



RN/RQ Series



PACKAGED ROOFTOP UNITS, AIR-SOURCE HEAT PUMPS, WATER-SOURCE / GEOTHERMAL HEAT PUMPS, & OUTDOOR AIR HANDLING UNITS



Features:

- Air-cooled or water-cooled condenser, with unit capacities from 2-140 tons
- Available as a chilled water or non-compressorized DX air handling unit, from 800-49,100 cfm
- Air-source, water-source, and geothermal heat pump options
- R-410A scroll compressors - one, two, or four compressor systems
- Variable capacity and variable speed scroll compressors for load matching cooling and improved part load efficiency
- Electric, gas, steam, or hot water heating
- AMCA certified and labeled low leakage economizer dampers
- Direct drive backward curved plenum fans
- Power exhaust and power return options
- Factory installed AAONAIR® total and sensible energy recovery wheels
- Double wall rigid polyurethane foam panel construction with a minimum R-value of 13
- Service access doors with full length stainless steel piano hinges and lockable handles
- Double sloped stainless steel drain pans

Application Flexibility
Minimizes Installation Time and Reduces Cost

○ *Makeup Air Applications
Up to 100% Outside Air*

○ *Dehumidification and
Filtration Capabilities*

○ *Large Tonnage Rooftops
with Small Footprints*

○ *Factory Installed or Customer
Specific Controls Options*

RN/RQ Series

Rooftop/Air Handlers

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

Superior Features

- Cabinet construction consists of rigid polyurethane foam panels with G90 galvanized steel on both sides and a closed cell polyurethane foam interior core. The inner wall protects the insulation from moisture damage, prevents microbial growth, and is easy to clean.
- Two inch rigid polyurethane foam insulated panels have a thermal resistance R-value of 13 or greater, which exceeds the R-value of a cabinet with four inch thick fiberglass construction. They also make the cabinet more rigid and resistant to damage and provide increased sound dampening.
- Access doors with full length stainless steel piano hinges and quarter turn, lockable handles provide improved reliability over single point hinges and make the unit easily serviceable.
- Corrosion resistant polyurethane paint exceeds a 2,500 hour salt spray test.
- AMCA Certified low leakage gear driven economizer dampers are standard on RN and RQ Series rooftop units. AAON low leakage dampers meet the California Title 24 damper air leakage requirement. Optional Economizer Fault Detection and Diagnostics is also available with the low leakage dampers to meet the California Title 24 requirements.
- Compressors and unit controls are contained within a compartment isolated from the air stream for ease of service and increased sound dampening.
- Direct drive backward curved plenum fans provide improved energy efficiency and reduced maintenance versus belt driven fans.
- Double sloped stainless steel drain pans eliminate 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.
- Run test report, wiring diagram, and Installation, Operation, and Maintenance manual with startup form provided in control access compartment of every unit.
- 5 year non-prorated compressor warranty, 15 year nonprorated aluminized steel gas heat exchanger warranty, and 25 year non-prorated



► 55-140 ton RN Series Packaged Rooftop Unit

Feature Flexibility

Premier Options

- Variable capacity and variable speed R-410A scroll compressors for load matching cooling and improved part load efficiency.
- Air-source, water-source, and geothermal heat pump options for energy efficient heating.
- Factory installed total or sensible AAONAIRE energy recovery wheels.
- Humidity control options including: High Capacity Coils, Modulating Hot Gas Reheat Humidity Control, Return Air Bypass, and Mixed Air Bypass.
- Chilled water cooling coils allow unit to tie into new or existing chilled water system.
- Hot water or steam heating coils allow unit to tie into new or existing boiler system.
- Polymer e-coated coils are available to extend the life of the coils and protect them in corrosive environments.
- Power exhaust and power return fans with economizer for application flexibility.
- VFD controlled and ECM driven supply, exhaust, and return fans for precise airflow control, building pressure control, and reduced power consumption.
- Modulating gas heat with stainless steel heat exchanger provides greater fuel efficiency, longer heater life, and improved occupancy comfort.
- SCR (Silicon Controlled Rectifier) electric heat control for reduced power consumption, longer heater life, and improved occupant comfort.
- Multiple high efficiency air filtration options.
- Unit controls options including factory installed customer provided controls.
- VFD controlled or ECM driven condenser fans for energy savings and refrigerant head pressure control.



