



Installation, Start-Up and Service Instructions

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START-UP CHECKLIST FOR 42S SERIES FAN COIL AIR CONDITIONERS CL-1

SAFETY CONSIDERATIONS

Installation of this unit can be hazardous due to electrical components and equipment location (such as an elevated structure). Only trained, qualified installers and service mechanics should install and service this equipment. See Fig. 1 for the Proposition 65 warning label.

⚠ CAUTION

When installing this unit, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves. Never wear bulky or loose fitting clothing when working on any mechanical equipment. Gloves should be worn for proper protection against heat and other possible injuries. Safety glasses or goggles should always be worn when drilling, cutting, or working with chemicals such as refrigerants or lubricants.
- Use care in handling and installing this unit.
- Never pressurize any equipment beyond specified test pressures. Always pressure-test with an inert fluid or gas such as clear water or dry nitrogen to avoid possible damage or injury in the event of a leak or component failure during testing. Always protect adjacent flammable material when welding or soldering. Use a suitable heat-shield material to contain sparks or drops of solder. Have a fire extinguisher readily available.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

Before performing installation, service, or maintenance operations on unit, turn off main power switch to unit and install lock(s) and lockout tag(s). Ensure electrical service to unit agrees with voltage and amperage listed on the unit rating plate. Unit may have more than one power switch.



Fig. 1 — Proposition 65 Warning Label

INTRODUCTION

Carrier fan coil units represent a prudent investment offering trouble-free operation and long service with proper installation, operation, and regular maintenance. Your equipment is initially protected under the manufacturer's standard warranty; however, this warranty is provided under the condition that the steps outlined in this manual for initial inspection, proper installation, regular periodic maintenance, and everyday operation of the equipment be followed in detail. This manual should be fully reviewed in advance before initial installation, start-up, and any maintenance. Should any questions arise, please contact your local sales representative or the factory BEFORE proceeding.

This document contains general installation instructions for the 42S unit fan coils. Refer to the unit wiring diagram installed on the blower housing or specific manufacturer literature for any other type of factory-mounted controls.

See drawings for unit configurations, dimensions, clearances, and pipe connections. Refer to unit wiring label for all electrical connections; follow NEC (National Electrical Code) and local codes.

PHYSICAL DATA

Component weight data, shipping weights, and filter data of the 42S units are provided in Table 1.

PRE-INSTALLATION

Unpack and Inspect Units

All units are carefully inspected at the factory throughout the manufacturing process under a strict detailed quality assurance program, and, where possible, ALL major components and sub-assemblies are carefully tested for proper operation and verified for full compliance with factory standards. Operational testing of some customer-furnished components such as electronic control valves and digital controllers may be a possible exception.

Each unit is carefully packaged for shipment to avoid damage during normal transit and handling. Equipment should always be stored in a dry place, and in the proper orientation as marked on the carton. All shipments are made from factory FOB and are the responsibility of the receiving party to inspect the equipment upon arrival. Any obvious damage to the carton and/or its contents should be recorded on the bill of lading and a claim should be filed with the transportation company, and Carrier should be advised. After determining the condition of the carton exterior, carefully remove each unit from the carton and inspect for hidden damage. At this time, check to make sure that "furnished only" items such as thermostats, grilles etc. are accounted for whether packaged separately or shipped at a later date. Any hidden damage should be recorded and immediately reported to the transportation company, a claim should be filed with the transportation company, and Carrier should be notified. In the event a claim for shipping damage is filed, the unit, shipping carton, and all packing must be retained for physical inspection by the transportation company. All equipment should be stored in the factory shipping carton with internal packing in place until installation.

At the time of receipt, the equipment type and arrangement should be verified against the order documents. Should any discrepancy be found, the local sales representative should be notified immediately so that proper action may be taken. Should any questions arise concerning warranty repairs, the factory must be notified BEFORE any corrective action is taken. Where local repairs or alterations can be accomplished, the factory must be fully informed of the extent and expected cost of those repairs before work is begun. Where factory operations are required, the factory must be contacted for authorization to return equipment and a Return Authorization Number will be issued. Unauthorized return shipments of equipment and shipments not marked with an authorization number will be refused. In addition, any claims for unauthorized expenses will not be accepted by the manufacturer.

Protect Units from Damage

All equipment is designed and fabricated with robust materials and presents a rugged appearance. Still, great care must be taken to assure that no force or pressure is applied to the coil, risers, or piping during handling. Never use the risers to lift the unit. Also, depending on the options and accessories, some units could contain delicate components that may be damaged by improper handling. Lifting or supporting the cabinet only at the top and bottom should be avoided to maintain the straight and square cabinet alignment. The unit must be lowered into the space taking care to properly align the risers to engage the riser swaged section on the unit below. The risers should never be bent or pushed together to be passed through the floor slot and should never be lifted up or pulled down to meet the risers on the floor below or above. The risers are designed with a 3-in. swage to accommodate a 2-in. overlap and minor floor to floor variations.

The equipment must always be properly supported. Temporary supports used during installation or service must be adequate to hold the equipment securely. Equipment should always be stored in the proper orientation as marked on the carton. To maintain warranty, protect units against hostile environment (such as rain, snow, or extreme temperatures), theft, vandalism, and debris on jobsite. Equipment covered in this manual is not suitable for outdoor installations. Do not allow foreign material to fall into drain pan. Prevent dust and debris from being deposited on motor, fan wheels and cooling/heating coils. Failure to do so may have serious adverse effects on unit operation, and in the case of the motor and blower assembly, may result in immediate or premature fail-

ure. Manufacturer's warranty is void if foreign material is allowed to be deposited on the motor or blower wheels of any unit. Some units and/or job conditions may require some form of temporary covering during construction.

Prepare Jobsite for Unit Installation

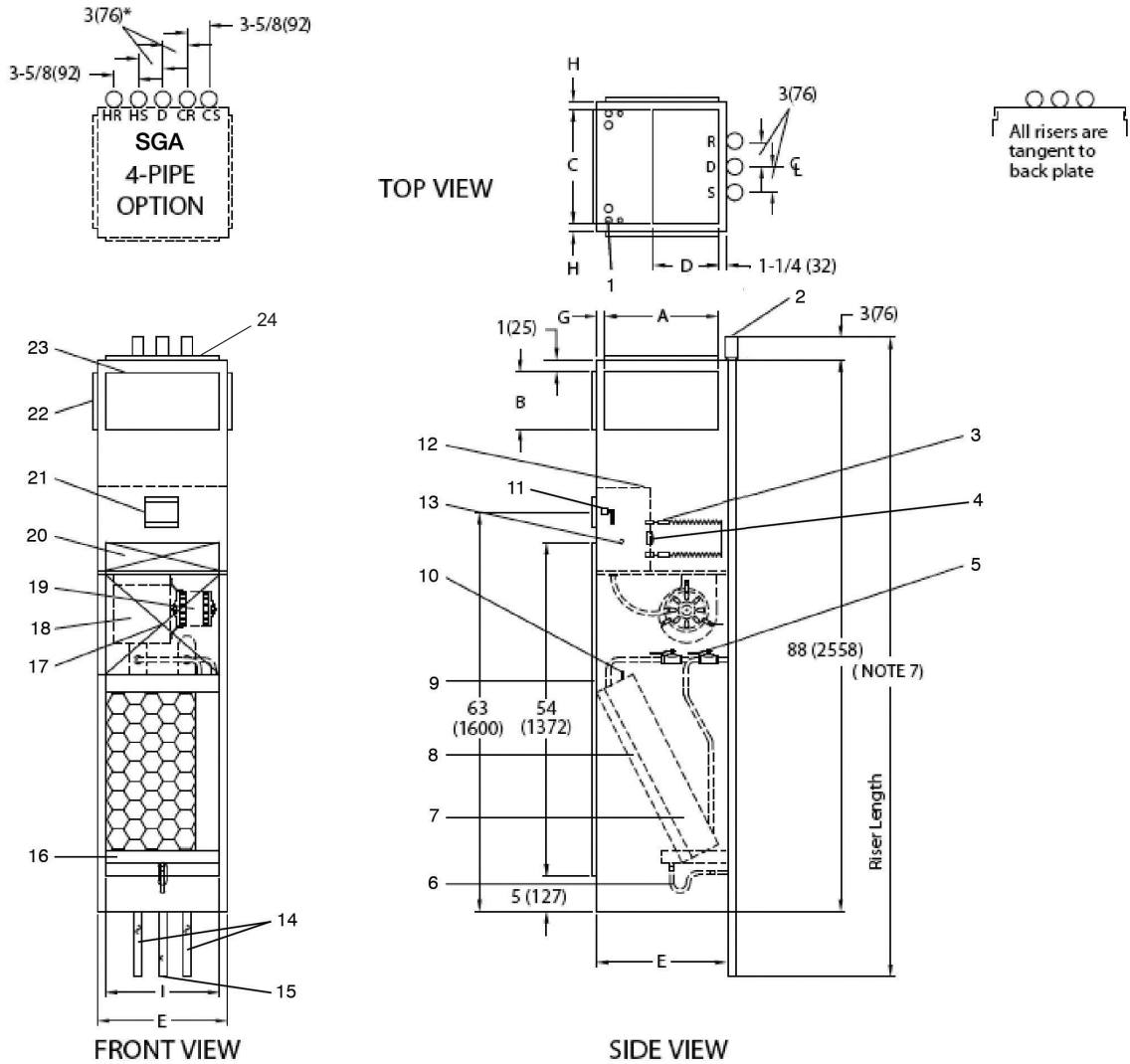
To save time and to reduce the possibility of costly errors, set up a complete sample installation in a typical room at jobsite. Check all critical dimensions such as pipe, wire, and duct connection requirements. Refer to job drawings and product dimension drawings as required (see Fig. 2-11). Instruct all trades in their part of the installation.

Table 1 — Physical Data — 42S Series 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)*									
42SGA,SGM,SU	180	225	240	260	280	305	—	—	—
42SH	202	247	262	286	311	336	—	—	—
42SJ	360	450	480	520	560	610	—	—	—
42SGS	162	203	216	234	252	275	—	—	—
42SM	—	—	—	—	—	—	390	390	390
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 x 24 ¹ / ₄		16 ¹ / ₄ x 26 ³ / ₄		20 ¹ / ₂ x 29 ¹ / ₄		24 ¹ / ₂ x 29 ¹ / ₂		26 ¹ / ₂ x 29 ¹ / ₂
Qty					1†				
PIPING CONNECTIONS									
Inlet (in. OD)	1/2, unless larger size valve package is selected								

*Calculate Operating Weight of Unit: Shipping Weight + Coil Water Weight x Number of Coil Rows.

†42SJ units require two filters.



LEGEND

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

*Drawing provided for reference only. Dimensions may vary with options ordered.
 NOTES:

1. Units are fabricated of galvanized steel with a 16-gage galvanized fan deck.
2. All risers are insulated with (1/2-in. or 3/4-in. thick) closed cell insulation.
3. Thermostats shipped loose for field connection.
4. Risers are 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.], maximum riser length = 119-in.
8. Maximum riser size is 2 1/2-in. diameter. If larger sizes are required, please consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. A 9-in. x 2 1/4-in. slot is provided in the inside back panel for coil connection penetration to permit expansion and contraction of risers. Care must be taken to position the risers so that coil connection is at center of slot.
11. Drawing is pictorial (see unit arrangements for actual supply and return air orientation).
12. All dimensions are in inches.

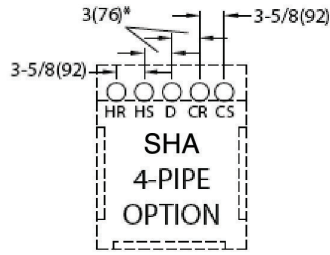
ITEM	DESCRIPTION	QTY
1	Electrical Knockouts	1
2	3-in. Expanded Section	3/5
3	Strip Heater (Optional)	1
4	Limit Switch**†† (Optional)	1
5	1/2-in. Isolation Ball Valves**	2/4
6	Flexible Drain Tube/P-Trap	1
7	Coil 1/2-in. OD Copper Tube	1
8	Filter, Throwaway, 1-in.**	1
9	Return Air Opening	1
10	Air Vent, Manual	1
11	Molex Connector for Field-Installed Stat	1
12	Control Box	1
13	Knockout (For Optional Remote Mounting)	2
14	Riser, Supply and Return (Copper)	2/4
15	Riser, Drain (Copper)	1
16	Drain Pan	1
17	Acoustical Bypass Panel	1
18	Blower	1
19	Motor, 3-Speed, PSC, with Quick Connect	1
20	Access Panel (Control Box)	1
21	Control Opening (Surface Mount Stat)	1
22	Duct Collar, 1/2-in. Extension (Typical)	1/2/3
23	Supply Air Opening(s)	1/2/3
24	Top Supply Collar 1-in Extension (Optional)	1

UNIT SIZE	NOM AIRFLOW (CFM)	DIMENSIONS (in.)								UNIT WEIGHT† (lb)		
		Single Supply		Double Supply		TOP Supply		E	G		H	I
		A	B	A	B	C	D					
03	300	14	8	14	6	14	10	17	1 1/2	1 1/2	14	180
04	400	14	12	14	6	14	10	17	1 1/2	1 1/2	14	225
06	600	18	10	18	6	16	12	20	1	2	18	240
08	800	18	12	18	6	16	12	20	1	2	18	260
10	1000	—	—	22	8	18	16	24	1	3	22	280
12	1200	—	—	22	8	18	16	24	1	3	22	305

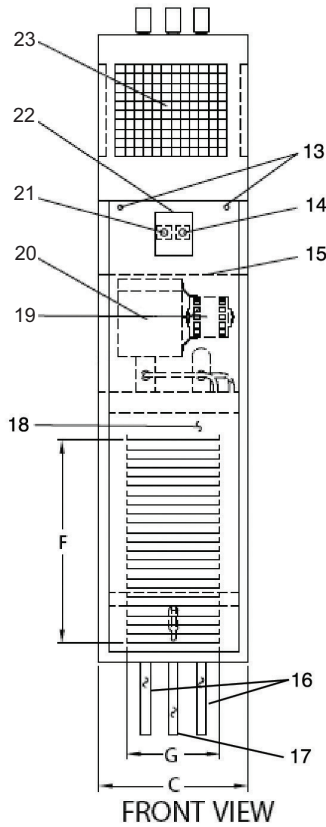
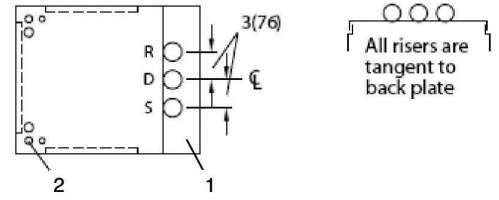
†Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

**Factory-Installed.
 ††Field-Installed.

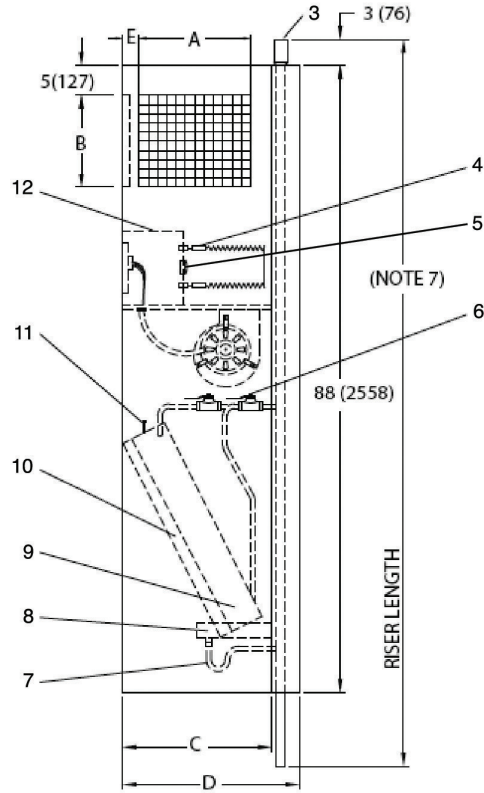
Fig. 2 — 42SGA Furred-In Stack Dimensions



TOP VIEW



FRONT VIEW



SIDE VIEW

LEGEND

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

ITEM	DESCRIPTION	QTY
1	Full Riser Chase	1
2	Electrical Knockouts	1
3	3-in. Expansion Section	3/5
4	Strip Heater (Optional)	1
5	Limit Switch**†† (Optional)	1
6	1/2-in. Isolation Ball Valves**	2/4
7	Flexible Drain Tube/P-Trap	1
8	Drain Pan	1
9	Coil 1/2-in. OD Tube	1
10	Filter, Throwaway, 1-in.**	1
11	Air Vent, Manual	1
12	Control Box	1
13	Cabinet Camloc® Fasteners	2
14	3-Speed Switch (Optional)	1
15	Electrical Access Panel	1
16	Riser, Supply and Return (Copper)	2/4
17	Riser, Drain (Copper)	1
18	Return Air Panel	1
19	Motor, 3-Speed, PSC	1
20	Blower	1
21	Thermostat (Optional)	1
22	Hinged Control Access Door	1
23	Double Deflection Steel Core Grille Assembly	1

*Drawing provided for reference only. Dimensions may vary with options ordered.

NOTES:

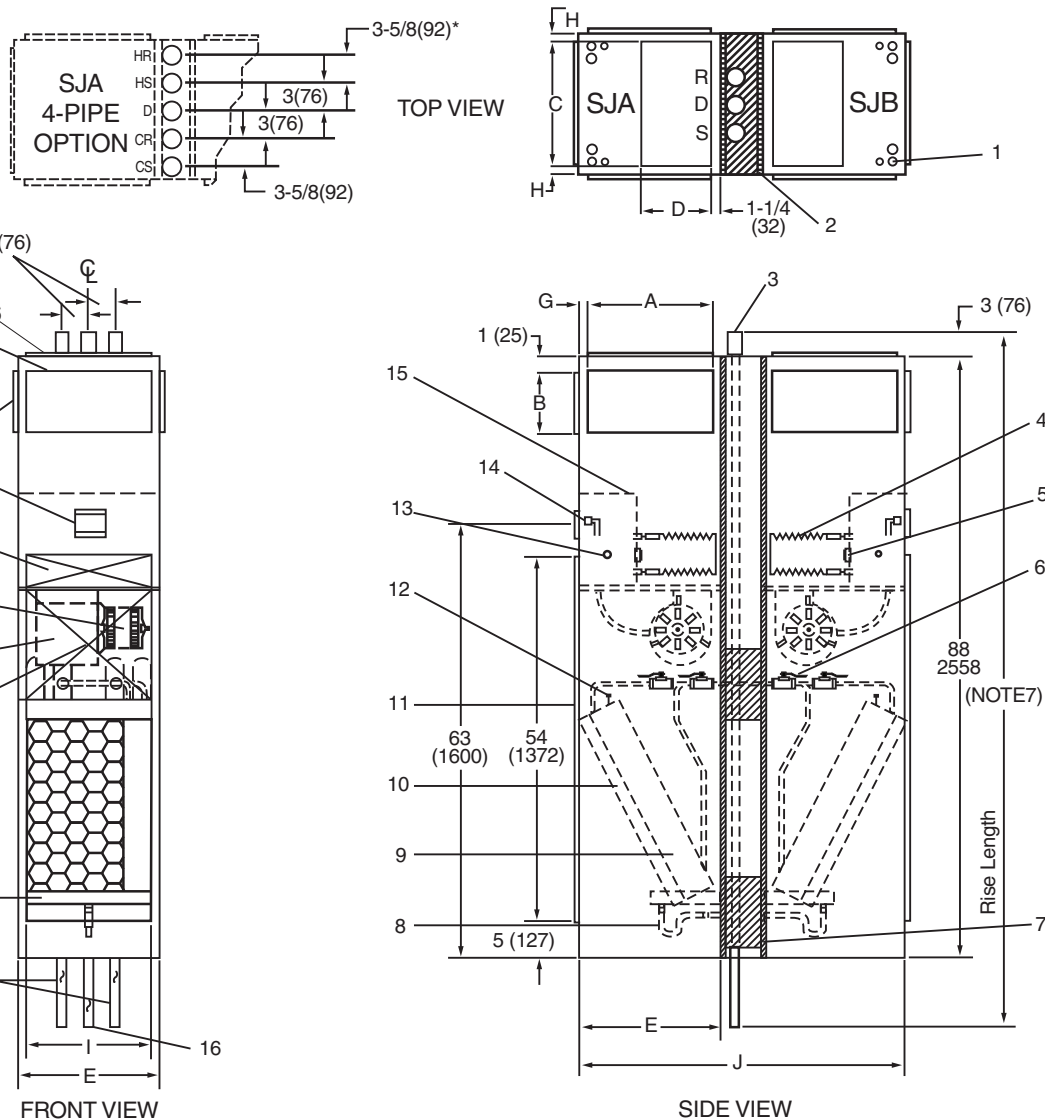
1. Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck, painted with Arctic White.
2. Risers are piped to coil with valves as specified.
3. Blower, motor, valves, coil, and filter are accessible through the return air opening.
4. Unit and control box are insulated.
5. Riser length = [(floor to floor) +2-in.], maximum riser length = 119-in.
6. Maximum riser size is 2 1/2-in. diameter. If larger sizes are required, please consult the factory.
7. Expansion loops in hot water heating circuits as required.
8. A 9-in. x 2 1/4-in. slot is provided in the inside back panel for coil connection penetration to permit expansion and contraction of risers. Care must be taken to position the risers so that coil connection is at center of slot.
9. Drawing is pictorial (see unit arrangements for actual supply and return air orientation).
10. 42SHA available in front return only.
11. All dimensions are in inches.

