



A KSB Company

CATALOGUE

Diaphragm Valves | Swing Check Valves | Actuators Industry | Building Services



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Catalogue

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Resistance Details

Applications ¹⁾		Temperature [°C] ²⁾	
		from	to
Diaphragm			
EPDM	<ul style="list-style-type: none"> ▪ Hot water and high-temperature hot water ▪ Service water ▪ Diluted acids and lyes 	-30	+140
SISTOMaXX (EPDM/W270)	<ul style="list-style-type: none"> ▪ Drinking water ▪ Hot water and high-temperature hot water 	-30	+90
EPDM-V	<ul style="list-style-type: none"> ▪ Reinforced for high loads ▪ Steam, condensate ▪ Vacuum applications 	-30	+140
IIR (soft rubber)	<ul style="list-style-type: none"> ▪ High-temperature hot water ▪ Cold water ▪ Diluted acids and lyes 	-20	+120
FKM	<ul style="list-style-type: none"> ▪ Mineral oils ▪ Diluted lyes ▪ Concentrated acids ▪ Hydrocarbons (aliphatic, aromatic) 	-20	+120
CSM	<ul style="list-style-type: none"> ▪ Concentrated lyes and acids ▪ Fluids containing chlorine 	-20	+80
NBR	<ul style="list-style-type: none"> ▪ Oils and greases ▪ Oil-containing compressed air ▪ Paraffins, petrols 	-30	+90
TFM/EPDM, 2-piece	<ul style="list-style-type: none"> ▪ Highest chemical load ▪ Food 	-30	+160
TFM/PVDF/EPDM, 3-piece	<ul style="list-style-type: none"> ▪ Highest chemical load ▪ Food 	-30	+160
Body coating			
Polyamide (Rilsan)	<ul style="list-style-type: none"> ▪ Food ▪ Water including seawater ▪ Oils and greases 	-20	+60
ECTFE (Halar)	<ul style="list-style-type: none"> ▪ High chemical load ▪ Acids and lyes 	-20	+90
Body lining			
NRH (hard rubber)	<ul style="list-style-type: none"> ▪ Acids and lyes ▪ Fluids containing chlorine 	-20	+100
IIR (butyl)	<ul style="list-style-type: none"> ▪ Acids and lyes ▪ Abrasive fluids 	-20	+120
PTFE	<ul style="list-style-type: none"> ▪ Highest chemical load ▪ Food ▪ Fluids containing chlorine 	-30	+160
TFM	<ul style="list-style-type: none"> ▪ Highest chemical load ▪ Food ▪ Fluids containing chlorine 	-30	+160

¹ Further applications on request

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

Materials

Material number	Code	Standard	Previous material number (until 2011)
5.1301	EN-GJL-250	EN 1561	JL1040
5.1300	EN-GJL-200	EN 1561	JL1030
5.3103	EN-GJS-400-18-LT	EN 1563	JS1049/JS1025
5.3106	EN-GJS-400-15	EN 1563	JS1030
1.0460	P250GH	DIN EN 10273	-
1.0619+N	GP240GH+N	DIN EN 10213	-
1.4408	GX5CrNiMo 19-11-2	DIN EN 10213	-
CC499K	CuSn5Zn5Pb2-C	EN 1982	Rg5
1.4409	GX2CrNiMo 19-11-2	DIN EN 10213	-

Application Ranges of Materials Used

SISTO-KB

- With free passage
- PN 10, DN 15 - 200

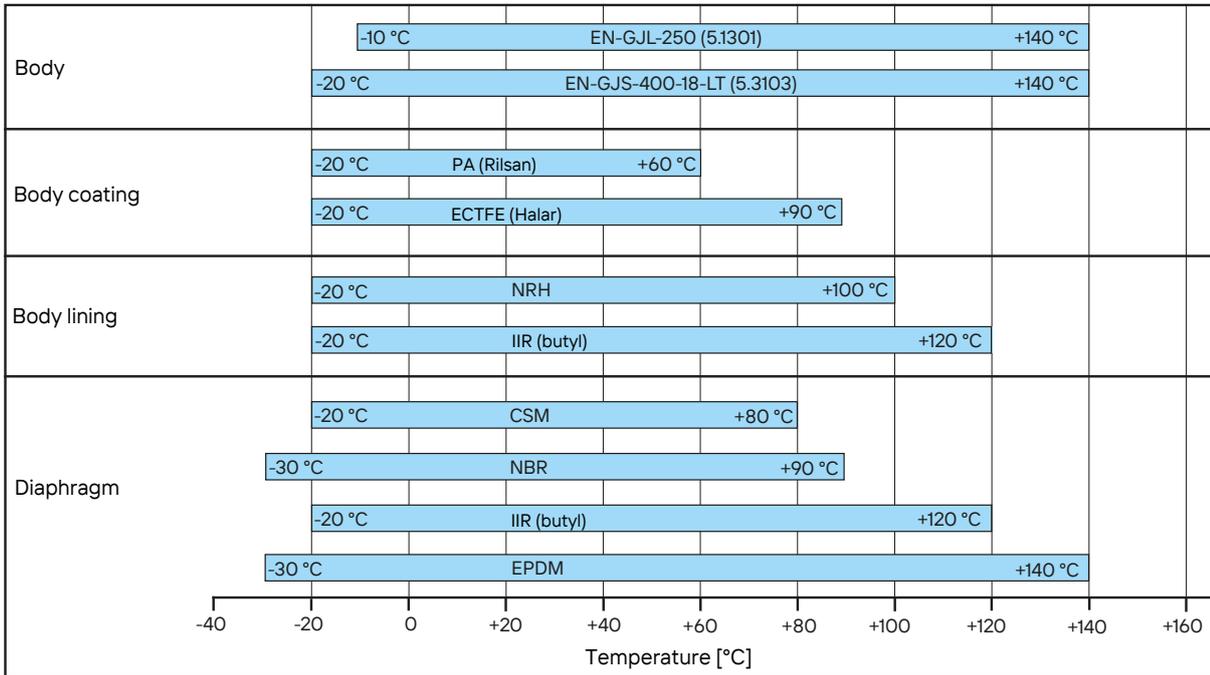


Fig. 1: Application ranges of SISTO-KB

SISTO-16

- PN 16, DN 15 - 200
- PN 10, DN 250 - 300

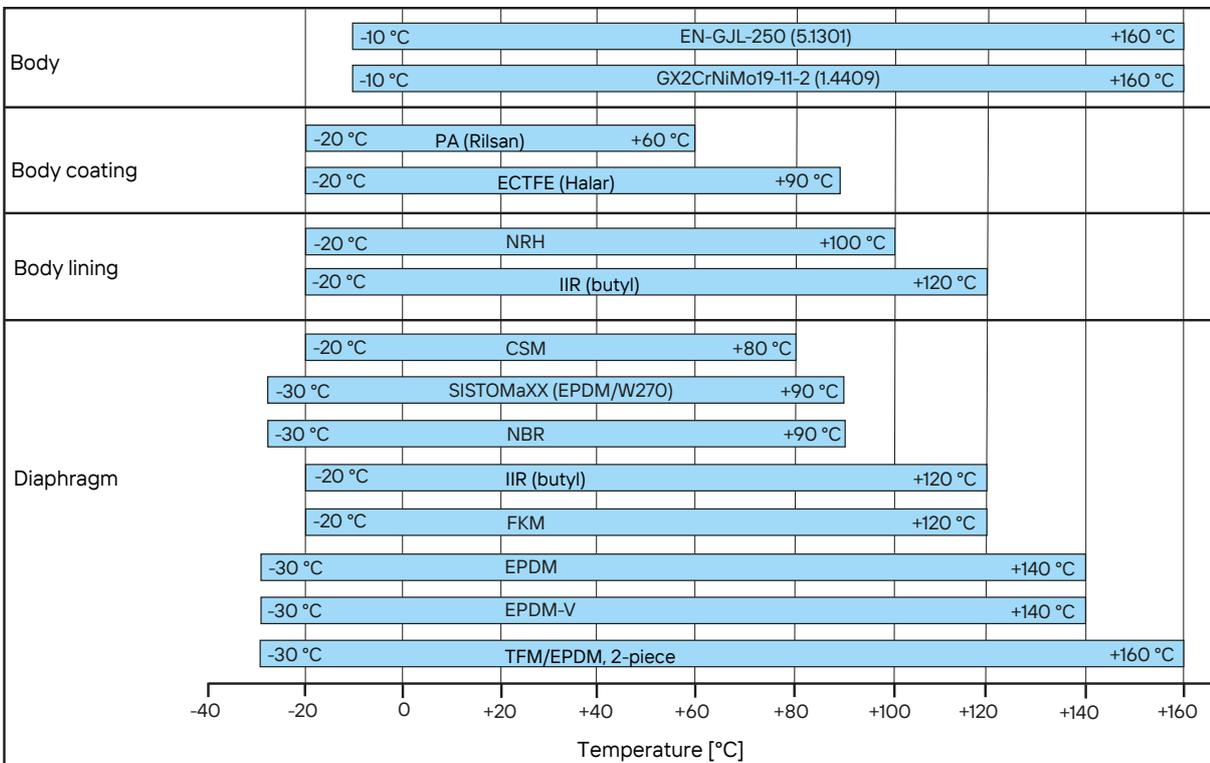


Fig. 2: Application ranges of SISTO-16

SISTO-16S

- PN 16, DN 15 - 200

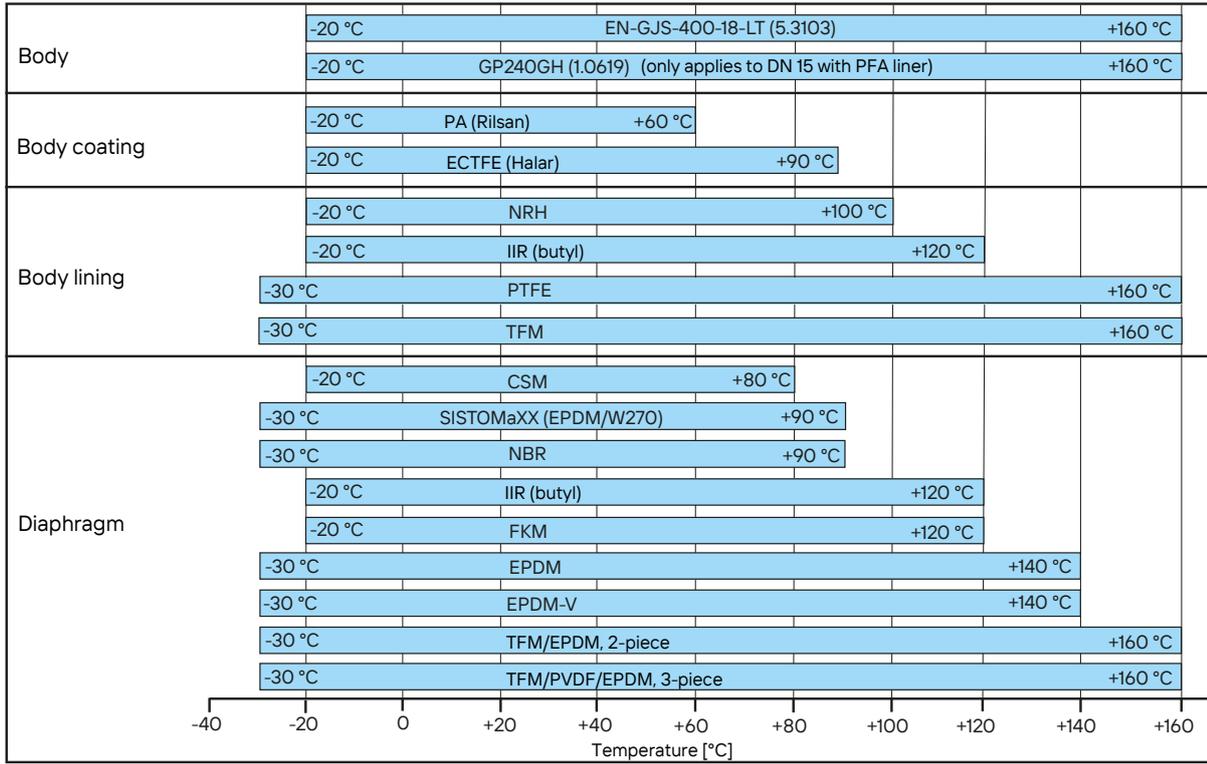


Fig. 3: Application ranges of SISTO-16S

SISTO-20

- PN 16, DN 15 - 200
- PN 10, DN 250 - 300

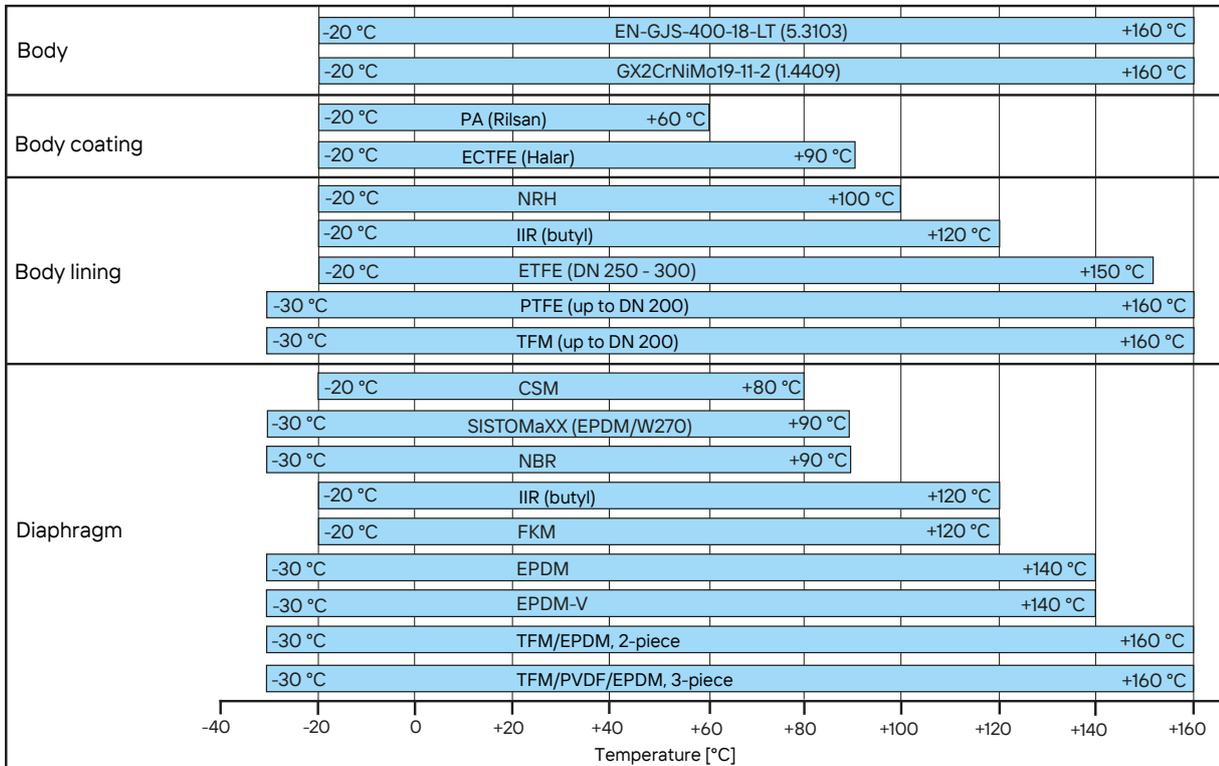


Fig. 4: Application ranges of SISTO-20

Overview of Type Series

Diaphragm valves			
SISTO-KB	<ul style="list-style-type: none"> Maintenance-free diaphragm valves Straight-way pattern With flanged ends 	PN 10	DN 15 - DN 200
SISTO-16	<ul style="list-style-type: none"> Maintenance-free diaphragm valves With flanged ends or threaded sockets 	PN 10/16	DN 15 - DN 300
SISTO-16S	<ul style="list-style-type: none"> Maintenance-free diaphragm valves With flanged ends Face-to-face length EN558 R7 (BS 5156) 	PN 10/16	DN 15 - DN 200
SISTO-20	<ul style="list-style-type: none"> Maintenance-free diaphragm valves With flanged ends or threaded sockets 	PN 10/16	DN 15 - DN 300
SISTO-16RGAMaXX	<ul style="list-style-type: none"> Maintenance-free diaphragm valves With threaded sockets Stainless steel 	PN 10/16	DN 15 - DN 80
SISTO-16TWA/HWA/DLU	<ul style="list-style-type: none"> Maintenance-free diaphragm valves With flanged ends 	PN 10/16	DN 15 - DN 200

Swing check valves			
SISTO-RSK/-RSKS	<ul style="list-style-type: none"> Maintenance-free swing check valves Soft-seated With flanged ends 	PN 10/16	DN 25 - DN 300

Actuators	
SISTO-LAP	<ul style="list-style-type: none"> Pneumatic piston actuators for industrial use
Electric actuators	<ul style="list-style-type: none"> Electric linear actuators Electric multi-turn actuators

Diaphragm Valve



Diaphragm Valves

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

SISTO-KB



Product benefits

- **Reliable sealing to atmosphere and absolutely tight shut-off**
The diaphragm provides absolutely tight shut-off as well as hermetic sealing to atmosphere and of all operating elements.
- **Low flow resistance coefficient**
Streamlined straight-through type body design
- **Excellent resistance to corrosion and abrasion**
High-quality body materials and linings offer reliability and a long service life.
- **Smooth actuation**
The thrust bearing minimises the closing torques.
- **Optimised long-term operation**
The stem protection integrated in the position indicator prevents ingress of contaminants.
- **Fluid purity**
Valve hydraulics without dead volume ensure optimum conditions for high-purity fluids and protection against deposits.
- **Quick identification of valve position**
The valve's position can be easily identified via a clear visual indicator, also visible from a distance.
- **Reliable operation**
The stem and all internal operating elements are **not** in contact with the fluid.

Further information

Dimensions and weights 22

Main applications

- Mining
- Chemical industry
- Drainage
- Drainage systems
- Descaling units
- Solids transport
- Maintaining groundwater levels
- Industrial recirculation systems
- Waste water treatment plants
- Condensate transport
- Fossil-fuelled power stations
- Paint shops
- Paper industry / pulp industry
- Petrochemical industry
- Refinery
- Flue gas desulphurisation
- Shipbuilding
- Sludge disposal
- Sludge processing

- Keeping in suspension
- Process engineering
- Washing plants
- Water treatment

Fluids handled

- Abrasive fluids
- Waste water with faeces
- Waste water without faeces
- Aggressive fluids
- Inorganic fluids
- Activated sludge
- Brackish water
- Service water
- Distillate
- Digested sludge
- Solids-laden fluids
- Solids (ore, sand, gravel, ash)
- River water, lake water and groundwater
- Fluids posing a health hazard

- Toxic fluids
- Corrosive fluids
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Organic fluids
- Polymerising/crystallising fluids
- Raw sludge
- Lubricants
- Grey water
- Brine
- Dipping paints
- Wash water
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 10
Nominal size	DN 15 - 200
Max. permissible pressure [bar]	10
Min. permissible temperature [°C] ³⁾	≥ -20
Max. permissible temperature [°C] ³⁾	≤ +140

Control pressure of piston actuators

Max. permissible temperature (actuator/control fluid): 80 °C

Permissible control pressure

Type	Piston diameter [mm]	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure P _{ctr. perm.} [bar]
SISTO-LAP	80 - 250	F10	5,5 - 10
	250	F14	5,5 - 10
	300	F10	5,5 - 7
	300	F14	5,5 - 10
	D250 ⁴⁾	F14	5,5 - 10
	D300 ⁴⁾	F14	5,5 - 7
SISTO-DLAP.230	125 - 200	-	5,5 - 7

 Pneumatic actuators from SISTO are suitable for compressed air of purity class 5:4:4 in accordance with ISO 8573-1. If there is a risk of frost, purity class 5:3:4 must be applied to prevent damage caused by icing.

Valve body materials

Overview of available materials

Material	Material number	ASTM ⁵⁾	Temperature limit
EN-GJL-250 (GG25)	5.1301	A48 Class 35 (UNS F12401)	-10 °C to +140 °C
EN-GJS-400-18-LT (GGG40.3)	5.3103	A536 Gr. 60-40-18	-20 °C to +140 °C

Design details

Design

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

Variants

- Actuator (electric or pneumatic)
- Body lined with IIR (butyl), temperature limit: +120 °C
- Body lined with NRH (hard rubber), temperature limit: +100 °C
- Body coated with ECTFE (Halar), temperature limit: +90 °C
- Body coated with PA (Rilsan), temperature limit: +60 °C
- Chain wheel
- Diaphragm made of CSM, temperature limit: +80 °C
- Diaphragm made of EPDM, temperature limit: +140 °C
- Diaphragm made of IIR, temperature limit: +120 °C
- Diaphragm made of NBR, temperature limit: +90 °C
- Stem extension
- Certification to customer specification

Actuators

Directly mounted piston actuator

- SISTO-DLAP.230 for DN 15 - 100
- Compact mounting without lantern
- Leakage detection hole
- Standard interface for accessories

Actuator function

- Actuator type DLAP.230 SF
 - Air-to-open
 - Spring-to-close
- Actuator type DLAP.230 OF
 - Spring-to-open
 - Air-to-close
- Actuator type DLAP.230 AZ
 - Air-to-open
 - Air-to-close

SISTO-LAP piston actuator

- Double-acting piston, piston rod extending from one end only, with or without spring
- Piston rod sealed by U-ring and scraper ring
- Piston with double cup seal and vulcanised metal disc
- Mechanical travel stops in the actuator for closed position and open position
- Flanges to DIN ISO 5210/DIN 3358
- Piston diameters 80 to 300 = F10
- Piston diameters 250 to 300 = F14

3 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

4 Double drum

5 ASTM materials similar to the materials indicated

Actuator function

- 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

Electric actuator

- Multi-turn actuator
- Linear actuator

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Available software

CAD portal, SISTO



This software uses the digital data of the SISTO products. (Click the QR code.)



Product information as per European 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

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAP (piston actuator)	9210.1
Type series booklet SISTO-SK-i	8676.5.

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

Flow coefficients

Flow coefficients for unlined valves

DN	Kvs value [m ³ /h]
15	7,2
20	12,2
25	32,0
32	45,0
40	64,0
50	108,0
65	205,0
80	284,0
100	504,0
125	792,0
150	1440,0
200	2210,0

Pressure/temperature ratings

Permissible operating pressure [bar]

PN	Material		DN	[°C]			
	Designation	Number		-20	-10 to +60	+100	+140
10	EN-GJL-250	5.1301	15 - 100	-	10	8	6
			125 - 150	-	6	4,5	3
			200	-	3	2,5	2
	EN-GJS-400-18-LT	5.3103	15 - 100	10	10	8	6
			125 - 150	6	6	4,5	3
			200	3	3	2,5	2

Materials

Materials of SISTO-KB manually operated valve

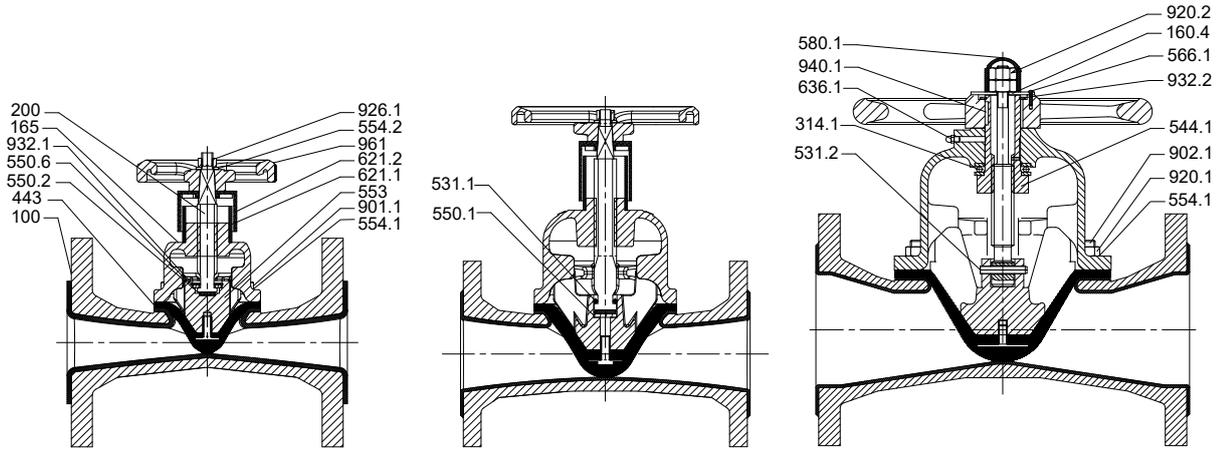


Fig. 5: SISTO-KB manually operated valve

DN 15-40 design

DN 50-100 design

DN 125-200 design

Parts list

Part No.	Description	Material		Note
		Designation	Number	
100	Body	EN-GJL-250	5.1301	-
		EN-GJS-400-18-LT	5.3103	-
160.4	Handwheel cover	EN-GJL-200	5.1300	For DN 125 - 200
165	Bonnet	EN-GJS-400-18-LT	5.3103	DN 200: EN-GJL-250 (5.1301) or optional: EN-GJS-400-18LT (5.3103)
200	Stem	X14CrMoS17	1.4104	-
314.1	Thrust bearing	Steel	-	For DN 125 - 200
443 ⁶⁾	Diaphragm	EPDM	-	-
531.1	Locking sleeve	Spring steel	-	For DN 50 - 100
531.2	Locking sleeve	Spring steel	-	For DN 125 - 200
544.1	Threaded bush	EN-GJS-400-18-C	5.3126	For DN 125 - 200
550.1	Bearing disc	Steel	-	For DN 50 - 100
550.2	PTFE disc	PTFE/graphite	-	For DN 15 - 100
550.6	Segmental disc	A2	-	For DN 15 - 40
553	Compressor	EN-GJL-250	5.1301	DN 15 - 20 = 5.3106
554.1	Washer	A2	-	For bodies with PA or ECTFE coating
554.2	Washer	A2	-	For DN 15 - 100
566.1	Half round head grooved pin	4.6	-	For DN 125 - 200
580.1	Cap	PE	-	For DN 125 - 200
621.1	Position indicator, lower part	ASA Luran	-	For DN 15 - 100
621.2	Position indicator, upper part	ASA Luran	-	For DN 25 - 100
636.1	Lubricating nipple	Steel	-	For DN 125 - 200
901.1	Hexagon head bolt	A2-70	-	For DN 15 - 80
902.1	Stud	A2-70	-	For DN 100 - 200
920.1	Nut	A2	-	For DN 100 - 200
920.2	Nut	A2	-	For DN 100 - 200
926.1	Prevailing torque nut	A2-70	-	For DN 15 - 100
932.1	Circlip	Spring steel	-	For DN 15 - 40
932.2	Circlip	Spring steel	-	For DN 125 - 200
940.1	Key	St50K	-	For DN 125 - 200
961	Handwheel	EN-GJL-200	5.1300	DN 15 - 20 = PC

Materials of the directly mounted DLAP.230 piston actuator

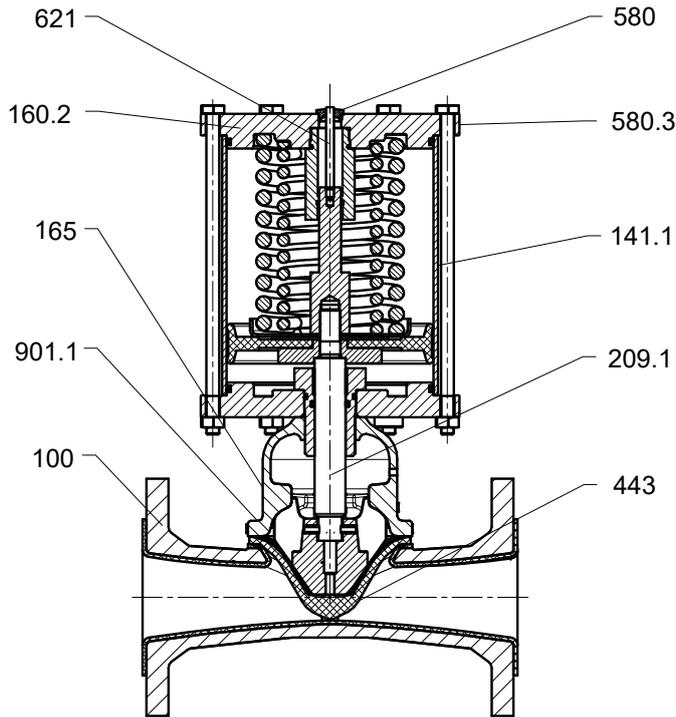


Fig. 6: SISTO-DLAP.230

Parts list

Part No.	Description	Material		Note
		Designation	Number	
100	Body	EN-GJL-250	5.1301	-
		EN-GJS-400-18-LT	5.3103	-
141.1	Cylinder	AlMgSi	3.3206	-
160.2	Top end cap	AlCu4PbMgMn	3.1645	-
165	Bonnet	EN-GJS-400-18-LT	5.3103	-
209.1	Piston rod	X14CrMoS17	1.4104	-
443 ⁶⁾	Diaphragm	EPDM	-	Standard
580	Cap	Plastic	-	M18 × 1 interface
580.3	Cap	Plastic	-	Air supply connection G ¹ / ₈ inch
621	Position indicator	Plastic	-	-
901.1	Hexagon head bolt	A2-70	-	DN 100: stud

Materials of SISTO-LAP piston actuator

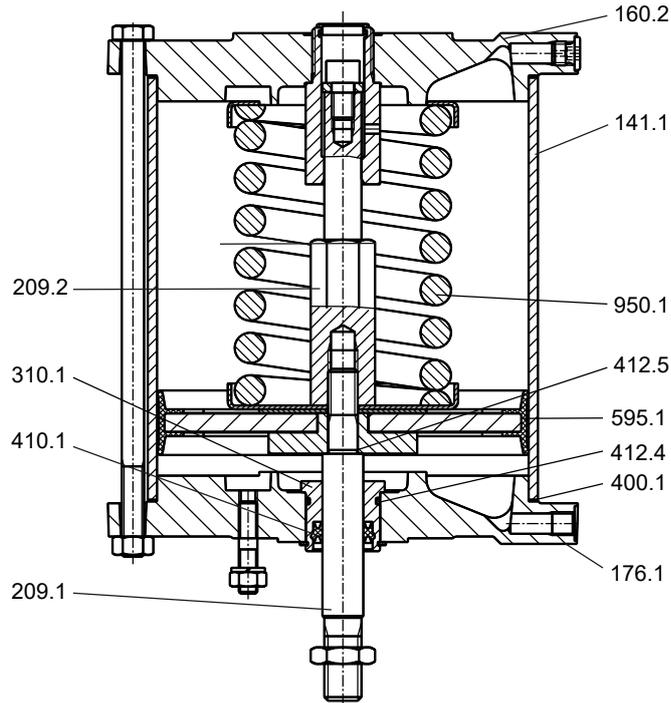


Fig. 7: SISTO-LAP-SF piston actuator

Parts list

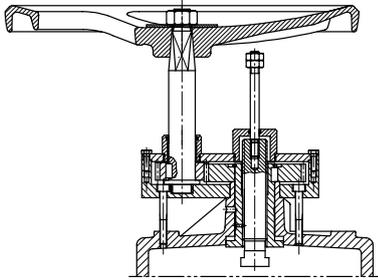
Part No.	Description	Material		Piston diameter [mm]
		Designation	Number	
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
176.1	Bottom end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
209.1	Lower piston rod	X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	X14CrMoS17	1.4104	80 - 300
310.1 ^{7) 8)}	Plain bearing	Plastic – POM	-	80 - 300
400.1 ^{7) 8)}	Gasket	Plastic – AFM 30	-	80 - 300
410.1 ^{7) 8)}	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4 ^{7) 8)}	O-ring	NBR	-	80 - 300
412.5 ^{7) 8)}	O-ring	NBR	-	80 - 300
595.1 ^{7) 8)}	Piston assembly	Steel/acrylonitrile butadiene rubber – St/ NBR	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

7 Recommended spare parts (= complete set of sealing elements)

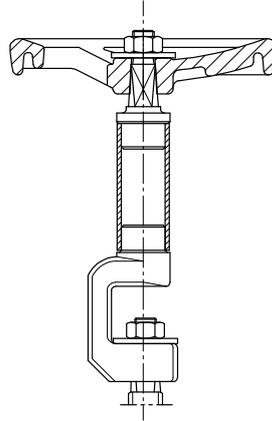
8 We recommend having these parts replaced in our factory.

Variants and accessories

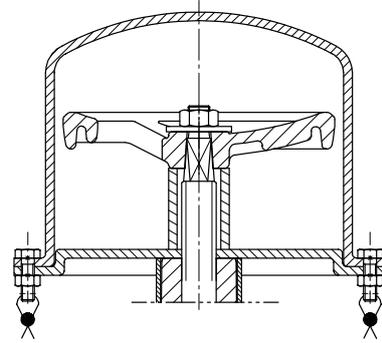
Variants and accessories of SISTO-KB manually operated valves



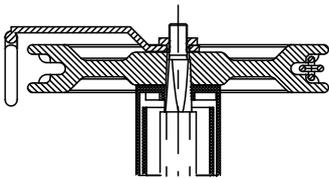
Gearbox



Stem extension

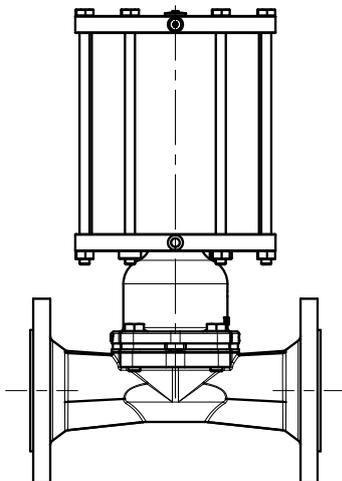


Lead-sealable cap

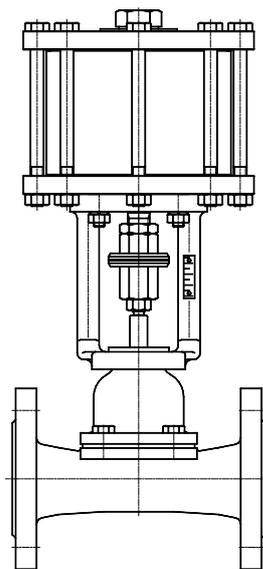


Chain wheel

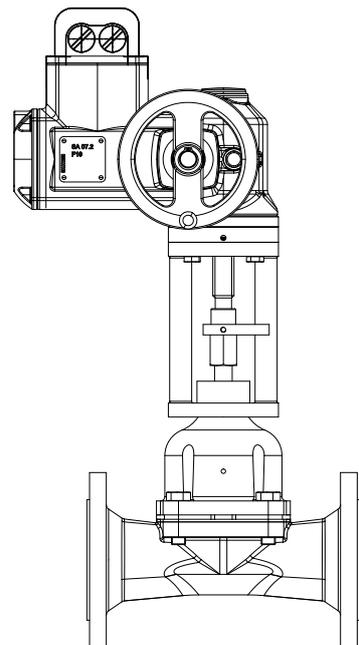
Variants of SISTO-KB with actuator



With directly mounted pneumatic piston actuator

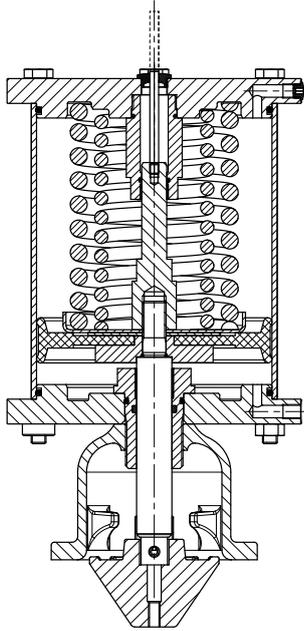


With mounted pneumatic piston actuator

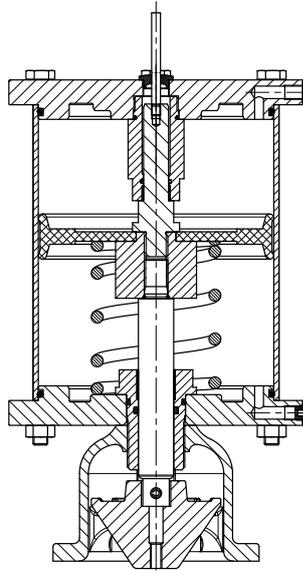


With electric actuator

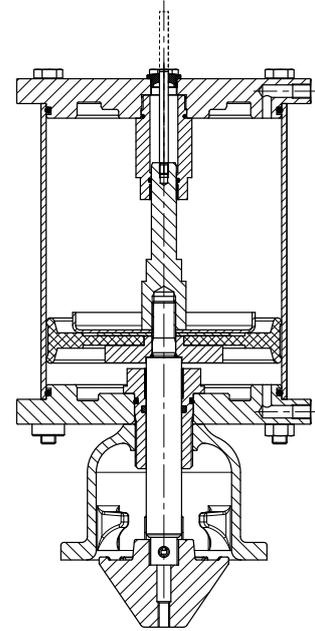
Variants and accessories of the directly mounted DLAP.230 piston actuator



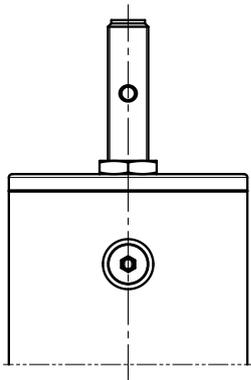
DLAP.230-SF



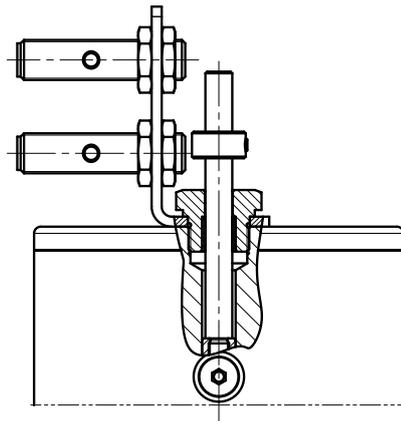
DLAP.230-OF



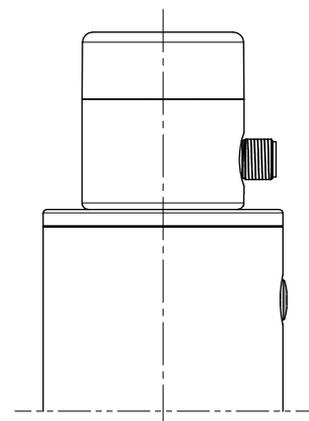
DLAP.230-AZ



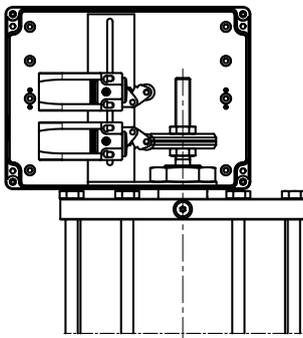
Directly mounted proximity switch
 for open position



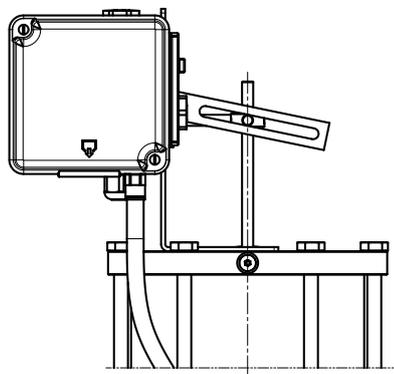
Inductive limit switches



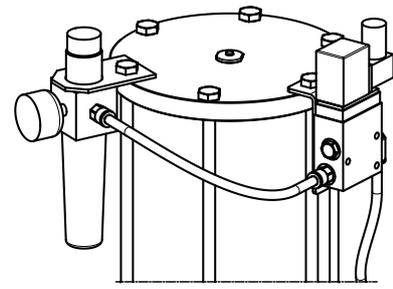
Intelligent actual-position feedback
 unit
 SK-i.310



