YORK®
Heating and Air Conditioning

SUBMITTAL SET

AFFINITY CONSOLE
COMMERCIAL GEOTHERMAL/
WATER SOURCE HEAT PUMPS
SINGLE CAPACITY

MODELS:
YC09 - 18
(.75 THRU 1.5 NOMINAL TONS)

AHRI CERTIFIED™ www.ahridirectory.org
Water Source HP
ANSI/AHRI/ASHRAE/ISO13256-1

ETL LISTED®

Due to continuous product improvement, specifications are subject to change without notice.

Visit us on the web at www.yorkgeothermal.com

Additional rating information can found at
www.ahridirectory.org

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Model Nomenclature

1-2	3	4-5	6	7	8	9	10	11	12	13	14	15-16	17
YC	S	09	L	0	1	1	C	N	N	B	5	SS	B

Model Type
YC – YC Series

Cabinet Configuration
C – Chassis Only
W – Chassis with Cabinet
S – Chassis with Slope Top
E – Chassis with Extended Slope Top

Unit Capacity
09, 12, 15, 18

Piping Option
L – Left
R – Right

Voltage
0 – 208-230/60/1
2 – 265-277/60/1

Unit Control
1 – CCM
2 – Versatec Microprocessor

Thermostat Control
1 – Unit Mounted Thermostat
2 – Remote Wall-Mount Thermostat

Vintage
B – PSC Motor & Aluminum Air Coil
C – ECM Motor & Aluminum Air Coil

Non-Standard Options
SS – Standard

Air Coil Option
5 – AlumiSeal™, Extended Range
8 – No Coating, Standard Range

Sound Kit
A – None
B – Blanket

Auxiliary Electric Heat
N – None
B – 1.0kW (09-12)
C – 2.0kW (09-12)
D – 3.0kW (15-18)

Motorized Outdoor Air Damper (Field Installed)
N – None
M – Motorized Damper

Coax Option
C – Copper
N – CuproNickel

Note: Chassis only available with left piping option

Rev.: 02 March 2014D

All Affinity Console Series product is Safety listed under UL1995 thru ETL and performance listed with AHRI in accordance with standard 13256-1.

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

AHRI Data

PSC & ECM Motors

AHRI/ASHRAE/ISO 13256-1

English (IP) Units

Model	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
09	2.5	300	8,500	13.4	10,500	4.4	10,200	22.5	8,700	3.8	9,000	16.0	6,700	3.1
12	3.5	350	10,500	12.3	14,400	4.3	12,400	19.5	11,800	3.7	11,000	14.2	9,500	3.5
15	4.5	450	13,500	13.6	17,000	4.9	16,200	22.0	14,000	4.1	14,200	15.9	10,500	3.4
18	5.5	500	16,200	12.5	21,000	4.4	19,000	19.6	17,000	3.7	16,600	15.1	13,300	3.1

12/14/09

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 operation at the lower voltage of dual voltage rated models.

Contractor: _____ P.O.: _____

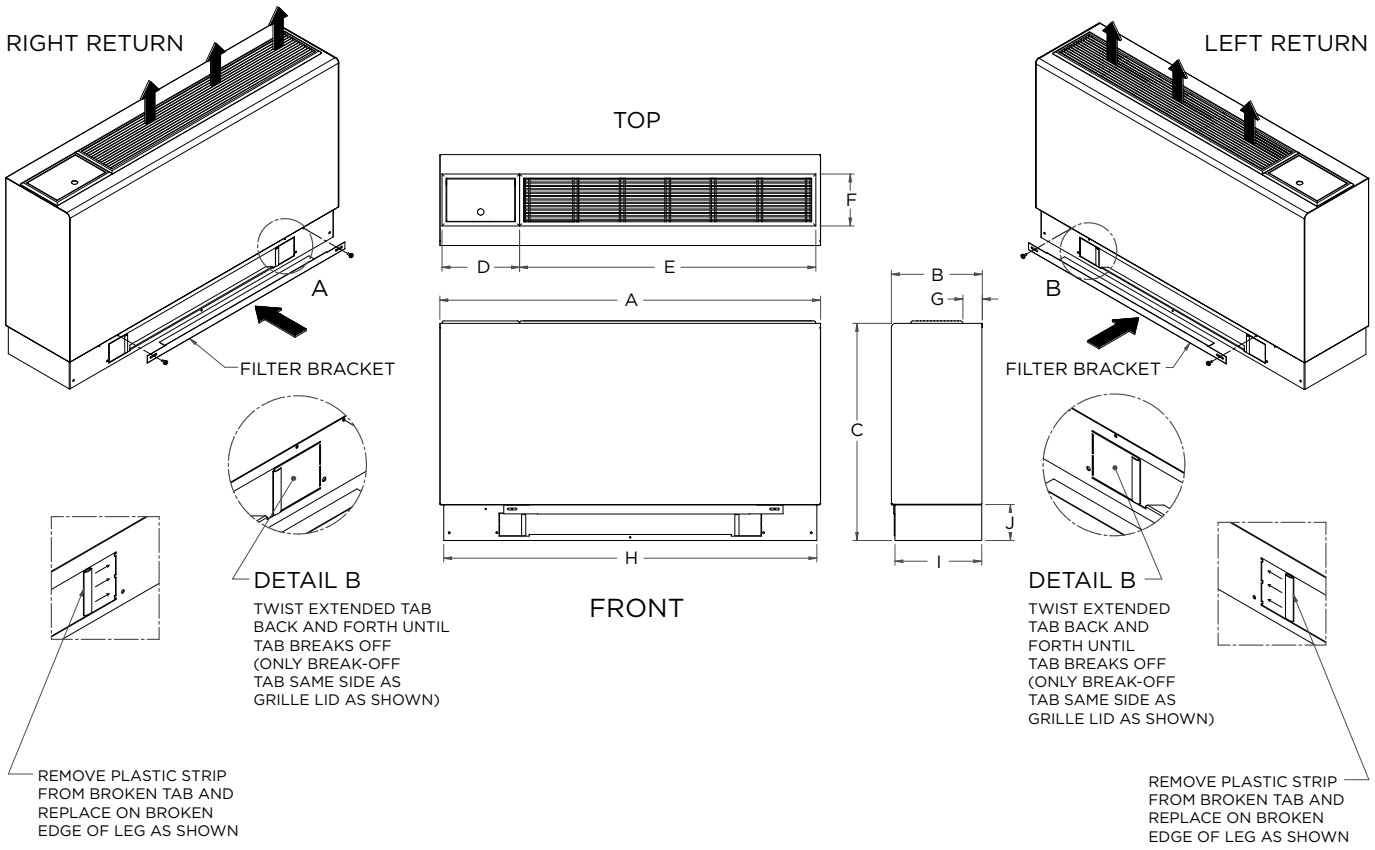
Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Dimensional Data - Flat Top Cabinet

YCW09-18



Flat Top Configuration		Overall Cabinet									
		A	B	C	D	E	F	G	H	I	J
		Width	Depth	Height	Grille Lid	Grille Length	Grille Width				
09-12	in.	45.0	10.8	25.7	9.2	35.0	6.1	2.3	44.1	10.3	4.3
	cm.	114.3	27.3	65.2	23.4	88.9	15.6	5.8	112.0	26.0	10.9
15-18	in.	50.0	12.3	25.7	9.2	35.0	6.1	3.3	49.1	11.8	4.3
	cm.	127.0	31.1	65.2	23.4	88.9	15.6	8.3	124.7	29.8	10.9

Contractor: _____ P.O.: _____

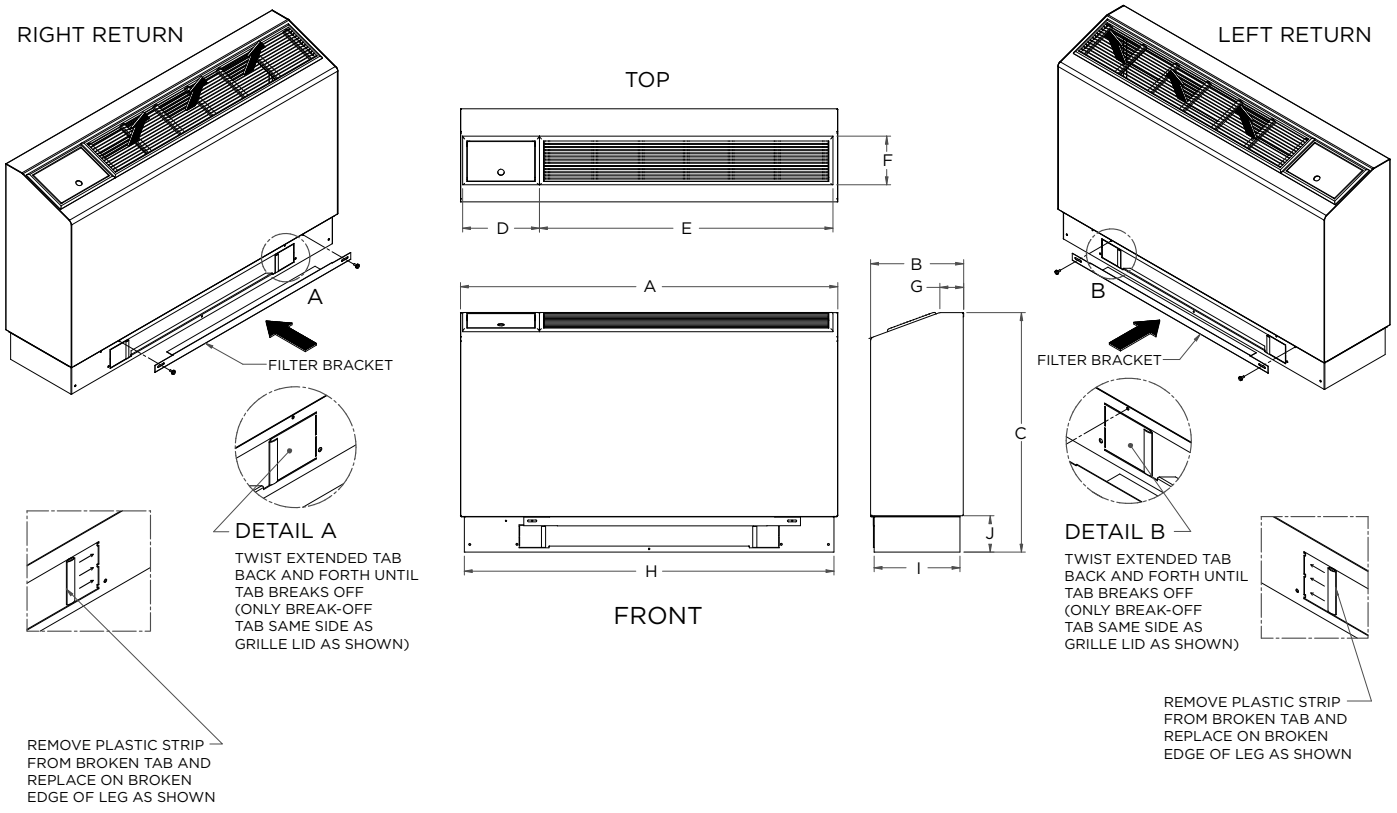
Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Dimensional Data - Slope Top Cabinet

