



2-port valves  
VVP47.10-0.25S to  
VVP47.15-2.5S



3-port valves  
VXP47.10-0.25S to  
VXP47.15-2.5S



3-port valves with T-bypass  
VMP47.10-0.25S to  
VMP47.15-2.5S



## 2-Port and 3-Port Terminal Unit Valves PN 16

**VVP47...S**  
**VXP47...S**  
**VMP47...S**

- Bronze valve body CC491K (Rg5)
- DN 10 and DN 15
- $k_{vs}$  0.25...2.5 m<sup>3</sup>/h
- Externally threaded connections G...B conforming to ISO 228/1 (DN 10) and W11/8-14 to BS84 (DN 15) for use with CONEX compression fittings for copper pipes (supplied by thirds)
- Small valves with flat seals and externally threaded connections G...B conforming to ISO 228/1, refer to Data Sheet CA1N4847
- Manual adjuster
- Can be combined with SSP... / SFP... motoric actuators or STP... / STS61 thermal actuators

### Use

- For use in ventilation and air conditioning systems for water-side terminal unit control in closed circuits, e.g. for induction units, fan coil units, small re-heaters and small re-coolers.
  - 2-pipe systems with 1 heat exchanger for heating and cooling
  - 4-pipe systems with 2 separate heat exchangers for heating and cooling
- In closed-circuit zone heating systems, e.g. for:
  - Separate floors in a building
  - Apartments and individual rooms
- The VXP47...S 3-port valves together with SFP... actuators are specially suited for changeover applications where small leakage rates are required.

## Type summary

VVP47...S 2-port	VXP47...S 3-port	VMP47...S 3-port with T-bypass	DN	$k_{vs}$ A → AB [m <sup>3</sup> /h]	$k_{vs}$ <sup>1)</sup> B → AB [m <sup>3</sup> /h]
VVP47.10-0.25S	VXP47.10-0.25S	VMP47.10-0.25S	10	0.25	0.18
VVP47.10-0.4S	VXP47.10-0.4S	VMP47.10-0.4S		0.40	0.28
VVP47.10-0.63S	VXP47.10-0.63S	VMP47.10-0.63S		0.63	0.44
VVP47.10-1S	VXP47.10-1S	VMP47.10-1S		1.00	0.70
VVP47.10-1.6S	VXP47.10-1.6S	VMP47.10-1.6S		1.60	1.12
VVP47.15-2.5S	VXP47.15-2.5S	VMP47.15-2.5S	15	2.50	1.75

<sup>1)</sup> Applies only to 3-port version

$k_{vs}$  = nominal flow rate of cold water (5...30 °C) through the fully opened valve ( $H_{100}$ ) at a differential pressure of 100 kPa (1 bar).

### Accessories

Screwed fittings: Refer to «Dimensions».

### Ordering

When ordering, please give the quantity, product name and type reference. The SSP..., SFP..., STP... and STS61 actuators must be ordered as separate items.

#### Example

One 3-port valve with T-bypass, type VMP47.10-1S

### Delivery

The valves and actuators are packed separately.

## Equipment combinations

Valves	SSP... motoric actuators		SFP... motoric actuators		STP... thermal actuators		STS61 thermal actuator <sup>1)</sup>	
	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]
VVP47.10-0.25S ... 0.4S	400	1000	400	1000	400	700	400	1000
VVP47.10-0.63S ... 1S		500		500				250
VVP47.10-1.6S	300	300	300	300	150	150	300	300
VVP47.15-2.5S								
VXP47.10-0.25S ... 0.4S	400		400		400		400	
VXP47.10-0.63S ... 1S					250			
VXP47.10-1.6S	300		300		150		300	
VXP47.15-2.5S								
VMP47.10-0.25S ... 0.4S	400		400		400		400	
VMP47.10-0.63S ... 1S					250			
VMP47.10-1.6S	300		300		150		300	
VMP47.15-2.5S								
Data Sheet	N4864		N4865		N4878		N4880	



<sup>1)</sup> After a power failure or switching off the operating voltage the control path A → AB of the valve opens.

