



**R-410A**

**Air, Water/Glycol Cooled**

**21 through 106 kW - Dual Circuits**

*Environmentally responsible.  
Economically efficient.  
Precision air cooling of the future.*





Data Aire®

... the pioneer and builder of the  
most complete line of  
precision cooling equipment

Data Aire's first precision cooling system was developed by data processing engineers who sought optimum environmental conditions for early computers. It was clear that "people comfort" air conditioning systems were unable to meet the environmental requirements of computers and data processing equipment. Precision environmental control equipment with high sensible cooling ratios was a necessity. Problems with paper sticking, head crash, and static electricity were eliminated. Humidity fluctuations were controlled saving possible electrical and mechanical failures and more importantly – Downtime. Data Aire's innovative response to the challenge of eliminating problems within the computer room environment was the start of the wide use of precision cooling.

As in the past, Data Aire is meeting today's challenge of not only the computer room but also the ever expanding telecommunications industry where precision cooling is vital to our everyday communications. Telecommunication equipment requires a controlled environment with clean and properly distributed air. As in the computer room, the environment must be precisely controlled – 24 hour a day, 365 days a year.

Data Aire produces solutions. We have offered environmental control solutions to meet specific needs in the smallest of places and in areas of thousands of square feet. We are prepared to assist you, your in-house engineering department, consulting engineer, or construction department in defining the proper solutions and bringing them to a predefined outcome.

Data Aire is committed to being the supplier of choice for environmental process cooling with flexibility, reliability, and expertise required to meet our customer's needs. To be successful, it is essential to be creative and use our resources to their fullest capabilities. The Data Aire goal is to benefit the employees, partners, and most of all – our customers with honesty and integrity.

Data Aire Delivers!

## **gForce DX SERIES**

### **DIRECT EXPANSION UNITS - DUAL CIRCUITS**

### **AIR COOLED, WATER COOLED, GLYCOL COOLED**

(Separate brochure for Chilled Water Cooled units.)

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Data Aire, Inc. reserves the right to make design changes for the purpose of product improvement or to withdraw any design without notice.



## MISSION CRITICAL COOLING

gForce by Data Aire provides the most advanced features in mission critical cooling equipment available on the market today. These units are the most efficient and economical while complying with strict environmental requirements.

Incorporating backward curved plenum fans with electronically commutated (EC) motors these units supply radially dispersed cooling air at lower speeds allowing for more uniform static pressure across the room. These fans, with integral DC motors, run at lower temperatures providing more net cooling from the computer room air conditioning (CRAC) unit. DC motors are more energy efficient, providing an on-going savings year after year. gForce efficiency is also increased by the use of rifled tubing in the cooling coils to promote the greatest amount of heat transfer. gForce dual circuit DX units are available in 21 through 106 kW with either upflow or downflow air distribution in air cooled or water/glycol cooled models. Each unit is factory run tested and put through a vigorous quality control procedure.

## IMPROVED PERFORMANCE and REDUCED MAINTENANCE

Backward curved fans discharge air radially allowing for uniform static pressure across the raised floor. Traditional forward curved fans blow air in a high velocity stream with high velocity pressure and minimal initial static pressure, prohibiting optimal airflow through the raised floor close to the CRAC. One of the key features of backward curved fans, commonly referred to as plug fans, is that the motor and fan are integrated into a single unit. Unlike forward curved fans that have a separate motor, pulley, belt and in some cases a shaft, plug fan blades are directly connected to the motor. This eliminates the need for monthly maintenance, belt replacement and all belt dust.

In the unlikely event of a fan failure, the entire fan unit is removed. Removal is easy with the unfastening of four screws and disconnection of the electrical service. The replacement fan is set in place, electrical connections are made and then the fan is bolted in place.

## INCREASED THERMODYNAMIC EFFICIENTIES

gForce's design incorporates rifled tubing cooling coils. Rifle tubing is similar to borings in a gun barrel which forces the bullet to rotate. In a cooling coil the riflings force the gas and liquid to rotate as it passes through the coil. This action forces the heavier matter, the liquid refrigerant, to the outside of the tube where the heat transfer occurs. As a result the coldest refrigerant is in contact with warmest surface resulting in better heat transfer.

## IMPROVED AIRFLOW DESIGN

gForce is the greatest internal capacity of an unit manufactured by Data Aire. The increased capacity of the gForce internal cabinet allows for less restrictive airflow. When additional options are added to smaller cabinets, the static pressure within the unit increases, making airflow more difficult. This is not an issue with the gForce, as the advanced design of the bigger interior and the product's quality construction ensures the highest level of efficiency in a precision air system

## ENVIRONMENTALLY RESPONSIBLE

Data Aire offers the gForce line in either R-407C or R-410A refrigerants. Either of these refrigerants comply with the requirements of the Montreal Protocol which called for the phase out of refrigerants that deplete the ozone layer. R-407C is a blend of three refrigerants and has characteristics similar to

R-22. R-410A is a blend of two refrigerants and has a higher volumetric cooling capacity but operates at higher pressures than either R-22 or R-407C. The choice of the environmentally friendly refrigerant is yours.

## ENERGY EFFICIENT COILS

gForce energy efficient coils are another unique feature engineered by Data Aire. These coils feature rifle tubing, a creative element that significantly adds to energy efficiency. Very similar to the borings on a rifle that spin the bullet as it exits the barrel, the refrigerant in a gForce unit spins as it travels through the coil. This spinning forces the liquid, and coldest refrigerant to the outside surface of the coil, resulting in a higher heat transfer and therefore higher efficiency.

## DATA AIRE DELIVERS

Standard ship cycle is 30 days from date of order. With an optional premium "quick ship" units can be expedited to ship in little as one week. All units are built to your specific order and specification. Not only does Data Aire deliver standard products in short lead times they are willing to modify designs to meet your specific requirements. Call your nearest Data Aire representative for more information.

### DESIGN FEATURES

#### Frame Cabinet

Units are constructed with heliarc welded tubular steel frames. The tubular construction provides for maximum strength and ease of access. Side and front panels can be easily removed with quarter-turn fasteners allowing full access to all unit components. All panels include 1 inch thick, 11/2 pound density insulation for protection and sound attenuation.

#### Coil Section

Designed for draw through application, the computer selected rifle tubing dual circuited A-frame coil has an interwoven surface that increases unit efficiency at low load conditions. Air is drawn through both circuits of the coil at low velocity providing effective surface exposure with minimum turbulence. The coil sits in a stainless steel drain pan.

#### Fan Section

Backward curved plenum fans with electronically commutated motors are used to provide the most efficient fan/motor combination available in the market today. Electronically commutated motors are DC motors but connect to standard AC power. DC motors are more efficient than AC motors and can be programmed to run at various speeds. With the fan blades directly connected to the motor there is no need for periodic maintenance. In the unlikely event of a fan failure replacement is simple. Merely remove four bolts disconnect the power and remove. Reverse the process for installation of a new fan.

#### Filter Section

Units are provided with 4 inch deep, MEV-8 pleated filters. The filter section is accessible from the top or side on downflow units and the right hand side on upflow units.

#### Reheat

Three stage electric reheat is standard. Low-watt density, finned, tubular sheathed coils are constructed of stainless steel and provide ample capacity to maintain room dry bulb conditions during dehumidification. Low-watt density coils eliminate ionization associated with open air electric resistance heating.

#### Humidification

gForce units include an electric steam generator humidifier with "quick change" disposable cylinders and auto-flush cycle. The steam generator humidifier with its patented control system optimizes cylinder life and energy efficiency by concentrating incoming water to a predetermined conductivity much higher than that of any entering water. The control system continuously monitors the conductivity in the cylinder through its electronics which allows water to be flushed as often as is necessary to maintain the capacity at this design conductivity. The high design conductivity results in a minimum flushing of heated water which saves energy. The humidifier is designed to allow all units at any voltage to produce full rated steam output capacity at an optimum low water level based on this design conductivity.

### REFRIGERATION CIRCUITS

Dual refrigeration circuits include high efficiency hermetic scroll type compressors. Scroll compressors represent new yet proven compressor technology. Scroll compressors offer a combination of reliability, performance, and efficiency. System noise is inherently quieter with scroll compressors.

Scroll compressors offer:

**Simplicity** - Fewer parts. Two components, a fixed scroll and orbiting scroll, replace approximately 15 parts required to do the same work.

**Improved Starting Ability** - With the scroll design the internal compression components always start unloaded even if the system pressures are not balanced. Since internal compressor pressures are always balanced at start-up, low voltage characteristics are excellent for scroll compressors.

**Energy Efficiency** - Scroll compressors are at least 10% more efficient than reciprocating type compressors.

The suction and discharge processes of a scroll compressor are physically separated. This reduces heat transfer between the suction and discharge gas. In a piston type compressor the cylinder is exposed to both suction and discharge gas. This results in high heat transfer reducing the compressor efficiency.

Scroll compressor compression and discharge processes are very smooth. Gas is compressed in approximately  $1\frac{1}{2}$  revolutions compared to less than  $\frac{1}{2}$  revolution for a piston.



Scrolls require no valves. Piston compressors require both suction and discharge valves. No valves, no valve losses.

**Durability** - Significant design effort and system cost are required to protect piston compressors from slugging and debris. Scroll compressors are designed to be more tolerant of both liquid and debris.

**Reliability** - Scrolls contain fewer moving parts resulting in greater reliability. Proven performance means fewer maintenance calls for field personnel.

**Lower Sound** - Systems properly designed with scroll compressors will be inherently quieter. On average, the compressor is up to 5 decibels quieter. (Sound characteristics of a scroll compressor are different than that of a reciprocating compressor. These do not effect system performance or reliability)

These durable, heavy duty compressors have no gaskets or seals, eliminating the possibility of refrigerant or oil leaking into the controlled space or environment. Each refrigeration circuit includes built-in compressor overload protection, crankcase heater, filter drier, sight glass, adjustable expansion valve with external equalizer, low pressure override timer (air cooled units), manual reset high pressure control, and anti-short cycle timer.

Water/glycol cooled units include counterflow condensers sized to provide the required capacity for heat rejection with minimum water/glycol flow and total pressure drop. Head pressure regulating valves control the condensing temperature and maintain required capacity at various water/glycol flow rates and temperatures.

