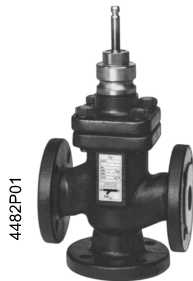


## Three-port seat valves with flange, PN40

### VXF61...



DN15 and 25



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 m<sup>3</sup>/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:

Cooling water Chilled water Low temperature hot water High temperature hot water Water with anti-freeze <sup>1) 2)</sup> Brine <sup>1) 2)</sup>	-25 ... +220 °C
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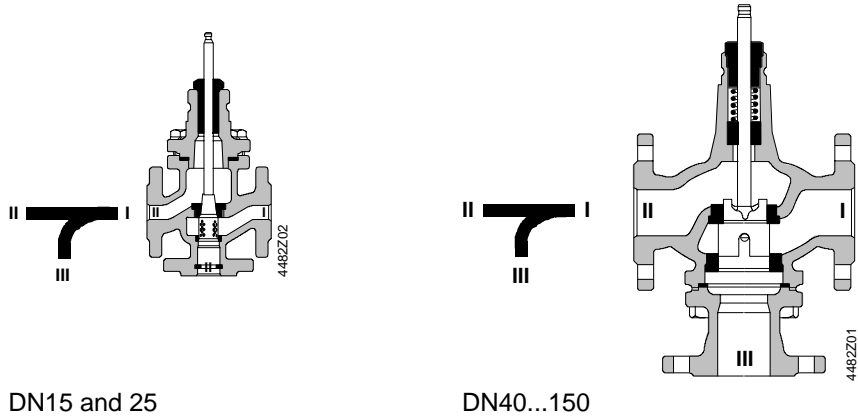
#### Special versions with thermal insulator and special stem sealing gland for:

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

- 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



**Mechanical design**  
Valve cross-section

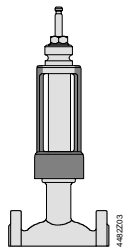


DN15 and 25

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**

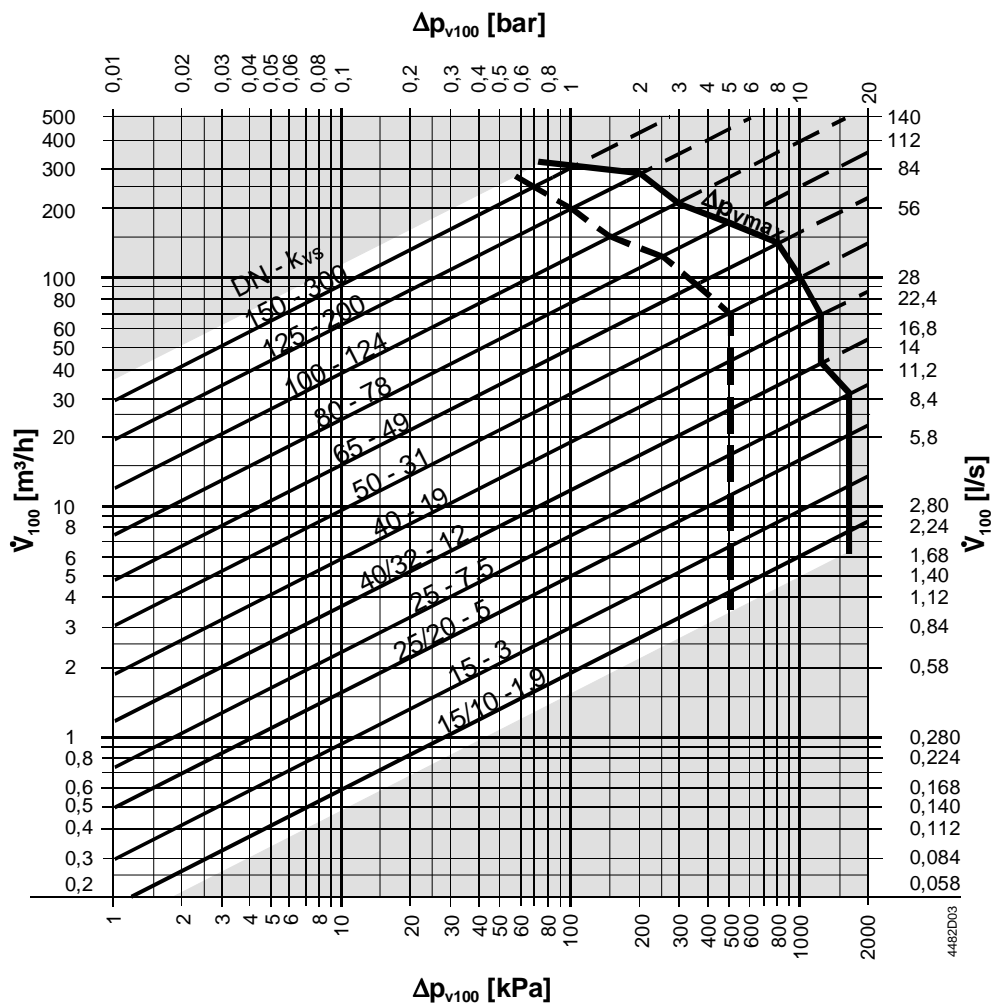


**Thermal insulator** for special version (type suffix: 2), required for thermo oils from 220 °C to max. 300/350 °C; factory-mounted in the valve on delivery.

