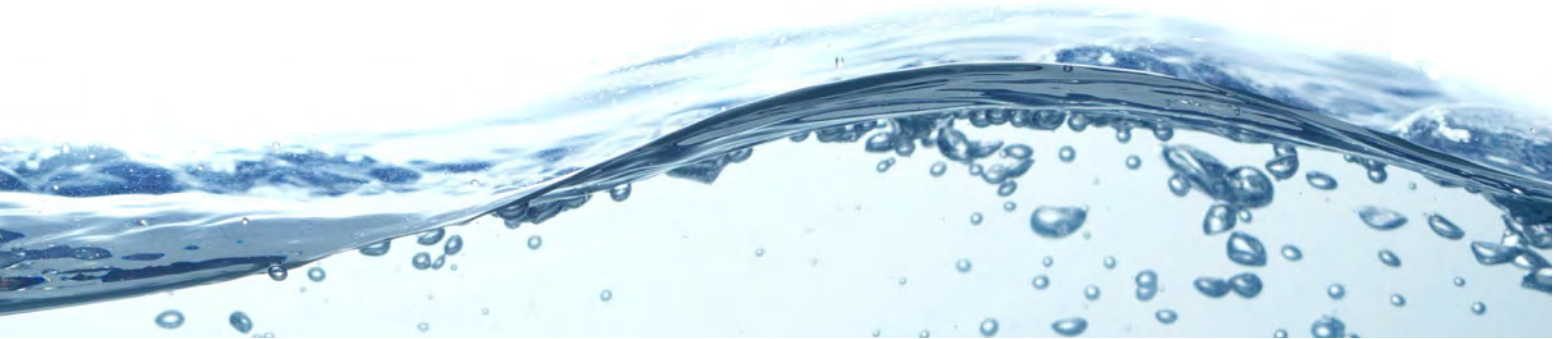




# Water-Source Heat Pumps

## SA SERIES



SA Series

Vertical Self-Contained Unit Water-Source  
Heat Pumps (23-70 tons)

### Features:

- Vertical self-contained units with capacities from 23 – 70 tons
- Direct drive backward curved plenum supply fans for improved energy efficiency and reduced maintenance
- Double wall rigid polyurethane foam injected panel construction reduces air leakage and dampens radiated sound
- 10-100% variable capacity R-410A scroll compressors for load matching cooling and heating with improved out load efficiency
- Two-way modulating water flow control valve option for head pressure control and unit operation with lower temperature condenser water
- Flexible control options allowing the control to be matched to the application
- Unit control and compressors are contained within a compartment isolated from the air stream for ease of service and quiet operation

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

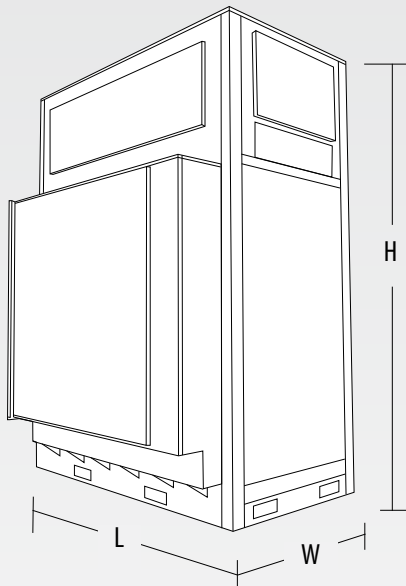
○ *Dehumidification and Premium  
Filtration Capabilities*

○ *Variable Air Volume  
Applications*

○ *Factory Installed or Customer  
Specific Controls Options*

# WSHP | SA Series

SA Series water-source heat pump self-contained units lead 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 heat pump configuration provide the SA Series with unmatched performance.



## Superior Features

- Single cabinet with capacities from 23-35 tons and dual cabinet with capacities from 45-70 tons.
- 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.
- Shell and tube or brazed plate water-cooled condensers provide improved unit efficiency and design flexibility.
- Double sloped stainless steel drain pans eliminate standing water that can support microbial growth and stainless steel construction prevents corrosion and rust 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.
- Heat pump configuration allows for energy efficiency heating and cooling.

