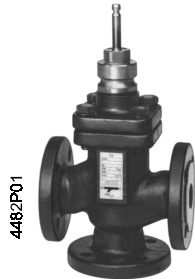


Three-port seat valves with flange, PN40

VXF61...



4482P01

DN15 and 25



4482P02

DN40...150

Three-port seat valves with flange, PN40

- Can be used as mixing or diverting valves
- DN15...150 mm
- DN15 and 25: cast steel GS-C 25 N
DN40...150: cast steel GS-45
- k_{vs} 1.9...300 m³/h
- Stroke 20 or 40 mm
- Can be equipped with actuators SQX..., SKD... and SKB...

Use

In district heating, heating, ventilating, and air conditioning systems as a **control valve for "mixing" or "diverting" functions.**

For open and closed circuits.

Media

Standard versions with standard stem sealing gland for:

<p>Cooling water Chilled water Low temperature hot water High temperature hot water Water with anti-freeze up to max. 50 % vol. ^{1) 2)} Brine ^{1) 2)}</p>	<p>-25 ... +220 °C</p>
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Special versions with thermal insulator and special stem sealing gland for:

Thermo oils	220 ... 300/350 °C ³⁾
Refrigerants	not permissible ⁴⁾

- 1) Media below 0 °C: ASZ6.5 stem heating element required to prevent freezing of the valve stem in the sealing gland.
- 2) Water with anti-freeze and brine: up to -10 °C as per DIN 3158 (stress case I) or up to -25 °C as per DIN 3158 (stress case II)
- 3) For applications with thermo oils of 220...300/350 °C, a thermal insulator between the valve and the actuator is required.
The maximum permissible temperatures in dependence of valve body material are described in the sections "Notes" and "Engineering notes".
- 4) For these applications, special refrigerant valves with magnetic actuators are used; refer to data sheets 4700...4799

Type summary

Standard version					
Type	DN [mm]	k_{vs} [m ³ /h]	S_v	$\Delta p_{vmax.}$	
				mixing kPa	diverting kPa
VXF61.14	15/10	1.9	> 50	1600	500 ¹⁾
VXF61.15	15	3			
VXF61.24	25/20	5			
VXF61.25	25	7.5	>100		
VXF61.39	40/32	12	> 50	1200	
VXF61.40	40	19			
VXF61.50	50	31			
VXF61.65	65	49	>100	800	350
VXF61.80	80	78		500	250
VXF61.90	100	124		300	150
VXF61.91	125	200		200	100
VXF61.92	150	300		100	70

Special versions with type suffix 2

For media and temperatures:		Example:
Thermo oils	220 ... 300/350 °C	VXF61.502 ²⁾

- 1) If noise is permitted, the same values apply as for mixing
 2) **Thermal insulator** for special version (type suffix: **2**), required for thermo oils from 220 °C to max. 300/350 °C; factory-mounted in the valve on delivery.

DN =	Nominal diameter	$\Delta p_{vmax.}$ =	Max. permissible differential pressure across the control path (II-I = mixing or I-II = diverting) of the valve valid for entire stroke range
k_{vs} =	Nominal flow value as per VDI 2173		
S_v =	Rangeability as per VDI 2173		

Accessories

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

Ordering

When ordering, please indicate type reference and type suffix (where required).

Example: **VXF61.50**

Delivery

Both the valve and the actuator are packed and supplied separately.

The special version (type suffix: **2**) for thermo oils is delivered with factory-mounted thermal insulator in the valve.

The valves are supplied without counter-flanges and without flange gaskets.

Equipment combinations

Valves	H_{100} [mm]	Actuators ¹⁾					
		SKD... ²⁾		SKB...		SKC...	
		mixing	diverting	mixing	diverting	mixing	diverting
VXF61.14	20	1200	500	1600	500		
VXF61.15							
VXF61.24							
VXF61.25							
VXF61.39							
VXF61.40							
VXF61.50			1000				
VXF61.65	40					800	350
VXF61.80						500	250
VXF61.90						300	150
VXF61.91						200	100
VXF61.92						100	70
Data sheet							

