



RL Series



PACKAGED ROOFTOP UNITS, HEAT PUMPS AND OUTDOOR AIR HANDLING UNITS



Features:

- Air-cooled condenser, water-cooled condenser, or AAON evaporative-cooled condenser, with capacities from 45-240 tons
- Chilled water or non-compressorized DX air handling units, from 8,900-75,500 cfm
- R-410A scroll or R-134a centrifugal compressors
- Sound attenuating, double wall, foam insulated cabinet construction
- Walk-in compressor and control service vestibule
- Unit access doors with full length hinges and lockable handles
- Spring isolated, direct drive, backward curved supply fans
- Blow-through and draw-through configurations
- Electric, gas, steam, or hot water heating
- Power exhaust and power return options
- Factory installed AAONAIRE sensible and total energy recovery wheels
- Humidity control features including return air bypass and modulating hot gas reheat
- Option boxes available for field installed components

Application Flexibility
Minimizes Installation Time and Reduces Cost

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

○ *Dehumidification
and Filtration Capabilities*

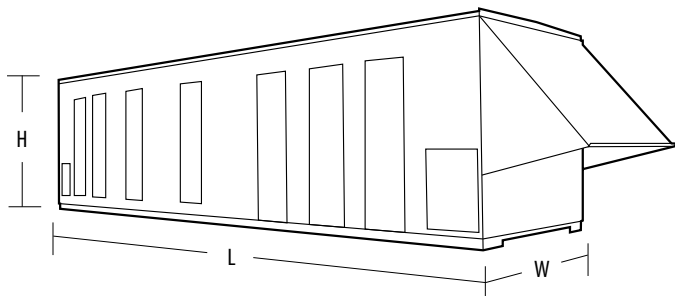
○ *Easy to Install and Service*

○ *Factory Installed or Customer
Specific Control Options*

RL Series

Rooftop/Air Handling Units

AAON continuously strives to satisfy the dynamic industry requirement for larger, more energy efficient packaged rooftop equipment. The RL Series design incorporates the AAON long term commitment and dedication to excel as the premier manufacturer of rooftop equipment. RL Series units are available in multiple configurations and include many standard features that make AAON synonymous with quality products for any application.



**Full Featured, Energy Efficient,
Packaged Rooftop Units to Meet
Today's Requirements!**

Rooftop Conditioners

Superior Features

- Access doors are provided in areas subject to scheduled maintenance. Walk-in doors are constructed with stainless steel piano hinges, perimeter gaskets, and zinc cast lockable handles that operate from a single point.
- Aluminum tread plate floor covering in appropriate equipment access areas for improved durability and safety.
- Marine service lights for quick and convenient maintenance.
- Microprocessor controls are compatible with BACnet®, Modbus, LonTalk®, and Fox protocols for integration with a variety of controls systems.
- Polyurethane paint exceeds a 2500-hour salt spray test
- Refrigerant circuits are provided with removable core filter dryers and isolation valves for ease of service; no need to cut the refrigerant line as is done with brazed in filter driers.
- Unit specific color-coded wiring diagrams are provided in point-to-point and ladder form and are laminated and permanently affixed inside the control compartment for ease of service.
- Selectable number of draw-through or blow-through direct drive backward curved plenum fans allows design flexibility for quieter applications and redundancy for applications where unit uptime is critical.

Premier Options

- VFD driven variable speed scroll compressors are available for load matching cooling and increased part load efficiency.
- Oil-Free magnetic bearing R-134a centrifugal Turboacor compressor option provides load matching cooling capacities with quiet, energy efficient operation.
- Compressor isolation valves are available for improved service efficiency.
- Double pane viewing windows can be installed in all doors where viewing of operating equipment or interior cabinet is needed.
- Multiple methods of humidity control including: High Capacity Cooling Coils, Return Air Bypass, and Modulating Humidity Control which provides efficient dehumidification, even with low sensible heat loads, without the temperature swings common with on/off reheat systems.
- Factory installed, sensible or enthalpy, gear driven economizer allows for free cooling.
- Multiple high efficiency filtration options, including pleated, cartridge, or bag type, with up to a MERV 14 efficiency rating.
- Factory installed total and sensible AAONAIRE energy recovery wheels save cooling and heating dollars. Return fans are available for high return static applications.
- Polymer e-coated coils are available to extend the life of the coils and protect them in corrosive environments.
- Interior corrosion protection option protects interior components of the unit in corrosive environments.
- Option boxes are segments of the unit that can be left empty from the factory so that components may be installed in the field without the trouble of installation and service in a crowded cabinet.

