Water-Source & Geothermal Heat Pumps

CFF Series · 1 to 20 Tons · R-454B

14 sizes
CFF012 through CFF240

2 cabinets
Vertical and horizontal, every size

4 voltages
208-230/1, 277/1, 208-230/3, 460/3

PRODUCT RANGE

Model	Nominal tons	Compressors	Cabinet	Voltage codes
CFF012	1	1	Vertical / Horizontal	A, B
CFF018	1.5	1	Vertical / Horizontal	A, B
CFF024	2	1	Vertical / Horizontal	A, B, C, D
CFF031	2.5	1	Vertical / Horizontal	A, B, C, D
CFF036	3	1	Vertical / Horizontal	A, B, C, D
CFF041	3.5	1	Vertical / Horizontal	A, C, D
CFF049	4	1	Vertical / Horizontal	A, C, D
CFF060	5	1	Vertical / Horizontal	A, C, D
CFF072	6	1	Vertical / Horizontal	A, C, D
CFF090	7.5	2	Vertical / Horizontal	A, C, D
CFF120	10	2	Vertical / Horizontal	C, D
CFF144	12	2	Vertical / Horizontal	C, D
CFF184	15	2	Vertical / Horizontal	C, D
CFF240	20	2	Vertical / Horizontal	C, D

Voltage codes: A = 208-230/1/60 · B = 277/1/60 · C = 208-230/3/60 · D = 460/3/60

STANDARD FEATURES

Refrigerant	R-454B (A2L, low GWP)
Cabinet	Stainless steel, insulated evaporator section
Drain pan	Stainless steel, insulated
Water coil	Coaxial cupronickel heat exchanger with steel jacket
Air coil	Copper tube, aluminum fin
Refrigerant circuit	TXV and filter drier per circuit; 7.5–20 ton units are dual-compressor, dual-circuit
Blower	Centrifugal, galvanized wheel(s); ECM motor through 10 ton
Controls & safeties	Overload protection, auto reset, solid-state lockout with HPS, LPS and condensate overflow switch
Applications	Water loop, ground water and ground loop (geothermal)

Contents — Model nomenclature · Rated performance · Electrical data · Physical data and fluid pressure drop · Performance data by model. For additional engineering data, consult factory.

MODEL NOMENCLATURE

EXAMPLE: CFF036A4-VLTFN-GR-SP-DC-X

CFF	036	A	4	-	V	L	T	F	N	-	GR-SP-DC	-	X
Series	Capacity	Voltage	Refrig.		Cabinet	Return	Supply	Water	Elec.		Options		Factory

1. Series	
CFF	Coldflow water-source heat pump

2. Capacity (MBtuh)	
012	1 ton
018	1.5 ton
024	2 ton
031	2.5 ton
036	3 ton
041	3.5 ton
049	4 ton
060	5 ton
072	6 ton
090	7.5 ton
120	10 ton
144	12 ton
184	15 ton
240	20 ton

3. Voltage	
A	208-230/1/60
B	277/1/60
C	208-230/3/60
D	460/3/60
E	575/3/60 *
F	115/1/60 *

4. Refrigerant	
4	R-454B
W	Water (fluid-to-fluid)

5. Cabinet	
V	Vertical
H	Horizontal
W	Water-to-water

6. Return air	
L	Left
R	Right
F	Front (vertical < 84 MBtuh)

7. Supply air	
T	Top
B	Back
S	Side
E	End

8. Water connection	
F	Front
B	Bottom
S	Side
1–8	Corner (vertical < 84 MBtuh)

9. Electrical service	
N	Standard
F	Front (vertical < 84 MBtuh)
B	Back (vertical < 84 MBtuh)
L	Left (vertical < 84 MBtuh)
R	Right (vertical < 84 MBtuh)

11. Factory code	
X	Standard

10. Options (suffix codes)	
TS	Two-stage compressor
HR	Heat recovery (desuperheater)
HB	Hot gas bypass
GR	Hot gas reheat
WR	Hot water reheat
SP	Sound package
WE	Waterside economizer
OA	DOAS (100% outside air)
BC	Backward-curved blower
BD	Belt-drive blower
CE	Coated evaporator fins
CC	Coated components
DW	Double wall
GT	Geothermal unit
SC	Straight cool
CP	Control package
IS	Individually circuited water connections
WV	24 V water valve
DC	Disconnect switch
#R	Coil rows (e.g. 4R = 4 rows)
CU	Custom unit

Multiple options are listed in suffix order, separated by dashes. * Consult factory for availability.

RATED PERFORMANCE

		Water loop				Ground water				Ground loop				Rated flow	
		Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F			
Model	Tons	Btuh	EER	Btuh	COP	Btuh	EER	Btuh	COP	Btuh	EER	Btuh	COP	Air CFM	Water GPM
CFF012	1	11,500	16.1	13,000	4.3	13,000	21.1	10,100	3.8	11,900	16.1	9,300	3.4	400	3
CFF018	1.5	19,010	13.4	24,380	4.2	21,660	17.8	18,510	3.7	20,600	15.9	12,380	3.0	600	4.5
CFF024	2	24,000	15.5	23,787	4.3	22,804	21.1	18,640	4.1	25,000	17.1	16,000	3.6	800	6
CFF031	2.5	30,500	15.5	31,275	4.3	32,445	21.1	24,698	4.1	31,200	17.1	19,500	3.6	1,000	7.5
CFF036	3	35,500	15.5	33,478	4.3	32,908	21.1	29,358	4.1	35,500	17.1	25,500	3.6	1,200	9
CFF041	3.5	40,500	15.5	37,883	4.3	37,543	21.1	34,484	4.1	40,500	17.1	26,000	3.6	1,400	10.5
CFF049	4	48,000	15.5	44,050	4.3	43,569	21.1	37,280	4.1	49,000	17.1	31,000	3.6	1,600	12
CFF060	5	59,000	15.5	59,908	4.3	57,937	21.1	46,600	4.1	63,000	17.1	43,000	3.5	1,900	15
CFF072	6	72,000	13.0	87,500	4.2	76,000	19.8	68,000	4.0	70,000	15.2	53,000	3.2	2,200	18
CFF090	7.5	90,000	14.0	109,500	4.5	68,000	23.0	53,000	4.0	62,000	16.1	41,000	3.5	3,000	24
CFF120	10	124,440	12.9	160,980	4.4	133,890	17.3	18,840	3.8	122,000	16.1	94,800	3.1	3,800	30
CFF144	12	148,541	13.7	181,776	5.0	173,923	19.4	142,426	4.4	159,360	17.9	101,050	3.5	4,800	33.6
CFF184	15	179,950	12.9	211,800	4.7	192,480	17.3	164,160	4.0	187,470	15.3	114,230	3.2	6,000	42
CFF240	20	248,890	12.8	331,170	4.6	306,060	18.1	256,360	4.1	283,190	15.9	177,980	3.4	8,000	60

Temperatures shown are entering fluid temperatures. Cooling ratings at 80.6°F DB / 66.2°F WB entering air; heating ratings at 68°F DB entering air. Ground loop heating at 32°F entering fluid requires antifreeze protection. Ratings are for the base unit without options.

