

**TRANQUILITY[®] LARGE
WATER-TO-WATER
(TMW) SERIES
SUBMITTAL DATA**

**MODELS TMW360 - 840
60HZ - HFC-410A**

ENGLISH LANGUAGE/I-P UNITS



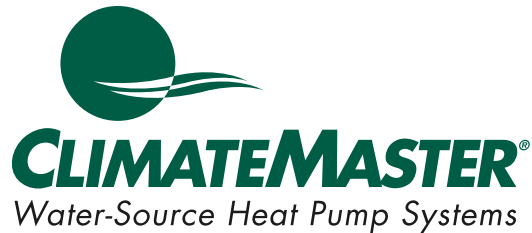
Rev.: 27, February 2013

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LC975

Rev.: 27, February 2013



SUBMITTAL DATA - I-P UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ Btuh

EER: _____

Heating Capacity: _____ Btuh

COP: _____

Ambient Air Temp: _____ °F

Entering Water Temp (Clg): _____ °F

Entering Air Temp (Clg): _____ °F

Entering Water Temp (Htg): _____ °F

Entering Air Temp (Htg): _____ °F

Airflow: _____ CFM

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (lb)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

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**MODELS TMW360 - 840
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Rev.: 27, February 2013

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LC975

Rev.: 27, February 2013



SUBMITTAL DATA - S-I UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ kW

EER: _____

Heating Capacity: _____ kW

COP: _____

Ambient Air Temp: _____ °C

Entering Water Temp (Clg): _____ °C

Entering Air Temp (Clg): _____ °C

Entering Water Temp (Htg): _____ °C

Entering Air Temp (Htg): _____ °C

Airflow: _____ l/s

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (kg)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

Table of Contents

	*PAGE NUMBER
UNIT FEATURES	4
SELECTION PROCEDURE	5
TMW LARGE SERIES NOMENCLATURE	7
PERFORMANCE DATA - AHRI/ASHRAE/ISO 13256-2.	8
PERFORMANCE DATA - TMW360 (60HZ I-P) - COOLING.	9
PERFORMANCE DATA - TMW360 (60HZ I-P) - HEATING.	10
PERFORMANCE DATA - TMW600 (60HZ I-P) - COOLING.	11
PERFORMANCE DATA - TMW600 (60HZ I-P) - HEATING.	12
PERFORMANCE DATA - TMW840 (60HZ I-P) - COOLING.	13
PERFORMANCE DATA - TMW840 (60HZ I-P) - HEATING.	14
ANTIFREEZE CORRECTION TABLE	15
PHYSICAL & ELECTRICAL DATA	16
DIMENSIONAL DATA - TMW360 - 840	17
TMW LARGE SERIES - SOUND DATA AND WIRING DIAGRAM MATRIX.	18
TMW LARGE SERIES - TYPICAL WIRING DIAGRAM	19
ENGINEERING SPECIFICATIONS	22
REVISION HISTORY	28

*Document page number is shown next to part number (e.g. LC975 - 3 = page 3). Since not all pages are typically used in the submittals process, the page number in the lower right corner can still be used (page ____ of ____).

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Unit Features

THE TRANQUILITY® LARGE WATER-TO-WATER (TMW) SERIES

The Tranquility® Large Water-to-Water (TMW) Series offers high efficiency and high capacity with advanced features, quiet operation and application flexibility at competitive prices. As ClimateMaster's largest water-to-water unit, the TMW Large Series can be used for radiant floor heating, snow/ice melt, chilled or hot water for fan coils, industrial process control, potable hot water generation*, hot/chilled water for make-up air, and many other types of HVAC and industrial applications that require cost effective heated or chilled water.

The Tranquility® Large Water-to-Water (TMW) Series exceeds ASHRAE 90.1 efficiencies, and also uses EarthPure® (HFC-410A) zero ozone depletion refrigerant, making it an extremely environmentally-friendly option. The unit is eligible for additional LEED® (Leadership in Energy and Environmental Design) points because of the "green" technology design.

Available in 30, 50, and 70 ton capacities (105.6 kW, 176 kW, and 246 kW), the TMW Large Series provides high capacity in a small footprint, which saves mechanical room space. The TMW Large Series has an extended range refrigerant circuit (refrigerant and water circuit insulation is standard), 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, modulating motorized water valve on source side, and TXV refrigerant metering device are just some of the features of the flexible TMW Large Series. The brazed plate heat exchangers constructed of 316 stainless steel are designed for many years of reliable operation.

Scroll compressor(s) operate quietly, and provide part load operation for capacity control. For ease of installation and service, access to the refrigeration service and electrical control panel is located at the front of the unit, allowing units to be installed side-by-side for large capacity applications.

TMW Large Series is controlled by a (BAS) Building Automation System or BACview6. BAS or BACview6 is used to monitor, change operating setpoints, check faults, and service diagnostics of the TMW.

The TMW Series water-to-water heat pumps are designed to meet the challenges of today's HVAC demands with a high efficiency, high value solution.

*Requires field supplied secondary heat exchanger.

UNIT FEATURES

- Sizes 360 (30 tons, 105.6 kW), 600 (50 tons, 176 kW), and 840 (70 tons, 246 kW)
- Copeland scroll compressor(s)
- Dual independent refrigeration circuits
- Exceeds ASHRAE 90.1 efficiencies
- Brazed plate heat exchanger for both source and load
- Exclusive front and back service access allows multiple units to be installed side-by-side for large capacity installations
- Top water connections, staggered for ease of manifolding multiple units
- Fully insulated water and refrigerant circuits
- Heavy gauge galvanized steel construction with polyester powder coat paint
- Insulated compressor compartment
- Small footprint
- TXV metering devices
- Extended range (30 to 120°F, -1.1 to 48.9°C) operation
- Microprocessor controls standard
- BACnet, Modbus, and Johnson N2 compatibility for DDC controls
- Lights on the front of the cabinet indicate unit power, fault, compressor 1 and 2 in operation
- Eleven safeties standard to protect the compressors and brazed plate heat exchangers
- Differential pressure sensors (2) for proof of water flow for Load and Source, factory installed.
- Optional modulating motorized water valve on Source side to maintain compressor head pressure
- Optional motorized valve on Load side for variable speed pumping.
- BACview 6 controller is used to set up unit controller at start up, and to monitor, change default settings, or service unit.
- Accessory 60 Mesh Y and basket strainers to mount external of unit.

Reference Calculations

<p>Heating</p> $LWT = EWT - \frac{HE}{GPM \times 500}$	<p>Cooling</p> $LWT = EWT + \frac{HR}{GPM \times 500}$
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Legend and Glossary of Abbreviations

BTUH = BTU(British Thermal Unit) per hour	HC = heating capacity, BTUH
COP = coefficient of performance = BTUH output/BTUH input	HR = total heat of rejection, BTUH
EER = energy efficiency ratio = BTUH output/Watt input	FPT = female pipe thread
MPT = male pipe thread	KW = total power unit input, kilowatts
ESP = external static pressure (inches w.g.)	LWT = leaving water temperature, °F
EWT = entering water temperature	MBTUH = 1000 BTU per hour
GPM = water flow in U.S. gallons/minute	TC = total cooling capacity, BTUH
HE = total heat of extraction, BTUH	WPD = waterside pressure drop (psi & ft. of hd.)

Conversion Table - to convert inch-pound (English) to S-I (Metric)

Water Flow	Water Pressure Drop
Water Flow (L/s) = gpm x 0.0631	PD (kPa) = PD (ft of hd) x 2.99

Selection Procedure

- Step 1: Determine the actual heating and/or cooling loads at the applicable source water temperature/flow rate and load water temperature/flow rate. The source heat exchanger is the condenser in cooling/evaporator in heating; the load heat exchanger is the evaporator in cooling/condenser in heating.
- Step 2: Obtain the following design parameters: Entering source/load water temperature, source/load water flow rate in GPM and water flow pressure drop. **Water flow rate is generally between 2.25 and 3.00 GPM/ton for closed loop (boiler/tower and geothermal) systems, and between 1.5 and 2.0 GPM/ton for open loop (well water) systems.** 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: Determine application requirements. Water-to-water applications are almost always designed for a particular installation, which will change how the data tables are used for unit selection. For example, a water-to-water unit used for radiant floor heating on a geothermal closed loop is significantly different in unit selection from a water-to-water unit on a boiler/tower application used for generating chilled water for fan coil units. It is especially important to note that **the load water flow rate must be maintained above minimum flow rates as shown in the data tables for proper refrigerant circuit operation and unit longevity.** For example, most radiant floor applications require buffer (storage) tanks because the flow rate through the floor is usually lower than the minimum flow rate for the water-to-water unit. Therefore, selection of the heat pump is dependent upon maintaining a certain tank temperature and unit load flow rate. There would be a pump between the heat pump and the buffer tank, and a pump(s) between the buffer tank and radiant floor to maintain design flow rate on both sides.
- Step 4: Enter tables at the design source water temperature and flow rate. Choose the appropriate load water temperature and flow rate. **Read the total heating or cooling capacities (Note: interpolation is permissible; extrapolation is not).**
- Step 5: If the units selected are not within 10% of the load calculations, then review what effect changing the GPM and water temperature would have on the capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure.

Example Equipment Selection for Heating

Step 1 Load Determination:

Assume we have determined that the application will be heating only (radiant floor) for a large commercial warehouse, and that the appropriate heating load at design conditions is as follows:

Total heating.....480,000 BTUH

Step 2 Design Conditions:

Entering source temperature.....30°F (geothermal closed loop)

Source flow rate.....113 GPM

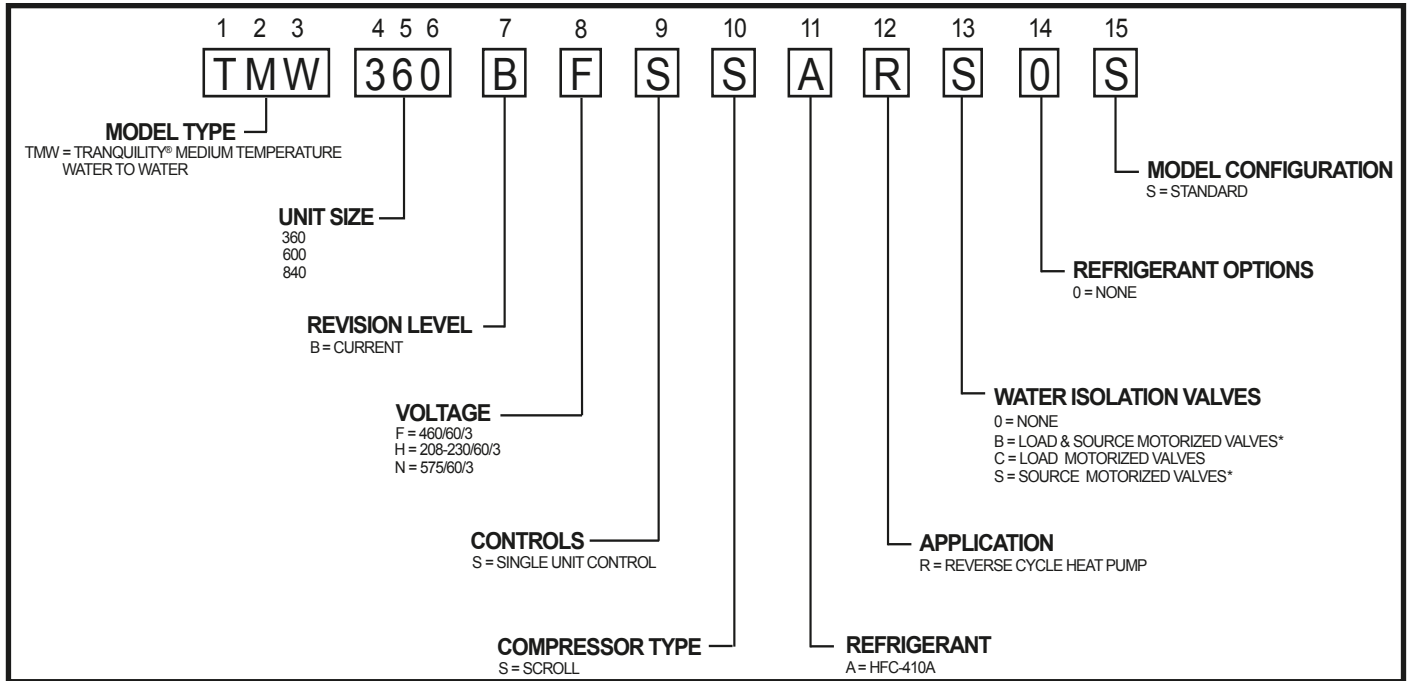
Entering load temperature.....130°F

Load flow rate.....113 GPM

Steps 3, 4, 5 HP Selection:

We enter the tables at design source water temperature and flow rate, and select the appropriate load water temperature and flow rate. A TMW600 at design conditions supplies 479,100 BTUH, which meets the design heating load requirement.

TMW Large Series Nomenclature



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TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - AHRI/ASHRAE/ISO 13256-2

TMW 360-840 Performance Data ASHRAE/AHRI/ISO 13256-2 English (I-P) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling		Heating		Cooling		Heating		Cooling		Heating	
	Indoor 53.6°F Outdoor 86°F		Indoor 104°F Outdoor 68°F		Indoor 53.6°F Outdoor 59°F		Indoor 104°F Outdoor 50°F		Indoor 53.6°F Outdoor 77°F		Indoor 104°F Outdoor 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
TMW360	380,300	16.00	531,000	5.10	438,000	24.20	416,000	4.20	399,600	18.40	316,000	3.40
TMW600	619,800	16.00	873,000	5.20	707,400	23.20	680,000	4.30	649,600	18.20	517,000	3.40
TMW840	814,800	16.20	1,141,000	5.30	925,700	23.30	894,000	4.40	852,600	18.40	677,000	3.40

All TMW360 ratings @ 90GPM Load w/90 GPM Source.

