

Fan Coils

Valve packages, general data

Field mounted packages

Zehnder Rittling Console and High Capacity Fan Coils have standard valve packages available as a factory built assembly and field-installed option for the main cooling coil and optional heating coil. Vertical Hi-Stack Fan Coils are the exception where all valve packages are factory installed. All valve packages are manufactured within strict tolerances and are hydrostatically tested for leaks. Valve packages are shipped loose for field assembly to ensure a leak free system as factory mounted valve packages often become damaged during shipment. All cooling piping and components are located directly above the auxiliary drain pan to allow condensate to be captured and properly drained. Insulation of the factory valve package is not required. However, all field connections downstream of the valve package should be insulated to prevent condensation from missing the auxiliary drain pan.

Valve package components

Zehnder Rittling valve packages consist of a variety of components and selection of each combination is dependent upon the application. The following sections provide a detailed description of each of the components. Following this section are additional schematic illustrations and mechanical specifications and photos.

Piping system/placement

Valve packages are available for two or four-pipe systems with left and/or right hand connections. The heating and cooling connections can be located on the same or opposite sides of the unit in four-pipe systems. All coil connections are left hand as standard unless specified differently.

Interconnecting piping

Interconnecting piping refers to the copper piping which is attached to the coil connections and to which all other components (i.e. control valves, end valves, circuit setters, etc.) are attached. Piping is ½" nominal (5/8" OD) copper.

Deluxe or basic valve packages

The basic valve package includes only the main components of the valve package (i.e., interconnecting piping, control valves, and end valves). The deluxe valve packages also include unions at the coil connections and a strainer on the supply water pipe along with the basic components. All valve package components are solder end connections.

Unions

The unions are cast bronze construction and close with a minimum amount of effort. Used for quick connect and disconnect of valve package components to minimize required field labor during servicing of the unit.

Strainer

The Y-type strainer body is constructed of brass with a 16 mesh 304 stainless steel screen. Used for removal of small particles from the water supply pipe during normal system operation. The strainer helps protect the coil and minimizes the chance of control valves clogging. Screens should be regularly removed and cleaned as part of a routine maintenance schedule.

Balance valves

The balance valve body is constructed of bronze and is used to balance hydronic circuits.

End valves

Each basic and deluxe valve package includes a ball valve for the supply water pipe and one of the following end valves on the return water pipe; ball valve, manual circuit setter, or automatic circuit setter. These valves serve as the field connection points on all of the Rittling valve packages. Consult the factory for inclusion of the other types of valves as end valves.

Ball valves

Ball valves, also known as end valves, allow the unit to be cut off for servicing purposes. They have a low resistance to water flow, operate easily, and are often used for water balancing. These valves have a compact handle that rotates 90 degrees to a fully open position. The valve body is forged brass and the ball is polished brass with virgin Teflon seats and seals. Ball valves are available as end valves on both the supply and return water pipes.

Manual circuit setter

A manual circuit setter, also known as a manual flow control valve, acts as both a flow setting device and a stop valve, taking the place of a ball valve. This valve allows water flow through the fan coil unit and can be set quickly and accurately. The manual circuit setter includes two measuring ports in the valve body to be used for pressure drop measurements during system balancing. This pressure drop can be compared to factory-supplied curves showing the corresponding flow rate. This valve shall have a 360-degree turn handwheel with memory feature including a locking feature for tamperproof setting.

Automatic circuit setter

An automatic circuit setter is an automatic flow control device that includes a ball valve cast in the valve body and is located on the return water pipe. The automatic circuit setter consists of a stainless steel/brass flow cartridge and a contoured orifice plate. As the pressure drop increases, the flow cartridge will move into the contoured orifice plate to decrease the flow. This flexing action provides a constant flow, independent of pressure (2-80 psi), and makes it difficult to clog and resistant to cavitation damage. This valve sets flow through the coil without any action required by a system balancer. The automatic circuit setter includes two measuring ports in the valve body to be used for pressure drop and temperature measurements.

Control valves

Valve packages are available with or without control valves. All control valve packages are shipped loose for field mounting and wiring.

2-way on/off valves

These 1/2" valves are normally closed to the coil as standard and will isolate the coil during a loss of power. Normally open valves are also available upon request. Upon response to a signal from the controller, the valve will be either fully open or fully closed. These valves are located in the water supply pipe, have a C_v of 3.5, and close off DP of 20 psi. A means of relieving pump head pressure must be accounted for when two-way valves are selected, most notably when used in combination with automatic changeover.

3-way on/off valves

These 1/2" valves are normally closed to the coil as standard and will isolate the coil during a loss of power. Normally open configurations are simply achieved by turning the valve around. Upon response to a signal from the controller, the valve will be either fully open allowing full flow to the coil or fully closed to the coil diverting full flow to the bypass line. All 3-way valve configurations include a balance fitting in the bypass line to allow proper flow balancing. These valves are located in the water supply pipe, have a C_v of 4.0, and close off DP of 20 psi.

2-way modulating valves

These 1/2", 24V valves modulate the flow of water (0-100%) through the coil in response to a signal from the controller and are normally closed to the coil as standard. Normally open valves are also available upon request. All modulating valves are three-wire floating equal percentage valves, designed for precise temperature control. All valves feature a magnetic clutch to extend the life of the motor and gear train, manual operating lever/position indicator facilitates field setup, and easy to use lever terminal blocks. These valves are located in the water supply pipe, have a C_v of 4.0, and close off DP of 50 psi. A means of relieving pump head pressure must be accounted for when two-way valves are selected, most notably when used in combination with automatic changeover.

3-way modulating valves

These 1/2", 24V valves modulate the flow of water (0-100%) through the coil in response to a signal from the controller and are normally closed to the coil as standard. Normally open configurations are simply achieved by turning the valve around. 3-way valves allow the water supply from the water supply pipe to mix with bypass water from the bypass line. This mixture exits through the supply water pipe to the coil. Modulating three-wire floating type valves are compatible with any 24V three-wire signal when three-minute time-out logic resides in the system controller. Modulating proportional type valves are compatible with any 0 to 10 Vdc or 4 to 20 mA signal with jumper selectable operating range and action resulting in precise positioning. All valves feature a magnetic clutch to extend the life of the motor and gear train, manual operating lever/position indicator facilitates field setup, and easy to use lever terminal blocks. These valves are located in the water supply pipe, have a C_v of 4.0, and close off DP of 50 psi.

Please contact the factory regarding any special valve requirements.