### Air Cooled with Remote Outdoor Air Cooled Condenser

A wide range of outdoor condensers are available with vertical air discharge. Condensers manufactured by Data Aire are sized to meet the required heat rejection and ambient conditions. The industrial duty condenser design includes an aluminum housing, aluminum finned copper tube coils, powder coated fan guards, energy efficient, thermally protected direct drive motors, and variable speed fan control on the lead motor for proper control down to -20° F. Additional fan motors are controlled with ambient thermostats.

### Air Cooled with Indoor Condenser

A wide range of floor mounted indoor condensers with horizontal intake and discharge are available for applications where an outdoor condenser cannot be used. Finished to match the indoor evaporator section, the condenser includes a centrifugal, forward curved, double width, double inlet blower engineered for quiet and reliable operation. The belt driven variable pitch drive section provides adjustable airflow. The motor has internal overload protection and is mounted on an adjustable slide base. Indoor condensers are provided with a factory mounted and piped receiver. The receiver has a head pressure control valve to maintain flooded condenser control.

### Air Cooled with Remote Outdoor Condensing Unit

When compressors are required to be out of the controlled space, Data Aire Series units are available with a remote outdoor condensing unit. The condensing unit includes the compressors with built-in overload protection, crankcase heater, filter drier, sight glass, and condenser coil. The condenser coil is constructed with copper tubes and aluminum fins. The housing is aluminum with vertical air discharge. The condenser is variable speed fan control on the lead motor for head pressure control down to -20° F. Additional fan motors are controlled by ambient fan thermostats.

### Water/Glycol Cooled with Remote Outdoor Fluid Cooler

Remote outdoor dry coolers (fluid coolers) are available in a variety of sizes. Each dry cooler includes an aluminum housing, aluminum finned copper tube coil, powder coated fan guards, surge tank, pump contactor, and energy efficient, thermally protected direct drive motors. Dry coolers with multiple motors have cycling control.

### Water/Glycol Cooled with Indoor Fluid Cooler

When required a wide range of floor mounted indoor fluid coolers (dry coolers) are available. The air intake and discharge are horizontal. Units are finished to match the indoor unit. The centrifugal, forward curved, double width, double inlet blower is engineered for quiet reliable operation. The belt driven variable pitch drive section provides adjustable airflow. The fan motor has internal overload protection and is mounted on an adjustable slide base. The unit control panel includes a pump contactor (units can be ordered with a factory mounted pump).



## SYSTEM CONTROL

Every gForce unit come equipped with a dap™ 4 control system, which is the fastest and most advance microprocessor controller available on the market today. The system is comprised of two components – a display module and a control module. The display module includes a backlit liquid crystal display and six buttons for easy programming and communication. All programming, status and alarm conditions are displayed on the module in easy to read verbiage. The control module is mounted inside the unit and connected to the display module via a special “telephone” like cable.

The display module will allow recall and display of the high and low temperature and high and low humidity for the last 24 hours; current percent of capacity and average percent of capacity for the last hour of operation for cool 1, cool 2, reheat, humidification, dehumidification, component runtimes for fan motor(s), cooling stages, reheat, humidification, dehumidification and chilled water valve. Programming will have multilevel password and accomplished entirely from the front of the unit. Programmable functions shall be entered on flash memory to ensure program retention should power fail. The historical database shall be maintained by rechargeable battery backup. Multiple messages shall be displayed by automatically by scrolling from each message to the next. Alarm conditions shall be displayed by automatically scrolling from each message to the next. Alarm conditions, in addition to being displayed, shall enunciate an audible alarm. Four programmable summary contacts shall be available for remote alarm monitoring. Additional test or service terminal shall not be required for any functions. The control shall include temperature anticipation, moisture level humidity control and automatic flush cycles.

An alarm condition shall continue to be displayed until the malfunction is corrected. Multiple alarms shall be displayed sequentially in order of occurrence and only those alarms, which have not been acknowledged, shall continue to sound an audible alarm. The dap4 panel shall perform an automatic self-test on system start-up. A user accessible diagnostic program shall aid in system component trouble shooting by displaying on the unit LCD screen the name of the controlled item, output relay number, terminal plug and pin number for each controlled item.

### Automatic Control Functions

Humidity Anticipation	Auxiliary Chilled Water Operation*	Sequential Load Activation
Start Time Delay	Automatic Reheat Element Rotation	Automatic or Manual Restart
Temperature Anticipation	Energy Saver (Glycol Operation)*	Hot Water Coil Flush Cycle*
Dehumidification Lockout	Chilled Water Coil Flush Cycle*	Energy Saver Coil Flush Cycle*
Selectable Water Under Floor Alarm Action		Compressor Short Cycle

### Condition and Data Routinely Displayed

Current Date and Time	Unit Status	Temperature Setpoint
Humidity Setpoint	Current Temperature	Cooling 1, 2, 3, 4*
Current Humidity	Dehumidification	Humidification
Current Fan Speed*	Reheat 1, 2, 3Current	Discharge Temperature*
Current Chilled Water Valve Position	Current Percent of Capacity Utilized	

### Switching and Control functions

System On/Off/Esc Button	Menu Selection Buttons	Menu Exit Button
Select Buttons	Alarm Silence Button	Program Set Button
Manual Override for:		
Cool 1, Cool 2, Heat 1, Humidification, CW Valve and Fan Speed		

**Alarms**

High Temperature Warning	High Humidity Warning	Local Alarm
Low Temperature Warning	Low Humidity Warning	Manual Override
Low Pressure Compressor 1	Low Pressure Compressor 2	Humidifier Problem
High Pressure Compressor 1	High Pressure Compressor 2	Custom Message*
Dirty Filter	Under Floor Water Detection	Power Failure Restart
Firestat Tripped	Compressor Short Cycle	Maintenance Required
Temperature Sensor Error	Humidity Sensor Error	Discharge Sensor Error*
No Water Flow*	Smoke Detector*	High Condensate Water Level*
Fan Motor Overload*	Standby Pump On*	Person to Contact on Alarm*

**Historical Data**

High Temperature Last 24 Hours	Low Temperature Last 24 Hours	High Humidity Last 24 Hours
Low Humidity Last 24 Hours	Alarm History (Last 100 Alarms)	Hourly Average of Duty
Equipment Runtimes for: Blower, Compressor 1, Compressor 2, Reheat 1, 2, 3, Dehumidification, Energy Saver*, Humidifier, Condenser and Chilled Water		

**Programmable Functions**

Temperature Setpoint	Temperature Deadband	Fan Control Mode
System Start Delay	Low Temperature Alarm Limit	Humidity Deadband
Humidity Setpoint	High Humidity Alarm Limit	Low Humidity Alarm Limit
Define Password	Reset Equipment Runtimes	Audio Alarm Mode
Reverse Acting Water Valve	Compressor Short Cycle Alarm	Humidity Anticipation
Compressors(s)	Analog Module Sensor Setup*	Calibrate Temperature Sensor
Temperature Scale	High Temperature Alarm Limit	Fan Speed Settings
Water Valve Voltage Range	Delay for Optional Alarm 1, 2, 3, 4	Firestat Temperature Alarm Limit
Manual Diagnosis	Remote Alarm 1, 2, 3, 4 Selection	Calibrate Discharge Air Sensor*
Person to contact on Alarm	Compressor Lead/Lag Sequence	Dehumidification Mode
Humidifier Autoflush Timer*	Power Problem or Restart Mode	Scheduled Normal Maintenance
Reheat Stages	Water Valve Mode	Calibrate Humidity
Humidifier	Compressor Supplements to Energy Saver*	
Network Protocol	Low Discharge Temperature Alarm Limit*	
Calibrate Chilled Water Temperature Sensor*		

In addition, the dap4 control panel shall support the following network protocols for integration with a Building Management System (BMS) for Computer Room Air Conditioning (CRAC) system monitoring and control: Modbus RTU, TCP/IP, SNMP V1 or V2, BACnet IP or MS/TP and LonTalk SNVT.

Building Management System Interface: Unit(s) shall be furnished with an optional interface card to communicate directly with the Building Automation System (BAS) through a RS-485, Ethernet or LonTalk port. All alarms, set points, and operating parameters that are accessible from the unit mounted control panel shall also be made available through the BAS.

\* Some of the programmable selections, displays or alarms may require additional components or sensors

***Energy Saver Coil*** - The Data Aire *Energy Saver Coil* is built into the system to provide total required capacity. Whenever the incoming water/glycol temperature is below 45° F/7.2° C, *Energy Saver* cooling is available. *Energy Saver* mode operates in the following range: return air setpoint plus deadband plus 2 degrees. The *Energy Saver* will operate providing there is a need for cooling. The valve will open at setpoint plus deadband. The valve will modulate as long as the space is between setpoint plus deadband plus 2 degrees. If the temperature falls below the deadband minus setpoint, the valve will close and the space is considered satisfied. While still in *Energy Saver* with the valve modulating, if the temperature goes beyond setpoint plus 2 degrees, the *Energy Saver* valve will close and DX cooling will begin.

The *Energy Saver* coil includes the next size motor, 3-way pressure control valve on the condenser water circuit, and 3-way valve on the economy coil. Common piping for coil and condensers is provided.

***Energy Saver/Compressor Supplement*** - Units with *Energy Saver* option can be provided with compressor supplement if the *Energy Saver* is not sufficient as a stand alone system. When the incoming water/glycol temperature is below the setpoint of the water changeover thermostat, the *Energy Saver* is enabled (even if there is no call for cooling). Upon a call for cooling (setpoint plus deadband), the valve will open proportionally - 10% for each 0.1° above setpoint plus deadband. The compressor will come on at setpoint plus deadband plus 1° (the valve is 100% open at this point). The compressor will go off at setpoint plus deadband plus 0.7°. The valve will close proportionally - 10% for each 0.1° below setpoint plus deadband. An air discharge sensor is factory installed.

***Auxiliary Chilled Water Coil*** - Where an existing chilled water loop is available, units can be fitted with an auxiliary chilled water coil. Units will operate using the chilled water for cooling. Upon a loss of water flow or an increase in room temperature the system will bring on compressor (DX) cooling. The Auxiliary Chilled Water coil includes the next size motor. Separate piping is provided for the chilled water coil and refrigeration connections.

***Auxiliary Chilled Water Coil/Compressor Supplement*** - The Auxiliary Chilled Water Coil can be provided with compressor supplement for extended savings by allowing the compressor to supplement operation as needed when the chilled water is not sufficient on a stand alone basis. An air discharge sensor is factory installed. (See *Energy Saver/Compressor Supplement* for details)

***Remote Temperature and Humidity Sensors*** - Temperature and humidity sensors may be ordered for remote wall mounting. Sensors are provided in a wall mount plastic case for remote sensing of temperature and humidity. 25 feet of shielded cable is provided for field wiring.

