SISTO

Industry, Building services

Diaphragm Valves, Actuators, Swing Check Valves

Content

Resistance of materials

	Fields of application [1]	Temperature up to
Diaphragm		
EPDM	Warm- and hot water, waste water, acids and caustics	140 °C
SISTOMaXX[2] (EPDM/W270)	Drinking water; cold- and warm water	90 °C
EPDM-V	Reinforced for higher stresses; vacuum application; sterile steam and condensation	140 °C
IIR (soft rubber)	Warm and hot water; weakened and concentrated caustics; abrasive media	120 °C
CSM	Concentrated acids and caustics; chlorous media	80 °C
NBR	Oil and grease; oil containing compressed air; paraffine; petrol	90 °C
TFM/EPDM 2-piece	Highest chemical strains; food; chlorous media	160 °C
TFM/PVDF/EPDM 3-piece	Highest chemical strains; food; chlorous media	140 °C
Body-coating		
PA[3] Polyamid (Rilsan)	Food; water incl. sea water; oil and grease	60 °C
ECTFE (Halar)	Highest chemical strains; acids and caustics	90 °C
Body-lining		
NR-H (hard rubber)	Acids and caustics; chlorous media	100 °C
IIR (soft rubber)	Abrasive media; acids and caustics	120 °C
PTFE	Highest chemical strains; food; chlorous media	160 °C
TFM	Highest chemical strains; food; chlorous media	160 °C

1) given as a guide only, further fields of application on request
2) The diaphragm quality SISTOMaXX complies with the recommendations of the Federal Environmental Agency (Elastomer guideline) and the DVGW worksheet W 270.
3) PA Polyamide (Rilsan) complies with the DVGW worksheet W 270.

Material designation

No. of material	Symbol	European standard	Previous symbol
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	GP240H	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	

