CARRIER FB4ANB070 Owner's Manual

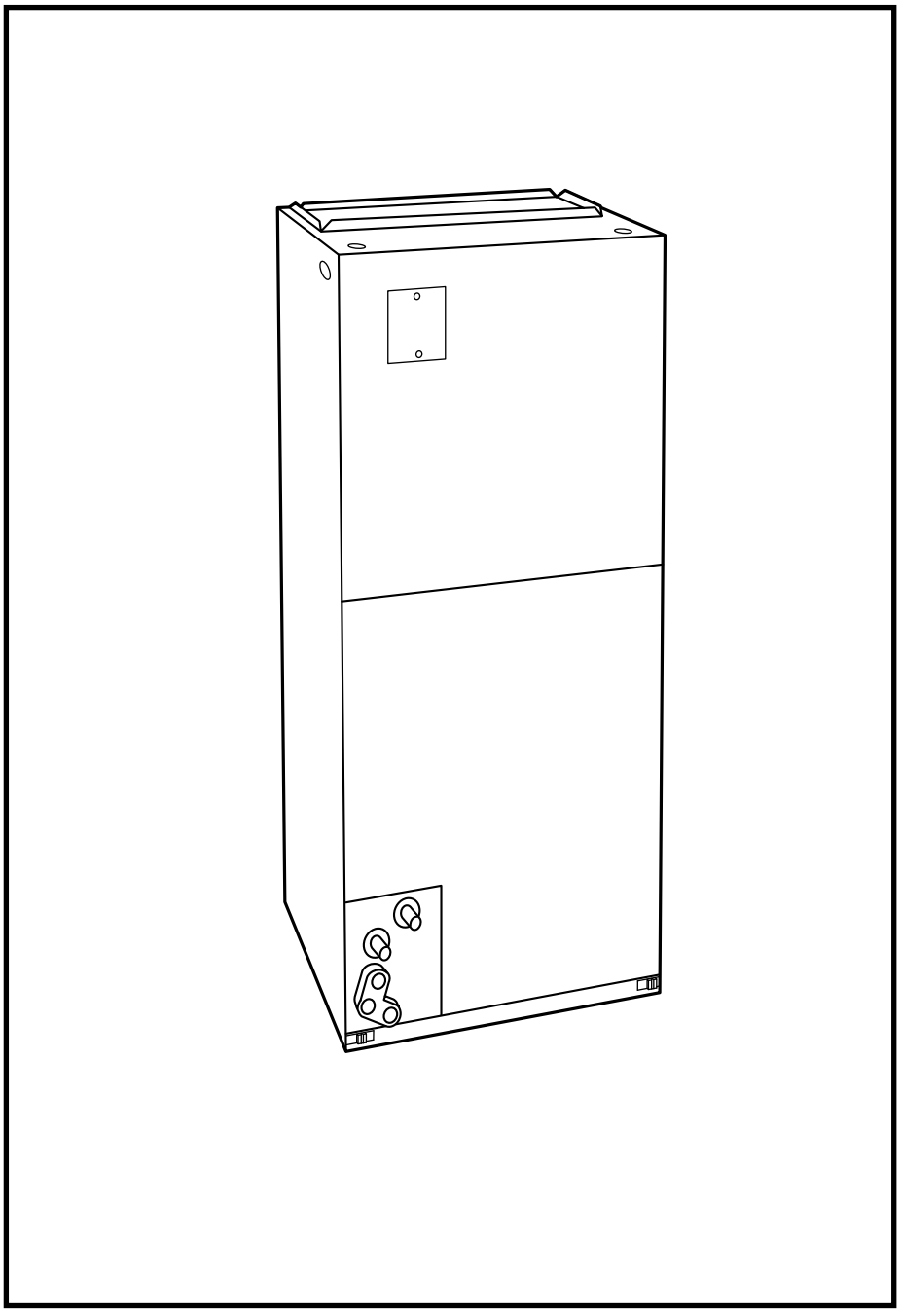
-------- Manual continues below --------

Carrier®
HEATING & COOLING

Product Data

FA4A
FB4A
FC4B
Direct Expansion Fan Coil

Sizes 018 thru 070



Air Handling Technology At Its Finest

Carrier's FA4A, FB4A, and FC4B direct expansion multipoise fan coils are designed to cover a wide range of air handling requirements. They are compact and ready to fit where needed — in the basement, crawl-space, attic, utility room, or closet.

All units come with solid-state power board controls, 1-in. insulation with an R value of 4.2, super-quiet multispeed motors, and fully wettable coils. Units can accommodate factory- or field-installed heaters from 3 to 30 kw.

The FA4A is the residential new construction (RNC) model in the line-up. It has an embossed galvanized steel casing, 2-speed motor in 018 through 036 sizes and 3-speed motor in 042 through 060 sizes. The FA4A is equipped with an AccuRater® metering device.

The FB4A is the standard of Carrier fan coils. It comes in a prepainted galvanized steel casing with foil-faced insulation and has a 3-speed motor in the full range of sizes 018 through 070. All FB4A units are equipped with an AccuRater metering device and are also shipped with a cleanable, permanent framed filter.

The FC4B is the deluxe design in the fan coil group. It incorporates all the features found in the FB4A. In addition, it has a hard shut-off thermostatic expansion valve (TXV) metering device with internal check valve for reverse-flow bypass capability. The FC4B is available in sizes 024 through 070.

Standard features

- Grooved copper tubing
- Lanced sine-wave aluminum fin
- Fully wettable coils
- High-impact thermoplastic condensate pan
- Primary and secondary drain connections with brass inserts
- Multipoise design for maximum versatility
- Field-installed heater packages from 3–30 kw (fused, circuit breaker, non-fused)
- Control board with built-in, replaceable 5-amp blade-type auto fuse
- Cooling controls
- Time-delay relay (TDR)
- High-density, super thick R 4.2 insulation
- Sweat connections
- Inspection plate for cleaning A-coil design
- HUD approved for manufactured housing
- 40-va, 208/230-v transformer
- All models listed with UL, cUL, ARI, and RADCO

Additional features

FA4A

- 018-060 sizes
- Embossed galvanized steel cabinet
- 2-speed motor in 018 through 036 sizes
- 3-speed motor in 042 through 060 sizes
- AccuRater metering device
- Factory-installed heaters available

