HS Replacement Units Submittal Data

Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Performance Data
HS Horizontal 048

Rated Air Flow 1700 CFM

HS - Water temperature range is 60°F - 95°F

		Cooling Performance - EAT 80/67°F (EER = 11.0)				Heating Performance - EAT 70°F (COP = 3.8)			
GPM	EWT °F	TOTAL BTUH	SENS BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	UNIT WATER PRESSURE WATER FT H20
5.9	60	51500	37500	64510	3717	45000	33394	3390	3.9
8.7	60	53500	39000	65430	3408	47900	35583	3608	8.4
12.4	60	54800	39900	66030	3209	49900	37076	3761	17.0
15.8	60	55400	40400	66270	3107	50900	37762	3845	27.6
5.9	70	48600	35400	63120	4150	51800	38291	3970	3.9
8.7	70	50600	36900	64070	3848	55000	40586	4224	8.4
12.4	70	51800	37800	64590	3653	**57000**	**41974**	**4403**	**17.0**
15.8	70	52500	38300	64940	3554	58000	42739	4498	27.6
5.9	85	44200	32200	60990	4798	62200	45696	4840	3.9
8.7	85	46200	33700	61980	4508	65500	47894	5152	8.4
12.4	**85**	**47500**	**34600**	**62620**	**4320**	67700	49414	5364	17.0
15.8	85	48100	35100	62880	4224	68800	50086	5477	27.6
5.9	90	42800	31200	60350	5014	**Operation Not Recommended**			3.9
8.7	90	44800	32700	61350	4728				8.4
12.4	90	46000	33500	61500	4542				17.0
15.8	90	46600	34000	62160	4447				27.6
5.9	95	41400	30200	59700	5231				3.9
8.7	95	43300	31600	60620	4948				8.4
12.4	95	44600	62500	61280	4764				17.0
15.8	95	45200	32900	61540	4670				27.6

Bold Face = Typical Operating Temperatures

Interpolation is permissible. Extrapolation is not.

CORRECTION FACTORS

For Variations In Entering Air Temperature

	Cooling Corrections				* Sensible equals Total			Heating Corrections			
Entering Air °F WB	Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb 70° DB	75° DB	80° DB	85° DB	90° DB	Heat of Rejection	Entering Air °F DB	Heating Capacity	Heat of Absorption	Power Input Watts
61	0.910	0.763	1.030	*	*	*	0.895	60	1.025	1.047	0.965
64	0.955	0.615	0.881	1.148	*	*	0.948	65	1.010	1.023	0.990
67	1.000	0.466	0.733	1.000	1.267	*	1.002	70	1.000	1.000	1.000
70	1.045		0.585	0.852	1.118	*	1.055	75	0.980	0.977	1.040
73	1.090		0.436	0.703	0.970	1.139	1.109	80	0.965	0.953	1.065

For Variations In Entering Air Flow

	Cooling Corrections				Heating Corrections		
CFM	Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Capacity	Heat of Absorption	Power Input Watts
1400	0.975	0.972	0.975	0.945	0.975	0.979	1.028
1550	0.988	0.986	0.992	0.973	0.988	0.989	1.014
1625	0.994	0.993	0.996	0.986	0.994	0.995	1.007
1700	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1915	1.018	1.020	1.035	1.039	1.018	1.015	0.980
2130	1.035	1.040	1.061	1.078	1.035	1.030	0.960

HS Replacement Units Submittal Data

Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Performance Data
HS Horizontal 060

Rated Air Flow 2000 CFM

HS - Water temperature range is 60°F - 95°F

		Cooling Performance - EAT 80/67°F (EER = 11.2)				Heating Performance - EAT 70°F (COP = 3.8)			
GPM	EWT °F	TOTAL BTUH	SENS BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	UNIT WATER PRESSURE WATER FT H20
7.8	60	67300	47338	83510	4747	59200	43992	4466	3.9
11.4	60	69800	49097	84710	4365	63100	46911	4746	8.4
16.2	60	71500	50293	85550	4114	65700	48762	4948	17.0
20.7	60	72300	50856	85900	3983	67100	49784	5060	27.8
7.8	70	63600	45836	81710	5303	68300	50505	5230	3.9
11.4	70	66100	47638	82940	4930	72400	53409	5559	8.4
16.2	70	67600	48368	83600	4684	**75000**	**55323**	**5792**	**17.0**
20.7	70	68500	49368	84060	4555	76500	56304	5919	27.8
7.8	85	58000	43309	78960	6136	81900	60216	6378	3.9
11.4	85	60400	45100	80130	5776	86200	63099	6778	8.4
16.2	**85**	**62000**	**46295**	**80919**	**5539**	89100	64962	7057	17.0
20.7	85	62800	46893	81290	5414	90600	66033	7208	27.8
7.8	90	56100	42378	78010	6414	**Operation Not Recommended**			3.9
11.4	90	58500	44191	79190	6058				8.4
16.2	90	60000	45324	79890	5823				17.0
20.7	90	60900	46004	80370	5700				27.8
7.8	95	54300	41460	77160	6692				3.9
11.4	95	56700	43324	78360	6341				8.4
16.2	95	58200	44471	79060	6108				17.0
20.7	95	59000	45082	79450	5987				27.8

