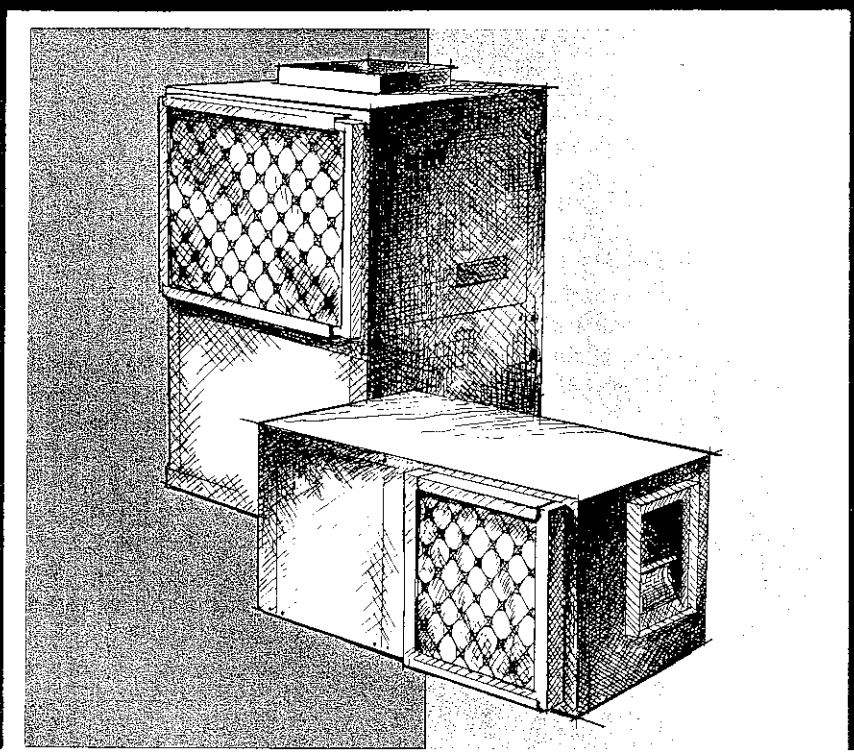
SERIES 10 thru 62
HEAT RECOVERY SYSTEM
HORIZONTAL and
VERTICAL MODELS



CLIMATE MASTER®

ENGINEERING DATA

DESCRIPTION

Horizontal/Vertical
Water-To-Air
Heat Recovery Units

The Climate Master horizontal ducted (Model H) and vertical ducted (Model V) Water-To-Air units are decentralized zone or individual package units containing a complete refrigerant circuit and refrigerant reversing valve. They are designed for quick field connection to a two-pipe supply and return closed loop piping system within a building. Each unit is individually controlled and offers year 'round availability of heating and cooling. Extensive laboratory tests are performed at the factory to assure satisfactory heating, cooling and fan operation at the recommended application flow rate and entering water temperature. Each unit is factory manufactured and assembled with the following components.

CABINET:

The cabinet construction is a heavy gauge, galvanized steel, painted electro-statically to prevent corrosion. The interior of the cabinet is lined with high density, coated insulation with improved thermal insulating and accoustical absorption 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 horizontal removal of the filter in both directions (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 in the cabinet on rails with vibration isolators for quiet, smooth running operation. The compressor is furnished with line break motor protection and features an anti-slug device for extended life.

REVERSING VALVE:

The reverse cycle feature is provided by a four way electromagnetic 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 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 high and low pressure safety 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 motor with inherent thermal overload protection (except Model 62 which is V-belt drive). The speed is designed for proper air delivery at varied external static pressure requirements. Units above 42,000 BTU have multi-speed blowers. Each unit is provided with disposable type air filters.

CONTROLS:

The control box, easily accessible from the front panel, includes a 24 volt control transformer, compressor contactor, blower and impedance lockout relay. 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.

SELECTION

1. APPLICATION

The horizontal ducted unit (Model H) is designed to be installed concealed above the ceiling in areas being served, over hallways, closets or soffits, thus saving valuable floor space. Supply air is ducted to areas to be conditioned.

The vertical ducted unit (Model V) is designed to be installed concealed in utility rooms, mechanical equipment rooms or closets. Supply air is ducted to areas to be conditioned.

2. RANGE OF SIZES

The selection data on the following pages gives detail heating/cooling capacities and performance for Horizontal/Vertical models 10 through 62. These models represent 10 MBH through 62 MBH equipment. Consult factory for information on 100 MBH through 240 MBH (Vertical) equipment.

3. RETURN AIR CONFIGURATIONS

These units are available with various supply and return air locations, which eliminates the requirement and expense of unnecessary elbows in the duct system. This unique flexibility promotes a better application of the product within the system.

When specifying the location of the return air duct for each application consider the following: The front of the unit is determined by the supply, return and electrical connections.

These connections are always located on the front of the unit. When a left hand return unit is required, the return air duct will be located to the left of the front panel. Drawing at right shows vertical unit with left hand return. The opposite is true for a right hand return. Rear return (vertical only) is located opposite the front panel. Straight-blow (horizontal only) is a left hand return, located opposite the supply air duct. (available on Models 10 thru 42 only)

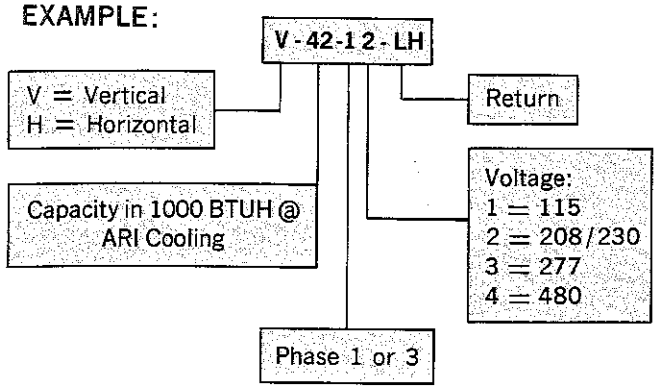
For availability of return air locations for each model, see dimensional data on Pages 20 and 21.

4. ORDER INFORMATION

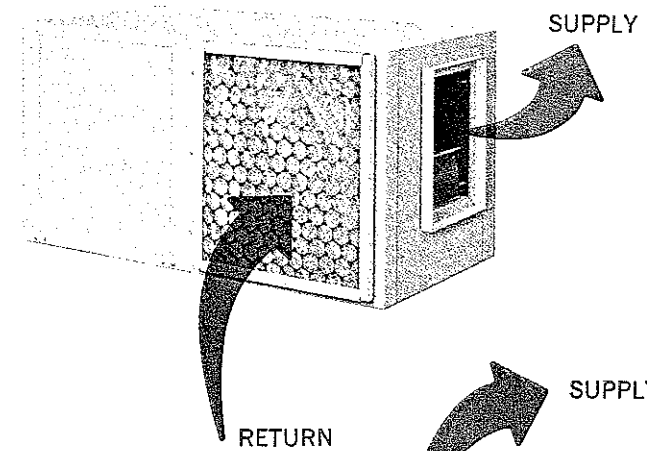
When specifying and ordering Vertical/Horizontal equipment, keep in mind to indicate the following information:

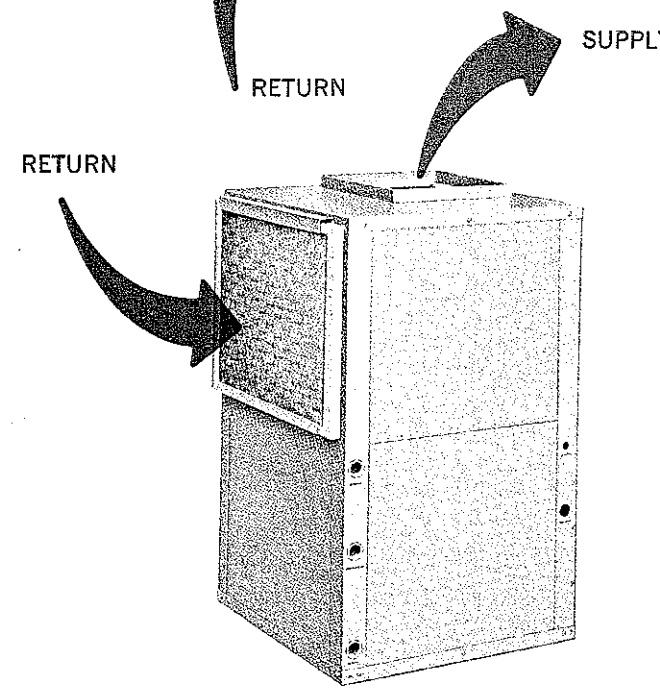
1. Configuration (vertical or horizontal).
2. Size (capacity in 1000 BTUH @ ARI Cooling).
3. Phase and voltage required.
4. Return configuration (left, right, rear or straight-blow).

