Installation, Start-Up and Service Instructions

CONTENTS

SAFETY CONSIDERATIONS

Air-handling equipment is designed to provide safe and reliable service when operated within design specifications. To avoid injury to personnel and damage to property or equipment, use good judgment and follow safe practices as outlined below when installing and operating this equipment.

See Fig. 1 Proposition 65 warning label.

⚠ DANGER

NEVER REACH INTO a unit while the fan is running.

LOCK OPEN AND TAG the fan motor power disconnect switch before working on unit. In addition, remove the fuses and take them with you after noting this on tag.

DISCONNECT ALL POWER before attempting any installation or service. More than one power source may be supplied to a unit. Power to remote mounted control devices may not be supplied through the unit.

CHECK THE WEIGHT of assembly and components to be sure that rigging equipment can handle them safely.

NEVER PRESSURIZE a coil with a non-liquid for leak testing. A dangerous burst may occur.

DO NOT STEAM-CLEAN coils until you are sure all personnel are clear of the area.

Failure to follow these warnings will result in severe personal injury or death.

IMPORTANT: Children should be supervised to ensure that they do not play with the appliance.

Fig. 1 — Proposition 65 Warning Label

INTRODUCTION

The following contains general installation instructions for the 42BHE, BVE fan coil units. See Fig. 2 for components. 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.

INSTALLATION

Step 1 — Unpack and Inspect Unit

Remove shipping wraps from unit and check shipment against shipping list. Check for concealed shipping damage. If shipment is damaged or incomplete, file claim with transportation company and contact your local Carrier representative immediately.

Step 2 — Protect Unit from Damage

To maintain warranty, protect unit against adverse weather conditions, theft or vandalism on the jobsite.

The described equipment IS NOT suitable for outdoor installations. The equipment should never be stored or installed where it may be subjected to a hostile environment such as rain, snow, or extreme temperatures.

Step 3 — Prepare Jobsite

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. Instruct all trades in the appropriate part of the installation. For unit component identification, refer to Fig. 2. For unit dimensions, refer to Fig. 3-5 for 42BHE units. Refer to Fig. 6-8 for 42BVE units.

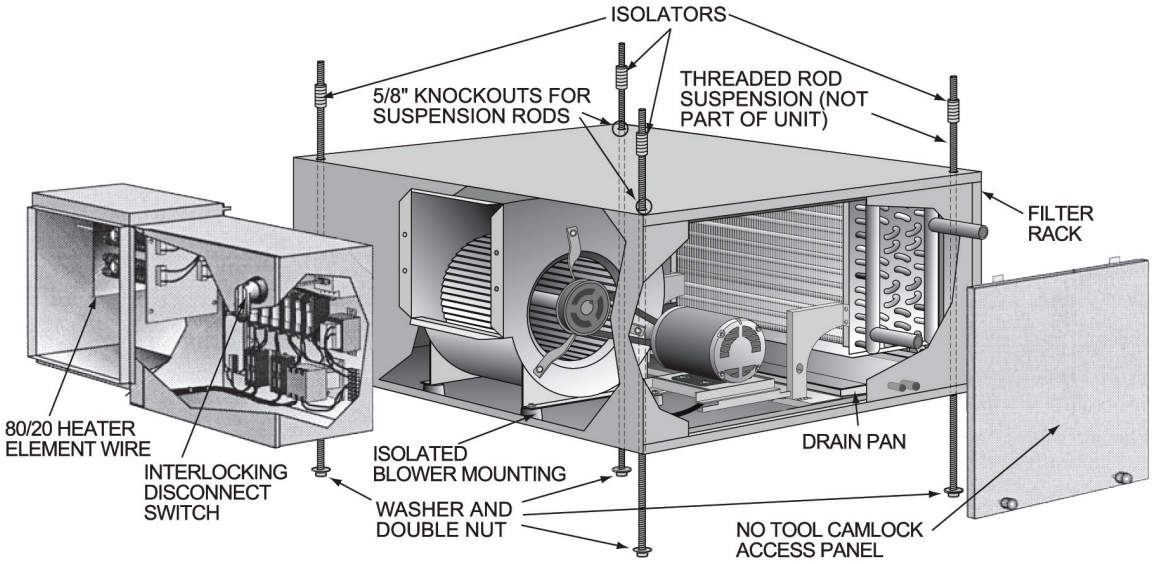
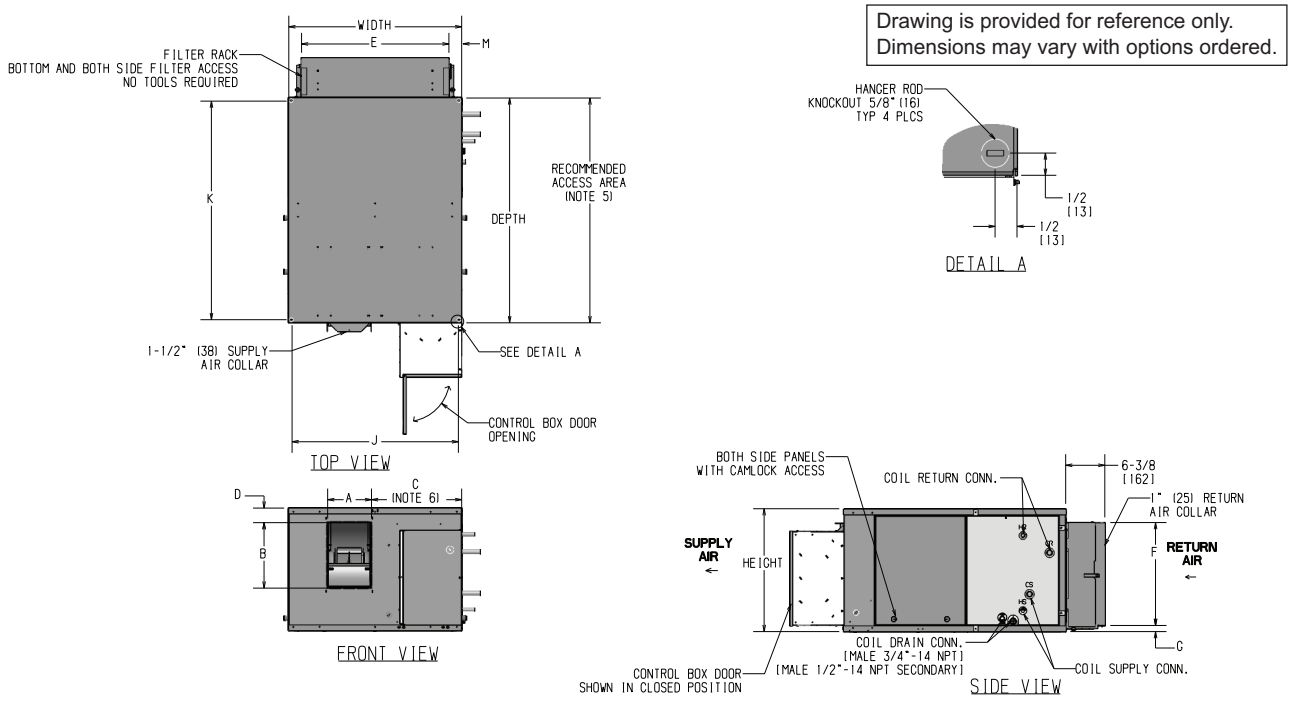


Fig. 2 — Component Identification (42BHE Units Shown)

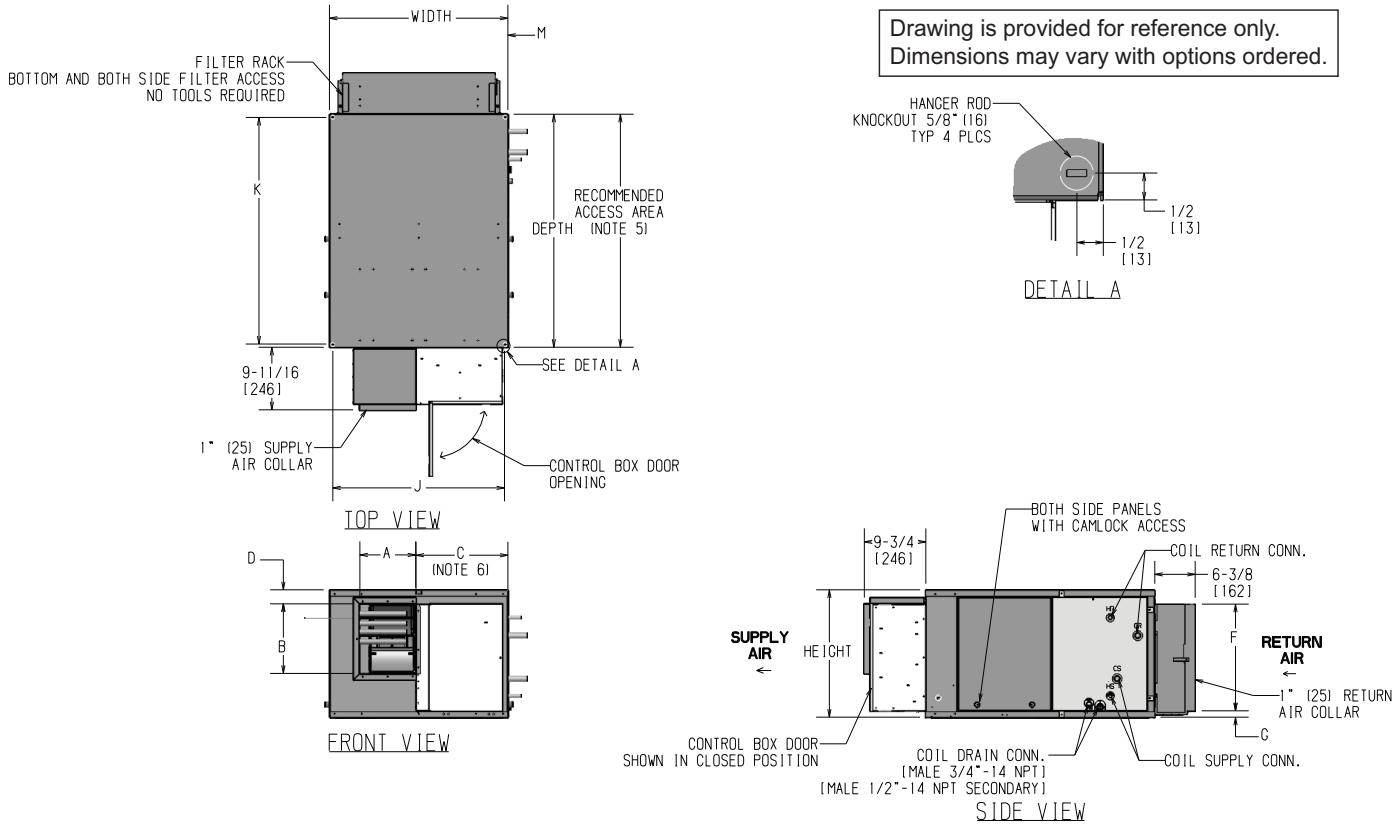


42BHE UNIT SIZE	FAN SIZE	DEPTH	WIDTH	HEIGHT	SUPPLY DUCT				RETURN DUCT			MOUNTING HOLES		M
					A	B	C	D	E	F	G	J	K	
06	9 x 4	36 (914)	28 (711)	19-3/4 (502)	7-1/8 (181)	10-1/2 (267)	14-1/2 (368)	2-1/4 (57)	24 (610)	16-1/2 (419)	1 (25)	27-1/4 (686)	35-1/4 (895)	2 (51)
08	9 x 6	36 (914)	28 (711)	19-3/4 (502)	8-1/2 (216)	10-1/2 (267)	14 (356)	2-1/4 (57)	24 (610)	16-1/2 (419)	1 (25)	27-1/4 (686)	35-1/4 (895)	2 (51)
10	10 x 4	37-1/2 (953)	37 (940)	21-1/2 (546)	7-1/8 (181)	11-5/8 (295)	15-1/4 (387)	2-1/4 (57)	33 (838)	18-1/4 (464)	1 (25)	36-1/4 (921)	37 (940)	2 (51)
12	10 x 7	37-1/2 (953)	37 (940)	21-1/2 (546)	10 (254)	11-5/8 (295)	14 (356)	2-1/4 (57)	33 (838)	18-1/4 (464)	1 (25)	36-1/4 (921)	37 (940)	2 (51)
16	11 x 10	37-3/4 (959)	47 (1194)	21-1/2 (546)	13-3/8 (340)	12-3/4 (324)	16-3/4 (425)	2-1/4 (57)	43 (1092)	18-1/4 (464)	1 (25)	46-1/4 (1175)	37 (940)	1-1/2 (38)
20	12 x 9	40-1/4 (1022)	48 (1219)	24 (610)	12-1/2 (216)	13-3/4 (349)	17-3/4 (451)	2-1/4 (57)	44 (1118)	20-3/4 (527)	1 (25)	47-1/4 (1200)	39-1/2 (1033)	2 (51)
30	12 x 12	40-1/4 (1022)	48 (1219)	32-1/4 (819)	15-7/8 (403)	13-3/4 (349)	16 (406)	7-1/4 (184)	44 (1118)	29 (737)	1 (25)	47-1/4 (1200)	39-1/2 (1033)	2 (51)
40	15 x 12	43-1/2 (1105)	62 (1575)	32-1/4 (819)	16-3/8 (416)	16-1/8 (410)	22-3/4 (578)	6-1/4 (159)	58 (1473)	29 (737)	1 (25)	61-1/4 (1556)	42-1/2 (1080)	2 (51)

NOTES:

1. Right hand shown, Left hand opposite.
2. All dimensions are ± 1/4-inch (6 mm).
3. Unit measurements on drawings and in tables are shown in inches and (millimeters).
4. Product specifications are subject to changes without notice.
5. Allow adequate spacing for maneuverability around unit to allow service through recommended access area.
6. “C” dimension is measured from coil side of unit.
7. Mixing Box option will vary return duct dimensions.

