



VVF53..J / VVF43..J



VXF53..J / VXF43..J

ACVATIX™

## 2- and 3-port valves with flanged connections, JIS-B2239-10K

VVF43/53\_J

VXF43/53\_J

From the large-stroke valve line


- High-performance valves for medium temperatures from -20...220 °C
- Valve body of nodular cast iron FCD400-18L (EN-GJS-400-18-LT)
- DN 15...150
- $k_{vs}$  1.25...400 m<sup>3</sup>/h
- Flange type JIS-B2239-10K
- Equipable with actuators SAX.. or 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 JIS-B2239-K10 	Actuators Stroke Positioning force Data sheet				SAX.. <sup>1)</sup>		SKD.. <sup>2)</sup>		SKB..		SKC..										
		Stock number	DN	k <sub>vs</sub> [m <sup>3</sup> /h]	S <sub>v</sub>	20 mm																
						Δp <sub>s</sub>	Δp <sub>max</sub>	Δp <sub>s</sub>	Δp <sub>max</sub>	Δp <sub>s</sub>	Δp <sub>max</sub>	Δp <sub>s</sub>	Δp <sub>max</sub>									
<b>Fluids</b> Preferred flow direction with fluids for low noise operation and high k <sub>vs</sub> -values with all actuator types	VVF53.15-1.25J	S55208-V109-A110	15	1.25	> 50																	
	VVF53.15-4J	S55208-V114-A110	15	4	> 100	1370	800	1370	800	1370	800	-	-									
	VVF53.25-6.3J	S55208-V118-A110	25	6.3																		
	VVF53.25-10J	S55208-V120-A110	25	10																		
	VVF53.40-16J	S55208-V124-A110	40	16																		
	VVF53.40-25J	S55208-V126-A110	40	25																		
	VVF53.50-31.5J	S55208-V127-A110	50	31.5																		
	VVF43.65-50J	S55206-V100-A110	65	50								700	650									
	VVF43.80-80J	S55206-V102-A110	80	80								450	400									
	VVF43.100-125J	S55206-V104-A110	100	125								300	250									
	VVF43.125-200J	S55206-V106-A110	125	200								175	160									
VVF43.150-315J	S55206-V108-A110	150	315								125	100										
<b>Steam</b> <sup>4)</sup> Exclusive flow direction for steam. Also useful for maximum close-off pressure Δp <sub>s</sub> and maximum differential pressure in operation (Δp <sub>max</sub> ) with fluids. Use with electro-hydraulic actuators only	VVF53.15-1.25J	S55208-V109-A110	15	1.25	> 50																	
	VVF53.15-4J <sup>5)</sup>	S55208-V114-A110	15	3.6	> 100	-	-	1370	1200	1370	1200	-	-									
	VVF53.25-6.3J	S55208-V118-A110	25	6.3																		
	VVF53.25-10J <sup>5)</sup>	S55208-V120-A110	25	8																		
	VVF53.40-16J	S55208-V124-A110	40	16																		
	VVF53.40-25J <sup>5)</sup>	S55208-V126-A110	40	23																		
	VVF53.50-31.5J	S55208-V127-A110	50	31.5																		
	VVF43.65-50J	S55206-V100-A110	65	50									800									
	VVF43.80-80J	S55206-V102-A110	80	80									750									
	VVF43.100-125J	S55206-V104-A110	100	125								1370	500									
	VVF43.125-200J	S55206-V106-A110	125	200									300									
VVF43.150-315J	S55206-V108-A110	150	315									200										
<b>Fluids</b>	VXF53.15-4J	S55208-V142-A110	15	4	> 100	800	200	800	200	800	200	-	-									
	VXF53.25-6.3J	S55208-V145-A110	25	6.3																		
	VXF53.25-10J	S55208-V146-A110	25	10																		
	VXF53.40-16J	S55208-V149-A110	40	16																		
	VXF53.40-25J	S55208-V150-A110	40	25																		
	VXF53.50-40J	S55208-V152-A110	50	40																		
	VXF43.65-63J	S55206-V115-A110	65	63																	650	200
	VXF43.80-100J	S55206-V116-A110	80	100																	400	200
	VXF43.100-160J	S55206-V117-A110	100	160																	250	150
	VXF43.125-250J	S55206-V118-A110	125	250																	160	100
	VXF43.150-400J	S55206-V119-A110	150	400																	100	70

