SIEMENS

ACVATIX™

2- and 3-port valves with flanged connections, PN 10

VVF32.., VXF32..

VVF32.. VXF32..

From the large-stroke valve line

- Control valves for medium temperatures from -10...150 °C
- Valve body of grey cast iron EN-GJL-250
- DN 15...150
- k_{vs} 1.6...400 m^3/h
- Flange type 21, Flange design B
- Equipable with electromotoric actuators SAX.., SAV.. or electrohydraulic actuators SKD.., SKB.., SKC..

CE

Use

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

For use in closed circuits.

Type summary

Valves			Actuators		SAX.. [1]		SKD..		SKB..		SAV.. [1]		SKC..	
			Stroke		20 mm						40 mm			
PN 16			Positioning force		800 N		1000 N		2800 N		1600 N		2800 N	
			Data sheet		N4501		N4561		N4564		N4503		N4566	
⋈ -10...150 °C	Stock no.	DN	k_{vs} [m³/h]	S_v	Δp_s [kPa]	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}
VVF32.15-1.6	S55202-V100	15	1.6	> 50	1000	400	1000	400	1000	400	-	-	-	-
VVF32.15-2.5	S55202-V101	15	2.5											
VVF32.15-4	S55202-V102	15	4											
VVF32.25-6.3	S55202-V103	25	6,3											
VVF32.25-10	S55202-V104	25	10											
VVF32.40-16	S55202-V105	40	16	> 100	550		750				1000	400		
VVF32.40-25	S55202-V106	40	25											
VVF32.50-40	S55202-V107	50	40		350	300	450				750			
VVF32.65-63	S55202-V108	65	63		200	150	250	200	700		450			
VVF32.80-100	S55202-V109	80	100		125	75	175	125	450		250	225		
VVF32.100-160[2]	S55202-V110	100	160		-	-	-	-	-	-	160	125	300	250
VVF32.125-250[2]	S55202-V111	125	250								125	90	190	160
VVF32.150-400[2]	S55202-V112	150	400								80	60	125	100

[1] Suitable for medium temperatures up to 130 °C.

[2] Valve characteristic for k_{vs} value 100 m³/h from 70% stroke, k_{vs} value 160 m³/h from 85% stroke, and k_{vs} value 400 m³/h from 90 % stroke is optimized for maximum volumetric flow.

Valves	Actuators				SAX.. [1]		SKD..		SKB..		SAV.. [1]		SKC..	
	Stroke				20 mm						40 mm			
PN 16	Positioning force				800 N		1000 N		2800 N		1600 N		2800 N	
	Data sheet				N4501		N4561		N4564		N4503		N4566	
-10...150 °C	Stock no.	DN	k_{vs} [m³/h]	S_v	Δp_{max} [kPa]									
					A⇨AB B	AB⇨A B	A⇨AB B	AB⇨A B	A⇨AB B	AB⇨A B	A⇨AB B	AB⇨A B	A⇨AB B	AB⇨A B
VXF32.15-1.6	S55202-V113	15	1.6	> 50	1000	400	1000	400	1000	400	-	-	-	-
VXF32.15-2.5	S55202-V114	15	2.5											
VXF32.15-4	S55202-V115	15	4											
VXF32.25-6.3	S55202-V116	25	6.3											
VXF32.25-10	S55202-V117	25	10											
VXF32.40-16	S55202-V118	40	16	> 100	550		750				1000	400		
VXF32.40-25	S55202-V119	40	25											
VXF32.50-40	S55202-V120	50	40		350	300	450				750			
VXF32.65-63	S55202-V121	65	63		200	150	250	200	700		450			
VXF32.80-100	S55202-V122	80	100		125	75	175	125	450		250	225		
VXF32.100-160[2]	S55202-V123	100	160		-	-	-	-	-	-	160	125	300	250
VXF32.125-250[2]	S55202-V124	125	250								125	90	190	160
VXF32.150-400[2]	S55202-V125	150	400								80	60	125	100

[1] Suitable for medium temperatures up to 130 °C.

