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济南工达捷能科技发展有限公司

西门子暖通空调产品  
使用手册



济南工达捷能科技发展有限公司

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## Three-port seat valves with flange, PN16

## VXF40...

### Three-port seat valves with flange, PN16

- For use as a mixing or diverting valve
- Grey cast iron GG-25
- DN15 ... DN150 mm
- $k_{vs}$  1.9 ... 300 m<sup>3</sup>/h
- 20 mm or 40 mm stroke
- Can be fitted with actuator types SKB..., SKC..., SKD... or SQX..

### Application

For use as a **control valve** in heating, ventilation and air conditioning systems in *mixing* or *diverting* applications.

**For closed circuits only.**

### Media

Standard version with standard stem seal for:

<b>Chilled water</b> <b>Low temperature hot water</b> <b>High-temperature hot water</b> <b>Water with anti-freeze</b> <sup>1) 2)</sup> <b>Brine</b> <sup>1) 2)</sup>	-25 ... +130 °C
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1) Media below 0 °C: A stem heater, type **ASZ6.5**, is required to prevent the valve stem from freezing in the gland.

2) Water with anti-freeze additives, and brine: Up to -10 °C to DIN 3158 (class I stress) or up to -25 °C to DIN 3158 (class II stress)

## Types

### Standard version

Type	DN [mm]	k <sub>vs</sub> [m <sup>3</sup> /h]	S <sub>v</sub>	Δp <sub>vmax</sub>	
				Mixing [kPa]	Diverting [kPa]
VXF40.15-1.9	15/10	1.9	> 50	100	100
VXF40.15-3	15	3			
VXF40.25-5	25/20	5			
VXF40.25-7.5	25	7.5			
VXF40.40-12	40/32	12	> 100	100	100
VXF40.40-19	40	19			
VXF40.50-31	50	31			
VXF40.65-49	65	49			
VXF40.80-78	80	78	> 100	100	70
VXF40.100-124	100	124			
VXF40.125-200	125	200			
VXF40.150-300	150	300			

DN = Nominal diameter  
k<sub>vs</sub> = Nominal flow to VDI2173  
S<sub>v</sub> = Rangeability to VDI2173

Δp<sub>vmax</sub> = Maximum admissible pressure differential across control path A – AB (mixing) or AB – A (diverting) in relation to the full stroke

### Accessories

**ASZ6.5 Electric stem heater**, AC 24 V, required for media below 0 °C

### Ordering

When ordering, please specify the quantity, product name and type code.

*Example: 2 three-port seat valves, PN16 Type VXF40.50-31*

### Delivery

- The valves and actuators are packed separately.
- No counter-flanges or flange seals are supplied with the valves.

### Compatibility

### Electric actuators

Landis & Staefa actuator types SKB..., SKC..., SKD... and SQX are available in various versions:

- AC 24 V / AC 230 V with 3-position control signal
- AC 24 V with a DC 0 ... 10 V or DC 4 ... 20 mA proportional control signal

Valves	H <sub>100</sub> [mm]	Actuators							
		SQX...		SKD...		SKB...		SKC...	
		Mixing	Diverting	Mixing	Diverting	Mixing	Diverting	Mixing	Diverting
Δp <sub>max</sub> [kPa]									
VXF40.15-1.9	20							-	-
VXF40.15-3								-	-
VXF40.25-5								-	-
VXF40.25-7.5		100	100	100	100	100	100	-	-
VXF40.40-12								-	-
VXF40.40-19								-	-
VXF40.50-31								-	-
VXF40.65-49		80	60		60			-	-
VXF40.80-78	60	40	80	40		70	-	-	
VXF40.100-124	40	-	-	-	-	-	-		70
VXF40.125-200		-	-	-	-	-	-	100	60
VXF40.150-300		-	-	-	-	-	-		50
<b>Data sheet</b>		<b>N4554</b>		<b>N4561</b>		<b>N4564</b>			

