



2-port valves  
VVP47.10-0.25 to VVP47.20-4.0



3-port valves  
VXP47.10-0.25 to VXP47.20-4.0



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



## 2-Port and 3-Port Terminal Unit Valves PN16

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

- Bronze valve body CC491K (Rg5)
- DN10, DN15 and DN20
- $k_{vs}$  0.25...4 m<sup>3</sup>/h
- Flat-sealing connections with external thread G...B to ISO 228/1 for:
  - ALG... screwed fittings (threaded connection) available from Siemens
  - SERTO SO21... compression fittings (any specialist supplier)
  - Screwed fittings for solder connections (any specialist supplier)
- Manual adjuster
- Can be combined with SSP... or SFP... motoric actuators or STP... 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 reheaters 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
  - Individual rooms
- The VXP47... 3-port valves together with SFP... actuators are specially suited for changeover applications where small leakage rates are required.

## Type summary

VVP47... 2-port	VXP47... 3-port	VMP47... 3-port with T-bypass	DN	$k_{vs}$ A → AB [m <sup>3</sup> /h]	$k_{vs}^{1)}$ B → AB [m <sup>3</sup> /h]	$\Delta p_{vmax}^{2)}$ [kPa]
VVP47.10-0.25	VXP47.10-0.25	VMP47.10-0.25	10	0.25	0.18	100
VVP47.10-0.4	VXP47.10-0.4	VMP47.10-0.4		0.40	0.28	
VVP47.10-0.63	VXP47.10-0.63	VMP47.10-0.63		0.63	0.44	
VVP47.10-1	VXP47.10-1	VMP47.10-1		1.00	0.70	
VVP47.10-1.6	VXP47.10-1.6	VMP47.10-1.6		1.60	1.12	
VVP47.15-2.5	VXP47.15-2.5	VMP47.15-2.5	15	2.50	1.75	40
VVP47.20-4	VXP47.20-4		20	4.00	2.80	

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

<sup>2)</sup> Where  $\Delta p_{vmax}$  is above 100 kPa, there is an increased risk of noise and erosion on the seat and plug

$k_{vs}$  = 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).

$\Delta p_{vmax}$  = maximum admissible pressure differential across the control path of the valve (depending on the construction) valid for the entire stroke range

### Accessories

Screwed fittings: Refer to «Dimensions».

### Ordering

When ordering, please give the quantity, product name and type reference, plus the quantity of ALG... screwed fittings required, if any. The ALG...screwed fittings (Siemens) and the SSP..., SFP... and STP... actuators must be ordered as separate items.

#### Example

1 3-port valve with T-bypass, type VMP47.10-1, and  
4 sets ALG13 screwed fittings

### Delivery

The valves, actuators and screwed fittings are packed separately.