## Premier Option

- 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 hot gas reheat 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 new or 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.
- Makeup air ventilation with up to 100% outside air.

SA Model	Intake	Nominal cfm	Height*	Length	Width*
023	Single	6,900	111-135 (in 4 inch increments)	79	55
028		8,400			
030		9,000			
035		10,500			
045	Double	13,500			110 <sup>†</sup>
050		15,000			
055		16,500			
058		17,400			
060		18,000			
065		19,500			
070		21,000			

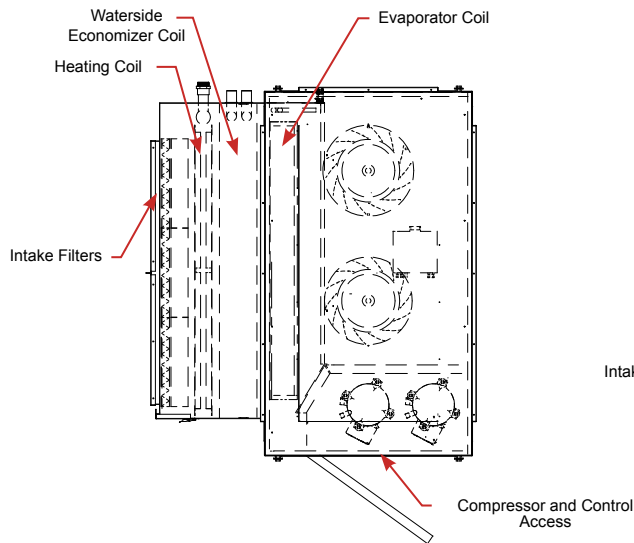
\*Dimensions may vary depending on options selected. All dimensions are in inches.

<sup>†</sup> Double intake units can be split in half for ease of installation.

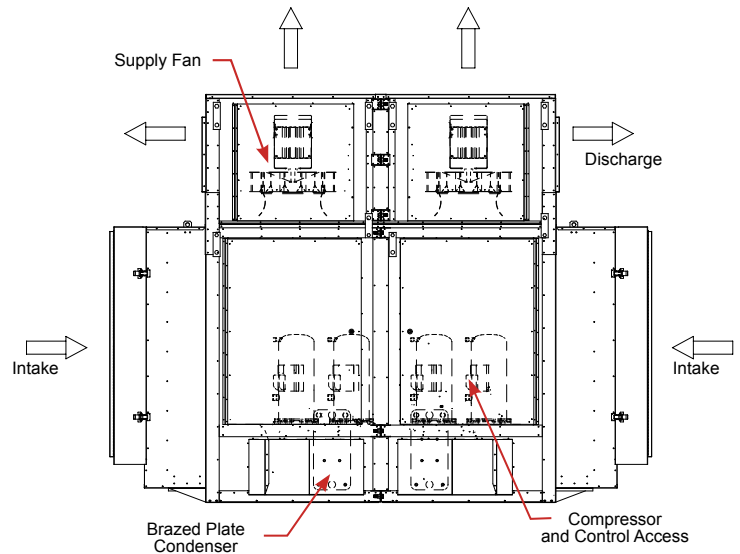
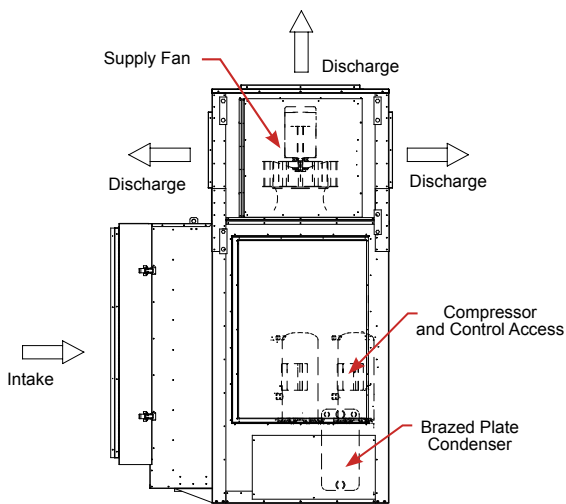
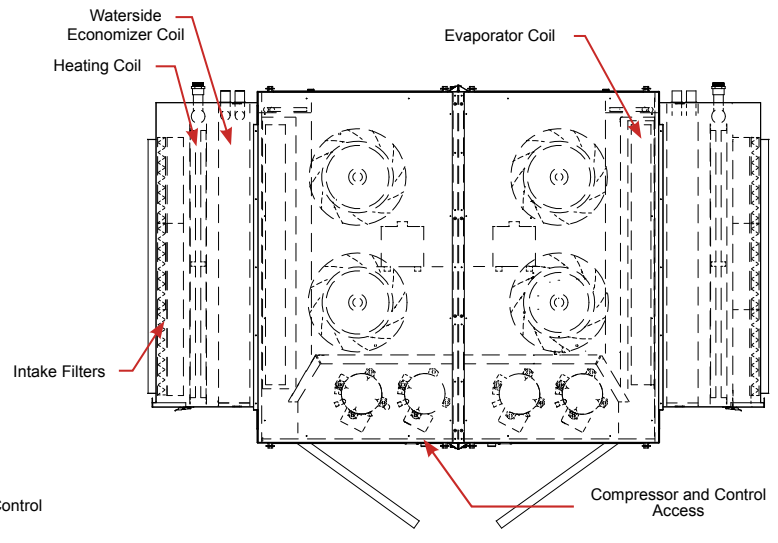
Maximum cfm may be 30-50% greater than nominal cfm.

