RIGID POLYURETHANE FOAM CABINET CONSTRUCTION

Geothermal systems are premium products and should be constructed using a premium cabinet design. AAON double wall rigid polyurethane foam cabinets save cooling and heating energy through improved insulation and air seals. This reduces the energy lost to the environment and increases the building owner’s savings. Saved energy is saved money. Heating and cooling energy lost through poor insulation and poor air seals results in significant monetary losses to building owners. AAON rigid polyurethane foam cabinets reduce these monetary losses through improved thermal resistance, thermal breaks and quality air seals.

VARIABLE CAPACITY COMPRESSOR

Geothermal systems with variable capacity compressors improve occupant comfort and system efficiency by varying the capacity of the system to match the instantaneous heating and cooling load of the conditioned space. The compressor continuously adjusts its capacity to precisely match the supply air temperature or leaving water temperature. During much of the heating and cooling season, the compressor operates at a reduced energy level, saving you operating costs. By pairing variable capacity compressors with variable air volume fans, in a geothermal configuration energy efficiency is maximized and operating costs are drastically reduced.

DIRECT DRIVE BACKWARD CURVED PLENUM FAN

A high efficiency geothermal system should be complimented by high efficiency air movement. AAON direct drive backward curved plenum fans offer improved efficiency, quieter operation, a smaller footprint and greater flexibility than comparable air moving devices in the HVAC industry. AAON offers fan arrays configurable from one to four, direct drive, backward curved, plenum fans. By offering combinations of varying fan widths and diameters, the fans can be selected at optimum operating efficiency. Direct drive backward curved impellers require up to 15% less power than belt-driven forward curved fans, at the same duty requirements, making them uniquely suited for high efficiency applications such as geothermal systems.

Geothermal heat pump systems, often referred to as ground source heat pumps (GSHP) or water-source heat pumps (WSHP), are among the most efficient, environmentally friendly ways to heat, cool and dehumidify buildings by recovering otherwise wasted energy and utilizing that energy to satisfy the needs of the building.

SUPERIOR FEATURES


Superior Features

RIGID POLYURETHANE FOAM CABINET CONSTRUCTION

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Robust Applications

CENTRAL GEOTHERMAL UNITS
By utilizing large commercial geothermal systems to provide outside air to occupied spaces, or interior units, the total number of units in the building can be reduced and complexity of the water piping can be simplified. An AAON geothermal system may supply up to 140 tons of cooling capacity with only a single water connection. The air from geothermal rooftop units can be ducted through conventional ductwork or the outside air can be used to supply smaller interior WSHP units that serve individual zones. Because AAON geothermal systems have no outdoor fans, in addition to high efficiency, the units offer extremely quiet operation and have low maintenance requirements.

DUAL FUEL
All AAON geothermal systems are available with auxiliary and emergency heating capability. Dual fuel units include an additional heat source from natural gas, LP gas, steam, hot water or electric heat. Dual fuel systems offer great flexibility by allowing a second heat source to be used as a supplemental heat to the heat pump or a form of back up heat if water loop down time is required.

SOUND AND SPACE SENSITIVE APPLICATIONS
AAON split system geothermal systems can be used in new or retrofit applications. In a retrofit application exterior air-cooled condensing units can be replaced with water-cooled condensing units and, in many applications, the existing refrigerant piping between the condensing unit and air handler can be reused. Because a water-cooled condenser uses no exterior fans, the unit sound is often not detectable by building occupants and neighbors. By utilizing a split system, indoor compressor sound can be removed from occupied spaces in office buildings, hotels, health care facilities, banks, schools, condominiums, apartments and other sound sensitive locations. The refrigerant-to-water heat exchanger, along with the compressor, can also be located in a mechanical room or on the exterior of the building and only a quiet operating indoor fan and coil remain in the occupied space. This not only removes sound from the occupied space, it also removes compressor maintenance requirements from the occupied space and makes the interior unit smaller - saving valuable interior space.

WATER-TO-WATER
AAON water-to-water geothermal systems, or reversible chillers, are highly efficient units which can greatly reduce operational costs while at full load or part load conditions. Units may be selected with single or multiple circuits to provide redundancy and prevent unwanted downtime. AAON water-to-water systems provide conditioned water for radiant floor heating, domestic hot water, pool heating, as well as, snow and ice melting. AAON water-to-water heat pumps occupy less space than central station chillers and can be transported easily through doorways, elevators and hallways.
Self-Contained Water-Source/Geothermal Heat Pump

VARIABLE CAPACITY SCROLL COMPRESSORS
With 10-100% capacity control, SB Series scroll compressors can precisely match the load needed by the unit. The compressors vary the volume of refrigerant that flows through the refrigeration circuit allowing the unit to tightly control the air temperature and save energy when the unit is not running at full load.

