



VVF43..  
VVF43..K



VXF43..

ACVATIX™

## 2- and 3-port valves with flanged connections, PN 16

VVF43..  
VXF43..


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 or higher
- DN 65...250
- $k_{vs}$  50...630 m<sup>3</sup>/h
- Flange type 21, flange design B
- VVF43..K with pressure compensation to handle high differential pressure
- Equipable with electro-motoric actuators SAV.. or electro-hydraulic actuators 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 PN 16 	Actuators				SAV.. <sup>4)</sup>		SKC..	
		Stroke				40 mm			
		Positioning force				1600 N		2800 N	
		Data sheet				N4503		N4566	
	Stock number	DN	k <sub>vs</sub> [m <sup>3</sup> /h]	S <sub>v</sub>	Δp <sub>s</sub>	Δp <sub>max</sub>	Δp <sub>s</sub>	Δp <sub>max</sub>	
					[kPa]				
<b>Fluids</b> Preferred flow direction A – AB with fluids for low noise operation and high kvs-values with all actuator types	VVF43.65-50	S55206-V100	65	50	> 100	450	400	700	650
	VVF43.65-63 <sup>1)</sup>	S55206-V101	65	63					
	VVF43.80-80	S55206-V102	80	80					
	VVF43.80-100 <sup>1)</sup>	S55206-V103	80	100		250	225	450	400
	VVF43.100-125	S55206-V104	100	125		160	125	300	250
	VVF43.100-160 <sup>1)</sup>	S55206-V105	100	160		125	90	175	160
	VVF43.125-200 <sup>1)</sup>	S55206-V106	125	200		80	60	125	100
	VVF43.125-250 <sup>1)</sup>	S55206-V107	125	250					
	VVF43.150-315 <sup>1)</sup>	S55206-V108	150	315					
VVF43.150-400	S55206-V109	150	400						
<b>Steam</b> <sup>2)</sup> Exclusive flow direction AB – A 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	VVF43.65-50	S55206-V100	65	50	> 100	-	-	1600	800
	VVF43.65-63	S55206-V101	65	63					750
	VVF43.80-80	S55206-V102	80	80					500
	VVF43.80-100	S55206-V103	80	100					300
	VVF43.100-125	S55206-V104	100	125					200
	VVF43.100-160 <sup>3)</sup>	S55206-V105	100	150 <sup>3)</sup>					
	VVF43.125-200	S55206-V106	125	200					
	VVF43.125-250 <sup>3)</sup>	S55206-V107	125	220 <sup>3)</sup>					
	VVF43.150-315 <sup>3)</sup>	S55206-V108	150	280 <sup>3)</sup>					
VVF43.150-400 <sup>3)</sup>	S55206-V109	150	360 <sup>3)</sup>						
<b>Fluids and Steam</b> Compensated valves above DN 65 are optimized for a single flow direction for fluids and steam DN 65..150: AB – A DN 200/250: A – AB	VVF43.65-63K <sup>1)</sup>	S55206-V110	65	63	> 100	-	-	1600	800
	VVF43.80-100K <sup>1)</sup>	S55206-V111	80	100					
	VVF43.100-150K <sup>1)</sup>	S55206-V120	100	150					
	VVF43.125-220K <sup>1)</sup>	S55206-V121	125	220					
	VVF43.150-315K	S55206-V122	150	315					
	VVF43.200-450K <sup>1)</sup>	S55206-V123	200	450	>50			1200	
	VVF43.250-630K <sup>1)</sup>	S55206-V124	250	630				1000	

	Stock number	DN	k <sub>vs</sub> [m <sup>3</sup> /h]	S <sub>v</sub>	Δp <sub>max</sub> [kPa]				
					A→AB B	AB→A B	A→AB B	AB→A B	
<b>Fluids</b>	VXF43.65-63 <sup>1)</sup>	S55206-V115	65	63	> 100	400	100	650	200
	VXF43.80-100 <sup>1)</sup>	S55206-V116	80	100					
	VXF43.100-160 <sup>1)</sup>	S55206-V117	100	160		125	50	250	150
	VXF43.125-250 <sup>1)</sup>	S55206-V118	125	250		90		160	100
	VXF43.150-400	S55206-V119	150	400		60		100	70

