Magnolia Series

GEOTHERMAL HEAT PUMPS

2 TO 6 TONS

Submittal Data
English Language
IP/Metric Units
SD1100AY 07/11

GEOSTAR

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Model Nomenclature

1-2	3-5	6	7	8	9	10	11	12	13	14	15	16
YS	024	T	L	1	0	0	C	B	D	S	S	A

Model Type
YS = Single Speed

Unit Capacity
024
030
036
042
048
060
070

Discharge Air Configuration
T = Top Discharge (vertical)
E = End (horizontal)
S = Side (horizontal)

Return Air Configuration
L = Left Painted
R = Right Painted

Voltage
1 = 208-230/60/1

Hot Water Options
0 = No Hot Water Generation, No GeoStart
1 = Hot Water Generation with factory installed pump, No GeoStart
3 = No Hot Water Generation, GeoStart
4 = Hot Water Generation with factory installed pump, GeoStart

Blower Option
0 = PSC
3 = Oversized PSC (024-030, 042-048 only)
4 = X13 ECM

Coax Option
C = Copper
N = Cupronickel

Sound Kit
B = Blanket

Cabinet Option
D = White Cabinet

Non-standard Option
S = Standard

Non-standard Option
S = Standard

Vintage
A = 024-042 and 070
B = 048 and 060

All Y Series product is safety listed under UL1995 thru ETL and performance listed with AHRI in accordance with standard 13256-1. The Y Series is also Energy Star rated.

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

AHRI Data

PSC Motor

AHRI/ASHRAE/ISO 13256-1
English (IP) Units

Model	Capacity Modulation	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
				Cooling EWT 86°F		Heating EWT 68°F		Cooling EWT 59°F		Heating EWT 50°F		Cooling EWT 77°F		Heating EWT 32°F	
		gpm	cfm	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
024	Single	6.0	800	23,900	14.6	27,000	4.7	26,400	22.8	22,300	4.0	24,400	17.0	17,500	3.5
030	Single	8.0	1000	29,500	14.9	34,600	4.8	32,900	23.0	28,300	4.0	29,000	17.0	22,800	3.5
036	Single	9.0	1150	33,300	14.4	40,600	4.5	37,700	21.2	33,000	3.9	34,500	16.6	26,000	3.3
042	Single	11.0	1400	40,800	14.5	45,400	4.5	45,800	22.0	37,000	3.8	42,300	16.8	29,900	3.3
048	Single	12.0	1600	47,700	14.7	56,000	4.4	52,000	21.0	45,900	3.8	49,500	16.8	36,900	3.3
060	Single	15.0	1900	58,400	14.7	72,500	4.4	65,500	20.8	58,400	3.8	60,900	16.6	47,100	3.3
070	Single	18.0	2100	63,000	14.2	79,000	4.4	70,000	20.3	64,100	3.8	68,500	15.2	51,600	3.3

11/12/10

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature
Heating capacities based upon 68°F DB, 59°F WB entering air temperature
All ratings based upon 208V operation

X13 ECM Motor

AHRI/ASHRAE/ISO 13256-1
English (IP) Units

Model	Capacity Modulation	Flow Rate		Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
				Cooling EWT 86°F		Heating EWT 68°F		Cooling EWT 59°F		Heating EWT 50°F		Cooling EWT 77°F		Heating EWT 32°F	
		gpm	cfm	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
024	Single	6.0	800	23,000	15.1	27,000	5.0	26,400	23.4	22,300	4.5	24,400	17.5	17,500	3.8
030	Single	8.0	1000	29,500	15.7	34,600	5.1	32,900	23.9	28,300	4.4	29,000	18.3	22,800	3.8
036	Single	9.0	1150	33,300	15.0	40,600	4.8	37,700	23.0	33,000	4.3	34,500	17.3	26,000	3.5
042	Single	11.0	1400	40,800	15.6	45,400	5.0	45,800	23.5	37,000	4.3	42,300	18.5	29,900	3.7
048	Single	12.0	1600	47,700	15.5	56,000	4.8	52,000	23.4	45,900	4.2	49,500	18.1	36,900	3.6
060	Single	15.0	1900	58,400	15.3	72,500	4.7	65,500	23.0	58,400	4.0	60,900	17.9	47,100	3.6
070	Single	18.0	2100	63,000	14.3	79,000	4.7	70,000	21.0	64,100	4.0	68,500	16.1	51,600	3.5

11/12/10

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature
Heating capacities based upon 68°F DB, 59°F WB entering air temperature
All ratings based upon 208V operation

Energy Star Compliance Table

Model	Tier 1		Tier 2		Tier 3	
	Ground Water	Ground Loop	Ground Water	Ground Loop	Ground Water	Ground Loop
024	X, P	X, P	X, P	X, P	X	X
030	X, P	X, P	X, P	X, P	X	X
036	X, P	X, P	X, P	X	X	-
042	X, P	X, P	X, P	X	X	X
048	X, P	X, P	X, P	X	X	X
060	X, P	X, P	X, P	X	-	X
070	X, P	X, P	X, P	X	-	-

X - Unit with X13 Blower
P - Unit with PSC Blower

3/18/11

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. Please note there are 3 Tier levels that dictate minimum efficiency for water source heat pumps. Only one tier level is active at a given moment.

Tier 1: 12/1/2009 – 12/31/2010

	EER	COP
Water-to-Air		
Ground Loop	14.1	3.3
Ground Water	16.2	3.6
Water-to-Water		
Ground Loop	15.1	3.0
Ground Water	19.1	3.4

Tier 2: 1/1/2011 – 12/31/2011

	EER	COP
Water-to-Air		
Ground Loop	16.1	3.5
Ground Water	18.2	3.8
Water-to-Water		
Ground Loop	15.1	3.0
Ground Water	19.1	3.4

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

	EER	COP
Water-to-Air		
Ground Loop	17.1	3.6
Ground Water	21.1	4.1
Water-to-Water		
Ground Loop	16.1	3.1
Ground Water	20.1	3.5

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Contractor: _____ P.O.: _____

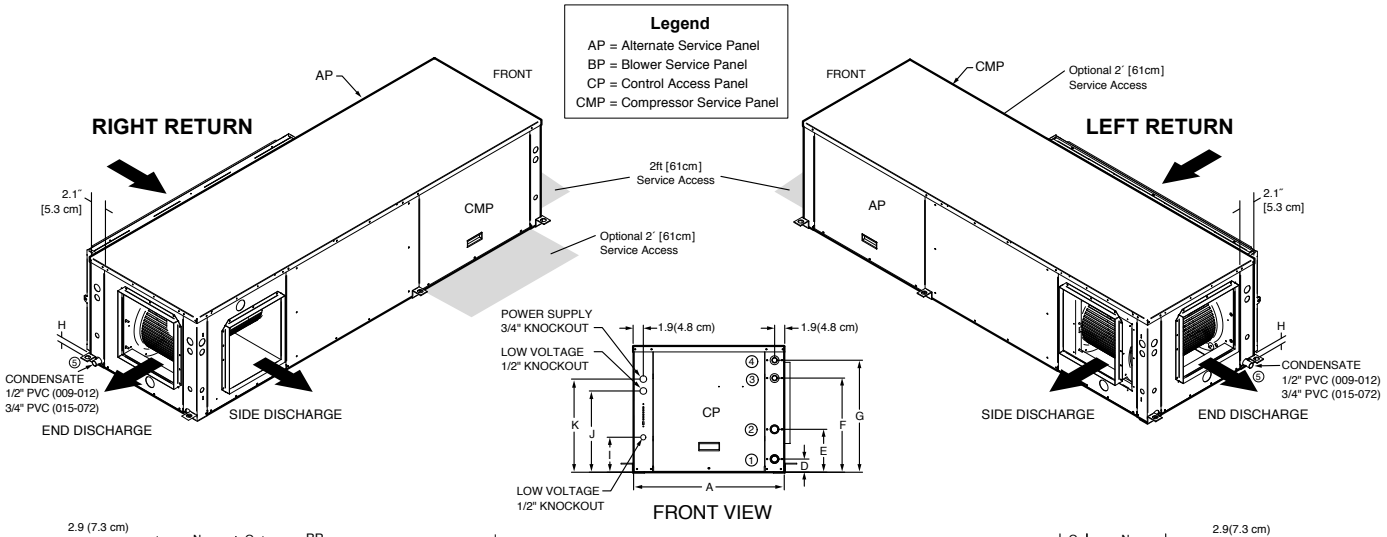
Engineer: _____

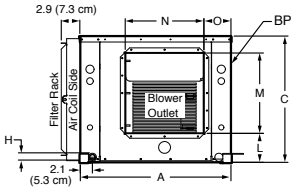
Project Name: _____ Unit Tag: _____

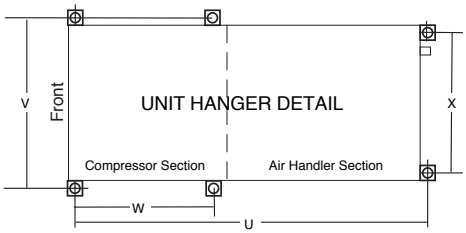
Magnolia Series
2 - 6 Tons 60Hz

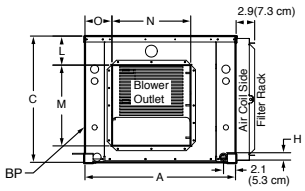
GEOSTAR

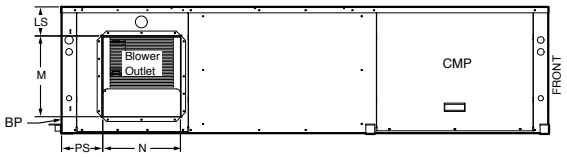
Horizontal Dimensional Data

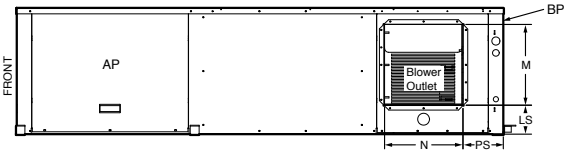


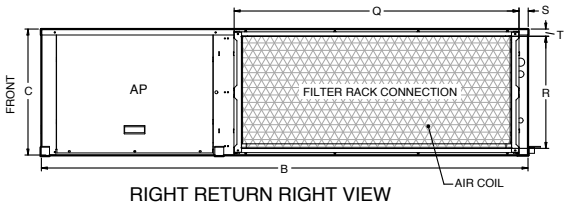


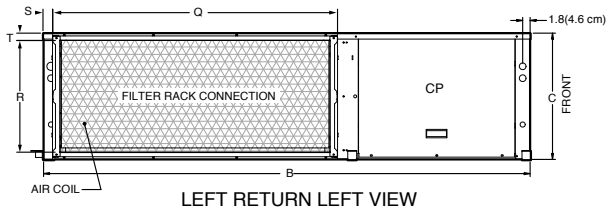












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Horizontal Dimensional Data cont.

Horizontal Models		Overall Cabinet			Water Connections							Electrical Knockouts						
		A Width	B Depth	C Height*	D Loop In	E Loop Out	F HWG In	G HWG Out	H Conden-sate	Loop Water FPT	HWG Sweat I.D.	J 1/2" cond.	K 1/2" cond.	L 3/4" cond.	M	N	P	Q
												Low Voltage	Ext Pump	Power Supply	Low Voltage	Ext Pump	Power Supply	Elec. Heat
024-036	in.	22.5	63.0	19.2	2.4	7.4	13.4	16.4	0.8	1"	1/2"	5.9	13.7	15.7	5.8	11.6	13.6	2.8
	cm.	57.2	160.0	48.8	6.1	18.8	34.0	41.7	2.0	Swivel	Female	15.0	34.8	39.9	14.7	29.5	34.5	7.1
042-048	in.	25.5	72.0	21.2	2.2	7.2	15.8	18.8	0.8	1"	1/2"	5.9	13.7	15.7	5.8	13.7	15.7	2.5
	cm.	64.8	182.9	53.8	5.6	18.3	40.1	47.8	2.0	Swivel	Female	15.0	34.8	39.9	14.7	34.8	39.9	6.4
060	in.	25.5	77.0	21.2	2.2	7.2	15.8	18.8	0.8	1"	1/2"	5.9	13.7	15.7	5.9	13.7	15.7	2.5
	cm.	64.8	195.6	53.8	5.6	18.3	40.1	47.8	2.0	Swivel	Female	15.0	34.8	39.9	15.0	34.8	39.9	6.4
070	in.	25.5	82.0	21.2	2.2	7.2	15.8	18.8	0.8	1"	1/2"	5.9	13.7	15.7	5.9	13.7	15.7	2.5
	cm.	64.8	208.3	53.8	5.6	18.3	40.1	47.8	2.0	Swivel	Female	15.0	34.8	39.9	15.0	34.8	39.9	6.4

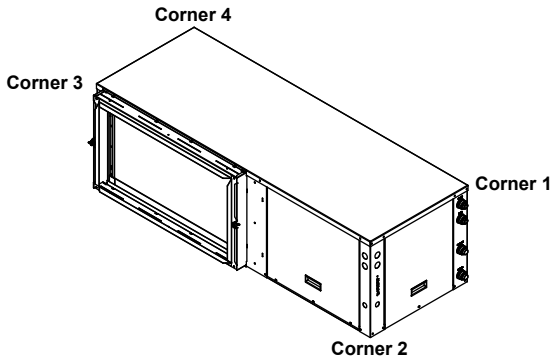
Horizontal Models		Discharge Connection duct flange installed (±0.10 in)							Return Connection using deluxe filter rack option (±0.10 in)						Unit Hanger Dimensions				PVC Drain Size
		R	S Supply Height	T Supply Depth	U	V	W	X	Y Return Height	Z Return Depth	AA	BB	CC	DD	EE	FF	GG	HH	
024-036	in.	6.5	9.4	10.5	6.5	2.3	5.7	6.5	16.9	30.5	2.2	2.8	1.0	1.0	21.1	63.4	24.8	n/a	3/4"
	cm.	16.5	23.9	26.7	16.5	5.8	14.5	16.5	42.9	77.5	5.6	7.1	2.5	2.5	53.6	161.0	63.0	n/a	1.9
042-048	in.	4.5	13.4	13.7	4.8	2.8	6.8	7.5	18.7	35.5	2.2	2.8	1.0	1.0	24.1	43.1	27.8	29.3	3/4"
	cm.	11.4	34.0	34.8	12.2	7.1	17.3	19.1	47.5	90.2	5.6	7.1	2.5	2.5	61.2	109.5	70.6	74.4	1.9
060	in.	4.5	13.4	13.7	4.8	2.8	6.8	7.5	18.7	40.5	2.2	2.8	1.0	1.0	24.1	48.1	27.8	29.3	3/4"
	cm.	11.4	34.0	34.8	12.2	7.1	17.3	19.1	47.5	102.9	5.6	7.1	2.5	2.5	61.2	122.2	70.6	74.4	1.9
070	in.	4.5	13.4	13.7	4.8	2.8	6.8	7.5	18.7	45.5	2.2	2.8	1.0	1.0	24.1	53.1	27.8	29.3	3/4"
	cm.	11.4	34.0	34.8	12.2	7.1	17.3	19.1	47.5	115.6	5.6	7.1	2.5	2.5	61.2	134.9	70.6	74.4	1.9

Unit is shipped with 1" filter. The deluxe duct collar/filter fack is field adjustable to accept a 2" filter. The duct collar/filter rack extends 3.2" from unit, and is suitable for duct connections. 1/12/10

Corner Weight Locations

Model		Horizontal Corner Weights				
		Post #1	Post #2	Post #3	Post #4	Total
024	lb	35	119	81	33	268
	kg	[16]	[54]	[37]	[15]	[122]
030	lb	38	122	86	33	279
	kg	[17]	[55]	[39]	[15]	[127]
036	lb	40	124	88	35	287
	kg	[18]	[56]	[40]	[16]	[130]
042	lb	63	147	87	52	349
	kg	[29]	[67]	[39]	[24]	[158]
048	lb	64	152	89	53	358
	kg	[29]	[69]	[40]	[24]	[162]
060	lb	93	156	81	73	403
	kg	[42]	[71]	[37]	[33]	[183]
070	lb	143	137	124	34	438
	kg	[65]	[62]	[56]	[15]	[199]

10/28/09



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Contractor: _____ P.O.: _____

Engineer: _____

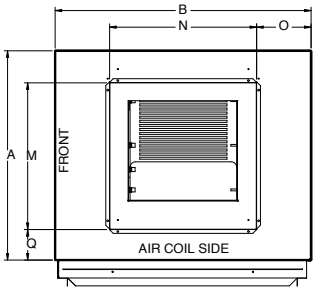
Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

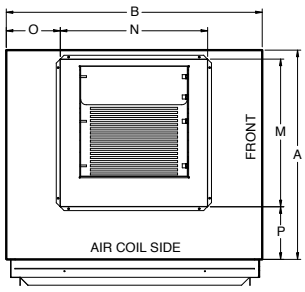
GEOSTAR

Vertical Dimensional Data

Legend
AP = Alternate Service Panel
BP = Blower Service Panel
CP = Control Access Panel
CMP = Compressor Service Panel

