



# RQ Series

Features and Benefits

# Nationally Recognized

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RQ Series (2-10 tons)

## Awards

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- **National Society of Professional Engineers**  
2011 New Product of the Year-Large Company Category
- **Consulting-Specifying Engineer Magazine**  
2011 Product of the Year - Silver
- **ACHR News Magazine**  
2011 Dealer Design Awards-Silver (Geothermal)  
2010 Dealer Design Awards-Bronze (Air-Cooled)

# Air-Cooled Packaged DX Units

Design Flexibility



AAON RQ Series rooftop units are engineered for performance, flexibility, and serviceability. Double wall rigid polyurethane foam insulated cabinet construction and direct drive backward curved plenum fans allow RQ Series units to have quiet, energy efficient airflow with high static pressure capabilities. RQ Series units also feature lockable hinged doors which provide service access to all sections of the unit.



# Air-Source Heat Pumps

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Air-Source Heat Pump  
RQ Series Rooftop Unit

Energy efficient cooling and heating can be achieved by reversing the unit's refrigeration circuit. This allows the indoor coil to be used as either a cooling coil or heating coil. Air-source heat pumps transfer heat to the outside in the summer and to the building in the winter to provide both space cooling and heating.

# Water-Source/Geothermal Heat Pumps



Geothermal RQ Series Rooftop Unit

Water-Source/Geothermal heat pumps provide energy efficient heating and cooling through the unit's refrigeration circuit. Water-Source heat pumps use a cooling tower and boiler water system to transfer heat to or from the building. Geothermal heat pumps take advantage of the seasonally constant temperature of the earth below ground level to transfer heat to or from the building. Geothermal heat pumps typically save between 15-25% of total building energy for non-residential buildings (DOE).

Design Flexibility





# Air Handling Units



RQ Series Air Handling Unit (400-3,300 cfm)

Air handling units are available for design flexibility. Non-compressorized DX air handling units can be paired with a matching condensing unit. Chilled water air handling units can be added to new or existing chiller systems for additional cooling capacity.

# Horizontal Configuration

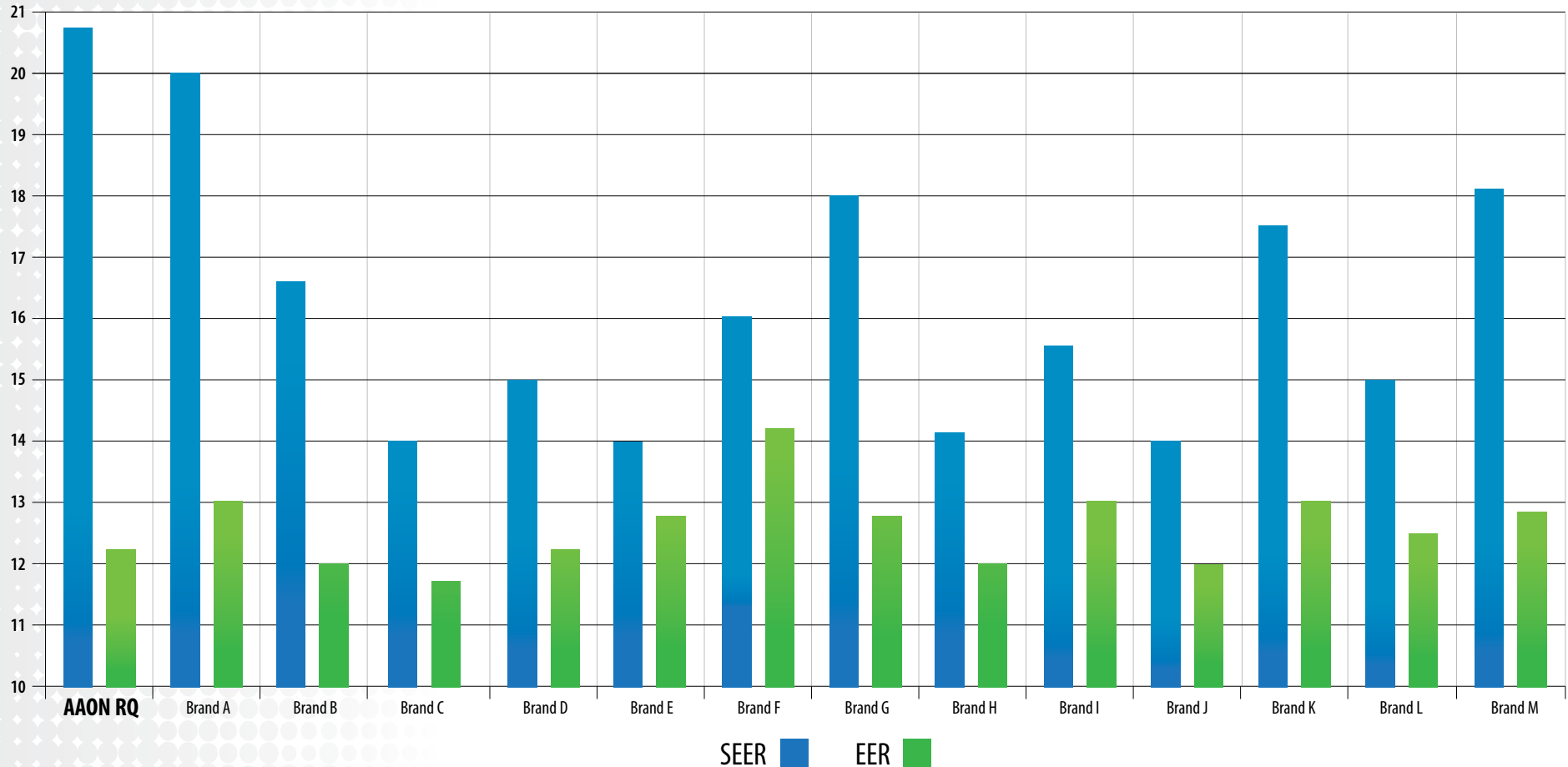
Horizontal Return and Supply Configuration  
(shown with shipping covers)