$\Delta p_{max}$  = maximum permissible differential pressure across the control path of the valve valid for the entire actuating range of the motorized valve.

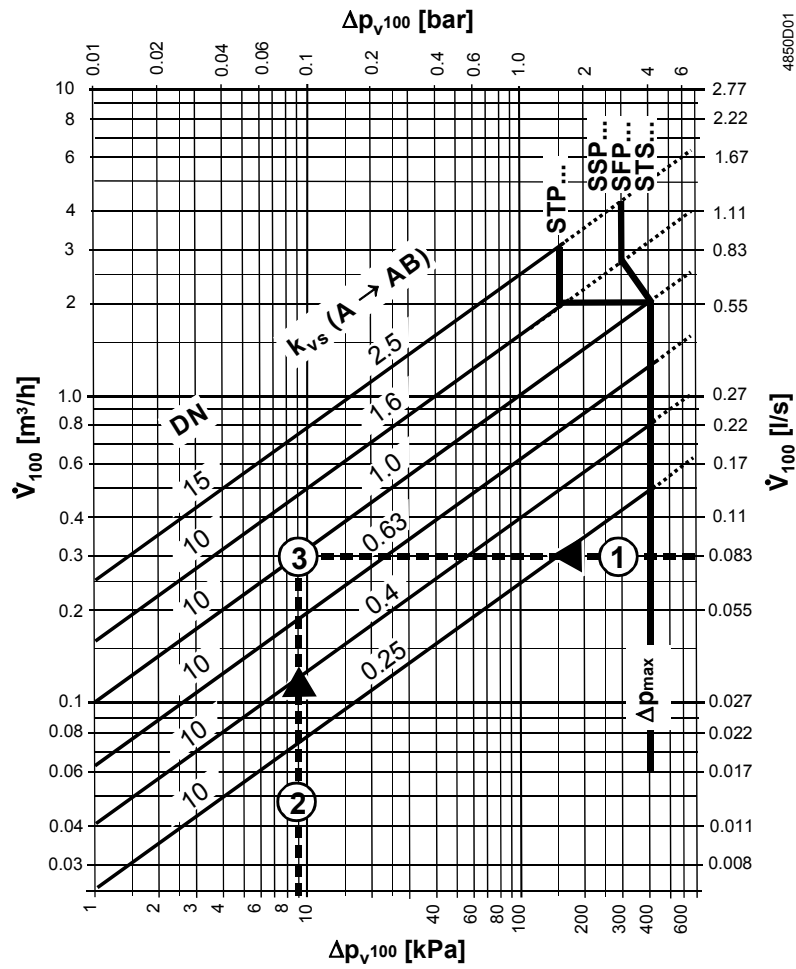
Where  $\Delta p_{max}$  is above 100 kPa, there is an increased risk of noise

$\Delta p_s$  = maximum permissible differential pressure (close of pressure) at which the motorized valve will close securely against the pressure

### Overview of actuators

Actuator	Type of actuator	Operating voltage	Positioning signal	Positioning time	Positioning force
SSP31...	Motoric	AC 230 V	3-position	150 s	100 N
SSP81...		AC 24 V			
SSP81.04				43 s	
SSP61...		AC/DC 24 V		DC 0...10 V	
SFP21/18		AC 230 V	2-position	30...50 s	105 N
SFP81/18		AC 24 V			
STP21...		AC 230 V		DC 0...10 V	
STP71...	AC 24 V				
STS61				70 s <sup>1)</sup>	125 N