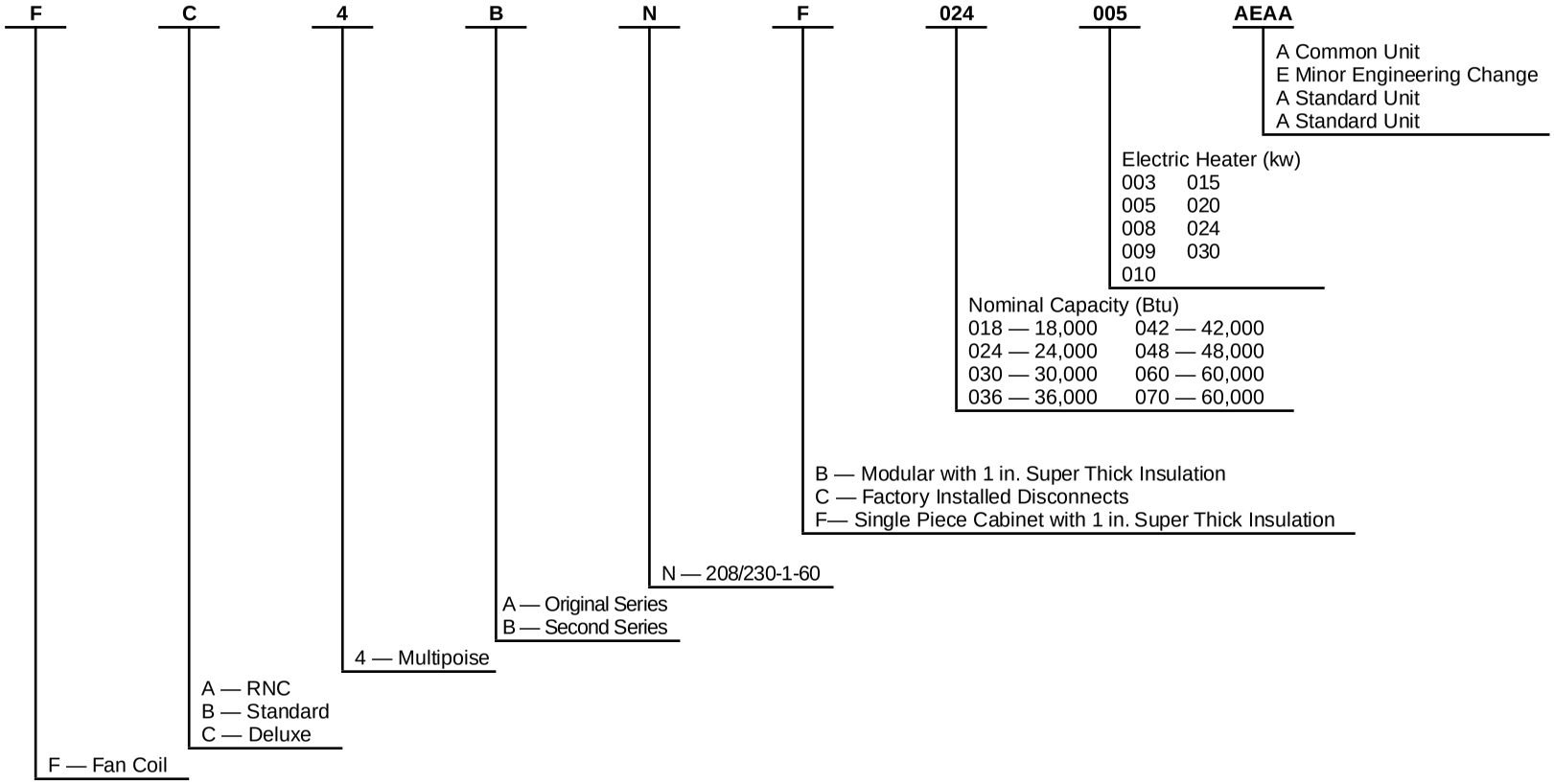
FB4A

- 018-070 sizes
- Prepainted galvanized steel cabinet
- 3-speed motor on all sizes 018 through 070
- Modular version available in 042 through 070 sizes
- AccuRater® metering device
- Foil-faced, high density insulation
- Factory-supplied, cleanable, permanent framed filter
- Factory-installed heaters available
- Factory-supplied power plug
- Multiple electric entry

FC4B

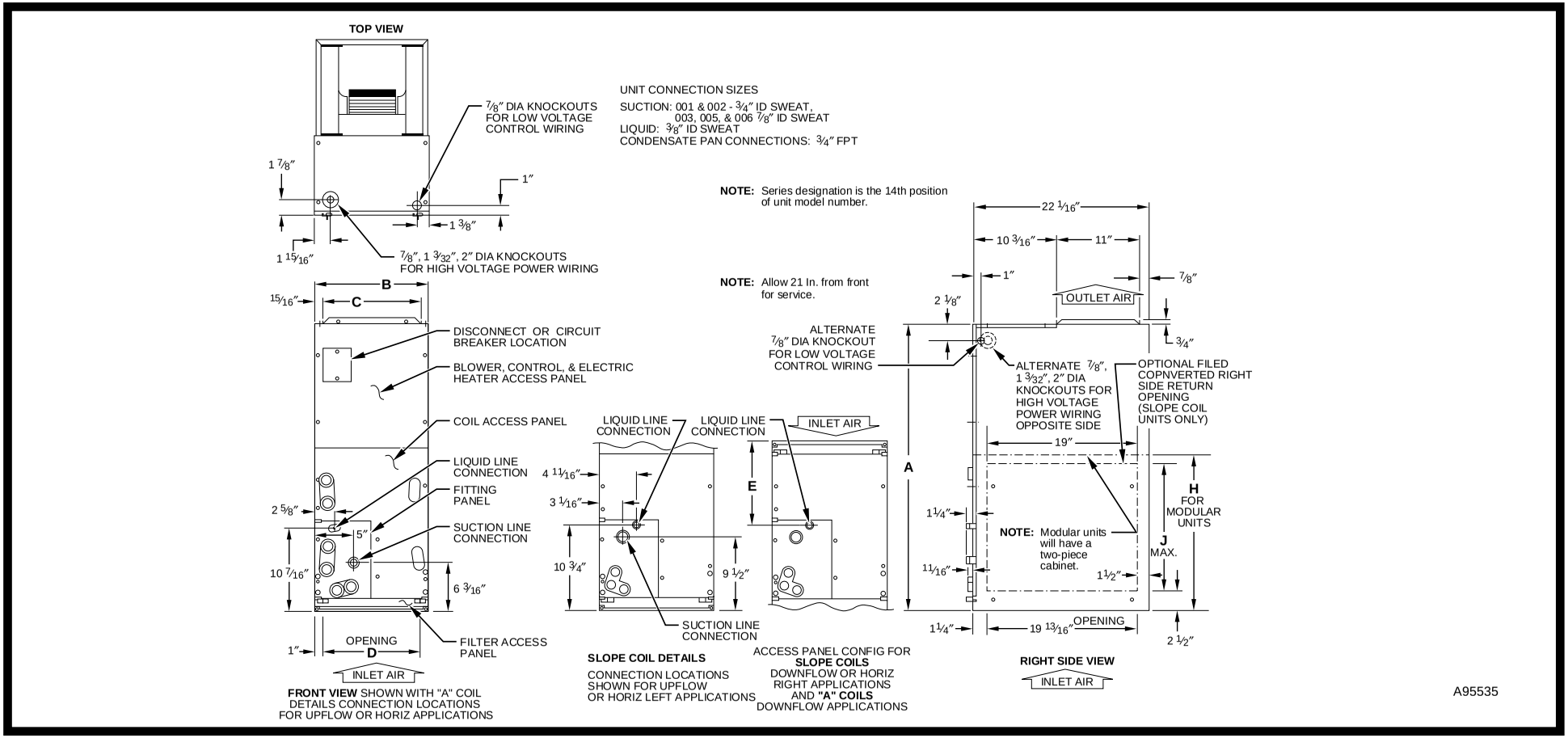
- 024-070 sizes
- TXV
- Prepainted galvanized steel cabinet
- 3-speed motor on 024 through 070 sizes
- Modular version available in 054 and 070 sizes
- Foil-faced, high-density insulation
- Factory-supplied, cleanable, permanent framed filter
- Factory-supplied power plug
- Multiple electric entry

Model number nomenclature



CERTIFICATION APPLIES ONLY WHEN THE COMPLETE SYSTEM IS LISTED WITH ARI.