VARIABLE SPEED SUPPLY FANS
ECM (Electronically Commutated Motor) driven direct drive backward curved plenum supply fans are standard on SB Series units to provide precise airflow control and reduced power consumption. Direct drive fans do not have belt energy losses and backward curved plenum fans are more energy efficient than housed forward curved fans. SB Series fans are more efficient than forward curved supply fans.

WATER-SOURCE AND GEOTHERMAL HEAT PUMP CONFIGURATION
An SB Series unit can heat the air as energy efficiently as it cools it. By transferring heat from the earth to the building, the SB Series heat pump requires no additional fuel gas or electrical installations.

DOUBLE WALL RIGID POLYURETHANE FOAM INJECTED PANEL CONSTRUCTION
AAON has set a new standard for performance with double wall construction using closed cell polyurethane foam injected insulation. Not only does it have more than twice the insulating R-value, it provides increased sound dampening, and creates a far more rigid and stronger assembly with less air leakage than fiberglass insulated construction.

**TABLE**

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All dimensions are in inches
Design cfm may be 30-50% greater or less than nominal cfm.
C and D units can be shipped in a split configuration for ease of installation.
*Dimension may vary depending on options selected.
SUPERIOR FEATURES

- Double wall rigid polyurethane foam injected panel cabinet construction has a higher thermal resistance, or R-value, compared with 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. Construction also makes the cabinet more rigid and resistant to damage, provides increased sound dampening, and reduces air leakage and infiltration.
- Access doors with chrome plated steel hinges and quarter turn, lockable handles make the unit easily serviceable.
- Unit control and compressors are contained within a compartment isolated from the air stream for ease of service and quiet operation.
- 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.
- Direct drive backward curved plenum fans are more energy efficient, quieter, and require less maintenance than belt driven fans.
- Variable speed supply fans allow precise airflow control and reduced power consumption.
- 10-100% variable capacity R-410A scroll compressors provide load matching cooling and improved part load efficiency.
- Coaxial refrigerant-to-water heat exchangers provide energy efficient heat transfer.
- Water-source and geothermal heat pump configurations allow for energy efficient heating and cooling.
- Labeled electrical components and color-coded wiring match the unit specific color-coded wiring diagram which is laminated and permanently affixed inside the control compartment.
- Factory run test report, wiring diagram, and Installation, Operation, and Maintenance manual with startup form are provided in the control compartment of every unit.
- Compressors include 5 year non-prorated warranty.

PREMIER OPTIONS

- Make up air ventilation with up to 100% outside air.
- Factory provided or customer provided controller can be selected to meet existing or new building control architecture.
- Modulating hot gas reheat humidity control option can provide precise humidity control necessary to maintain occupant comfort, without the temperature swings common with on/off reheat systems.
- Polymer e-coated coils are available to extend the life of the coils and protect them in corrosive environments.
- Multiple high efficiency filtration options, with up to a MERV 14 efficiency rating.
- SCR (Silicon Controlled Rectifier) electric heat control for reduced power consumption, longer heater life and improved occupant comfort.
The SA Series leads the industry in self contained unit technology and performance. Variable capacity scroll compressors, direct drive backward curved plenum supply fans, double wall rigid polyurethane foam insulated cabinet construction and optional heat pump configuration provide the SA Series with unmatched performance.

**SUPERIOR FEATURES**

- Two-inch double wall rigid polyurethane foam panel cabinet construction has at least a thermal resistance of R-13, 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 resistance to damage, provides increased sound dampening, and reduces air leakage and infiltration.

- Compressors and controls are contained within a compartment isolated from the air stream for ease of service and increased sound dampening.

- 10-100% variable capacity R-410A scroll compressors allow for load matching cooling.

- Direct drive backward curved plenum supply fans provide improved energy efficiency and reduced maintenance versus belt driven fans.

- Multiple, spring isolated, fan configurations give the unit redundancy, lower sound and vibration levels and the flexibility to meet job requirements.

- Single or multiple supply air connections can be factory provided from the right, left, back, or top sides of the supply fan plenum.

- Shell and tube or brazed plate water-cooled condensers provide improved unit efficiency and design flexibility.

- Sloped stainless steel drain pans eliminate standing water that 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 are provided in controls access compartment.

- Compressors include 5 year non-prorated warranty.

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**PREMIER OPTIONS**

- Heat pump configuration allows for energy efficient heating and cooling.

- Waterside economizer for free cooling during low ambient conditions.