<sup>1)</sup> 80 s delay time after standby mode

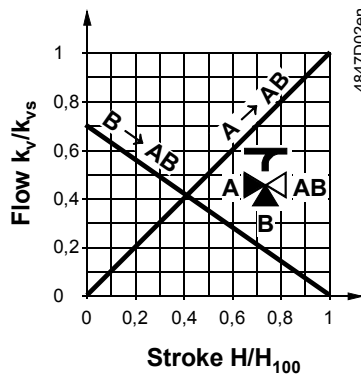


**Example:**

- 1  $\dot{V}_{100} = 0.083 \text{ l/s}$
- 2  $\Delta p_{v100} = 9 \text{ kPa}$
- 3  $k_{vs} \text{ value} = 1.0 \text{ m}^3/\text{h}$

$\Delta p_{v100}$  = differential pressure across the fully open valve and control path A → AB by a volume flow  $\dot{V}_{100}$   
 $\dot{V}_{100}$  = volume flow through the fully open valve ( $H_{100}$ )  
 $\Delta p_{max}$  = maximum permissible differential pressure across the valve's control path, valid for the entire actuating range of the motorised valve  
 100 kPa = 1 bar  $\approx$  10 mWG  
 1 m<sup>3</sup>/h = 0.278 l/s water at 20 °C

**Valve characteristics**



With valve types VXP47...S/VMP47...S, the  $k_{vs}$  values in bypass B represent only 70 % of the  $k_{vs}$  value in the straight-through control path, A → AB. This compensates for the flow resistance of the heat exchanger or radiator, so keeping the overall flow rate,  $\dot{V}_{100}$  as constant as possible.

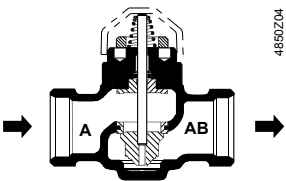

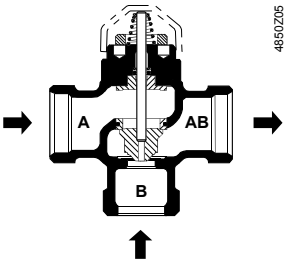

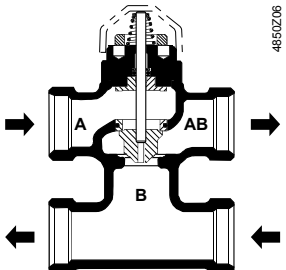

**Mechanical design**

- Combined disc / plug flow restrictor
- Seat ring embedded in through-port A → AB
- Seat machined into bypass B → AB.
- Continuously lubricated sealing rings
- Conical return springs, for more compact valve construction

Also refer to «Mounting» and «Commissioning».

The 2-port valves should preferably be installed in the return, where the stem seal will be exposed to lower temperatures.

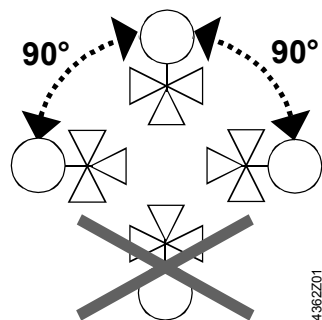
**Recommendation:** A strainer should be fitted upstream of the valve. This increases reliability.

Valve construction	Valve series	Valve flow in control mode			Valve stem	
		Inlet A	Inlet B	Outlet AB	Retracted	Extended
<p>2-port valves</p> 	<p>VVP47...</p> 	Variable		Variable	A → AB opens	A → AB closes
<p>3-port valves</p> 	<p>VXP47...</p> 	Variable	Variable	Constant	A → AB opens B → AB closes	A → AB closes B → AB opens
<p>3-port valves with T-bypass</p> 	<p>VMP47...</p> 	Variable	Variable	Constant	A → AB opens B → AB closes	A → AB closes B → AB opens

**Warning** The direction of flow **MUST** be as indicated by the arrow, i.e. only from A → AB and B → AB.  
The 3-port valve types VXP47...S and VMP47...S may only be used in mixing applications.

