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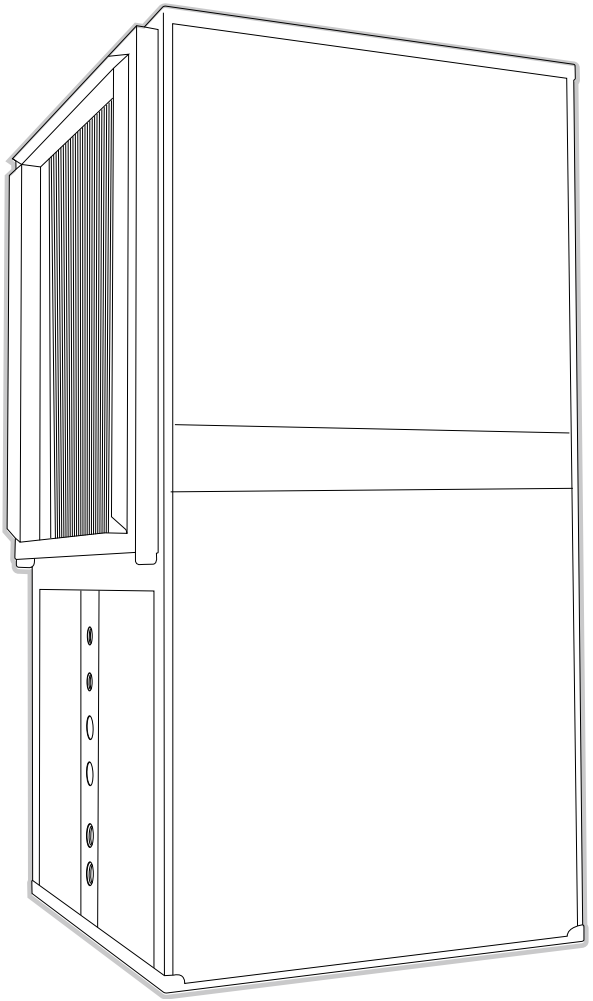


Engineering Data Submittal Manual

Project Name: _____
Engineer: _____
Contractor: _____
Architect: _____
Date Received: _____
Date Submitted: _____

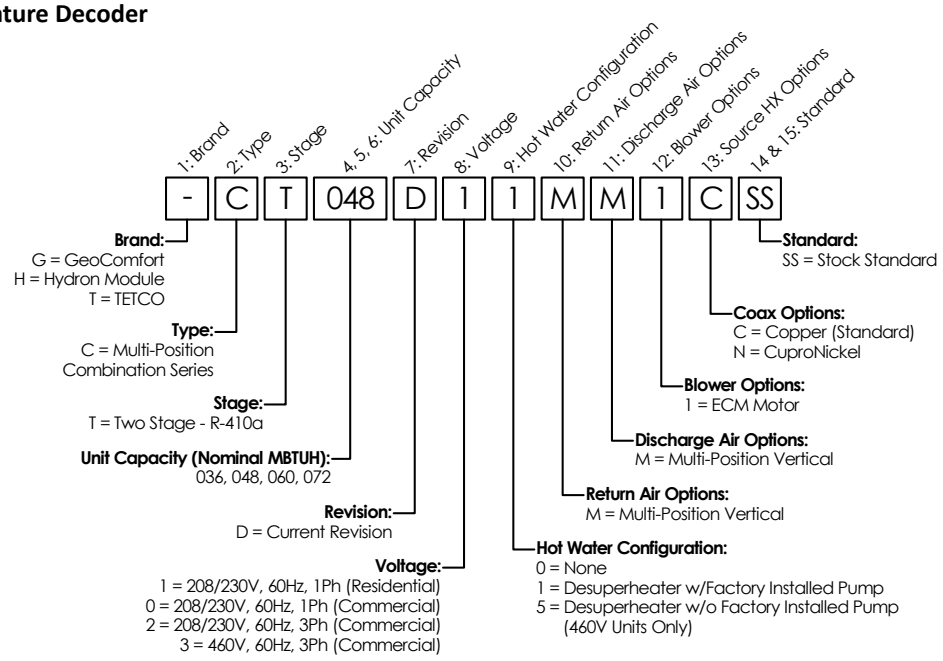
Unit Tag	Model Number

MODELS CT 036 - 072
VERTICAL PACKAGED SYSTEMS
WATER-TO-AIR HEAT PUMPS

20D214-05NN
REVISION: A

ENGINEERING SPECIFICATIONS:

Model Nomenclature Decoder



Ground Loop Heat Pump

Model	Capacity	Heating		Cooling	
		Btu/hr	COP	Btu/hr	EER
CT036	Full Load	28,100	4.1	37,500	18.1
	Part Load	21,800	4.6	28,300	26.6
CT048	Full Load	38,600	3.9	48,300	17.2
	Part Load	29,700	4.3	37,400	24.3
CT060	Full Load	47,900	3.7	61,000	16.6
	Part Load	38,700	4.2	47,400	23.4
CT072	Full Load	56,000	3.5	68,800	15.6
	Part Load	45,800	3.0	55,600	20.8

Note:
Rated in accordance with ISO Standard 13256-1 which includes Pump Penalties.
Heating capacities based on 68.0°F DB, 59.0°F WB entering air temperature.
Cooling capacities based on 80.6°F DB, 66.2°F WB entering air temperature.
Entering water temperatures Full Load: 32°F heating / 77°F cooling.
Entering water temperatures Part Load: 41°F heating / 68°F cooling.

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Water Source HP
ANSI/AHRI/ASHRAE/ISO13256-1

Ground Water Heat Pump

Model	Capacity	Heating		Cooling	
		Btu/hr	COP	Btu/hr	EER
CT036	Full Load	36,700	5.0	41,700	23.5
	Part Load	25,600	5.2	30,400	31.9
CT048	Full Load	46,700	4.6	53,100	21.8
	Part Load	33,700	4.9	39,400	29.4
CT060	Full Load	60,000	4.3	65,600	20.8
	Part Load	43,400	4.7	49,200	27.6
CT072	Full Load	69,400	4.1	73,400	19.3
	Part Load	45,800	3.9	57,600	24.1

Note:
Rated in accordance with ISO Standard 13256-1 which includes Pump Penalties.
Heating capacities based on 68.0°F DB, 59.0°F WB entering air temperature.
Cooling capacities based on 80.6°F DB, 66.2°F WB entering air temperature.
Entering water temperatures: 50°F heating / 59°F cooling.

Unit Physical Data

Model	036	048	060	072
Compressor Type	Two Stage Unloading Scroll			
Refrigerant Type	R410-A			
Refrigerant Charge	67	73	89	92
Heat Exchanger (Source)	Coaxial Copper / Steel (tube in tube)			
Source Option	Coaxial Cupro-Nickel / Steel			
Heat Exchanger (Air Coil)	Aluminum Micro-Channel			
Coil Face Area (Sq.Ft.)	5.55	5.55	6.17	6.17
Coil Dimemsions (in.)	31.8 x 21.5 x 1.0		35.9 x 24.7 x 1.26	
Unit Weight (nominal) - lbs	420	435	535	550

Pressure Drop (PSIG)

Model	036	048	060	072
GPM Water Flow	8.0	10.0	11.3	13.5
Source Water Pressure Drop	2.4	3.9	4.9	5.2

ECM Fan Performance - Two-Stage Compressor Units

Model[1]	Program[2]	Heating Modes		Cooling Modes		Dehumidification Mode[6]		Only Fan	DIP Switch Settings[4]							
		1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage		S1	S2	S3	S4	S5	S6	S7	S8
036	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	**1050**	**1350**	**1050**	**1350**	**895**	**1150**	**700**	**OFF**	**OFF**	**ON**	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**
	C	950	1200	950	1250	810	1065	635	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	D	850	1100	850	1150	725	980	575	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
048	A	1500	1800	1500	1900	1275	1615	945	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
	B	**1450**	**1700**	**1450**	**1750**	**1235**	**1490**	**890**	**OFF**	**ON**	**ON**	**OFF**	**OFF**	**ON**	**OFF**	**OFF**
	C	1300	1500	1300	1600	1105	1360	680	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
	D	1150	1350	1150	1400			725	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
060	A	1850	2200	1750	2100	1490	1785	980	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
	B	**1600**	**1850**	**1650**	**1950**	**1405**	**1660**	**870**	**ON**	**OFF**	**ON**	**OFF**	**ON**	**OFF**	**OFF**	**OFF**
	C	1450	1700	1450	1750	1235	1490	800	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
	D	1300	1500	1300	1550			725	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
072	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	B	**1850**	**2100**	**1750**	**2150**	**1490**	**1830**	**1075**	**OFF**	**OFF**	**ON**	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**
	C	1650	2000	1600	1900			975	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	D	1500	1750	1450	1700			875	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

Notes:

1. Program B (Bold type) is factory settings and rated CFM. CFM is controlled within 5% up to the max. ESP. Max. ESP includes allowance for wet coil and standard filter.
2. Power must be off to the unit for at least 3 seconds before the ECM motor will recognize a speed change.
3. Max ESP for models with internal electric heat is 0.6" ESP.

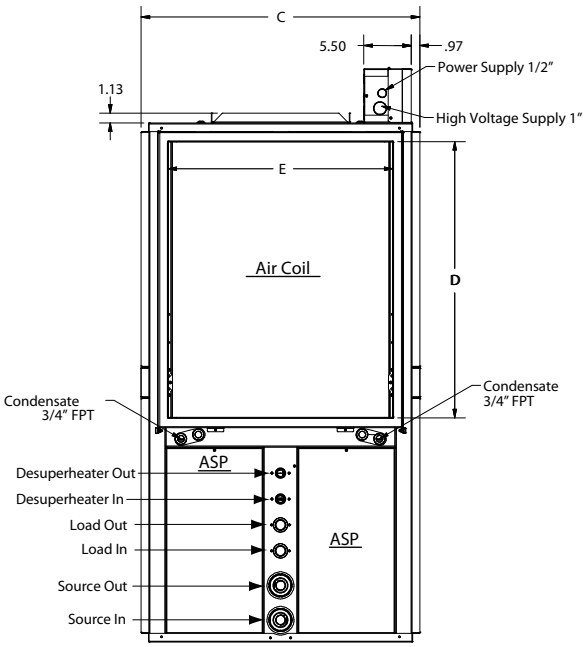
Heating & Cooling correction factors and Calculations

Glossary of Terms

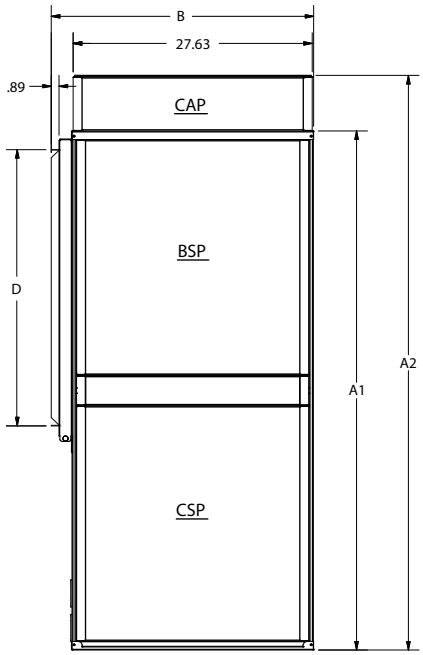
CFM = Airflow, Cubic Feet/Minute	HR = Total Heat Of Rejection, Btu/hr
COP = Coefficient of Performance = BTU Output / BTU Input	KW = Total Power Unit Input, Kilowatts
DH = Desuperheater Capacity, Btu/hr	LAT = Leaving Air Temperature, Fahrenheit
EAT = Entering Air Temperature, Fahrenheit (Dry Bulb/Wet Bulb)	LC = Latent Cooling Capacity, Btu/hr
EER = Energy Efficiency Ratio = BTU output/Watts input	SC = Sensible Cooling Capacity, Btu/hr
EWT = Entering Source Water Temperature, Fahrenheit	LWT = Leaving Source Water Temperature, Fahrenheit
ELT = Entering Load Water Temperature, Fahrenheit	LLT = Leaving Load Water Temperature, Fahrenheit
GPM = Water Flow, Gallons Per Minute	TC = Total Cooling Capacity, Btu/hr
HC = Total Heating Capacity, Btu/hr	WPD = Water Pressure Drop, PSI & Feet of Water
HE = Total Heat Of Extraction, Btu/hr	

ENGINEERING SPECIFICATIONS:

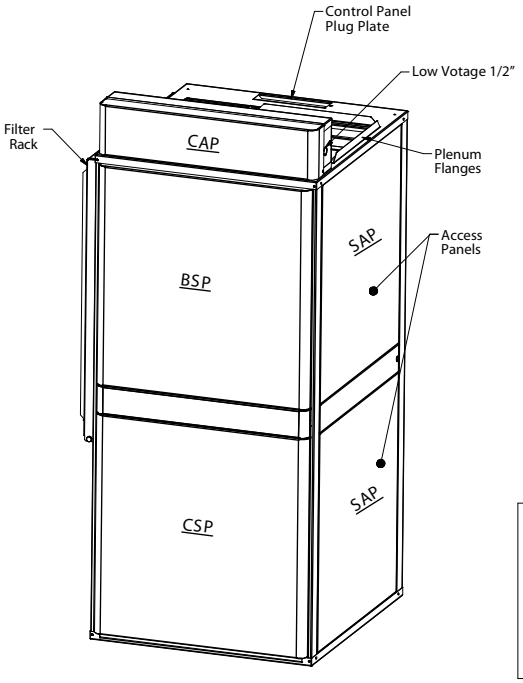
Dimensional Data

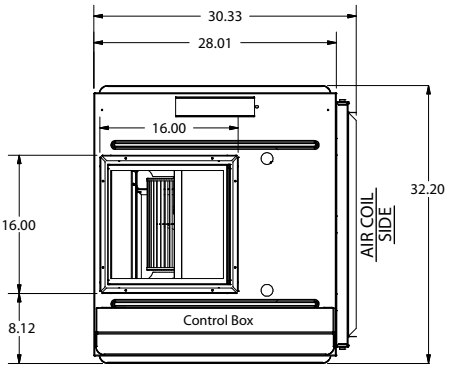


Left View

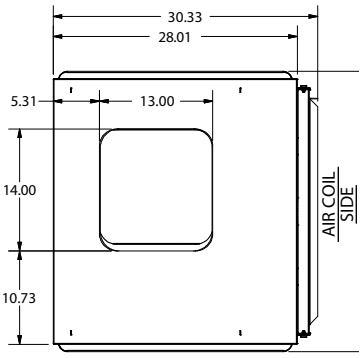


Front & Back View





Top View
Top Discharge



Bottom View
Bottom Discharge

LEGEND:

SAP = Service Access Panel
BSP = Blower Service Panel
CSP = Compressor Service Panel
CAP = Control Access Panel
ASP = Access Service Panel
FPT = Female Pipe Thread

Dimensional Data Table

Model	Dimensional Data without Control Box			Dimensional Data with Control Box	Supply Air (Top Discharge)		Supply Air (Bottom Discharge)		Return Air	
	Height (A1)	Width (B)	Depth (C)	Height (A2)	Width	Depth	Width	Depth	Width (E)	Height (D)
036 - 048	56.1	30.3	32.2	62.5	16.0	16.0	13.0	14.0	26.0	28.0
060 - 072	60.1	30.3	32.2	66.5	16.0	16.0	13.0	14.0	26.0	32.0

Heating & Cooling Calculations

Heating	Cooling
LAT = EAT + $\frac{HC}{CFM \times 1.08}$	LAT (DB) = EAT (DB) - $\frac{SC}{CFM \times 1.08}$
LWT = EWT - $\frac{HE}{GPM \times 500}$	LWT = EWT + $\frac{HR}{GPM \times 500}$
LC = TC - SC	

Heating Correction Factors

EAT °F	HC	HE	kW
50	1.0465	1.1188	0.8024
55	1.0351	1.0918	0.8436
60	1.0253	1.0645	0.8928
65	1.0108	1.0300	0.9454
70	1.0000	1.0000	1.0000
75	0.9895	0.9701	1.0553
80	0.9742	0.9489	1.0518

Sensible Cooling Correction Factors

EAT (WB) °F	EAT (DB) °F				
	70	75	80	85	90
55	1.201	1.289			
60	0.943	1.067	1.192		
65	0.797	0.952	1.106	1.261	
67	0.624	0.812	1.000	1.188	1.343
70		0.697	0.820	0.944	1.067
75			0.637	0.817	0.983

Cooling Correction Factors

EAT (WB) °F	TC	HR	kW
55	0.8215	0.8293	0.8635
60	0.8955	0.9001	0.9205
65	0.9701	0.9715	0.9774
67	1.0000	1.0000	1.0000
70	1.0446	1.0425	1.0335
75	1.1179	1.1124	1.0878

ENGINEERING SPECIFICATIONS:

Water Flow Selection

Proper flow rate is crucial for reliable operation of geothermal heat pumps. The performance data shows three flow rates for each entering water temperature (EWT column). The general "rule of thumb" when selecting flow rates is the following:

- Top flow rate: Open loop systems (1.5 to 2.0 gpm per ton)
- Middle flow rate: Minimum closed loop system flow rate (2.25 to 2.50 gpm/ton)
- Bottom flow rate: Nominal (optimum) closed loop system flow rate (3.0 gpm/ton)

Although the industry standard is adequate in most areas of North America, it is important to consider the application type before applying this "rule of thumb." Antifreeze is generally required for all closed loop (geothermal) applications. Extreme Southern U.S. locations are the only exception. Open loop (well water) systems cannot use antifreeze, and must have enough flow rate in order to avoid freezing conditions at the Leaving Source Water Temperature (LWT) connection.

Calculations must be made for all systems without antifreeze to determine if the top flow rate is adequate to prevent LWT at or near freezing conditions. The following steps should taken in making this calculation:

- Determine minimum EWT based upon your geographical area.
- Go to the performance data table for the heat pump model selected and look up the Heat of Extraction (HE) at the "rule of thumb" water flow rate (GPM) and at the design Entering Air Temperature (EAT).
- Calculate the temperature difference (TD) based upon the HE and GPM of the model.
- TD = HE / (GPM x 485).
- Calculate the LWT.
- LWT = EWT - TD.
- If the LWT is below 35-38°F, there is potential for freezing conditions if the flow rate or water temperature is less than ideal conditions, and the flow rate must be increased.

Example 1:

EWT = 50°F.
Flow rate = 6 GPM.
Air Flow = 1650 CFM. HE = 36,600 Btuh.
TD = 36,600 / (6 x 485) = 12.6°F
LWT = 50 - 12.6 = 37.4°F
Since the water flow is leaving at approximately 38°F, the flow rate is acceptable.

Example 2:

EWT = 40°F.
Flow rate = 6 GPM.
Air Flow = 1650 CFM. HE = 30,600 Btuh.
TD = 30,600 / (6 x 485) = 10.5°F
LWT = 40 - 10.5 = 29.5°F
Water flow rate must be increased to avoid freezing.

Performance Data Notes

1. In water-to-air mode capacity data is based on 15% (by mass) methanol antifreeze solution (multiplier: 485) and air. In hot-water mode capacity data is based on 15% (by mass) methanol antifreeze solution as source water and pure water as load water (multiplier: 500).
2. In water-to-air mode heating data is based on 70°F EAT and cooling data is based on 80/67°F EAT. Any condition outside performance table(s) requires correction factor(s).
3. Full-load performance data is accurate within ±15%. Part-load performance data is based on simulation with expected accuracy within ± 25%. Discharge pressure is up to ± 25 PSI; Suction pressure is up to ± 15 PSI, Subcooling is up to ± 5 °F; Superheat is up to ±6 °F.
4. Unit performance test is run without hot water generation.
5. Capacity data includes fan power but not pump power and it does not reflect fan or pump power correction for AHRI/ISO conditions.
6. Performance data is based upon the lower voltage of dual voltage rated units.
7. Interpolation of unit performance data is permissible; extrapolation is not.
8. Performance data is a result of lab testing and is not related to warranty.
9. Due to variations in installation, actual unit performance may vary from the tabulated data.
10. See Flow Rate Selection above for proper application.
11. Continuous research and development may result in a change to the current product design and specifications without notice.

