



Two-port valves (2-ports)
VVP45.10-0.25 to VVP45.25-6.3
VVK45...



Three-port valves (3-ports)
VXP45.10-0.25 to VXP45.25-6.3
VXK45...



Three-port valves with T bypass (4-ports)
VMP45.10-0.25 to VMP45.25-4
VMK45...



Two-port valves (2-ports)
VVP45.25-10 to VVP45.40-25



Three-port valves (3-ports)
VXP45.25-10 to VXP45.40-25



Two-port and three-port small valves PN16, ANSI Class 250

V...P45...
V...K45...

- Two-port valves, types VVP45... and VVK45.10-...
- Three-port valves, types VXP45... and VXK45.10-...
- Three-port valves with T bypass, types VMP45... and VMK45.10-...
- Nominal pressure 16 bar, ANSI Class 250
- Bronze (Rg5) valve body
- DN10, DN15, DN20, DN25, DN32 and DN40
- DN10 valves available with thread for compression fitting (V...K45.10-...)
- Male threaded connections G...B
- Nominal stroke 5.5 mm
- Manual adjuster
- Screwed fittings ALG... with flat seal, available from Landis & Staefa
- SERTO compression fittings, type SO21... available from suppliers to the trade
- Can be fitted with type SSB... or SSC... electric actuators

Use

- 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 storeys in a building
 - Apartments
 - Individual rooms

Media

- Hot water: Max. 110 °C, short-term max. 120 °C
- Chilled water: Above 2 °C
- Water containing anti-freeze agent

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.

Type summary

- Valve types **VVP45...** with threaded connections **G...B**
- Valve types **V...K45.10-...** for compression fittings only

DN [mm]	Connection	k _{vs} [m ³ /h]	VV...45... (2-ports)	VX...45... (3-ports)	VM...45... (4-ports)	k _{vs} Bypass [m ³ /h]	S _v	Δp _s [kPa]	Δp _{max} ¹⁾ [kPa] ¹⁾	Actuator Positioning force	
										200N	300N
10	G½B	0.25	VVP45.10-0.25	VXP45.10-0.25	VMP45.10-0.25	0.18	> 50	600	200	SSB	SSC
		0.4	VVP45.10-0.4	VXP45.10-0.4	VMP45.10-0.4	0.28					
		0.63	VVP45.10-0.63	VXP45.10-0.63	VMP45.10-0.63	0.44					
		1.0	VVP45.10-1	VXP45.10-1	VMP45.10-1	0.70					
		1.6	VVP45.10-1.6	VXP45.10-1.6	VMP45.10-1.6	1.12					
10	For compression fittings G½B	0.25	VVK45.10-0.25	VXK45.10-0.25	VMK45.10-0.25	0.18	> 100	400	200	SSC	
		0.4	VVK45.10-0.4	VXK45.10-0.4	VMK45.10-0.4	0.28					
		0.63	VVK45.10-0.63	VXK45.10-0.63	VMK45.10-0.63	0.44					
		1.0	VVK45.10-1	VXK45.10-1	VMK45.10-1	0.70					
		1.6	VVK45.10-1.6	VXK45.10-1.6	VMK45.10-1.6	1.12					
15	G¾B	2.5	VVP45.15-2.5	VXP45.15-2.5	VMP45.15-2.5	1.75	> 100	400	200	SSC	
20	G1B	4.0	VVP45.20-4	VXP45.20-4	VMP45.20-4	2.80					
25	G1¼B	6.3	VVP45.25-6.3	VXP45.25-6.3		4.40	> 100	300	200	SSC	
25	G1½B	10	VVP45.25-10	VXP45.25-10		10					
32	G2B	16	VVP45.32-16	VXP45.32-16		16					
40	G2¼B	25	VVP45.40-25	VXP45.40-25		25					
								70	70		

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

Δp_s = Max. admissible pressure differential in kPa at which the valve is still capable of closing against the pressure.

Δp_{max} = Max. admissible pressure differential across the closed valve/actuator assembly.