ELECTRICAL DATA

Model	Tons	Code	Voltage / Phase / Hz	Compressor			Blower motor		Min. circuit ampacity	Max. fuse / HACR
				Qty	RLA (ea.)	LRA (ea.)	Qty × HP	FLA (ea.)		
CFF012	1	A	208-230/1/60	1	5.2	26	1 × 1/3	2.8	**9.3**	**15**
		B	277/1/60	1	4.74	21	1 × 1/3	2.6	**8.5**	**15**
CFF018	1.5	A	208-230/1/60	1	7.92	43	1 × 1/3	2.8	**12.7**	**20**
		B	277/1/60	1	6.5	29	1 × 1/3	2.6	**10.7**	**15**
CFF024	2	A	208-230/1/60	1	9	63	1 × 1/3	2.8	**14.1**	**20**
		B	277/1/60	1	7.76	48	1 × 1/3	2.6	**12.3**	**20**
		C	208-230/3/60	1	7.7	59.9	1 × 1/3	2.8	**12.4**	**20**
		D	460/3/60	1	3.8	32.4	1 × 1	2.1	**6.9**	**15**
CFF031	2.5	A	208-230/1/60	1	12.5	67	1 × 1/3	2.8	**18.4**	**30**
		B	277/1/60	1	9.17	55	1 × 1/3	2.6	**14.1**	**20**
		C	208-230/3/60	1	9.6	67.7	1 × 1/3	2.8	**14.8**	**20**
		D	460/3/60	1	4.5	38.1	1 × 1	2.1	**7.7**	**15**
CFF036	3	A	208-230/1/60	1	14.4	86	1 × 3/4	5.8	**23.8**	**35**
		B	277/1/60	1	10.3	55	1 × 1/2	3.6	**16.5**	**25**
		C	208-230/3/60	1	12.2	97.5	1 × 3/4	5.8	**21.1**	**30**
		D	460/3/60	1	3.7	44.3	1 × 1	2.1	**6.7**	**15**
CFF041	3.5	A	208-230/1/60	1	15.8	96	1 × 3/4	5.8	**25.6**	**40**
		C	208-230/3/60	1	12.2	102.8	1 × 3/4	5.8	**21.1**	**30**
		D	460/3/60	1	5.8	50	1 × 1	2.1	**9.4**	**15**
CFF049	4	A	208-230/1/60	1	19.4	102	1 × 3/4	5.8	**30.1**	**45**
		C	208-230/3/60	1	12	123	1 × 3/4	5.8	**20.8**	**30**
		D	460/3/60	1	6.3	60	1 × 1	2.1	**10.0**	**15**
CFF060	5	A	208-230/1/60	1	22.6	148	1 × 3/4	5.8	**34.1**	**50**
		C	208-230/3/60	1	13.1	93	1 × 3/4	5.8	**22.2**	**35**
		D	460/3/60	1	6.6	60	1 × 1	2.1	**10.4**	**15**
CFF072	6	A	208-230/1/60	1	32.05	127	1 × 1	6.6	**46.7**	**70**
		C	208-230/3/60	1	21.2	156.5	1 × 1	6.6	**33.1**	**50**
		D	460/3/60	1	9.1	74.8	1 × 1	2.1	**13.5**	**20**
CFF090	7.5	A	208-230/1/60	2	19.4	102	2 × 3/4	5.8	**55.3**	**70**
		C	208-230/3/60	2	12	123	2 × 1	6.6	**40.2**	**50**
		D	460/3/60	2	6.3	60	2 × 1	2.1	**18.4**	**20**
CFF120	10	C	208-230/3/60	2	13.1	93	2 × 1	6.6	**42.7**	**50**
		D	460/3/60	2	6.6	60	2 × 1	2.1	**19.1**	**25**
CFF144	12	C	208-230/3/60	2	21.2	156.5	1 × 5	13.6	**61.3**	**80**
		D	460/3/60	2	9.1	74.8	1 × 5	6.8	**27.3**	**35**
CFF184	15	C	208-230/3/60	2	27.7	178.5	1 × 5	13.6	**75.9**	**100**
		D	460/3/60	2	11.5	103	1 × 5	6.8	**32.7**	**40**
CFF240	20	C	208-230/3/60	2	28.5	255	2 × 3	8.6	**81.3**	**100**
		D	460/3/60	2	13.5	123	2 × 3	4.3	**39.0**	**50**

Wire and protect per NEC and local codes.

PHYSICAL DATA

Model	Tons	Vertical cabinet					Horizontal cabinet				
		L (in)	W (in)	H (in)	Unit (lb)	Ship (lb)	L (in)	W (in)	H (in)	Unit (lb)	Ship (lb)
CFF012	1	19	19	32	135	155	33.75	21.5	20.75	125	145
CFF018	1.5	19	19	31	135	155	33.5	21.5	20.75	130	150
CFF024	2	21.5	21.5	39	210	230	33.5	21.5	20.75	210	230
CFF031	2.5	21.5	21.5	39	210	230	33.5	21.5	20.75	210	230
CFF036	3	21.5	21.5	39	220	240	40.25	23	19.25	215	235
CFF041	3.5	21.5	21.5	39	220	240	40.25	23	19.25	215	235
CFF049	4	26	24	43	320	340	45.5	26	21	330	350
CFF060	5	26	24	43	320	340	45.5	26	21	340	360
CFF072	6	26	25	43	330	350	45.5	26	21	350	370
CFF090	7.5	48.5	28	68.5	620	650	93.25	36	27.5	650	670
CFF120	10	48.5	28	68.5	620	650	93.25	36	27.5	650	670
CFF144	12	48.5	28	68.5	620	650	93.25	36	27.5	650	670
CFF184	15	55.25	36.5	80	720	750	93.25	36	31	750	770
CFF240	20	55.25	36.5	80	720	750	93.25	36	31	750	770

Overall cabinet dimensions exclude filter rack, duct flanges and factory options.

FLUID PRESSURE DROP

Model	Water flow and pressure drop across the water coil														
	GPM	ft	psi	GPM	ft	psi	GPM	ft	psi	GPM	ft	psi	GPM	ft	psi
CFF012	1.5	3.2	1.4	2	5.3	2.3	2.5	7.9	3.4	3	11.0	4.8	3.5	14.5	6.3
CFF018	2.5	5.9	2.5	3	8.2	3.5	4	13.7	5.9	4.5	17.0	7.3	5	20.5	8.9
CFF024	3	1.4	0.6	4	2.6	1.1	5.3	4.5	1.9	6	5.8	2.5	7.5	9.0	3.9
CFF031	3.8	2.1	0.9	5	3.8	1.7	6.6	6.6	2.9	7.5	8.5	3.7	9.4	13.3	5.8
CFF036	4.5	4.0	1.8	6	7.2	3.1	7.9	12.5	5.4	9	16.1	7.0	11.3	25.2	10.9
CFF041	5.3	5.1	2.2	7	9.1	4.0	9.2	15.7	6.8	10.5	20.2	8.8	13.1	31.6	13.8
CFF049	6	3.3	1.4	8	5.9	2.6	10.6	10.2	4.4	12	13.1	5.7	15	20.5	8.9
CFF060	7.5	4.6	2.0	10.1	8.3	3.6	13.2	14.2	6.2	15	18.4	8.0	18.8	28.8	12.5
CFF072	10	6.4	2.8	14	11.7	5.1	16	14.9	6.5	18	18.4	8.0	20	22.3	9.6
CFF090	12	5.7	2.4	14	7.5	3.2	18	11.7	5.1	21	15.5	6.7	24	19.7	8.5
CFF120	16	4.8	2.1	20	7.2	3.1	24	10.0	4.3	28	13.2	5.7	30	15.8	6.9
CFF144	19.2	3.4	1.5	24	5.1	2.2	28.8	7.0	3.0	33.6	9.3	4.0	48	17.6	7.6
CFF184	22	4.0	1.7	27	5.8	2.5	32	7.9	3.4	42	12.9	5.6	52	18.9	8.2
CFF240	30	3.7	1.6	40	6.2	2.7	50	9.3	4.0	60	12.9	5.6	75	19.2	8.3

Pure water at 70°F. Pressure drop shown in feet of head (ft) and psi.