YCS09-18



Slope Top Configuration		Overall Cabinet									
		A	B	C	D	E	F	G	H	I	J
		Width	Depth	Height	Grille Lid	Grille Length	Grille Width				
09-12	in.	45.0	11.1	28.6	9.2	35.0	6.1	2.8	44.1	10.3	4.3
	cm.	114.3	28.2	72.6	23.4	88.9	15.6	7.2	112.0	26.0	10.9
15-18	in.	50.0	12.6	29.1	9.2	35.0	6.1	2.5	49.1	11.8	4.3
	cm.	127.0	32.0	73.9	23.4	88.9	15.6	6.4	124.7	29.8	10.9

Contractor: _____ P.O.: _____

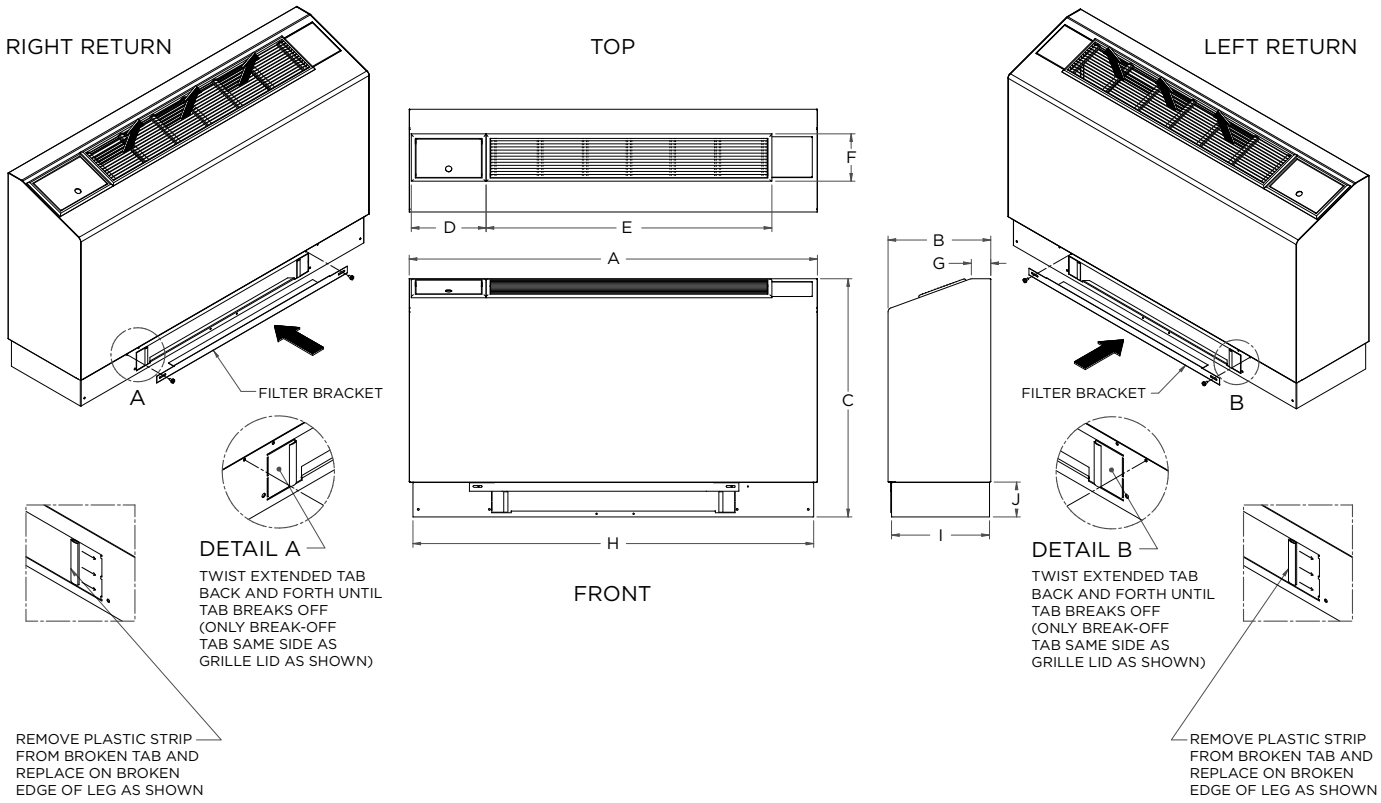
Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Dimensional Data - Extended Slope Top Cabinet

YCE09-18



Ext. Slope Top Configuration		Overall Cabinet									
		A Width	B Depth	C Height	D Grille Lid	E Grille Length	F Grille Width	G	H	I	J
09-12	in.	50.0	12.6	29.1	9.2	35.0	6.1	2.4	49.1	12.0	4.3
	cm.	127.0	32.0	73.9	23.4	88.9	15.6	6.1	124.7	30.5	10.9
15-18	in.	55.0	12.6	29.1	9.2	35.0	6.1	2.5	54.1	11.8	4.3
	cm.	139.7	32.0	73.9	23.4	88.9	15.6	6.4	137.4	29.8	10.9

Contractor: _____ P.O.: _____

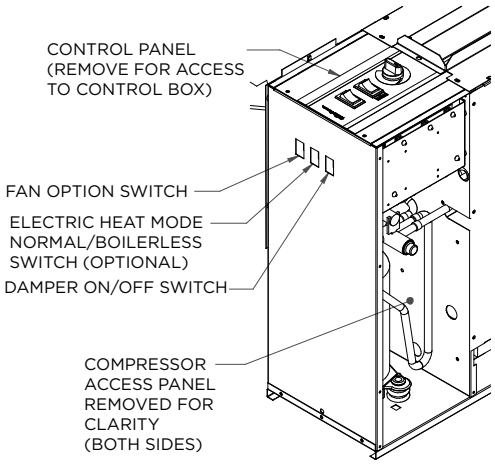
Engineer: _____

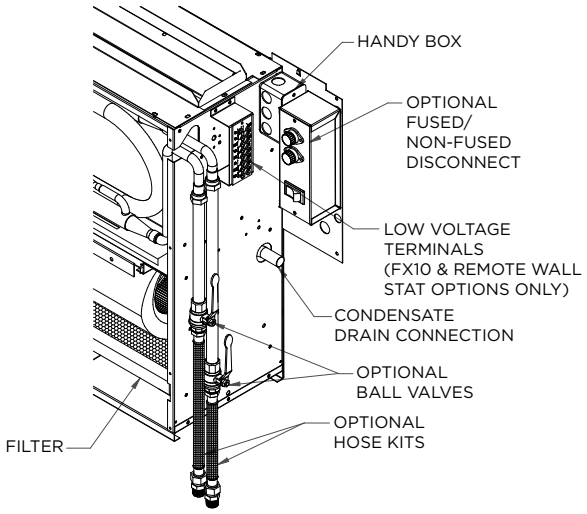
Project Name: _____ Unit Tag: _____

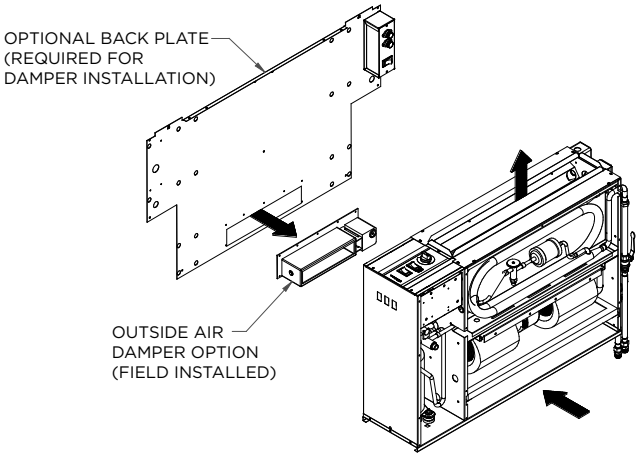
Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

YORK®

Dimensional Data - Right Return Controls Detail







Contractor: _____ P.O.: _____

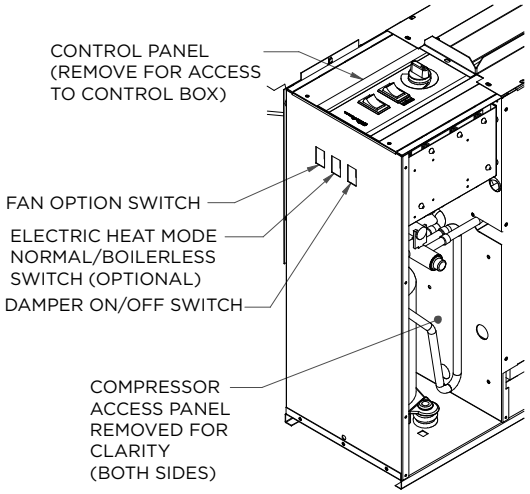
Engineer: _____

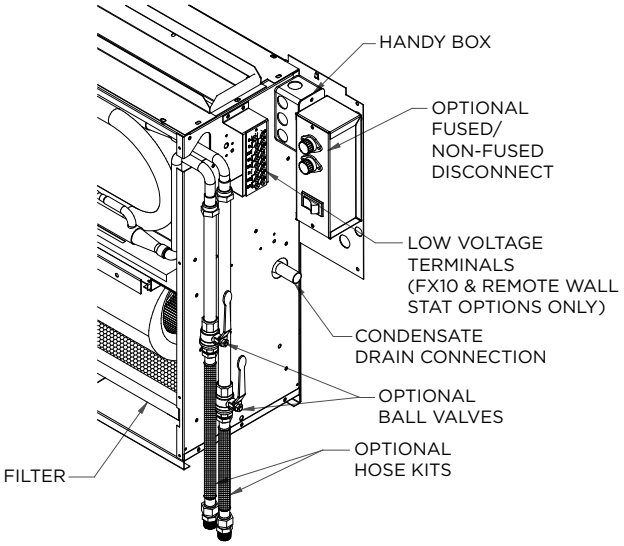
Project Name: _____ Unit Tag: _____

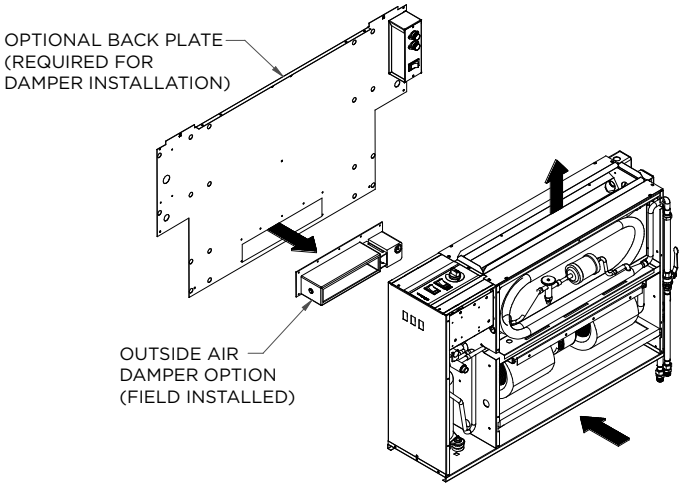
Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Dimensional Data - Right Return Chassis