All TMW600 ratings @ 150GPM Load w/150 GPM Source.

All TMW840 ratings @ 210GPM Load w/210 GPM Source.

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

TMW 360-840 Performance Data ASHRAE/AHRI/ISO 13256-2 Metric (S-I) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling		Heating		Cooling		Heating		Cooling		Heating	
	Indoor 12°C Outdoor 30°C		Indoor 40°C Outdoor 20°C		Indoor 12°C Outdoor 15°C		Indoor 40°C Outdoor 10°C		Indoor 12°C Outdoor 25°C		Indoor 40°C Outdoor 0°C	
	Capacity kW	EER W/W	Capacity kW	COP	Capacity kW	EER W/W	Capacity kW	COP	Capacity kW	EER W/W	Capacity kW	COP
TMW360	111.46	4.70	155.63	5.10	128.37	7.10	121.92	4.20	117.12	5.39	92.61	3.40
TMW600	181.65	4.70	255.86	5.20	207.33	6.80	199.30	4.30	190.39	5.33	151.52	3.40
TMW840	238.80	4.75	334.41	5.30	271.31	6.83	262.02	4.40	249.88	5.39	198.42	3.40

All TMW360 ratings @ 5.68 l/s Load w/5.68 l/s Source.

All TMW600 ratings @ 9.47 l/s Load w/9.47 l/s Source.

All TMW840 ratings @ 13.25 l/s Load w/13.25 l/s Source.

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

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW360 (60Hz I-P) - Cooling

SOURCE				LOAD								SLWT °F	LOAD								SLWT °F									
EWT °F	Flow			Flow 45 GPM									EWT °F	Flow 68 GPM			EWT °F	Flow 90 GPM												
	GPM	WPD		TC	kW	HR	LLWT	EER	WPD	PSI	FT			TC	kW	HR		LLWT	EER	WPD		PSI	FT	TC	kW	HR	LLWT	EER	WPD	PSI
60	45	1.1	3	30																	278.4	17.8	338.9	23.9	15.6	4.2	9.6	75.0		
				40	312.4	18.30	374.5	26.3	17.1	1.2	2.7	76.6	326.5	18.5	389.3	30.4	17.6	2.4	5.6	77.2	333.3	18.6	396.5	32.7	17.9	4.2	9.6	77.6		
				50	365.2	19.11	430.1	33.9	19.1	1.2	2.7	79.1	384.5	19.4	450.4	38.7	19.8	2.4	5.6	80.0	393.8	19.6	460.3	41.3	20.1	4.2	9.6	80.5		
				60	421.4	20.07	489.5	41.4	21.0	1.2	2.7	81.8	447.0	20.5	516.8	46.8	21.8	2.4	5.6	83.0	459.5	20.8	530.1	49.8	22.1	4.2	9.6	83.6		
				70	480.4	21.20	552.4	48.7	22.7	1.2	2.7	84.6	513.5	21.9	588.0	54.8	23.4	2.4	5.6	86.2	529.9	22.3	605.6	58.2	23.8	4.2	9.6	87.1		
				80	541.5	22.53	618.1	55.9	24.0	1.2	2.7	87.6																		
	68	2.4	6	30																										
				40	494.1	19.85	561.5	48.1	24.9	1.2	2.7	76.7	460.5	19.3	526.0	46.4	23.9	2.4	5.6	75.6	474.3	19.5	540.6	49.5	24.3	4.2	9.6	76.0		
				50	558.2	21.02	629.6	55.2	26.6	1.2	2.7	78.7	530.7	20.5	600.4	54.3	25.9	2.4	5.6	77.8	549.0	20.9	619.9	57.8	26.3	4.2	9.6	78.4		
				60																										
				70																										
				80																										
75	45	1.1	3	30																										
				40	289.6	21.54	362.7	27.3	13.4	1.2	2.7	91.1	251.9	20.9	323.0	22.6	12.0	2.4	5.6	89.3	255.9	21.0	327.3	24.4	12.2	4.2	9.6	89.5		
				50	339.5	22.37	415.5	35.0	15.2	1.2	2.7	93.5	301.4	21.7	375.2	31.2	13.9	2.4	5.6	91.7	307.1	21.8	381.3	33.2	14.1	4.2	9.6	92.0		
				60	392.9	23.34	472.2	42.6	16.8	1.2	2.7	96.1	355.8	22.7	432.8	39.5	15.7	2.4	5.6	94.3	363.7	22.8	441.1	42.0	16.0	4.2	9.6	94.7		
				70	449.1	24.50	532.3	50.1	18.3	1.2	2.7	98.8	414.6	23.8	495.4	47.8	17.4	2.4	5.6	97.2	425.2	24.0	506.7	50.6	17.7	4.2	9.6	97.7		
				80	507.5	25.86	595.4	57.4	19.6	1.2	2.7	101.7	477.3	25.1	562.8	55.9	19.0	2.4	5.6	100.2	491.1	25.5	577.7	59.1	19.3	4.2	9.6	100.9		
	68	2.4	6	30																										
				40	296.8	20.48	366.3	26.9	14.5	1.2	2.7	85.8	258.0	20.0	325.9	22.5	12.9	2.4	5.6	84.6	262.3	20.1	330.4	24.2	13.1	4.2	9.6	84.8		
				50	348.9	21.15	420.7	34.6	16.5	1.2	2.7	87.5	309.6	20.6	379.7	30.9	15.0	2.4	5.6	86.3	315.8	20.7	386.2	33.0	15.2	4.2	9.6	86.4		
				60	404.7	21.95	479.3	42.1	18.4	1.2	2.7	89.3	366.6	21.4	439.3	39.2	17.1	2.4	5.6	88.1	375.3	21.5	448.4	41.7	17.4	4.2	9.6	88.3		
				70	463.7	22.91	541.6	49.4	20.2	1.2	2.7	91.1	428.7	22.3	504.5	47.4	19.2	2.4	5.6	90.0	440.4	22.5	517.0	50.3	19.6	4.2	9.6	90.4		
				80	525.3	24.07	607.1	56.7	21.8	1.2	2.7	93.1	495.3	23.5	575.1	55.3	21.1	2.4	5.6	92.2	510.9	23.8	591.7	58.7	21.5	4.2	9.6	92.7		
90	45	4.2	10	30																										
				40	300.4	19.97	368.2	26.8	15.0	1.2	2.7	83.2	261.0	19.6	327.4	22.4	13.3	2.4	5.6	82.3	265.5	19.6	332.1	24.2	13.5	4.2	9.6	82.4		
				50	353.5	20.56	423.3	34.4	17.2	1.2	2.7	84.4	313.7	20.1	382.0	30.8	15.6	2.4	5.6	83.5	320.1	20.2	388.7	33.0	15.9	4.2	9.6	83.6		
				60	410.5	21.28	482.8	41.8	19.3	1.2	2.7	85.8	372.0	20.8	442.6	39.1	17.9	2.4	5.6	84.9	381.1	20.9	452.1	41.6	18.2	4.2	9.6	85.1		
				70	471.0	22.16	546.2	49.1	21.3	1.2	2.7	87.2	435.7	21.6	509.2	47.1	20.1	2.4	5.6	86.4	448.1	21.8	522.2	50.1	20.5	4.2	9.6	86.7		
				80	534.2	23.22	613.1	56.3	23.0	1.2	2.7	88.7	504.2	22.7	581.4	55.1	22.2	2.4	5.6	88.0	520.8	23.0	598.9	58.4	22.7	4.2	9.6	88.4		
	68	2.4	6	30																										
				40	221.5	24.66	305.4	20.3	9.0	1.2	2.7	103.6	228.4	24.8	312.6	23.3	9.2	2.4	5.6	103.9	231.7	24.9	316.1	24.9	9.3	4.2	9.6	104.1		
				50	264.5	25.45	351.0	28.4	10.4	1.2	2.7	105.7	274.2	25.6	361.3	32.0	10.7	2.4	5.6	106.1	278.9	25.7	366.3	33.9	10.8	4.2	9.6	106.4		
				60	311.3	26.33	400.8	36.3	11.8	1.2	2.7	107.9	326.3	26.6	416.8	40.4	12.3	2.4	5.6	108.7	332.8	26.7	423.8	42.7	12.4	4.2	9.6	109.0		
				70	363.2	27.37	456.3	43.9	13.3	1.2	2.7	110.5	381.3	27.8	475.7	48.7	13.7	2.4	5.6	111.4	390.0	28.0	485.1	51.4	13.9	4.2	9.6	111.8		
				80	465.1	29.83	566.6	59.3	15.6	1.2	2.7	115.5	439.9	29.2	539.2	57.0	15.1	2.4	5.6	114.3	451.4	29.5	551.6	60.0	15.3	4.2	9.6	114.8		
90	2.4	6	30																											
			40	227.4	23.59	307.6	20.0	9.6	1.2	2.7	99.1	234.8	23.7	315.3	23.1	9.9	2.4	5.6	99.4	238.4	23.7	319.0	24.8	10.0	4.2	9.6	99.5			
			50	272.2	24.20	354.5	28.0	11.3	1.2	2.7	100.5	282.8	24.3	365.6	31.7	11.6	2.4	5.6	100.9	287.9	24.4	370.9	33.7	11.8	4.2	9.6	101.0			
			60	321.3	24.88	405.9	35.8	12.9	1.2	2.7	102.1	336.1	25.1	421.4	40.1	13.4	2.4	5.6	102.6	343.2	25.2	428.9	42.4	13.6	4.2	9.6	102.8			
			70	374.1	25.69	461.4	43.5	14.6	1.2	2.7	103.8	394.1	26.0	482.6	48.4	15.1	2.4	5.6	104.4	403.9	26.2	492.9	51.1	15.4	4.2	9.6	104.8			
			80	487.0	27.79	581.5	58.3	17.5	1.2	2.7	107.4	456.6	27.2	549.0	56.5	16.8	2.4	5.6	106.5	469.6	27.4	562.9	59.6	17.1	4.2	9.6	106.9			
90	4.2	10	30																											
			40	230.3	23.07	308.7	19.9	10.0	1.2	2.7	96.9	238.0	23.2	316.7	23.0	10.3	2.4	5.6	97.1	241.7	23.2	320.5	24.7	10.4	4.2	9.6	97.1			
			50	276.1	23.59	356.2	27.9	11.7	1.2	2.7	97.9	287.1	23.7	367.7	31.6	12.1	2.4	5.6	98.2	292.5	23.8	373.3	33.6	12.3	4.2	9.6	98.3			
			60	326.2	24.18	408.4	35.6	13.5	1.2	2.7	99.1	341.7	24.4	424.6	39.9	14.0	2.4	5.6	99.5	349.3	24.5	432.4	42.3	14.3	4.2	9.6	99.7			
			70	380.4	24.89	465.0	43.2	15.3	1.2	2.7	100.4	401.5	25.2	487.2	48.2	15.9	2.4	5.6	100.9	411.8	25.4	498.0	50.9	16.2	4.2	9.6	101.2			
			80	437.9	25.76	525.5	50.6	17.0	1.2	2.7	101.8	466.0	26.2	555.2	56.2	17.8	2.4	5.6	102.5	479.9	26.5	569.9	59.3	18.1	4.2	9.6	102.8			
105	45	1.1	3	30																										
				40	198.4	29.44	298.5	21.3	6.7	1.2	2.7	118.4	203.8	29.6	304.4	24.0	6.9	2.4	5.6	118.6	206.4	29.6	307.2	25.5	7.0	4.2	9.6	118.8		
				50	238.1	30.32	341.2	29.5	7.9	1.2	2.7	120.3	245.8	30.5																