Mechanical limit switch

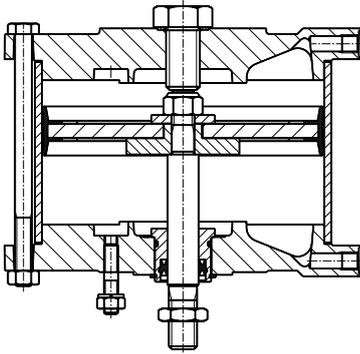


Positioner

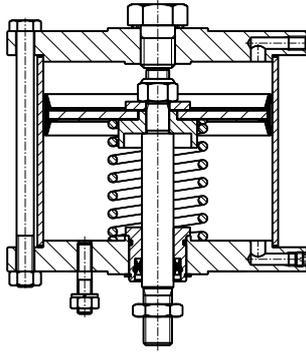


Solenoid valve and
 filter/pressure reducer

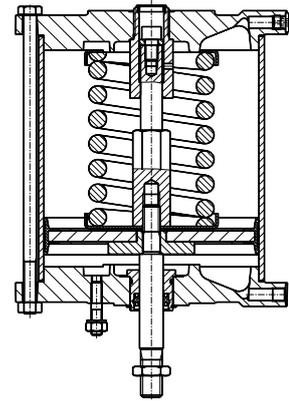
Variants and accessories of the SISTO-LAP piston actuator



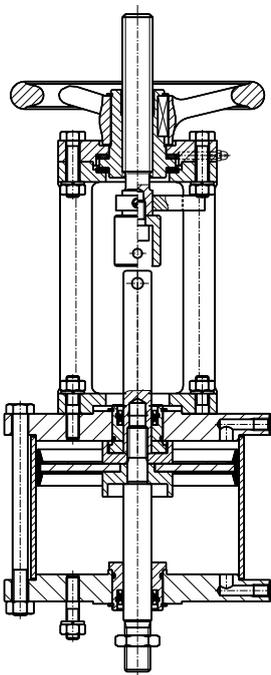
LAP-AZ type



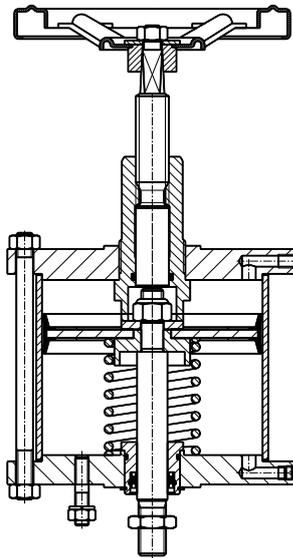
LAP-OF type



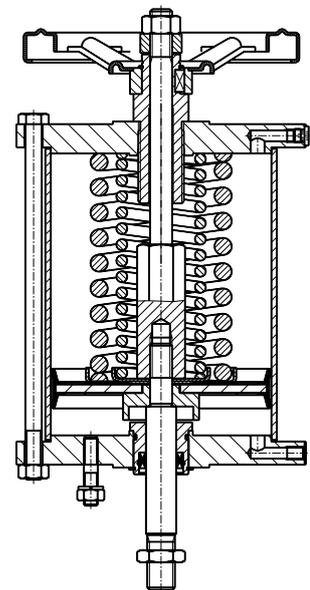
LAP-SF type



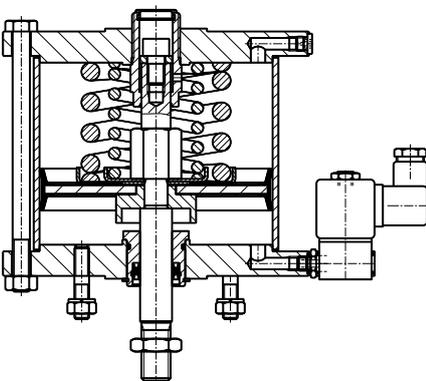
LAP-AZ type with emergency handwheel



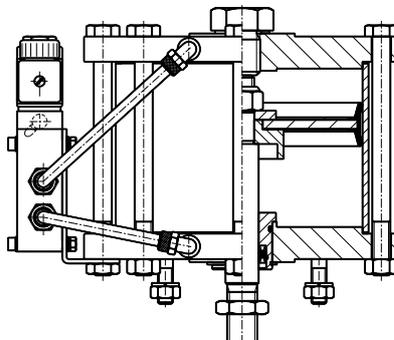
LAP-OF type with emergency handwheel



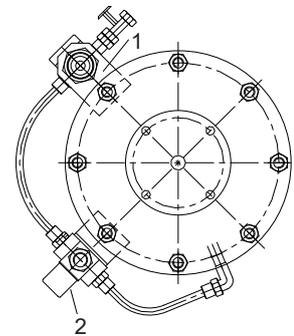
LAP-SF type with emergency handwheel



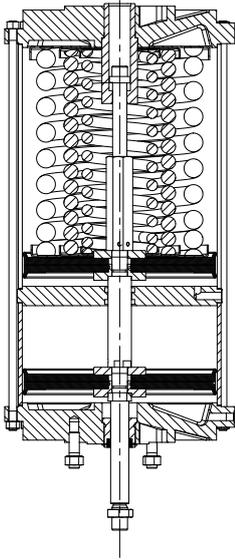
LAP-SF type with 3/2 directional control valve



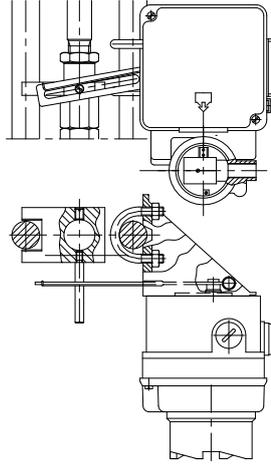
LAP-AZ type with 5/2 directional control valve



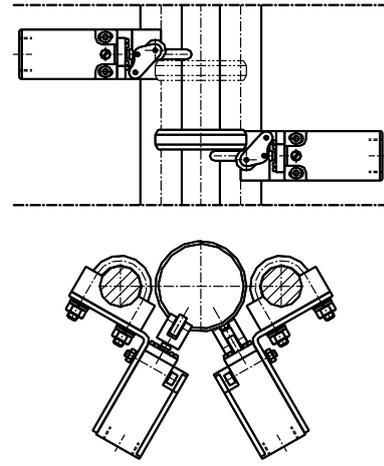
1 Filter/pressure reducer
 2 Solenoid valve



LAP-SF type with double piston

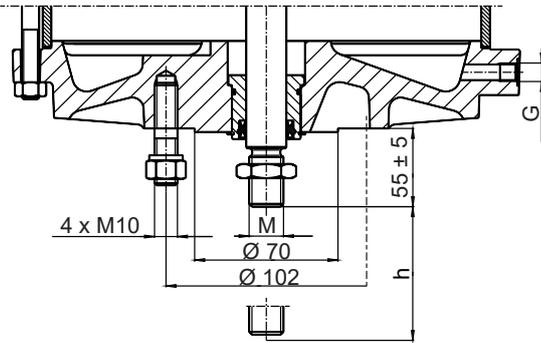


Configuration with positioner

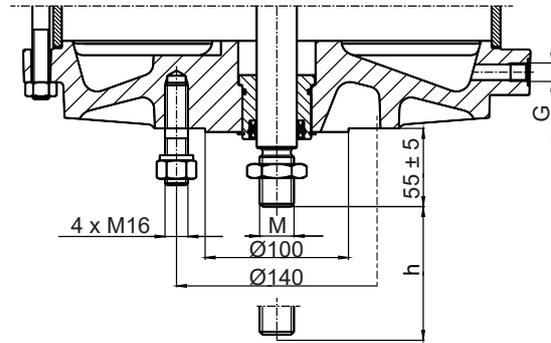


Configuration with mechanical limit switches

Interface



Flange connection F10



Flange connection F14

Symbols key

Symbol	Description
G	G 1/8 in. for piston diameters 80/125/160 G 1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358
 Pipe connection: DIN ISO 228 G 1/8 in. and G 1/4 in.

Dimensions and weights

Dimensions and weights of SISTO-KB manually operated valve

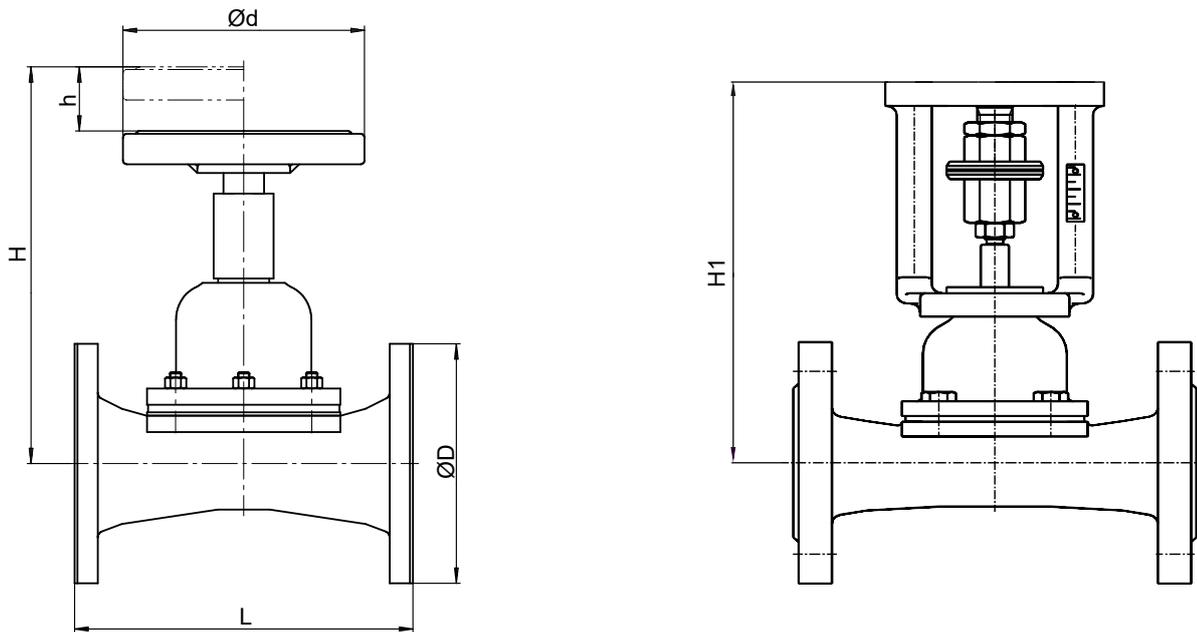


Fig. 8: SISTO-KB manually operated valve

Prepared for SISTO-LAP
piston actuator or electric actuator

Dimensions and weights

DN	Diaphragm [mm]	L [mm]	Ø D [mm]	h [mm]	Manually operated valve				Prepared for actuator	
					H ⁹⁾ [mm]	Ø d [mm]	Handwheel turns	[kg]	Centre-to-top height H1 ⁹⁾ [mm]	Top flange
15	70 x 46	130	95	9	93	63	3	2,5	216	F10
20		150	105		93	63	3	3,1	216	F10
25	86 x 67	160	115	21	155	100	7	4,6	235	F10
32		180	140		155	100	7	5,7	235	F10
40		200	150		155	100	7	7,3	235	F10
50	111 x 86	230	165	33	220	125	8	10,5	300	F10
65	128 x 108	290	185	45	295	200	11	16,7	337	F10
80	169 x 134	310	200	46	320	200	11	23,0	362	F10
100	Ø 200	350	220	59	370	250	11	30,5	382	F10
125	Ø 230	400	250	73	360	320	15	47,3	444	F10
150	Ø 285	480	285	95	440	400	19	68,4	511	F10/F14
200	Ø 337	600	340	114	560	500	23	102,4	623	F10/F14

Mating dimensions as per standard

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

⁹ Add 5 mm to centre-to-top height for rubber-lined valves.

Dimensions and weights of SISTO-KB with directly mounted DLAP.230 piston actuator

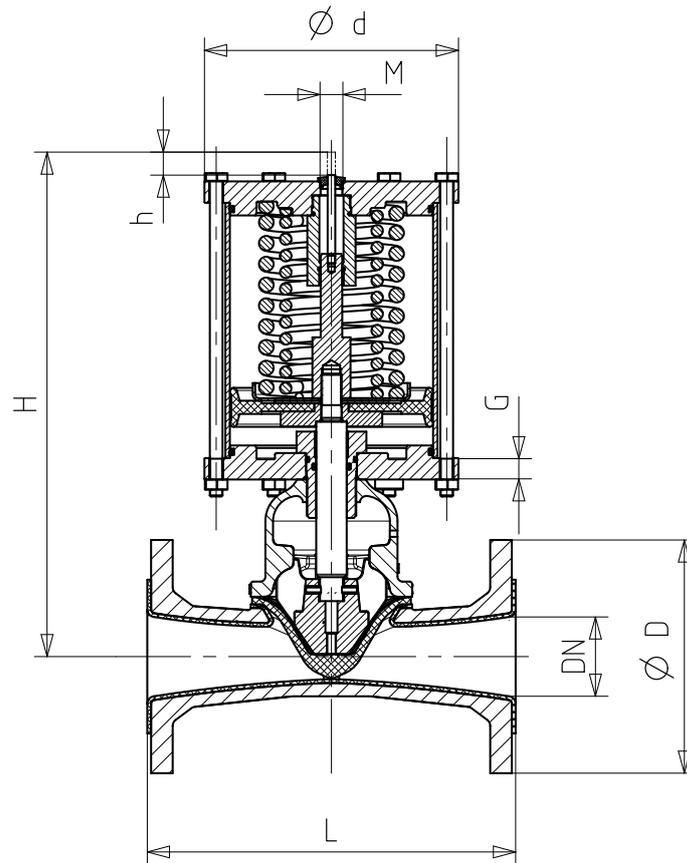


Fig. 9: SISTO-KB with DLAP.230

Dimensions and weights

DN	Diaphragm [mm]	Piston [mm]	L [mm]	Ø D [mm]	h [mm]	H [mm]	Ø d [mm]	[kg]
15	70 × 46	125	130	165	9	300	46	9,1
20			150	165		300	71	9,7
25	86 × 67	125	160	165	21	333	71	12,2
32			180	165		333	89	13,8
40			200	165		333	89	14,6
50	111 × 86	125	230	165	31	358	165	18,0
		160		200		372	200	23,0
65	128 × 108	160	290	200	40	423	200	28,0
		200		250		468	250	37,5
80	169 × 134	160	310	200	46	454	200	35,0
		200		250		499	250	44,0
100	Ø 200	200	350	250	59	534	250	50,0

Connections

Control air G	Interface for accessories M
G 1/8 in	M18 × 1

Dimensions and weights of SISTO-LAP piston actuator

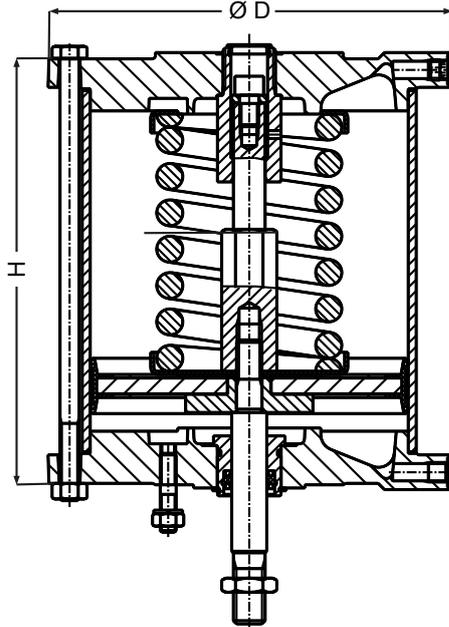


Fig. 10: SISTO-LAP

Dimensions and weights for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-AZ-80-F10	15	130	111	4
LAP-AZ-80-F10	30	130	131	5
LAP-AZ-125-F10	15	170	131	6
LAP-AZ-125-F10	30	170	131	7
LAP-AZ-125-F10	45	170	151	8
LAP-AZ-125-F10	60	170	151	9
LAP-AZ-160-F10	45	210	168	11
LAP-AZ-160-F10	60	210	188	12
LAP-AZ-200-F10	45	255	190	18
LAP-AZ-200-F10	60	255	210	18
LAP-AZ-200-F10	80	255	230	20
LAP-AZ-250-F10	60	305	240	31
LAP-AZ-250-F10	80	305	260	32
LAP-AZ-250-F14	100	305	280	34
LAP-AZ-300-F14	100	355	294	44

Dimensions and weights for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-80.101-F10	15	130	151	5
LAP-OF-125.101-F10	15	170	151	7
LAP-OF-125.102-F10	30	170	189	6
LAP-OF-160.102-F10	30	210	188	11
LAP-OF-200.001-F10	45	255	310	21
LAP-OF-200.001-F10	60	255	330	22
LAP-OF-250.001-F10	45	305	340	35
LAP-OF-250.001-F10	60	305	360	30
LAP-OF-250.002-F10	80	305	400	35
LAP-OF-300.002-F10	80	355	434	52
LAP-OF-D250.012-F14	100	305	524	55

Dimensions and weights for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-SF-125.002.5-F10	15	170	212	10
LAP-SF-125.002-F10	30	170	271	12
LAP-SF-160.012-F10	30	210	274	18
LAP-SF-160.012-F10	45	210	310	19
LAP-SF-200.003.7-F10	45	255	350	32
LAP-SF-250.004.7-F10	45	305	380	42
LAP-SF-250.004-F10	60	305	480	45
LAP-SF-250.004-F10	80	305	500	48
LAP-SF-300.034-F10	60	355	514	67
LAP-SF-300.034-F10	80	355	535	70
LAP-SF-D300.035-F14	100	355	812	127

Technical data

Actuator sizes of directly mounted DLAP.230 piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-KB

Minimum required control pressure: 5.5 bar
Maximum permissible control pressure 7 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Operating pressure [bar] for actuator function: **type DLAP.230-AZ (air-to-open/air-to-close)**

DN	Diaphragm [mm]	Piston [mm]	Elastomer diaphragm [bar]
15	70 × 46	125	10
20		125	10
25	86 × 67	125	10
32		125	10
40		125	10
50	111 × 86	125	10
		160	10
65	128 × 108	160	9
		200	10
80	169 × 134	160	7
		200	10
100	Ø 200	200	8

Operating pressure [bar] for actuator function: **type DLAP.230-OF (spring-to-open/air-to-close)**

DN	Diaphragm [mm]	Piston [mm]	Elastomer diaphragm [bar]
15	70 × 46	125	10
20		125	10
25	86 × 67	125	10
32		125	10
40		125	10
50	111 × 86	125	9
		160	10
65	128 × 108	160	7
		200	10
80	169 × 134	160	5
		200	10
100	Ø 200	200	7

Operating pressure [bar] for actuator function: **type DLAP.230-SF (air-to-open/spring-to-close)**

DN	Diaphragm [mm]	Piston [mm]	Elastomer diaphragm [bar]
15	70 × 46	125	10
20		125	10
25	86 × 67	125	10
32		125	10
40		125	10
50	111 × 86	125	7
		160	10
65	128 × 108	160	6
		200	10
80	169 × 134	160	5
		200	9
100	Ø 200	200	5

Other selection options on request.

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-KB valve with elastomer diaphragm

Minimum required control pressure: 5.5 bar
Maximum permissible pressure 10 bar

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	DN 15 - 20	DN 25 - 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
LAP-AZ-80-F10	15/30	10	4	↓	↓	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	↑	10	10	↓	↓	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	3	↓	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	8	5	3	↓	↓
LAP-AZ-200-F10	45	↑	↑	↑	10	10	↓	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	↑	7	3	↓
LAP-AZ-250-F10	60/80	↑	↑	↑	↑	↑	10	6	↓
LAP-AZ-250-F14	100	↑	↑	↑	↑	↑	↑	↑	3
LAP-AZ-300-F14	100	↑	↑	↑	↑	↑	↑	↑	6

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	DN 15 - 20	DN 25 - 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
LAP-OF-80.101-F10	15	7	↓	↓	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15	10	↓	↓	↓	↓	↓	↓	↓
LAP-OF-125.102-F10	30	↑	10	6	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30	↑	↑	10	↓	↓	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	10	8	5	↓	↓
LAP-OF-250.001-F10	45/60	↑	↑	↑	↑	10	10	↓	↓
LAP-OF-250.002-F10	80	↑	↑	↑	↑	↑	↑	5	↓
LAP-OF-300.002-F10 ⁽¹⁾	80	↑	↑	↑	↑	↑	↑	6	↓
LAP-OF-D250.012-F14	100	↑	↑	↑	↑	↑	↑	↑	6

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	DN 15 - 20	DN 25 - 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
LAP-SF-125.002.5-F10	15	10	↓	↓	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	10	3	↓	↓	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	↑	10	2	↓	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	↑	7	5	↓	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	10	9	↓	↓	↓
LAP-SF-250.004-F10	60/80	↑	↑	↑	↑	↑	6	↓	↓
LAP-SF-300.034-F10 ⁽¹⁾	60/80	↑	↑	↑	↑	10	10	6	↓
LAP-SF-D300.035-F14	100	↑	↑	↑	↑	↑	↑	↑	6

Other selection options on request

10 Max. control pressure: 7 bar

SISTO-16



Product benefits

- **Reliable sealing to atmosphere and absolutely tight shut-off**
The diaphragm provides absolutely tight shut-off as well as hermetic sealing to atmosphere and of all operating elements.
- **Maximum service life and pressure limit**
Maximised diaphragm life and pressure limit thanks to completely enclosed, spiral-supported diaphragm.
- **Excellent functional reliability**
Increased functional reliability of the diaphragm thanks to balanced diaphragm suspension.
- **Excellent resistance to corrosion and abrasion**
High-quality body materials and linings offer reliability and a long service life.
- **Smooth actuation**
The thrust bearing minimises the closing torques.
- **Optimised long-term operation**
The stem protection integrated in the position indicator prevents ingress of contaminants.
- **Fluid purity**
Valve hydraulics without dead volume ensure optimum conditions for high-purity fluids and protection against deposits.
- **Quick identification of valve position**
The valve's position can be easily identified via a clear visual indicator, also visible from a distance.
- **Reliable operation**
The stem and all internal operating elements are **not** in contact with the fluid.

Further information

Dimensions and weights 44

Main applications

- Mining
- General irrigation systems
- Chemical industry
- Homogenisation
- Industry/process engineering
- Industrial recirculation systems
- Waste water treatment plants
- Air-conditioning systems
- Condensate transport
- Fossil-fuelled power stations
- Power stations
- Cooling circuits
- Paint shops
- Seawater desalination/reverse osmosis
- Mining
- Paper industry / pulp industry
- Petrochemical industry
- Refinery
- Flue gas desulphurisation
- Shipbuilding
- Swimming pools
- Process engineering
- Heat recovery systems
- Hot-water heating systems
- Water treatment
- Water extraction

Fluids handled

- Waste water without faeces
- Aggressive fluids
- Inorganic fluids
- Brackish water
- Service water
- Steam
- Distillate
- Paints and varnishes
- River water, lake water and groundwater
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water

- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Fuels
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Oil
- Organic fluids
- Polymerising/crystallising fluids
- Cleaning agents
- Lubricants
- Brine
- Dipping paints
- Drinking water
- Wash water
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16 ¹¹⁾
Nominal size	DN 15 - 300
Max. permissible pressure [bar]	16 ¹²⁾
Min. permissible temperature [°C] ¹³⁾	≥ -10
Max. permissible temperature [°C] ¹³⁾	≤ +160

Control pressure of piston actuators

Max. permissible temperature (actuator/control fluid): 80 °C

Permissible control pressure

Type	Piston diameter [mm]	Top flange DIN ISO 5210 / DIN 3358	Permissible control pressure P _{ctr. perm.} [bar]
SISTO-LAP	80 - 250	F10	5,5 - 10
	250	F14	5,5 - 10
	300	F10	5,5 - 7
	300	F14	5,5 - 10
	D250 ¹⁴⁾	F14	5,5 - 10
	D300 ¹⁴⁾	F14	5,5 - 7
SISTO-LAP.520/ DLAP.230	40 - 250	-	5,5 - 7

 Pneumatic actuators from SISTO are suitable for compressed air of purity class 5:4:4 in accordance with ISO 8573-1. If there is a risk of frost, purity class 5:3:4 must be applied to prevent damage caused by icing.

Valve body materials

Material overview (for available variants see the Variant overview (⇒ Page 30) table)

Material	Material number	ASTM ¹⁵⁾	Temperature limit
EN-GJL-250 (GG25)	5.1301	A48 Class 35 (UNS F12401)	-10 °C to +160 °C
GX2CrNiMo19-11-2 ¹⁶⁾	1.4409	A351 Gr. CF3M (UNS J92800)	-10 °C to +160 °C
EN-GJS-400-18-LT (GGG40.3)	5.3103	A536 Gr. 60-40-18	-10 °C to +160 °C

Design details

Design

- Models with flanged ends or threaded socket ends
- Soft-seated weir-type shut-off valve in straight-way pattern
- Rising handwheel
- Shut-off and sealing to atmosphere by spiral-supported, completely enclosed diaphragm.
DN 250 and above: spiral-supported design only
- Position indicator with integrated stem protection
- Manufactured and tested to EN 13397
- Marked in accordance with DIN EN 19 (ISO 5209)
- Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for DN 15 - 200

Variants

- Actuator (electric or pneumatic)
- Limit switches
- Locking device
- Body lined with IIR (butyl), temperature limit: +120 °C
- Body lined with NRH (hard rubber), temperature limit: +100 °C
- Body coated with ECTFE (Halar), temperature limit: +90 °C
- Body coated with PA (Rilsan), temperature limit: +60 °C
- Chain wheel
- Leakage detection hole and additional stem seal for DN 15 - 200

11 DN 250 - 300 = PN 10

12 DN 250 - 300 = 10 bar

13 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

14 Double drum

15 The ASTM materials are similar to the materials indicated.

16 Body with threaded socket ends

- Diaphragm made of CSM, temperature limit: +80 °C
- Diaphragm made of EPDM, temperature limit: +140 °C
- Diaphragm made of SISTOMaXX (EPDM/W270), temperature limit: +90 °C
- Diaphragm made of EPDM-V (vacuum), temperature limit: +140 °C
- Diaphragm made of FKM, temperature limit: +120 °C
- Diaphragm made of IIR, temperature limit: +120 °C
- Diaphragm made of NBR, temperature limit: +90 °C
- TFM/EPDM diaphragm, 2-piece¹⁷⁾, Temperature limit +160 °C
- Lead-sealable cap (prevents unauthorised actuation)
- Stem extension
- Positioner
- Certification to customer specification

Variant overview

Variant overview of SISTO-16 with flanged ends

DN	Material number		Lining			Coating	
	Body	Bonnet	None	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15	5.3103	1.0619	x	x	x	x	x
20 - 50	5.3103	5.1301	-	x	x	-	-
20 - 50	5.1301	5.1301	x	-	-	x	x
65 - 150	5.1301	5.1301	x	x	x	x	x
200 - 300	5.3103	5.1301	x	x	x	x	x

Variant overview of SISTO-16 with threaded socket ends

DN	Material number		Lining			Coating	
	Body	Bonnet	None	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15 - 20	1.4409	1.0619	x	-	-	-	-
25 - 80	1.4409	5.1301	x	-	-	-	-

Actuators

Directly mounted piston actuator

- SISTO-DLAP.230 for DN 50 - 125
- SISTO-LAP.520 for DN 15 - 40
- Compact mounting without lantern
- Leakage detection hole
- Standard interface for accessories

Actuator function

- Actuator type DLAP.230/LAP.520 SF
 - Air-to-open
 - Spring-to-close
- Actuator type DLAP.230/LAP.520 OF
 - Spring-to-open
 - Air-to-close
- Actuator type DLAP.230/LAP.520 AZ
 - Air-to-open
 - Air-to-close

SISTO-LAP piston actuator

- Double-acting piston, piston rod extending from one end only, with or without spring
- Piston rod sealed by U-ring and scraper ring
- Piston with double cup seal and vulcanised metal disc
- Mechanical travel stops in the actuator for closed position and open position
- Flanges to DIN ISO 5210/DIN 3358

- Piston diameters 80 to 300 = F10
- Piston diameters 250 to 300 = F14
- Leakage detection hole from MD 65 with screw (can be plugged)

Actuator function

- 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

Electric actuator

- Multi-turn actuator
- Linear actuator

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

17 DN 250 - 300: max. operating pressure 6 bar

Product information as per European 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).

Available software

CAD portal, SISTO



This software uses the digital data of the SISTO products. (Click the QR code.)



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

Product information as per Regulation (EU) 1935/2004

Overview

Label	Effective in:
	Europe ¹⁸⁾ Certificate regarding food contact materials as per Regulation (EU) 1935/2004

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAP (piston actuator)	9210.1
Type series booklet SISTO-SK-i	8676.5.

18 This certification only applies to versions with threaded socket ends and EPDM diaphragm or 2-piece TFM/EPDM diaphragm.

Flow coefficients

Flow coefficients for unlined valves with flanged ends

DN	MD [mm]	Kvs value [m ³ /h]
15	40	4
20	65	11,5
25	65	14
32	92	35
40	92	43
50	115	72
65	168	141
80	168	195
100	202	304
125	202	298
150	280	601
200	280	478
250	415	1166
300	415	1260

Flow coefficients for lined valves with flanged ends

DN	MD [mm]	Kvs value [m ³ /h]
15	40	4
20	65	9,1
25	65	13
32	92	26,5
40	92	32,5
50	115	52,5
65	168	127
80	168	176
100	202	274
125	202	268
150	280	541
200	280	430
250	415	1142
300	415	1245

Flow coefficients for unlined valves with threaded socket ends

DN	MD [mm]	Kvs value [m ³ /h]
15	40	7,6
20	40	7,4
25	65	28,3
32	65	29
40	65	28
50	92	66,5
65	115	114
80	168	234

Pressure/temperature ratings

Permissible operating pressure [bar]

PN	Material		[°C]							
	Designation	Number	-10 to +50	+100	+110	+120	+130	+140	+150	+160
16	EN-GJS-400-18-LT	5.3103	16,0	16,0	16,0	16,0	15,8	15,6	14,0	12,0
	EN-GJL-250	5.1301	16,0	16,0	16,0	16,0	15,4	14,9	14,0	12,0
	GP240GH	1.0619	16,0	14,8	14,6	14,4	14,3	14,1	14,0	12,0
	GX2CrNiMo19-11-2	1.4409	16,0	15,1	14,8	14,5	14,2	13,9	13,7	12,0
10 ¹⁹⁾	EN-GJS-400-18-LT	5.3103	10,0	10,0	10,0	10,0	9,9	9,8	9,0	8,0

If a combination of different pressure enclosure materials is used, the respectively lowest permissible operating pressure shall apply.

Materials

Materials of SISTO-16 manually operated valve with flanged ends

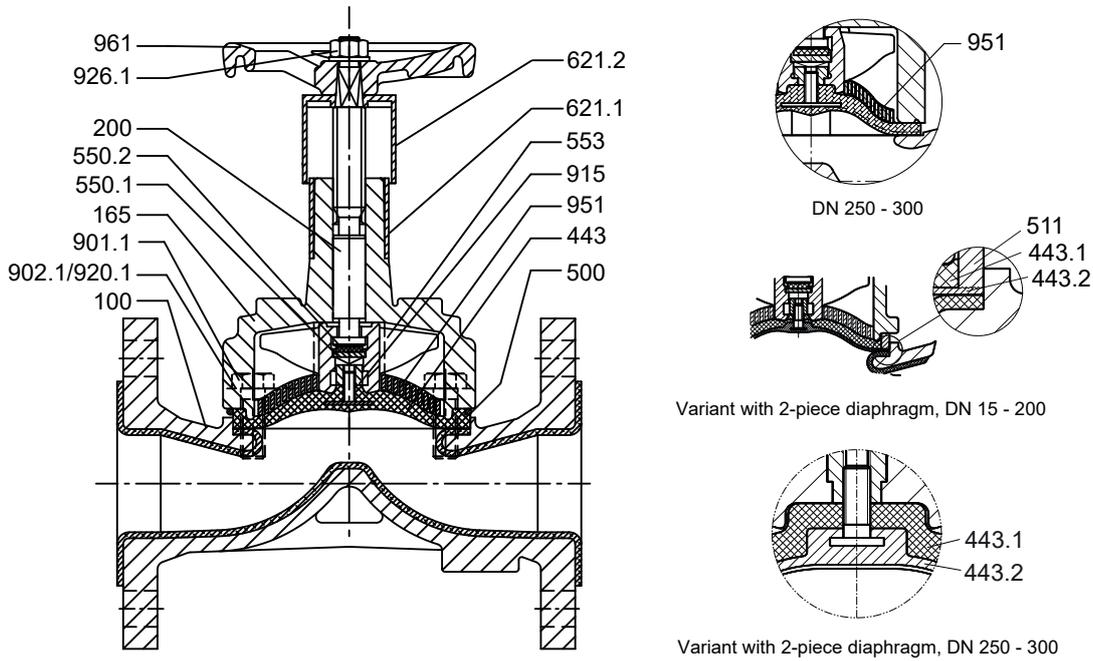


Fig. 11: SISTO-16 manually operated valve with flanged ends

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40	EN-GJS-400-18-LT	5.3103	
		65 - 115	EN-GJL-250	5.1301	NRH and IIR = 5.3103
		168 - 280	EN-GJL-250	5.1301	DN 200 = 5.3103
		415	EN-GJS-400-18-LT	5.3103	-
165	Bonnet	40	GP240GH	1.0619	-
		65 - 415	EN-GJL-250	5.1301	-
200	Stem	40 - 415	X14CrMoS17	1.4104	-
443 ²⁰⁾	Diaphragm	40 - 415	EPDM	-	Standard
443.1 ²⁰⁾	Backing diaphragm	40 - 415	EPDM	-	-
443.2 ²⁰⁾	Diaphragm	40 - 415	TFM	-	-
500	Ring	40 - 280	Galvanised steel	-	-
511	Backing ring	40 - 280	Steel	-	-
550.1	Bearing disc	92 - 415	Steel	-	-
550.2	PTFE disc	40, 92 - 415	PTFE/graphite	-	-
553	Compressor	40	GP240GH	1.0619	-
		65	GD-ZnAl4Cu1	2.2141.05	-
		92 - 280	EN-GJS-400-15	5.3106	-
		415	EN-GJL-250	5.1301	-
621.1	Position indicator, lower part	40 - 415	ASA Luran	-	-
621.2	Position indicator, upper part	40 - 415	ASA Luran	-	-
901.1	Hexagon head bolt	40 - 280	A2	-	-
902.1	Stud	415	A2	-	-
915	Floating nut	40 - 415	Steel	-	-
920.1	Nut	415	A2	-	-
926.1	Prevailing torque nut	40 - 415	A2	-	-
951	Support spiral	65 - 415	Steel	-	-
961	Handwheel	40	Plastic	-	-

²⁰ Recommended spare parts

Part No.	Description	MD	Material		Note
			Designation	Number	
961	Handwheel	65 - 415	EN-GJL-200	5.1300	-

Materials of SISTO-16 manually operated valve with threaded socket ends

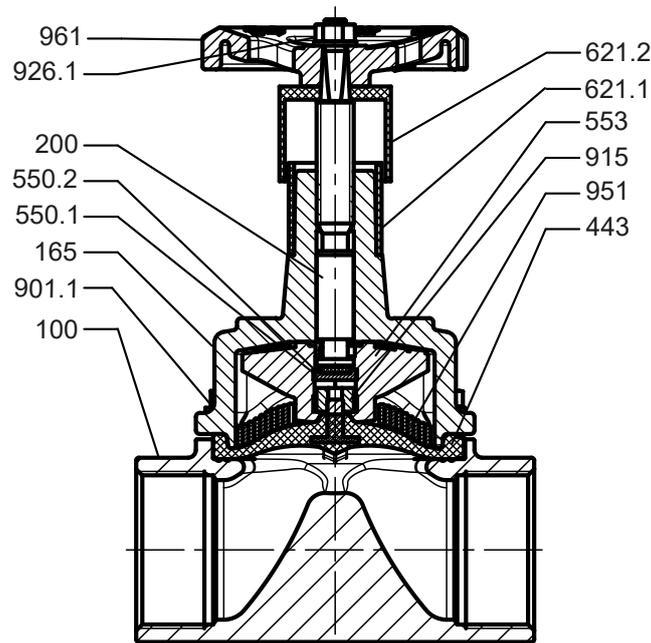


Fig. 12: SISTO-16 manually operated valve with threaded socket ends, DN 15 - 80

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40 - 168	GX2CrNiMo19-11-2	1.4409	-
165	Bonnet	40	GP240GH	1.0619	-
		65 - 168	EN-GJL-250	5.1301	-
200	Stem	40 - 168	X14CrMoS17	1.4104	-
443 ²¹⁾	Diaphragm	40 - 168	EPDM	-	Standard
550.1	Bearing disc	92 - 168	Steel	-	-
550.2	PTFE disc	40, 92 - 168	PTFE/graphite	-	-
553	Compressor	40	GP240GH	1.0619	-
		65	GD-ZnAl4Cu1	2.2141.05	-
		92 - 168	EN-GJS-400-15	5.3106	-
621.1	Position indicator, lower part	40 - 168	ASA Luran	-	-
621.2	Position indicator, upper part	40 - 168	ABS	-	-
901.1	Hexagon head bolt	40 - 168	A2	-	-
915	Floating nut	40 - 168	Steel	-	-
926.1	Prevailing torque nut	40 - 168	A2	-	-
951	Support spiral	65 - 168	Steel	-	-
961	Handwheel	40	Plastic	-	-
		65 - 168	EN-GJL-200	5.1300	-

²¹ Recommended spare parts

Materials of directly mounted LAP.520 and DLAP.230 piston actuators

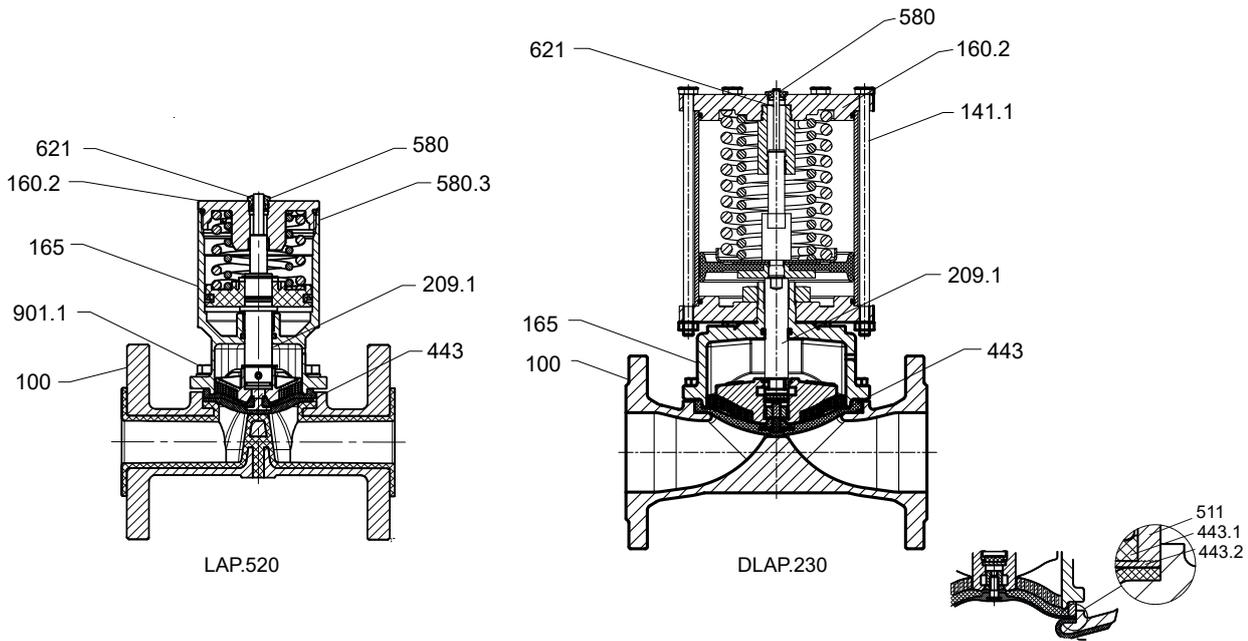


Fig. 13: Directly mounted LAP.520 and DLAP.230 piston actuators

Variant with 2-piece diaphragm, DN 15 - 125

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40 - 202	EN-GJL-250	5.1301	NRH and IIR = 5.3103
141.1	Cylinder	115-202	AlMgSi	3.3206	-
160.2	Top end cap	40 - 92	GX2CrNiMo19-11-2	1.4409	-
		115 - 202	AlCu4PbMgMn	3.1645	-
165	Bonnet	40 - 92	GX2CrNiMo19-11-2	1.4409	-
		115 - 202	EN-GJS-400-18-LT	5.3103	-
209.1	Piston rod	40 - 92	X8CrNiS18-9	1.4305	-
		115 - 202	X14CrMoS17	1.4104	-
443 ²²⁾	Diaphragm	40 - 202	EPDM	-	Standard
443.1 ²²⁾	Backing diaphragm	40 - 202	EPDM	-	-
443.2 ²²⁾	Diaphragm	40 - 202	TFM	-	-
511	Backing ring	40 - 202	Steel	-	-
580	Cap	40 - 202	Plastic	-	M12 x 1/M18 x 1 interface
580.3	Cap	40 - 202	Plastic	-	M5 / G1/8 air supply connection
621	Position indicator	40 - 202	Plastic	-	-
901.1	Hexagon head bolt	40 - 202	A2	-	For PTFE lining with TFM diaphragm: material 8.8 A2E

