

2-PORT AND 3-PORT ZONE VALVES Type ZVX

Specification No. 185-4-XXX*

Satchwell ZVX 2-port flow control and 3-port diverter valves are for the regulation of low pressure heating and chilled water circuits where on/off control is required, principally the control of room temperature in individual rooms or small zones of buildings. They are operated via a 2-wire control circuit, using a thermostat or other controlling instrument having a single-pole single-throw switch.

The 2-port valves are normally-closed; the actuator motor is energised to open the valve, which then closes under positive spring action when de-energised.

Port A of the 3-port valve is normally-closed, thus allowing water to flow from port AB to port B, the return circuit; when the actuator motor is energised, port A opens to divert flow from the return to the load circuit.

These ZVX zone valves are fitted with a manual operator lever to permit manual override of the normally-closed condition, either prior to electrical power being available or in the event of a power failure. The 3 port valve will move to a mid position when manually overridden. The 3-port valves are available in three sizes with a choice of BSP or compression type pipe connections.



* For the full specification number replace the 4X's with the appropriate figures from the Type column in the table below.

FEATURES

- Complete compact unit; no site assembly required
- 3-port valves available in BSP or Compression pipe connections
- Connecting cable included for fast, simple wiring
- Two-wire control with positive spring return
- Manual operator lever included as standard

SPECIFICATION

Group	Size	Type	* Kvs	Maximum differential pressure kPa
2-Port BSP (Female) Parallel fitting	1/2"	ZVX 4201	3.2	200
	3/4"	ZVX 4202	4.5	150
	1"	ZVX 4203	5.8	100
3-port BSP (Female) Parallel fitting	1/2"	ZVX 4301	3.8	200
	3/4"	ZVX 4302	5.8	200
	1"	ZVX 4303	5.8	200
3-port Compression fitting	22mm	ZVX 4401	5.8	200

*Kvs = Flow in m³/hr to produce 1 bar pressure drop when the valve is fully open

Cvs = Flow in UK gal/min to produce 1 lbf/in² pressure drop when the valve is fully open Kvs = Cvs x 1.038

100 kPa = 1 Bar approximately equal to 1.02 kgf/cm² approximately equal to 14.5 lbf/in²

CONSTRUCTION

Maximum Continuous Working Pressure:	1000 kPa
Maximum Internal Pressure:	2500 kPa (PN25)
Minimum Water Temperature:	5°C
Maximum Water Temperature:	110°C
Maximum Ambient Temperature:	60°C
Valve Type:	Paddle Type
Valve Running Time (Nominal):	2 port: 13 Seconds to open 4 Seconds to close 3 port: 13 Seconds to open 4 Seconds to close
Power Supply:	240 Vac, 50 Hz
Consumption:	5W
Operation:	
2-port valve:	Normally-closed, the valve is driven open by the motor and closes by spring action.
3-port valve:	Port A is normally-closed, the valve is driven open by the motor and closes by spring action.

CONSTRUCTION

Pipe Connections: BSP Parallel female or compression. Valves suitable for compression fittings are supplied complete with compression nuts and olives.

VALVE MATERIALS

Body:	Brass to DIN 17.660/BS 2872
Springs:	Stainless Steel
Disc Pin:	Stainless Steel
Disc:	Ethylene Propylene
O Ring Sealing:	EPDM (Peroxide)
Motor Cover:	Plastic - Fire retardant ASTM-UL-VO
Motor Fly Lead:	3-core cable 1 metre long
Motor lead Colours:	Blue (Neutral), Brown (Live), Green/Yellow (Earth)
Manual Override:	Achieved by use of built-in lever. On the 3-port valves the manual lever sets the valve to a mid position. When in normal use ensure the lever is in the 'Auto' position.

GOOD DESIGN PRACTICE

CONTROL MEDIUM

These valves are suitable for use with hot or chilled water in closed circuits. If the circuit is open, for example mains water systems, it is possible that a build-up of mineral deposits may impair the operation of the valve and frequent maintenance will be necessary. Appropriate precautions should be taken.

Other fluids - for example seawater, oils etc: Satchwell cannot accept responsibility for use of these valves with fluids other than water. Descriptions of all materials in contact with the fluid are given on page 2 and it is the responsibility of the specifier to check their suitability.

INSTALLATION

1. Select a location that is as close as possible to the heat exchanger or fan coil unit being controlled, and is reasonably clean and free from damp and condensation. Ensure there is adequate access for wiring the motor; allow a minimum clearance of 130mm from the centre of the pipe, see figs 1 to 3.
2. Ensure the maximum ambient temperature for the motorised valve is not exceeded.
3. The valve must be installed horizontally and the actuator must never be below the valve.
4. Remove all protective materials from the valve.
5. Remove all foreign matter from pipework.
6. Fit the valve into pipework using the minimum quantity of jointing material.
7. Observe direction of flow, refer to figs 4 and 5.
8. When all zone valves are 2-port, incorporate independent control of the main water circuit volume and/or differential pressure, to maintain the pump head within reasonable limits.
9. When tightening the pipe connections onto the valve hold the valve firmly, but not the actuator.
10. Before filling the system set the valve to the manual position. Return it to the auto position after the system has been filled.

WIRING

Wiring details are shown in Fig. 6.

DO NOT SWITCH THE POWER ON UNTIL COMMISSIONING STEPS 1 TO 4 HAVE BEEN CARRIED OUT.