Fig. 3 — Unit Dimensions — 42BHE Fan Coil Base Unit (No Controls)

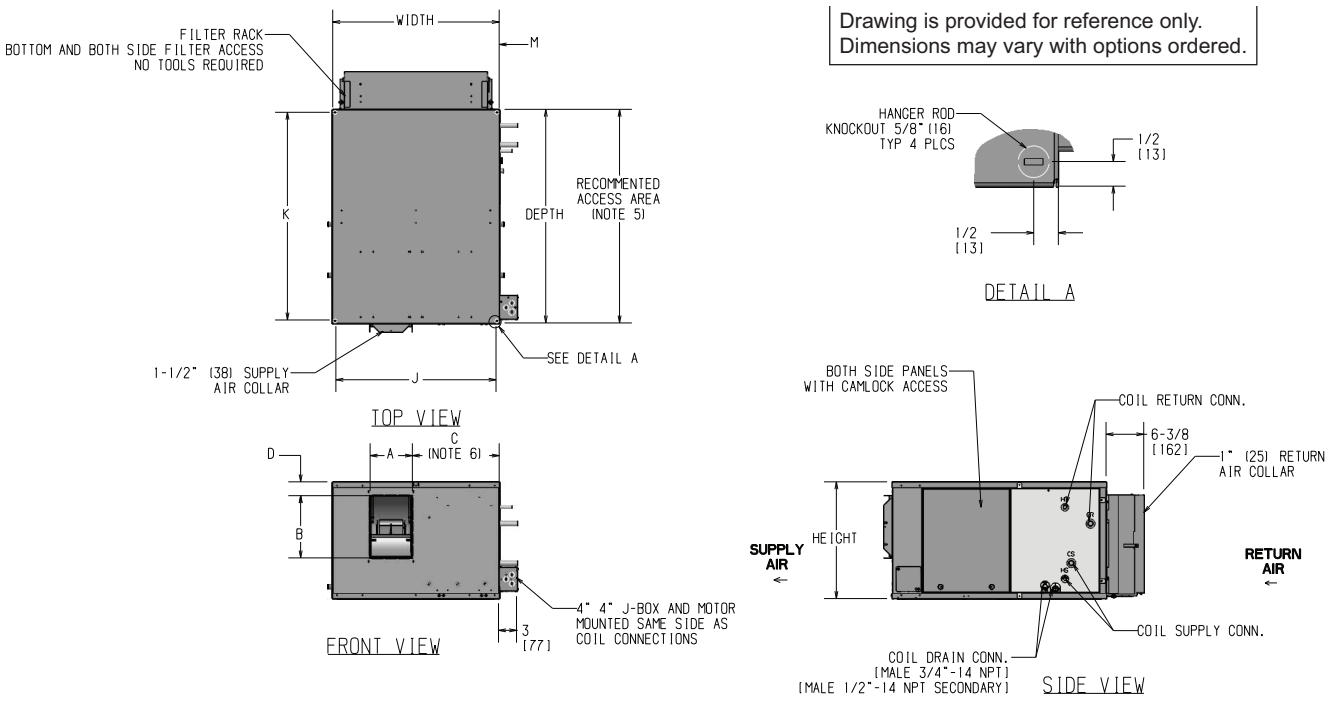


42BHE UNIT SIZE	SUPPLY DUCT DIMENSIONS – INCHES (MILLIMETERS)				M
	A	B	C	D	
06	8-7/8 (225)	10-1/2 (267)	14-1/2 (368)	2-1/4 (57)	2 (51)
08	8-7/8 (225)	10-1/2 (267)	14 (356)	2-1/4 (57)	2 (51)
10	10-3/8 (264)	11-5/8 (295)	15-1/4 (387)	2-1/4 (57)	2 (51)
12	10-3/8 (264)	11-5/8 (295)	14 (356)	2-1/4 (57)	2 (51)
16	13-7/8 (352)	12-3/4 (324)	16-3/4 (425)	2-1/4 (57)	2 (51)
20	13 (330)	13-3/4 (349)	17-3/4 (451)	2-1/4 (57)	2 (51)
30	16-1/4 (413)	13-3/4 (349)	16 (406)	7-1/4 (184)	2 (51)
40	16-3/4 (425)	16-1/8 (410)	22-3/4 (578)	6-1/4 (159)	2 (51)

NOTES:

1. Right hand shown, Left hand opposite.
2. All dimensions are ±1/4 in. (6 mm).
3. Unit measurements on drawings and in tables are shown in inches and (millimeters).
4. Product specifications are subject to changes without notice.
5. Allow adequate spacing for maneuverability around unit to allow service through recommended access area.
6. “C” dimension is measured from coil side of unit.
7. Mixing Box option will vary return duct dimensions.
8. For dimensions not shown in this table see Base Unit dimensional drawing.

Fig. 4 — Unit Dimensions — 42BHE Fan Coil Base Unit with Motor Control Option

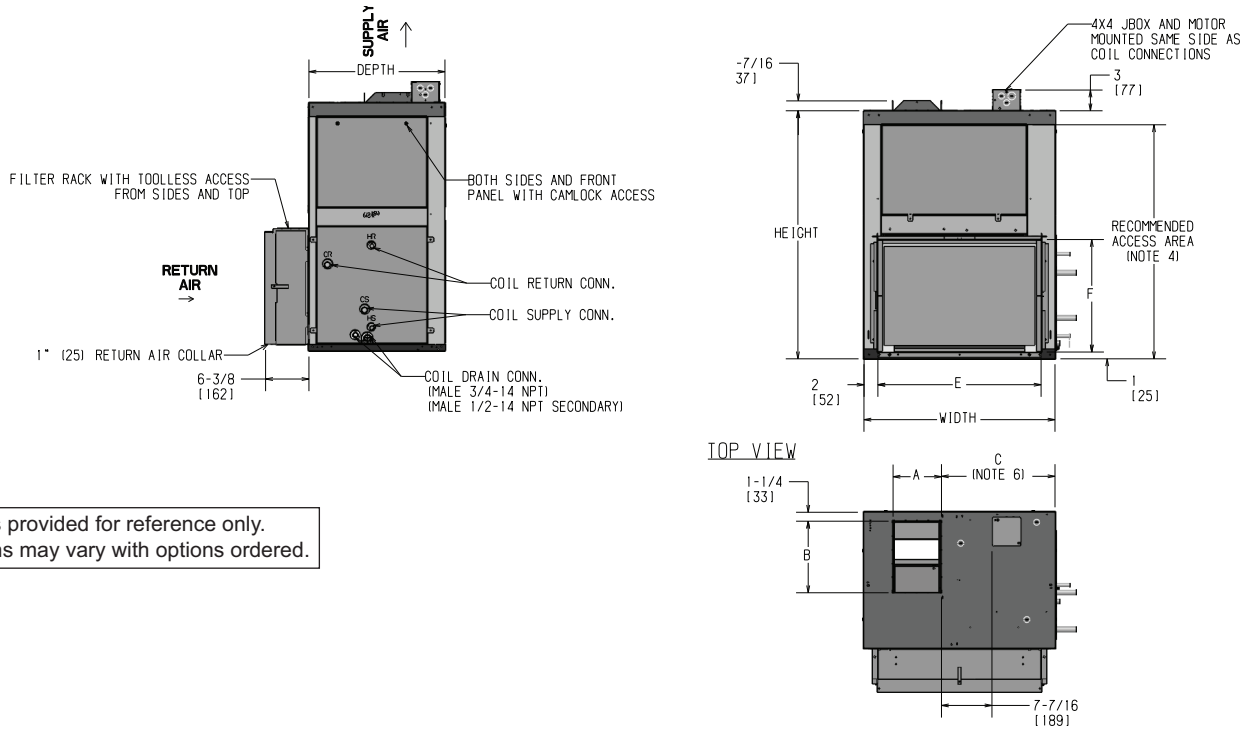


42BHE UNIT SIZE	SUPPLY DUCT DIMENSIONS – INCHES (MILLIMETERS)				M
	A	B	C	D	
06	8-7/8 (225)	10-1/2 (267)	14-1/2 (368)	2-1/4 (57)	2 (51)
08	8-7/8 (225)	10-1/2 (267)	14 (356)	2-1/4 (57)	2 (51)
10	10-3/8 (264)	11-5/8 (295)	15-1/4 (387)	2-1/4 (57)	2 (51)
12	10-3/8 (264)	11-5/8 (295)	14 (356)	2-1/4 (57)	2 (51)
16	13-7/8 (352)	12-3/4 (324)	16-3/4 (425)	2-1/4 (57)	2 (51)
20	13 (330)	13-3/4 (349)	17-3/4 (451)	2-1/4 (57)	2 (51)
30	16-1/4 (413)	13-3/4 (349)	16 (406)	7-1/4 (184)	2 (51)
40	16-3/4 (425)	16-1/8 (410)	22-3/4 (578)	6-1/4 (159)	2 (51)

NOTES:

1. Right hand shown, Left hand opposite.
2. All dimensions are ±1/4-in. (6 mm).
3. Unit measurements on drawings and in tables are shown in inches and (millimeters).
4. Product specifications are subject to changes without notice.
5. Allow adequate spacing for maneuverability around unit to allow service through recommended access area.
6. “C” dimension is measured from coil side of unit.
7. Mixing Box option will vary return duct dimensions.
8. For dimensions not shown in this table see Base Unit dimensional drawing.