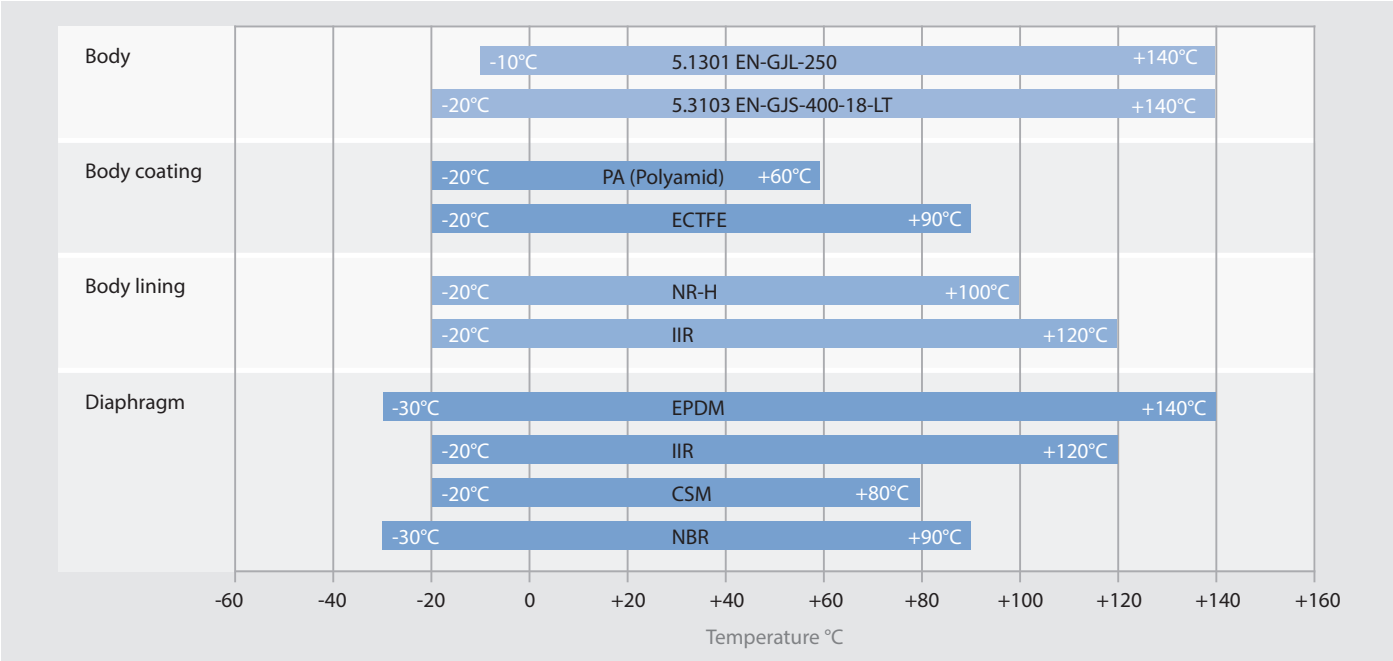
Operating range of materials

SISTO-KB

straight through type

with flanges

PN 10, DN 15 – 200



SISTO-16

face to face length: DIN 3202/F1, ISO 5752-1

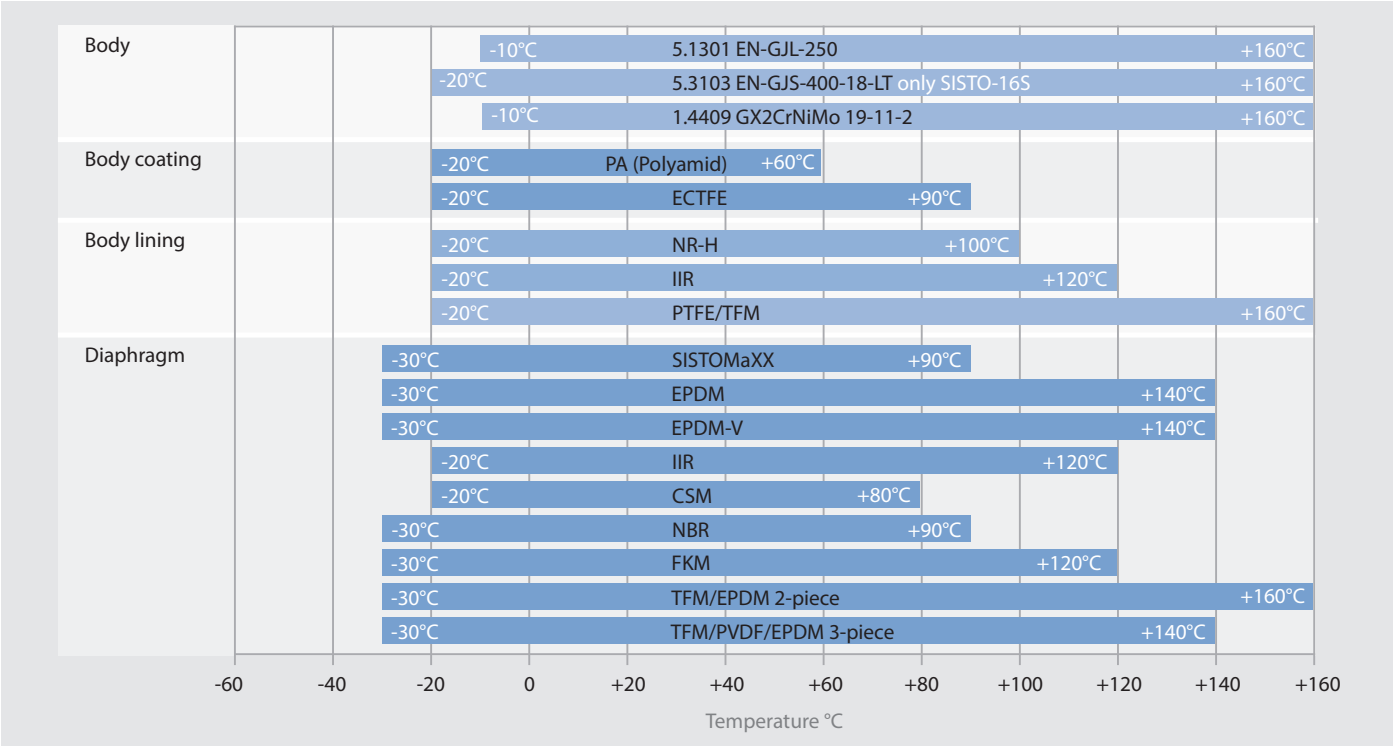
PN 16, DN 15 – 300

SISTO-16S

with flanges

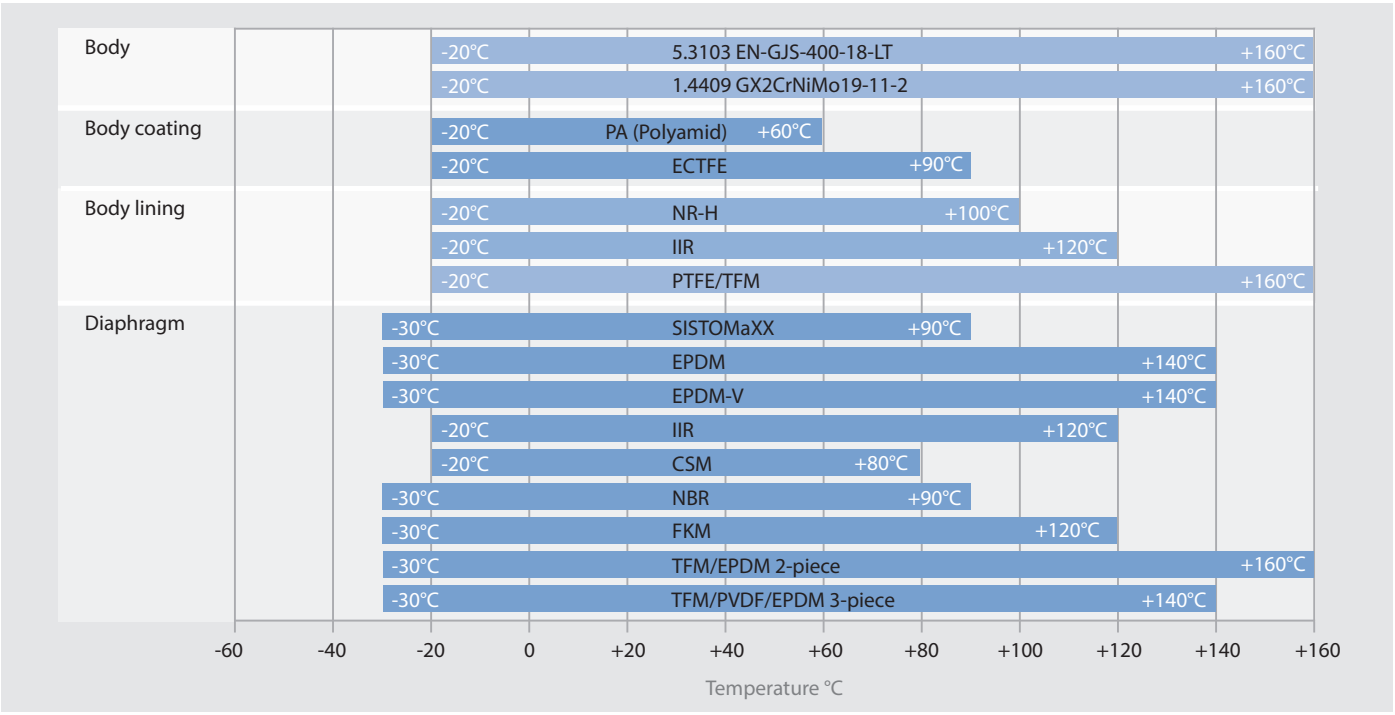
face to face length: BS 5156, ISO 5752-7

