



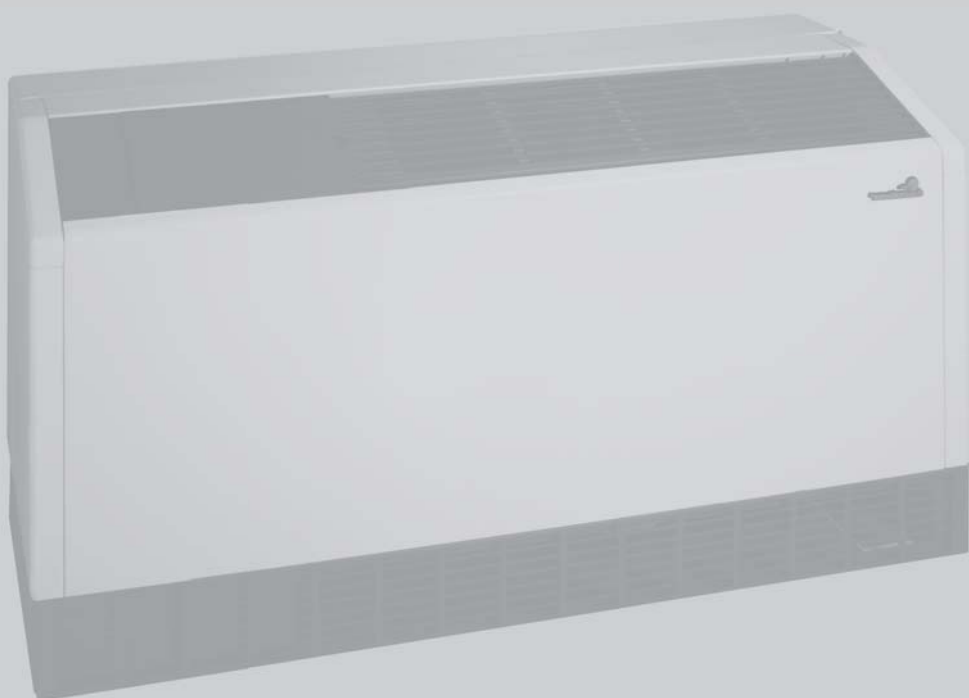
## TRANQUILITY CONSOLE (TRC) SERIES



SIZE 06 - 18 (1.8kW - 5.3kW)  
CONSOLES  
R410A - 60Hz STANDARD & EXTENDED RANGE



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## TRANQUILITY CONSOLE (TRC) SERIES WITH EARTHPURE® REFRIGERANT

The Tranquility series (TRC) console unit provides a high efficiency WSHP “ductless” solution for spaces where individual, quiet control of the heating and cooling system is important. TRC units are especially ideal where ceiling height and space are limited, or when preserving the integrity of an existing structure. The TRC series exceeds ASHRAE 90.1 efficiencies, yet maintains small cabinet dimensions. Using EarthPure refrigerant, the Tranquility console not only protects the environment, it does so while delivering unprecedented comfort, efficiency, and reliability.

Available in sizes 1/2 ton (1.76 kW) through 1-1/2 tons (5.3 kW) with numerous cabinet, water piping and control choices, the TRC series offers a wide range of units for most any installation. The TRC has an extended range refrigerant circuit, capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Microprocessor controls, galvanized steel cabinet, polyester powder coat paint and TXV refrigerant metering device are just some of the features of the flexible TRC series.

ClimateMaster’s exclusive double isolation compressor mounting system makes the TRC series one of the quietest console units on the market. Compressors are mounted on vibration isolation springs to a heavy gauge mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration/sound attenuation. Options such as e-coated air coil, DDC controls, internal pump and factory-installed water solenoid valves allow customized design solutions.

The TRC Series console water-source heat pumps are designed to meet the challenges of today’s HVAC demands with a low cost/high value “ductless” solution.

## UNIT FEATURES

- Sizes 06 (1/2 ton, 1.76 kW) through 18 (1-1/2 ton, 5.3 kW)
- Environmentally-friendly EarthPure® (HFC-410A) zero ozone depletion refrigerant
- High Efficiency Rotary compressors
- Exceeds ASHRAE 90.1 efficiencies
- Two-piece chassis/cabinet design
- Galvanized steel cabinet with durable Polar Ice powder coat finish and black “matte” finish on subbase
- Slope top/aluminum rigid bar supply air grille
- Unique double isolation compressor mounting for quiet operation
- TXV metering device
- Extended range (20 to 120°F, -6.7 to 48.9°C) operation
- Advanced digital auto or manual-change-over unit mounted controls with temperature display and fault indication
- Remote-mounted controls available
- Microprocessor controls standard (optional DXM and/or DDC controls)
- LonWorks, BACnet, Modbus and Johnson N2 compatibility options for DDC controls
- Right or left-hand piping arrangement
- Front or bottom return
- Unit Performance Sentinel™ performance monitoring system
- Eight Safeties Standard
- Wide variety of options including e-coated air coils and internal pumps

## Selection Procedure

## Reference Calculations

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

## Legend and Glossary of Abbreviations

BTUH = BTU( British Thermal Unit) per hour	HWC = hot water generator (desuperheater) capacity, Mbtuh
CFM = airflow, cubic feet/minute	IPT = internal pipe thread
COP = coefficient of performance = BTUH output/BTUH input	KW = total power unit input, kilowatts
DB = dry bulb temperature (°F)	LAT = leaving air temperature, °F
EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)	LC = latent cooling capacity, BTUH
EER = energy efficiency ratio = BTUH output/Watt input	LWT = leaving water temperature, °F
EPT = external pipe thread	MBTUH = 1000 BTU per hour
ESP = external static pressure (inches w.g.)	S/T = sensible to total cooling ratio
EWT = entering water temperature	SC = sensible cooling capacity, BTUH
GPM = water flow in U.S. gallons/minute	TC = total cooling capacity, BTUH
HE = total heat of extraction, BTUH	WB = wet bulb temperature (°F)
HC = air heating capacity, BTUH	WPD = waterside pressure drop (psi & ft. of hd.)
HR = total heat of rejection, BTUH	

## Conversion Table - to convert inch-pound (English) to SI (Metric)

Air Flow	Water Flow	Ext Static Pressure	Water Pressure Drop
Airflow (L/s) = CFM x 0.472	Water Flow (L/s) = gpm x 0.0631	ESP (Pa) = ESP (in of wg) x 249	PD (kPa) = PD (ft of hd) x 2.99

## Selection Procedure

- Step 1 Determine the actual heating and cooling loads at the desired dry bulb and wet bulb conditions.
- Step 2 Obtain the following design parameters: Entering water temperature, water flow rate in GPM, air flow in CFM, water flow pressure drop and design wet and dry bulb temperatures. Air flow CFM should be between 300 and 450 CFM per ton. Unit water pressure drop should be kept as close as possible to each other to make water balancing easier. Go to the appropriate tables and find the proper indicated water flow and water temperature.
- Step 3 Select a unit based on total and sensible cooling conditions. Select a unit which is closest to, but no larger than, the actual cooling load.
- Step 4 Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities (Note: interpolation is permissible, extrapolation is not).
- Step 5 Read the heating capacity. If it exceeds the design criteria it is acceptable. It is quite normal for Water-Source Heat Pumps to be selected on cooling capacity only since the heating output is usually greater than the cooling capacity.
- Step 6 Determine the correction factors associated with the variable factors of dry bulb and wet bulb (page 14).
- Corrected Total Cooling = tabulated total cooling x wet bulb correction.  
Corrected Sensible Cooling = tabulated sensible cooling x wet/dry bulb correction.
- Step 7 Compare the corrected capacities to the load requirements. Normally if the capacities are within 10% of the loads, the equipment is acceptable. It is better to undersize than oversize, as undersizing improves humidity control, reduces sound levels and extends the life of the equipment.
- Step 8 When completed, calculate water temperature rise and assess the selection. If the units selected are not within 10% of the load calculations, then review what effect changing the GPM, water temperature and/or air flow and air temperature would have on the corrected capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure. Remember, when in doubt, undersize slightly for best performance.

## Example Equipment Selection For Cooling

## Step 1 Load Determination:

Assume we have determined that the appropriate cooling load at the desired dry bulb 80°F and wet bulb 65°F conditions is as follows:

Total Cooling ..... 10,200 BTUH  
Sensible Cooling ..... 8,350 BTUH  
Entering Air Temp ..... 80°F Dry Bulb / 65°F Wet Bulb

## Step 2 Design Conditions:

Similarly, we have also obtained the following design parameters:

Entering Water Temp ..... 90°F  
Water Flow (Based upon 12°F rise in temp.) 2.3 GPM  
Air Flow ..... 350 CFM

## Step 3, 4 &amp; 5 HP Selection:

After making our preliminary selection (TRC12), we enter the tables at design water flow and water temperature and read Total Cooling, Sens. Cooling and Heat of Rej. capacities:

Total Cooling ..... 10,800 BTUH  
Sensible Cooling ..... 9,200 BTUH  
Heat of Rejection ..... 13,900 BTUH

## Step 6 &amp; 7 Entering Air and Airflow Corrections:

Next, we determine our correction factors.

	Table	Ent Air	Air Flow	Corrected
Corrected Total Cooling =	10,800 x	0.976 x	0.954 =	10,056
Corrected Sens Cooling =	9,200 x	1.071 x	0.927 =	9,134
Corrected Heat of Reject =	13,900 x	0.979 x	0.958 =	13,037

## Step 8 Water Temperature Rise Calculation &amp; Assessment:

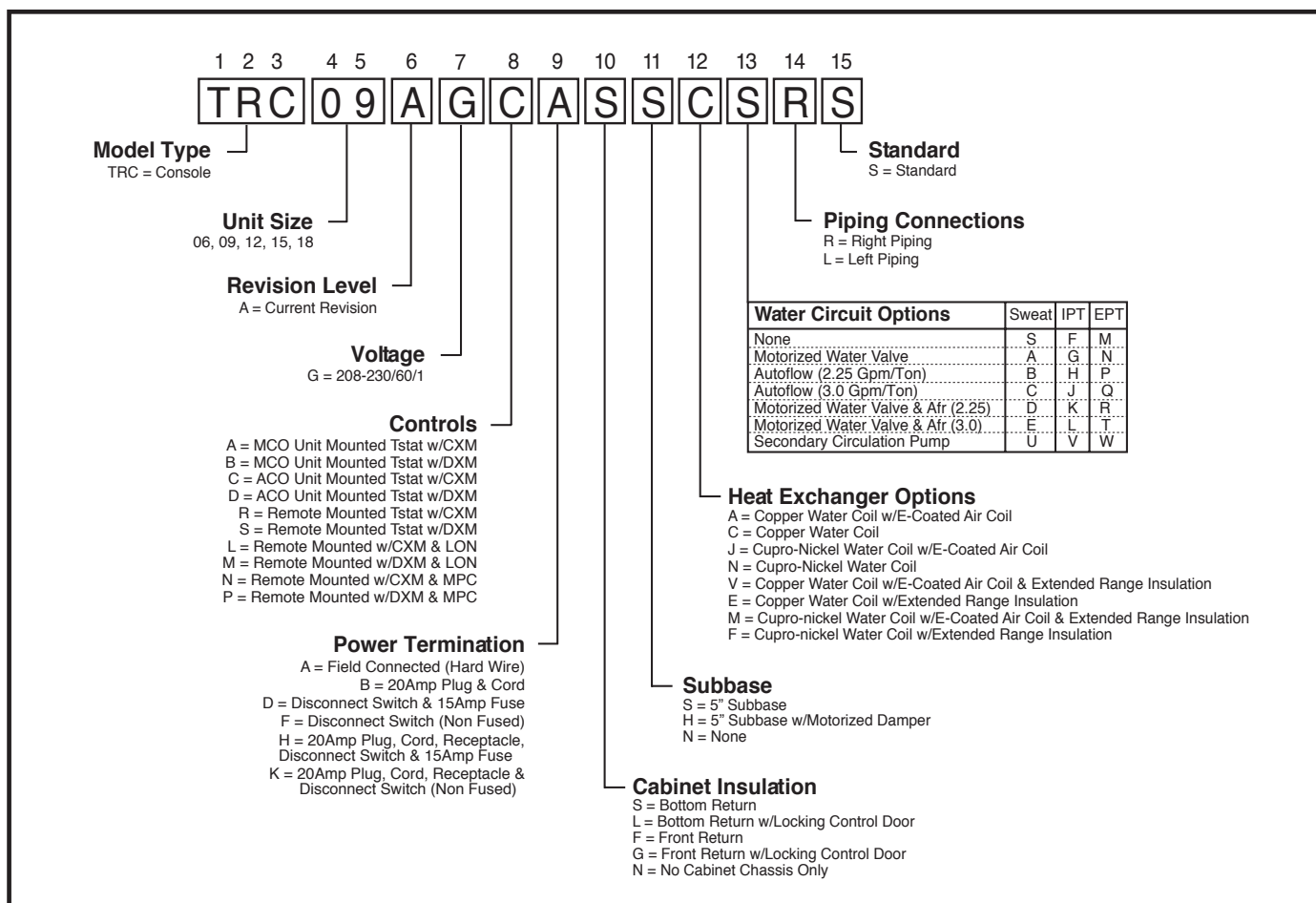
Actual  
Temperature Rise ..... 11.3°F

When we compare the Corrected Total Cooling and Corrected Sensible Cooling figures with our load requirements stated in Step 1, we discover that our selection is within +/- 10% of our sensible load requirement. Furthermore, we see that our Corrected Total Cooling figure is slightly undersized as recommended, when compared to the actual indicated load.

## Tranquility Console (TRC) Series

Rev.: 05/23/07D

## TRC Series Nomenclature



Rev.: 12/15/06D

## Performance Data ARI/ASHRAE/ISO 13256-1

ASHRAE/ARI/ISO 13256-1. English (IP) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F	
	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
TRC06	Data not available at time of publication.											
TRC09	8,600	13.3	11,400	4.6	9,200	18.6	9,500	4.0	8,800	14.9	7,300	3.3
TRC12	11,300	13.3	14,900	4.9	12,500	18.7	12,100	4.1	11,800	15.1	9,300	3.7
TRC15	14,100	13.5	18,200	5.1	16,600	21.3	14,800	4.3	15,100	15.8	11,400	3.5
TRC18	16,200	13.0	20,100	4.5	17,600	19.5	16,500	4.0	16,500	15.0	13,200	3.4

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 air flow is rated on high speed, Units factory shipped on medium and low motor taps.

All ratings based upon operation at lower voltage of dual voltage rated models

ASHRAE/ARI/ISO 13256-1. Metric (SI) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Cooling 25°C		Heating 0°C	
	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP
TRC06	Data not available at time of publication.											
TRC09	2,521	3.9	3,341	4.6	2,696	5.5	2,784	4.0	2,579	4.4	2,140	3.3
TRC12	3,312	3.9	4,367	4.9	3,664	5.5	3,546	4.1	3,458	4.4	2,726	3.7
TRC15	4,132	4.0	5,334	5.1	4,865	6.2	4,338	4.3	4,426	4.6	3,341	3.5
TRC18	4,572	3.8	5,891	4.5	5,158	5.7	4,836	4.0	4,836	4.4	3,869	3.4

Cooling capacities based upon 27°C DB, 19°C WB entering air temperature

Heating capacities based upon 20°C DB, 15°C WB entering air temperature

All air flow is rated on high speed, Units factory shipped on medium and low motor taps.

All ratings based upon operation at lower voltage of dual voltage rated models



## Performance Data Selection Notes

For operation in the shaded area when water is used in lieu of an anti-freeze solution, the LWT (Leaving Water Temperature) must be calculated. Flow must be maintained to a level such that the LWT is maintained above 42°F [5.6°C] when the JW3 jumper is not clipped (see example below). This is due to the potential of the refrigerant temperature being as low as 32°F [0°C] with 40°F [4.4°C] LWT, which may lead to a nuisance cutout due to the activation of the Low Temperature Protection. JW3 should never be clipped for standard range equipment or systems without antifreeze.

### Example:

At 50°F EWT (Entering Water Temperature) and 1.5 gpm/ton, a 3 ton unit has a HE of 22,500 Btuh. To calculate LWT, rearrange the formula for HE as follows:

$HE = TD \times GPM \times 500$ , where HE = Heat of Extraction (Btuh); TD = temperature difference (EWT - LWT) and GPM = U.S. Gallons per Minute.

$$TD = HE / (GPM \times 500)$$

$$TD = 22,500 / (4.5 \times 500)$$

$$TD = 10^\circ\text{F}$$

$$LWT = EWT - TD$$

$$LWT = 50 - 10 = 40^\circ\text{F}$$

In this example, a higher flow rate will be required for EWTs at or below 50°F without antifreeze. At 2 gpm/ton, the calculation above results in a TD of 7.5.  $LWT = 50 - 7.5 = 42.5^\circ\text{F}$ , which is above 42°F EWT, and is acceptable for this application.

