. Mode automatically switched by changeover sensing water temp.	Wall or unit mounted. Heating/cooling Thermostat	Yes	Motorized (N.C.) 3-way or 2-way	Thermostat has integral 3-speed switch	
ELECTRIC HEAT	2-Position Electric Valve with Auxiliary Electric Heat (2-pipe)	Thermostat cycles valve open or closed. Thermostat activates electric heater. Heater cannot turn on if hot water is in coil.	Wall or unit mounted. Sequenced heating and cooling.	Yes. Two Required.	Motorized 3-way or 2-way	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
	2-Position Electric Valve with Total Electric Heat (2-pipe)	Thermostat cycles valve open or closed.Thermostat activates electric heater.	Wall or unit mounted. Sequenced heating and cooling.	None	Motorized (N.C.) 3-way or 2-way, no bypass required	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.
4-PIPE	2-Position Electric Valves (4-pipe)	Thermostat cycles cooling valve open or closed. Thermostat cycles heating valve open or closed.	Wall or unit mounted. Sequenced heating and cooling.	None	Motorized (N.C.) 3-way or 2-way (requires 2 valves)	Thermostat has integral 3-speed switch	Valve packages with belled end(s) for field soldering to coil.

NOTE(S):

a. Unit-mounted thermostats are not recommended with either fan-cycle control or applications with outside-air dampers.
b. If system is heating-only or cooling-only, no changeover or bypass is required.

LEGEND

N.C. — Normally Closed

Controls (cont)

Control Options

24-v Debonair® Thermostat

24-v Debonair thermostat

Features large backlit display, power loss protected memory, dynamic fan speed control, 4-pipe, 2-pipe automatic changeover applications with adjustable dead band. Programmable and non-programmable models available. Thermostat is being offered for unit mounting, surface mounting with tile ring, or remote wall mounting applications.

24-v proportional thermostat

Features large LCD screen with backlight, 3-speed and analog fan speed control, 4-pipe, 2-pipe automatic changeover applications. Programmable and BACnet® compatible models available.

24-v controls by others

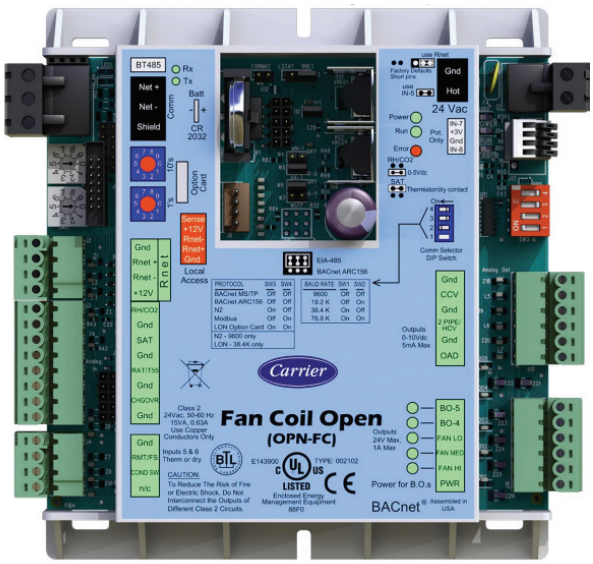
Unit supplied with factory-installed 24-v transformer, 3-speed relay board, and aquastat (as required) for use with field-installed low voltage controls.

Integrated Direct Digital Controls (DDC)

Fan coil open controller

The factory-mounted controller continuously monitors and regulates the fan coil operation with reliability and precision. This advanced controller features a sophisticated, factory engineered control program that helps provide optimum performance and energy efficiency. The fan coil open controller also features plug-and-play connectively to Carrier's i-Vu® Open control system. For added flexibility, the fan coil controller is capable of stand alone operation, or can be integrated with any Building Automation System (BAS) utilizing BACnet® protocol. Application features include built-in advance control routines for zone level humidity control, zone level demand ventilation (ASHRAE 62) and automatic fan speed control based on demand. System benefits include demand limiting for maximum energy saving, and compatibility with i-Vu control system tenant billing for tracking tenants after hours energy usage. Hardware features include onboard hardware clock, remote occupancy input, and support for space temperature thermistor sensor for stand alone operation.