PN 16, DN 15 – 200



SISTO-20

PN 16, DN 15 – 300



List of Type Series

Diaphragm valves

SISTO-KB	Maintenance-free diaphragm valve, straight through type, with flanges	PN 10	DN 15 – DN 200
SISTO-16	Maintance-free diaphragm valve, with flanges	PN 16	DN 15 – DN 300
SISTO-16S	Maintenance-free diaphragm valve, with flanges, face to face length EN558-1 R7 (BS 5156)	PN 16	DN 15 – DN 200
SISTO-16RGA*MaXX*	Maintenance-free diaphragm valve with screwed ends, stainless steel	PN 16	DN 15 – DN 80
SISTO-16TWA/ HWA/DLU	Maintenance-free diaphragm valve, with flanges	PN 16	DN 15 – DN 200
SISTO-20	Maintenance-free diaphragm valve, with flanges	PN 16	DN 15 – DN 300

Swing check valves

SISTO-RSK/RSKS	Maintenance-free swing check valve, soft-seated, with flanges; straight through type	PN 16	DN 25 – DN 300

Actuators

SISTO-LAD	Pneumatic diaphragm actuators, industry execution
SISTO-LAP	Pneumatic piston actuators, industry execution
Electric Actuators	Electric linear actuators, electric rotary actuators

Diaphragm valves

Diaphragm Valves

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

SISTO-KB

Main applications

- Mining
- Chemical industry
- Drainage
- Drainage systems
- Descaling units
- Solids transport
- Industrial recirculation systems
- Waste water treatment plants
- Condensate transport
- Paint shops
- Pulp and paper industry
- Refineries
- Flue gas desulphurisation
- Sludge disposal
- Sludge processing
- Process engineering
- 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
- Toxic fluids
- Corrosive fluids
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Organic fluids
- Polymerising/crystallising fluids
- Raw sludge
- Lubricants
- Waste water
- Brine
- Dipping paints
- 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][1)]	≥ -20
Max. permissible temperature [°C][1)]	≤ +140

SISTO-LAD diaphragm actuator

- Max. permissible control medium temperature: 80 °C
- Permissible control pressure: 4 - 6 bar

SISTO-LAP piston actuator

- Max. permissible control medium temperature: 80 °C

Permissible control pressure

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$
[mm]		[bar]
80 - 250	F10	5,5 - 10
250	F14	5,5 - 10
300	F10	5,5 - 7

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

8651.1/23-EN

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$
[mm]		[bar]
300	F14	5,5 - 10
D250[2)]	F14	5,5 - 10
D300[2)]	F14	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[3)]	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
GX5CrNiMo19-11-2	1.4408[4)]	A 351 Gr. CF8M (UNS J92900)	-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

SISTO-LAD diaphragm actuator

- Sliding stem sealed by O-rings
- Mechanical travel stops in the actuator for closed position and open position
- Manual override available as standard for spring-to-close design

Actuator function

- Actuator type LAD-AZ
  - Air-to-open
  - Air-to-close
- Actuator type LAD-OF
  - Spring-to-open
  - Air-to-close
- Actuator type LAD-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

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

2 Double piston
3 ASTM materials similar to the materials indicated
4 DN 50, DN 80, DN 100 only

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 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.

Product information

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

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

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

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

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

Valves without electrical components do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAD (diaphragm actuator)	9211.1
Type series booklet SISTO-LAP (piston actuator)	9210.1

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

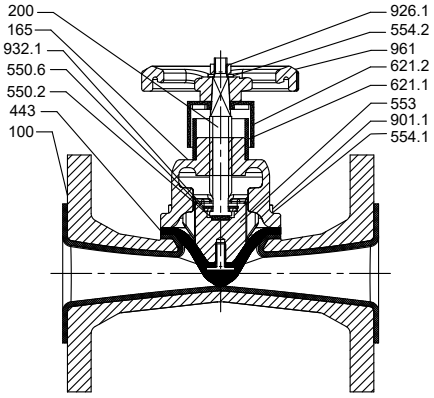
Pressure/temperature ratings

Permissible operating pressure [bar]

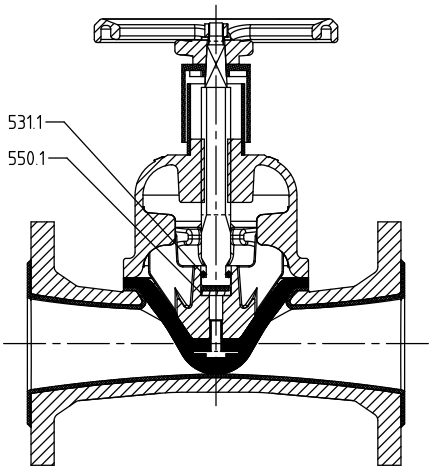
PN	Material	Material number	DN	[°C]			
				-20	-10 to +60	+100	+140
10	EN-GJL-250	5.1301	15-100	-	10	8	6
			125-150	-	6	4,5	3
			200	-	3	2,5	2
	EN-GJS-400-18-LT	5.3103	15-100	10	10	8	6
			125-150	6	6	4,5	3
			200	3	3	2,5	2
	GX5CrNiMo19-11-2	1.4408	50-100	10	10	8	6

Materials

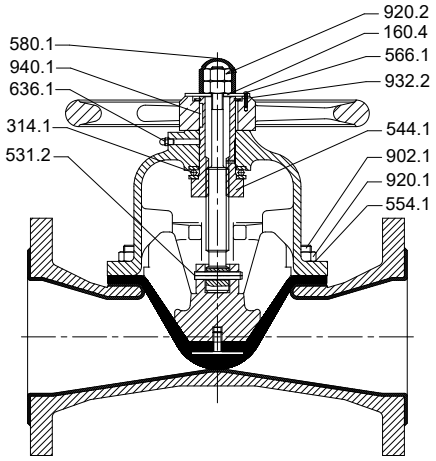
Materials of SISTO-KB manually operated valve