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW360 (60Hz I-P) - Heating

SOURCE				LOAD								LOAD																	
EWT °F	Flow			EWT °F	Flow 45 GPM					SLWT °F	Flow 67 GPM						SLWT °F	Flow 90 GPM						SLWT °F					
	GPM	WPD PSI	FT		TC	kW	HE	LLWT	COP		WPD PSI	FT	TC	kW	HE	LLWT		COP	WPD PSI	FT	TC	kW	HE		LLWT	COP	WPD PSI	FT	
30	45	1.2	2.7	100	301.1	27.73	206.8	113.5	3.2	1.1	2.6	20.9	303.1	26.51	213.0	109.0	3.4	2.4	5.5	20.7	304.2	25.91	216.1	106.8	3.4	4.2	9.6	20.5	
				80	319.5	22.14	244.3	94.2	4.2	1.1	2.6	22.9	322.3	21.16	250.4	89.5	4.5	2.4	5.5	22.7	323.8	20.69	253.5	87.2	4.6	4.2	9.6	22.6	
				100	307.4	27.86	212.7	113.7	3.2	1.1	2.6	23.8	309.9	26.61	219.4	109.2	3.4	2.4	5.5	23.6	311.2	26.00	222.8	107.0	3.5	4.2	9.6	23.5	
				120	295.7	35.49	175.0	133.3	2.4	1.1	2.6	24.9	297.8	33.87	182.6	128.9	2.6	2.4	5.5	24.7	298.9	33.08	186.4	126.7	2.6	4.2	9.6	24.5	
	67	2.4	5.6	130									25.3	292.4	38.38	161.7	138.8	2.2	2.4	5.5	25.3	293.4	37.49	165.8	136.6	2.3	4.2	9.6	25.1
				60	338.9	17.81	278.4	75.0	5.6	1.1	2.6	23.9							24.4	343.9	16.57	287.7	67.6	6.1	4.2	9.6	23.7		
				80	323.5	22.20	248.0	94.4	4.3	1.1	2.6	24.6	326.6	21.21	254.5	89.7	4.5	2.4	5.5	24.4	328.2	20.73	257.8	87.3	4.6	4.2	9.6	24.3	
				100	310.5	27.92	215.5	113.9	3.3	1.1	2.6	25.3	313.2	26.66	222.5	109.3	3.4	2.4	5.5	25.1	314.6	26.04	226.0	107.0	3.5	4.2	9.6	25.0	
	90	4.2	9.6	120	297.8	35.55	176.9	133.4	2.5	1.1	2.6	26.1	300.1	33.91	184.7	129.0	2.6	2.4	5.5	25.9	301.3	33.12	188.6	126.8	2.7	4.2	9.6	25.9	
				130									26.4	294.2	38.42	163.4	138.8	2.2	2.4	5.5	26.4	295.3	37.52	167.6	136.7	2.3	4.2	9.6	26.3
				60	374.5	18.30	312.4	76.6	6.0	1.1	2.6	26.3							27.3	364.2	21.10	292.5	88.1	5.1	4.2	9.6	27.1		
				80	358.8	22.75	281.5	96.0	4.6	1.1	2.6	27.6	362.4	21.64	288.8	90.7	4.9	2.4	5.5	27.3	364.2	21.10	292.5	88.1	5.1	4.2	9.6	27.1	
40	45	1.2	2.7	100	344.9	28.58	247.7	115.4	3.5	1.1	2.6	29.1	348.2	27.15	255.8	110.4	3.8	2.4	5.5	28.7	349.8	26.46	259.9	107.8	3.9	4.2	9.6	28.6	
				120	330.3	36.35	206.6	134.9	2.7	1.1	2.6	30.9	333.4	34.51	216.0	130.0	2.8	2.4	5.5	30.5	335.0	33.62	220.6	127.5	2.9	4.2	9.6	30.3	
				130									31.5	326.1	39.07	193.0	139.8	2.4	2.4	5.5	31.5	327.6	38.06	198.0	137.4	2.5	4.2	9.6	31.3
				60	389.3	18.51	326.5	77.2	6.2	1.1	2.6	30.4							31.2	377.2	21.24	305.1	88.4	5.2	4.2	9.6	31.0		
	67	2.4	5.6	80	370.6	22.94	292.6	96.5	4.7	1.1	2.6	31.4	375.0	21.79	300.9	91.1	5.0	2.4	5.5	31.2	377.2	21.24	305.1	88.4	5.2	4.2	9.6	31.0	
				100	353.9	28.75	256.1	115.9	3.6	1.1	2.6	32.5	357.9	27.29	265.1	110.7	3.8	2.4	5.5	32.2	360.0	26.58	269.6	108.1	4.0	4.2	9.6	32.1	
				120	336.5	36.51	212.3	135.2	2.7	1.1	2.6	33.8	340.3	34.63	222.4	130.2	2.9	2.4	5.5	33.5	342.2	33.72	227.4	127.7	3.0	4.2	9.6	33.3	
				130									34.2	331.5	39.18	198.1	140.0	2.5	2.4	5.5	34.2	333.4	38.16	203.5	137.5	2.6	4.2	9.6	34.0
	90	4.2	9.6	60	396.5	18.61	333.3	77.6	6.2	1.1	2.6	32.7							33.2	381.1	21.87	306.8	91.3	5.1	4.2	9.6	33.2		
				80	376.2	23.03	298.0	96.8	4.8	1.1	2.6	33.4	381.1	21.87	306.8	91.3	5.1	2.4	5.5	33.2	383.5	21.30	311.2	88.5	5.3	4.2	9.6	33.2	
				100	358.2	28.84	260.1	116.1	3.6	1.1	2.6	34.3	362.6	27.36	269.6	110.8	3.9	2.4	5.5	34.1	364.8	26.64	274.3	108.2	4.0	4.2	9.6	34.0	
				120	339.5	36.58	215.0	135.3	2.7	1.1	2.6	35.3	343.6	34.69	225.5	130.3	2.9	2.4	5.5	35.0	345.6	33.77	230.7	127.8	3.0	4.2	9.6	34.9	
50	45	1.2	2.7	60	430.1	19.11	365.2	79.1	6.6	1.1	2.6	33.9							33.9	430.1	19.11	365.2	79.1	6.6	1.1	2.6	33.9		
				80	410.6	23.60	330.4	98.3	5.1	1.1	2.6	35.4	415.7	22.31	340.0	92.4	5.5	2.4	5.5	35.0	418.4	21.69	344.7	89.3	5.7	4.2	9.6	34.8	
				100	392.7	29.51	292.3	117.6	3.9	1.1	2.6	37.1	397.6	27.86	302.9	111.9	4.2	2.4	5.5	36.6	400.1	27.06	308.1	109.0	4.3	4.2	9.6	36.4	
				120	372.9	37.39	245.7	136.8	2.9	1.1	2.6	39.1	377.8	35.28	257.8	131.4	3.1	2.4	5.5	38.6	380.3	34.26	263.7	128.6	3.3	4.2	9.6	38.4	
	67	2.4	5.6	130									39.5	370.0	38.73	238.1	138.4	2.8	4.2	9.6	39.5	370.0	38.73	238.1	138.4	2.8	4.2	9.6	39.5
				60	450.4	19.43	384.4	80.0	6.8	1.1	2.6	38.7							39.5	436.6	21.90	362.2	89.7	5.8	4.2	9.6	39.3		
				80	426.9	23.88	345.7	99.1	5.2	1.1	2.6	39.8	433.3	22.54	356.7	92.9	5.6	2.4	5.5	39.5	436.6	21.90	362.2	89.7	5.8	4.2	9.6	39.3	
				100	405.2	29.76	303.9	118.2	4.0	1.1	2.6	41.1	411.3	28.06	315.8	112.3	4.3	2.4	5.5	40.7	414.4	27.24	321.7	109.3	4.5	4.2	9.6	40.5	
	90	4.2	9.6	120	381.6	37.61	253.6	137.2	3.0	1.1	2.6	42.5	387.5	35.45	266.9	131.7	3.2	2.4	5.5	42.1	390.5	34.41	273.4	128.8	3.3	4.2	9.6	41.9	
				130									42.1	378.2	38.87	245.9	138.6	2.9	4.2	9.6	42.8	378.2	38.87	245.9	138.6	2.9	4.2	9.6	42.8
				60	460.3	19.59	393.8	80.5	6.9	1.1	2.6	41.3							41.9	445.5	22.01	370.8	89.9	5.9	4.2	9.6	41.8		
				80	434.7	24.02	353.1	99.4	5.3	1.1	2.6	42.2	441.9	22.66	364.9	93.2	5.7	2.4	5.5	41.9	445.5	22.01	370.8	89.9	5.9	4.2	9.6	41.8	
60	45	1.2	2.7	100	411.2	29.89	309.5	118.5	4.0	1.1	2.6	43.2	417.8	28.16	322.1	112.5	4.3	2.4	5.5	42.9	421.3	27.33	328.3	109.5	4.5	4.2	9.6	42.8	
				120	385.7	37.71	257.3	137.4	3.0	1.1	2.6	44.3	392.2	35.54	271.2	131.8	3.2	2.4	5.5	44.0	395.5	34.48	278.1	128.9	3.4	4.2	9.6	43.9	
				130									44.0	382.2	38.93	249.7	138.6	2.9	4.2	9.6	44.5	382.2	38.93	249.7	138.6	2.9	4.2	9.6	44.5
				60	489.5	20.07	421.4	81.8	7.1	1.1	2.6	41.4							42.5	476.9	22.40	400.8	90.6	6.2	4.2	9.6	42.3		
	67	2.4	5.6	80	466.3	24.59	382.7	100.9	5.6	1.1	2.6	43.1	473.3	23.11	394.8	94.1	6.0	2.4	5.5	42.5	476.9	22.40	400.8	90.6	6.2	4.2	9.6	42.3	
				100	444.3	30.58	340.2	120.0	4.3	1.1	2.6	44.9	451.2	28.68	353.6	113.5	4.6	2.4	5.5	44.4	454.7	27.78	360.2	110.2	4.8	4.2	9.6	44.1	
				120	419.0	38.56	287.7	139.0	3.2	1.1	2.6	47.2	426.2	36.16	303.1	132.8	3.5	2.4	5.5	46.6	429.8	35.00	310.7	129.7	3.6	4.2	9.6	46.2	
				130									46.6	416.3	39.49	281.9	139.4	3.1	4.2	9.6	47.5	416.3	39.49	281.9	139.4	3.1	4.2	9.6	47.5
	90	4.2	9.6	60	516.8	20.55	447.0	83.0	7.4	1.1	2.6	46.8	526.0	19.30	460.5	75.6	8.0	2.4	5.5	46.4							47.5		
				80	488.2	25.01	403.2	101.9	5.7	1.1	2.6	48.1	497.3	23.47	417.5	94.8	6.2	2.4	5.5	47.7	501.9	22.74	424.6	91.2	6.5	4.2	9.6	47.5	
				100	461.1	30.95	355.8	120.8	4.4	1.1	2.6	49.5	469.9	29.00	371.3	114.1	4.7	2.4	5.5	49.0	474.3	28.06	378.9	110.7	5.0	4.2	9.6	48.8	
				120	430.7	38.87	298.4	139.5	3.2	1.1	2.6	51.2	439.6	36.42	315.6	133.3	3.5	2.4	5.5	50.7	444.0	35.23	324.1	130.0	3.7	4.2	9.6	50.4	
70	45	1.2	2.7	130									50.7	427.9	39.69	292.7													

