



Aston Dual Hydronic Unit

GEOTHERMAL HEAT PUMPS
8 TO 15 TONS

Submittal Data
English Language
IP/Metric Units
SD1007WGA 01/23

GEOSTAR

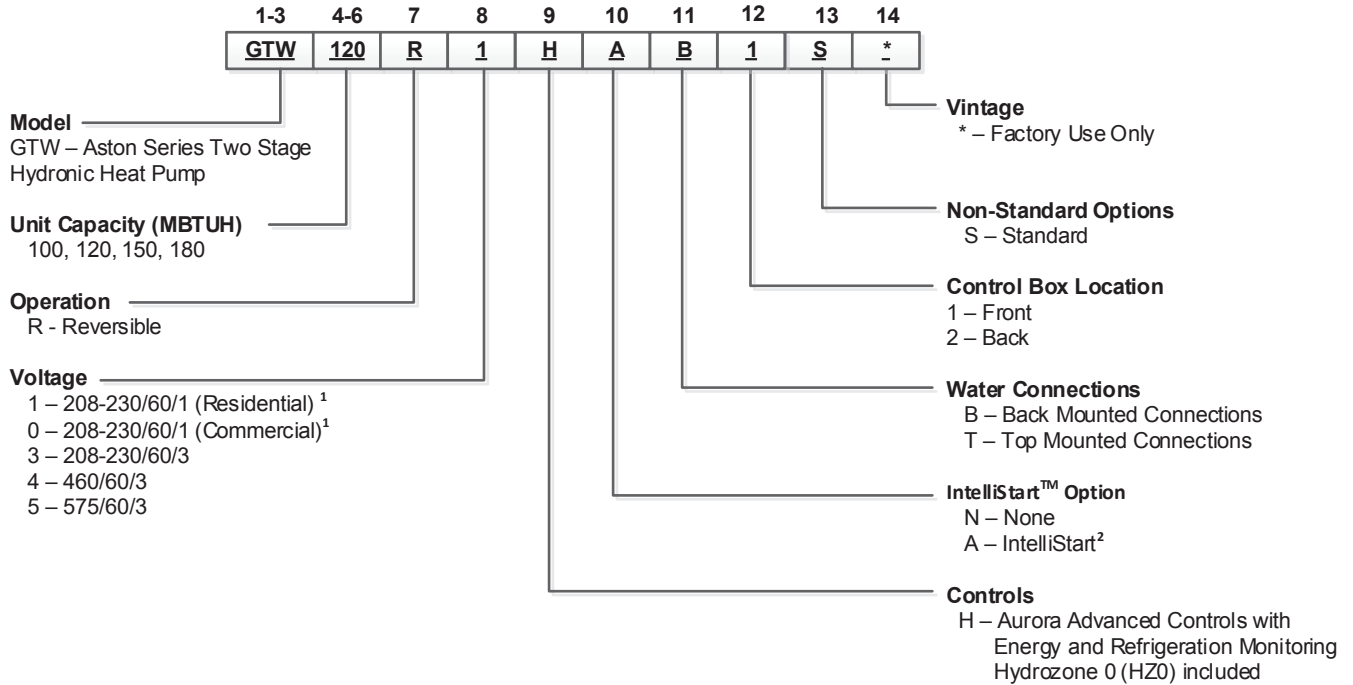
Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Model Nomenclature



Notes:

- 1 – Dual power feed required.
- 2 – IntelliStart Option available for single phase voltage options only.

Rev.: 10 Oct 2020B



G Series hydronic units are Safety listed under UL1995 thru ETL and performance tested in accordance with standard AHRI/ISO 13256-2.

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

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AHRI Data

AHRI/ASHRAE/ISO 13256-2
English (IP) Units

Model	Capacity Modulation	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
				Cooling EST 86°F ELT 53.6°F		Heating EST 68°F ELT 104°F		Cooling EST 59°F ELT 53.6°F		Heating EST 50°F ELT 104°F		Cooling Full EST 77°F Part EST 68°F ELT 53.6°F		Heating Full EST 32°F Part ELT 41°F ELT 104°F	
		Sgpm	Lgpm	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
100	Full	23	23	93,000	14.6	125,000	4.0	105,000	22.0	103,000	3.3	100,000	16.8	82,000	3.0
	Part	23	23	50,000	15.8	65,000	4.6	56,000	24.5	53,000	3.7	54,000	22.0	47,000	3.4
120	Full	28	28	103,000	14.0	142,000	4.0	123,000	21.6	118,000	3.3	114,000	16.2	93,000	3.0
	Part	28	28	58,000	15.5	76,000	4.4	65,000	22.4	62,500	3.7	63,000	21.1	55,000	3.4
150	Full	32	32	129,000	13.5	199,000	4.0	153,000	21.1	148,000	3.2	147,000	16.0	123,000	2.8
	Part	32	32	72,000	15.3	101,000	4.3	75,000	22.0	73,000	3.7	78,000	20.7	70,000	3.3
180	Full	36	36	150,000	13.3	221,000	3.9	175,000	19.8	173,000	3.1	165,000	15.8	139,000	2.7
	Part	36	36	78,000	15.0	113,000	4.2	89,000	20.9	87,000	3.7	86,000	18.4	82,000	3.5

All ratings based upon 208V operation.

3/21/11

Energy Star Compliance Table

Model	Tier 3	
	Ground Water	Ground Loop
100	Yes	Yes
120	Yes	Yes
150	No	No
180	No	No

12/17/10

Energy Star Rating Criteria

In order for water-source heat pumps to be Energy Star rated they must meet or exceed the minimum efficiency requirements listed below.

Tier 3: 1/1/2012 - No Effective End Date Published

	EER	COP
Closed loop water-to-air	17.1	3.6
Open loop water-to-air	21.1	4.1
Closed loop water-to-water	16.1	3.1
Open loop water-to-water	20.1	3.5

Contractor: _____ P.O.: _____

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Project Name: _____ Unit Tag: _____



AHRI Data cont.

The performance standard AHRI/ASHRAE/ISO 13256-2 became effective January 1, 2000. This new standard has three major categories: Water Loop, Ground Water, and Ground Loop.

Unit of Measure: The Cooling COP

The cooling efficiency is measured in EER (US version measured in Btuh per Watt. The Metric version is measured in a cooling COP (Watt per Watt) similar to the traditional COP measurement.

Pump Power Correction Calculation

Within each model, only one water flow rate is specified for all three groups and pumping Watts are calculated using the following formula. This additional power is added onto the existing power consumption.

- Pump power correction = $(\text{gpm} \times 0.0631) \times (\text{Press Drop} \times 2990) / 300$

Where 'gpm' is waterflow in gpm and 'Press Drop' is the pressure drop through the unit heat exchanger at rated water flow in feet of head.

ISO Capacity and Efficiency Calculations

The following equations illustrate cooling calculations:

- ISO Cooling Capacity = Cooling Capacity (Btuh) x 3.412
- ISO EER Efficiency (W/W) = ISO Cooling Capacity (Btuh) x 3.412 / [Power Input (Watts) + Pump Power Correction (Watt)]

The following equations illustrate heating calculations:

- ISO Heating Capacity = Heating Capacity (Btuh) x 3.412
- ISO COP Efficiency (W/W) = ISO Heating Capacity (Btuh) x 3.412 / [Power Input (Watts) + Pump Power Correction (Watt)]

Test Conditions

	ISO/AHRI 13256-2 WLHP	ISO/AHRI 13256-2 GWHP	ISO/AHRI 13256-2 GLHP
Cooling			
Liquid Entering Indoor Side - °F <i>Standard Rating Test</i>	53.6	53.6	53.6
Liquid Entering Heat Exchanger - °F <i>Part-load Rating Test</i>	86	59	77
Liquid Entering Heat Exchanger Fluid Flow Rate	86	59	68
	*	*	*
Heating			
Liquid Entering Indoor Side - °F <i>Standard Rating Test</i>	104	104	104
Liquid Entering Outdoor-side Heat Exchanger - °F <i>Part-load Rating Test</i>	68	50	32
Liquid Entering Outdoor-side Heat Exchanger Fluid Flow Rate	68	50	41
	*	*	*

Conversions

Water Flow (lps) = GPM x 0.0631

Press Drop (Pascals) = Press Drop (ft hd) x 2990

NOTES: *Flow rate is specified by the manufacturer

WLHP = Water Loop Heat Pump; GWHP = Ground Water Heat Pump;

GLHP = Ground Loop Heat Pump

Contractor: _____ P.O.: _____

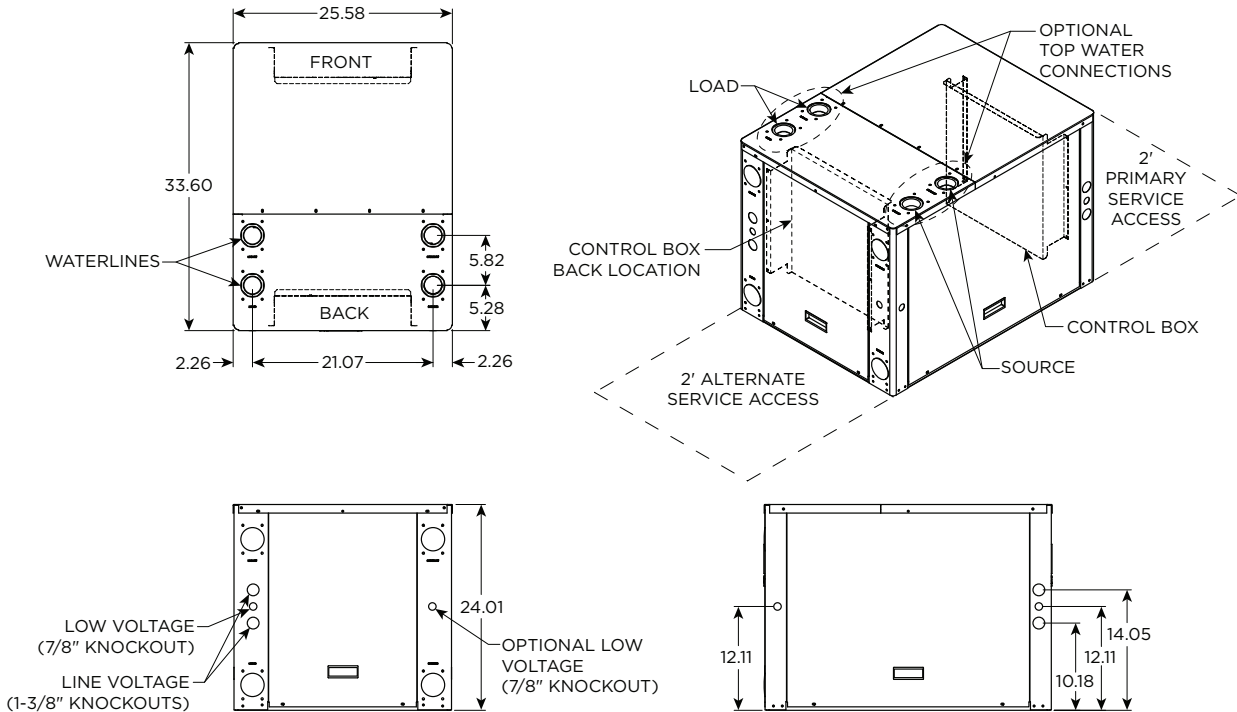
Engineer: _____

Project Name: _____ Unit Tag: _____

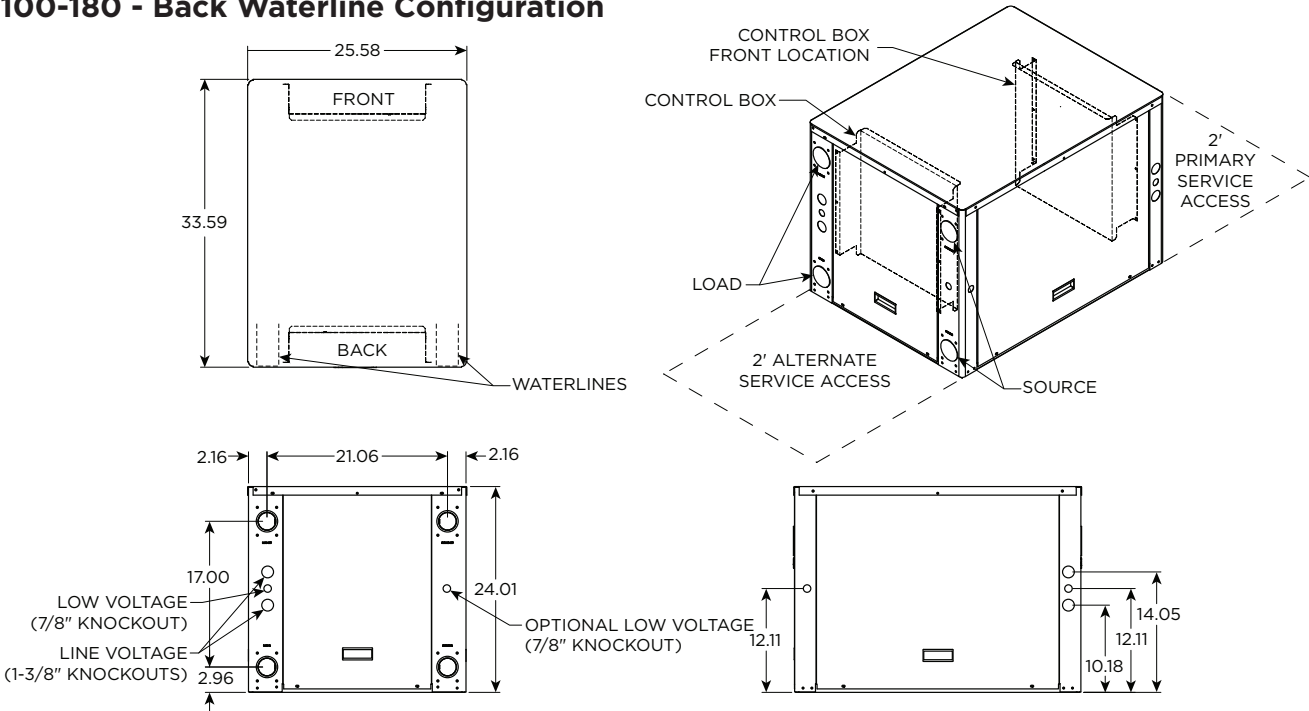


Dimensional Data

100-180 - Top Waterline Configuration



100-180 - Back Waterline Configuration



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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Physical Data

Model	Model			
	100	120	150	180
Compressor (2 each)	Scroll			
Factory Charge R410A, oz [kg]	46 [1.30]	46 [1.30]	46 [1.30]	54 [1.53]
Load Water Connection				
FPT - in	2	2	2	2
Source Water Connection				
FPT - in	2	2	2	2
Weight - Operating, lb [kg]	390 [177]	400 [181]	400 [181]	420 [190]
Weight - Packaged, lb [kg]	385 [175]	395 [179]	395 [179]	415 [188]

12/29/22

Electrical Data

Model	Supply Circuit	Rated Voltage	Voltage Min/Max	Compressor*				Load Pump FLA	Source Pump FLA	Total Unit FLA	Min Circ Amp	Max Fuse/HACR
				MCC	RLA	LRA	LRA**					
100	L1/L2	208-230/60/1	187/253	41.2	26.4	134.0	47.0	-	-	26.4	33.0	50
	L3/L4	208-230/60/1	187/253	41.2	26.4	134.0	47.0	4.2	4.2	34.8	41.4	60
	Single	208-230/60/3	187/253	24.9	16.0	110.0	66.0	-	-	32.0	36.0	50
	Single	460/60/3	414/506	12.1	7.8	52.0	31.0	-	-	15.6	17.6	25
	Single	575/60/3	517/633	8.9	5.7	38.9	-	-	-	11.4	12.8	15
120	L1/L2	208-230/60/1	187/253	47.0	30.1	145.0	51.0	-	-	30.1	37.6	60
	L3/L4	208-230/60/1	187/253	47.0	30.1	145.0	51.0	4.2	4.2	38.5	46.0	70
	Single	208-230/60/3	187/253	28.0	17.3	120.0	72.0	-	-	34.6	38.9	50
	Single	460/60/3	414/506	15.0	9.6	70.0	42.0	-	-	19.2	21.6	30
	Single	575/60/3	517/633	12.5	8.0	53.0	-	-	-	16.0	18.0	25
150	L1/L2	208-230/60/1	187/253	42.0	26.9	145.0	51.0	-	-	26.9	33.6	60
	L3/L4	208-230/60/1	187/253	42.0	26.9	145.0	51.0	4.2	4.2	35.3	42.0	60
	Single	208-230/60/3	187/253	35.0	22.4	190.0	114.0	-	-	44.8	50.4	70
	Single	460/60/3	414/506	19.0	12.2	87.0	52.0	-	-	24.4	27.5	30
	Single	575/60/3	517/633	15.0	9.6	62.0	-	-	-	19.2	21.6	30
180	L1/L2	208-230/60/1	187/253	50.0	32.1	185.0	65.0	-	-	32.1	40.1	70
	L3/L4	208-230/60/1	187/253	50.0	32.1	185.0	65.0	4.2	4.2	40.5	48.5	80
	Single	208-230/60/3	187/253	39.0	26.0	190.0	114.0	-	-	52.0	58.5	80
	Single	460/60/3	414/506	19.0	13.0	100.0	60.0	-	-	26.0	29.3	40
	Single	575/60/3	517/633	14.5	9.3	72.0	-	-	-	18.6	20.9	30

3/7/13

HACR circuit breaker in USA only

* Ratings per each compressor - unit supplied with two

** With optional IntelliStart

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Reference Calculations

<p>Heating Calculations:</p> $LWT = EWT - \frac{HE}{GPM \times 500^*}$	<p>Cooling Calculations:</p> $LWT = EWT + \frac{HR}{GPM \times 500^*}$
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NOTE: * When using water. Use 485 for 15% methanol/water or Environol solution.