- 1) Actuators available for delivery: • AC 24 V / AC 230 V with 3-position control
 • AC 24 V with proportional control DC 0...10 V or DC 4...20 mA
 2) Usable up to max. medium temperature of 140 °C

H_{100} = 100% stroke of the valve and the actuator

Δp_{max} = Max. permissible differential pressure across the control path (II-I = mixing or I-II = diverting) of the valve across the entire actuating range of the motorized valve

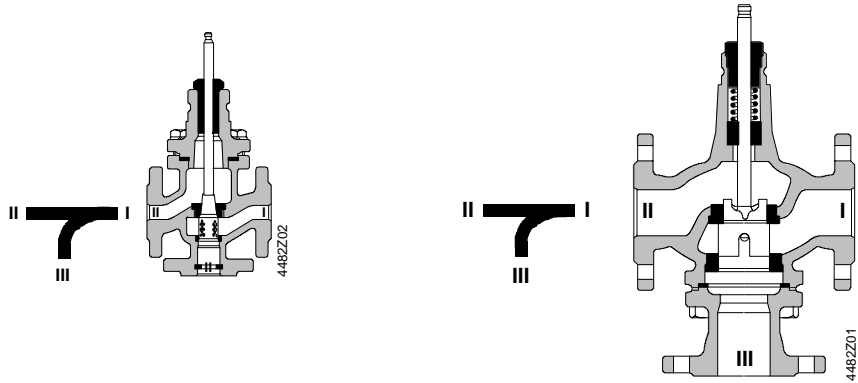
Pneumatic actuators



Pneumatic actuators are available on request from your local office.

Application is possible only if the VXF61... is used as a mixing valve.

Mechanical design
Valve cross-section

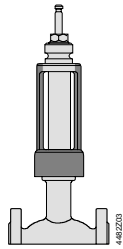


DN15 and 25

DN40...150

Depending on the nominal size, a guided parabolic, perforated or slot plug is used that is directly connected to the valve stem. The seats are attached to the valve body with the aid of special gland material.