CFF012

1 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **11,500** · 16.1 EER
Htg 68°F **13,000** · 4.3 COP

GROUND WATER
Clg 59°F **13,000** · 21.1 EER
Htg 50°F **10,100** · 3.8 COP

GROUND LOOP
Clg 77°F **11,900** · 16.1 EER
Htg 32°F **9,300** · 3.4 COP

Rated flow
400 CFM
3 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	11.01	7.22	0.66	0.64	13.90	17.2
	60	10.56	6.99	0.66	0.70	12.95	15.1
	70	10.12	6.78	0.67	0.76	12.71	13.4
	85	9.46	6.50	0.69	0.85	12.35	11.2
	100	8.79	6.25	0.71	0.93	11.98	9.4
75 / 63	50	11.79	8.61	0.73	0.64	13.98	18.3
	60	11.31	8.33	0.74	0.70	13.71	16.1
	70	10.84	8.09	0.75	0.76	13.44	14.2
	85	10.13	7.75	0.77	0.85	13.03	11.9
	100	9.42	7.46	0.79	0.94	12.63	10.0
80 / 67	50	12.93	9.50	0.73	0.65	15.14	20.0
	60	**12.41**	**9.19**	**0.74**	**0.71**	**14.82**	**17.5**
	70	11.89	8.92	0.75	0.77	14.51	15.5
	85	**11.11**	**8.55**	**0.77**	**0.86**	**14.04**	**13.0**
	100	10.33	8.23	0.80	0.95	13.56	10.9
85 / 71	50	14.06	10.39	0.74	0.65	16.29	21.5
	60	13.50	10.06	0.74	0.71	15.93	18.9
	70	12.94	9.76	0.75	0.77	15.58	16.7
	85	12.09	9.36	0.77	0.86	15.04	14.0
	100	11.24	9.00	0.80	0.96	14.50	11.8

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	12.14	0.88	9.16	4.1
	60	13.83	0.91	10.71	4.4
	70	15.51	0.95	12.27	4.8
	80	17.20	0.99	13.82	5.1
70	**50**	**11.48**	**0.89**	**8.43**	**3.8**
	60	13.07	0.93	9.89	4.1
	70	**14.66**	**0.97**	**11.35**	**4.4**
	80	16.25	1.01	12.81	4.7
80	50	10.69	0.91	7.58	3.4
	60	12.17	0.95	8.93	3.7
	70	13.66	0.99	10.27	4.0
	80	15.14	1.03	11.62	4.3

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	7.78	0.78	5.11	2.9
	30	8.60	0.80	5.87	3.1
	40	10.26	0.84	7.39	3.6
70	25	7.35	0.80	4.63	2.7
	30	**8.13**	**0.82**	**5.35**	**2.9**
	40	9.69	0.85	6.78	3.3
80	25	6.85	0.82	4.07	2.5
	30	7.58	0.83	4.73	2.7
	40	9.03	0.87	6.05	3.0

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
1.5	3.2	1.4
2	5.3	2.3
2.5	7.9	3.4
3	11.0	4.8
3.5	14.5	6.3

CABINET

	L×W×H in	lb
Vert.	19×19×32	135
Horiz.	33.75×21.5×20.75	125

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	5.2	26	1 × 1/3	2.8	**9.3**	**15**
B	277/1/60	1	4.74	21	1 × 1/3	2.6	**8.5**	**15**

CFF018

1.5 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **19,010** · 13.4 EER
Htg 68°F **24,380** · 4.2 COP

GROUND WATER
Clg 59°F **21,660** · 17.8 EER
Htg 50°F **18,510** · 3.7 COP

GROUND LOOP
Clg 77°F **20,600** · 15.9 EER
Htg 32°F **12,380** · 3.0 COP

Rated flow
600 CFM
4.5 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	19.36	12.71	0.67	1.13	23.23	17.2
	60	18.45	12.21	0.67	1.21	22.59	15.4
	70	17.54	11.75	0.68	1.29	21.96	13.7
	85	16.18	11.12	0.70	1.41	21.00	11.6
	100	14.82	10.53	0.72	1.52	20.04	9.8
75 / 63	50	20.74	15.15	0.74	1.14	24.62	18.4
	60	19.76	14.55	0.75	1.22	23.93	16.4
	70	18.79	14.02	0.76	1.30	23.22	14.7
	85	17.33	13.27	0.78	1.41	22.17	12.3
	100	15.87	12.57	0.80	1.53	21.12	10.4
80 / 67	50	22.74	16.71	0.74	1.15	26.66	20.0
	60	**21.66**	**16.05**	**0.75**	**1.23**	**25.87**	**17.8**
	70	20.60	15.45	0.76	1.31	25.08	15.9
	85	**19.01**	**14.62**	**0.78**	**1.43**	**23.89**	**13.4**
	100	17.40	13.87	0.81	1.54	22.69	11.3
85 / 71	50	24.73	18.27	0.75	1.16	28.69	21.5
	60	23.58	17.56	0.75	1.24	27.82	19.2
	70	22.42	16.91	0.76	1.32	26.93	17.2
	85	20.68	16.01	0.78	1.44	25.60	14.4
	100	18.94	15.17	0.81	1.56	24.27	12.2

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	19.58	1.44	14.67	4.0
	60	22.69	1.57	17.36	4.3
	70	25.81	1.68	20.07	4.6
	80	28.92	1.80	22.77	4.8
70	**50**	**18.51**	**1.46**	**13.49**	**3.7**
	60	21.44	1.60	16.02	3.9
	70	**24.38**	**1.72**	**18.53**	**4.2**
	80	27.32	1.84	21.06	4.4
80	50	17.24	1.50	12.11	3.4
	60	19.98	1.63	14.42	3.6
	70	22.71	1.75	16.74	3.8
	80	25.45	1.88	19.05	4.0

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	11.58	1.14	7.68	3.0
	30	13.11	1.20	9.00	3.2
	40	16.15	1.32	11.64	3.6
70	25	10.95	1.16	6.97	2.8
	30	**12.38**	**1.22**	**8.20**	**3.0**
	40	15.26	1.34	10.67	3.3
80	25	10.20	1.19	6.13	2.5
	30	11.54	1.25	7.26	2.7
	40	14.22	1.37	9.51	3.0

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
2.5	5.9	2.5
3	8.2	3.5
4	13.7	5.9
4.5	17.0	7.3
5	20.5	8.9

CABINET

	L×W×H in	lb
Vert.	19×19×31	135
Horiz.	33.5×21.5×20.75	130

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	7.92	43	1 × 1/3	2.8	**12.7**	**20**
B	277/1/60	1	6.5	29	1 × 1/3	2.6	**10.7**	**15**

CFF024

2 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **24,000** · 15.5 EER
Htg 68°F **23,787** · 4.3 COP

GROUND WATER
Clg 59°F **22,804** · 21.1 EER
Htg 50°F **18,640** · 4.1 COP

GROUND LOOP
Clg 77°F **25,000** · 17.1 EER
Htg 32°F **16,000** · 3.6 COP

Rated flow
800 CFM
6 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	31.27	10.41	0.33	1.03	34.16	36.1
	59	30.08	9.98	0.33	1.18	33.48	29.6
	70	28.63	9.38	0.33	1.37	32.68	23.7
	86	26.39	8.61	0.33	1.67	31.45	17.6
	100	24.34	—	—	1.97	30.42	13.5
75 / 63	50	27.74	19.77	0.71	1.04	30.65	31.8
	59	26.82	19.56	0.73	1.19	30.23	26.3
	70	25.41	18.79	0.74	1.36	29.43	21.2
	86	23.45	17.93	0.76	1.65	28.44	15.8
	100	21.70	17.05	0.79	1.95	27.71	12.2
80.6 / 66.2	50	29.35	21.63	0.74	1.03	32.30	34.0
	59	**27.50**	**20.62**	**0.75**	**1.17**	**30.86**	**27.4**
	70	26.87	20.56	0.77	1.36	30.87	22.5
	86	**25.50**	**20.11**	**0.79**	**1.67**	**30.55**	**17.0**
	100	22.93	18.87	0.82	1.95	28.95	12.8
85 / 71	50	31.76	21.15	0.67	1.07	34.78	35.0
	59	30.56	20.58	0.67	1.16	33.89	30.7
	70	29.06	19.99	0.69	1.35	33.02	24.6
	86	26.79	19.19	0.72	1.64	31.75	18.2
	100	24.78	18.35	0.74	1.94	30.75	14.0

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	21.85	1.52	17.22	4.7
	60	24.52	1.56	19.77	5.2
	68	26.68	1.58	21.86	5.5
	80	30.25	1.64	25.23	6.0
68	**50**	**20.50**	**1.60**	**15.62**	**4.2**
	60	24.08	1.70	18.87	4.6
	68	**27.50**	**1.78**	**22.00**	**5.0**
	80	29.78	1.78	24.28	5.4
80	50	21.13	1.89	15.24	3.6
	60	23.62	1.92	17.65	4.0
	68	25.80	1.95	19.71	4.2
	80	29.28	2.04	22.90	4.6