Bold Face = Typical Operating Temperatures

Interpolation is permissible. Extrapolation is not.

CORRECTION FACTORS

For Variations In Entering Air Temperature

	Cooling Corrections * Sensible equals Total							Heating Corrections			
Entering Air °F WB	Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb 70° DB	75° DB	80° DB	85° DB	90° DB	Heat of Rejection	Entering Air °F DB	Heating Capacity	Heat of Absorption	Power Input Watts
61	0.910	0.763	1.030	1.297	*	*	0.895	60	1.025	1.047	0.965
64	0.955	0.615	0.881	1.148	*	*	0.948	65	1.010	1.023	0.990
67	1.000	0.466	0.733	1.000	1.267	*	1.002	70	0.995	1.000	1.015
70	1.045		0.585	0.852	1.118	*	1.055	75	0.980	0.977	1.040
73	1.090		0.436	0.703	0.970	1.139	1.109	80	0.965	0.953	1.065

For Variations In Entering Air Flow

	Cooling Corrections				Heating Corrections		
CFM	Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Capacity	Heat of Absorption	Power Input Watts
1700	0.979	0.976	0.980	0.954	0.979	0.982	1.024
1850	0.990	0.988	0.995	0.977	0.990	0.991	1.012
2000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2065	1.005	1.005	1.017	1.010	1.005	1.004	0.995
2130	1.009	1.010	1.023	1.020	1.009	1.008	0.990
2200	1.018	1.000	1.035	1.039	1.018	1.015	0.980

HS Replacement Units Submittal Data

CLIMATEMASTER®

Blower Performance

Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

HS 048 - 060

Based on wet air coil and clean air filter. * Factory connected tap. Field connection required to other taps.

Size	Fan Speed	CFM External Static Pressure (in wg.) 0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	Minimum CFM	Maximum CFM
048	HI	2130	2050	1960	1860	1750	1630	1470				1400	2130
	MED*	1980	1900	1810	1720	1620	1520	1400					
	LO	1810	1730	1650	1570	1490	1400						
060	HI	2200	2140	2080	2010	1940	1860	1740				1700	2200
	MED*	2110	2050	2000	1940	1870	1800	1710					
	LO	2060	2000	1940	1880	1820	1760	1700					

HS Replacement Units Submittal Data

Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Electrical Data

HS 048 - 060

SIZE	MODEL	VOLTS	PHASE	MIN. CRKT. AMP.	MAX. FUSE/ HACR BRKR.	MAX. CRKT. BRKR. (CANADA)	LRA COMP. (EA)	RLA COMP. (EA)	BLOWER FLA	TOTAL FLA	BLOWER HP
048	HS	208/230	1	32.3	50	50	95.4	21.5	5.40	26.9	3/4
		208/230	3	22.7	35	35	82.0	13.8	5.40	19.2	3/4
		460	3	10.9	15	15	41.0	6.9	2.20	9.10	3/4
		575	3	8.3	15	15	36.0	5.4	1.40	6.50	3/4
060	HS	208/230	1	40.3	60	60	125.0	27.6	5.80	33.4	1
		208/230	3	26.0	40	40	90.0	16.1	5.80	21.9	1
		460	3	12.3	15	15	45.0	7.7	2.60	10.3	1
		575	3	10.3	15	15	43.0	6.4	2.30	8.70	1

208/230 VOLTAGE IS FACTORY TAPPED AT 208V. Transformer lead must be switched for 230V.