		Heating - EAT 70°F				
	EER	HC	kW	HE	LAT	COP
10.9	26.7	5.5	0.50	3.8	91.0	3.22
10.9	29.9	6.0	0.51	4.3	93.1	3.44
10.9	31.7	6.3	0.52	4.5	94.1	3.55
10.8	22.9	6.4	0.52	4.7	94.8	3.62
10.9	25.8	6.9	0.53	5.1	96.5	3.79
9.9	27.4	7.2	0.54	5.4	97.9	3.91
19.6		7.4	0.55	5.6	98.6	3.97
22.1		7.8	0.56	5.9	100.0	4.10
		8.2	0.57	6.3	101.6	4.23
		8.4	0.57	6.5	102.4	4.30
		7	0.58	6.7	103.6	4.2



**Performance Data**  
**TRC06**

Data for this model was not available at time of publication.

## CLIMATEMASTER WATER-SOURCE HEAT PUMPS

## Tranquility Console (TRC) Series

Rev.: 05/23/07D

Performance Data  
TRC09

350 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

*WPD Adder for Motorized Valve, TRC09 (Cv = 4.9, MOPD = 125 psi)			EWT °F	GPM	WPD*		Cooling - EAT 80/67°F						Heating - EAT 70°F							
					PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP			
			Operation Not Recommended																	
GPM			WPD Adder	30	1.1	1.6	3.7	9.2	6.7	0.73	0.44	10.7	20.6	6.9	0.69	4.6	88.2	2.94		
					PSI	FT	1.6	2.6	6.0	8.9	6.6	0.74	0.43	10.4	20.7	7.2	0.69	4.8	89.0	3.04
							2.2	4.5	10.4	8.8	6.5	0.74	0.43	10.2	20.6	7.3	0.69	5.0	89.4	3.11
1.1	0.3	0.6	40	1.1	1.4	3.2	9.4	6.9	0.73	0.47	11.1	19.9	7.9	0.70	5.5	90.9	3.29			
1.6	0.6	1.3		1.6	2.3	5.3	9.3	6.8	0.73	0.45	10.9	20.5	8.3	0.71	5.9	91.8	3.41			
2.2	1.2	2.7		2.2	4.2	9.7	9.2	6.7	0.73	0.45	10.7	20.6	8.5	0.71	6.1	92.4	3.48			
			50	1.1	1.2	2.8	9.5	7.0	0.74	0.51	11.3	18.5	8.9	0.72	6.5	93.7	3.63			
				1.6	2.2	5.1	9.5	6.9	0.73	0.49	11.1	19.5	9.3	0.73	6.9	94.7	3.76			
				2.2	3.8	8.8	9.4	6.9	0.73	0.47	11.1	19.9	9.6	0.73	7.1	95.4	3.84			
			60	1.1	1.1	2.5	9.4	7.1	0.76	0.56	11.3	16.7	10.0	0.74	7.5	96.4	3.95			
				1.6	2.1	4.9	9.5	7.0	0.74	0.53	11.3	17.9	10.4	0.75	7.9	97.6	4.08			
				2.2	3.7	8.5	9.5	7.0	0.74	0.51	11.2	18.6	10.7	0.75	8.1	98.3	4.16			
			70	1.1	1.0	2.3	9.0	7.1	0.79	0.62	11.2	14.5	11.0	0.76	8.4	99.0	4.23			
				1.6	2.0	4.6	9.3	7.1	0.77	0.58	11.3	15.9	11.4	0.77	8.8	100.2	4.36			
				2.2	3.5	8.1	9.4	7.1	0.76	0.56	11.3	16.7	11.7	0.77	9.1	101.0	4.43			
			80	1.1	1.0	2.3	8.5	7.0	0.82	0.69	10.9	12.3	11.9	0.78	9.2	101.4	4.47			
				1.6	1.9	4.4	8.8	7.1	0.80	0.65	11.1	13.7	12.3	0.79	9.6	102.6	4.58			
				2.2	3.2	7.4	9.0	7.1	0.79	0.62	11.2	14.5	12.6	0.80	9.9	103.4	4.64			
			85	1.1	1.0	2.2	8.1	6.9	0.84	0.73	10.6	11.1	12.3	0.79	9.6	102.5	4.56			
				1.6	1.9	4.4	8.5	7.0	0.82	0.68	10.9	12.5	12.7	0.80	10.0	103.6	4.66			
				2.2	3.1	7.2	8.8	7.0	0.80	0.66	11.0	13.3	13.0	0.81	10.2	104.3	4.71			
			90	1.1	0.9	2.1	7.8	6.7	0.87	0.77	10.4	10.1	12.7	0.80	10.0	103.5	4.66			
				1.6	1.9	4.4	8.2	6.9	0.84	0.72	10.7	11.4	13.1	0.81	10.3	104.6	4.74			
				2.2	3.0	6.9	8.5	7.0	0.82	0.69	10.9	12.2	13.3	0.82	10.5	105.2	4.77			
			100	1.1	0.9	2.1	6.9	6.3	0.91	0.86	9.8	7.9	Operation Not Recommended							
				1.6	1.8	4.2	7.4	6.6	0.89	0.81	10.2	9.1								
				2.2	2.9	6.7	7.7	6.7	0.87	0.78	10.4	9.9								
			110	1.1	0.9	2.1	5.8	5.6	0.97	0.96	9.1	6.0								
				1.6	1.8	4.2	6.4	6.0	0.94	0.91	9.5	7.0								
				2.2	2.9	6.7	6.7	6.2	0.92	0.87	9.7	7.7								
120	1.1	0.9	2.1	4.5	4.6	1.00	1.07	8.2	4.2											
	1.6	1.8	4.2	5.1	5.1	1.00	1.02	8.6	5.0											
	2.2	2.8	6.5	5.5	5.4	0.98	0.98	8.9	5.6											

Performance Data  
TRC12

450 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

*WPD Adder for Motorized Valve, TRC12 (Cv = 4.9, MOPD = 125 psi)			EWT °F	GPM	WPD*		Cooling - EAT 80/67°F						Heating - EAT 70°F				
					PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
GPM      WPD Adder PSI      FT			20	3.0	7.8	18.0	Operation Not Recommended						7.3	0.79	4.7	85.1	2.71
			30	1.5	2.1	4.9	12.6	8.2	0.65	0.56	14.5	22.4	8.1	0.81	5.4	86.7	2.96
				2.3	4.5	10.4	12.4	8.0	0.65	0.53	14.2	23.3	8.5	0.81	5.7	87.5	3.06
				3.0	6.8	15.7	12.3	8.0	0.65	0.52	14.0	23.6	8.7	0.82	5.9	87.9	3.12
1.5      0.5      1.0 2.3      1.2      2.7 3.0      2.2      5.0			40	1.5	2.0	4.6	12.7	8.4	0.67	0.61	14.7	20.7	9.4	0.83	6.7	89.4	3.35
				2.3	4.2	9.7	12.6	8.2	0.65	0.58	14.6	21.9	9.9	0.83	7.1	90.4	3.48
				3.0	6.1	14.1	12.6	8.2	0.65	0.56	14.5	22.4	10.2	0.84	7.3	90.9	3.56
			50	1.5	1.8	4.2	12.5	8.7	0.70	0.67	14.8	18.7	10.8	0.85	8.0	92.3	3.74
				2.3	3.8	8.8	12.6	8.5	0.68	0.63	14.8	20.0	11.4	0.86	8.5	93.5	3.91
				3.0	5.8	13.4	12.7	8.4	0.67	0.61	14.7	20.7	11.7	0.86	8.8	94.1	4.00
			60	1.5	1.7	3.9	12.1	9.0	0.74	0.73	14.6	16.6	12.2	0.87	9.3	95.1	4.14
				2.3	3.7	8.5	12.4	8.8	0.71	0.69	14.7	17.9	12.9	0.87	9.9	96.5	4.32
				3.0	5.2	12.0	12.5	8.7	0.70	0.67	14.8	18.6	13.2	0.88	10.2	97.2	4.41
			70	1.5	1.5	3.5	11.6	9.2	0.79	0.80	14.4	14.5	13.6	0.88	10.6	97.9	4.50
				2.3	3.5	8.1	12.0	9.1	0.76	0.76	14.5	15.8	14.3	0.89	11.2	99.4	4.69
				3.0	4.9	11.3	12.1	9.0	0.74	0.73	14.6	16.5	14.6	0.90	11.6	100.1	4.79
			80	1.5	1.4	3.2	11.0	9.2	0.83	0.89	14.1	12.5	14.8	0.90	11.8	100.5	4.84
				2.3	3.2	7.4	11.4	9.2	0.81	0.83	14.3	13.7	15.5	0.91	12.4	101.9	5.01
				3.0	4.8	11.1	11.6	9.2	0.79	0.81	14.4	14.4	15.8	0.91	12.7	102.6	5.10
			85	1.5	1.4	3.1	10.7	9.1	0.85	0.93	13.9	11.5	15.4	0.90	12.3	101.6	4.98
				2.3	3.1	7.2	11.1	9.2	0.83	0.88	14.1	12.7	16.0	0.91	12.9	102.9	5.13
				3.0	4.7	10.7	11.3	9.2	0.81	0.85	14.2	13.4	16.3	0.92	13.1	103.5	5.20
			90	1.5	1.3	3.0	10.4	9.1	0.87	0.98	13.7	10.6	15.9	0.91	12.8	102.7	5.11
				2.3	3.0	6.9	10.8	9.2	0.85	0.92	13.9	11.7	16.5	0.92	13.3	103.9	5.25
				3.0	4.5	10.4	11.0	9.2	0.84	0.89	14.1	12.3	16.7	0.92	13.6	104.4	5.31
			100	1.5	1.3	3.0	9.7	8.7	0.90	1.08	13.4	9.0	Operation Not Recommended				
				2.3	2.9	6.7	10.1	9.0	0.88	1.02	13.6	9.9					
				3.0	4.3	9.9	10.3	9.0	0.88	0.99	13.7	10.5					
			110	1.5	1.2	2.8	9.0	8.2	0.91	1.20	13.1	7.5					
				2.3	2.9	6.7	9.4	8.5	0.90	1.13	13.3	8.4					
				3.0	4.2	9.7	9.6	8.7	0.90	1.09	13.4	8.8					
			120	1.5	1.2	2.8	8.4	7.5	0.89	1.33	12.9	6.3					
				2.3	2.8	6.5	8.7	7.9	0.91	1.25	13.0	7.0					
				3.0	4.1	9.5	8.9	8.1	0.91	1.21	13.1	7.4					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.

ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).

See performance correction tables for operating conditions other than those listed above.

See Performance Data Selection Notes for operation in shaded areas.

## Performance Data

### TRC15

520 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

*WPD Adder for Motorized Valve, TRC15 (Cv = 4.9, MOPD = 125 psi)			EWT °F	GPM	WPD*		Cooling - EAT 80/67°F						Heating - EAT 70°F				
					PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
						20	3.7	5.1	11.8	Operation Not Recommended						8.9	0.92
GPM	WPD Adder		30	1.9	1.5	3.5	16.9	11.0	0.65	0.62	19.0	27.1	10.0	0.94	6.8	87.8	3.11
				2.8	3.0	6.9	16.5	10.4	0.63	0.58	18.5	28.6	10.5	0.95	7.2	88.6	3.22
	PSI	FT		3.7	4.7	10.9	16.3	10.1	0.62	0.56	18.2	29.2	10.7	0.96	7.5	89.1	3.28
1.9	0.7	1.7	40	1.9	1.2	2.8	16.9	11.4	0.67	0.70	19.3	24.1	11.7	0.98	8.4	90.8	3.51
2.3	1.7	4.0		2.3	4.2	9.7	12.6	8.2	0.65	0.58	14.6	21.9	9.9	0.83	7.1	90.4	3.48
3.7	3.3	7.6		3.7	4.3	9.9	16.9	11.0	0.65	0.62	19.0	27.1	12.6	0.99	9.2	92.4	3.71
			50	1.9	1.0	2.3	16.6	11.5	0.69	0.79	19.3	21.0	13.4	1.01	10.0	93.9	3.91
				2.8	2.3	5.3	16.9	11.5	0.68	0.73	19.4	23.1	14.1	1.02	10.7	95.2	4.06
				3.7	3.9	9.0	16.9	11.4	0.67	0.70	19.3	24.2	14.5	1.03	11.0	95.9	4.15
			60	1.9	0.9	2.1	15.9	11.3	0.71	0.89	18.9	17.9	15.2	1.04	11.7	97.1	4.29
				2.8	2.1	4.9	16.4	11.4	0.70	0.82	19.2	19.9	16.0	1.05	12.4	98.5	4.46
				3.7	3.5	8.1	16.6	11.5	0.69	0.79	19.3	21.0	16.4	1.06	12.8	99.3	4.56
			70	1.9	0.9	2.1	15.0	10.9	0.73	0.99	18.4	15.2	16.9	1.06	13.3	100.1	4.66
				2.8	2.0	4.6	15.6	11.2	0.72	0.92	18.8	16.9	17.8	1.08	14.1	101.6	4.84
				3.7	3.3	7.6	15.9	11.3	0.71	0.89	18.9	17.9	18.2	1.08	14.5	102.5	4.93
			80	1.9	0.9	2.1	14.0	10.5	0.75	1.10	17.8	12.7	18.5	1.09	14.8	103.0	4.99
				2.8	1.8	4.2	14.6	10.8	0.74	1.03	18.2	14.2	19.4	1.10	15.6	104.5	5.17
				3.7	3.1	7.2	15.0	10.9	0.73	1.00	18.4	15.0	19.8	1.10	16.1	105.3	5.26
			85	1.9	0.9	2.0	13.4	10.3	0.77	1.16	17.4	11.6	19.2	1.10	15.5	104.3	5.14
				2.8	1.8	4.0	14.1	10.5	0.75	1.09	17.8	13.0	20.1	1.11	16.3	105.8	5.31
				3.7	3.0	6.9	14.4	10.7	0.74	1.05	18.0	13.8	20.5	1.11	16.7	106.5	5.40
			90	1.9	0.8	1.8	12.9	10.0	0.78	1.22	17.0	10.5	20.0	1.11	16.2	105.6	5.29
				2.8	1.7	3.9	13.5	10.3	0.76	1.15	17.5	11.8	20.8	1.12	17.0	107.0	5.45
				3.7	2.9	6.7	13.9	10.5	0.75	1.11	17.7	12.5	21.2	1.12	17.3	107.7	5.53
			100	1.9	0.8	1.8	11.7	9.6	0.82	1.35	16.3	8.7	Operation Not Recommended				
				2.8	1.6	3.7	12.4	9.8	0.80	1.27	16.7	9.7					
				3.7	2.8	6.5	12.7	10.0	0.78	1.23	17.0	10.3					
			110	1.9	0.8	1.8	10.6	9.2	0.87	1.48	15.7	7.2					
				2.8	1.6	3.7	11.2	9.4	0.84	1.40	16.0	8.0					
				3.7	2.7	6.2	11.5	9.5	0.83	1.37	16.2	8.4					
			120	1.9	0.7	1.6	9.6	9.0	0.94	1.62	15.1	5.9					
				2.8	1.5	3.5	10.1	9.1	0.90	1.54	15.4	6.5					
				3.7	2.7	6.2	10.4	9.2	0.88	1.51	15.5	6.9					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.

ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).

See performance correction tables for operating conditions other than those listed above.

See Performance Data Selection Notes for operation in shaded areas.