### Equipment combinations

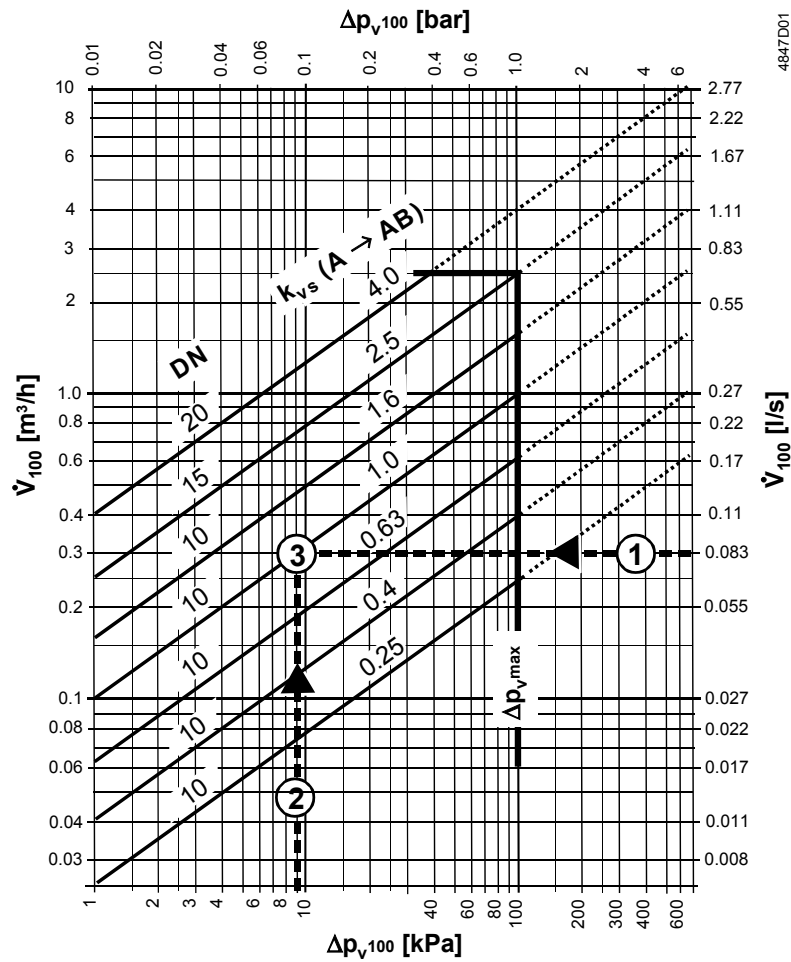
Valves	SSP... motoric actuators		SFP... motoric actuators		STP... thermal actuators	
	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]	$\Delta p_{max}$ [kPa]	$\Delta p_s$ [kPa]
VVP47.10-0.25...1.6	100	100	100	100	100	100
VVP47.15-2.5						
VVP47.20-4	40	40	40	40	40	40
VXP47.10-0.25...1.6	100		100		100	
VXP47.15-2.5						
VXP47.20-4						
VMP47.10-0.25...1.6	100		100		100	
VMP47.15-2.5						
Data Sheet	4864		4865		4878	

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

$\Delta p_s$  = maximum admissible pressure differential (closing pressure) at which the motorized valve will close reliably against the pressure

### Overview of actuators

Actuator	Type of actuator	Operating voltage	Positioning signal	Positioning time	Positioning force
SSP31...	Motic	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	34 s	
SFP21/18	Thermal	AC 230 V	2-position	30...50 s	105 N
SFP81/18		AC 24 V			
STP21...		AC 230 V			
STP71...		AC 24 V			

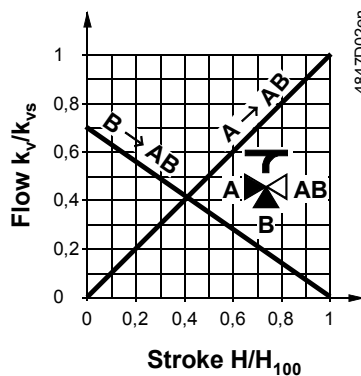


**Example:**

- 1  $\dot{V}_{100} = 0.083 \text{ l/s}$
- 2  $\Delta p_{V100} = 9 \text{ kPa}$
- 3  $k_{vs} \text{ value} = 1.0 \text{ m}^3/\text{h}$

$\Delta p_{V100}$  = pressure differential across the fully open valve and control path A → AB at a flow rate of  $\dot{V}_{100}$   
 $\dot{V}_{100}$  = flow rate across the fully open valve ( $H_{100}$ )  
 $\Delta p_{Vmax}$  = maximum admissible pressure differential across the control path of the valve (depending on the construction) valid for the entire stroke range  
 100 kPa = 1 bar ≈ 10 mWG  
 1 m<sup>3</sup>/h = 0.278 l/s water at 20 °C

**Valve characteristics**



With valve types VXP47.../VMP47..., 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.

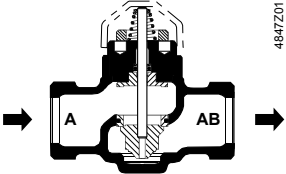

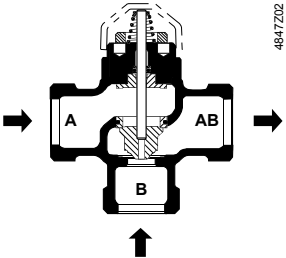
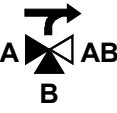
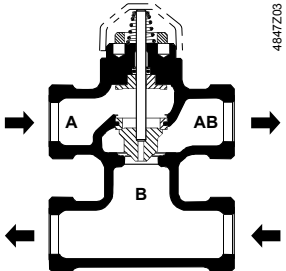
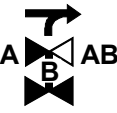
**Mechanical design**