- <sup>1)</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  
VVF43..K: Valve characteristic for k<sub>vs</sub> value 63 m<sup>3</sup>/h, 450 m<sup>3</sup>/h and 630 m<sup>3</sup>/h from 90 % stroke, k<sub>vs</sub> value 100, 150 and 220 m<sup>3</sup>/h from 80 % stroke is optimized for maximum volumetric flow
- <sup>2)</sup> Operate with opposite flow direction with steam
- <sup>3)</sup> Reduced k<sub>vs</sub> value
- <sup>4)</sup> Usable up to a max. medium temperature of 130 °C; SAV.. available in select countries only

- 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 stem sealing gland must be ordered separately (Stock number: 4 284 8806 0).

**Ordering****Example**

Product number	Stock number	Description
VXF43.65-63	S55206-V115	3-port valve with flange, PN 16
SKC32.60	SKC32.60	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 14/15

**Equipment combinations**

Product number	Description	Stroke	Positioning force	Operating voltage	Positioning signal	Spring return time	Positioning time	LED	Manual adjuster	Auxiliary functions			
SAV31.00 <sup>7)</sup>	S55150-A112	40 mm	1600 N	AC 230 V	3-position	-	120 s	-	Press and fix	1) 2) 5) , ,			
SAV61.00 <sup>7)</sup>	S55150-A110			AC/DC 24 V	DC 0...10 V			-		120 s	✓	1) 3) 5) 6) , , , ,	
SAV61.00U <sup>7)</sup>	S55150-A110-A100				DC 4...24 mA						-	120 s	-
SAV81.00 <sup>7)</sup>	S55150-A111			3-position	-			-		-			1) 2) 5) , ,
SAV81.00U <sup>7)</sup>	S55150-A111-A100												
SKC32.60	SKC32.60	40 mm	2800 N	AC 230 V	3-position	-	120 s	-	Turn, Position is maintained	1) 2) 5) , ,			
SKC32.61	SKC32.61			AC 24 V	3-position	-		18 s		-	1) 3) 5) , ,		
SKC60	SKC60						0...10 V	4...20 mA		0...1000 Ω	20 s	Opening: 120 s Closing: 20 s	✓
SKC62	SKC62			3-position	-	120 s							-
SKC62U	SKC62U												
SKC62UA	SKC62UA												
SKC82.60	SKC82.60												
SKC82.60U	SKC82.60U												
SKC82.61	SKC82.61												
SKC82.61U	SKC82.61U												

- 1) Auxiliary switch (optional)  
 2) Potentiometer (optional)  
 3) Position feedback, forced control, selection of valve characteristic  
 4) Direction of operation, stroke limit control, sequence control, signal addition (optional)  
 5) Stem heating element (optional)  
 6) Function module (optional)  
 7) SAV.. available in select countries only





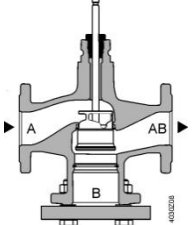
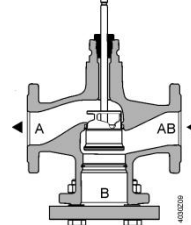
**Product documentation**

• Mounting Instructions	M4030 74 319 0749 0	DN 65 .. DN 150
	A6V10774961 A5W90000815	DN 200, DN 250
• Basic documentation	P4030	Contains background information and technical basic knowledge of valves

## Technical and mechanical design







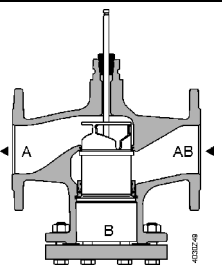
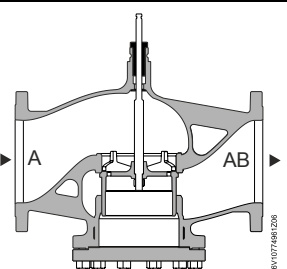
The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