- ▲ Cutaway of double wall rigid polyurethane foam insulated cabinet panel increases thermal resistance, reduces air leakage, and attenuates radiated sound. Thermal break reduces heat transfer between interior and exterior metal cabinet walls.

- ▶ Standard AMCA Certified AAON Low Leakage Damper

Dehumidification

AAON offers many humidity control options. High capacity cooling coils are available which allow for more dehumidification versus standard cooling coils. Return air bypass and mixed air bypass are available on RN Series units for single coil humidity control. Modulating hot has reheat humidity control is available to provide energy efficient dehumidification, even with low sensible heat loads, without the temperature swings common with on/off reheat systems.

High Ambient Operation

With robust design and construction, AAON equipment can be rated and operate to over 125°F (52°C) ambient.

R-13 Double Wall Rigid Polyurethane Foam Panel Construction

AAON is setting a new standard for performance with double wall construction using closed cell polyurethane foam insulation. Not only does it have several times the insulating R-value, it creates a far more rigid and stronger assembly with less air leakage than fiberglass insulated panels.

AMCA Certified and Labeled Low Leakage Dampers

Gear driven economizer eliminates the excess play and bind that occurs with linkage type economizers. Standard AMCA Certified and Labeled AAON Low Leakage Dampers meet the California Title 24 damper air leakage requirement.





Rooftop Units (6-140 tons)

RN Model	Cabinet	Configuration	Air-Cooled IEER	Air-Cooled EER	Water-Cooled IEER	Nominal cfm	Width*	Height*	Length*	
RN-006	A	Vertical	Up to 14.8	Up to 14.0	NA	2,000	79	44	82	
RN-007						2,500				
RN-008						2,650				
RN-010						3,000				
RN-009	B		Up to 16.8	Up to 13.9		NA	3,400	96	50	88
RN-011							3,600			
RN-013							3,800			
RN-015							4,200			
RN-014	C		Up to 20.2	Up to 13.6		Up to 16.0	5,200	101	60	110
RN-016							6,400			
RN-018							6,800			
RN-020							7,000			
RN-025		9,000								
RN-030		10,500								
RN-026	D	Up to 12.0	Up to 13.8	Up to 16.5	10,000	100	102	155		
RN-031					12,400					
RN-040					16,000					
RN-050					20,000					
RN-060					23,000					
RN-070					25,000					
RN-055	E	Up to 17.5	Up to 12.1	Up to 15.2	15,000	142	105	241		
RN-065					17,000					
RN-075					18,000					
RN-090					22,000					
RN-105					24,000			303		
RN-120					29,500					
RN-130					32,000					
RN-140					33,000					
RNA-011	C	Horizontal	Up to 13.8	Up to 12.7	NA	3,600	101	60	138	
RNA-013						3,800				
RNA-016						6,400				
RNA-018						6,800				
RNA-020						7,000				
RNA-025						9,000				
RNA-030						10,500				
				Up to 16.0						

*Dimensions vary depending on options selected. • All dimensions are in inches • Design cfm may be 30-50% greater or less than nominal cfm.

Wide Range of Capacities



◀ 6-30 ton RN Series Air-Cooled Condenser Packaged Rooftop Unit



▶ 2-10 ton RQ Series Air-Cooled Condenser Rooftop Unit

▶ Dimpled heat exchanger provides energy efficient heat transfer and has no internal turbulator, which can corrode over time.



Rooftop Units (2-10 tons)

RQ Model	Cabinet	Air-Cooled SEER	Air-Cooled EER	Nominal cfm	Width*	Height*	Length*
RQ-002	Vertical or Horizontal	Up to 20.7	Up to 14.8	850	44	51	82
RQ-003				1,050			
RQ-004				1,400			
RQ-005				1,750			
RQ-006				1,800			
RQ-007				2,400			
RQ-008				2,800			
RQ-010				3,000			

*Dimensions vary depending on options selected. • All dimensions are in inches • Design cfm may be 30-50% greater or less than nominal cfm.

Ease of Service

Ease of Service

AAON equipment is designed from concept to completion with minimum service time as a primary factor. Readily accessible compressors and control components allow timely evaluation of service issues without delay. Color-coded wiring diagrams allow fast connection identification and analysis and thus a reduction in down time and cost. Individual components and wires are also labeled for quick circuit evaluation. The result of this AAON standard procedure is low service cost and greater unit run time.

