



VVF22..



VXF22..

ACVATIX™

## 2- and 3-port valves with flanged connections, PN 6

VVF22..  
VXF22..

From the large-stroke valve line


- Performance valves for medium temperatures from -10...130 °C
- Valve body of grey cast iron EN-GJL-250
- DN 25...100
- $k_{vs}$  2.5...160 m<sup>3</sup>/h
- Flange type 21, flange design B
- Equipable with electro-motoric actuators SAX..., SAV.. or electro-hydraulic actuators SKD..., SKB..., SKC..


### Use

In boiler, refrigeration plants, heating groups, ventilation and air-handling units as control or shutoff valves.

For use in closed circuits.

## Type summary

Valves	Actuators				SAX..	SKD..	SKB..	SAV..	SKC..											
					20 mm				40 mm											
PN 6	Stroke				800 N	1000 N	2800 N	1600 N	2800 N											
	Positioning force				N4501	N4561	N4564	N4503	N4566											
	Data sheet				$\Delta p_s$	$\Delta p_{max}$	$\Delta p_s$	$\Delta p_{max}$	$\Delta p_s$	$\Delta p_{max}$										
	Stock number	DN	$k_{vs}$	$S_v$	[kPa]															
-10...130 °C			[m³/h]																	
VVF22.25-2.5	S55200-V100	25	2.5	> 50	600	300	600	300	600	300	-	-	-	-						
VVF22.25-4	S55200-V101	25	4								-	-								
VVF22.25-6.3	S55200-V102	25	6.3								-	-								
VVF22.25-10	S55200-V103	25	10								-	-								
VVF22.40-16	S55200-V104	40	16	> 100	550	300	600	300	600	300	600	300	-	-						
VVF22.40-25	S55200-V105	40	25		350						450	450	225							
VVF22.50-40	S55200-V106	50	40		200						150	250	200	450	250	225	-	-		
VVF22.65-63	S55200-V107	65	63		125						75	175	125	450	250	225	300	250		
VVF22.80-100 <sup>1)</sup>	S55200-V108	80	100		-						-	-	-	-	-	-	160	125	300	250
VVF22.100-160 <sup>1)</sup>	S55200-V109	100	160		-						-	-	-	-	-	-	160	125	300	250

Valves	Actuators				SAX..	SKD..	SKB..	SAV..	SKC..										
					20 mm				40 mm										
PN 6	Stroke				800 N	1000 N	2800 N	1600 N	2800 N										
	Positioning force				N4501	N4561	N4564	N4503	N4566										
	Data sheet				$\Delta p_{max}$														
	Stock number	DN	$k_{vs}$	$S_v$	[kPa]														
-10...130 °C			[m³/h]																
VXF22.25-2.5	S55200-V110	25	2.5	> 50	300	100	300	100	300	100	-	-	-	-					
VXF22.25-4	S55200-V111	25	4								-	-							
VXF22.25-6.3	S55200-V112	25	6.3								-	-							
VXF22.25-10	S55200-V113	25	10								-	-							
VXF22.40-16	S55200-V114	40	16	> 100	300	100	300	100	300	100	300	100	-	-					
VXF22.40-25	S55200-V115	40	25								150	50	200	80	225	50			
VXF22.50-40	S55200-V116	50	40								75	50	125	50	225	50	250	100	
VXF22.65-63	S55200-V117	65	63								-	-	-	-	-	-	-	250	100
VXF22.80-100 <sup>1)</sup>	S55200-V118	80	100								-	-	-	-	-	-	-	250	100
VXF22.100-160 <sup>1)</sup>	S55200-V119	100	160								-	-	-	-	-	-	-	250	100

<sup>1)</sup> Valve characteristic for  $k_{vs}$  value 100 m³/h from 70% stroke,  $k_{vs}$  value 160 m³/h from 85% is optimized for maximum volumetric flow

