

# Diaphragm Valve

## SISTO-C

Sterile Process Engineering  
PN 16  
DN 6-200

### Type Series Booklet



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Type Series Booklet SISTO-C

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## Diaphragm Valves

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

## SISTO-C



#### Main applications

- Chemical industry
- Homogenisation
- Food industry / beverage industry
- Pharmaceutical industry
- Process engineering
- Water treatment

#### Fluids handled

- Aggressive fluids
- Inorganic fluids
- Steam
- Distillate
- Gas
- Fluids posing a health hazard
- Toxic fluids
- High-temperature hot water
- Corrosive fluids
- Valuable fluids
- Volatile fluids
- Solvents
- Oil
- Organic fluids

- Polymerising/crystallising fluids
- Radioactive fluids
- Cleaning agents

#### Operating data

##### SISTO-C manually operated valve

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size <sup>1)</sup>	DN 6 - 200
Max. permissible pressure [bar]	16
Min. permissible temperature [°C] <sup>2)</sup>	≥ -20
Max. permissible temperature [°C] <sup>2)</sup>	≤ +160

##### SISTO-C LAP actuated valve

Table 2: Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size <sup>1)</sup>	DN 6 - 200
Max. permissible pressure [bar]	16
Min. permissible temperature [°C] <sup>2)</sup>	≥ -20
Max. permissible temperature [°C] <sup>2)</sup>	≤ +160
Control medium	Compressed air (min. 5.5 bar) (max. 7.0 bar)

#### Valve body materials

Table 3: Overview of available materials

Material	Material number	Temperature limit
X2CrNiMo18-14-3 <sup>3)</sup>	1.4435/316L	-20 °C to +160 °C
X1NiCrMoCu25-20-5	1.4539	-20 °C to +160 °C
NiCr21Mo14W	2.4602	-20 °C to +160 °C
NiCr23Mo16Al	2.4605	-20 °C to +160 °C
NiMo16Cr15W	2.4819	-20 °C to +160 °C
NiMo16Cr16Ti	2.4610	-20 °C to +160 °C

#### Design details

##### Design

- Soft-seated straightway shut-off valve in Y-pattern or T-pattern; manually or pneumatically actuated
- Shut-off and sealing to atmosphere by completely enclosed diaphragm; no dead volumes; suitable for sterilisation
- Suitable for CIP/SIP
- Self-drain angle marked on weld ends and in marking area.
- Manufactured and tested to EN 13397
- Marked in accordance with DIN EN 19 (ISO 5209)
- Marked in accordance with ASME BPE

<sup>1</sup> Smaller and larger nominal sizes available on request

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

<sup>3</sup> Forged material to ASME BPE: sulphur content 0.005 to 0.015 %; chrome content 17 to 18 %; BN2: Δ Fe <0.5 %

### Variants

- Handwheel made of stainless steel 1.4404/1.4409
- Tank valves or multi-port valves<sup>4)</sup>
- Pneumatic actuators
- Limit switches
- Positioners
- Adjustable travel stop
- High-temperature design for temperatures  $\geq 80^{\circ}\text{C}$  at actuator cylinder

### Diaphragm materials

**Table 4:** Overview of diaphragm qualities

Diaphragm	Temperature limit [°C]
SISTO-AseptiXX EPDM	+140
SISTO-AseptiXX TFM/EPDM bonded	
SISTO-AseptiXX TFM/EPDM 2-piece	+160

### Surface finish

**Table 5:** Surface finish of wetted internal body surfaces

Internal body surfaces				
Ra [ $\mu\text{m}$ ] <sup>5)</sup>	Ra [ $\mu\text{in}$ ]	ASME BPE Code	Hygiene class DIN 11866	Surface treatment
6,3	250	SF0	-	Ground
3,2	125	-	-	
1,6	60	-	-	
0,8	30	SF3	H3	
0,6	25	SF2	-	Electropolished
0,5	20	SF1	-	
0,4	15	-	H4	
0,8	30	-	HE3	
0,6	25	SF6	-	
0,5	20	SF5	-	
0,4	15	SF4	HE4	
0,25	10	-	HE5	

### Manually operated valve

**Table 6:** Overview of materials of manually operated valve

Diaphragm diameter (MD)	Type	Bonnet	Handwheel
30 - 115	HV.510	Stainless steel 1.4409	PA66-GF30
30 - 202	HV.520	Stainless steel 1.4409	Stainless steel 1.4409
280 <sup>6)</sup>	HV	-	-

### Actuator

**Table 7:** Overview of actuator materials

Diaphragm diameter (MD)	Type	Bonnet	Actuator
30 - 202	LAP.520	Stainless steel 1.4409	Stainless steel 1.4301 / 1.4409
168 - 202	LAP.530	Stainless steel 1.4409	Aluminium, hard anodised
280 <sup>6)</sup>	LAP	-	-

### SISTO-LAP piston actuator

- Actuator type LAP-AZ
  - Air-to-open
  - Air-to-close
- Actuator type LAP-OF
  - Spring-to-open
  - Air-to-close
- Actuator type LAP-SF
  - Air-to-open
  - Spring-to-close

### 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.
- Special design: All moving parts are separated from the fluid by the diaphragm.
- Compact valve design with integrated actuator requires minimal space.
- Actuator interface allows straightforward retrofitting of limit switches.
- Higher sterile requirements can be met with standard design by controlled discharge of exhaust air
- Pneumatic stainless steel actuators meet stringent requirements in sterile applications.
- High operating comfort thanks to visual position indicator, also with the limit switch enclosure mounted
- Low-friction piston seal minimises friction losses and ensures smooth movement of the pneumatic actuators.
- The valve hydraulics without dead volume offers optimum conditions for high-purity fluids.
- Optimised functional reliability of the diaphragm thanks to balanced diaphragm suspension
- Reliable processes ensured by limit switches in IP64 stainless steel enclosure for actuators
- Readily identifiable position: integral red position indicator on manually operated valves and pneumatic actuators
- The valves are self-draining and CIP/SIP-compatible, making them ideally suited for pharmaceutical applications
- Laser marking simplifies valve installation and identification of drain angle.

<sup>4</sup> For further designs refer to the "Sterile Processes" catalogue, reference No. 8652.10. More variants on request.

