



VVF53..
VVF53..K



VXF53..

ACVATIX™

2- and 3-port valves with flanged connections, PN 25 VVF53.. VXF53..

From the large-stroke valve line

- High-performance valves for medium temperatures from -20...220 °C
- Valve body of nodular cast iron EN-GJS-400-18-LT
- DN 15...150
- k_{vs} 0.16...400 m³/h
- Flange type 21, flange design B
- VVF53..K with pressure compensation to handle high differential pressure
- Equipable with electro-motoric actuators SAX.. or electro-hydraulic actuators SKD.., SKB.., SKC..

Use

In boiler, district heating and refrigeration plants, cooling towers, heating groups, and in air handling units as control or shutoff valves.
For use in closed or open hydraulic circuits (observe cavitation).

Type summary

	Valves	Actuators Stroke Positioning force Data sheet				SAX.. ⁴⁾		SKD.. ²⁾		SKB..		SKC..	
						20 mm		20 mm				40 mm	
						800 N		1000 N		2800 N		2800 N	
						N4501		N4561		N4664		N4566	
		Stock no.	DN	k _{vs} [m ³ /h]	S _v	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}
						[kPa]							
Fluids Preferred flow direction A-AB with fluids for low noise operation and high kvs-values with all actuator types	VVF53.15-0.16	S55208-V100	15	0.16	> 50	2500	1200	2500	1200	2500	1200	-	-
	VVF53.15-0.2	S55208-V101	15	0.2									
	VVF53.15-0.25	S55208-V102	15	0.25									
	VVF53.15-0.32	S55208-V103	15	0.32									
	VVF53.15-0.4	S55208-V104	15	0.4									
	VVF53.15-0.5	S55208-V105	15	0.5									
	VVF53.15-0.63	S55208-V106	15	0.63									
	VVF53.15-0.8	S55208-V107	15	0.8									
	VVF53.15-1	S55208-V108	15	1									
	VVF53.15-1.25	S55208-V109	15	1.25									
	VVF53.15-1.6	S55208-V110	15	1.6	> 100	1600	750	2100	1100	2000	1150	700	650
	VVF53.15-2	S55208-V111	15	2									
	VVF53.15-2.5	S55208-V112	15	2.5									
	VVF53.15-3.2	S55208-V113	15	3.2									
	VVF53.15-4	S55208-V114	15	4									
	VVF53.20-6.3	S55208-V116	20	6.3									
	VVF53.25-5	S55208-V117	25	5									
	VVF53.25-6.3	S55208-V118	25	6.3									
	VVF53.25-8	S55208-V119	25	8									
	VVF53.25-10	S55208-V120	25	10									
	VVF53.32-16	S55208-V122	32	16									
	VVF53.40-12.5	S55208-V123	40	12.5									
	VVF53.40-16	S55208-V124	40	16									
	VVF53.40-20	S55208-V125	40	20									
	VVF53.40-25	S55208-V126											

	Valves	Actuators Stroke Positioning force Data sheet				SAX.. ⁶⁾		SKD.. ²⁾		SKB..		SKC..									
						20 mm						40 mm									
						800 N		1000 N		2800 N		2800 N									
						N4501		N4561		N4664		N4566									
		Stock no.	DN	k _{vs} [m ³ /h]	S _v	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}								
[kPa]																					
Steam ⁴⁾ Exclusive flow direction AB-A for steam. Also useful for maximum close-off pressure Δp _s and maximum differential pressure in operation (Δp _{max}) with fluids. Use with electro-hydraulic actuators only	VVF53.15-0.16	S55208-V100	15	0.16	> 50	-	-	2500	1200	2500	1200	-	-								
	VVF53.15-0.2	S55208-V101	15	0.2																	
	VVF53.15-0.25	S55208-V102	15	0.25																	
	VVF53.15-0.32	S55208-V103	15	0.32																	
	VVF53.15-0.4	S55208-V104	15	0.4																	
	VVF53.15-0.5	S55208-V105	15	0.5																	
	VVF53.15-0.63	S55208-V106	15	0.63																	
	VVF53.15-0.8	S55208-V107	15	0.8																	
	VVF53.15-1	S55208-V108	15	1																	
	VVF53.15-1.25	S55208-V109	15	1.25																	
	VVF53.15-1.6	S55208-V110	15	1.6																	
	VVF53.15-2	S55208-V111	15	2	> 100																
	VVF53.15-2.5	S55208-V112	15	2.5																	
	VVF53.15-3.2	S55208-V113	15	3.2																	
	VVF53.15-4 ⁵⁾	S55208-V114	15	3.6																	
	VVF53.20-6.3 ⁵⁾	S55208-V116	20	5																	
	VVF53.25-5	S55208-V117	25	5																	
	VVF53.25-6.3	S55208-V118	25	6.3																	
	VVF53.25-8	S55208-V119	25	8																	
	VVF53.25-10 ⁵⁾	S55208-V120	25	8																	
	VVF53.32-16 ⁵⁾	S55208-V122	32	15																	
	VVF53.40-12.5	S55208-V123	40	12.5																	
	VVF53.40-16	S55208-V124	40	16																	
	VVF53.40-20	S55208-V125	40	20																	
	VVF53.40-25 ⁵⁾	S55208-V126	40	23																	

