

INDOOR PACKAGED EQUIPMENT

COMMERCIAL INDOOR
HEAT PUMPS



Vertical Stacked Water Source Heat Pumps



Performance, value and sustainability in a labor-saving package.

The Vertical Stacked Water Source Heat Pumps (VSCS) from Johnson Controls offer the ultimate in multi-story HVAC design flexibility. The VSCS Series is a compact, concealed system, capable of providing total heating and cooling functions for a single zone or multiple rooms. These units offer the flexibility of a four-pipe fan coil system at the cost of a two-pipe system, with the added flexibility of individual tenant metering. VSCS Series units are ideally suited for the total heating and cooling needs of any two-plus story building with a consistent floor plan.

- Hotels
- High-Rise Apartments / Condominiums
- Hospitals / Nursing homes
- Dormitories
- Renovated office space

The space saving VSCS unit is a two-part system featuring a self-supporting, pre-piped cabinet, and a removable heat pump chassis. The cabinet, complete with supply/return/drain risers, is installed during the intermediate phase of building construction. The cabinet is framed-in, and covered with drywall, as part of the interior wall structure. The finished equipment installation is hidden from view, blending with the decor of the room. Access to the mechanical components of the unit can be made entirely through the front/return air panel.

The provision for as many as three cabinet supply air outlets allows for maximum design flexibility and cost savings. One strategically located unit can serve up to three separate rooms without the need for ductwork. The ease of removal and replacement of the heat pump chassis offers enhanced serviceability. A chassis that requires service may be quickly removed, replaced with a back-up chassis, and serviced at a more convenient time or place.

Johnson Controls stacked heat pump design exceeds ASHRAE 90.1 requirements at all rating conditions, making the VSCS series an excellent choice for water-loop and geothermal applications.

STANDARD FEATURES

Construction

- Cabinet assembly is constructed of heavy gauge corrosion resistant galvanized steel
- Removable inner service panel seals the fan and compressor compartment during operation
- Standard 14 gauge galvanized steel drain pan
- Full-length supply, return, and condensate risers (Type-M), are factory assembled onto the cabinet
- Riser placement may be on any of three sides of the cabinet: right, left or back
- Risers are internally piped into the cabinet assembly
- Maximum factory installed riser length is 120 inches
- Condensate drain riser insulated with 1/2 inch wall thickness "Armaflex" insulation
- Integral guide rails for slide-in heat pump chassis
- All models 3/4 to 3 tons are shipped factory-charged and tested
- Convenient indoor access to all parts and service needs
- Units are insulated with 1/2" thick, 2 lb. density acoustic fiberglass insulation
- Supply air openings are factory cut according to customer specifications
- Standard noise attenuating insulated air baffle provided for each supply air opening

Tonnage Capacities
3/4 to 3 tons





- Two-part system: pre-piped cabinet & removable heat pump chassis
- Provision in cabinet for up to three supply air outlets
- All cabinet openings are provided with drywall flanges around the full opening perimeter

Compressors

- High efficiency rotary compressors on 3/4 to 1-1/2 ton units and hermetic reciprocating compressors for 2 to 3 ton units
- Compressors are mounted on rubber isolators to minimize vibration transmission
- Internal overload protection provided on compressors
- External high pressure and low pressure cutout switches are included in each compressor control circuit
- Standard time delay relays for anti-short cycle protection
- Compressors provided with standard 5-year warranty

Refrigerant System

- Environmentally friendly R-410A refrigerant design
- Air-to-air refrigerant coil
- Water-to-refrigerant coil
- Chassis base is fabricated from 14 gauge galvanized steel
- Service ports provided for field diagnosis
- Available in 3/4, 1, 1-1/2, 2, 2-1/2 and 3 tons of cooling
- Dual circuit models feature internally manifolded condensers
- Each refrigeration circuit includes an adjustable bi-flow thermal expansion valve (with external equalizer), liquid line filter drier, and service gauge ports
- The reversing valve is a pilot operated, sliding piston type with a replaceable magnetic solenoid coil

Evaporator and Condenser Coils

- Refrigerant-to-air heat transfer coils are constructed of internally enhanced copper tubes; mechanically bonded to enhanced aluminum plate fins
- The coaxial refrigerant-to-water heat exchangers feature a convoluted inner tube design for high heat transfer efficiency

Fan Assembly

- Forward curved, double-inlet and double-width, direct-drive centrifugal blowers are used for air movement
- Large diameter blower wheels are employed to provide required airflow performance at minimum noise levels
- Fan motors are PSC type and feature permanently lubricated bearings
- Motors provided with internal thermal overload protection
- Fan motors mounted with integral "flex-mount" system for additional vibration isolation with rubber grommets
- Removable fan and motor assembly
- Fan motors provided with two available fan speed settings (Hi-Low)

Electrical Components and Controls

- All units are ETL listed
- All units are factory wired with a 24-volt control circuit to allow for connection to a factory or field provided mechanical or electronic heat pump thermostat
- Basic control functions include anti-short cycle compressor protection, random start delay, and positive compressor lockout in the event of high pressure/low temperature cutout
- The reversing valve solenoid coil shall be energized in cooling mode only
- Standard terminal block provided for service convenience and maintenance
- 50 VA Class II transformer
- Blower motor power relay
- Single-pole contactor for compressor operation
- Shut-off ball valves with threaded hose connections

Filters

- All models shipped with 1-inch thick medium-efficiency throwaway filters
- Filters are accessible through the hinged return air panel

Risers

- "Type M" and "Type L" copper with swaged connections
- External condensate riser – minimizes blockage potential
- Optional riser insulation (standard on drain riser)
- Master/slave riser configurations available

Decorator Front Panel

- Flush-mounted return air panel to minimize line-of-sight noise transmission
- Front access panel is provided pre-primed and hinged to heat-pump chassis
- Front panel can be mounted for right or left-hinged access

Supply Air Grilles

- Unit mounted supply grilles of double-deflection type
- Grilles for unequal airflow applications shall be provided with integral opposed blade dampers
- Supply air grilles provided in standard "appliance white" painted finish

Unit Tagging

- Each unit individually tagged with factory and customer supplied information

OPTIONAL FEATURES

Construction

- Protective risers cover to avoid riser damage during shipping, handling and installation
- Type-L copper risers
- Corrosion protective evaporator coil coating
- Cupronickel coaxial water-to-refrigerant coil

Refrigeration

- Optimal unit performance can be enhanced by the addition of an automatic water flow regulator
- System efficiency may be improved by the addition of a water control valve to the refrigeration chassis

Fan Assembly

- Hi-static motor and blower assembly available for applications with extended ductwork layout

Controls

- Non-fused disconnect
- Additional electrical fusing available
- Surface-mount connection box allows for mounting of a space thermostat directly above the units return air panel
- Auto-flow regulator valve option