EXAMPLE:



R.H. RETURN SHOWN





L.H. RETURN SHOWN

SYSTEM SAFETY CONTROLS

The temperature control of the system can be quite simple since each individual horizontal or vertical package unit is furnished with its own controls.

However, a system of water loop monitoring controls is desirable to perform the following functions:

1. A flow switch to indicate and alarm in case of no flow in system.
2. A high temperature water indicator and alarm in case the loop temperature should exceed a pre-set temperature.
3. A low temperature water indicator and alarm in case the loop temperature should fall below a pre-set temperature.

Controls for the cooler and heater are also necessary to operate these units to maintain the pre-set water loop conditions.

Additional controls such as time-clocks, low limits and timers may be specified as options.

ENGINEERING DATA

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COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 10,000 BTUH*.
Power Input: 1350 Watts.

*Basis: 350 CFM of 80°F DB/67°F WB entering air.
1.5 GPM of Water entering at 75°F, leaving at 95°F.

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 11,000 BTUH*.
Power Input: 1300 Watts.

*Basis: 350 CFM of 70°F entering air.
1.5 GPM of 60°F entering water.

APPLICATION DATA

ENTERING AIR (°F) WET BULB	TOTAL CAPACITY (BTUH)	BASED ON 350 CFM & 95°F LEAVING WATER — SENSIBLE CAPACITY (BTUH) ENTERING AIR (°F) DRY BULB				HEAT OF REJECTION (BTUH)
		75	80	85	90	
61	8650	6920	7960	—	—	13150
64	9350	6450	7500	8760	—	13900
67	10000	5800	6950	8200	9600	14700
70	10600	—	6250	7420	8740	15600
73	11250	—	—	6750	7930	16700

ENTERING WATER & FLOW RATE VARIATION MULTIPLIER

CFM	380	365	350	335	318	300
TOTAL CAPACITY	1.024	1.012	1.000	.983	.963	.942
SENSIBLE CAPACITY	1.038	1.019	1.000	.979	.952	.925
HEAT OF REJECTION	1.060	1.029	1.000	.987	.972	.957

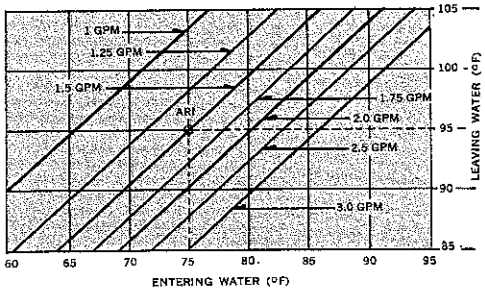
VARIATION OF ENTERING AIR TEMPERATURES

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

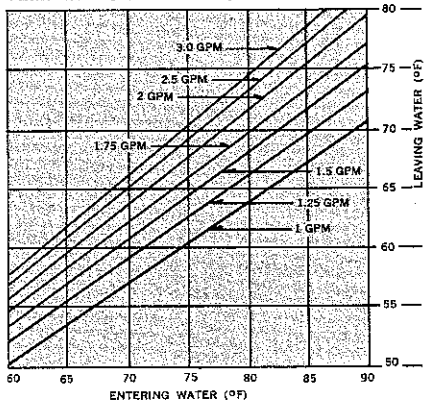
CFM	380	365	350	335	318	300
HEATING CAPACITY MULTIPLIER	1.024	1.012	1.000	.983	.962	.942
HEAT OF ABSORPTION MULTIPLIER	1.033	1.016	1.000	.979	.956	.932
POWER INPUT MULTIPLIER	.980	.990	1.000	1.025	1.055	1.081

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.927	0.954	1420
0.967	0.978	1380
1.000	1.000	1350
1.029	1.022	1320
1.057	1.044	1290

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORPTION (BTUH)	POWER INPUT WATTS
16200	11600	1620
15200	10700	1560
14300	9900	1500
13400	9100	1440
12600	8400	1390
11800	7700	1340
11000	7000	1300

BLOWER PERFORMANCE

(INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESS (IWG)					
.05	.10	.15	.20	.25	.3
380	365	350	335	318	300

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	1.00	1.25	1.50	1.75	2.00	2.50	3.00
PRESSURE DROP (PSIG)	1.4	1.7	2.0	2.4	2.8	3.8	4.9

SAMPLE PROBLEM (COOLING)

335 CFM AIR ENTERING AT 75°F DB/64°F WB
3 GPM OF 80°F ENTERING WATER

		AIRFLOW CORRECTION ▼	WATER FLOW CORRECTION ▼	
TOTAL CAPACITY	= 9350 X	.983 X	1.029 =	9458 BTUH
SENSIBLE CAPACITY	= 6450 X	.979 X	1.029 =	6498 BTUH
HEAT REJECTION	= 13900 X	.987 X	1.022 =	14021 BTUH

SAMPLE PROBLEM (HEATING)

335 CFM OF AIR ENTERING @ 65°F
3 GPM OF 71°F ENTERING WATER

		ENTERING AIR CORRECTION ▼	AIRFLOW CORRECTION ▼	
HEATING CAPACITY	= 13400 X	1.03 X	.983 =	13567 BTUH
HEAT OF ABSORPTION	= 9100 X	1.04 X	.979 =	9265 BTUH
POWER INPUT (WATTS)	= 1440 X	0.98 X	1.025 =	1447 Watts

ENGINEERING DATA

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 13,500 BTUH*.
Power Input: 1900 Watts.

*Basis: 450 CFM of 80°F DB/67°F WB entering air.
2.0 GPM of Water entering at 75°F, leaving at 95°F.

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HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 15,000 BTUH*.
Power Input: 1900 Watts.

*Basis: 450 CFM of 70°F entering air.
2.0 GPM of 80°F entering water.