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW600 (60Hz I-P) - Cooling

SOURCE				LOAD							SLWT °F	LOAD							SLWT °F	LOAD							SLWT °F			
EWT °F	Flow			Flow 75 GPM								Flow 113 GPM								Flow 150 GPM										
	GPM	WPD PSI	FT	TC	KW	HR	LLWT	EER	WPD PSI	FT		TC	KW	HR	LLWT	EER	WPD PSI	FT		TC	KW	HR	LLWT	EER	WPD PSI	FT				
60	75	1.7	4.0	40	506.2	30.6	610.3	26.6	16.5	1.7	3.9	76.2	528.3	30.9	633.4	30.7	17.1	3.6	8.3	76.8	538.9	31.1	644.6	32.9	17.3	6.3	14.5	77.1		
				50	593.0	31.8	701.3	34.3	18.6	1.7	3.9	78.7	623.6	32.3	733.5	39.0	19.3	3.6	8.3	79.5	638.6	32.5	749.2	41.5	19.6	6.3	14.5	80.0		
				60	686.7	33.2	799.7	41.8	20.7	1.7	3.9	81.3	728.5	33.9	843.7	47.1	21.5	3.6	8.3	82.5	749.1	34.2	865.3	50.1	21.9	6.3	14.5	83.1		
				70	786.8	34.7	905.0	49.1	22.6	1.7	3.9	84.2	842.4	35.6	963.6	55.0	23.7	3.6	8.3	85.8	870.2	36.0	992.9	58.4	24.1	6.3	14.5	86.6		
	113	3.7	8.6	50	606.0	30.4	709.3	34.0	20.0	1.7	3.9	72.6																		
				60	703.3	31.5	810.6	41.3	22.3	1.7	3.9	74.4	748.6	32.1	857.9	46.7	23.3	3.6	8.3	75.3	771.1	32.4	881.4	49.8	23.8	6.3	14.5	75.7		
				70	807.4	32.9	919.3	48.5	24.6	1.7	3.9	76.4	868.4	33.7	982.9	54.6	25.8	3.6	8.3	77.5	899.2	34.1	1015.1	58.0	26.4	6.3	14.5	78.1		
				80	917.6	34.3	1034.3	55.5	26.7	1.7	3.9	78.5																		
	75	75	1.7	4.0	30								409.1	34.5	526.6	22.8	11.8	3.6	8.3	89.0	415.4	34.6	533.3	24.5	12.0	6.3	14.5	89.2		
					40	470.9	35.5	591.7	27.6	13.3	1.7	3.9	90.8	489.6	35.8	611.4	31.4	13.7	3.6	8.3	91.3	498.6	35.9	620.9	33.4	13.9	6.3	14.5	91.6	
					50	553.2	36.8	678.3	35.4	15.0	1.7	3.9	93.1	579.3	37.2	705.8	39.8	15.6	3.6	8.3	93.9	592.0	37.4	719.2	42.2	15.8	6.3	14.5	94.3	
					60	642.4	38.2	772.3	43.0	16.8	1.7	3.9	95.7	678.2	38.7	810.0	48.0	17.5	3.6	8.3	96.7	695.7	39.0	828.5	50.8	17.8	6.3	14.5	97.2	
113		3.7	8.6	30									418.3	33.1	531.1	22.7	12.6	3.6	8.3	84.4	425.1	33.2	538.1	24.4	12.8	6.3	14.5	84.5		
				40	481.9	33.9	597.3	27.3	14.2	1.7	3.9	85.6	502.0	34.2	618.3	31.2	14.7	3.6	8.3	86.0	511.8	34.3	628.4	33.2	14.9	6.3	14.5	86.2		
				50	567.4	34.9	686.3	35.0	16.2	1.7	3.9	87.2	595.8	35.3	715.9	39.5	16.9	3.6	8.3	87.8	609.6	35.5	730.3	41.9	17.2	6.3	14.5	88.0		
				60	660.5	36.1	783.2	42.5	18.3	1.7	3.9	89.0	699.7	36.6	824.1	47.6	19.1	3.6	8.3	89.7	719.0	36.8	844.3	50.4	19.5	6.3	14.5	90.1		
150		6.5	15.1	30									422.9	32.5	533.3	22.6	13.0	3.6	8.3	82.1	429.9	32.5	540.6	24.3	13.2	6.3	14.5	82.2		
				40	487.4	33.1	600.2	27.1	14.7	1.7	3.9	83.0	508.2	33.4	621.8	31.1	15.2	3.6	8.3	83.3	518.3	33.5	632.3	33.2	15.5	6.3	14.5	83.4		
				50	574.4	34.1	690.4	34.8	16.9	1.7	3.9	84.2	604.0	34.4	721.0	39.3	17.6	3.6	8.3	84.6	618.4	34.5	735.9	41.8	17.9	6.3	14.5	84.8		
				60	669.4	35.1	788.8	42.2	19.1	1.7	3.9	85.6	710.4	35.5	831.3	47.4	20.0	3.6	8.3	86.1	730.7	35.7	852.4	50.3	20.4	6.3	14.5	86.4		
90	75	1.7	4.0	30	361.9	40.2	498.9	20.5	9.0	1.7	3.9	103.3	372.6	40.5	512.0	23.5	9.2	3.6	8.3	103.7	377.8	40.6	515.9	25.0	9.3	6.3	14.5	103.8		
				40	431.9	41.5	573.4	28.6	10.4	1.7	3.9	105.4	447.4	41.8	589.8	32.1	10.7	3.6	8.3	105.8	454.8	42.0	597.7	34.0	10.8	6.3	14.5	106.0		
				50	509.2	42.9	655.3	36.5	11.9	1.7	3.9	107.6	533.6	43.3	681.1	40.6	12.3	3.6	8.3	108.3	544.2	43.5	692.4	42.8	12.5	6.3	14.5	108.6		
				60	596.3	44.4	747.5	44.2	13.4	1.7	3.9	110.1	626.4	44.9	779.4	48.9	13.9	3.6	8.3	111.0	641.1	45.2	794.9	51.5	14.2	6.3	14.5	111.4		
	113	3.7	8.6	30									382.4	38.8	514.5	23.3	9.9	3.6	8.3	99.2	387.9	38.9	520.3	24.9	10.0	6.3	14.5	99.3		
				40	443.7	39.7	578.7	28.3	11.2	1.7	3.9	100.3	460.4	39.9	596.2	31.9	11.5	3.6	8.3	100.6	468.5	40.0	604.7	33.8	11.7	6.3	14.5	100.8		
				50	524.4	40.7	663.0	36.1	12.9	1.7	3.9	101.9	548.2	41.0	687.8	40.3	13.4	3.6	8.3	102.3	559.7	41.2	699.9	42.6	13.6	6.3	14.5	102.5		
				60	612.7	41.8	755.2	43.7	14.6	1.7	3.9	103.5	645.8	42.3	789.7	48.6	15.3	3.6	8.3	104.2	662.0	42.5	806.6	51.2	15.6	6.3	14.5	104.5		
	150	6.5	15.1	30									422.9	32.5	533.3	22.6	13.0	3.6	8.3	82.1	429.9	32.5	540.6	24.3	13.2	6.3	14.5	82.2		
				40	487.4	33.1	600.2	27.1	14.7	1.7	3.9	83.0	508.2	33.4	621.8	31.1	15.2	3.6	8.3	83.3	518.3	33.5	632.3	33.2	15.5	6.3	14.5	83.4		
				50	574.4	34.1	690.4	34.8	16.9	1.7	3.9	84.2	604.0	34.4	721.0	39.3	17.6	3.6	8.3	84.6	618.4	34.5	735.9	41.8	17.9	6.3	14.5	84.8		
				60	669.4	35.1	788.8	42.2	19.1	1.7	3.9	85.6	710.4	35.5	831.3	47.4	20.0	3.6	8.3	86.1	730.7	35.7	852.4	50.3	20.4	6.3	14.5	86.4		
105	75	1.7	4.0	30	327.0	47.4	488.4	21.4	6.9	1.7	3.9	118.1	335.6	47.6	497.8	24.1	7.0	3.6	8.3	118.4	339.7	47.7	502.3	25.5	7.1	6.3	14.5	118.5		
				40	391.8	48.9	558.4	29.7	8.0	1.7	3.9	120.0	404.3	49.2	571.8	32.9	8.2	3.6	8.3	120.4	410.3	49.3	578.2	34.6	8.3	6.3	14.5	120.6		
				50	463.8	50.4	635.5	37.7	9.2	1.7	3.9	122.1	481.4	50.8	654.3	41.5	9.5	3.6	8.3	122.7	489.8	50.9	663.3	43.5	9.6	6.3	14.5	122.9		
				60	542.5	52.0	719.7	45.6	10.4	1.7	3.9	124.4	566.8	52.5	745.6	50.0	10.8	3.6	8.3	125.2	578.5	52.7	758.1	52.3	11.0	6.3	14.5	125.5		
	113	3.7	8.6	30									345.8	45.7	501.3	23.9	7.6	3.6	8.3	114.0	350.3	45.8	506.1	25.4	7.7	6.3	14.5	114.1		
				40	404.3	46.7	563.2	29.3	8.7	1.7	3.9	115.1	418.0	46.9	577.6	32.6	8.9	3.6	8.3	115.4	424.6	47.0	584.6	34.4	9.0	6.3	14.5	115.5		
				50	479.9	47.8	642.8	37.3	10.0	1.7	3.9	116.5	499.5	48.1	663.3	41.2	10.4	3.6	8.3	116.9	508.9	48.2	673.2	43.3	10.6	6.3	14.5	117.1		
				60	563.2	49.0	730.1	45.1	11.5	1.7	3.9	118.1	590.5	49.4	758.7	49.5	12.0	3.6	8.3	118.7	603.8	49.6	772.7	52.0	12.2	6.3	14.5	118.9		
	150	6.5	15.1	30									350.8	44.7	503.2	23.8	7.8	3.6	8.3	111.8	355.5	44.8	508.1	25.3	7.9	6.3	14.5	111.8		
				40	410.5	45.6	565.7	29.2	9.0	1.7	3.9	112.6	424.8	45.8	580.6	32.5	9.3	3.6	8.3	112.8	431.7	45.9	587.9	34.3	9.4	6.3	14.5	112.9		
				50	487.9	46.6	646.5	37.1	10.5	1.7	3.9	113.7	508.5	46.8	667.9	41.0	10.9	3.6	8.3	114.0	518.5	46.9	678.3	43.1	11.1	6.3	14.5	114.1		
				60	573.4	47.6	735.3	44.8	12.1	1.7	3.9	114.9	602.3	47.9	765.4	49.3	12.6	3.6	8.3	115.3	616.4	48.1	780.1	51.8	12.8	6.3	14.5	115.5		
120	75	1.7	4.0	30	277.0	55.9	477.4	22.4	5.1	1.7	3.9	132.9	293.5	56.1	484.6	24.8	5.2	3.6	8.3	133.1	296.6	56.2	488.0	26.1	5.3	6.3	14.5	133.2		
				40	345.4	57.6	541.7	30.9	6.0	1.7	3.9	134.6	354.8	57.9	552.0	33.8	6.1	3.6	8.3	134.9	359.3	58.0	556.9	35.3	6.2	6.				

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW600 (60Hz I-P) - Heating

Source				LOAD								SLWT °F	LOAD								SLWT °F							
EWT °F	Flow			EWT °F	Flow 75 GPM						EWT °F		Flow 113 GPM						EWT °F	Flow 150 GPM								
	GPM	WPD			TC	kW	HE	LLWT	COP	WPD			TC	kW	HE	LLWT	COP	WPD		TC		kW	HE	LLWT	COP	GPM		
	PSI	FT							PSI	FT						PSI	FT						PSI	FT				
30	75	1.7	3.9	100	492.4	44.89	339.5	113.2	3.2	1.7	4.0	21.1	495.5	43.09	348.7	108.9	3.4	3.7	8.6	20.8	497.1	42.21	353.3	106.7	3.5	6.5	15.1	20.7
				80	521.1	36.38	397.3	93.9	4.2	1.7	4.0	23.0	525.5	34.91	406.7	89.3	4.4	3.7	8.6	22.9	527.7	34.19	411.3	87.0	4.5	6.5	15.1	22.8
		100	502.5	45.10	348.9	113.5	3.3	1.7	4.0	23.9	506.2	43.26	358.9	109.0	3.4	3.7	8.6	23.7	508.1	42.36	363.9	106.8	3.5	6.5	15.1	23.6		
		120	484.6	56.10	293.5	133.1	2.5	1.7	4.0	24.8	487.8	53.86	304.3	128.8	2.7	3.7	8.6	24.7	489.4	52.77	309.6	126.6	2.7	6.5	15.1	24.6		
	113	3.6	8.3	100	507.3	45.20	353.4	113.6	3.3	1.7	4.0	25.3	511.4	43.34	363.8	109.1	3.5	3.7	8.6	25.2	513.5	42.43	369.0	106.9	3.5	6.5	15.1	25.1
				80	527.4	36.48	403.2	94.1	4.2	1.7	4.0	24.7	532.1	34.99	413.0	89.5	4.5	3.7	8.6	24.6	534.5	34.26	417.9	87.1	4.6	6.5	15.1	24.5
		100	507.3	45.20	353.4	113.6	3.3	1.7	4.0	25.3	511.4	43.34	363.8	109.1	3.5	3.7	8.6	25.2	513.5	42.43	369.0	106.9	3.5	6.5	15.1	25.1		
		120	488.0	56.20	296.6	133.2	2.5	1.7	4.0	26.1	491.5	53.94	307.7	128.8	2.7	3.7	8.6	25.9	493.3	52.84	313.3	126.7	2.7	6.5	15.1	25.9		
	150	6.3	14.5	100	507.3	45.20	353.4	113.6	3.3	1.7	4.0	25.3	511.4	43.34	363.8	109.1	3.5	3.7	8.6	25.2	513.5	42.43	369.0	106.9	3.5	6.5	15.1	25.1
				80	527.4	36.48	403.2	94.1	4.2	1.7	4.0	24.7	532.1	34.99	413.0	89.5	4.5	3.7	8.6	24.6	534.5	34.26	417.9	87.1	4.6	6.5	15.1	24.5
		100	507.3	45.20	353.4	113.6	3.3	1.7	4.0	25.3	511.4	43.34	363.8	109.1	3.5	3.7	8.6	25.2	513.5	42.43	369.0	106.9	3.5	6.5	15.1	25.1		
		120	488.0	56.20	296.6	133.2	2.5	1.7	4.0	26.1	491.5	53.94	307.7	128.8	2.7	3.7	8.6	25.9	493.3	52.84	313.3	126.7	2.7	6.5	15.1	25.9		
40	75	1.7	3.9	100	610.3	30.59	506.2	76.2	5.8	1.7	4.0	26.6	610.3	30.59	506.2	76.2	5.8	1.7	4.0	26.6	610.3	30.59	506.2	76.2	5.8	1.7	4.0	26.6
				80	585.5	37.38	458.3	95.6	4.6	1.7	4.0	27.9	591.0	35.70	469.6	90.5	4.9	3.7	8.6	27.6	593.9	34.88	475.1	87.9	5.0	6.5	15.1	27.5
		100	564.0	46.30	406.3	115.2	3.6	1.7	4.0	29.3	569.0	44.19	418.5	110.2	3.8	3.7	8.6	29.0	571.5	43.16	424.6	107.7	3.9	6.5	15.1	28.8		
		120	541.7	57.62	345.4	134.6	2.8	1.7	4.0	30.9	546.4	55.04	358.8	129.8	2.9	3.7	8.6	30.5	548.7	53.79	365.5	127.4	3.0	6.5	15.1	30.3		
	113	3.6	8.3	100	604.1	37.67	475.9	96.2	4.7	1.7	4.0	31.6	610.9	35.93	488.6	90.9	5.0	3.7	8.6	31.4	614.3	35.09	494.9	88.2	5.1	6.5	15.1	31.3
				80	604.1	37.67	475.9	96.2	4.7	1.7	4.0	31.6	610.9	35.93	488.6	90.9	5.0	3.7	8.6	31.4	614.3	35.09	494.9	88.2	5.1	6.5	15.1	31.3
		100	578.4	46.58	419.8	115.6	3.6	1.7	4.0	32.6	584.5	44.41	433.3	110.5	3.9	3.7	8.6	32.4	587.6	43.35	440.0	107.9	4.0	6.5	15.1	32.3		
		120	552.0	57.88	354.8	134.9	2.8	1.7	4.0	33.7	557.6	55.26	369.4	130.0	3.0	3.7	8.6	33.5	560.5	53.97	376.6	127.6	3.0	6.5	15.1	33.4		
	150	6.3	14.5	100	604.1	37.67	475.9	96.2	4.7	1.7	4.0	31.6	610.9	35.93	488.6	90.9	5.0	3.7	8.6	31.4	614.3	35.09	494.9	88.2	5.1	6.5	15.1	31.3
				80	604.1	37.67	475.9	96.2	4.7	1.7	4.0	31.6	610.9	35.93	488.6	90.9	5.0	3.7	8.6	31.4	614.3	35.09	494.9	88.2	5.1	6.5	15.1	31.3
		100	578.4	46.58	419.8	115.6	3.6	1.7	4.0	32.6	584.5	44.41	433.3	110.5	3.9	3.7	8.6	32.4	587.6	43.35	440.0	107.9	4.0	6.5	15.1	32.3		
		120	552.0	57.88	354.8	134.9	2.8	1.7	4.0	33.7	557.6	55.26	369.4	130.0	3.0	3.7	8.6	33.5	560.5	53.97	376.6	127.6	3.0	6.5	15.1	33.4		
50	75	1.7	3.9	100	701.3	31.84	592.9	78.7	6.5	1.7	4.0	34.3	701.3	31.84	592.9	78.7	6.5	1.7	4.0	34.3	701.3	31.84	592.9	78.7	6.5	1.7	4.0	34.3
				80	670.6	38.68	538.9	98.0	5.1	1.7	4.0	35.7	678.5	36.73	553.5	92.1	5.4	3.7	8.6	35.3	682.5	35.79	560.7	89.1	5.6	6.5	15.1	35.2
		100	642.9	47.76	480.2	117.3	3.9	1.7	4.0	37.3	650.3	45.30	496.0	111.7	4.2	3.7	8.6	36.9	654.1	44.10	503.9	108.8	4.3	6.5	15.1	36.7		
		120	612.6	59.33	410.4	136.6	3.0	1.7	4.0	39.1	620.0	56.34	428.1	131.2	3.2	3.7	8.6	38.7	623.7	54.89	436.7	128.4	3.3	6.5	15.1	38.4		
	113	3.6	8.3	100	733.5	32.29	623.6	79.5	6.7	1.7	4.0	39.0	733.5	32.29	623.6	79.5	6.7	1.7	4.0	39.0	733.5	32.29	623.6	79.5	6.7	1.7	4.0	39.0
				80	696.6	39.08	563.6	98.7	5.2	1.7	4.0	40.0	706.5	37.06	580.4	92.6	5.6	3.7	8.6	39.8	711.5	36.08	588.7	89.5	5.8	6.5	15.1	39.6
		100	663.2	48.13	499.3	117.9	4.0	1.7	4.0	41.2	672.3	45.59	517.1	112.1	4.3	3.7	8.6	40.9	677.0	44.36	526.0	109.1	4.5	6.5	15.1	40.7		
		120	627.1	59.67	423.8	137.0	3.1	1.7	4.0	42.5	636.1	56.61	443.2	131.5	3.3	3.7	8.6	42.2	640.6	55.12	452.8	128.7	3.4	6.5	15.1	42.0		
	150	6.3	14.5	100	749.2	32.52	638.6	80.0	6.8	1.7	4.0	41.5	749.2	32.52	638.6	80.0	6.8	1.7	4.0	41.5	749.2	32.52	638.6	80.0	6.8	1.7	4.0	41.5
				80	709.2	39.27	575.5	99.0	5.3	1.7	4.0	42.4	720.1	37.22	593.4	92.9	5.7	3.7	8.6	42.1	725.7	36.23	602.4	89.7	5.9	6.5	15.1	42.0
		100	672.9	48.31	508.4	118.1	4.1	1.7	4.0	43.3	683.0	45.73	527.3	112.3	4.4	3.7	8.6	43.0	688.2	44.48	536.7	109.3	4.5	6.5	15.1	42.9		
		120	634.0	59.83	430.2	137.2	3.1	1.7	4.0	44.3	643.8	56.74	450.5	131.6	3.3	3.7	8.6	44.0	648.8	55.23	460.6	128.8	3.4	6.5	15.1	43.9		
60	75	1.7	3.9	100	799.7	33.22	686.7	81.3	7.1	1.7	4.0	41.8	799.7	33.22	686.7	81.3	7.1	1.7	4.0	41.8	799.7	33.22	686.7	81.3	7.1	1.7	4.0	41.8
				80	763.0	40.09	626.6	100.5	5.6	1.7	4.0	43.4	773.9	37.85	645.1	93.8	6.0	3.7	8.6	42.9	779.4	36.78	654.2	90.4	6.2	6.5	15.1	42.6
		100	728.9	49.30	561.0	119.7	4.3	1.7	4.0	45.1	739.4	46.46	581.2	113.3	4.7	3.7	8.6	44.6	744.7	45.09	591.2	110.0	4.8	6.5	15.1	44.3		
		120	690.0	61.07	481.9	138.7	3.3	1.7	4.0	47.2	701.0	57.64	504.6	132.7	3.6	3.7	8.6	46.6	706.4	55.97	515.8	129.6	3.7	6.5	15.1	46.3		
	113	3.6	8.3	100	843.7	33.85	728.5	82.5	7.3	1.7	4.0	47.1	843.7	33.85	728.5	82.5	7.3	1.7	4.0	47.1	843.7	33.85	728.5	82.5	7.3	1.7	4.0	47.1
				80	798.7	40.64	660.4	101.5	5.8	1.7	4.0	48.3	812.6	38.31	682.2	94.5	6.2	3.7	8.6	47.9	819.8	37.20	693.2	91.0	6.5	6.5	15.1	47.7
		100	756.9	49.80	587.3	120.4	4.5	1.7	4.0	49.6	770.1	46.86	610.5	113.9	4.8	3.7	8.6	49.2	776.9	45.44	622.2	110.5	5.0	6.5	15.1	49.0		
		120	709.9	61.51	500.3	139.3	3.4	1.7	4.0	51.1	723.5	58.00	525.9	133.1	3.7	3.7	8.6											