<sup>5</sup> Exact values in accordance with ASME BPE: 0.76 / 0.64 / 0.51 / 0.38  $\mu\text{m}$

<sup>6</sup> Design as per customer specifications

**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 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.

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

Valves without electrical components 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. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

**Related documents**

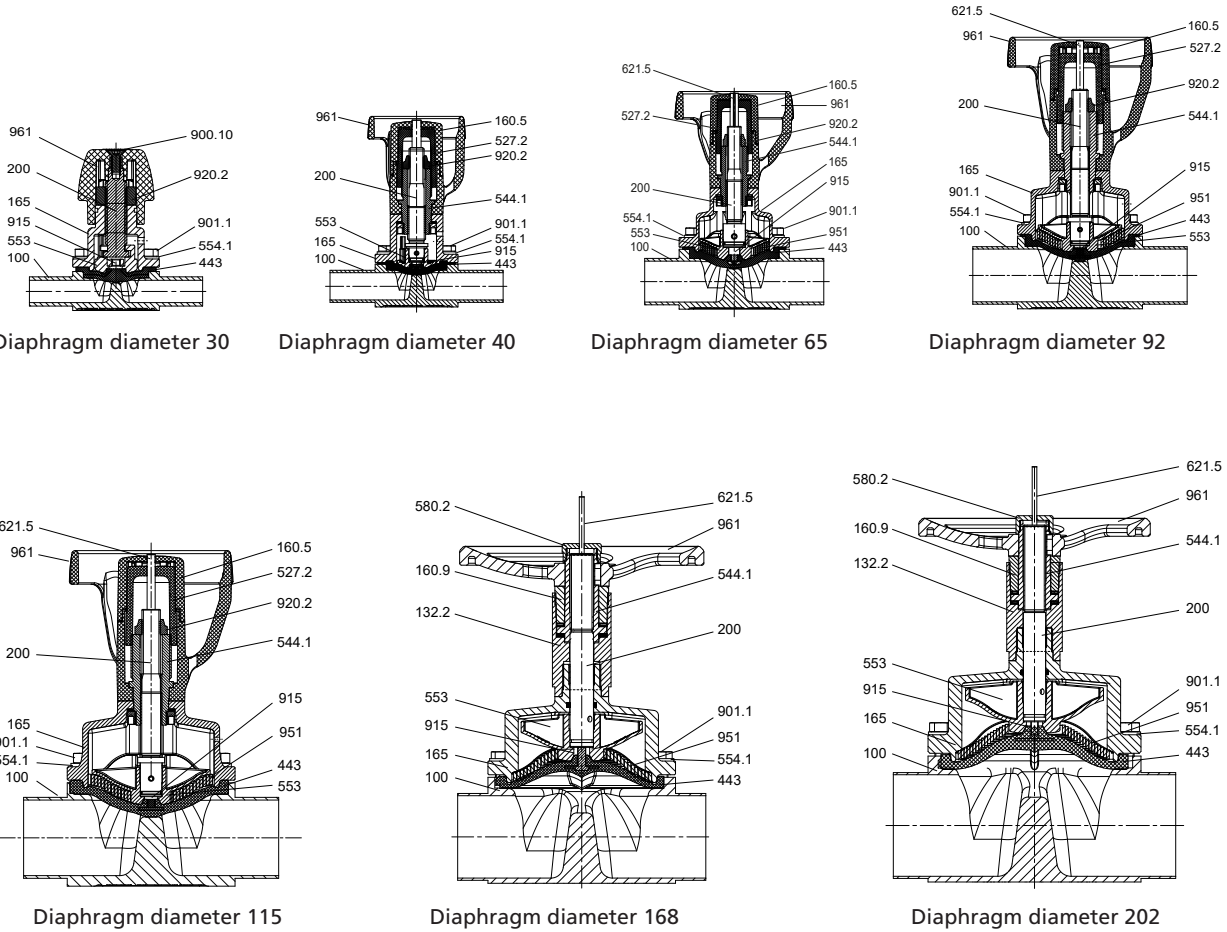
**Table 8:** Information/documents

Document	Reference number
"Sterile Processes" catalogue	8652.10
Operating manual	0570.822
Type series booklet SISTO-SK-i LED	8676.5
CAD portal 	<a href="https://ksb.partcommunity.com/3d-cad-models/membranventile-ksb-se-co-kgaa?info=ksb%2F1products%2F3valves%2F5diaphragm&amp;cwid=8817">https://ksb.partcommunity.com/3d-cad-models/membranventile-ksb-se-co-kgaa?info=ksb%2F1products%2F3valves%2F5diaphragm&amp;cwid=8817</a>

**Materials**

**Materials of SISTO-C manually operated valve**

SISTO-C HV.510/.520 mit Handrad



**Table 9: Parts list**

Part No.	Description	Material	Material number	Note
100	Body	X2CrNiMo18-14-3	1.4435/316L	Forged
132.2	Intermediate piece	X2CrNiMo17-12-2	1.4404	-
160.5	Handwheel cover	PA66-GF30	-	30 % glass fibre, black
160.9	Bearing cover	X2CrNiMo17-12-2	1.4404	-
165	Bonnet	GX2CrNiMo19-11-2	1.4409	-
200	Stem	X2CrNiMo17-12-2 X8CrNiS18-9	1.4404/1.4305	Diaphragm diameter 30 = 1.4404 Kolsterised
443 <sup>7)</sup>	Diaphragm	SISTO-AseptiXX EPDM	-	FDA, CFR 21, Section 177.2600 EC 1935/2004
527.2	Locating sleeve	PA66-GF30	-	-
544.1	Threaded bush	SoMs59	-	-
553	Compressor	GX2CrNiMo19-11-2	1.4409	-
554.1	Washer	A2	-	-
580.2	Cap	X2CrNiMo17-12-2	1.4404	-
621.5	Position indicator	PA6	-	-
900.10	Screw	A2	-	-
901.1	Hexagon head bolt	A2-70	-	DIN 933
915	Floating nut	A2	-	-
920.2	Nut	A2	-	-

