GEOTHERMAL SPLIT SYSTEMS

CLIMATEMASTER

INDOOR & OUTDOOR SPLIT GEOTHERMAL
HEATING AND COOLING COMFORT SYSTEMS

TRANQUILITY 27™ INDOOR SPLIT (TTS) SERIES - SIZES 026-064
GENESIS INDOOR SPLIT (GSS) SERIES - SIZES 018-060
PARADIGM OUTDOOR SPLIT (PDW) SERIES - SIZES 018-060

CLIMATEMASTER®
THE GLOBAL LEADER

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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 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 geothermal 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. Overall, geothermal technology offers the highest cooling EER's and heating COP's available in the industry. 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 levels 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 consistent indoor temperature with comfortable relative humidity.

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, EarthPure™ HFC 410A refrigerant is used in the Tranquility series equipment for minimum global warming impact and zero ozone depletion.

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 can be 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 geothermal system 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.

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 mostly 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.

Tranquility 27™

Rounding Out the Product Line

Building upon the overwhelming market success of the Tranquility 27™ packaged unit, the split system uses the same components in a more flexible configuration. The Tranquility 27™ split system compressor section can be coupled with a variety of air handlers and add-on furnace coils to achieve the highest efficiencies of any split system heat pump on the market today, while still providing the flexibility of an all-electric or dual fuel system and a remote compressor section location. Split systems are often used in areas where it would be difficult to install a packaged unit, such as in an attic or crawl space.

EarthPure™ Refrigerant

EarthPure™ is a non-chlorine based (HFC 410A) refrigerant, that with R-407C and R-134A, is seen as the future of all refrigerants used worldwide. HFC 410A characteristics compared to R-22 are:

- Binary and near azeotropic mixture of 50% R-32 and 50% R-125.
- Higher efficiencies (50-60% higher operating pressures).
- Zero ozone depletion potential and low global warming potential.
- Virtually no glide. Unlike other alternative refrigerants, the two components in HFC 410A have virtually the same leak rates. Therefore, refrigerant can be added if necessary without recovering the charge.

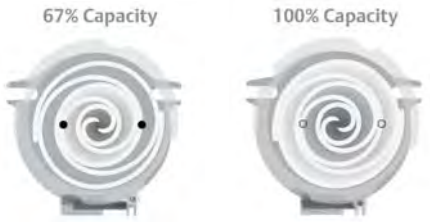
Copeland Two-Stage Scroll Compressor

Achieve a greater level of comfort. The Copeland Scroll UltraTech™ provides superior comfort than fixed-capacity compressors by incorporating a revolutionary two-step design. With a unique 67% part-load capacity step, systems with UltraTech™ maintain precise temperature levels and lower relative humidity. This eliminates uneven peaks and valleys and allows for steady cooling comfort. Homeowners now have a better, more efficient way to power their heating and cooling system, raising their level of comfort, while lowering energy bills. So when your customers need a new heating and cooling system, make sure it has the best technology inside – the Copeland Scroll UltraTech™ compressor.

Save with superior efficiency. Over 40% of summer utility bills can come from the air conditioner compressor operation. A system with the Copeland Scroll UltraTech™ compressor delivers higher efficiency than any other single compressor system. In fact, systems with UltraTech™ provide up to 60% greater energy efficiency as compared to 10 SEER systems – which can save homeowners hundreds of dollars a year in energy costs.

Take it easy with quieter control. Copeland Scroll UltraTech™ is remarkably quiet at both full- and part-load capacity. In fact, it is up to four times quieter than a reciprocating compressor. Homeowners can enjoy its superior efficiency and comfort without having to hear the operation.

Learn the beauty of the design. With Copeland Scroll UltraTech™, two internal bypass ports enable the system to run at 67% part-load capacity for better efficiency and humidity control. Based on demand, the modulation ring is activated, sealing the bypass ports and instantly shifting capacity to 100%. Take advantage of "shift on the fly" stage changing (no stopping and starting required like other two-stage compressors).



Choose proven scroll performance. While Copeland Scroll UltraTech™ builds on established scroll technology, it is still a scroll at heart, which means it operates with fewer moving parts, no volumetric efficiency drop-off or compression leakage. The result is unsurpassed reliability and virtually silent operation for both indoor and outdoor applications.

Other New Features

- Stylish two-tone look with textured black powder coat paint and stainless steel front access panel.
- Liftout handle for front access panel.
- Factory supplied (field-installed) filter drier for trouble free reliability.
- Easy access low profile horizontal control box.
- Double isolated compressor for quiet and vibration free operation.
- Spring-mounted compressor for additional noise suppression.
- Open Service-Friendly Cabinet (i.e, all components in compressor section can be serviced from the front).

The Tranquility 27™ Series Split System has abundant features and industry leading efficiency.

Application Flexibility

- Four Capacities 026, 038, 049, and 064.
- Extended range operation (20-120°F EWT) and flow rates as low as 1.5 gpm per ton.
- Compressor section match-ups for a variety of air handlers and add-on furnace coils for the ultimate in system and fuel type flexibility.
- Precharged compressor section with back-seating service valves for quick installation.
- Circuit breaker protected loop and hot water generator pumps.
- Field selectable freeze protection setting for well or loop.
- EarthPure™ HFC 410A zero ozone depletion refrigerant.
- Highest efficiencies for split systems in ARI/ISO/ ASHRAE/ANSI 13256-1 ratings for heating COP's, cooling EER's with low water flow rates.
- Two-Stage operation for ultra high efficiencies and unsurpassed comfort.
- Operating temperature range and high efficiency allow shorter loops.
- Optional hot water generator with internal pump generates hot water at considerable savings.
- Rugged and highly efficient next generation Copeland UltraTech™ scroll compressors provide the industry's highest efficiencies and full capacity with reduced cycling losses.
- Oversized coaxial tube water-to-refrigerant heat exchangers operate at low liquid pressure drop. Convoluted copper (and optional cupronickel) water tube functions efficiently at low-flow rates and provides freeze-damage resistance.

Service Advantages

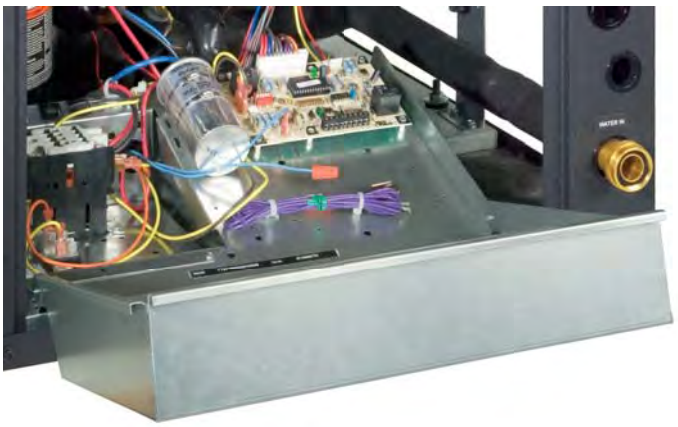
- Removable panels - 3 for compressor section (plus removable top panel).
- Low profile control box grants easy access to all internal components.
- Factory supplied (field installed) liquid line filter/drier.
- Brass swivel-type water connections for quick connection and elimination of wrenches or sealants during installation.
- Bi-directional thermal expansion valve.
- CXM control features status lights with memory for easy diagnostics.
- Unit Performance Sentinel alerts homeowner of potential performance issues.
- Circuit breaker protected 75VA control transformer.
- High and low pressure service ports on refrigerant circuit.
- Accurate refrigerant sensing freeze protection.

Factory Quality

- All units are built on our Integrated Process Control Assembly System (IPCS). The IPCS is a unique state of the art manufacturing system that is designed to assure quality of the highest standards of any manufacturer in the water-source industry. Our IPCS system:
  - Verifies that the correct components are being assembled.

- Automatically performs special leak tests on all joints.
- Conducts pressure tests.
- Performs highly detailed run test unparalleled in the HVAC industry.
- Automatically disables packaging for a "failed" unit.
- Creates computer database for future service analysis and diagnostics from run test results.

- Heavy gauge galvanized steel cabinets are epoxy powder coated for durable and long-lasting finish.
- 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 to insure annual leak rate of less than 1/4 ounce.
- 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: double isolation mounted compressors, compressor springs, insulated compressor compartment, and interior cabinet insulation using 1/2" coated glass fiber.
- Safety features include: high pressure and loss of charge to protect the compressor; condensate overflow protection; low water temperature limit sensors to safeguard the coaxial heat exchanger and air coil; hot water high limit and low compressor discharge temperature switch provided to shut down the hot water generator when conditions dictate. Fault lockout enables emergency heat and prevents compressor operation until thermostat or circuit breaker has been reset.



Advanced Unit Controls With
Easy Diagnostics And
Unit Protection Sentinel Functions

Options & Accessories

- Optional hot water generator with internally mounted pump.
- Optional cupronickel coaxial heat exchanger.
- Electronic thermostat.
- Closed loop Flow Controller.
- Electronic auto-changeover thermostat with 3-stage heat, 2-stage cool and indicator LED's.
- Hose kits.

EarthPure™ HFC 410A Refrigerant

Features and Benefits

Three Easy, Lift-out Service Access Panels with Stainless Steel Front Panel

Fully Insulated Water and Refrigerant Lines

Optional Factory Installed Hot Water Genorator With Internal Pump

Brass Swivel Water Connections

Oversized Water Coil

Two-Stage Copeland UltraTech™ Unloading Scroll Compressor

Low Profile Control Box

Backseating Brass Service Valves with Service Port

Application Flexibility

- Eight Capacities 018, 024, 030, 036, 042, 048, and 060.
- Voltage availability in 208-230/60/1.
- Stackable cabinets.
- Extended range operation (20-120°F EWT) and flow rates as low as 1.5 gpm per ton.
- Circuit breaker protected loop and hot water generator pumps.
- Field selectable low temperature cut-out selection setting for well or loop.
- Corner located electrical box for wiring access from two sides.
- Compressor mounting springs "matched" to each compressor for maximum quietness.
- Narrow cabinet for movement through doorways.
- Precharged refrigerant circuit with backseating service valves for quick installation.

Operating Efficiencies

- ARI/ASHRAE/ISO 13256-1 ratings for heating COP's, cooling EER's and low water flow rates.
- Operating and temperature range allow shorter loops.
- Optional hot water generator with internal pump generates hot water at considerable savings.
- Rugged, super quiet, and highly efficient scroll compressors.
- Oversized coaxial tube water to refrigerant heat exchangers operate at low liquid pressure drop.
- Convoluted copper (and optional cupronickel) water tube functions efficiently at low-flow rates and provides freeze-damage resistance.

Service Advantages

- Removable panels-3 for compressor.
- Brass swivel-type water and HWG connections for quick connection and elimination of wrenches or sealants during installation.
- Solid state digital compressor module provides reliable lockout, diagnostic, and time delay functions.
- High side loss-of-charge sensing reduces nuisance low pressure faults.
- LED Fault and status indication with memory for easy diagnostics.
- Designed for front-access service in tight applications.
- High and low pressure service ports in the refrigerant circuit.
- Refrigerant sensing freeze protection for more accurate low temperature cut-out.

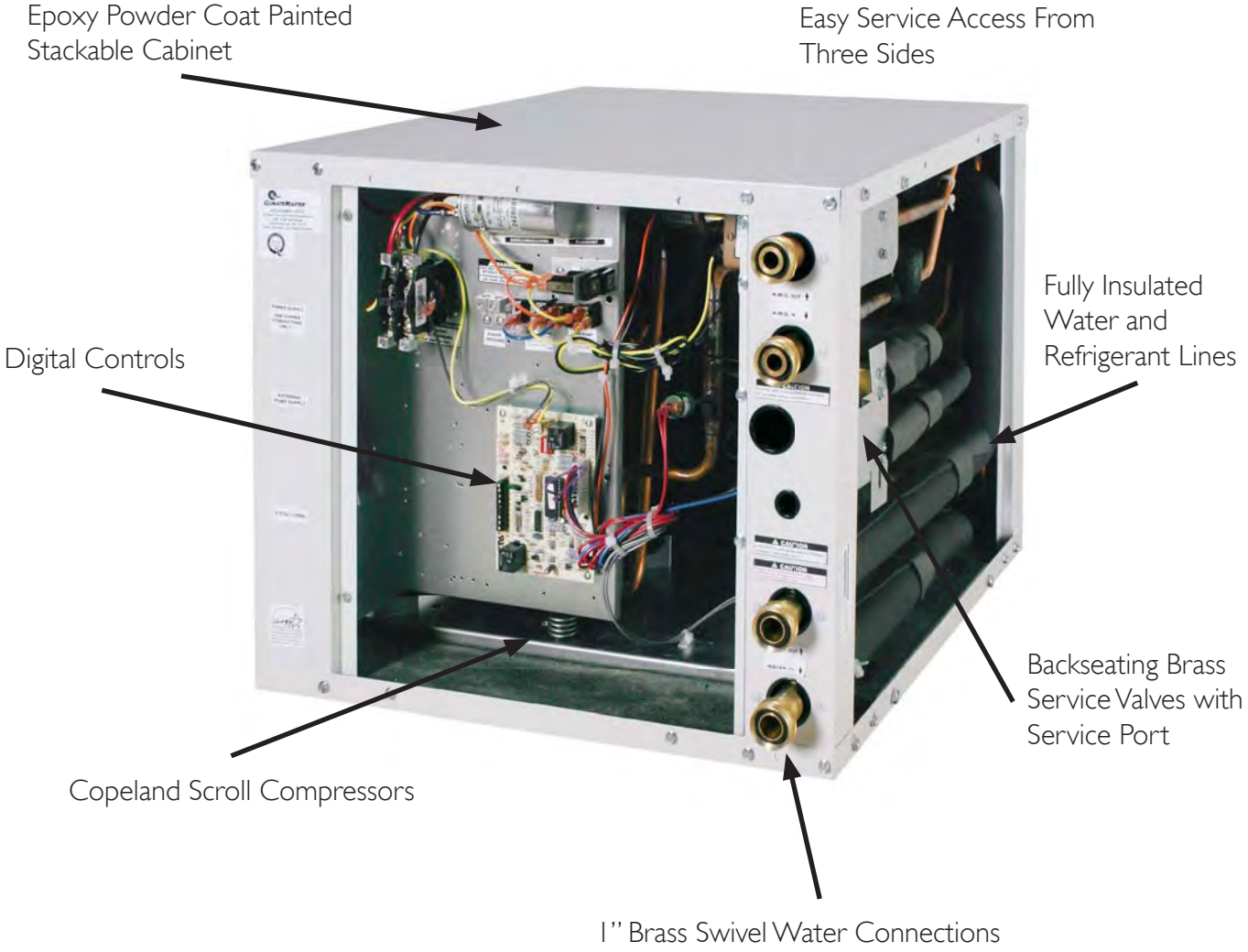
Factory Quality

- All units are built on our Integrated Process Control Assembly System (IPCS). The IPCS is a unique state of the art manufacturing system that is designed to assure quality of the highest standards of any manufacturer in the water-source industry. Our IPCS system:
  - Verifies that the correct components are being assembled.
  - Automatically performs special leak tests on all joints.
  - Conducts pressure tests.
  - Performs highly detailed run test unparalleled in the HVAC industry.
  - Automatically disables packaging for a "failed" unit.
  - Creates computer database for future service analysis and diagnostics from run test results.
- Heavy gauge galvanized steel cabinets are epoxy powder coated for durable and long-lasting finish.
- 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 to insure annual leak rate of less than 1/4 ounce.
- 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: double isolation mounted compressors, compressor springs, insulated compressor compartment, and interior cabinet insulation using 1/2" coated glass fiber.
- Safety features include: high pressure and loss of charge to protect the compressor; condensate overflow protection; low water temperature limit sensors to safeguard the coaxial heat exchanger and air coil; hot water high limit and low compressor discharge temperature switch provided to shut down the hot water generator when conditions dictate. Fault lockout enables emergency heat and prevents compressor operation until thermostat or circuit breaker has been reset.

Options & Accessories

- Optional hot water generator with internally mounted pump.
- Optional cupronickel coaxial heat exchanger.
- Wide thermostat selection.
- Closed loop flow controller.
- Hose kits.

Features and Benefits



Paradigm

What is the Paradigm (pear-a-dime)?

ClimateMaster introduced the industry to the first ever "outdoor" geothermal split system with internal pumping for residential applications. We are giving the consumer choices for unit location! The unit may be installed inside or outside, thereby satisfying the requirements of almost any home. When installed outside, the unit may be placed on an existing pad and easily connected to existing electric service. And with this installation option, the fluid loop remains outside avoiding extensive installation inside the home. The Paradigm is geothermal without the hassle.

Why "Paradigm Shift"?

We have defined the Paradigm shift as follows: to advance a model of technology beyond the familiar. But what do we mean? Essentially, our Paradigm is taking traditional geothermal technology a step further by offering a unique split system design suitable for any home. Home owners can now enjoy all the savings of a geothermal system with lower installation costs and less hassle. More importantly, the Paradigm is opening up the previously illusive retrofit market. Hence, our slogan "From Air to Water...". The Paradigm is a competitive product designed to shift traditional air source homeowners to the benefits of water source geothermal technology.

From the utility perspective, the Paradigm just about perfectly embodies what the utility industry has been searching for in geothermal: Lower first cost, simple and easy to service, fits traditional dealer practices and broad market appeal especially for retrofit, etc. The Paradigm can pull geothermal out of its high end niche into more of a mainstream segment.

The Paradigm Concept

The Paradigm provides a unique solution to many of the problems associated with single-package geothermal units. In addition, it substantially reduces overall installed costs and perhaps more importantly, opens up the largely untapped retrofit market (which, for conventional equipment, is over 3 times larger than the new construction market).

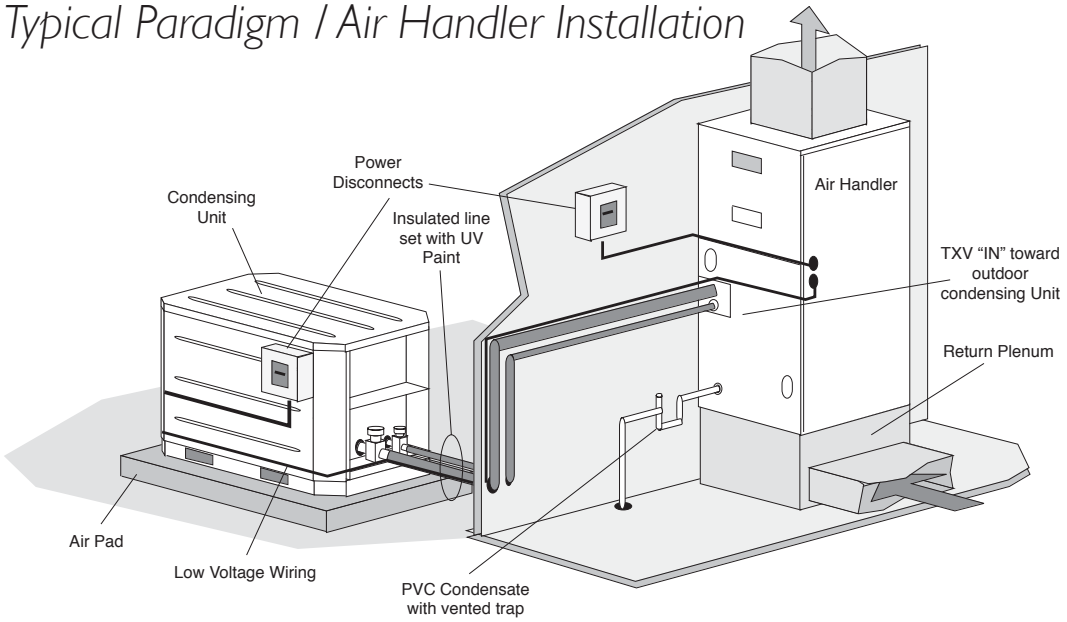
In new construction, the Paradigm offers many benefits over packaged geothermal units: The fluid loop is kept outside, which keeps large diameter piping, flammable antifreezes and flushing carts (a large, messy service tool) out of the home. The outdoor compressor means noise and most service activity will remain outside. The indoor air handlers are quiet, require less space and allow less costly ductwork (they don't have to be side return with canvas collars and plenum lining). Also, a Paradigm can utilize a gas furnace as the blower and supplemental heat (dual fuel or add-on) which removes a major consumer barrier in that geothermal has traditionally forced the homeowner to make an all-electric home decision. An add-on application also allows the option of sizing the geothermal component to the cooling load, rather than heating, which may further reduce first costs. The Paradigm should be able to tap a larger new construction segment than geothermal currently captures, even when marketed through existing geothermal dealers.

In the replacement market, the Paradigm greatly expands the range of suitable geothermal applications. Current geothermal retrofits have required a complete change out of all existing equipment, elaborate ductwork modifications, complex routing of interior loop fluid lines including below grade foundation penetrations, upgraded electrical service and unit feeders (110v furnace being changed to 240v heat pump with electric backup), and more. This assumes that a geothermal package unit can even be adapted to fit into the existing space. This process is expensive and disruptive to the owner (they typically don't want to change radically from what they have); hence the lack of geothermal retrofits existing. In contrast, the Paradigm can be installed outside on the same line set and electric service supplying the existing air conditioner or heat pump condensing unit. The loop stays outside. Only the indoor coil might need to be changed on an existing furnace, or possibly the air handler on an older heat pump. The purchase timing could be driven by a first-time central cooling addition; the upgrade replacement of an aging or broken air conditioner, heat pump or furnace; an HVAC change necessitated by a renovation; or an efficiency upgrade driven by a utility marketing program.

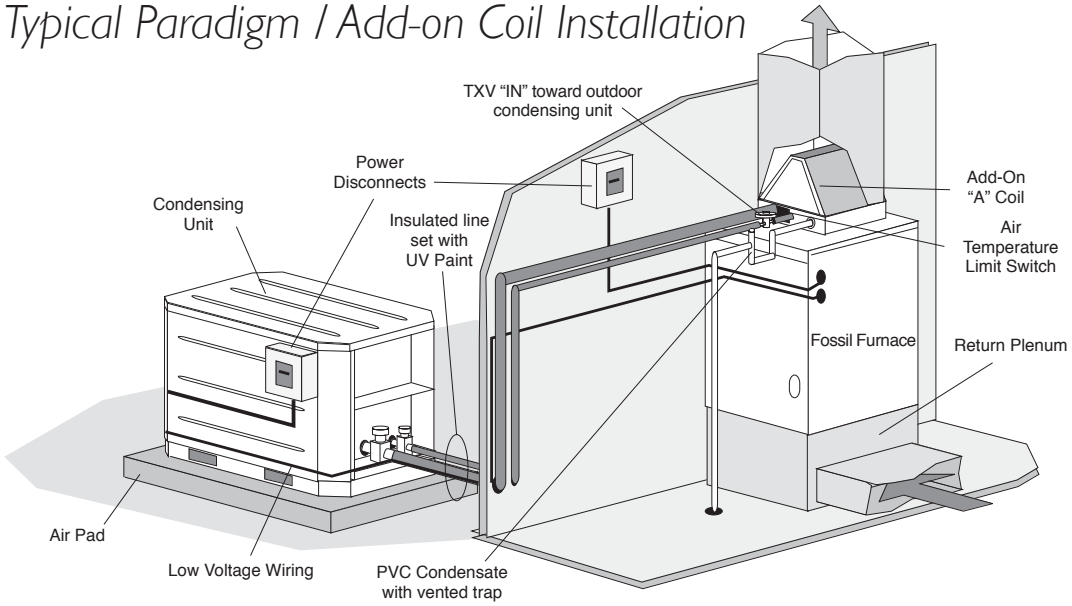
The Paradigm does not need to be located outside. It can be placed in garages, carports, basements, crawl spaces, etc. This may be important to some homeowners who may be very concerned about outdoor aesthetics. They also can utilize ground water if placed in an appropriate indoor location. Noise is not a problem as the Paradigm is extremely quiet (the box is sealed and insulated). The Paradigm also has excellent heating and latent cooling capacities compared with competitive high efficiency geothermal units. In many cases a Paradigm produces the heating output of one size larger competitor unit. And the Paradigm is likely to be the highest EER per dollar cost unit available in the geothermal industry today.

The goal for the Paradigm Series is based upon application flexibility, efficiency, reliability and a solid state microprocessor compressor control, producing a reliable, simple product both easy to service and install. Its efficiency and application flexibility make it the "Paradigm" of geothermal heat pumps.

Typical Paradigm / Air Handler Installation



Typical Paradigm / Add-on Coil Installation



Application Flexibility

- Eight Capacities 018, 024, 030, 036, 042, 048, and 060.
- Voltage availability in 208-230/60/1.
- Stackable cabinets.
- Extended range operation (20-120°F EWT) and flow rates as low as 2.25 gpm per ton (geothermal closed loop operation).
- Circuit breaker protected loop and hot water generator pumps.
- Field selectable low temperature cut-out selection setting for geothermal closed loop operation.
- Easily accessible electrical box for wiring.
- Weather-resistent cabinet.
- Internally-mounted (field installed) Flow Controller
- Precharged refrigerant circuit with backseating service valves for quick installation.

Operating Efficiencies

- ARI/ASHRAE/ISO 13256-1 ratings for heating COP's, cooling EER's and low water flow rates.
- Operating and temperature range allow shorter loops.
- Optional remoted-mounted hot water generator with internal pump generates hot water at considerable savings.
- Rugged, super quiet, and highly efficient scroll compressors (rotary for size 018).
- Oversized coaxial tube water to refrigerant heat exchangers operate at low liquid pressure drop.
- Convoluted copper (and optional cupronickel) water tube functions efficiently at low-flow rates and provides freeze-damage resistance.

Service Advantages

- Removable side and top panels for easy access to water/refrigerant circuits.
- Low ambient temperature switch activates loop pump in extreme temperatures.
- Solid state digital compressor module provides reliable lockout, diagnostic, and time delay functions.
- High side loss-of-charge sensing reduces nuisance low pressure faults.
- LED Fault and status indication with memory for easy diagnostics.
- High and low pressure service ports in the refrigerant circuit.
- Refrigerant sensing freeze protection for more accurate low temperature cut-out.

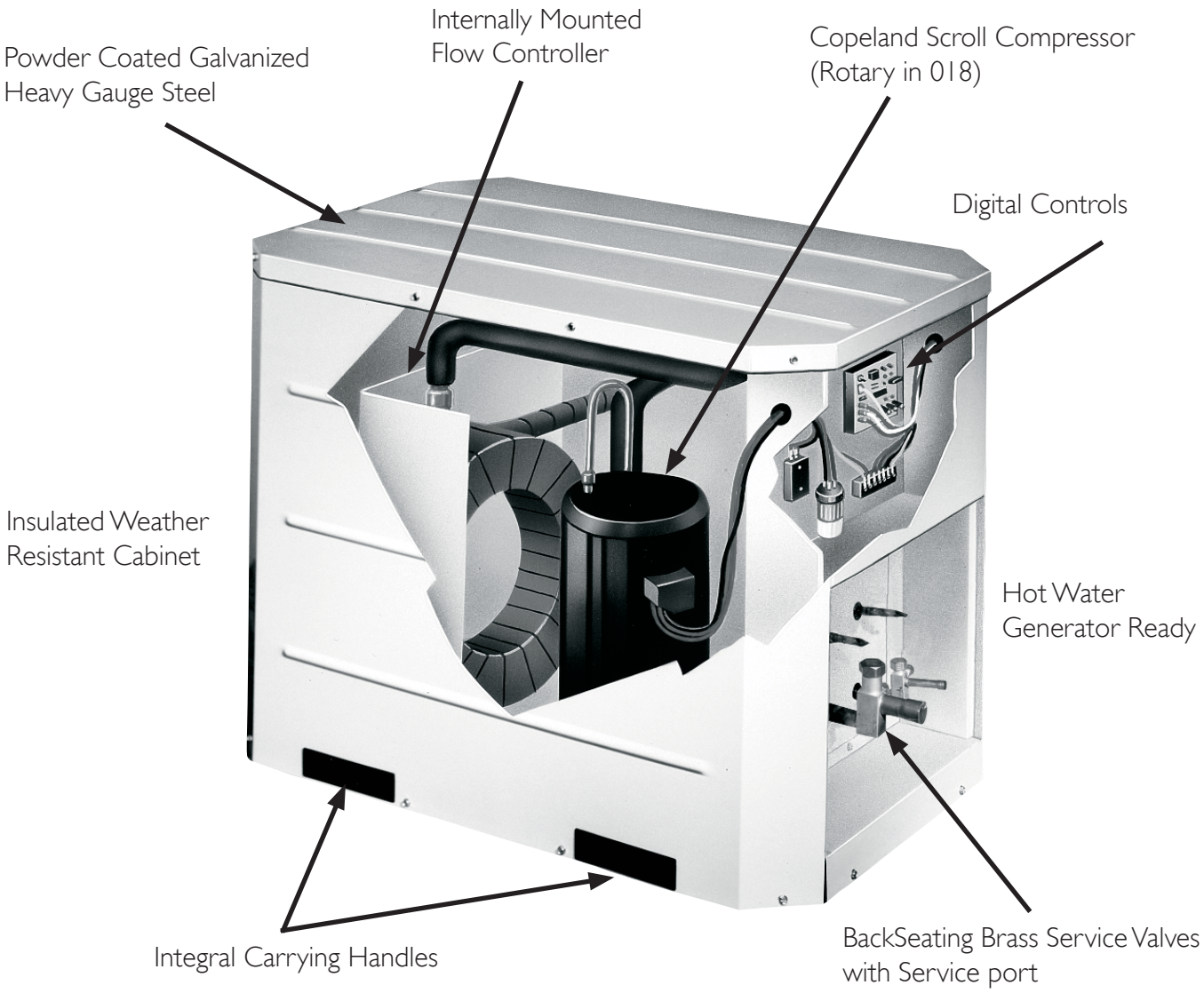
Factory Quality

- All units are built on our Integrated Process Control Assembly System (IPCS). The IPCS is a unique state of the art manufacturing system that is designed to assure quality of the highest standards of any manufacturer in the water-source industry. Our IPCS system:
  - Verifies that the correct components are being assembled.
  - Automatically performs special leak tests on all joints.
  - Conducts pressure tests.
  - Performs highly detailed run test unparalleled in the HVAC industry.
  - Automatically disables packaging for a "failed" unit.
  - Creates computer database for future service analysis and diagnostics from run test results.
- Heavy gauge galvanized steel cabinets are epoxy powder coated for durable and long-lasting finish.
- 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 to insure annual leak rate of less than 1/4 ounce.
- 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: double isolation mounted compressors, compressor springs, insulated compressor compartment, and interior cabinet insulation using 1/2" coated glass fiber.
- Safety features include: high pressure and loss of charge to protect the compressor; condensate overflow protection; low water temperature limit sensors to safeguard the coaxial heat exchanger and air coil; hot water high limit and low compressor discharge temperature switch provided to shut down the hot water generator when conditions dictate. Fault lockout enables emergency heat and prevents compressor operation until thermostat or circuit breaker has been reset.

Options & Accessories

- Optional remote-mounted hot water generator with internally mounted pump.
- Optional cupronickel coaxial heat exchanger.
- Wide thermostat selection.
- Closed loop flow controller.