Note

When using a stem heating element with a medium temperature of below -5°C , the stem sealing gland must be replaced. In this case, the sealing gland must be ordered separately (Stock number: 4 284 8806 0).

Ordering**Example**

Product number	Stock number	Description
VXF53.25-6.3	S55208-V145	3-port valve with flange, PN 25
SAX31.03	S55150-A106	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.-Nr.

See page 15

Equipment combinations

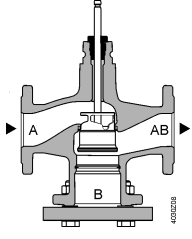
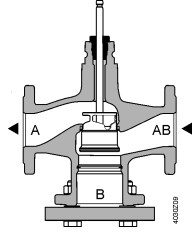
Product number	Description	Stroke	Positioning force	Operating voltage	Positioning signal	Spring return time	Positioning time	LED	Manual adjuster	Auxiliary functions
SAX31.00	S55150-A105	20 mm	800 N	AC 230 V	3-position	-	120 s	-	Push and fix	1)
SAX31.03	S55150-A106						30 s			2) 3)
SAX61.03	S55150-A100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

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

Technical and mechanical design

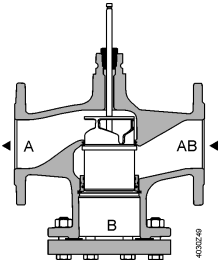
The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

2-port valves

 Fluids	 Steam (Fluids possible)
 Closing against the pressure	 Closing with the pressure
 A → AB For use with all actuators	 A ← AB Use with electro-hydraulic actuators only

2-port valves
pressure compensated

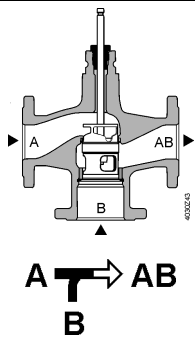
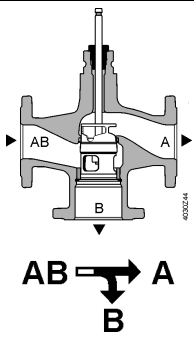
The VVF53..K valves use a pressure-compensated plug. This enables the same type of actuators to be used for the control of volumetric flow at higher differential pressures.

 Fluids and Steam
 Closing with the pressure
 A ← AB Use with electro-hydraulic actuators only

