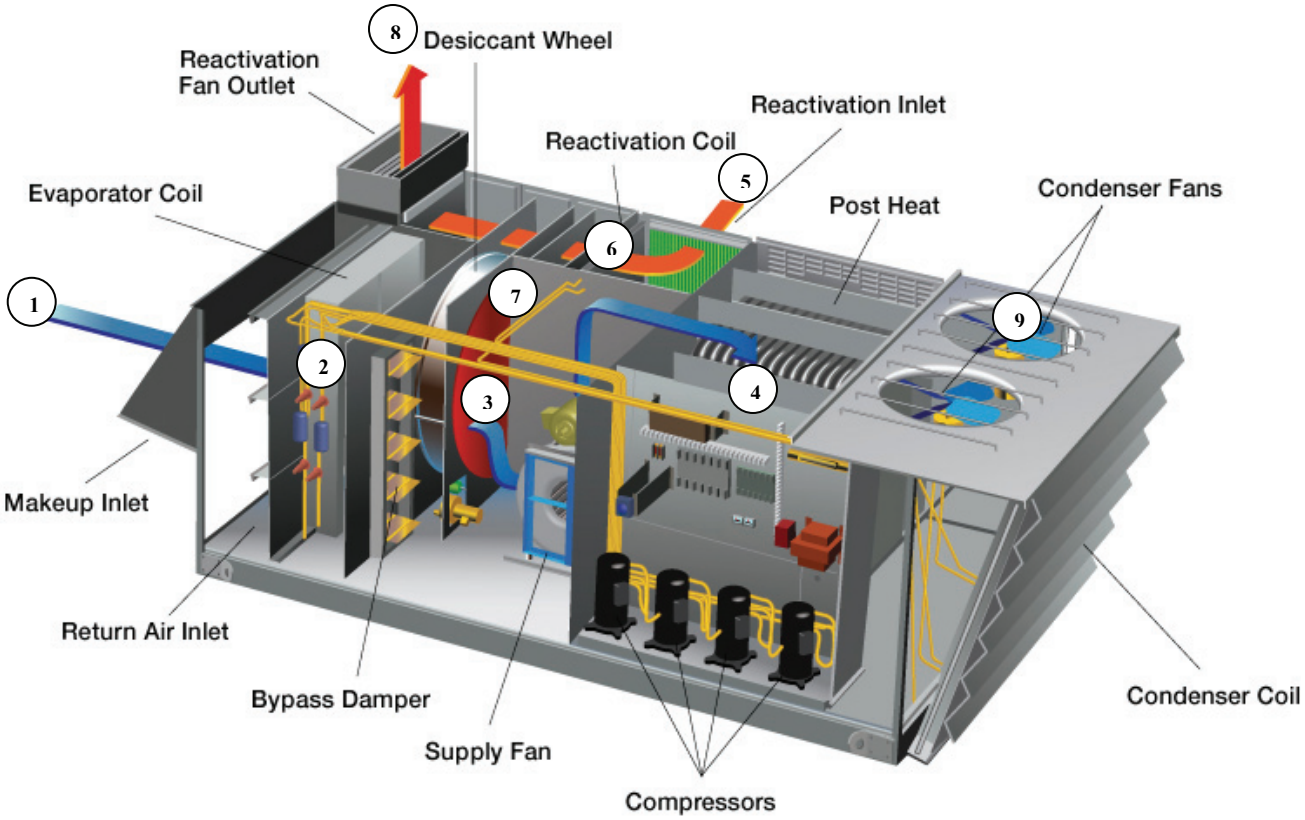
HCUc Preliminary Engineering Catalog

7/10/07

Operating Principles



SUPPLY AIR STREAM – Outside air is drawn into the unit using the supply fan <1>. The warm, moist outside air first passes through filters and then the direct expansion (DX) cooling coil <2> where the air is cooled and dehumidified. The moisture removed by the DX coil is carried off by a drainpipe. After it leaves the DX coil, the air is cool and at or near saturation. This is where the desiccant wheel functions most efficiently. The air passes through the desiccant wheel <3> where additional moisture is removed. This air is delivered directly to the space or into an existing air handler <4>.

REACTIVATION AIR STREAM – Reactivation air for the desiccant wheel is drawn into the unit using the reactivation fan <5>. The air is heated while passing through the reactivation coil <6>. Then the air is filtered before passing through the desiccant wheel <7>. The heated air removes the moisture that the wheel adsorbs from the process air stream and is then exhausted <8>. Additional condensing heat required for the DX cooling process, but not needed for the regeneration process, is exhausted outside the unit by the condensing coil and fans <9>.

The HCU system uses both refrigeration dehumidification and desiccant dehumidification in their most efficient realms to maximize system performance. By utilizing the DX coil where it is most efficient and the desiccant wheel where it is most efficient, the unit functions with very low SHR's. By utilizing the waste heat from the condenser coil to drive moisture off of the desiccant wheel, no extra energy is required.

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Features and Benefits

Indoor air quality and make up air has quickly become a major focus for building managers and designers. The introduction of makeup air into buildings has resulted in increased operating costs and has lead to moisture related problems such as mold, wet surfaces and structural decay.

Munters innovative HCU units are the reliable solution. These products not only condition makeup air cost effectively and prevent problems caused by excessive moisture, but are also simple to order, install, operate, and maintain.

The Munters Humidity Control Unit (HCU) product line offers commercial customers an energy-efficient way to bring dry makeup air into their building to control humidity, effectively reducing the costly ramifications of high indoor humidity: mold growth, and poor IAQ.

The unit is designed to condition 100% makeup air to provide leaving air conditions at low humidity levels and space neutral temperatures. The HCU operates at very low sensible heat ratios (SHR's). The unit can operate as a stand-alone system or as an outside air pretreatment unit, off-loading other air conditioning and air handling equipment.

HCU products range in volume from 1,000 to 16,000 cfm and are suitable for both indoor and outdoor installations. All products are manufactured with full access service doors, panels, and filters.

The unit utilizes a packaged refrigeration system in conjunction with an active titanium silica gel desiccant wheel. The HCU operates cost-effectively because all of the energy required for the regeneration of the desiccant wheel is recycled from the condenser waste heat. The system is integrally designed and controlled for superior performance in even the highest humidity load conditions.

Benefits

- Provides substantially improved IAQ
- Avoids cool and reheat
- Controls humidity during full load, part load and unoccupied periods
- Allows independent control of temperature and humidity.
- Provides very high energy efficiency
- Optimizes the refrigeration based air conditioning and desiccant based dehumidification performance

Features

- Optional built in digital controller
- Remote monitoring capabilities
- Selection of humidity or temperature demand as the control point
- High efficiency Scroll Compressors
- Titanium enhanced silica gel with carbon
- Variable frequency drives for capacity control
- Galvalume double wall construction
- Suitable for outdoor use

Base Unit Components and Options

BASE UNIT – The basic unit includes access panels, louvered air intakes and a base that allows for a minimum of four lifting points. The unit is fully assembled, tested and ETL listed. The unit is suitable for outdoor installation.

REFRIGERATION COMPONENTS – Each unit comes equipped with the latest in scroll compressor technology and is available with R-410a or R22 refrigerant. Evaporator and condenser coils are sized for maximum system performance. Each system comes standard with balanced port thermal expansion valve, liquid line solenoid valve, liquid line filter drier, high pressure cut out switches, high pressure sensors, refrigeration gauge ports, overload protection and condenser capacity control for increased energy efficiency.

DESICCANT COMPONENTS – The HCU includes Munters own Honeycombe© Silica Gel desiccant wheel, specially designed for optimal moisture removal capacity. All of the energy used to regenerate the wheel is recycled from the condenser. There is never a need to provide a supplemental energy source saving you both first cost and operating cost. The wheel rotates slowly at 8 rph eliminating the wear, maintenance and replacement costs associated with other products utilizing high rpm rotors.

CONTROLS – The HCU is provided with all the necessary controls to ensure efficient operation. Munters optional microprocessor control interfaces with many building management systems, or uses a thermostat or humidistat to maintain the desired space conditions.

The optional microprocessor constantly monitors outdoor conditions to ensure that the delivered air is conditioned before it enters the building. This helps to prevent swings in the space temperature and humidity often associated with other equipment.

The unit can be added to an existing system to condition makeup air and control humidity in the building. The unit can also be operated as a stand alone unit providing cooling, heating and dehumidification as required. In night set-back mode, the HCU can maintain humidity control when the building is not occupied.

Since exhaust air is not required for the dehumidification process, the added cost of ductwork and fan horsepower is eliminated.

Other basic unit features include:

- Titanium silica gel desiccant wheel, drive motor and full face seals
- Direct expansion evaporator coil, condensing coil and scroll compressor factory assembled, piped and refrigerant charged
- BAF or FC supply fan with high efficiency motor
- BAF reactivation fan with high efficiency motor
- Air intake hoods or louvers
- 2" supply and reactivation filters
- Factory tested prior to shipment
- Operating and maintenance manual
- ETL label

UNIT OPTIONS –Options vary model to model. The standard system options include:

- Bottom or side supply outlet
- Corrosion resistant coil coating
- High static supply fan
- Space mounted thermostat and humidistat
- Optional microprocessor
- BMS communication interface
    - Modbus
    - Echelon
    - Bacnet
    - Metasys
    - I/O Board
- Return and supply smoke detection
- Roof curb
- Auxiliary gas, electric, steam, or hot water post heat

HCUc General Engineering Specifications

Furnish and install MUNTERS HCU unit(s) or approved equal. Sizes, arrangements, capacities and performance shall be as indicated on plans and schedules. Unit manufacturer shall be registered under ISO 9001. Cooling performance shall be rated in accordance with ARI standards. Unit shall be ETL or UL listed. Packaged condensing units shall be factory pre-assembled, tested and shipped complete with all components necessary to maintain humidity and temperature control levels independent of load variations within design limits. Unit(s) shall be designed for year-round 24 hr/day service.

DESICCANT WHEEL

The desiccant wheel media shall be a monolithic, extended-surface contact medium, fabricated entirely of inert, inorganic binders and glass fibers formed into narrow passages in the direction of airflow. The wheel shall be non-toxic. The process and reactivation air streams shall be separated by air seals and internal partitions so that the humid reactivation air does not mix with the dry process air. Acceptable manufacturers must be able to procure replacement wheels within 24 hours or provide a spare stock for each unit size. The proposed equipment shall meet the following minimum requirements:

A) Wheel Face Seals
The dehumidifier shall have full-face seals on both the process air entering and the process air leaving sides of the wheel. These shall seal the entire perimeter of both air streams as they enter and leave the wheel. Partial seals shall not be acceptable. The seals shall be the silicone rubber bulb-type, with a protective strip of low-friction, abrasive-resistant surface to extend seal life and reduce the force needed to turn the desiccant wheel. Neither wiper-type seals nor brush-type nor any non-contact-type seal shall be acceptable. The seals shall be documented to have a minimum working life of 25,000 hours of normal operation.

B) Materials
The glass fibers which form the support matrix shall be made from uniform continuous strands larger than five microns in diameter which are non-respirable and are not considered a possible health risk by the International Agency for Research on Cancer (IARC).

C) Flame spread and smoke generation
The wheel shall be tested according to ASTM E84-90 (Standard Test Method for Surface Burning of Building Materials) and shall achieve the following results:

1) Flame spread index = 0
2) Smoke developed index = 10

D) Desiccant impregnation
The desiccant shall be evenly impregnated throughout the structure for predictable, consistent performance and for maximum wheel life. Coatings applied on top of the contact medium shall not be acceptable unless the manufacturer can provide independent life tests demonstrating less than a 5% decline in desiccant capacity over a five year period of normal operation.

E) Desiccant type
The desiccant impregnated into the contact medium shall be a titanium-reinforced silica gel. The HoneyCombe® desiccant wheel shall be a fabricated extended surface contact media with a multitude of small passages parallel to the airflow. The rotary structure shall be a monolithic composite consisting of inert silicates with microscopic pores designed to remove water in a vapor phase. The desiccant shall be hydro thermally -stabilized silica gel reinforced with titanium for maximum strength and stability over time. The fabricated structure shall be smooth and continuous having a depth of between 95 and 200 millimeters in the direction of airflow without interruptions or sandwich layers which restrict air flow or create a leakage path at joining surfaces. Nominal face

velocity shall not exceed 1100 fpm. The HoneyCombe® wheel shall be manufactured in the United States. The manufacturer shall provide documentation to establish that:

1) The desiccant retains more than 90% of its original capacity after ten years of continuous operation in clean air, with inlet air conditions up to an including 100% relative humidity.

2) The wheel as impregnated with silica gel is capable of withstanding five complete water immersion cleaning cycles while retaining more than 95% of its original adsorption capacity.

DESICCANT WHEEL SUPPORT AND DRIVE ASSEMBLY

Desiccant wheels 60" in diameter and smaller shall be a single piece for fast removal and simple handling. Belt-driven desiccant wheels shall be supported by four rollers at the base of the unit so the wheel can be easily removed by lifting it over the rollers using the drive belt. In addition, the wheel drive assembly shall provide:

A) Rotation speed
To avoid excessive heat carryover from reactivation to the process air, the wheel rotation speed shall not exceed 8 rph while achieving the required moisture removal rate at the specified conditions.

B) Drive belt
HCUc-4015 and smaller shall use a V-belt. HCUc-4020 through HCUc-8040 shall use a flat, toothed type belt with aramid fiber reinforcement. HCUc-1265 units and larger shall use direct-drive wheels.

C) Drive motor
The drive motor shall be fractional horsepower and rated for continuous duty for a period of 20,000 hours under the load conditions imposed by the drive assembly.

D) Rotation detection
The drive assembly shall be equipped with a rotation detection circuit which shuts down the dehumidifier and signals the operator through an alarm if the wheel is not rotating.

DIRECT EXPANSION (DX) COOLING COILS

Coils shall be sized to provide the full capacity scheduled. Coils shall be arranged to condition the full volume of process air. Refrigerant pressure drop to be between 1.5 psi and 5 psi, and air face velocities shall be 450 fpm or less. Coil circuiting provides for optimum performance with minimum pressure loss. Coil shall be designed for 250 PSI working pressure and factory tested under water at 300 PSI air pressure.

Direct expansion cooling coils are fin and tube type constructed of 3/8" O.D. x 0.012" or 1/2" O.D. x 0.016" wall rifled copper tubes and .006 inch thickness aluminum fins mechanically bonded to tubes. Casing and tube support sheets are 16 gauge galvanized steel formed to provide mounting flanges and structural support for the fin-tube assembly. Supply headers consist of an expansion valve and distributor to feed liquid refrigerant through copper tubing to all circuits in the coil equally. Tubes are circuited to insure minimum refrigerant pressure drop and maximum heat transfer. Fin spacing of up to 12 FPI provides adequate transfer area to minimum air pressure drop. Direct expansion coils conform to ARI Standard 410 and are compatible with all other components of the same refrigeration circuit.

DRAIN PANS

The drain pan is to be constructed of welded 304 SS and bolted in place. The cooling coil drain pan shall extend the entire length of the coil and extend a minimum of 4 inches beyond the air leaving side of the coil. The drain pan shall be a minimum of 2 inches deep and have a minimum pitch of 1 inch. The drain pan shall be sloped to ensure zero standing water. Drain connection shall extend through unit base. Connection to be 1 inch male NPT.

PACKAGED REFRIGERATION CONDENSING UNITS

Condensing units are complete with compressor(s), condenser heat exchanger, and all controls and

accessories required to regulate refrigerant pressure, flow rates and temperatures. The condensing unit is piped together with evaporator coil(s) and is sized and controlled to operate at all conditions required. Condensing units manufactured by a separate company and then mounted and piped and a single skid are not acceptable. The refrigeration equipment shall be capable of operation down to an ambient temperature of 50°F.