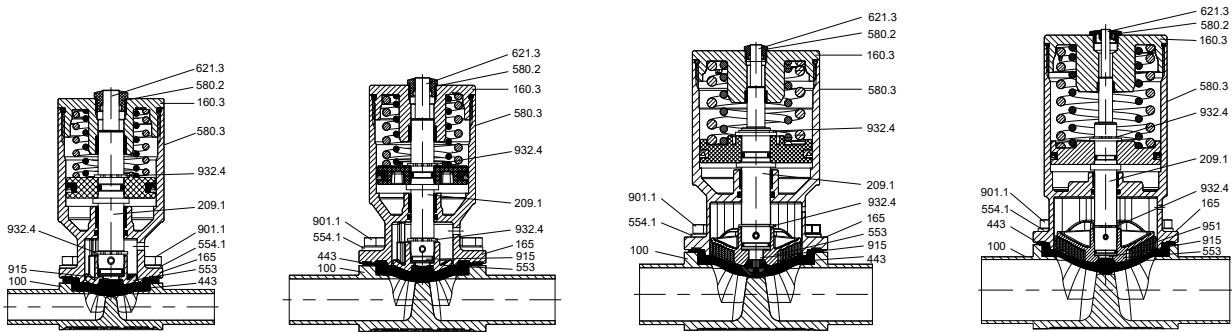
<sup>7</sup> Recommended spare parts

Part No.	Description	Material	Material number	Note
951	Support spiral	X5CrNi18-10	1.4301	-
961	Handwheel	PA66-GF30	-	Diaphragm diameters 30 - 115; 30 % glass fibre, black
		GX2CrNiMo19-11-2	1.4409	Diaphragm diameters 168 - 202



**Materials of SISTO-C with actuator**

SISTO-C mit LAP.520/.530SF

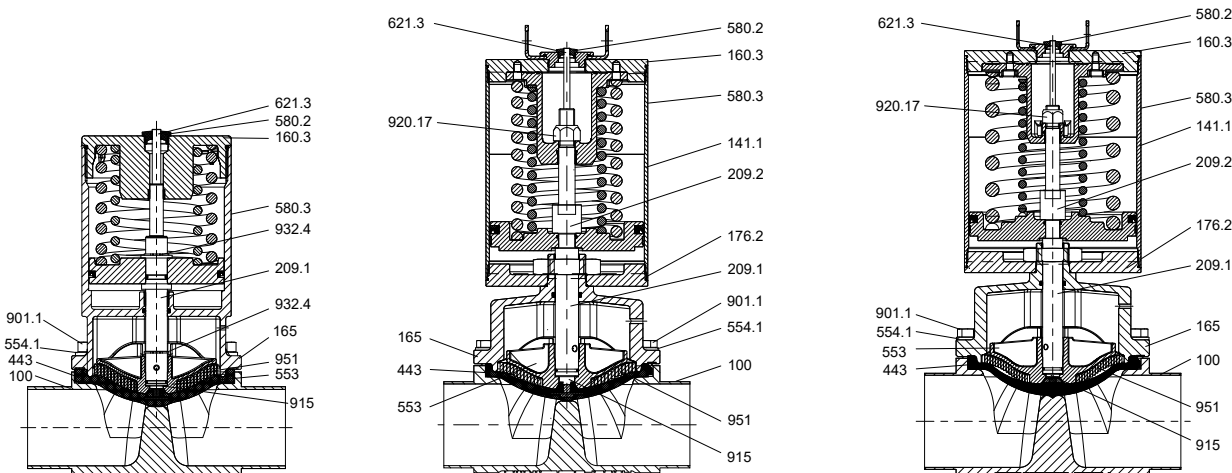


Diaphragm diameter 30

Diaphragm diameter 40

Diaphragm diameter 65

Diaphragm diameter 92



Diaphragm diameter 115

Diaphragm diameter 168

Diaphragm diameter 202

**Table 10: Parts list**

Part No.	Description	Material	Material number	Note
100	Body	X2CrNiMo18-14-3	1.4435/316L	Forged
141.1	Cylinder	X5CrNi18-10 / X6CrNiTi18-10	1.4301/1.4541	Variant with diaphragm diameters 168 - 202 Aluminium, hard anodised
160.3	Cover	X2CrNiMo17-12-2	1.4404	Variant with diaphragm diameters 168 - 202 Aluminium, hard anodised
165	Bonnet	GX2CrNiMo19-11-2	1.4409	-
176.2	Bottom	X2CrNiMo17-12-2	1.4404	-
209.1	Lower piston rod	X8CrNiS18-9	1.4305	-
209.2	Upper piston rod	X8CrNiS18-9	1.4305	-
443 <sup>8)</sup>	Diaphragm	SISTO-AseptiXX EPDM	-	FDA, CFR 21, Section 177.2600 EC 1935/2004
553	Compressor	GX2CrNiMo19-11-2	1.4409	-
554.1	Washer	A2	-	-
580.2	Cap	PA	-	-
580.3	Cap	PA	-	-
621.3	Position indicator	PA	-	-
901.1	Hexagon head bolt	A2-70	-	DIN 933
915	Floating nut	A2	-	-

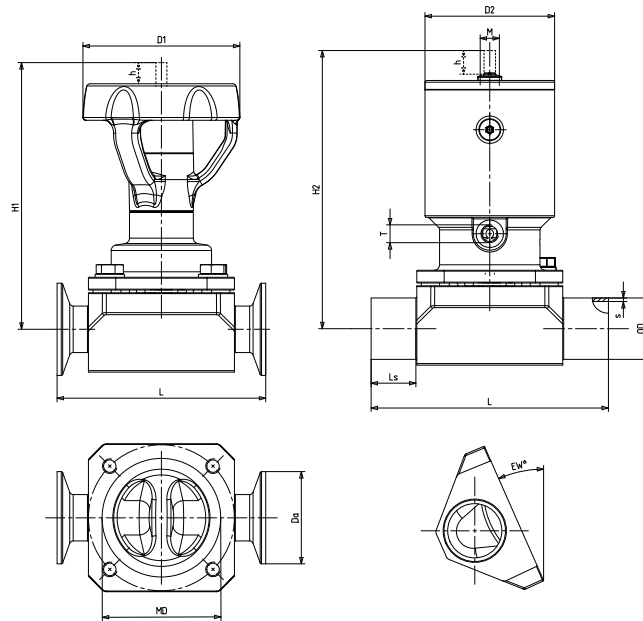
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<sup>8</sup> Recommended spare parts

Part No.	Description	Material	Material number	Note
920.17	Nut	A2	-	-
932.4	Circlip	A2	-	-
951	Support spiral	X5CrNi18-10	1.4301	From diaphragm diameter 65