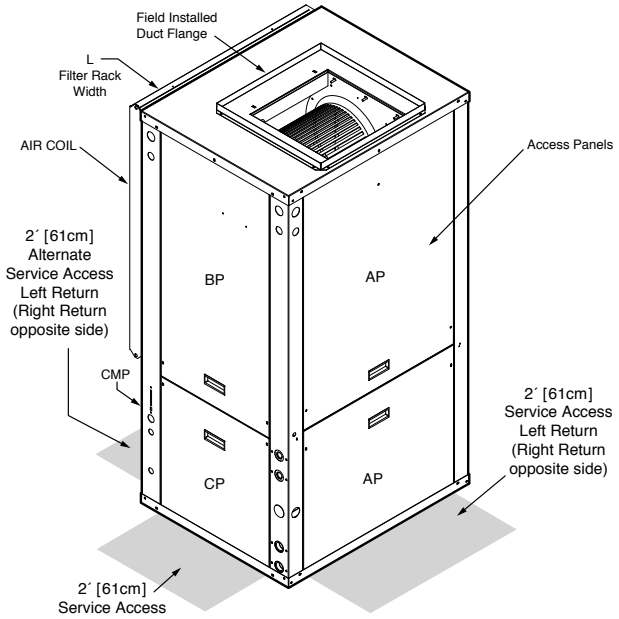


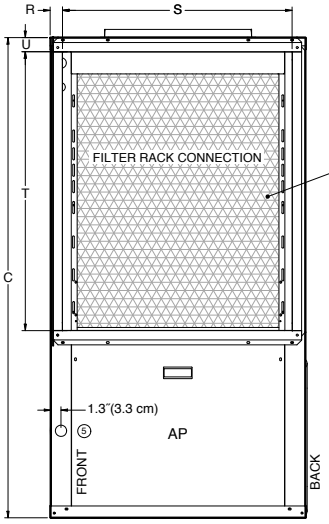
TOP VIEW - RIGHT RETURN



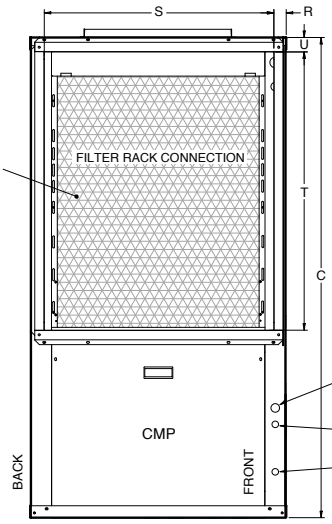
TOP VIEW - LEFT RETURN

LEFT RETURN

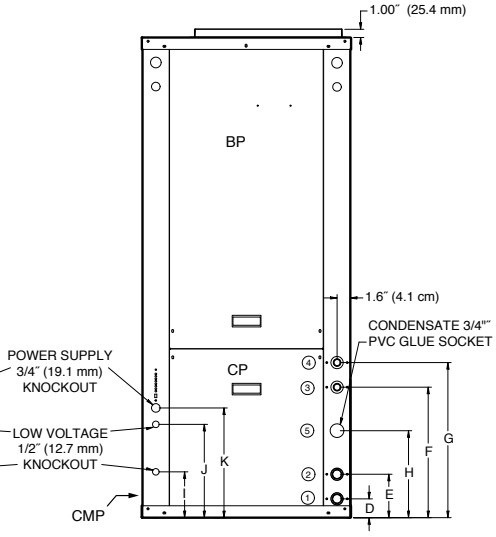




RIGHT VIEW - RIGHT RETURN



LEFT VIEW - LEFT RETURN



FRONT VIEW

Vertical Topflow Models		Overall Cabinet			Water Connections							Electrical Connections					Discharge Connection duct flange installed (±0.10 in)					Return Connection using std deluxe filter rack (±0.10 in)					
		A Width	B Depth	C Height	D Loop In	E Loop Out	F HWG In	G HWG Out	H Cond-ensate	Loop Water FPT	HWG Sweat I.D.	J 1/2" cond. Low Voltage	K 1/2" cond. Ext Pump	L 3/4" cond. Power Supply	M	N	P Supply Width	Q Supply Depth	R	S	T	U	V Return Depth	W Return Height	X	Y	Z
024-	in.	22.3	26.3	44.4	1.9	6.9	13.5	16.4	10.2	1" Swivel	1/2" Female	5.1	10.8	16.5	5.9	3.3	14.0	14.0	6.2	0.8	2.7	2.3	22.0	22.0	1.9	1.0	25.7
036	cm.	56.6	66.8	112.8	4.8	17.5	34.3	41.7	25.9			13.0	27.4	41.9	15.0	8.4	35.6	35.6	15.7	2.0	6.9	5.8	55.9	55.9	4.8	2.5	65.3
042-	in.	25.4	31.4	58.4	2.3	7.3	15.9	18.9	10.6	1" Swivel	1/2" Female	6.5	12.2	17.9	5.9	3.3	18.0	18.0	6.9	1.1	3.8	1.7	28.1	34.0	2.0	1.0	28.7
070	cm.	64.5	79.8	148.3	5.8	18.5	40.4	48.0	26.9			16.5	31.0	45.5	15.0	8.4	45.7	45.7	17.5	2.8	9.7	4.3	71.4	86.4	5.1	2.5	72.9

Condensate is 3/4" PVC female glue socket and is switchable from side to front 1/12/10

Unit shipped with deluxe 1" (field adjustable to 2") duct collar/filter rack extending from unit 3.25" and is suitable for duct connection.

Discharge flange is field installed and extends 1" [25.4mm] from cabinet

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

Physical Data

Model		024	030	036	042	048	060	070
Compressor (1 each)		Single Speed Scroll						
Factory Charge R-410A, oz [kg] Vertical		52 [1.47]	56 [1.58]	60 [1.70]	74 [2.09]	84 [2.38]	100 [2.83]	104 [2.94]
Factory Charge R-410A, oz [kg] Horizontal		52 [1.47]	56 [1.58]	60 [1.70]	74 [2.09]	84 [2.38]	100 [2.83]	104 [2.94]
Blower Motor & Blower								
Blower Motor Type/Speeds	X13	X13 ECM - 5 Speeds						
	PSC	PSC - 3 Speeds						
Blower Motor - hp [W]	X13	1/2 [373]	1/2 [373]	1/2 [373]	1 [746]	1 [746]	1 [746]	1 [746]
	PSC	1/5 [149]	1/3 [249]	1/2 [373]	1/2 [373]	1/2 [373]	1 [746]	1 [746]
Optional - Oversized Blower Motor - hp [W]	X13	Not Available						
	PSC	1/3 [249]	1/2 [373]	Not Available	3/4 [560]	3/4 [560]	Not Available	Not Available
Blower Wheel Size (Dia x W), in. [mm]	X13	9 x 7 [229 x 178]	9 x 7 [229 x 178]	9 x 7 [229 x 178]	11 x 10 [279 x 254]	11 x 10 [279 x 254]	11 x 10 [279 x 254]	11 x 10 [279 x 254]
	PSC	9 x 7 [229 x 178]	9 x 7 [229 x 178]	9 x 7 [229 x 178]	10 x 10 [254 x 254]	10 x 10 [254 x 254]	11 x 10 [279 x 254]	11 x 10 [279 x 254]
Coax and Water Piping								
Water Connections Size - Swivel - in [mm]		1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]	1 [25.4]
HWG Connection Size - Female Sweat (I.D.) - in [mm]		1/2" [12.7]	1/2" [12.7]	1/2" [12.7]	1/2" [12.7]	1/2" [12.7]	1/2" [12.7]	1/2" [12.7]
Coax & Piping Water Volume - gal [l]		.4 [1.4]	0.7 [2.6]	.7 [2.6]	.7 [2.7]	1.0 [3.8]	1.3 [4.9]	1.6 [6.1]
Vertical								
Air Coil Dimensions (H x W), in. [mm]		24 x 20 [610 x 542]	24 x 20 [610 x 542]	28 x 20 [711 x 542]	28 x 25 [711 x 635]	28 x 25 [711 x 635]	32 x 25 [813 x 635]	36 x 25 [914 x 635]
Air Coil Total Face Area, ft^2 [m^2]		3.3 [0.310]	3.3 [0.310]	3.9 [0.362]	4.9 [0.451]	4.9 [0.451]	5.6 [0.516]	6.3 [0.581]
Air Coil Tube Size, in [mm]		3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]
Air Coil Number of rows		3	3	3	3	3	3	3
Filter Standard - 1" [24mm] Pleated MERV8 Throwaway, in [mm]		28 x 24 [712 x 610]	28 x 24 [712 x 610]	28 x 24 [712 x 610]	36 x 30 [914 x 762]	36 x 30 [914 x 762]	36 x 30 [914 x 762]	36 x 30 [914 x 762]
Weight - Operating, lb [kg]		267 [121]	282 [128]	308 [140]	351 [159]	388 [176]	430 [195]	435 [197]
Weight - Packaged, lb [kg]		287 [130]	302 [137]	328 [149]	371 [168]	408 [185]	450 [204]	455 [206]
Horizontal								
Air Coil Dimensions (H x W), in. [mm]		18 x 27 [457 x 686]	18 x 27 [457 x 686]	18 x 30 [457 x 762]	20 x 35 [508 x 889]	20 x 35 [508 x 889]	20 x 40 [508 x 1016]	20 x 45 [508 x 1143]
Air Coil Total Face Area, ft2 [m2]		3.4 [0.316]	3.4 [0.316]	3.9 [0.362]	4.9 [0.451]	4.9 [0.451]	5.6 [0.516]	6.3 [0.581]
Air Coil Tube Size, in [mm]		3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]
Air Coil Number of rows		3	3	3	3	3	3	3
Filter Standard - 1" [25mm] Pleated MERV8 Throwaway, in [mm]		1 - 18 x 32 [457 x 813]	1 - 18 x 32 [457 x 813]	1 - 18 x 32 [457 x 813]	1 - 20 x 37 [686 x 940]	1 - 20 x 37 [686 x 940]	1 - 20 x 20 [508 x 508] 1 - 20 x 22 [508 x 559]	1 - 20 x 25 [508 x 635] 1 - 20 x 22 [508 x 559]
Weight - Operating, lb [kg]		268 [122]	279 [127]	287 [130]	349 [158]	358 [162]	403 [183]	438 [199]
Weight - Packaged, lb [kg]		288 [131]	299 [136]	307 [139]	379 [172]	388 [176]	448 [203]	483 [219]

3/18/11

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Auxiliary Heat Ratings

Model	KW			BTU/HR		Min	Y Series Compatibility		
	208V	230V	Stages	208V	230V	CFM	024 - 036	042	048 - 070
EAM(H)5	3.6	4.8	1	12,300	16,300	450	•		
EAM(H)8	5.7	7.6	1	19,400	25,900	550	•		
EAM(H)10	7.2	9.6	1	24,600	32,700	650	•		
EAL(H)10	7.2	9.6	1	24,600	32,700	1100		•	•
EAL(H)15	10.8	14.4	1	36,900	49,100	1250		•	•
EAL(H)20	14.4	19.2	1	49,200	65,500	1500			•

9/18/09

Model	Supply Circuit	Heater Amps		Min Circuit Amp		Max Fuse (USA)		Max Fuse (CAN)		Max CKT BRK	
		208 V	240 V	208 V	240 V	208 V	240 V	208 V	240 V	208 V	240 V
EAM(H)5	Single	17.3	20	26.7	30	30	30	30	30	30	30
EAM(H)8	Single	27.5	31.7	39.3	44.6	40	45	40	45	40	50
EAM(H)10	Single	34.7	40	48.3	55	50	60	50	60	50	60
EAL(H)10	Single	34.7	40	53.3	60	60	60	60	60	60	60
EAL(H)15	Single	52.0	60	75	85	80	90	80	90	70	100
	L1/L2	34.7	40	53.3	60	60	60	60	60	60	60
	L3/L4	17.3	20	21.7	25	25	25	25	25	20	30
EAL(H)20	Single	69.3	80	96.7	110	100	110	100	110	100	100
	L1/L2	34.7	40	53.3	60	60	60	60	60	60	60
	L3/L4	34.7	40	43.3	50	45	50	45	50	40	50

9/18/09

All heaters rated single phase 60 cycle and include unit blower load.
All fuses type “D” time delay (or HACR circuit breaker in USA)
Wire length based on one-way measurement with 2% voltage drop
Wire size based on 60°C (*90°C) copper conductor
“H” is used in part numbers for horizontal units

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Electrical Data

PSC Motor

Model	Compressor Model No.	Rated Voltage	Voltage Min/Max	Compressor				HWG Pump FLA	Ext Loop FLA	Blower Motor FLA	Total Unit FLA	Min Circ Amp	Max Fuse/ HACR
				MCC	RLA	LRA	LRA**						
024	ZP20K5E-PFV	208-230/60/1	187/253	21.0	13.5	58.3	21.0	0.4	5.4	1.2	20.5	23.9	35
024*	ZP20K5E-PFV	208-230/60/1	187/253	21.0	13.5	58.3	21.0	0.4	5.4	1.5	20.8	24.2	35
030	ZP25K5E-PFV	208-230/60/1	187/253	22.0	14.1	73.0	26.0	0.4	5.4	1.5	21.4	24.9	35
030*	ZP25K5E-PFV	208-230/60/1	187/253	22.0	14.1	73.0	26.0	0.4	5.4	2.2	22.1	25.6	35
036	HRH029U1LP6	208-230/60/1	187/253	27.0	17.3	96.7	34.0	0.4	5.4	2.2	25.3	29.6	45
042	HRH034U1LP6	208-230/60/1	187/253	31.0	20.0	115.0	41.0	0.4	5.4	3.5	29.3	34.3	50
042*	HRH034U1LP6	208-230/60/1	187/253	31.0	20.0	115.0	41.0	0.4	5.4	4.6	30.4	35.4	50
048	HRH040U1LP6	208-230/60/1	187/253	32.0	21.0	115.0	41.0	0.4	5.4	3.5	30.3	35.6	50
048*	HRH040U1LP6	208-230/60/1	187/253	32.0	21.0	115.0	41.0	0.4	5.4	4.6	31.4	36.7	50
060	HRH051U1LP6	208-230/60/1	187/253	41.0	26.3	150.0	53.0	0.4	5.4	5.9	38.0	44.6	70
070	HRH056U1LP6	208-230/60/1	187/253	47.0	30.1	145.0	51.0	0.4	5.4	5.9	41.8	49.3	70

HACR circuit breaker in USA only 1/12/10

* With optional high-static PSC motor

** With optional GeoStart™, only available on 208-230/60/1

NOTE: High-static option not available on 036, 060, and 070 model sizes.

X13 ECM Motor

Model	Compressor Model No.	Rated Voltage	Voltage Min/Max	Compressor				HWG Pump FLA	Ext Loop FLA	Blower Motor FLA	Total Unit FLA	Min Circ Amp	Max Fuse/ HACR
				MCC	RLA	LRA	LRA**						
024	ZP20K5E-PFV	208-230/60/1	187/253	21.0	13.5	58.3	21.0	0.4	5.4	4.1	23.4	26.8	40
030	ZP25K5E-PFV	208-230/60/1	187/253	22.0	14.1	73.0	26.0	0.4	5.4	4.1	24.0	27.5	40
036	HRH029U1LP6	208-230/60/1	187/253	27.0	17.3	96.7	34.0	0.4	5.4	4.1	27.2	31.5	45
042	HRH034U1LP6	208-230/60/1	187/253	31.0	20.0	115.0	41.0	0.4	5.4	7.6	33.4	38.4	50
048	HRH040U1LP6	208-230/60/1	187/253	32.0	21.0	115.0	41.0	0.4	5.4	7.6	34.4	39.7	60
060	HRH051U1LP6	208-230/60/1	187/253	41.0	26.3	150.0	53.0	0.4	5.4	7.6	39.7	46.3	70
070	HRH056U1LP6	208-230/60/1	187/253	47.0	30.1	145.0	51.0	0.4	5.4	7.6	43.5	51.0	80

HACR circuit breaker in USA only 10/20/09

** With optional GeoStart™, only available on 208-230/60/1

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

Blower Performance Data

Standard PSC Motor

Model	Blower Spd	Blower Size	Motor HP	Airflow (cfm) at External Static Pressure (in. wg)														
				0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.00
024	H	9 x 7	1/5	1065	1045	1030	1005	975	950	925	900	870	835	800	-	-	-	-	-
	M			880	865	850	830	815	795	775	750	725	700	670	-	-	-	-	-
	L			805	790	780	765	745	725	710	685	660	630	600	-	-	-	-	-
030	H	9 x 7	1/3	1120	1100	1070	1050	1040	1030	1020	1010	1000	980	830	-	-	-	-	-
	M			1020	1000	980	960	920	880	860	840	820	790	-	-	-	-	-	-
	L			860	850	840	830	810	800	780	760	740	710	-	-	-	-	-	-
036	H	9 x 7	1/2	1360	1340	1320	1290	1260	1220	1185	1130	1080	1045	1010	910	855	-	-	-
	M			1205	1190	1170	1145	1120	1085	1050	1015	980	940	900	845	-	-	-	-
	L			1070	1060	1050	1035	1020	995	970	940	910	875	840	780	-	-	-	-
042	H	10 x 10	1/2	1705	1685	1665	1645	1625	1595	1565	1530	1500	1450	1405	1260	1140	-	-	-
	M			1485	1475	1465	1445	1430	1410	1390	1350	1315	1260	1210	1110	1010	-	-	-
	L			1180	1165	1150	1135	1120	1090	1060	1030	1000	965	920	855	-	-	-	-
048	**H**	10 x 10	1/2	1930	1910	1885	1860	1830	1790	1750	1710	1665	1620	1580	1280	1235	-	-	-
	M			1580	1565	1550	1535	1525	1505	1485	1445	1410	1310	1215	1130	1030	-	-	-
	L			1180	1170	1160	1140	1120	1100	1080	1050	1020	970	930	875	-	-	-	-
060	H	11 x 10	1	2360	2330	2300	2270	2240	2215	2190	2160	2130	2095	2060	1985	1920	1855	-	-
	M			2165	2130	2095	2070	2050	2030	2010	1985	1965	1930	1900	1850	1775	1700	-	-
	L			1965	1940	1920	1900	1885	1870	1855	1825	1800	1780	1760	1720	1625	1530	-	-
070	**H**	11 x 10	1	2450	2435	2420	2395	2370	2340	2310	2280	2250	2225	2200	2040	2000	1950	-	-
	M			2215	2190	2170	2155	2140	2120	2095	2070	2045	2015	1990	1940	1876	1795	-	-
	L			2005	1990	1975	1960	1950	1940	1925	1910	1890	1865	1845	1780	1710	1565	-	-

Factory settings are in Bold

11/13/09

Air flow values are with dry coil and standard filter

For wet coil performance first calculate the face velocity of the air coil (Face Velocity [fpm] = Airflow [cfm] / Face Area [sq ft]).