Materials of SISTO-LAP piston actuator

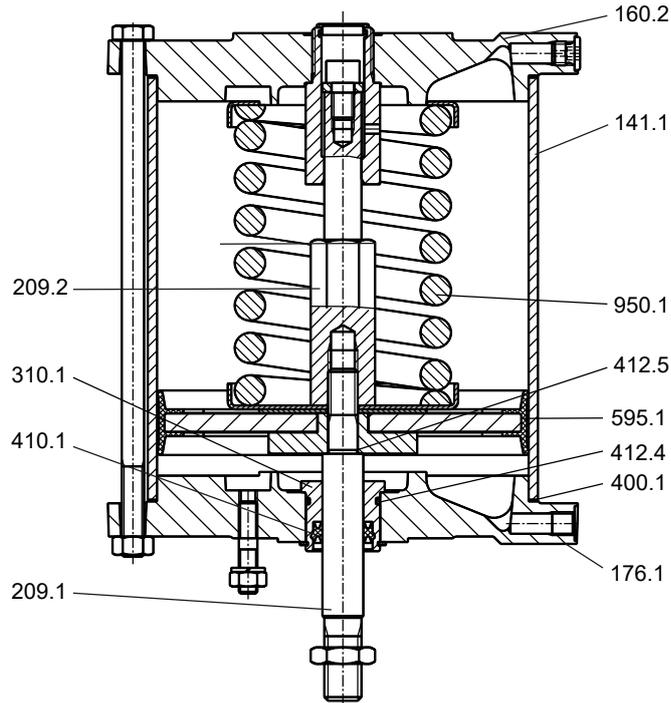


Fig. 14: SISTO-LAP-SF piston actuator

Parts list

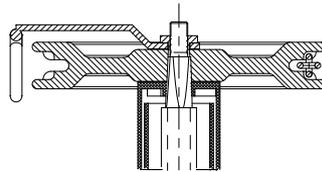
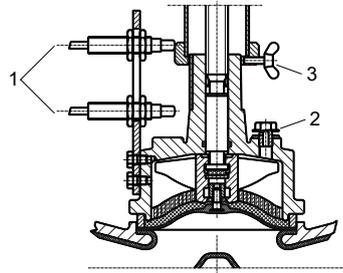
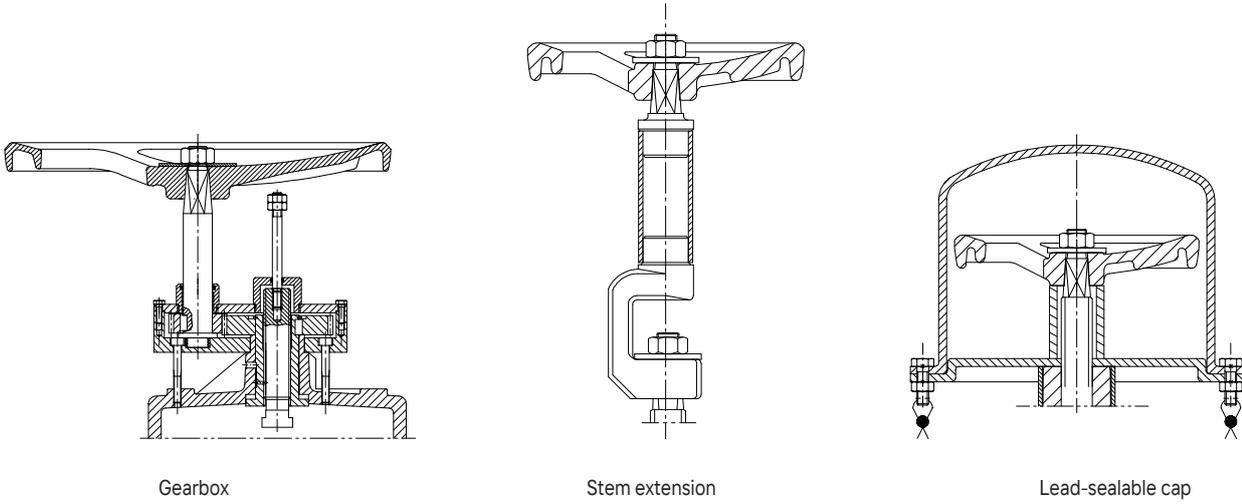
Part No.	Description	Material		Piston diameter [mm]
		Designation	Number	
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
176.1	Bottom end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
209.1	Lower piston rod	X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	X14CrMoS17	1.4104	80 - 300
310.1 ^{23) 24)}	Plain bearing	Plastic – POM	-	80 - 300
400.1 ^{23) 24)}	Gasket	Plastic – AFM 30	-	80 - 300
410.1 ^{23) 24)}	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4 ^{23) 24)}	O-ring	NBR	-	80 - 300
412.5 ^{23) 24)}	O-ring	NBR	-	80 - 300
595.1 ^{23) 24)}	Piston assembly	Steel/acrylonitrile butadiene rubber – St/ NBR	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

23 Recommended spare parts (= complete set of sealing elements)

24 We recommend having these parts replaced in our factory.

Variants and accessories

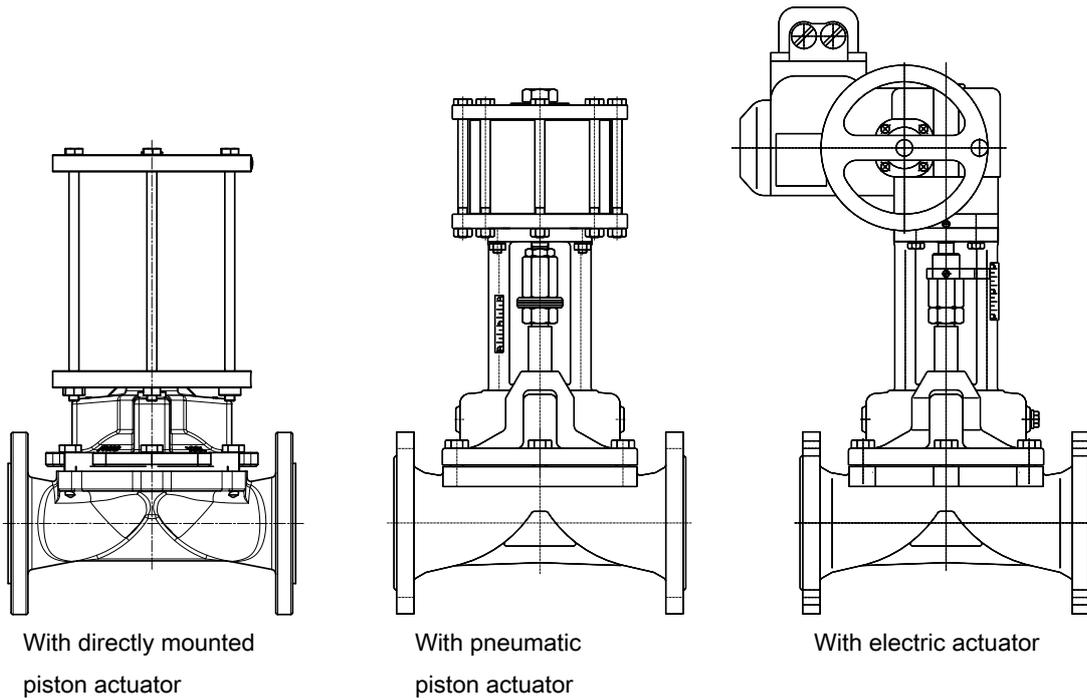
Variants and accessories of SISTO-16 manually operated valves



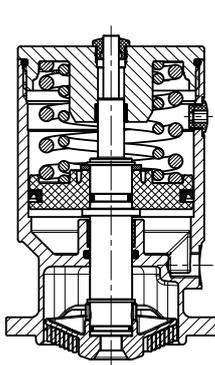
Chain wheel

- 1 Inductive limit switches
- 2 Leakage detection hole
- 3 Locking device

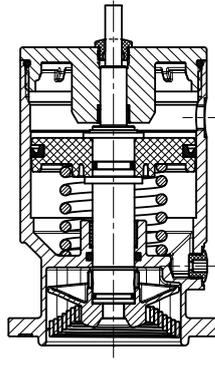
Variants of SISTO-16 with actuator



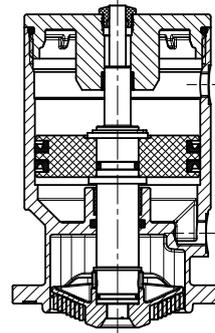
Variants and accessories of the directly mounted LAP.520 and DLAP.230 piston actuator



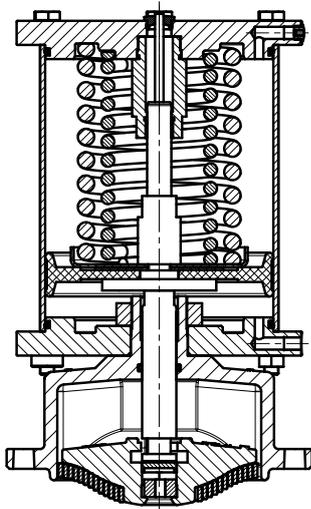
LAP.520-SF



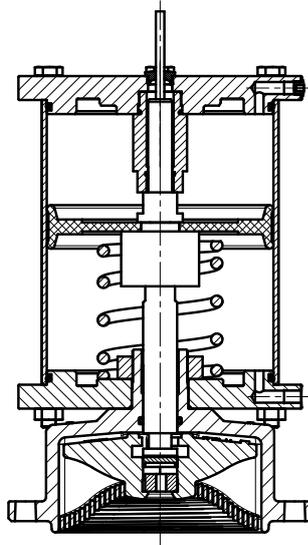
LAP.520-OF



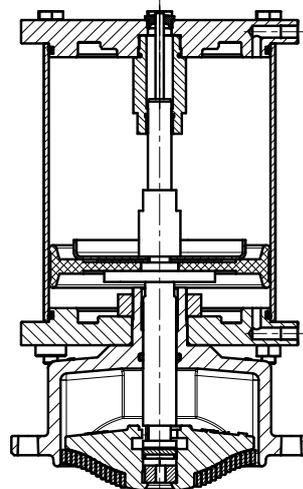
LAP.520-AZ



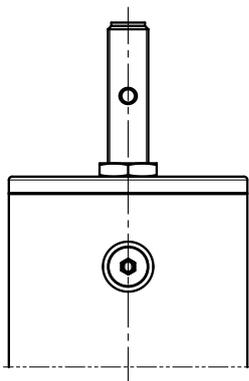
DLAP.230-SF



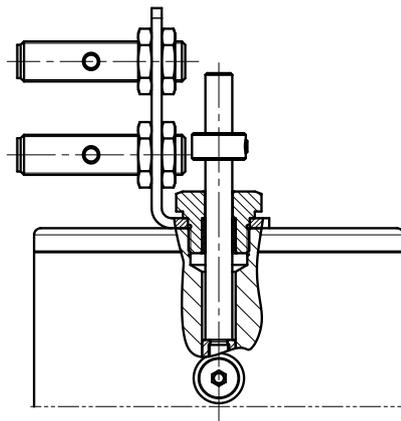
DLAP.230-OF



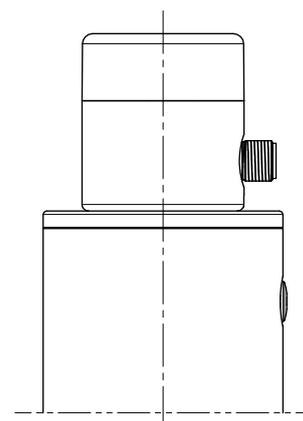
DLAP.230-AZ



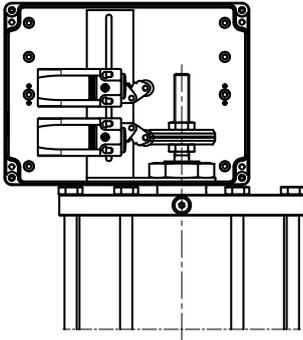
Directly mounted proximity switch
for open position



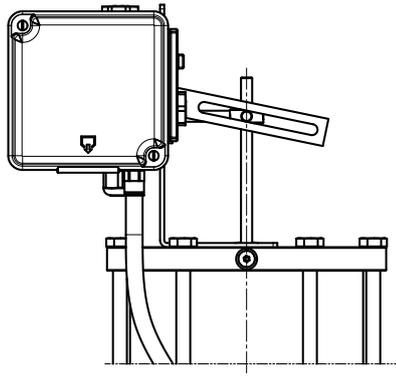
Inductive limit switches



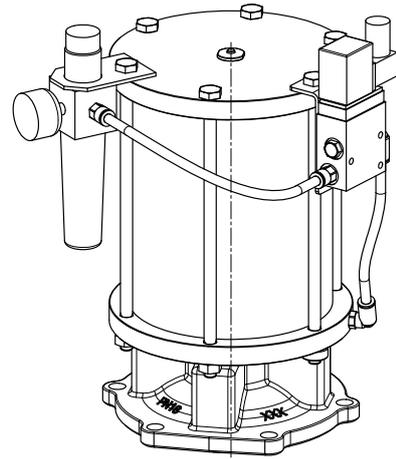
Intelligent actual-position feedback
unit
SK-i.310



Mechanical limit switches

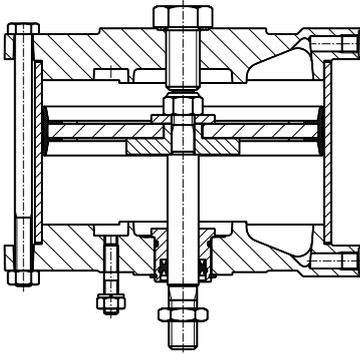


Positioner

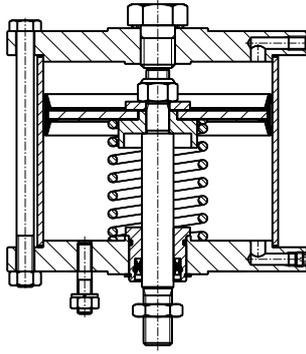


Solenoid valve and
filter/pressure reducer

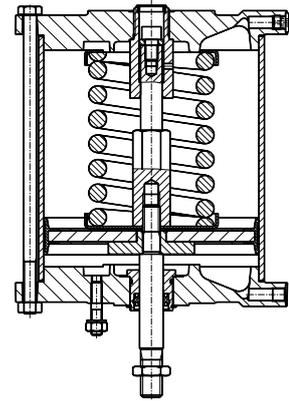
Variants and accessories of the SISTO-LAP piston actuator



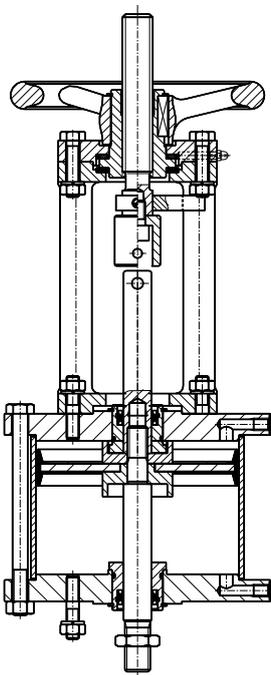
LAP-AZ type



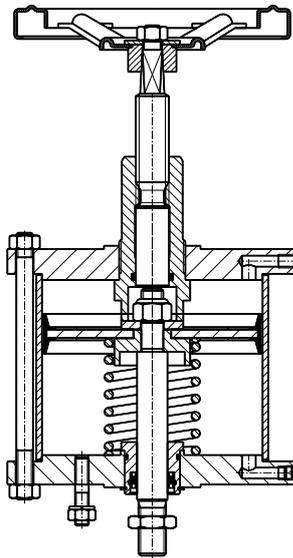
LAP-OF type



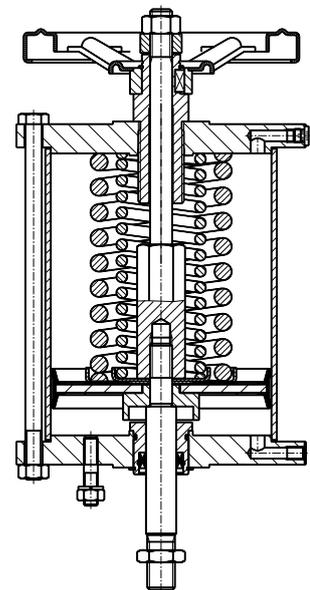
LAP-SF type



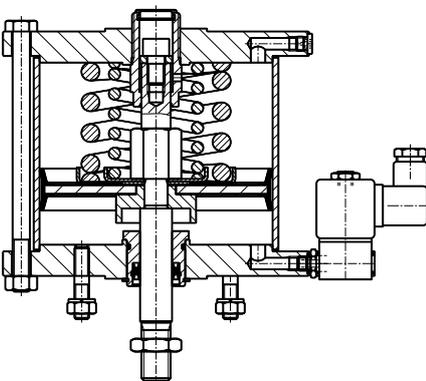
LAP-AZ type with emergency handwheel



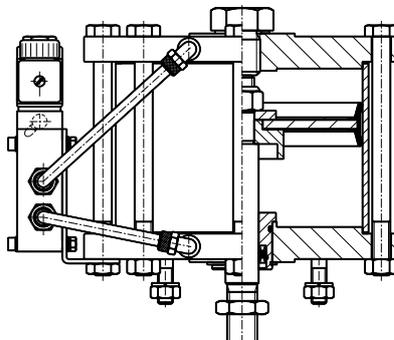
LAP-OF type with emergency handwheel



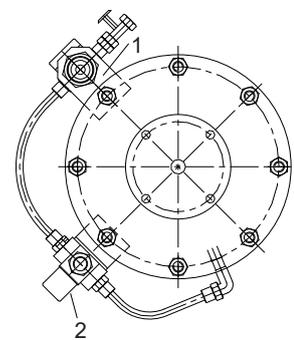
LAP-SF type with emergency handwheel



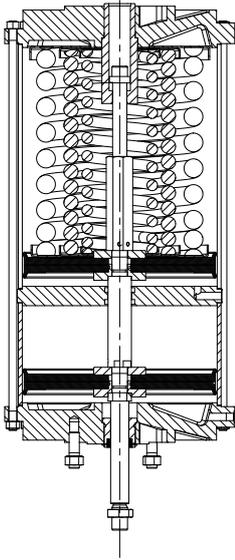
LAP-SF type with 3/2 directional control valve



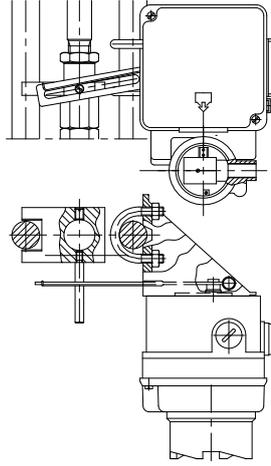
LAP-AZ type with 5/2 directional control valve



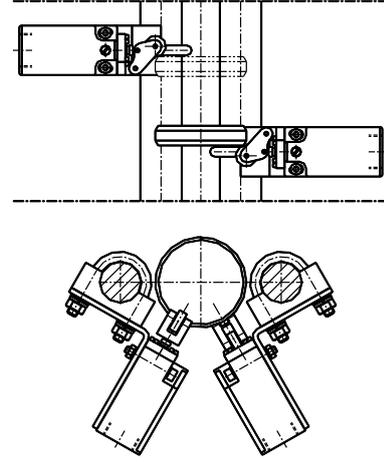
1 Filter/pressure reducer
 2 Solenoid valve



LAP-SF type with double piston

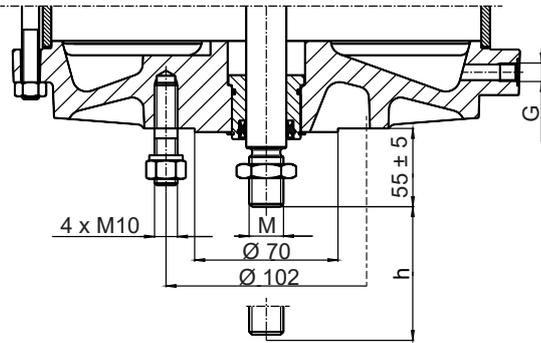


Configuration with positioner

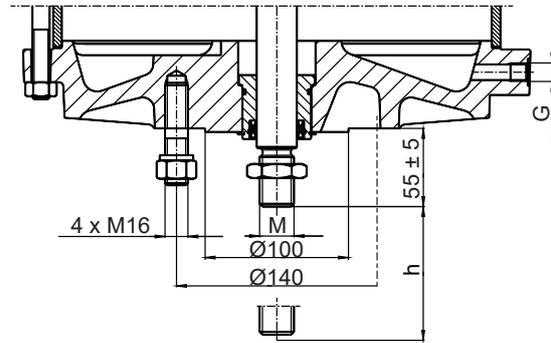


Configuration with mechanical limit switches

Interface



Flange connection F10



Flange connection F14

Symbols key

Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358
 Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

Dimensions and weights of SISTO-16 manually operated valve with flanged ends

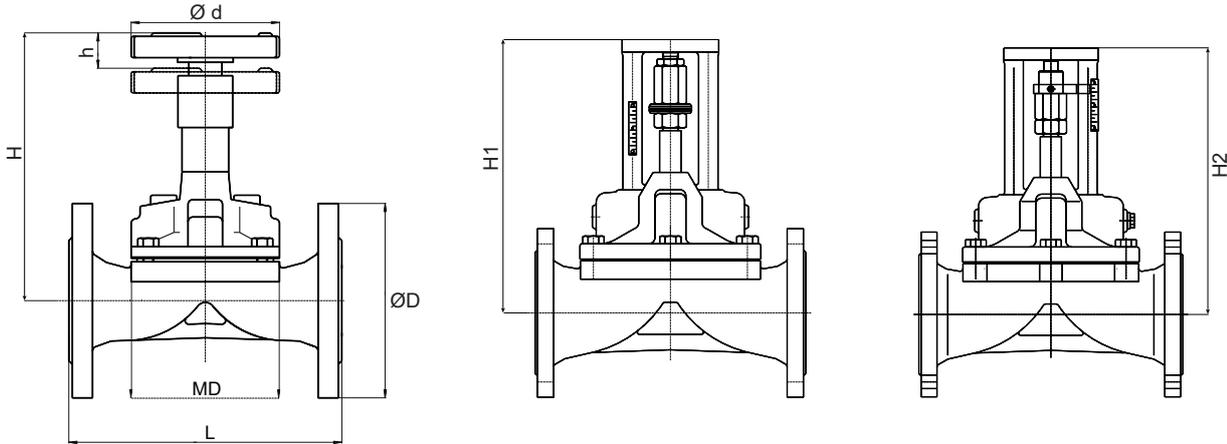


Fig. 15: SISTO-16 manually operated valve with flanged ends

Prepared for SISTO-LAP
(from MD 65)

Prepared for electric actuator
(from MD 65)

Dimensions and weights

DN	MD [mm]	L [mm]	Ø D [mm]	h [mm]	Manually operated valve				Prepared for actuator		
					H ²⁵⁾ [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height SISTO-LAP H1 ²⁵⁾ [mm]	Centre-to-top height Electric actuator H2 ²⁵⁾	
										F07/F10 [mm]	F14 [mm]
15	40	130	95	7	104	60	3	2,5	On request	On request	-
20	65	150	105	13	152	100	4	3,9	220	220	-
25	65	160	115	13	150	100	4	4,5	220	220	-
32	92	180	140	22	196	100	7	7,1	245	245	-
40	92	200	150	22	200	100	7	7,5	245	245	-
50	115	230	165	30	241	125	8	11,0	265	285	-
65	168	290	185	45	322	200 (250) ²⁶⁾	9	20,5	350	370	-
80	168	310	200	45	322	200 (250) ²⁶⁾	9	23,0	350	370	-
100	202	350	220	60	388	250 (315) ²⁶⁾	12	36,5	390	410	-
125	202	400	250	60	388	250 (315) ²⁶⁾	12	44,0	390	410	-
150	280	480	285	80	512	400 (500) ²⁶⁾	13	80,0	500	520	540
200 ²⁷⁾	280	600	340	80	512	400 (500) ²⁶⁾	13	100,0	500	520	540
250 ²⁸⁾	415	730	400	115	645	400	20	190,0	600	-	640
300 ²⁸⁾	415	850	445	115	645	400	20	210,0	600	-	640

Mating dimensions as per standard

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

25 Add 5 mm to centre-to-top height for rubber-lined valves.

26 Optionally with a larger handwheel diameter for operating pressures > 10 bar, from DN 100, a gearbox can be used as an alternative.

27 Alternative: bolt hole pattern to DIN EN 1092-2 PN 10

28 Bolt hole pattern to DIN EN 1092-2 PN 10. Optional: gearbox for operating pressures > 5 bar.

Dimensions and weights of SISTO-16 manually operated valve with threaded socket ends

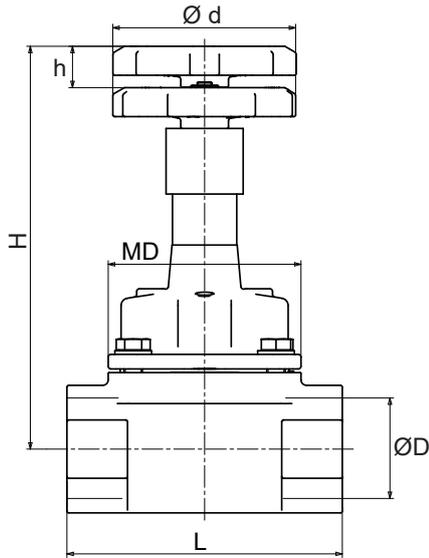


Fig. 16: SISTO-16 manually operated valve with threaded socket ends

Dimensions and weights

DN	MD [mm]	Ø D [inch]	L [mm]	H [mm]	Ø d [mm]	h [mm]	[kg]
15	40	½	85	103	63	7	0,5
20	40	¾	95	106	63	7	0,6
25	65	1	105	151	100	13	2,5
32	65	1¼	120	156	100	13	2,5
40	65	1½	130	159	100	13	3,0
50	92	2	150	202	100	22	5,0
65	115	2½	185	248	125	30	8,0
80	168	3	220	333	200	45	16,5

Mating dimensions as per standard

Face-to-face lengths: DIN EN 16722
 Pipe threads: DIN EN 10226-1 (ISO 7/1)

Dimensions and weights of SISTO-16 with directly mounted LAP.520 and DLAP.230 piston actuator

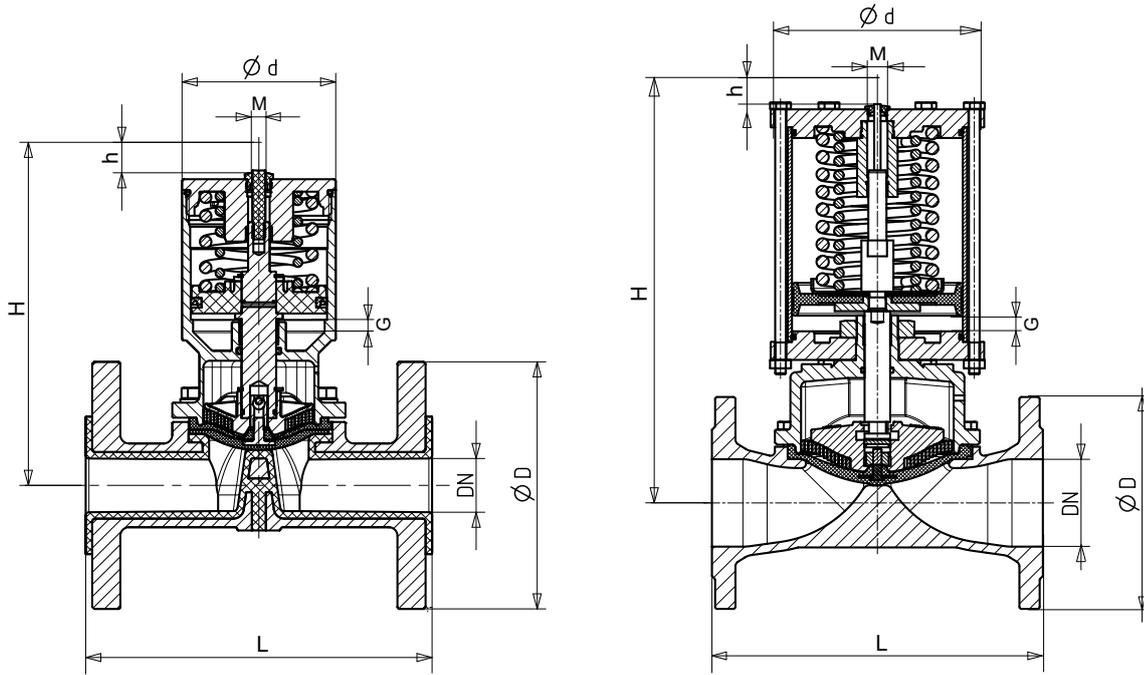


Fig. 17: Diaphragm valves with directly mounted piston actuators

SISTO-16 with LAP.520

SISTO-16 with DLAP.230

Dimensions and weights

DN	MD [mm]	Type	Piston [mm]	L [mm]	Ø D [mm]	h [mm]	H [mm]	Ø d [mm]	[kg]
15	40	LAP.520	40	130	95	7	112	46	2,2
			50			136	58	2,7	
20	65	LAP.520	63	150	105	13	156	71	4,1
			80			182	89	5,5	
25	65	LAP.520	63	160	115	13	159	71	4,5
			80			185	89	6,0	
32	92	LAP.520	80	180	140	21	214	89	8,5
			100			225	110	10,0	
40	92	LAP.520	80	200	150	21	219	89	9,3
			100			230	110	10,8	
50	115	LAP.520	100	230	165	24	252	110	14,0
			DLAP.230			125	364	165	18,5
						160	381	200	23,0
65	168	DLAP.230	160	290	185	40	423	200	33,0
			200			467	250	44,0	
80	168	DLAP.230	160	310	200	40	423	200	35,5
			200			467	250	47,0	
100	202	DLAP.230	200	350	220	55	517	250	56,0
125	202	DLAP.230	200	400	250	55	517	250	63,5

Connections

	Piston 40 - 50 mm	Piston 63 mm	≥ Piston 80 mm
Control air	M5	G1/8 in	G1/8 in
Interface for accessories	M12x1	M12x1	M18x1

Dimensions and weights of SISTO-LAP piston actuator

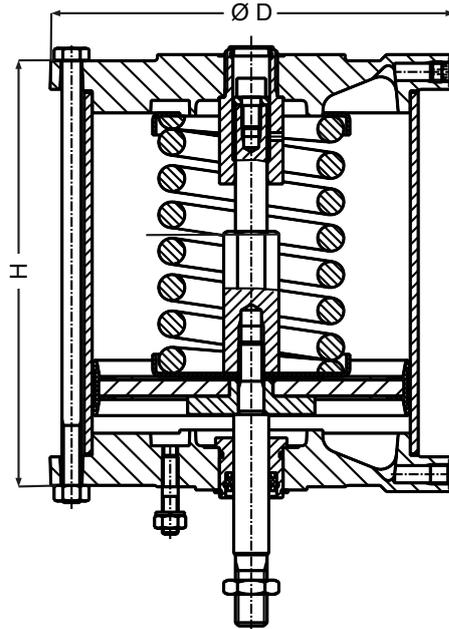


Fig. 18: SISTO-LAP

Dimensions and weights for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-AZ-80-F10	15	130	111	4
LAP-AZ-80-F10	30	130	131	5
LAP-AZ-125-F10	15	170	131	6
LAP-AZ-125-F10	30	170	131	7
LAP-AZ-125-F10	45	170	151	8
LAP-AZ-125-F10	60	170	151	9
LAP-AZ-160-F10	30	210	168	11
LAP-AZ-160-F10	45	210	168	11
LAP-AZ-160-F10	60	210	188	12
LAP-AZ-200-F10	30	255	170	17
LAP-AZ-200-F10	45	255	190	17
LAP-AZ-200-F10	60	255	210	18
LAP-AZ-200-F10	80	255	230	20
LAP-AZ-250-F10	60	305	240	25
LAP-AZ-250-F10	80	305	260	28
LAP-AZ-250-F14	60	305	260	28
LAP-AZ-250-F14	80	305	260	28
LAP-AZ-300-F10	60	355	254	32
LAP-AZ-300-F10	80	355	274	35
LAP-AZ-300-F14	60	355	254	32
LAP-AZ-300-F14	80	355	274	35
LAP-AZ-D250-F14	80	355	424	47
LAP-AZ-D300-F14	80	355	432	61

Dimensions and weights for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-80.101-F10	15	130	151	5
LAP-OF-80.101-F10	30	130	151	6
LAP-OF-125.101-F10	15	170	151	7
LAP-OF-125.101-F10	30	170	151	8
LAP-OF-160.102-F10	30	210	188	12
LAP-OF-160.102-F10	45	210	208	13
LAP-OF-200.102-F10	30	255	210	19
LAP-OF-200.102-F10	45	255	210	19

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-200.001-F10	45	255	310	22
LAP-OF-200.001-F10	60	255	330	23
LAP-OF-250.002-F10	60	305	380	32
LAP-OF-250.002-F10	80	305	400	35
LAP-OF-250.002-F14	60	305	400	32
LAP-OF-250.002-F14	80	305	400	35
LAP-OF-300.002-F10	60	355	414	51
LAP-OF-300.012-F14	80	355	434	53
LAP-OF-D250.012-F14	80	305	504	54
LAP-OF-D300.012-F14	80	355	572	74

Dimensions and weights for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-SF-80.001.5-F10	15	130	171	6
LAP-SF-80.001-F10	30	130	271	7
LAP-SF-125.002.5-F10	15	170	212	10
LAP-SF-125.002-F10	30	170	271	12
LAP-SF-160.012-F10	30	210	274	18
LAP-SF-160.012-F10	45	210	310	19
LAP-SF-200.003.5-F10	30	255	290	28
LAP-SF-200.003.7-F10	45	255	350	32
LAP-SF-200.003-F10	60	255	450	35
LAP-SF-200.003-F10	80	255	470	37
LAP-SF-250.004.7-F10	45	305	380	42
LAP-SF-250.004-F10	60	305	480	45
LAP-SF-250.004-F10	80	305	500	48
LAP-SF-250.004-F14	60	305	380	42
LAP-SF-250.004-F14	80	305	500	49
LAP-SF-300.034-F10	60	355	514	67
LAP-SF-300.034-F14	80	355	535	75
LAP-SF-D300.005-F14	80	355	732	99
LAP-SF-D300.034-F10	80	355	693	81
LAP-SF-D300.345-F14	80	355	732	122

Technical data

Actuator sizes of directly mounted LAP.520 and DLAP.230 piston actuators

Selection table for maximum permissible operating pressure in bar for SISTO-16

Minimum required control pressure: 5.5 bar
Maximum permissible control pressure 7 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Combination of diaphragm seats (MD) and nominal sizes (DN) (⇒ Page 46)

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	LAP.520	63	10	5
		80	16	12
92	LAP.520	80	8	4
		100	14	8
115	LAP.520	100	10	5
	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	LAP.520	63	10	5
		80	16	12
92	LAP.520	80	8	4
		100	14	8
115	LAP.520	100	8	3
	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	9	-
		50	16	13
65	LAP.520	63	9	4
		80	16	12
92	LAP.520	80	8	4
		100	13	8
115	LAP.520	100	8	3
	DLAP.230	125	12	6
		160	16	14
168	DLAP.230	160	7	4
		200	13	9
202	DLAP.230	200	8	5

Other selection options on request.

Actuator size of SISTO-LAP piston actuator**Selection table for maximum permissible operating pressure in bar for SISTO-16 valve with elastomer diaphragm**

Minimum required control pressure: 5.5 bar

Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.

Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	16	9	5	↓	↓	↓
LAP-AZ-125-F10	15/30	↑	16	16	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	↑	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	10	6	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	16	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	10	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	↑	16	7
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	↑	11
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	16
LAP-AZ-D300-F14 ²⁹⁾	80	↑	↑	↑	↑	↑	↑

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	16	5	3	↓	↓	↓
LAP-OF-125.101-F10	15/30	↑	16	16	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	↑	9	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	15	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	9	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	16	4
LAP-OF-300.002-F10 ²⁹⁾	60	↑	↑	↑	↑	↑	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	10
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	14
LAP-OF-D300.012-F14 ²⁹⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	13	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	16	7	3	↓	↓	↓
LAP-SF-125.002.5-F10	15	↑	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	16	10	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	↑	15	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	16	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	↑	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	6	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	9	3
LAP-SF-300.034-F10	60	↑	↑	↑	16	15	↓
LAP-SF-300.034-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	10
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	16

Other selection options on request.

²⁹ Max. control pressure: 7 bar

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-16 valve with TFM diaphragm

Minimum required control pressure: 5.5 bar
Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	13	4	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	8	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	6	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	11	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	7	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	13	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14 ³⁰⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	8	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	14	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	8	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	14	9	↓
LAP-OF-300.002-F10 ³⁰⁾	60	↑	↑	↑	16	16	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	8
LAP-OF-D300.012-F14 ³⁰⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	7	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	12	4	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	8	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	10	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	5	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	10	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	6	↓
LAP-SF-300.034-F10	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10 ³⁰⁾	60	↑	↑	↑	↑	↑	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	4
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request.

30 Max. control pressure: 7 bar

SISTO-16S



Product benefits

- **Reliable sealing to atmosphere and absolutely tight shut-off**
The diaphragm provides absolutely tight shut-off as well as hermetic sealing to atmosphere and of all operating elements.
- **Maximum service life and pressure limit**
Maximised diaphragm life and pressure limit thanks to completely enclosed, spiral-supported diaphragm.
- **Excellent functional reliability**
Increased functional reliability of the diaphragm thanks to balanced diaphragm suspension.
- **Excellent resistance to corrosion and abrasion**
High-quality body materials and linings offer reliability and a long service life.
- **Smooth actuation**
The thrust bearing minimises the closing torques.
- **Optimised long-term operation**
The stem protection integrated in the position indicator prevents ingress of contaminants.
- **Fluid purity**
Valve hydraulics without dead volume ensure optimum conditions for high-purity fluids and protection against deposits.
- **Quick identification of valve position**
The valve's position can be easily identified via a clear visual indicator, also visible from a distance.
- **Reliable operation**
The stem and all internal operating elements are **not** in contact with the fluid.