<sup>1)</sup> Series G: Usable up to a max. medium temperature of 130 °C

<sup>2)</sup> Usable up to a max. medium temperature of 150 °C

<sup>3)</sup> Valve characteristic for k<sub>vs</sub> value 63 m<sup>3</sup>/h from 90% stroke, k<sub>vs</sub> value 100, 160 and 250 m<sup>3</sup>/h from 80% stroke is optimized for maximum volumetric flow

<sup>4)</sup> Operate with opposite flow direction with steam

<sup>5)</sup> Reduced k<sub>vs</sub> value

DN = Nominal size

k<sub>vs</sub> = Flow nominal value of cold water (5...30 °C) through the fully opened valve (H<sub>100</sub>) at a differential pressure of 100 kPa (1 bar)

S<sub>v</sub> = Rangeability

Δp<sub>s</sub> = Maximum permissible differential pressure at which the motorized valve still closes securely against the pressure

Δp<sub>max</sub> = Maximum permissible differential pressure across the valve's throughport for the entire positioning range of the motorized valve

### 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
VXF53.25-6.3J	S55208-V145-A110	3-port valve with flange, JIS-B2239-10K, DN25
SKD62	SKD62	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 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	-	Push and fix	1)
SAX31.03	S55150-A106			AC/DC 24 V	0...10 V 4...20 mA 0...1000 Ω		30 s			
SAX61.03	S55150-A100					-	120 s	-	Push and fix	1)
SAX61.03U	S55150-A100-A100						30 s			
SAX81.00	S55150-A102			3-position	120 s	-	Push and fix	1)		
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				
SKD60	SKD60			AC 24 V	0...10 V 4...20 mA 0...1000 Ω	-	Opening: 30 s Closing: 15 s	✓	Turn, Position is maintained	2)
SKD62	SKD62					15 s				
SKD62U	SKD62U					-	120 s	-		
SKD62UA	SKD62UA					8 s				
SKD82.50	SKD82.50			3-position	-	-	120 s	-	Turn, Position is maintained	1)
SKD82.50U	SKD82.50U									
SKD82.51	SKD82.51									
SKD82.51U	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	✓	Turn, Position is maintained	2)
SKB62	SKB62					10 s				
SKB62U	SKB62U					-	120 s	-		
SKB62UA	SKB62UA					10 s				
SKB82.50	SKB82.50			3-position	-	-	120 s	-	Turn, Position is maintained	1)
SKB82.50U	SKB82.50U									
SKB82.51	SKB82.51									
SKB82.51U	SKB82.51U	10 s								
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	✓	Turn, Position is maintained	2)
SKC62	SKC62					20 s				
SKC62U	SKC62U					-	120 s	-		
SKC62UA	SKC62UA					18 s				
SKC82.60	SKC82.60			3-position	-	-	120 s	-	Turn, Position is maintained	1)
SKC82.60U	SKC82.60U									
SKC82.61	SKC82.61									
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





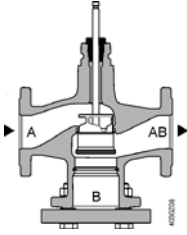
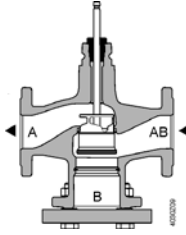
## Product documentation

- Mounting Instructions M4030 74 319 0869 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.




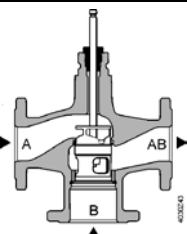
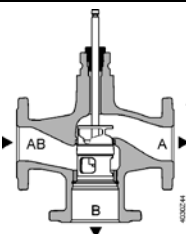
### 2-port valves

 Fluids	 Steam and Fluids
 Closing against the pressure	 Closing with the pressure
 <p><b>A → AB</b> For use with all actuators</p>	 <p><b>A ← AB</b> Use with electrohydraulic actuators only</p>