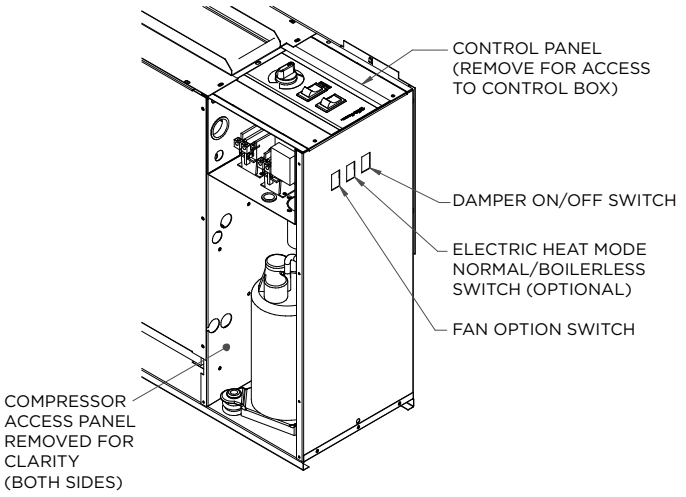
Data = inches (cm)

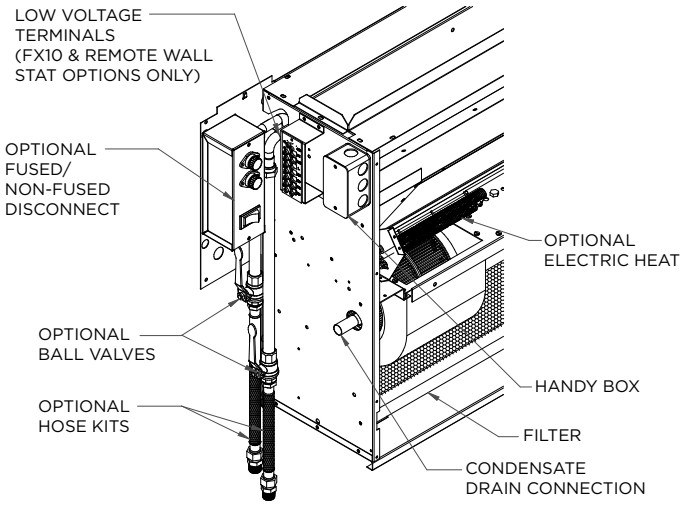


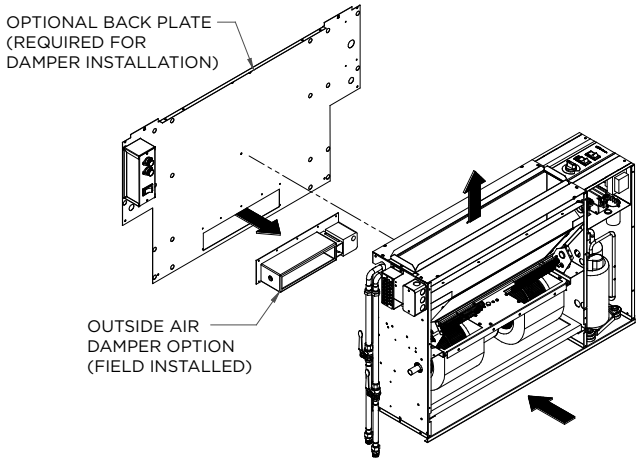




Dimensional Data - Left Return Controls Detail







Contractor: _____ P.O.: _____

Engineer: _____

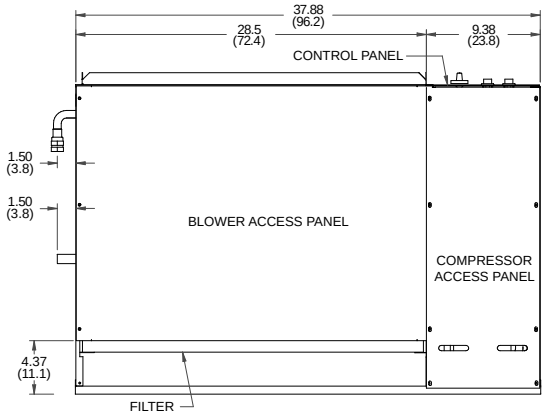
Project Name: _____ Unit Tag: _____

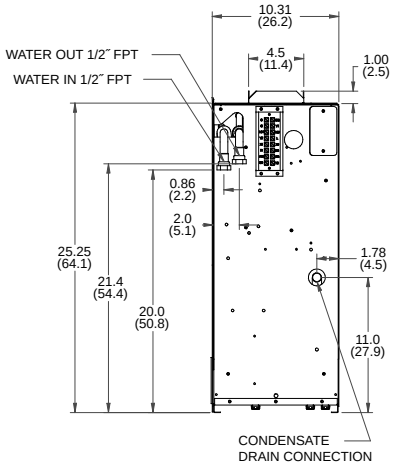
Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

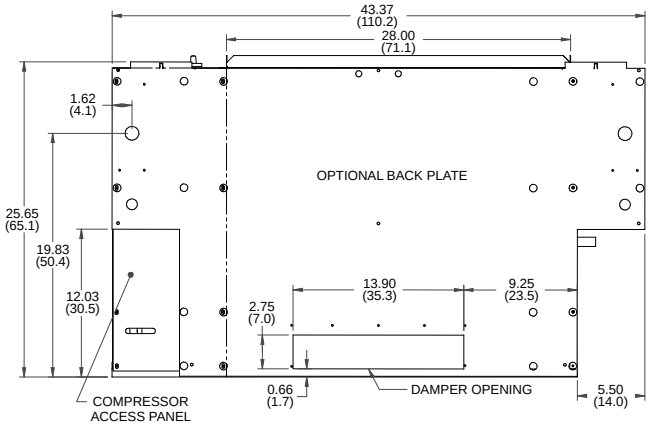
Dimensional Data - Left Return Chassis

Data = inches (cm)

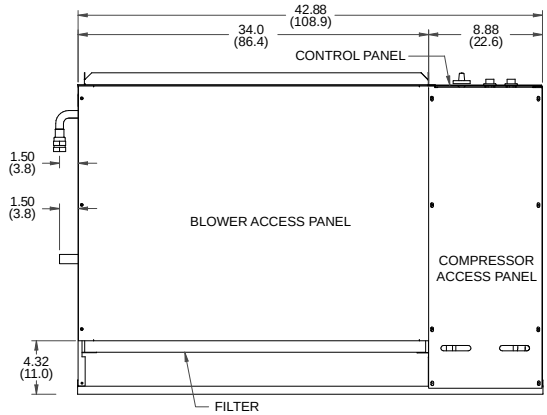
Models 09-12

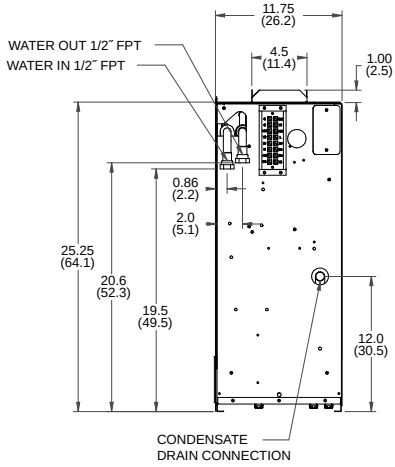


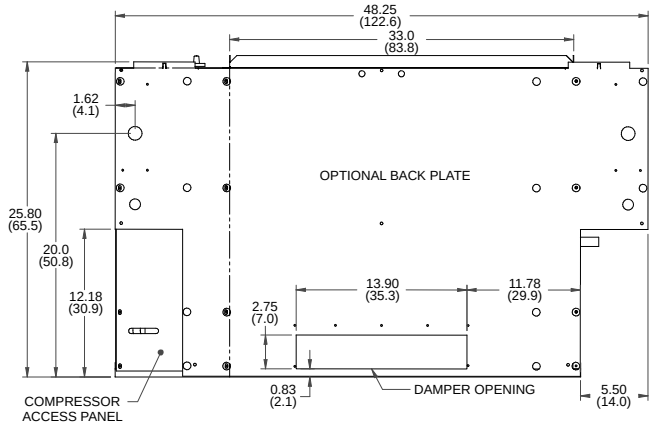




Models 15-18







Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

Physical Data

Model		Consoles			
		09	12	15	18
Compressor (1 each)		Rotary			
Factory Charge R410A, oz [kg]		27 [0.77]	27 [0.77]	36 [1.02]	34 [0.96]
Fan Motor & Blower					
Fan Motor Type/Speeds	PSC	2 Speeds			
	ECM	3 Speeds			
Fan Motor- hp [W]	PSC	1/20 [37]	1/20 [37]	1/12 [62]	1/12 [62]
	ECM	0.25 [186]	0.25 [186]	0.25 [186]	0.25 [186]
Blower Wheel Size (Dia x W), in. [mm]	PSC	5.75 x 5.5 [146 x 140]	5.75 x 5.5 [146 x 140]	6.0 x 6.5 [152 x 165]	6.0 x 6.5 [152 x 165]
	ECM	5.75 x 5.5 [146 x 140]	5.75 x 5.5 [146 x 140]	6.0 x 6.5 [152 x 165]	6.0 x 6.5 [152 x 165]
Coax and Water Piping					
Water Connections Size - FPT - in [mm]		1/2" [12.7]	1/2" [12.7]	1/2" [12.7]	1/2" [12.7]
Coax & Piping Water Volume - gal [l]		0.15 [0.6]	0.18 [0.7]	0.35 [1.3]	0.35 [1.3]
Consoles					
Air Coil Dimensions (H x W), in. [mm]		8 x 22 [203 x 559]	8 x 22 [203 x 559]	8 x 30 [203 x 762]	8 x 30 [203 x 762]
Air Coil Total Face Area, ft2 [m2]		1.2 [0.114]	1.2 [0.114]	1.7 [0.155]	1.7 [0.155]
Air Coil Tube Size, in [mm]		3/8 [9.5]	3/8 [9.5]	3/8 [9.5]	3/8 [9.5]
Air Coil Number of rows		3	3	4	4
Filter Standard - 1" [25.44mm]		1 - 10 x 28 [254 x 711]	1 - 10 x 28 [254 x 711]	1 - 12 x 33 [305 x 838]	1 - 12 x 33 [305 x 838]
Weight - Operating, lb [kg]		210 [91]	210 [95]	230 [102]	235 [107]
Weight - Packaged, lb [kg]		220 [100]	220 [100]	240 [109]	245 [111]

1/20/14

Electrical Data

ECM Motor

Model	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Min Circ Amp	Max Fuse/ HACR
			MCC	RLA	LRA				
09	115/60/1	104/127	12.5	8.0	50.0	4.25	12.3	14.3	20
	208-230/60/1	187/253	6.4	4.1	21.0	2.6	6.7	7.7	10/15
	265/60/1	238/292	6.7	4.3	22.0	2.5	6.8	7.9	10/15
12	115/60/1	104/127	14.8	9.5	50.0	4.25	13.8	16.1	25
	208-230/60/1	187/253	7.7	4.9	25.0	2.6	7.5	8.8	10/15
	265/60/1	238/292	7.0	4.5	22.0	2.5	7.0	8.1	10/15
15	208-230/60/1	187/253	9.2	5.9	29.0	2.6	8.5	10.0	15
	265/60/1	238/292	7.8	5.0	28.0	2.5	7.5	8.8	10/15
18	208-230/60/1	187/253	10.4	6.7	33.5	2.6	9.3	10.9	15
	265/60/1	238/292	8.7	5.6	28.0	2.5	8.1	9.5	15