***Smoke Detector*** - A unit mounted smoke detector will shut down the unit if smoke is sensed. The unit mounted microprocessor control will sound an alarm and display a "SMOKE DETECTED" message. The smoke detector is mounted in the return air stream and is provided with auxiliary contacts.

***Unit Mounted Disconnect*** - A unit mounted nonautomatic disconnect switch is installed in the high voltage electrical section. The operating mechanism (handle) protrudes through the decorative exterior panel. The operating mechanism prevents access to the high voltage electrical components by not allowing entry until switched to the "OFF" position.

**Tandem Scroll Compressors** - Units may be ordered with tandem scroll compressors when four stage compressor control is required. Units remain dual circuited. Tandem scrolls offer the inherent advantages of scroll technology: higher efficiency, increased reliability, lower sound, and excellent liquid handling.

Scroll tandems offer two steps of modulation so that one or both compressors (per circuit) can run depending upon the load of the system, resulting in part-load efficiency equal to full load efficiency. Two-step modulation is possible because of a carefully designed tubing configuration and the scroll's superior ability to tolerate liquid. The built-in discharge check valve, present in all scroll compressors, effectively prevents liquid migration in the off compressor. Oil migration is controlled with two specially designed oil and gas equalization lines. Adding this option to 30-ton unit will increase cabinet size to 144". (See Supplement TS1-99: *Tandem Scroll Technical Performance*)

**Hot Gas Bypass** - A hot gas bypass valve is available for applications that create low suction pressure conditions that could lead to coil freeze and/or compressor cycling. In facilities such conditions generally exist in instances where; 1) a unit's dehumidification mode needs to run for extended period of time; or 2) a room is designed for low entering air conditions; or 3) a unit is utilizing an oversized condenser at low outdoor ambient conditions.

When the system suction pressure is high enough it will maintain pressure on the leaving side of the hot gas bypass valve to keep the valve port closed. Should the suction pressure decrease below the desired setting, the pressure from the suction line forces the diaphragm, which off-sets the spring pres-

sure, allowing the spring to push the valve open. The opening of this valve allows some hot gas to mix with the refrigerant in the suction line raising the evaporator pressure. This increases the suction pressure in the system back to the desired setting. The hot gas bypass can be manually adjusted within a certain range to fine tune the unit to a desired suction pressure in the field.

**Humidifier Modulating Control** - Modulating control may be added to the unit's steam generator humidifier. Modulating control will allow the humidifier to match its output to the signal from the humidity control. A self-regulating auto flush is included.

**Hot Water Reheat** - Where hot water is available, a water coil for reheat is offered. The coil is designed for 150 psi maximum water pressure and includes a 2-way valve (a 3-way is also available). Units with the hot water reheat do not include electric reheat. Supplemental reheat may be ordered.

**Hot Gas Reheat** - The unit's hot gas discharge may be used for reheat and maximum system efficiency. Supplemental electric reheat may be ordered in addition to the hot gas reheat.

**3-Way Water Regulating Valve** - 3-way water regulating valves are available on water and glycol cooled units to replace the standard 2-way valve. The 3-way valve controls the water/glycol flow rate to maintain the required capacity under varying conditions. This option is recommended on units with dual pump applications.

**Upflow Air Discharge Plenum** - Upflow air discharge plenums are fully insulated with front discharge grille. Side grilles for both or one side are available. Plenums are 18" high and painted to match the unit's color.

**Floorstands** - Floorstands are adjustable ( $\pm 2$  inches) and may be ordered with factory installed turning vane or with seismic construction.

**High Efficiency Filters** - Standard filters are rated MERV 8 based on ASHRAE 52.2. Higher efficiency filters are available (consult factory regarding efficiency percentage and unit static pressures).

**Condensate Pumps** - Condensate pumps may be ordered factory installed or shipped loose for field installation. Condensate pumps are complete with sump, motor, and automatic control. Pumps shipped loose are available in 115, 230, or 460 volts.

Pump Ratings:

230 volt:

with check valve - 40 GPH at 20 feet  
without check valve - 130 GPH at 40 feet

460 volt:

with check valve - 50 GPH at 20 feet  
without check valve - 270 GPH at 40 feet

**Pump Package** - Centrifugal pump packages are available to circulate water or water/glycol solutions. Pumps are available in various horsepower and voltages. Both 3400 and 1750 rpm pumps are available as an option. On dual pump applications it is recommended that a 3-way water regulating valve be used in lieu of the standard 2-way valve.

**Pump Enclosure** - Pump enclosures are available for either single or dual pump applications. Pump enclosures are vented and weather resistant. When ordered with pumps, the pumps are factory mounted in the enclosure ready for field piping and wiring.

**Integral Pump Enclosures** - Pumps may be factory mounted as an integral part of the dry cooler. A 30" extension is added to the dry cooler. Pumps are pre-piped and wired and includes shut-off valves. A flow switch is included with dual pumps.

**Pump Auto-Changeover** - Dual pump packages may be provided with a pump auto-changeover control and NEMA 4 flow switch (field installed). The pump auto-changeover control is factory wired and mounted in the dry cooler control box. The pump auto-changeover control provides automatic pump changeover in the event of a pump failure. Upon pump changeover, an audible alarm will sound at the indoor unit and a message ("STANDBY PUMP ON") will be displayed on the indoor unit microprocessor display.

**Extended Compressor Warranty** - Extended compressor warranties are available from Data Aire. Contact your local representative for one that best suites your needs.

# AIR COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### CAPACITY in Btu/hr - Gross

80° DB/67° WB 50% RH	Total	76,800	108,600	128,400	165,600	214,900	266,500	326,900	388,200
	Sensible	58,300	84,900	106,400	126,600	160,300	204,900	243,400	301,700
75° DB/62.5° WB 50% RH	Total	71,600	100,500	119,300	153,300	199,700	246,800	303,700	360,600
	Sensible	56,300	81,600	102,400	121,800	154,700	197,200	235,100	290,700
75° DB/61° WB 45% RH	Total	69,500	97,100	115,800	149,300	193,800	240,400	294,300	350,100
	Sensible	60,200	87,200	109,600	130,300	165,000	211,100	250,400	310,900
72° DB/60° WB 50% RH	Total	68,400	95,700	113,900	145,900	190,600	235,000	289,800	344,000
	Sensible	55,100	79,700	99,900	119,000	151,400	192,500	230,100	284,100
72° DB/58.6° WB 45% RH	Total	66,900	93,000	110,600	142,000	185,400	229,700	283,300	334,400
	Sensible	58,600	84,600	106,300	126,100	160,200	204,700	244,100	301,400

### FAN SECTION

Airflow - CFM	2,700	3,600	4,500	4,800	6,400	8,000	9,000	12,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	450	500	500	560	500	500	500	500
Fan motor - kW/HP	1.0/1.4	2.8/3.7	2.8/3.7	3.0/4.0	2.8/3.7	2.8/3.7	2.8/3.7	2.8/3.7
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.0	1.5	0.8	1.2	1.5	1.4	0.6	1.3
Next size fan - diameter (mm)	500	N/A	560	560	N/A	560	560	560
Fan motor - kW/HP	2.8/3.7		3.0/4.0	5.0/6.7		3.0/4.0	3.0/4.0	3.0/4.0
Maximum E.S.P.	1.5	N/A	1.4	1.5	N/A	1.5	1.2	1.5

### COMPRESSORS

Type:								
Hermetic scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

### EVAPORATOR COIL

Face area - sq. ft.	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity - FPM	221	295	369	331	262	328	369	369

### REHEAT SECTION

Electric	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	105,500	115,000	121,000	126,000	90,000	210,000	230,000	N/A
Downflow	60,000	65,000	69,000	72,000	108,000	120,000	130,000	N/A
Upflow								
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	70,000	81,000	86,000	90,000	130,000	145,000	160,000	N/A
Downflow	34,300	44,800	47,500	49,400	74,200	82,000	90,700	N/A
Upflow								

# AIR COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity lbs/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity lbs/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION\*

(4 inch thick MERV 8)

Quantity /size	<i>Downflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x20
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	<i>Upflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8

(Note: Efficiency based on ASHRAE Std. 52.2)

### CONNECTION SIZES

Liquid line - O.D. Copper (2 per unit)	1/2	1/2	1/2	5/8	5/8	5/8	7/8	7/8
Hot gas line - O.D. Copper (2 per unit)	1/2	5/8	5/8	3/4	3/4	3/4	7/8	7/8
Suction line* - O.D. Copper (2 per unit)	7/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

NOTE: Refer to Operation and Maintenance manual for recommended pipe sizing between unit and condenser.

### ELECTRICAL SECTION

Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	72/83/90	78/90/100	87/101/110	109/132/150	112/136/150	147/167/200	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	36/41/45	36/41/45	43/49/50	52/64/70	54/65/70	66/75/90	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/68/70	72/83/90	78/90/100	87/101/110	105/120/125	111/127/150	147/167/200	165/186/225
460/3/60	FLA/MCA/MOP	27/31/35	36/41/45	36/41/45	43/49/50	54/61/70	56/64/70	66/75/90	78/88/110

Electrical data based on: electric reheat - **YES**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	68/82/90	70/86/90	76/92/100	109/132/150	112/136/150	130/159/175	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	32/39/40	32/39/40	36/44/50	52/64/70	54/65/70	59/72/80	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	29/33/45	43/48/60	49/54/70	59/65/90	77/84/110	83/91/150	119/132/175	136/150/200
460/3/60	FLA/MCA/MOP	14/15/20	23/25/30	23/25/30	30/33/45	41/45/60	43/48/60	54/59/80	65/72/90

FLA - Full load amps

MCA -Minimum circuit ampacity (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device



# AIR COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### ELECTRICAL SECTION

Next Size Fan

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	N/A	78/90/100	N/A	N/A	113/137/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	N/A	36/42/45	45/52/60	N/A	55/66/70	68/77/90	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	N/A	78/90/100	N/A	N/A	113/128/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	N/A	36/42/45	45/52/60	N/A	57/65/70	68/77/90	80/89/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	N/A	71/87/90	N/A	N/A	113/137/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	N/A	33/40/45	38/46/50	N/A	55/66/70	60/73/80	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	N/A	50/55/70	N/A	N/A	84/93/125	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	N/A	24/26/35	32/36/45	N/A	44/49/60	55/61/80	67/73/100

FLA - full load amps

MCA - Minimum circuit amps (wire size amps)

MOP - Maximum rating of the overcurrent protective device

### COMPRESSOR

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

### CONDENSER

Remote air cooled outdoor

Standard selection at 95° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC021	GHRC032	GHRC039	GHRC053	GHRC060	GHRC074	GHRC099	GHRC106

Selection at 100° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC025	GHRC039	GHRC053	GHRC060	GHRC074	GHRC084	GHRC106	GHRC141

Selection at 105° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC039	GHRC053	GHRC053	GHRC074	GHRC084	GHRC106	GHRC141	GHRC176

(Note: Refer to pages 51 and 55 for electrical data on remote air cooled condensers.)