Then for velocities of 200 fpm reduce the static capability by 0.03 in. wg, 300 fpm by 0.08 in. wg, 400 fpm by 0.12 in. wg. and 500 fpm by 0.16 in. wg.

Optional High Static PSC Motor

Model	Blower Spd	Blower Size	Motor HP	Airflow (cfm) at External Static Pressure (in. wg)														
				0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.00
024	H	9 x 7	1/3	1120	1100	1070	1050	1040	1030	1020	1010	1000	980	830	-	-	-	-	-
	M			1020	1000	980	960	920	880	860	840	820	790	-	-	-	-	-	-
	L			860	850	840	830	810	800	780	760	740	710	-	-	-	-	-	-
030	H	9 x 7	1/2	1340	1320	1300	1270	1240	1200	1160	1115	1070	1025	985	880	-	-	-	-
	M			1185	1175	1165	1130	1095	1065	1035	1000	965	920	880	795	-	-	-	-
	L			1050	1040	1030	1015	1000	980	960	925	895	855	815	-	-	-	-	-
042	H	10 x 10	3/4	2095	2080	2060	2020	1980	1950	1920	1880	1840	1780	1725	1550	1335	1120	-	-
	M			1960	1940	1920	1890	1865	1830	1800	1760	1725	1670	1620	1435	1300	-	-	-
	L			1800	1780	1760	1740	1725	1695	1670	1625	1585	1525	1465	1300	1200	-	-	-
048	H	10 x 10	3/4	2095	2080	2060	2020	1980	1950	1920	1880	1840	1780	1725	1550	1335	1120	-	-
	M			1960	1940	1920	1890	1865	1830	1800	1760	1725	1670	1620	1435	1300	-	-	-
	L			1800	1780	1760	1740	1725	1695	1670	1625	1585	1525	1465	1300	1200	-	-	-

Factory settings are in Bold

11/4/09

Air flow values are with dry coil and standard filter

For wet coil performance first calculate the face velocity of the air coil (Face Velocity [fpm] = Airflow [cfm] / Face Area [sq ft]).

Then for velocities of 200 fpm reduce the static capability by 0.03 in. wg, 300 fpm by 0.08 in. wg, 400 fpm by 0.12 in. wg. and 500 fpm by 0.16 in. wg.

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

Blower Performance Data cont.

X13 ECM Motor

Model	Motor Spd	Motor Tap	Blower Size	Motor HP	Airflow (cfm) at External Static Pressure (in. wg)														
					0.00	**0.05**	**0.10**	**0.15**	**0.20**	**0.25**	**0.30**	**0.35**	**0.40**	**0.45**	**0.50**	**0.60**	**0.70**	**0.80**	**0.90**	**1.00**
	High	5			980	960	940	930	920	905	890	875	860	840	820	800	745	-	-	-
	Med High	4			890	878	865	845	825	813	800	785	770	753	735	710	665	-	-	-
024	Med	3	9 x 7	1/2	830	815	800	788	775	755	735	723	710	690	670	640	600	-	-	-
	Med Low	2			780	760	740	703	665	653	640	620	600	585	570	-	-	-	-	-
	Low	1			625	593	560	535	510	495	480	455	430	410	390	-	-	-	-	-
	High	5			1340	1310	1280	1240	1200	1170	1140	1095	1050	1015	980	900	800	-	-	-
	Med High	4			1130	1115	1100	1085	1070	1057	1044	1022	1000	970	940	870	780	-	-	-
030	Med	3	9 x 7	1/2	1030	1005	980	965	950	935	920	900	880	870	860	830	750	-	-	-
	Med Low	2			960	945	930	915	900	885	870	855	840	825	810	790	740	-	-	-
	Low	1			790	765	740	725	710	690	670	660	650	630	610	580	500	-	-	-
	High	5			1370	1345	1320	1285	1250	1220	1190	1158	1125	1085	1045	960	-	-	-	-
	Med High	4			1265	1253	1240	1220	1200	1175	1150	1120	1090	1053	1015	-	-	-	-	-
036	Med	3	9 x 7	1/2	1160	1143	1125	1113	1100	1085	1070	1055	1040	1020	1000	-	-	-	-	-
	Med Low	2			1110	1095	1080	1065	1050	1038	1025	1008	990	980	970	-	-	-	-	-
	Low	1			825	803	780	770	760	740	720	705	690	670	650	-	-	-	-	-
	High	5			1840	1825	1810	1790	1770	1745	1720	1700	1680	1660	1640	1600	1570	1530	1480	-
	Med High	4			1730	1713	1695	1670	1645	1623	1600	1575	1550	1535	1520	1480	1440	1390	1350	-
042	**Med**	3	11 x 10	1	1630	1610	1590	1563	1535	1513	1490	1470	1450	1425	1400	1370	1330	1290	-	-
	Med Low	2			1550	1520	1490	1465	1440	1415	1390	1370	1350	1330	1310	1260	1220	1180	-	-
	Low	1			1380	1340	1300	1275	1250	1225	1200	1175	1150	1125	1100	1030	980	820	-	-
	High	5			2060	2045	2030	2015	2000	1970	1940	1925	1910	1890	1870	1830	1800	1750	1740	-
	Med High	4			1880	1860	1840	1825	1810	1785	1760	1740	1720	1705	1690	1640	1610	1570	1535	-
048	**Med**	3	11 x 10	1	1790	1770	1750	1730	1710	1685	1660	1640	1620	1600	1580	1550	1510	1460	-	-
	Med Low	2			1670	1650	1630	1605	1580	1555	1530	1510	1490	1470	1450	1410	1370	1340	-	-
	Low	1			1430	1405	1380	1353	1325	1303	1280	1255	1230	1210	1190	1130	1070	925	-	-
	High	5			2400	2360	2330	2315	2300	2290	2285	2275	2265	2250	2230	2200	2165	2110	2080	2030
	Med High	4			2180	2160	2140	2130	2120	2105	2090	2075	2060	2045	2030	2000	1960	1930	1890	1850
060	**Med**	3	11 x 10	1	2080	2050	2020	2010	2000	1985	1970	1955	1940	1925	1910	1870	1840	1800	1760	1720
	Med Low	2			1930	1920	1910	1893	1875	1863	1850	1833	1815	1798	1780	1740	1700	1660	1620	1590
	Low	1			1750	1735	1720	1698	1675	1658	1640	1620	1600	1583	1565	1525	1490	1450	1410	1350
	High	5			2400	2360	2330	2315	2300	2290	2285	2275	2265	2250	2230	2200	2165	2110	2080	2030
	Med High	4			2180	2160	2140	2130	2120	2105	2090	2075	2060	2045	2030	2000	1960	1930	1890	1850
070	**Med**	3	11 x 10	1	2080	2050	2020	2010	2000	1985	1970	1955	1940	1925	1910	1870	1840	1800	1760	1720
	Med Low	2			1930	1920	1910	1893	1875	1863	1850	1833	1815	1798	1780	1740	1700	1660	1620	1590
	Low	1			1750	1735	1720	1698	1675	1658	1640	1620	1600	1583	1565	1525	1490	1450	1410	1350

11/13/09

Factory settings are in Bold

Air flow values are with dry coil and standard filter

For wet coil performance first calculate the face velocity of the air coil (Face Velocity [fpm] = Airflow [cfm] / Face Area [sq ft]).

Then for velocities of 200 fpm reduce the static capability by 0.03 in. wg, 300 fpm by 0.08 in. wg, 400 fpm by 0.12 in. wg. and 500 fpm by 0.16 in. wg.

ISO/AHRI rating point on the YS070 will require moving the red wire on the motor to high speed (tap 5) and disconnecting the tan wire from tap 5.

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Operating Limits

Operating Limits	Cooling		Heating	
	(°F)	(°C)	(°F)	(°C)
Air Limits				
Min. Ambient Air	45	7.2	45	7.2
Rated Ambient Air	80	26.7	70	21.1
Max. Ambient Air	100	37.8	85	29.4
Min. Entering Air	50	10.0	40	4.4
Rated Entering Air db/wb	80.6/66.2	27/19	68	20.0
Max. Entering Air db/wb	110/83	43/28.3	80	26.7
Water Limits				
Min. Entering Water	30	-1.1	20	-6.7
Normal Entering Water	50-110	10-43.3	30-70	-1.1
Max. Entering Water	120	48.9	90	32.2

NOTE: Minimum/maximum limits are only for start-up conditions, and are meant for bringing the space up to occupancy temperature. Units are not designed to operate at the minimum/maximum conditions on a regular basis. The operating limits are dependant upon three primary factors: 1) water temperature, 2) return air temperature, and 3) ambient temperature. When any of the factors are at the minimum or maximum levels, the other two factors must be at the normal level for proper and reliable unit operation.

Definitions

ABBREVIATIONS AND DEFINITIONS:

CFM = airflow, cubic feet/minute
EWT = entering water temperature, Fahrenheit
GPM = water flow in gallons/minute
WPD = water pressure drop, PSI and feet of water
EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)
HC = air heating capacity, MBTUH
TC = total cooling capacity, MBTUH
SC = sensible cooling capacity, MBTUH
KW = total power unit input, kilowatts
HR = total heat of rejection, MBTUH
HE = total heat of extraction, MBTUH
HWC = hot water generator capacity, MBTUH
EER = Energy Efficient Ratio = BTU output/Watt input
COP = Coefficient of Performance = BTU output/BTU input
LWT = leaving water temperature, °F
LAT = leaving air temperature, °F
TH = total heating capacity, MBTUH
LC = latent cooling capacity, MBTUH
S/T = sensible to total cooling ratio

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

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Correction Factor Tables

Cooling Capacity Corrections

Entering Air WB °F	Total Clg Cap	Sensible Cooling Capacity Multipliers - Entering DB °F										Power Input	Heat of Rejection
		60	65	70	75	80	80.6	85	90	95	100		
55	0.898	0.723	0.866	1.048	1.185	*	*	*	*	*	*	0.985	0.913
60	0.912		0.632	0.880	1.078	1.244	1.260	*	*	*	*	0.994	0.927
65	0.967			0.694	0.881	1.079	1.085	1.270	*	*	*	0.997	0.972
66.2	0.983			0.655	0.842	1.040	1.060	1.232	*	*	*	0.999	0.986
67	**1.000**			0.616	0.806	**1.000**	1.023	1.193	1.330	*	*	**1.000**	**1.000**
70	1.053				0.693	0.879	0.900	1.075	1.250	1.404	*	1.003	1.044
75	1.168					0.687	0.715	0.875	1.040	1.261	1.476	1.007	1.141

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NOTE: * Sensible capacity equals total capacity at conditions shown.

Heating Corrections

Ent Air DB °F	Htg Cap	Power	Heat of Ext
45	1.062	0.739	1.158
50	1.050	0.790	1.130
55	1.037	0.842	1.096
60	1.025	0.893	1.064
65	1.012	0.945	1.030
68	1.005	0.976	1.012
70	**1.000**	**1.000**	**1.000**
75	0.987	1.048	0.970
80	0.975	1.099	0.930

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Air Flow Corrections

Airflow		Cooling				Heating		
CFM Per Ton of Clg	% of Nominal	Total Cap	Sens Cap	Power	Heat of Rej	Htg Cap	Power	Heat of Ext
240	60	0.922	0.786	0.910	0.920	0.943	1.150	0.893
275	69	0.944	0.827	0.924	0.940	0.958	1.105	0.922
300	75	0.959	0.860	0.937	0.955	0.968	1.078	0.942
325	81	0.971	0.894	0.950	0.967	0.977	1.053	0.959
350	88	0.982	0.929	0.964	0.978	0.985	1.031	0.973
375	94	0.992	0.965	0.982	0.990	0.993	1.014	0.988
400	**100**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**	**1.000**
425	106	1.007	1.034	1.020	1.010	1.007	0.990	1.011
450	113	1.012	1.065	1.042	1.018	1.013	0.983	1.020
475	119	1.017	1.093	1.066	1.026	1.018	0.980	1.028
500	125	1.019	1.117	1.092	1.033	1.023	0.978	1.034
520	130	1.020	1.132	1.113	1.038	1.026	0.975	1.038

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Antifreeze Corrections

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

Antifreeze Type	Antifreeze % by wt	Cooling Capacity	Heating Capacity	Pressure Drop
EWT - degF [DegC]		**90 [32.2]**	**30 [-1.1]**	**30 [-1.1]**
Water	0	1.000	1.000	1.000
Ethylene Glycol	10	0.991	0.973	1.075
	20	0.979	0.943	1.163
	30	0.965	0.917	1.225
	40	0.955	0.890	1.324
	50	0.943	0.865	1.419
Propylene Glycol	10	0.981	0.958	1.130
	20	0.969	0.913	1.270
	30	0.950	0.854	1.433
	40	0.937	0.813	1.614
	50	0.922	0.770	1.816
Ethanol	10	0.991	0.927	1.242
	20	0.972	0.887	1.343
	30	0.947	0.856	1.383
	40	0.930	0.815	1.523
	50	0.911	0.779	1.639
Methanol	10	0.986	0.957	1.127
	20	0.970	0.924	1.197
	30	0.951	0.895	1.235
	40	0.936	0.863	1.323
	50	0.920	0.833	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. Determine the corrected heating and cooling performance at 30°F and 90°F respectively as well as pressure drop at 30°F for a Y Series YS024-PSC.

The corrected cooling capacity at 90°F would be: 24,500 MBtuh x 0.969 = 23,741 MBtuh
The corrected heating capacity at 30°F would be: 19,000 MBtuh x 0.913 = 17,347 MBtuh
The corrected pressure drop at 30°F and 6 GPM would be: 10.5 feet of head x 1.270 = 13.34 feet of head

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

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Pressure Drop

Model	GPM	Pressure Drop (psi)				
		30°F	50°F	70°F	90°F	110°F
024	3.0	1.1	1.0	0.9	0.8	0.6
	4.5	2.4	2.2	2.1	2.0	1.9
	6.0	4.5	4.4	4.3	4.1	4.0
	8.0	6.7	6.6	6.5	6.3	6.2
030	4.0	0.9	0.8	0.7	0.6	0.5
	6.0	1.9	1.8	1.7	1.6	1.5
	8.0	3.7	3.6	3.5	3.4	3.3
	10.0	4.8	4.7	4.6	4.5	4.4
036	5.0	1.4	1.1	0.9	0.7	0.5
	7.0	2.5	2.3	2.1	1.8	1.6
	9.0	6.0	5.8	5.5	5.3	5.1
	12.0	6.6	6.4	6.2	6.0	5.7
042	5.0	1.5	1.2	0.9	0.5	0.4
	8.0	3.4	3.1	2.8	2.5	2.1
	11.0	7.9	7.5	7.2	6.9	6.6
	14.0	9.1	8.8	8.5	8.2	7.9
048	6.0	2.8	2.6	2.4	2.2	2.0
	9.0	6.5	6.3	6.0	5.8	5.5
	12.0	10.2	9.9	9.6	9.3	9.0
	16.0	12.9	12.6	12.2	11.8	11.4
060	9.0	4.1	3.8	3.6	3.4	3.1
	12.0	7.1	6.7	6.3	5.9	5.6
	15.0	9.6	9.2	8.9	8.6	8.3
	20.0	15.5	14.5	13.3	12.0	10.7
070	12.0	4.0	3.6	3.2	3.0	2.7
	15.0	6.4	6.0	5.6	5.2	4.8
	18.0	8.8	8.4	7.9	7.5	7.1
	24.0	13.6	13.2	12.6	12.0	11.5

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

YS024 - Performance Data

Single Speed PSC (800 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	3.0	1.2	2.8	Operation not recommended						Operation not recommended						
	4.5	2.4	5.6													
	6.0	4.6	10.6	15.6	1.68	9.8	86.0	2.72	1.6							
30	3.0	1.1	2.6	Operation not recommended						Operation not recommended						
	4.5	2.4	5.5	18.7	1.74	12.7	89.6	3.14	1.7	27.5	17.4	0.63	1.11	31.2	24.8	---
	6.0	4.5	10.5	19.0	1.76	13.0	90.0	3.16	1.7	27.8	17.7	0.64	1.04	31.4	26.8	---
40	3.0	1.1	2.5	Operation not recommended						Operation not recommended						
	4.5	2.3	5.3	20.5	1.78	14.4	91.7	3.38	1.9	27.6	17.7	0.64	1.20	31.7	22.9	---
	6.0	4.5	10.3	21.1	1.80	15.0	92.4	3.44	1.9	27.9	18.0	0.64	1.14	31.8	24.6	---
50	3.0	1.0	2.3	21.7	1.79	15.6	93.2	3.56	2.1	27.5	18.0	0.65	1.37	32.2	20.1	1.3
	4.5	2.2	5.2	22.5	1.82	16.3	94.0	3.63	2.1	27.8	18.1	0.65	1.30	32.2	21.4	1.2
	6.0	4.4	10.2	23.2	1.84	16.9	94.9	3.70	2.2	28.0	18.2	0.65	1.23	32.2	22.7	1.2
60	3.0	1.0	2.2	24.0	1.83	17.7	95.7	3.84	2.3	26.8	17.7	0.66	1.52	32.0	17.6	1.5
	4.5	2.2	5.0	24.8	1.85	18.5	96.7	3.92	2.4	27.0	17.8	0.66	1.44	32.0	18.8	1.4
	6.0	4.3	10.0	25.6	1.88	19.2	97.6	4.00	2.4	27.3	17.9	0.66	1.36	31.9	20.1	1.4
70	3.0	0.9	2.0	26.2	1.87	19.8	98.3	4.10	2.6	26.1	17.4	0.67	1.67	31.8	15.6	1.8
	4.5	2.1	4.9	27.1	1.89	20.6	99.4	4.20	2.6	26.3	17.5	0.66	1.58	31.7	16.7	1.8
	6.0	4.3	9.9	28.0	1.91	21.5	100.4	4.30	2.7	26.6	17.6	0.66	1.49	31.6	17.8	1.7
80	3.0	0.8	1.9	29.0	1.88	22.6	101.5	4.53	2.9	24.9	16.8	0.68	1.81	31.1	13.7	2.3
	4.5	2.1	4.7	29.7	1.90	23.2	102.4	4.58	2.9	25.2	17.0	0.68	1.73	31.1	14.5	2.2
	6.0	4.2	9.7	30.4	1.92	23.8	103.2	4.64	3.0	25.5	17.1	0.67	1.68	31.2	15.2	2.1
90	3.0	0.8	1.7	31.8	1.88	25.4	104.8	4.95	3.3	23.6	16.2	0.69	2.01	30.5	11.7	2.8
	4.5	2.0	4.6	32.3	1.91	25.8	105.4	4.96	3.4	24.0	16.5	0.69	1.92	30.6	12.5	2.7
	6.0	4.1	9.6	32.8	1.93	26.2	105.9	4.98	3.5	24.5	16.7	0.68	1.86	30.8	13.2	2.5
100	3.0	0.7	1.6	Operation not recommended						Operation not recommended						
	4.5	1.9	4.4							22.7	16.0	0.71	2.20	30.2	10.3	3.4
	6.0	4.1	9.4							23.0	16.2	0.70	2.13	30.3	10.8	3.2
110	3.0	0.6	1.4							Operation not recommended						
	4.5	1.9	4.3							21.1	15.4	0.73	2.46	29.5	8.6	4.1
	6.0	4.0	9.3							21.5	15.6	0.73	2.39	29.7	9.0	3.9
120	3.0	0.6	1.3							Operation not recommended						
	4.5	1.8	4.1							19.1	14.8	0.77	2.85	28.9	6.7	4.9
	6.0	3.9	9.1							19.6	15.0	0.77	2.77	29.0	7.1	4.6