HS Replacement Units Submittal Data

CLIMATEMASTER®

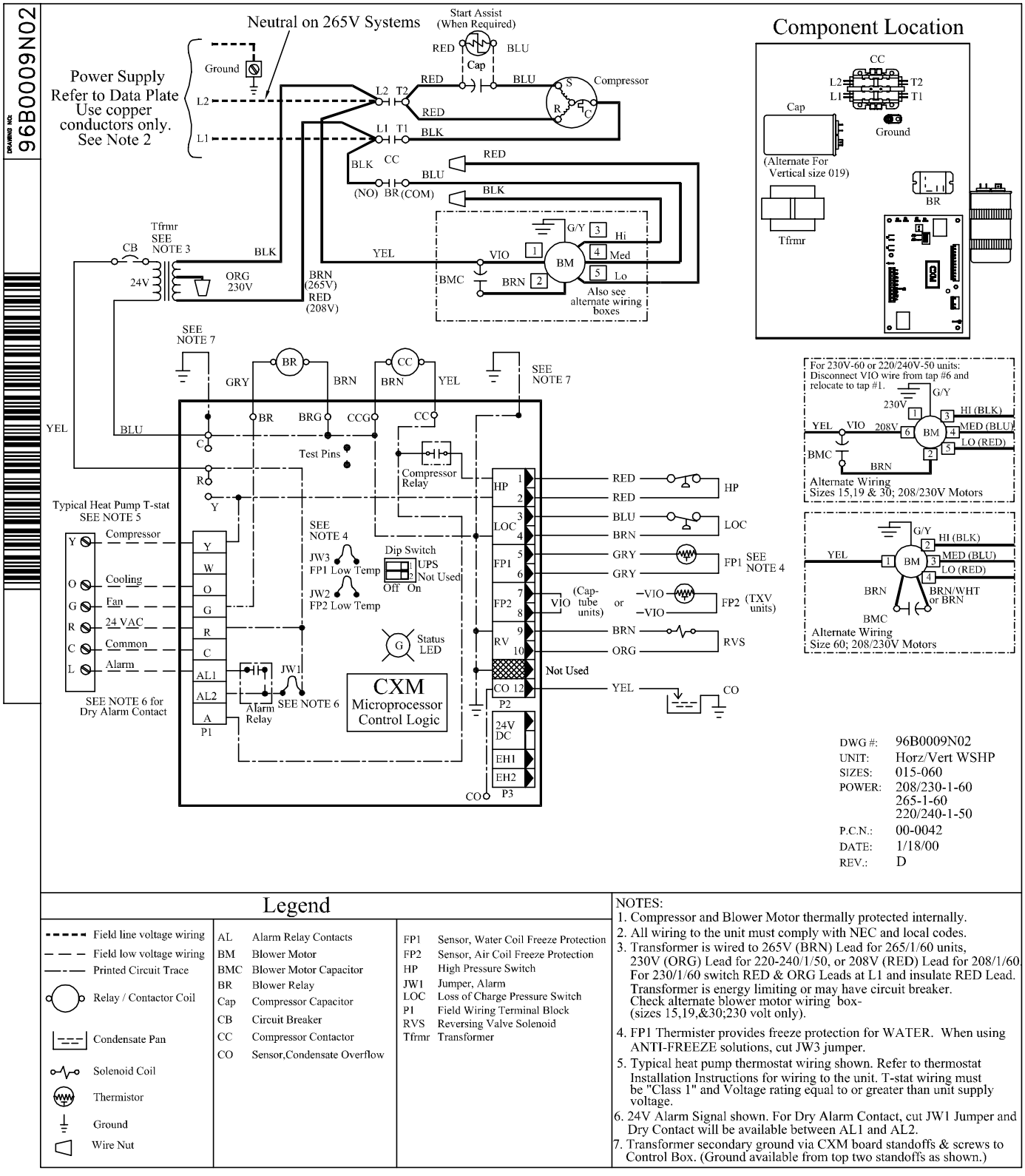
Typical Wiring Diagram

Typical Single Phase
Wiring Diagram for
HS Units with CXM Controller

Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____



DWG #: 96B0009N02
UNIT: Horz/Vert WSHP
SIZES: 015-060
POWER: 208/230-1-60
265-1-60
220/240-1-50
P.C.N.: 00-0042
DATE: 1/18/00
REV.: D

Legend

Field line voltage wiring	AL	Alarm Relay Contacts	FP1	Sensor, Water Coil Freeze Protection
Field low voltage wiring	BM	Blower Motor	FP2	Sensor, Air Coil Freeze Protection
Printed Circuit Trace	BMC	Blower Motor Capacitor	HP	High Pressure Switch
Relay / Contactor Coil	BR	Blower Relay	JW1	Jumper, Alarm
Condensate Pan	Cap	Compressor Capacitor	LOC	Loss of Charge Pressure Switch
Solenoid Coil	CB	Circuit Breaker	P1	Field Wiring Terminal Block
Thermistor	CC	Compressor Contactor	RVS	Reversing Valve Solenoid
Ground	CO	Sensor,Condensate Overflow	Tfrmr	Transformer
Wire Nut				