Air-Cooled, Water-Cooled, or Evaporative-Cooled Condensers

Air-Cooled Condensing

Copper tube mechanically bonded aluminum fin condenser coils are slope mounted to prevent physical damage. The outward facing coils are intrusion protected with perforated metal screens. All condenser coils are designed for minimum 10°F of refrigerant sub-cooling. VFD can be installed on the condenser fans for head pressure control and greater operating temperature range, as well as to provide reduced sound levels at off design ambient temperatures. All condenser fans are direct drive, axial flow propeller type, and discharge vertically.

Evaporative-Cooled Condensing

When compared to air-cooled designs these units deliver both outstanding energy efficiency and significant operational cost savings. Energy cost reduction can be 20% to 40% annually dependent on geographic location. Geographic locations that require a central chiller and cooling tower are considered primary locations for application of the evaporative-cooled RL Series rooftop unit.

Factory installed AAON evaporative-cooled condenser, with air-cooled de-superheater and variable frequency drive controlled fans, can be 20 - 40% more energy efficient than a comparable air-cooled condenser, can use 22 - 100% less water than a conventional evaporative-cooled condenser, and require 22 - 100% less chemical usage than a conventional evaporative-

cooled condenser. Interior of evaporative-cooled condenser is constructed of 304 stainless steel and other non-corrosive materials. De-superheater coils include polymer e-coating for corrosion protection.

Water-Cooled Condensing

The energy efficient water-cooled units are of particular application value when there exists an accessible water source or when cooling tower water is available. The standard water-cooled RL Series units include these features:

- Shell and tube heat exchangers.
- Each heat exchanger is provided with a removable and cleanable type basket filter.
- Heat exchanger piping connections are made within the condensing section of the rooftop unit.

Air Handling Units

The RL Series also fits the job when units are required without compressors. The unit will be built without a condensing section and walk-in compressor and control vestibule. All other features and options are readily available. Air handling units may include the following options:

- Supplied with a DX coil and TXV.
- Supplied with a chilled water coil in 4, 6, or 8 row. The unit may be specified with any of the heating options to provide a year-round rooftop heating and cooling package.

RL Model	Condenser Type	Compressor Type	Width	Height	Air-Cooled Length*	Water-Cooled Length*	Evaporative-Cooled Length*	Air Handling Unit Length*	
045	Air-Cooled, Water-Cooled, Evaporative-Cooled or Air Handling Unit	R-410A Scroll	100	102	400	375	376	225	
060									
070									
075									
095									
100									
110			142		508	437	493	233	
125									
134									
135			100		508	437	493	233	
155			142		506	449	476	223	
170									
190									
210	533	493		548					227
230									
090	Evaporative-Cooled	R-134a Centrifugal Turbocor	100	102	N/A	N/A	413	N/A	
120			493						
150			479						
180			142				548		
181									
240									

*Dimension may vary depending on options selected.
All dimensions are in inches.

RL Series Features



Evaporative-Cooled Condenser

Interior of evaporative-cooled condenser is constructed of 304 stainless steel and other non-corrosive materials. A de-superheater is installed above the moisture eliminators, spray nozzles and the copper tube condensers are below.



Complete Water Treatment

To ensure the proper treatment of the water system can be correctly and accurately performed, AAON furnishes a three chemical system and all associated controls, injector pumps, and control components.



Electric Heat

Low watt density, nickel chromium element, electric resistance coils. Modules are 40 KW individual circuit fused with manual reset high temperature switches.



Economizer

A full line of economizer options are available. All are low leakage with extruded airfoil blades and rubber edge and aluminum end seals.



Evaporator Coils

Each evaporator coil has a TXV. A double sloped drain pan is provided for positive drainage. Tubing is dressed and structurally supported.



Walk-In Service Vestibule

The walk-in service vestibule provides shelter for the maintenance and service personnel while periodic maintenance is performed on the unit. A fluorescent light fixture is furnished in the compartment, controlled by a light switch at the door, and the vestibule can be heated and/or cooled for comfort.



Spring Isolators

Spring isolators provide sound attenuation for the main blower section.



AAONAIRE®

This energy recovery ventilation 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.



Gas Heat Exchanger

Constructed from stainless steel with patented "dimple" design to maximize efficiency at all inlet air conditions. Burners have electronic ignition and safety shutdown.