[2] Valve characteristic for k_{vs} value 100 m³/h from 70% stroke, k_{vs} value 160 m³/h from 85% stroke, and k_{vs} value 400 m³/h from 90 % stroke 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

Δp_s = Maximum permissible differential pressure at which the motorized valve still closes securely against the pressure

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

Ordering (Example)

Type	Stock no.	Description
VXF32.15-1.6	S55202-V113	3-port valve with flange, PN 10
SKD32.50	SKD32.50	Electrohydraulic actuator

Delivery

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

Note

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

Equipment combinations

Type	Stock no.	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			
SAX61.03 **SAX61.03U**	S55150-A100 S55150-A100-A100			AC 24 V DC 24 V	0…10 V 4…20 mA 0…1000 Ω			x		[2], [3]
SAX81.00	S55150-A102				3-position	-	120 s	-		[1]
SAX81.03 **SAX81.03U**	S55150-A103 S55150-A103-A100						30 s			
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				
SKD60	SKD60			AC 24 V	0…10 V 4…20 mA 0…1000 Ω	-	Opening: 30 s Closing: 15 s	x		[2]
SKD62 **SKD62U**	SKD62 SKD62U					15 s				
SKD62UA	SKD62UA									[4]
SKD82.50 **SKD82.50U**	SKD82.50 SKD82.50U				3-position	-	120 s	-		[1]
SKD82.51 **SKD82.51U**	SKD82.51 SKD82.51U					8 s				
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			AC 24 V	0…10 V 4…20 mA 0…1000 Ω	-	Opening: 120 s Closing: 10 s	x		[2]
SKB62 **SKB62U**	SKB62 SKB62U					10 s				
SKB62UA	SKB62UA									[4]
SKB82.50 **SKB82.50U**	SKB82.50 SKB82.50U				3-position	-	120 s	-		[1]
SKB82.51U **SKB82.51**	SKB82.51 SKB82.51U					10 s				

Type	Stock no.	Stroke	Positioning force	Operating voltage	Positioning signal	Spring return time	Positioning time	LED	Manual adjuster	Auxiliary functions
SAV31.00	S55150-A112	40 mm	1600 N	AC 230 V	3-position	-	120 s	-	Press and fix	[1], [5]
SAV61.00 **SAV61.00U**	S55150-A110 S55150-A110-A100			AC 24 V DC 24 V	0…10 V 4…20 mA 0…1000 Ω			x		[1], [2], [5], [6]
SAV81.00 **SAV81.00U**	S55150-A111 S55150-A111-A100				3-position			-		[1], [5]
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			AC 24 V	0…10 V 4…20 mA 0…1000 Ω	-	Opening: 120 s Closing: 20 s	x		[2]
SKC62 **SKC62U**	SKC62 SKC62U					20 s				
SKC62UA	SKC62UA									[4]
SKC82.60 **SKC82.60U**	SKC82.60 SKC82.60U				3-position	-	120 s	-		[1]
SKC82.61 **SKC82.61U**	SKC82.61 SKC82.61U					18 s				

[1] Auxiliary switch, potentiometer

[2] Position feedback, forced control, selection of valve characteristic

[3] Optional: sequence control, selection of acting direction

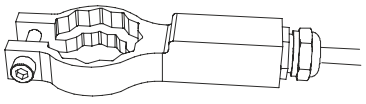
[4] Plus sequence control, stroke limitation, selection of acting direction

[5] Stem heating element (optional)

[6] Function module (optional)

Accessories / Spare parts

Accessories

Type	Stock no.	Description	Notes	Example
ASZ6.6	S55845-Z108	Stem heating element	Required for medium temperatures < 0 °C	

Spare parts

Stem sealing gland				
Type	**DN**	**Stock no.**	**Notes**	**Image**
VVF32.. VXF32..	DN 15…80	4 284 8806 0	Series A	
	DN 100…150	4 284 8806 0	Series A, B and C until October 2015	
	DN 100…150	4 679 5629 0	Seried D as of October 2015	

Product documentation

Title	Content	Document ID
Mounting instructions valves VVF.. VXF..	Mounting instructions	M4030 74 319 0749 0
Valves VVF..,VXF..,VVG41.., VXG41.., VVI41.., VXI41..	Basic documentation: Contains background information and general technical basics for valves	P4030