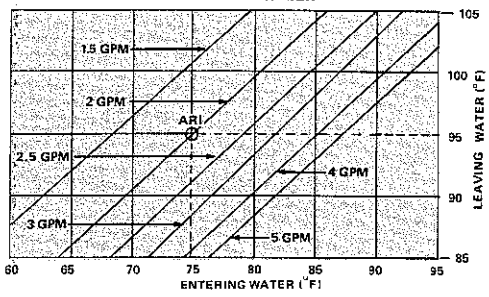
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 450 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	11700	9180	10200	—	—	18000
64	12600	8500	9770	11460	—	19200
67	13500	7830	8950	10530	12080	20000
70	14400	—	8280	9650	11510	21050
73	15200	—	—	8670	10340	23000

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	610	580	540	500	450	400
TOTAL CAPACITY	1.081	1.071	1.057	1.031	1.000	.955
SENSIBLE CAPACITY	1.132	1.114	1.090	1.050	1.000	.942
HEAT OF REJECTION	1.184	1.165	1.140	1.077	1.000	.967

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.919	0.955	2020
0.963	0.978	1950
1.000	1.000	1900
1.030	1.021	1850
1.057	1.038	1810

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)					
.15	.2	.25	.3	.35	.4
610	580	540	500	450	400

SAMPLE PROBLEM

540 CFM AIR ENTERING AT 75° DB/61° WB
3 GPM OF 87°F ENTERING WATER

		AIRFLOW CORRECTION ▼	WATER FLOW CORRECTION ▼	
TOTAL CAPACITY	= 11700 x	1.057 x	.963 =	11910 BTUH
SENSIBLE CAPACITY	= 9180 x	1.090 x	.963 =	9635 BTUH
HEAT REJECTION	= 18000 x	1.140 x	.978 =	20070 BTUH

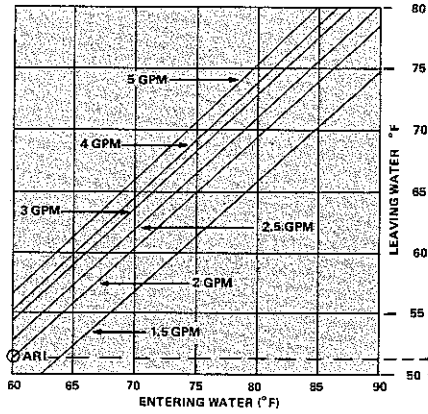
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

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

VARIATION OF AIR FLOW CORRECTION FACTOR

CFM	610	580	540	500	450	400
HEATING CAPACITY	1.081	1.071	1.057	1.031	1.000	.955
HEAT OF ABSORPTION	1.125	1.105	1.078	1.043	1.000	.947
POWER INPUT	.931	.941	.953	.974	1.000	1.067

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORPTION (BTUH)	POWER INPUT (WATTS)
21300	11900	2380
20000	11400	2280
18800	10900	2190
17700	10500	2110
16700	10100	2035
15800	9750	1960
15000	9500	1900

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	1.5	2.0	2.5	3.0	4.0	5.0
PRESSURE DROP (PSIG)	1.3	1.8	2.5	3.3	5.2	7.4

SAMPLE PROBLEM

540 CFM OF AIR ENTERING @ 65°F
3 GPM OF 72°F ENTERING WATER

		ENTERING AIR CORRECTION ▼	AIRFLOW CORRECTION ▼	
HEATING CAPACITY	= 17700 x	1.03 x	1.057 =	19270 BTUH
HEAT OF ABSORPTION	= 10500 x	1.04 x	1.078 =	10410 BTUH
POWER INPUT (WATTS)	= 2110 x	0.98 x	0.953 =	2060 WATTS

ENGINEERING DATA

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 18,500 BTUH*.
Power Input: 2300 Watts.

*Basis: 600 CFM at 80°F DB/67°F WB entering air.
2.6 GPM of Water entering at 75°F, leaving at 95°F.

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HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 18,500 BTUH*.
Power Input: 2200 Watts.

*Basis: 600 CFM of 70°F entering air.
2.6 GPM of 60°F Water entering.

VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 600 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	16500	13050	14500	—	—	22300
64	17600	11950	13700	15650	—	24200
67	18500	10750	12400	14450	16650	26000
70	19500	—	11200	12950	15000	27700
73	20700	—	—	11800	13650	29400

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	660	640	615	600	590	565	535	500
TOTAL CAPACITY	1.028	1.019	1.007	1.000	0.993	0.977	0.956	0.933
SENSIBLE CAPACITY	1.045	1.030	1.011	1.000	0.991	0.969	0.943	0.912
HEAT OF REJECTION	1.070	1.048	1.018	1.000	0.995	0.983	0.967	0.950

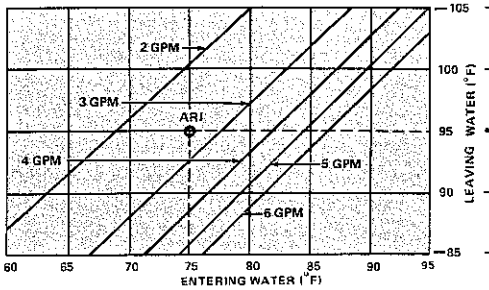
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

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

VARIATION OF AIR FLOW CORRECTION FACTOR

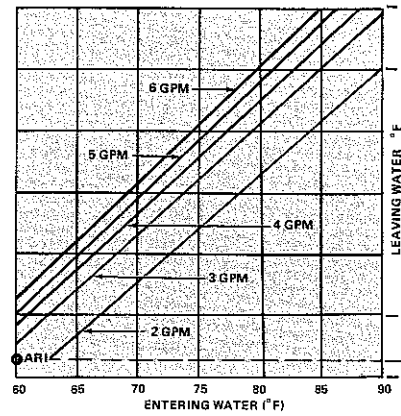
CFM	660	640	615	600	590	565	535	500
HEATING CAPACITY	1.028	1.019	1.007	1.000	0.993	0.977	0.956	0.933
HEAT OF ABSORPTION	1.039	1.026	1.009	1.000	0.992	0.972	0.948	0.920
POWER INPUT	0.976	0.983	0.994	1.000	1.010	1.034	1.066	1.099

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.925	0.946	2430
0.964	0.975	2360
1.000	1.000	2300
1.030	1.024	2240
1.059	1.046	2190

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORPTION (BTUH)	POWER INPUT (WATTS)
27000	16050	2730
25100	15400	2610
23300	14500	2490
21600	13600	2390
20800	12700	2310
19000	11450	2230
18500	11050	2200

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)							
.05	.10	.15	.18	.20	.25	.30	.35
660	640	615	600	590	565	535	500

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	2	3	4	5	6
PRESSURE DROP (PSIG)	1.1	1.7	2.4	3.0	3.8

SAMPLE PROBLEM

640 CFM AIR ENTERING AT 75°F DB/64°F WB
5.5 GPM OF 80°F ENTERING WATER

		AIRFLOW CORRECTION ▼	WATER FLOW CORRECTION ▼	
TOTAL CAPACITY	= 17600 X	1.019 X	1.030 =	18470 BTUH
SENSIBLE CAPACITY	= 11950 X	1.030 X	1.030 =	12680 BTUH
HEAT REJECTION	= 24200 X	1.048 X	1.024 =	25970 BTUH

SAMPLE PROBLEM

640 CFM OF AIR ENTERING @ 75°F
5.5 GPM OF 65°F ENTERING WATER

		ENTERING AIR CORRECTION ▼	AIRFLOW CORRECTION ▼	
HEATING CAPACITY	= 20800 X	.97 X	1.019 =	20560 BTUH
HEAT OF ABSORPTION	= 12700 X	.95 X	1.026 =	12380 BTUH
POWER INPUT (WATTS)	= 2310 X	1.04 X	0.983 =	2362 WATTS

ENGINEERING DATA

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.

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HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 21,500 BTUH*.
Power Input: 2600 Watts.

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

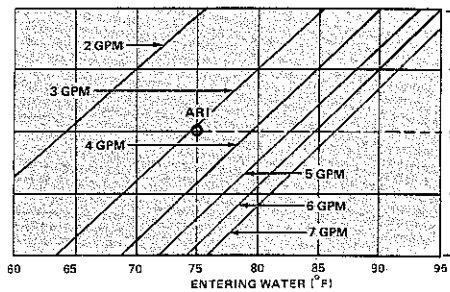
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

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

VARIATION OF AIRFLOW CORRECTION FACTOR

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

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

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

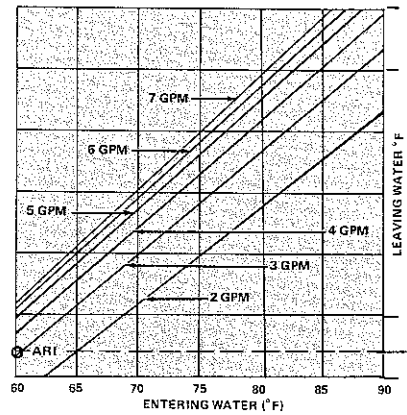
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

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

VARIATION OF AIR FLOW CORRECTION FACTOR

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

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

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

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

ENGINEERING DATA

27

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 26,000 BTUH*.
Power Input: 3100 Watts.