Fig. 5 — Unit Dimensions — 42BHE Fan Coil Base Unit with Electric Heat Option

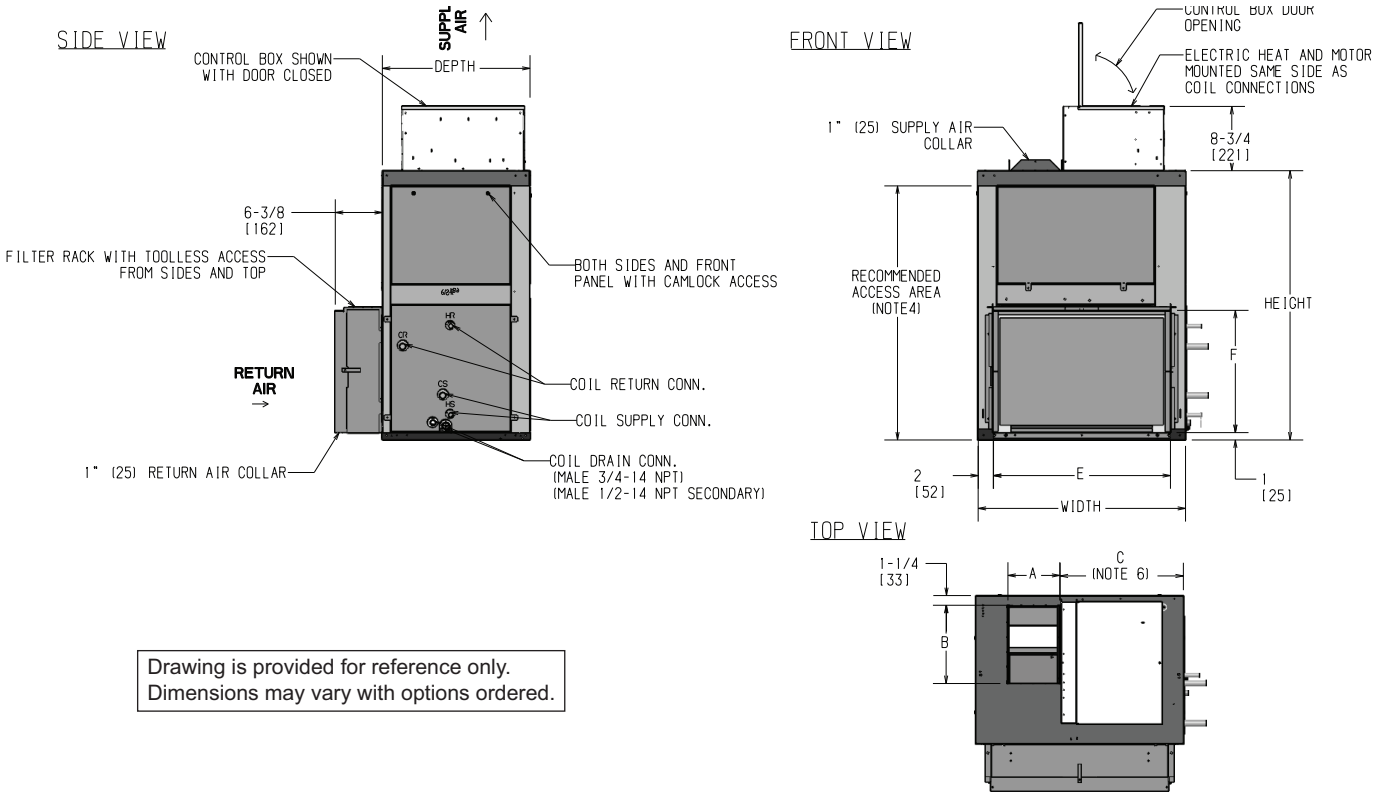


Drawing is provided for reference only.
Dimensions may vary with options ordered.

42BVE UNIT SIZE	FAN SIZE	DEPTH	WIDTH	HEIGHT	SUPPLY DUCT			RETURN DUCT	
					A	B	C	E	F
06	9 x 4	20 (508)	28 (711)	36-1/2 (927)	7-1/8 (181)	10-1/2 (267)	16-3/4 (425)	24 (610)	16-1/2 (419)
08	9 x 6	20 (508)	28 (711)	36-1/2 (927)	8-1/2 (216)	10-1/2 (267))	15-1/4 (387)	24 (610)	16-1/2 (419)
10	10 x 4	22 (559)	37 (940)	39-3/8 (1000)	7-1/8 (181)	11-9/16 (294)	24-1/2 (622)	33 (838)	18-1/4 (464)
12	10 x 7	22 (559)	37 (940)	39-3/8 (1000)	9-15/16 (252)	11-9/16 (294)	21-1/2 (546)	33 (838)	18-1/4 (464)
16	11 x 10	22 (559)	47 (1194)	39-3/8 (1000)	13-3/8 (340)	12-3/4 (324)	16-3/4 (425)	43 (1092)	18-1/4 (464)
20	12 x 9	24 (610)	48 (1219)	45-1/8 (1146)	12-1/2 (318)	13-3/4 (349)	17-3/4 (451)	44 (1118)	20-3/4 (527)
30	12 x 12	28 (711)	48 (1219)	54-3/16 (1376)	15-7/8 (403)	13-3/4 (349)	16 (406)	44 (1118)	29 (737)
40	15 x 12	28 (711)	62 (1575)	57-5/8 (1464)	16-7/16 (418)	16-1/16 (408)	22-3/4 (578)	58 (1473)	29 (737)

NOTES:
1. Right hand shown, Left hand opposite.
2. All dimensions are ±1/4-inch (6 mm)
3. Drain pan removal is on the piping side of the unit.
4. Allow adequate spacing or maneuverability of unit to allow service through recommended access area.
5. Unit measurements on drawings and in tables are shown in inches and (millimeters)
6. “C” dimension is measured from coil side of unit.
7. Product specifications are subject to change without notice.
8. Unit measurements on drawings and in tables are shown in inches and (millimeters).

Fig. 6 — Unit Dimensions — 42BVE Fan Coil Base Unit (No Controls)



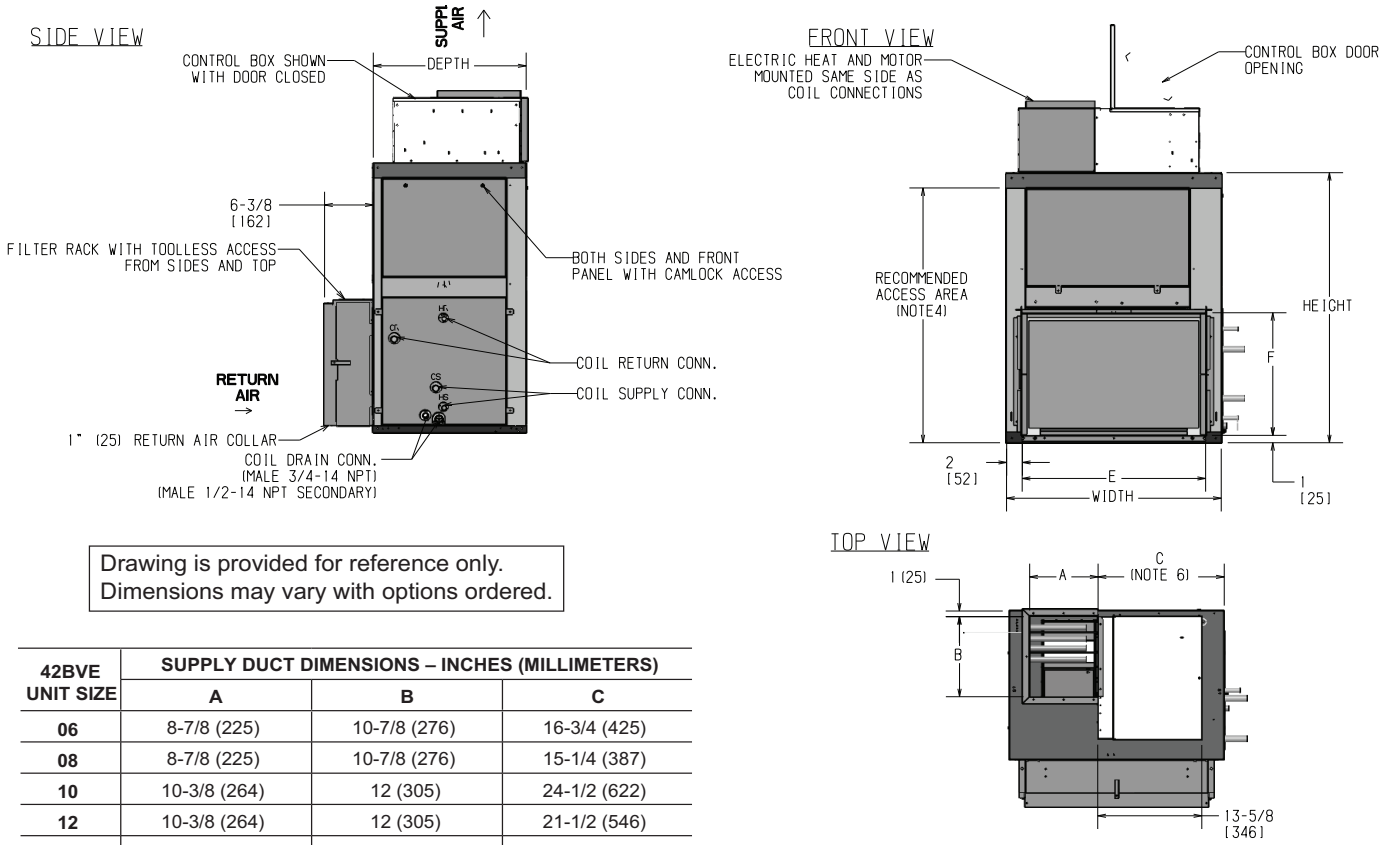
Drawing is provided for reference only.
Dimensions may vary with options ordered.

42BVE UNIT SIZE	SUPPLY DUCT DIMENSIONS – INCHES (MILLIMETERS)		
	A	B	C
06	7-1/8 (181)	10-1/2 (267)	16-3/4 (425)
08	8-1/2 (216)	10-1/2 (267)	15-1/4 (387)
10	7-1/8 (181)	11-9/16 (294)	24-1/2 (622)
12	9-15/16 (252)	11-9/16 (294)	21-1/2 (546)
16	13-3/8 (340)	12-3/4 (324)	16-3/4 (425)
20	12-1/2 (216)	13-3/4 (349)	17-3/4 (451)
30	15-7/8 (403)	13-3/4 (349)	16 (406)
40	16-7/16 (418)	16-1/16 (408)	22-3/4 (578)

NOTES:

1. Right hand shown, Left hand opposite.
2. All dimensions are ± 1/4-inch (6 mm).
3. Drain pan removal is on the piping side of the unit.
4. Allow adequate spacing or maneuverability of unit to allow service through recommended access area.
5. Unit measurements on drawings and in tables are shown in inches and (millimeters).
6. “C” dimension is measured from coil side of unit.
7. Product specifications are subject to change without notice.
8. For dimensions not shown in this table see Base Unit dimensional drawing.

Fig. 7 — Unit Dimensions — 42BVE Fan Coil Base Unit with Motor Control Option



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

42BVE UNIT SIZE	SUPPLY DUCT DIMENSIONS – INCHES (MILLIMETERS)		
	A	B	C
06	8-7/8 (225)	10-7/8 (276)	16-3/4 (425)
08	8-7/8 (225)	10-7/8 (276)	15-1/4 (387)
10	10-3/8 (264)	12 (305)	24-1/2 (622)
12	10-3/8 (264)	12 (305)	21-1/2 (546)
16	13-7/8 (352)	13 (330)	16-3/4 (425)
20	13 (330)	14-1/8 (359)	17-3/4 (451)
30	16-1/4 (413)	14-1/8 (359)	16 (406)
40	16-3/4 (425)	16-3/8 (416)	22-3/4 (578)

NOTES:
1. Right hand shown, Left hand opposite.
2. All dimensions are ± 1/4-inch (6 mm).
3. Drain pan removal is on the piping side of the unit.
4. Allow adequate spacing or maneuverability of unit to allow service through recommended access area.
5. Unit measurements on drawings and in tables are shown in inches and (millimeters).
6. “C” dimension is measured from coil side of unit.
7. Product specifications are subject to change without notice.
8. For dimensions not shown in this table see Base Unit dimensional drawing.

Fig. 8 — Unit Dimensions — 42BVE Fan Coil Base Unit with Electric Heat Option

Step 4 — Prepare Unit

Be sure that unit power requirements match available power source. Refer to unit nameplate and wiring diagram. Check all tags on unit to determine if any shipping screws are to be removed. Remove screws as directed. Install the mixing box if the unit is ordered with one. Follow the mixing box installation instructions found on Step 9 page 17.

Step 5 — Position Unit

1. The horizontal blower coil units have 5/8 in. (15.88 mm) knockouts in each corner of the top and bottom panels for 1/2 in. (12.70 mm) all thread (not supplied with unit) to pass through (see Fig. 9 and 10). Be sure to support the unit from underneath until mounting is complete.
2. Install vibration isolators (recommended for all sizes). Field-supplied and field-installed accessories must be independently supported or suspended. It is recommended that a trapeze suspension be used on 42BHE size 30 and 40 units.
3. To ensure proper drainage and operation, be sure unit is level. DO NOT mount the unit on a slope. The pitch of a suspended unit can change after coil is filled; recheck after filling. Drain pan has built-in slope to ensure proper drainage.
4. Sufficient clearance must be maintained for service and maintenance. Ensure that there is a minimum clearance of 24 in. (609.60 mm) on access side for motor, pulley and belt access. Filter shall be removed from side or top of the filter rack on vertical unit (42BVE) and side or bottom of the filter rack on horizontal unit (42BHE). If side access to filter is desired, the minimum clearance required is the width of the filter rack plus 6 inches (154.40 mm).
5. A minimum of 48 in. (121.92 cm) clearance is required between factory supplied electric heater and a field supplied combustible component placed downstream of the unit.
6. Protect unit from damage from jobsite debris. Do not allow foreign material to fall into drain pan. Prevent dust and debris from being deposited on motor or fan.
7. Maximum operating altitude for units is 13,400 ft (4 km). All units are IPX0 rated.