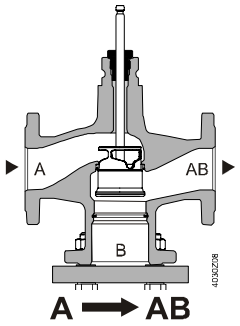
Technical and mechanical design

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

2-port valves

Fluids

Closing against the pressure



For use with all actuators

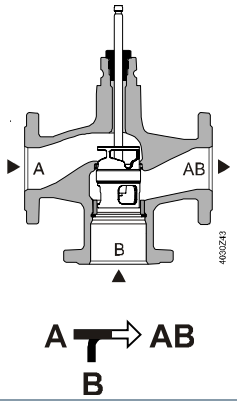
Note

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

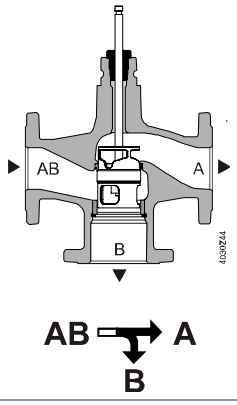
3-port valves

Fluids

Mixing valve (preferred use)

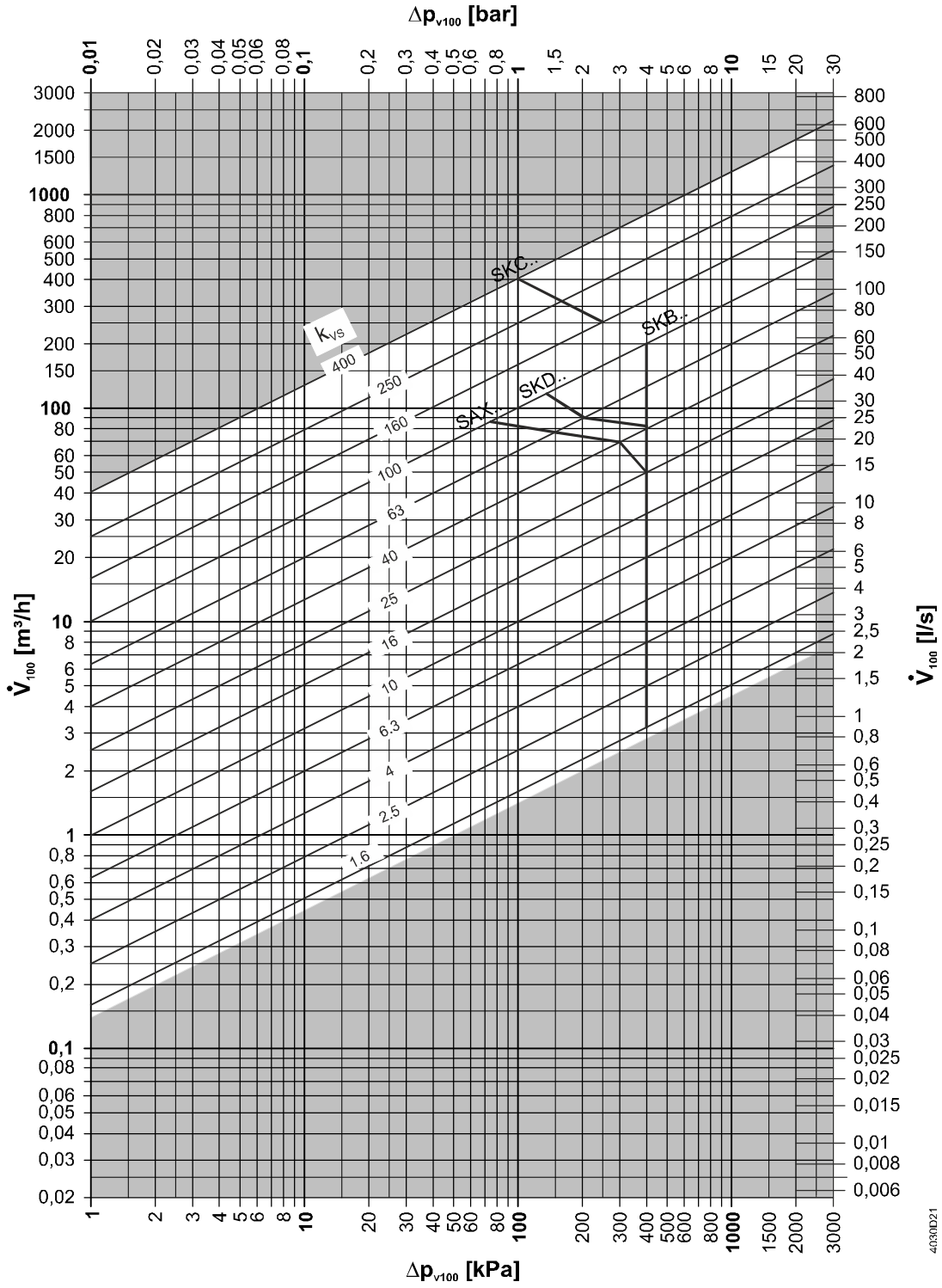


Diverting valve



Sizing

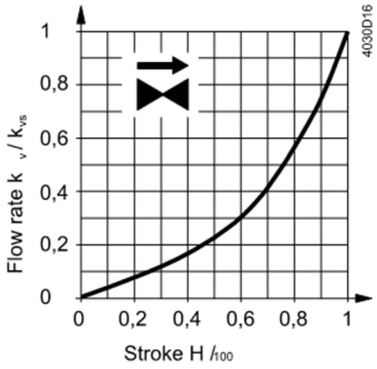
Flow chart



Δp$_{max}$ values apply for the mixing function. Δp$_{max}$ values for the diverting function, see table Type summary [▶ 2]

Valve characteristics

2-port valves

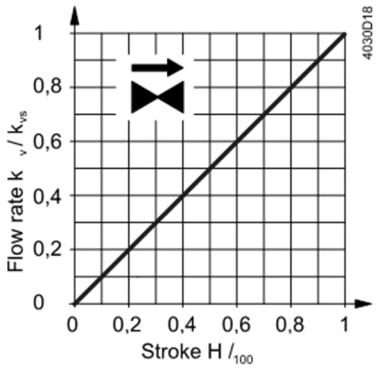


0…30 %: Linear