Note

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

### 3-port valves

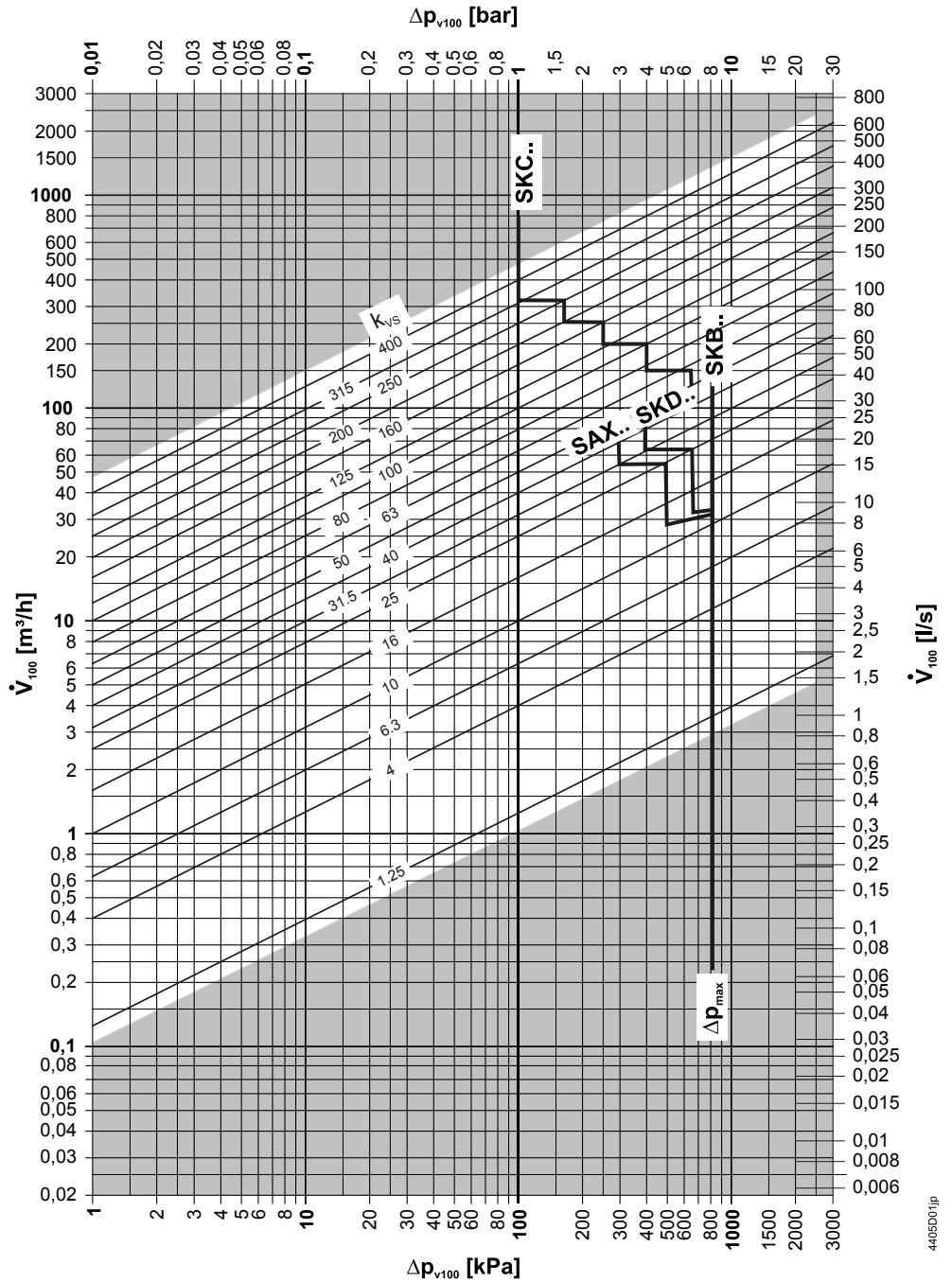
 Fluids	
 Mixing valve (preferred use)	 Diverting valve
 <p><b>A T B → AB</b></p>	 <p><b>AB → A</b> B</p>

## 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. The stem sealing gland can be used for water and water with antifreeze between -20°C up to +150°C	