Air Handling Unit Option

AAON RN and RQ Series outdoor air handling units provide a hydronic cooling and heating option. Gas, electric, steam, and hot water heating are available on an RN and RQ Series air handling units. Cabinet construction is similar to the packaged rooftop units with easily accessible coil connections.

Microchannel condenser coils

Invisible footprint condenser design

All double wall construction

Slide out filter access

2-10 ton RQ Series

Color-coded wiring diagram

Slide out filter access

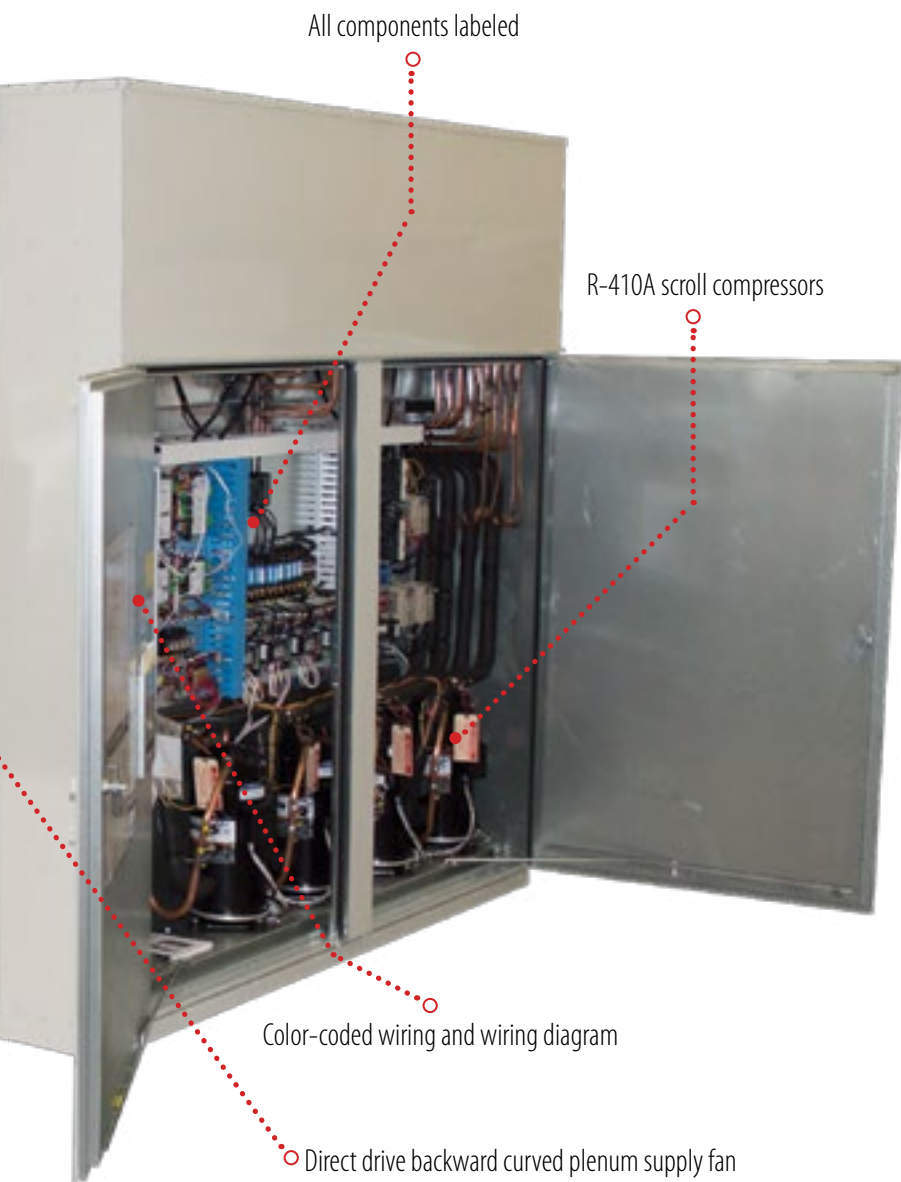
Continuous bulb seal

All components labeled

R-410A scroll compressor



26-70 ton RN Series Unit



▲ 11, 13, & 16-30 ton RN Series Horizontal Configuration Unit with Factory Provided Final Filtration

Makeup Air Capability

AAON RN and RQ Series units have makeup air capability and can be specified with up to 100% outside air. AAON AIRE energy recovery wheels are available on makeup air units to increase the unit's energy efficiency. High capacity cooling coils are available to handle the higher latent load of outside air. Modulating gas heat and SCR electric heat are available to provide energy efficient supply air temperature heating. Modulating humidity control is available to provide dehumidification without over cooling when the outside air humidity is above setpoint. Variable capacity scroll compressors are available to provide energy efficient supply air temperature control.

