



VVF42..
VVF42..K



VXF42..

ACVATIX™

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

**VVF42..
VVF42..K
VXF42..**

From the large-stroke valve line

-
- Performance 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 m³/h
 - Flange type 21, flange design B
 - VVF42..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, in ventilation and air-handling units as control or shutoff valves.
For use in closed hydraulic circuits (observe cavitation).

Type summary

Valves	Actuators Stroke Positioning force Data sheet				SAX.. ¹⁾		SKD..		SKB..		SKC..							
					20 mm								40 mm					
					800 N		1000 N		2800 N		2800 N							
PN 16					N4501		N4561		N4564		N4566							
	Stock number	DN	k _{vs} [m³/h]	S _V	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}	Δp _s	Δp _{max}						
-10...150 °C					[kPa]													
VVF42.15-1.6	S55204-V100	15	1.6	> 50	1600	400	1600	400	1600	400	-	-						
VVF42.15-2.5	S55204-V101	15	2.5															
VVF42.15-4	S55204-V102	15	4															
VVF42.20-6.3	S55204-V103	20	6.3															
VVF42.25-6.3	S55204-V104	25	6.3															
VVF42.25-10	S55204-V105	25	10	> 100	900	300	1200	450	1200	400	-	-						
VVF42.32-16	S55204-V106	32	16															
VVF42.40-16	S55204-V107	40	16															
VVF42.40-25	S55204-V108	40	25		550	750												
VVF42.50-31.5	S55204-V109	50	31.5		350	450	1200											
VVF42.50-40	S55204-V110	50	40		200	150	250	200	700									
VVF42.65-50	S55204-V111	65	50		125	75	175	125	450									
VVF42.65-63	S55204-V112	65	63		-	-	-	-	-	-	300	250						
VVF42.80-80	S55204-V113	80	80								190	160						
VVF42.80-100 ²⁾	S55204-V114	80	100								125	100						
VVF42.100-125	S55204-V115	100	125								-	-	-	-	-	-	1600	400
VVF42.100-160 ²⁾	S55204-V116	100	160															
VVF42.125-200	S55204-V117	125	200															
VVF42.125-250	S55204-V118	125	250	> 100	1600	400	1600	400	1600	400	-	-						
VVF42.150-315	S55204-V119	150	315															
VVF42.150-400 ²⁾	S55204-V120	150	400															
VVF42.50-40K ³⁾	S55204-V121	50	40															
VVF42.65-63K ³⁾	S55204-V122	65	63	> 100	1600	400	1600	400	1600	400	-	-						
VVF42.80-100K ³⁾	S55204-V123	80	100															
VVF42.100-160K ³⁾	S55204-V124	100	160															
VVF42.125-250K ³⁾	S55204-V125	125	250															
VVF42.150-360K	S55204-V126	150	360	> 100	1600	400	1600	400	1600	400	-	-						
VVF42.50-40K ³⁾	S55204-V121	50	40															
VVF42.65-63K ³⁾	S55204-V122	65	63															
VVF42.80-100K ³⁾	S55204-V123	80	100															
VVF42.100-160K ³⁾	S55204-V124	100	160	> 100	1600	400	1600	400	1600	400	-	-						
VVF42.125-250K ³⁾	S55204-V125	125	250															
VVF42.150-360K	S55204-V126	150	360															
VVF42.50-40K ³⁾	S55204-V121	50	40															
VVF42.65-63K ³⁾	S55204-V122	65	63	> 100	1600	400	1600	400	1600	400	-	-						
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VVF42.150-360K	S55204-V126	150	360	> 100	1600	400	1600	400	1600	400	-	-						
VVF42.50-40K ³⁾	S55204-V121	50	40															
VVF42.65-63K ³⁾	S55204-V122	65	63															
VVF42.80-100K ³⁾	S55204-V123	80	100															
VVF42.100-160K ³⁾	S55204-V124	100	160	> 100	1600	400	1600	400	1600	400	-							

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

³⁾ Valve characteristics for pressure compensated valves for k_{vs} value 100 m³/h from 70% stroke, k_{vs} value 40, 160 and 250 m³/h from 80% stroke and k_{vs} value 63 m³/h from 90% stroke is optimized for maximum volumetric flow.