Legend and Notes

Abbreviations and Definitions

ELT = entering load fluid temperature to heat pump	PSI = pressure drop in pounds per square inch
LLT = leaving load fluid temperature from heat pump	FT HD = pressure drop in feet of head
LGPM = load flow in gallons per minute	KW = kilowatt
LWPD = load heat exchanger water pressure drop	HR = heat rejected in MBTUH
EST = entering source fluid temperature to heat pump	TC = total cooling capacity in MBTUH
LST = leaving source fluid temperature from heat pump	COP = coefficient of performance (HC/KW x 3.413)
SGPM = source flow in gallons per minute	HC = heating capacity in MBTUH
SWPD = source heat exchanger water pressure drop	HE = heat of extraction in MBTUH
EER = cooling energy efficiency (TC/KW)	

Notes to Performance Data Tables

The following notes apply to all performance data tables:

- Three flow rates are shown for each unit. The lowest flow rate shown is used for geothermal open loop/well water systems with a minimum of 50°F EST. The middle flow rate shown is the minimum geothermal closed loop flow rate. The highest flow rate shown is optimum for geothermal closed loop systems and the suggested flow rate for boiler/tower applications.
- Entering water temperatures below 40°F assumes 15% antifreeze solution.
- Interpolation between ELT, EST, and GPM data is permissible.
- Operation in the gray areas is not recommended.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Antifreeze Correction

Catalog performance can be corrected for antifreeze use. Please use the following table and note the example given.

Antifreeze Type	Antifreeze % by wt	Heating		Cooling		Pressure Drop
		Load	Source	Load	Source	
EWT - °F [°C]		80 [26.7]	30 [-1.1]	50 [10.0]	90 [32.2]	30 [-1.1]
Water	0	1.000	1.000	1.000	1.000	1.000
Ethylene Glycol	10	0.990	0.973	0.976	0.991	1.075
	20	0.978	0.943	0.947	0.979	1.163
	30	0.964	0.917	0.921	0.965	1.225
	40	0.953	0.890	0.897	0.955	1.324
	50	0.942	0.865	0.872	0.943	1.419
Propylene Glycol	10	0.981	0.958	0.959	0.981	1.130
	20	0.967	0.913	0.921	0.969	1.270
	30	0.946	0.854	0.869	0.950	1.433
	40	0.932	0.813	0.834	0.937	1.614
	50	0.915	0.770	0.796	0.922	1.816
Ethanol	10	0.986	0.927	0.945	0.991	1.242
	20	0.967	0.887	0.906	0.972	1.343
	30	0.944	0.856	0.869	0.947	1.383
	40	0.926	0.815	0.830	0.930	1.523
	50	0.907	0.779	0.795	0.911	1.639
Methanol	10	0.985	0.957	0.962	0.986	1.127
	20	0.969	0.924	0.929	0.970	1.197
	30	0.950	0.895	0.897	0.951	1.235
	40	0.935	0.863	0.866	0.936	1.323
	50	0.919	0.833	0.836	0.920	1.399



WARNING: Gray area represents antifreeze concentrations greater than 35% by weight and should be avoided due to the extreme performance penalty they represent.

Antifreeze Correction Example

Antifreeze solution is propylene glycol 20% by weight for the source and methanol 10% for the load. Determine the corrected heating at 30°F source and 80°F load as well as pressure drop at 30°F for an Envision Series NDW120. Also, determine the corrected cooling at 90°F source and 50°F load.

The corrected heating capacity at 30°F/80°F would be:

$$98,500 \text{ MBTUH} \times 0.913 \times 0.985 = 88,582 \text{ MBTUH}$$

The corrected cooling capacity at 90°F/50°F would be:

$$113,200 \times 0.969 \times 0.962 = 105,523 \text{ MBTUH}$$

The corrected pressure drop at 30°F and 36 GPM would be:

$$4.9 \text{ psi} \times 1.270 = 6.22 \text{ psi}$$

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Load and Source Pressure Drop

Model	GPM	Pressure Drop (psi)				
		30°F	50°F	70°F	90°F	110°F
100	15	1.0	0.8	0.5	0.3	0.1
	23	2.5	2.2	2.0	1.7	1.3
	30	3.8	3.6	3.3	3.1	2.4
	34	4.5	4.3	4.0	3.8	3.0
120	18	1.6	1.3	1.1	0.8	0.6
	28	3.4	3.2	2.9	2.7	2.1
	36	4.9	4.7	4.4	4.2	3.3
	40	5.6	5.4	5.1	4.9	3.9
150	21	2.1	1.9	1.6	1.4	1.0
	32	4.2	3.9	3.7	3.4	2.7
	42	6.0	5.8	5.5	5.3	4.2
	50	7.5	7.3	7.0	6.8	5.5
180	24	2.7	2.4	2.2	1.9	1.5
	36	4.9	4.7	4.4	4.2	3.3
	48	7.1	6.9	6.6	6.4	5.1
	60	9.3	9.1	8.8	8.6	7.0

3/9/09

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



100 - Performance Data

Cooling Capacity

Source		Load Flow - 15 GPM							Load Flow - 23 GPM							Load Flow - 30 GPM						
EST °F	Flow GPM	ELT °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F		
30	15	50	35.6	108.0	3.80	121.0	28.4	46.1	40.3	111.7	3.91	125.1	28.6	46.7	42.3	115.0	4.00	128.6	28.8	47.2		
		70	54.3	117.9	3.90	131.2	30.2	47.5	59.4	121.7	3.99	135.3	30.5	48.0	61.7	125.0	4.07	138.9	30.7	48.5		
		90	73.0	127.9	4.00	141.5	32.0	48.9	78.6	131.7	4.07	145.6	32.3	49.4	81.0	135.0	4.13	149.1	32.7	49.9		
	23	110	91.6	137.8	4.10	151.8	33.6	50.2	97.7	141.6	4.15	155.8	34.1	50.8	100.3	145.0	4.20	159.3	34.5	51.2		
		50	35.3	110.1	3.69	122.7	29.8	40.7	40.1	113.8	3.80	126.7	29.9	41.0	42.2	116.9	3.89	130.2	30.0	41.3		
		70	54.0	120.3	3.76	133.1	32.0	41.6	59.2	124.1	3.86	137.3	32.2	41.9	61.5	127.5	3.94	141.0	32.3	42.3		
	30	90	72.6	130.4	3.83	143.5	34.1	42.5	78.3	134.5	3.92	147.9	34.4	42.9	80.8	138.1	3.99	151.7	34.6	43.2		
		110	91.3	140.6	3.90	153.9	36.1	43.4	97.4	144.9	3.97	158.5	36.5	43.8	100.1	148.7	4.04	162.5	36.8	44.1		
		50	35.1	112.0	3.60	124.3	31.1	38.3	40.0	115.5	3.71	128.2	31.2	38.5	42.1	118.6	3.80	131.6	31.2	38.8		
	50	15	70	53.7	122.3	3.64	134.8	33.6	39.0	59.0	126.3	3.74	139.1	33.7	39.3	61.4	129.7	3.83	142.8	33.8	39.5	
			90	72.3	132.7	3.68	145.2	36.1	39.7	78.1	137.0	3.78	149.9	36.3	40.0	80.6	140.9	3.87	154.1	36.4	40.3	
			110	90.9	143.0	3.72	155.7	38.4	40.4	97.1	147.8	3.82	160.8	38.7	40.7	99.9	152.0	3.90	165.3	39.0	41.0	
23		50	36.6	100.3	5.23	118.1	19.2	65.7	41.0	103.7	5.33	121.9	19.5	66.2	42.9	106.7	5.41	125.2	19.7	66.7		
		70	55.1	111.5	5.37	129.8	20.8	67.3	60.0	115.0	5.45	133.6	21.1	67.8	62.1	118.1	5.52	137.0	21.4	68.3		
		90	73.6	122.7	5.51	141.4	22.3	68.9	79.0	126.3	5.57	145.3	22.7	69.4	81.4	129.6	5.63	148.8	23.0	69.8		
30		110	92.2	133.9	5.65	153.1	23.7	70.4	98.0	137.7	5.69	157.1	24.2	70.9	100.6	141.0	5.73	160.6	24.6	71.4		
		50	36.4	102.1	5.09	119.4	20.0	60.4	40.8	105.4	5.18	123.1	20.3	60.7	42.8	108.4	5.26	126.3	20.6	61.0		
		70	54.9	113.5	5.19	131.2	21.9	61.4	59.8	117.2	5.27	135.1	22.2	61.7	62.0	120.4	5.34	138.6	22.6	62.0		
70		15	90	73.3	124.9	5.28	142.9	23.6	62.4	78.8	128.9	5.35	147.1	24.1	62.8	81.2	132.3	5.41	150.8	24.5	63.1	
			110	91.8	136.3	5.38	154.7	25.3	63.5	97.8	140.6	5.44	159.1	25.9	63.8	100.4	144.3	5.49	163.1	26.3	64.2	
			50	36.2	103.6	4.98	120.6	20.8	58.0	40.7	106.9	5.06	124.2	21.2	58.3	42.7	109.9	5.13	127.3	21.4	58.5	
	23	70	54.6	115.3	5.03	132.4	22.9	58.8	59.7	119.0	5.11	136.4	23.3	59.1	61.8	122.3	5.18	140.0	23.6	59.3		
		90	73.1	126.9	5.09	144.2	25.0	59.6	78.6	131.1	5.16	148.7	25.4	59.9	81.0	134.8	5.23	152.6	25.8	60.2		
		110	91.5	138.5	5.14	156.0	26.9	60.4	97.6	143.2	5.21	161.0	27.5	60.7	100.2	147.3	5.28	165.2	27.9	61.0		
	30	50	37.7	92.5	6.65	115.2	13.9	85.4	41.7	95.6	6.74	118.7	14.2	85.8	43.4	98.4	6.83	121.7	14.4	86.2		
		70	56.0	105.0	6.83	128.3	15.4	87.1	60.6	108.3	6.91	131.9	15.7	87.6	62.6	111.3	6.97	135.1	16.0	88.0		
		90	74.3	117.4	7.02	141.4	16.7	88.8	79.5	121.0	7.07	145.1	17.1	89.4	81.7	124.1	7.12	148.4	17.4	89.8		
	90	15	110	Operation not recommended																		
			50	37.5	94.0	6.49	116.1	14.5	80.1	41.6	97.1	6.56	119.5	14.8	80.4	43.3	99.8	6.63	122.4	15.1	80.6	
			70	55.8	106.7	6.61	129.2	16.1	81.2	60.4	110.2	6.67	132.9	16.5	81.6	62.5	113.2	6.73	136.2	16.8	81.8	
23		90	74.1	119.4	6.74	142.4	17.7	82.4	79.3	123.2	6.79	146.4	18.2	82.7	81.6	126.6	6.83	149.9	18.5	83.0		
		110	Operation not recommended																			
		50	37.3	95.3	6.35	116.9	15.0	77.8	41.4	98.4	6.40	120.2	15.4	78.0	43.3	101.1	6.45	123.1	15.7	78.2		
30		70	55.6	108.2	6.42	130.1	16.8	78.7	60.3	111.8	6.47	133.8	17.3	78.9	62.3	114.9	6.52	137.1	17.6	79.1		
		90	73.9	121.1	6.49	143.2	18.7	79.5	79.1	125.1	6.54	147.5	19.1	79.8	81.4	128.7	6.58	151.2	19.5	80.1		
		110	Operation not recommended																			
110		15	50	38.7	84.8	8.08	112.3	10.5	105.0	42.4	87.6	8.16	115.5	10.7	105.4	44.0	90.1	8.24	118.2	10.9	105.8	
			70	56.9	98.5	8.30	126.8	11.9	106.9	61.2	101.6	8.37	130.2	12.1	107.4	63.0	104.4	8.42	133.1	12.4	107.8	
			90	75.0	112.2	8.53	141.3	13.2	108.8	79.9	115.7	8.57	144.9	13.5	109.3	82.1	118.7	8.61	148.1	13.8	109.7	
	23	110	Operation not recommended																			
		50	38.5	85.9	7.89	112.8	10.9	99.8	42.3	88.8	7.94	115.9	11.2	100.1	43.9	91.3	7.99	118.6	11.4	100.3		
		70	56.7	99.9	8.04	127.3	12.4	101.1	61.0	103.2	8.08	130.7	12.8	101.4	62.9	106.0	8.12	133.8	13.1	101.6		
	30	90	74.8	113.9	8.19	141.8	13.9	102.3	79.8	117.6	8.22	145.6	14.3	102.7	81.9	120.8	8.25	149.0	14.6	103.0		
		110	Operation not recommended																			
		50	38.4	86.9	7.73	113.2	11.2	97.5	42.2	89.8	7.75	116.2	11.6	97.7	43.8	92.4	7.78	118.9	11.9	97.9		
	110	15	70	56.5	101.1	7.81	127.7	12.9	98.5	60.9	104.5	7.84	131.2	13.3	98.7	62.8	107.5	7.86	134.3	13.7	99.0	
			90	74.6	115.3	7.90	142.2	14.6	99.5	79.6	119.2	7.92	146.2	15.1	99.7	81.8	122.6	7.94	149.7	15.4	100.0	
			110	Operation not recommended																		
23		50	39.7	77.0	9.50	109.4	8.1	124.6	43.1	79.6	9.58	112.2	8.3	125.0	44.5	81.8	9.65	114.7	8.5	125.3		
		70	57.7	92.0	9.77	125.3	9.4	126.7	61.7	95.0	9.83	128.5	9.7	127.1	63.5	97.5	9.88	131.2	9.9	127.5		
		90	Operation not recommended																			
30		110	Operation not recommended																			
		50	39.6	77.8	9.29	109.5	8.4	119.5	43.0	80.4	9.32	112.3	8.6	119.8	44.5	82.8	9.36	114.7	8.8	120.0		
		70	57.6	93.1	9.46	125.4	9.8	120.9	61.6	96.2	9.49	128.6	10.1	121.2	63.4	98.9	9.52	131.4	10.4	121.4		
30		90	Operation not recommended																			
		110	Operation not recommended																			
		50	39.5	78.5	9.10	109.5	8.6	117.3	42.9	81.2	9.10	112.3	8.9	117.5	44.4	83.6	9.10	114.6	9.2	117.6		
30	70	57.5	94.0	9.20	125.4	10.2	118.4	61.5	97.2	9.20	128.6	10.6	118.6	63.3	100.1	9.20	131.5	10.9	118.8			
	90	Operation not recommended																				
	110	Operation not recommended																				

NOTE: For part load application, divide capacity by 2.