### 2-port valves

 Fluids	 Steam ( Fluids possible )
 Closing against the pressure	 Closing with the pressure
 <p style="text-align: center;"><b>A → AB</b></p> <p style="text-align: center;">For use with all actuators</p>	 <p style="text-align: center;"><b>A ← AB</b></p> <p style="text-align: center;">Use with electro-hydraulic actuators only</p>

### 2-port valves pressure compensated




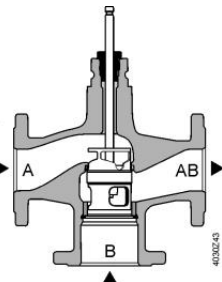
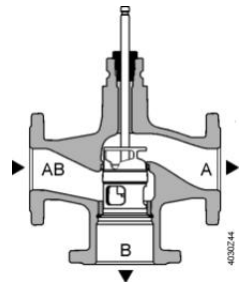
The VVF43..K valves use a pressure-compensated plug. This enables the same type of actuators to be used for the control of volumetric flow at higher differential pressures.

  DN 65...150 Fluids and Steam	  DN 200, DN 250 Fluids and Steam
 Closing with the pressure	 Closing against the pressure
 <p style="text-align: center;"><b>A ← AB</b></p> <p style="text-align: center;">Use with electro-hydraulic actuators only</p>	 <p style="text-align: center;"><b>A → AB</b></p> <p style="text-align: center;">Use with electro-hydraulic actuators only</p>



Note

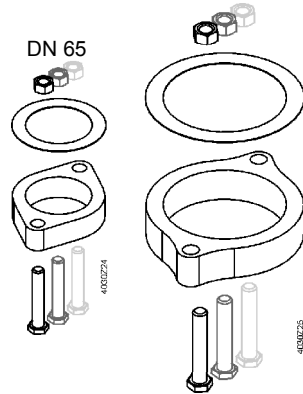
**2-port valves do not become 3-port valves by removing the blank flange!**

### 3-port valves

 Fluids	
 Mixing valve (preferred use)	 Diverting valve
 <p style="text-align: center;"><b>A → AB</b></p> <p style="text-align: center;"><b>B → AB</b></p>	 <p style="text-align: center;"><b>AB → A</b></p> <p style="text-align: center;"><b>B → A</b></p>

