



AcuAir Hygienic Air Units



Precision engineered for sanitary food processing.

The power behind **your mission**



When it's AcuAir clean, it's process room clean

FRICK® AcuAir systems are precision engineered and painstakingly built to help you meet the food processing requirements of the United States Department of Agriculture.

Food safety regulations seek to promote food safety through controlling:

- Process room temperatures
- Sanitary wash-down intervals
- Condensation on room surfaces
- Cleanability of equipment design
- Room clean-up procedures

AcuAir units provide temperature, pressure and humidity control to make sure you meet those requirements. By managing condensation, removing contaminants and limiting air migration, AcuAir units deliver clean, sanitary air to the environment. An array of options allows you to customize the unit to meet your every need.



Proper and uniform room temperatures are critical for:

- Beef
- Chicken
- Pork
- Duck
- Turkey



Proper humidity levels are critical for:

- Dairy
- Cheese
- Yogurt
- Ice-cream
- Bread
- Dough



The presence of contaminants in the finished product can negatively affect the health of the consumer, the reputation of the processor and product shelf life, while increasing the processor's economic liability.

Solving the room environment

A safety-first, efficient and reliable solution for airstream disinfection

We know that your production room needs to run smoothly, and that cleaning equipment shouldn't involve a room shutdown. AcuAir reduces downtime and cost to your business by keeping temperatures at 40°F (4.44°C) to 35°F (1.66°C), meaning fewer sanitation cycles per day. We also know the importance of protecting your people and products. AcuAir improves indoor air quality by ensuring your process room is maintained at the correct temperature and pressure while removing ammonia from the room.

We have the experience and expertise to:

- Select the proper AcuAir Hygienic Air Unit to match your moisture and heat loads
- Understand and address your psychrometric requirements
- Integrate state-of-the-art controls to comply with increasingly stringent regulatory safeguards
- Link the control of your AcuAir Hygienic Air Units to your plant-wide control system

Managing condensation

Food contaminants generally migrate by direct contact or when attached to dirt or water particles. Airborne moisture in contact with cold surfaces increases the likelihood of condensation formation. Water droplets are highly visible and can carry thousands of microbial pathogens. Controlling the dew point of the air reduces the potential for the formation of condensation.

Managing temperature

Maintaining proper and uniform temperatures in the food processing space limits the ability of contaminants to activate or propagate, increasing the safe production times between necessary sanitary wash-down periods.

Managing sanitation air

Food process rooms and equipment must be washed down regularly. This disturbs microbial contaminants, causing some to become airborne. The wash-down process also wets surfaces that then must be dried.

Through effective management of room air during wash-down, airborne pathogens are expelled, the room is dried, and production can quickly resume.

Managing airborne contaminants

Processing activities tend to introduce and stir up dirt particles and pathogens that may become airborne. Uncontrolled, transient microbial pairs can contaminate open products and colonize in catch points. Constant air filtration captures free-floating microbes and minimizes the potential for cross-contamination of products.

Managing air migration

Not all spaces within a food processing facility have the same hygienic requirements. Air movement between processing spaces has the potential to carry airborne contaminants. Through management of the air pressure of adjacent spaces, air movement can be controlled, effectively mitigating the possibility of airborne cross-contamination.

The AcuAir solution – production mode

AcuAir mixed-air units provide temperature, pressure, humidity and airborne contaminant control in the process room.

Fresh air

Fresh air in small quantities is mixed with process room air to provide positive air pressure in the space. This supplemental air offsets the air removed by processing equipment or escaping the space through doors and openings. Providing makeup air effectively controls the infiltration of unconditioned air into the process room.

Pre-filter

The mixed air is immediately filtered to capture airborne particles that could compromise the integrity of the hygienic process air unit. In addition to enhancing internal cleanliness, these filters economically extend the service life of the AcuAir unit's final filters.

Cooling coils

Industrial-grade cooling coils remove heat and moisture from the airstream. Selected specifically for the application and manufactured for duty in food production settings, fin-coil bundles are the heart of managing temperature and humidity in the processing space.

Reheat coils

Adding a few degrees of sensible heat into mechanically chilled air improves the moisture absorption capacity of the air and reduces the potential for condensation in the process room. Reheat coils are a means to add the heat necessary for humidity control. FRICK offers economical hot gas coils as standard.

