



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 PN 16

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

- Bronze valve body CC491K (Rg5)
- DN 10, DN 15 and DN 20
- k_{vs} 0.25 to 4 m³/h
- Flat seal male threaded connections G...B to ISO 228/1 for
 - Screwed fittings ALG... (available from Siemens)
 - SERTO SO 21... compression fittings (available from suppliers to the trade)
 - Screwed fittings for welded connections (available from suppliers to the trade)
- 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... 2-port	VXP47... 3-port	VMP47... 3-port with T-bypass	DN	k_{vs} A → AB [m ³ /h]	k_{vs} ¹⁾ B → AB [m ³ /h]
VVP47.10-0.25	VXP47.10-0.25	VMP47.10-0.25	10	0.25	0.18
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	15	1.60	1.12
VVP47.15-2.5	VXP47.15-2.5	VMP47.15-2.5		2.50	1.75
VVP47.20-4	VXP47.20-4			20	4.00

¹⁾ 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

Type reference	Description
ALG...2	Set of 2 screwed fittings for 2-port valves, consisting of - 2 union nuts - 2 discs and - 2 flat seals
ALG...3	Set of 3 screwed fittings for 3-port valves, consisting of - 3 union nuts - 3 discs and - 3 flat seals

Order

When ordering, please give the quantity, product name and type reference of the valve and the required ALG... screwed fittings. The ALG... screwed fittings (Siemens) and the SSP..., SFP..., STP... and STS61 actuators must be ordered as separate items.

Example

4 three-port valves VXP47.10-1 and
4 sets of screwed fittings ALG133

For 3-port valves with bypass VMP47...order two sets of 3 screwed fittings.

Delivery

Valves, actuators and fittings are packed and supplied separately.

Equipment combinations

Valves	SSP... motoric actuators		SFP... motoric actuators		STP... thermal actuators		STS61 thermal actuator ¹⁾	
	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]
VVP47.10-0.25...0.4	400	1000	400	1000	400	700	400	1000
VVP47.10-0.63...1		500		500		250		500
VVP47.10-1.6	300	300	300	300	150	150	300	300
VVP47.15-2.5								
VVP47.20-4	175	175	175	175	100	100	175	175
VXP47.10-0.25...0.4	400		400		400		400	
VXP47.10-0.63...1								
VXP47.10-1.6	300		300		150		300	
VXP47.15-2.5								
VXP47.20-4	175		175		100		175	
VMP47.10-0.25...0.4	400		400		400		400	
VMP47.10-0.63...1								
VMP47.10-1.6	300		300		150		300	
VMP47.15-2.5								
Data sheet	N4864		N4865		N4878		N4880	



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

Δp_{max} = maximum permissible differential pressure across the control path of the valve valid for the entire actuating range of the motorized valve

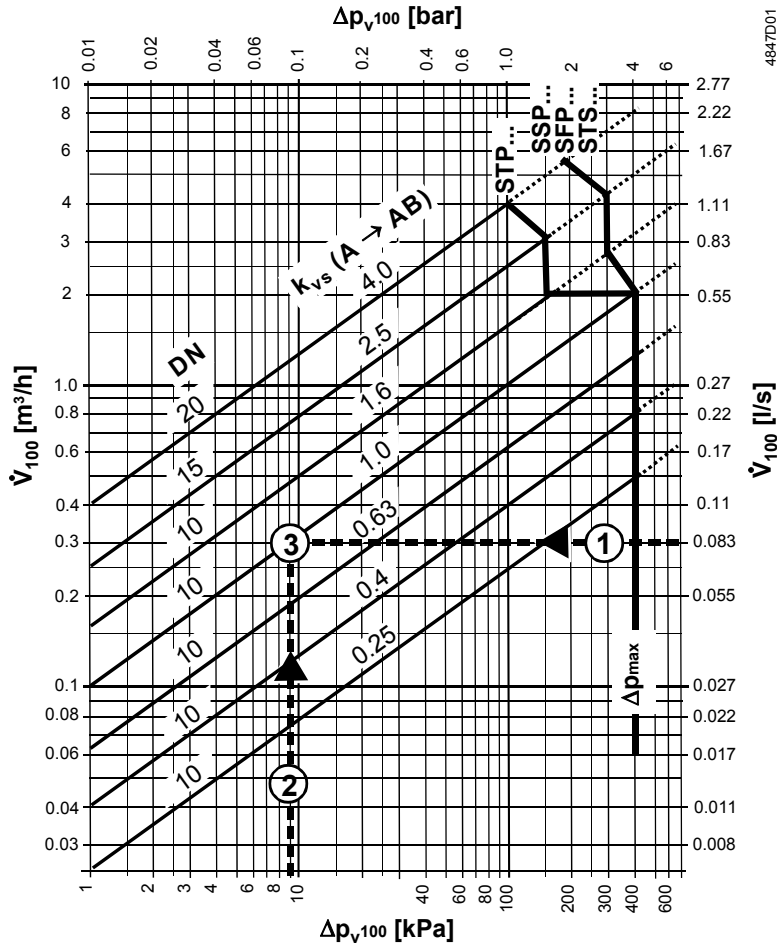
Δp_s = maximum permissible differential pressure (close of pressure) at which the motorized valve will close securely against the pressure