Mounting notes

Orientation



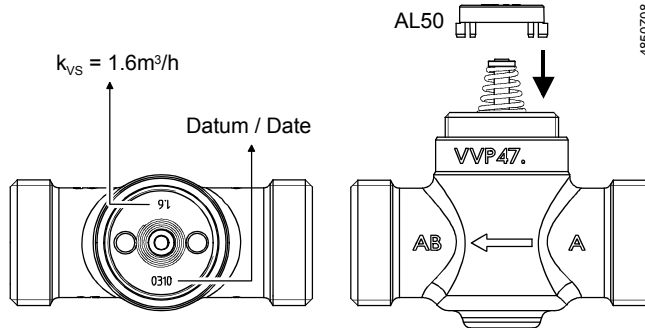
The specified direction of flow must be observed in all cases (also refer to «Engineering notes»).

The valves are delivered in a singlepack. Mounting Instructions 74 319 0406 0 are enclosed with the packaging.

The valve and actuator can be easily assembled on site. There is no need for special tools or calibration.

#### AL50 supporting ring

The AL50 supporting ring must be put into position before mounting the actuator onto the valve.



### Commissioning



**Commission the valve only if the manual knob or actuator have been mounted correctly.**

#### Manual adjustment

The straight-through control path A → AB can be opened either electrically via the actuator, or by adjustment with the manual button. In the case of 3-port valves, this throttles or closes bypass B.

### Maintenance



V...P47...S valves require no maintenance.

When doing service work on the valve / actuator:

- Deactivate the pump and turn off the power supply
- Close the shutoff valves
- Fully reduce the pressure in the piping system and allow pipes to completely cool down

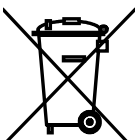
If necessary, disconnect the electrical wires.

Before putting the valve into operation again, make certain the manual knob or the actuator is correctly fitted.

#### Stem sealing gland

The stem sealing gland cannot be exchanged. In the case of leakage, the entire valve must be replaced. Contact your local office or branch.

#### Disposal



The valve must be dismantled and separated into its various constituent materials before disposal.

Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

**Current local legislation must be observed.**

### Warranty

The technical data supplied for these valves is valid only for valves used in conjunction with the actuators listed under «Equipment combinations».

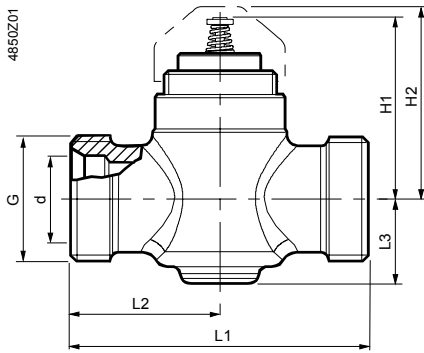
**Use with third-party actuators invalidates any warranty offered by Siemens Switzerland Ltd / HVAC Products.**