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

k_{vr} = Minimum flow rate through the valve in m³/h at 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...P45...**

DN [mm]	Valve threads	For valve type	Landis & Staefa		Supplier: SERTO	
			Male thread	Female thread		External pipe diameter
10	G½B	V...P45.10-0.25 to V...P45.10-1.6	ALG13		SO 21-12-1/2"	12 mm
					SO 21-14-1/2"	14 mm
15	G¾B	V...P45.15-2.5	ALG14		SO 21-15-1/2"	15 mm
					SO 21-17-3/4"	17 mm
20	G1B	V...P45.20-4			ALG15	
25	G1¼B	VVP45.25-6.3 VXP45.25-6.3			ALG20	
25	G1½B	VVP45.25-10 VXP45.25-10			ALG25	
32	G2B	VVP45.32-16 VXP45.32-16			ALG32	
40	G2½B	VVP45.40-25 VXP45.40-25			ALG40	

**Compression fittings
for V...K45.10-...**

DN [mm]	Valve threads	For valve type	Supplier: CONEX	Supplier: KUTERLITE
			Standard Compression Fittings (Type A)	Standard Compression Fittings
10	G½B	V...K45.10-0.25 bis V...K45.10-1.6	Compression fitting 65/15 Union nut 63/15 External pipe diameter 15 mm	Compression fitting 978B Union nut 978A External pipe diameter 15 mm

Other L&S valves

Other PN16 valves with a stroke of 5.5 mm and screwed fittings, but with higher pressure differentials:

Type	Valve description	Data sheet
VVG44...	Two-port valves PN16	N4364
VVI52.15...	Two-port valves PN16/25	N4377
VVG55...	Two-port valves PN25	N4379
VXG44...	Three-port valves PN16	N4464
VMP43...	Two-port valves PN16 Three-port valves PN16 Three-port valves with T bypass PN16	N4841

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 (Landis & Staefa) and the SS... actuators must be ordered as separate items.

Example

**1 three-port valve with T bypass, type VMP45.10-1, and
4 sets fittings, type ALG13**

Delivery

The valves, actuators and screwed fittings are packed separately.

Equipment combinations

Valve types V...45.10-0,25 to V...45.25-6,3 are operated with type SSB... actuators (see data sheet N4891) or type SSC... actuators (see data sheet N4895) whereas valve types V...P45.25-10, V...45.32-16 and V...P45.40-25 are only operated with type SSC... actuators.

Actuator	Operating voltage	Control	Run-time	Positioning force	To k_{vs}
SSB31...	AC 230 V	3-position	150 s	200 N	6.3 m ³ /h
SSB61...	AC 24 V	DC 0 ... 10 V	75 s		
SSB81...	AC 24 V	3-position	150 s		
SSC31...	AC 230 V	3-position	150 s	300 N	25 m ³ /h
SSC61...	AC 24 V	DC 0 ... 10 V	30 s		
SSC81...	AC 24 V	3-position	150 s		