DN = Nominal size

$k_{vs}$  = Flow nominal value of cold water (5...30 °C) through the fully opened valve ( $H_{100}$ ) at a differential pressure of 100 kPa (1 bar)

$S_v$  = Rangeability

$\Delta p_s$  = Maximum permissible differential pressure at which the motorized valve still closes securely against the pressure

$\Delta p_{max}$  = Maximum permissible differential pressure across the valve's throughport for the entire positioning range of the motorized valve

## Ordering

### Example

Product number	Stock number	Description
VVF22.25-2.5	S55200-V100	2-port valve with flange, PN 6
SKD32.50	SKD32.50	Electro-hydraulic actuator

Delivery

Valves, actuators and accessories are packed and delivered as separate items.

Note

Counter-flanges, bolts and gaskets must be provided on site.

Spare parts, Rev.-No.

See page 11

## Equipment combinations

Product number	Description	Stroke	Positioning force	Operating voltage	Positioning signal	Spring return time	Positioning time	LED	Manual adjuster	Auxiliary functions			
SAX31.00	S55150-A105	20 mm	800 N	AC 230 V	3-position	-	120 s	-	Press and fix	1)			
SAX31.03	S55150-A106						30 s	✓			2), 3)		
SAX61.03	S55150-A100			AC 24 V DC 24 V	0...10 V 4...20 mA 0...1000 Ω					120 s		-	1)
SAX61.03U	S55150-A100-A100						30 s	-					
SAX81.00	S55150-A102									3-position	-		
SAX81.03	S55150-A103						30 s	-					
SAX81.03U	S55150-A103-A100												
SKD32.21	SKD32.21	20 mm	1000 N	AC 230 V	3-position	8 s	Opening: 30 s Closing: 10 s	-	Turn, Position is maintained	1)			
SKD32.50	SKD32.50					-	120 s	✓					
SKD32.51	SKD32.51					8 s	Opening: 30 s Closing: 15 s						
SKD60	SKD60			-	1)								
SKD62	SKD62			AC 24 V		0...10 V 4...20 mA 0...1000 Ω		15 s		✓	2)		
SKD62U	SKD62U						3-position	-					
SKD62UA	SKD62UA			3-position	-	4)							
SKD82.50	SKD82.50						3-position	-		120 s	-	1)	
SKD82.50U	SKD82.50U			8 s	-								
SKD82.51	SKD82.51					8 s	-	120 s		-	1)		
SKD82.51U	SKD82.51U												
SKB32.50	SKB32.50	20 mm	2800 N	AC 230 V	3-position	-	120 s	-	Turn, Position is maintained	1)			
SKB32.51	SKB32.51					10 s		✓					
SKB60	SKB60			-	Opening: 120 s Closing: 10 s	2)							
SKB62	SKB62			AC 24 V			0...10 V 4...20 mA 0...1000 Ω	10 s		✓	4)		
SKB62U	SKB62U				3-position	-							
SKB62UA	SKB62UA			3-position			-	120 s		-	1)		
SKB82.50	SKB82.50				3-position	-						120 s	-
SKB82.50U	SKB82.50U			10 s			-						
SKB82.51	SKB82.51	10 s	-		120 s	-		1)					
SKB82.51U	SKB82.51U												
SAV31.00	S55150-A112	40 mm	1600 N	AC 230 V	3-position	-	120 s	-	Press and fix	-			
SAV61.00	S55150-A110			AC 24 V DC 24 V	0...10 V 4...20 mA 0...1000 Ω			3-position		-	120 s	✓	2)
SAV61.00U	S55150-A110-A100											3-position	
SAV81.00	S55150-A111	3-position	-	-	-	-	-	-					
SAV81.00U	S55150-A111-A100												
SKC32.60	SKC32.60	40 mm	2800 N	AC 230 V	3-position	-	120 s	-	Turn, Position is maintained	1)			
SKC32.61	SKC32.61					18 s		✓					
SKC60	SKC60			-	Opening: 120 s Closing: 20 s	2)							
SKC62	SKC62			AC 24 V			0...10 V 4...20 mA 0...1000 Ω	20 s		✓	4)		
SKC62U	SKC62U				3-position	-							
SKC62UA	SKC62UA			3-position			-	120 s		-	1)		
SKC82.60	SKC82.60				3-position	-						120 s	-
SKC82.60U	SKC82.60U	18 s	-										
SKC82.61	SKC82.61			18 s	-	120 s	-	1)					
SKC82.61U	SKC82.61U												

