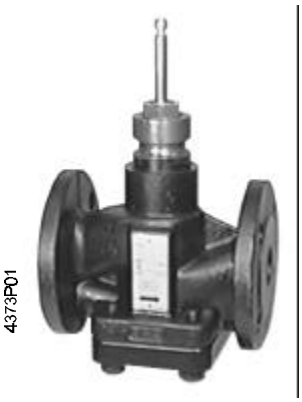
Two-port seat valves with flange, PN25

VVF52...



Two-port seat valves with flange, PN25

- **Spheroidal cast iron GGG-40.3**
- **DN15...40 mm**
- **k_{vs} 0.16...25 m^3/h**
- **Stroke 20 mm**
- **Can be equipped with actuators SQX..., SKD..., SKB...**
- **Valves >DN50...150 mm from GGG-40; see data sheet 4345**

Use

For use in district heating, heating, ventilating, and air conditioning systems as a **control or safety shutoff valve as per DIN 32730. 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** up to max. 50 % vol. [1) 2)] **Brine** [1) 2)]	−25 ... +140 °C

Special versions with special stem sealing gland for:	
High temperature hot water **Saturated steam** (up to max. 6 bar abs.) **Hot steam** (up to max. 6 bar abs.) **Thermo oils**	140 ... 180 °C
Refrigerants	not permissible [3)]

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 −20 °C as per DIN 3158 (stress case I) or up to −25 °C as per DIN 3158 (stress case II)
3) 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	$\Delta p_{vmax.}$ [kPa]
VVF52.15-0.16	15	0.16	50...100	1600
VVF52.15-0.2		0.20		
VVF52.15-0.25		0.25		
VVF52.15-0.32		0.32		
VVF52.15-0.4		0.40		
VVF52.15-0.5		0.50		
VVF52.15-0.63		0.63		
VVF52.15-0.8		0.80		
VVF52.15-1		1.00		
VVF52.15-1.25 [1)]		1.25		
VVF52.15-1.6 [1)]		1.60		
VVF52.15-2 [1)]		2.00		
VVF52.15-2.5 [1)]		2.50		
VVF52.15-3.2 [1)]		3.20		
VVF52.15-4 [1)]		4.00		
VVF52.25-5 [1)]	25	5.00	100...200	
VVF52.25-6.3 [1)]		6.30		
VVF52.25-8 [1)]		8.00		
VVF52.25-10 [1)]		10.00		
VVF52.40-12.5 [1)]	40	12.50		
VVF52.40-16 [1)]		16.00		
VVF52.40-20 [1)]		20.00		
VVF52.40-25 [1)]		25.00		

1) Deliverable from k_{vs} 1.25 m^3/h also as **special version G** for saturated steam/super-heated steam. Usable with the electro-hydraulic actuators of type series SKD… / SKB...

Special version with type suffix A and G

For media and temperatures		Example:
High temperature hot water	140 ... 180 °C	VVF52.25-... **A**
Saturated steam (max. 6 bar abs.) **Hot steam** (max. 6 bar abs.)		VVF52.25-... **G**
Thermo oils		VVF52.25-... **A**

DN = Nominal diameter
k_{vs} = Nominal flow value as per VDI 2173
S_v = Rangeability as per VDI 2173
$\Delta p_{vmax.}$ = Max. permissible differential pressure across the valve's control path, valid for the entire stroke range

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: **VVF52.15-4A**

Delivery

Both the valve and the actuator are packed and supplied separately.
The valves are supplied without counter-flanges and without flange gaskets.

Equipment combinations

Valves		Actuators [1]					
		SQX... [2) 3)]		SKD... [2) 4)]		SKB... [4)]	
	H_{100} [mm]	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s
		[kPa]					
VVF52.15...	20	1600	2500	1600	2500	1600	2500
VVF52.25...		1200	1500		2250		
VVF52.40...		400	500	700	750		2000
Data sheet		**4554**		**4561**		**4564**	

1) Actuators available for delivery:
- AC 24 V / AC 230 V with 3-position signal
- AC 24 V with proportional pos. signal DC 0...10 V or DC 4...20 mA

2) Usable up to max. medium temperature of 140 °C
3) The Δp_{max} and Δp values are valid for the new SQX32... / SQX82... and SQX62 actuators; deliverable from January 1999
4) Usable also in combination with **special version G** for saturated steam/super-heated steam.

