



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 EFFICIENCIES

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 (based on ASHRAE Std. 52.1-1999), 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 1½ revolutions compared to less than ½ 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).

DATA ALARM PROCESSOR-III

The Data Alarm Processor-III (DAP™ III) offers the definitive answer for precision environmental control. The DAP-III control system not only controls and monitors temperature, humidity, airflow and cleanliness, it provides component run times, alarm history and an automatic self-test of the microprocessor on system start-up. All messages are presented in a clear vernacular format and sequentially displayed on a backlit, liquid crystal display (LCD).

OPERATION – Highly reliable, flat, sealed switches with tactile feedback allow unit on/off operation, menu selection for programming, operational information, diagnostics, and historical data. Multilevel password prevents unauthorized access. Alarm conditions are enunciated by an audible alarm. The alarm silence button will quiet the audible alarm but the display will continue to indicate the alarm condition until the problem is corrected.

STANDARD FEATURES

- | | |
|---|------------------------------------|
| Two row, eighty character, backlit LCD screen | Stand alone panel |
| Programmed settings saved in flash memory | Microprocessor based |
| Smooth keyboard type buttons | Automatic self-test diagnostics |
| Real time clock with back-up battery | USB port for software upgrades |
| Forward and backward menu access | All settings from face of panel |
| Data base of unit and room conditions | Multi-level password access |
| Factory calibrated humidity sensor | Battery backup for historical data |
| Factory calibrated temperature sensor | Menus factory programmed |
| Power “ON” status contact | |

OPERATIONAL FEATURES

- | | |
|---|-------------------------------|
| Automatic or manual restart | Automatic compressor rotation |
| Automatic reheat element rotation | Hot water coil flush cycle |
| Adjustable mode and stage response time | Humidity anticipation |
| Chilled water energy saver coil flush cycle | Sequential load activation |
| Compressor short cycle control on DX units | Dehumidification mode lockout |
| Start time delay | |

OPTIONAL FEATURES

- | | |
|--|----------------------------------|
| Energy saver (glycol) or auxiliary chilled water operation | Humidifier auto-flush cycle |
| Periodical DX activation on Energy Saver system | Three additional remote alarms |
| Supplemental compressor in Energy Saver mode | Discharge air temperature sensor |
| Chilled water temperature sensor | Modulating humidifier control |
| Four analog inputs (4-20 mA or 0-10 VDC signal) | RS-485 Multi-drop network card |
| Two analog outputs (0-10 VDC signal) | Ethernet network card |
| Underfloor water detection cable | LONTALK network card |
| Fan speed control for optional plug fan or VFD | |

DIAGNOSTIC and SERVICE FEATURES

- | | |
|--|---------------------------------|
| Alarms displayed in order of occurrence | Manual diagnostic program |
| Programmable delays for optional alarms | Adjustable alarm limits |
| Programmable remote alarm contact | Select alarms optional disabled |
| Four programmable optional alarm inputs | Selectable audio alarm tone |
| Manual override for blower, cool 1/2, reheat 1, humidification and water valve | |

PROTECTIVE and SAFETY FEATURES

Metal shell enclosure with sealed front control panel	Watch dog timer
Opto-coupler signal inputs	Protected 24VAC power input
Heavy ground planes and power foils	Isolation transformer
Switching power supply	Fuses on all control boards

CONDITIONS and DATA DISPLAYED

Current percent of capacity utilized	Temperature setpoint
Current temperature	Humidity setpoint
Current humidity	Unit or network identification number*
Current discharge air temperature*	Zone number*
Current chilled water temperature*	

FUNCTIONS DISPLAYED

Cooling stages	Energy Saver*
Reheat stages	Dehumidification
Chilled water flow percentage	Humidification

ALARMS

High temperature warning	Low temperature warning
High humidity warning	Low humidity warning
High pressure/internal overload compressor 1	Low pressure compressor 1
High pressure/internal overload compressor 2	Low pressure compressor 2
Under floor water detection	No air flow
Firestat tripped, unit shutdown	Dirty filter alarm
Custom message (programmed by factory)*	Humidity failure
Chilled water temperature sensor problem*	Manual override
Low voltage warning	Power failure restart
Compressor short-cycle	Temperature sensor problem
Humidity sensor problem	Maintenance required
Local alarm*	Discharge air sensor problem*
Check humidifier cylinder*	Fan motor overload*
No water flow*	Smoke detector, unit shutdown*
Standby pump on*	Person to contact on alarm*

HISTORICAL DATA

Equipment run times	Alarm history for last ten alarms
High and low temperature in last 24 hours	High and low humidity in last 24 hours
Average percent of capacity last hour	

PROGRAMMABLE SETTINGS and SELECTIONS

The user friendly Menus and Select buttons used with the 10 menu groups permit step-by-step programming of many functions. The DAP III Operation Manual provides a complete and detailed guide to the settings and selections. Refer to it for specific ranges and settings.

* - May require additional components and/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 TSI-99: Tandem Scroll Technical Performance)

Hot Gas Bypass - Hot gas bypass is available for changing load conditions. The hot gas bypass valve is installed between the compressor discharge line and the leaving side of the expansion valve through a side outlet distributor. The system with the evaporator under full load will maintain pressure on the leaving side of the hot gas bypass valve to keep the valve port closed. Should the load on the evaporator decrease to the point where the coil is below the desired setting, the pressure on the discharge of the hot gas bypass will put pressure on the diaphragm overcoming the spring pressure of the seat and allowing some hot gas to mix with the normal liquid discharge of the expansion valve raising the evaporator

pressure. This reduces the cooling capacity of the unit to match the load. The hot gas bypass valve can be adjusted to "fine tune" the unit to room conditions.

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 at 30% (per ASHRAE Std. 52-76). 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.

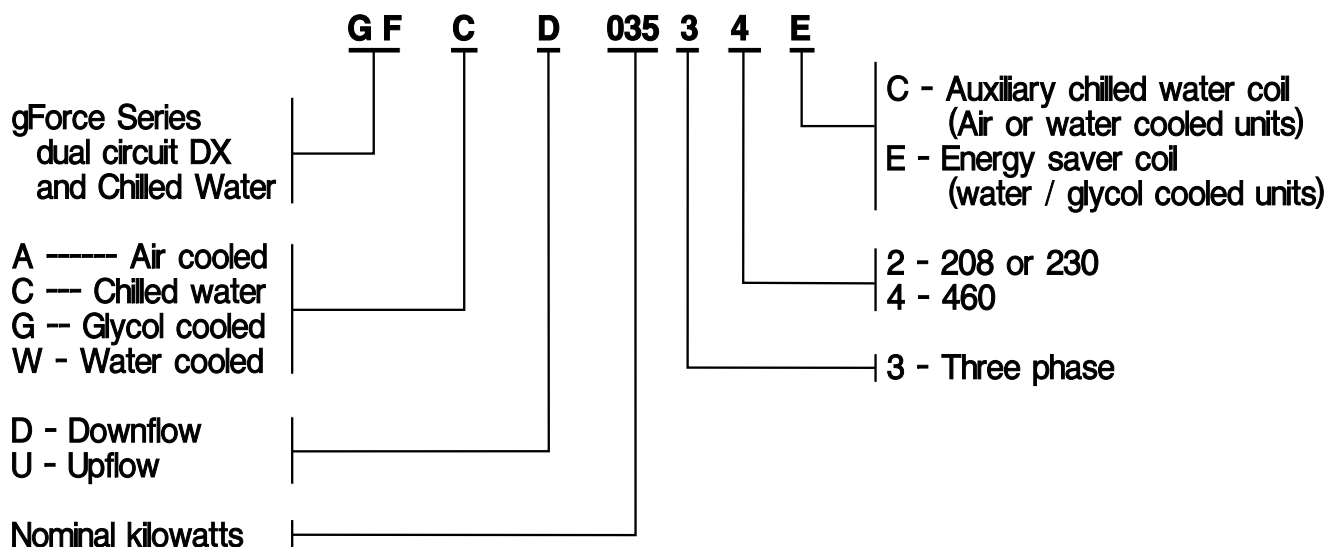
Integral Pump Enclosures - Pumps may be factory mounted as an integral part of the dry cooler. A 30" extension is added to the dry cooler. Pumps are pre-piped and wired and includes shut-off valves. A flow switch is included with dual pumps.

Pump Auto-Changeover - Dual pump packages may be provided with a pump auto-changeover control and NEMA 4 flow switch (field installed).

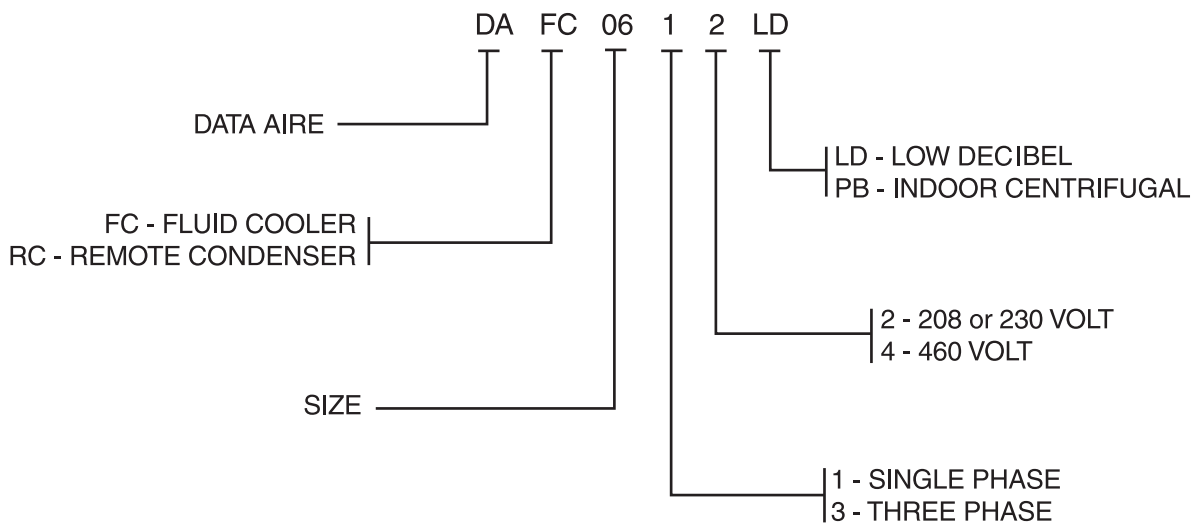
The pump auto-changeover control is factory wired and mounted in the dry cooler control box. The pump auto-changeover control provides automatic pump changeover in the event of a pump failure. Upon pump changeover, an audible alarm will sound at the indoor unit and a message ("STANDBY PUMP ON") will 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.

MODEL NUMBER IDENTIFICATION



AIR COOLED CONDENSERS & FLUID COOLERS
MODEL NUMBER IDENTIFICATION



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)	500	500	500	560	500	500	500	500
Fan motor - kW/HP	2.8/3.7	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.	1.5	1.5	0.8	1.2	1.5	1.4	0.6	1.3
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.	N/A	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	Downflow	105,500	115,000	121,000	126,000	90,000	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	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

AIR COOLED: Performance data at STANDARD airflow

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, 30% efficient, based on ASHRAE Std. 52-76)

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	4/16x25
		2/16x25	2/16x25	2/16x25	2/16x25				
		1/16x20	1/16x20	1/16x20	1/16x20				
	<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

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	63/77/80	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	29/35/40	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	63/73/80	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	29/33/35	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	63/77/80	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	29/35/40	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	34/38/50	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	16/17/20	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	N/A	N/A	78/90/100	N/A	N/A	113/137/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	78/90/100	N/A	N/A	113/128/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	71/87/90	N/A	N/A	113/137/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	50/55/70	N/A	N/A	84/93/125	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	N/A	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	DARC-06	DARC-09	DARC-11	DARC-15	DARC-17	DARC-21	DARC-28	DARC-30

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	DARC-07	DARC-11	DARC-15	DARC-17	DARC-21	DARC-24	DARC-30	DARC-40

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	DARC-11	DARC-15	DARC-15	DARC-21	DARC-24	DARC-30	DARC-40	DARC-50

(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

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	<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

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, 30% efficient, based on ASHRAE Std. 52-76)

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	4/16x25
		2/16x25	2/16x25	2/16x25	2/16x25				
		1/16x20	1/16x20	1/16x20	1/16x20				
	<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

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	DARC-06	DARC-09	DARC-11	DARC-15	DARC-17	DARC-21	DARC-28	DARC-30

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	DARC-07	DARC-11	DARC-15	DARC-17	DARC-21	DARC-24	DARC-30	DARC-40

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	DARC-11	DARC-15	DARC-17	DARC-21	DARC-24	DARC-30	DARC-40	DARC-50

(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 50% RH	Total	86,600	121,200	143,900	184,100	238,500	298,200	365,900	430,800
	Sensible	62,200	89,800	112,500	134,000	169,700	217,500	259,400	318,500
75° DB/62.5°WB 50% RH	Total	80,600	112,800	134,200	171,400	221,200	277,500	339,700	401,400
	Sensible	60,100	86,800	108,600	129,700	164,000	210,400	251,000	308,200
75° DB/61° WB 45% RH	Total	78,100	109,200	130,700	166,300	215,300	269,700	329,600	389,100
	Sensible	64,000	92,500	116,400	138,000	174,700	224,200	266,600	328,200
72° DB/60° WB 50% RH	Total	77,000	107,700	128,400	163,700	210,800	265,000	324,000	383,800
	Sensible	58,900	85,000	106,300	127,100	160,600	206,100	245,900	302,000
72° DB/58.6° WB 45% RH	Total	74,900	104,300	124,700	159,700	206,100	258,000	315,200	374,400
	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)	500	500	500	560	500	500	500	500
Fan motor - kW/HP	2.8/3.7	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.	1.5	1.5	0.8	1.2	1.5	1.4	0.6	1.3
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.	N/A	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>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	N/A
	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	N/A
Hot water	Optional	Optional	Optional	Optional	Optional	Optional	Optional	N/A
Capacity - Btu/hr	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	<i>Downflow</i>	N/A
	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	<i>Upflow</i>	N/A

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	N/A	N/A	78/90/100	N/A	N/A	113/137/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	78/90/100	N/A	N/A	113/128/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	71/87/90	N/A	N/A	113/137/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	50/55/70	N/A	N/A	84/93/125	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	N/A	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	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.

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

FILTER SECTION

(4 inch thick, 30% efficient, based on ASHRAE Std. 52-76)

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	4/16x25
		2/16x25	2/16x25	2/16x25	2/16x25				
		1/16x20	1/16x20	1/16x20	1/16x20				
	<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

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

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)	500	500	500	560	500	500	500	500
Fan motor - kW/HP	2.8/3.7	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.	1.5	1.5	0.8	1.2	1.5	1.4	0.6	1.3
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.	N/A	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 Capacity - lb/hr (Adjustable)	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
kW	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30	10-30
	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	3.3-10.2
Steam grid Capacity - lb/hr at 15 psi	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	31	31	31	31	31	31	31	31	31

FILTER SECTION

(4 inch thick, 30% efficient, based on ASHRAE Std. 52-76)

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	4/16x25
		2/16x25	2/16x25	2/16x25	2/16x25				
		1/16x20	1/16x20	1/16x20	1/16x20				
	<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

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	63/77/80	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	29/35/40	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	63/73/80	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	29/33/35	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	63/77/80	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	29/35/40	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	34/38/50	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	16/17/20	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	N/A	N/A	78/90/100	N/A	N/A	113/137/150	149/169/200	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	78/90/100	N/A	N/A	113/128/150	149/169/200	166/187/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	71/87/90	N/A	N/A	113/137/150	131/160/175	166/200/225
460/3/60	FLA/MCA/MOP	N/A	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	N/A	N/A	50/55/70	N/A	N/A	84/93/125	120/133/175	138/152/200
460/3/60	FLA/MCA/MOP	N/A	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	DAFC-11	DAFC-17	DAFC-17	DAFC-21	DAFC-24	DAFC-37	DAFC-40	DAFC-50

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	DAFC-17	DAFC-21	DAFC-21	DAFC-30	DAFC-30	DAFC-40	DAFC-50	DAFC-61

(NOTE: Refer to pages 53 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	3.0/4.0	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	<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 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, 30% efficient, based onn ASHRAE Std. 52-76)

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	4/16x25
		2/16x25	2/16x25	2/16x25	2/16x25				
		1/16x20	1/16x20	1/16x20	1/16x20				
	<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

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	DAFC-11	DAFC-17	DAFC-17	DAFC-21	DAFC-24	DAFC-37	DAFC-40	DAFC-50

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	DAFC-17	DAFC-21	DAFC-21	DAFC-30	DAFC-30	DAFC-40	DAFC-50	DAFC-61

(NOTE: Refer to pages 53 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 50% RH	Total	79,000	99,600	118,200	131,700	222,500	255,300	275,600	376,200
	Sensible	72,100	92,500	111,500	119,500	188,600	213,900	233,300	320,900
72° DB/60° WB 50% RH	Total	69,400	87,800	104,500	115,100	192,400	220,000	237,900	325,300
	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

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 50% RH	Total	83,900	106,500	127,600	141,800	217,800	261,600	294,600	353,400
	Sensible	68,100	88,000	106,900	116,500	169,800	206,300	231,700	291,000
72° DB/60° WB 50% RH	Total	72,000	91,600	109,900	121,400	185,200	222,700	250,300	303,400
	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