# SA Series Self-Contained Water-Source/Geothermal Heat Pump

## Single Sided Intake (23-35 tons)



## Double Sided Intake (45-70 tons)



## 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

An SA Series unit can heat the air as energy efficiently as it cools it. Using refrigerant-to-water heat exchangers, the unit can operate at lower condensing temperatures than an air-source heat pump. By transferring heat from the earth to the building, the SA Series heat pump requires no additional fuel gas or electrical installations.

## Modular Design

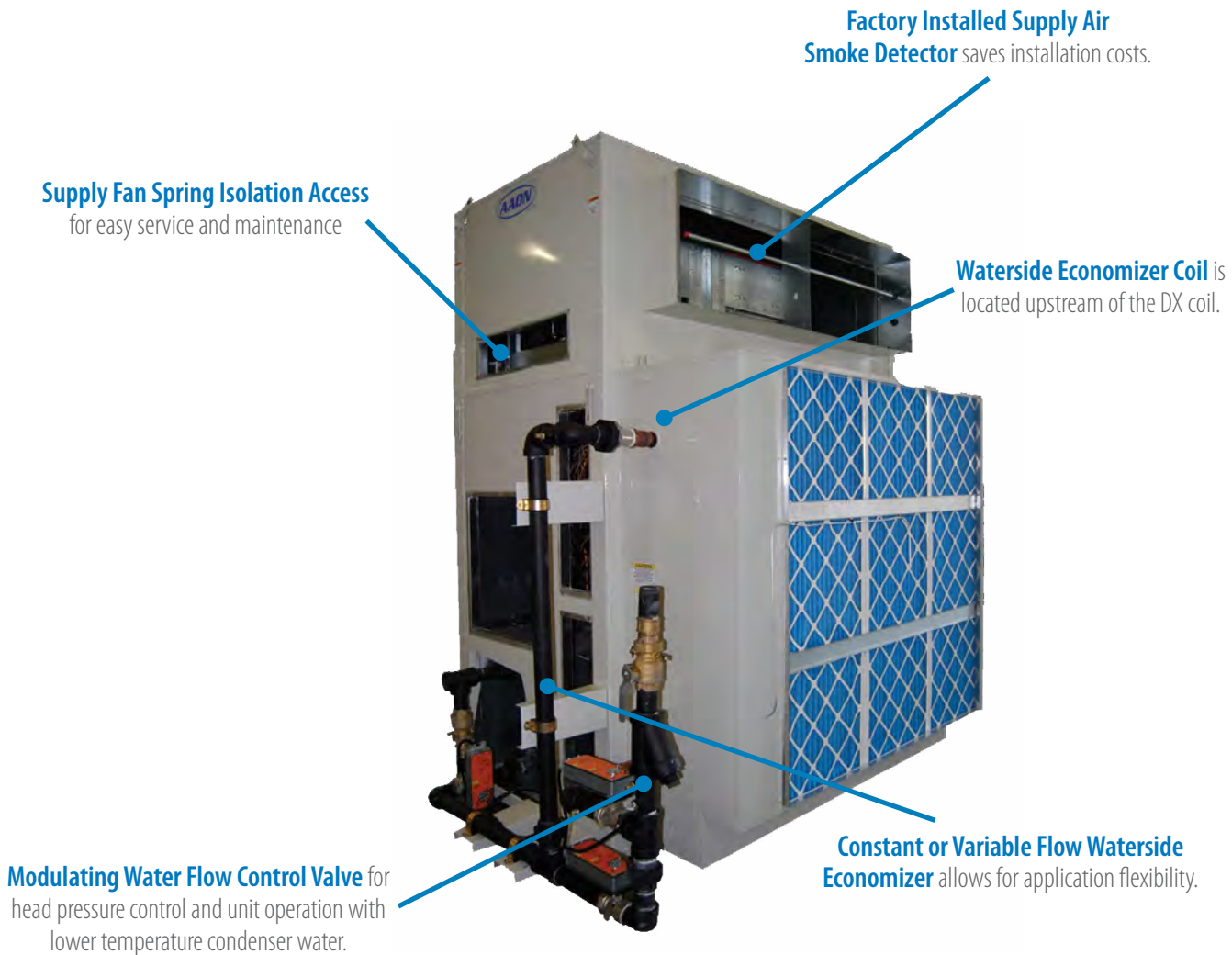
The SA Series features 4 capacity sizes with a single air intake (SA-023 to SA-035) and these units can also be matched together to provide 7 additional sizes which increase the capacity with two air intakes (SA-045 to SA-070).

Variable capacity scroll compressors provide load matching cooling and heat pump heating and improve part load efficiency.



# Unique Configurations

## SA Series with Waterside Economizer



## Energy Saving Waterside Economizer

Waterside economizers save compressor energy at low ambient conditions. The system can cool the air without running the compressors. High efficiency cooling coils are constructed of copper tubing mechanically bonded to aluminum fins and are designed to maximize performance.

Waterside economizers utilize low outdoor air temperatures and a cooling tower to cool the condenser water loop. This ambient cooled fluid is then used in the waterside economizer coil to provide cooling without mechanical refrigeration or to supplement it.

Waterside economizers are most effective in dry climates and for applications that require cooling during lower ambient conditions. Waterside economizers can also be effective in humid climates for humidity control because it does not introduce additional outdoor air into the space as an airside economizer does. Typical applications include health care facilities, data centers, laboratories, and manufacturing facilities.

Water-source heat pump systems are among the most energy efficient ways to heat and cool a building, especially buildings with a wide variety of spaces, such as classrooms, health care facilities, and office buildings. AAON water-source heat pumps include the same unmatched flexibility and complete serviceability as AAON air-cooled systems.



## Health Care Facilities

*Health care facilities demand a HVAC System that is energy efficient while improving the indoor air quality for a comfortable environment*

### Energy Efficiency

Spring Isolated direct drive backward curved plenum fans with VFD driven motors for precise temperature control, reduced power consumption, and overall greater system efficiency. Features such as 10-100% variable capacity compressors provide load matching cooling and overall improved part load efficiency. Two-way modulating water flow control valve option allows for head pressure control, lower condenser water temperature (<65°F), and condenser water pump energy savings, with the additional benefit of saving installation time and cost.