Condenser coils shall be sized to reject the heat absorbed by the evaporator coil and the work of compression at a low delta T relative to ambient to enhance efficiency. Coil circuiting provides for optimum performance with minimum pressure loss. Coil shall be round tube, plate-fin, or microchannel design. Coil shall be designed for 400 PSI working pressure and factory tested under water at 600 PSI air pressure.

Compressors are scroll type. Service Access shall be provided around the entire compressor for maintenance. Isolation valves shall be provided in the refrigeration circuit to allow removal of pressure sensors and other control instruments. Each compressor shall have its own refrigeration circuit and expansion valve. Tandem compressors sets are not acceptable.

Condenser fans shall be provided with fan guards both on the intake and discharge. Condensing unit section shall be accessed through access doors. Access panels are not acceptable. Condenser coils shall be provided with exterior coil guards to prevent damage.

All piping connections are brazed using a filler material with not less than 15% silver content for copper to brass joint. Brazing flux is used on all joints and all interior surfaces of brazed assemblies are exposed only to dry nitrogen during heating and cool down periods. All refrigeration tubing is copper, type "L", cleaned and capped, designed specifically for refrigeration service. All piping circuits contain thermostatic expansion valve with external equalization, liquid line solenoid valve, and filter/dryer. All components are completely installed in piping circuit and all joints leak tested with refrigerant charge and electronic leak detector prior to evacuation, final charging and complete factory testing and set-up. All assembly and testing work is performed at the factory prior to shipping. All refrigeration circuits are pumped down, valved off and shipped with the full refrigerant charge ready for on site start-up.

WEATHER PROTECTION (OUTDOOR UNITS)
The dehumidification system shall be capable of continuous outdoor operation. The air inlets shall be protected from water entry by hoods, louvers, mist eliminators or connected duct work. Consequently, all access panels shall be weather tight, as shall all joints between casing and electrical conduits and between the unit casing and any components mounted in separate enclosures. The roof shall be fabricated using a capped standing seam or single piece style construction.

FANS
Supply blowers provide the specified air volume(s) through the system with adequate static pressure to overcome duct and distribution losses specified. Supply blowers are belt-drive forward curve or direct-drive backward inclined, air foil blade type. Direct-drive blower fan speed shall not exceed 80% of the fan shaft critical speed. Access shall be provided to the supply blower for inspection and servicing. All fans shall be rated in accordance with AMCA Standard 210. Condenser fans shall be direct driven propeller type. Reactivation fans shall be direct-driven backward inclined, air foil blade type with VFD control.

FAN BALANCING
Fans shall be balanced such that the maximum displacement in any plane does not exceed 1.5 mils for fans operating at or below 2000 rpm or 1.0 mils for fans operating above 2000 rpm.

FAN MOTORS
Supply and reactivation fan motors shall be the totally-enclosed fan-cooled (TEFC), high-efficiency type with a minimum of Class B insulation. Condenser fan motors shall be ODP.

FILTERS
The unit shall include disposable filters with 25% to 30% minimum efficiency with 90% to 92% arrestance

minimum as rated by ASHRAE Test Standard 52-76. The filters shall be removable at the inlet of both supply and reactivation air streams. These filters shall be mounted on sliding or lift racks and accessible through access or doors. The entire supply and reactivation air stream shall be filtered.

ELECTRICAL CONTROL CABINET
The electrical control cabinet shall be weather tight to NEMA 3R standards and shall include:

A) Wiring to comply with the current National Electrical Code with further fuse and wiring sizing to meet or exceed UL 508A Industrial Control Panel.

B) Wires shall be color-coded or numbered at both ends and all terminal block connection points shall be numbered. These markings shall correspond with the electrical diagram provided in the operating and maintenance manual.

C) Components shall be UL, ETL or CSA approved where possible.

D) Operating and maintenance manual
The control cabinet shall include a copy of the O & M manual, mounted in a separate compartment or pocket to allow access to critical information by maintenance personnel after installation.

CONTROLS
The unit shall have the option of microprocessor control. Units with the optional microprocessor shall be capable of communicating with a building management system (BMS) through Modbus, Lonworks or BACnet protocol. Control options include the ability for the HCU to determine stages of heating, cooling and dehumidification required to maintain space conditions when an "enable" command is given via the BMS, or direct control via commands issued from the BMS.

Non-microprocessor version shall respond to contact closures from an external source to bring on stages of heating, cooling and dehumidification.

UNIT CONSTRUCTION – HCUc

UNIT BASE
Unit base shall be bolted steel construction with formed heavy gauge galvanized steel channels around the outside perimeter and reinforced with galvanized steel cross members bolted on centers not exceeding 31 inches. Base shall have a minimum of four lifting brackets.

UNIT STRUCTURE
The unit casing shall be constructed using a double wall panel and frame system for torsional rigidity. This includes walls, floors and ceilings. This system shall not contain any through metal. The unit casing shall also meet the following criteria based on ASTM E84-90 (Standard Test Method for Surface Burning of Building Materials), flame spread = 25, smoke index = 50.

The frame system components shall be constructed of fiberglass reinforced plastic (FRP) pultruded members. Horizontal frame members shall be supported along their length by intermediate supports and internal partitions. Through metal systems shall not be allowed. To avoid condensation, heat loss or loss of cooling capacity, each panel shall be 2 inches thick and constructed such that there are no through metal connections between the exterior surface and the interior surface. The interior casing shall be 22-gauge galvanized steel. The exterior casing shall be 22-gauge corrosion resistant galvalume. Manufacturers not providing exterior galvalume construction must provide painted galvanized exterior panels. Painted coating must be corrosion resistant exceeding ANSI 2000 hour salt spray standards. Panels shall be foam injected into individual panels with a density of 2-1/2 lb/ft^3. The heat transfer rate through casing walls shall be less than 0.0625 Btu/sq. ft./°F equivalent to an R-value of 14. This construction shall be suitable for a 50°F difference as tested between process air dry bulb temperature and the dew point of the air surrounding the plenum. The unit casing shall be manufactured as an air and vapor tight system. There shall be a gasket system which seals the

panels to the structure. Fixed panels shall be provided with flat closed cell neoprene and be sealed in place with FDA approved silicon. Doors and plug panels shall be provided with polyvinyl chloride seals.

ACCESS DOORS AND PANELS

Access doors or plug panel doors will be provided as indicated on the drawings. Doors shall be rigid double wall construction and shall use heavy-duty hinges with lockable latches on each door. Doors shall be a minimum of 15" in width. Doors shall be of the same construction as panels. Door latches shall be capable of being fully tightened against gasket surfaces. All major components such as coils, filters, blowers, etc., within the air handling structure shall be easily removable through access panels without dismantling plenums or distributing ductwork. Equipment that requires disassembly of components rather than access through removable or hinged panels shall not be acceptable. The unit casing shall include access panels for inspection and for any maintenance required by the operating and maintenance manual. Panels without gaskets shall not be acceptable.

INDIRECT FIRED POST HEATERS

Heater shall conform to ANSI Z83.9. Unit shall be suitable for operation on natural gas or propane as specified. Unit shall be of down blast or horizontal configuration. Unit shall have an input rating of 100, 200, 320 or 400 MBH on high firing rate and 50, 100, 160, or 200 MBH on low firing rate, respectively. Where input is greater than 400 MBH multiple heaters shall be used. It shall contain tube type heated exchangers, flue gas collector with vent fan, in shot burners, and controls for high and low fire. Unit shall be un-housed and fit within the unit housing envelope dimensions.

Burners shall be die formed in shot type with adjustable air shutters. Burners must be individually removable for cleaning or service. Entire burner assembly must be easily removable as an assembly.

Unit shall have a powered venting system consisting of a collection box, direct drive vent fan and an air proving switch. The collection box shall be made of the same material as the heat exchanger bulkhead plate and shall be removable. The venting fan bearings shall have a minimum L10 bearing life of 24000 hrs. The vent fan shall exhaust the flue gas horizontally out the side of the unit. The unit fan shall operate on 120/1/60 and not exceed 2 FLA.

Tubes shall be permanently attached to a bulkhead plate to form an airtight seal between combustion byproducts and heated air system. Heat exchanger shall be constructed of 18 gauge aluminized tubes with 14 gauge aluminized steel bulkhead plate. Heat exchanger shall be rated for a minimum lifespan of 100,000 cycles.

Gas train shall utilize components certified by AGA. Gas train shall consist of a 24 VAC two stage combination valve (manual on-off, automatic safety shutoff, regulation to handle 0.5 psig input pressure and adjustable pilot valve). The combination valve shall be rated at a flow of 400 MBH. The valve shall feed in shot burners through a manifold with screw in brass orifices sized for either natural gas or propane, as required by unit schedule. The flame controllers shall be solid state module that operates on 24 VAC. It shall have a built in spark igniter and flame sensor with 100% gas shutoff. The pilot shall be ignited during each cycle of operation. After the pilot is proven, the main burner valve shall open. Pilot and main burners shall be extinguished during the off cycle. The thermal disc type high temperature limit switch shall shut off the main and pilot valves if an overheat occurs.

HCUc Control Sequence:

The HCUc is designed to provide an economical way to bring makeup air into the space and control space temperature and humidity at the same time. The HCUc first uses a cooling coil to cool and dehumidify the air. The air is cool and saturated with moisture as it leaves the cooling coil. The air is then passed through a desiccant wheel which converts the latent heat (moisture) into sensible heat. This raises the air temperature to a room-neutral temperature condition and at the same time lowers the dew point. This prevents overcooling the space at off-design conditions. The desiccant wheel is reactivated by recycling waste heat from the condenser coil. The HCUc can provide cooling-only by simply turning off the desiccant wheel.
The HCUc has an internal microprocessor and can be controlled by one of two means: Autonomous control or conventional external control.

AUTONOMOUS CONTROL
The HCUc can provide autonomous (stand alone) control based on space conditions. It can also monitor outside temperature and humidity and be programmed to override space condition call for cooling, dehumidification or heating to prevent swings in space conditions. In autonomous mode of operation, there is a single set point for each of cooling, DH and heating. There is also a dead band (normally 2 degrees). When the temperature rises to the set point, the first stage of cooling will energize. The microprocessor will wait for a "stage delay" period of time to see of this stage of cooling satisfies the space temperature. If it does before the stage delay elapses, the stage will shut off. If it is not satisfied, the second stage will start. The microprocessor will wait a stage delay and turn on another stage is the space temperature is still not satisfied. This method of control will cycle between two stages once equilibrium is reached. In other words, it will cycle between stage 1 and 2 or between stage 2 and 3 and so forth. This same control sequence is applied to control of dehumidification and heating.

The HCUc operating in autonomous control requires a control source to give the unit a "run" signal. A remote terminal is available as a control source for the HCUc in autonomous mode of operation. The microprocessor monitors space and ambient temperature and humidity with sensors to controls stages of heating, cooling or dehumidification as required to maintain desired space conditions. The remote terminal functions as a programmable thermostat that allows for night setback with On/Auto/Off supply fan settings and Open or Closed outside air damper operation. The remote terminal may be mounted remotely from the temp/RH sensors. The remote terminal will display STATUS of the space temperature and dew point, ambient temperature and dew point as well as internal performance characteristics of the unit such as compressor discharge pressures, coil leaving temperatures and unit leaving temperature and dew point. The terminal will also allow for programming of set points for temperature, dew point, fan, and damper operation for each day and night of the week.

The control source can also be a Building Management System (BMS) communicating with the HCUc via Lonworks, BacNet, or Modbus protocol or through an IO board mounted in the HCUc control panel. With This type of control, the BMS need only provide a run signal. Night setback input is an option. All faults can be monitored. The space temperature and humidity can be transmitted from the BMS to the HCUc or the HCUc can monitor space conditions and provide this information to the BMS. The same holds true for outside conditions.

In autonomous mode, the HCUc receives a signal to initiate the supply fan (Unit on). The microprocessor then determines whether DH, Cooling or Afterheat is needed. There is an option selectable on the microprocessor to run DH and afterheat simultaneously. The following describes in detail how each function is controlled in autonomous mode.

DH
When in dehumidification mode, compressor A energizes first and provides all of the required heat for desiccant wheel reactivation. The reactivation fan is modulated to maintain a constant discharge pressure (444psi) to insure proper reactivation temperature. Compressor A heat of rejection/reactivation heat is handled by a separate condenser coil. The entire condenser A airflow is generated by the reactivation fan.

Compressors B, C, and D are energized in that order as required to produce the desired space dew point and temperature. The condenser coil for these three compressors is located on the end of the unit separately from the reactivation (A) condenser coil. The airflow for the B, C, D condenser coil is provided by the condenser fans that cycle on discharge pressure to maintain the required condensing temperature.

The microprocessor monitors ambient temperature and dew point. If the ambient dew point is above *Ambient DH on*, Stage 1 DH will energize. Additional stages of ambient override can be selected as well.

COOLING

When in cooling-only mode of operation (ambient dew point is low), compressor D is the primary compressor. Compressors C, B, and A are energized in that order, after stage delays, as required to maintain desired leaving air temperature. The reason for this sequence in cooling-only mode is to conserve condenser/reactivation fan energy.

When the wheel is not required for dew point control, a wheel bypass damper opens to reduce air pressure drop and the supply fan goes to a lower speed to save energy.

HEATING

Upon a call for heating, stages of heat energize, after stage delays, as required to maintain desired space temperature. DH and heating can be energized at the same time unless locked out.

The ambient temperature override operates according to the following sequence. When the ambient temperature drops below *Ambheat Override Ht 1* temperature, afterheat stage 1 energizes. If the space temperature rises above *Space heat setpoint on* plus *Space Temp dead band*, stage 1 de-energizes. When the ambient temperature drops below *Ambheat Override Ht 2* temperature, stage 2 afterheat energizes. If the space temperature rises above *Space heat setpoint on* plus *Space Temp dead band*, stage 2 heat de-energizes. This sequence repeats for stages 3 and 4.

EXTERNAL CONTROL

The HCUc be controlled by an external controller. The external controller can control the unit by one of two methods:

1. Autonomous control: the Munters microprocessor monitors space and ambient conditions and controls the unit as necessary to maintain space temperature and dew point set points. With this method of control, the external controller only provides a run signal to the HCU.
2. IO control: the external controller gives individual signals to the Munters controller to initiate supply fan, 2 or 4 stages of cooling, one stage of dehumidification, up to 4 stages of afterheat.

The external controller can be a Building Management System (BMS) communicating through Lonworks, BacNet, or Modbus protocol. It can be a BMS communication via an IO card mounted in the HCU control panel. A conventional thermostat and humidistat can also be used. With conventional external control, the external controller will turn on the supply fan and individually dictate each stage of cooling (2 or 4) and each stage of heating to energize. It needs to provide only one DH signal. Stages of DH are determined internally by the HCUc by means of stage delays as described in autonomous mode of operation.

Warranty

EQUIPMENT WARRANTY
Munters warrants all equipment manufactured by it to be free from defects in workmanship and materials for a period of one year commencing thirty (30) days from date of shipment of equipment by Munters.

This warranty applies only to equipment that is properly installed, maintained and operated under normal conditions with competent supervision in accordance with the equipment instruction manual and Company recommendations, if any, made in the proposal governing purchase of said equipment. Munters' obligation under this warranty is limited to repair or replacement at our option, at our factory, of any part returned to us prepaid which upon examination shall prove to be defective. Freight charge incurred for shipment of warranty repair or replacement parts will be the responsibility of the purchaser.

This warranty shall be void in the case of any equipment which has been disassembled, repaired, or tampered with in any way, except when such work had been done with Munters' written approval.

MUNTERS WILL NOT BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING FROM THE USE OF THIS PRODUCT.

THIS WARRANTY SHALL BE VOIDED IF PAYMENT IS NOT MADE IN ACCORDANCE WITH THE TERMS AS SET FORTH BY MUNTERS.