Dimensions

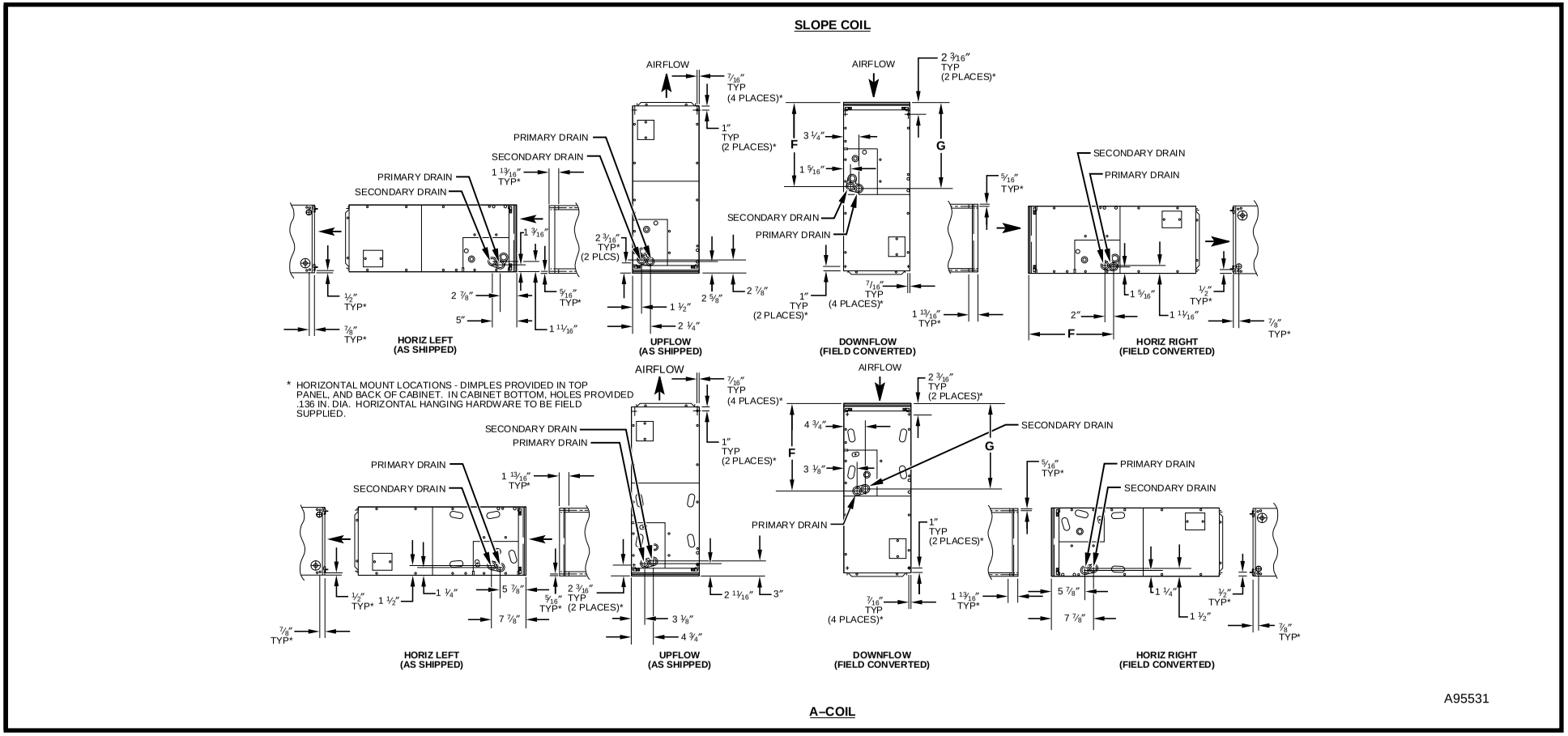


UNIT SIZE*	COIL TYPE	A		B		C		D		E		H†		J	
		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm
018, 024	Slope	42-11/16	1084.3	14-5/16	363.5	12-7/16	316.0	12-5/16	312.7	10-7/16	265.1	—	—	12.0	304.8
030	Slope	47-11/16	1211.5	17-5/8	447.5	15-3/4	400.1	15-5/8	396.9	15-3/8	390.5	—	—	17.0	431.8
036	Slope	49-5/8	1260.5	17-5/8	447.5	15-3/4	400.1	15-5/8	396.9	15-3/8	390.5	—	—	17.0	431.8
033, 042	Slope	53-7/16	1357.3	21-1/8	536.5	19-1/4	489.0	19-1/8	485.8	19-3/16	487.0	28-5/16	719.1	19.0	482.6
048	A	49-5/8	1260.5	21-1/8	536.5	19-1/4	489.0	19-1/8	485.8	15-11/16	398.3	24-1/2	622.3	—	—
038, 060	A	53-7/16	1357.3	21-1/8	536.5	19-1/4	489.0	19-1/8	485.8	19-1/2	495.3	28-5/16	719.1	—	—
054, 070	A	59-3/16	1503.4	24-11/16	627.0	22-3/4	577.9	22-11/16	576.2	25-1/4	641.5	34-1/16	865.2	—	—

* Descriptions and dimensions apply to all versions (FA4A, FB4A, and FC4B), unless otherwise specified.

† Applicable for modular units only.

Dimensions continued



UNIT SIZE*	COIL TYPE	F		G	
		In.	mm	In.	mm
018, 024	Slope	18-1/8	460.4	18-5/8	473.1
030	Slope	23-1/8	587.4	23-5/8	600.0
036	Slope	23-1/8	587.4	23-5/8	600.0
033, 042	Slope	26-15/16	684.2	27-1/2	698.5
048	A	23-7/16	593.3	23-1/8	587.4
038, 060	A	27-1/4	692.2	26-1516	684.2
054, 070	A	32-15/16	836.6	32-5/8	828.7

* Descriptions and dimensions apply to all versions (FA4A, FB4A, and FC4B), unless otherwise specified.

Physical data

MODEL FA4A	018	024	030	036	—	042	048	—	060	—	—
FB4A	018	024	030	036	—	042	048	—	060	—	070
FC4B*	—	024	030	036	033	042	048	038	060	054	070
SHIPPING WT (Lb)	94	98	126	128	147	147	154	168	168	199	199
REFRIGERANT METERING DEVICE	Bypass AccuRater (FA4A, FB4A); TXV Factory Installed on FC4B										
PISTON SIZE	52	65	73	80	—	84	88	—	101	—	101
TXV SIZE †	—	2 ton	2-1/2 ton	3 ton	2-1/2 ton	3 ton	4 ton	3 ton	5 ton	4 ton	5 ton
COIL											
Rows and Fins Per In.	2 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5	3 and 14.5
Face Area (Sq Ft)	2.23	2.23	2.97	2.97	3.46	3.46	4.45	5.93	5.93	7.42	7.42
Configuration	Slope	Slope	Slope	Slope	Slope	Slope	A	A	A	A	A
FAN											
Air Discharge											
CFM (Nominal)	650	850	1100	1300	1100	1500	1700	1300	2000	1700	2000
Motor Hp (PSC)	1/5**	1/4	1/3**	1/3	1/3	1/2	3/4	1/3	3/4	1/2	3/4
FILTER‡	21-1/2 x 13		21-1/2 x 16-3/8		21-1/2 x 19-7/8					21-1/2 x 23-5/16	

* Fan coil units with hard shut-off TXV may require compressdor hard start components. Refer to outdoor unit specifications.
† FC4B factory-installed TXV is hard shut-off, bypass flow-type for heat pump application.
‡ Filter must be field supplied for FA4A units. (See Accessory Kits.)
** FA4A018 fan coil has a 1/10 Hp motor
FA4A030 fan coil has a 1/4 Hp motor
NOTE: Descriptions and dimensions apply to all versions (FA4A, FB4A, FC4B, etc.), unless otherwise specified.