30…100 %: Equal percentage
n_{gl} = 3 to VDI / VDE 2173

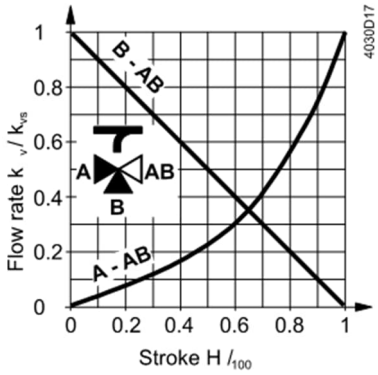
For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{V100}.

For product lines:
VVF32.125-250
VVF32.150-400



0…100 %: Linear

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

Port AB = constant flow

Port A = variable flow

Port B = bypass (variable flow)

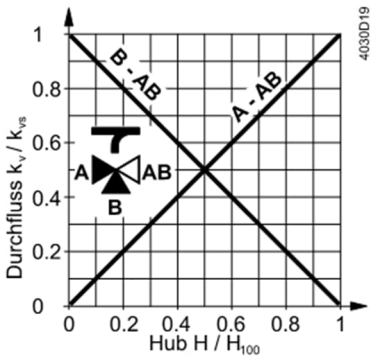
Mixing: Flow from port A and port B to port AB

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

For product lines:
VXF32.125-250
VXF32.150-400

Throughport A-AB

0...100%: Linear

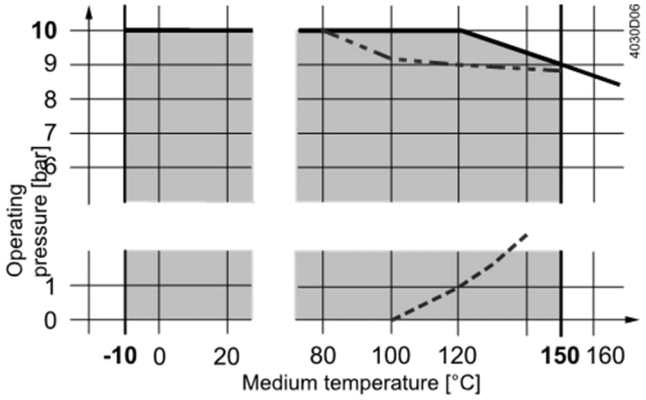


Bypass B-AB

0...100%: Linear

Operating pressure and medium temperature

Fluids, PN10
with V..F32..