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



100 - Performance Data

Heating Capacity

Source		Load Flow - 15 GPM							Load Flow - 23 GPM					Load Flow - 30 GPM							
EWT °F	Flow GPM	ELT °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	
30	23	60	72.2	91.3	5.01	74.2	5.3	20.1	68.2	94.5	4.85	78.0	5.7	23.2	66.5	97.3	4.71	81.2	6.1	24.6	
		80	91.9	89.2	6.64	66.6	3.9	21.1	88.0	92.1	6.46	70.1	4.2	23.9	86.3	94.7	6.31	73.2	4.4	25.1	
		100	111.6	87.2	8.28	58.9	3.1	22.1	107.8	89.8	8.08	62.2	3.3	24.6	106.1	92.1	7.91	65.1	3.4	25.7	
		120	131.3	85.1	9.91	51.3	2.5	23.2	127.6	87.4	9.70	54.3	2.6	25.3	126.0	89.5	9.51	57.0	2.8	26.2	
	30	60	72.3	92.0	5.10	74.6	5.3	20.1	68.4	96.3	4.94	79.4	5.7	23.1	66.7	100.0	4.80	83.6	6.1	24.4	
		80	92.0	89.9	6.77	66.8	3.9	21.1	88.2	93.9	6.59	71.4	4.2	23.8	86.5	97.4	6.43	75.4	4.4	25.0	
		100	111.7	87.9	8.43	59.1	3.1	22.1	108.0	91.6	8.24	63.5	3.3	24.5	106.3	94.8	8.07	67.3	3.4	25.5	
		120	131.4	85.8	10.10	51.3	2.5	23.2	127.8	89.2	9.89	55.5	2.6	25.2	126.1	92.2	9.70	59.1	2.8	26.1	
	50	15	60	73.6	102.2	5.00	85.1	6.0	38.7	69.2	105.4	4.84	88.9	6.4	42.3	67.2	108.3	4.70	92.3	6.8	43.8
			80	93.3	100.1	6.62	77.5	4.4	39.7	89.0	103.1	6.44	81.1	4.7	42.9	87.0	105.7	6.29	84.2	4.9	44.4
			100	113.1	98.1	8.20	69.9	3.5	37.4	108.8	100.7	8.00	73.3	3.7	43.6	106.9	103.1	7.88	76.2	3.8	44.9
			120	132.8	96.0	9.87	62.3	2.9	41.7	128.6	98.4	9.65	65.5	3.0	44.3	126.7	100.5	9.47	68.2	3.1	45.5
23		60	74.4	107.7	5.12	90.2	6.2	38.0	69.7	111.9	4.95	95.0	6.6	41.7	67.7	115.5	4.81	99.1	7.0	43.4	
		80	94.1	105.6	6.78	82.5	4.6	39.0	89.5	109.5	6.59	87.0	4.9	42.4	87.5	112.9	6.43	91.0	5.1	43.9	
		100	113.8	103.5	8.44	74.7	3.6	40.0	109.3	107.2	8.23	79.1	3.8	43.1	107.4	110.3	8.06	82.9	4.0	44.5	
		120	133.5	101.5	10.10	67.0	2.9	41.1	129.1	104.8	9.87	71.1	3.1	43.8	127.2	107.7	9.68	74.7	3.3	45.0	
30		60	75.0	112.4	5.23	94.6	6.3	37.4	70.2	117.5	5.06	100.2	6.8	41.3	68.1	121.9	4.90	105.1	7.3	43.0	
		80	94.7	110.4	6.92	86.8	4.7	38.4	90.0	115.1	6.73	92.2	5.0	42.0	88.0	119.3	6.56	96.9	5.3	43.5	
		100	114.4	108.3	8.61	78.9	3.7	39.5	109.8	112.8	8.40	84.1	3.9	42.7	107.8	116.7	8.21	88.7	4.2	44.1	
		120	134.2	106.3	10.30	71.1	3.0	40.5	129.6	110.4	10.07	76.1	3.2	43.4	127.6	114.1	9.87	80.4	3.4	44.6	
70	15	60	75.2	113.9	5.10	96.5	6.5	57.1	70.3	118.4	4.94	101.6	7.0	61.2	68.2	122.4	4.80	106.0	7.5	62.9	
		80	94.9	111.8	6.74	88.8	4.9	58.2	90.1	116.1	6.57	93.7	5.2	61.9	88.0	119.8	6.41	97.9	5.5	63.5	
		100	114.6	109.8	8.39	81.1	3.8	59.2	109.9	113.7	8.19	85.8	4.1	62.5	107.8	117.2	8.02	89.8	4.3	64.0	
		120	134.4	107.7	10.03	73.5	3.1	60.2	129.7	111.4	9.82	77.9	3.3	63.2	127.6	114.6	9.63	81.7	3.5	64.6	
	23	60	76.5	124.0	5.24	106.1	6.9	55.8	71.2	129.2	5.06	111.9	7.5	60.3	68.9	133.8	4.91	117.0	8.0	62.2	
		80	96.3	122.0	6.92	98.3	5.2	56.9	91.0	126.9	6.73	103.9	5.5	61.0	88.7	131.2	6.55	108.8	5.9	62.7	
		100	116.0	119.9	8.60	90.6	4.1	57.9	110.8	124.5	8.39	95.9	4.4	61.7	108.6	128.6	8.20	100.6	4.6	63.3	
		120	135.7	117.8	10.28	82.8	3.4	59.0	130.6	122.2	10.05	87.9	3.6	62.4	128.4	126.0	9.85	92.4	3.7	63.8	
	30	60	77.7	132.9	5.37	114.6	7.3	54.7	72.1	138.7	5.17	121.0	7.9	59.5	69.6	143.7	5.00	126.7	8.4	61.6	
		80	97.4	130.8	7.08	106.7	5.4	55.8	91.9	136.3	6.86	112.9	5.8	60.2	89.4	141.1	6.68	118.3	6.2	62.1	
		100	117.2	128.8	8.79	98.8	4.3	56.8	111.7	134.0	8.56	104.8	4.6	60.9	109.2	138.5	8.36	110.0	4.9	62.7	
		120	136.9	126.7	10.50	90.9	3.5	57.9	131.4	131.6	10.25	96.7	3.8	61.6	129.1	135.9	10.03	101.7	4.0	63.2	
90	15	60	76.7	125.6	5.20	107.9	7.1	75.6	71.4	131.4	5.04	114.2	7.6	80.1	69.1	136.5	4.90	119.8	8.2	82.0	
		80	96.5	123.5	6.87	100.1	5.3	76.7	91.2	129.1	6.69	106.2	5.7	80.8	88.9	133.9	6.53	111.6	6.0	82.6	
		100	Operation not recommended																		
		120	Operation not recommended																		
	23	60	78.7	140.4	5.36	122.1	7.7	73.7	72.7	146.6	5.17	128.9	8.3	78.8	70.1	152.0	5.01	134.9	8.9	81.0	
		80	98.4	138.3	7.06	114.2	5.7	74.8	92.5	144.2	6.86	120.9	6.2	79.5	90.0	149.4	6.68	126.6	6.6	81.6	
		100	Operation not recommended																		
		120	Operation not recommended																		
	30	60	80.4	153.3	5.50	134.6	8.2	72.1	73.9	159.9	5.29	141.8	8.9	77.7	71.0	165.6	5.10	148.2	9.5	80.1	
		80	100.2	151.3	7.23	126.6	6.1	73.1	93.7	157.5	7.00	133.6	6.6	78.4	90.9	163.0	6.80	139.8	7.0	80.7	
		100	Operation not recommended																		
		120	Operation not recommended																		

NOTE: For part load application, divide capacity by 2.

3/7/13

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



120 - Performance Data

Cooling Capacity

Source		Load Flow - 18 GPM							Load Flow - 28 GPM							Load Flow - 36 GPM						
EST °F	Flow GPM	ELT °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F		
30	18	50	35.8	128.0	5.26	145.9	24.3	49.5	40.5	132.6	5.30	150.7	25.0	50.1	42.4	136.3	5.34	154.5	25.5	50.6		
		70	54.0	143.7	5.43	162.2	26.5	51.6	59.4	148.9	5.47	167.5	27.2	52.3	61.5	153.0	5.51	171.8	27.8	52.9		
		90	72.3	159.3	5.60	178.4	28.5	53.8	78.2	165.1	5.64	184.4	29.2	54.6	80.6	169.7	5.68	189.1	29.9	55.2		
	28	110	90.6	175.0	5.77	194.7	30.3	56.0	97.0	181.3	5.81	201.2	31.2	56.8	99.6	186.4	5.85	206.4	31.9	57.5		
		50	35.4	131.3	5.05	148.6	26.0	42.9	40.3	136.1	5.10	153.5	26.7	43.3	42.2	139.9	5.13	157.4	27.3	43.7		
		70	53.6	147.6	5.18	165.2	28.5	44.4	59.1	152.9	5.22	170.7	29.3	44.8	61.3	157.1	5.26	175.1	29.9	45.2		
	36	90	71.8	163.8	5.31	181.9	30.9	45.8	77.9	169.7	5.35	188.0	31.7	46.3	80.3	174.4	5.38	192.8	32.4	46.8		
		110	90.0	180.0	5.43	198.5	33.1	47.3	96.7	186.5	5.48	205.2	34.1	47.8	99.3	191.7	5.51	210.5	34.8	48.3		
		50	35.1	134.0	4.89	150.7	27.4	40.0	40.1	138.8	4.93	155.7	28.2	40.4	42.1	142.7	4.96	159.6	28.8	40.6		
	50	18	70	53.3	150.7	4.98	167.7	30.3	41.2	58.8	156.1	5.02	173.2	31.1	41.5	61.1	160.5	5.05	177.7	31.8	41.8	
			90	71.4	167.3	5.07	184.6	33.0	42.3	77.6	173.4	5.11	190.8	33.9	42.7	80.1	178.2	5.15	195.8	34.6	43.1	
			110	89.6	184.0	5.16	201.6	35.7	43.4	96.4	190.7	5.20	208.4	36.6	43.9	99.1	196.0	5.24	213.9	37.4	44.3	
28		50	36.7	119.8	6.79	142.9	17.6	69.1	41.1	124.1	6.84	147.4	18.1	69.7	42.9	127.5	6.89	151.0	18.5	70.1		
		70	55.0	135.4	6.95	159.1	19.5	71.2	60.0	140.3	7.01	164.2	20.0	71.9	62.0	144.2	7.06	168.3	20.4	72.4		
		90	73.2	151.1	7.12	175.4	21.2	73.4	78.8	156.5	7.18	181.0	21.8	74.1	81.1	160.9	7.23	185.6	22.3	74.7		
36		110	91.5	166.8	7.29	191.6	22.9	75.6	97.7	172.8	7.35	197.9	23.5	76.4	100.1	177.6	7.40	202.8	24.0	77.0		
		50	36.2	123.8	6.51	146.0	19.0	62.7	40.8	128.3	6.56	150.7	19.5	63.1	42.7	131.8	6.61	154.4	20.0	63.4		
		70	54.4	140.1	6.64	162.8	21.1	64.2	59.6	145.2	6.70	168.0	21.7	64.6	61.7	149.2	6.74	172.2	22.1	65.0		
70		18	90	72.6	156.4	6.78	179.6	23.1	65.6	78.4	162.1	6.83	185.4	23.7	66.1	80.7	166.6	6.88	190.1	24.2	66.5	
			110	90.8	172.8	6.91	196.3	25.0	67.1	97.2	179.0	6.97	202.8	25.7	67.6	99.8	184.0	7.01	207.9	26.2	68.1	
			50	35.9	127.1	6.29	148.5	20.2	59.9	40.6	131.6	6.34	153.3	20.8	60.2	42.5	135.3	6.38	157.1	21.2	60.5	
	28	70	54.0	143.9	6.40	165.7	22.5	61.0	59.4	149.1	6.45	171.1	23.1	61.4	61.5	153.2	6.49	175.4	23.6	61.7		
		90	72.1	160.7	6.50	182.9	24.7	62.2	78.1	166.5	6.55	188.9	25.4	62.6	80.5	171.2	6.60	193.7	26.0	62.9		
		110	90.3	177.6	6.60	200.1	26.9	63.3	96.9	184.0	6.66	206.7	27.6	63.8	99.5	189.1	6.70	212.0	28.2	64.1		
	36	50	37.6	111.5	8.31	139.9	13.4	88.6	41.7	115.5	8.38	144.1	13.8	89.2	43.4	118.8	8.44	147.5	14.1	89.7		
		70	55.9	127.2	8.48	156.1	15.0	90.8	60.6	131.8	8.55	160.9	15.4	91.5	62.5	135.4	8.61	164.8	15.7	92.0		
		110	74.1	142.8	8.65	172.3	16.5	93.0	79.4	148.0	8.72	177.7	17.0	93.7	81.5	152.1	8.78	182.1	17.3	94.3		
	90	18	Operation not recommended																			
			50	37.1	116.3	7.97	143.5	14.6	82.5	41.4	120.5	8.03	147.9	15.0	82.9	43.1	123.8	8.09	151.4	15.3	83.2	
			70	55.3	132.7	8.11	160.4	16.4	83.9	60.2	137.5	8.17	165.4	16.8	84.4	62.1	141.3	8.23	169.4	17.2	84.7	
28		90	73.4	149.1	8.25	177.2	18.1	85.4	79.0	154.5	8.32	182.9	18.6	85.9	81.2	158.8	8.37	187.3	19.0	86.3		
		Operation not recommended																				
		50	36.7	120.1	7.70	146.4	15.6	79.8	41.1	124.4	7.76	150.9	16.0	80.1	42.9	127.9	7.81	154.5	16.4	80.3		
36		70	54.8	137.1	7.81	163.8	17.6	80.9	59.9	142.1	7.87	168.9	18.0	81.3	61.9	146.0	7.93	173.1	18.4	81.5		
		90	72.9	154.1	7.93	181.2	19.4	82.1	78.6	159.7	7.99	187.0	20.0	82.5	80.9	164.1	8.05	191.6	20.4	82.8		
		Operation not recommended																				
110		18	50	38.5	103.3	9.84	136.8	10.5	108.2	42.4	107.0	9.92	140.8	10.8	108.8	43.9	110.0	9.98	144.0	11.0	109.2	
			70	56.8	118.9	10.00	153.0	11.9	110.4	61.2	123.2	10.09	157.6	12.2	111.0	63.0	126.7	10.15	161.3	12.5	111.5	
			90	75.0	134.6	10.17	169.3	13.2	112.6	80.0	139.4	10.25	174.4	13.6	113.3	82.0	143.3	10.32	178.5	13.9	113.8	
	28	Operation not recommended																				
		50	37.9	108.8	9.43	140.9	11.5	102.3	42.0	117.2	9.50	145.1	11.9	102.6	43.6	115.8	9.56	148.5	12.1	102.9		
		70	56.1	125.3	9.57	157.9	13.1	103.7	60.7	129.8	9.65	162.7	13.4	104.1	62.6	133.4	9.71	166.5	13.7	104.5		
	36	90	74.2	141.8	9.72	174.9	14.6	105.2	79.5	146.9	9.80	180.3	15.0	105.7	81.6	151.0	9.86	184.6	15.3	106.1		
		Operation not recommended																				
		50	37.4	113.2	9.10	144.2	12.4	99.6	41.6	117.2	9.17	148.5	12.8	99.9	43.3	120.5	9.23	152.0	13.1	100.1		
	110	18	70	55.5	130.3	9.23	161.8	14.1	100.8	60.4	135.0	9.30	166.8	14.5	101.1	62.3	138.8	9.36	170.7	14.8	101.4	
			90	73.6	147.5	9.36	179.4	15.8	102.0	79.1	152.8	9.43	185.0	16.2	102.3	81.3	157.1	9.49	189.5	16.5	102.6	
			Operation not recommended																			
28		50	39.4	95.0	11.36	133.8	8.4	127.8	43.0	98.4	11.45	137.5	8.6	128.3	44.4	101.2	11.53	140.5	8.8	128.7		
		70	57.7	110.7	11.53	150.0	9.6	130.0	61.8	114.7	11.62	154.3	9.9	130.6	63.5	117.9	11.70	157.8	10.1	131.0		
		Operation not recommended																				
36		50	38.8	101.2	10.88	138.4	9.3	122.0	42.5	104.9	10.97	142.3	9.6	122.4	44.0	107.8	11.04	145.5	9.8	122.7		
		70	56.9	117.8	11.04	155.5	10.7	123.5	61.3	122.1	11.13	160.0	11.0	123.9	63.0	125.5	11.20	163.7	11.2	124.2		
		Operation not recommended																				
110		36	50	38.2	106.2	10.50	142.0	10.1	119.5	42.1	110.0	10.58	146.1	10.4	119.7	43.7	113.1	10.65	149.4	10.6	120.0	
			70	56.3	123.5	10.64	159.9	11.6	120.7	60.9	128.0	10.73	164.6	11.9	121.0	62.7	131.6	10.80	168.4	12.2	121.2	
			Operation not recommended																			

NOTE: For part load application, divide capacity by 2.