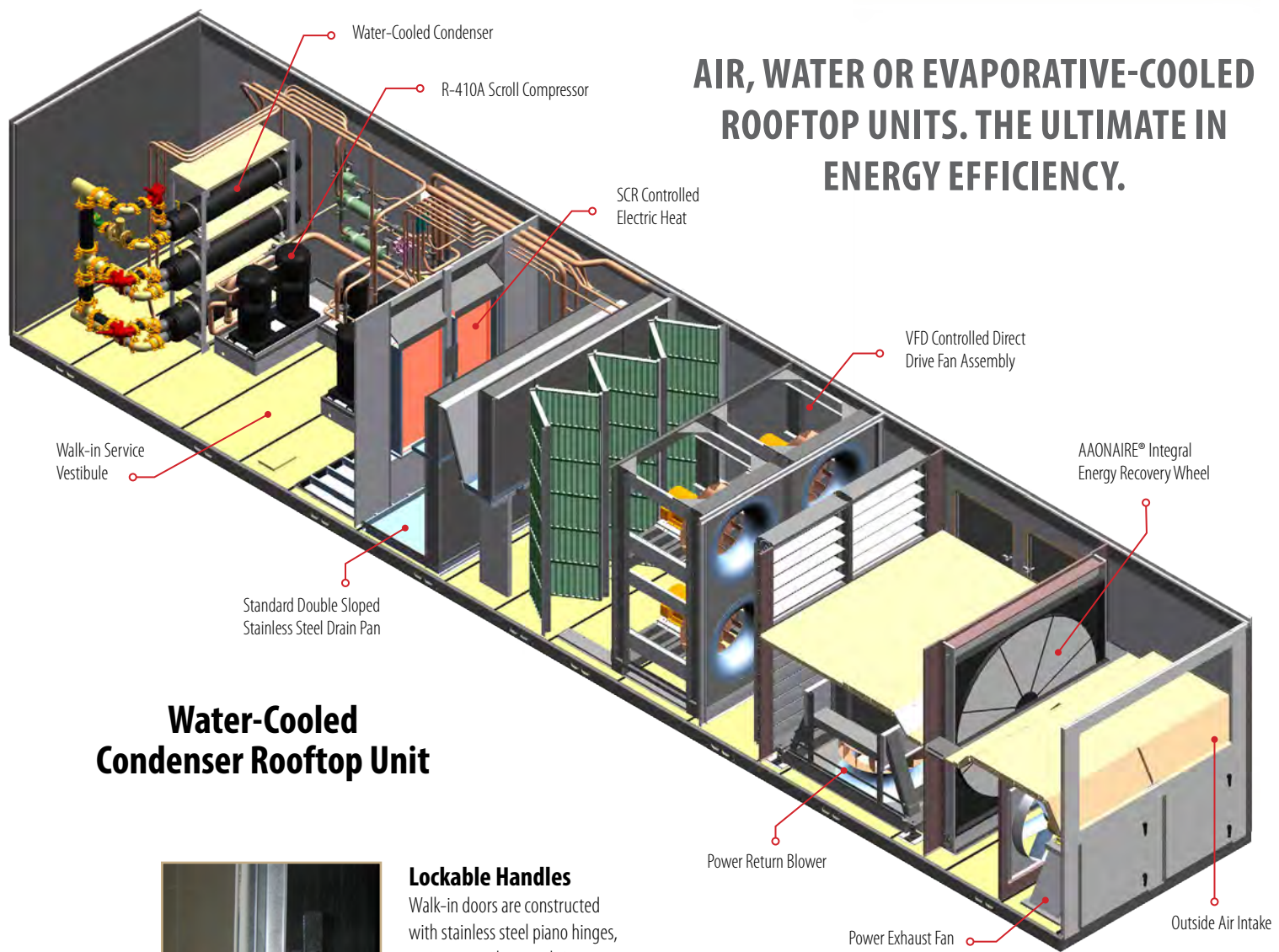


Blower Section

Single or multiple direct drive, single inlet plenum fans with spring isolation on the entire assembly allows optimization of fan diameter, sound level, and efficiency.

RL Series Rooftop/Air Handling Units

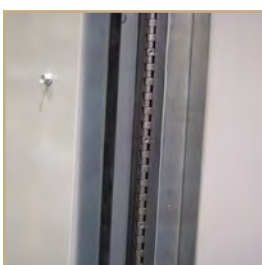
**AIR, WATER OR EVAPORATIVE-COOLED
ROOFTOP UNITS. THE ULTIMATE IN
ENERGY EFFICIENCY.**



Water-Cooled Condenser Rooftop Unit



Lockable Handles
Walk-in doors are constructed with stainless steel piano hinges, perimeter gaskets, and zinc cast lockable handles that operate from a single point.