Performance data

AIRFLOW PERFORMANCE (CFM)

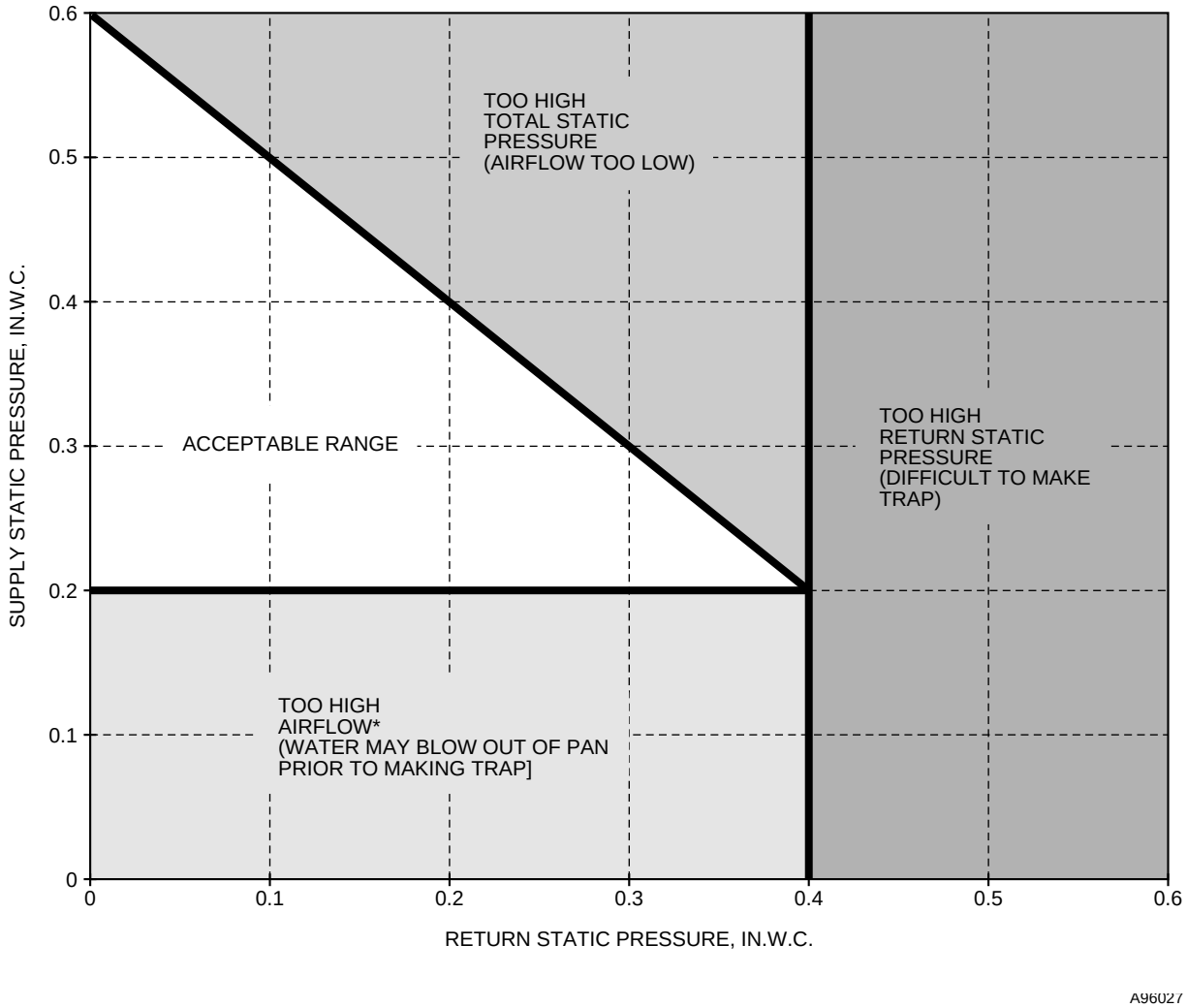
MODEL AND SIZE	BLOWER MOTOR SPEED	EXTERNAL STATIC PRESSURE (IN. WC)											
		0.10		0.20		0.30		0.40		0.50		0.60	
		208V	230V	208V	230V	208V	230V	208V	230V	208V	230V	208V	230V
FA4A 018	High	660	725	615	675	565	625	500	565	405	470	—	—
	Low	585	650	540	605	490	555	420	485	345	395	—	—
FB4A 018	High	860	925	815	870	765	820	715	760	645	690	550	600
	Medium	650	740	625	705	585	660	545	620	480	555	385	450
	Low	565	650	535	620	500	590	460	545	405	480	330	385
FA4A 024	High	940	975	890	925	835	865	780	805	715	735	635	650
	Low	820	900	785	855	745	805	700	750	640	680	545	575
FB4A, FC4B 024	High	945	975	900	930	840	870	780	805	695	725	560	595
	Medium	835	900	795	855	745	800	690	740	610	650	470	510
	Low	605	695	575	665	530	625	485	580	425	510	340	395
FA4A 030	High	1075	1170	1030	1115	985	1055	920	990	850	910	750	805
	Low	825	960	810	935	790	890	750	845	690	780	590	680
FB4A, FC4B 030	High	1260	1305	1200	1245	1135	1170	1065	1110	985	1015	880	900
	Medium	1055	1170	1020	1115	980	1055	930	1000	960	920	755	810
	Low	830	950	805	925	780	890	740	850	685	790	595	700
FA4A 036	High	1320	1405	1265	1345	1205	1280	1135	1210	1060	1120	960	1025
	Low	1100	1215	1070	1170	1020	1115	960	1060	890	980	805	895
FB4A, FC4B 036	High	1485	1550	1425	1490	1365	1420	1300	1350	1230	1275	1150	1190
	Medium	1235	1380	1200	1325	1160	1265	1110	1210	1055	1140	985	1070
	Low	1035	1185	1010	1150	980	1115	940	1070	890	1010	825	935
FA4A, FB4A, FC4B 042	High	1580	1710	1540	1655	1495	1595	1440	1530	1375	1445	1290	1355
	Medium	1400	1570	1375	1525	1350	1480	1305	1425	1255	1360	1175	1280
	Low	1195	1375	1180	1350	1165	1325	1135	1285	1085	1240	1020	1160
FA4A, FB4A, FC4B 048	High	1880	1935	1785	1830	1700	1735	1615	1645	1520	1555	1430	1460
	Medium	1740	1840	1660	1750	1585	1660	1510	1575	1435	1485	1350	1390
	Low	1425	1605	1395	1555	1360	1495	1315	1430	1255	1360	1170	1270
FA4A, FB4A, FC4B 060	High	2145	2245	2085	2185	2030	2115	1965	2045	1905	1975	1830	1895
	Medium	2025	2175	1970	2110	1915	2050	1860	1980	1805	1905	1740	1830
	Low	1680	1895	1655	1855	1625	1810	1595	1765	1555	1705	1500	1645
FB4A, FC4B 070	High	2205	2285	2130	2205	2050	2120	1960	2025	1875	1930	1790	1825
	Medium	1880	2075	1845	2015	1795	1945	1745	1870	1675	1790	1595	1700
	Low	1570	1825	1560	1795	1545	1745	1520	1700	1480	1640	1420	1565
FC4B 033	High	1315	1385	1255	1315	1185	1240	1115	1165	1035	1080	950	995
	Medium	1045	1170	1010	1130	970	1080	925	1020	870	960	790	870
	Low	775	900	765	880	740	855	710	825	655	780	570	715
FC4B 038	High	1570	1700	1525	1645	1475	1580	1420	1515	1355	1440	1285	1360
	Medium	1215	1420	1180	1380	1150	1340	1110	1290	1060	1240	1000	1170
	Low	1020	1200	995	1185	960	1130	925	1090	880	1040	835	980
FC4B 054	High	1700	1835	1640	1760	1570	1685	1500	1605	1420	1520	1330	1430
	Medium	1505	1660	1455	1600	1395	1540	1330	1470	1260	1395	1175	1310
	Low	1300	1460	1260	1410	1205	1350	1145	1290	1080	1220	1000	1140

NOTES:

1. Airflow based upon dry coil at 230v with factory approved filter and electric heater (2 element heater, sizes 018 through 036; 3 element heater, sizes 042 through 060).
2. Not recommended for use above 0.60 in. external static pressure.