TOTAL WEIGHT UNIT CORRECTION FACTOR (LB)

See Fig. 11 and 12 for 8-row water-filled coils and double wall construction (see Table 1). For a different number of rows, total unit weight can be determined by:

1. Identify the size of unit and number of rows.
2. From Fig. 11 or 12, identify the total weight of the unit.
3. From Table 1, identify the correction factor and deduct this factor from the total weight.

See Fig. 11 and 12 for operating weight information. Weight information is based on 8-row water-filled coils and double wall cabinet construction. For a different coil and cabinet options, use the weight correction factor table, Table 1.

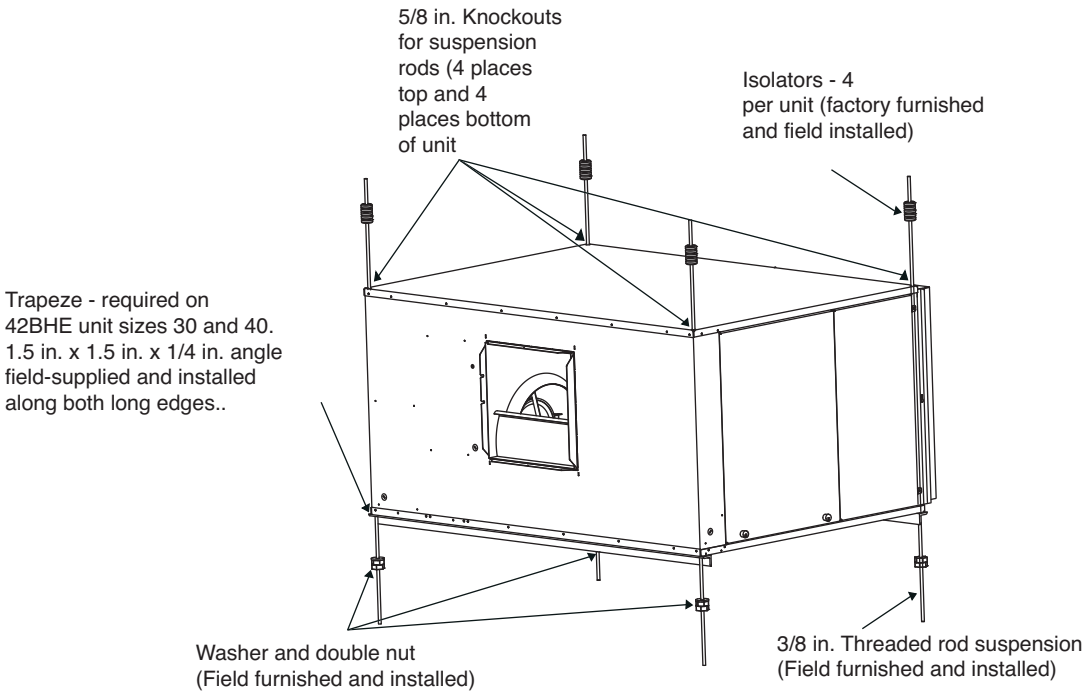


Fig. 9 — 42BHE Threaded Rod Suspension

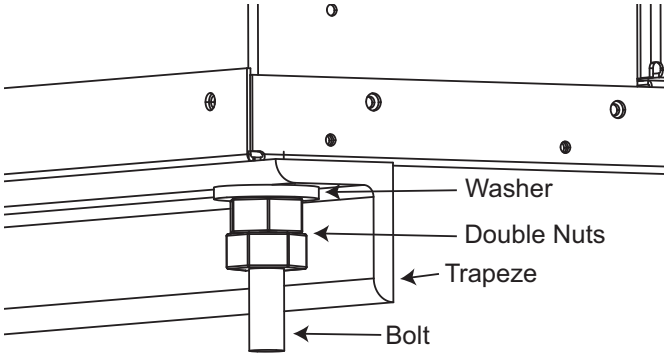


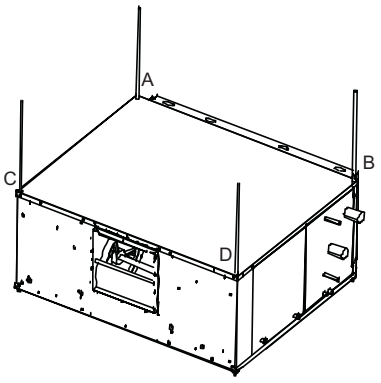
Fig. 10 — 42BHE Units Mounting Details - Threaded Rod Suspension

Table 1 — Total Weight Unit Correction Factor (lb)[a]

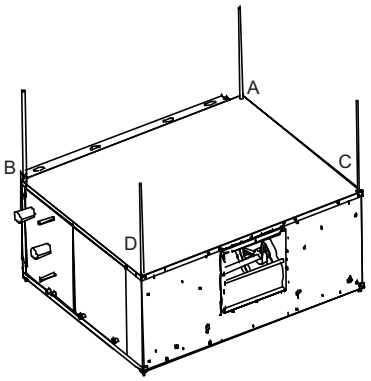
OPTIONS	6	8	10	12	16	20	30	40
4-Row Coil	-21	-21	-28	-28	-39	-46	-74	-98
5-Row Coil	-16	-16	-21	-21	-29	-35	-55	-74
6-Row Coil	-11	-11	-14	-14	-20	-23	-37	-49
7-Row Coil	-5	-5	-7	-7	-10	-12	-18	-25
Single Wall Construction	-31	-31	-40	-40	-47	-58	-67	-82

NOTE(S):

a. Unit weights (shown in pounds), ± 10%, are based on the largest water-filled coil and a 1 HP motor.



RIGHT HAND UNIT

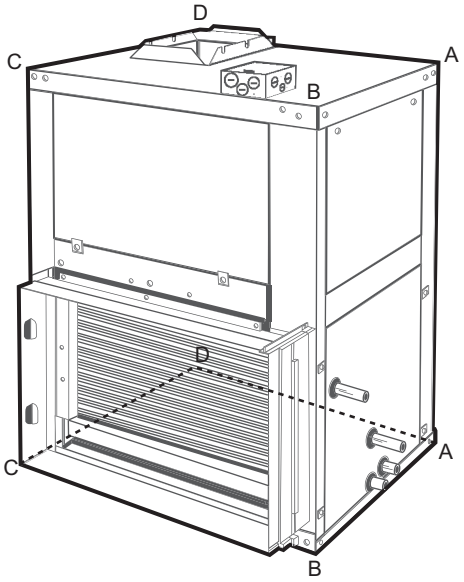


LEFT HAND UNIT

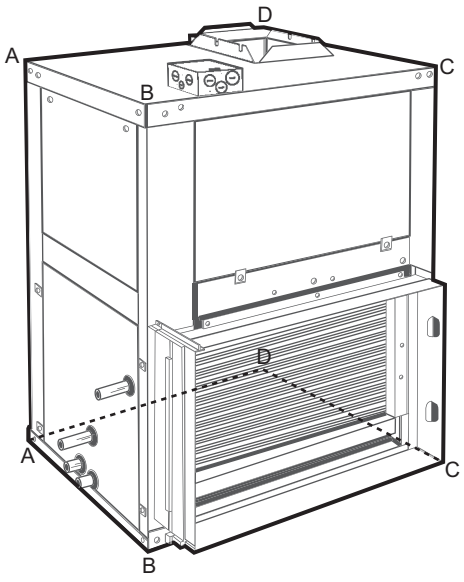
UNIT 42BHE	NO ELECTRIC HEAT (lb)				TOTAL WEIGHT	WITH ELECTRIC HEAT (lb)				TOTAL WEIGHT
	A	B	C	D		A	B	C	D	
06	49	53	55	59	216	49	56	67	75	247
08	50	54	55	59	218	49	57	67	76	249
10	60	67	65	73	265	59	72	78	91	300
12	61	68	66	74	269	60	72	78	92	302
16	78	85	81	88	332	77	89	94	107	367
20	90	98	89	97	374	90	102	103	115	410
30	122	130	109	117	478	122	134	123	136	515
40	158	165	135	143	601	158	169	150	161	638

NOTE: Unit weights (shown in pounds) ±10%, are based on the 8-row water filled coils, double wall cabinet construction, and 1 hp motor.

Fig. 11 — 42BHE Horizontal Unit — Operating/Distributed Weight Calculations



RIGHT HAND UNIT



LEFT HAND UNIT

UNIT 42BVE	NO ELECTRIC HEAT (lb)				TOTAL WEIGHT	WITH ELECTRIC HEAT (lb)				TOTAL WEIGHT
	A	B	C	D		A	B	C	D	
06	51	52	59	51	213	57	63	69	55	244
08	52	53	59	51	215	57	64	70	55	246
10	60	65	71	60	256	66	77	82	64	289
12	61	66	72	61	260	67	78	83	65	293
16	72	83	84	70	309	78	96	96	73	343
20	90	108	101	83	382	95	123	114	86	418
30	114	142	123	98	477	119	158	137	100	514
40	134	175	146	115	570	138	193	161	116	608

NOTE: Unit weights (shown in pounds) ± 10%, are based on the 8-row water filled coils, double wall cabinet construction and 1 hp motor.

Fig. 12 — 42BVE Vertical Unit — Operating/Distributed Weight Calculations

Step 6 — Make Piping Connections

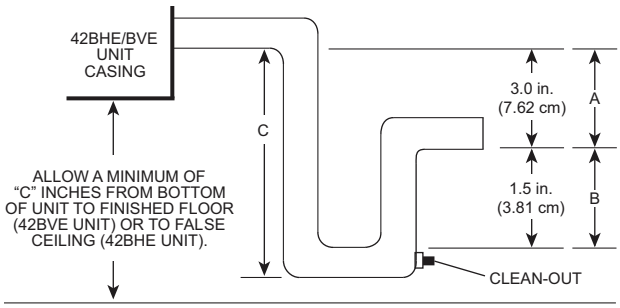
DRAIN

The unit has a double-sloped condensate drain pan to ensure proper drainage. The condensate drain must be at least 3/4 in. (19.05 mm) copper, galvanized, black iron, or PVC piping. Install the trapped drain line in accordance with all applicable codes. Slope drain away from unit to prevent overflowing and insulate the line to prevent sweating.

Drain piping should be sloped a minimum of 1/8 in. (3.175 mm) per ft away from the unit. Condensate drain must be trapped for proper drainage and odor control. The differential height of the trap inlet to outlet must be at least 1 in. wg greater than the total static pressure of the unit. The differential height of the outlet to the bottom of the trap must not be less than the total static pressure of the unit.

The 42BVE units should be installed on a pad. The height of the pad should be adequate to allow for a proper condensate trap. The condensate trap shown in Fig. 13 is for a unit with a total static pressure (TSP) of 2-in. wg (0.50 kPa) with a 1-in. wg (0.25 kPa) safety factor for any change in operating conditions. The A dimension must equal the system TSP plus 1-in. wg (0.25 kPa). The B dimension is one half of A, and C is the total of A + B + pipe diameter.

The unit drain pan is equipped with a secondary connection that must be piped to an open-site drain. This will prevent overflow and possible building damage if the primary drain is blocked. The secondary drain connection can be capped if potential overflow will not damage the building or unit.



NOTE: Dimension C is the total of A + B + the pipe diameter.

Fig. 13 — Condensate Trap

WATER SUPPLY/RETURN CONNECTIONS

⚠ CAUTION

Residue 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. Ensure system cleanliness when connecting to water systems.

