



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
- DN 65...150
- k_{vs} 50...400 m³/h
- Flange type 21, flange design B
- VVF43..K with pressure compensation to handle high differential pressure
- Equipable with 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 Stroke Positioning force Data sheet | | | | SKC.. | |
|--|--|--|-------------------|---------------------------------|-------|---------------------------|---------------------------|
| | | | | | | 40 mm | |
| | | | | | | 2800 N | |
| | | | | | | N4566 | |
| | | Stock number | DN | k_{vs} [m ³ /h] | S_v | Δp_s [kPa] | Δp_{max} [kPa] |
| Fluids Preferred flow direction with fluids for low noise operation and high k_{vs} -values with all actuator types | VVF43.65-50 | S55206-V100 | 65 | 50 | > 100 | 700 | 650 |
| | VVF43.65-63 ¹⁾ | S55206-V101 | 65 | 63 | | | |
| | VVF43.80-80 | S55206-V102 | 80 | 80 | | 450 | 400 |
| | VVF43.80-100 ¹⁾ | S55206-V103 | 80 | 100 | | | |
| | VVF43.100-125 | S55206-V104 | 100 | 125 | | 300 | 250 |
| | VVF43.100-160 ¹⁾ | S55206-V105 | 100 | 160 | | | |
| | VVF43.125-200 ¹⁾ | S55206-V106 | 125 | 200 | | 175 | 160 |
| | VVF43.125-250 ¹⁾ | S55206-V107 | 125 | 250 | | | |
| | VVF43.150-315 ¹⁾ | S55206-V108 | 150 | 315 | | 125 | 100 |
| | VVF43.150-400 | S55206-V109 | 150 | 400 | | | |
| | VVF43.65-63K ¹⁾ | S55206-V110 | 65 | 63 | | 1600 | 800 |
| | VVF43.80-100K ¹⁾ | S55206-V111 | 80 | 100 | | | |
| | VVF43.100-160K ¹⁾ | S55206-V112 | 100 | 160 | | | |
| | VVF43.125-250K ¹⁾ | S55206-V113 | 125 | 250 | | | |
| VVF43.150-360K | S55206-V114 | 150 | 360 | | | | |
| | | | | | | | |
| Steam ²⁾ Exclusive flow direction 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 | 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 ³⁾ | S55206-V105 | 100 | 150 ³⁾ | | | |
| | VVF43.125-200 | S55206-V106 | 125 | 200 | | | |
| | VVF43.125-250 ³⁾ | S55206-V107 | 125 | 220 ³⁾ | | | |
| | VVF43.150-315 ³⁾ | S55206-V108 | 150 | 280 ³⁾ | | | |
| VVF43.150-400 ³⁾ | S55206-V109 | 150 | 360 ³⁾ | | | | |
| Steam ²⁾ Exclusive flow direction for steam. | VVF43.65-63K | S55206-V110 | 65 | 63 | > 100 | 1600 | 800 |
| | VVF43.80-100K | S55206-V111 | 80 | 100 | | | |
| | VVF43.100-160K ³⁾ | S55206-V112 | 100 | 150 ³⁾ | | | |
| | VVF43.125-250K ³⁾ | S55206-V113 | 125 | 220 ³⁾ | | | |
| | VVF43.150-360K ³⁾ | S55206-V114 | 150 | 315 ³⁾ | | | |
| | | | | | | | |
| |  | Stock number | DN | k_{vs} [m ³ /h] | S_v | Δp_{max} [kPa] | |
| | | | | | | A → AB B | AB → A B |
| Fluids | VXF43.65-63 ¹⁾ | S55206-V115 | 65 | 63 | > 100 | 650 | 200 |
| | VXF43.80-100 ¹⁾ | S55206-V116 | 80 | 100 | | 400 | |
| | VXF43.100-160 ¹⁾ | S55206-V117 | 100 | 160 | | 250 | 150 |
| | VXF43.125-250 ¹⁾ | S55206-V118 | 125 | 250 | | 160 | 100 |
| | VXF43.150-400 | S55206-V119 | 150 | 400 | | 100 | 70 |

¹⁾ Valve characteristic for k_{vs} value 63 m³/h from 90% stroke, k_{vs} value 100, 160, 200 and 250 m³/h from 80% stroke and k_{vs} value 315 m³/h from 70% stroke is optimized for maximum volumetric flow