HACR circuit breaker in USA only 1/20/14

PSC Motors

Model	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Min Circ Amp	Max Fuse/ HACR
			MCC	RLA	LRA				
09	115/60/1	104/127	12.5	8.0	50.0	0.92	8.9	10.9	25
	208-230/60/1	187/253	6.4	4.1	21.0	0.50	4.6	5.6	10/15
	265/60/1	238/292	6.7	4.3	22.0	0.50	4.8	5.9	10/15
12	115/60/1	104/127	14.8	9.5	50.0	0.92	10.4	12.8	30
	208-230/60/1	187/253	7.7	4.9	25.0	0.50	5.4	6.6	10/15
	265/60/1	238/292	7.0	4.5	22.0	0.50	5.0	6.1	10/15
15	208-230/60/1	187/253	9.2	5.9	29.0	0.69	6.6	8.1	10/15
	265/60/1	238/292	7.8	5.0	28.0	0.65	5.7	6.9	10/15
18	208-230/60/1	187/253	10.4	6.7	33.5	0.69	7.4	9.1	15
	265/60/1	238/292	8.7	5.6	28.0	0.65	6.3	7.7	10/15

HACR circuit breaker in USA only 1/20/14

Auxiliary Heat Ratings

ECM Motors

Model	Rated Voltage	Voltage Min./Max.	Heater Element Watts	Fan Motor FLA	Heater Element FLA	Total Unit FLA	Min. Circuit Amp.	Max. Fuse/ Brkr.
09-12 (1 kW)	208/60/1	197/254	818	2.45	3.93	6.4	8.0	10
	230/60/1	197/254	1000	2.60	4.35	7.0	8.7	15
	265/60/1	239/291	1000	2.50	3.77	6.3	7.8	10
09-12 (2 kW)	208/60/1	197/254	1636	2.45	7.86	10.3	12.9	20
	230/60/1	197/254	2000	2.60	8.70	11.3	14.1	25
	265/60/1	239/292	2000	2.50	7.55	10.1	12.6	20
15-18 (3 kW)	208/60/1	197/254	2454	2.45	11.80	14.3	17.8	30
	230/60/1	197/254	3000	2.60	13.04	15.6	19.6	35
	265/60/1	239/292	3000	2.50	11.32	13.8	17.3	30

Always refer to unit nameplate data prior to installation. 10/5/10

PSC Motors

Model	Rated Voltage	Voltage Min./Max.	Heater Element Watts	Fan Motor FLA	Heater Element FLA	Total Unit FLA	Min. Circuit Amp.	Max. Fuse/ Brkr.
09-12 (1 kW)	208/60/1	197/254	818	0.50	3.93	4.4	5.5	10
	230/60/1	197/254	1000	0.50	4.35	4.9	6.1	10
	265/60/1	239/291	1000	0.50	3.77	4.3	5.3	10
09-12 (2 kW)	208/60/1	197/254	1636	0.50	7.86	8.4	10.5	15
	230/60/1	197/254	2000	0.50	8.70	9.2	11.5	20
	265/60/1	239/292	2000	0.50	7.55	8.1	10.1	15
15-18 (3 kW)	208/60/1	197/254	2454	0.69	11.80	12.5	15.6	25
	230/60/1	197/254	3000	0.69	13.04	13.7	17.2	30
	265/60/1	239/292	3000	0.65	11.32	12.0	15.0	25

10/5/10

Blower Performance Data

PSC Motors

Model	CFM	
	Low Speed	High Speed
09	300	350
12	300	350
15	450	500
18	450	500

Factory settings are in Bold
Air flow values are with dry coil and standard filter.

ECM Motors

Model	CFM		
	Low Speed	Medium Speed	High Speed
09	300	325	400
12	300	325	400
15	350	450	600
18	350	450	600

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 0.12in. wg. and 500 fpm by 0.16 in. wg.

Pressure Drop

Model	GPM	Pressure Drop (psi)				
		30°F	50°F	70°F	90°F	110°F
09	1.2	1.0	0.9	0.8	0.7	0.6
	1.8	2.3	2.2	2.0	1.9	1.8
	2.5	3.8	3.7	3.5	3.3	3.1
12	1.5	0.9	0.8	0.7	0.6	0.5
	2.3	1.7	1.5	1.4	1.3	1.1
	3.5	3.0	2.7	2.5	2.4	2.2
15	2.0	1.7	1.6	1.5	1.4	1.3
	3.0	3.3	3.2	3.0	2.9	2.8
	4.5	5.7	5.5	5.3	5.1	4.9
18	3.0	1.7	1.6	1.5	1.4	1.3
	4.0	4.1	4.0	3.9	3.7	3.6
	5.5	7.9	7.6	7.4	7.2	6.9

12/14/09

Correction Factor Tables

Cooling Capacity Corrections

Entering Air WB ºF	Total Clg Cap	Sensible Cooling Capacity Multipliers - Entering DB ºF										Power Input	Heat of Rejection
		60	65	70	75	**80**	80.6	85	90	95	100		
45	0.719	0.891	1.058	1.128	*	*	*	*	*	*	*	0.898	0.741
50	0.719	0.893	0.980	1.106	*	*	*	*	*	*	*	0.898	0.741
55	0.812	0.629	0.844	1.026	1.172	*	*	*	*	*	*	0.922	0.819
60	0.897			0.820	0.995	1.206	1.238	*	*	*	*	0.955	0.895
65	0.960			0.568	0.810	1.004	1.052	1.227	*	*	*	0.982	0.951
66.2	0.984			0.505	0.743	1.002	1.027	1.151	*	*	*	0.993	0.980
67	**1.000**			0.463	0.699	**1.000**	1.011	1.101	1.310	*	*	**1.000**	**1.000**
70	1.047				0.599	0.865	0.879	1.007	1.225	1.433	*	1.018	1.029
75	1.148					0.567	0.584	0.734	0.956	1.261	1.476	1.056	1.118

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

7/20/06

Heating Capacity Corrections

	Heating Corrections		
Ent Air DB °F	Htg Cap	Power	Heat of Ext
45	1.050	0.749	1.158
50	1.059	0.859	1.130
55	1.043	0.894	1.096
60	1.033	0.947	1.064
65	1.023	0.974	1.030
68	1.009	0.990	1.012
70	**1.000**	**1.000**	**1.000**
75	1.011	1.123	0.970
80	1.000	1.196	0.930

7/20/06

Reference Calculations

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

Legend

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
HW = desuperheater 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

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 dependent 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.

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 an Affinity Console Series YC*18.

The corrected cooling capacity at 90°F would be: 17,100 MBtuh x 0.969 = 16,569 MBtuh

The corrected heating capacity at 30°F would be: 14,300 MBtuh x 0.913 = 13,056 MBtuh

The corrected pressure drop at 30°F and 5.5 GPM would be: 18.2 feet of head x 1.270 = 23.1 feet of head

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

YORK®

YC09 - Performance Data

300 Rated CFM Heating / Cooling

Performance capacities shown in thousands of Btuh.

EWT °F	Flow Rate GPM	Water Pressure Drop		HEATING - EAT 70 °F					COOLING - EAT 80/67 °F					
		PSI	FT/HD	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER
20	1.2	1.1	2.5	Operation not recommended					Operation not recommended					
	1.8	2.4	5.6											
	2.5	3.8	8.8	6.8	0.60	4.8	89.0	3.35						
30	1.2	1.0	2.3	Operation not recommended					Operation not recommended					
	1.8	2.3	5.4	6.9	0.60	4.8	89.3	3.38	12.1	7.3	0.61	0.38	13.4	31.8
	2.5	3.8	8.8	7.3	0.63	5.1	90.5	3.40	12.2	7.4	0.61	0.36	13.4	33.9
40	1.2	1.0	2.2	7.6	0.62	5.5	91.5	3.63	Operation not recommended					
	1.8	2.3	5.2	7.9	0.62	5.8	92.4	3.72	11.5	7.1	0.62	0.41	12.9	28.1
	2.5	3.8	8.7	8.3	0.64	6.1	93.7	3.80	11.6	7.2	0.62	0.39	12.9	30.0
50	1.2	0.9	2.1	8.8	0.65	6.6	95.2	4.00	10.7	6.8	0.63	0.45	12.3	23.6
	1.8	2.2	5.1	9.1	0.65	6.9	96.0	4.08	10.9	6.9	0.63	0.44	12.3	24.9
	2.5	3.7	8.5	9.4	0.66	7.1	97.0	4.17	11.0	7.0	0.64	0.41	12.4	26.6
60	1.2	0.9	2.0	10.3	0.68	8.0	99.8	4.46	10.4	6.7	0.64	0.52	12.1	19.9
	1.8	2.1	4.9	10.5	0.68	8.2	100.5	4.53	10.5	6.7	0.64	0.50	12.2	21.0
	2.5	3.6	8.3	10.8	0.69	8.5	101.3	4.60	10.7	6.9	0.64	0.47	12.3	22.4
70	1.2	0.8	1.8	11.8	0.71	9.4	104.5	4.88	10.0	6.5	0.65	0.59	12.0	17.1
	1.8	2.0	4.7	12.0	0.71	9.6	105.0	4.93	10.1	6.6	0.65	0.56	12.1	18.0
	2.5	3.5	8.1	12.2	0.72	9.8	105.7	4.99	10.3	6.7	0.65	0.54	12.1	19.2
80	1.2	0.8	1.7	12.7	0.73	10.2	107.3	5.11	9.5	6.3	0.67	0.65	11.7	14.5
	1.8	2.0	4.6	12.9	0.74	10.4	107.9	5.12	9.6	6.5	0.67	0.62	11.7	15.5
	2.5	3.4	7.9	13.1	0.75	10.5	108.4	5.13	9.9	6.5	0.66	0.60	11.9	16.4
90	1.2	0.7	1.6	13.6	0.76	11.0	110.0	5.24	9.2	6.1	0.67	0.72	11.6	12.7
	1.8	1.9	4.4	13.8	0.77	11.2	110.6	5.25	9.3	6.2	0.67	0.69	11.7	13.5
	2.5	3.3	7.6	14.0	0.78	11.3	111.2	5.26	9.4	6.3	0.67	0.67	11.7	14.1
100	1.2	0.7	1.5	Operation not recommended					Operation not recommended					
	1.8	1.8	4.3						9.0	6.0	0.67	0.76	11.6	11.8
	2.5	3.2	7.4						9.1	6.1	0.67	0.74	11.6	12.3
110	1.2	0.6	1.5						Operation not recommended					
	1.8	1.8	4.1						8.6	5.8	0.67	0.83	11.5	10.4
	2.5	3.1	7.2						8.7	5.9	0.68	0.81	11.5	10.7
120	1.2	0.6	1.4						Operation not recommended					
	1.8	1.7	4.0						8.2	5.5	0.67	0.90	11.3	9.1
	2.5	3.0	6.9						8.3	5.6	0.68	0.88	11.3	9.5

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

YORK®

YC12 - Performance Data

350 Rated CFM Heating / Cooling

Performance capacities shown in thousands of Btuh.