NOTES:
1. Compressor and Blower Motor thermally protected internally.
2. All wiring to the unit must comply with NEC and local codes.
3. Transformer is wired to 265V (BRN) Lead for 265/1/60 units, 230V (ORG) Lead for 220-240/1/50, or 208V (RED) Lead for 208/1/60. For 230/1/60 switch RED & ORG Leads at L1 and insulate RED Lead. Transformer is energy limiting or may have circuit breaker. Check alternate blower motor wiring box- (sizes 15,19,&30;230 volt only).
4. FP1 Thermister provides freeze protection for WATER. When using ANTI-FREEZE solutions, cut JW3 jumper.
5. Typical heat pump thermostat wiring shown. Refer to thermostat Installation Instructions for wiring to the unit. T-stat wiring must be "Class 1" and Voltage rating equal to or greater than unit supply voltage.
6. 24V Alarm Signal shown. For Dry Alarm Contact, cut JW1 Jumper and Dry Contact will be available between AL1 and AL2.
7. Transformer secondary ground via CXM board standoffs & screws to Control Box. (Ground available from top two standoffs as shown.)

HS Replacement Units Submittal Data

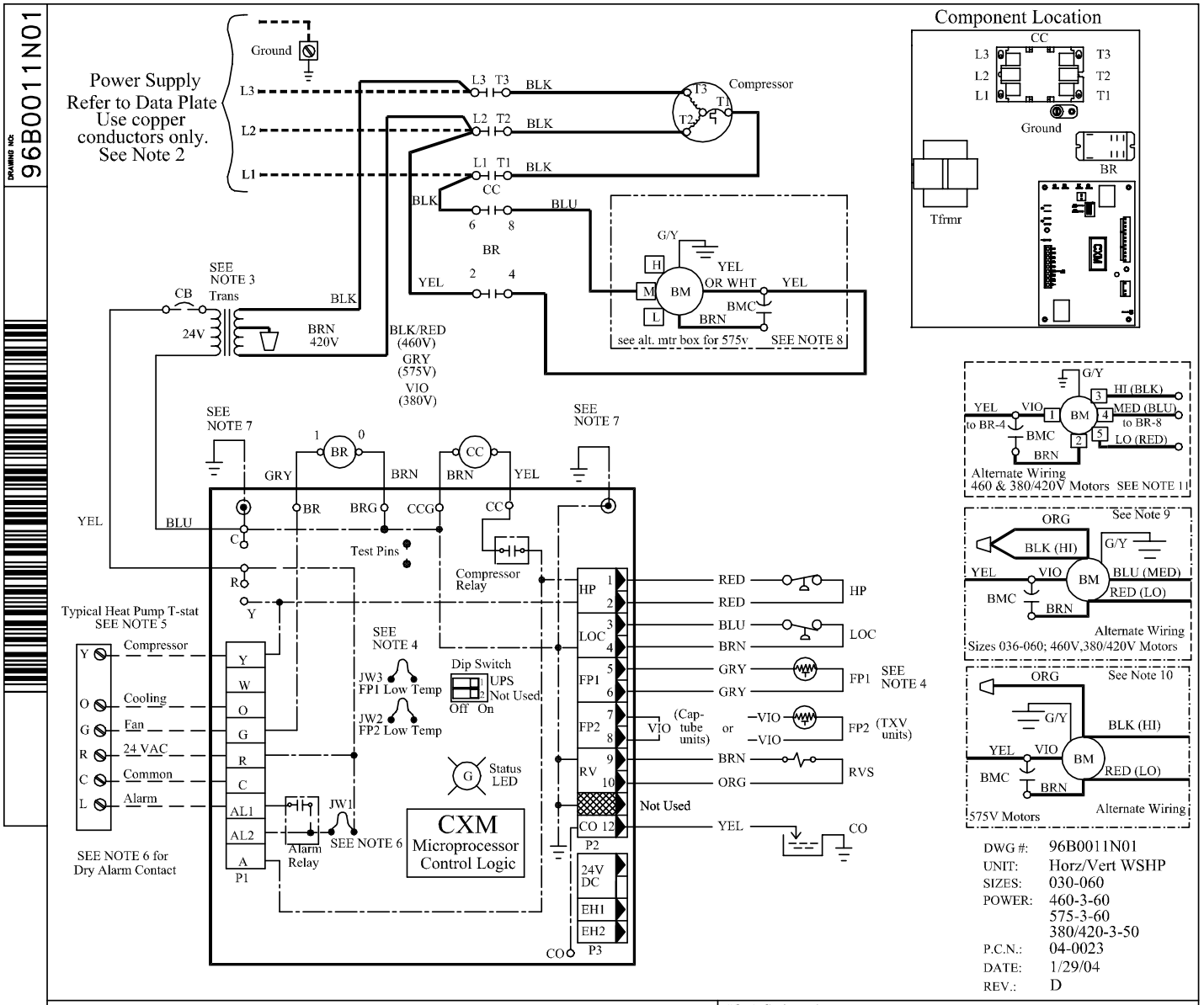
Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Typical Wiring Diagram