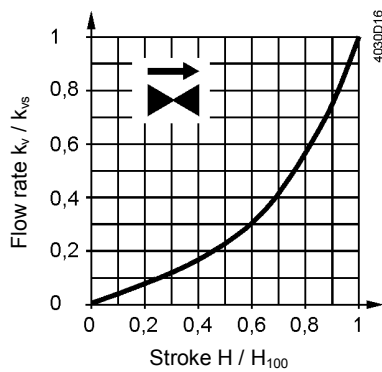
## Sizing

## Flow chart



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

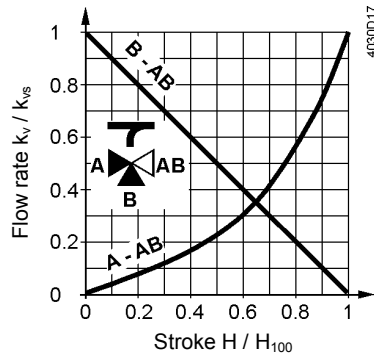
### Valve characteristics 2-port valves



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  
 $\eta_{gl} = 3$  to VDI / VDE 2173

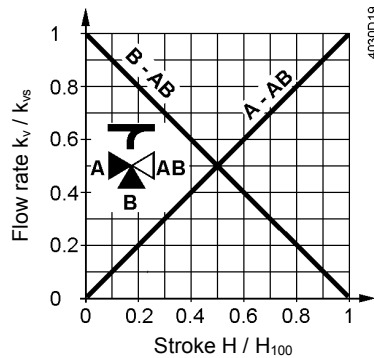
For high  $k_{vS}$  values the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

**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:  
 VXF43.125-250J  
 VXF43.150-400J



**Throughport A-AB**

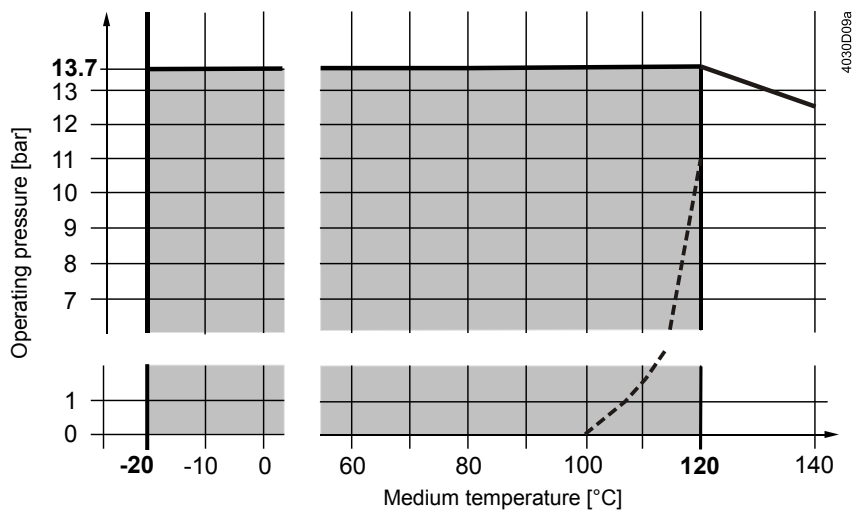
0...100%: Linear

**Bypass B-AB**

0...100%: Linear

**Operating pressure and medium temperature**

**Fluids**  
 with V..F43..J/V..F53..J



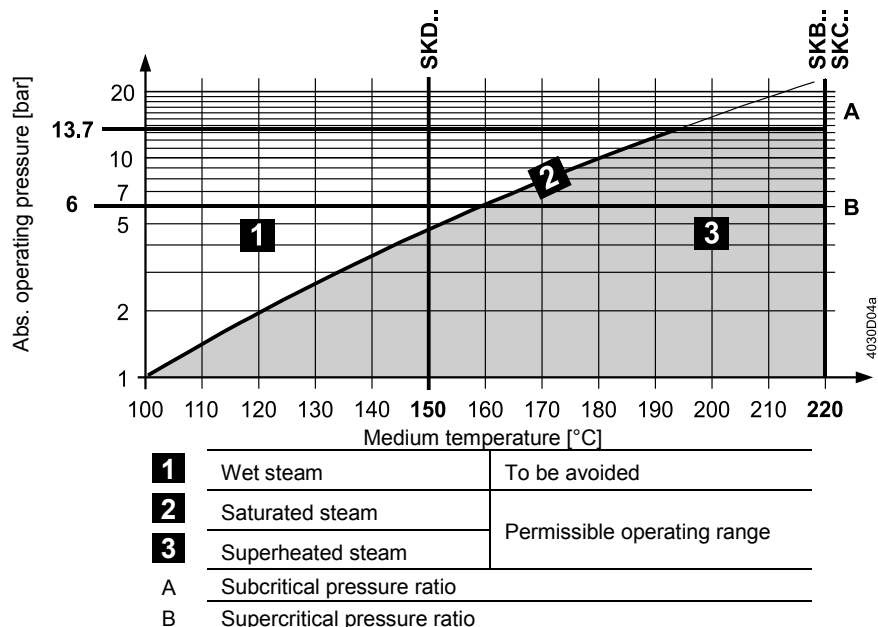
--- Curve for saturated steam; steam forms below this line