EWT °F	Flow Rate GPM	Water Pressure Drop		HEATING - EAT 70 °F					COOLING - EAT 80/67 °F					
		PSI	FT/HD	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER
20	1.5	1.0	2.3	Operation not recommended					Operation not recommended					
	2.3	1.7	4.0											
	3.5	3.2	7.4	8.6	0.80	5.9	90.8	3.15						
30	1.5	0.9	2.1	Operation not recommended					Operation not recommended					
	2.3	1.7	3.8	10.0	0.85	7.1	94.3	3.44	14.2	9.8	0.69	0.45	15.8	31.6
	3.5	3.0	6.9	10.2	0.86	7.3	95.1	3.48	14.4	10.0	0.69	0.42	15.9	34.1
40	1.5	0.9	2.0	10.8	0.88	7.8	96.7	3.62	Operation not recommended					
	2.3	1.6	3.7	11.0	0.88	8.0	97.0	3.66	13.7	9.5	0.70	0.54	15.5	25.5
	3.5	2.9	6.6	11.3	0.89	8.2	97.8	3.72	13.9	9.7	0.70	0.50	15.6	27.6
50	1.5	0.8	1.8	11.9	0.91	8.8	99.6	3.86	13.0	9.1	0.70	0.64	15.2	20.2
	2.3	1.5	3.5	12.1	0.91	9.0	100.0	3.89	13.1	9.2	0.71	0.62	15.2	21.1
	3.5	2.7	6.2	12.3	0.92	9.2	100.6	3.94	13.3	9.4	0.71	0.58	15.3	22.8
60	1.5	0.8	1.7	13.2	0.94	10.0	103.0	4.14	12.1	8.6	0.71	0.71	14.5	17.0
	2.3	1.4	3.3	13.4	0.94	10.2	103.4	4.16	12.2	8.7	0.71	0.68	14.5	17.8
	3.5	2.6	6.0	13.7	0.96	10.4	104.2	4.19	12.4	8.9	0.71	0.65	14.6	19.2
70	1.5	0.7	1.6	14.5	0.97	11.2	106.4	4.39	11.1	8.0	0.72	0.77	13.8	14.4
	2.3	1.4	3.2	14.7	0.98	11.4	106.9	4.40	11.3	8.1	0.72	0.75	13.8	15.0
	3.5	2.5	5.8	15.0	1.00	11.6	107.7	4.41	11.5	8.3	0.72	0.71	13.9	16.3
80	1.5	0.7	1.5	15.6	1.03	12.1	109.4	4.45	10.6	7.8	0.73	0.84	13.5	12.6
	2.3	1.3	3.0	15.9	1.04	12.3	110.0	4.48	10.9	7.9	0.73	0.80	13.6	13.5
	3.5	2.5	5.7	16.1	1.05	12.5	110.6	4.50	11.0	8.0	0.73	0.78	13.7	14.1
90	1.5	0.6	1.4	16.7	1.07	13.0	112.1	4.55	10.2	7.5	0.73	0.92	13.4	11.1
	2.3	1.3	2.9	16.9	1.09	13.2	112.8	4.56	10.4	7.6	0.74	0.88	13.4	11.8
	3.5	2.4	5.5	17.2	1.10	13.4	113.5	4.57	10.5	7.7	0.73	0.85	13.4	12.4
100	1.5	0.6	1.3	Operation not recommended					Operation not recommended					
	2.3	1.2	2.8						9.7	7.3	0.75	1.00	13.1	9.7
	3.5	2.3	5.3						9.8	7.4	0.75	0.97	13.1	10.1
110	1.5	0.5	1.2						Operation not recommended					
	2.3	1.1	2.6						8.9	6.9	0.77	1.11	12.7	8.1
	3.5	2.2	5.1						9.1	7.0	0.77	1.08	12.8	8.4
120	1.5	0.5	1.2						Operation not recommended					
	2.3	1.1	2.5						8.5	6.7	0.79	1.21	12.6	7.0
	3.5	2.1	4.9						8.7	6.8	0.78	1.18	12.7	7.4

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

YORK®

YC15 - Performance Data

450 Rated CFM Heating / Cooling

Performance capacities shown in thousands of Btuh.

EWT °F	Flow Rate GPM	Water Pressure Drop		HEATING - EAT 70 °F					COOLING - EAT 80/67 °F					
		PSI	FT/HD	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER
20	2.0	1.8	4.1	Operation not recommended					Operation not recommended					
	3.0	3.4	7.8											
	4.5	5.9	13.6	10.7	0.93	7.5	90.0	3.37						
30	2.0	1.7	3.9	Operation not recommended					Operation not recommended					
	3.0	3.3	7.6	11.8	0.95	8.5	92.2	3.62	17.1	12.2	0.71	0.48	18.7	35.6
	4.5	5.7	13.2	12.3	0.97	9.0	93.3	3.72	17.3	12.4	0.71	0.45	18.9	38.4
40	2.0	1.7	3.8	12.7	0.95	9.4	94.1	3.93	Operation not recommended					
	3.0	3.2	7.5	12.9	0.96	9.6	94.6	3.94	16.7	12.0	0.72	0.60	18.8	27.8
	4.5	5.6	12.9	13.4	0.98	10.1	95.6	4.02	17.0	12.2	0.72	0.57	18.9	30.0
50	2.0	1.6	3.7	13.9	0.95	10.6	96.5	4.27	16.2	11.7	0.72	0.75	18.8	21.5
	3.0	3.2	7.3	14.1	0.97	10.8	97.1	4.28	16.4	11.8	0.72	0.72	18.8	22.6
	4.5	5.5	12.7	14.6	0.99	11.2	97.9	4.31	16.6	12.0	0.72	0.68	18.9	24.4
60	2.0	1.6	3.6	15.2	0.96	12.0	99.4	4.66	15.5	11.4	0.74	0.84	18.3	18.3
	3.0	3.1	7.1	15.6	0.97	12.2	100.0	4.69	15.6	11.5	0.74	0.81	18.4	19.2
	4.5	5.4	12.5	16.1	1.00	12.7	101.0	4.72	15.9	11.8	0.74	0.77	18.5	20.7
70	2.0	1.5	3.5	16.6	0.96	13.3	102.2	5.05	14.7	11.1	0.76	0.94	17.9	15.7
	3.0	3.0	7.0	17.0	0.98	13.7	103.0	5.08	14.9	11.3	0.76	0.90	18.0	16.5
	4.5	5.3	12.2	17.6	1.00	14.1	104.1	5.12	15.2	11.5	0.76	0.86	18.1	17.8
80	2.0	1.5	3.4	18.3	1.03	14.8	105.7	5.22	14.2	10.9	0.77	1.00	17.6	14.1
	3.0	3.0	6.8	18.6	1.04	15.1	106.3	5.24	14.5	11.1	0.77	0.96	17.7	15.1
	4.5	5.2	12.0	18.9	1.05	15.3	106.8	5.26	14.7	11.2	0.76	0.93	17.8	15.8
90	2.0	1.4	3.2	19.6	1.07	15.9	108.3	5.35	13.7	10.6	0.77	1.08	17.4	12.7
	3.0	2.9	6.7	19.9	1.09	16.2	108.9	5.36	13.9	10.8	0.78	1.03	17.4	13.5
	4.5	5.1	11.8	20.2	1.10	16.4	109.5	5.38	14.1	10.9	0.77	1.00	17.5	14.1
100	2.0	1.4	3.1	Operation not recommended					Operation not recommended					
	3.0	2.8	6.5						13.4	10.5	0.78	1.14	17.3	11.8
	4.5	5.0	11.6						13.6	10.6	0.78	1.10	17.3	12.3
110	2.0	1.3	3.0						Operation not recommended					
	3.0	2.8	6.4						12.8	10.1	0.79	1.23	17.0	10.4
	4.5	4.9	11.3						13.0	10.3	0.79	1.20	17.1	10.8
120	2.0	1.3	2.9						Operation not recommended					
	3.0	2.7	6.2						11.3	9.2	0.81	1.39	16.0	8.1
	4.5	4.8	11.1						11.5	9.3	0.81	1.35	16.1	8.5

Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

Affinity Console Series
Single Capacity
.75 - 1.5 Tons 60Hz

YORK®

YC18 - Performance Data

500 Rated CFM Heating / Cooling

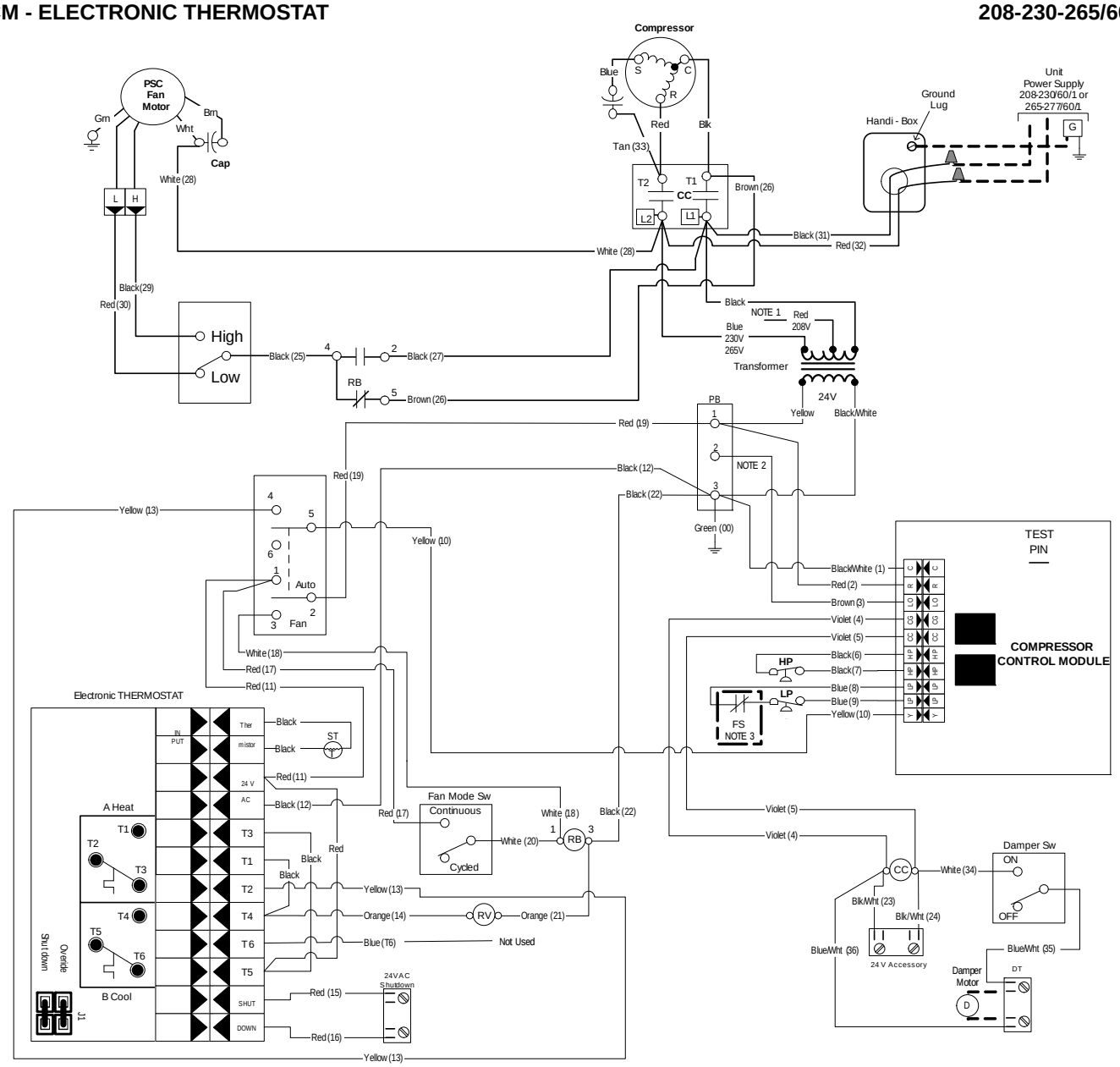
Performance capacities shown in thousands of Btuh.