Further information

Dimensions and weights 64

Main applications

- Chemical industry
- Homogenisation
- Industrial recirculation systems
- Air-conditioning systems
- Paint shops
- Seawater desalination/reverse osmosis
- Paper industry / pulp industry
- Petrochemical industry
- Refinery
- Flue gas desulphurisation
- Shipbuilding
- Process engineering
- Heat recovery systems
- Hot-water heating systems
- Water treatment

Fluids handled

- Waste water without faeces
- Aggressive fluids
- Inorganic fluids

- Service water
- Steam
- River water, lake water and groundwater
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Fuels
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Organic fluids
- Cleaning agents
- Brine
- Drinking water
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size	DN 15 - 200
Max. permissible pressure [bar]	16
Min. permissible temperature [°C] ³¹⁾	≥ -20 (-30 ³²⁾)
Max. permissible temperature [°C] ³¹⁾	≤ +160

Control pressure of piston actuators

Max. permissible temperature (actuator/control fluid): 80 °C

Permissible control pressure

Type	Piston diameter [mm]	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure P [bar] <small>ctr. perm.</small>
SISTO-LAP	80 - 250	F10	5,5 - 10
	250	F14	5,5 - 10
	300	F10	5,5 - 7
	300	F14	5,5 - 10
	D250 ³³⁾	F14	5,5 - 10
	D300 ³³⁾	F14	5,5 - 7
SISTO-LAP.520/ DLAP.230	40 - 200	-	5,5 - 7

i Pneumatic actuators from SISTO are suitable for compressed air of purity class 5:4:4 in accordance with ISO 8573-1. If there is a risk of frost, purity class 5:3:4 must be applied to prevent damage caused by icing.

Valve body materials

Overview of available materials

Material	Material number	Temperature limit
EN-GJS-400-18-LT	5.3103	-20 °C to +160 °C
GP240GH	1.0619	-20 °C to +160 °C

Design details

Design

- Soft-seated weir-type 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)
- TA-Luft-compliant design to VDI 2440

Variants

- Actuator (electric or pneumatic)
- Limit switches
- Locking device
- Body lined with IIR (butyl), temperature limit: +120 °C

- Body lined with NRH (hard rubber), temperature limit: +100 °C
- Body lined with PFA (DN 15 only), temperature limit: +160 °C
- Body lined with PTFE (anti-static), temperature limit: +160 °C
- Body lined with PTFE, temperature limit: +160 °C
- Body lined with TFM, temperature limit: +160 °C
- Body coated with ECTFE (Halar) inside and outside, temperature limit: +90 °C
- Body coated with PA (Rilsan) inside and outside, temperature limit: +60 °C
- Chain wheel
- Leakage detection hole and additional stem seal
- Diaphragm made of CSM, temperature limit: +80 °C
- Diaphragm made of EPDM, temperature limit: +140 °C
- Diaphragm made of SISTOMaXX (EPDM/W270), temperature limit: +90 °C
- Diaphragm made of EPDM-V (vacuum), temperature limit: +140 °C
- Diaphragm made of FKM, temperature limit: +120 °C
- Diaphragm made of IIR, temperature limit: +120 °C
- Diaphragm made of NBR, temperature limit: +90 °C
- Two-piece diaphragm made of TFM/EPDM, temperature limit: +160 °C
- Three-piece diaphragm made of TFM/PVDF/EPDM, temperature limit: +160 °C
- Lead-sealable cap (prevents unauthorised actuation)
- Stem extension
- Certification to customer specification

31 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

32 For limited operating conditions on request.

33 Double drum

Variant overview

Overview of SISTO-16S variants

DN	Material number		Lining			Coating		
	Body	Bonnet	None	PTFE/TFM	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15	1.0619	1.0619	-	PFA only	-	-	-	-
20-200	5.3103	5.3103	x	x	x	x	x	x

Actuators

Directly mounted piston actuator

- SISTO-LAP.520 for DN 15
- SISTO-DLAP.230 for DN 20 - 125
- Compact mounting without lantern
- Leakage detection hole
- Standard interface for accessories

Actuator function

- Actuator type DLAP.230/LAP.520 AZ
 - Air-to-open
 - Air-to-close
- Actuator type DLAP.230/LAP.520 OF
 - Spring-to-open
 - Air-to-close
 - Actuator type DLAP.230/LAP.520 SF
 - Air-to-open
 - Spring-to-close

SISTO-LAP piston actuator

- Double-acting piston, piston rod extending from one end only, with or without spring
- Piston rod sealed by U-ring and scraper ring
- Piston with double cup seal and vulcanised metal disc
- Mechanical travel stops in the actuator for closed position and open position
- Flanges to DIN ISO 5210/DIN 3358
- Piston diameters 80 to 300 = F10
- Piston diameters 250 to 300 = F14
- Leakage detection hole from MD 65 with screw (can be plugged)

Actuator function

- 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

Electric actuator

- Multi-turn actuator
- Linear actuator

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per European 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

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAP (piston actuator)	9210.1
Type series booklet SISTO-SK-i	8676.5.

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

Flow coefficients

Flow coefficients for unlined valves

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

Pressure/temperature ratings

Permissible operating pressure [bar]

PN	Material		[°C]							
	Designation	Number	-20 to +50	+100	+110	+120	+130	+140	+150	+ 160
16	EN-GJS-400-18-LT	5.3103	16,0	16,0	16,0	16,0	15,8	15,6	14,0	12,0
	GP240GH	1.0619	16,0	14,8	14,6	14,4	14,3	14,1	14,0	12,0

Materials

Materials of SISTO-16S manually operated valve

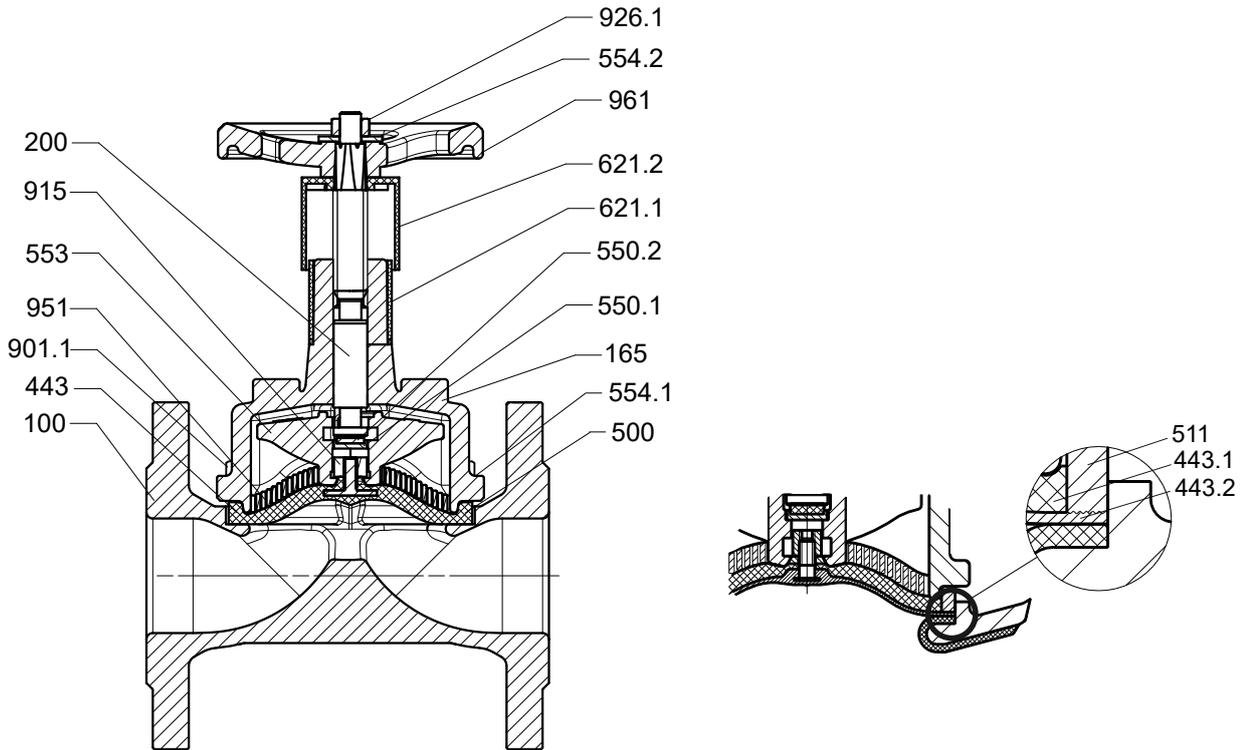


Fig. 19: SISTO-16S manually operated valve / variant with 2-piece diaphragm

Parts list

Part No.	Description	Material		Note
		Designation	Number	
100	Body	EN-GJS-400-18-LT	5.3103	DN 15 = 1.0619 with PFA lining
165	Bonnet	EN-GJS-400-18-LT	5.3103	DN 15 = 1.0619
200	Stem	X14CrMoS17	1.4104	-
443 ³⁴⁾	Diaphragm	EPDM	-	Standard
443.1 ³⁴⁾	Backing diaphragm	EPDM	-	-
443.2 ³⁴⁾	Diaphragm	TFM	-	-
500	Ring	St 37/A2E	-	-
511	Backing ring	St 37/A2E	-	-
550.1	Bearing disc	11SMnPb30	1.0718	For DN 40-200
550.2	PTFE disc	PTFE/graphite	-	For DN 15; DN 40-200
553	Compressor	EN-GJS-400-15	5.3106	DN 15-25 = 1.0619
554.1	Washer	A2	-	For bodies with PA or ECTFE coating
554.2	Washer	A2	-	-
621.1	Position indicator, lower part	ASA Luran	-	-
621.2	Position indicator, upper part	ASA Luran	-	-
901.1	Hexagon head bolt	A2-70	-	For PTFE lining with TFM diaphragm: material 8.8 A2E
915	Floating nut	11SMnPb30	1.0718	-
926.1	Prevailing torque nut	A2-70	-	-
951	Support spiral	St 2K BK	-	From MD 65
961	Handwheel	EN-GJL-200	5.1300	DN 15 = PC

34 Recommended spare parts

Materials of directly mounted SISTO-LAP.520 and SISTO-DLAP.230 piston actuators

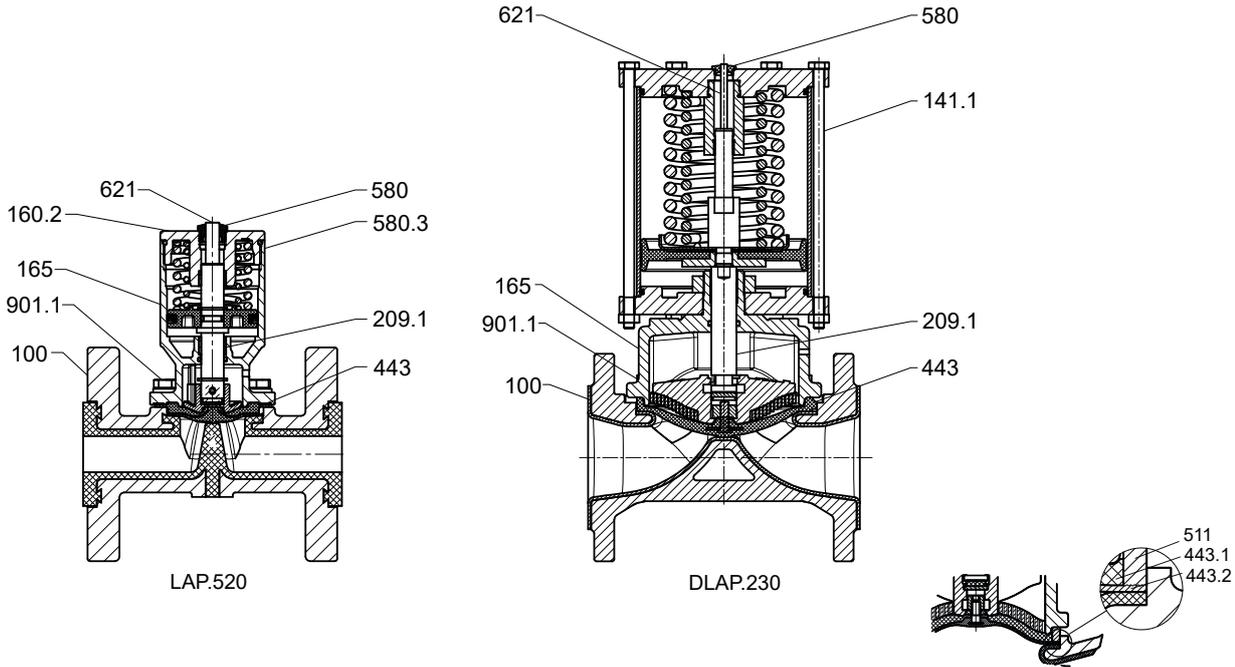


Fig. 20: Directly mounted SISTO-LAP.520 and SISTO-DLAP.230 piston actuators

Variant with 2-piece diaphragm, DN 15 - 125

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40	GP240GH	1.0619	With PFA lining
		65 - 202	EN-GJS-400-18-LT	5.3103	-
141.1	Cylinder	65 - 202	AlMgSi	3.3206	-
160.2	Top end cap	40	GX2CrNiMo19-11-2	1.4409	-
		65 - 202	AlCu4PbMgMn	3.1645	-
165	Bonnet	40	GX2CrNiMo19-11-2	1.4409	-
		65 - 202	EN-GJS-400-18-LT	5.3103	-
209.1	Piston rod	40	X8CrNiS18-9	1.4305	-
		65 - 202	X14CrMoS17	1.4104	-
443 ³⁵⁾	Diaphragm	40 - 202	EPDM	-	Standard
443.1 ³⁵⁾	Backing diaphragm	40 - 202	EPDM	-	-
443.2 ³⁵⁾	Diaphragm	40 - 202	TFM	-	-
511	Backing ring	40 - 202	Steel	-	-
580	Cap	40 - 202	Plastic	-	M12 x 1 / M18 x 1 interface
580.3	Cap	40 - 202	Plastic	-	Air supply connection M5 / G ¹ / ₈ inch
621	Position indicator	40 - 202	Plastic	-	-
901.1	Hexagon head bolt	40 - 202	A2	-	For PTFE lining with TFM diaphragm: material 8.8 A2E

35 Recommended spare parts

Materials of SISTO-LAP piston actuator

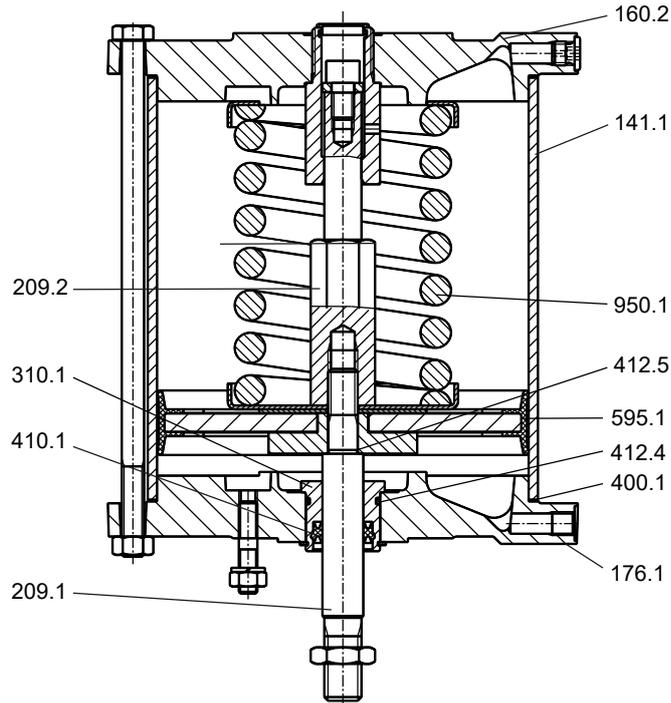


Fig. 21: SISTO-LAP-SF piston actuator

Parts list

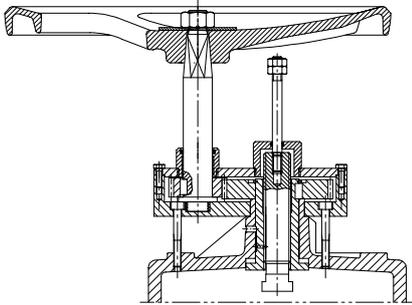
Part No.	Description	Material		Piston diameter [mm]
		Designation	Number	
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
176.1	Bottom end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
209.1	Lower piston rod	X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	X14CrMoS17	1.4104	80 - 300
310.1 ^{36) 37)}	Plain bearing	Plastic – POM	-	80 - 300
400.1 ^{36) 37)}	Gasket	Plastic – AFM 30	-	80 - 300
410.1 ^{36) 37)}	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4 ^{36) 37)}	O-ring	NBR	-	80 - 300
412.5 ^{36) 37)}	O-ring	NBR	-	80 - 300
595.1 ^{36) 37)}	Piston assembly	Steel/acrylonitrile butadiene rubber – St/ NBR	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

36 Recommended spare parts (= complete set of sealing elements)

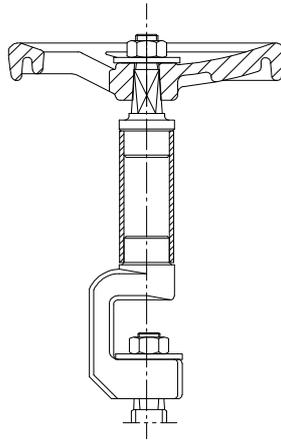
37 We recommend having these parts replaced in our factory.

Variants and accessories

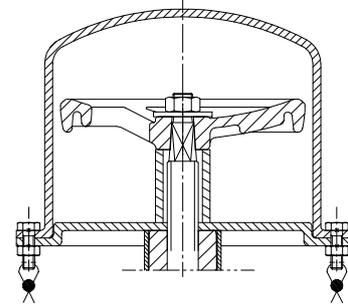
Variants and accessories of SISTO-16S manually operated valve



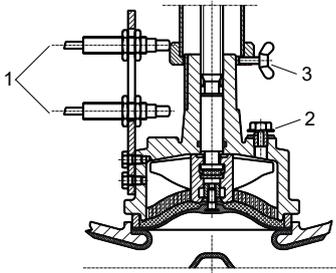
Gearbox



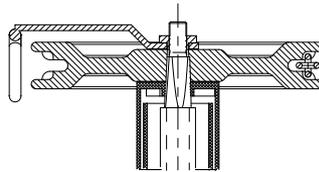
Stem extension



Lead-sealable cap

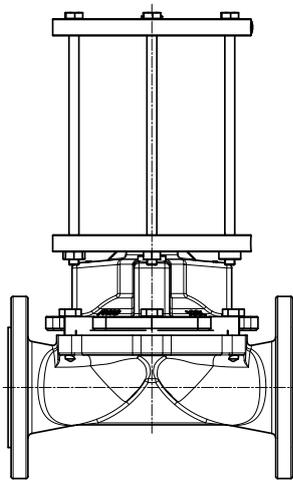


- 1 Limit switch
- 2 Leakage detection hole
- 3 Locking device

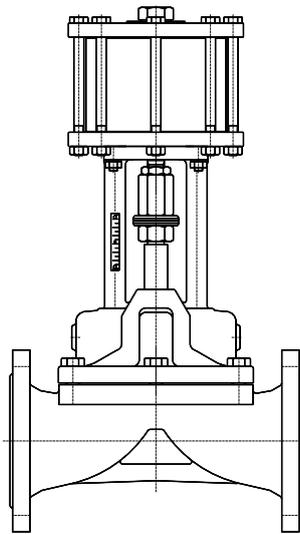


Chain wheel

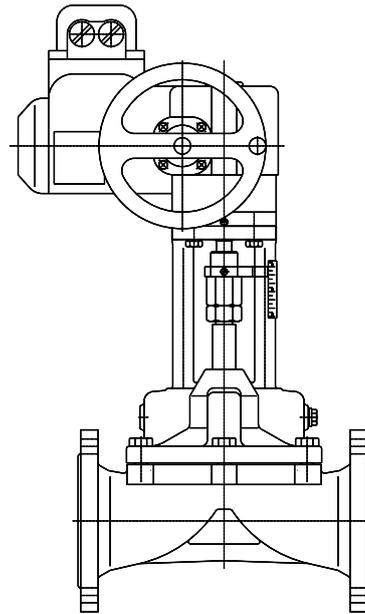
Variants of SISTO-16S with actuator



With directly mounted pneumatic piston actuator

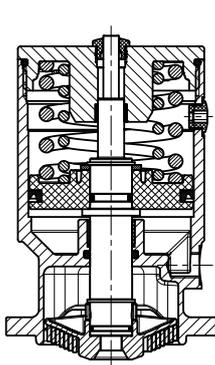


With mounted pneumatic piston actuator

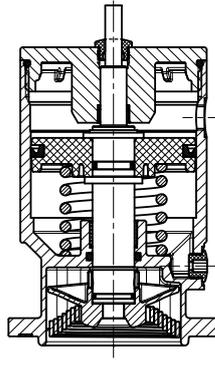


With electric actuator

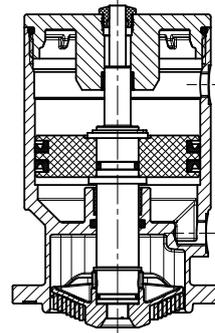
Variants and accessories of directly mounted SISTO-LAP.520 and SISTO-DLAP.230 piston actuators



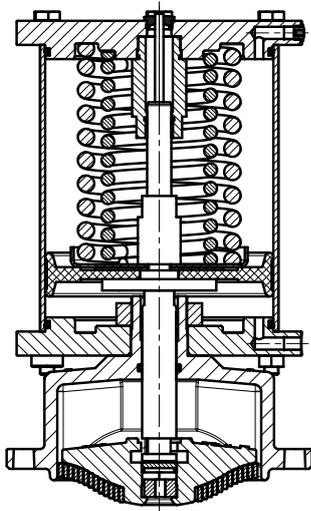
LAP.520-SF



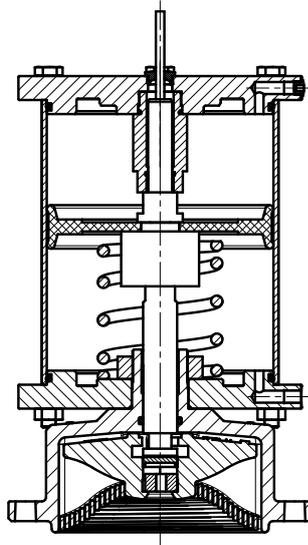
LAP.520-OF



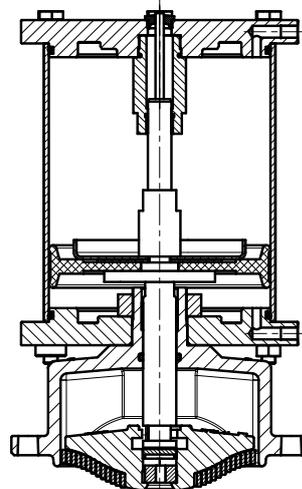
LAP.520-AZ



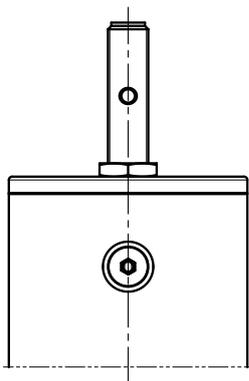
DLAP.230-SF



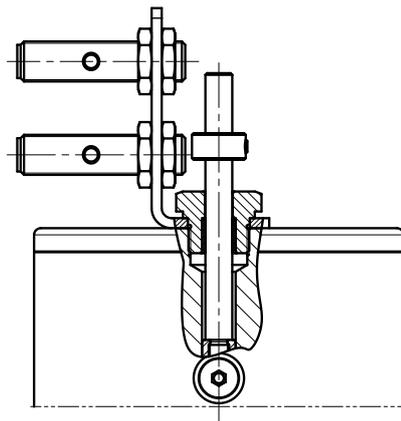
DLAP.230-OF



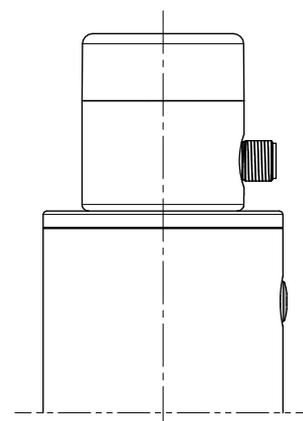
DLAP.230-AZ



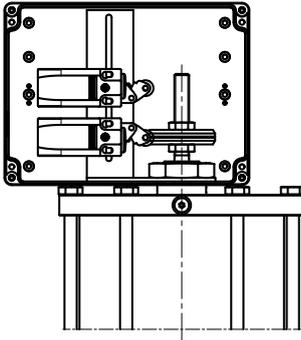
Directly mounted proximity switch
for open position



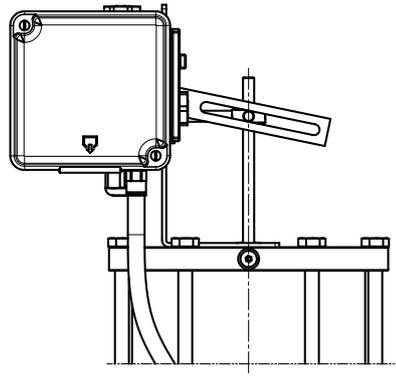
Inductive limit switches



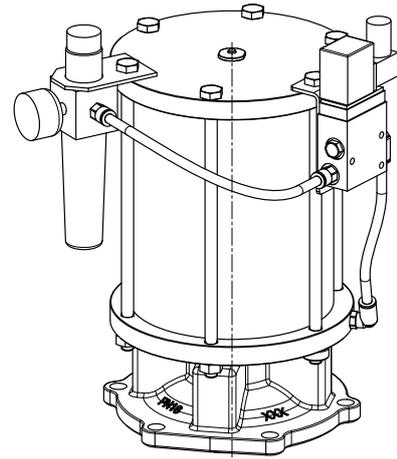
Intelligent actual-position feedback
unit
SK-i.310



Mechanical limit switches

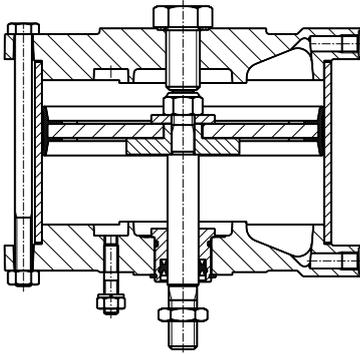


Positioner

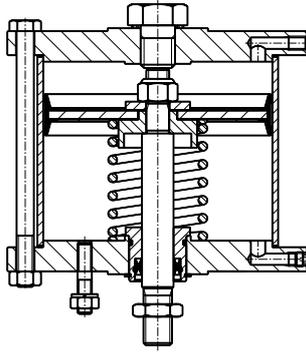


Solenoid valve and
filter/pressure reducer

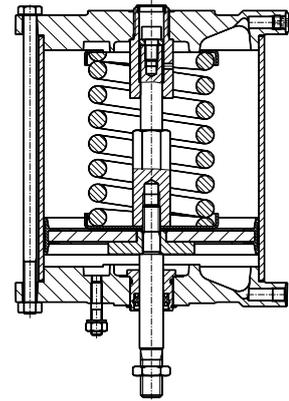
Variants and accessories of the SISTO-LAP piston actuator



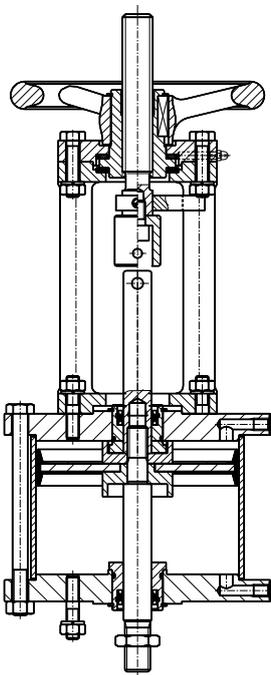
LAP-AZ type



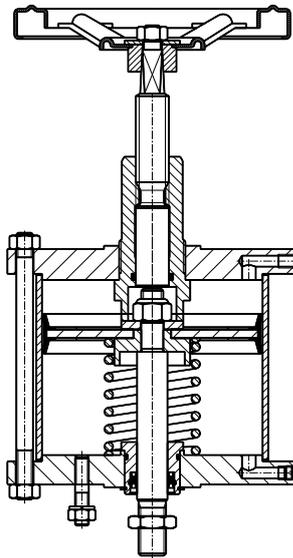
LAP-OF type



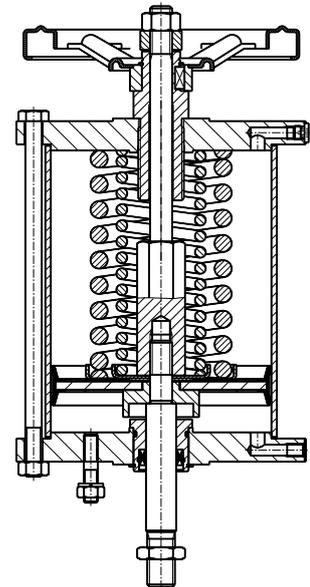
LAP-SF type



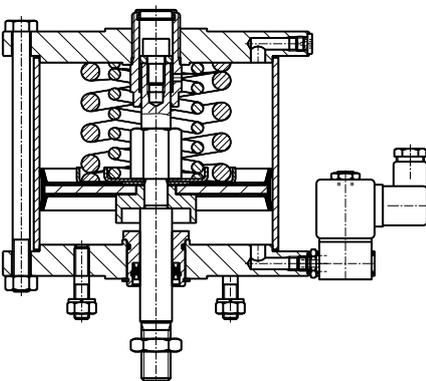
LAP-AZ type with emergency handwheel



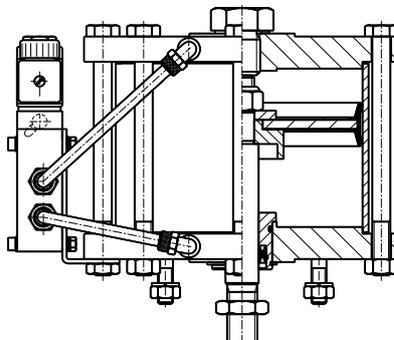
LAP-OF type with emergency handwheel



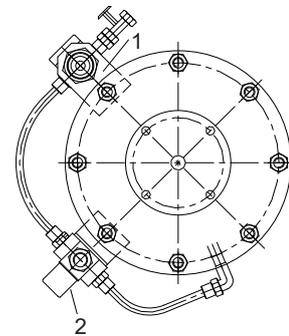
LAP-SF type with emergency handwheel



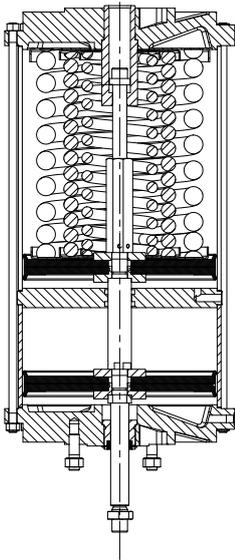
LAP-SF type with 3/2 directional control valve



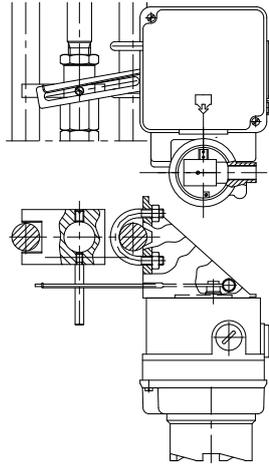
LAP-AZ type with 5/2 directional control valve



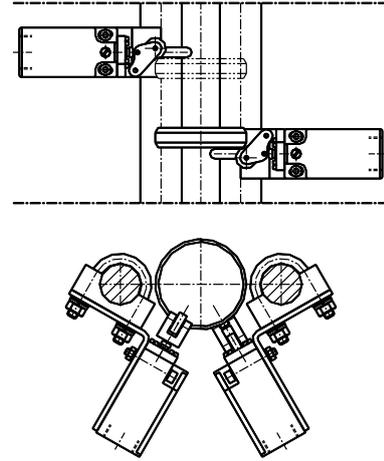
1 Filter/pressure reducer
 2 Solenoid valve



LAP-SF type with double piston

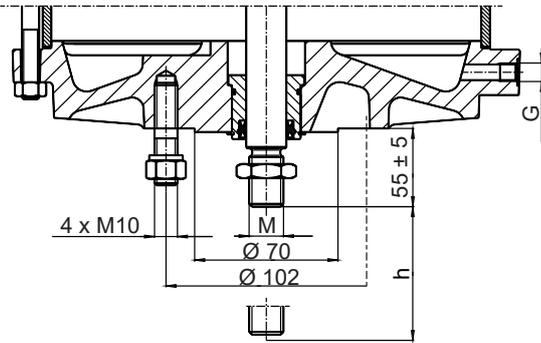


Configuration with positioner

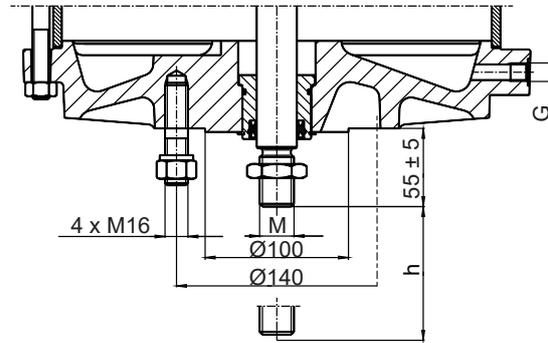


Configuration with mechanical limit switches

Interface



Flange connection F10



Flange connection F14

Symbols key

Symbol	Description
G	G 1/8 in. for piston diameters 80/125/160 G 1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358
 Pipe connection: DIN ISO 228 G 1/8 in. and G 1/4 in.

Dimensions and weights

Dimensions and weights of SISTO-16S manually operated valve

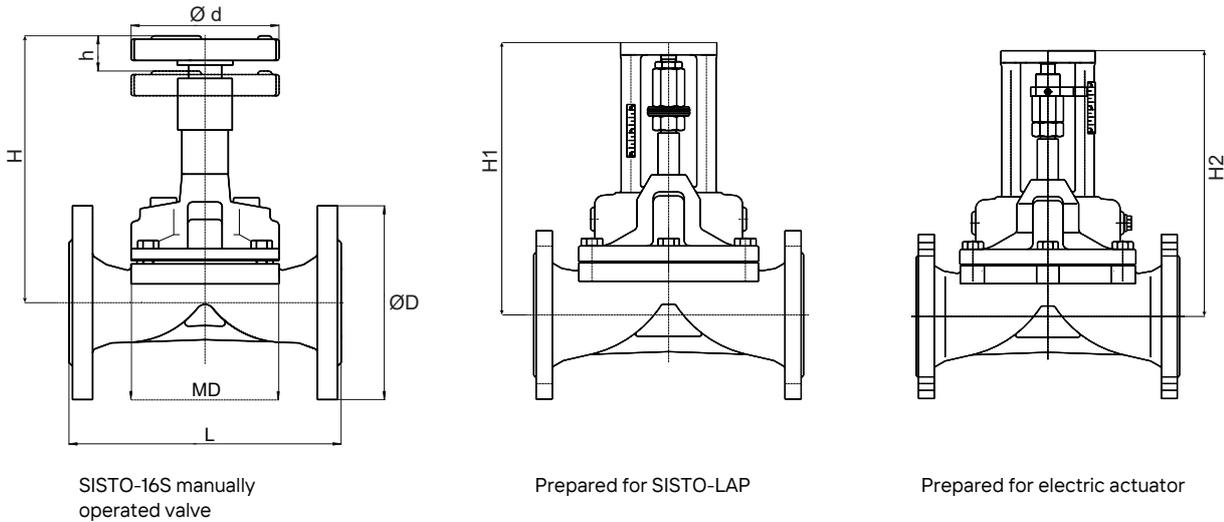


Fig. 22: SISTO-16S

Dimensions and weights

DN	MD [mm]	L ³⁸⁾ [mm]	Ø D [mm]	h [mm]	Manually operated valve				Prepared for actuator		
					H ³⁹⁾ [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height SISTO-LAP H1 ³⁹⁾ [mm]	Centre-to-top height Electric actuator H2 ³⁹⁾	
										F07/F10 [mm]	F14 [mm]
15 ⁴⁰⁾	40	108	95	7	104	60	3	2,5	On request	On request	-
20	65	117	105	13	150	100	4	3,4	210	210	-
25	65	127	115	13	150	100	4	3,8	210	210	-
40	92	159	150	22	192	100	7	7,0	230	230	-
50	115	190	165	30	225	125	8	10,5	250	250	-
65	115	216	185	30	231	125	8	12,5	250	250	-
80	168	254	200	45	307	200 (250) ⁴¹⁾	9	21,5	305	320	-
100	202	305	220	60	388	250 (315) ⁴¹⁾	12	35,0	355	370	-
125	202	356	250	60	388	250 (315) ⁴¹⁾	12	40,0	355	370	-
150	280	406	285	80	512	400 (500) ⁴¹⁾	13	72,0	435	460	480
200	280	521	340	80	512	400 (500) ⁴¹⁾	13	90,0	435	460	480

Mating dimensions as per standard

Face-to-face length: EN 558 R7
 Flanges: DIN EN 1092-2⁴²⁾
 Flange facing: DIN EN 1092-2, type B

38 Add 6 mm to face-to-face length for rubber-lined and PTFE/TFM-lined valves.

39 Add 5 mm to centre-to-top height for rubber-lined valves.

40 With PFA lining only

41 Optionally with a larger handwheel diameter for operating pressures > 10 bar, from DN 100, a gearbox can be used as an alternative.