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



120 - Performance Data

Heating Capacity

Source		Load Flow - 18 GPM							Load Flow - 28 GPM							Load Flow - 36 GPM						
EWT °F	Flow GPM	ELT °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F		
30	28	60	71.0	98.9	5.36	80.6	5.4	21.0	67.3	102.4	5.44	83.8	5.5	24.0	65.8	105.2	5.51	86.4	5.6	25.2		
		80	90.7	96.2	7.16	71.8	3.9	22.0	87.1	99.6	7.26	74.9	4.0	24.7	85.7	102.4	7.34	77.3	4.1	25.7		
		100	110.4	93.6	8.96	63.0	3.1	23.0	106.9	96.9	9.08	65.9	3.1	25.3	105.5	99.6	9.18	68.3	3.2	26.2		
		120	130.1	90.9	10.76	54.2	2.5	24.0	126.7	94.2	10.90	57.0	2.5	25.9	125.4	96.9	11.01	59.3	2.6	26.7		
	36	60	71.2	101.2	5.40	82.8	5.5	20.8	67.6	106.1	5.51	87.3	5.6	23.8	66.1	110.0	5.60	90.9	5.8	25.0		
		80	90.9	98.5	7.20	74.0	4.0	21.8	87.4	103.4	7.33	78.4	4.1	24.4	86.0	107.2	7.43	81.9	4.2	25.5		
		100	110.7	95.9	9.00	65.2	3.1	22.8	107.2	100.6	9.15	69.4	3.2	25.0	105.8	104.5	9.27	72.8	3.3	26.0		
		120	130.4	93.2	10.80	56.4	2.5	23.7	127.0	97.9	10.97	60.5	2.6	25.7	125.7	101.7	11.10	63.8	2.7	26.5		
	50	18	60	72.6	113.4	5.53	94.5	6.0	39.5	68.4	116.9	5.59	97.8	6.1	43.0	66.7	119.7	5.63	100.5	6.2	44.4	
			80	92.3	110.7	7.33	85.7	4.4	40.5	88.2	114.2	7.41	88.9	4.5	43.6	86.5	117.0	7.47	91.5	4.6	44.9	
			100	112.0	108.0	9.13	76.9	3.5	41.5	108.0	111.5	9.23	80.0	3.5	44.3	106.3	114.2	9.30	82.5	3.6	45.4	
			120	131.7	105.4	10.93	68.1	2.8	42.4	127.8	108.7	11.04	71.1	2.9	44.9	126.2	111.4	11.13	73.4	2.9	45.9	
28		60	73.3	119.7	5.63	100.5	6.2	38.8	68.9	124.5	5.70	105.1	6.4	42.5	67.1	128.4	5.76	108.7	6.5	44.0		
		80	93.0	117.1	7.43	91.7	4.6	39.8	88.7	121.8	7.52	96.1	4.7	43.1	87.0	125.6	7.60	99.7	4.8	44.5		
		100	112.7	114.4	9.23	82.9	3.6	40.8	108.5	119.1	9.34	87.2	3.7	43.8	106.8	122.8	9.43	90.7	3.8	45.0		
		120	132.4	111.7	11.03	74.1	3.0	41.8	128.3	116.4	11.16	78.3	3.1	44.4	126.7	120.1	11.26	81.6	3.1	45.5		
36		60	73.9	124.8	5.70	105.4	6.4	38.3	69.3	130.6	5.79	110.9	6.6	42.1	67.5	135.3	5.87	115.2	6.8	43.6		
		80	93.6	122.1	7.50	96.5	4.8	39.3	89.1	127.9	7.61	101.9	4.9	42.7	87.4	132.5	7.70	106.2	5.0	44.1		
		100	113.3	119.5	9.30	87.7	3.8	40.3	108.9	125.2	9.43	93.0	3.9	43.4	107.2	129.7	9.53	97.2	4.0	44.6		
		120	133.0	116.8	11.10	78.9	3.1	41.2	128.7	122.4	11.25	84.1	3.2	44.0	127.1	127.0	11.37	88.2	3.3	45.1		
70	18	60	74.5	130.7	5.77	111.1	6.6	57.7	69.7	136.1	5.82	116.2	6.9	61.7	67.8	140.4	5.87	120.3	7.0	63.3		
		80	94.2	128.1	7.57	102.2	5.0	58.6	89.5	133.4	7.64	107.3	5.1	62.3	87.6	137.6	7.70	111.3	5.2	63.8		
		100	113.9	125.4	9.37	93.4	3.9	59.6	109.3	130.6	9.46	98.4	4.0	63.0	107.5	134.8	9.53	102.3	4.1	64.3		
		120	133.6	122.7	11.17	84.6	3.2	60.6	129.1	127.9	11.28	89.4	3.3	63.6	127.3	132.1	11.37	93.3	3.4	64.8		
	28	60	75.6	140.5	5.90	120.4	7.0	56.6	70.5	146.7	5.96	126.3	7.2	61.0	68.4	151.6	6.01	131.0	7.4	62.7		
		80	95.3	137.9	7.70	111.6	5.3	57.6	90.3	143.9	7.78	117.4	5.4	61.6	88.3	148.8	7.85	122.0	5.6	63.2		
		100	115.0	135.2	9.50	102.8	4.2	58.6	110.1	141.2	9.60	108.5	4.3	62.3	108.1	146.0	9.68	113.0	4.4	63.7		
		120	134.7	132.5	11.30	94.0	3.4	59.6	129.9	138.5	11.42	99.5	3.6	62.9	128.0	143.3	11.51	104.0	3.6	64.2		
	36	60	76.5	148.4	6.00	127.9	7.2	55.8	71.1	155.1	6.07	134.4	7.5	60.4	68.9	160.5	6.13	139.6	7.7	62.2		
		80	96.2	145.7	7.80	119.1	5.5	56.8	90.9	152.4	7.89	125.5	5.7	61.0	88.8	157.8	7.97	130.6	5.8	62.7		
		100	115.9	143.1	9.60	110.3	4.4	57.7	110.7	149.7	9.71	116.6	4.5	61.7	108.6	155.0	9.80	121.6	4.6	63.2		
		120	135.6	140.4	11.40	101.5	3.6	58.7	130.5	147.0	11.53	107.6	3.7	62.3	128.5	152.2	11.63	112.5	3.8	63.7		
90	18	60	76.5	148.1	6.00	127.6	7.2	75.8	71.1	155.3	6.06	134.6	7.5	80.4	68.9	161.0	6.10	140.2	7.7	82.2		
		80	96.2	145.4	7.80	118.8	5.5	76.8	90.9	152.5	7.87	125.7	5.7	81.0	88.8	158.2	7.93	131.2	5.8	82.7		
		100	Operation not recommended																			
		120	Operation not recommended																			
	28	60	77.9	161.4	6.17	140.3	7.7	74.4	72.1	168.8	6.22	147.6	8.0	79.5	69.7	174.8	6.27	153.4	8.2	81.5		
		80	97.6	158.7	7.97	131.5	5.8	75.4	91.9	166.1	8.04	138.7	6.1	80.1	89.6	172.0	8.10	144.4	6.2	82.0		
		100	Operation not recommended																			
		120	Operation not recommended																			
	36	60	79.1	172.0	6.30	150.5	8.0	73.3	72.8	179.7	6.36	158.0	8.3	78.7	70.3	185.8	6.40	164.0	8.5	80.9		
		80	98.8	169.3	8.10	141.7	6.1	74.3	92.6	176.9	8.17	149.1	6.3	79.4	90.2	183.0	8.23	154.9	6.5	81.4		
		100	Operation not recommended																			
		120	Operation not recommended																			

NOTE: For part load application, divide capacity by 2.

3/7/13

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



150 - Performance Data

Cooling Capacity

Source		Load Flow - 21 GPM							Load Flow - 32 GPM							Load Flow - 42 GPM						
EST °F	Flow GPM	ELT °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F		
30	21	50	35.3	153.9	5.76	173.5	26.7	46.5	40.0	159.9	5.9	179.9	27.3	47.1	42.1	165.4	5.94	185.7	27.9	47.7		
		70	52.3	185.8	6.22	207.0	29.8	49.7	57.9	193.1	6.3	214.7	30.5	50.4	60.5	199.8	6.42	221.7	31.1	51.1		
		90	69.3	217.7	6.69	240.5	32.6	52.9	75.9	226.3	6.8	249.5	33.3	53.8	78.9	234.1	6.89	257.6	34.0	54.5		
	32	110	86.2	249.6	7.15	274.0	34.9	56.1	93.8	259.5	7.3	284.2	35.7	57.1	97.2	268.4	7.37	293.5	36.4	58.0		
		50	34.3	164.4	5.5	183.1	30.0	41.4	39.3	171.1	5.6	190.1	30.7	41.9	41.6	177.3	5.7	196.6	31.3	42.3		
		70	51.1	198.7	5.93	218.9	33.5	43.7	57.1	206.7	6.0	227.3	34.3	44.2	59.8	214.0	6.11	234.9	35.0	44.7		
		90	67.8	233.1	6.37	254.8	36.6	45.9	74.9	242.4	6.5	264.4	37.5	46.5	78.1	250.8	6.57	273.2	38.2	47.1		
		110	84.5	267.4	6.8	290.7	39.3	48.2	92.6	278.0	6.9	301.6	40.2	48.8	96.3	287.6	7.0	311.5	41.0	49.5		
		50	33.4	173.9	5.24	191.8	33.2	39.1	38.7	181.3	5.3	199.4	34.1	39.5	41.0	188.0	5.40	206.4	34.8	39.8		
	50	21	70	50.0	210.5	5.66	229.8	37.2	40.9	56.3	219.1	5.8	238.8	38.1	41.4	59.2	227.0	5.83	246.9	38.9	41.8	
			90	66.5	247.1	6.08	267.8	40.6	42.8	73.9	257.0	6.2	278.1	41.6	43.2	77.3	266.0	6.27	287.4	42.4	43.7	
			110	83.0	283.7	6.50	305.8	43.6	44.6	91.6	294.8	6.6	317.4	44.6	45.1	95.5	305.0	6.70	327.9	45.5	45.6	
32		50	36.4	143.2	7.49	168.8	19.1	66.1	40.7	148.9	7.6	174.9	19.6	66.7	42.7	154.0	7.73	180.4	19.9	67.2		
		70	53.3	175.2	8.02	202.5	21.9	69.3	58.6	182.1	8.1	209.9	22.4	70.0	61.0	188.4	8.26	216.6	22.8	70.6		
		90	70.3	207.2	8.54	236.3	24.3	72.5	76.5	215.3	8.7	244.9	24.8	73.3	79.4	222.7	8.80	252.8	25.3	74.1		
		110	87.2	239.1	9.06	270.0	26.4	75.7	94.5	248.5	9.2	280.0	27.0	76.7	97.8	257.1	9.34	289.0	27.5	77.5		
		50	35.5	151.8	7.2	176.2	21.2	61.0	40.1	158.0	7.3	182.8	21.7	61.4	42.2	163.7	7.4	188.8	22.2	61.8		
		70	52.3	185.8	7.65	211.9	24.3	63.2	57.9	193.3	7.8	219.8	24.9	63.7	60.5	200.1	7.89	227.0	25.4	64.2		
42		90	69.1	219.9	8.15	247.7	27.0	65.5	75.7	228.6	8.3	256.9	27.6	66.1	78.7	236.6	8.40	265.2	28.2	66.6		
		110	85.8	253.9	8.6	283.4	29.4	67.7	93.5	263.9	8.8	293.9	30.0	68.4	97.0	273.0	8.9	303.4	30.6	69.0		
		50	34.8	159.6	6.84	182.9	23.3	58.7	39.6	166.3	6.9	190.1	23.9	59.1	41.8	172.5	7.05	196.6	24.5	59.4		
	70	51.4	195.5	7.32	220.5	26.7	60.5	57.3	203.5	7.4	228.9	27.4	60.9	60.0	210.8	7.54	236.6	28.0	61.3			
	90	68.0	231.4	7.79	258.0	29.7	62.3	75.0	240.7	7.9	267.7	30.4	62.7	78.1	249.2	8.03	276.6	31.0	63.2			
	110	84.5	267.4	8.27	295.6	32.3	64.1	92.6	277.9	8.4	306.6	33.1	64.6	96.3	287.5	8.53	316.6	33.7	65.1			
70	21	50	37.4	132.6	9.22	164.1	14.4	85.6	41.4	137.8	9.4	169.8	14.7	86.2	43.2	142.6	9.51	175.0	15.0	86.7		
		70	54.3	164.6	9.81	198.1	16.8	88.9	59.3	171.1	10.0	205.1	17.2	89.5	61.6	177.0	10.11	211.5	17.5	90.1		
		90	71.3	196.6	10.39	232.1	18.9	92.1	77.2	204.4	10.6	240.4	19.4	92.9	79.9	211.4	10.71	248.0	19.7	93.6		
	32	110	Operation not recommended																			
		50	36.7	139.2	8.8	169.3	15.8	80.6	40.9	144.9	9.0	175.5	16.2	81.0	42.9	150.1	9.1	181.1	16.5	81.3		
		70	53.5	172.9	9.37	204.9	18.5	82.8	58.8	179.9	9.52	212.4	18.9	83.3	61.1	186.2	9.66	219.2	19.3	83.7		
		90	70.3	206.7	9.93	240.5	20.8	85.0	76.6	214.9	10.09	249.3	21.3	85.6	79.4	222.4	10.23	257.3	21.7	86.1		
		110	Operation not recommended																			
		50	36.2	145.2	8.44	174.0	17.2	78.3	40.5	151.4	8.6	180.7	17.7	78.6	42.5	157.0	8.70	186.7	18.0	78.9		
	42	70	52.8	180.5	8.97	211.1	20.1	80.1	58.3	187.9	9.1	219.0	20.6	80.4	60.7	194.7	9.25	226.2	21.0	80.8		
		90	69.4	215.8	9.51	248.2	22.7	81.8	76.0	224.5	9.7	257.4	23.2	82.3	78.9	232.3	9.80	265.8	23.7	82.7		
		110	Operation not recommended																			
50		38.4	122.0	10.96	159.3	11.1	105.2	42.1	126.8	11.1	164.8	11.4	105.7	43.8	131.1	11.30	169.7	11.6	106.2			
70		55.3	154.0	11.60	193.6	13.3	108.4	60.0	160.1	11.79	200.3	13.6	109.1	62.1	165.6	11.96	206.4	13.8	109.7			
90		72.3	186.1	12.24	227.8	15.2	111.7	77.9	193.4	12.44	235.9	15.5	112.5	80.5	200.1	12.62	243.1	15.8	113.2			
90	21	110	Operation not recommended																			
		50	37.9	126.6	10.5	162.4	12.1	100.1	41.8	131.8	10.6	168.2	12.4	100.5	43.5	136.6	10.8	173.4	12.6	100.8		
		70	54.8	160.0	11.09	197.9	14.4	102.4	59.6	166.5	11.27	205.0	14.8	102.8	61.8	172.4	11.43	211.4	15.1	103.2		
	32	90	71.6	193.5	11.71	233.4	16.5	104.6	77.4	201.2	11.90	241.7	16.9	105.1	80.1	208.2	12.07	249.3	17.2	105.6		
		110	Operation not recommended																			
		50	37.5	130.9	10.04	165.1	13.0	97.9	41.5	136.4	10.2	171.3	13.4	98.2	43.3	141.5	10.35	176.8	13.7	98.4		
		70	54.2	165.5	10.63	201.8	15.6	99.6	59.2	172.3	10.80	209.2	16.0	100.0	61.5	178.5	10.96	215.9	16.3	100.3		
		90	70.9	200.2	11.22	238.5	17.8	101.4	77.0	208.2	11.40	247.1	18.3	101.8	79.7	215.5	11.57	255.0	18.6	102.1		
		110	Operation not recommended																			
	110	21	50	39.4	111.3	12.69	154.6	8.8	124.7	42.8	115.7	12.9	159.7	9.0	125.2	44.3	119.7	13.08	164.3	9.2	125.7	
			70	56.3	143.4	13.39	189.1	10.7	128.0	60.7	149.1	13.61	195.5	11.0	128.6	62.7	154.2	13.81	201.3	11.2	129.2	
			90	Operation not recommended																		
32		110	Operation not recommended																			
		50	39.1	114.1	12.1	155.5	9.4	119.7	42.6	118.7	12.3	160.8	9.6	120.1	44.1	123.0	12.5	165.7	9.8	120.4		
		70	56.0	147.2	12.81	190.9	11.5	121.9	60.4	153.1	13.02	197.5	11.8	122.3	62.5	158.5	13.21	203.5	12.0	122.7		
		90	Operation not recommended																			
		110	Operation not recommended																			
		50	38.9	116.6	11.64	156.3	10.0	117.4	42.4	121.5	11.8	161.9	10.3	117.7	44.0	126.0	12.00	166.9	10.5	117.9		
42		70	55.7	150.6	12.29	192.5	12.3	119.2	60.2	156.7	12.49	199.3	12.6	119.5	62.3	162.3	12.67	205.6	12.8	119.8		
		90	Operation not recommended																			
		110	Operation not recommended																			

NOTE: For part load application, divide capacity by 2.

