Classic Series

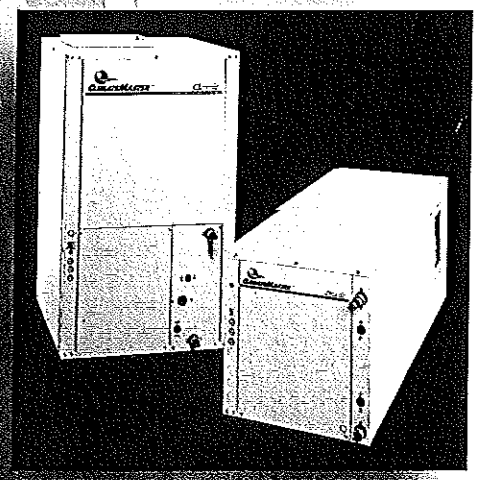
Residential Geothermal Heat Pumps

Specifications Catalog

Single-speed Vertical

and Horizontal Units

Models VP/HP 030 – 060



CLIMATEMASTER™

Quality Products Built For Life!

Classic Series

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Specifications Catalog

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Geothermal Advantages

Geothermal systems transfer heat from a building to the earth in the cooling mode, or from the earth to the building in the heating mode. Water is used as the heat transfer medium, either in a closed loop piping system, or by directly pumping well water. By using this stable thermal source, geothermal heat pumps provide energy efficient comfort the year around.

Highest Efficiency

The extremely high levels of efficiency are possible because a geothermal heat pump only uses electricity to move heat, not produce it. A Classic Series unit typically supplies 4 kilowatts of heat for every kilowatt of electricity used. Three of these kilowatts of heat come directly from the earth itself, and are clean, free and renewable. Most systems also include a hot water generator, which diverts a portion of the supplied heat to the domestic water heater. This provides a substantial portion of a family's hot water needs at a very low cost. Overall, geothermal technology offers the highest cooling EER's and heating COP's available in the industry.

Maximum Comfort

Geothermal heat pumps also provide higher comfort than traditional space conditioning equipment.

By using a relatively warm source of heat such as the earth, supply air temperatures are significantly higher in the heating mode than traditional air-source heat pumps. Geothermal heat pumps also cycle much less often than fossil furnaces, creating a more consistent indoor temperature.

Geothermal heat pumps provide this comfort and economy in a single factory-tested and sealed packaged unit, without the need for field evacuation or charging, a noisy outdoor fan, or a flue.

Environmentally Friendly

The environmental advantages of geothermal systems have caught the eye of governmental agencies such as the Environmental Protection Agency (EPA) and the Department of Energy (DOE). Because it is lowest in CO_2 emissions, geothermal technology provides a solution to global warming by primarily using the natural energy of the earth. In contrast, traditional space conditioning systems depend upon the exploitation and burning of fossil energy sources with the resultant greenhouse gas emissions. Also, a minimal amount of HCFC22 is used in the factory sealed unit to prevent field leakage.

Better Investment

Low life-cycle costs are provided by the low operating and maintenance costs of geothermal systems, even when the higher initial installation costs are considered. In new construction, monthly energy savings typically exceed the increased mortgage payments. Therefore, cash flow is positive from the start. In retrofit systems, a buyer who purchases with cash usually realizes a return on investment well above certificate of deposit rates. And, with equipment life exceeding 20 years, a ClimateMaster Classic Series unit is a lasting investment.

Electric utilities, recognizing the dual benefits of high efficiency and low electric peak demand, often provide incentives to purchase these systems.

Geothermal System Types

Before choosing a geothermal system, many application factors must be evaluated including:

- ground water availability and quality
- loop installation costs
- land area available
- sub-soil conditions
- local codes
- owner preferences

ClimateMaster dealers have the expertise and computer software to determine the best type of system. Many regions have contractors specializing in the installation of the ground loop portion of the system.

Closed Loop Systems

Closed Loop Systems consist of an underground heat exchange network of sealed, high strength polyethylene plastic pipe and a Flow Controller pumping module. When cooling, the loop fluid temperature will rise, and rejected heat is dissipated into the cooler earth. Conversely, while heating, the loop fluid temperatures fall, and heat is absorbed from the earth. ClimateMaster Flow Controller pumping modules utilize small wattage pumps to circulate the water/antifreeze fluid within the piping system. The plastic heat exchange loop is closed and thermally fusion-welded at all connections in the same manner as natural gas distribution lines. Closed loops do not require a ground water supply or drain, and they are not subject to mineral build up.

Closed Loops can be installed in vertical or horizontal configurations, or submerged in a pond or lake. When designed properly, all three alternatives operate with similar efficiency. ClimateMaster high density polyethylene plastic pipe is used for all closed loop installations. Pipe connections are heat fused to form joints that are stronger than the pipe itself. ClimateMaster loop piping has a life expectancy in excess of 50 years.

Horizontal Loops are often considered when adequate land space is available. The pipes are placed in trenches, excavated by a backhoe or chain trencher to a depth of 4-6 feet. Depending on design, from 1-6 pipes are installed in each trench. Multiple pipe and coiled "slinky" configurations are often used to conserve land requirements and reduce overall installed loop costs. Horizontal boring technology can also be used to install u-bend loops 10-15 feet deep with minimal landscaping disruption. Trench lengths range from 100-400 feet per system ton. Trenches must be spaced from 6-10 feet apart. The overall land area required ranges from 750-1,500 square feet per system ton.

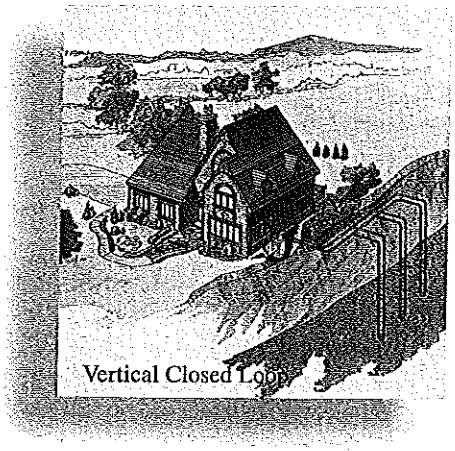
Vertical Loops are the ideal choice when available land area is limited. Drilling equipment is used to bore small-diameter vertical holes. Two pipes joined together with a u-bend fitting are inserted into the vertical bore. Bore hole depth ranges from 100-300 feet per system ton. Bores must be spaced from 10-15 feet apart and properly grouted. The land space required ranges from 100-200 square feet per system ton.

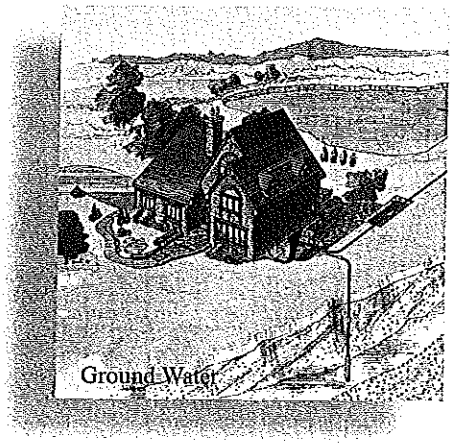
Pond (Lake) Loops are very economical to install when a body of surface water is available, because excavation costs are virtually eliminated. Coils or "slinky" mats of pipe are simply placed on the bottom of the pond (lake). In most cases, 1/4 to 1/2 acre of water surface, with a minimum depth of 8-10 feet, is needed for a typical residence.

Ground Water Systems

Open loop systems utilize ground water as a direct energy source when good quality water is available at a reasonable pumping depth. A well must have enough capacity to deliver a minimum of 1.5 gpm per system ton during peak operation. Ditches, field tiles, ponds and streams are the most common discharge systems. Reinjection or semi-closed recirculation wells can also be utilized in some regions. In ideal conditions, an open loop application can be the most economical type of system to install.


Horizontal Closed Loop


Vertical Closed Loop


Ground Water

Classic Series Design Features

The design goal for the Classic Series was based upon efficiency, reliability and a blend of solid state and electro-mechanical controls providing a straight forward product, both easy to install and service. Such a cost effective and simple design is destined to become the "Classic" of the geothermal industry.

Application Flexibility

- Five capacities 030, 036, 042, 048 and 060.
- Extended range operation (25-110°F EWT) and flow rates as low as 1.5 gpm per ton.
- Vertical units with either right or left return air.
- Horizontal units with right or left return air, and back or side discharge (field convertible).
- Internally trapped condensate (vertical only).
- Reliable three-speed PSC fan motor adapts to various duct systems.
- Circuit breaker protected loop and hot water generator pumps.
- Field-selectable freeze protection setting for well or loop.
- Relay to control field-mounted 24 VAC accessories.
- Optional field installed auxiliary duct heater.
- Optional Field Installed 1" filter rack/duct collar.

Operating Efficiencies

- ARI Standard 320, 325 & 330 certified ratings.
- Operating temperature range allows shorter loops.
- Optional hot water generator with internal pump (vertical only) generates hot water at considerable savings.
- Rugged and highly efficient next generation reciprocating compressors.
- Oversized coaxial tube water to refrigerant heat exchangers operate at low fluid pressure drop.
- Convoluted copper (and optional cupronickel) water tube functions efficiently at low-flow rates and provides freeze-damage resistance.
- Oversized rifled tube/lanced aluminum fin air to refrigerant heat exchangers provide high efficiency.
- PSC blowers provide quiet, efficient air movement with high static capability.

Service Advantages

- Removable panels, 3 for compressor compartment, 1-2 for air handling compartment.
- Brass swivel-type water connections for quick connection and elimination of wrenches or sealants during installation.
- Solid state compressor control module provides reliable lockout and time delay functions.
- Circuit breaker protected 75VA control transformer.
- Cycle start low pressure and freeze stat bypass to prevent nuisance lock outs.
- Delay on make timer to prevent nuisance anti-short system delays.
- Insulated divider and separate air handling/compressor compartments permit service testing without air bypass.
- Internal drop-out blower for easy servicing.
- High and low pressure service ports in the refrigerant circuit.
- Reliable refrigerant sensing freeze protection.