Features and Benefits



Tranquility 27™ (TTS) Performance Data - English (IP) Units

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

Model	Load	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
		Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F	
		Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
026	Full	24,700	15.0	31,400	5.3	28,600	23.2	25,600	4.7	26,400	18.0	19,500	3.9
026	Part	18,300	16.3	24,300	5.4	22,000	29.4	19,200	4.6	20,800	24.5	16,600	4.1
038	Full	35,900	14.8	44,700	5.0	40,100	21.4	35,900	4.5	37,300	16.7	27,000	3.8
038	Part	24,400	16.5	30,300	5.6	28,000	27.1	24,400	4.6	27,100	23.7	21,400	4.1
049	Full	48,100	14.6	59,400	5.2	53,900	20.9	47,700	4.6	50,200	16.6	37,200	4.0
049	Part	33,300	16.0	42,000	5.4	38,700	26.8	33,800	4.7	37,000	22.8	29,900	4.2
064	Full	56,900	14.5	74,000	4.7	63,800	19.2	58,800	4.3	59,500	15.3	45,700	3.6
064	Part	40,800	15.8	52,700	5.2	46,000	25.7	42,300	4.4	44,800	22.2	37,500	4.0

Tranquility 27™ (TTS) Performance Data - Metric (SI) Units

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

Model	Load	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
		Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Cooling 25°C		Heating 0°C	
		Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP
026	Full	7,239	4.4	9,203	5.3	8,382	6.8	7,503	4.7	7,737	5.3	5,715	3.9
026	Part	5,363	4.8	7,122	5.4	6,448	8.6	5,627	4.6	6,096	7.2	4,865	4.1
038	Full	10,522	4.3	13,101	5.0	11,753	6.3	10,522	4.5	10,932	4.9	7,913	3.8
038	Part	7,151	4.8	8,880	5.6	8,206	7.9	7,151	4.6	7,943	6.9	6,272	4.1
049	Full	14,097	4.3	17,409	5.2	15,797	6.1	13,980	4.6	14,713	4.9	10,903	4.0
049	Part	9,760	4.7	12,309	5.4	11,342	7.9	9,906	4.7	10,844	6.7	8,763	4.2
064	Full	16,676	4.2	21,688	4.7	18,699	5.6	17,233	4.3	17,438	4.5	13,394	3.6
064	Part	11,958	4.6	15,445	5.2	13,482	7.5	12,397	4.4	13,130	6.5	10,991	4.0

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
All ratings based upon 208V operation.

Genesis Split (GSS) & Paradigm Split (PDW) Performance Data - English (IP) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F	
	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
018	16,600	14.4	20,300	4.8	18,500	22.1	15,500	4.0	17,800	16.2	12,800	3.5
024	23,500	14.5	29,300	4.7	25,700	20.6	22,800	3.9	25,200	16.6	18,600	3.5
030	28,000	14.7	34,000	4.7	30,200	20.8	26,400	3.9	29,800	16.4	21,500	3.5
036	32,800	14.5	39,200	4.4	34,900	20.1	31,900	3.9	34,700	15.9	25,900	3.3
042	39,800	14.1	48,300	4.7	44,100	19.7	37,800	3.9	42,000	15.5	31,700	3.6
048	44,500	14.2	52,500	4.8	47,500	19.3	42,000	3.9	47,400	15.9	35,800	3.6
060	55,100	13.0	72,700	4.6	57,800	17.2	57,100	3.7	57,600	14.2	47,200	3.5

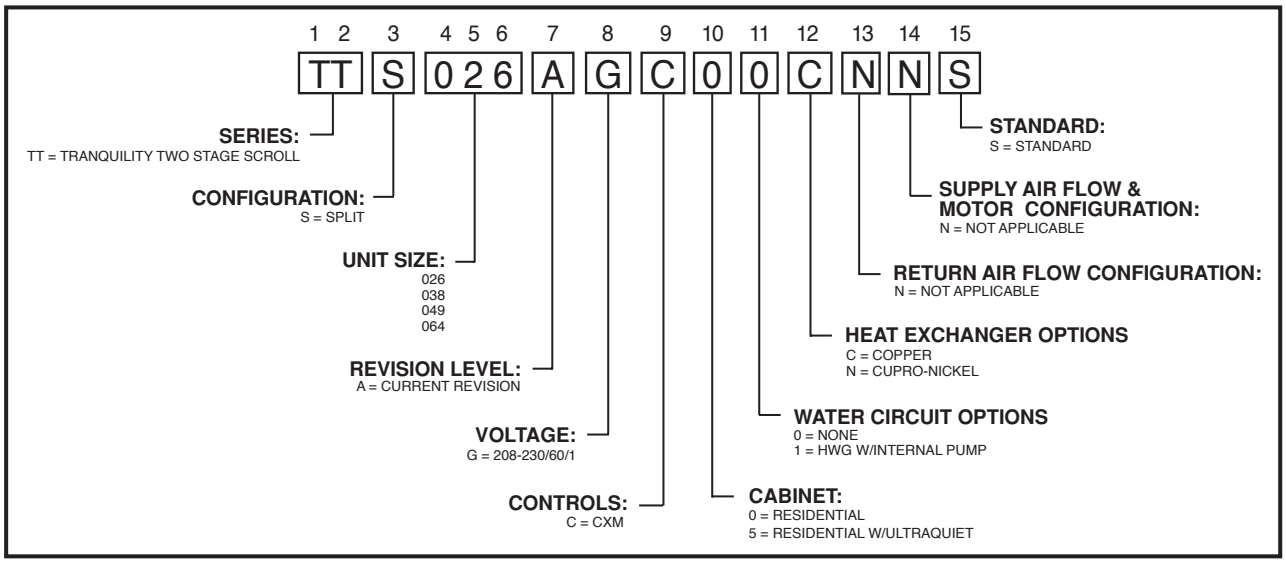
Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
All ratings based upon 208V operation.

Genesis Split (GSS) & Paradigm Split (PDW) Performance Data - Metric (SI) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Cooling 25°C		Heating 0°C	
	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP	Capacity Watts	EER W/W	Capacity Watts	COP
018	4,865	4.2	5,950	4.8	5,422	6.5	4,543	4.0	5,217	4.7	3,751	3.5
024	6,887	4.2	8,587	4.7	7,532	6.0	6,682	3.9	7.386	4.9	5,451	3.5
030	8,206	4.3	9,965	4.7	8,851	6.1	7,737	3.9	8.734	4.8	6,301	3.5
036	9,613	4.2	11,489	4.4	10,229	5.9	9,349	3.9	10,170	4.7	7,591	3.3
042	11,665	4.1	14,156	4.7	12,925	5.8	11,079	3.9	12,309	4.5	9,291	3.6
048	13,042	4.2	15,387	4.8	13,921	5.7	12,309	3.9	13,892	4.7	10,492	3.6
060	16,149	3.8	21,307	4.6	16,940	5.0	16,735	3.7	16,882	4.2	13,834	3.5

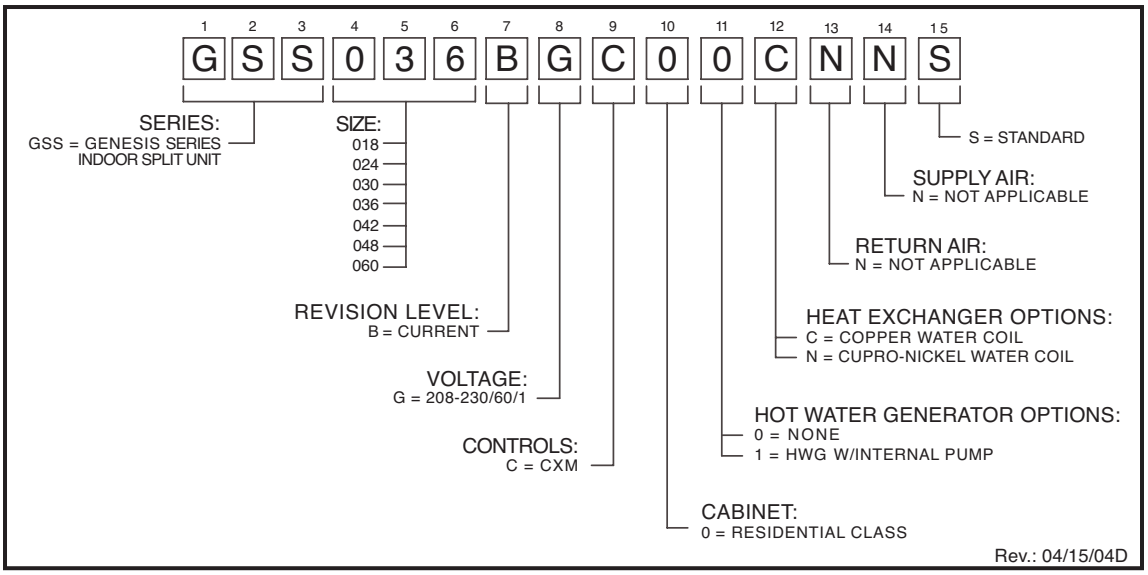
Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
All ratings based upon 208V operation.

Tranquility Nomenclature



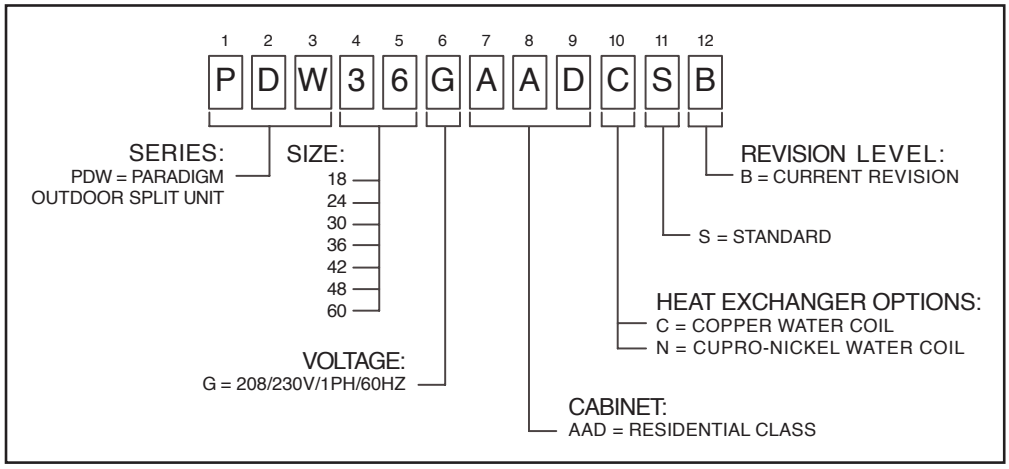
Rev.: 07/21/05D

Genesis Nomenclature



Rev.: 04/15/04D

Paradigm Nomenclature



Rev.: 04/15/04D

Heating

$$LWT = EWT - \frac{HE}{GPM \times 500}$$

$$LAT = EAT + \frac{HC}{CFM \times 1.08}$$

Cooling

$$LWT = EWT + \frac{HR}{GPM \times 500}$$

$$LAT\ (DB) = EAT\ (DB) - \frac{SC}{CFM \times 1.08}$$

$$LC = TC - SC$$

$$S/T = \frac{SC}{TC}$$

CFM	=	airflow, cubic feet/minute	HWC	=	Hot Water Generator (desuperheater) capacity, Mbtuh
EWT	=	entering water temperature, ˚F	WPD	=	Water coil pressure drop (psi & ft hd)
GPM	=	water flow in US gallons/minute	EER	=	Energy Efficiency Ratio = BTU output/Watt input
EAT	=	entering air temperature, Fahrenheit (dry bulb/wet bulb)	COP	=	Coefficient of Performance = BTU output/BTU input
HC	=	air heating capacity, Mbtuh	LWT	=	leaving water temperature, °F
TC	=	total cooling capacity, Mbtuh	LAT	=	leaving air temperature, °F
SC	=	sensible cooling capacity, Mbtuh	LC	=	latent cooling capacity, Mbtuh
KW	=	total power unit input, KiloWatts	S/T	=	sensible to total cooling ratio
HR	=	total heat of rejection, Mbtuh			
HE	=	total heat of extraction, Mbtuh			

Genesis (GSS) & Paradigm (PDS) Performance Correction Factors

Heating Corrections

Ent Air DB °F	Htg Cap	Power	Heat of Ext
60	1.019	0.896	1.054
65	1.010	0.948	1.028
68	1.004	0.980	1.011
70	**1.000**	**1.000**	**1.000**
75	0.997	1.059	0.979
80	0.993	1.118	0.957

Cooling Corrections

Ent Air WB °F	Total Clg Cap	Sens Clg Cap Multiplier - Entering DB °F							Power	Heat of Rej
		70	75	80	80.6	85	90	95		
60	0.881	0.943	1.067	1.192	1.240	*	*	*	0.983	0.899
65	0.940	0.797	0.952	1.106	1.125	1.261	*	*	0.991	0.949
66.2	0.976	0.693	0.868	1.043	1.063	1.217	*	*	0.997	0.980
67	**1.000**	0.624	0.812	**1.000**	1.023	1.188	1.343	1.352	**1.000**	**1.000**
70	1.012		0.697	0.820	0.835	0.944	1.067	1.257	1.002	1.010
75	1.024			0.637	0.658	0.817	0.983	1.159	1.005	1.019

Rev. 5/2/00M

* Sensible capacity equals total capacity (no latent capacity) at conditions shown as "*"

ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Clg- 80.6°F DB/66.2°F WB and Htg- 68°F DB/59°F WB

Airflow Correction Factors

TT Full Load Air Flow Corrections

Airflow	Cooling				Heating		
% of Rated	Total Cap	Sens Cap	Power	Heat of Rej	Htg Cap	Power	Heat of Ext
60	0.925	0.788	0.913	0.922	0.946	1.153	0.896
69	0.946	0.829	0.926	0.942	0.959	1.107	0.924
75	0.960	0.861	0.937	0.955	0.969	1.078	0.942
81	0.972	0.895	0.950	0.968	0.977	1.053	0.959
88	0.983	0.930	0.965	0.979	0.985	1.032	0.974
94	0.992	0.965	0.982	0.990	0.993	1.014	0.988
100	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106	1.007	1.033	1.020	1.009	1.006	0.989	1.011
113	1.012	1.064	1.042	1.018	1.012	0.982	1.019
119	1.016	1.092	1.066	1.025	1.018	0.979	1.027
125	1.018	1.116	1.091	1.032	1.022	0.977	1.033
130	1.019	1.132	1.112	1.037	1.026	0.975	1.038

TT Part Load Air Flow Corrections

Airflow	Cooling				Heating		
% of Rated	Total Cap	Sens Cap	Power	Heat of Rej	Htg Cap	Power	Heat of Ext
60	0.920	0.781	0.959	0.927	0.946	1.241	0.881
69	0.942	0.832	0.964	0.946	0.960	1.163	0.915
75	0.956	0.867	0.969	0.959	0.969	1.115	0.937
81	0.969	0.901	0.975	0.970	0.978	1.076	0.956
88	0.981	0.934	0.982	0.981	0.986	1.043	0.973
94	0.991	0.967	0.990	0.991	0.993	1.018	0.988
100	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106	1.007	1.033	1.011	1.008	1.006	0.990	1.010
113	1.013	1.065	1.023	1.015	1.012	0.986	1.017
119	1.018	1.098	1.036	1.021	1.017	0.983	1.024
125	1.021	1.131	1.051	1.026	1.021	0.981	1.030
130	1.023	1.159	1.063	1.030	1.024	0.979	1.034

Entering Air Correction Factors

TT Full Load Entering Air Corrections

Full Load Heating Corrections			
Ent Air DB °F	Htg Cap	Power	Heat of Ext
40	1.052	0.779	1.120
45	1.043	0.808	1.102
50	1.035	0.841	1.084
55	1.027	0.877	1.065
60	1.019	0.915	1.045
65	1.010	0.957	1.023
68	1.004	0.982	1.010
70	**1.000**	**1.000**	**1.000**
75	0.989	1.045	0.974
80	0.976	1.093	0.946

Full Load Cooling Corrections													
Ent Air WB °F	Total Clg Cap	Sens Clg Cap Multipliers- Entering DB °F										Power	Heat of Rej
		60	65	70	75	**80**	80.6	85	90	95	100		
45	0.832	1.346	1.461	1.603	*	*	*	*	*	*	*	0.946	0.853
50	0.850	1.004	1.174	1.357	*	*	*	*	*	*	*	0.953	0.870
55	0.880	0.694	0.902	1.115	1.331	*	*	*	*	*	*	0.964	0.896
60	0.922		0.646	0.875	1.103	1.329	1.356	*	*	*	*	0.977	0.932
65	0.975			0.639	0.869	1.096	1.123	1.320	*	*	*	0.993	0.979
66.2	0.990			0.582	0.812	1.039	1.066	1.262	1.482	*	*	0.997	0.991
67	**1.000**			0.545	0.774	**1.000**	1.027	1.223	1.444	*	*	**1.000**	**1.000**
70	1.040				0.630	0.853	0.880	1.075	1.297	1.517	*	1.011	1.035
75	1.117					0.601	0.627	0.821	1.046	1.275	1.510	1.033	1.101

* Sensible capacity equals total capacity (no latent capacity) at conditions shown as "*"

Rev.: 03/29/04

ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Clg- 80.6°F DB/66.2°F WB and Htg- 68°F DB/59°F WB

TT Part Load Entering Air Corrections

Part Load Heating Corrections			
Ent Air DB °F	Htg Cap	Power	Heat of Ext
40	1.084	0.732	1.161
45	1.073	0.764	1.140
50	1.060	0.802	1.117
55	1.046	0.846	1.090
60	1.031	0.893	1.061
65	1.016	0.945	1.031
68	1.006	0.978	1.013
70	**1.000**	**1.000**	**1.000**
75	0.984	1.058	0.968
80	0.968	1.117	0.936

Part Load Cooling Corrections													
Ent Air WB °F	Total Clg Cap	Sens Clg Cap Multipliers- Entering DB °F										Power	Heat of Rej
		60	65	70	75	**80**	80.6	85	90	95	100		
45	0.876	1.286	1.302	1.389	*	*	*	*	*	*	*	0.981	0.895
50	0.883	1.002	1.099	1.241	*	*	*	*	*	*	*	0.985	0.901
55	0.903	0.706	0.871	1.060	1.271	*	*	*	*	*	*	0.989	0.918
60	0.935		0.617	0.844	1.079	1.319	1.349	*	*	*	*	0.993	0.945
65	0.979			0.595	0.849	1.098	1.128	1.342	*	*	*	0.998	0.982
66.2	0.991			0.531	0.789	1.040	1.070	1.284	1.522	*	*	0.999	0.993
67	**1.000**			0.486	0.747	**1.000**	1.030	1.245	1.481	*	*	**1.000**	**1.000**
70	1.035				0.583	0.842	0.873	1.090	1.327	1.552	*	1.003	1.030
75	1.105					0.552	0.584	0.811	1.057	1.290	1.510	1.008	1.088

* Sensible capacity equals total capacity (no latent capacity) at conditions shown as "*"

Rev.: 03/29/04

ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Clg- 80.6°F DB/66.2°F WB and Htg- 68°F DB/59°F WB

530 CFM Nominal (Rated) Airflow Cooling, 530 CFM Nominal (Rated) Airflow Heating — Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	7.00	4.5	10.4	Operation not recommended							10.9	1.17	7.2	92.4	2.73	1.9
	7.00	4.5	10.4								11.1	1.12	7.4	89.4	2.90	1.7
30	3.50	1.2	2.8	450	22.1	11.7	0.62	24.1	35.6	-	13.2	1.23	9.1	97.2	3.15	2.0
	3.50	1.2	2.8	530	22.5	12.5	0.63	24.6	35.7	-	13.4	1.18	9.4	93.4	3.33	1.7
	5.75	2.9	6.7	450	22.3	11.7	0.61	24.3	36.6	-	13.8	1.23	9.7	98.4	3.29	2.0
	5.75	2.9	6.7	530	22.7	12.5	0.62	24.8	36.6	-	14.0	1.18	10.0	94.5	3.48	1.7
	7.00	4.1	9.5	450	22.4	11.7	0.60	24.4	37.3	-	14.0	1.23	9.9	98.8	3.34	1.9
	7.00	4.1	9.5	530	22.8	12.5	0.61	24.9	37.4	-	14.2	1.18	10.2	94.8	3.53	1.7
40	3.50	1.1	2.5	450	22.6	12.6	0.70	24.9	32.3	-	16.0	1.32	11.6	102.9	3.55	2.0
	3.50	1.1	2.5	530	23.0	13.5	0.71	25.4	32.4	-	16.2	1.27	11.9	98.3	3.74	1.8
	5.75	2.6	6.0	450	22.8	12.6	0.65	24.9	35.1	-	16.7	1.32	12.3	104.4	3.71	2.0
	5.75	2.6	6.0	530	23.2	13.5	0.66	25.4	35.2	-	16.9	1.27	12.6	99.5	3.90	1.7
	7.00	3.6	8.3	450	22.9	12.6	0.65	25.0	35.2	-	16.9	1.32	12.5	104.8	3.75	2.0
	7.00	3.6	8.3	530	23.3	13.5	0.66	25.5	35.3	-	17.1	1.27	12.8	99.9	3.95	1.7
50	3.50	1.0	2.3	450	22.1	12.9	0.79	24.8	28.0	0.7	18.6	1.38	14.1	108.3	3.95	2.1
	3.50	1.0	2.3	530	22.5	13.8	0.80	25.3	28.1	0.7	18.9	1.32	14.5	103.0	4.20	1.8
	5.75	2.4	5.5	450	22.4	12.9	0.74	24.8	30.3	0.6	19.4	1.38	14.8	109.9	4.12	2.1
	5.75	2.4	5.5	530	22.8	13.8	0.75	25.3	30.4	0.6	19.7	1.32	15.2	104.4	4.37	1.8
	7.00	3.4	7.9	450	22.4	12.9	0.72	24.8	31.1	0.6	19.6	1.38	15.0	110.3	4.16	2.0
	7.00	3.4	7.9	530	22.8	13.8	0.73	25.3	31.2	0.6	19.9	1.32	15.4	104.8	4.42	1.8
60	3.50	1.0	2.3	450	21.1	12.8	0.90	24.1	23.4	1.1	21.3	1.44	16.4	113.8	4.34	2.2
	3.50	1.0	2.3	530	21.5	13.7	0.92	24.6	23.4	1.1	21.6	1.38	16.9	107.7	4.59	1.9
	5.75	2.3	5.3	450	21.6	13.0	0.83	24.4	26.0	1.0	22.2	1.45	17.3	115.7	4.49	2.2
	5.75	2.3	5.3	530	22.0	13.9	0.85	24.9	25.9	1.0	22.5	1.39	17.8	109.3	4.74	1.9
	7.00	3.2	7.4	450	21.7	13.0	0.81	24.4	26.8	0.9	22.4	1.45	17.5	116.1	4.53	2.1
	7.00	3.2	7.4	530	22.1	13.9	0.83	24.9	26.6	0.9	22.7	1.39	18.0	109.7	4.79	1.9
70	3.50	0.9	2.1	450	19.6	12.4	1.03	23.2	19.0	1.4	24.0	1.48	19.0	119.4	4.75	2.3
	3.50	0.9	2.1	530	20.0	13.3	1.05	23.6	19.0	1.5	24.3	1.42	19.5	112.5	5.02	2.0
	5.75	2.1	4.9	450	20.3	12.6	0.95	23.5	21.4	1.3	24.8	1.49	19.9	121.0	4.88	2.3
	5.75	2.1	4.9	530	20.7	13.5	0.97	24.0	21.3	1.4	25.2	1.43	20.4	114.0	5.16	2.0
	7.00	3.0	6.9	450	20.5	12.7	0.93	23.6	22.0	1.2	25.1	1.49	20.0	121.6	4.94	2.2
	7.00	3.0	6.9	530	20.9	13.6	0.95	24.1	22.0	1.2	25.5	1.43	20.6	114.5	5.23	1.9
80	3.50	0.8	1.8	450	18.1	11.9	1.18	22.1	15.3	1.8	26.6	1.52	21.4	124.7	5.13	2.4
	3.50	0.8	1.8	530	18.5	12.7	1.20	22.5	15.4	1.8	27.0	1.46	22.0	117.2	5.42	2.1
	5.75	2.0	4.6	450	18.8	12.1	1.10	22.6	17.1	1.6	27.7	1.53	22.4	127.0	5.31	2.4
	5.75	2.0	4.6	530	19.2	13.0	1.12	23.0	17.1	1.7	28.1	1.47	23.0	119.1	5.60	2.1
	7.00	2.8	6.5	450	19.0	12.2	1.08	22.7	17.6	1.5	28.0	1.54	22.7	127.6	5.33	2.4
	7.00	2.8	6.5	530	19.4	13.1	1.10	23.1	17.6	1.5	28.4	1.48	23.3	119.6	5.62	2.1
85	3.50	0.8	1.8	450	17.4	11.6	1.26	21.7	13.8	2.0	28.0	1.55	22.7	127.6	5.29	2.5
	3.50	0.8	1.8	530	17.7	12.4	1.28	22.1	13.8	2.0	28.4	1.49	23.3	119.6	5.59	2.2
	5.75	1.9	4.4	450	18.1	11.9	1.18	22.1	15.3	1.8	29.1	1.56	23.7	129.9	5.47	2.5
	5.75	1.9	4.4	530	18.4	12.7	1.20	22.5	15.3	1.9	29.5	1.50	24.4	121.5	5.76	2.2
	7.00	2.7	6.2	450	18.2	12.0	1.15	22.2	15.8	1.7	29.4	1.56	24.0	130.5	5.52	2.5
	7.00	2.7	6.2	530	18.6	12.8	1.17	22.6	15.9	1.7	29.8	1.50	24.7	122.1	5.82	2.2
90	3.50	0.8	1.8	450	16.7	11.4	1.34	21.3	12.5	2.4	29.4	1.57	23.9	130.5	5.49	2.6
	3.50	0.8	1.8	530	17.0	12.2	1.36	21.7	12.5	2.5	29.8	1.51	24.6	122.1	5.78	2.2
	5.75	1.9	4.4	450	17.2	11.6	1.26	21.5	13.7	1.9	30.6	1.60	25.1	133.0	5.61	2.6
	5.75	1.9	4.4	530	17.5	12.4	1.28	21.9	13.7	2.0	31.0	1.53	25.8	124.2	5.94	2.2
	7.00	2.7	6.2	450	17.4	11.7	1.23	21.6	14.1	1.8	30.9	1.60	25.4	133.6	5.66	2.5
	7.00	2.7	6.2	530	17.7	12.5	1.25	22.0	14.2	1.8	31.3	1.53	26.1	124.7	6.00	2.2
100	3.50	0.8	1.8	450	15.1	10.8	1.50	20.3	10.1	2.4	Operation not recommended					
	3.50	0.8	1.8	530	15.4	11.6	1.53	20.7	10.1	2.5						
	5.75	1.8	4.2	450	15.6	11.0	1.43	20.5	10.9	2.2						
	5.75	1.8	4.2	530	15.9	11.8	1.46	20.9	10.9	2.3						
	7.00	2.6	6.0	450	15.8	11.0	1.40	20.6	11.3	2.0						
	7.00	2.6	6.0	530	16.1	11.8	1.43	21.0	11.3	2.0						
110	3.50	0.7	1.6	450	13.9	10.7	1.70	19.8	8.2	2.7						
	3.50	0.7	1.6	530	14.2	11.4	1.73	20.2	8.2	2.8						
	5.75	1.7	3.9	450	14.2	10.6	1.63	19.8	8.7	2.5						
	5.75	1.7	3.9	530	14.5	11.3	1.66	20.2	8.7	2.5						
	7.00	2.5	5.8	450	14.4	10.7	1.60	19.9	9.0	2.2						
	7.00	2.5	5.8	530	14.7	11.4	1.63	20.3	9.0	2.3						
120	3.50	0.7	1.6	450	12.9	10.6	1.95	19.6	6.6	3.0						
	3.50	0.7	1.6	530	13.2	11.3	1.99	20.0	6.6	3.0						
	5.75	1.7	3.9	450	13.2	10.5	1.85	19.5	7.1	2.7						
	5.75	1.7	3.9	530	13.5	11.2	1.88	19.9	7.2	2.7						
	7.00	2.4	5.5	450	13.2	10.5	1.82	19.5	7.3	2.4						
	7.00	2.4	5.5	530	13.5	11.2	1.85	19.9	7.3	2.5						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

850 CFM Nominal (Rated) Airflow Cooling, 850 CFM Nominal (Rated) Airflow Heating — Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	8.00	5.6	12.9	Operation not recommended							14.9	1.54	9.8	88.4	2.84	2.4
	8.00	5.6	12.9								15.1	1.49	10.1	85.9	2.97	2.1
30	4.00	1.5	3.5	750	29.4	18.4	1.09	32.6	27.0	-	17.6	1.60	12.4	91.7	3.22	2.4
	4.00	1.5	3.5	880	29.9	19.8	1.15	33.8	26.0	-	17.9	1.55	12.7	88.8	3.38	2.1
	6.00	3.1	7.2	750	29.6	18.4	1.04	32.6	28.5	-	18.5	1.61	13.2	92.8	3.37	2.4
	6.00	3.1	7.2	880	30.1	19.8	1.10	33.8	27.4	-	18.8	1.56	13.5	89.8	3.53	2.1
	8.00	5.1	11.8	750	29.8	18.5	1.01	32.7	29.5	-	18.9	1.62	13.5	93.3	3.42	2.4
	8.00	5.1	11.8	880	30.3	19.9	1.07	33.9	28.3	-	19.2	1.57	13.9	90.2	3.58	2.1
40	4.00	1.4	3.2	750	29.2	19.0	1.18	32.7	24.7	-	21.1	1.67	15.5	96.0	3.70	2.5
	4.00	1.4	3.2	880	29.7	20.4	1.25	33.9	23.8	-	21.4	1.62	15.9	92.5	3.87	2.2
	6.00	2.8	6.5	750	29.4	19.0	1.13	32.8	26.0	-	22.1	1.69	16.4	97.3	3.83	2.5
	6.00	2.8	6.5	880	29.9	20.4	1.19	34.0	25.1	-	22.4	1.64	16.8	93.6	4.00	2.2
	8.00	4.6	10.6	750	29.5	19.0	1.10	32.8	26.8	-	22.6	1.71	16.9	97.9	3.87	2.4
	8.00	4.6	10.6	880	30.0	20.4	1.16	34.0	25.9	-	22.9	1.66	17.3	94.1	4.04	2.1
50	4.00	1.3	3.0	750	28.4	19.2	1.30	32.3	21.8	1.1	24.2	1.74	18.3	99.9	4.08	2.6
	4.00	1.3	3.0	880	28.9	20.6	1.37	33.5	21.1	1.1	24.6	1.69	18.8	95.9	4.27	2.3
	6.00	2.6	6.0	750	28.9	19.2	1.23	32.6	23.5	1.0	25.2	1.78	19.3	101.1	4.15	2.6
	6.00	2.6	6.0	880	29.4	20.7	1.30	33.8	22.6	1.0	25.6	1.72	19.8	96.9	4.36	2.3
	8.00	4.3	9.9	750	29.1	19.2	1.19	32.7	24.5	0.9	25.8	1.80	19.7	101.9	4.20	2.6
	8.00	4.3	9.9	880	29.6	20.7	1.26	33.9	23.5	0.9	26.2	1.74	20.2	97.6	4.41	2.2
60	4.00	1.2	2.8	750	27.2	18.9	1.42	31.7	19.2	1.5	27.1	1.83	20.9	103.5	4.34	2.8
	4.00	1.2	2.8	880	27.7	20.3	1.50	32.9	18.5	1.6	27.5	1.77	21.5	98.9	4.55	2.5
	6.00	2.5	5.8	750	27.9	19.2	1.34	32.1	20.8	1.3	28.1	1.86	21.8	104.7	4.43	2.8
	6.00	2.5	5.8	880	28.4	20.6	1.42	33.3	20.0	1.4	28.5	1.80	22.4	100.0	4.64	2.4
	8.00	4.0	9.2	750	28.2	19.2	1.32	32.2	21.4	1.1	28.7	1.87	22.3	105.4	4.50	2.7
	8.00	4.0	9.2	880	28.7	20.7	1.39	33.4	20.6	1.2	29.1	1.81	22.9	100.6	4.71	2.4
70	4.00	1.1	2.5	750	25.8	18.4	1.56	30.9	16.5	2.0	29.8	1.90	23.3	106.8	4.60	3.1
	4.00	1.1	2.5	880	26.3	19.8	1.65	32.0	15.9	2.1	30.2	1.84	23.9	101.8	4.81	2.7
	6.00	2.3	5.3	750	26.6	18.8	1.49	31.4	17.9	1.8	30.7	1.93	24.2	107.9	4.66	3.0
	6.00	2.3	5.3	880	27.1	20.2	1.57	32.5	17.3	1.8	31.2	1.87	24.8	102.8	4.89	2.6
	8.00	3.8	8.8	750	27.0	19.0	1.44	31.6	18.8	1.5	31.3	1.95	24.6	108.6	4.70	3.0
	8.00	3.8	8.8	880	27.5	20.4	1.52	32.7	18.1	1.5	31.8	1.89	25.3	103.5	4.93	2.6
80	4.00	1.0	2.3	750	24.4	17.9	1.72	29.9	14.2	2.6	32.1	1.97	25.4	109.6	4.78	3.4
	4.00	1.0	2.3	880	24.8	19.2	1.82	31.0	13.6	2.6	32.6	1.91	26.1	104.3	5.00	2.9
	6.00	2.2	5.1	750	25.2	18.2	1.64	30.4	15.4	2.2	33.3	2.01	26.4	111.1	4.86	3.3
	6.00	2.2	5.1	880	25.6	19.6	1.73	31.5	14.8	2.3	33.8	1.95	27.1	105.6	5.08	2.9
	8.00	3.5	8.1	750	25.5	18.4	1.59	30.6	16.0	1.9	33.8	2.03	26.9	111.7	4.88	3.3
	8.00	3.5	8.1	880	26.0	19.8	1.68	31.7	15.5	1.9	34.3	1.97	27.6	106.1	5.10	2.8
85	4.00	1.0	2.3	750	23.5	17.5	1.82	29.4	12.9	2.9	33.3	2.01	26.5	111.1	4.86	3.6
	4.00	1.0	2.3	880	23.9	18.8	1.92	30.5	12.4	3.0	33.8	1.95	27.2	105.6	5.08	3.1
	6.00	2.1	4.9	750	24.4	17.9	1.72	29.9	14.2	2.5	34.5	2.04	27.5	112.6	4.96	3.5
	6.00	2.1	4.9	880	24.8	19.2	1.82	31.0	13.6	2.6	35.0	1.98	28.2	106.8	5.18	3.1
	8.00	3.4	7.9	750	24.8	18.0	1.68	30.1	14.8	2.1	35.1	2.06	28.0	113.3	4.99	3.5
	8.00	3.4	7.9	880	25.2	19.4	1.77	31.2	14.2	2.1	35.6	2.00	28.7	107.5	5.22	3.0
90	4.00	1.0	2.3	750	22.7	17.1	1.90	29.0	11.9	3.2	34.5	2.04	27.6	112.6	4.96	3.7
	4.00	1.0	2.3	880	23.1	18.4	2.01	30.0	11.5	3.3	35.0	1.98	28.3	106.8	5.18	3.3
	6.00	2.1	4.9	750	23.6	17.6	1.81	29.4	13.0	2.8	35.7	2.08	28.5	114.1	5.03	3.7
	6.00	2.1	4.9	880	24.0	18.9	1.91	30.5	12.6	2.8	36.2	2.02	29.3	108.1	5.25	3.2
	8.00	3.4	7.9	750	24.0	17.8	1.76	29.6	13.6	2.3	36.3	2.11	29.0	114.8	5.04	3.6
	8.00	3.4	7.9	880	24.4	19.1	1.86	30.7	13.1	2.3	36.8	2.04	29.8	108.7	5.29	3.1
100	4.00	1.0	2.3	750	21.1	16.5	2.11	28.1	10.0	3.9	Operation not recommended					
	4.00	1.0	2.3	880	21.5	17.7	2.23	29.1	9.6	4.0						
	6.00	2.0	4.6	750	21.9	16.8	2.00	28.5	11.0	3.4						
	6.00	2.0	4.6	880	22.3	18.1	2.11	29.5	10.6	3.4						
	8.00	3.2	7.4	750	22.3	17.0	1.95	28.7	11.4	2.8						
	8.00	3.2	7.4	880	22.7	18.3	2.06	29.7	11.0	2.8						
110	4.00	0.9	2.1	750	19.7	15.9	2.34	27.4	8.4	4.7						
	4.00	0.9	2.1	880	20.0	17.1	2.47	28.4	8.1	4.8						
	6.00	1.9	4.4	750	20.3	16.2	2.21	27.7	9.2	4.0						
	6.00	1.9	4.4	880	20.7	17.4	2.34	28.7	8.8	4.1						
	8.00	3.1	7.2	750	20.6	16.4	2.16	27.8	9.5	3.3						
	8.00	3.1	7.2	880	21.0	17.6	2.28	28.8	9.2	3.4						
120	4.00	0.9	2.1	750	18.3	15.5	2.59	27.0	7.1	5.6						
	4.00	0.9	2.1	880	18.6	16.7	2.74	28.0	6.8	5.7						
	6.00	1.8	4.2	750	18.9	15.7	2.46	27.1	7.7	4.7						
	6.00	1.8	4.2	880	19.2	16.9	2.60	28.1	7.4	4.8						
	8.00	3.0	6.9	750	19.2	15.8	2.40	27.2	8.0	3.9						
	8.00	3.0	6.9	880	19.5	17.0	2.54	28.2	7.7	4.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