Horizontal configuration provides a solution for applications that require horizontal ductwork; it does not require a special horizontal supply/return curb. All of the premier features and options available for vertical configuration RQ units are also available with the horizontal configuration.

# Efficiency

The AAON RQ Series has AHRI listed efficiencies of up to 20.7 SEER. The AAON RQ Series is one of the most efficient light commercial rooftop unit in the industry.



[www.ahridirectory.org](http://www.ahridirectory.org) • 05/26/2017

AAON and Competitors' Highest Efficiency Listed Products



# Single Zone VAV

Single Zone VAV is an application using a variable speed fan and modulating compressor. The fan speed is controlled by the room thermostat and the compressor capacity is controlled by the supply air temperature. Fans consume a lot more energy at maximum speed than at part load. Reducing the fan speed by half reduces the required fan horsepower by a factor of 8! The combination of the variable speed fan and modulating compressor allow the single zone VAV unit to provide precise temperature control, improved dehumidification, and reduced unit sound while consuming only as much energy as the space load requires.

<b>Location</b>	Dallas, Texas			
<b>Building Type</b>	Single Zone	Single Zone	Single Zone	Single Zone
<b>System Type</b>	CAV	VAV	VAV	VAV
<b>Compressor Control</b>	Cycling (kWh)	HGB (kWh)	Cycling (kWh)	Variable Capacity (kWh)
<b>DX Electric</b>	51888	63988	43383	38612
<b>Fan Electric</b>	19906	8438	8438	8438
<b>Subtotal</b>	71794	72426	51821	47050
<b>% Difference</b>	0.0%	-0.9%	27.8%	34.5%

Building Size: 8,000 ft<sup>2</sup> • Hours Occupied : 3,328 hrs/year • Peak Cooling Load: 25 tons • Five AAON RQ Series - 5 ton units

