

Diaphragm Valve

## SISTO-16TWA

PN 16  
DN 15-200

### Type Series Booklet



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Type Series Booklet SISTO-16TWA

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## Diaphragm Valves

### Diaphragm Valves – No Dead Volume, Soft-seated, Glandless

## SISTO-16TWA



#### Main applications

- Pressure boosting
- Fire-fighting systems
- Domestic water supply
- Air-conditioning systems
- Cooling circuits
- Rainwater harvesting
- Shipbuilding
- Swimming pools
- Drinking water supply
- Heat recovery systems
- Hot-water heating systems

#### Fluids handled

##### SISTO-16TWA

- Drinking water up to 90 °C
- Drinking water, particularly drinking water installations to DIN 1988
- Other fluids on request.

##### SISTO-16HWA

- Hot water up to 140 °C
- Service water

##### SISTO-16DLU

- Compressed air up to 90 °C
- Oil-containing compressed air
- Technical gases

#### Operating data

##### Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size <sup>1)</sup>	DN 15 - 200
Max. permissible pressure [bar]	16
Min. permissible temperature [°C] <sup>2)</sup>	≥ -10
Max. permissible temperature [°C] <sup>2)</sup>	≤ +140

#### Valve body materials

##### Overview of available materials

Material	Material number	Temperature limit
<b>SISTO-16TWA</b>		
GX2CrNiMo19-11-2	1.4409 (DN 15 - 200)	-10 °C to +90 °C
EN-GJL-250	5.1301 (DN 125 - 200)	-10 °C to +60 °C
<b>SISTO-16HWA</b>		
EN-GJL-250	5.1301	-10 °C to +140 °C
<b>SISTO-16DLU</b>		
EN-GJL-250	5.1301	-10 °C to +90 °C

#### Design details

##### Design

- Soft-seated shut-off valve in straight-way pattern
- Rising handwheel
- Shut-off and sealing to atmosphere by spiral-supported, completely enclosed diaphragm
- Position indicator with integrated stem protection
- Manufactured and tested to EN 13397
- Marked in accordance with DIN EN 19 (ISO 5209)

##### SISTO-16TWA

- Noise emissions: The valves comply with valves group I in acc. with DVGW W570-1:2013 and DIN 3546-1:2010.

#### Variants

- Electric actuators
- Limit switches
- Locking device
- Chain wheel
- Leakage detection hole and additional stem seal
- Lead-sealable cap (prevents unauthorised actuation)
- Pneumatic actuators
- Stem extension

<sup>1</sup> From DN 100 and operating pressures > 10 bar using a gearbox is recommended.

<sup>2</sup> The temperatures indicated are for orientation only; they are not valid for all operating conditions.

### Product benefits

- Reliable sealing ensured by one single sealing element (the diaphragm), which provides hermetic sealing to atmosphere and absolutely tight shut-off. The specially enclosed diaphragm ensures long service life and high operating reliability.
- Increased functional reliability of the diaphragm thanks to balanced diaphragm suspension
- Maintenance-free as all moving parts are separated from the fluid by the diaphragm.
- High level of reliability as the thrust bearing minimises the closing torques required.
- Optimised long-term operation as the position indicator with integrated stem protection prevents the ingress of contaminants.
- High level of reliability as the valve hydraulics without dead volume ensure optimum conditions for high-purity fluids.
- Long service life as the diaphragm support increases valve life and extends the pressure limit of the diaphragm.
- Both the SISTOMaXX diaphragm material and the body material 1.4409 and coating material polyamide (Rilsan) meet the recommendations of the German Environment Agency.

### Product information

#### Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see <http://www.ksb.com/reach>.

#### Product information as per Directive 2014/34/EU (ATEX)

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU.

#### Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

### Certifications

#### SISTO-16TWA

##### Overview

Label	Effective in:
	Germany <sup>3)</sup> DN 15 - 100
	Switzerland <sup>3)</sup> DN 15 - 100
	Austria <sup>3)</sup> DN 15 - 100
	Belgium DN 15 - 200

### Related SISTO documents

#### Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-16	8635.1
Type series booklet SISTO-LAD (diaphragm actuator)	9211.1
Type series booklet SISTO-LAP (piston actuator)	9210.1
Engineering information SISTO-16TWA/HWA/DLU	8635.030

### Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

#### Valve

1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Fluid handled
8. Pipe connection
9. Variants
10. Number of type series booklet
11. Certificate

#### Actuator

1. Type
2. Control pressure  $P_{ctr}$
3. Accessories

<sup>3)</sup> SISTO-16TWA diaphragm valves with flanged ends, DN 15-100, are registered in accordance with DVGW/SVGW/ÖVGW. The quality of the SISTOMaXX diaphragm material meets the recommendations of the German Environment Agency (Elastomers Guideline) and DVGW Worksheet W270.

### Flow coefficients

Flow coefficients for SISTO-16TWA

DN	MD <sup>4)</sup> [mm]	Kvs value [m <sup>3</sup> /h]	DN	MD <sup>4)</sup> [mm]	Kvs value [m <sup>3</sup> /h]
15	40	7,5	65	115	140,0
20	40	8,0	80	168	270,0
25	65	29,0	100	168	285,0
32	65	30,0	125	202	298,0
40	65	31,0	150	280	601,0
50	92	85,0	200	280	478,0

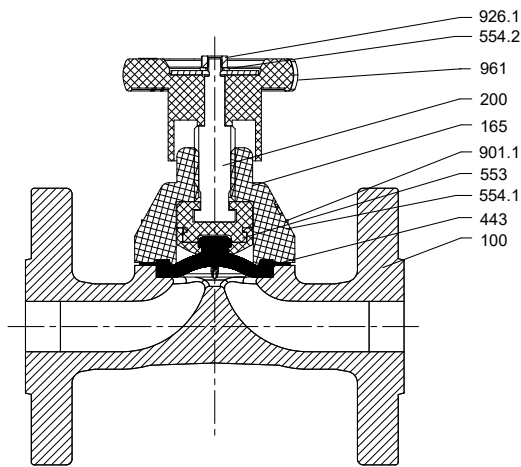
Flow coefficients for SISTO-16HWA/DLU

DN	MD <sup>4)</sup> [mm]	Kvs value [m <sup>3</sup> /h]	DN	MD <sup>4)</sup> [mm]	Kvs value [m <sup>3</sup> /h]
15	40	4,0	65	168	141,0
20	65	11,5	80	168	195,0
25	65	14,0	100	202	304,0
32	92	35,0	125	202	298,0
40	92	43,0	150	280	601,0
50	115	72,0	200	280	478,0

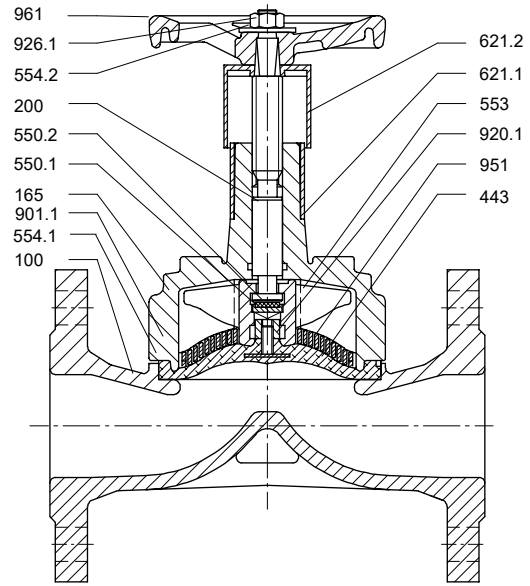
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<sup>4</sup> MD = diaphragm diameter

**Materials of SISTO-16TWA manually operated valve**



DN 15-20



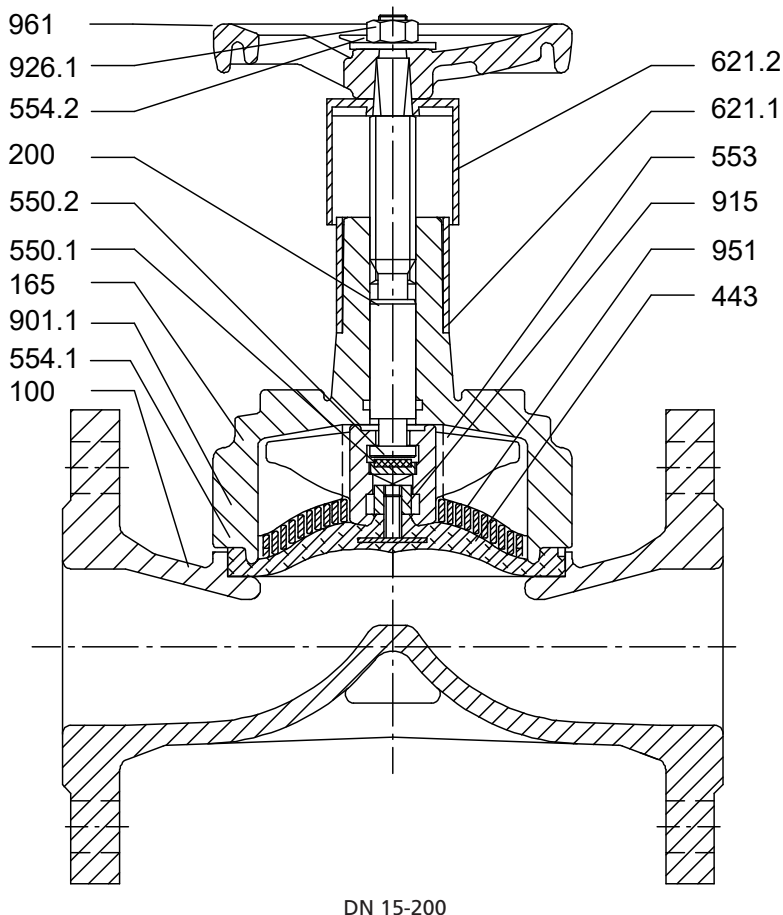
DN 25-200

Part No.	Description	SISTO-16TWA Diaphragm diameter 40 DN 15-20		SISTO-16TWA Diaphragm diameters 65-168 DN 25-100		SISTO-16TWA Diaphragm diameters 202-280 DN 125-200	
		Material		Material		Material	
		Designation	Number	Designation	Number	Designation	Number
100	Body	GX2CrNiMo19-11-2	1.4409	GX2CrNiMo19-11-2	1.4409	GX2CrNiMo19-11-2 Optional: EN-GJL-250/Rilsan (DVGW/KTW)	1.4409 5.1301
165	Bonnet	POM	-	EN-GJL-250	5.1301	EN-GJL-250	5.1301
200	Stem	CuZn39Pb3	CW614N	X14CrMoS17	1.4104	X14CrMoS17	1.4104
443 <sup>5)</sup>	Diaphragm	SISTOMaXX (EPDM/W270)	-	SISTOMaXX (EPDM/W270)	-	SISTOMaXX (EPDM/W270)	-
550.1	Bearing disc	-	-	11SMnPb30 DN 32-200	1.0718	11SMnPb30	1.0718
550.2	PTFE disc	-	-	PTFE/graphite DN 32-200	-	PTFE/graphite	-
553	Compressor	GD-ZnAl4Cu1	5.3106	EN-GJS-400-15 DN 25 = GD- ZnAl4Cu1	5.3106	EN-GJS-400-15	5.3106
554.1	Washer	A2-70	-	A2-70	-	A2-70	-
554.2	Washer	A2-70	-	A2-70	-	A2-70	-
621.1	Position indicator, lower part	-	-	ASA Luran	-	ASA Luran	-
621.2	Position indicator, upper part	-	-	ASA Luran	-	ASA Luran	-
901.1	Hexagon head bolt	A2-70	-	A2-70	-	A2-70	-
915	Floating nut	-	-	11SMnPb30	1.0718	11SMnPb30	1.0718
926.1	Prevailing torque nut	A2-70	-	A2-70	-	A2-70	-
951	Support spiral	-	-	St 2K BK	-	St 2K BK	-
961	Handwheel	PC	-	EN-GJL-200	5.1300	EN-GJL-200	5.1300

8635.33/27-EN

<sup>5</sup> Recommended spare parts

**Materials of SISTO-16HWA/DLU manually operated valve**

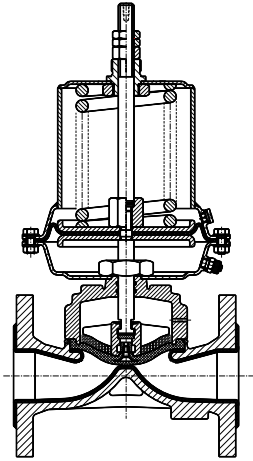


Part No.	Description	SISTO-16HWA Diaphragm diameters 40-280 DN 15-200		SISTO-16DLU Diaphragm diameters 40-280 DN 15-200	
		Material		Material	
		Designation	Number	Designation	Number
100	Body	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301
165	Bonnet	EN-GJL-250 DN 15 = 1.0619	5.1301	EN-GJL-250 DN 15 = 1.0619	5.1301
200	Stem	X14CrMoS17	1.4104	X14CrMoS17	1.4104
443 <sup>6)</sup>	Diaphragm	EPDM	-	NBR	-
550.1	Bearing disc	11SMnPb30 DN 32-200	1.0718	11SMnPb30 DN 32-200	1.0718
550.2	PTFE disc	PTFE/graphite DN 32-200	-	PTFE/graphite DN 32-200	-
553	Compressor	EN-GJS-400-15 DN 15-25 = GD-ZnAl4Cu1	5.3106	EN-GJS-400-15 DN 15-25 = GD-ZnAl4Cu1	5.3106
554.1	Washer	A2-70	-	A2-70	-
554.2	Washer	A2-70	-	A2-70	-
621.1	Position indicator, lower part	ASA Luran	-	ASA Luran	-
621.2	Position indicator, upper part	ASA Luran	-	ASA Luran	-
901.1	Hexagon head bolt	A2-70	-	A2-70	-
915	Floating nut	11SMnPb30	1.0718	11SMnPb30	1.0718
926.1	Prevailing torque nut	A2-70	-	A2-70	-
951	Support spiral	St 2K BK = from DN 20	-	St 2K BK = from DN 20	-
961	Handwheel	EN-GJL-200 DN 15 = PC	5.1300	EN-GJL-200 DN 15 = PC	5.1300

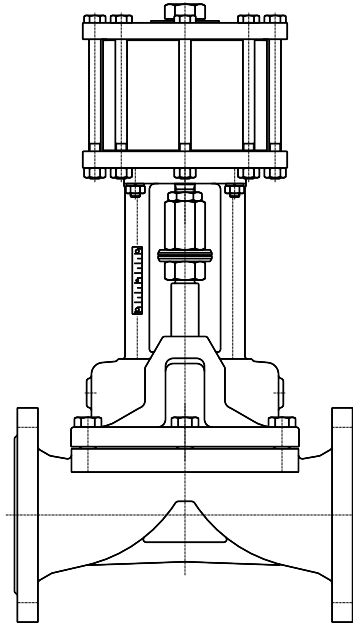
<sup>6)</sup> Recommended spare parts



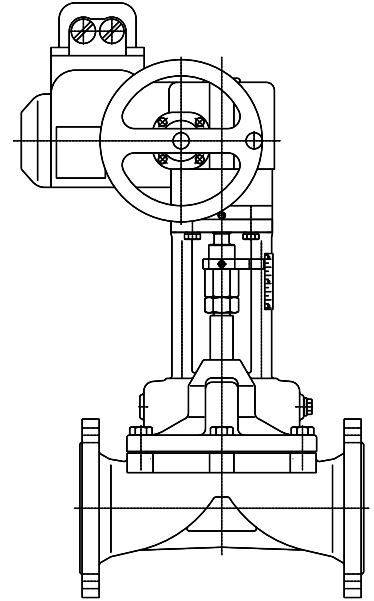
**Variants**



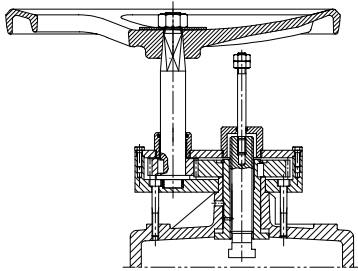
With SISTO-LAD



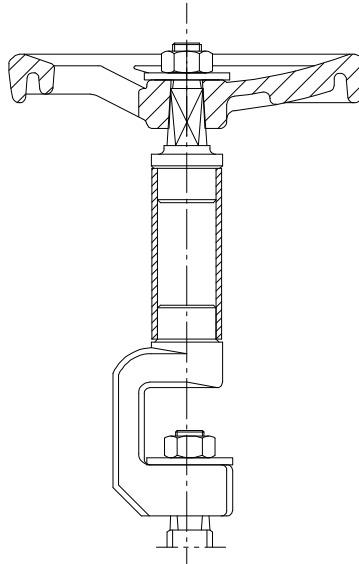
With SISTO-LAP



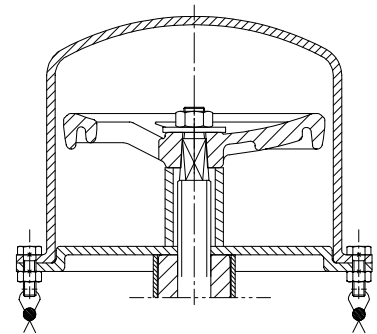
With electric actuator



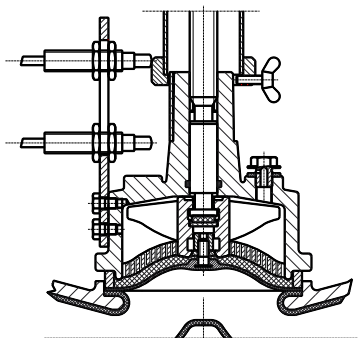
Gearbox



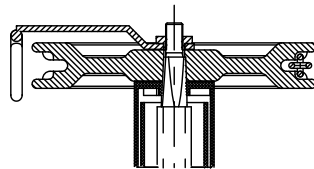
Stem extension



Lead-sealable cap



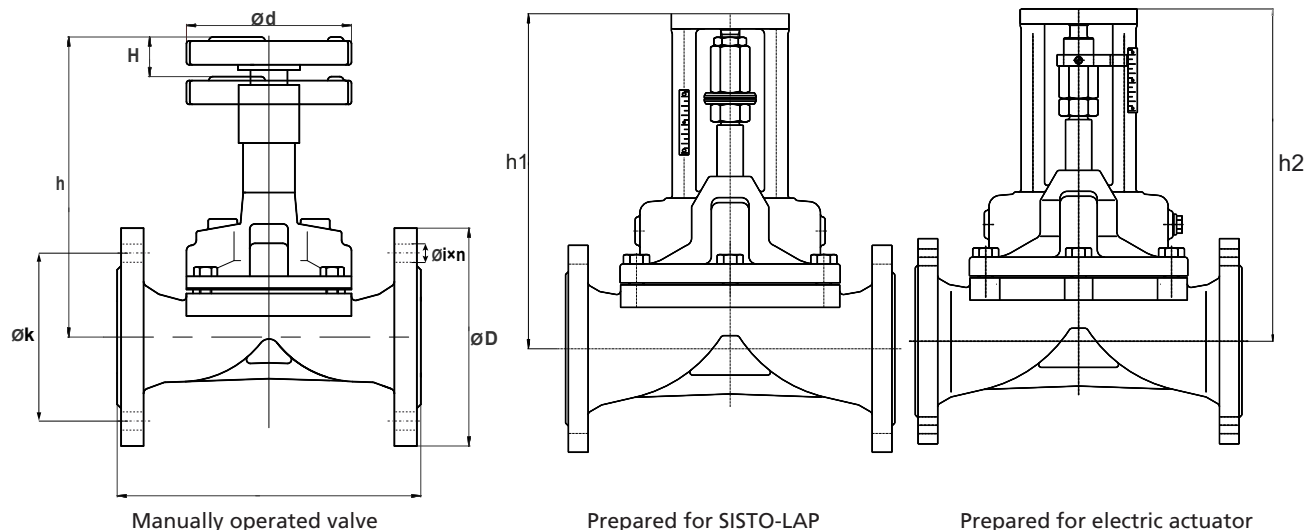
Limit switches, leakage detection hole, locking device



Chain wheel

8635.33/27-EN

**Dimensions and weights**



**Dimensions and weights of SISTO-16TWA**

DN	MD <sup>7)</sup> [mm]	l [mm]	Ø D [mm]	Ø k [mm]	Ø i [mm]×n	H [mm]	Manually operated valve			[kg]
							h [mm]	Ø d [mm]	Handwheel turns approx.	
15	40	130	95	65	14×4	8	98	60	3	1,9
20	40	150	105	75	14×4	8	101	60	3	2,6
25	65	160	115	85	14×4	13	154	100	4	4,4
32	65	180	140	100	18×4	13	159	100	4	5,7
40	65	200	150	110	18×4	13	163	100	4	6,5
50	92	230	165	125	18×4	22	206	100	7	9,3
65 <sup>8)</sup>	115	290	185	145	18×4	30	240	125	8	13,1
80	168	310	200	160	18×8	45	328	200 (250) <sup>9)</sup>	9	23,9
100	168	350	220	180	18×8	45	343	200 (250) <sup>9)</sup>	9	26,1
125	202	400	250	210	18×8 (19×8) <sup>10)</sup>	60	388	250 (315) <sup>9)</sup>	12	44,0
150	280	480	285	240	22×8 (23×8) <sup>10)</sup>	80	512	400 (500) <sup>9)</sup>	13	82,0
200	280	600	340	295	22×8 (23×12) <sup>10)</sup>	80	512	400 (500) <sup>9)</sup>	13	100,0

Valid for SISTO-16TWA  
DN 15-200:

**Mating dimensions as per standard**

Face-to-face length: EN 558-1 R1  
 Flanges: DIN EN 1092-1  
 Flange facing: DIN EN 1092-1, type B

Valid for SISTO-16TWA  
 DN 125-200 for body made of EN-GJL-250/Rilsan:

**Mating dimensions as per standard**

Face-to-face length: EN 558-1 R1  
 Flanges: DIN EN 1092-2  
 Flange facing: DIN EN 1092-2, type B

<sup>7</sup> MD = diaphragm diameter  
<sup>8</sup> In accordance with DIN EN 1092-1:2018 Table 13, Footnote "6", DN 65 flanges are supplied with four holes.  
<sup>9</sup> On option for operating pressures > 10 bar  
<sup>10</sup> In accordance with DIN EN 1092-2

Dimensions and weights of SISTO-16HWA/DLU

DN	MD <sup>7)</sup> [mm]	l [mm]	Ø D [mm]	H [mm]	Manually operated valve				Prepared for actuator		
					h [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height with SISTO-LAP h1 [mm]	Centre-to-top height of electric actuator h2	
										F07/F10 [mm]	F14 [mm]
15	40	130	95	8	104	60	3	3,0	On request	On request	-
20	65	150	105	13	150	100	4	4,4	210	210	-
25	65	160	115	13	150	100	4	4,9	210	210	-
32	92	180	140	22	192	100	7	8,6	230	230	-
40	92	200	150	22	192	100	7	9,0	230	230	-
50	115	230	165	30	231	125	8	12,4	250	250	-
65	168	290	185	45	322	200 (250) <sup>11)</sup>	9	23,2	305	320	480
80	168	310	200	45	322	200 (250) <sup>11)</sup>	9	25,7	305	320	480
100	202	350	220	60	388	250 (315) <sup>11)</sup>	12	39,0	355	370	480
125	202	400	250	60	388	250 (315) <sup>11)</sup>	12	44,0	355	370	480
150	280	480	285	80	512	400 (500) <sup>11)</sup>	13	82,0	435	460	480
200	280	600	340	80	512	400 (500) <sup>11)</sup>	13	100,0	435	460	480

**Mating dimensions as per standard**

Face-to-face length: EN 558-1 R1  
 Flanges: DIN EN 1092-2  
 Flange facing: DIN EN 1092-2, type B

<sup>11</sup> On option for operating pressures > 10 bar







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