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

Note

All relevant local directives must be observed

Medium compatibility and temperature ranges

Medium	Temperature range		Type	Notes
	T_{min}	T_{max}	V..F32..	
	[°C]			
Cold water	1	25	x	-
Low-temperature hot water	1	130	x	-
High-temperature hot water [1)]	130	150	x	-
Water with antifreeze	-5	150	x	For medium temperatures below 0°C, the stem heating ASZ6.6 has to be installed.
	-10	150	x	
	-20	150	-	
Brines	-5	150	x	For medium temperatures below 0°C, the stem heating ASZ6.6 has to be installed.
	-10	150	x	
	-20	150	-	
Demineralized water according to VDI2035 / SWKI_BT102-01	1	150	x	-

1) Differentiation due to saturated steam curve

Fields of use

Fields of use		Type	
		VVF32..	VXF32..
Generation	Boiler plants	x	x
	District heating plants	x	-
	Refrigeration plants	x	x
Distribution	Heating groups	x	x
	Ventilation and air-handling units	x	x

Notes

Safety

⚠ CAUTION	
	**National safety regulations** Failure to comply with national safety regulations may result in personal injury and property damage. ● Observe national provisions and comply with the appropriate safety regulations.

Engineering

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

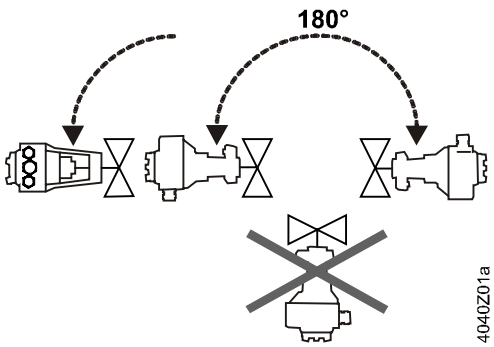
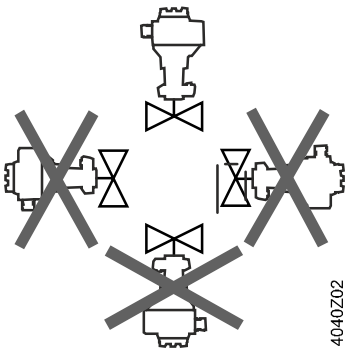
Mount a dirt filter or dirt trap before the valve to ensure the proper functioning and long service life of the valve. Remove dirt, welding beads, etc. from the valves and pipes.

Cavitation

Cavitation can be avoided by limiting the pressure differential across the valve depending on the medium temperature and prepressure.

Mounting

Mounting positions

Indoors	Outdoors
	

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

Commissioning

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

Note

Ensure that the 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

The valves are equipped with maintenance-free, continuously lubricated stem sealing glands. See Accessories / Spare parts [▶ 5] for replacement stem sealing glands.

⚠ CAUTION

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 valve as part of domestic waste.

- Special treatment for individual components may be required by law or make ecological sense.
- Comply with all local and currently applicable laws and regulations.

Warranty

The application-related technical data listed in the chapters Type summary [▶ 2] and Equipment combinations [▶ 4] are guaranteed only when the valves are used in connection with the Siemens actuators listed. When used with actuators of other manufacture, any warranty by Siemens becomes void.

Technical data

Functional data		
PN class		PN 10
Connection		Flange
Operating pressure		See section "Operating pressure and medium temperatures", Technical and mechanical design [▶ 9]
Valve characteristic [1)]		See section "Valve characteristics", Technical and mechanical design [▶ 8]
Leakage rate	Throughport	0…0.02% of k_{vs} value
	Bypass	0.5…2% of k_{vs} value (k_{vs} ≥6.3) 0.5…3% of k_{vs} value (k_{vs} 1.6; 2.5; 4)
Permissible media		See table "Medium compatibility and temperature ranges", Technical and mechanical design [▶ 10]
Medium temperature		-10…150 °C
Rangeability	Up to DN 25	>50
	From DN 32	>100
Nominal stroke	Up 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
Steam sealing gland		Brass, EPDM O-rings, PTFE sleeve, silicon-free grease

Standards, directives and approvals		
Pressure Equipment Directive Pressure-carrying accessories		PED 2014/68/EU Scope: Article 1, section 1 Definitions: Article 2, section 5
Fluid group 2:		PN 10
	≤DN 80	Without CE certification as per article 4, section 3 (sound engineering practice) [2)]
	DN 100…150	Category I, Modul A, with CE-marking as per article 14, section 2
EU conformity (CE)	DN 100…150	A5W00006523 [3)]
PN class		ISO 7268
Operating pressure		ISO 7005, DIN EN 12284

Standards, directives and approvals	
Flanges	ISO 7005
Length of flanged valves	DIN EN 558-1, line 1
Valve characteristic [1]	VDI 2173
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.