Fan Coil Open Controller



Automatic changeover (summer-winter switch)

The automatic-changeover thermostat sensor is a 10,000 ohm thermistor (33ZCSENCHG) in a moisture-proof and dust-proof enclosure. Cable and temperature sensing element are hermetically sealed in a polypropylene enclosure with epoxy resin. Device clamps on coil supply pipe with end snap-on clip.

The set point temperatures are factory set. When water temperature rises above 80°F (approximately), the sensor switches to the winter cycle. When water temperature drops below approximately 70°F, the sensor switches to the summer cycle. Switch reset is automatic.

ECM motor control methods

There are three main control methods to control the speed of electronically commutated motor (ECM) for desirable airflow for a given application.

3-discrete speed input, potentiometer field speed adjustment

This method uses the ECM with potentiometer field adjustment. The relay board will have three main circuits for HI, MEDIUM, and LOW speed. Each of these speeds can be adjusted by potentiometer to any value in the motor's operating range. This will allow the customization of air flow on each speed of the fan coil unit to better suit any requirements.

4-discrete speed input, potentiometer field speed adjustment, solid state

This is the same as 3-discrete speed input but with additional fourth speed. All 4 speeds can be adjusted by potentiometer to any value in the motor's operating range.

ECM variable speed

This method requires 0 to 10-v signal for fan speed. It has no predetermined fan speeds and will ramp the motor fan speed according to the controller used on the fan coil unit. All ECM motor packages use a constant torque operating mode. An ETO request is required for pricing and availability of constant airflow operation.

Guide specifications

Fan Coil Unit — Vertical Stack Models

HVAC Guide Specifications — 42S

Size Range: **300 to 2000 Nominal cfm**

Carrier Model Numbers:

42SG* (Furred-In, 300 to 1200 cfm)
42SHA (Cabinet, 300 to 1200 cfm)
42SJ* (Furred-In, Ditto, 300 to 1200 cfm)
42SMA (Mega, Furred-In, 1400 to 2000 cfm)
42SUA (Universal, Furred-In, 300 to 1200 cfm)

Part 1 — General

1.01 SYSTEM DESCRIPTION

Stack fan coil units, 2-pipe, 4-pipe or 2-pipe with electric heat for furred-in or exposed cabinets that are floor mounted in multi-story buildings.

1.02 QUALITY ASSURANCE

Units shall be tested and certified in accordance with AHRI (Air-Conditioning, Heating, and Refrigeration Institute) standard 440, latest edition. All units shall have C-ETL-US listing signifying the units have been examined by ETL and are in compliance with both the US and Canadian applicable standards. Each coil shall be factory tested for leakage at least 350 psig air pressure with coil submerged in water. Insulation and adhesive shall meet NFPA (National Fire Prevention Association) 90A requirements for flame spread and smoke generation.

1.03 DELIVERY, STORAGE AND HANDLING

Unit shall be handled and stored in accordance with the manufacturer's instructions.

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory assembled, stack fan coil units. Units are complete with water coil(s), fan(s), motor(s), drain pan, and all required wiring, piping, controls, and special features. Standard insulation shall be dual density fiberglass insulation.

B. Cabinet Stack Unit (42SH):

Outside panels are made of heavy gage galvanized steel coated with powder-coat finish and are fabricated with no exposed fasteners. The interior surfaces shall be lined with 1/2 in. thick fiberglass insulation. The standard cabinet unit has factory-installed double deflection discharge grille(s) and stamped return grille. Controls are factory wired and mounted in small access panel at front of unit.

C. Furred-In Stack Unit (42SG):

The unit shall be constructed of heavy gage galvanized steel frame and back panel. The fan coil is for furred-in installation. These units are designed to have the wallboard applied directly to the unit surface. Units have stamped (standard) or bar-type aluminum (optional) return-air grille panel. Removable return-air grille provides access to all internal piping and wiring.

D. Ditto Furred-In Stack Units (42SJ):

The open unit shall be constructed of heavy gage galvanized steel frame and back panel. These units are similar to the 42SG but are actually two completely separate units contained in one cabinet that share a common set of risers. Units are shipped together by a common UL one hour fire rated riser chase. These units are designed to have the wallboard directly applied to the unit surface. The interior surfaces shall be lined with 1/2 in. thick fiberglass insulation. Units have stamped (standard) or bar-type aluminum (optional) return-air grille panel. Removable return-air grille provides access to all internal piping and wiring.