Model 036, 3 Ton, Part Load Heating Performance Data

					Heating									
EWT	Flow	WPD		LWT	Airflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	6.0	2.0	4.7	20.8	950	87.7	18.2	12.2	1.76	3.04	299.0	74.9	20.4	7.3
				20.6	1050	86.5	18.7	12.8	1.73	3.16	295.0	74.9	20.5	7.4
30	3.0	0.6	1.4	21.5	950	87.9	18.4	12.3	1.77	3.05	301.0	74.7	21.5	7.9
				21.3	1050	86.4	18.6	12.7	1.73	3.14	294.0	74.5	20.4	7.8
	4.5	1.2	2.8	23.8	950	89.0	19.5	13.5	1.77	3.23	306.0	79.5	21.6	7.1
				23.8	1050	87.2	19.5	13.5	1.75	3.26	302.0	79.3	21.6	7.0
	6.0	2.0	4.6	25.1	950	89.8	20.3	14.2	1.77	3.35	309.0	82.8	21.5	5.9
				25.1	1050	87.9	20.3	14.3	1.75	3.40	304.0	82.7	21.4	5.8
40	3.0	0.6	1.3	29.4	950	90.9	21.5	15.4	1.78	3.53	315.0	87.9	21.6	6.1
				29.4	1050	88.9	21.5	15.5	1.75	3.59	309.0	87.6	21.5	6.2
	4.5	1.2	2.7	32.3	950	92.3	22.9	16.8	1.78	3.76	320.0	94.3	20.6	5.3
				32.2	1050	90.2	22.9	16.9	1.75	3.84	313.0	94.0	20.5	5.4
	6.0	1.9	4.4	34.0	950	93.0	23.6	17.6	1.76	3.92	319.0	98.5	17.5	4.2
				33.9	1050	90.9	23.7	17.8	1.73	4.02	312.0	98.2	17.5	4.3
50	3.0	0.5	1.3	37.3	950	93.9	24.5	18.4	1.80	4.00	328.0	102.1	20.5	5.0
				37.2	1050	91.7	24.6	18.6	1.76	4.09	321.0	101.7	20.5	5.0
	4.5	1.1	2.6	40.8	950	95.4	26.1	20.0	1.79	4.28	332.0	110.1	17.5	4.8
				40.7	1050	93.1	26.1	20.2	1.75	4.39	324.0	109.7	17.6	4.9
	6.0	1.8	4.2	42.8	950	96.2	26.9	20.9	1.78	4.45	333.0	115.6	14.5	3.9
				42.7	1050	93.9	27.0	21.1	1.73	4.58	324.0	115.2	14.4	3.9
60	3.0	0.5	1.2	45.2	950	97.0	27.7	21.5	1.82	4.46	344.0	117.7	19.6	4.1
				45.1	1050	94.5	27.8	21.7	1.78	4.58	335.0	117.1	19.6	4.1
	4.5	1.1	2.4	49.0	950	99.0	29.8	23.9	1.72	5.08	330.0	126.6	16.6	4.4
				48.9	1050	96.4	29.9	24.2	1.67	5.24	320.0	126.1	16.5	4.5
	6.0	1.7	4.0	51.4	950	100.1	30.9	25.1	1.71	5.31	331.0	133.2	13.5	3.9
				51.3	1050	97.4	31.1	25.4	1.66	5.49	322.0	133.0	13.6	3.8
70	3.0	0.5	1.2	52.7	950	100.4	31.2	25.2	1.76	5.20	341.0	133.0	19.6	3.7
				52.5	1050	97.6	31.3	25.5	1.71	5.37	331.0	132.2	19.5	3.8
	4.5	1.0	2.4	57.4	950	102.5	33.3	27.4	1.74	5.61	345.0	145.3	15.4	4.9
				57.3	1050	99.5	33.5	27.7	1.69	5.81	334.0	144.5	15.5	5.0
	6.0	1.7	3.9	60.2	950	103.6	34.5	28.6	1.74	5.81	350.0	153.6	13.7	4.1
				60.0	1050	100.6	34.7	29.0	1.68	6.05	338.0	152.9	13.5	4.2
80	3.0	0.5	1.1	60.5	950	103.6	34.4	28.4	1.78	5.67	356.0	150.5	18.6	4.2
				60.2	1050	100.5	34.6	28.7	1.72	5.89	344.0	149.6	18.5	4.3
	4.5	1.0	2.3	65.9	950	105.9	36.8	30.8	1.77	6.11	362.0	164.9	14.7	6.1
				65.7	1050	102.7	37.0	31.2	1.71	6.36	349.0	164.0	14.6	6.1
	6.0	1.6	3.8	68.9	950	107.3	38.2	32.2	1.76	6.37	366.0	175.5	11.7	5.4
				68.7	1050	104.0	38.5	32.7	1.69	6.66	353.0	174.6	11.6	5.4
90	3.0	0.5	1.1	68.3	950	106.8	37.7	31.6	1.81	6.13	371.0	169.2	17.6	5.2
				68.0	1050	103.5	38.0	32.0	1.74	6.39	358.0	168.0	17.5	5.3
	4.5	1.0	2.3	74.4	950	109.2	40.2	34.1	1.80	6.56	378.0	185.4	13.7	7.6
				74.1	1050	105.8	40.6	34.7	1.73	6.89	364.0	184.4	13.6	7.6
	6.0	1.6	3.7	77.7	950	110.8	41.9	35.8	1.79	6.86	383.0	198.1	10.6	6.9
				77.5	1050	107.2	42.2	36.4	1.72	7.22	368.0	197.0	10.5	7.0

ENGINEERING SPECIFICATIONS:

Model 036, 3 Ton, Full Load Heating Performance Data

					Heating									
EWT	Flow	WPD		LWT	Aiflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	9.0	4.1	9.4	20.6	1200	90.7	26.8	19.2	2.24	3.51	295.3	66.3	23.1	8.3
				20.5	1350	88.6	27.1	19.5	2.24	3.55	295.3	66.1	23.1	8.4
30	4.5	1.4	3.2	20.3	1200	92.4	29.0	21.2	2.29	3.71	304.6	68.8	28.2	7.9
				20.1	1350	90.1	29.3	21.5	2.29	3.75	304.6	68.7	28.2	8.0
	7.0	2.8	6.6	23.3	1200	93.5	30.5	22.6	2.31	3.87	308.2	74.9	25.7	6.7
				23.3	1350	91.1	30.8	22.9	2.31	3.91	308.2	74.8	25.7	6.7
	9.0	4.0	9.1	24.8	1200	93.5	30.5	22.7	2.30	3.89	307.4	77.4	23.5	5.6
				24.8	1350	91.1	30.7	22.9	2.30	3.91	307.4	77.3	23.5	5.7
40	4.5	1.3	2.9	28.7	1200	95.2	32.6	24.6	2.34	4.08	314.9	83.7	25.0	6.3
				28.6	1350	92.6	32.9	24.9	2.34	4.12	314.9	83.5	25.0	6.4
	7.0	2.6	6.0	32.3	1200	96.5	34.3	26.2	2.36	4.26	318.7	91.1	22.2	5.7
				32.2	1350	93.7	34.6	26.5	2.36	4.30	318.7	90.9	22.2	5.8
	9.0	3.6	8.3	34.0	1200	96.5	34.3	26.3	2.34	4.30	317.8	94.2	19.8	4.7
				33.9	1350	93.7	34.5	26.5	2.34	4.32	317.8	94.0	19.8	4.8
50	4.5	1.2	2.7	37.1	1200	98.1	36.4	28.2	2.40	4.44	326.5	99.0	22.2	5.7
				36.9	1350	95.2	36.7	28.5	2.40	4.48	326.5	98.8	22.2	5.8
	7.0	2.4	5.5	41.2	1200	99.5	38.2	29.9	2.42	4.63	330.4	107.9	19.1	5.7
				41.1	1350	96.4	38.5	30.2	2.42	4.66	330.4	107.6	19.1	5.8
	9.0	3.3	7.6	43.1	1200	99.5	38.2	30.0	2.40	4.66	329.5	111.5	16.5	4.9
				43.1	1350	96.4	38.5	30.3	2.40	4.70	329.5	111.2	16.5	5.0
60	4.5	1.1	2.5	44.9	1200	102.0	41.5	33.0	2.50	4.86	345.7	117.2	21.3	5.1
				44.7	1350	98.7	41.9	33.4	2.50	4.91	345.7	116.9	21.3	5.2
	7.0	2.2	5.0	49.7	1200	103.6	43.6	35.0	2.52	5.07	349.9	127.6	18.0	5.8
				49.6	1350	100.2	44.0	35.4	2.52	5.12	349.9	127.3	18.0	6.0
	9.0	3.0	7.0	52.0	1200	103.6	43.6	35.0	2.51	5.09	348.9	131.8	15.2	5.2
				51.9	1350	100.1	43.9	35.3	2.51	5.13	348.9	131.5	15.2	5.3
70	4.5	1.0	2.3	52.6	1200	106.2	46.9	37.9	2.64	5.21	368.3	136.4	21.1	5.2
				52.5	1350	102.4	47.3	38.3	2.64	5.25	368.3	136.1	21.1	5.3
	7.0	2.0	4.7	58.1	1200	108.1	49.4	40.3	2.66	5.44	372.6	148.6	17.5	6.6
				58.0	1350	104.2	49.8	40.7	2.66	5.49	372.6	148.2	17.5	6.8
	9.0	2.8	6.5	60.8	1200	108.0	49.3	40.3	2.65	5.45	371.6	153.5	14.7	6.0
				60.7	1350	104.1	49.7	40.7	2.65	5.50	371.6	153.2	14.7	6.1
80	4.5	0.9	2.1	60.8	1200	109.7	51.4	41.9	2.78	5.42	388.7	154.9	20.0	6.2
				60.6	1350	105.5	51.8	42.3	2.78	5.46	388.7	154.6	20.0	6.3
	7.0	1.9	4.4	66.9	1200	111.7	54.0	44.4	2.80	5.65	393.3	168.7	16.2	8.2
				66.8	1350	107.4	54.5	44.9	2.80	5.70	393.3	168.3	16.2	8.4
	9.0	2.6	6.1	69.8	1200	111.6	53.9	44.4	2.78	5.68	392.2	174.3	13.2	7.6
				69.7	1350	107.3	54.4	44.9	2.78	5.73	392.2	173.9	13.2	7.8
90	4.5	0.9	2.0	69.0	1200	113.1	55.9	45.9	2.92	5.61	410.5	173.9	19.1	7.5
				68.7	1350	108.7	56.4	46.4	2.92	5.66	410.5	173.5	19.1	7.6
	7.0	1.8	4.1	75.6	1200	115.4	58.8	48.8	2.94	5.86	415.3	189.4	15.1	10.1
				75.5	1350	110.7	59.3	49.3	2.94	5.91	415.3	188.9	15.1	10.2
	9.0	2.4	5.6	78.8	1200	115.3	58.7	48.7	2.93	5.87	414.2	195.7	12.0	9.5
				78.7	1350	110.6	59.2	49.2	2.93	5.92	414.2	195.2	12.0	9.7

Model 036, 3 Ton, Part Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Airflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	3.0	0.4	1.0	74.2	950	30.7	21.3	0.69	35.3	1.33	23.0	245.0	137.7	24.4	10.1
				74.6	1050	31.2	22.4	0.72	35.7	1.33	23.4	247.0	139.9	24.5	10.8
	4.5	0.9	2.1	66.3	950	31.5	21.6	0.68	35.7	1.21	26.0	214.0	136.3	19.5	10.6
				66.6	1050	32.1	22.7	0.71	36.2	1.21	26.4	216.0	138.5	20.5	11.1
	6.0	1.5	3.4	62.4	950	32.0	21.8	0.68	36.0	1.17	27.4	200.0	135.5	18.3	10.8
				62.5	1050	32.5	22.9	0.70	36.5	1.16	28.0	201.0	137.7	18.3	11.3
60	3.0	0.4	1.0	83.7	950	29.4	20.9	0.71	34.4	1.49	19.8	281.0	140.3	24.4	8.5
				84.0	1050	29.8	22.0	0.74	34.9	1.49	20.1	283.0	142.5	24.5	8.8
	4.5	0.9	2.0	75.9	950	30.1	21.2	0.70	34.7	1.34	22.5	247.0	138.9	19.3	8.9
				76.1	1050	30.6	22.3	0.73	35.2	1.34	22.9	249.0	141.0	19.5	9.4
	6.0	1.4	3.3	72.0	950	30.6	21.3	0.70	34.9	1.28	23.9	232.0	138.2	17.4	9.0
				72.2	1050	31.1	22.5	0.72	35.5	1.28	24.3	234.0	140.3	18.4	9.4
70	3.0	0.4	0.9	93.1	950	27.9	20.4	0.73	33.5	1.66	16.8	319.0	142.9	23.5	6.8
				93.4	1050	28.3	21.5	0.76	34.0	1.67	17.0	322.0	144.8	24.4	7.3
	4.5	0.8	1.9	85.5	950	28.7	20.7	0.72	33.8	1.50	19.1	285.0	141.5	19.5	7.3
				85.7	1050	29.1	21.8	0.75	34.3	1.50	19.5	286.0	143.6	19.5	7.8
	6.0	1.4	3.2	81.7	950	29.1	20.8	0.71	34.0	1.43	20.4	269.0	140.9	17.6	7.3
				81.8	1050	29.6	21.9	0.74	34.4	1.42	20.8	269.0	143.0	17.4	7.8
80	3.0	0.4	0.9	102.6	950	26.5	19.9	0.75	32.8	1.87	14.2	363.0	145.5	23.7	6.1
				102.8	1050	26.9	21.0	0.78	33.2	1.87	14.4	364.0	147.4	23.6	6.6
	4.5	0.8	1.9	95.1	950	27.2	20.1	0.74	33.0	1.69	16.1	327.0	144.1	19.7	6.7
				95.3	1050	27.6	21.2	0.77	33.4	1.69	16.4	328.0	146.1	19.6	7.0
	6.0	1.4	3.2	91.4	950	27.6	20.3	0.73	33.1	1.61	17.2	309.0	143.5	17.4	6.6
				91.5	1050	28.0	21.3	0.76	33.5	1.61	17.4	310.0	145.5	17.4	7.0
90	3.0	0.4	0.9	112.0	950	24.9	19.4	0.78	32.1	2.09	11.9	408.0	147.8	22.7	6.2
				112.3	1050	25.3	20.4	0.81	32.5	2.10	12.1	410.0	149.9	22.8	6.5
	4.5	0.8	1.9	104.7	950	25.7	19.6	0.77	32.1	1.90	13.5	370.0	146.7	18.5	6.7
				104.9	1050	26.0	20.8	0.80	32.5	1.90	13.7	371.0	148.4	18.6	7.2
	6.0	1.4	3.2	101.1	950	26.1	19.7	0.76	32.3	1.82	14.3	354.0	146.0	17.5	6.7
				101.2	1050	26.4	20.9	0.79	32.6	1.82	14.5	355.0	147.7	17.6	7.3
100	3.0	0.4	1.0	121.6	950	23.4	18.7	0.80	31.4	2.35	10.0	457.0	150.5	21.7	6.4
				121.9	1050	23.7	19.9	0.84	31.8	2.36	10.1	461.0	151.9	22.7	7.1
	4.5	0.8	1.9	114.4	950	24.1	19.0	0.79	31.4	2.14	11.2	418.0	149.4	17.7	6.9
				114.5	1050	24.4	20.1	0.82	31.7	2.14	11.4	419.0	151.1	17.7	7.5
	6.0	1.4	3.2	110.8	950	24.4	19.2	0.79	31.5	2.06	11.9	401.0	148.5	16.5	7.3
				110.9	1050	24.8	20.2	0.81	31.8	2.06	12.0	403.0	150.5	16.7	7.4
110	3.0	0.4	1.0	131.3	950	21.9	18.2	0.83	31.0	2.66	8.2	516.0	152.9	22.7	7.0
				131.5	1050	22.2	19.5	0.88	31.2	2.66	8.3	516.0	153.9	22.7	7.9
	4.5	0.8	2.0	124.1	950	22.5	18.3	0.82	30.7	2.41	9.3	470.0	152.0	16.7	7.5
				124.2	1050	22.8	19.5	0.85	31.1	2.43	9.4	474.0	153.5	17.7	8.1
	6.0	1.4	3.2	120.6	950	22.8	18.4	0.81	30.7	2.33	9.8	453.0	151.4	15.6	7.6
				120.7	1050	23.1	19.6	0.85	31.1	2.32	9.9	454.0	153.0	15.7	8.2

ENGINEERING SPECIFICATIONS:

Model 036, 3 Ton, Full Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	4.5	1.1	2.6	72.5	1250	42.4	28.5	0.67	49.1	1.95	21.7	243.9	135.5	27.1	12.2
				72.9	1350	43.1	29.8	0.69	49.9	2.00	21.6	244.7	137.2	27.4	12.9
	7.0	2.1	4.8	64.5	1250	42.9	28.8	0.67	49.1	1.83	23.4	222.7	134.8	22.1	13.0
				64.7	1350	43.5	30.1	0.69	49.9	1.88	23.1	223.4	136.6	22.3	13.6
	9.0	3.1	7.0	61.2	1250	43.0	28.9	0.67	49.1	1.79	24.0	215.0	134.6	20.3	13.1
				61.4	1350	43.7	30.2	0.69	49.9	1.83	23.9	215.7	136.4	20.5	13.8
60	4.5	1.0	2.4	82.0	1250	40.8	27.9	0.68	48.1	2.13	19.2	281.0	137.5	27.0	10.1
				82.4	1350	41.5	29.1	0.70	48.9	2.18	19.0	281.9	139.3	27.3	10.6
	7.0	2.0	4.5	74.2	1250	41.3	28.2	0.68	48.1	1.99	20.8	256.6	136.9	21.8	10.8
				74.4	1350	41.9	29.4	0.70	48.9	2.04	20.5	257.3	138.7	22.0	11.3
	9.0	2.9	6.6	71.0	1250	41.4	28.2	0.68	48.1	1.95	21.2	247.7	136.7	19.9	11.0
				71.2	1350	42.0	29.5	0.70	48.8	2.00	21.0	248.5	138.5	20.1	11.5
70	4.5	1.0	2.3	91.5	1250	39.1	27.2	0.70	47.0	2.32	16.9	320.5	139.6	26.5	8.1
				91.9	1350	39.7	28.4	0.72	47.8	2.38	16.7	321.5	141.4	26.8	8.6
	7.0	1.8	4.2	83.8	1250	39.6	27.5	0.69	47.0	2.17	18.2	292.6	139.0	21.4	8.8
				84.1	1350	40.2	28.7	0.71	47.8	2.23	18.0	293.5	140.8	21.6	9.4
	9.0	2.7	6.2	80.7	1250	39.7	27.5	0.69	46.9	2.12	18.7	282.6	138.7	19.4	9.0
				80.9	1350	40.3	28.8	0.71	47.7	2.18	18.5	283.4	140.5	19.6	9.6
80	4.5	0.9	2.2	101.1	1250	37.3	26.3	0.71	46.0	2.54	14.7	364.8	141.3	25.9	7.2
				101.4	1350	37.9	27.5	0.73	46.8	2.61	14.5	365.9	143.1	26.1	7.7
	7.0	1.7	4.0	93.5	1250	37.7	26.6	0.71	45.8	2.38	15.8	333.0	140.6	21.2	7.9
				93.7	1350	38.3	27.7	0.72	46.6	2.44	15.7	334.0	142.5	21.4	8.4
	9.0	2.6	5.9	90.5	1250	37.8	26.7	0.71	45.7	2.32	16.3	321.6	140.4	19.3	8.0
				90.7	1350	38.4	27.8	0.72	46.5	2.38	16.1	322.5	142.2	19.5	8.5
90	4.5	0.9	2.1	110.6	1250	35.3	25.3	0.72	44.9	2.81	12.6	415.1	142.9	25.1	6.9
				110.9	1350	35.8	26.4	0.74	45.6	2.88	12.4	416.4	144.8	25.3	7.4
	7.0	1.7	3.8	103.2	1250	35.7	25.5	0.71	44.7	2.63	13.6	378.9	142.3	20.7	7.6
				103.4	1350	36.2	26.7	0.74	45.4	2.70	13.4	380.1	144.1	20.8	8.2
	9.0	2.4	5.7	100.2	1250	35.8	25.6	0.72	44.6	2.57	13.9	365.9	142.0	18.9	7.8
				100.4	1350	36.3	26.7	0.74	45.3	2.63	13.8	367.0	143.8	19.1	8.4
100	4.5	0.8	1.9	120.1	1250	33.1	24.2	0.73	43.8	3.14	10.5	471.0	145.0	24.3	7.1
				120.4	1350	33.6	25.3	0.75	44.6	3.22	10.4	472.4	146.9	24.5	7.6
	7.0	1.6	3.6	112.8	1250	33.4	24.5	0.73	43.4	2.94	11.4	430.0	144.3	19.6	7.9
				113.0	1350	33.9	25.5	0.75	44.2	3.02	11.2	431.3	146.2	19.8	8.4
	9.0	2.3	5.3	109.9	1250	33.5	24.5	0.73	43.3	2.87	11.7	415.2	144.1	17.9	7.9
				110.1	1350	34.0	25.6	0.75	44.0	2.94	11.6	416.5	145.9	18.1	8.5
110	4.5	0.8	1.8	129.6	1250	30.8	23.1	0.75	42.7	3.49	8.8	529.3	147.1	24.5	7.6
				129.9	1350	31.2	24.1	0.77	43.4	3.58	8.7	531.0	149.0	24.8	8.1
	7.0	1.5	3.3	122.5	1250	31.1	23.3	0.75	42.3	3.27	9.5	483.2	146.4	18.6	8.3
				122.7	1350	31.6	24.3	0.77	43.0	3.35	9.4	484.7	148.3	18.9	8.9
	9.0	2.1	4.9	119.6	1250	31.2	23.4	0.75	42.1	3.19	9.8	466.6	146.1	16.7	8.4
				119.8	1350	31.7	24.4	0.77	42.9	3.27	9.7	468.1	148.0	16.9	9.1