42 Optionally with bolt hole pattern to ASME B 16.5 - 2013 Cl. 150

Dimensions and weights of SISTO-16S with directly mounted DLAP.230 piston actuators

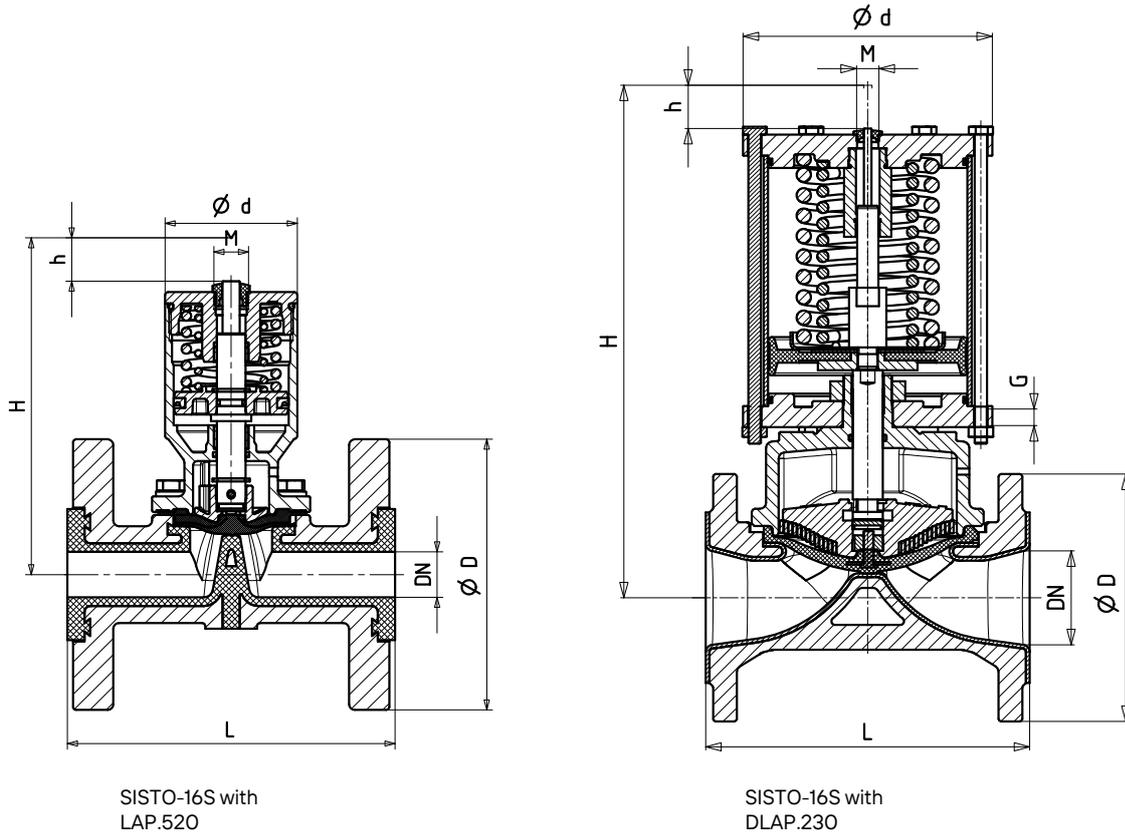


Fig. 23: SISTO-16S with directly mounted piston actuators

Dimensions and weights

DN	MD [mm]	Type	Piston [mm]	L [mm]	Ø D [mm]	h [mm]	H [mm]	Ø d [mm]	[kg]
15	40	LAP.520	40	108	95	7	113	46	2,5
			50				137	58	3,0
20	65	DLAP.230	125	117	105	13	313	165	11,3
25			125	127	115	13	318	165	12,1
40	92	DLAP.230	125	159	150	21	344	165	15,6
50	115	DLAP.230	125	190	165	24	352	165	19,5
			160				369	200	24,0
65		DLAP.230	125	216	185		356	165	21,5
			160				373	200	26,0
80	168	DLAP.230	160	254	200	40	426	200	34,5
			200				470	250	46,0
100	202	DLAP.230	200	305	220	55	520	250	55,0
125	202	DLAP.230	200	356	250	55	520	250	62,0

Connections

	≤ Piston 63 mm	≥ Piston 80 mm
Control air	M5	G ¹ / ₈ in
Interface for accessories	M12 x 1	M18 x 1

Dimensions and weights of SISTO-LAP piston actuator

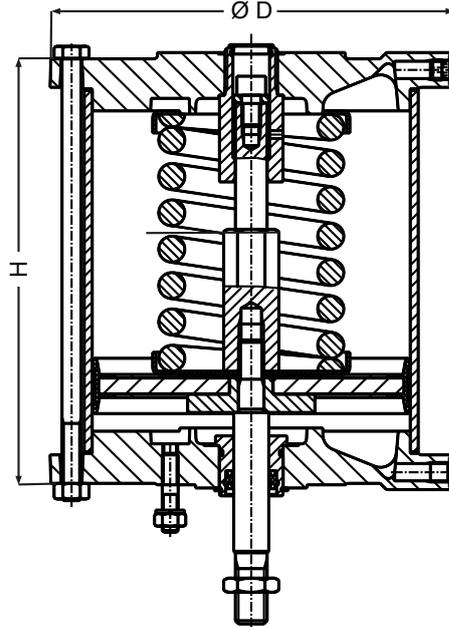


Fig. 24: SISTO-LAP

Dimensions and weights for actuator function: type LAP-AZ (air-to-open/air-to-close)

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-AZ-80-F10	15	130	111	4
LAP-AZ-80-F10	30	130	131	5
LAP-AZ-125-F10	15	170	131	6
LAP-AZ-125-F10	30	170	131	7
LAP-AZ-125-F10	45	170	151	8
LAP-AZ-125-F10	60	170	151	9
LAP-AZ-160-F10	30	210	168	11
LAP-AZ-160-F10	45	210	168	11
LAP-AZ-160-F10	60	210	188	12
LAP-AZ-200-F10	30	255	170	17
LAP-AZ-200-F10	45	255	190	17
LAP-AZ-200-F10	60	255	210	18
LAP-AZ-200-F10	80	255	230	20
LAP-AZ-250-F10	60	305	240	25
LAP-AZ-250-F10	80	305	260	28
LAP-AZ-250-F14	60	305	260	28
LAP-AZ-250-F14	80	305	260	28
LAP-AZ-300-F10	60	355	254	32
LAP-AZ-300-F10	80	355	274	35
LAP-AZ-300-F14	60	355	254	32
LAP-AZ-300-F14	80	355	274	35
LAP-AZ-D250-F14	80	355	424	47
LAP-AZ-D300-F14	80	355	432	61

Dimensions and weights for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-80.101-F10	15	130	151	5
LAP-OF-80.101-F10	30	130	151	6
LAP-OF-125.101-F10	15	170	151	7
LAP-OF-125.101-F10	30	170	151	8
LAP-OF-160.102-F10	30	210	188	12
LAP-OF-160.102-F10	45	210	208	13
LAP-OF-200.102-F10	30	255	210	19
LAP-OF-200.102-F10	45	255	210	19
LAP-OF-200.001-F10	45	255	310	22
LAP-OF-200.001-F10	60	255	330	23
LAP-OF-250.002-F10	60	305	380	32
LAP-OF-250.002-F10	80	305	400	35
LAP-OF-250.002-F14	60	305	400	32
LAP-OF-250.002-F14	80	305	400	35
LAP-OF-300.002-F10	60	355	414	51
LAP-OF-300.012-F14	80	355	434	53
LAP-OF-D250.012-F14	80	305	504	54
LAP-OF-D300.012-F14	80	355	572	74

Dimensions and weights for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-SF-80.001.5-F10	15	130	171	6
LAP-SF-80.001-F10	30	130	271	7
LAP-SF-125.002.5-F10	15	170	212	10
LAP-SF-125.002-F10	30	170	271	12
LAP-SF-160.012-F10	30	210	274	18
LAP-SF-160.012-F10	45	210	310	19
LAP-SF-200.003.5-F10	30	255	290	28
LAP-SF-200.003.7-F10	45	255	350	32
LAP-SF-200.003-F10	60	255	450	35
LAP-SF-200.003-F10	80	255	470	37
LAP-SF-250.004.7-F10	45	305	380	42
LAP-SF-250.004-F10	60	305	480	45
LAP-SF-250.004-F10	80	305	500	48
LAP-SF-250.004-F14	60	305	380	42
LAP-SF-250.004-F14	80	305	500	49
LAP-SF-300.034-F10	60	355	514	67
LAP-SF-300.034-F14	80	355	535	75
LAP-SF-D300.005-F14	80	355	732	99
LAP-SF-D300.034-F10	80	355	693	81
LAP-SF-D300.345-F14	80	355	732	122

Technical data

Actuator sizes of directly mounted SISTO- LAP.520 and SISTO-DLAP.230 piston actuators

Selection table for maximum permissible operating pressure in bar for SISTO-16S

Minimum required control pressure: 5.5 bar
Maximum permissible control pressure 7 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Combination of diaphragm seats (MD) and nominal sizes (DN) (⇒ Page 64)

Operating pressure [bar] for actuator function: **type AZ (air-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	DLAP.230	125	16	16
92	DLAP.230	125	16	13
115	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type OF (spring-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	DLAP.230	125	16	16
92	DLAP.230	125	16	15
115	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type SF (air-to-open/spring-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	9	-
		50	16	13
65	DLAP.230	63	16	16
92	DLAP.230	80	16	16
115	DLAP.230	125	12	6
		160	16	14
168	DLAP.230	160	7	4
		200	13	9
202	DLAP.230	200	8	5

Other selection options on request.

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-16S valve with elastomer diaphragm

Minimum required control pressure: 5.5 bar
Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	16	9	5	↓	↓	↓
LAP-AZ-125-F10	15/30	↑	16	16	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	↑	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	10	6	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	16	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	10	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	↑	16	7
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	↑	11
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	16
LAP-AZ-D300-F14 ⁴³⁾	80	↑	↑	↑	↑	↑	↑

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	16	5	3	↓	↓	↓
LAP-OF-125.101-F10	15/30	↑	16	16	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	↑	9	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	15	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	9	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	16	4
LAP-OF-300.002-F10 ⁴³⁾	60	↑	↑	↑	↑	↑	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	10
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	14
LAP-OF-D300.012-F14 ⁴³⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	13	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	16	7	3	↓	↓	↓
LAP-SF-125.002.5-F10	15	↑	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	16	10	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	↑	15	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	16	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	↑	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	6	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	9	3
LAP-SF-300.034-F10	60	↑	↑	↑	16	15	↓
LAP-SF-300.034-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	10
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	16

Other selection options on request.

⁴³ Max. control pressure: 7 bar

Actuator size of SISTO-LAP piston actuator**Selection table for maximum permissible operating pressure in bar for SISTO-16S valve with TFM diaphragm**

Minimum required control pressure: 5.5 bar

Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.

Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	13	4	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	8	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	6	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	11	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	7	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	13	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14 ⁴⁴⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	8	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	14	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	8	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	14	9	↓
LAP-OF-300.002-F10 ⁴⁴⁾	60	↑	↑	↑	16	16	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	8
LAP-OF-D300.012-F14 ⁴⁴⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	7	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	12	4	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	8	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	10	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	5	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	10	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	6	↑
LAP-SF-300.034-F10	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10 ⁴⁴⁾	60	↑	↑	↑	↑	↑	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	4
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request.

⁴⁴ Max. control pressure: 7 bar

SISTO-20



Product benefits

- **Reliable sealing to atmosphere and absolutely tight shut-off**
The diaphragm provides absolutely tight shut-off as well as hermetic sealing to atmosphere and of all operating elements.
- **Maximum service life and pressure limit**
Maximised diaphragm life and pressure limit thanks to completely enclosed, spiral-supported diaphragm.
- **Excellent functional reliability**
Increased functional reliability of the diaphragm thanks to balanced diaphragm suspension.
- **Excellent resistance to corrosion and abrasion**
High-quality body materials and linings offer reliability and a long service life.
- **Smooth actuation**
The thrust bearing minimises the closing torques.
- **Optimised long-term operation**
The stem protection integrated in the position indicator prevents ingress of contaminants.
- **Fluid purity**
Valve hydraulics without dead volume ensure optimum conditions for high-purity fluids and protection against deposits.
- **Quick identification of valve position**
The valve's position can be easily identified via a clear visual indicator, also visible from a distance.
- **Reliable operation**
The stem and all internal operating elements are **not** in contact with the fluid.

Further information

Dimensions and weights 87

Main applications

- Mining
- General irrigation systems
- Chemical industry
- Homogenisation
- Industry/process engineering
- Industrial recirculation systems
- Waste water treatment plants
- Air-conditioning systems
- Condensate transport
- Fossil-fuelled power stations
- Power stations
- Cooling circuits
- Paint shops
- Seawater desalination/reverse osmosis
- Mining
- Paper industry / pulp industry
- Petrochemical industry
- Refinery
- Flue gas desulphurisation
- Shipbuilding

- Swimming pools
- Process engineering
- Heat recovery systems
- Hot-water heating systems
- Water treatment
- Water extraction

Fluids handled

- Waste water without faeces
- Aggressive fluids
- Inorganic fluids
- Brackish water
- Service water
- Steam
- Distillate
- Paints and varnishes
- River water, lake water and groundwater
- Gas
- Fluids posing a health hazard
- Toxic fluids
- Hot water

- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Fuels
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Oil
- Organic fluids
- Polymerising/crystallising fluids
- Cleaning agents
- Lubricants
- Brine
- Dipping paints
- Drinking water
- Wash water
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16 ⁴⁵⁾
Nominal size	DN 15 - 300
Max. permissible pressure [bar]	16 ⁴⁶⁾
Min. permissible temperature [°C] ⁴⁷⁾	≥ -20 (-30 ⁴⁸⁾)
Max. permissible temperature [°C] ⁴⁷⁾	≤ +160

Control pressure of piston actuators

Max. permissible temperature (actuator/control fluid): 80 °C

Permissible control pressure

Type	Piston diameter [mm]	Top flange DIN ISO 5210 / DIN 3358	Permissible control pressure P _{ctr. perm.} [bar]
SISTO-LAP	80 - 250	F10	5,5 - 10
	250	F14	5,5 - 10
	300	F10	5,5 - 7
	300	F14	5,5 - 10
	D250 ⁴⁹⁾	F14	5,5 - 10
	D300 ⁴⁹⁾	F14	5,5 - 7
SISTO-LAP.520/ DLAP.230	40 - 250	-	5,5 - 7

i Pneumatic actuators from SISTO are suitable for compressed air of purity class 5:4:4 in accordance with ISO 8573-1. If there is a risk of frost, purity class 5:3:4 must be applied to prevent damage caused by icing.

Valve body materials

Material overview (for available variants see the Variant overview (⇒ Page 74) table)

Material	Material number	ASTM ⁵⁰⁾	Temperature limit
EN-GJS-400-18-LT (GGG40.3)	5.3103	A536 Gr. 60-40-18	-20 °C to +160 °C
GP240GH	1.0619	A757 Gr. A1Q (UNS J03002)	-20 °C to +160 °C
GX2CrNiMo19-11-2	1.4409	A351 Gr. CF3M (UNS J92800)	-20 °C to +160 °C

Design details

Design

Valves to type series booklet 8643.1

- Models with flanged ends, threaded socket ends or socketed weld ends
- Soft-seated weir-type shut-off valve in straight-way pattern
- Rising handwheel
- Shut-off and sealing to atmosphere by spiral-supported, completely enclosed diaphragm.
DN 250 and above: spiral-supported design only
- Position indicator with integrated stem protection
- Manufactured and tested to EN 13397
- Marked in accordance with DIN EN 19 (ISO 5209)
- Version in compliance with TA-Luft (German Clean Air Act) to VDI 2440 for DN 15 - 200

Variants

- Actuator (electric or pneumatic)
- Limit switches
- Locking device
- Body lined with IIR (butyl), temperature limit: +120 °C
- Body lined with NRH (hard rubber), temperature limit: +100 °C
- Body lined with PFA (DN 15 only), temperature limit: +160 °C

- Body lined with PTFE, temperature limit: +160 °C, up to DN 200
- Body lined with TFM; temperature limit: +160 °C, up to DN 200
- Body lined with ETFE DN 250-300, temperature limit +150 °C
- Body coated with ECTFE (Halar), temperature limit: +90 °C
- Body coated with PA (Rilsan), temperature limit: +60 °C
- Chain wheel
- Leakage detection hole and additional stem seal for DN 15 - 200
- Diaphragm made of CSM, temperature limit: +80 °C
- Diaphragm made of EPDM, temperature limit: +140 °C
- Diaphragm made of SISTOMaXX (EPDM/W270), temperature limit: +90 °C
- Diaphragm made of EPDM-V (vacuum), temperature limit: +140 °C
- Diaphragm made of FKM, temperature limit: +120 °C
- Diaphragm made of IIR, temperature limit: +120 °C
- Diaphragm made of NBR, temperature limit: +90 °C
- Diaphragm TFM/PVDF/EPDM, 3-piece⁵¹⁾, Temperature limit +160 °C
- TFM/EPDM diaphragm, 2-piece⁵²⁾, Temperature limit +160 °C
- Lead-sealable cap (prevents unauthorised actuation)

45 DN 250 - 300 = PN 10

46 DN 250 - 300 = 10 bar

47 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

48 For limited operating conditions on request.

49 Double drum

50 The ASTM materials are similar to the materials indicated.

51 DN 250 - 300: max. operating pressure 6 bar

52 DN 250 - 300: max. operating pressure 6 bar

- Stem extension
- Positioner
- Certification to customer specification

Overview of variants

Variant overview of SISTO-20 with flanged ends

DN	Material number, body	Material number, bonnet		Lining				Coating	
		Standard	Optional	None	PTFE/TFM	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15	1.0619	1.0619	-	-	PFA	-	-	-	-
15	5.3103	1.0619	-	x	-	x	x	x	x
15 - 20	1.4409	1.0619	1.4409	x	-	-	-	x	x
20 - 300	5.3103	5.3103	-	x	x ⁵³⁾	x	x	x	x
25 - 200	1.4409	5.3103	1.4409	x	-	-	-	x	x

Variant overview of SISTO-20 with threaded socket ends / socket weld ends

DN	Material number, body	Material number, bonnet		Lining				Coating	
		Standard	Optional	None	PTFE/TFM	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15 - 20	1.4409	1.0619	1.4409	x	-	-	-	-	-
25 - 80	1.4409	5.3103	1.4409	x	-	-	-	-	-

Actuators

Directly mounted piston actuator

- SISTO-DLAP.230 for DN 50 - 125
- SISTO-LAP.520 for DN 15 - 40
- Compact mounting without lantern
- Leakage detection hole
- Standard interface for accessories

Actuator function

- Actuator type DLAP.230/LAP.520 SF
 - Air-to-open
 - Spring-to-close
- Actuator type DLAP.230/LAP.520 OF
 - Spring-to-open
 - Air-to-close
- Actuator type DLAP.230/LAP.520 AZ
 - Air-to-open
 - Air-to-close

SISTO-LAP piston actuator

- Double-acting piston, piston rod extending from one end only, with or without spring
- Piston rod sealed by U-ring and scraper ring
- Piston with double cup seal and vulcanised metal disc
- Mechanical travel stops in the actuator for closed position and open position
- Flanges to DIN ISO 5210/DIN 3358
- Piston diameters 80 to 300 = F10
- Piston diameters 250 to 300 = F14
- Leakage detection hole from MD 65 with screw (can be plugged)

Actuator function

- 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

Electric actuator

- Multi-turn actuator
- Linear actuator

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per European 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 O+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

53 DN 250 - 300 = ETFE

subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Product information as per Regulation (EU) 1935/2004

Overview

Label	Effective in:
	Europe ⁵⁴ Certificate regarding food contact materials as per Regulation (EU) 1935/2004

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAP (piston actuator)	9210.1
Type series booklet SISTO-SK-i	8676.5.

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

54 This certification only applies to stainless steel body material or PTFE body lining in combination with an EPDM diaphragm or two-piece TFM/EPDM diaphragm.

Flow coefficients

Flow coefficients for unlined valves with flanged ends (**Materials: 5.3103/1.0619**)

DN	MD [mm]	Kvs value [m ³ /h]
15	40	5
20	65	15,5
25	65	16,5
32	92	38
40	92	42,5
50	115	63,5
65	168	141
80	168	195
100	202	304
125	202	298
150	280	601
200	280	478
250	415	1166
300	415	1260

Flow coefficients for lined valves with flanged ends (**Materials: 5.3103/1.0619**)

DN	MD [mm]	Kvs value [m ³ /h]
15	40	4
20	65	9,1
25	65	13
32	92	26,5
40	92	32,5
50	115	52,5
65	168	127
80	168	176
100	202	274
125	202	268
150	280	541
200	280	430
250	415	1142
300	415	1245

Flow coefficients for unlined valves with flanged ends (**Material: 1.4409**)

DN	MD [mm]	Kvs value [m ³ /h]
15	40	7,5
20	40	8
25	65	29
32	65	30
40	65	31
50	92	85
65	115	140
80	168	270
100	168	285
125	202	400
150	280	850
200	280	850

Flow coefficients for unlined valves with threaded socket ends

DN	MD [mm]	Kvs value [m ³ /h]
15	40	7,6
20	40	7,4
25	65	28,3
32	65	29
40	65	28
50	92	66,5
65	115	114
80	168	234

Pressure/temperature ratings

Permissible operating pressure [bar]

PN	Material		[°C]							
	Designation	Number	-20 to +50	+100	+110	+120	+130	+140	+150	+160
16	EN-GJS-400-18-LT	5.3103	16,0	16,0	16,0	16,0	15,8	15,6	14,0	12,0
	GP240GH	1.0619	16,0	14,8	14,6	14,4	14,3	14,1	14,0	12,0
	GX2CrNiMo19-11-2	1.4409	16,0	15,1	14,8	14,5	14,2	13,9	13,7	12,0
10 ⁵⁵⁾	EN-GJS-400-18-LT	5.3103	10,0	10,0	10,0	10,0	9,9	9,8	9,0	8,0

If a combination of different pressure enclosure materials is used, the respectively lowest permissible operating pressure shall apply.

Materials

Materials of SISTO-20 with flanged ends

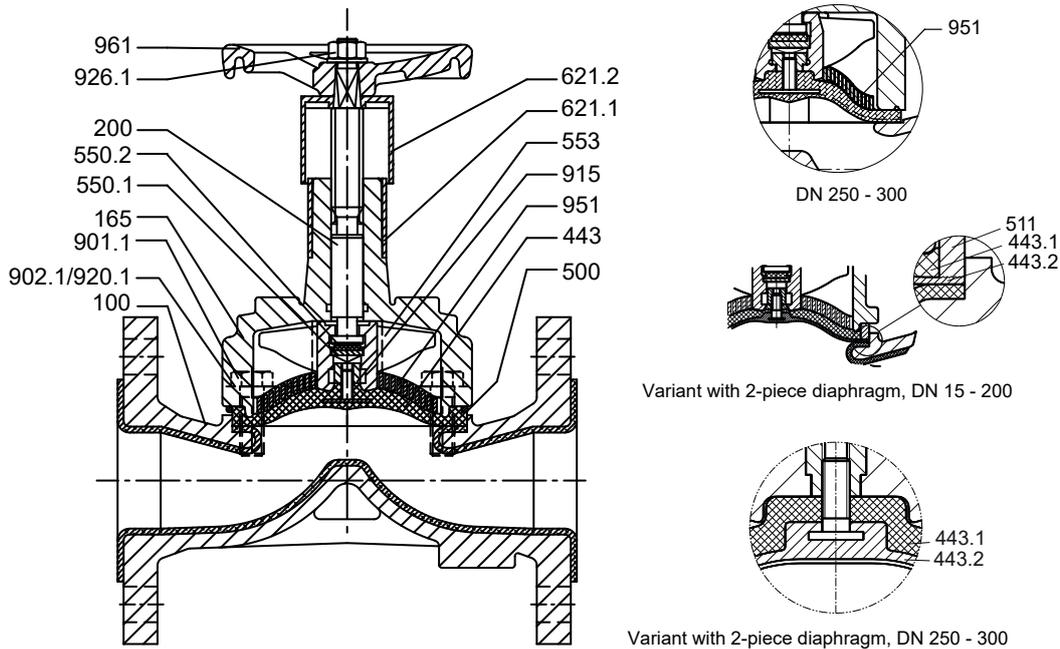


Fig. 25: SISTO-20 with flanged ends

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40 - 415	EN-GJS-400-18-LT	5.3103	-
		40 - 280	GX2CrNiMo19-11-2	1.4409	Stainless steel variant
		40	GP240GH	1.0619	If PFA-lined
165	Bonnet	40	GP240GH	1.0619	-
		65 - 415	EN-GJS-400-18-LT	5.3103	-
200	Stem	40 - 415	X14CrMoS17	1.4104	-
443 ⁵⁶⁾	Diaphragm	40 - 415	EPDM	-	Standard
443.1 ⁵⁶⁾	Backing diaphragm	40 - 415	EPDM	-	-
443.2 ⁵⁶⁾	Diaphragm	40 - 415	TFM	-	-
500	Ring	40 - 280	Galvanised steel	-	-
511	Backing ring	40 - 280	Steel	-	-
550.1	Bearing disc	92 - 415	Steel	-	-
550.2	PTFE disc	40, 92 - 415	PTFE/graphite	-	-
553	Compressor	40 - 65	GP240GH	1.0619	-
		92 - 280	EN-GJS-400-15	5.3106	-
		415	EN-GJL-250	5.1301	-
621.1	Position indicator, lower part	40 - 415	ASA Luran	-	-
621.2	Position indicator, upper part	40 - 415	ASA Luran	-	-
901.1	Hexagon head bolt	40 - 280	A2	-	For PTFE lining with TFM diaphragm: material 8.8 A2E
902.1	Stud	415	A2	-	-
915	Floating nut	40 - 415	Steel	-	-
920.1	Nut	415	A2	-	-
926.1	Prevailing torque nut	40 - 415	A2	-	-
951	Support spiral	65 - 415	Steel	-	-
961	Handwheel	40	Plastic	-	-
		65 - 415	EN-GJL-200	5.1300	-

56 Recommended spare parts

Materials of SISTO-20 with threaded socket ends

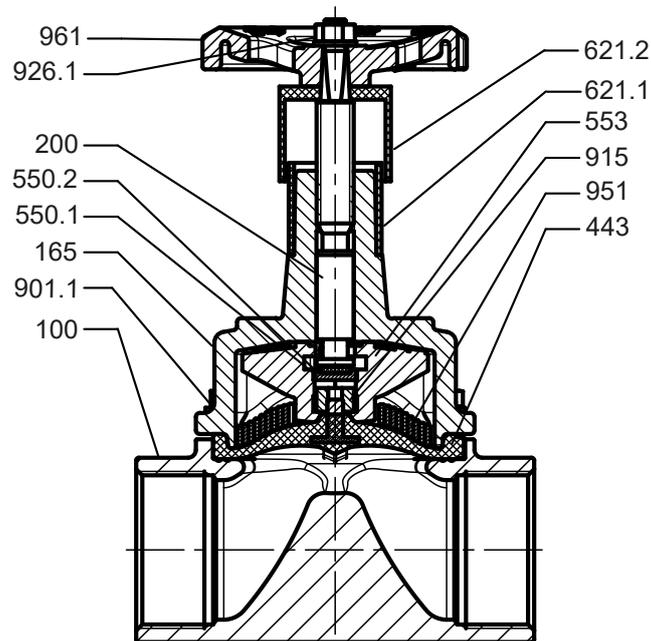


Fig. 26: SISTO-20 with threaded socket ends, DN 15 - 80

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40 - 168	GX2CrNiMo19-11-2	1.4409	-
165	Bonnet	40	GP240GH	1.0619	-
		65 - 168	EN-GJS-400-18-LT	5.3103	-
200	Stem	40 - 168	X14CrMoS17	1.4104	-
443 ⁵⁷⁾	Diaphragm	40 - 168	EPDM	-	Standard
550.1	Bearing disc	92 - 168	Steel	-	-
550.2	PTFE disc	40, 92 - 168	PTFE/graphite	-	-
553	Compressor	40 - 65	GP240GH	1.0619	-
		92 - 168	EN-GJS-400-15	5.3106	-
621.1	Position indicator, lower part	40 - 168	ASA Luran	-	-
621.2	Position indicator, upper part	40 - 168	ABS	-	-
901.1	Hexagon head bolt	40 - 168	A2	-	-
915	Floating nut	40 - 168	Steel	-	-
926.1	Prevailing torque nut	40 - 168	A2	-	-
951	Support spiral	65 - 168	Steel	-	-
961	Handwheel	40	Plastic	-	-
		65 - 168	EN-GJL-200	5.1300	-

57 Recommended spare parts

Materials of directly mounted LAP.520 and DLAP.230 piston actuators

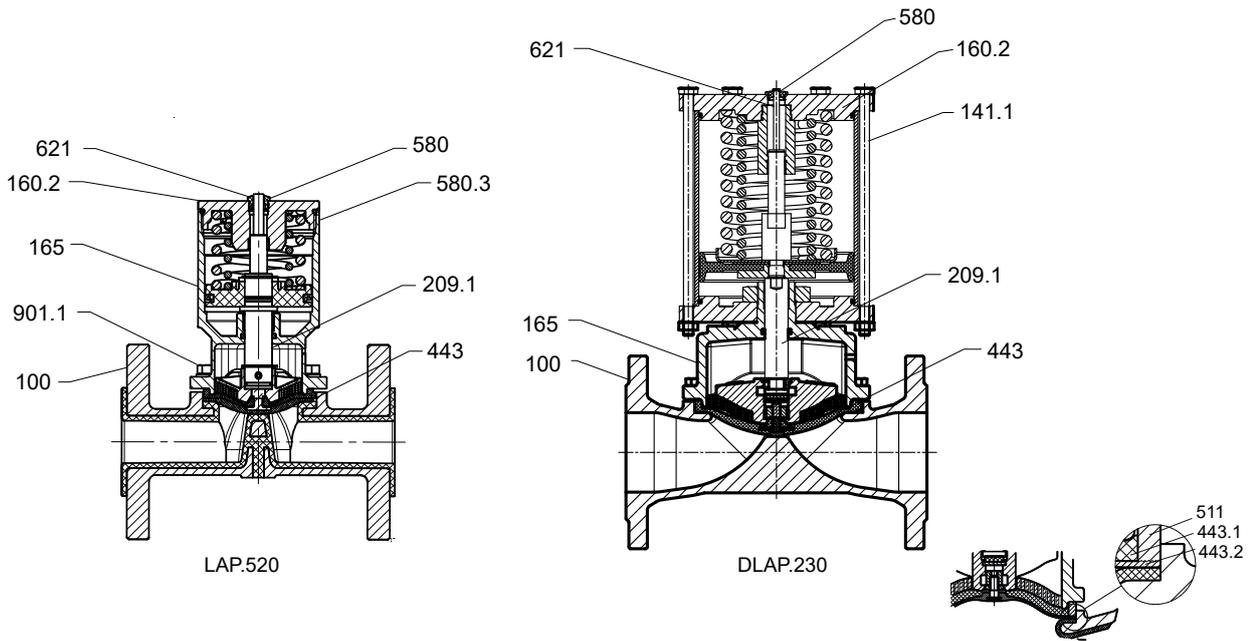


Fig. 27: Directly mounted LAP.520 and DLAP.230 piston actuators

Variant with 2-piece diaphragm, DN 15 - 125

Parts list

Part No.	Description	MD	Material		Note
			Designation	Number	
100	Body	40 - 202	EN-GJS-400-18-LT	5.3103	-
		40 - 202	GX2CrNiMo19-11-2	1.4409	Stainless steel variant
		40	GP240GH	1.0619	If PFA-lined
141.1	Cylinder	115-202	AlMgSi	3.3206	-
160.2	Top end cap	40 - 92	GX2CrNiMo19-11-2	1.4409	-
		115 - 202	AlCu4PbMgMn	3.1645	-
165	Bonnet	40 - 92	GX2CrNiMo19-11-2	1.4409	-
		115 - 202	EN-GJS-400-18-LT	5.3103	-
209.1	Piston rod	40 - 92	X8CrNiS18-9	1.4305	-
		115 - 202	X14CrMoS17	1.4104	-
443 ⁵⁸⁾	Diaphragm	40 - 202	EPDM	-	Standard
443.1 ⁵⁸⁾	Backing diaphragm	40 - 202	EPDM	-	-
443.2 ⁵⁸⁾	Diaphragm	40 - 202	TFM	-	-
511	Backing ring	40 - 202	Steel	-	-
580	Cap	40 - 202	Plastic	-	M12 x 1/M18 x 1 interface
580.3	Cap	40 - 202	Plastic	-	M5 / G1/8 air supply connection
621	Position indicator	40 - 202	Plastic	-	-
901.1	Hexagon head bolt	40 - 202	A2	-	For PTFE lining with TFM diaphragm: material 8.8 A2E

58 Recommended spare parts

Materials of SISTO-LAP piston actuator

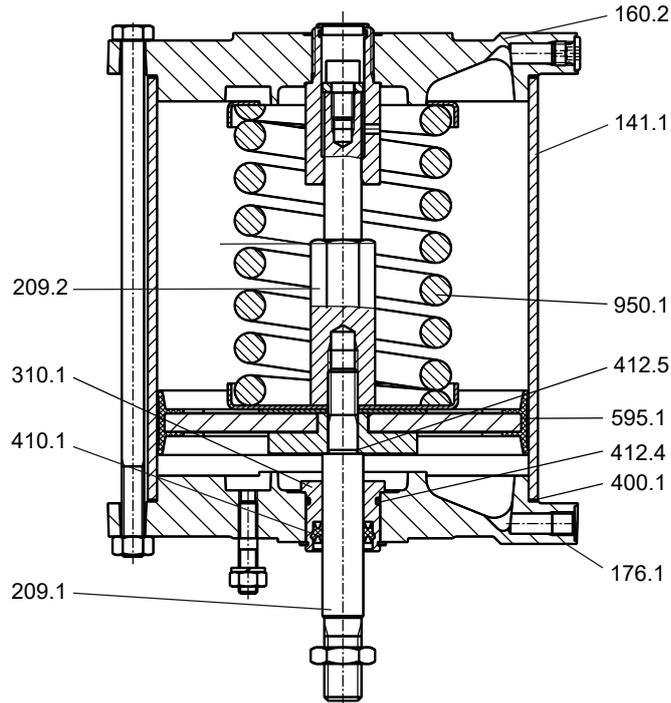


Fig. 28: SISTO-LAP-SF piston actuator

Parts list

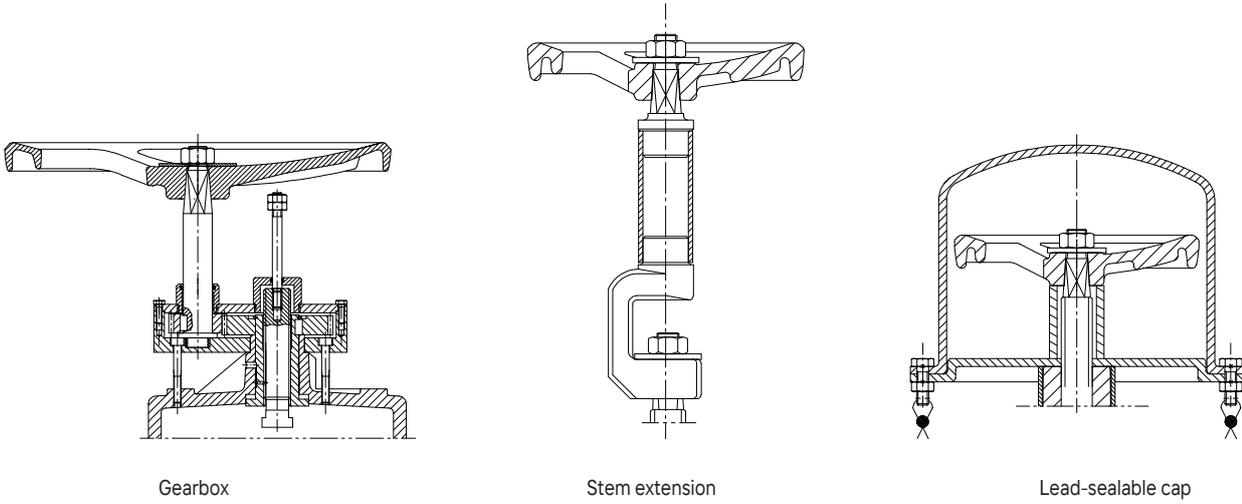
Part No.	Description	Material		Piston diameter [mm]
		Designation	Number	
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
176.1	Bottom end cap	AlCu4PbMgMn	3.1645	80 - 160
		AISI7Mg0.3	3.2371	200 - 300
209.1	Lower piston rod	X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	X14CrMoS17	1.4104	80 - 300
310.1 ⁵⁹⁾ 60)	Plain bearing	Plastic – POM	-	80 - 300
400.1 ⁵⁹⁾ 60)	Gasket	Plastic – AFM 30	-	80 - 300
410.1 ⁵⁹⁾ 60)	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4 ⁵⁹⁾ 60)	O-ring	NBR	-	80 - 300
412.5 ⁵⁹⁾ 60)	O-ring	NBR	-	80 - 300
595.1 ⁵⁹⁾ 60)	Piston assembly	Steel/acrylonitrile butadiene rubber – St/ NBR	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

59 Recommended spare parts (= complete set of sealing elements)

60 We recommend having these parts replaced in our factory.

Variants and accessories

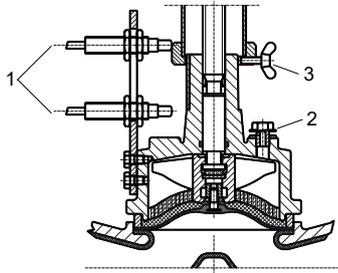
Variants and accessories of SISTO-20 manually operated valves



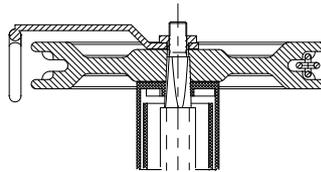
Gearbox

Stem extension

Lead-sealable cap

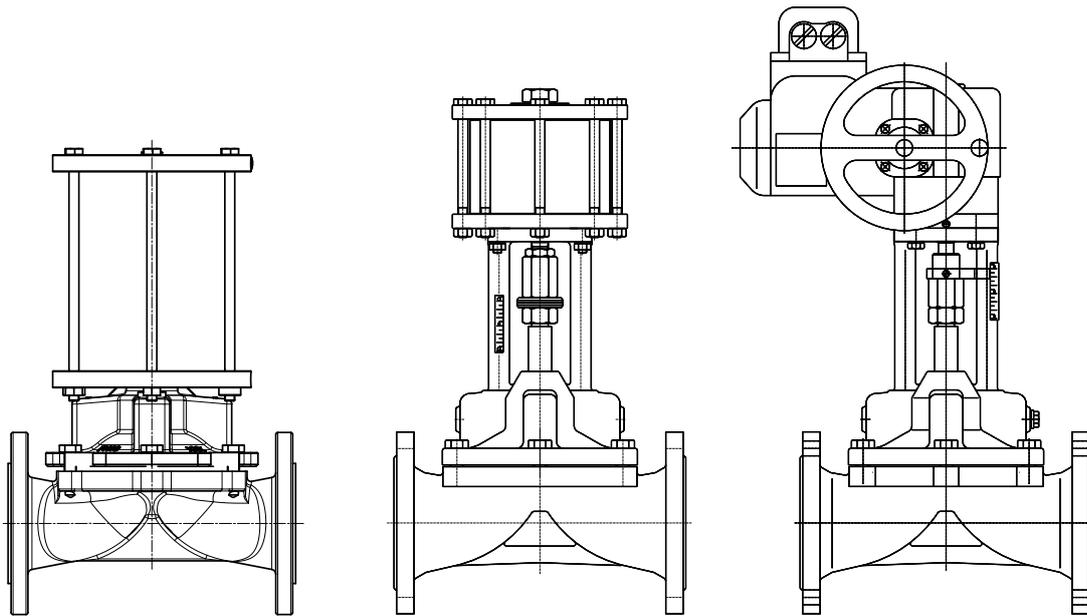


- 1 Inductive limit switches
- 2 Leakage detection hole
- 3 Locking device



Chain wheel

Variants of SISTO-20 with actuator

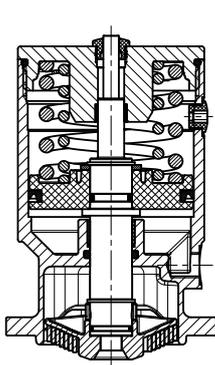


With directly mounted piston actuator

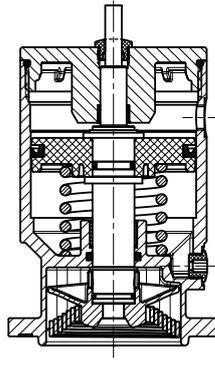
With pneumatic piston actuator

With electric actuator

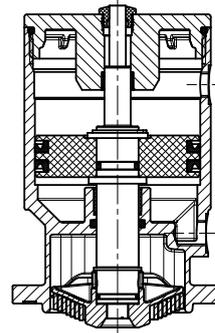
Variants and accessories of the directly mounted LAP.520 and DLAP.230 piston actuator



