



B(C,V) Series Multi-position Air Handler Electric or Hot Water Heat with Variable-Speed Motor Option Engineering & Specification Guide



Contents:	Page #:
Product Features	2
Physical Data	3
Nomenclature	4
Blower Performance	5
Electrical Data.....	7
Water Heating Capacities	9
Hydronic System Design	11
Line Lengths for Heating Coils	12
Installation Configurations	13
Dimensions	15



ISO 9001:2000
—Registered Quality System—



Product improvement is a continuous process at Advanced Distributor Products. Therefore, product specifications are subject to change without notice and without obligation on our part. Please contact your ADP representative or distributor to verify detail

Cabinet Features

- Stiff cabinets constructed of pre-painted heavy gauge galvanized steel to prevent corrosion and are lined with high quality 5/8" foil faced insulation to prevent sweating.
- Multi-position available from factory or field convertible.
- Enhanced grommets - secure & tight.
- All air handlers are basiloid packaged with bar coding and full description on label.
- Side return right- or left-hand capable on 12-30, 36 size models
- Magnetic filter rack door:
 1. Easy filter replacement
 2. Tight seal for less air leakage
 3. Fiberglass air filter comes with every air handler
 4. Filter rack accepts standard size filters sold in hardware stores

Evaporator Coil Features

- Coils are air pressure tested at 500 PSI, pressure tested with Helium, sealed and then charged with dry air.
- Suitable for use with R-22 and R410A.
- Rifled copper tubing.
- Patented lanced fin design.
- Flrator, non-bleed A/C or HP expansion valves available factory installed. Screw-on expansion valves also available for field installation.
- Dual 3/4" FPT left and right condensate drain connections.
- Drain pans are molded of corrosion proof high temperature (450⁰ F) engineering polymer.

Hot Water Heat Features

- Suitable for potable water systems.
- Easy to read, plug and play multi-function control board controls both factory and field installed circulating pumps with the following features: (not available with variable-speed motor)
 1. Thermostat connections
 2. Freeze protection activates circulating pump if water coil temperature drops below 40 deg. F.
 3. Pump timer activates circulating pump every six hours for one minute purging the hot water coil of sedentary water. Pump timer activation is skipped while compressor is operating.
 4. 24 Vac control to activate an isolation valve supplying hot water to the Air Handler.
 5. Auxillary contacts on control board allow the Air Handler to turn on/off a water heater or boiler.
- Optional factory installed 120 V circulating pump fully encased in cabinet.
- Purge Valve available on all hot water coils with factory installed circulating pumps.
- Low water pressure drop through hot water coil for excellent heating performance.
- Water connections 7/8" ODF (fits 3/4" pipe) for 1-3 ton models and 1 1/8" ODF (fits 1" pipe) for 3.5-5 ton models.
- Easy to replace hot water coil. Remove one screw and slide out.

Variable-Speed Motor Features

- Maintains a selected CFM over wide range of static conditions.
- Soft start feature slowly ramps up airflow on start up.
- Dehumidification setting when activated runs cooling cfm at 90%.
- Constant air circulation setting runs cooling cfm at 50%. This quiet continuous airflow improves IAQ and eliminates stratification at a reduced energy cost.
- Control Board LED Lights display operating mode and indicates when dehumidification setting has been activated.
- Time delay standard.

Electrical Features

- Multi-function Control Board standard factory installed on all models with three-speed blower motors.
- Factory installed fan time delay, built into control board. Time delay controls blower activation and shutoff in both heating and cooling modes for increased energy efficiency and comfort.
- Electric heat kits available factory installed for 2.5 & 5 Kw. Higher Kw heat kits available for field installation.
- High efficiency three-speed motors for project flexibility.
- Dynamically balanced blowers for quiet vibration free operation.
- Electrical connections can be made on top or both sides of cabinet.
- Easy to adjust blower speeds for fine tuning customer comfort.
- Blower door safety switch on all models.

Physical Data

Transformer Size and Type		Air Handler Size											
		12	18	24	25	30	31	36	37	42	48	49	60
		40VA, Class 2											
Three-Speed Blower Data	(1) Available Voltage	120 V or 208/240 V, 60 Hz, 1 ph. or 220 V, 50 Hz, 1 ph.											
	Wheel (dia." x width")	9 X 6				10 X 8				10 X 10			
	Motor H. P.	1/5	1/4	1/4	1/3	1/3	1/3	1/3	1/3	1/2	1/2	3/4	3/4
	F. L. A. @ 120 V	2.0	3.2	3.2	5.3	5.3	7.1	7.1	7.1	8.5	7.5	10.5	10.5
	F. L. A. @ 240 V	1.4	1.4	1.8	2.2	2.2	2.6	2.6	2.6	3.0	4.4	4.3	4.3
	Nominal CFM	400	600	800	800	1000	1000	1200	1200	1400	1600	1600	2000
Variable-Speed Blower Data	(1) Available Voltage	-	-	-	120 V or 208/240 V, 60 Hz, 1 ph.			-	120 V or 208/240 V, 60 Hz, 1 ph.			-	120 V or 208/240 V, 60 Hz, 1 ph.
	Wheel (dia." x width")	-	-	-	9 X 6	10 X 8	10 X 8	-	10 X 8	10 X 8	10 X 8	-	10 X 10
	Motor H. P.	-	-	-	1/3	1/2	1/2	-	1/2	1/2	3/4	-	1
	F. L. A. @ 120 V	-	-	-	4.8	5.4	5.4	-	6.0	6.0	7.0	-	10.2
	F. L. A. @ 240 V	-	-	-	2.4	2.7	2.7	-	3.0	3.0	3.5	-	5.1
	Cooling CFM Range	-	-	-	600 - 1000	600 - 1200	600 - 1200	-	600 - 1200	1000 - 1500	1400 - 1800	-	1700 - 1900
Heating CFM Range	-	-	-	600 - 1000	1100 - 1200	1100 - 1200	-	1100 - 1200	1200 - 1500	1600 - 1800	-	1700 - 1900	
Single-Speed Circulating Pump Data	Connection Size	7/8"											
	Voltage	120 V											
	Amps	0.52											
Air Filter Size		12" X 20"			16" X 20"			16" X 25"	16" X 20"	16" X 25"			18" X 25"
Refrigerant Conn. (IDS) Suction		3/4"				7/8"		3/4"	7/8"				
Refrigerant Conn. (IDS) Liquid		3/8"											
Florator Piston Size (in)		.041	.053	.059	.059	.067	.067	.073	.073	.080	.084	.084	.093
Weight lbs. (base unit w/out hot water coil)		120			130	140	150	140	150	210	230	230	240

(1) Electric heat models are not available in 120 V, 60 Hz. Hot water heat models are not available in 208/240 V, 60 Hz.