Performance Data  
TRC18

620 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

*WPD Adder for Motorized Valve, TRC18 (Cv = 4.9, MOPD = 125 psi)			EWT °F	GPM	WPD*		Cooling - EAT 80/67°F						Heating - EAT 70°F					
					PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP	
						20	4.5	7.5	17.3	Operation Not Recommended						13.9	1.24	9.8
GPM	WPD Adder		30	2.3	2.2	5.1	18.6	12.3	0.66	0.72	21.0	25.7	15.3	1.28	11.0	92.8	3.51	
	PSI	FT		3.4	4.4	10.2	17.6	11.6	0.66	0.69	19.9	25.3	15.7	1.28	11.3	93.4	3.57	
				4.5	6.9	15.9	16.9	11.1	0.66	0.68	19.3	24.8	15.8	1.29	11.5	93.7	3.61	
2.3	0.2	0.6	40	2.3	2.0	4.6	19.3	13.2	0.68	0.80	22.1	24.2	16.6	1.30	12.2	94.8	3.74	
3.4	0.6	1.3		3.4	4.1	9.5	19.0	12.8	0.67	0.75	21.6	25.3	16.9	1.30	12.4	95.2	3.79	
4.5	1.1	2.5		4.5	6.3	14.6	18.8	12.5	0.67	0.73	21.3	25.6	17.0	1.31	12.6	95.4	3.81	
			50	2.3	1.8	4.2	19.1	13.5	0.70	0.90	22.2	21.4	17.5	1.31	13.0	96.1	3.91	
				3.4	3.8	8.8	19.3	13.3	0.69	0.84	22.2	23.1	17.7	1.31	13.2	96.4	3.95	
				4.5	6.0	13.9	19.4	13.2	0.68	0.81	22.1	23.9	17.8	1.31	13.3	96.5	3.97	
			60	2.3	1.6	3.7	18.4	13.3	0.72	1.01	21.8	18.2	18.2	1.31	13.8	97.2	4.07	
				3.4	3.6	8.3	18.9	13.4	0.71	0.94	22.1	20.1	18.5	1.31	14.0	97.6	4.12	
				4.5	5.6	12.9	19.1	13.5	0.70	0.91	22.2	21.0	18.6	1.31	14.2	97.8	4.15	
			70	2.3	1.5	3.5	17.2	12.8	0.75	1.13	21.1	15.3	19.3	1.32	14.8	98.8	4.27	
				3.4	3.4	7.9	17.9	13.1	0.73	1.06	21.5	17.0	19.7	1.33	15.2	99.5	4.36	
				4.5	5.2	12.0	18.2	13.3	0.73	1.02	21.7	17.9	20.0	1.33	15.5	99.9	4.40	
			80	2.3	1.4	3.2	15.9	12.1	0.76	1.25	20.2	12.7	21.0	1.35	16.4	101.3	4.55	
				3.4	3.2	7.4	16.7	12.6	0.75	1.18	20.7	14.1	21.8	1.37	17.1	102.6	4.68	
				4.5	5.0	11.6	17.0	12.7	0.75	1.14	21.0	14.9	22.3	1.38	17.6	103.3	4.75	
			85	2.3	1.4	3.1	15.3	11.7	0.77	1.32	19.8	11.6	22.2	1.38	17.6	103.2	4.73	
				3.4	3.1	7.15	16.0	12.2	0.76	1.25	20.3	12.9	23.3	1.40	18.6	104.9	4.88	
				4.5	4.9	11.35	16.4	12.4	0.76	1.21	20.6	13.6	24.0	1.42	19.2	105.9	4.97	
			90	2.3	1.3	3.0	14.6	11.3	0.77	1.39	19.4	10.5	23.5	1.40	18.7	105.1	4.91	
				3.4	3.0	6.9	15.3	11.8	0.77	1.32	19.8	11.6	24.9	1.43	20.0	107.2	5.08	
				4.5	4.8	11.1	15.7	12.0	0.76	1.28	20.1	12.3	25.7	1.45	20.8	108.4	5.18	
			100	2.3	1.3	3.0	13.5	10.5	0.78	1.53	18.8	8.8	Operation Not Recommended					
				3.4	2.9	6.7	14.1	10.9	0.78	1.46	19.1	9.6						
				4.5	4.6	10.6	14.4	11.1	0.77	1.42	19.2	10.1						
			110	2.3	1.2	2.8	12.8	9.8	0.77	1.67	18.5	7.6						
				3.4	2.8	6.5	13.1	10.1	0.77	1.60	18.6	8.2						
				4.5	4.5	10.4	13.3	10.3	0.78	1.56	18.7	8.5						
120	2.3	1.2	2.8	12.6	9.4	0.74	1.82	18.9	6.9									
	3.4	2.8	6.5	12.6	9.5	0.76	1.75	18.6	7.2									
	4.5	4.4	10.2	12.7	9.7	0.76	1.71	18.5	7.4									

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.

ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).

See performance correction tables for operating conditions other than those listed above.

See Performance Data Selection Notes for operation in shaded areas.

## Performance Data Correction Tables

### Air Flow Correction Table

Airflow	Cooling				Heating		
% of Rated	Total Capacity	Sensible Capacity	Power	Heat of Rejection	Heating Capacity	Power	Heat of Extraction
73%	0.946	0.898	0.971	0.951	0.967	1.084	0.937
78%	0.954	0.927	0.976	0.958	0.976	1.062	0.954
83%	0.964	0.953	0.981	0.967	0.983	1.042	0.968
89%	0.974	0.974	0.987	0.977	0.990	1.026	0.981
94%	0.987	0.990	0.993	0.988	0.995	1.012	0.991
100%	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106%	1.015	1.002	1.008	1.014	1.004	0.991	1.007
111%	1.031	0.996	1.016	1.028	1.006	0.985	1.011

### Entering Air Correction Table

Heating			
Entering Air DB°F	Heating Capacity	Power	Heat of Extraction
60	1.036	0.910	1.068
65	1.019	0.955	1.035
68	1.008	0.982	1.014
70	1.000	1.000	1.000
75	0.980	1.046	0.964
80	0.960	1.091	0.927

Cooling										
Entering Air WB°F	Total Capacity	Sensible Cooling Capacity Multiplier - Entering DB °F							Power	Heat of Rejection
		65	70	75	80	80.6	85	90		
60	0.926	0.632	0.820	1.004	1.182	*	*	*	1.003	0.931
65	0.976		0.615	0.856	1.071	1.095	1.260	*	1.000	0.979
66.2	0.990		0.555	0.807	1.030	1.055	1.224	*	1.000	0.992
67	1.000		0.507	0.765	1.000	1.017	1.188	*	1.000	1.000
70	1.039			0.620	0.865	0.893	1.076	1.252	1.001	1.032
75	1.113				0.566	0.597	0.805	1.013	1.002	1.089

\* = Sensible capacity equals total capacity

ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Cooling - 80.6°F DB/66.2°F WB, 1 and Heating - 68°F DB/59°F WB entering air temperature

**Antifreeze Correction Table**

Antifreeze Type	Antifreeze %	Cooling			Heating		WPD Corr. Fct. EWT 30°F
		EWT 90°F			EWT 30°F		
		Total Cap	Sens Cap	Power	Htg Cap	Power	
Water	0	1.000	1.000	1.000	1.000	1.000	1.000
Propylene Glycol	5	0.995	0.995	1.003	0.989	0.997	1.070
	15	0.986	0.986	1.009	0.968	0.990	1.210
	25	0.978	0.978	1.014	0.947	0.983	1.360
Methanol	5	0.997	0.997	1.002	0.989	0.997	1.070
	15	0.990	0.990	1.007	0.968	0.990	1.160
	25	0.982	0.982	1.012	0.949	0.984	1.220
Ethanol	5	0.998	0.998	1.002	0.981	0.994	1.140
	15	0.994	0.994	1.005	0.944	0.983	1.300
	25	0.986	0.986	1.009	0.917	0.974	1.360
Ethylene Glycol	5	0.998	0.998	1.002	0.993	0.998	1.040
	15	0.994	0.994	1.004	0.980	0.994	1.120
	25	0.988	0.988	1.008	0.966	0.990	1.200



## Blower Performance & Electrical Data

### Blower Performance

Model	Rated CFM	SCFM		
		Low Speed	Medium Speed	High Speed
TRC06	Not available at time of publication.			
TRC09	350	270	310	350
TRC12	450	290	360	450
TRC15	520	360	440	520
TRC18	620	400	500	620

Fan speed is user selectable

All airflow is rated at lowest Voltage if unit is dual Voltage rated, i.e. 208V for 208-230V units

All units ARI/ISO/ASHRAE 13256-1 rated on high fan speed

All units are designed and rated for zero external static pressure (non-ducted) application

### Electrical Data

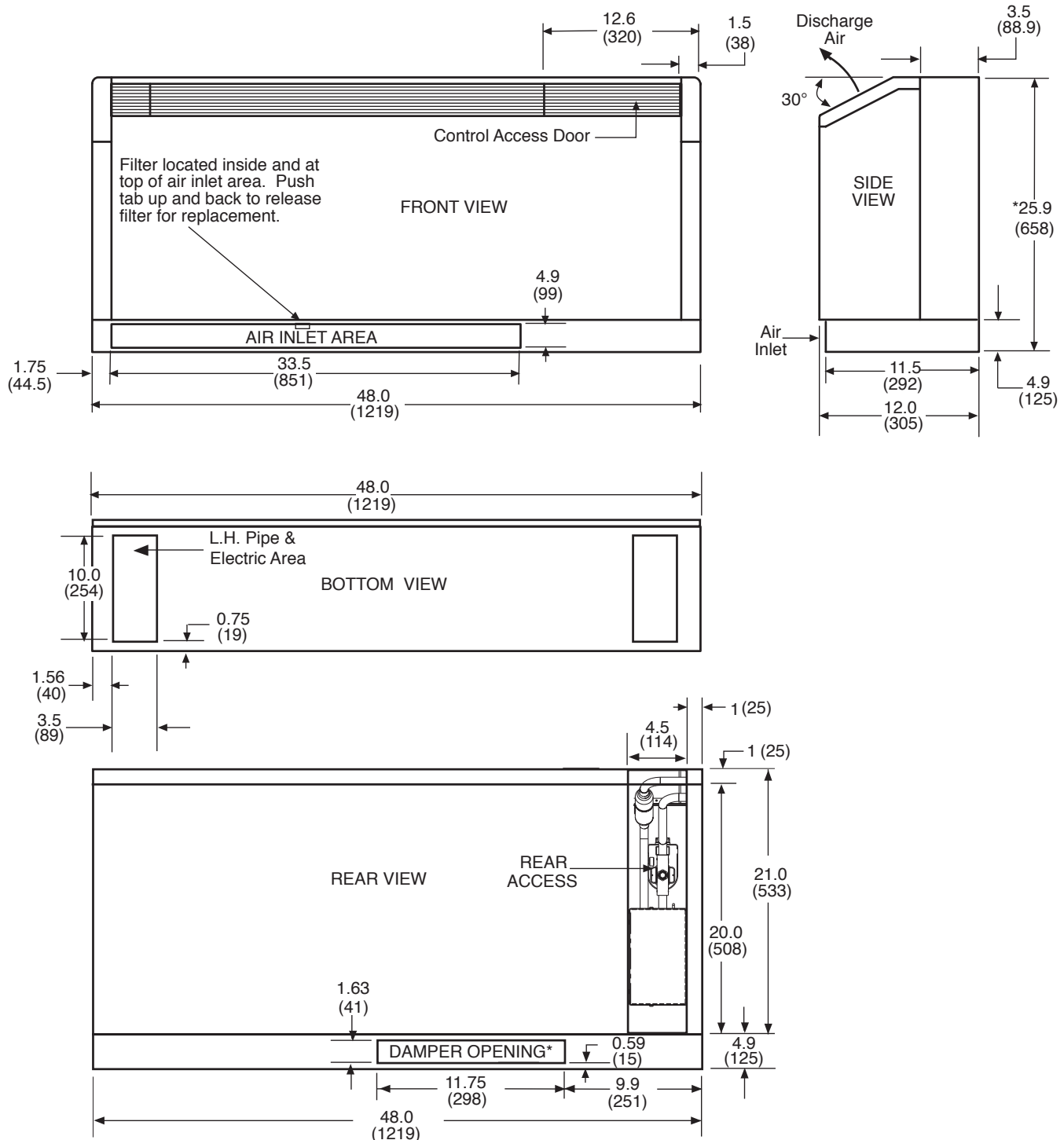
Model	Voltage Code	Voltage	Min/Max Voltage	Compressor			Fan Motor FLA	Total Unit FLA	Min Circuit Amps	Max Fuse/HACR
				QTY	RLA	LRA				
TRC06	Data not available at time of publication.									
TRC09	A	115/60/1	104-126	1	8.1	46.5	0.6	8.6	10.7	15
	G	208-230/60/1	197-254	1	4.5	23.0	0.4	4.9	6.0	15
	E	265/60/1	239-292	1	3.1	24.0	0.4	3.5	4.3	15
TRC12	A	115/60/1	104-126	1	10.6	55.8	1.0	11.6	14.3	25
	G	208-230/60/1	197-254	1	5.2	24.0	0.6	5.8	7.1	15
	E	265/60/1	239-292	1	4.2	25.0	0.4	4.6	5.7	15
TRC15	G	208-230/60/1	197-254	1	6.1	30.0	0.8	6.9	8.4	15
	E	265/60/1	239-292	1	4.7	28.5	0.6	5.3	6.5	15
TRC18	G	208-230/60/1	197-254	1	6.8	38.0	0.7	7.5	9.2	15
	E	265/60/1	239-292	1	6.2	29.0	0.6	6.8	8.4	15

## Physical Data

Model	06	09	12	15	18
Compressor (1 Each)	Rotary				
Factory Charge R410A (oz) [kg]	*	28 [0.794]	29 [0.822]	37 [1.049]	39 [1.105]
PSC Fan Motor & Blower (3 Speeds)					
Fan Motor (hp) [W]	*	1/20 [37]	1/12 [62]	1/8 [93]	1/8 [93]
Blower Wheel Size (dia x w) - (in) [mm] - Qty 2	*	5.25 x 6.25 [133 x 159]			
Water Connection Size					
O.D. Sweat (in) [mm]	*	1/2 [12.7]			3/4 [19.1]
Optional IPT Fittings (in)	*	1/2			3/4
Optional EPT Fittings (in)	*	1/2			3/4
Condensate Connection Size					
I.D. Vinyl Hose (In) [mm]	*	5/8 [15.9]			
Air Coil Size					
Dimensions (h x w) - (in) [mm]	*	8 x 26 [20.3 x 66.0]	10 x 26 [25.4 x 66.0]		10 x 32 [25.4 x 81.2]
Filter Size					
Bottom Return (in) [cm]	*	1 - 10 x 30 x 1 [25.4 x 76.2 x 2.5]			2 - 10 x 16 x 1 [25.4 x 40.6 x 2.5]
Front Return (In) [cm]	*	1 - 7 x 29.5 x 1/8 [17.8 x 74.9 x 0.32]			7 x 31.5 x 1/8 [17.8 x 80.0 x .32]
Cabinet Size					
Bottom Return (Std. 5" Base) (W x H x D) - (In) [cm]	*	48 x 26 x 12 [121.9 x 66.0 x 30.5]			54 x 26 x 12 [137.2 x 66.0 x 30.5]
Front Return (No Subbase) (W x H x D) - (In) [cm]	*	48 x 21 x 12 [121.9 x 53.3 x 30.5]			54 x 21 x 12 [137.2 x 53.3 x 30.5]
Cabinet Size					
Weight - Operating, (lbs) [kg]	*	175 [79]	180 [82]	190 [86.2]	220 [99.8]
Weight - Packaged, (lbs) [kg]	*	185 [83.9]	190 [86]	200 [90.8]	232 [105.2]

\* Data not available at time of publication.

All units have rubber grommet compressor mountings, isolation plate, and TXV expansion devices.