- 1) Auxiliary switch, potentiometer
- 2) Position feedback, forced control, selection of valve characteristic
- 3) Optional: sequence control, selection of acting direction
- 4) Plus sequence control, stroke limitation, and selection of acting direction

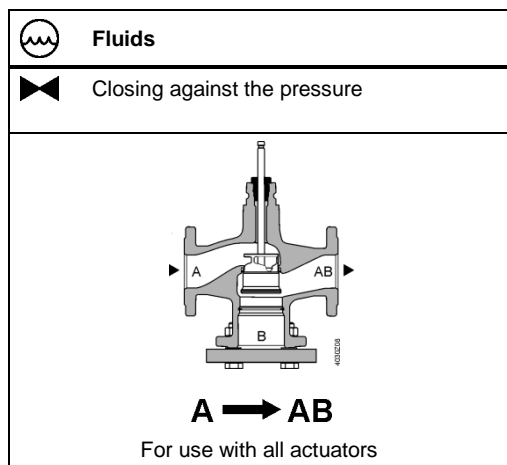
**Product documentation**

- Mounting Instructions M4030 74 319 0749 0
- Basic documentation P4030 Contains background information and technical basic knowledge of valves

**Technical and mechanical design**

The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

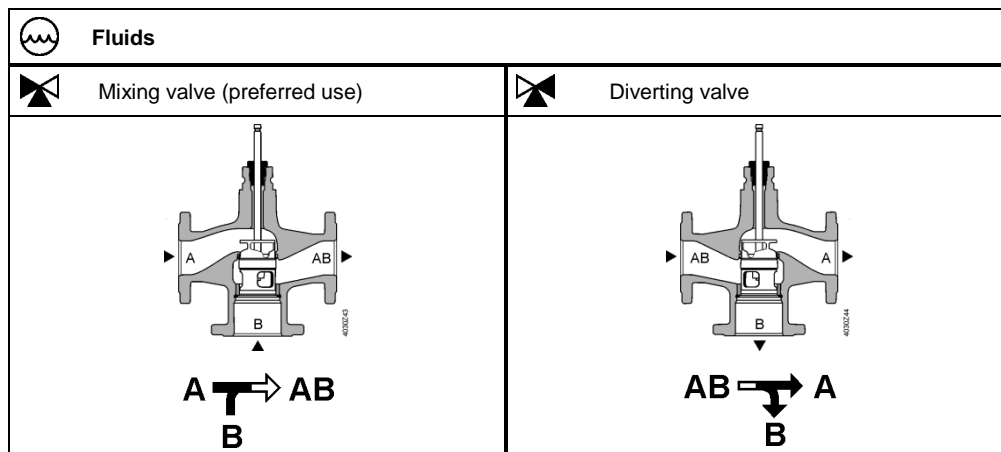
**2-port valves**




Note

**2-port valves do not become 3-port valves by removing the blank flange!**

**3-port valves**

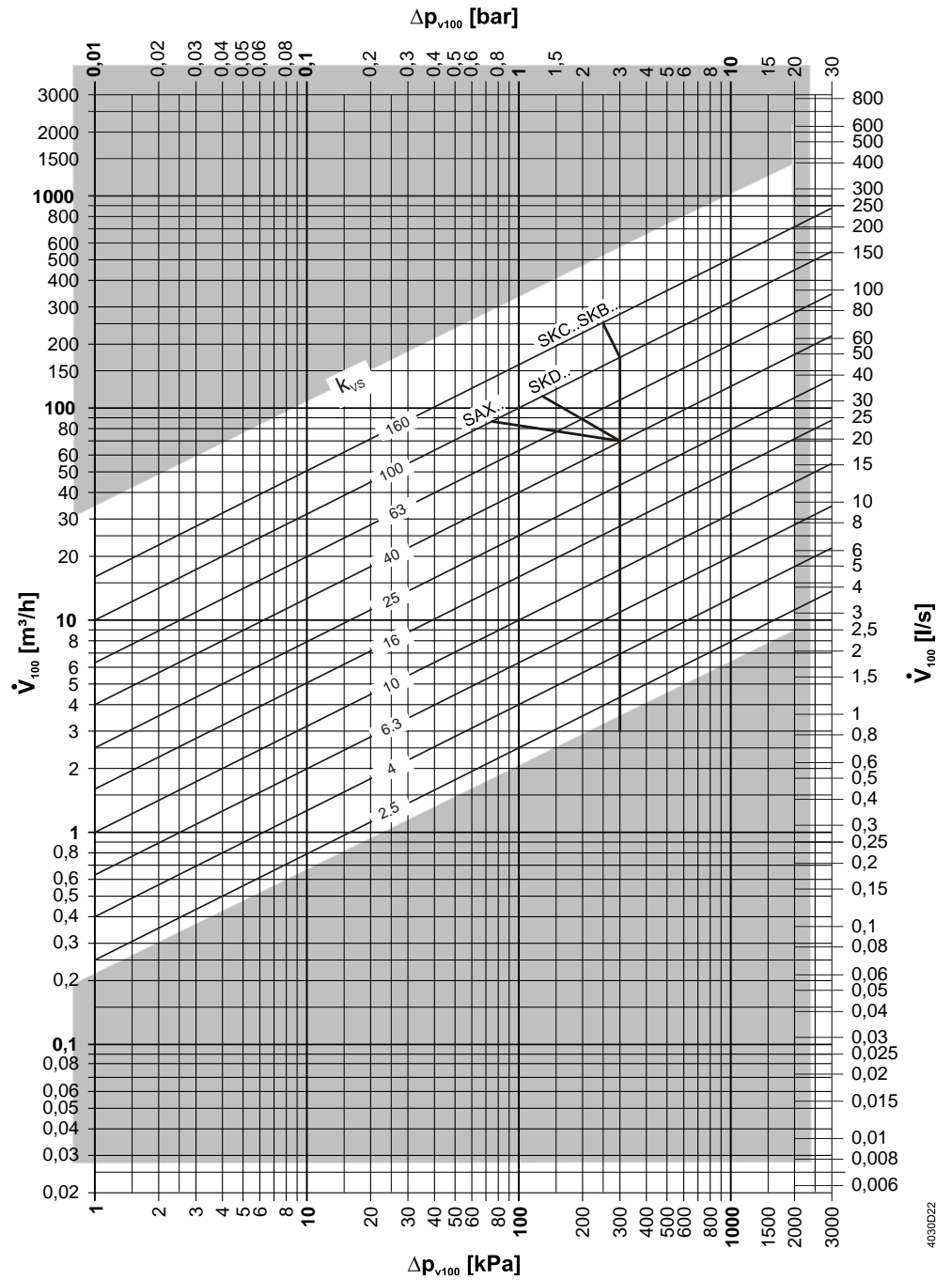


## Accessories

Product number	Stock number	Description	Note	Example
ASZ6.6	S55845-Z108	Stem heating element	Required for medium temperatures < 0 °C	

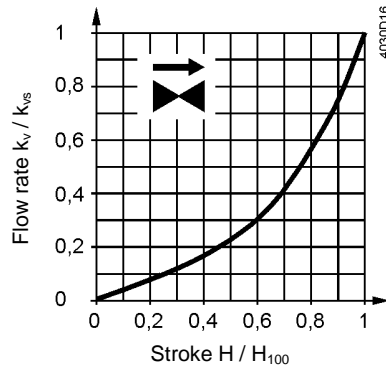
## Sizing

### Flow chart



$\Delta p_{\text{max}}$  values apply for the mixing function.  $\Delta p_{\text{max}}$  values for the diverting function see table „Type summary“, page 2.