Model Nomenclature

B	C	R	M	A1	2	24	S	2P	3
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B = ADP Beige Painted Cabinet

MOTOR TYPE

- C** = Three-Speed
- V** = Variable-Speed

Horizontal Drain Pan Position*

- L** = Left-Hand
- R** = Right-Hand
- O** = No Cooling Coil

AIRFLOW CONFIGURATION

- V** = Vertical Only
- M** = Multi-position

SLAB NUMBER

- A1** Thru **Z9**
- 00** = No Cooling Coil, Heating Only

METERING DEVICE

- 0** = No Cooling Coil
- 2** = Florator
- 3** = Bleed TXV (R-22)
- 4** = Non-Bleed A/C TXV (R-22)
- 5** = Non-Bleed HP-A/C TXV (R-22)
- 6** = Non-Bleed A/C TXV (R-410A)
- 9** = Non-Bleed HP-A/C TXV (R-410A)

UNIT SIZE

12, 18, 24, 25, 30, 36	31, 37, 42, 48, 49, 60
Slant Coil (side return capable)	'A' Coil

VOLTAGE ⁽¹⁾

- 1** = 208/240 V, 60 Hz, 1 ph. with time delay
- 3** = 120 V, 60 Hz, 1 ph. with time delay
- 5** = 220 V, 50 Hz, 1 ph. with time delay (Only available in three-speed blower options and 2N, 3N, & 4N Heat options)

HEAT

- 00** = 0 Kw ELEC.**
- 02** = 2.5 Kw ELEC.**
- 05** = 5 Kw ELEC.**

All with pump and valve assembly

- 2P** = 2 Row hot water coil [sizes 12-30,36]
- 3P** = 3 Row hot water coil [all sizes]
- 4P** = 4 Row hot water coil [sizes 31,37-60]

All with no pump

- 2N** = 2 Row hot water coil [sizes 12-30,36]
- 3N** = 3 Row hot water coil [all sizes]
- 4N** = 4 Row hot water coil [sizes 31,37-60]

LINE VOLTAGE CONNECTION

- S** = Stripped Wire

⁽¹⁾ Electric heat models are not available in 120 V, 60 Hz. Hot water heat models are not available in 208/240 V, 60 Hz.

* Horizontal Drain Pans can be field installed as an accessory in Vertical Only Air Handlers for multi-position configuration.

** Elec. Heat Kits higher than 5 Kw only available as field installed kits.

Note: Horizontal Drain Pan Position for slant coil models indicate that the opposing side of the cabinet is side air return capable.

All Air Handlers with slant coils can be field converted to allow for either left or right side air return.

Three-Speed Blower Performance (CFM vs. ESP inches H₂O)

All data is given while air handler is operating with a dry DX coil and air filter installed.

Speeds marked in **bold with an asterisk*** are the factory speed settings for both heating and cooling.

Cooling speeds should not be reduced below factory setting.

Unit Size (MBTUH)	Fan Speed Setting	Electric Heat Models					Water Heat Models				
		0.10	0.20	0.30	0.40	0.50	0.10	0.20	0.30	0.40	0.50
12	*Low	458	445	431	402	368	499	493	470	437	401
	Med	631	611	581	543	485	671	636	611	557	490
	High	725	691	650	602	544	727	715	675	631	540
18	Low	458	445	431	402	368	499	493	470	437	401
	*Med	631	611	581	543	485	671	636	611	557	490
	High	725	691	650	602	544	727	715	675	631	540
24	Low	588	580	564	537	471	687	584	579	549	487
	*Med	771	747	710	671	600	889	847	795	731	666
	High	893	848	801	714	639	952	896	847	780	697
25	*Low	819	812	805	782	735	781	777	773	760	741
	Med	1015	1004	986	961	930	989	989	983	967	942
	High	1155	1149	1122	1090	1039	1095	1089	1072	1049	1020
30	Low	819	812	805	782	735	781	777	773	760	741
	*Med	1015	1004	986	961	930	989	989	983	967	942
	High	1155	1149	1122	1090	1039	1095	1089	1072	1049	1020
31	*Low	1118	1111	1097	1060	1013	1121	1110	1099	1065	1023
	Med	1275	1261	1222	1168	1112	1302	1278	1233	1197	1144
	High	1355	1330	1317	1267	1196	1448	1391	1359	1298	1223
36	Low	1118	1111	1097	1060	1013	1121	1110	1099	1065	1023
	*Med	1275	1261	1222	1168	1112	1302	1278	1233	1197	1144
	High	1355	1330	1317	1267	1196	1448	1391	1359	1298	1223
37	Low	1190	1122	1052	1028	1003	1072	1011	947	926	903
	*Med	1437	1355	1270	1241	1212	1351	1274	1194	1167	1139
	High	1449	1429	1389	1344	1298	1361	1342	1305	1263	1219
42	Low	1153	1144	1144	1135	1135	1345	1331	1302	1282	1257
	*Med	1494	1445	1431	1395	1342	1681	1615	1587	1521	1487
	High	1666	1590	1571	1511	1469	1788	1727	1674	1603	1529
48	Low	1568	1527	1502	1433	1397	1518	1440	1409	1383	1338
	*Med	1775	1724	1672	1563	1505	1652	1575	1541	1506	1459
	High	1881	1834	1765	1693	1597	1736	1668	1614	1564	1524
49	*Low	1662	1650	1643	1614	1568	1646	1642	1639	1630	1606
	Med	1853	1840	1813	1746	1675	1833	1826	1820	1766	1702
	High	2085	1038	1990	1916	1839	2065	2029	1981	1918	1847
60	Low	1662	1650	1643	1614	1568	1646	1642	1639	1630	1606
	*Med	1853	1840	1813	1746	1675	1833	1826	1820	1766	1702
	High	2085	1038	1990	1916	1839	2065	2029	1981	1918	1847

Variable-Speed Blower Performance & Adjustment Table

Model	Operating Mode	Thermostat Terminals X = Energized Terminal						Control Board Taps							
		HUM	EM	W1	O	Y2/Y1	G	Cool				Heat			
								A	B	C	D	A	B	C	D
CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM		
25	Cooling	**			X	X		850	700	600	500				
	Heating					X						850	675	600*	500*
	Continuous Blower						X	425	350	300	250				
	Aux. Heat			X		X		***	***	***	***	850	700	600*	500*
	Emer. Heat		X	X				***	***	***	***	850	700	600*	500*
30, 31	Cooling	**			X	X		1200	1000	800	600				
	Heating					X						1200	1000	800*	600*
	Continuous Blower						X	600	500	400	350				
	Aux. Heat			X		X		***	***	***	***	1200	1000	800*	600*
	Emer. Heat		X	X				***	***	***	***	1200	1000	800*	600*
37	Cooling	**			X	X		1400	1230	1100	1000				
	Heating					X						1400	1230	1100*	1000*
	Continuous Blower						X	700	615	550	500				
	Aux. Heat			X		X		***	***	***	***	1400	1230	1100*	1000*
	Emer. Heat		X	X				***	***	***	***	1400	1230	1100*	1000*
42	Cooling	**			X	X		1400	1230	1100	1000				
	Heating					X						1400	1230	1100*	1000*
	Continuous Blower						X	700	615	550	500				
	Aux. Heat			X		X		***	***	***	***	1400	1230	1100*	1000*
	Emer. Heat		X	X				***	***	***	***	1400	1230	1100*	1000*
48	Cooling	**			X	X		1600	1450	1350	1250				
	Heating					X						1600	1450	1350*	1250*
	Continuous Blower						X	800	725	675	625				
	Aux. Heat			X		X		***	***	***	***	1600	1450	1350*	1250*
	Emer. Heat		X	X				***	***	***	***	1600	1450	1350*	1250*
60	Cooling	**			X	X		1900	1850	1800	1700				
	Heating					X						1900	1850	1800	1700
	Continuous Blower						X	950	925	900	850				
	Aux. Heat			X		X		***	***	***	***	1900	1850	1800	1700
	Emer. Heat		X	X				***	***	***	***	1900	1850	1800	1700

* This CFM is not approved for use with the highest kW heater size.

