



Two-port valves VVP47.10-0.63 to VVP47.20-4.0 Three-port valves VXP47.10-0.63 to VXVP47.20-4.0 Three-port valves with T-bypass (4 ports) VMP47.10-0.63 to VMP47.15-2.5



2-port and 3-port valves PN16, ANSI Class 250

V...P47...

- Two-port valves, type VVP47...
- Three-port valves, type VXP73...
- Three-port valves with T-bypass, type VMP47...
- Nominal pressure 16 bar, ANSI Class 250
- Bronze valve body (Rg5)
- DN10, DN15 and DN20
- Externally-threaded connections, G...B
- Nominal stroke 2.5 mm
- Manual adjuster
- Type ALG... screwed fittings and flat seal available from Siemens
- SERTO compression fittings, type SO 21... available from suppliers to the trade
- Can be fitted with type SSP... or STP... electric actuators

Application

- In ventilation and air-conditioning systems for water-side terminal unit control in closed circuits, e.g. induction units, fan-coil units, small reheaters and small re-coolers, for use in:
 - Two-pipe systems with one heat exchanger for heating and cooling
 - Four-pipe systems with two separate heat exchangers for heating and cooling
- In closed-circuit zone heating systems, e.g.
 - Individual floors in a building
 - Apartments
 - Individual rooms

- Media**
- LPHW: Max. 110 °C, or max. 120 °C for brief periods
 - Chilled water: Above 1 °C
 - Water with antifreeze

Recommendation: Water should be treated as specified in VDI 2035.

Operating pressure Max. 1600 kPa (16 bar) in accordance with ISO 7268 (DIN 2401) and ANSI Class 250 as per ASME B16.15.

Types

DN [mm]	Connection	k _{vs} [m ³ /h]	VV...47... (2 ports)	VX...47... (3 ports)	VM...47... (4 ports)	k _{vs} Bypass [m ³ /h]	S _v	Δp _s [kPa]	Δp _{max} ¹⁾ [kPa]	Actuator Positioning force	
			VVP47.10-0.63	VXP47.10-0.63	VMP47.10-0.63					100N	105N
10	G½B	0.63	VVP47.10-0.63	VXP47.10-0.63	VMP47.10-0.63	0.44	> 50	100	100	SSP	STP
		1.0	VVP47.10-1	VXP47.10-1	VMP47.10-1	0.70					
		1.6	VVP47.10-1.6	VXP47.10-1.6	VMP47.10-1.6	1.12					
15	G¾B	2.5	VVP47.15-2.5	VXP47.15-2.5	VMP47.15-2.5	1.75	> 50	40	40	SSP	STP
20	G1B	4.0	VVP47.20-4	VXP47.20-4		2.8					

¹⁾ Where Δp_{max} is above 100 kPa, there is an increased risk of noise and erosion on the seat and plug

Δp_s = Maximum admissible pressure differential at which the valve is still capable of closing against the pressure

Δp_{max} = Maximum admissible pressure differential across the valve control path for the entire working range of the valve

k_{vs} = Flow rate in m³/h of water at 20 °C through the fully open valve at nominal stroke (100 %) and at a pressure differential of 1 bar.

k_{vr} = Minimum flow rate through the valve in m³/h with a pressure differential of 1 bar, at which the flow-characteristic tolerances can still be maintained.

S_v = Rangeability (k_{vs} / k_{vr})

Threaded fittings for V...P47...

DN [mm]	Valve threads	For valve type	Siemens		Manufacturer: SERTO	
			External thread	Internal thread		External pipe diameter
10	G½B	V...P47.10-0.63 to V...P47.10-1.6	ALG13		SO 21-12-1/2"	12 mm
					SO 21-14-1/2"	14 mm
					SO 21-15-1/2"	15 mm
15	G¾B	V...P47.15-2.5	ALG14		SO 21-17-3/4"	17 mm
					SO 21-18-3/4"	18 mm
20	G1B	V...P47.20-4		ALG15		

Ordering

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

Example

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

Delivery

The valves, actuators and screwed fittings are packed separately.