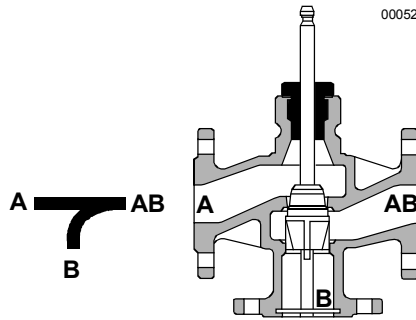
$H_{100}$  = 100 % stroke of valve and actuator  
 $\Delta p_{max}$  = Maximum admissible pressure differential across control path A – AB (mixing) or AB – A (diverting) across the whole actuating range of the motorised valve.

## Pneumatic actuators

Landis & Staefa pneumatic actuators are available on request from your local office.  
**Pneumatic actuators are only suitable for applications where the VXF40... valves are used as mixing valves.**

## Application

### Valve cross-section



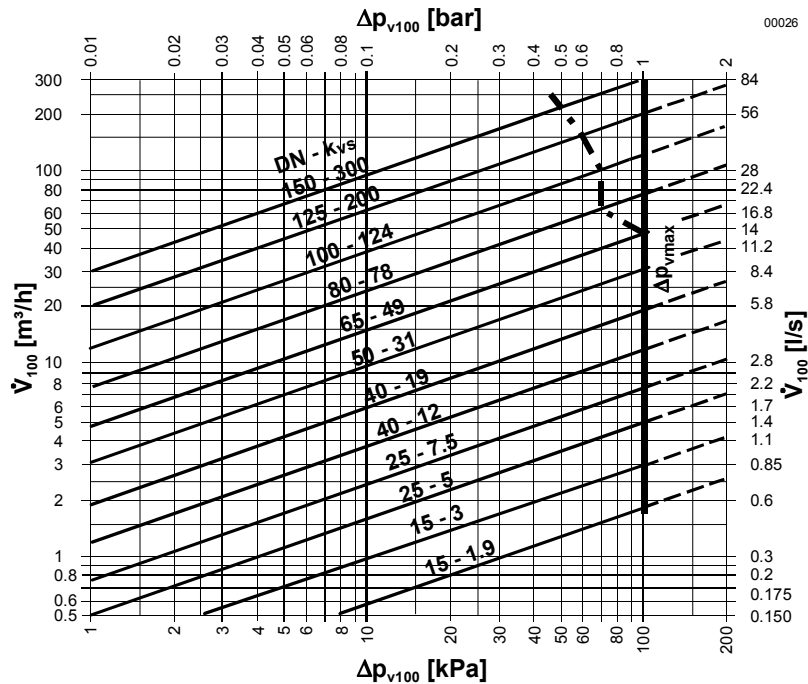
Guided parabolic plug, integrated into the valve stem.  
 The seat is machined into the valve body.

## Disposal

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

## Sizing

### Sizing chart



100 kPa = = 1 bar  $\approx$  10 mWG  
 1 m³/h = 0.278 kg/s water at 20 °C

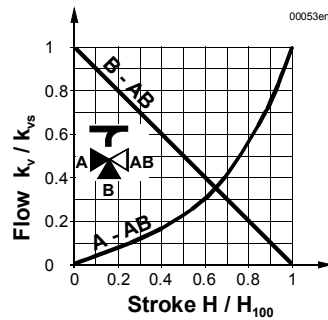
— =  $\Delta p_{Vmax}$  = Maximum admissible pressure differential across **control path A – AB of the mixing valve** (with actuator) applicable to the entire stroke range.  
 - · - =  $\Delta p_{Vmax}$  = Maximum admissible pressure differential across **control path AB – A of the diverting valve** (with actuator) applicable to the entire stroke range.

$\Delta p_{V100}$  = Pressure differential across the fully open valve across the control path (A – AB for mixing or AB – A for diverting applications) at flow  $V_{100}$

$V_{100}$  = Flow in m³/h

## Valve characteristic

The VXF40... valve should preferably be used in mixing applications.