Typical Three Phase Wiring Diagram for HS Units with CXM Controller



Legend

Field line voltage wiring	
Field low voltage wiring	
Printed Circuit Trace	
Relay / Contactor Coil	
Condensate Pan	
Solenoid Coil	
Thermistor	
Ground	

AL	Alarm Relay Contacts
BMC	Blower Motor Capacitor
BR	Blower Relay
CB	Circuit Breaker
CC	Compressor Contactor
CO	Sensor, Condensate Overflow
FP1	Sensor, Water Coil Freeze Protection
FP2	Sensor, Air Coil Freeze Protection
HP	High Pressure Switch
JW1	Jumper, Alarm
LOC	Loss of Charge Pressure Switch
P1	Field Wiring Terminal Block
RVS	Reversing Valve Solenoid
Trans	Transformer

NOTES:

1. Compressor and Blower Motor thermally protected internally.
2. All wiring to the unit must comply with NEC and local codes.
3. Tfrmr is wired to 460V (BLK/RED) Lead for 460/3/60 units, 575V (GRY) Lead for 575/3/60, or 380V (VIO) Lead for 380/3/50. For 420/3/50 switch VIO & BRN Leads at L1 and insulate VIO Lead. Transformer is energy limiting or may have circuit breaker.
4. FP1 Thermister provides freeze protection for WATER. When using ANTI-FREEZE solutions, cut JW3 jumper.
5. Typical heat pump thermostat wiring shown. Refer to thermostat Installation Instructions for wiring to the unit. T-stat wiring must be "Class 1" and Voltage rating equal to or greater than unit supply voltage.

NOTES: (cont.)

6. 24V Alarm Signal shown. For Dry Alarm Contact, cut JW1 Jumper and Dry Contact will be available between AL1 and AL2.
7. Transformer secondary ground via CXM board standoffs & screws to Control Box. (Ground available from top two standoffs as shown.)
8. Fan motors factory wired for Medium Speed. For High or Low speed remove BLU wire from fan motor speed tap 'M' and connect to 'H' for High or 'L' for Low
9. For HIGH speed operation, separate BLK and ORG leads and cap (insulate) the ORG. Disconnect the BLU lead from the blower relay and cap. Connect the BLK lead to the blower relay. For LOW speed operation, disconnect BLU lead from blower relay and cap. Connect the RED lead to the blower relay.
10. This is a two speed motor. For LOW speed operation, disconnect the BLK lead from the blower relay and connect the RED lead. Connect the BLK and ORG leads together.
11. For HIGH or LOW speed operation, remove BLU wire BR8 and connect BLK or RED wire respectively. Tape off unused wires.