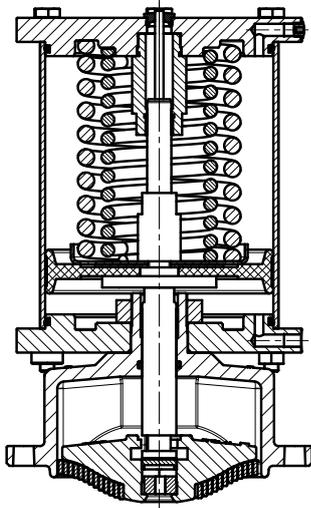
LAP.520-SF



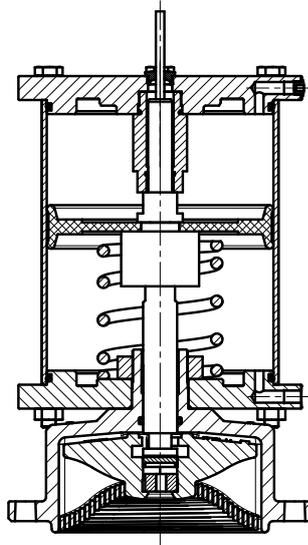
LAP.520-OF



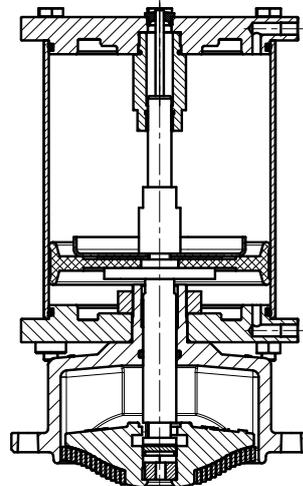
LAP.520-AZ



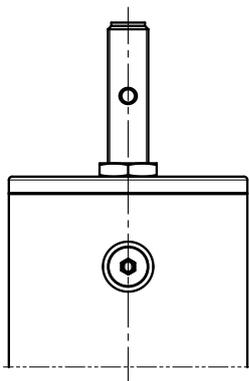
DLAP.230-SF



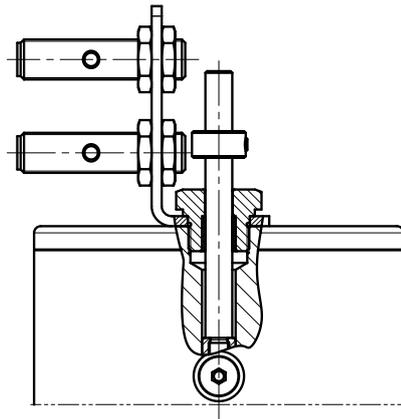
DLAP.230-OF



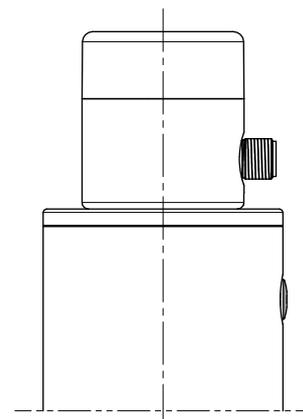
DLAP.230-AZ



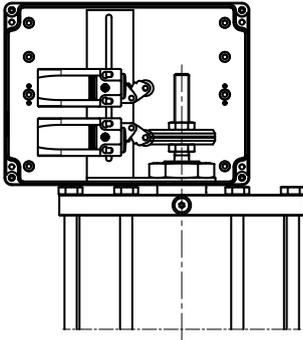
Directly mounted proximity switch
for open position



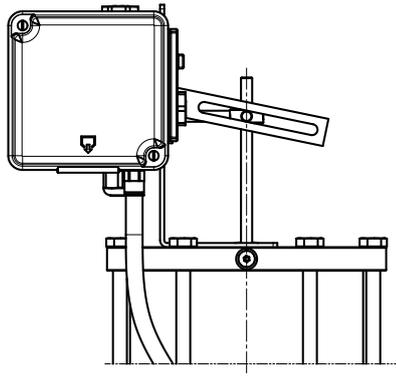
Inductive limit switches



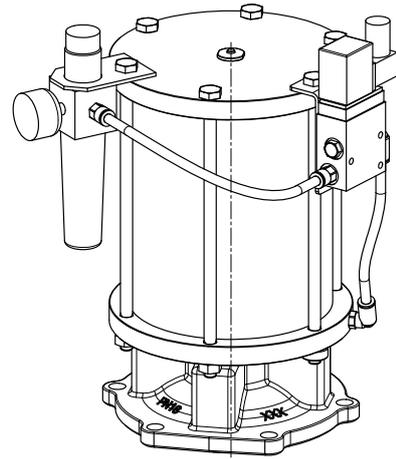
Intelligent actual-position feedback
unit
SK-i.310



Mechanical limit switches

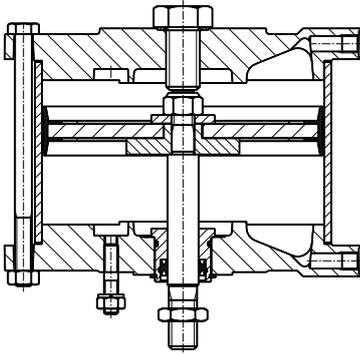


Positioner

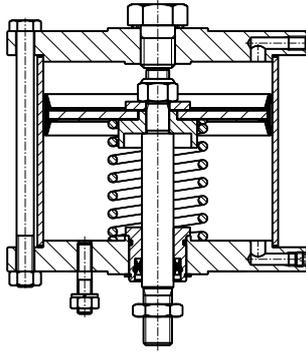


Solenoid valve and
filter/pressure reducer

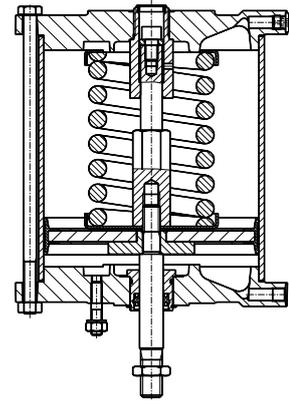
Variants and accessories of the SISTO-LAP piston actuator



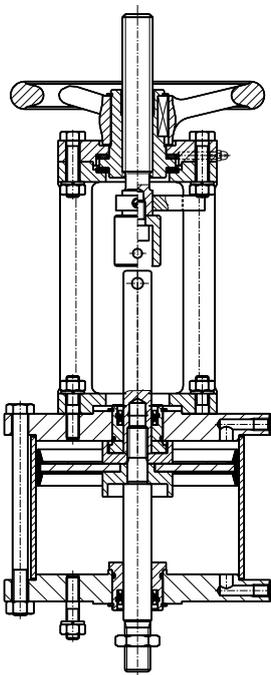
LAP-AZ type



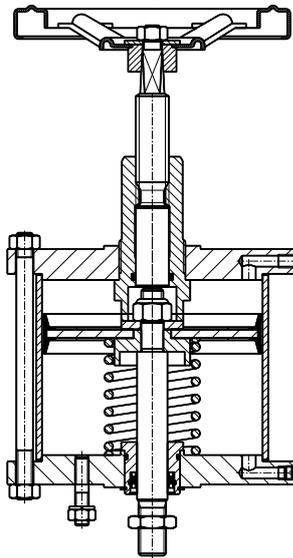
LAP-OF type



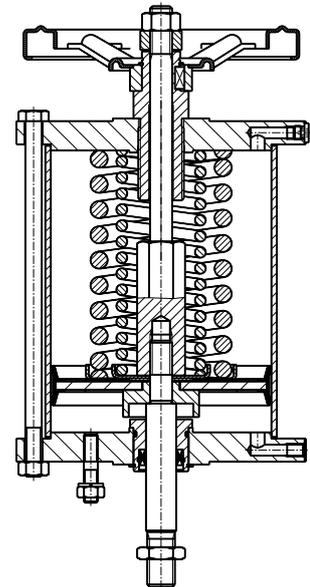
LAP-SF type



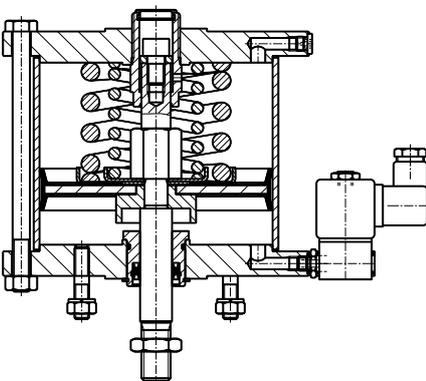
LAP-AZ type with emergency handwheel



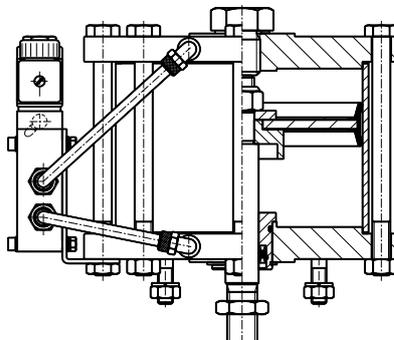
LAP-OF type with emergency handwheel



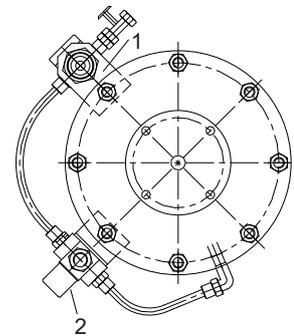
LAP-SF type with emergency handwheel



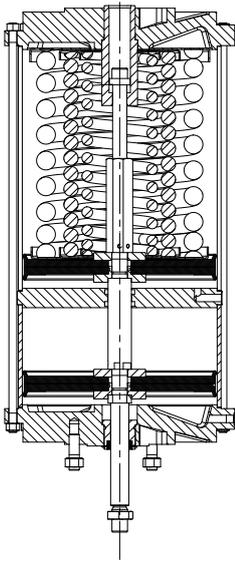
LAP-SF type with 3/2 directional control valve



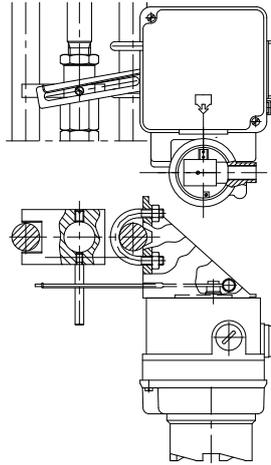
LAP-AZ type with 5/2 directional control valve



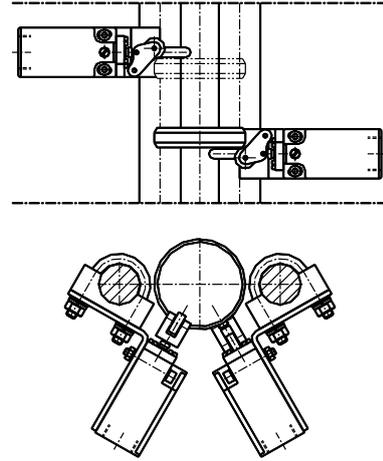
1 Filter/pressure reducer
2 Solenoid valve



LAP-SF type with double piston

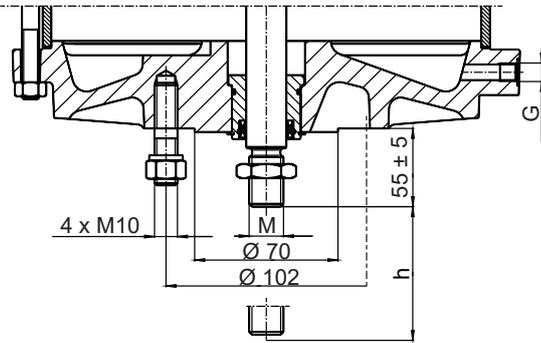


Configuration with positioner

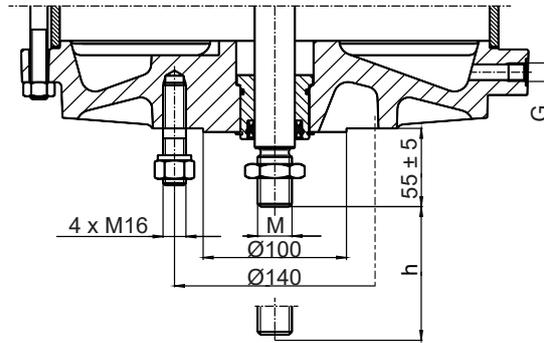


Configuration with mechanical limit switches

Interface



Flange connection F10



Flange connection F14

Symbols key

Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

Dimensions and weights of SISTO-20 with flanged ends

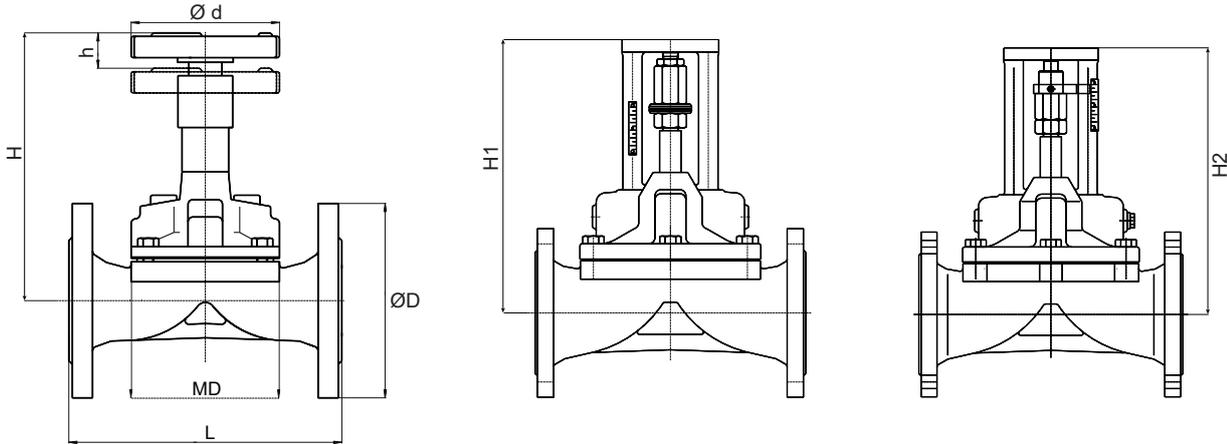


Fig. 29: SISTO-20 with flanged ends

Prepared for SISTO-LAP
(from MD 65)

Prepared for electric actuator
(from MD 65)

Dimensions and weights for **body materials 5.3103/1.0619**

DN	MD [mm]	L [mm]	Ø D [mm]	h [mm]	Manually operated valve				Prepared for actuator		
					H ⁶¹ [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height SISTO-LAP H1 [mm] ⁶¹	Centre-to-top height Electric actuator H2 ⁶¹	
										F07/F10 [mm]	F14 [mm]
15 ⁶²	40	130	95	7	104	60	3	2,5	On request	On request	-
20	65	150	105	13	152	100	4	3,9	220	220	-
25	65	160	115	13	150	100	4	4,5	220	220	-
32	92	180	140	22	196	100	7	7,1	245	245	-
40	92	200	150	22	200	100	7	7,5	245	245	-
50	115	230	165	30	241	125	8	11,0	265	285	-
65	168	290	185	45	322	200 (250) ⁶³	9	20,5	350	370	-
80	168	310	200	45	322	200 (250) ⁶³	9	23,0	350	370	-
100	202	350	220	60	388	250 (315) ⁶³	12	36,5	390	410	-
125	202	400	250	60	388	250 (315) ⁶³	12	44,0	390	410	-
150	280	480	285	80	512	400 (500) ⁶³	13	80,0	500	520	540
200 ⁶⁴	280	600	340	80	512	400 (500) ⁶³	13	100,0	500	520	540
250 ⁶⁵	415	730	400	115	645	400	20	190,0	600	-	640
300 ⁶⁵	415	850	445	115	645	400	20	210,0	600	-	640

Mating dimensions as per standard

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

61 Add 5 mm to centre-to-top height for rubber-lined valves.

62 Mating dimensions to standard for DN 15: flanges DN EN 1092-1 / raised face DIN EN 1092-1 type B

63 Optionally with a larger handwheel diameter for operating pressures > 10 bar, from DN 100, a gearbox can be used as an alternative.

64 Alternative: bolt hole pattern to DIN EN 1092-2 PN 10

65 Bolt hole pattern to DIN EN 1092-2 PN 10. Optional: gearbox for operating pressures > 5 bar.

Dimensions and weights of SISTO-20 with flanged ends

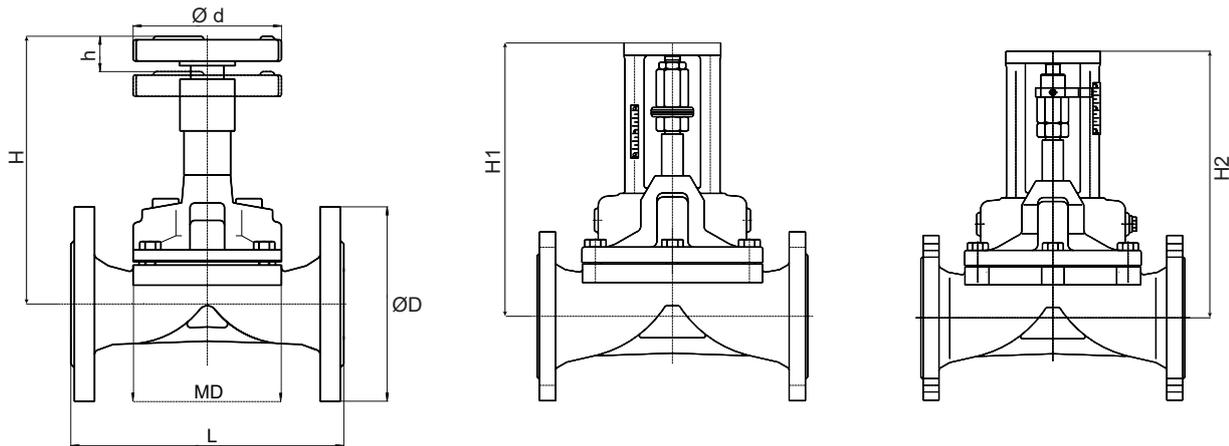


Fig. 30: SISTO-20 with flanged ends

Prepared for SISTO-LAP
(from MD 65)

Prepared for electric actuator
(from MD 65)

Dimensions and weights for body material 1.4409

DN	MD [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 SISTO-LAP H1 [mm]	Centre-to-top height Electric actuator H2	
										F07/F10 [mm]	F14 [mm]
15	40	130	95	7	109	60	3	1,9	On request	On request	-
20	40	150	105	7	114	60	3	2,6	On request	On request	-
25	65	160	115	13	154	100	4	4,4	225	225	-
32	65	180	140	13	159	100	4	5,7	230	230	-
40	65	200	150	13	163	100	4	6,5	235	235	-
50	92	230	165	22	206	100	7	9,3	260	280	-
65 ⁶⁶⁾	115	290	185 ⁶⁶⁾	30	240	125	8	13,1	275	295	-
80	168	310	200	45	328	200 (250) ⁶⁷⁾	9	23,9	365	385	-
100	168	350	220	45	343	200 (250) ⁶⁷⁾	9	26,1	380	400	-
125	202	400	250	60	388	250 (315) ⁶⁷⁾	12	44,0	390	410	-
150	280	480	285	80	512	400 (500) ⁶⁷⁾	13	80,0	500	520	540
200	280	600	340	80	512	400 (500) ⁶⁷⁾	13	95,0	500	520	540

Mating dimensions as per standard

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

66 4 flange holes

67 Optionally with a larger handwheel diameter for operating pressures > 10 bar, from DN 100, a gearbox can be used as an alternative.

Dimensions and weights of SISTO-20 with threaded socket ends or socket weld ends

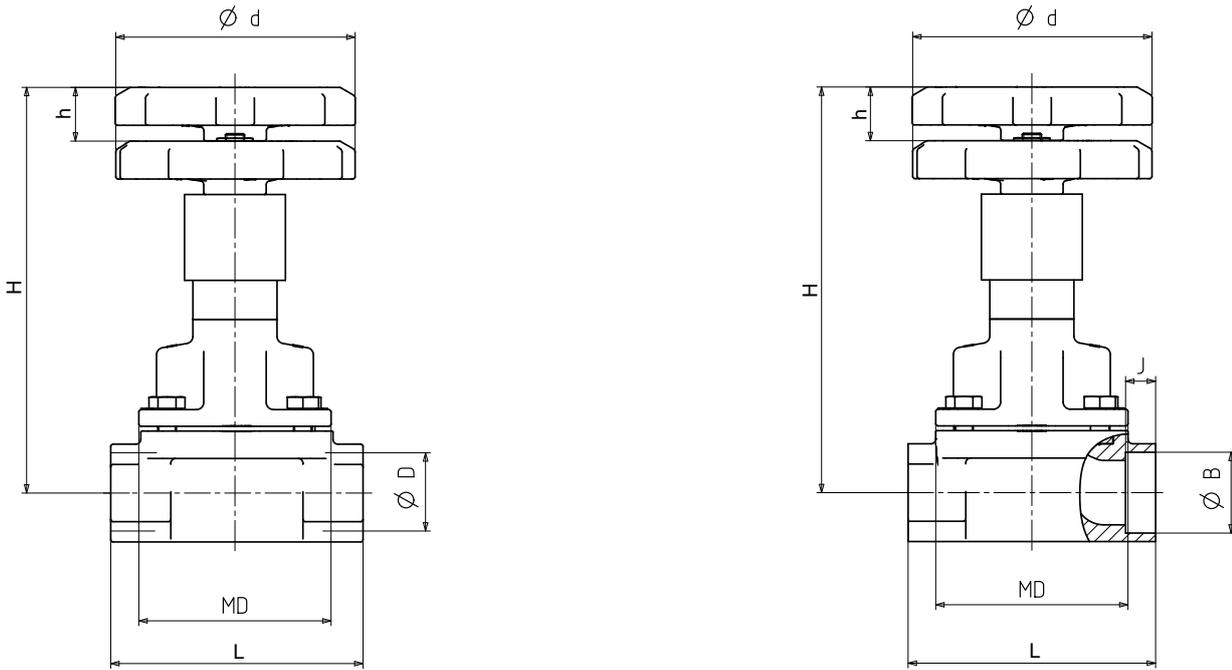


Fig. 31: SISTO-20 with threaded socket ends⁶⁸⁾

SISTO-20 with socket weld ends
(ASME B16.11)⁶⁸⁾

Dimensions and weights

DN	MD [mm]	Ø D [inch]	Ø B [mm]	J [mm]	L [mm]	H [mm]	Ø d [mm]	h [mm]	[kg]
15	40	½	21,8	9,5	85	103	63	7	0,5
20	40	¾	27,2	12,5	95	106	63	7	0,6
25	65	1	33,9	12,5	105	151	100	13	2,5
32	65	1¼	42,7	12,5	120	156	100	13	2,5
40	65	1½	48,8	12,5	130	159	100	13	3,0
50	92	2	61,2	16	150	202	100	22	5,0
65	115	2½	73,9	16	185	248	125	30	8,0
80	168	3	89,8	16	220	333	200	45	16,5

Mating dimensions as per standard

- Face-to-face lengths: DIN EN 16722
- Socket weld ends: ASME B16.11
- Pipe threads: DIN EN 10226-1 (ISO 7/1)

⁶⁸ Also available as actuated valve

Dimensions and weights of SISTO-20 with the directly mounted SISTO-LAP.520 and DLAP.230 piston actuator

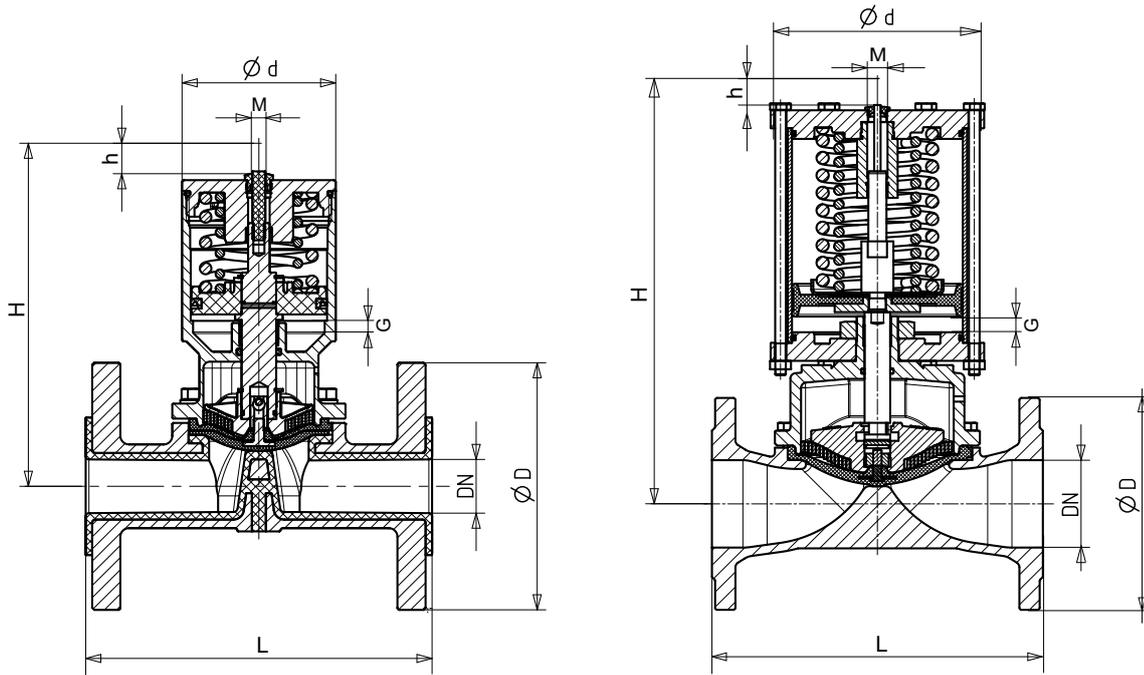


Fig. 32: Diaphragm valves with directly mounted piston actuators

SISTO-20 with LAP.520

SISTO-20 with DLAP.230

Dimensions and weights for **body materials 5.3103/1.0619**

DN	MD [mm]	Type	Piston [mm]	L [mm]	Ø D [mm]	h [mm]	H [mm]	Ø d [mm]	[kg]	
15	40	LAP.520	40	130	95	7	112	46	2,2	
			50				136	58	2,7	
20	65	LAP.520	63	150	105	13	156	71	4,1	
			80				182	89	5,5	
25	65	LAP.520	63	160	115	13	159	71	4,5	
			80				185	89	6,0	
32	92	LAP.520	80	180	140	21	214	89	8,5	
			100				225	110	10,0	
40	92	LAP.520	80	200	150	21	219	89	9,3	
			100				230	110	10,8	
50	115	LAP.520	100	230	165	24	252	110	14,0	
			DLAP.230				125	364	165	18,5
							160	381	200	23,0
65	168	DLAP.230	160	290	185	40	423	200	33,0	
			200				467	250	44,0	
80	168	DLAP.230	160	310	200	40	423	200	35,5	
			200				467	250	47,0	
100	202	DLAP.230	200	350	220	55	517	250	56,0	
125	202	DLAP.230	200	400	250	55	517	250	63,5	

Connections

	Piston 40 - 50 mm	Piston 63 mm	≥ Piston 80 mm
Compressed air	M5	G1/8 in	G1/8 in
Interface for accessories	M12x1	M12x1	M18x1

Dimensions and weights of SISTO-20 with the directly mounted SISTO-LAP.520 and DLAP.230 piston actuator

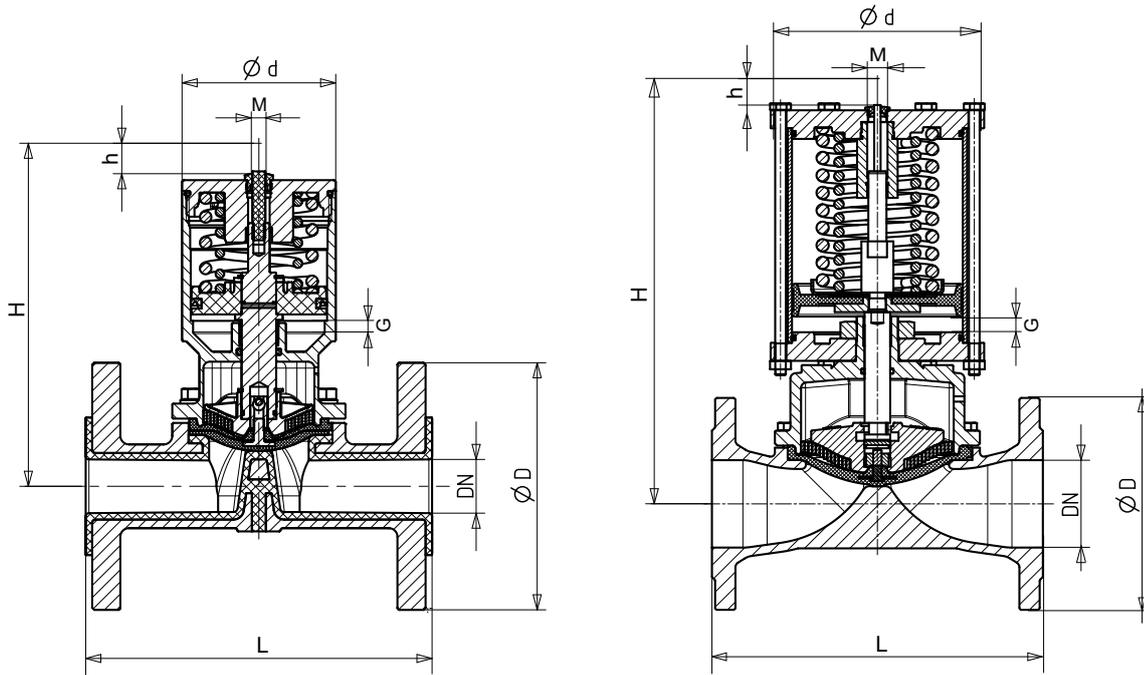


Fig. 33: Diaphragm valves with directly mounted piston actuators

SISTO-20 with LAP.520

SISTO-20 with DLAP.230

Dimensions and weights for **body material 1.4409**

DN	MD [mm]	Type	Piston [mm]	L [mm]	Ø D [mm]	h [mm]	H [mm]	Ø d [mm]	[kg]	
15	40	LAP.520	40	130	95	7	112	46	2,5	
			50				136	58	3,0	
20	40	LAP.520	40	150	105	7	115	46	3,2	
			50				139	58	3,7	
25	65	LAP.520	63	160	115	13	158	71	5,1	
			80				184	89	6,5	
32	65	LAP.520	63	180	140	13	163	71	6,6	
			80				189	89	8,0	
40	65	LAP.520	63	200	150	13	167	71	8,6	
			80				193	89	8,6	
50	92	LAP.520	80	230	165	21	225	89	12,6	
			100				236	110	12,6	
65 ⁶⁹⁾	115	LAP.520	100	230	165	24	254	110	15,8	
			DLAP.230				125	366	165	20,2
							160	385	200	25,0
80	168	DLAP.230	160	310	200	40	439	200	35,0	
			200				483	250	46,0	
100	168	DLAP.230	160	350	220	40	453	200	37,5	
			200				498	250	48,5	
125	202	DLAP.230	200	400	250	55	539	250	57,0	

Connections

	Piston 40 - 50 mm	Piston 63 mm	≥ Piston 80 mm
Compressed air	M5	G1/8 in	G1/8 in
Interface for accessories	M12x1	M12x1	M18x1

69 4 flange holes

Dimensions and weights of SISTO-LAP piston actuator

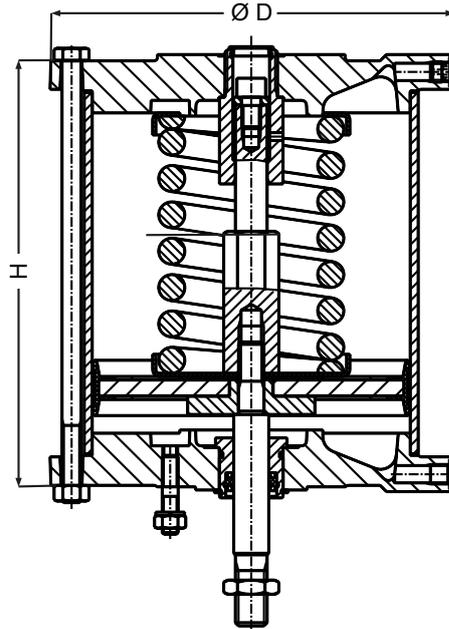


Fig. 34: SISTO-LAP

Dimensions and weights for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-AZ-80-F10	15	130	111	4
LAP-AZ-80-F10	30	130	131	5
LAP-AZ-125-F10	15	170	131	6
LAP-AZ-125-F10	30	170	131	7
LAP-AZ-125-F10	45	170	151	8
LAP-AZ-125-F10	60	170	151	9
LAP-AZ-160-F10	30	210	168	11
LAP-AZ-160-F10	45	210	168	11
LAP-AZ-160-F10	60	210	188	12
LAP-AZ-200-F10	30	255	170	17
LAP-AZ-200-F10	45	255	190	17
LAP-AZ-200-F10	60	255	210	18
LAP-AZ-200-F10	80	255	230	20
LAP-AZ-250-F10	60	305	240	25
LAP-AZ-250-F10	80	305	260	28
LAP-AZ-250-F14	60	305	260	28
LAP-AZ-250-F14	80	305	260	28
LAP-AZ-300-F10	60	355	254	32
LAP-AZ-300-F10	80	355	274	35
LAP-AZ-300-F14	60	355	254	32
LAP-AZ-300-F14	80	355	274	35
LAP-AZ-D250-F14	80	355	424	47
LAP-AZ-D300-F14	80	355	432	61

Dimensions and weights for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-80.101-F10	15	130	151	5
LAP-OF-80.101-F10	30	130	151	6
LAP-OF-125.101-F10	15	170	151	7
LAP-OF-125.101-F10	30	170	151	8
LAP-OF-160.102-F10	30	210	188	12
LAP-OF-160.102-F10	45	210	208	13
LAP-OF-200.102-F10	30	255	210	19
LAP-OF-200.102-F10	45	255	210	19

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-OF-200.001-F10	45	255	310	22
LAP-OF-200.001-F10	60	255	330	23
LAP-OF-250.002-F10	60	305	380	32
LAP-OF-250.002-F10	80	305	400	35
LAP-OF-250.002-F14	60	305	400	32
LAP-OF-250.002-F14	80	305	400	35
LAP-OF-300.002-F10	60	355	414	51
LAP-OF-300.012-F14	80	355	434	53
LAP-OF-D250.012-F14	80	305	504	54
LAP-OF-D300.012-F14	80	355	572	74

Dimensions and weights for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Type	Stroke [mm]	Ø D [mm]	H [mm]	[kg]
LAP-SF-80.001.5-F10	15	130	171	6
LAP-SF-80.001-F10	30	130	271	7
LAP-SF-125.002.5-F10	15	170	212	10
LAP-SF-125.002-F10	30	170	271	12
LAP-SF-160.012-F10	30	210	274	18
LAP-SF-160.012-F10	45	210	310	19
LAP-SF-200.003.5-F10	30	255	290	28
LAP-SF-200.003.7-F10	45	255	350	32
LAP-SF-200.003-F10	60	255	450	35
LAP-SF-200.003-F10	80	255	470	37
LAP-SF-250.004.7-F10	45	305	380	42
LAP-SF-250.004-F10	60	305	480	45
LAP-SF-250.004-F10	80	305	500	48
LAP-SF-250.004-F14	60	305	380	42
LAP-SF-250.004-F14	80	305	500	49
LAP-SF-300.034-F10	60	355	514	67
LAP-SF-300.034-F14	80	355	535	75
LAP-SF-D300.005-F14	80	355	732	99
LAP-SF-D300.034-F10	80	355	693	81
LAP-SF-D300.345-F14	80	355	732	122

Technical data

Actuator sizes of directly mounted SISTO-LAP.520 and DLAP.230 piston actuators

Selection table for maximum permissible operating pressure in bar for SISTO-20

Materials 5.3103/1.0619/1.4409

Minimum required control pressure: 5.5 bar
Maximum permissible control pressure 7 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Combination of diaphragm seats (MD) and nominal diameters (DN) for variants 5.3103/1.0619 (⇒ Page 90) and for variant 1.4409 (⇒ Page 91).

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	LAP.520	63	10	5
		80	16	12
92	LAP.520	80	8	4
		100	14	8
115	LAP.520	100	10	5
	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	10	-
		50	16	16
65	LAP.520	63	10	5
		80	16	12
92	LAP.520	80	8	4
		100	14	8
115	LAP.520	100	8	3
	DLAP.230	125	14	8
		160	16	16
168	DLAP.230	160	9	6
		200	15	10
202	DLAP.230	200	10	7

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

MD [mm]	Type	Piston [mm]	Elastomer diaphragm [bar]	TFM diaphragm [bar]
40	LAP.520	40	9	-
		50	16	13
65	LAP.520	63	9	4
		80	16	12
92	LAP.520	80	8	4
		100	13	8
115	LAP.520	100	8	3
	DLAP.230	125	12	6
		160	16	14
168	DLAP.230	160	7	4
		200	13	9
202	DLAP.230	200	8	5

Other selection options on request.

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-20 with elastomer diaphragm

Materials 5.3103/1.0619/1.4409

Minimum required control pressure: 5.5 bar

Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	16	9	5	↓	↓	↓
LAP-AZ-125-F10	15/30	↑	16	16	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	↑	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	10	6	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	16	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	10	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	↑	16	7
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	↑	11
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	16
LAP-AZ-D300-F14 ⁷⁰⁾	80	↑	↑	↑	↑	↑	↑

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	16	5	3	↓	↓	↓
LAP-OF-125.101-F10	15/30	↑	16	16	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	↑	9	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	15	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	9	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	16	4
LAP-OF-300.002-F10 ⁷⁰⁾	60	↑	↑	↑	↑	↑	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	10
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	14
LAP-OF-D300.012-F14 ⁷⁰⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	13	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	16	7	3	↓	↓	↓
LAP-SF-125.002.5-F10	15	↑	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	16	10	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	↑	15	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	16	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	↑	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	6	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	9	3
LAP-SF-300.034-F10	60	↑	↑	↑	16	15	↓
LAP-SF-300.034-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	10
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	16

Other selection options on request.

70 Max. control pressure: 7 bar

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO-20 valve with TFM diaphragm

Materials 5.3103/1.0619/1.4409

Minimum required control pressure: 5.5 bar
Maximum permissible pressure 10 bar

Operating pressure for pressure applied on one side in accordance with EN12266-1.
Information on operating pressures applied on both sides is available on request.

Symbols key

Symbol	Description
↑	Select smaller actuator.
↓	Select larger actuator.

Operating pressure [bar] for actuator function: **type LAP-AZ (air-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	13	4	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	8	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	6	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	11	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	7	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	13	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14 ⁷¹⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-OF (spring-to-open/air-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	8	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	14	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	8	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	14	9	↓
LAP-OF-300.002-F10 ⁷¹⁾	60	↑	↑	↑	16	16	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	↑	8
LAP-OF-D300.012-F14 ⁷¹⁾	80	↑	↑	↑	↑	↑	16

Operating pressure [bar] for actuator function: **type LAP-SF (air-to-open/spring-to-close)**

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	7	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	12	4	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	8	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	10	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	5	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	10	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	6	↓
LAP-SF-300.034-F10	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10 ⁷¹⁾	60	↑	↑	↑	↑	↑	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	4
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request.

⁷¹ Max. control pressure: 7 bar

SISTO-16RGAMaXX



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.
- Balanced diaphragm suspension for increased functional reliability of the diaphragm
- Maintenance-free: All functional parts are located outside the fluid.
- High level of reliability with thrust bearing minimising the closing torques required
- Optimised long-term operation: The position indicator with integrated stem protection prevents the ingress of contaminants.
- High level of reliability: The valve hydraulics without dead volume ensure optimum conditions for high-purity fluids.
- Long service life: The diaphragm support increases valve life and extends the pressure limit of the diaphragm.
- The SISTOMaXX diaphragm material and the body material 1.4409 meet the recommendations of the German Environment Agency (elastomers guideline) and DVGW Worksheet W270.