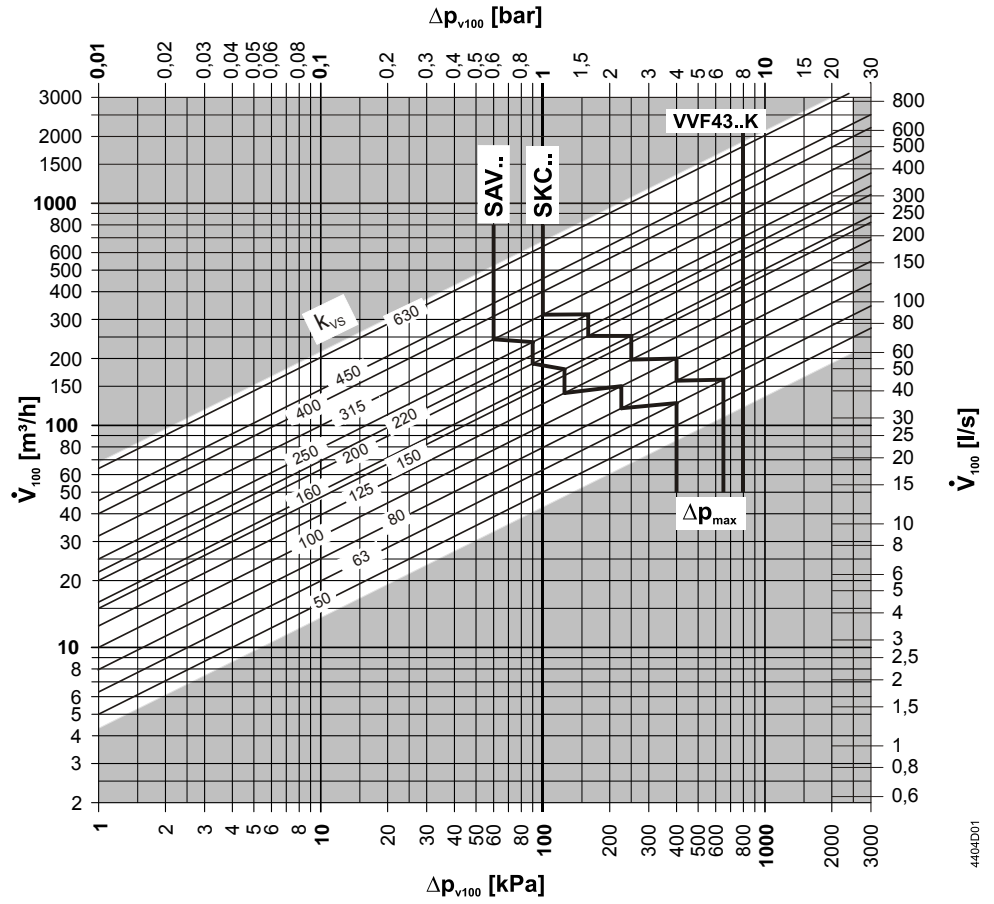
## Accessories

Product number	Stock number	Description	Note	Example
ASZ6.6	S55845-Z108	Stem heating element	Required for medium temperatures < 0 °C	
-	428488060	Stem sealing gland	When using valves of the V..F43.. 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.	

Adaptertype	Stock number r	Bolts included	Description	VXF41..	Example
ALF41B65	S55845-Z114	4x M16x90mm	Adapter for replacing 3-port valves VXF41.. by VXF43.. <ul style="list-style-type: none"> <li>• Due to different dimensions of the bypass flange</li> <li>• Every valve to be replaced requires an adapter</li> <li>• Adapter is supplied with the required number and size of bolts and nuts as well as two suitable flat sealings</li> </ul> Replace 3-port valves VXF41... DN 15...50 by 3-port valves VXF53.. (data sheet N4405).	DN 65	
ALF41B80	S55845-Z115	8x M16x110mm		DN 80	
ALF41B100	S55845-Z116	8x M16x110mm		DN 100	
ALF41B125	S55845-Z117	8x M16x110mm		DN 125	
ALF41B150	S55845-Z118	8x M20x110mm		DN 150	

# Sizing

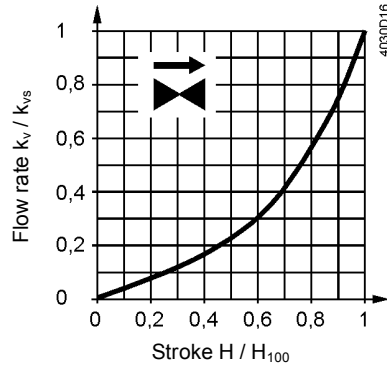
## Flow chart



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

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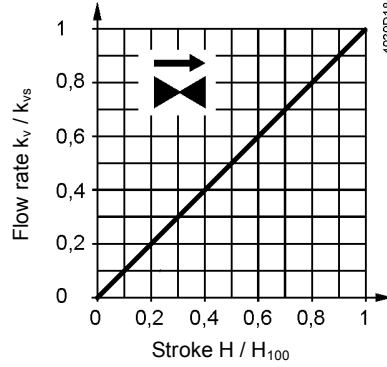
**Valve characteristics**  
**2-port valves**