Install piping in accordance with all applicable codes. The supply and return connections are marked on the coil stub ends with an "S" on the supply (inlet) and an "R" on the return (outlet). Blue letters mark chilled water connections, red letters indicate

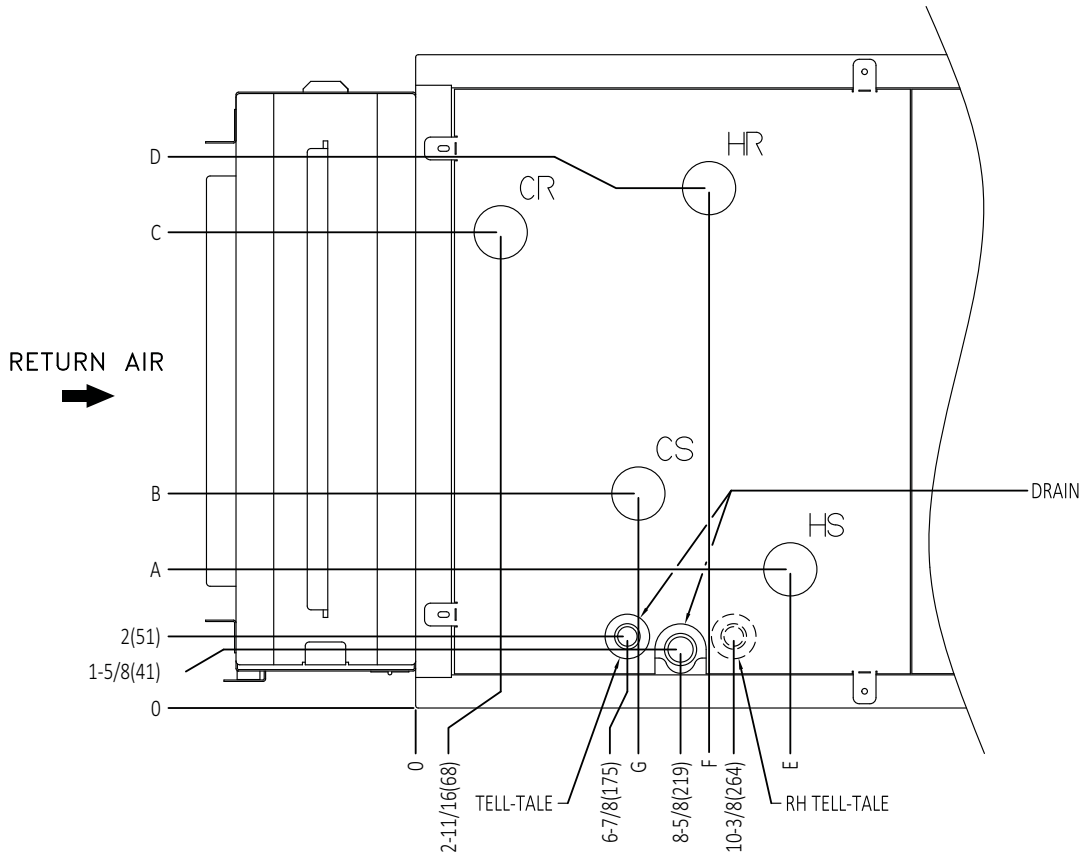
steam or hot water connections. Install valves in lines in accordance with valve manufacturer's instructions. Be sure valves are in proper operating position and are easily accessible for adjustment. See Table 2 for Physical Data. See Fig. 14 and Table 3 for hydronic coil piping connection specifications.

Table 2 — 42B Physical Data

UNIT SIZE 42BHE, BVE	06	08	10	12	16	20	30	40
NOMINAL CFM	600	800	1000	1200	1600	2000	3000	4000
42BHE OPERATING WT (lb) (no heat/ with heat)	216/247	218/249	265/300	269/302	332/367	374/410	478/515	601/638
42BVE OPERATING WT (lb) (no heat/ with heat)	213/244	215/246	256/289	260/293	309/343	382/418	477/514	570/608
FILTERS (2 in. pleated)								
Number...Size (in.)	1...16-1/2 x 24	1...16-1/2 x 24	1...18-1/4 x 33	1...18-1/4 x 33	2...18-1/4 x 21-1/2	2...20-1/2 x 22	2...29 x 22	2...29 x 29
Face Area (sq ft)	2.8	2.8	4.2	4.2	5.5	6.3	8.9	11.7
HYDRONIC COILS								
Size (in.)	15 x 20	15 x 20	15 x 29	15 x 29	15 x 39	18 x 40	27 x 40	27 x 54
Face Area (sq ft)	2.1	2.1	3.0	3.0	4.1	4.9	7.7	10.3
Fins per inch	10							
Coil Water Volume (approx. gal. per row of coil)	0.240	0.240	0.324	0.324	0.420	0.492	0.768	1.020
FANS								
Qty...Size (in.)	1...9 x 4	1...9 x 6	1...10 x 4	1...10 x 7	1...11 x 10	1...12 x 9	1...12 x 12	1...15 x 12
HYDRONIC COIL CONN. in. (mm) 8 Row (Cooling)	1 (25.400) nominal, 1.125 (28.575) OD						1-1/2 (38.100) nominal, 1.625 (41.275) OD	
4 and 6 Row (Cooling) in. (mm)	3/4 (19.050) nominal, 0.875 (22.225) OD				1 (25.400) nominal, 1.125 (28.575) OD		1-1/2 (38.100) nominal, 1.625 (41.275) OD	
1 Row (Heating) in. (mm)	1/2 (17.700) nominal, 0.625 (15.875) OD						1-1/2 (38.100) nominal, 1.625 (41.275) OD	
2 Row (Heating) in. (mm)	1/2 (12.700) nominal, 0.625 (15.875) OD				1 (25.400) nominal, 1.125 (28.575) OD		1-1/2 (38.100) nominal, 1.625 (41.275) OD	
DX COIL CONN. LIQUID LINE in. (mm)	1/4 (6.350) nominal, 0.375 (9.525) OD						1/2 (12.700) nominal, 0.625 (15.875) OD	
DX COIL CONN. SUCTION LINE in. (mm)	3/4 (19.050) nominal, 0.875 (22.225) OD				1 (25.400) nominal, 1.125 (28.575) OD		1-1/2 (38.100) nominal, 1.625 (41.275) OD	
DRAIN CONN. SIZES in. (mm)	3/4 (19.050) MPT							

LEGEND

DX — Direct Expansion



Horizontal, left hand unit with re-heat coil shown.

Coil Header Connection Size

42BHE/ BVE	DIMENSIONS - INCHES (MILLIMETERS)									
	8 Row		6 Row		4 Row		2 Row HW		1 Row HW	
	Nom. Size	Actual OD	Nom. Size	Actual OD	Nom. Size	Actual OD	Nom. Size	Actual OD	Nom. Size	Actual OD
06-12	1 (25.400)	1-1/8 (28.575)	3/4 (19.050)	7/8 (22.225)	3/4 (19.050)	7/8 (22.225)	1/2 (12.700)	5/8 (15.875)	1/2 (12.700)	5/8 (15.875)
16-22	1 (25.400)	1-1/8 (28.575)	1 (25.400)	1-1/8 (28.575)	1 (25.400)	1-1/8 (28.575)	1 (25.400)	1-1/8 (28.575)	1/2 (12.700)	5/8 (15.875)
30-40	1-1/2 (38.100)	1-5/8 (41.275)	1-1/2 (38.100)	1-5/8 (41.275)	1-1/2 (38.100)	1-5/8 (41.275)	1-1/2 (38.100)	1-5/8 (41.275)	1-1/2 (38.100)	1-5/8 (41.275)

Fig. 14 — Hydronic Coil Piping Connection Diagram

Table 3 — Hydronic Coil Piping Connections

42BHE/ BVE	COIL ROWS		DIMENSIONS - INCHES (MILLIMETERS)						
	Cool	Heat	A	B	C	D	E	F	G
06/08	4	—	—	6-1/8 (155.575)	12-3/4 (323.850)	—	—	—	5-15/16 (150.813)
		1	3-1/2 (88.900)	6-1/8 (155.575)	12-3/4 (323.850)	15-1/2 (393.700)	7 (177.800)	7 (177.800)	5-15/16 (150.813)
		2	3-13/16 (96.838)	6-1/8 (155.575)	12-3/4 (323.850)	15-13/16 (401.638)	7-9/16 (192.088)	7-9/16 (192.088)	5-15/16 (150.813)
	6	—	—	6-1/8 (155.575)	12-3/4 (323.850)	—	—	—	8-1/8 (206.375)
		1	3-1/2 (88.900)	6-1/8 (155.575)	12-3/4 (323.850)	15-1/2 (393.700)	9-3/16 (233.363)	9-3/16 (233.363)	8-1/8 (206.375)
		2	3-13/16 (96.838)	6-1/8 (155.575)	12-3/4 (323.850)	15-13/16 (401.638)	9-3/4 (247.650)	9-3/4 (247.650)	8-1/8 (206.375)
	8	—	—	6-1/8 (155.575)	12-3/4 (323.850)	—	—	—	10-1/4 (260.350)
10/12	4	—	—	7-3/4 (196.850)	14-3/8 (365.125)	—	—	—	5-15/16 (150.813)
		1	5-1/8 (130.175)	7-3/4 (196.850)	14-3/8 (365.125)	17-1/8 (434.975)	7 (177.800)	7 (177.800)	5-15/16 (150.813)
		2	5-7/16 (138.113)	7-3/4 (196.850)	14-3/8 (365.125)	17-7/16 (442.913)	7-9/16 (192.088)	7-9/16 (192.088)	5-15/16 (150.813)
	6	—	—	7-3/4 (196.850)	14-3/8 (365.125)	—	—	—	8-1/8 (206.375)
		1	5-1/8 (130.175)	7-3/4 (196.850)	14-3/8 (365.125)	17-1/8 (434.975)	9-3/16 (233.363)	9-3/16 (233.363)	8-1/8 (206.375)
		2	5-27/61 (138.243)	7-3/4 (196.850)	14-3/8 (365.125)	17-7/16 (442.913)	9-3/4 (247.650)	9-3/4 (247.650)	8-1/8 (206.375)
	8	—	—	7-3/4 (196.850)	14-3/8 (365.125)	—	—	—	10-1/4 (260.350)
16	4	—	—	7-3/4 (196.850)	15-5/8 (396.875)	—	—	—	5-15/16 (150.813)
		1	LH 10-5/8 (269.875)	7-3/4 (196.850)	15-5/8 (396.875)	12 (304.800)	9-5/8 (244.475)	7 (177.800)	5-15/16 (150.813)
			RH 13-3/8 (339.725)	7-3/4 (196.850)	15-5/8 (396.875)	12 (304.800)	9-5/8 (244.475)	7 (177.800)	5-15/16 (150.813)
		2	12 (304.800)	7 (177.800)	16-3/8 (415.925)	13-5/8 (346.075)	10-3/8 (263.525)	7-9/16 (192.088)	5-15/16 (150.813)
	6	—	—	7-3/4 (196.850)	15-5/8 (396.875)	—	—	—	8-1/8 (206.375)
		1	LH 10-5/8 (269.875)	7-3/4 (196.850)	15-5/8 (396.875)	12 (304.800)	11-13/16 (300.038)	9-3/16 (233.363)	8-1/8 (206.375)
			RH 13-3/8 (339.725)	7-3/4 (196.850)	15-5/8 (396.875)	12 (304.800)	11-13/16 (300.038)	9-3/16 (233.363)	8-1/8 (206.375)
		2	12 (304.800)	7 (177.800)	16-3/8 (415.925)	13-5/8 (346.075)	12-1/2 (317.500)	9-3/4 (247.650)	8-1/8 (206.375)
	8	—	—	9-1/2 (241.300)	15-5/8 (396.875)	—	—	—	10-1/4 (260.350)
20	4	—	—	7-13/16 (198.438)	18-3/16 (461.963)	—	—	—	5-15/16 (198.438)
		1	LH 11-15/16 (303.213)	7-13/16 (198.438)	18-3/16 (461.963)	13-5/16 (338.138)	9-5/8 (244.475)	7 (177.800)	5-15/16 (198.438)
			RH 14-11/16 (373.063)	7-13/16 (198.438)	18-3/16 (461.963)	13-5/16 (338.138)	9-5/8 (244.475)	7 (177.800)	5-15/16 (198.438)
		2	11-9/16 (293.688)	7-7/8 (200.025)	18-3/16 (461.963)	15-13/16 (401.638)	9-1/16 (230.188)	7 (177.800)	5 (127.000)
	6	—	—	7-13/16 (198.438)	18-3/16 (461.963)	—	—	—	8-1/8 (206.735)
		1	LH 11-15/16 (303.213)	7-13/16 (198.438)	18-3/16 (461.963)	13-5/16 (338.138)	11-13/16 (300.038)	9-3/16 (233.363)	8-1/8 (206.735)
			RH 14-11/16 (373.063)	7-13/16 (198.438)	18-3/16 (461.963)	13-5/16 (338.138)	11-13/16 (300.038)	9-3/16 (233.363)	8-1/8 (206.735)
		2	11-9/16 (293.688)	7-7/8 (200.025)	18-3/16 (461.963)	15-13/16 (401.638)	11-1/4 (285.750)	9-3/16 (233.363)	7-1/8 (180.975)
	8	—	—	7-13/16 (198.438)	18-3/16 (461.963)	—	—	—	10-1/4 (260.350)
30/40	4	—	—	5-15/16 (150.813)	26-5/16 (668.338)	—	—	—	5-15/16 (150.813)
		1	7-1/16 (179.388)	5-15/16 (150.813)	26-5/16 (668.338)	25-13/16 (655.638)	9 (228.600)	7 (177.800)	4-7/8 (123.825)
		2	10-5/16 261.938)	5-15/16 (150.813)	26-5/16 (668.338)	23-13/16 (604.838)	9-1/8 (231.775)	7 (177.800)	4-7/8 (123.825)
	6	—	—	5-15/16 (150.813)	26-5/16 (668.338)	—	—	—	8-1/8 (206.375)
		1	7-1/16 (179.388)	5-15/16 (150.813)	26-5/16 (668.338)	25-13/16 (655.638)	11-1/8 (282.575)	9-1/8 (231.775)	7-1/16 (179.388)
		2	10-5/16 (261.938)	5-15/16 (150.813)	26-5/16 (668.338)	23-13/16 (604.838)	11-5/16 (287.338)	9-1/8 (231.775)	7-1/16 (179.388)
	8	—	—	5-15/16 (150.813)	26-5/16 (668.338)	—	—	—	10-1/4 (260.350)