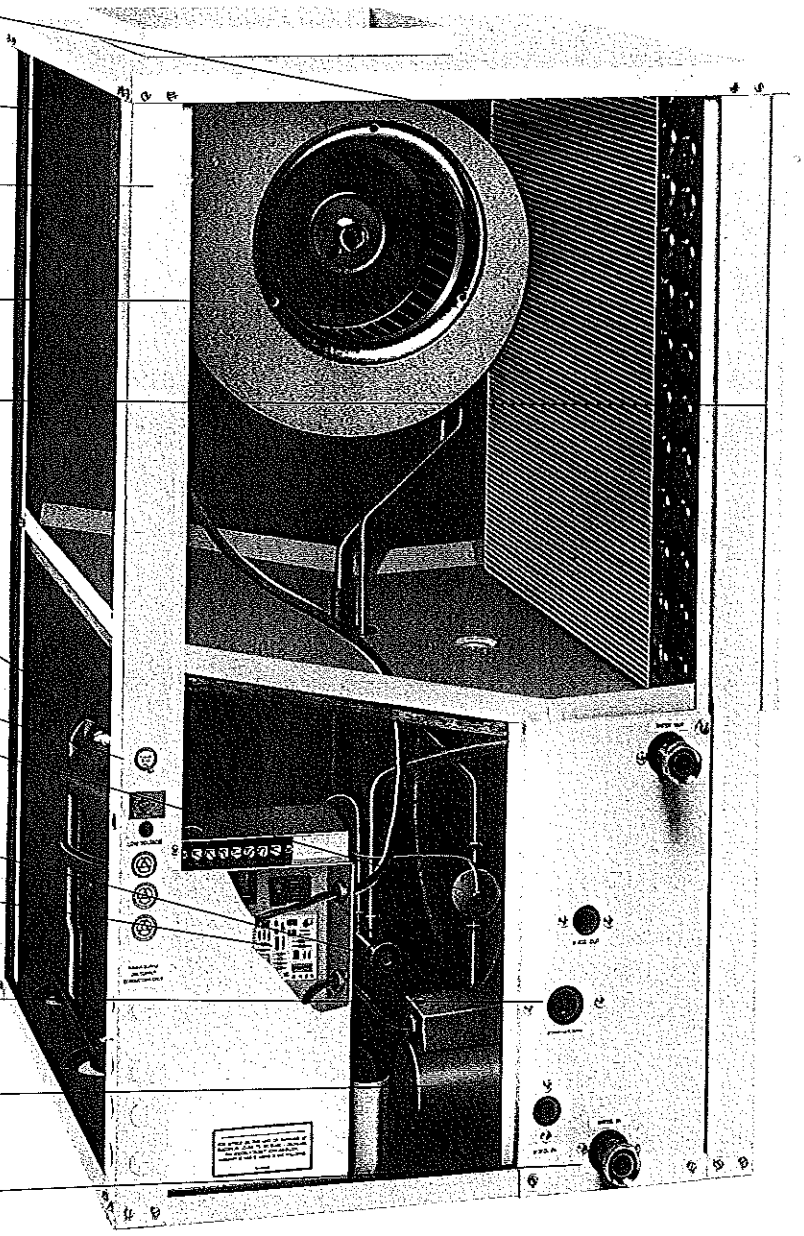
Factory Quality

- All units are water run-tested in all modes to ensure efficiency and reliability.
- Heavy gauge galvanized steel cabinets are powder painted for durable and long-lasting protection.
- All refrigerant brazing is done in a nitrogen atmosphere.
- All units are deep evacuated to less than 100 microns prior to refrigerant charging.
- All joints are both helium and halogen leak tested.
- Coaxial heat exchanger, refrigerant suction lines and all water lines are fully insulated to eliminate condensation problems in low temperature applications.
- Noise Reduction features include: isolation mounted compressors; insulated compressor compartment; and interior cabinet insulation using 1/2" coated glass fiber.
- Safety features include: high and low pressure refrigerant controls to protect compressor; freeze protection sensor to safeguard the coaxial heat exchanger; hot water high limit pump shutdown; fault lockout prevents compressor operation until thermostat or circuit breaker is reset; anti-short cycle delay.

Options & Accessories

- Optional hot water generator with internally mounted pump (vertical only) and water heater plumbing connector.
- Optional cupronickel coaxial heat exchanger.
- Wide thermostat selection.
- 90% efficient cleanable electrostatic air filters.
- Closed loop Flow Controller pumping modules.
- Auxiliary electric duct heater.
- Hose kits.
- 1" filter rack/duct collar for vertical and horizontal units.

Classic Series Vertical Heat Pump



Performance Certified by ARI

ARI 325 Open Loop Ground Water Applications

Unit Model Classic	CFM	GPM	Cooling 70° F EWT BTU/HR	Cooling 70° F EWT EER	Heating 50° F EWT BTU/HR	Heating 50° F EWT EER	Cooling 70° F EWT BTU/HR	Cooling 70° F EWT COP	Heating 50° F EWT BTU/HR	Heating 50° F EWT COP
030	1100	5.0	30,000	13.0	32,000	15.7	35,800	4.0	29,000	3.4
036	1300	6.0	37,000	13.0	42,000	16.8	42,000	3.8	34,000	3.5
042	1450	8.0	44,000	13.0	47,000	15.8	50,000	3.8	39,000	3.3
048	1800	8.0	51,500	13.0	54,000	16.3	56,000	4.0	45,000	3.4
060	2000	10.0	61,000	13.0	66,000	15.0	67,000	3.8	52,000	3.3

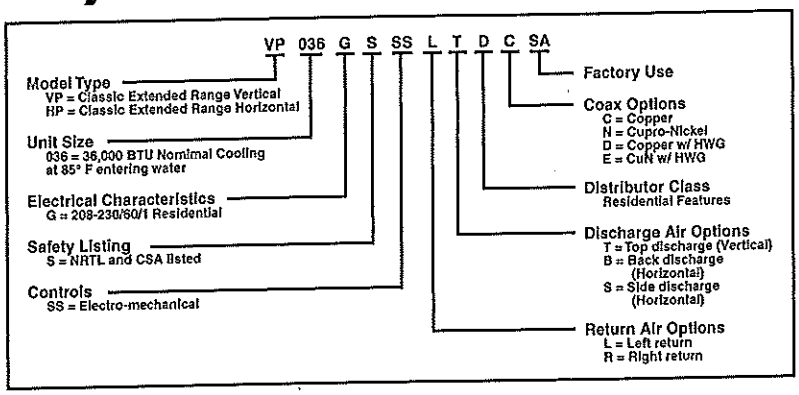
Rated in accordance with ARI 325 which includes power consumption allowance for pumping.
Cooling capacities based upon 80° F DB, 67° F WB entering air temperature.
Heating capacities based upon 70° F DB entering air temperature.
These rating are in accordance with CSA standard C446.

ARI 330 Closed Loop Ground Source Applications

Unit Model Classic	CFM	GPM	Cooling 77° F EWT BTU/HR	Cooling 77° F EWT EER	Heating 32° F EWT BTU/HR	Heating 32° F EWT COP
030	1100	6.0	30,000	13.0	22,000	3.2
036	1300	9.0	36,000	13.8	27,000	3.2
042	1450	8.0	42,000	13.2	31,000	3.2
048	1800	10.0	48,500	13.5	38,000	3.2
060	2000	10.0	60,000	13.0	41,000	3.2

Rated in accordance with ARI 330 which includes power consumption allowance for pumping.
Cooling capacities based upon 80° F DB, 67° F WB entering air temperature.
Heating capacities based upon 70° F DB entering air temperature.
These rating are in accordance with CSA standard C446.

Unit Model Key



Reference Calculations & Legend

$$LWT = EWT - \frac{HE}{GPM \times 500} \qquad LWT = EWT - \frac{HR}{GPM \times 500} \qquad LC = TC - SC$$

$$LAT = EAT - \frac{HC}{CFM \times 1.08} \qquad LAT\ (DB) = EAT\ (DB) - \frac{SC}{CFM \times 1.08} \qquad S/T = \frac{SC}{TC}$$

AHC = Total Heating Capacity - HWG

CFM	=	airflow, cubic feet/minute	EER	=	Energy Efficiency Ratio = BTU output/Watt input
EWT	=	entering water temperature, Fahrenheit	COP	=	Coefficient of Performance = BTU output/BTU input
GPM	=	water flow in gallons/minute	LWT	=	leaving water temperature, °F
EAT	=	entering air temperature, Fahrenheit (dry bulb/wet bulb)	LAT	=	leaving air temperature, °F
HC	=	air heating capacity, BTUH	TH	=	total heating capacity, BTUH
TC	=	total cooling capacity, BTUH	LC	=	latent cooling capacity, BTUH
SENS	=	sensible cooling capacity, BTUH	S/T	=	sensible to total cooling ratio
KW	=	total power unit input, kilowatts	AHC	=	airside heating capacity in HWG mode
HR	=	total heat of rejection, BTUH			
HE	=	total heat of extraction, BTUH			
HWG	=	desuperheater capacity, BTUH			

Performance Data — Classic Model 030

Rated Air Flow 1100 CFM

COOLING PERFORMANCE - EAT 80/67 F HEATING PERFORMANCE - EAT 70 F

EWT-F	GPM	TOTAL COOLING BTUH	SENS COOLING BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	EER*	HWG TOTAL BTUH	TOTAL HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP*	HWG TOTAL BTUH	Unit Water Pressure drop PSI	Unit Water Pressure drop FT.H20
25	5							21240	14950	1840	3.4	2570	2.4	5.5
	8							22210	15810	1880	3.5	3160	3.3	7.6
	10							23190	16670	1910	3.6	3740	4.2	9.8
30	5							22820	16380	1890	3.5	2860	2.3	5.3
	8							23790	17240	1920	3.6	3440	3.2	7.4
	10							24770	18100	1950	3.7	4020	4.1	9.5
35	5							24400	17800	1930	3.7	3140	2.2	5.1
	8							25370	18660	1970	3.8	3720	3.1	7.2
	10							26350	19520	2000	3.9	4310	4.0	9.3
40	5	38050	27870	43280	1530	24.8	2690	25980	19230	1980	3.8	3420	2.1	4.8
	8	38570	27870	43540	1460	26.5	3280	26960	20090	2010	3.9	4010	3.0	7.0
	10	39100	27870	43800	1380	28.4	2990	27930	20950	2050	4.0	4590	3.9	9.1
45	5	37160	27440	42680	1620	23.0	3000	27560	20650	2020	4.0	3700	2.0	4.6
	8	37690	27450	42940	1540	24.5	3580	28540	21510	2060	4.1	4290	2.9	6.7
	10	38220	27450	43200	1460	26.1	3290	29510	22370	2090	4.1	4870	3.8	8.9
50	5	36280	27020	42090	1700	21.3	3300	29140	22080	2070	4.1	3990	1.9	4.4
	8	36810	27030	42350	1620	22.7	3890	30120	22940	2100	4.2	4570	2.8	6.5
	10	37330	27020	42610	1540	24.2	3590	31090	23800	2140	4.3	5150	3.7	8.6
60	5	34520	26180	40890	1870	18.5	3910	32310	24930	2160	4.4	4550	1.7	3.9
	8	35050	26180	41150	1790	19.6	4200	33280	25790	2190	4.4	5140	2.6	6.1
	10	35570	26180	41410	1710	20.8	3910	34260	26650	2230	4.5	5720	3.5	8.2
70	5	32760	25340	39690	2030	16.1	5100	35470	27780	2250	4.6	5120	1.5	3.5
	8	33280	25340	39950	1950	17.0	4810	36450	28640	2290	4.7	5700	2.4	5.6
	10	33810	25330	40210	1880	18.0	4510	37420	29500	2320	4.7	6280	3.4	7.7
80	5	31000	24490	38490	2200	14.1	5710	38630	30630	2340	4.8	5680	1.3	3.1
	8	31520	24490	38750	2120	14.9	5410	39610	31490	2380	4.9	6270	2.2	5.2
	10	32050	24490	39010	2040	15.7	5120	40580	32350	2410	4.9	6850	3.2	7.3
90	5	29230	23650	37300	2360	12.4	6310						1.1	2.6
	8	29760	23650	37560	2290	13.0	6020						2.0	4.7
	10	30280	23640	37820	2210	13.7	5730						3.0	6.9
100	5	27470	22800	36100	2530	10.9	6920						0.9	2.2
	8	28000	22800	36360	2450	11.4	6630						1.9	4.3
	10	28520	22800	36620	2370	12.0	6330						2.8	6.4
105	5	26590	22380	35500	2610	10.2	7220						0.8	1.9
	8	27110	22380	35760	2530	10.7	6930						1.8	4.1
	10	27640	22380	36020	2460	11.3	6640						2.7	6.2
110	5	25710	21960	34900	2690	9.5	7530						0.7	1.7
	8	26230	21960	35160	2620	10.0	7230						1.7	3.8
	10	26760	21950	35420	2540	10.5	6940						2.6	6.0

Interpolation is permissible. Extrapolation is not.
* Calculated without Hot Water Generator in unit.
No pumping power included.

Anti-freeze solution used for 35 Deg. F. and below EWT is 15% by weight of sodium chloride.