THIS WARRANTY IS EXPRESSLY IN LIEU OF OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND MUNTERS NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE CONSTUCTION, DELIVERY, AND OPERATION OF THIS EQUIPMENT EXCEPT AS AFORESAID.

OPTIONAL WARRANTY
Munters warrants the desiccant wheel to be free of defects in material and workmanship for a period of up to five years from the purchase date.

The foregoing does not apply to:

1. Lithium Chloride wheels that have not been maintained under a Munters Service Agreement continuously throughout the five-year period;
2. Damage caused by misuse or any improper maintenance or contamination of the Honeycombe wheel media; or
3. Damage caused by other component malfunction or operation of the equipment beyond the specified conditions

Should this desiccant wheel be found to be defective due to material or workmanship within the specified warranty period, Munters shall repair or replace the desiccant wheel at its option.

If the wheel is determined to be defective and not repairable, the wheel will be replaced, and a credit will be applied toward the cost to replace the desiccant wheel, per the prorated schedule below. The replacement costs do not include freight or labor to remove or reinstall the wheel.

The original equipment invoice date establishes the purchase date which will be used to calculate the prorated replacement cost.

This warranty is not transferable and does not cover normal wear and tear or damage caused by improper use. The warranty is also voided if the purchaser modifies the desiccant wheel or original equipment in any way.

Prorated Schedule

Year	Percent Credit
1	100%
2	80%
3	60%
4	40%
5	20%

STEAM REACTIVATED SYSTEMS: Munters will only repair or replace leaking steam coils under warranty when accompanied by a water quality report from an independent, qualified laboratory showing the chemical analysis of the steam associated with these coils. These tests must show pH values and sulfur content within the ranges associated with proper steam operating ranges. Proper steam piping, per manufacturer's recommendations, must be applied to any steam coil installations to prevent contamination and possible water hammering that could lead to leaks.

LABOR WARRANTY

Munters' obligation under this warranty for labor is limited to correcting any improperly performed start-up labor, for a period of ninety (90) days. Customer is responsible for providing clear access to equipment.

CLAIM PROCEDURES

If any defect appears in the equipment during the applicable warranty period:

1. Buyer shall notify Munters of the defect in writing, including in such written notice the model, serial number and part number of such equipment or defective part thereof, and a description of the nature of the defect.
2. After receipt of such information, Munters will ship a replacement, F.O.B. Munters factory, and will invoice the buyer therefore, and for shipping charges, if applicable.
3. Upon receipt of written authorization from Munters, buyer shall return the defective equipment or part to Munters with shipping charges prepaid.
4. Upon receipt of the equipment or part by Munters, the cause of the failure will be analyzed and, if equipment or part is found to be defective in workmanship or material, a credit will be issued for the cost of the replacement or repair of said equipment or part, per the terms of this warranty as set forth herein. Any special shipping requests such as "Next Day Air" will be the customer's responsibility and will be sent "freight collect".

MUNTERS ASSUMES NO RESPONSIBILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE TO STRUCTURES (INCLUDING, BUT NOT LIMITED TO, ANY DUCTWORK, ROOFING MATERIALS, OUTBUILDINGS OR PIPING) OR ANY OTHER EQUIPMENT CAUSED BY ANY DEFECTIVE EQUIPMENT OR PART OR THE REMOVAL OR REPLACEMENT THEREOF, AND BUYER SPECIFICALLY WAIVES ANY RIGHT OR LIABILITY FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND RELATING TO OR ARISING OUT OF THE EQUIPMENT OR ANY PART THEREOF, OR THE BUYER'S USE THEREOF.

This warranty does not include delivery of materials to the job site or rigging, scaffolding, lifts or labor necessary to install replacement equipment or parts. Buyer is responsible for lifting requirements, cranes, unpacking, etc., as well as removal of previously supplied or installed materials.

APPENDIX

Equipment Schedules & Drawings

Equipment Schedule - HCUc-3412AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	56-3/4"H x 65-1/4"W x 111-1/4"L								
Unit Weight, no heat (+/- 10%)	3,300 lb.								
Unit Weight, with heat (+/- 10%)	3,500 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	2, 3, or 5								
Maximum CFM	3,400								
Reactivation Fan									
Type	Direct Drive BIA								
HP	1.5								
CFM	Variable up to 2,500								
Condensing Fan									
Type	Propeller								
HP	2 @ 1.5 HP								
Compressors									
Nominal Tonnage	12								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	2 HP	3 HP	5 HP	2 HP	3 HP	5 HP	2 HP	3 HP	5 HP
Supply Motor	5.5	8.0	13.4	5.1	7.6	13.2	2.6	3.8	6.6
Reactivation Motor	4.5	4.5	4.5	4.1	4.1	4.1	2.1	2.1	2.1
Condensing Motor	13.3	13.3	13.3	12.0	12.0	12.0	6.0	6.0	6.0
Compressor A	13.2	13.2	13.2	13.2	13.2	13.2	6.0	6.0	6.0
Compressor B	13.2	13.2	13.2	13.2	13.2	13.2	6.0	6.0	6.0
Compressor C	13.2	13.2	13.2	13.2	13.2	13.2	6.0	6.0	6.0
Compressor D	13.2	13.2	13.2	13.2	13.2	13.2	6.0	6.0	6.0
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	80.9	83.4	88.8	78.3	80.8	86.4	36.9	38.1	40.9
MCA	84.2	86.7	92.2	81.6	84.1	89.7	38.4	39.6	42.6
MOP	90	90	100	90	90	100	40	45	45

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	85.7	88.2	93.6	82.7	85.2	90.8	39.0	40.2	43.0
MCA	89.0	91.5	97.0	86.0	88.5	94.1	40.5	41.7	44.7
MOP	100	100	110	90	100	100	45	45	50

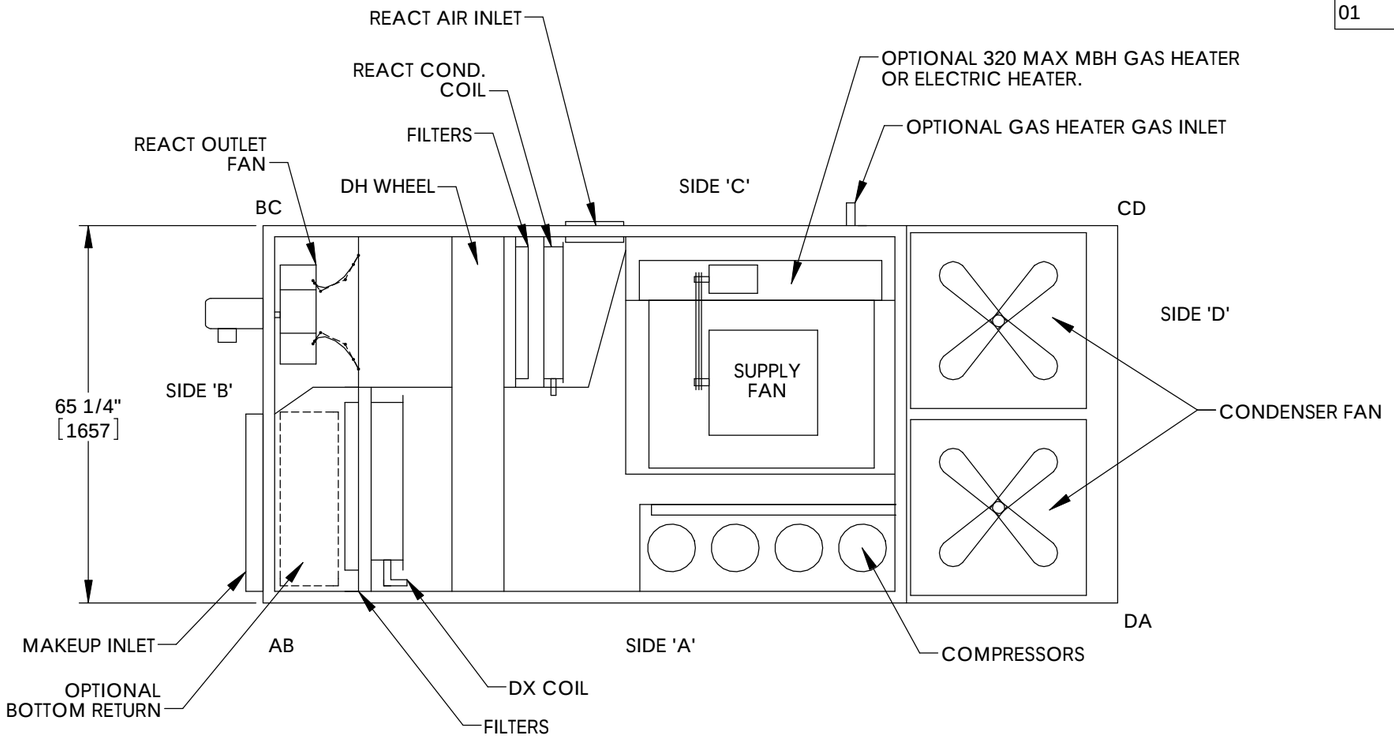
Equipment Schedule - HCUc-3415AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	56-3/4"H x 65-1/4"W x 111-1/4"L								
Unit Weight, no heat (+/- 10%)	3,300 lb.								
Unit Weight, with heat (+/- 10%)	3,500 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	2, 3, or 5								
Maximum CFM	3,400								
Reactivation Fan									
Type	Direct Drive BIA								
HP	2								
CFM	Variable up to 3,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 1.5 HP								
Compressors									
Nominal Tonnage	15								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	2 HP	3 HP	5 HP	2 HP	3 HP	5 HP	2 HP	3 HP	5 HP
Supply Motor	5.5	8.0	13.4	5.1	7.6	13.2	2.6	3.8	6.6
Reactivation Motor	6.0	6.0	6.0	5.4	5.4	5.4	2.7	2.7	2.7
Condensing Motor	13.3	13.3	13.3	12.0	12.0	12.0	6.0	6.0	6.0
Compressor A	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor B	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor C	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor D	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	84.4	86.9	92.3	81.6	84.1	89.7	38.3	39.5	42.3
MCA	87.8	90.3	95.7	85.0	87.5	93.1	39.9	41.1	44.0
MOP	100	100	100	90	100	100	45	45	50

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	89.2	91.7	97.1	86.0	88.5	94.1	40.4	41.6	44.4
MCA	92.6	95.1	100.5	89.4	91.9	97.5	42.0	43.2	46.1
MOP	100	100	110	100	100	110	45	45	50

S71090-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	01	ADDED CORNER WEIGHTS	MGY 06/14/07	MGY 06/14/07	



WEIGHTS IN POUNDS

	CORNER WEIGHTS				UNIT WEIGHT
	AB	BC	CD	DA	
NO MBH	759	825	858	858	3,300
320 MBH	770	875	910	945	3,500

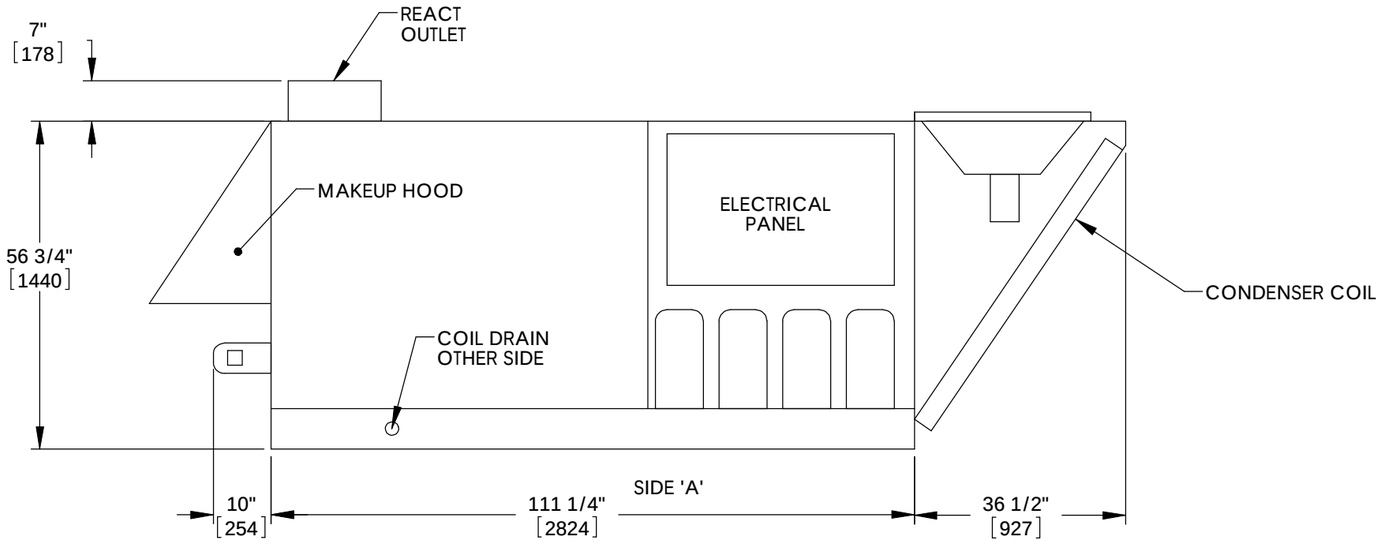
WEIGHTS IN KILOGRAMS

	CORNER WEIGHTS				UNIT WEIGHT
	AB	BC	CD	DA	
NO MBH	263	374	389	389	1,415
320 MBH	349	397	413	428	1,587

SIDE CLEARANCES:

SIDE 'A' = 48" (1219)
SIDE 'B' = 48" (1219)
SIDE 'C' = 48" (1219)
SIDE 'D' = 48" (1219)

SEE PAGE 2 OF 3 FOR RETURN AND SUPPLY LOCATION AND SIZES.



PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches
Unless Otherwise Specified

TOLERANCES ARE:

FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

Munters

DRAWING TITLE: HCUc 3412, 3415

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	05/03/07		
Ck. By: WF	Date: 05/04/07		
Appr. By: PT	Date: 05/04/07	SHEET: 1 OF 3	PART NUMBER: S71090-000 SIZE B

Equipment Schedule - HCUc-4015AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	72"H x 65-1/4"W x 126-1/2"L								
Unit Weight, no heat (+/- 10%)	4,000 lb.								
Unit Weight, with heat (+/- 10%)	4,250 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	3, 5, or 7.5								
Maximum CFM	4,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	2								
CFM	Variable up to 3,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 1.5 HP								
Compressors									
Nominal Tonnage	15								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	3 HP	5 HP	7.5HP	3 HP	5 HP	7.5HP	3 HP	5 HP	7.5HP
Supply Motor	9.0	13.4	20.2	8.6	13.2	20.2	4.3	6.6	8.9
Reactivation Motor	6.0	6.0	6.0	5.4	5.4	5.4	2.7	2.7	2.7
Condensing Motor	13.3	13.3	13.3	12.0	12.0	12.0	6.0	6.0	6.0
Compressor A	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor B	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor C	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Compressor D	13.7	13.7	13.7	13.7	13.7	13.7	6.2	6.2	6.2
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	87.9	92.3	99.1	85.1	89.7	96.7	40.0	42.3	44.6
MCA	91.3	95.7	104.2	88.5	93.1	101.8	41.6	44.0	46.8
MOP	100	100	110	100	100	110	45	50	50

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	92.7	97.1	103.9	89.5	94.1	101.1	42.1	44.4	46.7
MCA	96.1	100.5	109.0	92.9	97.5	106.2	43.7	46.1	48.9
MOP	100	110	125	100	110	125	45	50	50

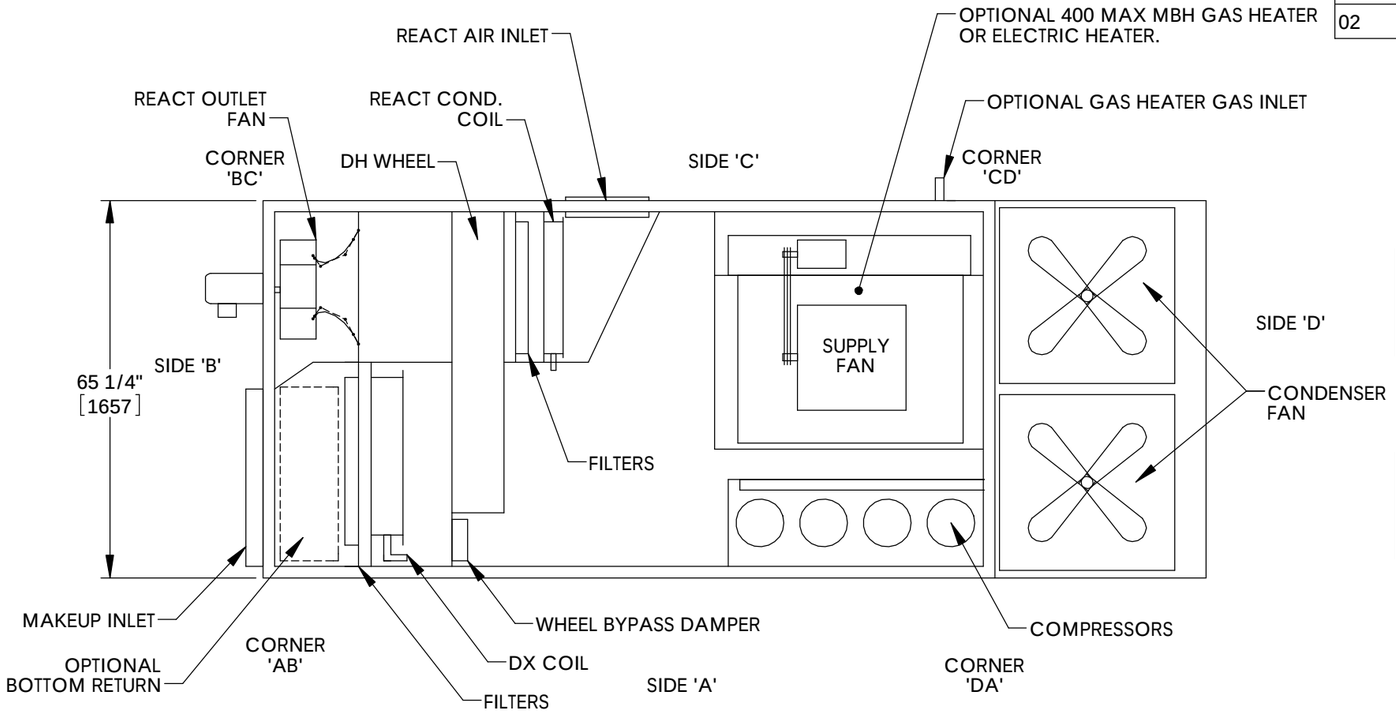
Equipment Schedule - HCUc-4020AA

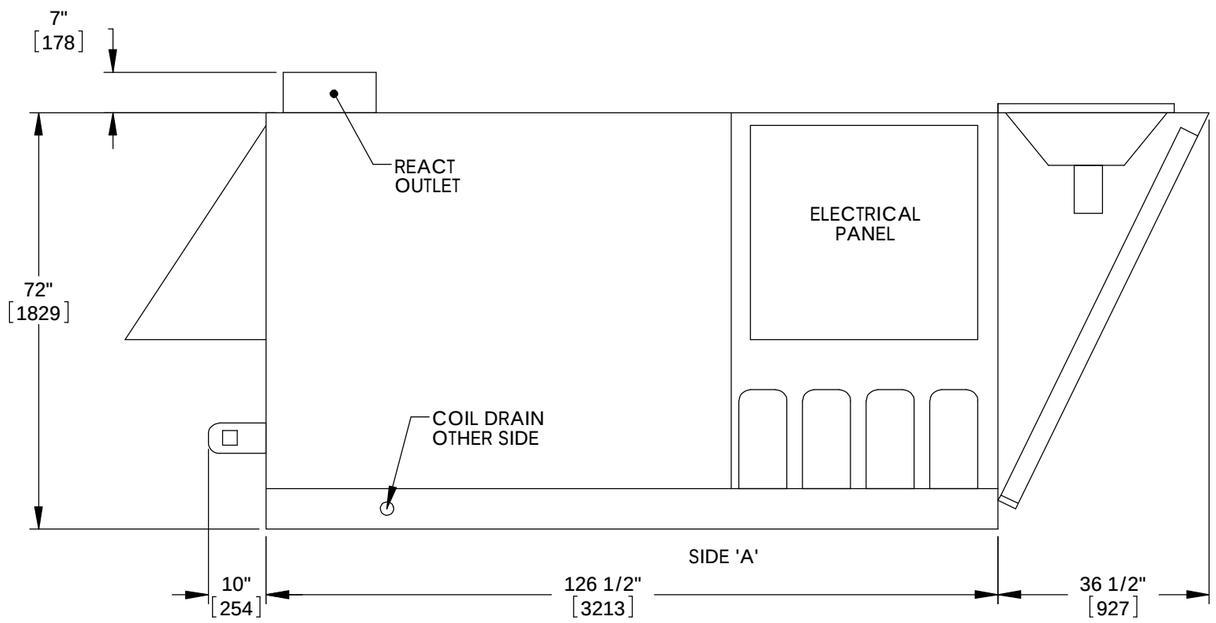
Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	72"H x 65-1/4"W x 126-1/2"L								
Unit Weight, no heat (+/- 10%)	4,000 lb.								
Unit Weight, with heat (+/- 10%)	4,250 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	3, 5, or 7.5								
Maximum CFM	4,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	3								
CFM	Variable up to 4,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 1.5 HP								
Compressors									
Nominal Tonnage	20								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	3 HP	5 HP	7.5HP	3 HP	5 HP	7.5HP	3 HP	5 HP	7.5HP
Supply Motor	9.0	13.4	20.2	8.6	13.2	17.8	4.3	6.6	8.9
Reactivation Motor	8.6	8.6	8.6	7.8	7.8	7.8	3.9	3.9	3.9
Condensing Motor	13.3	13.3	13.3	12.0	12.0	12.0	6.0	6.0	6.0
Compressor A	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor B	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor C	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor D	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	98.1	102.5	109.3	95.1	99.7	104.3	47.6	49.9	52.2
MCA	102.0	106.4	114.4	99.0	103.6	108.8	49.6	51.9	54.4
MOP	110	110	125	110	110	125	50	60	60

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	102.9	107.3	114.1	99.5	104.1	108.7	49.7	52.0	54.3
MCA	106.8	111.2	119.2	103.4	108.0	113.2	51.7	54.0	56.5
MOP	110	125	125	110	110	125	60	60	60

S71080-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	01	CHANGED LENGTH	MGY 05/03/07	MGY 05/03/07	
	02	ADD CORNER WEIGHTS	TWR 6/14/07	TWR 6/14/07	





WEIGHT IN POUNDS

CORNER WEIGHTS (LBS.)					
HEATER	AB	BC	CD	DA	UNIT WEIGHT
NO BTU	920	1000	1040	1040	4000
400 BTU/ELE	935	1063	1105	1148	4250

WEIGHT IN KILOGRAMS

CORNER WEIGHTS (KG.)					
HEATER	AB	BC	CD	DA	UNIT WEIGHT
NO BTU	417	454	472	472	1815
400 BTU/ELE	424	482	501	521	1928

SIDE CLEARANCES:

SIDE 'A' = 48" (1219)
SIDE 'B' = 48" (1219)
SIDE 'C' = 48" (1219)
SIDE 'D' = 48" (1219)

SEE PAGE 2 OF 3 FOR RETURN AND SUPPLY LOCATION AND SIZES.

PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches
Unless Otherwise Specified

TOLERANCES ARE:

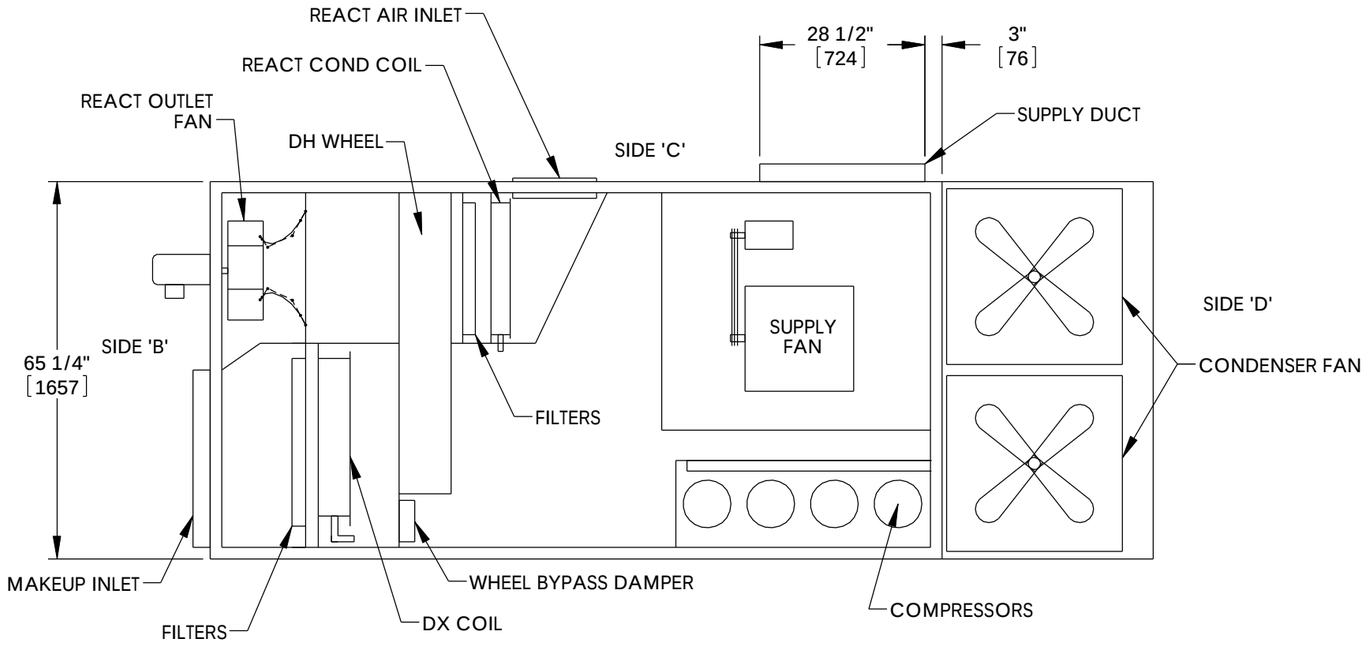
FRACTIONS DECIMALS ANGLES
± 1/32 ± .005 ± 1/2 Deg

Munters

DRAWING TITLE: HCUc 4015, 4020

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	11/10/06		
Ck. By: PT	Date: 11/10/06		
Appr. By: SP	Date: 11/10/06	SHEET: 1 OF 3	PART NUMBER: S71080-000 / SIZE B

S71080-002	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	-	-	-	-	

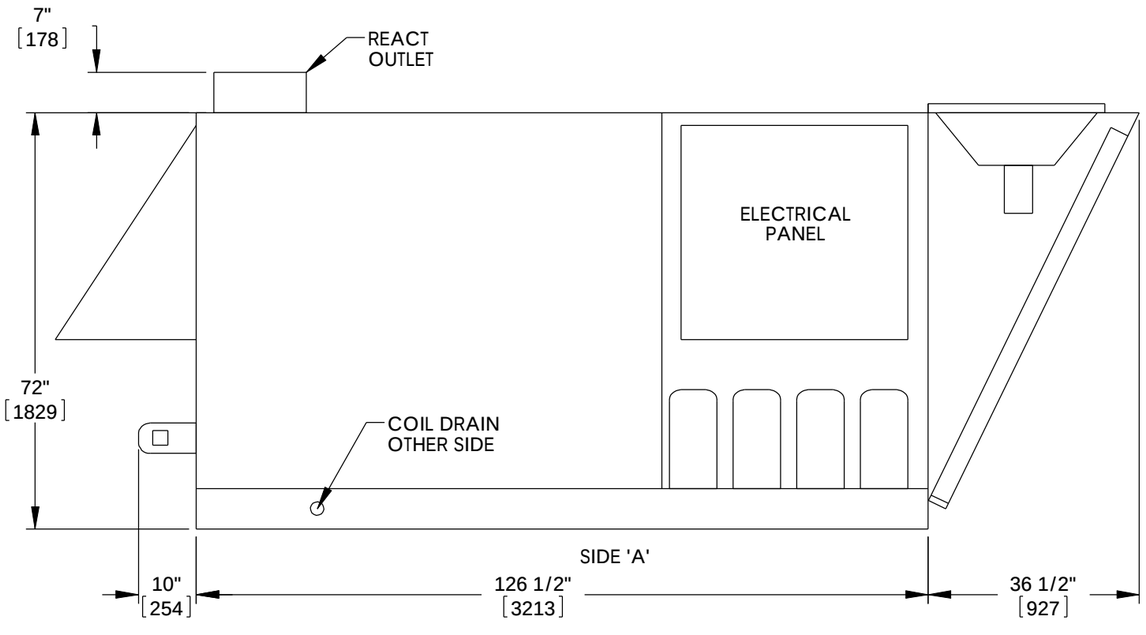


SIDE 'A'

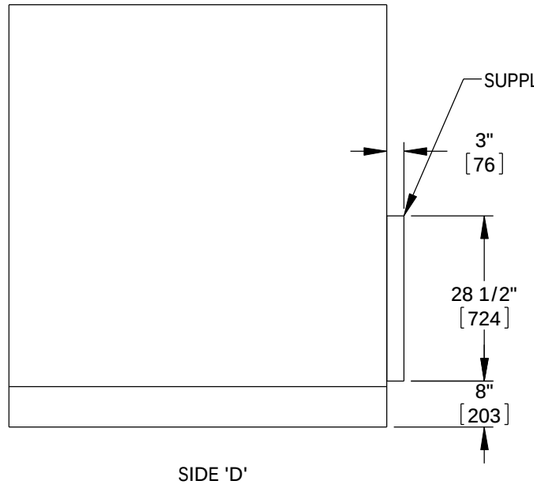
SIDE CLEARANCES:

SIDE 'A' = 48" (1219)
SIDE 'B' = 48" (1219)
SIDE 'C' = 48" (1219)
SIDE 'D' = 48" (1219)

UNIT WEIGHT = 4,250 Lbs. ±10%
UNIT WEIGHT = 1928 Kg. ±10%



SIDE 'A'



SIDE 'D'

PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches
Unless Otherwise Specified

TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
± 1/32	± .005	± 1/2 Deg

Munters

DRAWING TITLE: HCUc 4000

Detailed by: MDR	Date: 05-31-07	MATERIAL:	SPEC:
Ck. By: RA	Date: 05-31-07		
Appr. By: WF	Date: 05-31-07	SHEET: 1 OF 3	PART NUMBER: S71080-002 / SIZE: B

Equipment Schedule - HCUc-6020AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	72"H x 95-7/8"W x 172-7/16"L								
Unit Weight, no heat (+/- 10%)	5,250 lb.								
Unit Weight, 400 MBH (+/- 10%)	5,415 lb.								
Unit Weight, 800 MBH (+/- 10%)	5,600 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	5, 7.5 or 10								
Maximum CFM	6,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	5								
CFM	Variable up to 6,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 2 HP								
Compressors									
Nominal Tonnage	20								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	5 HP	7.5 HP	10HP	5 HP	7.5 HP	10HP	5 HP	7.5 HP	10HP
Supply Motor	14.3	21.1	28.3	13.0	19.1	25.6	6.5	9.5	12.8
Reactivation Motor	14.3	14.3	14.3	13.0	13.0	13.0	6.5	6.5	6.5
Condensing Motor	13.7	13.7	13.7	12.4	12.4	12.4	6.2	6.2	6.2
Compressor A	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor B	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor C	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Compressor D	15.6	15.6	15.6	15.6	15.6	15.6	7.8	7.8	7.8
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	109.5	116.3	123.5	105.1	111.2	117.7	52.6	55.6	58.9
MCA	113.4	121.6	130.6	109.0	116.0	124.1	54.6	58.0	62.1
MOP	125	125	150	110	125	125	60	60	70
Non-fused Disconnect	250	250	250	250	250	250	100	100	100