700 CFM Nominal (Rated) Airflow Cooling, 700 CFM Nominal (Rated) Airflow Heating

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	8.00	4.7	10.9	Operation not recommended							16.5	1.64	11.1	95.5	2.95	2.4
	8.00	4.7	10.9								16.7	1.57	11.4	92.1	3.12	2.1
30	4.00	1.2	2.8	600	27.5	17.0	0.90	30.5	30.6	-	18.1	1.66	12.8	97.9	3.20	2.4
	4.00	1.2	2.8	700	28.0	18.2	0.92	31.1	30.4	-	18.4	1.59	13.1	94.3	3.39	2.1
	6.00	2.6	6.0	600	27.8	17.0	0.85	30.6	32.7	-	18.8	1.66	13.3	99.0	3.32	2.4
	6.00	2.6	6.0	700	28.3	18.2	0.87	31.2	32.5	-	19.1	1.59	13.7	95.3	3.52	2.1
	8.00	4.5	10.4	600	28.0	17.1	0.83	30.7	33.7	-	19.1	1.67	13.7	99.5	3.35	2.4
	8.00	4.5	10.4	700	28.5	18.3	0.85	31.3	33.5	-	19.4	1.60	14.1	95.7	3.55	2.1
40	4.00	1.1	2.5	600	28.2	18.4	1.01	31.6	27.9	-	20.7	1.69	15.2	101.9	3.59	2.5
	4.00	1.1	2.5	700	28.7	19.7	1.03	32.2	27.9	-	21.0	1.62	15.6	97.8	3.80	2.2
	6.00	2.6	6.0	600	28.4	18.4	0.93	31.6	30.5	-	21.5	1.69	16.0	103.2	3.73	2.5
	6.00	2.6	6.0	700	28.9	19.7	0.95	32.2	30.4	-	21.8	1.62	16.4	98.8	3.94	2.1
	8.00	4.4	10.2	600	28.5	18.4	0.90	31.6	31.7	-	22.0	1.69	16.4	104.0	3.82	2.4
	8.00	4.4	10.2	700	29.1	19.7	0.92	32.2	31.6	-	22.3	1.62	16.8	99.5	4.03	2.1
50	4.00	1.0	2.3	600	28.0	19.0	1.14	31.8	24.6	0.8	23.4	1.72	17.7	106.1	3.99	2.6
	4.00	1.0	2.3	700	28.5	20.3	1.16	32.4	24.6	0.8	23.7	1.65	18.2	101.3	4.21	2.2
	6.00	2.5	5.8	600	28.3	19.1	1.05	31.8	27.0	0.7	24.3	1.72	18.6	107.5	4.14	2.6
	6.00	2.5	5.8	700	28.8	20.4	1.07	32.4	26.9	0.8	24.7	1.65	19.1	102.7	4.39	2.2
	8.00	4.2	9.7	600	28.4	19.1	1.01	31.9	28.1	0.7	24.9	1.73	19.1	108.4	4.22	2.5
	8.00	4.2	9.7	700	29.0	20.4	1.03	32.5	28.2	0.7	25.3	1.66	19.6	103.5	4.47	2.2
60	4.00	0.9	2.1	600	26.9	19.1	1.29	31.3	20.9	1.3	26.6	1.75	20.7	111.0	4.45	2.7
	4.00	0.9	2.1	700	27.4	20.4	1.31	31.9	20.9	1.3	27.0	1.68	21.3	105.7	4.71	2.3
	6.00	2.4	5.5	600	27.6	19.2	1.19	31.6	23.2	1.2	27.8	1.76	21.8	112.9	4.63	2.7
	6.00	2.4	5.5	700	28.1	20.5	1.21	32.2	23.2	1.2	28.2	1.69	22.4	107.3	4.89	2.3
	8.00	4.1	9.5	600	27.9	19.2	1.14	31.7	24.5	1.1	28.4	1.76	22.4	113.8	4.73	2.6
	8.00	4.1	9.5	700	28.4	20.5	1.16	32.3	24.5	1.1	28.8	1.69	23.0	108.1	4.99	2.3
70	4.00	0.8	1.8	600	25.5	18.5	1.45	30.5	17.6	1.8	29.9	1.78	23.7	116.1	4.92	2.8
	4.00	0.8	1.8	700	26.0	19.8	1.48	31.1	17.6	1.8	30.3	1.71	24.4	110.1	5.19	2.5
	6.00	2.3	5.3	600	26.3	18.8	1.35	30.9	19.5	1.7	31.2	1.79	25.1	118.1	5.11	2.8
	6.00	2.3	5.3	700	26.8	20.1	1.37	31.5	19.6	1.7	31.7	1.72	25.8	111.9	5.40	2.4
	8.00	4.0	9.2	600	26.7	19.0	1.30	31.1	20.5	1.5	31.9	1.80	25.8	119.2	5.19	2.8
	8.00	4.0	9.2	700	27.2	20.3	1.32	31.7	20.6	1.5	32.4	1.73	26.5	112.9	5.49	2.4
80	4.00	0.7	1.6	600	23.9	17.8	1.64	29.5	14.6	2.3	33.2	1.83	27.1	121.2	5.32	3.0
	4.00	0.7	1.6	700	24.4	19.0	1.67	30.1	14.6	2.3	33.7	1.75	27.8	114.6	5.64	2.6
	6.00	2.3	5.3	600	24.8	18.2	1.52	30.0	16.3	2.1	34.9	1.84	28.6	123.9	5.56	3.0
	6.00	2.3	5.3	700	25.3	19.5	1.55	30.6	16.3	2.1	35.4	1.76	29.4	116.8	5.89	2.6
	8.00	3.9	9.0	600	25.2	18.4	1.46	30.2	17.3	1.9	35.8	1.84	29.5	125.2	5.70	2.9
	8.00	3.9	9.0	700	25.7	19.7	1.49	30.8	17.2	1.9	36.3	1.76	30.3	118.0	6.04	2.6
85	4.00	0.7	1.6	600	23.2	17.5	1.74	29.0	13.3	2.5	35.0	1.84	28.7	124.0	5.57	3.2
	4.00	0.7	1.6	700	23.6	18.7	1.77	29.6	13.3	2.6	35.5	1.76	29.5	117.0	5.91	2.7
	6.00	2.2	5.1	600	23.9	17.8	1.62	29.5	14.8	2.3	36.8	1.86	30.4	126.8	5.80	3.2
	6.00	2.2	5.1	700	24.4	19.1	1.65	30.1	14.8	2.3	37.3	1.78	31.2	119.3	6.14	2.7
	8.00	3.8	8.8	600	24.4	18.0	1.56	29.7	15.6	2.1	37.8	1.86	31.3	128.3	5.96	3.0
	8.00	3.8	8.8	700	24.9	19.3	1.59	30.3	15.7	2.1	38.3	1.78	32.2	120.7	6.31	2.65
90	4.00	0.7	1.6	600	22.4	17.1	1.84	28.6	12.2	2.7	36.9	1.86	30.5	126.9	5.81	3.2
	4.00	0.7	1.6	700	22.8	18.3	1.87	29.1	12.2	2.8	37.4	1.78	31.3	119.5	6.16	2.8
	6.00	2.1	4.9	600	23.2	17.5	1.71	29.0	13.6	2.5	38.7	1.88	32.2	129.7	6.03	3.2
	6.00	2.1	4.9	700	23.6	18.7	1.74	29.6	13.6	2.5	39.3	1.80	33.1	122.0	6.40	2.8
	8.00	3.7	8.5	600	23.5	17.7	1.65	29.2	14.2	2.2	39.8	1.88	33.3	131.4	6.20	3.1
	8.00	3.7	8.5	700	24.0	18.9	1.68	29.8	14.3	2.3	40.4	1.80	34.2	123.4	6.58	2.7
100	4.00	0.6	1.4	600	20.9	16.6	2.05	27.9	10.2	3.1	Operation not recommended					
	4.00	0.6	1.4	700	21.3	17.8	2.09	28.4	10.2	3.2						
	6.00	2.1	4.9	600	21.6	16.8	1.92	28.2	11.3	2.8						
	6.00	2.1	4.9	700	22.0	18.0	1.96	28.7	11.2	2.9						
	8.00	3.6	8.3	600	22.0	17.0	1.86	28.4	11.8	2.5						
	8.00	3.6	8.3	700	22.4	18.2	1.89	28.9	11.9	2.6						
110	4.00	0.6	1.4	600	19.8	16.4	2.29	27.6	8.6	3.5						
	4.00	0.6	1.4	700	20.2	17.6	2.33	28.1	8.7	3.5						
	6.00	2.0	4.6	600	20.3	16.4	2.15	27.7	9.4	3.1						
	6.00	2.0	4.6	700	20.7	17.6	2.19	28.2	9.5	3.2						
	8.00	3.4	7.9	600	20.6	16.5	2.08	27.7	9.9	2.8						
	8.00	3.4	7.9	700	21.0	17.7	2.12	28.2	9.9	2.9						
120	4.00	0.5	1.2	600	19.0	16.2	2.51	27.7	7.6	3.8						
	4.00	0.5	1.2	700	19.4	17.3	2.56	28.2	7.6	3.9						
	6.00	1.9	4.4	600	19.4	16.4	2.39	27.7	8.1	3.4						
	6.00	1.9	4.4	700	19.8	17.6	2.43	28.2	8.1	3.5						
	8.00	3.3	7.6	600	19.6	16.5	2.35	27.7	8.3	3.1						
	8.00	3.3	7.6	700	20.0	17.7	2.39	28.2	8.4	3.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

1200 CFM Nominal (Rated) Airflow Cooling, 1200 CFM Nominal (Rated) Airflow Heating — Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	9.00	5.9	13.6	Operation not recommended							23.3	2.25	15.9	91.6	3.04	2.9
	9.00	5.9	13.6								23.6	2.18	16.3	88.2	3.17	2.5
30	4.50	1.7	3.9	1000	41.8	21.7	1.66	46.7	25.2	-	25.7	2.32	18.0	93.8	3.25	3.0
	4.50	1.7	3.9	1200	42.5	23.3	1.75	48.4	24.3	-	26.1	2.25	18.5	90.1	3.40	2.6
	6.75	3.3	7.6	1000	41.9	21.7	1.54	46.5	27.2	-	26.9	2.34	19.1	94.9	3.37	3.0
	6.75	3.3	7.6	1200	42.6	23.3	1.63	48.2	26.1	-	27.3	2.27	19.6	91.1	3.52	2.6
	9.00	5.7	13.2	1000	42.1	21.7	1.50	46.4	28.1	-	27.6	2.36	19.7	95.6	3.43	2.9
	9.00	5.7	13.2	1200	42.8	23.3	1.58	48.1	27.1	-	28.0	2.29	20.2	91.6	3.58	2.5
40	4.50	1.5	3.5	1000	41.0	23.0	1.81	46.5	22.7	-	29.9	2.44	21.7	97.7	3.59	3.1
	4.50	1.5	3.5	1200	41.7	24.7	1.91	48.2	21.8	-	30.3	2.36	22.3	93.4	3.76	2.7
	6.75	3.2	7.4	1000	41.6	23.1	1.69	46.7	24.6	-	31.2	2.47	23.0	98.9	3.70	3.0
	6.75	3.2	7.4	1200	42.3	24.8	1.79	48.4	23.6	-	31.7	2.39	23.6	94.5	3.89	2.6
	9.00	5.4	12.5	1000	41.8	23.1	1.64	46.7	25.5	-	32.0	2.49	23.8	99.6	3.77	3.0
	9.00	5.4	12.5	1200	42.5	24.8	1.73	48.4	24.6	-	32.5	2.41	24.4	95.1	3.95	2.6
50	4.50	1.3	3.0	1000	39.8	23.9	1.98	45.9	20.1	1.4	34.1	2.55	25.5	101.6	3.92	3.2
	4.50	1.3	3.0	1200	40.5	25.7	2.09	47.6	19.4	1.4	34.6	2.47	26.2	96.7	4.11	2.8
	6.75	3.1	7.2	1000	40.7	24.2	1.85	46.4	22.0	1.2	35.9	2.60	27.1	103.2	4.05	3.2
	6.75	3.1	7.2	1200	41.4	26.0	1.96	48.1	21.1	1.2	36.4	2.52	27.8	98.1	4.23	2.8
	9.00	5.2	12.0	1000	41.1	24.3	1.79	46.5	23.0	1.0	36.8	2.62	28.0	104.1	4.12	3.1
	9.00	5.2	12.0	1200	41.8	26.1	1.89	48.2	22.1	1.0	37.3	2.54	28.7	98.8	4.30	2.7
60	4.50	1.2	2.8	1000	38.3	24.6	2.16	45.1	17.7	1.9	38.6	2.69	29.5	105.7	4.21	3.5
	4.50	1.2	2.8	1200	39.0	26.5	2.28	46.7	17.1	1.9	39.2	2.61	30.3	100.2	4.40	3.0
	6.75	3.0	6.9	1000	39.4	25.1	2.03	45.7	19.4	1.6	40.7	2.75	31.4	107.7	4.34	3.4
	6.75	3.0	6.9	1200	40.1	27.0	2.14	47.4	18.7	1.7	41.3	2.66	32.2	101.9	4.55	3.0
	9.00	5.0	11.6	1000	39.9	25.3	1.96	46.0	20.4	1.4	41.8	2.79	32.3	108.7	4.39	3.4
	9.00	5.0	11.6	1200	40.6	27.2	2.07	47.7	19.6	1.4	42.4	2.70	33.2	102.7	4.60	2.9
70	4.50	1.1	2.5	1000	36.5	25.2	2.36	44.1	15.5	2.5	43.4	2.84	33.7	110.2	4.48	3.8
	4.50	1.1	2.5	1200	37.2	27.1	2.49	45.7	14.9	2.6	44.0	2.75	34.6	104.0	4.69	3.3
	6.75	2.9	6.7	1000	37.8	25.8	2.21	44.8	17.1	2.2	45.7	2.92	35.9	112.3	4.59	3.7
	6.75	2.9	6.7	1200	38.5	27.7	2.34	46.4	16.5	2.2	46.4	2.83	36.8	105.8	4.81	3.2
	9.00	4.8	11.1	1000	38.4	25.9	2.14	45.2	17.9	1.8	47.1	2.96	37.0	113.6	4.66	3.7
	9.00	4.8	11.1	1200	39.1	27.9	2.26	46.8	17.3	1.9	47.8	2.87	38.0	106.9	4.88	3.2
80	4.50	1.0	2.3	1000	34.7	25.5	2.58	43.0	13.4	3.3	48.4	3.01	38.1	114.8	4.71	4.2
	4.50	1.0	2.3	1200	35.3	27.4	2.73	44.6	12.9	3.3	49.1	2.92	39.1	107.9	4.93	3.6
	6.75	2.8	6.5	1000	36.0	26.1	2.42	43.7	14.9	2.8	51.1	3.11	40.6	117.3	4.82	4.1
	6.75	2.8	6.5	1200	36.6	28.1	2.56	45.3	14.3	2.8	51.9	3.01	41.7	110.0	5.05	3.6
	9.00	4.5	10.4	1000	36.6	26.4	2.35	44.1	15.6	2.3	52.7	3.16	42.0	118.8	4.89	4.0
	9.00	4.5	10.4	1200	37.3	28.4	2.48	45.7	15.0	2.4	53.5	3.06	43.1	111.3	5.12	3.5
85	4.50	1.0	2.3	1000	33.7	25.6	2.73	42.6	12.3	3.7	51.0	3.11	40.4	117.2	4.81	4.4
	4.50	1.0	2.3	1200	34.3	27.5	2.88	44.1	11.9	3.8	51.8	3.01	41.5	110.0	5.04	3.6
	6.75	2.8	6.5	1000	35.0	26.2	2.55	43.2	13.7	3.2	54.0	3.21	43.1	120.0	4.93	4.4
	6.75	2.8	6.5	1200	35.6	28.2	2.69	44.8	13.2	3.2	54.8	3.11	44.2	112.3	5.16	3.6
	9.00	4.5	10.4	1000	35.7	26.6	2.46	43.5	14.5	2.6	55.8	3.27	44.5	121.7	5.00	4.5
	9.00	4.5	10.4	1200	36.3	28.6	2.60	45.1	14.0	2.4	56.6	3.17	45.7	113.7	5.23	3.7
90	4.50	0.9	2.1	1000	32.7	25.7	2.86	42.1	11.4	4.1	53.6	3.20	42.8	119.6	4.91	4.6
	4.50	0.9	2.1	1200	33.3	27.6	3.02	43.6	11.0	4.2	54.4	3.10	43.9	112.0	5.14	4.0
	6.75	2.7	6.2	1000	34.0	26.4	2.67	42.7	12.7	3.5	57.0	3.32	45.6	122.8	5.03	4.6
	6.75	2.7	6.2	1200	34.6	28.4	2.82	44.2	12.3	3.6	57.8	3.22	46.8	114.6	5.26	4.0
	9.00	4.4	10.2	1000	34.7	26.7	2.58	43.0	13.4	2.9	58.7	3.38	47.2	124.4	5.09	4.5
	9.00	4.4	10.2	1200	35.3	28.7	2.73	44.6	12.9	3.0	59.6	3.28	48.4	116.0	5.33	3.9
100	4.50	0.8	1.8	1000	30.7	25.8	3.16	41.2	9.7	5.0	Operation not recommended					
	4.50	0.8	1.8	1200	31.2	27.7	3.34	42.7	9.3	5.1						
	6.75	2.6	6.0	1000	31.9	26.5	2.95	41.7	10.8	4.3						
	6.75	2.6	6.0	1200	32.5	28.5	3.12	43.2	10.4	4.3						
	9.00	4.2	9.7	1000	32.6	26.8	2.86	42.0	11.4	3.5						
	9.00	4.2	9.7	1200	33.2	28.8	3.02	43.5	11.0	3.6						
110	4.50	0.8	1.8	1000	28.8	25.9	3.52	40.5	8.2	6.0						
	4.50	0.8	1.8	1200	29.3	27.8	3.72	42.0	7.9	6.1						
	6.75	2.5	5.8	1000	30.0	26.5	3.28	40.9	9.1	5.1						
	6.75	2.5	5.8	1200	30.5	28.5	3.47	42.4	8.8	5.2						
	9.00	4.0	9.2	1000	30.6	26.9	3.17	41.1	9.7	4.2						
	9.00	4.0	9.2	1200	31.1	28.9	3.35	42.6	9.3	4.3						
120	4.50	0.7	1.6	1000	27.0	25.9	3.94	40.3	6.9	7.2						
	4.50	0.7	1.6	1200	27.5	27.9	4.16	41.8	6.6	7.3						
	6.75	2.5	5.8	1000	28.1	26.5	3.66	40.4	7.7	6.1						
	6.75	2.5	5.8	1200	28.6	28.5	3.87	41.9	7.4	6.2						
	9.00	3.8	8.8	1000	28.7	26.9	3.54	40.5	8.1	5.0						
	9.00	3.8	8.8	1200	29.2	28.9	3.74	42.0	7.8	5.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

1000 CFM Nominal (Rated) Airflow Cooling, 1000 CFM Nominal (Rated) Airflow Heating

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	11.00	4.0	9.2	Operation not recommended							22.3	2.16	15.3	94.3	3.03	3.3
	11.00	4.0	9.2								22.6	2.07	15.7	90.9	3.20	2.8
30	5.50	1.1	2.5	850	37.1	22.5	1.19	41.1	31.2	-	24.5	2.23	17.1	96.7	3.22	3.4
	5.50	1.1	2.5	1000	37.8	24.1	1.21	41.9	31.2	-	24.9	2.14	17.6	93.1	3.41	2.9
	8.25	2.3	5.3	850	37.3	22.5	1.12	41.1	33.3	-	25.3	2.24	18.0	97.6	3.31	3.3
	8.25	2.3	5.3	1000	38.0	24.1	1.14	41.9	33.3	-	25.7	2.15	18.5	93.8	3.50	2.9
	11.00	3.9	9.0	850	37.5	22.5	1.08	41.2	34.7	-	25.8	2.25	18.5	98.1	3.36	3.3
	11.00	3.9	9.0	1000	38.2	24.1	1.10	42.0	34.7	-	26.2	2.16	19.0	94.3	3.55	2.9
40	5.50	1.0	2.3	850	38.8	24.6	1.35	43.4	28.7	-	28.1	2.32	20.4	100.6	3.55	3.5
	5.50	1.0	2.3	1000	39.6	26.3	1.37	44.2	28.9	-	28.5	2.22	21.0	96.4	3.76	3.0
	8.25	2.2	5.1	850	39.1	24.7	1.26	43.5	31.0	-	29.4	2.33	21.6	102.0	3.70	3.4
	8.25	2.2	5.1	1000	39.9	26.4	1.28	44.3	31.2	-	29.8	2.23	22.2	97.6	3.92	3.0
	11.00	3.7	8.5	850	39.2	24.7	1.24	43.5	31.6	-	30.0	2.34	22.3	102.7	3.76	3.4
	11.00	3.7	8.5	1000	40.0	26.4	1.26	44.3	31.7	-	30.4	2.24	22.9	98.1	3.98	2.9
50	5.50	0.9	2.1	850	38.4	25.1	1.47	43.4	26.1	0.9	32.1	2.40	24.1	105.0	3.92	3.6
	5.50	0.9	2.1	1000	39.1	26.9	1.50	44.2	26.1	0.9	32.6	2.30	24.8	100.2	4.15	3.1
	8.25	2.1	4.9	850	38.7	25.2	1.39	43.5	27.8	0.8	33.6	2.41	25.6	106.6	4.09	3.5
	8.25	2.1	4.9	1000	39.5	27.0	1.42	44.3	27.8	0.9	34.1	2.31	26.3	101.6	4.33	3.1
	11.00	3.6	8.3	850	38.8	25.2	1.38	43.6	28.1	0.8	34.4	2.42	26.4	107.5	4.17	3.5
	11.00	3.6	8.3	1000	39.6	27.0	1.41	44.4	28.1	0.8	34.9	2.32	27.1	102.3	4.41	3.0
60	5.50	0.8	1.8	850	37.2	25.4	1.70	43.0	21.9	1.6	36.3	2.48	27.9	109.5	4.29	3.7
	5.50	0.8	1.8	1000	37.9	27.2	1.73	43.8	21.9	1.6	36.8	2.38	28.7	104.1	4.53	3.3
	8.25	2.0	4.6	850	37.9	25.5	1.59	43.3	23.8	1.4	38.0	2.49	29.7	111.4	4.47	3.7
	8.25	2.0	4.6	1000	38.6	27.3	1.62	44.1	23.8	1.5	38.6	2.39	30.5	105.7	4.73	3.2
	11.00	3.5	8.1	850	38.1	25.6	1.54	43.4	24.7	1.3	39.0	2.50	30.6	112.5	4.57	3.7
	11.00	3.5	8.1	1000	38.8	27.4	1.57	44.2	24.7	1.3	39.6	2.40	31.4	106.7	4.84	3.2
70	5.50	0.8	1.8	850	35.1	24.9	1.90	41.7	18.5	2.2	40.4	2.57	31.7	114.0	4.61	3.9
	5.50	0.8	1.8	1000	35.8	26.7	1.94	42.5	18.5	2.2	41.0	2.46	32.6	108.0	4.88	3.4
	8.25	2.0	4.6	850	36.1	25.2	1.79	42.3	20.2	2.0	42.4	2.59	33.7	116.2	4.80	3.9
	8.25	2.0	4.6	1000	36.8	27.0	1.82	43.1	20.2	2.0	43.0	2.48	34.6	109.8	5.08	3.4
	11.00	3.3	7.6	850	36.6	25.4	1.73	42.5	21.2	1.8	43.6	2.60	34.7	117.5	4.91	3.9
	11.00	3.3	7.6	1000	37.3	27.2	1.76	43.3	21.2	1.8	44.2	2.49	35.7	110.9	5.20	3.4
80	5.50	0.7	1.6	850	32.7	24.1	2.14	39.9	15.3	2.8	44.5	2.66	35.4	118.5	4.90	4.2
	5.50	0.7	1.6	1000	33.3	25.8	2.18	40.7	15.3	2.8	45.1	2.55	36.4	111.8	5.18	3.6
	8.25	1.9	4.4	850	33.8	24.6	2.01	40.7	16.8	2.5	46.6	2.69	37.5	120.8	5.08	4.1
	8.25	1.9	4.4	1000	34.5	26.3	2.05	41.5	16.8	2.6	47.3	2.58	38.5	113.8	5.37	3.6
	11.00	3.2	7.4	850	34.4	24.8	1.94	41.0	17.7	2.3	47.7	2.70	38.5	122.0	5.18	4.1
	11.00	3.2	7.4	1000	35.1	26.5	1.98	41.8	17.7	2.3	48.4	2.59	39.6	114.8	5.48	3.6
85	5.50	0.7	1.6	850	31.4	23.6	2.27	39.1	13.8	3.1	46.3	2.71	37.1	120.4	5.01	4.4
	5.50	0.7	1.6	1000	32.0	25.3	2.31	39.8	13.9	3.1	47.0	2.60	38.1	113.5	5.30	3.8
	8.25	1.9	4.4	850	32.6	24.1	2.13	39.8	15.3	2.8	48.5	2.74	39.1	122.8	5.19	4.3
	8.25	1.9	4.4	1000	33.2	25.8	2.17	40.6	15.3	2.9	49.2	2.63	40.2	115.6	5.48	3.8
	11.00	3.1	7.2	850	33.2	24.3	2.07	40.1	16.0	2.5	49.6	2.76	40.2	124.0	5.27	4.3
	11.00	3.1	7.2	1000	33.8	26.0	2.11	40.9	16.0	2.6	50.3	2.65	41.3	116.6	5.56	3.7
90	5.50	0.7	1.6	850	30.0	23.2	2.40	38.2	12.5	3.3	48.2	2.76	38.8	122.5	5.12	4.5
	5.50	0.7	1.6	1000	30.6	24.8	2.44	38.9	12.5	3.4	48.9	2.65	39.9	115.3	5.41	3.9
	8.25	1.8	4.2	850	31.2	23.6	2.26	39.0	13.8	3.0	50.4	2.81	40.8	124.9	5.26	4.4
	8.25	1.8	4.2	1000	31.8	25.3	2.30	39.7	13.8	3.1	51.1	2.69	41.9	117.3	5.57	3.9
	11.00	3.1	7.2	850	31.8	23.9	2.19	39.3	14.5	2.7	51.5	2.83	41.9	126.1	5.33	4.4
	11.00	3.1	7.2	1000	32.4	25.6	2.23	40.1	14.5	2.8	52.2	2.71	43.0	118.3	5.65	3.8
100	5.50	0.7	1.6	850	27.4	22.2	2.69	36.6	10.2	3.8	Operation not recommended					
	5.50	0.7	1.6	1000	27.9	23.8	2.74	37.3	10.2	3.9						
	8.25	1.8	4.2	850	28.5	22.7	2.53	37.2	11.3	3.5						
	8.25	1.8	4.2	1000	29.1	24.3	2.58	37.9	11.3	3.5						
	11.00	3.0	6.9	850	29.1	22.9	2.46	37.6	11.8	3.1						
	11.00	3.0	6.9	1000	29.7	24.5	2.51	38.3	11.8	3.2						
110	5.50	0.6	1.4	850	25.0	21.5	3.01	35.3	8.3	4.3						
	5.50	0.6	1.4	1000	25.5	23.0	3.07	36.0	8.3	4.3						
	8.25	1.7	3.9	850	26.0	21.9	2.86	35.7	9.1	3.9						
	8.25	1.7	3.9	1000	26.5	23.4	2.91	36.4	9.1	3.9						
	11.00	2.8	6.5	850	26.5	22.1	2.77	36.0	9.6	3.5						
	11.00	2.8	6.5	1000	27.0	23.6	2.82	36.7	9.6	3.5						
120	5.50	0.6	1.4	850	23.2	21.3	3.40	34.7	6.8	4.7						
	5.50	0.6	1.4	1000	23.6	22.8	3.46	35.4	6.8	4.8						
	8.25	1.7	3.9	850	23.8	21.3	3.21	34.8	7.4	4.2						
	8.25	1.7	3.9	1000	24.3	22.8	3.27	35.5	7.4	4.3						
	11.00	2.7	6.2	850	24.2	21.4	3.12	34.9	7.8	3.8						
	11.00	2.7	6.2	1000	24.7	22.9	3.18	35.6	7.8	3.9						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