### Indoor Air Quality and Comfort

Double wall rigid polyurethane foam panel construction is easily cleanable without exposed insulation. Modulating hot gas reheat for energy efficient dehumidification, even with low sensible heat loads for improved indoor

comfort. Premier options like high efficiency filters with up to MERV 14 and 95% efficiency are also available to meet filtration requirements common in health care facilities.

### Makeup Air Capability

All SA Series water-source heat pump self-contained units can provide up to 100% outside air to the space. Modulating cooling, heating and dehumidification allow control of the air supplied to the space for improved ventilation without sacrificing comfort.



## Schools

*Educational facilities need an energy efficient and quiet HVAC system that is not disruptive while providing a comfortable learning environment.*

### Comfortable Learning Environments

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.

### Quiet Operation and Cost Savings

Self-contained units provide numerous features and options for quiet operation conducive to an effective learning environment, while also offering cost-savings important to educational facilities.



- ▲ Double wall rigid polyurethane foam panel construction increases thermal resistance, reduces air leakage and attenuates radiated noise.

**Spring Isolated Direct Drive Backward Curved Fans** offer greater system efficiency while providing a quieter operation so as to not disrupt the learning process.

**VFD Driven Fans** are available for precise airflow control and reduced power consumption for further cost savings.

**Double Wall Rigid Polyurethane Foam Injected Panel cabinet** offers reduced air leakage and infiltration, and along with isolated compressor and controls compartment provides increased sound dampening. Compressor sound blankets are also available for an even quieter unit operation.

**Single Zone VAV** is the most energy efficient system for school applications. AAON SA Series Single Zone VAV systems modulate fan speed to provide precise space temperature control and modulate compressor capacity to provide precise supply air temperature control.



## High Rise Buildings

*High rise buildings need a HVAC system that offers energy efficiency, easy serviceability, and can deliver comfort to multiple areas.*

### Energy Efficiency and Occupant Comfort

High rise building owners want to save money while providing a comfortable environment for their occupants, which is why AAON Self-Contained units offer standard features and premier options such as direct drive backward curved plenum fans with VFD driven motors for precise temperature control, reduced power consumption, and overall greater system efficiency. Features like modulating variable capacity compressors (10-100%) for load matching cooling and overall improved part load efficiency which saves high rise building owners money and energy.

Modulating hot gas reheat for energy efficient dehumidification, even with low sensible heat loads for improved indoor comfort for occupants and overall greater cost savings. Waterside Economizers save energy at low ambient conditions and provide “free cooling” for increased cost savings.

### Serviceability

In high rise buildings, a non-functioning unit is money out the window and upset unproductive occupants. AAON Self-Contained units offer numerous features and options to save valuable installation and service time. Features and options like lockable access doors with quarter turn handles, isolated compressor and controls compartment, clogged filter switch, overflow switch, sight glass, and compressor isolation valves reduce unit downtime and increase the overall serviceability of the unit.

AAON Self-Contained Units are available in shipping splits which means easy delivery and installation at the jobsite.

### VAV Application

SA Series water-source heat pump systems using VAV boxes are available to heat and cool the complete floor of a high rise building. Variable speed fans and variable capacity compressor allow for precise control

# AAON Environmentally Friendly HVAC Product Family

## ROOFTOP UNITS (2-240 tons)



## OUTDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)



## CONDENSING UNITS (2-230 tons)



## PACKAGED OUTDOOR MECHANICAL ROOMS (4-540 tons)



## SELF-CONTAINED UNITS (3-70 tons)



## COILS



## INDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)

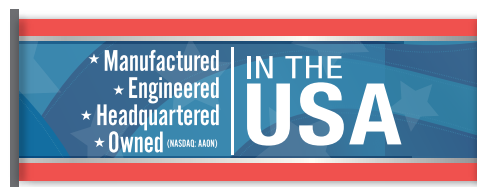


## WATER-SOURCE HEAT PUMPS (1/2 - 230 tons)



Defining Quality. Building Comfort.

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