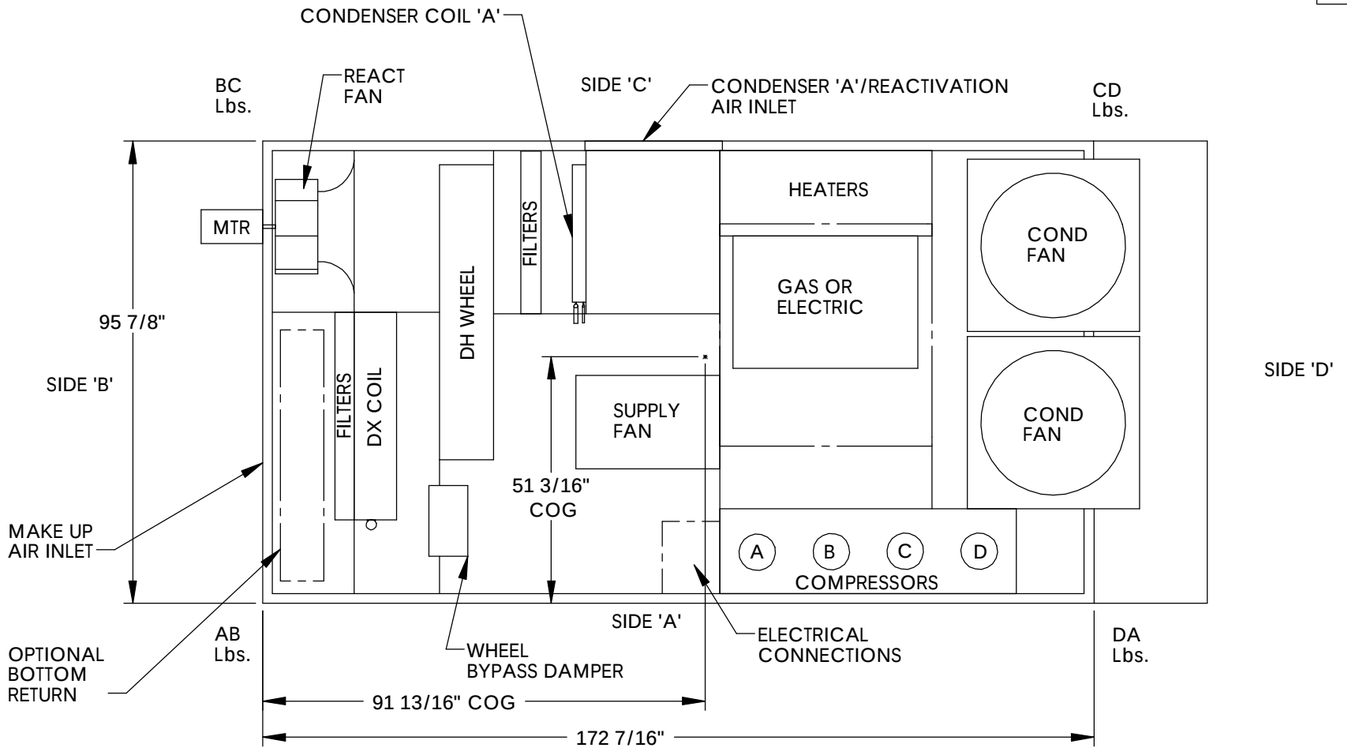
With Gas Auxiliary Heat

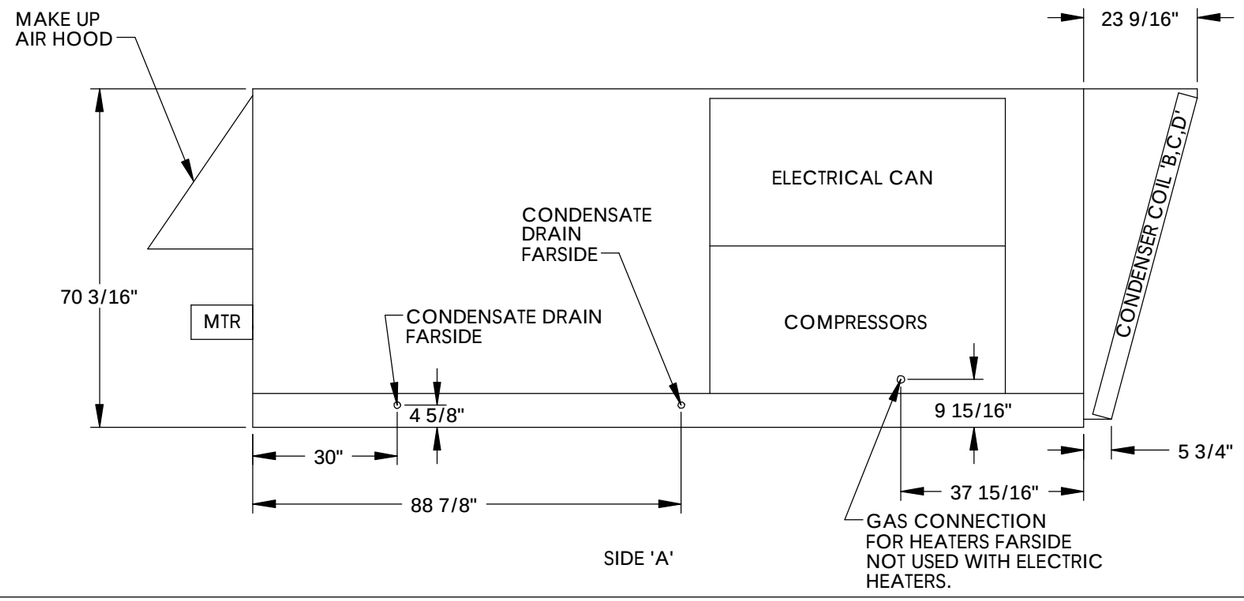
Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	114.3	121.1	128.3	109.5	115.6	122.1	54.7	57.7	61.0
MCA	118.2	126.4	135.4	113.4	120.4	128.5	56.7	60.1	64.2
MOP	125	150	150	125	125	150	60	70	75
Non-fused Disconnect	250	250	250	250	250	250	100	100	100

Equipment Schedule - HCUc-6030AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	72"H x 95-7/8"W x 172-7/16"L								
Unit Weight, no heat (+/- 10%)	5,250 lb.								
Unit Weight, 400 MBH (+/- 10%)	5,415 lb.								
Unit Weight, 800 MBH (+/- 10%)	5,600 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	5, 7.5 or 10								
Maximum CFM	6,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	5								
CFM	Variable up to 6,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 2 HP								
Compressors									
Nominal Tonnage	30								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	5 HP	7.5 HP	10HP	5 HP	7.5 HP	10HP	5 HP	7.5 HP	10HP
Supply Motor	14.3	21.1	28.3	13.0	19.1	25.6	6.5	9.5	12.8
Reactivation Motor	14.3	14.3	14.3	13.0	13.0	13.0	6.5	6.5	6.5
Condensing Motor	13.7	13.7	13.7	12.4	12.4	12.4	6.2	6.2	6.2
Compressor A	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor B	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor C	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor D	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	147.1	153.9	161.1	142.7	148.8	155.3	70.2	73.2	76.5
MCA	153.4	160.2	168.2	149.0	155.1	161.7	73.3	76.3	79.7
MOP	175	175	175	150	175	175	85	85	90
Non-fused Disconnect	250	250	250	250	250	250	100	100	100
	178.35	185.15	196.48	173.95	180.05	187.3	85.45	88.45	92.5
With Gas Auxiliary Heat	169.17	176.99	185.27	164.11	171.12	178.6	80.73	84.18	87.975
Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	151.9	158.7	165.9	147.1	153.2	159.7	72.3	75.3	78.6
MCA	158.2	165.0	173.0	153.4	159.5	166.1	75.4	78.4	81.8
MOP	175	175	200	175	175	175	85	90	90
Non-fused Disconnect	250	250	250	250	250	250	100	100	100

S71072-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	04	ADDED OPTIONAL BOTTOM RETURN AIR	AFJ 2-26-07	MGY 2-26-07	





POST HEAT OPTIONS

	CORNER WEIGHTS				UNIT WEIGHT
	AB	BC	CD	DA	
NO MBH	1,271	1,347	1,274	1,358	5,250
400 MBH	1,271	1,347	1,449	1,348	5,415
800 MBH	1,271	1,347	1,644	1,338	5,600
ELE. HTR	1,271	1,347	1,644	1,338	5,600

SIDE CLEARANCES:
SIDE 'A' = 48"
SIDE 'B' = 48"
SIDE 'C' = 60"
SIDE 'D' = 48"

PRELIMINARY DRAWING

DRAWING SUBJECT TO REVISIONS

All Dimensions Are In Inches Unless Otherwise Specified

TOLERANCES ARE:

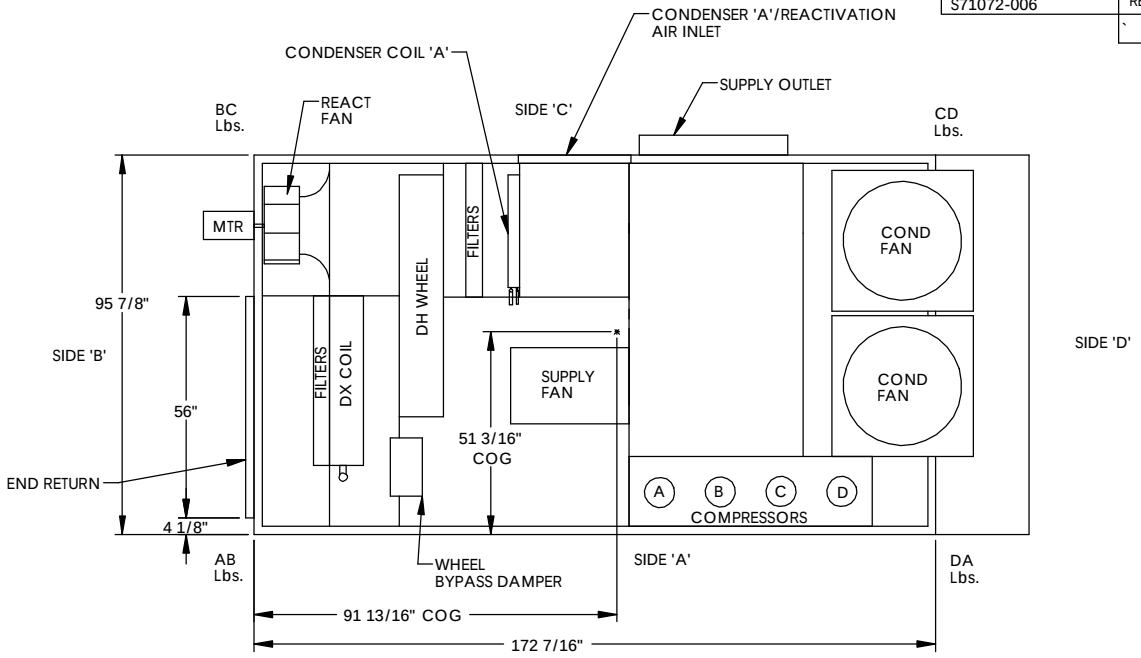
FRACTIONS DECIMALS ANGLES
± 1/32 ± .005 ± 1/2 Deg

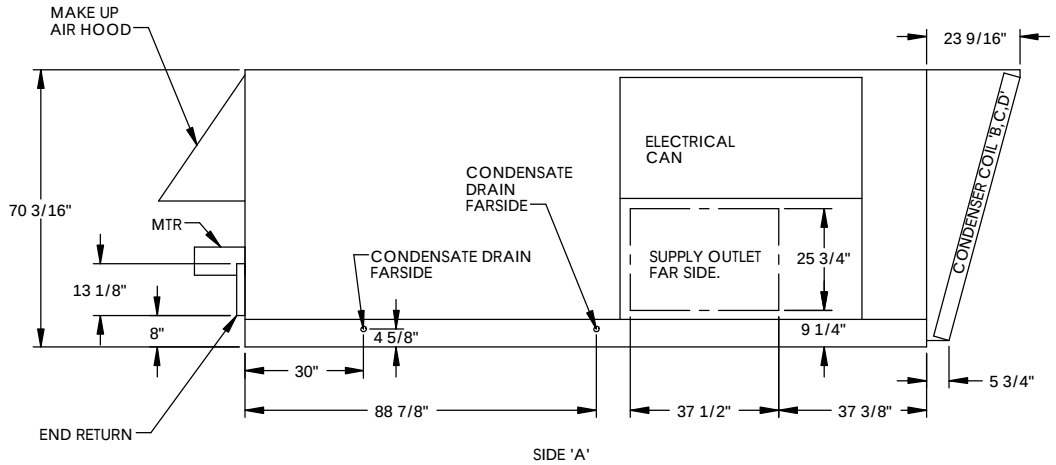
Munters

DRAWING TITLE: HCUc-6030, 6020

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	12/09/05		
Ck. By: R PAUTZ	Date: 12-13-05		
Appr. By: R PAUTZ	Date: 12-13-05	SHEET: 1 OF 3	PART NUMBER: S71072-000 / SIZE B

S71072-006	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	`	`	`	`	





	CORNER WEIGHTS				UNIT WEIGHT
	AB	BC	CD	DA	
NO HEAT	1,271	1,347	1,274	1,358	5,250

SIDE CLEARANCES:
SIDE 'A' = 48"
SIDE 'B' = 48"
SIDE 'C' = 60"
SIDE 'D' = 48"

PRELIMINARY DRAWING

DRAWING SUBJECT TO REVISIONS

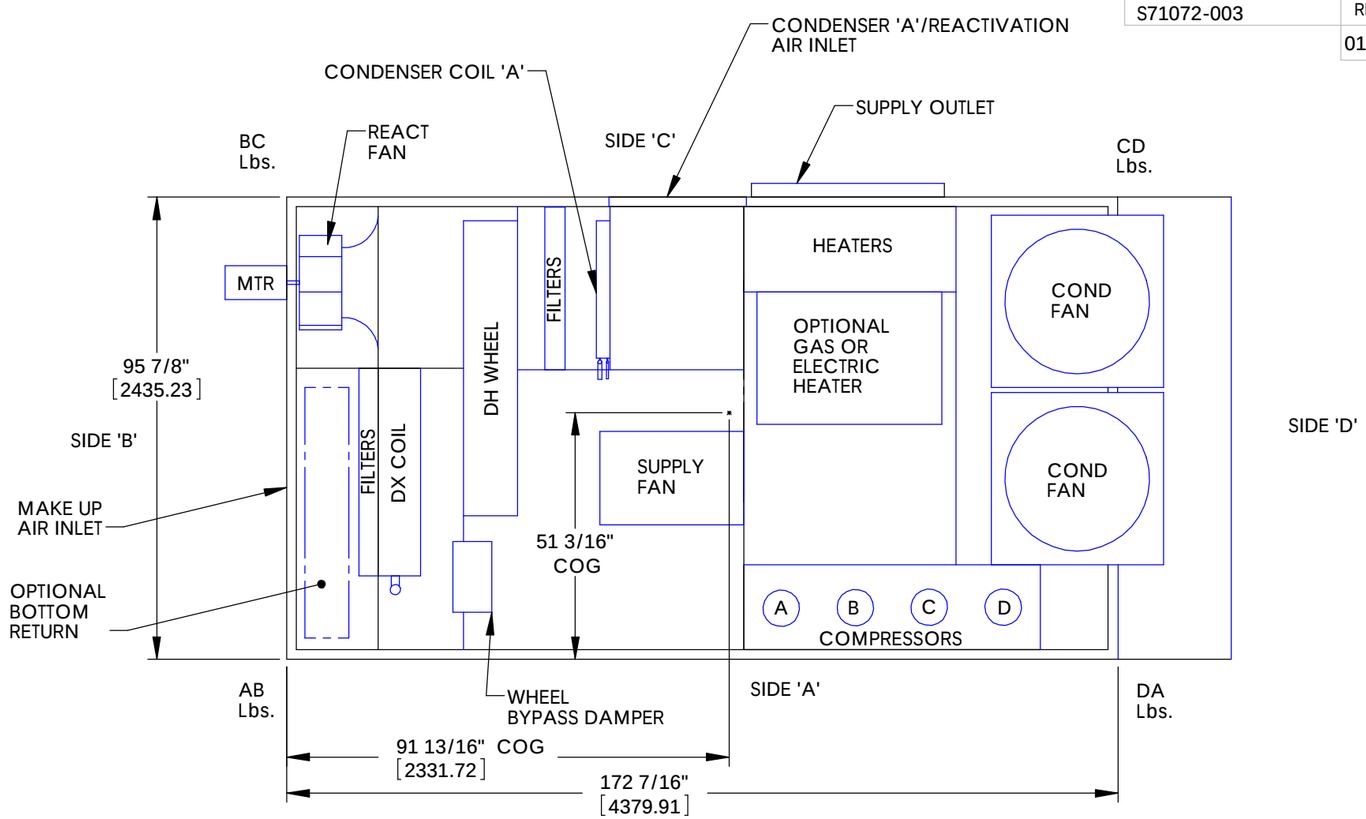
All Dimensions Are In Inches Unless Otherwise Specified
TOLERANCES ARE:
FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