Valves	Actuators Stroke				SAX.. ¹⁾	SKD..	SKB..	SKC..
PN 16	Positioning force				20 mm			40 mm
	Data sheet				800 N	1000 N	2800 N	2800 N
		DN	k _{VS}	S _V	N4501	N4561	N4564	N4566
					$\Delta p_{\max}$			
-10...150 °C	Stock number		[m³/h]		[kPa]			
								
VXF42.15-1.6	S55204-V127	15	1.6	> 50	400	100	400	100
VXF42.15-2.5	S55204-V128	15	2.5					
VXF42.15-4	S55204-V129	15	4					
VXF42.20-6.3	S55204-V130	20	6.3					
VXF42.25-6.3	S55204-V131	25	6.3					
VXF42.25-10	S55204-V132	25	10	> 100	300	50	200	80
VXF42.32-16	S55204-V133	32	16					
VXF42.40-16	S55204-V134	40	16					
VXF42.40-25	S55204-V135	40	25					
VXF42.50-31.5	S55204-V136	50	31.5					
VXF42.50-40	S55204-V137	50	40					
VXF42.65-50	S55204-V138	65	50		150	50	200	80
VXF42.65-63	S55204-V139	65	63					
VXF42.80-80	S55204-V140	80	80					
VXF42.80-100 ²⁾	S55204-V141	80	100		75	50	125	50
VXF42.100-125	S55204-V142	100	125					
VXF42.100-160 ²⁾	S55204-V143	100	160					
VXF42.125-200	S55204-V144	125	200		-	-	-	-
VXF42.125-250	S55204-V145	125	250					
VXF42.150-315	S55204-V146	150	315					
VXF42.150-400 ²⁾	S55204-V147	150	400					

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 (H₁₀₀) 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

$\Delta p_{\max}$ = 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
VXF42.65-63	S55204-V139	3-port valve with flange, PN 16
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 14

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			AC 24 V DC 24 V	0...10 V 4...20 mA 0...1000 Ω		30 s	✓		2) 3)		
SAX61.03 SAX61.03U	S55150-A100 S55150-A100-A100					120 s		-		1)		
SAX81.00	S55150-A102						30 s				-	1)
SAX81.03 SAX81.03U	S55150-A103 S55150-A103-A100					3-position		-		120 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			✓	2)	
SKD32.51	SKD32.51					8 s						Opening: 30 s Closing: 15 s
SKD60	SKD60			AC 24 V	0...10 V 4...20 mA 0...1000 Ω	-	120 s	-				1)
SKD62 SKD62U	SKD62 SKD62U					15 s				Opening: 30 s Closing: 15 s	2)	
SKD62UA	SKD62UA					3-position	8 s	120 s		-	1)	
SKD82.50 SKD82.50U	SKD82.50 SKD82.50U											-
SKD82.51 SKD82.51U	SKD82.51 SKD82.51U			3-position	8 s	120 s	-	1)				
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				Opening: 120 s Closing: 10 s	✓	2)
SKB60	SKB60					-				120 s	-	1)
SKB62 SKB62U	SKB62 SKB62U			10 s	Opening: 120 s Closing: 10 s	✓	2)					
SKB62UA	SKB62UA			AC 24 V	0...10 V 4...20 mA 0...1000 Ω	-	120 s	-		1)		
SKB82.50 SKB82.50U	SKB82.50 SKB82.50U					10 s					Opening: 120 s Closing: 10 s	✓
SKB82.51 SKB82.51U	SKB82.51 SKB82.51U					3-position	10 s	120 s		-	1)	
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	Opening: 120 s Closing: 20 s			✓				2)
SKC60	SKC60			-	120 s			-				1)
SKC62 SKC62U	SKC62 SKC62U			20 s		Opening: 120 s Closing: 20 s	✓		2)			
SKC62UA	SKC62UA			AC 24 V	0...10 V 4...20 mA 0...1000 Ω	-	120 s	-	1)			
SKC82.60 SKC82.60U	SKC82.60 SKC82.60U					18 s				Opening: 120 s Closing: 20 s		✓
SKC82.61 SKC82.61U	SKC82.61 SKC82.61U					3-position	18 s	120 s	-	1)		

