

Specification Guide

F Series

Premier Low Profile Air Handlers

Electric or No Heat, with available 5-Speed High Efficiency ECM Motor



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Cabinet Features

- Available from factory as upflow or upflow/horizontal. Field installed horizontal drain pan kit also available.
- Downflow kit available for field installation.
- Two independent front access panels allow for easy access to clean the coil, even after installation.
- Only four (4) screws to remove blower panel for easier access.
- Slide-out blower and coil assemblies.
- Cabinet constructed of heavy gauge painted steel.
- High quality 5/8" foil-faced insulation lines cabinet, with cabinet flanges & retaining rods for better attachment.
- Brackets hold coil assembly in place when installed in horizontal position.
- Filter rack built into every air handler (filter not included).
- ETL lab tested 2% or less cabinet air leakage for better efficiency.

Evaporator Coil Features

- Coils are air pressure tested at 500psi, leak tested with helium, sealed with rubber plugs, and then charged with dry air.
- Suitable for use with R-22 and R-410A.
- Available in copper or aluminum construction.
- Lanced fin design.
- Rifled copper tubing.
- Piston or HP TXV available factory installed. Screw-on TXVs available as kits for field installation (see Accessories & Replacement Parts list for available kits).
- TXV Bulbs come standard attached to header assembly.
- HYDROTEC™ drain pan holds less water, which reduces the possibility of mold and mildew growing in the pan.
- All drain pans have Microban protection, which inhibits the growth of mold and mildew that cause odors and staining.
- Drain pans are molded of corrosion proof engineered polymer.
- Dual 3/4" FPT condensate drains on left and right sides.

Electrical Features

- 120 V 60 Hz and 208/240 V 60 Hz supply voltages available.
- 5-speed high efficiency ECM motor available.
- Dynamically balanced blowers for quiet, vibration-free operation.
- Fan time delay factory installed (1 second on, 45 seconds off).
- Line voltage connections can be made on top, right or left side of cabinet.

Physical Data

		Unit Size									
		18	24	25	30	31	36	37	42	48	60
Available Voltage ^[1]		(120 V 60 Hz, 1 ph), (208/240 V, 60 Hz, 1 ph)									
Maximum Elec. Heat Available (kW)		10	10	10	15	15	15	15	15	20	20
Transformer Size and Type		40 VA, Class 2									
Blower Data: 3-Speed PSC Motor (120V)	Motor H. P.	1/5	1/3	1/3	1/3	1/3	1/3	1/3	1/2	3/4	3/4
	F. L. A. @ 120 V	2.0	3.2	3.2	3.2	5.3	5.3	5.3	8.5	7.5	10.5
	Wheel (dia x wid)	9x6	9x6	9x6	9x6	9x6	10x8	9x6	10x8	10x8	10x10
Blower Data: 3-Speed PSC Motor (240V)	Motor H. P.	1/5	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/2	1/2
	F. L. A. @ 240 V	1.1	1.6	1.9	1.9	2.6	2.6	1.9	1.9	3.9	3.9
	Wheel (dia x wid)	9x6	9x6	10x8	10x8	12x8	10x8	12x8	12x8	11x10	11x10
Blower Data: 5-Speed High Eff. ECM Motor (120V)	Motor H. P.	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	3/4	1
	F. L. A. @ 120 V	3.9	3.9	5.8	5.8	5.8	5.8	5.8	5.8	8.7	11.1
	Wheel (dia x wid)	9x6	9x6	10x8	10x8	10x8	10x8	10x8	10x8	10x10	10x10
Blower Data: 5-Speed High Eff. ECM Motor (240V)	Motor H. P.	1/3	1/3	1/2	1/2	1/2	1/2	1/2	1/2	3/4	1
	F. L. A. @ 240 V	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.2	4.6
	Wheel (dia x wid)	9x6	9x6	10x8	10x8	10x8	10x8	10x8	10x8	10x10	10x10
Nominal CFM		600	800	800	1000	1000	1200	1200	1400	1600	2000
Air Filter Size (in)		12x20	12x20	16x20	16x20	18x25	16x20	18x25	18x25	18x25	18x25
Sound Level @ 0.3 Static (dBA) ^[2]		50	50	48	50	53	50	53	53	53	54
Refrigerant Conn. (IDS) Suction (in)		3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Refrigerant Conn. (IDS) Liquid (in)		3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
R-22 Piston Size (in) (for replacement only)		.053	.059	.059	.067	.067	.073	.073	.080	.084	.093
R-410A Piston Size (in)		.049	.053	.053	.059	.059	.067	.067	.073	.076	.093
Approx. Weight lbs (base unit w/o heat)		80	80	105	105	155	105	155	155	155	155

[1] 120 V, 60 Hz supply voltage cannot be used with electric heat

[2] Typical sound levels based on 240V 3-speed PSC motor.