Note

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

3-port valves

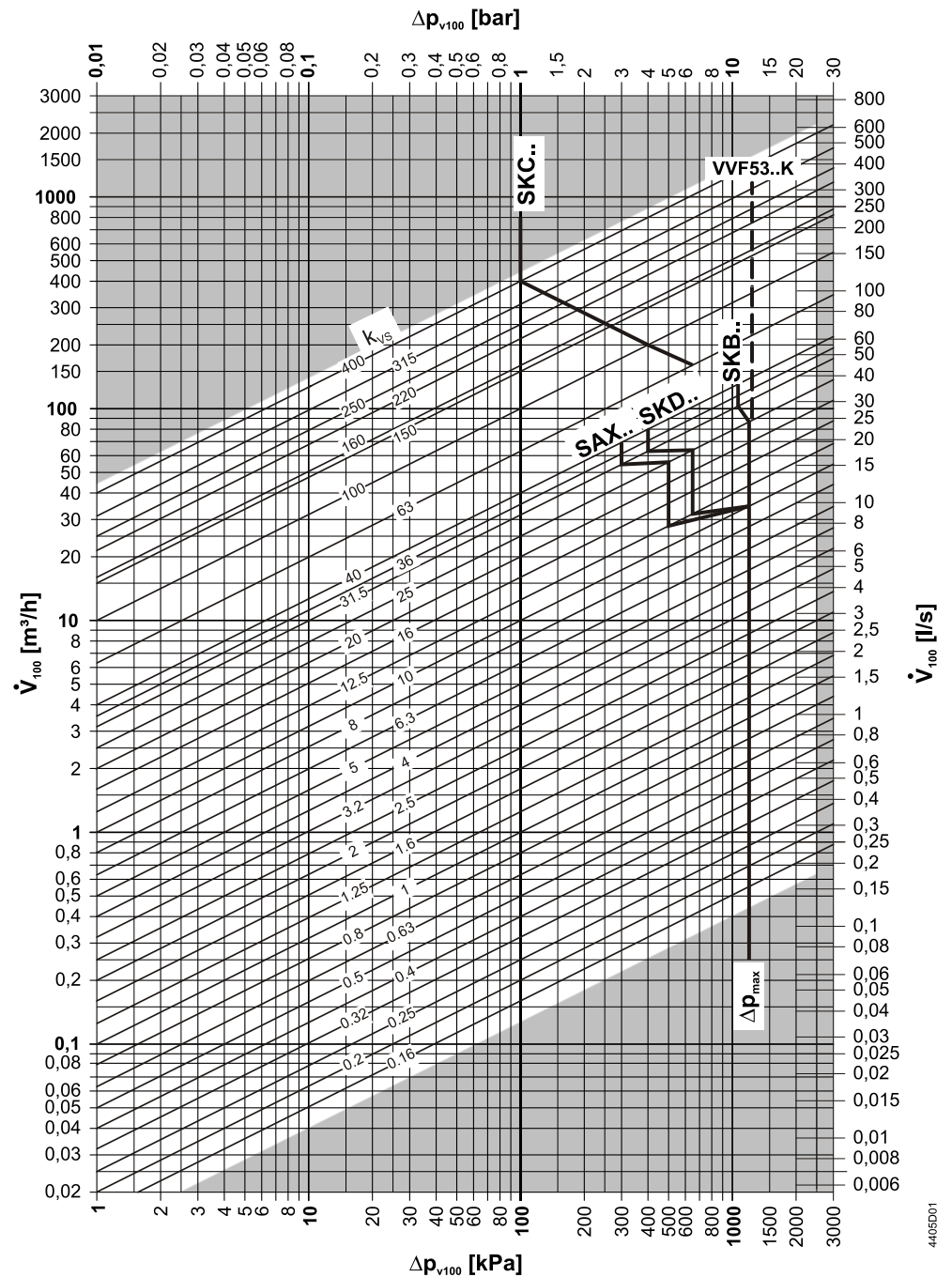
Fluids	
Mixing valve (preferred use)	Diverting valve
	

Accessories

Product number	Stock number	Description	Note	
ASZ6.6	S55845-Z108	Stem heating element	Required for medium temperatures < 0 °C	
-	428488060	Stem sealing gland	When using valves of the V..F53.. lines with a stem heating element and a medium temperature below -5 °C, the stem sealing gland must be replaced. With the gland 428488060 the valve can be used with water, water with antifreeze and brines between -20 °C and 150 °C.	

Adapter type	Stock number	Bolts included	Description	VXF41..	
ALF41B15	S55845-Z110	4x M12x90mm	Adapter for replacing 3-port valves VXF41.. by VXF53.. • Due to different dimensions of the bypass flange • Every valve to be replaced requires an adapter • Adapter is supplied with the required number and size of bolts and nuts as well as two suitable flat sealings Replace 3-port valves VXF41.., DN 65...150 by 3-port valves VXF43.. (data sheet N4404).	DN 15	
ALF41B25	S55845-Z111	4x M12x90mm		DN 25	
ALF41B40	S55845-Z112	4x M16x90mm		DN 40	
ALF41B50	S55845-Z113	4x M16x90mm		DN 50	