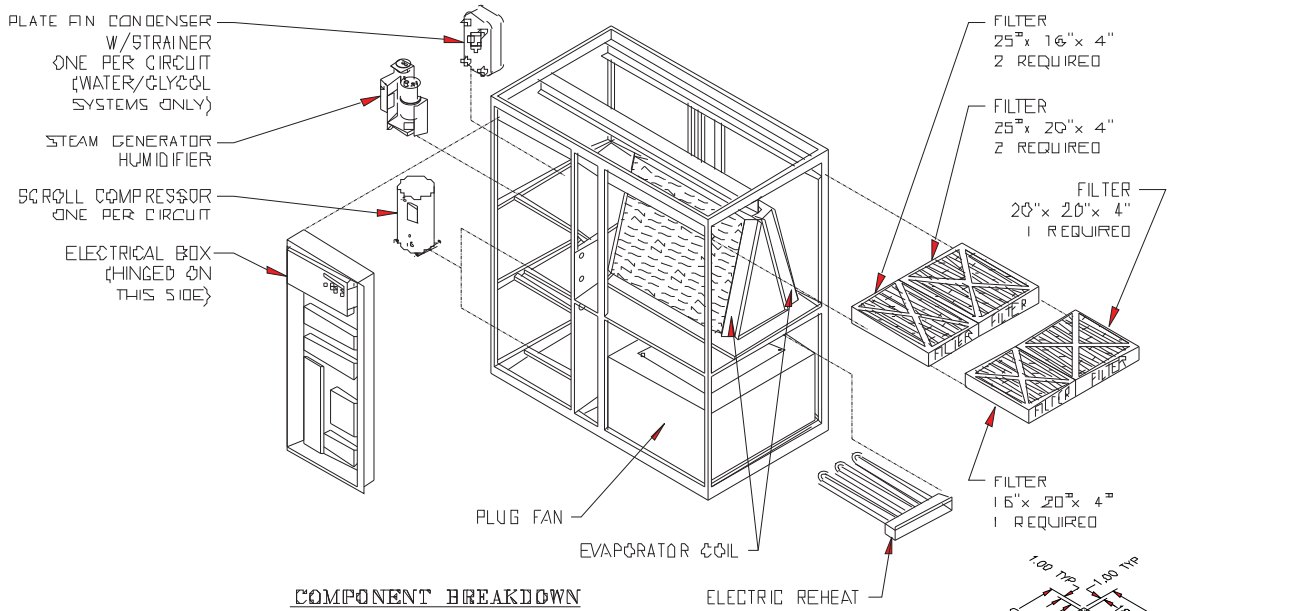
CAPACITY in Btu/hr - Gross		Downflow units (based on 45° F Entering Fluid Temperature)							
MODEL NUMBER		GF*D/U021	GF*D/U028	GF*D/U035	GF*D/U046	GF*D/U056	GF*D/U070	GF*D/U091	GF*D/U106
75° DB/62.5° WB	Total	93,200	117,900	141,000	153,600	247,400	279,600	312,800	382,500
	50% RH Sensible	78,700	101,300	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

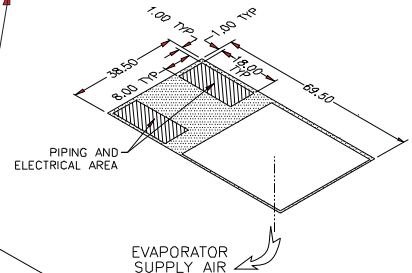
FAN SECTION									
Airflow - CFM		3,300	4,400	5,500	5,600	8,000	9,000	10,000	14,000
Number of fans		1	1	1	1	2	2	2	3
Standard fan - diameter (mm)		500	500	560	560	500	560	560	560
Fan motor - kW/HP		2.8/3.7	2.8/3.7	5.0/6.7	5.0/6.7	2.8/3.7	3.0/4.0	5.0/6.7	3.0/4.0
External static pressure (E.S.P.) - in. 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							
<u>Electrical data based on STANDARD unit, electric reheat - YES, steam generator humidifier - YES, and STANDARD FAN.</u>									
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
<u>Electrical data based on: electric reheat - NO, steam generator humidifier - YES, and STANDARD FAN.</u>									
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
<u>Electrical data based on: electric reheat - YES, steam generator humidifier - NO, and STANDARD FAN.</u>									
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
<u>Electrical data based on: electric reheat - NO, steam generator humidifier - NO, and STANDARD FAN.</u>									
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

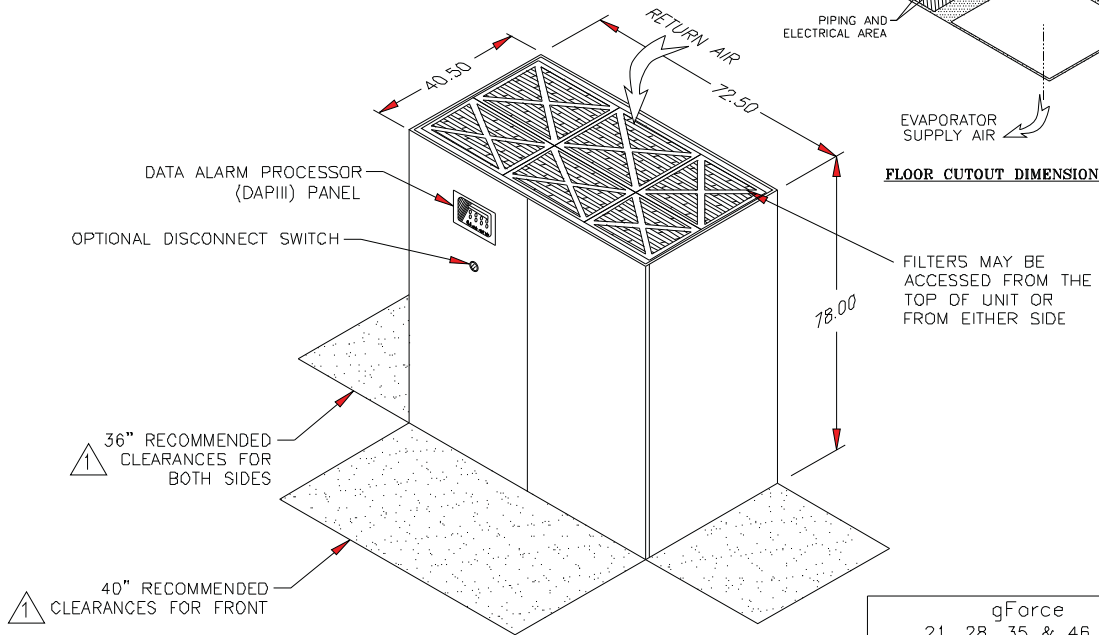
gForce 21, 28, 35 and 46 kW - Downflow



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS



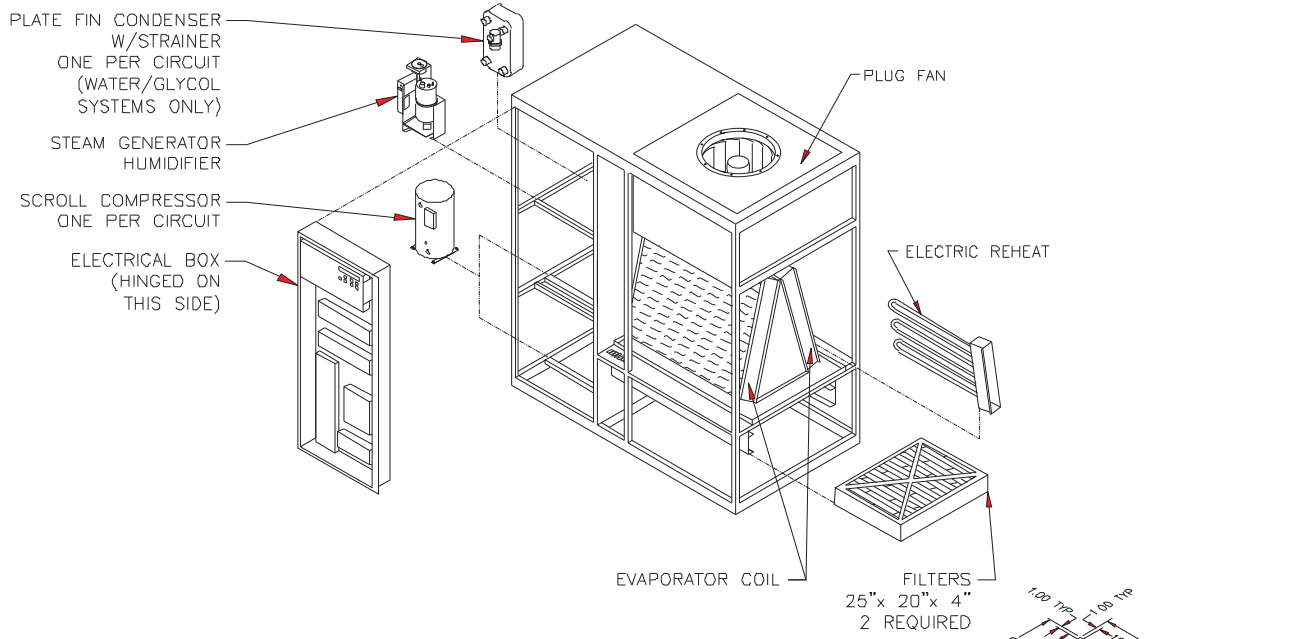
DIMENSIONAL DATA

gForce 21, 28, 35 & 46 KW DX DOWNFLOW		
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company		
DRAWN BY :	GABE	SCALE: NONE
CHECKED BY :		SH 1 OF 1
DATE :	02-05-10	REV -
PART OF		
550-900-509		
DWG NO.		

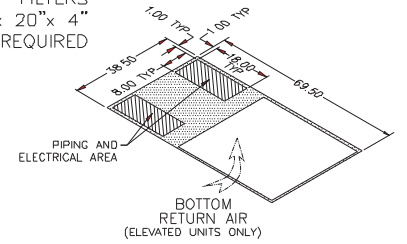
NOTES:

- 1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
- 2. ALL PIPING TERMINATES INSIDE OF CABINET.
- 3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.

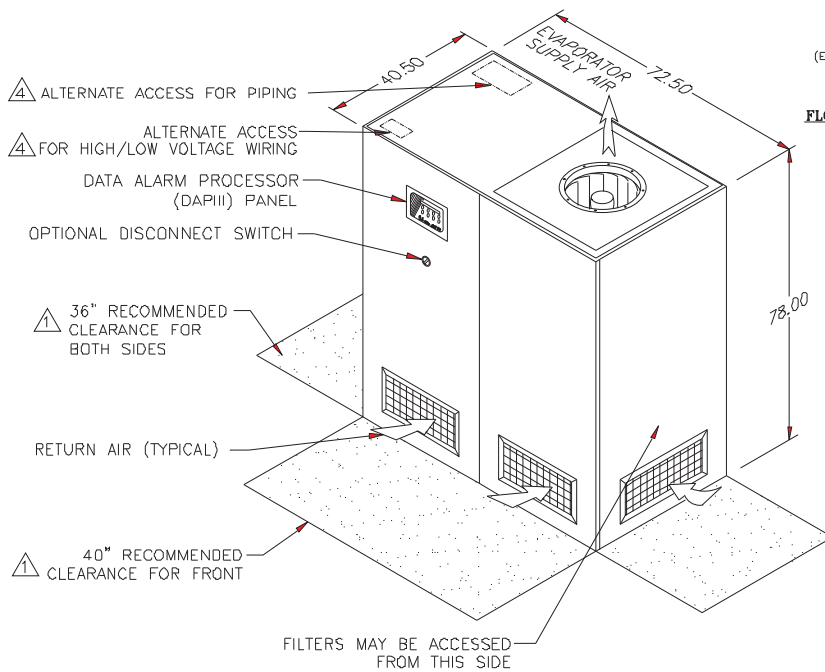
gForce 21, 28, 35 and 46 kW - Upflow



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS



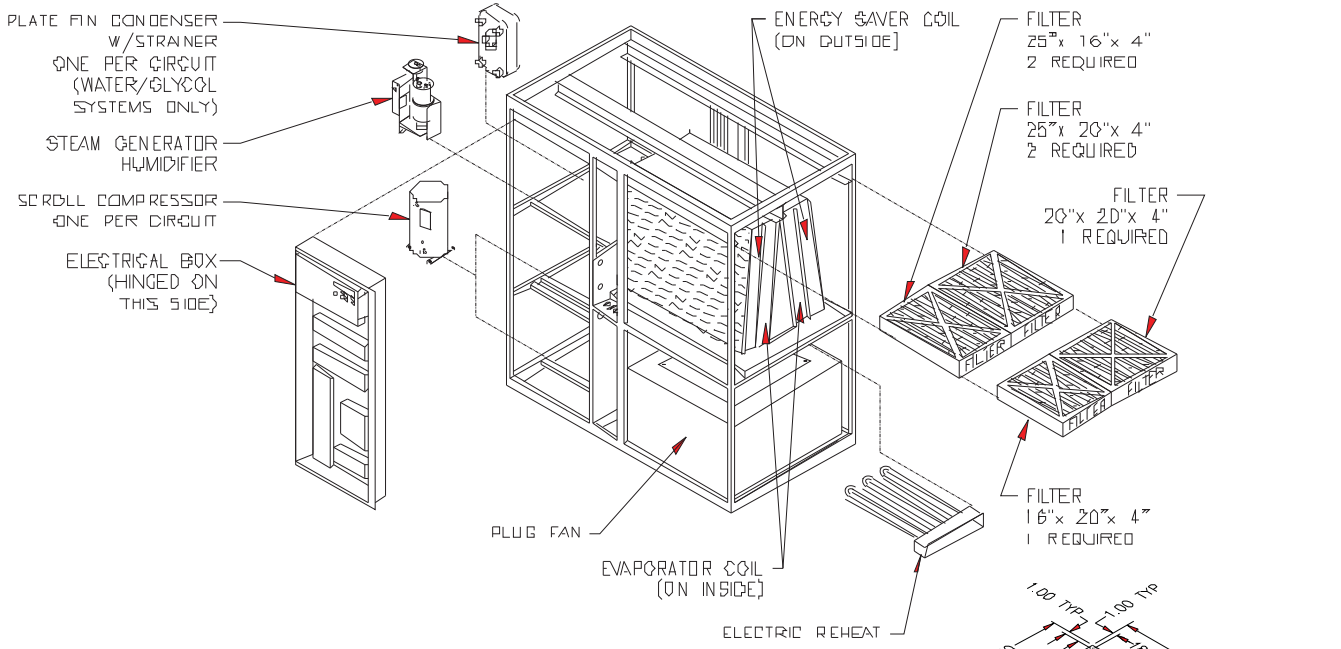
DIMENSIONAL DATA

NOTES:

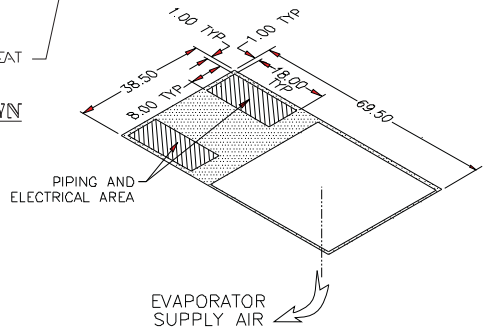
1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
2. ALL PIPING TERMINATES INSIDE OF CABINET.
3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.
- △ OPENINGS ARE NOT PROVIDED FOR ALTERNATE ACCESS LOCATIONS.

gForce 21, 28, 35 & 46 kW DX UPFLOW			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH	1 OF 1
DATE :	02-05-10	REV	-
PART OF			
550-900-515 DWG NO.			

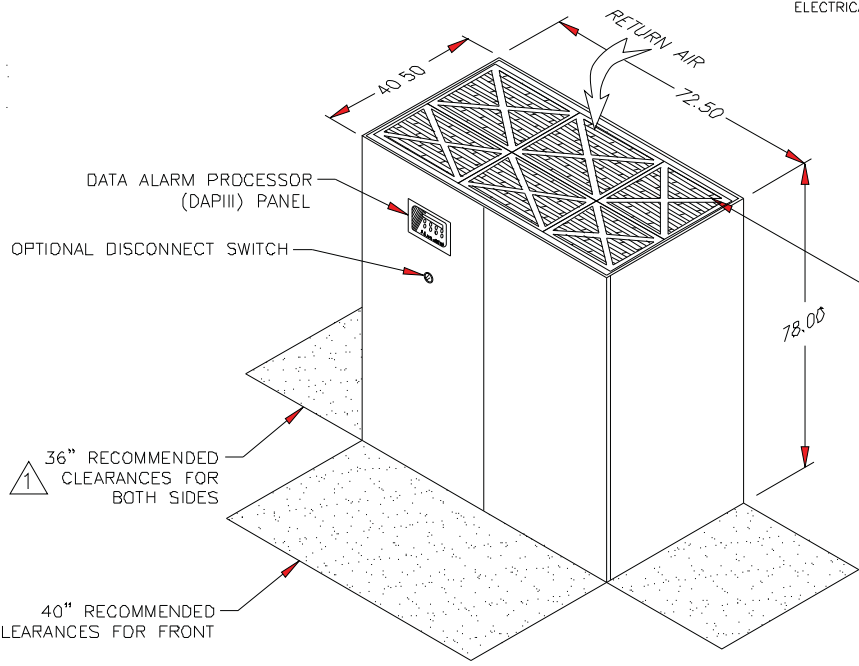
gForce 21, 28, 35 and 46 kW - Downflow with Energy Saver Coil



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS



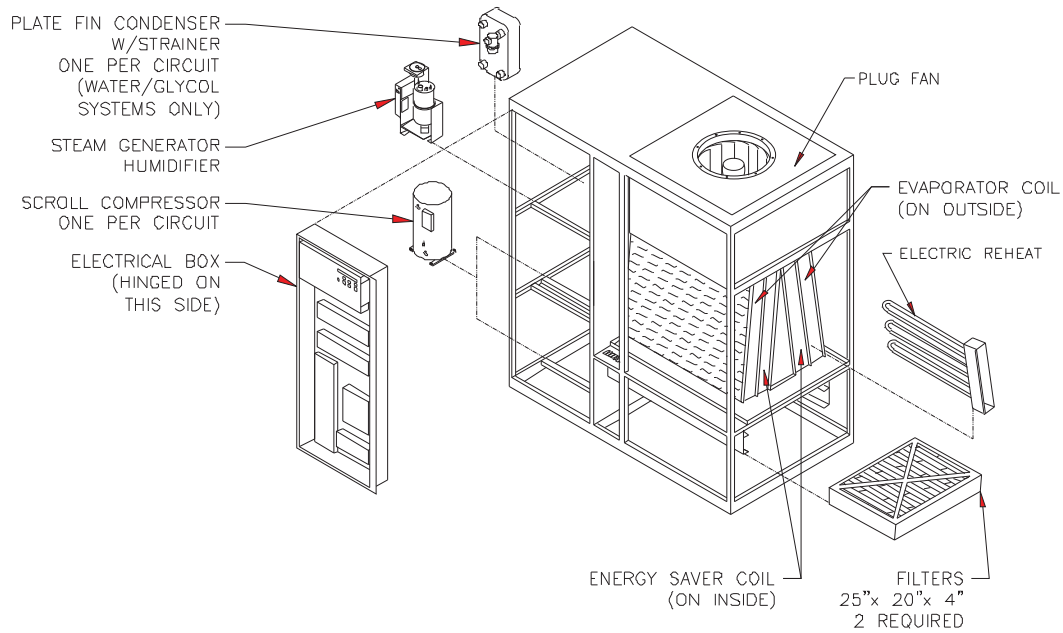
FILTERS MAY BE ACCESSED FROM THE TOP OF UNIT OR FROM EITHER SIDE

DIMENSIONAL DATA

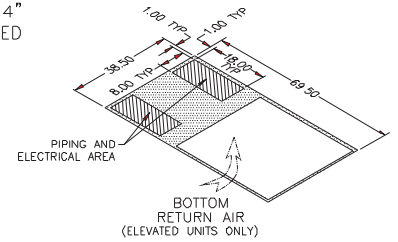
- NOTES:**
1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
 2. ALL PIPING TERMINATES INSIDE OF CABINET.
 3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.

gForce 21, 28, 35 & 46 KW DX DOWNFLOW WITH ENERGY SAVER COILS		
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company		
DRAWN BY :	GABE	SCALE: NONE
CHECKED BY :		SH 1 OF 1
DATE :	02-05-10	REV -
PART OF		
550-900-512 DWG NO.		