Compatibility

The valves can be operated with type SSP... or STP... electric actuators (see data sheets N4864 and N4878 respectively).

Actuator	Operating voltage	Control	Running time	Positioning force
SSP31...	AC 230 V	3-position	150 s	100 N
SSP61...	AC 24 V	DC 0 ...10 V	34 s	
SSP81...		3-position	150 s	
SSP81.04			43 s	
STP21...	AC 230 V	2-position	180 s	105 N
STP71...	AC 24 V			

Sizing

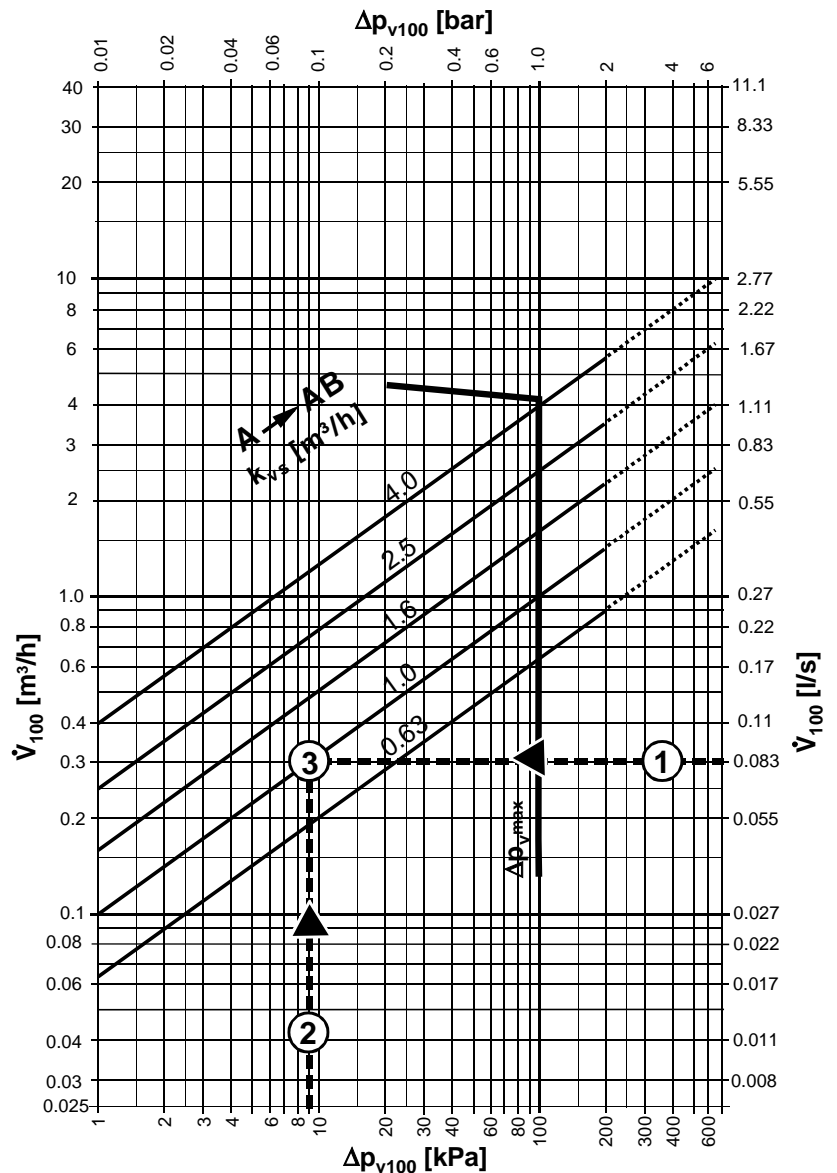
Key:

- Δp_{vmax}
Where Δp_{max} is above 100 kPa, there is an increased risk of noise and erosion on the seat and plug.
- k_{vs} value in straight-through control path A → AB
- 100 kPa 1 bar ≈ 10 mWG
- 1 m³/h 0.278 l/s water at 20 °C
- Δp_{max} Maximum admissible pressure differential across the valve control path for the entire working range of the control valve
- Δp_{vmax} Maximum admissible differential pressure across the valve under all operating conditions
- Δp_{v100} Maximum admissible pressure differential with valve fully open at nominal stroke
- \dot{V}_{100} Maximum flow rate in l/s

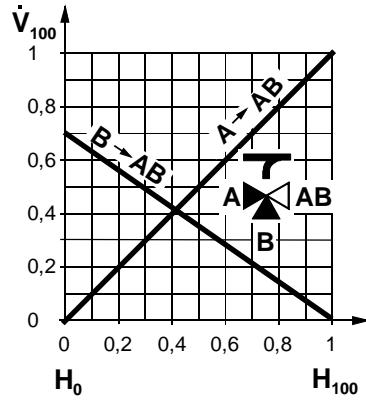
The k_{vs} -values in **bypass B** for type VVP47... and VXP.47... valves represent only 70 % of the k_{vs} value in the **straight-through control path A → AB**. This compensates for the flow resistance of the heat exchanger or radiator, so keeping the overall flow rate, \dot{V}_{100} as constant as possible.

Example:

-** = Example:
- (1) \dot{V}_{100} = 0.083 l/s
- (2) Δp_{v100} = 9 kPa
- (3) Required k_{vs} value = 1.0 m³/h



Control characteristics



Warning: Type VXP47... and VMP47... valves may be used only in mixing applications.

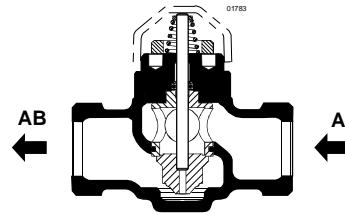
- \dot{V}_{100} = Volumetric flow rate
- H_0 = Valve stroke 0 % = path A \rightarrow AB closed, and bypass B open
- H_{100} = Valve stroke 100 % = A \rightarrow AB open, and bypass B closed
- Port AB = Constant total flow from A and B \rightarrow AB
- Port A = Variable flow in the straight-through control path from A \rightarrow AB
- Port B = Variable flow in the bypass from B \rightarrow AB

Engineering notes

The valves should preferably be installed in the return, where the seals are exposed to lower temperatures. See also "Mounting" and "Commissioning".

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

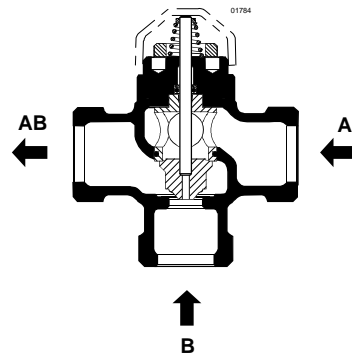
Two-port valves
VVP47...



Flow permissible only in direction of arrow from A \rightarrow AB (marked on valve body)

- Port AB = Variable flow through straight-through path (outlet)
- Port A = Variable flow through straight-through path (inlet)
- Valve stem retracted: Path A \rightarrow AB open
- Stem extended: Path A \rightarrow AB closed

Three-port valves
VXP47...

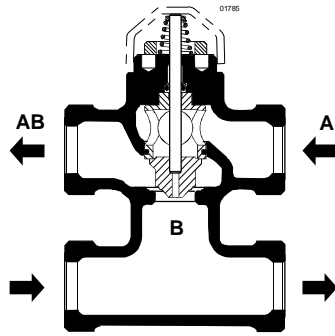


VXP47...
These valves may be used only in mixing applications.