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



150 - Performance Data

Heating Capacity

Source		Load Flow - 21 GPM							Load Flow - 32 GPM					Load Flow - 42 GPM							
EWT °F	Flow GPM	ELT °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	
30	32	60	72.6	132.7	7.7	106.4	5.0	19.9	68.4	133.8	7.6	107.9	5.2	23.3	66.4	134.7	7.4	109.3	5.3	24.8	
		80	92.0	126.1	11.0	88.6	3.4	21.6	88.0	127.6	10.8	90.8	3.5	24.3	86.1	128.9	10.6	92.7	3.6	25.6	
		100	111.4	119.6	14.3	70.9	2.5	23.2	107.6	121.4	14.0	73.6	2.5	25.4	105.9	123.0	13.7	76.1	2.6	26.4	
	120	130.8	113.0	17.6	53.1	1.9	24.9	127.2	115.2	17.2	56.5	2.0	26.5	125.6	117.1	16.9	59.6	2.0	27.2		
	42	60	72.9	135.9	7.8	109.4	5.1	19.6	68.6	137.0	7.6	111.0	5.3	23.1	66.6	138.0	7.5	112.4	5.4	24.6	
		80	92.3	129.2	11.1	91.5	3.4	21.3	88.2	130.7	10.9	93.6	3.5	24.1	86.3	132.0	10.7	95.6	3.6	25.4	
100		111.7	122.5	14.4	73.5	2.5	23.0	107.8	124.3	14.1	76.3	2.6	25.2	106.0	126.0	13.8	78.8	2.7	26.2		
120	131.0	115.8	17.7	55.5	1.9	24.7	127.4	118.0	17.3	58.9	2.0	26.3	125.7	120.0	17.0	62.0	2.1	27.0			
50	21	60	75.6	163.4	8.3	135.3	5.8	37.1	70.3	164.7	8.1	137.1	6.0	41.4	67.9	165.9	8.0	138.7	6.1	43.4	
		80	94.9	156.0	11.2	117.8	4.1	38.8	89.9	157.8	11.0	120.3	4.2	42.5	87.6	159.4	10.8	122.6	4.3	44.2	
		100	114.2	148.6	14.1	100.4	3.1	40.4	109.4	150.8	13.9	103.5	3.2	43.5	107.3	152.8	13.6	106.4	3.3	44.9	
		120	133.4	141.2	17.1	82.9	2.4	42.1	129.0	143.9	16.7	86.8	2.5	44.6	127.0	146.3	16.4	90.3	2.6	45.7	
	32	60	76.0	168.0	8.3	139.6	5.9	36.7	70.6	169.3	8.2	141.4	6.1	41.2	68.1	170.5	8.0	143.1	6.2	43.2	
		80	95.3	160.3	11.3	121.8	4.2	38.4	90.1	162.1	11.1	124.4	4.3	42.2	87.8	163.8	10.9	126.7	4.4	44.0	
		100	114.5	152.7	14.2	104.1	3.1	40.1	109.7	155.0	14.0	107.3	3.3	43.3	107.5	157.1	13.7	110.3	3.4	44.7	
		120	133.8	145.1	17.2	86.4	2.5	41.8	129.2	147.8	16.9	90.3	2.6	44.4	127.2	150.3	16.5	93.9	2.7	45.5	
	42	60	76.4	172.0	8.4	143.4	6.0	36.3	70.8	173.4	8.2	145.3	6.2	40.9	68.3	174.7	8.1	147.0	6.3	43.0	
		80	95.6	164.2	11.4	125.5	4.2	38.1	90.4	166.1	11.2	128.0	4.4	42.0	88.0	167.8	11.0	130.4	4.5	43.8	
		100	114.9	156.4	14.4	107.5	3.2	39.8	109.9	158.8	14.1	110.8	3.3	43.1	107.7	160.9	13.8	113.8	3.4	44.6	
		120	134.2	148.6	17.3	89.5	2.5	41.5	129.5	151.4	17.0	93.5	2.6	44.2	127.3	154.0	16.7	97.1	2.7	45.4	
70	21	60	78.8	197.8	8.9	167.5	6.5	54.0	72.5	199.3	8.7	169.6	6.7	59.4	69.6	200.8	8.6	171.5	6.9	61.8	
		80	98.0	189.3	11.5	150.1	4.8	55.7	92.0	191.4	11.3	153.0	5.0	60.4	89.2	193.4	11.1	155.6	5.1	62.6	
		100	117.2	180.8	14.1	132.7	3.8	57.4	111.5	183.5	13.8	136.3	3.9	61.5	108.9	186.0	13.6	139.6	4.0	63.4	
		120	136.4	172.3	16.7	115.3	3.0	59.0	131.0	175.6	16.4	119.7	3.1	62.5	128.5	178.6	16.1	123.7	3.3	64.1	
	32	60	79.4	203.2	8.9	172.7	6.7	53.6	72.8	204.8	8.8	174.9	6.8	59.1	69.8	206.3	8.6	176.8	7.0	61.6	
		80	98.5	194.5	11.6	155.0	4.9	55.2	92.3	196.7	11.4	157.9	5.1	60.1	89.5	198.7	11.2	160.6	5.2	62.4	
		100	117.7	185.8	14.2	137.3	3.8	56.9	111.8	188.6	13.9	141.0	4.0	61.2	109.1	191.1	13.7	144.4	4.1	63.1	
		120	136.9	177.1	16.9	119.6	3.1	58.6	131.3	180.5	16.5	124.1	3.2	62.2	128.7	183.5	16.2	128.2	3.3	63.9	
	42	60	79.8	208.2	9.0	177.4	6.8	53.1	73.1	209.8	8.8	179.6	7.0	58.8	70.1	211.3	8.7	181.6	7.1	61.4	
		80	99.0	199.2	11.7	159.4	5.0	54.8	92.6	201.5	11.4	162.5	5.2	59.8	89.7	203.6	11.2	165.2	5.3	62.1	
		100	118.1	190.3	14.3	141.5	3.9	56.5	112.1	193.2	14.0	145.3	4.0	60.9	109.3	195.8	13.8	148.7	4.2	62.9	
		120	137.3	181.4	17.0	123.5	3.1	58.2	131.6	184.9	16.6	128.1	3.3	62.0	129.0	188.0	16.3	132.3	3.4	63.7	
90	21	60	82.1	232.1	9.5	199.7	7.2	71.0	74.6	233.9	9.3	202.1	7.4	77.4	71.2	235.6	9.2	204.3	7.5	80.3	
		80	101.2	222.6	11.8	182.3	5.5	72.6	94.1	225.1	11.6	185.6	5.7	78.4	90.8	227.4	11.4	188.6	5.9	81.0	
		100	Operation not recommended																		
		120	Operation not recommended																		
	32	60	82.7	238.5	9.6	205.9	7.3	70.4	75.0	240.4	9.4	208.3	7.5	77.0	71.5	242.1	9.2	210.6	7.7	80.0	
		80	101.8	228.7	11.9	188.2	5.6	72.1	94.5	231.3	11.7	191.5	5.8	78.0	91.1	233.6	11.5	194.6	6.0	80.7	
		100	Operation not recommended																		
		120	Operation not recommended																		
	42	60	83.3	244.3	9.6	211.4	7.4	69.9	75.4	246.2	9.5	214.0	7.6	76.6	71.8	248.0	9.3	216.3	7.8	79.7	
		80	102.3	234.3	12.0	193.4	5.7	71.6	94.8	236.9	11.7	196.9	5.9	77.7	91.4	239.3	11.5	200.0	6.1	80.5	
		100	Operation not recommended																		
		120	Operation not recommended																		

NOTE: For part load application, divide capacity by 2.

3/7/13

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Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



180 - Performance Data

Cooling Capacity

Source		Load Flow - 24 GPM							Load Flow - 36 GPM							Load Flow - 48 GPM						
EST °F	Flow GPM	ELT °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F	LLT °F	TC MBTUH	Power kW	HR MBTUH	EER	LST °F		
30	24	50	35.5	173.5	6.83	196.8	25.4	46.4	40.0	180.0	6.9	203.7	26.0	47.0	42.2	186.6	7.04	210.6	26.5	47.5		
		70	52.4	211.1	7.58	237.0	27.9	49.7	57.8	219.1	7.7	245.3	28.5	50.4	60.5	227.0	7.81	253.7	29.1	51.1		
		90	69.3	248.8	8.32	277.2	29.9	53.1	75.7	258.2	8.5	287.0	30.5	53.9	78.9	267.5	8.58	296.8	31.2	54.7		
	110	86.1	286.4	9.07	317.4	31.6	56.4	93.5	297.2	9.2	328.6	32.3	57.4	97.2	308.0	9.35	339.9	32.9	58.3			
	36	50	34.6	184.8	6.5	207.0	28.4	41.5	39.3	192.0	6.6	214.6	29.0	41.9	41.7	199.3	6.7	222.2	29.7	42.3		
		70	51.2	225.2	7.23	249.9	31.1	43.9	57.0	233.9	7.3	258.9	31.8	44.4	59.9	242.5	7.46	268.0	32.5	44.9		
		90	67.9	265.6	7.94	292.7	33.4	46.3	74.7	275.7	8.1	303.2	34.2	46.8	78.1	285.8	8.19	313.7	34.9	47.4		
	110	84.5	306.0	8.7	335.5	35.3	48.6	92.4	317.5	8.8	347.5	36.1	49.3	96.3	329.0	8.9	359.5	36.9	50.0			
	48	50	33.7	196.1	6.21	217.3	31.6	39.1	38.7	204.1	6.3	225.6	32.4	39.4	41.2	212.0	6.40	233.8	33.1	39.7		
		70	50.1	239.2	6.89	262.7	34.7	40.9	56.2	248.6	7.0	272.5	35.5	41.4	59.3	258.0	7.10	282.2	36.3	41.8		
		90	66.5	282.4	7.57	308.2	37.3	42.8	73.7	293.2	7.7	319.4	38.2	43.3	77.3	304.0	7.80	330.6	39.0	43.8		
	110	82.9	325.5	8.25	353.6	39.5	44.7	91.2	337.8	8.4	366.3	40.3	45.3	95.4	350.0	8.50	379.0	41.2	45.8			
50	24	50	36.5	162.2	9.03	193.0	18.0	66.1	40.6	168.3	9.2	199.6	18.3	66.6	42.7	174.4	9.31	206.2	18.7	67.2		
		70	53.7	195.9	9.83	229.5	19.9	69.1	58.7	203.3	10.0	237.4	20.4	69.8	61.2	210.7	10.14	245.3	20.8	70.4		
		90	70.9	229.7	10.63	265.9	21.6	72.2	76.8	238.3	10.8	275.2	22.1	72.9	79.7	247.0	10.96	284.4	22.5	73.7		
	110	88.0	263.4	11.43	302.4	23.1	75.2	94.8	273.3	11.6	312.9	23.6	76.1	98.2	283.3	11.78	323.4	24.0	77.0			
	36	50	35.7	171.4	8.6	200.9	19.8	61.2	40.1	178.1	8.8	208.1	20.3	61.6	42.3	184.9	8.9	215.2	20.8	62.0		
		70	52.7	207.4	9.40	239.5	22.1	63.3	58.0	215.4	9.5	248.0	22.6	63.8	60.7	223.4	9.69	256.4	23.0	64.2		
		90	69.7	243.4	10.16	278.1	23.9	65.4	76.0	252.6	10.3	287.8	24.5	66.0	79.1	261.9	10.48	297.6	25.0	66.5		
	110	86.7	279.3	10.9	316.6	25.6	67.6	93.9	289.9	11.1	327.7	26.1	68.2	97.5	300.4	11.3	338.8	26.7	68.8			
	48	50	34.9	180.7	8.25	208.8	21.9	58.7	39.6	188.0	8.4	216.5	22.5	59.0	41.9	195.3	8.50	224.3	23.0	59.3		
		70	51.8	218.9	8.97	249.5	24.4	60.4	57.4	227.4	9.1	258.5	25.0	60.8	60.2	236.0	9.25	267.6	25.5	61.1		
		90	68.6	257.1	9.70	290.2	26.5	62.1	75.2	266.9	9.9	300.5	27.1	62.5	78.5	276.8	10.00	310.9	27.7	63.0		
	110	85.4	295.3	10.43	330.9	28.3	63.8	93.0	306.4	10.6	342.5	28.9	64.3	96.8	317.5	10.75	354.2	29.5	64.8			
70	24	50	37.4	150.9	11.24	189.2	13.4	85.8	41.3	156.6	11.4	195.5	13.7	86.3	43.2	162.3	11.59	201.8	14.0	86.8		
		70	54.9	180.7	12.09	222.0	15.0	88.5	59.6	187.5	12.3	229.4	15.3	89.1	61.9	194.3	12.46	236.9	15.6	89.7		
		90	72.5	210.6	12.94	254.7	16.3	91.2	77.9	218.5	13.1	263.3	16.6	91.9	80.6	226.4	13.34	271.9	17.0	92.7		
	110	Operation not recommended																				
	36	50	36.8	158.0	10.8	194.8	14.7	80.8	40.9	164.2	10.9	201.5	15.0	81.2	42.9	170.4	11.1	208.3	15.4	81.6		
		70	54.2	189.6	11.57	229.1	16.4	82.7	59.1	196.9	11.75	237.0	16.8	83.2	61.5	204.2	11.93	244.9	17.1	83.6		
		90	71.6	221.2	12.39	263.4	17.9	84.6	77.2	229.6	12.58	272.5	18.3	85.1	80.1	238.0	12.77	281.5	18.6	85.6		
	110	Operation not recommended																				
	48	50	36.2	165.2	10.28	200.3	16.1	78.3	40.4	171.9	10.4	207.5	16.5	78.6	42.6	178.6	10.60	214.8	16.8	78.9		
		70	53.5	198.5	11.06	236.2	17.9	79.8	58.5	206.3	11.2	244.6	18.4	80.2	61.1	214.1	11.40	253.0	18.8	80.5		
		90	70.7	231.8	11.83	272.1	19.6	81.3	76.6	240.7	12.0	281.7	20.0	81.7	79.6	249.5	12.20	291.2	20.5	82.1		
	110	Operation not recommended																				
90	24	50	38.4	139.6	13.44	185.5	10.4	105.5	42.0	144.8	13.7	191.4	10.6	106.0	43.7	150.1	13.86	197.4	10.8	106.4		
		70	56.2	165.5	14.34	214.5	11.5	107.9	60.5	171.8	14.57	221.4	11.8	108.5	62.6	178.0	14.79	228.4	12.0	109.0		
		90	74.0	191.5	15.24	243.5	12.6	110.3	79.0	198.7	15.48	251.5	12.8	111.0	81.4	205.9	15.72	259.5	13.1	111.6		
	110	Operation not recommended																				
	36	50	37.9	144.7	12.9	188.6	11.2	100.5	41.6	150.3	13.1	195.0	11.5	100.8	43.5	156.0	13.3	201.3	11.7	101.2		
		70	55.7	171.8	13.74	218.7	12.5	102.2	60.1	178.4	13.96	226.0	12.8	102.6	62.3	185.0	14.17	233.4	13.1	103.0		
		90	73.4	199.0	14.61	248.8	13.6	103.8	78.5	206.5	14.83	257.1	13.9	104.3	81.1	214.1	15.06	265.5	14.2	104.7		
	110	Operation not recommended																				
	48	50	37.5	149.8	12.32	191.8	12.2	98.0	41.3	155.8	12.5	198.5	12.5	98.3	43.3	161.9	12.70	205.2	12.7	98.6		
		70	55.2	178.1	13.14	223.0	13.6	99.3	59.7	185.1	13.35	230.6	13.9	99.6	62.0	192.1	13.55	238.3	14.2	99.9		
		90	72.8	206.5	13.97	254.1	14.8	100.6	78.1	214.4	14.18	262.8	15.1	100.9	80.7	222.3	14.40	271.4	15.4	101.3		
	110	Operation not recommended																				
110	24	50	39.3	128.3	15.65	181.7	8.2	125.1	42.6	133.1	15.9	187.3	8.4	125.6	44.3	137.9	16.13	193.0	8.6	126.1		
		70	57.5	150.3	16.60	207.0	9.1	127.2	61.3	156.0	16.86	213.5	9.3	127.8	63.3	161.6	17.11	220.0	9.4	128.3		
		90	Operation not recommended																			
	110	Operation not recommended																				
	36	50	39.1	131.3	15.0	182.5	8.8	120.1	42.4	136.4	15.2	188.4	9.0	120.5	44.1	141.6	15.5	194.3	9.2	120.8		
		70	57.2	154.0	15.91	208.3	9.7	121.6	61.1	160.0	16.16	215.1	9.9	121.9	63.1	165.9	16.41	221.9	10.1	122.3		
		90	Operation not recommended																			
	110	Operation not recommended																				
	48	50	38.8	134.3	14.36	183.3	9.4	117.6	42.2	139.8	14.6	189.5	9.6	117.9	44.0	145.2	14.80	195.7	9.8	118.2		
		70	56.9	157.7	15.23	209.7	10.4	118.7	60.9	163.9	15.46	216.7	10.6	119.0	62.9	170.1	15.70	223.7	10.8	119.3		
		90	Operation not recommended																			
	110	Operation not recommended																				

NOTE: For part load application, divide capacity by 2.