** Humidistat will reduce cooling airflow by 10% in high humidity.

***Airflow is the greater of the COOL and HEAT values when both electric heat and heat pump are operating.

NOTES: The heating and cooling taps are factory set on "A" except model 37 is set on "B"

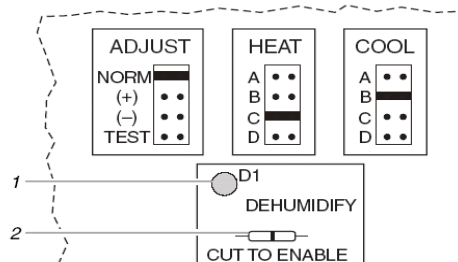
Adjust tap (+) will increase airflow by 10%, while tap (-) will decrease airflow by 12%.

Adjust tap "test" will cause motor to run at 70% of full airflow. Use this for troubleshooting only.

At the start of a call for cooling there is a short run at 82% of airflow for 7.5 minutes.

At the end of a call for cooling there is a blower off delay of 1 minute.

Control Board Taps and Dehumidify Resistor.



1. Dehumidify LED
2. Dehumidify resistor

Electrical Data

Air Handler Size (MBTUH)	Elec. Heating Cap.		Three-Speed Blower Minimum Heat Settings	Three-Speed Blower Amps		Variable- Speed Blower Amps		Three-Speed Blower Minimum Circuit Ampacity	Variable-Speed Blower Minimum Circuit Ampacity	Circuit Breaker Amps Per Stage		
	Kw	BTUH		120 V	240 V	120 V	240 V	240 V	240 V	1	2	3
	(1) 240 V	(1) 240 V										
12 Water Heat	0	0	Low	2.0	1.4	-	-	1.8	-	15	-	-
12 No Heat	0	0	Low	2.0	1.4	-	-	1.8	-	15	-	-
12 Elec. Heat	2.5	8,530	Low	-	1.4	-	-	14.8	-	15	-	-
12 Elec. Heat	5	17,065	Low	-	1.4	-	-	27.8	-	30	-	-
18 Water Heat	0	0	Low	3.2	1.4	-	-	1.8	-	15	-	-
18 No Heat	0	0	Low	3.2	1.4	-	-	1.8	-	15	-	-
18 Elec. Heat	2.5	8,530	Low	-	1.4	-	-	14.8	-	15	-	-
18 Elec. Heat	5	17,065	Low	-	1.4	-	-	27.8	-	30	-	-
18 Elec. Heat	7.5	25,598	Med	-	1.4	-	-	40.8	-	45	-	-
18 Elec. Heat	10	34,130	Med	-	1.4	-	-	53.8	-	60	-	-
24 Water Heat	0	0	Low	3.2	1.8	-	-	2.3	-	15	-	-
24 No Heat	0	0	Low	3.2	1.8	-	-	2.3	-	15	-	-
24 Elec. Heat	2.5	8,530	Low	-	1.8	-	-	15.3	-	30	-	-
24 Elec. Heat	5	17,065	Low	-	1.8	-	-	28.3	-	30	-	-
24 Elec. Heat	7.5	25,598	Low	-	1.8	-	-	41.3	-	45	-	-
24 Elec. Heat	10	34,130	Med	-	1.8	-	-	54.3	-	60	-	-
24 Elec. Heat	12.5	42,663	Med	-	1.8	-	-	67.4	-	45	30	-
25 Water Heat	0	0	Low	5.3	2.2	4.8	2.4	2.8	3.0	15	-	-
25 No Heat	0	0	Low	5.3	2.2	4.8	2.4	2.8	3.0	15	-	-
25 Elec. Heat	2.5	8,530	Low	-	2.2	-	2.4	15.8	16.0	30	-	-
25 Elec. Heat	5	17,065	Low	-	2.2	-	2.4	28.8	29.0	30	-	-
25 Elec. Heat	7.5	25,598	Low	-	2.2	-	2.4	41.8	42.1	45	-	-
25 Elec. Heat	10	34,130	Low	-	2.2	-	2.4	54.8	55.1	60	-	-
25 Elec. Heat	12.5	42,663	Low	-	2.2	-	2.4	67.9	68.1	45	30	-
30 Water Heat	0	0	Low	5.3	2.2	5.4	2.7	2.8	3.4	15	-	-
30 No Heat	0	0	Low	5.3	2.2	5.4	2.7	2.8	3.4	15	-	-
30 Elec. Heat	2.5	8,530	Low	-	2.2	-	2.7	15.8	16.4	30	-	-
30 Elec. Heat	5	17,065	Low	-	2.2	-	2.7	28.8	29.4	45	-	-
30 Elec. Heat	7.5	25,598	Low	-	2.2	-	2.7	41.8	42.4	45	-	-
30 Elec. Heat	10	34,130	Low	-	2.2	-	2.7	54.8	55.5	60	-	-
30 Elec. Heat	12.5	42,663	Med	-	2.2	-	2.7	67.9	68.5	45	30	-
30 Elec. Heat	15	51,195	Med	-	2.2	-	2.7	80.9	81.5	60	30	-
30 Elec. Heat	17.5	59,728	Med	-	2.2	-	2.7	93.9	94.5	60	45	-
31 Water Heat	0	0	Low	7.1	2.6	5.4	2.7	3.3	3.4	15	-	-
31 No Heat	0	0	Low	7.1	2.6	5.4	2.7	3.3	3.4	15	-	-
31 Elec. Heat	2.5	8,530	Low	-	2.6	-	2.7	16.3	16.4	30	-	-
31 Elec. Heat	5	17,065	Low	-	2.6	-	2.7	29.3	29.4	45	-	-
31 Elec. Heat	7.5	25,598	Low	-	2.6	-	2.7	42.3	42.4	45	-	-
31 Elec. Heat	10	34,130	Low	-	2.6	-	2.7	55.3	55.5	60	-	-
31 Elec. Heat	12.5	42,663	Low	-	2.6	-	2.7	68.4	68.5	45	30	-
31 Elec. Heat	15	51,195	Low	-	2.6	-	2.7	81.4	81.5	60	30	-
31 Elec. Heat	17.5	59,728	Low	-	2.6	-	2.7	94.4	94.5	60	45	-

Kw packages in bold indicates that these heat packages require and include circuit breakers. Optional for others.

(1) For 208 Volts use .751 correction factor for Kw & BTUH.

Electrical Data cont.