*Basis: 900 CFM of 80°F DB/67°F WB entering air.
3.65 GPM of Water entering at 75°F, leaving at 95°F.

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 26,500 BTUH*.
Power Input: 3100 Watts.

*Basis: 900 CFM of 70°F entering air.
3.65 GPM of 60°F entering water.

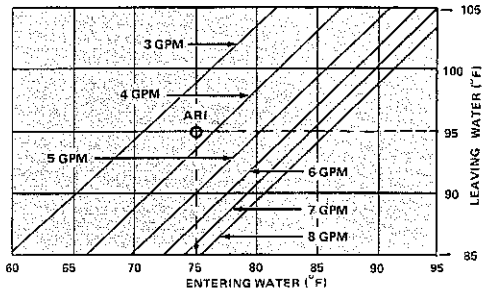
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 900 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	22600	17850	20100	—	—	32500
64	24500	16900	19600	22050	—	34700
67	26500	15900	18550	21200	23850	36500
70	28200	—	17200	19750	22850	38700
73	29900	—	—	18250	21250	41100

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	780	820	855	890	900	915	940	960
TOTAL CAPACITY	.946	.964	.980	.995	1.000	1.004	1.012	1.019
SENSIBLE CAPACITY	.930	.953	.973	.993	1.000	1.008	1.020	1.030
HEAT OF REJECTION	.958	.973	.985	.997	1.000	1.012	1.031	1.047

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.930	0.960	3270
0.966	0.981	3180
1.000	1.000	3100
1.030	1.019	3020
1.057	1.041	2950

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)							
.10	.15	.20	.23	.25	.30	.35	.40
960	940	915	900	890	855	820	780

SAMPLE PROBLEM

915 CFM AIR ENTERING AT 75° DB/64° WB
5 GPM OF 75°F ENTERING WATER

		AIRFLOW CORRECTION	WATER FLOW CORRECTION	
TOTAL CAPACITY	= 24500 X	1.004 X	1.030 =	25340 BTUH
SENSIBLE	= 16900 X	1.008 X	1.030 =	17550 BTUH
HEAT REJECTION	= 34700 X	1.012 X	1.019 =	35780 BTUH

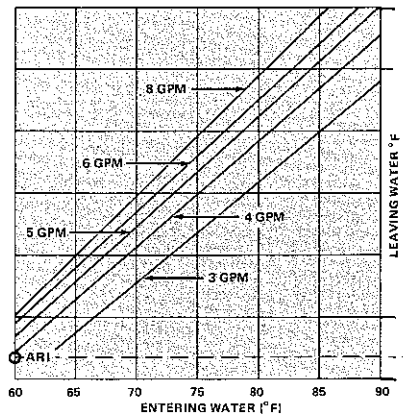
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	.97	.94
HEAT OF ABSORPTION	1.07	1.04	1.00	.95	.94
POWER INPUT	.96	.98	1.00	1.04	1.08

VARIATION OF AIR FLOW CORRECTION FACTOR

CFM	780	820	855	890	900	915	940	960
HEATING CAPACITY	.946	.964	.980	.995	1.000	1.004	1.013	1.019
HEAT OF ABSORPTION	.936	.957	.976	.994	1.000	1.006	1.017	1.026
POWER INPUT	1.078	1.054	1.030	1.006	1.000	.996	.989	.983

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORBTION (BTUH)	POWER INPUT (WATTS)
39800	25000	4070
37500	23500	3880
35200	22000	3700
32900	20400	3520
30700	18800	3350
28100	17000	3190
26500	15600	3100

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	3	4	5	6	7	8
PRESSURE DROP (PSIG)	2.1	3.3	4.5	6.8	8.3	9.9

SAMPLE PROBLEM

915 CFM OF AIR ENTERING @ 70°F.
5 GPM OF 67.5°F ENTERING WATER

		ENTERING AIR CORRECTION	AIR FLOW CORRECTION	
HEATING CAPACITY	= 30700 X	1.00 X	1.004 =	30820 BTUH
HEAT OF ABSORPTION	= 18800 X	1.00 X	1.006 =	18910 BTUH
POWER INPUT (WATTS)	= 3350 X	1.00 X	.996 =	3337 WATTS

ENGINEERING DATA

33

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 32,000 BTUH*.
Power Input: 3600 Watts.

*Basis: 1040 CFM of 80°F DB/67°F WB entering air.
4.4 GPM of Water entering at 75°F, leaving at 95°.

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 30,000 BTUH*.
Power Input: 3400 Watts.

*Basis: 1040 CFM of 70°F entering air.
4.4 GPM of 60°F entering water.

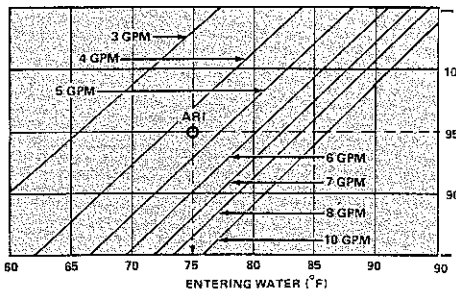
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 1040 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	27400	21650	24660	—	—	39000
64	29900	20330	23620	26910	—	41700
67	32500	18850	21750	25700	28250	44000
70	34500	—	19320	23120	26910	47100
73	37000	—	—	20720	24790	51000

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	940	975	1010	1040	1070	1100	1125
TOTAL CAPACITY	.960	.976	.989	1.000	1.008	1.016	1.022
SENSIBLE CAPACITY	.948	.969	.986	1.000	1.013	1.026	1.036
HEAT OF REJECTION	.978	.987	.994	1.000	1.012	1.023	1.032

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.928	0.957	3800
0.966	0.977	3680
1.000	1.000	3600
1.028	1.024	3540
1.057	1.046	3500

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)							
.1	.15	.2	.25	.3	.35	.4	.45	.5
1150	1125	1100	1070	1040	1010	975	940	900

SAMPLE PROBLEM

1100 CFM AIR ENTERING AT 85° DB/64° WB
6 GPM OF 75°F ENTERING WATER

		AIR FLOW CORRECTION	WATER FLOW CORRECTION	
TOTAL CAPACITY	= 29900 X	1.015 X	1.028	= 31230 BTUH
SENSIBLE	= 26910 X	1.026 X	1.028	= 28380 BTUH
HEAT REJECTION	= 41700 X	1.023 X	1.024	= 43680 BTUH

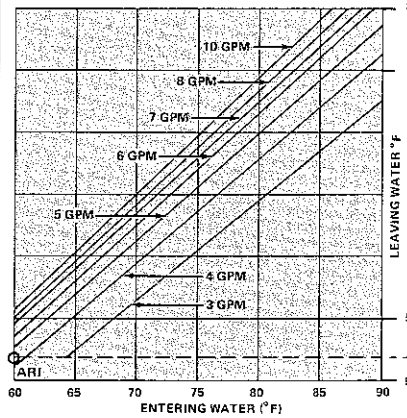
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	.97	.94
HEAT OF ABSORPTION	1.07	1.04	1.00	.95	.94
POWER INPUT	.96	.98	1.00	1.04	1.08

VARIATION OF AIR FLOW CORRECTION FACTOR

CFM	940	975	1010	1040	1070	1100	1125
HEATING CAPACITY	.965	.978	.990	1.000	1.008	1.016	1.020
HEAT OF ABSORPTION	.945	.963	.987	1.000	1.011	1.022	1.031
POWER INPUT	1.045	1.030	1.016	1.000	.993	.986	.980

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORBTION (BTUH)	POWER INPUT (WATTS)
44300	29200	4070
41500	27300	3950
39200	25500	3850
37000	23600	3750
34600	21600	3640
32100	19700	3510
30000	18000	3400

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	3	4	5	6	7	8	9	10
PRESSURE DROP (PSIG)	1.3	2.0	2.9	4.0	5.2	6.5	8.0	9.6

SAMPLE PROBLEM

1100 CFM OF AIR ENTERING AT 75°F
6 GPM OF 73°F ENTERING WATER

		ENTERING AIR CORRECTION	AIR FLOW CORRECTION	
HEATING CAPACITY	= 37000 X	0.97 X	0.99	= 35530 BTUH
HEAT OF ABSORPTION	= 23600 X	0.95 X	0.987	= 22130 BTUH
POWER INPUT (WATTS)	= 3750 X	1.04 X	1.016	= 3962 WATTS

ENGINEERING DATA

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 42,000 BTUH*.
Power Input: 4800 Watts.