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW840 (60Hz I-P) - Cooling

Source PD				LOAD							SLWT °F	LOAD							SLWT °F	LOAD							SLWT °F			
EWT °F	Flow			EWT °F	Flow 105 GPM							EWT °F	Flow 158 GPM							EWT °F	Flow 210 GPM									
	GPM	WPD PSI	FT		TC	KW	HR	LLWT	EER	WPD PSI			FT	TC	KW	HR	LLWT	EER			WPD PSI	FT	TC	KW	HR	LLWT		EER	WPD PSI	FT
60	105	2.8	6.4	40	666.2	39.3	800.0	27.4	17.0	2.6	5.9	75.2	693.4	39.7	828.6	31.3	17.5	5.5	12.8	75.7	706.6	39.9	842.4	33.3	17.7	9.6	22.2	76.0		
				50	783.4	41.1	923.2	35.2	19.1	2.6	5.9	77.5	821.0	41.7	962.8	39.6	19.7	5.5	12.8	78.3	839.2	42.0	982.0	42.1	20.0	9.6	22.2	78.7		
				60	908.7	43.1	1055.5	42.8	21.1	2.6	5.9	80.1	959.1	44.0	1108.8	47.9	21.8	5.5	12.8	81.2	983.6	44.4	1134.8	50.7	22.2	9.6	22.2	81.7		
				70	1040.7	45.4	1195.4	50.2	22.9	2.6	5.9	82.8	1106.4	46.6	1265.3	56.0	23.7	5.5	12.8	84.2	1138.5	47.3	1299.5	59.2	24.1	9.6	22.2	84.9		
	80	1172.1	47.9	1335.3	57.7	24.5	2.6	5.9	85.6																					
	158	6.0	13.8	40	1066.6	43.2	1213.7	49.7	24.7	2.6	5.9	75.4	1138.6	44.3	1289.6	55.6	25.7	5.5	12.8	76.4	1174.2	44.9	1327.2	58.8	26.1	9.6	22.2	76.9		
				50	1210.5	45.5	1365.6	56.9	26.6	2.6	5.9	77.4																		
				60																										
70																														
75	105	2.8	6.4	30	521.0	44.1	671.1	20.2	11.8	2.6	5.9	87.8	537.3	44.3	688.3	23.3	12.1	5.5	12.8	88.1	545.2	44.4	696.6	24.9	12.3	9.6	22.2	88.3		
				40	622.6	45.6	778.0	28.3	13.7	2.6	5.9	89.8	645.8	46.0	802.4	31.9	14.0	5.5	12.8	90.3	657.0	46.1	814.2	33.8	14.2	9.6	22.2	90.5		
				50	733.2	47.4	894.5	36.1	15.5	2.6	5.9	92.1	765.2	47.9	928.3	40.3	16.0	5.5	12.8	92.7	780.6	48.1	944.6	42.6	16.2	9.6	22.2	93.1		
				60	851.6	49.4	1019.7	43.9	17.3	2.6	5.9	94.5	894.4	50.1	1065.2	48.7	17.8	5.5	12.8	95.4	915.1	50.5	1087.2	51.3	18.1	9.6	22.2	95.8		
	70	976.3	51.7	1152.4	51.4	18.9	2.6	5.9	97.1	1032.2	52.8	1212.0	56.9	19.6	5.5	12.8	98.3	1059.2	53.4	1241.0	59.9	19.9	9.6	22.2	98.9					
	80	1080.3	53.8	1263.5	59.4	20.1	2.6	5.9	99.3																					
	158	6.0	13.8	30	530.7	42.4	675.1	20.0	12.5	2.6	5.9	83.5	548.0	42.6	693.1	23.1	12.9	5.5	12.8	83.8	556.3	42.7	701.8	24.8	13.0	9.6	22.2	83.9		
				40	635.6	43.7	784.3	28.0	14.6	2.6	5.9	85.0	660.3	44.0	810.1	31.7	15.0	5.5	12.8	85.3	672.3	44.1	822.6	33.7	15.2	9.6	22.2	85.5		
50				750.2	45.1	904.0	35.8	16.6	2.6	5.9	86.5	784.8	45.6	940.1	40.1	17.2	5.5	12.8	87.0	801.5	45.8	957.6	42.4	17.5	9.6	22.2	87.2			
60				873.6	46.8	1033.1	43.4	18.7	2.6	5.9	88.2	920.4	47.5	1082.3	48.4	19.4	5.5	12.8	88.8	943.2	47.9	1106.3	51.1	19.7	9.6	22.2	89.1			
70	1004.4	48.8	1170.7	50.9	20.6	2.6	5.9	90.0	1066.1	49.8	1235.9	56.5	21.4	5.5	12.8	90.8	1096.3	50.4	1267.9	59.6	21.8	9.6	22.2	91.2						
80	1124.0	50.8	1297.1	58.6	22.1	2.6	5.9	91.6																						
210	10.4	24.1	30	535.5	41.6	677.1	19.9	12.9	2.6	5.9	81.4	553.2	41.8	695.5	23.1	13.2	5.5	12.8	81.6	561.8	41.9	704.4	24.7	13.4	9.6	22.2	81.7			
			40	641.9	42.7	787.5	27.9	15.0	2.6	5.9	82.5	667.5	43.0	814.0	31.6	15.5	5.5	12.8	82.8	679.9	43.2	826.9	33.6	15.7	9.6	22.2	82.9			
			50	758.6	44.1	908.7	35.7	17.2	2.6	5.9	83.7	794.5	44.5	946.1	40.0	17.8	5.5	12.8	84.0	811.9	44.7	964.2	42.3	18.2	9.6	22.2	84.2			
			60	884.5	45.6	1039.9	43.2	19.4	2.6	5.9	84.9	933.4	46.3	1091.0	48.2	20.2	5.5	12.8	85.4	957.2	46.6	1116.0	50.9	20.5	9.6	22.2	85.7			
70	1018.2	47.5	1180.0	50.6	21.4	2.6	5.9	86.3	1083.1	48.5	1248.1	56.3	22.4	5.5	12.8	87.0	1115.0	48.9	1281.7	59.4	22.8	9.6	22.2	87.3						
80	1146.3	49.4	1314.7	58.2	23.2	2.6	5.9	87.6																						
90	105	2.8	6.4	30	477.5	51.9	654.4	21.0	9.2	2.6	5.9	102.5	491.1	52.2	668.8	23.8	9.4	5.5	12.8	102.8	679.9	43.2	826.9	33.6	15.7	9.6	22.2	82.9		
				40	573.0	53.5	755.2	29.2	10.7	2.6	5.9	104.5	592.3	53.8	775.6	32.6	11.0	5.5	12.8	104.9	601.6	54.0	785.4	34.3	11.1	9.6	22.2	105.0		
				50	676.9	55.2	865.1	37.2	12.3	2.6	5.9	106.6	703.5	55.7	893.4	41.1	12.6	5.5	12.8	107.1	716.2	56.0	906.9	43.2	12.8	9.6	22.2	107.4		
				60	791.8	57.3	987.1	45.0	13.8	2.6	5.9	109.0	827.8	58.0	1025.5	49.5	14.3	5.5	12.8	109.7	845.0	58.4	1043.9	52.0	14.5	9.6	22.2	110.1		
	70	909.4	59.7	1112.9	52.7	15.2	2.6	5.9	111.4	956.3	60.7	1163.3	57.9	15.7	5.5	12.8	112.4	975.2	61.2	1183.7	60.7	15.9	9.6	22.2	112.9					
	80	989.2	61.5	1198.7	61.1	16.1	2.6	5.9	113.2																					
	158	6.0	13.8	30	488.3	49.9	658.4	20.8	9.8	2.6	5.9	98.4	502.8	50.1	673.5	23.7	10.0	5.5	12.8	98.6	509.8	50.2	680.8	25.2	10.2	9.6	22.2	98.7		
				40	587.2	51.2	761.5	28.9	11.5	2.6	5.9	99.7	608.0	51.4	783.2	32.4	11.8	5.5	12.8	100.0	618.0	51.6	793.6	34.2	12.0	9.6	22.2	100.1		
50				695.3	52.6	874.4	36.9	13.2	2.6	5.9	101.2	724.3	53.0	904.8	40.9	13.7	5.5	12.8	101.6	738.3	53.2	919.4	43.0	13.9	9.6	22.2	101.8			
60				811.7	54.2	996.4	44.6	15.0	2.6	5.9	102.8	851.0	54.8	1037.8	49.2	15.5	5.5	12.8	103.3	869.9	55.1	1057.8	51.7	15.8	9.6	22.2	103.6			
70	935.1	56.2	1126.5	52.2	16.6	2.6	5.9	104.5	987.0	57.1	1181.5	57.5	17.3	5.5	12.8	105.2	1011.5	57.5	1207.5	60.4	17.6	9.6	22.2	105.5						
80	1027.2	57.8	1224.2	60.4	17.8	2.6	5.9	105.7																						
210	10.4	24.1	30	493.6	49.0	660.4	20.7	10.1	2.6	5.9	96.3	508.6	49.1	675.9	23.6	10.4	5.5	12.8	96.5	515.8	49.2	683.4	25.1	10.5	9.6	22.2	96.5			
			40	594.2	50.0	764.6	28.8	11.9	2.6	5.9	97.3	615.8	50.3	787.0	32.3	12.2	5.5	12.8	97.5	626.2	50.4	797.8	34.1	12.4	9.6	22.2	97.6			
			50	704.5	51.3	879.1	36.7	13.7	2.6	5.9	98.4	734.7	51.6	910.6	40.7	14.2	5.5	12.8	98.7	749.3	51.8	925.8	42.9	14.5	9.6	22.2	98.9			
			60	823.4	52.8	1003.1	44.4	15.6	2.6	5.9	99.6	864.6	53.3	1046.2	49.1	16.2	5.5	12.8	100.1	884.6	53.6	1067.1	51.6	16.5	9.6	22.2	100.3			
70	950.0	54.5	1135.7	51.9	17.4	2.6	5.9	100.9	1004.7	55.4	1193.3	57.3	18.2	5.5	12.8	101.5	1031.4	55.8	1221.4	60.2	18.5	9.6	22.2	101.8						
80	1049.5	56.1	1240.5	60.0	18.7	2.6	5.9	102.0																						
105	105	2.8	6.4	30	431.3	61.5	640.7	21.9	7.0	2.6	5.9	117.3	442.4	61.7	652.5	24.5	7.2	5.5	12.8	117.5	447.7	61.8	658.2	25.8	7.2	9.6	22.2	117.6		
				40	520.8	63.1	735.9	30.2	8.3	2.6	5.9	119.1	536.6	63.4	752.7	33.3	8.5	5.5	12.8	119.5	544.1	63.6	760.7	34.9	8.6					