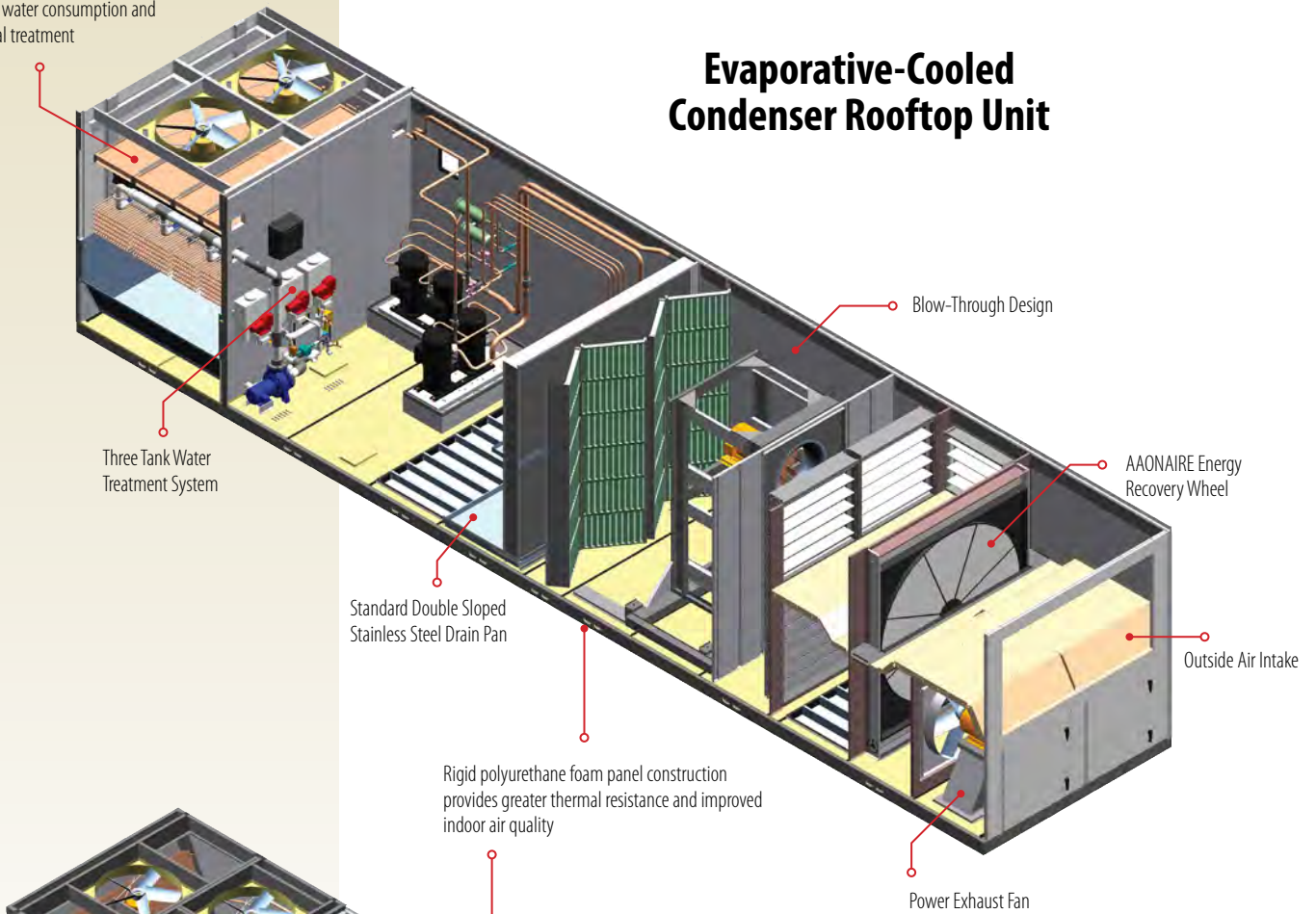
Hinged Access Doors
Full length stainless steel piano hinges provide improved reliability over single point hinges.



Optional Exhaust and Return Fans
The axial flow and plenum power exhaust and return fans are directly driven by the motor.