DIRECT EXPANSION (DX) SYSTEMS

NOTE: Operation of DX equipped fan coils at any fan speed other than high fan speed is not approved and will void the manufacturer's limited warranty.

⚠CAUTION

42BHE/42BVE is a partial unit and shall only be connected to an appliance suitable for the same refrigerant.

42BHE/42BVE is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of Standard UL 60335-2-40 / CSA C22.2 No. 60335-2-40. The unit must only be connected to other units that have been confirmed as complying with PARTIAL UNIT requirements of Standard UL 60335-2-40 / CSA C22.2 No. 60335-2-40.

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 below, 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 also be used to lower the freezing point.

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 are compatible with the treated water.

Failure to provide proper water quality may affect the fan coil unit's warranty. See Table 4 for water quality parameters.

Table 4 — Water Quality Parameters

WATER CONTAINING	REQUIRED CONCENTRATION
Sulphate	Less than 200 ppm
pH	7.0 – 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
CaCO3 Hardness	300 - 500 ppm
CaCO3 Alkalinity	300 - 500 ppm
Particulate Quantity	Less than 10 ppm
Particulate Size	800 micron max

NOTE: Maximum water operating temperature 190°F (87°C). Maximum allowable water pressure selectable in Carrier's Fan Coil Builder.

HYDROSTATIC TEST

When all joints are completed, perform hydrostatic test for leaks. Hydronic systems should be tested with water (some components are not designed to hold gas). If gas testing is necessary, pressure must NOT exceed 80 psig. All chilled water piping and valves not located over drain pans or drip lips must be insulated to prevent damage from sweating. Vent all coils during final preparations. (See Step 10, section 6 on page 19.)

⚠WARNING

Never pressurize unit beyond the specified test pressure. Always pressure test with an inert gas or fluid (nitrogen or clear water) to avoid possible unit damage or personal injury in the event of a leak during testing.

Check interior unit piping for signs of leakage from shipping damage or mishandling. If leaks are found, *notify your local Carrier representative before initiating any repairs*.

⚠CAUTION

All water coils must be protected from freezing after initial filling with water. Even if system is drained, unit coils may still hold enough water to cause damage when exposed to temperatures below freezing.

INSULATION

Following the hydrostatic test, insulate all piping to unit to prevent sweating.

MAXIMUM EXTERNAL STATIC PRESSURES

See Table 5 for maximum external static pressure information when units are running at minimum airflow.

Table 5 — Maximum External Static Pressures at Minimum Airflow

42BHE/BVE	MINIMUM CFM	MAXIMUM ESP (in. wg)
06	300	0.17
08	400	1.35
10	700	1.75
12	900	0.87
16	1000	1.73
20	1800	1.19
30	2200	1.36
40	3200	1.73

Step 7 — Make Electrical Connections

Refer to the unit rating plate for supply voltage, motor and heater amperage, and required circuit ampacities. (See Tables 6-8.) The unit wiring diagram shows all factory and field wiring. Most of the unit motors are dual-voltage that are factory-wired for a specified voltage. The motors should be checked to ensure that they are wired for the correct voltage and rotation.

Units equipped with factory-installed motor controls and disconnect will comply with NEC requirements for disconnect, motor controller and motor overload protection. Separate disconnect and motor starter are not required to comply with NEC requirements.

All field wiring should be done in accordance with all applicable local and national codes. Any factory wiring modifications without factory authorization will void all factory warranties and nullify any agency listings.

The manufacturer assumes no responsibility for any damage and/or injuries resulting from improperly installed or wired components.

Install fan switches, thermostats and other accessories in accordance with accessory manufacturer's instructions and applicable wiring diagram.

Table 6 — 42BHE, BVE Electric Heater Availability

kW	42BHE UNIT SIZE							
	06	08	10	12	16	20	30	40
1.0	·	·	—	—	—	—	—	—
1.5	·	·	·	·	—	—	—	—
2.0	·	·	·	·	—	—	—	—
2.5	·	·	·	·	·	—	—	—
3.0	·	·	·	·	·	—	—	—
3.5	·	·	·	·	·	·	—	—
4.0	·	·	·	·	·	·	—	—
4.5	·	·	·	·	·	·	—	—
5.0	·	·	·	·	·	·	—	—
6.0	·	·	·	·	·	·	·	·
7.0	—	·	·	·	·	·	·	·
8.0	—	·	·	·	·	·	·	·
9.9	—	—	·	·	·	·	·	·
12.0	—	—	—	·	·	·	·	·
14.0	—	—	—	—	·	·	·	·
15.0	—	—	—	—	·	·	·	·
16.0	—	—	—	—	·	·	·	·
18.0	—	—	—	—	—	·	·	·
19.9	—	—	—	—	—	·	·	·
25.0	—	—	—	—	—	—	·	·
30.0	—	—	—	—	—	—	·	·
35.0	—	—	—	—	—	—	—	·
39.9	—	—	—	—	—	—	—	·

LEGEND

· — Standard Offering

— — Not Offered

NOTES:

1. Stages available:
   a. Single phase: 1 to 12 kW, 1 stage only
      3 to 12 kW, 1 stage or 2 stage
   b. Three phase: 1 to 39.9 kW, 1 stage only
      4 to 39.9 kW, 1 or 2 stage
      12 to 39.9 kW, 1, 2 or 3 stage
2. Electric Heating Capacities (Btuh) = Heater kW x 3413
3. Electric Heater Amperage for Single-phase Power = (Heater kW x 1000)/Applied Voltage
   Electric Heater Amp. for 3-phase Power = (Heater kW x 1000)/(Applied Voltage x 1.73).

Table 7 — 42BHE, BVE Electric Heater Data

kW	FULL LOAD AMPS						
	Single-Phase				Three-Phase		
	115-v	208-v	240-v	277-v	208-v	240-v	480-v
1.0	8.3	4.8	4.2	3.6	2.8	2.4	1.2
1.5	12.5	7.2	6.3	5.4	4.2	3.6	1.8
2.0	16.7	9.6	8.3	7.2	5.6	4.8	2.4
2.5	20.8	12.0	10.4	9.0	6.9	6.0	3.0
3.0	25.0	14.4	12.5	10.8	8.3	7.2	3.6
3.5	29.2	16.8	14.6	12.6	9.7	8.4	4.2
4.0	33.3	19.2	16.7	14.4	11.1	9.6	4.8
4.5	37.5	21.6	18.8	16.2	12.5	10.8	5.4
5.0	—	24.0	20.8	18.1	13.9	12.0	6.0
6.0	—	28.8	25.0	21.7	16.7	14.4	7.2
7.0	—	33.7	29.2	25.3	19.4	16.8	8.4
8.0	—	38.5	33.3	28.9	22.2	19.2	9.6
9.9	—	—	—	35.7	27.5	23.8	11.9
12.0	—	—	—	43.3	33.3	28.9	14.4
14.0	—	—	—	—	38.9	33.7	16.8
15.0	—	—	—	—	41.6	36.1	18.0
16.0	—	—	—	—	—	38.5	19.2
18.0	—	—	—	—	—	—	21.7
19.9	—	—	—	—	—	—	23.9
25.0	—	—	—	—	—	—	30.1
30.0	—	—	—	—	—	—	36.1
35.0	—	—	—	—	—	—	42.1
39.9	—	—	—	—	—	—	48.0

Table 8 — Motor Performance Data (Full Load Amps)

VOLTAGE V-Ph-Hz	Nominal HP								
	1/4	1/3	1/2	3/4	1	1-1/2	2	3	5
115-1-60	5.2	6.0	8.6	13.3	14.4	—	—	—	—
208-1-60	3.0	3.6	4.8	6.6	7.4	9.4	11.0	—	—
230-1-60	2.5	3.0	4.2	5.1	6.0	9.0	10.9	—	—
277-1-60	2.1	2.5	3.6	5.1	5.4	8.5	8.0	—	—
208-3-60	—	—	2.4	3.6	3.8	6.0	6.5	8.2	14.0
230-3-60	—	—	2.2	3.0	3.2	4.8	6.2	8.0	13.2
460-3-60	—	—	1.1	1.5	1.9	2.8	3.1	4.0	6.6

NOTES:

1. Motor full load amps refer to National Electric Code (NEC) amps; actual motor nameplate amps may vary.
2. NEC data extrapolated for 277-v.
3. Motors are open drip proof, ball bearing, single speed, 1750 rpm rated at continuous duty, 104°F ambient with reversible rotation.
4. 5HP motors available only on size 40 units.

C ETL LISTED US

Intertek

SERVICE SWITCHES:

The service switch is an On/Off switch on incoming power supply to unit. Proper amperage load must be determined before switch can be selected. The range of the fused or non-fused service switch is 0 to 40 amps.

MCA (minimum circuit amps) = 1.25 x sum of all loads.

MFS (maximum fuse size = MCA rounded up to next available fuse size.

Step 8 — Make Duct Connections

Install all ductwork to and from unit in accordance with all applicable codes. Duct construction must allow unit to operate within the limits of the unit external static pressure as shown on job submittals.

Units designed to operate with ductwork may be damaged if operated without the intended ductwork attached. Units configured to bring in outside air should have some method of low temperature protection to prevent coil freeze-up.

Insulate all ductwork as required. Use flexible connections to minimize duct-to-duct alignment problems and noise transmission where specified. Acoustic lining of main supply and return duct should be considered for noise control. Noise transmission will be reduced when return grilles are located as far as possible from the unit.

Install ductwork, accessory grilles, and plenums so that they do not restrict access to filter.

NOTE: Prevent dirt, dust, and debris from settling in unit.

Step 9 — Install Mixing Box

Mixing boxes are preassembled from the factory. A linkage kit consisting of 2 crankarms, 2 swivels, and either a 25-in. (635.00 mm) (unit sizes 06-16) or a 34-in. (863.60 mm) (unit sizes 20-40) length of 5/16-in. (7.94 mm) rod is provided for field installation of the actuator.

To install the mixing box:

1. Assemble the mixing box base rails using the provided hardware. The base rails are marked with identifying letters. See Fig. 15.
2. Place unit on the base rails. Install mixing box and attach to base rails using the no. 8 x 1/2 in. fasteners at the locations shown in Fig. 16 (42BHE units) or Fig. 17 (42BVE units). See Fig. 18 and 19 for base rail and mixing box details.
3. Seal the connection between the mixing box and the return duct flange.