Air Handler Size (MBTUH)	Heating Capacity		Three-Speed Blower Minimum Heat Settings	Three-Speed Blower Amps		Variable Speed Blower Amps		Three-Speed Blower Minimum Circuit Ampacity	Variable-Speed Blower Minimum Circuit Ampacity	Circuit Breaker Amps Per Stage		
	Kw	BTUH		120 V	240 V	120 V	240 V			240 V	240 V	1
	(1) 240 V	(1) 240 V										
36 Water Heat	0	0	Low	7.1	2.6	-	-	3.3	-	15	-	-
36 No Heat	0	0	Low	7.1	2.6	-	-	3.3	-	15	-	-
36 Elec. Heat	2.5	8,530	Low	-	2.6	-	-	16.3	-	30	-	-
36 Elec. Heat	5	17,065	Low	-	2.6	-	-	29.3	-	30	-	-
36 Elec. Heat	7.5	25,598	Low	-	2.6	-	-	42.3	-	45	-	-
36 Elec. Heat	10	34,130	Low	-	2.6	-	-	55.3	-	60	-	-
36 Elec. Heat	12.5	42,663	Med	-	2.6	-	-	68.4	-	45	30	-
36 Elec. Heat	15	51,195	Med	-	2.6	-	-	81.4	-	60	30	-
36 Elec. Heat	17.5	59,728	Med	-	2.6	-	-	94.4	-	60	45	-
36 Elec. Heat	20	68,260	Med	-	2.6	-	-	107.4	-	60	60	-
37 Water Heat	0	0	L	7.1	2.6	6	3.0	3.3	3.8	15	-	-
37 No Heat	0	0	L	7.1	2.6	6	3.0	3.3	3.8	15	-	-
37 Elec. Heat	5	17,065	L	-	2.6	-	3.0	29.3	29.8	45	-	-
37 Elec. Heat	10	34,130	L	-	2.6	-	3.0	55.3	55.8	45	30	-
37 Elec. Heat	12.5	42,663	M	-	2.6	-	3.0	68.4	68.9	60	30	-
37 Elec. Heat	15	51,195	M	-	2.6	-	3.0	81.4	81.9	60	30	-
37 Elec. Heat	20	68,260	M	-	2.6	-	3.0	107.4	107.9	60	45	30
42 Water Heat	0	0	L	8.5	3.0	6	3.0	3.8	3.8	15	-	-
42 No Heat	0	0	L	8.5	3.0	6	3.0	3.8	3.8	15	-	-
42 Elec. Heat	5	17,065	L	-	3.0	-	3.0	29.8	29.8	45	-	-
42 Elec. Heat	10	34,130	L	-	3.0	-	3.0	55.8	55.8	45	30	-
42 Elec. Heat	12.5	42,663	L	-	3.0	-	3.0	68.9	68.9	45	30	-
42 Elec. Heat	15	51,195	M	-	3.0	-	3.0	81.9	81.9	60	30	-
42 Elec. Heat	20	68,260	M	-	3.0	-	3.0	107.9	107.9	60	45	30
48 Water Heat	0	0	L	7.5	4.4	7	3.5	5.5	4.4	15	-	-
48 No Heat	0	0	L	7.5	4.4	7	3.5	5.5	4.4	15	-	-
48 Elec. Heat	5	17,065	L	-	4.4	-	3.5	31.5	30.4	45	-	-
48 Elec. Heat	10	34,130	L	-	4.4	-	3.5	57.6	56.5	60	-	-
48 Elec. Heat	12.5	42,663	L	-	4.4	-	3.5	70.6	69.5	45	30	-
48 Elec. Heat	15	51,195	L	-	4.4	-	3.5	83.6	82.5	60	45	-
48 Elec. Heat	20	68,260	L	-	4.4	-	3.5	109.7	108.5	60	45	30
48 Elec. Heat	25	85,325	M	-	4.4	-	4.3	135.7	135.6	60	60	30
49 Water Heat	0	0	L	10.5	4.3	-	-	5.4	-	15	-	-
49 No Heat	0	0	L	10.5	4.3	-	-	5.4	-	15	-	-
49 Elec. Heat	5	17,065	L	-	4.3	-	-	31.4	-	30	-	-
49 Elec. Heat	10	34,130	L	-	4.3	-	-	57.5	-	60	-	-
49 Elec. Heat	12.5	42,663	L	-	4.3	-	-	70.5	-	45	30	-
49 Elec. Heat	15	51,195	L	-	4.3	-	-	83.5	-	60	30	-
49 Elec. Heat	20	68,260	L	-	4.3	-	-	109.5	-	60	60	-
49 Elec. Heat	25	85,325	L	-	3.5	-	-	134.6	-	60	60	30
60 Water Heat	0	0	L	10.5	4.3	10.2	5.1	5.4	6.4	15	-	-
60 No Heat	0	0	L	10.5	4.3	10.2	5.1	5.4	6.4	15	-	-
60 Elec. Heat	5	17,065	L	-	4.3	-	5.1	31.4	32.4	45	-	-
60 Elec. Heat	10	34,130	L	-	4.3	-	5.1	57.5	58.5	60	-	-
60 Elec. Heat	12.5	42,663	L	-	4.3	-	5.1	70.5	71.5	45	30	-
60 Elec. Heat	15	51,195	L	-	4.3	-	5.1	83.5	84.5	60	30	-
60 Elec. Heat	20	68,260	L	-	4.3	-	5.1	109.5	110.5	60	60	-
60 Elec. Heat	25	85,325	M	-	4.3	-	4.3	135.6	135.6	60	60	30

Kw packages in bold indicates that these heat packages require and include circuit breakers. Optional for others.

(1) For 208 Volts use .751 correction factor for Kw & BTUH.

Water Heating Capacity (BTUH)

Unit Size 12, 18 & 24

Water Coil Size	ENT. WATER TEMP.	1 GPM				2 GPM				3 GPM			
		H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM		
			400	600	800		400	600	800		400	600	800
2 ROW	120°F	0.2	9,004	10,979	11,914	0.6	11,639	13,997	15,683	1.4	12,536	15,396	17,522
	140°F	0.2	13,209	15,600	16,942	0.6	16,452	19,823	22,240	1.3	17,683	21,757	24,793
	160°F	0.2	17,628	20,302	22,065	0.6	21,316	25,727	28,834	1.3	22,872	28,184	32,151
	180°F	0.2	32,738	25,065	27,260	0.6	26,217	31,687	35,621	1.3	28,091	34,659	39,573
3 ROW	120°F	0.3	11,286	13,771	14,944	0.9	14,528	17,826	20,160	1.9	15,582	19,636	22,659
	140°F	0.2	16,401	19,506	21,177	0.9	20,495	25,194	28,524	1.9	21,942	27,701	32,004
	160°F	0.2	21,792	25,320	27,500	0.9	26,511	32,641	36,991	1.8	28,343	35,833	41,442
	180°F	0.2	26,908	31,193	33,891	0.9	32,564	40,145	45,532	1.8	34,771	44,014	50,947