AHRI Certified High Efficiency

The RN Series is available with an IEER rating up to 20.2, while the RQ Series is available with a SEER rating up to 20.7.



◀ 20.7 SEER 3 ton RQ Series Unit



▶ 20.2 IEER 14 ton RN Series Unit

Horizontal Configuration

Horizontal configuration is available for RQ Series units (2-10 tons) and RN Series units (11, 13, 16-30 tons). This configuration provides a solution for applications that require horizontal ductwork; it does not require special horizontal supply/return curbs. All of the premier features and options currently available for the RQ and RN units are available with this configuration. **High efficiency final filtration configuration is available on the RN Series units for health care and other applications that require it.**

High Efficiency Options



- ◀ Electric Preheat is available with all AAON energy recovery options for frost prevention.

Air-Source Heat Pump Option

Energy efficient cooling and heating can be achieved by reversing the unit's refrigeration circuits. This allows the indoor coil to be used as either a cooling coil or heating coil. This is a more efficient method of heating than electric heating because a heat pump can reject more heat to the space per the amount of energy used. Thus, the operating costs of heat pump heating are always less than the operating costs of electric heating. Heat pump heating can also a more efficient method of heating than gas heating and, depending on the cost of electricity and natural gas or propane, heat pump heating can have less operating costs than gas heating.

Compressor Capacity Control



- ◀ VFD controlled variable speed scroll compressors provide load matching cooling and improve part load efficiency.

RN and RQ Series units have a variety of compressor options available for load matching cooling, providing both high full load and part load efficiency. Options include staged, 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 compressors allow for a wide range of capacity control (10-100%) for improved part load efficiency with simple controls.



- ◀ Two-Step Scroll Compressors provide the simplicity of staged capacity control with high part load efficiency



Two-Step Compressors improve part load efficiency with simple staged control. Unit IEER can be optimized without requiring complex refrigeration and DDC controls, reducing operating costs and maintenance costs. Two-step compressors are available in the RQ Series and 14 ton RN Series.

Variable Speed Compressors

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 AAON 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.



▲ 2-10 ton RQ Series with inverter driven variable speed compressors for load matching cooling and improved part load efficiency

Water-Source/Geothermal Heat Pump Option

Energy efficient cooling and heating can be achieved by reversing the flow of the unit's refrigeration circuits. This allows the indoor coil to be used as either a cooling coil or heating coil. Geothermal heat pumps take advantage of the relatively constant temperature of the earth below ground level to transfer heat to or from the building. Depending on latitude, ground temperatures range from 45°F to 75°F. This ground temperature is warmer than the air above it during the winter and cooler than the air in the summer.



▶ 2-230 ton RN Series Water-Source/Geothermal Heat Pump Packaged Rooftop Unit



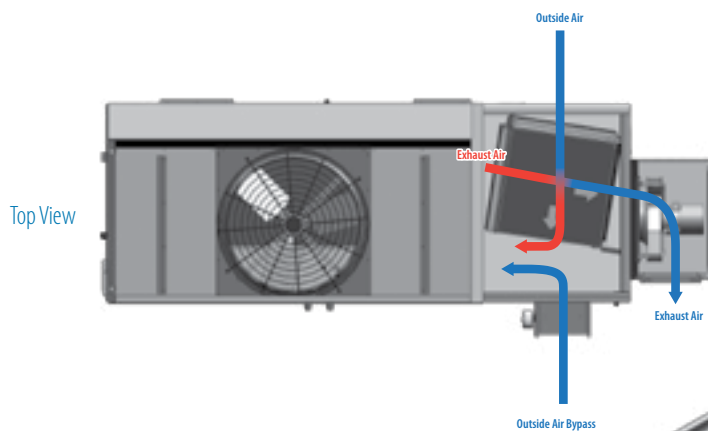
Electric Preheat is available with all AAON energy recovery options for frost prevention. ▼