1650 CFM Nominal (Rated) Airflow Cooling, 1650 CFM Nominal (Rated) Airflow Heating

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	12.00	4.8	11.1	Operation not recommended							31.8	2.89	22.2	91.0	3.22	3.8
	12.00	4.8	11.1								32.3	2.80	22.8	88.1	3.38	3.3
30	6.00	1.3	3.0	1400	55.8	35.9	2.23	62.5	25.0	-	34.7	3.00	24.7	92.9	3.39	4.0
	6.00	1.3	3.0	1650	56.8	38.6	2.36	64.8	24.1	-	35.2	2.91	25.4	89.8	3.55	3.5
	9.00	2.7	6.2	1400	56.2	36.0	2.11	62.5	26.6	-	36.3	3.04	26.1	94.0	3.50	3.9
	9.00	2.7	6.2	1650	57.2	38.7	2.23	64.8	25.7	-	36.8	2.95	26.8	90.7	3.66	3.4
	12.00	4.6	10.6	1400	56.6	36.0	2.03	62.6	27.9	-	37.2	3.07	26.9	94.6	3.55	3.9
	12.00	4.6	10.6	1650	57.6	38.7	2.15	64.9	26.8	-	37.7	2.97	27.6	91.2	3.72	3.3
40	6.00	1.1	2.5	1400	55.5	37.2	2.43	63.0	22.8	-	39.8	3.17	29.2	96.3	3.68	4.1
	6.00	1.1	2.5	1650	56.5	40.0	2.57	65.3	22.0	-	40.4	3.07	30.0	92.7	3.86	3.6
	9.00	2.6	6.0	1400	56.1	37.2	2.30	63.0	24.4	-	41.8	3.22	31.0	97.6	3.80	4.0
	9.00	2.6	6.0	1650	57.1	40.0	2.43	65.3	23.5	-	42.4	3.12	31.8	93.8	3.98	3.5
	12.00	4.4	10.2	1400	56.3	37.3	2.23	63.0	25.2	-	42.9	3.25	32.0	98.4	3.87	4.0
	12.00	4.4	10.2	1650	57.3	40.1	2.36	65.3	24.3	-	43.5	3.15	32.8	94.4	4.05	3.4
50	6.00	1.1	2.5	1400	54.2	37.8	2.63	62.4	20.6	1.9	45.1	3.33	33.9	99.8	3.97	4.3
	6.00	1.1	2.5	1650	55.2	40.6	2.78	64.7	19.9	2.0	45.8	3.23	34.8	95.7	4.16	3.7
	9.00	2.5	5.8	1400	55.3	37.9	2.49	63.0	22.2	1.7	47.5	3.40	36.0	101.4	4.09	4.2
	9.00	2.5	5.8	1650	56.3	40.8	2.63	65.3	21.4	1.7	48.2	3.29	37.0	97.0	4.29	3.7
	12.00	4.2	9.7	1400	55.7	37.9	2.42	63.1	23.0	1.4	48.9	3.44	37.3	102.3	4.17	4.2
	12.00	4.2	9.7	1650	56.7	40.8	2.56	65.4	22.1	1.4	49.6	3.33	38.3	97.8	4.37	3.6
60	6.00	1.0	2.3	1400	52.2	37.3	2.84	61.2	18.4	2.8	50.9	3.51	39.0	103.7	4.25	4.6
	6.00	1.0	2.3	1650	53.1	40.1	3.00	63.4	17.7	2.8	51.6	3.40	40.0	99.0	4.45	4.0
	9.00	2.4	5.5	1400	53.7	37.8	2.69	62.1	20.0	2.4	53.7	3.59	41.5	105.5	4.38	4.5
	9.00	2.4	5.5	1650	54.7	40.7	2.84	64.4	19.3	2.4	54.5	3.48	42.6	100.6	4.59	3.9
	12.00	4.0	9.2	1400	54.3	38.0	2.62	62.5	20.7	2.0	55.3	3.63	43.0	106.6	4.46	4.5
	12.00	4.0	9.2	1650	55.3	40.9	2.77	64.8	20.0	2.0	56.1	3.52	44.1	101.5	4.67	3.9
70	6.00	0.9	2.1	1400	49.7	36.5	3.08	59.4	16.1	3.8	56.7	3.70	44.1	107.5	4.49	5.0
	6.00	0.9	2.1	1650	50.6	39.3	3.25	61.6	15.6	3.8	57.5	3.59	45.3	102.3	4.69	4.4
	9.00	2.3	5.3	1400	51.5	37.3	2.91	60.7	17.7	3.2	60.0	3.80	47.1	109.7	4.63	5.0
	9.00	2.3	5.3	1650	52.4	40.1	3.08	62.9	17.0	3.3	60.9	3.68	48.3	104.2	4.85	4.3
	12.00	3.8	8.8	1400	52.4	37.7	2.83	61.2	18.5	2.7	61.8	3.86	48.7	110.9	4.69	4.9
	12.00	3.8	8.8	1650	53.3	40.5	2.99	63.4	17.8	2.7	62.7	3.74	50.0	105.2	4.91	4.2
80	6.00	0.9	2.1	1400	46.9	35.5	3.34	57.6	14.0	4.9	62.7	3.91	49.3	111.5	4.70	5.6
	6.00	0.9	2.1	1650	47.7	38.2	3.53	59.7	13.5	5.0	63.6	3.79	50.6	105.7	4.92	4.8
	9.00	2.3	5.3	1400	48.7	36.4	3.16	58.9	15.4	4.2	66.4	4.02	52.6	113.9	4.84	5.5
	9.00	2.3	5.3	1650	49.6	39.1	3.34	61.0	14.9	4.3	67.4	3.90	54.0	107.8	5.07	4.8
	12.00	3.6	8.3	1400	49.7	36.8	3.07	59.5	16.2	3.5	68.5	4.10	54.5	115.3	4.90	5.4
	12.00	3.6	8.3	1650	50.6	39.6	3.24	61.7	15.6	3.5	69.5	3.97	55.9	109.0	5.13	4.7
85	6.00	0.9	2.1	1400	45.3	34.8	3.49	56.6	13.0	5.6	65.6	4.02	51.9	113.4	4.78	5.9
	6.00	0.9	2.1	1650	46.1	37.4	3.69	58.7	12.5	6.3	66.6	3.90	53.3	107.4	5.00	5.1
	9.00	2.2	5.1	1400	47.3	35.6	3.30	57.9	14.3	4.8	69.6	4.16	55.4	116.0	4.90	5.8
	9.00	2.2	5.1	1650	48.1	38.3	3.49	60.0	13.8	4.9	70.6	4.03	56.9	109.6	5.13	5.1
	12.00	3.6	8.3	1400	48.2	36.1	3.21	58.6	15.0	3.9	71.7	4.23	57.3	117.4	4.97	5.4
	12.00	3.6	8.3	1650	49.1	38.8	3.39	60.7	14.5	4.0	72.8	4.10	58.8	110.9	5.20	5.0
90	6.00	0.9	2.1	1400	43.7	34.0	3.64	55.7	12.0	6.2	68.7	4.14	54.6	115.4	4.86	6.2
	6.00	0.9	2.1	1650	44.5	36.6	3.85	57.7	11.6	6.3	69.7	4.01	56.0	109.1	5.09	5.4
	9.00	2.2	5.1	1400	45.8	34.9	3.44	56.9	13.3	5.3	72.8	4.28	58.2	118.1	4.99	6.1
	9.00	2.2	5.1	1650	46.6	37.5	3.63	59.0	12.8	5.4	73.9	4.15	59.7	111.5	5.22	5.3
	12.00	3.5	8.1	1400	46.8	35.3	3.34	57.6	14.0	4.3	75.1	4.37	60.1	119.7	5.04	6.0
	12.00	3.5	8.1	1650	47.6	38.0	3.53	59.7	13.5	4.4	76.2	4.23	61.7	112.8	5.28	5.2
100	6.00	0.8	1.8	1400	40.7	32.8	3.99	53.8	10.2	7.6	Operation not recommended					
	6.00	0.8	1.8	1650	41.4	35.3	4.22	55.8	9.8	7.8						
	9.00	2.1	4.9	1400	42.6	33.6	3.77	54.9	11.3	6.5						
	9.00	2.1	4.9	1650	43.4	36.1	3.98	56.9	10.9	6.6						
	12.00	3.3	7.6	1400	43.6	33.9	3.66	55.6	11.9	5.3						
	12.00	3.3	7.6	1650	44.4	36.5	3.87	57.6	11.5	5.4						
110	6.00	0.8	1.8	1400	37.6	31.8	4.40	52.3	8.5	9.2						
	6.00	0.8	1.8	1650	38.3	34.2	4.65	54.2	8.2	9.4						
	9.00	2.0	4.6	1400	39.4	32.4	4.15	53.2	9.5	7.8						
	9.00	2.0	4.6	1650	40.1	34.8	4.38	55.1	9.2	7.9						
	12.00	3.2	7.4	1400	40.4	32.7	4.02	53.7	10.0	6.4						
	12.00	3.2	7.4	1650	41.1	35.2	4.25	55.6	9.7	6.5						
120	6.00	0.8	1.8	1400	34.8	31.2	4.88	51.1	7.1	10.9						
	6.00	0.8	1.8	1650	35.4	33.5	5.16	53.0	6.9	11.1						
	9.00	2.0	4.6	1400	36.4	31.4	4.59	51.7	7.9	9.3						
	9.00	2.0	4.6	1650	37.0	33.8	4.85	53.6	7.6	9.4						
	12.00	3.0	6.9	1400	37.2	31.7	4.46	52.1	8.3	7.6						
	12.00	3.0	6.9	1650	37.9	34.1	4.71	54.0	8.0	7.7						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

1200 CFM Nominal (Rated) Airflow Cooling, 1200 CFM Nominal (Rated) Airflow Heating

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	14.00	4.1	9.5	Operation not recommended							28.6	2.93	19.0	96.5	2.86	3.4
	14.00	4.1	9.5								29.0	2.81	19.5	92.4	3.02	3.0
30	7.00	0.5	1.2	1000	42.0	26.0	1.64	47.5	25.6	-	31.6	3.01	21.7	99.3	3.08	3.5
	7.00	0.5	1.2	1200	42.8	27.8	1.67	48.4	25.6	-	32.1	2.89	22.3	94.8	3.26	3.1
	10.50	1.9	4.4	1000	42.8	26.3	1.59	48.2	26.9	-	32.6	3.01	22.7	100.2	3.17	3.5
	10.50	1.9	4.4	1200	43.6	28.1	1.62	49.1	26.9	-	33.1	2.89	23.3	95.5	3.36	3.0
	14.00	3.9	9.0	1000	44.1	26.9	1.57	49.5	28.1	-	33.1	3.02	23.3	100.6	3.21	3.4
	14.00	3.9	9.0	1200	45.0	28.8	1.60	50.4	28.1	-	33.6	2.90	23.9	95.9	3.40	3.0
40	7.00	0.4	0.9	1000	44.7	28.2	1.79	50.8	25.0	-	36.1	3.10	25.9	103.4	3.41	3.6
	7.00	0.4	0.9	1200	45.6	30.2	1.82	51.8	25.1	-	36.6	2.97	26.6	98.2	3.61	3.1
	10.50	1.8	4.2	1000	45.0	28.2	1.69	50.8	26.6	-	37.4	3.11	27.2	104.6	3.52	3.6
	10.50	1.8	4.2	1200	45.9	30.2	1.72	51.8	26.7	-	37.9	2.98	27.9	99.2	3.73	3.1
	14.00	3.7	8.5	1000	45.3	28.3	1.66	51.0	27.3	-	38.0	3.11	27.7	105.2	3.58	3.5
	14.00	3.7	8.5	1200	46.2	30.3	1.69	52.0	27.3	-	38.6	2.98	28.5	99.8	3.80	3.1
50	7.00	0.3	0.7	1000	45.1	29.1	1.98	51.9	22.8	1.0	40.9	3.20	30.3	107.9	3.75	3.7
	7.00	0.3	0.7	1200	46.0	31.1	2.02	52.9	22.8	1.0	41.5	3.07	31.1	102.0	3.96	3.2
	10.50	1.8	4.2	1000	45.6	29.1	1.86	51.9	24.5	0.9	42.5	3.21	31.8	109.4	3.88	3.7
	10.50	1.8	4.2	1200	46.5	31.1	1.89	52.9	24.6	0.9	43.1	3.08	32.7	103.3	4.10	3.2
	14.00	3.6	8.3	1000	45.7	29.1	1.81	51.9	25.2	0.8	43.3	3.21	32.6	110.1	3.95	3.6
	14.00	3.6	8.3	1200	46.6	31.1	1.84	52.9	25.3	0.8	43.9	3.08	33.5	103.9	4.18	3.2
60	7.00	0.3	0.7	1000	43.9	28.7	2.23	51.4	19.7	1.7	46.2	3.31	35.2	112.8	4.09	3.9
	7.00	0.3	0.7	1200	44.7	30.7	2.27	52.4	19.7	1.7	46.9	3.17	36.2	106.2	4.34	3.4
	10.50	1.7	3.9	1000	44.8	29.1	2.08	51.9	21.5	1.5	48.1	3.32	37.0	114.5	4.25	3.8
	10.50	1.7	3.9	1200	45.7	31.1	2.12	52.9	21.6	1.6	48.8	3.18	38.0	107.7	4.50	3.3
	14.00	3.4	7.9	1000	45.2	29.2	2.01	52.1	22.5	1.4	49.1	3.33	37.9	115.5	4.32	3.8
	14.00	3.4	7.9	1200	46.1	31.3	2.05	53.1	22.5	1.4	49.8	3.19	38.9	108.4	4.58	3.3
70	7.00	0.2	0.5	1000	41.8	27.9	2.52	50.4	16.6	2.3	51.7	3.42	40.3	117.9	4.43	4.1
	7.00	0.2	0.5	1200	42.6	29.9	2.57	51.4	16.6	2.4	52.5	3.28	41.4	110.5	4.69	3.6
	10.50	1.7	3.9	1000	43.2	28.6	2.35	51.1	18.4	2.1	53.8	3.44	42.2	119.8	4.58	4.1
	10.50	1.7	3.9	1200	44.0	30.6	2.39	52.1	18.4	2.2	54.6	3.30	43.4	112.1	4.85	3.5
	14.00	3.3	7.6	1000	43.8	28.8	2.27	51.5	19.3	1.9	54.9	3.46	43.2	120.8	4.65	4.0
	14.00	3.3	7.6	1200	44.6	30.8	2.31	52.5	19.3	2.0	55.7	3.32	44.4	113.0	4.92	3.5
80	7.00	0.2	0.5	1000	39.4	27.0	2.87	49.2	13.7	3.0	57.3	3.56	45.3	123.1	4.72	4.4
	7.00	0.2	0.5	1200	40.2	28.9	2.92	50.1	13.8	3.0	58.1	3.41	46.5	114.8	4.99	3.8
	10.50	1.6	3.7	1000	40.9	27.7	2.66	49.9	15.4	2.7	59.5	3.59	47.4	125.1	4.86	4.3
	10.50	1.6	3.7	1200	41.7	29.6	2.71	50.9	15.4	2.7	60.4	3.44	48.7	116.6	5.15	3.7
	14.00	3.1	7.2	1000	41.6	28.0	2.57	50.3	16.2	2.4	60.7	3.61	48.5	126.2	4.93	4.3
	14.00	3.1	7.2	1200	42.4	30.0	2.62	51.3	16.2	2.5	61.6	3.46	49.8	117.5	5.22	3.7
85	7.00	0.2	0.5	1000	38.1	26.5	3.05	48.6	12.5	3.5	60.0	3.63	47.7	125.6	4.84	4.6
	7.00	0.2	0.5	1200	38.8	28.4	3.11	49.5	12.5	3.6	60.9	3.48	49.0	117.0	5.13	4.0
	10.50	1.6	3.7	1000	39.5	27.2	2.85	49.3	13.9	3.0	62.3	3.68	49.8	127.7	4.96	4.5
	10.50	1.6	3.7	1200	40.3	29.1	2.90	50.2	13.9	3.0	63.2	3.53	51.2	118.8	5.25	3.9
	14.00	3.0	6.9	1000	40.3	27.5	2.75	49.7	14.7	2.7	63.6	3.70	51.0	128.9	5.04	4.5
	14.00	3.0	6.9	1200	41.1	29.4	2.80	50.7	14.7	2.7	64.5	3.55	52.4	119.8	5.33	3.9
90	7.00	0.1	0.2	1000	36.8	26.1	3.24	47.9	11.4	3.5	62.7	3.71	50.1	128.1	4.95	4.7
	7.00	0.1	0.2	1200	37.5	27.9	3.30	48.8	11.4	3.6	63.6	3.56	51.5	119.1	5.24	4.1
	10.50	1.5	3.5	1000	38.3	26.6	3.03	48.6	12.6	3.2	65.2	3.77	52.4	130.4	5.07	4.6
	10.50	1.5	3.5	1200	39.0	28.5	3.09	49.5	12.6	3.3	66.1	3.61	53.8	121.0	5.37	4.0
	14.00	3.0	6.9	1000	39.0	27.0	2.93	49.1	13.3	2.9	66.3	3.80	53.4	131.4	5.11	4.6
	14.00	3.0	6.9	1200	39.8	28.9	2.98	50.0	13.4	2.9	67.3	3.64	54.9	121.9	5.42	4.0
100	7.00	0.1	0.2	1000	34.2	25.2	3.68	46.9	9.3	4.1	Operation not recommended					
	7.00	0.1	0.2	1200	34.9	27.0	3.75	47.8	9.3	4.2						
	10.50	1.5	3.5	1000	35.6	25.7	3.45	47.4	10.3	3.7						
	10.50	1.5	3.5	1200	36.3	27.5	3.51	48.3	10.3	3.8						
	14.00	2.8	6.5	1000	36.3	26.0	3.34	47.7	10.9	3.3						
	14.00	2.8	6.5	1200	37.0	27.8	3.40	48.6	10.9	3.4						
110	7.00	0.1	0.2	1000	32.1	24.9	4.16	46.4	7.7	4.6						
	7.00	0.1	0.2	1200	32.7	26.6	4.24	47.3	7.7	4.7						
	10.50	1.5	3.5	1000	33.2	25.0	3.91	46.5	8.5	4.1						
	10.50	1.5	3.5	1200	33.8	26.8	3.98	47.4	8.5	4.2						
	14.00	2.7	6.2	1000	33.7	25.2	3.79	46.7	8.9	3.7						
	14.00	2.7	6.2	1200	34.4	27.0	3.86	47.6	8.9	3.8						
120	7.00	0.1	0.2	1000	30.7	24.7	4.70	46.8	6.5	5.0						
	7.00	0.1	0.2	1200	31.3	26.4	4.79	47.7	6.5	5.1						
	10.50	1.4	3.2	1000	31.4	24.8	4.42	46.5	7.1	4.5						
	10.50	1.4	3.2	1200	32.0	26.5	4.50	47.4	7.1	4.6						
	14.00	2.6	6.0	1000	31.8	25.0	4.29	46.4	7.4	4.1						
	14.00	2.6	6.0	1200	32.4	26.8	4.37	47.3	7.4	4.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

1850 CFM Nominal (Rated) Airflow Cooling, 1850 CFM Nominal (Rated) Airflow Heating

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	kW	HR	EER	HWC	HC	kW	HE	LAT	COP	HWC
20	15.00	5.0	11.6	Operation not recommended							39.4	3.90	26.5	93.2	2.96	4.0
	15.00	5.0	11.6								40.0	3.78	27.2	90.0	3.10	3.5
30	7.50	0.6	1.4	1575	61.7	37.7	3.19	71.7	19.3	-	43.5	4.06	30.0	95.6	3.14	4.1
	7.50	0.6	1.4	1850	62.8	40.5	3.37	74.3	18.6	-	44.1	3.93	30.8	92.1	3.29	3.6
	11.25	2.3	5.3	1575	62.6	38.1	3.05	72.1	20.5	-	45.3	4.11	31.7	96.6	3.23	4.1
	11.25	2.3	5.3	1850	63.7	41.0	3.22	74.7	19.8	-	46.0	3.98	32.5	93.0	3.39	3.5
	15.00	4.8	11.1	1575	63.9	38.9	2.98	73.1	21.4	-	46.2	4.14	32.5	97.2	3.27	4.0
	15.00	4.8	11.1	1850	65.0	41.8	3.15	75.7	20.6	-	46.9	4.01	33.4	93.5	3.43	3.5
40	7.50	0.5	1.2	1575	63.0	39.2	3.40	73.7	18.5	-	50.1	4.29	35.9	99.5	3.42	4.3
	7.50	0.5	1.2	1850	64.1	42.2	3.59	76.4	17.9	-	50.8	4.16	36.8	95.4	3.58	3.7
	11.25	2.2	5.1	1575	63.9	39.5	3.23	73.9	19.8	-	52.2	4.36	37.7	100.7	3.51	4.2
	11.25	2.2	5.1	1850	65.0	42.5	3.41	76.6	19.1	-	53.0	4.22	38.7	96.5	3.68	3.6
	15.00	4.5	10.4	1575	64.1	39.5	3.14	73.9	20.4	-	53.4	4.39	38.8	101.4	3.57	4.1
	15.00	4.5	10.4	1850	65.2	42.5	3.32	76.6	19.6	-	54.2	4.25	39.8	97.1	3.74	3.6
50	7.50	0.4	0.9	1575	62.9	40.0	3.64	74.4	17.3	2.0	57.0	4.53	41.8	103.5	3.69	4.5
	7.50	0.4	0.9	1850	64.0	43.0	3.85	77.1	16.6	2.1	57.8	4.39	42.9	98.9	3.86	3.9
	11.25	2.1	4.9	1575	63.6	40.1	3.44	74.4	18.5	1.8	59.5	4.60	44.1	105.0	3.79	4.4
	11.25	2.1	4.9	1850	64.7	43.1	3.63	77.1	17.8	1.8	60.4	4.46	45.3	100.2	3.97	3.8
	15.00	4.3	9.9	1575	63.9	40.1	3.34	74.3	19.1	1.5	61.0	4.64	45.4	105.9	3.85	4.3
	15.00	4.3	9.9	1850	65.0	43.1	3.53	77.0	18.4	1.5	61.9	4.50	46.6	101.0	4.03	3.8
60	7.50	0.4	0.9	1575	60.7	39.7	3.92	73.3	15.5	2.9	64.2	4.78	48.1	107.7	3.94	4.8
	7.50	0.4	0.9	1850	61.8	42.7	4.14	76.0	14.9	3.0	65.1	4.63	49.4	102.6	4.12	4.2
	11.25	2.1	4.9	1575	62.1	40.1	3.68	73.8	16.9	2.5	67.2	4.87	50.9	109.5	4.04	4.7
	11.25	2.1	4.9	1850	63.2	43.1	3.89	76.5	16.2	2.5	68.2	4.72	52.2	104.1	4.23	4.1
	15.00	4.1	9.5	1575	62.6	40.2	3.58	73.9	17.5	2.1	69.0	4.93	52.3	110.6	4.10	4.7
	15.00	4.1	9.5	1850	63.7	43.2	3.78	76.6	16.9	2.1	70.0	4.78	53.7	105.0	4.29	4.0
70	7.50	0.3	0.7	1575	58.0	39.1	4.24	71.7	13.7	4.0	71.7	5.06	54.8	112.2	4.15	5.3
	7.50	0.3	0.7	1850	59.0	42.0	4.48	74.3	13.2	4.0	72.8	4.90	56.2	106.4	4.35	4.6
	11.25	2.0	4.6	1575	59.7	39.6	3.97	72.5	15.0	3.4	75.4	5.17	58.0	114.3	4.27	5.2
	11.25	2.0	4.6	1850	60.8	42.6	4.20	75.1	14.5	3.4	76.5	5.01	59.5	108.3	4.48	4.5
	15.00	3.9	9.0	1575	60.5	39.9	3.85	72.9	15.7	2.8	77.4	5.23	59.7	115.5	4.34	5.1
	15.00	3.9	9.0	1850	61.6	42.9	4.07	75.5	15.1	2.9	78.5	5.07	61.3	109.3	4.54	4.4
80	7.50	0.2	0.5	1575	54.6	38.1	4.61	69.8	11.8	5.2	79.8	5.35	61.8	116.9	4.37	5.8
	7.50	0.2	0.5	1850	55.6	41.0	4.87	72.3	11.4	5.3	81.0	5.18	63.4	110.5	4.58	5.1
	11.25	2.0	4.6	1575	56.7	38.9	4.31	70.7	13.2	4.4	84.1	5.48	65.5	119.4	4.50	5.7
	11.25	2.0	4.6	1850	57.7	41.8	4.55	73.3	12.7	4.5	85.3	5.31	67.2	112.7	4.71	5.0
	15.00	3.7	8.5	1575	57.8	39.2	4.16	71.2	13.9	3.6	86.4	5.56	67.6	120.8	4.55	5.6
	15.00	3.7	8.5	1850	58.8	42.2	4.40	73.8	13.4	3.7	87.7	5.39	69.4	113.9	4.77	4.9
85	7.50	0.2	0.5	1575	52.9	37.6	4.83	68.7	11.0	5.9	84.1	5.50	65.5	119.4	4.48	6.2
	7.50	0.2	0.5	1850	53.8	40.4	5.10	71.2	10.5	6.0	85.3	5.33	67.2	112.7	4.69	5.4
	11.25	1.9	4.4	1575	55.0	38.4	4.50	69.8	12.2	5.0	88.7	5.66	69.5	122.1	4.59	6.1
	11.25	1.9	4.4	1850	56.0	41.3	4.76	72.3	11.8	5.1	90.0	5.48	71.3	115.0	4.81	5.5
	15.00	3.6	8.3	1575	56.1	38.8	4.35	70.3	12.9	4.1	91.3	5.74	71.8	123.7	4.66	6.0
	15.00	3.6	8.3	1850	57.1	41.7	4.60	72.8	12.4	4.2	92.6	5.56	73.7	116.3	4.88	5.2
90	7.50	0.2	0.5	1575	51.1	37.0	5.03	67.7	10.2	6.5	88.3	5.66	69.2	121.9	4.57	6.5
	7.50	0.2	0.5	1850	52.0	39.8	5.32	70.2	9.8	6.6	89.6	5.48	71.0	114.8	4.79	5.6
	11.25	1.9	4.4	1575	53.3	37.8	4.70	68.7	11.3	5.5	93.3	5.82	73.6	124.9	4.70	6.4
	11.25	1.9	4.4	1850	54.2	40.7	4.97	71.2	10.9	5.6	94.7	5.64	75.5	117.4	4.92	5.5
	15.00	3.5	8.1	1575	54.4	38.3	4.54	69.2	12.0	4.6	96.1	5.91	76.0	126.5	4.77	6.3
	15.00	3.5	8.1	1850	55.4	41.2	4.80	71.7	11.5	4.6	97.5	5.73	78.0	118.8	4.99	5.4
100	7.50	0.1	0.2	1575	47.4	35.7	5.53	65.8	8.6	8.0	Operation not recommended					
	7.50	0.1	0.2	1850	48.2	38.4	5.84	68.2	8.3	8.2						
	11.25	1.8	4.2	1575	49.6	36.6	5.15	66.7	9.6	6.8						
	11.25	1.8	4.2	1850	50.5	39.4	5.44	69.1	9.3	6.9						
	15.00	3.3	7.6	1575	50.7	37.1	4.97	67.2	10.2	5.6						
	15.00	3.3	7.6	1850	51.6	39.9	5.25	69.6	9.8	5.7						
110	7.50	0.1	0.2	1575	43.6	34.4	6.09	64.1	7.2	9.7						
	7.50	0.1	0.2	1850	44.4	37.0	6.43	66.4	6.9	9.9						
	11.25	1.8	4.2	1575	45.8	35.3	5.67	64.8	8.1	8.2						
	11.25	1.8	4.2	1850	46.6	38.0	5.99	67.1	7.8	8.4						
	15.00	3.1	7.2	1575	47.0	35.8	5.47	65.1	8.6	6.7						
	15.00	3.1	7.2	1850	47.8	38.5	5.78	67.5	8.3	6.9						
120	7.50	0.1	0.2	1575	40.1	33.2	6.73	62.9	6.0	11.5						
	7.50	0.1	0.2	1850	40.8	35.7	7.11	65.2	5.7	11.7						
	11.25	1.7	3.9	1575	42.1	34.0	6.26	63.2	6.7	9.8						
	11.25	1.7	3.9	1850	42.9	36.6	6.61	65.5	6.5	9.9						
	15.00	2.9	6.7	1575	43.2	34.5	6.04	63.5	7.2	8.0						
	15.00	2.9	6.7	1850	44.0	37.1	6.38	65.8	6.9	8.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for ARI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Operation below 40°F EWT is based upon a 15% antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit (standard on residential models).
See performance correction tables for operating conditions other than those listed above.
"-" HWG operation is limited by a discharge temperature switch.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	2.2	0.5	1.2	475	Operation not recommended						Operation not recommended					
				600												
	3.5	1.2	2.7	475												
				600												
	4.5	1.8	4.2	475	11.8	1.19	7.7	92.9	2.89	1.3						
				600	12.1	1.12	8.2	88.6	3.17	1.2						
30	2.2	0.5	1.2	475	12.9	1.22	8.7	95.2	3.10	1.5	20.7	12.9	0.80	23.4	26.0	0.5
				600	13.2	1.14	9.3	90.4	3.40	1.3	22.1	14.7	0.80	24.9	27.5	0.5
	3.5	1.1	2.6	475	13.5	1.23	9.3	96.4	3.22	1.6	20.9	12.9	0.75	23.5	27.9	0.6
				600	13.9	1.16	9.9	91.4	3.52	1.3	22.3	14.7	0.76	24.9	29.5	0.5
	4.5	1.8	4.1	475	13.8	1.24	9.6	96.9	3.26	1.6	20.9	12.9	0.74	23.5	28.3	0.6
				600	14.1	1.16	10.2	91.8	3.57	1.4	22.4	14.7	0.75	24.9	30.0	0.5
40	2.2	0.5	1.1	475	14.8	1.26	10.5	98.9	3.44	1.8	20.3	12.9	0.87	23.2	23.2	1.0
				600	15.2	1.18	11.2	93.4	3.77	1.5	21.7	14.7	0.88	24.7	24.6	0.9
	3.5	1.1	2.5	475	15.6	1.28	11.3	100.5	3.58	1.8	20.6	12.9	0.81	23.4	25.6	0.9
				600	16.0	1.20	11.9	94.7	3.92	1.6	22.1	14.7	0.81	24.8	27.1	0.8
	4.5	1.7	3.9	475	16.0	1.29	11.6	101.1	3.63	1.9	20.8	12.9	0.79	23.4	26.4	0.8
				600	16.4	1.21	12.2	95.2	3.98	1.7	22.2	14.7	0.79	24.9	27.9	0.8
50	2.2	0.5	1.1	475	16.8	1.31	12.4	102.8	3.78	2.0	19.7	12.7	0.97	23.0	20.3	1.4
				600	17.2	1.22	13.1	96.6	4.13	1.8	21.0	14.6	0.98	24.3	21.4	1.3
	3.5	1.1	2.5	475	17.8	1.33	13.3	104.7	3.93	2.1	20.2	12.8	0.89	23.2	22.7	1.2
				600	18.2	1.24	14.0	98.1	4.31	1.8	21.6	14.7	0.90	24.6	24.0	1.2
	4.5	1.7	3.8	475	18.2	1.33	13.6	105.5	4.00	2.2	20.3	12.9	0.86	23.3	23.7	1.0
				600	18.6	1.25	14.4	98.8	4.38	1.9	21.7	14.7	0.87	24.7	25.0	1.1
60	2.2	0.5	1.0	475	18.9	1.35	14.3	106.8	4.10	2.3	18.9	12.5	1.08	22.6	17.4	1.7
				600	19.3	1.26	15.0	99.9	4.49	2.0	20.2	14.3	1.09	23.9	18.4	1.6
	3.5	1.0	2.4	475	20.0	1.37	15.3	109.0	4.28	2.4	19.5	12.7	0.99	22.9	19.7	1.5
				600	20.5	1.28	16.1	101.6	4.69	2.1	20.9	14.5	1.00	24.3	20.9	1.5
	4.5	1.6	3.7	475	20.5	1.38	15.8	109.9	4.35	2.4	19.7	12.8	0.96	23.0	20.6	1.3
				600	21.0	1.29	16.6	102.4	4.77	2.2	21.1	14.6	0.97	24.4	21.8	1.4
70	2.2	0.4	1.0	475	21.0	1.39	16.2	110.8	4.43	2.6	18.0	12.2	1.21	22.2	14.9	2.0
				600	21.5	1.30	17.0	103.1	4.84	2.2	19.3	13.9	1.22	23.4	15.8	2.0
	3.5	1.0	2.3	475	22.3	1.41	17.4	113.4	4.62	2.6	18.7	12.5	1.11	22.5	16.9	1.8
				600	22.8	1.32	18.3	105.2	5.06	2.3	20.0	14.2	1.12	23.8	17.9	1.8
	4.5	1.5	3.6	475	22.8	1.42	17.9	114.4	4.70	2.7	19.0	12.6	1.07	22.6	17.7	1.6
				600	23.4	1.33	18.8	106.0	5.14	2.4	20.3	14.3	1.08	24.0	18.8	1.7
80	2.2	0.4	1.0	475	23.1	1.43	18.2	114.9	4.74	2.9	17.1	11.8	1.34	21.7	12.7	2.2
				600	23.6	1.34	19.1	106.5	5.18	2.4	18.3	13.5	1.36	22.9	13.5	2.3
	3.5	1.0	2.2	475	24.5	1.45	19.5	117.8	4.94	3.0	17.8	12.1	1.24	22.1	14.4	2.1
				600	25.1	1.36	20.5	108.8	5.41	2.5	19.1	13.8	1.25	23.3	15.3	2.2
	4.5	1.5	3.5	475	25.1	1.46	20.1	118.9	5.03	3.1	18.1	12.2	1.20	22.2	15.1	1.9
				600	25.7	1.37	21.1	109.7	5.51	2.7	19.4	14.0	1.21	23.5	16.0	2.0
90	2.2	0.4	0.9	475	25.1	1.46	20.2	119.0	5.04	3.1	16.1	11.3	1.48	21.1	10.9	2.5
				600	25.8	1.37	21.1	109.8	5.51	2.7	17.2	12.9	1.49	22.3	11.5	2.6
	3.5	0.9	2.1	475	26.7	1.49	21.6	122.1	5.26	3.3	16.8	11.7	1.37	21.5	12.3	2.4
				600	27.4	1.40	22.6	112.3	5.76	2.8	18.0	13.3	1.39	22.7	13.0	2.5
	4.5	1.4	3.3	475	27.4	1.50	22.3	123.4	5.35	3.4	17.1	11.8	1.33	21.7	12.8	2.3
				600	28.1	1.40	23.3	113.3	5.85	2.9	18.3	13.5	1.35	22.9	13.6	2.3
100	2.2	0.4	0.9	475	Operation not recommended						15.0	10.7	1.62	20.5	9.3	2.9
				600							16.1	12.2	1.63	21.6	9.8	3.0
	3.5	0.9	2.1	475							15.8	11.1	1.52	21.0	10.4	2.7
				600							16.9	12.7	1.53	22.1	11.0	2.8
	4.5	1.4	3.2	475							16.1	11.3	1.48	21.1	10.9	2.5
				600							17.2	12.9	1.49	22.3	11.6	2.6
110	2.2	0.4	0.9	475							14.0	10.1	1.75	20.0	8.0	3.2
				600							14.9	11.5	1.77	21.0	8.4	3.3
	3.5	0.9	2.0	475							14.7	10.5	1.66	20.4	8.9	3.0
				600							15.7	12.0	1.67	21.5	9.4	3.1
	4.5	1.3	3.1	475							15.0	10.7	1.62	20.6	9.3	2.8
				600							16.1	12.2	1.63	21.6	9.8	2.9

Interpolation is permissable, extrapolation is not.

Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	3.0	0.4	1.0	650	Operation not recommended						Operation not recommended					
				800												
	4.5	1.0	2.2	650												
				800												
	6.0	1.7	3.9	650	16.0	1.62	10.5	92.8	2.89	2.1						
				800	16.2	1.59	10.8	88.7	2.99	1.8						
30	3.0	0.4	0.9	650	18.9	1.69	13.2	97.0	3.29	2.4	29.4	19.3	0.92	32.6	32.1	0.9
				800	19.2	1.62	13.7	92.3	3.48	2.0	31.0	21.2	0.94	34.2	33.0	0.8
	4.5	0.9	2.1	650	19.1	1.69	13.4	97.2	3.32	2.5	30.0	19.6	0.89	33.0	33.8	1.0
				800	19.4	1.64	13.8	92.4	3.47	2.1	31.0	21.2	0.91	34.1	34.3	0.8
	6.0	1.6	3.8	650	19.3	1.69	13.5	97.5	3.35	2.6	30.6	19.9	0.86	33.5	35.6	1.0
				800	19.5	1.65	13.9	92.6	3.47	2.2	31.1	21.2	0.87	34.1	35.6	0.8
40	3.0	0.4	0.9	650	21.5	1.75	15.6	100.7	3.60	2.8	28.7	18.7	1.10	32.4	26.2	1.6
				800	21.9	1.69	16.1	95.3	3.80	2.4	30.2	20.6	1.12	34.0	26.9	1.4
	4.5	0.9	2.1	650	21.9	1.77	15.9	101.2	3.63	2.9	29.2	19.0	1.06	32.8	27.6	1.5
				800	22.2	1.70	16.3	95.6	3.81	2.5	30.2	20.6	1.08	33.9	28.0	1.4
	6.0	1.6	3.7	650	22.3	1.78	16.2	101.8	3.67	3.0	29.7	19.3	1.02	33.1	29.1	1.3
				800	22.5	1.72	16.6	96.0	3.82	2.6	30.2	20.6	1.04	33.8	29.2	1.3
50	3.0	0.4	0.9	650	24.1	1.82	17.9	104.4	3.88	3.2	27.9	18.2	1.28	32.3	21.9	2.2
				800	24.5	1.75	18.5	98.3	4.10	2.8	29.4	20.0	1.31	33.8	22.5	2.1
	4.5	0.9	2.0	650	24.7	1.85	18.4	105.2	3.92	3.3	28.4	18.4	1.23	32.5	23.1	2.0
				800	24.9	1.77	18.9	98.9	4.13	2.9	29.3	20.0	1.25	33.6	23.4	2.0
	6.0	1.6	3.6	650	25.3	1.87	18.9	106.1	3.96	3.4	28.8	18.7	1.18	32.8	24.4	1.7
				800	25.4	1.79	19.3	99.4	4.16	3.0	29.3	20.0	1.20	33.4	24.4	1.8
60	3.0	0.4	0.9	650	26.6	1.90	20.1	107.9	4.09	3.6	27.0	18.0	1.42	31.9	19.0	2.7
				800	27.1	1.82	20.9	101.4	4.38	3.2	28.4	19.6	1.46	33.4	19.5	2.7
	4.5	0.8	1.9	650	27.5	1.93	20.9	109.1	4.16	3.8	27.2	18.1	1.36	31.9	20.0	2.4
				800	27.9	1.84	21.6	102.3	4.43	3.3	28.2	19.6	1.39	32.9	20.3	2.5
	6.0	1.5	3.5	650	28.4	1.96	21.7	110.4	4.23	3.9	27.4	18.3	1.30	31.9	21.2	2.2
				800	28.7	1.87	22.3	103.2	4.49	3.4	28.0	19.7	1.32	32.5	21.2	2.3
70	3.0	0.4	0.8	650	29.0	1.98	22.3	111.3	4.29	4.1	26.1	17.8	1.57	31.5	16.7	3.2
				800	29.7	1.88	23.3	104.4	4.63	3.5	27.5	19.3	1.61	33.0	17.1	3.2
	4.5	0.8	1.9	650	30.2	2.02	23.3	113.0	4.38	4.2	26.1	17.9	1.49	31.2	17.5	2.9
				800	30.8	1.92	24.3	105.7	4.72	3.7	27.0	19.3	1.53	32.3	17.7	3.0
	6.0	1.5	3.4	650	31.4	2.06	24.4	114.7	4.47	4.3	26.1	18.0	1.41	30.9	18.4	2.7
				800	32.0	1.95	25.3	107.0	4.80	3.8	26.6	19.4	1.44	31.5	18.4	2.8
80	3.0	0.3	0.8	650	31.6	2.05	24.6	115.0	4.51	4.5	25.4	17.1	1.77	31.5	14.4	3.6
				800	32.4	1.95	25.7	107.4	4.87	3.9	26.8	18.5	1.81	32.9	14.8	3.7
	4.5	0.8	1.8	650	32.9	2.09	25.8	116.9	4.60	4.7	25.4	17.2	1.68	31.1	15.1	3.4
				800	33.6	1.99	26.8	108.9	4.96	4.0	26.3	18.6	1.72	32.2	15.3	3.5
	6.0	1.4	3.2	650	34.3	2.14	27.0	118.8	4.69	4.8	25.4	17.2	1.59	30.8	16.0	3.1
				800	34.9	2.03	28.0	110.4	5.04	4.2	25.9	18.6	1.62	31.4	15.9	3.2
90	3.0	0.3	0.8	650	34.2	2.12	26.9	118.6	4.72	5.0	24.7	16.4	1.96	31.4	12.6	4.1
				800	35.0	2.01	28.1	110.5	5.10	4.2	26.0	17.7	2.01	32.9	12.9	4.3
	4.5	0.8	1.7	650	35.6	2.17	28.2	120.8	4.81	5.2	24.7	16.4	1.86	31.1	13.3	3.9
				800	36.4	2.06	29.4	112.1	5.18	4.4	25.6	17.8	1.91	32.1	13.4	4.0
	6.0	1.4	3.1	650	37.1	2.22	29.5	122.9	4.89	5.4	24.7	16.5	1.77	30.7	14.0	3.6
				800	37.8	2.11	30.6	113.8	5.25	4.6	25.2	17.9	1.80	31.3	14.0	3.7
100	3.0	0.3	0.7	650	Operation not recommended						23.4	15.9	2.20	30.9	10.6	4.6
				800							24.6	17.2	2.26	32.3	10.9	4.8
	4.5	0.7	1.7	650							23.3	16.0	2.09	30.5	11.2	4.4
				800							24.2	17.3	2.14	31.5	11.3	4.5
	6.0	1.3	3.0	650							23.3	16.0	1.98	30.1	11.8	4.1
				800							23.8	17.3	2.02	30.7	11.8	4.2
110	3.0	0.3	0.7	650							22.0	15.4	2.44	30.3	9.0	5.1
				800							23.2	16.7	2.50	31.7	9.3	5.3
	4.5	0.7	1.6	650							22.0	15.5	2.32	29.9	9.5	4.8
				800							22.8	16.7	2.37	30.9	9.6	5.0
	6.0	1.3	2.9	650							21.9	15.5	2.20	29.4	10.0	4.6
				800							22.4	16.8	2.24	30.0	10.0	4.7

Interpolation is permissable, extrapolation is not.

Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	3.7	0.6	1.5	800	Operation not recommended						Operation not recommended					
				1000												
	5.5	1.4	3.3	800												
				1000												
	7.5	2.7	6.2	800	18.4	1.92	11.9	91.3	2.82	2.6						
				1000	18.6	1.88	12.2	87.2	2.91	2.2						
30	3.7	0.6	1.4	800	20.6	1.97	13.9	93.8	3.06	2.9	34.5	22.6	1.09	38.2	31.6	1.1
				1000	20.7	1.92	14.1	89.1	3.15	2.5	36.0	25.2	1.04	39.5	34.4	0.9
	5.5	1.4	3.2	800	21.5	1.96	14.8	94.9	3.20	3.0	34.6	22.4	1.07	38.3	32.4	1.1
				1000	21.6	1.92	15.1	90.0	3.30	2.6	36.0	24.7	1.09	39.7	33.1	1.0
	7.5	2.6	6.0	800	22.4	1.96	15.7	95.9	3.35	3.2	34.8	22.2	1.05	38.4	33.2	1.2
				1000	22.6	1.92	16.1	90.9	3.45	2.7	36.1	24.1	1.14	40.0	31.8	1.0
40	3.7	0.6	1.4	800	24.0	2.03	17.1	97.8	3.48	3.4	33.5	22.3	1.31	37.9	25.5	1.9
				1000	24.1	1.98	17.4	92.4	3.58	3.0	34.9	25.0	1.25	39.2	27.8	1.8
	5.5	1.3	3.1	800	24.9	2.04	18.0	98.9	3.58	3.6	33.6	22.2	1.26	37.9	26.7	1.8
				1000	24.9	1.98	18.2	93.1	3.68	3.1	34.9	24.4	1.28	39.3	27.3	1.7
	7.5	2.5	5.8	800	25.8	2.06	18.8	99.9	3.68	3.7	33.7	22.1	1.20	37.8	28.0	1.6
				1000	25.7	1.99	18.9	93.8	3.78	3.2	35.0	23.9	1.31	39.5	26.8	1.6
50	3.7	0.6	1.3	800	27.5	2.08	20.4	101.8	3.87	4.0	32.4	22.1	1.53	37.7	21.2	2.7
				1000	27.6	2.03	20.7	95.6	3.99	3.4	33.8	24.7	1.47	38.8	23.1	2.6
	5.5	1.3	3.0	800	28.4	2.12	21.2	102.8	3.93	4.1	32.6	22.0	1.45	37.5	22.5	2.4
				1000	28.2	2.05	21.2	96.1	4.04	3.6	33.9	24.2	1.47	38.9	23.0	2.4
	7.5	2.4	5.6	800	29.3	2.16	21.9	103.9	3.98	4.2	32.7	21.9	1.36	37.3	24.0	2.1
				1000	28.8	2.06	21.8	96.6	4.09	3.7	33.9	23.8	1.48	39.0	23.0	2.2
60	3.7	0.6	1.3	800	31.0	2.17	23.6	105.8	4.19	4.5	31.2	21.4	1.66	36.9	18.8	3.3
				1000	31.1	2.09	24.0	98.8	4.37	3.9	32.7	23.8	1.67	38.3	19.6	3.3
	5.5	1.3	2.9	800	31.8	2.21	24.3	106.8	4.22	4.6	31.2	21.1	1.59	36.7	19.7	3.0
				1000	32.0	2.11	24.8	99.6	4.45	4.1	32.7	23.5	1.62	38.3	20.2	3.0
	7.5	2.4	5.4	800	32.7	2.25	25.0	107.9	4.25	4.8	31.2	20.8	1.52	36.4	20.6	2.7
				1000	32.9	2.13	25.6	100.4	4.52	4.2	32.8	23.1	1.58	38.2	20.7	2.8
70	3.7	0.5	1.3	800	34.4	2.25	26.8	109.9	4.48	5.0	30.0	20.7	1.79	36.2	16.8	3.9
				1000	34.6	2.14	27.3	102.0	4.73	4.4	31.5	23.0	1.87	37.9	16.9	3.9
	5.5	1.2	2.8	800	35.3	2.30	27.4	110.8	4.50	5.2	29.9	20.2	1.73	35.8	17.3	3.6
				1000	35.8	2.17	28.4	103.1	4.83	4.5	31.6	22.8	1.78	37.7	17.8	3.7
	7.5	2.3	5.3	800	36.1	2.35	28.1	111.8	4.51	5.3	29.7	19.7	1.67	35.5	17.8	3.3
				1000	37.0	2.20	29.5	104.2	4.92	4.7	31.7	22.5	1.69	37.5	18.8	3.4
80	3.7	0.5	1.2	800	37.9	2.31	30.0	113.9	4.81	5.6	29.0	20.7	2.00	35.9	14.5	4.5
				1000	38.0	2.20	30.5	105.2	5.08	4.8	30.5	23.0	2.08	37.6	14.7	4.6
	5.5	1.2	2.7	800	38.6	2.37	30.5	114.7	4.77	5.8	28.9	20.2	1.93	35.5	15.0	4.2
				1000	39.1	2.24	31.5	106.2	5.12	5.0	30.6	22.7	1.98	37.3	15.4	4.3
	7.5	2.2	5.1	800	39.3	2.44	31.0	115.5	4.73	6.0	28.7	19.7	1.87	35.1	15.4	3.9
				1000	40.2	2.28	32.4	107.2	5.17	5.2	30.6	22.5	1.89	37.1	16.3	4.0
90	3.7	0.5	1.2	800	41.4	2.37	33.3	117.9	5.12	6.2	28.0	20.7	2.20	35.5	12.7	5.1
				1000	41.5	2.25	33.8	108.4	5.41	5.2	29.4	23.0	2.30	37.3	12.8	5.3
	5.5	1.1	2.6	800	41.9	2.44	33.6	118.5	5.03	6.4	27.9	20.2	2.13	35.2	13.1	4.8
				1000	42.5	2.31	34.6	109.3	5.40	5.5	29.5	22.7	2.19	37.0	13.5	4.9
	7.5	2.1	4.9	800	42.5	2.52	33.9	119.2	4.94	6.7	27.7	19.7	2.06	34.8	13.5	4.5
				1000	43.5	2.36	35.4	110.3	5.40	5.7	29.6	22.5	2.08	36.7	14.2	4.6
100	3.7	0.5	1.1	800	Operation not recommended						26.4	19.6	2.39	34.6	11.0	5.8
				1000							27.7	21.8	2.49	36.2	11.1	6.0
	5.5	1.1	2.5	800							26.3	19.2	2.32	34.2	11.4	5.4
				1000							27.8	21.6	2.38	35.9	11.7	5.6
	7.5	2.0	4.7	800							26.2	18.7	2.24	33.8	11.7	5.1
				1000							27.9	21.3	2.26	35.6	12.3	5.2
110	3.7	0.5	1.1	800							24.8	18.6	2.58	33.6	9.6	6.4
				1000							26.0	20.6	2.69	35.2	9.7	6.7
	5.5	1.1	2.4	800							24.7	18.1	2.50	33.2	9.9	6.0
				1000							26.1	20.4	2.57	34.9	10.2	6.2
	7.5	2.0	4.5	800							24.6	17.7	2.42	32.8	10.2	5.7
				1000							26.2	20.2	2.44	34.5	10.7	5.8

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Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	4.5	1.6	3.8	975	Operation not recommended						Operation not recommended					
				1200												
	7.0	3.3	7.6	975												
				1200												
	9.0	4.9	11.2	975	23.1	2.15	15.7	91.9	3.14	3.2						
				1200	22.9	2.23	15.3	87.7	3.01	2.7						
30	4.5	1.6	3.7	975	25.6	2.38	17.5	94.3	3.14	3.6	41.8	27.1	1.32	46.3	31.6	1.2
				1200	25.9	2.30	18.1	90.0	3.30	3.0	42.2	29.1	1.38	46.9	30.5	1.1
	7.0	3.2	7.3	975	26.2	2.31	18.3	94.9	3.32	3.7	41.7	27.3	1.27	46.1	32.9	1.3
				1200	26.3	2.31	18.4	90.3	3.33	3.2	42.0	29.4	1.33	46.5	31.7	1.1
	9.0	4.7	10.9	975	26.8	2.24	19.2	95.5	3.51	3.9	41.6	27.5	1.22	45.8	34.2	1.3
				1200	26.6	2.32	18.7	90.5	3.36	3.3	41.9	29.8	1.27	46.2	32.9	1.2
40	4.5	1.5	3.5	975	29.2	2.46	20.8	97.7	3.48	4.2	40.4	26.5	1.53	45.6	26.5	2.2
				1200	29.6	2.37	21.5	92.8	3.65	3.6	40.7	28.5	1.60	46.1	25.5	2.1
	7.0	3.1	7.1	975	29.8	2.42	21.6	98.3	3.61	4.4	40.4	26.7	1.47	45.4	27.5	2.1
				1200	29.9	2.39	21.8	93.1	3.67	3.7	40.6	28.8	1.54	45.9	26.4	2.0
	9.0	4.6	10.6	975	30.4	2.38	22.3	98.9	3.75	4.5	40.4	26.9	1.41	45.2	28.5	1.9
				1200	30.3	2.41	22.1	93.4	3.69	3.9	40.6	29.0	1.48	45.6	27.5	1.9
50	4.5	1.5	3.4	975	32.8	2.53	24.2	101.1	3.80	4.8	38.9	26.0	1.73	44.8	22.5	3.2
				1200	33.2	2.44	24.9	95.6	3.99	4.2	39.2	27.9	1.81	45.4	21.7	3.1
	7.0	3.0	6.9	975	33.4	2.53	24.8	101.7	3.88	5.0	39.0	26.1	1.67	44.7	23.4	2.8
				1200	33.6	2.47	25.2	95.9	3.99	4.3	39.3	28.1	1.75	45.2	22.5	2.8
	9.0	4.4	10.2	975	34.1	2.52	25.5	102.3	3.96	5.2	39.1	26.2	1.61	44.6	24.3	2.4
				1200	34.0	2.49	25.5	96.2	4.00	4.5	39.3	28.3	1.68	45.0	23.4	2.6
60	4.5	1.4	3.3	975	36.2	2.65	27.2	104.4	4.01	5.5	36.9	25.7	1.90	43.3	19.4	3.9
				1200	36.9	2.54	28.2	98.4	4.25	4.7	37.4	28.2	1.98	44.1	18.9	3.9
	7.0	2.9	6.7	975	36.9	2.65	27.9	105.1	4.08	5.6	37.3	25.9	1.84	43.6	20.3	3.6
				1200	37.5	2.57	28.7	98.9	4.28	4.9	37.8	28.2	1.91	44.3	19.8	3.6
	9.0	4.3	9.9	975	37.7	2.66	28.6	105.8	4.15	5.8	37.7	26.2	1.78	43.8	21.2	3.2
				1200	38.2	2.59	29.3	99.4	4.32	5.1	38.2	28.3	1.85	44.5	20.7	3.3
70	4.5	1.4	3.2	975	39.6	2.76	30.2	107.6	4.20	6.1	34.8	25.4	2.07	41.9	16.8	4.7
				1200	40.5	2.64	31.5	101.3	4.49	5.3	35.5	28.4	2.15	42.8	16.5	4.7
	7.0	2.8	6.5	975	40.5	2.78	31.0	108.4	4.26	6.3	35.6	25.8	2.01	42.4	17.7	4.3
				1200	41.4	2.67	32.3	101.9	4.55	5.5	36.3	28.3	2.08	43.4	17.5	4.4
	9.0	4.1	9.6	975	41.3	2.80	31.7	109.2	4.32	6.5	36.3	26.2	1.96	43.0	18.6	3.9
				1200	42.3	2.69	33.1	102.6	4.61	5.7	37.1	28.2	2.01	44.0	18.5	4.1
80	4.5	1.3	3.1	975	43.2	2.86	33.4	111.0	4.42	6.8	33.5	24.5	2.30	41.4	14.6	5.4
				1200	44.2	2.74	34.8	104.1	4.72	5.8	34.2	27.4	2.39	42.3	14.3	5.5
	7.0	2.7	6.2	975	44.0	2.88	34.2	111.8	4.47	7.0	34.3	24.9	2.23	41.9	15.4	5.0
				1200	45.0	2.76	35.6	104.7	4.78	6.1	35.0	27.3	2.31	42.9	15.2	5.1
	9.0	4.0	9.3	975	44.8	2.90	34.9	112.6	4.53	7.3	35.0	25.2	2.17	42.4	16.1	4.6
				1200	45.9	2.79	36.4	105.4	4.83	6.3	35.8	27.2	2.23	43.4	16.0	4.8
90	4.5	1.3	3.0	975	46.7	2.97	36.6	114.4	4.61	7.5	32.3	23.6	2.52	40.9	12.8	6.1
				1200	47.8	2.84	38.1	106.9	4.93	6.3	32.9	26.4	2.62	41.9	12.6	6.3
	7.0	2.6	6.0	975	47.5	2.98	37.4	115.1	4.67	7.8	33.0	24.0	2.45	41.4	13.4	5.7
				1200	48.7	2.86	38.9	107.5	4.98	6.6	33.7	26.3	2.54	42.3	13.3	5.9
	9.0	3.9	8.9	975	48.3	3.00	38.1	115.9	4.72	8.1	33.7	24.3	2.38	41.8	14.1	5.4
				1200	49.5	2.88	39.7	108.2	5.04	6.9	34.4	26.2	2.45	42.8	14.0	5.5
100	4.5	1.3	2.9	975	Operation not recommended						30.3	23.7	2.83	39.9	10.7	6.9
				1200							30.9	26.5	2.94	40.9	10.5	7.2
	7.0	2.5	5.8	975							30.9	24.1	2.75	40.3	11.2	6.5
				1200							31.6	26.4	2.85	41.3	11.1	6.7
	9.0	3.7	8.6	975							31.6	24.4	2.67	40.7	11.8	6.1
				1200							32.3	26.3	2.75	41.6	11.7	6.2
110	4.5	1.2	2.8	975							28.2	23.9	3.14	38.9	9.0	7.7
				1200							28.8	26.7	3.26	39.9	8.8	8.0
	7.0	2.4	5.6	975							28.9	24.2	3.05	39.3	9.5	7.2
				1200							29.5	26.6	3.16	40.2	9.3	7.5
	9.0	3.6	8.3	975							29.5	24.6	2.97	39.6	9.9	6.8
				1200							30.1	26.5	3.05	40.5	9.9	7.0

Performance capacities shown in thousands of Btuh.

Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	5.2	2.0	4.7	1150	Operation not recommended						Operation not recommended					
				1400												
	9.0	4.9	11.2	1150												
				1400												
	10.5	6.2	14.3	1150	26.5	2.62	17.5	91.3	2.96	3.6						
				1400	27.2	2.60	18.4	88.0	3.07	3.1						
30	5.2	2.0	4.6	1150	31.3	2.71	22.0	95.2	3.38	4.1	50.5	33.1	1.67	56.2	30.3	1.6
				1400	31.3	2.65	22.3	90.7	3.46	3.5	52.4	36.4	1.73	58.3	30.3	1.3
	9.0	4.7	10.9	1150	31.4	2.71	22.2	95.3	3.40	4.3	49.9	32.6	1.62	55.4	30.9	1.6
				1400	31.9	2.67	22.8	91.1	3.51	3.6	52.5	36.6	1.68	58.2	31.3	1.4
	10.5	6.0	13.9	1150	31.6	2.71	22.4	95.4	3.42	4.4	49.3	32.2	1.57	54.6	31.4	1.7
				1400	32.5	2.68	23.3	91.5	3.55	3.8	52.6	36.9	1.63	58.2	32.4	1.5
40	5.2	1.9	4.5	1150	35.8	2.80	26.3	98.9	3.75	4.8	48.6	32.2	1.94	55.2	25.1	2.7
				1400	35.9	2.73	26.6	93.7	3.85	4.2	50.4	35.4	2.01	57.2	25.1	2.5
	9.0	4.6	10.6	1150	36.1	2.81	26.5	99.1	3.76	5.0	48.0	31.7	1.87	54.4	25.6	2.5
				1400	36.9	2.77	27.4	94.4	3.90	4.3	50.5	35.6	1.94	57.1	26.0	2.4
	10.5	5.8	13.5	1150	36.3	2.82	26.7	99.3	3.77	5.2	47.3	31.3	1.81	53.5	26.1	2.3
				1400	37.8	2.80	28.3	95.0	3.96	4.5	50.5	35.9	1.88	57.0	26.9	2.3
50	5.2	1.9	4.3	1150	40.4	2.88	30.6	102.5	4.11	5.6	46.7	31.3	2.21	54.2	21.1	3.8
				1400	40.4	2.82	30.8	96.7	4.21	4.8	48.4	34.3	2.29	56.2	21.1	3.6
	9.0	4.4	10.2	1150	40.7	2.91	30.8	102.8	4.10	5.8	46.0	30.8	2.13	53.3	21.6	3.4
				1400	41.8	2.87	32.0	97.7	4.27	5.0	48.4	34.6	2.21	56.0	21.9	3.4
	10.5	5.6	13.0	1150	41.1	2.94	31.1	103.1	4.10	6.0	45.4	30.4	2.05	52.4	22.1	2.9
				1400	43.2	2.92	33.2	98.6	4.34	5.2	48.5	34.9	2.13	55.8	22.8	3.1
60	5.2	1.8	4.2	1150	44.5	2.98	34.3	105.8	4.37	6.3	45.3	31.0	2.44	53.6	18.6	4.6
				1400	45.0	2.90	35.1	99.7	4.55	5.5	46.9	33.3	2.52	55.5	18.6	4.6
	9.0	4.3	9.9	1150	45.2	3.02	34.9	106.4	4.38	6.5	45.4	30.4	2.36	53.4	19.3	4.2
				1400	46.4	2.94	36.3	100.7	4.61	5.7	47.0	33.7	2.42	55.2	19.4	4.2
	10.5	5.5	12.6	1150	45.9	3.06	35.4	106.9	4.40	6.7	45.5	29.9	2.27	53.2	20.0	3.8
				1400	47.8	2.99	37.6	101.6	4.68	5.9	47.0	34.1	2.31	54.9	20.3	3.9
70	5.2	1.8	4.0	1150	48.6	3.08	38.1	109.1	4.62	7.0	43.9	30.8	2.67	53.0	16.4	5.5
				1400	49.5	2.98	39.4	102.8	4.87	6.2	45.5	32.3	2.75	54.8	16.5	5.5
	9.0	4.1	9.6	1150	49.6	3.13	38.9	109.9	4.65	7.3	44.7	30.0	2.58	53.5	17.3	5.0
				1400	50.9	3.02	40.6	103.7	4.94	6.4	45.5	32.7	2.63	54.4	17.3	5.1
	10.5	5.3	12.2	1150	50.6	3.17	39.8	110.8	4.67	7.5	45.5	29.3	2.49	54.0	18.2	4.6
				1400	52.3	3.07	41.9	104.6	5.00	6.6	45.5	33.2	2.50	54.0	18.2	4.8
80	5.2	1.7	3.9	1150	53.0	3.16	42.2	112.7	4.91	7.9	41.7	29.8	2.97	51.8	14.0	6.3
				1400	54.1	3.06	43.6	105.8	5.17	6.7	43.2	31.2	3.06	53.6	14.1	6.4
	9.0	4.0	9.3	1150	54.3	3.23	43.2	113.7	4.92	8.1	42.5	29.1	2.87	52.3	14.8	5.8
				1400	55.7	3.13	45.1	106.9	5.22	7.0	43.2	31.7	2.92	53.2	14.8	6.0
	10.5	5.1	11.8	1150	55.5	3.30	44.2	114.7	4.93	8.4	43.2	28.4	2.77	52.7	15.6	5.4
				1400	57.4	3.19	46.5	108.0	5.27	7.3	43.2	32.2	2.78	52.7	15.6	5.6
90	5.2	1.6	3.8	1150	57.5	3.25	46.4	116.3	5.19	8.7	39.5	28.8	3.27	50.7	12.1	7.1
				1400	58.6	3.15	47.9	108.8	5.46	7.3	40.9	30.2	3.37	52.4	12.1	7.4
	9.0	3.9	8.9	1150	58.9	3.34	47.5	117.5	5.17	9.0	40.2	28.1	3.16	51.0	12.7	6.7
				1400	60.5	3.23	49.5	110.0	5.49	7.7	40.9	30.7	3.21	51.9	12.7	6.9
	10.5	4.9	11.4	1150	60.4	3.43	48.7	118.6	5.16	9.4	41.0	27.4	3.05	51.4	13.4	6.3
				1400	62.5	3.31	51.2	111.3	5.53	8.0	40.9	31.1	3.06	51.4	13.4	6.4
100	5.2	1.6	3.6	1150	Operation not recommended						37.5	28.2	3.65	50.0	10.3	8.0
				1400							38.9	29.6	3.76	51.7	10.3	8.3
	9.0	3.7	8.6	1150							38.2	27.6	3.53	50.3	10.8	7.5
				1400							38.9	30.0	3.59	51.1	10.8	7.8
	10.5	4.7	11.0	1150							38.9	26.9	3.41	50.6	11.4	7.1
				1400							38.9	30.5	3.42	50.6	11.4	7.2
110	5.2	1.5	3.5	1150							35.6	27.6	4.04	49.4	8.8	8.9
				1400							36.8	29.0	4.16	51.0	8.8	9.2
	9.0	3.6	8.3	1150							36.2	27.0	3.91	49.6	9.3	8.4
				1400							36.8	29.4	3.97	50.4	9.3	8.6
	10.5	4.6	10.5	1150							36.9	26.3	3.77	49.7	9.8	7.9
				1400							36.9	29.9	3.78	49.8	9.8	8.1

Interpolation is permissable, extrapolation is not.