²⁾ Operate with opposite flow direction with steam

³⁾ Reduced k_{vs} value

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

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 12

Equipment combinations

| Product number | Description | Stroke | Positioning force | Operating voltage | Positioning signal | Spring return time | Positioning time | LED | Manual adjuster | Auxiliary functions | |
|----------------|-------------|--------|-------------------|-------------------|-------------------------------------|--------------------|---------------------------------|-----|------------------------------|---------------------|----|
| 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 | | | | | - | | | | | |
| SKC62 | SKC62 | | | AC 24 V | 0...10 V 4...20 mA 0...1000 Ω | 20 s | Opening: 120 s Closing: 20 s | ✓ | | - | 2) |
| SKC62U | SKC62U | | | | | | | | | | |
| SKC62UA | SKC62UA | | | | | | | | | | |
| SKC82.60 | SKC82.60 | | | - | - | - | 3-position | - | | 120 s | - |
| 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) Plus sequence control, stroke limitation, and selection of acting direction





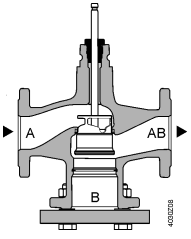
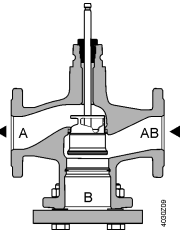
Product documentation

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

Technical and mechanical design





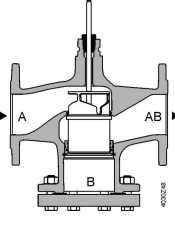
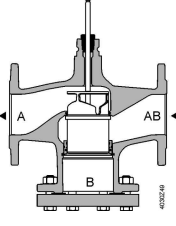
The illustrations below show the basic design of the valves. Constructional features, such as the shape of plugs, may differ.

2-port valves

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

**2-port valves
pressure compensated**




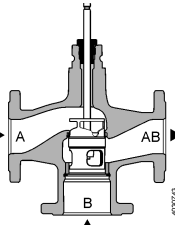
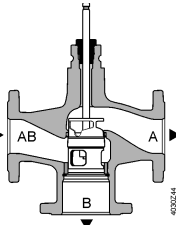
The VVF43..K valves use a pressure-compensated plug. This enables the same type of actuators to be used for the control of volumetric flow at higher differential pressures.

| | |
|---|--|
|  Fluids |  Steam |
|  Closing against the pressure |  Closing with the pressure |
|  <p>A → AB For use with all actuators</p> |  <p>A ← AB 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>A T B → AB</p> |  <p>AB T A B</p> |