UNIT SIZE	NOM AIRFLOW (CFM)	DIMENSIONS (in.)								UNIT WEIGHT† (lb)	
		SINGLE SUPPLY		DOUBLE SUPPLY		C	D	E	F		G
		A	B	A	B						
03	300	14	8	14	6	17	22 ³ / ₈	2 1/2	22 1/8	14 ³ / ₄	202
04	400	14	12	14	8	17	22 ³ / ₈	2 1/2	22 1/8	14 ³ / ₄	247
06	600	14	12	14	8	20	25 ³ / ₈	2 1/2	26 ⁵ / ₈	17 ³ / ₄	262
08	800	14	16	14	10	20	25 ³ / ₈	2 1/2	26 ⁵ / ₈	17 ³ / ₄	286
10	1000	18	16	14	12	24	29 ³ / ₈	2 1/2	31 1/8	17 ³ / ₄	311
12	1200	18	16	14	12	24	29 ³ / ₈	2 1/2	31 1/8	17 ³ / ₄	336

†Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

**Factory-Installed.
††Field-Installed.

Fig. 3 — 42SHA Cabinet Dimensions



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

ITEM	DESCRIPTION	QTY
1	Electrical Knockouts	6
2	Gypsum Board, 5/8-in. Type "X"	1
3	3-in. Expanded Section	3/5
4	Strip Heater** (Optional)	2
5	Limit Switch**†† (Optional)	2
6	1/2-in. Isolation Ball Valves**	4/8
7	Thermafiber Insulation	2
8	Flexible Drain Tube/P-Trap	2
9	Coil 1/2-in. OD Copper Tube	2
10	Filter, Throwaway, 1-in.**	2
11	Return Air Opening	2
12	Air Vent, Manual	2
13	Knockout (For Optional Remote Mounting)	2
14	Molex Connector for Field Installed Stat	2
15	Control Box	2
16	Riser, Drain (Copper)	1
17	Riser, Supply and Return (Copper)	2/4
18	Drain Pan	2
19	Return Air Blockoff Panel (Optional)	1
20	Blower	2
21	Motor, 3-Speed, PSC, with Quick Connect	2
22	Access Panel (Control Box)	2
23	Control Opening (Surface Mount Stat)	2
24	Duct Collar, 1/2-in. Extension (Typical)	1/2/3
25	Supply Air Opening(s)	1/2/3
26	Top Supply Duct Collar, 1-in. Extension (Optional)	1

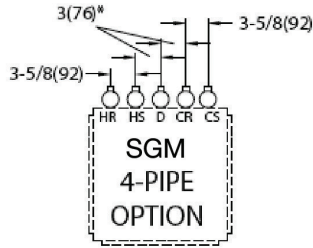
- *Drawing provided for reference only. Dimensions may vary with options ordered.
- NOTES:**
- Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck.
 - All risers are insulated with closed cell insulation.
 - Thermostats shipped loose for field connection.
 - Risers are piped to coil with valves as specified.
 - Blower, motor, valves, coil, and filter are accessible through the return air opening.
 - Unit and control box are insulated.
 - Riser length = [(floor to floor) +2-in.], maximum riser length = 119-in.
 - Maximum riser size is 2 1/2-in. diameter. If larger sizes are required, please consult the factory.
 - Expansion loops in hot water heating circuits as required.
 - A 9-in. x 2 1/4-in. slot is provided in the inside back panel for coil connection penetration to permit expansion and contraction of risers. Care must be taken to position the risers so that coil connection is at center of slot.
 - Drawing is pictorial (see unit arrangements for actual supply and return air orientation).
 - All dimensions are in inches.

UNIT SIZE	NOM AIRFLOW (CFM)	DIMENSIONS (in.)										UNIT WEIGHT† (lb)	
		SINGLE SUPPLY		DOUBLE SUPPLY		TOP SUPPLY		E	G	H	I		J
		A	B	A	B	C	D						
03	300	14	8	14	6	14	10	17	1 1/2	1 1/2	14	39 5/8	360
04	400	14	12	14	6	14	10	17	1 1/2	1 1/2	14	39 5/8	450
06	600	18	10	18	6	16	12	20	1	2	18	45 5/8	480
08	800	18	12	18	6	16	12	20	1	2	18	45 5/8	520
10	1000	—	—	22	8	18	16	24	1	3	22	53 5/8	560
12	1200	—	—	22	8	18	16	24	1	3	22	53 5/8	610

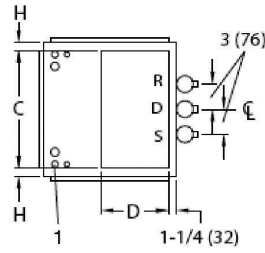
†Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

**Factory-Installed.
 ††Field-Installed.

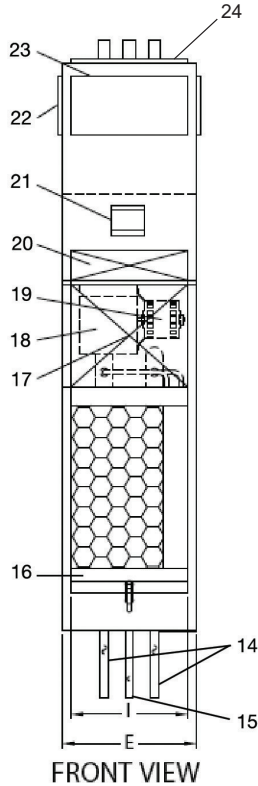
Fig. 4 — 42SJ Back-to-Back Furred-In Stack Dimensions



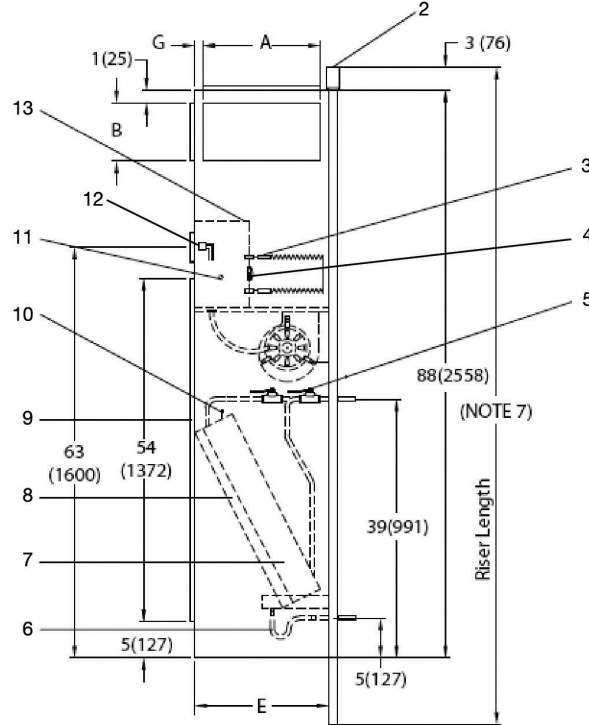
TOP VIEW



All risers are tangent to back plate



FRONT VIEW



SIDE VIEW

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

ITEM	DESCRIPTION	QTY
1	Electrical Knockouts	1
2	3-in. Expanded Section	3/5
3	Strip Heater** (Optional)	1
4	Limit Switch**†† (Optional)	1
5	1/2-in. Isolation Ball Valves**	2/4
6	Flexible Drain Tube/P-Trap	1
7	Coil 1/2-in. OD Copper Tube	1
8	Filter, Throwaway, 1-in.**	1
9	Return Air Opening	1
10	Air Vent, Manual	1
11	Knockout (For Optional Remote Mounting)	2
12	Molex Connector for Field-Installed Thermostat	1
13	Control Box	1
14	Riser, Supply and Return (Copper)	2/4
15	Riser, Drain (Copper)	1
16	Drain Pan	1
17	Acoustical Bypass Panel	1
18	Blower	1
19	Motor, 3-Speed, PSC, with Quick Connect	1
20	Access Panel (Control Box)	1
21	Control Opening (Surface Mount Thermostat)	1
22	Duct Collar, 1/2-in. Extension (Typical)	1/2/3
23	Supply Air Opening(s)	1/2/3
24	Top Supply Duct Collar, 1-in. Extension (Optional)	1

*Drawing provided for reference only. Dimensions may vary with options ordered.
NOTES:

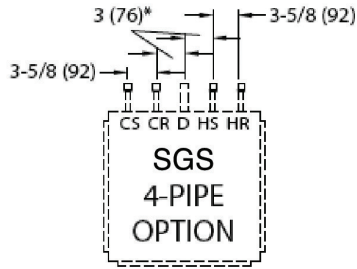
1. Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck.
2. All risers are insulated with closed cell insulation.
3. Thermostats shipped loose for field connection.
4. Risers are piped to coil with valves as specified.
5. Blower, motor, valves, coil, and filter are accessible through the return air opening.
6. Unit and control box are insulated.
7. Riser length = [(floor to floor) +2-in.], maximum riser length = 119-in.
8. Maximum riser size is 2 1/2-in. diameter. If larger sizes are required, please consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. A 9-in. x 2 1/4-in. slot is provided in the inside back panel for coil connection penetration to permit expansion and contraction of risers. Care must be taken to position the risers so that coil connection is at center of slot.
11. Drawing is pictorial (see unit arrangements for actual supply and return air orientation).
12. All dimensions are in inches.

UNIT SIZE	NOM AIRFLOW (CFM)	DIMENSIONS (in.)										UNIT WEIGHT† (lb)
		SINGLE SUPPLY		DOUBLE SUPPLY		TOP SUPPLY		E	G	H	I	
		A	B	A	B	C	D					
03	300	14	8	14	6	14	10	17	1 1/2	1 1/2	14	180
04	400	14	12	14	6	14	10	17	1 1/2	1 1/2	14	225
06	600	18	10	18	6	16	12	20	1	2	18	240
08	800	18	12	18	6	16	12	20	1	2	18	260
10	1000	—	—	22	8	18	16	24	1	3	22	280
12	1200	—	—	22	8	18	16	24	1	3	22	305

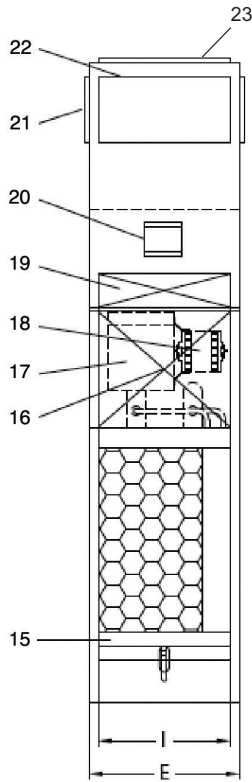
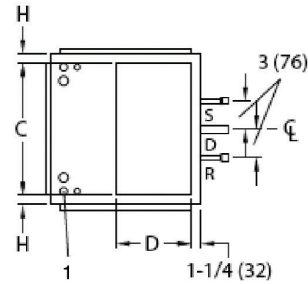
†Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

**Factory-Installed.
††Field-Installed.

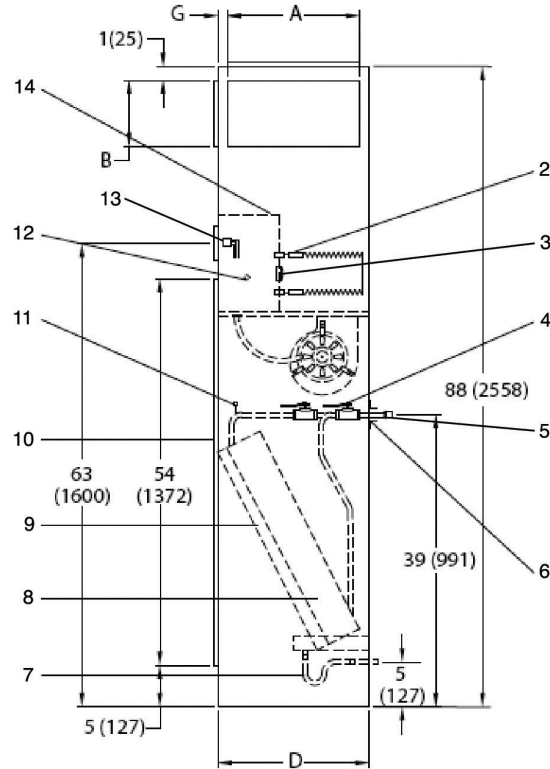
Fig. 5 — 42SGM Furred-In Master Stack Dimensions



TOP VIEW



FRONT VIEW



SIDE VIEW

LEGEND

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

ITEM	DESCRIPTION	QTY
1	Electrical Knockouts	1
2	Strip Heater** (Optional)	1
3	Limit Switch**†† (Optional)	1
4	1/2-in. Isolation Ball Valves**	2/4
5	Coil Stub Outs	2/4
6	Shipping Brace	2/4
7	Flexible Drain Tube/P-Trap	1
8	Coil 1/2-in. OD Copper Tube	1
9	Filter, Throwaway, 1-in.**	1
10	Return Air Opening	1
11	Air Vent, Manual	1
12	Knockout (For Optional Remote Mounting)	2
13	Molex Connector for Field-Installed Stat	1
14	Control Box	1
15	Drain Pan	1
16	Return Air Blockoff Panel (Optional)	1
17	Blower	1
18	Motor, 3-Speed, PSC, with Quick Connect	1
19	Access Panel (Control Box)	1
20	Control Opening (Surface Mount Thermostat)	1
21	Duct Collar, 1/2-in. Extension (Typical)	1/2/3
22	Supply Air Opening(s)	1/2/3
23	Top Supply Duct Collar 1-in. Extension (Optional)	1

*Drawing provided for reference only. Dimensions may vary with options ordered.

NOTES:

1. Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck.
2. All risers are insulated with closed cell insulation.
3. Thermostats shipped loose for field connection.
4. Risers are 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.], maximum riser length = 119-in.
8. Maximum riser size is 2 1/2-in. diameter. If larger sizes are required, please consult the factory.
9. Expansion loops in hot water heating circuits as required.
10. A 9-in. x 2 1/4-in. slot is provided in the inside back panel for coil connection penetration to permit expansion and contraction of risers. Care must be taken to position the risers so that coil connection is at center of slot.
11. Drawing is pictorial (see unit arrangements for actual supply and return air orientation).
12. All dimensions are in inches.

UNIT SIZE	NOM AIRFLOW (CFM)	DIMENSIONS (in.)										UNIT WEIGHT† (lb)
		SINGLE SUPPLY		DOUBLE SUPPLY		TOP SUPPLY		E	G	H	I	
		A	B	A	B	C	D					
03	300	14	8	14	6	14	10	17	1 1/2	1 1/2	14	162
04	400	14	12	14	6	14	10	17	1 1/2	1 1/2	14	203
06	600	18	10	18	6	16	12	20	1	2	18	216
08	800	18	12	18	6	16	12	20	1	2	18	234
10	1000	—	—	22	8	18	16	24	1	3	22	252
12	1200	—	—	22	8	18	16	24	1	3	22	275

†Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

**Factory-Installed.
††Field-Installed.

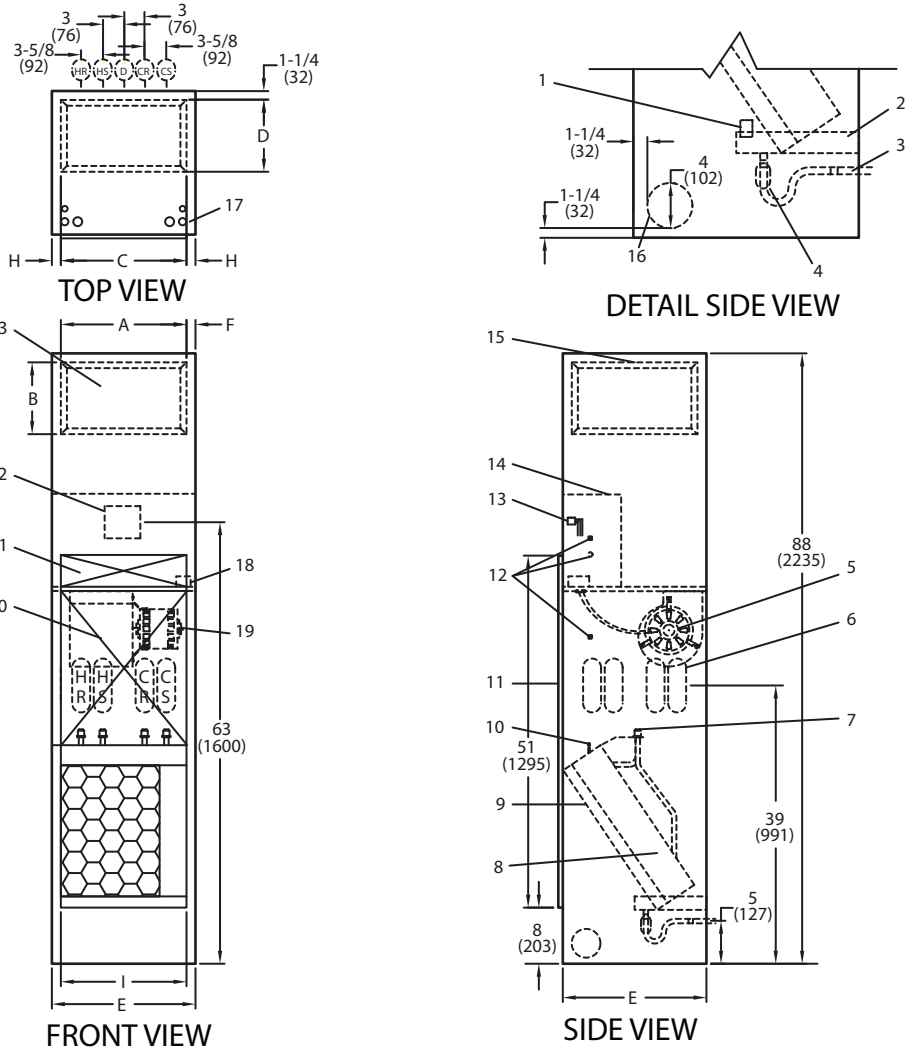
Fig. 6 — 42SGS Furred-In Slave Stack Dimensions

ITEM	DESCRIPTION	QTY
1	Float Switch (Optional)	1
2	Drain Pan	1
3	Flexible Drain Tube/P-Trap	1
4	Drain Knockout (3 Sides)	1 each side
5	Blower	1
6	Riser Knockouts (3 Sides)	2/4
7	1/2-in. Flare Adaptor (SWT x 37.5)	2/4
8	Coil, 1/2-in. OD Copper Tube	1
9	1 in. Throwaway Filter (Factory Installed)	1
10	Manual Air Vent	1
11	Return Air Opening	1
12	Knockout (For Optional Thermostat Remote Mounting)	3
13	Molex Connector for Field-Installed Thermostat	1
14	Control Box	1
15	Duct Collar Extension (1/2-in. Side, 1-in. Top)	1/2/3
16	Outside Air Knockout (On Each Side Panel)	1
17	Electrical Knockouts (Near Each Side)	1
18	Service Switch (Optional)	1
19	Motor, 3-Speed, PSC, with Quick Connect	1
20	Access Panel for Motor and Blower Assembly	1
21	Access Panel (Control Box)	1
22	Control Opening Knockout (Surface Mount Thermostat)	1
23	Supply Air Openings (4 Sides and Top, Stitch Cut)	1/2/3

LEGEND

CR	—	Cold Water Return
CS	—	Cold Water Supply
D	—	Drain
HR	—	Hot Water Return
HS	—	Hot Water Supply
PSC	—	Permanent Split Capacitor
SWT	—	Sweat

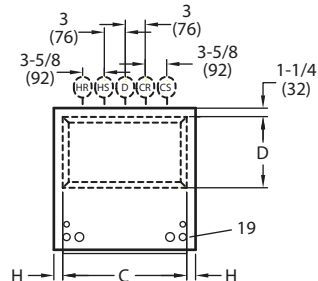
- NOTES:
- Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck.
 - Thermostats shipped loose for field connection.
 - Blower, motor, valves, coil, and filter are accessible through the return air opening.
 - Unit and control box are insulated with 1/2-in. (13 mm) coated fiberglass insulation.
 - All risers will ship separately from units. Riser dimensions are measured from centerline of knockout.
 - Drain knockouts on three sides of cabinet.
 - Flex hoses ship with unit.
 - Thread fittings on both ends of flex hoses must be field tightened and leak tested.
 - Return air panel not shown.
 - All dimensions are in inches (mm).