*Basis: 1200 CFM of 80°F Dry Bulb/67°F Wet Bulb entering air.
5.7 GPM of Water entering at 75°F, leaving at 95°F.

42

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 38,000 BTUH*.
Power Input: 4300 Watts.

*Basis: 1200 CFM of 70°F. entering air.
5.7 GPM of 60°F entering water.

VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 1200 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	35900	27600	32000	—	—	50700
64	38900	26100	30300	34600	—	54200
67	42000	23900	27700	32800	37800	57000
70	44500	—	25400	29800	35200	60900
73	46600	—	—	27000	31700	64400

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	1050	1100	1150	1200	1250	1300	1350
TOTAL CAPACITY	.952	.966	.983	1.000	1.011	1.024	1.036
SENSIBLE CAPACITY	.908	.956	.978	1.000	1.018	1.037	1.058
HEAT OF REJECTION	.973	.982	.990	1.000	1.016	1.032	1.047

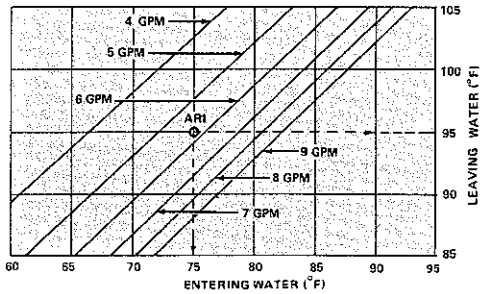
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	.96	.93
HEAT OF ABSORPTION	1.07	1.04	1.00	.95	.94
POWER INPUT	.96	.98	1.00	1.04	1.08

VARIATION OF AIR FLOW CORRECTION FACTOR

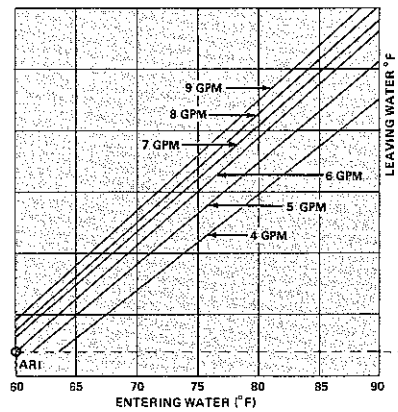
CFM	1050	1100	1150	1200	1250	1300	1350
HEATING CAPACITY	.95	.965	.98	1.00	1.01	1.02	1.04
HEAT OF ABSORPTION	.94	.96	.97	1.00	1.02	1.03	1.05
POWER INPUT	1.08	1.05	1.03	1.00	.99	.98	.97

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.930	0.960	5050
0.970	0.980	4920
1.000	1.000	4800
1.027	1.024	4710
1.056	1.046	4620

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



	HEATING CAPACITY (BTUH)	HEAT OF ABSORBTION (BTUH)	POWER INPUT (WATTS)
80	55100	38300	4920
75	52300	35800	4790
70	49400	33100	4700
65	46600	30500	4580
60	43600	27800	4480
55	40500	25200	4370
50	38000	22800	4300

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

BLOWER SPEED	SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)					
	.1	.2	.3	.4	.5	.6
HIGH	1360	1305	1250	1190	1125	1040
MEDIUM	1320	1255	1200	1140	1070	—
LOW	1285	1230	1180	1120	—	—

NOTE: ON MODELS V OR H 42-34 MEDIUM SPEED IS UNAVAILABLE.

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	4	5	6	7	8	9
PRESSURE DROP (PSIG)	1.5	1.8	3.1	4.0	5.3	6.5

SAMPLE PROBLEM

1250 CFM AIR ENTERING AT 80° DB/64° WB
7.5 GPM OF 75°F ENTERING WATER

		AIRFLOW CORRECTION ▼	WATER FLOW CORRECTION ▼	
TOTAL CAPACITY	= 38900 X	1.011 X	1.027 =	40390 BTUH
SENSIBLE	= 30300 X	1.018 X	1.027 =	31680 BTUH
HEAT REJECTION	= 54200 X	1.016 X	1.024 =	56390 BTUH

SAMPLE PROBLEM

1250 CFM OF AIR @ 75°F ENTERING TEMPERATURE
7.5 GPM OF 73°F ENTERING WATER

		ENTERING AIR CORRECTION ▼	AIRFLOW CORRECTION ▼	
HEATING CAPACITY	= 46600 X	.96 X	1.01 =	45280 BTUH
HEAT OF ABSORPTION	= 30500 X	.95 X	1.02 =	29560 BTUH
POWER INPUT (WATTS)	= 4580 X	1.04 X	.99 =	4715 WATTS

ENGINEERING DATA

52

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 52,000 BTUH*.
Power Input: 5900 Watts.

*Basis: 1700 CFM of 80°F DB/67°F WB entering air.
7.0 GPM of Water entering at 75°F, leaving at 95°F.

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 51,000 BTUH*.
Power Input: 5700 Watts.

*Basis: 1700 CFM of 70°F entering air.
7 GPM of 60°F entering water.

VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 1700 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	45800	36200	41200	—	—	62600
64	49000	33800	38700	44600	—	66200
67	52000	31200	36000	41300	47800	70000
70	55000	—	32500	38200	44000	74200
73	57900	—	—	34200	40500	78500

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	1500	1550	1600	1650	1700	1750	1800	1850
TOTAL CAPACITY	.952	.964	.976	.988	1.000	1.008	1.016	1.025
SENSIBLE CAPACITY	.938	.953	.969	.984	1.000	1.013	1.026	1.039
HEAT OF REJECTION	.964	.973	.982	.991	1.000	1.020	1.041	1.062

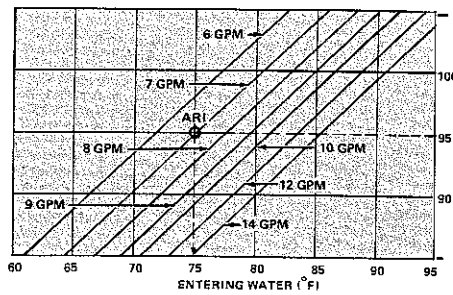
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	0.97	0.94
HEAT OF ABSORPTION	1.07	1.04	1.00	0.95	0.94
POWER INPUT	0.96	0.98	1.00	1.04	1.08

VARIATION OF AIRFLOW CORRECTION FACTOR

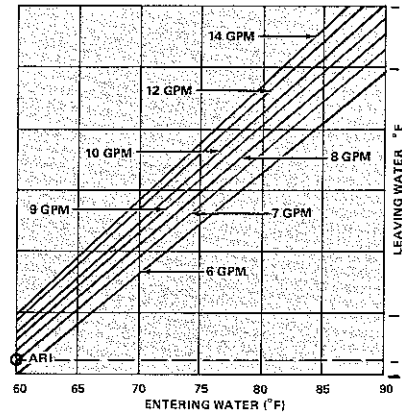
CFM	1500	1550	1600	1650	1700	1750	1800	1850
HEATING CAPACITY	.952	.964	.976	.988	1.000	1.008	1.016	1.025
HEAT OF ABSORPTION	.943	.958	.972	.986	1.000	1.011	1.022	1.034
POWER INPUT	1.077	1.059	1.035	1.017	1.000	0.993	0.986	0.979