\* \* \* The following section has no reference to column headings \* \* \*

### EVAPORATOR FAN MOTOR

FLA - full load amps

Diameter (mm)/kW/HP	450/1.0/1.4	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	3.7	8.2	8.8	N/A
460/3/60	1.8	3.7	4.3	6.7

# AIR COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### CAPACITY in Btu/hr - Gross

80° F/67° WB	Total	79,900	111,700	132,500	169,500	222,900	271,700	333,200	397,900
50% RH	Sensible	65,000	94,900	119,700	138,100	180,800	218,900	258,200	329,300
75° DB/62.5° WB	Total	74,200	103,900	122,800	157,300	207,200	251,800	309,800	369,300
50% RH	Sensible	62,500	91,100	114,900	132,700	173,900	210,300	248,900	316,300
75° DB/61° WB	Total	71,900	100,600	118,800	152,400	201,300	245,600	300,400	257,900
45% RH	Sensible	67,100	97,900	118,600	142,200	186,600	226,000	266,000	339,400
72° DB/60° WB	Total	70,800	99,200	117,000	150,000	197,700	239,800	395,700	352,200
50% RH	Sensible	61,000	88,900	112,000	129,500	169,700	205,100	243,400	308,500
72° DB/58.6° WB	Total	68,800	96,300	113,300	146,000	194,000	234,500	289,100	343,800
45% RH	Sensible	64,900	94,700	112,700	137,800	181,300	218,600	258,700	329,000

### FAN SECTION

Airflow - CFM	3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans	1	1	1	1	2	2	2	3
Standard motor - diameter (mm)	500	500	560	560	500	500	560	560
Fan motor - kW/HP	2.8/3.7	2.8/3.7	5.0/6.7	5.0/6.7	2.8/3.7	2.8/3.7	3.0/4.0	3.0/4.0
External static pressure (E.S.P.) - in of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	1.0	1.5	1.5	1.5	0.9	0.7	1.1
Next size motor - diameter (mm)	N/A	560	N/A	N/A	N/A	560	560	560
Fan motor -kW/HP	-	3.0/4.0	-	-	-	3.0/4.0	5.0/6.7	5.0/6.7
Maximum E.S.P.	-	1.5	-	-	-	1.5	1.5	1.5

### COMPRESSORS

Type:								
Hermetic scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

### EVAPORATOR COIL

Face area - sq ft	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity - fpm	271	361	451	386	328	369	410	431

### REHEAT SECTION

Electric	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	105,500	115,000	121,000	126,000	190,000	210,000	230,000	N/A
	Downflow	60,000	65,000	69,000	72,000	108,000	120,000	130,000
	Upflow	60,000	65,000	69,000	72,000	108,000	120,000	130,000
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	70,000	81,000	86,000	90,000	130,000	145,000	160,000	N/A
	Downflow	34,300	44,800	47,500	49,400	74,200	82,000	90,700
	Upflow	34,300	44,800	47,500	49,400	74,200	82,000	90,700

# AIR COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity - lb/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - lb/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION

(4 inch thick MERV 8)

Quantity /size	Downflow	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x20
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	Upflow	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8

(Note: Efficiency based on ASHRAE Std. 52.2)

### CONNECTION SIZES

Liquid line - O.D. Copper (2 per unit)	1/2	1/2	1/2	5/8	5/8	5/8	7/8	7/8
Hot gas line - O.D. Copper (2 per unit)	1/2	5/8	5/8	3/4	3/4	3/4	7/8	7/8
Suction line* - O.D. Copper (2 per unit)	7/8	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

(Note: Refer to Operation and Maintenance manual for recommended pipe sizing between unit and condenser.)

### ELECTRICAL SECTION

Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	N/A	N/A	109/132/150	112/136/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	39/44/50	45/52/60	52/64/70	54/65/70	68/77/90	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	N/A	N/A	105/120/125	111/127/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	39/44/50	45/52/60	54/61/70	56/64/70	68/77/90	80/89/110

Electrical data based on: electrical reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	N/A	N/A	109/132/150	112/136/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	35/42/45	38/46/50	52/64/70	54/65/70	60/73/80	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	N/A	N/A	77/84/110	83/91/110	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	26/28/35	32/36/45	41/45/60	43/48/60	55/61/80	67/73/100

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps) MOP - Maximum rating of the overcurrent protective device

# AIR COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFAD/U021 GFAD/U028 GFAD/U035 GFAD/U046 GFAD/U056 GFAD/U070 GFAD/U091 GFAD/U106

### ELECTRICAL SECTION

### Next Size Fan

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	55/66/70	72/81/100	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/128/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	57/65/70	72/81/100	87/97/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	68/83/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	33/40/45	N/A	N/A	N/A	55/66/70	65/78/90	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	44/48/60	N/A	N/A	N/A	84/93/125	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	24/26/35	N/A	N/A	N/A	44/49/60	60/65/80	74/81/100

FLA - full load amps

MCA - Minimum circuit amps (wire size amps)

MOP - Maximum rating of the overcurrent protective device

### COMPRESSOR

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

### CONDENSER

Remote air cooled outdoor

Standard selection at 95° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC021	GHRC032	GHRC039	GHRC053	GHRC060	GHRC074	GHRC099	GHRC106

Selection at 100° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC025	GHRC039	GHRC053	GHRC060	GHRC074	GHRC084	GHRC106	GHRC141

Selection at 105° F ambient at sea level

Evaporative model	GFAD/U021	GFAD/U028	GFAD/U035	GFAD/U046	GFAD/U056	GFAD/U070	GFAD/U091	GFAD/U106
Condenser model	GHRC039	GHRC053	GHRC053	GHRC074	GHRC084	GHRC106	GHRC141	GHRC176

(NOTE: Refer to pages 51 and 55 for electrical data on remote air cooled condensers.)

\* \* \* The following section has no reference to column headings \* \* \*

### EVAPORATOR FAN MOTOR

FLA - full load amps

Diameter (mm)/kW/HP	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	8.2	8.8	N/A
460/3/60	3.7	4.3	6.7

# WATER COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### CAPACITY in BTU/hr - Gross

80° F/67° WB	Total	86,600	121,200	143,900	184,100	238,500	298,200	365,900	430,800
50% RH	Sensible	62,200	89,800	112,500	134,000	169,700	217,500	259,400	318,500
75° DB/62.5° WB	Total	80,600	112,800	134,200	171,400	221,200	277,500	339,700	401,400
50% RH	Sensible	60,100	86,800	108,600	129,700	164,000	210,400	251,000	308,200
75° DB/61° WB	Total	78,100	109,200	130,700	166,300	215,300	269,700	329,600	389,100
45% RH	Sensible	64,000	92,500	116,400	138,000	174,700	224,200	266,600	328,200
72° DB/60° WB	Total	77,000	107,700	128,400	163,700	210,800	265,000	324,000	383,800
50% RH	Sensible	58,900	85,000	106,300	127,100	160,600	206,100	245,900	302,000
72° DB/58.6° WB	Total	74,900	104,300	124,700	159,700	206,100	258,000	315,200	374,400
45% RH	Sensible	62,300	89,700	112,700	134,400	169,900	217,800	259,200	319,800

### FAN SECTION

Airflow - CFM	2,700	3,600	4,500	4,800	6,400	8,000	9,000	12,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	450	500	500	560	500	500	500	500
Fan motor - kW/HP	1.0/1.4	2.8/3.7	2.8/3.7	3.0/4.0	2.8/3.7	2.8/3.7	2.8/3.7	2.8/3.7
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.0	1.5	0.8	1.2	1.5	1.4	0.6	1.3
Next size fan - diameter (mm)	500	N/A	560	560	N/A	560	560	560
Fan motor - kW/HP	2.8/3.7		3.0/4.0	5.0/6.7		3.0/4.0	3.0/4.0	3.0/4.0
Maximum E.S.P.	1.5	N/A	1.4	1.5	N/A	1.5	1.2	1.5

### COMPRESSORS

Type:								
Hermetic Scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

### EVAPORATOR COIL

Face area - sq ft	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity - fpm	221	295	369	331	262	328	369	369

### REHEAT SECTION

Electric	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr								
	<i>Downflow</i>	105,500	115,000	121,000	126,000	190,000	210,000	230,000
	<i>Upflow</i>	60,000	65,000	69,000	72,000	108,000	120,000	130,000
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr								
	<i>Downflow</i>	70,000	81,000	86,000	90,000	130,000	145,000	160,000
	<i>Upflow</i>	34,300	44,800	47,500	49,400	74,200	82,000	90,700

# WATER COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity in lb/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity in lb/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION

(4 inch thick MERV 8)

Quantity /size	<i>Downflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x20
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	<i>Upflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8
(Note: Efficiency based on ASHRAE Std. 52.2)									

### CONDENSER WATER REQMENTS

(Maximum design water pressure 150 psi - high pressure valves optional.)