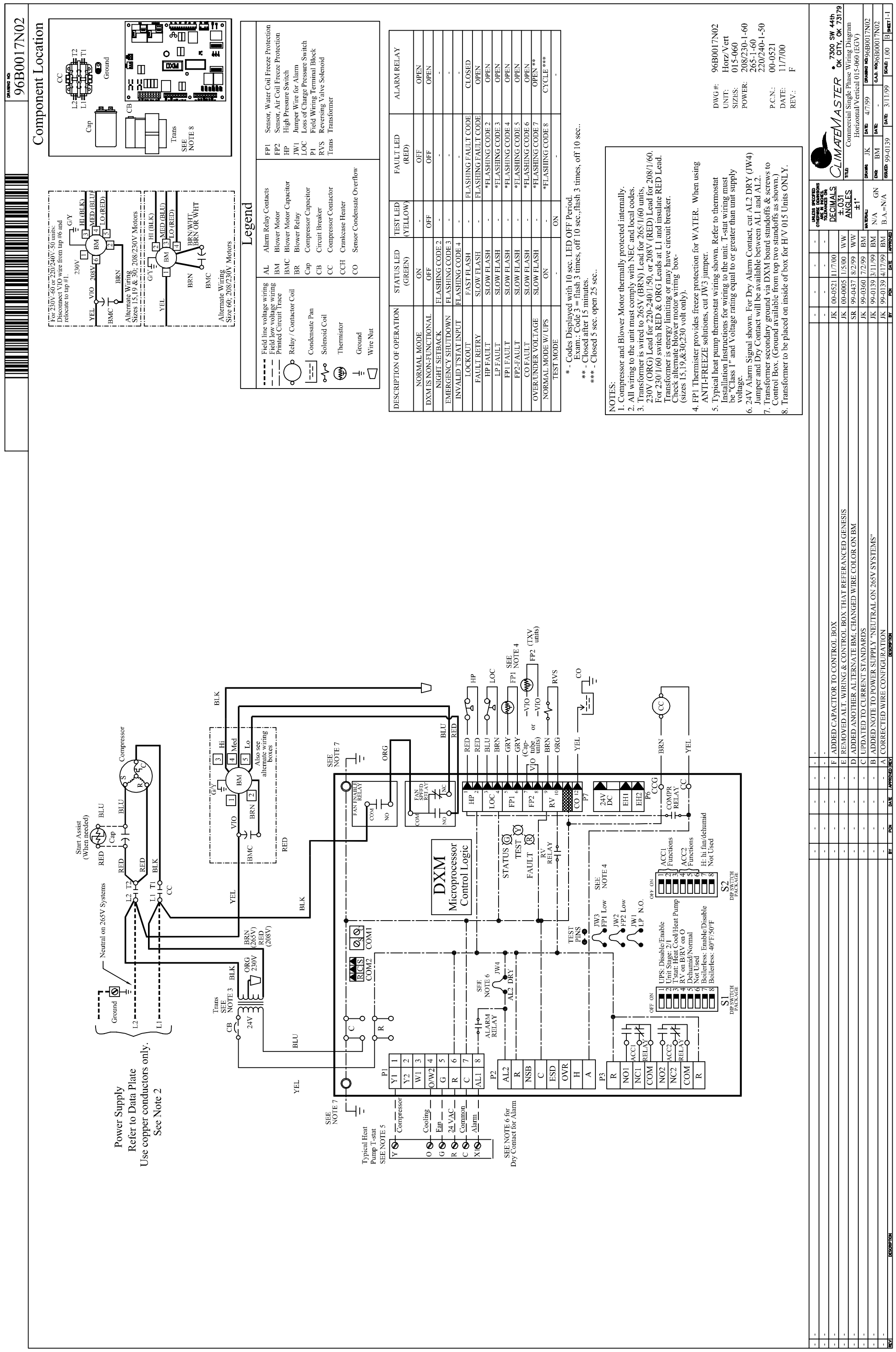
HS Replacement Units Submittal Data

CLIMATEMASTER®

Contractor: ______________________	*P.O.:* ________________
Engineer: ____	
Project Name: ____________________	*Unit Tag:* ______________