H_{100} = 100% stroke of the valve and the actuator
Δp_{max} = Max. permissible differential pressure across the valve's control path across the entire actuating range of the motorized valve
Δp_s = Maximum permissible differential pressure (closing pressure) at which the motorized valve will close securely against pressure.

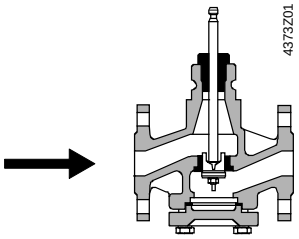
Pneumatic actuators

Pneumatic actuators are available on request from your local office.

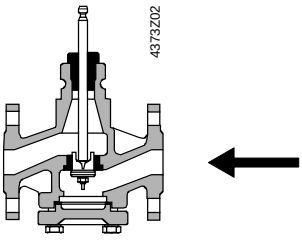
⚠ **The VVF52...G valves (for hot steam/super-heated steam) cannot be used with pneumatic actuators.**

Mechanical design

Valve cross-section



Standard version VVF52...
for cooling water, chilled water
low temp. hot water, high temp. hot water
water with anti-freeze
brine, −25 ... +140 °C



Special version VVF52...G
for saturated steam appl., super-heated steam up to max. 6 bar abs.,
from 140 °C to 180 °C

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

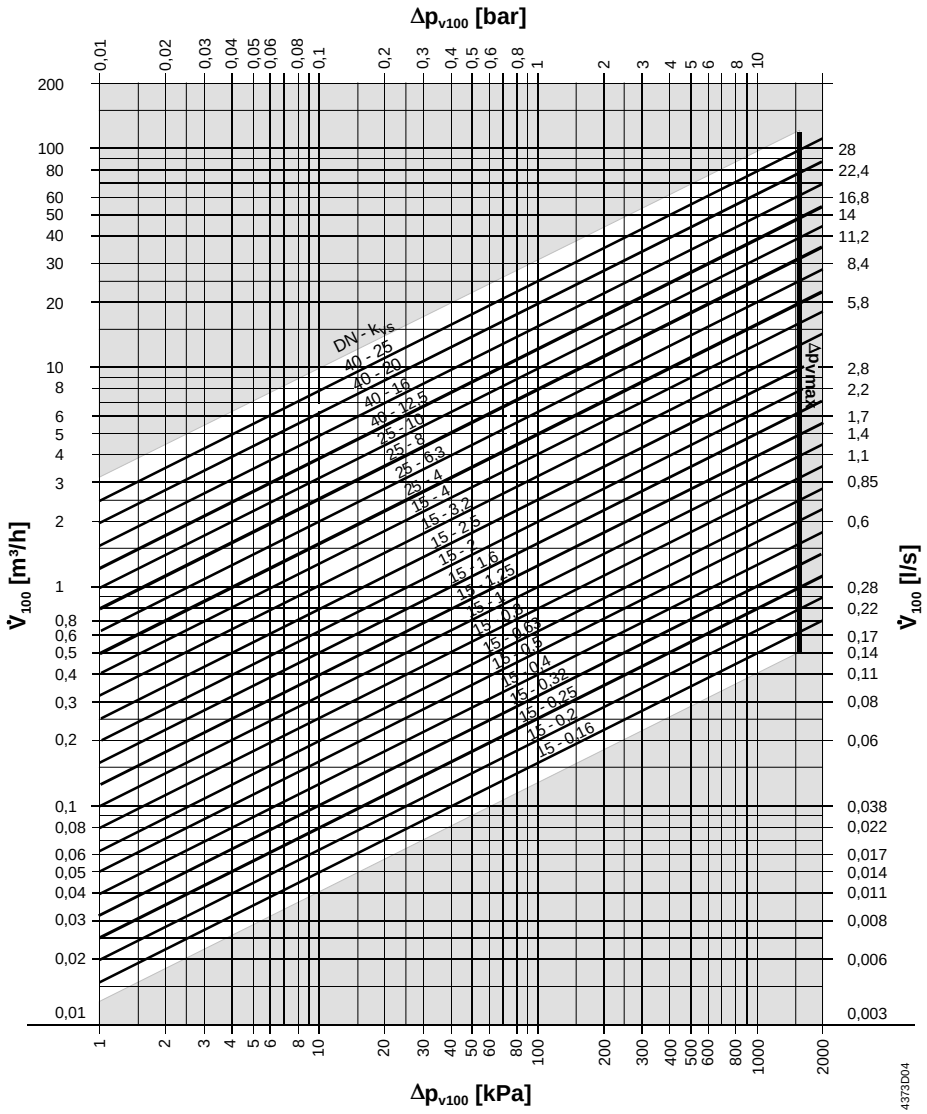
⚠ **The two-port seat valve does not become a three-port valve by removing the blank flange.**