**Console Cabinet Dimensions****Size 06 -15****Bottom Return - Left Hand Piping****Left Hand Bottom Return****Notes:**

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

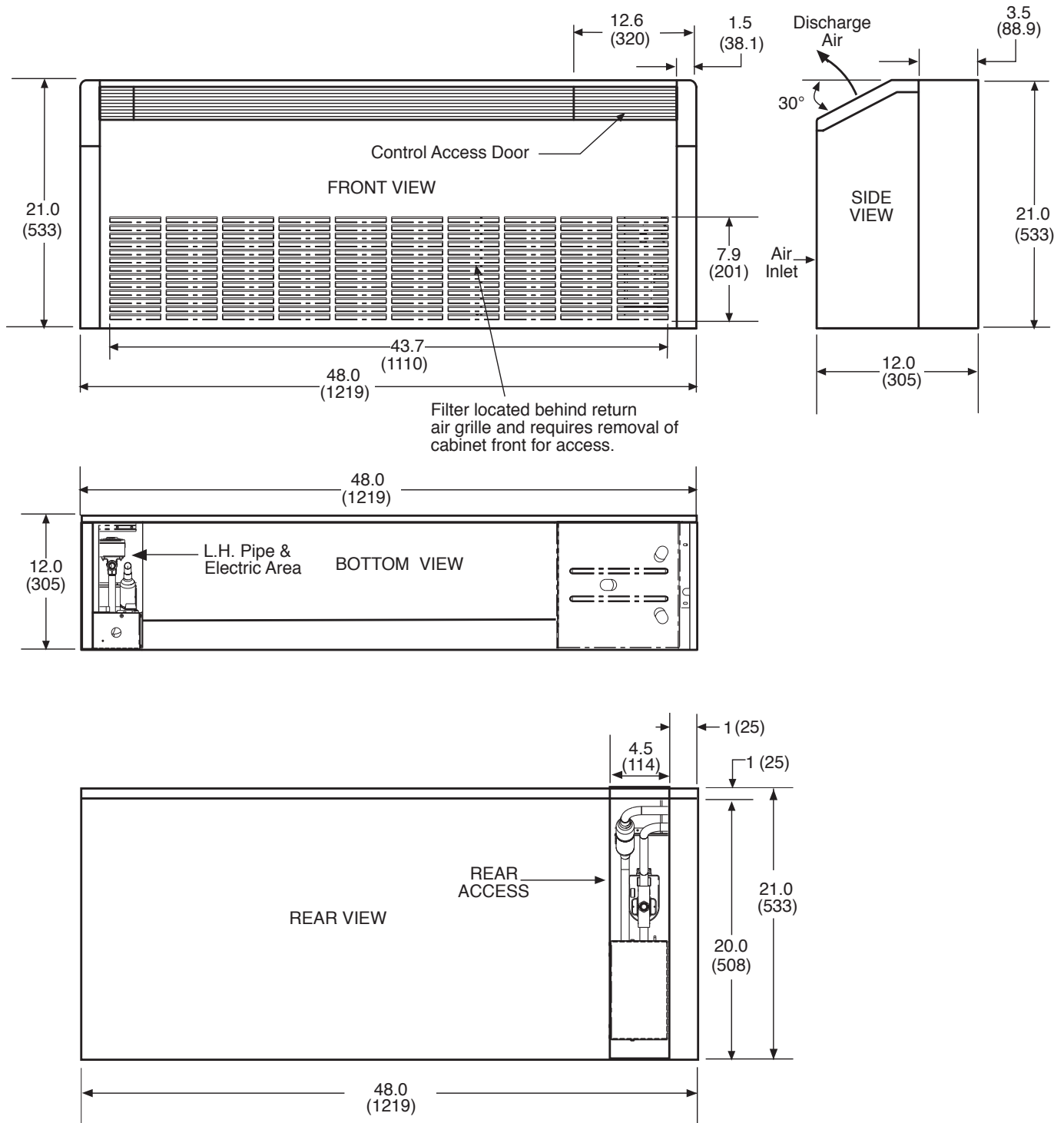
Rev.: 07/14/06D

## Console Cabinet Dimensions

### Size 06 - 15

### Bottom Return - Right Hand Piping

### Left Hand Front Return



#### Notes:

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

Rev.: 07/14/06D

## Tranquility Console (TRC) Series

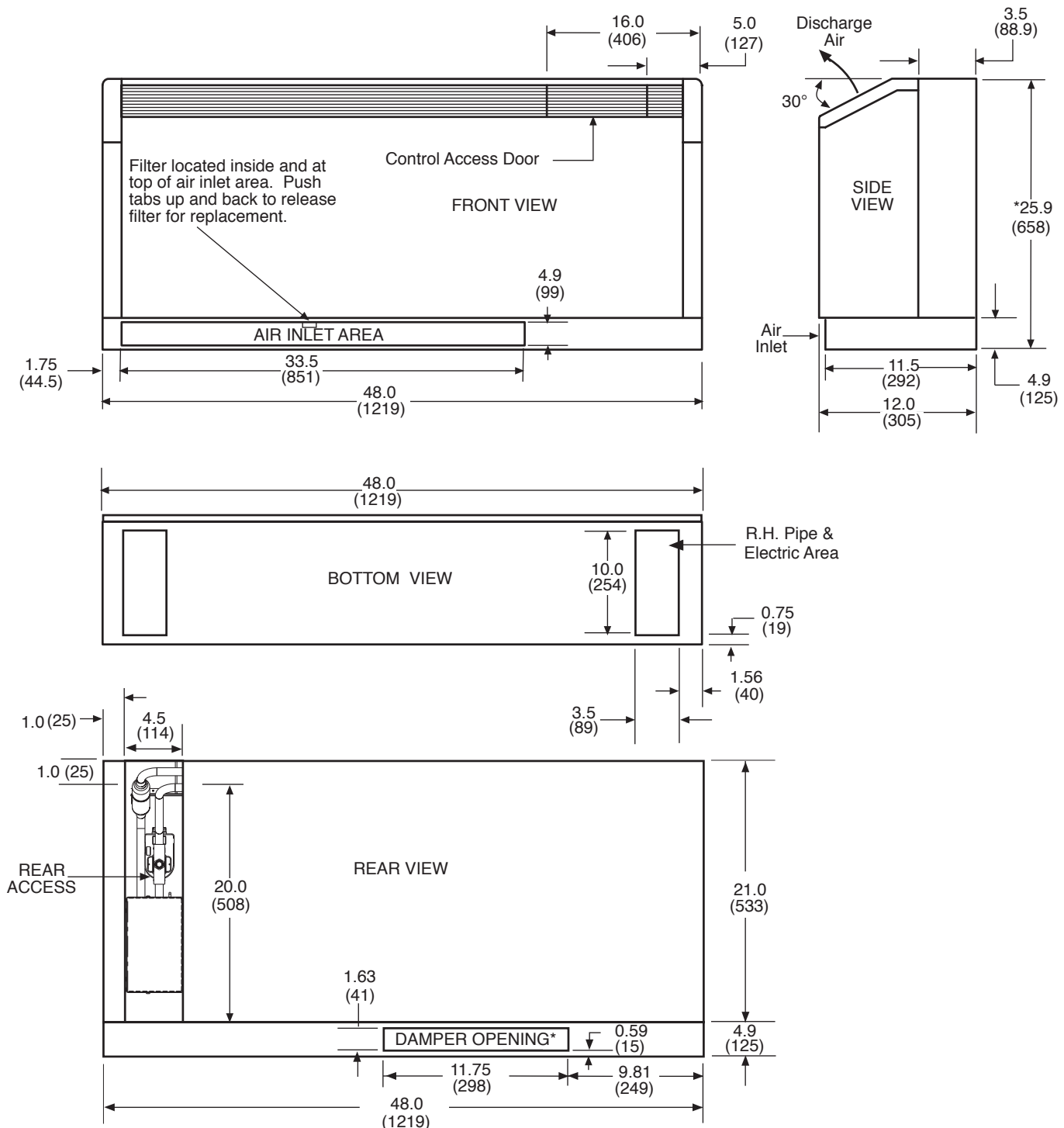
Rev.: 05/23/07D

## Console Cabinet Dimensions

## Size 06 -15

## Front Return - Left Hand Piping

## Right Hand Bottom Return

**Notes:**

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

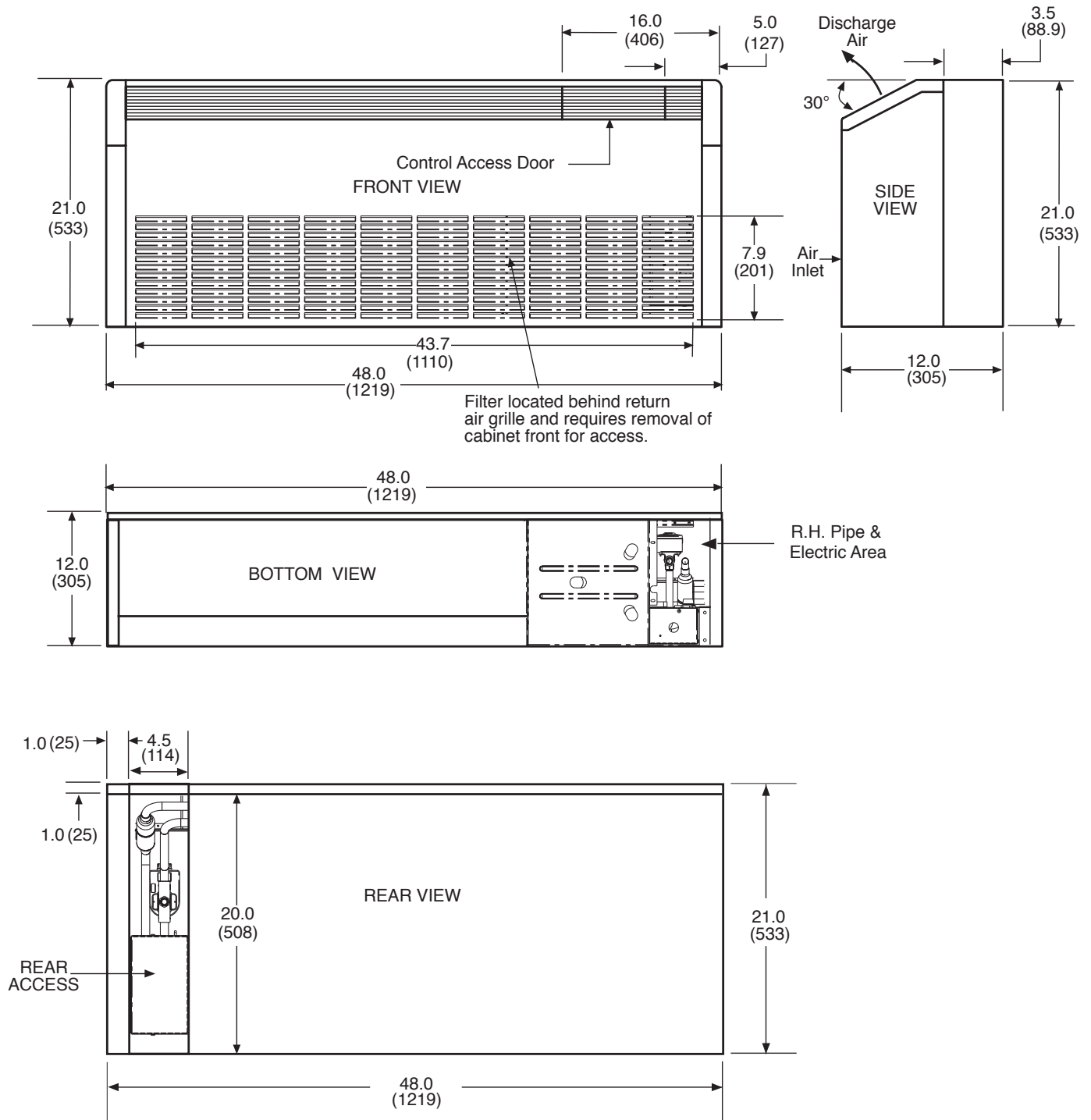
Rev.: 07/14/06D

## Console Cabinet Dimensions

### Size 06 - 15

### Front Return - Right Hand Piping

### Right Hand Front Return



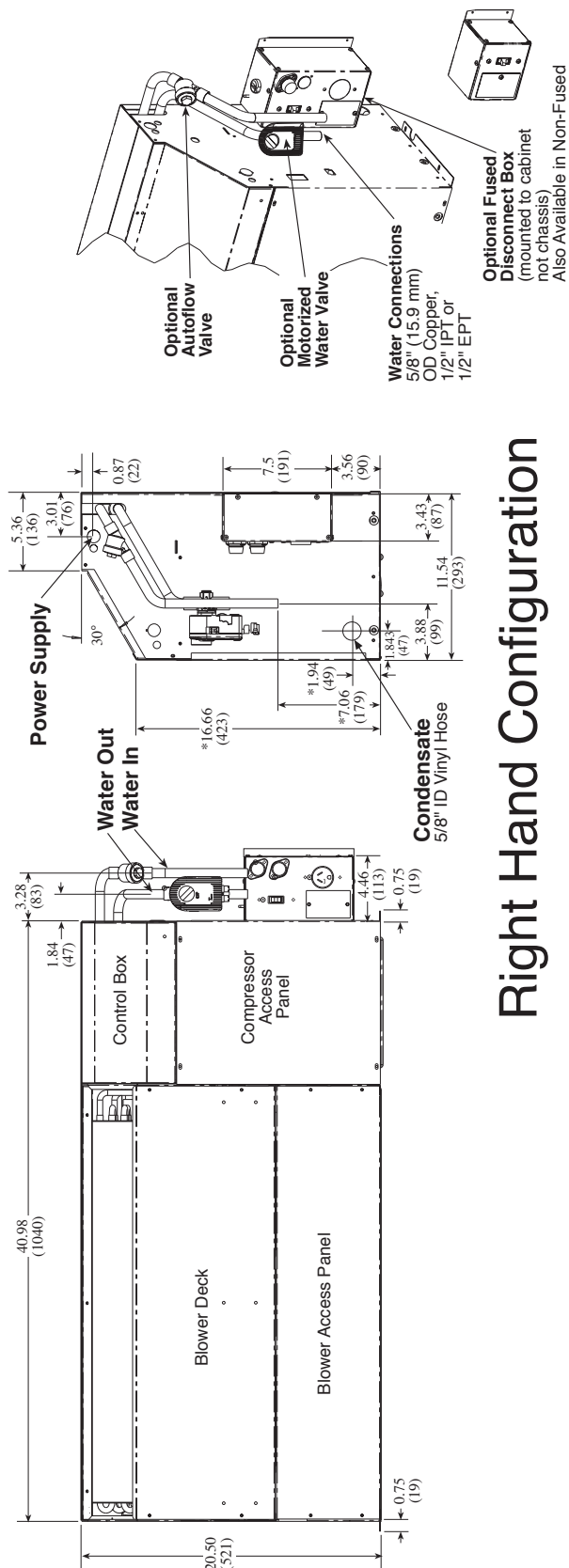
#### Notes:

All Dimensions are in inches (mm).

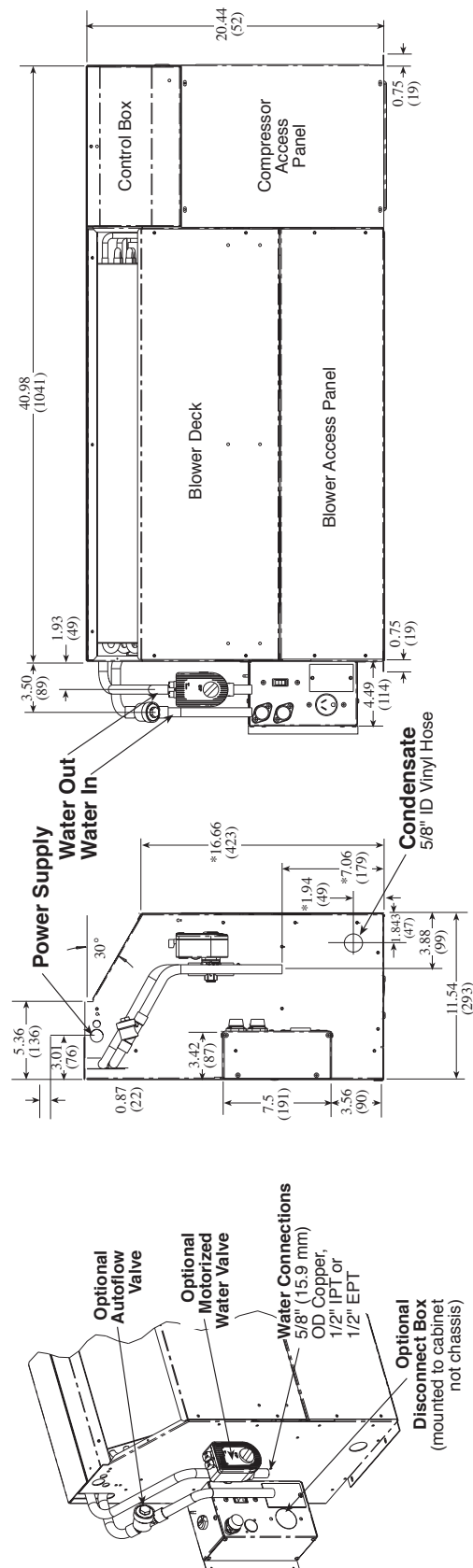
Optional autoflow valve, motorized water valve and disconnect box are shown.