Industry Leading Efficiency



## Energy Recovery Wheels

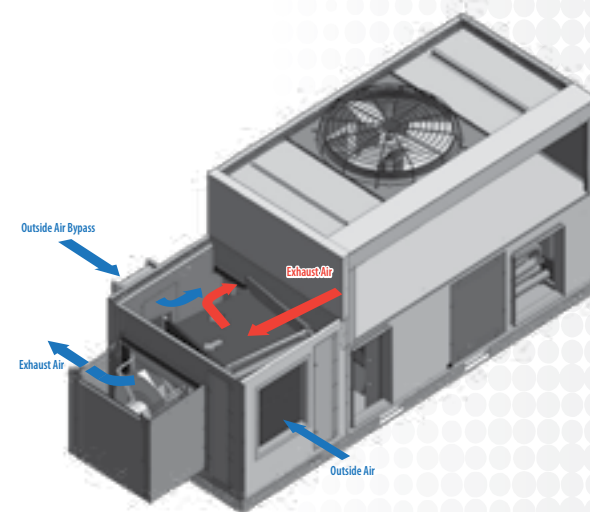
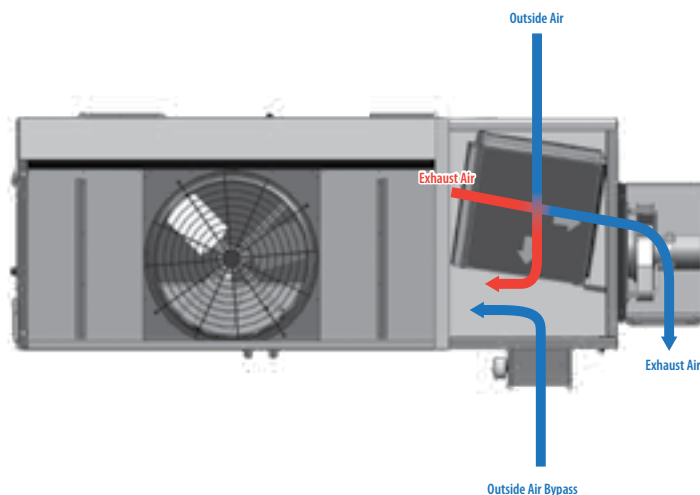


Energy recovery wheels significantly reduce operating costs by transferring energy from the exiting exhaust air to the entering outside air, reducing the amount of energy the system has to use to cool the air from outside air conditions to supply air conditions. AAONAIRE energy recovery wheels remove moisture from the outside air during the summer to avoid excess moisture in the air and add moisture to the air during the winter to avoid over drying of the air. AAONAIRE energy recovery wheels help to maintain comfortable humidity levels year round. Up to 80% of the exhaust air energy is recovered by the wheel, significantly reducing energy usage during outside air ventilation.

# Fixed Plate Energy Recovery



Cross-flow fixed plate heat exchanger energy recovery saves heating and cooling dollars by pre-cooling, pre-heating, and humidifying the ventilation outside air (depending on ambient conditions). Cross-flow fixed plate heat exchangers have no moving parts and also improve indoor air quality by eliminating cross contamination.



Cross-Flow Fixed Plate Energy Recovery Airflow

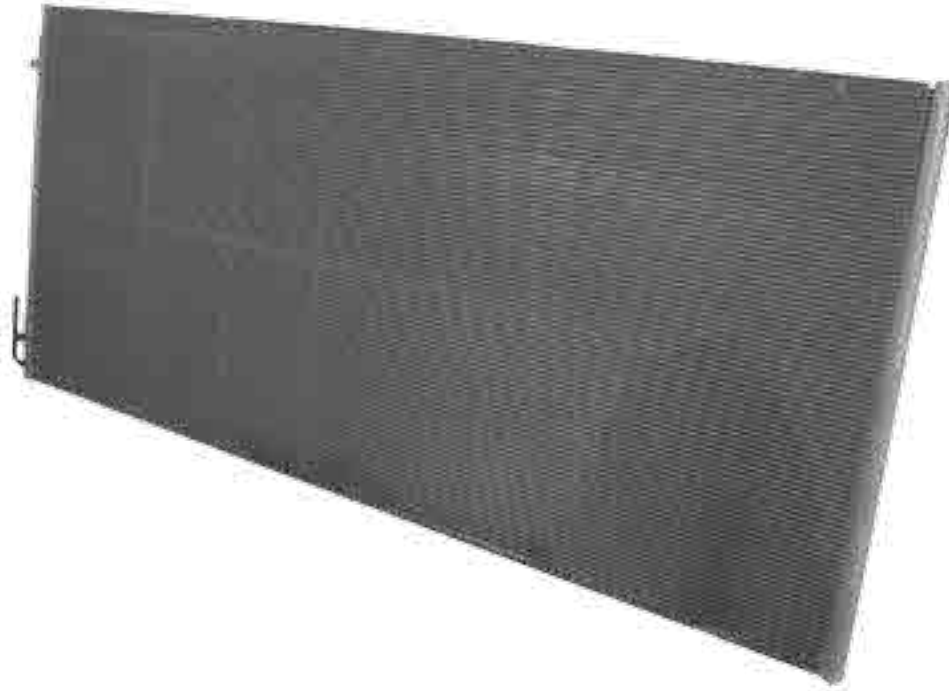
# High Capacity Cooling Coil

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6 row high capacity cooling coil provides greater coil surface area for heat transfer, improving unit efficiency and dehumidification. Up to MERV 14, high efficiency unit and pre-filters keep the coil and indoor air cleaner. A clean system operates more efficiently and saves money!