Disposal

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

Sizing

Flow diagram



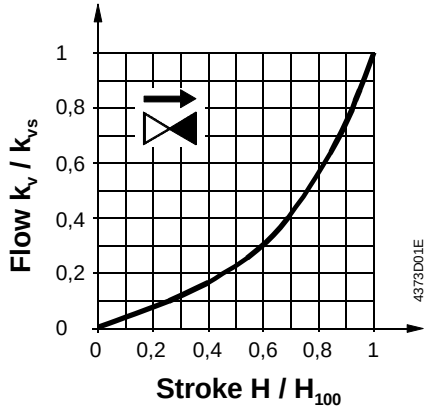
Δp$_{vmax.}$ = Maximum permissible differential pressure across the valve's control path, valid for the entire stroke range

Δp$_{v100}$ = Differential pressure across the fully opened valve across the control path at $\dot{V}_{100}$ flow in kPa or in bar

$\dot{V}_{100}$ = Flow in m³/h or in l/s

100 kPa = 1 bar ≈ 10 mWG

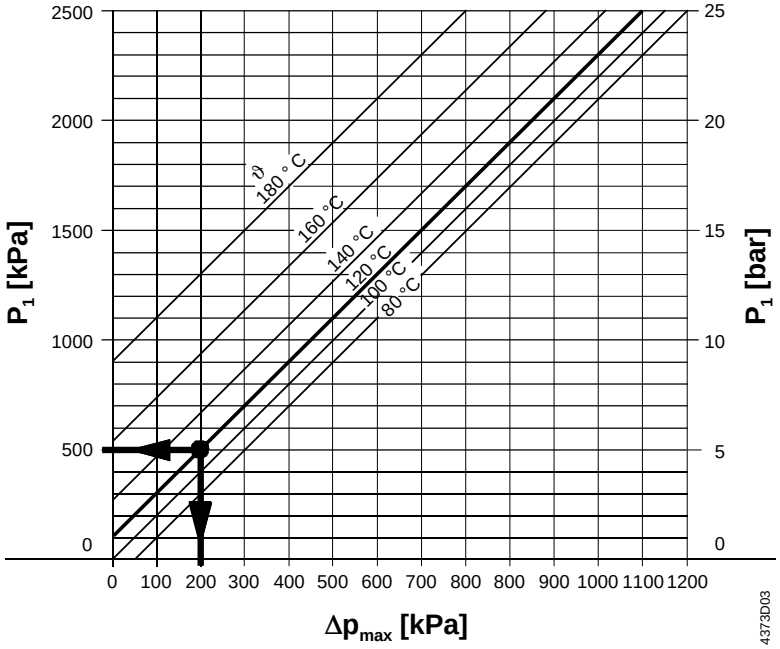
Valve flow characteristic

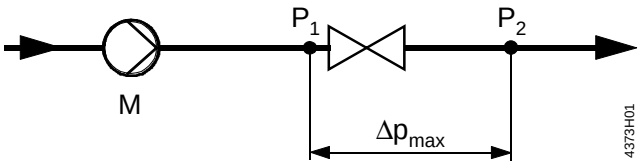


Valve flow characteristic
0... 30 % ⇒ **linear**
30... 100 % ⇒ **n$_{gl}$ = 3 as per VDI / VDE 2173**

Cavitation

Cavitation increases wear of valve plug and seat and additionally causes noise. You can avoid cavitation by not exceeding the pressure difference values indicated in the below diagram and by adhering to the listed, static pressure.