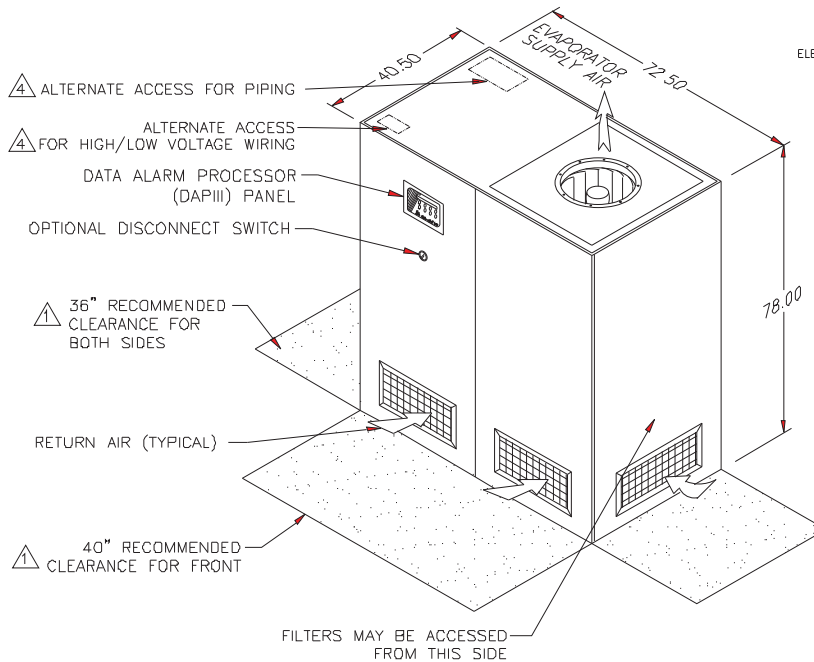
gForce 21, 28, 35 and 46 kW - Upflow with Energy Saver Coil



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS



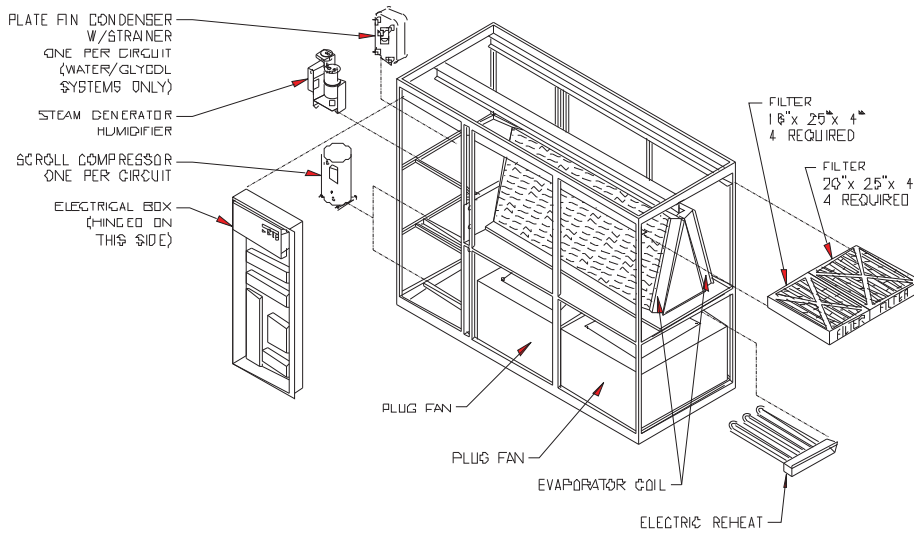
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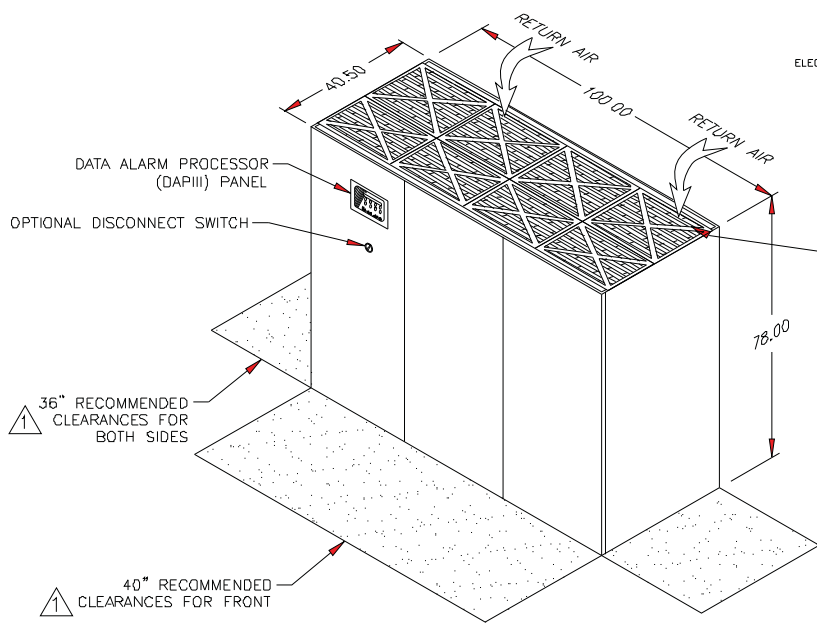
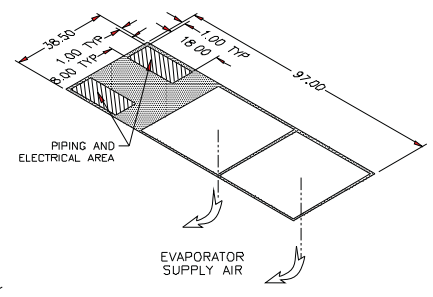
1. △ DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
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3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.
- △ OPENINGS ARE NOT PROVIDED FOR ALTERNATE ACCESS LOCATIONS.

gForce 21, 28, 35 & 46 KW DX UPFLOW WITH ENERGY SAVER COIL			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH :	OF 1
DATE :	02-18-10	REV :	-
PART OF			
550-900-518			
DWG NO.			

gForce 56, 70 and 91 kW - Downflow



COMPONENT BREAKDOWN



DIMENSIONAL DATA

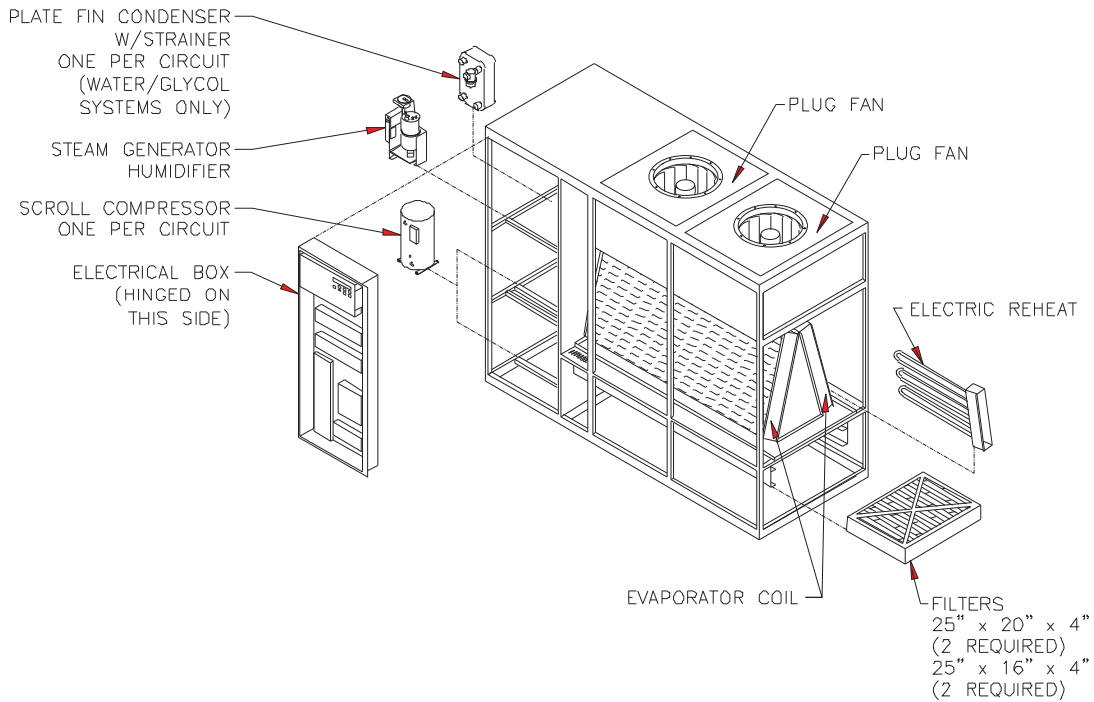
FILTERS MAY BE ACCESSED FROM THE TOP OF UNIT OR FROM THE FRONT OR FROM EITHER SIDE

gForce 56, 70 & 91 KW DX DOWNFLOW	
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company	
DRAWN BY :	GABE
CHECKED BY :	
DATE	02-05-10
SCALE:	NONE
REV	-
PART OF	
550-900-510	
DWG NO.	

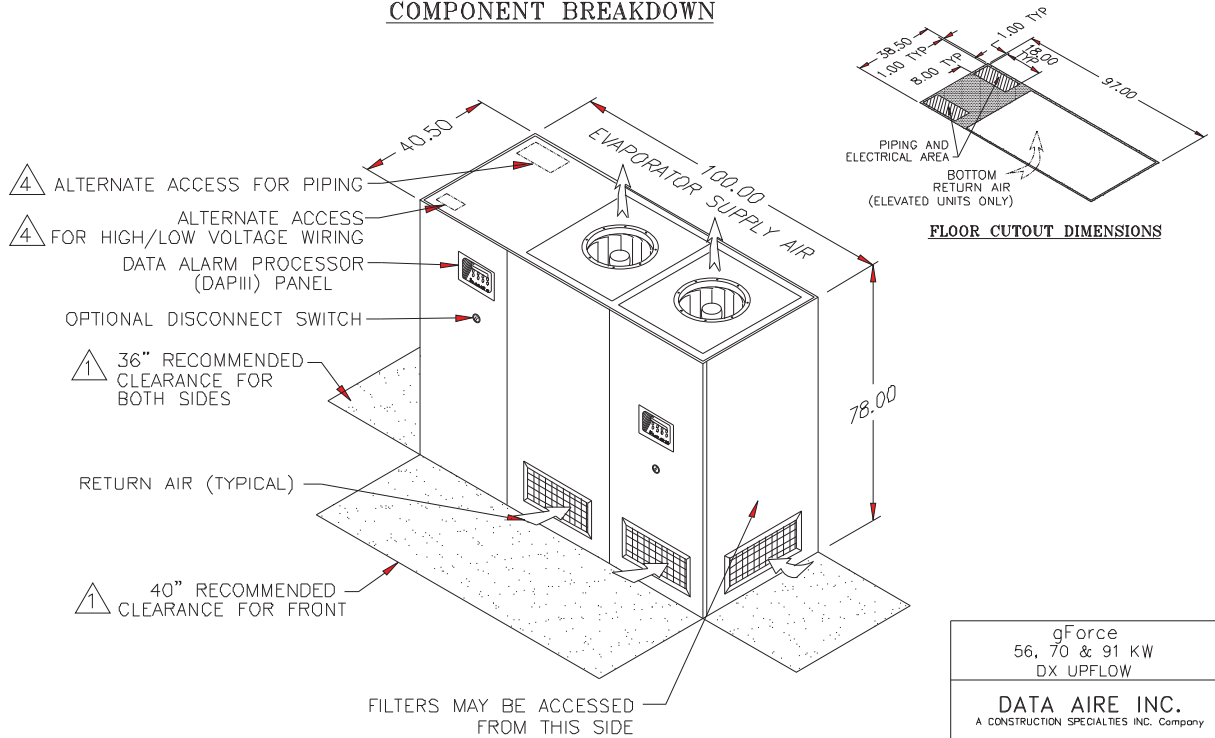
NOTES:

- 1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
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gForce 56, 70 and 91 kW - Upflow



COMPONENT BREAKDOWN



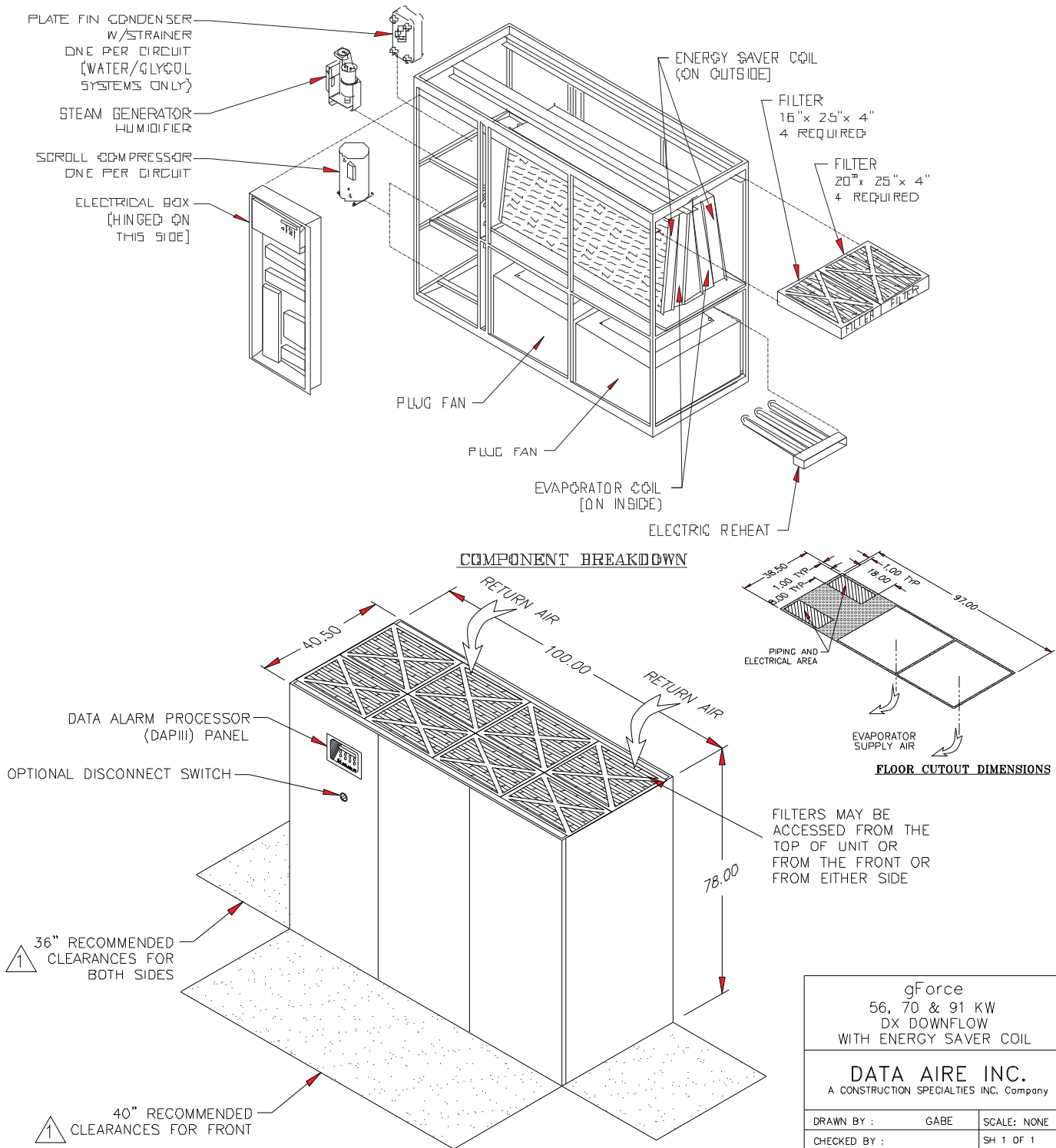
DIMENSIONAL DATA

NOTES:

- 1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
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- 3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.
- 4. OPENINGS ARE NOT PROVIDED FOR ALTERNATE ACCESS LOCATIONS.

gForce 56, 70 & 91 KW DX UPFLOW			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH:	1 OF 1
DATE :	02-15-10	REV:	-
PART OF			
550-900-516 DWG NO.			