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

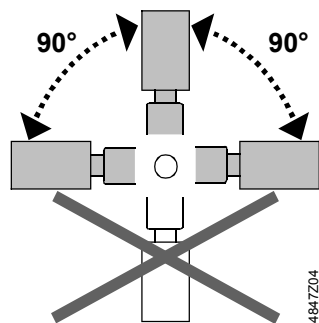
**Recommendation:** A strainer should be fitted upstream of the valve. This increases reliability.

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	<p>A → AB Valve opens</p>	<p>A → AB Valve closes</p>
<p>3-port valves</p> 	<p>VXP47...</p> 	Variable	Variable	Constant	<p>A → AB Valve opens</p> <p>B → AB Valve closes</p>	<p>A → AB Valve closes</p> <p>B → AB Valve opens</p>
<p>3-port valves with T-bypass</p> 	<p>VMP47...</p> 	Variable	Variable	Constant	<p>A → AB Valve opens</p> <p>B → AB Valve closes</p>	<p>A → AB Valve closes</p> <p>B → AB Valve opens</p>

**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... and VMP47... may only be used in mixing applications.

Mounting notes

Orientation



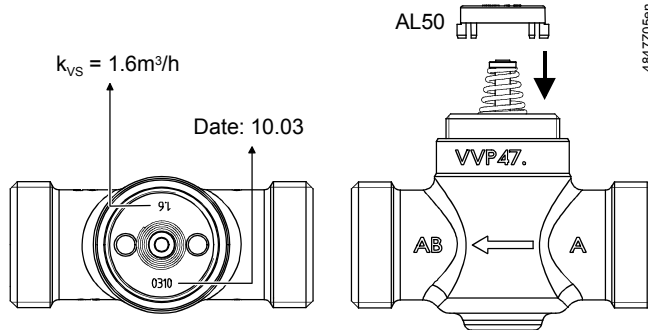
The specified direction of flow must be observed in all cases (also refer to «Engineering notes»).

The valves are delivered in a multipack. Mounting Instructions 74 319 0301 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

#### 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.

Warning

**Before performing any service work on the valve and / or actuator:**  
**Switch OFF the pump and power supply, close the main shutoff valve in the pipework, release pressure in the pipes and allow them to cool down completely. If necessary, disconnect electrical connections from terminals. The valve may be commissioned only with the manual adjuster preset or with a correctly mounted actuator.**

### Disposal



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

### 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 Building Technologies / HVAC Products.**

## Technical data

Operating data	Pressure class	PN16 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 $k_{vs}$	
	Bypass B → AB	0...0.05 % of $k_{vs}$	
	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	
	Admissible operating pressure	1600 kPa (16 bar)	
	Nominal stroke	2.5 mm	
	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	G...B (inches) to ISO 228/1	
	Screwed fitting	R/Rp... to ISO 7/1, G... to ISO 228/1	
	Actuator connection	M30 x 1.5	
Accessories	Weight	refer to «Dimensions»	
	ALG... screwed fittings (supplier: Siemens)	nut, nipple and flat seal for steel pipes with gas pipe threads	
	SERTO SO 21... compression fitting (obtainable from suppliers to the trade)	nut and compression fitting for seamless copper and mild-steel piping	
	Solder fittings (obtainable from suppliers to the trade)	for copper and steel pipes	

$S_v$  = rangeability  $k_{vs} / k_{vr}$

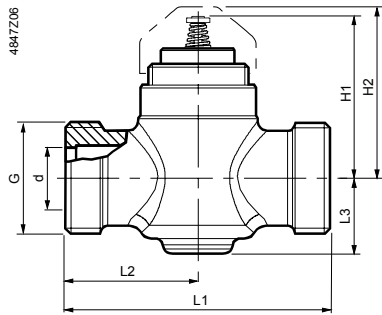
$k_{vs}$  = nominal flow rate of chilled water (5...30 °C) through the fully opened valve ( $H_{100}$ ) at a differential pressure of 100kPa (1bar).