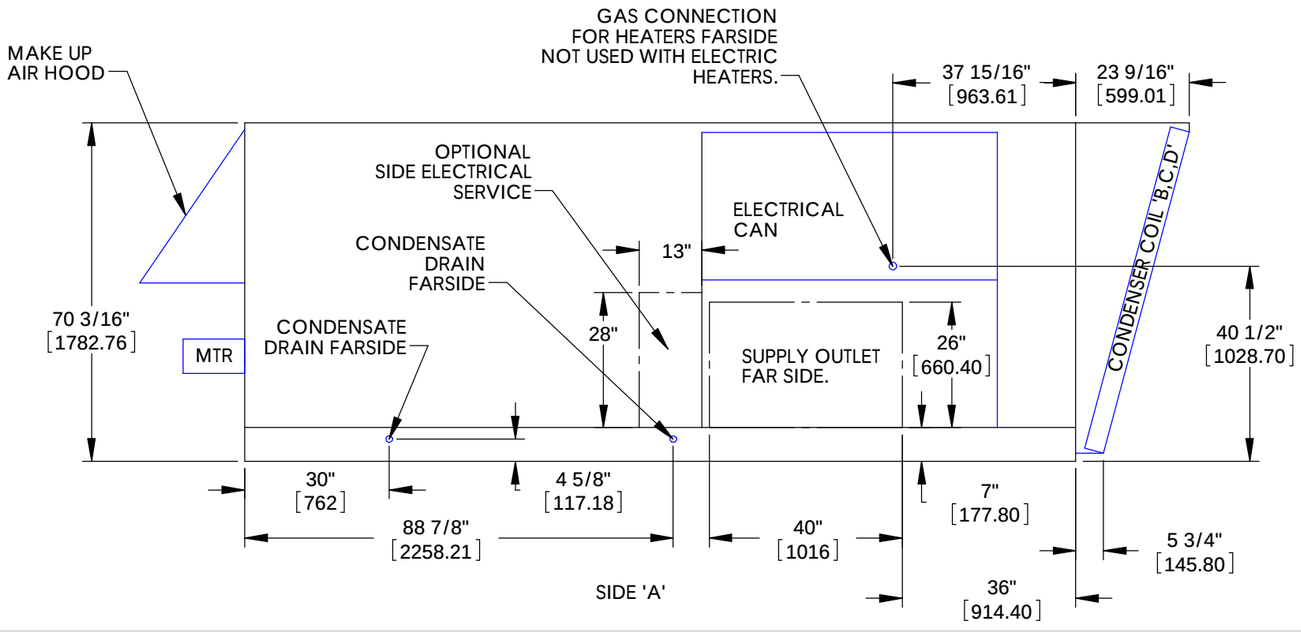
Munters

DRAWING TITLE: HCUc-6030

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	10/02/06		
Ck. By: `	Date: `		
Appr. By: `	Date: `	SHEET: 1 OF 3	PART NUMBER: S71072-006 SIZE B

S71072-003	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	01	ADDED SIDE ELECTRICAL SERVICE NOTE	AFJ 4-2-07	AFJ 4-2-07	~





POST HEAT OPTIONS

	CORNER WEIGHTS (LBS)				UNIT WEIGHT	
	AB	BC	CD	DA	(LBS)	(kg)
NO MBH	1,271	1,347	1,274	1,358	5,250	2,381
400 MBH	1,271	1,347	1,449	1,348	5,415	2,456

SIDE CLEARANCES:
SIDE 'A' = 48" [121.9]
SIDE 'B' = 48" [121.9]
SIDE 'C' = 60" [152.4]
SIDE 'D' = 48" [121.9]

PRELIMINARY DRAWING

DRAWING SUBJECT TO REVISIONS

All Dimensions Are In Inches Unless Otherwise Specified

TOLERANCES ARE:

FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

Munters

DRAWING TITLE: HCUc-6030

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	08/17/06		
Ck. By: PT	Date: 08/23/06		
Appr. By: RP	Date: 08/23/06	SHEET: 1 OF 3	PART NUMBER: S71072-003 / SIZE B

Equipment Schedule - HCUc-8030AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	85-1/2"H x 95-7/8"W x 249"L								
Unit Weight, no heat (+/- 10%)	7,850 lb.								
Unit Weight, 400 MBH (+/- 10%)	8,250 lb.								
Unit Weight, 800 MBH (+/- 10%)	8,500 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	7.5, 10 or 15								
Maximum CFM	8,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	7.5								
CFM	Variable up to 8,000								
Condensing Fan									
Type	Propeller								
HP	2 @ 2 HP								
Compressors									
Nominal Tonnage	30								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	7.5 HP	10 HP	15 HP	7.5 HP	10 HP	15 HP	7.5 HP	10 HP	15 HP
Supply Motor	21.0	28.3	39.6	19.0	25.6	35.8	9.5	12.8	17.9
Reactivation Motor	21.0	21.0	21.0	19.0	19.0	19.0	9.5	9.5	9.5
Condensing Motor	13.7	13.7	13.7	12.4	12.4	12.4	6.2	6.2	6.2
Compressor A	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor B	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor C	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Compressor D	25.0	25.0	25.0	25.0	25.0	25.0	12.2	12.2	12.2
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	160.5	167.8	179.1	154.7	161.3	171.5	76.2	79.5	84.6
MCA	166.8	174.9	189.0	161.0	167.7	180.5	79.3	82.7	89.1
MOP	175	200	225	175	175	200	90	90	100
Non-fused Disconnect	250	250	250	250	250	250	100	100	100

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	165.3	172.6	183.9	159.1	165.7	175.9	78.3	81.6	86.7
MCA	171.6	179.7	193.8	165.4	172.1	184.9	81.4	84.8	91.2
MOP	175	200	225	175	175	200	90	90	100
Non-fused Disconnect	250	250	250	250	250	250	100	100	100

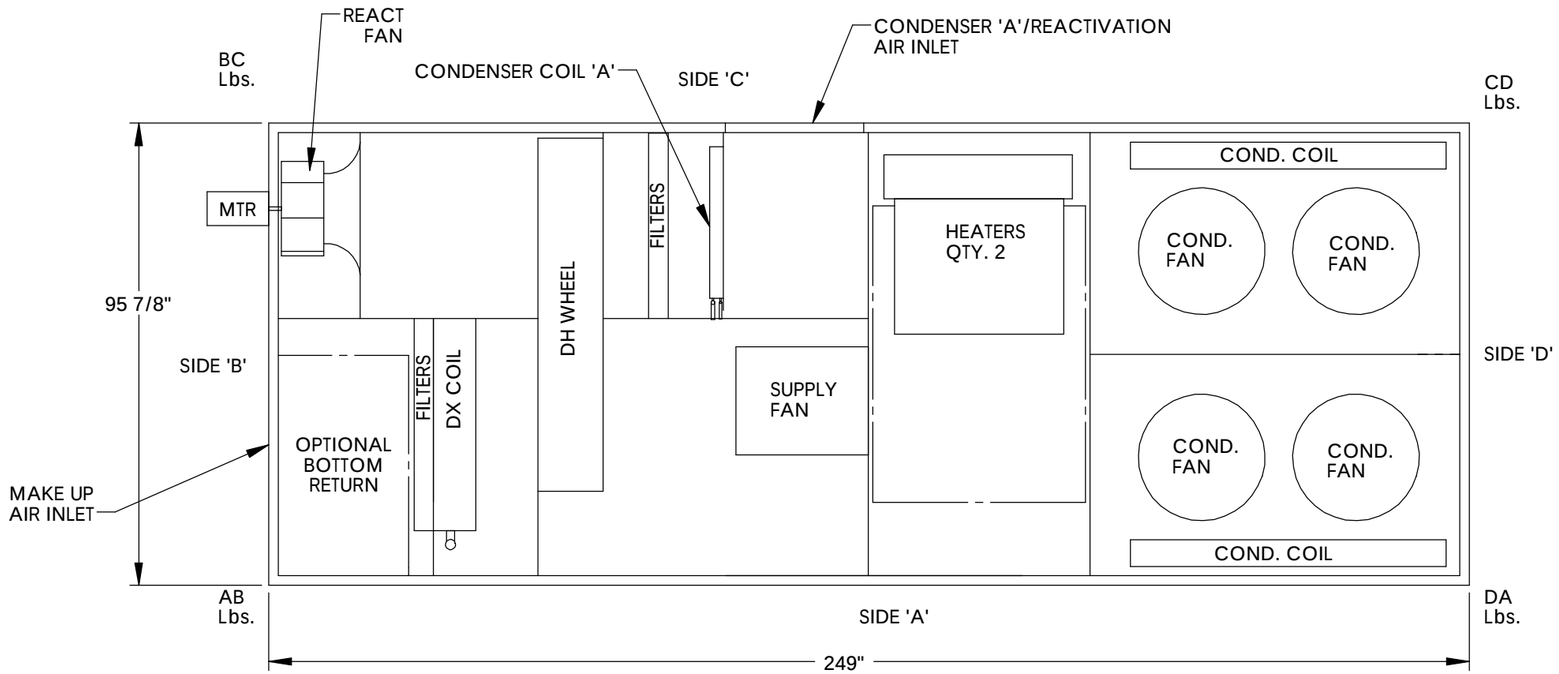
Equipment Schedule - HCUc-8040AA

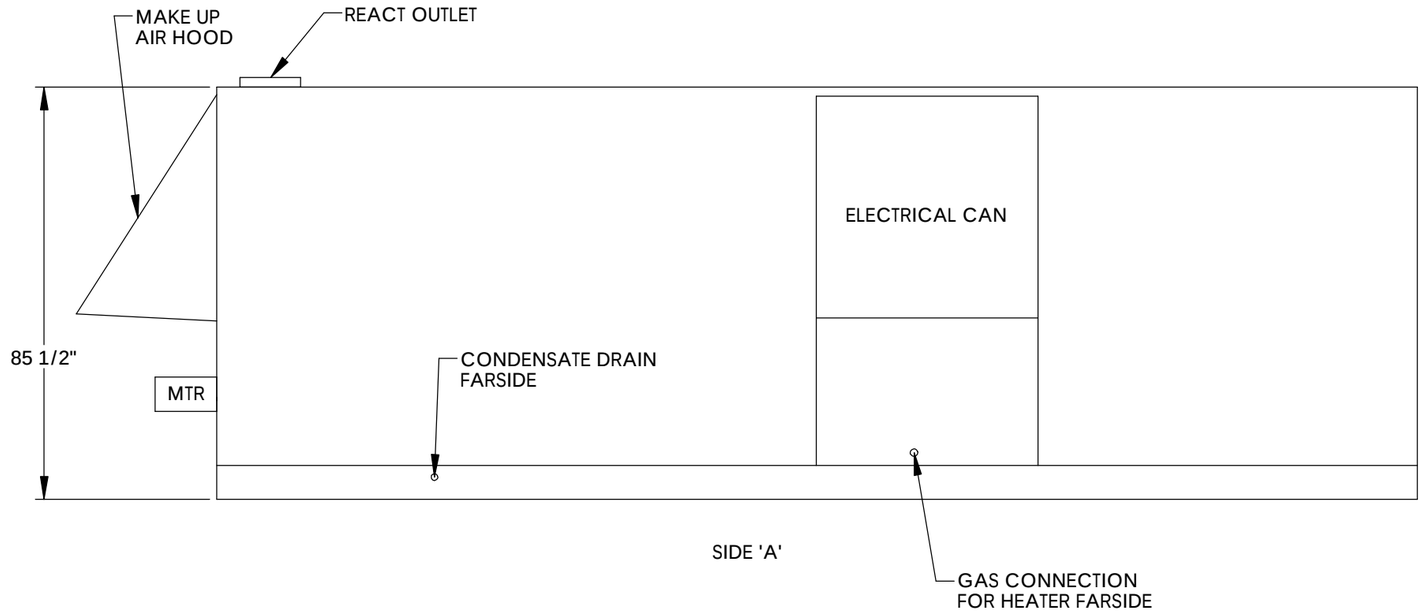
Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Unit Base Dimensions	85-1/2"H x 95-7/8"W x 249"L								
Unit Weight, no heat (+/- 10%)	7,850 lb.								
Unit Weight, 400 MBH (+/- 10%)	8,250 lb.								
Unit Weight, 800 MBH (+/- 10%)	8,500 lb.								
Supply Fan									
Type	Belt Drive Forward Curve								
HP	7.5, 10 or 15								
Maximum CFM	8,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	7.5								
Maximum CFM	8,000								
Condensing Fan									
Type	Propeller								
HP	4 @ 2 HP								
Compressors									
Nominal Tonnage	40								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	7.5 HP	10 HP	15 HP	7.5 HP	10 HP	15 HP	7.5 HP	10 HP	15 HP
Supply Motor	21.0	28.3	39.6	19.0	25.6	35.8	9.5	12.8	17.9
Reactivation Motor	21.0	21.0	21.0	19.0	19.0	19.0	9.5	9.5	9.5
Condensing Motor	27.4	27.4	27.4	24.8	24.8	24.8	12.4	12.4	12.4
Compressor A	33.3	33.3	33.3	33.3	33.3	33.3	17.9	17.9	17.9
Compressor B	33.3	33.3	33.3	33.3	33.3	33.3	17.9	17.9	17.9
Compressor C	33.3	33.3	33.3	33.3	33.3	33.3	17.9	17.9	17.9
Compressor D	33.3	33.3	33.3	33.3	33.3	33.3	17.9	17.9	17.9
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	207.4	214.7	226.0	200.3	206.9	217.1	105.2	108.5	113.6
MCA	215.7	223.0	235.9	208.6	215.2	226.1	109.7	113.0	118.1
MOP	225	250	250	225	225	250	125	125	135
Non-fused Disconnect	250	250	400	250	250	250	250	250	250

With Gas Auxiliary Heat

Control Transformer	9.6	9.6	9.6	8.7	8.7	8.7	4.3	4.3	4.3
FLA	212.2	219.5	230.8	204.7	211.3	221.5	107.3	110.6	115.7
MCA	220.5	227.8	240.7	213.0	219.6	230.5	111.8	115.1	120.2
MOP	250	250	250	225	250	250	125	125	135
Non-fused Disconnect	250	400	400	250	250	400	250	250	250