## Through-port

0 ... 30 % Linear  
 30 ... 100 %  $n_{gl} = 3$  to VDI/ VDE2173

## Bypass

0 ... 100 % Linear

## Mixing

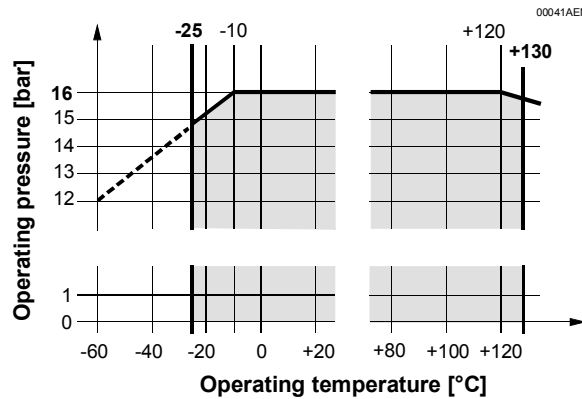
Flow from port A and port B to port AB

## Diverting

Flow from port AB to port A and port B

Port AB = Constant flow  
 Port A = Variable flow  
 Port B = Bypass (variable flow)

## Operating pressure and temperature



Operating pressures to ISO7268 and EN133 at operating temperatures of  $-25 \dots +130 \text{ }^\circ\text{C}$  to DIN4747 and DIN3158

## Engineering

- In heating systems, the valve should preferably be installed in the return, where the seal will be exposed to lower temperatures, so extending its service life.
- Water should be of the quality recommended in VDI 2035
- Recommendation: To increase the reliability of the valve, a **strainer** should be installed at the valve inlet.

## Stem heater

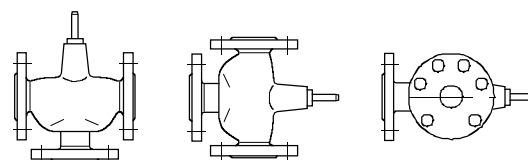
With **media temperatures below  $0 \text{ }^\circ\text{C}$** , an electric **stem heater, type ASZ6.5** is required to prevent the valve stem from freezing in the gland. For safety reasons, the stem heater is designed to operate with a voltage of AC 24 V.

## Mounting

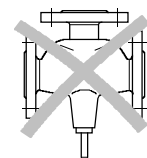
The valve and actuator are easily assembled directly on site. There is no need for special tools or calibration.

Mounting instructions are enclosed with the valve.

## Orientation



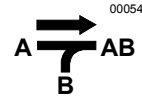
Permissible



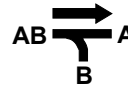
Not permissible

Direction of flow

- Mixing: from A and B to AB



- Diverting: from AB to A and B



## Commissioning

The actuator must be commissioned only with the actuator correctly assembled.

- Stem retracted: Through-port opens, and bypass closes
- Stem extended: Through-port closes and bypass opens

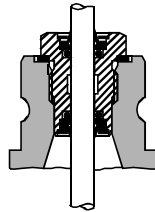
## Maintenance

Before servicing the valve, 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 must be re-commissioned only with the actuator correctly assembled.

Stem seal

This can be replaced without removing the valve from the pipework. The pipes must be cool and free of pressure, and the stem surface must be in perfect condition. If the seal is damaged in the vicinity of the seal, the entire stem/plug unit must be replaced. Contact your local office for details.

Spare parts



4420203

Replacements for EPDM O-ring seal including flat-faced copper seal, for chilled water, low temperature hot water, high temperature hot water, and brine  $-25 \dots +130 \text{ }^\circ\text{C}$

VXF40... DN15 ... DN80 (Stem diameter 10 mm) **4 284 8806 0**  
 VXF40... DN100 ... DN150 (Stem diameter 14 mm) **4 679 5629 0**

## Warranty

**The Landis & Staefa warranty is invalidated by the use of actuators from other manufacturers.**

The technical data in relation to  $\Delta p_{\max}$ ,  $\Delta p_s$ , leakage rates, noise and service-life is valid only in conjunction with the Landis & Staefa actuators listed in the table under "Compatibility".