Model 036, 3 Ton, Full Load Hydronic Heating Performance Data

Source Water					Load Water					Heating							
EWT	Flow	WPD		LWT	ELT	Flow	WPD		LLT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSID	FT	°F	°F	GPM	PSID	FT	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	9.0	3.5	8.2	21.0	85	9.0	3.3	7.6	90.5	24.8	17.6	2.11	3.44	333.6	69.4	8.8	7.3
				21.4	95		3.3	7.6	100.3	24	15.8	2.39	2.94	376.0	69.9	9.9	7.2
				22.0	110		3.3	7.6	115.1	22.8	13.0	2.88	2.32	446.2	71.9	9.4	6.4
30	4.5	1.0	2.3	21.6	85	9.0	3.4	7.9	90.8	25.9	18.3	2.24	3.39	355.4	72.3	11.1	7.6
				22.4	95		3.4	7.9	100.6	25.1	16.5	2.53	2.91	400.5	72.8	11.9	7.5
				23.8	110		3.4	7.9	115.3	23.9	13.5	3.05	2.30	475.3	74.9	11.6	6.7
	7.0	2.4	5.5	24.2	85		3.4	7.9	91.0	27	19.6	2.17	3.65	344.3	76.4	10.3	6.9
				24.8	95		3.4	7.9	100.8	26.1	17.7	2.45	3.12	388.0	76.9	11.3	6.8
				25.6	110		3.4	7.9	115.5	24.9	14.8	2.95	2.47	460.5	79.1	10.9	6.1
	9.0	3.6	8.3	25.4	85		3.4	7.9	91.1	27.5	20.2	2.13	3.78	339.1	79.4	9.8	5.5
				25.8	95		3.4	7.9	100.9	26.7	18.5	2.41	3.25	382.1	79.9	10.8	5.4
				26.5	110		3.4	7.9	115.6	25.3	15.4	2.91	2.55	453.6	82.2	10.4	4.7
40	4.5	0.9	2.1	30.1	85	9.0	3.4	7.9	91.5	29.3	21.5	2.28	3.77	364.0	88.3	9.8	6.7
				31.0	95		3.4	7.9	101.3	28.4	19.6	2.57	3.24	410.2	88.9	10.3	6.7
				32.5	110		3.4	7.9	116.0	27	16.4	3.10	2.55	486.8	91.4	9.9	6.0
	7.0	2.1	4.9	33.2	85		3.4	7.9	91.8	30.5	23.0	2.20	4.06	352.7	93.2	9.0	6.5
				33.8	95		3.4	7.9	101.6	29.6	21.1	2.49	3.48	397.4	93.9	9.7	6.5
				34.7	110		3.4	7.9	116.2	28.1	17.9	3.00	2.75	471.7	96.6	9.2	5.9
	9.0	3.3	7.5	34.6	85		3.4	7.9	91.9	31.1	23.7	2.17	4.20	347.4	96.9	8.5	5.2
				35.0	95		3.4	7.9	101.7	30.2	21.8	2.45	3.61	391.4	97.5	9.3	5.2
				35.7	110		3.4	7.9	116.4	28.7	18.6	2.95	2.85	464.6	100.4	8.7	4.6
50	4.5	0.8	1.8	38.7	85	9.0	3.4	7.9	92.2	32.6	24.7	2.32	4.12	372.4	104.0	8.6	7.2
				39.6	95		3.4	7.9	102.0	31.7	22.8	2.62	3.55	419.6	104.7	8.9	7.3
				41.1	110		3.4	7.9	116.7	30.1	19.4	3.15	2.80	498.0	107.7	8.6	6.8
	7.0	1.9	4.4	42.2	85		3.4	7.9	92.6	34	26.4	2.24	4.45	360.8	109.8	7.9	7.6
				42.8	95		3.4	7.9	102.3	33	24.4	2.53	3.82	406.5	110.6	8.4	7.7
				43.8	110		3.4	7.9	117.0	31.4	21.0	3.05	3.02	482.5	113.8	7.7	7.3
	9.0	2.9	6.7	43.8	85		3.4	7.9	92.7	34.7	27.2	2.21	4.60	355.3	114.1	7.4	6.4
				44.2	95		3.4	7.9	102.5	33.6	25.1	2.49	3.95	400.4	114.9	8.0	6.5
				45.0	110		3.4	7.9	117.1	32	21.8	3.00	3.13	475.2	118.2	7.2	6.0
60	4.5	0.8	1.8	47.0	85	9.0	3.5	8.1	93.1	36.5	28.4	2.36	4.53	381.2	120.1	8.9	8.3
				47.9	95		3.5	8.1	102.9	35.4	26.3	2.67	3.89	429.5	120.9	9.2	8.5
				49.6	110		3.5	8.1	117.5	33.7	22.7	3.22	3.07	509.8	124.4	9.1	8.1
	7.0	1.8	4.2	51.1	85		3.5	8.1	93.4	38	30.2	2.29	4.86	369.4	126.8	8.3	9.3
				51.7	95		3.5	8.1	103.2	36.9	28.1	2.58	4.19	416.2	127.7	8.6	9.5
				52.8	110		3.5	8.1	117.8	35.1	24.5	3.11	3.31	494.0	131.4	8.1	9.2
	9.0	2.8	6.4	52.9	85		3.5	8.1	93.6	38.8	31.1	2.25	5.05	363.8	131.8	7.8	8.1
				53.4	95		3.5	8.1	103.4	37.6	28.9	2.54	4.34	409.9	132.7	8.2	8.3
				54.2	110		3.5	8.1	118.0	35.8	25.4	3.06	3.43	486.5	136.5	7.6	8.0
70	4.5	0.7	1.7	55.3	85	9.0	3.6	8.3	94.0	40.3	32.1	2.41	4.90	389.4	135.6	9.7	10.3
				56.3	95		3.6	8.3	103.7	39.1	29.8	2.72	4.21	438.7	136.5	9.9	10.6
				58.1	110		3.6	8.3	118.2	37.1	25.9	3.28	3.31	520.7	140.4	10.2	10.3
	7.0	1.8	4.1	60.0	85		3.6	8.3	94.3	42	34.0	2.33	5.28	377.3	143.2	9.0	11.8
				60.7	95		3.6	8.3	104.0	40.7	31.7	2.64	4.52	425.1	144.2	9.4	12.0
				61.8	110		3.6	8.3	118.6	38.7	27.8	3.18	3.57	504.5	148.4	9.2	11.9
	9.0	2.7	6.3	62.0	85		3.6	8.3	94.5	42.8	35.0	2.30	5.45	371.6	148.8	8.6	10.7
				62.5	95		3.6	8.3	104.2	41.5	32.7	2.59	4.70	418.7	149.9	8.9	10.9
				63.4	110		3.6	8.3	118.8	39.4	28.7	3.13	3.69	496.9	154.2	8.6	10.8
80	4.5	0.7	1.6	64.0	85	9.0	3.6	8.3	94.6	43.3	34.9	2.47	5.14	395.8	149.8	9.7	13.4
				65.1	95		3.6	8.3	104.3	42	32.5	2.79	4.41	446.0	150.8	9.9	13.6
				67.0	110		3.6	8.3	118.9	39.9	28.4	3.36	3.48	529.3	155.1	10.5	13.5
	7.0	1.6	3.8	69.1	85		3.6	8.3	95.0	45.1	36.9	2.39	5.53	383.5	158.2	9.1	15.3
				69.8	95		3.6	8.3	104.7	43.7	34.5	2.70	4.74	432.1	159.3	9.4	15.6
				71.0	110		3.6	8.3	119.2	41.6	30.5	3.25	3.75	512.9	163.9	9.4	15.6
	9.0	2.5	5.8	71.3	85		3.6	8.3	95.2	46	38.0	2.35	5.74	377.7	164.4	8.7	14.2
				71.8	95		3.6	8.3	104.9	44.6	35.6	2.65	4.93	425.6	165.5	8.9	14.6
				72.8	110		3.6	8.3	119.4	42.4	31.5	3.20	3.88	505.1	170.3	8.7	14.5
90	4.5	0.6	1.5	72.7	85	9.0	3.6	8.3	95.3	46.3	37.7	2.52	5.38	402.0	163.8	9.9	16.7
				73.9	95		3.6	8.3	105.0	44.9	35.2	2.85	4.62	453.0	164.9	10.2	17.1
				75.8	110		3.6	8.3	119.5	42.6	30.9	3.44	3.63	537.6	169.6	11.0	17.1
	7.0	1.5	3.5	78.2	85		3.6	8.3	95.7	48.2	39.9	2.44	5.79	389.5	173.0	9.4	19.1
				79.0	95		3.6	8.3	105.4	46.7	37.3	2.76	4.96	438.9	174.2	9.6	19.5
				80.3	110		3.6	8.3	119.9	44.4	33.0	3.33	3.91	520.9	179.2	9.8	19.6
	9.0	2.3	5.3	80.6	85		3.6	8.3	95.9	49.1	40.9	2.40	6.00	383.6	179.8	8.9	18.1
				81.2	95		3.6	8.3	105.6	47.6	38.4	2.71	5.15	432.3	181.0	9.2	18.5
				82.2	110		3.6	8.3	120.1	45.3	34.1	3.27	4.06	513.0	186.2	9.2	18.6

ENGINEERING SPECIFICATIONS:

Model 048, 4 Ton, Part Load Heating Performance Data

				Heating									
EWT	Flow	WPD		LWT	Airflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	8.0	2.8	6.5	20.5	1300	88.1	25.5	17.4	2.35	3.18	286.0	79.2	12.6	7.7
				20.4	1450	86.3	25.6	17.7	2.31	3.25	279.0	78.8	11.6	7.6
30	4.0	0.8	1.9	21.1	1300	88.0	25.3	17.2	2.37	3.12	288.0	78.3	15.5	7.9
				21.0	1450	86.2	25.4	17.4	2.34	3.19	283.0	77.9	15.5	7.9
	6.0	1.7	3.8	23.7	1300	88.9	26.6	18.4	2.38	3.27	292.0	82.3	14.5	7.3
				23.6	1450	87.0	26.7	18.7	2.34	3.34	287.0	81.9	14.7	7.3
	8.0	2.7	6.3	25.1	1300	89.3	27.2	19.1	2.37	3.36	292.0	84.6	11.6	6.8
				25.0	1450	87.4	27.3	19.4	2.33	3.44	286.0	84.2	11.6	6.7
40	4.0	0.8	1.8	29.6	1300	90.2	28.3	20.1	2.41	3.45	299.0	88.2	13.5	6.7
				29.4	1450	88.2	28.6	20.5	2.36	3.54	293.0	87.7	13.7	6.7
	6.0	1.6	3.7	32.2	1300	91.7	30.5	22.6	2.30	3.89	285.0	91.7	12.5	6.6
				32.1	1450	89.5	30.6	22.9	2.25	3.99	278.0	91.1	11.6	6.7
	8.0	2.6	6.0	34.0	1300	92.2	31.2	23.4	2.28	4.02	284.0	94.7	8.5	6.4
				33.9	1450	90.1	31.4	23.8	2.23	4.12	278.0	94.1	8.6	6.6
50	4.0	0.8	1.7	37.4	1300	93.0	32.2	24.4	2.31	4.09	290.0	96.9	11.5	6.6
				37.3	1450	90.6	32.3	24.5	2.26	4.18	283.0	96.3	11.5	6.6
	6.0	1.5	3.5	41.0	1300	94.3	34.1	26.2	2.32	4.32	295.0	103.2	9.5	7.3
				40.9	1450	91.9	34.3	26.6	2.27	4.44	288.0	102.5	9.7	7.3
	8.0	2.5	5.7	43.0	1300	95.1	35.2	27.3	2.31	4.47	296.0	106.9	6.5	7.5
				42.9	1450	92.6	35.4	27.7	2.25	4.61	288.0	106.3	6.5	7.5
60	4.0	0.7	1.7	45.6	1300	95.5	35.9	27.9	2.34	4.49	302.0	108.1	10.5	7.0
				45.4	1450	93.0	36.0	28.2	2.29	4.62	294.0	107.3	10.6	7.0
	6.0	1.5	3.3	49.6	1300	97.3	38.3	30.2	2.35	4.77	309.0	115.6	8.7	8.6
				49.5	1450	94.6	38.5	30.7	2.29	4.92	300.0	114.8	8.7	8.5
	8.0	2.4	5.5	51.9	1300	98.1	39.5	31.5	2.34	4.94	311.0	120.4	5.7	9.0
				51.8	1450	95.4	39.8	32.0	2.28	5.10	301.0	119.6	5.5	9.0
70	4.0	0.7	1.6	53.7	1300	98.4	39.8	31.7	2.39	4.89	316.0	120.1	10.5	7.8
				53.4	1450	95.6	40.0	32.1	2.32	5.05	307.0	119.1	10.7	7.8
	6.0	1.4	3.2	58.2	1300	100.4	42.7	34.5	2.40	5.21	324.0	129.1	8.6	10.1
				58.0	1450	97.4	43.0	35.0	2.33	5.40	314.0	128.2	8.7	10.0
	8.0	2.3	5.3	60.8	1300	101.2	43.8	35.7	2.39	5.39	326.0	134.9	4.6	10.7
				60.6	1450	98.2	44.2	36.3	2.32	5.59	315.0	134.0	4.6	10.7
80	4.0	0.7	1.6	61.7	1300	101.2	43.9	35.6	2.43	5.29	331.0	132.8	10.6	9.1
				61.4	1450	98.2	44.1	36.1	2.36	5.48	320.0	131.6	10.6	9.2
	6.0	1.4	3.1	66.7	1300	103.6	47.2	38.8	2.45	5.64	341.0	143.7	8.6	11.9
				66.4	1450	100.4	47.7	39.6	2.37	5.89	329.0	142.5	8.7	12.0
	8.0	2.2	5.2	69.6	1300	104.7	48.7	40.4	2.44	5.86	343.0	150.7	4.6	12.8
				69.4	1450	101.4	49.1	41.1	2.36	6.11	331.0	149.6	4.6	12.7
90	4.0	0.7	1.5	69.5	1300	104.3	48.2	39.7	2.48	5.69	348.0	146.6	10.7	10.5
				69.2	1450	101.0	48.5	40.3	2.40	5.92	335.0	145.1	10.6	10.6
	6.0	1.3	3.1	75.1	1300	107.0	51.9	43.3	2.51	6.07	359.0	159.1	8.7	14.0
				74.9	1450	103.4	52.3	44.1	2.42	6.34	345.0	157.7	8.6	14.0
	8.0	2.2	5.1	78.3	1300	108.3	53.8	45.3	2.49	6.33	362.0	167.7	4.7	15.2
				78.1	1450	104.7	54.4	46.2	2.40	6.63	348.0	166.4	4.6	15.2

Model 048, 4 Ton, Full Load Heating Performance Data

				Heating									
EWT	Flow	WPD		LWT	Aiflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	12.0	5.7	13.1	20.4	1500	92.8	37.0	26.6	3.06	3.54	295.2	66.6	13.4	7.7
				20.2	1700	90.8	38.1	27.7	3.05	3.66	294.2	66.5	13.2	7.7
30	6.0	1.8	4.2	21.1	1500	92.3	36.2	25.8	3.04	3.49	292.7	67.9	17.2	7.9
				20.7	1700	90.3	37.3	27.0	3.03	3.61	291.8	67.8	17.0	8.0
	9.0	3.5	8.2	23.8	1500	93.2	37.6	27.1	3.07	3.59	297.8	72.4	15.9	7.4
				23.5	1700	91.1	38.8	28.3	3.07	3.70	296.9	72.2	15.7	7.4
	12.0	5.5	12.7	25.2	1500	93.7	38.4	27.9	3.09	3.64	300.1	74.8	12.7	7.0
				25.0	1700	91.6	39.6	29.1	3.08	3.77	299.2	74.7	12.5	7.0
40	6.0	1.7	4.0	29.6	1500	95.3	41.0	30.3	3.15	3.81	309.2	82.2	15.0	7.1
				29.1	1700	93.0	42.3	31.6	3.15	3.94	308.2	82.1	14.8	7.2
	9.0	3.4	7.8	32.7	1500	96.3	42.6	31.7	3.19	3.91	314.5	87.6	13.3	7.3
				32.4	1700	93.9	43.9	33.0	3.18	4.05	313.5	87.4	13.1	7.4
	12.0	5.3	12.2	34.4	1500	96.9	43.5	32.6	3.20	3.98	317.0	90.6	9.9	7.2
				34.2	1700	94.5	44.9	34.0	3.20	4.11	316.0	90.4	9.7	7.3
50	6.0	1.7	3.8	38.1	1500	98.3	45.9	34.7	3.27	4.11	325.6	96.7	12.8	7.4
				37.6	1700	95.8	47.3	36.2	3.26	4.25	324.6	96.5	12.6	7.4
	9.0	3.2	7.5	41.7	1500	99.4	47.6	36.3	3.31	4.21	331.2	103.0	11.0	8.5
				41.3	1700	96.7	49.1	37.8	3.30	4.36	330.2	102.8	10.8	8.5
	12.0	5.1	11.7	43.6	1500	100.0	48.6	37.3	3.32	4.29	333.8	106.5	7.2	8.6
				43.3	1700	97.3	50.1	38.8	3.32	4.42	332.8	106.4	7.0	8.7
60	6.0	1.6	3.6	46.8	1500	100.7	49.8	38.3	3.38	4.32	339.5	111.8	11.7	8.2
				46.3	1700	98.0	51.4	39.9	3.37	4.47	338.5	111.7	11.6	8.2
	9.0	3.0	7.0	50.8	1500	102.0	51.8	40.1	3.42	4.44	345.4	119.1	9.8	10.0
				50.4	1700	99.1	53.4	41.8	3.41	4.59	344.4	118.9	9.6	10.0
	12.0	4.7	11.0	52.9	1500	102.6	52.8	41.1	3.43	4.51	348.1	123.2	5.9	10.6
				52.6	1700	99.7	54.5	42.8	3.43	4.66	347.0	123.0	5.7	10.6
70	6.0	1.4	3.3	55.6	1500	103.2	53.8	41.9	3.50	4.50	353.5	127.5	11.7	9.4
				55.0	1700	100.2	55.5	43.6	3.49	4.66	352.4	127.3	11.4	9.4
	9.0	2.8	6.5	60.0	1500	104.5	55.9	43.8	3.54	4.63	359.6	135.8	9.5	11.9
				59.6	1700	101.4	57.6	45.6	3.53	4.78	358.5	135.6	9.4	11.9
	12.0	4.4	10.2	62.3	1500	105.2	57.0	44.9	3.55	4.71	362.4	140.5	5.5	12.8
				62.0	1700	102.0	58.8	46.7	3.55	4.85	361.3	140.3	5.4	12.7
80	6.0	1.3	3.1	64.2	1500	106.2	58.6	46.1	3.65	4.71	369.9	143.4	11.7	11.0
				63.5	1700	102.9	60.4	48.0	3.64	4.86	368.8	143.2	11.5	11.0
	9.0	2.6	6.0	69.0	1500	107.5	60.8	48.2	3.69	4.83	376.3	152.8	9.4	14.1
				68.5	1700	104.2	62.7	50.1	3.68	4.99	375.2	152.5	9.3	14.1
	12.0	4.1	9.4	71.5	1500	108.3	62.1	49.4	3.71	4.91	379.3	158.0	5.3	15.3
				71.2	1700	104.9	64.0	51.4	3.70	5.07	378.1	157.8	5.1	15.3
90	6.0	1.2	2.8	72.7	1500	109.1	63.3	50.3	3.80	4.88	386.3	159.5	11.9	12.8
				72.0	1700	105.6	65.3	52.4	3.79	5.05	385.1	159.2	11.8	12.9
	9.0	2.4	5.5	77.9	1500	110.6	65.8	52.7	3.85	5.01	393.1	169.9	9.7	16.6
				77.5	1700	106.9	67.8	54.7	3.84	5.17	391.8	169.6	9.5	16.6
	12.0	3.7	8.5	80.7	1500	111.4	67.1	53.9	3.87	5.08	396.1	175.8	5.3	18.0
				80.4	1700	107.7	69.2	56.0	3.86	5.25	394.9	175.5	5.1	18.0