**Dimensions**

**Dimensions to DIN**



Dimensions to DIN

**Table 11: Dimensions and weights to DIN**

DN	Inch	Diaphragm diameter	h [mm]	Drain angle °	Manually operated valve			Actuator				Butt weld ends <sup>9)</sup> to DIN 11866-A			Clamps <sup>9)</sup> to DIN 32676-A (DIN 11866-A)		K <sub>vs</sub> value [m <sup>3</sup> /h]					
					H1 [mm]	D1 [mm]	[kg] <sup>10)</sup>	H2 [mm]	D2 [mm]	[kg] <sup>11)</sup>	T	M	L [mm]	Ls [mm]	ODxs [mm]	L [mm]		Da [mm]				
6	1/4	30	5	41,2	68	35	0,4	87	41	0,6	M 5	M 12x1	80	20,0	8x1,0	63,5	25,0	1,1				
8	5/16			34,6	68			87							10x1,0	63,5	25,0	1,8				
10	3/8			24,0	69			88							13x1,5	63,5	34,0	2,1				
15	1/2	40	7	21,7	116	66	0,9	103	46	0,9	M 5	M 12x1	115	30,0	19x1,5	88,9	34,0	5,0				
20	3/4			34,6	146	88	2,0	149	71	2,9					23x1,5	101,6	34,0	11,8				
25	1	65	13	24,1	148			151			M 5	M 12x1	130	25,0	29x1,5	114,3	50,5	16,5				
32	1 1/4			31,3	215	125	4,6	207	89	6,3					35x1,5	139,7	50,5	34,0				
40	1 1/2			24,7	216			208							41x1,5	139,7	50,5	42,5				
50	2	115	24	21,7	231	125	7,1	242	110	10,3	M 5	M 12x1	190	32,5	53x1,5	158,8	64,0	65,0				
65	2 1/2			31,0	327	250	23,8	421	167	27,7/ 34,9					70x2,0	-	-	137,0				
80	3	168	40	21,0	336			430		26,7/ 33,9	M 5	M 12x1	254	31,0	85x2,0	-	-	156,0				
100	4			20,0	377	250	37,7	501	210	48,5/ 59,3					G 1/8	M 18x1	305	37,5	104x2,0	-	-	245,0
125	4 1/2			8,8	392		49,7													356	63,0	129x2,0
150	5	280	80	17,9	512	400	97,0					414	50,0	154x2,0	-				-	490,0		
200	6			4,1	536		114,0						521	103,5	204x2,0	-	-	500,0				

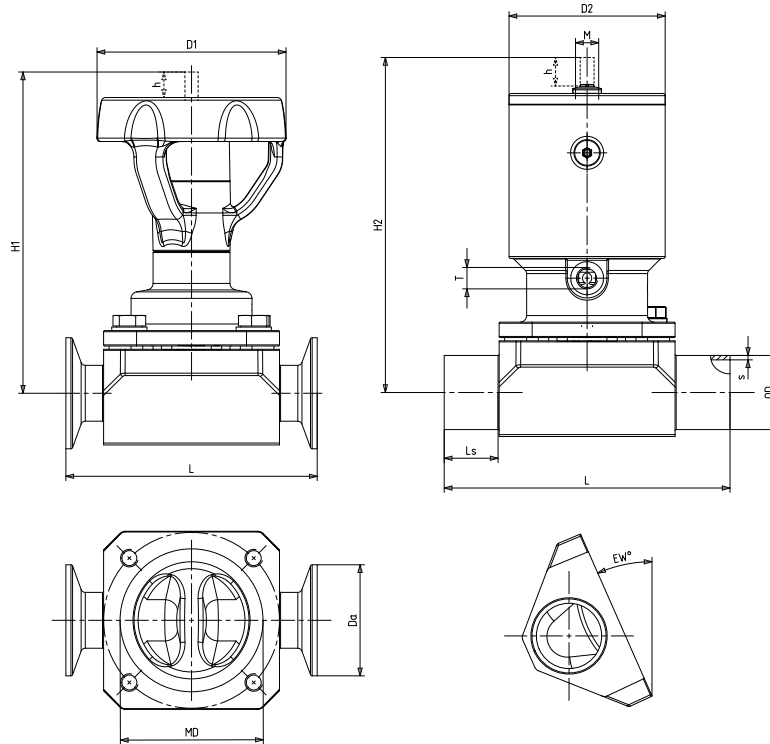
<sup>9</sup> Smaller and larger nominal sizes available on request

<sup>10</sup> Variant HV.510 for diaphragm diameter 30 - 115, variant HV.520 for diaphragm diameter 168 - 202

<sup>11</sup> Variant LAP.520 for diaphragm diameter 30 - 115, variant LAP.530/520 for diaphragm diameter 168 - 202

<sup>12</sup> Design as per customer specifications

**Dimensions to ISO**



Dimensions to ISO

**Table 12: Dimensions and weights to ISO**

DN	Inch	Diaphragm diameter	h [mm]	Drain angle °	Manually operated valve			Actuator				Butt weld ends <sup>13)</sup> to DIN 11866-B (ISO 4200)			Clamps <sup>13)</sup> to DIN 32676-B (ISO 4200)		K <sub>vs</sub> value [m <sup>3</sup> /h]									
					H1 [mm]	D1 [mm]	[kg] <sup>14)</sup>	H2 [mm]	D2 [mm]	[kg] <sup>15)</sup>	T	M	L [mm]	Ls [mm]	ODxS [mm]	L [mm]		Da [mm]								
6	1/4	30	5	38,0	68	35	0,4	87	41	0,6	M 5	M 12 x 1	80	20,0	10,2x1,6	63,5	25,0	1,5								
8	5/16			23,0	69			88					13,5x1,6		63,5	25,0	2,2									
10	3/8	40	7	27,7	115	66	0,9	102	46	0,9			M 5	M 12 x 1	115	30,0	17,2x1,6	88,9	25,0	4,5						
15	1/2			15,7	117			104							21,3x1,6		88,9	50,5	5,2							
20	3/4	65	13	27,1	148	88	2,0	151	71	2,9					M 5	M 12 x 1	130	25,0	26,9x1,6	101,6	50,5	14,7				
25	1			17,7	150			153									33,7x2,0		114,3	50,5	17,5					
32	1 1/4	92	21	24,4	216	125	4,6	208	89	6,3							M 5	M 12 x 1	180	37,5	42,2x2,0	139,7	64,0	43,0		
40	1 1/2			17,1	219			211											48,3x2,0		139,7	64,0	45,5			
50	2	115	24	15,6	234	125	7,1	245	110	10,3									M 5	M 12 x 1	190	32,5	60,3x2,0	158,8	77,5	69,0
65	2 1/2			168	40			27,0													330		250	23,8	424	167
80	3	19,6	336	22,8		430	26,7/ 33,9	88,9x2,3	-	-	161,0															
100	4	202	55	15,3	382	250	37,7	506	210	48,5/ 59,3	G 1/8	M 18x1									305	37,5	114,3x2,3	-	-	255,0
125	4 1/2			5,4	392			47,7					- <sup>16)</sup>	356							63,0		139,7x2,6	-	-	258,0
150	5	280	80	13,7	518	400	92,0	- <sup>16)</sup>					414	50,0							168,3x2,6	-	-	500,0		
200	6			0,9	543			111,0	- <sup>16)</sup>	521			103,5		219,1x2,6	-					-	510,0				