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	15.19	1.38	11.07	3.7
	32	16.73	1.39	12.54	4.0
	40	18.59	1.41	14.36	4.4
68	25	14.97	1.50	10.45	3.3
	32	**16.50**	**1.51**	**11.92**	**3.6**
	40	18.34	1.53	13.70	3.9
80	25	14.74	1.70	9.50	2.8
	32	16.25	1.73	10.93	3.1
	40	18.05	1.74	12.68	3.4

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
3	1.4	0.6
4	2.6	1.1
5.3	4.5	1.9
6	5.8	2.5
7.5	9.0	3.9

CABINET

	L×W×H in	lb
Vert.	21.5×21.5×39	210
Horiz.	33.5×21.5×20.75	210

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	9	63	1 × 1/3	2.8	**14.1**	**20**
B	277/1/60	1	7.76	48	1 × 1/3	2.6	**12.3**	**20**
C	208-230/3/60	1	7.7	59.9	1 × 1/3	2.8	**12.4**	**20**
D	460/3/60	1	3.8	32.4	1 × 1	2.1	**6.9**	**15**

CFF031

2.5 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **30,500** · 15.5 EER
Htg 68°F **31,275** · 4.3 COP

GROUND WATER
Clg 59°F **32,445** · 21.1 EER
Htg 50°F **24,698** · 4.1 COP

GROUND LOOP
Clg 77°F **31,200** · 17.1 EER
Htg 32°F **19,500** · 3.6 COP

Rated flow
1,000 CFM
7.5 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	36.08	23.88	0.66	1.65	40.72	26.5
	59	34.33	23.07	0.67	1.79	39.45	22.9
	70	32.13	22.05	0.69	1.97	37.86	19.1
	86	28.82	20.58	0.71	2.21	35.38	15.0
	100	25.81	19.21	0.74	2.42	33.10	12.1
75 / 63	50	37.52	26.98	0.72	1.64	42.13	27.8
	59	35.71	25.66	0.72	1.78	40.81	23.9
	70	33.43	24.60	0.74	1.97	39.17	19.9
	86	30.03	22.97	0.77	2.23	36.65	15.5
	100	26.90	21.58	0.80	2.44	34.26	12.5
80.6 / 66.2	50	39.86	28.84	0.72	1.62	44.41	29.9
	59	**39.00**	**28.76**	**0.74**	**1.79**	**44.12**	**26.0**
	70	35.52	26.88	0.76	1.96	41.25	21.1
	86	**31.00**	**24.65**	**0.80**	**2.22**	**37.61**	**16.0**
	100	28.63	23.93	0.84	2.33	35.59	14.0
85 / 71	50	43.52	28.93	0.66	1.57	47.90	33.9
	59	41.39	28.08	0.68	1.81	46.59	27.2
	70	38.78	26.98	0.70	1.98	44.55	22.9
	86	34.87	24.82	0.71	2.26	41.60	17.7
	100	31.40	23.50	0.75	2.37	38.50	15.1

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	28.69	2.15	22.32	4.5
	60	33.00	2.26	26.26	4.9
	68	36.52	2.33	29.56	5.2
	80	41.69	2.38	34.56	5.8
68	**50**	**27.00**	**2.22**	**20.41**	**4.1**
	60	31.73	2.37	24.62	4.5
	68	**36.00**	**2.49**	**28.50**	**4.8**
	80	40.45	2.54	32.76	5.3
80	50	25.87	2.38	18.72	3.6
	60	29.90	2.53	22.25	3.9
	68	33.38	2.64	25.36	4.2
	80	38.55	2.77	30.08	4.6

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	18.28	1.80	13.13	3.6
	32	20.93	1.90	15.44	3.8
	40	24.15	2.00	18.29	4.1
68	25	17.40	1.85	12.06	3.3
	32	**20.00**	**1.96**	**14.29**	**3.5**
	40	23.14	2.08	17.01	3.8
80	25	16.04	1.93	10.45	2.9
	32	18.57	2.05	12.55	3.1
	40	21.59	2.19	15.11	3.3

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
3.8	2.1	0.9
5	3.8	1.7
6.6	6.6	2.9
7.5	8.5	3.7
9.4	13.3	5.8

CABINET

	L×W×H in	lb
Vert.	21.5×21.5×39	210
Horiz.	33.5×21.5×20.75	210

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	12.5	67	1 × 1/3	2.8	**18.4**	**30**
B	277/1/60	1	9.17	55	1 × 1/3	2.6	**14.1**	**20**
C	208-230/3/60	1	9.6	67.7	1 × 1/3	2.8	**14.8**	**20**
D	460/3/60	1	4.5	38.1	1 × 1	2.1	**7.7**	**15**

CFF036

3 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **35,500** · 15.5 EER
Htg 68°F **33,478** · 4.3 COP

GROUND WATER
Clg 59°F **32,908** · 21.1 EER
Htg 50°F **29,358** · 4.1 COP

GROUND LOOP
Clg 77°F **35,500** · 17.1 EER
Htg 32°F **25,500** · 3.6 COP

Rated flow
1,200 CFM
9 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	38.47	25.24	0.66	1.79	43.55	25.9
	59	37.05	24.57	0.66	1.97	42.74	22.2
	70	35.28	23.77	0.67	2.20	41.73	18.6
	86	32.62	22.43	0.69	2.57	40.33	14.4
	100	30.19	21.29	0.71	2.95	39.22	11.4
75 / 63	50	39.80	28.37	0.71	1.80	44.89	26.7
	59	38.34	27.72	0.72	1.98	44.05	22.9
	70	36.54	26.80	0.73	2.21	43.03	19.2
	86	33.79	25.53	0.76	2.57	41.52	14.9
	100	31.25	24.49	0.78	2.95	40.28	11.8
80.6 / 66.2	50	41.97	30.84	0.73	1.81	47.10	27.9
	59	**40.00**	**29.74**	**0.74**	**2.01**	**45.81**	**23.5**
	70	38.57	29.23	0.76	2.22	45.09	20.2
	86	**36.00**	**28.39**	**0.79**	**2.56**	**43.68**	**16.0**
	100	33.02	27.01	0.82	2.95	42.06	12.5
85 / 71	50	45.35	30.16	0.66	1.82	50.53	29.9
	59	43.75	29.39	0.67	2.00	49.54	25.8
	70	41.66	28.55	0.69	2.24	48.26	21.6
	86	38.51	27.46	0.71	2.61	46.38	16.7
	100	35.88	26.44	0.74	2.97	44.98	13.5

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	32.69	2.42	25.49	4.5
	60	36.92	2.47	29.53	5.0
	68	40.40	2.51	32.87	5.4
	80	45.63	2.58	37.86	5.9
68	**50**	**32.00**	**2.54**	**24.38**	**4.2**
	60	36.31	2.64	28.35	4.6
	68	**40.00**	**2.75**	**31.67**	**4.8**
	80	44.85	2.76	36.48	5.4
80	50	31.78	2.93	22.84	3.6
	60	35.65	2.96	26.61	3.9
	68	38.71	2.99	29.54	4.2
	80	43.82	3.08	34.36	4.6

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	23.87	2.21	17.38	3.7
	32	26.34	2.25	19.71	4.0
	40	29.25	2.30	22.45	4.3
68	25	23.62	2.37	16.56	3.3
	32	**26.00**	**2.42**	**18.78**	**3.6**
	40	28.89	2.48	21.46	3.9
80	25	20.84	2.65	12.83	2.6
	32	24.42	2.73	16.13	2.9
	40	28.67	2.85	19.98	3.3

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
4.5	4.0	1.8
6	7.2	3.1
7.9	12.5	5.4
9	16.1	7.0
11.3	25.2	10.9