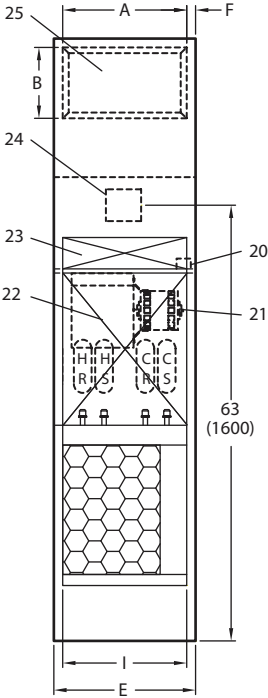
UNIT SIZE	UNIT WEIGHT* (lb)	DIMENSIONS (in.)										FILTER SIZE (in.)
		SIDE SUPPLY			TOP SUPPLY							
		A	B	SIZE	C	D	SIZE	E	F	H	I	
03	180	14	12	14 x 12	14	10	14 x 10	17	3	1 1/2	14	12 1/2 x 24 1/4 x 1
04	225	14	12	14 x 12	14	10	14 x 10	17	3	1 1/2	14	12 1/2 x 24 1/4 x 1
06	240	18	12	18 x 12	16	12	16 x 12	20	1	2	18	16 1/4 x 26 3/4 x 1
08	260	18	12	18 x 12	16	12	16 x 12	20	1	2	18	16 1/4 x 26 3/4 x 1
10	280	22	16	22 x 16	18	16	18 x 16	24	1	3	22	20 1/2 x 29 1/4 x 1
12	305	22	16	22 x 16	18	16	18 x 16	24	1	3	22	20 1/2 x 29 1/4 x 1

*Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

Fig. 7 — 42SU Universal Furred-In Stack Dimensions



TOP VIEW



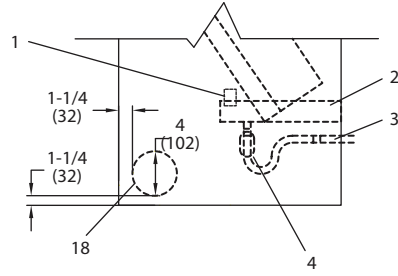
FRONT VIEW

LEGEND

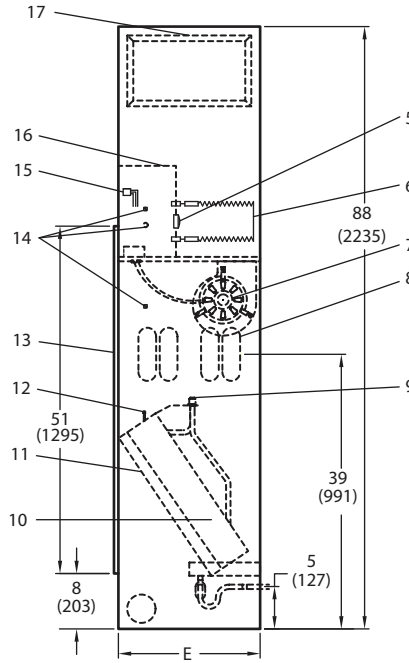
- CR — Cold Water Return
- CS — Cold Water Supply
- D — Drain
- HR — Hot Water Return
- HS — Hot Water Supply
- PSC — Permanent Split Capacitor
- SWT — Sweat

NOTES:

1. Units are fabricated of 18-gage galvanized steel with a 16-gage galvanized fan deck.
2. Thermostats shipped loose for field connection.
3. Blower, motor, valves, coil, and filter are accessible through the return air opening.
4. Unit and control box are insulated with 1/2-in. (13 mm) coated fiberglass insulation.
5. All risers will ship separately from units. Riser dimensions are measured from centerline of knockout.
6. Drain knockouts on three sides of cabinet.
7. Flex hoses ship with unit.
8. Thread fittings on both ends of flex hoses must be field tightened and leak tested.
9. Return air panel not shown.
10. All dimensions are in inches (mm).



DETAIL SIDE VIEW



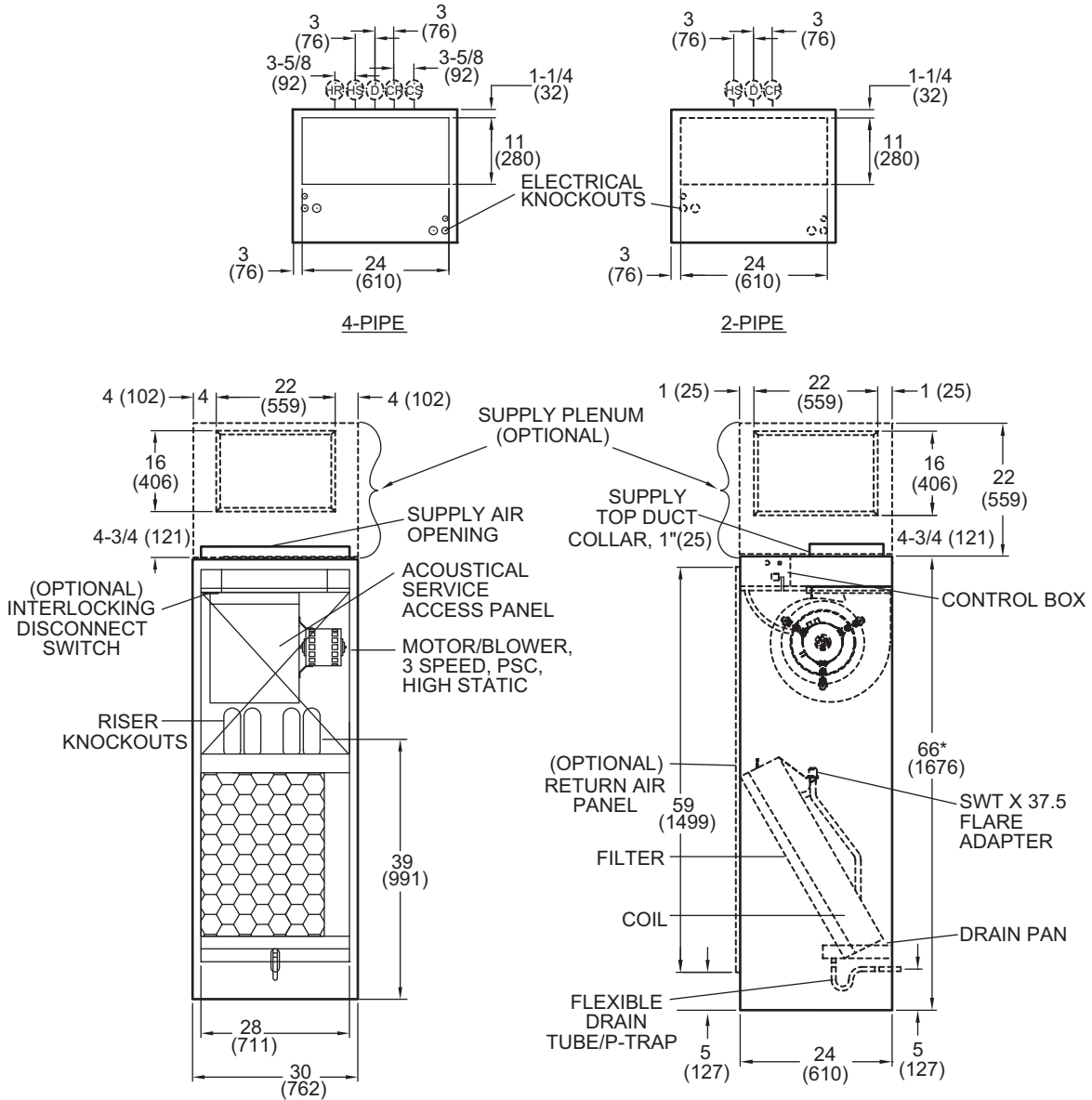
SIDE VIEW

ITEM	DESCRIPTION	QTY
1	Float Switch (Optional)	1
2	Drain Pan	1
3	Flexible Drain Tube/P-Trap	1
4	Drain Knockout (3 Sides)	1 each side
5	Limit Switch (Factory Installed)	1
6	Strip Heater	1
7	Blower	1
8	Riser Knockouts (3 Sides)	2/4
9	1/2-in. Flare Adapter (SWT x 37.5)	2/4
10	Coil, 1/2-in. OD Copper Tube	1
11	1-in. Throwaway Filter (Factory Installed)	1
12	Manual Air Vent	1
13	Return Air Opening	1
14	Knockout (For Optional Thermostat Remote Mounting)	3
15	Molex Connector for Field-Installed Thermostat	1
16	Control Box	1
17	Duct Collar Extension (1/2-in. Side, 1-in. Top)	1/2/3
18	Outside Air Knockout (On Each Side Panel)	1
19	Electrical Knockouts (Near Each Side)	1
20	Service Switch (Optional)	1
21	Motor, 3-Speed, PSC, with Quick Connect	1
22	Access Panel for Motor and Blower Assembly	1
23	Access Panel (Control Box)	1
24	Control Opening Knockout (Surface Mount Thermostat)	1
25	Supply Air Openings (4 Sides and Top, Stitch Cut)	1/2/3

UNIT SIZE	UNIT WEIGHT* (lb)	DIMENSIONS (in.)										FILTER SIZE (in.)
		SIDE SUPPLY			TOP SUPPLY							
		A	B	SIZE	C	D	SIZE	E	F	H	I	
03	182	14	12	14 x 12	14	10	14 x 10	17	3	1 1/2	14	12 1/2 x 24 1/4 x 1
04	227			14 x 10								
06	242	18	12	18 x 12	16	12	16 x 12	20	1	2	18	16 1/4 x 26 3/4 x 1
08	262			16 x 12								
10	282	22	16	22 x 16	18	16	18 x 16	24	1	3	22	20 1/2 x 29 1/4 x 1
12	307			18 x 16								

*Unit weights are based on dry coils and minimum rows. Weights exclude packaging, valves, and other components.

Fig. 8 — 42SU Universal Furred-In Stack with Heater Dimensions



- LEGEND**
- CR** — Cold Water Return
 - CS** — Cold Water Supply
 - D** — Drain
 - HR** — Hot Water Return
 - HS** — Hot Water Supply
 - PSC** — Permanent Split Capacitor
 - SWT** — Sweat

- NOTES:**
1. Unit measurements on drawings are shown in inches (millimeters).
 2. Units are fabricated of galvanized steel with a 16 gage galvanized fan deck.
 3. Blower, motor, valves, coil, and filter are accessible through the return air opening.
 4. Unit and control box are insulated with 1/2-in. (13 mm) coated fiberglass insulation.
 5. Maximum riser size is 2 1/2-in. (64 mm) diameter. If larger sizes are required, please consult the factory.
 6. This drawing is pictorial. (See unit arrangements for actual supply and return air orientation.)
 7. Riser length = [floor to floor + 2-in. (51 mm)]. Maximum riser length is 119-in. (3023 mm).
 8. Unit shipping weight is approximately 390 lb (176 kg).

Fig. 9 — 42SM Mega Furred-In Stack Dimensions

PANEL DIMENSIONS (in.)

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: Dimensions in inches.

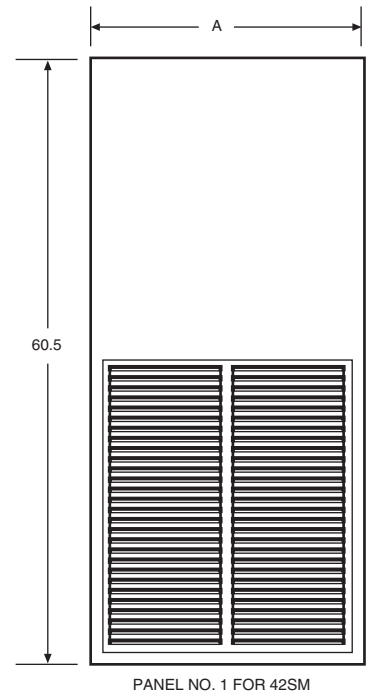
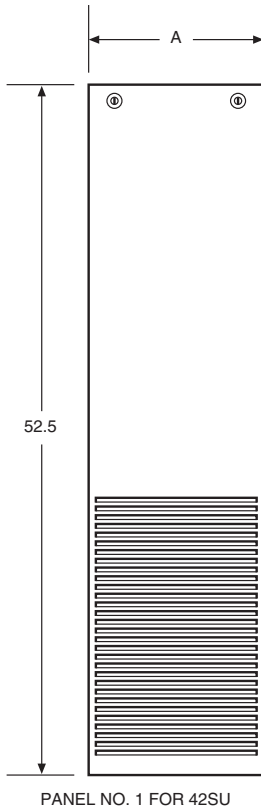
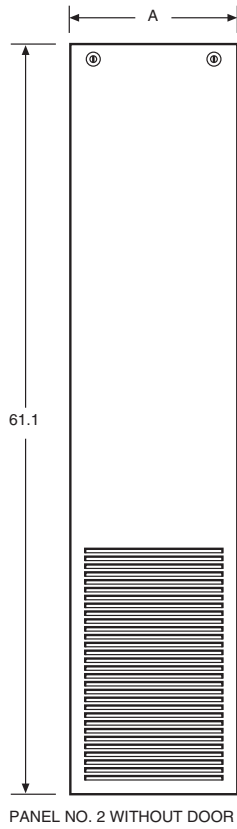
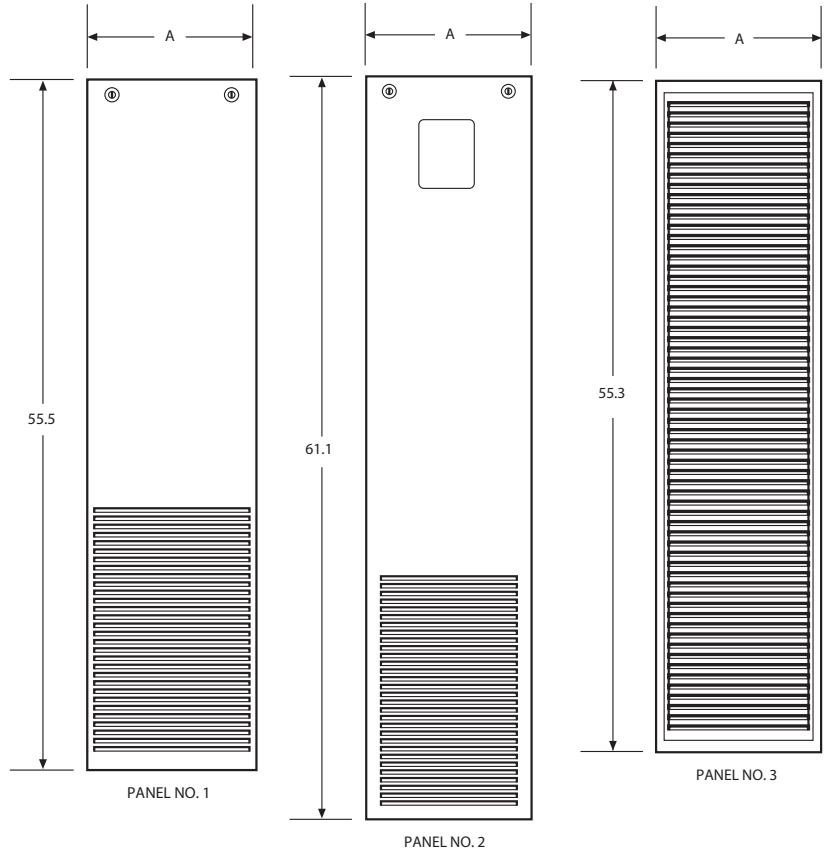


Fig. 10 — Return-Air Wall Panels for Furred-In Units — Panels with No Frame Dimensions

PANEL AND FRAME DIMENSIONS (in.)

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

NOTE: Dimensions in inches.