S71074-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	02	ADD ELECTRICAL ACCESS LOCATION TO PAGE 2	TWR 6/25/07	TWR 6/25/07	





CORNER WEIGHTS					
HEATER	AB	BC	CD	DA	UNIT WEIGHT
NO BTU	1910	1965	2015	1960	7850
400 BTU	2033	2055	2079	2083	8250
800 BTU	2068	2145	2169	2118	8500
ELE. HTR.	2068	2145	2169	2118	8500

SIDE CLEARANCES:
SIDE 'A' = 48"
SIDE 'B' = 48"
SIDE 'C' = 60"
SIDE 'D' = 48"

PRELIMINARY DRAWING

DRAWING SUBJECT TO REVISIONS

All Dimensions Are In Inches Unless Otherwise Specified

TOLERANCES ARE:

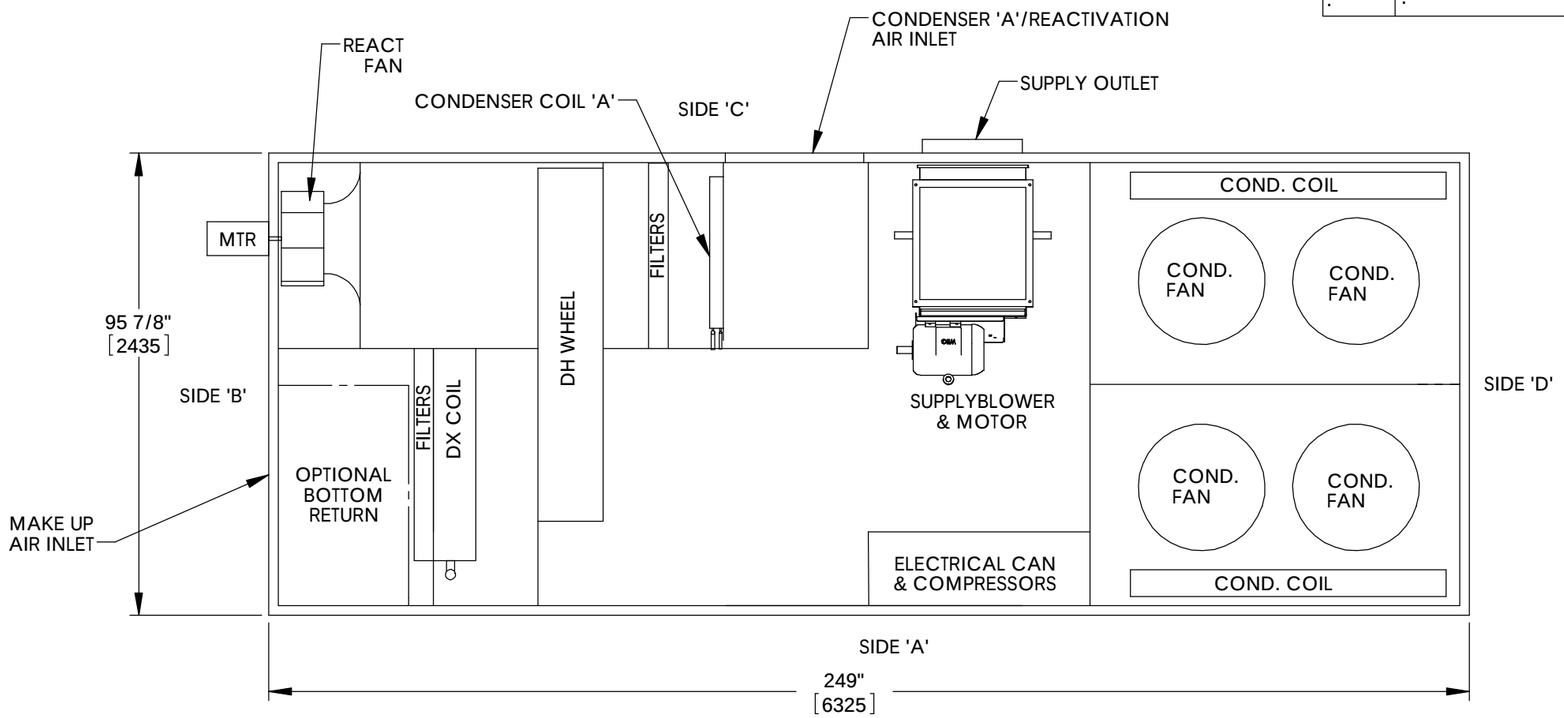
FRACTIONS DECIMALS ANGLES
± 1/32 ± .005 ± 1/2 Deg

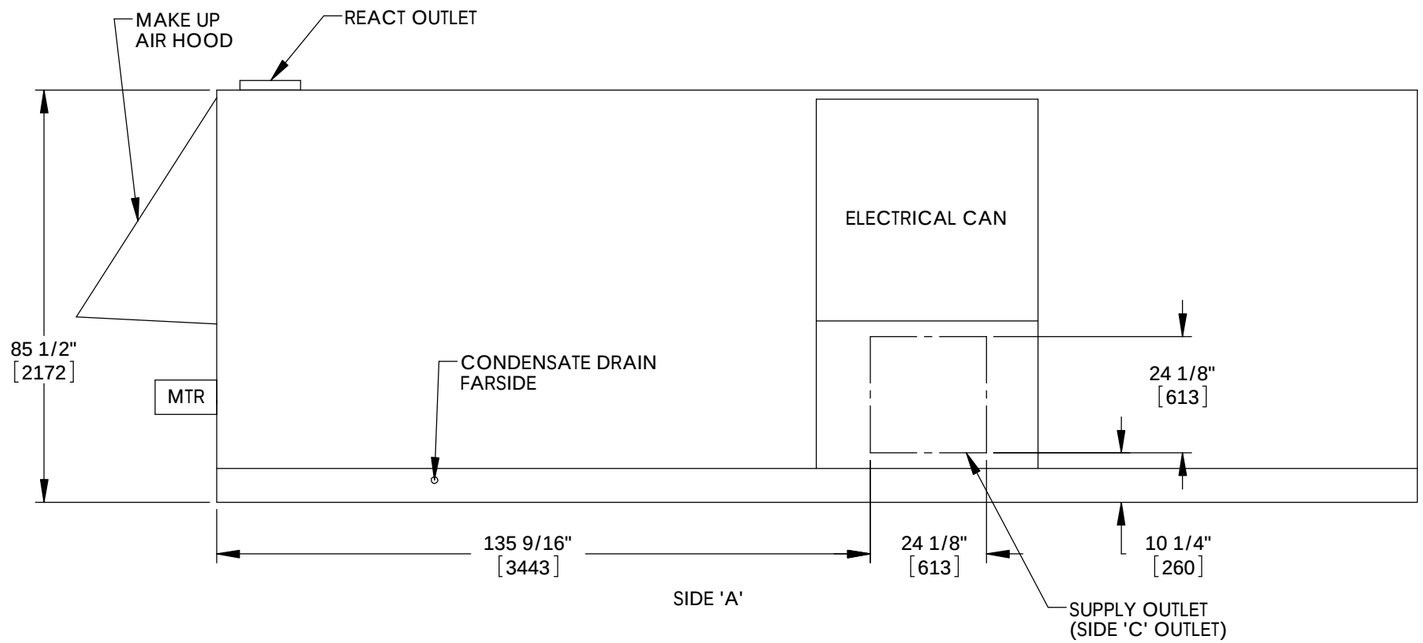
Munters

DRAWING TITLE: HCUc-8040

Detailed by:	Date:	MATERIAL:	SPEC:
MGY	02/16/06		
Ck. By: TWR	Date: 2/17/06		
Appr. By: PT	Date: 2/17/06	SHEET: 1 OF 3	PART NUMBER: S71074-000 / SIZE B

S71074-009	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	.	.	.	.	





SIDE CLEARANCES:
SIDE 'A' = 48" [1291]
SIDE 'B' = 48" [1291]
SIDE 'C' = 60" [1524]
SIDE 'D' = 48" [1291]

WEIGHT = 7,850 Lbs. ± 10%
WEIGHT = 3,561 Kg. ± 10%

PRELIMINARY DRAWING

DRAWING SUBJECT TO REVISIONS

All Dimensions Are In Inches
Unless Otherwise Specified

TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
± 1/32	± .005	± 1/2 Deg

Munters

DRAWING TITLE: HCUc-8040

Detailed by: TWR	Date: 6/28/07	MATERIAL: ...	SPEC: GS100
Ck. By: MGY	Date: 6/28/07		
Appr. By: AS	Date: 6/28/07	SHEET: 1 OF 3	PART NUMBER: S71074-009 / SIZE B

Equipment Schedule - HCUc-1250AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Dimensions, no heat	102"H x 126-1/2"W x 310-1/4"L								
Unit Weight, no heat (+/- 10%)	13,650 lb.								
Unit Weight, 800 MBH (+/- 10%)	15,050 lb.								
Unit Weight, 1200 MBH (+/- 10%)	15,300 lb.								
Unit Weight, 1600 MBH (+/- 10%)	15,550 lb.								
Supply Fan									
Type	Belt Drive BIA								
HP	10, 15 or 20								
Maximum CFM	12,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	10								
CFM	Variable up to 10,000								
Condensing Fan									
Type	Propeller								
HP	4 @ 2 HP								
Compressors									
Nominal Tonnage	50								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	10 HP	15 HP	20 HP	10 HP	15 HP	20 HP	10 HP	15 HP	20 HP
Supply Motor	28.3	39.6	54.0	25.6	35.8	48.8	12.8	17.9	24.4
Reactivation Motor	28.3	28.3	28.3	25.6	25.6	25.6	12.8	12.8	12.8
Condensing Motor	27.4	27.4	27.4	24.8	24.8	24.8	12.4	12.4	12.4
Compressor A	48.1	48.1	48.1	48.1	48.1	48.1	18.6	18.6	18.6
Compressor B	48.1	48.1	48.1	48.1	48.1	48.1	18.6	18.6	18.6
Compressor C	48.1	48.1	48.1	48.1	48.1	48.1	18.6	18.6	18.6
Compressor D	48.1	48.1	48.1	48.1	48.1	48.1	18.6	18.6	18.6
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	281.2	292.5	306.9	272.7	282.9	295.9	114.6	119.7	126.2
MCA	293.2	304.5	320.4	284.7	294.9	308.1	119.3	124.4	132.3
MOP	300	350	350	300	300	350	135	135	150
Non-fused Disconnect	400	400	400	400	400	400	175	175	175

With Gas Auxiliary Heat

Control Transformer	14.4	14.4	14.4	13.0	13.0	13.0	6.5	6.5	6.5
FLA	290.8	302.1	316.5	281.4	291.6	304.6	118.9	124.0	130.5
MCA	302.8	314.1	330.0	293.4	303.6	316.8	123.6	128.7	136.6
MOP	350	350	350	300	350	350	135	135	150
Non-fused Disconnect	400	400	400	400	400	400	175	175	175

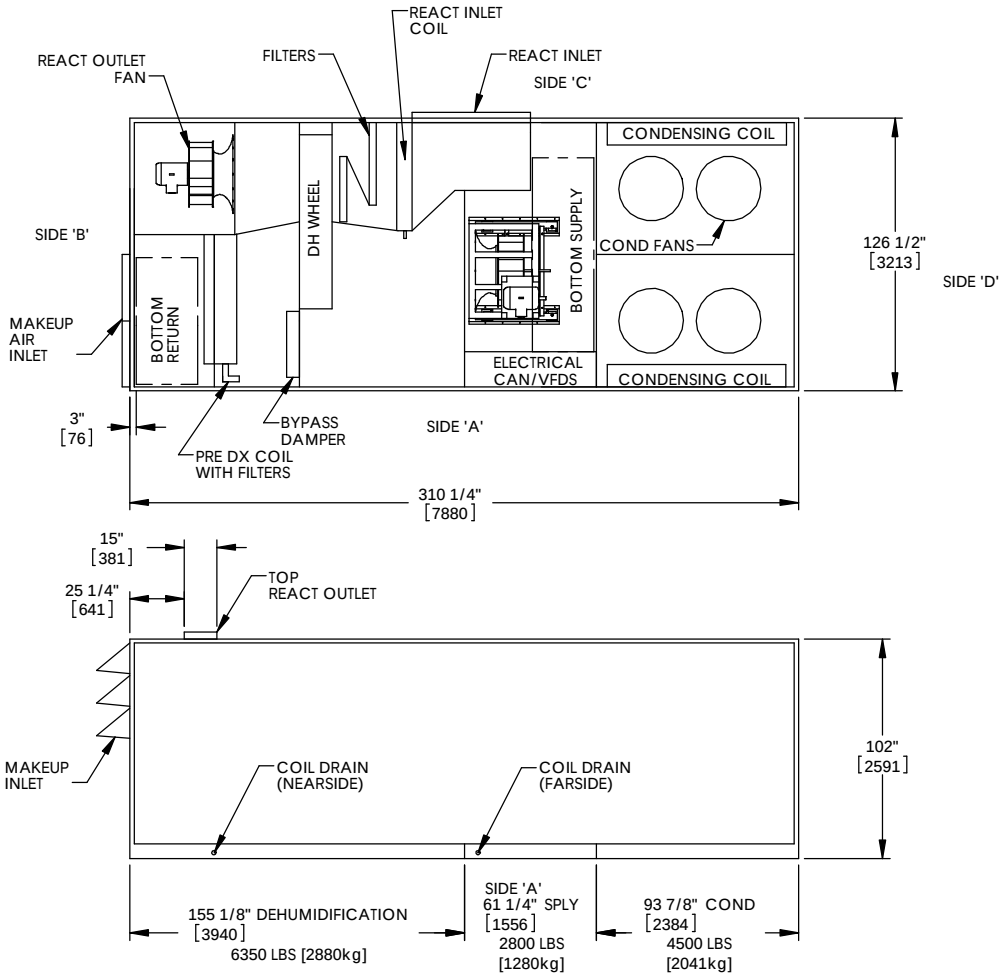
Equipment Schedule - HCUc-1265AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Dimensions, no heat	102"H x 126-1/2"W x 310-1/4"L								
Unit Weight, no heat (+/- 10%)	13,650 lb.								
Unit Weight, 800 MBH (+/- 10%)	15,050 lb.								
Unit Weight, 1200 MBH (+/- 10%)	15,300 lb.								
Unit Weight, 1600 MBH (+/- 10%)	15,550 lb.								
Supply Fan									
Type	Belt Drive BIA								
HP	10, 15 or 20								
Maximum CFM	12,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	10								
CFM	Variable up to 12,000								
Condensing Fan									
Type	Propeller								
HP	4 @ 2 HP								
Compressors									
Nominal Tonnage	65								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	10 HP	15 HP	20 HP	10 HP	15 HP	20 HP	10 HP	15 HP	20 HP
Supply Motor	28.3	39.6	54.0	25.6	35.8	48.8	12.8	17.9	24.4
Reactivation Motor	28.3	28.3	28.3	25.6	25.6	25.6	12.8	12.8	12.8
Condensing Motor	27.4	27.4	27.4	24.8	24.8	24.8	12.4	12.4	12.4
Compressor A	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor B	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor C	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor D	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	300.8	312.1	326.5	292.3	302.5	315.5	135.0	140.1	146.6
MCA	314.1	325.4	340.0	305.6	315.8	328.8	140.9	146.0	152.7
MOP	350	350	350	350	350	350	150	150	175
Non-fused Disconnect	400	400	400	400	400	400	175	175	175

With Gas Auxiliary Heat

Control Transformer	14.4	14.4	14.4	13.0	13.0	13.0	6.5	6.5	6.5
FLA	310.4	321.7	336.1	301.0	311.2	324.2	139.3	144.4	150.9
MCA	323.7	335.0	349.6	314.3	324.5	337.5	145.2	150.3	157.0
MOP	350	350	400	350	350	350	150	175	175
Non-fused Disconnect	400	400	400	400	400	400	175	175	175

S71082-001	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	-	-	- / ...	- / ...	...