1) Auxiliary switch, potentiometer

2) Position feedback, forced control, selection of valve characteristic

3) Optional: sequence control, selection of acting direction

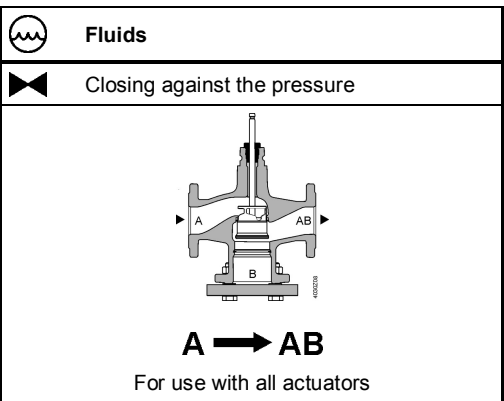
4) Plus sequence control, stroke limitation, and selection of acting direction

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

Technical and
mechanical design

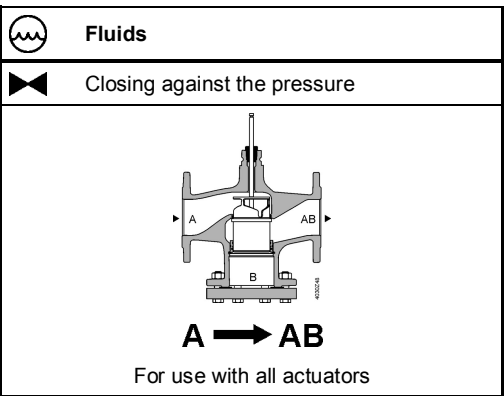
The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

2-port valves



2-port valves
pressure compensated

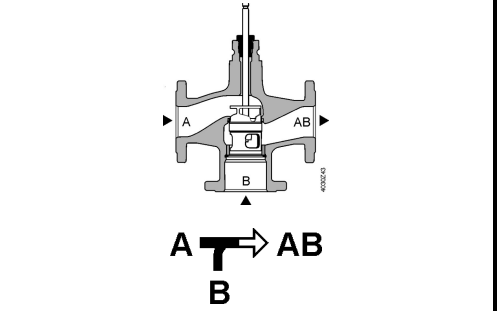
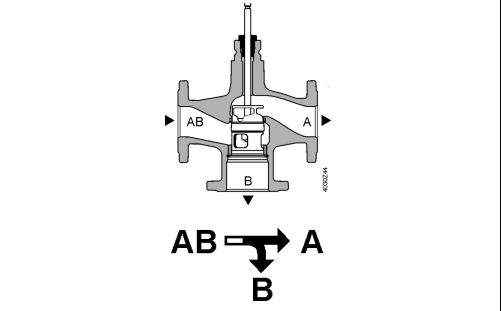
The VVF42..K valves use a pressure-compensated plug. This enables the same type of actuators to be used for the control of volumetric flow at higher differential pressures.