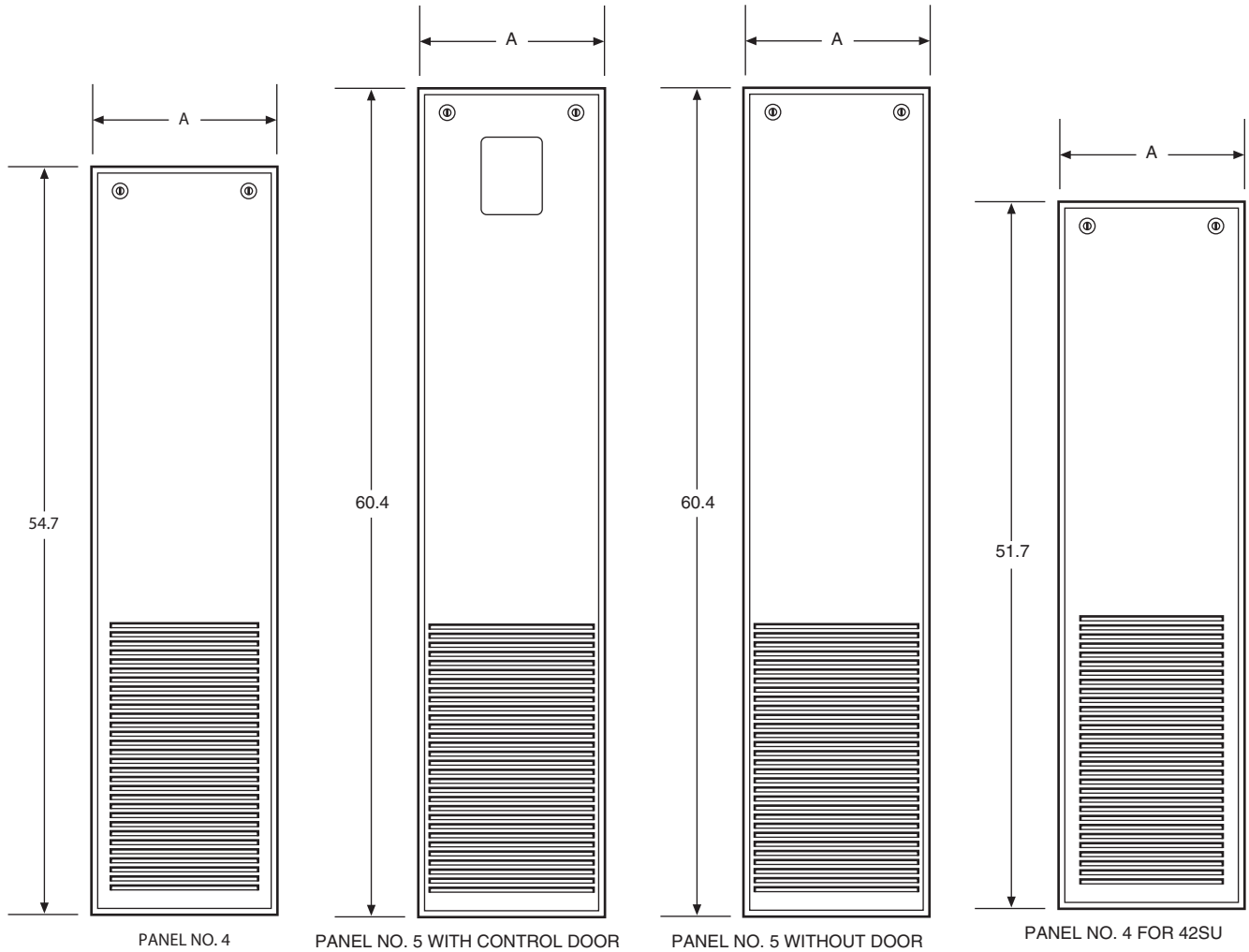


Fig. 11 — Return-Air Wall Panels for Furred-In Units — Panels with Frame Dimensions

Identify and Prepare Units

Be sure power requirements match available power source. Refer to unit nameplate and wiring diagram.

1. Check all tags on unit to determine if shipping screws or braces are to be removed. Remove screws as directed.
2. Rotate the fan wheel by hand to ensure that the fan is unrestricted and can rotate freely. Check for shipping damage and fan obstructions. Adjust blower motor as required.

NOTE: When optional factory-installed risers are ordered, see Appendix A on page 29 for block-out construction dimensions.

INSTALLATION

Step 1 — Place Units in Position

A factory tag is on top of each unit. The tag states riser tier number, floor, room number (if furnished), and supply-air arrangement. Check unit for any other labels that apply to installation. Units should not be installed at locations other than that marked on the unit identification tag. If no specific detail is shown on tag for unit location, then determine configuration for the Universal unit based on information within this manual. Should any questions arise regarding unit configuration, contact the sales representative or the factory BEFORE proceeding. Remove unit from pallet and take directly to assigned space for installation. While all equipment is designed and fabricated with sturdy materials and may present a rugged appearance, great care must be taken to assure that no force or pressure be applied to the coil, risers or piping during

handling. Never use the riser to lift the unit. To maintain the straight and square cabinet alignment, avoid lifting or supporting the cabinet only at the top and bottom.

While the manufacturer does not become involved in the design and selection of support methods and components, it should be noted that unacceptable system operating characteristics and/or performance may result from improper or inadequate unit structural support. Due to variations in building construction, floor plans, and unit configurations, each installation is different. The actual step-by-step method of installation may vary from unit to unit. However, the risers should be moved as little as possible to avoid damage to the unit and internal components.

42SG, SH, AND SJ UNITS

1. Begin on lowest floor and progress upward, floor by floor, to top.
2. Examine drain line (Fig. 2-6). Be sure both ends are in place and that it forms a trap. Avoid pinching drain line.
3. Tip unit over riser hole in building floor. As unit is righted, align riser with unit below.

NOTE: The unit must be lowered into the space, taking care to properly align the risers to engage the riser swaged section on the unit below. The riser should never be bent or pushed together to be passed through the floor slot and should never be lifted up or pulled down to meet the riser on the floor below or above.

4. Install isolator pads beneath the four corners of unit if applicable.
5. Before anchoring the equipment in place, the unit must be leveled, and the cabinet must be squared and brought into line with any adjacent or included walls. The unit may be anchored in place by bolting directly through the unit floor or attaching to the cabinet in some location that will not interfere with drywall or other items such as the supply grille, thermostat, or return access panel. When attaching to the unit cabinet, care must be taken to not penetrate the cabinet in locations that may damage internal components or wiring. The mounting technique is a matter of choice; however, the unit should always be anchored securely to prevent movement during construction and riser expansion and contraction. On certain units, shipping screws or braces must be removed after the unit is installed. Be sure to check all tags on the unit to determine which, if any, of these devices need to be removed.
6. If installing a 42SJ unit, follow steps a-h. For 42SG and 42SH units, continue to Step 7.

NOTE: The 42SJ back-to-back fan coils have been designed to serve two separate rooms. These products are classified by Underwriters Laboratories Inc. for use in penetration firestop systems, control number 27WL when ordered with 1-hr rated chase. See UL Fire Resistance Directory for more information. Figure 12 shows the 42SJ unit with standard risers and with Siamese risers.

- a. Lay out the control lines for the drywall track and studs in the floor and ceiling (see Fig. 13).

NOTE: Tracking may be installed now or after the unit is set.

- b. Position the 42SJ fan coil assembly between two rooms with the unit drywall separation spotted over the wall control lines.

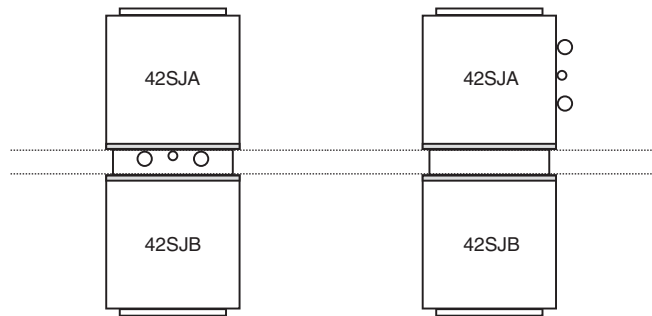


Fig. 12 — 42SJ Unit with Standard and Siamese Risers

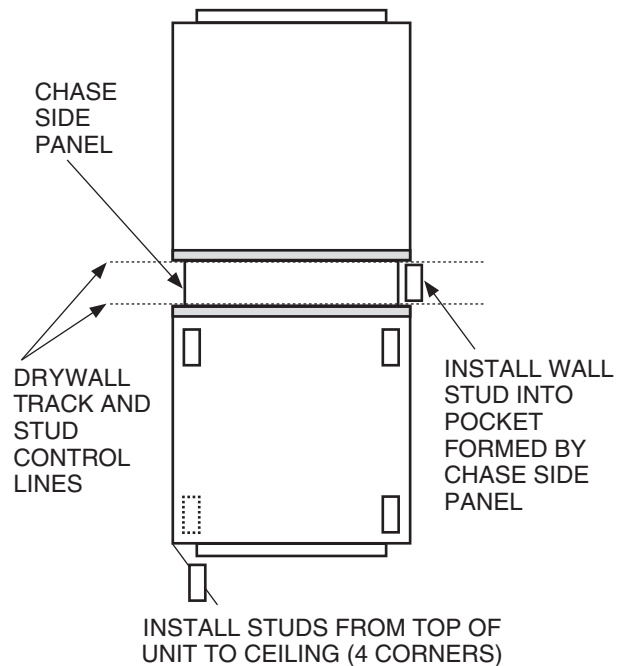


Fig. 13 — 42SJ Wall Board Installation

- c. If not already installed, install the floor and ceiling tracks up to and over the 42SJ fan coil unit.
- d. Position the vertical studs and fasten into each of the stud pockets formed into the chase side panels (see Fig. 13).

NOTE: The studs may be mechanically fastened to the 42SJ fan coil. Care should be taken, however, not to penetrate the supply or return water risers or internal piping. Given the levelness of the floor and/or the fan coil assembly, some shimming may be necessary.

- e. Assemble the specified wall construction up to and over the top of the fan coil unit (see Fig. 14).
- f. With the fire-wall separation being complete, the drywall skin on the surface of the individual fan coils can be applied. Drywall can be applied directly to the surface, or, if necessary, studding may be installed on the corners for vertical control (see Fig. 14).
- g. For ease of installation of the access panel, apply drywall on the return-air side directly to the surface of the unit (see Fig. 14). When applying the wall board directly to the unit cabinet, it may be necessary to shim the wall board in some areas to achieve the desired finished wall surface.
- h. After all drywalling and painting is complete, install thermostats, supply air grilles and return air panels.

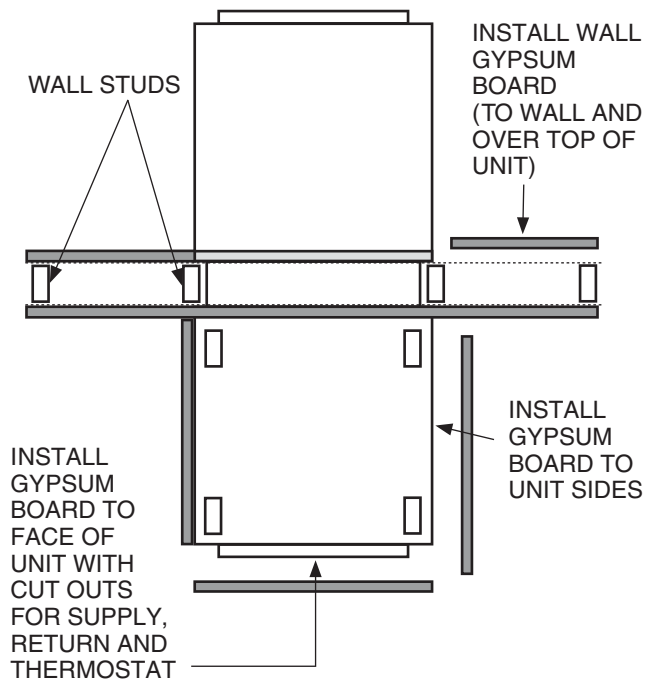


Fig. 14 — 42SJ Unit Installation

CAUTION

Toxic residues and loose particles resulting from manufacturing and field piping techniques such as joint compounds, soldering flux, and metal shavings may be present in the unit and the piping system. Special consideration must be given to system cleanliness when connecting to solar, domestic or potable water systems. Failure to heed this warning could result in equipment damage.

7. Attach unit risers:

NOTE: Submittals and product literature detailing unit operation, controls, and connections should be thoroughly reviewed BEFORE beginning the connection and testing of risers and piping. The supply and return connections are marked on the coil stub-outs and the valve package with an “S” meaning supply or inlet and “R” meaning return or outlet indicating flow direction to and from the coil. Blue letters mark the chilled water connections and red letters mark the hot water connections.

- a. Each riser has a 3-in. swaged portion at top and sufficient extension at bottom for an inserted length of approximately 2 inches. This unit-to-unit joint is NOT intended for full bottoming in the joint, but allows for variations in floor-to-floor dimensions and for correct riser positioning.
If job requires that unit risers be supplemented with between-the-floor extensions, pieces may be field-supplied or factory-supplied. If factory-supplied, insulation is also provided.
- b. Level unit to ensure proper coil operation and condensate drainage. Proper riser installation and vertical positioning in the unit provides for a unit piping run-out to the service valves, which are centered in the access slots and level or sloping down slightly away from the riser. This prevents condensation from running back to the riser and possible damage from dripping at the bottom of a riser column. Each job has specific requirements, and satisfying those requirements is the responsibility of the installer.

After units are positioned and riser centered in pipe chase, make unit plumb in two directions, using unit frame as a reference.

- c. Anchor unit to building. Use bolts or lag screws through holes provided in unit frame.
- d. After all units in a stack are anchored, make unit-to-unit riser joints. First, center each coil-to-riser line within the expansion slot in the unit back panel. Each riser joint must be in vertical alignment with at least 1-in. penetration into the swaged joint. This condition is met if floor-to-floor dimension is as specified and coil-to-riser lines are properly centered. Wide variations in floor-to-floor dimensions may necessitate cutting off or extending individual risers. Such modifications are the full responsibility of the installing contractor.
- e. Before making the riser joints, the riser insulation must be pulled back away from the joint and protected from heat during the brazing process. The riser joint filler material must be selected to withstand the total operating pressure (both static and pumping head) to which the system will be subjected. Low temperature lead alloy solders such as “50/50” and “60/40” are normally not suitable.

IMPORTANT: Chilled water and hot water risers should never be piped to drain down into the condensate riser. Extensive water damage can occur due to drain overflow. Drain chilled and hot water risers to a remote location away from the unit such as sink, room or floor drains.

8. Anchor risers as required:

- a. Do not fasten risers rigidly within each unit. Risers must be free to move within pipe chase in response to normal vertical expansion and contraction. The unit internal piping is designed to accommodate a total riser vertical movement of $\pm 3/4$ -in., due to thermal expansion and/or contraction, when positioned properly at the jobsite.
 - b. Built-in risers must be anchored at some point to building structure. Unit design accommodates up to 1 1/2-in. expansion and contraction in riser assemblies when positioned properly at the job-site. Risers must be anchored to the building structure to limit expansion and contraction movement to a maximum of 1 1/2-in. Riser anchoring and expansion compensation is not included in the factory-supplied unit and must be field-provided. While some special riser features are available from the factory, riser end caps, air vents, and/or flushing loops are normally provided on the job by the installer.
9. Test the system for leaks after the connections are completed. When testing with air or some other gas, it might be necessary to tighten stem packing nuts on some valves to maintain air pressure in the riser. Pressure testing risers with water should be done with the unit service valves closed to prevent flushing debris into the unit valve packages. This will also allow risers to be drained down after testing in the winter to avoid freeze-up problems. In the event that leaking or defective components are discovered, the sales representative must be notified before any repairs are attempted. All leaks should be repaired before proceeding with the installation.
10. After system integrity has been established, pull the riser insulation back into place over the joint and glue or seal to prevent sweating and heat loss or gain. Internal chilled

water piping and valves are located over the drain pan and need not be insulated.

- If required, fireproof where necessary. Any fireproofing requirements where risers or piping penetrate floors or walls are the responsibility of the installer. This work should be done only after all pressure testing is completed. The fireproofing method used must accommodate pipe expansion and contraction and the piping must be protected from abrasion and chemical attack. The pipe insulation also must be maintained to prevent sweating and must be protected from wear or erosion at the joint between the insulation and the fireproofing material.

42SU UNIVERSAL ARRANGEMENT

The unique design of the universal stack fan coil unit allows for field configuration for each unit. Air discharge, riser, drain, and outside air knockouts have been strategically located on each unit. Risers, shown with unit, are for reference only. All risers are factory fabricated and shipped loose for field installation.

It is important that you identify all of the unit feature locations and which knockouts you intend to use before proceeding with the installation. See Fig. 15-19. Also, it must be determined whether your application requires a Mating Unit (primary/secondary) and its configuration. Consult your local sales representative or the factory for further details on primary/secondary arrangements.

Potential Universal Arrangement Unit Configurations

Risers: Three Locations

The pre-installed supply, return, and drain risers (2-pipe or 4-pipe applications) can be oriented on any of three sides of the unit (see Fig. 15).

Risers cannot be installed on the return air side of the cabinet.

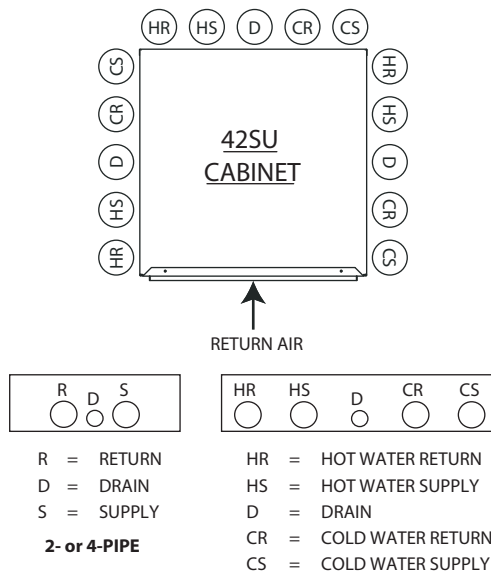


Fig. 15 — 42SU Unit Configuration

Unit orientation is determined based on the location of the risers in the building. The riser side of the universal stack unit always determines the rear of the unit. See Fig. 16.

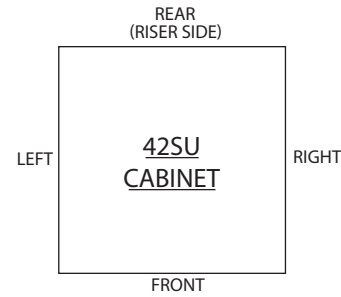


Fig. 16 — 42SU Unit Orientation

Return Air: Single Location

The return air/access panel may then be oriented on the left, right, or front of the unit.

Supply Air: Five Locations (4 sides and top)

Includes stitched design for 1/2-in. duct flanges.

Outside Air: Two Locations

Either side adjacent to the return air opening.

NOTE: Outside air opening may be used on a side if risers are configured on that same side.

Supply, Return, and Drain Riser Installation

- Three sides of each universal stack unit have four supply and return riser knockouts along the center and one drain knockout near the lower part of the unit (see Fig. 17). Identify whether your application uses a 2-pipe or 4-pipe configuration.
 - Two-pipe configurations typically use the two inner riser knockouts.
 - Four-pipe configurations will use all four riser knockouts.
- Locate and mark the riser and drain knockouts that apply to your particular unit application, ensuring proper orientation of the return air opening in room.
- Insert a flat head screw driver into knockout slot shown in Fig. 18.
- Pry screw driver back and forth until knockout tabs break away from the unit.
- Discard knockout. Be careful of sharp edges.
- Use a sharp retractable knife (see Fig. 19) and vertically cut the insulation down the center of the riser and drain knockouts the full length of the knockout.
- Use adhesive or glue to re-attach insulation that has pulled away from the unit during knockout removal process.