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

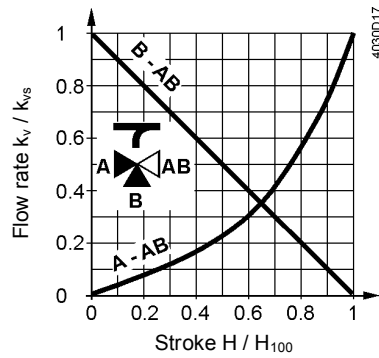
For high  $k_{vs}$  values the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

For product lines:  
VVF43.125-200  
VVF43.125-250  
VVF43.125-220K  
VVF43.150-315  
VVF43.150-400  
VVF43.150-315K



0...100 %: Linear

**3-port valves**



**Throughport A-AB**

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

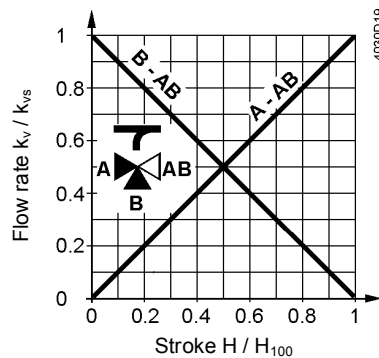
For high  $k_{vs}$  values the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$ .

**Bypass B-AB**

0...100 %: Linear  
Port AB = constant 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:  
VXF43.125-250  
VXF43.150-400



**Throughport A-AB**

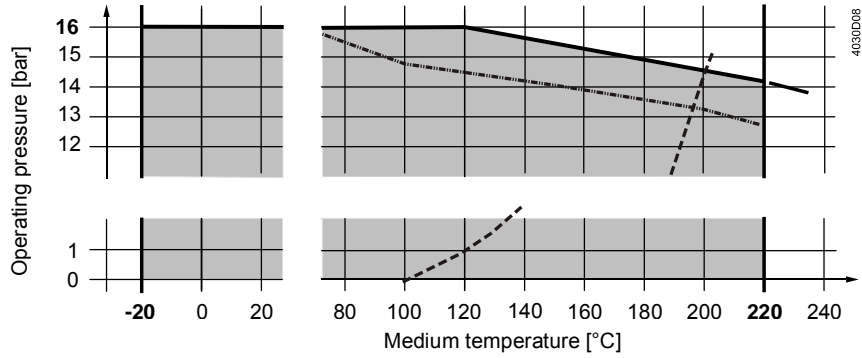
0...100 %: Linear

**Bypass B-AB**

0...100 %: Linear

**Operating pressure and medium temperature**

**Fluids**  
with V..F43..



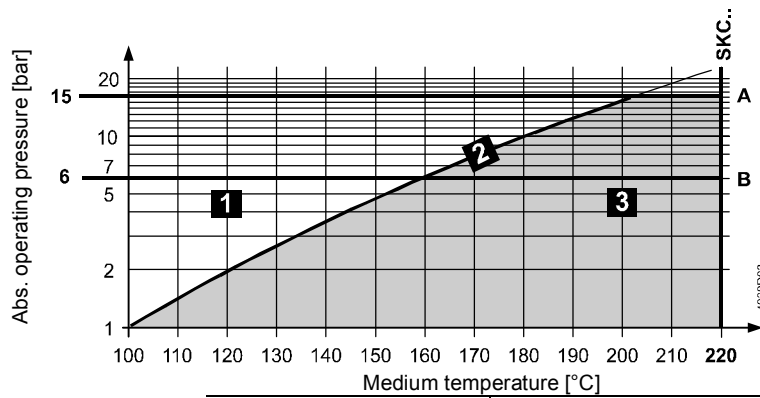
--- Curve for saturated steam; steam forms below this line  
 Operating pressure according to EN 1092, valid for 2-port valves with blank flange

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

Notes

All relevant local directives must be observed

**Saturated steam**  
**Superheated steam**  
with VVF43..



Water	-
Wet steam	To be avoided
Saturated steam	Permissible operating range
Superheated steam	
A	Subcritical pressure ratio
B	Supercritical pressure ratio