- VFD controlled supply fans for precise airflow control and reduced power consumption.

- Plenum height options in increments of 4 inches allow the unit to meet the space requirements.

- Modulating humidity control provides energy efficient dehumidification, even at low sensible heat loads, without the temperature swings common with on/off reheat systems.

- Hot water or steam preheating coils allow unit to tie into existing boiler system.

- Polymer e-coated coils are available to extend the life of the coils and protect them in corrosive environments.

- Multiple filtration options, up to MERV 14, for high efficiency air filtering.

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**SA Series Self-Contained Units**

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<thead>
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<th>Cabinet</th>
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<td>21,000</td>
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</table>

*Dimensions may vary depending on options selected.
**Double intake units can be split in half for ease of installation.
All dimensions are in inches.
Design cfm may be 30-50% greater or less than nominal cfm.
Self-Contained Water-Source/Geothermal Heat Pump

**VARIABLE CAPACITY SCROLL COMPRESSORS**
With 10-100% capacity control, SA Series scroll compressors can precisely match the load needed by the unit. The compressors vary the volume of refrigerant that flows through the refrigeration system allowing the unit to tightly control the air temperature and save energy.

**WATER-SOURCE/GEOTHERMAL CONFIGURATION**
With the heat pump option an SA Series unit can heat the air as energy efficiently as it cools it. Using refrigerant-to-water heat exchangers condensers, the unit can operate at lower ambient temperatures than an air-source heat pump.

**MODULAR DESIGN**
The SA Series features 4 capacity sizes with a single air intake (SA-023 to SA-035) and these units can also be matched together to provide 7 additional sizes which increase the capacity with two air intakes (SA-045 to SA-070).
AAON M2 Series modular units provide an ideal solution for new and replacement applications with its modular construction and premier factory installed features. The serviceability, quiet operation, reliability, premium efficiency, and rugged construction allow M2 Series units to expertly fit the needs of your specific job requirements. These units reflect the proven reliability and engineering excellence from AAON, the premier manufacture of heating and cooling products.

**SUPERIOR FEATURES**

- Blowers are backward curved plenum style with aluminum construction
- Cabinet design allows air leakage of less than 1% at +/- 6” of static pressure
- Double wall cabinet construction increases exterior sound dampening and is easier to clean than single wall construction. Double wall galvanized cabinet construction incorporates high performance composite panels that are insulated with closed cell polyurethane foam. Double wall doors provide better thermal and acoustic insulation, remain flatter and seal better against door frame gaskets than doors with single wall construction.
- Easy access doors are hinged with removable chrome plated steel hinges and use quick release latches.
- Delivery options include factory assembled or shipped as individual modules. Large cabinet dual deck modules are provided factory assembled to prevent unnecessary lifting in the field.
- Unit specific color-coded wiring diagrams are provided in point-to-point and ladder form, laminated, and permanently affixed inside the control compartment.
- Double sloped stainless steel drain pan eliminates standing water that can support microbial growth. Stainless steel construction ensures the pan itself will not corrode leading to contaminants in the air stream.
- Controls are located in a compartment that is isolated from the air stream for easy service.
- Compressors include 5 year non-prorated warranty.
Self-Contained Water-Source / Geothermal Heat Pump

**PREMIER OPTIONS**

- Access sections can be customer selected and placed in the construction of the unit. The sections allow easy field installation of components such as airflow monitoring stations, humidifiers or other devices important to occupant comfort. Access sections also provide easy access for maintenance and cleaning when required.
- Corrosion protection is available for the coils with a polymer e-coating to extended coil assembly useful life.
- Electric and hot water preheat prevents hydronic coil freeze instances.
- Electric, hot water or steam heat, or indirect fired gas provides the flexibility to meet the requirements for indoor applications.
- Face and bypass dampers provide capacity control of the coil.
- Factory or field mounted controls can be provided to meet the existing control architecture or designed to meet the needs of a new construction project.
- Marine service lights in each air stream compartment are controlled by a single switch.
- Multiple options and monitoring devices are available in the filter section for improved indoor air quality.
- Modulating hot gas reheat dehumidifies while maintaining uniform and consistent space temperatures without the temperature swings common with on/off systems.
- Phase and brownout protection protects the unit from local power fluctuations.
- Unit can be provided with a factory installed convenience outlet.
- Drain pans are sloped to ensure positive drainage and constructed from stainless steel to provide resistance to corrosion.
- The cabinet interior metal liner is cleanable, and easily wiped down. The use of foam panel construction rather than fiberglass insulation eliminates the potential for trapping dirt or moisture in the interior of the air handler.
The M2 Series Heat Pump can be configured for a variety of applications:

- Total Energy Recovery with 100% Outside Air
- Dehumidification with modulating hot gas reheat and/or return air bypass
- Comfort or Process Heating and Cooling
- Premium Filtration for Indoor Air Quality
- Modular construction for renovation installations with restricted install space

Self-Contained Water-Source / Geothermal Heat Pump

**INDOOR AIR QUALITY FEATURES**

- Drain pans are sloped to ensure positive drainage and constructed from stainless steel to provide resistance to corrosion.
- The cabinet interior metal liner is cleanable and easily wiped down. The rigid, polyurethane foam panel construction rather than fiberglass insulation eliminates the potential for trapping dirt or moisture in the interior of the air handler and offers a clean air tunnel with no exposed insulation.
- Access to the unit’s interior for maintenance is made easy with standard hinged doors that open against pressure. Adhering to the unit’s maintenance schedule is an important element in combating mold growth and maintaining indoor air quality.
- Each unit can be shrink-wrapped for shipping to prevent damage due to weather and road debris as well as during storage prior to installation.

**ENERGY EFFICIENCY**

M2 Series standard backward curved plenum fans are more energy efficient, quieter, and can handle higher static pressures, and are easier to clean than comparable forward curved blowers. A clean fan not only requires less energy than a dirty one, but also maintains capacity and reduces stress on the unit.

Foam paneling provides more insulating value than ½ lb density fiberglass insulation. Two inch AAON foam insulation provides thermal conductivity of R=13 inch (1” paneling provides R=6.5) while 2”½ lb. density fiberglass only offers R=6.5.

**ACOUSTICAL FEATURES**

When compared with single wall cabinet construction, the M2 Series has greater sound insulation capabilities due to the composite paneling.

Additionally, vibration isolation mounts are sized for fan and motor assemblies to minimize undesirable noise.

AAON pre-engineered factory installed controls are manufacturer tested to ensure consistent quality, and reduce field labor costs.

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### M2 Model Specifications

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<th>M2 Model</th>
<th>Nominal cfm</th>
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*Dimensions may vary depending on options selected. All dimensions are in inches. Maximum cfm may be 30-50% greater than nominal cfm.
ENERGY RECOVERY WHEEL
The AAONAIRE Energy Wheel is a total energy recovery wheel, transferring both sensible and latent energy from the incoming air stream to the exhaust and preconditioning the supply air. This saves energy by reducing mechanical heating and cooling use, and also lowers costs by increasing effective system capacity by 30% or more which allows smaller equipment to be selected.

POLYMER E-COATED COILS
A uniformly thick polymer coating is applied to the entire coil by an immersion process that minimizes the potential for gaps in coverage that may occur with spray coating. The polymer coil coating provides corrosion protection for more than 6000 hours in salt spray testing, while maintaining the thermal performance of the coil.

HUMIDITY CONTROL
Modulating hot gas reheat delivers only the amount of reheat required for space comfort, providing precise dehumidification without overcooler the space. Occupant comfort is uniform and consistent; drastic temperature swings common to on/off type reheat systems are eliminated.

CONTROL FEATURES
AAON also features factory installed customer provided controls allowing the customer to specify the type and manufacturer of the controller to match the building requirement. This flexibility allows the unit to match an existing building control architecture.

M2 Series Geothermal Heat Pump Serviceability
**Rooftop Water-Source/Geothermal Heat Pump**

**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 more than twice the insulating R-value, it creates a far more rigid and stronger assembly with less air leakage than fiberglass insulated panels.

**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 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.

**MAKEUP AIR CAPABILITY**

AAON RN and RQ Series units have makeup air capability and can be specified with up to 100% outside air. AAONAIRO 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, consistent 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 consistent supply air temperature.

**DUAL FUEL HEAT**

AAON RN and RQ Series water source and geothermal units provide a number of dual fuel options. 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.

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*Length and height vary depending on options selected.
All dimensions are in inches.
Design cfm may be 30-50% greater or less than nominal cfm.
**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 - over 5 times the industry standard of 500 hours.
- 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 with rubber isolation mounts provide improved energy efficiency and reduced maintenance versus belt driven fans.
- 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 non-prorated aluminized steel gas heat exchanger warranty and 25 year non-prorated stainless steel gas heat exchanger warranty.