Typical Wiring Diagram

Typical Single Phase Wiring Diagram for HS Units with DXM Controller



HS Replacement Units Submittal Data

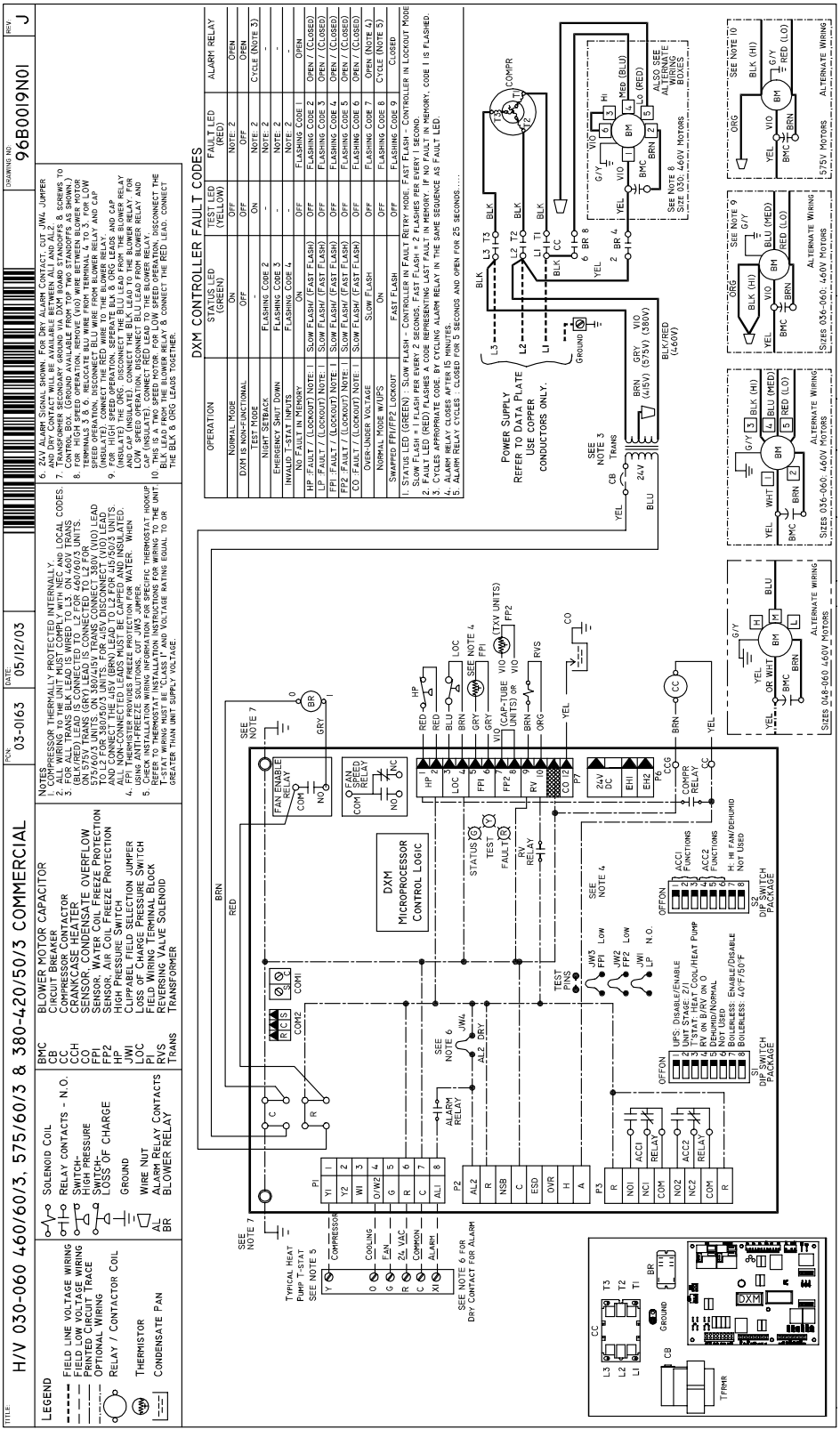
Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Typical Wiring Diagram

Typical Three Phase Wiring Diagram for HS with DXM Controller



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HS Replacement Units Submittal Data

CLIMATEMASTER®

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Physical Characteristics

Size	Model	Ship Wt. Lb.	Oper. Wt. Lb.	Ref.-to-Air Heat Exchanger Face Area Sq. Ft.	No. of Rows Deep	Copper Tube Sz. OD in.	No. of Fins/ Inch	Refrig. Charge R-22/CKT oz.	No. of Circuits	High Volt. Knockout In.	Blower Diameter	Blower Width
048	HS	300	290	4.17	2	3/8	14	46	1	7/8, 1-1/8	10.0	10.0
060	HS	357	347	4.17	3	3/8	14	82	1	7/8, 1-1/8	11.0	10.0

Operating Limits

Environment
This equipment is designed for indoor installation ONLY.

Power Supply
A voltage variation of +/- 10% of nameplate utilization voltage is acceptable. Three-phase system imbalance shall not exceed 2%.

Starting Conditions
HS Units:
HS Units start and operate in heating in an ambient of 40°F, with entering air at 50°F, with entering water at 70°F, with both air and water at the flow rates used in the ARI Standard 320-86 rating test, for initial start-up in winter.

Note: These are not normal or continuous operating conditions. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.

Air and Water Limits

	HS	
	Cooling	Heating
Min. Ambient Air	50°F	50°F
Rated Ambient Air	80°F	70°F
Max. Ambient Air	100°F	85°F
Min. Entering Air, db/wb	70/61°F	50°F
Rated Entering Air, db/wb	80/67°F	70°F
Max. Entering Air, db/wb	95/76°F	80°F

Water Limits

	HS	
	Cooling	Heating
Min. Entering Water	60°F	60°F
Normal Entering Water	85°F	70°F
Max. Entering Water	95°F	90°F

NOTES: (A) Minimum Air and Water conditions can only be used at ARI flow rates.
(B) Only one maximum or minimum value may be used with HS Units, all other parameters must be at normal conditions.