Plenum fans

Unhoused plenum fans are utilized to circulate the process room air. The inherent capability of the fans to handle static pressure, and the open nature of the design, make them particularly well-suited for use in hygienic applications. Available either with NEMA frame motor(s) with VSD control OR as EC motor(s) with speed control built into the motor.

Final filters

Final filters capture particles as small as 1µm and is MERV 14 as standard. The air delivered to the food process space is of the highest quality.

Hygienic supply air distribution

AcuAir hygienic supply air distribution diffusers distribute conditioned air in the process space. Proper air velocity ensures that maximum coverage is obtained and condensation risk is minimized.

Exhaust fans

Exhaust fans positioned in the return airstream provide control of the process room air pressure. As process equipment exhaust fluctuates and doors open and close, the fan speed is adjusted to control air pressure within the room and to manage air migration to adjacent spaces. Available either as Axial Style Fans with NEMA Frame Motors with VSD control *or* as EC Motors with Speed Control Built into the Motor.

AcuAir Quantum HD Unity Controller

The AcuAir Quantum HD Unity Controller provides the supervisory control to safely and effectively manage control of the process room environment. Developed and refined over years of hygienic air unit control, the system delivers proven and reliable control.

The AcuAir solution – clean-up mode

Wash-down of the food process room is about floor safety and room recovery.

The AcuAir solution is about continuously flushing the space with dry, clean air and exhausting saturated, dirty air.

A total of 100% of fresh outside air is drawn into the AcuAir hygienic unit. The fresh air is conditioned for optimal moisture collection and filtered to hygienic quality. The dry, clean air sweeps across the ceilings and walls as it is delivered to the space undergoing cleanup.

This dynamic flow of air dries the surfaces it encounters, capturing suspended moisture and drawing it toward the return air opening. Once in the return duct, moisture-laden air is exhausted to the outdoors.

Depending on the temperature and humidity of the outside air being conditioned, different strategies are used. In warmer, humid conditions, mechanical cooling may be used to remove moisture from the air stream, allowing drying capacity to be enhanced. In colder, dryer conditions, heating may be used to increase the moisture capturing capacity of the air stream, allowing drying capacity to be enhanced. In extreme cold and dry conditions, 100% fresh air may not be required. Reduced airflow and heating may be used to provide cost savings while maintaining drying times. These functions are precisely controlled with the AcuAir Quantum HD Unity Controller.



We make 'smart' work for you with Quantum HD Unity Control

Powerful control logic

The AcuAir Quantum HD Unity Controller employs the most powerful hygienic air processing control logic in the industry. The combination of innovative technology, powerful software and reliable performance maximizes the efficiency of your hygienic air unit, providing the greatest value available while meeting your air-handling control needs.

AcuAir Quantum HD Unity Controllers are:

- Built to recognized standards that include cUL
- Factory-tested prior to shipment
- Proven control software
- Compatible with new installations or existing equipment
- Fully compatible with A/B control systems, appearing as a native device on the network
- Accessible anywhere there is internet access

System interface panel

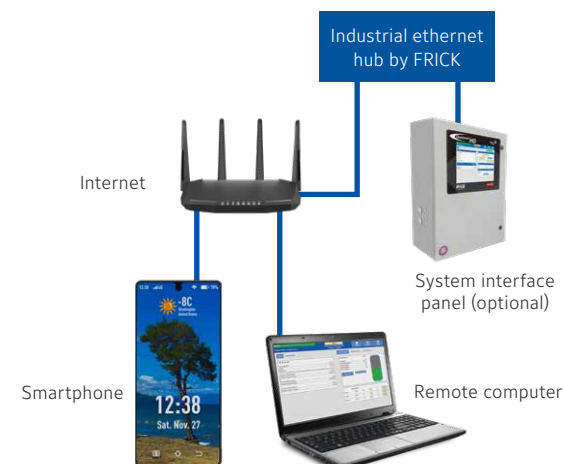
The optional system interface panel provides both local and remote access to your AcuAir Hygienic Air Units and any other Quantum HD Unity Controller panel on the network. It features an industrial touchscreen panel that puts control at your fingertips.

Get connected

All Quantum HD Unity Controllers offer the connectivity you have come to expect from FRICK products. Whether you are connected at the unit with your laptop, in your office with a network-connected computer or remotely via the internet, you are always in control of your processes.