ENGINEERING SPECIFICATIONS:

Model 048, 4 Ton, Part Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	4.0	0.7	1.6	74.6	1300	41.2	28.4	0.69	47.7	1.89	21.8	247.0	139.8	17.5	10.9
				74.9	1450	41.9	29.9	0.71	48.3	1.89	22.2	249.0	142.3	17.5	10.9
	6.0	1.4	3.3	66.7	1300	42.8	29.0	0.68	48.6	1.69	25.3	216.0	137.7	14.4	11.3
				66.9	1450	43.5	30.5	0.70	49.3	1.69	25.7	217.0	140.1	14.3	11.6
	8.0	2.4	5.5	62.7	1300	43.7	29.3	0.67	49.1	1.60	27.3	201.0	136.4	13.5	12.1
				62.9	1450	44.4	30.9	0.69	49.9	1.60	27.8	202.0	138.9	13.4	12.4
60	4.0	0.7	1.6	83.8	1300	39.0	27.6	0.71	46.1	2.09	18.6	280.0	142.8	15.6	10.1
				84.1	1450	39.6	29.1	0.73	46.8	2.10	18.9	282.0	145.3	15.5	10.2
	6.0	1.4	3.2	76.2	1300	40.6	28.2	0.69	47.1	1.89	21.5	248.0	140.7	13.5	10.4
				76.4	1450	41.3	29.7	0.72	47.7	1.89	21.8	249.0	143.1	13.4	10.6
	8.0	2.3	5.3	72.3	1300	41.5	28.5	0.69	47.6	1.79	23.2	232.0	139.5	12.4	11.2
				72.4	1450	42.1	30.0	0.71	48.2	1.78	23.6	232.0	142.0	11.3	11.4
70	4.0	0.7	1.5	93.0	1300	36.8	26.8	0.73	44.7	2.33	15.8	316.0	145.8	14.5	9.3
				93.3	1450	37.3	28.4	0.76	45.3	2.33	16.0	318.0	147.9	14.5	9.5
	6.0	1.4	3.1	85.6	1300	38.3	27.3	0.71	45.5	2.11	18.2	283.0	143.9	11.5	9.6
				85.8	1450	38.9	28.8	0.74	46.1	2.11	18.4	284.0	146.1	11.5	9.8
	8.0	2.2	5.2	81.8	1300	39.1	27.6	0.70	45.9	2.00	19.5	266.0	142.7	10.5	10.3
				82.0	1450	39.8	29.1	0.73	46.6	2.00	19.9	267.0	145.0	10.5	10.6
80	4.0	0.7	1.5	102.4	1300	34.6	26.0	0.75	43.4	2.59	13.4	356.0	148.9	13.6	8.6
				102.6	1450	35.1	27.5	0.78	43.9	2.59	13.5	358.0	151.0	13.6	8.8
	6.0	1.3	3.1	95.2	1300	36.0	26.5	0.73	44.1	2.36	15.3	322.0	146.9	11.6	9.1
				95.3	1450	36.6	28.0	0.77	44.6	2.36	15.5	323.0	148.9	11.5	9.4
	8.0	2.2	5.1	91.5	1300	36.8	26.8	0.73	44.5	2.25	16.4	305.0	145.7	10.6	9.9
				91.6	1450	37.4	28.3	0.76	45.1	2.25	16.6	306.0	147.8	10.5	10.2
90	4.0	0.7	1.5	111.7	1300	32.3	25.1	0.78	42.1	2.88	11.2	399.0	151.9	12.7	8.3
				111.9	1450	32.7	26.8	0.82	42.5	2.88	11.4	400.0	153.6	12.6	8.7
	6.0	1.3	3.1	104.7	1300	33.8	25.6	0.76	42.9	2.65	12.8	365.0	150.0	11.5	8.8
				104.8	1450	34.2	27.2	0.80	43.2	2.64	12.9	365.0	151.9	10.5	9.3
	8.0	2.2	5.1	101.1	1300	34.6	25.9	0.75	43.2	2.53	13.7	347.0	148.7	10.5	9.6
				101.3	1450	35.0	27.5	0.78	43.7	2.53	13.9	348.0	150.6	10.5	10.0
100	4.0	0.7	1.5	121.2	1300	30.1	24.2	0.81	41.0	3.20	9.4	446.0	154.8	12.7	8.6
				121.3	1450	30.3	25.9	0.85	41.2	3.20	9.5	446.0	156.4	11.7	9.0
	6.0	1.3	3.1	114.3	1300	31.4	24.7	0.79	41.5	2.96	10.6	411.0	153.0	10.7	9.1
				114.4	1450	31.9	26.2	0.82	42.0	2.96	10.8	412.0	154.9	10.6	9.3
	8.0	2.2	5.1	110.8	1300	32.1	25.0	0.78	41.7	2.83	11.3	393.0	151.7	9.7	9.9
				110.9	1450	32.6	26.4	0.81	42.3	2.83	11.5	394.0	153.7	9.7	10.1
110	4.0	0.7	1.6	130.7	1300	27.9	23.4	0.84	40.1	3.57	7.8	497.0	157.6	12.7	9.1
				130.8	1450	28.1	25.0	0.89	40.3	3.56	7.9	497.0	159.2	11.7	9.4
	6.0	1.4	3.1	123.8	1300	29.0	23.8	0.82	40.3	3.31	8.8	461.0	156.2	9.7	9.5
				124.0	1450	29.4	25.3	0.86	40.6	3.31	8.9	462.0	157.8	9.7	9.8
	8.0	2.2	5.2	120.5	1300	29.7	24.0	0.81	40.6	3.18	9.3	443.0	154.9	9.7	10.3
				120.5	1450	30.0	25.5	0.85	40.9	3.17	9.5	443.0	156.7	8.7	10.5

Model 048, 4 Ton, Full Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	6.0	1.7	4.0	71.8	1600	54.4	37.0	0.68	63.3	2.60	20.9	236.5	132.2	19.1	12.2
				72.0	1750	54.7	38.2	0.70	63.9	2.71	20.2	237.2	134.5	19.0	12.4
	9.0	3.4	7.8	64.6	1600	55.5	37.3	0.67	63.9	2.46	22.6	219.7	131.5	16.0	12.8
				64.8	1750	55.8	38.5	0.69	64.6	2.57	21.7	220.4	133.7	16.0	13.1
	12.0	4.7	10.7	61.0	1600	55.9	37.6	0.67	64.1	2.41	23.2	211.7	130.7	14.8	13.7
				61.1	1750	56.2	38.8	0.69	64.8	2.52	22.3	212.4	132.9	14.7	14.0
60	6.0	1.7	3.9	81.3	1600	52.2	36.2	0.69	61.9	2.83	18.4	272.8	134.4	17.6	11.1
				81.5	1750	52.5	37.3	0.71	62.6	2.95	17.8	273.7	136.6	17.5	11.4
	9.0	3.3	7.5	74.3	1600	53.3	36.5	0.68	62.4	2.68	19.9	253.4	133.6	14.6	11.7
				74.5	1750	53.6	37.6	0.70	63.2	2.80	19.1	254.3	135.9	14.5	12.0
	12.0	4.5	10.4	70.8	1600	53.6	36.7	0.68	62.6	2.63	20.4	244.2	132.9	13.3	12.6
				70.9	1750	53.9	37.9	0.70	63.2	2.74	19.7	245.0	135.1	13.2	12.9
70	6.0	1.6	3.7	90.8	1600	49.9	35.3	0.71	60.4	3.09	16.1	311.1	136.5	15.9	10.1
				91.0	1750	50.2	36.4	0.73	61.2	3.22	15.6	312.1	138.8	15.8	10.4
	9.0	3.1	7.2	84.0	1600	51.0	35.6	0.70	61.0	2.92	17.5	289.1	135.7	13.2	10.8
				84.1	1750	51.3	36.7	0.72	61.7	3.05	16.8	290.0	138.0	13.0	11.1
	12.0	4.3	10.0	80.5	1600	51.3	35.9	0.70	61.1	2.86	17.9	278.5	135.0	12.0	11.7
				80.6	1750	51.6	37.0	0.72	61.8	2.99	17.3	279.4	137.2	11.7	12.0
80	6.0	1.5	3.4	100.3	1600	47.6	34.1	0.72	59.1	3.37	14.1	353.1	138.9	15.0	9.3
				100.5	1750	47.8	35.1	0.73	59.8	3.52	13.6	354.3	141.2	14.7	9.6
	9.0	2.9	6.7	93.6	1600	48.5	34.4	0.71	59.4	3.19	15.2	328.1	138.1	12.5	10.0
				93.8	1750	48.8	35.4	0.73	60.2	3.33	14.7	329.2	140.4	12.4	10.3
	12.0	4.0	9.2	90.2	1600	48.9	34.6	0.71	59.5	3.12	15.7	316.1	137.3	11.6	10.9
				90.4	1750	49.2	35.7	0.73	60.3	3.26	15.1	317.2	139.6	11.3	11.2
90	6.0	1.4	3.1	109.8	1600	45.0	32.8	0.73	57.7	3.71	12.1	400.2	141.2	14.2	8.9
				110.1	1750	45.3	33.8	0.75	58.5	3.87	11.7	401.5	143.6	13.8	9.1
	9.0	2.6	6.1	103.3	1600	46.0	33.1	0.72	58.0	3.51	13.1	371.8	140.4	12.2	9.6
				103.4	1750	46.2	34.1	0.74	58.7	3.67	12.6	373.1	142.7	12.0	9.9
	12.0	3.7	8.4	100.0	1600	46.3	33.3	0.72	58.0	3.44	13.5	358.3	139.6	11.5	10.5
				100.1	1750	46.5	34.3	0.74	58.7	3.59	13.0	359.5	141.9	11.2	10.7
100	6.0	1.3	3.0	119.4	1600	42.3	31.7	0.75	56.4	4.12	10.3	452.2	143.1	13.3	9.1
				119.7	1750	42.6	32.7	0.77	57.3	4.30	9.9	453.7	145.5	13.0	9.3
	9.0	2.5	5.8	112.9	1600	43.2	32.0	0.74	56.5	3.90	11.1	420.1	142.3	11.5	9.8
				113.2	1750	43.5	33.0	0.76	57.4	4.08	10.7	421.5	144.7	11.1	10.0
	12.0	3.5	8.0	109.7	1600	43.5	32.2	0.74	56.5	3.82	11.4	404.8	141.5	11.0	10.6
				109.8	1750	43.7	33.2	0.76	57.3	3.99	11.0	406.1	143.9	10.6	10.9
110	6.0	1.2	2.8	129.0	1600	39.6	30.7	0.78	55.2	4.56	8.7	506.2	145.0	13.3	9.4
				129.2	1750	39.8	31.6	0.79	56.0	4.76	8.4	507.9	147.4	12.9	9.7
	9.0	2.4	5.5	122.6	1600	40.4	31.0	0.77	55.1	4.32	9.4	470.3	144.1	10.8	10.1
				122.8	1750	40.6	31.9	0.79	56.0	4.51	9.0	471.8	146.6	10.4	10.4
	12.0	3.3	7.6	119.5	1600	40.6	31.2	0.77	55.0	4.23	9.6	453.2	143.3	10.2	11.0
				119.6	1750	40.9	32.1	0.78	56.0	4.42	9.3	454.6	145.7	9.7	11.3

ENGINEERING SPECIFICATIONS:

Model 048, 4 Ton, Full Load Hydronic Heating Performance Data

Source Water					Load Water					Heating							
EWT	Flow	WPD		LWT	ELT	Flow	WPD		LLT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSID	FT	°F	°F	GPM	PSID	FT	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	12.0	5.4	12.5	21.1	85	12.0	4.0	9.3	90.5	32.7	22.9	2.86	3.35	330.8	69.1	8.3	7.5
				21.3	95		3.6	8.3	100.4	32.4	21.4	3.23	2.94	373.5	71.5	8.2	6.1
				21.8	110		3.6	8.3	115.3	31.8	18.4	3.93	2.37	449.4	73.6	9.6	5.3
30	6.0	1.6	3.6	22.6	85	12.0	4.0	9.3	90.3	31.9	21.5	3.04	3.08	355.6	69.9	9.8	7.9
				23.2	95		3.6	8.3	100.3	31.5	19.8	3.44	2.68	401.4	72.3	9.2	6.5
				24.3	110		3.6	8.3	115.2	31	16.7	4.18	2.17	483.1	74.4	10.8	5.7
	9.0	3.3	7.7	24.4	85		4.0	9.3	90.8	34.5	24.5	2.93	3.45	342.1	73.8	8.7	7.7
				24.8	95		3.6	8.3	100.7	34.1	22.8	3.32	3.01	386.2	76.3	8.4	6.4
				25.5	110		3.6	8.3	115.6	33.5	19.7	4.04	2.43	464.7	78.6	9.8	5.5
	12.0	5.4	12.3	25.6	85		4.0	9.3	90.9	35.5	25.7	2.87	3.63	336.2	75.7	8.5	7.5
				25.9	95		3.6	8.3	100.9	35.1	24.0	3.25	3.17	379.5	78.3	8.3	6.2
				26.4	110		3.6	8.3	115.8	34.5	21.0	3.95	2.56	456.7	80.6	9.7	5.4
40	6.0	1.5	3.4	31.2	85	12.0	4.0	9.3	91.0	36.2	25.6	3.10	3.42	364.1	83.5	8.2	8.0
				31.8	95		3.6	8.3	101.0	35.8	23.9	3.50	3.00	411.1	86.3	7.3	6.7
				32.9	110		3.6	8.3	115.9	35.2	20.7	4.26	2.42	494.7	88.9	9.0	6.0
	9.0	3.2	7.3	33.4	85		4.0	9.3	91.5	39.2	29.0	2.99	3.84	350.3	88.2	7.3	8.5
				33.7	95		3.6	8.3	101.5	38.8	27.3	3.38	3.36	395.4	91.2	6.6	7.2
				34.5	110		3.6	8.3	116.4	38.1	24.1	4.11	2.72	475.9	93.9	7.9	6.6
	12.0	5.1	11.7	34.8	85		4.0	9.3	91.7	40.3	30.3	2.93	4.03	344.3	90.4	7.0	8.6
				35.1	95		3.6	8.3	101.7	39.9	28.6	3.31	3.53	388.7	93.5	6.5	7.3
				35.6	110		3.6	8.3	116.5	39.2	25.4	4.03	2.85	467.7	96.2	7.7	6.7
50	6.0	1.4	3.3	39.8	85	12.0	4.0	9.3	91.8	40.5	29.7	3.16	3.76	372.2	97.4	6.8	9.0
				40.4	95		3.6	8.3	101.7	40.1	27.9	3.57	3.29	420.2	100.7	5.7	7.7
				41.5	110		3.6	8.3	116.6	39.4	24.6	4.34	2.66	505.6	103.6	7.4	7.1
	9.0	3.0	7.0	42.3	85		4.0	9.3	92.3	43.8	33.4	3.05	4.21	358.1	102.8	5.9	10.2
				42.8	95		3.6	8.3	102.2	43.3	31.5	3.45	3.68	404.2	106.3	5.0	9.0
				43.5	110		3.6	8.3	117.1	42.6	28.3	4.19	2.98	486.4	109.4	6.2	8.5
	12.0	4.9	11.2	44.0	85		4.0	9.3	92.5	45.1	34.9	2.98	4.44	351.9	105.4	5.8	10.7
				44.3	95		3.6	8.3	102.4	44.6	33.1	3.38	3.87	397.3	109.0	4.9	9.4
				44.9	110		3.6	8.3	117.3	43.9	29.9	4.11	3.13	478.1	112.2	6.0	8.9
60	6.0	1.4	3.2	48.4	85	12.0	4.0	9.3	92.5	44.9	33.9	3.21	4.10	380.4	111.3	6.4	10.3
				49.0	95		3.6	8.3	102.4	44.4	32.0	3.63	3.58	429.5	115.1	5.1	9.0
				50.1	110		3.6	8.3	117.3	43.7	28.7	4.41	2.90	516.8	118.4	7.0	8.6
	9.0	2.9	6.8	51.3	85		4.0	9.3	93.1	48.5	37.9	3.10	4.59	365.9	117.5	5.5	12.3
				51.7	95		3.6	8.3	103.0	48	36.1	3.50	4.02	413.1	121.5	4.4	11.0
				52.5	110		3.6	8.3	117.9	47.2	32.7	4.26	3.25	497.1	125.1	5.7	10.7
	12.0	4.7	10.9	53.2	85		4.0	9.3	93.3	50	39.7	3.03	4.84	359.7	120.5	5.4	13.0
				53.5	95		3.6	8.3	103.3	49.5	37.8	3.43	4.23	406.0	124.6	4.3	11.7
				54.1	110		3.6	8.3	118.1	48.6	34.4	4.17	3.42	488.6	128.2	5.6	11.4
70	6.0	1.4	3.1	56.9	85	12.0	4.0	9.3	93.2	49.1	38.0	3.26	4.41	387.5	125.9	6.4	11.8
				57.6	95		3.6	8.3	103.1	48.6	36.0	3.69	3.86	437.4	130.2	5.0	10.6
				58.8	110		3.6	8.3	118.0	47.8	32.5	4.49	3.12	526.4	134.0	7.2	10.3
	9.0	2.9	6.7	60.3	85		4.0	9.3	93.9	53.1	42.4	3.15	4.94	372.7	132.9	5.5	14.5
				60.7	95		3.6	8.3	103.8	52.6	40.5	3.56	4.33	420.8	137.5	4.3	13.3
				61.5	110		3.6	8.3	118.6	51.7	36.9	4.33	3.50	506.4	141.5	5.8	13.0
	12.0	4.7	10.7	62.4	85		4.0	9.3	94.1	54.7	44.2	3.08	5.20	366.3	136.3	5.4	15.4
				62.7	95		3.6	8.3	104.0	54.2	42.3	3.49	4.55	413.6	140.9	4.2	14.2
				63.4	110		3.6	8.3	118.9	53.2	38.7	4.24	3.68	497.7	145.0	5.6	14.0
80	6.0	1.3	3.1	65.7	85	12.0	4.0	9.3	93.8	53	41.7	3.32	4.68	392.4	141.7	6.1	13.7
				66.4	95		3.6	8.3	103.7	52.4	39.6	3.76	4.08	443.0	146.5	4.6	12.5
				67.7	110		3.6	8.3	118.6	51.5	35.9	4.57	3.30	533.1	150.8	7.0	12.3
	9.0	2.9	6.6	69.4	85		4.0	9.3	94.6	57.3	46.3	3.21	5.23	377.5	149.6	5.3	17.0
				69.9	95		3.6	8.3	104.5	56.7	44.3	3.63	4.58	426.2	154.7	3.9	15.8
				70.7	110		3.6	8.3	119.3	55.7	40.6	4.42	3.69	512.8	159.2	5.6	15.7
	12.0	4.6	10.6	71.7	85		4.0	9.3	94.8	59	48.3	3.14	5.51	371.0	153.4	5.2	18.2
				72.0	95		3.6	8.3	104.7	58.4	46.3	3.56	4.81	418.9	158.6	3.9	17.0
				72.7	110		3.6	8.3	119.6	57.4	42.6	4.33	3.89	504.0	163.2	5.4	16.9
90	6.0	1.3	3.0	74.5	85	12.0	4.0	9.3	94.5	56.7	45.1	3.39	4.90	396.9	157.7	6.0	15.8
				75.2	95		3.6	8.3	104.4	56.1	43.0	3.83	4.29	448.1	163.1	4.5	14.6
				76.5	110		3.6	8.3	119.2	55.2	39.3	4.66	3.47	539.2	167.9	7.1	14.5
	9.0	2.8	6.5	78.5	85		4.0	9.3	95.2	61.3	50.1	3.27	5.49	381.8	166.6	5.2	19.8
				79.0	95		3.6	8.3	105.1	60.7	48.1	3.70	4.81	431.1	172.3	3.8	18.5
				79.9	110		3.6	8.3	120.0	59.7	44.3	4.50	3.89	518.7	177.3	5.6	18.5
	12.0	4.5	10.5	81.0	85		4.0	9.3	95.5	63.2	52.3	3.20	5.79	375.3	170.8	5.1	21.2
				81.4	95		3.6	8.3	105.4	62.5	50.1	3.63	5.05	423.7	176.6	3.8	20.0
				82.0	110		3.6	8.3	120.3	61.5	46.5	4.41	4.09	509.8	181.8	5.4	20.0