Rev.: 07/14/06D

## Console Chassis Dimensions Size 06 - 15



## Right Hand Configuration



## Left Hand Configuration

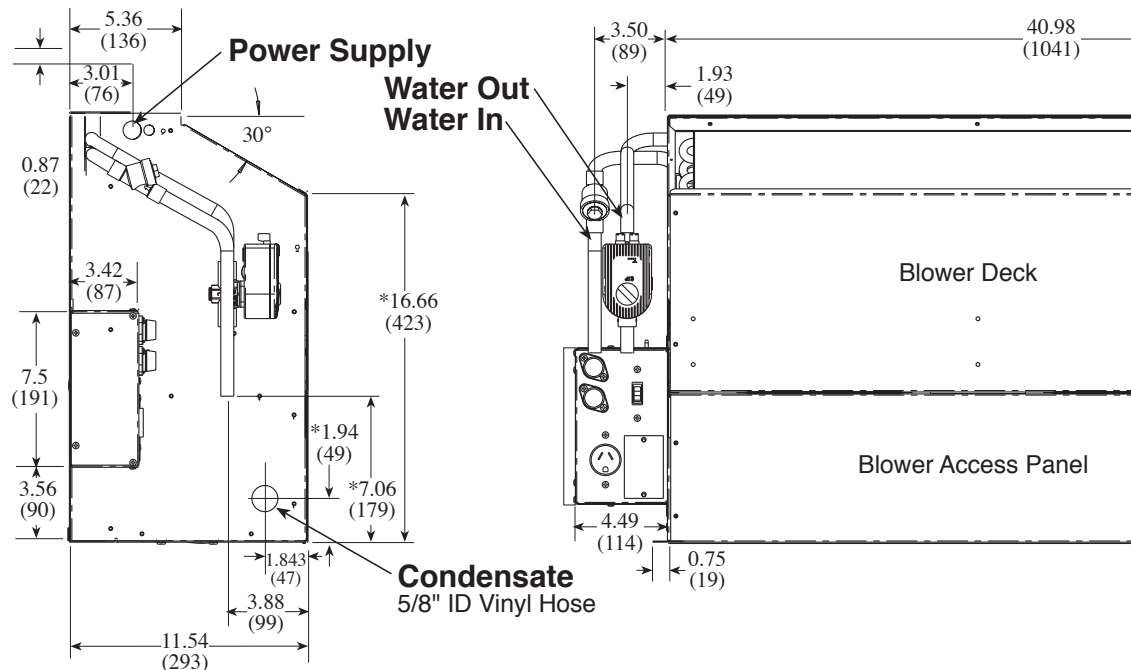
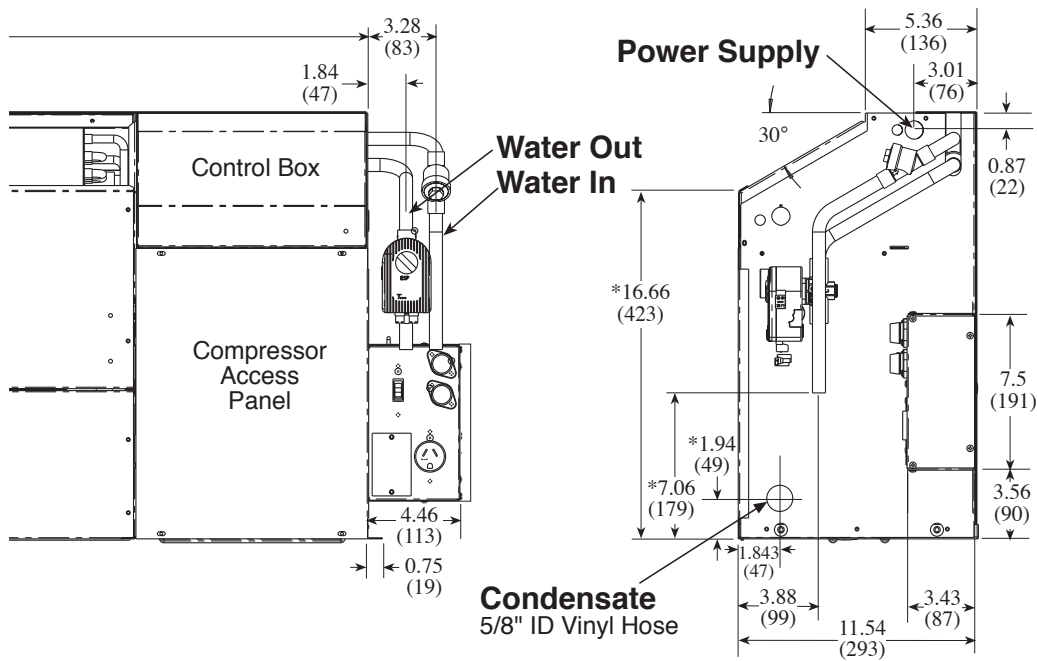
**Notes:**

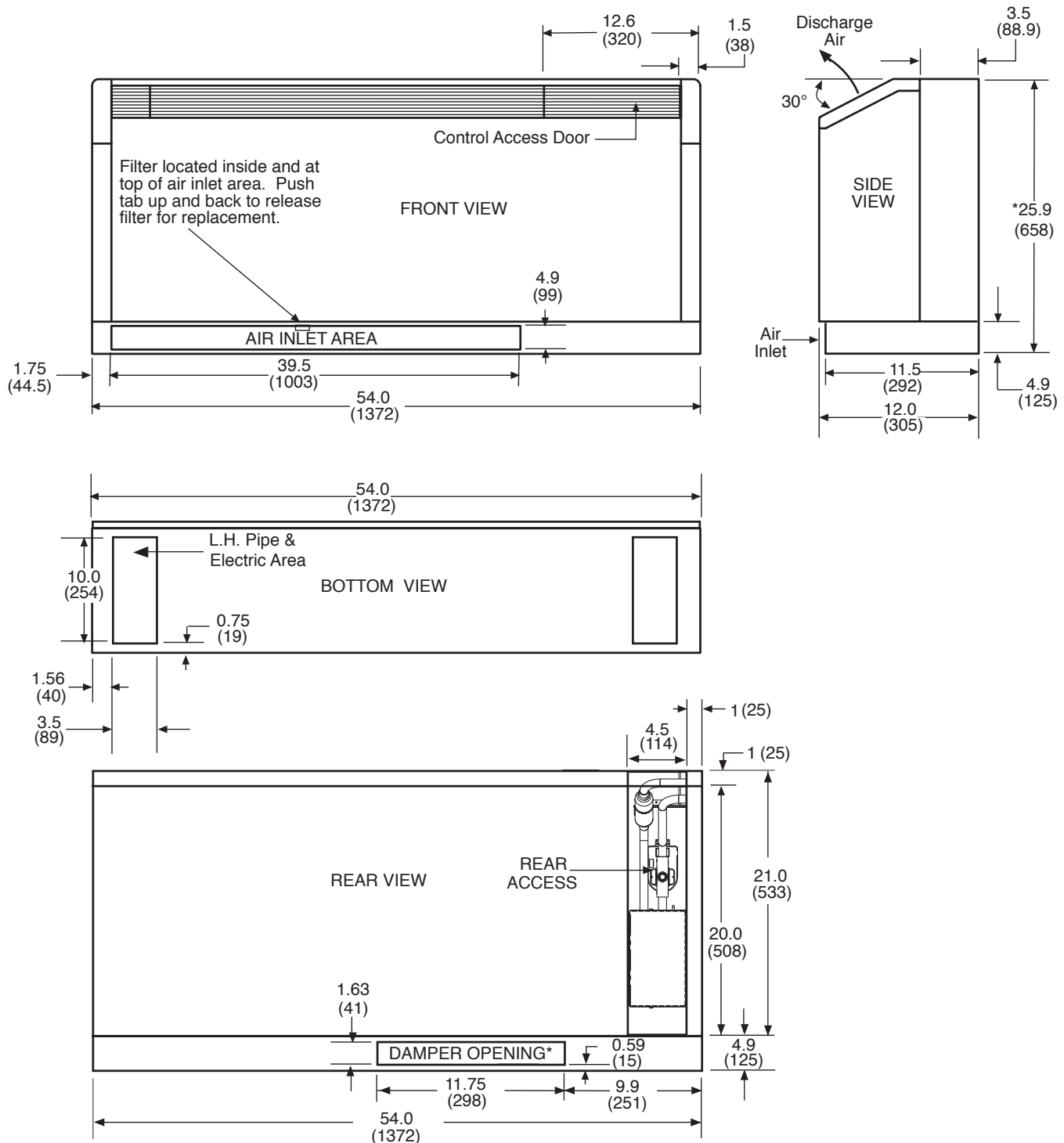
- All Dimensions are in inches (mm)
- \* For installed dimension, add to dimension shown 2.9" [74mm] with 3" subbase and 4.9" [124mm] for 5" subbase.
- Optional autoflow valve, motorized water valve and disconnect box are shown.
- Water connection in same location regardless of connection type.

Rev.: 07/14/06D



**Piping Detail  
Size 06 - 15**



**Console Cabinet Dimensions****Size 18****Bottom Return - Left Hand Piping****Left Hand Bottom Return****Notes:**

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

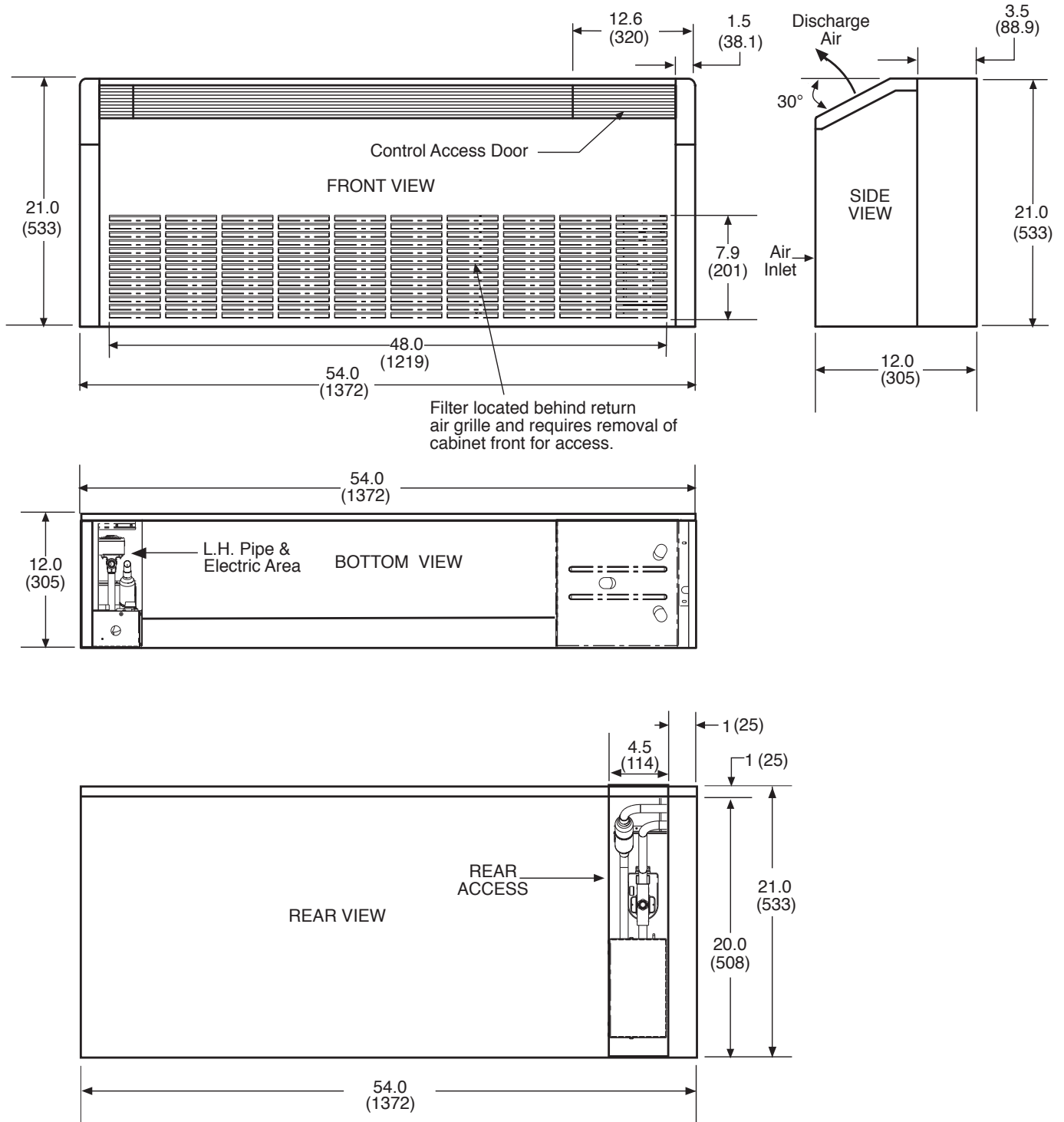
Rev.: 07/14/06D

Console Cabinet Dimensions

Size 18

Bottom Return - Right Hand Piping

Left Hand Front Return



**Notes:**

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

Rev.: 07/14/06D

## Tranquility Console (TRC) Series

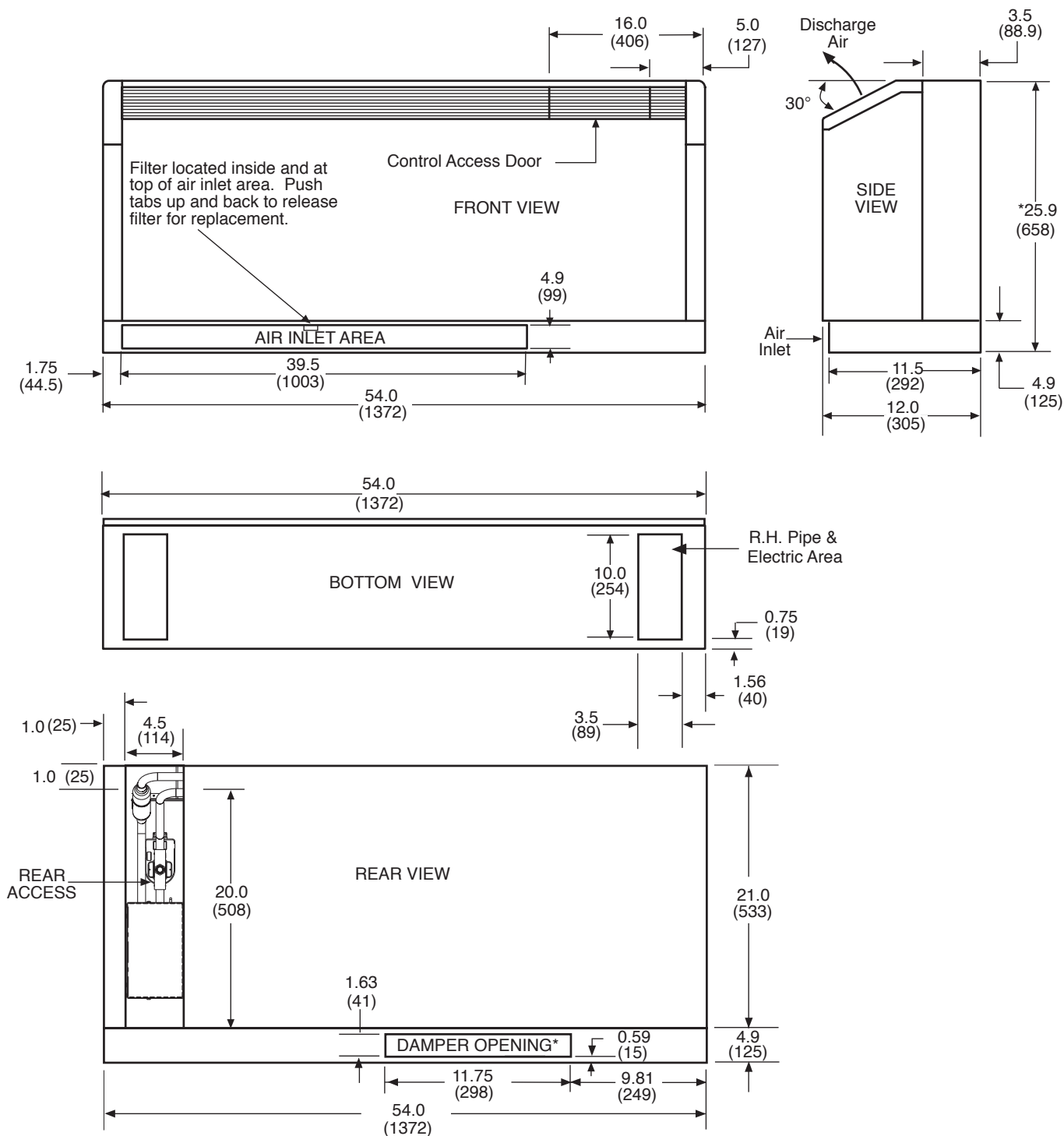
Rev.: 05/23/07D

## Console Cabinet Dimensions

## Size 18

## Front Return - Left Hand Piping

## Right Hand Bottom Return

**Notes:**

All Dimensions are in inches (mm)

Optional autoflow valve, motorized water valve and disconnect box are shown.