## Medium compatibility and temperature ranges

Medium	Temperature range		Valve			Note
	T <sub>min</sub> [°C]	T <sub>max</sub> [°C]	VVF43..	VVF43..K	VXF43..	
Cold water	1	25	■	■	■	-
Low-temperature hot water	1	130	■	■	■	-
High-temperature hot water <sup>1)</sup>	130	150	■	■	■	-
	150	180	■	■	■	-
Water with antifreeze	-5	150	■	■	■	V..F43: With a medium temperature of below -5 °C, the stem sealing gland must be replaced by the gland 428488060.
	-10	150	■	- <sup>3)</sup>	■	
	-20	150	■	- <sup>3)</sup>	■	
Cooling water <sup>2)</sup>	1	25	■	■	■	-
Brines	-5	150	■	■	■	V..F43: With a medium temperature of below -5 °C, the stem sealing gland must be replaced by the gland 428488060.
	-10	150	■	- <sup>3)</sup>	■	
	-20	150	■	- <sup>3)</sup>	■	
Saturated steam	100	150	■	■	-	-
	150	200	■	■	-	-
Superheated steam	120	150	■	■	-	-
	150	220	■	■	-	-
Heat transfer oils	20	220	■	■	■	On the basis of mineral oil
Super-clean water (demineralized and deionized water)	1	150	-	-	-	

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

<sup>2)</sup> Open circuits

<sup>3)</sup> VVF43..K can't be used with media below -5 °C due to the compensation sealing material

## Fields of use

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

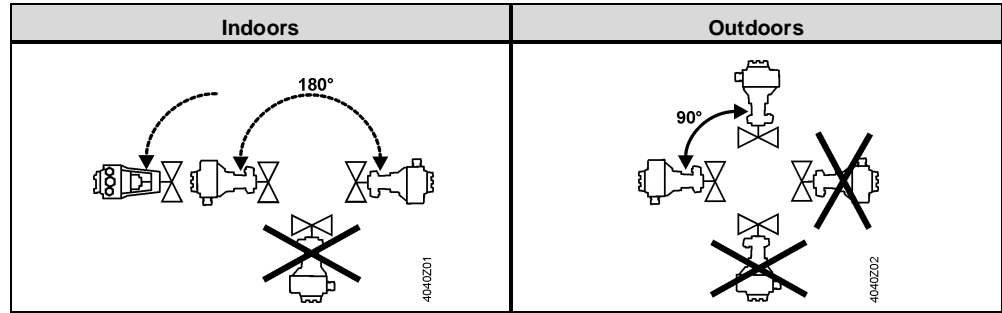
<sup>1)</sup> Open circuits

## 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.
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



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 or AB→A	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

Do not dispose of the device as unsorted municipal 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 16	
	Connection	Flange	
	Operating pressure	See Section "Operating pressure and medium temperature", page 8	
	Valve characteristics <sup>1)</sup>	See section "Valve characteristics", page 7	
	Leakage rate	Throughport	DN 65...150: 0...0.01 % of $k_{vs}$ value (Class IV) DN 200, DN 250: 0...0.02 % of $k_{vs}$ value
		Bypass	0.5...2% of $k_{vs}$ value with SKC.. 0.05% of $k_{vs}$ value with SAV..
	Permissible media	See table "Medium compatibility and temperature ranges", page 9	
	Medium temperature	-20...220 °C <sup>2)</sup> VVF43..K: -5...220 °C	
	Rangeability	DN 65...150:	>100
		DN 200, DN 250:	>50
	Nominal stroke	40 mm	
	Materials	Valve body	DN 65...150: EN-GJS-400-18-LT
			DN 200, DN 250: ASTM A216WCB (GP240GH)
Blank flange		DN 65...150: P265GH	
		DN 200, DN 250: CK25	
Valve stem, seat, plug		Stainless steel	
Stem sealing gland		Stainless steel	
		DN 65...150: FEPM (silicone-free) DN 200, DN 250: PTFE (not silicone-free)	
Compensation sealing	Stainless steel		
	DN 65...150: FEPM (silicone-free) DN 200, DN 250: PTFE+carbon (not silicone-free)		
Adapter ALF41B..	Steel S235JRG2		
Norms and standards	Pressure Equipment Directive	PED 2014/68/EU	
	Pressure Accessories	Scope: Article 1, section 1 Definition: Article 2, section 5	
	Fluid group 2:		
	DN 65...125	Category I, Module A, with CE-marking as per article 14, section 2	
	DN 150	Category II, Module A2, with CE-marking, as per article 14, section 2 notified body number 0036	
	DN 200, DN 250	Category II, Module A2, with CE-marking, as per article 14, section 2 notified body number 0035	
	EU Conformity (CE):		
	DN 65...150	A5W00006523 <sup>3)</sup>	
	DN 200, DN 250	A5W90001026 <sup>3)</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		