# Microchannel Condenser Coil



Microchannel condenser coils are standard on all RQ Series DX cooling units. Microchannel coils are more efficient, smaller, lighter, and use less refrigerant than traditional fin and tube condenser coils. Conventional light commercial rooftop units have bent condenser coils that trap dirt within the coil fins. RQ Series condenser coils are flat, making them easier to clean and service. This preserves the energy efficiency of the unit over its lifetime.

Industry Leading Efficiency





## Low Leakage Economizer



Gear driven economizer allows for free cooling and eliminates excess play and binding that occurs with linkage type economizers. Standard AMCA Certified and Labeled AAON Low Leakage Dampers meet the California Title 24 damper air leakage requirement. Optional Economizer Fault Detection and Diagnostics is also available to meet the California Title 24 requirements



## Outside Airflow Monitoring

Available for applications that require accurate outside airflow measurement. Controller communicates with factory provided controls or can be used with customer provided unit controls with a simple 0-10VDC output signal.



Outside Air Opening with Airflow Measurement System  
(shown without rain hood)



# Enthalpy Economizer



With an enthalpy economizer, temperature and humidity sensor in the outside air stream is used to provide free cooling when the outside air is below a certain setpoint. An extra temperature and humidity sensor can be ordered for the return air stream to provide a comparative enthalpy economizer. A comparative enthalpy economizer compares the enthalpy of the outside air and the return air. When the outside air has less overall energy than the return air, the unit does not use as much energy to cool the outside air, saving money in energy costs.

# Direct Drive Backward Curved Plenum Fans

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Direct drive backward curved plenum fans are standard on all units. Direct driven fans have no belt energy losses. A belt driven system can lose up to 15% of the applied power due to heat and belt slippage caused by the normal stretching and slipping of the belt. Direct drive backward curved plenum supply fans with rubber isolation mounts are more energy efficient, quieter, and require less maintenance than belt driven fans.



# Variable Speed Fans



Variable speed supply fans allow precise airflow control and reduced power consumption. Variable speed fans allow the fan to run only as fast as the space conditions require. Cutting the fan speed in half reduces the applied power to the fan motor by a factor of 8!



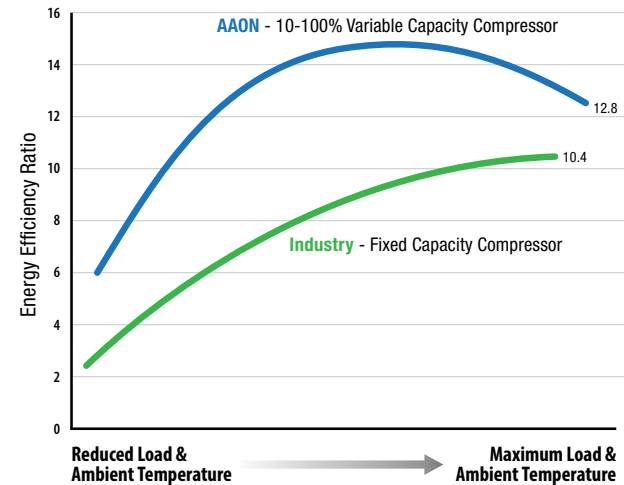
Industry Leading Efficiency

# Variable Capacity Compressors

Two-Step Scroll Compressor



10-100% Variable Capacity Compressor



A variety of compressor options are available for load matching cooling, and providing both high full load and part load efficiency. Options include single stage, two-step, 10-100% variable capacity, and variable speed compressors. Two-stage compressors provide a cost effective additional cooling capacity stage that improves part load efficiency. Units with 10-100% variable capacity scroll compressors are simple to control and the compressors have a wide range of capacity modulation. Variable speed compressors use compressor motor speed control to reduce capacity, save energy, and reduce sound.



# Variable Speed Compressor



RQ Series with inverter driven variable speed compressors for load matching cooling and improved part load efficiency

Variable speed compressors provide load matching cooling and the highest efficiency ratings when operating at part load conditions. Refrigeration controls are built-in to the AAOA equipment to protect the compressors and optimize the efficiency for VAV, Single Zone VAV and Makeup Air applications. Variable speed compressors are quiet in operation, especially at reduced capacity.