**Operating pressure and operating temperatures according to JIS-B2238**

Notes

- All relevant local directives must be observed

**Saturated steam**  
**Superheated steam**  
 with VVF43..J/VVF53..J



### Medium compatibility and temperature ranges

Medium	Temperature range		Valve		Note
	T <sub>min</sub> [°C]	T <sub>max</sub> [°C]	VVF43..J VVF53..J	VXF43..J VXF53..J	
Cold water	1	25	■	■	-
Low-temperature hot water	1	120	■	■	-
Water with antifreeze	-5	120	■	■	V..F43/V..F53: With a medium temperature of below -5 °C, the stem sealing gland must be replaced
	-20	120	■	■	
Cooling water <sup>1)</sup>	1	25	■	■	-
Brines	-5	120	■	■	V..F43/V..F53: With a medium temperature of below -5 °C, the stem sealing gland must be replaced
	-20	120	■	■	
Saturated steam <sup>2)</sup>	100	150	■	-	-
	100	220	■	-	-
Superheated steam	120	150	■	-	-
	120	220	■	-	-
Heat transfer oils	20	220	■	■	On the basis of mineral oil

<sup>1)</sup> Open circuits

<sup>2)</sup> Operate with inverted flow direction with steam

### Fields of use

Fields of use		Valve	
		VVF43..J / VVF53..J	VXF43..J / VXF53..J
<b>Generation</b>	Boiler plants	■	■
	District heating plants	■	-
	Refrigeration plants	■	■
	Cooling towers <sup>1)</sup>	■	■
<b>Distribution</b>	Heating groups	■	■
	Air handling units	■	■

<sup>1)</sup> 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 VVF43../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.

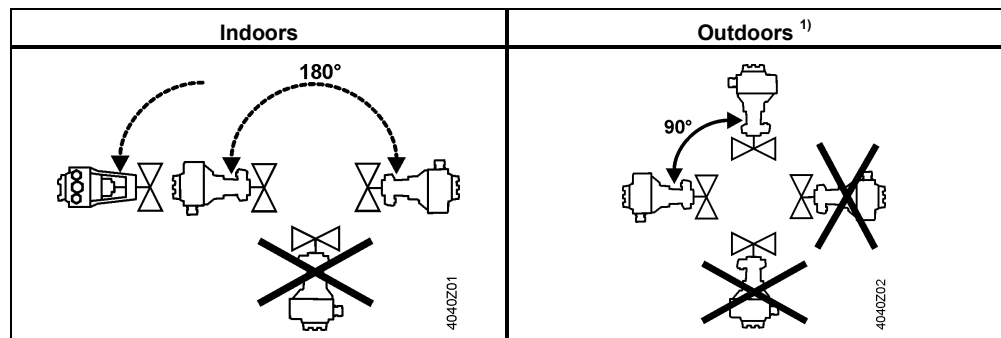
Remove dirt, welding beads, etc. from the valves and pipes.

#### 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



<sup>1)</sup> 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.

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	Pressure Class	10K	
	Connection	Flange JIS-B2239 – 10K	
	Operating pressure	See Section "Operating pressure and medium temperatures" page 6	
	Valve characteristics <sup>1)</sup>	See section "Valve characteristics", page 5	
	Leakage rate	Throughport	0...0.01% of $k_{vs}$ value (Class IV)
		Bypass	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 7	
	Medium temperature		
	Water/Water with anti freeze	-20...120 °C <sup>2)</sup>	
	Steam	100...220 °C <sup>2)</sup>	
	Rangeability	DN 15, $k_{vs}$ 1.25 m <sup>3</sup> /h: >50 DN 15...150: >100	
	Nominal stroke	Up to DN 50: 20 mm From DN 65: 40 mm	
	Materials	Valve body	FCD400-18L (EN-GJS-400-18-LT)
Blank flange		VVF.. P265GH (higher then P235GH = JIS 3115G -SPV24)	
Valve stem, seat, plug		Stainless steel	
Stem sealing gland		Stainless steel	
		FEPM (silicone-free)	
Standards	Pressure Equipment Directive	PED 97/23/EC	
	Pressure-carrying accessories	According to article 1, section 2.1.4	
	Fluid group 2	PS 14 bar (According JIS-B2239-10K	
	without CE certification according to article 3, section 3 (good engineering practice)	≤ DN 65	
	Category I, with CE certification	DN 80...125	
	Category II, with CE certification, notified body identification number 0036	150	
	PN class	ISO 7268	
	Operating pressure	ISO 7005, DIN EN 12284	
	Flanges	JIS-B2239-10K	
	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	