Unit Size 25, 30 & 36

Water Coil Size	ENT. WATER TEMP.	2 GPM				3 GPM				4 GPM			
		H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM		
			800	1000	1200		800	1000	1200		800	1000	1200
2 ROW	120°F	0.5	17,277	18,048	19,124	1.0	19,588	20,523	21,997	1.7	20,990	22,035	23,750
	140°F	0.5	24,529	25,619	27,164	1.0	27,747	29,072	31,155	1.7	29,682	31,163	33,616
	160°F	0.5	31,899	33,313	35,341	1.0	36,013	37,734	40,464	1.6	38,472	40,396	43,602
	180°F	0.4	39,359	41,098	43,622	0.9	44,360	46,482	49,872	1.6	47,332	49,705	53,678
3 ROW	120°F	0.7	21,309	22,783	54,179	1.4	24,501	26,156	28,137	2.4	25,648	28,187	30,578
	140°F	0.6	30,149	32,261	34,255	1.3	33,970	36,982	39,809	2.3	36,180	39,801	43,208
	160°F	0.6	39,095	41,866	44,472	1.3	43,988	47,928	51,621	2.2	46,799	51,526	55,970
	180°F	0.6	48,121	51,564	54,794	1.3	54,077	58,963	63,537	2.2	57,481	63,331	68,827

Unit Size 31 & 37

Water Coil Size	ENT. WATER TEMP.	3 GPM				4 GPM				5 GPM			
		H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM		
			1000	1100	1200		1000	1100	1200		1000	1100	1200
3 ROW	120°F	0.8	28,726	29,931	31,014	1.4	31,055	32,522	33,856	2	32,602	34,260	35,779
	140°F	0.8	40,610	42,329	43,874	1.3	43,847	45,937	47,838	2	45,986	48,344	50,505
	160°F	0.8	52,624	54,869	56,888	1.3	56,759	59,485	61,965	1.9	59,479	62,550	65,366
	180°F	0.8	64,735	67,541	70,015	1.3	69,759	73,130	76,197	1.9	73,051	76,844	80,323
4 ROW	120°F	1.0	33,478	34,963	36,329	1.7	36,193	38,058	39,751	2.6	37,946	40,069	42,015
	140°F	1.0	47,246	49,386	51,301	1.7	51,024	53,674	56,080	2.6	53,450	56,462	59,224
	160°F	1.0	61,139	63,925	66,420	1.7	65,969	69,416	72,548	2.5	69,055	72,970	76,562
	180°F	1.0	75,121	78,563	81,645	1.6	80,995	82,250	89,117	2.4	84,734	89,561	93,993

All capacities are based on 70°F entering air temperature.

For entering air temperatures other than 70°F use the following capacity correction factors:

(72°F x .982), (68°F x 1.02), (66°F x 1.04).

Glycol correction factors: (10% X .98), (20% X .95), (30% X .92), (40% X .88)

Water Heating Capacity (BTUH) (cont.)

Unit Size 42 & 48

Water Coil Size	ENT. WATER TEMP.	3 GPM				4 GPM				5 GPM			
		H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM		
			1400	1500	1600		1400	1500	1600		1400	1500	1600
3 ROW	120°F	0.8	32,883	33,695	34,441	1.4	36,190	37,221	38,173	2.0	38,464	39,660	40,722
	140°F	0.8	46,541	47,701	48,766	1.3	51,167	52,686	53,996	2.0	54,329	56,032	57,617
	160°F	0.8	60,372	61,888	63,279	1.3	66,310	68,229	70,004	1.9	70,350	72,572	74,640
	180°F	0.9	74,330	76,209	77,933	1.3	81,575	83,951	86,149	1.9	86,486	89,234	91,792
4 ROW	120°F	1.0	38,636	39,631	40,540	1.7	42,707	44,006	45,204	2.6	45,457	46,988	48,409
	140°F	1.0	54,582	55,996	57,288	1.7	60,284	62,131	63,834	2.6	64,115	66,290	68,310
	160°F	1.0	70,692	72,535	74,216	1.7	78,023	80,428	82,647	2.5	82,925	85,756	88,386
	180°F	1.0	86,924	89,200	91,276	1.6	95,879	98,851	101,592	2.4	101,845	105,340	108,588

Unit Size 49

Water Coil Size	ENT. WATER TEMP.	3 GPM		4 GPM		5 GPM	
		H ₂ O P.D. in FT.	CFM	H ₂ O P.D. in FT.	CFM	H ₂ O P.D. in FT.	CFM
			1600		1600		1600
3 ROW	120°F	0.9	35,898	1.5	39,807	2.2	42,517
	140°F	0.9	50,787	1.4	56,267	2.2	60,046
	160°F	0.8	65,859	1.4	72,907	2.1	77,746
	180°F	0.8	81,064	1.4	89,678	2.1	95,569
4 ROW	120°F	1.1	41,978	1.9	46,837	2.9	50,156
	140°F	1.1	59,276	1.9	66,098	2.8	70,734
	160°F	1.1	76,276	1.8	85,532	2.8	91,479
	180°F	1.1	94,339	1.8	105,091	2.7	112,342

Unit Size 60

Water Coil Size	ENT. WATER TEMP.	3 GPM				4 GPM				5 GPM			
		H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM			H ₂ O P.D. in FT.	CFM		
			1800	1900	2000		1800	1900	2000		1800	1900	2000
3 ROW	120°F	1.2	37,308	37,936	38,521	2.1	41,636	42,459	43,229	3.2	44,672	45,650	46,570
	140°F	1.2	52,797	53,693	54,526	2.1	58,874	60,047	61,145	3.2	63,115	64,508	65,818
	160°F	1.2	68,481	69,650	70,737	2.0	76,308	77,839	79,273	3.1	81,747	83,564	85,273
	180°F	1.2	84,309	85,756	87,101	2.0	93,886	95,781	97,555	3.1	100,517	102,764	104,879
4 ROW	120°F	1.1	43,662	44,406	45,095	1.9	49,104	50,118	51,065	2.9	52,882	54,114	55,271
	140°F	1.1	61,666	62,721	63,698	1.9	69,318	70,759	72,104	2.8	74,605	76,356	77,999
	160°F	1.1	79,853	81,224	82,492	1.8	89,723	91,598	93,347	2.8	96,514	98,793	100,931
	180°F	1.1	98,172	99,863	101,427	1.8	110,265	112,579	114,739	2.7	118,557	121,369	124,009

All capacities are based on 70°F entering air temperature.

For entering air temperatures other than 70°F use the following capacity correction factors:

(72°F x .982), (68°F x 1.02), (66°F x 1.04).

Glycol correction factors: (10% X .98), (20% X .95), (30% X .92), (40% X .88)

Hydronic System Design

Includes: Heating coil selection, line sizing and selected pump other than supplied by ADP

Sample Application

3 ton Cooling Load
 180° F Water Temp
 40% Glycol Mixture
 60,000 BTUH Heat Required

(1) From the 3 ton heating capacity tables select a hot water coil that supplies at least 60,000 btuh at 1,200 CFM, 180° F water temperature.