Correction Factors

	Cooling Corrections							Heating Corrections			
Entering Air Wet Bulb F°	Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb 70 F DB	75 F DB	80 F DB	85 F DB	90 F DB	Heat of Rejection	Entering Air Dry Bulb F°	Heating Capacity	Heat of Absorption	Power Input Watts
61	.844	.804	1.023	1.194	*	*	.856	60	1.011	1.044	.915
64	.923	.685	.896	1.119	1.260	*	.936	65	1.006	1.022	.958
67	1.000	.581	.763	1.000	1.187	1.330	1.000	70	1.000	1.000	1.000
70	1.036		.633	.860	1.059	1.248	1.026	75	.987	.972	1.039
73	1.071		.506	.735	.929	1.132	1.132	80	.974	.945	1.078

* Sensible cooling equals total cooling capacity.

	Cooling Corrections				Heating Corrections		
CFM	Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Capacity	Heat of Absorption	Power Input Watts
528	.922	.686	.926	.923	.947	.928	1.050
875	.980	.915	.979	.979	.986	.981	1.015
1110	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1125	1.011	1.063	1.012	1.014	1.014	1.021	.990
1240	1.018	1.117	1.020	1.031	1.031	1.043	.981

Performance Data — Classic Model 036

Rated Air Flow 1250 CFM

COOLING PERFORMANCE - EAT 80/67 F HEATING PERFORMANCE - EAT 70 F

EWT-F	GPM	TOTAL COOLING BTUH	SENS COOLING BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	EER*	HWG TOTAL BTUH	TOTAL HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP*	HWG TOTAL BTUH	Unit Water Pressure drop PSI	Unit Water Pressure drop FT.H20
25	6							25500	17940	2210	3.4	4080	2.8	6.5
	9							25980	18380	2230	3.4	4700	4.2	9.6
	12							26460	18820	2240	3.5	5320	5.5	12.8
30	6							27240	19480	2280	3.5	4440	2.7	6.3
	9							27720	19910	2290	3.5	5060	4.1	9.4
	12							28200	20350	2300	3.6	5680	5.4	12.6
35	6							28990	21010	2340	3.6	4800	2.6	6.1
	9							29470	21450	2350	3.7	5420	4.0	9.2
	12							29940	21880	2360	3.7	6030	5.3	12.4
40	6	45370	31560	51370	1760	25.8	4190	30730	22540	2400	3.8	5160	2.5	5.9
	9	46250	31450	51940	1670	27.7	3810	31210	22980	2410	3.8	5780	3.9	9.0
	12	47120	31340	52510	1580	29.9	3430	31690	23410	2420	3.8	6390	5.3	12.1
45	6	44160	31120	50540	1870	23.6	4540	32470	24080	2460	3.9	5520	2.4	5.6
	9	45040	31010	51110	1780	25.3	4160	32950	24510	2470	3.9	6140	3.8	8.8
	12	45910	30900	51680	1690	27.2	3780	33430	24950	2490	3.9	6750	5.2	11.9
50	6	42950	30680	49710	1980	21.7	4890	34220	25610	2520	4.0	5880	2.3	5.4
	9	43830	30560	50280	1890	23.2	4510	34700	26040	2540	4.0	6500	3.7	8.6
	12	44710	30450	50840	1800	24.9	4120	35170	26480	2550	4.0	7110	5.1	11.7
60	6	40540	29790	48050	2200	18.4	5580	37700	28670	2650	4.2	6600	2.2	5.0
	9	41410	29680	48610	2110	19.6	5200	38180	29110	2660	4.2	7220	3.5	8.1
	12	42290	29570	49180	2020	20.9	4820	38660	29540	2670	4.2	7830	4.9	11.3
70	6	38120	28900	46380	2420	15.7	6280	42590	33140	2770	4.5	7320	2.0	4.6
	9	39000	28790	46950	2330	16.7	5900	43070	33570	2780	4.5	7930	3.3	7.7
	12	39870	28680	47510	2240	17.8	5520	43550	34010	2790	4.6	8550	4.7	10.9
80	6	35700	28010	44720	2640	13.5	6970	44680	34800	2890	4.5	8040	1.8	4.2
	9	36580	27900	45280	2550	14.3	6590	45160	35240	2910	4.6	8650	3.2	7.3
	12	37450	27790	45850	2460	15.2	6210	45630	35680	2920	4.6	9270	4.5	10.4
90	6	33280	27130	43050	2860	11.6	7670						1.6	3.7
	9	34160	27010	43620	2770	12.3	7290						3.0	6.9
	12	35040	26900	44190	2680	13.1	6910						4.3	10.0
100	6	30870	26240	41390	3080	10.0	8360						1.4	3.3
	9	31740	26130	41950	2990	10.6	7980						2.8	6.4
	12	32620	26010	42520	2900	11.2	7600						4.2	9.6
105	6	29660	25790	40550	3190	9.3	8710						1.3	3.1
	9	30530	25680	41120	3100	9.8	8330						2.7	6.2
	12	31410	25570	41690	3010	10.4	7950						4.1	9.4
110	6	28450	25350	39720	3300	8.6	9060						1.2	2.9
	9	29330	25240	40290	3210	9.1	8680						2.6	6.0
	12	30200	25130	40860	3120	9.7	8300						4.0	9.2

Interpolation is permissible. Extrapolation is not.
* Calculated without Hot Water Generator in unit.
No pumping power included.

Anti-freeze solution used for 35 Deg. F. and below EWT is 15% by weight of sodium chloride.

Correction Factors

Entering Air Wet Bulb F°	Cooling Corrections: Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb: 70 F DB	75 F DB	80 F DB	85 F DB	90 F DB	Cooling Corrections: Heat of Rejection	Heating Corrections: Entering Air Dry Bulb F°	Heating Capacity	Heat of Absorption	Power Input Watts
61	.910	.763	1.030	*	*	*	.895	60	1.025	1.047	.965
64	.955	.615	.881	1.148	*	*	.948	65	1.010	1.023	.990
67	1.000	.466	.733	1.000	1.267	*	1.000	70	1.000	1.000	1.000
70	1.045		.585	.852	1.118	*	1.055	75	.980	.977	1.040
73	1.090		.436	.703	.970	1.397	1.109	80	.965	.953	1.065

CFM	Cooling Corrections: Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Corrections: Heating Capacity	Heat of Absorption	Power Input Watts
720	.940	.932	.924	.898	.941	.949	1.062
900	.961	.955	.954	.931	.961	.966	1.045
1250	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1375	1.014	1.016	1.030	1.031	1.014	1.012	.984
1580	1.037	1.042	1.061	1.076	1.051	1.034	.958

* Sensible cooling equals total cooling capacity.

Performance Data — Classic Model 042

Rated Air Flow 1450 CFM

COOLING PERFORMANCE - EAT 80/67 F HEATING PERFORMANCE - EAT 70 F

EWT-F	GPM	TOTAL COOLING BTUH	SENS COOLING BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	EER*	HWG TOTAL BTUH	TOTAL HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP*	HWG TOTAL BTUH	Unit Water Pressure drop PSI	Unit Water Pressure drop FT.H20
25	7							28520	19490	2650	3.2	5300	3.1	7.1
	10							31680	22200	2780	3.3	5760	5.0	11.6
	14							34850	24910	2910	3.5	6220	7.0	16.1
30	7							30670	21450	2700	3.3	5640	3.0	7.0
	10							33830	24160	2840	3.5	6100	5.0	11.5
	14							37000	26870	2970	3.7	6560	6.9	16.0
35	7							32820	23410	2760	3.5	5980	3.0	6.9
	10							35990	26120	2890	3.6	6440	4.9	11.4
	14							39150	28830	3020	3.8	6900	6.9	15.9
40	7	50690	34511	58310	2230	22.7	4130	34970	25370	2810	3.6	6320	2.9	6.8
	10	51110	33961	58580	2190	23.3	3690	38140	28080	2950	3.8	6780	4.9	11.3
	14	51520	33411	58840	2150	24.0	3250	41300	30790	3080	3.9	7240	6.8	15.8
45	7	49550	34046	57540	2340	21.2	4500	37120	27330	2870	3.8	6660	2.9	6.7
	10	49960	33496	57810	2300	21.7	4050	40290	30040	3000	3.9	7120	4.8	11.2
	14	50380	32947	58080	2260	22.3	3610	43450	32750	3140	4.1	7570	6.8	15.7
50	7	48410	33581	56780	2450	19.7	4860	39270	29280	2930	3.9	7000	2.8	6.6
	10	48820	33031	57040	2410	20.3	4420	42440	32000	3060	4.1	7460	4.8	11.1
	14	49230	32482	57310	2370	20.8	3980	45600	34710	3190	4.2	7910	6.8	15.6
60	7	46120	32651	55240	2670	17.3	5590	43570	33200	3040	4.2	7680	2.8	6.4
	10	46530	32102	55510	2630	17.7	5150	46740	35920	3170	4.3	8130	4.7	10.9
	14	46950	31552	55780	2590	18.1	4700	49900	38630	3300	4.4	8590	6.7	15.4
70	7	43840	31721	53710	2890	15.1	6320	47870	37120	3150	4.5	8350	2.7	6.2
	10	44250	31172	53980	2850	15.5	5880	51040	39840	3280	4.6	8810	4.6	10.7
	14	44660	30622	54250	2810	15.9	5430	54200	42550	3420	4.6	9270	6.6	15.2
80	7	41550	30792	52180	3110	13.3	7050	52180	41040	3260	4.7	9030	2.6	6.0
	10	41960	30242	52450	3070	13.7	6600	55340	43750	3390	4.8	9490	4.5	10.5
	14	42380	29693	52720	3030	14.0	6160	58510	46470	3530	4.9	9950	6.5	15.0
90	7	39260	29862	50650	3330	11.8	7770						2.5	5.8
	10	39680	29312	50920	3290	12.1	7330						4.4	10.3
	14	40090	28763	51180	3250	12.3	6890						6.4	14.8
100	7	36980	28932	49110	3560	10.4	8500						2.4	5.6
	10	37390	28383	49380	3510	10.6	8060						4.4	10.1
	14	37810	27833	49650	3470	10.9	7620						6.3	14.6
105	7	35840	28467	48350	3670	9.8	8870						2.4	5.5
	10	36250	27918	48620	3620	10.0	8420						4.3	10.0
	14	36660	27368	48890	3580	10.2	7980						6.3	14.5
110	7	34690	28003	47580	3780	9.2	9230						2.3	5.4
	10	35110	27453	47850	3730	9.4	8790						4.3	9.9
	14	35520	26903	48120	3690	9.6	8340						6.2	14.4

Interpolation is permissible. Extrapolation is not.
* Calculated without Hot Water Generator in unit.
No pumping power included.

Anti-freeze solution used for 35 Deg. F. and below EWT is 15% by weight of sodium chloride.

Correction Factors

Entering Air Wet Bulb F°	Cooling Corrections: Total Cooling	Sensible Cooling Capacity Entering Dry Bulb: 70 F DB	75 F DB	80 F DB	85 F DB	90 F DB	Heat of Rejection	Heating Corrections: Entering Air Dry Bulb F°	Heating Capacity	Heat of Absorption	Power Input Watts
61	.910	.763	1.030	*	*	*	.895	60	1.025	1.047	.965
64	.955	.615	.881	1.148	*	*	.948	65	1.010	1.023	.990
67	1.000	.466	.733	1.000	1.267	*	1.000	70	1.000	1.000	1.000
70	1.045		.585	.852	1.118	*	1.055	75	.980	.977	1.040
73	1.090		.436	.703	.970	1.397	1.109	80	.965	.953	1.065

* Sensible cooling equals total cooling capacity.