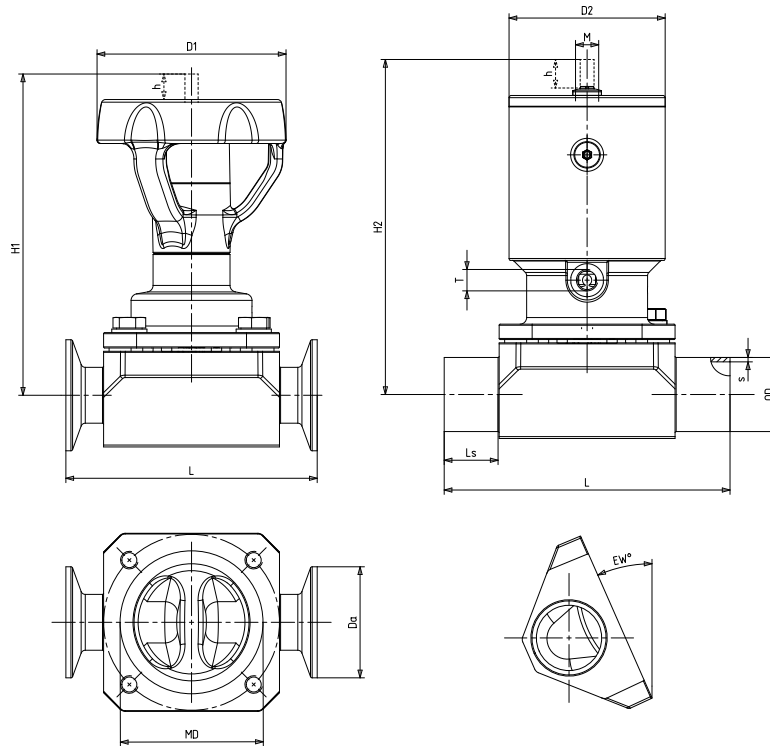
<sup>13)</sup> Smaller and larger nominal sizes available on request

<sup>14)</sup> Variant HV.510 for diaphragm diameter 30 - 115, variant HV.520 for diaphragm diameter 168 - 202

<sup>15)</sup> Variant LAP.520 for diaphragm diameter 30 - 115, variant LAP.530/.520 for diaphragm diameter 168 - 202

<sup>16)</sup> Design as per customer specifications

**Dimensions to OD**



Dimensions to OD

**Table 13: Dimensions and weights to OD**

DN	Inch	Diaphragm diameter	h [mm]	Drain angle °	Manually operated valve			Actuator				Butt weld ends <sup>17)</sup> to OD ASME BPE			Clamps <sup>17)</sup> to DIN 32676-C (OD ASME BPE)		Kvs value [m <sup>3</sup> /h]			
					H1 [mm]	D1 [mm]	[kg] <sup>18)</sup>	H2 [mm]	D2 [mm]	[kg] <sup>19)</sup>	T	M	L [mm]	Ls [mm]	ODxs [mm]	L [mm]		Da [mm]		
6	1/4	30	5	45,8	68	35	0,4	87	41	0,6	M 5	M 12x1	80	20,0	6,35x0,89	63,5	25,0	0,6		
10	3/8			35,5	68			87							9,53x0,89	63,5	25,0	1,7		
15	1/2			26,0	69			88							12,70x1,65	63,5	25,0	2,1		
15	1/2	40	7	37,3	115	66	0,9	102	46	0,9			M 18x1	115	30,0	12,70x1,65	88,9	25,0	2,6	
20	3/4			22,2	116			103								19,05x1,65	101,6	25,0	4,9	
25	1	65	13	31,8	146	88	2,0	149	71	2,9				130	25,0	25,40x1,65	114,3	50,5	13,8	
40	1 1/2			28,8	215			125								4,6	207	89	6,3	180
50	2	115	24	23,5	231	125	7,1	242	110	10,3				G 1/8	190	32,5	50,80x1,65	158,8	64,0	62,0
65	2 1/2			12,3	236			6,4									247	9,6	63,50x1,65	193,8
80	3	168	40	26,7	330	250	22,8	424	167	26,7/33,9					254	31,0	76,20x1,65	222,3	91,0	151,0
100	4			20,9	377			250		37,7	501	210					48,5/59,3	305	37,5	101,60x2,11
150	5	280	80	18,8	512	400	93,4	- <sup>20)</sup>			414	50,0			152,4x2,77	-	-	490,0		