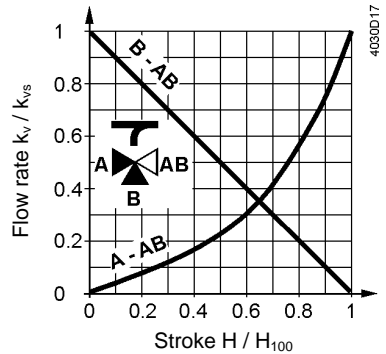
**Valve characteristics**  
**2-port valves**



0...30%: Linear  
30...100%: Equal percentage  
 $n_{gl} = 3$  to VDI / VDE 2173

For high  $k_{vs}$  values the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

**3-port valves**



**Throughport A-AB**

0...30%: Linear  
30...100%: Equal percentage  
 $n_{gl} = 3$  to VDI / VDE 2173

For high  $k_{vs}$  values the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

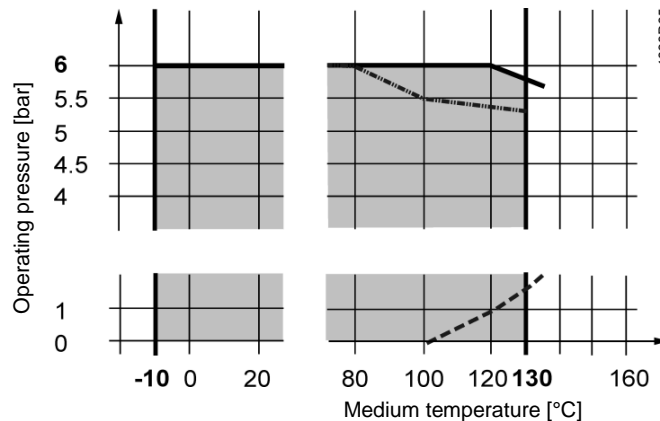
**Bypass B-AB**

0...100%: Linear  
Tor AB = constant flow  
Tor A = variable flow  
Tor B = bypass (variable flow)

**Mixing:** Flow from port A and port B to port AB  
**Diverting:** Flow from port AB to port A and port B

**Operating pressure and medium temperature**

Fluids, PN6 with V..F22..



--- Curve for saturated steam; steam forms below this line  
Operating pressure according to EN 1092, valid for 2-port valves with blank flange

**Operating pressure and operating temperatures according to ISO 7005, EN 1092 and EN 12284**

Notes

All relevant local directives must be observed

**Medium compatibility and temperature ranges**

Medium	Temperature range		Valve	Note
	T <sub>min</sub> [°C]	T <sub>max</sub> [°C]		
Cold water	1	25	■	-
Low-temperature hot water	1	130	■	-
High-temperature hot water	130	150	-	-
Water with antifreeze	-5	130	■	For medium temperatures below 0 °C, the stem heating ASZ6.6 has to be installed.
	-10	130	■	
Brines	-5	130	■	For medium temperatures below 0 °C, the stem heating ASZ6.6 has to be installed.
	-10	130	■	
Demineralized water according to VDI2035 / SWKI_BT102-01	1	130	■	