Airflows in this region have the **potential** for condensate to blow out of the drainpan. If usage in this region is desired, consult duct static pressure graph for allowable return and supply duct static pressures.

Airflows in this region are outside recommended airflow for all applications. Usage at these airflows could result in condensate blowing out of the drainpan.



ACCEPTABLE DUCT CONDITIONS

For satisfactory operation (specifically making dry secondary trap), subject fan coils must be installed with duct systems which fall within the “Acceptable Range” illustrated above.

* Operation in this “Too High Airflow” range (below .2 supply static) applies only to *horizontal* applications of the following:

048	medium and high blower speeds
060	medium and high blower speeds
070	high blower speeds

All other applications (the above units on low speed, FK units, 018 thru 042 units, all units in vertical applications, etc.) are acceptable to use below the .2 supply static boundary.

Performance data continued

FILTER STATIC PRESSURE DROP (IN. WC.)

UNIT SIZE	CFM								
	400	600	800	1000	1200	1400	1600	1800	2000
018	0.02	0.044	0.075	—	—	—	—	—	—
024	—	0.044	0.075	0.110	—	—	—	—	—
030	—	—	0.048	0.072	0.100	—	—	—	—
036	—	—	—	0.072	0.100	0.130	—	—	—
033, 038, 042	—	—	—	—	0.070	0.092	0.120	—	—
048	—	—	—	—	—	0.092	0.120	0.152	—
060	—	—	—	—	—	—	0.120	0.152	0.187
054, 070	—	—	—	—	—	—	0.086	0.105	0.130

ELECTRIC HEATER STATIC PRESSURE DROP (IN. WC.)

018–036

HEATER ELEMENTS	KW	EXTERNAL STATIC PRESSURE CORRECTION
0	0	+.02
1	3,5	+.01
2	8,10	0
3	9,15	-.02
4	20	-.04

042–070

HEATER ELEMENTS	KW	EXTERNAL STATIC PRESSURE CORRECTION
0	0	+.04
2	8,10	+.02
3	9,15	0
4	20	-.02
6	18,24,30	-.10

The airflow performance data was developed using fan coils with 10-kw electric heaters (2 elements) in the 018 through 036 size units and 15-kw heaters (3 elements) in the 042 through 070 size units. For fan coils with heaters of a different number of elements, the external available static at a given CFM from the curve may be corrected by adding or subtracting available external static pressure as indicated above.

AIR DELIVERY PERFORMANCE CORRECTION COMPONENT PRESSURE DROP (IN. WC) AT INDICATED AIRFLOW (DRY-TO-WET COIL)

UNIT SIZE	CFM									
	500	600	700	800	900	1000	1100	1200	1300	1350
018	0.023	0.034	0.044	—	—	—	—	—	—	—
024	0.035	0.051	0.066	0.080	0.091	—	—	—	—	—
030	—	—	—	0.051	0.063	0.073	0.081	—	—	—
036	—	—	—	—	—	0.073	0.081	0.091	0.098	0.102

UNIT SIZE	CFM								
	1200	1300	1400	1500	1600	1700	1800	1900	2000
033, 042	0.075	0.083	0.091	0.098	—	—	—	—	—
048	—	—	0.066	0.073	0.080	0.086	0.091	—	—
038, 060	—	—	—	—	0.051	0.057	0.063	0.069	0.073
054, 070	—	—	—	—	0.030	0.034	0.039	0.044	0.053

NOTE: Subtract the above pressure drop corrections from unit airflow data when that component or condition is used. The remaining external static pressure will be available for the duct system.

Performance data continued

GROSS COOLING CAPACITIES (MBtuh)

UNIT	EVAPORATOR AIR CFM AND BF	COIL REFRIGERANT TEMPERATURE (°F)*														
		35			40			45			50			55		
		Evaporator Air — Entering Wet-Bulb Temp (°F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
FA4A, FB4A 018	400	28	23	19	25	21	16	22	17	13	19	14	11	15	10	9
	0.08	13	14	15	12	13	14	11	12	12	10	10	11	8	9	9
	500	31	26	21	28	23	18	25	20	15	21	16	13	17	12	11
	0.10	15	16	18	14	15	16	12	14	15	11	12	13	9	10	10
	600	33	28	23	31	25	20	27	22	17	23	17	14	19	13	12
	0.13	16	18	20	15	17	18	13	15	16	12	14	14	10	12	12
	650	34	29	24	32	26	21	28	22	18	24	18	15	19	13	13
	0.14	16	19	21	15	17	19	14	16	17	13	14	15	11	12	13
FA4A, FB4A, FC4B 024	600	39	33	27	36	29	23	31	24	18	27	19	15	21	14	12
	0.05	19	20	22	17	19	20	15	16	17	13	14	15	11	12	12
	700	42	35	29	38	31	25	34	27	20	29	21	17	23	16	14
	0.06	20	22	24	18	20	22	17	18	20	15	16	17	13	14	14
	875	47	39	32	42	35	28	38	30	23	32	24	20	26	18	17
	0.08	22	25	28	21	23	26	19	21	23	17	19	20	15	16	17
FA4A, FB4A, FC4B 030	750	48	40	32	44	35	28	38	30	23	32	24	18	26	17	15
	0.04	23	25	26	21	22	24	19	20	21	16	18	18	14	15	15
	900	53	44	36	48	39	31	42	33	25	36	27	21	28	19	17
	0.06	25	28	30	23	25	27	21	23	24	18	20	21	16	17	17
	1075	58	48	39	52	42	34	46	36	28	39	29	24	31	21	20
	0.07	27	31	33	25	28	31	23	25	27	20	22	24	17	19	20
FA4A, FB4A, FC4B 036	800	53	43	35	48	38	29	41	31	23	34	25	18	27	18	15
	0.05	25	27	28	23	24	25	20	21	22	17	19	18	15	16	15
	900	58	47	38	52	41	32	45	34	26	37	27	20	29	19	16
	0.06	27	30	31	25	27	28	22	24	25	19	21	20	16	17	16
	1100	65	54	43	58	47	36	51	39	29	43	31	24	33	22	20
	0.07	31	34	36	28	31	33	25	28	29	22	24	24	19	20	19
	1300	71	59	48	64	51	41	56	43	33	47	35	27	37	25	22
	0.09	34	38	41	31	35	37	28	31	32	25	28	27	21	23	22
FA4A, FB4A, FC4B 033, 042	1000	69	57	46	62	50	39	54	42	31	45	33	25	35	23	20
	0.05	33	35	37	30	32	33	26	28	29	23	24	25	19	20	20
	1200	77	63	51	69	55	44	61	47	35	51	37	29	39	26	24
	0.07	36	39	42	33	36	38	29	32	34	26	28	29	22	23	24
	1350	82	68	55	74	59	46	65	50	38	54	39	31	42	28	26
	0.08	39	43	46	35	39	41	32	35	37	28	30	31	23	26	26
	1530	87	72	59	79	64	50	69	53	41	58	42	34	46	30	28
	0.09	41	46	50	38	42	45	34	38	40	30	33	34	26	28	28
FA4A, FB4A, FC4B 048	1200	83	69	56	75	61	48	66	52	39	56	41	32	45	30	26
	0.05	39	43	46	36	39	42	32	35	37	28	31	32	24	26	26
	1400	90	75	61	82	66	53	72	57	43	61	45	36	49	33	30
	0.06	42	47	51	39	43	47	35	39	42	31	34	36	27	29	30
	1600	95	79	65	87	71	56	77	60	47	66	48	40	52	36	33
	0.07	45	51	55	42	47	51	38	42	46	34	38	40	29	32	33
	1750	99	83	68	90	74	59	80	63	50	69	51	42	55	37	35
	0.08	47	53	59	44	49	54	40	45	49	36	40	42	31	34	35

See notes on pg. 10.