DN 15-40 design



DN 50-100 design



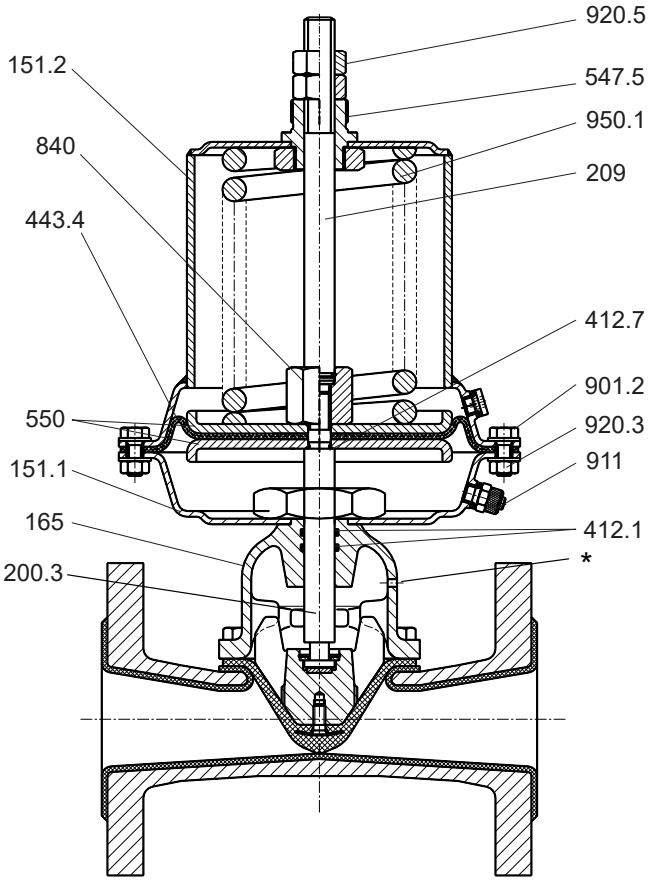
DN 125-200 design

Parts list

Part No.	Description	Material	Material number	Note
100	Body	EN-GJL-250	5.1301	-
160.4	Handwheel cover	EN-GJL-200	5.1300	For DN 125-200
165	Bonnet	EN-GJL-250	5.1301	-
200	Stem	X14CrMoS17	1.4104	-
314.1	Thrust bearing	Steel	-	For DN 125-200
443[5)]	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 25-100
621.2	Position indicator, upper part	ASA Luran	-	For DN 15-100
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