CABINET

	L×W×H in	lb
Vert.	21.5×21.5×39	220
Horiz.	40.25×23×19.25	215

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	14.4	86	1 × 3/4	5.8	**23.8**	**35**
B	277/1/60	1	10.3	55	1 × 1/2	3.6	**16.5**	**25**
C	208-230/3/60	1	12.2	97.5	1 × 3/4	5.8	**21.1**	**30**
D	460/3/60	1	3.7	44.3	1 × 1	2.1	**6.7**	**15**

CFF041

3.5 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **40,500** · 15.5 EER
Htg 68°F **37,883** · 4.3 COP

GROUND WATER
Clg 59°F **37,543** · 21.1 EER
Htg 50°F **34,484** · 4.1 COP

GROUND LOOP
Clg 77°F **40,500** · 17.1 EER
Htg 32°F **26,000** · 3.6 COP

Rated flow
1,400 CFM
10.5 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	45.71	30.67	0.67	2.37	52.42	23.2
	59	43.59	29.72	0.68	2.52	50.83	20.5
	70	40.91	28.48	0.70	2.72	48.82	17.6
	86	36.85	26.55	0.72	3.03	45.82	14.0
	100	33.01	24.79	0.75	3.29	42.89	11.4
75 / 63	50	47.38	34.81	0.73	2.36	54.07	24.1
	59	45.18	33.81	0.75	2.52	52.41	21.3
	70	42.40	32.58	0.77	2.72	50.32	18.2
	86	38.18	30.60	0.80	3.04	47.18	14.5
	100	34.22	28.93	0.85	3.31	44.16	11.7
80.6 / 66.2	50	50.12	38.06	0.76	2.35	56.77	25.7
	59	**47.00**	**36.48**	**0.78**	**2.60**	**54.49**	**21.4**
	70	44.84	35.85	0.80	2.73	52.77	19.3
	86	**41.00**	**—**	**—**	**2.96**	**49.74**	**16.0**
	100	36.22	32.22	0.89	3.36	46.31	12.3
85 / 71	50	54.17	37.28	0.69	2.32	60.72	28.2
	59	51.73	36.30	0.70	2.49	58.86	24.8
	70	48.52	35.12	0.72	2.71	56.41	21.0
	86	43.57	33.18	0.76	3.06	52.65	16.4
	100	39.01	31.32	0.80	3.38	49.17	13.1

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	38.86	2.96	30.14	4.5
	60	44.52	3.08	35.38	4.9
	68	48.98	3.14	39.64	5.2
	80	55.39	3.17	45.94	5.9
68	**50**	**37.50**	**3.08**	**28.35**	**4.1**
	60	42.90	3.21	33.30	4.5
	68	**47.00**	**3.27**	**37.21**	**4.8**
	80	53.52	3.35	43.45	5.3
80	50	0.00	0.40	0.00	3.6
	60	40.61	3.41	30.33	4.0
	68	44.83	3.52	34.19	4.2
	80	0.00	0.40	0.00	4.6

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	24.30	2.43	17.40	3.5
	32	27.75	2.54	20.47	3.8
	40	31.58	2.66	23.88	4.1
68	25	22.97	2.49	15.85	3.2
	32	**26.50**	**2.62**	**18.93**	**3.5**
	40	30.32	2.75	22.28	3.8
80	25	21.49	2.58	14.06	2.9
	32	24.13	2.71	16.27	3.1
	40	28.34	2.89	19.86	3.3

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
5.3	5.1	2.2
7	9.1	4.0
9.2	15.7	6.8
10.5	20.2	8.8
13.1	31.6	13.8

CABINET

	L×W×H in	lb
Vert.	21.5×21.5×39	220
Horiz.	40.25×23×19.25	215

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	15.8	96	1 × 3/4	5.8	**25.6**	**40**
C	208-230/3/60	1	12.2	102.8	1 × 3/4	5.8	**21.1**	**30**
D	460/3/60	1	5.8	50	1 × 1	2.1	**9.4**	**15**

CFF049

4 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **48,000** · 15.5 EER
Htg 68°F **44,050** · 4.3 COP

GROUND WATER
Clg 59°F **43,569** · 21.1 EER
Htg 50°F **37,280** · 4.1 COP

GROUND LOOP
Clg 77°F **49,000** · 17.1 EER
Htg 32°F **31,000** · 3.6 COP

Rated flow
1,600 CFM
12 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	53.61	35.38	0.66	2.25	59.69	30.1
	59	51.60	34.40	0.67	2.53	58.61	25.1
	70	49.05	33.17	0.68	2.83	57.09	20.8
	86	45.65	32.01	0.70	3.34	55.44	15.9
	100	41.80	29.62	0.71	3.82	53.22	12.5
75 / 63	50	55.50	39.89	0.72	2.24	61.55	31.3
	59	53.43	38.87	0.73	2.52	60.42	26.1
	70	51.23	38.28	0.75	2.85	59.34	21.5
	86	46.91	35.76	0.76	3.34	56.72	16.3
	100	44.88	35.16	0.78	3.90	56.58	13.1
80.6 / 66.2	50	59.08	43.83	0.74	2.22	65.05	33.7
	59	**57.00**	**43.06**	**0.76**	**2.58**	**64.20**	**27.0**
	70	54.16	42.05	0.78	2.84	62.25	22.8
	86	**51.00**	**40.09**	**0.79**	**3.30**	**60.67**	**18.0**
	100	46.30	38.74	0.84	3.82	57.74	13.8
85 / 71	50	63.80	42.84	0.67	2.18	69.64	37.3
	59	61.39	42.12	0.69	2.48	68.23	30.6
	70	58.37	40.96	0.70	2.83	66.42	24.7
	86	54.01	39.46	0.73	3.34	63.81	18.8
	100	50.07	37.88	0.76	3.82	61.51	14.9

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	49.68	3.57	39.12	4.7
	60	55.83	3.64	45.02	5.2
	68	60.84	3.70	49.82	5.5
	80	68.28	3.77	57.03	6.1
68	**50**	**50.00**	**3.88**	**38.37**	**4.3**
	60	54.70	3.89	43.05	4.7
	68	**58.00**	**3.87**	**46.40**	**5.0**
	80	66.85	4.04	54.66	5.5
80	50	47.72	4.21	34.96	3.7
	60	53.13	4.29	40.08	4.1
	68	57.74	4.37	44.42	4.3
	80	64.87	4.50	51.13	4.7

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	36.08	3.32	26.35	3.7
	32	39.61	3.39	29.65	4.0
	40	43.73	3.45	33.54	4.3
68	25	35.58	3.57	25.02	3.4
	32	**39.00**	**3.65**	**28.17**	**3.6**
	40	42.95	3.67	32.02	3.9
80	25	34.86	3.93	23.05	3.0
	32	38.16	3.98	26.18	3.2
	40	42.25	4.06	29.99	3.4

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
6	3.3	1.4
8	5.9	2.6
10.6	10.2	4.4
12	13.1	5.7
15	20.5	8.9

CABINET

	L×W×H in	lb
Vert.	26×24×43	320
Horiz.	45.5×26×21	330

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	19.4	102	1 × 3/4	5.8	**30.1**	**45**
C	208-230/3/60	1	12	123	1 × 3/4	5.8	**20.8**	**30**
D	460/3/60	1	6.3	60	1 × 1	2.1	**10.0**	**15**

CFF060

5 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **59,000** · 15.5 EER
Htg 68°F **59,908** · 4.3 COP