Sizing

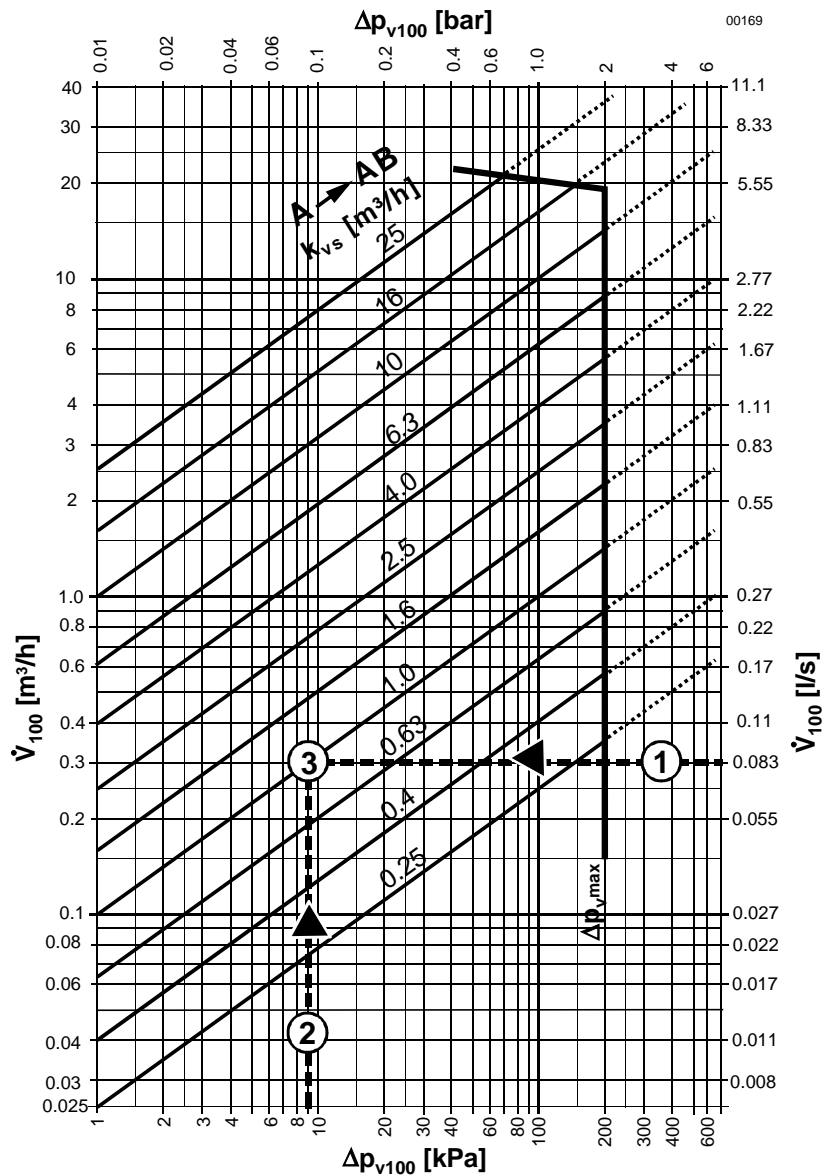
Key:

- Δp_{vmax}
(Where Δp_{vmax} 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 mWS
- 1 m³/h 0.278 l/s water at 20 °C
- Δp_{max} Maximum admissible pressure differential across the closed valve/actuator assembly.
- Δp_{vmax} Maximum admissible differential pressure across the valve under all operating conditions
- Δp_{v100} Admissible differential pressure with fully open valve and nominal stroke
- \dot{V}_{100} Maximum flow rate in l/s

The k_{vs} -values in **bypass B** for valve types V...45.10... to V...45.25-6.3 represent only 70 % of the k_{vs} value in the **straight-through control path A → AB** (for other types 100 %). 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:

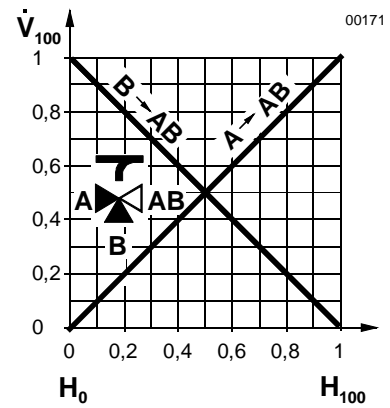
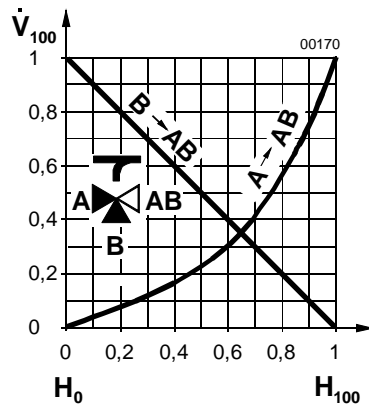
-** = Example
- (1) \dot{V}_{100} = 0.083 l/s
- (2) Δp_{v100} = 9 kPa
- (3) Required k_{vs} value = 1.0 m³/h



Control characteristics

V...45.10-0.25 to V...45.25-6.3

V...P45.25-10 to V...P45.40-25



Caution !