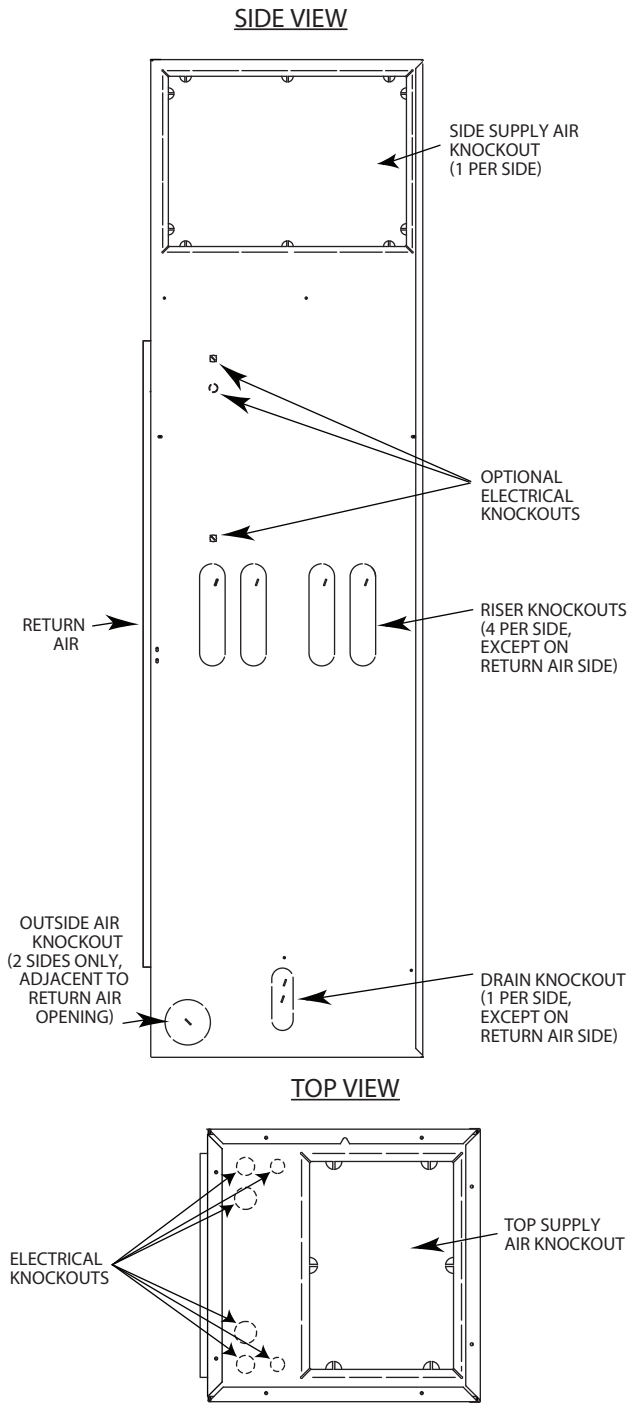


Fig. 17 — Locate 42SU Unit Knockouts

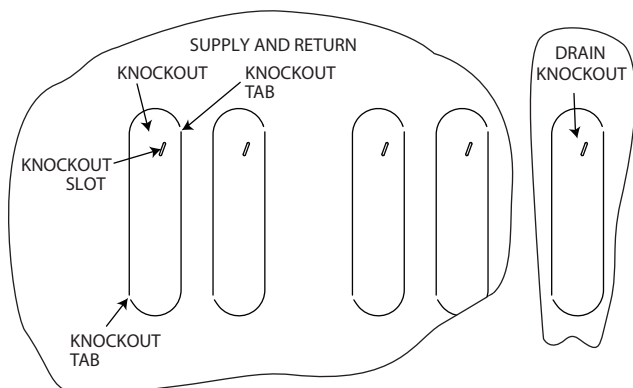


Fig. 18 — Remove 42SU Unit Knockouts

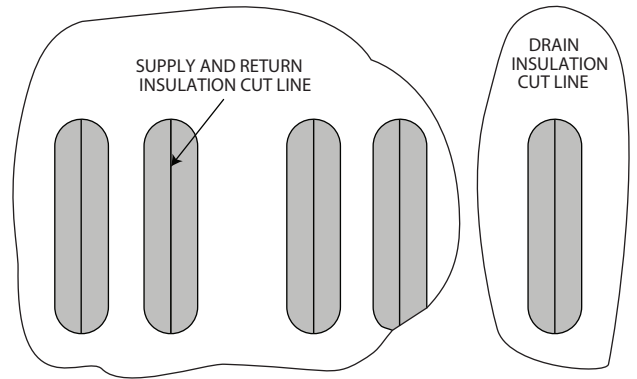


Fig. 19 — 42SU Unit Knockout Insulation Removal

CAUTION

Toxic residues and loose particles resulting from manufacturing and field piping techniques such as joint compounds, soldering flux, and metal shavings may be present in the unit and the piping system. Special consideration must be given to system cleanliness when connecting to solar, domestic or potable water systems.

Submittals and product literature detailing unit operation, controls, and connections should be thoroughly reviewed BEFORE beginning the connection and testing of risers and piping.

To assure optimal unit performance, the supply connection(s) are marked on the unit's coil with an "S" meaning supply or inlet and "R" meaning return or outlet indicating flow direction to and from the coil. Blue letters mark the chilled water connections and red letters mark the hot water connections.

The unit's internal piping is designed to accommodate a total riser vertical movement of $\pm 1\frac{1}{2}$ in., due to thermal expansion and/or contraction, when positioned properly at the jobsite. Risers must be anchored to the building structure to limit expansion and contraction movement to a maximum of 3 inches. Riser anchoring and expansion compensation is not included in the unit and must be provided. Riser end caps, air vents, and/or flushing loops must be provided at the jobsite by the installer.

Proper field riser installation and vertical positioning in the unit should have a pipe run-out to the service valves which are centered in the knockout access slots and that slope down slightly away from the riser (see Fig. 20). This prevents condensation from running back to the riser and possible damage from dripping at the bottom of a riser column. Each job has specific requirements and satisfying those requirements is the responsibility of the installer.

Riser to Unit Installation

Before making the riser joints, the riser insulation must be pulled back away from the joint and protected from heat during the brazing process. Each riser joint must be in vertical alignment. Variations in floor-to-floor dimensions may require field work such as cutting off or extending the risers. This operation is the responsibility of the installer. The riser joint filler material must be selected to withstand the total operating pressure (both static and pumping head) to which the system will be subjected. Low temperature lead alloy solders such as "50/50" and "60/40" are normally not suitable.

Riser to Drain Installation

1. After the applicable supply, return, and drain knockouts have been removed, carefully position the unit so that the riser ball valves penetrate into the unit through the riser

knockouts, making sure the insulation penetrates into the unit as shown in Fig. 20-23.

- Before anchoring the equipment in place, the unit must be leveled and the cabinet must be plumb and squared. The unit may be anchored in place by bolting directly through the unit floor or attaching to the cabinet in some location that will not interfere with drywall or other items such as the supply grille, thermostat, or return access panel. When attaching to the unit cabinet, care must be taken to not penetrate the cabinet in locations that may damage internal components or wiring. The mounting technique is a matter of choice; however, the unit should always be anchored securely to prevent movement during construction and riser expansion and contraction. After anchoring the unit, it is then ready for the various service connections such as riser connections and electrical.
- The plastic flare caps on the end of the riser ball valves should be removed and discarded.
- All universal stack units use reinforced braided stainless steel flexible hose kits for piping between field-installed risers and unit water coils as shown in Fig. 21. The hose kit design has threaded connections on each end. The hose kits allow for riser fluctuations due to thermal expansion.

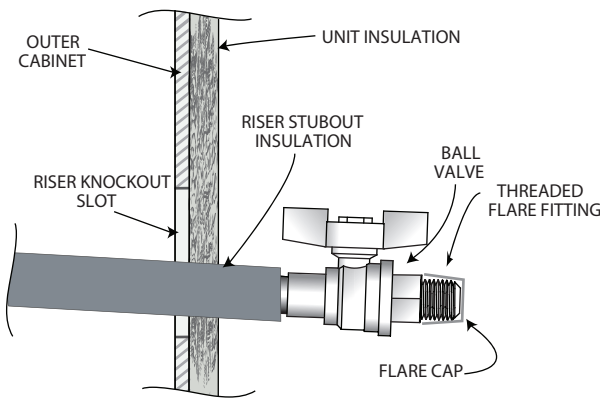


Fig. 20 — 42SU Unit Riser to Unit Installation Setup

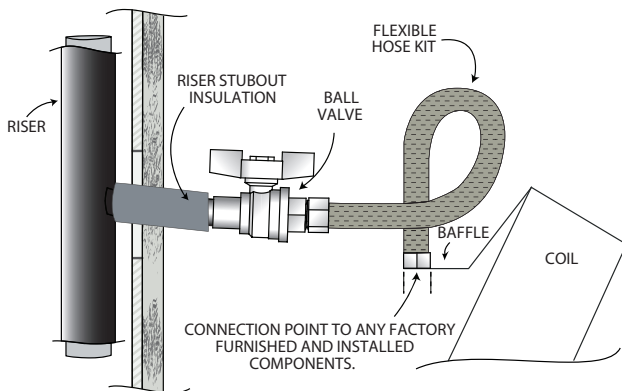


Fig. 21 — 42SU Unit Riser to Unit Installation

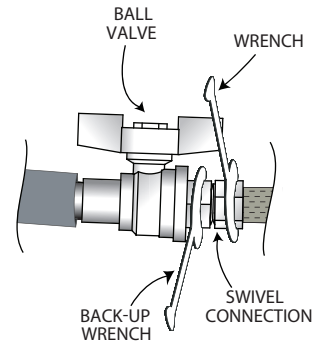


Fig. 22 — 42SU Unit Riser to Unit Installation (Tighten Swivel Connections)

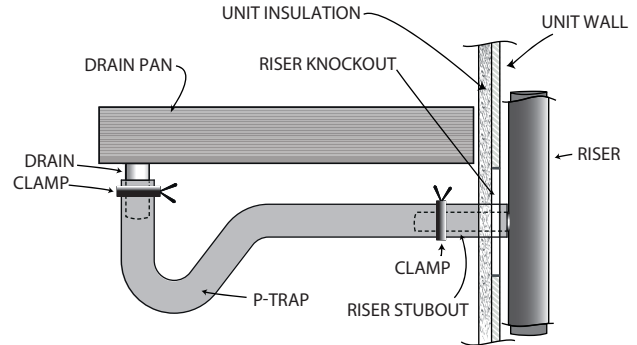


Fig. 23 — 42SU Unit Riser to Drain Installation

- Use a wrench to tighten the swivel connections. Use a backup wrench to hold the riser ball valve stationary to prevent it from bending or twisting during installation as shown in Fig. 22. Be careful not to over-tighten swivel connections.

CAUTION

Hose connection torque requirements are 350 in. lb +10/-0 in. lb to prevent leaks.

- Locate the unit's coil fitting.
- The plastic flare caps on the end of the coil fitting should be removed and discarded.
- Use a wrench to tighten the swivel connections. The baffle acts as a secondary wrench. Be careful not to over-tighten swivel connections.

CAUTION

Hose connection torque requirements are 350 in. lb +10/-0 in. lb to prevent leaks.

- Locate the p-trap drain and rubber hose factory installed to the drain pan connection in the bottom of the unit as shown in Fig. 23.
- Push the rubber drain hose over the riser drain stubout. Be careful not to bend the drain stubout.
- Adjust the hose clamp over the riser stubout and rubber hose to hold in place as shown in Fig. 23.
- Test for leaks. Any and all leaks should be repaired before proceeding with installation. When testing with air or some other gas, it might be necessary to tighten stem packing nuts on some valves to maintain air pressure in the riser. Pressure testing risers with water should be done with the unit service valves closed to prevent flushing debris into the unit valve packages. This will

also allow risers to be drained down after testing in the winter to avoid freeze-up problems. In the event that leaking or defective components are discovered, the sales representative must be notified BEFORE any repairs are attempted. All leaks should be repaired before proceeding with the unit installation.

13. After system integrity has been established, the riser insulation must be pulled back into place over the joint and glued or sealed to prevent sweating and heat loss or gain. All of the risers, including the riser stubouts, should be properly covered with insulation. Internally mounted chilled water piping and valves are located over the drain pan and need not be insulated.

Any fireproofing requirements where risers or piping penetrate floors or walls are the responsibility of the installer. This work should be done only after all pressure testing is completed. The fireproofing method used must accommodate pipe expansion and contraction and the piping must be protected from abrasion and chemical attack. The pipe insulation also must be maintained to prevent sweating and must be protected from wear or erosion at the joint between the insulation and the fireproofing material.

When no risers are ordered for the universal stack unit, it is the responsibility of the installer to make sure that an isolation ball valve is installed between each supply and return piping connection to the unit. Flare fittings are factory provided to allow connection between the ball valves and the hoses.

Supply Air Installation

Each side of the unit has one supply air knockout as well as a supply air knockout on the top of the unit (see Fig. 17).

1. Determine which supply air opening/openings are required for your application.

NOTE: The supply air opening on the riser side of the unit should not be used.

2. Use a sharp retractable knife to trim insulation using center knockout slot/trim line as pattern (see Fig. 24).
3. Use a sharp standard needle nose pliers and grab knockout tab (see Fig. 24).

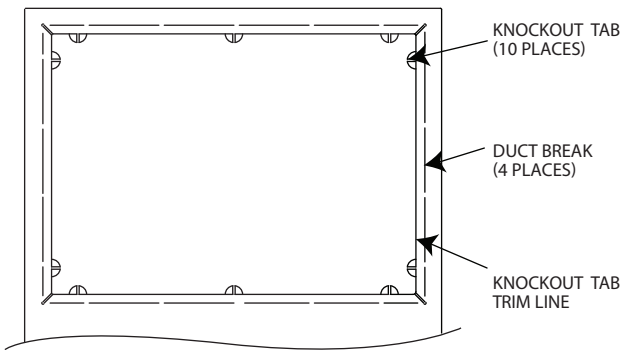


Fig. 24 — 42SU Unit Supply Air Knockout Tab Location

4. Twist or pry pliers back and forth until knockout tab breaks away from unit.
5. Repeat for all supply air tabs until all have been broken.
6. Discard center knockout piece. Be careful of sharp edges.
7. Use a sharp retractable knife to trim any excess insulation using knockout hole as pattern.
8. Use duct pliers (hand seamers) to fold duct flange out of the unit 90 degrees for each side of the supply air opening along duct break (see Fig. 24). The 90-degree flanges

can now be used as drywall stops to prevent coverage of discharge opening (see Fig. 25).

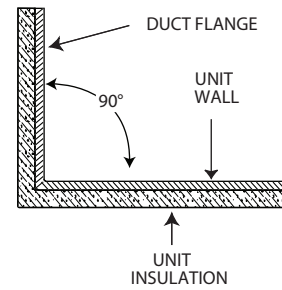


Fig. 25 — 42SU Supply Air Installation

9. Use adhesive or glue to re-attach insulation that has pulled away from the unit during knockout removal process.
10. For ducted applications tape should be applied along and around all of the supply air opening knockouts to prevent air leakage.

All installations should be made in compliance with all governing codes and ordinances. Compliance with all codes is the responsibility of the installing contractor.

42SM UNITS

The unique design of the mega stack fan coil unit allows for field-configuration of each unit. Risers, shown with unit, are for reference only. All risers are factory-fabricated and shipped loose for field installation.

It is important that you identify all of the unit feature locations before proceeding with the installation (see Fig. 9). Also, it must be determined whether your application requires a mating unit (primary/secondary) and its configurations. Consult your local sales representative or the factory for further details on primary/secondary arrangements.

Unit orientation is determined based on the location of the risers in the building. Risers can only be installed on the rear side of the unit and always determine the rear of the mega stack unit. The return air is always on the front (see Fig. 26).

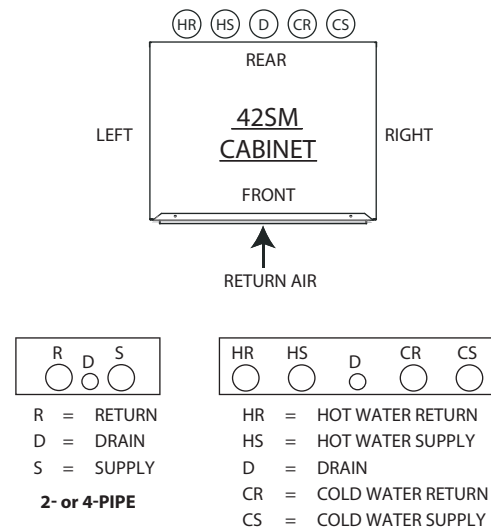


Fig. 26 — 42SM Unit Installation

Supply, Return, and Drain Risers

CAUTION

Toxic residues and loose particles resulting from manufacturing and field piping techniques such as joint compounds, soldering flux, and metal shavings may be present in the unit and the piping system. Special consideration must be given to system cleanliness when connecting to solar, domestic or potable water systems.

Submittals and product literature detailing unit operation, controls, and connections should be thoroughly reviewed BEFORE beginning the connection and testing of risers and piping.

The supply and return connections are marked on the coil stubouts and the valve package depending on your configuration. “CS” means cold water supply, “CR” means cold water return, “HS” means hot water supply, and “HR” means hot water return to indicate flow direction to and from the coil. Blue letters mark the chilled water connections and red letters mark the hot water connections.

The unit internal piping is designed to accommodate a total riser vertical movement of $\pm 1\frac{1}{2}$ in., due to thermal expansion and/or contraction, when positioned properly at the jobsite. Risers must be anchored to the building structure to limit riser expansion and contraction movement to a maximum of 3 inches. Riser anchoring and expansion compensation is not included in the factory-supplied unit and must be field-provided. While some special riser features are available from the factory, riser end caps, air vents, and/or flushing loops are normally provided on the job by the installer.

Riser to Unit Installation

Proper riser installation and vertical positioning in the unit provides for a unit piping run-out to the service valves which are centered in the access slots and level or sloping down slightly away from the riser. This prevents condensation from running back to the riser and possible damage from dripping at the bottom of a riser column. Each job has specific requirements and satisfying those requirements is the responsibility of the installer.

Riser to Drain Installation

1. Carefully position the unit so that the riser ball valves penetrate into the unit through the riser slot making sure the insulation penetrates into the unit as shown in Fig. 27 and 28.

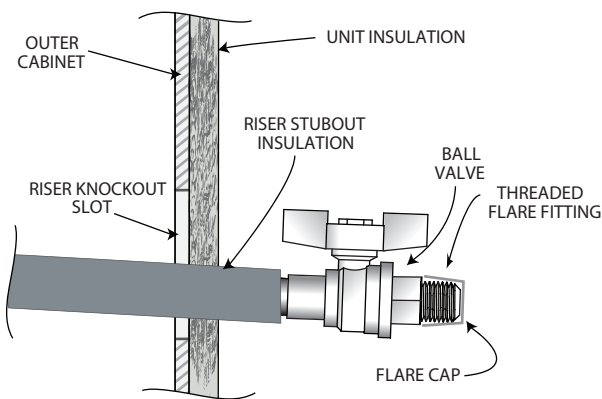


Fig. 27 — 42SM Riser to Unit Installation

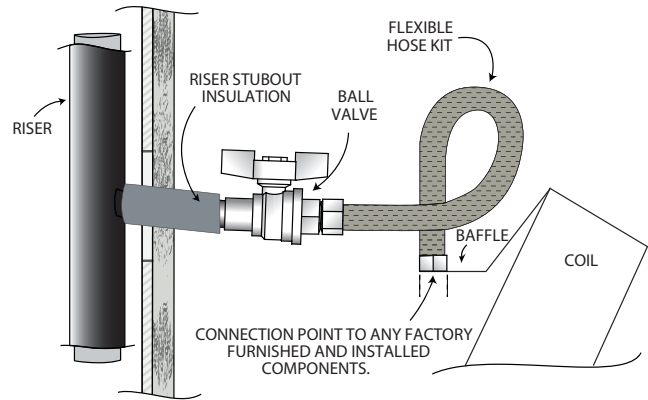


Fig. 28 — 42SM Riser to Unit Connection

2. Before anchoring the equipment in place, the unit must be leveled and the cabinet must be plumb and squared. The unit may be anchored in place by bolting directly through the unit's floor or attaching to the building walls through the cabinet walls in some location that will not interfere with drywall or other items such as the supply grille, thermostat, or return access panel. When attaching sheet rock to the unit cabinet, care must be taken to not penetrate the cabinet in locations that may damage internal components or wiring. The mounting technique is a matter of choice; however, the unit should always be anchored securely to the building to prevent movement during construction and riser expansion and contraction. After anchoring the unit, it is then ready for the various service connections such as riser connections and electrical.
3. The plastic flare caps on the end of the riser ball valves should be removed and discarded.
4. All mega stack units use reinforced braided stainless steel flexible hose kits for piping between field-installed risers and unit water coils as shown in Fig. 28. Each hose has threaded connections on each end. The hose kits allow for riser fluctuations due to thermal expansion.
5. Use a wrench to tighten the swivel connections. Use a backup wrench to hold the riser ball valve stationary to prevent it from bending or twisting during installation as shown in Fig. 29. Be careful not to over-tighten swivel connections.

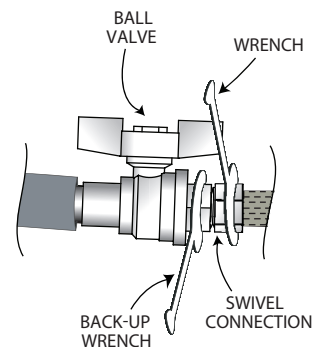


Fig. 29 — 42SM Riser to Unit Installation (Tighten Swivel Connections)

CAUTION

Hose connection torque requirements are 350 in. lb +10/-0 in. lb to prevent leaks.

6. Locate the unit's coil fitting.
7. The plastic flare caps on the end of the coil fitting should be removed and discarded.
8. Use a wrench to tighten the swivel connections. The baffle acts as a secondary wrench. Be careful not to over-tighten swivel connections.

⚠ CAUTION

Hose connection torque requirements are 350 in. lb +10/-0 in. lb to prevent leaks.

9. Locate the p-trap drain and rubber hose factory installed to the drain pan connection in the bottom of the unit as shown in Fig. 30.
10. Push the rubber drain hose over the riser drain stubout. Be careful that you do not bend the drain stubout.
11. Adjust the hose clamp over the riser stubout and rubber hose to hold in place as shown in Fig. 30.

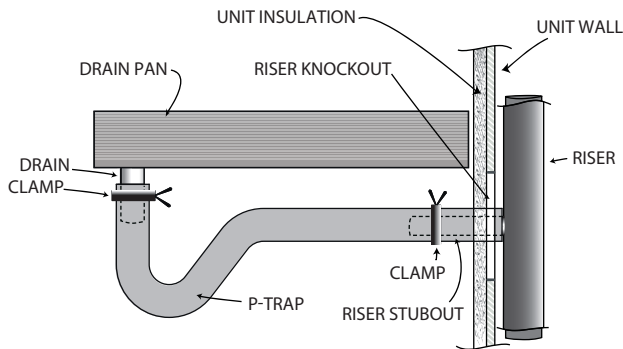


Fig. 30 — 42SM Riser to Drain Installation

12. Test for leaks. Any and all leaks should be repaired before proceeding with installation. When testing with air or some other gas, it might be necessary to tighten stem packing nuts on some valves to maintain air pressure in the riser. Pressure testing risers with water should be done with the unit service valves closed to prevent flushing debris into the unit valve packages. These valves will also allow risers to be drained down after testing in the winter to avoid freeze-up problems. In the event that leaking or defective components are discovered, the sales representative must be notified BEFORE any repairs are attempted. All leaks should be repaired before proceeding with the unit installation.
13. After system integrity has been established, the riser insulation must be pulled back into place over the joint and glued or sealed to prevent sweating and heat loss or gain. All of the risers including the riser stubouts should be properly covered with insulation. Internally mounted chilled water piping and valves are located over the drain pan and need not be insulated.

Any fireproofing requirements where risers or piping penetrate floors or walls are the responsibility of the installer. This work should be done only after all pressure testing is completed. The fireproofing method used must accommodate pipe expansion and contraction and the piping must be protected from abrasion and chemical attack. The pipe insulation also must be maintained to prevent sweating and must be protected from wear or erosion at the joint between the insulation and the fireproofing material.

When no risers are ordered for the mega stack unit, it is the responsibility of the installer to make sure that a

field-supplied isolation ball valve is installed between each supply and return piping connection to the unit. Flare fittings are factory provided to allow connection between the ball valves and the hoses.

Variations in floor-to-floor dimensions may require field work such as cutting off or extending the risers. This operation is the responsibility of the installer. The riser joint filler material must be selected to withstand the total operating pressure (both static and pumping head) to which the system will be subjected. Low temperature lead alloy solders such as “50/50” and “60/40” are normally not suitable.

Chilled water and hot water risers should never be piped to drain down into the condensate riser. Extensive water damage can occur due to drain overflow. Drain chilled and hot water risers to a remote location away from the unit such as sink, room, or floor drains.

All installations should be made in compliance with all governing codes and ordinances. Compliance with all codes is the responsibility of the installing contractor.

Supply Air Installation

1. If the unit has been ordered with a supply air plenum, then each side of the unit has one supply air knockout as well as a supply air knockout on the top of the unit (see Fig. 31 and 32).
2. Determine which supply air opening/openings are required for your application.

NOTE: The supply air opening on the riser side of the unit should not be used.

3. Use a sharp retractable knife to trim insulation using center knockout slot/trim line as pattern (see Fig. 33).
4. Use a sharp standard needle nose pliers and grab knockout tab (see Fig. 33).
5. Twist or pry pliers back and forth until knockout tab breaks away from unit.
6. Repeat for all supply air tabs until all have been broken.
7. Discard center knockout piece. Be careful of sharp edges.
8. Use a sharp retractable knife to trim any excess insulation using knockout hole as pattern.
9. Use duct pliers (hand seamers) to fold duct flange out of the unit 90 degrees for each side of the supply air opening along duct break (see Fig. 33). The 90-degree flanges can now be used as drywall stops to prevent coverage of discharge opening (see Fig. 34).

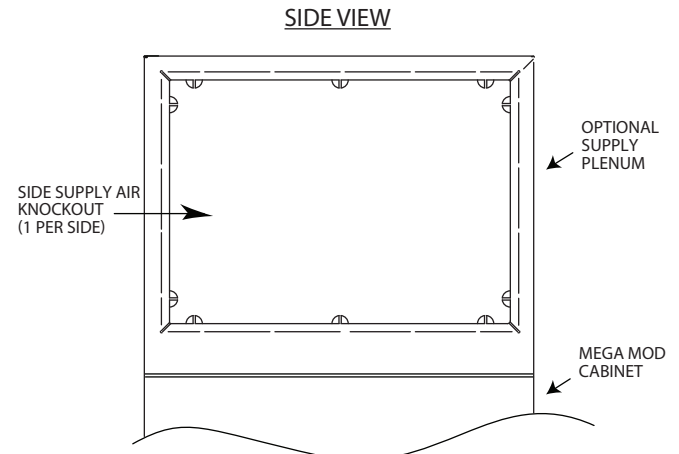


Fig. 31 — 42SM Unit Knockout Locations Side View (Typical)

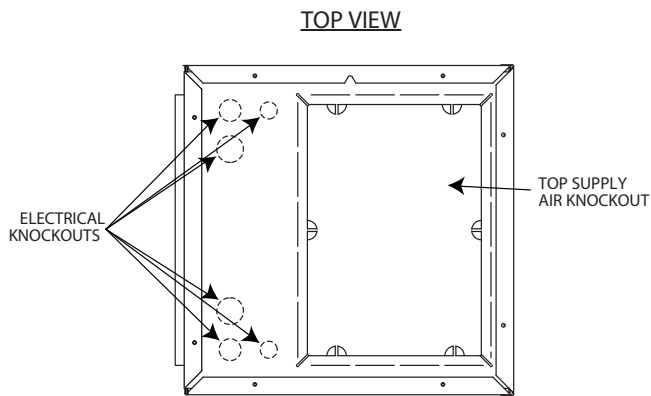


Fig. 32 — 42SM Unit Knockout Locations Top View (Typical)

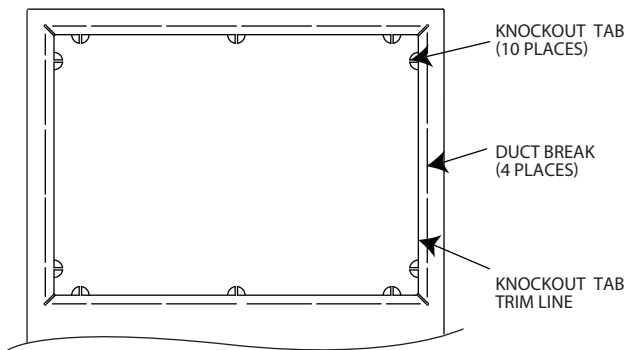


Fig. 33 — 42SM Unit Supply Air Knockout Tab Location

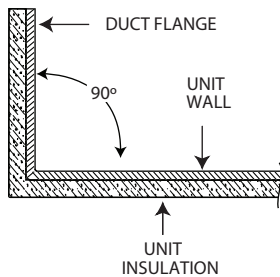


Fig. 34 — 42SM Unit Supply Air Installation

10. Use adhesive or glue to re-attach insulation that has pulled away from the unit during knockout removal process.
11. For ducted applications, tape should be applied along and around all of the supply air opening knockouts to prevent air leakage.

Step 2 — Make Electrical Connections

Refer to unit nameplate for required supply voltage, fan and heater amperage, and required circuit ampacity. Refer to unit wiring diagram for unit and field wiring. Since each project is different and each unit on a project may be different, the installer must be familiar with the wiring diagram and nameplate on the unit before beginning any wiring. Make sure all electrical connections are in accordance with unit wiring diagram and all applicable codes. The type and sizing of all wiring and other electrical components such as circuit breakers, disconnect switches, etc. should be determined by the individual job requirements, and should not be based on the size and/or type of connection provided on the equipment. All installations should be made in compliance with all governing

codes and ordinances. Compliance with all codes is the responsibility of the installing contractor.

The fan motor(s) should never be controlled by any wiring or device other than the factory-supplied switch or thermostat/switch combination unless prior factory authorization is obtained. Fan motor(s) may be temporarily wired for use during construction only with prior factory approval and only in strict accordance with the instructions issued at that time.

The unit electrical supply is designed to enter through knockouts provided in the top of the unit and pass down through matching knockouts in the control section top. Where space allows, power may be pulled directly through the side of the cabinet into the control section.

All components furnished for field installation by either the factory or the controls contractor should be located and checked for proper function and compatibility. All internal components should be checked for shipping damage, and any loose connections should be tightened to minimize problems during start-up.

Any devices such as fan switches or thermostats that have been furnished from the factory for field installation must be wired in strict accordance with the wiring diagram that appears on the unit. Failure to do so could result in personal injury or damage to components, and will void all manufacturer's warranties.

The manufacturer assumes no responsibility for any damages and/or injuries resulting from improper field installation and/or wiring.

FACTORY-INSTALLED OPTIONS

Condensate Overflow Switch

The condensate overflow switch is used to detect a clogged condensate drain pan. The condensate switch uses a normally closed contact to allow the system control power to pass through the switch energizing the water valves and fans allowing normal operation. When an overflow condition is detected by the switch, it opens the NC contact and de-energizes the water valve and fans.

Aquastat

The aquastat must be able to sense whether the flowing water is being chilled or heated and switches a contact closed to provide automatic summer or winter changeover for the system. When a two-pipe cooling/heating system with optional auxiliary electric heat is desired, an additional aquastat is required.

If the valve package is field-supplied, the aquastat must be installed in a location where it will sense the water temperature regardless of control valve position. A bleed bypass should be provided for proper operation of aquastat. The bleed line allows a small amount of water to flow from supply to return piping when the control valve is closed for loop temperature sensing.

All field wiring must be in accordance with governing codes and ordinances. Any modification of unit wiring without factory authorization will invalidate all factory warranties and nullify any agency listings. The manufacturer assumes no responsibility for any damages and/or injuries resulting from improper field installation and/or wiring.

IMPORTANT: Refer to unit wiring label for specific functions. Standard wiring diagram configurations are maintained in separate Fan Coil Wiring Diagram literature. Refer to unit wiring label for specific functions.

Units may be equipped with line voltage controls or 24 vac control systems. The following descriptions are for typical control sequences only. For detailed control operating sequence, refer to thermostat operating instructions.

STANDARD WIRING PACKAGES

Thermostatic Electric Valve Control, 2-Pipe

A thermostatically controlled 2-position valve provides superior control to fan cycling. With this control, the fan runs continuously unless it is manually switched to the OFF or AUTO position. The fan must be on before the valve can be opened to supply water to the coil.

This system can be used for normal 2-pipe changeover systems and can also be furnished for cooling-only or heating-only applications by omitting the changeover and specifying which application is intended. Wiring diagrams show typical applications. Refer to wiring diagram on unit blower housing for unit specific wiring.

Thermostatic 2-Pipe Auxiliary Electric Heat with Valve Control

This system, also called twilight or intermediate season electric heat, goes a long way towards solving the spring and fall control problems of 2-pipe systems.

Chilled water can be run late into the fall, turned on early in the spring, and electric heat will still be available to all units whenever required.

In winter, the system is switched over to hot water. Two changeover devices are required for this. One device switches the action of the thermostat and the other locks out the electric heat when hot water is in the coil.

With this system, the fan runs continuously unless manually switched to OFF or AUTO position. Fan must be on before thermostat can send signal to open chilled water valve or turn on electric heater.

Two control methods are available:

1. Use the standard automatic changeover thermostat with a dead band between heating and cooling.
2. Use a manual changeover thermostat. With this method only one changeover is required.

Be sure to include a 2-way or 3-way electric valve with this system.

NOTE: Wiring diagrams are for typical applications. If other voltages for heaters or controls are specified, wiring may differ from that shown. Refer to wiring diagram on unit blower housing for unit specific wiring.

Thermostat 2-Pipe Total Electric Heat with Valve Control

With this system, the complete heating requirement for the space is provided by the electric heater; the water system is never changed over for heating. It is therefore possible, just as with 4-pipe systems, to have heating or cooling at any time of the year.

The fan runs continuously unless it is manually switched to OFF or AUTO position. Fan must be on before thermostat can send signal to open chilled water valve or turn on electric heater.

Normally, an automatic changeover thermostat with a dead band between heating and cooling is used, but a manual changeover thermostat is also suitable. A 2-way or 3-way valve must also be used so that the chilled water is off whenever the heater is on. No changeover device to sense water temperature is necessary.

NOTE: Wiring diagrams are for typical applications. If other voltages for heaters or controls are specified, wiring may differ from that shown. Refer to wiring diagram on unit blower housing for unit specific wiring.

Thermostatic Valve Control, 4-Pipe

The 4-pipe system provides the ultimate in economy and room temperature control. Both hot water and chilled water are available at any time.

Normally an automatic changeover thermostat is used, but a manual changeover thermostat is also suitable. Two 2-way valves, two 3-way valves, or one 2-way plus one 3-way valve must be selected. An automatic changeover device to sense water temperature is not required.

With this system, the fan runs continuously unless it is manually switched to OFF/AUTO position. Fan must be on before thermostat can send signal to open the chilled water or hot water valve.

NOTE: Wiring diagrams are for typical applications. If other voltages for heaters or controls are specified, wiring may differ from that shown. Refer to wiring diagram on unit blower housing for unit specific wiring.

Step 3 — Make Duct Connections

Install all ductwork to and from unit in accordance with project plans, specifications, and all applicable codes. Duct construction must allow unit to operate within duct external static pressure limits as shown on job submittals. Units designed to operate with ductwork may be damaged if operated without intended ductwork attached.

Units provided with outside air should have some method of low-temperature protection to prevent freeze-up. This protection may be any of several methods, such as a low temperature thermostat to close the outside air damper or a preheat coil to temper the outside air before it reaches the unit. It should be noted that none of these methods will adequately protect the coil in the event of power failure. The safest method of freeze protection is to use glycol in the proper percent solution for the coldest expected air temperature.

Insulate ductwork as required. Use flexible connections to minimize duct-to-unit alignment problems and noise transmission where specified.

The manufacturer assumes no responsibility for undesirable system operation due to improper system design, equipment or component selection, and/or installation of ductwork, grilles, and other related components.

⚠ CAUTION

Prevent dust and debris from settling in unit. If wall finish or color is to be spray-applied, cover all openings to prevent spray from entering unit. Failure to do so could result in damage to the unit and/or the reduction of unit efficiency.

Step 4 — Frame and Finish Unit

Models 42SG, SH, SJ, SU and SM have factory enclosures and may be finished with normally accepted wall covering. However, drywall secured with adhesive bonding alone is *not* recommended.

Concealed units are designed to have gypsum board or other types of wall board applied directly to the unit cabinet surface to a maximum combined thickness of $5/8$ -inch. Use low-profile sheet metal panhead screws to secure wallboard to unit frame. Fasteners may penetrate the cabinet no more than $1/2$ -inch.

These fasteners must be located to avoid damage to internal components and wiring in the same manner as anchoring fasteners. Do not apply sheet metal screw or nails where they can penetrate coil, riser pipes, or electrical junction box and raceways.

Do not secure wallboard to drain pan edges or to control box enclosure. Condensate leaks or electrical shorts may result.

An alternate method of enclosing the unit is to frame one or more sides with studding and apply the wall board to this framing. This method requires specific unit features and return access panels when used on the return-air side of a unit. Units not properly equipped will exhibit poor cooling and/or

heating performance and could experience excessive or premature component failures.

Prevent sheetrock dust or other debris from settling on coil fins, motor-blower assembly or other unit interior surfaces.

EXPOSED UNIT FINISH, TOUCH-UP AND REPAINT

Return access and exposed cabinet units may be furnished with a baked enamel finish. Small scratches in this finish may be repaired with touch-up paint available from the factory. Some colors of touch-up paint are available in aerosol containers and all touch-up paint is available in pint, quart, and gallon cans.

⚠ CAUTION

Proper safety procedures should be followed regarding ventilation and safety equipment during touch-up and repainting since materials may pose a health hazard. The manufacturer's directions should be followed for the products being used.

To repaint the factory-baked enamel, the finish should be prepared by light sanding with no. 280 grit sand paper or no. 000 or no. 0000 fine steel wool. The surface may also be wiped with a liquid surface etch cleaning product such as "No Sand" or "Pasceo." These items should be available at most paint product stores. It should be noted that the more conscientiously this preparation is done, the more effective it will be.

After this preparation is accomplished, the factory finish should provide excellent adhesion for a variety of air-dried top coats. Enamel will give a more durable, higher gloss finish, while latex will not adhere as well and will give a dull, softer finish. Top coats involving an exothermic chemical process between two components, such as epoxies and urethanes, should be avoided.

Factory aerosol touch-up paint may require a number of light "dust coats" to isolate the factory-baked enamel finish from the quick drying touch-up paint.

Step 5 — Cut Out Openings for Grilles and Thermostats

On all units with optional supply-air or return-air grilles, dampers, thermostats, and switch plates, cut out openings where specified on the job plans. Be careful not to cut wires, piping or structural supports.

For remote-mounted thermostats, use a steel thermostat shield ring to protect drywall from thermostat wiring where applicable.

If not included on the unit or furnished from the factory, supply and return grilles should be provided as recommended in the product catalog.

Step 6 — Make Final Preparations

1. Turn off power to the unit (open unit electrical disconnect).
2. Install thermostats and perform any other final wiring as applicable. Check the unit for any loose wires.
3. Perform a final visual inspection. All equipment, plenums, ductwork, and piping should be inspected to verify that all systems are complete and properly installed and mounted, and that no debris or foreign articles such as paper or drink cans are left in the units or other areas. Clean dirt, dust, and other construction debris from unit interior. Be sure to check fan wheel and housing.
4. Rotate fan wheel by hand to be sure it is free and does not rub housing. Check that wing nuts securing fan assembly to fan deck are tight.
5. Ensure all panels and filters are installed before checking fan operation. Turn on power to the unit.

6. Install filter in frame at front of coil. If field-supplied filters are used, be sure size is as specified in Table 1.

⚠ CAUTION

Do not start up or operate unit without filter. Be sure filter and unit interior are clean. Failure to do so could result in damage to the equipment or building.

7. ECM (Electronically Commutated Motor) Blower:
If the unit is equipped with an ECM blower, additional steps may be required during the air balancing process. The ECM blower is controlled by one of three control boards, depending on the options ordered with the unit. Review project submittals or order acknowledgment to determine which ECM control scheme the unit has. Alternatively, match the control board to the illustrations identified in the Control Board Type section.
8. Check the fan and motor operation.
9. Be sure drain line is properly and securely positioned and that the line is clear. Pour water into drain to check operation.
10. Prior to the water system start-up and balancing, the chilled/hot water systems should be flushed to clean out dirt and debris which may have collected in the piping during construction. During this procedure, the system should be flushed from the supply riser to the return riser through a cross-over loop at the end of the riser column, and all unit service valves must be in the closed position. This prevents foreign matter from entering the unit and clogging the valves and metering devices. Strainers should be installed in the piping mains to prevent this material from entering the units during normal operation. Vent all air from unit coil and related piping. Air venting from the unit is accomplished by the use of the standard manual air vent fitting, or the optional automatic air vent fitting installed on the coil. Venting can be accomplished by depressing the needle valve core. Automatic air vents may be unscrewed one turn counterclockwise to speed initial venting, but should be screwed in for automatic venting after start-up operations. When steady steam of water begins to escape, close valve. Vent release air slowly, usually dripping water into drain pan in the process. Make sure all service valves are open and that the motorized control valves, if supplied, are set for automatic operation.