Flow chart

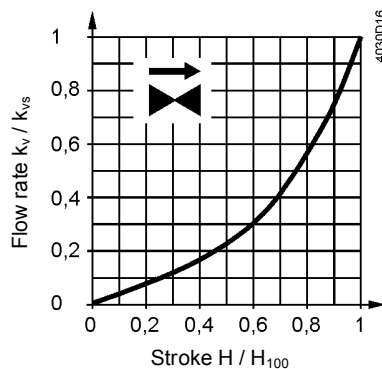


Δp_{max} values apply for the mixing function. Δp_{max} values for the diverting function see table "Type summary", page 2

Δp_{max} values for K_{vs} value 16, DN 32, see table "Type summary", page 2

4405D01

Valve characteristics 2-port valves

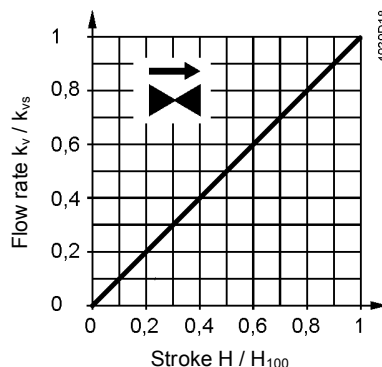


0...30 %: Linear
30...100 %: Equal percentage
 $n_{gl} = 3$ to VDI / VDE 2173

For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{v100} .

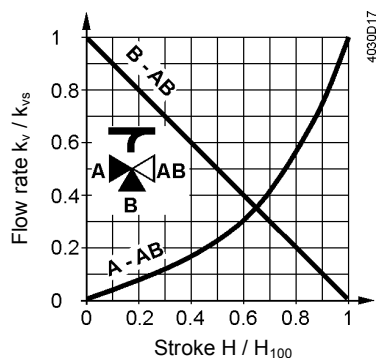
For product lines:

VVF53.125-200
VVF53.125-250
VVF53.125-220K
VVF53.150-315
VVF53.150-400
VVF53.150-315K



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

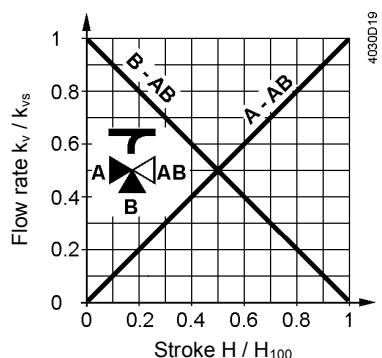
0...100 %: Linear

Port AB = constant volumetric flow
Port A = variable volumetric flow
Port B = Bypass (variable volumetric flow)

Mixing: Volumetric flow from port A and port B to port AB
Diverting: Volumetric flow from port AB to port A and port B

For product lines:

VXF53.125-250
VXF53.150-400



Throughport A-AB

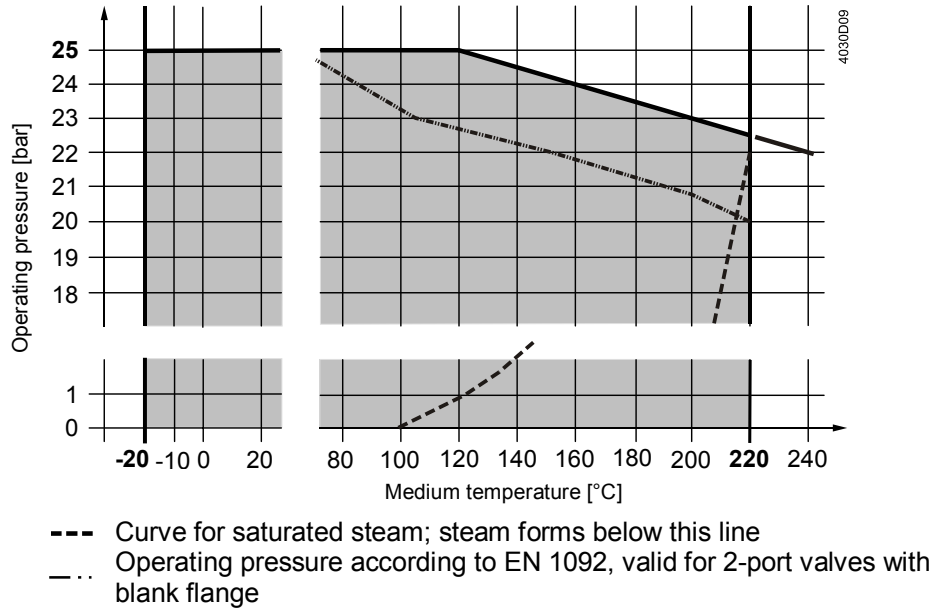
0...100 %: Linear

Bypass B-AB

0...100 %: Linear

Operating pressure and medium temperature

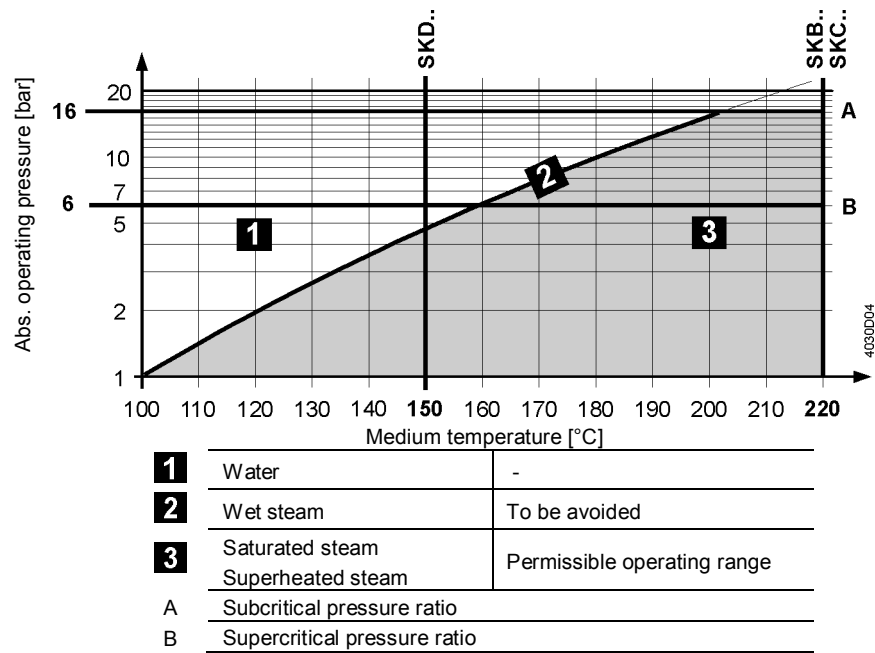
Fluids
with V..F53..



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

Notes All relevant local directives must be observed

Saturated steam
Superheated steam
with VVF53..



Medium compatibility and temperature ranges

Medium	Temperature range		Valve			Note
	T _{min} [°C]	T _{max} [°C]	VVF53..	VVF53..K	VXF53..	
Cold water	1	25	■	■	■	-
Low-temperature hot water	1	130	■	■	■	-
High-temperature hot water ¹⁾	130	150	■	■	■	-
	150	180	■	■	■	-
	180	220	■	■	■	-
Water with antifreeze	-5	150	■	■	■	V..F53: With a medium temperature of below -5 °C, the stem sealing gland must be replaced by the gland 428488060
	-10	150	■	- ⁴⁾	■	
	-20	150	■	- ⁴⁾	■	
Cooling water ²⁾	1	25	■	■	■	-
Brines	-5	150	■	■	■	V..F53: With a medium temperature of below -5 °C, the stem sealing gland must be replaced by the gland 428488060
	-10	150	■	- ⁴⁾	■	
	-20	150	■	- ⁴⁾	■	
Saturated steam ³⁾	100	150	■	■	-	-
	100	220	■	■	-	-
Superheated steam	120	150	■	■	-	-
	120	220	■	■	-	-
Heat transfer oils	20	220	■	■	■	On the basis of mineral oil
Super-clean water (demineralized and deionized)	1	150	-	-	-	

¹⁾ Differentiation due to saturated steam curve

²⁾ Open circuits

³⁾ Operate with inverted flow direction with steam

⁴⁾ VVF53..K can't be used with media below -5 °C due to the compensation sealing material