gForce 56, 70 and 91 kW - Downflow with Energy Saver Coil



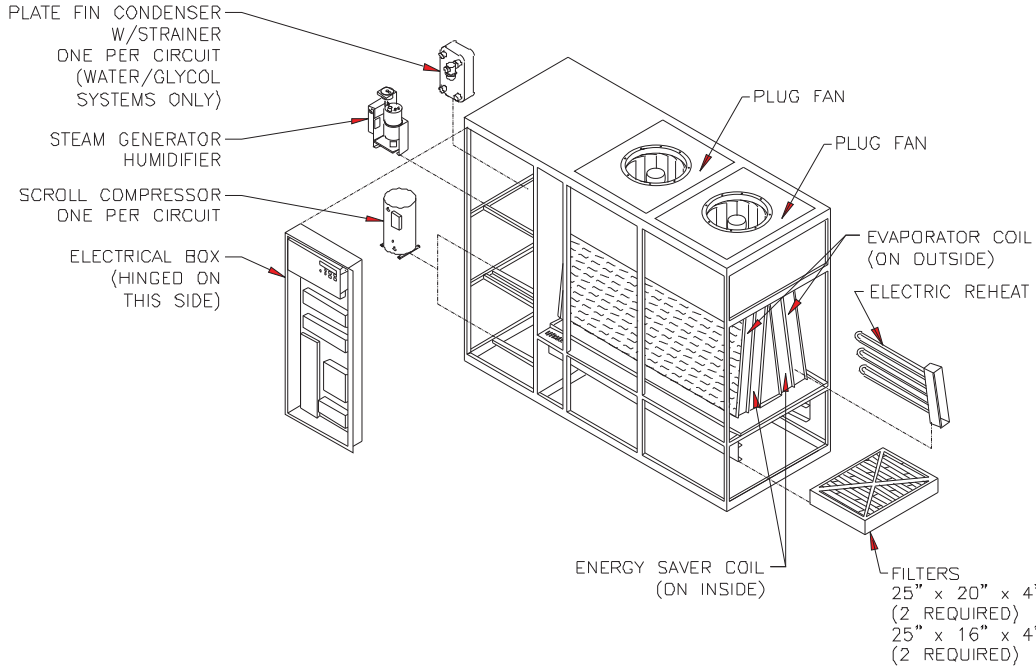
NOTES:

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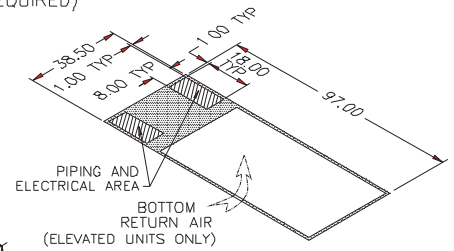
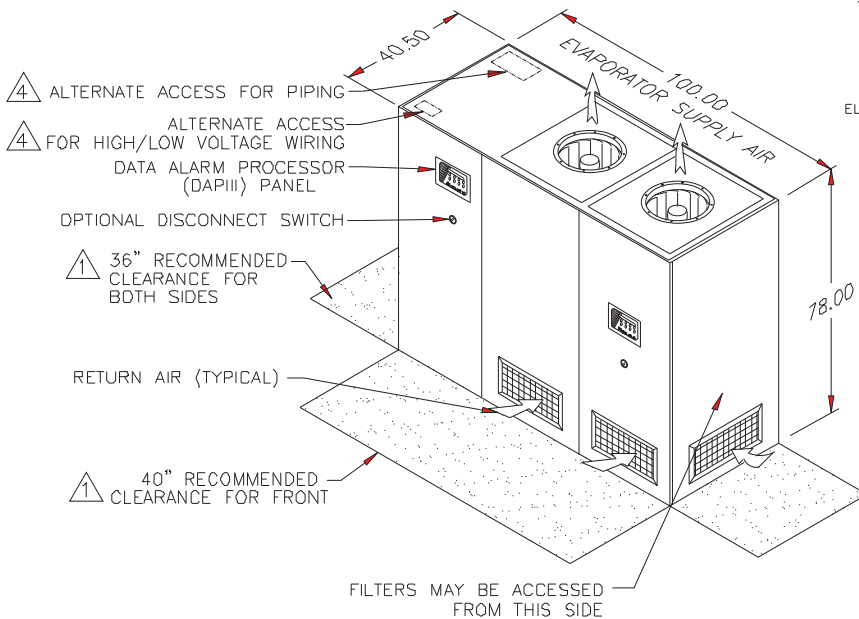
DIMENSIONAL DATA

gForce 56, 70 & 91 kW DX DOWNFLOW WITH ENERGY SAVER COIL			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH	1 OF 1
DATE :	02-05-10	REV	-
PART OF			
550-900-513			
DWG NO.			

gForce 56, 70 and 91 kW - Upflow with Energy Saver Coil



COMPONENT BREAKDOWN



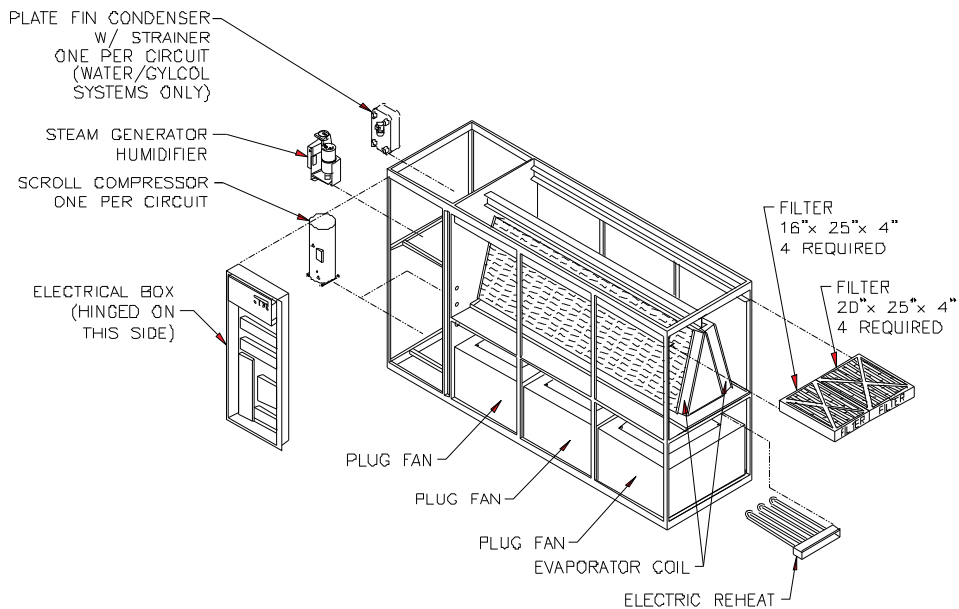
FLOOR CUTOUT DIMENSIONS

DIMENSIONAL DATA

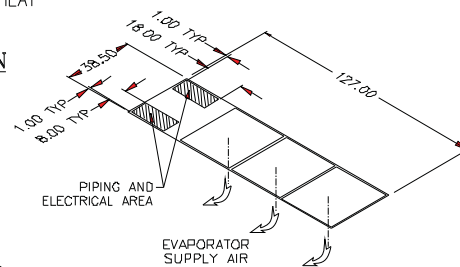
NOTES:

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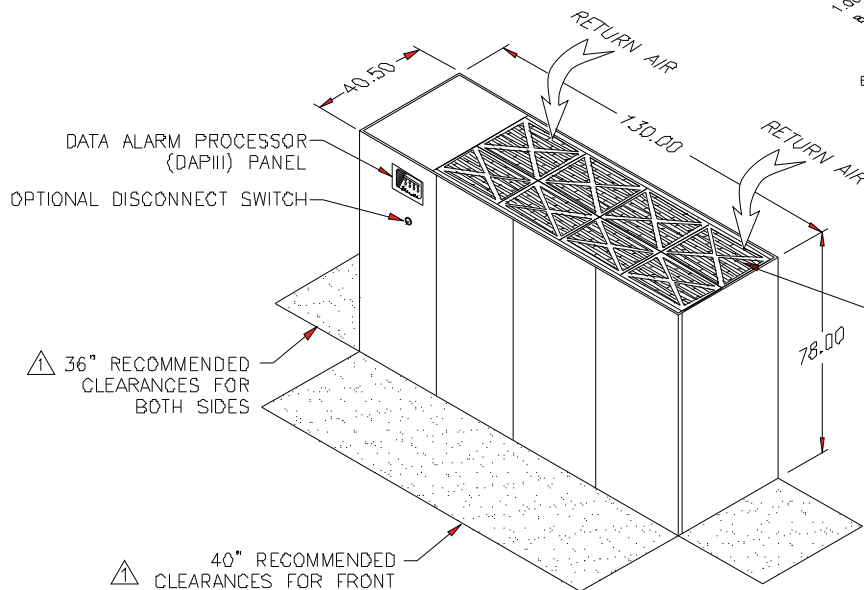
gForce 56, 70 & 91 KW DX UPFLOW WITH ENERGY SAVER COIL			
DATA AIRE INC. <small>A CONSTRUCTION SPECIALTIES INC. Company</small>			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH :	1 OF 1
DATE :	02-15-10	REV :	-
PART OF			
550-900-519 <small>DWG NO.</small>			



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS



FILTERS MAY BE
ACCESSED FROM THE
TOP OF UNIT OR
FRONT OR FROM
THIS SIDE

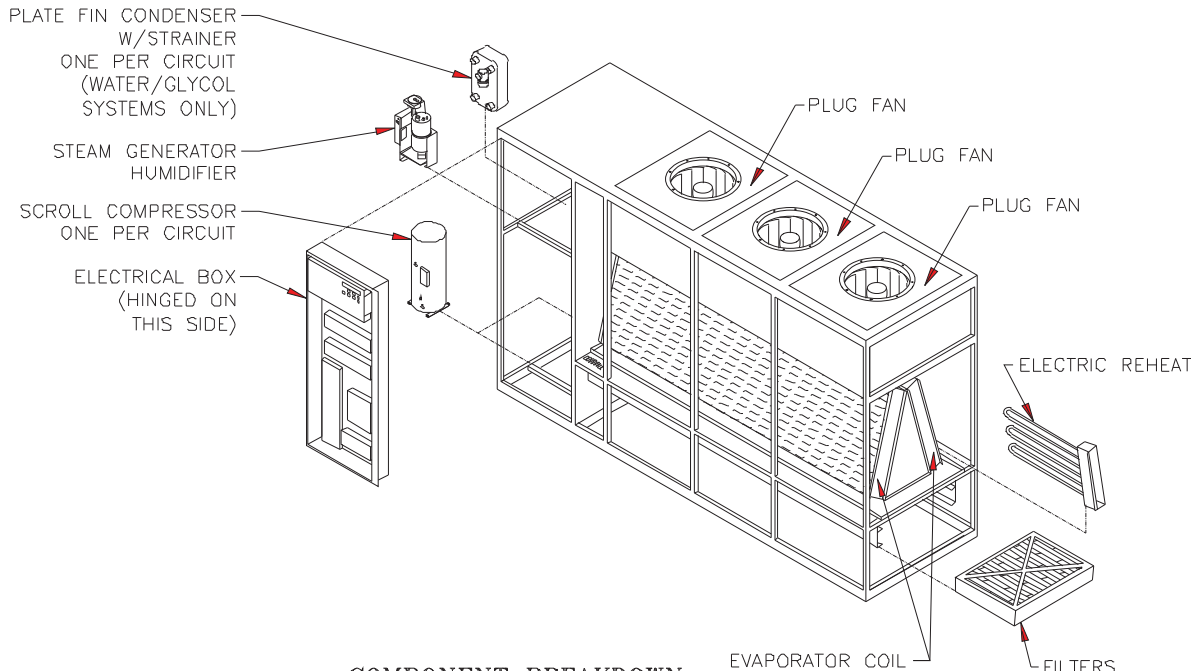
DIMENSIONAL DATA

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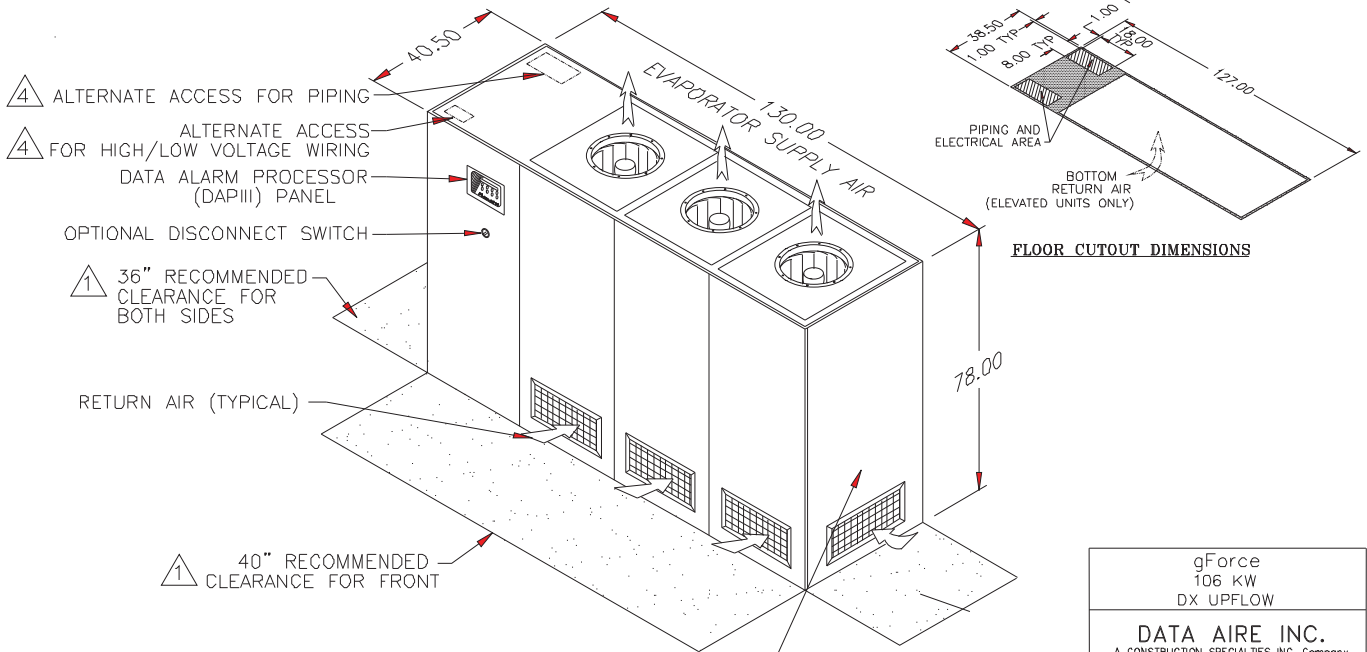
- 1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
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- 3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.

gForce 106 KW DX DOWNFLOW	
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company	
DRAWN BY :	GABE
CHECKED BY :	SH 1 OF 1
DATE :	02-09-10
PART OF	
550-900-511 DWG NO	

gForce 106 kW - Upflow



COMPONENT BREAKDOWN



FLOOR CUTOUT DIMENSIONS

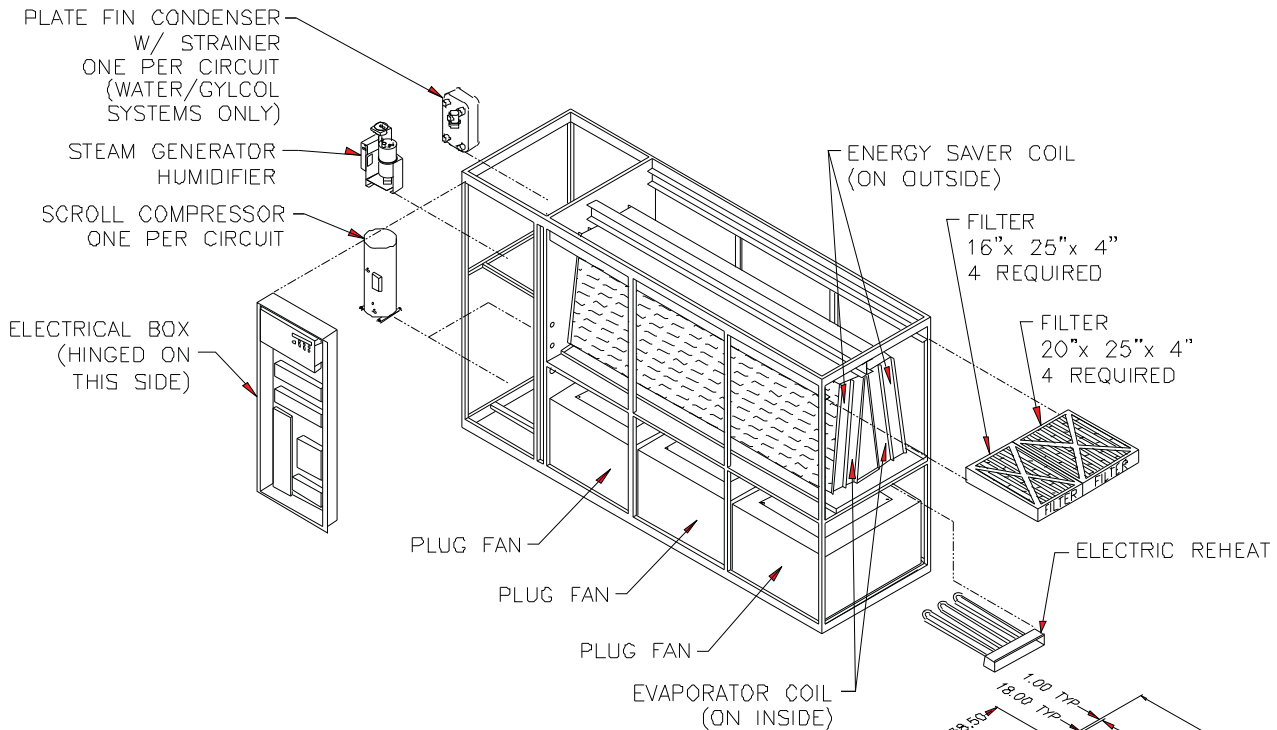
- △ ALTERNATE ACCESS FOR PIPING
- △ FOR HIGH/LOW VOLTAGE WIRING
- DATA ALARM PROCESSOR (DAPIII) PANEL
- OPTIONAL DISCONNECT SWITCH
- △ 36" RECOMMENDED CLEARANCE FOR BOTH SIDES
- RETURN AIR (TYPICAL)
- △ 40" RECOMMENDED CLEARANCE FOR FRONT