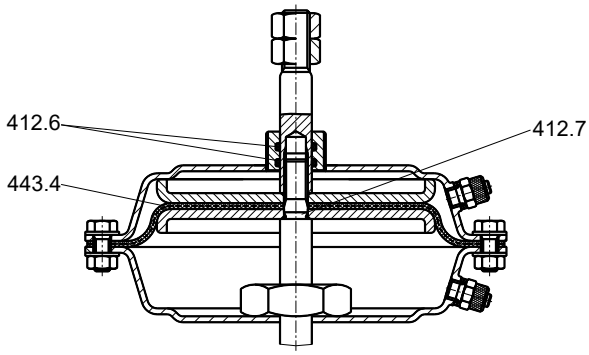
5 Recommended spare parts

Materials of SISTO-LAD diaphragm actuator

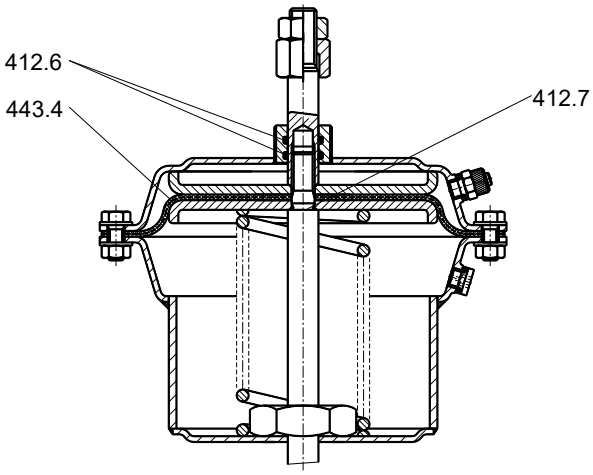


LAD-SF type

* = shown offset by 90°



LAD-AZ type



LAD-OF type

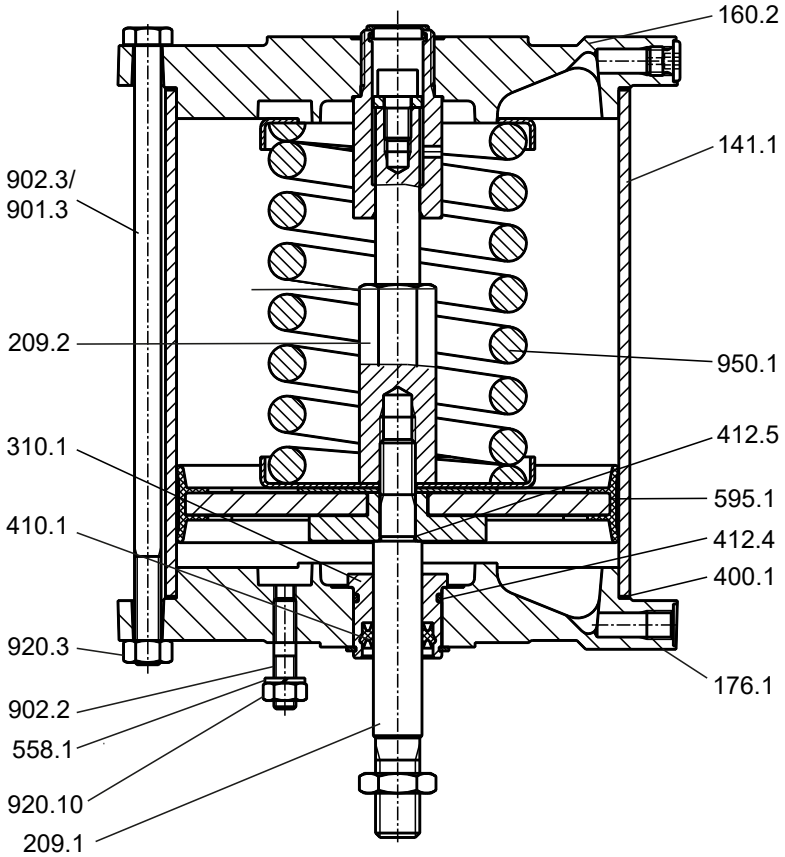
Parts list

Part No.	Description	Material	Material number	Note
151.1	Lower housing section	St 37/RN	-	-
151.2	Upper housing section	St 37/RN	-	-
165	Bonnet	EN-GJS-400-18-LT	5.3103	-
200.3	Stem	X14CrMoS17	1.4104	-
209	Piston rod	X14CrMoS17	1.4104	-
412.1[6)]	O-ring	NBR	-	-
412.6[6) 7)]	O-ring	NBR	-	-
412.7[6) 7)]	O-ring	NBR	-	-
443.4[6)]	Actuator diaphragm	NBR	-	-
547.5	Guide bush	SoMs59	-	-
550[7)]	Diaphragm plate	St 37/galvanised	-	-
840	Coupling	X14CrMoS17	1.4104	-
901.2	Hexagon head bolt	8.8 A2E	-	-
911	Compressed air port	Brass	-	For 8 x 1 PA hose
920.3	Nut	A2	-	-
920.5	Nut	A2	-	-
950.1	Spring	Spring steel	-	-

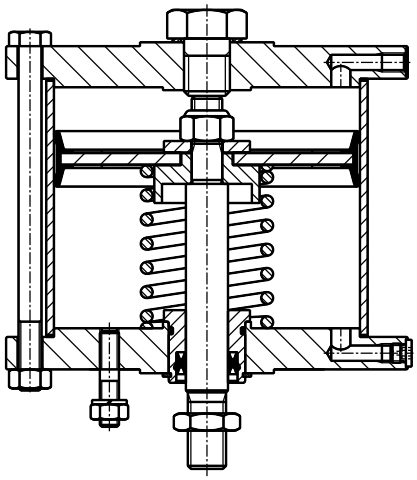
6 Recommended spare parts

7 We recommend having these parts replaced in our factory.

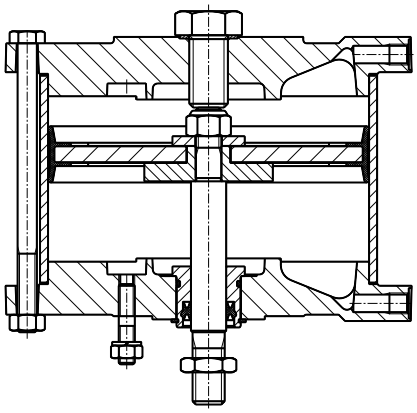
Materials of SISTO-LAP piston actuator



LAP-SF type



LAP-OF type



LAP-AZ type

Parts list

Part No.	Description	Material	Material number	Piston diameter [mm]
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
176.1	Bottom end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 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[8) 9)]	Plain bearing	Plastic – POM	-	80 - 300
400.1[8) 9)]	Gasket	Plastic – AFM 30	-	80 - 300
410.1[8) 9)]	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4[8) 9)]	O-ring	NBR	-	-
412.5[8) 9)]	O-ring	NBR	-	-
558.1	Lock washer	A2	-	-
595.1[8) 9)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
901.3	Hexagon head bolt	8.8 A2E	-	-
902.2	Stud	8.8 A2E	-	-
902.3	Stud	A2-70	-	-

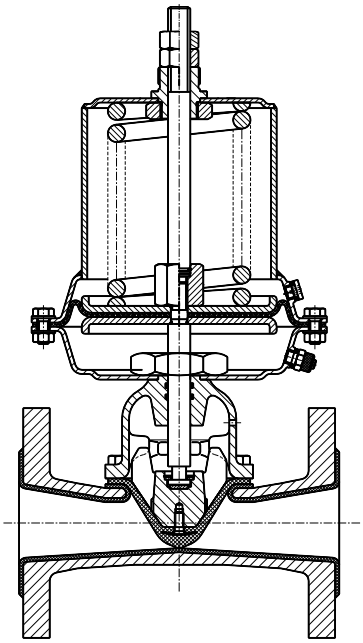
8 Recommended spare parts (= complete set of sealing elements)

9 We recommend having these parts replaced in our factory.

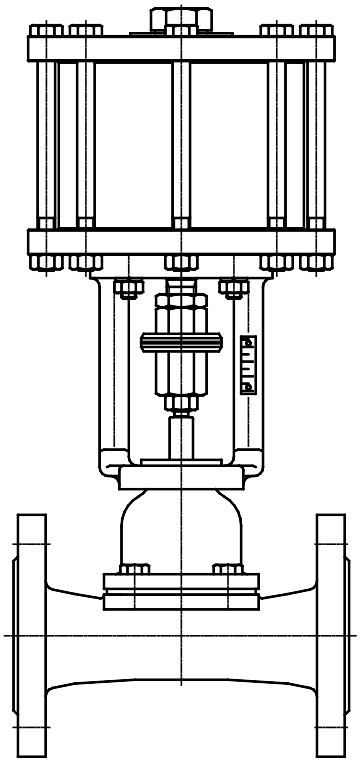
Part No.	Description	Material	Material number	Piston diameter [mm]
920.3	Nut	A2	-	-
920.10	Nut	A2	-	-
950.1	Spring	Spring steel	-	80 - 300

Variants

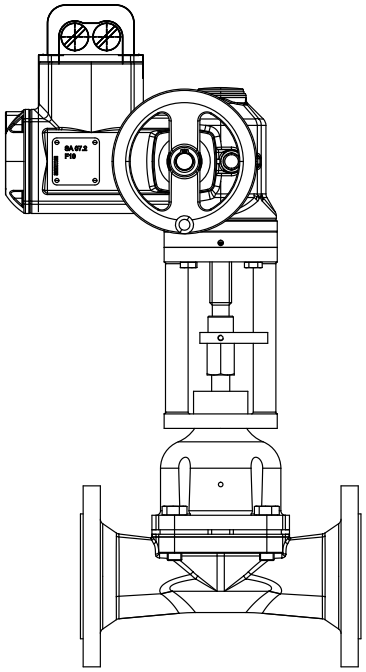
Variant illustrations of SISTO-KB manually operated valve