	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 A5W90001031 <sup>3)</sup> and CE1E4404en <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 13 + 14	
	Weight	See "Dimensions", page 13 + 14	

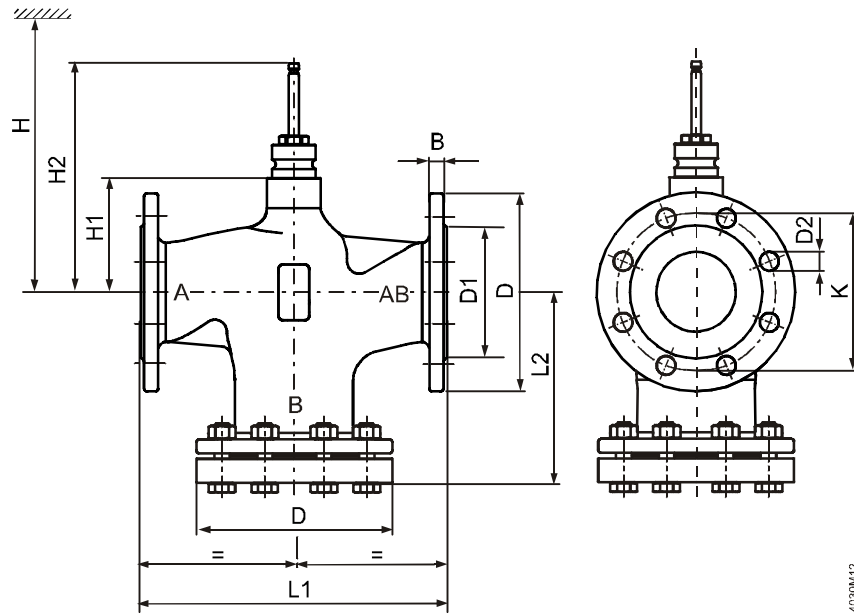
<sup>1)</sup> For certain valve lines and high  $k_{vs}$  values, the valve characteristic is optimized for maximum volumetric flow  $k_{V100}$

<sup>2)</sup> 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).


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

## Dimensions

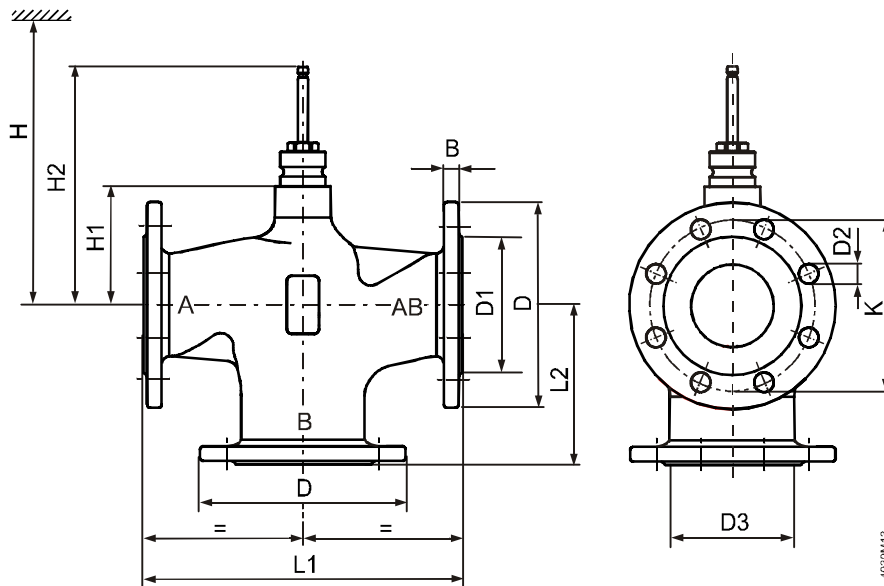
### VVF43..