CFM	Cooling Corrections: Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Corrections: Heating Capacity	Heat of Absorption	Power Input Watts
930	.947	.939	.934	.931	.947	.955	1.061
1250	.977	.973	.977	.971	.977	.980	1.027
1450	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1580	1.007	1.009	1.021	1.017	1.004	1.030	.991
1800	1.028	1.031	1.044	1.041	1.028	1.024	.968

Performance Data — Classic Model 048

Rated Air Flow 1800 CFM

COOLING PERFORMANCE - EAT 80/67 F HEATING PERFORMANCE - EAT 70 F

EWT-F	GPM	TOTAL COOLING BTUH	SENS COOLING BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	EER*	HWG TOTAL BTUH	TOTAL HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP*	HWG TOTAL BTUH	Unit Water Pressure drop PSI	Unit Water Pressure drop FT.H20
25	8							32440	22650	2870	3.3	4460	3.8	8.7
	12							33320	23400	2900	3.4	4850	6.5	15.0
	16							34200	24160	2940	3.4	5250	9.2	21.2
30	8							35090	25000	2960	3.5	4850	3.7	8.6
	12							35970	25750	2990	3.5	5240	6.5	14.9
	16							36850	26510	3030	3.6	5630	9.2	21.2
35	8							37750	27350	3050	3.6	5240	3.7	8.6
	12							38630	28100	3080	3.7	5630	6.4	14.8
	16							39510	28860	3120	3.7	6020	9.1	21.1
40	8	59030	41300	68170	2680	22.1	4190	40400	29700	3140	3.8	5620	3.7	8.5
	12	59080	41000	67940	2600	22.7	3540	41280	30460	3170	3.8	6020	6.4	14.8
	16	59120	40690	67710	2520	23.5	2890	42160	31210	3210	3.9	6410	9.1	21.1
45	8	57740	40750	67290	2800	20.6	4730	43060	32050	3230	3.9	6010	3.7	8.5
	12	57780	40450	67070	2720	21.2	4080	43940	32810	3260	3.9	6410	6.4	14.7
	16	57820	40140	66840	2640	21.9	3430	44820	33560	3300	3.6	6800	9.1	21.0
50	8	56440	40210	66420	2920	19.3	5270	45710	34400	3320	3.7	6400	3.6	8.4
	12	56480	39900	66190	2850	19.8	4620	46600	35160	3350	3.9	6800	6.4	14.7
	16	56520	39600	65970	2770	20.4	3970	47480	35910	3390	4.0	7190	9.1	20.9
60	8	53850	39120	64670	3170	17.0	6350	51030	39100	3500	4.0	7180	3.6	8.3
	12	53890	38810	64450	3090	17.4	5700	51910	39860	3530	4.3	7570	6.3	14.6
	16	53930	38510	64220	3010	17.9	5050	52790	40620	3570	4.3	7970	9.0	20.8
70	8	51250	38020	62930	3420	15.0	7420	56340	43800	3670	4.4	7960	3.5	8.2
	12	51290	37720	62700	3340	15.3	6770	57220	44560	3710	4.4	8350	6.3	14.4
	16	51340	37410	62470	3260	15.7	6130	58100	45320	3750	4.4	8750	9.0	20.7
80	8	48660	36930	61180	3670	13.3	8500	61650	48500	3850	4.5	8740	3.5	8.1
	12	48700	36630	60950	3590	13.6	7850	62530	49260	3890	4.6	9130	6.2	14.3
	16	48740	36320	60720	3510	13.9	7200	63410	50020	3920	4.7	9530	8.9	20.6
90	8	46060	35840	59430	3920	11.8	9580						3.4	7.9
	12	46110	35540	59200	3840	12.0	8930						6.2	14.2
	16	46150	35230	58980	3760	12.3	8280						8.9	20.5
100	8	43470	34750	57680	4160	10.4	10660						3.4	7.8
	12	43510	34440	57460	4090	10.6	10010						6.1	14.1
	16	43550	34140	57230	4010	10.9	9360						8.8	20.4
105	8	42170	34200	56810	4290	9.8	11200						3.4	7.8
	12	42210	33900	56580	4210	10.0	10550						6.1	14.0
	16	42260	33590	56350	4130	10.2	9900						8.8	20.3
110	8	40870	33660	55940	4410	9.3	11740						3.3	7.7
	12	40920	33350	55710	4330	9.4	11090						6.0	14.0
	16	40960	33050	55480	4250	9.6	10440						8.8	20.2

Interpolation is permissible. Extrapolation is not.
* Calculated without Hot Water Generator in unit.
No pumping power included.

Anti-freeze solution used for 35 Deg. F. and below EWT is 15% by weight of sodium chloride.

Correction Factors

	Cooling Corrections							Heating Corrections			
Entering Air Wet Bulb F°	Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb 70 F DB	75 F DB	80 F DB	85 F DB	90 F DB	Heat of Rejection	Entering Air Dry Bulb F°	Heating Capacity	Heat of Absorption	Power Input Watts
61	.910	.763	1.030	1.297	*	*	.895	60	1.050	1.047	.965
64	.955	.615	.881	1.148	*	*	.948	65	1.010	1.023	.990
67	1.000	.466	.733	1.000	1.267	*	1.000	70	1.000	1.000	1.000
70	1.045		.585	.852	1.118	*	1.055	75	.980	.977	1.040
73	1.090		.436	.703	.970	1.397	1.109	80	.965	.953	1.065

	Cooling Corrections				Heating Corrections		
CFM	Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Capacity	Heat of Absorption	Power Input Watts
1070	.948	.941	.932	.885	.948	.952	1.059
1400	.975	.972	.975	.945	.975	.975	1.028
1800	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2130	1.035	1.040	1.061	1.078	1.035	1.030	.960
2380	1.056	1.063	1.089	1.124	1.056	1.049	.937

* Sensible cooling equals total cooling capacity.

Performance Data — Classic Model 060

Rated Air Flow 2000 CFM

COOLING PERFORMANCE - EAT 80/67 F HEATING PERFORMANCE - EAT 70 F

EWT-F	GPM	TOTAL COOLING BTUH	SENS COOLING BTUH	HEAT OF REJECTION BTUH	POWER INPUT WATTS	EER*	HWG TOTAL BTUH	TOTAL HEATING BTUH	HEAT OF ABSORPTION BTUH	POWER INPUT WATTS	COP*	HWG TOTAL BTUH	Unit Water Pressure drop PSI	Unit Water Pressure drop FT.H20
25	10							38880	26810	3530	3.2	4670	4.8	11.0
	15							40810	28460	3620	3.3	5270	8.3	19.1
	20							42740	30100	3700	3.4	5870	11.8	27.3
30	10							41910	29530	3630	3.4	5040	4.6	10.5
	15							43840	31170	3710	3.5	5640	8.1	18.7
	20							45770	32810	3800	3.5	6230	11.6	26.9
35	10							44940	32240	3720	3.5	5410	4.4	10.1
	15							46870	33880	3810	3.6	6000	7.9	18.3
	20							48800	35530	3890	3.7	6600	11.4	26.4
40	10	69950	48630	80590	3120	22.4	4500	47970	34950	3810	3.7	5770	4.2	9.7
	15	71570	48980	81970	3050	23.5	3260	49900	36600	3900	3.8	6370	7.7	17.8
	20	73190	49330	83350	2980	24.6	2020	51830	38240	3980	3.8	6960	11.2	26.0
45	10	68410	47940	79540	3260	21.0	5060	51000	37670	3910	3.8	6140	4.0	9.2
	15	70030	48280	80920	3190	21.9	3830	52930	39310	3990	3.9	6730	7.5	17.4
	20	71650	48630	82310	3120	23.0	2590	54860	40950	4080	3.6	7330	11.1	25.5
50	10	66870	47240	78500	3410	19.6	5630	54030	40380	4000	3.7	6500	3.8	8.8
	15	68490	47590	79880	3340	20.5	4390	55960	42020	4080	3.9	7100	7.3	16.9
	20	70110	47940	81260	3270	21.5	3150	57890	43670	4170	4.0	7690	10.9	25.1
60	10	63790	45850	76400	3700	17.3	6760	60100	45810	4190	4.0	7230	3.4	7.9
	15	65410	46200	77790	3630	18.0	5520	62030	47450	4270	4.3	7830	6.9	16.0
	20	67030	46550	79170	3560	18.8	4280	63960	49090	4350	4.3	8420	10.5	24.2
70	10	60710	44460	74310	3990	15.2	7890	66160	51230	4370	4.4	7960	3.0	7.0
	15	62330	44810	75700	3920	15.9	6650	68090	52880	4460	4.4	8560	6.6	15.2
	20	63950	45160	77080	3850	16.6	5410	70020	54520	4540	4.4	9160	10.1	23.3
80	10	57630	43070	72220	4280	13.5	9020	72220	56660	4560	4.5	8690	2.6	6.1
	15	59250	43420	73600	4210	14.1	7780	74150	58300	4640	4.6	9290	6.2	14.3
	20	60870	43770	74990	4140	14.7	6540	76080	59950	4730	4.7	9890	9.7	22.4
90	10	54550	41680	70130	4570	11.9	10150						2.3	5.2
	15	56170	42030	71510	4500	12.5	8910						5.8	13.4
	20	57790	42380	72890	4430	13.1	7670						9.3	21.5
100	10	51460	40290	68040	4860	10.6	11280						1.9	4.3
	15	53090	40640	69420	4790	11.1	10040						5.4	12.5
	20	54710	40990	70800	4720	11.6	8800						8.9	20.7
105	10	49920	39600	66990	5000	10.0	11840						1.7	3.9
	15	51550	39950	68370	4930	10.5	10610						5.2	12.1
	20	53170	40300	69760	4860	10.9	9370						8.8	20.2
110	10	48380	38900	65950	5150	9.4	12410						1.5	3.5
	15	50010	39250	67330	5080	9.9	11170						5.0	11.6
	20	51630	39600	68710	5010	10.3	9930						8.6	19.8

Interpolation is permissible. Extrapolation is not.
* Calculated without Hot Water Generator in unit.
No pumping power included.

Anti-freeze solution used for 35 Deg. F. and below EWT is 15% by weight of sodium chloride.

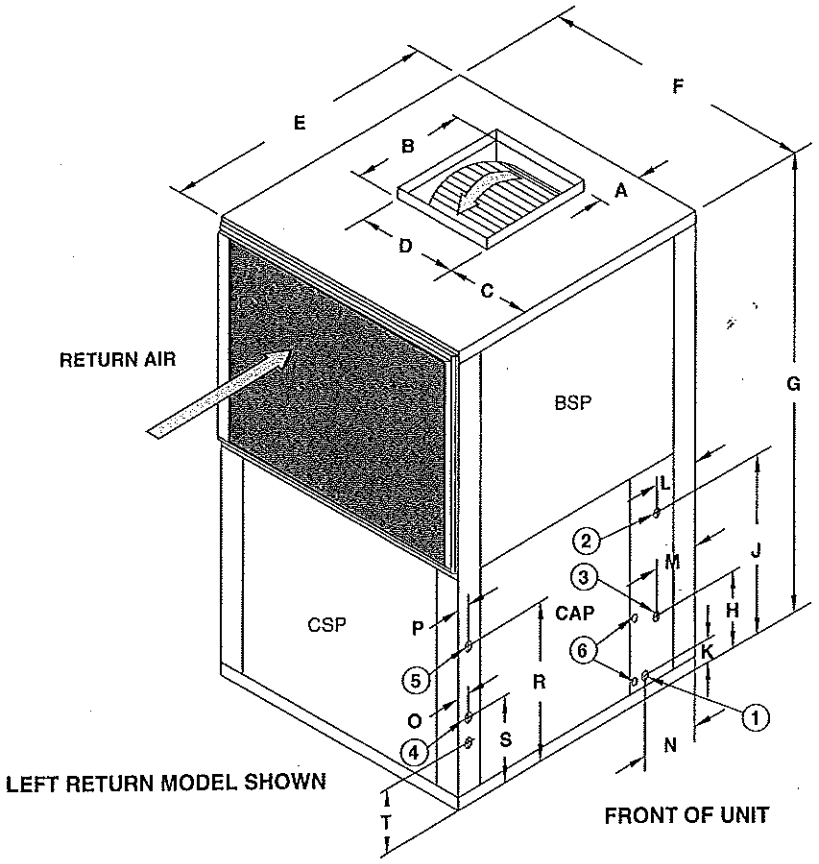
Correction Factors

	Cooling Corrections							Heating Corrections			
Entering Air Wet Bulb F°	Total Cooling Capacity	Sensible Cooling Capacity Entering Dry Bulb 70 F DB	75 F DB	80 F DB	85 F DB	90 F DB	Heat of Rejection	Entering Air Dry Bulb F°	Heating Capacity	Heat of Absorption	Power Input Watts
61	.910	.763	1.030	1.297	1.564	*	.895	60	1.050	1.047	.965
64	.955	.615	.881	1.148	1.415	*	.948	65	1.010	1.023	.990
67	1.000	.466	.733	1.000	1.267	1.697	1.000	70	1.000	1.000	1.000
70	1.045		.585	.852	1.118	1.546	1.055	75	.980	.977	1.040
73	1.090		.436	.703	.970	1.397	1.109	80	.965	.953	1.065

* Sensible cooling equals total cooling capacity.