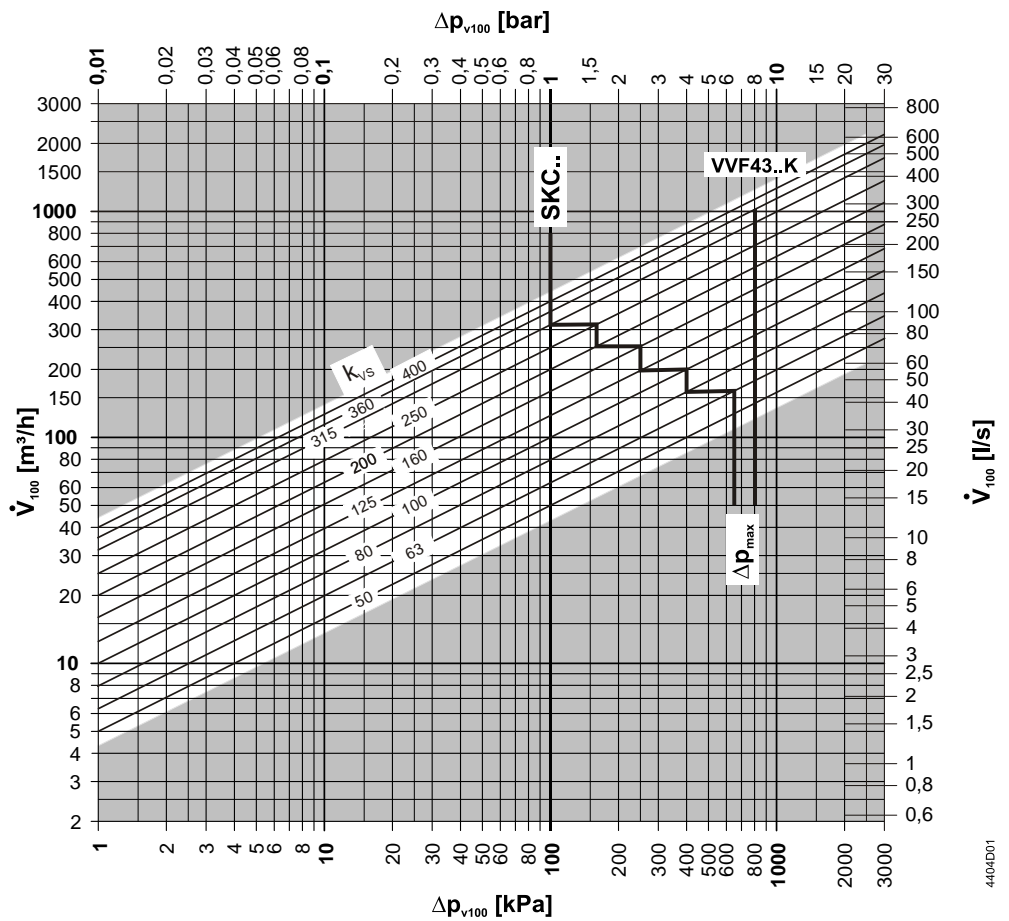
Accessories

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

| Adapter type | Stock number | Bolts included | Description | VXF41.. | |
|--------------|--------------|----------------|---|---------|--|
| ALF41B65 | S55845-Z114 | 4x M16x90mm | Adapter for replacing 3-port valves VXF41.. by VXF43.. • 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 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

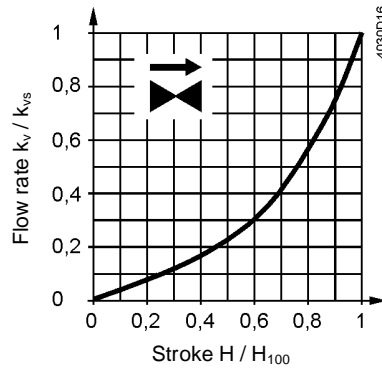
Flow chart



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

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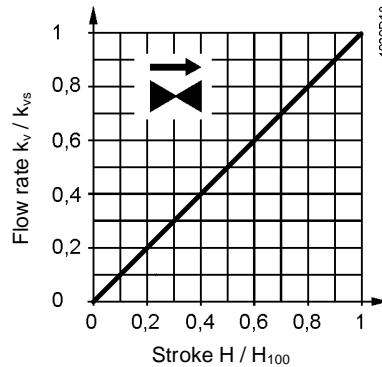
Valve characteristics 2-port valves



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

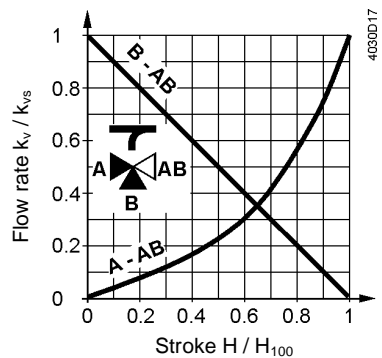
For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{V100} .

For product lines:
VVF43.125-250
VVF43.125-250K
VVF43.150-400
VVF43.150-360K



0...100%: Linear

3-port valves



Throughport A-AB

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

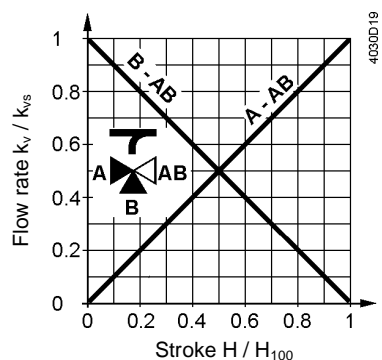
For high k_{vs} values the valve characteristic is optimized for maximum volumetric flow k_{V100} .