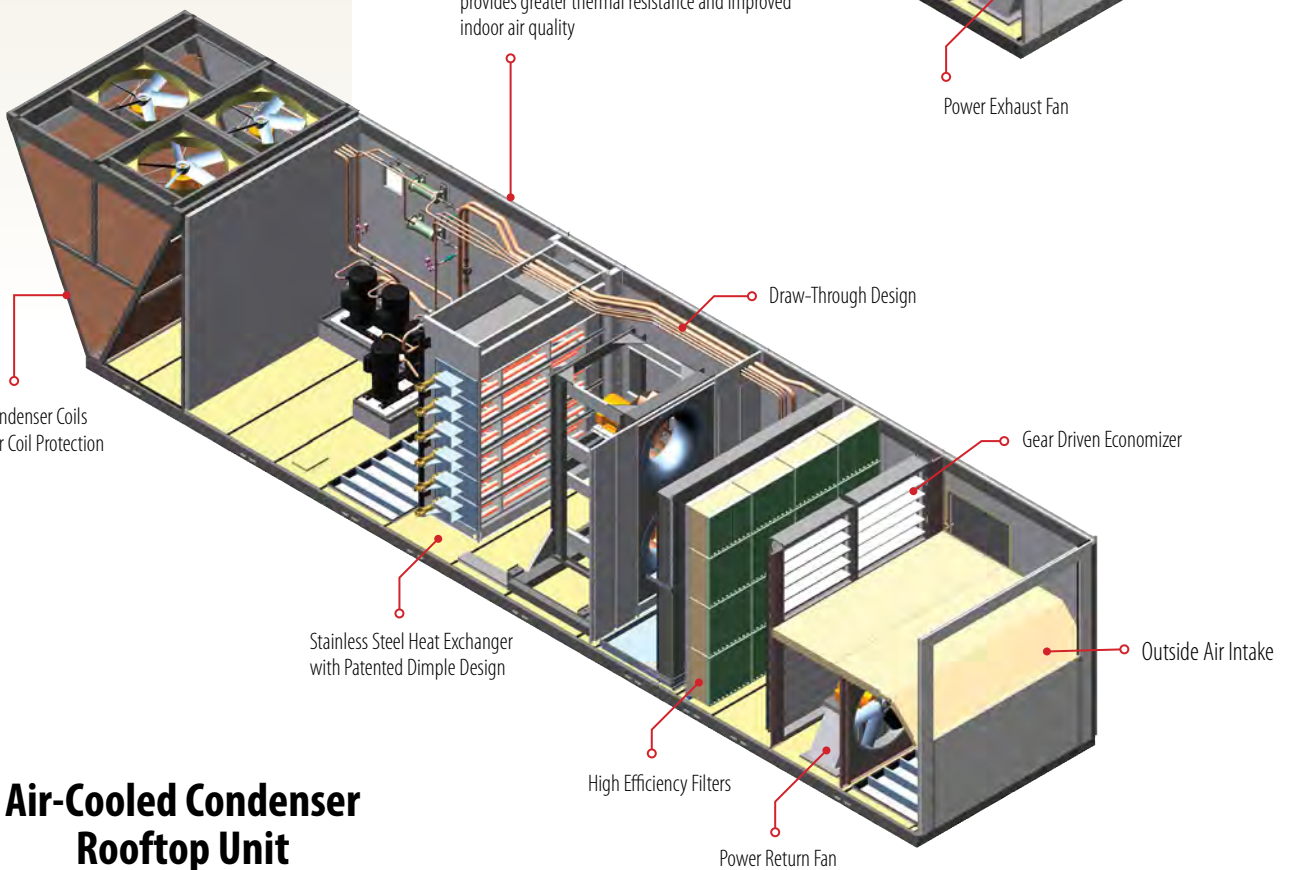
Patented De-Superheater Design reduces water consumption and chemical treatment

Evaporative-Cooled Condenser Rooftop Unit



Sloped Condenser Coils with Outer Coil Protection

Air-Cooled Condenser Rooftop Unit



Heating and Cooling Options

The RL Series can be configured as either a draw-through or blow-through arrangement with supply or return fans. The supply blower assemblies are direct drive, unhused, single inlet, single width, fans with spring isolation.

The AAON ECat32 selection software easily allows selection for constant or variable air flow applications. The software determines the most efficient alternatives for the application as a function of fan quantity, fan diameter, fan blade width, and rpm.

Inlet and outlet sound ratings are provided for each combination of fans and unit inlet and outlet sound ratings are determined for the overall unit configuration. Multiple fans can provide improved reliability, greater efficiency, lower sound levels, and greater service options.