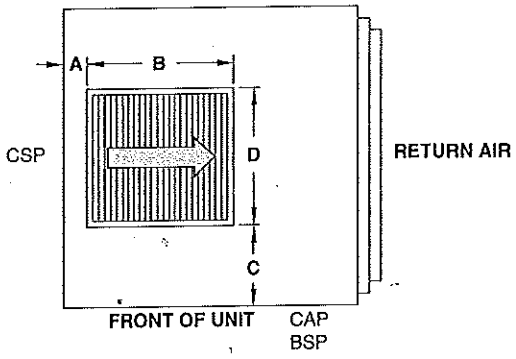
	Cooling Corrections				Heating Corrections		
CFM	Total Cooling Capacity	Sensible Cooling Capacity	Heat of Rejection	Power Input Watts	Heating Capacity	Heat of Absorption	Power Input Watts
1320	.950	.945	.939	.905	.950	.957	1.057
1700	.979	.976	.980	.954	.979	.982	1.024
2000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2200	1.018	1.018	1.035	1.035	1.018	1.015	.980
2570	1.043	1.047	1.068	1.089	1.043	1.037	.951

Dimensions — Vertical Classic Models



LEFT RETURN MODEL SHOWN

FRONT OF UNIT



RIGHT RETURN TOP DISCHARGE PANEL

Legend:

1. Water Inlet	1" FPT Swivel Connection
2. Water Outlet	1" FPT Swivel Connection
3. Condensate Drain	3/4"FPT
4. High Voltage Access	7/8" X 1 1/8" K.O. (22mm X 29mm K.O.)
5. Low Voltage Access	1/2" Dia. (13mm Dia.)
6. HWG Optional	1/2" FPT

HWG Location Dimensions:

Size 030-036

HWG Outlet - 10" from bottom of unit and 1 5/8" to the right of the water inlet.
HWG Inlet - 3 1/8" from bottom of unit and 2 7/8" to the left of water inlet.

Size 042-060

HWG Outlet - 10" from bottom of unit and 6" to the right of the water inlet.
HWG Inlet - 3" from bottom of unit and 4 3/4" to the left of water inlet.

Abbreviations:

CAP - Control Access Panel
BSP - Blower Service Panel
CSP - Compressor Service Panel

Return Air Duct Size:

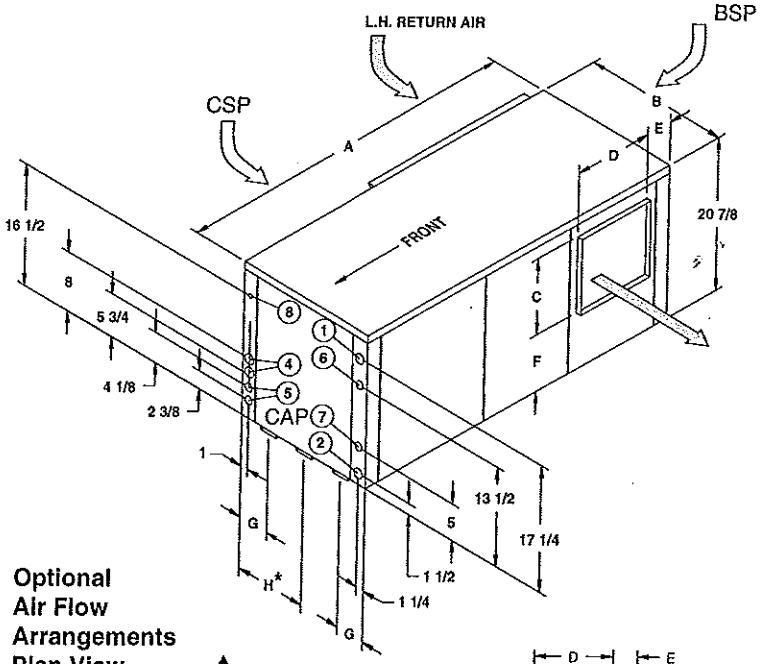
030 - 036	22 1/8" High X 21 3/4" Wide (562mm High X 553mm Wide)
042 - 060	22 7/8" High X 26 3/4" Wide (581mm High X 680mm Wide)

Nominal Filter Size:

VP 030/036 24" X 24" X 1"
(610mm X 610mm X 25mm)
VP 042/048/060 14" X 25" X 1" Qty-2
(711mm X 635mm X 25mm)

MODEL		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T
030	INCHES	2	12 9/16	6 13/16	12 15/16	25 5/16	25 5/16	42	7 1/16	16 1/4	1 15/32	3 27/32	7 27/32	5 9/16	1 1/32	1	14 1/2	8	5 3/4
	MM	51	319	173	297	643	643	1067	179	413	37	98	199	141	26	25	368	203	146
036	INCHES	2	12 9/16	6 3/16	12 15/16	25 5/16	25 5/16	42	7 1/16	16 1/4	1 15/32	3 27/32	7 27/32	5 9/16	1 1/32	1	14 1/2	8	5 3/4
	MM	51	319	173	329	643	643	1067	179	413	37	98	199	141	26	25	368	203	146
042	INCHES	2 11/16	14 3/4	7 5/16	15	28	28	43	8 13/16	16 3/4	1 3/8	2 7/8	8 13/16	4 7/8	1 1/32	1	14 1/2	8	5 3/4
	MM	68	325	186	342	711	711	1092	224	425	35	73	224	124	26	25	368	203	146
048	INCHES	2 11/16	14 3/4	7 5/16	15	28	28	43	8 13/16	16 3/4	1 3/8	2 7/8	8 13/16	4 7/8	1 1/32	1	14 1/2	8	5 3/4
	MM	68	325	186	342	711	711	1092	224	425	35	73	224	124	26	25	368	203	146
060	INCHES	2 11/16	14 3/4	7 5/16	15	28	28	43	8 13/16	16 3/4	1 3/8	2 7/8	8 13/16	4 7/8	1 1/32	1	14 1/2	8	5 3/4
	MM	68	325	186	342	711	711	1092	224	425	35	73	224	124	26	25	368	203	146

Dimensions — Horizontal Classic Models



Legend:

1. Water Outlet	1" FPT Swivel Connection
2. Water Inlet	1" FPT Swivel Connection
3. Condensate Drain	3/4" FPT
4. High Voltage Access	7/8" X 1 1/8" K.O.
5. Optional Voltage Access	7/8" X 1 1/8" K.O.
6. HWG Outlet	1/2" FPT
7. HWG Inlet	1/2" FPT
8. Low Voltage Access	7/8" X 1 1/8" K.O.

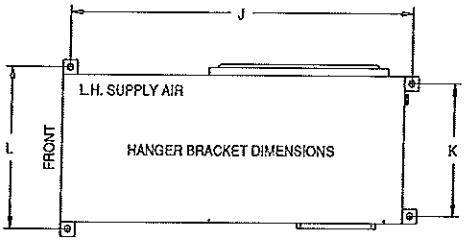
Abbreviations:

CAP - Control Access Panel
BSP - Blower Service Panel
CSP - Compressor Service Panel

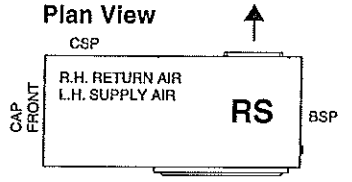
* - There are only (2) support runners on the HP 030/036

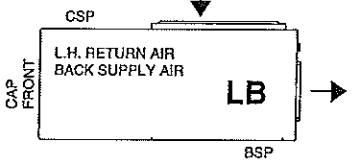
Nominal Filter Size:

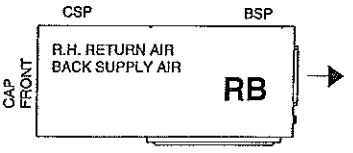
HP 030/036 20" X 14" X 1" Qty-2
HP 042/048/060 20" X 20" 1" Qty-2

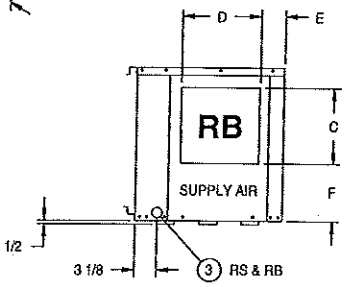


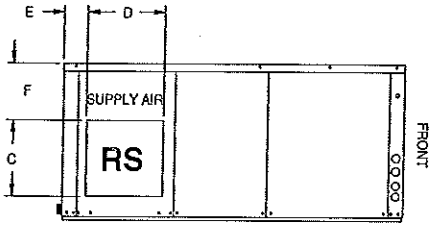
Optional Air Flow Arrangements Plan View

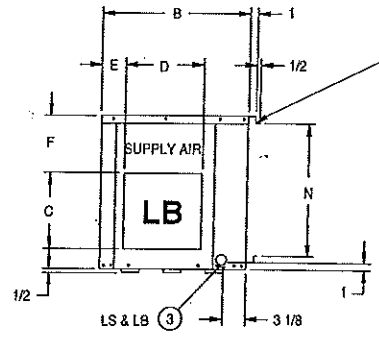




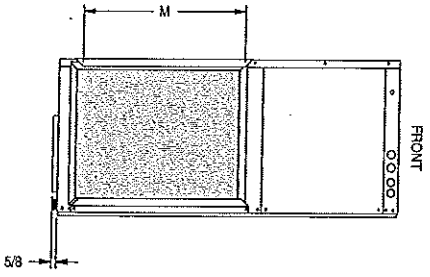








FLANGED R.A. FILTER RACK (M X N DUCT CONNECTION)



SUPPLY AIR DUCT LOCATIONS (LS SHOWN ON MAIN DRAWINGS)

MODEL	SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N
030	INCHES	47 1/8	20 1/8	10 3/8	10 3/4	3 5/8	7 3/4	7 1/4	N/A	47 1/8	18 1/8	22 1/8	25 5/8	18 3/8
	MM	1197	511	264	273	92	197	184	N/A	1197	460	562	651	467
036	INCHES	47 1/8	20 1/8	10 3/8	10 3/4	3 5/8	7 3/4	7 1/4	14	47 1/8	18 1/8	22 1/8	25 5/8	18 3/8
	MM	1197	511	264	273	92	197	184	356	1197	460	562	651	467
042	INCHES	60	28	11 3/4	8 3/8	8 3/8	7 3/8	4	14	60	26	30	37 1/2	18 3/8
	MM	1524	711	298	213	92	187	102	356	1524	660	762	343	467
048	INCHES	60	28	11 3/4	13 1/2	5 7/8	7 3/8	4	14	60	26	30	37 1/2	18 3/8
	MM	1524	711	298	343	149	187	102	356	1524	660	762	343	467
060	INCHES	60	28	13 7/8	13 1/2	5 7/8	5 3/8	4	14	60	26	30	37 1/2	18 3/8
	MM	1524	711	352	343	149	137	102	356	1524	660	762	343	467