Bypass B-AB

0...100%: Linear
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

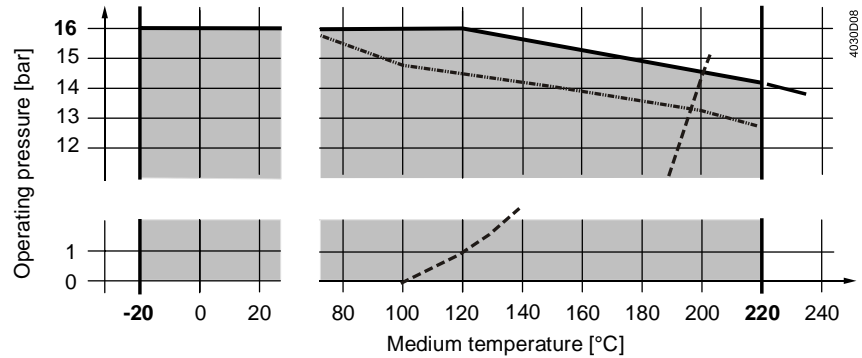
0...100%: Linear

Bypass B-AB

0...100%: Linear

Operating pressure and medium temperature

Fluids
with V..F43..



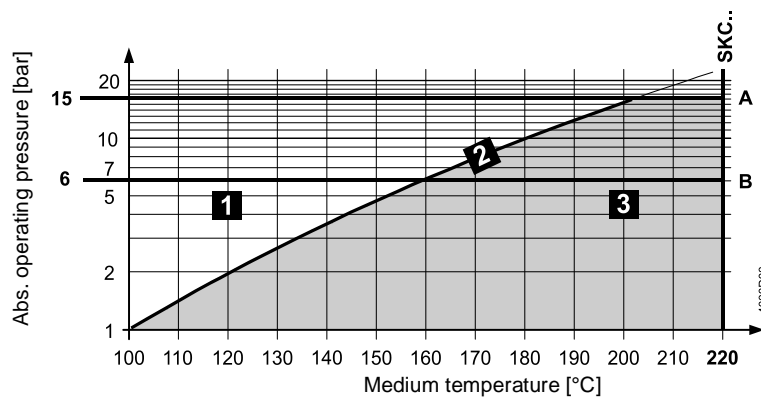
- Curve for saturated steam; steam forms below this line
- . . Operating pressure according to EN 1092, valid for 2-port valves with blank flange

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..



| | | |
|----------|------------------------------|-----------------------------|
| 1 | Wet steam | To be avoided |
| 2 | Saturated steam | Permissible operating range |
| 3 | Superheated steam | |
| A | Subcritical pressure ratio | |
| B | Supercritical pressure ratio | |

Medium compatibility and temperature ranges

| Medium | Temperature range | | Valve | | | Note |
|---|-----------------------|-----------------------|---------|-----------------|---------|---|
| | T _{min} [°C] | T _{max} [°C] | VVF43.. | VVF43..K | VXF43.. | |
| Cold water | 1 | 25 | ■ | ■ | ■ | - |
| Low-temperature hot water | 1 | 130 | ■ | ■ | ■ | - |
| High-temperature hot water ¹⁾ | 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 | ■ | - ⁴⁾ | ■ | |
| | -20 | 150 | ■ | - ⁴⁾ | ■ | |
| Cooling water ²⁾ | 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 | ■ | - ⁴⁾ | ■ | |
| | -20 | 150 | ■ | - ⁴⁾ | ■ | |
| Saturated steam ³⁾ | 100 | 150 | ■ | ■ | - | - |
| | 150 | 200 | ■ | ■ | - | - |
| Superheated steam ³⁾ | 120 | 150 | ■ | ■ | - | - |
| | 150 | 220 | ■ | ■ | - | - |
| Heat transfer oils | 20 | 220 | ■ | ■ | ■ | On the basis of mineral oil |
| Super-clean water (demineralized and deionized water) | 1 | 150 | - | - | - | |

- 1) Differentiation due to saturated steam curve
- 2) Open circuits
- 3) Operate with inverted flow direction with steam
- 4) 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.. |
| Generation | Boiler plants | ■ | ■ |
| | District heating plants | ■ | - |
| | Refrigeration plants | ■ | ■ |
| | Cooling towers ¹⁾ | ■ | ■ |
| Distribution | Heating groups | ■ | ■ |
| | Air handling units | ■ | ■ |