SIDE CLEARANCES:
SIDE 'A' = 60" [1524]
SIDE 'B' = 48" [1219]
SIDE 'C' = 48" [1219]
SIDE 'D' = 48" [1219]

UNIT WEIGHT = 13,650 LBS ±10%
UNIT WEIGHT = 6192 kg ±10%

PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches Unless Otherwise Specified
TOLERANCES ARE:
FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

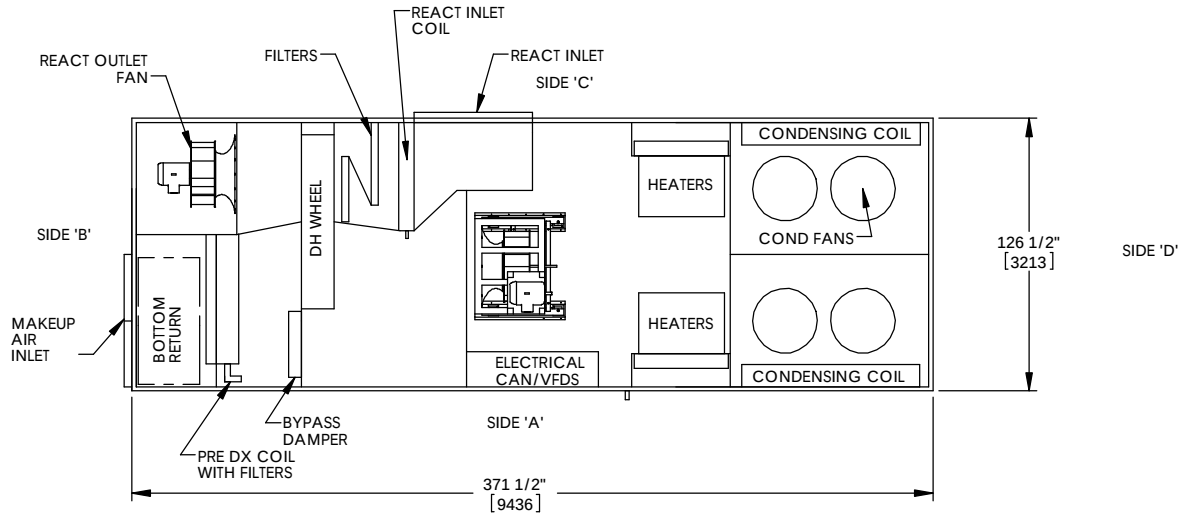
Munters

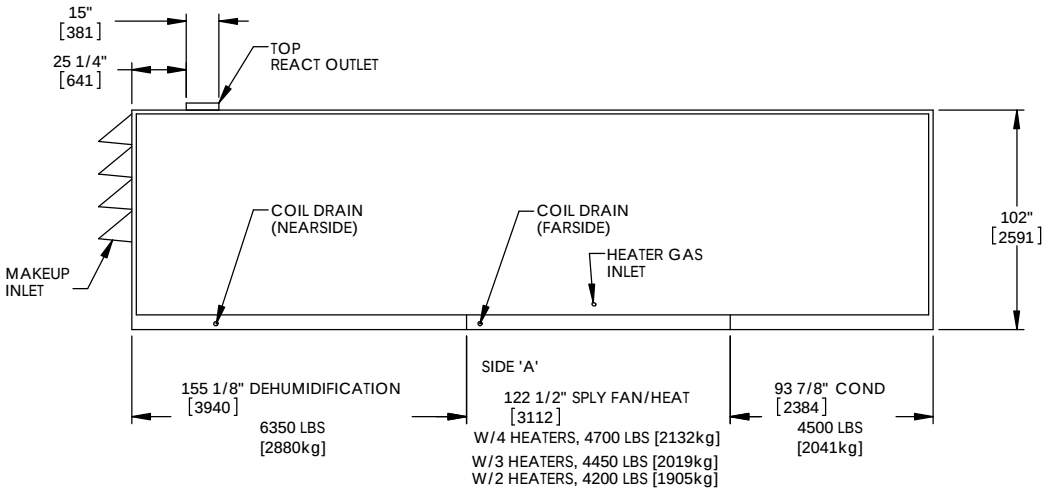
DRAWING TITLE: HCUc-1265

Detailed by:	Date:
MDR	12-08-06
Ck. By: PT	Date: 12-12-06
Appr. By: MGY	Date: 12-12-06

MATERIAL: ...
SPEC: GS100
SHEET: 1 OF 3
PART NUMBER: S71082-001
SIZE B

S71082-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	-	-	- / ...	- / ...	...





SIDE CLEARANCES:
SIDE 'A' = 60" [1524]
SIDE 'B' = 48" [1219]
SIDE 'C' = 48" [1219]
SIDE 'D' = 48" [1219]

4 HEATER UNIT WEIGHT = 15,550 LBS [7053kg]±10%
3 HEATER UNIT WEIGHT = 15,300 LBS [6940kg]±10%
2 HEATER UNIT WEIGHT = 15,050 LBS [6827kg]±10%

PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches Unless Otherwise Specified
TOLERANCES ARE:
FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

Munters

DRAWING TITLE: HCUc-1265

Detailed by:	Date:
MDR	12-08-06
Ck. By: PT	Date: 12-12-06
Appr. By: MGY	Date: 12-12-06

MATERIAL: ...
SPEC: GS100
SHEET: 1 OF 3
PART NUMBER: S71082-000
SIZE: B

Equipment Schedule - HCUc-1665AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Dimensions, no heat	102"H x 126-1/2"W x 340-7/8"L								
Unit Weight, no heat (+/- 10%)	16,025 lb.								
Unit Weight, 800 MBH (+/- 10%)	17,425 lb.								
Unit Weight, 1200 MBH (+/- 10%)	17,675 lb.								
Unit Weight, 1600 MBH (+/- 10%)	17,925 lb.								
Supply Fan									
Type	Belt Drive BIA								
HP	15, 20 or 25								
Maximum CFM	16,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	10								
CFM	Variable up to 12,000								
Condensing Fan									
Type	Propeller								
HP	4 @ 2 HP								
Compressors									
Nominal Tonnage	65								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, or Electric								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	15 HP	20 HP	25 HP	15 HP	20 HP	25 HP	15 HP	20 HP	25 HP
Supply Motor	39.6	54.0	65.5	35.8	48.8	59.2	17.9	24.4	29.6
Reactivation Motor	28.3	28.3	28.3	25.6	25.6	25.6	12.8	12.8	12.8
Condensing Motor	27.4	27.4	27.4	24.8	24.8	24.8	12.4	12.4	12.4
Compressor A	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor B	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor C	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Compressor D	53.0	53.0	53.0	53.0	53.0	53.0	23.7	23.7	23.7
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
Crankcase Heaters	0.9	0.9	0.9	0.8	0.8	0.8	0.4	0.4	0.4
FLA	312.1	326.5	338.0	302.5	315.5	325.9	140.1	146.6	151.8
MCA	325.4	340.0	354.4	315.8	328.8	340.7	146.0	152.7	159.2
MOP	350	350	400	350	350	350	150	175	175
Non-fused Disconnect	400	400	400	400	400	400	175	175	175

With Gas Auxiliary Heat

Control Transformer	14.4	14.4	14.4	13.0	13.0	13.0	6.5	6.5	6.5
FLA	321.7	336.1	347.6	311.2	324.2	334.6	144.4	150.9	156.1
MCA	335.0	349.4	364.0	324.5	337.5	349.4	150.3	157.0	163.5
MOP	350	400	400	350	350	400	150	175	175
Non-fused Disconnect	400	400	400	400	400	400	175	175	200

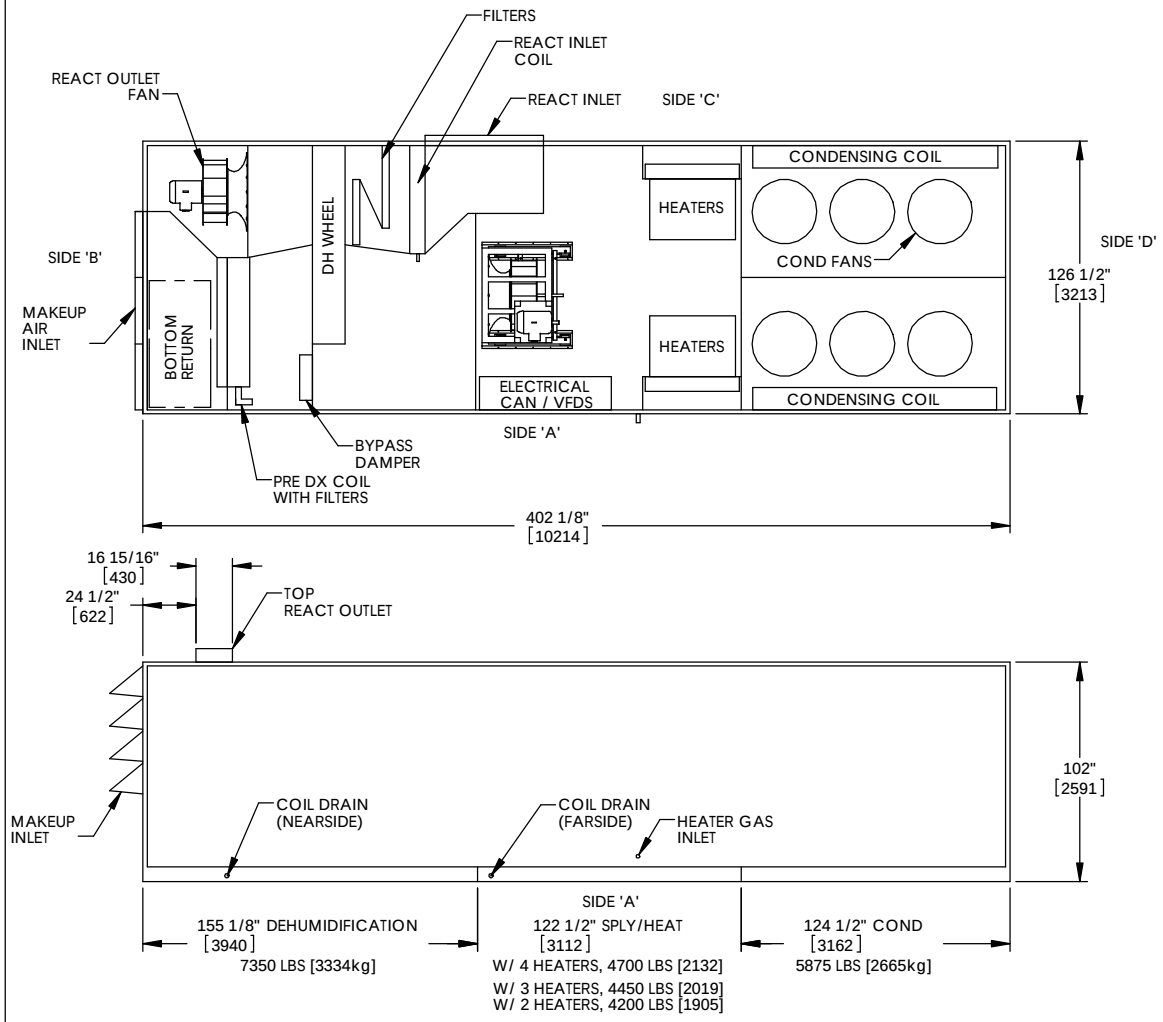
Equipment Schedule - HCUc-1685AA

Unit Type	**AA**: DX Air-cooled packaged condensing outdoor, R-410a								
Dimensions, no heat	102"H x 126-1/2"W x 340-7/8"L								
Unit Weight, no heat (+/- 10%)	16,025 lb.								
Unit Weight, 800 MBH (+/- 10%)	17,425 lb.								
Unit Weight, 1200 MBH (+/- 10%)	17,675 lb.								
Unit Weight, 1600 MBH (+/- 10%)	17,925 lb.								
Supply Fan									
Type	Belt Drive BIA								
HP	15, 20 or 25								
Maximum CFM	16,000								
Reactivation Fan									
Type	Direct Drive BIA								
HP	15								
CFM	Variable up to 16,000								
Condensing Fan									
Type	Propeller								
HP	6 @ 2 HP								
Compressors									
Nominal Tonnage	85								
Stages of capacity	4								
Refrigerant	R-410a								
After Heat									
Type	Natural Gas, Propane, Electric, Hot Water, or Steam								
Filter									
Type	2" 30% Pleated Disposable								
Electrical									
Power	208 / 3 / 60			230 / 3 / 60			460 / 3 / 60		
Supply Motor Size	15 HP	20 HP	25 HP	15 HP	20 HP	25 HP	15 HP	20 HP	25 HP
Supply Motor	39.6	54.0	65.5	35.8	48.8	59.2	17.9	24.4	29.6
Reactivation Motor	39.6	39.6	39.6	35.8	35.8	35.8	17.9	17.9	17.9
Condensing Motor	41.1	41.1	41.1	37.2	37.2	37.2	18.6	18.6	18.6
Compressor A	73.9	73.9	73.9	73.9	73.9	73.9	30.4	30.4	30.4
Compressor B	73.9	73.9	73.9	73.9	73.9	73.9	30.4	30.4	30.4
Compressor C	73.9	73.9	73.9	73.9	73.9	73.9	30.4	30.4	30.4
Compressor D	73.9	73.9	73.9	73.9	73.9	73.9	30.4	30.4	30.4
Control Transformer	4.8	4.8	4.8	4.3	4.3	4.3	2.2	2.2	2.2
FLA	420.7	435.1	446.6	408.7	421.7	432.1	178.2	184.7	189.9
MCA	439.2	453.6	465.1	427.2	440.2	450.6	185.8	192.3	197.5
MOP	500	500	500	500	500	500	200	200	225
Non-fused Disconnect	600	600	600	600	600	600	400	400	400

With Gas Auxiliary Heat

Control Transformer	14.4	14.4	14.4	13.0	13.0	13.0	6.5	6.5	6.5
FLA	430.3	444.7	456.2	417.4	430.4	440.8	182.5	189.0	194.2
MCA	448.8	463.2	474.7	435.9	448.9	459.3	190.1	196.6	201.8
MOP	500	500	500	500	500	500	200	225	225
Non-fused Disconnect	600	600	600	600	600	600	400	400	400

S71077-000	REV.	DESCRIPTION	BY / DATE	CHKD / DATE	E.C.O. NO.
	-	-	- / ...	- / ...	...



SIDE CLEARANCES:
SIDE 'A' = 60" [1524mm]
SIDE 'B' = 48" [1219mm]
SIDE 'C' = 48" [1219mm]
SIDE 'D' = 48" [1219mm]

UNIT WEIGHT = WITH 4 HEATERS 17,925 LBS [8131kg] ±10%
UNIT WEIGHT = WITH 3 HEATERS 17,675 LBS [8017kg] ±10%
UNIT WEIGHT = WITH 2 HEATERS 17,425 LBS [7904kg] ±10%

PRELIMINARY DRAWING.

DRAWING IS SUBJECT TO REVISIONS.

All Dimensions Are In Inches Unless Otherwise Specified
TOLERANCES ARE:
FRACTIONS ± 1/32 DECIMALS ± .005 ANGLES ± 1/2 Deg

Munters

DRAWING TITLE: HCUc-1685

Detailed by:	Date:
MDR	12-15-06
Ck. By: PJT	12-15-06
Appr. By: MGY	12-15-06

MATERIAL: ... SPEC: -

SHEET: 1 OF 3 PART NUMBER: S71077-000 SIZE B

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Tel: 800.229.8557 Fax: 210.651.9085
www.munters.us; drycoolinfo@munters.com