EWT °F	Flow Rate GPM	Water Pressure Drop		HEATING - EAT 70 °F					COOLING - EAT 80/67 °F					
		PSI	FT/HD	HC kBtuh	Power kW	HE kBtuh	LAT °F	COP	TC kBtuh	SC kBtuh	S/T Ratio	Power kW	HR kBtuh	EER
20	3.0	1.8	4.1	Operation not recommended					Operation not recommended					
	4.0	4.2	9.7											
	5.5	8.0	18.5	13.0	1.20	8.9	92.0	3.16						
30	3.0	1.7	3.9	Operation not recommended					Operation not recommended					
	4.0	4.1	9.6	14.2	1.24	10.0	94.3	3.35	22.2	16.0	0.72	0.69	24.6	32.1
	5.5	7.9	18.2	14.3	1.25	10.1	94.5	3.36	22.5	16.3	0.72	0.65	24.7	34.6
40	3.0	1.7	3.8	15.5	1.26	11.2	96.7	3.60	Operation not recommended					
	4.0	4.1	9.4	15.8	1.27	11.5	97.3	3.65	21.3	15.5	0.72	0.79	24.1	26.9
	5.5	7.8	17.9	16.2	1.28	11.8	98.0	3.71	21.7	15.8	0.73	0.75	24.2	29.1
50	3.0	1.6	3.7	17.2	1.28	12.8	99.9	3.93	20.3	14.8	0.73	0.93	23.5	21.9
	4.0	4.0	9.2	17.6	1.29	13.2	100.5	3.98	20.5	14.9	0.73	0.89	23.5	23.0
	5.5	7.6	17.6	18.1	1.31	13.6	101.5	4.05	20.8	15.2	0.73	0.84	23.7	24.8
60	3.0	1.6	3.6	19.2	1.30	14.8	103.6	4.33	19.0	13.9	0.73	1.01	22.4	18.7
	4.0	3.9	9.1	19.7	1.32	15.2	104.4	4.37	19.2	14.1	0.73	0.97	22.5	19.7
	5.5	7.5	17.3	20.3	1.34	15.7	105.6	4.43	19.5	14.4	0.74	0.92	22.6	21.2
70	3.0	1.5	3.5	21.3	1.32	16.8	107.4	4.71	17.6	13.1	0.74	1.09	21.3	16.1
	4.0	3.9	8.9	21.8	1.34	17.2	108.3	4.75	17.8	13.2	0.74	1.06	21.5	16.9
	5.5	7.4	17.1	22.5	1.37	17.8	109.7	4.80	18.2	13.5	0.74	1.00	21.6	18.2
80	3.0	1.5	3.4	23.3	1.40	18.6	111.2	4.88	17.1	12.9	0.75	1.25	21.3	13.7
	4.0	3.8	8.8	23.7	1.41	18.9	111.9	4.92	17.4	13.1	0.75	1.19	21.5	14.7
	5.5	7.3	16.9	24.0	1.43	19.1	112.4	4.93	17.7	13.2	0.75	1.15	21.6	15.3
90	3.0	1.4	3.2	24.7	1.44	19.8	113.8	5.03	16.6	12.6	0.76	1.41	21.4	11.8
	4.0	3.7	8.6	25.1	1.46	20.1	114.5	5.04	16.9	12.8	0.76	1.34	21.5	12.6
	5.5	7.2	16.6	25.5	1.48	20.5	115.2	5.06	17.1	12.9	0.75	1.30	21.5	13.2
100	3.0	1.4	3.1	Operation not recommended					Operation not recommended					
	4.0	3.7	8.5						16.4	12.5	0.76	1.49	21.5	11.0
	5.5	7.1	16.3						16.6	12.6	0.76	1.44	21.5	11.5
110	3.0	1.3	3.0						Operation not recommended					
	4.0	3.6	8.3						15.8	12.1	0.77	1.62	21.3	9.7
	5.5	6.9	15.9						16.0	12.3	0.77	1.58	21.4	10.1
120	3.0	1.3	2.9						Operation not recommended					
	4.0	3.5	8.2						14.7	11.7	0.80	1.77	20.8	8.3
	5.5	6.8	15.7						15.0	11.9	0.79	1.72	20.9	8.7

Wiring Schematics

CCM - ELECTRONIC THERMOSTAT

208-230-265/60/1



Legend

Factory low voltage wiring Factory line voltage wiring Field low voltage wiring Field line voltage wiring Quick connect terminal Wire nut	CC - Compressor Contactor DT - Damper Terminal Block FS - Freeze Sensing Device HP - High Pressure Switch LP - Low Pressure Switch PB - Power Block RB - Blower Relay RV - Reversing Valve Coil ST - Entering Air Temperature Sensor	L1 Field wire lug Earth Ground Relay Contacts- N.O., N.C. P 3 2 1 Polarized connector	HP Switch - High Pressure LP Switch - Low Pressure Relay coil Capacitor T Thermistor Temperature Switch	Notes: 1. Switch Red and Blue wires for 208 volt operation 2. Terminal C of 24 V PB is used as "L" output for Brown wire 3 for Lockout. 3. Optional field installed freeze sensing device.

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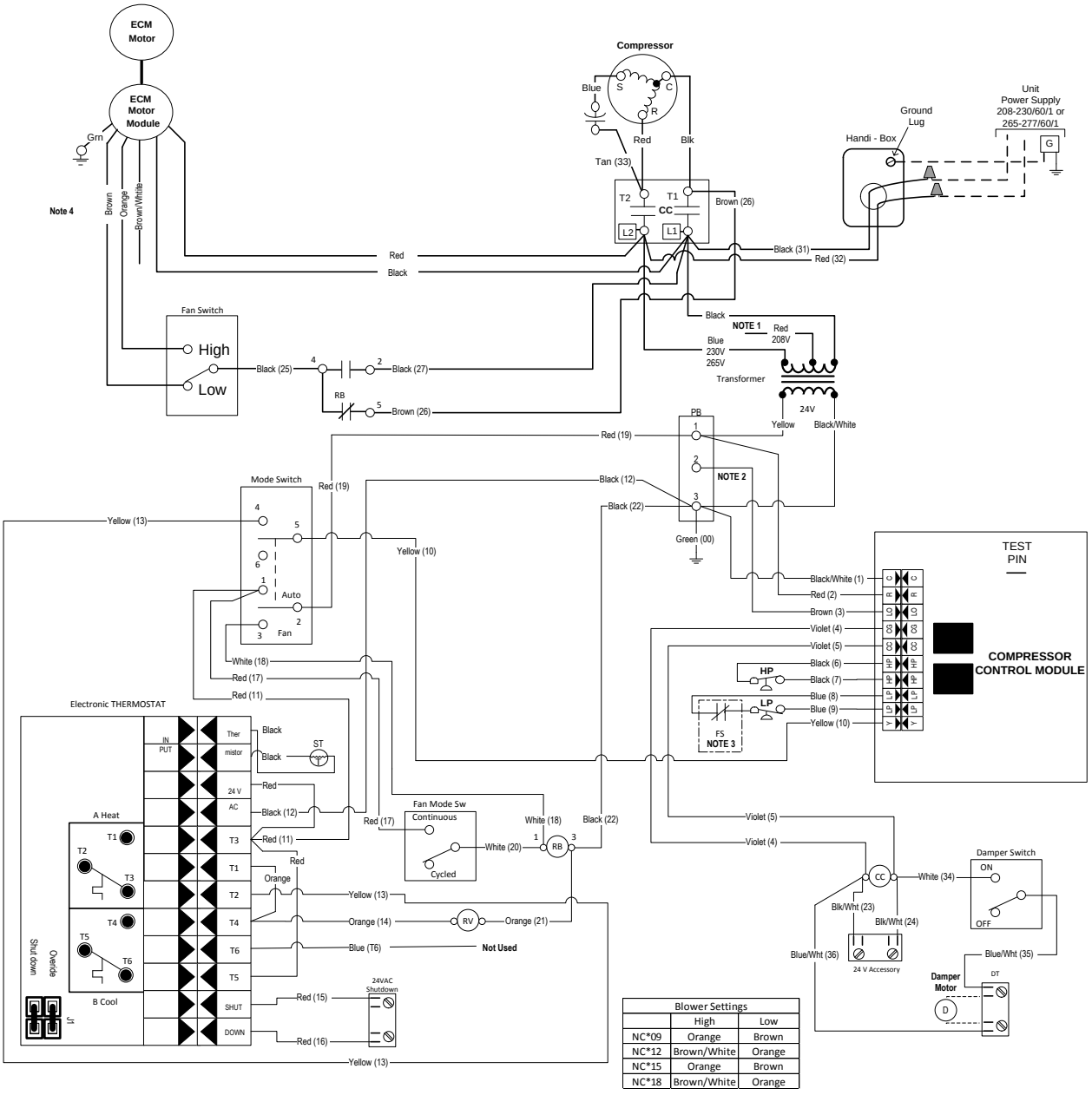
Wiring Schematics cont.

CCM w/ECM - ELECTRONIC THERMOSTAT

208-230-265/60/1



Blower Settings		
	High	Low
NC*09	Orange	Brown
NC*12	Brown/White	Orange
NC*15	Orange	Brown
NC*18	Brown/White	Orange

Legend

- Factory low voltage wiring
- Factory line voltage wiring
- Field low voltage wiring
- Field line voltage wiring
- Quick connect terminal
- Wire nut

CC - Compressor Contactor
DT - Damper Terminal Block
FS - Freeze Sensing Device
HP - High Pressure Switch
LP - Low Pressure Switch
PB - Power Block
RB - Blower Relay
RV - Reversing Valve Coil
ST - Entering Air Temperature Sensor