HS Replacement Units Submittal Data

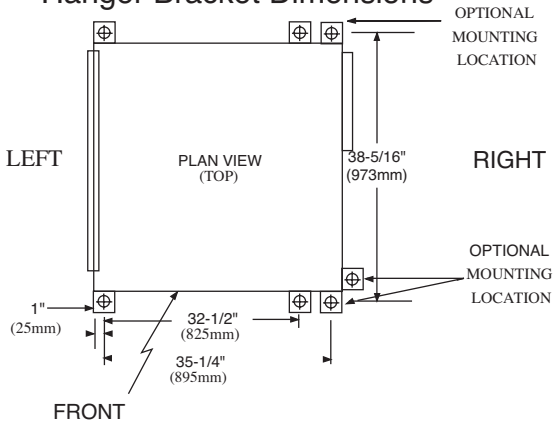
Contractor: _____ *P.O.:* _____

Engineer: _____

Project Name: _____ *Unit Tag:* _____

Dimensions
HS 048/060

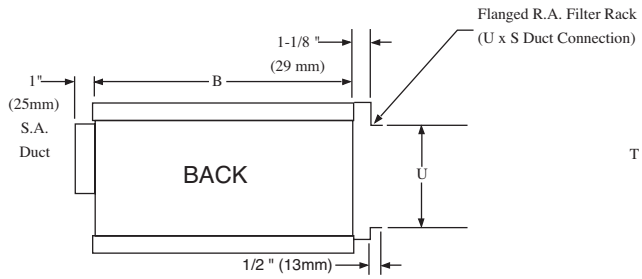
Hanger Bracket Dimensions

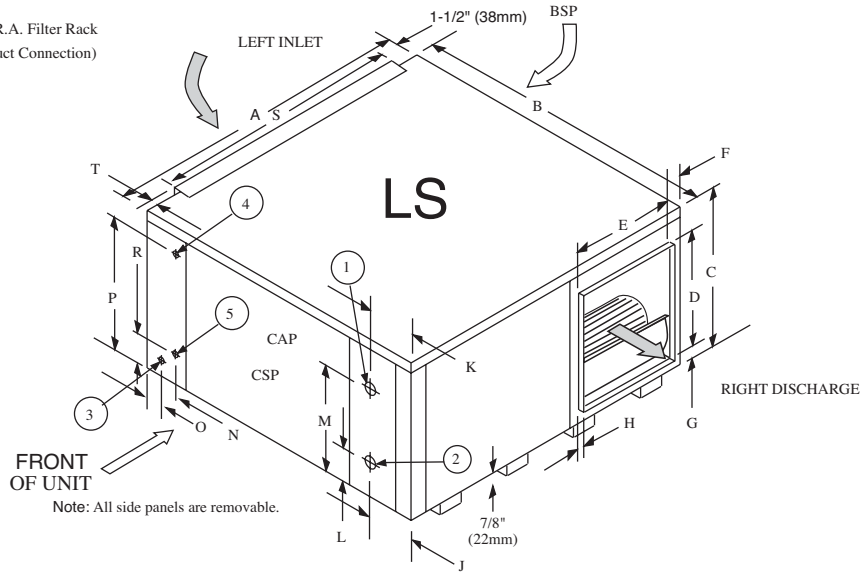


1. Water Outlet 1" IPT
2. Water Inlet 1" IPT
3. Condensate Drain 3/4" IPT
4. High Voltage Access 7/8" x 1 1/8" DIA., (22mm x 29mm DIA.)
5. Low Voltage Access 1/2" DIA., (13mm DIA.)

CAP - Control Access Panel
BSP - Blower Service Panel
CSP - Compressor Service Panel

Return Air Duct Size
18 1/4" High x 30" Wide
(464mm High x 762 Wide)
Nominal Filter Size
16" x 20" x 1" Two Required
(406mm High x 762mm Wide) Two Required





Note: All side panels are removable.

NOTE: Available in left return and straight blow only (LS) as shown.

MODEL		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U	V
048	**INCHES**	36-1/4	36-1/4	21	15	15	1-3/4	2-5/8	1	5-1/8	1-7/8	2-5/8	18-1/2	7-1/2	5-3/8	12-1/2	4	32	1	18-1/4	1-1/2
	MM	921	921	533	381	381	44	67	25	130	48	67	470	191	137	318	102	813	25	464	38
060	**INCHES**	36-1/4	36-1/4	21	15	15	1-3/4	2-5/8	1	5-1/8	1-7/8	2-5/8	18-1/2	7-1/2	5-3/8	12-1/2	4	32	1	18-1/4	1-1/2
	MM	921	921	533	381	381	44	67	25	130	48	67	470	191	137	318	102	813	25	464	38