Product Nomenclature

F C M E31 9 24 S 05 2

Cabinet Color

F = Fully painted (taupe)

Blower Motor Type

C = 3-speed PSC motor
E = 5-speed high efficiency ECM motor

Airflow Configuration ^[1]

M = Multi-position (vertical, left or right horiz.)

Slab Number

Metering Device

1 = Piston (R-410A)
9 = Non-bleed HP-A/C TXV (R-410A)

Unit Size (Nominal MBTUH)

18, 24, 25, 30, 31, 36, 37, 42, 48, 60

Voltage (All include time delay functionality)

1 = 208/240 V, 60 Hz, 1 ph. (ECM only)
2 = 208/240 V, 60 Hz, 1 ph. (PSC only)
3 = 120 V, 60 Hz, 1 ph. (ECM only) ^[2]
4 = 120 V, 60 Hz, 1 ph. (PSC only) ^[2]

Electric Heat

00 = none sizes 18 - 60
05 = 5 kW sizes 18 - 48
07 = 7.5 kW sizes 18 - 60
10 = 10 kW sizes 18 - 60
15 = 15 kW sizes 30 - 60
20 = 20 kW sizes 48 - 60

Available In:

Note: Maximum 10 kW per electrical supply circuit.

Line Voltage Connections

	Amount of Heat (kW)					
	0	5	7.5	10	15	20
S = Stripped wire	#	#				
B = Circuit breaker		O	#	#	#	#

= Standard O = Optional

[1] Downflow with optional field installed kit.

[2] 120 V, 60 Hz supply voltage cannot be used with electric heat

Blower Performance: 3-Speed PSC Motor

- All data is given while air handler is operating with a dry coil and air filter installed.
- Speeds marked ***bold with asterisk** are the factory speed settings for both heating and cooling.
- Heating speeds should not be reduced below factory setting.
- Different speeds can be set for cooling mode; see installation instructions for changing cooling speeds.
- For downflow operation (with field installed kit), use the next highest speed setting available. If set to high speed from the factory, use high speed for downflow.

208/240 Volt 3-Speed PSC Motor

		Airflow (CFM) vs. External Static Pressure (inches W.C.)				
Size	Speed	0.10	0.20	0.30	0.40	0.50
18	Low	505	499	487	434	397
	*Med	653	634	625	600	512
	High	891	853	812	778	733
24	Low	663	624	583	578	562
	*Med	902	864	822	792	744
	High	1159	1097	1031	960	893
25	*Low	867	839	803	780	733
	Med	1044	1015	991	941	889
	High	1260	1234	1200	1149	1098
30	Low	867	839	803	780	733
	*Med	1044	1015	991	941	889
	High	1260	1234	1200	1149	1098
31	*Low	1143	1112	1081	1047	1015
	Med	1268	1233	1186	1165	1133
	High	1415	1390	1352	1314	1260
36	Low	1143	1112	1081	1047	1015
	*Med	1268	1233	1186	1165	1133
	High	1415	1390	1352	1314	1260
37	*Low	1318	1299	1270	1210	1147
	Med	1444	1409	1374	1294	1220
	High	1712	1645	1544	1453	1328
42	Low	1318	1299	1270	1210	1147
	*Med	1444	1409	1374	1294	1220
	High	1712	1645	1544	1453	1328
48 **	*Low	1764	1709	1652	1563	1418
	Med	1984	1884	1780	1683	1509
	High	2031	1959	1832	1725	1617
60	Low	1764	1709	1652	1563	1418
	Med	1984	1884	1780	1683	1509
	*High	2031	1959	1832	1725	1617