AcuAir Air Handling Unit



AcuAir Hygienic Air Units

Enhanced efficiency and performance

Our market-leading FRICK AcuAir Hygienic Air Units deliver enhanced efficiency, performance and customer experiences. Our AcuAir units will help you meet standards and keep your food processing rooms operating at best-in-class efficiency levels. As your one-stop shop for all your industrial refrigeration needs, our customer-focused approach ensures we value your feedback and act on it to enhance our product offerings to meet your needs. Therefore, AcuAir now delivers even greater efficiency and customer experiences thanks to our deep product and industry expertise.

AcuAir's added benefits over ceiling-hung evaporators

Introduces outside air to the process room

- Allows rooms to be pressurized to limit contaminants from flowing from less hygienic rooms
- Provides enhanced indoor air quality (IAQ)
- Economizer Mode enables outside air to be used in optimal conditions to maintain room temperature
- Economizer Mode also allows you to switch off refrigeration circuits for 'free cooling'

Filtration

- Air recirculated from room is filtered before being cooled, keeping coils from clogging
- Final filters capture particles up to 1µm, removing contaminants from the air stream

Removes ammonia

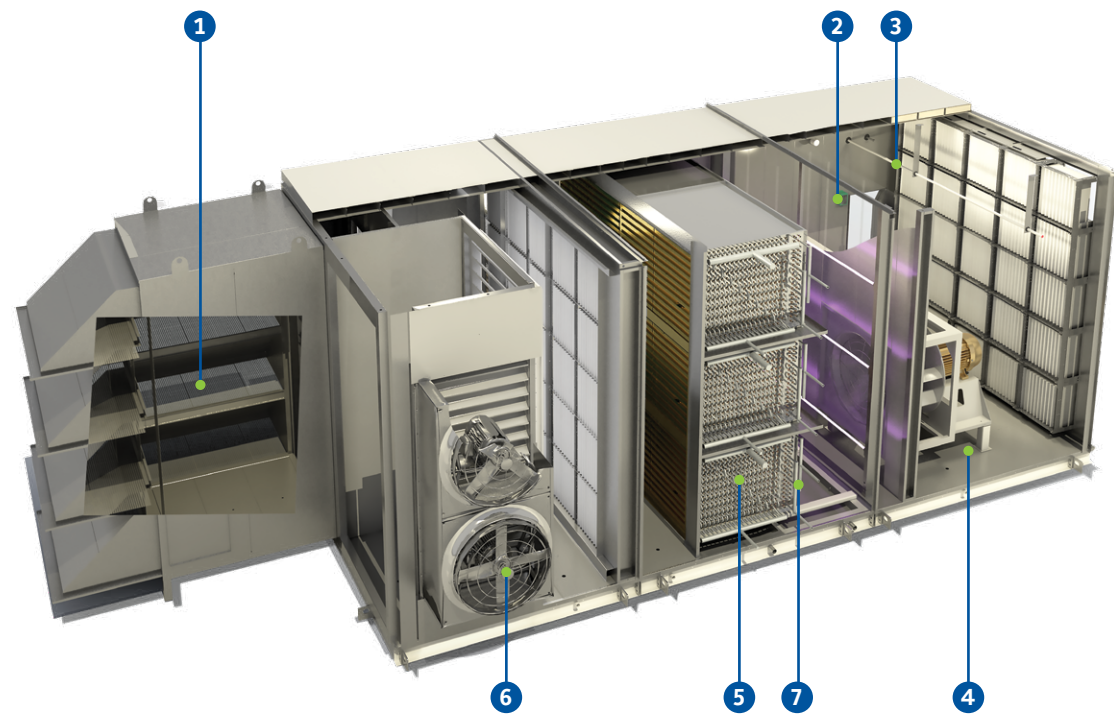
- Ammonia levels are monitored for safety purposes via the rooftop ammonia coil
- Units are cleaned on the roof, eliminating the need for cleaning evaporators on the ceiling (scissor lifts)

Sanitation heat

- Spaces dry faster by switching from 90% to 95% recirculated system to the 100% outside air system
- Adding heat to the outside air helps it absorb moisture, quickening the drying process

Advantages of AcuAir at a glance

	Hygienic AHUs	Ceiling-Hung Evaporators
Cooling	Yes	Yes
Introduction of Outside Air	Yes	No
Room Pressurization	Yes	No
Reheat	Yes	Yes
Filtration	Yes	No
Ammonia in the Room	No	Yes
Cleanability	On the roof	Inside the room at the ceiling
Sanitation Heat	Yes	No
Air Distribution	Multi-directional	Single direction



Heating options

Typical clean-up heat is a direct-fired gas heater with a high turndown ratio for accurate temperature control. Other options include indirect gas heat, steam and more.