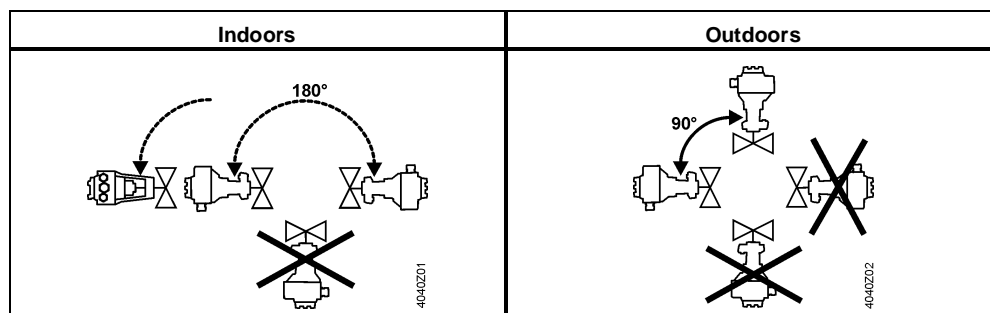
¹⁾ Open circuits

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. |
| Dirt trap | Operate valves of the product lines VVF43.. with inverted flow direction for steam. 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 | 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 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 temperatures", page 7 | |
| | Valve characteristics ¹⁾ | See section "Valve characteristics", page 6 | |
| | Leakage rate | Throughport | 0...0.01% of k_{vs} value (Class IV) |
| | | Bypass | 0.5...2% of k_{vs} value |
| | Permissible media | See table "Medium compatibility and temperature ranges", page 7 | |
| | Medium temperature | | -20...220 °C ²⁾ |
| | | | VVF43..K: 1...220 °C |
| | Rangeability | >100 | |
| Nominal stroke | 40 mm | | |
| Materials | Valve body | EN-GJS-400-18-LT | |
| | Blank flange | 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 | | |

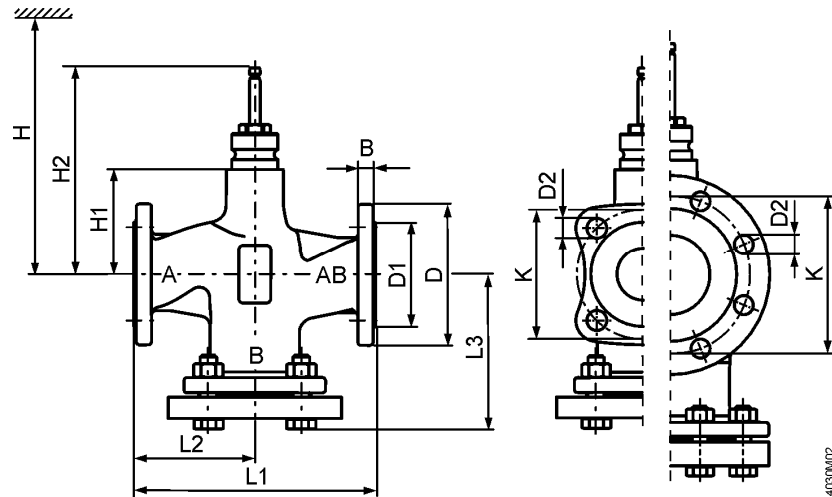
| | | | |
|-----------------------------|--|--|--------------|
| Standards | Pressure Equipment Directive | PED 97/23/EC | |
| | Pressure-carrying accessories | According to article 1, section 2.1.4 | |
| | Fluid group 2 | PN 16 | |
| | Category I, with CE certification | DN 65...125 | |
| | Category 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 11 | |
| | Weight | See „Dimensions“, page 11 | |

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).

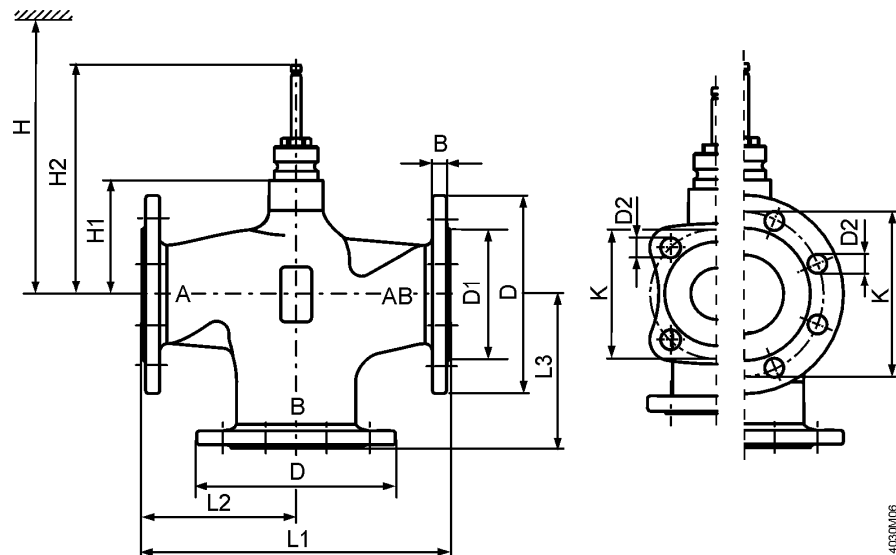
Dimensions

VVF43..