120 Volt 3-Speed PSC Motor

		Airflow (CFM) vs. External Static Pressure (inches W.C.)				
Size	Speed	0.10	0.20	0.30	0.40	0.50
18	Low	431	424	425	403	385
	*Med	645	645	645	641	597
	High	804	804	804	793	765
24	Low	530	525	519	507	483
	*Med	925	915	875	823	736
	High	1189	1110	1016	917	826
25	*Low	998	956	905	844	770
	Med	1045	1004	962	871	785
	High	1089	1036	980	905	826
30	Low	998	956	905	844	770
	*Med	1045	1004	962	871	785
	High	1089	1036	980	905	826
31	Low	1008	1004	972	925	867
	*Med	1190	1150	1100	1040	970
	High	1250	1200	1140	1070	995
36	Low	945	930	912	869	793
	*Med	1150	1145	1123	1166	1004
	High	1291	1291	1285	1277	1200
37	Low	1008	1004	972	925	867
	*Med	1190	1150	1100	1040	970
	High	1250	1200	1140	1070	995
42	*Low	1393	1378	1366	1246	1167
	Med	1603	1592	1575	1540	1443
	High	1811	1811	1805	1744	1674
48	Low	1393	1378	1366	1246	1167
	*Med	1603	1592	1575	1540	1443
	High	1811	1811	1805	1744	1674
60	Low	1583	1583	1583	1567	1551
	*Med	1972	1972	1968	1882	1819
	High	2169	2146	2096	2004	1908

** Use only low speed on heating for unit size 48 with 5kW electric heat.

Blower Performance: 5-Speed High Efficiency 120V ECM Motor

- All data is given while air handler is operating with a dry coil and air filter installed.
- Speeds marked ***bold with asterisk** are the factory speed settings for both heating and cooling.
- Heating speeds should not be reduced below factory setting.
- Different speeds can be set for cooling mode; see installation instructions for changing cooling speeds.
- For downflow operation (with field installed kit):
 - If factory-set speed tap 3 is desirable for your application, use speed tap 5 for downflow.

		Airflow (CFM) vs. External Static					
Size	Tap	0.1	0.2	0.3	0.4	0.5	0.6
18	1	529	492	429	367	328	289
	2	603	563	526	469	417	380
	*3	757	725	701	668	639	586
	4	806	777	746	720	692	661
	5	849	826	798	768	745	720
24	1	613	575	538	487	432	395
	2	769	737	711	678	648	594
	*3	955	926	899	871	842	814
	4	989	962	938	912	891	865
	5	1046	1024	996	971	945	919
25	1	687	633	573	482	424	373
	2	830	794	757	708	636	570
	*3	971	948	913	882	840	802
	4	1012	988	960	922	889	849
	5	1057	1040	1011	979	943	909
30	1	765	720	667	602	521	474
	2	971	950	913	879	836	797
	*3	1163	1141	1116	1090	1054	1025
	4	1203	1189	1168	1139	1112	1078
	5	1222	1202	1188	1161	1128	1102
31	1	853	793	724	658	525	475
	2	1047	999	948	898	840	785
	*3	1230	1185	1142	1104	1054	1007
	4	1268	1231	1189	1147	1106	1053
	5	1316	1273	1237	1196	1152	1108
36	1	835	798	761	710	629	569
	2	1158	1137	1114	1088	1054	1024
	*3	1354	1327	1310	1290	1270	1239
	4	1418	1389	1369	1351	1327	1304
	5	1429	1412	1395	1379	1358	1330
37	1	908	851	794	730	632	535
	2	1232	1186	1142	1104	1054	1005
	*3	1432	1389	1346	1307	1272	1228
	4	1468	1426	1388	1350	1311	1275
	5	1504	1474	1438	1401	1363	1323
42	1	961	914	857	794	744	611
	2	1417	1377	1339	1299	1267	1223
	*3	1613	1574	1543	1508	1482	1447
	4	1669	1634	1600	1564	1530	1504
	5	1694	1665	1637	1603	1570	1537
48	1	1169	1106	1008	930	859	799
	2	1658	1615	1575	1532	1477	1409
	*3	1830	1792	1754	1737	1682	1622
	4	1863	1844	1809	1778	1740	1684
	5	1895	1855	1836	1805	1772	1714
60	1	1317	1298	1239	1162	1049	972
	2	1809	1752	1706	1707	1671	1619
	*3	1905	1851	1822	1784	1795	1756
	4	2013	1956	1908	1867	1890	1867
	5	2230	2171	2119	2072	2038	2048

Blower Performance: 5-Speed High Efficiency 240V ECM Motor

- All data is given while air handler is operating with a dry coil and air filter installed.
- Speeds marked ***bold with asterisk** are the factory speed settings for both heating and cooling.
- Heating speeds should not be reduced below factory setting.
- Different speeds can be set for cooling mode; see installation instructions for changing cooling speeds.
- For downflow operation (with field installed kit):
 - If factory-set speed tap 3 is desirable for your application, use speed tap 5 for downflow.