1 Fresh air plenum

Inlet plenum and hoods block out rain and snow, and are constructed of a single wall of sheet metal. Materials used in fabrication are selected to match the unit's exterior.

2 Refrigerant detector

Refrigerant-cooled units are equipped with a chemical cell refrigerant gas detector that is connected with the AcuAir controller.

3 Smoke detector

A smoke detector is provided as standard on every unit. The unit will shut down if a fire is detected.

4 Unit floors

Each section of the AcuAir unit has a recessed, triple-sloping stainless steel drain pan for wash-down purposes. Drains are factory-piped to the side of the unit base, and the underside is spray-coated with insulation to minimize condensation.

5 Cooling coils

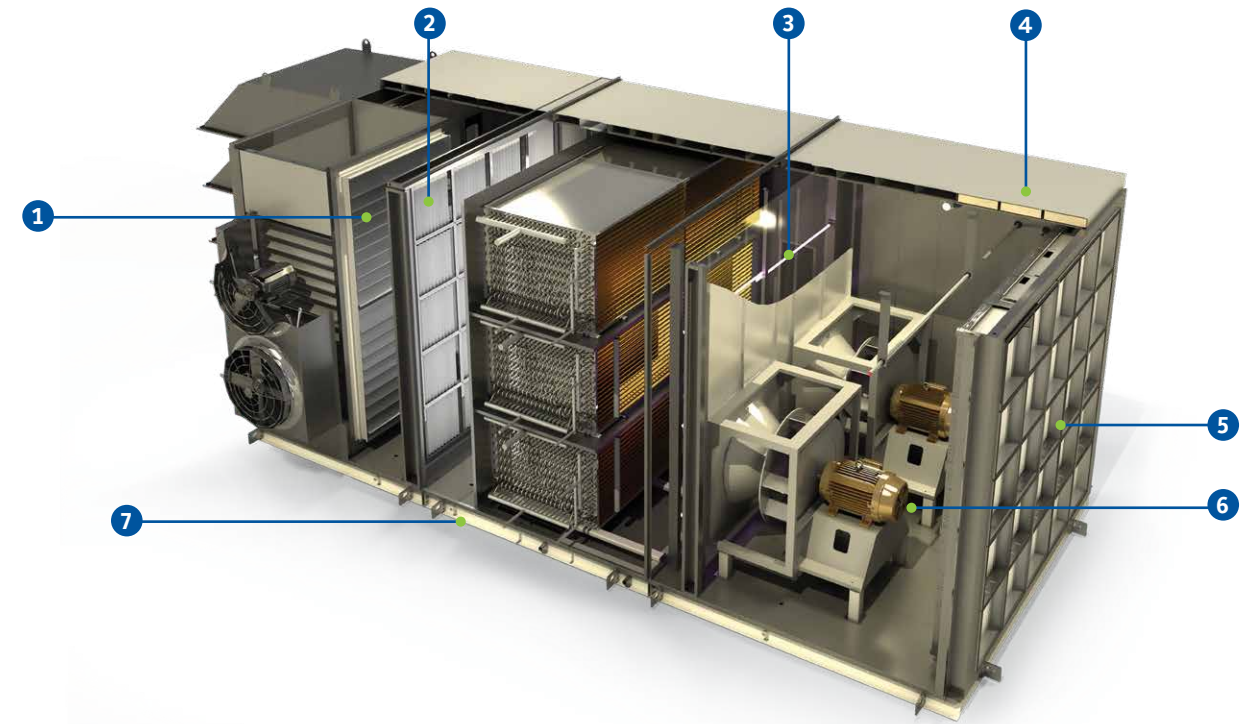
Cooling options include recirculated glycol, flooded refrigerant, recirculated refrigerant or direct expansion (DX) refrigerant. Common materials are stainless steel tube and aluminum fin or epoxy-coated aluminum fins. Coil materials, construction and circuit design are custom for each application. Intermediate drain pans are provided for stacked coils.

6 Exhaust fans and dampers

Direct-drive axial fans and backdraft dampers are mounted in the return air section for cleanup and economizer cycles. Fans can provide up to 100% exhaust of the system airflow. Fans contain speed control and are factory mounted, wired and controlled.