Rev: 12/12/03 B

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

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Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	6.0	2.6	5.9	1300	Operation not recommended						Operation not recommended					
				1600												
	9.0	4.9	11.2	1300												
				1600												
	12.0	7.6	17.6	1300	30.1	3.01	19.8	91.4	2.93	4.2						
				1600	31.4	2.95	21.3	88.2	3.12	3.6						
30	6.0	2.5	5.8	1300	34.2	2.99	24.0	94.3	3.35	4.8	54.9	35.5	1.91	61.4	28.7	1.7
				1600	36.7	2.98	26.5	91.2	3.61	4.0	56.7	38.9	2.00	63.5	28.3	1.4
	9.0	4.7	10.9	1300	34.8	3.04	24.4	94.8	3.35	5.0	54.9	35.7	1.84	61.1	29.9	1.7
				1600	36.8	3.01	26.5	91.3	3.58	4.2	56.5	38.7	1.93	63.1	29.4	1.5
	12.0	7.4	17.1	1300	35.4	3.10	24.8	95.2	3.35	5.1	54.8	35.9	1.76	60.9	31.1	1.8
				1600	36.9	3.04	26.5	91.4	3.56	4.4	56.4	38.5	1.85	62.7	30.5	1.6
40	6.0	2.4	5.6	1300	37.9	3.07	27.4	97.0	3.61	5.6	53.4	34.9	2.19	60.9	24.4	3.0
				1600	40.7	3.07	30.2	93.6	3.89	4.8	55.1	38.2	2.30	63.0	24.0	2.8
	9.0	4.6	10.6	1300	39.1	3.13	28.4	97.8	3.66	5.8	53.3	35.1	2.11	60.5	25.3	2.8
				1600	41.3	3.09	30.7	93.9	3.92	5.0	54.9	38.0	2.21	62.4	24.9	2.6
	12.0	7.2	16.6	1300	40.3	3.19	29.4	98.7	3.71	6.0	53.2	35.2	2.03	60.1	26.3	2.6
				1600	41.9	3.11	31.3	94.2	3.95	5.2	54.7	37.8	2.12	61.9	25.8	2.5
50	6.0	2.3	5.4	1300	41.6	3.16	30.8	99.6	3.86	6.4	51.9	34.2	2.47	60.3	21.0	4.3
				1600	44.7	3.15	33.9	95.9	4.15	5.6	53.6	37.5	2.59	62.4	20.7	4.1
	9.0	4.4	10.2	1300	43.4	3.21	32.4	100.9	3.95	6.7	51.7	34.4	2.38	59.9	21.8	3.8
				1600	45.8	3.16	35.0	96.5	4.24	5.8	53.3	37.3	2.49	61.8	21.4	3.8
	12.0	7.0	16.1	1300	45.2	3.27	34.0	102.2	4.05	6.9	51.6	34.6	2.29	59.4	22.6	3.3
				1600	46.8	3.17	36.0	97.1	4.33	6.0	53.0	37.1	2.40	61.2	22.1	3.5
60	6.0	2.3	5.2	1300	46.9	3.26	35.8	103.4	4.21	7.3	50.1	33.6	2.71	59.4	18.5	5.3
				1600	48.7	3.24	37.6	98.2	4.40	6.3	52.7	37.2	2.83	62.4	18.6	5.2
	9.0	4.3	9.9	1300	48.5	3.31	37.2	104.5	4.29	7.5	50.1	33.6	2.62	59.1	19.2	4.8
				1600	50.3	3.25	39.2	99.1	4.53	6.6	52.4	37.0	2.73	61.7	19.2	4.8
	12.0	6.7	15.6	1300	50.1	3.36	38.6	105.7	4.37	7.7	50.1	33.6	2.52	58.8	19.9	4.3
				1600	52.0	3.27	40.8	100.1	4.66	6.8	52.0	36.9	2.62	60.9	19.8	4.5
70	6.0	2.2	5.1	1300	52.2	3.36	40.7	107.2	4.55	8.1	48.4	32.9	2.96	58.5	16.4	6.3
				1600	52.6	3.32	41.3	100.5	4.64	7.1	51.9	36.9	3.07	62.4	16.9	6.3
	9.0	4.1	9.6	1300	53.6	3.40	42.0	108.1	4.62	8.4	48.5	32.8	2.86	58.3	17.0	5.8
				1600	54.9	3.35	43.5	101.8	4.81	7.3	51.4	36.8	2.96	61.5	17.4	5.9
	12.0	6.5	15.1	1300	54.9	3.44	43.2	109.1	4.68	8.6	48.7	32.7	2.76	58.1	17.7	5.3
				1600	57.1	3.37	45.6	103.0	4.97	7.6	50.9	36.6	2.85	60.6	17.9	5.5
80	6.0	2.1	4.9	1300	56.1	3.45	44.3	110.0	4.77	9.0	46.6	32.1	3.26	57.7	14.3	7.2
				1600	56.6	3.41	45.0	102.8	4.87	7.8	50.0	36.0	3.39	61.5	14.7	7.4
	9.0	4.0	9.3	1300	57.2	3.48	45.4	110.8	4.82	9.4	46.7	32.0	3.15	57.5	14.8	6.7
				1600	58.6	3.43	47.0	103.9	5.01	8.1	49.5	35.8	3.26	60.6	15.2	6.9
	12.0	6.3	14.6	1300	58.4	3.52	46.4	111.6	4.86	9.7	46.9	31.9	3.04	57.2	15.4	6.3
				1600	60.7	3.44	48.9	105.1	5.16	8.4	49.0	35.7	3.14	59.7	15.6	6.4
90	6.0	2.0	4.7	1300	60.1	3.53	48.0	112.8	4.98	10.0	44.8	31.3	3.57	57.0	12.6	8.2
				1600	60.6	3.49	48.7	105.1	5.08	8.4	48.0	35.0	3.71	60.7	13.0	8.5
	9.0	3.9	8.9	1300	60.9	3.56	48.8	113.4	5.01	10.4	44.9	31.2	3.45	56.7	13.0	7.7
				1600	62.4	3.51	50.4	106.1	5.21	8.8	47.6	34.9	3.57	59.7	13.3	8.0
	12.0	6.1	14.0	1300	61.8	3.60	49.5	114.0	5.04	10.8	45.1	31.1	3.33	56.4	13.6	7.2
				1600	64.2	3.52	52.2	107.2	5.35	9.2	47.1	34.8	3.43	58.8	13.7	7.4
100	6.0	2.0	4.5	1300	Operation not recommended						43.1	30.9	3.99	56.7	10.8	9.3
				1600							46.3	34.6	4.14	60.4	11.2	9.6
	9.0	3.7	8.6	1300							43.3	30.8	3.85	56.4	11.2	8.7
				1600							45.8	34.5	3.99	59.4	11.5	9.0
	12.0	5.9	13.5	1300							43.4	30.7	3.72	56.1	11.7	8.2
				1600							45.4	34.4	3.84	58.4	11.8	8.4
110	6.0	1.9	4.4	1300							41.5	30.6	4.41	56.5	9.4	10.3
				1600							44.5	34.2	4.58	60.1	9.7	10.7
	9.0	3.6	8.3	1300							41.6	30.5	4.26	56.1	9.8	9.7
				1600							44.1	34.1	4.41	59.1	10.0	10.0
	12.0	5.6	13.0	1300							41.7	30.4	4.11	55.8	10.2	9.2
				1600							43.6	34.0	4.24	58.1	10.3	9.4

Interpolation is permissable, extrapolation is not.

Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Performance capacities shown in thousands of Btuh.

EWT °F	GPM	WPD		CFM	HEATING - EAT 70°F						COOLING - EAT 80/67 °F					
		PSI	FT		HC	KW	HE	LAT	COP	HWC	TC	SC	KW	HR	EER	HWC
20	7.5	1.6	3.7	1650	Operation not recommended						Operation not recommended					
				2000												
	11.3	3.2	7.4	1650												
				2000												
	15.0	5.1	11.8	1650	41.1	4.04	27.3	93.0	2.98	5.3						
				2000	41.5	3.99	27.9	89.2	3.05	4.5						
30	7.5	1.6	3.6	1650	43.1	4.09	29.2	94.2	3.09	6.0	67.5	44.2	2.64	76.5	25.5	2.2
				2000	43.8	4.05	30.0	90.3	3.17	5.0	69.1	47.2	2.73	78.5	25.3	1.8
	11.3	3.1	7.1	1650	45.5	4.13	31.4	95.5	3.23	6.2	67.6	43.9	2.58	76.4	26.2	2.3
				2000	46.1	4.09	32.2	91.4	3.30	5.3	68.8	46.7	2.68	77.9	25.7	1.9
	15.0	4.9	11.4	1650	47.9	4.18	33.6	96.9	3.36	6.4	67.6	43.6	2.52	76.2	26.9	2.3
				2000	48.5	4.13	34.4	92.4	3.44	5.5	68.4	46.1	2.63	77.4	26.0	2.0
40	7.5	1.5	3.5	1650	50.4	4.29	35.8	98.3	3.45	7.0	65.3	43.5	3.05	75.7	21.4	3.8
				2000	51.3	4.25	36.8	93.7	3.54	6.0	66.8	46.5	3.15	77.6	21.2	3.5
	11.3	3.0	6.9	1650	53.0	4.35	38.2	99.8	3.57	7.3	65.4	43.3	2.96	75.5	22.1	3.5
				2000	53.3	4.28	38.7	94.7	3.65	6.2	66.5	46.0	3.07	77.0	21.7	3.4
	15.0	4.8	11.1	1650	55.7	4.42	40.6	101.3	3.69	7.5	65.5	43.0	2.86	75.2	22.9	3.2
				2000	55.3	4.32	40.6	95.6	3.75	6.5	66.3	45.5	2.99	76.5	22.1	3.2
50	7.5	1.5	3.4	1650	57.7	4.48	42.4	102.4	3.77	8.0	63.1	42.9	3.46	74.9	18.2	5.4
				2000	58.7	4.44	43.5	97.2	3.87	7.0	64.6	45.8	3.58	76.8	18.1	5.2
	11.3	2.9	6.7	1650	60.6	4.57	45.0	104.0	3.88	8.3	63.2	42.6	3.34	74.6	18.9	4.8
				2000	60.4	4.48	45.2	98.0	3.96	7.2	64.3	45.3	3.47	76.1	18.6	4.8
	15.0	4.6	10.7	1650	63.5	4.66	47.6	105.6	3.99	8.6	63.3	42.4	3.21	74.2	19.7	4.1
				2000	62.2	4.51	46.8	98.8	4.04	7.5	64.1	44.8	3.36	75.5	19.1	4.4
60	7.5	1.4	3.3	1650	64.9	4.68	48.9	106.4	4.06	9.1	61.6	41.9	3.78	74.6	16.3	6.6
				2000	66.1	4.64	50.3	100.6	4.17	7.9	63.1	45.4	3.90	76.4	16.2	6.5
	11.3	2.8	6.5	1650	68.1	4.79	51.7	108.2	4.16	9.4	61.9	41.7	3.61	74.2	17.1	6.0
				2000	68.5	4.67	52.6	101.7	4.30	8.2	63.2	45.0	3.74	75.9	16.9	6.1
	15.0	4.5	10.4	1650	71.3	4.90	54.5	110.0	4.26	9.7	62.1	41.4	3.45	73.9	18.0	5.4
				2000	71.0	4.71	54.9	102.9	4.42	8.5	63.2	44.6	3.58	75.4	17.7	5.6
70	7.5	1.4	3.2	1650	72.2	4.88	55.5	110.5	4.33	10.1	60.2	41.0	4.11	74.2	14.7	7.8
				2000	73.5	4.83	57.0	104.0	4.45	8.9	61.7	45.0	4.23	76.1	14.6	7.9
	11.3	2.7	6.3	1650	75.6	5.01	58.5	112.4	4.42	10.4	60.6	40.7	3.89	73.9	15.6	7.2
				2000	76.6	4.87	60.0	105.5	4.61	9.2	62.0	44.7	4.02	75.7	15.4	7.3
	15.0	4.3	10.0	1650	79.0	5.15	61.5	114.4	4.50	10.8	61.0	40.4	3.68	73.5	16.6	6.6
				2000	79.7	4.90	63.0	106.9	4.77	9.5	62.4	44.3	3.80	75.4	16.4	6.8
80	7.5	1.3	3.1	1650	79.4	5.08	62.1	114.6	4.58	11.3	57.6	40.2	4.56	73.2	12.6	9.0
				2000	80.9	5.03	63.7	107.5	4.71	9.7	59.0	44.2	4.70	75.0	12.5	9.2
	11.3	2.6	6.1	1650	82.7	5.20	64.9	116.4	4.66	11.7	58.0	40.0	4.32	72.7	13.4	8.4
				2000	83.8	5.05	66.6	108.8	4.86	10.1	59.3	43.8	4.46	74.5	13.3	8.6
	15.0	4.2	9.7	1650	86.0	5.33	67.8	118.2	4.73	12.1	58.3	39.7	4.09	72.3	14.3	7.8
				2000	86.7	5.07	69.4	110.1	5.01	10.5	59.7	43.5	4.22	74.1	14.1	8.0
90	7.5	1.3	3.0	1650	86.7	5.28	68.7	118.7	4.81	12.5	55.0	39.5	5.02	72.1	11.0	10.2
				2000	88.3	5.23	70.5	110.9	4.95	10.5	56.3	43.4	5.17	73.9	10.9	10.6
	11.3	2.5	5.9	1650	89.8	5.39	71.4	120.4	4.88	13.0	55.3	39.2	4.76	71.5	11.6	9.6
				2000	91.0	5.24	73.1	112.1	5.09	11.0	56.6	43.0	4.90	73.3	11.5	9.9
	15.0	4.1	9.4	1650	92.9	5.51	74.1	122.1	4.94	13.5	55.6	39.0	4.49	71.0	12.4	9.0
				2000	93.7	5.25	75.8	113.4	5.23	11.5	56.9	42.7	4.64	72.8	12.3	9.2
100	7.5	1.2	2.9	1650	Operation not recommended						53.3	39.1	5.56	72.3	9.6	11.5
				2000							54.6	42.9	5.72	74.1	9.5	11.9
	11.3	2.4	5.6	1650							53.7	38.8	5.27	71.6	10.2	10.8
				2000							54.9	42.6	5.43	73.5	10.1	11.2
	15.0	3.9	9.0	1650							54.0	38.5	4.98	71.0	10.8	10.2
				2000							55.3	42.2	5.14	72.8	10.7	10.4
110	7.5	1.2	2.8	1650							51.7	38.6	6.10	72.5	8.5	12.8
				2000							52.9	42.5	6.28	74.4	8.4	13.3
	11.3	2.4	5.4	1650							52.0	38.4	5.78	71.8	9.0	12.1
				2000							53.3	42.1	5.96	73.6	8.9	12.5
	15.0	3.8	8.7	1650							52.4	38.1	5.46	71.0	9.6	11.4
				2000							53.6	41.8	5.64	72.8	9.5	11.6

Interpolation is permissable, extrapolation is not.

Rev: 12/12/03 B

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

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

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

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

Table does not reflect fan or pump power ISO corrections.

Tranquility 27™ (TTS) Physical Data

Model	026	038	049	064
Compressor [1 Each]	Copeland UltraTech Two-Stage Scroll			
Factory Charge R410A (oz) [kg]	90 [2.55]	104 [2.95]	126 [3.57]	168 [4.76]
Water Connection Size				
IPT (in)	1	1	1	1
HWG Connection Size				
IPT (in)	1	1	1	1
Line Set Connection Size				
Suction Line Sweat Connection (in.)	3/4	7/8	7/8	1-1/8
Liquid Line Sweat Connection (in.)	3/8	3/8	3/8	1/2
Weight - Operating, (lbs) [kg]	203 [92]	221 [100]	250 [113]	265 [120]
Weight - Packaged, (lbs) [kg]	218 [99]	236 [107]	265 [120]	280 [127]

All units have spring compressor mountings, TXV expansion devices, and 1/2" [12.2mm] & 3/4" [19.1mm] electrical knockouts.

Genesis (GSS) Physical Data

Model	018	024	030	036	042	048	060
Compressor [1 Each]	Scroll						
Factory Charge R22 (oz) [kg]	90 [2.55]	104 [2.95]	108 [3.06]	117 [3.32]	122 [3.46]	130 [3.69]	136 [3.86]
Water Connection Size							
IPT (in)	1	1	1	1	1	1	1
HWG Connection Size							
IPT (in)	1	1	1	1	1	1	1
Line Set Connection Size							
Suction Line Sweat Connection (in.)	3/4	7/8	7/8	7/8	7/8	7/8	1-1/8
Liquid Line Sweat Connection (in.)	3/8	3/8	3/8	3/8	3/8	3/8	1/2
Weight - Operating, (lbs) [kg]	165 [75]	203 [92]	205 [93]	217 [98]	221 [100]	229 [104]	235 [107]
Weight - Packaged, (lbs) [kg]	180 [82]	218 [99]	220 [100]	232 [105]	236 [107]	244 [111]	250 [113]

All units have spring compressor mountings, TXV expansion devices, and 1/2" [12.2mm] & 3/4" [19.1mm] electrical knockouts.

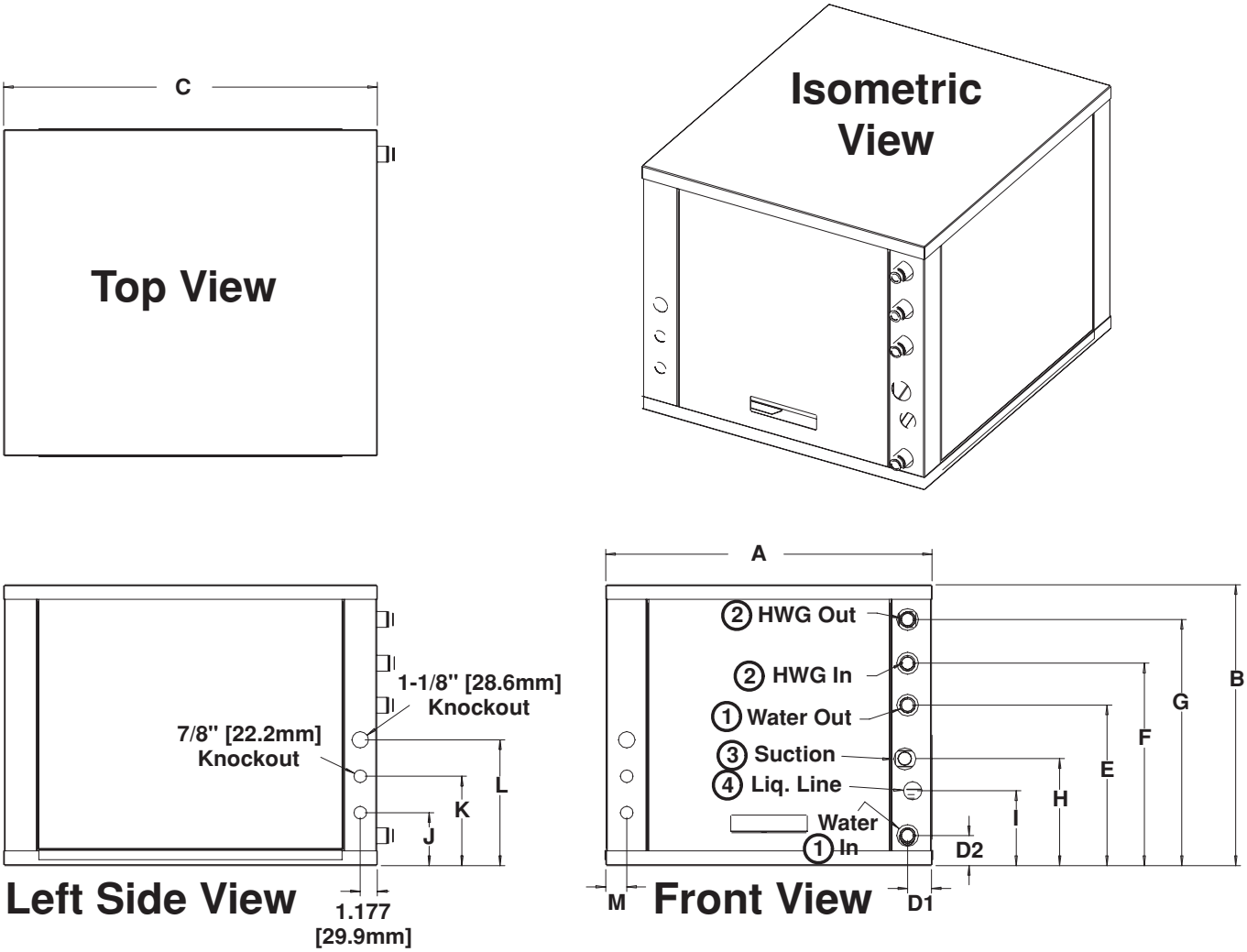
Paradigm (PDW) Physical Data

Model	018	024	030	036	042	048	060
Compressor [1 Each]	Rotary	Scroll					
Factory Charge R22 (oz) [kg]	70 [1.98]	74 [2.10]	86 [2.52]	101 [2.86]	122 [3.46]	130 [3.69]	136 [3.86]
Water Connection Size							
EPT (in)	1-1/4						
Line Set Connection Size							
Suction Line Sweat Connection (in.)	3/4	3/4	7/8	7/8	7/8	7/8	1-1/8
Liquid Line Sweat Connection (in.)	3/8	3/8	3/8	3/8	3/8	3/8	1/2
Weight - Operating, (lbs) [kg]	165 [75]	203 [92]	205 [93]	217 [98]	221 [100]	229 [104]	235 [107]
Weight - Packaged, (lbs) [kg]	180 [82]	218 [99]	220 [100]	232 [105]	236 [107]	244 [111]	250 [113]

All units have spring compressor mountings, TXV expansion devices, weather resistant cabinet, and 1/2" [12.2mm] & 3/4" [19.1mm] electrical knockouts. Hot Water Generator with factory installed hot gas service ports.

Tranquility 27™ (TTS) Dimensional Data

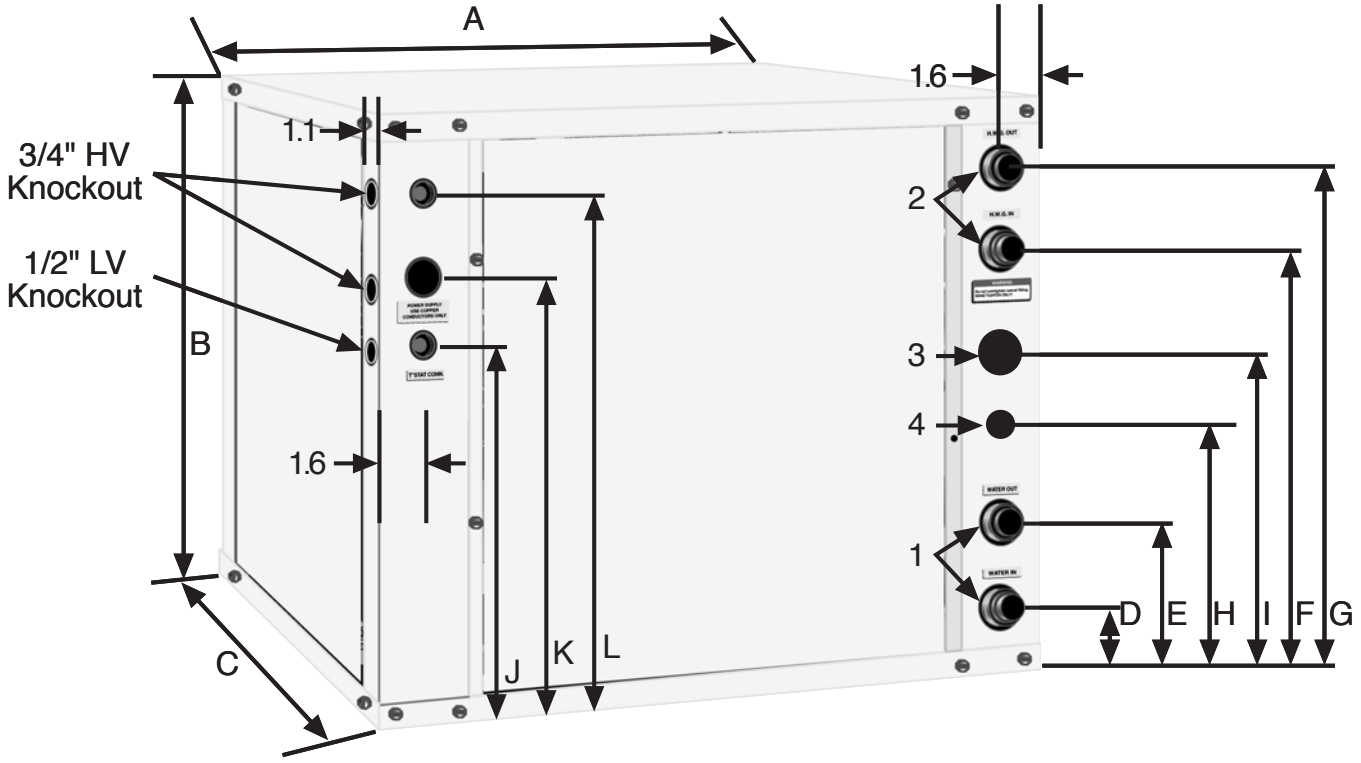
Model		Overall Cabinet			Water Connections							Refrigerant Connection				Electrical Knockouts			
		A Width	B Height	C Depth	1 Water In/Out Swivel	2 HWG In/Out Swivel	D1 Water In	D2 Water In	E Water Out	F HWG In	G HWG Out	3 Suction	4 Liquid	H	I	J	K	L	M
026	in	22.4	19.3	25.6	1	1	1.6	2.1	11.0	13.9	16.9	3/4	3/8	7.3	5.1	3.6	6.1	8.6	1.4
	cm	56.9	49.0	65.0	-	-	4.1	5.3	27.9	35.3	42.9	-	-	18.5	13.0	9.1	15.5	21.8	3.6
038	in	25.4	21.3	30.6	1	1	1.7	3.4	12.1	15.6	18.9	7/8	3/8	8.4	6.1	3.6	6.1	8.6	1.7
	cm	64.5	54.1	77.7	-	-	4.3	8.6	30.7	39.6	48.0	-	-	21.3	15.5	9.1	15.5	21.8	4.3
049	in	25.4	21.3	30.6	1	1	1.7	3.4	12.1	15.6	18.9	7/8	3/8	8.4	6.1	3.6	6.1	8.6	1.7
	cm	64.5	54.1	77.7	-	-	4.3	8.6	30.7	39.6	48.0	-	-	21.3	15.5	9.1	15.5	21.8	4.3
064	in	25.4	21.3	30.6	1	1	1.7	3.4	12.1	15.6	18.9	1-1/8	1/2	8.4	6.1	3.6	6.1	8.6	1.7
	cm	64.5	54.1	77.7	-	-	4.3	8.6	30.7	39.6	48.0	-	-	21.3	15.5	9.1	15.5	21.8	4.3



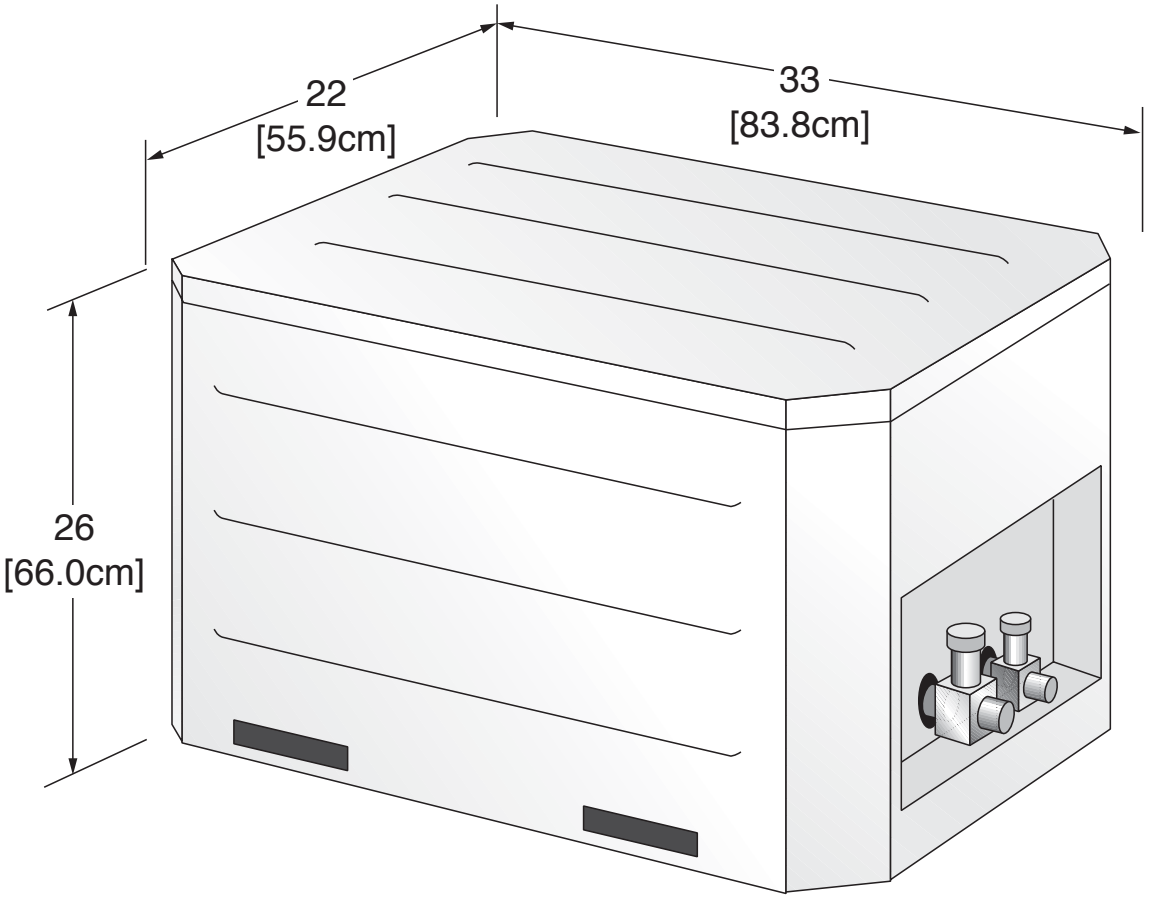
Genesis (GSS) Dimensional Data

Model		Overall Cabinet			Water Connections						Refrigerant Connections				Electrical Knockouts		
		A	B	C	1 - Water In & Out	2 - HWG In & Out	D	E	F	G	3-Size	4-Size	H	I	J	K	L
		Width	Height	Depth	Swivel	Swivel	In	Out	HWG In	HWG Out	Suction	Liquid	Suction	Liquid			
018	in.	22.4	19.3	25.6	1"	1"	2.4	5.4	13.9	16.9	3/4"	3/8"	8.1	11.1	5.7	9.7	12.2
	cm.	[56.9]	[49.0]	[65.0]			[6.1]	[13.7]	[35.3]	[42.9]			[20.6]	[28.3]	[14.5]	[24.6]	[31.0]
024	in.	22.4	19.3	25.6	1"	1"	2.4	5.4	13.9	16.9	3/4"	3/8"	8.1	11.1	5.7	9.7	12.2
	cm.	[56.9]	[49.0]	[65.0]			[6.1]	[13.7]	[35.3]	[42.9]			[20.6]	[28.3]	[14.5]	[24.6]	[31.0]
030	in.	22.4	19.3	25.6	1"	1"	2.4	5.4	13.9	16.9	7/8"	3/8"	8.1	11.1	5.7	9.7	12.2
	cm.	[56.9]	[49.0]	[65.0]			[6.1]	[13.7]	[35.3]	[42.9]			[20.6]	[28.3]	[14.5]	[24.6]	[31.0]
036	in.	22.4	19.3	25.6	1"	1"	2.4	5.4	13.9	16.9	7/8"	3/8"	8.1	11.1	5.7	9.7	12.2
	cm.	[56.9]	[49.0]	[65.0]			[6.1]	[13.7]	[35.3]	[42.9]			[20.6]	[28.3]	[14.5]	[24.6]	[31.0]
042	in.	25.4	21.3	30.6	1"	1"	2.4	5.4	15.9	18.9	7/8"	3/8"	9.1	12.1	8.1	11.7	14.2
	cm.	[64.5]	[54.1]	[77.7]			[6.1]	[13.7]	[40.4]	[48.0]			[23.2]	[30.8]	[20.6]	[29.7]	[36.1]
048	in.	25.4	21.3	30.6	1"	1"	2.4	5.4	15.9	18.9	7/8"	3/8"	9.1	12.1	8.1	11.7	14.2
	cm.	[64.5]	[54.1]	[77.7]			[6.1]	[13.7]	[40.4]	[48.0]			[23.2]	[30.8]	[20.6]	[29.7]	[36.1]
060	in.	25.4	21.3	30.6	1"	1"	2.4	5.4	15.9	18.9	1-1/8"	1/2"	9.1	12.1	8.1	11.7	14.2
	cm.	[64.5]	[54.1]	[77.7]			[6.1]	[13.7]	[40.4]	[48.0]			[23.2]	[30.8]	[20.6]	[29.7]	[36.1]