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.923	0.962	6280
0.965	0.983	6080
1.000	1.000	5900
1.029	1.021	5750
1.054	1.044	5610

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORPTION (BTUH)	POWER INPUT (WATTS)
73500	49400	7350
69000	46400	6900
65000	43400	6550
61000	40300	6200
57000	37000	5950
53500	33500	5800
51000	31000	5700

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

BLOWER SPEED	SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)					
	.1	.2	.3	.4	.5	.6
HIGH	—	—	1870	1800	1665	1490
MEDIUM	—	1760	1710	1650	1560	—
LOW	1725	1700	1650	1600	—	—

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	6	7	8	9	10	12	14
PRESSURE DROP (PSIG)	2.2	2.8	3.4	4.0	4.6	6.8	8.4

SAMPLE PROBLEM

1750 CFM AIR ENTERING AT 80° DB/61° WB.
9 GPM OF 85°F ENTERING WATER.

		AIR FLOW CORRECTION	WATER FLOW CORRECTION	
TOTAL CAPACITY	= 45800 X	1.008 X	0.965	= 44550 BTUH
SENSIBLE	= 41200 X	1.013 X	0.965	= 40270 BTUH
HEAT REJECTION	= 62600 X	1.020 X	0.983	= 62770 BTUH

SAMPLE PROBLEM

1750 CFM OF AIR ENTERING @ 75°F.
9 GPM OF 74°F ENTERING WATER.

		ENTERING AIR CORRECTION	AIR FLOW CORRECTION	
HEATING CAPACITY	= 61000 X	0.97 X	1.008	= 59640 BTUH
HEAT OF ABSORPTION	= 40300 X	0.95 X	1.011	= 38710 BTUH
POWER INPUT (WATTS)	= 6200 X	1.04 X	0.993	= 6400 WATTS

ENGINEERING DATA

COOLING

In accordance with ARI Standard 240-67.
Cooling Capacity: 62,000 BTUH*.
Power Input: 7300 Watts.

*Basis: 2100 CFM of 80°F DB/67°F WB entering air.
8.8 GPM of Water entering at 75°F, leaving at 95°F.

62

HEATING

In accordance with ARI Standard 240-67.
Heating Capacity: 59,000 BTUH*.
Power Input: 7200 Watts.

*Basis: 2100 CFM of 70°F entering air.
8.8 GPM of 60°F entering water.

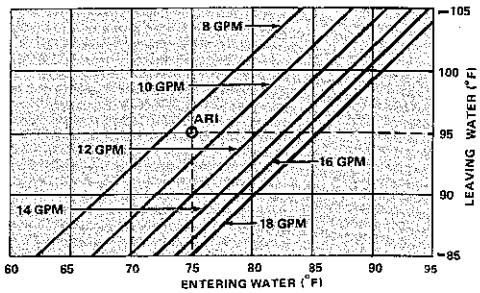
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F) WET BULB	BASED ON 2100 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	54000	42700	48500	—	—	79500
64	57800	39300	45400	52000	—	84000
67	62000	36000	42000	48400	55500	88000
70	66300	—	38400	44400	51000	94500
73	71000	—	—	41000	47500	98000

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	1800	1900	2000	2100	2200	2300	2400
TOTAL CAPACITY	.942	.962	.981	1.000	1.013	1.027	1.033
SENSIBLE CAPACITY	.925	.950	.975	1.000	1.021	1.043	1.063
HEAT OF REJECTION	.957	.971	.986	1.000	1.033	1.067	1.080

VARIATION OF ENTERING WATER TEMP. AND FLOW RATE MULTIPLIER



TOTAL & SENSIBLE CAPACITY MULTIPLIER	HEAT OF REJECTION MULTIPLIER	POWER INPUT (WATTS)
0.928	0.948	7770
0.974	0.979	7500
1.000	1.000	7300
1.029	1.022	7140
1.056	1.043	7000

BLOWER PERFORMANCE (INCLUDES ALLOWANCE FOR WET COIL & FILTER)

BLOWER SPEED	SCFM @ AVAILABLE EXTERNAL STATIC PRESSURE (IWG)						
	.2	.25	.3	.35	.4	.5	.6
HIGH	—	—	—	—	2300	2100	1890
MEDIUM	2410	2300	2200	2100	2000	1790	—
LOW	2100	2000	1890	—	—	—	—

SAMPLE PROBLEM

2000 CFM AIR ENTERING AT 80° DB/61° WB.
12 GPM OF 86°F ENTERING WATER.

		AIR FLOW CORRECTION	WATER FLOW CORRECTION	
TOTAL CAPACITY	= 54000 X	.981 X	.974	= 51600 BTUH
SENSIBLE	= 48500 X	.975 X	.974	= 46060 BTUH
HEAT REJECTION	= 79500 X	.986 X	.979	= 76740 BTUH

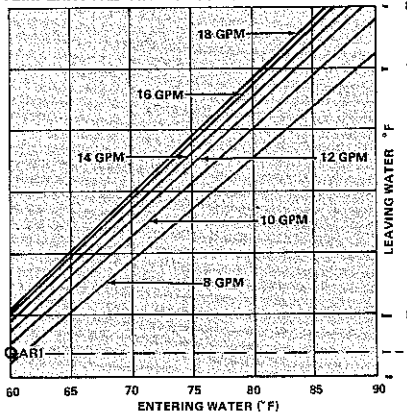
VARIATION OF ENTERING AIR TEMPERATURES CORRECTION FACTOR

ENTERING AIR (°F)	60	65	70	75	80
HEATING CAPACITY	1.05	1.03	1.00	0.97	0.94
HEAT OF ABSORPTION	1.07	1.04	1.00	0.95	0.94
POWER INPUT	0.96	0.98	1.00	1.04	1.08

VARIATION OF AIRFLOW CORRECTION FACTOR

CFM	1800	1900	2000	2100	2200	2300	2400
HEATING CAPACITY	.942	.962	.981	1.000	1.013	1.027	1.033
HEAT OF ABSORPTION	.931	.954	.977	1.000	1.018	1.037	1.054
POWER INPUT	1.087	1.057	1.034	1.000	0.989	0.977	0.969

VARIATION OF ENTERING WATER TEMPERATURE AND FLOW RATE



HEATING CAPACITY (BTUH)	HEAT OF ABSORPTION (BTUH)	POWER INPUT (WATTS)
85000	55700	8950
80600	52400	8550
76200	49000	8200
72000	46500	7850
67900	43000	7630
62300	38000	7370
59000	35000	7200

WATER PRESSURE DROP - PSIG.