GROSS COOLING CAPACITIES (MBtuh) continued

UNIT	EVAPORATOR AIR CFM AND BF	COIL REFRIGERANT TEMPERATURE (°F)*														
		35			40			45			50			55		
		Evaporator Air — Entering Wet-Bulb Temp (°F)														
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62
FA4A, FB4A 060 FC4B 038, 060	1300	91	74	60	81	65	51	72	55	41	60	44	31	48	31	26
	0.03	43	46	48	39	41	43	35	37	38	30	32	31	25	27	26
	1600	104	85	69	94	76	59	83	64	47	70	51	38	55	37	31
	0.05	49	53	57	45	49	51	40	44	45	35	38	38	30	32	31
	1750	109	91	73	99	80	63	87	68	51	74	54	41	58	39	33
	0.05	52	57	61	47	52	55	43	47	49	38	41	41	32	35	33
	2000	117	97	80	106	86	68	94	74	56	80	59	45	64	43	38
	0.06	56	62	67	51	57	61	46	51	54	41	45	45	35	39	38
FB4A 070 FC4B 054, 070	1300	93	77	63	84	69	52	75	58	43	64	46	33	50	32	27
	0.02	44	47	50	40	43	45	36	38	39	31	33	33	26	27	27
	1600	104	87	72	95	78	61	85	67	50	73	53	40	58	38	34
	0.03	50	54	58	46	50	53	41	45	47	36	39	40	31	33	33
	1750	109	91	75	100	82	65	89	70	53	76	57	44	61	41	36
	48	52	57	62	48	53	57	43	48	51	39	42	43	33	36	36
	2000	116	98	81	106	87	70	95	75	58	82	61	49	67	45	40
	0.05	55	62	68	51	57	62	47	52	56	42	46	49	36	40	40

* Saturated suction leaving evaporator coil.

Sensible Heat Capacity (1000 Btuh)

BF — Bypass Factor

NOTES:

1. Contact manufacturer for cooling capacities at conditions other than shown in table.
2. Formulas:

   Leaving db = entering db — $\frac{\text{sensible heat cap.}}{1.09 \times \text{CFM}}$

   Leaving wb = wb corresponding to enthalpy of air leaving coil (h_{lwb})

   $h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{CFM}}$

   where h_{ewb} = enthalpy of air entering coil.
3. Direct interpolation is permissible. Do not extrapolate.
4. SHC is based on 80°F db temperature of air entering coil. Below 80°F subtract (corr factor x CFM) from SHC.

   Above 80°F db, add (corr factor x CFM) to SHC.

SHC CORRECTION FACTOR

BYPASS FACTOR	ENTERING AIR DRY-BULB TEMPERATURE (°F)					
	79	78	77	76	75	Under 75
	81	82	83	84	84	Over 85
	Correction Factor					
0.10	0.98	1.96	2.94	3.92	4.91	Use formula shown below
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	

Interpolation is permissible.

Correction Factor = 1.09 x (1 – BF) x (db – 80)

Carrier accessories

ITEM	ACCESSORY PART NO.*	FAN COIL SIZE USED WITH
Disconnect Kit	KFADK0101DSC	Cooling controls and heaters 3 kw through 10 kw
Downflow Base Kit	KFACB0101CFB	018, 024
	KFACB0201CFB	030, 036
	KFACB0301CFB	033, 038, 042, 048, 060
	KFACB0401CFB	054, 070
Downflow Conversion Kit	KFADC0201SLP	Slope Coil Units — 018, 024, 030, 033, 036, 042
	KFADC0401ACL	A-Coil Units — 038, 048, 054, 060, 070
Single-Point Wiring Kit	KFASP0101SPK	15 and 20 kw Fuse
Filter Kit (12 Pack)	KFAFK0112SML	018, 024
	KFAFK0212MED	030, 036
	KFAFK0312LRG	033, 038, 042, 048, 060
	KFAFK0412XXL	054, 070
Power Plug Kit (25 Pack)	KFAPP0125PLG	FA4A 018–060

* Factory-authorized and listed, field installed.

Accessory Kits Description Suggested and Required Use

1. **Disconnect Kit**
   The kit is used to disconnect electrical power to the fan coil so service or maintenance may be performed safely.

SUGGESTED USE: FK4, FC4, FB4, FA4, and FH4 units for 3kw through 10kw electric resistance heaters and cooling controls.

2. **Downflow Base Kit**
   This kit is designed to provide a 1-in. minimum clearance between unit discharge plenum, ductwork, and combustible materials. It also provides a gap free seal with the floor.

REQUIRED USE: This kit must be used whenever FK4, FC4, FB4, FA4, and FH4 fan coils are used in downflow applications.

3. **Downflow Conversion Kit**
   Fan coils are shipped from the factory for upflow or horizontal-left applications. Downflow conversion kits provide proper condensate water drainage and support for the coil when used in downflow applications. Separate kits are available for slope coils and A-coils.

REQUIRED USE: This kit must be used whenever FK4, FC4, FB4, and FA4 fan coils are used in downflow applications.

4. **Single Point Wiring Kit**
   The single point wiring kit acts as a jumper between L1 and L3 lugs, and between the L2 and L4 lugs. This allows the installer to run 2 heavy-gage, high-voltage wires into the fan coil rather than 4 light-gage, high-voltage wires.

SUGGESTED USE: FK4, FC4, FB4, FA4, and FH4 fan coils only with 15kw and 20kw heaters.

5. **Fan Coil Filter**
   The kit consists of 12 fan coil framed filters. These filters collect large dust particles from the return air entering the fan coil and prevents them from collecting on the coil. This process helps to keep the coil clean, which increases heat transfer and in turn the efficiency of the system.

SUGGESTED USE: To replace filters in FK4, FC4, FB4, FA4, and FH4 fan coils.

REQUIRED USE: All FA4 units unless a filter grille is used.

6. **Power Plug Kit**
   The kit consists of 25 wire harness assemblies. Each plug provides the high-voltage power connection to the fan coil in the absence of electric heat.

REQUIRED USE: FA4A units installed without electric heat.

Accessory electric heaters

HEATER PART NO.	KW @ 240V	VOLTS/PH	KW/STAGE	INTERNAL CIRCUIT PROTECTION	FAN COIL SIZE USED WITH	HEATING CAP.** @ 230V
KFAEH0101N03	3	230/1	3	None‡	018–024	9,400
KFAEH0201N05	5	230/1	5	None‡	018–038	15,700
KFAEH0301N08	8	230/1	8	None‡	018–070	25,100
KFAEH0401N10	10	230/1	10	None‡	018–070	31,400
KFAEH0601F20	20	230/1	10,10	Fuse	030–070	62,800
KFAEH0801315	15	230/3	5,10	None‡	036–070	47,100
KFAEH0901318	18	230/3	6,6,6	None‡	042–070	56,500
KFAEH1001F24	24	230/3*	8,8,8	Fuse	048, 060, 070	78,300
KFAEH1101F30	30	230/3*	10,10,10	Fuse	048, 060, 070	94,100
KFAEH1301C05	5	230/1	5	Circuit Braker‡	018–038	15,700
KFAEH1401C08	8	230/1	8	Circuit Braker‡	018–038	25,100
KFAEH1501C10	10	230/1	10	Circuit Braker‡	018–070	31,400
KFAEH1701C20	20	230/1	10,10	Circuit Braker‡	030–070	62,800
KFAEH1901S20	20	230/1	10,10	Fuse‡	030–070	62,800
KFAEH2501N09	9	230/1†	3,6	None‡	030–070	28,200
KFAEH2601F15	15	230/1	5,10	Fuse	024–070	47,100
KFAEH2701S15	15	230/1	5,10	Fuse‡	024–070	47,100
KFAEH2801C15	15	230/1	5,10	Circuit Braker‡	024–070	47,100

Smart heat

HEATER PART NO.	KW @ 240V	VOLTS/PH	KW/STAGE	INTERNAL CIRCUIT PROTECTION	FAN COIL SIZE USED WITH	HEATING CAP.** @ 230V
KFAEH2201H10	10	230/1	4,6	None‡	018–036	31,400
KFAEH2301H15	15	230/1	3,8,4	Fuse	024–048	47,100
KFAEH2401H20	20	230/1	5,10,5	Fuse	030–070	62,800

* Field convertible to 1 phase.
† Field convertible to 3 phase.
‡ Approved for Canadian application.
** Blower motor heat not included.