7 Reheat coils

Reheat coils are integrated within the cooling coil fin pack, adding a few degrees of sensible heat. These are constructed in the same way as the cooling coils. Additionally, we offer economical hot gas coils.



Mixing box

The mixing box is the merge point of the return and the fresh makeup airstreams. Low air velocity prevents water carryover and provides uniform flow into the pre-filters.

Controls

Standard AcuAir Quantum HD Unity Controller computer-based controls are factory-wired to the unit's VSD starter panel. A NEMA 4X remote mode selection panel and optional operator interface touchscreen panel are shipped separately. The AcuAir Quantum HD Unity Controller comes standard with Ethernet communications capability.

1 Fresh and return air dampers

AcuAir uses opposed-blade dampers in the fresh airstream and parallel blade dampers in the return airstream for optimal control of the mixture percentage. The blade and frame materials are constructed to match the interior walls.

2 Pre-filters

Pre-filters have an outside access door to ease maintenance. Typically, 4in. MERV 8 filters are used to protect the interior of the AcuAir unit and extend the life of the final filters.

3 Optional UV lights

Optional UV lights control microbial growth on the cooling coil, with the added benefit of disinfecting air borne contaminants as air recirculates through the process room.

4 Unit panels

Walls and roof are galvanized, interior and exterior cake-pan-style panels. The 3in. cabinet enclosure has foam-in-place insulation. Panel joints are sealed with food-grade caulking to ensure a watertight and airtight system suitable for washdown.

5 Final filters

MERV 14 filters are provided with a differential pressure transducer and gauge to indicate filter loading. An access door to the final section makes filter maintenance easier.

6 Supply fan(s) and motor(s)

A direct-driven, centrifugal, backward-inclined plenum fan with a premium-efficiency TEFC motor is standard for long life and ease of maintenance. VSD control is provided as standard. Multiple parallel fans are optional on units 30,000 CFM or greater, and standard on units 60,000 CFM and above.

7 Unit frame

Fully foamed-in-place drain pans and floors provide a vapor seal and thermal break. The rigid, fully welded and factory-painted steel frame has lifting lugs positioned for safely raising the unit. The underside of each section is protected with a galvanized sheet metal panel.

Standard features



Sequential defrost

Where process room operating temperatures must be low, the likelihood of frost building up on the cooling coil increases. AcuAir has technology that allows the hygienic unit to operate in that frosted cooling coil condition, and defrost the coils individually while maintaining operation. This technology reduces the size of the AcuAir units and eliminates the cost of stopping the unit's operation or providing hot gas for defrost of the evaporators.



Economizer

AcuAir economizing is the use of cool outside air to handle the heat load generated within the process space. When an AcuAir unit is equipped with the economizer option, AcuAir controls shut down mechanical cooling and transition to economizer cooling based on unique set points defined for that particular facility. Room pressure is maintained by controlling the amount of warm air that is exhausted to offset the incoming cool air. Economizer cooling has the potential to create substantial energy savings in many parts of North America.



Direct-drive blowers

Direct-drive supply fan configurations are simpler, more efficient and cleaner than belt-driven configurations. AcuAir supply fans are equipped with variable-speed drives that are fine-tuned to system operating conditions, minimizing energy usage while maintaining space conditions.



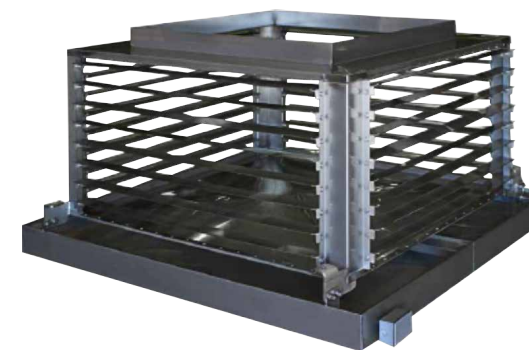
Parallel fan assemblies

Operation of the AcuAir Hygienic Air Unit is critical for keeping the process room in production. AcuAir offers the option of parallel plenum fans to provide a degree of redundancy in the event of mechanical failure and to reduce the size of individual fans and motors. Should a fan or motor fail, the remaining fans will continue to operate, providing sufficient air flow to the room and preventing a shutdown of your process space.



Epoxy-coated cooling coil fins

As hygienic design becomes more extreme, the use of stainless steel coils or tubes in place of galvanized steel tubes increases. Applying aluminum fins on stainless-steel refrigerant coils is great for heat transfer. AcuAir offers epoxy-coated fins for stainless-steel tube aluminum fin hygienic cooling coils. The epoxy coating offers excellent protection to the aluminum against most cleaning solutions while retaining its outstanding heat transfer properties.