<sup>1)</sup> Differentiation due to saturated steam curve

**Fields of use**

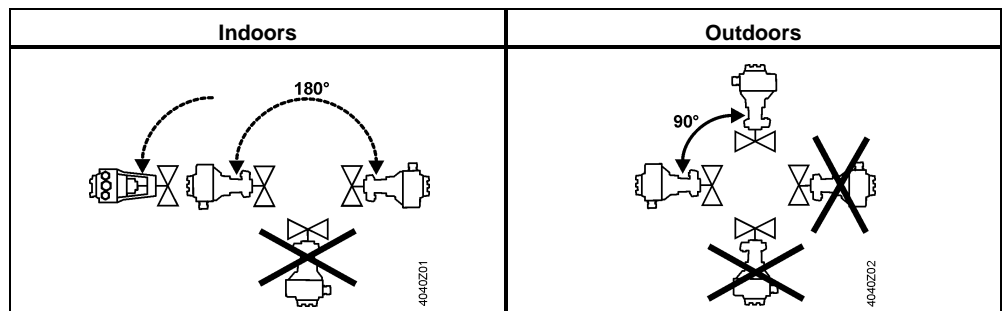
Fields of use		Valves	
		VVF22..	VXF22..
<b>Generation</b>	Boiler plants	■	■
	Refrigeration plants	■	■
<b>Distribution</b>	Heating groups	■	■
	Ventilation and air-handling units	■	■

**Engineering notes**

- Mounting location** Preferably mount the valves at the return, as the temperature is lower there and the strain on the stem sealing gland is lower.
- Dirt trap** Mount a dirt filter or dirt trap before the valve to ensure proper functioning, and a long service life of the valve. Remove dirt, welding beads, etc. from the valves and pipes.
- Cavitation** Cavitation can be avoided by limiting the pressure differential across the valve depending on the medium temperature and prepressure.

**Mounting notes**

**Mounting position**



Mounting positions apply to both 2- and 3-port valves.

**Commissioning notes**



**The valve may be put into operation only if actuator and valve are correctly assembled.**

**Note**

Ensure that actuator stem and valve stem are rigidly connected in all positions.

## Function check

Valve	Throughport A→AB	Bypass B→AB
Valve stem extends	Closes	Opens
Valve stem retracts	Opens	Closes

## Maintenance notes

Valves are equipped with maintenance-free, continuously lubricated stem sealing glands. See page 11 for replacement stem sealing glands.



When servicing valves or actuators:

- Deactivate the pump and turn off the power supply
- Close the shutoff valves
- Fully reduce the pressure in the piping system and allow pipes to completely cool down

If necessary, disconnect the electrical wires.

## Disposal

Do not dispose of the device as household waste.

- Special handling of individual components may be mandated by law or make ecological sense.
- Observe all local and currently applicable laws and regulations.

## Warranty

Application-related technical data are guaranteed only when the valves are used in connection with the Siemens actuators listed under "Equipment combinations", page 3.

When used with actuators of other manufacture, any warranty by Siemens becomes void.

## Technical data

Functional data	PN class	PN 6	
	Connection	Flange	
	Operating pressure	See Section "Operating pressure and medium temperatures", page 9	
	Valve characteristics <sup>1)</sup>	See section "Valve characteristics", page 6	
	Leakage rate	Throughport	0...0.02% of $k_{VS}$ value
		Bypass	0.5...2% of $k_{VS}$ value ( $k_{VS} \geq 6.3$ ) 0.5...4% of $k_{VS}$ value ( $k_{VS} 2.5; 4$ )
	Permissible media	See table "Medium compatibility and temperature ranges", page 7	
	Medium temperature	-10...130 °C	
	Rangeability	To DN 25: > 50	
		From DN 40: >100	
Nominal stroke	To DN 80: 20 mm		
	From DN 100: 40 mm		
Materials	Valve body	EN-GJL-250	
	Blank flange	VVF.. S235JRG2	
	Valve stem	Stainless steel	