## Technical data

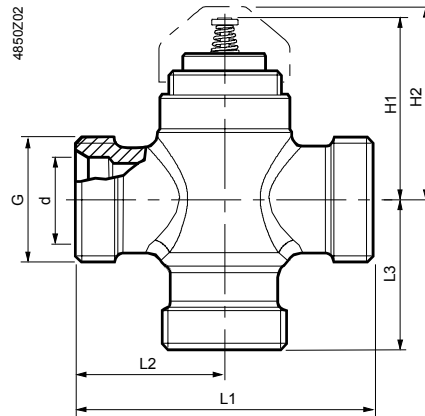
Operating data	PN class	PN 16 to EN 1333
	Valve characteristic	
	Path A → AB	linear
	Bypass B → AB	linear
	Leakage	to DIN EN 1349
	Path A → AB	0...0.05 % of $k_{vS}$ value
	Bypass B → AB	0...0.05 % of $k_{vS}$ value
	Suitable media	chilled water, low-temperature hot water and water with frost protection additives recommendation: water should be treated as specified in VDI 2035
	Temperature of medium	1...110 °C, or max. 120 °C for short periods
	Rangeability $S_v$	> 50 as in VDI 2173
Permissible operating pressure	1600 kPa (16 bar)	
Nominal stroke	2.5 mm	
Industry standards	Pressure Equipment Directive	PED 97/23/EC
	Pressure Accessories	as per article 1, section 2.1.4
	Fluid group 2	without CE-marking as per article 3, section 3 (sound engineering practice)
Materials	Valve body	bronze CC491K (Rg5)
	Stem	stainless steel
	Plug, seat ring, gland	brass
	Stem seal	EPDM O-rings
Dimensions / weight	Dimensions	refer to «Dimensions»
	Threaded connections	
	Valve DN 10	G...B to ISO 228/1
	Valve DN 15	W11/8-14 to BS84
	Actuator connection	M30 x 1.5
Weight	refer to «Dimensions»	
Accessories	CONEX compression fitting (obtainable from suppliers to the trade)	nut and compression fitting for seamless copper piping
	$S_v$	= rangeability $k_{vS} / k_{vR}$
	$k_{vS}$	= nominal flow rate of chilled water (5...30 °C) through the fully opened valve ( $H_{100}$ ) at a differential pressure of 100kPa (1bar).
	$k_{vR}$	= the lowest value for $k_v$ at which the flow characteristic tolerance is still maintained, at a differential pressure of 100kPa (1 bar)

## Dimensions

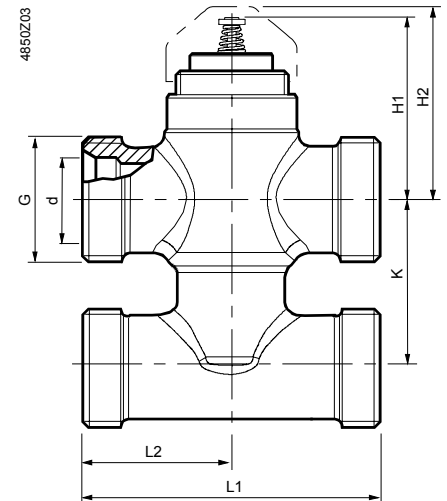
### 2-port valves VVP47...S



### 3-port valves VXP47...S



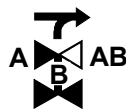
### 3-port valves with T bypass VMP47...S



Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VVP47.10-0.25S ... 1.6S	10	G½B	15.2	46	≈ 49	60	30	19	0.32
VVP47.15-2.5S	15	W11/8-14	22.2	46	≈ 49	65	32.5	19	0.34

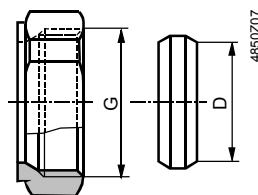


Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VXP47.10-0.25S ... 1.6S	10	G½B	15.2	46	≈ 49	60	30	30	0.32
VXP47.15-2.5S	15	W11/8-14	22.2	46	≈ 49	65	32.5	32.5	0.37



Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	K [mm]	L1 [mm]	L2 [mm]	Weight [kg]
VMP47.10-0.25S ... 1.6S	10	G½B	15.2	46	≈ 49	40	60	30	0.4
VMP47.15-2.5S	15	W11/8-14	22.2	46	≈ 49	40	65	32,5	0.48

### Compression fittings



For valve type	DN	G [in]	CONEX type (from specialist supplier)	D [mm]
VVP47.10-0.25S ... 1.6S VXP47.10-0.25S ... 1.6S VMP47.10-0.25S ... 1.6S	10	G½	Conex 63	15
VVP47.15-2.5S VXP47.15-2.5S VMP47.15-2.5S	15	W11/8-14	Conex 65	22

DN = nominal size

G = valve thread (internal, cylindrical)

D = external diameter for seamless copper and mild-steel piping