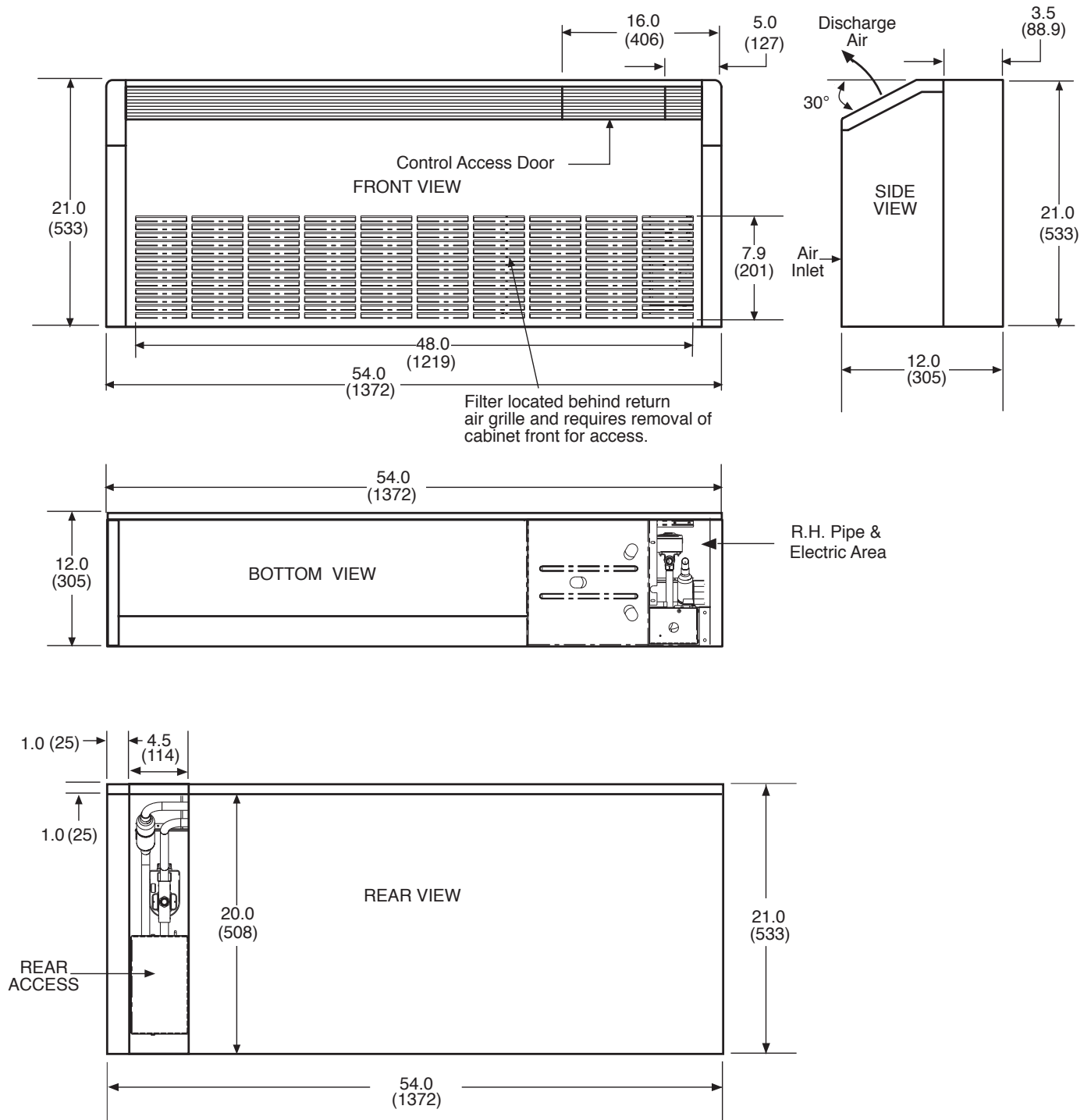
Rev.: 07/14/06D

## Console Cabinet Dimensions

### Size 18

### Front Return - Right Hand Piping

### Right Hand Front Return



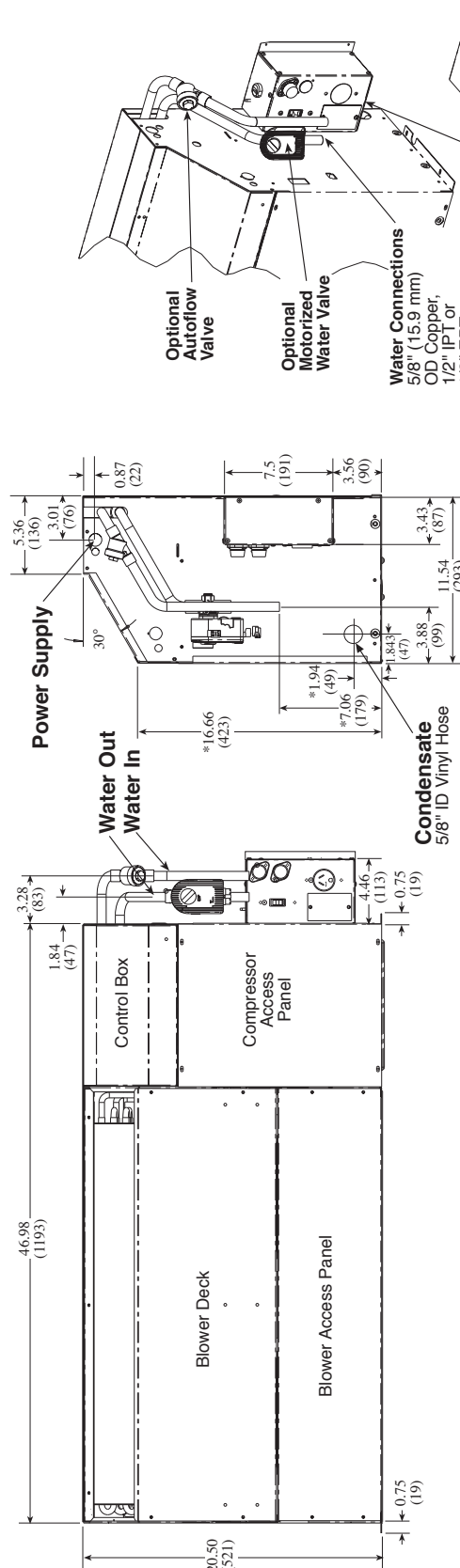
#### Notes:

All Dimensions are in inches (mm).

Optional autoflow valve, motorized water valve and disconnect box are shown.

Rev.: 07/14/06D

## Console Chassis Dimensions Size 18



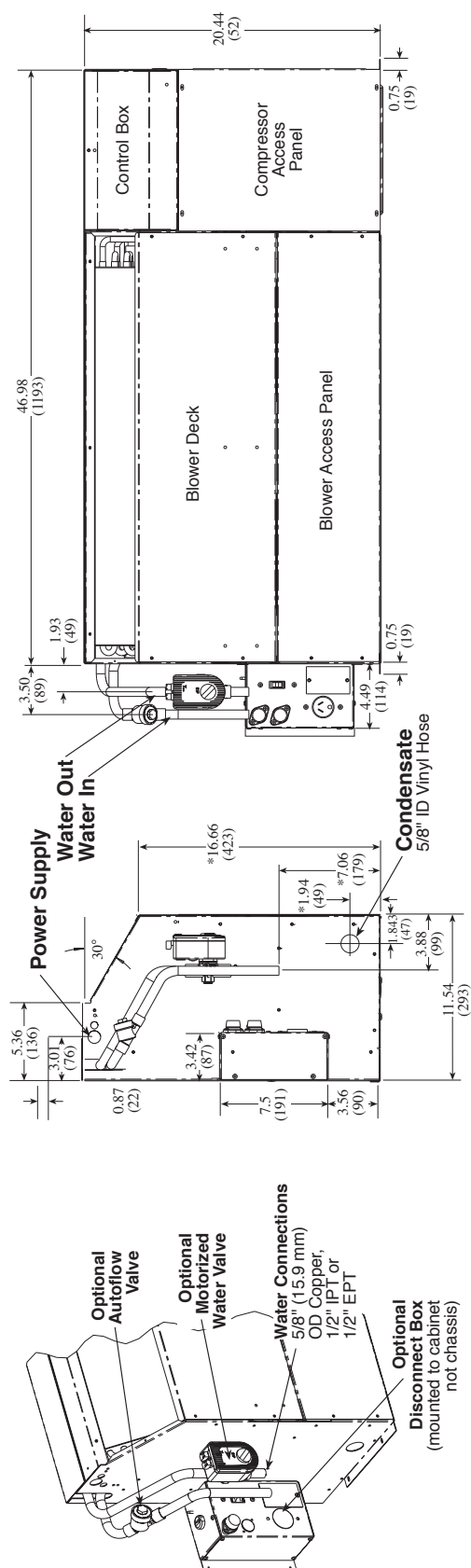
Optional Autoflow Valve

Optional Motorized Water Valve

Water Connections  
5/8" (15.9 mm)  
OD Copper,  
1/2" IPT or  
1/2" EPT

Optional Fused Disconnect Box  
(mounted to cabinet not chassis)  
Also Available in Non-Fused

## Right Hand Configuration



Optional Autoflow Valve

Optional Motorized Water Valve

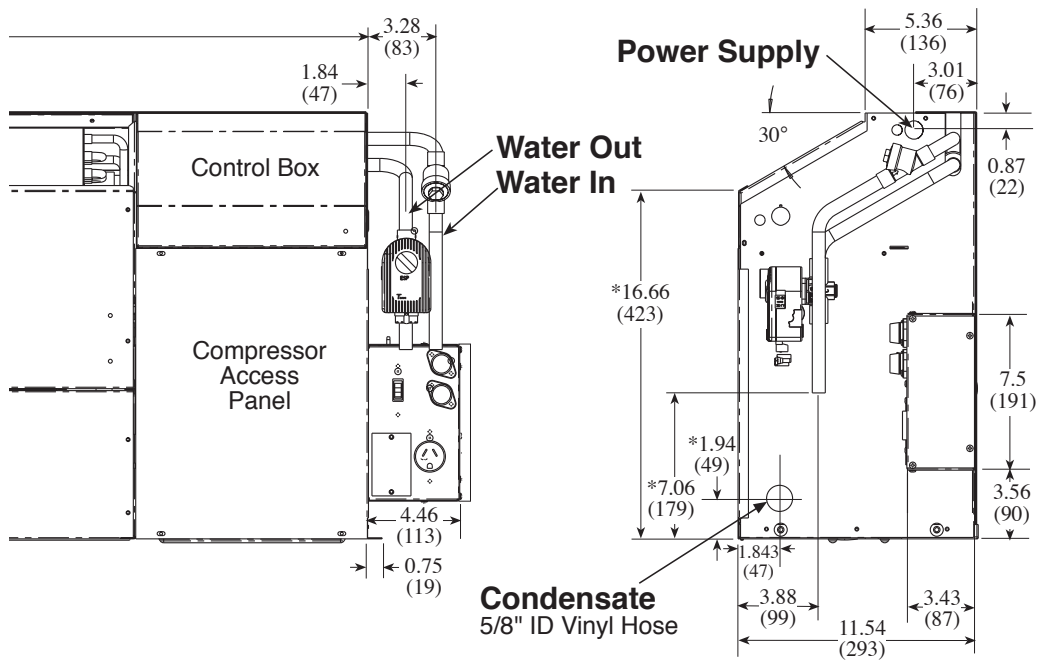
Water Connections  
5/8" (15.9 mm)  
OD Copper,  
1/2" IPT or  
1/2" EPT

Optional Fused Disconnect Box  
(mounted to cabinet not chassis)

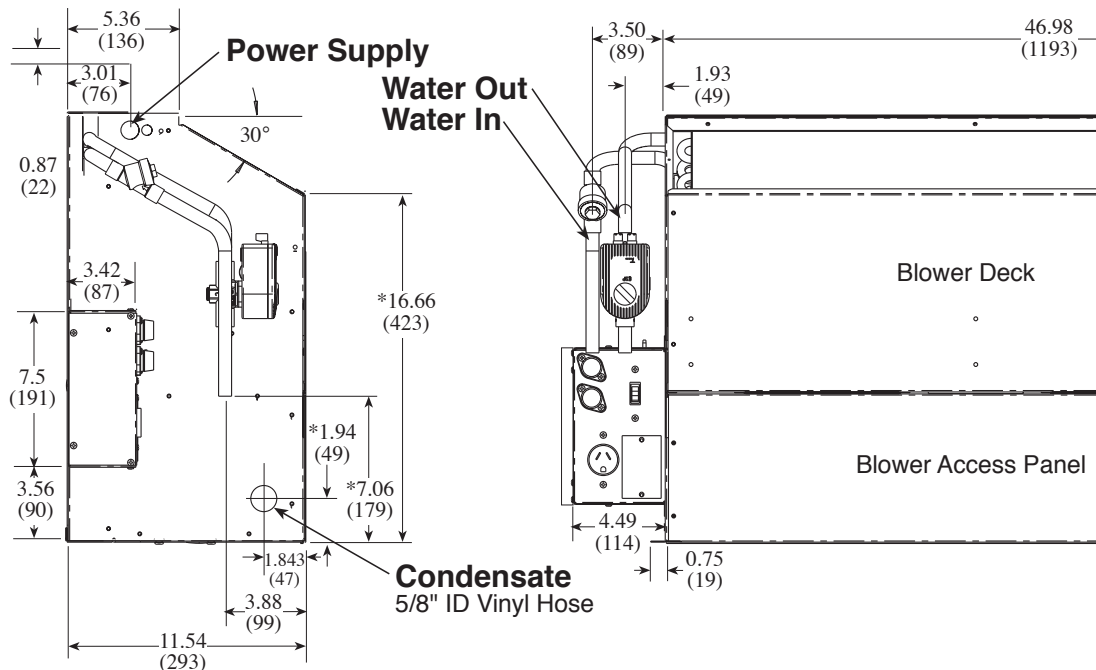
**Notes:**  
All Dimensions are in inches (mm)  
\* For installed dimension, add to dimension shown 2.9" [74mm] with 3" subbase and 4.9" [124mm] for 5" subbase.  
Optional autoflow valve, motorized water valve and disconnect box are shown.  
Water connection in same location regardless of connection type.

Rev.: 07/14/06D

Piping Detail  
Size 18



## Right Hand Configuration



## Left Hand Configuration



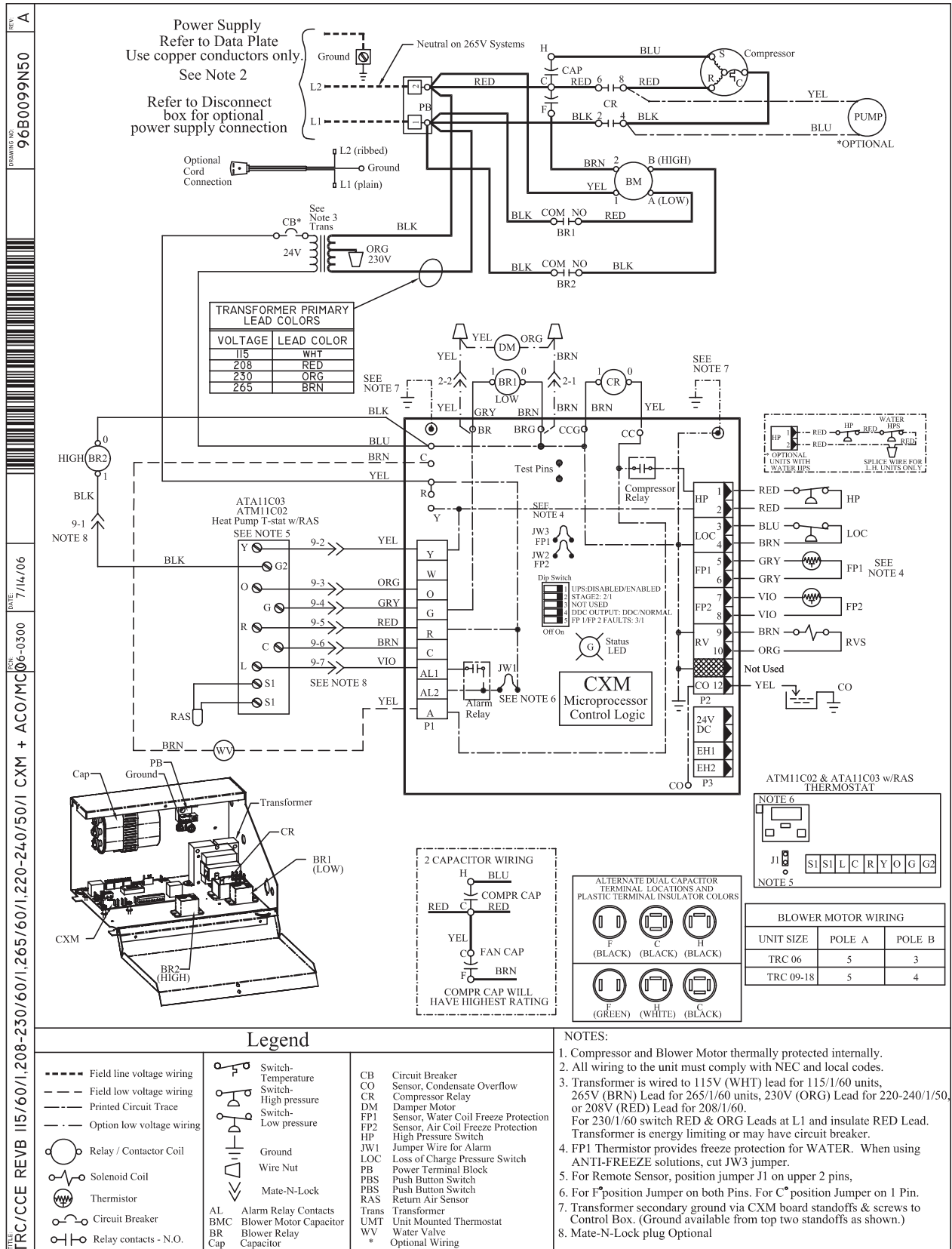
## TRC Series Wiring Diagram Matrix

Only CXM and DXM diagrams, with a representative diagram of LON and MPC Options are presented in this submittal. Other diagrams can be located online at [www.climatemaster.com](http://www.climatemaster.com) using the part numbers presented below.