Supply air diffusers

The AcuAir hygienic supply air diffusers are constructed of 304 stainless steel to prevent corrosion and withstand the frequent wash-downs typical of food process spaces. The air discharge openings are sized to provide the required air velocity for proper throw and distribution.

Oversized drain pans catch any condensation droplets from the diffuser face or grills. Drain pans are insulated and have underside electric heat tracing to guard against condensation that may form under the pan and risk dripping onto products or surfaces below.



Return air boxes and return drip pans

AcuAir hygienic return air boxes and return drip pans are constructed of 304 stainless steel to prevent corrosion and withstand the frequent wash-down chemicals typical of food process spaces. The oversized return box pan will catch any condensation droplets from the air box face or grills.

Both return box drip pans and return drip pans are insulated. Both have optional underside electric heat for added protection against condensation that may form under the pan and risk dripping onto products and surfaces below.

Optional features



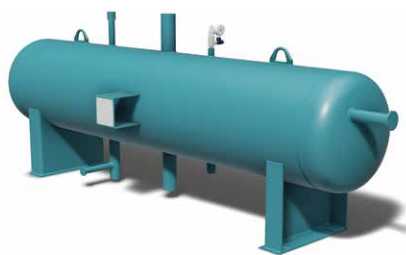
Indirect-fired heaters

AcuAir offers state-of-the-art, modular, indirect-fired gas heaters as a heat source for both sanitation and heat in process. The heaters offer high turndown while retaining maximum efficiency over the entire range. Indirect-fired gas heaters keep the combustion byproducts out of the process airstream, alleviating concerns related to incomplete combustion and contamination of the workplace air and product.



Motor service rails

Changing out heavy fan motors inside tight spaces can be both stressful and hazardous, especially under time constraints. AcuAir offers built-in motor service rails in certain sizes to facilitate safe, easy and rapid handling of the task.



Flooded-surge vessels

Many AcuAir applications used cooling coils designed for a flooded refrigerant feed. The AcuAir series of flooded-surge vessels are sized to match your system requirements, built to current ASME standards and painted for longevity.



UVC lights

With the threat of airborne viruses and contaminants shutting down production, AcuAir offers a UVC light solution that offers the best of both worlds. The standard offering is a washdown-capable system configured for coil cleaning and achieves 40% first-pass kill-rate airstream disinfection of Influenza A. This system keeps your coil operating at optimal conditions and renders bacteria, viruses, molds and other contaminants inert as air recirculates throughout the production space.

AcuAir Hygienic Air Systems – best-in-class performance

Enhanced benefits of AcuAir over ceiling-hung evaporators



Introduces outside air to the process room

- Allows rooms to be pressurized to limit contaminants from flowing from less hygienic rooms
- Provides enhanced IAQ
- Economizer Mode enables outside air to be used in optimal conditions to maintain room temperature by switching off refrigeration circuits for 'free cooling'



Filtration

- Air within the room is filtered before being cooled, keeping coils from clogging
- Final filters capture particles (up to 1µm), cleansing the air further



Removes ammonia

- Ammonia levels are monitored for safety purposes via the rooftop ammonia coil
- Units are cleaned on the roof, eliminating the need for cleaning evaporators on the ceiling (scissor lifts)



Sanitation heat

- Spaces dry faster by switching from 90% to 90% recirculated system to the 100% outside air system
- Adding heat to the outside air helps it absorb moisture, quickening the drying process

Working with you to shape the future of AcuAir

We've listened to your feedback. And now we're introducing a range of new enhancements to reduce overall delivery and improve the customer experience of AcuAir. We'll continue to evolve to meet your industrial refrigeration needs to ensure your process room is ready for production when you are.

AcuAir Hygienic Air Units produce clean air by managing condensation, removing contaminants and limiting air migration.