Mixing:
Flow from A and B \rightarrow AB

- Port AB = Constant total flow (outlet)
- Port A = Variable flow A \rightarrow AB (inlet A)
- Port B = Variable flow B \rightarrow AB through bypass (inlet B)
- Valve stem retracted: Path A \rightarrow AB open, bypass B closed
- Valve stem extended: Path A \rightarrow AB closed, bypass B open

**Three-port valves
with T bypass (4 ports)**
VMP47...



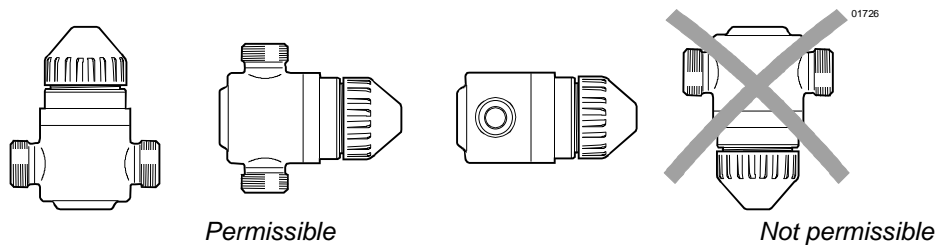
VMP47...
These valves may be used only in mixing applications.

Mixing:
Flow from A and B → AB

- Port AB = Constant total flow (outlet)
- Port A = Variable flow A → AB (inlet A)
- Port B = Variable flow B → AB through bypass (inlet B)
- Valve stem retracted: Path A → AB open, bypass closed
- Stem extended: Path A → AB closed, bypass B open

Mounting instructions

Orientation



In addition, the direction of flow as described under "Engineering" must be observed. The valves are delivered in multipacks; mounting instructions are enclosed with the packaging.

Commissioning notes

Manual adjustment

The **straight-through path A → AB** can be opened either electrically via the actuator, or manually. With three-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 shut-off 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 pre-set 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 given for these applications is valid only for valves used in conjunction with the actuators described under "Compatibility".

The use of type V...P47... valves with third-party actuators invalidates any warranty offered by Siemens Building Technologies / HVAC Products.

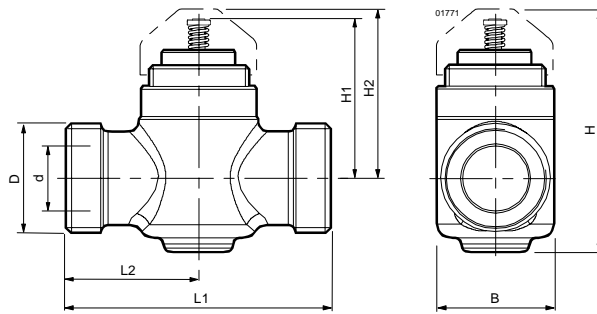
Technical data

Operating data	Characteristics	
	Path A → AB	Linear
	– Bypass B	Linear
	Leakage	
	– Path A → AB	0...0.05 % of k_{vs}
	– Bypass B	0...0.05 % of k_{vs}
	Rangeability	See "Types"
	Pressure class PN16	To ISO 7268 (DIN 2401)
ANSI Class 250	ASME B16.15	
Nominal stroke	2.5 mm	
Materials	Valve materials	
	– Housing	Bronze Rg5 (EN1982)
	– Stem	Stainless steel
	– Plug, seat, gland	Brass
Dimensions / Weight	– O-rings	Special EPDM rubber
	Dimensions	See "Dimensions" (table)
	Threaded connections	
	– Valve	G...B to ISO 228/1
	– Screwed fittings	R/Rp... to ISO7/1
Accessories	Weight	See "Dimensions" (table)
	ALG... screwed fittings (supplier: Siemens)	Nut, nipple and flat seal for steel pipes with gas-pipe threads
	SO 21... screwed fittings (supplier: SERTO)	Nut and compression fitting for seamless copper and mild-steel piping

Dimensions

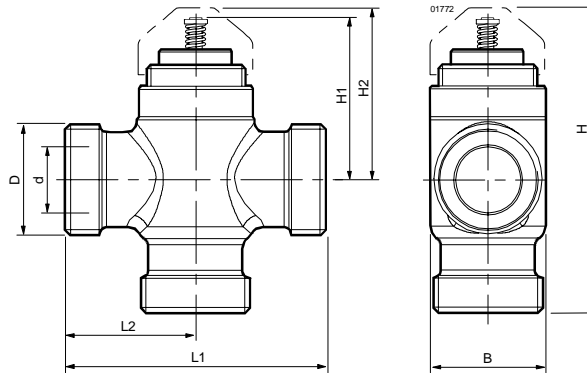
All dimensions in mm

Two-port valves (2-port) VVP47...