Using 65°F EWT GPM/ΔP in psi	7.1/2.0	9.5/3.0	11.9/3.5	19.0/4.0	19.0/4.0	23.8/4.0	29.7/6.0	35.0/6.5
Using 75° F EWT GPM/ΔP in psi	11.1/3.0	14.8/3.5	18.6/4.0	29.7/4.5	29.7/4.5	37.1/4.5	46.4/7.0	52.0/8.0
Using 85°F EWT GPM/ΔP in psi	15.8/4.0	21.0/4.0	26.2/5.0	42.0/7.0	42.0/7.0	52.5/7.0	62.6/10.5	72.0/12.0

### CONNECTION SIZES

Condenser water supply	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condenser water return	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

### ELECTRICAL SECTION

Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	72/83/90	78/90/100	87/101/110	109/132/150	112/136/150	147/167/200	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	36/41/45	36/41/45	43/49/50	52/64/70	54/65/70	66/75/90	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/68/70	72/83/90	78/90/100	87/101/110	105/120/125	111/127/150	147/167/200	165/186/225
460/3/60	FLA/MCA/MOP	27/31/35	36/41/45	36/41/45	43/49/50	54/61/70	56/64/70	66/75/90	78/88/110

Electrical data based on: electric reheat - **YES**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	68/82/90	70/86/90	76/92/100	109/132/150	112/136/150	130/159/175	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	32/39/40	32/39/40	36/44/50	52/64/70	54/65/70	59/72/80	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	29/33/45	43/48/60	49/54/70	59/65/90	77/84/110	83/91/150	119/132/175	136/150/200
460/3/60	FLA/MCA/MOP	14/15/20	23/25/30	23/25/30	30/33/45	41/45/60	43/48/60	54/59/80	65/72/90

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

# WATER COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### ELECTRICAL SECTION

### Next Size Fan

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	⋮	N/A	⋮	78/90/100	⋮	N/A	⋮	N/A	⋮	113/137/150	⋮	149/169/200	⋮	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	⋮	N/A	⋮	36/42/45	⋮	45/52/60	⋮	N/A	⋮	55/66/70	⋮	68/77/90	⋮	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	⋮	N/A	⋮	78/90/100	⋮	N/A	⋮	N/A	⋮	113/128/150	⋮	149/169/200	⋮	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	⋮	N/A	⋮	36/42/45	⋮	45/52/60	⋮	N/A	⋮	57/65/70	⋮	68/77/90	⋮	80/89/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	⋮	N/A	⋮	71/87/90	⋮	N/A	⋮	N/A	⋮	113/137/150	⋮	131/160/175	⋮	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	⋮	N/A	⋮	33/40/45	⋮	38/46/50	⋮	N/A	⋮	55/66/70	⋮	60/73/80	⋮	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	⋮	N/A	⋮	50/55/70	⋮	N/A	⋮	N/A	⋮	84/93/125	⋮	120/133/175	⋮	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	⋮	N/A	⋮	24/26/35	⋮	32/36/45	⋮	N/A	⋮	44/49/60	⋮	55/61/80	⋮	67/73/100

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

### COMPRESSOR

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

\* \* \* The following section has no reference to column headings \* \* \*

### EVAPORATOR FAN MOTOR

FLA - full load amps

Diameter (mm)/kW/HP	450/1.0/1.4	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	3.7	8.2	8.8	N/A
460/3/60	1.8	3.7	4.3	6.7

\* Units with Energy Saver or Auxiliary Chilled Water Coils have different filter quantities as those listed in this section. Refer to dimensional data sheets.



# WATER COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### CAPACITY in Btu/hr - Gross

80° F/67° WB	Total	89,100	125,100	148,700	188,700	248,600	302,500	373,200	444,100
50% RH	Sensible	68,500	99,900	126,300	145,600	190,600	230,800	274,100	347,000
75° DB/62.5° WB	Total	83,300	116,400	138,100	175,800	231,200	282,200	347,000	413,500
50% RH	Sensible	66,200	96,200	121,200	140,500	183,900	223,100	265,000	334,600
75° DB/61° WB	Total	80,600	113,000	134,000	170,700	224,100	274,300	337,200	401,300
45% RH	Sensible	70,700	103,100	130,300	150,200	196,400	238,500	282,500	357,900
72° DB/60° WB	Total	79,800	111,200	131,800	168,100	220,800	270,100	331,200	395,100
50% RH	Sensible	64,800	94,000	118,200	137,500	179,800	218,500	259,500	327,200
72° DB/58.6° WB	Total	77,800	108,200	128,800	164,000	214,600	263,800	324,000	384,500
45% RH	Sensible	68,900	99,900	126,300	146,000	190,500	231,900	274,900	347,200

### FAN SECTION

Airflow - CFM	3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans	1	1	1	1	2	2	2	3
Standard motor - diameter (mm)	500	500	560	560	500	500	560	560
Fan motor - kW/HP	2.8/3.7	2.8/3.7	5.0/6.7	3.0/4.0	2.8/3.7	2.8/3.7	3.0/4.0	3.0/4.0
External static pressure (E.S.P.) - in of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	1.0	1.5	1.5	1.5	0.9	0.7	1.1
Next size motor - diameter (mm)	N/A	560	N/A	N/A	N/A	560	560	560
Fan motor -kW/HP	-	3.0/4.0	-	-	-	3.0/4.0	3.0/4.0	3.0/4.0
Maximum E.S.P.	-	1.5	-	-	-	1.5	1.5	1.5

### COMPRESSORS

Type:								
Hermetic Scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

### EVAPORATOR COIL

Face area in sq ft	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity in fpm	271	361	451	386	328	369	410	431

### REHEAT SECTION

Electrical	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Downflow	105,500	115,000	121,000	126,000	190,000	210,000	230,000	N/A
Upflow	60,000	65,000	69,000	72,000	108,000	120,000	130,000	N/A
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Downflow	70,000	81,000	86,000	90,000	130,000	145,000	160,000	N/A
Upflow	34,300	44,800	47,500	49,400	74,200	82,000	90,700	N/A

# WATER COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity in lb/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity in lb/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION

Quantity /size	Downflow	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x20
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	Upflow	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8
(Note: Efficiency based on ASHRAE Std. 52.2)									

### CONDENSER WATER

Requirements (Maximum design water pressure 150 psi - high pressure valves optional.)

Using 65° F EWT GPM/ΔP in psi	7.1/2.0	9.5/3.0	11.9/3.5	19.0/4.0	19.0/4.0	23.8/4	29.7/6.0	35.0/6.5
Using 75° F EWT GPM/ΔP in psi	11.1/3.0	14.8/3.5	18.6/4.0	29.7/4.5	29.7/4.5	37.1/4.5	46.4/7.0	52.0/8.0
Using 85° F EWT GPM/ΔP in psi	15.8/4.0	21.0/4.0	26.2/5.0	42.0/7.0	42.0/7.0	52.5/7.0	62.6/10.5	72.0/12.0

### CONNECTION SIZES

Condenser water supply	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condenser water return	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

### ELECTRICAL SECTION

Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	N/A	N/A	109/132/150	112/136/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	39/44/50	45/52/60	52/64/70	54/65/70	68/77/90	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	N/A	N/A	105/120/125	111/127/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	39/44/50	45/52/60	54/61/70	56/64/70	68/77/90	80/89/110

Electrical data based on: electrical reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	N/A	N/A	109/132/150	112/136/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	35/42/45	38/46/50	52/64/70	54/65/70	60/73/80	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	N/A	N/A	77/84/110	83/91/110	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	26/28/35	32/36/45	41/45/60	43/48/60	55/61/80	67/73/90

FLA - Full load amps

MCA - Minimum circuit amps (wire size amps)

MOP - Maximum rating of the overcurrent protective device

# WATER COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFWD/U021 GFWD/U028 GFWD/U035 GFWD/U046 GFWD/U056 GFWD/U070 GFWD/U091 GFWD/U106

### ELECTRICAL SECTION

### Next Size Fan

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	55/66/70	72/81/100	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/128/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	57/65/70	72/81/100	87/97/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	68/83/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	33/40/45	N/A	N/A	N/A	55/66/70	65/78/90	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	44/48/60	N/A	N/A	N/A	84/93/125	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	24/26/35	N/A	N/A	N/A	44/49/60	60/65/80	74/81/100

FLA - full load amps

MCA - Minimum circuit amps (wire size amps)

MOP - Maximum rating of the overcurrent protective device

### COMPRESSOR

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

\* \* \* The following section has no reference to column headings \* \* \*

### EVAPORATOR FAN MOTOR

FLA - full load amps

Diameter (mm)/kW/HP	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	8.2	8.8	N/A
460/3/60	3.7	4.3	6.7

GLYCOL COOLED: Performance data at STANDARD airflow

R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

**CAPACITY in Btu/hr - Gross**

80° F/67° WB 50% RH	Total	74,600	104,800	124,400	159,700	208,600	258,100	317,000	375,400
	Sensible	57,500	83,400	105,000	124,200	157,800	201,600	239,500	296,800
75° DB/62.5° WB 50% RH	Total	69,400	97,300	115,400	148,400	193,400	239,100	294,500	348,800
	Sensible	55,400	80,300	100,800	119,800	152,000	193,900	231,100	285,800
75° DB/61° WB 45% RH	Total	66,700	94,200	111,600	144,200	187,500	231,400	285,300	338,100
	Sensible	59,000	85,800	108,000	128,100	162,200	207,100	246,400	305,700
72° DB/60° WB 50% RH	Total	66,300	92,800	110,000	141,700	184,300	227,800	281,000	332,800
	Sensible	54,200	78,400	98,300	117,100	148,600	189,300	226,100	279,200
72° DB/58.6° WB 45% RH	Total	64,600	90,100	107,300	138,200	180,000	220,800	274,500	323,500
	Sensible	57,600	83,200	104,900	124,400	157,700	200,600	240,000	296,400

**FAN SECTION**

Airflow - CFM	2,700	3,600	4,500	4,800	6,400	8,000	9,000	12,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	450	500	500	560	500	500	500	500
Fan motor - kW/HP	1.0/1.4	2.8/3.7	2.8/3.7	3.0/4.0	2.8/3.7	2.8/3.7	2.8/3.7	2.8/3.7
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.0	1.5	0.8	1.2	1.5	1.4	0.6	1.3
Next size fan - diameter (mm)	500	N/A	560	560	N/A	560	560	560
Fan motor - kW/HP	2.8/3.7		3.0/4.0	5.0/6.7		3.0/4.0	3.0/4.0	3.0/4.0
Maximum E.S.P.	1.5	N/A	1.4	1.5	N/A	1.5	1.2	1.5

**COMPRESSORS**

Type:								
Hermetic Scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

**EVAPORATOR COIL**

Face are - sq ft	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity - fpm	221	295	369	331	262	328	369	369

**REHEAT SECTION**

Electric	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr								
	<i>Downflow</i>	105,500	115,000	121,000	126,000	190,000	210,000	230,000
	<i>Upflow</i>	60,000	65,000	69,000	72,000	108,000	120,000	130,000
Hot Water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr								
	<i>Downflow</i>	70,000	81,000	86,000	90,000	130,000	145,000	160,000
	<i>Upflow</i>	34,300	44,800	47,500	49,400	74,200	82,000	90,700

# GLYCOL COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity - lb/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - lb/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION

Quantity /size	<i>Downflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x20
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	<i>Upflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8
(Note: Efficiency based on ASHRAE Std. 52.2)									

### CONDENSER WATER

Requirements: (Maximum design water pressure 150 psi - high pressure valves optional.)