Changing with and for you

- Standardizing product lines
- Unit selection and pricing within CoolWare
- Proposals and submittal packages delivered in hours
- Coming soon: ECM Fans for AcuAir Hygienic AHUs
- Continued improvement of the Quantum HD Unity Controller

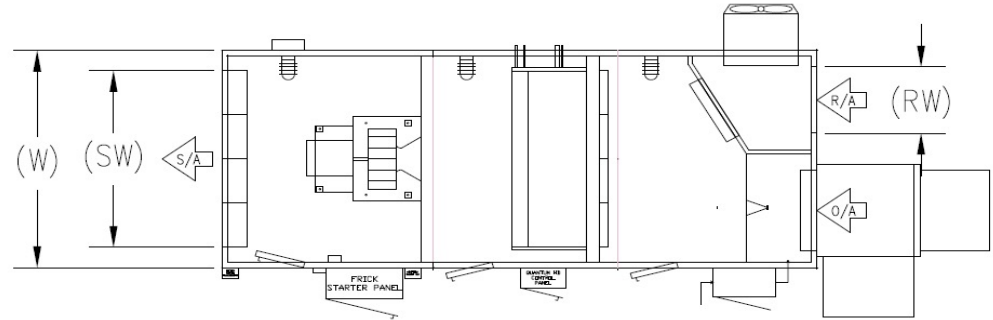
Cost effective and energy efficient

- Selection of AcuAir Hygienic Air Units to best match your moisture and heat loads
- Effective management of washdown to get you back to production quicker
- Room pressure control to minimize cross-contamination
- Standardization of direct-drive fans for stock inventory and the replacement of components

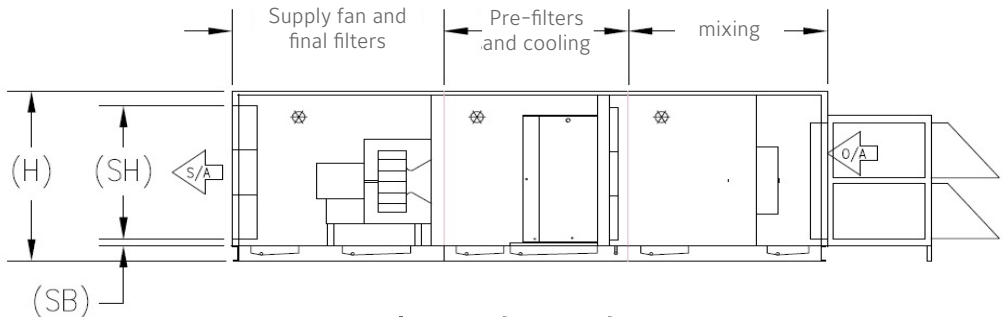
Control features

- Economizer mode for 'free cooling'
- VSDs across the board for fine-tuning fan speeds
- Independent Exhaust Air Fan VSD control to reduce start and stop times