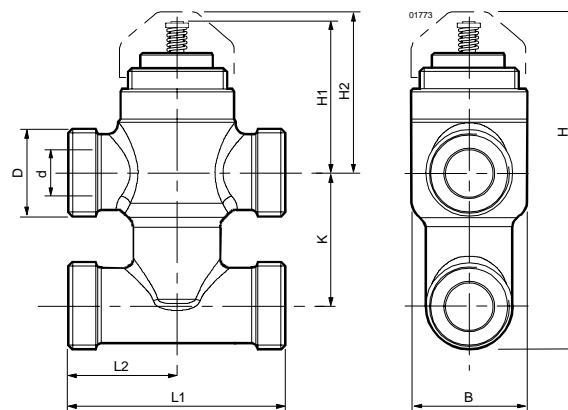
DN [mm]	D	d	Valve type	B	H	H1	H2	L1	L2	G [kg]
10	G½B	10.5	VVP47.10-0.63 ... 1.6	35	≈ 68	46	≈ 49	60	30	0.32
15	G¾B	14	VVP47.15-2.5	35	≈ 68	46	≈ 49	65	32.5	0.34
20	G1B	20	VVP47.20-4	36	≈ 75	49	≈ 52	80	40	0.44

Three-port valves VXP47...



DN [mm]	D	d	Valve type	B	H	H1	H2	L1	L2	G [kg]
10	G½B	10.5	VXP47.10-0.63 ... 1.6	35	≈ 79	46	≈ 49	60	30	0.32
15	G¾B	14	VXP47.15-2.5	35	≈ 81.5	46	≈ 49	65	32.5	0.37
20	G1B	20	VXP47.20-4	36	≈ 92	49	≈ 52	80	40	0.5

Three-port valves with T bypass (4 ports) VMP47...



DN [mm]	D	d	Valve type	B	H	H1	H2	C	L1	L2	G [kg]
10	G½B	10.5	VMP47.10-0.63 ... 1.6	35	≈ 100	46	≈ 49	40	60	30	0.4
15	G¾B	14	VMP47.15-2.5	35	≈ 102	46	≈ 49	40	65	32.5	0.48

Screwed fittings

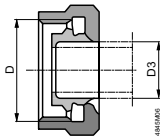
ALG... screwed fittings with flat seal, available from Siemens

With external thread ALG13 and 14

With internal thread ALG15

Type code	DN (Valve) [mm]	For valve type	D	D1	D2	L ≈ [mm]	T ≈ [mm]
ALG13	10	V...P47.10-0.25 to V...P47.10-1.6	G½B	R ³ / ₈		24	9
ALG14	15	V...P47.15-2.5	G¾B	R½		29,5	12
ALG15	20	V...P47.20-4	G1B		Rp½	23	13

SERTO compression fittings are not supplied by Siemens and must be ordered from your trade supplier.



Type code	DN (Valve) [mm]	For valve type	D	D3 External pipe diameter
SO 21-12-1/2"	10	V...P47.10-0.25 to V...P47.10-1.6	G½	12 mm
SO 21-14-1/2"				14 mm
SO 21-15-1/2"				15 mm
SO 21-17-3/4"	15	V...P47.15-2.5	G¾	17 mm
SO 21-18-3/4"				18 mm

DN = Nominal size of valve

D = Valve thread (internal cylindrical)

D3 = External diameter for seamless copper and mild-steel piping