**PREMIER OPTIONS**

- Variable capacity and variable speed R-410A scroll compressors for load matching cooling and improved part load efficiency.
- Water-source and geothermal heat pump options for energy efficient heating.
- Factory installed total or sensible AAONAI RE energy recovery wheels.
- Humidity control options including: High Capacity Coils, Modulating Humidity Control, Return Air Bypass and Mixed Air Bypass.
- Polymer e-coated coils, copper finned coils and stainless steel coil casings 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 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 control-by-others.
- Dual fuel, using both the heat pump and a second form of heat, offers great flexibility and a supplemental form of heat during heat pump operation.
AAON continuously strives to satisfy the dynamic industry requirement for larger, more energy efficient packaged rooftop equipment. The RZ Series design incorporates the AAON long term commitment and dedication to excel as the premier manufacturer of rooftop equipment. RZ Series units are available in multiple configurations and include many standard features that make AAON synonymous with quality products for any application.

**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 and open from the outside or inside.
- Aluminum tread plate floor covering in appropriate equipment access areas for improved durability and safety.
- Marine service lights for quick and convenient maintenance.
- Polyurethane paint exceeds a 2,500-hour salt spray test - over 5 times the industry standard of 500 hours.
- 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.
- Microprocessor controls are compatible with BACnet®, Modbus, LonTalk®, and Fox protocols for integration with a variety of controls systems.
- 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 working in a crowded cabinet.
**SUPPLY AIR FANS**
The RZ 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, unhoused, single inlet, single width, fans with spring isolation.

The AAON ECat selection software easily permits a selection for constant speed or variable speed 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, AAON’s unique design assures trouble free service, capacity, and efficient performance. Up to 12 individual burners may be utilized. 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.

**HEAT PUMP**
The energy efficient water-source/geothermal heat pump units are of particular application value when there exists an accessible water source or when cooling tower water is available. The standard water-cooled RZ Series units include 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.

**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.

**FLEXIBILITY**
The wide range of unit sizes, capacities, airflow rates, as well as, the standard design features and the many available options make the RZ Series the wise selection.

**A TREND SETTING DESIGN**
In the past when greater airflows 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 RZ Series, the greater airflow 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.

**VARIABLE CAPACITY COMPRESSORS**
RZ 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. VFD driven variable speed R-410A scroll compressors are available for load matching cooling capabilities and increased part load efficiency. During part load operation, reducing compressor capacity saves system operating costs.
**Evaporator Coils**

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

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**Hinged Access Doors**

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

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**Electric Heat**

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

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**Economizer**

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

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**Spring Isolators**

Spring isolators provide sound attenuation for the main blower section.

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**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.

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**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.

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**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.

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**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.

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**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.
WATER-SOURCE/GEOTHERMAL HEAT PUMP ROOFTOP UNITS. THE ULTIMATE IN ENERGY EFFICIENCY.

Optional Exhaust and Return Fans

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

<table>
<thead>
<tr>
<th>RZ Model</th>
<th>Condenser Type</th>
<th>Compressor Type</th>
<th>Compressors/Circuits</th>
<th>Width</th>
<th>Height</th>
<th>Length</th>
</tr>
</thead>
<tbody>
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<td>R-410A Scroll</td>
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<td>142</td>
<td>104</td>
<td>Length varies depending on options selected.</td>
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*Dimension may vary depending on options selected.

All dimensions are in inches.

Design cfm may be 30-50% greater or less than nominal cfm.
Geothermal heat pumps use the constant temperature of the earth as the exchange medium instead of the outside air temperature. A few feet below the earth’s surface the ground remains at a relatively constant temperature. 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 above it in the summer. The geothermal heat pump takes advantage of this constant temperature by exchanging heat with the earth through a ground heat exchanger.

The unique features and flexibility of AAON equipment provide you with the opportunity to apply AAON heat pumps to educational facilities, office buildings, supermarkets and convenience stores, museums and libraries, churches and auditoriums, restaurants and many more applications desiring high efficiency, low cost heating and cooling. Equipment can be self-contained or split systems and include AAON rigid polyurethane foam panel construction to save heating and cooling dollars from escaping the HVAC cabinet, and AAON direct drive backward curved plenum fans for efficient air movement.

AAON Geothermal Quick Selection

<table>
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<th>Nominal Cooling (tons)</th>
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<tr>
<td>M2</td>
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<tr>
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<td>RZ</td>
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<td>RN</td>
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<tr>
<td>RQ</td>
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</table>

Self-Contained Units

Rooftop Units
Geothermal Water Heat Exchanger Systems

- Closed Loop Horizontal Well System
- Closed Loop Vertical Well System
- Closed Loop Surface Water System
- Open Loop Groundwater Well System

CONTACT YOUR LOCAL AAON REPRESENTATIVE TO LEARN MORE ABOUT THE MANY HEATING AND COOLING SOLUTIONS AAON CAN PROVIDE FOR YOU.