Using 65° F EGT GPM/ΔP in psi	7.1/2.0	9.5/3.0	11.9/3.5	19.0/4.0	19.0/4.0	23.8/4.0	29.7/6.0	35.0/6.5
Using 75°F EGT GPM/ΔP in psi	11.1/3.0	14.8/3.5	18.6/4.0	29.7/4.5	29.7/4.5	37.1/4.5	46.4/7.0	52.0/8.0
Using 85° F EGT GPM/ΔP in psi	15.8/4.0	21.0/4.0	26.2/5.0	42.0/7.0	42.0/7.0	52.5/7.0	62.6/10.5	72.0/12.0
Using fluid cooler GPM/ΔP in psi	21.0/5.7	28.0/7.0	35.0/7.5	56.0/9.0	56.0/9.0	70.0/10.0	87.5/14.0	98.0/16.0

### CONNECTION SIZES

Condensate water supply	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensate water return	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

### ELECTRICAL SECTION

#### Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	72/83/90	78/90/100	87/101/110	109/132/150	112/136/150	147/167/200	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	36/41/45	36/41/45	43/49/50	52/64/70	54/65/70	66/75/90	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **YES** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/68/70	72/83/90	78/90/100	87/101/110	105/120/125	111/127/150	147/167/200	165/186/225
460/3/60	FLA/MCA/MOP	27/31/35	36/41/45	36/41/45	43/49/50	54/61/70	56/64/70	66/75/90	78/88/110

Electrical data based on: electric reheat - **YES**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	58/72/80	68/82/90	70/86/90	76/92/100	109/132/150	112/136/150	130/159/175	164/199/225
460/3/60	FLA/MCA/MOP	27/33/35	32/39/40	32/39/40	36/44/50	52/64/70	54/65/70	59/72/80	76/92/100

Electrical data based on: electric reheat - **NO**, steam generator - **NO** and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	29/33/45	43/48/60	49/54/70	59/65/90	77/84/110	83/91/150	119/132/175	136/150/200
460/3/60	FLA/MCA/MOP	14/15/20	23/25/30	23/25/30	30/33/45	41/45/60	43/48/60	54/59/80	65/72/90

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

# GLYCOL COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

### ELECTRICAL SECTION

### Next Size Fan

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	N/A	78/90/100	N/A	N/A	113/137/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	N/A	36/42/45	45/52/60	N/A	55/66/70	68/77/90	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	N/A	78/90/100	N/A	N/A	113/128/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	N/A	36/42/45	45/52/60	N/A	57/65/70	68/77/90	80/89/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	N/A	71/87/90	N/A	N/A	113/137/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	N/A	33/40/45	38/46/50	N/A	55/66/70	60/73/80	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO** and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	N/A	50/55/70	N/A	N/A	84/93/125	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	N/A	24/26/35	32/36/45	N/A	44/49/60	55/61/80	67/73/100

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

### COMPRESSOR

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

### OUTDOOR FLUID COOLER

Standard selection at 95° F ambient and sea level

Evaporative model	GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
Fluid cooler model	GHFC035	GHFC060	GHFC060	GHFC074	GHFC084	GHFC130	GHFC141	GHFC176

Selection at 100° F ambient and sea level

Evaporative model	GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
Fluid cooler model	GHFC060	GHFC074	GHFC074	GHFC106	GHFC106	GHFC141	GHFC176	GHFC215

(NOTE: Refer to pages 59 and 62 for electrical data on fluid coolers.)

\* \* \* The following section has no reference to column headings \* \* \*

### EVAPORATOR FAN MOTOR

FLA - full load amps

Diameter (mm)/kW/HP	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	8.2	8.8	N/A
460/3/60	3.7	4.3	6.7

# GLYCOL COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

### CAPACITY in Btu/hr - Gross

80° DB/67° WB 50% RH	Total	77,300	107,900	127,300	163,600	215,900	264,500	322,900	384,500
	Sensible	64,100	93,600	117,100	135,800	178,200	216,100	254,100	324,200
75° DB/62.5° WB 50% RH	Total	71,600	100,300	118,100	152,100	200,900	243,800	300,300	357,500
	Sensible	61,500	89,700	112,900	130,600	171,300	207,000	244,900	311,400
75° DB/61° WB 45% RH	Total	69,200	97,200	115,100	146,600	194,700	237,500	290,700	346,900
	Sensible	65,900	96,300	114,700	139,800	183,800	222,500	261,800	334,700
72° DB/60° WB 50% RH	Total	68,200	95,700	112,600	145,200	191,800	231,400	286,800	341,300
	Sensible	59,900	87,400	110,300	127,400	167,200	201,500	239,400	303,800
72° DB/58.6° WB 45% RH	Total	66,700	92,900	110,500	141,700	187,500	226,600	279,400	331,600
	Sensible	64,000	92,500	110,000	135,900	178,400	215,100	254,300	326,600

### FAN SECTION

Airflow - CFM	3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans	1	1	1	1	2	2	2	3
Standard motor - diameter (mm)	500	500	560	560	500	500	560	560
Fan motor - kW/HP	2.8/3.7	2.8/3.7	5.0/6.7	3.0/4.0	2.8/3.7	2.8/3.7	3.0/4.0	3.0/4.0
External static pressure (E.S.P.) - in of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	1.0	1.5	1.5	1.5	0.9	0.7	1.1
Next size motor - diameter (mm)	N/A	560	N/A	N/A	N/A	560	560	560
Fan motor -kW/HP	-	3.0/4.0	-	-	-	3.0/4.0	5.0/6.7	5.0/6.7
Maximum E.S.P.	-	1.5	-	-	-	1.5	1.5	1.5

### COMPRESSORS

Type:								
Hermetic Scroll	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Number	2	2	2	2	2	2	2	2
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A

### EVAPORATOR COIL

Face area - sq ft	12.2	12.2	12.2	14.5	24.4	24.4	24.4	32.5
Rows of coils	2	3	4	5	3	4	5	4
Face velocity - fpm	271	361	451	386	328	369	410	431

### REHEAT SECTION

Electric	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	15	15	15	15	22.5	22.5	22.5	30
Capacity - Btu/hr	51,225	51,225	51,225	51,225	76,835	76,835	76,835	102,450
Hot gas	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity - Btu/hr	26,000	38,000	42,200	48,000	64,000	81,000	101,000	126,000
Steam	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	105,500	115,000	121,000	126,000	190,000	210,000	230,000	N/A
	Downflow	60,000	65,000	69,000	72,000	108,000	120,000	N/A
	Upflow	60,000	65,000	69,000	72,000	108,000	120,000	N/A
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	70,000	81,000	86,000	90,000	130,000	145,000	160,000	N/A
	Downflow	34,300	44,800	47,500	49,400	74,200	82,000	N/A
	Upflow	34,300	44,800	47,500	49,400	74,200	82,000	N/A



# GLYCOL COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER

GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

### HUMIDIFIER SECTION

Steam generator	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Capacity in lb/hr (Adjustable)	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
kW	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2	3.3-10.2
Steam grid	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Capacity in lb/hr at 15 psi	31	31	31	31	31	31	31	31

### FILTER SECTION

(4 inch thick MERV 8)

Quantity /size	<i>Downflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	4/20x25	4/20x25	4/20x25	4/20x25
		1/20x20	1/20x20	1/20x20	1/20x20	4/16x25	4/16x25	4/16x25	4/16x20
		2/16x25	2/16x25	2/16x25	2/16x25				2/20x25
		1/16x20	1/16x20	1/16x20	1/16x20				2/16x25
	<i>Upflow</i>	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25	2/20x25
		-	-	-	-	2/16x25	2/16x25	2/16x25	4/16x25
Efficiency - MERV		8	8	8	8	8	8	8	8
(Note: Efficiency based on ASHRAE Std. 52.2)									

### CONDENSER WATER

Requirements (Maximum design water pressure 150 psi - high pressure valves optional.)

Using 65° F EGT GPM/ΔP in psi	7.1/2.0	9.5/3.0	11.9/3.5	19.0/4.0	19.0/4.0	23.8/4.0	29.7/6.0	35.0/6.5
Using 75° F EGT GPM/ΔP in psi	11.1/3.0	14.8/3.5	18.6/4.0	29.7/4.5	29.7/4.5	37.1/4.5	46.4/7.0	52.0/8.0
Using 85° F EGT GPM/ΔP in psi	15.8/4.0	21.0/4.0	26.2/5.0	42.0/7.0	42.0/7.0	52.5/7.0	62.6/10.5	72.0/12.0
Using fluid cooler GPM/ΔP in psi	21.0/5.7	28.0/7.0	35.0/7.5	56.0/9.0	56.0/9.0	70.0/10.0	87.5/14.0	98.0/16.0

### CONNECTION SIZES

Condenser water supply	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condenser water return	1-5/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensate drain	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier supply	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

### ELECTRICAL SECTION

Standard Fan

Electrical data based on STANDARD unit: electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	N/A	N/A	109/132/150	112/136/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	39/44/50	45/52/60	52/64/70	54/65/70	68/77/90	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	N/A	N/A	105/120/125	111/127/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	39/44/50	45/52/60	54/61/70	56/64/70	68/77/90	80/89/110

Electrical data based on: electrical reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	N/A	N/A	109/132/150	112/136/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	35/42/45	38/46/50	52/64/70	54/65/70	60/73/80	78/94/110

Electrical data based on: electrical reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	N/A	N/A	77/84/110	83/91/110	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	26/28/35	32/36/45	41/45/60	43/48/60	55/61/80	67/73/90

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

GLYCOL COOLED: Performance data at OPTIONAL airflow

R-410A Refrigerant

R-407C information available in a separate brochure

MODEL NUMBER GFGD/U021 GFGD/U028 GFGD/U035 GFGD/U046 GFGD/U056 GFGD/U070 GFGD/U091 GFGD/U106

**ELECTRICAL SECTION**

**Next Size Fan**

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	55/66/70	72/81/100	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	72/84/90	N/A	N/A	N/A	113/128/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	36/42/45	N/A	N/A	N/A	57/65/70	72/81/100	87/97/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	68/83/90	N/A	N/A	N/A	113/137/150	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	33/40/45	N/A	N/A	N/A	55/66/70	65/78/90	85/101/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and NEXT SIZE FAN.