NOTE: Be careful not to tape or seal the filter access panel.

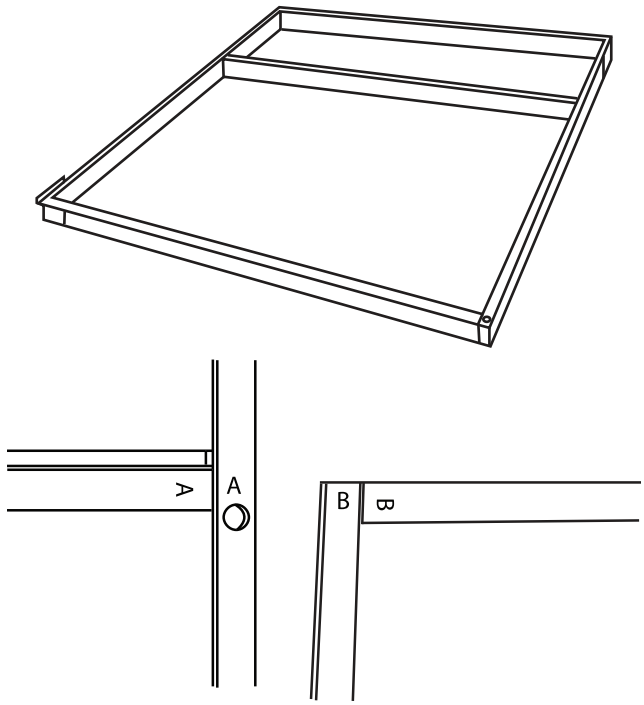


Fig. 15 — Assemble Base

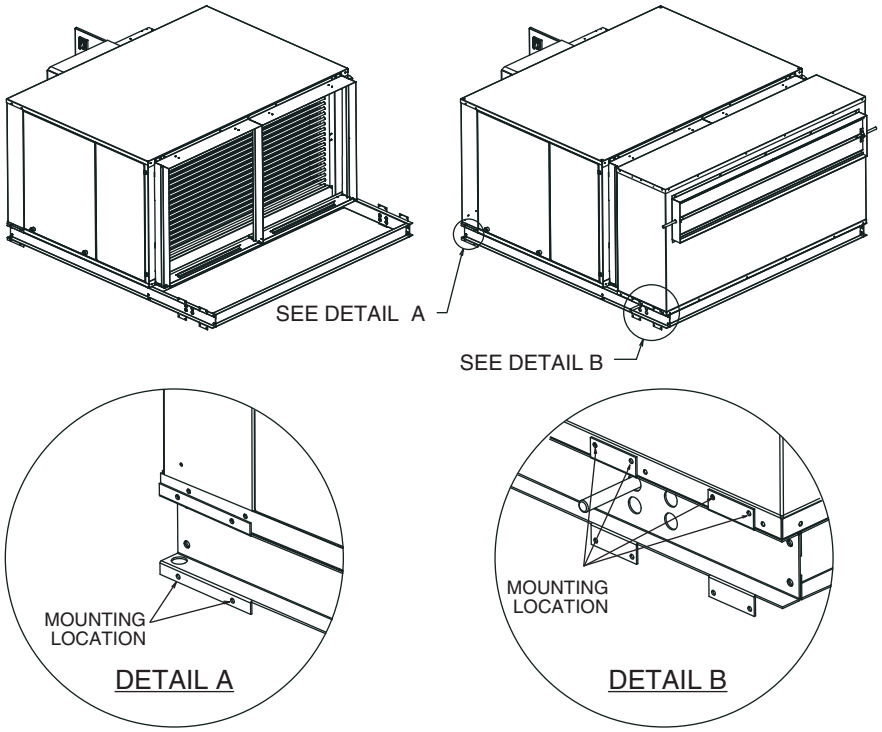


Fig. 16 — Install Mixing Box - 42BHE Units

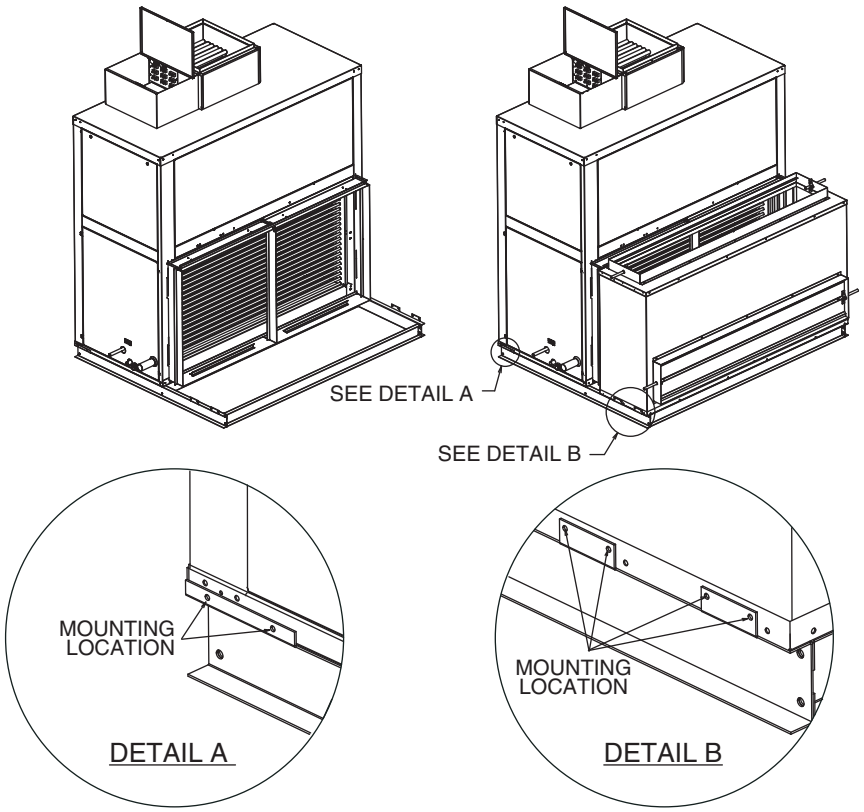
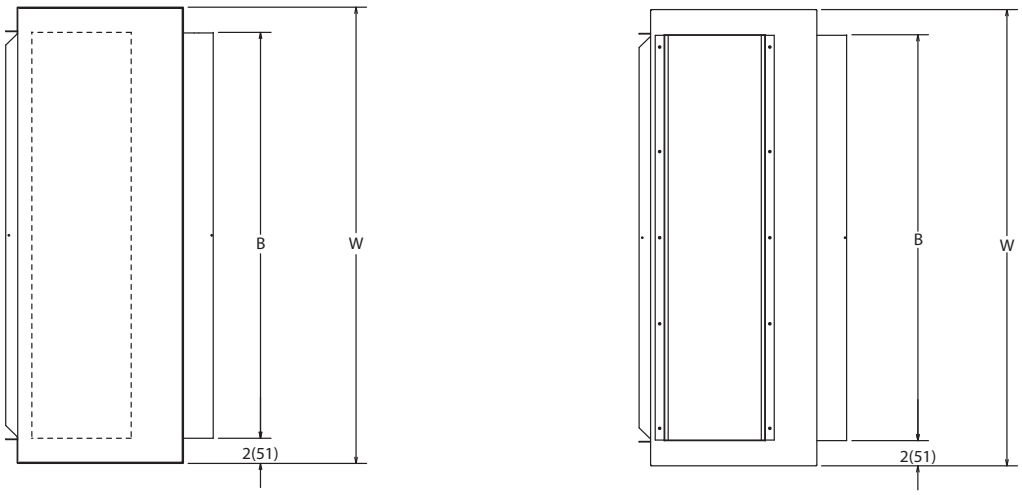


Fig. 17 — Install Mixing Box — 42BVE units

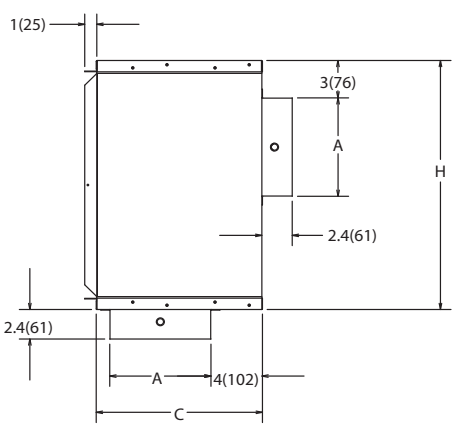
HORIZONTAL UNITS – DIMENSIONS - INCHES (MILLIMETERS)			
Unit Type and Size	W	D	A
BHE06	28 (711)	51.6 (1311)	16.1 (409)
BHE08	28 (711)	51.6 (1311)	16.1 (409)
BHE10	37 (940)	55.2 (1402)	18.1 (460)
BHE12	37 (940)	55.2 (1402)	18.1 (460)
BHE16	47 (1194)	55.4 (1407)	18.1 (460)
BHE20	48 (1219)	57.8 (1468)	18.1 (460)
BHE30	48 (1219)	59.8 (1519)	20.1 (511)
BHE40	62 (1575)	63.0 (1600)	20.1 (511)

HORIZONTAL UNITS – DIMENSIONS - INCHES (MILLIMETERS)			
Unit Type and Size	W	D	A
BVE06	28 (711)	35.5 (902)	16.1 (409)
BVE08	28 (711)	35.5 (902)	16.1 (409)
BVE10	37 (940)	39.5 (1003)	18.1 (460)
BVE12	37 (940)	39.5 (1003)	18.1 (460)
BVE16	47 (1194)	39.5 (1003)	18.1 (460)
BVE20	48 (1219)	41.5 (1054)	18.1 (460)
BVE30	48 (1219)	47.5 (1207)	20.1 (511)
BVE40	62 (1575)	47.5 (1207)	20.1 (511)

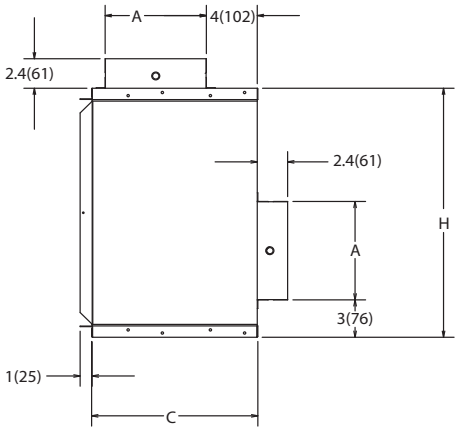
Fig. 18 — Base Rail Details



TOP VIEWS



BTM/REAR INLET - 42BHE
BTM/FRONT INLET FOR - 42BVE



TOP/REAR INLET - 42BHE
TOP/FRONT INLET FOR - 42BVE

DIMENSIONS - INCHES (MILLIMETERS)					
42BHE,BVE	**H**	**W**	**A**	**B**	**C**
06	18.5 (470)	28 (711)	6 (152)	24 (610)	11 (279)
08	18.5 (470)	28 (711)	6 (152)	24 (610)	11 (279)
10	20.25 (514)	37 (940)	8 (203)	33 (838)	13 (330)
12	20.25 (514)	37 (940)	8 (203)	33 (838)	13 (330)
16	20.25 (514)	47 (1194)	8 (203)	43 (1092)	13 (330)
20	22.75 (578)	48 (1219)	8 (203)	44 (1118)	13 (330)
30	31.0 (787)	48 (1219)	10 (254)	44 (1118)	15 (381)
40	31.0 (787)	62 (1575)	10 (254)	58 (1473)	15 (381)

Fig. 19 — Mixing Box Details

Step 10 — Make Final Preparations

1. TURN POWER OFF. (Open unit electrical disconnect.)
2. Clean unit thoroughly. Remove dirt and debris from unit, especially drain pan, drain line, motor, and fan. Pour water into drain pan to check that drain operates properly.
3. Rotate fan wheel by hand to be sure wheel is free and does not rub housing. The 42BHE, BVE belt drives are factory-set at the speed required for the design specifications specified when ordered. These drives may be adjusted to achieve different speed by qualified personnel during air system balancing. Refer to the Start-Up section on page 20 before energizing the unit. Check fan belt tension as described in the Service section which follows.
4. Check that a clean air filter of proper type and size is installed in unit filter rack after commissioning. Clean or Replace Air Filters section on page 21. Do NOT operate unit without filter.
5. Turn on water supply. Open all valves. Check for leaks. Recheck pitch of suspended unit.
6. Vent all air from unit coil and related piping. If air vent is manual, release air by turning air-vent screw 1-1/2 turns counterclockwise with screwdriver. When a steady stream of water begins to escape, close valve. If vent is automatic, trapped air will be released automatically. Vent releases air

slowly, usually dripping water into the drain pan in the process.