		Airflow (CFM) vs. External Static							
Size	Tap	0.1	0.2	0.3	0.35	0.4	0.45	0.5	0.6
18	1	492	448	393	361	361	333	307	273
	2	513	471	420	414	384	357	325	318
	*3	667	641	615	605	596	577	567	560
	4	705	673	665	648	630	621	603	590
	5	721	689	673	656	639	629	612	590
24, 25	1	732	627	590	581	571	545	536	525
	2	671	634	594	578	573	546	493	480
	*3	892	859	832	828	818	797	790	775
	4	911	866	839	832	825	818	804	760
	5	924	886	846	832	825	818	797	780
30, 31	1	871	830	778	722	671	635	625	586
	2	906	859	809	779	715	689	654	635
	*3	1085	1070	1048	1036	1024	1001	989	975
	4	1125	1103	1087	1059	1047	1024	1012	983
	5	1176	1146	1114	1098	1081	1059	1047	1029
36, 37	1	882	887	826	804	766	760	755	695
	2	1082	1037	1025	1002	990	959	921	881
	*3	1270	1250	1238	1228	1214	1189	1179	1162
	4	1290	1275	1265	1246	1236	1227	1212	1172
	5	1335	1315	1301	1287	1278	1259	1240	1225
42	1	1008	907	861	832	803	772	717	671
	2	1292	1243	1202	1192	1171	1149	1127	1070
	*3	1447	1430	1404	1377	1359	1340	1322	1283
	4	1534	1502	1476	1459	1433	1416	1398	1362
	5	1559	1519	1502	1477	1460	1434	1417	1381
48	1	1585	1494	1320	1252	1210	1151	1120	1088
	2	1510	1463	1414	1389	1363	1324	1256	1228
	*3	1675	1633	1579	1556	1545	1510	1487	1451
	4	1737	1697	1655	1633	1612	1590	1568	1545
	5	1781	1731	1679	1658	1637	1615	1593	1571
60	1	1394	1342	1288	1251	1172	1109	1077	1025
	2	1722	1666	1623	1594	1564	1534	1518	1471
	*3	2083	2048	2013	1990	1972	1947	1929	1885
	4	2179	2135	2101	2079	2056	2039	2021	1937
	5	2209	2166	2122	2101	2057	2058	2047	1956

Electrical Data: 3 Speed PSC Motor

No Electric Heat

Unit Size	Electric Heating Capacity		Blower Amps			Minimum Circuit Ampacity			Circuit Breaker Amps per Stage	
	kW ^[1]	BTUH	120 V	208 V	240 V	120 V	208 V	240 V	1	2
	240 V ^[2]	240 V ^[2]								
18	0	0	2.0	1.2	1.1	2.5	1.5	1.4	15	-
24	0	0	3.2	1.7	1.6	4.0	2.1	2.0	15	-
25, 30	0	0	3.2	2.0	1.9	4.0	2.5	2.4	15	-
31, 36	0	0	5.3	2.7	2.6	6.6	3.4	3.3	15	-
37	0	0	5.3	2.0	1.9	6.6	2.5	2.4	15	-
42	0	0	8.5	2.0	1.9	10.6	2.5	2.4	15	-
48	0	0	7.5	4.1	3.9	9.4	5.1	4.9	15	-
60	0	0	10.5	4.1	3.9	13.1	5.1	4.9	15	-