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

YS030 - Performance Data

Single Speed PSC (1000 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	4.0	1.0	2.2	Operation not recommended						Operation not recommended						
	6.0	1.9	4.5													
	8.0	3.8	8.7	20.0	1.90	13.5	86.5	3.09	1.9							
30	4.0	0.9	2.1	Operation not recommended						Operation not recommended						
	6.0	1.9	4.4	21.2	1.96	14.5	87.6	3.16	2.1	30.4	19.3	0.64	1.38	35.1	21.9	---
	8.0	3.7	8.5	22.0	1.98	15.2	88.4	3.26	2.1	30.8	19.7	0.64	1.30	35.2	23.7	---
40	4.0	0.9	2.0	Operation not recommended						Operation not recommended						
	6.0	1.8	4.3	23.9	2.00	17.1	90.1	3.50	2.3	31.3	20.2	0.64	1.41	36.1	22.1	---
	8.0	3.7	8.4	25.0	2.02	18.1	91.1	3.62	2.4	32.4	20.9	0.65	1.40	37.2	23.1	---
50	4.0	0.8	1.9	25.8	2.01	18.9	91.9	3.76	2.5	30.5	19.9	0.65	1.39	35.2	21.9	1.4
	6.0	1.8	4.1	26.9	2.04	19.9	92.9	3.87	2.6	32.3	21.0	0.65	1.45	37.2	22.3	1.3
	8.0	3.6	8.3	27.9	2.06	20.9	93.8	3.97	2.7	34.0	22.1	0.65	1.50	39.1	22.7	1.3
60	4.0	0.8	1.8	29.4	2.05	22.4	95.2	4.20	2.9	30.1	19.7	0.66	1.54	35.3	19.5	1.6
	6.0	1.7	4.0	30.5	2.07	23.4	96.2	4.31	2.9	31.9	20.9	0.66	1.60	37.4	20.0	1.5
	8.0	3.6	8.2	31.6	2.10	24.5	97.3	4.42	3.0	33.8	22.1	0.66	1.65	39.4	20.5	1.4
70	4.0	0.7	1.6	33.0	2.09	25.9	98.6	4.63	3.2	29.6	19.5	0.66	1.69	35.4	17.5	2.0
	6.0	1.7	3.9	34.2	2.11	27.0	99.6	4.74	3.3	31.6	20.8	0.66	1.75	37.6	18.1	1.9
	8.0	3.5	8.1	35.3	2.13	28.0	100.7	4.86	3.4	33.6	22.2	0.66	1.80	39.7	18.7	1.8
80	4.0	0.7	1.5	36.9	2.19	29.4	102.1	4.93	3.6	29.3	19.3	0.66	2.16	36.6	13.6	2.5
	6.0	1.6	3.8	37.8	2.22	30.2	103.0	4.99	3.7	30.7	20.4	0.66	2.06	37.8	15.0	2.4
	8.0	3.5	8.0	38.7	2.24	31.0	103.8	5.06	3.8	32.1	21.5	0.67	1.99	38.8	16.1	2.3
90	4.0	0.6	1.4	40.7	2.29	32.9	105.7	5.21	4.1	29.0	19.0	0.66	2.36	37.0	12.3	3.3
	6.0	1.6	3.7	41.4	2.32	33.4	106.3	5.22	4.2	29.9	20.0	0.67	2.25	37.6	13.3	3.1
	8.0	3.4	7.9	42.0	2.35	34.0	106.9	5.24	4.3	30.5	20.7	0.68	2.18	37.9	14.0	3.0
100	4.0	0.6	1.3	Operation not recommended						Operation not recommended						
	6.0	1.6	3.6							27.5	19.7	0.72	2.58	36.3	10.7	3.9
	8.0	3.4	7.8							28.0	19.9	0.71	2.50	36.5	11.2	3.7
110	4.0	0.5	1.2							Operation not recommended						
	6.0	1.5	3.5							24.9	18.7	0.75	2.89	34.7	8.6	4.9
	8.0	3.3	7.6							25.4	19.0	0.75	2.81	35.0	9.0	4.5
120	4.0	0.5	1.1							Operation not recommended						
	6.0	1.5	3.3							21.1	17.2	0.82	3.09	31.7	6.8	5.7
	8.0	3.3	7.5							21.6	17.5	0.81	3.00	31.8	7.2	5.4

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

YS036 - Performance Data

Single Speed PSC (1250 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	5.0	1.5	3.4	Operation not recommended						Operation not recommended						
	7.0	2.6	6.0													
	9.0	6.1	14.1	23.4	2.43	15.1	86.9	2.83	2.3							
30	5.0	1.4	3.1	Operation not recommended						Operation not recommended						
	7.0	2.5	5.8	27.4	2.46	19.0	90.1	3.27	2.5	35.9	25.1	0.70	1.64	41.5	21.9	---
	9.0	6.0	13.8	28.2	2.51	19.6	90.7	3.29	2.6	36.4	25.6	0.70	1.54	41.7	23.6	---
40	5.0	1.3	2.9	Operation not recommended						Operation not recommended						
	7.0	2.4	5.5	30.8	2.52	22.2	92.8	3.58	2.9	38.7	27.2	0.70	1.74	44.6	22.2	---
	9.0	5.9	13.6	31.9	2.57	23.2	93.7	3.65	2.9	39.2	27.5	0.70	1.66	44.9	23.6	---
50	5.0	1.1	2.6	33.3	2.53	24.6	94.8	3.85	3.1	40.9	29.1	0.71	1.90	47.4	21.5	1.6
	7.0	2.3	5.2	34.5	2.58	25.7	95.8	3.92	3.2	41.5	29.2	0.70	1.84	47.7	22.5	1.5
	9.0	5.8	13.3	35.7	2.62	26.8	96.7	3.99	3.3	42.0	29.4	0.70	1.78	48.1	23.6	1.5
60	5.0	1.0	2.4	37.7	2.60	28.8	98.3	4.25	3.5	39.2	28.5	0.73	2.09	46.4	18.8	2.0
	7.0	2.2	5.0	39.0	2.64	30.0	99.4	4.33	3.6	39.9	28.7	0.72	2.02	46.8	19.7	1.9
	9.0	5.7	13.1	40.2	2.67	31.1	100.4	4.42	3.6	40.5	28.9	0.71	1.96	47.2	20.7	1.8
70	5.0	0.9	2.1	42.1	2.67	33.0	101.9	4.62	3.9	37.6	27.9	0.74	2.28	45.3	16.5	2.5
	7.0	2.1	4.7	43.5	2.70	34.3	103.0	4.73	4.0	38.3	28.2	0.74	2.21	45.8	17.4	2.4
	9.0	5.5	12.8	44.8	2.72	35.5	104.1	4.83	4.1	39.0	28.5	0.73	2.13	46.3	18.3	2.3
80	5.0	0.8	1.8	46.7	2.73	37.4	105.6	5.01	4.4	36.1	27.1	0.75	2.55	44.8	14.1	3.2
	7.0	1.9	4.5	47.7	2.76	38.3	106.4	5.07	4.5	36.7	27.6	0.75	2.43	45.0	15.1	3.0
	9.0	5.4	12.5	48.8	2.79	39.3	107.3	5.13	4.6	37.4	28.0	0.75	2.36	45.4	15.9	2.9
90	5.0	0.7	1.6	51.2	2.79	41.7	109.3	5.39	4.9	34.5	26.3	0.76	2.79	44.1	12.4	3.9
	7.0	1.8	4.2	52.0	2.83	42.4	109.9	5.40	5.1	35.1	27.0	0.77	2.67	44.2	13.2	3.7
	9.0	5.3	12.3	52.8	2.86	43.1	110.5	5.41	5.2	35.8	27.5	0.77	2.58	44.6	13.9	3.6
100	5.0	0.6	1.3	Operation not recommended						Operation not recommended						
	7.0	1.7	4.0							33.3	26.4	0.79	2.98	43.5	11.2	4.6
	9.0	5.2	12.0							33.8	26.6	0.79	2.89	43.6	11.7	4.4
110	5.0	0.5	1.1							Operation not recommended						
	7.0	1.6	3.7							31.2	25.3	0.81	3.28	42.4	9.5	5.7
	9.0	5.1	11.8							31.8	25.7	0.81	3.19	42.7	10.0	5.4
120	5.0	0.4	0.8							Operation not recommended						
	7.0	1.5	3.5							26.5	22.7	0.85	3.61	38.8	7.4	6.8
	9.0	5.0	11.5							27.1	23.0	0.85	3.50	39.0	7.7	6.4

11/10/09

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS042 - Performance Data

Single Speed PSC (1400 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	5.0	1.6	3.8	Operation not recommended						Operation not recommended						
	8.0	3.6	8.2													
	11.0	8.0	18.5	27.0	2.81	17.4	85.9	2.82	3.5							
30	5.0	1.5	3.4	Operation not recommended						Operation not recommended						
	8.0	3.4	7.8	30.0	2.82	20.4	87.8	3.12	3.7	43.6	31.7	0.73	1.93	50.2	22.6	---
	11.0	7.9	18.1	31.0	2.86	21.2	88.5	3.18	3.8	44.2	32.3	0.73	1.81	50.4	24.4	---
40	5.0	1.3	3.0	Operation not recommended						Operation not recommended						
	8.0	3.2	7.5	33.4	2.88	23.5	90.1	3.40	4.0	45.7	32.7	0.72	2.06	52.7	22.1	---
	11.0	7.7	17.8	34.8	2.91	24.8	91.0	3.50	4.1	46.3	33.2	0.72	1.95	53.0	23.7	---
50	5.0	1.2	2.7	35.5	2.92	25.5	91.5	3.56	4.4	47.1	33.4	0.71	2.31	55.0	20.4	2.4
	8.0	3.1	7.1	37.0	2.94	27.0	92.5	3.69	4.5	47.8	33.8	0.71	2.20	55.3	21.7	2.4
	11.0	7.5	17.4	38.5	2.96	28.4	93.5	3.81	4.7	48.4	34.1	0.70	2.09	55.5	23.2	2.3
60	5.0	1.0	2.3	39.9	2.99	29.7	94.4	3.91	5.0	46.0	32.8	0.71	2.57	54.8	17.9	3.0
	8.0	2.9	6.7	41.4	3.01	31.1	95.3	4.03	5.1	47.0	33.1	0.70	2.43	55.3	19.3	2.8
	11.0	7.4	17.0	42.9	3.03	32.5	96.3	4.15	5.3	48.0	33.5	0.70	2.30	55.8	20.9	2.7
70	5.0	0.9	2.0	44.2	3.05	33.8	97.2	4.25	5.6	44.9	32.2	0.72	2.82	54.5	15.9	3.8
	8.0	2.8	6.4	45.7	3.07	35.2	98.2	4.36	5.7	46.3	32.5	0.70	2.66	55.3	17.4	3.6
	11.0	7.2	16.7	47.2	3.09	36.7	99.2	4.48	5.9	47.6	32.8	0.69	2.50	56.1	19.0	3.4
80	5.0	0.7	1.6	49.4	3.11	38.8	100.7	4.65	6.3	43.4	31.6	0.73	3.02	53.8	14.4	4.8
	8.0	2.6	6.0	50.6	3.15	39.8	101.5	4.71	6.5	44.4	31.9	0.72	2.88	54.3	15.4	4.5
	11.0	7.1	16.3	51.8	3.18	40.9	102.2	4.78	6.7	45.6	32.1	0.70	2.79	55.1	16.3	4.3
90	5.0	0.5	1.2	54.6	3.18	43.8	104.1	5.04	7.1	42.0	31.0	0.74	3.34	53.4	12.6	6.0
	8.0	2.5	5.7	55.5	3.22	44.5	104.7	5.05	7.3	42.6	31.2	0.73	3.18	53.5	13.4	5.7
	11.0	6.9	16.0	56.3	3.26	45.2	105.2	5.06	7.5	43.5	31.4	0.72	3.08	54.0	14.1	5.5
100	5.0	0.4	0.9	Operation not recommended						Operation not recommended						
	8.0	2.3	5.3							39.8	30.2	0.76	3.55	52.0	11.2	7.1
	11.0	6.8	15.6							40.5	30.5	0.75	3.44	52.2	11.8	6.8
110	5.0	0.4	0.9							Operation not recommended						
	8.0	2.1	4.9							36.7	29.1	0.79	3.91	50.0	9.4	8.6
	11.0	6.6	15.2							37.4	29.5	0.79	3.80	50.4	9.8	8.3
120	5.0	0.4	0.9							Operation not recommended						
	8.0	2.0	4.6							33.2	28.2	0.85	4.55	48.7	7.3	10.4
	11.0	6.5	14.9							33.9	28.6	0.84	4.42	49.0	7.7	10.0

11/10/09

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YS048 - Performance Data

Single Speed PSC (1600 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	6.0	2.2	5.1	Operation not recommended						Operation not recommended						
	9.0	4.4	10.0													
	12.0	6.8	15.8	30.8	3.32	19.5	87.0	2.72	4.6							
30	6.0	2.0	4.7	Operation not recommended						Operation not recommended						
	9.0	4.2	9.6	35.3	3.31	24.0	89.8	3.12	4.9	50.3	31.3	0.62	2.33	58.3	21.6	---
	12.0	6.7	15.5	35.8	3.35	24.4	90.1	3.13	5.0	51.0	31.9	0.63	2.19	58.5	23.3	---
40	6.0	1.9	4.3	Operation not recommended						Operation not recommended						
	9.0	4.0	9.2	40.1	3.44	28.4	92.8	3.41	5.4	53.1	34.8	0.65	2.52	61.7	21.1	---
	12.0	6.5	15.0	41.9	3.51	30.0	93.9	3.51	5.5	54.0	35.5	0.66	2.39	62.2	22.6	---
50	6.0	1.7	3.9	42.9	3.50	31.0	94.5	3.60	5.9	54.9	37.4	0.68	2.84	64.6	19.3	2.9
	9.0	3.8	8.8	45.5	3.58	33.3	96.1	3.73	6.1	56.0	38.3	0.68	2.72	65.2	20.6	2.8
	12.0	6.3	14.6	48.1	3.66	35.6	97.7	3.85	6.2	57.0	39.1	0.69	2.59	65.8	22.0	2.7
60	6.0	1.5	3.5	49.5	3.67	37.0	98.6	3.96	6.7	54.5	37.4	0.69	3.14	65.2	17.4	3.5
	9.0	3.6	8.4	52.2	3.73	39.5	100.2	4.11	6.8	55.4	38.0	0.69	2.99	65.6	18.5	3.4
	12.0	6.1	14.1	54.9	3.79	42.0	101.9	4.25	7.0	56.2	38.6	0.69	2.85	65.9	19.8	3.2
70	6.0	1.3	3.0	56.1	3.83	43.0	102.6	4.29	7.5	54.1	37.3	0.69	3.43	65.8	15.8	4.5
	9.0	3.5	8.0	58.9	3.87	45.7	104.4	4.46	7.7	54.8	37.7	0.69	3.27	65.9	16.8	4.3
	12.0	5.9	13.7	61.7	3.91	48.4	106.1	4.63	7.9	55.4	38.2	0.69	3.10	66.0	17.9	4.0
80	6.0	1.1	2.6	61.3	3.91	47.9	105.8	4.59	8.4	51.4	35.8	0.70	3.71	64.0	13.9	5.6
	9.0	3.3	7.6	63.2	3.96	49.7	107.0	4.68	8.6	52.1	36.4	0.70	3.54	64.2	14.7	5.3
	12.0	5.8	13.3	65.2	4.01	51.5	108.2	4.77	8.9	52.9	36.9	0.70	3.43	64.6	15.5	5.1
90	6.0	1.0	2.2	66.5	4.00	52.9	109.1	4.88	9.4	48.7	34.3	0.70	4.06	62.5	12.0	7.0
	9.0	3.1	7.1	67.5	4.05	53.7	109.7	4.89	9.7	49.4	35.0	0.71	3.87	62.7	12.8	6.7
	12.0	5.6	12.9	68.6	4.10	54.6	110.3	4.90	10.1	50.4	35.6	0.70	3.75	63.2	13.5	6.4
100	6.0	0.8	1.8	Operation not recommended						Operation not recommended						
	9.0	2.9	6.7							46.7	34.3	0.74	4.37	61.6	10.7	8.4
	12.0	5.4	12.5							47.4	34.6	0.73	4.23	61.8	11.2	8.0
110	6.0	0.6	1.4							Operation not recommended						
	9.0	2.7	6.3							43.4	33.2	0.76	4.83	59.9	9.0	10.3
	12.0	5.2	12.1							44.3	33.7	0.76	4.70	60.4	9.4	9.7
120	6.0	0.4	1.0							Operation not recommended						
	9.0	2.6	5.9							40.1	32.0	0.80	5.40	58.5	7.4	12.4
	12.0	5.0	11.6							41.0	32.5	0.79	5.24	58.8	7.8	11.8