FILTERS MAY BE ACCESSED FROM THIS SIDE

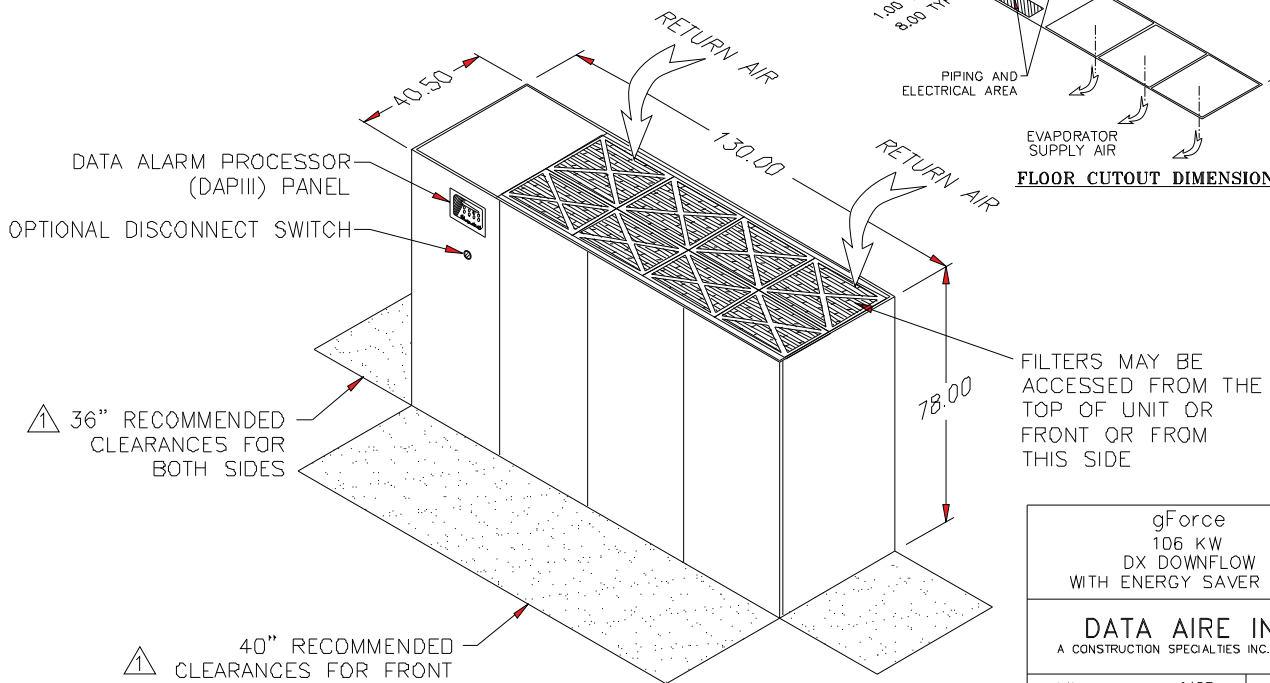
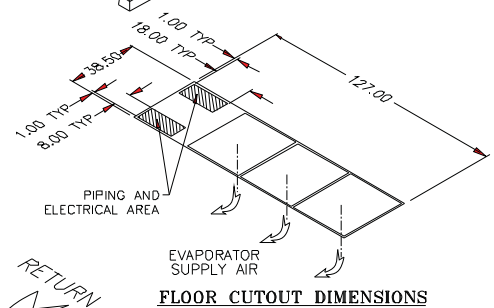
DIMENSIONAL DATA

- NOTES:**
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 3. ALL COMPONENTS AND OPTIONS ARE NOT SHOWN.
 - △ OPENINGS ARE NOT PROVIDED FOR ALTERNATE ACCESS LOCATIONS.

gForce 106 kW DX UPFLOW	
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company	
DRAWN BY : GABE	SCALE: NONE
CHECKED BY :	SH 1 OF 1
DATE : 02-15-10	REV -
PART OF	
550-900-517	
DWG NO.	



COMPONENT BREAKDOWN



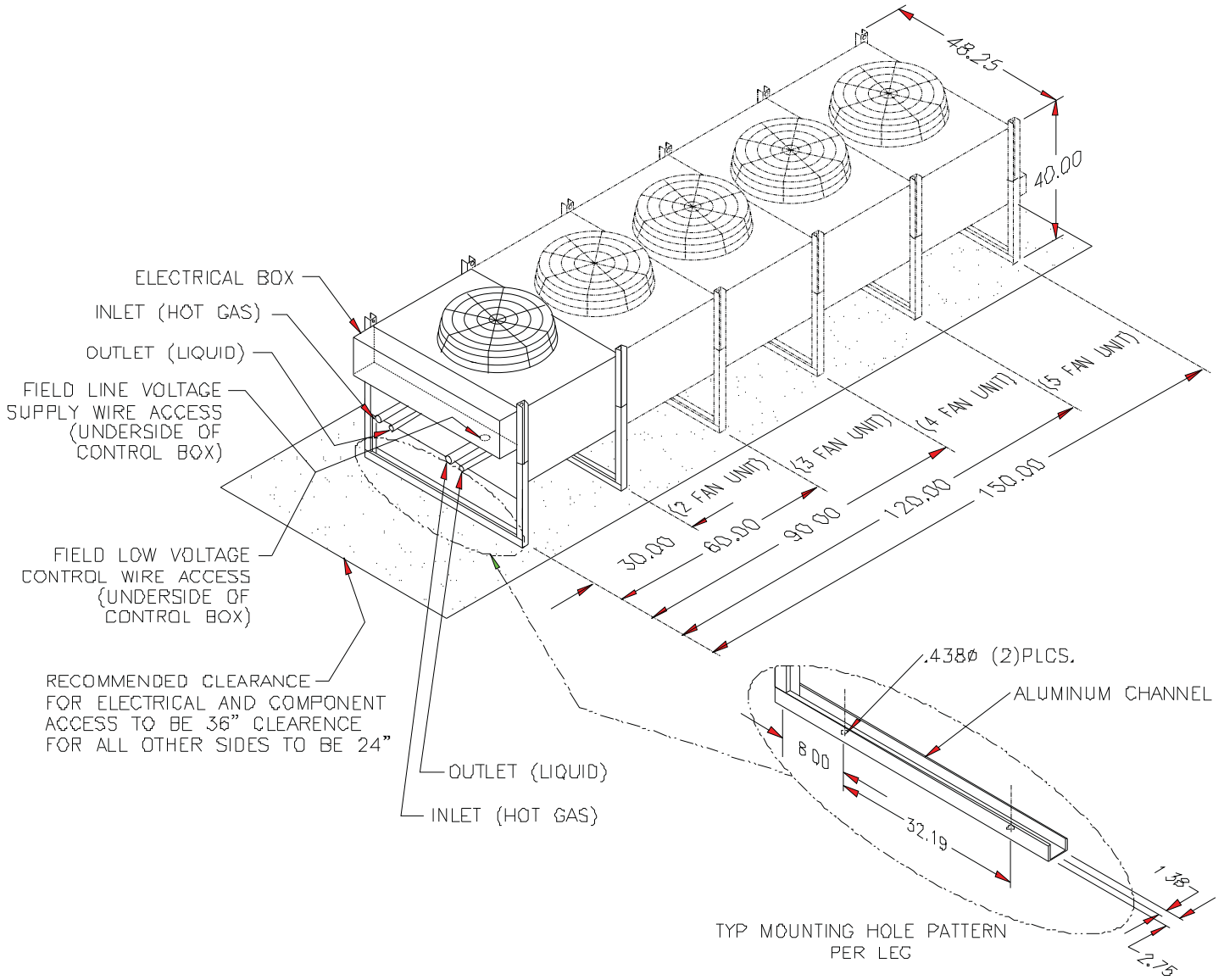
DIMENSIONAL DATA

NOTES:

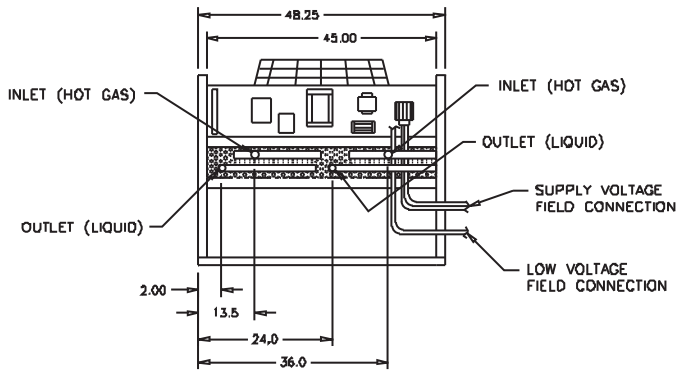
- 1. DIMENSIONS NOTED ARE THE MINIMUM CLEARANCES REQUIRED BY THE FACTORY. CONSULT LOCAL BUILDING CODES AND NEC FOR ADDITIONAL CLEARANCE REQUIREMENTS.
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gForce 106 kW DX DOWNFLOW WITH ENERGY SAVER COIL			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	GABE	SCALE:	NONE
CHECKED BY :		SH	1 OF 1
DATE :	02-09-10	REV	-
PART OF			
550-900-514 DWG NO.			

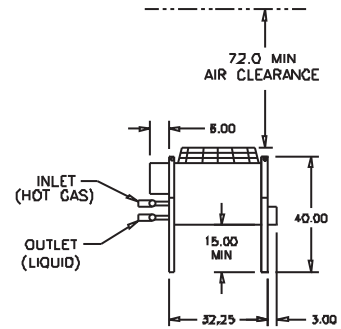
DATA AIRE Air Cooled Condensers, DARC 06-50, Dual Circuit



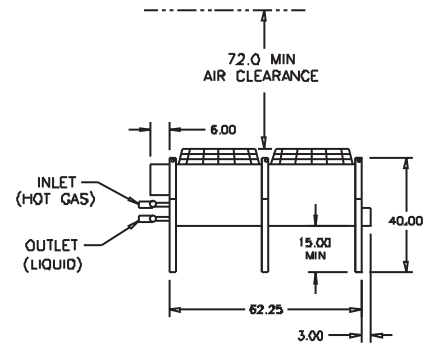
MODEL NUMBER	LENGTH	UNIT NET WT.#	PIPE CONNECTION SIZES (COPPER STUB.OD)		QTY. MOTORS	STANDARD CONDENSER				LOW DECIBEL CONDENSER					
			HOT GAS	LIQUID		HP	RPM	TOTAL CFM	MOTOR FLA		HP	RPM	TOTAL CFM	MOTOR FLA	
									208/230V	460V				208/230V	460V
DARC 06	32-1/4"	220	1-1/8	7/8	1	3/4	1075	5000	4.6	2.3	1/2	850	4000	3.2	1.6
DARC 07	32-1/4"	250	1-1/8	7/8	1	3/4	1075	4900	4.6	2.3	1/2	850	3900	3.2	1.6
DARC 09	32-1/4"	270	1-1/8	7/8	1	3/4	1075	4800	4.6	2.3	1/2	850	3800	3.2	1.6
DARC 11	62-1/4"	300	1-1/8	7/8	2	3/4	1075	10400	9.2	4.6	1/2	850	8300	6.4	3.2
DARC 15	62-1/4"	310	1-1/8	7/8	2	3/4	1075	10000	9.2	4.6	1/2	850	8000	6.4	3.2
DARC 17	62-1/4"	320	1-3/8	7/8	2	3/4	1075	9800	9.2	4.6	1/2	850	7800	6.4	3.2
DARC 21	92-1/4"	450	1-1/8	7/8	3	3/4	1075	15000	13.8	6.9	1/2	850	12000	9.6	4.8
DARC 24	92-1/4"	520	1-3/8	7/8	3	3/4	1075	14750	13.8	6.9	1/2	850	11800	9.6	4.8
DARC 28	92-1/4"	530	1-3/8	7/8	3	3/4	1075	14500	13.8	6.9	1/2	850	11600	9.6	4.8
DARC 30	122-1/4"	610	1-3/8	7/8	4	3/4	1075	20000	18.4	9.2	1/2	850	16000	12.8	6.4
DARC 37	122-1/4"	700	1-5/8	1-1/8	4	3/4	1075	19500	18.4	9.2	1/2	850	15600	12.8	6.4
DARC 40	122-1/4"	920	1-5/8	1-1/8	4	3/4	1075	19000	18.4	9.2	1/2	850	15200	12.8	6.4
DARC 44	152-1/4"	1270	1-5/8	1-1/8	5	3/4	1075	24500	23.0	11.5	1/2	850	19600	16.0	8.0
DARC 50	152-1/4"	1350	1-5/8	1-1/8	5	3/4	1075	24000	23.0	11.5	1/2	850	19200	16.0	8.0



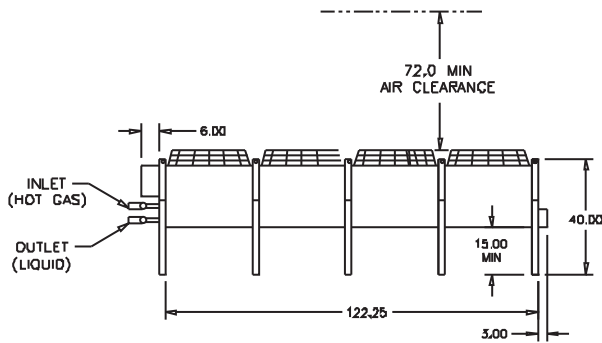
DUAL CIRCUIT CONNECTION LOCATION



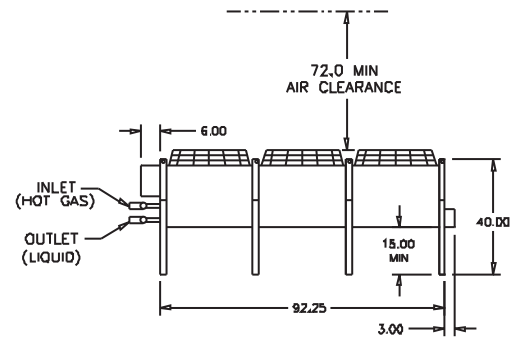
1 FAN UNIT, MODEL 6 THRU 9



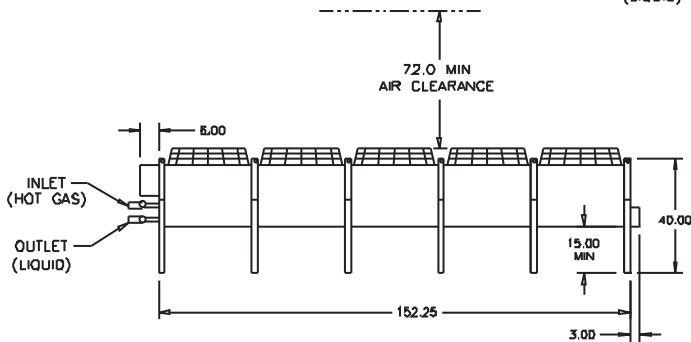
2 FAN UNIT, MODEL 11 THRU 17



4 FAN UNIT, MODEL 30 THRU 40

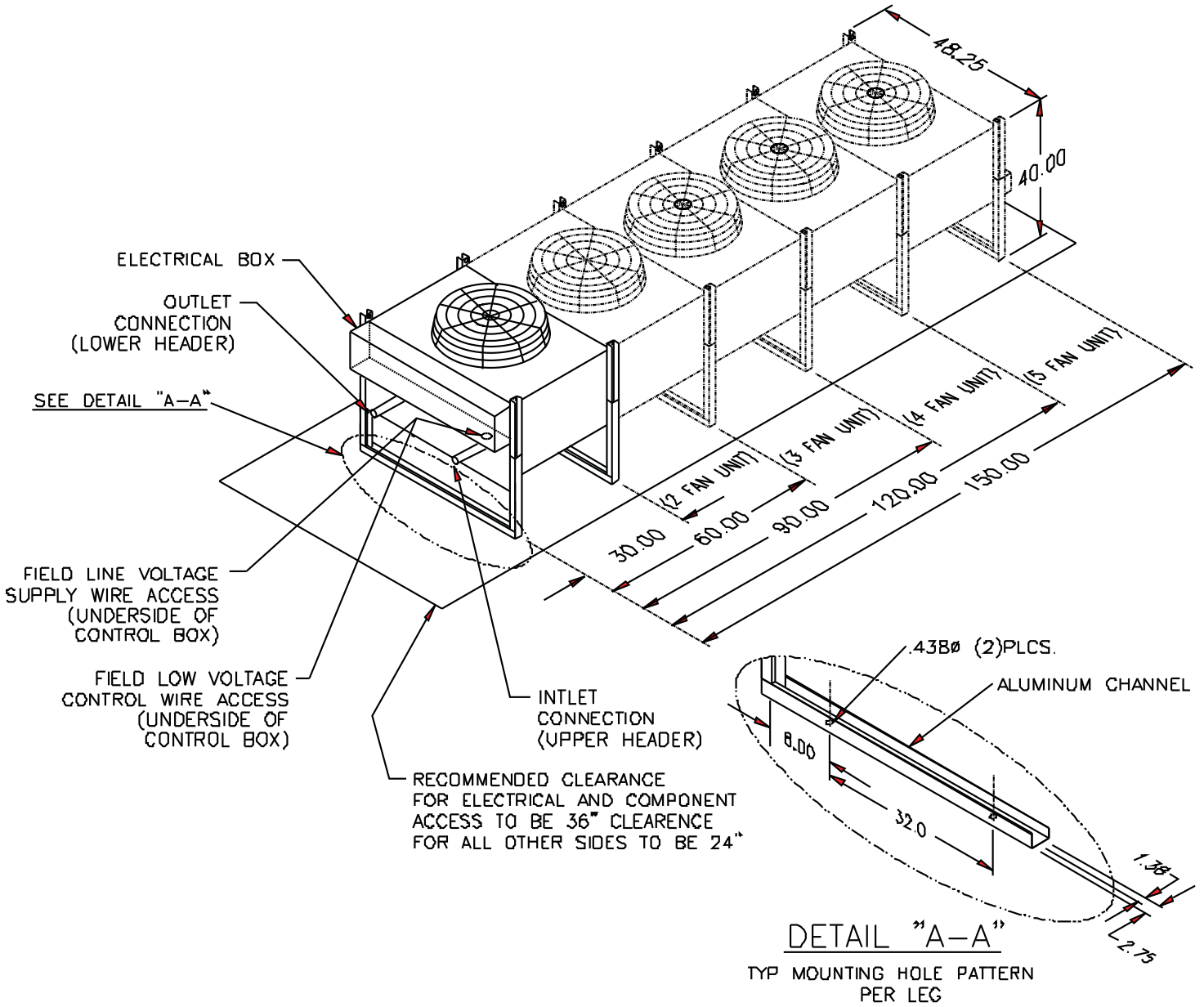


3 FAN UNIT, MODEL 21 THRU 28

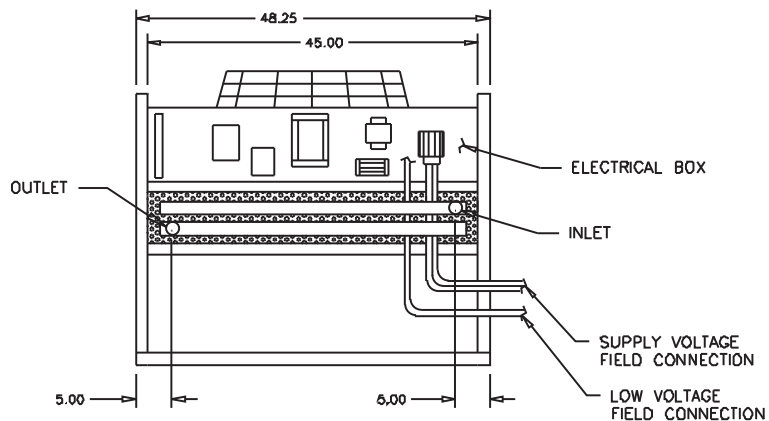


5 FAN UNIT, MODEL 44 THRU 50

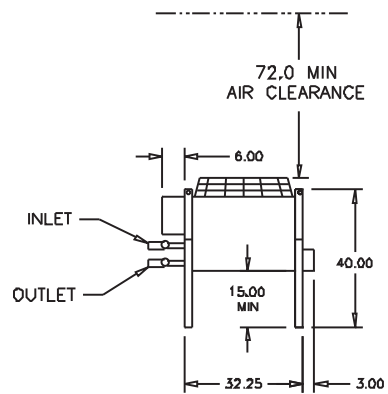
DATA AIRE Fluid Coolers, DAFC MODEL 06-50



