

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



From the large-stroke valve line

**hiwa**  
VALVE DRIVE FLOW



High-performance valves for medium temperatures from  $-10^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  (If used for steam or other requirements such as  $220^{\circ}\text{C}$ , please specify it in the order).

DN15 to DN150 is ductile iron EN-GJS-450 body (or other materials as requirements).

Kvs 2.5 to 400  $\text{m}^3/\text{h}$

Flange ISO7005 type 21, flange design B

Used in combination with electric-hydraulic actuators SIEMENS SKC, Honeywell or Danfoss electric actuators, etc.

Used 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 (pay attention to cavitation).

## Application

As control or shutoff valves, it is used boiler, district heating and refrigeration plants, cooling towers, heating equipment, ventilation and air handling units.

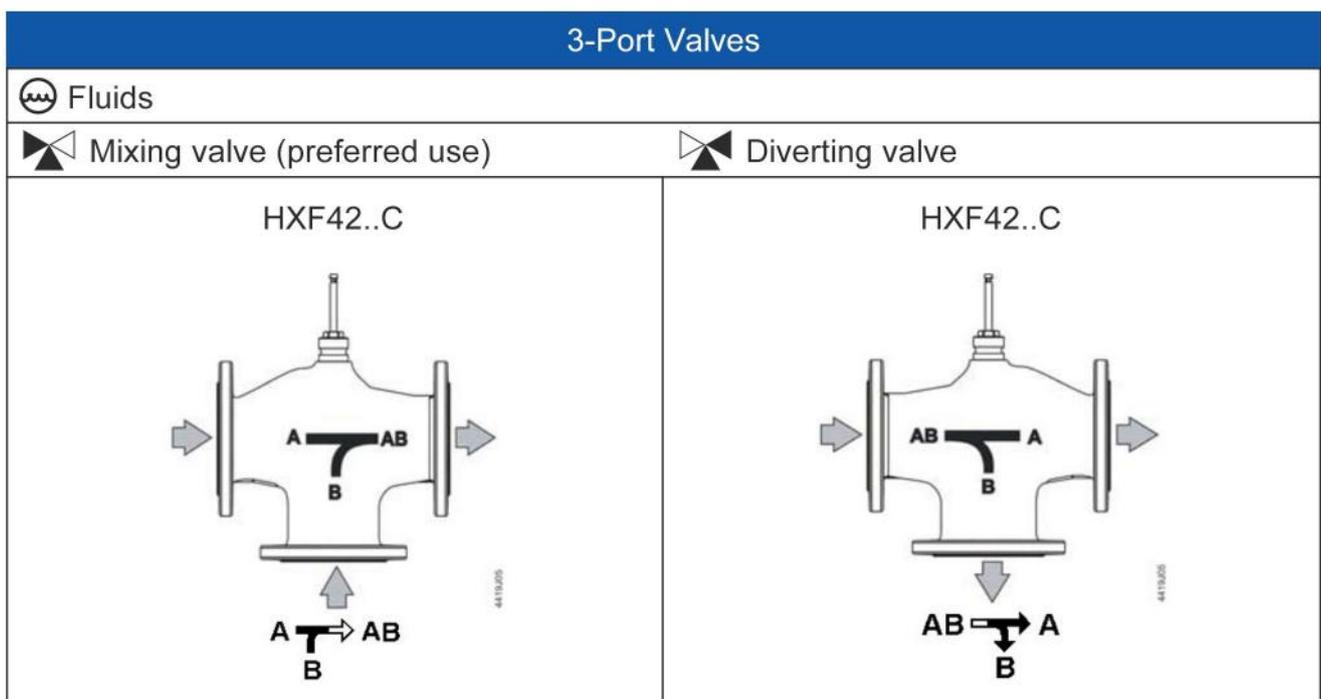
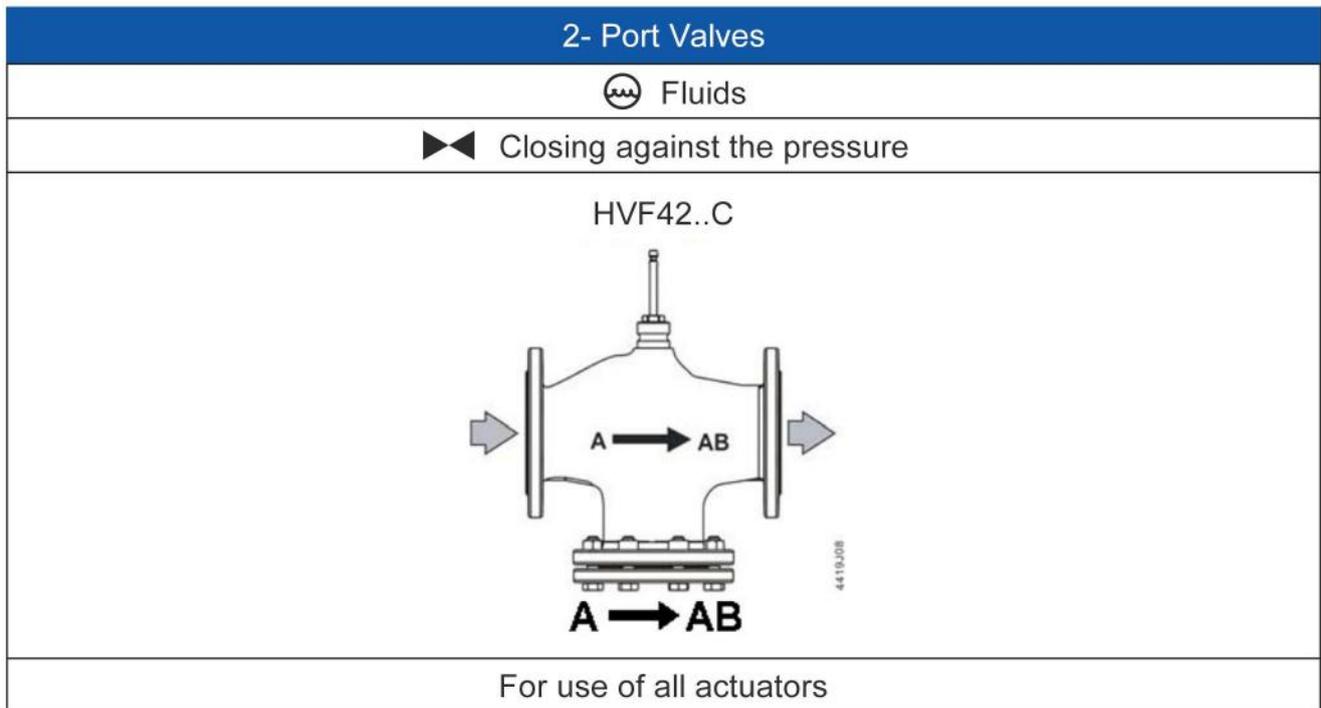
HVF42..C, HXF42..C is used in closed hydraulic circuits (pay attention to cavitation).

Fields of use		Valves	
		HVF42..C	HXF42..C
Generation	Boiler plants	√	√
	District heating plants	√	
	Refrigeration plants	√	√
Distribution	Heating groups	√	√
	Ventilation and air-handling units	√	√

## Technical Technology

### Mechanical Design

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



## Valve Characteristics

About the numbers in this section: X axis: Stroke (H/H100); Y axis: Flow rate (Kv / kvs)

2-port valves		
<p>For product line: HVF42..C Excluding: HVF42.125-250C HVF42.150-400C</p>		<p>0...30%: linear 30...100%: Equal percentage (ngl=3 to VDI/VDE 2173) Characteristic design conforms to LGBR(SBT) DN80 valve Kvs=100m³/h, DN100 valve Kvs=160 m³/h, DN150 valve Kvs=315m³/h, For Kv100 80%...100%, the valve characteristic is optimized for maximum volumetric flow.</p>
<p>For product line: HVF42.125-250C HVF42.150-400C</p>		<p>0...100%: linear</p>
3-port valves		
<p>Mixing: Volumetric flow from port A and port B to port AB Diverting: Volumetric flow from port AB to port A and port B</p>		
<p>For product line: HXF42..C Excluding: HXF42.125-250C HXF42.150-400C</p>		<p>Through port 0...30%: linear 30...100%: Equal percentage (ngl=3 to VDI/VDE 2173) Characteristic design conforms to LGBR(SBT) DN80 valve Kvs=100m³/h, DN100 valve Kvs=160 m³/h, DN150 valve Kvs=315m³/h, For Kv100 80%...100%, the valve characteristic is optimized for maximum volumetric flow. Bypass: 0...100%: linear</p>
<p>For product line: HXF42.125-250C HXF42.150-400C</p>		<p>Through port A-AB 100%: linear Bypass B-AB 0...100%: linear</p>

## Medium compatibility and temperature ranges

Medium	Temperature range		Valve		Note
	Tmin(°C)	Tmax(°C)	HVF42..C	HXF42..C	
Cold water	1	25	√	√	
Hot water	1	130	√	√	
High-temperature hot water	130	150	√	√	
	150	180			
Water with antifreeze	-5	150	√	√	With a medium temperature below 0 °C, the valve stem heating device must be installed
	-10	150	√	√	
	-20	150			
Cooling water	1	25	√		
Brines	-5	150	√	√	With a medium temperature below 0 °C, the valve stem heating device must be installed
	-10	150	√	√	
	-20	150			
Ultrapure water (softened and deionized water)	1	150			
Compliant with VDI2035/SWKI -_B 102-01 softened water	1	150	√	√	

1. Differentiation due to saturated steam curve

2. Open circuits

### Equipment combination

Common words

DN=Nominal size

Kvs=Flow nominal value of cold water (5...30°C) through the fully opened valve (H100) at a differential pressure of 100kPa (1 bar)

Sv=Rangeability

$\Delta p_{ps}$ =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 through port for the entire positioning range of the motorized valve

HVF42..C	Actuator				EBX..		EBV..	
PN16	Stroke				20mm		40mm	
	Driving force				1000N		1800N	
-10~150°C	PN	DN	$K_{vs}$ m <sup>3</sup> /h	SV	$\Delta p_s$	$\Delta p_{max}$	$\Delta p_s$	$\Delta p_{max}$
HVF42.15-2.5	16	15	2.5	>50	1600	400		
HVF42.20-6.3	16	20	6.3	>50	1600	400		
HVF42.25-6.3	16	25	6.3	>50	1600	400		
HVF42.25-10	16	25	10	>50	1600	400		
HVF42.32-16	16	32	16	>50	1200	400		
HVF42.40-16	16	40	16	>50	750	400		
HVF42.40-25	16	40	25	>50	750	400		
HVF42.50-31.5	16	50	31.5	>100	450	400		
HVF42.50-40	16	50	40	>100	450	400		
HVF42.65-50	16	65	50	>100	250	200		
HVF42.65-63	16	65	63	>100	250	200		
HVF42.80-80	16	80	80	>100	175	125		
HVF42.80-100	16	80	100	>100	175	125		
HVF42.100-125	16	100	125	>100			300	250
HVF42.100-160	16	100	160	>100			300	250
HVF42.125-200	16	125	200	>100			190	160
HVF42.125-250	16	125	250	>100			190	160
HVF42.150-315	16	150	315	>100			125	100
HVF42.150-400	16	150	400	>100			125	100

HXF42..C	Actuator				EBX..		EBV..	
PN16	Stroke				20mm		40mm	
	Driving force				1000N		1600N	
-10~150°C	PN	DN	$K_{vs}$ m <sup>3</sup> /h	SV	$\Delta p_s$	$\Delta p_{max}$		
HXF42.15-2.5	16	15	2.5	>50	400	100		
HXF42.20-6.3	16	20	6.3	>50	400	100		
HXF42.25-6.3	16	25	6.3	>50	400	100		
HXF42.25-10	16	25	10	>50	400	100		
HXF42.32-16	16	32	16	>50	400	100		
HXF42.40-16	16	40	16	>50	400	100	400	100
HXF42.40-25	16	40	25	>50	400	100	400	100
HXF42.50-31.5	16	50	31.5	>100	400	100	400	100
HXF42.50-40	16	50	40	>100	400	100	400	100
HXF42.65-50	16	65	50	>100	200	80	400	100
HXF42.65-63	16	65	63	>100	200	80	400	100
HXF42.80-80	16	80	80	>100	125	50	225	50
HXF42.80-100	16	80	100	>100	125	50	225	50
HXF42.100-125	16	100	125	>100			125	50
HXF42.100-160	16	100	160	>100			125	50
HXF42.125-200	16	125	200	>100			90	50
HXFH2.125-250	16	125	250	>100			90	50
HXF42.150-315	16	150	315	>100			60	50
HXF42.150-400	16	150	400	>100			60	50

## Technical data

The technical data section may include the following data sets

Functional data	
PN class	PN16
Connection	Flange
Working pressure	Refer to technical design
Valve characteristics	Refer to technical design
Leakage rate	Throughport: 0~0.02% of Kvs value By pass: 0.5~2% of Kvs value (KVS≥6.3)
Permissible medium	Refer to technical design
Medium temperature	-10~150°C
Rangeability	To DN40: >50 From DN50: >100
Nominal stroke	To DN100: 20mm From DN125: 40mm

Material	
Body	DN15-DN150:EN-GJS-450
Blind flange	Same as valve body
Stem	Stainless steel
Seat	HVF42..C、HXF42..C: Machined
Valve plug	DN15-DN150 Stainless steel
Stem sealing	Brass , EPDM , PTFE

Ambient condition		
Storage IEC60721-3-1	Class	1K3
	Temperature	-15~+55°C
	Rel. humidity	5~95%r.h.
Transportation IEC60721-3-2	Class	2K3,2M2
	Temperature	-30~+65°C
	Rel. humidity	<95%r.h.
Operation IEC60721-3-3	Class	3K5,3Z11
	Temperature	-15~+55°C
	Rel. humidity	5~95%r.h.

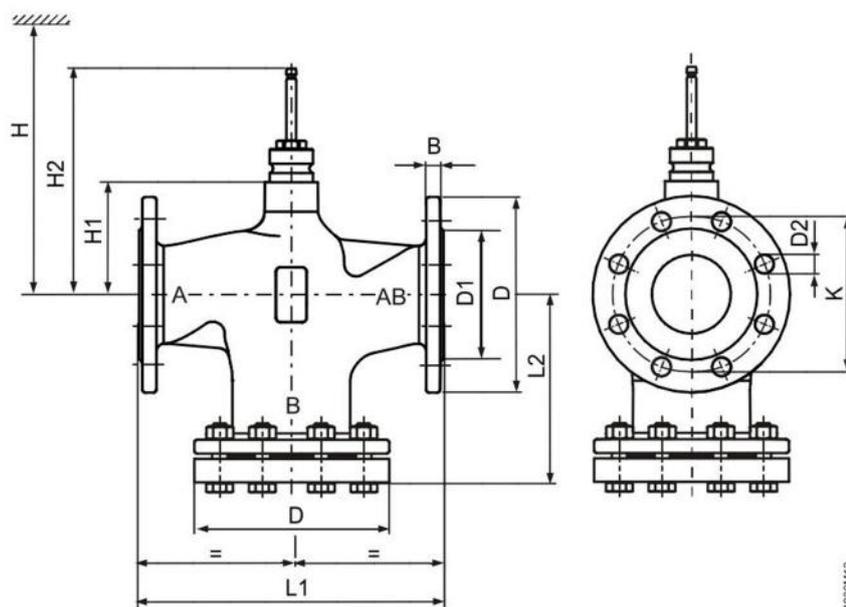
## Standards

PN class	ISO 7268
Working pressure	ISO 7005
Flange	ISO 7005
Length of flanged valves	DIN EN558-1,line 1
Valve characteristic	VDI 2173
Leakage rate	Through port, Bypass according to EN 60534-4 / EN 1349
Water treatment	VDI 2035

## Weight

DN		15	20	25	32	40	50	65	80	100	125	150
Weight HVF42.C		3.7	4.7	5.0	7.4	8.9	11.9	16.7	26.6	36.5	45.7	63.6
(kg) HXF42..C		2.6	3.3	4.1	6.1	7.1	9.5	13.9	21.5	31.1	38.4	53.6

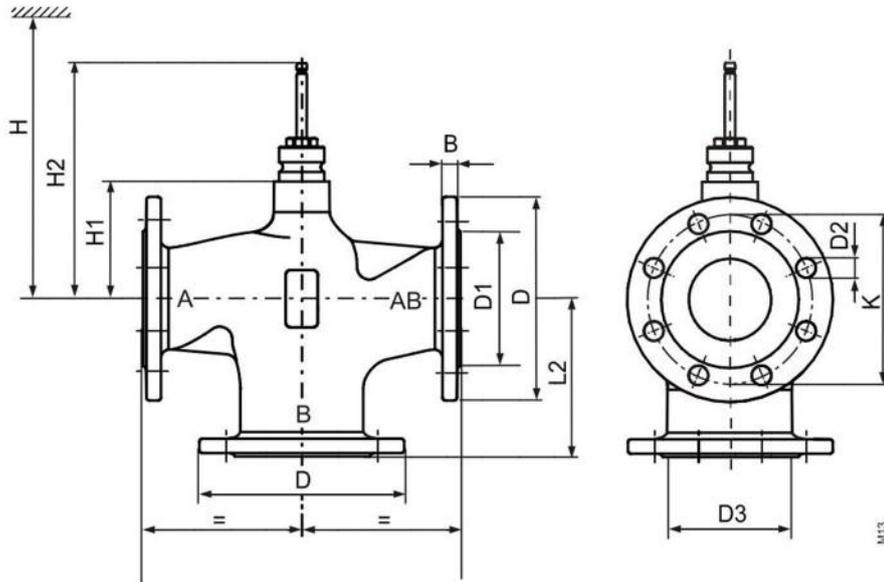
## Dimensions



4000M12

### 2-port Valves HVF42-16 PN16

DN	B	D	D1	D2	L1	L2	K	H1	H2
15	14	95	46	14(4X)	130	87.5	65	63	159.5
20	16	105	56	14(4X)	150	99.5	75	63	159.5
25	15	115	65	14(4X)	160	104.5	85	63	159.5
32	17	140	76	19(4X)	180	119	100	60	156.5
40	16	150	84	19(4X)	200	129	110	60	156.5
50	16	165	99	19(4X)	230	146	125	100	196.5
65	17	185	118	19(4X)	290	178	145	115	231.5
80	17	200	132	19(8X)	310	190	160	115	231.5
100	17	220	156	19(8X)	350	206	180	146	262.5
125	17	250	184	19(8X)	400	233	210	159	275.5
150	17	284	211	23(8X)	480	275	240	186.5	303

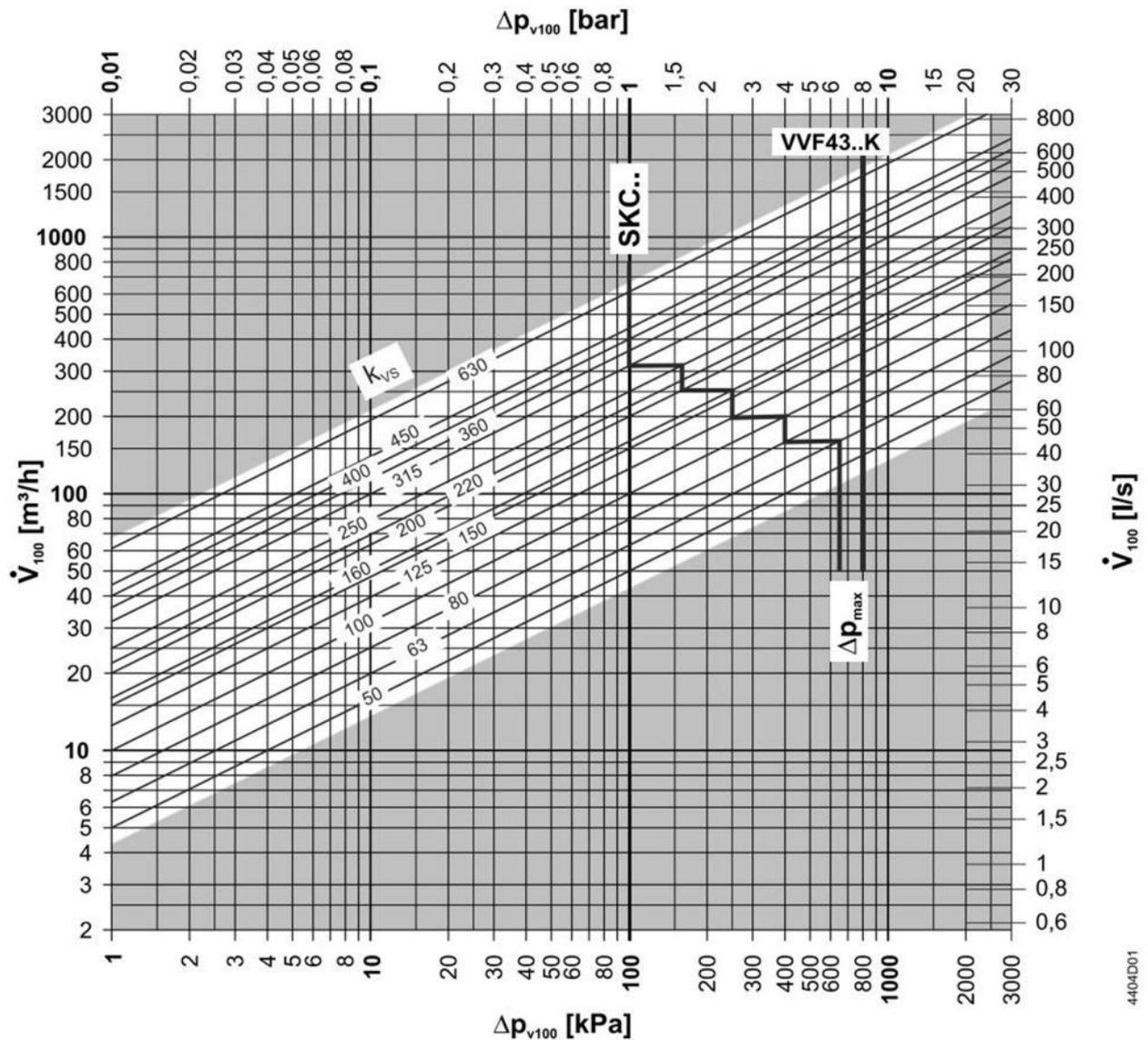


### 3-port Valves HXF42-16 PN16

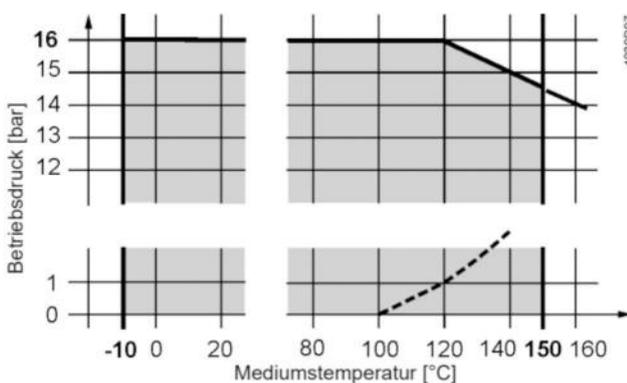
DN	B	D	D1	D2	L1	L2	K	H1	H2
15	14	95	46	14(4X)	130	65	65	63	159.5
20	16	105	56	14(4X)	150	75	75	63	159.5
25	15	115	65	14(4X)	160	80	85	63	159.5
32	17	140	76	19(4X)	180	90	100	60	156.5
40	16	150	84	19(4X)	200	100	110	60	156.5
50	16	165	99	19(4X)	230	115	125	100	196.5
65	17	185	118	19(4X)	290	145	145	115	231.5
80	17	200	132	19(8X)	310	155	160	115	231.5
100	17	220	156	19(8X)	350	175	180	146	262.5
125	17	250	184	19(8X)	400	200	210	159	275.5
150	17	284	211	23(8X)	480	240	240	186.5	303

## Model Selection

### Flow Chart



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



### Operating pressure and medium temperature Fluids, PN16 with H..F42..

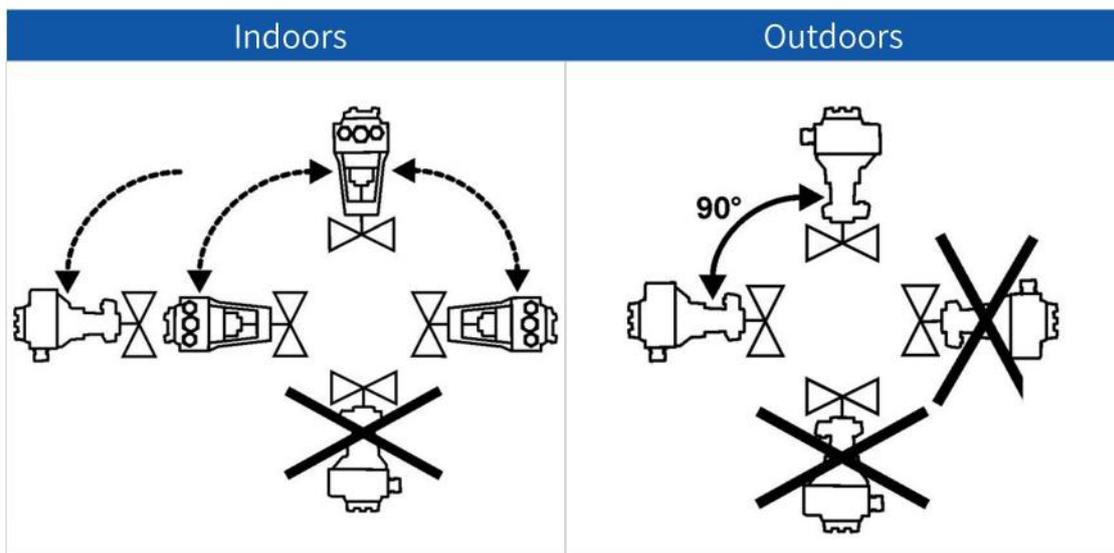
- Curve for saturated steam; steam forms below this line
- Operating pressure according to EN 1092-1, valid for 2-port valves with blank flange

## Security

	<p><b>⚠ Notice</b></p>
	<p><b>National safety regulations</b></p> <ul style="list-style-type: none"> <li>· Failure to comply with national safety regulations may cause personal injury and property damage</li> <li>· Please comply with national regulations and relevant safety regulations</li> </ul>

## Mounting notes

Mounting positions apply to both 2- port and 3-port valves



## Commissioning notes

	<p><b>⚠ Warning</b></p>
	<p>Incorrect assembly</p> <p>If the valve is put into use without correctly assembling the actuator and valve, it will damage the valve and the leaked medium may cause personal injury.</p> <ul style="list-style-type: none"> <li>· Ensure that the actuator and valve stem are rigidly connected in all positions.</li> </ul>

## Function check

Valve	Through port A →B	BypassB→AB
Valve stem extends	Closes	Opens
Valve stem retracts	Opens	Closes

## Engineering precautions installation location

Preferably mount the valves at the return, as the temperature is lower there and the load on the stem sealing gland is lower.

## Filter

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 slags, 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 pressure.

## Mounting notes

The valve may be put into operation only if actuator and valve are correctly assembled. Ensure that actuator stem and valve stem are rigidly connected in all positions.

## Maintenance notes

Valves are equipped with maintenance-free.

When servicing valves or actuators:

- 1. Deactivate the pump and turn off the power supply
- 2. 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.

According to laws, regulations, and ecological requirements, certain valves require special treatment.

Local and currently valid legislation must be observed.

Disposal



HIWA.cares about your drinking water safety

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