The 3 row coil supplies 68,827 BTUH @ 4 GPM, 2.2' pressure drop
 Correct capacity for 40% glycol (correction factors found below capacity chart) $\frac{68,827}{0.88}$
Corrected coil heating capacity (BTUH) = **60,568**

(2) Determine total equivalent line length

Note: Use the following line sizes as a guide for initial selection

1 - 3 GPM, 3/4"	4 - 5 GPM, 1"	6 - 8 GPM, 1 1/4"
-----------------	---------------	-------------------

Line size	<u>1"</u>								
Total number of fittings		<u>Quantity</u>		<u>Equiv. ft. of pipe (Table 3)</u>	=				
90° SR elbows		<u>20</u>	X	<u>2.7'</u>	=	<u>54'</u>		<u>54'</u>	
90° LR elbows		<u>0</u>	X	<u>0</u>	=	<u>0</u>		<u>+ 0</u>	
45° elbows		<u>0</u>	X	<u>0</u>	=	<u>0</u>		<u>+ 0</u>	
gate valves		<u>2</u>	X	<u>1.9'</u>	=	<u>3.8'</u>		<u>+ 3.8'</u>	
Total supply and return line length								<u>+ 186'</u>	
Total equivalent line length								= 244'	

(3) Determine total pump head required

				<u>Press. Drop/ft (Table 1)</u>					
Total equivalent line length	<u>244'</u>	X	<u>0.015</u>	=	<u>3.66</u>			<u>3.66'</u>	
Total pressure drop through coil (found on capacity chart)								<u>+ 2.2'</u>	
Line length correction factor for 40% glycol @ 180°F (Table 2)								X 1.12	
Total pump head required								6.58'	

(4) Now select a pump that supplies 4 GPM with at least 6.58' head capability.

Note: If desired, recalculation can be done with another line size to vary pump requirement.

Nominal Pipe Size	GPM																	
	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3	3.25	3.5	3.75	4	4.5	5	6	7	8
1/2"	.030	.048	.065	.083	.100	.125	.150	.175	.200	-	-	-	-	-	-	-	-	-
3/4"	.005	.009	.012	.016	.019	.024	.029	.034	.039	.045	.050	.056	.062	.077	.092	.130	-	-
1"	-	-	-	-	.005	.006	.007	.008	.009	.011	.012	.014	.015	.019	.023	.033	.042	.053
1 1/4"	-	-	-	-	-	-	-	-	-	-	-	-	.005	.007	.008	.011	.015	.018

% Glycol	140°F	160°F	180°F
10	1.04	1.04	1.02
20	1.08	1.07	1.04
30	1.13	1.11	1.08
40	1.19	1.16	1.12
50	1.24	1.21	1.17

Pipe Size	90° SR el	90° LR el	45° el	gate valve
1/2"	1.5	0.8	1	1
3/4"	2	1	1.4	1.4
1"	2.7	1.3	1.9	1.9
1 1/4"	3.6	1.8	2.5	2.5

Maximum Line Lengths for Heating Coils Using ADP Pump

All line lengths are total for supply and return

Air Handler Size	Water Coil Size	Nominal Pipe Size (ID)	Maximum Supply Pipe Length (ft.) type K copper																			
			GPM																			
			1	1.3	1.5	1.8	2	2.3	2.5	2.8	3	3.3	3.5	3.8	4	4.3	4.5	4.8	5	6	7	8
12, 18, & 24	2 Row	1/2"	256	149	100	71	53	35	23	15	8	-	-	-	-	-	-	-	-	-	-	
		3/4"	-	-	-	464	361	263	198	152	118	-	-	-	-	-	-	-	-	-	-	-
	3 Row	1/2"	256	148	98	70	51	33	20	12	5	-	-	-	-	-	-	-	-	-	-	-
		3/4"	-	-	-	454	351	251	186	140	105	-	-	-	-	-	-	-	-	-	-	-
30 & 36	2 Row	1/2"	-	-	-	-	55	37	25	16	10	-	-	-	-	-	-	-	-	-	-	-
		3/4"	-	-	-	-	372	273	208	162	128	99	76	58	43	-	-	-	-	-	-	-
		1"	-	-	-	-	-	-	-	-	-	504	401	321	257	-	-	-	-	-	-	-
	3 Row	1/2"	-	-	-	-	53	35	23	14	8	-	-	-	-	-	-	-	-	-	-	-
		3/4"	-	-	-	-	361	263	188	152	118	89	66	48	33	-	-	-	-	-	-	-
		1"	-	-	-	-	-	-	-	-	-	461	359	280	217	-	-	-	-	-	-	-
31, 37, 42 & 48	3 Row	3/4"	-	-	-	-	-	-	-	-	134	104	81	63	48	35	25	16	9	-	-	-
		1"	-	-	-	-	-	-	-	-	-	526	422	341	277	221	177	141	111	-	-	-
		1 1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	576	467	378	-	-	-
	4 Row	3/4"	-	-	-	-	-	-	-	-	126	97	75	57	43	30	19	11	4	-	-	-
		1"	-	-	-	-	-	-	-	-	-	497	397	319	257	200	156	120	90	-	-	-
		1 1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	514	405	315	-	-	-
49 & 60	3 Row	3/4"	-	-	-	-	-	-	-	-	121	92	69	51	37	23	12	3	-	-	-	-
		1"	-	-	-	-	-	-	-	-	-	473	372	293	230	172	127	90	59	-	-	-
		1 1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	430	318	228	-	-	-
	4 Row	3/4"	-	-	-	-	-	-	-	-	123	94	72	54	40	27	16	8	-	-	-	-
		1"	-	-	-	-	-	-	-	-	-	485	382	306	244	187	143	106	77	-	-	-
		1 1/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	476	367	278	-	-	-

Notes:

- Line lengths are based on water only. To adjust maximum line lengths for glycol, divide length by the factors shown in **Table 2**.
- IMPORTANT:** Glycol should never be used in a potable water system.
- All lengths are based on closed loop systems.
- Line lengths within the shaded areas should not be used when a water heater is the source of heat. When using a boiler for these line lengths, excessive line temperature loss will occur and must be accounted for.
- Supply and return lines must be properly insulated to reduce temperature loss and to prevent freezing when passing through an unconditioned space.
- All lengths include (12) 90° short radius elbows. To adjust for extra or fewer fittings, use the factors in **Table 1**.
- Always use full flow ball or gate valves to minimize pressure drop.