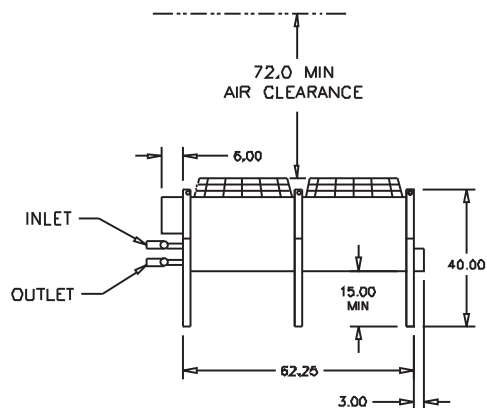
MODEL NUMBER	LENGTH	UNIT NET WT. #	PFC CONNECTION SIZES (COPPER STUB, Ø)		QTY. MOTORS	STANDARD FLUID COOLER					LOW DECIBEL FLUID COOLER				
			INLET	OUTLET		H.P.	RPM	TOTAL CFM	MOTOR FLA		H.P.	RPM	TOTAL CFM	MOTOR FLA	
									208/230V	460V				208/230V	460V
DAFC 06	32-1/4"	260	1-5/8	1-5/8	1	3/4	1075	5000	4.6	2.3	1/2	850	4000	3.2	1.6
DAFC 07	32-1/4"	285	1-5/8	1-5/8	1	3/4	1075	4900	4.6	2.3	1/2	850	3900	3.2	1.6
DAFC 09	32-1/4"	310	1-5/8	1-5/8	1	3/4	1075	4800	4.6	2.3	1/2	850	3800	3.2	1.6
DAFC 11	62-1/4"	260	2-1/8	2-1/8	2	3/4	1075	10400	9.2	4.6	1/2	850	8300	6.4	3.2
DAFC 15	62-1/4"	370	2-1/8	2-1/8	2	3/4	1075	10000	9.2	4.6	1/2	850	8000	6.4	3.2
DAFC 17	62-1/4"	400	2-5/8	2-5/8	2	3/4	1075	9800	9.2	4.6	1/2	850	7800	6.4	3.2
DAFC 21	92-1/4"	560	2-1/8	2-1/8	3	3/4	1075	15000	13.8	6.9	1/2	850	12000	9.6	4.8
DAFC 24	92-1/4"	645	2-5/8	2-5/8	3	3/4	1075	14750	13.8	6.9	1/2	850	11800	9.6	4.8
DAFC 28	92-1/4"	665	2-5/8	2-5/8	3	3/4	1075	14500	13.8	6.9	1/2	850	11600	9.6	4.8
DAFC 30	122-1/4"	745	2-1/8	2-1/8	4	3/4	1075	20000	18.4	9.2	1/2	850	16000	12.8	6.4
DAFC 37	122-1/4"	845	2-5/8	2-5/8	4	3/4	1075	19500	18.4	9.2	1/2	850	15600	12.8	6.4
DAFC 40	122-1/4"	1100	2-5/8	2-5/8	4	3/4	1075	19000	18.4	9.2	1/2	850	15200	12.8	6.4
DAFC 44	152-1/4"	1460	2-5/8	2-5/8	5	3/4	1075	24500	23.0	11.5	1/2	850	19600	16.0	8.0
DAFC 50	152-1/4"	1560	2-5/8	2-5/8	5	3/4	1075	24000	23.0	11.5	1/2	850	19200	16.0	8.0



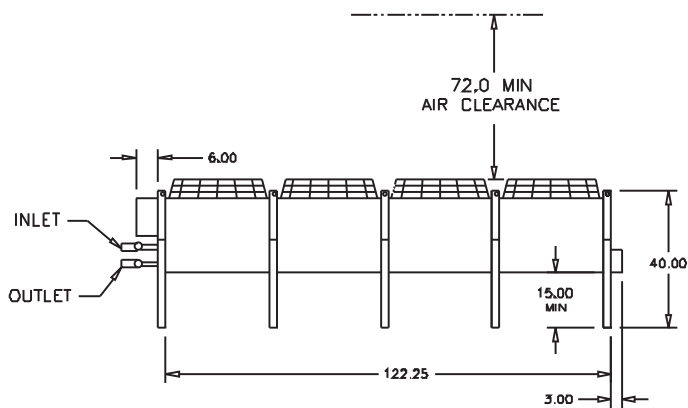
END VIEW CONNECTION LOCATION



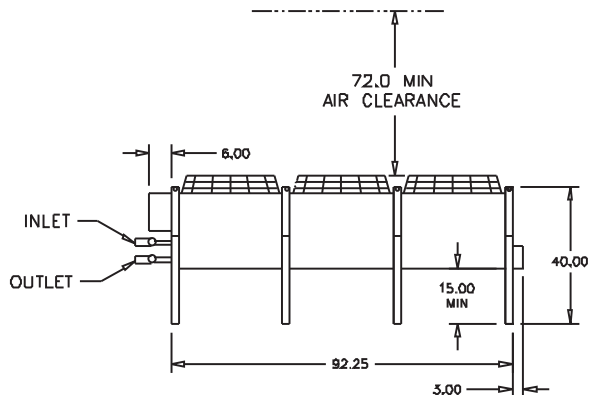
1 FAN UNIT, MODEL 6 THRU 9



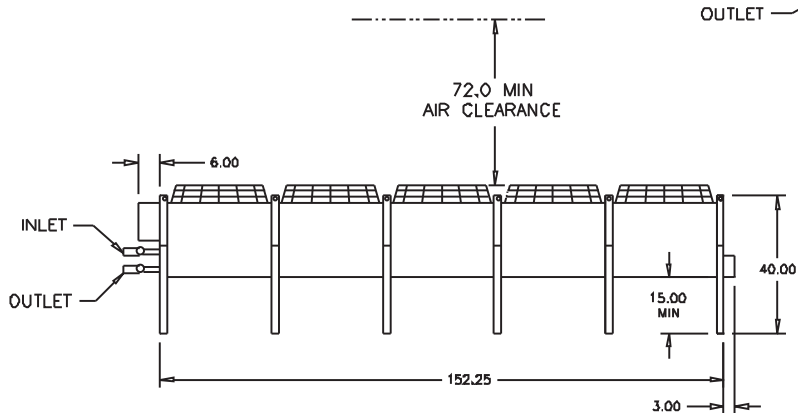
2 FAN UNIT, MODEL 11 THRU 17



4 FAN UNIT, MODEL 30 THRU 40



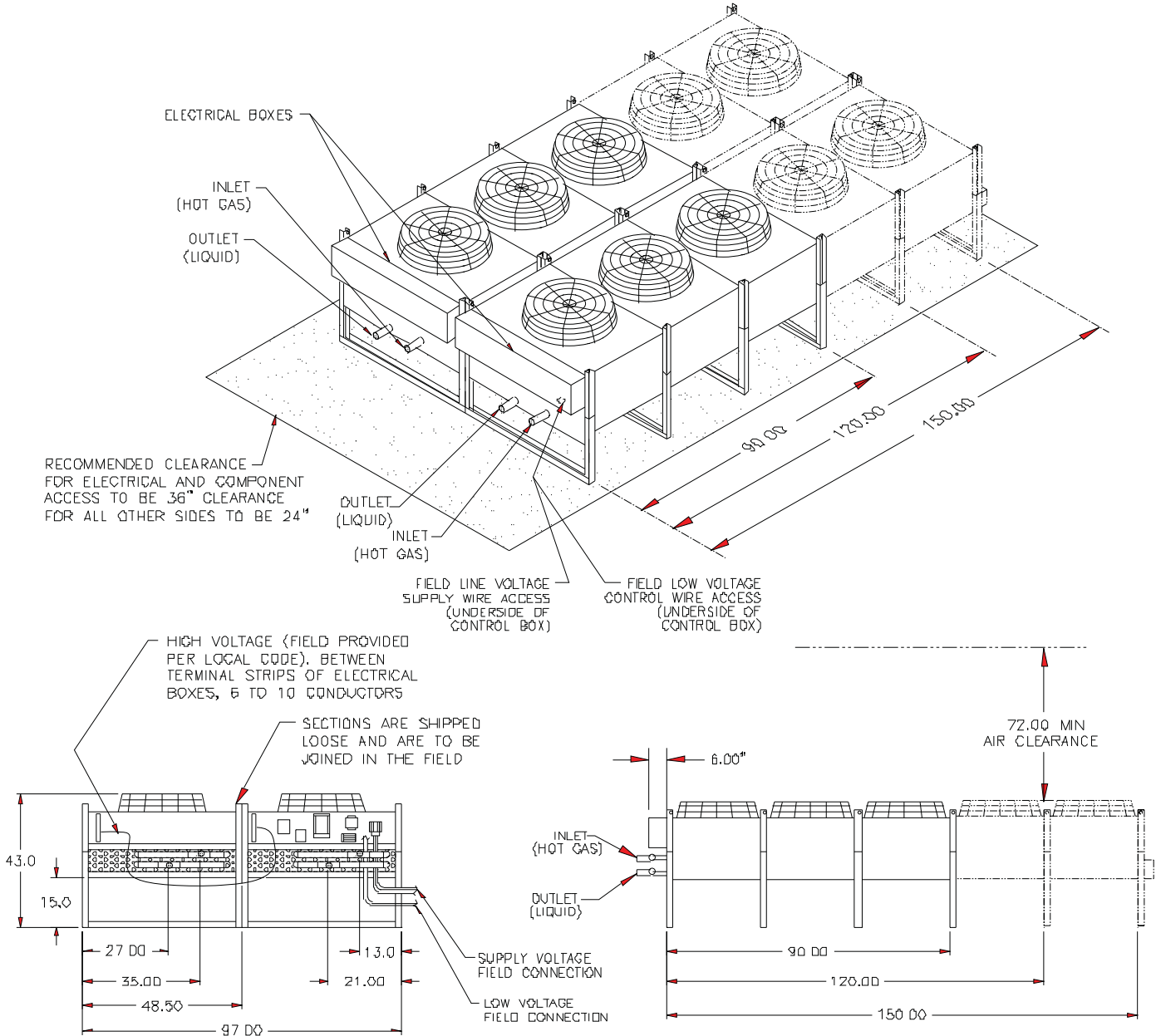
3 FAN UNIT, MODEL 21 THRU 28



5 FAN UNIT, MODEL 44 THRU 50

DATA AIRE DOUBLE WIDE Air Cooled Condenser, DARC 57-100, Dual Circuit

A DOUBLE WIDE CONDENSER SHIPS AS TWO EQUALLY SIZED SECTIONS THAT MUST BE MOUNTED SIDE BY SIDE AND RE-CONNECTED UPON INSTALLATION. A SINGLE SOURCE OF LINE VOLTAGE POWER IS REQUIRED. HIGH VOLTAGE WIRING FROM ONE ELECTRICAL BOX TO THE OTHER IS REQUIRED. THE SECTION ON THE RIGHT HAS A COMPLETE ELECTRICAL BOX. THE OTHER HAS AN ELECTRICAL BOX THAT ONLY HAS A TERMINAL BLOCK. WIRING MUST BE FIELD CONNECTED BETWEEN THE ELECTRICAL BOX OF THE RIGHT SECTION TO THE ELECTRICAL BOX ON THE LEFT. FANS WILL CYCLE IN BANKS OF TWO. REFER TO LOCAL ELECTRICAL CODES. LOW DECIBEL CONDENSERS HAVE "LD" AT END OF MODEL NUMBER.



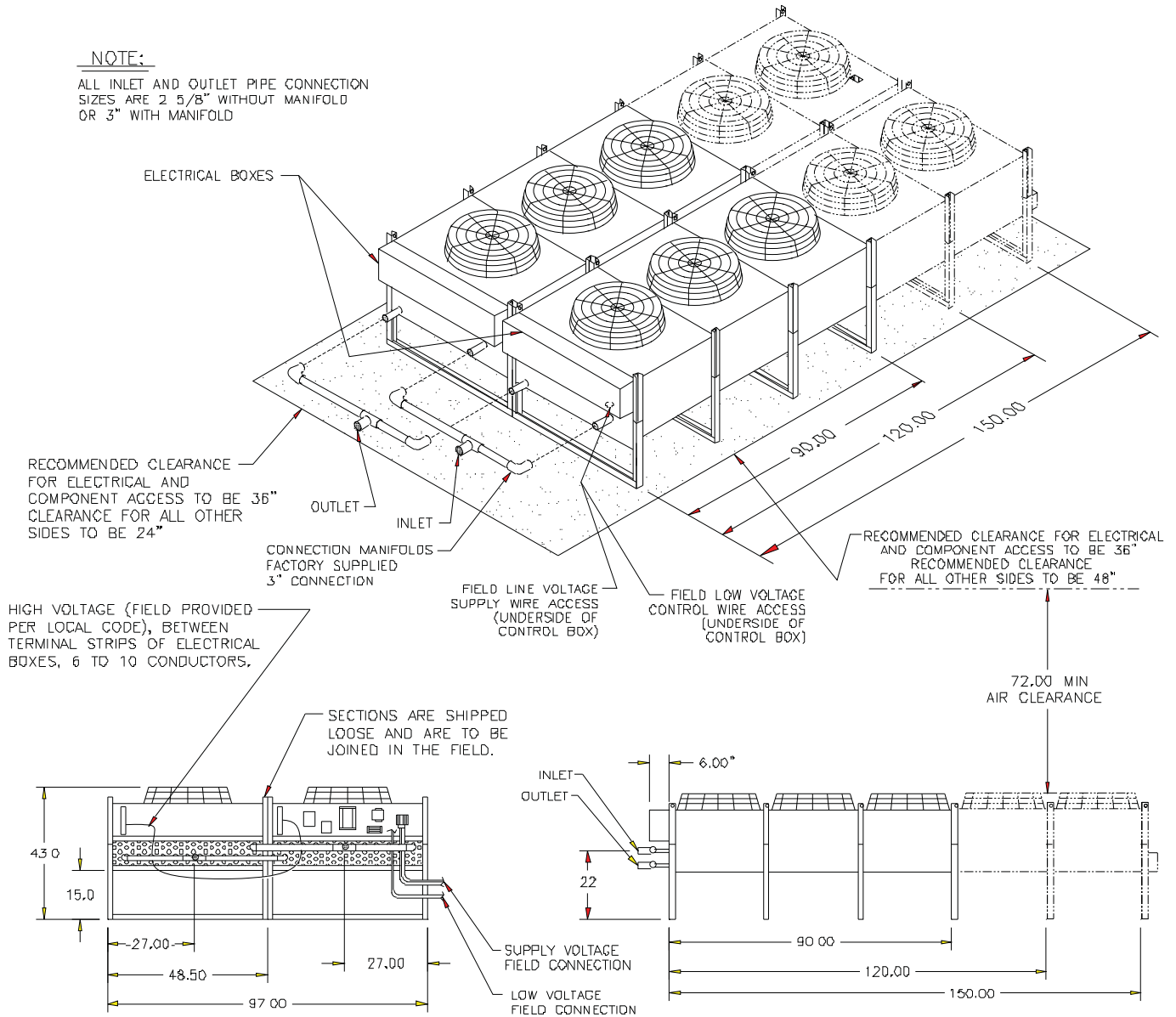
MODEL NUMBER	LENGTH	UNIT NET WT.#	PIPE CONNECTION SIZES (COPPER STUDS)		QTY. MOTORS	STANDARD CONDENSER				LOW DECIBEL CONDENSER					
			HOT GAS	LIQUID		H.P.	RPM	TOTAL CFM	MOTOR FLA		H.P.	RPM	TOTAL CFM	MOTOR FLA	
									208/230V	460V				208/230V	460V
DARC 57	92-1/4"	1120	1-3/8	7/8	8	3/4	1075	29,500	27.6	13.8	1/2	850	23,600	19.2	9.6
DARC 61	122-1/4"	1220	1-3/8	7/8	8	3/4	1075	39,500	36.8	18.4	1/2	850	32,000	25.6	12.8
DARC 75	122-1/4"	1400	1-5/8	1-1/8	8	3/4	1075	39,000	36.8	18.4	1/2	850	31,200	25.6	12.8
DARC 80	122-1/4"	1840	1-5/8	1-1/8	8	3/4	1075	38,000	36.8	18.4	1/2	850	30,400	25.6	12.8
DARC 88	152-1/4"	2540	1-5/8	1-1/8	10	3/4	1075	49,000	46.0	23.0	1/2	850	39,200	32.0	16.0
DARC 100	152-1/4"	2700	1-5/8	1-1/8	10	3/4	1075	48,000	46.0	23.0	1/2	850	38,400	32.0	16.0