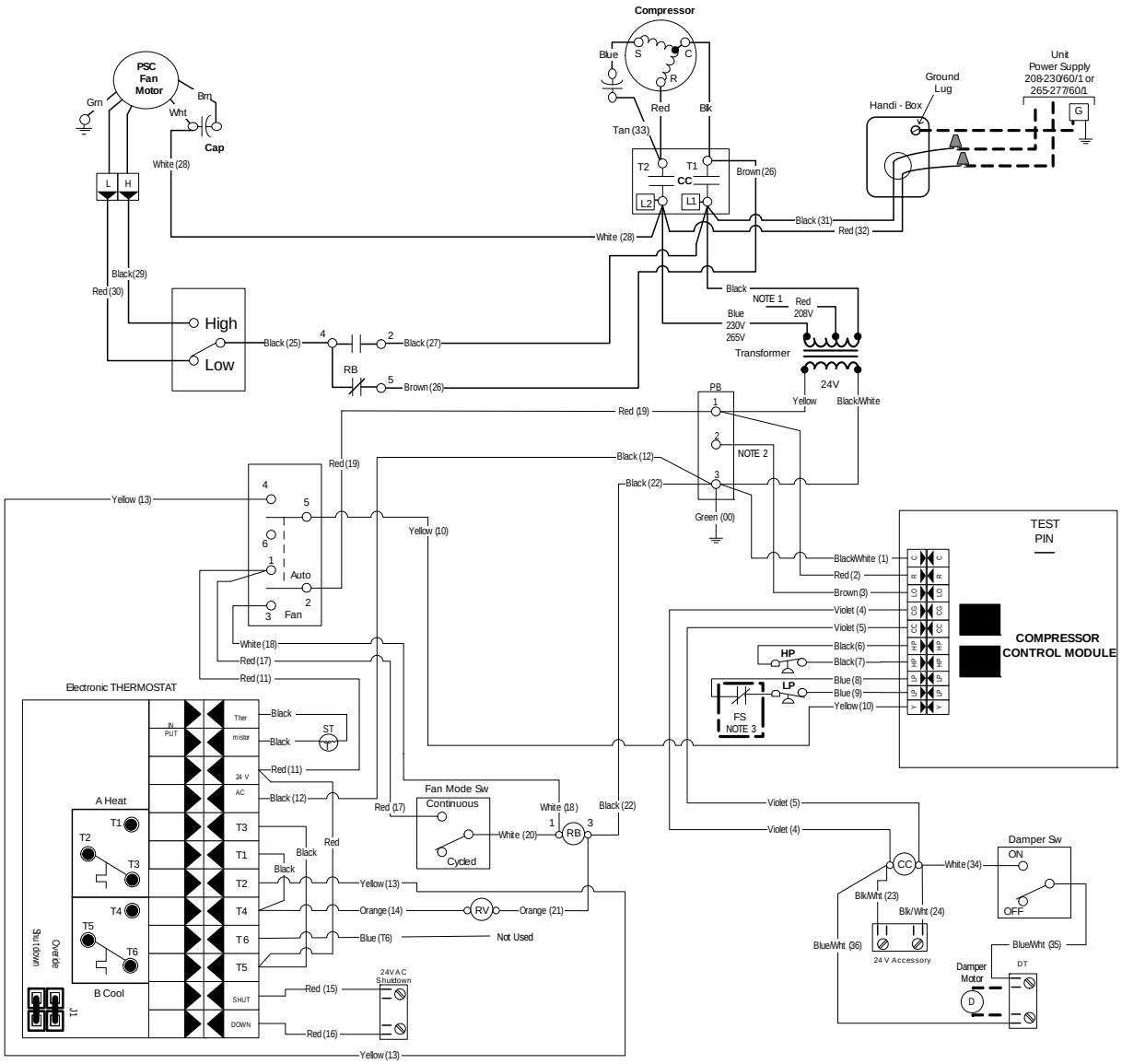
- L1 — Field wire lug
- Earth Ground
- Relay Contacts - N.O., N.C.
- P — Polarized connector
- HP — Switch - High Pressure
- LP — Switch - Low Pressure
- Relay coil
- Capacitor
- Thermistor
- Temperature Switch

Notes:

1. Switch Red and Blue wires for 208 volt operation
2. Terminal C of 24 V PB is used as "L" output for Brown wire 3 for Lockout.
3. Optional field installed freeze sensing device.
4. Factory wired. Refer to blower table settings.

Wiring Schematics cont.

CCM w/EH - ELECTRONIC THERMOSTAT **208-230-265/60/1**



Legend

- Factory low voltage wiring
- Factory line voltage wiring
- Field low voltage wiring
- Field line voltage wiring
- Quick connect terminal
- Wire nut

CC - Compressor Contactor
DT - Damper Terminal Block
FS - Freeze Sensing Device
HP - High Pressure Switch
LP - Low Pressure Switch
PB - Power Block
RB - Blower Relay
RV - Reversing Valve Coil
ST - Entering Air Temperature Sensor

- L1 — Field wire lug
- Earth Ground
- Relay Contacts- N.O., N.C.
- P — Polarized connector

- HP — Switch - High Pressure
- LP — Switch - Low Pressure
- Relay coil
- Capacitor
- Thermistor
- Temperature Switch

Notes:

1. Switch Red and Blue wires for 208 volt operation
2. Terminal C of 24 V PB is used as "L" output for Brown wire3 for Lockout
3. Optional field installed freeze sensing device.

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Wiring Schematics cont.

VERSATEC CONTROL - EH & REMOTE WALL THERMOSTAT

208-230-265/60/1

Legend for Schematic [A]

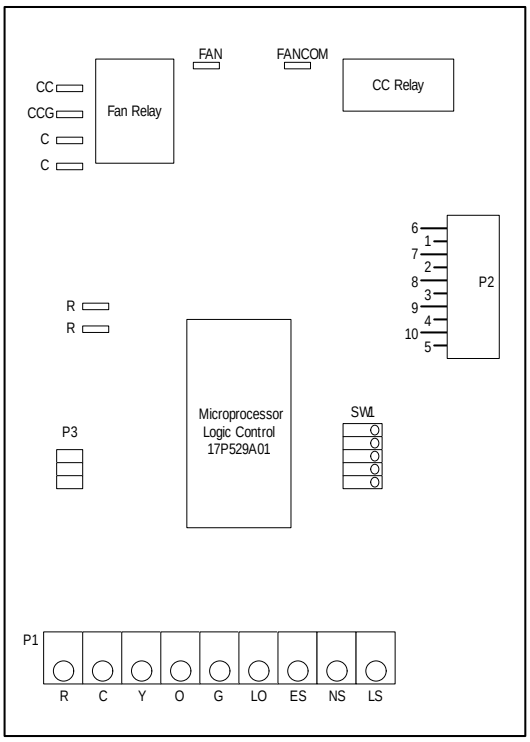
Normal Control Timing Table

Blower off delay	30 seconds
Compressor on delay	10 seconds
Short cycle delay	5 minutes
Minimum compressor on time	60 seconds (except for fault condition)
High pressure fault recognition delay	Less than 1 second
Low pressure fault recognition delay	30 seconds
Freeze sensing fault recognition delay	30 seconds
Condensate overflow fault recognition delay	30 seconds
Low pressure fault bypass delay	2 minutes
Freeze sensing fault bypass delay	2 minutes
Motorized valve delay	90 seconds
Random start delay	0 - 25 seconds

Test Control Timing Table

Blower off delay	5 seconds
Compressor on delay	2 seconds
Short cycle delay	15 seconds
Minimum compressor on time	5 seconds (except for fault condition)
High pressure fault recognition delay	Less than 1 second
Low pressure fault recognition delay	30 seconds
Freeze sensing fault recognition delay	30 seconds
Condensate overflow fault recognition delay	30 seconds
Low pressure fault bypass delay	0 seconds
Freeze sensing fault bypass delay	0 seconds
Motorized valve delay	90 seconds
Random start delay	0 seconds

Versatec Logic Board Physical Layout



LED Display Mode Table

LED	Normal Display Mode
	SW1 - #4 On, SW2 Off
Drain	Drain pan overflow lockout
Water Flow	FS thermistor (loop <15°F, well <30°F) lockout
High Press	High pressure >600 PSI lockout
Low Press	Low pressure < 40 PSI lockout
Air Flow	Not used
Status	Microprocessor malfunction*
DHW Limit	Not Used
HWD	SW2 status (Off = down position, On = up position)

Diagnostic Modes			
LED	Current Fault Status	Inputs	Outputs
	SW1- #4 On, SW2 On	SW1- #4 Off, SW2 Off	SW1- #4 Off, SW2 On
Drain	Drain pan overflow	Y	Compressor
Water Flow	FS thermistor (loop <15°F, well <30°F)	G	FAN
High Press	High pressure >600 PSI	O	O
Low Press	Low pressure < 40 PSI	ES	ES
Air Flow	Not used	NS	NS
Status	Not used	LS	LS
DHW Limit	Not used	Not Used	Not Used
HWD	SW2 in the On position	Off position	On position

*Flashing Status light indicates microprocessor is functioning properly Solid "on" indicates a microprocessor malfunction.

Logic Board DIP Switch Settings

Switch	OFF	ON
SW1 - 1	Test - Selected timings sped up to facilitate troubleshooting	Normal - Standard timings
SW1 - 2	Loop - Closed loop freeze sensing setting (15°F)	Well - Open loop freeze sensing setting (30°F)
SW1 - 3	Enables NS features	Normal - Standard thermostat operation
SW1 - 4	IO Display * - Enables Input/Output display on external LED board*	Normal * - Unit status display
SW1 - 5	Motorized Valve - 1.5 minute compressor on delay	Normal - Standard delay on call from compressor used
SW2	OFF * - Normal or Input display mode activated	ON * - Current fault or Output display mode activated

*Refer to LED Display Mode table for position of SW1-4 and SW2

Operational Logic Table

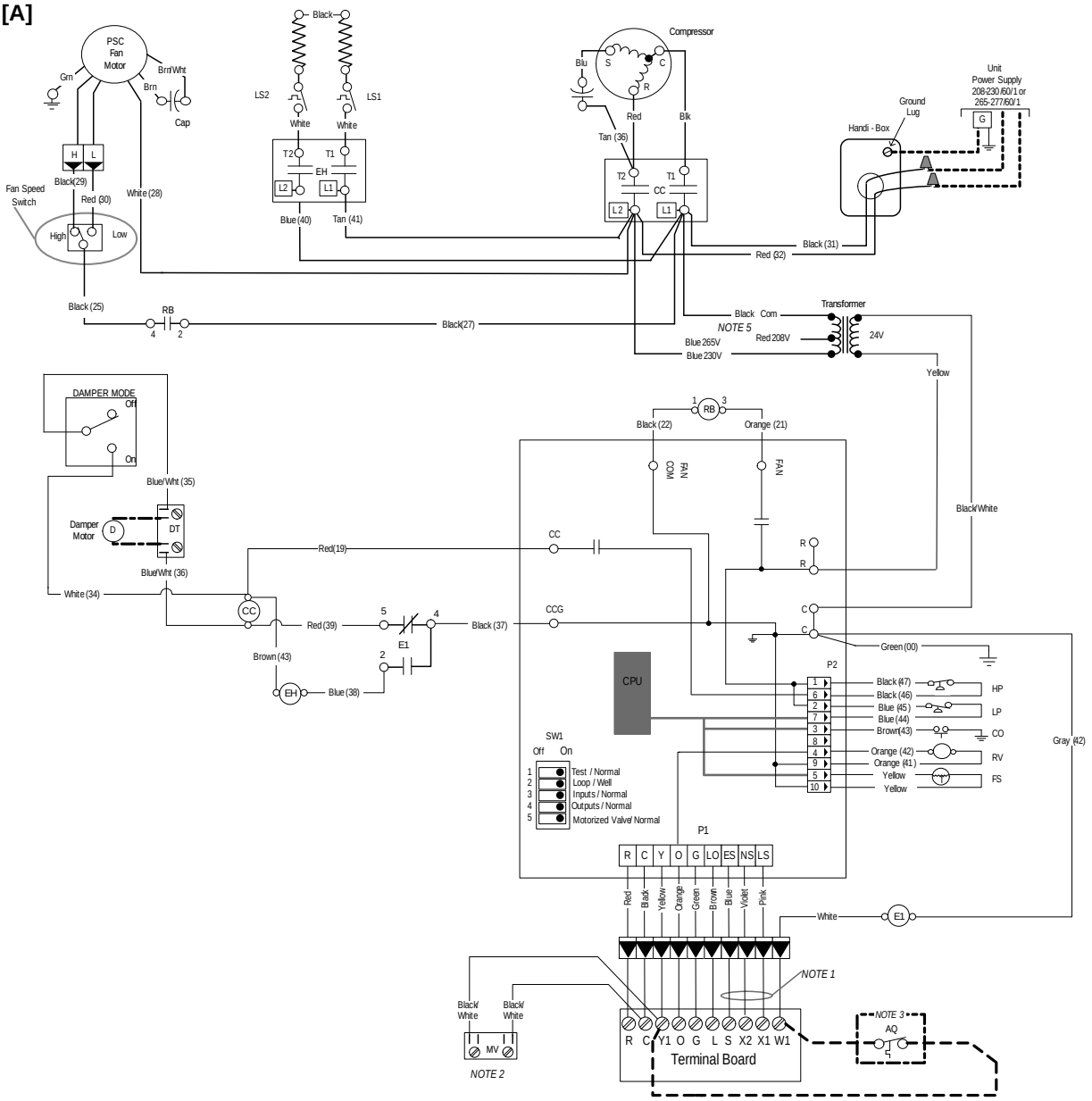
Mode	Inputs	Fan	Comp	RV
Htg	Y	ON	ON	OFF
Clg	Y,O	ON	ON	ON
Fan	G	ON	OFF	OFF

Wiring Schematics cont.