With Electric Heat

Unit Size	Electric Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps/Stage ^[3]	
	kW ^[1]	BTUH	208 V	240 V	208 V	240 V	1	2
	240 V ^[2]	240 V ^[2]						
18	5	17,065	1.2	1.1	24.0	27.4	30	-
	7.5	25,598	1.2	1.1	35.3	40.4	45	-
	10	34,130	1.2	1.1	46.6	53.5	60	-
24	5	17,065	1.7	1.6	24.7	28.0	30	-
	7.5	25,598	1.7	1.6	36.0	41.1	45	-
	10	34,130	1.7	1.6	47.2	54.1	60	-
25	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
30	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
	15	51,195	2.0	1.9	70.2	80.5	60	30
31, 36	5	17,065	2.7	2.6	26.0	29.3	30	-
	7.5	25,598	2.7	2.6	37.3	42.3	45	-
	10	34,130	2.7	2.6	48.6	55.3	60	-
	15	51,195	2.7	2.6	71.1	81.4	60	30
37, 42	5	17,065	2.0	1.9	25.1	28.4	30	-
	7.5	25,598	2.0	1.9	36.4	41.4	45	-
	10	34,130	2.0	1.9	47.6	54.5	60	-
	15	51,195	2.0	1.9	70.2	80.5	60	30
48	5	17,065	4.1	3.9	27.7	30.9	45 ^[4]	-
	7.5	25,598	4.1	3.9	39.0	43.9	45	-
	10	34,130	4.1	3.9	50.3	57.0	60	-
	15	51,195	4.1	3.9	72.9	83.0	60	30
	20	68,260	4.1	3.9	95.4	109.0	60	60
60	7.5	25,598	4.1	3.9	39.0	43.9	45	-
	10	34,130	4.1	3.9	50.3	57.0	60	-
	15	51,195	4.1	3.9	72.9	83.0	60	30
	20	68,260	4.1	3.9	95.4	109.0	60	60

[1] kW packages in **bold italics** require and include circuit breakers; circuit breakers are optional for others.

[2] For 208 volt use 0.751 correction factor for kW & BTUH.

[3] Listed circuit breaker size is for 240V applications. For 208V verify breaker sizing based on min. circuit ampacity.

[4] Breaker supplied with heat kit may need to be changed. Verify breaker sizing based on min. circuit ampacity.

Electrical Data: 5-Speed High Efficiency ECM Motor

No Electric Heat

Unit Size	Elec. Heating Capacity		Blower Amps			Minimum Circuit Ampacity			Circuit Breaker Amps per Stage	
	kW ^[1]	BTUH	120 V	208 V	240 V	120 V	208 V	240 V	1.0	2.0
	240 V ^[2]	240 V ^[2]								
18, 24	0	0	3.9	3.2	3.0	4.9	4.0	3.8	15.0	-
25	0	0	5.8	3.2	3.0	7.3	4.0	3.8	15.0	-
30, 31, 36, 37, 42	0	0	5.8	3.2	3.0	7.3	4.0	3.8	15.0	-
48	0	0	8.7	3.4	3.2	10.9	4.2	4.0	15.0	-
60	0	0	11.1	4.9	4.6	13.9	6.1	5.8	15.0	-

With Electric Heat

Unit Size	Elec. Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps per Stage ^[3]	
	kW ^[1]	BTUH	208 V	240 V	208 V	240 V	1	2
	240 V ^[2]	240 V ^[2]						
18, 24, 25	5	17,065	3.2	3.0	26.5	29.8	30	-
	7.5	25,598	3.2	3.0	37.8	42.8	45	-
	10	34,130	3.2	3.0	49.1	55.8	60	-
30, 31, 36, 37, 42	5	17,065	3.2	3.0	26.5	29.8	30	-
	7.5	25,598	3.2	3.0	37.8	42.8	45	-
	10	34,130	3.2	3.0	49.1	55.8	60	-
	15	51,195	3.2	3.0	71.7	81.9	60	30
48	5	17,065	3.4	3.2	26.8	30.0	30	-
	7.5	25,598	3.4	3.2	38.1	43.1	45	-
	10	34,130	3.4	3.2	49.4	56.1	60	-
	15	51,195	3.4	3.2	71.9	82.1	60	30
60	20	68,260	3.4	3.2	94.5	108.2	60	60
	7.5	25,598	4.9	4.6	39.9	44.8	45	-
	10	34,130	4.9	4.6	51.2	57.8	60	-
	15	51,195	4.9	4.6	73.8	83.9	60	30
	20	68,260	4.9	4.6	96.3	109.9	60	60