DATA AIRE Double Wide Fluid Coolers, DAFC Model 57 thru 100

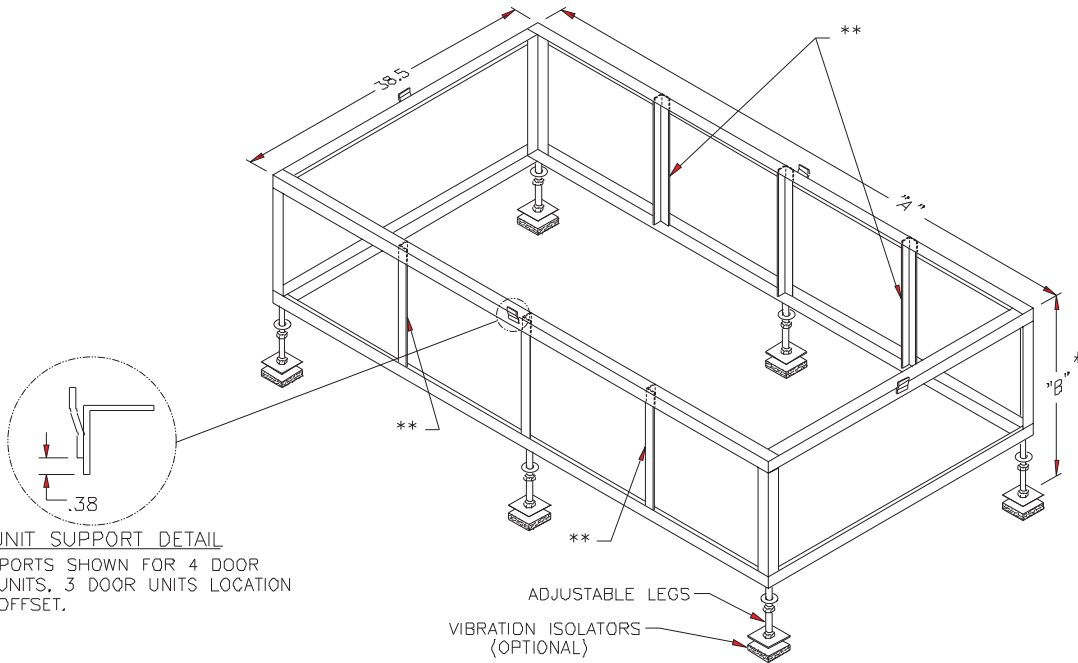
A DOUBLE WIDE FLUID COOLER SHIPS AS TWO EQUALLY SIZED SECTIONS THAT MUST BE MOUNTED SIDE BY SIDE AND RE-CONNECTED UPON INSTALLATION. THE PIPING CAN BE JOINED USING A FACTORY PROVIDED MANIFOLD KIT. A SINGLE SOURCE OF LINE VOLTAGE POWER IS REQUIRED. HIGH VOLTAGE WIRING FROM ONE ELECTRICAL BOX TO THE OTHER IS REQUIRED. THE SECTION ON THE RIGHT HAS A COMPLETE ELECTRICAL BOX THE OTHER HAS AN ELECTRICAL BOX THAT ONLY HAS A TERMINAL BLOCK. WIRING MUST BE FIELD CONNECTED BETWEEN THE ELECTRICAL BOX OF THE RIGHT SECTION TO THE ELECTRICAL BOX ON THE LEFT. FANS WILL CYCLE IN BANKS OF TWO. REFER TO LOCAL ELECTRICAL CODES. LOW DECIBEL FLUID COOLERS HAVE "LD" AT END OF MODEL NUMBER.

NOTE:

ALL INLET AND OUTLET PIPE CONNECTION SIZES ARE 2 5/8" WITHOUT MANIFOLD OR 3" WITH MANIFOLD



MODEL NUMBER	LENGTH	UNIT NET WT.	QTY. MOTORS	STANDARD FLUID COOLER					LOW DECIBEL FLUID COOLER				
				H.P.	RPM	TOTAL CFM	MOTOR FLA		H.P.	RPM	TOTAL CFM	MOTOR FLA	
							208/230v	460v				208/230v	460v
DAFC 57	92-1/4"	1330	6	3/4	1075	29,500	27.6	13.8	1/2	850	23,600	19.2	9.6
DAFC 61	122-1/4"	1490	8	3/4	1075	40,000	36.8	18.4	1/2	850	32,000	25.6	12.8
DAFC 75	122-1/4"	1690	8	3/4	1075	39,000	36.8	18.4	1/2	850	31,200	25.6	12.8
DAFC 80	122-1/4"	2200	8	3/4	1075	38,000	36.8	18.4	1/2	850	30,400	25.6	12.8
DAFC 88	152-1/4"	2920	10	3/4	1075	49,000	46.0	23.0	1/2	850	39,200	32.0	16.0
DAFC 100	152-1/4"	3120	10	3/4	1075	48,000	46.0	23.0	1/2	850	38,400	32.0	16.0



UNIT SUPPORT DETAIL

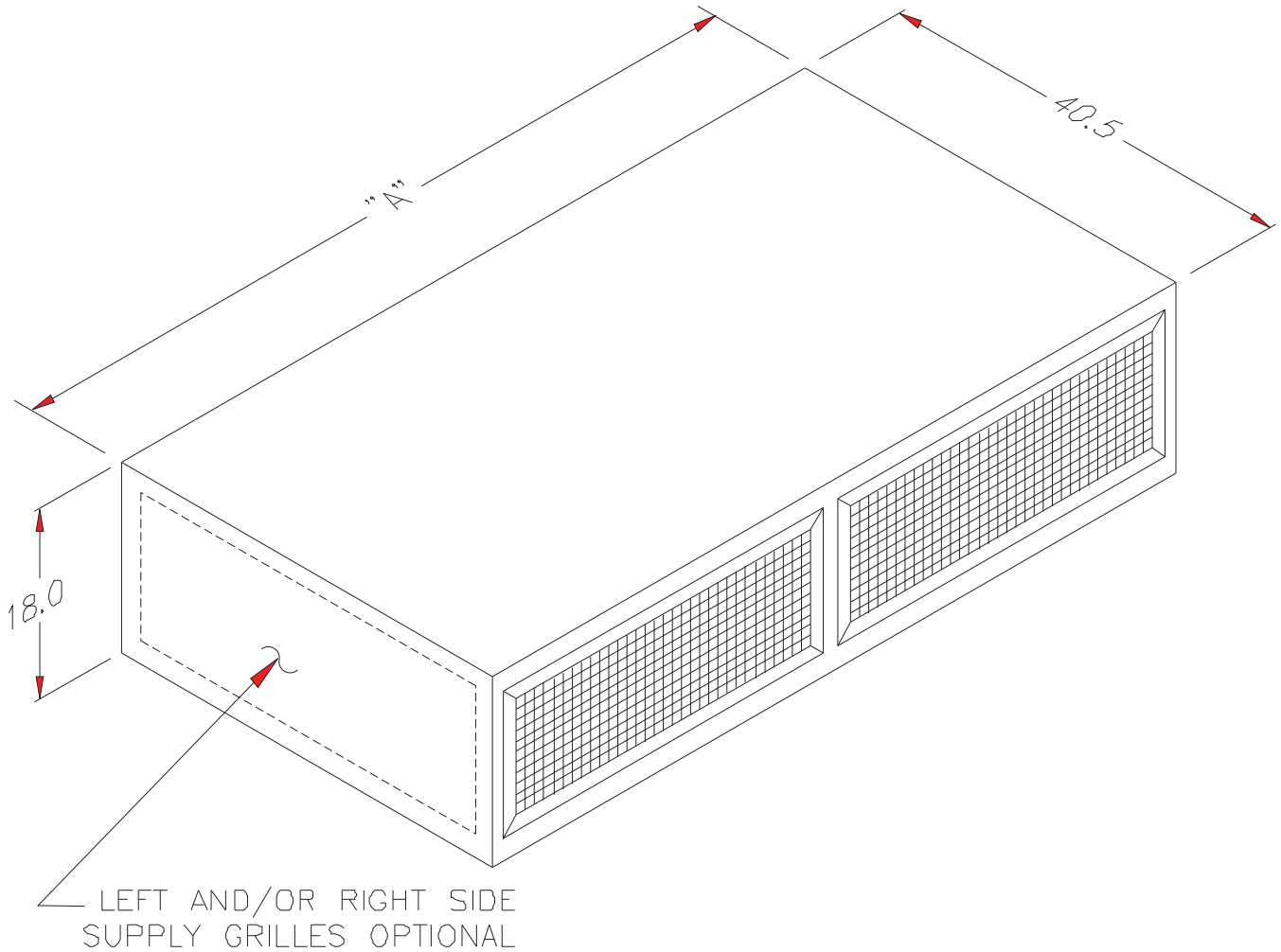
UNIT SUPPORTS SHOWN FOR 4 DOOR AND UP UNITS, 3 DOOR UNITS LOCATION WILL BE OFFSET.

NOTES:

- * 1. DIMENSION "B" IS TOTAL HEIGHT SPECIFIED ON ORDER AND SHOULD EQUAL HEIGHT FROM BUILDING FLOOR TO RAISED FLOOR. THE STAND WILL BE BUILT 2 INCHES LESS THAN SPECIFIED AND HAVE ADJUSTABLE LEGS TO PROVIDE +2/-1 INCHES FROM THE SPECIFIED HEIGHT.
- ** 2. ONLY USED ON 4 DOOR UNIT
- 3. SPECIFIED HEIGHT MUST BE BETWEEN 12 AND 24 INCHES IN 2 INCH INCREMENTS. (12, 14, 16, 18, 20, 22, 24).
- 4. DOWNFLOW UNITS USING FLOORSTANDS OR JACKSTANDS ARE SUBJECTED TO ADDITIONAL STATIC PRESSURE LOSSES, DEPENDING ON THE AIRFLOW AND STAND HEIGHT. THE NEXT SIZE MOTOR OPTION MAY BE REQUIRED ON SOME FLOOR HEIGHTS.
- 5. 1 1/2 x 1 1/2 x 1/8 ANGLE FRAME CONSTRUCTION
- 6. CENTER LEGS ONLY USED ON 3 & 4 DOOR UNITS
- 7. ADJUSTABLE LEGS HAVE A 3.5 SQ., 10 GAUGE PAD.
- 8. VIBRATION ISOLATION PADS ARE OPTIONAL.

CAB. SIZE	"A"	UNIT SIZE
2 DOOR	69.5	21, 28, 35 KW
2-1/2 DOOR	69.5	46 KW
3 DOOR	97.0	56, 70, 91 KW
4 DOOR	127.0	106 KW

gForce GF FLOORSTAND DX UNITS	
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company	
DRAWN BY : J. PATTON	SCALE: NONE
CHECKED BY :	SH 1 OF 1
DATE : 03-09-10	REV -
PART OF	
550-900-525 DWG. NO.	



CAB. SIZE	"A"	UNIT SIZE	FRONT SUPPLY GRILLE	
			SIZE	QUANTITY
2-1/2 DOOR	72.5	21, 28, 35, 46 KW	34 X 14	2
3 DOOR	100.0	56, 70, 91 KW	28 X 14	3
4 DOOR	130.0	106 KW	28 X 14	4

gForce GF DISCHARGE AIR PLENUM DX UPFLOW			
DATA AIRE INC. A CONSTRUCTION SPECIALTIES INC. Company			
DRAWN BY :	J. PATTON	SCALE:	NONE
CHECKED BY :		SH	1 OF 1
DATE :	03-09-10	REV	-
PART OF			
550-900-522 DWG NO.			

Standard Condenser Electrical Data

Standard Condenser Electrical Data

	208/1/60	208/3/60	460/3/60
<u>Model</u>	<u>FLA/MCA/MOP</u>	<u>FLA/MCA/MOP</u>	<u>FLA.MCA.MOP</u>
DARC 03	4.6/5.8/15	4.6/5.8/15	2.3/2.9/15
DARC 05	4.6/5.8/15	4.6/5.8/15	2.3/2.9/15
DARC 06	4.6/5.8/15	4.6/5.8/15	2.3/2.9/15
DARC 07	4.6/5.8/15	4.6/5.8/15	2.3/2.9/15
DARC 09	4.6/5.8/15	4.6/5.8/15	2.3/2.9/15
DARC 11	9.2/10/15	9.2/10/15	4.6/5.2/15
DARC 15	9.2/10/15	9.2/10/15	4.6/5.2/15
DARC 17	9.2/10/15	9.2/10/15	4.6/5.2/15
DARC 21	14/15/20	14/15/20	6.9/7.5/15
DARC 24	14/15/20	14/15/20	6.9/7.5/15
DARC 28	14/15/20	14/15/20	6.9/7.5/15
DARC 30	18/20/25	18/20/25	9.2/9.8/15
DARC 37	18/20/25	18/20/25	9.2/9.8/15
DARC 40	18/20/25	18/20/25	9.2/9.8/15
DARC 44	23/24/25	23/24/25	12/12/15
DARC 50	23/24/25	23/24/25	12/12/15
DARC 57	28/29/30	28/29/30	14/14/15
DARC 61	37/38/40	37/38/40	18/19/20
DARC 75	37/38/40	37/38/40	18/19/20
DARC 80	37/38/40	37/38/40	18/19/20
DARC 88	46/47/45	46/47/40	23/24/25
DARC100	46/47/45	46/47/40	23/24/25

gForce SERIES Dimensional and Weight Data

gForce Series - Dimensions

Model	Length	Width	Height
GFAD/U021xx	72.00"	40.50"	78.00"
GFAD/U028xx	72.00"	40.50"	78.00"
GFAD/U035xx	72.00"	40.50"	78.00"
GFAD/U046xx	72.00"	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	Standard Units		Units with Energy Saver or Aux Chilled Water Coils	
	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	Standard Units		Units with Energy Saver or Aux Chilled Water Coils	
	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

Computer Room Air Conditioning Units
(Floor Mounted, Direct Expansion, 21 to 106 kW)

1.01 GENERAL

- A. The environmental control units shall be provided with a high sensible cooling system, factory assembled, piped, wired, and run tested prior to shipment and designed for either upflow or downflow air delivery as detailed on the project plans and schedule.
- B. The system shall be designed for draw through air arrangement to insure even air distribution to the entire face of the coil.
- C. Units shall be ETL or UL listed.

1.02 CABINET and FRAME

- A. The frame shall be constructed of 14 gauge welded tubular steel and coated with a heavy corrosion inhibiting finish for long life. The unit shall have complete front and side access by means of steel doors with heavy-duty hinges. All doors shall be easily removable via lift-off hinges for easier service access. Doors shall be manufactured of minimum 18-gauge steel for superior sound attenuation and shall be lined with one-inch thick, 1-1/2-pound density, fiberglass insulation. Each door shall be provided with sure close latches and a polyurethane gasket to prevent air leakage.
- B. The unit shall be painted the color selected from the manufacturer's standard color chart.

1.03 REFRIGERATION CIRCUIT

A. Air Cooled with Remote Outdoor Condenser - The refrigeration system shall be split type with an indoor evaporator section and remote outdoor condenser.

The indoor evaporator section shall include the cooling coil, compressors, humidifier, reheat, filters, and controls. The cooling coil shall be in a cross circuited or interlaced "A" frame arrangement to allow maximum coil surface in a small cabinet. The large faced coil area shall be constructed with 1/2" O.D. rifled copper tube with 12 fins per inch of corrugated aluminum for maximum heat transfer. Maximum face velocity shall be less than 500 feet per minute. The expansion valves shall be of the adjustable thermostatic type with external equalization. The compressors shall be of the hermetic scroll with complete overload protection on all three power lines, internal thermostat for winding protection, crankcase heater, sight-glass, and low pressure override timer for positive starting at low temperatures. The circuit shall contain high and low pressure safety switches. The high and low pressure safety switches shall be installed with Shraeder type fittings with valve core.

Each system shall include a low profile, slow speed, direct drive propeller fan type air cooled condenser. The air discharge shall be vertical to minimize the effects of wind blowing through the coil at low ambient temperatures. The condenser shall be constructed of stainless steel. The condenser shall contain a 1/2" O.D. rifled copper tube coil with corrugated aluminum fins for maximum heat transfer. The condenser shall have fan speed control with transducers to modulate the speed of the first condenser fan motor and provide positive start-up and operation at ambient temperatures to -20° F. Condensers with more than one fan shall utilize a pressure control on the second fan. Condensers with additional condenser fan motors are to be controlled by ambient thermostats. All controls including the fan speed controller shall be factory mounted in the air cooled condenser in an integral factory wired and tested control panel. The air cooled condenser shall be manufactured by the manufacturer of the indoor unit.

B. Air Cooled with Floor Mounted Indoor Condenser - The refrigeration system shall be split type with an indoor evaporator section and floor mounted indoor condenser section.

The indoor evaporator section shall include the cooling coil, compressors, humidifier, reheat, filters, and controls. The cooling coil shall be in a cross circuited or interlaced "A" frame arrangement to allow maximum coil surface in a small cabinet. The large faced coil area shall be constructed with 1/2" O.D. rifled copper tube with 12 fins per inch of corrugated aluminum for maximum heat transfer. Maximum face velocity shall be less than 500 feet per minute. The expansion valves shall be of the adjustable

thermostatic type with external equalization. The compressors shall be of the hermetic scroll with complete overload protection on all three power lines, internal thermostat for winding protection, crankcase heater, sight-glass, and low pressure override timer for positive starting at low temperatures. The circuit shall contain high and low pressure safety switches. The high and low pressure safety switches shall be installed with Shraeder type fittings with valve core.

Each system shall include a floor mounted, indoor air cooled condenser section. The condenser frame shall be constructed of 14 gauge welded tubular steel and be coated with a heavy corrosion inhibiting finish for long life. The unit shall have complete front and side access by means of high quality furniture grade steel doors with heavy-duty hinges. The doors shall be lined with one inch thick, 1-1/2 pound density fiberglass coated with neoprene. Each door shall be provided with sure close latches, which shall be easily removable via lift-off hinges for easy access and service. Each door shall be provided with a polyurethane gasket to prevent air leakage.

The doors shall be painted to match or contrast with other room equipment.

The blower section shall be belt driven centrifugal type, double width, double inlet and shall be statically and dynamically balanced at the factory as a complete assembly to a maximum vibration level of two mils in any plane. The blower wheel shall be a minimum of 15 inches in diameter. The blower wheel shall be supported on a heavy steel shaft having self-aligning ball bearings with a minimum life span of 100,000 hours. The blower wheel shall be driven by a motor mounted on an adjustable slide base. The drive motor shall be 1750 rpm. The drive package shall be belt driven with two belts and a variable pitch sheave, sized for 200% of the fan motor horsepower.

The condenser coil shall be constructed of copper tubes and corrugated aluminum fins. The condenser coil shall be equally circuited for each refrigeration compressor. A receiver shall be factory mounted with head pressure control and solenoid valve for each circuit.

C. Air Cooled with Remote Outdoor Condensing Unit - The refrigeration system shall be split type with an indoor evaporator section and remote outdoor condensing unit.