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Performance Data - TMW840 (60Hz I-P) - Heating

EWT °F	Source		LOAD								SLWT °F	LOAD								SLWT °F	LOAD								SLWT °F
	Flow		Flow 105 GPM									Flow 158 GPM									Flow 210 GPM								
	GPM	WPD	TC	kW	HE	LLWT	COP	WPD		TC		kW	HE	LLWT	COP	WPD		TC	kW		HE	LLWT	COP	GPM		FT			
	PSI	FT						PSI	FT						PSI	FT						PSI	FT	PSI	FT				
30	105	2.5	5.9	80	665.6	46.5	507.1	92.7	4.2	2.8	6.4	20.5	669.6	44.8	517.2	88.5	4.4	6.0	13.8	20.3	671.6	43.9	522.2	86.4	4.5	10.4	24.1	20.2	
				100	646.0	58.1	448.0	112.4	3.3	2.8	6.4	21.6	649.8	55.9	459.5	108.3	3.4	6.0	13.8	21.4	649.2	54.8	462.6	106.2	3.5	10.4	24.1	21.3	
				80	681.8	46.8	522.5	93.0	4.3	2.8	6.4	23.4	686.6	44.9	533.5	88.7	4.5	6.0	13.8	23.3	689.0	44.1	539.0	86.6	4.6	10.4	24.1	23.2	
				100	658.7	58.3	460.0	112.6	3.3	2.8	6.4	24.2	663.2	56.0	472.3	108.5	3.5	6.0	13.8	24.1	662.8	54.9	475.8	106.3	3.5	10.4	24.1	24.0	
	158	5.5	12.8	80	681.8	46.8	522.5	93.0	4.3	2.8	6.4	23.4	686.6	44.9	533.5	88.7	4.5	6.0	13.8	23.3	689.0	44.1	539.0	86.6	4.6	10.4	24.1	23.2	
				100	658.7	58.3	460.0	112.6	3.3	2.8	6.4	24.2	663.2	56.0	472.3	108.5	3.5	6.0	13.8	24.1	662.8	54.9	475.8	106.3	3.5	10.4	24.1	24.0	
				120	634.6	73.0	385.8	132.2	2.6	2.8	6.4	25.2	638.7	70.2	399.4	128.2	2.7	6.0	13.8	25.0	640.8	68.8	406.2	126.2	2.7	10.4	24.1	24.9	
				130																									
	210	9.6	22.2	60	716.7	38.1	586.9	73.6	5.5	2.8	6.4	24.5	721.5	36.7	596.6	69.1	5.8	6.0	13.8	24.4	723.9	36.0	601.3	66.8	5.9	10.4	24.1	24.3	
				80	689.6	46.9	529.9	93.1	4.3	2.8	6.4	25.0	694.8	45.0	541.4	88.8	4.5	6.0	13.8	24.9	697.4	44.2	547.1	86.6	4.6	10.4	24.1	24.9	
				100	664.8	58.4	465.8	112.7	3.3	2.8	6.4	25.6	669.7	56.1	478.5	108.6	3.5	6.0	13.8	25.5	669.4	55.0	482.1	106.4	3.6	10.4	24.1	25.5	
				120	639.0	73.1	389.9	132.3	2.6	2.8	6.4	26.3	643.4	70.3	403.9	128.3	2.7	6.0	13.8	26.2	645.7	68.9	410.9	126.2	2.8	10.4	24.1	26.1	
40	105	2.5	5.9	60	799.9	39.3	666.2	75.2	6.0	2.8	6.4	27.4	805.9	37.7	677.5	70.2	6.3	6.0	13.8	27.2	808.9	37.0	683.0	67.7	6.4	10.4	24.1	27.1	
				80	770.4	48.1	606.7	94.7	4.7	2.8	6.4	28.6	776.7	46.0	620.1	89.9	5.0	6.0	13.8	28.3	779.9	45.0	626.7	87.4	5.1	10.4	24.1	28.2	
				100	743.2	59.7	539.8	114.3	3.7	2.8	6.4	29.8	749.3	57.1	554.7	109.6	3.8	6.0	13.8	29.5	752.3	55.8	562.1	107.2	4.0	10.4	24.1	29.4	
				120	713.5	74.6	459.3	133.8	2.8	2.8	6.4	31.3	719.5	71.4	476.1	129.3	3.0	6.0	13.8	31.0	722.4	69.8	484.4	127.0	3.0	10.4	24.1	30.9	
	158	5.5	12.8	60	828.6	39.7	693.4	75.7	6.1	2.8	6.4	31.3	836.0	38.1	706.4	70.6	6.4	6.0	13.8	31.1	839.7	37.3	712.7	68.0	6.6	10.4	24.1	31.0	
				80	793.5	48.4	628.6	95.2	4.8	2.8	6.4	32.1	801.2	46.3	643.5	90.2	5.1	6.0	13.8	31.9	805.1	45.3	650.9	87.7	5.2	10.4	24.1	31.8	
				100	761.3	60.0	556.8	114.6	3.7	2.8	6.4	33.0	768.6	57.3	573.2	109.8	3.9	6.0	13.8	32.8	772.3	56.0	581.3	107.4	4.0	10.4	24.1	32.7	
				120	726.6	74.9	471.4	134.0	2.8	2.8	6.4	34.1	733.6	71.6	489.6	129.4	3.0	6.0	13.8	33.8	737.2	70.0	498.5	127.1	3.1	10.4	24.1	33.7	
	210	9.6	22.2	60	842.4	39.9	706.6	76.0	6.2	2.8	6.4	33.3	850.6	38.3	720.3	70.8	6.5	6.0	13.8	33.2	854.7	37.5	727.1	68.1	6.7	10.4	24.1	33.1	
				80	804.6	48.6	639.1	95.4	4.9	2.8	6.4	34.0	813.0	46.4	654.8	90.3	5.1	6.0	13.8	33.8	817.2	45.4	662.6	87.8	5.3	10.4	24.1	33.7	
				100	769.9	60.2	564.9	114.8	3.8	2.8	6.4	34.7	777.8	57.5	582.1	110.0	4.0	6.0	13.8	34.5	781.9	56.1	590.6	107.5	4.1	10.4	24.1	34.4	
				120	732.8	75.0	477.2	134.2	2.9	2.8	6.4	35.5	740.4	71.7	496.0	129.5	3.0	6.0	13.8	35.3	744.2	70.1	505.3	127.2	3.1	10.4	24.1	35.2	
50	105	2.5	5.9	60	923.2	41.1	783.4	77.5	6.6	2.8	6.4	35.2	932.5	39.3	798.7	71.8	7.0	6.0	13.8	34.9	937.0	38.5	806.1	68.9	7.1	10.4	24.1	34.8	
				80	884.7	49.8	715.1	96.9	5.2	2.8	6.4	36.5	894.2	47.4	732.6	91.4	5.5	6.0	13.8	36.1	898.9	46.3	741.3	88.6	5.7	10.4	24.1	36.0	
				100	849.0	61.5	639.4	116.3	4.0	2.8	6.4	37.9	858.1	58.5	658.7	111.0	4.3	6.0	13.8	37.5	862.7	57.0	668.3	108.3	4.4	10.4	24.1	37.4	
				120	809.0	76.6	548.0	135.6	3.1	2.8	6.4	39.6	818.3	72.9	569.8	130.5	3.3	6.0	13.8	39.2	823.0	71.1	580.6	128.0	3.4	10.4	24.1	39.0	
	158	5.5	12.8	60	962.8	41.7	821.0	78.3	6.8	2.8	6.4	39.6	974.6	39.9	839.8	73.4	7.2	6.0	13.8	39.4	979.6	39.0	849.8	70.4	7.3	10.4	24.1	39.3	
				80	916.6	50.3	745.3	97.5	5.3	2.8	6.4	40.6	928.4	47.9	765.3	91.8	5.7	6.0	13.8	40.3	934.3	46.7	775.2	88.9	5.9	10.4	24.1	40.2	
				100	874.0	62.0	662.8	116.8	4.1	2.8	6.4	41.6	885.1	58.9	684.5	111.3	4.4	6.0	13.8	41.4	890.7	57.4	695.2	108.6	4.6	10.4	24.1	41.2	
				120	827.0	77.0	564.7	136.0	3.2	2.8	6.4	42.9	838.2	73.2	588.6	130.8	3.4	6.0	13.8	42.6	843.7	71.4	600.4	128.2	3.5	10.4	24.1	42.4	
	210	9.6	22.2	60	980.1	42.0	839.2	78.7	6.9	2.8	6.4	42.1	994.6	40.2	859.8	74.4	7.3	6.0	13.8	41.9	999.6	39.3	869.8	71.5	7.4	10.4	24.1	42.0	
				80	932.0	50.6	759.8	97.8	5.4	2.8	6.4	42.8	944.9	48.1	781.1	92.1	5.8	6.0	13.8	42.6	951.4	46.9	791.7	89.1	5.9	10.4	24.1	42.5	
				100	886.0	62.2	674.0	117.1	4.2	2.8	6.4	43.6	898.1	59.1	696.8	111.5	4.5	6.0	13.8	43.4	904.2	57.5	708.2	108.7	4.6	10.4	24.1	43.3	
				120	835.6	77.2	572.6	136.2	3.2	2.8	6.4	44.6	847.6	73.4	597.5	130.9	3.4	6.0	13.8	44.3	853.6	71.5	609.9	128.3	3.5	10.4	24.1	44.2	
60	105	2.5	5.9	60	1055.5	43.1	908.7	80.1	7.2	2.8	6.4	42.8	1070.9	41.3	929.8	75.0	7.6	6.0	13.8	42.6	1077.0	40.4	940.8	72.1	7.7	10.4	24.1	42.7	
				80	1007.5	51.8	831.1	99.3	5.7	2.8	6.4	44.2	1020.9	49.1	853.7	93.0	6.1	6.0	13.8	43.8	1027.7	47.8	864.9	89.8	6.3	10.4	24.1	43.6	
				100	962.7	63.6	745.8	118.6	4.4	2.8	6.4	45.8	975.7	60.2	770.6	112.5	4.8	6.0	13.8	45.4	982.2	58.5	782.9	109.5	4.9	10.4	24.1	45.2	
				120	911.3	78.9	642.5	137.7	3.4	2.8	6.4	47.8	925.0	74.7	670.5	131.9	3.6	6.0	13.8	47.3	931.8	72.6	684.3	129.0	3.8	10.4	24.1	47.0	
	158	5.5	12.8	60	1081.8	47.6	882.1	81.7	7.3	2.8	6.4	43.8	1100.8	45.8	921.8	76.1	7.9	6.0	13.8	43.6	1108.0	44.9	943.0	74.2	7.9	10.4	24.1	43.9	
				80	1050.5	52.6	817.5	100.2	5.9	2.8	6.4	49.0	1067.5	49.8	898.0	93.6	6.3	6.0	13.8	48.6	1076.1	48.4	911.1	90.3	6.5	10.4	24.1	48.5	
				100	996.3	64.3	777.2	119.2	4.5	2.8	6.4	50.2	1012.4	60.7	805.5	113.0	4.9	6.0	13.8	49.8	1020.7	59.0	819.6	109.8	5.1	10.4	24.1	49.6	
				120	935.5	79.4	664.7	138.1	3.5	2.8	6.4	51.6	952.0	75.1	695.9	132.3	3.7	6.0	13.8	51.2	960.2	73.0	711.3	129.3	3.9	10.4	24.1	51.0	
	210	9.6	22.2	60																									

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			
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

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TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Physical & Electrical Data

Physical Data

Model	TMW360	TMW600	TMW 840
Compressor (qty)	Scroll (2)	Scroll (2)	Scroll (2)
Compressor Oil Type	ALL	REVA	REVB
	POE	POE	PVE
Factory Charge HFC-410A (lbs) [kg] / circuit	15 [6.8]	27.5 [12.5]	33.8 [15.4]
Indoor / Load Water connection sizes FPT (in)	2	2-1/2	2-1/2
Outdoor / Source Water connection size FPT (in)	2	2-1/2	2-1/2
Weight - Operating (lbs) [kg]	1400 [635]	2055 [932]	2305 [1042]
Weight - Shipping (lbs) [kg]	1325 [601]	1925 [873]	2175 [983]
Water Volume (Source)			
Gallons [Liters]	4.7 [17.8]	8.3 [31.4]	9.5 [36]
Water Volume (Load)			
Gallons [Liters]	4.4 [16.7]	7.3 [27.6]	8.5 [32.2]

Unit Maximum Water Working Pressure	
Options	Max Working Pressure PSIG [kPa]
Base Unit	300 [2,068]
Motorized Valves	300 [2,068]