WATER FLOW RATE (GPM)	8	10	12	14	16	18
PRESSURE DROP (PSIG)	1.2	1.6	2.1	2.8	3.7	4.9

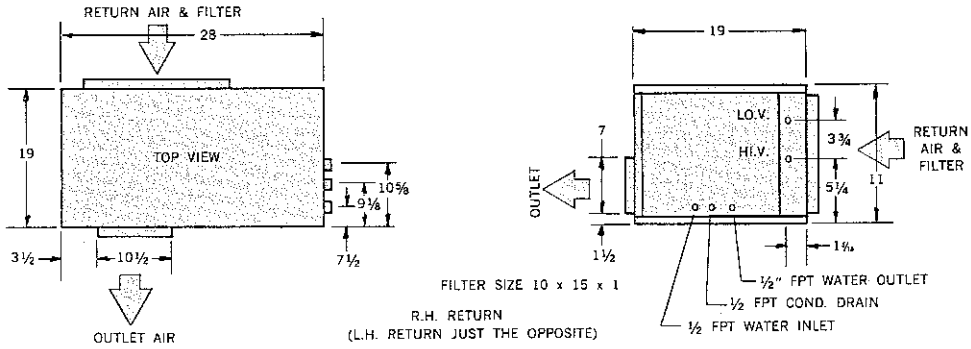
SAMPLE PROBLEM

2000 CFM OF AIR ENTERING @ 75°F.
12 GPM OF 67°F ENTERING WATER.

		ENTERING AIR CORRECTION	AIR FLOW CORRECTION	
HEATING CAPACITY	= 67900 X	0.97 X	0.981	= 64610 BTUH
HEAT OF ABSORPTION	= 43000 X	0.95 X	0.977	= 39910 BTUH
POWER INPUT (WATTS)	= 7630 X	1.04 X	1.034	= 8205 WATTS

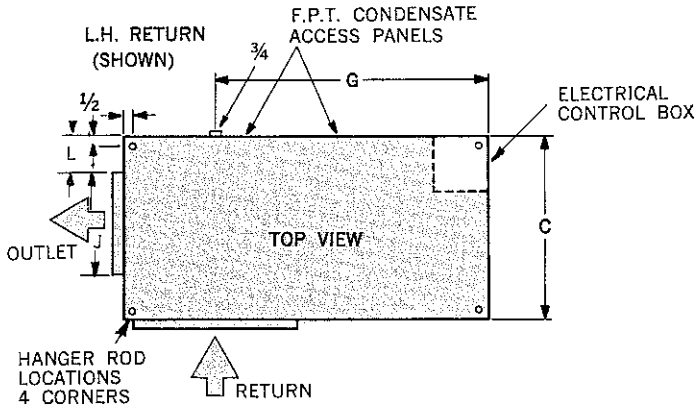
HORIZONTAL DIMENSIONAL DATA

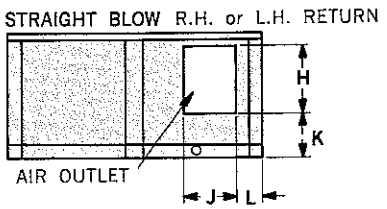
MODEL 10

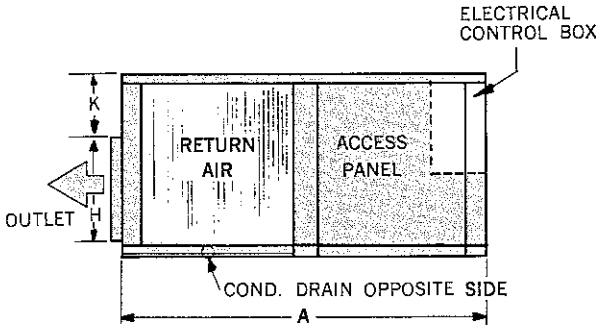


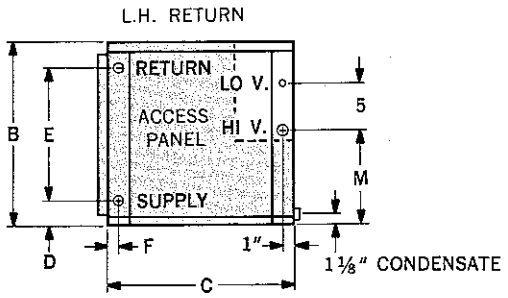
MODELS 14-62

NOTE: MODELS 52 AND 62 NOT AVAILABLE WITH STRAIGHT BLOW RETURN









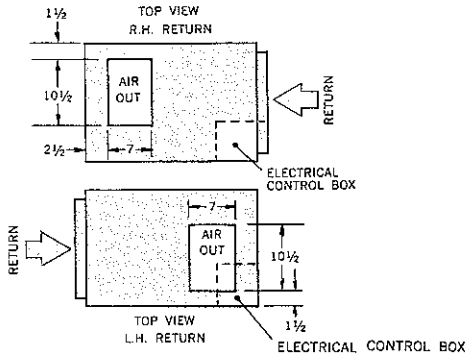
MODEL	A	B	C	D	E	F	G	H	J	K	L	M
14 & 18	40 3/16	16¾	20⅛	2½	11	1	29¼	10½	11¼	1½	3½	8¼
22, 27 & 33	40 3/16	20⅝	20⅛	2½	14¾	1	29¼	11⅞	11⅜	7¼	3½	10¼
42	40 3/16	20⅝	20⅛	2½	14	1	29¼	13⅝	10⅜	5½	3⅞	10¼
52	52	24	25	3¼	15¼	*	36¼	13¾	14¾	8¾	3¼	10¼
62	52	24	25	3¼	13½	**	36¼	15⅞	14⅞	7⅛	3	10¼

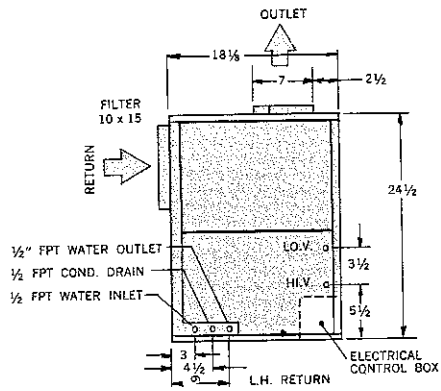
* Model 52 "F" Dimension — Supply 2", Return 4¾"
**Model 62 "F" Dimension — Supply 5¼", Return 2"

MODEL	SUPPLY F.P.T.	RETURN F.P.T.	WT. LBS. (APPROX.)	FILTER SIZE
14 & 18	½	½	170	16 x 20 x 1
22	¾	¾	210	16 x 20 x 1
27 & 33	¾	¾	225	20 x 20 x 1
42	¾	¾	250	20 x 20 x 1
52	1	1	330	23 x 30 x 1
62	1	1	400	23 x 30 x 1

VERTICAL DIMENSIONAL DATA

MODEL 10





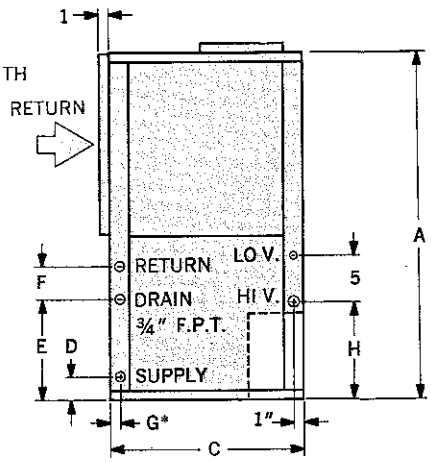
MODELS 14-62

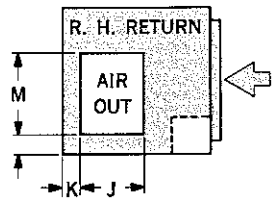
NOTE:

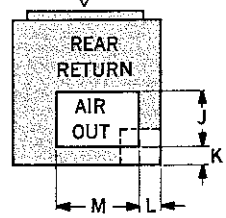
MODELS 14-42 AVAILABLE WITH LEFT, RIGHT & REAR RETURN

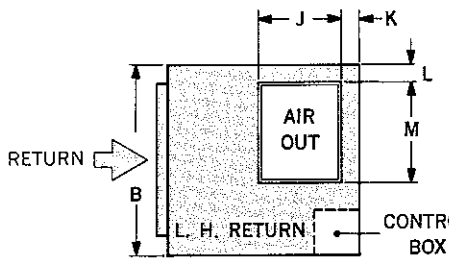
MODELS 52 AND 62 AVAILABLE WITH REAR RETURN

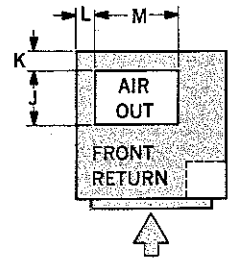
(Consult Factory for Front Return)