Thermal insulator

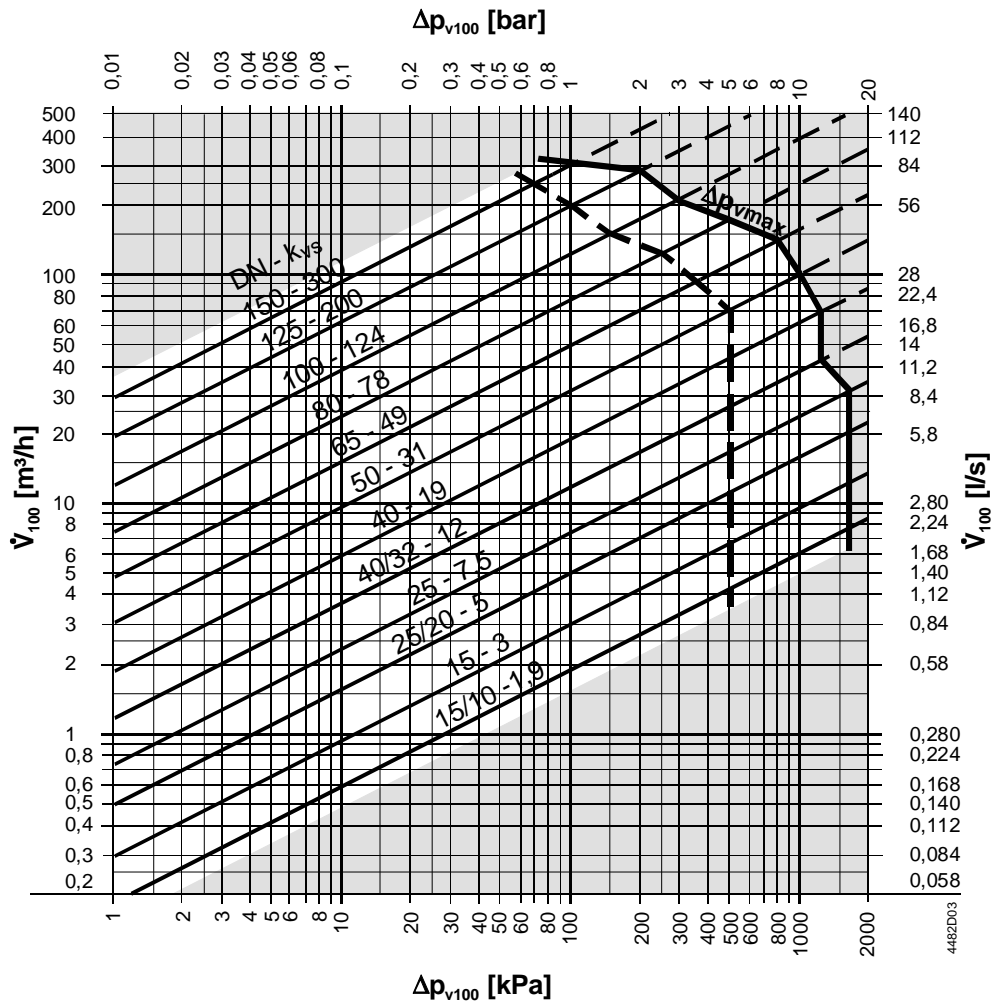


Thermal insulator for special version (type suffix: 2), required for thermo oils from 220 °C to max. 300/350 °C; factory-mounted in the valve on delivery.

Disposal

The various material types used require that you disassemble the unit and sort the components prior to disposal.

Sizing
Sizing diagram



100 kPa = 1 bar ≈ 10 mWG

1 m³/h = 0.278 kg/s water at 20 °C

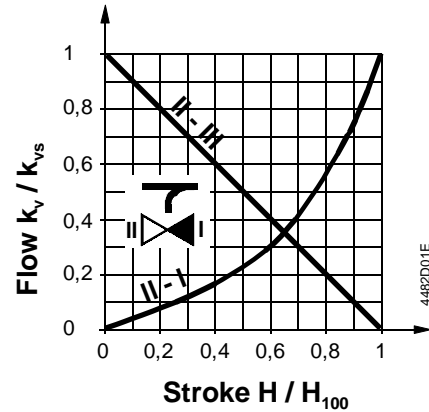
— = Δp_{vmax} = Max. permissible differential pressure across the **mixing valve's II-I control path** (actuator) valid for the entire stroke range

— · — = Δp_{vmax} = Max. permissible differential pressure across the **diverting valve's I-II control path** (actuator) valid for the entire stroke range

Δp_{v100} = Pressure difference across the fully opened valve (actuator) across the control path (II-I = mixing or I-II = diverting) at flow \dot{V}_{100}

\dot{V}_{100} = Flow in m³/h

Valve flow characteristic



Valve flow characteristic in the **Through-port**

0... 30 %: linear

30...100 %: $n_{gl} = 3$ as per VDI / VDE 2173

Bypass

0...100 %: linear

Mixing: Flow from port II and port III to port I

Diverting: Flow from port I to port II and port III

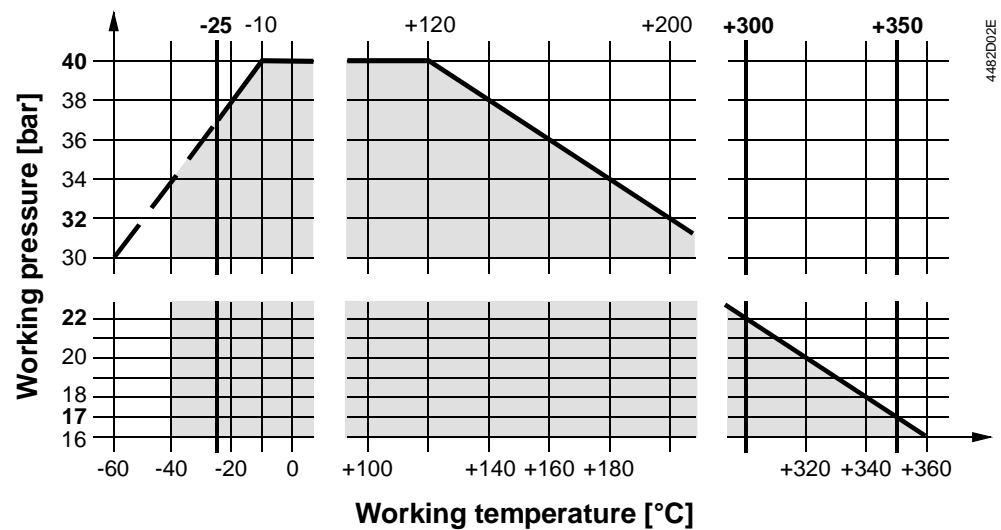
Port I = constant flow

Port II = variable flow

Port III = bypass (variable flow)