Umweltverträglichkeit
The product environmental declaration CE1E4402en01 (VVF32..) [3] and CE1E4402en02 (VXF32..) [3] contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Dimensions / Weight	
Dimensions	See Dimensions [▶ 15]
Weight	See Dimensions [▶ 15]

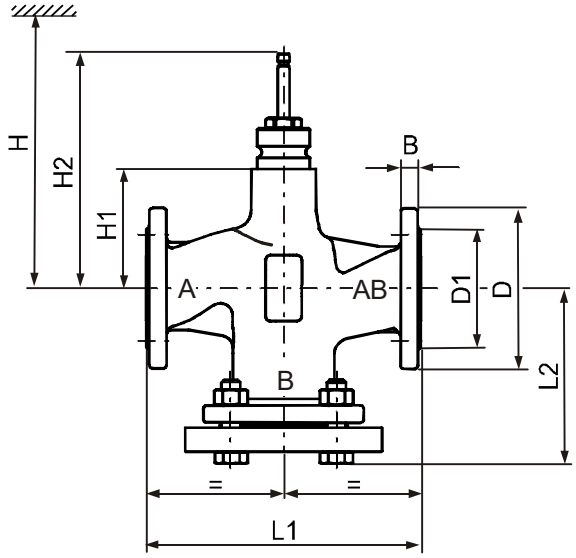
1) For certain valve lines and high k_{vs} values, the valve characteristic is optimized for maximum volumetric flow k_{V100}.

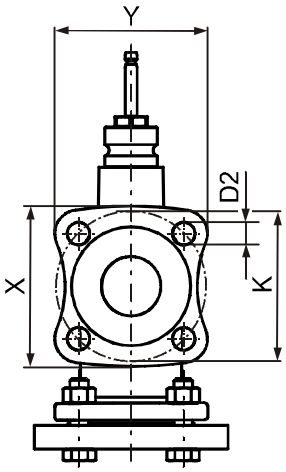
2) Valves where PS x DN < 1000, do not require special testing and cannot carry the CE label.

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

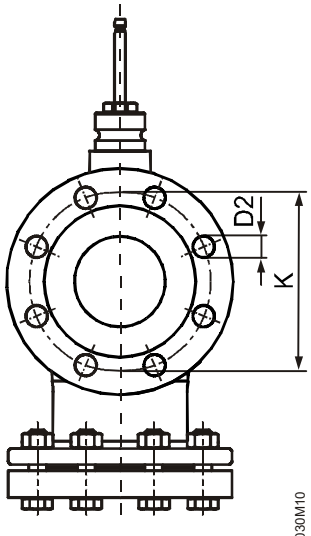
Dimensions

VVF32..