Table 1 Equivalent ft. of pipe

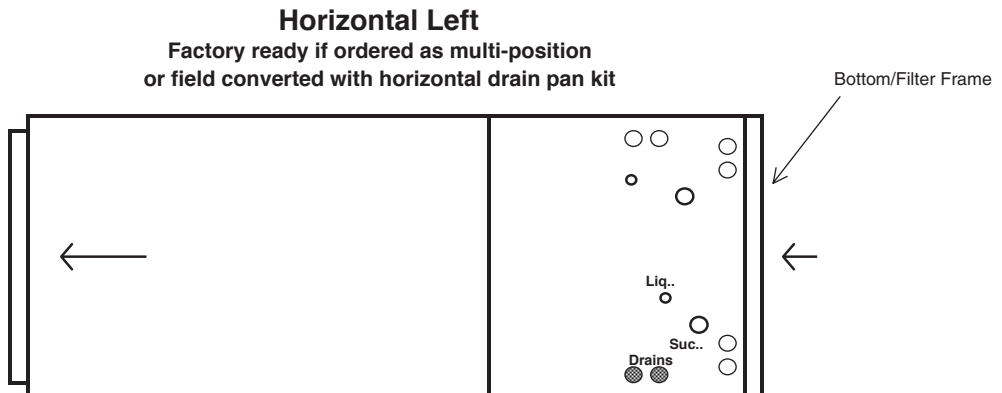
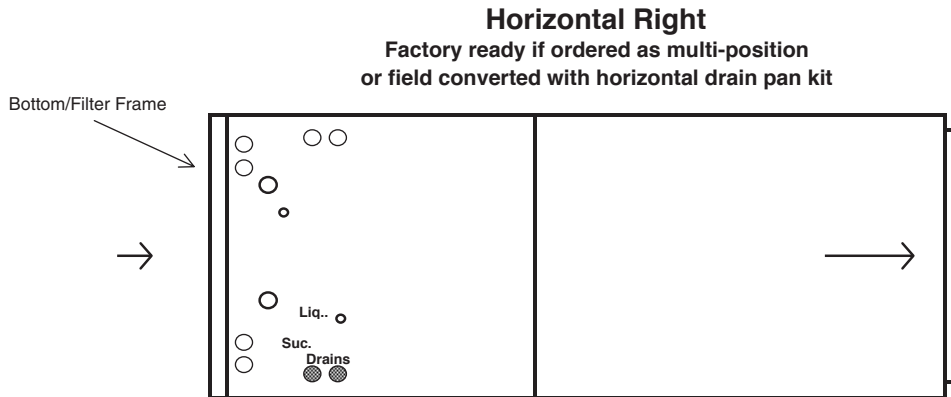
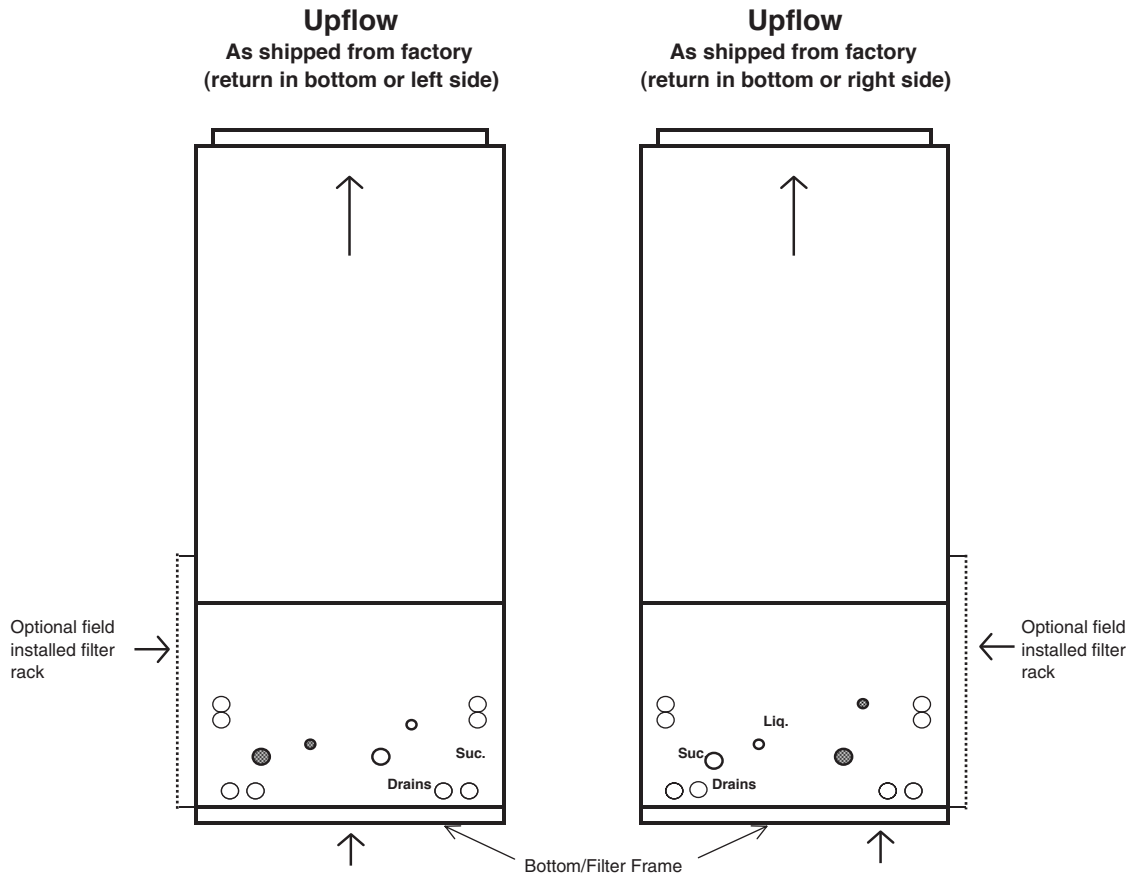
Pipe size	90° SR el	90° LR el	45° el	gate valve
1/2"	1.5	0.8	1	1
3/4"	2	1	1.4	1.4
1"	2.7	1.3	1.9	1.9
1 1/4"	3.6	1.8	2.5	2.5

Table 2 Fluid Temperature

% Glycol	140° F	160° F	180° F
10	1.04	1.04	1.02
20	1.08	1.07	1.04
30	1.13	1.11	1.08
40	1.19	1.16	1.12
50	1.24	1.21	1.17

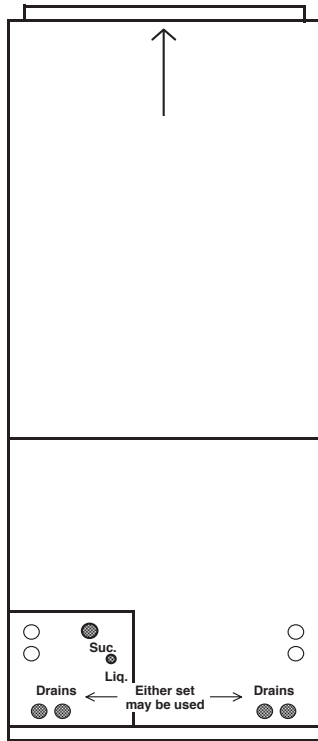
Size 12 - 30, 36 Installation Configurations

Shading Indicates Proper Line Connections



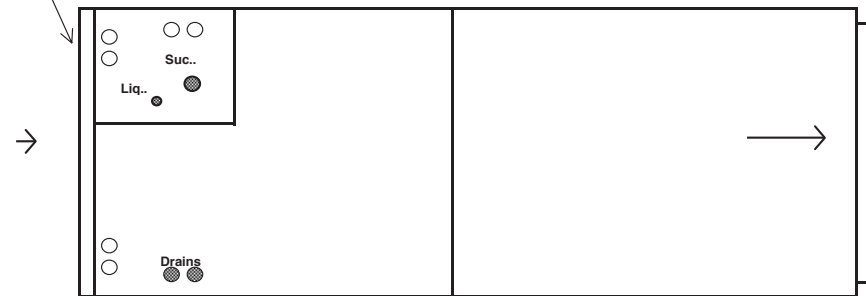
Size 31, 37 - 60 Installation Configurations
Shading Indicates Proper Line Connections

Upflow
 As shipped from factory
 (return in bottom)