Gas Heat

A system unique to AAON, the all stainless steel design construction assures dependable, long-term functionality. Through elimination of the need for internal turbulators, this unique design assures trouble free service, capacity, and efficient performance. Up to 12 individual burners may be utilized. The total input of the 45-125 and 135 ton units is greater than 2580 MBH while the 134 and 150-240 ton units are 2880 MBH. Each burner may be supplied with 2 stage gas control valves. Stainless steel heat exchanger has a 10 year prorated warranty.

Electric Heat

Electric resistance heating coils are open type with low watt density nickel chromium elements. The heating modules are 40 KW with individual circuit fusing and a manually reset high temperature limit switch.

Hot Water and Steam Heat Coils

Hot water and steam coils are available in 1 or 2 row configurations with 4 different face areas to meet job requirements.

Chilled Water Coils

Chilled water coils are constructed of 1/2" seamless copper tubing mechanically expanded to bond with the aluminum fins. Tube sheets are constructed of 16 GA galvanized steel and extruded holes for the copper tubing. All headers are constructed of heavy wall copper tubing with either spun or die formed end caps. Chilled Water coils are available in 4, 6, or 8 rows deep in two different face areas for each cabinet size.

Hot Water or Steam Preheat Coils

When job site conditions require, coils are available to precondition the outside air. 1 or 2 row hot water or steam coils may be supplied to match the system requirements.

Variable Capacity Compressors

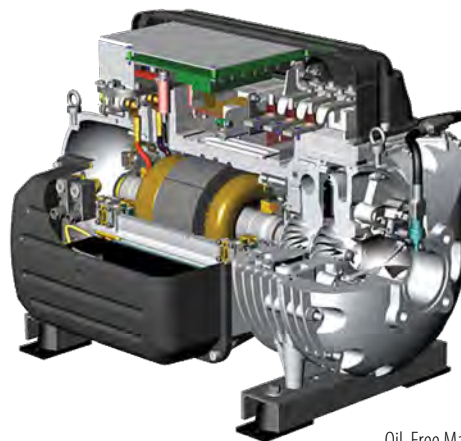
RL Series unit are available with variable capacity compressors which allow the unit to be able to provide a consistent supply air temperature at all operating conditions. Variable capacity and VFD driven variable speed R-410A scroll compressors are available for load matching cooling capabilities and increased part load efficiency. Variable capacity R-134a centrifugal Turbocor compressors provide load matching cooling capabilities, with quiet energy efficient operation. During part load operation, reducing compressor capacity saves system operating costs.

Flexibility

The wide range of unit sizes, capacities, air flow rates, as well as, the standard design features and the many available options make the RL Series the wise selection.

A Trend Setting Design

In the past when greater air flows were required, the diameter of the single plenum fan was simply increased to meet the requirement. This results in higher tip speeds, which also means higher sound levels. With the AAON RL Series, the greater air flow rates can be accomplished with multiple fans of smaller diameter, which inherently will be quieter than a single larger diameter fan. All the fans are also directly driven by the motor, which eliminates the drive belt assembly and associated requirement for maintenance. The entire assembly is then spring mounted to further enhance the vibration isolation and reduce sound transmission.



Oil-Free Magnetic Bearing Variable Capacity
Centrifugal Turbocor Compressor



VFD Driven Variable Speed Scroll Compressor

RL Series
Rooftop/Air Handling Units

AAON Environmentally Friendly HVAC Product Family

**Custom & Cataloged
Air Handling Units** ■
(800-200,000+ cfm)

Condensers & Condensing Units ■
(2-230 tons)

**Chillers (Air-Cooled, Evaporative-
Cooled, Heat Pumps)** ■
(4-540 tons)

Rooftop Units ■
(2-240 tons)

Outdoor Equipment Rooms ■
(Chillers, Boilers & Pumps)

Self-Contained Units ■
(3-70 tons)

Residential Systems ■
(2-5 tons)

Geothermal & WSHP Units ■
(1/2-230 tons)

Air-Source Heat Pumps ■
(2-230 tons)

Heating and Cooling Coils ■
(Booster, Hydronic, & DX)

Fluid Coolers ■
(50-450 tons)

Heating and Cooling *for...*

Auditoriums
Convenience Stores
Health Clubs
Healthcare Facilities
Homes
Lodgings
Manufacturing
Museums & Libraries
Natatoriums
Office Buildings
Restaurants
Retail Stores
Schools
Supermarkets



Defining Quality. Building Comfort.

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