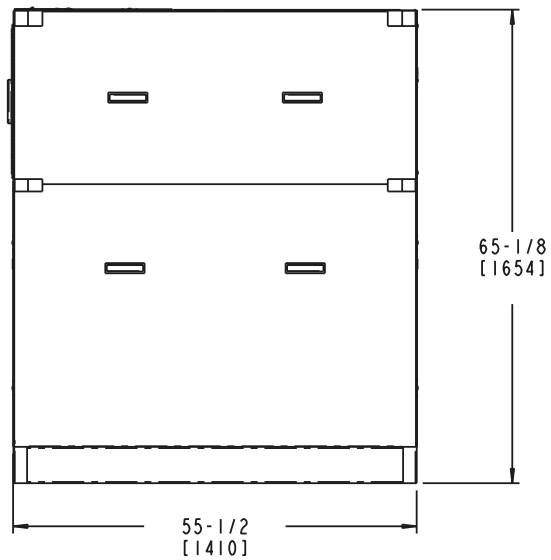
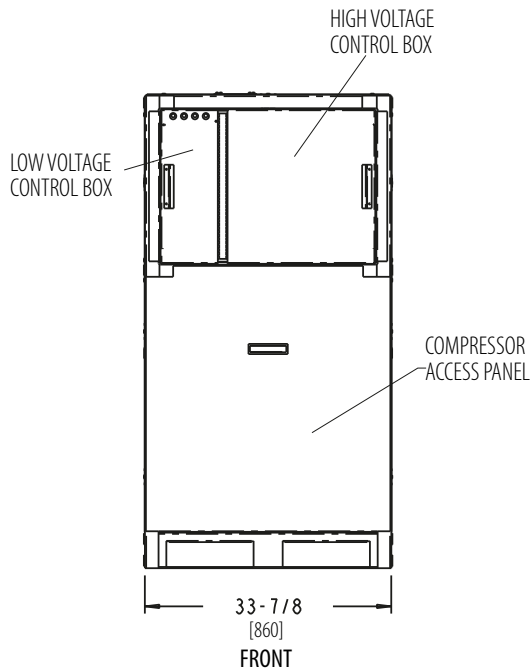
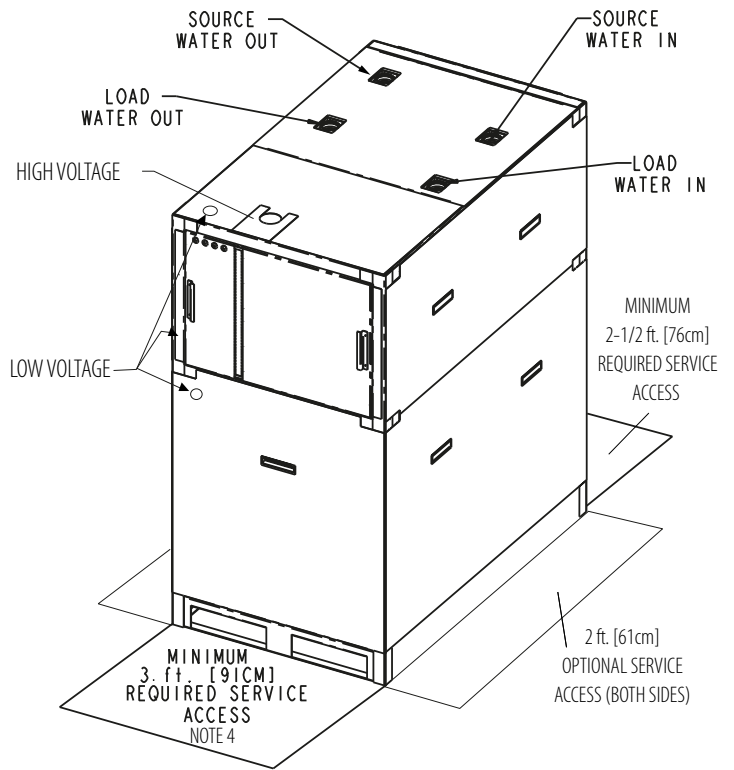
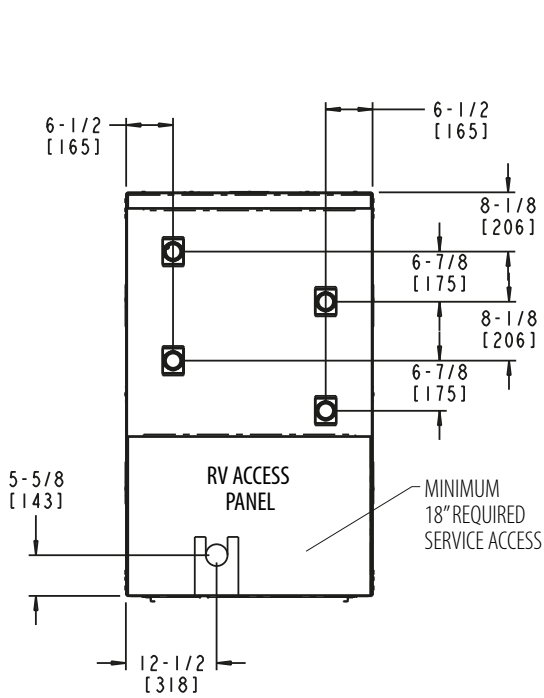
TMW Electrical Data

Model	Voltage Code	Voltage	Voltage Min/Max	Compressor			Total Unit FLA	Min Circuit Amps	Max UL/CSA HACR
				Qty	RLA (EA)	LRA (EA)			
TMW360	H	208-230/60/3	187/254	2	56.4	425	113	127	175
	F	460/60/3	414/506	2	25.5	173	51	57	80
	N	575/60/3	518/633	2	20.4	128	41	46	60
TMW600	H	208-230/60/3	187/254	2	94.7	605	189	213	300
	F	460/60/3	414/506	2	42.8	272	86	96	125
	N	575/60/3	518/633	2	34.3	238	69	77	110
TMW840	H	208-230/60/3	187/254	2	124.3	599	249	280	400
	F	460/60/3	414/506	2	56.2	310	112	126	175
	N	575/60/3	518/633	2	45.0	239	90	101	125

HACR circuit breaker in USA only

TMW Corner Weights (control box is on front) lbs [kg]

Model	Left Front	Left Rear	Right Front	Right Rear
TMW360	345 [156]	350 [159]	275 [125]	355 [161]
TMW600	492 [223]	500 [227]	400 [181]	533 [242]
TMW840	557 [252]	565 [255]	452 [204]	601 [271]



NOTE:

1. DIMENSIONS SHOWN IN INCHES AND [MILLIMETERS].
2. TMW360 WATER CONNECTIONS ARE 2" FPT.
3. TMW600 AND 840 WATER CONNECTIONS ARE 2.5" FPT.
4. FOR MULTIPLE UNITS PLACED SIDE BY SIDE. ALLOW SUFFICIENT SPACE FRONT OR BACK TO REMOVE UNIT.

TMW Large Series - Sound Data and Wiring Diagram Matrix

Sound Power Data

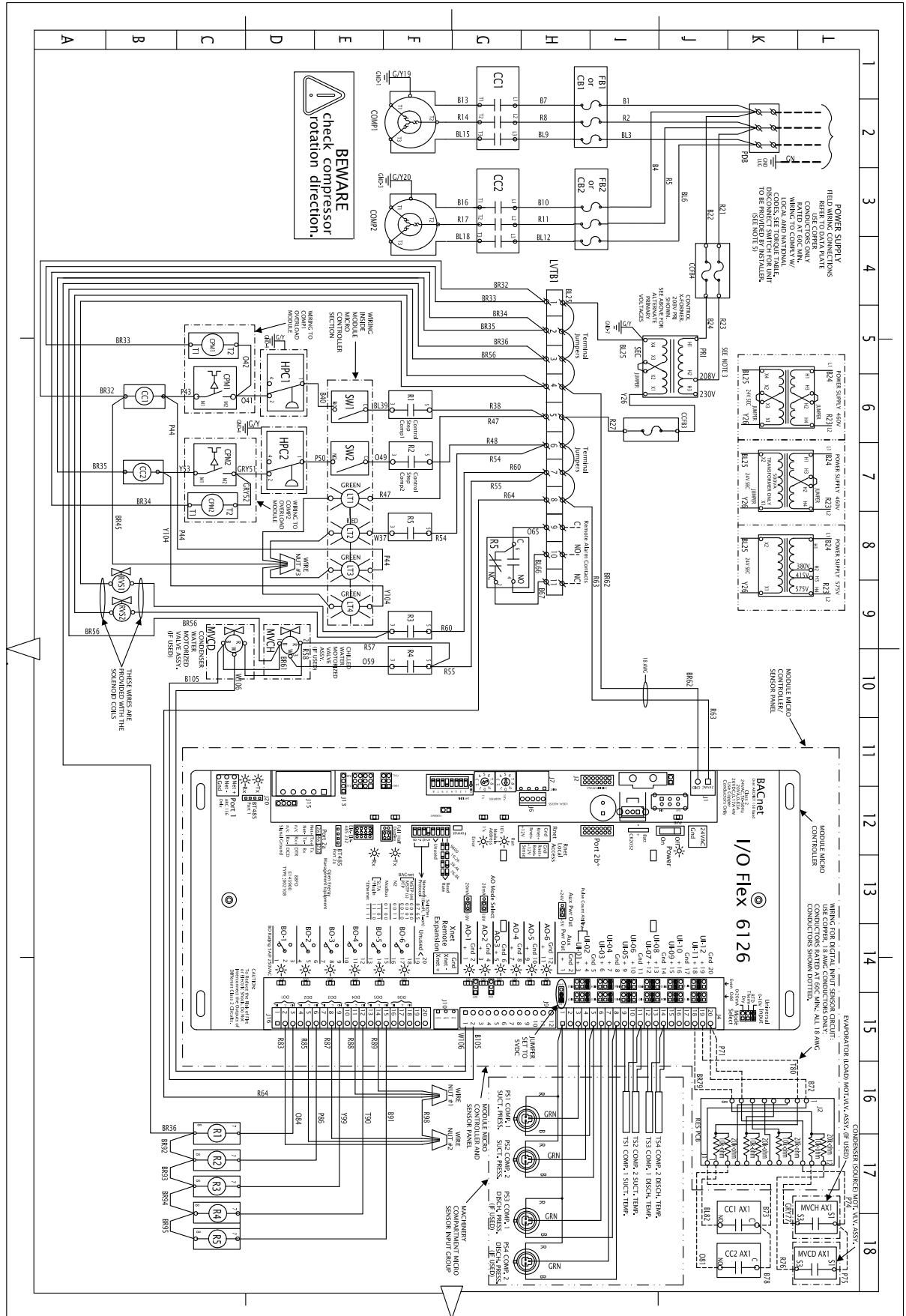
Model	dBA
TMW360	67
TMW600	70
TMW800	72

Wiring Diagrams

Model	Refrigerant	Wiring Diagram Part Number	Electrical	Agency
TMW360-840	EarthPure® HFC-410A	96B0152N01	208-230/60/3 460/60/3 575/60/3	UL

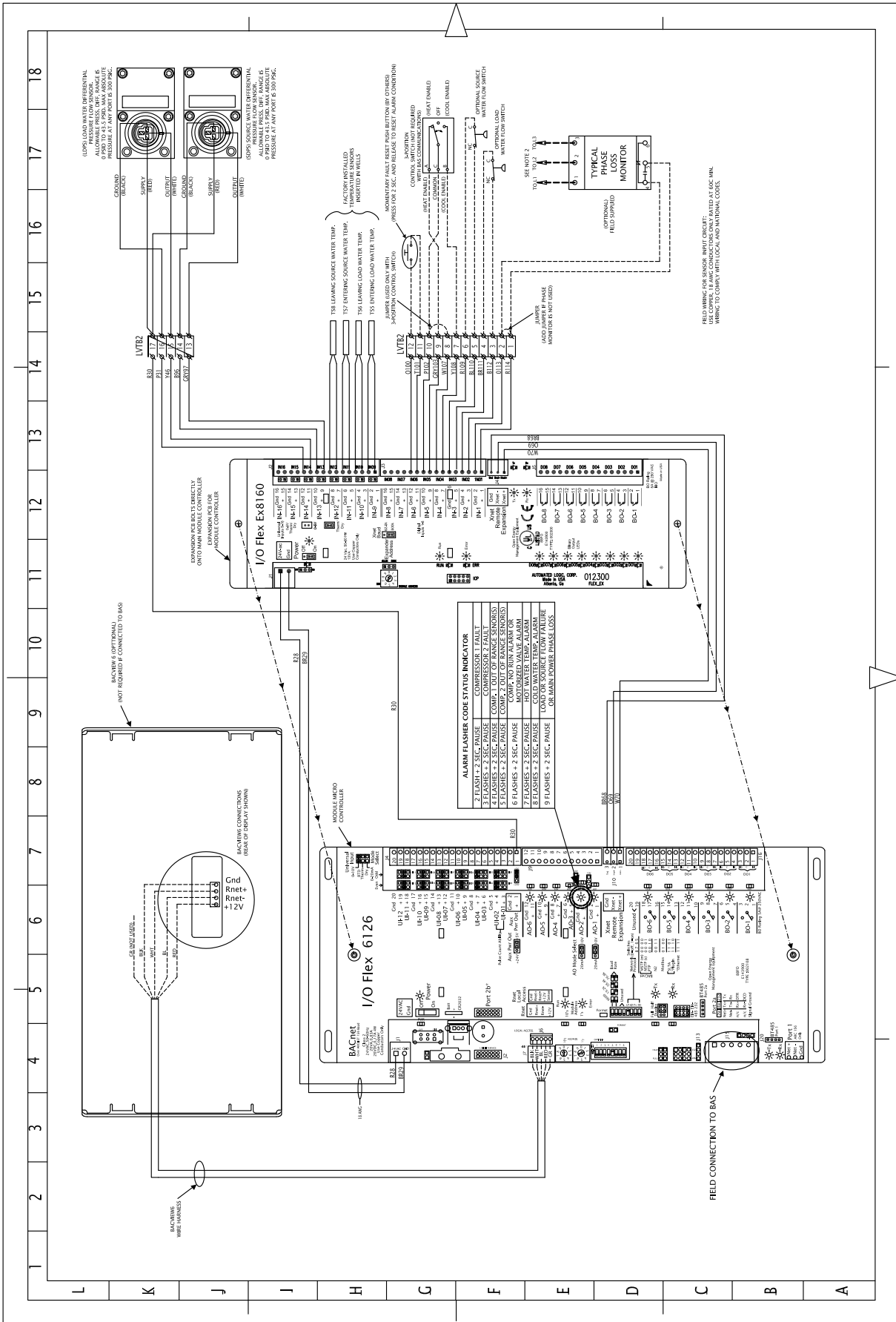
All current diagrams may be downloaded at www.climatemaster.com/commercial-wiring