**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 m<sup>3</sup>/h = 0.278 kg/s water at 20 °C

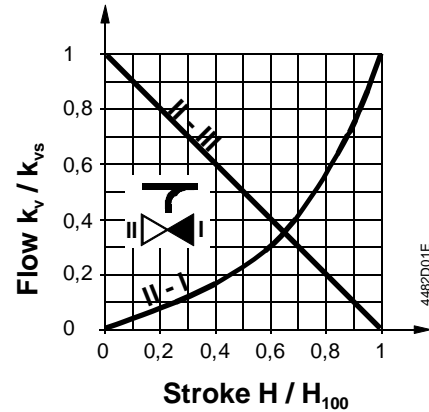
— =  $\Delta p_{vmax}$  = Max. permissible differential pressure across the **mixing valve's II-I control path** (actuator) valid for the entire stroke range

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

$\Delta p_{v100}$  = 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 m<sup>3</sup>/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

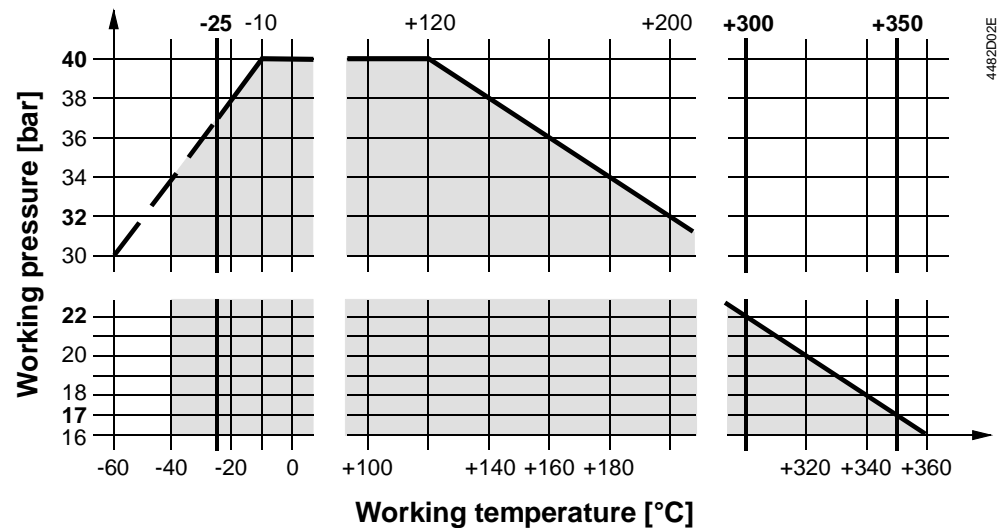
Port I = constant flow

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:**

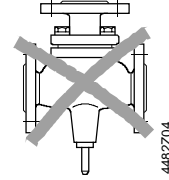
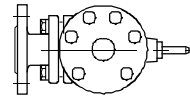
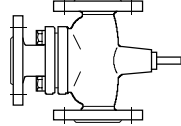
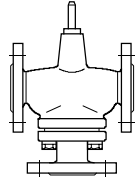
- GS-C 25 N = max. 350 °C (DN15 and DN25)
- GS-45 = max. 300 °C (DN40...150)

### 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**



4482Z07

### 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.

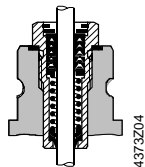
### Spare parts

DN15 and DN25:

Standard version

DN15 ... 150:

Special version 2



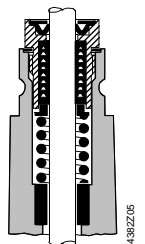
4373Z04

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



4382Z05

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  $\Delta p_{\max}$ ,  $\Delta p_s$ , leakage rate, noise level and life apply only when used together with the Landis & Staefa actuators as listed in "Type summary".

## Technical data

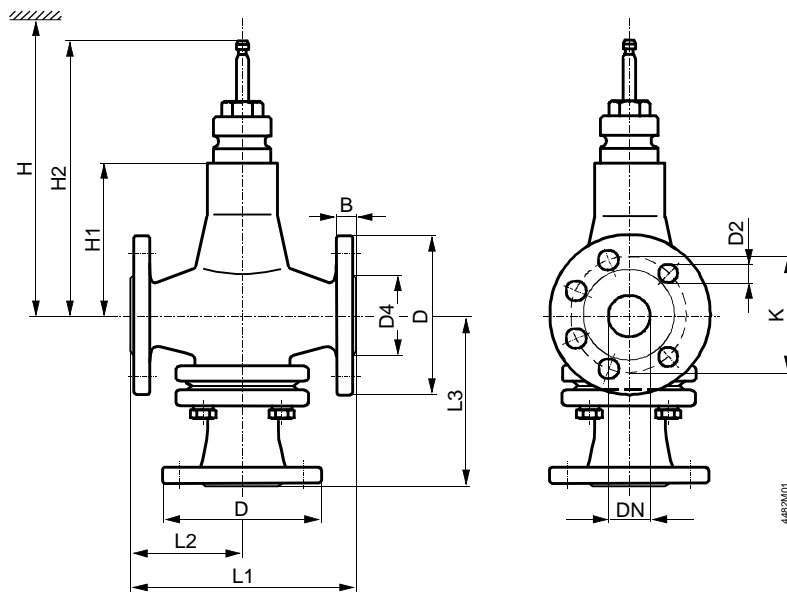
### Function data

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