Note

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

3-port valves

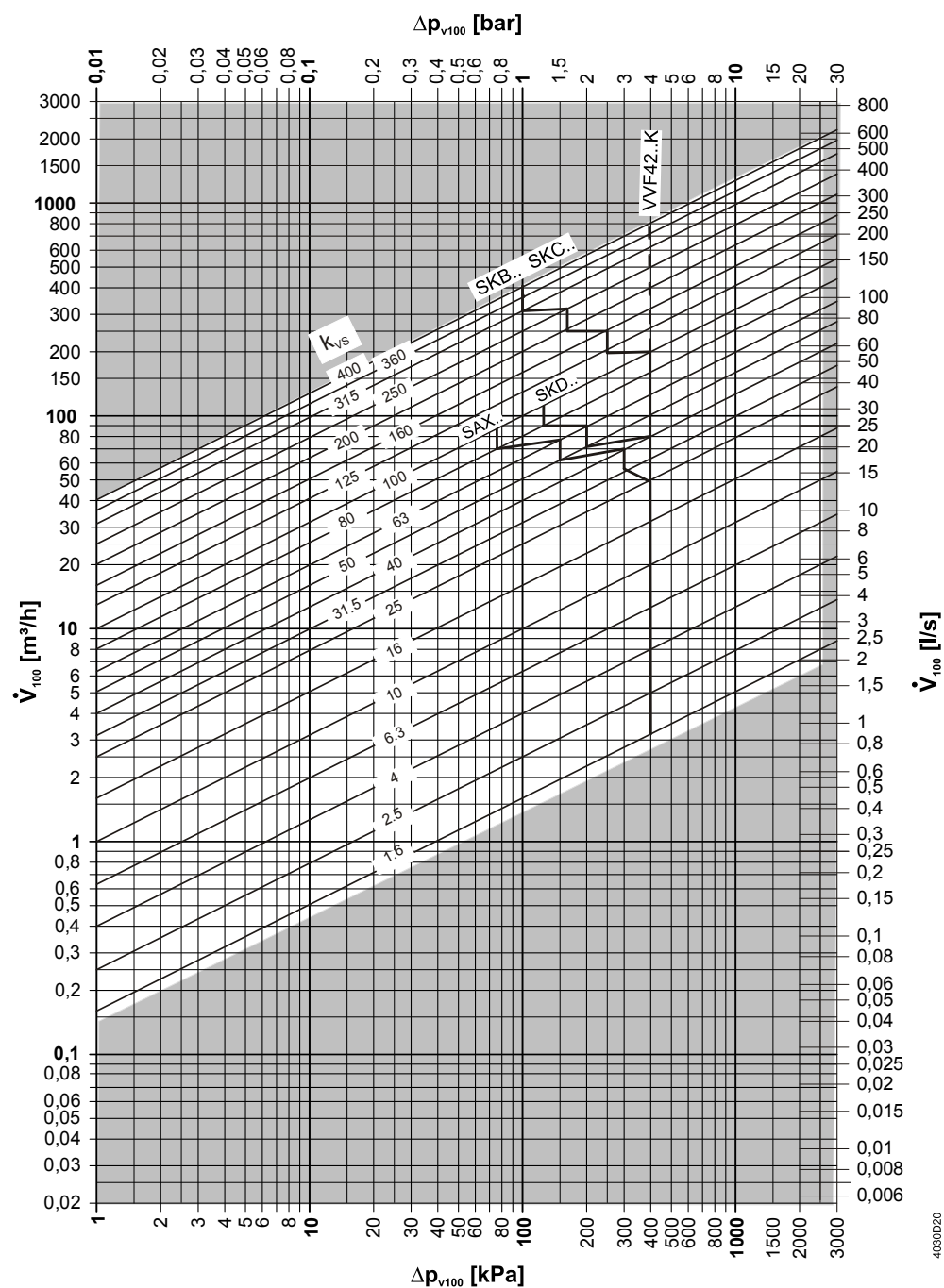
 Fluids	
 Mixing valve (preferred use)	 Diverting valve
	

Accessories

Product number	Stock number	Description	Note	Example
ASZ6.5	ASZ6.5	Stem heating element	Required for medium temperatures < 0 °C	
ASZ6.6	S55845-Z108			

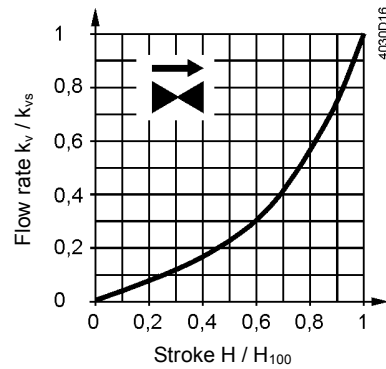
Sizing

Flow chart



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

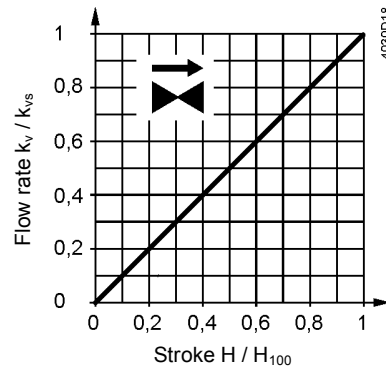
Valve characteristics 2-port valves



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

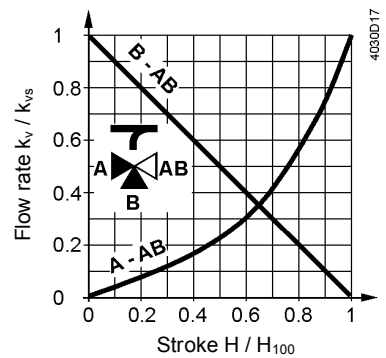
For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{v100} .