TMW Large Series - Typical Wiring Diagram



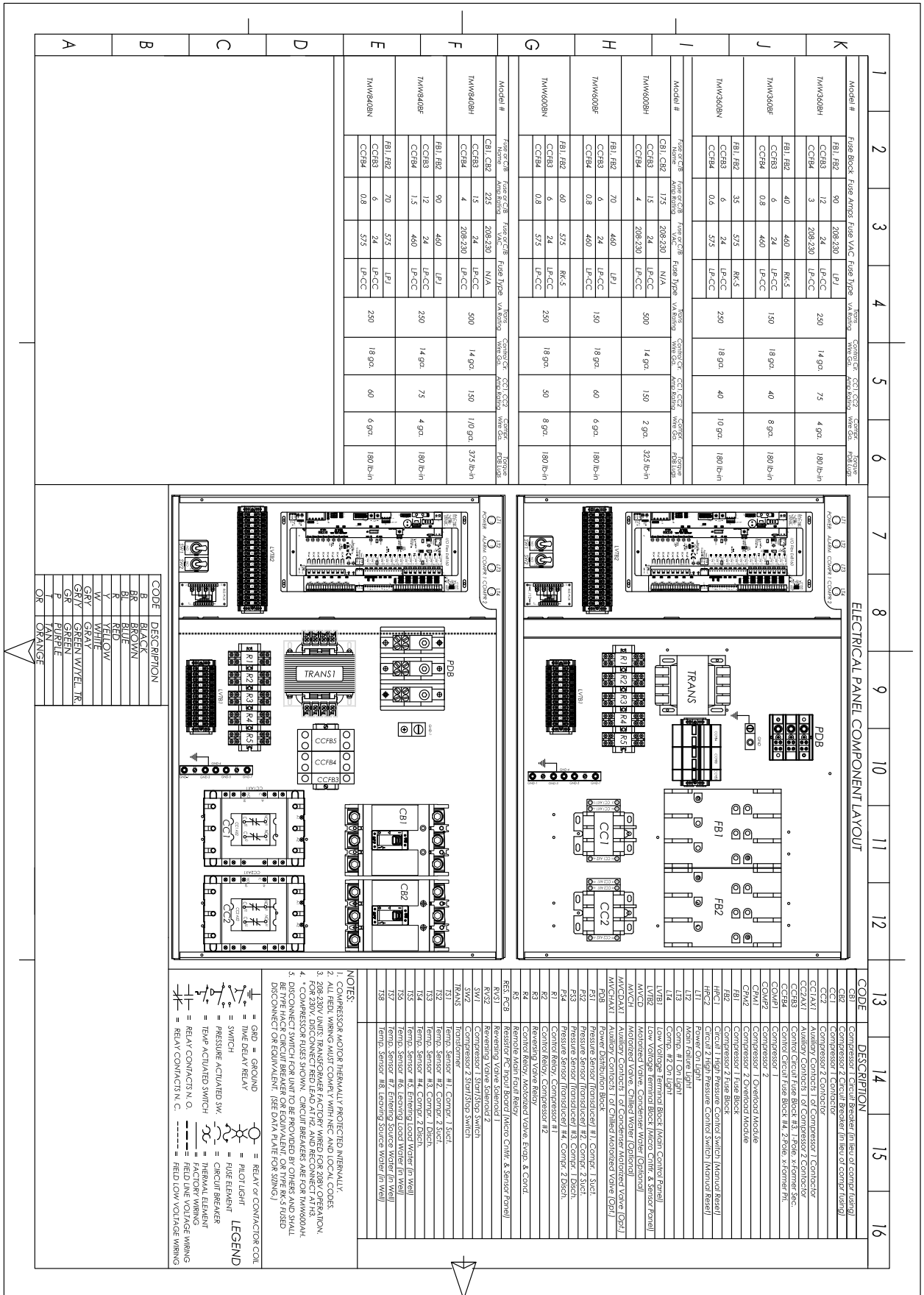
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TMW Large Series - Typical Wiring Diagram (Continued)



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TMW Large Series - Typical Wiring Diagram (Continued)



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Tranquility® Large Water-to-Water (TMW360 - 840) Series 60Hz Engineering Specifications Page 1

General:

Furnish and install ClimateMaster "TMW" 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.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 30° to 120°F (-1.1° to 48.9°C) as standard. Equivalent units from other manufacturers may be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated in accordance with Air-Conditioning, Heating and Refrigeration Institute/International Standards Organization (AHRI/ISO 13256-2). The units shall be certified to UL508A Standard. The units shall have AHRI/ISO and UL-US-C labels.

All units shall be fully quality tested by factory run testing under normal operating conditions as described herein. Quality control system shall automatically perform via computer: triple leak check, pressure tests, evacuation and accurately charge system, perform detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria. Detailed report card will ship with each unit displaying status for critical tests and components. **NOTE: If unit fails on any cross check, it shall not be allowed to ship. Serial numbers will be recorded by factory and furnished to contractor on report card for ease of unit warranty status. Units tested without water flow are not acceptable.**

Units can be connected to building automated system (BAS) or Stand Alone.

Basic Construction:

All units must have multiple removable panels for serviceability of compressor compartment. **Units having only one access panel shall not be acceptable.** Service panels shall have Allen head three-quarter turn quick release latches, and hand hold pockets for easy removal.

The heat pumps shall be fabricated from heavy gauge galvanized steel with powder coat paint finish. Both sides of the steel shall be painted for added protection. All interior surfaces shall be lined with 1/2 inch (12.7mm) thick, 1-1/2 lb/ft³ (24 kg/m³) acoustic type glass fiber insulation.

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 acceptable.**

The frame design shall consist of heavy gauge galvanized steel with powder coat finish. The module must have a low center of gravity base with cutouts for forklift or pallet jack and the frame must be designed to fit through a standard 36 inch doorway.

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be copper FPT fittings. **Contractor shall be responsible for any extra costs involved in the installation of units that do not have this feature.** Contractor must ensure that units can be easily removed for servicing and coordinate locations of electrical conduit and lights with the electrical contractor.

**Tranquility® Large Water-to-Water (TMW360 - 840) Series 60Hz
Engineering Specifications Page 2**

Unit(s) shall have exterior indicator lights showing, 1) power (on-Green), 2) unit "fault" status (fault - Red), 3) compressor 1 operation (on-Green), and 4) compressor 2 operation (on-Green). **Contractor shall be responsible for providing control circuitry and indicator lights for units not providing this feature.**

Refrigerant Circuit:

Units shall have sealed, isolated refrigerant circuits, each including a high efficiency scroll compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, a reversing valve, sight glass, filter dryer, load and source brazed plate refrigerant to water heat exchangers, and safety controls including a high pressure switch, low pressure switch (loss of charge), and low water temperature sensors. 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.

Hermetic compressors shall be internally sprung. The compressors will be mounted on specially engineered sound-tested EPDM vibration isolation grommets to a large heavy gauge base plate. Compressors shall have thermal overload protection. Each compressor shall have isolation switch to aid start-up and service. **Units without isolation switch are not acceptable.**

Heat exchangers shall be highly efficient, refrigerant to water, dual circuited, brazed plate design, constructed of 316 stainless steel; designed, tested, and UL stamped in accordance with ASME Section VIII pressure vessel code for 650 PSIG (4482 kPa) working refrigerant pressure. The heat exchangers shall be mounted to eliminate the effect of migration of refrigerant to the cold evaporator with consequent liquid slugging on start-up. The heat exchangers shall be mounted on two layers of noise attenuating rubber isolation pads which also acts as a thermal barrier. The heat exchangers shall be wrapped with 3/4 inch closed cell insulated blanket and closed cell insulation shall be provided on suction side refrigerant tubing to prevent condensation.

Water Circuit:

Unit shall have all internal water tubing insulated with closed cell insulation. Field connections shall be on the top so multiple units can be installed side by side. PT ports and heat exchanger flushing connections shall be accessible from back service panel. Load and Source water shall be tested and results approved by ClimateMaster to activate unit warranty.

Unit shall have Source Motorized Valve to prevent unit from locking out when water temperature is below 60°F in cooling mode. Valve will automatically modulate to maintain compressor head pressure, for continuous unit operation.

Unit shall have Pressure Differential Sensors for Load and Source factory installed. Sensors are for proof of water flow.

External of unit contractor must supply the following: minimum 60 mesh stainless steel screen strainers (for Load and Source), and pressure taps. All components should be isolated for ease of service.

Option: Motorized valve. Valve is used when variable speed pump is incorporated on water circuit.

Option: Source motorized valve can be omitted. If unit is heating only and does not have variable speed pump.

Electrical:

The control box shall consist of a NEMA Type I enclosure with high and low voltage compartments, components include: low voltage connection block, power distribution block, compressor fusing, contactors, finger safe control fusing, transformer, isolation relays, status and alarm relay, 16-bit microprocessor DDC controller with built in native Building Automation System (BAS) communication protocols (BACnet and Modbus) two isolation switches to disable each individual compressor during start-up or troubleshooting, and external status indicating lights.

Tranquility® Large Water-to-Water (TMW360 - 840) Series 60Hz Engineering Specifications Page 3

Solid State Control System:

DDC Controller shall be specifically designed to protect against building electrical system noise contamination, EMI and RFI interference. DDC control system shall be fully compatible with the Building Automation System via native BACnet or Modbus communication or BACview 6. Scheduling of the various compressors shall be performed by the microprocessor based controller. Controller shall provide following compressor safety protections: anti-short cycling, high voltage, low voltage, high discharge pressure, low suction pressure, high discharge temperature, low suction temperature, high source leaving water temperature, low load leaving water temperature, load low water flow, and source low water flow.

Units not providing the 11 safety protections of anti-short cycling, high voltage, low voltage, high discharge pressure, low suction pressure, high discharge temperature, low suction temperature, high source leaving water temperature, low load leaving water temperature, load loss of water flow, and source loss of water flow will not be accepted. A compressor run time equalization sequence is provided to ensure even distribution of compressor run time. **Units without even distribution of compressor run time are not acceptable.** A load limit control shall be available to limit the number of compressors that can be energized at one time.

DDC Controller shall monitor and report the following for each refrigeration circuit:

- a. Discharge pressure and temperature faults.
- b. Suction pressure and temperature faults.
- c. Compressor winding high temperature fault.
- d. Low Load leaving chilled water temperature fault.
- e. High source leaving water temperature fault.

DDC Controller shall monitor and report the following system parameters for the unit:

- f. Chilled water entering and leaving temperature.
- g. Condenser water entering and leaving temperature.
- h. Load and Source low water flow.
- i. Communication error
- j. Electrical voltage/phase failure

Any failure condition shall cause a "fault" indication at the DDC Controller and shutdown of that compressor circuit. In the case of a system "fault" the entire unit will shutdown. When any fault occurs, the DDC Controller shall record conditions at the time of the fault, and store the data for recall. This information shall be capable of recall through BACview6 and displayed on the 4 line by 40 character, back-lit LCD. A history of faults shall be maintained including date and time for each fault (up to the last 100 occurrences). Internal leaving chilled water reset control will ensure that the parallel evaporators are operated above the freeze point for part load operation.

DDC Controller shall have flashing Light Emitting Diode (LED) for the following: compressor 1 fault, compressor 2 fault, sensors for compressor 1 out of range, sensors for compressor 2 out of range, compressor alarm, motorized water valve alarm, hot water temperature alarm, cold water temperature alarm, load flow failure, source flow failure, and main power phase loss.

Units without flashing LED for unit fault are not acceptable.

Bacview 6 with cable must be used for setting controller at start up. Bacview 6 can also be used to operate, monitor, and change default settings, or as a service tool for the unit.

Warranty:

ClimateMaster shall warranty equipment for a period of 12 months from start up or 18 months from shipping (which ever occurs first). Warranty is not activated until 1). water test is approved, and 2). factory start-up is complete.

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

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

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

FIELD OPTIONS/ACCESSORIES

Hose Kits:

All units shall be connected with hoses. The hoses shall be 2 feet (61cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted.

Valves:

The following valves are available and will be shipped loose: for field installation.

- a. Ball valve; bronze material, standard port full flow design, FPT connections.
- b. Ball valve with memory stop and PT port.

Strainers:

The following strainers are available and will be shipped loose: for field installation.

- a. 3" FPT Y-strainer. 60 mesh screen.
- b. 3" FPT Basket strainer. 60 mesh screen.

BACview6 and Cable: 6A:

Used to control the unit if BAS is not used or as a service tool for service diagnostics at the unit. DDC Controller has port for cable.

3 way switch: (Not required if connected to BAS) field obtained and installed operation mode switch selects - off, cool, heat.

Phase monitor: (Not required, recommended) field obtained and installed. Protects compressors.

TMW LARGE SERIES 60 HZ - HFC-410A SUBMITTAL DATA ENG/I-P

Notes:

Notes:

Revision History

Date:	Item:	Action:
02/27/13	Heating Performance Data	Updated
12/17/12	All Pages	Added Size 840
11/14/11	Dimensional Data	Updated
08/09/11	Unit Maximum Working Water Pressure	Updated to Reflect New Safeties
04/29/11	Physical Data Table, Performance Data Tables	Updated
02/08/11	Created	