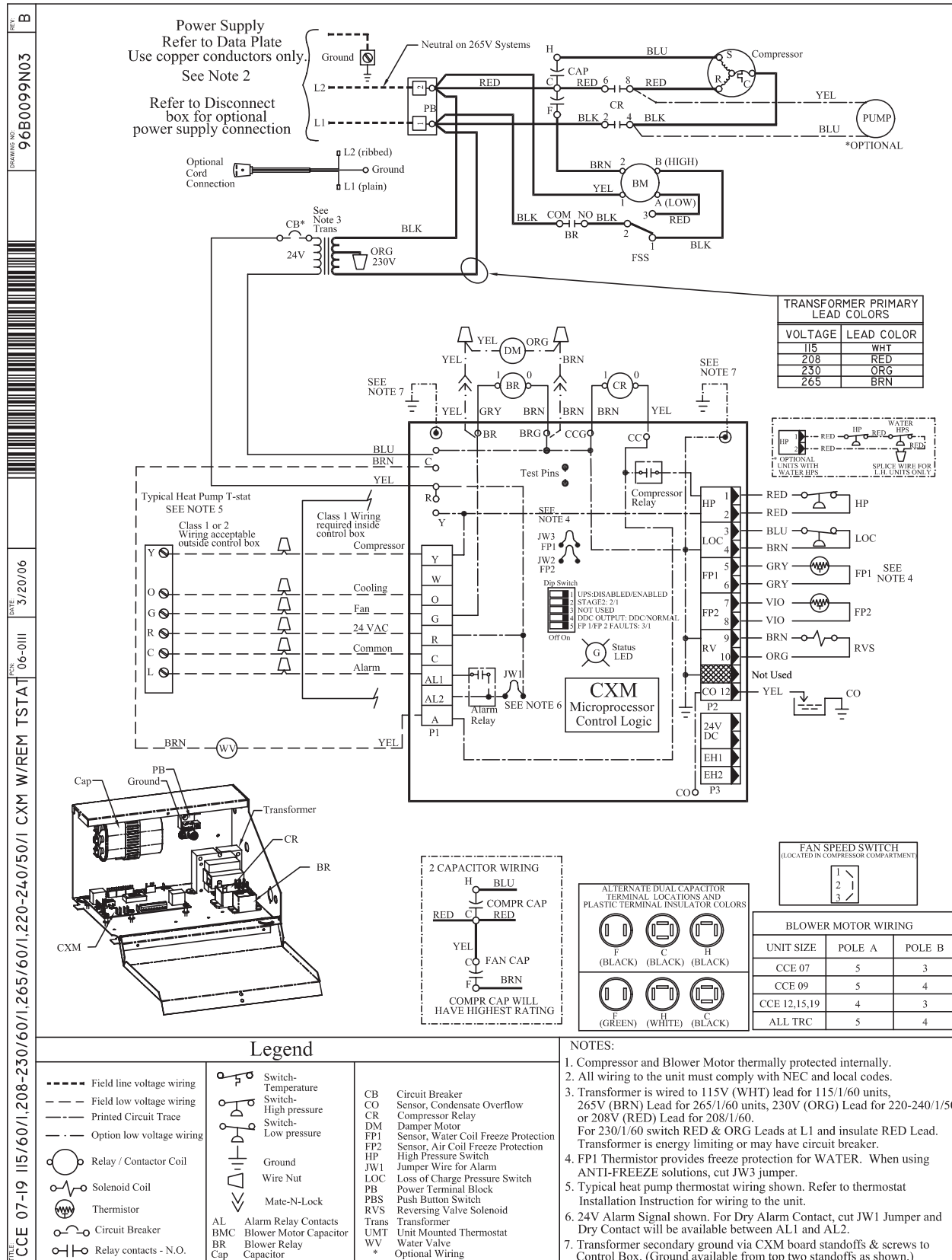
Model	Refrigerant	Wiring Diagram Part Number	Electrical	Control		Agency
TRC06 - TRC18	R410A	96B0099N50	115/60/1, 208-230/60/1, 265/60/1	CXM	ACO/MCO	CSA
	R410A	96B0099N03			REM	CSA
	R410A	96B0099N04			LON	CSA
	R410A	96B0099N05			MPC	CSA
	R410A	96B0100N50	115/60/1, 208-230/60/1, 265/60/1	DXM	ACO/MCO	CSA
	R410A	96B0100N03			REM	CSA
	R410A	96B0100N04			LON	CSA
	R410A	96B0100N05			MPC	CSA

All wiring diagrams available at [www.climatemaster.com](http://www.climatemaster.com).

## Typical Wiring Diagram Manual & Auto Change Over TRC Units With CXM Controller



## Typical Wiring Diagram Remote Mounted Thermostat TRC Units With CXM Controller

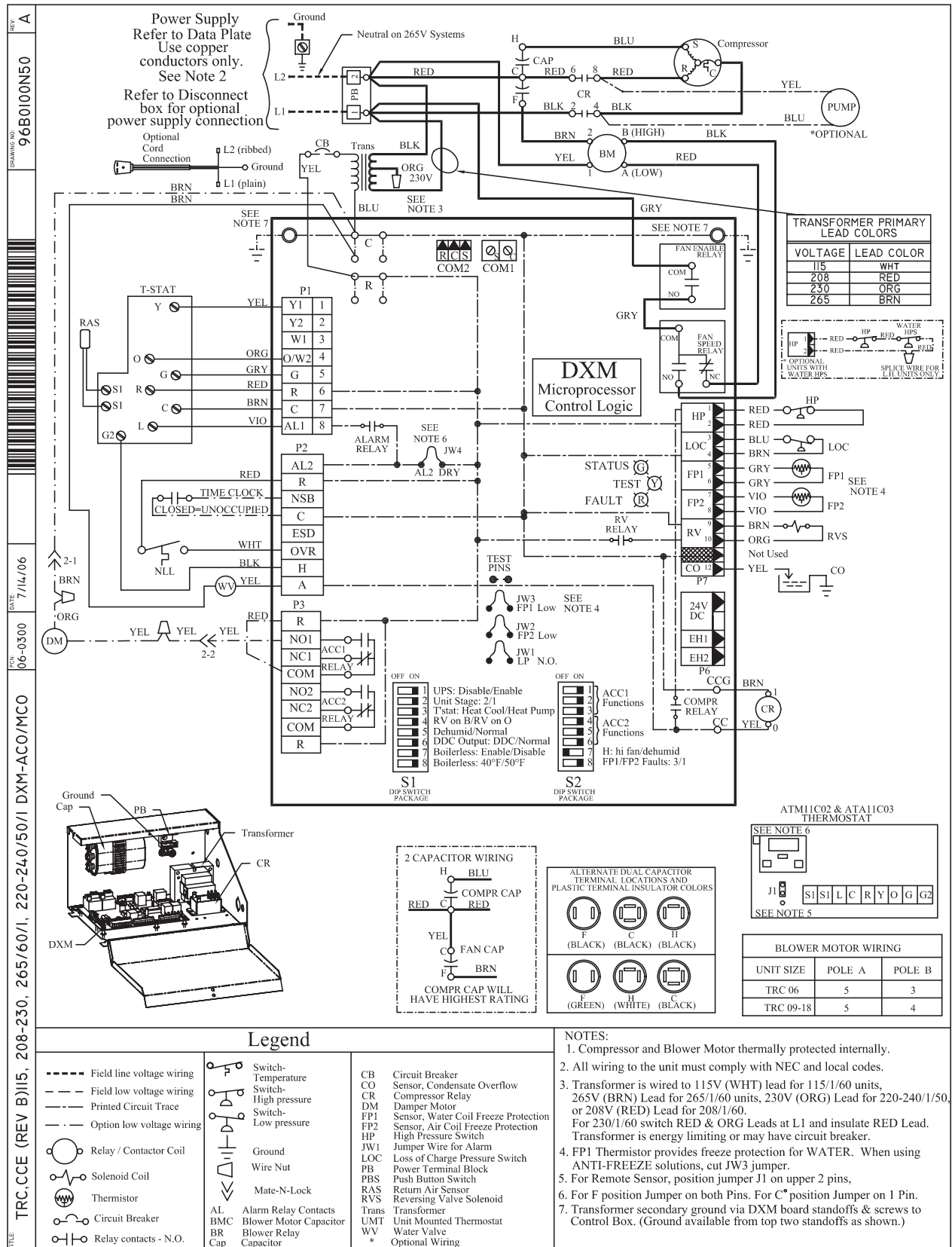








# Typical Wiring Diagram Manual & Auto Change Over TRC Units With DXM Controller



**Power Supply**  
Refer to Data Plate  
Use copper conductors only.  
See Note 2  
Refer to Disconnect box for optional power supply connection

Optional Cord Connection L2 (ribbed) Ground L1 (plain)

Neutral on 265V Systems

L2 RED BLU CR 6 8 RED  
L1 YEL BLK 2 4 BLK  
BRN 2 B (HIGH) BLK  
YEL 1 A (LOW) RED

Compressor PUMP \*OPTIONAL

SEE NOTE 7

Class 1 or 2 Wiring acceptable outside control box  
Class 1 Wiring required inside control box

Compressor Cooling Fan 24 VAC Common Alarm

Typical Heat Pump T-stat SEE NOTE 5

TIME CLOCK CLOSED=UNOCCUPIED

NLL WHT YEL WV

DM YEL YEL YEL

OVVERRIDE WITH DIGITAL T-STAT

Transformer CR

DXM Microprocessor Control Logic

STATUS TEST FAULT RV RELAY

JW3 FP1 Low JW2 FP2 Low JW1 LP N.O.

OFF ON 1 UPS: Disable/Enable 2 Unit Stage: 2/1 3 Tstat: Heat Cool/Heat Pump 4 RV on B/RV on O 5 Dehumid/Normal 6 DDC Output: DDC/Normal 7 Boilerless: Enable/Disable 8 Boilerless: 40°F/50°F

S1 DIP SWITCH PACKAGE S2 DIP SWITCH PACKAGE

TRANSFORMER PRIMARY LEAD COLORS

VOLTAGE	LEAD COLOR
115	WHT
208	RED
230	ORG
265	BRN

HP LOC FP1 FP2 VIO VIO BRN ORG Not Used YEL CO

24V DC EH1 EH2 CCG COMPR RELAY CC

HP 1 HP 2 HP 3 HP 4 HP 5 HP 6 HP 7 HP 8 HP 9 HP 10 HP 11 HP 12

SPICE WIRE FOR WATER UNITS ONLY

FAN SPEED SWITCH (LOCATED IN COMPRESSOR COMPARTMENT)

BLOWER MOTOR WIRING

UNIT SIZE	POLE A	POLE B
CCE 07	5	3
CCE 09	5	4
CCE 12,15,19	4	3
ALL TRC	5	4

**Legend**

- Field line voltage wiring
- Field low voltage wiring
- Printed Circuit Trace
- Option low voltage wiring
- Relay / Contactor Coil
- Solenoid Coil
- Thermistor
- Circuit Breaker
- Relay contacts - N.O.
- Switch-Temperature
- High-pressure
- Switch-Low pressure
- Ground
- Wire Nut
- Mate-N-Lock
- Alarm Relay Contacts
- Blower Motor Capacitor
- Blower Relay Cap
- Circuit Breaker
- Sensor, Condensate Overflow
- Compressor Relay
- Damper Motor
- Sensor, Water Coil Freeze Protection
- Sensor, Air Coil Freeze Protection
- High Pressure Switch
- Reversing Valve Solenoid
- Transformer
- Unit Mounted Thermostat
- Water Valve
- \* Optional Wiring

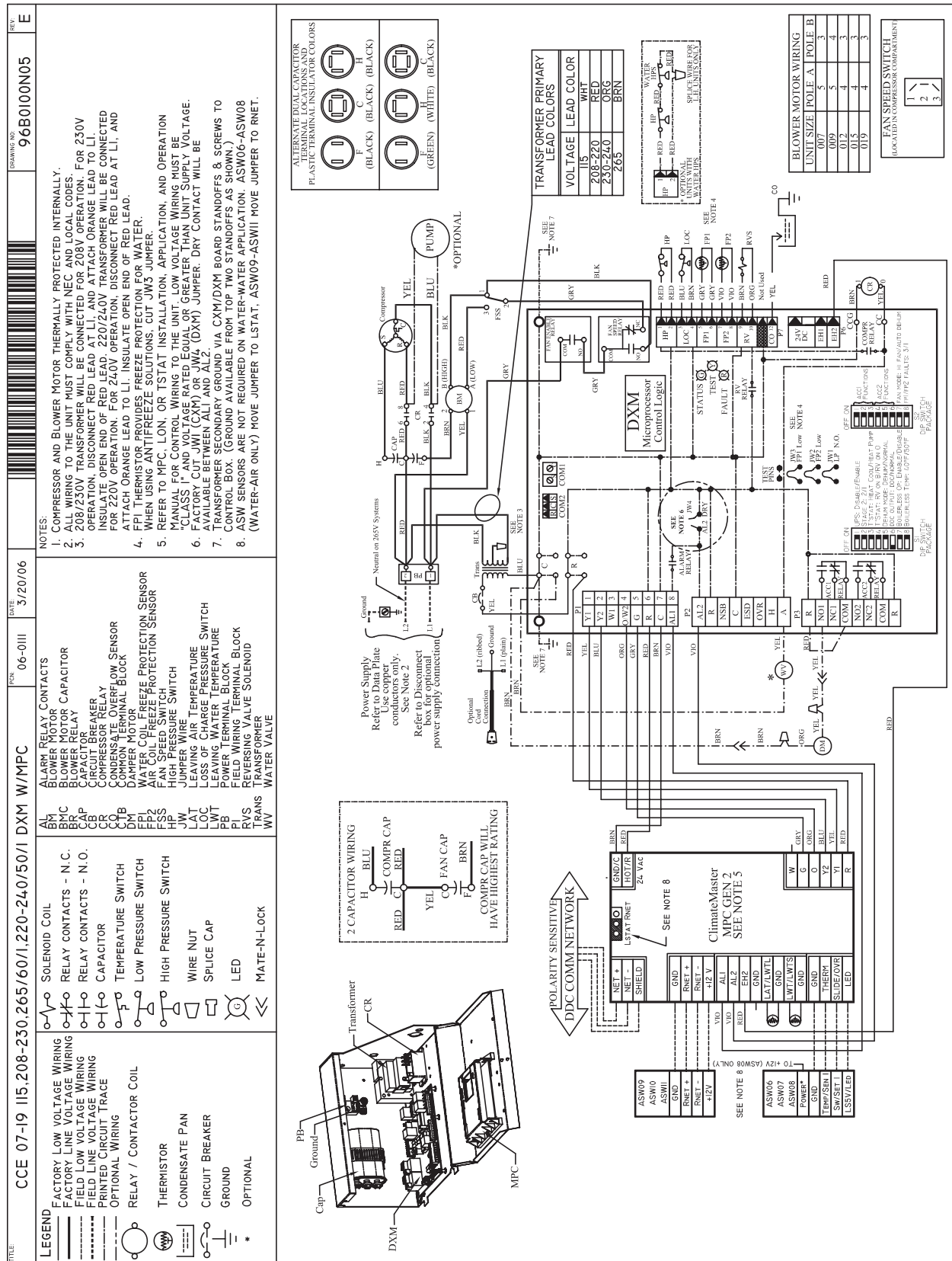
**NOTES:**

- Compressor and Blower Motor thermally protected internally.
- All wiring to the unit must comply with NEC and local codes.
- Transformer is wired to 115V (WHT) lead for 115/1/60 units, 265V (BRN) Lead for 265/1/60 units, 230V (ORG) Lead for 220-240/1/5 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.
- FP1 Thermistor provides freeze protection for WATER. When using ANTI-FREEZE solutions, cut JW3 jumper.
- Typical unit mounted thermostat wiring shown.
- 24V Alarm Signal shown. For Dry Alarm Contact, cut AL2DRY (JW4) alarm and Dry Contact will be available between AL1 and AL2.
- Transformer secondary ground via DXM board standoffs & screws to Control Box. (Ground available from top two standoffs as shown.)





## Typical Wiring Diagram TRC Units With DXM & MPC Controller



## Tranquility Console (TRC) Series 60Hz Engineering Specifications Rev.: 04/02/07

### General:

Furnish and install ClimateMaster "Console" 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.

### Console Water Source Heat Pumps:

Units shall be supplied completely factory built for an entering water temperature range from 20° to 120°F (-6.7° to 48.9°C) as standard. Equivalent units from other manufacturers can be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated and certified in accordance with American Refrigeration Institute / International Standards Organization (ARI / ISO) and Environmental Testing Laboratories for United States and Canada (ETL-US-C). The units shall have ARI / ISO and ETL-US-C labels.

### Basic Construction:

Console Units shall have one of the following air flow and piping arrangements: Front Inlet/Right-hand Piping; Front Inlet/Left-hand piping; Bottom Inlet/Right-hand piping; or Bottom Inlet/Left-hand piping as shown on the plans. **If units with these arrangements are NOT used, the contractor is responsible for any extra costs incurred by other trades.** If other arrangements make servicing difficult, the contractor must provide access panels and clear routes to ease service. Architect/Engineer must approve any changes in layout.

The cabinet, wall mounting hardware and subbase shall be constructed of heavy gauge galvanized steel with a baked polyester powder coat paint finish. Corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. **Unit corrosion protection must meet these stringent requirements or unit(s) will not be accepted.** Color will be Polar Ice. Both sides of the steel shall be painted for added protection. Additionally, the wall mounting hardware shall have welded corner bracing. The easily removable cabinet enclosure allows for easy service to the chassis, piping compartment and control compartment.