## Technical data

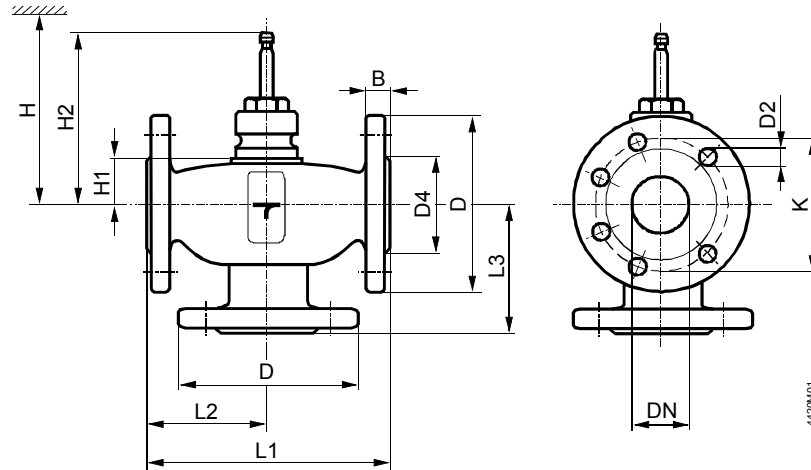
Operating data	PN class	PN16
Valve characteristic	– Through-port	0 ... 30 % 30 ... 100 %
	– Bypass	0 ... 100 %
Leakage	– Through-port	0 ... 0.02 % of $k_{vs}$ value to VDI / VDE2174
	– Bypass	0.5 ... 2 % of $k_{vs}$
Admissible pressure	1600 kPa (16 bar) to ISO7268 / EN1333	
Operating pressure	To DIN4747 / DIN3158 in the range $-25 \dots +130 \text{ }^\circ\text{C}$	
Flange connections	To ISO7005-2	

Materials

Stroke	DN15 ... DN80	20 mm
	DN100 ... DN150	40 mm
Valve body	GG-25 to DIN EN 1561	
Stem	Stainless steel	
Plug	DN15 ... DN65	Brass
	DN80 ... DN150	Bronze
Seal	Brass	
- Sealing material	EPDM O-rings	

Dimensions

All dimensions in mm



DN [mm]	B	D Ø	D2 Ø	D4 Ø	H1	H2	K Ø	L1	L2	L3	Weight [kg]
15	14	95	14 (4x)	46	40.5	137	65	130	65	65	4.2
25	16	115	14 (4x)	65	34	130.5	85	160	80	80	4.6
40	18	150	19 (4x)	84	39	135.5	110	200	100	100	8.0
50	20	165		99	39	135.5	125	230	115	115	11.7
65	20	185	118	60	156.5	145	290	145	145	145	14.7
80	22	200	19 (8x)	132	60	156.5	160	310	155	155	18.8
100	24	220		156	93	209.5	180	350	175	175	29
125	26	250	184	104	220.5	210	400	200	200	200	42
150	26	285	23 (8x)	211	120	236.5	240	480	240	240	61

Overall installation height

DN [mm]	H			
	SQX...	SKD...	SKB...	SKC...
15	> 465	> 540	> 615	-
25	> 459	> 534	> 609	-
40	> 464	> 539	> 614	-
50	> 464	> 539	> 614	-
65	> 485	> 560	> 635	-
80	> 485	> 560	> 635	-
100	-	-	-	> 666
125	-	-	-	> 677
150	-	-	-	> 693

- DN = Nominal diameter
- H = Total height of actuator plus minimum clearance from wall or ceiling for mounting, connection, operation, maintenance etc.
- H1 = Installation height from middle of pipe, for fitted actuator (upper edge)
- H2 = Valve in "Closed" position, i.e. with stem fully extended