MODEL	A	B	C	D	E	F	G	H	J	K	L	M
14 & 18	34 3/16	21⅛	21⅛	2½	6	9½	1	10⅜	11¼	1½	9⅜	10¼
22	34 3/16	21⅛	21⅛	2½	6	9½	1	10⅜	11⅜	1½	1½	11⅞
27 & 33	38 3/16	21⅛	21⅛	2½	6	11¼	1	10⅜	11⅜	1½	1½	11⅞
42	38 3/16	21⅛	21⅛	2½	6	11¼	1	10⅜	10⅜	3	1½	13⅝
52	43	23¼	31	3¼	6	12½	*	10¼	14¾	2	4	13¾
62	43	23¼	31	3¼	6	10¾	**	10¼	14⅞	1½	1	15⅞

*MODELS 52 "G" DIMENSIONS — SUPPLY 2" — DRAIN 3½" — RETURN 4¾"

**MODELS 62 "G" DIMENSIONS — SUPPLY 5⅞" — DRAIN 3½" — RETURN 2".

MODEL	SUPPLY F.P.T.	RETURN F.P.T.	WT. LBS. (APPROX.)	FILTER SIZE
14 & 18	½	½	185	16 x 20 x 1
22, 27 & 33	¾	¾	230	20 x 20 x 1
42	¾	¾	265	20 x 20 x 1
52	1	1	370	23 x 30 x 1
62	1	1	425	23 x 30 x 1

ELECTRICAL ENGINEERING DATA

1. Minimum circuit ampacity is 125 percent of the compressor full load current plus the full load current of the blower motor.
2. Maximum fuse size is rated not higher than 225 percent of the full load current of the compressor plus the full load current of the blower motor.
3. The basis for the above data is based on UL requirements and the national electric code.
4. All units are optionally available with controls for an automatic changeover thermostat.

V & H MODEL NO.	VOLTAGE	PH.	MIN. CIRCUIT AMPACITY	MAX. FUSE SIZE	COMP. L.R.A.	COMP. F.L.A.	BLOWER F.L.A.	TOTAL F.L.A.	BLOWER WHEEL DIAMETER + LENGTH	BLOWER H.P.	Ref. to AIR HEAT EXCH. FACE AREA ft²	COIL DEPTH	FINS PER INCH	V-B.H. or DIRECT DRIVE
10-11 10-12 10-13	115 208/230 277	1 1 1	17.1 10.1 7	25 15 15	47 28 27.4	10.3 6.4 5.0	4.2 2.1 .73	14.5 8.5 5.73	10 1/4 / 4 1/2	1/12 1/12 1/8	.765	3.5	11	D.D.
14-12 14-13	208/230 277	1 1	12.9 8.9	15 15	41 42	8.6 6.5	2.1 .7	10.7 7.2	9 1/2 / 7 1/4	1/12 1/8	1.83	1.7	12	D.D.
18-12 18-13	208/230 277	1 1	13.6 10.5	15 15	54 47	9.2 7.8	2.1 0.7	11.3 8.5	9 1/2 / 7 1/4	1/12 1/8	1.83	2.6	10	D.D.
22-12 22-13	208/230 277	1 1	14.6 11.3	20 15	51 50	9.9 8.1	2.4 1.1	12.3 9.2	9 1/2 / 7 1/4	1/6 1/6	1.83	2.6	10	D.D.
27-12 27-13	208/230 277	1 1	18.7 14.6	30 25	71 62	13.0 10.8	2.4 1.1	15.4 11.9	9 1/2 / 7 1/4	1/6 1/6	2.29	1.9	14	D.D.
33-12 33-13 33-32 33-34	208/230 277 208/230 480	1 1 3 3	23.1 15.8 14.2 6.8	35 25 20 15	76 69 65 27	15.9 11.0 8.8 4.7	3.2 2.0 3.2 .9	19.1 13.0 12.0 5.6	9 1/2 / 7 1/4	1/4 1/4 1/4 1/4	2.29	2.5	13	D.D.
42-12 42-32 42-34	208/230 208/230 480	1 3 3	32.3 20.3 8.4	50 30 15	103 72 35	21.5 11.9 5.6	5.4 5.4 1.4	26.9 17.3 7.0	10 / 6	1/2 1/2 1/3	2.29	3.1	13	D.D. multi speed
52-12 52-32 52-34	208/230 208/230 480	1 3 3	37.3 25.2 12.2	60 35 20	140 104 50	25.5 15.8 7.4	5.4 5.4 2.9	30.9 21.2 10.3	10 3/16 / 9 11/16	1/2	4.14	2.2	14	D.D. multi speed
62-12 62-32 62-34	208/230 208/230 480	1 3 3	46.9 27.5 15.0	70 45 25	147 132 62	30.6 19.4 10.7	7.6 3.1 1.6	38.2 22.5 12.3	13 3/16 / 9 11/16	3/4	4.14	3.3	12	V.B.

SUGGESTED BID FORM

1. Contractor shall furnish and install water source Heat Recovery Units as specified on plans, in accordance with sizes listed in schedule.

2. Conditioner shall be of the configuration specified with air inlet, air discharge and maximum dimensional data shown in plans. Casing shall be corner and panel construction, with a steel base pan. The cabinet shall be constructed of galvanized metal; one coat of primer and one coat of electro-spray enamel. Access panels shall be lined internally with 1-1/2 lb. density, matfaced fiberglass insulation.

3. The ceiling-mounted concealed horizontal conditioner shall be horizontal air inlet and horizontal air discharge. The Horizontal model will have a front and side panel access to the condensing section and a panel for blower motor access on the air handler side. Each corner shall be provided with a threaded nut pin locator hole, to accommodate a hanger bracket assembly.

The conditioner manufacturer shall provide a kit of four hanger brackets comprising of a heavy steel hanger bracket, integral vibration isolator, cap screw and isolator washer. Hanger bracket shall accommodate a 5/16" hanger rod.

4. The floor-mounted concealed vertical conditioner shall be horizontal air inlet and vertical air discharge. Removable access panels shall be provided at the front and side of the unit, to allow complete electrical access to blower, motor, compressor and controls on these models. The conditioner shall be mounted on an accoustical isolator pad.

5. The conditioner shall contain a sealed refrigerant circuit consisting of a hermetic motor compressor with internally fused capacitor, air-to-refrigerant finned tube heat exchanger, capillary expansion tube, refrigerant reversing valve, water-to-refrigerant coaxial tube heat exchanger. Reset type high and low pressure control shall be factory-installed in the refrigerant circuit, with a lockout relay enabling remote resetting at the thermostat.

6. A control box shall be factory-installed and easily accessible from the front panel. Completely factory-wired, the control box shall contain relays for the compressor, blower reversing valve and a 24 volt transformer.

7. A wall-mounted thermostat and sub-base of the manual (optional automatic changeover) type, shall be provided with each conditioner. Thermostats to be mounted as shown in plans.

8. The blower motor shall be centrifugal type and the blower shall be direct mounted to the motor with inherent thermal overload protection. Motors shall be of the permanently lubricated type (V-belt drive on Model 62).

9. The conditioner shall be provided with a 1" thick high velocity type disposable air filter, installed in a filter rack.

10. Piping connections shall be easily accessible from the front of the conditioner. Supply, return and condensate connections shall be securely stubbed to the front post with FPT fittings. Pipe sizes shall be as indicated in the plans. Condensate drain connection shall be (½" on 10). Supply, return and condensate piping, shall be connected to the loop as specified in the plans.

11. The conditioner shall be furnished for the specific voltage and phase specified in plans and shall be guaranteed + or −10% of the data plate voltage, however, on 208/230v the limits are +10% and −5%.

A one year warranty shall be provided by the contractor for furnishing parts and labor for replacing any part which becomes defective in normal operation one year from the date of original installation or 13 months after shipment. The hermetically sealed motor compressor assembly and components of the refrigerant circuit, not readily separable therefrom, shall be warranted to the original owner for five years.

CLIMATE MASTER®

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