COMMISSIONING

1. Check that the valve is wired correctly for the scheme required.
2. Check that the valve is installed in the pipework correctly for the required scheme, with regard to configuration of port markings and direction of water flow.
3. Set the manual lever to 'AUTO'.
4. Switch on the power and check the valve operates as required.

DIMENSIONS

3-PORT BSP CONNECTIONS

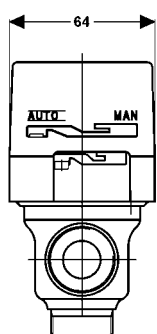
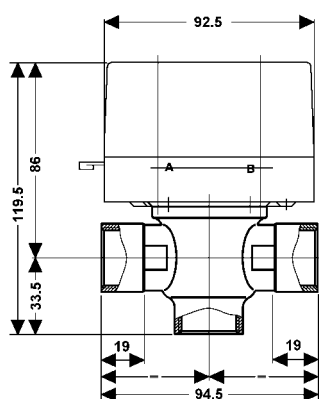


Fig.1

NOTE:
Allow a minimum of 50mm clearance above actuator for valve removal.

3-PORT COMPRESSION FITTINGS

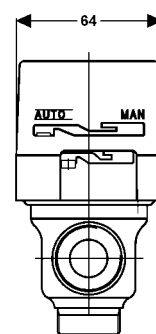
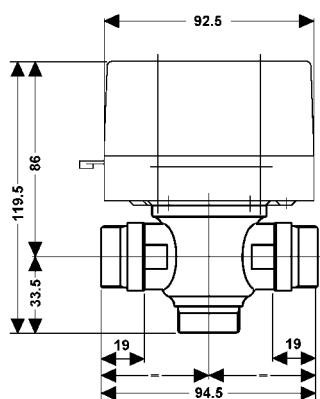


Fig.2

NOTE:
Allow a minimum of 50mm clearance above actuator for valve removal.

2-PORT BSP CONNECTIONS

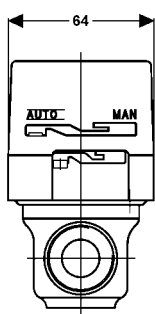
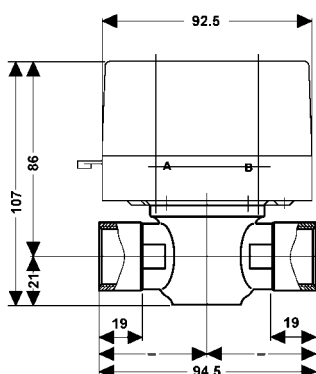
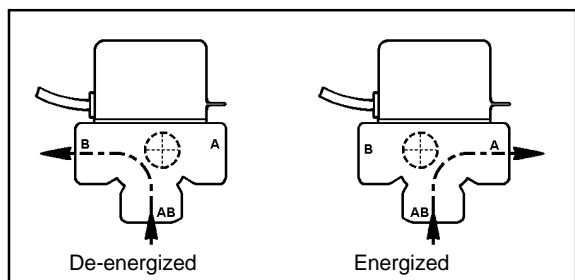


Fig.3

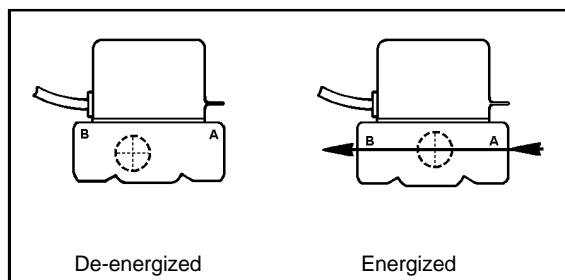
NOTE:
Allow a minimum of 50mm clearance above actuator for valve removal.

WATER FLOW DIRECTION



3 port valve operation

Fig.4



2 port valve operation

Fig.5

CONNECTION DIAGRAM

BASIC WIRING DIAGRAM

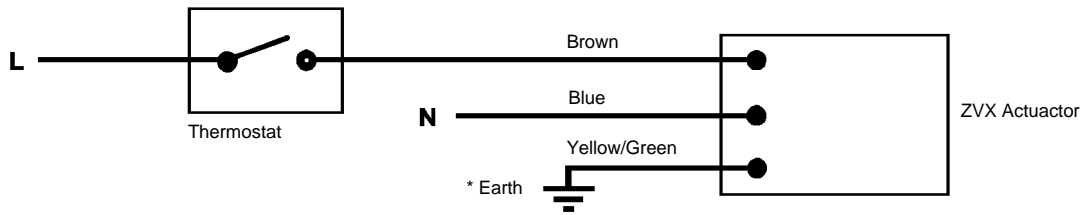


Fig.6

* Note: This actuator must be earthed.

CAUTION

- These actuators are at mains potential. Local wiring regulations and usual safety precautions must be observed. Note earthing requirements.
- Warning this actuator must be earthed as shown in fig. 6.
- Do not remove cover as live parts will be exposed.
- Do not switch the power on until commissioning steps 1 to 4 have been carried out (see page 2).
- Observe recommendations under 'Good Design Practice'.
- Observe maximum ambient temperature limits.
- Observe limits of water temperature, system pressure and maximum differential pressure.
- Interference with those parts under sealed covers renders the guarantee void.
- Information is given for guidance only and Satchwell do not accept responsibility for the selection or installation of its products unless information has been given by the Company in writing relating to a specific application.
- Design and performance of Satchwell equipment are subject to continual improvement and therefore liable to alteration without notice.
- A periodic system and tuning check of the control system is recommended. Please contact your local Satchwell Service Office for details.

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