	Seat	Machined
	Plug	Brass/ Bronze
	Stem sealing gland	Brass EPDM O-rings PTFE sleeve silicon-free
Standards, directives and approvals	Pressure Equipment Directive	PED 2014/68/EU
	Pressure-carrying accessories	Scope: Article 1, section 1 Definitions: Article 2, section 5
	Fluid group 2	PN 6
	≤ DN 100	Without CE certification as per article 4, section 3 (sound engineering practice) <sup>1)</sup>
	PN class	ISO 7268
	Operating pressure	ISO 7005, DIN EN 12284
	Flanges	ISO 7005
	Length of flanged valves	DIN EN 558-1, line 1
	Valve characteristic	VDI 2173 <sup>2)</sup>
	Leakage rate	Throughport, bypass according to EN 60534-4 / EN 1349
	Water treatment	VDI 2035
	Environmental conditions	
	Storage: IEC 60721-3-1	Class   1K3 Temperature   -15...+55 °C Rel. humidity   5...95% r.h.
	Transport: IEC 60721-3-2	Class   2K3, 2M2 Temperature   -30...+65 °C Rel. humidity   < 95% r.h.
Operation: IEC 60721-3-3	Class   3K5, 3Z11 Temperature   -15...+55 °C Rel. humidity   5...95% r.h.	
Environmental compatibility	The product environmental declaration CE1E4401en01 <sup>3)</sup> and CE1E4401en02 <sup>3)</sup> contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).	
Dimensions / Weight	Dimensions	See „Dimensions“, page 9
	Weight	See „Dimensions“, page 9

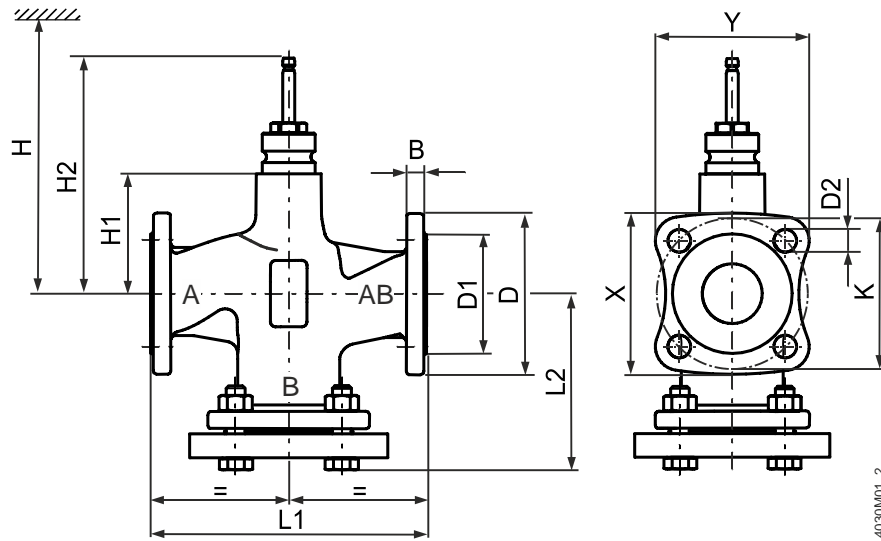
<sup>1)</sup> Valves where PS x DN < 1000, do not require special testing and cannot carry the CE label.

<sup>2)</sup> For certain valve lines and high  $k_{vs}$  values, the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

<sup>3)</sup> The documents can be downloaded from <http://siemens.com/bt/download>