VERSATEC CONTROL - EH & REMOTE WALL THERMOSTAT

208-230-265/60/1

Schematic [A]



Legend

Factory low voltage wiring Factory line voltage wiring Field low voltage wiring Field line voltage wiring DC voltage PCB traces Internal junction Quick connect terminal Wire nut L1 Field wire lug Ground	Relay Contacts N.O., N.C. Thermistor Relay coil	Switch - High pressure Switch - Low pressure P Polarized connector Condensate Overflow	AQ – Aquastat CC – Compressor Contactor CO – Condensate Overflow DT – Damper Terminal Block E1 – Electric Heat Relay EH – Electric Heat Contactor ES – Emergency Shutdown FS – Freeze Sensing Device HP – High Pressure Switch LP – Low Pressure Switch LS – Loadshed MV – Motorized Valve NS – Night Setback RB – Blower Power Relay RV – Reversing Valve Coil SW1 – DIP Switch #1	Notes 1 - Requires common connection or24 VAC for activation. 2 - When field installed 24VAC motorized valve is used connect to C and Y or SV terminals 3 - Optional field installed aquastat for use with single heat 4 - Check installation wiring information for specific thermostat hookup instructions 5 - Switch blue and red wires for208/ operation.

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Engineering Guide Specifications

General

Furnish and install York Water Source Heat Pumps, as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Chassis shall be installed with factory built cabinet or other approved custom cabinet. Chassis SHALL NOT be installed without an approved cabinet enclosure. Capacities and characteristics as listed in the schedule and the specifications that follow. The reverse cycle heating/cooling units shall be floor mounted console type with horizontal air inlet and up-flow 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].

Chassis & Cabinet

The cabinet shall be fabricated from heavy-gauge galvanized steel and finished with a beige textured epoxy powder coating on both sides for added protection. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117.

The cabinet shall be easily removable to allow for ease of service to the controls compartment, chassis, and piping. The top of the cabinet and grille is a horizontally flat (optional sloped) surface with a hinged control door cover. The return air filter shall be 1” (25.4 mm) fiberglass disposable type media.

The return and supply air sections are insulated with a 1/4” (6.4 mm) thick, dual density, 2 lb/ft3 (32 kg/m3) coated mat glass fiber with edges sealed or tucked under flanges to prevent the introduction of glass fibers into the discharge supply air through the aluminum grille. 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.

Option: A Super Quiet Sound package shall include multi-density full coverage compressor blanket.

Option: Shipped with motorized outside air damper and damper assembly for 25% make-up air.

The drain pan shall be of stainless steel construction to inhibit corrosion and bacterial growth. Drain outlet shall be located on pan as to allow complete and unobstructed drainage of condensate. The unit as standard will be supplied with solid-state electronic condensate overflow protection with microprocessor. Mechanical float switches WILL NOT be accepted. Condensate tube shall be constructed of stainless steel and have an internal factory installed condensate trap.

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, bi-directional thermostatic expansion valve, finned tube air-to-refrigerant heat exchanger, reversing valve, coaxial tube water-to-refrigerant heat exchanger, and service ports.

Compressors shall be high-efficiency single speed rotary type designed for heat pump duty and mounted on durometer grommets to provide vibration free compressor mounting. Compressor motors shall be single-phase PSC with external overload protection.

The air coil shall be sized for low-face velocity and constructed of lanced aluminum fins bonded to rifled aluminum tubes in a staggered pattern not less than three rows deep for enhanced performance.

Option: AlumiSeal electro-coated air coil.

The coaxial water-to-refrigerant heat exchanger shall be designed for low water pressure drop and constructed of a convoluted copper (cupronickel option) inner tube and a steel outer tube. Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled aluminum 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 bi-directionally without the use of check valves.

Option: Cupro-nickel 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. Water lines shall also be of cupronickel construction.

Option: ThermaShield coated water-to-refrigerant heat exchanger, water lines and refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures below 50°F.

Blower Motor & Assembly

The blower shall be a direct drive centrifugal type with a twin dynamically balanced wheel. The housing and wheel shall be designed for quiet, low outlet velocity operation. The blower housing shall be constructed of galvanized steel and shall be removable from the unit for servicing of the blower motor. The blower motor shall be a two-speed type and shall be isolated from the housing by rubber grommets. The motor shall be permanently lubricated and have thermal overload protection.

Engineering Guide Specifications cont.

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, and solid-state controller for complete unit operation. 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.

Unit mounted controls shall consist of switches for “OFF”, “FAN”, and “AUTO” or “HEAT/COOL”. An additional switch is provided for blower speed setting of “HI” or “LO”. The unit shall be equipped with a blower switch on the side of the control to provide “CONTINUOUS” or “CYCLED” blower operation. “CYCLED” blower will turn the blower on with the compressor. A unit-mounted electronic thermostat with a remote electronic thermistor located in the return air will control compressor operation in heating and cooling modes. Unit mounted thermostat shall be the standard thermostat option. All unit mounted thermostats shall be auto changeover. Manual changeover WILL NOT be accepted. Electromechanical operation WILL NOT be accepted.

Controls

Standard: A compressor control module (CCM) shall be included to disable compressor operation in the event of a trip of any of the safety switches and to send a signal to activate a fault indicator light at the thermostat. The CCM shall be capable of being reset from the thermostat or from the unit main disconnect switch. A terminal block with screw terminals shall be provided for field connection of all low-voltage wiring.

Option: Versatec microprocessor-based controller will provide operational sequencing; high and low pressure switch monitoring, freeze detection, lockout mode control, emergency shutdown mode, random start, short cycle protection, LED mode and fault indicators, fault memory, input and output diagnostics, and field selectable options, and condensate overflow sensing.

Option: Remote mounted thermostat is available for CCM & Versatec. A terminal block with screw terminals will be provided for field control wiring.

Piping

Supply and return water connections shall be 1/2 in. [12.7 mm] FPT copper threaded fittings. All water piping shall be insulated to prevent condensation at low liquid temperatures.

A stainless steel tube stubbed out from the chassis is provided for condensate drain attachment. A short piece of polyvinyl hose is supplied to assist in adapting to drain.

Accessories

Hose Kits – Ball Valves (field-installed)

A flexible steel braid hose featuring Kevlar® reinforced EPDM core with ANSI 302/304 stainless steel outer braid and fire rated materials per ASTM E 84-00 (NFPA 255, ANSI/UL 723 & UBC 8-1). Ball valve at one end; swivel connector with adapter at the other end (swivel to adapter connection via fiber or EPDM gasket). Swivel connection provides union between heat pump and piping system. The hoses feature brass fittings, stainless steel ferrules. A full port ball valve shall be provided with integral P/T (pressure/temperature) port on supply hose. Specifications: Temperature range of 35°F [2°C] to 180°F [82°C]. Max. working pressure of 400 psi [2757 kPa] for 1/2˝ and 3/4˝ hose kits; max. working pressure of 350 psi [kPa] for 1˝ and 1-1/4˝ hose kits.

Hose Kits - Automatic Balancing and Ball Valves (field-installed)

A flexible steel braid hose featuring Kevlar® reinforced EPDM core with ANSI 302/304 stainless steel outer braid and fire rated materials per ASTM E 84-00 (NFPA 255, ANSI/UL 723 & UBC 8-1). Ball valve at one end; swivel connector with adapter at the other end (swivel to adapter connection via fiber or EPDM gasket). Swivel connection provides union between heat pump and piping system. The hoses feature brass fittings, stainless steel ferrules. A full port ball valve shall be provided with integral P/T (pressure/temperature) port on supply hose and automatic balancing valve with integral P/T ports and full port ball valve on return hose.
Specifications:

- Temperature range of 35°F [2°C] to 180°F [82°C].
- Max. working pressure of 400 psi [2757 kPa] for 1/2˝ and 3/4˝ hose kits; max. working pressure of 350 psi [2413 kPa] for 1˝ and 1-1/4˝ hose kits.
- Minimum burst pressure of four times working pressure.

Engineering Guide Specifications cont.

Hose Kits – Automatic Balancing and Ball Valves with 'Y' strainer (field-installed)

A flexible steel braid hose featuring Kevlar® reinforced EPDM core with ANSI 302/304 stainless steel outer braid and fire rated materials per ASTM E 84-00 (NFPA 255, ANSI/UL 723 & UBC 8-1). Ball valve at one end; swivel connector with adapter at the other end (swivel to adapter connection via fiber or EPDM gasket). Swivel connection provides union between heat pump and piping system. The hoses feature brass fittings, stainless steel ferrules. A "y" strainer is provided on one end for fluid straining and integral "blowdown" valve.. A full port ball valve shall be provided with integral P/T (pressure/temperature) port on supply hose and automatic balancing valve with integral P/T ports and full port ball valve on return hose.

Specifications:

- Temperature range of 35°F [2°C] to 180°F [82°C].
- Max. working pressure of 400 psi [2757 kPa] for 1/2˝ and 3/4˝ hose kits; max. working pressure of 350 psi [2413 kPa] for 1˝ and 1-1/4˝ hose kits.
- Minimum burst pressure of four times working pressure.

Auxiliary Heater (field-installed 208-230V units only)

An electric resistance heater shall provide supplemental and/or emergency heating capability. A manual switch shall be mounted on the side of the control compartment with "NORMAL" or "BOILERLESS" mode. "NORMAL" will run the compressor when there is a call for heating or cooling. "BOILERLESS" mode operation will run electric heat whenever there is a call for heating and run the compressor for a cooling call.

Revision Guide

Pages:	Description:	Date:	By:
All	Updated with All-Aluminum Air Coils	10 Mar 2014	DS
All	First Published	30 Oct 2013	DS