$k_{vr}$  = the lowest value for  $k_v$  at which the characteristic tolerance is still maintained, at a differential pressure of 100kPa (1 bar)

## Dimensions

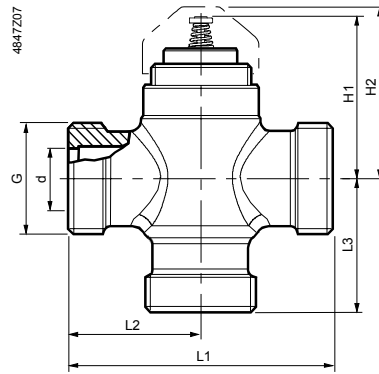
### 2-port valves

VVP47...



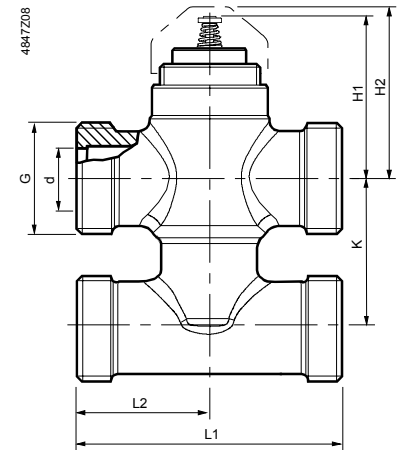
### 3-port valves

VXP47...

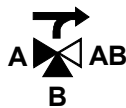


### 3-port valves with T bypass

VMP47...



Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VVP47.10-0.25 ... 1.6	10	G½B	10.5	46	≈ 49	60	30	19	0.32
VVP47.15-2.5	15	G¾B	14	46	≈ 49	65	32.5	19	0.34
VVP47.20-4	20	G1B	20	49	≈ 52	80	40	23	0.44



Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VXP47.10-0.25 ... 1.6	10	G½B	10.5	46	≈ 49	60	30	30	0.32
VXP47.15-2.5	15	G¾B	14	46	≈ 49	65	32.5	32.5	0.37
VXP47.20-4	20	G1B	20	49	≈ 52	80	40	40	0.5



Valve type	DN	G [ins]	d [mm]	H1 [mm]	H2 [mm]	K [mm]	L1 [mm]	L2 [mm]	Weight [kg]
VMP47.10-0.25 ... 1.6	10	G½B	10.5	46	≈ 49	40	60	30	0.4
VMP47.15-2.5	15	G¾B	14	46	≈ 49	40	65	32.5	0.48

### Screwed fittings

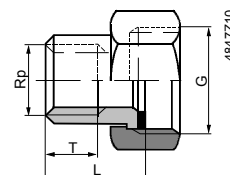
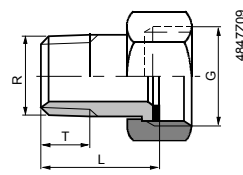
#### Flat-sealing screwed fittings

ALG13 and 14

with external thread

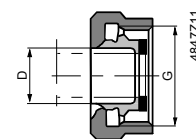
ALG15

with internal thread



#### Compression fittings

SERTO SO 21...



For valve type	DN	G [in]	ALG... <sup>1)</sup> (Siemens)	R [in]	Rp [in]	L [mm]	T [mm]	SERTO SO 21... <sup>2)</sup> (from specialist supplier)	D [mm]
VVP47.10-0.25 ... 1.6	10	G½	ALG13	R¾		≈ 24	≈ 9	SO 21-12-1/2"	12
VXP47.10-0.25 ... 1.6								SO 21-14-1/2"	14
VMP47.10-0.25 ... 1.6								SO 21-15-1/2"	15
VVP47.15-2.5	15	G¾	ALG14	R½		≈ 29.5	≈ 12	SO 21-17-3/4"	17
VXP47.15-2.5								SO 21-18-3/4"	18
VMP47.15-2.5									
VVP47.20-4	20	G1	ALG15		Rp½	≈ 23	≈ 13		
VXP47.20-4									

<sup>1)</sup> Type ALG... screwed fittings and flat seal available from Siemens

<sup>2)</sup> SERTO SO21... compression fittings, obtainable from specialist supplier

DN = nominal bore

G = valve thread (internal, cylindrical)

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