Further information

Dimensions and weights 100

Main applications

- Pressure boosting
- Fire-fighting systems
- Domestic water supply
- Air-conditioning systems
- Cooling circuits
- Rainwater harvesting

Fluids handled

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

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size	DN 15 - 80
Nominal size [inch]	Rp ½ - 3
Max. permissible pressure [bar]	16
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +90

Valve body materials

Overview of available materials

Material	Material number	Temperature limit
GX2CrNiMo19-11-2	1.4409	≤ 90 °C

Design details

Design

- Soft-seated weir-type 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)

Certifications

Overview

Label	Effective in:
	Germany DN 15 - 50
	Switzerland DN 15 - 50
	Belgium DN 15 - 80
	Denmark DN 15 - 80

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Engineering information	8638.030

Purchase order specifications

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

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

Flow coefficients

Flow coefficients for unlined valves with threaded socket ends

DN	MD [mm]	Kvs value [m ³ /h]
15	40	7,6
20	40	7,4
25	65	28,3
32	65	29
40	65	28
50	92	66,5
65	115	114
80	168	234

Materials of manually operated valve SISTO-16RGAMaXX

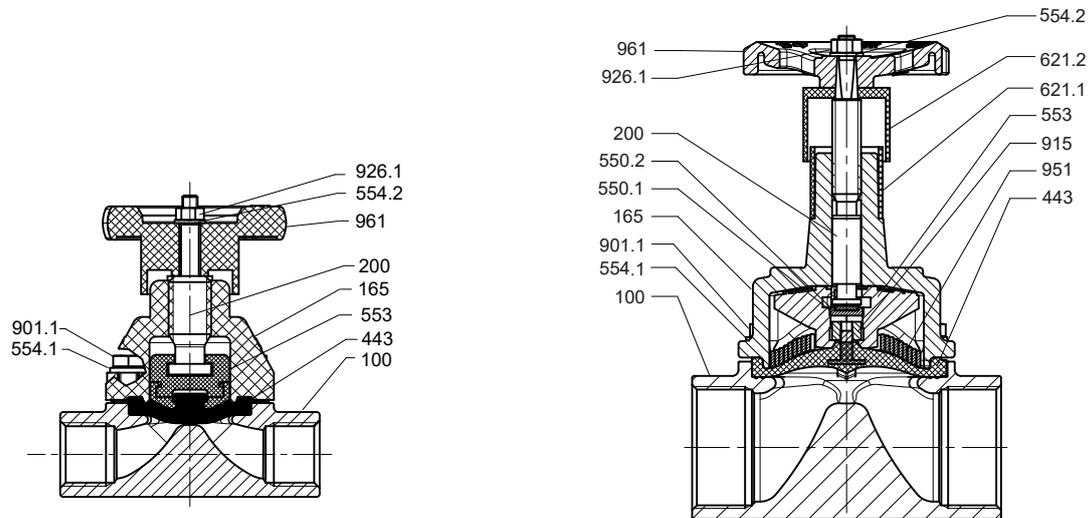


Fig. 35: SISTO-16RGAMaXX manually operated valves

DN 15 - 20
Rp ½ - ¾ in

DN 25 - 80
Rp 1 - 3 in

Parts list

Part No.	Description	MD 40 DN 15 - 20 Rp ½ - ¾ in		MD 65 - 168 DN 25 - 80 Rp 1 - 3 in	
		Material		Material	
		Designation	Number	Designation	Number
100	Body	GX2CrNiMo19-11-2	1.4409	GX2CrNiMo19-11-2	1.4409
165	Bonnet	POM	-	EN-GJL-250	5.1301
200	Stem	CuZn39Pb3	CW614N	X14CrMoS17	1.4104
443 ⁷²⁾	Diaphragm	SISTOMaXX (EPDM/W270)	-	SISTOMaXX (EPDM/W270)	-
550.1	Bearing disc	-	-	11SMnPb30 From DN 32 - 80	1.0718
550.2	PTFE disc	-	-	PTFE/graphite From DN 32 - 80	-
553	Compressor	GD-ZnAl4Cu1	-	EN-GJS-400-15 For DN 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	-
621.2	Position indicator, upper part	-	-	ASA Luran	-
901.1	Hexagon head bolt	A2-70	-	A2-70	-
915	Floating nut	-	-	11SMnPb30	1.0718
926.1	Prevailing torque nut	A2-70	-	A2-70	-
951	Support spiral	-	-	St 2K BK	-
961	Handwheel	Polycarbonate	-	EN-GJL-200	5.1300

72 Recommended spare parts

Dimensions and weights

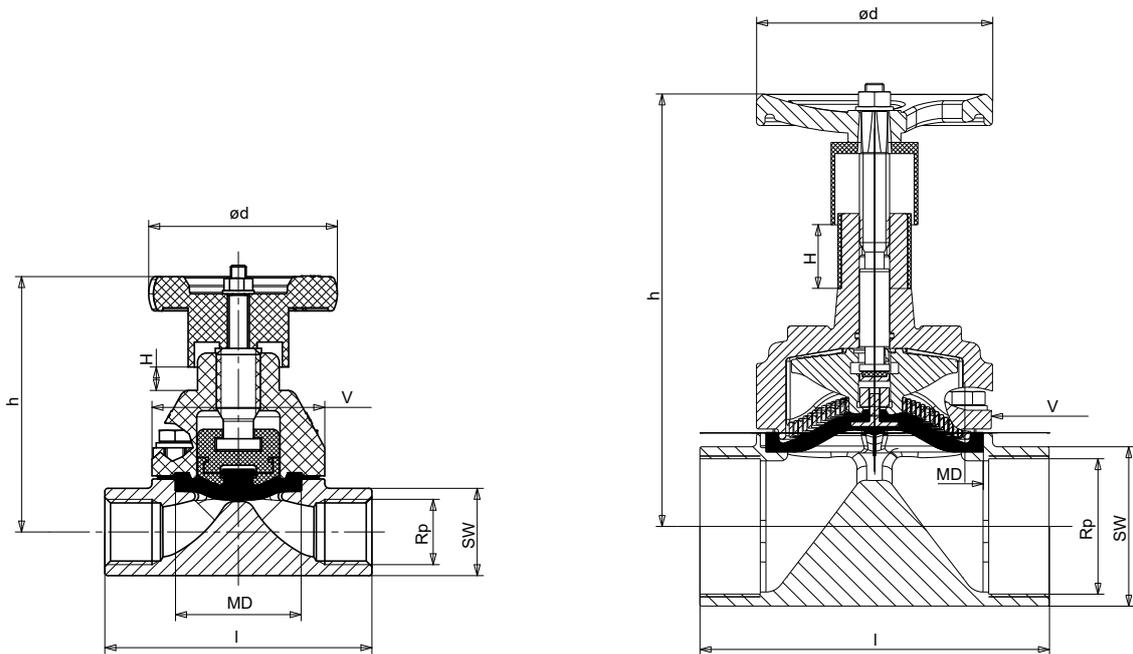


Fig. 36: SISTO-16RGAMaXX manually operated valve

DN 15 - 20
Rp ½ - ¾ in

DN 25 - 80
Rp 1 - 3 in

Dimensions and weights

DN	MD [mm]	[inch]	l [mm]	h [mm]	Ø d [mm]	V [mm]	SW [mm]	H [mm]	[kg]
15	40	½	85	87	63	55	28	7	0,5
20	40	¾	95	90	63	55	34	7	0,6
25	65	1	105	151	100	80	41	13	2,5
32	65	1¼	120	154	100	80	50	13	2,5
40	65	1½	130	157	100	80	58	13	3,0
50	92	2	150	201	100	105	70	22	5,0
65	115	2½	185	248	125	125	85	30	8,0
80	168	3	220	329	200	190	100	45	16,5

Mating dimensions as per standard

Pipe threads: DIN EN 10226-1 (ISO 7/1)
Face-to-face length: EN 16722

SISTO-16TWA



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 (Elastomer Guideline) and DVGW Worksheet W270.

Further information

Dimensions and weights 107

Main applications

- Pressure boosting
- Fire-fighting systems
- Domestic water supply
- Air-conditioning systems
- Cooling circuits
- Rainwater harvesting
- Shipbuilding
- Swimming pools ⁷³⁾
- 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 ⁷⁴⁾	DN 15 - 200
Max. permissible pressure [bar]	16
Min. permissible temperature [°C] ⁷⁵⁾	≥ -10
Max. permissible temperature [°C] ⁷⁵⁾	≤ +140

73 For higher chlorine contents please contact SISTO Armaturen.

74 From DN 100 and operating pressures > 10 bar using a gearbox is recommended.

75 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

Valve body materials

Overview of available materials

Material	Material number	Temperature limit
SISTO-16TWA		
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
SISTO-16HWA		
EN-GJL-250	5.1301	-10 °C to +140 °C
SISTO-16DLU		
EN-GJL-250	5.1301	-10 °C to +90 °C

Design details

Design

- Soft-seated weir-type 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 W 570-1: 2013 and DIN 3546-1: 2011.

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

Product information

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.

Valid for SISTO-16HWA/DLU only:

Product information as per European 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 Group 2.

Certifications

SISTO-16TWA

Overview

Label	Effective in:
	Germany DN 15 - 100 ⁷⁶⁾
	Switzerland DN 15 - 100 ⁷⁶⁾
	Austria DN 15 - 100 ⁷⁶⁾
	Belgium DN 15 - 200
	Denmark DN 15 - 100

Registrations

Overview

Label	Effective in:	Registration number
	Austria DN 15 - 100	R-15.2.4-21-17481

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

⁷⁶ SISTO-16TWA diaphragm valves with handwheel and flanged ends, DN 15-100, are registered in accordance with DVGW/ SVGW/ ÖVGW.

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

Actuator

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

Flow coefficients

Flow coefficients for SISTO-16TWA (material: 1.4409)

DN	MD [mm]	Kvs value [m ³ /h]
15	40	7,5
20	40	8,0
25	65	29,0
32	65	30,0
40	65	31,0
50	92	85,0
65	115	140,0
80	168	270,0
100	168	285,0
125	202	400,0
150	280	850,0
200	280	850,0

Flow coefficients for SISTO-16TWA (material: 5.1301)

DN	MD [mm]	Kvs value [m ³ /h]
125	202	298,0
150	280	601,0
200	280	478,0

Flow coefficients for SISTO-16HWA/DLU

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

Materials of SISTO-16TWA manually operated valve

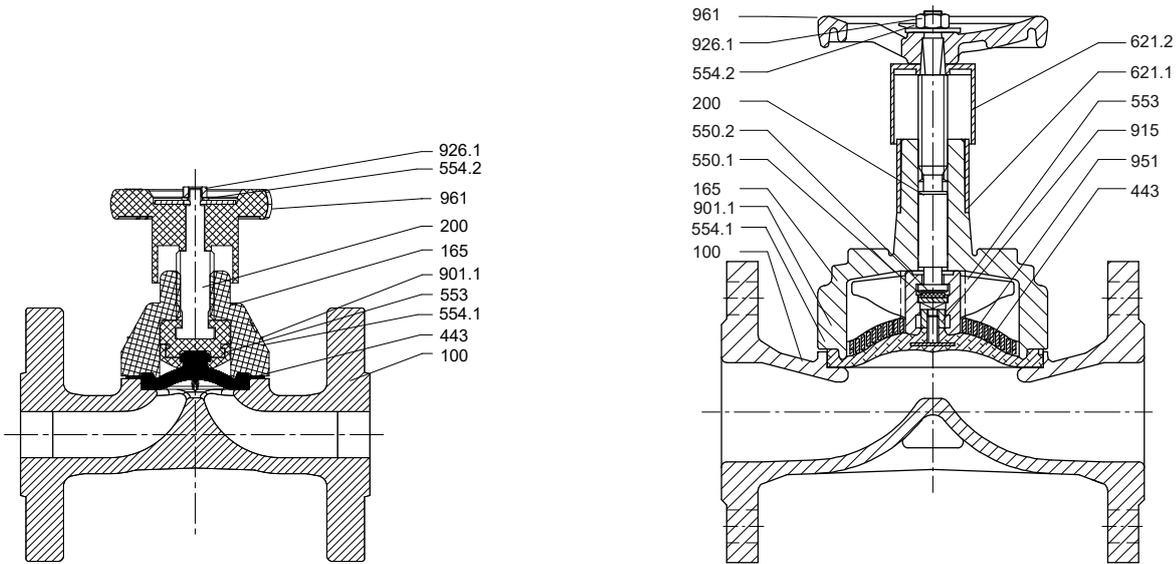


Fig. 37: SISTO-16TWA manually operated valve

SISTO-16TWA DN 15 - 20

SISTO-16TWA DN 25 - 200

Part No.	Description	SISTO-16TWA MD 40 DN 15 - 20		SISTO-16TWA MD 65 - 168 DN 25 - 100		SISTO-16TWA MD 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 ⁷⁷⁾	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	PA	-	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	Polycarbonate	-	EN-GJL-200	5.1300	EN-GJL-200	5.1300

77 Recommended spare parts

Materials of SISTO-16HWA/DLU manually operated valve

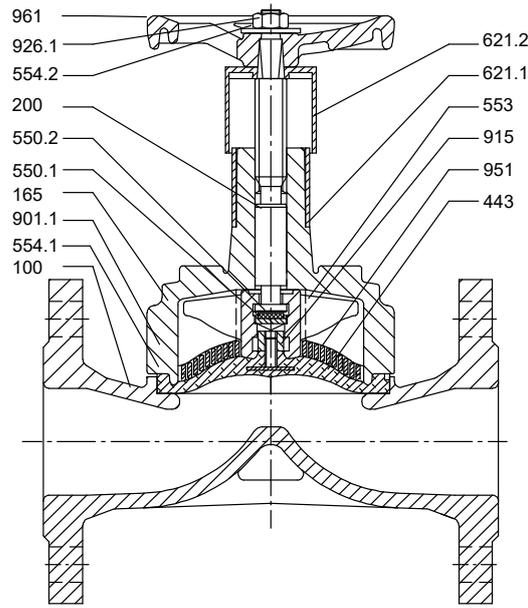


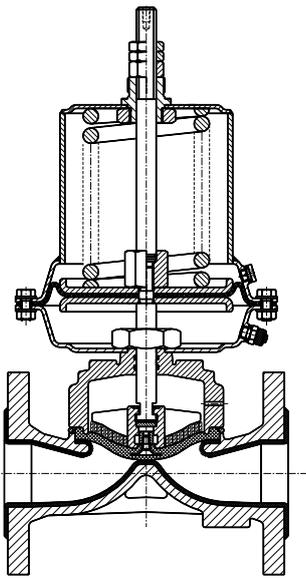
Fig. 38: SISTO-16HWA/DLU manually operated valve

SISTO-16HWA/DLU DN 15 - 200

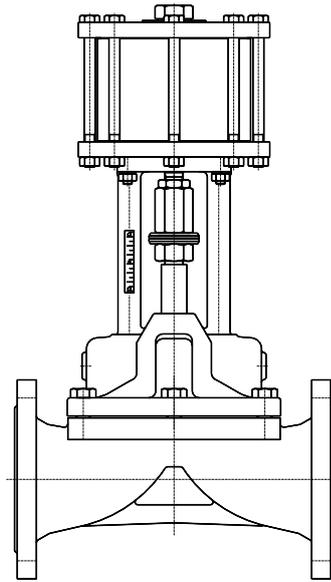
Part No.	Description	SISTO-16HWA MD 40 - 280 DN 15 - 200		SISTO-16DLU MD 40 - 280 DN 15 - 200	
		Material		Material	
		Designation	Number	Designation	Number
100	Body	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301
165	Bonnet	EN-GJL-250 DN 15 = 1.0619	5.1301	EN-GJL-250 DN 15 = 1.0619	5.1301
200	Stem	X14CrMoS17	1.4104	X14CrMoS17	1.4104
443 ⁷⁸⁾	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 = Polycarbonate	5.1300	EN-GJL-200 DN 15 = Polycarbonate	5.1300

78 Recommended spare parts

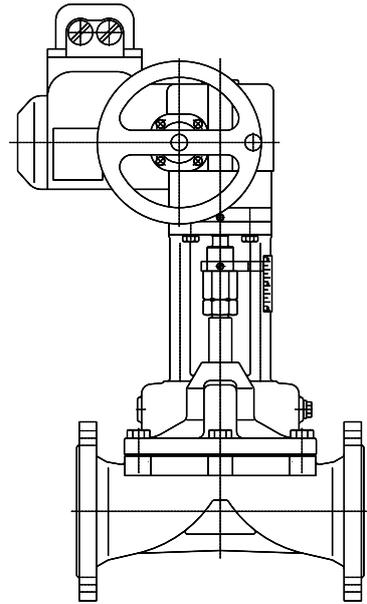
Variants



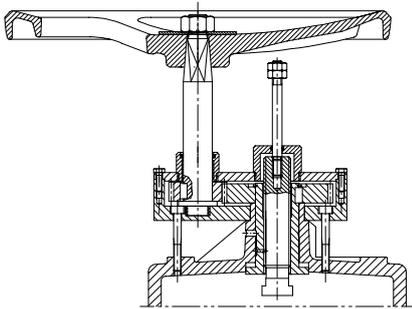
With SISTO-LAD



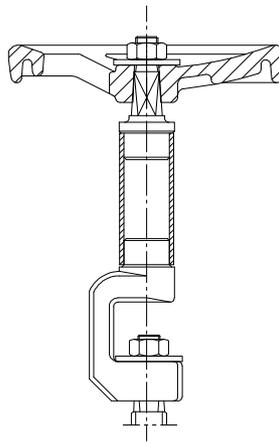
With SISTO-LAP



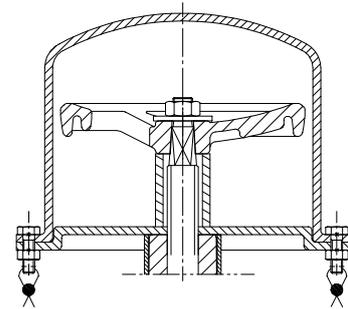
With electric actuator



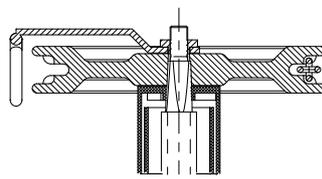
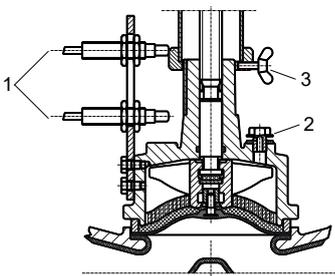
Gearbox



Stem extension



Lead-sealable cap



Chain wheel

- 1 Limit switch
- 2 Leakage detection hole
- 3 Locking device

Dimensions and weights

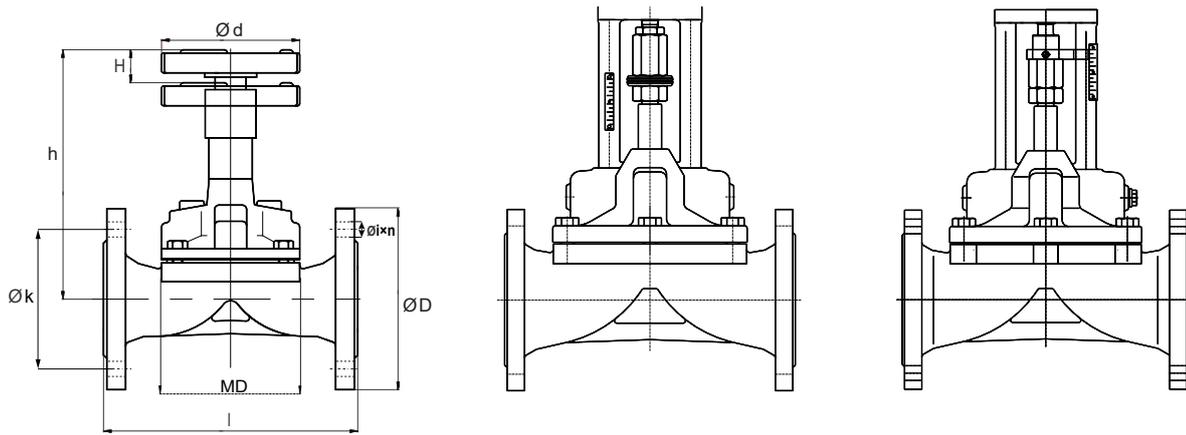


Fig. 39: SISTO-16TWA manually operated valve

Prepared for SISTO-LAP

Prepared for electric actuator

Dimensions and weights of SISTO-16TWA

DN	MD [mm]	I [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 ⁷⁹⁾	115	290	185	145	18×4	30	240	125	8	13,1
80	168	310	200	160	18×8	45	328	200 (250) ⁸⁰⁾	9	23,9
100	168	350	220	180	18×8	45	343	200 (250) ⁸⁰⁾	9	26,1
125	202	400	250	210	18×8 (19×8) ⁸¹⁾	60	388	250 (315) ⁸⁰⁾	12	44,0
150	280	480	285	240	22×8 (23×8) ⁸¹⁾	80	512	400 (500) ⁸⁰⁾	13	82,0
200	280	600	340	295	22×12 (23×12) ⁸¹⁾	80	512	400 (500) ⁸⁰⁾	13	100,0

Valid for SISTO-16TWA
DN 15 - 200:

Mating dimensions as per standard

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

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

Mating dimensions as per standard

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

⁷⁹ In accordance with DIN EN 1092-1:2018, Table 13, Footnote "6", DN 65 flanges are supplied with four holes.

⁸⁰ On option for operating pressures > 10 bar

⁸¹ In accordance with DIN EN 1092-2

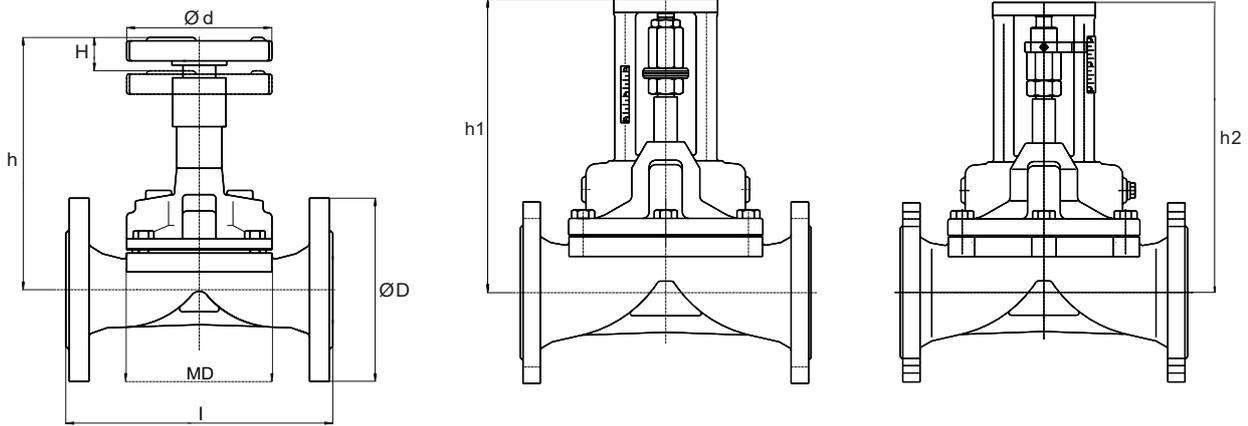


Fig. 40: SISTO-16HWA/DLU manually operated valve

Prepared for SISTO-LAP

Prepared for electric actuator

Dimensions and weights of SISTO-16HWA/DLU

DN	MD [mm]	I [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 SISTO-LAP h1 [mm]	Centre-to-top height 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) ⁸⁰⁾	9	23,2	305	320	480
80	168	310	200	45	322	200 (250) ⁸⁰⁾	9	25,7	305	320	480
100	202	350	220	60	388	250 (315) ⁸⁰⁾	12	39,0	355	370	480
125	202	400	250	60	388	250 (315) ⁸⁰⁾	12	44,0	355	370	480
150	280	480	285	80	512	400 (500) ⁸⁰⁾	13	82,0	435	460	480
200	280	600	340	80	512	400 (500) ⁸⁰⁾	13	100,0	435	460	480

Mating dimensions as per standard

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

Swing Check Valves



Swing check valves

Swing Check Valves to DIN/EN

SISTO-RSK/-RSKS



Product benefits

- Streamlined body design provides low flow resistance coefficient.
- Short stabilisation distances
- Valve hydraulics without dead volume ensure optimum conditions for high-purity fluids.
- Static sealing to atmosphere
- Pre-loaded valve disc and short travel to closure prevent pressure surges.
- Maintenance-free
- Soft rubber encapsulated valve disc ensures reliable shut-off.

Further information

Dimensions and weights 115

Main applications

- Mining
- General irrigation systems
- Chemical industry
- Disposal
- Fire-fighting systems
- Domestic water supply
- Nuclear power stations
- Waste water treatment plants
- Fossil-fuelled power stations
- Seawater desalination
- Process engineering
- Water treatment
- Water supply systems

- Condensate
- Corrosive fluids
- Valuable fluids
- Cooling water
- Fire-fighting water
- Solvents
- Seawater
- Fluids containing mineral oils
- Organic fluids
- Radioactive fluids
- Cleaning agents
- Grey water
- Brine
- Drinking water
- Wash water
- Other fluids on request.⁸²⁾

Fluids handled

- Abrasive fluids
- Waste water with/without faeces
- Aggressive fluids
- Inorganic fluids
- Brackish water
- Service water
- Solids-laden fluids
- River water, lake water and groundwater
- Fluids posing a health hazard
- Toxic fluids
- Highly aggressive fluids

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 16
Nominal size	DN 25 - 300
Max. permissible pressure [bar]	1-16
Min. permissible temperature [°C] ⁸³⁾	≥ -20 (-30 ⁸⁴⁾)
Max. permissible temperature [°C]	≤ +140

Permissible differential pressure: 1 bar - 16 bar

82 Throughflow of gaseous fluids is possible. Backflow of liquid fluids is prevented.

83 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

84 For limited operating conditions on request.

Valve body materials

Overview of available materials

Material	Material number	ASTM ⁸⁵⁾	Temperature limit
EN-GJS-400-18-LT (GGG40.3)	5.3103	A536 Gr. 60-40-18	-20 °C to +140 °C

Design details

Design

- Check valve to DIN EN 16767
- Marked in accordance with DIN EN 19 (ISO 5209)
- No moving external components
- Soft rubber encapsulated valve disc with slanted seat
- Soft-seated swing check valve in straight-way pattern with straight-line flow path

Variants

- Body and cover lined with IIR (butyl), temperature limit: +120 °C
- Body and cover lined with NRH (hard rubber), temperature limit: +100 °C
- Body and cover coated with ECTFE (Halar) inside and outside, temperature limit: +90 °C
- **Model approved for drinking water:**
Body and cover coated with PA (Rilsan)⁸⁶⁾ inside and outside, SISTOMaXX (EPDM/W270) encapsulated valve disc with EPDM/W270 joint ring, temperature limit +60 °C
- IIR-encapsulated valve disc, temperature limit: +120 °C
- CSM-encapsulated valve disc, temperature limit: +80 °C
- EPDM-encapsulated valve disc, temperature limit: +140 °C
- NBR-encapsulated valve disc, temperature limit: +90 °C
- FKM-encapsulated valve disc, temperature limit: +120 °C
- With flushing connection

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per European 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

Information/documents

Document	Reference number
Operating manual SISTO-RSK/-RSKS	8675.10

Purchase order specifications

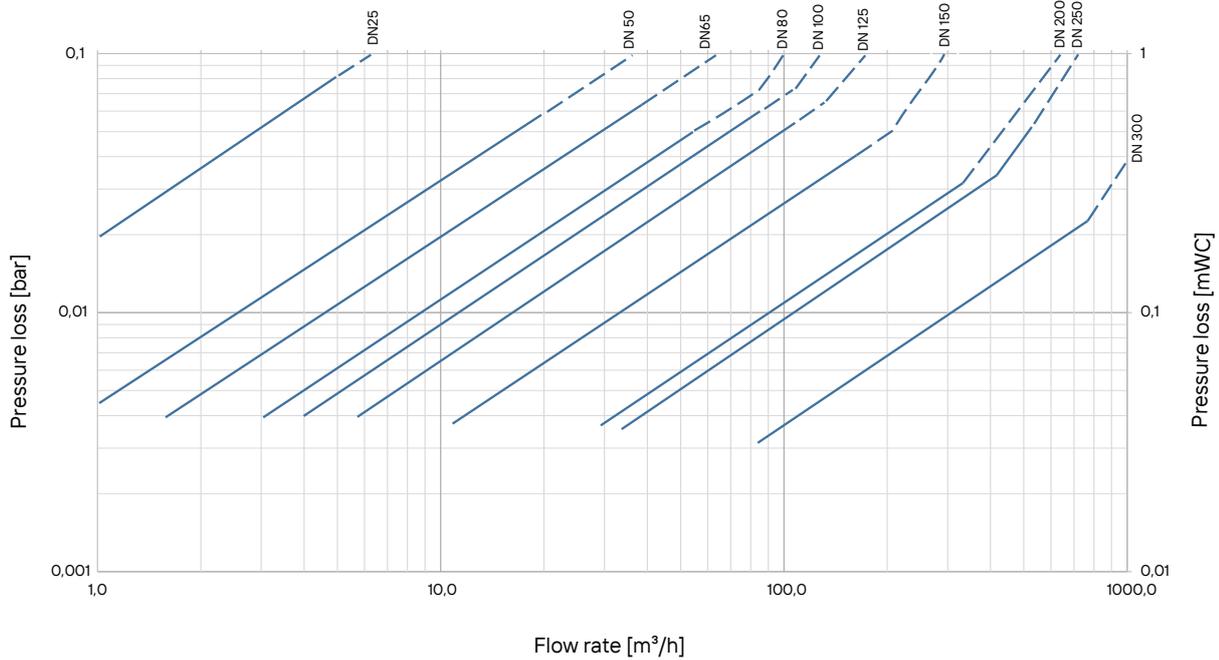
Please specify the following information in all enquiries or purchase orders:

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

85 ASTM materials similar to the materials indicated

86 In compliance with KTW recommendations for the use of elastomers in drinking water issued by the German Environment Agency

Flow characteristics



Water at 20°C, without lining

The (continuous) curves represent the flow rate ranges for optimum use of the swing check valves at a recommended max. flow velocity of 3 m/s.

Flow coefficients

Flow coefficients for unlined valves

DN	Kvs value [m³/h]	
	RSK	RSKS
25	24,0	-
40	115,0	115,0
50	115,0	115,0
65	-	186,0
80	310,0	310,0
100	380,0	380,0
125	500,0	500,0
150	1010,0	1010,0
200	-	2000,0
250	-	2250,0
300	-	5000,0

Pressure/temperature ratings

Permissible operating pressure [bar]

PN	DN	Material		[°C]		
		Designation	Number	-20 to +100	+120	+140
16	25 - 300	EN-GJS-400-18-LT	5.3103	16	12	8

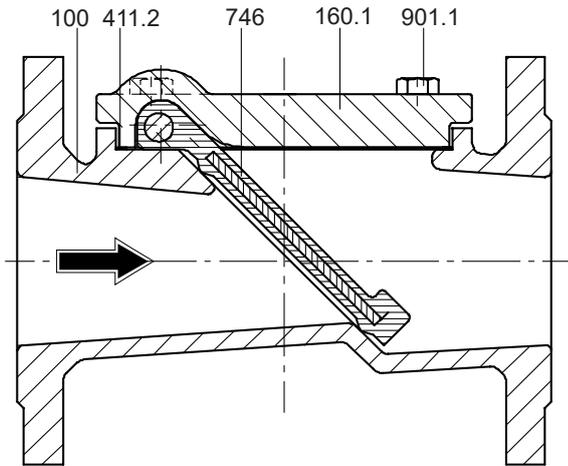
Opening pressure at room temperature

- Valve in as-supplied condition
- Fluid handled: water

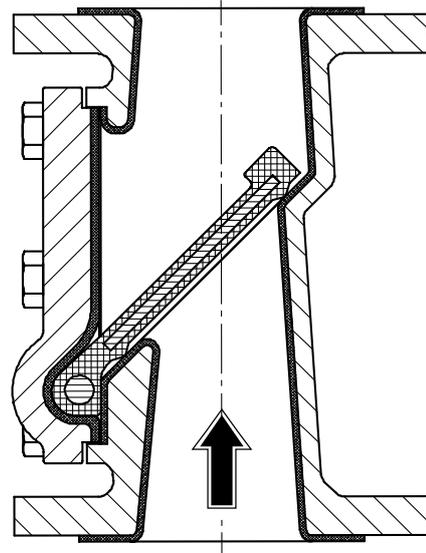
Opening pressure at room temperature

DN	Opening pressure [barg]
25	< 0,05
50	< 0,05
80	< 0,05
100	< 0,05
125	< 0,09
150	< 0,09
200	< 0,09
250	< 0,09
300	< 0,15

Materials



Horizontal installation position⁸⁷⁾
(Shown: variant without lining)



Vertical installation position⁸⁸⁾
(Shown: variant with lining)

Parts list

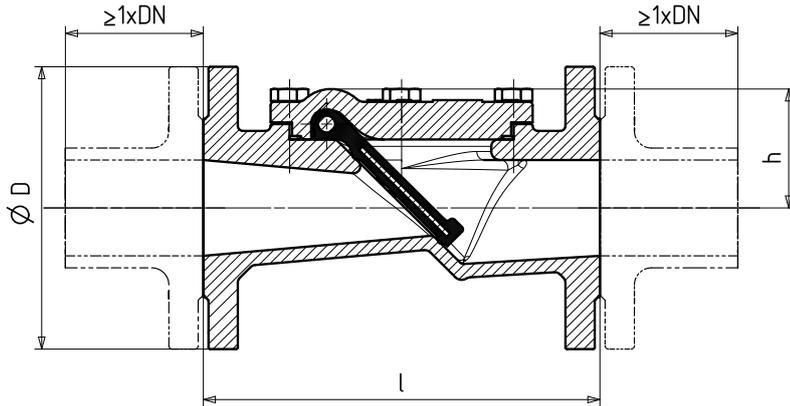
Part No.	Description	Material	
		Designation	Number
100	Body	EN-GJS-400-18-LT	5.3103
160.1	Cover	EN-GJS-400-18-LT	5.3103
411.2 ⁸⁹⁾	Joint ring	EPDM	-
746 ⁸⁹⁾	Valve disc	S355/IIR	-
901.1	Hexagon head bolt	A2-70	-

⁸⁷ Recommended installation position

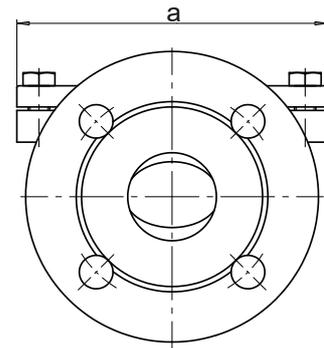
⁸⁸ Vertical installation is only permitted if the fluid does not contain any solids.

⁸⁹ Recommended spare parts

Dimensions and weights



Front view / sectional drawing with upstream/downstream stabilisation distances



Side view

Dimensions and weights

DN	l [mm]		a [mm]		h [mm]	ØD [mm]	[kg]	
	RSK	RSKS	RSK	RSKS			RSK	RSKS
25	160	-	84	-	43	115	4,2	-
40	200	180 ⁹⁰⁾	164	164	75	150	12,8	12,9
50	230	200	175	164	75	165	12,8	13,1
65	-	240	-	175	75	185	-	14
80	310	260	224	232	100	200	25,9	23,9
100	350	300	224	232	100	220	28,2	27,4
125	400	350	290	290	135	250	50	45,7
150	480	400	290	290	125	285	55,5	61,5
200	-	500	-	390	175	340	-	108,7
250	-	600	-	390	175	400	-	138,9
300	-	700	-	550	250	455	-	285,8

Mating dimensions as per standard

- RSK face-to-face length: EN 558 R1
- RSKS face-to-face length: EN 558 R48
- Flanges: DIN EN 1092-2
- Flange facing: DIN EN 1092-2, type B

Installation instructions

Swing check valves can be installed horizontally and vertically. Installation in horizontal pipes is preferable. Recommended installation positions, see drawings (⇒ Page 114).

When installing them in vertical pipes, make sure that the flow direction is upward. Vertical installation is only permitted if the fluid does not contain any solids.

The flow direction must correspond to the cast-on flow direction arrow (see illustrations (⇒ Page 114)).

Recommended stabilisation distances upstream and downstream of the swing check valve $\ge 1 \times DN$ (see drawing above).

90 PN 10 only – flange thickness not in compliance with DIN EN 1092-2

Actuators



Pneumatic Actuators

Piston Actuators

SISTO-LAP



Product benefits

- Actuators with optimised stroke variants ensure full valve travel with minimum air consumption
- Smooth, low-friction movement of the piston assembly with double cup seal or low-friction piston ring

Further information

Dimensions and weights 125

SISTO-LAP product description

Pneumatic piston actuator designed for valves with a linear stem movement (globe, diaphragm and gate valves).

Suitable for building services, industrial plants, power stations, the food and beverages industries and the chemical industry.

The pneumatic actuators can also be used in potentially explosive atmospheres.

Operating data

- Max. permissible control fluid temperature: +80 °C
- Permissible ambient temperature: -10 °C to +80 °C

Permissible control pressure

Piston diameter [mm]	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr. perm.}$ [bar]
80 - 250	F10	5,5 - 10
250	F14	5,5 - 10
300	F10	5,5 - 7
300	F14	5,5 - 10
D250 ⁹¹⁾	F14	5,5 - 7
D300 ⁹¹⁾	F14	5,5 - 7
500	F25	4-10
D500 ⁹¹⁾	F25	4-7

i Pneumatic actuators from SISTO are suitable for compressed air of purity class 5:4:4 in accordance with ISO 8573-1. If there is a risk of frost, purity class 5:3:4 must be applied to prevent damage caused by icing.