⚠ CAUTION

The air vent provided on the unit is not intended to replace the main system 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 needed. Some systems may require repeated venting over a period of time to properly eliminate air from the system. Failure to do so could result in equipment damage.

7. TURN POWER ON. (Close unit electrical disconnect.)

NOTE: Be sure power is off before making any adjustments inside unit.

8. Check fan and motor operation. Motor to fan wheel rotation must match airflow direction shown in Fig. 3-8.

   Set unit air delivery for required blower rpm per job submittals or product data catalog. Adjust fan motor pulley (Fig. 20) as follows:

   a. Loosen setscrew on movable pulley flange.
   b. Screw flange toward fixed flange to increase fan speed and away from fixed flange to decrease speed.
   c. Reset setscrew.
   d. Check belt tension. The drive belt should be tensioned to allow 1/2 to 3/4-in. deflection at the midpoint between pulleys with moderate pressure.

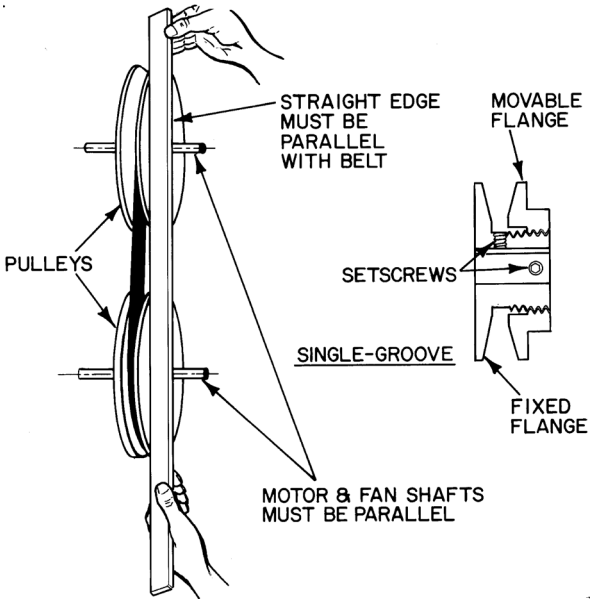


Fig. 20 — Fan Pulley Adjustments

Inspect the unit for loose wires, correct blower wheel operation, and loose or missing access panels or doors. Unless otherwise required for balancing and start-up procedures, units should not be operated without proper ductwork, supply/return air grilles, and access panels and/or doors in place.

⚠ CAUTION

Do not exceed motor nameplate FLA (full load amps). Operator must confirm motor current draw before putting unit into service and again after air balancing the system. Failure to do so could result in equipment damage.

START-UP

⚠ CAUTION

Follow all safety considerations previously outlined. Failure to do so could result in personal injury or equipment damage.

Start-up procedures vary depending upon the time of year (summer or winter) and building characteristics (new building or old building, occupied or 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 fed low-temperature chilled water in a hot, humid setting, condensation will form on many parts of the unit. In order to avoid excessive condensation, water of higher temperature should be used, approximately 65°F to 70°F. Also, the building should be as completely enclosed as possible and outside-air supply fans and toilet and kitchen exhaust fans should be off.

As the building temperature drops, the chilled water temperature can gradually be 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.

Air System Balancing

All ductwork, air grilles, filters, and access doors and panels must be complete and connected to establish actual system operating conditions before air system balancing procedures are started.

NOTE: Units are factory set for system designed operating conditions specified at the time of order entry.

Proper belt drive alignment and tension must be maintained when adjusting the unit fan drive speed. The drive belt tension should not exceed 3/16-in. (4.76 mm) deflection midway between the pulleys under 8 lb of force. New belts tend to stretch during their initial period of use. After 5 days of operation, check and readjust belt tension and pulley alignment if necessary. Failure to do so may result in excessive unit noise and/or premature belt/bearing failure.

SERVICE

⚠ WARNING

Lock open and tag electrical disconnect before servicing equipment. Failure to do so could result in personal injury or death.

Clean Coils

1. Brush between coil fins with a stiff wire brush. Do not bend fins. Follow up by cleaning with a vacuum cleaner. If coil is cleaned with an air hose, take care not to drive dirt and dust into other components.
2. Install clean air filters.

Check Drain

Check drain pan, drain line and trap at start of each cooling season. A standard type pipe cleaner for 3/4 in. (19.05 mm) ID pipe can ensure removal of obstructions so that condensate is carried away. Check the drain line at filter cleaning time during the cooling season.

Fan and Motor Bearings

Fan shaft bearings are permanently lubricated and sealed, and need no attention. Check tag on motor for motor bearing lubrication instructions (if any). Most motors furnished with these units are permanently lubricated.

Align Pulley

Loosen pulley setscrew(s). Align pulleys by using a straight edge as shown in Fig. 20. Re-tighten setscrew(s).

Adjust Fan Belt Tension

Loosen fan motor base mounting screws. Reposition the motor so that belt deflection does not exceed 3/16-in. at belt midpoint under 8 lb of force. Re-tighten motor mounting screws and recheck fan belt tension.

Clean Fan Wheel

Use a stiff brush or vacuum to remove dirt and debris from scroll. Wipe all fan surfaces with a damp cloth.

Clean or Replace Air Filters

Each unit is equipped with return air filters. At the start of each cooling season and after each month of operation (more or less depending on operating conditions), replace unit filter.

Unit filters are 1 in. (25.40 mm), 2 in. (50.80 mm) or 4 in. (101.60 mm) thick. Filters can be easily accessed from the side or bottom of the filter rack (see Fig. 21).

To remove filters from the side of the filter rack:

1. Remove the side access panel of the filter rack by pulling tab at the bottom of the panel to free from magnets, and lower it out of the slot in the top of the filter frame
2. Pull out dirty filters.
3. Replace with new appropriate size filters.
4. To re-install side access panel into filter rack
   a. Insert the tab of panel into the slot in filter frame's top.
   b. Rotate panel toward the frame, ensure magnets are engaged.

To remove filters from the bottom of the filter rack:

1. Open hinged bottom access panel - pull down to disengage magnets.
2. Pull out dirty filters.
3. Replace with new appropriate size filters.
4. Secure bottom access panels, make sure magnets are re-engaged.

Units are designed to accept various filter sizes depending on job requirements. Each filter frame is equipped with Filter Support Angle Brackets and 1 in. (25.40 mm) or 2 in. (50.80 mm) filter slots on all four sides of filter frame. The Filter Support Angle Brackets are designed to provide guidance and support to the new filter as it is being inserted.

In order to accommodate 1 in. (25.40 mm) and 2 in. (50.80 mm) filters, the bracket should be inserted into corresponding slots on all sides of the filter frame (See Fig. 21) and secured with screws. When 4 in. filter is installed, the brackets should be stored for future use with different filter thickness, or discarded if 4 in. filter will be always used.

Recommended Maintenance

Quarterly

- Lubricate motor and blower bearings (if applicable)
- Check and adjust belt tension
- Change air filter

Annually (in addition to quarterly maintenance)

- Inspect all wiring connections and tighten if necessary
- Check and tighten set screws on pulleys
- Clean coil and drain pan
- Clean blower wheel as needed

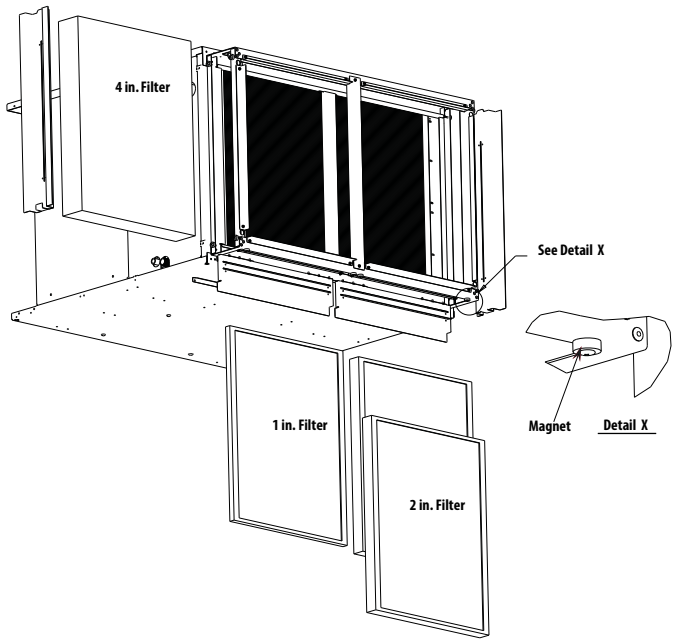


Fig. 21 — Horizontal Unit Filter Rack

TROUBLESHOOTING

Excessive Condensation on Fan Coil Unit Parts

Excessive condensation can be caused by running chilled water through a fan coil unit with its fan off. If fan cycling control is used, a water-flow control valve should be installed to shut off the water when the fan stops.

The following two practices will also help avoid condensation problems:

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

Motor Overload

The following are causes and remedies for motor trip-out on overload:

Cause:

Fan delivers too much air because external static pressure is lower than the design pressure.

Remedy:

Reduce fan speed by adjusting motor pulley or changing fan shaft pulley to larger diameter.

Cause:

Air temperature across fan motor is too high (heating mode).

Remedy:

Check ambient temperature on motor's nameplate. Compare to actual air temperature at the motor or at the fan discharge. If motor's nameplate lists and ambient temperature of 104°F and the actual air temperature is higher, either lower the air temperature or obtain a special motor rated for high ambient temperatures.

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

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INITIAL START-UP CHECKLIST
FOR AIRSTREAM™ 42BHE,BVE06-40 SYSTEM FAN COIL AIR CONDITIONERS
(Remove and use for job file.)

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 document.

START-UP CHECKLIST

The following is a checklist to be completed before start-up:

1. General visual unit and system inspection	☐ Yes	☐ No
2. Check that unit is level	☐ Yes	☐ No
3. Record electrical supply voltage	☐ Yes	☐ No
4. Check all wiring for secure connections	☐ Yes	☐ No
5. Verify with straight edge alignment of motor and blower pulleys	☐ Yes	☐ No
6. Tighten all set screws	☐ Yes	☐ No
7. Confirm V-belt is properly tightened	☐ Yes	☐ No
8. Check condensate drain connection	☐ Yes	☐ No
9. Verify trap is deep enough	☐ Yes	☐ No
10. Prime the trap with water	☐ Yes	☐ No
11. Check supply and return water connections for leaks	☐ Yes	☐ No
12. Fill systems with water by opening supply ball valve and control valve	☐ Yes	☐ No
13. Open air vent on top of coil to vent air out of system	☐ Yes	☐ No
14. Open return ball valve	☐ Yes	☐ No
15. Engage power only long enough to verify proper blower rotation	☐ Yes	☐ No
16. Check all ductwork and grilles in place	☐ Yes	☐ No
17. Check all unit panels and filters in place	☐ Yes	☐ No
18. Start fans, pumps, chillers, etc.	☐ Yes	☐ No
19. Check for overload conditions of all units	☐ Yes	☐ No
20. Check all ductwork and units for air leaks	☐ Yes	☐ No
21. Balance water systems, as required	☐ Yes	☐ No
22. Balance air systems, as required	☐ Yes	☐ No
23. Record all final settings for future use	☐ Yes	☐ No
24. Check piping and ductwork for noise or vibration	☐ Yes	☐ No
25 Check all dampers for proper operation	☐ Yes	☐ No
26. Verify proper cooling operation	☐ Yes	☐ No
27. Verify proper heating operation	☐ Yes	☐ No
28. Reinstall all covers and access panels	☐ Yes	☐ No
29. Verify proper condensate drainage	☐ Yes	☐ No

COMMENTS:

SIGNATURES:

Start-up
Technician _____Date_____

Customer
Representative_____Date_____

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE