CLIMATE MASTER 22 Series

WATER TO AIR **HEAT PUMPS**

VERTICAL MODEL
HORIZONTAL MODEL

Better Cooling...Better Heating...Economically

CHOOSE FROM VERTICAL AND HORIZONTAL MODELS

2 Electrical Options

Different Return Air Configurations

Ease of Installation

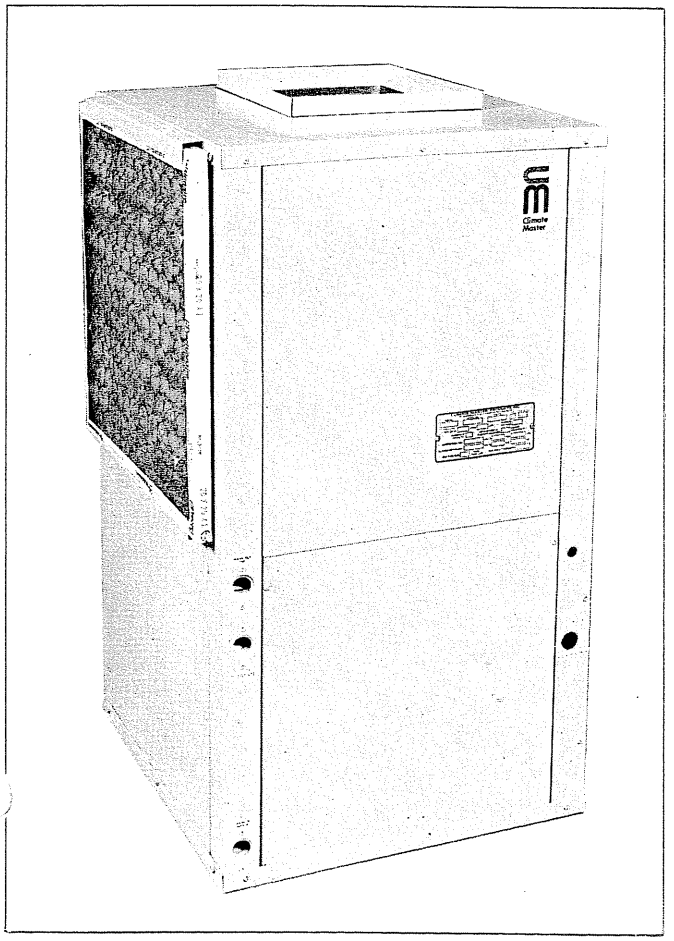
Versatility of Application

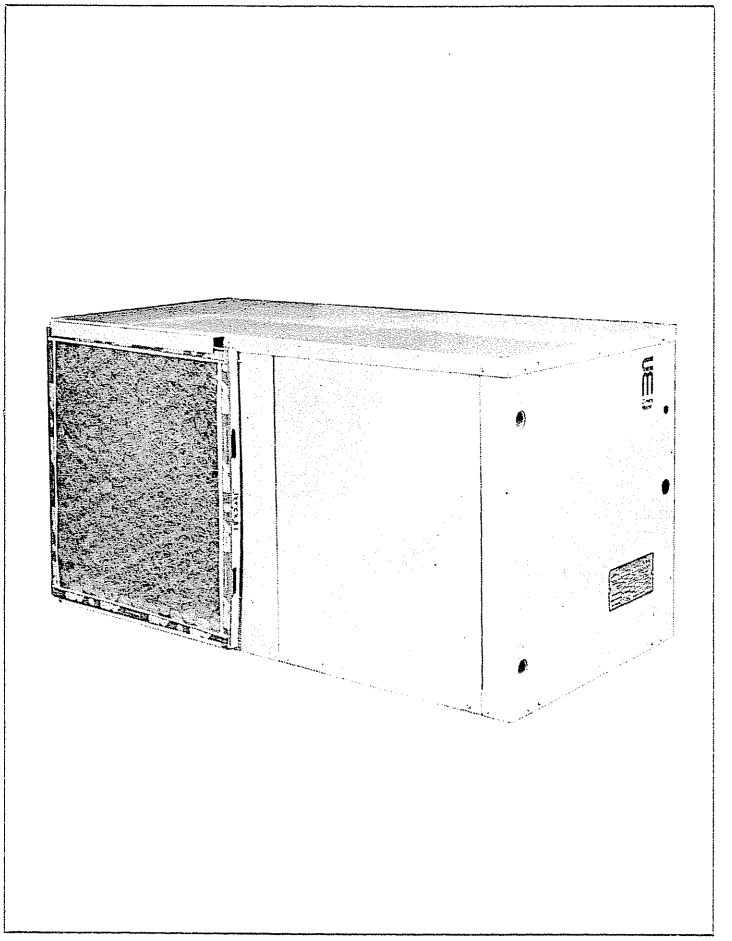
Compact, Space-Saving Design

Designed & Tested for High Efficiency

Superior Accessibility

Accoustically Improved





ADVANCED FEATURES and SPECIFICATIONS

MAKE CLIMATE MASTER YOUR BEST BUY IN ALL WEATHER COMFORT...

The Climate Master® is a complete factory-packaged water-to-air heat pump that provides total comfort. Each unit is designed and built per the specifications listed below:

Cabinet:

The cabinet is made of heavy gauge, galvanized steel, and painted electro-statically to prevent corrosion. The interior of the cabinet is lined with high density, coated insulation with improved thermal insulating and accoustical absorbtion characteristics. The units have access panels for ease of inspection and service to all components. The design incorporates externally stubbed water and drain (FPT) connections in the front of the unit for easy installation. The electrical power, control voltage wiring and control box are also accessible from the front of the unit. The supply air opening is provided with a duct collar and the return air incorporates a filter rack permitting removal of the filter in any direction (also optionally available is a flanged filter rack for ducted returns). The horizontal unit has threaded fasteners on the top for ceiling suspended installation.

Compressor:

The hermetic compressor is internally spring-mounted and mounted in the cabinet on rails with vibration isolators for quiet, smooth running operation. The compressor is furnished with motor protection and features an anti-slug device for extended life.

Reversing Valve:

The reverse cycle feature is provided by a four way electro-magnetic reversing valve designed for low pressure drops and reliable operation.

Refrigerant-To-Water Heat Exchanger:

The heat exchanger is coaxial (tube-in-tube) spirally wound with booster fins on the refrigerant side to provide optimum heat transfer. The inner (water) tube is available in copper or 90/10 cupro-nickel construction designed to withstand water pressures of 500 psi. The outer (refrigerant) tube is made of primed and painted steel. Design working pressure on the refrigerant side is 450 psi.

Air-To-Refrigerant Heat Exchanger:

The large face area, fin coil heat exchanger utilizes 3/8" staggered copper tubes with rippled and corrugated aluminum fins for added heat transfer. The refrigerant circuiting is designed for optimum pressure drops and efficiency.

Refrigerant Control:

The optimum factory charge of Refrigerant 22 is metered by precisely designed capillary tubes. The critical charge and sizing of capillary tubes is laboratory researched for balancing on the cooling and heating modes at varied conditions. The refrigerant piping is factory pressure and leak tested. Abnormal pressures within the refrigerant circuit are prevented with safety high and low pressure switches.
Charging and service ports are provided on the high and low pressure sides of the unit as standard equipment.

Blower and Motor:

The centrifugal type blower wheel and housing is custom designed for quiet operation and efficient air delivery. The blower is close-coupled to a the motor with internal inherent thermal overload protection. The speed taps are designed for adequate air delivery at varied external static pressure requirements. Each unit is provided with a high velocity type disposable filter.

Controls:

The control box, easily accessible from the front panel, includes a 24 volt control transformer, compressor contactor, blower and impedance relays. The single phase model is furnished with a run capacitor. Completely factory wired, the circuit features a lock-out relay to provide a manual reset at the thermostat in case of interrupted operation by the safety controls. The individual control components are designed for ease of inspection and serviceability. A terminal block is provided for convenient field wiring to the thermostat. A remote thermostat for comfort control is furnished with the unit.

SUPERIOR **COOLING** CAPACITIES AND PERFORMANCE

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 22,000 BTUH*.
Power Input: 2500 Watts.

*Basis: 750 CFM of 80° F DB/67° F WB entering air
3.1 GPM of Water entering at 75° F, leaving at 95° F.

APPLICATION DATA

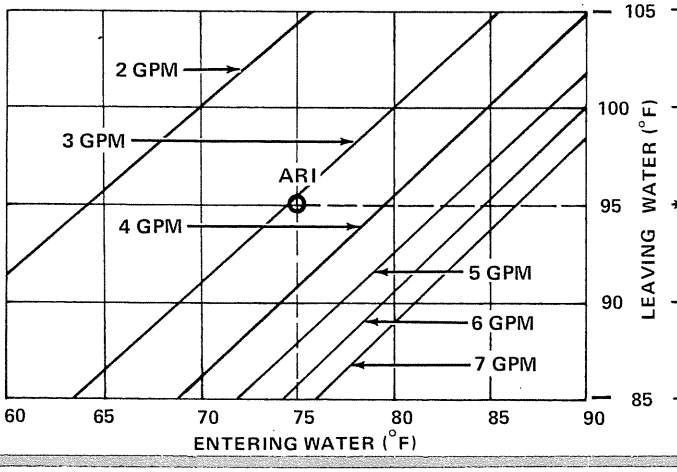
ENTERING AIR (° F) WET BULB	BASED ON 750 CFM & 95°F LEAVING WATER					
	TOTAL CAPACITY (BTUH)	SENSIBLE CAPACITY (BTUH) ENTERING AIR (°F) DRY BULB				HEAT OF REJECTION (BTUH)
		75	80	85	90	
61	18700	14300	16050	–	–	27900
64	20400	13450	15600	17750	–	29300
67	22000	12550	14500	16950	19350	31000
70	23350	–	13400	15300	18000	32900
73	24850	–	–	14300	16400	35300

CORRECTION FACTORS

(A) VARIATION OF AIRFLOW

CFM	630	680	715	740	750	760	780	800
TOTAL CAPACITY	.935	.962	.980	.995	1.000	1.004	1.011	1.019
SENSIBLE CAPACITY	.915	.950	.970	.992	1.000	1.005	1.018	1.030
HEAT OF REJECTION	.950	.972	.986	.996	1.000	1.009	1.028	1.046

(B) VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.933	0.943	2670
0.968	0.974	2580
1.000	1.000	2500
1.031	1.024	2430
1.059	1.046	2370

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)							
.10	.15	.20	.225	.25	.30	.35	.40
800	780	760	750	740	715	680	630

SAMPLE PROBLEM (COOLING)

740 CFM AIR ENTERING AT 75° F DB/64° F WB
4.5 GPM OF 87° F ENTERING WATER

		AIRFLOW CORRECTION		WATER FLOW CORRECTION		
TOTAL CAPACITY	= 20400	X .995	X	.968	=	19650 BTUH
SENSIBLE CAPACITY	= 13450	X .992	X	.968	=	12920 BTUH
HEAT REJECTION	= 29300	X .996	X	.974	=	28420 BTUH

SUPERIOR **HEATING** CAPACITIES AND PERFORMANCE

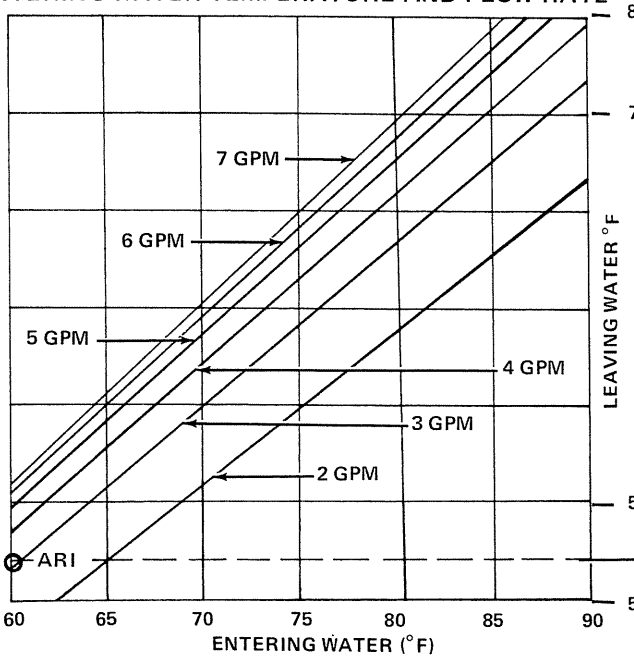
HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 21,000 BTUH*.
Power Input: 2600 Watts.

*Basis: 750 CFM of 70°F entering air
3.1 GPM of 60°F entering water.

APPLICATION DATA

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORBTION (BTUH)	POWER INPUT (WATTS)
32400	20500	3540
30400	19300	3320
28400	17900	3120
26500	16500	2940
24700	15100	2770
22800	13600	2680
21500	12500	2600

VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY MULTIPLIER	1.05	1.03	1.00	.97	.94
HEAT OF ABSORPTION MULTIPLIER	1.07	1.04	1.00	.95	.94
POWER INPUT MULTIPLIER	0.96	0.98	1.00	1.04	1.08

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	630	680	715	740	750	760	780	800
HEATING CAPACITY MULTIPLIER	.934	.961	.979	.994	1.000	1.005	1.012	1.020
HEAT OF ABSORPTION MULTIPLIER	.924	.955	.977	.993	1.000	1.005	1.015	1.026
POWER INPUT MULTIPLIER	1.100	1.055	1.028	1.007	1.000	0.997	0.990	0.981

WATER PRESSURE DROP-PSIG.

WATER FLOW RATE (GPM)	2	3	4	5	6	7
PRESSURE DROP (PSIG)	1.5	2.1	3.3	4.5	6.8	8.3

SAMPLE PROBLEM (HEATING)

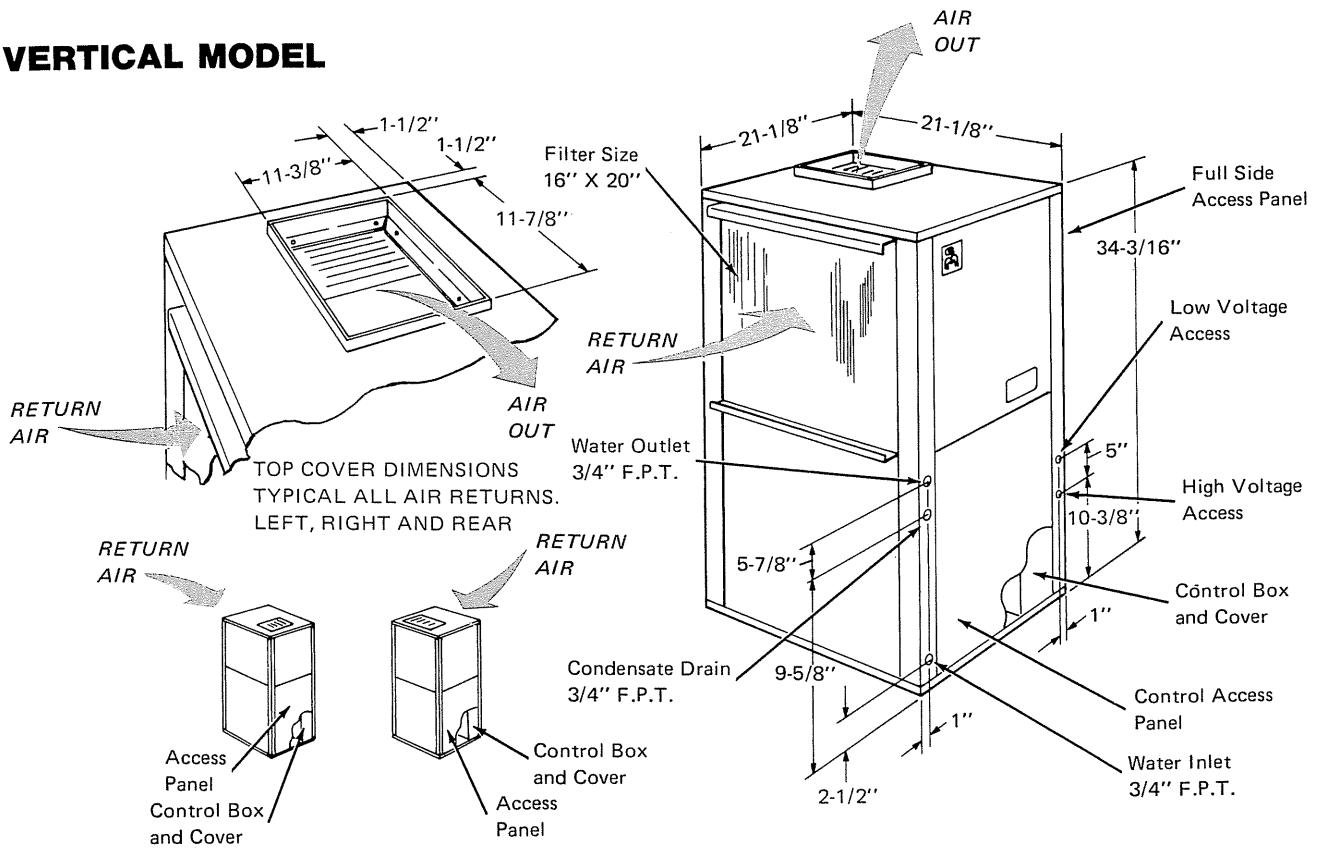
740 CFM OF AIR ENTERING @ 75°F
4.5 GPM OF 71°F ENTERING WATER

			ENTERING AIR CORRECTION		AIRFLOW CORRECTION		
			▼		▼		
HEATING CAPACITY	=	26500	X .97	X	.994	=	25550 BTUH
HEAT OF ABSORPTION	=	16500	X .95	X	.993	=	15570 BTUH
POWER INPUT (WATTS)	=	2940	X 1.04	X	1.007	=	2610 WATTS

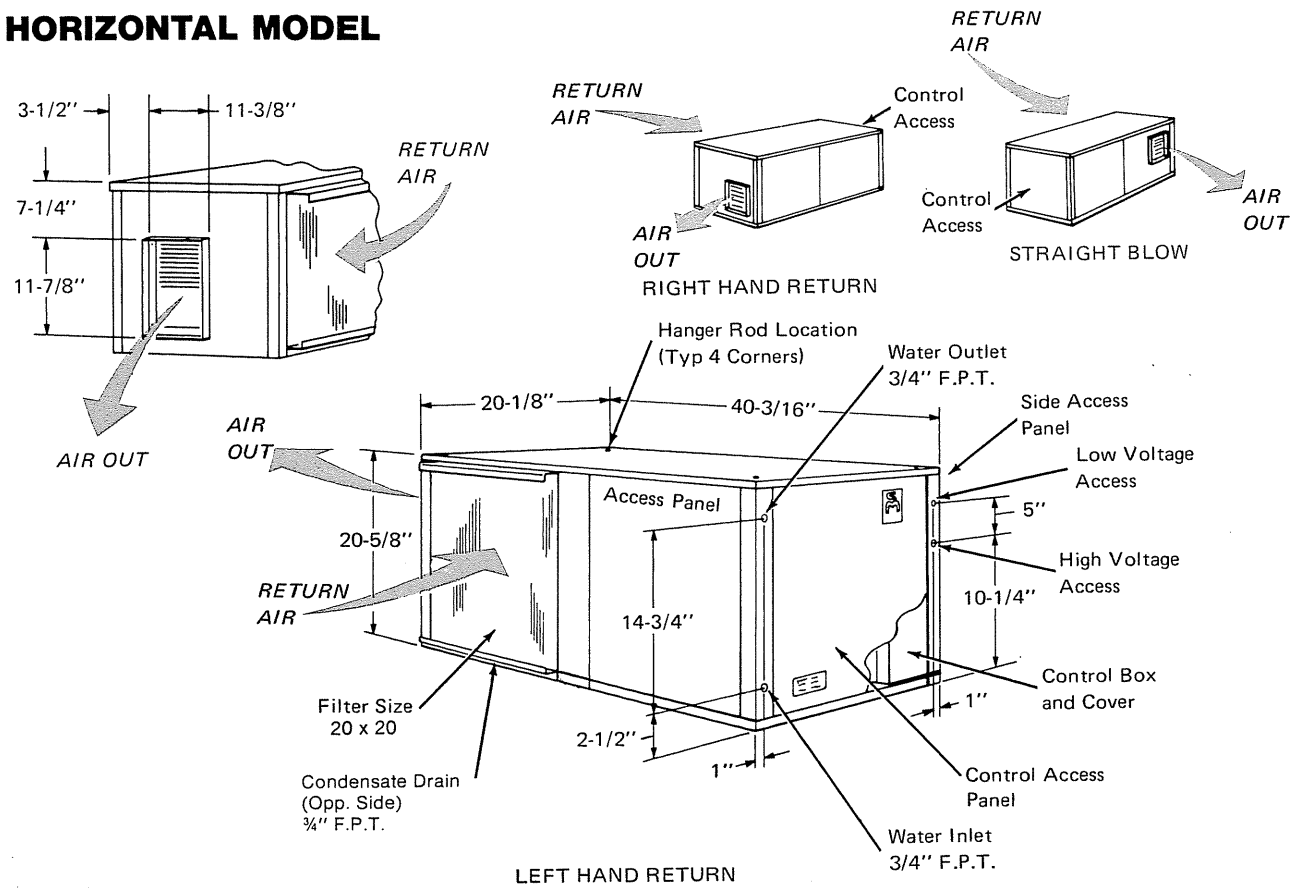
CHOOSE FROM VERTICAL AND HORIZONTAL STYLES