Rev.: 08/10/05D



Paradigm (PDW) Dimensional Data



Tranquility 27™ (TTS) Electrical Data

Model	Compressor			HWG Pump FLA	External Pump FLA	Total Unit FLA	Min Circuit Amps	Max Fuse/ HACR	Min AWG	Max Wire Ft. (m)
	RLA	LRA	Qty							
026	10.3	52	1	0.4	4.0	14.7	17.2	25	10	110 (33.5)
038	16.7	82	1	0.4	4.0	21.0	25.2	40	8	120 (36.5)
049	21.2	96	1	0.4	4.0	25.5	30.8	50	6	160 (48.5)
064	25.6	118	1	0.4	4.0	30.0	36.4	60	6	135 (41.0)

Rated Voltage of 208/230/60/1
HACR circuit breaker in USA only
Wire length based on one way measurement with 2% voltage drop

Min/Max Voltage of 197/254
All fuses Class RK-5
Wire size based on 60°C copper conductor

Genesis (GSS) Electrical Data

Model	Compressor			HWG Pump FLA	External Pump FLA	Total Unit FLA	Min Circuit Amps	Max Fuse/ HACR	Min AWG	Max Wire Ft (m)
	RLA	LRA	Qty							
018	9.0	42.0	1	0.40	4.0	13.4	15.7	20	12	80 (24.4)
024	10.3	56.0	1	0.40	4.0	14.6	17.2	25	10	110 (33.5)
030	12.2	67.0	1	0.40	4.0	16.5	19.6	30	10	100 (30.5)
036	13.5	73.0	1	0.40	4.0	17.8	21.2	30	10	90 (27.4)
042	16.5	95.0	1	0.40	4.0	20.9	25.0	40	8	120 (36.6)
048	18.3	109.0	1	0.40	4.0	22.7	27.3	45	6	180 (54.9)
060	25.0	169.0	1	0.40	4.0	29.3	35.6	60	6	140 (42.7)

Rated Voltage of 208/230/60/1
HACR circuit breaker in USA only
Wire length based on one way measurement with 2% voltage drop

Min/Max Voltage of 197/254
All fuses Class RK-5
Wire size based on 60°C copper conductor

Paradigm (PDW) Electrical Data

Model	Compressor				HWG Pump FLA	Ext Loop Pump FLA	Total Unit FLA	Min Circuit Amps	Max Fuse/ HACR	Min AWG	Max Wire Ft (m)
	RLA	LRA	Qty	Crank-case							
018	7.1	38.0	1	N/A	0.40	4.0	11.2	12.9	20	12	90 (27.4)
024	10.3	56.0	1	0.17	0.40	4.0	14.4	17.0	25	10	120 (36.6)
030	12.2	67.0	1	0.17	0.40	4.0	16.4	19.4	30	10	100 (30.5)
036	13.5	73.0	1	0.17	0.40	4.0	17.6	21.0	30	10	90 (27.4)
042	16.5	95.0	1	0.17	0.40	4.0	20.7	24.8	40	8	120 (36.6)
048	18.3	109.0	1	0.17	0.40	4.0	22.5	27.1	45	8	110 (33.5)
060	28.9	169.0	1	0.29	0.40	4.0	33.1	40.4	60	6	120 (36.6)

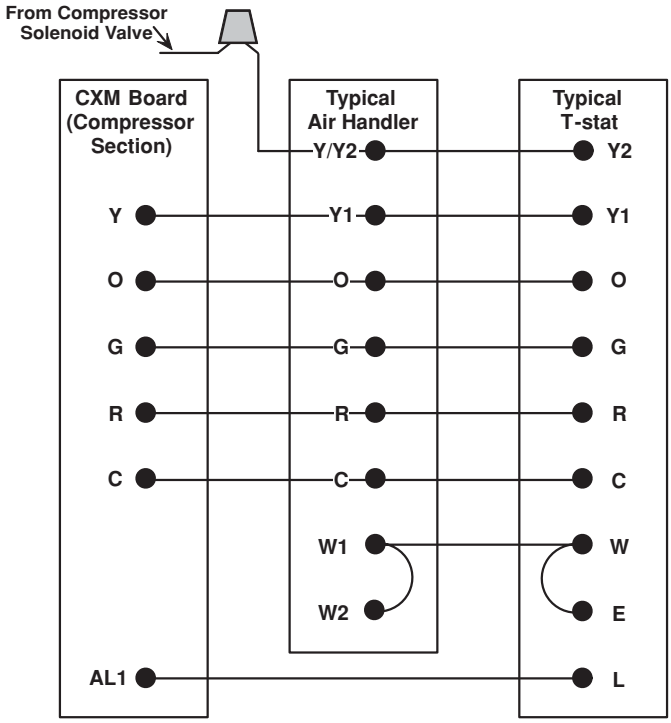
Rated Voltage of 208/230/60/1
HACR circuit breaker in USA only
Wire length based on one way measurement with 2% voltage drop

Min/Max Voltage of 197/254
All fuses Class RK-5
Wire size based on 60°C copper conductor

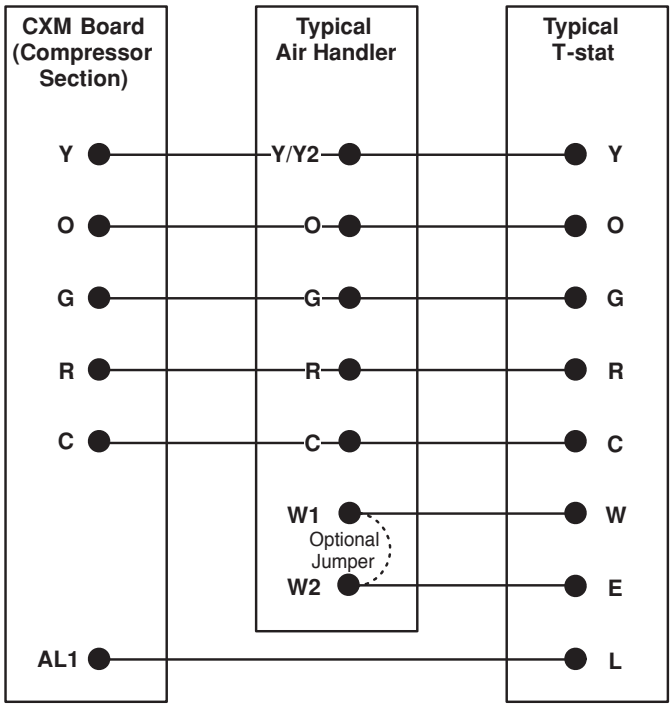
Thermostat Installation

The thermostat should be located on an interior wall in a larger room, away from supply duct drafts. DO NOT locate the thermostat in areas subject to sunlight, drafts or on external walls. The wire access hole behind the thermostat may in certain cases need to be sealed to prevent erroneous temperature measurement. Position the thermostat back plate against the wall so that it appears level and so the thermostat wires protrude through the middle of the back plate. Mark the position of the back plate mounting holes and drill holes with a 3/16" (5mm) bit. Install supplied anchors and secure plate to the wall. Thermostat wire must be 18 AWG wire. Wire the appropriate thermostat as shown in Figures 28a and 28b to the low voltage terminal strip on the CXM control board. Practically any heat pump thermostat will work with these units, provided it has the correct number of heating and cooling stages.

Typical Thermostat Wiring, Two-Stage Units (3 Heat / 2 Cool)



Typical Thermostat Wiring, Single-Stage Units (2 Heat / 1 Cool)



CXM Control
For detailed control information, see CXM/DXM Application, Operation and Maintenance (AOM) manual (part #97B0003N08).

Field Selectable Inputs
Test mode: Test mode allows the service technician to check the operation of the control in a timely manner. By momentarily shorting the test terminals, the CXM control enters a 20 minute test mode period in which all time delays are sped up 15 times. Upon entering test mode, the status LED will flash a code representing the last fault. For diagnostic ease at the thermostat, the alarm relay will also cycle during test mode. The alarm relay will cycle on and off similar to the status LED to indicate a code representing the last fault, at the thermostat. Test mode can be exited by shorting the test terminals for 3 seconds.
Retry Mode: If the control is attempting a retry of a fault, the status LED will slow flash (slow flash = one flash every 2 seconds) to indicate the control is in the process of retrying.

Field Configuration Options
Note: In the following field configuration options, jumper wires should be clipped ONLY when power is removed from the CXM control.

Water coil low temperature limit setting: Jumper 3 (JW3-FP1 Low Temp) provides field selection of temperature limit setting for FP1 of 30°F or 10°F [-1°F or -12°C] (refrigerant temperature).
Not Clipped = 30°F [-1°C]. Clipped = 10°F [-12°C].
Air coil low temperature limit setting: Jumper 2 (JW2-FP2 Low Temp) provides field selection of temperature limit setting for FP2 of 30°F or 10°F [-1°F or -12°C] (refrigerant temperature). Note: This jumper should only be clipped under extenuating circumstances, as recommended by the factory.
Not Clipped = 30°F [-1°C]. Clipped = 10°F [-12°C].
Alarm relay setting: Jumper 1 (JW1-AL2 Dry) provides field selection of the alarm relay terminal AL2 to be jumpered to 24VAC or to be a dry contact (no connection).
Not Clipped = AL2 connected to R. Clipped = AL2 dry contact (no connection).

DIP Switches
Note: In the following field configuration options, DIP switches should only be changed when power is removed from the CXM control.
DIP switch 1: Unit Performance Sentinel Disable - provides field selection to disable the UPS feature.
On = Enabled. Off = Disabled.
DIP switch 2: Stage 2 Selection - provides selection of whether compressor has an “on” delay. If set to stage 2, the compressor will have a 3 second delay before energizing. Also, if set for stage 2, the alarm relay will NOT cycle during test mode.
On = Stage 1. Off = Stage 2
DIP switch 3: Not Used.
DIP switch 4: DDC Output at EH2 - provides selection for DDC operation. If set to “DDC Output at EH2,” the EH2 terminal will continuously output the last fault code of the controller. If set to “EH2 normal,” EH2 will operate as standard electric heat output.
On = EH2 Normal. Off = DDC Output at EH2.
NOTE: Some CXM controls only have a 2 position DIP switch package. If this is the case, this option can be selected by clipping the jumper which is in position 4 of SW1.
Jumper not clipped = EH2 Normal. Jumper clipped = DDC Output at EH2.
DIP switch 5: Factory Setting - Normal position is “On.” Do not change selection unless instructed to do so by the factory.

CXM LED And Alarm Relay Operations

Description of Operation	LED	Alarm Relay
Normal Mode	On	Open
Normal Mode with UPS Warning	On	Cycle (closed 5 sec., Open 25 sec.)
CXM is non-functional	Off	Open
Fault Retry	Slow Flash	Open
Lockout	Fast Flash	Closed
Over/Under Voltage Shutdown	Slow Flash	Open (Closed after 15 minutes)
Test Mode - No fault in memory	Flashing Code 1	Cycling Code 1
Test Mode - HP Fault in memory	Flashing Code 2	Cycling Code 2
Test Mode - LP Fault in memory	Flashing Code 3	Cycling Code 3
Test Mode - FP1 Fault in memory	Flashing Code 4	Cycling Code 4
Test Mode - FP2 Fault in memory	Flashing Code 5	Cycling Code 5
Test Mode - CO Fault in memory	Flashing Code 6	Cycling Code 6
Test Mode - Over/Under shutdown in memory	Flashing Code 7	Cycling Code 7
Test Mode - UPS in memory	Flashing Code 8	Cycling Code 8
Test Mode - Swapped Thermistor	Flashing Code 9	Cycling Code 9

-Slow Flash = 1 flash every 2 seconds
-Fast Flash = 2 flashes every 1 second
-Flash code 2 = 2 quick flashes, 10 second pause, 2 quick flashes, 10 second pause, etc.
-On pulse 1/3 second; off pulse 1/3 second

Safety Features – CXM Control

The safety features below are provided to protect the compressor, heat exchangers, wiring and other components from damage caused by operation outside of design conditions.

Anti-short cycle protection: The control features a 5 minute anti-short cycle protection for the compressor. Note: The 5 minute anti-short cycle also occurs at power up.

Random start: The control features a random start upon power up of 5-80 seconds.

Fault Retry: In Fault Retry mode, the Status LED begins slowly flashing to signal that the control is trying to recover from a fault input. The control will stage off the outputs and then "try again" to satisfy the thermostat input call. Once the thermostat input call is satisfied, the control will continue on as if no fault occurred.

If 3 consecutive faults occur without satisfying the thermostat input call, the control will go into "lockout" mode. The last fault causing the lockout will be stored in memory and can be viewed by going into test mode. Note: FP1/FP2 faults are factory set at only one try.

Lockout: In lockout mode, the status LED will begin fast flashing. The compressor relay is turned off immediately. Lockout mode can be "soft" reset by turning off the thermostat (or satisfying the call). A "soft" reset keeps the fault in memory but resets the control. A "hard" reset (disconnecting power to the control) resets the control and erases fault memory.

Lockout with emergency heat: While in lockout mode, if W becomes active (CXM), emergency heat mode will occur.

High pressure switch: When the high pressure switch opens due to high refrigerant pressures, the compressor relay is de-energized immediately since the high pressure switch is in series with the compressor contactor coil. The high pressure fault recognition is immediate (does not delay for 30 continuous seconds before de-energizing the compressor).

High pressure lockout code = 2

Example: 2 quick flashes, 10 sec pause, 2 quick flashes, 10 sec. pause, etc.

Low pressure switch: The low pressure switch must be open and remain open for 30 continuous seconds during "on" cycle to be recognized as a low pressure fault. If the low pressure switch is open for 30 seconds prior to compressor power up it will be considered a low pressure (loss of charge) fault. The low pressure switch input is bypassed for the initial 60 seconds of a compressor run cycle.

Low pressure lockout code = 3

Water coil low temperature (FP1): The FP1 thermistor temperature must be below the selected low temperature limit setting for 30 continuous seconds during a compressor run cycle to be recognized as a FP1 fault. The FP1 input is bypassed for the initial 60 seconds of a compressor run cycle. FP1 is set at the factory for one try. Therefore, the control will go into lockout mode once the FP1 fault has occurred.

FP1 lockout code = 4

Air coil low temperature (FP2): The FP2 thermistor temperature must be below the selected low temperature limit setting for 30 continuous seconds during a compressor run cycle to be recognized as a FP2 fault. The FP2 input is bypassed for the initial 60 seconds of a compressor run cycle. FP2 is set at the factory for one try. Therefore, the control will go into lockout mode once the FP2 fault has occurred.

FP2 lockout code = 5

Condensate overflow: The condensate overflow sensor must sense overflow level for 30 continuous seconds to be recognized as a CO fault. Condensate overflow will be monitored at all times.

CO lockout code = 6

Over/under voltage shutdown: An over/under voltage condition exists when the control voltage is outside the range of 19VAC to 30VAC. Over/under voltage shut down is a self-resetting safety. If the voltage comes back within range for at least 0.5 seconds, normal operation is restored. This is not considered a fault or lockout. If the CXM is in over/under voltage shutdown for 15 minutes, the alarm relay will close.

Over/under voltage shut down code = 7

Unit Performance Sentinel-UPS (patent pending): The UPS feature indicates when the heat pump is operating inefficiently. A UPS condition exists when:

a) In heating mode with compressor energized, FP2 is greater than 125°F [52°C] for 30 continuous seconds, or:
b) In cooling mode with compressor energized, FP1 is greater than 125°F [52°C] for 30 continuous seconds, or:
c) In cooling mode with compressor energized, FP2 is less than 40°F [4.5°C] for 30 continuous seconds. If a UPS condition occurs, the control will immediately go to UPS warning. The status LED will remain on as if the control is in normal mode. Outputs of the control, excluding LED and alarm relay, will NOT be affected by UPS. The UPS condition cannot occur during a compressor off cycle. During UPS warning, the alarm relay will cycle on and off. The cycle rate will be "on" for 5 seconds, "off" for 25 seconds, "on" for 5 seconds, "off" for 25 seconds, etc.

UPS warning code = 8

Swapped FP1/FP2 thermistors: During test mode, the control monitors to see if the FP1 and FP2 thermistors are in the appropriate places. If the control is in test mode, the control will lockout, with code 9, after 30 seconds if:

a) The compressor is on in the cooling mode and the FP1 sensor is colder than the FP2 sensor, or:
b) The compressor is on in the heating mode and the FP2 sensor is colder than the FP1 sensor.

Swapped FP1/FP2 thermistor code = 9.

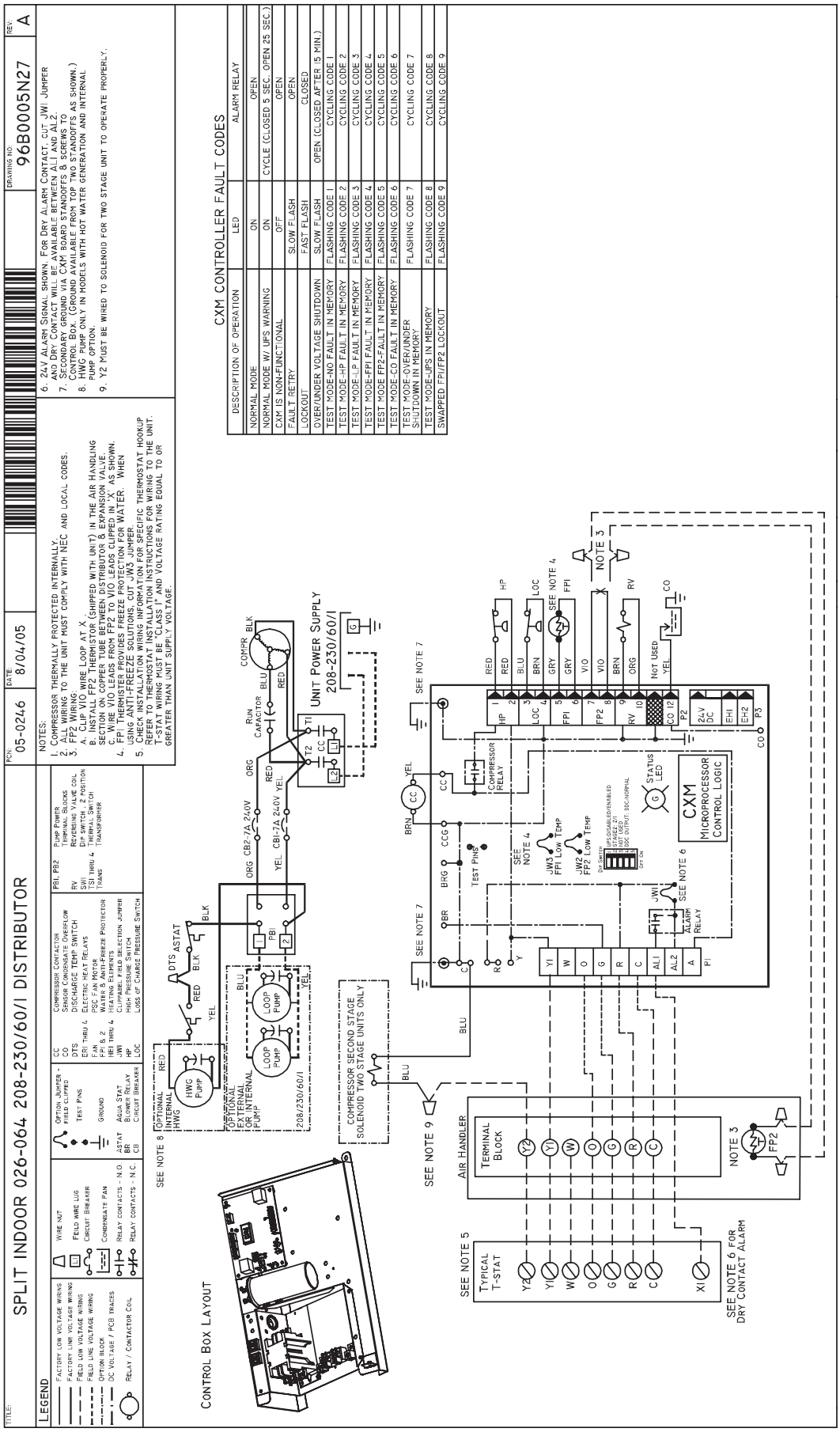
Diagnostic Features
The LED on the CXM board advises the technician of the current status of the CXM control. The LED can display either the current CXM mode or the last fault in memory if in test mode. If there is no fault in memory, the LED will flash Code 1 (when in test mode).

CXM Control Start-up Operation
The control will not operate until all inputs and safety controls are checked for normal conditions. The compressor will have a 5 minute anti-short cycle delay at power-up. The first time after power-up that there is a call for compressor, the compressor will follow a 5 to 80 second random start delay. After the random start delay and anti-short cycle delay, the compressor relay will be energized. On all subsequent compressor calls, the random start delay is omitted.

Unit Operation

T-stat signal	TTS Variable Speed Air Handler	GSS/PDW Variable Speed Air Handler	GSS/PDW PSC Air Handler
G	Fan only	Fan only	Fan only
G, Y or Y1	Stage 1 heating[1]	Stage 1 heating[3]	Stage 1 heating[5]
G, Y1, Y2	Stage 2 heating[1]	Stage 2 heating[3]	Stage 2 heating[5]
G, Y1, Y2, W	Stage 3 heating[1]	Stage 3 heating[3]	N/A
G, W	Emergency heat	Emergency heat	Emergency heat
G, Y or Y1, O	Stage 1 cooling[2]	Stage 1 cooling[4]	Cooling[6]
G, Y1, Y2, O	Stage 2 cooling[2]	Stage 2 cooling[4]	N/A