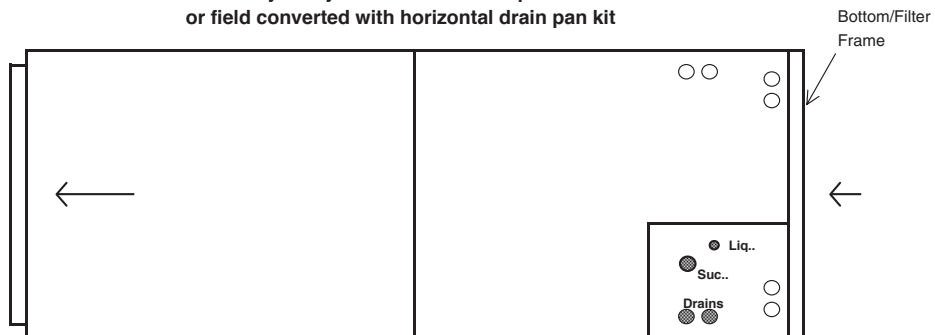


Bottom/Filter
 Frame

Horizontal Right
 Factory ready if ordered as multi-position
 or field converted with horizontal drain pan kit

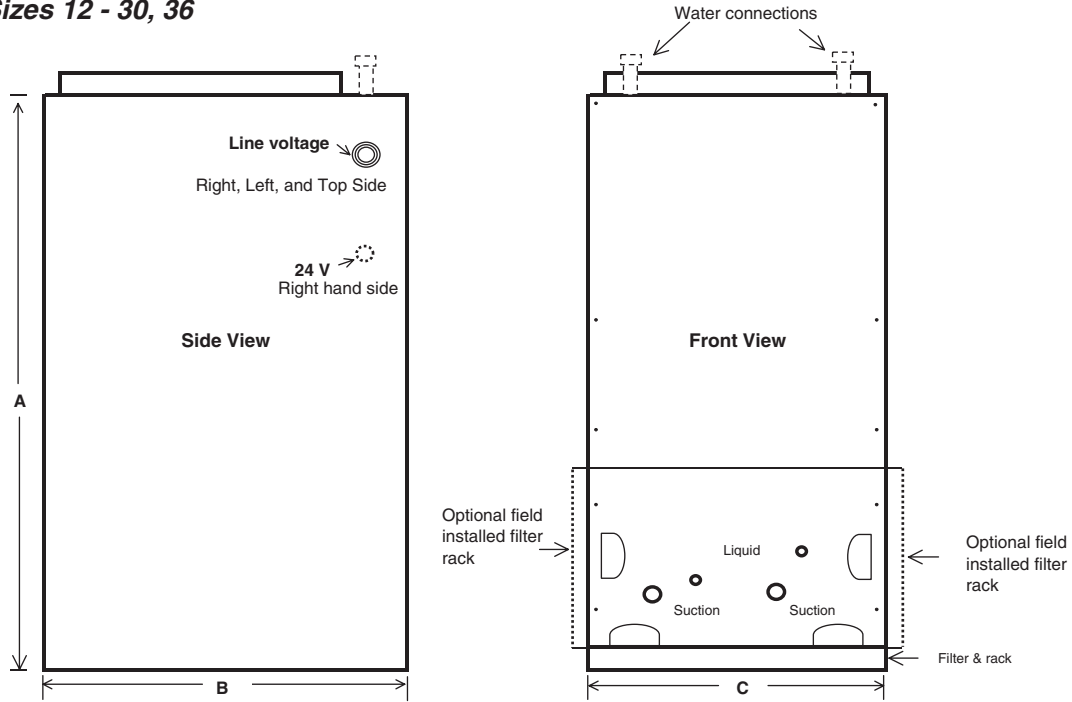


Horizontal Left
 Factory ready if ordered as multi-position
 or field converted with horizontal drain pan kit



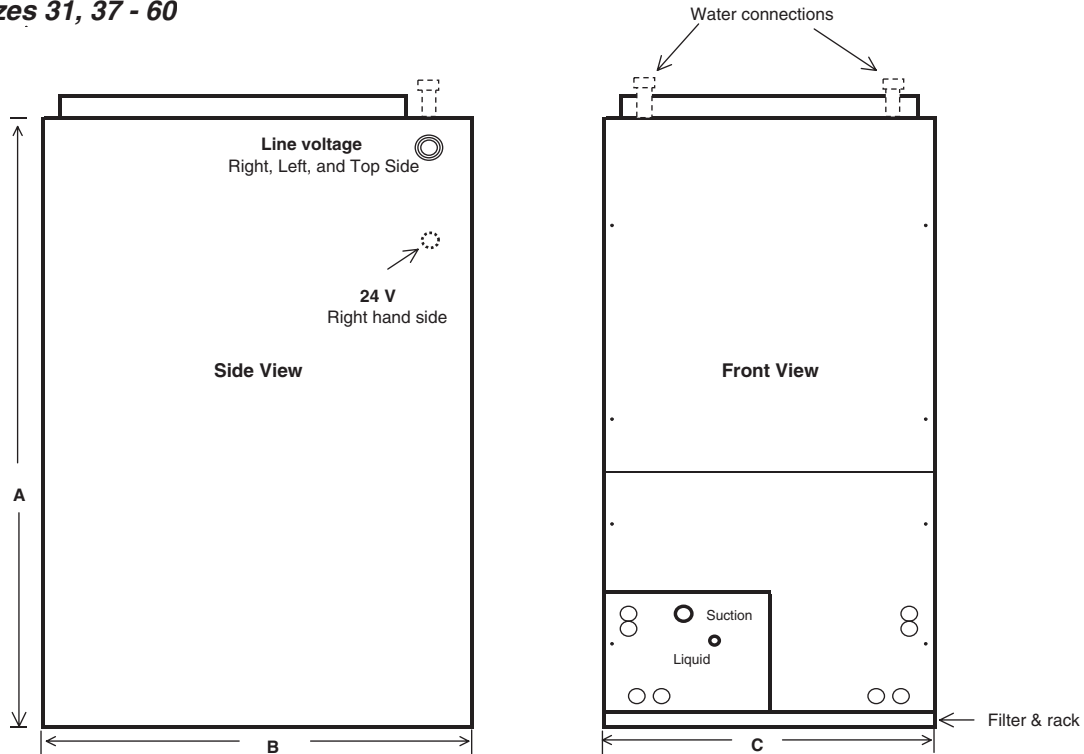
Dimensions

Sizes 12 - 30, 36



Unit Size	A	B	C	Supply Duct Opening		Return Duct Opening	
				Depth X Width	Depth X Width	Depth X Width	Depth X Width
12, 18 & 24	44"	22"	15"	17"	13 1/2"	17 1/4"	10 1/4"
25, 30 & 36	48"	22"	18 1/2"	17"	17"	17 1/4"	14"

Sizes 31, 37 - 60



Unit Size	A	B	C	Supply Duct Opening		Return Duct Opening	
				Depth X Width	Depth X Width	Depth X Width	Depth X Width
31, 37, 42 & 48	49"	26"	20"	21"	18 1/2"	22"	15 3/4"
49 & 60	53"	26"	22"	21"	20 1/2"	22"	17 3/4"



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