⚠ CAUTION

The air vent provided on the unit is not intended to replace the main system air vents and may not release air trapped in other parts of the system. Inspect the entire system for potential air traps and vent those areas as required, independently. In addition, some systems may require repeated venting over a period of time to properly eliminate air from the system. Failure to properly vent system may negatively affect operation.

11. Check all control valves in the system for proper operation in accordance with valve manufacturer's instructions.
12. For units with factory-installed ball valves with lever handles:
When handle is perpendicular to valve body, there is no flow through valve. Ball valves may be used as shutoff valves.

ECM (ELECTRONICALLY COMMUTATED MOTOR) CONTROL OPTION

CAUTION

Both of the procedures described below require the control box to be powered while adjustments are made. Line voltage components are concealed behind a secondary cover. However, installer should still take all reasonable precautions to prevent electrical shock.

3-Discrete Speed Rheostat Field Adjustment (42SM Only) (See Fig. 35)

The unit has been factory-configured to produce PSC equivalent airflow on high speed, with medium and low speed set at 80% and 60% of high, respectively. If these settings are acceptable, then no further configuring is required. Board mounted rheostats are provided to adjust the airflow pertaining to each output. Each output can be adjusted from 0 to 100% of the motor's factory programmed operating range. To set airflow, connect a volt-meter between "common" (near the red status LED) and Flo1 through Flo4.

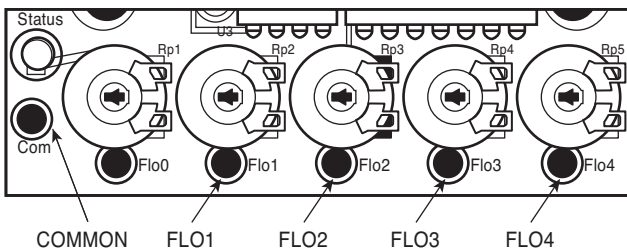


Fig. 35 — ECM Rheostat Speed Board (42SM Only)

Carrier's convention is to preset and wire Flo1 for high speed, Flo2 for medium, and Flo3 for low. Flo4 is not used with any standard thermostat, but may be employed for a more advanced application. The chart on the control box cover associates airflow rates with the voltage indicated on your voltmeter. For each speed, adjust the rheostat until indicated voltage matches the desired value from the airflow table.

3-Discrete Speed Potentiometer Field Adjustment (See Fig. 36)

The unit has been factory configured to produce PSC (permanent split capacitor) equivalent airflow on high speed, with medium and low speed set at 80% and 60% of high, respectively. If these settings are acceptable, then no further configuring is required.

If alternative airflows are desired, use board-mounted pots to adjust the airflow associated with each input. Each output can be adjusted from 0 to 100% of the motor's factory programmed operating range. Use voltmeter and airflow chart (on control box cover) to set values. Refer to Appendix B for adjustment procedure.

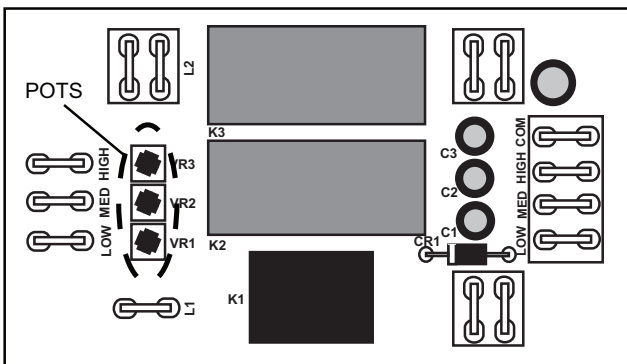


Fig. 36 — 3-Speed Potentiometer Adjustment

4-Discrete Speed Potentiometer Field Adjustment, Solid State

The unit has been factory configured to produce PSC equivalent airflow on high speed, with medium and low speed set at 80% and 60% of high, respectively. If these settings are acceptable, then no further configuring is required.

Board mounted pots are provided to adjust the airflow pertaining to each output. Each output can be adjusted from 0 to 100% of the motor's factory programmed operating range. Use voltmeter and airflow chart (on the control box cover) to set values. Refer to Appendix C for adjustment procedure.

Variable Airflow for 0-10 vdc Input

No control board is required and no field adjustments are possible. Motor uses 0 to 10 vdc signal directly. See control box label. Fan enable at 1.5 vdc.

START-UP

CAUTION

Both of the start-up and servicing procedures described below require the control box to be powered while adjustments are made. Line voltage components are concealed behind a secondary cover. However, installer should still take all reasonable precautions.

Before beginning any start-up operation, the start-up personnel should familiarize themselves with the unit, options and accessories, and control sequence to understand the proper system operation. All personnel should have a good working knowledge of general start-up procedures and have the appropriate start-up and balancing guides available for consultation.

The building must be completely finished including doors, windows, and insulation. All internal walls and doors should be in place and in the normal position. In some cases, the interior decorations and furniture may influence overall system performance. The entire building should be as complete as possible before beginning any system balancing.

Except as required during start-up and balancing operations, no fan coil units should be operated without all the proper duct-work attached, supply and return grilles in place, and all access doors and panels in place and secure.

Start-up procedures vary depending on time of year (summer or winter) and building characteristics (new building/old building, occupied/unoccupied, etc.)

Start-up in the cooling mode requires that proper care be given to avoid condensation problems. Condensation forms on surfaces that are colder than the dew point of the surrounding air. If a unit is started and is piped with low-temperature chilled water in a hot, humid atmosphere, condensation will form on many parts of the unit. In order to avoid excessive condensation, higher temperature water should initially be used (approximately 65°F to 70°F) and the fan coil control set at low or medium fan speed. Be sure the fan current does not exceed motor nameplate values. Also, outside air supply fans, and bathroom and kitchen exhaust fans should be off.

As the building temperature drops, the chilled water temperature can be gradually reduced until it reaches 50°F. At this point, the outside air fans can be turned on. When the chilled water temperature is reduced to its design point, the exhaust fans can be turned on.

Cooling/Heating System

Prior to the water system start-up and balancing, flush the chilled / hot water systems to clean out dirt and debris which may have collected in the piping during construction. During the process, all unit service valves must be in the closed position to prevent foreign matter from entering the unit and clogging the valves and metering devices. Strainers should be in-

stalled in the piping mains to prevent such material from entering units during normal operation.

During system filling, air venting from the unit is accomplished by the use of standard manual air vent or optional automatic air venting installed on the coil. Manual air vents are basically Schrader valves. For air venting, depress the valve until the air has vented the coil. When water begins to escape through the valve, release the valve. Automatic air vents may be unscrewed one turn counterclockwise to speed initial venting but should be screwed in for automatic venting after start-up operation. See Fig. 37 and 38.

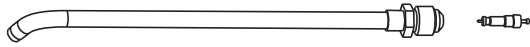


Fig. 37 — Manual Air Vent

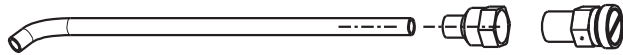


Fig. 38 — Automatic Air Vent

Air System Balancing

All duct stubs, grilles, filters, and return-access panels must be properly installed to establish actual system operating conditions BEFORE beginning air balancing operations.

Each individual unit and the attached ductwork is a unique system with its own operating characteristics. For this reason, air balancing is normally done by balance specialists who are familiar with all procedures required to properly establish air distribution and fan-system operating conditions. These procedures should not be attempted by unqualified personnel.

Units with no ductwork have air volumes predetermined at the factory by supply grille size and normally do not require air balancing other than selecting the desired fan speed. Units furnished with optional dampers on supply grilles may require some small adjustments to “fine tune” the air delivery to each grille. Opposed blade balancing dampers are not available for all grilles on a unit with electric heat.

After proper system operation is established, the actual unit air delivery and the actual fan motor amperage draw for each unit should be recorded in a convenient place for future reference.

Water System Balancing

A complete knowledge of the hydronic system, along with its components and controls, is essential to proper water system balancing. This procedure should not be attempted by unqualified personnel. The system must be complete, and all components must be in operating condition BEFORE beginning water system balancing operations.

Each hydronic system has different operating characteristics depending on the devices and controls used in the system. The actual balancing technique may vary from one system to another.

After the proper system operation is established, the appropriate system operating conditions such as various water temperatures and flow rates should be recorded in a convenient place for future reference.

Before and during water system balancing, conditions may exist due to incorrect system pressures which may result in noticeable water noise or undesired valve operation. After the entire system is balanced, these conditions will not exist on properly designed systems.

Water Treatment

Proper water treatment is a specialized industry. Carrier recommends consulting an expert in this field to analyze the water for compliance with the water quality parameters listed in Table 2 and to specify the appropriate water treatment regimen. The expert may recommend typical additives such as

rust inhibitors, scaling preventative, antimicrobial growth agents or algae preventatives. Anti-freeze solutions may be used to lower the freezing point.

Carrier’s water coil tubes and headers are constructed of pure copper. Multiple brass alloys may be present in the valve package, depending on unit configuration. It is the user’s responsibility to ensure the tube and piping materials furnished by Carrier are compatible with the treated water.

Failure to provide proper water quality will void the fan coils unit’s warranty.

Table 2 — Water Quality Concentrations

WATER CONTAINING	REQUIRED CONCENTRATION
Sulphate	Less than 200 ppm
pH	7.0 to 8.5
Chlorides	Less than 200 ppm
Nitrate	Less than 100 ppm
Iron	Less than 4.5 mg/l
Ammonia	Less than 2.0 mg/l
Manganese	Less than 0.1 mg/l
Dissolved Solids	Less than 1000 mg/l
CaCO ₃ Hardness	300 to 500 ppm
CaCO ₃ Alkalinity	300 to 500 ppm
Particulate Quantity	Less than 10 ppm
Particulate Size	800 micron max

Controls Operation

Before proper control operation can be verified, all other systems must be operating properly. The correct water and air temperatures must be present for the control function being tested. Some controls and features are designed to not operate under certain conditions. For example, on a two-pipe cooling/heating system with auxiliary electric heat, the electric heater cannot be energized with hot water in the system.

A wide range of controls, electrical options and accessories may be used with the equipment covered in this manual. Consult the approved unit submittals, order acknowledgments, and other literature for detailed information regarding each individual unit and its controls. Since controls and features may vary from one unit to another, care should be taken to identify the controls used on each unit and their proper control sequence. Information provided by component manufacturers regarding installation, operation, and maintenance of their individual controls is available upon request.

When changing from one mode to another (cooling to heating or heating to cooling), it may take some time to actually notice a change in the leaving air temperature. In addition, some units may be designed for a very low air temperature rise in heating. Before declaring a unit inoperative or a component defective, it may be necessary to verify operation by more than one method.

SERVICE

Excessive Condensation on Unit

Running chilled water through a fan coil unit with the unit fan off can cause excessive condensation. If fan cycling is used, a water flow control valve should be installed to shut off the water when the fan stops.

Other methods of control that avoid condensation problems are as follows:

1. Continuous fan operation with motorized chilled water valve controlled by a thermostat.
2. Continuous fan operation with thermostat control to switch fan from high to low speed (instead of off).

To Clean Coil

1. Be sure electrical service switch is open, locked, and tagged while working on unit.
2. Remove return-air grille access panel and brush between coil fins with stiff wire brush. Care should be taken to not damage coil fins. Follow-up by cleaning with vacuum cleaner. If coil is cleaned with air hose and nozzle, take care not to drive dirt and dust into other components. Blow air through the coil fins from the leaving air face. This should again be followed by vacuuming. Units provided with the proper type of air filters, replaced regularly, will require less frequent coil cleaning.
3. Install clean filter. Refer to Filters section.

Check Drain

Lock open and tag unit electrical service switch.

Check drain pan, drain line and trap before initial start-up and at start of each cooling season. A standard type pipe cleaner for $\frac{3}{4}$ -in. ID pipe can be used to ensure that pipe is clear of obstruction so that condensate is carried away. Check the drain line at filter cleaning time during the cooling season. Be sure that debris has not fallen into unit through supply-air grille. Should the growth of algae and/or bacteria be a concern, consult an air conditioning and refrigeration supply organization familiar with local conditions for chemicals or other solutions available to control these agents.

Fan Motor Bearings

Lock open and tag unit electrical service switch.

Standard motors are permanently sealed and lubricated. No lubrication is required unless special motors have been supplied or unusual operating conditions exist.

Clean Fan Wheel

Lock open and tag unit electrical service switch.

For access to fan assembly, remove front or bottom panel. Fan assembly may be removed from its tracks if unit has a long conduit lead. Dirt and debris should not be allowed to accumulate on the blower wheel or housing. This can result in an unbalanced blower wheel condition which can damage a blower wheel or motor. The wheel and housing may be cleaned periodically using a vacuum cleaner and a brush, taking care not to dislodge the factory balancing weights on the blower wheel blades.

Clean Electric Heater

Electric resistance heaters typically require no normal periodic maintenance when unit air filters are changed properly. The operation and service life may be affected by other conditions and equipment in the system. The two most important operating conditions for an electric heater are proper airflow and proper supply voltage. High supply voltage and/or poorly distributed or insufficient airflow over the element will result in element overheating and possible limit switch opening. This condition may result in the heater cycling on the high-limit thermal cutout. The high-limit thermal cutout device is a safety device only and is not intended for continuous operation. With proper unit application and operation, the high-limit thermal cutout will not operate. This device only operates when a problem exists, and ANY condition that causes high-limit cutout MUST be corrected immediately. High supply voltage also causes excessive amperage draw and may trip the circuit breaker or blow the fuses on the incoming power supply.

After proper airflow and supply power are assured, regular filter maintenance is important to provide clean air over the heater. Dirt that is allowed to deposit on the heating element will cause hot spots and eventual element burn through. These hot spots will normally not be enough to trip the high-

limit thermal cutout device and may not be evident until actual heater element failure.

Electrical Wiring and Controls

The electrical operation of each unit is determined by the components and wiring of the unit. This may vary from unit to unit. Consult the wiring diagram attached to the unit for the actual type and number of controls provided on each unit.

The integrity of all electrical connections should be verified at least twice during the first year of operation. Afterwards, all controls should be inspected regularly for proper operation. Some components may experience erratic operation or failure due to age. Wall thermostats may also become clogged with dust and lint and should be periodically inspected and cleaned to provide reliable operation.

When replacing any components such as fuses, contactors, or relays, use only the exact type, size and voltage component as furnished from the factory. Any deviation without factory authorization could result in personal injury or damage to the unit. This will also void all factory warranties. Only factory-supplied replacement parts ensure that the warranty and agency status remain in effect. All repair work should be done in such a manner as to maintain the equipment in compliance with governing codes, ordinances and testing agency listings.

More specific information regarding the use and operating characteristics of the standard controls offered by the manufacturer are contained in other manuals.

Valves and Piping

No formal maintenance is required on the valve-package components most commonly used with fan coil units other than a visual inspection for possible leaks in the course of other normal periodic maintenance. In the event that a valve should need replacement, the same precautions taken during the initial installation to protect the valve package from excessive heat should also be used during replacement.

Filters

The type of throwaway filter most commonly used on fan coil units should be replaced on a regular basis. The time interval between each replacement should be established based on regular filter inspection and should be recorded in the log for each unit. Refer to product catalog for recommended filter size for each product type and size. If the replacement filters are not purchased from the factory, the filter used should be of same type and size as those furnished from or recommended by the factory. Pleated media or extended surface filter should not be used since the high air pressure drop encountered with these type of filters is not compatible with the type of fan coil unit covered in the manual.

A maintenance schedule for permanent filters should be developed in the same manner as throwaway filters. Unlike throwaway filters, permanent filters may be cleaned and reinstalled in the unit instead of being discarded when dirty. The optional factory permanent filter may be cleaned in hot soapy water to remove any trapped dirt, then set aside on edge to dry.

Before replacing the filter in the unit, it should be recharged with some type of entrapment film. The filter should be sprayed on both sides or submerged in the film to assure complete coverage. The filter should not be allowed to soak in the film but should be immediately removed and the excess film drained from the filter before re-installation in the unit.

NOTE: Permanent filters normally have less static pressure loss than throwaway filters.

Drain

The drain must be checked before initial start-up and at the beginning of each cooling season to assure that the drain trap

and line are clear. If it is clogged, take steps to clear the debris so that condensate will flow easily.

Make periodic checks of the drain during the cooling season to maintain a free flowing condensate. Units provided with secondary or tell-tale drain connection will indicate a clogged main line by flow from the tell-tale connection.

NOTE: Should the growth of algae and/or bacteria be a concern, consult an air conditioning and refrigeration supply organization familiar with local conditions for chemical or other solution available to control these growths.

Warranty

All equipment and components sold through the Parts Department are warranted under the same conditions as the standard manufacturer's warranty with the exception that the warranty period is twelve (12) months unless the component is furnished as a warranty replacement. Parts furnished as warranty replacements are warranted for the remaining term of the original unit warranty or not less than thirty (30) days.

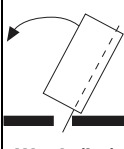
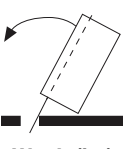
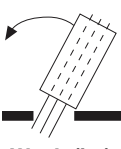
APPENDIX A — BLOCK-OUT CONSTRUCTION

This section provides rough guidelines for the block-out slot size for 42S units with risers included. Therefore, the floor block-out slot dimensions listed in this document should be considered estimates. The engineer for the project is ultimately responsible for the actual dimensions and meeting local code requirements.

To select using the following Tables A-D, locate the appropriate unit size in the cabinet charts (dimensions are given in inches). Then, follow the row across to locate the clear height (If the clear height exceeds 96-in. use the 96-in. block-out size). Under type of installation, read the block-out size. If the clear height is lower than listed or is not recommended (NR) in the standard 88-in. cabinet chart, use the short 79-in. cabinet chart. If the clear height is lower than listed or is not recommended (NR) in the short 79-in. cabinet chart, please contact the factory.

For examples of clearance height, unit placement, and riser length see Fig. A. For possible piping arrangements of the 42SJ unit see Fig. B.

Table A — STANDARD 88-IN. CABINET, TWO-PIPE UNITS

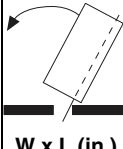
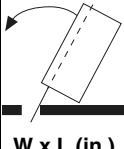
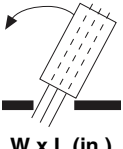
UNIT SIZE	CLEAR HEIGHT (in.)	BLOCK-OUT CONSTRUCTION SIZE TYPE OF INSTALLATION			
		TYPE 1	TYPE 2	TYPE 3*	
					
	W x L (in.)	W x L (in.)	W x L (in.)		
Single Unit and Siamese Back-to-Back					
03, 04	96	57/8 x 15	51/8 x 15	5 x 15	
	95	61/4 x 15	53/8 x 15		
	94	65/8 x 15	55/8 x 15		
	93	7 x 15	NR		
06, 08	92	71/2 x 15	NR	NR	
	96	61/4 x 18	53/8 x 18	5 x 18	
	95	63/4 x 18			
	94	71/8 x 18	NR		
93	75/8 x 18	NR			
10, 12	96	71/2 x 22	51/8 x 18	5 x 22	
	95	71/2 x 22	NR		
	94	8 x 22	NR		
42SJ Back-to-Back					
03, 04	93 and above	Not recommended for standard 42SJ. For Siamese 42SJ use Single unit guidelines.		5 x 15	
06, 08	93 and above			5 x 18	
10, 12	93 and above			5 x 22	

* Not recommended for Siamese Back-to-Back Installation.