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	34 s	
SFP21/18		AC 230 V	2-position	30...50 s	105 N
SFP81/18		AC 24 V			
STP21...	Thermal	AC 230 V	DC 0...10 V	180 s	125 N
STP71...		AC 24 V			
STS61				70 s ¹⁾	

¹⁾ 80 s delay time after standby mode

Sizing



Example:

- 1 \dot{V}_{100} = 0.083 l/s
- 2 $\Delta p_{v,100}$ = 9 kPa
- 3 Required k_{vs} -value = 1.0 m³/h

$\Delta p_{v,100}$ = differential pressure across the fully open valve and control path A → AB by a volume flow \dot{V}_{100}

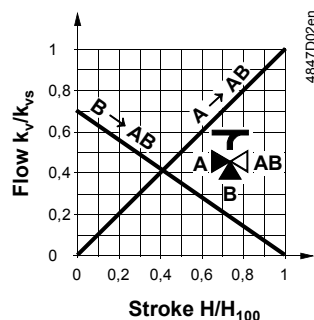
\dot{V}_{100} = volume flow through the fully open valve (H_{100})

Δp_{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 mWS

1 m³/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

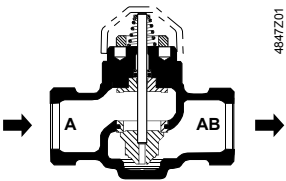

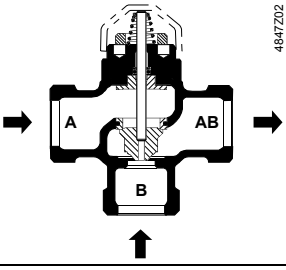
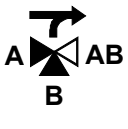
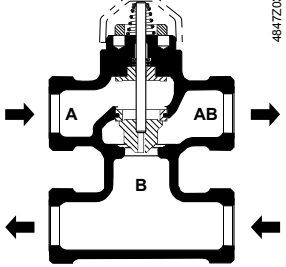
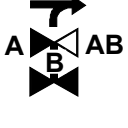
- Combined disc / plug flow restrictor
- Seat ring embedded in through-port A → AB
- Seat machined into bypass B → AB.
- Continuously lubricated sealing rings
- Conical return springs, for more compact valve construction

Engineering notes

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.

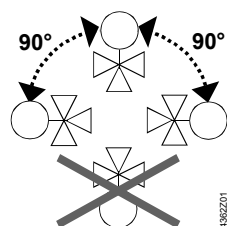
Recommendation: A strainer should be fitted upstream of the valve. This increases reliability.

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

Mounting notes

Orientation



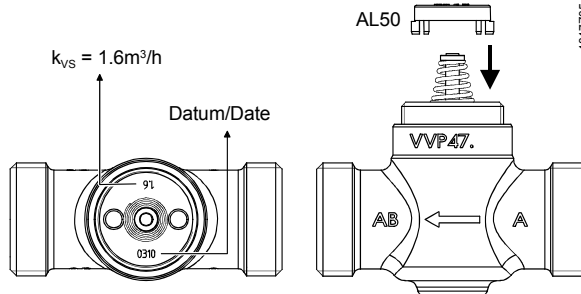
The specified direction of flow must be observed in all cases (also refer to «Engineering notes»).

The valves are delivered in multiple packs; 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



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... 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

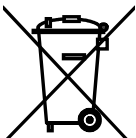
If necessary, disconnect the electrical wires.

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 rate	to DIN EN 1349
	Path A → AB	0...0.05 % of k_{vs} value
	Bypass B → AB	0...0.05 % of k_{vs} value
	Permissible 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	G...B to ISO 228/1
	Screwed fittings	R/Rp... to ISO 7/1, G... to ISO 228/1
	Actuator connection	M30 x 1.5
Weight	refer to «Dimensions»	
Accessories	ALG... screwed fittings (supplier: Siemens)	nut, nipple and flat seal for steel pipes with gas-pipe threads
	SERTO SO 21... screwed fittings (available from suppliers to the trade)	nut and compression fitting for seamless copper and mild-steel piping
	Welded fittings (available from suppliers to the trade)	for copper and steel piping

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

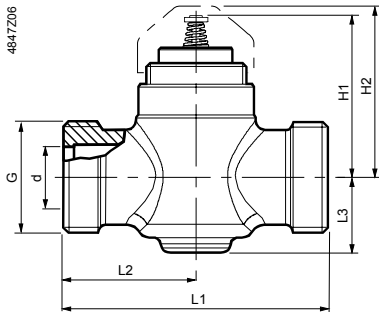
k_{vs} = nominal flow rate of chilled water (5...30 °C) through the fully opened valve (H_{100}) at a differential pressure of 100kPa (1bar).