Use the three-port valve primarily as a mixing valve

Working pressure and temperature



Working pressure staged as per ISO 7268 and EN 1333

at operating temperatures of -25 ... +300/350 °C as per DIN 4747 and DIN 3158.

Notes

Engineering

We recommend installation in the return pipe, as the temperatures in this pipe are lower for applications in heating systems, which in turn, extends the stem sealing gland's life.

Water quality requirements as per VDI 2035.



In open circuits, there is a risk of valve plug seizing caused by scale deposits. Thus, use only the most powerful actuators SKB... or SKC... for these applications.

Additionally, periodic actuation (twice or three times per week) must be planned.

Always use a strainer upstream of the valve.

We generally recommend that you install a **strainer even with closed circuits** to increase the valve's functional safety.



For media below 0 °C, use the electric **ASZ6.5 stem heating element** to prevent the valve stem from freezing in the sealing gland. For safety reasons, the stem heating element has been designed for **AC 24 V / 30 W** operating voltage.



The maximum permissible temperatures in dependence of valve body materials are:

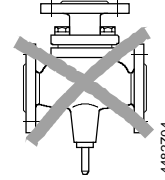
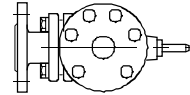
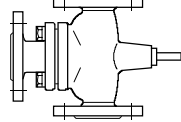
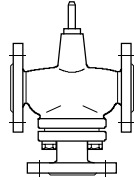
- GS-C 25 N = max. 350 °C (DN15 and DN25)
- GS-45 = max. 300 °C (DN40...150)

Mounting

Both valve and actuator can easily be assembled at the mounting location. Neither special tools nor adjustments are required.

The valve is supplied with mounting instructions.

Mounting positions



Permissible

Not permissible

Direction of flow:

When mounting, pay attention to the **valve's flow direction symbol**:

Mixing from II / III to I



Diverting from I to II / III



Commissioning



Commission the valve only if the actuator has been mounted correctly.

- Stem retracts: Through-port opens, bypass closes
- Stem extends: Through-port closes, bypass opens

Service



For actuator service work: Turn off the pump and the operating voltage, close the shutoff valves, depressurize the pipes and allow them to cool down. Disconnect the electrical connections, where required, from the terminals. Re-commission the valve only if the actuator has been mounted correctly.

Stem sealing gland

The glands can be exchanged without removing the valve, provided the pipes are depressurized and cooled off and the stem surface is unharmed. If the stem is damaged in the gland range, replace the entire stem-plug-unit. Contact your local office or branch.

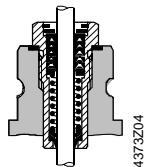
Spare parts

DN15 and DN25:

Standard version

DN15 ... 150:

Special version 2

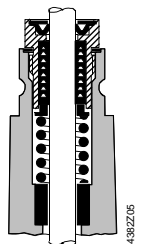


Replacement for PTFE-O-ring sealing gland, including flat seal made from copper, for cooling water, chilled water, low temperature hot water, high temperature hot water, saturated steam, super-heated steam, thermo oils and brine – 25 ... +300/350 °C

- For VVF61... DN15 and 25 (Stem dia. 10 mm) **4 284 8829 0**
- For VVF61 ... 2 DN15 ... 150 (Stem dia. 10 mm) **4 284 8829 0**

DN40 ... 150:

Standard version



Replacement for PTFE-O-ring sealing gland, including flat seal made from copper, for cooling water, chilled water, low temperature hot water, high temperature hot water, saturated steam, super-heated steam and brine – 25 ... +220 °C

- For VVF61... DN40 ... 150 (Stem dia. 14 mm) **4 679 5630 0**

Warranty

The use of third-party actuators expressly voids any warranty claims.