DIMENSIONAL DATA

VERTICAL MODEL



HORIZONTAL MODEL



CLIMATE MASTER FOR QUALITY AND ECONOMY

PHYSICAL DATA

SPECIFICATION CHART

FOR VERTICAL AND HORIZONTAL MODELS

MODEL		V22 - 12	H22 - 12	V22 - 13	H22 - 13
CONFIGURATION		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL
VOLTAGE *		208/230	208/230	277	277
PHASE		1	1	1	1
MIN. CIRCUIT AMPACITY		14.6	14.6	11.3	11.3
MAX. FUSE SIZE**		20	20	15	15
COMPRESSOR F.L.A.		9.9	9.9	8.1	8.1
COMPRESSOR L.R.A.		51	51	50	50
BLOWER F.L.A.		2.4	2.4	1.1	1.1
BLOWER MOTOR-HP		1/6	1/6	1/6	1/6
BLOWER WHEEL DIA.		9-1/2	9-1/2	9-1/2	9-1/2
BLOWER WHEEL LEN.		7-1/4	7-1/4	7-1/4	7-1/4
REF. TO AIR HEAT EXCHANGER	ROWS	3	3	3	3
	FACE AREA	1.83	1.83	1.83	1.83
	FINS/INCH	10	10	10	10
WATER INLET (FPT)		3/4	3/4	3/4	3/4
WATER OUTLET (FPT)		3/4	3/4	3/4	3/4
DRAIN (FPT)		3/4	3/4	3/4	3/4
FILTER SIZE		16 x 20	20 x 20	16 x 20	20 x 20
OPERATING, WT. (APPROX.)		250	260	250	260

* MIN. VOLTAGE ON 208/230 VOLT MODELS IS 197 VOLTS.

** TIME DELAY TYPE

NOTE: ALL UNITS ARE OPTIONALLY AVAILABLE WITH CONTROLS FOR AN AUTOMATIC CHANGEOVER THERMOSTAT.

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Climate Master

CLIMATE MASTER PRODUCTS

DIVISION OF WEIL - MC LAIN COMPANY, INC.

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DIVISION W-M WEIL-McLAIN