All interior surfaces shall be lined with 1/4 inch (6.4mm) thick, dual density, 2 lb/ft<sup>3</sup> (32 kg/m<sup>3</sup>) acoustic flexible blanket type glass fiber insulation with a non-woven, anti-microbial treated mat face. Insulation placement shall be designed in a manner that will eliminate any exposed edges to prevent the introduction of glass fibers into the air stream.

Standard insulation must meet NFPA Fire Hazard Classification requirements 25/50 per ASTM E84, UL 723, CAN/ULC S102-M88 and 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.**

The cabinet shall have a 30° sloped top with aluminum rigid bar type discharge grille. Aluminum discharge grille shall be anodized charcoal grey in color including hinged control door. Cabinet shall have rounded edges (0.325 inch / 8.255 mm minimum radius) on all exposed corners for safety and esthetic purposes. **Units not having sloped top and rounded corners (0.325 inch / 8.255 mm minimum) on front, side, top slope, and top corners shall not be accepted.**

Return Air Filter shall be 1" (25.4mm) fiberglass disposable type media for bottom return units (units with subbase) or 1/8" (3.2mm) permanent cleanable type media for front return type units.

*Option: The unit shall be provided with a keyed lock on the control access door.*

*Option: The unit shall be provided with a motorized outside air damper and damper assembly, factory mounted and wired.*

*Option: The unit shall be provided without a subbase (5 inch / 127mm high subbase is standard).*

*Option: The unit shall include a front return air grille integrally stamped into Cabinet (no subbase allowed).*

*Option: The unit shall include an optional architectural-style field installed return air grille to help conceal the subbase return air opening (units with bottom return only).*

*Option: The unit shall be supplied with extended range Insulation option, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant to water heat exchanger.*

### Fan and Motor Assembly:

Fan and motor assembly shall be assembled on a slide out fan deck with quick electrical disconnecting means to provide and facilitate easy field servicing. The fan motor shall be multi-speed, permanently lubricated, PSC type, with internal thermal

overload protection. Units supplied without permanently lubricated motors must provide external oilers for easy service. The fan motor shall include a torsionally flexible motor mounting system or saddle mount system with resilient rings to inhibit vibration induced high noise levels associated with "hard wire belly band" motor mounting. The airflow rating of the unit shall be based on a wet coil and a clean filter in place. **Ratings based on a dry coil and / or no filter shall NOT be acceptable.**

#### Refrigerant Circuit:

All units shall contain an EarthPure® (HFC 410A) sealed refrigerant circuit including a high efficiency rotary compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, an enhanced corrugated aluminum lanced fin and rifled copper tube refrigerant to air heat exchanger, reversing valve, coaxial (tube in tube) refrigerant to water heat exchanger, and safety controls including a high pressure switch, low pressure switch (loss of charge), water coil low temperature sensor, and air coil low temperature sensor. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the contractor supplied disconnect switch. **Units that cannot be reset at the thermostat shall not be acceptable.**

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on computer selected vibration isolation grommets to a large heavy gauge compressor mounting tray plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 625 PSIG (4309 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 625 PSIG (4309 kPa) working refrigerant pressure and 450 PSIG (3101 kPa) working water pressure. The refrigerant to water heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all external steel and copper tubing. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced types with external equalizer for optimum refrigerant metering. Units shall be designed and tested for operating ranges of entering water temperatures from 20° to 120°F (-6.7° to 48.9°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function. If the reversing valve solenoid defaults to cooling mode, an additional low temperature thermostat must be provided to prevent over-cooling an already cold room.

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

*Option: The unit will be supplied with internally factory mounted two-way water valve for variable speed pumping requirements. A factory-mounted or field-installed high pressure switch shall be installed in the water piping to disable compressor operation in the event water pressures build due to water freezing in the piping system.*

*Option: The unit will be supplied with internally factory mounted automatic water flow regulators.*

*Option: The unit will be supplied with internally mounted secondary pump for primary/secondary applications, specifically one-pipe systems.*

*Option: The unit shall be supplied with extended range Insulation option, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant to water heat exchanger.*

*Option: The refrigerant to air heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all galvanized end plates and copper tubing, and a minimum of 2000 hours of salt spray on all aluminum fins. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).*

#### Piping:

Water piping shall terminate in the same location regardless of the connection and valve options.

*Option: Threaded EPT copper fittings (sweat connections are standard).*

*Option: Threaded IPT copper fittings (sweat connections are standard).*

#### **Drain Pan:**

The drain pan shall be constructed of galvanized steel and have a powder coat paint application to further inhibit corrosion. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Stainless Steel materials are also acceptable. Drain pan shall be fully insulated. Drain outlet shall be located at pan as to allow complete and unobstructed drainage of condensate. The unit as standard will be supplied with solid-state electronic condensate overflow protection. **Mechanical float switches will NOT be accepted.**

#### **Electrical:**

Unit controls shall be located under the hinged control door in the sloped top grille. Operating controls shall consist of slide switches to select "OFF", "HEAT," "COOL," "AUTO" (when equipped with auto change-over option – "AUTO" is not available for standard manual change-over controls), Fan "AUTO" (fan cycles with compressor), Fan "ON" (continuous fan), Fan "LO" (low speed fan), and Fan "HI" (high speed fan). Temperature adjustment shall be accomplished via two push buttons, one labeled with an arrow up, and the other labeled with an arrow down. Controls shall include an LCD display for display of temperature and set point. **Units without an LCD display shall not be accepted.**

A control box shall be located above the unit compressor compartment and shall contain operating controls as outlined in the paragraph above, 24VAC transformer, double-pole compressor relay, and solid-state controller for complete unit operation. Reversing valve and fan motor wiring shall be routed through this electronic controller. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. A unit-mounted digital thermostat with a remote bulb measuring return air temperature shall control the compressor operation for heating and cooling. Control shall be equipped with a fan switch (provides options to cycle fan with compressor or provide continuous fan) and a fault indicator light. **Units without a fault indicator light shall not be accepted.**

*Option: Digital ACO unit mounted thermostat (MCO is standard).*

*Option: Provisions for remote thermostat (unit mounted is standard).*

*Option: Disconnect Switch, Non-Fused.*

*Option: Disconnect Switch, Fused with 15A fuse.*

*Option: 20A power plug/cord.*

*Option: 20A plug, cord, receptacle, disconnect switch, fused with 15A fuse.*

*Option: 20A plug, cord, receptacle, disconnect switch, non fused.*

#### **Solid State Control System (CXM):**

Units shall have a solid-state control system. **Units utilizing electro-mechanical control shall not be acceptable.** The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat pump type thermostat. The control system shall have the following features:

- a. Anti-short cycle time delay on compressor operation.
- b. Random start on power up mode.
- c. Low voltage protection.
- d. High voltage protection.
- e. Unit shutdown on high or low refrigerant pressures.
- f. Unit shutdown on low water temperature.
- g. Condensate overflow electronic protection.
- h. Option to reset unit at thermostat or disconnect.
- i. Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
- j. Ability to defeat time delays for servicing.
- k. Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low voltage, high voltage, low water/air temperature cut-out, condensate overflow, and control voltage status.
- l. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor start command to prevent nuisance safety trips.
- m. 24V output to cycle a motorized water valve or other device with compressor contactor.
- n. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.



- o. Water coil low temperature sensing (selectable for water or anti-freeze).
- p. Air coil low temperature sensing.

**NOTE: Units not providing the 8 safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil low temperature cut-out, and condensate overflow protections will not be accepted.**

#### Option: Enhanced solid state control system (DXM)

This control system features two stage control of cooling and two stage control of heating modes for exacting temperature and dehumidification purposes.

This control system coupled with a multi-stage thermostat will better dehumidify room air by automatically running the heat pump's fan at lower speed on the first stage of cooling thereby implementing low sensible heat ratio cooling. On the need for higher cooling performance the system will activate the second stage of cooling and automatically switch the fan to the higher fan speed setting. This system may be further enhanced with a humidistat. **Units not having automatic low sensible heat ratio cooling will not be accepted;** as an alternate a hot gas reheat coil may be provided with control system for automatic activation.

Control shall have all of the above mentioned features of the CXM control system along with the following expanded features:

- a. Removable thermostat connector.
- b. Night setback control.
- c. Random start on return from night setback.
- d. Minimized reversing valve operation (Unit control logic shall only switch the reversing valve when cooling is demanded for the first time. The reversing valve shall be held in this position until the first call for heating, ensuring quiet operation and increased valve life.).
- e. Override temperature control with 2-hour (adjustable) timer for room occupant to override setback temperature at the thermostat.
- f. Dry contact night setback output for digital night setback thermostats.
- g. Ability to work with heat pump or heat/cool (Y, W) type thermostats.
- h. Ability to work with heat pump thermostats using O or B reversing valve control.
- i. Emergency shutdown contacts.
- j. Boilerless system heat control at low loop water temperature.
- k. Ability to allow up to 3 units to be controlled by one thermostat.
- l. Relay to operate an external damper.
- m. Ability to automatically change fan speed from multistage thermostat.
- n. Relay to start system pump.
- o. 75 VA control transformer. Control transformer shall have load side short circuit and overload protection via a built in circuit breaker.

#### Remote Service Sentinel (CXM/DXM):

Solid state control system shall communicate with thermostat to display (at the thermostat) the unit status, fault status, and specific fault condition, as well as retrieve previously stored fault that caused unit shutdown. The Remote Service Sentinel allows building maintenance personnel or service personnel to diagnose unit from the wall thermostat. The control board shall provide a signal to the thermostat fault light, indicating a lockout. Upon cycling the G (fan) input 3 times within a 60 second time period, the fault light shall display the specific code as indicated by a sequence of flashes. A detailed flashing code shall be provided at the thermostat LED to display unit status and specific fault status such as over/under voltage fault, high pressure fault, low pressure fault, low water temperature fault, condensate overflow fault, etc. **Units that do not provide this remote service sentinel shall not be acceptable.**

#### Option: Lonworks interface system

Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a LONWORKS interface board, which is LONMark certified. This will permit all units to be daisy chained via a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm

- i. High pressure switch alarm
- j. Condensate sensor alarm
- k. Hi/low voltage alarm
- l. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied / occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON / AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

#### **Option: MPC (Multiple Protocol Control) interface system**

Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch. Protocol selection shall not require any additional programming or special external hardware or software tools. This will permit all units to be daisy chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

- a. Space temperature
- b. Leaving water temperature
- c. Discharge air temperature
- d. Command of space temperature setpoint
- e. Cooling status
- f. Heating status
- g. Low temperature sensor alarm
- h. Low pressure sensor alarm
- i. High pressure switch alarm
- j. Condensate overflow alarm
- k. Hi/low voltage alarm
- l. Fan "ON/AUTO" position of space thermostat as specified above
- m. Unoccupied / occupied command
- n. Cooling command
- o. Heating command
- p. Fan "ON / AUTO" command
- q. Fault reset command
- r. Itemized fault code revealing reason for specific shutdown fault (any one of 7)

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

#### **Warranty:**

Climate Master shall warranty equipment for a period of 12 months from start up or 18 months from shipping (which ever occurs first).

*Option: Extended 4-year compressor warranty covers compressor for a total of 5 years.*

*Option: Extended 4-year refrigeration circuit warranty covers coils, reversing valve, expansion valve and compressor for a total of 5 years.*

*Option: Extended 4-year control board warranty covers the CXM/DXM control board for a total of 5 years.*

#### **FIELD INSTALLED OPTIONS**

##### **Hose Kits:**

Hoses shall be 1 foot (31cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted. Note: Threaded connection piping option must be ordered for hose kit connections.

*Option: 2 foot (61cm) hose lengths instead of standard 1 foot (31cm) length.*

##### **Valves:**

The following valves are available and will be shipped loose:

- a. Ball valve; bronze material, standard port full flow design, IPT connections.

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- b. Ball valve with memory stop and PT Port; standard port full flow design, IPT connections.
- c. "Y" strainer with cap; bronze material, IPT connections.
- d. "Y" strainer with blowdown valve; bronze material, IPT connections.
- e. Motorized water valve; slow acting, 24v, IPT connections.

**Hose Kit Assemblies:**

The following assemblies ship with the valves already assembled to the hose described:

- a. Supply and return hoses having ball valve with PT port.
- b. Supply hose having ball valve with PT port; return hose having automatic flow regulator valve (Measureflo) with PT ports, and ball valve.
- c. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having automatic flow regulator (Measureflo) with PT ports, and ball valve.

**Thermostats:**

The thermostat shall be a ClimateMaster mechanical or electronic type thermostat as selected below with the described features (Note: "Remote mounted thermostat" control option must be selected for the console unit):

- a. Single Stage Standard Manual Changeover (ATM11C01)  
Thermostat shall be a single-stage, vertical mount, manual changeover with HEAT-OFF-COOL system switch and fan ON-AUTO switch. Thermostat shall have a mechanical temperature indicator and set point indication. Thermostat shall only require 4 wires for connection. Mercury bulb thermostats are not acceptable.
- b. Single Stage Digital Manual Changeover with Two-Speed Fan Control (ATM11C03) – Recommended for Console Remote-Mount Thermostat (DXM required)  
Thermostat shall be a single-stage, digital, manual changeover with HEAT-OFF-COOL system switch, fan ON-AUTO switch, and fan LO-HI switch. Thermostat shall have an LCD display with temperature and set-point(s) in °F or °C. The Thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to display specific fault condition. Thermostat shall come standard with remote temperature sensor, but may be operated with internal sensor if desired via installation of a jumper.
- c. Single Stage Digital Auto or Manual Changeover (ATA11U01)  
Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch and fan ON-AUTO switch. Thermostat shall have an LCD display with temperature and set-point(s) in °F or °C. The Thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to display specific fault condition. Thermostat shall provide temperature display offset for custom applications.
- d. Single Stage Digital Automatic Changeover with Two-Speed Fan Control (ATA11C04) – Recommended for Console Remote-Mount Thermostat (DXM required)  
Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch, fan ON-AUTO switch, and fan LO-HI switch. Thermostat shall have an LCD display with temperature and set-point(s) in °F or °C. The Thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to display specific fault condition. Thermostat shall come standard with remote temperature sensor, but may be operated with internal sensor if desired via installation of a jumper.
- e. Multistage Digital Automatic Changeover (ATA22U01)  
Thermostat shall be multi-stage (2H/2C), manual or automatic changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. A fault LED shall be provided to indicate specific fault condition(s). Thermostat shall provide temperature display offset for custom applications. Thermostat shall allow unit to provide better dehumidification with optional DXM controller by automatically using lower fan speed on stage 1 cooling (higher latent cooling) as main cooling mode, and automatically shifting to high speed fan on stage 2 cooling.
- f. Single Stage Manual Changeover Programmable 5/2 Day (ATP11N01)  
Thermostat shall be 5 day/2 day programmable (with up to 4 set points per day), single stage (1H/1C), manual changeover with HEAT-OFF-COOL system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. Thermostat shall provide convenient override feature to temporarily change set point.
- g. Multistage Automatic or Manual Changeover Programmable 5/2 Day (ATP21U01)  
Thermostat shall be 5 day/2 day programmable (with up to 4 set points per day), multi-stage (2H/1C), automatic or manual changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, set-point(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of set-point(s) without batteries. Thermostat shall provide convenient override feature to temporarily change set point.
- h. Multistage Automatic or Manual Changeover Programmable 7 Day (ATP32U01)  
Thermostat shall be 7 day programmable (with up to 4 set points per day), multi-stage (3H/2C), automatic or manual



changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Thermostat shall have a blue backlit dot matrix LCD display with temperature, set-points, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of set-points without batteries. Thermostat shall provide heating set-point range limit, cooling set-point range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

- i. Multistage Automatic or Manual Changeover Programmable 7 Day with Humidity Control (ATP32U02)  
Thermostat shall be 7 day programmable (with up to 4 set points per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO system settings and fan ON-AUTO settings. Separate dehumidification and humidification set points shall be configurable for discreet outputs to a dehumidification option and/or an external humidifier. Installer configuration mode shall allow thermostat dehumidification mode to operate with ClimaDry reheat or with ECM fan dehumidification mode via settings changes. Thermostat shall have a blue backlit dot matrix LCD display with temperature, relative humidity, set-points, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of set-points without batteries. Thermostat shall provide heating set-point range limit, cooling set-point range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

#### **DDC Sensors:**

ClimateMaster wall mounted DDC sensor to monitor room temperature and interfaces with optional interface system described above. Several types as described below:

- a. Sensor only with no display (LON and MPC).
- b. Sensor with override (LON only).
- c. Sensor with setpoint and adjustment override (MPC only).
- d. Sensor with setpoint and adjustment override, LCD display, status/fault indication (LON and MPC).

## Section Change Log

Date:	Item:	Action:
05/23/07	Specifications	Updated for new Safety Agency
05/23/07	Decoder	Updated decoder
01/01/07	First Published	

**Notes:**

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