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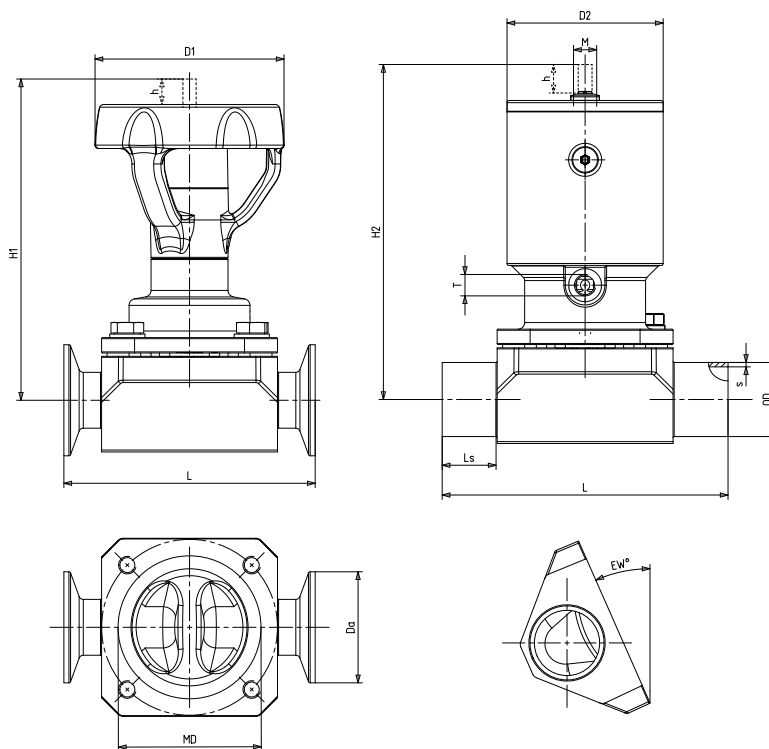
<sup>17)</sup> Smaller and larger nominal sizes available on request

<sup>18)</sup> Variant HV.510 for diaphragm diameter 30 - 115, variant HV.520 for diaphragm diameter 168 - 202

<sup>19)</sup> Variant LAP.520 for diaphragm diameter 30 - 115, variant LAP.530/.520 for diaphragm diameter 168 - 202

<sup>20)</sup> Design as per customer specifications

**Dimensions to SMS**



Dimensions to SMS

**Table 14: Dimensions and weights to SMS**

DN	Inch	Diaphragm diameter	h [mm]	Drain angle °	Manually operated valve			Actuator				Butt weld ends <sup>21)</sup> to SMS 3008			Clamps <sup>21)</sup> to DIN 32676 (SMS 3008)			K <sub>v</sub> value [m <sup>3</sup> /h]	
					H1 [mm]	D1 [mm]	[kg] <sup>22)</sup>	H2 [mm]	D2 [mm]	[kg] <sup>23)</sup>	T	M	L [mm]	Ls [mm]	ODxs [mm]	L [mm]	Da [mm]		di [mm]
10	3/8	30	5	24,0	69	35	0,4	88	41	0,6	M 5	M 12x1	80	20,0	12x1,0	63,5	25,0	10,0	2,1
15	1/2	40	7	21,7	116	66	0,9	103	46	0,9			115	30,0	18x1,0	88,9	25,0	16,0	5,0
25	1	65	13	31,1	146	88	2,0	149	71	2,9	G 1/8	M 18x1	130	25,0	25x1,2	114,3	50,5	22,6	13,8
40	1 1/2	92	21	26,9	216	125	4,6	208	89	6,3			180	37,5	38x1,2	139,7	50,5	35,6	39,0
50	2	115	24	22,7	231		7,1	242	110	10,3			190	32,5	51x1,2	158,8	64,0	48,6	62,0
65	2 1/2			12,2			236			6,4			247	9,6	254	30,0	76,1x1,6	193,8	77,5
80	3	168	40	26,7	330	250	22,8	424	167	26,7/33,9			305	37,5				101,6x2,0	222,3
100	4	202	55	20,8	377		37,7	501	210	48,5/59,3						292,1	119,0	97,6	237,0

<sup>21)</sup> Smaller and larger nominal sizes available on request

<sup>22)</sup> Variant HV.510 for diaphragm diameter 30 - 115, variant HV.520 for diaphragm diameter 168 - 202

<sup>23)</sup> Variant LAP.520 for diaphragm diameter 30 - 115, variant LAP.530/520 for diaphragm diameter 168 - 202

### Specifications

Butt weld ends:	DIN 11866 Series A (DIN 11850) DIN 11866 Series B (DIN EN ISO 1127/ISO 4200) DIN 11866 Series C (OD ASME BPE) SMS 3008 JIS-G 3447
Clamps:	DIN 32676 ASME BPE SMS 3017 JIS-G 3447
Marking:	DIN EN 19 (ISO 5209) ASME BPE

### Actuator selection by operating pressure

#### Operating pressure<sup>24)</sup> in bar in acc. with DIN EN 12266-2 and actuator dimensions

**Table 15:** Operating pressure [bar] for actuator function: (LAP.520/530-SF) air-to-open/spring-to-close

Diaphragm size [mm]		EPDM [bar]			TFM, bonded [bar]		TFM, 2-piece [bar]		Dimensions [mm]	
MD <sup>25)</sup>	Function	Piston	One side	Both sides	One side	Both sides	One side	Both sides	H2 max.	D2
30	SF	35	10	5	7	3,5	-	-	88	41
		40	14	7	12	6	12	6	95	46
		50	16	8	16	8	16	8	119	60
40	SF	40	10	5	7	3,5	-	-	104	46
		50	14	7	12	6	12	6	136	58
		63	16	8	16	8	16	8	168	77
65	SF	63	10	5	7	3,5	8	4	153	71
		80	14	7	12	6	12	6	197	89
		100	16	8	16	8	16	8	244	116
92	SF	80	10	5	7	3,5	8	4	211	89
		100	14	7	12	6	12	6	243	110
		160	16	8	16	8	16	8	371	167
115	SF	100	10	5	7	3,5	8	4	247	110
		160	14	7	12	6	12	6	379	167
168	SF	160	10	5	-	-	8	4	430	167
		200	14	7	-	-	12	6	460	210
202	SF	200	10	5	-	-	8	4	506	210
		D200	14	7	-	-	12	6	677	210
280 <sup>26)</sup>	SF	-	-	-	-	-	-	-	-	-

**Table 16:** Operating pressure [bar] for actuator function: (LAP.520/530-OF) spring-to-open/air-to-close

Diaphragm size [mm]		EPDM [bar]			TFM, bonded [bar]		TFM, 2-piece [bar]		Dimensions [mm]	
MD <sup>25)</sup>	Function	Piston	One side	Both sides	One side	Both sides	One side	Both sides	H2 max.	D2
30	OF	35	9	4,5	7	3,5	8	4	88	41
40	OF	40	9	4,5	7	3,5	8	4	104	46
65	OF	63	9	4,5	7	3,5	8	4	153	71
92	OF	80	9	4,5	7	3,5	8	4	211	89
115	OF	100	9	4,5	7	3,5	8	4	247	110
168	OF	160	9	4,5	-	-	8	4	430	167
202	OF	200	9	4,5	-	-	8	4	506	210
280 <sup>26)</sup>	OF	-	-	-	-	-	-	-	-	-