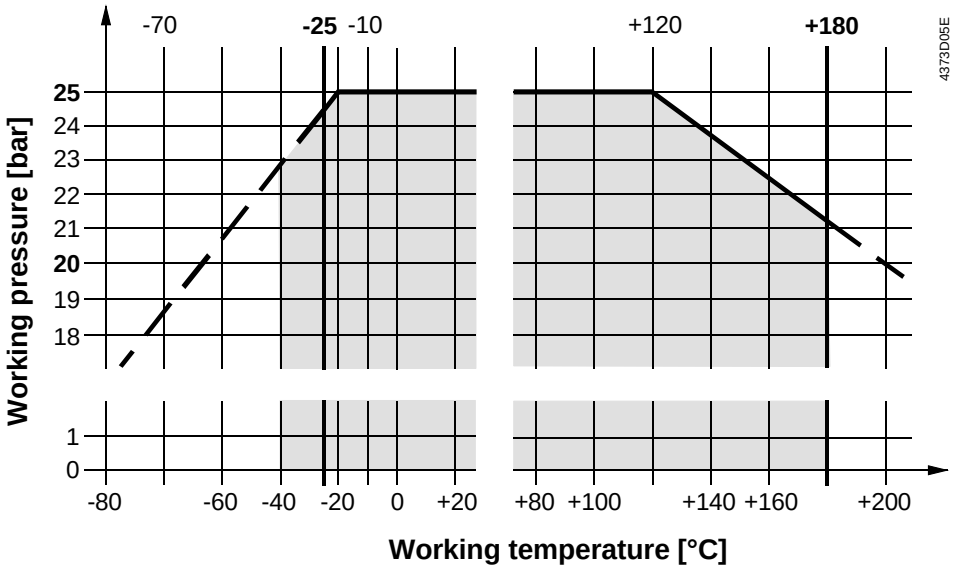




100 kPa = 1 bar ≈ 10 mWG
ϑ = Water temperature
Δp_{max} = Pressure difference for nearly closed valve at which cavitation can largely be prevented.
P_1 = Pressure k P_1 upstream of the valve = P_2 + Δp_{max}
P_2 = System pressure + existing steam pressure
M = Pump

Example:
Pressure P_1 upstream of the valve: 500 kPa (5 bar).
Water temperature: 120 °C.
The above diagram (example) shows that a maximum pressure difference of 200 kPa (2 bar) is permissible with a nearly closed valve.

Working pressure and temperature



Working pressure staged as per ISO 7268 and EN 1333 at operating temperatures of −25 ... +180 °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.

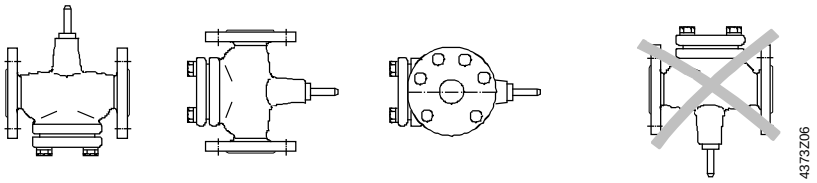
We generally recommend that you install a **strainer even with closed circuits** to increase the valve's functional safety.

⚠ **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.

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 special attention to the **valve's flow direction symbol**.
VVF52... ➡
VVF52...**G** (for steam) ⬅

Commissioning

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

Stem retracts: Increasing flow
Stem extends: Decreasing flow

Service

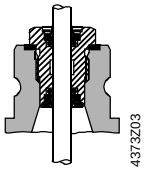
⚠ **For actuator service work: Turn off the pump and the operating voltage, close the shutoff valves, depressurize the pipes and allow them to cool down. Disconnect the electrical connections, where required, from the terminals. Re-commission the valve only if the actuator has been mounted correctly.**