Design details

Design

- Double-acting piston, piston rod extending from one end only, with or without spring
- Flanges to DIN ISO 5210/DIN 3358
- Piston diameters 80 to 300 = F10
- Piston diameters 250 to 300 = F14
- Piston diameter 500 = F25
- Piston with double cup seal and vulcanised metal disc
- Piston rod sealed by U-ring and scraper ring
- Mechanical travel stops in the actuator for closed position and open position
- Installation kit and mating dimensions see type series booklet of the valve type series

Actuator function

- 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

Accessories

- Exhaust regulator
- Throttling valve
- Piston rods protruding from both cylinder end caps (stroke limited in closing direction)
- Filter/pressure reducer
- Solenoid valves

⁹¹ Double drum

- Emergency handwheel
- Limit switch(es)
- Silencer
- Positioners

Product information

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

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per Directive 2014/34/EU (ATEX) for pneumatic actuators

Pneumatic actuators 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

Information/documents

Document	Reference number
Installation instructions for partly completed machinery, SISTO-LAP	0570.823
Operating manual	0570.821

Purchase order information

Actuator

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

1. Type
2. Control pressure P_{ctr}
3. Accessories
4. Number of type series booklet
5. Valve travel
6. Break-to-open force
7. Break-to-close force
8. End-to-open force
9. End-to-close force

Materials of SISTO-LAP piston actuator

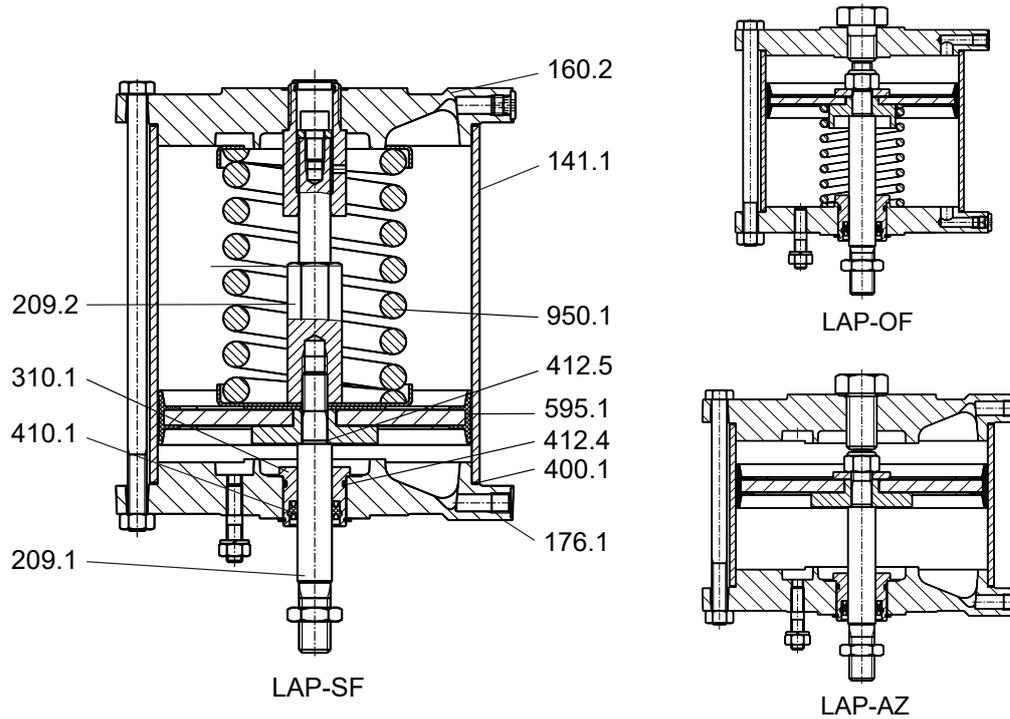


Fig. 41: SISTO-LAP piston actuator

Parts list

Part No.	Description	Material		Piston diameter [mm]
		Designation	Number	
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn	3.1645	80 - 160
		AlSi7Mg0.3	3.2371	200 - 300
176.1	Bottom end cap	AlCu4PbMgMn	3.1645	80 - 160
		AlSi7Mg0.3	3.2371	200 - 300
209.1	Lower piston rod	Stainless steel - X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	Stainless steel - X14CrMoS17	1.4104	80 - 300
310.1 ⁹²⁾ 93)	Plain bearing	Plastic - POM	-	80 - 300
400.1 ⁹²⁾ 93)	Gasket	Plastic - AFM 30	-	80 - 300
410.1 ⁹²⁾ 93)	Seal/wiper set	Plastic - L96-SFR/NBR	-	80 - 300
412.4 ⁹²⁾ 93)	O-ring	NBR	-	80 - 300
412.5 ⁹²⁾ 93)	O-ring	NBR	-	80 - 300
595.1 ⁹²⁾ 93)	Piston assembly	Steel/acrylonitrile butadiene rubber - St/NBR	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

92 Recommended spare parts (= complete set of sealing elements)

93 We recommend having these parts replaced in our factory.

Materials of SISTO-LAP piston actuator with piston rods protruding from both cylinder end caps

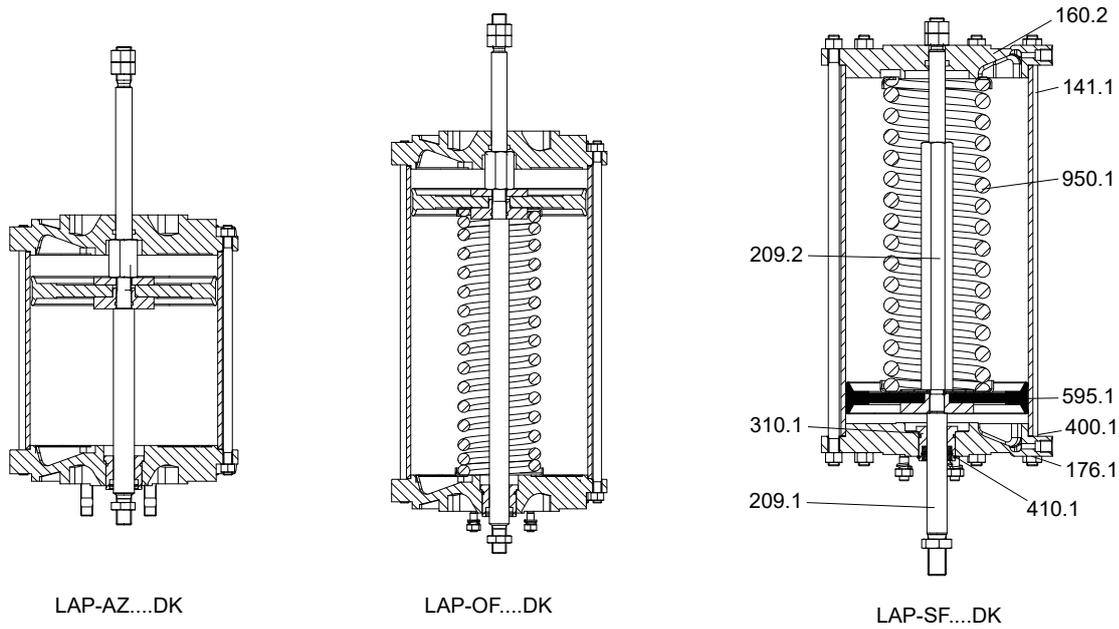


Fig. 42: SISTO-LAP with piston rods protruding from both cylinder end caps

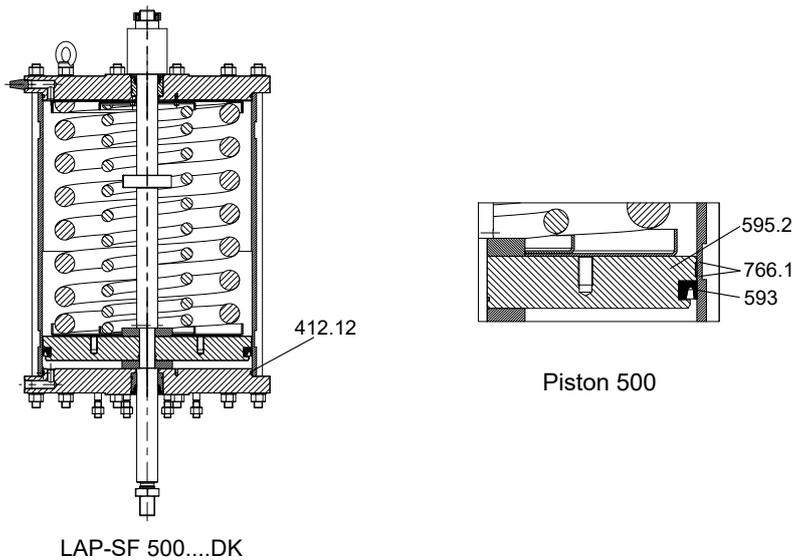


Fig. 43: SISTO-LAP-SF 500...DK

Parts list

Part No.	Description	Material		Piston diameter [mm] DK
		Designation	Number	
141.1	Cylinder	AlMgSi0.5F22	3.3206	80 - 300
		St E355	1.0580	500
160.2	Top end cap	AlCuMgPb	3.1645	80 - 160
		AlSiMg	3.2371	200 - 300
		AW2017A		500
176.1	Bottom end cap	AlCuMgPb	3.1645	80 - 160
		AlSiMg	3.2371	200 - 300
		AW2017A		500
209.1	Lower piston rod	Stainless steel - X12CrMoS17	1.4104	80 - 500
209.2	Upper piston rod	Stainless steel - X12CrMoS17	1.4104	80 - 500

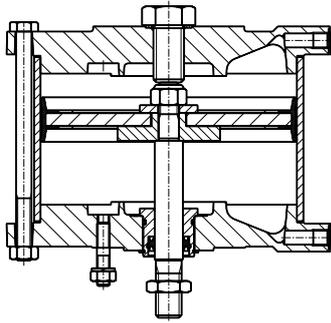
Part No.	Description	Material		Piston diameter [mm] DK
		Designation	Number	
310.1 ⁹⁴⁾⁹⁵⁾	Plain bearing	Plastic - POM CWR710R	2.0540	80 - 300 500
400.1 ⁹⁴⁾⁹⁵⁾	Gasket	Plastic - AFM 30	-	80 - 300
410.1 ⁹⁴⁾⁹⁵⁾	Seal/wiper set	Plastic - L96-SFR/NBR	-	80 - 300
412.12	O-ring	NBR	-	500
593 ⁹⁴⁾⁹⁵⁾	Piston seal	Acrylonitrile butadiene rubber - NBR	-	500
595.1 ⁹⁴⁾⁹⁵⁾	Piston assembly	Steel/acrylonitrile butadiene rubber - St/NBR	-	80 - 300
595.2	Piston	Cast aluminium alloy - G-AlSi7Mg AW2017A	3.2371	500
766.1 ⁹⁴⁾⁹⁵⁾	Guide strap	PTFE	-	500
950.1	Spring	Spring steel	-	80 - 500

94 Recommended spare parts (= complete set of sealing elements)

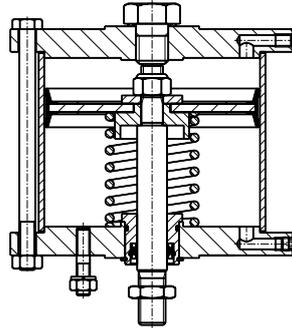
95 We recommend having these parts replaced in our factory.

Variants

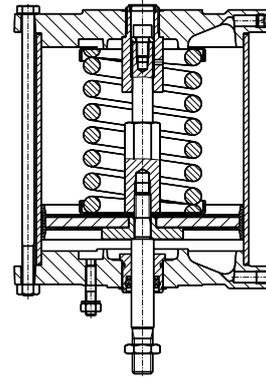
SISTO-LAP piston actuator and accessories



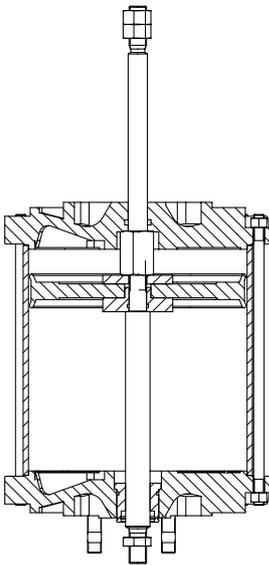
LAP-AZ type



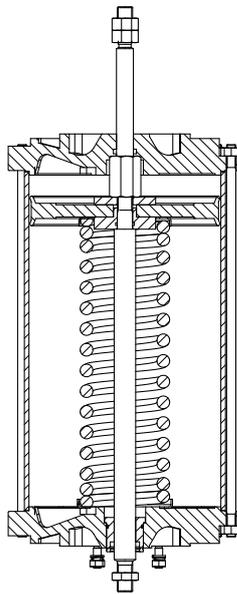
LAP-OF type



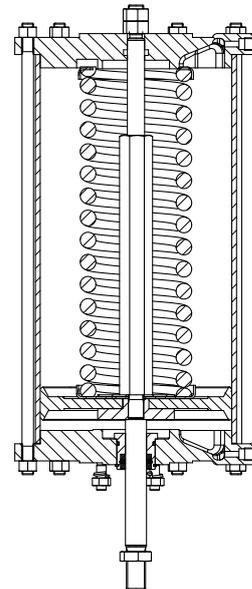
LAP-SF type



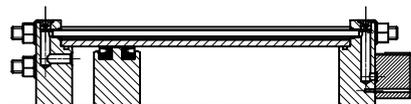
LAP-AZ...DK type



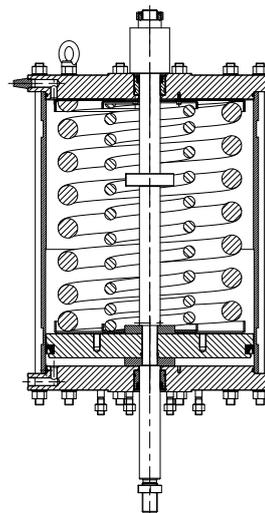
LAP-OF...DK type



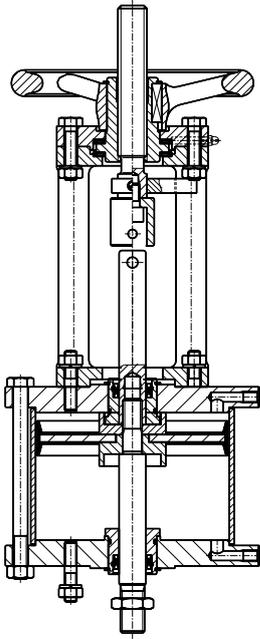
LAP-SF...DK type



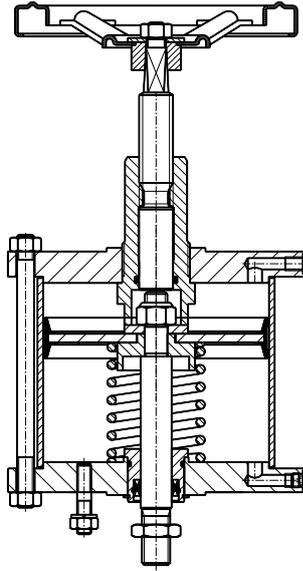
Internal air routing, example: LAP-AZ-500
(only available for LAP-500 design)



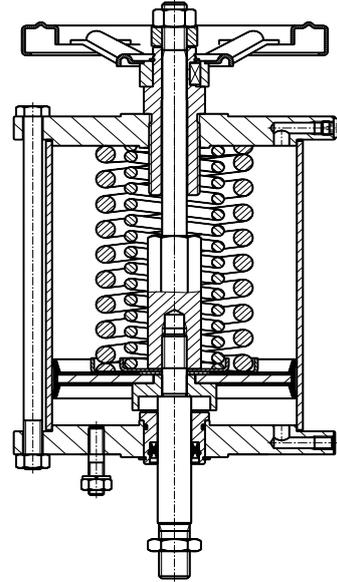
LAP-SF-500...DK type
(design with piston rods protruding from both cylinder end caps only)



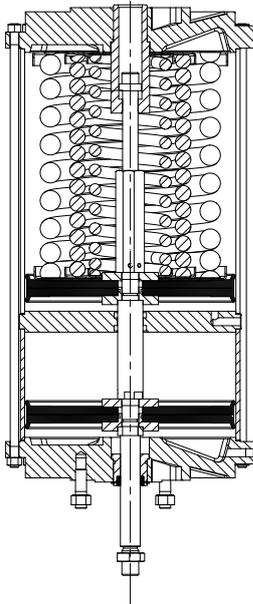
LAP-AZ type with emergency handwheel



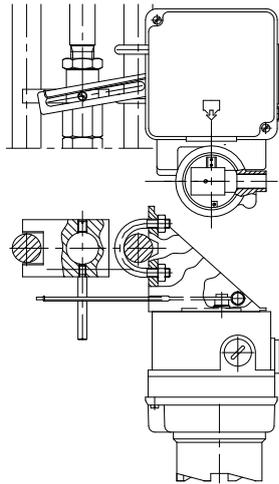
LAP-OF type with emergency handwheel



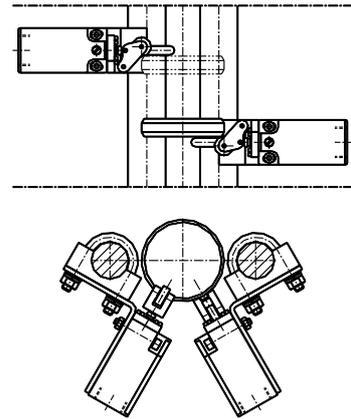
LAP-SF type with emergency handwheel



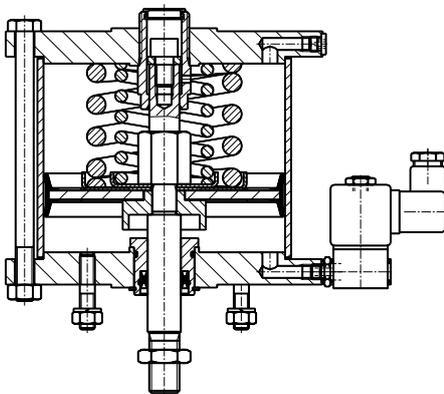
LAP-SF type with double piston



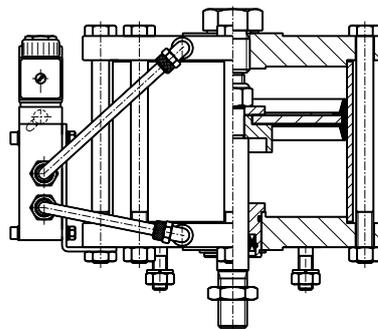
Configuration with positioner



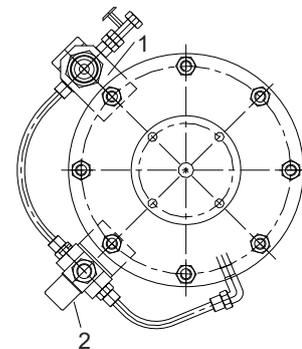
Configuration with limit switches



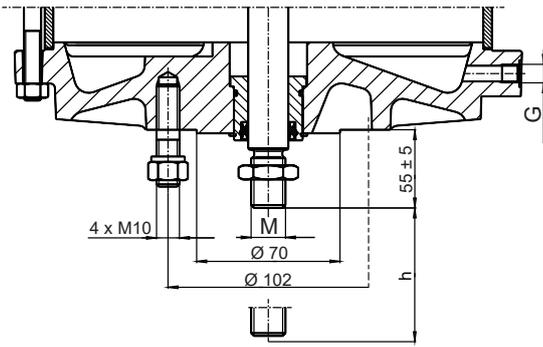
LAP-SF type with 3/2 directional control valve



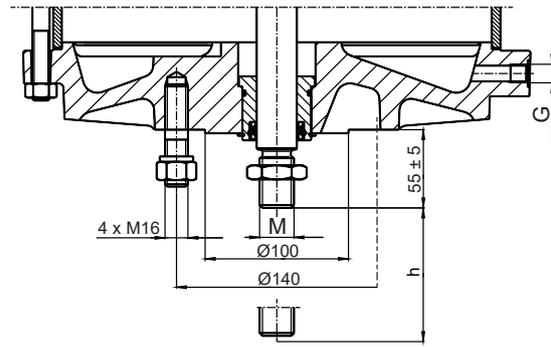
LAP-AZ type with 5/2 directional control valve



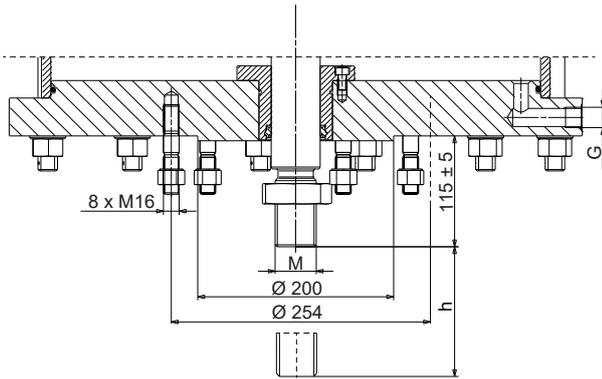
1) Filter/pressure reducer
2) Solenoid valve



Flange connection F10



Flange connection F14



Flange connection F25

Symbols key

Symbol	Description
G	G1/8" for piston diameters 80/125/160 G1/4" for piston diameters 200/250/300 G 1/2" for piston diameter 500
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameter D 300/F14 optional M36x3 for piston diameter 500

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228

Dimensions and weights

SISTO-LAP piston actuator

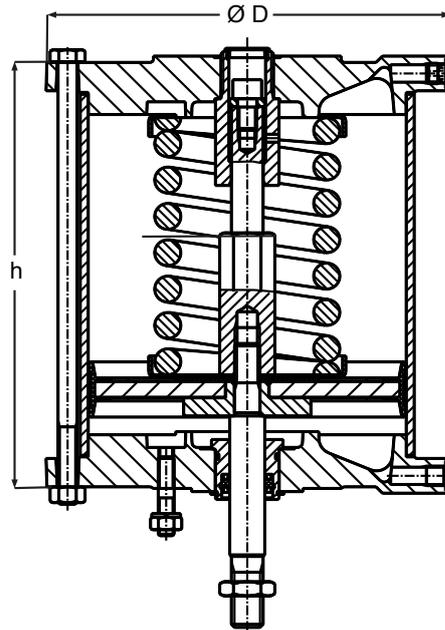


Fig. 44: SISTO-LAP

Dimensions and weights for actuator function: **type LAP-AZ** (air-to-open/air-to-close PST 5.5 bar)

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-AZ-80-F10	15	130	111	4	2500	2500
LAP-AZ-80-F10	30	130	131	5	2500	2500
LAP-AZ-125-F10	15	170	131	6	6300	6300
LAP-AZ-125-F10	30	170	131	7	6300	6300
LAP-AZ-125-F10	45	170	151	8	6300	6300
LAP-AZ-125-F10	60	170	151	9	6300	6300
LAP-AZ-160-F10	30	210	168	11	10300	10300
LAP-AZ-160-F10	45	210	168	11	10300	10300
LAP-AZ-160-F10	60	210	188	12	10300	10300
LAP-AZ-160-F10	80	210	208	13	10300	10300
LAP-AZ-200-F10	30	255	170	17	16216	16216
LAP-AZ-200-F10	45	255	190	17	16216	16216
LAP-AZ-200-F10	60	255	210	18	16216	16216
LAP-AZ-200-F10	80	255	230	20	16216	16216
LAP-AZ-250-F10	60	305	240	25	16216	16216
LAP-AZ-250-F10	80	305	260	28	25300	25300
LAP-AZ-250-F14	60	305	260	28	25300	25300
LAP-AZ-250-F14	80	305	260	28	25300	25300
LAP-AZ-250-F14	100	305	280	34	25300	25300
LAP-AZ-300-F10	60	355	254	32	36600	36600
LAP-AZ-300-F10	80	355	274	35	36600	36600
LAP-AZ-300-F14	60	355	254	32	36600	36600
LAP-AZ-300-F14	80	355	274	35	36600	36600
LAP-AZ-300-F14	100	355	294	44	36600	36600
LAP-AZ-D250-F14	80	355	424	47	50600	50600
LAP-AZ-D300-F14	80	355	452	61	73200	73200
LAP-AZ-500-F25	60	585	275	133	101500	101500
LAP-AZ-500-F25	120	585	335	154	101500	101500
LAP-AZ-500-F25	180	585	395	175	101500	101500
LAP-AZ-500-F25	240	585	455	196	101500	101500
LAP-AZ-D500-F25	60	585	275	364	203000	203000

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-AZ-D500-F25	120	585	295	376	203000	203000
LAP-AZ-D500-F25	180	585	315	388	203000	203000
LAP-AZ-D500-F25	240	585	335	400	203000	203000

Dimensions and weights for actuator function: **type LAP-OF** (spring-to-open/air-to-close PST 5.5 bar)

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-OF-80.101-F10	15	130	151	5	720	1700
LAP-OF-80.101-F10	30	130	151	6	720	1700
LAP-OF-125.101-F10	15	170	151	7	720	5500
LAP-OF-125.101-F10	30	170	151	8	720	5500
LAP-OF-125.102-F10	30	170	189	6	1150	5100
LAP-OF-160.001-F10	45	210	288	13	2360	7900
LAP-OF-160.102-F10	30	210	188	12	1150	9100
LAP-OF-160.102-F10	45	210	208	13	1150	9100
LAP-OF-160.102-F10	60	210	224	14	1150	9100
LAP-OF-200.001-F10	45	255	310	22	2360	13800
LAP-OF-200.001-F10	60	255	330	23	2360	13800
LAP-OF-200.001-F10	80	255	350	25	2360	13800
LAP-OF-200.102-F10	30	255	210	19	1150	15000
LAP-OF-200.102-F10	45	255	210	19	1150	15000
LAP-OF-250.001-F10	45	305	340	35	2360	22960
LAP-OF-250.001-F10	60	305	360	30	2360	22960
LAP-OF-250.002-F10	60	305	380	32	5630	19600
LAP-OF-250.002-F10	80	305	400	35	5630	19600
LAP-OF-250.002-F14	60	305	400	32	5630	19600
LAP-OF-250.002-F14	80	305	400	35	5630	19600
LAP-OF-300.002-F10	60	355	414	51	5630	30900
LAP-OF-300.002-F10	80	355	434	51	5630	30900
LAP-OF-300.002-F14	80	355	434	52	5630	30900
LAP-OF-300.012-F14	80	355	434	53	7960	28600
LAP-OF-D250.012-F14	80	305	504	54	7960	42600
LAP-OF-D250.012-F14	100	305	524	55	7960	42600
LAP-OF-D300.012-F14	80	355	572	74	7960	65260
LAP-OF-500.007-F25	60	585	641	281	78300	23200
LAP-OF-500.007-F25	120	585	701	293	82400	19100
LAP-OF-500.007-F25	180	585	761	305	86500	15000
LAP-OF-500.007-F25	240	585	821	317	90700	10800
LAP-OF-500.008-F25	60	585	641	316	56700	44800
LAP-OF-500.008-F25	120	585	701	328	64200	37300
LAP-OF-500.008-F25	180	585	761	340	71800	29700
LAP-OF-500.008-F25	240	585	821	352	79400	22100
LAP-OF-500.009-F25	60	585	641	356	41500	60000
LAP-OF-500.009-F25	120	585	701	368	50900	50600
LAP-OF-500.009-F25	180	585	761	380	60400	41100
LAP-OF-500.009-F25	240	585	821	392	69800	31700
LAP-OF-500.078-F25	60	585	641	349	33400	68100
LAP-OF-500.078-F25	120	585	701	361	45100	56400
LAP-OF-500.078-F25	180	585	761	373	56800	44700
LAP-OF-500.078-F25	240	585	821	385	68500	33000
LAP-OF-500.079-F25	60	585	641	389	18200	83300
LAP-OF-500.079-F25	120	585	701	401	31800	69700
LAP-OF-500.079-F25	180	585	761	413	45400	56100
LAP-OF-500.079-F25	240	585	821	425	58900	42600
LAP-OF-D500.007-F25	60	585	641	389	179900	23200
LAP-OF-D500.007-F25	120	585	701	409	184000	19100
LAP-OF-D500.007-F25	180	585	761	429	188100	15000
LAP-OF-D500.007-F25	240	585	821	449	192300	10800
LAP-OF-D500.008-F25	60	585	641	424	158300	44800

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-OF-D500.008-F25	120	585	701	444	165800	37300
LAP-OF-D500.008-F25	180	585	761	464	173400	29700
LAP-OF-D500.008-F25	240	585	821	484	181000	22100
LAP-OF-D500.009-F25	60	585	641	464	143100	60000
LAP-OF-D500.009-F25	120	585	701	484	152500	50600
LAP-OF-D500.009-F25	180	585	761	504	162000	41100
LAP-OF-D500.009-F25	240	585	821	524	171400	31700
LAP-OF-D500.078-F25	60	585	641	457	135000	68100
LAP-OF-D500.078-F25	120	585	701	477	146700	56400
LAP-OF-D500.078-F25	180	585	761	497	158400	44700
LAP-OF-D500.078-F25	240	585	821	517	170100	33000
LAP-OF-D500.079-F25	60	585	641	497	119800	83300
LAP-OF-D500.079-F25	120	585	701	517	133400	69700
LAP-OF-D500.079-F25	180	585	761	537	147000	56100
LAP-OF-D500.079-F25	240	585	821	557	160500	42600
LAP-OF-D500.089-F25	60	585	641	532	98200	104900
LAP-OF-D500.089-F25	120	585	701	552	115200	87900
LAP-OF-D500.089-F25	180	585	761	572	132200	70900
LAP-OF-D500.089-F25	240	585	821	592	149200	53900
LAP-OF-D500.789-F25	60	585	1104	565	74900	128200
LAP-OF-D500.789-F25	120	585	1164	585	96100	107000
LAP-OF-D500.789-F25	180	585	1224	605	117200	85900
LAP-OF-D500.789-F25	240	585	1284	625	138400	64700

Dimensions and weights for actuator function: **type LAP-SF** (air-to-open/spring-to-close PST 5.5 bar)

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-SF-80.001.5-F10	15	130	171	6	1050	1600
LAP-SF-80.001-F10	30	130	271	7	820	1830
LAP-SF-125.002.5-F10	15	170	212	10	2640	3990
LAP-SF-125.002-F10	30	170	271	12	2270	4360
LAP-SF-160.012-F10	30	210	274	18	4680	6160
LAP-SF-160.012-F10	45	210	310	19	5280	5560
LAP-SF-200.003.5-F10	30	255	290	28	9190	7880
LAP-SF-200.003.7-F10	45	255	350	32	7320	9750
LAP-SF-200.003-F10	60	255	450	35	7810	9260
LAP-SF-200.003-F10	80	255	470	37	8920	8150
LAP-SF-250.004.7-F10	45	305	380	42	11810	14840
LAP-SF-250.004-F10	60	305	480	45	12540	14110
LAP-SF-250.004-F10	80	305	500	48	14230	12420
LAP-SF-250.004-F14	60	305	480	42	12540	14110
LAP-SF-250.004-F14	80	305	500	49	14230	12420
LAP-SF-300.034-F10	60	355	514	67	15380	23150
LAP-SF-300.034-F10	80	355	535	70	18180	20350
LAP-SF-300.034-F14	80	355	535	75	18180	20350
LAP-SF-D300.005-F14	80	355	742	99	44630	32430
LAP-SF-D300.034-F14	80	355	712	89	56710	20350
LAP-SF-D300.035-F14	100	355	832	127	43160	33900
LAP-SF-D300.345-F14	80	355	752	122	30180	46880
LAP-SF-500.007-F25	60	585	641	281	78300	23200
LAP-SF-500.007-F25	120	585	701	293	82400	19100
LAP-SF-500.007-F25	180	585	761	305	86500	15000
LAP-SF-500.007-F25	240	585	821	317	90700	10800
LAP-SF-500.008-F25	60	585	641	316	56700	44800
LAP-SF-500.008-F25	120	585	701	328	64200	37300
LAP-SF-500.008-F25	180	585	761	340	71800	29700
LAP-SF-500.008-F25	240	585	821	352	79400	22100
LAP-SF-500.009-F25	60	585	641	356	41500	60000
LAP-SF-500.009-F25	120	585	701	368	50900	50600

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
LAP-SF-500.009-F25	180	585	761	380	60400	41100
LAP-SF-500.009-F25	240	585	821	392	69800	31700
LAP-SF-500.078-F25	60	585	641	349	33400	68100
LAP-SF-500.078-F25	120	585	701	361	45100	56400
LAP-SF-500.078-F25	180	585	761	373	56800	44700
LAP-SF-500.078-F25	240	585	821	385	68500	33000
LAP-SF-500.079-F25	60	585	641	389	18200	83300
LAP-SF-500.079-F25	120	585	701	401	31800	69700
LAP-SF-500.079-F25	180	585	761	413	45400	56100
LAP-SF-500.079-F25	240	585	821	425	58900	42600
LAP-SF-D500.007-F25	60	585	641	389	179900	23200
LAP-SF-D500.007-F25	120	585	701	409	184000	19100
LAP-SF-D500.007-F25	180	585	761	429	188100	15000
LAP-SF-D500.007-F25	240	585	821	449	192300	10800
LAP-SF-D500.008-F25	60	585	641	424	158300	44800
LAP-SF-D500.008-F25	120	585	701	444	165800	37300
LAP-SF-D500.008-F25	180	585	761	464	173400	29700
LAP-SF-D500.008-F25	240	585	821	484	181000	22100
LAP-SF-D500.009-F25	60	585	641	464	143100	60000
LAP-SF-D500.009-F25	120	585	701	484	152500	50600
LAP-SF-D500.009-F25	180	585	761	504	162000	41100
LAP-SF-D500.009-F25	240	585	821	524	171400	31700
LAP-SF-D500.078-F25	60	585	641	457	135000	68100
LAP-SF-D500.078-F25	120	585	701	477	146700	56400
LAP-SF-D500.078-F25	180	585	761	497	158400	44700
LAP-SF-D500.078-F25	240	585	821	517	170100	33000
LAP-SF-D500.079-F25	60	585	641	497	119800	83300
LAP-SF-D500.079-F25	120	585	701	517	133400	69700
LAP-SF-D500.079-F25	180	585	761	537	147000	56100
LAP-SF-D500.079-F25	240	585	821	557	160500	42600
LAP-SF-D500.089-F25	60	585	641	532	98200	104900
LAP-SF-D500.089-F25	120	585	701	552	115200	87900
LAP-SF-D500.089-F25	180	585	761	572	132200	70900
LAP-SF-D500.089-F25	240	585	821	592	149200	53900
LAP-SF-D500.789-F25	60	585	1104	565	74900	128200
LAP-SF-D500.789-F25	120	585	1164	585	96100	107000
LAP-SF-D500.789-F25	180	585	1224	605	117200	85900
LAP-SF-D500.789-F25	240	585	1284	625	138400	64700

Electric actuators, Make PS Automation GmbH



Fig. 45: PSL electric linear actuator

PSL type series product description

Electric linear actuators of the PSL type series for simple control operations	
Duty type:	S4 50 %
Ambient temperature [°C]:	-20 to +60
For direct connection to step controllers and control units.	
Driven by 230 V/50 Hz single-phase AC motor.	
Motor protection:	Anti-jam design (PSL202)/thermal switch (PSL204-PSL214)
Types:	PSL202
	PSL204
	PSL208
	PSL210
	PSL214

PS Automation GmbH basic equipment, PSL type series

- Easy-to-adjust limit switches for OPEN/CLOSED positions
- Defined closing force via disc springs in closed position.
- Handwheel for manual operation.
- IP65 enclosure of linear actuators to EN 60529.

For technical information and data sheets see: <https://www.ps-automation.com/produkte/psl/>

Electric Actuators, Make AUMA



Fig. 46: SA electric multi-turn actuator

SA type series product description

Electric multi-turn actuators of the SA type series for open-close duty, with three-phase motors	
Duty type:	S4 50 %
For short-time duty	S2 - 15 min
Ambient temperature [°C]:	-30 to +70
Output speed:	32 rpm
Connection type:	B1
Driven by AUMA three-phase motor 400 V/50 Hz	
Thermal class:	F
Motor protection:	Temperature switch
Connection to plug-type motor connector	
Types:	SA 07.2-B1-32
	SA 07.6-B1-32
	SA 10.2-B1-32
	SA 14.2-B1-32

AUMA basic equipment, SA type series

- Easy-to-adjust limit switching: Counter gear mechanism for end positions OPEN/CLOSED
- Continuously adjustable torque switches for closing and opening direction
- Anti-condensation heater in switch compartment
- Mechanical flasher relay indicating operation
- Corrosion protection: KS, powder-coated, colour: silver grey (similar to RAL 7037)
- Internal wiring to circuit diagram TPA 00R1AA-101-000 at connector
- Manual actuator for settings and for emergency operation, idle during electric actuation
- IP68 enclosure

For technical information and data sheets see: <https://www.auma.com>

Certificates/Declaration of conformity



Certificates

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 187121/030**

Organization:



KSB SE & Co. KGaA
Johann-Klein-Str. 9
67227 Frankenthal (Pfalz)
Germany

Site:

c/o **SISTO Armaturen S.A.**
18 Rue Martin Maas
L-6468 Echternach
Luxembourg

Scope:

Development, production, marketing and service of pumps, valves, additional components and systems

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity:

The certificate is valid in conjunction with the main certificate 01 100 187121 from 2022-07-13 until 2025-07-12.

2022-07-22

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

Certificate

Standard **ISO 14001:2015**

Certificate Registr. No. **01 104 187121/030**

Organization:



KSB SE & Co. KGaA
Johann-Klein-Str. 9
67227 Frankenthal (Pfalz)
Germany

Site:

c/o **SISTO Armaturen S.A.**
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Luxembourg

Scope:

Development, production, marketing and service of pumps, valves, additional components and systems

Proof has been furnished by means of an audit that the requirements of ISO 14001:2015 are met.

Validity:

The certificate is valid in conjunction with the main certificate 01 104 187121 from 2022-07-13 until 2025-07-12.

2022-07-22

A handwritten signature in blue ink, appearing to read 'T. Schlimm', written over a horizontal line.

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

Certificate

Standard **ISO 45001:2018**

Certificate Registr. No. **01 213 187121/030**

Organization:



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Site:

c/o **SISTO Armaturen S.A.**
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Luxembourg

Scope:

Development, production, marketing and service of pumps, valves, additional components and systems

Proof has been furnished by means of an audit that the requirements of ISO 45001:2018 are met.

Validity:

The certificate is valid in conjunction with the main certificate 01 213 187121 from 2022-07-13 until 2025-07-12.

2022-07-22

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

EU Declaration of Conformity SISTO Diaphragm Valves and Swing Check Valves

Hereby we,

SISTO Armaturen S.A.
18, rue Martin Maas
6468 Echternach (Luxembourg)

declare that **the product:**

Diaphragm valves and Diaphragm valves with pneumatic actuator

SISTO-KB	PN 10	DN 32 - 200
SISTO-KBS	PN 10	DN 32 - 200 (ND 1 ¹ / ₄ - 8 inches)
SISTO-10	PN 10	DN 32 - 300
SISTO-10S	PN 10	DN 32 - 200 (ND 1 ¹ / ₄ - 8 inches)
SISTO-10M	PN 10	Rp 1 ¹ / ₄ - 3 inches
SISTO-16HWA/DLU	PN 16	DN 32 - 200
SISTO-16	PN 16	DN 32 - 200
	PN 10	DN 250 - 300
	PN 16	DN 32 - 80 (Rp 1 ¹ / ₄ - 3 inches)
SISTO-16S	PN 16	DN 32 - 200 (ND 1 ¹ / ₄ - 8 inches)
SISTO-20	DIN PN 16	DN 32 - 200
	PN 10	DN 250 - 300
	PN 16	DN 32 - 80 (Rp 1 ¹ / ₄ - 3 inches)
	ISO PN 20	DN 32 - 125

Swing check valves

SISTO-RSK/-RSKS	PN 16	DN 32 - 300
------------------------	-------	-------------

satisfies the safety requirements laid down in the European Pressure Equipment Directive 2014/68/EU.

Suitable for:

Fluids in Groups 1 and 2

Conformity assessment procedure:

Module H

Name and address of the notified body responsible for approval and surveillance:

TÜV Rheinland Industrie Service GmbH
 Zertifizierungsstelle für Druckgeräte
 Am Grauen Stein
 51105 Köln (Germany)

Identification number of the notified body:

0035

Valves ≤ DN 25 comply with the European Pressure Equipment Directive 2014/68/EU, Article 4, Section 3. They must bear neither the CE marking nor the identification number of a notified body.

The EU Declaration of Conformity was issued in/on:

Echternach, 25 November 2024

Bernd Hackenberger
 Head of Design and Development

Markus Schuster
 Head of Integrated Management Systems

Glossary

ATEX 2014/34/EU

The acronym ATEX is the French abbreviation for explosive atmospheres: "Atmosphère explosible". The ATEX product directive 2014/34/EU lays down rules to be met by equipment and protective systems intended for use in potentially explosive atmospheres in the European Union (EU).

DN

Nominal size; numeric designation of size of the components in a piping system

Grey water

Faecal-free waste water

LAP

Pneumatic piston actuator, available in versions AZ, OF and SF

LAP-AZ

LAP-AZ = OPEN/CLOSE = double-acting piston actuator (air-to-open / air-to-close)

LAP-OF

LAP-OF = opening spring = pneumatic piston actuator, fail-open (spring-to-open / air-to-close)

LAP-SF

LAP-SF = closing spring = pneumatic piston actuator, fail-close (air-to-open / spring-to-close)

MD

Diaphragm diameter, numeric designation of the diaphragm size

Pressure Equipment Directive 2014/68/EU (PED)

The 2014/68/EU Directive sets out the requirements to be met by pressure equipment intended to be placed on the market in the European economic area.

Waste water

Water which has been changed by some type of use, e.g. domestic grey water



Get in touch with us. We are here to help, anywhere and at any time.

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