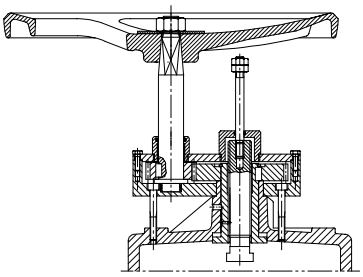
With SISTO-LAD



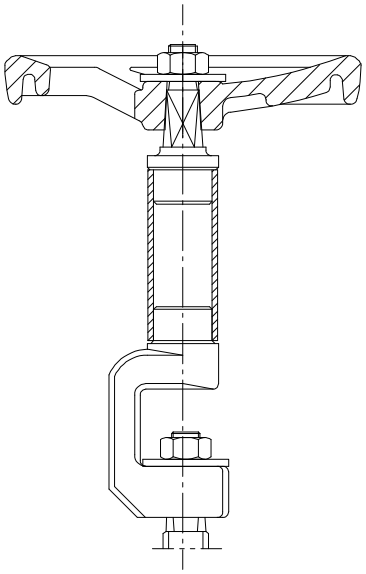
With SISTO-LAP



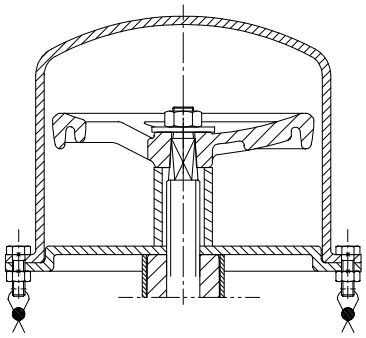
With electric actuator



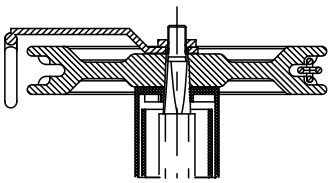
Gearbox



Stem extension

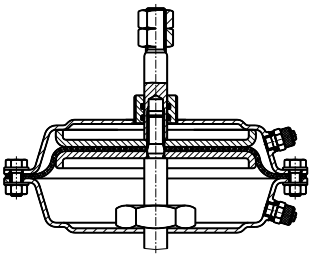


Lead-sealable cap

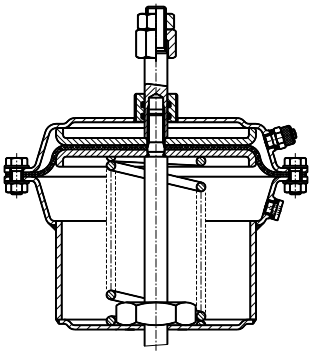


Chain wheel

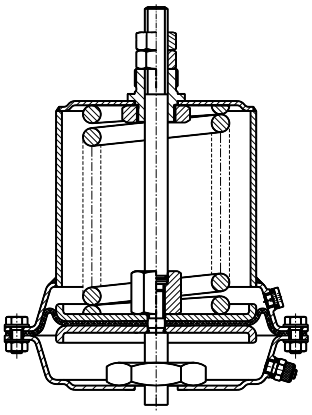
Variant illustrations of SISTO-LAD diaphragm actuator and accessories



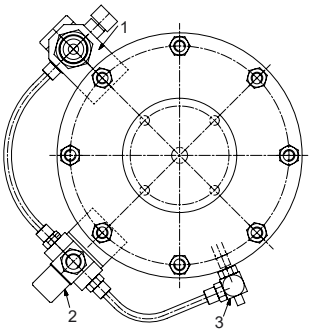
LAD-AZ type



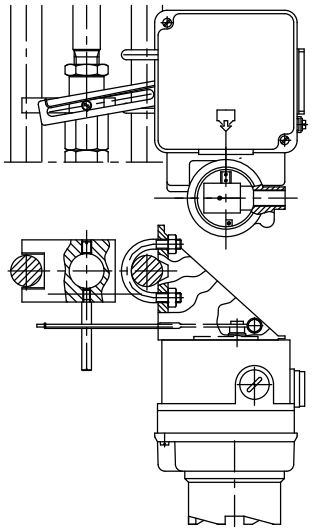
LAD-OF type



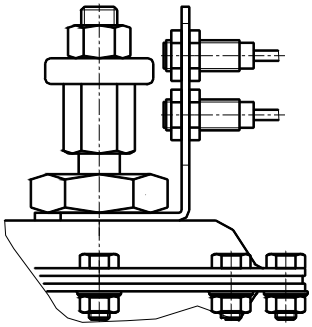
LAD-SF type



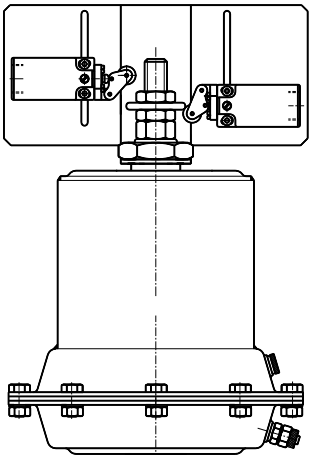
1) Filter/pressure reducer
2) Solenoid valve
3) Throttling valve