E. Universal Furred-In Stack Units (42SU):

Units shall be constructed of heavy gage galvanized steel frame and back panel. Interior surfaces shall be lined with standard fiberglass insulation. Units shall be designed to have wallboard applied directly to the unit surface. Unit shall have a bright white painted stamped steel return air access panel. Removable return air/access panel shall provide access to all internal components.

F. Mega Furred-In Stack Units (42SM):

Units shall be constructed of heavy gage galvanized steel frame and back panel. Interior surfaces shall be lined with standard fiberglass insulation. Units shall be designed to have wallboard applied directly to the unit surface. Return air/access opening shall provide access to all internal components.

G. Drain Pan:

Drain pan shall be formed of heavy gage steel and shall be coated inside with fire-retardant closed cell foam insulation. Water never touches the metal pan, eliminating the possibility of corrosion. On 42SG, SH, and SJ units the drain is factory piped to the drain riser that has a removable "P-trap" allowing easy cleaning. On 42SU and 42SM units, the drain pan shall be field piped to the drain riser with a removable/cleanable "P-trap." On 42SM units, the standard drain pan is stainless steel, externally coated with a 2-part closed cell foam insulation.

H. Filter:

A filter track complete with 1 in. non-woven synthetic throwaway filter shall be installed in the unit. Optional filters are available.

I. Fan:

1. Centrifugal fan shall be directly driven by an electric motor.
2. Fan wheel shall be double-width type with forward-curved blades and shall be statically and dynamically balanced.
3. Fan wheel and scroll shall be constructed of galvanized steel.
4. Fans shall be easily removable.

J. Coil:
   1. Standard base unit shall be equipped with a 3-row coil for installation in a 2-pipe system. Additional coil depth and circuiting shall be provided for installation in a 4-pipe system as described in the Special Features section.
   2. All coils shall have 1/2 in. copper tubes and aluminum fins with 14 fins per inch spacing; coil fins are mechanically bonded to copper tubes. The copper tubes comply with the ASTM (American Society for Testing and Materials) B-75. The fin thickness is 0.0045 in. and tube thickness is 0.016 in. All coils are tested with air at least 350 psig under water.
   3. Coil shall be equipped with a manual air vent and shall be piped to supply and return risers with valves as specified on the equipment drawings. For 42SU and 42SM units, coil is not piped to risers, which shall be shipped separately.
   4. Piping between hot water coil and risers shall include loops to compensate for maximum riser expansion and contraction of 1-1/2 in. on 42SG, 42SH, and 42SJ units.

K. Flexible Hose (Optional):
   1. Construction:
      a. Hose shall have an external component constructed of stainless steel 304L wire braid with an internal core tube of EPDM rubber.
      b. Hoses shall have 37.5 degree female swivel crimp on fittings on either end for attachment to brass 1/2 in. male adapters.
      c. Hoses shall be assembled with a patented process which bonds the tube to the outer braid, minimizing the possibility of the hose assembly kinking during installation.
      d. All hoses shall be equipped with permanently installed (crimped) end fittings to eliminate the possibility of bands or clamps loosening and creating leaks.
      e. Plated steel hose swivel fittings and brass adapters shall reduce the possibility of overtorquing.
   2. Regulations:
      a. Hoses shall meet UL-94 VO rating listed as Underwriters Laboratories Yellow Card number QMFZ2.E80017.
      b. The 1/2 in. hoses shall be rated for a maximum working pressure of 400 psig and burst pressure of 1600 psig.
      c. Temperature range for hose assemblies shall be –40°F to 200°F.
      d. Hoses shall be field connected.
      e. Torque specifications for hose connections shall be 350 in.-lb +10/–0 in.-lb to prevent leaks.

L. Risers:
   1. Standard factory-furnished and installed riser length shall be as specified on the equipment drawings.
   2. Supply and return risers shall be 3/4 in. to 2-1/2 in. diameter.
   3. Risers shall be Type M or L copper insulated with 1/2 in. or 3/4 in. thick closed cell insulation.
   4. Optional riser chase on 42SGA for application of wall board directly to the chase.

M. Valves:

   The factory furnished or installed risers shall have ball valves except on the drain riser.

N. Controls and Safeties:
   1. Controls:

      Unit shall come with no controls unless control package is selected.
   2. Safeties:

      Unit fan motor shall be equipped with thermal overload protection with automatic reset.

O. Operating Characteristics:
   1. A unit with a conventional coil, installed in a 2-pipe system, shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system.
   2. A unit with a row-split coil, installed in a 4-pipe system, shall be capable of providing sequenced heating and cooling.