GROUND WATER
Clg 59°F **57,937** · 21.1 EER
Htg 50°F **46,600** · 4.1 COP

GROUND LOOP
Clg 77°F **63,000** · 17.1 EER
Htg 32°F **43,000** · 3.5 COP

Rated flow
1,900 CFM
15 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	64.55	42.23	0.65	3.17	73.68	24.1
	59	62.22	41.18	0.66	3.43	72.25	21.2
	70	59.28	39.78	0.67	3.79	70.54	18.0
	86	54.84	37.70	0.69	4.40	68.18	14.0
	100	50.87	35.95	0.71	4.97	66.14	11.1
75 / 63	50	66.82	47.60	0.71	3.17	75.96	25.0
	59	64.42	46.48	0.72	3.44	74.48	21.8
	70	61.41	45.02	0.73	3.80	72.71	18.5
	86	56.74	43.42	0.77	4.38	70.00	14.6
	100	52.66	41.43	0.79	4.97	67.95	11.7
80.6 / 66.2	50	70.59	52.08	0.74	3.19	79.79	26.2
	59	**68.00**	**50.92**	**0.75**	**3.58**	**78.55**	**22.0**
	70	64.77	49.65	0.77	3.81	76.09	19.5
	86	**60.00**	**47.41**	**0.79**	**4.24**	**72.80**	**16.0**
	100	55.49	45.97	0.83	4.98	70.83	12.3
85 / 71	50	76.35	50.74	0.66	3.22	85.66	28.0
	59	73.61	49.56	0.67	3.49	83.83	24.6
	70	70.11	48.63	0.69	3.84	81.54	20.9
	86	64.94	46.19	0.71	4.42	78.36	16.5
	100	60.10	44.68	0.74	5.04	75.63	13.2

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	58.05	4.39	44.74	4.4
	60	65.48	4.53	51.70	4.8
	68	71.67	4.66	57.46	5.0
	80	81.88	4.89	66.87	5.5
68	**50**	**58.00**	**4.64**	**43.85**	**4.1**
	60	64.01	4.82	49.24	4.3
	68	**70.00**	**5.05**	**54.44**	**4.5**
	80	80.57	5.23	64.39	5.0
80	50	55.68	5.19	39.62	3.5
	60	62.84	5.37	46.20	3.8
	68	69.02	5.53	51.82	4.0
	80	78.65	5.80	60.53	4.3

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	41.94	3.92	30.24	3.6
	32	45.83	3.98	33.91	3.8
	40	50.74	4.07	38.51	4.2
68	25	41.34	4.18	28.73	3.3
	32	**45.00**	**4.26**	**32.14**	**3.5**
	40	49.69	4.36	36.50	3.8
80	25	40.41	4.65	26.23	2.8
	32	44.14	4.74	29.63	3.0
	40	48.47	4.83	33.65	3.3

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
7.5	4.6	2.0
10.1	8.3	3.6
13.2	14.2	6.2
15	18.4	8.0
18.8	28.8	12.5

CABINET

	L×W×H in	lb
Vert.	26×24×43	320
Horiz.	45.5×26×21	340

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	22.6	148	1 × 3/4	5.8	**34.1**	**50**
C	208-230/3/60	1	13.1	93	1 × 3/4	5.8	**22.2**	**35**
D	460/3/60	1	6.6	60	1 × 1	2.1	**10.4**	**15**

CFF072

6 ton nominal · 1 compressor · R-454B

WATER LOOP
Clg 86°F **72,000** · 13.0 EER
Htg 68°F **87,500** · 4.2 COP

GROUND WATER
Clg 59°F **76,000** · 19.8 EER
Htg 50°F **68,000** · 4.0 COP

GROUND LOOP
Clg 77°F **70,000** · 15.2 EER
Htg 32°F **53,000** · 3.2 COP

Rated flow
2,200 CFM
18 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	67.45	43.62	0.65	3.50	78.72	19.1
	60	64.93	42.34	0.66	3.93	77.71	16.3
	70	62.41	41.20	0.67	4.37	76.70	14.1
	85	58.63	39.72	0.68	5.02	75.19	11.6
	100	54.85	38.46	0.71	5.67	73.67	9.6
75 / 63	50	72.27	52.12	0.73	3.52	83.55	20.3
	60	69.57	50.60	0.73	3.95	82.38	17.4
	70	66.87	49.25	0.74	4.39	81.20	15.1
	85	62.82	47.49	0.76	5.05	79.43	12.3
	100	58.77	45.98	0.79	5.71	77.67	10.2
80.6 / 66.2	**50**	**78.52**	**57.54**	**0.73**	**3.54**	**90.62**	**22.2**
	60	**75.59**	**55.85**	**0.74**	**3.99**	**89.19**	**19.0**
	70	72.66	54.36	0.75	4.43	87.77	16.4
	85	**68.27**	**52.43**	**0.77**	**5.09**	**85.64**	**13.4**
	100	63.88	50.77	0.79	5.75	83.51	11.1
85 / 71	50	85.49	63.00	0.74	3.57	97.68	23.9
	60	82.31	61.16	0.74	4.02	96.01	20.5
	70	79.12	59.53	0.75	4.46	94.35	17.7
	85	74.34	57.42	0.77	5.13	91.85	14.5
	100	69.57	55.60	0.80	5.80	89.35	12.0

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	71.29	5.05	54.06	4.1
	60	78.83	5.15	61.26	4.5
	68	86.36	5.25	68.46	4.8
	80	93.89	5.34	75.66	5.1
68	**50**	**67.40**	**5.14**	**49.85**	**3.8**
	60	74.52	5.24	56.63	4.2
	68	**81.64**	**5.34**	**63.41**	**4.5**
	80	88.75	5.44	70.18	4.8
80	50	62.83	5.26	44.89	3.5
	60	69.46	5.36	51.17	3.8
	68	76.09	5.46	57.46	4.1
	80	82.72	5.56	63.74	4.4

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	51.43	4.81	35.03	3.1
	32	55.13	4.86	38.55	3.3
	40	62.51	4.95	45.61	3.7
68	25	48.64	4.89	31.93	2.9
	32	**52.13**	**4.94**	**35.25**	**3.1**
	40	59.10	5.04	41.89	3.4
80	25	45.36	5.00	28.28	2.7
	32	48.61	5.05	31.36	2.8
	40	55.10	5.15	37.51	3.1

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
10	6.4	2.8
14	11.7	5.1
16	14.9	6.5
18	18.4	8.0
20	22.3	9.6

CABINET

	L×W×H in	lb
Vert.	26×25×43	330
Horiz.	45.5×26×21	350

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	1	32.05	127	1 × 1	6.6	**46.7**	**70**
C	208-230/3/60	1	21.2	156.5	1 × 1	6.6	**33.1**	**50**
D	460/3/60	1	9.1	74.8	1 × 1	2.1	**13.5**	**20**

CFF090

7.5 ton nominal · 2 compressors · R-454B

WATER LOOP
Clg 86°F **90,000** · 14.0 EER
Htg 68°F **109,500** · 4.5 COP

GROUND WATER
Clg 59°F **68,000** · 23.0 EER
Htg 50°F **53,000** · 4.0 COP

GROUND LOOP
Clg 77°F **62,000** · 16.1 EER
Htg 32°F **41,000** · 3.5 COP

Rated flow
3,000 CFM
24 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	104.23	68.94	0.66	5.36	122.51	19.5
	60	97.96	65.32	0.67	5.82	117.82	16.8
	70	91.69	61.89	0.68	6.28	113.12	14.6
	85	82.28	56.99	0.69	6.97	106.08	11.8
	100	72.88	52.22	0.72	7.66	99.03	9.5
75 / 63	50	111.66	82.38	0.74	5.39	130.05	20.7
	60	104.95	78.06	0.74	5.85	124.92	17.9
	70	98.24	73.98	0.75	6.31	119.79	15.6
	85	88.17	68.14	0.77	7.01	112.10	12.6
	100	78.10	62.46	0.80	7.71	104.41	10.1
80.6 / 66.2	50	122.54	90.92	0.74	5.43	141.06	22.6
	60	**115.18**	**86.17**	**0.75**	**5.90**	**135.30**	**19.5**
	70	107.82	81.67	0.76	6.36	129.54	16.9
	85	**96.78**	**75.23**	**0.78**	**7.07**	**120.90**	**13.7**
	100	85.75	68.97	0.80	7.77	112.26	11.0
85 / 71	50	133.41	99.55	0.75	5.47	152.08	24.4
	60	125.41	94.35	0.75	5.94	145.69	21.1
	70	117.40	89.43	0.76	6.41	139.29	18.3
	85	105.40	82.39	0.78	7.12	129.70	14.8
	100	93.39	75.54	0.81	7.83	120.11	11.9