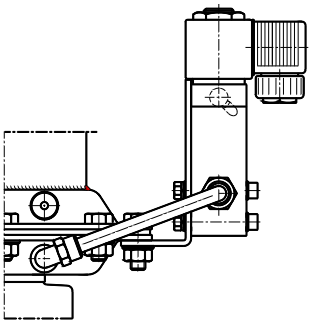
Configuration with positioner



Configuration with proximity sensor

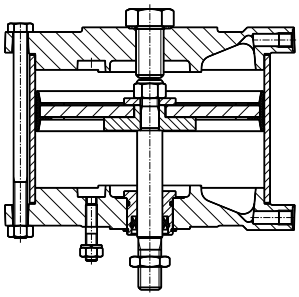


Configuration with mechanical limit switches

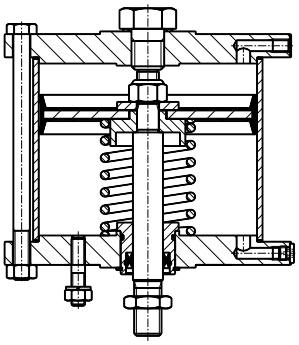


Configuration with solenoid valve

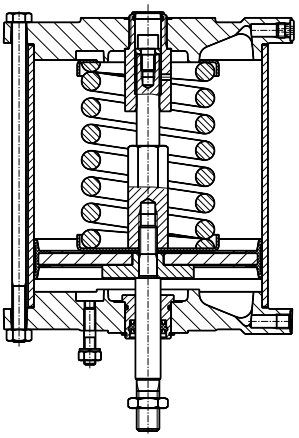
Variant illustrations of SISTO-LAP piston actuator and accessories



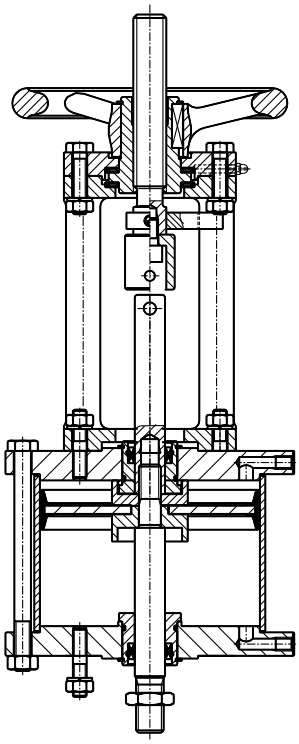
LAP-AZ type



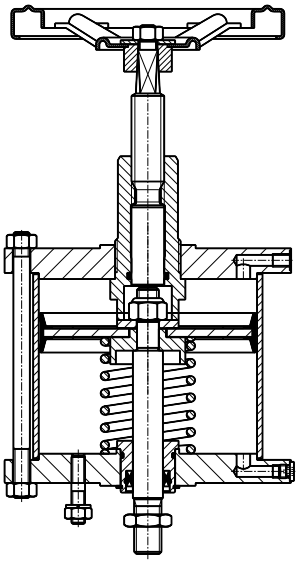
LAP-OF type



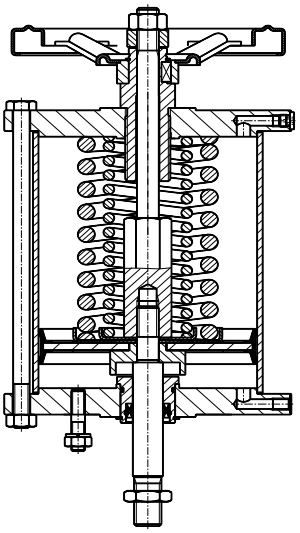
LAP-SF type



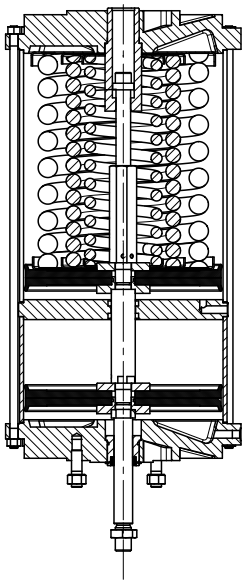
LAP-AZ type
with emergency handwheel



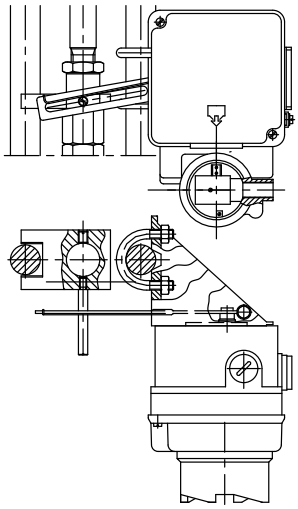
LAP-OF type
with emergency handwheel



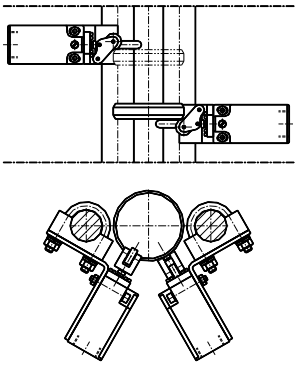
LAP-SF type
with emergency handwheel



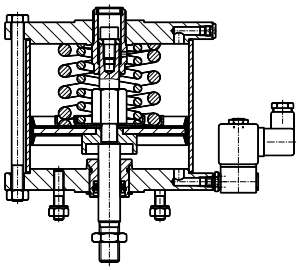
LAP-SF type with double piston



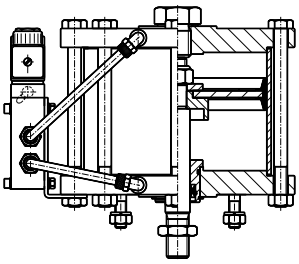
Configuration with positioner



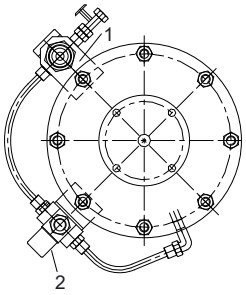
Configuration with limit switches



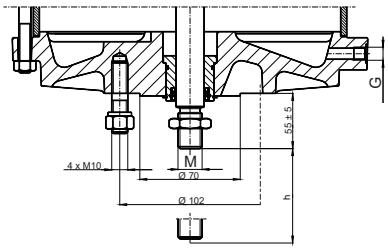
LAP-SF type with 3/2 directional control valve



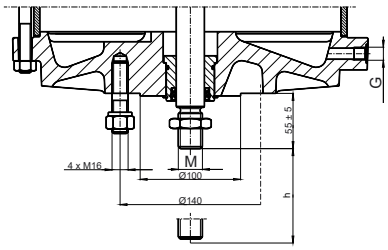
LAP-AZ type with 5/2 directional control valve