Type VX...45... and VM...45... valves may be used only in mixing applications.

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

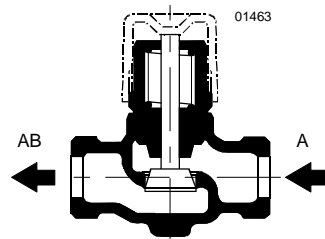
Recommendation:

A strainer should be fitted upstream of the valve.

Two-port valves

(2-ports)

VVP45... / VVK45...



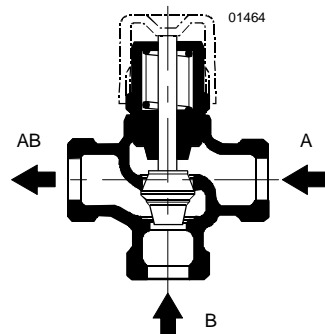
Flow only permissible in direction of arrow from A → AB (marked on valve body)

- Port AB = Variable flow through straight-through port (outlet)
- Port A = Variable flow through straight-through port (inlet)
- Stem retracted: Path A → AB open
- Stem extended: Path A → AB closing

Three-port valves

(3-ports)

VXP45... / VXK45...

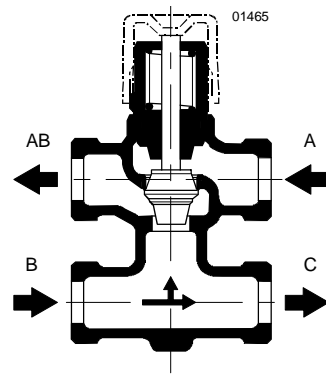


Type VXP45... and VXK45... valves may be used only in mixing applications.

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)
- Stem retracted: Path A → AB open, bypass B closed
- Stem extended: Path A → AB closed, bypass B open

**Three-port valves
with T bypass (4 ports)**
VMP45... / VMK45...



Type VMP45... and VMK45... valves
may be used only in mixing applications.

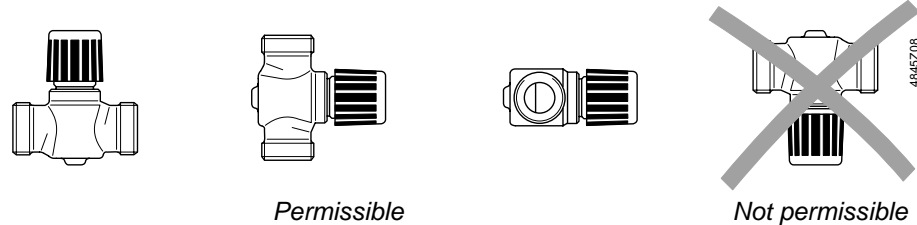
Mixing:
Flow from A and B → AB

- Port AB = Constant total flow (outlet)
- Port A = Variable flow A → AB (inlet A)
- Port B = Variable flow B → AB through bypass (inlet B)

Stem retracted: Path A → AB open, bypass closed
Stem extended: Path A → AB closed, bypass B open

Mounting notes

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 electrically via the actuator, or manually. With three-port valves, this throttles or closes **bypass B**. Manually, path A → AB can only be opened to 70 % (bypass closes to 30 %). The valves with k_{vs} values 10, 16 and 25 can be fully opened whereas the bypass can be fully closed. The valves are automatically closed by a return spring.

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 wheel pre-set or with a correctly mounted actuator.