4030M12

Product number	DN		B	Ø D	Ø D1	Ø D2	L1	L2	Ø K	H1	H2	H	
												SAV..	SKC..
VVF43..	65	21.8	17	185	118	19 (4x)	290	178	145	115	231.5	580	690
	80	27.7	17	200	132	19 (8x)	310	190	160	115	231.5	580	690
	100	33.6	17	220	156	19 (8x)	350	206	180	146	262.5	611	721
	125	50	17	250	184	19 (8x)	400	233	210	159	275.5	624	734
	150	66.3	17	284	211	23 (8x)	480	275.5	240	186.5	303	652	762
VVF43..K	65	21.9	17	185	118	19 (4x)	290	178	145	115	231.5	-	690
	80	27.9	17	200	132	19 (8x)	310	190	160	115	231.5	-	690
	100	34	17	220	156	19 (8x)	350	206	180	146	262.5	-	721
	125	46.9	17	250	184	19 (8x)	400	233	210	159	275.5	-	734
	150	67.7	17	284	211	23 (8x)	480	275.5	240	186.5	303	-	762
	200	130	30	340	266	22 (12x)	600	265	295	243	359.5	-	818
250	196	32	405	319	26 (12x)	730	290	355	275	391.5	-	850	

VXF43..



Product number	DN	kg	B	Ø D	Ø D1	Ø D2	Ø D3 <sup>1)</sup>	L1	L2	Ø K	H1	H2	H	
													SAV..	SKC..
VXF43..	65	16.9	17	185	118	19 (4x)	86	290	145	145	115	231.5	580	690
	80	20.9	17	200	132	19 (8x)	100	310	155	160	115	231.5	580	690
	100	26.6	17	220	156	19 (8x)	123	350	175	180	146	262.5	611	721
	125	36.5	17	250	184	19 (8x)	149	400	200	210	159	275.5	624	734
	150	53.4	17	284	211	23 (8x)	174	480	240	240	186.5	303	652	762

<sup>1)</sup> Interior opening of the bypass port

Spare parts

Stem sealing gland

Product number	DN	Stock number	Comments
VVF43.. VXF43.. VVF43..K	DN 65...150	74 284 0061 0	Standard version with FEPM-O-ring for medium temperatures between -5 °C and 220 °C
VVF43.. K	DN 200, DN 250	4 679 5630 0	Standard version with PTFE sleeve for medium temperatures between -5 °C and 220 °C
VVF43.. VXF43..	DN 65...150	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.
VVF43.65-50	..B	VXF43.65-63	..A
VVF43.65-63	..B	VXF43.80-100	..A
VVF43.80-80	..B	VXF43.100-160	..A
VVF43.80-100	..B	VXF43.125-250	..A
VVF43.100-125	..B	VXF43.150-400	..A
VVF43.100-160	..B		
VVF43.125-200	..B		
VVF43.125-250	..B		
VVF43.150-315	..B		
VVF43.150-400	..B		
VVF43.65-63K	..B		
VVF43.80-100K	..B		
VVF43.100-150K	..B		
VVF43.125-220K	..B		
VVF43.150-315K	..B		
VVF43.200-450K	..A		
VVF43.250-630K	..A		

Issued by  
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