4/22/11

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS060 - Performance Data

Single Speed PSC (2000 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	9.0	3.8	8.7	Operation not recommended						Operation not recommended						
	12.0	6.3	14.5													
	15.0	9.7	22.5	41.9	4.06	28.0	87.4	3.02	5.5							
30	9.0	3.6	8.4	Operation not recommended						Operation not recommended						
	12.0	6.1	14.1	43.8	3.99	30.2	88.3	3.22	5.9	72.0	49.1	0.68	2.96	82.1	24.3	---
	15.0	9.6	22.2	46.5	4.11	32.5	89.5	3.31	6.1	73.0	50.0	0.68	2.78	82.5	26.3	---
40	9.0	3.5	8.0	Operation not recommended						Operation not recommended						
	12.0	6.0	13.7	49.7	4.12	35.6	91.0	3.53	6.6	70.8	48.8	0.69	3.11	81.4	22.8	---
	15.0	9.4	21.7	52.2	4.22	37.8	92.2	3.63	6.7	71.8	49.5	0.69	2.97	81.9	24.2	---
50	9.0	3.3	7.6	54.6	4.20	40.3	93.3	3.81	7.1	68.5	48.0	0.70	3.34	79.9	20.5	3.9
	12.0	5.8	13.4	56.2	4.26	41.7	94.0	3.87	7.3	69.5	48.5	0.70	3.25	80.6	21.4	3.7
	15.0	9.2	21.3	57.8	4.32	43.1	94.8	3.92	7.5	70.5	48.9	0.69	3.16	81.3	22.3	3.5
60	9.0	3.1	7.3	62.2	4.35	47.3	96.8	4.19	8.0	67.3	47.0	0.70	3.64	79.7	18.5	4.8
	12.0	5.6	13.0	64.3	4.41	49.3	97.8	4.28	8.3	68.2	47.6	0.70	3.54	80.3	19.3	4.6
	15.0	9.1	21.0	66.4	4.46	51.2	98.8	4.36	8.5	69.1	48.3	0.70	3.45	80.9	20.1	4.4
70	9.0	3.0	6.9	69.8	4.50	54.4	100.3	4.54	9.0	66.0	46.0	0.70	3.93	79.4	16.8	6.0
	12.0	5.5	12.6	72.4	4.55	56.9	101.5	4.66	9.3	66.9	46.8	0.70	3.83	79.9	17.5	5.7
	15.0	8.9	20.6	75.0	4.60	59.3	102.7	4.78	9.5	67.7	47.6	0.70	3.73	80.4	18.2	5.4
80	9.0	2.8	6.5	76.2	4.59	60.6	103.3	4.87	10.2	62.2	45.0	0.72	4.45	77.4	14.0	7.6
	12.0	5.3	12.3	78.2	4.65	62.3	104.2	4.93	10.5	63.1	45.7	0.72	4.25	77.6	14.9	7.2
	15.0	8.8	20.2	80.1	4.70	64.1	105.1	5.00	10.7	64.1	46.3	0.72	4.11	78.1	15.6	6.8
90	9.0	2.7	6.1	82.7	4.68	66.8	106.3	5.18	11.4	58.4	43.9	0.75	4.86	75.0	12.0	9.5
	12.0	5.2	11.9	84.0	4.74	67.8	106.9	5.19	11.8	59.3	44.6	0.75	4.64	75.2	12.8	9.0
	15.0	8.6	19.9	85.3	4.80	68.9	107.5	5.21	12.2	60.5	45.0	0.74	4.49	75.9	13.5	8.6
100	9.0	2.5	5.8	Operation not recommended						Operation not recommended						
	12.0	5.0	11.5							56.1	43.4	0.77	5.15	73.7	10.9	11.2
	15.0	8.4	19.5							57.0	43.7	0.77	4.99	74.0	11.4	10.6
110	9.0	2.3	5.4							Operation not recommended						
	12.0	4.8	11.2							52.3	41.8	0.80	5.63	71.6	9.3	13.8
	15.0	8.3	19.1							53.4	42.4	0.79	5.48	72.1	9.7	13.1
120	9.0	2.2	5.0							Operation not recommended						
	12.0	4.7	10.8							48.0	39.9	0.83	6.25	69.3	7.7	16.6
	15.0	8.1	18.8							49.0	40.5	0.83	6.07	69.7	8.1	15.9

4/22/11

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

YS070 - Performance Data

Single Speed PSC (2200 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	12.0	4.3	9.8	Operation not recommended						Operation not recommended						
	15.0	5.6	13.0													
	18.0	9.0	20.8	46.0	4.98	29.0	87.4	2.71	6.5							
30	12.0	4.1	9.4	Operation not recommended						Operation not recommended						
	15.0	5.9	13.6	52.0	4.92	35.2	89.9	3.09	7.0	73.0	46.1	0.63	3.30	84.3	22.1	---
	18.0	8.8	20.3	53.7	5.06	36.4	90.6	3.11	7.3	74.0	47.0	0.64	3.10	84.6	23.9	---
40	12.0	3.8	8.8	Operation not recommended						Operation not recommended						
	15.0	5.2	12.0	58.4	5.10	41.0	92.6	3.35	7.8	74.6	49.3	0.66	3.49	86.5	21.4	---
	18.0	8.6	19.8	60.9	5.20	43.1	93.6	3.43	8.0	76.1	50.5	0.66	3.36	87.5	22.7	---
50	12.0	3.6	8.4	62.8	5.25	44.9	94.4	3.51	8.5	74.2	51.0	0.69	3.74	87.0	19.8	4.3
	15.0	5.0	11.5	65.4	5.29	47.4	95.5	3.62	8.7	76.2	52.5	0.69	3.68	88.7	20.7	4.1
	18.0	8.4	19.3	68.0	5.33	49.8	96.6	3.74	8.9	78.2	54.0	0.69	3.61	90.5	21.7	3.9
60	12.0	3.4	7.9	71.9	5.46	53.3	98.3	3.86	9.5	71.6	50.0	0.70	4.08	85.5	17.6	5.2
	15.0	4.8	11.0	73.9	5.49	55.2	99.1	3.95	9.8	73.3	51.3	0.70	4.00	87.0	18.3	4.9
	18.0	8.2	18.8	76.0	5.52	57.2	100.0	4.03	10.1	75.1	52.5	0.70	3.92	88.4	19.1	4.8
70	12.0	3.2	7.4	81.0	5.66	61.7	102.1	4.19	10.7	69.0	49.0	0.71	4.41	84.0	15.6	6.6
	15.0	4.6	10.5	82.5	5.69	63.1	102.7	4.25	11.0	70.5	50.0	0.71	4.32	85.2	16.3	6.3
	18.0	7.9	18.3	84.0	5.71	64.5	103.3	4.31	11.3	71.9	51.0	0.71	4.23	86.4	17.0	6.0
80	12.0	3.0	6.9	89.7	5.82	69.8	105.8	4.52	12.1	65.3	47.4	0.73	5.04	82.5	12.9	8.3
	15.0	4.4	10.0	91.2	5.88	71.2	106.4	4.55	12.4	66.5	48.3	0.73	4.81	82.9	13.8	7.9
	18.0	7.7	17.9	92.7	5.93	72.5	107.0	4.59	12.8	67.9	49.0	0.72	4.66	83.8	14.6	7.5
90	12.0	2.8	6.4	98.4	5.99	78.0	109.4	4.82	13.6	61.6	45.8	0.74	5.50	80.4	11.2	10.4
	15.0	4.1	9.5	99.9	6.07	79.2	110.1	4.83	14.0	62.5	46.6	0.75	5.25	80.4	11.9	9.9
	18.0	7.5	17.3	101.5	6.14	80.5	110.7	4.84	14.4	63.8	47.0	0.74	5.08	81.1	12.6	9.4
100	12.0	2.5	5.9	Operation not recommended						Operation not recommended						
	15.0	3.9	9.1							59.7	44.9	0.75	5.83	79.6	10.2	12.4
	18.0	7.3	16.9							60.6	45.3	0.75	5.65	79.8	10.7	11.7
110	12.0	2.3	5.4							Operation not recommended						
	15.0	3.7	8.5							56.2	42.9	0.76	6.38	78.0	8.8	15.1
	18.0	7.1	16.4							57.4	43.5	0.76	6.21	78.5	9.2	14.3
120	12.0	2.1	4.9							Operation not recommended						
	15.0	3.5	8.1							51.9	41.4	0.80	7.09	76.0	7.3	18.2
	18.0	6.9	15.9							53.0	42.0	0.79	6.88	76.4	7.7	17.3

4/22/11

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS024 - Performance Data

Single Speed ECM X13 (800 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	3.0	1.2	2.8	Operation not recommended						Operation not recommended						
	4.5	2.4	5.6													
	6.0	4.6	10.6	15.6	1.53	10.3	86.0	2.98	1.6							
30	3.0	1.1	2.6	Operation not recommended						Operation not recommended						
	4.5	2.4	5.5	18.7	1.59	13.2	89.6	3.44	1.7	27.5	17.4	0.63	0.94	30.7	29.1	---
	6.0	4.5	10.5	19.0	1.61	13.5	90.0	3.46	1.7	27.8	17.7	0.64	0.89	30.9	31.5	---
40	3.0	1.1	2.5	Operation not recommended						Operation not recommended						
	4.5	2.3	5.3	20.5	1.63	14.9	91.7	3.69	1.9	27.6	17.7	0.64	1.04	31.2	26.4	---
	6.0	4.5	10.3	21.1	1.65	15.5	92.4	3.75	1.9	27.9	18.0	0.64	0.98	31.3	28.5	---
50	3.0	1.0	2.3	21.7	1.64	16.1	93.2	3.88	2.1	27.5	18.0	0.65	1.22	31.7	22.6	1.3
	4.5	2.2	5.2	22.5	1.66	16.8	94.0	3.96	2.1	27.8	18.1	0.65	1.15	31.7	24.2	1.2
	6.0	4.4	10.2	23.2	1.69	17.4	94.9	4.03	2.2	28.0	18.2	0.65	1.08	31.6	26.0	1.2
60	3.0	1.0	2.2	24.0	1.68	18.2	95.7	4.17	2.3	26.8	17.7	0.66	1.37	31.5	19.6	1.5
	4.5	2.2	5.0	24.8	1.70	19.0	96.7	4.26	2.4	27.0	17.8	0.66	1.29	31.4	21.0	1.4
	6.0	4.3	10.0	25.6	1.72	19.7	97.6	4.35	2.4	27.3	17.9	0.66	1.21	31.4	22.6	1.4
70	3.0	0.9	2.0	26.2	1.72	20.3	98.3	4.45	2.6	26.1	17.4	0.67	1.52	31.3	17.2	1.8
	4.5	2.1	4.9	27.1	1.74	21.1	99.4	4.56	2.6	26.3	17.5	0.66	1.43	31.2	18.4	1.8
	6.0	4.3	9.9	28.0	1.76	22.0	100.4	4.66	2.7	26.6	17.6	0.66	1.34	31.1	19.8	1.7
80	3.0	0.8	1.9	29.0	1.73	23.1	101.5	4.91	2.9	24.9	16.8	0.68	1.65	30.5	15.0	2.3
	4.5	2.1	4.7	29.7	1.75	23.7	102.4	4.97	2.9	25.2	17.0	0.68	1.58	30.5	16.0	2.2
	6.0	4.2	9.7	30.4	1.77	24.3	103.2	5.03	3.0	25.5	17.1	0.67	1.53	30.7	16.7	2.1
90	3.0	0.8	1.7	31.8	1.74	25.9	104.8	5.37	3.3	23.6	16.2	0.69	1.85	29.9	12.8	2.8
	4.5	2.0	4.6	32.3	1.76	26.3	105.4	5.38	3.4	24.0	16.5	0.69	1.77	30.0	13.6	2.7
	6.0	4.1	9.6	32.8	1.78	26.7	105.9	5.40	3.5	24.5	16.7	0.68	1.71	30.3	14.3	2.5
100	3.0	0.7	1.6	Operation not recommended						Operation not recommended						
	4.5	1.9	4.4							22.7	16.0	0.71	2.04	29.6	11.1	3.4
	6.0	4.1	9.4							23.0	16.2	0.70	1.97	29.7	11.7	3.2
110	3.0	0.6	1.4							Operation not recommended						
	4.5	1.9	4.3							21.1	15.4	0.73	2.30	29.0	9.2	4.1
	6.0	4.0	9.3							21.5	15.6	0.73	2.24	29.2	9.6	3.9
120	3.0	0.6	1.3							Operation not recommended						
	4.5	1.8	4.1							19.1	14.8	0.77	2.70	28.4	7.1	4.9
	6.0	3.9	9.1							19.6	15.0	0.77	2.63	28.5	7.4	4.6

11/10/09

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS030 - Performance Data

Single Speed ECM X13 (1000 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	4.0	1.0	2.2	Operation not recommended						Operation not recommended						
	6.0	1.9	4.5													
	8.0	3.8	8.7	20.0	1.70	14.2	86.5	3.45	1.9							
30	4.0	0.9	2.1	Operation not recommended						Operation not recommended						
	6.0	1.9	4.4	21.2	1.76	15.1	87.6	3.52	2.1	30.4	19.3	0.64	1.17	34.4	25.9	---
	8.0	3.7	8.5	22.0	1.78	15.9	88.4	3.62	2.1	30.8	19.7	0.64	1.10	34.6	28.0	---
40	4.0	0.9	2.0	Operation not recommended						Operation not recommended						
	6.0	1.8	4.3	23.9	1.80	17.7	90.1	3.89	2.3	31.3	20.2	0.64	1.21	35.4	25.9	---
	8.0	3.7	8.4	25.0	1.82	18.7	91.1	4.02	2.4	32.4	20.9	0.65	1.20	36.5	27.0	---
50	4.0	0.8	1.9	25.8	1.81	19.6	91.9	4.18	2.5	30.5	19.9	0.65	1.19	34.6	25.6	1.4
	6.0	1.8	4.1	26.9	1.84	20.6	92.9	4.29	2.6	32.3	21.0	0.65	1.25	36.5	25.9	1.3
	8.0	3.6	8.3	27.9	1.86	21.6	93.8	4.40	2.7	34.0	22.1	0.65	1.30	38.4	26.2	1.3
60	4.0	0.8	1.8	29.4	1.85	23.1	95.2	4.66	2.9	30.1	19.7	0.66	1.34	34.6	22.4	1.6
	6.0	1.7	4.0	30.5	1.87	24.1	96.2	4.77	2.9	31.9	20.9	0.66	1.40	36.7	22.9	1.5
	8.0	3.6	8.2	31.6	1.90	25.1	97.3	4.89	3.0	33.8	22.1	0.66	1.45	38.7	23.3	1.4
70	4.0	0.7	1.6	33.0	1.89	26.6	98.6	5.12	3.2	29.6	19.5	0.66	1.49	34.7	19.9	2.0
	6.0	1.7	3.9	34.2	1.91	27.6	99.6	5.24	3.3	31.6	20.8	0.66	1.55	36.9	20.5	1.9
	8.0	3.5	8.1	35.3	1.93	28.7	100.7	5.36	3.4	33.6	22.2	0.66	1.60	39.1	21.0	1.8
80	4.0	0.7	1.5	36.9	1.99	30.1	102.1	5.42	3.6	29.3	19.3	0.66	1.94	35.9	15.1	2.5
	6.0	1.6	3.8	37.8	2.02	30.9	103.0	5.49	3.7	30.7	20.4	0.66	1.85	37.1	16.6	2.4
	8.0	3.5	8.0	38.7	2.04	31.7	103.8	5.55	3.8	32.1	21.5	0.67	1.79	38.2	17.9	2.3
90	4.0	0.6	1.4	40.7	2.10	33.6	105.7	5.70	4.1	29.0	19.0	0.66	2.14	36.3	13.5	3.3
	6.0	1.6	3.7	41.4	2.12	34.1	106.3	5.71	4.2	29.9	20.0	0.67	2.05	36.9	14.6	3.1
	8.0	3.4	7.9	42.0	2.15	34.7	106.9	5.73	4.3	30.5	20.7	0.68	1.98	37.3	15.4	3.0
100	4.0	0.6	1.3	Operation not recommended						Operation not recommended						
	6.0	1.6	3.6							27.5	19.7	0.72	2.37	35.6	11.6	3.9
	8.0	3.4	7.8							28.0	19.9	0.71	2.30	35.8	12.2	3.7
110	4.0	0.5	1.2							Operation not recommended						
	6.0	1.5	3.5							24.9	18.7	0.75	2.68	34.0	9.3	4.9
	8.0	3.3	7.6							25.4	19.0	0.75	2.61	34.3	9.7	4.5
120	4.0	0.5	1.1							Operation not recommended						
	6.0	1.5	3.3							21.1	17.2	0.82	2.88	31.0	7.3	5.7
	8.0	3.3	7.5							21.6	17.5	0.81	2.80	31.2	7.7	5.4