Blower Performance — Vertical Classic Models

Air flow based on wet coil and clean filter

Do not extrapolate
Motor tapped to medium from factory

Size	Speed	Voltage	External Static Pressure (inch H2O) 0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
30	Low	208	995	924	838	746	674	596				
	Med	208	1091	1013	945	829	738	626				
	High	208	1177	1105	1022	914	809	667				
30	Low	230, 265, 460	1081	984	924	829	738	639				
	Med	230, 265, 460	1161	1074	974	893	797	667				
	High	230, 265, 460	1243	1157	1040	944	853	730				
36	Low	208	1002	985	965	934	856	717				
	Med	208	1221	1179	1117	1044	965	821				
	High	208	1553	1374	1261	1179	1045	966				
36	Low	230, 265, 460	1169	1115	1068	983	905	766				
	Med	230, 265, 460	1321	1238	1153	1074	973	833				
	High	230, 265, 460	1582	1449	1341	1193	1063	963				
42	Low	208	1330	1268	1211	1136	1072	1004				
	Med	208	1400	1329	1267	1196	1104	1029				
	High	208	1455	1368	1301	1232	1158	1079				
42	Low	230, 265, 460	1388	1310	1247	1182	1105	1021				
	Med	230, 265, 460	1437	1361	1274	1217	1135	1063				
	High	230, 265, 460	1472	1399	1321	1245	1157	1079				
48	Low	208	1729	1635	1569	1482	1372	1272				
	Med	208	1762	1701	1627	1567	1451	1344	1269			
	High	208	1872	1771	1680	1589	1498	1388	1293			
48	Low	230, 265, 460	1802	1707	1612	1545	1427	1325	1231			
	Med	230, 265, 460	1854	1757	1654	1544	1463	1357	1260			
	High	230, 265, 460	1895	1800	1700	1593	1509	1425	1336	1251		
60	Low	208	2051	1990	1927	1861	1794	1723	1650	1579		
	Med	208	2160	2084	2024	1956	1892	1805	1726	1652	1583	
	High	208	2302	2242	2164	2088	2004	1923	1843	1762	1678	1598
60	Low	230, 265, 460	2210	2136	2048	1987	1911	1825	1742	1663	1578	
	Med	230, 265, 460	2302	2220	2141	2047	1986	1903	1826	1745	1668	1588
	High	230, 265, 460	2327	2252	2163	2076	1985	1899	1812	1733	1658	1585

Post-it® Fax Note 7671 | Date 6-18-01 | # of pages ▶ 1

To DON	From Ron P
Co./Dept. GNTCK	Co. CM
Phone #	Phone #
Fax #	Fax #

Physical Data

Table 1. Physical Data VP/HP revision "C"

MODEL	VP030	VP036	VP042	VP048	VP060	HP030	HP036	HP042	HP048	HP060
Fan Wheel	9 X 7	9 X 7	10 X 6	10 X 10	11 X 10	9 X 8	9 X 8	10 X 6	10 X 10	11 X 10
PSC Fan Motor HP - # of Speeds	1/4 - 3	1/2 - 3	3/4 - 3	3/4 - 3	1.0 - 3	1/4 - 3	1/2 - 3	3/4 - 3	3/4 - 3	1.0 - 3
Compressor	Recip	Recip	Recip	Recip	Recip	Recip	Recip	Recip	Recip	Recip
R22 (oz.)	44.0	44.0	60.0	60.0	74.0	44.0	44.0	66.0	66.0	72.0
Air Coil Face Area (sq in.)	3.3	3.3	4.2	4.2	4.2	3.3	3.3	5.0	5.0	5.0
Air Coil tube size	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Air Coil Fin Spacing	12	12	14	14	14	14	14	14	14	14
Air Coil # of Rows	3	3	3	3	4	3	3	3	3	4
Air Coil # of Circuits	6	6	6	6	8	6	6	6	6	8
Filter - 1" Throwaway (Std.)	24 x 24	24 x 24	2-14 x 25	2-14 x 25	2-14 x 25	2-14 x 20	2-14 x 20	2-14 x 20	2-14 x 20	2-14 x 20
Weight - Operating	230	230	300	378	388	230	230	315	386	396
Weight - Packaged	240	240	310	388	398	240	240	325	396	406

Blower Performance — Horizontal Classic Models

Air flow based on wet coil and clean filter

Do not extrapolate
Motor tapped to medium from factory

Size	Air Flow	Speed	Voltage	External Static Pressure (inch H2O) 0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2
30	LS/RS	Low	208	995	924	838	746	674	596						
	LS/RS	Med	208	1091	1013	945	829	738	626						
	LS/RS	High	208	1177	1105	1022	914	809	667						
30	LS/RS	Low	230, 265, 460	1081	984	924	829	738	639						
	LS/RS	Med	230, 265, 460	1161	1074	974	893	797	667						
	LS/RS	High	230, 265, 460	1243	1157	1040	944	853	730						
30	LB/RB	Low	208	876	813	737	656	593	524						
	LB/RB	Med	208	960	891	832	730	649	551						
	LB/RB	High	208	1036	972	899	804	712	587						
30	LB/RB	Low	230, 265, 460	951	866	813	730	649	562						
	LB/RB	Med	230, 265, 460	1022	945	857	786	701	587						
	LB/RB	High	230, 265, 460	1094	1018	915	831	751	642						
36	LS/RS	Low	208	1002	985	965	934	856	717						
	LS/RS	Med	208	1221	1179	1117	1044	965	821						
	LS/RS	High	208	1553	1374	1261	1179	1045	966						
36	LS/RS	Low	230, 265, 460	1169	1115	1068	983	905	766						
	LS/RS	Med	230, 265, 460	1321	1238	1153	1074	973	833						
	LS/RS	High	230, 265, 460	1582	1449	1341	1193	1063	963						
36	LB/RB	Low	208	882	867	849	822	753	631						
	LB/RB	Med	208	1074	1038	983	919	849	722						
	LB/RB	High	208	1367	1209	1110	1038	920	850						
36	LB/RB	Low	230, 265, 460	1029	981	940	865	796	674						
	LB/RB	Med	230, 265, 460	1162	1089	1015	945	856	733						
	LB/RB	High	230, 265, 460	1392	1275	1180	1050	935	847						
42	LS/RS	Low	208	1462	1394	1342	1281	1239	1174	1113	1063				
	LS/RS	Med	208	1625	1570	1490	1423	1353	1307	1237	1172	1115	1060		
	LS/RS	High	208	1762	1681	1589	1522	1451	1357	1278	1208	1142	1077		
42	LS/RS	Low	230, 265, 460	1587	1519	1454	1385	1320	1259	1199	1144	1086			
	LS/RS	Med	230, 265, 460	1715	1631	1570	1484	1411	1340	1271	1203	1138	1078		
	LS/RS	High	230, 265, 460	1801	1716	1621	1527	1462	1395	1330	1267	1206	1141	1078	
42	LB/RB	Low	208	1287	1227	1181	1127	1090	1033	979	935				
	LB/RB	Med	208	1430	1382	1311	1252	1191	1150	1089	1031	981	933		
	LB/RB	High	208	1551	1479	1398	1339	1277	1194	1125	1063	1005	948		
42	LB/RB	Low	230, 265, 460	1397	1337	1280	1219	1162	1108	1055	1007	956			
	LB/RB	Med	230, 265, 460	1509	1435	1382	1306	1242	1179	1118	1059	1001	949		
	LB/RB	High	230, 265, 460	1585	1510	1426	1344	1287	1228	1170	1115	1061	1004	949	
48	LS/RS	Low	208	2002	1928	1838	1757	1664	1543	1458	1371	1288			
	LS/RS	Med	208	2214	2130	2037	1920	1803	1692	1575	1468	1357	1241		
	LS/RS	High	208	2381	2282	2144	1992	1892	1773	1658	1541	1432	1319	1214	
48	LS/RS	Low	230, 265, 460	2170	2101	1977	1850	1728	1611	1491	1378	1277			
	LS/RS	Med	230, 265, 460	2347	2247	2113	1983	1882	1769	1654	1547	1438	1337	1238	
	LS/RS	High	230, 265, 460	2441	2339	2206	2088	1974	1874	1763	1662	1564	1463	1364	1270
48	LB/RB	Low	208	1762	1697	1617	1546	1464	1358	1283	1206	1133			
	LB/RB	Med	208	1948	1874	1793	1690	1587	1489	1386	1292	1194	1092		
	LB/RB	High	208	2095	2008	1887	1753	1665	1560	1459	1356	1260	1161	1068	
48	LB/RB	Low	230, 265, 460	1895	1800	1700	1593	1509	1425	1336	1251				
	LB/RB	Med	230, 265, 460	1910	1849	1740	1628	1521	1418	1312	1213	1124			
	LB/RB	High	230, 265, 460	2148	2058	1941	1837	1737	1649	1551	1463	1376	1287	1200	1118
60	LS/RS	Low	208	1988	1907	1842	1774	1704	1608	1501					
	LS/RS	Med	208	2129	2041	1956	1886	1807	1695	1580					
	LS/RS	High	208	2467	2351	2229	2082	1980	1853	1733	1608	1499			
60	LS/RS	Low	230, 265, 460	2256	2163	2076	1974	1879	1759	1648	1543				
	LS/RS	Med	230, 265, 460	2390	2259	2171	2050	1941	1858	1749	1648	1543			
	LS/RS	High	230, 265, 460	2571	2490	2370	2232	2092	1960	1833	1707	1586			
60	LB/RB	Low	208	1749	1678	1621	1561	1500	1415	1321					
	LB/RB	Med	208	1874	1796	1721	1660	1590	1492	1390					
	LB/RB	High	208	2171	2069	1962	1832	1742	1631	1525	1415	1319			
60	LB/RB	Low	230, 265, 460	1985	1903	1827	1737	1654	1548	1450	1358				
	LB/RB	Med	230, 265, 460	2103	1988	1910	1804	1708	1635	1539	1450	1358			
	LB/RB	High	230, 265, 460	2262	2191	2086	1964	1841	1725	1613	1502	1396			

Classic Control Features & Operation

The Classic Series features a blend of electro-mechanical simplicity with a reliable solid state compressor control module (CCM) to handle all lockout, fault and time delay functions. The reliability of solid state timer and lockout control is much improved over traditional timers and electro-mechanical lockout relays. By blending the CCM with electro-mechanical controls both servicing and reliability are improved. The control system is designed to function with virtually any 24VAC thermostat and the reversing valve is energized in the cooling mode.

Circuit breakers are employed on the 230V loop and hot water generator pump power supply, as well as the 24VAC control transformer. Field thermostat connections are via seven screw terminals located on terminal strip TB on the control box. Unit power connections are to the L1 and L2 lugs on the compressor contactor.

Accessory Relay

An accessory relay allows the field connection of high current motorized water valves. The accessory relay has normally open connections and is cycled with the compressor contactor.

Short Cycle Protection

The CCM employs a 5-minute anti-short cycle protection of the compressor. This CCM also provides a 3-second delay on make to prevent nuisance anti-short cycle delays.

Test Mode Jumper

The CCM provides a test mode jumper to shorten timing delays for faster troubleshooting.

Fan Speed Selection

Any one of the three fan speeds can be selected by exchanging wires on the blower relay.

Bypass Timer

The low pressure and freeze protection safety circuit of the CCM is bypassed for 90 seconds at the start of each compressor cycle to prevent nuisance lockouts.