Cross-Flow Fixed Plate Heat Exchanger Energy Recovery

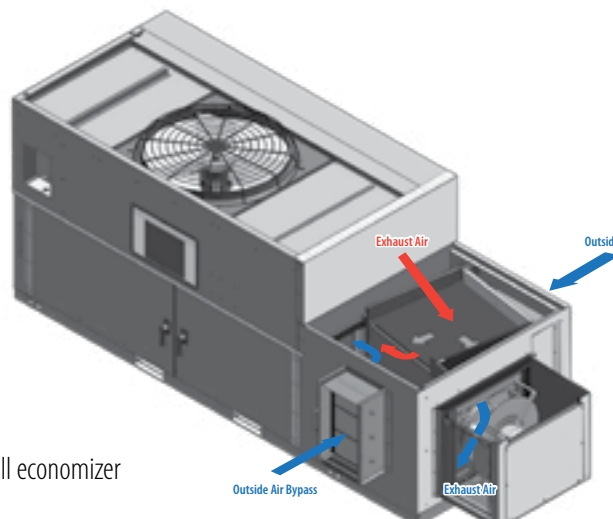
Cross-flow fixed plate heat exchangers save heating and cooling dollars by pre-cooling, pre-heating, and humidifying the ventilation outside air (depending on ambient conditions). Cross-flow fixed plate heat exchangers have no moving parts and can also improve indoor air quality by eliminating cross contamination. Sensible only or enthalpy fixed plate heat exchangers are available to meet application requirements. Fixed plate heat exchangers are available in the RQ Series (2-10 tons).

▲ 2-10 ton RQ Series with Cross-Flow Fixed Plate Heat Exchanger Energy Recovery



◀ Cross-Flow Fixed Plate Energy Recovery Airflow

▶ Cross-Flow Fixed Plate Energy Recovery Airflow



Outside Air Bypass allows for higher ventilation airflow and full economizer operation. Damper can also be used for defrosting the heat exchanger.

Energy Saving Configurations



- ▲ Factory installed AAONAIRE energy recovery wheel saves heating and cooling energy. Slide-out wheel allows for quick and easy maintenance.

AAONAIRE® Energy Recovery Wheel

The energy recovery wheel option can be provided in all model sizes allowing reduced equipment size and operating cost savings while pre-conditioning the outside air being introduced into the conditioned space. Sensible only or enthalpy wheels are available to meet the humidity control requirement of the system. Segmented polymer wheels allow for easy cleaning. Aluminum wheels are also available for application that require aluminum construction. Bypass dampers can be selected for full economizer operation.



AHRI Certified Performance

All AAON energy recovery options feature AHRI Certified heat exchangers.



- ◀ Direct Drive Backward Curved Plenum Fans are more energy efficient, quieter, and require less maintenance than belt driven fans. VFD controlled and ECM driven supply, exhaust, and return fans are available for precise air flow control, building pressure control, and reduced power consumption.

- ▶ Microchannel condenser coils are durable, more efficient, lighter, and use less refrigerant than traditional fin and tube condenser coils. These coils are standard on all air-cooled condenser RN/RQ Series rooftop units.





AAON Environmentally Friendly HVAC Product Family

<p>ROOFTOP UNITS (2-240 tons)</p> <p>RN SERIES RQ SERIES RZ/RL SERIES</p>	<p>WATER-SOURCE HEAT PUMPS (½ - 230 tons)</p> <p>RQ SERIES RZ/RL SERIES RN SERIES VERTICAL & HORIZONTAL WSHP M2 SERIES SA SERIES SB SERIES</p>	<p>PACKAGED OUTDOOR MECHANICAL ROOMS (4-540 tons)</p> <p>BOILER MECHANICAL ROOM LF SERIES LN SERIES FLUID COOLER LZ SERIES</p>
<p>INDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)</p> <p>F1 SERIES H3 SERIES V3 SERIES SA SERIES M2 SERIES M3 SERIES</p>	<p>SELF-CONTAINED UNITS (3-70 tons)</p> <p>SB SERIES SA SERIES M2 SERIES</p>	<p>CONDENSING UNITS (2-230 tons)</p> <p>CB SERIES CF SERIES CN SERIES CL SERIES</p>
<p>OUTDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)</p> <p>RZ/RL SERIES RN SERIES RQ SERIES</p>	<p>COILS BOOSTER, HYDRONIC, & DX</p>	<p>CONTROLS (WSHP, RTU, SELF-CONTAINED, & SPLIT SYSTEM)</p> <p>Touchscreen Contoller Pioneer Gold Pioneer Silver</p>

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