## Variable Speed Compressor ARHI Certified Efficiency

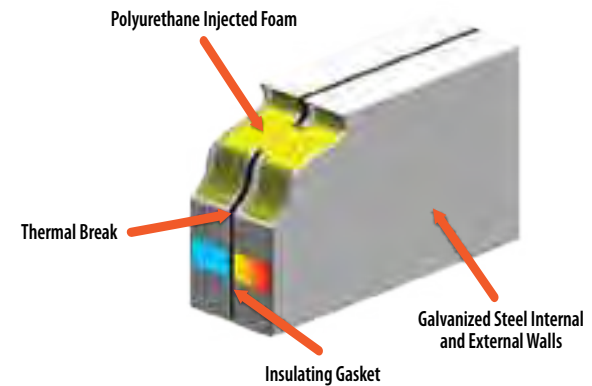
Model	Part Load	Full Load
RQ-002	20.3 SEER	14.2 EER
RQ-003	20.7 SEER	12.2 EER
RQ-004	19.2 SEER	12.9 EER
RQ-005	19.0 SEER	11.6 EER
RQ-006	20.1 IEER	11.2 EER

208/230V 3 Phase Standard Evap. Coil

# Foam Panel Cabinet



Continuous Bulb Door Seal



2" double wall rigid polyurethane foam panel cabinet construction has a thermal resistance of R-13 or greater, which exceeds the R-value of a cabinet with four-inch thick fiberglass construction. Panels include a thermal break, with no metal contact from inside to outside, to prevent heat transfer through the panel and prevent condensation on the outside of the cabinet. The inner wall protects the insulation from moisture damage, prevents microbial growth, and is easy to clean. This type of construction also makes the cabinet more rigid and resistant to damage, provides increased sound dampening, and reduces air leakage and infiltration.



# Stainless Steel Drain Pan



Double sloped stainless steel drain pan eliminates standing water which can support microbial growth and stainless steel construction prevents corrosion that could lead to water leaks and contaminants in the air stream.

Standard Features

## Corrosion Resistant Exterior Paint



Corrosion resistant exterior paint is capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.



Over 200 special paint color options are also available to meet your applications requirements

# Service Access Doors



Hinged service doors provide easy access to unit components for faster service trips.



Standard base includes forklift slots from multiple sides.

# Maintenance and Serviceability

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Customizable options save time and money on service trips include factory installed convenience outlet, refrigerant circuit sight glass, and unit disconnect switch.

Convenience Outlet



Unit Disconnect Switch



Refrigerant Circuit Sight Glass



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# Compressor Isolation Valves

Compressor isolation valves allow the compressors to be isolated from the refrigeration system for faster and easier maintenance.