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

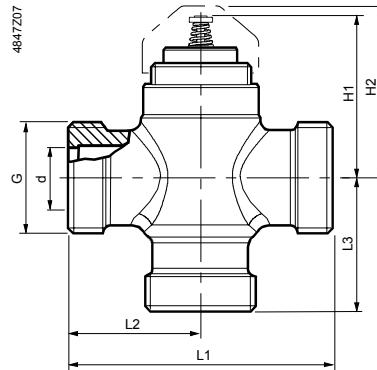
2-port valves

VVP47...



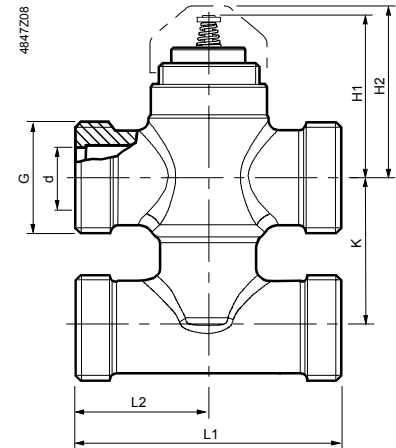
3-port valves

VXP47...

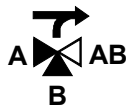


3-port valves with T-bypass

VMP47...



Type reference	DN	G [Zoll]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VVP47.10-0.25...1.6	10	G $\frac{1}{2}$ B	10.5	46	≈ 49	60	30	19	0.32
VVP47.15-2.5	15	G $\frac{3}{4}$ B	14	46	≈ 49	65	32.5	19	0.34
VVP47.20-4	20	G1B	20	49	≈ 52	80	40	23	0.44



Type reference	DN	G [Zoll]	d [mm]	H1 [mm]	H2 [mm]	L1 [mm]	L2 [mm]	L3 [mm]	Weight [kg]
VXP47.10-0.25...1.6	10	G $\frac{1}{2}$ B	10.5	46	≈ 49	60	30	30	0.32
VXP47.15-2.5	15	G $\frac{3}{4}$ B	14	46	≈ 49	65	32.5	32.5	0.37
VXP47.20-4	20	G1B	20	49	≈ 52	80	40	40	0.5



Type reference	DN	G [Zoll]	d [mm]	H1 [mm]	H2 [mm]	K [mm]	L1 [mm]	L2 [mm]	Weight [kg]
VMP47.10-0.25...1.6	10	G $\frac{1}{2}$ B	10.5	46	≈ 49	40	60	30	0.4
VMP47.15-2.5	15	G $\frac{3}{4}$ B	14	46	≈ 49	40	65	32.5	0.48

Screwed fittings

Sets of screwed fittings with flat seal available from Siemens ALG...2: set of 2 screwed fittings ALG...3: set of 3 screwed fittings	ALG132 ALG133 ALG142 ALG143 with male thread	
	ALG152 ALG153 with female thread	
Compression fittings available from suppliers to the trade	SERTO SO 21...	

ALG... type	for valve type	DN	G	R	Rp	L	T	SERTO type SO 21...	D
			[inch]	[inch]	[inch]	[mm]	[mm]		[mm]
ALG132	VVP47.10-0.25...1.6	10	G $\frac{1}{2}$	R $\frac{3}{8}$		≈ 24	≈ 9	SO 21-12-1/2"	12
ALG133	VXP47.10-0.25...1.6							SO 21-14-1/2"	14
2 x ALG132	VMP47.10-0.25...1.6							SO 21-15-1/2"	15
ALG142	VVP47.15-2.5	15	G $\frac{3}{4}$	R $\frac{1}{2}$		≈ 29.5	≈ 12	SO 21-17-3/4"	17
ALG143	VXP47.15-2.5							SO 21-18-3/4"	18
2 x ALG142	VMP47.15-2.5								
ALG152	VVP47.20-4	20	G1		Rp $\frac{1}{2}$	≈ 23	≈ 13		
ALG153	VXP47.20-4								

DN = Nominal size

G = Valve thread (internal cylindrical)

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