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	99.81	6.63	77.20	4.4
	60	112.12	6.91	88.53	4.8
	68	124.42	7.19	99.87	5.1
	80	136.73	7.48	111.20	5.4
68	**50**	**94.37**	**6.75**	**71.35**	**4.1**
	60	106.00	7.04	81.98	4.4
	68	**117.62**	**7.33**	**92.62**	**4.7**
	80	129.25	7.62	103.25	5.0
80	50	87.98	6.89	64.45	3.7
	60	98.81	7.19	74.26	4.0
	68	109.63	7.49	84.08	4.3
	80	120.46	7.78	93.89	4.5

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	67.70	5.91	47.52	3.4
	32	73.73	6.06	53.06	3.6
	40	85.79	6.34	64.15	4.0
68	25	64.03	6.02	43.48	3.1
	32	**69.73**	**6.17**	**48.69**	**3.3**
	40	81.13	6.46	59.09	3.7
80	25	59.72	6.15	38.73	2.8
	32	65.03	6.30	43.53	3.0
	40	75.64	6.60	53.13	3.4

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
12	5.7	2.4
14	7.5	3.2
18	11.7	5.1
21	15.5	6.7
24	19.7	8.5

CABINET

	L×W×H in	lb
Vert.	48.5×28×68.5	620
Horiz.	93.25×36×27.5	650

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
A	208-230/1/60	2	19.4	102	2 × 3/4	5.8	**55.3**	**70**
C	208-230/3/60	2	12	123	2 × 1	6.6	**40.2**	**50**
D	460/3/60	2	6.3	60	2 × 1	2.1	**18.4**	**20**

CFF120

10 ton nominal · 2 compressors · R-454B

WATER LOOP
Clg 86°F **124,440** · 12.9 EER
Htg 68°F **160,980** · 4.4 COP

GROUND WATER
Clg 59°F **133,890** · 17.3 EER
Htg 50°F **18,840** · 3.8 COP

GROUND LOOP
Clg 77°F **122,000** · 16.1 EER
Htg 32°F **94,800** · 3.1 COP

Rated flow
3,800 CFM
30 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	116.99	77.15	0.67	6.98	140.79	17.0
	60	113.78	75.66	0.67	7.73	140.13	14.9
	70	110.55	74.45	0.68	8.47	139.46	13.2
	85	105.73	73.08	0.70	9.58	138.45	11.1
	100	100.90	72.20	0.73	10.71	137.45	9.5
75 / 63	50	125.38	92.31	0.75	7.01	149.32	18.1
	60	121.94	90.54	0.75	7.77	148.44	15.9
	70	118.49	89.09	0.76	8.51	147.56	14.1
	85	113.32	87.47	0.78	9.65	146.24	11.9
	100	108.15	86.42	0.81	10.77	144.91	10.1
80.6 / 66.2	50	137.66	101.96	0.75	7.07	161.78	19.7
	60	**133.89**	**100.00**	**0.76**	**7.83**	**160.59**	**17.3**
	70	130.11	98.40	0.77	8.59	159.40	15.4
	85	**124.44**	**96.63**	**0.79**	**9.72**	**157.61**	**12.9**
	100	118.78	95.47	0.81	10.86	155.82	11.0
85 / 71	50	149.93	111.71	0.76	7.12	174.24	21.3
	60	145.82	109.56	0.76	7.89	172.73	18.7
	70	141.71	107.82	0.77	8.65	171.24	16.6
	85	135.55	105.87	0.79	9.80	168.98	13.9
	100	129.39	104.60	0.82	10.94	166.73	11.9

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	136.25	9.93	102.34	4.1
	60	153.26	10.36	117.90	4.4
	70	170.27	10.79	133.45	4.7
	80	187.27	11.21	149.01	5.0
70	**50**	**128.84**	**10.11**	**94.32**	**3.8**
	60	144.90	10.54	108.92	4.1
	70	**160.98**	**10.98**	**123.50**	**4.4**
	80	177.05	11.41	138.09	4.6
80	50	120.14	10.33	84.87	3.5
	60	135.11	10.78	98.32	3.8
	70	150.07	11.22	111.77	4.0
	80	165.03	11.67	125.21	4.2

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	91.89	8.87	61.63	3.1
	32	100.22	9.08	69.24	3.3
	40	116.90	9.50	84.46	3.7
70	25	86.93	9.02	56.13	2.9
	32	**94.80**	**9.24**	**63.27**	**3.1**
	40	110.55	9.68	77.53	3.4
80	25	81.10	9.22	49.63	2.7
	32	88.54	9.44	56.22	2.8
	40	103.11	9.89	69.37	3.2

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
16	4.8	2.1
20	7.2	3.1
24	10.0	4.3
28	13.2	5.7
30	15.8	6.9

CABINET

	L×W×H in	lb
Vert.	48.5×28×68.5	620
Horiz.	93.25×36×27.5	650

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
C	208-230/3/60	2	13.1	93	2 × 1	6.6	**42.7**	**50**
D	460/3/60	2	6.6	60	2 × 1	2.1	**19.1**	**25**

CFF144

12 ton nominal · 2 compressors · R-454B

WATER LOOP
Clg 86°F **148,541** · 13.7 EER
Htg 68°F **181,776** · 5.0 COP

GROUND WATER
Clg 59°F **173,923** · 19.4 EER
Htg 50°F **142,426** · 4.4 COP

GROUND LOOP
Clg 77°F **159,360** · 17.9 EER
Htg 32°F **101,050** · 3.5 COP

Rated flow
4,800 CFM
33.6 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	156.01	101.89	0.66	8.21	184.04	19.2
	60	147.36	97.00	0.67	8.96	177.93	16.7
	70	138.70	92.40	0.68	9.70	171.80	14.4
	85	125.73	85.93	0.69	10.81	162.63	11.7
	100	112.74	79.73	0.72	11.92	153.46	9.6
75 / 63	50	167.41	122.50	0.74	8.26	195.57	20.5
	60	158.15	116.65	0.75	9.00	188.86	17.8
	70	148.89	111.19	0.76	9.74	182.15	15.5
	85	134.99	103.47	0.78	10.87	172.08	12.5
	100	121.09	96.09	0.80	11.99	162.02	10.2
80.6 / 66.2	50	184.09	134.26	0.75	8.31	212.43	22.4
	60	**173.92**	**135.60**	**0.75**	**9.05**	**204.84**	**19.4**
	70	163.78	123.13	0.76	9.81	197.27	16.9
	85	**148.54**	**114.62**	**0.78**	**10.94**	**185.90**	**13.7**
	100	133.31	106.49	0.81	12.08	174.54	11.1
85 / 71	50	200.76	148.84	0.75	8.36	229.29	24.2
	60	189.72	141.79	0.76	9.12	220.85	21.0
	70	178.67	135.19	0.77	9.88	212.39	18.3
	85	162.10	125.89	0.79	11.02	199.72	14.9
	100	145.53	117.00	0.81	12.17	187.05	12.1

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	150.41	9.48	118.09	4.8
	60	171.24	10.04	136.97	5.1
	70	192.08	10.62	155.86	5.4
	80	212.91	11.18	174.73	5.7
70	**50**	**142.43**	**9.62**	**109.59**	**4.4**
	60	162.11	10.20	127.29	4.8
	70	**181.78**	**10.78**	**144.98**	**5.0**
	80	201.47	11.37	162.67	5.3
80	50	133.05	9.80	99.58	4.1
	60	151.37	10.41	115.88	4.4
	70	169.70	10.99	132.16	4.6
	80	188.03	11.59	148.46	4.9

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	96.40	8.04	68.96	3.5
	32	106.62	8.33	78.20	3.8
	40	127.05	8.90	96.67	4.2
70	25	91.40	8.16	63.53	3.3
	32	**101.05**	**8.46**	**72.18**	**3.5**
	40	120.34	9.03	89.49	3.9
80	25	85.52	8.32	57.13	3.0
	32	94.49	8.61	65.10	3.2
	40	112.46	9.22	81.04	3.6