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



180 - Performance Data

Heating Capacity

Source		Load Flow - 24 GPM							Load Flow - 36 GPM					Load Flow - 48 GPM								
EWT °F	Flow GPM	ELT °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F	LLT °F	HC MBTUH	Power kW	HE MBTUH	COP	LST °F		
30	36	60	72.7	152.0	9.7	119.1	4.6	20.1	68.5	153.2	9.5	120.8	4.7	23.3	66.4	154.3	9.3	122.5	4.8	24.9		
		80	92.0	143.7	12.6	100.6	3.3	21.6	88.1	145.2	12.4	102.9	3.4	24.3	86.1	146.8	12.2	105.2	3.5	25.6		
		100	111.3	135.4	15.6	82.1	2.5	23.2	107.6	137.3	15.3	85.0	2.6	25.3	105.8	139.2	15.0	87.9	2.7	26.3		
	120	130.6	127.0	18.6	63.6	2.0	24.7	127.2	129.3	18.2	67.1	2.1	26.3	125.5	131.6	17.9	70.7	2.2	27.1			
	48	60	73.0	155.9	9.7	122.7	4.7	19.8	68.7	157.1	9.6	124.5	4.8	23.1	66.6	158.3	9.4	126.2	4.9	24.7		
		80	92.3	147.4	12.7	104.0	3.4	21.3	88.3	149.0	12.5	106.3	3.5	24.1	86.3	150.5	12.3	108.7	3.6	25.5		
100		111.6	138.8	15.7	85.2	2.6	22.9	107.8	140.8	15.4	88.2	2.7	25.1	105.9	142.8	15.1	91.1	2.8	26.2			
120	130.9	130.3	18.7	66.4	2.0	24.5	127.4	132.6	18.4	70.0	2.1	26.1	125.6	135.0	18.0	73.6	2.2	26.9				
50	24	60	75.6	187.3	10.1	152.8	5.4	37.3	70.5	188.8	10.0	154.8	5.6	41.4	67.9	190.2	9.8	156.8	5.7	43.5		
		80	94.8	177.3	13.1	132.6	4.0	39.0	90.0	179.3	12.9	135.3	4.1	42.5	87.5	181.2	12.7	138.0	4.2	44.3		
		100	113.9	167.4	16.1	112.3	3.0	40.6	109.4	169.7	15.8	115.8	3.1	43.6	107.2	172.1	15.5	119.2	3.3	45.0		
		120	133.1	157.4	19.1	92.1	2.4	42.3	128.9	160.2	18.8	96.2	2.5	44.7	126.8	163.1	18.4	100.3	2.6	45.8		
	36	60	76.0	192.3	10.2	157.5	5.5	36.9	70.8	193.7	10.0	159.5	5.7	41.1	68.1	195.2	9.9	161.6	5.8	43.3		
		80	95.2	182.0	13.2	136.9	4.0	38.6	90.2	184.0	13.0	139.7	4.2	42.2	87.7	185.9	12.7	142.4	4.3	44.1		
		100	114.3	171.8	16.2	116.3	3.1	40.3	109.7	174.2	15.9	119.8	3.2	43.3	107.4	176.6	15.6	123.3	3.3	44.9		
		120	133.5	161.5	19.3	95.8	2.5	42.0	129.1	164.4	18.9	100.0	2.6	44.4	127.0	167.4	18.5	104.2	2.6	45.7		
	48	60	76.4	197.2	10.3	162.1	5.6	36.5	71.0	198.7	10.1	164.2	5.8	40.9	68.3	200.2	9.9	166.3	5.9	43.1		
		80	95.6	186.7	13.3	141.2	4.1	38.2	90.5	188.7	13.1	144.0	4.2	42.0	87.9	190.7	12.8	146.9	4.4	43.9		
		100	114.7	176.2	16.4	120.3	3.2	40.0	109.9	178.7	16.1	123.9	3.3	43.1	107.5	181.2	15.8	127.4	3.4	44.7		
		120	133.8	165.7	19.4	99.4	2.5	41.7	129.4	168.7	19.0	103.7	2.6	44.2	127.2	171.7	18.7	108.0	2.7	45.5		
70	24	60	78.9	226.5	10.7	190.1	6.2	54.2	72.7	228.3	10.5	192.5	6.4	59.3	69.6	230.0	10.3	194.8	6.5	61.9		
		80	97.9	214.7	13.7	167.9	4.6	56.0	92.1	217.0	13.5	171.0	4.7	60.5	89.1	219.3	13.2	174.2	4.9	62.7		
		100	116.9	202.8	16.8	145.7	3.5	57.9	111.4	205.7	16.4	149.6	3.7	61.7	108.7	208.6	16.1	153.6	3.8	63.6		
		120	135.9	191.0	19.8	123.4	2.8	59.7	130.8	194.5	19.4	128.2	2.9	62.9	128.2	197.9	19.0	132.9	3.0	64.5		
	36	60	79.4	232.5	10.8	195.8	6.3	53.7	73.0	234.3	10.6	198.2	6.5	59.0	69.8	236.0	10.4	200.6	6.7	61.6		
		80	98.4	220.3	13.8	173.2	4.7	55.6	92.4	222.7	13.6	176.4	4.8	60.2	89.4	225.1	13.3	179.6	5.0	62.5		
		100	117.3	208.2	16.9	150.6	3.6	57.5	111.7	211.1	16.6	154.6	3.7	61.4	108.9	214.1	16.3	158.6	3.9	63.4		
		120	136.3	196.0	20.0	127.9	2.9	59.3	131.1	199.6	19.6	132.8	3.0	62.6	128.5	203.1	19.2	137.7	3.1	64.3		
	48	60	79.9	238.5	10.8	201.5	6.5	53.2	73.3	240.3	10.6	203.9	6.6	58.7	70.1	242.1	10.5	206.4	6.8	61.4		
		80	98.8	226.0	13.9	178.5	4.8	55.1	92.7	228.4	13.7	181.8	4.9	59.9	89.6	230.8	13.4	185.0	5.0	62.3		
		100	117.8	213.5	17.0	155.5	3.7	57.0	112.0	216.6	16.7	159.6	3.8	61.1	109.1	219.6	16.4	163.7	3.9	63.2		
		120	136.8	201.0	20.1	132.4	2.9	59.0	131.4	204.7	19.7	137.4	3.0	62.4	128.7	208.3	19.3	142.4	3.2	64.1		
90	24	60	82.1	265.8	11.2	227.5	6.9	71.0	74.9	267.8	11.0	230.2	7.1	77.2	71.2	269.8	10.8	232.8	7.3	80.3		
		80	101.0	252.0	14.3	203.2	5.2	73.1	94.2	254.7	14.0	206.8	5.3	78.5	90.7	257.5	13.8	210.4	5.5	81.2		
		100	Operation not recommended																			
		120	Operation not recommended																			
	36	60	82.7	272.7	11.3	234.2	7.1	70.5	75.3	274.8	11.1	236.9	7.3	76.8	71.5	276.9	10.9	239.6	7.4	80.0		
		80	101.6	258.7	14.4	209.5	5.3	72.5	94.5	261.4	14.2	213.2	5.4	78.2	91.0	264.2	13.9	216.8	5.6	81.0		
		100	Operation not recommended																			
		120	Operation not recommended																			
	48	60	83.3	279.7	11.4	240.9	7.2	69.9	75.7	281.9	11.2	243.7	7.4	76.5	71.8	284.0	11.0	246.5	7.6	79.7		
		80	102.1	265.3	14.5	215.7	5.4	72.0	94.9	268.2	14.3	219.5	5.5	77.8	91.3	271.0	14.0	223.2	5.7	80.7		
		100	Operation not recommended																			
		120	Operation not recommended																			

NOTE: For part load application, divide capacity by 2.

3/7/13

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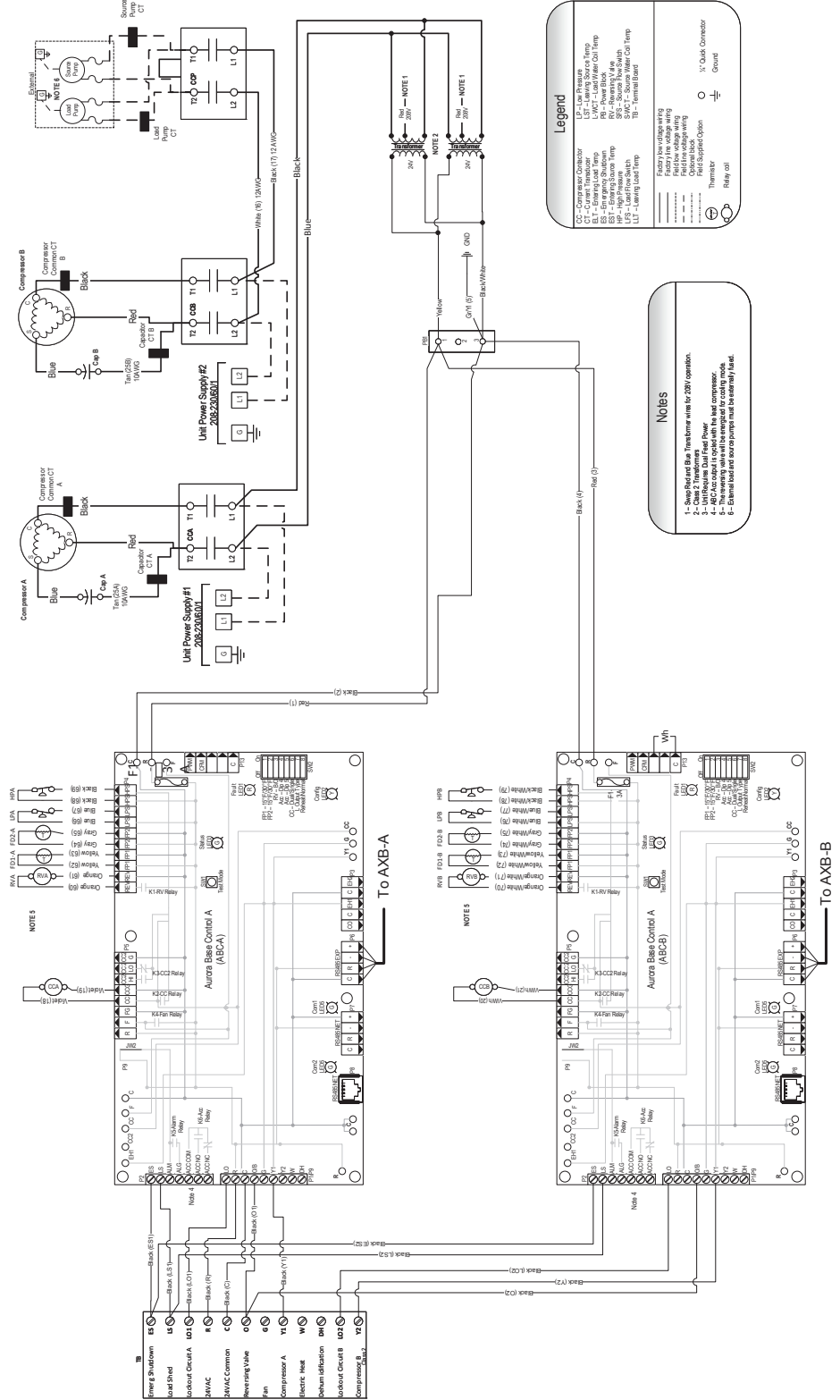
Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



Wiring Schematics

208-230/60/1 Supply Power with HydroZone

The manufacturer works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely the manufacturer's opinion or commendation of its products.