When using units with 20-, 24-, and 30-kw electric heaters, maintain a 1-in. clearance from combustible materials to discharge plenum and ductwork and maintain a distance of 36 in. from the unit. Use an accessory downflow base to maintain proper clearance on downflow installations.
Use flexible connectors between ductwork and unit to prevent transmission of vibration. When electric heater is installed, use heat resistant material for flexible connector between ductwork and unit at discharge connection. Ductwork passing through unconditioned space must be insulated and covered with vapor barrier.

FAN COIL ELECTRICAL DATA
(UNITS WITHOUT ELECTRICAL HEAT)

UNIT SIZE	VOLTS (1 PHASE)	FLA	MIN CKT AMPS	BRANCH CIRCUIT			
				Min Wire Size* Awg	Max Wire Length (Ft)†		Fuse Amps
					208v	230v	
018	208/230	1.6	2.0	14	325	350	15
024	208/230	2.0	2.5	14	250	275	15
030, 033	208/230	2.4	3.0	14	210	225	15
036, 038	208/230	3.2	4.0	14	150	175	15
042, 054	208/230	3.4	4.7	14	125	150	15
048	208/230	5.5	6.9	14	90	100	15
060, 070	208/230	5.4	6.8	14	90	100	15

* Use copper wire only. Use 75°C only in this application. When using non-metallic (NM) sheathed cable, wire size required should be based on that of 60°C conductors, instead of wire sizes shown in table above per NEC 1993 Article 336-26.
† Length shown is as measured one way along wire path between unit and service panel for a voltage drop not to exceed 2%.
FLA — Full Load Amps

ELECTRIC HEATER INTERNAL PROTECTION

HEATER KW	PHASE	FUSE QTY/SIZE	CKT BKR QTY/SIZE
3	1	—	—
5	1	—	2/60
8	1	—	2/60
10	1	—	2/60
15	1	4/60	4/60
20	1	4/60	4/60
24	3/1	6/60	—
30	3/1	6/60	—
9	1/3	—	—
15	3	—	—
18	3	—	—

ESTIMATED SOUND POWER LEVEL (dB)

UNIT SIZE	CONDITIONS		OCTAVE BAND CENTER FREQUENCY							
	CFM	Ext Static Pressure	Motor Rpm	63	125	250	500	1000	2000	4000
018	650	0.25	950	63	59	55	54	50	48	44
024	875	0.25	1075	64	60	56	53	53	49	45
030, 033	1075	0.25	1075	65	61	57	54	54	50	46
036, 038	1300	0.25	1075	66	62	58	55	50	47	
042	1530	0.25	1075	67	63	59	56	56	52	48
048, 054	1750	0.25	1075	67	63	59	56	56	52	48
060	2000	0.25	1100	68	64	60	57	57	53	49
070	2000	0.25	1075	68	64	60	57	57	53	49

* Estimated sound power levels have been derived using the method described in the *1987 ASHRAE HVAC Systems & Applications Handbook,* Chapter 52, p. 52.7.

ELECTRIC HEATER ELECTRICAL DATA

HEATER PART NO.	KW		PHASE	INTERNAL CIRCUIT PROTECTION	HEATER AMPS 208/230V			BRANCH CIRCUIT: MIN AMPACITY 208/230V**			MIN WIRE SIZE (AWG) 208/230V††			MIN GND WIRE SIZE 208/230V			FUSE/CKT BKR AMPS 208/230V			MAX. WIRE LENGTH 208/230V (FT)‡‡		
	240V	208V			SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4
KFAEH0101N03	3	2.3	1	None	10.9/12.0	—	—	16.2/17.5	—	—	12/12	—	—	12/12	—	—	20/20	—	—	63/65	—	—
KFAEH0201N05	5	3.8	1	None	18.1/20.0	—	—	31.2/33.5	—	—	8/8	—	—	8/8	—	—	40/40	—	—	81/85	—	—
KFAEH1301C05	5	3.8	1	Ckt Bkr	18.1/20.0	—	—	31.2/33.5	—	—	8/8	—	—	8/8	—	—	40/40	—	—	81/85	—	—
KFAEH0301N08	8	6.0	1	None	28.9/32.0	—	—	43.0/46.9	—	—	8/8	—	—	10/10	—	—	45/50	—	—	61/62	—	—
KFAEH1401C08	8	6.0	1	Ckt Bkr	28.9/32.0	—	—	43.0/46.9	—	—	8/8	—	—	10/10	—	—	45/50	—	—	61/62	—	—
KFAEH2501N09*	9	6.8	1	None	32.8/36.0	—	—	47.9/51.9	—	—	6/6	—	—	10/10	—	—	50/60	—	—	94/96	—	—
	9	6.8	3	None	18.8/20.8	—	—	30.4/32.9	—	—	8/8	—	—	10/10	—	—	35/35	—	—	108/111	—	—
KFAEH0401N10	10	7.5	1	None	36.2/40.0	—	—	52.2/56.9	—	—	6/6	—	—	10/10	—	—	60/60	—	—	78/79	—	—
KFAEH1501C10	10	7.5	1	Ckt Bkr	36.2/40.0	—	—	52.2/56.9	—	—	6/6	—	—	10/10	—	—	60/60	—	—	78/79	—	—
KFAEH2601F15	15	11.3	1	Fuse	54.2/59.9	36.2/40.0	18.1/20.0	74.7/81.8	52.2/56.9	22.7/25.0	4/4	6/6	10/10	8/8	10/10	10/10	80/90	60/60	25/25	86/87	78/79	78/79
KFAEH2701S15	15	11.3	1	Fuse‡	54.2/59.9	36.2/40.0	18.1/20.0	74.7/81.8	52.2/56.9	22.7/25.0	4/4	6/6	10/10	8/8	10/10	10/10	80/90	60/60	25/25	86/87	78/79	78/79
KFAEH2801C15	15	11.3	1	Ckt Bkr	—	36.2/40.0	18.1/20.0	—	52.2/56.9	22.7/25.0	—	6/6	10/10	—	10/10	10/10	—	60/60	25/25	—	78/79	78/79
KFAEH0801315	15	11.3	3	None	31.3/34.6	—	—	46.0/50.2	—	—	8/6	—	—	10/10	—	—	50/50	—	—	71/112	—	—
KFAEH0901318	18	13.5	3	None	37.6/41.5	—	—	53.9/58.8	—	—	6/6	—	—	10/10	—	—	60/60	—	—	94/95	—	—
KFAEH0601F20	20	15.0	1	Fuse	72.3/79.9	36.2/40.0	36.2/40.0	97.3/106.8	52.2/56.9	45.3/50.0	3/2	6/6	8/8	6/6	10/10	10/10	100/110	60/60	50/50	84/106	78/79	58/58
KFAEH1701C20	20	15.0	1	Ckt Bkr	—	36.2/40.0	36.2/40.0	—	52.2/56.9	45.3/50.0	—	6/6	8/8	—	10/10	10/10	—	60/60	50/50	—	78/79	58/58
KFAEH1901S20	20	15.0	1	Fuse‡	72.3/79.9	36.2/40.0	36.2/40.0	97.3/106.8	52.2/56.9	45.3/50.0	3/2	6/6	8/8	6/6	10/10	10/10	100/110	60/60	50/50	84/106	78/79	58/58
KFAEH1001F24†	24	18.0	3	Fuse	50.1/55.4	—	—	69.5/76.2	—	—	4/4	—	—	8/8	—	—	80/80	—	—	116/117	—	—
	24	18.0	1	Fuse	86.7/95.5	—	—	116.0/127.0	—	—	1/1	—	—	6/6	—	—	125/150	—	—	112/113	—	—
KFAEH1101F30†	30	22.5	3	Fuse	62.6/69.2	—	—	85.2/93.4	—	—	3/3	—	—	8/8	—	—	90/100	—	—	120/121	—	—
	30	22.5	1	Fuse	109.0/ 120.0	—	—	143.0/ 157.0	—	—	0/00	—	—	6/6	—	—	150/175	—	—	114/145	—	—