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

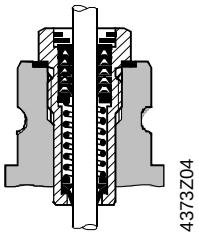
Standard version



Replacement for EPDM-O-ring sealing gland, including flat seal made from copper, for cooling water, chilled water, low temperature hot water, high temperature hot water, and brine –25 ... +140 °C

For VVF52...	DN15 ... 40	(Stem dia. 10 mm)	**4 284 8806 0**

Special version
A or G



Replacement for PTFE sealing gland, including flat seal made from copper, for high temperature hot water, hot steam, super-heated steam, and thermo oils 140... 180 °C

For VVF52...**A**	DN15 ... 40	(Stem dia. 10 mm)	**4 284 8829 0**
For VVF52...**G**	DN15 ... 40	(Stem dia. 10 mm)	**4 284 8829 0**

Warranty

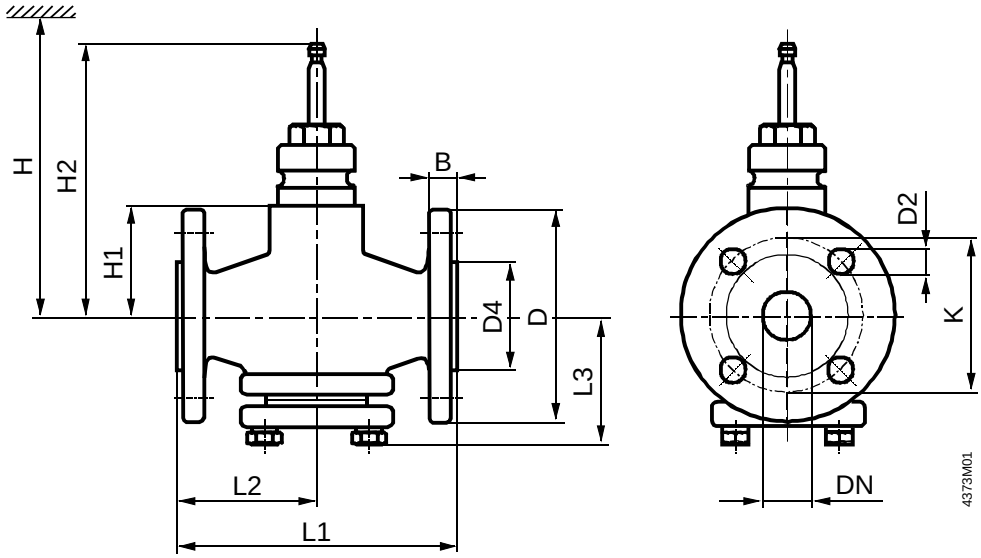
The use of third-party actuators expressly voids any warranty claims.

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	PN25
	Valve flow characteristic	
	0 ... 30 %	linear
	30 ... 100 %	n_{gl} = 3 as per VDI / VDE 2173
	Leakage rate	0 ... 0.02 % of k_{vs} value, VDE / VDI 2173
	Permissible pressure	2500 kPa (25 bar), ISO 7268 / EN 1333
	Working pressure	DIN 4747 / DIN 3158 in the range of –25 ... +180 °C
	Flange connections	ISO 7005 (PN25/PN16)
	Stroke	20 mm
Materials	Valve body	GGG-40.3 as per DIN 1693
	Seat, plug, and stem	stainless steel
	Sealing gland	
	Standard version	brass
	Special version	stainless steel
	Gland materials	EPDM-O-rings, PTFE sleeves

Dimensions



DN [mm]	B	D dia.	D2 dia.	D4 dia.	H1	H2	K	L1	L2	L3	Weight [kg]
15	16	95	14 (4x)	46	64	160.5	65	130	65	69.0	4.0
25	18	115		65			85	160	80	73.0	5.4
40	20	150	19 (4x)	84	57	153.5	110	200	100	97.5	8.9

DN	H		
[mm]	**SQX...**	**SKD...**	**SKB...**
15	> 489	> 564	> 639
25	> 489	> 564	> 639
40	> 482	> 557	> 639

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 Structure the actuator (upper edge)
H2 = Valve in the "Closed" position means that the stem is fully extended

Dimensions in mm

replaces CE1N4373E