| Product number | DN | kg | B | Ø D | Ø D1 | Ø D2 | L1 | L2 | L3 | Ø K | H1 | H2 | H |
|----------------|-----|------|----|-----|------|---------|-----|-----|-------|-----|-------|-------|-----|
| VVF43.. | 65 | 21.6 | 17 | 185 | 118 | 19 (4x) | 290 | 145 | 178 | 145 | 115 | 231.5 | 690 |
| | 80 | 27.4 | 17 | 200 | 132 | 19 (8x) | 310 | 155 | 190 | 160 | 115 | 231.5 | 690 |
| | 100 | 33.2 | 17 | 220 | 156 | 19 (8x) | 350 | 175 | 206 | 180 | 146 | 262.5 | 721 |
| | 125 | 45.8 | 17 | 250 | 184 | 19 (8x) | 400 | 200 | 233 | 210 | 159 | 275.5 | 734 |
| | 150 | 66.7 | 17 | 284 | 211 | 23 (8x) | 480 | 240 | 275.5 | 240 | 186.5 | 303 | 762 |
| VVF43..K | 65 | 21.9 | 17 | 185 | 118 | 19 (4x) | 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 | 34 | 17 | 220 | 156 | 19 (8x) | 350 | 175 | 206 | 180 | 146 | 262.5 | 721 |
| | 125 | 46.9 | 17 | 250 | 184 | 19 (8x) | 400 | 200 | 233 | 210 | 159 | 275.5 | 734 |
| | 150 | 67.7 | 17 | 284 | 211 | 23 (8x) | 480 | 240 | 275.5 | 240 | 186.5 | 303 | 762 |


VXF43..



| Product number | DN | kg | B | Ø D | Ø D1 | Ø D2 | L1 | L2 | L3 | Ø K | H1 | H2 | H |
|----------------|-----|------|----|-----|------|---------|-----|-----|-----|-----|-------|-------|-----|
| VXF43.. | 65 | 16.9 | 17 | 185 | 118 | 19 (4x) | 290 | 145 | 145 | 145 | 115 | 231.5 | 690 |
| | 80 | 20.9 | 17 | 200 | 132 | 19 (8x) | 310 | 155 | 155 | 160 | 115 | 231.5 | 690 |
| | 100 | 26.6 | 17 | 220 | 156 | 19 (8x) | 350 | 175 | 175 | 180 | 146 | 262.5 | 721 |
| | 125 | 36.5 | 17 | 250 | 184 | 19 (8x) | 400 | 200 | 200 | 210 | 159 | 275.5 | 734 |
| | 150 | 53.4 | 17 | 284 | 211 | 23 (8x) | 480 | 240 | 240 | 240 | 186.5 | 303 | 762 |

Spare parts

Stem sealing gland

| Product number | DN | Stock number | Comments |  |
|--------------------|-------------|---------------|---|---|
| VVF43.. VXF43.. | DN 65...150 | 74 284 0061 0 | - | |
| | | 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 | ..A | VXF43.65-63 | ..A |
| VVF43.65-63 | ..A | VXF43.80-100 | ..A |
| VVF43.80-80 | ..A | VXF43.100-160 | ..A |
| VVF43.80-100 | ..A | VXF43.125-250 | ..A |
| VVF43.100-125 | ..A | VXF43.150-400 | ..A |
| VVF43.100-160 | ..A | | |
| VVF43.125-200 | ..A | | |
| VVF43.125-250 | ..A | | |
| VVF43.150-315 | ..A | | |
| VVF43.150-400 | ..A | | |
| VVF43.65-63K | ..A | | |
| VVF43.80-100K | ..A | | |
| VVF43.100-160K | ..A | | |
| VVF43.125-250K | ..A | | |
| VVF43.150-360K | ..A | | |