208-230/3/60	FLA/MCA/MOP	N/A	44/48/60	N/A	N/A	N/A	84/93/125	N/A	N/A
460/3/60	FLA/MCA/MOP	N/A	24/26/35	N/A	N/A	N/A	44/49/60	60/65/80	74/81/100

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

**COMPRESSOR**

FLA -full load amps

208-230/3/60	13.1	17.6	20.5	25.0	30.1	33.3	51.3	55.8
460/3/60	6.1	9.6	9.6	12.8	16.7	17.9	23.1	26.9

**OUTDOOR FLUID COOLER**

Standard selection at 95° F ambient and sea level

Evaporative model	GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
Fluid cooler model	GHFC035	GHFC060	GHFC060	GHFC074	GHFC084	GHFC130	GHFC141	GHFC176

Selection at 100° F ambient and sea level

Evaporative model	GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
Fluid cooler model	GHFC060	GHFC074	GHFC074	GHFC106	GHFC106	GHFC141	GHFC176	GHFC215

(NOTE: Refer to pages 54 for electrical data on fluid coolers.)

\* \* \* The following section has no reference to column headings \* \* \*

**EVAPORATOR FAN MOTOR**

FLA - full load amps

Diameter (mm)/kW/HP	500/2.8/3.7	560/3.0/4.0	560/5.0/6.7
208-230/3/60	8.2	8.8	N/A
460/3/60	3.7	4.3	6.7

\* Units with Energy Saver or Auxiliary Chilled Water Coils have different filter quantities as those listed in this section. Refer to dimensional data sheets.

# ENERGY SAVER-GLYCOL COOLED: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

### CAPACITY in Btu/hr - Gross

(based on 45° F entering fluid temperature with 40% glycol solution)

MODEL NUMBER		GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
75° DB/62.5° WB 50% RH	Total	71,900	90,900	108,100	122,500	198,100	240,100	261,200	347,900
	Sensible	62,800	80,900	97,800	107,700	160,800	196,700	216,600	288,200
72° DB/60° WB 50% RH	Total	62,600	79,400	94,600	106,400	169,800	205,900	224,500	298,900
	Sensible	58,400	75,100	90,800	99,900	148,500	181,800	200,300	266,300
Rows of Coil		4	4	4	3	4	4	3	4
GPM		21.0	29.0	35.0	45.5	56.0	70.0	75.0	80.0
Pressure drop - psi		3.8	6.8	10.3	21.2	14.7	22.4	22.8	15.7

### FAN SECTION

Airflow - CFM	2,700	3,600	4,500	4,800	6,400	8,000	9,000	12,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	500	500	560	560	500	500	560	500
Fan motor - kW/HP	2.8/3.7	2.8/3.7	3.0/4.0	3.0/4.0	2.8/3.7	2.8/3.7	3.0/4.0	2.8/3.7
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	1.5	1.0	1.0	1.5	1.1	0.9	1.0
Next size fan - diameter (mm)	N/A	N/A	560	560	N/A	560	560	560
Fan motor - kW/HP			5.0/6.7	5.0/6.7		3.0/4.0	5.0/6.7	3.0/4.0
Maximum E.S.P.	-	-	1.5	1.5	-	1.4	1.5	1.3

### ELECTRICAL SECTION

#### Standard Fan

Electrical data based on STANDARD unit, electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	78/90/100	87/101/110	109/132/150	112/136/150	149/169/200	164/199/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	36/42/45	43/49/50	52/64/70	54/65/70	68/77/90	76/92/100

Electric data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	78/90/100	87/101/110	105/120/125	111/127/150	149/169/200	165/186/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	36/42/45	43/49/50	54/61/70	56/64/70	68/77/90	78/88/110

Electric data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	71/87/90	76/92/100	109/132/150	112/136/150	131/160/175	164/199/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	33/40/45	36/44/50	52/64/70	54/65/70	60/73/80	76/92/100

Electric data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	50/55/70	59/65/90	77/84/110	83/91/110	120/133/175	136/150/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	24/26/35	30/33/45	41/45/60	43/48/60	55/61/80	65/72/90

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

# ENERGY SAVER-GLYCOL COOLED: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

### CAPACITY in Btu/hr - Gross

(based on 45° F entering fluid temperature with 40% glycol solution)

MODEL NUMBER		GFGD/U021	GFGD/U028	GFGD/U035	GFGD/U046	GFGD/U056	GFGD/U070	GFGD/U091	GFGD/U106
75° DB/62.5° WB	Total	79,000	99,600	118,200	131,700	222,500	255,300	275,600	376,200
50% RH	Sensible	72,100	92,500	111,500	119,500	188,600	213,900	233,300	320,900
72° DB/60° WB	Total	69,400	87,800	104,500	115,100	192,400	220,000	237,900	325,300
50% RH	Sensible	67,000	85,700	103,000	110,800	174,800	198,000	216,000	297,200
Rows of coils		4	4	4	3	4	4	3	4
GPM		21.0	29.0	35.0	45.5	56.0	70.0	75.0	80.0
Pressure drop - psi		3.8	6.8	10.3	21.2	14.7	22.4	22.8	15.7

### FAN SECTION

Airflow - CFM	3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	500	500	560	560	500	560	560	560
Fan motor - kW/HP	2.8/3.7	2.8/3.7	5.0/6.7	5.0/6.7	2.8/3.7	3.0/4.0	5.0/6.7	3.0/4.0
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	0.7	1.5	1.5	1.2	0.9	1.5	0.6
Next size fan - diameter (mm)	N/A	560	N/A	N/A	560	560	N/A	560
Fan motor - kW/HP		3.0/4.0	-	-	3.0/4.0	5.0/6.7	-	5.0/6.7
Maximum E.S.P.	-	1.2	-	-	1.5	1.5	-	1.5

### ELECTRICAL SECTION

#### Standard Fan

Electrical data based on STANDARD unit, electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	N/A	N/A	109/132/150	113/137/150	N/A	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	39/44/50	45/52/60	52/64/70	55/66/70	72/81/100	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	N/A	N/A	105/120/125	113/128/150	N/A	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	39/44/50	45/52/60	54/61/70	57/65/70	72/81/100	80/89/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	N/A	N/A	109/132/150	113/137/150	N/A	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	35/42/45	38/46/50	52/64/70	55/66/70	65/78/90	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	N/A	N/A	77/84/110	84/93/125	N/A	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	26/28/35	32/36/45	41/45/60	44/49/60	60/65/80	67/73/100

FLA - Full load amps

MCA - Minimum circuit amps (wire sizing amps)

MOP - Maximum rating of the overcurrent protective device

# AUXILIARY CHILLED WATER COIL: Performance data at STANDARD airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

### CAPACITY in Btu/hr - Gross

( based on 45° F Entering Fluid Temperature)

MODEL NUMBER		GF*D/U021	GF*D/U028	GF*D/U035	GF*D/U046	GF*D/U056	GF*D/U070	GF*D/U091	GF*D/U106
75° DB/62.5° WB	Total	83,900	106,500	127,600	141,800	217,800	261,600	294,600	353,400
50% RH	Sensible	68,100	88,000	106,900	116,500	169,800	206,300	231,700	291,000
72° DB/60° WB	Total	72,000	91,600	109,900	121,400	185,200	222,700	250,300	303,400
50% RH	Sensible	63,000	81,400	98,900	107,500	155,800	189,800	212,900	268,900
Rows of coils		4	4	4	3	4	4	3	4
GPM		18.0	24.0	30.0	39.0	48.0	60.0	75.0	80.0
Pressure drop - psi		2.7	4.6	7.2	11.8	9.9	15.1	18.3	13.8

\* Insert "A" for air cooled, "W" for water cooled, or "G" for glycol cooled

### FAN SECTION

Airflow - CFM	2,700	3,600	4,500	4,800	6,400	8,000	9,000	12,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	500	500	560	560	500	500	560	500
Fan motor - kW/HP	2.8/3.7	2.8/3.7	3.0/4.0	3.0/4.0	2.8/3.7	2.8/3.7	3.0/4.0	2.8/3.7
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	1.5	1.0	1.0	1.5	1.1	0.9	1.0
Next size fan - diameter (mm)	N/A	N/A	560	560	N/A	560	560	560
Fan motor - kW/HP			3.0/4.0	5.0/6.7		3.0/4.0	3.0/4.0	3.0/4.0
Maximum E.S.P.	-	-	1.5	1.5	-	1.4	1.5	1.3

### ELECTRICAL SECTION

#### Standard Fan

Electrical data based on STANDARD unit, electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	78/90/100	87/101/110	109/132/150	112/136/150	149/169/200	164/199/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	36/42/45	43/49/50	52/64/70	54/65/70	68/77/90	76/92/100

Electric data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	78/90/100	87/101/110	105/120/125	111/127/150	149/169/200	165/186/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	36/42/45	43/49/50	54/61/70	56/64/70	68/77/90	78/88/110

Electric data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	71/87/90	76/92/100	109/132/150	112/136/150	131/160/175	164/199/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	33/40/45	36/44/50	52/64/70	54/65/70	60/73/80	76/92/100

Electric data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	50/55/70	59/65/90	77/84/110	83/91/110	120/133/175	136/150/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	24/26/35	30/33/45	41/45/60	43/48/60	55/61/80	65/72/90

# AUXILIARY CHILLED WATER COIL: Performance data at OPTIONAL airflow

## R-410A Refrigerant

R-407C information available in a separate brochure

### CAPACITY in Btu/hr - Gross

### Downflow units

(based on 45° F Entering Fluid Temperature)

MODEL NUMBER		GF*D/U021	GF*D/U028	GF*D/U035	GF*D/U046	GF*D/U056	GF*D/U070	GF*D/U091	GF*D/U106
75° DB/62.5° WB	Total	93,200	117,900	141,000	153,600	247,400	279,600	312,800	382,500
50% RH	Sensible	78,700	101,300	122,900	129,900	199,800	224,900	250,300	324,300
72° DB/60° WB	Total	80,700	102,300	122,400	132,300	212,000	239,100	266,700	330,400
50% RH	Sensible	73,000	94,000	113,900	120,200	184,500	207,300	230,400	300,200
Rows of coils		4	4	4	3	4	4	3	4
GPM		18.0	24.0	30.0	39.0	48.0	60.0	75.0	80.0
Pressure drop - psi		2.7	4.6	7.2	11.6	9.9	15.1	18.3	13.8