Fields of use

Fields of use		Valve	
		VVF53..	VXF53..
Generation	Boiler plants	■	■
	District heating plants	■	-
	Refrigeration plants	■	■
	Cooling towers ¹⁾	■	■
Distribution	Heating groups	■	■
	Air handling units	■	■

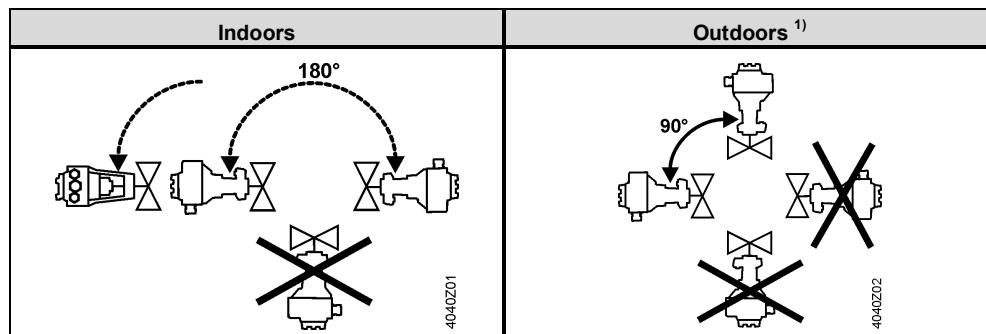
¹⁾ Open circuits

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.
	Operate valves of the product lines VVF53.. with inverted flow direction for steam.
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 the prepressure.

Mounting notes

Mounting position



¹⁾ Only in combination with weather shield ASK39.1 and actuators SAX..

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

The valves are maintenance-free.



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



Due to the different types of material used, the valve must be disassembled prior to disposal. Special handling of certain valve components may be required by law or may be sensible from an ecological point of view.

Local and currently valid legislation must be observed.

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

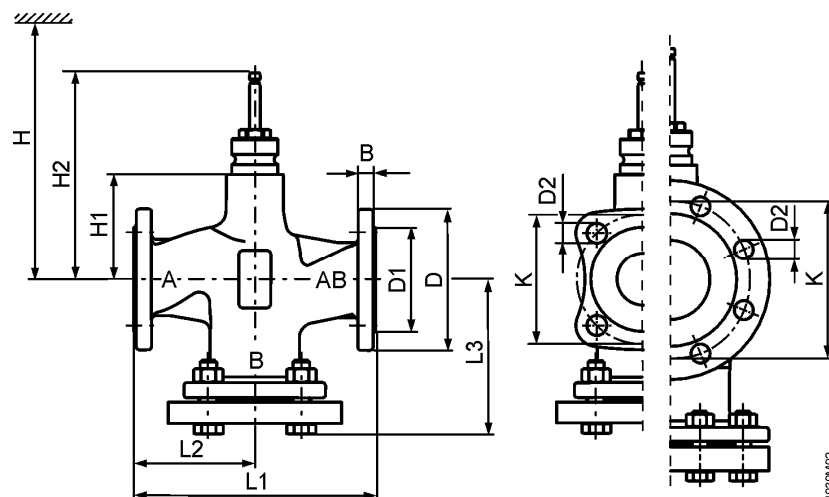
Functional data	PN class	PN 25
	Connection	Flange
	Operating pressure	See Section "Operating pressure and medium temperature" page 9
	Valve characteristics ¹⁾	See section "Valve characteristics", page 8
	Leakage rate	Throughport Bypass
		0...0.01 % of k_{VS} value (Class IV) 0.5...2 % of k_{VS} value with SKD.., SKB.., SKC.. 0.05 % of k_{VS} value with SAX..
	Permissible media	See table "Medium compatibility and temperature ranges", page 10
	Medium temperature	-20...220 °C ²⁾ VVF53..K: 1...220 °C
	Rangeability	DN 15, $k_{VS} \leq 1.25 \text{ m}^3/\text{h}$: >50 DN 15...150: >100
	Nominal stroke	Up to DN 50: 20 mm From DN 65: 40 mm
Materials	Valve body	EN-GJS-400-18-LT
	Blank flange	VVF.. P265GH
	Valve stem, seat, plug	Stainless steel
	Stem sealing gland	Stainless steel FEPM (silicone-free)
	Compensation sealing	Stainless steel FEPM (silicone-free)
	Adapter ALF41B..	Steel S235JRG2
Standards	Pressure Equipment Directive	PED 97/23/EC
	Pressure-carrying accessories	According to article 1, section 2.1.4
	Fluid group 2	PN 25
	without CE certification according to article 3, section 3 (good engineering practice)	$\leq \text{DN } 40$
	Category I, with CE certification	DN 50...100
	Category II, with CE certification, notified body identification number 0036	DN 125...150
	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
	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		ISO 14001 (environment) ISO 9001 (quality) SN 36350 (environmentally compatible products) RL 2002/95/EG (RoHS)
Dimensions / Weight	Dimensions	See „Dimensions“, page 14
	Weight	See „Dimensions“, page 14