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
19.2	3.4	1.5
24	5.1	2.2
28.8	7.0	3.0
33.6	9.3	4.0
48	17.6	7.6

CABINET

	L×W×H in	lb
Vert.	48.5×28×68.5	620
Horiz.	93.25×36×27.5	650

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
C	208-230/3/60	2	21.2	156.5	1 × 5	13.6	**61.3**	**80**
D	460/3/60	2	9.1	74.8	1 × 5	6.8	**27.3**	**35**

CFF184

15 ton nominal · 2 compressors · R-454B

WATER LOOP
Clg 86°F **179,950** · 12.9 EER
Htg 68°F **211,800** · 4.7 COP

GROUND WATER
Clg 59°F **192,480** · 17.3 EER
Htg 50°F **164,160** · 4.0 COP

GROUND LOOP
Clg 77°F **187,470** · 15.3 EER
Htg 32°F **114,230** · 3.2 COP

Rated flow
6,000 CFM
42 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	167.51	109.75	0.67	9.90	201.28	17.7
	60	163.25	107.85	0.67	11.02	200.87	14.9
	70	158.97	106.35	0.68	12.15	200.45	13.2
	85	152.57	104.82	0.70	13.85	199.84	11.1
	100	146.17	104.00	0.72	15.54	199.21	9.5
75 / 63	50	179.68	131.73	0.74	9.95	213.62	18.2
	60	175.11	129.47	0.75	11.08	212.93	15.9
	70	170.54	127.69	0.76	12.22	212.24	14.1
	85	163.69	125.87	0.78	13.92	211.20	11.9
	100	156.83	124.90	0.81	15.62	210.17	10.1
80.6 / 66.2	50	197.48	145.72	0.75	10.01	231.65	19.8
	60	**192.48**	**143.23**	**0.75**	**11.16**	**230.56**	**17.3**
	70	187.47	141.27	0.76	12.30	229.46	15.3
	85	**179.95**	**139.25**	**0.78**	**14.03**	**227.82**	**12.9**
	100	172.44	138.19	0.81	15.75	226.17	11.1
85 / 71	50	215.28	159.85	0.75	10.08	249.70	21.4
	60	209.83	157.13	0.76	11.24	248.20	18.8
	70	204.38	154.98	0.77	12.39	246.69	16.6
	85	196.21	152.77	0.79	14.13	244.43	14.0
	100	188.04	151.61	0.82	15.86	242.18	12.0

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	173.45	11.99	132.53	4.3
	60	198.67	12.61	155.60	4.7
	70	223.88	13.24	178.68	5.1
	80	249.10	13.87	201.75	5.4
70	**50**	**164.16**	**12.19**	**122.55**	**4.0**
	60	187.98	12.83	144.19	4.4
	70	**211.80**	**13.47**	**165.83**	**4.7**
	80	235.62	14.11	187.47	5.0
80	50	153.25	12.44	110.79	3.7
	60	175.43	13.09	130.74	4.0
	70	197.62	13.75	150.69	4.3
	80	219.80	14.40	170.65	4.6

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	108.25	10.42	72.68	3.1
	32	120.61	10.74	83.97	3.4
	40	145.33	11.36	106.54	3.8
70	25	102.56	10.59	66.41	2.9
	32	**114.23**	**10.91**	**76.99**	**3.2**
	40	137.58	11.55	98.16	3.6
80	25	95.87	10.81	58.99	2.7
	32	106.74	11.13	68.75	2.9
	40	128.49	11.79	88.27	3.3

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
22	4.0	1.7
27	5.8	2.5
32	7.9	3.4
42	12.9	5.6
52	18.9	8.2

CABINET

	L×W×H in	lb
Vert.	55.25×36.5×80	720
Horiz.	93.25×36×31	750

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
C	208-230/3/60	2	27.7	178.5	1 × 5	13.6	**75.9**	**100**
D	460/3/60	2	11.5	103	1 × 5	6.8	**32.7**	**40**

CFF240

20 ton nominal · 2 compressors · R-454B

WATER LOOP
Clg 86°F **248,890** · 12.8 EER
Htg 68°F **331,170** · 4.6 COP

GROUND WATER
Clg 59°F **306,060** · 18.1 EER
Htg 50°F **256,360** · 4.1 COP

GROUND LOOP
Clg 77°F **283,190** · 15.9 EER
Htg 32°F **177,980** · 3.4 COP

Rated flow
8,000 CFM
60 GPM

COOLING PERFORMANCE · MBtuh at rated air and water flow · highlighted rows are rating points

Ent. air DB / WB °F	EFT °F	Total cap.	Sensible cap.	SHR	kW	Heat rej.	EER
70 / 61	50	279.02	182.84	0.67	15.91	333.33	17.7
	60	259.54	171.38	0.67	16.89	317.16	15.6
	70	240.06	160.38	0.68	17.86	300.99	13.5
	85	210.83	144.42	0.70	19.31	276.73	11.0
	100	181.60	128.62	0.72	20.77	252.47	8.8
75 / 63	50	299.28	219.45	0.74	15.99	353.86	18.9
	60	278.43	203.79	0.75	16.97	336.34	16.6
	70	257.57	192.70	0.76	17.95	318.82	14.5
	85	226.28	173.69	0.78	19.41	292.53	11.8
	100	194.09	154.87	0.80	20.88	266.25	9.4
80.6 / 66.2	50	328.93	242.74	0.75	16.10	383.89	20.6
	60	**306.06**	**227.68**	**0.75**	**17.09**	**364.39**	**18.1**
	70	283.19	213.25	0.76	18.07	344.87	15.9
	85	**248.89**	**192.30**	**0.78**	**19.55**	**315.63**	**12.8**
	100	214.59	171.57	0.81	21.03	286.37	10.3
85 / 71	50	358.56	266.27	0.75	16.22	413.91	22.3
	60	333.69	249.80	0.76	17.21	392.43	19.6
	70	308.82	234.02	0.77	18.20	370.94	17.2
	85	271.51	211.11	0.79	19.70	338.71	13.9
	100	234.20	188.43	0.81	21.18	306.48	11.2

HEATING PERFORMANCE

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	50	270.84	17.97	209.52	4.4
	60	310.44	19.40	244.21	4.7
	70	350.04	20.85	278.90	4.9
	80	389.63	22.28	313.58	5.1
70	**50**	**256.36**	**18.26**	**194.02**	**4.1**
	60	293.77	19.73	226.43	4.4
	70	**331.17**	**21.19**	**258.83**	**4.6**
	80	368.58	22.66	291.24	4.8
80	50	239.34	18.63	175.76	3.8
	60	274.18	20.13	205.48	4.0
	70	309.02	21.62	235.20	4.2
	80	343.85	23.13	264.92	4.4

LOW-TEMP HEATING *

Ent. air °F	EFT °F	Total cap.	kW	Heat abs.	COP
60	25	168.49	14.37	119.43	3.4
	32	187.90	15.09	136.39	3.6
	40	226.71	16.53	170.31	4.0
70	25	159.65	14.60	109.82	3.2
	32	**177.98**	**15.33**	**125.65**	**3.4**
	40	214.66	16.80	157.33	3.7
80	25	149.27	14.88	98.48	2.9
	32	166.34	15.63	112.99	3.1
	40	200.50	17.13	142.03	3.4

* Antifreeze required.

PRESSURE DROP

GPM	ft	psi
30	3.7	1.6
40	6.2	2.7
50	9.3	4.0
60	12.9	5.6
75	19.2	8.3

CABINET

	L×W×H in	lb
Vert.	55.25×36.5×80	720
Horiz.	93.25×36×31	750

ELECTRICAL DATA

Code	Voltage / Phase / Hz	Comp. qty	RLA (ea.)	LRA (ea.)	Blower qty × HP	FLA (ea.)	MCA	Max. fuse / HACR
C	208-230/3/60	2	28.5	255	2 × 3	8.6	**81.3**	**100**
D	460/3/60	2	13.5	123	2 × 3	4.3	**39.0**	**50**