11/10/09

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS036 - Performance Data

Single Speed ECM X13 (1150 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	5.0	1.5	3.4	Operation not recommended						Operation not recommended						
	7.0	2.6	6.0													
	9.0	6.1	14.1	23.4	2.31	15.6	86.9	2.97	2.3							
30	5.0	1.4	3.1	Operation not recommended						Operation not recommended						
	7.0	2.5	5.8	27.4	2.34	19.4	90.1	3.43	2.5	35.9	25.1	0.70	1.51	41.1	23.7	---
	9.0	6.0	13.8	28.2	2.38	20.1	90.7	3.47	2.6	36.4	25.6	0.70	1.42	41.2	25.6	---
40	5.0	1.3	2.9	Operation not recommended						Operation not recommended						
	7.0	2.4	5.5	30.8	2.40	22.6	92.8	3.76	2.9	38.7	27.2	0.70	1.62	44.2	23.9	---
	9.0	5.9	13.6	31.9	2.44	23.6	93.7	3.84	2.9	39.2	27.5	0.70	1.54	44.5	25.5	---
50	5.0	1.1	2.6	33.3	2.41	25.0	94.8	4.05	3.1	40.9	29.1	0.71	1.78	47.0	23.0	1.6
	7.0	2.3	5.2	34.5	2.46	26.1	95.8	4.12	3.2	41.5	29.2	0.70	1.72	47.3	24.1	1.5
	9.0	5.8	13.3	35.7	2.50	27.2	96.7	4.18	3.3	42.0	29.4	0.70	1.66	47.7	25.3	1.5
60	5.0	1.0	2.4	37.7	2.48	29.2	98.3	4.45	3.5	39.2	28.5	0.73	1.97	46.0	19.9	2.0
	7.0	2.2	5.0	39.0	2.52	30.4	99.4	4.54	3.6	39.9	28.7	0.72	1.90	46.4	21.0	1.9
	9.0	5.7	13.1	40.2	2.55	31.5	100.4	4.62	3.6	40.5	28.9	0.71	1.84	46.8	22.1	1.8
70	5.0	0.9	2.1	42.1	2.55	33.4	101.9	4.84	3.9	37.6	27.9	0.74	2.16	44.9	17.4	2.5
	7.0	2.1	4.7	43.5	2.58	34.7	103.0	4.95	4.0	38.3	28.2	0.74	2.09	45.4	18.4	2.4
	9.0	5.5	12.8	44.8	2.60	35.9	104.1	5.05	4.1	39.0	28.5	0.73	2.01	45.9	19.4	2.3
80	5.0	0.8	1.8	46.7	2.62	37.8	105.6	5.23	4.4	36.1	27.1	0.75	2.42	44.3	14.9	3.2
	7.0	1.9	4.5	47.7	2.65	38.7	106.4	5.29	4.5	36.7	27.6	0.75	2.31	44.6	15.9	3.0
	9.0	5.4	12.5	48.8	2.68	39.7	107.3	5.35	4.6	37.4	28.0	0.75	2.24	45.0	16.7	2.9
90	5.0	0.7	1.6	51.2	2.68	42.1	109.3	5.60	4.9	34.5	26.3	0.76	2.66	43.6	13.0	3.9
	7.0	1.8	4.2	52.0	2.72	42.8	109.9	5.61	5.1	35.1	27.0	0.77	2.54	43.8	13.8	3.7
	9.0	5.3	12.3	52.8	2.75	43.5	110.5	5.63	5.2	35.8	27.5	0.77	2.46	44.2	14.6	3.6
100	5.0	0.6	1.3	Operation not recommended						Operation not recommended						
	7.0	1.7	4.0							33.3	26.4	0.79	2.86	43.0	11.7	4.6
	9.0	5.2	12.0							33.8	26.6	0.79	2.77	43.2	12.2	4.4
110	5.0	0.5	1.1							Operation not recommended						
	7.0	1.6	3.7							31.2	25.3	0.81	3.16	41.9	9.9	5.7
	9.0	5.1	11.8							31.8	25.7	0.81	3.07	42.3	10.4	5.4
120	5.0	0.4	0.8							Operation not recommended						
	7.0	1.5	3.5							26.5	22.7	0.85	3.53	38.6	7.5	6.8
	9.0	5.0	11.5							27.1	23.0	0.85	3.43	38.8	7.9	6.4

11/10/09

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS042 - Performance Data

Single Speed ECM X13 (1400 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	5.0	1.6	3.8	Operation not recommended						Operation not recommended						
	8.0	3.6	8.2													
	11.0	8.0	18.5	27.0	2.61	18.1	85.9	3.04	3.5							
30	5.0	1.5	3.4	Operation not recommended						Operation not recommended						
	8.0	3.4	7.8	30.0	2.61	21.1	87.8	3.37	3.7	43.6	31.7	0.73	1.71	49.4	25.5	---
	11.0	7.9	18.1	31.0	2.66	21.9	88.5	3.42	3.8	44.2	32.3	0.73	1.61	49.7	27.5	---
40	5.0	1.3	3.0	Operation not recommended						Operation not recommended						
	8.0	3.2	7.5	33.4	2.67	24.2	90.1	3.66	4.0	45.7	32.7	0.72	1.85	52.0	24.7	---
	11.0	7.7	17.8	34.8	2.71	25.5	91.0	3.77	4.1	46.3	33.2	0.72	1.75	52.3	26.5	---
50	5.0	1.2	2.7	35.5	2.72	26.2	91.5	3.83	4.4	47.1	33.4	0.71	2.11	54.3	22.4	2.4
	8.0	3.1	7.1	37.0	2.74	27.7	92.5	3.96	4.5	47.8	33.8	0.71	2.00	54.6	23.9	2.4
	11.0	7.5	17.4	38.5	2.76	29.1	93.5	4.10	4.7	48.4	34.1	0.70	1.89	54.8	25.7	2.3
60	5.0	1.0	2.3	39.9	2.78	30.4	94.4	4.20	5.0	46.0	32.8	0.71	2.36	54.1	19.5	3.0
	8.0	2.9	6.7	41.4	2.80	31.8	95.3	4.33	5.1	47.0	33.1	0.70	2.23	54.6	21.1	2.8
	11.0	7.4	17.0	42.9	2.82	33.2	96.3	4.45	5.3	48.0	33.5	0.70	2.09	55.1	23.0	2.7
70	5.0	0.9	2.0	44.2	2.85	34.5	97.2	4.55	5.6	44.9	32.2	0.72	2.62	53.8	17.2	3.8
	8.0	2.8	6.4	45.7	2.87	35.9	98.2	4.68	5.7	46.3	32.5	0.70	2.46	54.6	18.8	3.6
	11.0	7.2	16.7	47.2	2.89	37.4	99.2	4.79	5.9	47.6	32.8	0.69	2.30	55.4	20.7	3.4
80	5.0	0.7	1.6	49.4	2.91	39.5	100.7	4.97	6.3	43.4	31.6	0.73	2.80	53.0	15.5	4.8
	8.0	2.6	6.0	50.6	2.94	40.5	101.5	5.04	6.5	44.4	31.9	0.72	2.67	53.6	16.6	4.5
	11.0	7.1	16.3	51.8	2.97	41.6	102.2	5.11	6.7	45.6	32.1	0.70	2.59	54.4	17.6	4.3
90	5.0	0.5	1.2	54.6	2.98	44.4	104.1	5.37	7.1	42.0	31.0	0.74	3.11	52.6	13.5	6.0
	8.0	2.5	5.7	55.5	3.02	45.2	104.7	5.39	7.3	42.6	31.2	0.73	2.97	52.8	14.3	5.7
	11.0	6.9	16.0	56.3	3.06	45.9	105.2	5.40	7.5	43.5	31.4	0.72	2.88	53.3	15.1	5.5
100	5.0	0.4	0.9	Operation not recommended						Operation not recommended						
	8.0	2.3	5.3							39.8	30.2	0.76	3.34	51.2	11.9	7.1
	11.0	6.8	15.6							40.5	30.5	0.75	3.24	51.5	12.5	6.8
110	5.0	0.4	0.9							Operation not recommended						
	8.0	2.1	4.9							36.7	29.1	0.79	3.70	49.3	9.9	8.6
	11.0	6.6	15.2							37.4	29.5	0.79	3.60	49.7	10.4	8.3
120	5.0	0.4	0.9							Operation not recommended						
	8.0	2.0	4.6							33.2	28.2	0.85	4.34	48.0	7.6	10.4
	11.0	6.5	14.9							33.9	28.6	0.84	4.22	48.3	8.0	10.0

11/10/09

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

GEOSTAR

YS048 - Performance Data

Single Speed X13 ECM (1600 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	6.0	2.2	5.1	Operation not recommended						Operation not recommended						
	9.0	4.4	10.0													
	12.0	6.8	15.8	30.8	3.09	20.2	87.0	2.92	4.6							
30	6.0	2.0	4.7	Operation not recommended						Operation not recommended						
	9.0	4.2	9.6	35.3	3.12	24.6	89.8	3.31	4.9	50.3	31.3	0.62	2.09	57.4	24.1	---
	12.0	6.7	15.5	35.8	3.15	25.1	90.1	3.33	5.0	51.0	31.9	0.63	1.96	57.7	26.0	---
40	6.0	1.9	4.3	Operation not recommended						Operation not recommended						
	9.0	4.0	9.2	40.1	3.25	29.0	92.8	3.62	5.4	53.1	34.8	0.65	2.29	60.9	23.2	---
	12.0	6.5	15.0	41.9	3.29	30.7	93.9	3.74	5.5	54.0	35.5	0.66	2.16	61.4	25.0	---
50	6.0	1.7	3.9	42.9	3.32	31.6	94.5	3.79	5.9	54.9	37.4	0.68	2.61	63.8	21.0	2.9
	9.0	3.8	8.8	45.5	3.38	34.0	96.1	3.95	6.1	56.0	38.3	0.68	2.49	64.4	22.5	2.8
	12.0	6.3	14.6	48.1	3.43	36.4	97.7	4.11	6.2	57.0	39.1	0.69	2.36	65.1	24.1	2.7
60	6.0	1.5	3.5	49.5	3.47	37.7	98.6	4.18	6.7	54.5	37.4	0.69	2.91	64.4	18.7	3.5
	9.0	3.6	8.4	52.2	3.52	40.2	100.2	4.35	6.8	55.4	38.0	0.69	2.76	64.8	20.0	3.4
	12.0	6.1	14.1	54.9	3.56	42.8	101.9	4.52	7.0	56.2	38.6	0.69	2.62	65.1	21.5	3.2
70	6.0	1.3	3.0	56.1	3.62	43.7	102.6	4.54	7.5	54.1	37.3	0.69	3.20	65.0	16.9	4.5
	9.0	3.5	8.0	58.9	3.65	46.5	104.4	4.73	7.7	54.8	37.7	0.69	3.04	65.1	18.0	4.3
	12.0	5.9	13.7	61.7	3.68	49.2	106.1	4.91	7.9	55.4	38.2	0.69	2.87	65.2	19.3	4.0
80	6.0	1.1	2.6	61.3	3.70	48.7	105.8	4.86	8.4	51.4	35.8	0.70	3.48	63.2	14.8	5.6
	9.0	3.3	7.6	63.2	3.74	50.5	107.0	4.96	8.6	52.1	36.4	0.70	3.31	63.4	15.7	5.3
	12.0	5.8	13.3	65.2	3.78	52.3	108.2	5.05	8.9	52.9	36.9	0.70	3.21	63.9	16.5	5.1
90	6.0	1.0	2.2	66.5	3.78	53.6	109.1	5.16	9.4	48.7	34.3	0.70	3.84	61.8	12.7	7.0
	9.0	3.1	7.1	67.5	3.83	54.5	109.7	5.17	9.7	49.4	35.0	0.71	3.66	61.9	13.5	6.7
	12.0	5.6	12.9	68.6	3.87	55.4	110.3	5.19	10.1	50.4	35.6	0.70	3.54	62.5	14.2	6.4
100	6.0	0.8	1.8	Operation not recommended						Operation not recommended						
	9.0	2.9	6.7							46.7	34.3	0.74	4.14	60.8	11.3	8.4
	12.0	5.4	12.5							47.4	34.6	0.73	4.00	61.0	11.8	8.0
110	6.0	0.6	1.4							Operation not recommended						
	9.0	2.7	6.3							43.4	33.2	0.76	4.59	59.1	9.5	10.3
	12.0	5.2	12.1							44.3	33.7	0.76	4.46	59.5	9.9	9.7
120	6.0	0.4	1.0							Operation not recommended						
	9.0	2.6	5.9							40.1	32.0	0.80	5.16	57.7	7.8	12.4
	12.0	5.0	11.6							41.0	32.5	0.79	5.01	58.1	8.2	11.8

4/22/11

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YS060 - Performance Data

Single Speed X13 ECM (2000 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	9.0	3.8	8.7	Operation not recommended						Operation not recommended						
	12.0	6.3	14.5													
	15.0	9.7	22.5	41.9	3.96	28.4	87.4	3.10	5.5							
30	9.0	3.6	8.4	Operation not recommended						Operation not recommended						
	12.0	6.1	14.1	43.8	3.89	30.5	88.3	3.30	5.9	72.0	49.1	0.68	2.86	81.8	25.2	---
	15.0	9.6	22.2	46.5	4.01	32.8	89.5	3.39	6.1	73.0	50.0	0.68	2.68	82.2	27.2	---
40	9.0	3.5	8.0	Operation not recommended						Operation not recommended						
	12.0	6.0	13.7	49.7	4.03	35.9	91.0	3.62	6.6	70.8	48.8	0.69	3.01	81.0	23.5	---
	15.0	9.4	21.7	52.2	4.12	38.1	92.2	3.71	6.7	71.8	49.5	0.69	2.87	81.6	25.0	---
50	9.0	3.3	7.6	54.6	4.10	40.6	93.3	3.90	7.1	68.5	48.0	0.70	3.24	79.6	21.1	3.9
	12.0	5.8	13.4	56.2	4.16	42.0	94.0	3.96	7.3	69.5	48.5	0.70	3.15	80.3	22.0	3.7
	15.0	9.2	21.3	57.8	4.22	43.4	94.8	4.01	7.5	70.5	48.9	0.69	3.06	81.0	23.0	3.5
60	9.0	3.1	7.3	62.2	4.25	47.7	96.8	4.28	8.0	67.3	47.0	0.70	3.54	79.3	19.0	4.8
	12.0	5.6	13.0	64.3	4.31	49.6	97.8	4.37	8.3	68.2	47.6	0.70	3.44	79.9	19.8	4.6
	15.0	9.1	21.0	66.4	4.36	51.5	98.8	4.46	8.5	69.1	48.3	0.70	3.35	80.5	20.6	4.4
70	9.0	3.0	6.9	69.8	4.40	54.8	100.3	4.64	9.0	66.0	46.0	0.70	3.83	79.1	17.2	6.0
	12.0	5.5	12.6	72.4	4.45	57.2	101.5	4.76	9.3	66.9	46.8	0.70	3.73	79.6	17.9	5.7
	15.0	8.9	20.6	75.0	4.50	59.6	102.7	4.88	9.5	67.7	47.6	0.70	3.63	80.1	18.6	5.4
80	9.0	2.8	6.5	76.2	4.50	60.9	103.3	4.97	10.2	62.2	45.0	0.72	4.35	77.0	14.3	7.6
	12.0	5.3	12.3	78.2	4.55	62.7	104.2	5.04	10.5	63.1	45.7	0.72	4.15	77.2	15.2	7.2
	15.0	8.8	20.2	80.1	4.60	64.4	105.1	5.10	10.7	64.1	46.3	0.72	4.01	77.8	16.0	6.8
90	9.0	2.7	6.1	82.7	4.59	67.1	106.3	5.29	11.4	58.4	43.9	0.75	4.76	74.7	12.3	9.5
	12.0	5.2	11.9	84.0	4.65	68.1	106.9	5.30	11.8	59.3	44.6	0.75	4.54	74.8	13.1	9.0
	15.0	8.6	19.9	85.3	4.70	69.2	107.5	5.31	12.2	60.5	45.0	0.74	4.39	75.5	13.8	8.6
100	9.0	2.5	5.8	Operation not recommended						Operation not recommended						
	12.0	5.0	11.5							56.1	43.4	0.77	5.05	73.4	11.1	11.2
	15.0	8.4	19.5							57.0	43.7	0.77	4.89	73.7	11.7	10.6
110	9.0	2.3	5.4							Operation not recommended						
	12.0	4.8	11.2							52.3	41.8	0.80	5.53	71.2	9.5	13.8
	15.0	8.3	19.1							53.4	42.4	0.79	5.38	71.8	9.9	13.1
120	9.0	2.2	5.0							Operation not recommended						
	12.0	4.7	10.8							48.0	39.9	0.83	6.15	69.0	7.8	16.6
	15.0	8.1	18.8							49.0	40.5	0.83	5.97	69.4	8.2	15.9

4/22/11

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Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Magnolia Series
2 - 6 Tons 60Hz

GEOSTAR

YS070 - Performance Data

Single Speed X13 ECM (2200 CFM)