The technical data Δp_{\max} , Δp_s , leakage rate, noise level and life apply only when used together with the Landis & Staefa actuators as listed in "Type summary".

Technical data

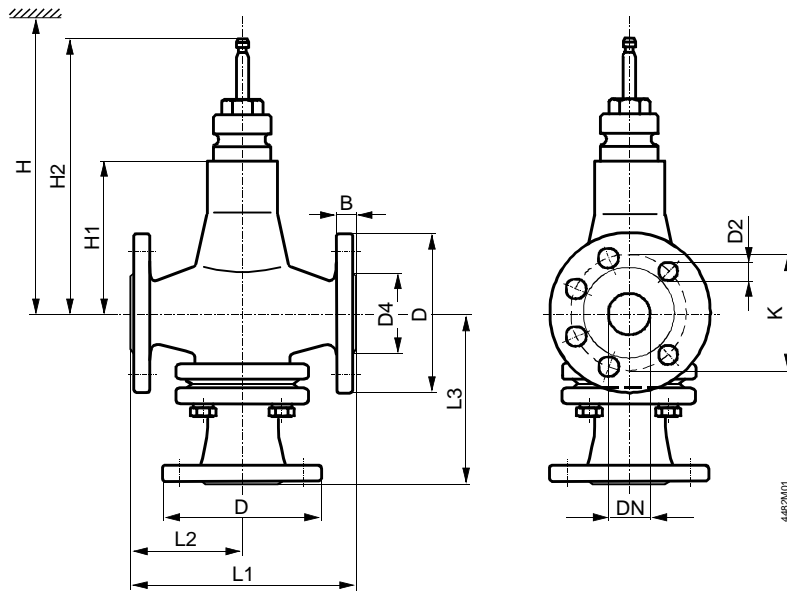
Function data

PN class	PN40
Valve flow characteristic	
Through-port	
0 ... 30 %	linear
30 ... 100 %	$n_{gl} = 3$ as per VDI / VDE 2173
Bypass	
0... 100%	linear
Leakage rate	
Through-port	0 ... 0.02 % of k_{vs} value, VDI / VDE 2173
Bypass	0.5...2 % of k_{vs} value, VDI / VDE 2173
Permissible pressure	4000 kPa (40 bar), ISO 7268 / EN 1333
Working pressure	DIN 4747 / DIN 3158 in the range of -25 ... +300/350°C
Flange connections	ISO 7005
Stroke	
– DN15... 50	20 mm
– DN65... 150	40 mm

Materials

Valve body	
DN15 and 25	cast steel GS-C 25 N as per DIN 17245
DN40... 150	cast steel GS-45 as per DIN 1681
Seat, plug, and stem	stainless steel
Sealing gland	
Standard version	stainless steel
Gland materials	PTFE sleeves

Dimensions



DN [mm]	B	D dia.	D2 dia.	D4 dia.	H1	H2	K	L1	L2	L3	Weight [kg]
15	14	95	14 (4x)	46	96	192.5	65	130	65	65	4.5
25	16	115		65	111	207.5	85	160	80	80	7.4
40	18	150	18 (4x)	84	136	232.5	110	200	100	162	17.0
50	20	165		99			125	230	115	170	21.0
65	22	185	18 (8x)	118	162	278.5	145	290	145	215	34.0
80	24	200		132	170	286.5	160	310	155	230	42.0
100		235	22 (8x)	156	180	296.5	190	350	175	250	62.0
125	26	270	26 (8x)	184	200	316.5	220	400	200	280	86.0
150	28	300		211	225	341.5	250	480	240	305	124.0

DN [mm]	SKD...	H SKB...	SKC...
15	> 596	> 671	
25	> 611	> 686	
40		> 711	
50			
65			> 737
80			> 745
100			> 755
125			> 775
150			> 800

DN = Nominal diameter

H = Total actuator height plus minimum distance to the wall or the ceiling for mounting, connection, operation, service, etc.

H1 = Dimension from the pipe centre to install the actuator (upper edge)

H2 = Valve in the "Closed" position means that the stem is fully extended

Dimensions in mm