Customizable Options





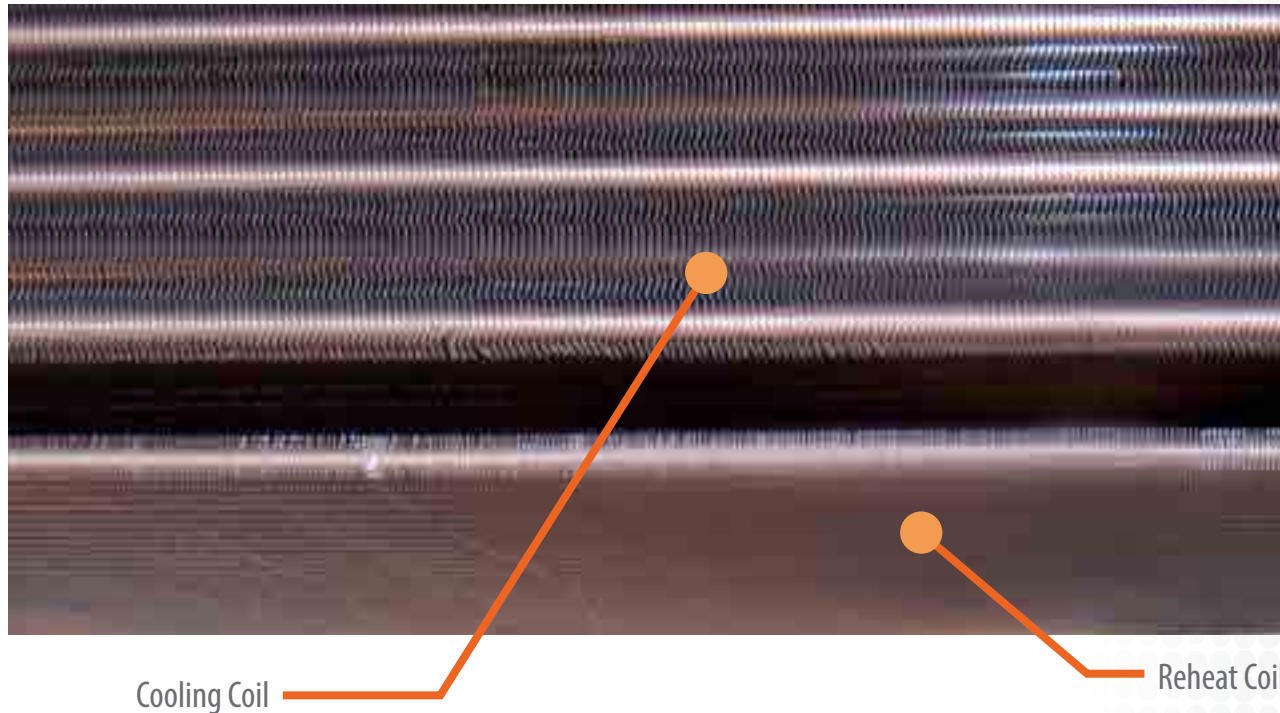
## Magnehelic Gauge



Magnehelic gauge measures the pressure drop across the evaporator coil and filters to indicate when a filter change or coil cleaning is needed. Clogged filter switch is also available to tie into a unit controller or building management system.



# Modulating Reheat



Modulating valve bypasses varying amounts of hot refrigerant gas to a reheat coil downstream of the cooling coil. This allows the unit to provide dehumidification after the space setpoint temperature is satisfied by cooling the air and reheating it with only as much heat as is necessary to maintain the room temperature setpoint. Modulating valve allows dehumidification without the temperature swings of on/off reheat.

# Modulating Gas Heat

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Modulating gas heat with 3:1 turndown allows for precise temperature control in the heating mode of operation. Units come standard with an industry leading 15 year non-prorated aluminized/25 year non-prorated stainless steel gas heater warranty. Propane heat is available as a factory installed option, with no field installation necessary.

## **High Turndown Gas Heat**

Available for applications that require a wide range of modulation capabilities, such as 100% outside air systems. Up to 11:1 turndown is available on the RQ Series, depending on heater capacity.

# SCR Electric Heat

Staged and SCR controlled electric heat provide energy efficiency, consistent supply air temperature heating and improved occupant comfort.



Customizable Options



## Interior Corrosion Protection



Units are available with interior components painted with AAON corrosion resistant paint. Corrosion resistant paint is capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.

## E-Coated Coils



Polymer E-coated coils are available for superior corrosion protection in harsh environments. An electrocoat system applies an electric charge to a metal part immersed in a bath of oppositely charged epoxy molecules, electrically drawing the coating to all exposed parts of the metal coil. An e-coated coil will extend the life of a coil by 3 to 5 times that of an uncoated coil (depending on the environment exposed).



# Customer Provided Controls

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Factory installed customer provided controls allow numerous control options with no field installation required. When field installed customer provided controls is selected, a terminal block is provided for field installation of controls.





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# AAON Touchscreen Controller



A simple and powerful controller design to optimize the performance of AAON equipment. The AAON Touchscreen Controller is an economical control solution with an easy to use touchscreen interface. The controller can function as a stand-alone unit controller or as a part of a BACnet MS/TP networked system.

Customizable Options



## Heating and Cooling Configurations



- Air-cooled packaged DX rooftop unit, from 2-10 tons.
- Air-source, water-source, or geothermal heat pump configurations.
- Chilled water or non-compressorized DX air handling unit, from 800-2,400 cfm.
- Makeup air capability, up to 100% outside air, to meet ventilation requirements.
- High performance hot water, steam, electric, and gas heating.

# Heating and Cooling for...

- **Auditoriums**
- **Convenience Stores**
- **Health Clubs**
- **Health Care Facilities**
- **Homes**
- **Lodgings**
- **Manufacturing**
- **Museums & Libraries**
- **Natatoriums**
- **Office Buildings**
- **Restaurants**
- **Retail Store**
- **Schools**
- **Supermarkets**



**Defining Quality. Building Comfort.**

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