Selectable Freeze Protection

The Classic provides field-selectable refrigerant temperature sensing freeze protection for either water (30°F) or anti-freeze (15°F) based systems. The unit is factory shipped on the water setting and can be switched to the antifreeze setting by exchanging wires on the CCM control.

Hot Water Generator Limit

This limit is reached when the hot water limit sensor is at or above 120°F. At this point the switch is opened and disables all power to the hot water generator pump until the sensed temperature has dropped below 110°F.

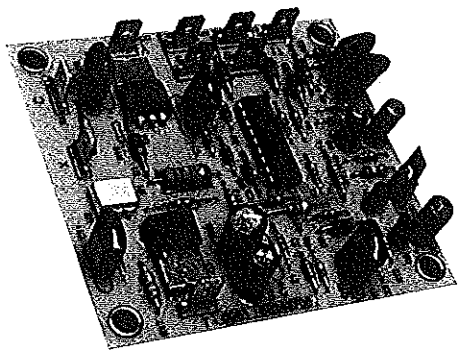
Safety Controls

The Classic employs two safety circuits, the high pressure and the low pressure/freezestat. Upon a lockout of either safety circuit, a 24VAC signal is applied to the "L" terminal and will illuminate a lockout light when connected to an appropriate thermostat. In the lockout mode the fan is operated continuously. Lockouts of any kind can be reset by removing power from the equipment or turning the thermostat "OFF" then back "ON" to a heating or cooling mode.

High Pressure — A normally closed high pressure switch is provided for safety and a lockout occurs when the high pressure switch is opened momentarily.

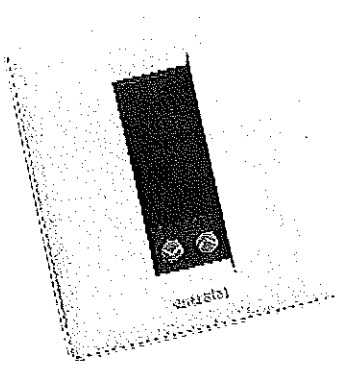
Low Pressure/Freezestat — A lockout occurs when either the low pressure switch, for loss of charge protection, or the low suction temperature freezestat, for freeze protection, is opened after a 90-second bypass period at the start of each compressor cycle.

Compressor Control Module



- Complete solid-state lockout function
- 5-minute short cycle protection
- 90-second LP and freeze bypass
- Speed-up mode
- Lockout signal
- 3 Second delay on make

ATA32E01 Thermostat Features



- 3-stage heat, 2-stage cool
- Simple operation
- Digital LCD display
- Precise temperature control
- Remote sensing capability
- Keypad lockout to prevent unauthorized access
- Comfort / Economy modes

Thermostat Selection

ATM11H01 — Manual Changeover electromechanical 1 Heat / 1 Cool thermostat

This thermostat is suited to heat/cool situations not requiring auxiliary electric heat.

- Heat, cool, and off
- Fan on, fan auto

ATM21H01 — Manual Changeover electromechanical 2 Heat / 1 Cool thermostat

This thermostat is suited to heat/cool situations which require auxiliary electric heat.

- Heat, cool, emergency heat, and off
- Fan on, fan auto
- Emergency heat and auxiliary heat light
- Fault light

ATA11E01 — Auto Changeover electronic 1 Heat / 1 Cool thermostat

This electronic thermostat is suited to heat/cool situations not requiring auxiliary electric heat or programmability.

- Heat, cool, auto, and off
- Fan on, fan auto
- °F or °C, Day/Night setpoints
- Power loss memory does not require battery
- Optional outdoor temperature and remote sensor
- Segmented LCD Display
- Fault light

ATA32E01 — Auto Changeover electronic 3 Heat / 2 Cool thermostat

This electronic thermostat is suited to heat/cool situations which require auxiliary electric heat but not programmability.

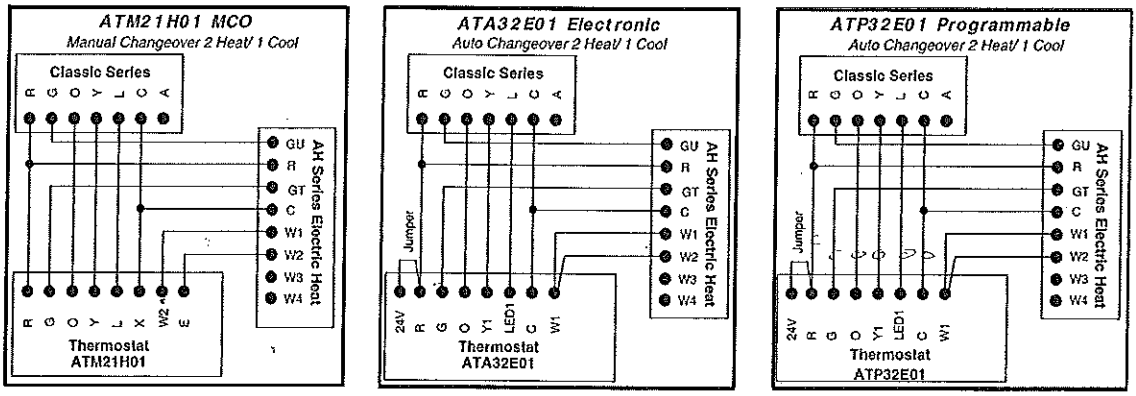
- Heat, cool, auto, emergency heat, and off modes
- Fan on, fan auto
- °F or °C, Day/Night setpoints
- Power loss memory does not require battery
- Optional outdoor temperature and remote sensor
- Segmented LCD Display
- Emergency heat and auxiliary heat light
- Fault light
- Comfort / Economy modes

ATP32E01 — Auto Changeover programmable electronic 3 Heat / 2 Cool thermostat

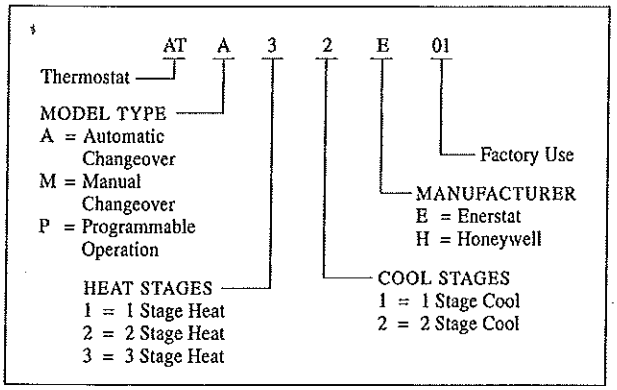
This electronic thermostat is suited to heat/cool situations which require auxiliary electric heat and programmability.

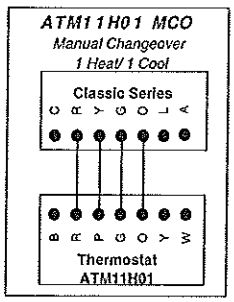
- Heat, cool, auto, emergency heat, and off modes
- Fan on, fan auto
- °F or °C, Heating and Cooling setpoints
- Programmability – 7 days, 4 periods / day
- Power loss memory does not require battery
- Optional outdoor temperature and remote sensor
- Segmented LCD Display
- Emergency heat and auxiliary heat light
- Fault light