For product lines:
VVF42.125-250
VVF42.125-250K
VVF42.150-400
VVF42.150-360K



0...100%: Linear

3-port valves



Throughport A-AB

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

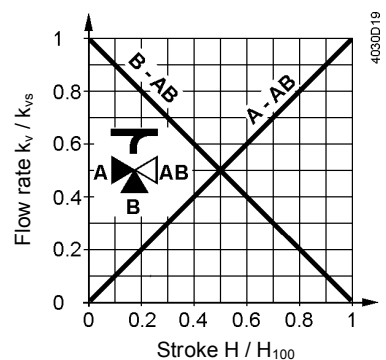
For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{v100} .

Bypass B-AB

0...100%: Linear
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

For product lines:
VXF42.125-250
VXF42.150-400



Throughport A-AB

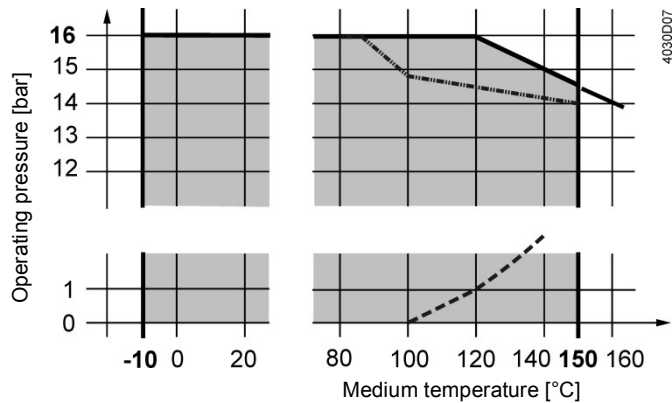
0...100%: Linear

Bypass B-AB

0...100%: Linear

Operating pressure and medium temperature

Fluids, PN16 with V..F42..



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 _{min} [°C]	T _{max} [°C]	VVF42..	VVF42..K	VXF42..	
Cold water	1	25	■	■	■	-
Low-temperature hot water	1	130	■	■	■	-
High-temperature hot water ¹⁾	130	150	■	■	■	-
	150	180	-	-	-	-
Water with antifreeze	-5	150	■	■	■	For medium temperatures below 0 °C, the stem heating ASZ6.6 has to be installed.
	-10	150	■	- ³⁾	■	
	-20	150	-	-	-	
Cooling water ²⁾	1	25	-	-	-	-
Brines	-5	150	■	■	■	For medium temperatures below 0 °C, the stem heating ASZ6.6 has to be installed.
	-10	150	■	- ³⁾	■	
	-20	150	-	-	-	
Super-clean water (demineralized and deionized water)	1	150	-	-	-	
Demineralized water according to VDI2035 / SWKI_BT102-01	1	150	■	■	■	

¹⁾ Differentiation due to saturated steam curve
²⁾ Open circuits
³⁾ VVF42..K can't be used with media below -5 °C due to the compensation sealing material

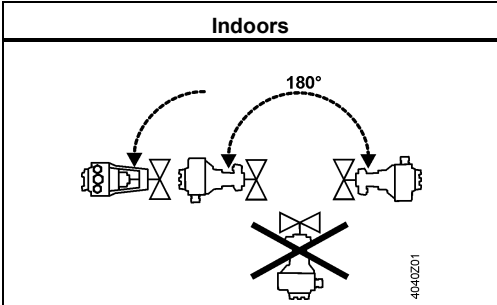
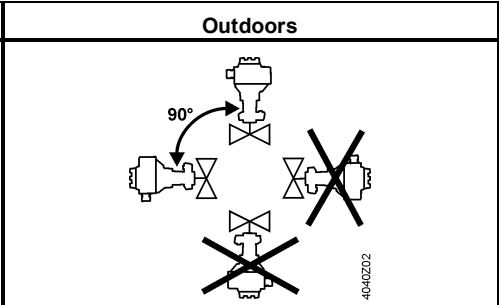
Fields of use

Fields of use		Valves		
		VVF42..	VVF42..K	VXF42..
Generation	Boiler plants	■	■	■
	District heating plants	■	■	-
	Refrigeration plants	■	■	■
Distribution	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

Monting position	Indoors  Outdoors 
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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.