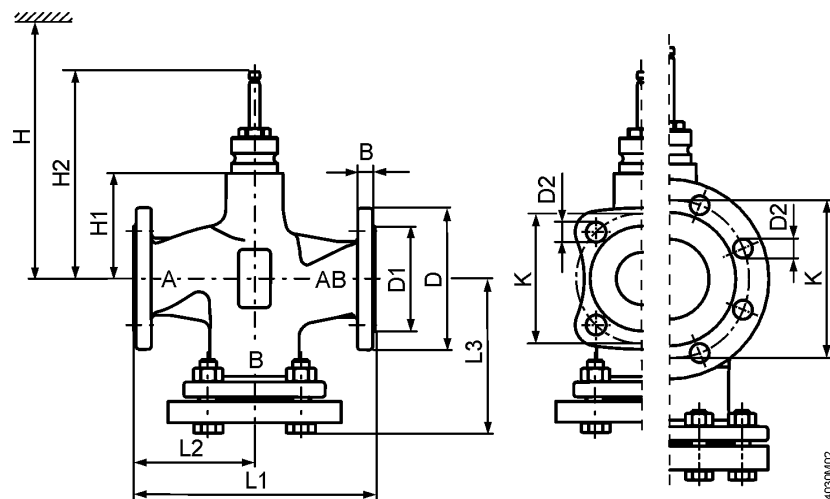
Environmental conditions	
Storage: IEC 60721-3-1	Class 1K3 Temperature -15...+55 °C Rel. humidity 5...95% r.H.
Transport: IEC 60721-3-2	Class 2K3, 2M2 Temperature -30...+65 °C Rel. humidity < 95% r.H.
Operation: IEC 60721-3-3	Class 3K5, 3Z11 Temperature -15...+55 °C Rel. humidity 5...95% r.H.
Environmental compatibility	ISO 14001 (environment) ISO 9001 (quality) SN 36350 (environmentally compatible products) RL 2002/95/EG (RoHS)

Dimensions / Weight	Dimensions	See „Dimensions“, page 10
	Weight	See „Dimensions“, page 10