Model 060, 5 Ton, Part Load Heating Performance Data

					Heating									
EWT	Flow	WPD		LWT	Airflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	10.0	5.0	11.6	20.8	1450	89.9	31.2	20.3	3.19	2.86	311.0	77.4	24.4	3.7
				20.8	1600	88.1	31.2	20.5	3.15	2.91	306.0	77.2	24.2	3.6
30	5.0	1.5	3.4	21.8	1450	89.7	30.9	19.9	3.23	2.80	315.0	76.9	26.4	5.0
				21.7	1600	88.0	31.1	20.2	3.19	2.85	311.0	76.7	26.3	5.1
	7.5	3.0	6.9	24.1	1450	90.8	32.6	21.6	3.23	2.96	319.0	81.5	25.4	3.9
				24.0	1600	88.9	32.7	21.8	3.20	3.00	314.0	81.3	25.3	3.7
	10.0	4.9	11.3	25.0	1450	92.1	34.6	24.2	3.06	3.32	299.0	83.3	23.4	2.9
				25.0	1600	89.9	34.3	24.1	3.01	3.35	292.0	83.1	22.2	2.8
40	5.0	1.4	3.2	29.5	1450	93.0	36.0	25.4	3.10	3.40	307.0	88.2	24.4	3.3
				29.3	1600	91.1	36.4	26.0	3.06	3.49	302.0	87.9	24.4	3.4
	7.5	2.8	6.5	32.4	1450	94.4	38.2	27.7	3.08	3.63	308.0	94.2	22.3	2.7
				32.3	1600	92.2	38.4	28.0	3.04	3.71	302.0	93.8	22.3	2.7
	10.0	4.7	10.8	34.0	1450	95.3	39.6	29.1	3.08	3.77	310.0	97.8	21.4	2.4
				33.9	1600	93.0	39.7	29.4	3.01	3.87	301.0	97.5	20.3	2.3
50	5.0	1.3	3.1	37.5	1450	96.2	41.0	30.4	3.11	3.87	316.0	101.5	22.4	2.9
				37.4	1600	93.8	41.0	30.6	3.06	3.93	309.0	101.1	22.2	2.8
	7.5	2.7	6.3	41.0	1450	97.8	43.5	32.9	3.11	4.10	320.0	109.2	20.2	3.0
				40.8	1600	95.3	43.7	33.3	3.05	4.20	313.0	108.7	20.4	2.9
	10.0	4.5	10.3	42.9	1450	98.6	44.8	34.3	3.10	4.24	322.0	113.9	18.4	2.8
				42.8	1600	96.1	45.2	34.8	3.03	4.37	314.0	113.4	18.4	2.8
60	5.0	1.3	3.0	45.6	1450	99.2	45.7	35.0	3.14	4.27	328.0	116.1	20.3	3.2
				45.3	1600	96.7	46.1	35.6	3.07	4.40	320.0	115.4	20.4	3.2
	7.5	2.6	6.0	49.5	1450	101.2	48.8	38.1	3.15	4.54	335.0	125.6	18.4	4.1
				49.4	1600	98.3	48.9	38.4	3.07	4.67	325.0	124.9	18.3	3.9
	10.0	4.3	9.9	51.8	1450	102.3	50.5	39.8	3.14	4.71	338.0	131.5	16.4	4.3
				51.7	1600	99.3	50.6	40.1	3.06	4.84	327.0	130.7	16.2	4.2
70	5.0	1.2	2.9	53.6	1450	102.4	50.8	39.9	3.20	4.66	344.0	132.1	19.4	3.8
				53.3	1600	99.5	51.0	40.4	3.11	4.80	334.0	131.2	19.3	3.8
	7.5	2.5	5.8	58.1	1450	104.5	54.1	43.2	3.21	4.94	353.0	143.4	17.5	5.4
				58.0	1600	101.5	54.4	43.8	3.10	5.14	340.0	142.8	16.3	5.2
	10.0	4.1	9.5	60.7	1450	105.6	55.8	44.9	3.18	5.13	354.0	150.4	14.4	5.9
				60.6	1600	102.3	55.9	45.3	3.09	5.30	342.0	149.2	14.4	5.9
80	5.0	1.2	2.8	61.5	1450	105.7	55.9	44.8	3.25	5.04	361.0	149.4	18.4	4.6
				61.3	1600	102.5	56.2	45.4	3.16	5.21	349.0	148.3	18.3	4.7
	7.5	2.4	5.6	66.7	1450	108.0	59.4	48.3	3.25	5.36	369.0	162.7	15.5	6.9
				66.5	1600	104.6	59.9	49.1	3.15	5.58	357.0	161.8	15.5	6.7
	10.0	4.0	9.3	69.7	1450	109.1	61.2	50.2	3.22	5.56	371.0	170.6	12.4	7.8
				69.5	1600	105.7	61.8	51.1	3.12	5.81	358.0	170.1	12.3	7.6
90	5.0	1.2	2.7	69.5	1450	109.0	61.0	49.7	3.31	5.41	379.0	167.9	17.5	6.0
				69.2	1600	105.5	61.4	50.5	3.20	5.62	366.0	166.6	17.5	5.8
	7.5	2.4	5.5	75.3	1450	111.4	64.8	53.5	3.30	5.75	388.0	183.0	14.5	8.6
				75.1	1600	107.7	65.2	54.4	3.17	6.03	372.0	182.0	13.4	8.5
	10.0	4.0	9.2	78.3	1450	113.4	67.9	56.7	3.29	6.06	394.0	196.5	11.4	9.4
				78.0	1600	109.8	68.9	58.0	3.17	6.37	380.0	196.2	11.4	9.3

ENGINEERING SPECIFICATIONS:

Model 060, 5 Ton, Full Load Heating Performance Data

				Heating									
EWT	Flow	WPD		LWT	Aiflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	15.0	10.5	24.3	20.8	1700	93.6	43.4	30.2	3.88	3.28	301.7	65.7	26.9	3.3
				20.7	1850	92.4	44.7	31.4	3.90	3.36	301.3	65.6	26.8	3.3
30	7.5	3.6	8.2	21.6	1700	93.9	43.8	30.6	3.87	3.32	305.8	66.6	29.8	4.8
				21.3	1850	92.6	45.1	31.8	3.90	3.39	305.4	66.6	29.7	4.7
	11.5	6.7	15.4	24.1	1700	95.4	46.6	33.1	3.95	3.46	313.6	71.3	28.2	3.6
				23.8	1850	94.0	48.0	34.5	3.97	3.54	313.2	71.2	28.1	3.6
	15.0	10.1	23.3	25.3	1700	95.9	47.5	34.0	3.96	3.52	315.4	73.5	26.3	3.0
				25.1	1850	94.5	48.9	35.3	3.99	3.59	315.0	73.5	26.2	3.0
40	7.5	3.3	7.6	29.9	1700	97.4	50.3	36.7	4.00	3.69	321.9	81.1	27.4	3.7
				29.6	1850	95.9	51.8	38.0	4.03	3.77	321.5	81.1	27.3	3.7
	11.5	6.2	14.3	32.9	1700	99.1	53.5	39.6	4.08	3.84	330.1	86.8	25.3	3.3
				32.6	1850	97.6	55.1	41.1	4.11	3.93	329.7	86.7	25.3	3.2
	15.0	9.4	21.7	34.4	1700	99.7	54.5	40.5	4.10	3.90	332.0	89.6	23.4	3.0
				34.2	1850	98.1	56.2	42.1	4.12	4.00	331.6	89.5	23.3	3.0
50	7.5	3.1	7.1	38.3	1700	100.9	56.8	42.6	4.15	4.01	338.6	96.3	24.9	3.6
				37.8	1850	99.3	58.5	44.3	4.17	4.11	338.2	96.3	24.9	3.5
	11.5	5.8	13.3	41.8	1700	102.9	60.4	46.0	4.23	4.18	347.2	103.0	22.6	3.9
				41.4	1850	101.2	62.3	47.8	4.25	4.30	346.7	103.0	22.5	3.9
	15.0	8.7	20.1	43.5	1700	103.6	61.6	47.1	4.24	4.26	349.2	106.3	20.4	3.9
				43.3	1850	101.7	63.4	48.8	4.27	4.35	348.7	106.3	20.3	3.9
60	7.5	2.8	6.6	46.6	1700	104.7	63.7	48.9	4.33	4.31	360.2	112.8	23.2	4.2
				46.1	1850	102.8	65.6	50.7	4.36	4.41	359.8	112.7	23.2	4.2
	11.5	5.3	12.3	50.5	1700	106.9	67.8	52.8	4.41	4.51	369.4	120.7	20.6	5.3
				50.2	1850	105.0	69.9	54.8	4.44	4.61	368.9	120.6	20.5	5.2
	15.0	8.1	18.7	52.6	1700	107.6	69.1	54.0	4.43	4.57	371.5	124.5	18.2	5.7
				52.3	1850	105.6	71.2	56.0	4.46	4.68	371.0	124.4	18.1	5.7
70	7.5	2.7	6.2	54.8	1700	108.5	70.7	55.2	4.54	4.56	383.2	131.0	21.9	5.2
				54.3	1850	106.4	72.8	57.2	4.57	4.67	382.7	130.9	21.8	5.3
	11.5	5.0	11.6	59.4	1700	111.0	75.2	59.4	4.63	4.76	392.9	140.1	18.9	7.1
				59.0	1850	108.8	77.5	61.6	4.66	4.87	392.4	140.0	18.8	7.0
	15.0	7.6	17.5	61.7	1700	111.7	76.6	60.7	4.65	4.83	395.2	144.6	16.3	7.8
				61.4	1850	109.5	78.9	62.9	4.68	4.94	394.7	144.5	16.2	7.8
80	7.5	2.6	5.9	63.2	1700	112.1	77.3	61.0	4.77	4.75	403.5	150.8	20.4	6.4
				62.6	1850	109.8	79.6	63.2	4.80	4.86	403.0	150.7	20.3	6.4
	11.5	4.8	11.1	68.2	1700	114.8	82.2	65.6	4.87	4.95	413.8	161.3	17.2	8.9
				67.8	1850	112.4	84.7	68.0	4.89	5.08	413.2	161.2	17.1	8.8
	15.0	7.3	16.7	70.8	1700	115.6	83.7	67.0	4.88	5.03	416.1	166.4	14.3	10.0
				70.4	1850	113.2	86.3	69.5	4.91	5.15	415.6	166.3	14.2	9.9
90	7.5	2.4	5.6	71.6	1700	115.7	83.9	66.8	5.01	4.91	424.3	171.3	19.0	8.0
				71.0	1850	113.2	86.4	69.2	5.04	5.02	423.8	171.2	18.9	7.9
	11.5	4.6	10.6	77.1	1700	118.6	89.2	71.8	5.11	5.12	435.1	183.2	15.6	11.1
				76.7	1850	116.0	91.9	74.4	5.14	5.24	434.5	183.1	15.5	11.0
	15.0	7.0	16.0	79.9	1700	119.5	90.9	73.4	5.13	5.19	437.6	189.1	12.6	12.4
				79.5	1850	116.9	93.7	76.1	5.16	5.32	437.0	188.9	12.5	12.4

Model 060, 5 Ton, Part Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	5.0	1.1	2.5	74.7	1450	51.8	33.7	0.65	59.9	2.37	21.9	237.0	129.6	25.5	12.4
				75.2	1650	53.0	35.7	0.67	61.1	2.38	22.3	240.0	132.9	25.4	12.1
	7.5	2.2	5.2	66.7	1450	53.6	34.5	0.64	60.8	2.13	25.2	203.0	127.3	20.4	12.8
				67.1	1650	54.9	36.4	0.66	62.1	2.13	25.7	205.0	130.6	20.3	12.4
	10.0	3.7	8.6	62.7	1450	54.5	34.9	0.64	61.4	2.02	27.0	187.0	126.0	18.4	13.0
				63.0	1650	56.0	36.9	0.66	62.9	2.03	27.6	190.0	129.4	19.4	12.7
60	5.0	1.1	2.4	84.0	1450	49.3	32.8	0.67	58.3	2.62	18.8	274.0	133.3	25.6	9.4
				84.5	1650	50.4	34.8	0.69	59.4	2.63	19.2	277.0	136.4	25.5	8.9
	7.5	2.2	5.0	76.2	1450	51.0	33.5	0.66	59.1	2.36	21.6	237.0	131.1	20.4	10.0
				76.6	1650	52.2	35.5	0.68	60.3	2.37	22.1	240.0	134.2	20.5	9.3
	10.0	3.6	8.3	72.3	1450	52.0	33.9	0.65	59.6	2.24	23.2	220.0	130.0	18.3	10.1
				72.5	1650	53.2	36.0	0.68	60.8	2.24	23.7	222.0	133.0	18.5	9.8
70	5.0	1.0	2.4	93.3	1450	46.7	31.8	0.68	56.6	2.91	16.0	314.0	137.0	25.6	6.9
				93.7	1650	47.6	34.0	0.71	57.5	2.92	16.3	317.0	139.8	25.7	6.3
	7.5	2.1	4.9	85.8	1450	48.4	32.4	0.67	57.3	2.63	18.4	275.0	134.8	20.4	7.3
				86.1	1650	49.4	34.6	0.70	58.4	2.63	18.8	278.0	137.8	20.6	6.6
	10.0	3.5	8.1	81.9	1450	49.3	32.8	0.67	57.8	2.50	19.7	257.0	133.7	18.4	7.6
				82.1	1650	50.4	35.0	0.70	58.9	2.50	20.2	259.0	136.6	18.5	7.0
80	5.0	1.0	2.4	102.6	1450	43.9	30.8	0.70	54.9	3.22	13.6	355.0	140.2	24.6	6.5
				103.0	1650	44.7	32.9	0.74	55.7	3.23	13.9	358.0	142.9	24.7	6.0
	7.5	2.1	4.8	95.3	1450	45.6	31.4	0.69	55.5	2.93	15.6	317.0	138.1	20.6	6.9
				95.5	1650	46.5	33.5	0.72	56.5	2.93	15.9	319.0	140.9	20.6	6.4
	10.0	3.4	8.0	91.5	1450	46.4	31.8	0.68	56.0	2.79	16.7	298.0	137.0	18.6	7.3
				91.7	1650	47.4	33.9	0.71	56.9	2.79	17.0	300.0	139.8	18.6	6.6
90	5.0	1.0	2.4	111.9	1450	41.1	29.7	0.72	53.2	3.55	11.6	400.0	143.4	23.7	7.2
				112.3	1650	41.8	31.8	0.76	54.0	3.56	11.7	403.0	146.0	23.7	6.9
	7.5	2.1	4.8	104.8	1450	42.7	30.3	0.71	53.8	3.25	13.1	360.0	141.4	19.6	7.6
				105.0	1650	43.6	32.4	0.74	54.7	3.27	13.3	364.0	143.9	20.6	7.1
	10.0	3.4	7.9	101.2	1450	43.5	30.6	0.70	54.1	3.10	14.0	341.0	140.4	17.6	8.0
				101.4	1650	44.5	32.7	0.74	55.1	3.12	14.2	345.0	143.0	18.7	7.3
100	5.0	1.0	2.4	121.3	1450	38.2	28.4	0.75	51.6	3.93	9.7	450.0	147.1	22.8	7.2
				121.6	1650	38.9	30.8	0.79	52.4	3.96	9.8	454.0	149.2	23.6	7.1
	7.5	2.1	4.8	114.3	1450	39.7	29.2	0.73	52.0	3.61	11.0	408.0	145.0	18.8	7.8
				114.5	1650	40.5	31.1	0.77	52.9	3.63	11.1	412.0	147.5	19.7	7.2
	10.0	3.5	8.0	110.8	1450	40.5	29.4	0.73	52.4	3.47	11.7	390.0	143.9	17.7	7.8
				111.0	1650	41.3	31.6	0.77	53.1	3.48	11.9	392.0	146.3	17.7	7.6
110	5.0	1.1	2.4	130.7	1450	35.3	27.6	0.78	50.1	4.36	8.1	503.0	150.1	22.6	8.0
				131.0	1650	35.9	29.5	0.82	50.8	4.37	8.2	506.0	152.7	22.6	7.3
	7.5	2.1	4.9	123.8	1450	36.6	27.9	0.76	50.3	4.01	9.1	460.0	148.6	17.8	8.2
				124.0	1650	37.3	29.9	0.80	51.0	4.02	9.3	462.0	151.0	17.7	7.7
	10.0	3.5	8.1	120.4	1450	37.4	28.1	0.75	50.5	3.85	9.7	439.0	147.8	15.7	8.3
				120.6	1650	38.0	30.4	0.80	51.2	3.85	9.9	440.0	149.9	15.7	8.1

ENGINEERING SPECIFICATIONS:

Model 060, 5 Ton, Full Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	7.5	2.6	6.0	71.7	1750	67.7	43.1	0.64	78.8	3.25	20.8	238.3	124.2	27.8	13.8
				72.1	1950	68.8	45.6	0.66	80.4	3.40	20.2	239.1	129.5	28.0	13.5
	11.5	5.3	12.2	64.1	1750	68.0	43.3	0.64	78.5	3.07	22.1	218.8	123.5	23.1	14.3
				64.4	1950	69.2	45.8	0.66	80.1	3.20	21.6	219.6	128.9	23.2	13.9
	15.0	8.2	19.0	60.7	1750	68.0	43.4	0.64	78.2	2.99	22.7	210.7	123.5	20.9	14.5
				61.0	1950	69.2	45.9	0.66	79.9	3.13	22.1	211.4	128.8	21.1	14.2
60	7.5	2.4	5.6	81.6	1750	66.4	42.5	0.64	78.4	3.51	18.9	274.0	126.5	28.0	10.5
				82.0	1950	67.5	44.9	0.67	80.0	3.67	18.4	274.9	132.0	28.2	10.0
	11.5	4.9	11.4	74.0	1750	66.7	42.7	0.64	78.0	3.31	20.2	251.6	125.8	23.0	10.9
				74.3	1950	67.9	45.1	0.66	79.7	3.46	19.6	252.4	131.3	23.2	10.5
	15.0	7.7	17.7	70.7	1750	66.7	42.8	0.64	77.7	3.23	20.7	242.2	125.8	20.7	11.1
				70.9	1950	67.9	45.3	0.67	79.4	3.38	20.1	243.0	131.2	20.9	10.7
70	7.5	2.3	5.2	91.4	1750	64.8	41.8	0.65	77.8	3.80	17.1	311.8	128.8	27.8	7.6
				91.9	1950	66.0	44.2	0.67	79.5	3.97	16.6	312.8	134.4	27.9	7.0
	11.5	4.6	10.6	83.9	1750	65.1	42.0	0.65	77.3	3.58	18.2	286.3	128.1	22.8	8.0
				84.2	1950	66.3	44.4	0.67	79.1	3.74	17.7	287.3	133.7	22.9	7.5
	15.0	7.2	16.5	80.6	1750	65.2	42.1	0.65	77.1	3.49	18.7	275.7	128.1	20.4	8.2
				80.8	1950	66.3	44.5	0.67	78.8	3.65	18.2	276.6	133.6	20.6	7.7
80	7.5	2.2	5.0	101.0	1750	62.3	40.8	0.65	76.4	4.13	15.1	354.6	131.2	27.3	7.1
				101.5	1950	63.4	43.1	0.68	78.1	4.31	14.7	355.8	136.9	27.4	6.6
	11.5	4.4	10.1	93.6	1750	62.6	41.0	0.65	75.9	3.89	16.1	325.6	130.5	22.6	7.6
				93.9	1950	63.7	43.3	0.68	77.6	4.07	15.7	326.7	136.2	22.7	7.1
	15.0	6.8	15.7	90.4	1750	62.6	41.1	0.66	75.6	3.80	16.5	313.5	130.5	20.3	7.8
				90.6	1950	63.7	43.4	0.68	77.2	3.97	16.0	314.6	136.1	20.4	7.3
90	7.5	2.1	4.8	110.5	1750	59.1	39.5	0.67	74.6	4.53	13.0	402.7	133.7	26.4	7.8
				111.0	1950	60.1	41.8	0.70	76.3	4.74	12.7	404.1	139.4	26.6	7.4
	11.5	4.2	9.7	103.3	1750	59.4	39.7	0.67	74.0	4.27	13.9	369.8	132.9	22.1	8.3
				103.6	1950	60.4	42.0	0.70	75.6	4.46	13.5	371.1	138.7	22.2	7.8
	15.0	6.5	15.1	100.1	1750	59.4	39.8	0.67	73.6	4.17	14.2	356.1	132.9	19.9	8.5
				100.4	1950	60.5	42.1	0.70	75.4	4.36	13.9	357.3	138.6	20.1	8.1
100	7.5	2.0	4.6	120.0	1750	55.8	38.1	0.68	72.9	5.01	11.1	454.9	136.1	25.4	7.8
				120.5	1950	56.8	40.3	0.71	74.7	5.24	10.8	456.5	141.9	25.5	7.3
	11.5	4.0	9.3	112.9	1750	56.1	38.3	0.68	72.2	4.72	11.9	417.8	135.3	21.0	8.3
				113.3	1950	57.1	40.5	0.71	74.0	4.94	11.6	419.2	141.2	21.1	7.8
	15.0	6.3	14.5	109.9	1750	56.1	38.4	0.68	71.8	4.61	12.2	402.2	135.3	18.9	8.5
				110.1	1950	57.1	40.6	0.71	73.5	4.82	11.8	403.6	141.1	19.1	8.0
110	7.5	1.9	4.5	129.5	1750	52.3	36.5	0.70	71.1	5.52	9.5	509.3	138.5	25.0	8.2
				130.0	1950	53.2	38.6	0.73	72.9	5.76	9.2	511.0	144.4	25.2	7.8
	11.5	3.9	9.0	122.6	1750	52.5	36.7	0.70	70.2	5.20	10.1	467.7	137.7	19.6	8.7
				122.9	1950	53.5	38.8	0.73	72.1	5.44	9.8	469.2	143.7	19.8	8.3
	15.0	6.1	14.1	119.6	1750	52.6	36.8	0.70	69.9	5.08	10.4	450.3	137.7	17.4	8.9
				119.8	1950	53.5	38.9	0.73	71.6	5.31	10.1	451.8	143.6	17.6	8.5

Model 060, 5 Ton, Full Load Hydronic Heating Performance Data

Source Water					Load Water					Heating							
EWT	Flow	WPD		LWT	ELT	Flow	WPD		LLT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSID	FT	°F	°F	GPM	PSID	FT	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	15.0	10.3	23.8	21.1	85	15.0	4.8	11.1	90.3	40	28.1	3.50	3.35	335.4	59.8	11.5	12.7
				21.6	95		4.7	10.9	100.1	38.4	24.9	3.96	2.84	381.5	60.5	13.1	12.5
				22.0	110		4.4	10.2	115.1	37.9	21.7	4.75	2.34	454.9	61.8	17.5	12.1
30	7.5	3.3	7.6	22.3	85	15.0	4.8	11.1	90.5	40.9	28.1	3.74	3.20	362.1	69.2	13.0	7.7
				23.2	95		4.7	10.9	100.2	39.3	24.9	4.23	2.72	412.0	70.1	14.1	7.4
				24.1	110		4.4	10.2	115.2	38.8	21.5	5.07	2.24	491.2	71.6	19.1	7.0
	11.5	6.9	15.9	24.6	85		4.8	11.1	90.7	42.6	30.3	3.60	3.47	349.4	72.9	12.1	7.3
				25.2	95		4.7	10.9	100.4	40.8	26.9	4.07	2.94	397.5	73.9	13.4	7.1
				25.8	110		4.4	10.2	115.4	40.4	23.7	4.88	2.43	473.9	75.4	18.1	6.7
	15.0	10.1	23.2	25.6	85		4.8	11.1	90.9	44.1	32.0	3.55	3.64	342.8	75.2	12.2	6.7
				26.1	95		4.7	10.9	100.6	42.3	28.6	4.02	3.08	390.0	76.2	13.6	6.5
				26.5	110		4.4	10.2	115.6	41.8	25.4	4.82	2.54	465.0	77.8	18.2	6.1
40	7.5	3.0	7.0	30.6	85	15.0	4.8	11.1	91.3	47.2	34.2	3.81	3.63	370.1	84.1	9.1	6.6
				31.6	95		4.7	10.9	101.0	45.3	30.6	4.30	3.09	421.0	85.2	9.7	6.5
				32.5	110		4.4	10.2	116.0	44.8	27.2	5.16	2.54	502.0	87.1	14.6	6.2
	11.5	6.3	14.6	33.4	85		4.8	11.1	91.5	49.1	36.6	3.67	3.92	357.0	88.7	8.3	6.9
				34.1	95		4.7	10.9	101.3	47.1	33.0	4.14	3.33	406.2	89.8	9.1	6.8
				34.7	110		4.4	10.2	116.2	46.6	29.6	4.97	2.75	484.3	91.8	13.6	6.6
	15.0	9.3	21.3	34.7	85		4.8	11.1	91.8	50.9	38.5	3.62	4.12	350.3	91.5	8.4	6.5
				35.2	95		4.7	10.9	101.5	48.8	34.9	4.08	3.51	398.5	92.7	9.4	6.4
				35.7	110		4.4	10.2	116.4	48.3	31.6	4.90	2.89	475.1	94.7	13.7	6.2
50	7.5	2.8	6.4	39.0	85	15.0	4.8	11.1	92.1	53.3	40.1	3.87	4.04	377.8	98.5	5.6	7.2
				40.0	95		4.7	10.9	101.8	51.2	36.3	4.37	3.43	429.8	99.8	5.8	7.1
				41.0	110		4.4	10.2	116.7	50.6	32.7	5.25	2.82	512.5	102.0	10.8	7.0
	11.5	5.8	13.4	42.3	85		4.8	11.1	92.4	55.5	42.8	3.73	4.36	364.5	103.9	4.9	8.1
				43.0	95		4.7	10.9	102.1	53.2	38.8	4.21	3.70	414.7	105.2	5.3	8.1
				43.7	110		4.4	10.2	117.0	52.6	35.4	5.05	3.05	494.4	107.5	9.7	8.1
	15.0	8.5	19.6	43.8	85		4.8	11.1	92.7	57.5	44.9	3.68	4.58	357.6	107.2	5.1	7.9
				44.4	95		4.7	10.9	102.3	55.1	40.9	4.15	3.89	406.8	108.6	5.7	7.9
				44.8	110		4.4	10.2	117.3	54.5	37.5	4.98	3.21	485.1	110.9	9.9	7.9
60	7.5	2.6	6.0	47.4	85	15.0	4.8	11.1	92.9	59.5	46.0	3.95	4.41	388.0	116.9	4.9	6.9
				48.5	95		4.7	10.9	102.6	57.1	41.9	4.46	3.75	441.3	118.4	5.0	7.0
				49.5	110		4.4	10.2	117.5	56.4	38.1	5.36	3.08	526.2	120.9	10.3	7.0
	11.5	5.4	12.5	51.2	85		4.8	11.1	93.3	61.9	48.9	3.80	4.77	374.3	123.2	4.3	8.4
				52.0	95		4.7	10.9	102.9	59.3	44.6	4.30	4.04	425.8	124.8	4.5	8.5
				52.6	110		4.4	10.2	117.8	58.7	41.1	5.16	3.33	507.7	127.5	9.2	8.7
	15.0	7.9	18.3	52.9	85		4.8	11.1	93.5	64.1	51.3	3.75	5.01	367.2	127.1	4.5	8.5
				53.5	95		4.7	10.9	103.2	61.5	47.0	4.24	4.25	417.7	128.8	4.9	8.6
				54.0	110		4.4	10.2	118.1	60.8	43.4	5.09	3.50	498.1	131.5	9.3	8.8
70	7.5	2.5	5.7	55.9	85	15.0	4.8	11.1	93.7	65.1	51.3	4.03	4.73	397.6	133.8	5.4	8.3
				57.1	95		4.7	10.9	103.3	62.5	47.0	4.55	4.03	452.3	135.6	5.5	8.4
				58.1	110		4.4	10.2	118.2	61.8	43.2	5.46	3.32	539.3	138.5	11.3	8.7
	11.5	5.1	11.8	60.2	85		4.8	11.1	94.0	67.7	54.5	3.88	5.11	383.6	141.1	4.8	10.4
				61.0	95		4.7	10.9	103.7	65	50.1	4.38	4.35	436.4	142.9	5.0	10.6
				61.7	110		4.4	10.2	118.6	64.2	46.3	5.26	3.58	520.3	146.0	10.1	11.0
	15.0	7.5	17.3	62.2	85		4.8	11.1	94.4	70.2	57.1	3.83	5.37	376.3	145.5	5.1	10.7
				62.8	95		4.7	10.9	104.0	67.3	52.6	4.32	4.57	428.1	147.5	5.3	10.9
				63.3	110		4.4	10.2	118.9	66.5	48.8	5.19	3.76	510.5	150.6	10.2	11.3
80	7.5	2.3	5.3	64.7	85	15.0	4.8	11.1	94.3	69.8	55.8	4.09	5.00	403.9	144.6	5.2	12.7
				66.0	95		4.7	10.9	103.9	66.9	51.1	4.62	4.24	459.5	146.5	5.3	12.9
				67.0	110		4.4	10.2	118.8	66.2	47.3	5.54	3.50	547.8	149.6	11.3	13.3
	11.5	4.8	11.2	69.4	85		4.8	11.1	94.7	72.6	59.2	3.94	5.40	389.7	152.4	4.6	15.5
				70.2	95		4.7	10.9	104.3	69.6	54.4	4.45	4.58	443.3	154.4	4.7	15.8
				70.9	110		4.4	10.2	119.2	68.8	50.6	5.34	3.78	528.5	157.7	10.1	16.3
	15.0	7.1	16.3	71.5	85		4.8	11.1	95.0	75.2	62.0	3.88	5.68	382.3	157.2	4.9	16.0
				72.2	95		4.7	10.9	104.6	72.1	57.1	4.39	4.81	434.9	159.3	5.1	16.4
				72.7	110		4.4	10.2	119.5	71.3	53.4	5.26	3.97	518.5	162.7	10.1	16.9
90	7.5	2.2	5.1	73.5	85	15.0	4.8	11.1	94.9	74.3	60.1	4.15	5.25	410.0	154.8	5.4	17.5
				74.8	95		4.7	10.9	104.5	71.2	55.2	4.69	4.45	466.4	156.8	5.6	17.9
				75.9	110		4.4	10.2	119.4	70.4	51.2	5.62	3.67	556.1	160.2	11.8	18.4
	11.5	4.6	10.5	78.6	85		4.8	11.1	95.3	77.2	63.6	3.99	5.67	395.5	163.1	4.9	20.9
				79.5	95		4.7	10.9	104.9	74.1	58.7	4.51	4.82	450.0	165.3	5.0	21.4
				80.2	110		4.4	10.2	119.8	73.2	54.7	5.41	3.97	536.5	168.8	10.6	22.1
	15.0	6.7	15.4	80.8	85		4.8	11.1	95.7	80	66.6	3.94	5.95	388.0	168.3	5.2	21.7
				81.5	95		4.7	10.9	105.2	76.7	61.5	4.45	5.05	441.4	170.6	5.4	22.2
				82.1	110		4.4	10.2	120.1	75.9	57.7	5.34	4.17	526.3	174.2	10.7	22.9

ENGINEERING SPECIFICATIONS:

Model 072, 6 Ton, Part Load Heating Performance Data

					Heating									
EWT	Flow	WPD		LWT	Aiflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	12.0	5.0	11.5	20.5	1650	92.1	39.4	26.3	3.82	3.02	322.0	79.5	21.3	4.4
				20.4	1850	89.7	39.4	26.6	3.73	3.09	314.0	79.2	20.2	4.5
30	6.0	1.5	3.4	21.0	1650	92.1	39.3	26.1	3.87	2.98	327.0	79.2	23.2	2.9
				21.0	1850	89.6	39.2	26.3	3.79	3.03	320.0	78.9	22.4	3.2
	9.0	3.0	6.8	23.6	1650	93.1	41.2	27.9	3.89	3.10	332.0	84.0	23.2	1.8
				23.5	1850	90.7	41.3	28.3	3.81	3.18	324.0	83.7	22.3	2.0
	12.0	4.9	11.3	25.0	1650	93.6	42.1	28.8	3.88	3.18	333.0	86.7	22.4	1.4
				25.0	1850	91.0	42.0	29.1	3.79	3.25	324.0	86.5	21.2	1.6
40	6.0	1.4	3.2	29.4	1650	94.7	44.0	30.7	3.91	3.31	339.0	91.6	22.4	1.8
				29.4	1850	92.0	44.0	31.0	3.81	3.38	329.0	91.2	21.3	2.0
	9.0	2.8	6.5	32.4	1650	96.0	46.3	33.1	3.87	3.51	339.0	97.6	19.4	1.4
				32.3	1850	93.2	46.3	33.4	3.77	3.60	329.0	97.3	18.5	1.6
	12.0	4.6	10.7	34.1	1650	96.6	47.5	34.3	3.87	3.60	341.0	101.2	18.3	1.3
				34.0	1850	93.8	47.6	34.7	3.76	3.70	330.0	100.8	17.2	1.5
50	6.0	1.3	3.1	37.7	1650	97.5	49.1	35.7	3.92	3.67	348.0	105.0	19.4	1.7
				37.6	1850	94.6	49.2	36.2	3.80	3.79	336.0	104.5	18.2	1.8
	9.0	2.7	6.2	41.2	1650	99.0	51.6	38.3	3.90	3.88	351.0	112.7	16.4	2.0
				41.1	1850	95.9	51.7	38.8	3.78	4.01	339.0	112.1	15.4	2.3
	12.0	4.4	10.2	43.2	1650	99.8	53.1	39.8	3.89	4.00	352.0	117.2	14.3	2.4
				43.1	1850	96.7	53.3	40.4	3.79	4.13	342.0	116.6	14.3	2.6
60	6.0	1.3	3.0	45.9	1650	100.7	54.6	41.0	3.99	4.01	364.0	120.0	18.4	1.3
				45.7	1850	97.5	54.9	41.6	3.88	4.14	353.0	119.3	18.4	1.4
	9.0	2.6	6.0	49.9	1650	102.4	57.7	44.1	3.99	4.24	369.0	129.5	15.4	2.3
				49.8	1850	99.0	57.9	44.7	3.85	4.40	355.0	128.9	14.3	2.5
	12.0	4.3	9.8	52.1	1650	103.3	59.4	45.8	3.98	4.37	372.0	135.1	13.5	3.0
				52.0	1850	99.9	59.7	46.6	3.86	4.53	359.0	134.4	13.3	3.1
70	6.0	1.2	2.9	54.0	1650	104.1	60.7	46.6	4.13	4.31	386.0	136.2	19.4	1.5
				53.8	1850	100.4	60.8	47.3	3.97	4.49	371.0	135.3	18.4	1.7
	9.0	2.5	5.8	58.5	1650	106.0	64.1	50.1	4.11	4.57	391.0	147.8	15.5	3.1
				58.3	1850	102.3	64.5	51.0	3.97	4.76	377.0	146.7	15.5	3.4
	12.0	4.1	9.5	61.1	1650	107.1	66.1	52.1	4.11	4.72	394.0	154.3	13.4	4.3
				60.9	1850	103.3	66.5	53.0	3.96	4.92	380.0	153.4	13.5	4.4
80	6.0	1.2	2.8	62.0	1650	107.5	66.8	52.4	4.22	4.64	405.0	153.4	18.5	3.3
				61.7	1850	103.6	67.0	53.1	4.07	4.82	390.0	152.1	18.5	3.5
	9.0	2.4	5.6	67.0	1650	109.8	71.0	56.5	4.23	4.91	413.0	166.7	15.4	5.7
				66.9	1850	105.6	71.2	57.3	4.05	5.15	395.0	165.6	14.5	5.9
	12.0	4.0	9.2	69.9	1650	111.1	73.3	58.8	4.23	5.07	417.0	174.4	13.4	7.0
				69.8	1850	106.7	73.4	59.5	4.05	5.31	399.0	173.3	12.4	7.2
90	6.0	1.2	2.7	70.0	1650	111.1	73.2	58.3	4.38	4.90	429.0	171.3	19.4	5.3
				69.7	1850	106.7	73.3	59.1	4.18	5.14	409.0	169.8	18.4	5.7
	9.0	2.4	5.5	75.6	1650	113.5	77.6	62.7	4.37	5.21	436.0	186.4	15.5	8.3
				75.4	1850	108.9	77.8	63.6	4.16	5.48	415.0	184.9	14.4	8.6
	12.0	3.9	9.1	78.8	1650	114.8	79.9	65.0	4.36	5.36	441.0	195.2	13.5	10.0
				78.6	1850	110.2	80.3	66.1	4.15	5.67	420.0	193.8	12.5	10.2