AcuAir standard mixed air unit dimensions



Plan view

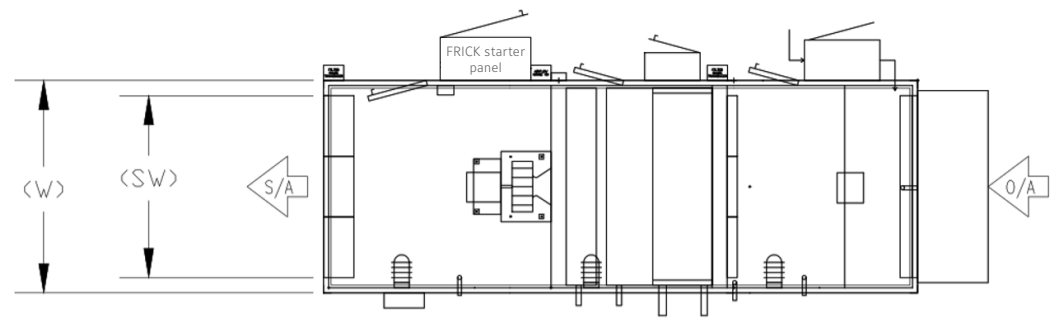


Elevation view

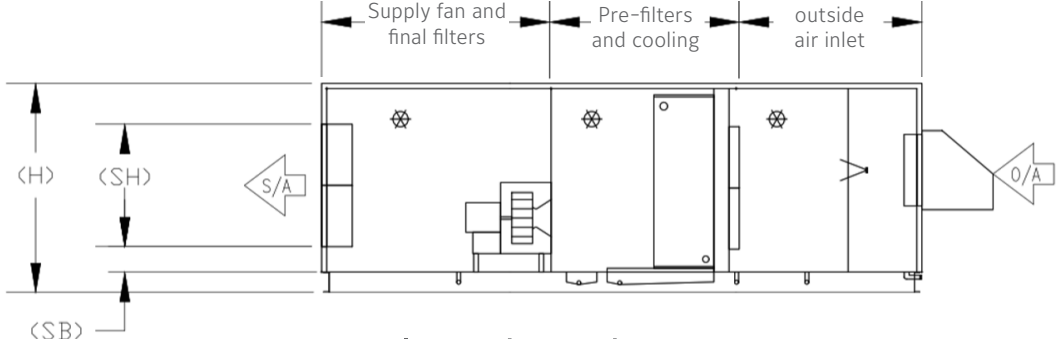
Model	Maximum Airflow (CFM)	Standard Dimensions		Supply Air			Return Air	
		Unit Height (H)	Unit Width (W)	Opening Width (SW)	Opening Height (SH)	Flat Side Bottom (SB)	Opening Width (RW)	Opening Height (RH)
YC-AA-F-20	20,000	92	118	96	72	4	36	66
YC-AA-F-30	30,000	114	118	96	96	4	37	96
YC-AA-F-40	40,000	114	144	120	96	4	49	96
YC-AA-F-50	50,000	139	144	120	120	4	49	120
YC-AA-F-60	60,000	139	168	150	120	4	60	120
YC-AA-F-70	70,000	139	192	174	120	4	68	120
YC-AA-F-80	80,000	139	216	198	120	4	78	120
YC-AA-F-90	90,000	139	240	222	120	4	85	120
YC-AA-F-100	100,000	139	264	246	120	4	96	120

All dimensions are in inches.
 Unit lengths are determined based on selected configurations and options.
 Do not use dimensions for construction, contact FRICK DSM for additional information.
 Unit dimensions shown are for standard sizes, contact FRICK for non-standard sizes or other modifications.

AcuAir standard make-up unit dimensions



Plan view



Elevation view

Model	Maximum Airflow (CFM)	Standard Dimensions		Supply Air		
		Unit Height (H)	Unit Width (W)	Opening Width (SW)	Opening Height (SH)	Flat Side Bottom (SB)
YC-AA-P-7-MA	7,000	82	84	72	48	10
YC-AA-P-10-MA	10,000	82	84	72	48	10
YC-AA-P-15-MA	15,000	92	84	72	72	4
YC-AA-P-20-MA	20,000	92	118	96	72	4
YC-AA-P-30-MA	30,000	114	118	96	96	4
YC-AA-P-40-MA	40,000	114	144	120	96	4
YC-AA-P-50-MA	50,000	139	144	120	120	4
YC-AA-P-60-MA	60,000	139	168	150	120	4
YC-AA-P-70-MA	70,000	139	192	174	120	4
YC-AA-P-80-MA	80,000	139	216	198	120	4

All dimensions are in inches.
 Unit lengths are determined based on selected configurations and options.
 Not all make-up air units ship in three pieces. Refer to project-specific drawing for details.
 Do not use dimensions for construction. Contact FRICK DSM for additional information.
 Unit dimensions shown are for standard sizes. Contact FRICK for non-standard sizes or other modifications.



FRICK – committed to cold for more than 135 years

We deliver innovative products that help the world run smoothly, smartly, simply and safely.

FRICK is the leader in industrial refrigeration.

We provide world-class refrigeration technology that is reliably cold through our unrivaled expertise, developed and honed over nearly a century and a half. We relentlessly pursue and achieve superior-quality products so you can confidently focus on your core businesses.

We offer a full line of equipment for food and beverage applications, including low-charge systems, rotary screw compressor packages, condensers, evaporators, heat exchangers, hygienic air handlers, controls, vessels and replacement parts for these products.

And we work with an elite set of sales and installation partners – our FRICK Factors – whose dedication to your absolute satisfaction contributes to our successful products, processes and services.

Specify FRICK solutions. Find the FRICK Factors nearest you at www.frickcold.com.

About Johnson Controls

At Johnson Controls (NYSE:JCI), we transform the environments where people live, work, learn and play. As the global leader in smart, healthy and sustainable buildings, our mission is to reimagine the performance of buildings to serve people, places and the planet.

Building on a proud history of nearly 140 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

Today, with a global team of 100,000 experts in more than 150 countries, Johnson Controls offers the world's largest portfolio of building technology and software as well as service solutions from some of the most trusted names in the industry.

Visit www.johnsoncontrols.com for more information and follow [@johnsoncontrols](https://twitter.com/johnsoncontrols) on social platforms.

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The power behind **your mission**