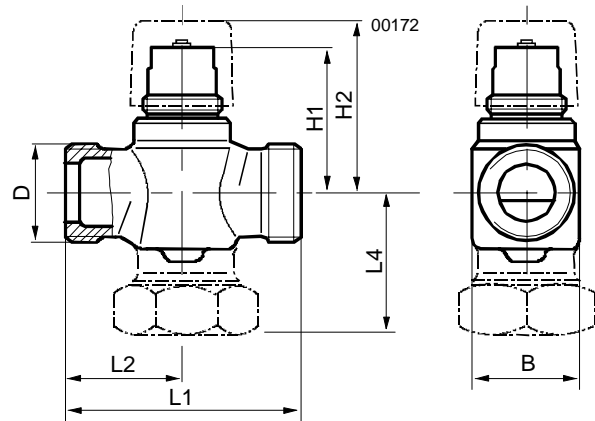
Technical data

Operating data	Characteristics	
	Path A → AB	<i>For valve types with k_{vs} 0.25 to 6.3: $n_{gl} = 2.2$ in accordance with VDI/VDE 2173 (optimised for a wide controllable range).</i> <i>For valve types with k_{vs} 10 to 25: Linear</i>
	– Bypass B	Linear
	Leakage	
	– Path A → AB	0...0.02 % of k_{vs}
	– Bypass B	0...0.02 % of k_{vs}
	Rangeability	see «Type summary»
	Pressure class PN16	Acc. to ISO 7268 (DIN 2401)
	ANSI Class 250	ASME B16.15
	Nominal stroke	5.5 mm
Materials	Valve materials	
	– Valve body	Bronze (Rg5)
	– Stem	Stainless steel
	– Plug, seat, gland	Brass
	– O-rings	Special EPDM rubber
Dimensions / Weights	Dimensions	see «Dimensions» (table)
	Threaded connections	
	– Valve	G...B to ISO 228/1
	– Screwed fittings	R/Rp... to ISO 7/1
	Weights	see «Dimensions» (table)
Accessories	ALG... screwed fittings (supplier: Landis & Staefa)	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
	Compression fittings (<i>for valves V...K45.10-0.25 bis V...K45.10-1.6</i>)	Nut and compression fitting for seamless copper and mild-steel piping

Dimensions

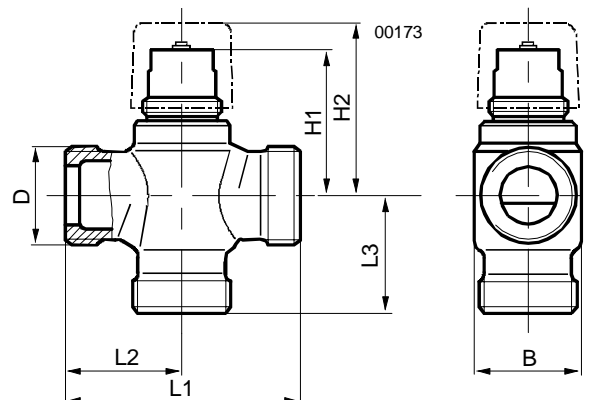
All Dimensions in mm

Two-port valves (2-ports) VVP45... / VVK45...



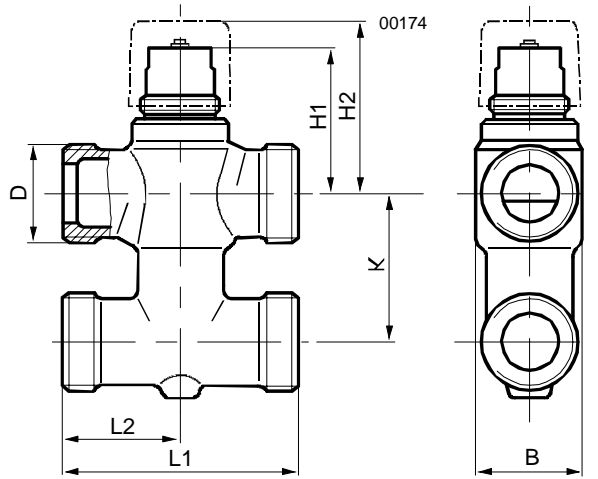
DN [mm]	D	Valve type	B	H1	H2	L1	L2	L4	G [kg]
10	G½B	VVP45.10-0.25 ... 1.6 VVK45.10-0.25 ... 1.6	29	44.9	≈ 54	60	30		0.26
15	G¾B	VVP45.15-2.5	31	44.9	≈ 54	65	32.5		0.30
20	G1B	VVP45.20-4	36	48.9	≈ 58	80	40		0.42
25	G1¼B	VVP45.25-6.3	42	51	≈ 60	80	40	49	0.76
25	G1½B	VVP45.25-10	70	62.5	≈ 71	105	52.5	62.5	1.40
32	G2B	VVP45.32-16	80	69	≈ 78	105	52.5	63.5	1.95
40	G2¼B	VVP45.40-25	100	72	≈ 81	130	65	76	2.75