<sup>24</sup> Higher operating pressures are possible with specific combinations.  
<sup>25</sup> MD = diaphragm diameter  
<sup>26</sup> Design as per customer specifications

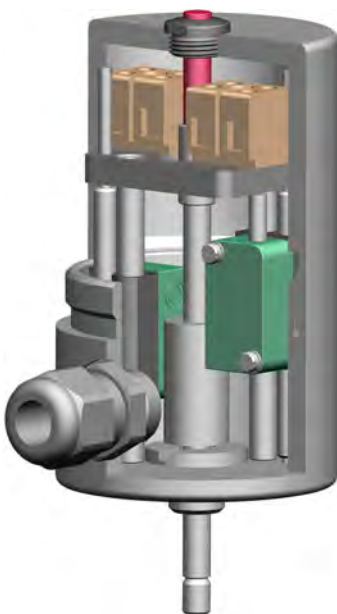
**Table 17:** Operating pressure [bar] for actuator function: (LAP.520/530-AZ) air-to-open/air-to-close

Diaphragm size [mm]			EPDM [bar]		TFM, bonded [bar]		TFM, 2-piece [bar]		Dimensions [mm]	
MD <sup>25)</sup>	Function	Piston	One side	Both sides	One side	Both sides	One side	Both sides	H2 max.	D2
30	AZ	35	12	6	8	4	12	6	88	41
40	AZ	40	12	6	8	4	12	6	104	46
65	AZ	63	12	6	8	4	12	6	153	71
92	AZ	80	12	6	8	4	12	6	211	89
115	AZ	100	12	6	8	4	12	6	247	110
168	AZ	160	12	6	-	-	12	6	430	167
202	AZ	200	12	6	-	-	12	6	506	210
280 <sup>26)</sup>	AZ	-	-	-	-	-	-	-	-	-



**Accessories**

**Electrical actual-position feedback unit SK.500/SK.510 for linear actuators, stroke: 5-60 mm**



- Straightforward adjustment of limit switches by means of threaded stem
- No special tools required for retrofitting on SISTO-C
- ATEX-compliant model (sensor, block terminals and cable entry with ATEX certification)
- Block terminals easily accessible for connection
- Visual position indicator as standard
- Stainless steel housing as standard
- Reliable adjustment of limit switches even under vibration conditions

Example: SK.500

**Table 18:** Technical data of SK.500/SK.510

Characteristic	Type	
	SK.500	SK.510
Stroke [mm]	5-26	5-60
Housing material	1.4404	1.4404
Electrical connection	Terminal strip and cable entry (optional: connector)	
Setting the proximity sensors	Threaded stem (optional: from outside the housing)	
Travel stop	Optional	
Enclosure	IP64	

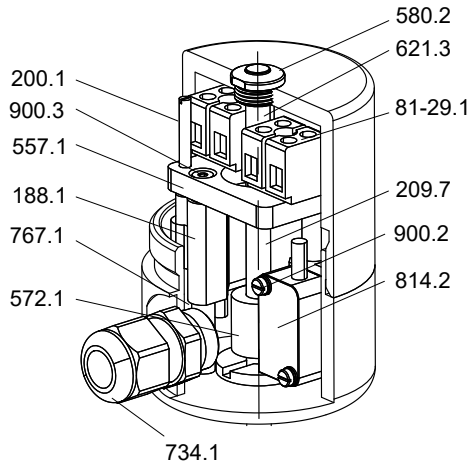
**Table 19:** Technical data of limit switches

Characteristic	NCB2-V3-N0 (inductive) 2-wire system	NBB2-V3-E2 (inductive) 3-wire system	ABV161651 (mechanical) <sup>27)</sup>
Manufacturer	Pepperl & Fuchs	Pepperl & Fuchs	Matsushita (with modified switching flag)
Type	NAMUR normally closed contact	PNP normally open contact	Changeover contact
Voltage	8 V	10.....30V	24 VDC / 250 VAC
Temperature range	-25 °C to +100 °C	-25 °C to +70 °C	-40 °C to +85 °C
Housing material	PBT	PBT	-
ATEX	SK.500/SK.510	-	-

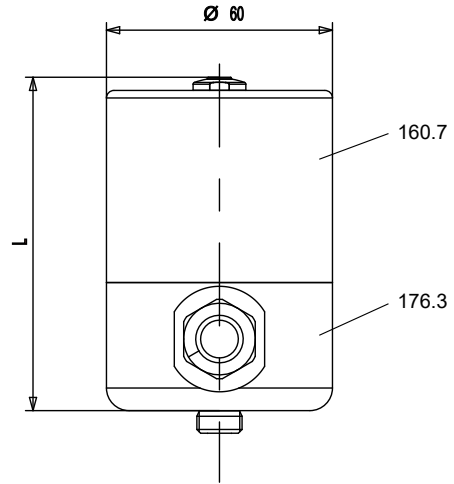
8644.1/26-EN

<sup>27)</sup> Can be used from diaphragm diameter 40 only

List of components of SK.500/SK.510



General assembly drawing of SK.500/SK.510



SK.500/SK.510 (MD 30-202)

Table 20: Parts list

Part No.	Description	Material	Material number	Note
81-29.1	Terminal	Plastic	-	-
160.7	Cover	X2CrNiMo17-12-2	1.4404	-
176.3	Bottom	X2CrNiMo17-12-2	1.4404	-
188.1	Halter	PA6	-	-
200.1	Stem	A2	-	-
209.7	Switching rod	X2CrNiMo17-12-2	1.4404	-
557.1	Guide disc	PA6	-	-
572.1	Contact piece	X14CrMoS17	1.4104	-
580.2	Cap	PA6	-	-
621.3	Position indicator	PA	-	-
734.1	Cable gland	Plastic	-	M16x1.5
767.1	Rod guide	A2	-	-
814.2	Limit switch	Plastic	-	-
900.2	Screw	A2	-	-
900.3	Screw	A2	-	-