The indoor evaporator section shall include the cooling coil, humidifier, reheat, filters, and controls. The cooling coil shall be in a cross-circuited or interlaced "A" frame arrangement to allow maximum coil surface in a small cabinet. The large faced coil area shall be constructed with 1/2" O.D. copper tube with 12 fins per inch of corrugated aluminum for maximum heat transfer. Maximum face velocity shall be less than 500 feet per minute. The expansion valves shall be of the adjustable thermostatic type with external equalization. The filter-drier shall be installed prior to the expansion valve.

The outdoor condensing unit shall be constructed of aluminum and contain hermetic scroll compressors with complete overload protection on all three power lines, internal thermostats for winding protection, crankcase heater, sight-glass, and low pressure override timer for positive starting at low temperatures. The circuits shall contain high and low pressure safety switches. The high and low-pressure safety switches shall be installed with Shraeder type fittings with valve core.

The condensing unit shall include a low profile, slow speed, direct drive propeller fan air cooled condenser section. The air discharge shall be vertical to minimize the effects of wind blowing through the coil at low ambient temperatures. The condenser coil shall be constructed with rifled copper tube and aluminum fin. The condensing unit shall have fan speed control with transducers to modulate the speed of the first condenser fan motor and provide positive start-up and operation at ambient temperatures to -20°F. Condensers with more than one fan shall utilize a pressure control on the second fan. Additional condenser fan motors shall be controlled by ambient thermostats. All controls including the fan speed control shall be factory mounted in an integral factory wired and tested control panel. The condensing unit shall be manufactured by the same manufacturer of the indoor unit.

D. Water/Glycol Cooled - The cooling coil shall be in a cross-circuited or interlaced "A" frame arrangement to allow maximum coil surface in a small cabinet. The large face area coil shall be constructed of 1/2" O.D. rifled copper tube with 12 fins per inch of corrugated aluminum for maximum heat transfer. Maximum face velocity shall be less than 500 feet per minute. The expansion valves shall be of the adjustable thermostatic type with external equalization. The compressors shall be of the hermetic scroll type with complete overload protection on all three power lines, internal thermostats for winding protection, crankcase heater, sight-glass, condensers with sub-cooling and 2-way water regulating valve for head pressure control. The circuits shall contain high and low pressure safety switches. The high and low-pressure safety switches shall be installed with Shraeder type fittings with valve core.

Each system shall include a low profile, slow speed, direct drive propeller fan type air cooled fluid cooler. Air discharge shall be vertical to prevent wind from blowing through the coil at low ambient temperatures. The fluid cooler shall be constructed of aluminum

and contain a 1/2" O.D. rifled copper tube coil with corrugated aluminum fins for maximum heat transfer. The fan motors shall have cycling control provided on fluid coolers with multiple fan motors. The fluid cooler shall include surge tank and fill valve, pump contactor, and fan cycling controls with integral factory wired and tested control panel. The fluid cooler shall be manufactured by the same manufacturer as the indoor unit.

1.04 DIRECT DRIVE PLENUM FAN SECTION

A. The supply air fan(s) shall be single width, single inlet plenum fan with backward inclined aluminum blades. Fan wheel shall be directly connected to its motor for greater efficiency. Fan/motor assembly shall be statically and dynamically balanced for quiet, vibration-free operation and shall have a minimum L10 life of 60,000 hours. Fan shall be maintenance free throughout its operating life.

B. The fan motor shall be electronically commutated (EC) synchronous DC motor and shall meet the NEMA Premium standard. The EC motor shall have soft start capability and shall be controlled via the keypad on the unit mounted controller or by a 4 to 20 milli-amp control signal sent directly to the analog input on the motor. The fan shall be mounted within the unit and fully enclosed in an integral plenum to allow efficient operation on raised floors with 12 or more inches of clearance under the floor.

C. Belt drive fans with variable frequency drives are not considered equal or acceptable.

1.05 FILTER CHAMBER

The filter chamber shall be an integral part of the system, designed within the frame and cabinet. The filters shall be four inch (4") deep pleated design, rated not less than 30% efficient (based on ASHRAE Std. 52-76).

1.06 ELECTRIC REHEAT

The reheat shall be of the finned enclosed, sheath type, fabricated of stainless steel core sheath with plated fins to withstand moist conditions. The reheat shall be installed on the air discharge side of the cooling coil and shall have three (3) stages. Each stage shall be ___ kW. The total kW shall be ___ to operate on a supply of ___ volts.

1.07 HUMIDIFIER

The unit shall be provided with steam generator type humidifier. The steam generating humidifier shall be of the self-contained disposable cylinder type with electronic controls. The capacity shall be adjustable from 10 to 30 pounds per hour. Power consumption at 22 pounds per hour shall be 7.7 kW or less. The humidifier shall discharge pure steam with no material dust carry-over and have a self-regulating automatic flush cycle. Cylinders shall be disposable not requiring cleaning or maintenance. The humidifier fill level, water conductivity and flush rate shall automatically adapt, both in frequency and duration, to variations in the incoming water.

1.08 WATER SENSOR

Units shall be provided with one (1) water sensor. The solid state water sensor shall be mounted under the unit to sense the presence of water. The sensor shall be connected to the microprocessor panel and activate an audible alarm. The water detector shall become an integral part of the microprocessor panel and shall display "WATER DETECTED IN UNDER FLOOR AREA" message when the sensor is activated.

1.09 CONTROL PANEL

A. The environmental control system shall be furnished with a microprocessor based Data Alarm Processor-III (DAP-III) panel. The panel shall include unit switching functions and display normal functions and service diagnostics on a 2 row, 80 character backlit liquid crystal display (LCD) in a clear vernacular format. The panel shall allow recall and display of the high and low temperature for the last 24 hours, 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), reheat, humidification and dehumidification. Programming shall have multilevel password access to prevent unauthorized access. Programming shall be accomplished entirely from the front of the unit without the need to access, set or program switches inside the unit (front door of the unit does not need to be opened). Programmable functions shall be entered on flash memory to ensure program retention should power fail. The historical database shall be maintained by battery backup. Multiple messages shall be displayed by automatically 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. A summary relay shall be available for remote alarms. 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 Data alarm Processor-III 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.

B. The following automatic control functions shall be included:

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

C. The following conditions, data and normal functions shall be monitored and displayed:

Temperature Setpoint	Humidity Setpoint
Current Temperature	Current Humidity
Cooling 1, 2, 3, 4*	Dehumidification
Reheat 1, 2, 3	Humidification
Current Percent of Capacity Utilized	Current Discharge Temperature*

D. The following switching and control functions shall be included:

System On/Off Switch	Menu Selection Buttons
Menu Exit Button	Select Buttons
Alarm Silence Button	Program Set Button
Manual Override for:	
Cool 1, Cool 2, Heat 1, Humidification	

E. The following alarm functions shall be monitored and displayed when they occur in addition to enunciating an audible alarm:

High Temperature Warning	High Humidity Warning
Low Temperature Warning	Low Humidity Warning
Low Pressure Compressor 1	Low Pressure Compressor 2

E. The following alarm functions shall be monitored and displayed when they occur in addition to enunciating an audible alarm:
(Continued)

High Pressure Compressor 1	High Pressure Compressor 2
----------------------------	----------------------------

Under Floor Water Detection
 Power Failure Restart
 Firestat Tripped
 Low Voltage Warning
 Maintenance Required
 Temperature Sensor Error
 Discharge Sensor Error*
 Custom Message*
 High Condensate Water Level*
 Standby Pump On*

Dirty Filter
 Manual Override
 Humidifier Problem
 Compressor Short Cycle
 Local Alarm
 Humidity Sensor Error
 No Water Flow*
 Smoke Detector*
 Fan Motor Overload*
 Person to Contact on Alarm*

F. The following historical data shall be available:

High Temperature Last 24 Hours
 High Humidity Last 24 Hours
 Alarm History (Last 10 Alarms)
 Equipment Runtimes for:

Low Temperature Last 24 Hours
 Low Humidity Last 24 Hours
 Average Percent of Capacity

Blower, Compressor 1, Compressor 2, Reheat 1, 2, 3, Dehumidification, Energy Saver*, Humidifier, Condenser and Chilled Water

G. The following functions shall be programmable:

Temperature Setpoint
 High Temperature Alarm Limit
 Humidity Setpoint
 High Humidity Alarm Limit
 Mode and Stage Response Time
 Reset Equipment Runtimes
 Automatic Self-Test Acknowledgment
 Humidity Anticipation
 Dehumidification Mode
 Power Problem or Restart Mode
 Message for Optional Alarm 1, 2, 3, 4*
 Compressor Supplements to Energy Saver*
 Person to contact on Alarm
 Humidifier Autoflush Timer*
 Scheduled Normal Maintenance
 Calibrate Temperature Sensor
 Compressors(s)
 Humidifier
 Water Valve Voltage Range
 Network Protocol
 Calibrate Discharge Air Sensor*

Temperature Deadband
 Low Temperature Alarm Limit
 Humidity Deadband
 Low Humidity Alarm Limit
 Compressor Lead/Lag Sequence
 Audio Alarm Mode
 Manual Diagnosis
 Compressor Short Cycle Alarm
 Low Discharge Temperature Alarm Limit*
 System Start Delay
 Delay for Optional Alarm 1, 2, 3, 4
 Remote Alarm 1, 2, 3, 4 Selection
 Define Password
 Firestat Temperature Alarm Limit
 Temperature Scale
 Calibrate Humidity
 Reheat States
 Water Valve Mode
 Reverse Acting Water Valve
 Analog Module Sensor Setup*
 Calibrate Chilled Water Temperature Sensor*

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

H. In addition, the DAP-III 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.

The following protocols shall be supported:

Modbus RTU, TCP/IP or ASCHII
BACnet IP or MS/TP
Johnson Metasys (N2)

SNMP V1 or V2
LonTalk SNVT

I. Building Management System Interface: Unit(s) shall be furnished with an 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.

1.10 OPTIONS

A. Energy Saver Coil - The environmental control units shall be provided with an Energy Saver coil. The Energy Saver coil shall be an integral part of the unit and will be capable of providing the total cooling capacity. Whenever the incoming water/glycol temperature is below the setpoint of the water changeover thermostat, Energy Saver cooling shall be available.

The Energy Saver shall operate in the following range: Return air setpoint plus deadband plus 2 degrees.

The Energy Saver shall operate providing there is a need for cooling. The valve shall open at setpoint plus deadband. The valve shall 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 shall close and the space shall be considered satisfied. While still in Energy Saver with the valve modulating, if the temperature goes beyond setpoint plus deadband plus 2 degrees, the Energy Saver valve shall close and mechanical (DX) cooling shall begin.

The Energy Saver coil shall include 3-way pressure control valves on the condenser circuits and 3-way valve on the economy coil. Common piping for the energy coil and condensers shall be provided.

B. Energy Saver/Compressor Supplement - Units with Energy Saver shall 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 shall be enabled (even if there is no call for cooling). Upon a call for cooling (setpoint plus deadband), the valve shall open proportionally - 10% for each 0.1° above setpoint plus deadband. The compressor shall come on at setpoint plus deadband plus 1.3° (the valve shall be 100% open at this point). The compressor shall go off at setpoint plus 1.3°. The valve shall close proportionally - 10% for each 0.1° below setpoint. An air discharge sensor shall be factory mounted.

C. Auxiliary Chilled Water Coil - Units shall be provided with an Auxiliary Chilled Water coil. The existing chilled water loop shall be utilized with the Auxiliary Chilled Water coil. Units shall operate using the chilled water for cooling. Upon a loss of water flow or an increase in room temperature the system shall bring on compressor (DX) cooling. Separate piping shall be provided for the chilled water coil and refrigeration connections.

D. Remote Temperature and Humidity Sensors -Units shall be provided with remote temperature and humidity sensors. Sensors shall be provided in a plastic case for remote mounting. 25 feet of shielded cable shall be provided for field wiring.

E. Disconnect - The environmental control unit shall include a non-automatic disconnect switch mounted in the high voltage section of the electrical panel. The operating mechanism shall prevent access to the high voltage electrical components until switched to the "OFF" position. The operating mechanism shall protrude through the decorative door.

F. Smoke Detector - The environmental control unit shall be provided with a smoke detector. The smoke detector shall be mounted with the sensing element in the return air stream. When the smoke detector is activated, it shall immediately shut down the unit.

G. Condensate Pump - Units shall be provided with condensate pumps. Pumps shall be factory mounted/wired or shipped loose for field installation and shall include sump, motor, and automatic control. The pumps shall be rated for 130 GPH @ 20 foot maximum head (40 GPH @ 20 feet with check valve).

H. Tandem Scroll Compressors - Provide units with tandem hermetic scroll compressors with two-step modulation for stage control. Each circuit shall contain two scroll compressors. Modulation shall allow one or both compressors (per circuit) to run depending upon the load of the system, resulting in part-load efficiency equal to full load efficiency.

I. Hot Gas Bypass - Units shall be provided with hot gas bypass. The hot gas bypass valve shall be installed between the compressor discharge line and the leaving side of the expansion valve through a side outlet distributor. The system with the evaporator under full load shall maintain pressure on the leaving side of the hot gas bypass valve to keep the valve port closed. Should the load on the evaporator decrease to the point where the coil is below the desired setting, the pressure on the discharge of the hot gas bypass shall put pressure on the diaphragm overcoming the spring pressure of the seat allowing some hot gas to mix with the normal liquid discharge of the expansion valve raising the evaporator pressure.

J. 3-Way Water Regulating Valves - Units shall be provided with a 3-way head pressure actuated regulating valve. The maximum water pressure shall be ___ psi.

K. High Efficiency Filters - The environmental control unit shall include filters with ___ MERV rating.. The filters shall be four-inch (4") deep pleated design.

L. Pre-Filters - The environmental control unit shall have one-inch (1") pre-filters in addition to the unit filters.

M. Upflow Plenum - Units with top (upflow) discharge shall be provided with plenum. The plenum shall have a front discharge air grille and be fully insulated with one inch (1") thick, 11/2-pound density fiberglass insulation coated with neoprene. The plenum height shall be 18 inches and shall be painted to match the unit color.

N. Floorstand - Units shall be provided with floorstands and vibration isolation pads. The floorstand shall be a complete welded base engineered to support the operating unit. The floorstand height shall be ___ inches and adjustable ± 2 inches.

O. Pump Package - A centrifugal pump shall be provided to circulate water or glycol solution. The pump shall be rated for ___ GPM @ ___ feet of head and shall operate on ___ volts.

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

Q. Pump Enclosure - A pump enclosure shall be provided for the centrifugal pumps(s). The enclosure shall be vented and weather resistant. Pumps shall be factory mounted in enclosure ready for field piping and wiring.

R. Automatic Lead/Lag Panel: Unit shall be furnished with an automatic lead/lag control panel. Panel shall be capable of controlling a minimum of four units. Upon occurrence of an alarm on one of the primary units the panel shall automatically shut down the primary unit and start standby unit(s) as required. In addition the panel shall rotate the primary and standby units after a user programmable number of hours to insure reliable operation and equalize run hours on all units

S. Zone Master Teamwork Operation: Each unit shall be furnished with capability to function as the zone master and control the operating mode of up to 32 units located in the same zone. Capabilities shall include:

- Unit lead/lag and standby rotation with an 8 hrs to seven days schedule
- Unit auto changeover by selectable standby or off (critical) alarms
- Standby unit activation by average zone temperature
- Zone functions inhibit preventing units from conflicting operation

- Secondary operating schedule for an economical control solution
- Programmable unit's status control (On/Off/Standby)
- Master unit fail safe mode allows slave units to revert their self control mode

T. No Water Flow Alarm: Unit shall be furnished with a NEMA 1 flow switch for field mounting into the chilled water piping to the unit. Upon a loss of water flow the unit control panel shall indicate "No Water Flow" and alarm shall sound.

U. Cable Type Water Detection Sensor: Units shall be provided with cable type water detection system designed to detect the presence of water anywhere along the cable. Cable shall be mounted on the floor under the unit. Sufficient length of cable shall be supplied to completely surround the perimeter of the unit so that water coming from anywhere within the unit will not escape detection. The water detector shall become an integral part of the microprocessor panel and shall display "WATER DETECTED IN UNDER FLOOR AREA" message and activate an audible alarm when the sensor is activated.

V. Discharge Plenum: Up flow units shall be equipped with an 18" tall discharge plenum with factory installed double deflection front discharge grille. Plenum shall be constructed of minimum 18 gauge steel, lined with 1" 1.5 pound per cubic foot insulation and painted to match the cabinet of the computer room air conditioning unit.

a. Discharge Plenum Side Discharge Grilles: Provide discharge grilles on ___ right side and ___ left side.

b. Extended Return Air Plenum: Down flow units shall be equipped with a four-sided inlet plenum on the return to extend the return air opening of the unit. Plenums shall be of sufficient height to penetrate the lay-in ceiling. If lay-in ceiling is not used plenum height shall sufficient to extend the return air opening to within 10" of the deck above or 6 feet whichever is shorter.

Plenum shall not be insulated, constructed of minimum 18 gauge steel and painted to match the color of the unit on which it is mounted

W. Hot Water Reheat: Reheat will be provided by hot water coil with 1/2" copper tubes and aluminum fins rated for a maximum working pressure of 300 PSI. Reheat circuit shall include a factory mounted 2-way hot water valve for temperature control. Coil, control valve and controls as required for a functioning system shall be factory mounted.

X. Steam Reheat: Reheat will be provided by steam coil with 1/2" copper tubes and aluminum fins rated for a maximum working pressure of 300 PSI. Reheat circuit shall include a factory mounted 2-way steam valve rated at 20 psi close off pressure for temperature control. Coil, control valve and controls as required for a functioning system shall be factory mounted. Steam strainer and trap are required and shall be furnished and piped by the installing contractor.

1.11 WARRANTY

A. All parts in the unit shall be warranted to be free from defects in material or workmanship for Eighteen (18) months, from date of shipment. Parts that fail during this period shall be repaired or a new part supplied by the manufacturer at no cost to the owner.

B. Manufacturer's warranty shall be for parts only. Labor is not included.

C. (Optional) Extended Compressor Warranty – In addition to the manufacturer's standard compressor warranty, the compressors shall be provided with an extended warranty for a period of Forty-Two (42) months or a total of Five (5) years. The warranty shall be for the replacement of compressors only (labor is not included).

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www.DataAire.com
800-347-2473

sales@DataAire.com
230 W. BlueRidge Avenue
Orange, California 92865

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