- ¹⁾ For certain valve lines and high k_{vs} values, the valve characteristic is optimized for maximum volumetric flow k_{V100}
- ²⁾ For medium temperatures < -5 °C, the stem sealing gland must be replaced. The sealing gland must be ordered separately (Stock number: 4 284 8806 0).

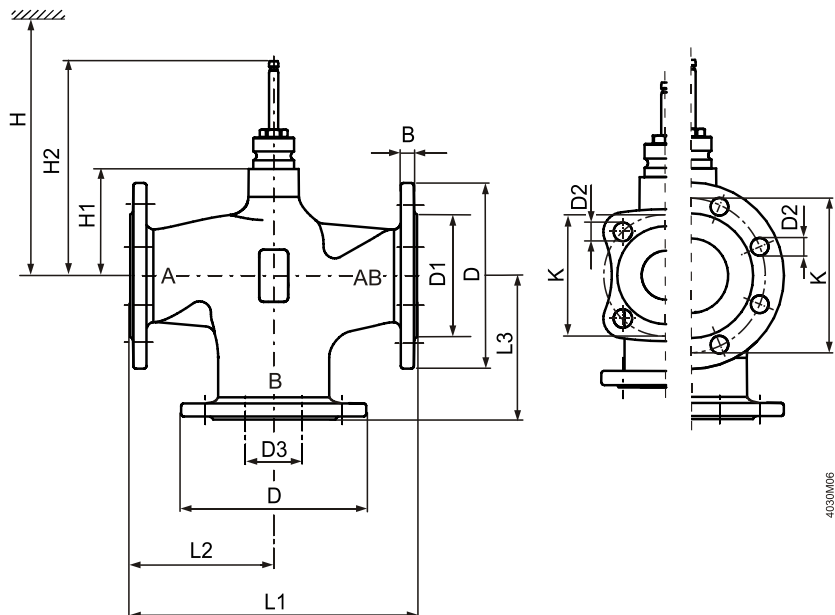
Dimensions

VVF53..



Product number	DN	kg	B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	H			
													SAX..	SKD..	SKB..	SKC..
VVF53..	15	4.2	14	95	46	14 (4x)	130	65	87.5	65	63	159.5	505	563	638	-
	20	5.3	16	105	56	14 (4x)	150	75	99.5	75	63	144.4	505	563	638	-
	25	6.1	15	115	65	14 (4x)	160	80	104.5	85	63	159.5	505	563	638	-
	32	8.7	17	140	76	19 (4x)	180	90	119	100	60	156.5	502	560	635	-
	40	10.1	16	150	84	19 (4x)	200	100	129	110	60	156.5	502	560	635	-
	50	13.5	16	165	99	19 (4x)	230	115	146	125	100	196.5	542	600	675	-
	65	22.2	17	185	118	19 (8x)	290	145	178	145	115	231.5	-	-	-	690
	80	27.7	17	200	132	19 (8x)	310	155	190	160	115	231.5	-	-	-	690
	100	38.6	17	235	156	23 (8x)	350	175	212.5	190	146	262.5	-	-	-	721
	125	54.4	17	270	184	28 (8x)	400	200	242	220	159	275.5	-	-	-	734
VVF53..K	150	74.3	17	297	211	28 (8x)	480	240	284	250	186.5	303	-	-	-	762
	50	13.6	16	165	99	19 (4x)	230	115	146	125	100	196.5	542	600	675	-
	65	22.3	17	185	118	19 (8x)	290	145	178	145	115	231.5	-	-	-	690
	80	27.9	17	200	132	19 (8x)	310	155	190	160	115	231.5	-	-	-	690
	100	39.0	17	235	156	23 (8x)	350	175	212.5	190	146	262.5	-	-	-	721
	125	57.5	17	270	184	28 (8x)	400	200	242	220	159	275.5	-	-	-	734
	150	75.8	17	297	211	28 (8x)	480	240	284	250	186.5	303	-	-	-	762

VXF53..