## Dimensions

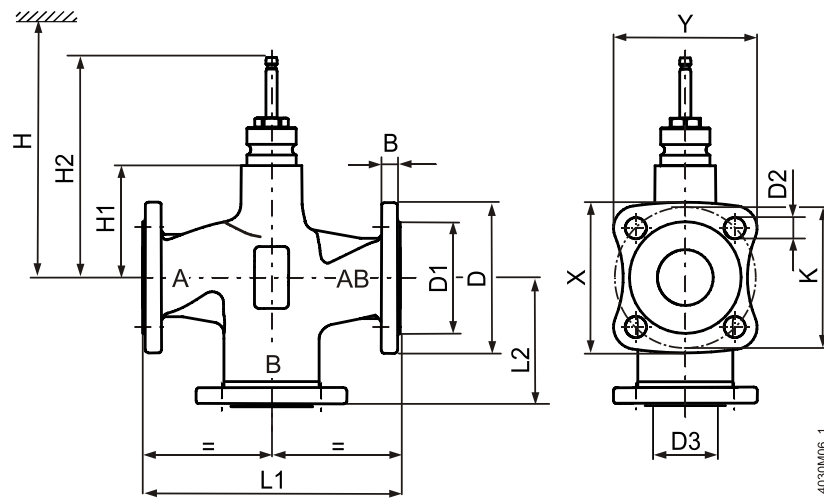
### VVF22..



4030M01\_2

Product number	DN	kg	B	Ø D	Ø D1	Ø D2	L1	L2	Ø K	X	Y	H1	H2	H				
														SAX..	SKD..	SKB..	SAV..	SKC..
VVF22..	25	4.1	11	100	58	11 (4x)	150	99	75	82	78	37	133.5	479	537	612	-	-
	40	6.5	13	130	78	14 (4x)	180	116	100	106	101	37	133.5	479	537	612	502	-
	50	8	14	140	88	14 (4x)	200	128	110	114	108	50	146.5	492	550	625	515	-
	65	11.9	14	160	108	14 (4x)	240	142.5	130	129	122	75	171.55	517	575	650	540	-
	80	17.1	16	190	124	19 (4x)	260	157	150	154	146	75	171.55	517	575	650	540	-
100	24.2	16	210	144	19 (4x)	300	179	170	170	160	110	226.5	-	-	-	575	685	

### VXF22..




4030M06\_1

Product number	DN	kg	B	Ø D	Ø D1	Ø D2	Ø D3 <sup>1)</sup>	L1	L2	Ø K	X	Y	H1	H2	H				
															SAX..	SKD..	SKB..	SAV..	SKC..
VXF22..	25	3	11	100	58	11 (4x)	36	150	75	75	82	78	37	133.5	479	537	612	-	-
	40	4.8	13	130	78	14 (4x)	52	180	90	100	106	101	37	133.5	479	537	612	502	-
	50	6.2	14	140	88	14 (4x)	65	200	100	110	114	108	50	146.5	492	550	625	515	-
	65	9.5	14	160	108	14 (4x)	85	240	120	130	129	122	75	171.55	517	575	650	540	-
	80	13.1	16	190	124	19 (4x)	98	260	130	150	154	146	75	171.55	517	575	650	540	-
100	24.2	16	210	144	19 (4x)	116	300	150	170	170	160	110	226.5	-	-	-	575	685	

<sup>1)</sup> Inside opening width of the bypass port

## Spare parts

### Stem sealing gland

Product number	DN	Stock number	Comments	Image
VVF22.. VXF22..	DN 25...80	4 284 8806 0	Series A	
	DN 100	4 284 8806 0	Series A, B and C until October 2015	
	DN 100	4 679 5629 0	Series D as of October 2015	

### Revision numbers

VVF..

VXF..

Product number	Valid from rev. no.	Product number	Valid from rev. no.
VVF22.25-2.5	..A	VXF22.25-2.5	..A
VVF22.25-4	..A	VXF22.25-4	..A
VVF22.25-6.3	..A	VXF22.25-6.3	..A
VVF22.25-10	..A	VXF22.25-10	..A
VVF22.40-16	..A	VXF22.40-16	..A
VVF22.40-25	..A	VXF22.40-25	..A
VVF22.50-40	..A	VXF22.50-40	..A
VVF22.65-63	..A	VXF22.65-63	..A
VVF22.80-100	..A	VXF22.80-100	..A
VVF22.100-160	..D	VXF22.100-160	..D

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