\* Insert "A" for air cooled, "W" for water cooled, or "G" for glycol cooled

### FAN SECTION

Airflow - CFM	3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans	1	1	1	1	2	2	2	3
Standard fan - diameter (mm)	500	500	560	560	500	560	560	560
Fan motor - kW/HP	2.8/3.7	2.8/3.7	5.0/6.7	5.0/6.7	2.8/3.7	3.0/4.0	5.0/6.7	3.0/4.0
External static pressure (E.S.P.) - in. of W.G.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum E.S.P.	1.5	0.7	1.5	1.5	1.2	0.9	1.5	0.6
Next size fan - diameter (mm)	N/A	560	N/A	N/A	560	560	N/A	560
Fan motor - kW/HP		3.0/4.0	-	-	3.0/4.0	5.0/6.7	-	5.0/6.7
Maximum E.S.P.	-	1.2	-	-	1.5	1.5	-	1.5

### ELECTRICAL SECTION

### Standard Fan

Electrical data based on STANDARD unit, electric reheat - **YES**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	72/83/90	N/A	N/A	109/132/150	113/137/150	N/A	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	36/41/45	39/44/50	45/52/60	52/64/70	55/66/70	72/81/100	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **YES**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/73/80	72/83/90	N/A	N/A	105/120/125	113/128/150	N/A	166/187/225
460/3/60	FLA/MCA/MOP	29/33/35	36/41/45	39/44/50	45/52/60	54/61/70	57/65/70	72/81/100	80/89/110

Electrical data based on: electric reheat - **YES**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	63/77/80	68/82/90	N/A	N/A	109/132/150	113/137/150	N/A	166/200/225
460/3/60	FLA/MCA/MOP	29/35/40	32/39/40	35/42/45	38/46/50	52/64/70	55/66/70	65/78/90	78/94/110

Electrical data based on: electric reheat - **NO**, steam generator humidifier - **NO**, and STANDARD FAN.

208-230/3/60	FLA/MCA/MOP	34/38/50	43/48/60	N/A	N/A	77/84/110	84/93/125	N/A	138/152/200
460/3/60	FLA/MCA/MOP	16/17/20	23/25/30	26/28/35	32/36/45	41/45/60	44/49/60	60/65/80	67/73/100

**Standard Condenser Electrical Data**

	208/1/60	208/3/60	460/3/60
<u>Model</u>	<u>FLA/MCA/MFS</u>	<u>FLA/MCA/MFS</u>	<u>FLA/MCA/MFS</u>
DARC 03	4.2/5.3/15	4.2/5.3/15	2.1/2.6/15
DARC 05	4.2/5.3/15	4.2/5.3/15	2.1/2.6/15
DARC 06	4.2/5.3/15	4.2/5.3/15	2.1/2.6/15
DARC 07	4.2/5.3/15	4.2/5.3/15	2.1/2.6/15
DARC 09	4.2/5.3/15	4.2/5.3/15	2.1/2.6/15
DARC 11	8.4/9.5/15	8.4/9.5/15	4.2/4.7/15
DARC 15	8.4/9.5/15	8.4/9.5/15	4.2/4.7/15
DARC 17	8.4/9.5/15	8.4/9.5/15	4.2/4.7/15
DARC 21	13/14/15	13/14/15	6.3/6.8/15
DARC 24	13/14/15	13/14/15	6.3/6.8/15
DARC 28	13/14/15	13/14/15	6.3/6.8/15
DARC 30	17/15/25	17/18/25	8.4/8.9/15
DARC 37	17/15/25	17/18/25	8.4/8.9/15
DARC 40	17/15/25	17/18/25	8.4/8.9/15
DARC 44	21/22/25	21/22/25	11/11/15
DARC 50	21/22/25	21/22/25	11/11/15
DARC 57	25/26/30	25/26/30	13/13/15
DARC 61	34/35/40	34/35/40	17/14/20
DARC 75	34/35/40	34/35/40	17/14/20
DARC 80	34/35/40	34/35/40	17/14/20
DARC 88	42/43/45	34/35/40	21/22/25
DARC100	42/43/15	34/35/40	21/22/25



## gForce SERIES Dimensional and Weight Data

### gForce Series - Dimensions

Model	Length	Width	Height
GFAD/U021xx	72.50"	40.50"	78.00"
GFAD/U028xx	72.50"	40.50"	78.00"
GFAD/U035xx	72.50"	40.50"	78.00"
GFAD/U046xx	72.50"	40.50"	78.00"
GFAD/U056xx	100.00"	40.50"	78.00"
GFAD/U070xx	100.00"	40.50"	78.00"
GFAD/U091xx	100.00"	40.50"	78.00"
GFAD/U106xx	130.00"	40.50"	78.00"

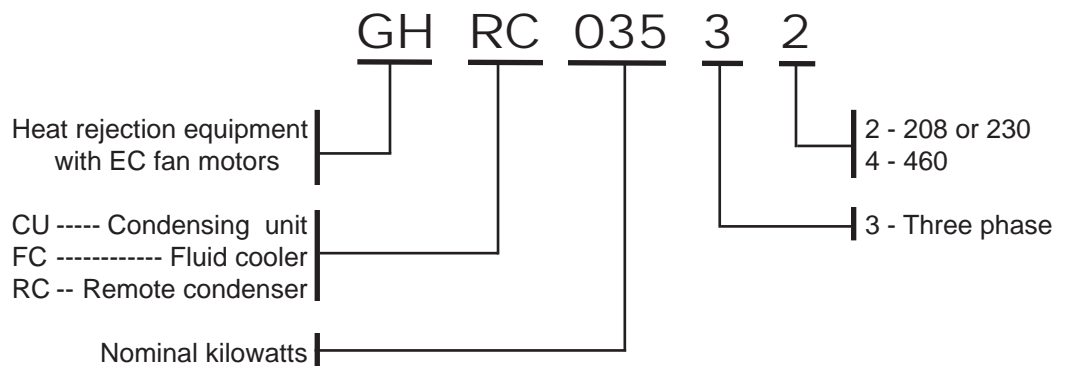
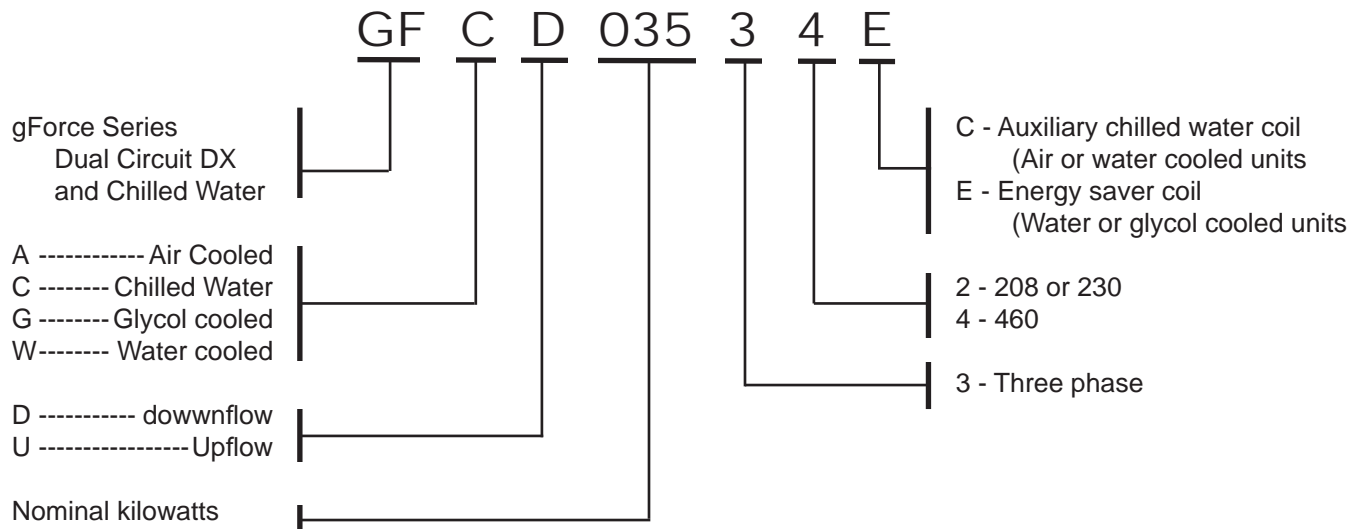
### gForce Series Air Cooled - Operating and Shipping Weights

Model	<u>Standard Units</u>		<u>Units with Energy Saver or Aux Chilled Water Coils</u>	
	Operating Weight	Shipping Weight	Operating Weight	Shipping Weight
GFAD/U021xx	1,113 lbs	1,270 lbs	1,220 lbs	1,375 lbs
GFAD/U028xx	1,130 lbs	1,286 lbs	1,260 lbs	1,420 lbs
GFAD/U035xx	1,145 lbs	1,300 lbs	1,305 lbs	1,460 lbs
GFAD/U046xx	1,415 lbs	1,595 lbs	1,600 lbs	1,785 lbs
GFAD/U056xx	1,595 lbs	1,805 lbs	1,806 lbs	2,015 lbs
GFAD/U070xx	1,640 lbs	1,850 lbs	1,875 lbs	2,085 lbs
GFAD/U091xx	1,685 lbs	1,900 lbs	1,975 lbs	2,085 lbs
GFAD/U106xx	2,150 lbs	2,415 lbs	2,470 lbs	2,850 lbs

### gForce Series Water or Glycol Cooled - Operating Shipping Weights

Model	<u>Standard Units</u>		<u>Units with Energy Saver or Aux Chilled Water Coils</u>	
	Operating Weight	Shipping Weight	Operating Weight	Shipping Weight
GF*D/U021xx	1,225 lbs	1,390 lbs	1,335	1,500
GF*D/U028xx	1,235 lbs	1,405 lbs	1,375	1,540
GF*D/U035xx	1,310 lbs	1,480 lbs	1,480	1,645
GF*D/U046xx	1,550 lbs	1,740 lbs	1,750	1,760
GF*D/U056xx	1,710 lbs	2,040 lbs	1,840	1,850
GF*D/U070xx	1,885 lbs	2,105 lbs	2,030	2,240
GF*D/U091xx	1,935 lbs	2,155 lbs	2,130	2,340
GF*D/U106xx	2,515 lbs	2,790 lbs	2,710	2,970

## MODEL NUMBER IDENTIFICATION





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