Legend

CC - Compressor Contactor	LP - Low Pressure	TR - Thermostat	1" - 1" Quick Connector
CT - Compressor Thermal Protection	L1 - Line 1	TS - Temperature Switch	⊕ - Ground
ES - Emergency Stop	L2 - Line 2	TS-2 - Shared Temperature Switch	
ELT - External Load Trip	L3 - Line 3	TS-3 - Shared Temperature Switch	
RT - Relay	W - Wire	TS-4 - Shared Temperature Switch	
SP - Signal Pressure	W-1 - Wire 1	TS-5 - Shared Temperature Switch	
SP-2 - Shared Pressure Switch	W-2 - Wire 2	TS-6 - Shared Temperature Switch	
SP-3 - Shared Pressure Switch	W-3 - Wire 3	TS-7 - Shared Temperature Switch	
SP-4 - Shared Pressure Switch	W-4 - Wire 4	TS-8 - Shared Temperature Switch	
SP-5 - Shared Pressure Switch	W-5 - Wire 5	TS-9 - Shared Temperature Switch	
SP-6 - Shared Pressure Switch	W-6 - Wire 6	TS-10 - Shared Temperature Switch	
SP-7 - Shared Pressure Switch	W-7 - Wire 7	TS-11 - Shared Temperature Switch	
SP-8 - Shared Pressure Switch	W-8 - Wire 8	TS-12 - Shared Temperature Switch	
SP-9 - Shared Pressure Switch	W-9 - Wire 9	TS-13 - Shared Temperature Switch	
SP-10 - Shared Pressure Switch	W-10 - Wire 10	TS-14 - Shared Temperature Switch	
SP-11 - Shared Pressure Switch	W-11 - Wire 11	TS-15 - Shared Temperature Switch	
SP-12 - Shared Pressure Switch	W-12 - Wire 12	TS-16 - Shared Temperature Switch	
SP-13 - Shared Pressure Switch	W-13 - Wire 13	TS-17 - Shared Temperature Switch	
SP-14 - Shared Pressure Switch	W-14 - Wire 14	TS-18 - Shared Temperature Switch	
SP-15 - Shared Pressure Switch	W-15 - Wire 15	TS-19 - Shared Temperature Switch	
SP-16 - Shared Pressure Switch	W-16 - Wire 16	TS-20 - Shared Temperature Switch	
SP-17 - Shared Pressure Switch	W-17 - Wire 17	TS-21 - Shared Temperature Switch	
SP-18 - Shared Pressure Switch	W-18 - Wire 18	TS-22 - Shared Temperature Switch	
SP-19 - Shared Pressure Switch	W-19 - Wire 19	TS-23 - Shared Temperature Switch	
SP-20 - Shared Pressure Switch	W-20 - Wire 20	TS-24 - Shared Temperature Switch	
SP-21 - Shared Pressure Switch	W-21 - Wire 21	TS-25 - Shared Temperature Switch	
SP-22 - Shared Pressure Switch	W-22 - Wire 22	TS-26 - Shared Temperature Switch	
SP-23 - Shared Pressure Switch	W-23 - Wire 23	TS-27 - Shared Temperature Switch	
SP-24 - Shared Pressure Switch	W-24 - Wire 24	TS-28 - Shared Temperature Switch	
SP-25 - Shared Pressure Switch	W-25 - Wire 25	TS-29 - Shared Temperature Switch	
SP-26 - Shared Pressure Switch	W-26 - Wire 26	TS-30 - Shared Temperature Switch	
SP-27 - Shared Pressure Switch	W-27 - Wire 27	TS-31 - Shared Temperature Switch	
SP-28 - Shared Pressure Switch	W-28 - Wire 28	TS-32 - Shared Temperature Switch	
SP-29 - Shared Pressure Switch	W-29 - Wire 29	TS-33 - Shared Temperature Switch	
SP-30 - Shared Pressure Switch	W-30 - Wire 30	TS-34 - Shared Temperature Switch	
SP-31 - Shared Pressure Switch	W-31 - Wire 31	TS-35 - Shared Temperature Switch	
SP-32 - Shared Pressure Switch	W-32 - Wire 32	TS-36 - Shared Temperature Switch	
SP-33 - Shared Pressure Switch	W-33 - Wire 33	TS-37 - Shared Temperature Switch	
SP-34 - Shared Pressure Switch	W-34 - Wire 34	TS-38 - Shared Temperature Switch	
SP-35 - Shared Pressure Switch	W-35 - Wire 35	TS-39 - Shared Temperature Switch	
SP-36 - Shared Pressure Switch	W-36 - Wire 36	TS-40 - Shared Temperature Switch	
SP-37 - Shared Pressure Switch	W-37 - Wire 37	TS-41 - Shared Temperature Switch	
SP-38 - Shared Pressure Switch	W-38 - Wire 38	TS-42 - Shared Temperature Switch	
SP-39 - Shared Pressure Switch	W-39 - Wire 39	TS-43 - Shared Temperature Switch	
SP-40 - Shared Pressure Switch	W-40 - Wire 40	TS-44 - Shared Temperature Switch	
SP-41 - Shared Pressure Switch	W-41 - Wire 41	TS-45 - Shared Temperature Switch	
SP-42 - Shared Pressure Switch	W-42 - Wire 42	TS-46 - Shared Temperature Switch	
SP-43 - Shared Pressure Switch	W-43 - Wire 43	TS-47 - Shared Temperature Switch	
SP-44 - Shared Pressure Switch	W-44 - Wire 44	TS-48 - Shared Temperature Switch	
SP-45 - Shared Pressure Switch	W-45 - Wire 45	TS-49 - Shared Temperature Switch	
SP-46 - Shared Pressure Switch	W-46 - Wire 46	TS-50 - Shared Temperature Switch	
SP-47 - Shared Pressure Switch	W-47 - Wire 47	TS-51 - Shared Temperature Switch	
SP-48 - Shared Pressure Switch	W-48 - Wire 48	TS-52 - Shared Temperature Switch	
SP-49 - Shared Pressure Switch	W-49 - Wire 49	TS-53 - Shared Temperature Switch	
SP-50 - Shared Pressure Switch	W-50 - Wire 50	TS-54 - Shared Temperature Switch	
SP-51 - Shared Pressure Switch	W-51 - Wire 51	TS-55 - Shared Temperature Switch	
SP-52 - Shared Pressure Switch	W-52 - Wire 52	TS-56 - Shared Temperature Switch	
SP-53 - Shared Pressure Switch	W-53 - Wire 53	TS-57 - Shared Temperature Switch	
SP-54 - Shared Pressure Switch	W-54 - Wire 54	TS-58 - Shared Temperature Switch	
SP-55 - Shared Pressure Switch	W-55 - Wire 55	TS-59 - Shared Temperature Switch	
SP-56 - Shared Pressure Switch	W-56 - Wire 56	TS-60 - Shared Temperature Switch	
SP-57 - Shared Pressure Switch	W-57 - Wire 57	TS-61 - Shared Temperature Switch	
SP-58 - Shared Pressure Switch	W-58 - Wire 58	TS-62 - Shared Temperature Switch	
SP-59 - Shared Pressure Switch	W-59 - Wire 59	TS-63 - Shared Temperature Switch	
SP-60 - Shared Pressure Switch	W-60 - Wire 60	TS-64 - Shared Temperature Switch	
SP-61 - Shared Pressure Switch	W-61 - Wire 61	TS-65 - Shared Temperature Switch	
SP-62 - Shared Pressure Switch	W-62 - Wire 62	TS-66 - Shared Temperature Switch	
SP-63 - Shared Pressure Switch	W-63 - Wire 63	TS-67 - Shared Temperature Switch	
SP-64 - Shared Pressure Switch	W-64 - Wire 64	TS-68 - Shared Temperature Switch	
SP-65 - Shared Pressure Switch	W-65 - Wire 65	TS-69 - Shared Temperature Switch	
SP-66 - Shared Pressure Switch	W-66 - Wire 66	TS-70 - Shared Temperature Switch	
SP-67 - Shared Pressure Switch	W-67 - Wire 67	TS-71 - Shared Temperature Switch	
SP-68 - Shared Pressure Switch	W-68 - Wire 68	TS-72 - Shared Temperature Switch	
SP-69 - Shared Pressure Switch	W-69 - Wire 69	TS-73 - Shared Temperature Switch	
SP-70 - Shared Pressure Switch	W-70 - Wire 70	TS-74 - Shared Temperature Switch	
SP-71 - Shared Pressure Switch	W-71 - Wire 71	TS-75 - Shared Temperature Switch	
SP-72 - Shared Pressure Switch	W-72 - Wire 72	TS-76 - Shared Temperature Switch	
SP-73 - Shared Pressure Switch	W-73 - Wire 73	TS-77 - Shared Temperature Switch	
SP-74 - Shared Pressure Switch	W-74 - Wire 74	TS-78 - Shared Temperature Switch	
SP-75 - Shared Pressure Switch	W-75 - Wire 75	TS-79 - Shared Temperature Switch	
SP-76 - Shared Pressure Switch	W-76 - Wire 76	TS-80 - Shared Temperature Switch	
SP-77 - Shared Pressure Switch	W-77 - Wire 77	TS-81 - Shared Temperature Switch	
SP-78 - Shared Pressure Switch	W-78 - Wire 78	TS-82 - Shared Temperature Switch	
SP-79 - Shared Pressure Switch	W-79 - Wire 79	TS-83 - Shared Temperature Switch	
SP-80 - Shared Pressure Switch	W-80 - Wire 80	TS-84 - Shared Temperature Switch	
SP-81 - Shared Pressure Switch	W-81 - Wire 81	TS-85 - Shared Temperature Switch	
SP-82 - Shared Pressure Switch	W-82 - Wire 82	TS-86 - Shared Temperature Switch	
SP-83 - Shared Pressure Switch	W-83 - Wire 83	TS-87 - Shared Temperature Switch	
SP-84 - Shared Pressure Switch	W-84 - Wire 84	TS-88 - Shared Temperature Switch	
SP-85 - Shared Pressure Switch	W-85 - Wire 85	TS-89 - Shared Temperature Switch	
SP-86 - Shared Pressure Switch	W-86 - Wire 86	TS-90 - Shared Temperature Switch	
SP-87 - Shared Pressure Switch	W-87 - Wire 87	TS-91 - Shared Temperature Switch	
SP-88 - Shared Pressure Switch	W-88 - Wire 88	TS-92 - Shared Temperature Switch	
SP-89 - Shared Pressure Switch	W-89 - Wire 89	TS-93 - Shared Temperature Switch	
SP-90 - Shared Pressure Switch	W-90 - Wire 90	TS-94 - Shared Temperature Switch	
SP-91 - Shared Pressure Switch	W-91 - Wire 91	TS-95 - Shared Temperature Switch	
SP-92 - Shared Pressure Switch	W-92 - Wire 92	TS-96 - Shared Temperature Switch	
SP-93 - Shared Pressure Switch	W-93 - Wire 93	TS-97 - Shared Temperature Switch	
SP-94 - Shared Pressure Switch	W-94 - Wire 94	TS-98 - Shared Temperature Switch	
SP-95 - Shared Pressure Switch	W-95 - Wire 95	TS-99 - Shared Temperature Switch	
SP-96 - Shared Pressure Switch	W-96 - Wire 96	TS-100 - Shared Temperature Switch	

NOTES

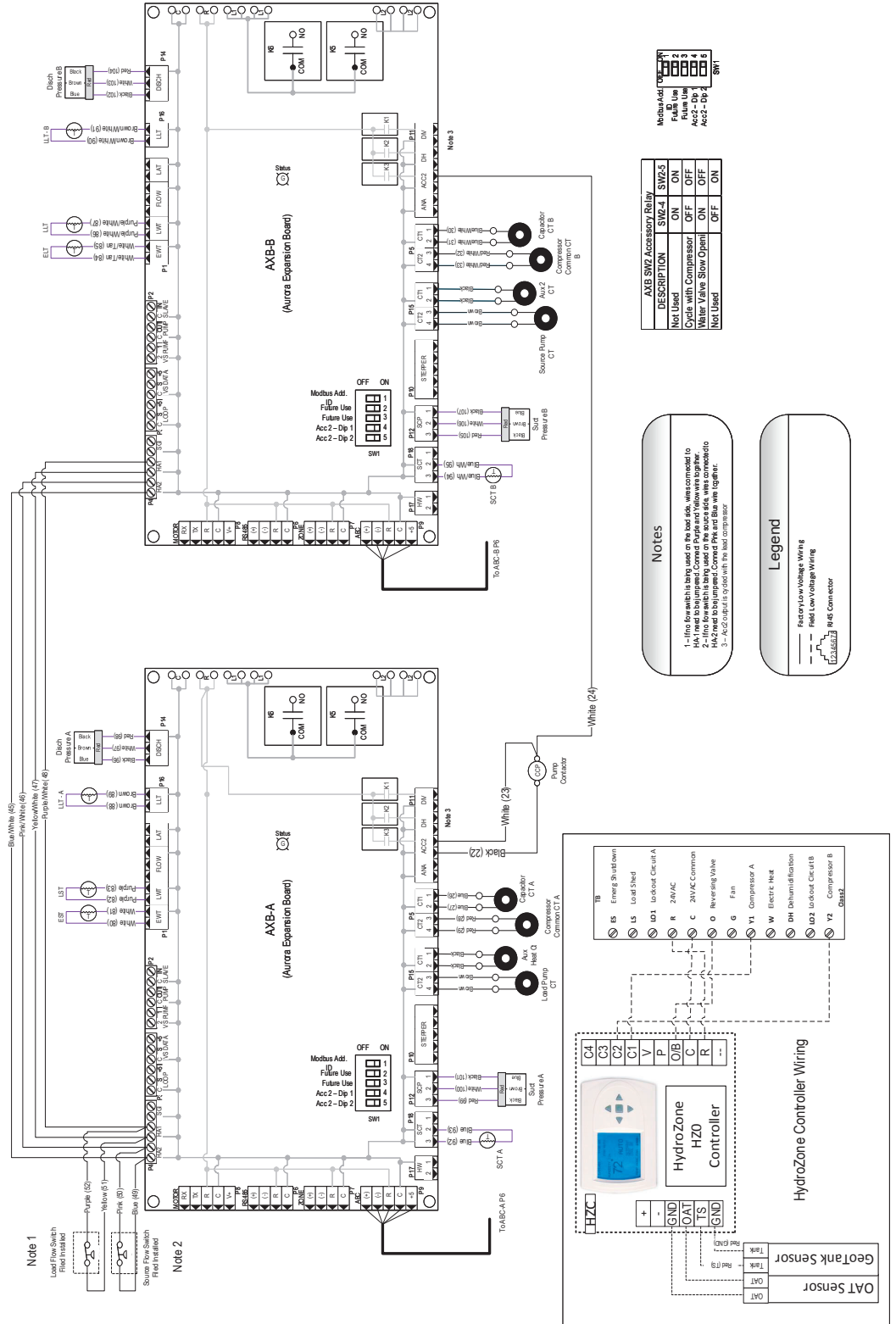
- 1 - Check all wire and blue Transformer wires for 208V operation.
- 2 - Check 208V/60Hz Transformer wires for 208V operation.
- 3 - Verify High Pressure Switch is wired to correct compressor.
- 4 - Verify Low Pressure Switch is wired to correct compressor.
- 5 - The emergency stop will be energized for cooling mode.
- 6 - External load must be energized for cooling mode.

Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



Wiring Schematics cont.

208-230/60/1 Supply Power HydroZone continued



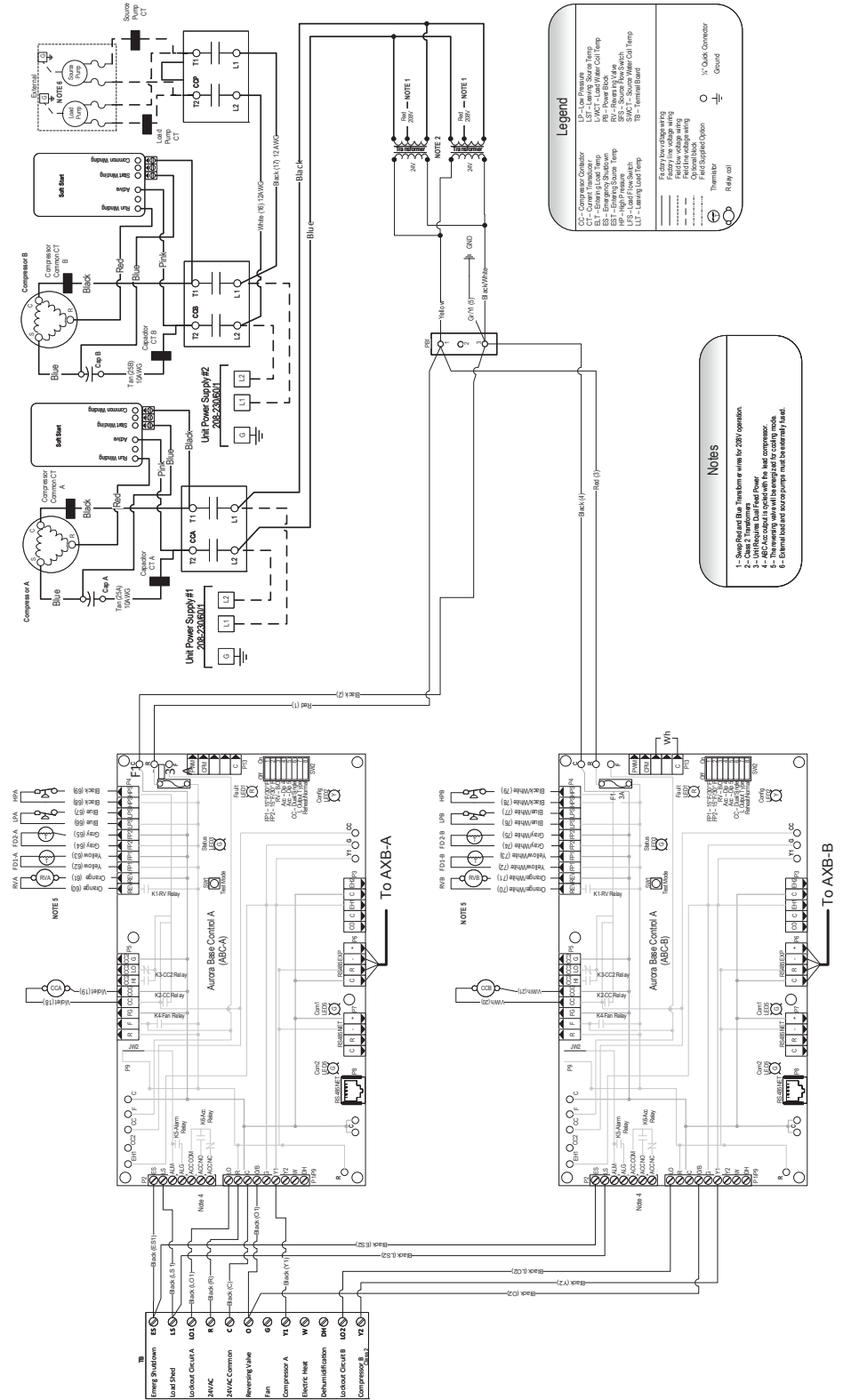
Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



Wiring Schematics cont.

208-230/60/1 with Soft Start Option and HydroZone

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Legend

CC	Control Circuit	LS	Low Voltage Switch
CT	Control Transformer	LST	Low Voltage Sensor Temp
CS	Control Switch	PS	Power Source Coil Temp
ES	Emergency Stop Button	PT	Power Block Temp
FS	Freeze Protection Switch	RF	Refrigerant Flow Switch
HS	High Pressure Switch	SP	Source Water Coil Temp
LS	Low Voltage Switch	SWC	Source Water Coil Temp
LST	Low Voltage Sensor Temp	TD	Terminal Block

Field wiring: Solid line
 Field wiring with ground: Solid line with ground symbol
 Field wiring with ground and neutral: Solid line with ground and neutral symbols
 Field wiring with ground and neutral and ground: Solid line with ground, neutral, and ground symbols
 Field wiring with ground and neutral and ground and ground: Solid line with ground, neutral, ground, and ground symbols

1: Quick Connector
 Ground
 Relay coil

Notes

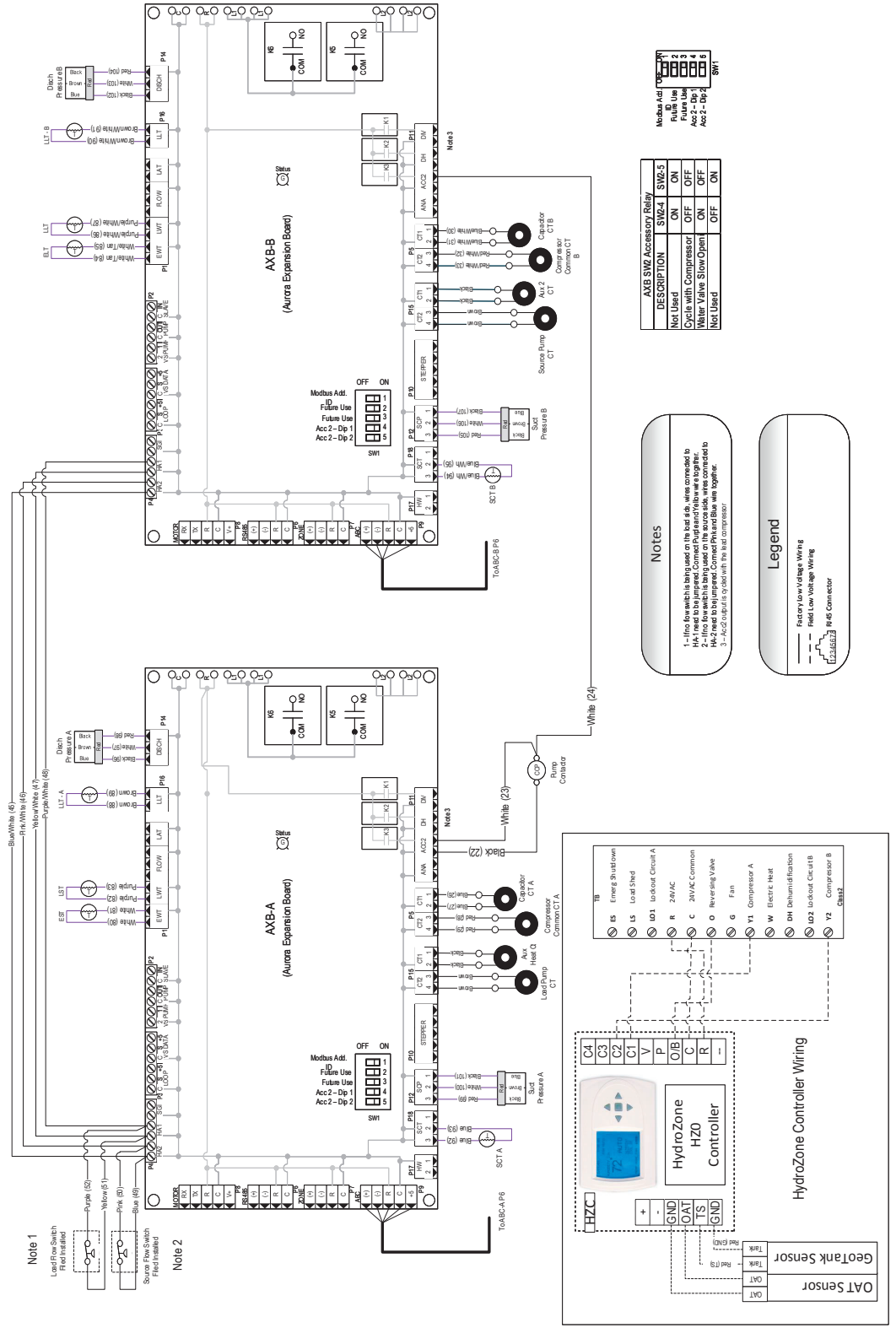
- 1 - Check that the 208V transformer wires for 208V operation.
- 2 - Check 2 Transformers.
- 3 - All wiring must be done in accordance with local code.
- 4 - All wiring must be done in accordance with local code.
- 5 - The wiring must be done in accordance with local code.
- 6 - External load line source pump must be used when used.

Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



Wiring Schematics cont.

208-230/60/1 Supply Power with HydroZone continued



Module Addr	ID	Use	Future Use	Acc 2 - Dp 1	Acc 2 - Dp 2	SW1
1	0000					
2	0001					
3	0002					
4	0003					
5	0004					

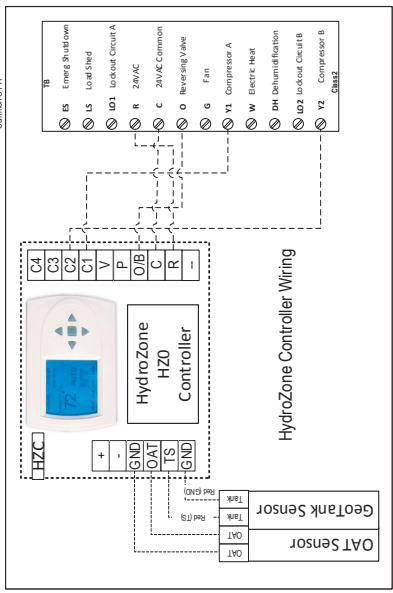
AXB SW2 Accessory Relay	SW2-1	SW2-2
DESCRIPTION	ON	ON
Not Used	ON	ON
C1 with Compressor	OFF	OFF
C2 with Compressor	OFF	OFF
Water Valve Stop/Start	ON	OFF
Not Used	OFF	ON

Notes

- 1- If no flow switch is being used on the load side, wire connected to H41 need to be jumpered. Connect Purple and Yellow wire together. If no flow switch being used on the source side, wire connected to H42 need to be jumpered. Connect Purple and Yellow wire together.
- 2- H41 and H42 inputs are jumpered with the lead compressor.
- 3- Acc 2-0 input is jumpered with the lead compressor.

Legend

- Factory Low Voltage Wiring
- Field Low Voltage Wiring
- MS Connector



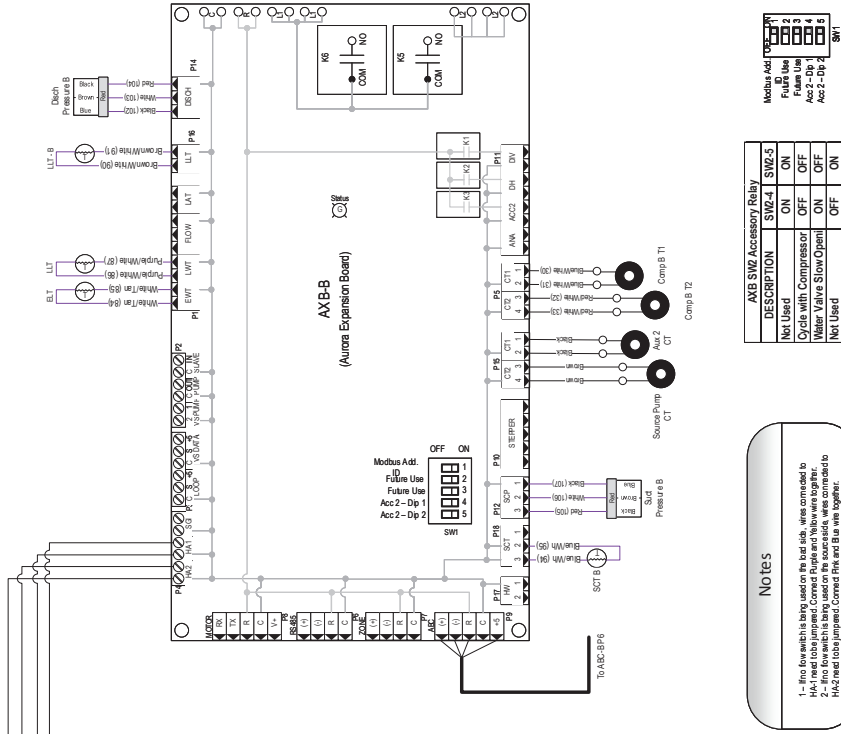
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Contractor: _____ P.O.: _____
 Engineer: _____
 Project Name: _____ Unit Tag: _____



Wiring Schematics cont.

3PH Supply Power with HydroZone continued



Modbus Adaptor

Acc 2-Dp 1	1
Acc 2-Dp 2	2
Future Use	3
Fault Line	4
Future Use	5
Future Use	6

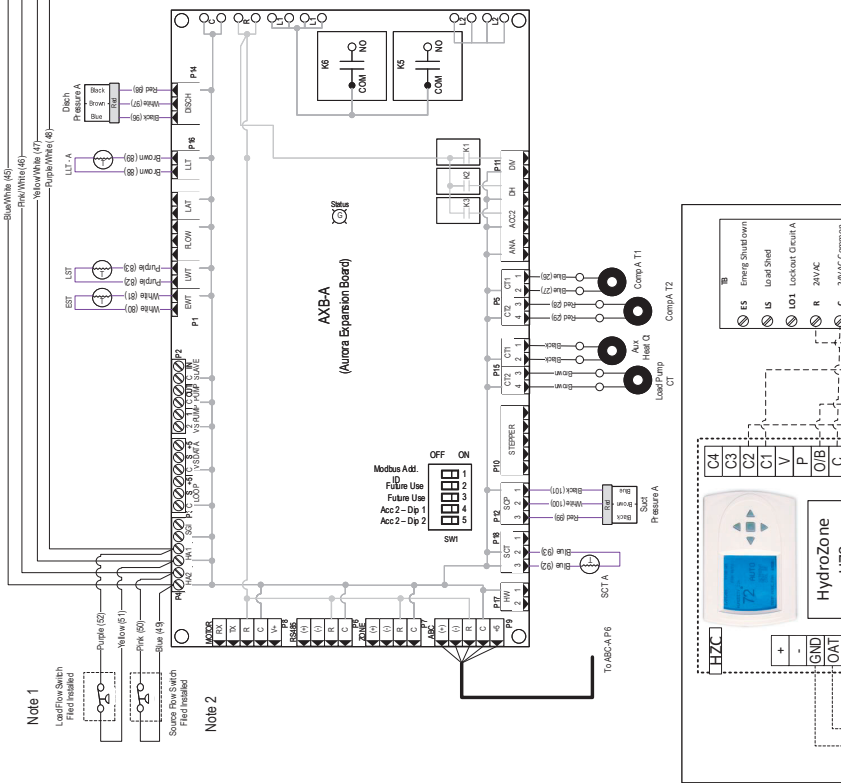
AXB SW2 Accessory Relay	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5
Not Used	ON	ON	ON	ON	ON
Cycle With Compressor	OFF	OFF	OFF	OFF	OFF
Water Valve Slow Open	ON	ON	ON	ON	ON
Not Used	OFF	OFF	OFF	OFF	ON

No tes

1- If the factory built switch is not used, the switch must be connected to HVA for the unit to run. Connect the factory built switch to the HVA. If no factory built switch is used, the switch must be connected to HVA for the unit to run. Connect the factory built switch to the HVA. If no factory built switch is used, the switch must be connected to HVA for the unit to run. Connect the factory built switch to the HVA.

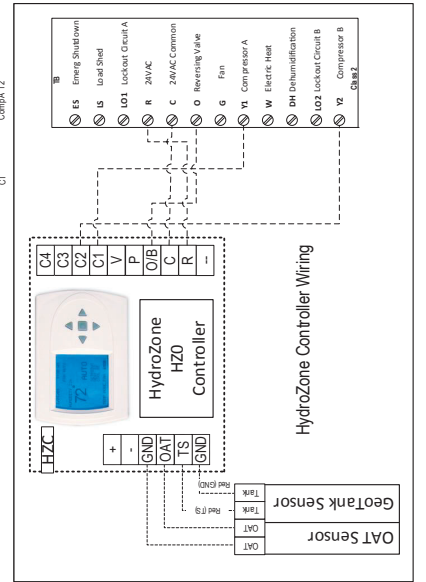
Legend

Factory Low Voltage Wiring
 Field Low Voltage Wiring
 R/G Connector



Note 1
 Load Flow Switch Field Installed

Note 2
 Source Flow Switch Field Installed



Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____



Engineering Guide Specifications

General

The liquid source water-to-water heat pump shall be a single packaged reverse-cycle heating/cooling unit. The unit shall be listed by a nationally recognized safety-testing laboratory or agency, such as ETL Testing Laboratory, Underwriters Laboratory (UL), or Canadian Standards Association (CSA). The unit shall be rated in accordance with Air Conditioning, Heating, and Refrigeration Institute/International Standards Organization (AHRI/ISO) and Canadian Standards Association (CSA-US). The liquid source water-to-water heat pump unit, shall be designed to operate with source liquid temperatures between 30°F [1.1°C] and 110°F [43.3°C] in cooling, and between 20°F [-6.7°C] and 90°F [32.2°C] in heating.

Casing and Cabinet

The cabinet shall be fabricated from heavy-gauge galvanized steel and finished with corrosion-resistant powder coating. This corrosion protection system shall meet the stringent 1,000 hour salt spray test per ASTM B117. The interior shall be insulated with 1/2" thick, multi-density, coated glass fiber for noise suppression.

The control box 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. The control box has a factory mounting option of being installed in the front or back (waterline side) of the unit.

Refrigerant Circuit

All units shall contain two (2) sealed refrigerant circuits, each containing a hermetic motor scroll compressor, bidirectional thermal expansion valve assemblies, reversing valve, braze plate heat exchangers, factory installed high and low pressure safety switches, freeze detection, service ports, and liquid line filter dryers. Compressors shall be scroll types designed for heat pump duty with internal isolation and mounted on rubber vibration isolators. Compressor motors shall have internal overload protection. A high density sound attenuating blanket shall be factory installed around the compressor to reduce sound. The water to refrigerant heat exchangers shall be interlaced copper brazed, 316 stainless plate steel, capable of withstanding 650 psig [4489 kPa] working pressure on the refrigerant side and 450 psig [3108 kPa] on the water side. The thermal expansion valve (TXV) shall provide proper superheat over the liquid temperature range with minimal "hunting." The assembly shall operate

bidirectionally without the use of check valves. Externally mounted pressure controlled water regulating flow valves are not acceptable.

Piping and Connections

Supply and return water connections shall be 2 in. [50.8 mm] FPT copper fittings fixed to the cabinet by use of a captive fitting, which eliminates the need for backup pipe wrenches.



Optional Back/Top Mount Water Connections - shall be factory installed to the back corner post or top panel by use of a captive fitting, which eliminates the need for backup pipe wrenches.

WARNING: Warranty is void if strainers are not used on the entering side of the load and source.

Electrical

Controls and safety devices will be factory wired and mounted within the unit. Controls shall include 24 Volt activated compressor contactors, 24VAC-75VA transformers with built in circuit breaker, reversing valve coils, and anti short-cycle protection. A terminal block with screw in terminals will be provided for field control wiring. To prevent short cycling when the safety controls are activated, the reset relay shall provide a lockout circuit that requires resetting of low voltage supply or main circuit breaker. A lockout signal shall be provided to the display to indicate a lockout situation. 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.

Optional IntelliStart (Compressor Soft Starter) - shall be factory installed for use in applications that require low starting amps, reduced compressor start-up noise, off-grid, and improved start-up behavior. IntelliStart shall reduce normal starting current by 60% on 208/60/1 units.

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Engineering Guide Specifications cont.

Microprocessor Control

An Aurora, a microprocessor-based controller, interfaces with an external control to monitor and control unit operation shall be provided. The unit control shall provide operational sequencing, high and low pressure switch monitoring, freeze detection, lockout mode control, load and loop pump control, LED status and fault indicators, fault memory, field selectable options, and accessory output. The Lockout signal output shall have a pulsed option so that DDC systems can read specific lockout conditions from the control.

The Aurora Advanced Control shall also feature an Energy Monitoring Package that will provide real time total power consumption, compressor monitoring, On Peak input signal for utility controlled demand programs, Performance and Refrigerant Monitoring kits to provide real time data including refrigerant superheat.

An optional Aurora Interface Diagnostic (AID) Tool shall communicate with the Aurora control allowing quick and easy access to monitoring, and troubleshooting of any Aurora control. The device shall include the features fault description and history, manual operation capability, sensor readings, timings, and other diagnostic tools. Optional IntelliStart® (compressor Soft Starter) shall be factory installed for use in applications that require low starting amps, reduced compressor start-up noise, off-grid, and improved start-up behavior. IntelliStart shall reduce normal starting current by up to 60%.

Accessories

Flow Proving Switch

WaterFurnace P/N - FPS300

A flow proving switch shall be available utilizing high reliability flow sensing technology.

Flow Meter Kit

Waterfurnace P/N NDWFMK

A flow meter shall be available utilizing vortex shredding behind a bluff body technology.

Strainer Connection Kit

WaterFurnace P/N - CKNDWI

A strainer connection kit shall be available and includes a 2 in. [50.8 mm] Y-strainer with self-aligning screen and 1 in. [25.4 mm] blow-off port to reduce debris that will enter the heat exchanger. Strainers should be made of a brass body with a 316 stainless steel screen. Connection kit shall also include a 2 in. [50.8 mm] wrought copper tee with integral pressure/temperature port.

Strainer Hose Kit Set

WaterFurnace P/N - WFI-XYH200-F-24MO-M

A strainer hose kit set shall be available and includes a 2 in. strainer loaded with 20-40 mesh screen and blow down valve, 2 in. stainless steel braid hose, 2 in. ball valve with integral pressure/temperature port and a JIC swivel fitting on the supply and 2 in. stainless steel braid hose and 2 in. ball valve with integral pressure/temperature port and a JIC swivel fitting on the return hose. The hose kit assembly shall be pressure rated at 300 psi working pressure.

NOTE: A strainer kit is required on both sides to reduce heat exchanger fouling and potential damage.

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Revision Guide

Pages:	Description:	Date:	By:
6	Updated Physical Data Table	17 Jan 2023	MA
All	Remove FX10, Changes for "A" Revision,	05 Jan 2021	JM
2	Updated Nomenclature to Reflect 3-Phase GeoStart Availability	18 Mar 2013	DS
6	Updated Electrical Data to Reflect 3-Phase GeoStart Availability	18 Mar 2013	DS
9-16	Updated Heating Performance Data	18 Mar 2013	DS
23	Added Revision Guide	18 Mar 2013	DS