Model 072, 6 Ton, Full Load Heating Performance Data

				Heating									
EWT	Flow	WPD		LWT	Aiflow	LAT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	18.0	10.3	23.7	20.9	2000	94.4	52.6	36.2	4.80	3.21	301.6	66.5	23.7	4.2
				20.7	2100	93.6	53.6	37.3	4.79	3.28	298.6	66.1	23.0	4.5
30	9.0	3.3	7.6	21.2	2000	95.6	55.2	38.4	4.91	3.29	310.9	70.1	28.3	2.6
				21.0	2100	94.8	56.2	39.5	4.90	3.36	307.8	69.7	27.7	2.9
	13.5	6.6	15.2	23.9	2000	96.4	57.0	40.2	4.93	3.39	315.7	75.1	25.8	1.5
				23.7	2100	95.6	58.1	41.3	4.92	3.46	312.5	74.7	25.1	1.8
	18.0	10.0	23.1	25.3	2000	96.9	58.0	41.1	4.96	3.43	318.1	77.2	24.5	1.3
				25.2	2100	96.1	59.1	42.2	4.94	3.51	315.0	76.8	23.9	1.5
40	9.0	3.1	7.1	29.7	2000	98.8	62.3	45.1	5.05	3.62	326.1	84.8	24.5	1.9
				29.4	2100	98.0	63.4	46.2	5.04	3.69	322.9	84.3	23.9	2.1
	13.5	6.1	14.2	32.8	2000	99.8	64.4	47.1	5.07	3.72	331.1	90.9	21.6	1.6
				32.6	2100	98.9	65.6	48.3	5.06	3.80	327.8	90.4	21.0	1.7
	18.0	9.3	21.6	34.5	2000	100.4	65.6	48.2	5.10	3.77	333.7	93.4	20.1	1.7
				34.3	2100	99.4	66.7	49.4	5.08	3.85	330.4	92.9	19.5	1.9
50	9.0	2.9	6.6	38.2	2000	102.2	69.5	51.7	5.21	3.91	342.7	99.9	21.1	2.1
				37.8	2100	101.2	70.8	53.1	5.20	3.99	339.2	99.4	20.5	2.4
	13.5	5.7	13.2	41.8	2000	103.3	71.9	54.0	5.24	4.02	347.9	107.1	17.8	2.7
				41.5	2100	102.3	73.2	55.4	5.22	4.11	344.4	106.5	17.2	2.9
	18.0	8.7	20.1	43.7	2000	103.9	73.2	55.3	5.26	4.08	350.6	110.0	16.2	3.2
				43.5	2100	102.8	74.5	56.6	5.25	4.16	347.1	109.5	15.6	3.4
60	9.0	2.7	6.3	46.4	2000	106.2	78.2	59.5	5.48	4.18	368.4	117.5	20.6	2.0
				46.0	2100	105.1	79.6	61.0	5.46	4.27	364.7	117.0	20.0	2.1
	13.5	5.4	12.5	50.5	2000	107.4	80.8	62.0	5.50	4.31	374.0	126.0	17.0	3.2
				50.3	2100	106.3	82.3	63.6	5.49	4.39	370.2	125.4	16.4	3.4
	18.0	8.3	19.1	52.7	2000	108.1	82.3	63.4	5.53	4.36	376.9	129.5	15.2	4.1
				52.6	2100	106.9	83.7	64.9	5.51	4.45	373.2	128.8	14.7	4.4
70	9.0	2.6	6.0	54.6	2000	110.3	87.1	67.3	5.79	4.41	397.5	136.3	21.1	2.4
				54.2	2100	109.1	88.6	68.9	5.78	4.49	393.6	135.6	20.6	2.7
	13.5	5.2	12.0	59.3	2000	111.7	90.0	70.1	5.82	4.53	403.6	146.1	17.3	4.4
				59.0	2100	110.4	91.6	71.8	5.80	4.63	399.6	145.3	16.7	4.7
	18.0	7.9	18.3	61.8	2000	112.4	91.6	71.7	5.84	4.60	406.7	150.1	15.4	5.7
				61.6	2100	111.1	93.3	73.4	5.83	4.69	402.7	149.3	14.8	5.9
80	9.0	2.5	5.8	63.0	2000	114.0	95.0	74.2	6.09	4.57	423.4	154.1	20.9	4.5
				62.6	2100	112.6	96.7	76.0	6.08	4.66	419.2	153.4	20.3	4.8
	13.5	5.0	11.5	68.2	2000	115.5	98.3	77.4	6.12	4.71	429.9	165.2	16.9	7.3
				67.9	2100	114.1	100.0	79.2	6.10	4.80	425.6	164.4	16.3	7.6
	18.0	7.6	17.6	71.0	2000	116.3	100.0	79.0	6.15	4.77	433.2	169.8	14.9	9.0
				70.7	2100	114.9	101.8	80.9	6.13	4.87	428.9	168.9	14.3	9.2
90	9.0	2.4	5.6	71.4	2000	117.7	103.1	81.2	6.41	4.71	450.7	172.4	21.2	7.0
				70.9	2100	116.3	105.0	83.2	6.40	4.81	446.2	171.6	20.6	7.3
	13.5	4.8	11.2	77.1	2000	119.4	106.6	84.6	6.44	4.85	457.6	184.8	17.0	10.5
				76.8	2100	117.9	108.6	86.7	6.43	4.95	453.0	183.9	16.4	10.8
	18.0	7.4	17.0	80.1	2000	120.2	108.5	86.4	6.47	4.91	461.2	189.9	15.0	12.5
				79.9	2100	118.7	110.5	88.5	6.46	5.01	456.6	189.0	14.3	12.8

ENGINEERING SPECIFICATIONS:

Model 072, 6 Ton, Part Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	6.0	1.3	2.9	73.6	1600	58.8	37.7	0.64	68.7	2.91	20.2	230.0	136.0	22.3	4.3
				74.0	1750	59.7	39.2	0.66	69.7	2.92	20.5	232.0	137.9	22.3	5.8
	9.0	2.6	6.1	65.9	1600	60.4	38.3	0.64	69.4	2.64	22.9	196.0	134.2	18.1	4.6
				66.1	1750	61.4	39.8	0.65	70.4	2.64	23.3	198.0	136.2	18.2	6.0
	12.0	4.4	10.1	62.0	1600	61.3	38.8	0.63	69.9	2.51	24.4	181.0	132.9	17.1	6.2
				62.2	1750	62.3	40.3	0.65	70.9	2.51	24.8	182.0	134.7	17.1	7.7
60	6.0	1.2	2.8	83.2	1600	56.5	36.8	0.65	67.5	3.24	17.4	268.0	138.6	23.3	3.7
				83.5	1750	57.4	38.3	0.67	68.5	3.25	17.7	270.0	140.4	23.4	5.2
	9.0	2.5	5.9	75.6	1600	58.0	37.4	0.64	68.0	2.93	19.8	232.0	136.8	19.2	4.0
				75.8	1750	59.0	39.0	0.66	69.0	2.93	20.1	234.0	138.7	19.3	5.4
	12.0	4.2	9.7	71.8	1600	58.9	37.7	0.64	68.4	2.79	21.1	215.0	135.7	17.3	5.5
				71.9	1750	59.9	39.3	0.66	69.4	2.79	21.5	216.0	137.5	17.2	7.1
70	6.0	1.2	2.8	92.8	1600	54.1	35.9	0.66	66.4	3.61	15.0	310.0	141.2	24.3	3.1
				93.1	1750	54.9	37.5	0.68	67.3	3.62	15.2	312.0	142.9	24.4	4.7
	9.0	2.5	5.7	85.3	1600	55.5	36.3	0.65	66.7	3.26	17.0	271.0	139.7	19.3	3.5
				85.5	1750	56.4	37.9	0.67	67.6	3.26	17.3	272.0	141.4	19.2	4.9
	12.0	4.1	9.5	81.5	1600	56.5	36.7	0.65	67.1	3.11	18.1	254.0	138.5	18.4	4.9
				81.7	1750	57.4	38.3	0.67	68.0	3.11	18.4	255.0	140.1	18.3	6.6
80	6.0	1.2	2.8	102.4	1600	51.5	34.9	0.68	65.2	4.03	12.8	356.0	144.2	24.6	2.6
				102.7	1750	52.2	36.5	0.70	66.0	4.04	12.9	357.0	145.7	24.5	4.2
	9.0	2.4	5.6	95.0	1600	52.9	35.5	0.67	65.4	3.65	14.5	315.0	142.5	20.3	2.9
				95.2	1750	53.8	37.0	0.69	66.3	3.66	14.7	317.0	144.0	20.5	4.5
	12.0	4.1	9.3	91.3	1600	53.8	35.7	0.66	65.6	3.48	15.5	296.0	141.4	18.4	4.5
				91.4	1750	54.7	37.2	0.68	66.5	3.48	15.7	297.0	143.1	18.4	6.1
90	6.0	1.2	2.8	112.0	1600	48.8	33.9	0.70	64.1	4.49	10.8	405.0	147.0	24.5	2.5
				112.3	1750	49.6	35.2	0.71	64.9	4.51	11.0	407.0	148.8	24.5	3.9
	9.0	2.4	5.6	104.7	1600	50.2	34.4	0.69	64.1	4.09	12.3	363.0	145.4	20.5	2.6
				104.9	1750	51.0	36.0	0.71	64.9	4.09	12.5	364.0	146.9	20.4	4.2
	12.0	4.0	9.3	101.0	1600	51.0	34.7	0.68	64.3	3.90	13.1	342.0	144.3	18.4	4.3
				101.2	1750	51.9	36.4	0.70	65.3	3.92	13.2	345.0	145.7	19.4	5.6
100	6.0	1.2	2.8	121.6	1600	45.9	32.9	0.72	62.9	4.98	9.2	455.0	150.0	23.6	2.5
				121.9	1750	46.7	34.4	0.74	63.7	4.99	9.4	456.0	151.5	23.4	4.0
	9.0	2.5	5.7	114.4	1600	47.2	33.3	0.71	62.8	4.56	10.4	412.0	148.5	19.5	2.7
				114.6	1750	48.1	34.9	0.73	63.7	4.59	10.5	416.0	149.9	20.6	4.3
	12.0	4.1	9.4	110.8	1600	48.1	33.6	0.70	63.0	4.37	11.0	393.0	147.4	18.5	4.3
				111.0	1750	48.9	35.1	0.72	63.8	4.38	11.2	394.0	148.8	18.4	6.0
110	6.0	1.2	2.9	131.4	1600	43.3	31.6	0.73	62.2	5.54	7.8	511.0	153.2	23.5	2.4
				131.7	1750	44.0	33.2	0.75	63.1	5.58	7.9	515.0	154.4	24.4	3.9
	9.0	2.5	5.8	124.1	1600	44.4	32.3	0.73	61.7	5.08	8.7	466.0	151.5	19.5	2.9
				124.3	1750	45.1	33.8	0.75	62.5	5.08	8.9	467.0	152.9	19.5	4.4
	12.0	4.1	9.5	120.6	1600	45.1	32.5	0.72	61.7	4.88	9.2	445.0	150.6	17.5	4.5
				120.8	1750	45.9	34.1	0.74	62.6	4.91	9.4	449.0	151.8	18.5	6.4

Model 072, 6 Ton, Full Load Cooling Performance Data

					Cooling										
EWT	Flow	WPD		LWT	Aiflow	TC	SC		HR		EER	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSI	FT	°F	CFM	MBtuh	MBtuh	S/T	MBtuh	kW	Btuh/W	PSIG	PSIG	°F	°F
50	9.0	3.0	6.9	71.0	1900	78.3	47.1	0.60	91.5	3.87	20.2	234.0	124.6	25.0	4.9
				71.1	2150	78.3	48.2	0.62	92.3	4.11	19.1	235.7	127.8	25.3	6.6
	13.5	5.8	13.4	63.9	1900	78.9	47.5	0.60	91.3	3.64	21.7	215.0	124.4	20.4	5.2
				64.1	2150	78.9	48.7	0.62	92.1	3.87	20.4	216.6	127.6	20.7	6.9
	18.0	8.6	19.8	60.5	1900	79.3	48.4	0.61	91.5	3.57	22.2	208.9	124.3	18.9	6.9
				60.6	2150	79.3	49.6	0.63	92.3	3.80	20.9	210.4	127.5	19.2	8.7
60	9.0	2.9	6.6	80.8	1900	76.3	46.3	0.61	90.6	4.18	18.3	269.9	127.8	26.1	4.2
				80.9	2150	76.3	47.5	0.62	91.4	4.44	17.2	271.8	131.1	26.4	5.8
	13.5	5.6	12.9	73.8	1900	76.9	46.7	0.61	90.3	3.94	19.5	248.0	127.6	21.2	4.4
				73.9	2150	76.9	47.9	0.62	91.2	4.18	18.4	249.7	130.9	21.6	6.2
	18.0	8.3	19.2	70.4	1900	77.3	47.6	0.62	90.5	3.86	20.0	240.9	127.4	19.6	6.2
				70.5	2150	77.3	48.8	0.63	91.3	4.10	18.9	242.6	130.8	19.9	8.0
70	9.0	2.8	6.4	90.5	1900	74.1	45.4	0.61	89.5	4.52	16.4	307.7	130.8	26.7	3.5
				90.7	2150	74.1	46.5	0.63	90.5	4.81	15.4	309.9	134.2	27.0	5.2
	13.5	5.4	12.5	83.6	1900	74.6	45.8	0.61	89.1	4.26	17.5	282.7	130.6	21.9	3.9
				83.8	2150	74.6	47.0	0.63	90.1	4.53	16.5	284.7	134.0	22.2	5.6
	18.0	8.1	18.6	80.2	1900	75.0	46.7	0.62	89.3	4.18	17.9	274.7	130.5	20.1	5.5
				80.3	2150	75.0	47.9	0.64	90.1	4.44	16.9	276.6	133.9	20.5	7.3
80	9.0	2.7	6.2	100.2	1900	71.2	44.4	0.62	88.0	4.92	14.5	349.0	133.7	27.0	2.9
				100.4	2150	71.2	45.5	0.64	89.0	5.23	13.6	351.4	137.2	27.2	4.6
	13.5	5.2	12.1	93.4	1900	71.8	44.8	0.62	87.6	4.63	15.5	320.6	133.5	22.3	3.3
				93.5	2150	71.8	45.9	0.64	88.6	4.93	14.6	322.9	136.9	22.6	5.0
	18.0	7.8	17.9	90.0	1900	72.1	45.6	0.63	87.6	4.55	15.8	311.5	133.4	20.6	5.0
				90.1	2150	72.1	46.8	0.65	88.6	4.83	14.9	313.7	136.8	20.9	6.8
90	9.0	2.6	6.0	109.7	1900	67.7	42.9	0.63	86.1	5.40	12.5	395.2	136.3	26.8	2.5
				110.0	2150	67.7	44.0	0.65	87.3	5.75	11.8	398.0	139.8	26.9	4.2
	13.5	5.1	11.7	103.1	1900	68.2	43.4	0.64	85.6	5.09	13.4	363.1	136.0	22.4	2.8
				103.2	2150	68.2	44.4	0.65	86.7	5.41	12.6	365.7	139.6	22.7	4.6
	18.0	7.5	17.3	99.8	1900	68.5	44.2	0.65	85.5	4.99	13.7	352.8	135.9	20.9	4.7
				99.9	2150	68.5	45.3	0.66	86.6	5.31	12.9	355.3	139.5	21.2	6.4
100	9.0	2.5	5.9	119.2	1900	63.6	41.0	0.64	84.0	5.97	10.7	446.5	138.4	26.3	2.4
				119.5	2150	63.6	42.0	0.66	85.3	6.35	10.0	449.7	142.0	26.5	4.2
	13.5	4.9	11.4	112.7	1900	64.1	41.4	0.65	83.3	5.62	11.4	410.2	138.2	22.1	2.8
				112.9	2150	64.1	42.4	0.66	84.5	5.98	10.7	413.1	141.8	22.2	4.6
	18.0	7.3	16.9	109.5	1900	64.4	42.2	0.66	83.2	5.52	11.7	398.5	138.1	20.6	4.5
				109.7	2150	64.4	43.3	0.67	84.4	5.87	11.0	401.3	141.7	20.9	6.5
110	9.0	2.5	5.7	128.7	1900	59.3	38.9	0.66	81.8	6.58	9.0	499.7	140.4	26.3	2.5
				129.1	2150	59.3	39.9	0.67	83.2	6.99	8.5	503.3	144.1	26.6	4.2
	13.5	4.8	11.2	122.3	1900	59.7	39.3	0.66	80.8	6.19	9.6	459.2	140.2	21.4	2.9
				122.6	2150	59.7	40.3	0.68	82.2	6.58	9.1	462.4	143.9	21.6	4.6
	18.0	7.2	16.6	119.2	1900	60.0	40.1	0.67	80.7	6.07	9.9	446.1	140.1	19.8	4.7
				119.4	2150	60.0	41.1	0.69	82.0	6.46	9.3	449.2	143.7	20.0	6.6

ENGINEERING SPECIFICATIONS:

Model 072, 6 Ton, Full Load Hydronic Heating Performance Data

Source Water					Load Water					Heating							
EWT	Flow	WPD		LWT	ELT	Flow	WPD		LLT	HC	HE		COP	Discharge	Suction	Subcooling	Superheat
°F	GPM	PSID	FT	°F	°F	GPM	PSID	FT	°F	MBtuh	MBtuh	kW	W/W	PSIG	PSIG	°F	°F
25	18.0	10.0	23.1	21.0	85	18.0	5.7	13.3	90.5	49.5	35.0	4.25	3.41	334.5	66.2	15.9	3.3
				21.4	95		5.5	12.8	100.3	48	31.8	4.76	2.96	379.0	67.5	17.9	2.6
				21.7	110		5.5	12.6	115.4	48.9	29.1	5.79	2.48	457.3	68.9	21.9	1.6
30	9.0	3.0	6.8	21.8	85	18.0	5.6	13.0	90.7	51.3	36.0	4.47	3.36	361.0	71.4	20.2	5.9
				22.5	95		5.4	12.5	100.5	49.7	32.6	5.02	2.90	409.0	72.7	22.0	5.1
				23.2	110		5.3	12.3	115.6	50.6	29.8	6.10	2.43	493.4	74.3	26.8	4.2
	13.5	5.9	13.6	24.2	85		5.6	13.0	90.8	52.5	37.9	4.29	3.59	347.4	75.6	15.1	4.8
				24.7	95		5.4	12.5	100.7	50.9	34.5	4.81	3.10	393.7	77.0	16.8	4.1
				25.1	110		5.3	12.3	115.8	51.8	31.8	5.85	2.60	474.9	78.7	20.8	3.1
	18.0	9.9	22.8	25.5	85		5.6	13.0	91.0	54.1	39.6	4.25	3.73	340.2	77.5	14.0	5.2
				25.9	95		5.4	12.5	100.8	52.4	36.2	4.76	3.23	385.5	79.0	15.8	4.4
				26.2	110		5.3	12.3	115.9	53.3	33.5	5.79	2.70	465.0	80.7	19.6	3.4
40	9.0	2.8	6.4	30.2	85	18.0	5.8	13.3	91.5	58.2	42.7	4.55	3.75	368.0	86.0	16.2	5.4
				31.1	95		5.6	12.8	101.3	56.3	38.9	5.10	3.24	416.9	87.6	17.5	4.7
				31.7	110		5.5	12.6	116.4	57.4	36.2	6.20	2.71	503.0	89.5	22.1	3.7
	13.5	5.5	12.7	33.2	85		5.8	13.3	91.6	59.6	44.7	4.36	4.01	354.2	91.1	10.9	4.9
				33.7	95		5.6	12.8	101.4	57.7	41.0	4.89	3.46	401.3	92.8	12.2	4.2
				34.1	110		5.5	12.6	116.5	58.8	38.5	5.95	2.90	484.1	94.8	15.8	3.1
	18.0	9.2	21.3	34.7	85		5.8	13.3	91.8	61.3	46.6	4.32	4.16	346.8	93.5	9.9	5.8
				35.1	95		5.6	12.8	101.6	59.4	42.9	4.84	3.60	392.9	95.2	11.2	5.1
				35.4	110		5.5	12.6	116.7	60.5	40.4	5.89	3.01	474.0	97.2	14.6	4.0
50	9.0	2.6	6.0	38.8	85	18.0	5.9	13.6	92.2	64.9	49.1	4.62	4.12	374.9	100.3	12.6	5.8
				39.7	95		5.7	13.1	102.0	62.8	45.1	5.18	3.55	424.8	102.1	13.6	5.1
				40.3	110		5.6	12.9	117.1	64	42.5	6.31	2.97	512.4	104.3	18.1	4.1
	13.5	5.1	11.9	42.2	85		5.9	13.6	92.4	66.4	51.3	4.43	4.39	360.8	106.2	7.3	5.7
				42.8	95		5.7	13.1	102.2	64.4	47.4	4.97	3.80	408.8	108.2	8.1	5.0
				43.1	110		5.6	12.9	117.3	65.5	44.9	6.04	3.18	493.2	110.5	11.6	4.0
	18.0	8.6	19.9	43.9	85		5.9	13.6	92.6	68.4	53.4	4.39	4.57	353.3	108.9	6.2	7.1
				44.3	95		5.7	13.1	102.4	66.3	49.5	4.92	3.95	400.3	110.9	7.1	6.4
				44.6	110		5.6	12.9	117.5	67.5	47.1	5.99	3.30	483.0	113.3	10.3	5.3
60	9.0	2.5	5.7	47.2	85	18.0	5.8	13.5	93.0	71.9	56.0	4.67	4.51	383.7	115.9	10.2	8.1
				48.1	95		5.6	13.0	102.7	69.7	51.9	5.23	3.91	434.7	118.1	11.0	7.4
				48.7	110		5.5	12.8	117.9	70.9	49.2	6.37	3.26	524.5	120.6	15.6	6.3
	13.5	4.9	11.4	51.1	85		5.8	13.5	93.2	73.6	58.3	4.47	4.83	369.3	122.8	4.8	8.5
				51.7	95		5.6	13.0	102.9	71.3	54.2	5.02	4.16	418.4	125.1	5.3	7.9
				52.1	110		5.5	12.8	118.1	72.7	51.9	6.11	3.49	504.8	127.7	8.7	6.8
	18.0	8.3	19.1	53.0	85		5.8	13.5	93.4	75.8	60.7	4.43	5.01	361.6	125.9	3.8	10.5
				53.5	95		5.6	13.0	103.2	73.4	56.4	4.97	4.33	409.7	128.3	4.3	9.8
				53.8	110		5.5	12.8	118.3	74.8	54.2	6.05	3.62	494.3	131.0	7.4	8.7
70	9.0	2.4	5.6	55.7	85	18.0	5.7	13.2	93.7	78.6	62.5	4.72	4.88	392.4	130.5	9.1	9.9
				56.7	95		5.5	12.7	103.5	76.1	58.0	5.29	4.22	444.6	133.0	9.7	9.3
				57.3	110		5.4	12.5	118.6	77.5	55.6	6.43	3.53	536.4	135.8	14.6	8.2
	13.5	4.8	11.0	60.1	85		5.7	13.2	93.9	80.4	65.0	4.52	5.21	377.7	138.2	3.6	10.9
				60.7	95		5.5	12.7	103.7	77.9	60.6	5.07	4.50	428.0	140.8	3.9	10.3
				61.1	110		5.4	12.5	118.8	79.4	58.3	6.17	3.77	516.3	143.8	7.6	9.1
	18.0	8.0	18.6	62.3	85		5.7	13.2	94.2	82.8	67.5	4.48	5.42	369.9	141.8	2.6	13.3
				62.8	95		5.5	12.7	103.9	80.2	63.1	5.02	4.68	419.1	144.5	2.9	12.7
				63.0	110		5.4	12.5	119.1	81.7	60.9	6.11	3.92	505.6	147.5	6.2	11.5
80	9.0	2.3	5.4	64.4	85	18.0	5.7	13.1	94.4	84.2	67.9	4.79	5.15	399.3	141.9	9.1	9.3
				65.5	95		5.5	12.6	104.1	81.6	63.3	5.37	4.45	452.4	144.5	9.7	8.7
				66.1	110		5.4	12.4	119.2	83.1	60.8	6.54	3.72	545.7	147.6	14.8	7.5
	13.5	4.6	10.7	69.2	85		5.7	13.1	94.6	86.2	70.5	4.59	5.50	384.3	150.3	3.6	10.4
				69.9	95		5.5	12.6	104.3	83.5	65.9	5.15	4.75	435.4	153.1	3.8	9.8
				70.3	110		5.4	12.4	119.5	85.1	63.7	6.27	3.98	525.3	156.3	7.7	8.6
	18.0	7.8	17.9	71.6	85		5.7	13.1	94.9	88.8	73.3	4.55	5.72	376.3	154.1	2.6	13.0
				72.1	95		5.5	12.6	104.6	86	68.6	5.10	4.94	426.3	157.0	2.8	12.4
				72.4	110		5.4	12.4	119.7	87.6	66.4	6.21	4.13	514.3	160.3	6.3	11.2
90	9.0	2.3	5.2	73.3	85	18.0	5.6	13.0	95.0	89.7	73.1	4.86	5.41	406.1	152.8	9.6	8.4
				74.4	95		5.4	12.5	104.7	86.9	68.3	5.45	4.67	460.1	155.7	10.2	7.8
				74.9	110		5.3	12.3	119.8	88.5	65.8	6.64	3.91	555.0	159.0	15.6	6.6
	13.5	4.5	10.3	78.4	85		5.6	13.0	95.2	91.9	76.0	4.66	5.78	390.8	161.8	4.0	9.6
				79.1	95		5.4	12.5	104.9	89	71.2	5.23	4.99	442.8	164.8	4.3	9.0
				79.5	110		5.3	12.3	120.1	90.7	69.0	6.36	4.18	534.2	168.4	8.5	7.8
	18.0	7.5	17.4	81.0	85		5.6	13.0	95.5	94.6	78.8	4.62	6.00	382.7	166.0	3.1	12.4
				81.5	95		5.4	12.5	105.2	91.6	73.9	5.18	5.18	433.6	169.1	3.3	11.8
				81.8	110		5.3	12.3	120.4	93.3	71.8	6.30	4.34	523.1	172.7	7.1	10.6

Unit Electrical Data

Model	Voltage Code/ HWG Option	60 Hz Power		Compressor		Fan Motor FLA	HWG Pump FLA	Ext. Loop Pump FLA	Total Unit FLA	Min Circuit AMPS	Max Brkr HACR
		Volts	Phase	LRA	RLA						
CT036	00	208/230	1	83.0	15.6	3.9	0.0	0.0	19.5	23.4	35
	01	208/230	1	83.0	15.6	3.9	0.5	0.0	20.0	23.9	40
	10	208/230	1	83.0	15.6	3.9	0.0	4.0	23.5	27.4	40
	11	208/230	1	83.0	15.6	3.9	0.5	4.0	24.0	27.9	40
	20	208/230	3	73.0	11.6	3.9	0.0	0.0	15.5	18.4	30
	21	208/230	3	73.0	11.6	3.9	0.5	0.0	16.0	18.9	30
	30/35	460	3	38.0	5.7	3.2	0.0	0.0	8.9	10.3	15
CT048	00	208/230	1	104.0	21.2	5.2	0.0	0.0	26.4	31.7	50
	01	208/230	1	104.0	21.2	5.2	0.5	0.0	26.9	32.2	50
	10	208/230	1	104.0	21.2	5.2	0.0	5.5	31.9	37.2	50
	11	208/230	1	104.1	21.2	5.2	0.5	5.5	32.4	37.7	50
	20	208/230	3	83.1	14.0	5.2	0.0	0.0	19.2	22.7	35
	21	208/230	3	83.1	14.0	5.2	0.5	0.0	19.7	23.2	35
	30/35	460	3	41.0	6.4	4.7	0.0	0.0	11.1	12.7	15
CT060	00	208/230	1	152.9	27.1	6.9	0.0	0.0	34.0	40.8	60
	01	208/230	1	152.9	27.1	6.9	0.5	0.0	34.5	41.3	60
	10	208/230	1	152.9	27.1	6.9	0.0	5.5	39.5	46.3	70
	11	208/230	1	152.9	27.1	6.9	0.5	5.5	40.0	46.8	70
	20	208/230	3	110.0	16.5	6.9	0.0	0.0	23.4	27.5	40
	21	208/230	3	110.0	16.5	6.9	0.5	0.0	23.9	28.0	45
	30/35	460	3	52.0	7.2	6.0	0.0	0.0	13.2	15.0	20
CT072	00	208/230	1	179.2	29.7	6.9	0.0	0.0	36.6	44.0	70
	01	208/230	1	179.2	29.7	6.9	0.5	0.0	37.1	44.5	70
	10	208/230	1	179.2	29.7	6.9	0.0	5.5	42.1	49.5	70
	11	208/230	1	179.2	29.7	6.9	0.5	5.5	42.6	50.0	80
	20	208/230	3	136.0	17.6	6.9	0.0	0.0	24.5	28.9	45
	21	208/230	3	136.0	17.6	6.9	0.5	0.0	25.0	29.4	45
	30/35	460	3	66.1	8.5	6.0	0.0	0.0	14.5	16.6	25

Notes:

1. All line and low voltage wiring must adhere to the National Electrical Code and local codes, whichever is the most stringent.
2. In determining the correct supply wire size and maximum length, reference NFPA 70, Section 310. If the calculation is close to the maximum allowable ampacity of a particular wire size, use the next size up. This will ensure that no adverse effects occur, such as light dimming and/or shortened compressor life.
3. Min/Max Voltage: 208/230/60 = 187-252, 460/60 = 432-504
4. See Wiring Diagrams for proper 460V power.

*The external loop pump FLA is based on a maximum of three UP26-116F-230V pumps (1/2hp) for 048-072 and two pumps for 036.

ENGINEERING SPECIFICATIONS:

General
Packaged Two-Stage Vertical Combination "CT" Series Geothermal Heat Pumps shall be constructed based on all information to follow. Equipment shall be completely assembled, piped, internally wired, charged with refrigerant, and tested.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 25° to 120°F (-3.9° to 48.9°C) (extended data tables; Heating 25F – 90F, cooling 50F – 110F) as standard. All equipment listed in this section must be rated and certified in accordance with Air-Conditioning, Heating and Refrigeration Institute/ International Standards Organization (AHRI/ISO 13256-1). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI/ISO and ETL-US-C labels.

All units shall be fully quality tested by factory run testing under normal operating conditions as described herein. Quality control system shall automatically perform via computer: helium leak check of both the water and refrigerant circuits, pressure tests, double evacuation and accurately charged system, perform detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria.

Basic Construction
Vertical Units shall have one of the following air flow arrangements: Multi-position field convertible; Left Return/ Top Discharge, Right Return/Top Discharge, Left Return/ Bottom Discharge, Right Return/Bottom Discharge. The heat pumps shall be fabricated from powder coated heavy gauge galvanized steel. Cabinet air leakage rating must meet ASHRAE 193-2010 standards. All access panels on the air side of the cabinet must be gasketed to ensure proper seal. Bottom Discharge configuration requires field installed internal plenum kit.

All units must have a minimum of three access panels for serviceability of compressor compartment. See IOM manuals for service clearances. All units must have an insulated panel separating the fan compartment from the compressor compartment

All interior surfaces shall be lined with 3/8 inch (9.5mm) thick, 3-6 lb/ft3 (24 kg/m3) acoustic type closed cell, non-porous, non-fibrous Nitrile/Vinyl insulation.

Standard cabinet panel insulation must meet UL-1995 and ASTM E 84/UL 723 Flame 25 / Smoke 50 requirements, air erosion and mold growth limits of UL-181, stringent fungal resistance test per ASTM-C1071 and ASTM G21, and shall meet zero level bacteria growth per ASTM G22. The insulation shall be UL-GREENGUARD certified under the Childrens and Schools classification and approved by the Factory Mutual Research Corporation. For added protection it shall be protected with an EPA-approved antimicrobial agent.

All vertical units to have field installed discharge air duct collar, shipped loose, units shall have a factory installed 1" (25.4mm) wide filter rack. Filter rack provided by heat pump manufacturer. Filter removal from either side with access door as part of the bracket. Units shall have a 1" (25.4mm) thick throwaway type glass fiber or pleated filter.

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be brass FPT fittings securely mounted to a dedicated compressor compartment subpanel, allowing for connection to a flexible hose without the use of a back-up wrench. All water connections must be under the return air duct connection as to not interfere with the serviceability of unit.

The unit shall be supplied with extended range internal insulation. All internal water lines and the evaporator side refrigeration tubing shall all have closed cell EPDM insulation. The water to refrigerant coaxial heat exchanger shall be encased in a clam shell rigid foam case and injected with 8lb. spray foam to eliminate any condensation forming on heat exchanger.

Option: Sound attenuating compressor blanket for additional noise reduction.

Fan and Motor Assembly
Blower shall have orifice rings to allow removal of wheel and motor from one side without removing housing or be set on rails that allow the fan assembly to be removed from the front or rear access panel. The fan assembly or housing shall be removable without removing the ductwork. Units shall have a direct-drive centrifugal fan with a dynamic balanced wheel. The fan motor shall be an ECM variable speed ball bearing type motor. The fan motor shall be isolated from the housing by rubber grommets. The motor shall be

Fan and Motor Assembly
Blower shall have orifice rings to allow removal of wheel and motor from one side without removing housing or be set on rails that allow the fan assembly to be removed from the front or rear access panel. The fan assembly or housing shall be removable without removing the ductwork. Units shall have a direct-drive centrifugal fan with a dynamic balanced wheel. The fan motor shall be an ECM variable speed ball bearing type motor. The fan motor shall be isolated from the housing by rubber grommets. The motor shall be permanently lubricated and have thermal overload protection. The motor will have 3 fan speed selections, a constant fan operation mode, as well as a dehumification mode. The ECM fan motor incorporates a soft start feature.

Refrigerant Circuit
All units shall contain R-410A sealed refrigerant circuit including a high efficiency two-stage unloading scroll compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, micro-channel refrigerant to air heat exchanger, reversing valve, coaxial (tube in tube) refrigerant to water heat exchanger, stainless steel brazed plate water to refrigerant heat exchanger, and safety controls (see controls section). Refrigerant access ports shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Units shall have bi-directional filter/drier installed on the liquid line of the refrigerant system and is located in the air stream compartment for service.

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on rubber grommets secured to the cabinet base for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor discharge and suction refrigerant lines to have shock loops directly at compressor for additional vibration elimination. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant to air heat exchangers (air coil) shall utilize an all-aluminium micro-channel construction and be rated to withstand 625 PSIG (4309 kPa) refrigerant working pressure. Refrigerant to water coaxial heat exchangers (water coil) shall be of copper inner water tube and steel refrigerant outer tube design, shall have enhanced rifled and knurled inner tube, rated to withstand 625 PSIG (4309 kPa) working refrigerant pressure and 500 PSIG (3445 kPa) working water pressure, and designed to have a low water pressure drop. Refrigerant to water heat exchangers (hydronic heating load side) shall be of brazed plate stainless steel design, rated to withstand 625 PSIG (4309 kPa) working refrigerant pressure and 500 PSIG (3445 kPa) working water pressure, and designed to have a low water pressure drop (max. 15ft.hd.). Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced types with external equalizer for optimum refrigerant metering.

The expansion valves must be bi-directional without the use of check valves. The TXV shall be located in the air stream compartment for service. Units shall be designed and tested for operating ranges of entering water temperatures from 25° to 120°F (-6.7° to 48.9°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function.

Option: The unit will be supplied with a cupro-nickel coaxial water to refrigerant heat exchanger.

Option: The unit shall be supplied with a hot water generator (desuperheater) heat exchanger.

Drain Pan
The drain pan shall be constructed of composite plastic with anti-microbial resin built in to inhibit corrosion and bacteria growth. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. Drain pan shall be fully insulated. The unit as standard will be supplied with solid-state electronic condensate overflow protection (see controls section). Units shall be furnished with a3/4" FPT condensate drain connection. The drain pan shall have both a primary and secondary drain connection.

Electrical
A control box shall be located external of the unit and on top of the cabinet and shall contain a 75VA transformer, 24 volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation and control. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. Unit controls shall be 24 Volt and provide heating or cooling as required by the remote thermostat/sensor.

Source pump high voltage terminal block including minimum 7amp circuit breaker protection to be provided for field wiring of source pumps. A detachable low voltage thermostat terminal strip with screw terminals to be provided for field wiring.

Option: Auxiliary electric heat system installed internal of the unit. The unit shall have a sheet metal plenum installed to house the electric heat strip without removing the blower housing. Field installed kit includes controls and circuit breakers for service.

ENGINEERING SPECIFICATIONS:

Solid State Safety Control Board
Units shall have a solid-state safety control system. The microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat pump type 24V thermostat. The control system shall have the following features:

- Anti-short cycle time delay on compressor operation (5 minutes).
- Random start on power up mode.
- Low voltage protection.
- High voltage protection.
- Unit shutdown on low temperature (low source coil temp OR low air coil temp).
- Condensate overflow electronic protection.
- Option to reset unit at thermostat or disconnect (soft or hard reset functions)
- Fault retry logic. The same fault trip has to occur 3 times before a hard lockout. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur. A soft or hard reset will restart the unit.
- Ability to defeat time delays for servicing (test mode).
- Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low/high voltage, low water/air temperature, condensate overflow, high discharge gas temperature, fauty temperature sensor(s), and control voltage status.
- The low-pressure switch shall not be monitored for the first 90 seconds after a compressor start command to prevent nuisance safety trips.
- 24V output to cycle a motorized water valve or other device with compressor contactor.
- Water coil low temperature sensing selectable for water or anti-freeze.
- Air coil low temperature sensing.
- High discharge gas temperature sensing.
- Smart desuperheater operation and logic to eliminate any heat transfer from the water tank to the source loop during cooling mode.

Solid State ECM Fan Control Board
Airflow selection shall be accomplished via dip switch settings on the ECM control board. Actual airflow shall be indicated by the CFM LED with each 100 CFM being represented by one flash of the LED. Airflow shall be automatically maintained (±5%) by the ECM motor regardless of external static pressure up to its maximum output capacity. A dip switch shall allow selection of a special dehumidification mode, which reduces airflow in cooling by 50cfm/ton to increase the latent capacity of the unit. A terminal shall be provided on the control board to allow an external humidistat to activate dehumidification mode, or the control board can be set to constant dehumidification mode.

Solid State Hot Water Control Board
The hot water microprocessor board controls the priority selection between forced air and hydronic modes as well as controls the fan motor and auxiliary heater (if installed) operation. It also controls additional internal heat pump components for hydronic operation such as the additional diverting valve, 3-way valve, load side pump relay, and second stage compressor operation. The control board shall have 5 LED indicators for power, status, inputs, and outputs. It shall have dip switches for priority selection which shall consist of 12 different options including shared priority timing. The control board shall also employ a 5 minute time delay while switching between modes for compressor protection.

Revision Table

Date	Description of Revision	Page
25OCT2019	Electrical Data Table updated	27
22APR2019	Unit Physical Data and Pressure Drop Tables updated.	4
	CT Nomenclature updated.	3
11APR2019	Unit Electrical Data updated	10
	CT024 information removed	ALL
01MAR2017	Updated Electrical Data Tables	-
17AUG2015	Revised electrical data table	-
14JAN2015	Document Created	ALL

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