P. Electrical Requirements:

   Standard unit shall operate on 115-v, single-phase, 60 Hz electrical power supply. All externally exposed wiring shall be in flexible conduit.

Q. Motor:
   1. Standard fan motor shall be 3-speed, 115-v, single-phase, 60 Hz, ECM type, factory mounted on the blower housing.
   2. Bearings shall be permanently lubricated ball bearings.
   3. Motor shall be equipped with quick connect electrical plug.
   4. Motor shall have thermal overload protection with automatic reset.

R. Special Features:

   Certain standard features are not applicable when the features designated by * are specified.

Guide specifications (cont)

* 1. Unit coil shall be equipped with automatic air vents.
* 2. Unit shall be equipped with a 3-row, 4-row, or 5-row (42SM) coil for installation in a 2-pipe system.
* 3. For installation in a 4-pipe system, unit shall be equipped with:
    a. A 3/1, 3/2 or 4/1 row-split coil, as shown on equipment drawings for cooling and heating.
    b. Two each supply and return risers and one drain riser.
    c. Two ball valves, 2 circuit setters and two 2-way motorized valves.
    d. Motorized control valves shall be rated at 300 psi with 25 psi or 150 psi close-off pressure differential, and rated to operate with fluid temperatures from 40°F to 180°F. Normally closed valves shall be powered open with spring driven closure.
* 4. Unit shall be equipped with 3-way motorized valves.
5. Fixed flow valve(s) shall be factory installed as shown on the equipment drawings.
6. Motor shall be ECM (electronically commutated motor) motor for single-phase, 60 Hz, 115, 208, 230, or 277 volts. The operating sequence shall be one of the following, as specified:
    a. 3 Discrete Speed Input, Potentiometer Field Speed Adjustment. For use with a 3-speed thermostat.
    b. 4 Discrete Speed Input, Potentiometer Field Speed Adjustment. For use with a 3-speed thermostat.
    c. Variable Airflow for 0 to 10 vdc / 4 to 20 mA Input. Requires a 0 to 10 VDC input signal and is not compatible with a 3-speed thermostat.
* 7. Double-deflection aluminum finish supply grille(s) shall be finished for field installation.
8. Double-deflection aluminum finish supply grille(s) with opposed blade damper shall be furnished for field installation on two or more discharge units.
9. Ceiling skirts for exposed stack units shall be provided for field trim and installation.
10. A fresh-air opening shall be provided as shown on the equipment drawings.
*11. 1 in. thick cleanable filters or pleated MERV 8 filters, shall be installed in the filter track.
*12. Unit shall be equipped with nichrome wire electric strip heaters for total or auxiliary electric heat as specified on the equipment schedule.
    a. Heaters shall be protected by an automatic reset safety cutout switch and a fusible link.
    b. Heater capacity shall be as specified on the equipment schedule.
    c. Heaters shall be single phase, 60 Hz for 120, 208, 240 or 277 volts as specified on the equipment schedule.
    d. Electric heaters shall include thermal overload protection with fusible link back-up.
    e. Units with electric heat shall also include blower motor and control sub-fusing.
13. Fused or unfused service switch shall be provided. Switch shall be suitable for single phase, 60 Hz service for 115, 208, 240 or 277 volts as specified on the equipment schedule.
14. Panels of 42SH unit shall be painted with the color specified on the equipment schedule.
15. Return air panels shall be supplied as shown on the equipment drawings.
16. Tamper-proof fasteners (Allen head) shall be installed on the access panels on cabinet models.
17. A stainless steel drain pan shall be available for factory installation.
18. Factory-installed insulation options shall include foil faced fiberglass or closed cell insulation (42SG,SH,SJ,SM only).
19. Control Options:
    a. Factory installed 24-v transformer and relay board for use, with 24-v controls by others.
    b. Carrier's Debonair® 24-v digital display programmable or non-programmable thermostat, including factory-installed 24-v transformer, relay board, and changeover sensors, as required. Provides automatic fan speed control based on demand.
    c. Factory-Installed Carrier Fan Coil Open Controller: BACnet®[1] based communicating controller with pre-programmed control algorithms; including factory-installed 24-v transformer, relay board, supply air sensor, return air sensor, and changeover sensor (as required). Provides automatic fan speed control based on demand.

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