NOTES:

- CLEAR HEIGHT is the dimension from the floor to ceiling (See Fig. A of this appendix).
- The above charts allow 1-in. tolerance in clear height to allow for variance in floor-to-floor dimensions.
- Consult factory for applications with 3-in. and 4-in. risers and insulations exceeding 3/4-inch.
- See Figure B for 42SJ unit and piping arrangements.

Table B — SHORT 79-IN. CABINET, TWO-PIPE UNITS

UNIT SIZE	CLEAR HEIGHT (in.)	BLOCK-OUT CONSTRUCTION SIZE TYPE OF INSTALLATION			
		TYPE 1	TYPE 2	TYPE 3*	
					
	W x L (in.)	W x L (in.)	W x L (in.)		
Single Unit and Siamese Back-to-Back					
03, 04	91	41/8 x 15	41/4 x 15	5 x 15	
	90	5 x 15	41/2 x 15		
	89	51/8 x 15	45/8 x 15		
	88	51/8 x 15	5 x 15		
06, 08	91	5 x 18	41/4 x 18	5 x 18	
	90	51/8 x 18	41/2 x 18		
	89	51/8 x 18	45/8 x 18		
	88	61/8 x 18	5 x 18		
10, 12	91	51/8 x 22	41/4 x 22	5 x 22	
	90	6 x 22	41/2 x 22		
	89	61/8 x 22	45/8 x 22		
	88	7 x 22	5 x 22		
42SJ Back-to-Back					
03, 04	88 and above	Not recommended for standard 42SJ. For Siamese 42SJ use Single unit guidelines.		5 x 15	
06, 08	88 and above			5 x 18	
10, 12	88 and above			5 x 22	

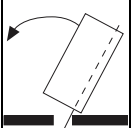
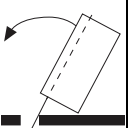
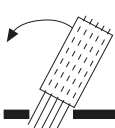
* Not recommended for Siamese Back-to-Back Installation.

NOTES:

- CLEAR HEIGHT is the dimension from the floor to ceiling (See Fig. A of this appendix).
- The above charts allow 1-in. tolerance in clear height to allow for variance in floor-to-floor dimensions.
- Consult factory for applications with 3-in. and 4-in. risers and insulations exceeding 3/4-inch.
- See Figure B for 42SJ unit and piping arrangements.

APPENDIX A — BLOCK-OUT CONSTRUCTION (cont.)

Table C — STANDARD 88-IN. CABINET (Four-Pipe 42S Units)

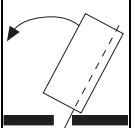
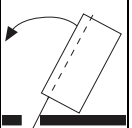
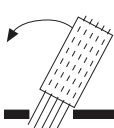
UNIT SIZE	CLEAR HEIGHT (in.)	BLOCK-OUT CONSTRUCTION SIZE TYPE OF INSTALLATION		
		TYPE 1	TYPE 2	TYPE 3*
				
W x L (in.)	W x L (in.)	W x L (in.)		
Single Unit and Siamese Back-to-Back				
03, 04	96	5 ⁷ / ₈ x 16†	5 ¹ / ₈ x 16†	5 x 18**
	95	6 ¹ / ₄ x 16†	5 ³ / ₈ x 16†	5 x 18 ¹ / ₄ **
	94	6 ⁵ / ₈ x 16†	5 ⁵ / ₈ x 16†	5 x 18 ⁵ / ₈ **
	93	7 x 16†	NR	
	92	7 ¹ / ₂ x 16†	NR	
06, 08	96	6 ¹ / ₄ x 18	5 ³ / ₈ x 18	5 x 18††
	95	6 ³ / ₄ x 18		5 x 18 ¹ / ₄ ††
	94	7 ¹ / ₈ x 18	NR	5 x 18 ⁵ / ₈ ††
	93	7 ⁵ / ₈ x 18	NR	NR
10, 12	96	7 ¹ / ₂ x 22	5 ¹ / ₈ x 22	5 x 22
	95	7 ¹ / ₂ x 22	NR	
	94	8 x 22		NR
42SJ Back-to-Back				
03, 04	96	Not recommended for standard 42SJ. For Siamese 42SJ use Single unit guidelines.	5 x 18	
	95			
	94			
06, 08	96			
	95			
10, 12	96	5 x 22		
	95			

- * Not recommended for Siamese Back-to-Back Installation.
- † Use 16-in. block-out length for risers up to 1¹/₂-in. in diameter. Use 17-in. block-out length for risers up to 2¹/₂-in. in diameter. Since the cabinet is 17-in. wide, it may be necessary to cover the exposed block-out if the cabinet is not centered.
- ** This block-out length is for risers up to 1¹/₂-in. in diameter. Add 1-in. to the block-out length for risers up to 2¹/₂-in. in diameter. Both block-out lengths are greater than the cabinet width. It will be necessary to cover the exposed block-out at the side(s) of the cabinet.
- †† This block-out length is for risers up to 1¹/₂-in. in diameter. Add 1-in. to block-out length for risers up to 2¹/₂-in. in diameter.
- *** Use 17-in. block-out length for risers up to 1¹/₂-in. in diameter. Since the cabinet is 17-in. wide, it may be necessary to cover the exposed block-out if the cabinet is not centered. Use 18-in. block-out length for risers up to 2¹/₂-in. in diameter. It will be necessary to cover the exposed block-out at the side(s) of the cabinet.

NOTES:

1. CLEAR HEIGHT is the dimension from the floor to ceiling (See Fig. A of this appendix).
2. The above charts allow 1-in. tolerance in clear height to allow for variance in floor-to-floor dimensions.
3. Consult factory for applications with 3-in. and 4-in. risers and insulations exceeding 3/4-inch.
4. See Figure B for 42SJ unit and piping arrangements.

Table D — SHORT 79-IN. CABINET (Four-Pipe 42S Units)

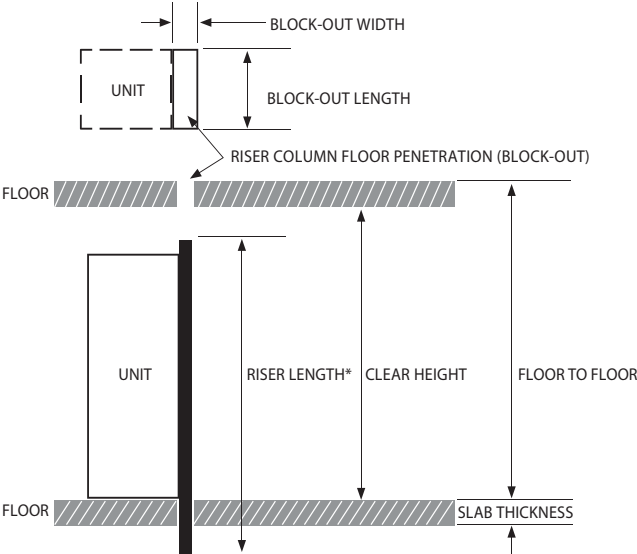
UNIT SIZE	CLEAR HEIGHT (in.)	BLOCK-OUT CONSTRUCTION SIZE TYPE OF INSTALLATION		
		TYPE 1	TYPE 2	TYPE 3*
				
W x L (in.)	W x L (in.)	W x L (in.)		
Single Unit and Siamese Back-to-Back				
03, 04	91	4 ¹ / ₈ x 16†	4 ¹ / ₄ x 16†	5 x 17***
	90	5 x 16†	4 ¹ / ₂ x 16†	
	89	5 ¹ / ₈ x 16†	4 ⁵ / ₈ x 16†	5 x 17 ¹ / ₂ **
	88	5 ¹ / ₈ x 16†	5 x 16†	5 x 17 ³ / ₄ **
06, 08	91	5 x 18	4 ¹ / ₄ x 18	5 x 18
	90	5 ³ / ₈ x 18	4 ¹ / ₂ x 18	
	89	5 ³ / ₄ x 18	4 ⁵ / ₈ x 18	5 x 18 ¹ / ₂
	88	6 ¹ / ₈ x 18	5 x 18	5 x 18 ³ / ₄
10, 12	91	5 ⁵ / ₈ x 22	4 ¹ / ₄ x 22	5 x 22
	90	6 x 22	4 ¹ / ₂ x 22	
	89	6 ¹ / ₂ x 22	4 ⁵ / ₈ x 22	
	88	7 x 22	5 x 22	
42SJ Back-to-Back				
03, 04	91	Not recommended for standard 42SJ. For Siamese 42SJ use Single unit guidelines.	5 x 17	
	90			
	89			
	88			
06, 08	91			
	90			
	89			
	88			
10, 12	91	5 x 22		
	90			
	89			
	88			

- * Not recommended for Siamese Back-to-Back Installation.
- † Use 16-in. block-out length for risers up to 1¹/₂-in. in diameter. Use 17-in. block-out length for risers up to 2¹/₂-in. in diameter. Since the cabinet is 17-in. wide, it may be necessary to cover the exposed block-out if the cabinet is not centered.
- ** This block-out length is for risers up to 1¹/₂-in. in diameter. Add 1-in. to the block-out length for risers up to 2¹/₂-in. in diameter. Both block-out lengths are greater than the cabinet width. It will be necessary to cover the exposed block-out at the side(s) of the cabinet.
- †† This block-out length is for risers up to 1¹/₂-in. in diameter. Add 1-in. to block-out length for risers up to 2¹/₂-in. in diameter.
- *** Use 17-in. block-out length for risers up to 1¹/₂-in. in diameter. Since the cabinet is 17-in. wide, it may be necessary to cover the exposed block-out if the cabinet is not centered. Use 18-in. block-out length for risers up to 2¹/₂-in. in diameter. It will be necessary to cover the exposed block-out at the side(s) of the cabinet.

NOTES:

1. CLEAR HEIGHT is the dimension from the floor to ceiling (See Fig. A of this appendix).
2. The above charts allow 1-in. tolerance in clear height to allow for variance in floor-to-floor dimensions.
3. Consult factory for applications with 3-in. and 4-in. risers and insulations exceeding 3/4-inch.
4. See Figure B for 42SJ unit and piping arrangements.

APPENDIX A — BLOCK-OUT CONSTRUCTION (cont.)



NOTE: Riser Length = Floor-to-floor dimensions ± 2-in. (maximum riser length of 115-in. When riser length must exceed 115-in. use 104-in. riser length and extensions. Extension length = floor-to-floor dimension ± 4-in. to 104-in.

Fig. A — Block-Out Construction Clear Height

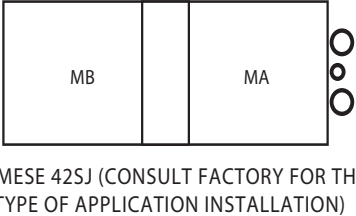
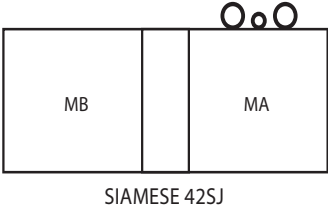
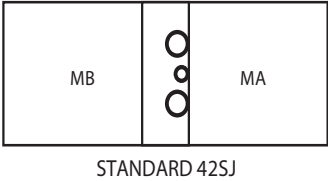


Fig. B — 42SJ Block-Out Construction Piping Arrangement

APPENDIX B — POTENTIOMETER ADJUSTMENT

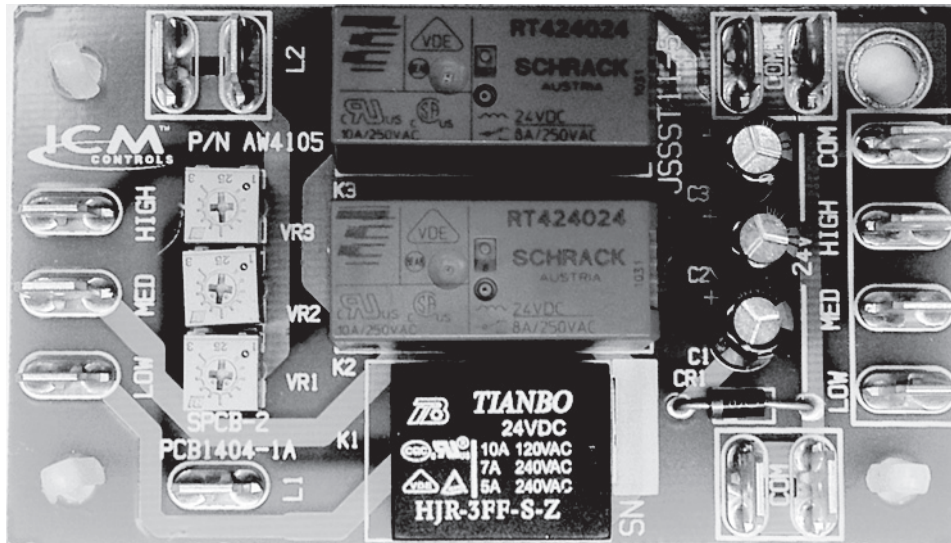


Fig. C — 3-Speed ECM

Adjusting the low, medium, and high potentiometers requires the use of a multi-meter capable of measuring 0~5 vdc (See Fig. C).

1. Only trained and qualified individuals should attempt to adjust or service components on any electrical component. Failure to follow safety rules could result in electrical shock or hazard.
2. Unit must be powered to perform the following procedure. If main power is not available, connecting a temporary 24-v-40VA power supply to parallel with a secondary outputs of the unit's transformer is recommended.
3. Set the electrical multi-meter to volts direct current (vdc) on the 0~5 or 0~20 vdc scale.
4. Attach black (negative) lead of meter to the DC common terminal, labeled "L2" above the potentiometer and to the left of the orange relay.
5. Attach the red (positive) lead of the meter to the red wire that bridges the 0-10 vdc outputs: high, medium, and low.
6. High Speed: Close high speed relay by applying 24-v to the high terminal. Using a small screwdriver, turn the VR3 potentiometer so the meter measures 4.51 vdc. This will set the ECM speed to 90% of maximum for high speed. Open the high speed relay.
7. Medium Speed: close medium speed relay by applying 24-v to the medium terminal. Using a small screwdriver, turn the VR2 potentiometer so the meter measures 3.53 vdc. This will set the ECM speed to 70% of maximum for medium speed. Open the medium speed relay.
8. Low Speed: Close low speed relay by applying 24-v to the low terminal. Using a small screwdriver, turn the VR1 potentiometer so the meter measures 2.06 vdc. This will set the ECM speed to 40% of maximum speed for low speed operation. Open the low speed relay.

APPENDIX C — EVO/ECM 4-SPEED ADJUSTMENT

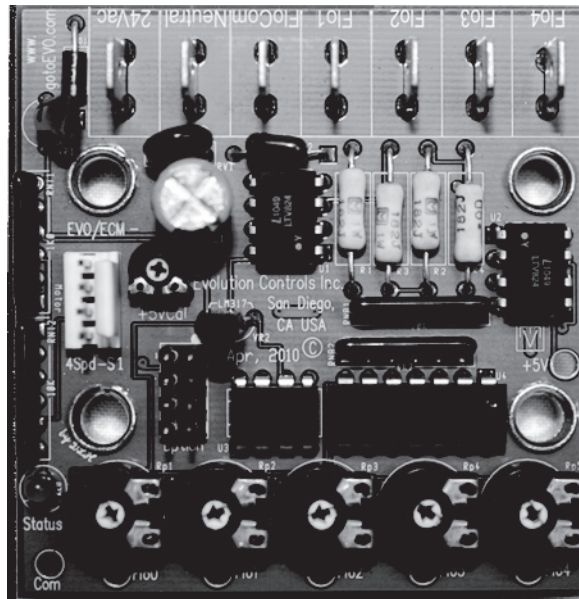


Fig. D — 4-Speed ECM

Adjusting the Flo1, Flo2, Flo3 potentiometers requires the use of a multi-meter capable of measuring 0~5 vdc.

1. Only trained and qualified individuals should attempt to adjust or service components on any electrical component. Failure to follow safety rules could result in electrical shock or hazard.
2. 24 vac power must be supplied to ECM board to make adjustments.
3. Set the electrical multi-meter to volts direct current (vdc) on the 0~5 or 0~20 vdc scale.
4. Attach black (negative) lead of meter to the “Com” terminal to the left of the potentiometers and below the status light.
5. Attach the red (positive) lead of the meter to the high speed “Flo1” terminal below the potentiometer.
6. High Speed: Using a small screwdriver, turn the Flo1 potentiometer so the meter measures 4.51 vdc. This will set the ECM speed to 90% of maximum for high speed operation.
7. Medium Speed: Using a small screwdriver, turn the Flo2 potentiometer so the meter measures 3.53 vdc. This will set the ECM speed to 70% of maximum speed for medium speed operation.
8. Low Speed: Using a small screwdriver, turn the Flo3 potentiometer so the meter measures 2.06 vdc. This will set the ECM speed to 40% of maximum speed for low speed operation.
9. For setting of Flo0 and Flo4, contact Carrier, otherwise these potentiometers should be set to full counter-clockwise rotation.

START-UP CHECKLIST FOR 42S SERIES FAN COIL AIR CONDITIONERS

NOTE: To avoid injury to personnel and damage to equipment or property when completing the procedures listed in this start-up checklist, use good judgment, follow safe practices, and adhere to the safety considerations/information as outlined in preceding sections of this Installation, Start-Up, and Service Instructions document.

I. Project Information

Job Name _____

Address _____

City _____ State _____ Zip _____

Installing Contractor _____

Sales Office _____

Start-up Performed By _____

Table 1 — INSPECTION, INSTALLATION, AND START-UP CHECKLIST

ITEM	COMPLETE	ITEM	COMPLETE
Receiving & Inspection		Electrical Connections	
1. Unit received undamaged		30. Refer to unit wiring diagram	
2. Unit received complete as ordered		31. Connection incoming power service(s)	
3. "Furnish only" parts accounted for		32. Install and connect "furnish only" parts	
4. Unit arrangement/hand correct		33. All field wiring in code compliance	
5. Unit structural support complete and correct		Unit Start-Up	
Handling & Installation		34. General visual unit and system inspection	
6. Mounting grommets/isolators used		35. Check for proper fan rotation	
7. Unit mounted level and square		36. Record electrical supply voltage	
8. Proper access provided for unit and accessories		37. Record ambient temperatures	
9. Proper electrical service provided		38. Check all wiring for secure connections	
10. Proper overcurrent protection provided		39. Close all unit isolation valves	
11. Proper service switch/disconnect provided		40. Flush water systems	
12. Proper chilled water line size to unit		41. Fill systems with water/refrigerant	
13. Proper hot water line size to unit		42. Vent water systems as required	
14. Proper refrigerant line sizes to unit		43. All ductwork and grilles in place	
15. All service to unit in code compliance		44. All unit panels and filters in place	
16. All shipping screws and braces removed		45. Start fans, pumps, chillers, etc.	
17. Unit protected from dirt and foreign matter		46. Check for overload condition of all units	
Cooling/Heating Connections		47. Check all ductwork and units for air leaks	
18. Protect valve package components from heat		48. Balance water systems as required	
19. Connect field piping to unit		49. Balance air systems as required	
20. Pressure-test all piping for leaks		50. Record all final settings for future use	
21. Install drain line and traps as required		51. Check piping and ductwork for vibration	
22. Insulate all piping as required		52. Check all dampers for proper operation	
23. Connect risers from 42SGM to 42SGS models		53. Verify proper cooling operation	
24. Connect risers to unit coil valve package (if risers are shipped/installed separately)		54. Verify proper heating operation	
Ductwork Connections		55. Reinstall all covers and access panels	
25. Install ductwork, fittings, and grilles as required		56. Verify proper condensate drainage	
26. Flexible duct connections at unit			
27. Proper supply and return grille type and size used			
28. Control outside air for freeze protection			
29. Insulate all ductwork as required			

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