EWT °F	Flow gpm	WPD		HEATING - EAT 70°F						COOLING - EAT 80/67°F						
		PSI	FT	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	HWC kBtuh	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER	HWC kBtuh
20	12.0	4.3	9.8	Operation not recommended						Operation not recommended						
	15.0	5.6	13.0													
	18.0	9.0	20.8	46.0	4.88	29.3	87.4	2.76	6.5							
30	12.0	4.1	9.4	Operation not recommended						Operation not recommended						
	15.0	5.9	13.6	52.0	4.82	35.5	89.9	3.16	7.0	73.0	46.1	0.63	3.18	83.9	22.9	---
	18.0	8.8	20.3	53.7	4.96	36.8	90.6	3.17	7.3	74.0	47.0	0.64	2.99	84.2	24.7	---
40	12.0	3.8	8.8	Operation not recommended						Operation not recommended						
	15.0	5.2	12.0	58.4	5.00	41.3	92.6	3.42	7.8	74.6	49.3	0.66	3.38	86.1	22.1	---
	18.0	8.6	19.8	60.9	5.10	43.5	93.6	3.50	8.0	76.1	50.5	0.66	3.25	87.2	23.4	---
50	12.0	3.6	8.4	62.8	5.15	45.2	94.4	3.57	8.5	74.2	51.0	0.69	3.64	86.6	20.4	4.3
	15.0	5.0	11.5	65.4	5.19	47.7	95.5	3.69	8.7	76.2	52.5	0.69	3.58	88.4	21.3	4.1
	18.0	8.4	19.3	68.0	5.23	50.2	96.6	3.81	8.9	78.2	54.0	0.69	3.51	90.2	22.3	3.9
60	12.0	3.4	7.9	71.9	5.36	53.6	98.3	3.94	9.5	71.6	50.0	0.70	3.98	85.2	18.0	5.2
	15.0	4.8	11.0	73.9	5.39	55.6	99.1	4.02	9.8	73.3	51.3	0.70	3.90	86.6	18.8	4.9
	18.0	8.2	18.8	76.0	5.42	57.5	100.0	4.11	10.1	75.1	52.5	0.70	3.82	88.1	19.7	4.8
70	12.0	3.2	7.4	81.0	5.56	62.0	102.1	4.27	10.7	69.0	49.0	0.71	4.31	83.7	16.0	6.6
	15.0	4.6	10.5	82.5	5.59	63.4	102.7	4.33	11.0	70.5	50.0	0.71	4.22	84.9	16.7	6.3
	18.0	7.9	18.3	84.0	5.61	64.8	103.3	4.39	11.3	71.9	51.0	0.71	4.13	86.0	17.4	6.0
80	12.0	3.0	6.9	89.7	5.72	70.2	105.8	4.59	12.1	65.3	47.4	0.73	4.93	82.1	13.2	8.3
	15.0	4.4	10.0	91.2	5.78	71.5	106.4	4.63	12.4	66.5	48.3	0.73	4.71	82.6	14.1	7.9
	18.0	7.7	17.9	92.7	5.83	72.9	107.0	4.67	12.8	67.9	49.0	0.72	4.56	83.4	14.9	7.5
90	12.0	2.8	6.4	98.4	5.89	78.3	109.4	4.90	13.6	61.6	45.8	0.74	5.39	80.0	11.4	10.4
	15.0	4.1	9.5	99.9	5.97	79.6	110.1	4.91	14.0	62.5	46.6	0.75	5.15	80.1	12.2	9.9
	18.0	7.5	17.3	101.5	6.04	80.9	110.7	4.92	14.4	63.8	47.0	0.74	4.98	80.8	12.8	9.4
100	12.0	2.5	5.9	Operation not recommended						Operation not recommended						
	15.0	3.9	9.1							59.7	44.9	0.75	5.73	79.2	10.4	12.4
	18.0	7.3	16.9							60.6	45.3	0.75	5.55	79.5	10.9	11.7
110	12.0	2.3	5.4							Operation not recommended						
	15.0	3.7	8.5							56.2	42.9	0.76	6.28	77.6	8.9	15.1
	18.0	7.1	16.4							57.4	43.5	0.76	6.11	78.2	9.4	14.3
120	12.0	2.1	4.9							Operation not recommended						
	15.0	3.5	8.1							51.9	41.4	0.80	6.98	75.7	7.4	18.2
	18.0	6.9	15.9							53.0	42.0	0.79	6.78	76.1	7.8	17.3

4/22/11

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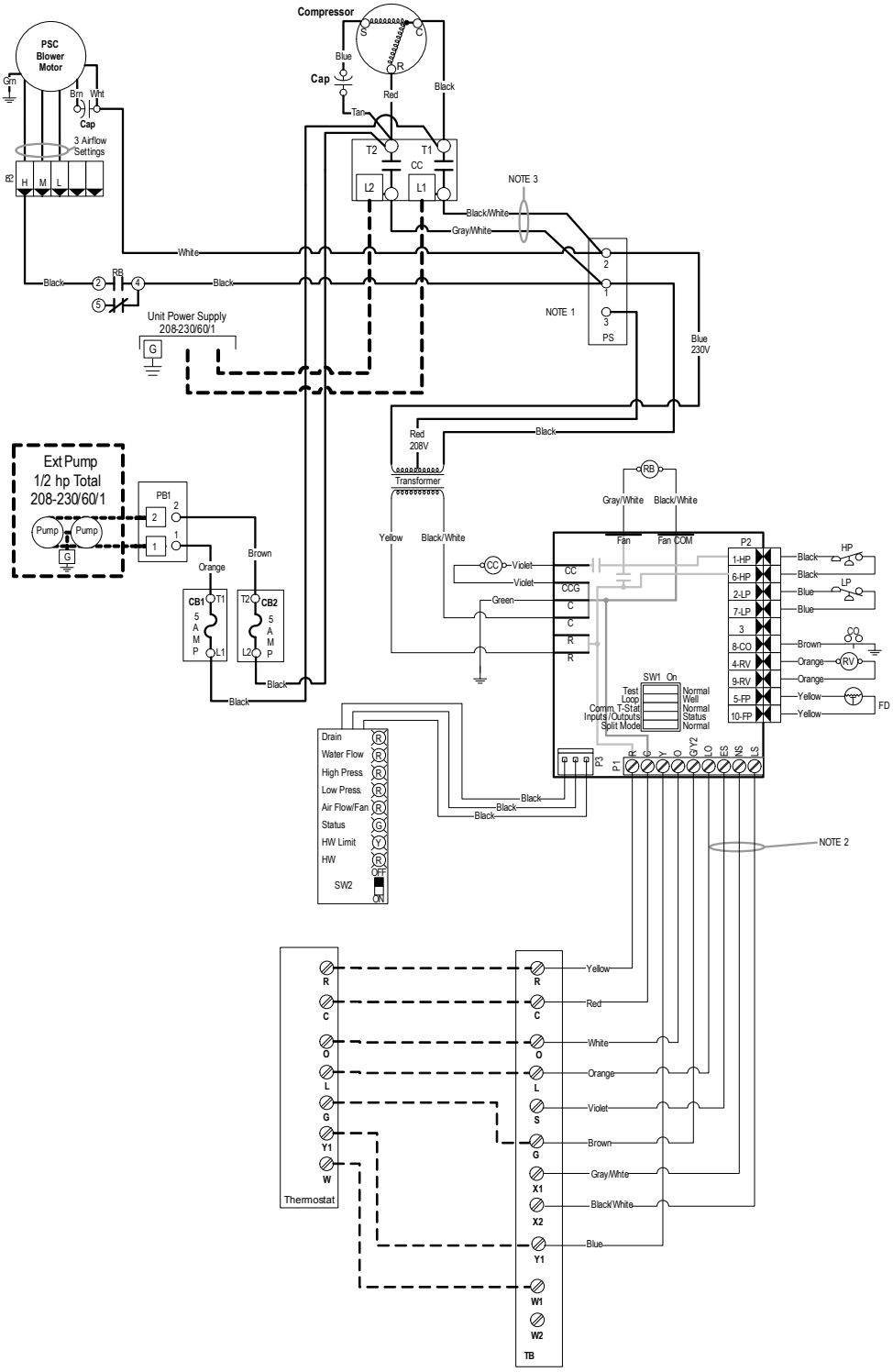
Wiring Schematics cont.

208-230/60/1 PSC



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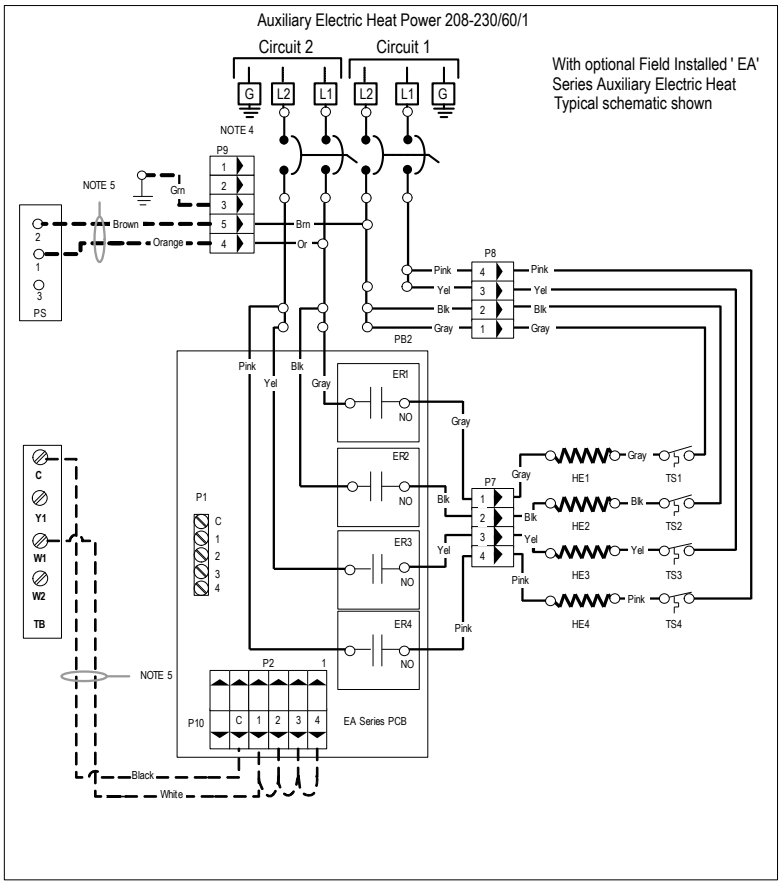
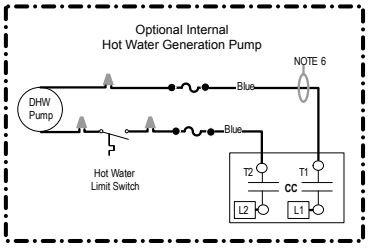
Wiring Schematics cont.

208-230/60/1 PSC cont.





Normal Mode Control Timing Table		
Event	**Normal Mode**	**Test Mode**
Power On Delay	5 minutes	15 seconds
Compressor On Delay	10 seconds	2 seconds
Compressor Minimum On Time	2 minutes	5 seconds
Compressor Short Cycle Delay	5 minutes	15 seconds
Blower Off Delay	30 seconds	5 seconds
Fault Recognition Delay– High Pressure	Less than1 second	Less than 1 second
Start-Up Bypass – Low Pressure	2 minutes	0 seconds
Fault Recognition Delay – Low Pressure	30 seconds	30 seconds
Start-Up Bypass – Freeze Detection Limit	2 minutes	0 seconds
Fault Recognition Delay – Freeze Detection Limit	30 seconds	30 seconds
Fault Recognition Delay – Condensate Overflow	30 seconds	30 seconds

Factory Setup DIP Switches (SW1)				
DIP Switch Number		**Description**	**"OFF" Position**	**"ON" Position**
SW1-	**1**	**Service Test Mode** On the control, allows field selection of "NORMAL" or "TEST" operational modes, Test mode accelerates most timing functions 16 times to allow faster troubleshooting Test mode also allows viewing the "CURRENT" status of the fault inputs on the LED display.	Test Mode	Normal Speed Operation
SW1-	**2**	**Freeze Detection Setting** This DIP switch allows field selection of low source water thermistor fault sensing for "WELL" water(30°F) or "LOOP" (15°F) for antifreeze protected earth loops.	"LOOP" (15°F)	"WELL" (30°F)
SW1-	**3**	**Not Available**	N/A	Normal Operation
SW1-	**4**	**I/O Display Mode** This DIP switch enables Input/Output Display or Status/Current Fault on LED Board . Refer to SW2 for operation and positioning.	Input/Output Display Mode	Status/Current Fault Display Mode
SW1-	**5**	**Not Available**	N/A	Normal Operation
SW2		**LED Display(On LED Board)** This DIP switch enables Normal Status or Input display mode in the "OFF" position and Current Fault or Output display mode in the "ON" position.	Status or Inputs Display Mode	Current Fault or Output Display Mode

LED Display Mode Table			
Status Display Mode			
LED	SW1-4 On , SW2 Off		
Drain	Drain Pan Overflow Lockout		
Water Flow	Freeze Detection (Loop <= 15°F, Well <= 30°F)		
High Press	High Pressure Lockout		
Low Press	Low Pressure Lockout		
Air Flow	Not Used		
Status	Microprocessor Malfunction*		
HW Limit	Not Used		
HW	SW2 Status (Off=Down Position ,On=Up Position)		
Diagnostic Display Modes			
	Current Fault Display Mode	**Inputs Display Mode**	**Outputs Display Mode**
LED	SW1-4 On, SW2 On	SW1-4 Off, SW2 Off	SW1-4 Off, SW2 On
Drain	Drain Pan Overflow Lockout	Y	Compressor
Water Flow	Freeze Detection Lockout	G	Fan
High Press.	High Pressure Lockout	O	Reversing Valve
Low Press	Low Pressure Lockout	ES	ES
Air Flow	Not Used	NS	NS
Status	Not Used	LS	LS
HW Limit	Not Used	Not Used	Not Used
HW	SW2 = On	SW2 = Off	SW2 = On

* Flashing Status Light Indicates the Board is Functioning Properly A Solid "On" Indicates a Board Malfunction.

Operational Logic Table				
Mode	Inputs	Fan	Comp	RV
Htg	Y	Auto	ON	OFF
Clg	Y, O	Auto	ON	ON
Fan Only	G/Y2	ON	OFF	OFF

PSC Blower Motor Factory Settings		
Model	**Vertical**	**Horizontal**
024	Med	Med
030	Med	Med
036	High	High
042	Med	Med
048	High	High
060	Med	Med
070	High	High

Notes:

1 - Swap blue and red leads for 208V operation
2 - Requires common connection or 24 VAC for activation
3 - Wires are removed when Auxiliary Heat is installed.
4 - Field supplied Square D part number QOU141100JBAF (jumper bar assembly) should be used for single source power.
5 - Wires are provided with the unit but not connected.
6 - Wire not connected at factory, connect to T1 for HW pump operation.

Legend

- Factory Low Voltage Wiring
- Factory Line Voltage Wiring
- Field Low Voltage Wiring
- Field Line Voltage Wiring
- Optional Block
- DC Voltage PCB Traces
- Field Zone Sensor Wiring
- Internal Junction
- Quick Connect Terminal
- L1 Field Wiring Lug
- Ground
- Relay Contacts– N.O., N.C.
- Thermistor
- Relay Coil
- Switch - Condensate Overflow
- Switch - High pressure
- Switch - Low pressure
- Polarized connector
- Capacitor
- Circuit Breaker
- Jumper Wire

CB - Circuit Breaker
CC – Compressor Contactor
CO – Condensate Overflow Sensor
ES – Emergency Shutdown
HP – High Pressure Switch
LP – Low Pressure Switch
FD – Freeze Detection Sensor
RB – Blower Relay
RV – Reversing Valve Coil

ES - Emergency Shutdown
NS - Night Setback
LS - Loadshed

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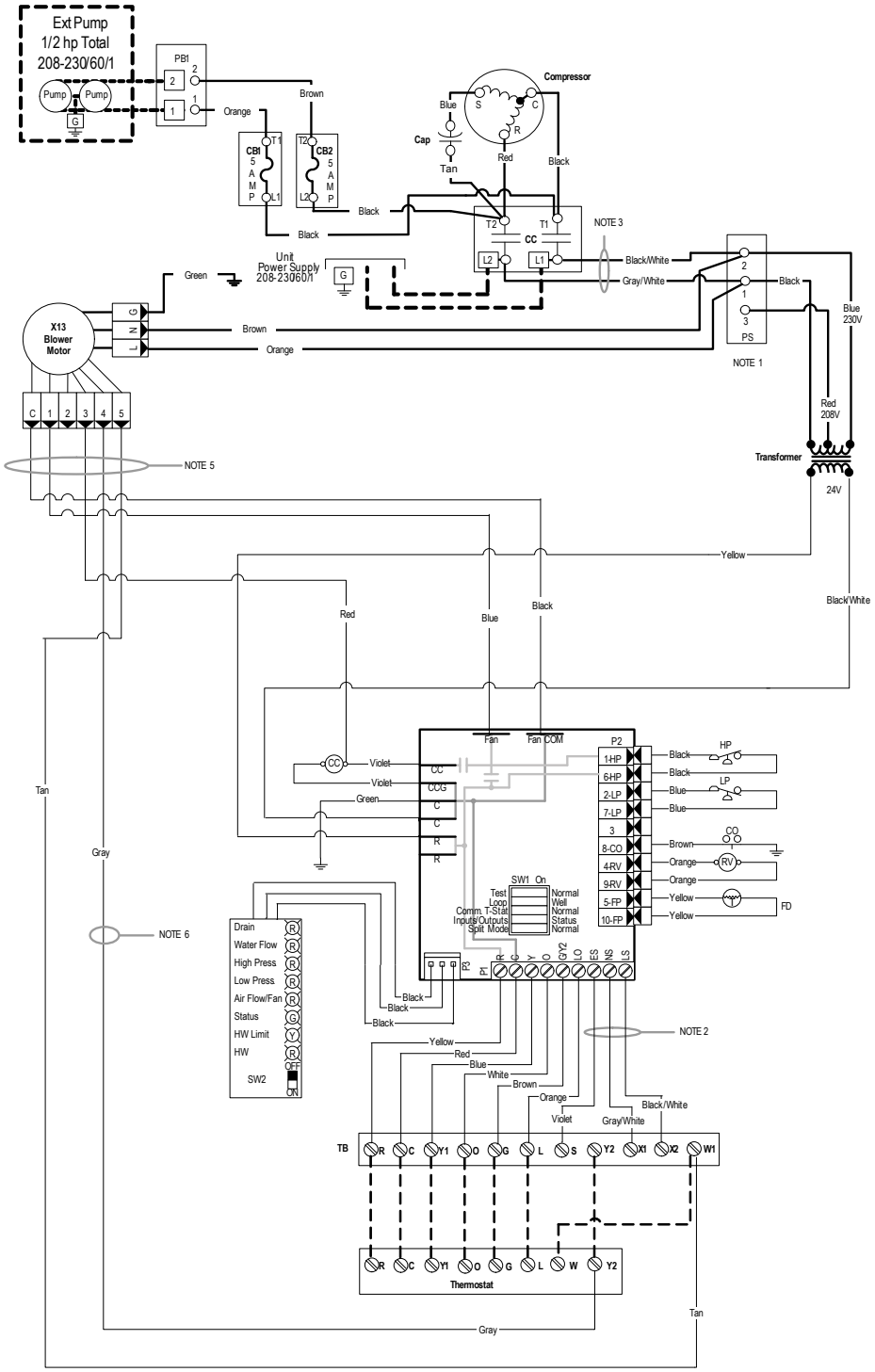
Wiring Schematics