Table 21: Dimensions table of SK.500/SK.510

Model	Diaphragm diameter [MD]	Length (L) [mm]	Stroke [mm]	Weight [kg]
SK.500	MD 30-115	101	5-26	1,3
SK.510	MD 168-202	152	5-60	1,8

**Terminal diagram for SK.500/SK.510**

**Table 22: Terminal diagram for SK.500/SK.510**

<p style="text-align: center;">Inductive 3-wire system</p>	<p style="text-align: center;">Inductive 2-wire system</p>	<p style="text-align: center;">Mechanical Changeover contact</p>

**Table 23: Symbols key**

Symbol	Description
1)	Open
2)	Closed





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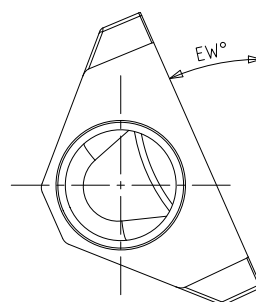
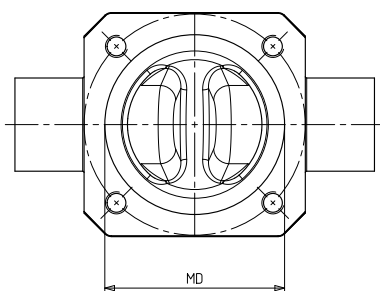
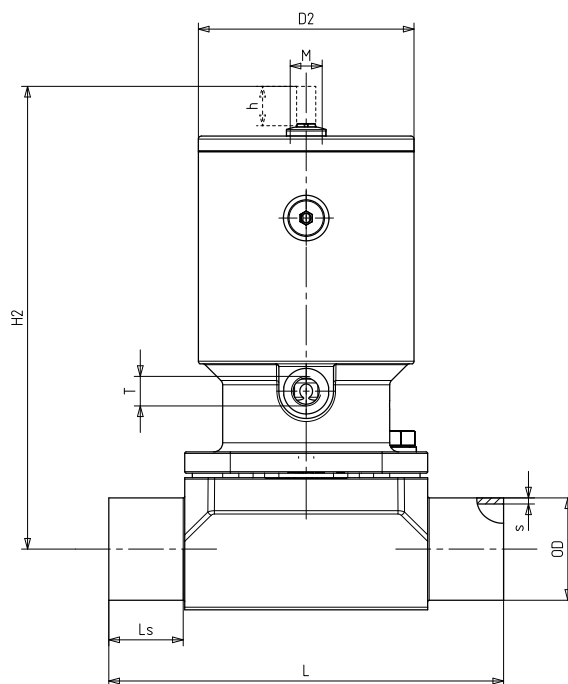
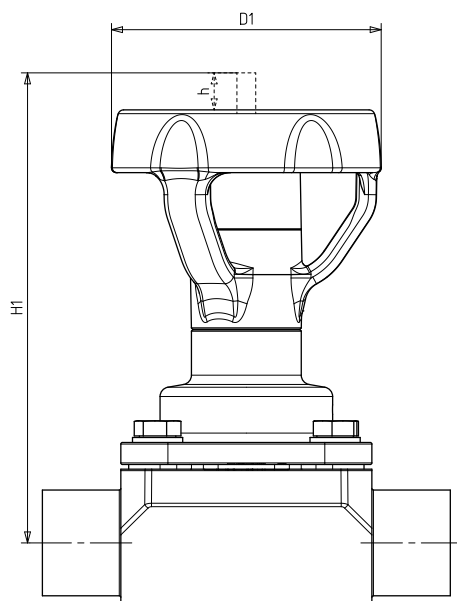


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### SISTO-C - Non-standard

#### Dimensions and Kvs-Values



#### Dimensions to DIN [mm]

DN	NPS	MD	h	EW°	Manually operated			Actuator				Butt weld ends to DIN 11866 Series A			K <sub>vs</sub> -Value
					H1	D1	[kg]	H2	D2	[kg]	T	L	Ls	ODxs	
20	¾"	40	7	9,6	120	66	1,0	107	46	1,0	M5	115	30	23x1,5	4,4
32	1 ¼"	65	13	12,2	154	88	2,6	157	71	3,5	G¾	140	30	35x1,5	15,4
50	2"	92	21	10	226	125	6,5	218	89	8,2	G¾	190	42,5	53x1,5	42,4
65	2 ½"	115	24	7	241	125	8,0	252	110	11,2	G¾	200	37,5	70x2	65
100	4"	168	40	10,7	351	250	30,9	445	167	34,8/42,0	G¾	305	56,5	104x2	143

#### Dimensions to ISO [mm]

DN	NPS	MD	h	EW°	Manually operated			Actuator				Butt weld ends to DIN 11866 Series B (ISO 4200)			K <sub>vs</sub> -Value
					H1	D1	[kg]	H2	D2	[kg]	T	L	Ls	ODxs	
10	¾"	30	5	7,7	72	35	0,4	91	41	0,6	M5	80	20	17,2x1,6	2,2
20	¾"	40	7	2,8	120	66	1	107	46	1	M5	115	30	26,9x1,6	4,7
32	1 ¼"	65	13	4,2	154	88	2,6	157	71	3,5	G¾	140	30	42,4x2	17,5
50	2"	92	21	4,9	226	125	6,5	218	89	8,2	G¾	190	42,5	60,3x2	45,7
65	2 ½"	115	24	2,7	241	125	7,6	252	110	10,8	G¾	200	37,5	76,1x2	67
100	4"	168	40	6,25	351	250	29,8	445	167	34,8/42,0	G¾	305	56,5	114,3x2,3	157

#### Dimensions to OD [mm]

DN	NPS	MD	h	EW°	Manually operated			Actuator				Butt weld ends to OD ASME BPE			K <sub>vs</sub> -Value
					H1	D1	[kg]	H2	D2	[kg]	T	L	Ls	ODxs	
50	2"	92	21	12	226	125	6,5	218	89	8,2	G¾	190	42,5	50,8x1,65	42,4
80	3"	115	24	2,1	241	125	7,6	252	110	10,8	G¾	200	37,5	76,2x1,65	67
100	4"	168	40	11,9	351	250	30,9	445	167	34,8/42,0	G¾	305	56,5	101,6x2,11	143