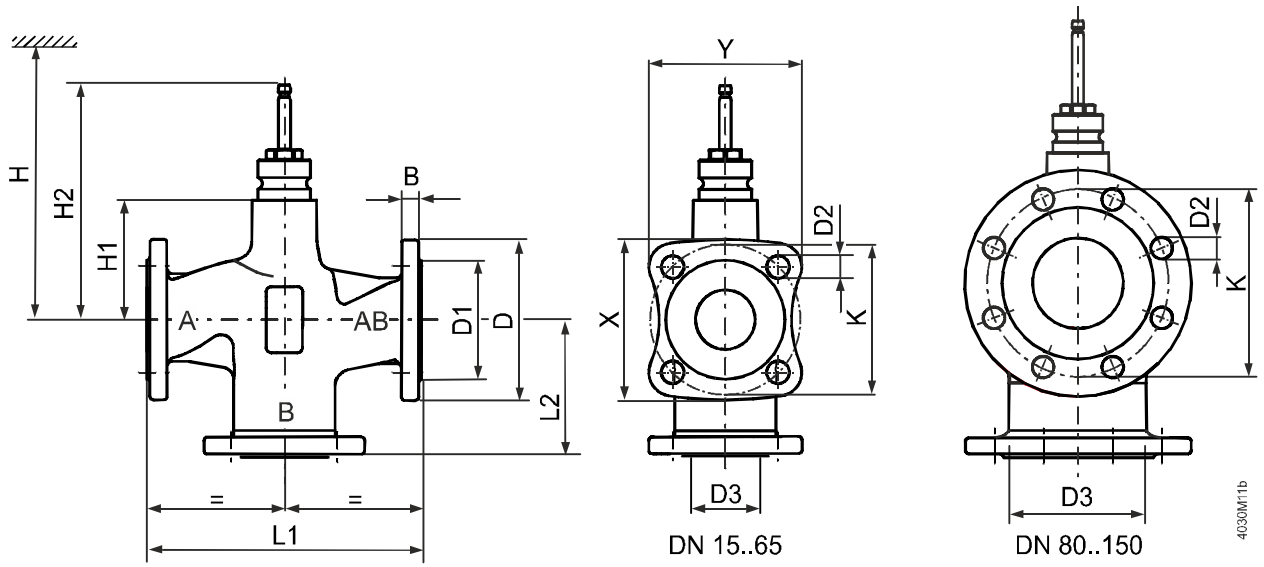
DN 15..DN 65



DN 80..DN 150

Type	DN	B	D	D1	D2	L1	L2	X	Y	K	H1	H2	H					kg
													SAX	SKD	SKB	SAV	SKC	
		[mm]																[kg]
VVF32..	15	14	95	46	14 (4x)	130	86	79	76	65	37	133.5	479	537	612	-	-	3.7
	25	15	115	65		160	104	94.4	90.1	85								5.4
	40	16	150	84	19 (4x)	200	126	123.2	117.8	110						502		9.2
	50		165	99		230	143	135.2	128.4	125	50	146.5	492	550	625	515		12.2
	65	17	185	118		290	173	150	142.5	145	75	171.5	517	575	650	540		17
	80		200	132	19 (8x)	310	185	-	-	160								25
	100		220	156		350	205			180	110	226.5	-	-	-	575	685	35.9
	125		250	184		400	232			210	123	239.5				588	698	52.5
	150		284	211	23 (8x)	480	275			240	150.5	267				616	726	74.9

VXF32..



Type	DN	B	D	D1	D2	D3 [1]	L1	L2	X	Y	K	H1	H2	H					kg
														SAX	SKD	SKB	SAV	SKC	
		[mm]																	[kg]
VXF32..	15	14	95	46	14 (4x)	23	130	65	79	76	65	37	133.5	479	537	612	-	-	2.6
	25	15	115	65		36	160	80	94.4	90.1	85								3.8
	40	16	150	84	19 (4x)	56	200	100	123.2	117.8	110						502	-	6.3
	50		165	99		69	230	115	135.2	128.4	125	50	146.5	492	550	625	515		8.7
	65	17	185	118		85	290	143	150	142.5	145	75	171,5	517	575	650	540		12.9
	80		200	132	19 (8x)	102	310	155	-	-	160								19.2
	100		220	156		124	350	175			180	110	226.5	-	-	-	575	685	29
	125		250	184		149	400	200			210	123	239.5				588	698	43.2
	150		284	211	23 (8x)	174	480	240			240	150.5	267				616	726	62.1

[1] Inside opening width of the bypass port

Revision numbers

Type	Valid from rev. no.	Type	Valid from rev. no.
VVF32.15-1.6 S55202-V100	..A	**VXF32.15-1.6** S55202-V113	..A
VVF32.15-2,5 S55202-V101	..A	**VXF32.15-2.5** S55202-V114	..A
VVF32.15-4 S55202-V102	..A	**VXF32.15-4** S55202-V115	..A
VVF32.25-6.3 S55202-V103	..A	**VXF32.25-6.3** S55202-V116	..A
VVF32.25-10 S55202-V104	..A	**VXF32.25-10** S55202-V117	..A
VVF32.40-16 S55202-V105	..A	**VXF32.40-16** S55202-V118	..A
VVF32.40-25 S55202-V106	..A	**VXF32.40-25** S55202-V119	..A
VVF32.50-40 S55202-V107	..A	**VXF32.50-40** S55202-V120	..A
VVF32.65-63 S55202-V108	..A	**VXF32.65-63** S55202-V121	..A
VVF32.80-100 S55202-V109	..A	**VXF32.80-100** S55202-V122	..A
VVF32.100-160 S55202-V110	..D	**VXF32.100-160** S55202-V123	..D
VVF32.125-250 S55202-V111	..D	**VXF32.125-250** S55202-V124	..D
VVF42.150-400 S55202-V112	..D	**VXF32.150-400** S55202-V125	..D

Issued by
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Document ID CE1N4402en
Edition 2022-03-04