1 Stage 1 = 1st stage compressor, 1st stage fan operation
Stage 2 = 2nd stage compressor, 2nd stage fan operation
Stage 3 = 2nd stage compressor, auxiliary electric heat, 2nd or 3rd stage fan operation (depending on fan settings)
2 Stage 1 = 1st stage compressor, 1st stage fan operation, reversing valve
Stage 2 = 2nd stage compressor, 2nd stage fan operation, reversing valve
3 Stage 1 = compressor, 1st stage fan operation
Stage 2 = compressor, 2nd stage fan operation
Stage 3 = compressor, auxiliary electric heat, 2nd or 3rd stage fan operation (depending on fan settings)
4 Stage 1 = compressor, 1st stage fan operation, reversing valve
Stage 2 = compressor, 2nd stage fan operation, reversing valve
5 Stage 1 = compressor, fan
Stage 2 = compressor, auxiliary electric heat, fan
6 Cooling = compressor, fan, reversing valve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DATE: 8/04/05
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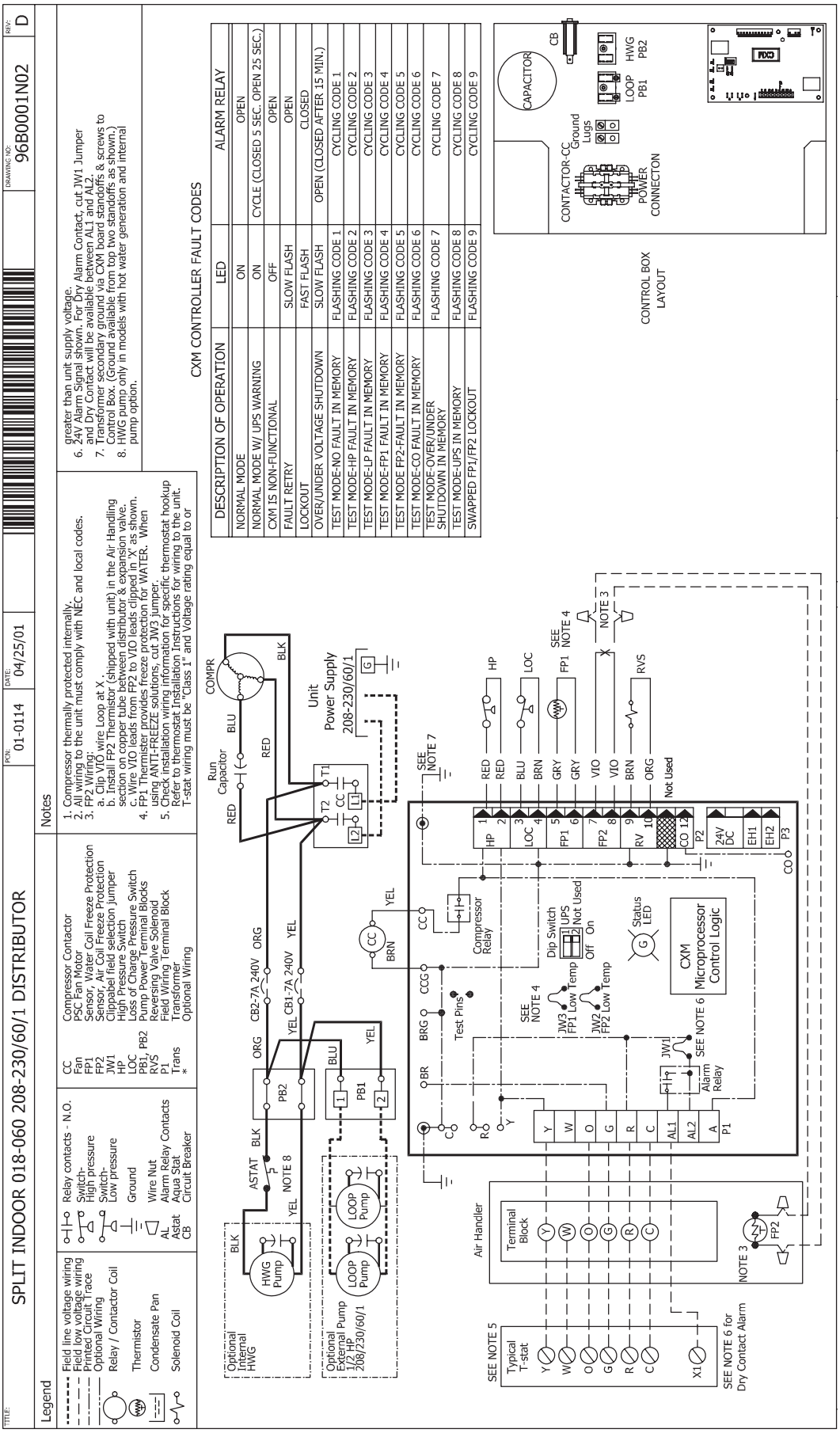
LEGEND
FACTORY LOW VOLTAGE WIRING
FACTORY LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
FIELD LINE VOLTAGE WIRING
OPTION BLOCK
DC VOLTAGE / PCB TRACES
RELAY / CONTACTOR COIL
WIRE NUT
FIELD WIRE LUG
CIRCUIT BREAKER
CONDENSATE PAN
RELAY CONTACTS - N.O.
RELAY CONTACTS - N.C.
OPTION JUMPER - FIELD CLIPPED
TEST PINS
GROUND
AQUA STAT
BLOWER RELAY
CIRCUIT BREAKER
CC COMPRESSOR CONTACTOR
CO SENSOR CONDENSATE OVERFLOW
DTS DISCHARGE TEMP SWITCH
EB1 THRU 4 ELECTRIC HEAT RELAYS
FM PSC FAN MOTOR
FP1 & 2 WATER & ANTI-FREEZE PROTECTOR
HE1 THRU 4 HEATING ELEMENTS
JW1 CLIPPABLE FIELD SELECTION JUMPER
HPS HIGH PRESSURE SWITCH
LOC LOSS OF CHARGE PRESSURE SWITCH
PB1, PB2 PUMP POWER TERMINAL BLOCKS
RV REVERSING VALVE COIL
SW1 DIP SWITCH, 2 POSITION
TS1 THRU 4 THERMAL SWITCH
TRANS TRANSFORMER
NOTES:
1. COMPRESSOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES.
3. FP2 WIRING:
A. CLIP V10 WIRE LOOP AT X.
B. INSTALL FP2 THERMISTOR (SHIPPED WITH UNIT) IN THE AIR HANDLING SECTION ON COPPER TUBE BETWEEN DISTRIBUTOR & EXPANSION VALVE.
C. WIRE V10 LEADS FROM FP2 TO V10 LEADS CLIPPED IN 'X' AS SHOWN.
4. FP1 THERMISTER PROVIDES FREEZE PROTECTION FOR WATER. WHEN USING ANTI-FREEZE SOLUTIONS, CUT JW3 JUMPER.
5. CHECK INSTALLATION MANUAL FOR MORE SPECIFIC THERMOSTAT HOOKUP REFER TO THERMOSTAT INSTALLATION INSTRUCTIONS FOR WIRING TO THE UNIT. T-STAT WIRING MUST BE "CLASS 1" AND VOLTAGE RATING EQUAL TO OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. 24V ALARM SIGNAL SHOWN. FOR DRY ALARM CONTACT, CUT JW1 JUMPER AND DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2.
7. CONTROL BOX GROUND VIA CXM IS STANDOFFS (GROUND AVAILABLE FROM TOP TWO STANDOFFS AS SHOWN.)
8. HWG PUMP ONLY IN MODELS WITH HOT WATER GENERATION AND INTERNAL PUMP OPTION.
9. Y2 MUST BE WIRED TO SOLENOID FOR TWO STAGE UNIT TO OPERATE PROPERLY.
CXM CONTROLLER FAULT CODES
DESCRIPTION OF OPERATION | LED | ALARM RELAY
NORMAL MODE | ON | OPEN
NORMAL MODE W/ UPS WARNING | ON | CYCLE (CLOSED 5 SEC. OPEN 25 SEC.)
CXM IS NON-FUNCTIONAL | OFF | OPEN
FAULT RETRY | SLOW FLASH | OPEN
LOCKOUT | FAST FLASH | CLOSED
OVER/UNDER VOLTAGE SHUTDOWN | SLOW FLASH | OPEN (CLOSED AFTER 15 MIN.)
TEST MODE-NO FAULT IN MEMORY | FLASHING CODE 1 | CYCLING CODE 1
TEST MODE-HP FAULT IN MEMORY | FLASHING CODE 2 | CYCLING CODE 2
TEST MODE-LP FAULT IN MEMORY | FLASHING CODE 3 | CYCLING CODE 3
TEST MODE-FP1 FAULT IN MEMORY | FLASHING CODE 4 | CYCLING CODE 4
TEST MODE FP2-FAULT IN MEMORY | FLASHING CODE 5 | CYCLING CODE 5
TEST MODE-CO FAULT IN MEMORY | FLASHING CODE 6 | CYCLING CODE 6
TEST MODE-OVER/UNDER SHUTDOWN IN MEMORY | FLASHING CODE 7 | CYCLING CODE 7
TEST MODE-UPS IN MEMORY | FLASHING CODE 8 | CYCLING CODE 8
SWAPPED FP1/FP2 LOCKOUT | FLASHING CODE 9 | CYCLING CODE 9
CONTROL BOX LAYOUT
SEE NOTE 8
OPTIONAL INTERNAL HWG
OPTIONAL EXTERNAL OR INTERNAL PUMP
HWG PUMP
LOOP PUMP
208/230/60/1
DTS
ASTAT
ORG CB2-7A 240V
YEL CB1-7A 240V
COMPR
CAPACITOR
RUN
UNIT POWER SUPPLY 208-230/60/1
COMPRESSOR SECOND STAGE SOLENOID TWO STAGE UNITS ONLY
SEE NOTE 9
AIR HANDLER
TERMINAL BLOCK
SEE NOTE 5
TYPICAL T-STAT
SEE NOTE 6 FOR DRY CONTACT ALARM
NOTE 3
SEE NOTE 7
TEST PINS
SEE NOTE 4
JW3 FP1 LOW TEMP
JW2 FP2 LOW TEMP
SEE NOTE 6
JW1
ALARM RELAY
COMPRESSOR RELAY
STATUS LED
CXM MICROPROCESSOR CONTROL LOGIC
HP
LOC
FP1
RV
CO
NOT USED
24V DC
EH1
EH2
P1
P2
P3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DATE: 04/25/01
DRAWING NO: 96B0001N02
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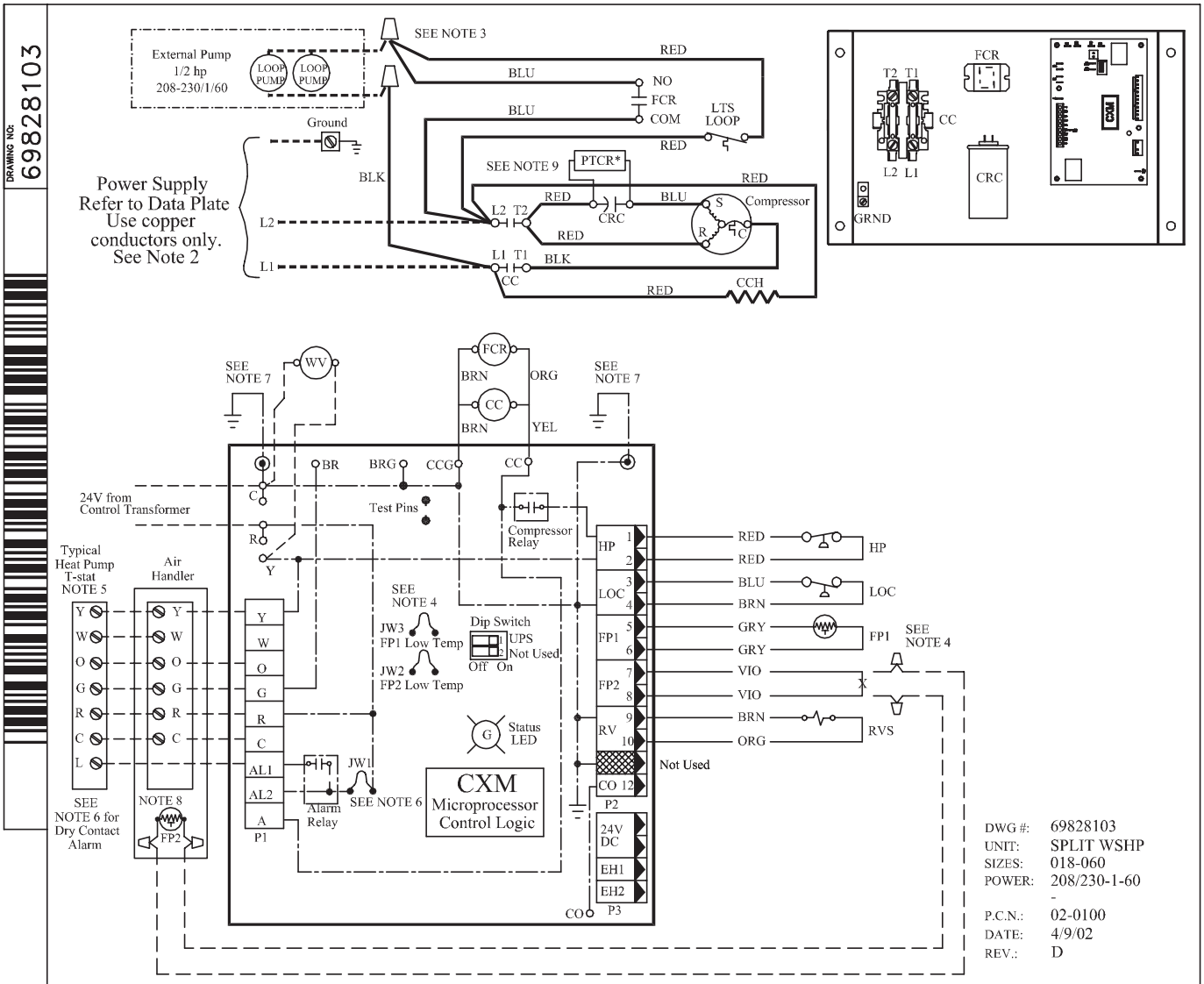
Legend
Field line voltage wiring
Field low voltage wiring
Printed Circuit Trace
Optional Wiring
Relay / Contactor Coil
Thermistor
Condensate Pan
Solenoid Coil
Relay contacts - N.O.
Switch
High pressure Switch
Low pressure Switch
Ground
Wire Nut
Alarm Relay Contacts
Aqua Stat
Circuit Breaker
CC Compressor Contactor
Fan PSC Fan Motor
FP1 Sensor, Water Coil Freeze Protection
FP2 Sensor, Air Coil Freeze Protection
JW1 Clippabel field selection jumper
HP High Pressure Switch
LOC Loss of Charge Pressure Switch
PB1, PB2 Pump Power Terminal Blocks
RVS Reversing Valve Solenoid
P1 Field Wiring Terminal Block
Trans Transformer
* Optional Wiring
Notes
1. Compressor thermally protected internally.
2. All wiring to the unit must comply with NEC and local codes.
3. FP2 Wiring:
a. Clip VIO wire Loop at X.
b. Install FP2 Thermistor (shipped with unit) in the Air Handling section on copper tube between distributor & expansion valve.
c. Wire VIO leads from FP2 to VIO leads clipped in 'X' as shown.
4. FP1 Thermister provides freeze protection for WATER. When using ANTI-FREEZE solutions, cut JW3 jumper.
5. Check installation wiring information for specific thermostat hookup Refer to thermostat Installation Instructions for wiring to the unit. T-stat wiring must be "Class 1" and Voltage rating equal to or greater than unit supply voltage.
6. 24V Alarm Signal shown. For Dry Alarm Contact, cut JW1 Jumper and Dry Contact will be available between AL1 and AL2.
7. Transformer secondary ground via CXM board standoffs & screws to Control Box. (Ground available from top two standoffs as shown.)
8. HWG pump only in models with hot water generation and internal pump option.
CXM CONTROLLER FAULT CODES
DESCRIPTION OF OPERATION | LED | ALARM RELAY
NORMAL MODE | ON | OPEN
NORMAL MODE W/ UPS WARNING | ON | CYCLE (CLOSED 5 SEC. OPEN 25 SEC.)
CXM IS NON-FUNCTIONAL | OFF | OPEN
FAULT RETRY | SLOW FLASH | OPEN
LOCKOUT | FAST FLASH | CLOSED
OVER/UNDER VOLTAGE SHUTDOWN | SLOW FLASH | OPEN (CLOSED AFTER 15 MIN.)
TEST MODE-NO FAULT IN MEMORY | FLASHING CODE 1 | CYCLING CODE 1
TEST MODE-HP FAULT IN MEMORY | FLASHING CODE 2 | CYCLING CODE 2
TEST MODE-LP FAULT IN MEMORY | FLASHING CODE 3 | CYCLING CODE 3
TEST MODE-FP1 FAULT IN MEMORY | FLASHING CODE 4 | CYCLING CODE 4
TEST MODE FP2-FAULT IN MEMORY | FLASHING CODE 5 | CYCLING CODE 5
TEST MODE-CO FAULT IN MEMORY | FLASHING CODE 6 | CYCLING CODE 6
TEST MODE-OVER/UNDER SHUTDOWN IN MEMORY | FLASHING CODE 7 | CYCLING CODE 7
TEST MODE-UPS IN MEMORY | FLASHING CODE 8 | CYCLING CODE 8
SWAPPED FP1/FP2 LOCKOUT | FLASHING CODE 9 | CYCLING CODE 9
CONTROL BOX LAYOUT
CONTACTOR-CC
CAPACITOR
CB
Ground Lugs
POWER CONNECTION
LOOP PB1
HWG PB2
Unit Power Supply 208-230/60/1
Run Capacitor
COMPR
CB2-7A 240V
CB1-7A 240V
ASTAT
NOTE 8
HWG Pump
LOOP Pump
Optional Internal HWG
Optional External Pump 1/2 HP 208/230/60/1
SEE NOTE 7
HP
LOC
FP1
FP2
RV
CO
24V DC
EH1
EH2
P2
P3
Not Used
RVS
NOTE 3
SEE NOTE 4
Dip Switch
UPS
Not Used
Off On
JW3 FP1 Low Temp
JW2 FP2 Low Temp
Test Pins
Compressor Relay
Status LED
CXM Microprocessor Control Logic
SEE NOTE 6
JW1
Alarm Relay
AL1
AL2
A
P1
Air Handler
Terminal Block
SEE NOTE 5
Typical T-stat
SEE NOTE 6 for Dry Contact Alarm
X1
Y
W
O
G
R
C



Legend

Factory line voltage wiring	Thermistor	CC	Compressor Contactor
Factory low voltage wiring	Ground	CCH	Crankcase Heater
Field line voltage wiring		CRC	Compressor Run Capacitor
Field low voltage wiring		FCR	Flow Control Relay
Printed Circuit Trace		FP1	Sensor, Water Coil Freeze Protection
Relay / Contactor Coil		FP2	Sensor, Air Coil Freeze Protection
Solenoid Coil		HP	High Pressure Switch
Temperature Switch		JW1	Jumper Wire for Alarm
High Pressure Switch		LOC	Loss of Charge Pressure Switch
Low Pressure Switch		LTS	Low Temperature Switch
		P1	Field Wiring Terminal Block
		PTCR	Positive Temp. Coefficient Relay
	AL Alarm Relay Contacts	RVS	Reversing Valve Solenoid
	CB Circuit Breaker	Trans	Transformer
		WV	Water Valve

NOTES:
1. Compressor thermally protected internally.
2. All wiring to the unit must comply with NEC and local codes.
3. For operation of field installed flow controller disconnect wire nuts from BLU leads and connect flow controller wire to BLU leads. Danger line voltage. Disconnect power to unit before making this connection. Warning do not operate pump unless it has been connected to a water source.
4. FP1 Thermister provides freeze protection for WATER. When using ANTI-FREEZE solutions, cut JW3 jumper.
5. Typical heat pump thermostat wiring shown. Refer to thermostat Installation Instructions for wiring to the unit. T-stat wiring must be "Class 1" and Voltage rating equal to or greater than unit supply voltage.
6. 24V Alarm Signal shown. For Dry Alarm Contact, cut JW1 Jumper and Dry Contact will be available between AL1 and AL2.
7. Transformer secondary ground via CXM board standoffs & screws to Control Box. (Ground available from top two standoffs as shown.)
8. FP2 Wiring
   a. Clip VIO wire Loop at X
   b. Install FP2 Thermistor (shipped with unit) in the Air Handling section on copper tube between distributor & expansion valve.
   c. Wire VIO lead from FP2 to VIO lead clipped in note 'a' as shown.
9. PTCR, use only when applicable.

The installation of geothermal heat pump units and all associated components, parts, and accessories which make up the installation shall be in accordance with the regulations of ALL authorities having jurisdiction and MUST conform to all applicable codes. It is the responsibility of the installing contractor to determine and comply with ALL applicable codes and regulations.

General
Proper indoor coil selection is critical to system efficiency. Using an older-model coil can affect efficiency and may not provide the customer with rated or advertised EER and COP. Coil design and technology have dramatically improved operating efficiency and capacity in the past 20 years. Homeowners using an older coil are not reaping these cost savings and comfort benefits. NEVER MATCH AN R-22 INDOOR COIL WITH AN R-410A COMPRESSOR SECTION.

Newer indoor coils have a larger surface area, enhanced fin design, and grooved tubing. These features provide a larger area for heat transfer, improving efficiency and expanding capacity. Typical older coils may only have one-third to one-half the face area of these redesigned coils.

Indoor Coil Selection - Tranquility 27 (TTS)
ClimateMaster split system heat pumps are rated in the ARI directory with a specific indoor coil match. Tranquility 27 (TTS) models are rated with Carrier/ Bryant FV4 or FE4 series variable speed air handlers as shown in Table 1a. Other brands of air handlers may attain the same ARI ratings providing that the specifications meet or exceed those listed in Table 1a AND Table 1b. An ECM motor and TXV is required. Cap tubes and fixed orifices are not acceptable. PSC fans may be used if matched to Table 1b, but will not meet ARI ratings. If using PSC fan, compressor section must be operated as a single stage unit (i.e. wired for either 1st stage or 2nd stage). Without the ability to vary the airflow, supply air temperatures may not be acceptable if the compressor is allowed to change stages when used with a PSC fan motor.

Tranquility 27™ Air Handler Matches for ARI Ratings

Compressor Section	026	038	049	064
Air Handler Model FV4	003	005	006	006
Refrigerant	R-410A			
Metering Device	TXV (required)			
Air Coil Type Rows - Fins/in. Face Area (sq. ft.)	 Slope 3 - 14.5 3.46	 A 3 - 14.5 5.93	 A 3 - 14.5 7.42	 A 3 - 14.5 7.42
Cabinet Configuration	Upflow / Downflow / Horizontal (Multipoise)			
ECM Settings for ARI Ratings (FV4 Fan Coil)	AC/HP size: 036 System Type: Comfort AC/HP CFM Adjust: Nom	AC/HP size: 036 System Type: HP-Effic AC/HP CFM Adjust: High	AC/HP size: 048 System Type: Comfort AC/HP CFM Adjust: High	AC/HP size: 060 System Type: Comfort AC/HP CFM Adjust: High
Fan Motor Type - HP	ECM - 1/2	ECM - 1/2	ECM - 3/4	ECM - 3/4

Tranquility 27™ Air Handler Characteristics for Brands other than Above Models

Model*	Nominal Tons*	Evaporator Temp (ºF)	CFM	Capacity (MBtuh)**
026 - Part Load	1.5	50	530	19.2 - 22.4
026 - Full Load	2.0	52	880	24.2 - 28.2
038 - Part Load	2.5	51	700	25.2 - 29.2
038 - Full Load	3.0	50	1200	34.5 - 40.1
049 - Part Load	3.5	47	1000	34.3 - 39.9
049 - Full Load	4.0	48	1650	46.3 - 53.8
064 - Full Load	5.0	48	1850	54.5 - 63.3

* Nominal tons are at ARI/ISO 13256-1 GLHP conditions. Two-stage units may be operated in single-stage mode if desired, where smaller capacity is required. For example, a model 026 may be used as a 1-1/2 ton unit if "locked" into 1st stage operation only. If PSC fan is used, unit must be "locked" into either 1st or 2nd stage. An ECM fan is required for two-stage operation and for ARI ratings. Size air handler for "Full Load" if operating in two-stage mode.

**When selecting an air handler based upon the above conditions, choose entering WB temperature of 67ºF. Use evaporator temperature, CFM and capacity requirements as listed above. The air handler capacity must be at least at the minimum capacity shown in the table in order for the ARI rating condition to be valid. See Figure 1 for an example selection.

Indoor Coil Selection - R-22 Units

Geothermal split system heat pumps with R-22 refrigerant are rated in the ARI directory with a "generic" indoor coil match and PSC fan. Selection of air handlers that attain the published ARI ratings must meet or exceed the specifications listed in Table 2. **A TXV is required.** Cap tubes and fixed orifices are not acceptable.

R-22 Air Handler Characteristics

Model*	Nominal Tons*	Evaporator Temp (ºF)	CFM	Capacity (MBtuh)**
018	1.5	50	600	18.5 - 21.3
024	2.0	47	800	25.5 - 29.3
030	2.5	49	1000	31.5 - 36.2
036	3.0	48	1200	37.0 - 42.5
042	3.5	45	1400	42.2 - 48.5
048	4.0	46	1600	50.0 - 57.5
060	5.0	45	2000	58.0 - 66.7

* Nominal tons are at ARI/ISO 13256-1 GLHP conditions.

**When selecting an air handler based upon the above conditions, choose entering WB temperature of 67ºF. Use evaporator temperature, CFM and capacity requirements as listed above. The air handler capacity must be at least at the minimum capacity shown in the table in order for the ARI rating condition to be valid. See Figure 1 for an example selection.

Air Handler Selection Example
Figure 1 shows a typical peformance table for a heat pump air handler. Suppose the evaporator temperature required is 50ºF, the capacity required is 35,000 Btuh and the airflow required is 1,200 CFM. Each evaporator temperature listed in the table shows three wet bulb temperatures. As recommended in the table notes above, select the 67ºF WB column. At 1,200 CFM, the model 003 capacity is 36 MBtuh, which is higher than the minimum capacity required of 35,000 Btuh. In this example, model 003 would be the appropriate match.

Selecting Air Handler

UNIT SIZE	EVAPORATOR AIR Cfm / BF	COIL REFRIGERANT TEMPERATURE (°F)*															
		35			40			45			50			55			
		Evaporator Air — Entering Wet-Bulb Temperature (°F)															
		72	67	62	72	67	62	72	67	62	72	67	62	72	67	62	
003	800	59	48	38	53	42	32	46	35	24	39	27	20	30	18	16	
	0.20	28	29	31	25	27	28	22	23	24	19	20	20	16	16	18	
	1000	68	56	45	61	49	37	54	41	29	45	32	25	35	22	20	
	0.22	32	34	37	29	31	33	26	28	28	23	24	25	19	20	20	
	1200	75	62	49	68	54	42	60	45	34	50	36	29	40	25	23	
	0.25	35	39	42	32	36	38	29	32	33	26	28	29	22	23	23	
	1400	80	67	54	73	59	46	64	49	38	54	39	32	43	28	27	
	0.27	38	43	47	35	39	43	32	36	37	28	32	32	24	26	27	
005	750	61	49	39	55	43	33	48	37	27	41	29	20	33	21	17	
	0.04	27	27	28	24	25	25	21	22	22	18	18	18	15	15	15	
	950	74	60	48	67	53	40	59	45	33	50	35	25	39	24	21	
	0.06	32	34	35	29	30	31	25	26	27	22	23	23	18	18	19	
	1150	89	72	57	79	63	48	69	52	38	58	41	31	44	29	25	
	0.07	37	39	41	33	35	36	29	31	32	25	26	27	20	22	22	
	1500	103	84	66	92	73	56	81	61	46	67	48	39	52	34	31	
	0.10	43	46	49	38	41	44	34	37	39	29	32	33	25	27	27	
	1700	110	89	71	99	78	60	86	65	49	72	51	42	56	37	35	
	0.11	45	50	53	41	45	48	36	39	42	31	34	36	27	29	30	
006	1050	77	62	50	69	55	43	61	47	35	52	38	27	41	27	22	
	0.01	34	36	37	31	32	33	27	28	29	23	25	24	20	20	20	
	1300	100	82	65	90	71	55	79	60	45	66	47	37	49	32	27	
	0.02	42	45	47	37	40	42	33	35	37	29	31	32	23	25	24	
	1750	117	96	77	106	84	65	93	71	53	78	56	46	60	40	34	
	0.04	48	53	57	44	48	52	39	43	48	34	38	39	29	31	31	
	2050	126	103	83	114	91	71	99	76	59	84	60	50	65	44	39	
	0.05	52	58	63	48	53	57	43	47	51	37	42	43	33	35	35	
	2300	132	108	87	119	95	75	105	80	63	88	69	54	70	47	42	
	0.06	55	62	68	50	57	61	45	51	54	40	45	46	35	39	38	

= Gross cooling capacity (MBtuh)
= Sensible heat capacity (MBtuh)
BF = Bypass factor

Utilizing the Existing Air Handler or Coil (R22 units only)
It is recommended that a new coil or air handler be installed with any geothermal split system compressor section due to the low initial cost of the additional equipment versus the reliability and benefit of new technology, increased reliability and warranty. However, if the existing air handler must be used (R22 systems only), the following conditions apply:

- If the existing coil currently uses an orifice, the orifice must be removed and replaced with a TXV. If the coil utilizes capillary tubes, it will not operate properly with the geothermal split system and should be replaced.
- If life expectancy of indoor coil (and associated components - fan, cabinet, etc.) is less than 7-10 years, indoor section should be replaced.

General
The liquid source heating/cooling split condensing units shall be ARI/ISO/ASHRAE 13256-1 (ground-source closed-loop) performance certified and listed by a nationally recognized safety-testing laboratory or agency, such as the Canadian Standards Association (CSA US). Each unit shall be water run-tested at the factory. Each unit shall be pallet mounted and shipped with appropriate protective packaging to help avoid damage in transportation. The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of five years on all parts, and ten years on the compressor and refrigerant circuit parts with a service labor allowance during the first 30 days. An optional extended warranty is available for the Tranquility 27™ Series units, which adds a labor allowance and trip charge. The water source units shall be designed to operate with entering fluid temperature between 20°F and 120°F.

Casing & Cabinet
The cabinet shall be fabricated from heavy-gauge galvanized steel and painted with an epoxy powder coating. The interior shall be insulated with 1/2" thick, multi-density, coated glass fiber. Three compressor compartment access panels shall be provided and shall be removable with linesets and water piping in place. The internal component layout shall provide for major service with the unit in-place for restricted access installations.

Refrigerant Circuit
All units shall contain EarthPure™ (HFC 410A) sealed refrigerant circuit employing a hermetic motor compressor, bidirectional thermal expansion valve, reversing valve, coaxial tube water-to-refrigerant heat exchanger and service ports. An optional Hot Water Generator (desuperheater) coil shall be provided. Compressors shall be Copeland UltraTech™ Two-Stage scroll type designed for heat pump duty and mounted on spring vibration isolators. Compressor motors shall be single phase PSC with internal over load protection. A factory provided bidirectional filter drier shall be included in all models. The coaxial water-to-refrigerant heat exchangers shall be designed for close approach temperatures and be construct ed of a convoluted copper (optional cupronickel) inner tube and a steel outer tube. The thermal expansion valve shall provide proper superheat over the entire fluid temperature range with minimal "hunting". The valve shall operate only in the heating mode with the use of an internal check valve. The water-to-refrigerant heat exchanger, optional desuperheater coil and refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures.

Electrical
CXM Control - A microprocessor-based compressor controller shall be provided to monitor and control unit operation. The control shall provide compressor sequencing, high and low pressure monitoring, field selectable low water temperature sensing, over/under voltage monitoring, and unit performance sentinel (UPS). The control shall also provide for water valve connection, a test mode, short cycle protection, random start-up, as well as fault LED, fault memory, and intelligent fault retry.

The control shall employ quick attach harness assemblies for low voltage connections to the control board to aid in troubleshooting or replacement. An integral terminal block with screw terminals shall be provided on the control for field low voltage connections. A circuit breaker protected 75VA transformer shall be employed. Line voltage box lugs shall be provided for unit wiring. Units shall have knockouts for entrance of low and line voltage wiring. The control box shall be harness plug-connected for easy removal. Residential models shall have a dual circut-breaker protected power block for the connection of external Flow Controller pump module.

Piping
Supply and return water connections, as well as Hot Water Generator (desuperheater) connections shall be 1" FPT brass swivel fittings which provide a union and eliminate the need for pipe wrenches and sealants when making field connections. A thread by sweat fitting shall be provided for connection to the water heater. All water piping shall be insulated to prevent condensation at low liquid temperatures.

General

The liquid source heating/cooling split condensing units shall be ARI/ASHRAE/ISO 13256-1 loop performance certified and listed by a nationally recognized safety-testing laboratory or agency, such as Underwriter's Laboratory (UL), or Canadian Standards Association (CSA-US). Each unit shall be water run-tested at the factory. Each unit shall be pallet mounted and shipped in clear shrink wrap for visual shipping damage inspection. The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of five years on all parts, and ten years on the compressor and refrigerant circuit parts with a service labor allowance during the first 30 days. An optional extended warranty is available for the Genesis™ Split Series units, which adds a labor allowance and trip charge. The liquid source units shall be designed to operate with entering liquid temperature between 20°F and 120°F.

Casing & Cabinet

The cabinet shall be designed for indoor installations. The cabinet shall be fabricated from heavy-gauge galvanized steel painted with a epoxy powder coat paint with a 1000 hr. salt spray test rating. The interior shall be insulated with 1/2" thick, multi-density, coated glass fiber with edges sealed or tucked under flanges. Three compressor compartment access panels shall be provided and shall be removable with linesets and water piping in place. The internal component layout shall provide for major service with the unit in-place for restricted access installations.

Refrigerant Circuit

All units shall contain split refrigerant circuits employing a hermetically sealed compressor, thermal expansion valve, reversing valve, coaxial tube water-to-refrigerant heat exchanger, service ports, and backseating service valves. Compressors shall be high-efficiency advanced scroll type designed for heat pump duty and mounted on spring vibration isolators. Compressor motors shall be single phase PSC with internal overload protection. A factory installed bidirectional filter drier shall be provided. 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 only in the heating mode with the use of an internal check valve. The water-to-refrigerant heat exchanger and refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures. Air coil connections shall be made through brass backseating service valves with built-in Schrader ports.

Electrical

CXM Control - A microprocessor-based compressor controller (CXM) shall be provided to monitor and control unit operation. The control shall provide high and low pressure monitoring, field selectable water and air coil low water temperature sensing, over/under voltage monitoring, and unit performance sentinel (UPS). The control shall also provide for water valve connection, a test mode, short cycle protection, random start-up, as well as fault LED, fault memory, and intelligent fault retry.

The control shall employ quick attach harness assemblies for low voltage connections to the control board to aid in troubleshooting or replacement. An integral terminal block with screw terminals shall be provided on the control for all field low voltage connections. Line voltage lugs shall be provided for unit wiring. Units shall have knockouts for entrance of low and line voltage wiring. The control box shall be harness plug-connected for easy removal.

Piping

Supply and return water connections shall be 1" swivel fittings. All water piping shall be insulated to prevent condensation at low liquid temperatures.

General
The liquid source heating/cooling split condensing units shall be ARI/ASHRAE/ISO 13256-1 loop performance certified and listed by a nationally recognized safety-testing laboratory or agency, such as Underwriter's Laboratory (UL), or Canadian Standards Association (CSA-US). Each unit shall be water run-tested at the factory. Each unit shall be pallet mounted and shipped in clear shrink wrap for visual shipping damage inspection. The units shall be warranted by the manufacturer against defects in materials and workmanship for a period of five years on all parts, and ten years on the compressor and refrigerant circuit parts with a service labor allowance during the first 30 days. An optional extended warranty is available for the Paradigm™ Split Series units, which adds a labor allowance and trip charge. The liquid source units shall be designed to operate with entering liquid temperature between 20°F and 120°F.

Casing & Cabinet
The cabinet shall be weather resistant and designed for outdoor installations. The cabinet shall be fabricated from heavy-gauge galvanized steel painted with a epoxy powder coat paint with a 1000 hr. salt spray test rating. The interior shall be insulated with 1/2" thick, multi-density, coated glass fiber with edges sealed or tucked under flanges. Two compressor compartment access panels shall be provided and shall be removable with linesets and water piping in place. The internal component layout shall provide for major service with the unit in-place for restricted access installations. The cabinet shall provide adequate space to house the one or two pump Flow Controller pumping module within the cabinet.

Refrigerant Circuit
All units shall contain split refrigerant circuits employing a hermetically sealed compressor, thermal expansion valve, reversing valve, coaxial tube water-to-refrigerant heat exchanger, service ports, and backseating service valves. Compressors shall be high-efficiency advanced scroll or rotary type designed for heat pump duty and mounted on vibration isolators. Compressor motors shall be single phase PSC with internal overload protection. A factory installed bidirectional filter drier shall be provided. 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 only in the heating mode with the use of an internal check valve. The water-to-refrigerant heat exchanger and refrigerant suction lines shall be insulated to prevent condensation at low liquid temperatures. Air coil connections shall be made through brass backseating service valves with built-in Schrader ports. Hot Water Generator (desuperheater) connections shall be accomplished with 1/2" backseating service valves.

Electrical
CXM Control - A microprocessor-based compressor controller (CXM) shall be provided to monitor and control unit operation. The control shall provide high and low pressure monitoring, field selectable low water temperature sensing, over/under voltage monitoring, and unit performance sentinel (UPS). The control shall also provide for water valve connection, a test mode, short cycle protection, random start-up, as well as fault LED, fault memory, and intelligent fault retry.

The control shall employ quick attach harness assemblies for low voltage connections to the control board to aid in troubleshooting or replacement. An integral terminal block with screw terminals shall be provided on the control for all field low voltage connections. Line voltage lugs shall be provided for unit wiring. Units shall have knockouts for entrance of low and line voltage wiring. The control box shall be harness plug-connected for easy removal.

Piping
Supply and return water connections shall be 1-1/4" MPT fittings. All water piping shall be insulated to prevent condensation at low liquid temperatures.

Accessories & Options

Hot Water Generator (internal) - TTS & GSS units only
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. A high limit (TTS/GSS units) and low compressor discharge line temperature switch (TTS units) shall be provided to disable the pump when these conditions occur.

Hot Water Generator (field installed) - PDW units only
An optional heat reclaiming Hot Water Generator (desuperheater) Remote Module with vented double-wall copper construction suitable for potable water shall be provided as a field installed accessory. A high limit shut-off switch shall be provided. The HWG Remote Module shall be located remote from the compressor section, near the water heater, and shall include an internal pump and water coil.

Cupro-Nickel Heat Exchanger
An optional corrosion resistant CuNi coaxial heat exchanger shall be factory installed in lieu of standard copper construction.

Thermostat (field installed)
A multistage auto-changeover electronic digital thermostat shall be provided. The thermostat shall offer 2 heating and 1 cooling stages (GSS/PDW units) or 3 heating and 2 cooling stages (TTS units) with precise temperature control. An OFF-HEAT-AUTO-COOL-EMERG system switch, OFF-AUTO fan switch, and indicating LED's shall be provided. The thermostat shall read out in °F or °C and be calibratable.

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" pump isolation valves and 3-way service valves. Pump heads shall be removable from the volute for easy replacement. The Flow Controller shall be enclosed in a galvanized steel or plastic case and fully insulated with urethane foam to prevent condensation. The Flow Controller shall have a 5-year warranty on all parts.

Hose Kits (field installed) - TTS & GSS only
A rubber hose kit shall provide connections between the unit and Flow Controller. Rubber 1" hose allows flexible connection and absorbs vibration transmission between unit and Flow Controller. Brass elbows with MPT fittings for unit connection, barbed fittings for hose connection and FPT fittings for Pressure/Temperature ports shall be included to allow service and troubleshooting of the unit. Hose clamps shall be used to connect the hose to the brass elbows and Flow Controller.

Cooling TXV Kit (field installed) - R-22 GSS & PDW units only
A cooling thermostatic expansion valve kit shall be provided to be field installed on the A-Coil or at the air handler.

Warranty Information
The ClimateMaster residential warranty reflects the reliability built in to every unit and includes five years on all parts, and ten years on the compressor and refrigerant circuit parts with a service labor allowance during the first 30 days. An optional extended warranty is available for residential units, which adds a labor allowance and trip charge. See extended warranty certificate (RP405) for details.

Revision Log

Date	Page	Description
08/10/05	All	First Published

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