- 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

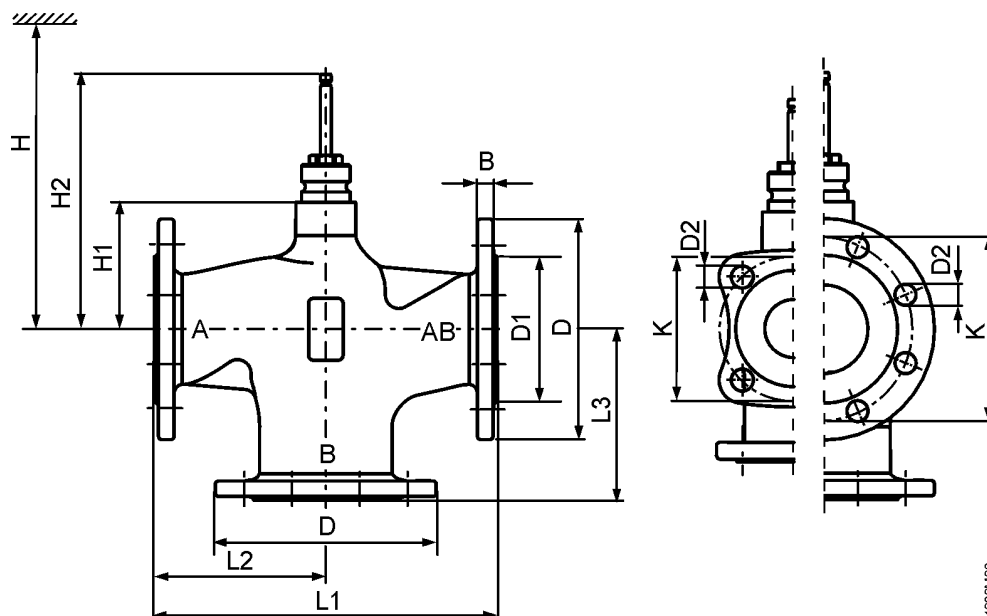
VVF53..J  
VVF43..J



Product number	DN	kg	B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	H			
													SAX..	SKD..	SKB..	SKC..
VVF53..J	15	4.2	14	95	46	15 (4x)	130	65	87.5	70	63	159.5	505	563	638	-
VVF43..J	25	6.2	15	115	65	19 (4x)	160	80	104.5	90	63	159.5	505	563	638	-
	40	10.2	16	150	84	19 (4x)	200	100	129	105	60	156.5	502	560	635	-
	50	13.7	16	165	99	19 (4x)	230	115	146	120	100	196.5	542	600	675	-
	65	22.1	17	185	118	19 (4x)	290	145	178	140	115	231.5	-	-	-	690
	80	28.1	17	200	132	19 (8x)	310	155	190	150	115	231.5	-	-	-	690
	100	34.1	17	220	156	19 (8x)	350	175	212.5	175	146	262.5	-	-	-	721
	125	46.6	17	250	184	23 (8x)	400	200	242	210	159	275.5	-	-	-	734
	150	67.5	17	284	211	23 (8x)	480	240	284	240	186.5	303	-	-	-	762

Bolt diameter and bolt-circle are corrected according JIS2232 – 10K  
Flange Sealing area / flange outside diameter is kept according to ISO 7005-2

VXF53..J  
VXF43..J




4030M06

Product number	DN	kg	B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	H			
													SAX..	SKD..	SKB..	SKC..
VXF53..J	15	3.2	14	95	46	15 (4x)	130	65	65	70	63	159.5	505	563	638	-
VXF43..J	25	4.7	15	115	65	19 (4x)	160	80	80	90	63	159.5	505	563	638	-
	40	7.2	16	150	84	19 (4x)	200	100	100	105	60	156.5	502	560	635	-
	50	9.8	16	165	99	19 (4x)	230	115	115	120	100	196.5	542	600	675	-
	65	17.1	17	185	118	19 (4x)	290	145	145	140	115	231.5	-	-	-	690
	80	21.2	17	200	132	19 (8x)	310	155	155	150	115	231.5	-	-	-	690
	100	27.1	17	220	156	19 (8x)	350	175	175	175	146	262.5	-	-	-	721
	125	37.1	17	250	184	23 (8x)	400	200	200	210	159	275.5	-	-	-	734
150	54.5	17	284	211	23 (8x)	480	240	240	240	186.5	303	-	-	-	762	

Bolt diameter and bolt-circle are corrected according JIS2232 – 10K  
Flange Sealing area / flange outside diameter is kept according to ISO 7005-2

### Spare parts

#### Stem sealing gland

Product number	DN	Stock number	Comments	
VVF43..J VVF53..J VXF43..J VXF53..J	DN 15...150	74 284 0061 0	-	
		4 284 8806 0	When operating with medium temperatures below -5 °C – can be used for water and water with antifreeze between -20°C and +150°C	

### Revision numbers

Product number	Valid from rev. no.	Product number	Valid from rev. no.
VVF53.15-1.25J	..A		
VVF53.15-4J	..A	VXF53.15-4J	..A
VVF53.25-6.3J	..A	VXF53.25-6.3J	..A
VVF53.25-10J	..A	VXF53.25-10J	..A
VVF53.40-16J	..A	VXF53.40-16J	..A
VVF53.40-25J	..A	VXF53.40-25J	..A
VVF53.50-31.5J	..A	VXF53.50-40J	..A
VVF43.65-50J	..A	VXF43.65-63J	..A
VVF43.80-80J	..A	VXF43.80-100J	..A
VVF43.100-125J	..A	VXF43.100-160J	..A
VVF43.125-200J	..A	VXF43.125-250J	..A
VVF43.150-315J	..A	VXF43.150-400J	..A