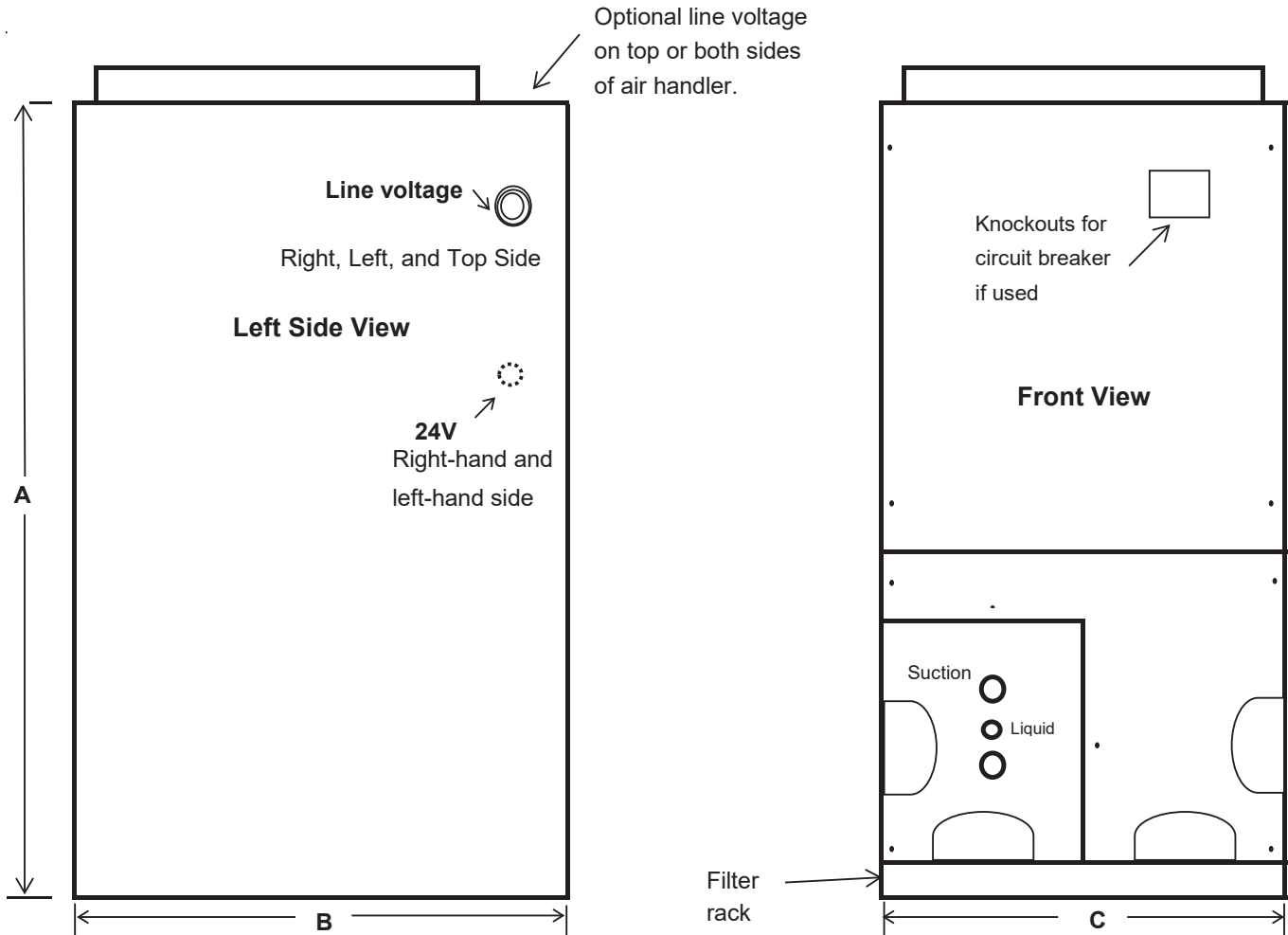
[1] kW packages in **bold italics** require and include circuit breakers; circuit breakers are optional for others.

[2] For 208 volt use 0.751 correction factor for kW & BTUH.

[3] Listed circuit breaker size is for 240V applications. For 208V verify breaker sizing based on min. circuit ampacity.

Dimensions

Air Handler Size	A (in)	B (in)	C (in)	Supply Duct Opening		Return Duct Opening	
				Depth (in)	Width (in)	Depth (in)	Width (in)
18, 24	36	22	15	17	13	20.35	12.20
25, 30, 36	41	22	18 1/2	17	16.5	20.35	16.20
31, 37, 42, 48, 60	48	26	21 7/8	21	20	24.60	20.08





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