208-230/60/1 X13 ECM



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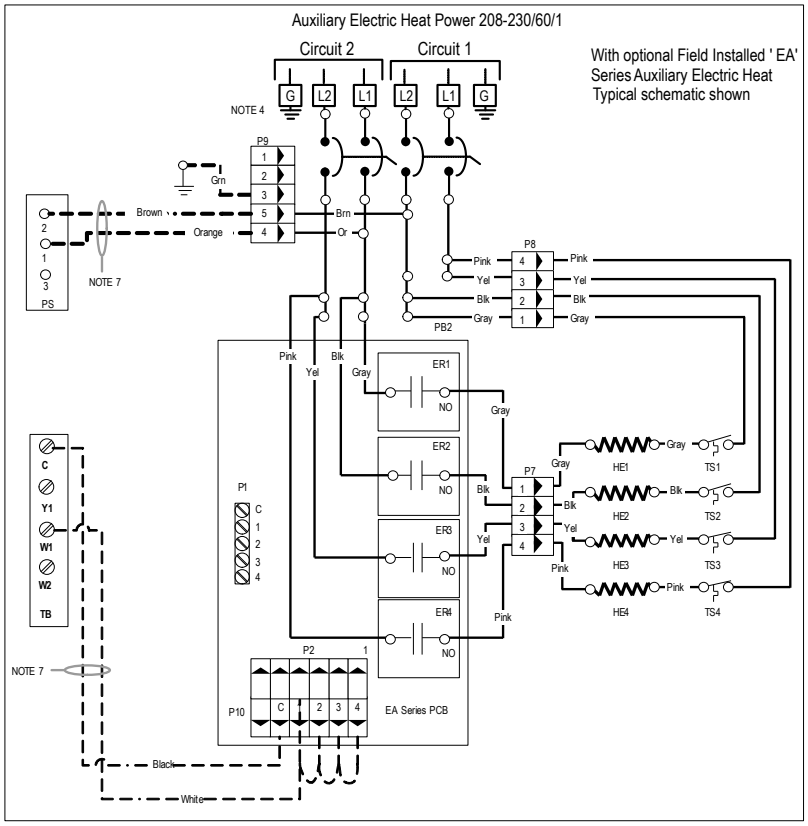
Wiring Schematics cont.

208-230/60/1 X13 ECM cont.



X13 MOTOR LOW VOLTAGE CONNECTIONS					
Model	TAP-1 Low	TAP-2 Med.Low	TAP-3 Medium	TAP-4 Med. Hi	TAP-5 High
024	BLUE			RED	TAN
030	BLUE			RED	TAN
036	BLUE			RED	TAN
042	BLUE		RED		TAN
048	BLUE		RED		TAN
060	BLUE		RED		TAN
070	BLUE		RED		TAN

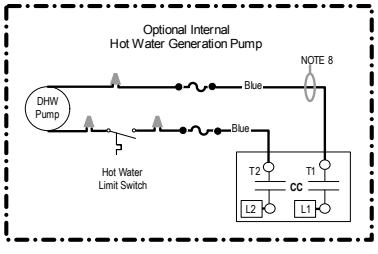
WIRE COLOR	CALL	DESCRIPTION
BLUE	G	FAN
RED	Y1	1ST STAGE H/C
GRAY	Y2	2ND STAGE H/C
TAN	W	AUXILIARY HEAT

Factory Setup DIP Switches(SW1)				
DIP Switch Number		Description	"OFF" Position	"ON" Position
SW1-	1	**Service Test Mode** On the control,allows field selection of "NORMAL" or "TEST" operational modes, Test mode accelerates most timing functions 16 times to allow faster troubleshooting. Test mode also allows viewing the "CURRENT" status of the fault inputs on the LED display.	Test Mode	Normal Speed Operation
SW1-	2	**Freeze Detection Setting** This DIP switch allows field selection of low source water thermistor fault sensing for "WELL" water (30 °F) or "LOOP" (15°F)for antifreeze protected earth loops	"LOOP" (15°F)	"WELL" (30°F)
SW1-	3	**Not Available**	N/A	Normal Operation
SW1-	4	**I/O Display Mode** This DIP switch enables Input/Output Display or Status/Current Fault on LED Board Refer to SW2 for operation and positioning	Input/Output Display Mode	Status/Current Fault Display Mode
SW1-	5	**Not Available**	N/A	Normal Operation
SW2		**LED Display (On LED Board)** This DIP switch enables Normal Status or Input display mode in the "OFF" position and Current Fault or Output display mode in the "ON" position.	Status or Inputs Display Mode	Current Fault or Output Display Mode

Operational Logic Table				
Mode	Inputs	Fan	Comp	RV
Htg	Y	Auto	ON	OFF
Clg	Y, O	Auto	ON	ON
Fan Only	G/Y2	ON	OFF	OFF

Notes:

1 - Swap blue and red leads for 208V operation
2 - Requires common connection or 24 VAC for activation
3 - Wires are removed when Auxiliary Heat is installed.
4 - Field supplied Square D part number QOU141100JBAF (jumper bar assembly) should be used for single source power.
5 - Refer to the X13 Motor Low Voltage Connection Table.
6 - Wire is provided with the unit but not connected to the X13 motor.
7 - Wires are provided with the unit but not connected.
8 - Wire not connected at factory, connect to T1 for HW pump operation.



Normal Mode Control Timing Table		
Event	Normal Mode	Test Mode
Power On Delay	5 minutes	15 seconds
Compressor On Delay	10 seconds	2 seconds
Compressor Minimum On Time	2 minutes	5 seconds
Compressor Short Cycle Delay	5 minutes	15 seconds
Blower Off Delay	30 seconds	5 seconds
Fault Recognition Delay – High Pressure	Less than1 second	Less than1 second
Start-Up Bypass- Low Pressure	2 minutes	0 seconds
Fault Recognition Delay – Low Pressure	30 seconds	30 seconds
Start-Up Bypass- Low Water Coil Limit	2 minutes	0 seconds
Fault Recognition Delay – Low Water Coil Limit	30 seconds	30 seconds
Fault Recognition Delay – Condensate Overflow	30 seconds	30 seconds

X13 MOTOR BLOWER TABLE						
MODEL	ESP	TAP-1 Low (cfm)	TAP-2 Med. Low (cfm)	TAP-3 Medium (cfm)	TAP-4 Med. Hi (cfm)	TAP-5 High (cfm)
024	0.3	480	670	740	800	890
030	0.3	680	870	920	1040	1140
036	0.3	720	1020	1070	1150	1190
042	0.5	1100	1310	1410	1520	1640
048	0.5	1190	1450	1580	1690	1870
060	0.5	1540	1750	1880	2010	2210
070	0.5	1560	1790	1900	2030	2230

LED Display Mode Table	
Status Display Mode	
LED	SW1-4 On, SW2 Off
Drain	Drain Pan Overflow Lockout
Water Flow	Freeze Detection (Loop <= 15°F, Well <= 30°F)
High Press	High Pressure Lockout
Low Press	Low Pressure Lockout
Air Flow	Not Used
Status	Microprocessor Malfunction*
HW Limit	Not Used
HW	SW2 Status(Off=Down Position, On=Up Position)

Diagnostic Display Modes			
	Current Fault Display Mode	Inputs Display Mode	Outputs Display Mode
LED	SW1-4 On, SW2 On	SW1-4 Off, SW2 Off	SW1-4 Off, SW2 On
Drain	Drain Pan Overflow Lockout	Y	Compressor
Water Flow	Low Water Coil Limit Lockout	G	Fan
High Press	High Pressure Lockout	O	Reversing Valve
Low Press	Low Pressure Lockout	ES	ES
Air Flow	Not Used	NS	NS
Status	Not Used	LS	LS
HW Limit	Not Used	Not Used	Not Used
HW	SW2 = On	SW2 = Off	SW2 = On

* Flashing Status Light Indicates the Board is Functioning Properly A Solid "On" Indicates a Board Malfunction

Legend

- Factory Low Voltage Wiring
- Factory Line Voltage Wiring
- Field Low Voltage Wiring
- Field Line Voltage Wiring
- Optional Block
- DC Voltage PCB Traces
- Field Zone Sensor Wiring
- Internal Junction
- Quick Connect Terminal
- L1 Field Wiring Lug
- Ground
- Relay Contacts – N.O., N.C.

CB - Circuit Breaker
CC – Compressor Contactor
CO – Condensate Overflow Sensor
ES – Emergency Shutdown
HP – High Pressure Switch
LP – Low Pressure Switch
FD – Freeze Detection Sensor
RB – Blower Relay
RV – Reversing Valve Coil

- Thermistor
- Relay Coil
- Switch- Condensate Overflow
- Switch- High pressure
- Switch- Low pressure
- 3 2 1 Polarized connector
- Capacitor
- Circuit Breaker
- Jumper Wire

ES - Emergency Shutdown
NS - Night Setback
LS - Loadshed

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Engineering Guide Specifications

General

Furnish and install water source heat pumps as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Capacities and characteristics as listed in the schedule and the specifications that follow. The reverse cycle heating/cooling units shall be either suspended type with horizontal air inlet and discharge or floor mounted type with horizontal air inlet and vertical upflow air discharge. Units shall be AHRI/ISO 13256-1 certified and listed by a nationally recognized safety-testing laboratory or agency, such as ETL Testing Laboratory. Each unit shall be computer run-tested at the factory with conditioned water and operation verified to catalog data. Each unit shall be mounted on a pallet and shipped in a corrugated box or stretch-wrapped. The units shall be designed to operate with entering liquid temperature between 20°F and 120°F [-6.7°C and 48.9°C].

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 1000 hour salt spray test per ASTM B117. The interior shall be insulated with 1/2 in. thick, multi-density, cleanable aluminum foil coated glass fiber with edges sealed or tucked under flanges to prevent the introduction of glass fibers into the discharge air. Standard cabinet panel insulation must meet NFPA 90A 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. Unit insulation must meet these stringent requirements or unit(s) will not be accepted.

One (horizontal) to two (vertical) blower and three compressor compartment access panels shall be 'lift-out' removable with supply and return ductwork in place.

A duct collar shall be provided on the supply air opening. Standard size 1 in. [2.54 cm] MERV 8 filters shall be provided with each unit. Units shall have a return air filter rack that is field convertible from 1 in. [2.54 cm] to 2 in. [5.1 cm]. The vertical units shall have a removable insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise and to permit operational service testing without air bypass. Vertical units shall be supplied with left or right horizontal air inlet and top vertical air discharge. Horizontal units shall be supplied with left or right air inlet and side or end air discharge.

Refrigerant Circuit

All units shall utilize the non-ozone depleting and low global warming potential refrigerant R410A. All units shall contain a sealed refrigerant circuit including a hermetic motor-compressor, bidirectional thermostatic expansion valve, finned tube air-to-refrigerant heat exchanger, reversing valve, coaxial tube water-to-refrigerant heat exchanger, optional hot water generator coil, and service ports.

Compressors shall be high-efficiency single speed scroll type designed for heat pump duty and mounted on vibration isolators. The compressor shall be double isolation mounted using selected durometer grommets to provide vibration free compressor mounting. Compressor motors shall be single-phase PSC with overload protection.

The air coil shall be sized for low-face velocity and constructed of lanced aluminum fins bonded to rifled copper tubes in a staggered pattern not less than three rows deep for enhanced performance. The coil will be electro-coated for maximum protection against formicary corrosion.

The coaxial water-to-refrigerant heat exchanger shall be designed for low water pressure drop, constructed of a convoluted copper (cupronickel option) inner tube and a steel outer tube, and foam insulated to prevent condensation at low liquid temperatures. Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 600 PSIG (4135 kPa) refrigerant working pressure. Refrigerant to water heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design, rated to withstand 600 PSIG (4135 kPa) working refrigerant pressure and 450 PSIG (3101 kPa) working water pressure. The thermostatic expansion valve shall provide proper superheat over the entire liquid temperature range with minimal "hunting." The valve shall operate bidirectionally without the use of check valves.

Option: Cupronickel refrigerant to water heat exchanger shall be of copper-nickel inner water tube and steel refrigerant outer tube design, rated to withstand 600 PSIG (4135 kPa) working refrigerant pressure and 450 PSIG (3101 kPa) working water pressure. Heat exchanger shall be foam insulated.

Blower Motor and Assembly

The blower shall be a direct drive centrifugal type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low outlet velocity operation. The blower housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the blower motor. The blower motor shall be a 5 speed X13 ECM type. The X13 ECM blower motor shall be soft starting, shall maintain constant torque over its operating static range, and shall provide 5 speed settings. The blower motor shall be isolated from the housing by rubber

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Engineering Guide Specifications cont.

grommets. The motor shall be permanently lubricated and have thermostatic overload protection. X13 ECM motors shall be long-life ball bearing type.

Option: PSC blower motor shall be a three-speed PSC type.

Option: High static blower motors shall be available on certain PSC models.

Electrical

A control box shall be located within the unit compressor compartment and shall contain a 75VA transformer, 24 volt activated, 2 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation. Electromechanical operation WILL NOT be accepted. 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.

A microprocessor-based controller that interfaces with a multi-stage electronic thermostat to monitor and control unit operation shall be provided. The control shall provide operational sequencing, blower control, high and low pressure switch monitoring, freeze detection, condensate overflow sensing, lockout mode control, LED status and fault indicators, fault memory, and field selectable options. The control shall provide fault retry three times before locking out to limit nuisance trips.

A terminal block with screw terminals will be provided for field control wiring. All units shall have knockouts for entrance of low and line voltage wiring. The blower motor and control box shall be harness plug wired for easy removal.

Optional GeoStart™ (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. GeoStart shall reduce normal starting current by 60% on 208/60/1 units.

Piping

Supply and return water connections shall be 1 in. [2.54 cm] FPT brass swivel fittings, which provide a union and eliminate the need for pipe wrenches and sealants when making field connections. The optional hot water generator shall have sweat type fittings. All water piping shall be insulated to prevent condensation at low liquid temperatures, on the vertical units, the condensate connection shall be a 3/4 in. [1.91 cm] PVC socket with internally-trapped hose that can be routed to front or side locations.

Hanger Kit

(included with horizontal units only - field installed)
The hanger kit shall consist of galvanized steel brackets, bolts, lock washers, and isolators and shall be designed to fasten to the unit bottom panel for suspension from 3/8 in. threaded rods. Unit sizes 024-036 shall include four (4) brackets and the 042-070 shall include six (6) hanger brackets. Brackets shall not inhibit filter removal in any way.

Accessories

Thermostat (field-installed)

A multi-stage auto-changeover electronic digital thermostat shall be provided. The thermostat shall offer two heating stages and one cooling stage with precise temperature control. An OFF-HEAT-AUTO-COOL-EMERG system switch, OFF-AUTO blower switch, and indicating LEDs shall be provided. The thermostat shall display in °F or °C.

AlpinePure MERV 13 Filter

A 2 in. [51 mm] MERV 13 filter can help fulfill a credit under the LEED Rating System. Its low initial resistance promotes low energy consumption (0.21 in. w.g. @ 300 FPM) and provides nearly twice the life of a standard filter (300 fpm vs. standard 500 fpm application).

Hot Water Generation

An optional heat reclaiming hot water generator coil of vented double-wall copper construction suitable for potable water shall be provided. The coil and hot water circulating pump shall be factory mounted inside the unit with integral electronic high limit temperature monitoring.

Earth Loop Flow Center (field-installed)

A self-contained module shall provide all liquid flow, fill and connection requirements for ground source closed loop systems up to 20 GPM. The pumps shall be wired to a power block located in the nearest unit.

Auxiliary Heater (field-installed)

An electric resistance heater shall provide supplemental and/or emergency heating capability. Vertical units shall have the control and resistance heater coil assembly mounted internally. For horizontal units, the control box shall be mounted internally while the resistance heater coil assembly shall be mounted externally. The heater shall feed line voltage power to the unit blower and transformer to provide emergency heat capability in the event of an open compressor circuit breaker.

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Engineering Guide Specifications cont.

AlpinePure HRV/ERV (field installed)

A self-contained unit shall provide removal of stale air while replenishing the structure with an equal amount of fresh, clean air. The incoming and exhaust air streams shall be completely separate through the exchanger. The Heat Recovery Ventilator (HRV) shall transfer sensible heat from the stale exhaust air to the fresh incoming air with a Sensible Efficiency up to 79%. The HRV shall be equipped with a Defrost Mode. The Energy Recovery Ventilator (ERV) shall transfer sensible heat as well as latent heat with a Total Efficiency of 50%. The ERV shall be designed for use in warm humid areas with heavy air conditioning use. The ERV shall not be recommended for use in areas where the temperature drops below 25°F (-4°C) for more than five days. The ERV shall not be equipped with a Defrost Mode.

Electronic Air Cleaner (field-installed)

A 1 in. [25 mm] electronic air cleaner, cleanable 97% efficiency at 0.3 microns and larger, shall be provided in lieu of the standard throwaway filter. The initial pressure drop across the filter shall not exceed 0.2 in. w.g. at 300 fpm force velocity.

Electrostatic Air Cleaner (field-installed)

A 1 in. [25 mm] electrostatic air cleaner, cleanable 90% efficiency, shall be provided in lieu of the standard throwaway filter. The initial pressure drop across the filter shall not exceed 0.15 in. w.g. at 300 fpm force velocity.

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