Disposal



Warranty

Application-related technical data are guaranteed only when the valves are used in connection with the Siemens actuators listed under "Equipment combinations", page 4.

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

Technical data

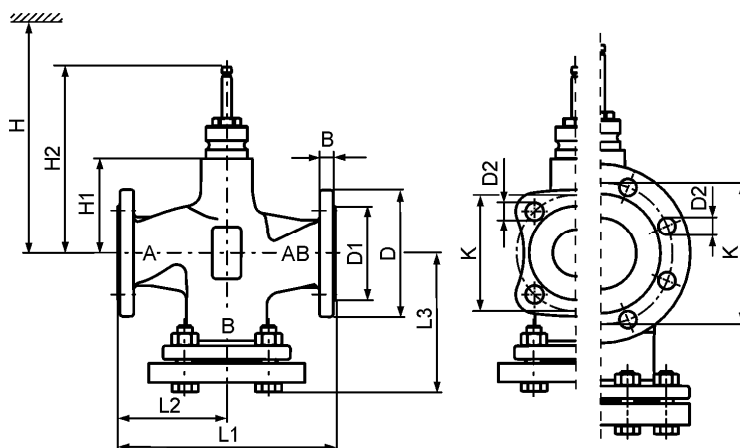
Functional data	PN class	PN 16
	Connection	Flange
	Operating pressure	See Section "Operating pressure and medium temperatures", page 8
	Valve characteristics ¹⁾	See section "Valve characteristics", page 7
	Leakage rate	Throughport 0...0.02% of k_{VS} value
		Bypass 0.5...2% of k_{VS} value ($k_{VS} \geq 6.3$)
		0.5...3% of k_{VS} value ($k_{VS} 1.6; 2.5; 4$)
	Permissible media	See table "Medium compatibility and temperature ranges", page 8
	Medium temperature	-10...150 °C VVF42..K: -5...150 °C
	Rangeability	To DN 25: > 50 From DN 32: >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
	Compensation sealing	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	PN 16
	Without CE certification as per article 3, section 3 (sound engineering practice)	≤DN 50
	Category I, with CE certification	DN 65...125
	Category II, with CE certification, notified body identification number 0036	DN 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 13
	Weight	See „Dimensions“, page 13

