

INDOOR PACKAGED EQUIPMENT

COMMERCIAL INDOOR  
HEAT PUMPS



# Vertical Stacked Water Source Heat Pumps



 **ENVIRO-TEC<sup>®</sup>**  
BY JOHNSON CONTROLS

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

The Vertical Stacked Water Source Heat Pumps (VSCS) from ENVIRO-TEC® 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.

All units are tested and certified by AHRI/ISO 13256-1 and ETL for United States and Canada. ENVIRO-TEC® 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 3/8 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
- 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

Tonnage Capacities  
3/4 to 3 tons





### Compressors

- High efficiency rotary compressors on 3/4 to 1-1/2 ton units and scroll 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
- 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
- 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 sound 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/Controls

- Available in 208/230 and 265/277 1-phase
- All units are completely factory wired with all necessary operating controls
- A 24 volt control circuit, with oversized transformer, is provided for field connection
- The reversing valve solenoid coil is energized in cooling mode only
- The unit has a microprocessor-based control system
- The unit operates with conventional thermostat designs
- The unit incorporates a lockout circuit which provides reset capability should any of the following standard safety devices trip and shut off the compressor
- Loss-of-charge/Low-pressure switch, High-pressure switch
- Low water temperature, Condensate overflow, and Low voltage (brown-out) protection
- Anti-short cycle timer (ASCT)
- Random start
- The unit has capability to defeat time delays for servicing
- The unit control board has on-board diagnostics and fault code display

### Filters

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

## Risers

- "Type-M" copper with swaged connections
- External condensate riser – minimizes blockage potential
- Optional riser insulation
- 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

## FIELD INSTALLED ACCESSORIES

- Hoses: high-pressure flexible hoses, with quick-sealing swivel couplings, provide supply and return water connections to the chassis. Hose material is fire-rated (UL-94 VO) thermoplastic inner tube, reinforced by a stainless steel wire outer braid. The hose assemblies are rated for a minimum 350 psig working pressure.
- Electronic Thermostats, 1 Heat/1 Cool, Non-programmable and 7-Day Programmable, back-lit display, occupancy sensing cover.