4030M06

Product number	DN	kg	B	Ø D	Ø D1	Ø D2	Ø D3	L1	L2	L3	Ø K	H1	H2	H			
														SAX..	SKD..	SKB..	SKC..
VXF53..	15	3.2	14	95	46	14 (4x)	25	130	65	65	65	63	159.5	505	563	638	-
	20	4.0	16	105	56	14 (4x)	35	150	75	75	75	63	159.5	505	563	638	-
	25	4.6	15	115	65	14 (4x)	38	160	80	80	85	63	159.5	505	563	638	-
	32	6.1	17	140	76	19 (4x)	46	180	90	90	100	60	156.5	502	560	635	-
	40	7.2	16	150	84	19 (4x)	57	200	100	100	110	60	156.5	502	560	635	-
	50	9.7	16	165	99	19 (4x)	69	230	115	115	125	100	196.5	542	600	675	-
	65	16.6	17	185	118	19 (8x)	86	290	145	145	145	115	231.5	-	-	-	690
	80	20.9	17	200	132	19 (8x)	100	310	155	155	160	115	231.5	-	-	-	690
	100	28.5	17	235	156	23 (8x)	123	350	175	175	190	146	262.5	-	-	-	721
	125	42.2	17	270	184	28 (8x)	149	400	200	200	220	159	275.5	-	-	-	734
	150	55.9	17	297	211	28 (8x)	174	480	240	240	250	186.5	303	-	-	-	762

Spare parts

Stem sealing gland

Product number	DN	Stock number	Comments	
VVF53.. VXF53..	DN 15...150	74 284 0061 0	Standard version with FEPM-O-ring for medium temperatures between -5 °C and 220 °C.	
		4 284 8806 0	When operating with medium temperatures below -5 °C . With the gland 428488060 the valve can be used with water, water with antifreeze and brines between -20 °C and 150 °C.	

Revision numbers

Product number	Valid from rev. no.	Product number	Valid from rev. no.	Product number	Valid from rev. no.
VVF53.15-0.16	..A	VVF53.50-40K	..B	VXF53.15-1.6	..A
VVF53.15-0.2	..A	VVF53.65-63K	..B	VXF53.15-2.5	..A
VVF53.15-0.25	..A	VVF53.80-100K	..B	VXF53.15-4	..A
VVF53.15-0.32	..A	VVF53.100-150K	..B	VXF53.20-6.3	..A
VVF53.15-0.4	..A	VVF53.125-220K	..B	VXF53.25-6.3	..A
VVF53.15-0.5	..A	VVF53.150-315K	..B	VXF53.25-10	..A
VVF53.15-0.63	..A			VXF53.32-16	..A
VVF53.15-0.8	..A			VXF53.40-16	..A
VVF53.15-1	..A			VXF53.40-25	..A
VVF53.15-1.25	..A			VXF53.50-40	..A
VVF53.15-1.6	..A			VXF53.65-63	..A
VVF53.15-2	..A			VXF53.80-100	..A
VVF53.15-2.5	..A			VXF53.100-160	..A
VVF53.15-3.2	..A			VXF53.125-250	..A
VVF53.15-4	..A			VXF53.150-400	..A
VVF53.20-6.3	..A				
VVF53.25-5	..A				
VVF53.25-6.3	..A				
VVF53.25-8	..A				
VVF53.25-10	..A				
VVF53.32-16	..A				
VVF53.40-12.5	..A				
VVF53.40-16	..A				
VVF53.40-20	..A				
VVF53.40-25	..A				
VVF53.50-31.5	..A				
VVF53.50-40	..A				
VVF53.65-63	..C				
VVF53.80-100	..C				
VVF53.100-160	..C				
VVF53.125-250	..C				
VVF53.150-400	..C				