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

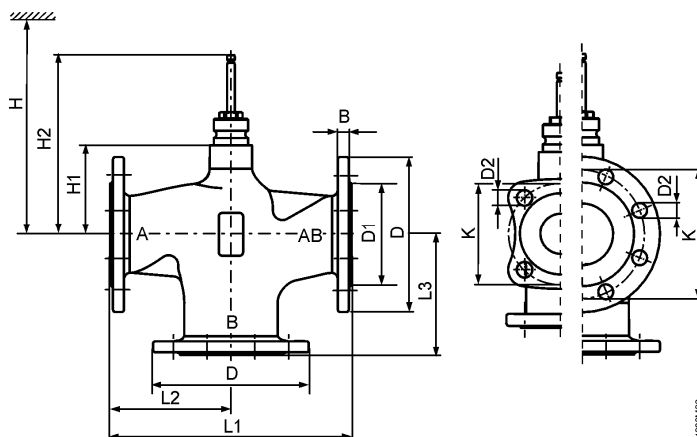
Dimensions

VVF42.. VVF42..K



Product number	DN		B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	H			
													SAX..	SKD..	SKB..	SKC..
VVF42..	15	3.7	14	95	46	14 (4x)	130	65	86	65	37	133.5	479	537	612	-
	20	4.7	16	105	56	14 (4x)	150	75	97	75	37	133.5	479	537	612	-
	25	5.4	15	115	65	14 (4x)	160	80	106.5	85	37	133.5	479	537	612	-
	32	8.4	17	140	76	19 (4x)	180	90	119	100	37	133.5	479	537	612	-
	40	9.3	16	150	84	19 (4x)	200	100	126	110	37	133.5	479	537	612	-
	50	12.2	16	165	99	19 (4x)	230	115	144	125	50	146.5	492	550	625	-
	65	17	17	185	118	19 (4x)	290	145	174	145	75	171.5	517	575	650	-
	80	25	17	200	132	19 (8x)	310	155	186	160	75	171.5	517	575	650	-
	100	35.7	17	220	156	19 (8x)	350	175	205	180	110	226.5	-	-	-	685
	125	52.5	17	250	184	19 (8x)	400	200	233	210	123	239.5	-	-	-	698
VVF42..K	150	74.3	17	284	211	23 (8x)	480	240	275.5	240	150.5	267	-	-	-	726
	50	12	16	165	99	19 (4x)	230	115	144	125	50	146.5	492	550	625	-
	65	17.5	17	185	118	19 (4x)	290	145	174	145	75	171.5	517	575	650	-
	80	27	17	200	132	19 (8x)	310	155	186	160	75	171.5	517	575	650	-
	100	35.9	17	220	156	19 (8x)	350	175	206	180	110	226.5	-	-	-	685
	125	52.3	17	250	184	19 (8x)	400	200	233	210	123	239.5	-	-	-	698
	150	76.3	17	284	211	23 (8x)	480	240	275.5	240	150.5	267	-	-	-	726

VXF42..



Product number	DN		B	Ø D	Ø D1	Ø D2	L1	L2	L3	Ø K	H1	H2	H			
													SAX..	SKD..	SKB..	SKC..
VXF42..	15	2.6	14	95	46	14 (4x)	130	65	65	65	37	133.5	479	537	612	-
	20	3.3	16	105	56	14 (4x)	150	75	75	75	37	133.5	479	537	612	-
	25	3.8	15	115	65	14 (4x)	160	80	80	85	37	133.5	479	537	612	-
	32	5.7	17	140	76	19 (4x)	180	90	90	100	37	133.5	479	537	612	-
	40	6.3	16	150	84	19 (4x)	200	100	100	110	37	133.5	479	537	612	-
	50	8.7	16	165	99	19 (4x)	230	115	115	125	50	146.5	492	550	625	-
	65	12.9	17	185	118	19 (4x)	290	145	145	145	75	171.5	517	575	650	-
	80	19.2	17	200	132	19 (8x)	310	155	155	160	75	171.5	517	575	650	-
	100	28.8	17	220	156	19 (8x)	350	175	175	180	110	226.5	-	-	-	685
	125	43.2	17	250	184	19 (8x)	400	200	200	210	123	239.5	-	-	-	698
	150	61.5	17	284	211	23 (8x)	480	240	240	240	150.5	267	-	-	-	726

Spare parts

Stem sealing gland

Product number	DN	Stock number	Comments	
VVF42.. VXF42..	DN 15...150	4 284 8806 0		

Revision numbers

VVF..

VXF..

Product number	Valid from rev. no.	Product number	Valid from rev. no.
VVF42.15-1.6	..A	VXF42.15-1.6	..A
VVF42.15-2.5	..A	VXF42.15-2.5	..A
VVF42.15-4	..A	VXF42.15-4	..A
VVF42.20-6.3	..A	VXF42.20-6.3	..A
VVF42.25-6.3	..A	VXF42.25-6.3	..A
VVF42.25-10	..A	VXF42.25-10	..A
VVF42.32-16	..A	VXF42.32-16	..A
VVF42.40-16	..A	VXF42.40-16	..A
VVF42.40-25	..A	VXF42.40-25	..A
VVF42.50-31.5	..A	VXF42.50-31.5	..A
VVF42.50-40	..A	VXF42.50-40	..A
VVF42.65-50	..A	VXF42.65-50	..A
VVF42.65-63	..A	VXF42.65-63	..A
VVF42.80-80	..A	VXF42.80-80	..A
VVF42.80-100	..A	VXF42.80-100	..A
VVF42.100-125	..A	VXF42.100-125	..A
VVF42.100-160	..A	VXF42.100-160	..A
VVF42.125-200	..A	VXF42.125-200	..A
VVF42.125-250	..A	VXF42.125-250	..A
VVF42.150-300	..A	VXF42.150-300	..A
VVF42.150-400	..A	VXF42.150-400	..A
VVF42.50-40K	..A		
VVF42.65-63K	..A		
VVF42.80-100K	..A		
VVF42.100-160K	..A		
VVF42.125-250K	..A		
VVF42.150-360K	..A		