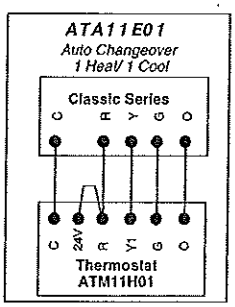
Thermostat Wiring



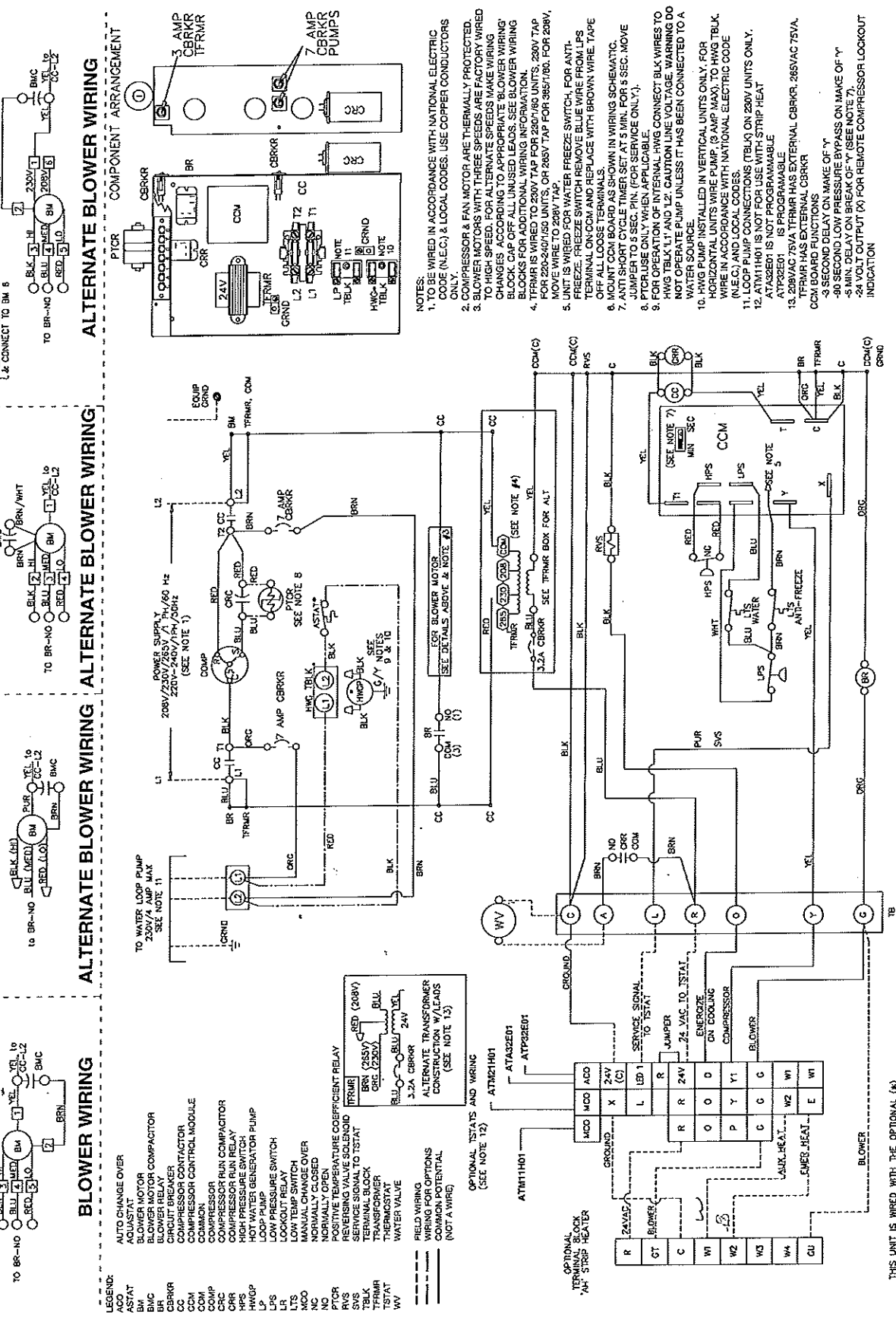
Thermostat Model Key







Electrical Wiring Diagram — Classic Models

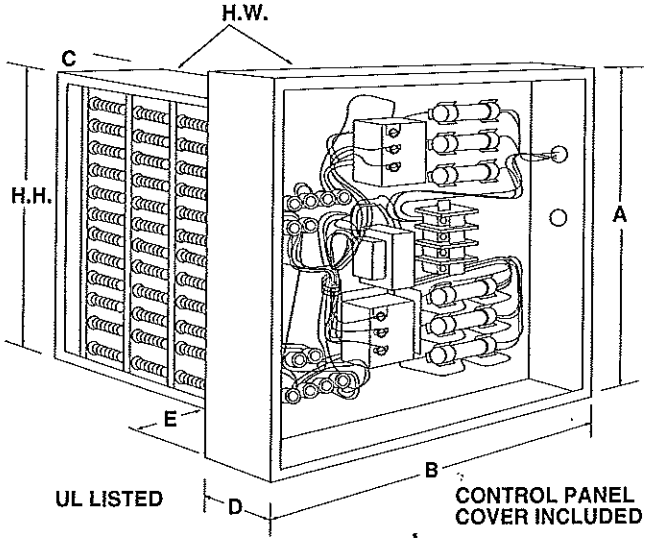


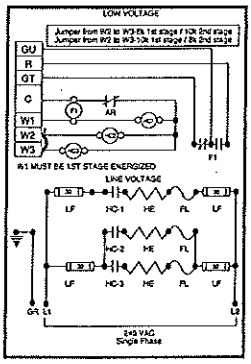
Electrical Data — Classic Models

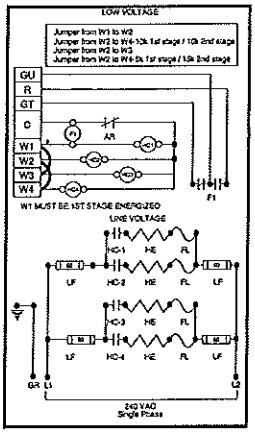
Size	Rated Voltage	Voltage Min/Max	Comp RLA	Comp LRA	Fan Motor (HP)	Fan Motor (FLA)	HWG* Pump (Amp)	Loop† Pump (Amp)	Total Unit (FLA)	Min Crkt Amp	Max Fuse (USA)	Max Fuse (Can)	Wire Min AWG	Wire Max Ft
030	208-230/60/1	197/254	11.2	61	1/4	1.6	0.52	4.0	17.3	20.1	30	30	10	100
036	208-230/60/1	197/254	14.4	82	1/2	3.0	0.52	4.0	21.9	25.5	35	35	10	80
042	208-230/60/1	197/254	17.9	87	3/4	5.6	0.52	4.0	28.1	32.6	40	40	8	90
048	208-230/60/1	197/254	21.8	105	3/4	5.5	0.52	4.0	31.8	37.3	50	50	8	80
060	208-230/60/1	197/254	24.4	135	1	5.8	0.52	4.0	34.7	40.8	60	60	6	120

HACR circuit breaker in USA only. All fuses Class RK-5
Wire length based on one way measurement with 2% voltage drop and wire size based on 60°C copper conductor
*HWG Pump Amps not used in Max Fuse or MCA calculations per UL1995 Section 36.15
†Loop Pump Amps included in Min Ckt Amp and Max Fuse/HACR

Auxiliary Duct Heater — AH Series







MODEL	KW	VOLTS	PHASE	STEPS	AMPS	DIMENSIONS A	B	C*	D	E	H-W	H-H	MODELS USED WITH 030	036	042	048	060
AH10GM	9.2 7.5	230 208	1	2	40.0 36.1	16	10	6.2	4	2	13	14	•	•			
AH10GL	9.2 7.5	230 208	1	2	40.0 36.1	17	17	6.2	4	2	15.5	15	•	•			
AH15GM	13.8 11.25	230 208	1	2	60.0 54.1	16	17	6.2	4	2	13	14			•	•	•
AH15GL	13.8 11.25	230 208	1	3	60.0 54.1	17	17	6.2	4	2	15.5	15			•	•	•
AH20GL	18.4 15.0	230 208	1	4	80.0 72.1	17	17	6.2	4	2	15.5	15			•	•	•

Engineering Guide Specs

General

The water source heating/cooling units shall be either suspended type with horizontal air inlet and discharge, or floor mounted type with horizontal air inlet and vertical upflow air discharge. Units shall be ARI Standard 320 (water loop), 325 (ground-water) and 330 (ground-source closed-loop) performance certified and listed by a nationally recognized safety-testing laboratory or agency, such as NRTL Testing Laboratory, or Canadian Standards Association (CSA). Each unit shall be water run-tested at the factory. Each unit shall be pallet mounted and shipped in clear shrink wrap with corrugated corner supports for visual shipping damage inspection. The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of one year on all parts, including a labor allowance with an additional four-year warranty covering the compressor and refrigerant circuit parts. An optional 2-year all parts, 10-year compressor and refrigerant circuit warranty shall be available from the manufacturer. The water source units shall be designed to operate with entering fluid temperature between 25°F and 110°F as manufactured by ClimateMaster, Inc. of Oklahoma City, Oklahoma.

Casing & Cabinet

The cabinet shall be fabricated from heavy-gauge galvanized steel. The interior shall be insulated with 1/2"-thick, multi-density, coated glass fiber with edges sealed or tucked under flanges to prevent the introduction of glass fibers into the discharge air. One or two blower compartment and three compressor compartment access panels shall be provided and shall be removable with supply and return ductwork in place. The internal component layout shall provide for major service with the unit in-place for restricted access installations.

A duct collar shall be provided on the supply air opening. Standard-size 1" filters shall be provided with each unit. Vertical and horizontal units shall have filter brackets. The units shall have an insulated divider panel between the air handling section and the compressor section to minimize the transmission of compressor noise, and to permit operational service testing without air bypass. Vertical units shall be supplied with left or right horizontal air inlet. Horizontal units shall be supplied with left or right air inlet, and field convertible side or back air discharge.

Refrigerant Circuit

All units shall contain a sealed refrigerant circuit including a hermetic motor-compressor, bi-directional thermal expansion valve, finned tube air-to-refrigerant heat exchanger, reversing valve, coaxial tube water-to-refrigerant heat exchanger, optional desuperheater coil, and service ports.

Compressors shall be high-efficiency reciprocating type designed for heat pump duty and mounted on vibration isolators. Compressor motors shall be single or three-phase PSC with internal overload protection. The finned tube coil shall be sized for low-face velocity and constructed of lanced aluminum fins bonded to rifled copper tubes in a staggered pattern not less than three rows deep. The coaxial water-to-refrigerant heat exchanger shall be designed for close approach temperatures and be constructed of a convoluted copper (optional cupronickel) inner tube and a steel outer tube. The thermal expansion valve shall provide proper superheat over the entire liquid temperature range with minimal "hunting." The valve shall operate bi-directionally without the use of check valves.

The water-to-refrigerant heat exchanger, optional desuperheater coil and refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures.

Fan Motor & Assembly

The fan shall be a direct drive centrifugal type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low outlet velocity operation and be of galvanized steel construction. Tight fan housing geometry shall not be permitted. The fan housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the fan motor. The fan motor shall be a three-speed PSC type. The PSC fan motor shall be high efficiency and provide high static capability. The fan motor shall be isolated from the housing by rubber grommets. The motor shall be permanently lubricated and have thermal overload protection.

Electrical

A solid state compressor control module shall be provided for compressor protection. The control shall provide high and low pressure switch monitoring, freeze protection sensing, lockout mode control with fault signal output, 3-second delay on make timing, 5-minute delay on break anti-short cycle timing, and 90-second cycle start bypass timing for the low pressure and freeze protection circuits.

A terminal block with screw terminals shall be provided for field low-voltage wiring. A 75VA low-voltage transformer with circuit breaker shall be provided. Line voltage terminal blocks or connection lugs shall be provided for unit and pump wiring. Circuit breaker protection shall be provided for all circulating pumps. Units shall have knockouts for entrance of low and line voltage wiring. An internal accessory relay shall be factory installed for field connection of accessories and shall cycle with the compressor contactor.

Piping

Supply and return water connections shall be 1" FPT brass swivel fittings to provide a union and eliminate the need for pipe wrenches and sealants when making field connections. Desuperheater connections shall be 1/2" FPT copper threaded fittings mechanically fastened to unit cabinet, eliminating the need for back-up wrenches when making field piping connections. All water piping shall be insulated to prevent condensation at low liquid temperatures. The condensate connection shall be a 3/4" MPT with internal-trap (vertical units only).

Hanger Kit (field installed-horizontal units only)

The hanger kit shall consist of galvanized steel brackets, bolts, lock washers, and isolators and shall be designed to fasten to the unit bottom panel for suspension from 3/8" threaded rods.

Accessories & Options

Hot Water Generator

An optional heat reclaiming desuperheater coil of vented double-wall copper construction suitable for potable water shall be provided. The coil and hot water circulating pump shall be factory mounted inside the unit (coil only in horizontal units). A coaxial drain fitting for the DHW tank connection and a high limit shutoff switch shall be provided.

Cupro-Nickel Heat Exchanger

An optional corrosion resistant CuNi coaxial heat exchanger shall be factory installed in lieu of the standard copper construction.

Thermostat (field-installed)

A multi-stage auto-changeover electronic digital thermostat shall be provided. The thermostat shall offer 2 heating and 1 cooling stage with precise temperature control. An OFF-HEAT-AUTO-COOL-EMERG system switch, ON-AUTO fan switch, and indicating LED's shall be provided. The thermostat shall read out in °F or °C. An optional remote sensor shall be available. The thermostat shall provide an outdoor temperature display and day/night setpoints.

Electrostatic Filter (field-installed)

A 1" permanent, cleanable 90% efficient electrostatic filter shall be provided in lieu of the standard throwaway type.

Flow Controller (field-installed)

A self-contained module shall provide all fluid pumping, fill and connection requirements for ground-source closed-loop systems up to 20 GPM. The Flow Controller shall provide 1-1/4" pump isolation valves and 3-way service valves. Pumps shall be of cartridge type construction for easy replacement. The valve and pump volute combination shall be of one piece construction. The Flow Controller shall be enclosed in a powder-coated control galvanized case and fully insulated with urethane foam to prevent condensation. The Flow Controller shall have a 3-year warranty on all parts.

Auxiliary Heater (field-installed)

A duct mounted electric heater shall provide supplemental and/or emergency heating capability when used with 2 stage heating thermostats.

1" Filter Rack/Duct Collar (field-installed)

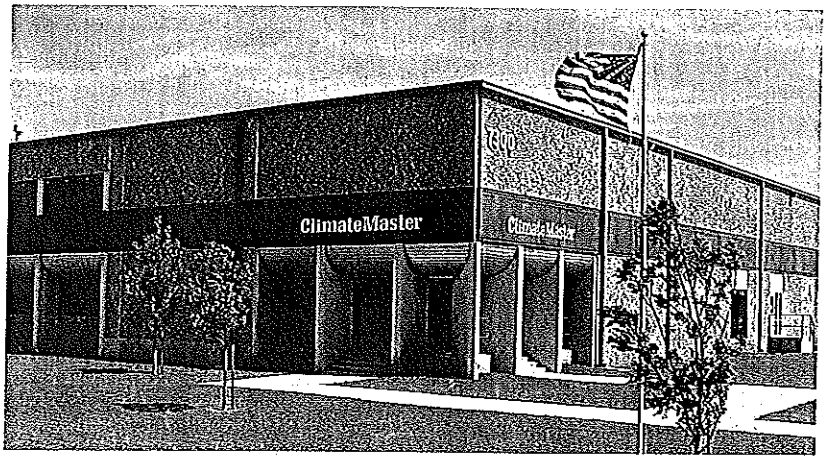
A filter rack/duct collar shall be provided for each vertical or horizontal unit, to accept 1" filters.

Warranty Information

ClimateMaster's Classic Series residential warranty reflects the reliability built in to every unit and includes one year on all parts with a service labor allowance, and five years on the compressor and refrigerant circuit parts.

An optional extended warranty is available for Classic Series units. This warranty doubles the standard residential warranty protection to 2 years on all parts with labor allowance, and 10 years on refrigerant circuit components. See extended warranty certificate (RP105) for details.

Notes:



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