SMART HEAT ELECTRICAL DATA

HEATER PART NO.	KW		PHASE	INTERNAL CIRCUIT PROTECTION	HEATER AMPS 208/230V			BRANCH CIRCUIT: MIN AMPACITY 208/230V**			MIN WIRE SIZE (AWG) 208/230V††			MIN GND WIRE SIZE 208/230V			FUSE/CKT BKR AMPS 208/230V			MAX. WIRE LENGTH 208/230V (FT)‡‡		
	240V	208V			SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4	SINGLE CIRCUIT	DUAL CIRCUIT L1, L2	DUAL CIRCUIT L3, L4
KFAEH2201H10	10	7.5	1	None	32.5/35.9	—	—	44.6/48.9	—	—	6/6	—	—	10/10	—	—	50/50	—	—	101/102	—	—
KFAEH2301H15	15	11.3	1	Fuse	54.2/59.9	39.7/43.9	14.4/16.0	74.6/81.7	49.7/54.9	24.9/26.8	4/4	6/6	10/10	8/8	10/10	10/10	80/90	50/60	30/30	90/91	91/91	69/70
KFAEH2401H20	20	15.0	1	Fuse	72.3/79.9	36.2/40.0	36.2/40.0	97.3/106.8	52.2/56.9	45.3/50.0	3/2	6/6	8/8	6/6	10/10	10/10	100/110	60/60	50/50	84/106	78/79	58/58

FIELD MULTIPOINT WIRING OF 24- AND 30-KW SINGLE PHASE

HEATER PART NO.	KW		PHASE	HEATER AMPS 208/230V			MIN AMPACITY 208/230V**			MIN WIRE SIZE (AWG) 208/230V††			MIN GND WIRE SIZE 208/230V	FUSE/CKT BKR AMPS 208/230V			MAX. WIRE LENGTH 208/230V (FT)‡‡		
	240V	208V		L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6		L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6
KFAEH1001F24†	24	18.0	1	28.9/32.0	28.9/32.0	28.9/32.0	43.0/46.9	36.1/40.0	36.1/40.0	8/8	8/8	8/8	10/10	45/50	40/45	40/45	61/62	73/73	73/73
KFAEH1101F30†	30	22.5	1	36.2/40.0	36.2/40.0	36.2/40.0	52.2/56.9	45.1/50.0	45.1/50.0	6/6	8/8	8/8	10/10	60/60	50/60	50/60	78/79	58/58	58/58

* Field convertible to 3 phase.
† Field convertible to 1 phase, single or multiple supply circuit.
‡ Approved for Canadian application.
** Includes blower motor amps of largest fan coil used with heater.
†† Copper wire must be used. If other than uncoated (non-plated), 75°C ambient, copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the National Electric Code (ANSI/NFPA 70).
‡‡ Length shown is as measured 1 way along wire path between unit and service panel for a voltage drop not to exceed 2%.

NOTE: Single circuit application of F15 and F20 heaters requires single-point wiring kit accessory.

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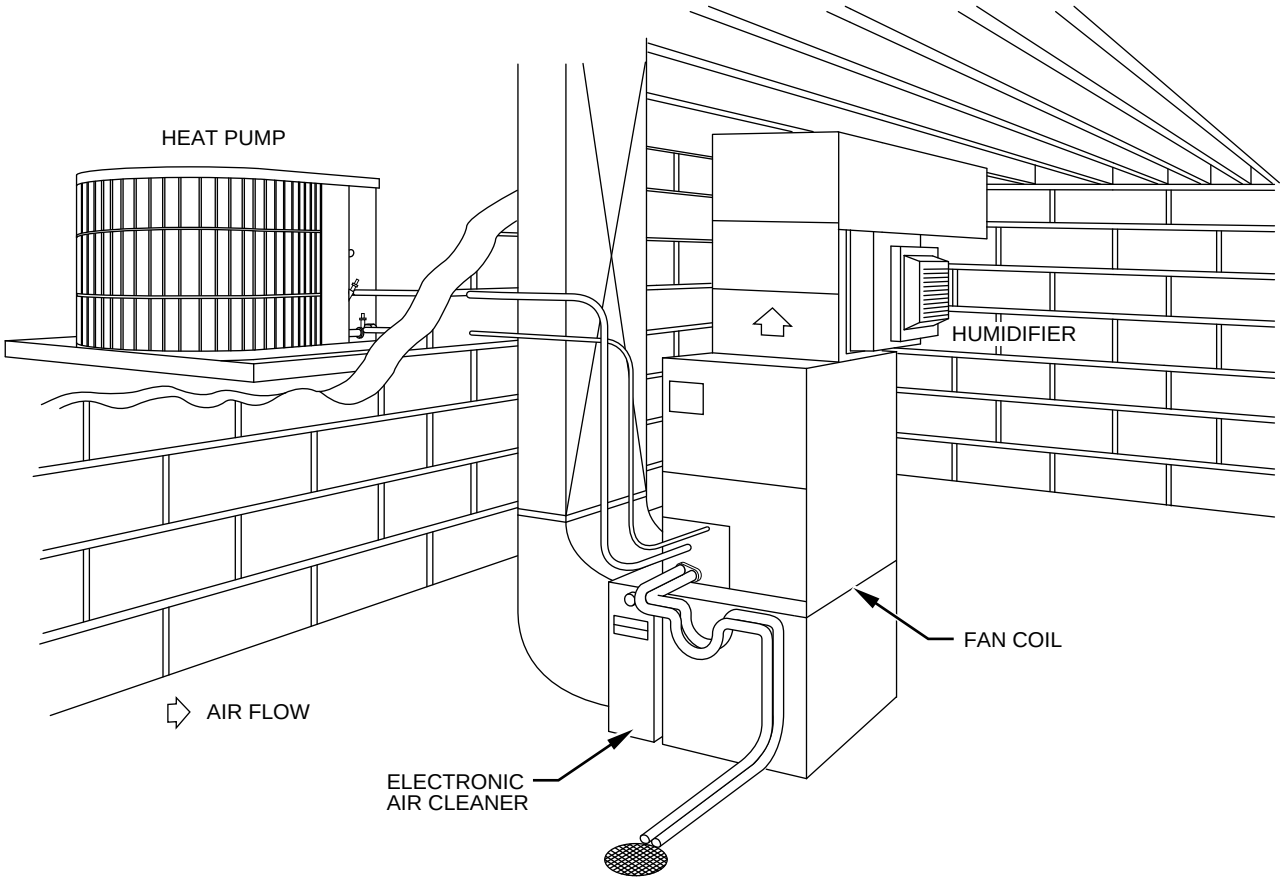
Matched system



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