Three-port valves (3-ports) VXP45... / VXK45...



DN [mm]	D	Valve type	B	H1	H2	L1	L2	L3	G [kg]
10	G½B	VXP45.10-0.25 ... 1.6 VXK45.10-0.25 ... 1.6	29	44.9	≈ 54	60	30	30	0.28
15	G¾B	VXP45.15-2.5	31	44.9	≈ 54	65	32.5	32.5	0.34
20	G1B	VXP45.20-4	36	48.9	≈ 58	80	40	40	0.48
25	G1¼B	VXP45.25-6.3	42	51	≈ 60	80	40	40	0.64
25	G1½B	VXP45.25-10	70	62.5	≈ 81	105	52.5	52.5	1.20
32	G2B	VXP45.32-16	80	69	≈ 88	105	52.5	52.5	1.60
40	G2¼B	VXP45.40-25	100	72	≈ 91	130	65	65	2.30

Three-port valve with T bypass (4-ports)
VMP45... und VMK45...

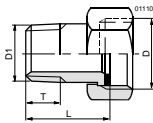


DN [mm]	D	Valve type	B	H1	H2	K	L1	L2	G [kg]
10	G½B	VMP45.10-0.25 ... 1.6 VMK45.10-0.25 ... 1.6	29	44.9	≈ 54	40	60	30	0.36
15	G¾B	VMP45.15-2.5	31	44.9	≈ 54	40	65	32.5	0.46
20	G1B	VMP45.20-4	36	48.9	≈ 58	50	80	40	0.64

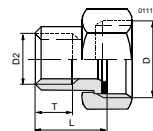
Screwed fittings

ALG... screwed fittings with flat seal, available from Landis & Staefa

with male threads
ALG13 and 14

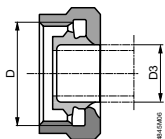


with female threads
ALG15 to 40



Type code	DN (Valve) [mm]	For valve type	D	D1	D2	L ≈ [mm]	T ≈ [mm]
ALG13	10	V...P45.10-0.25 bis V...P45.10-1.6	G½B	R¾		24	9
ALG14	15	V...P45.15-2.5	G¾B	R½		29.5	12
ALG15	20	V...P45.20-4	G1B		Rp½	23	13
ALG20	25	V...P45.25-6.3	G1¼B		Rp¾	25	15
ALG25	25	V...P45.25-10	G1½B		Rp1	27	17
ALG32	32	V...P45.32-16	G2B		Rp1¼	32	19
ALG40	40	V...P45.40-25	G2¼B		Rp1½	32	19

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



Type code	DN (Valve) [mm]	For valve type	D	D3 External diameter
SO 21-12-1/2"	10	V...P45.10-0.25		12 mm
SO 21-14-1/2"		bis	G½	14 mm
SO 21-15-1/2"		V...P45.10-1.6		15 mm
SO 21-17-3/4"	15	V...P45.15-2.5	G¾	17 mm
SO 21-18-3/4"				18 mm

- DN = Nominal width of valve [mm]
- D = Valve thread (internal cylindrical)
- D3 = External diameter for seamless copper and mild-steel piping