1) Filter/pressure reducer
2) Solenoid valve



Flange connection F10



Flange connection F14

Symbols key

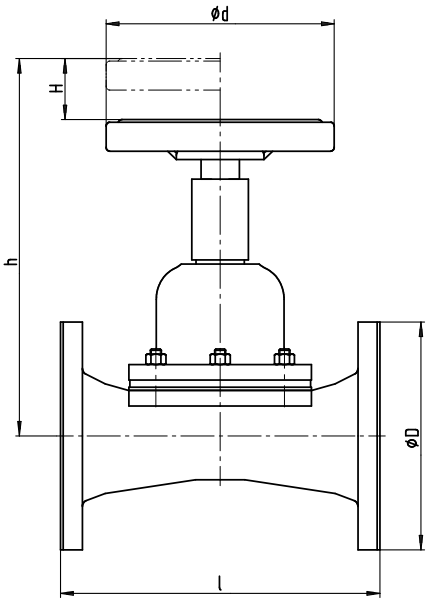
Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

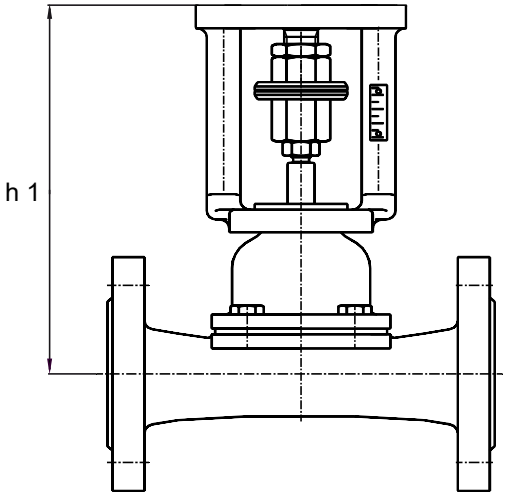
Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

Dimensions and weights of SISTO-KB manually operated valve



Manually operated valve



Diaphragm valve prepared for piston actuator SISTO-LAP and electric actuator

Dimensions and weights

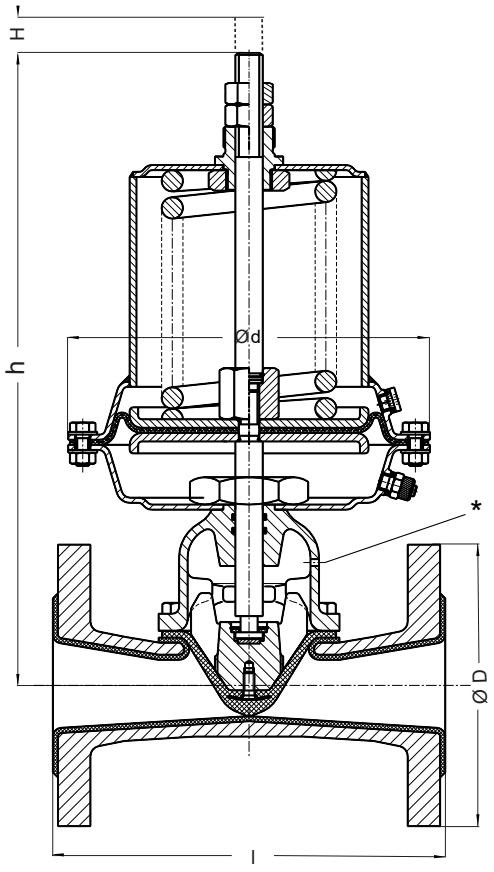
DN	Diaphragm [mm]	l [mm]	Ø D [mm]	H [mm]	Manually operated valve				Prepared for actuator	
					h [mm][10)]	Ø d [mm]	Handwheel turns	[kg]	Centre-to-top height h1 [mm] [10)]	Top flange
15	70 x 46	130	95	9	93	63	3	2,5	216	F10
20	70 x 46	150	105	9	93	63	3	3,1	216	F10
25	86 x 67	160	115	21	155	100	7	4,6	235	F10
32	86 x 67	180	140	21	155	100	7	5,7	235	F10
40	86 x 67	200	150	21	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	280	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 length:	EN 558-1 R1
Flanges:	DIN EN 1092-2
Flange facing:	DIN EN 1092-2, type B

10 Add 5 mm for rubber-lined valves

Dimensions and weights of SISTO-LAD diaphragm actuator



Diaphragm valve with SISTO-LAD

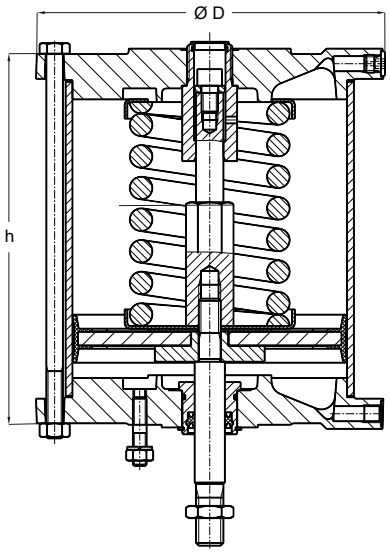
Dimensions and weights

DN	Diaphragm [mm]	l [mm]	Ø D [mm]	H [mm]	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	LAD-SF type		
					Actuator size 100				Actuator size 150				Actuator size 220				100	150	220
					Ø d [mm]	h [mm][11)12)]			Ø d [mm]	h [mm][11)12)]			Ø d [mm]	h [mm][11)12)]			[kg]	[kg]	[kg]
15	70 x 46	130	95	9	160	200	260	260	210	230	300	350	-	-	-	-	9,5	11,5	-
20	70x 46	150	105	9	160	200	260	260	210	230	300	350	-	-	-	-	10,0	12,0	-
25	86 x 67	160	115	21	160	220	280	280	210	250	320	370	307	370	540	540	11,0	13,0	19,0
32	86 x 67	180	140	21	160	220	280	280	210	250	320	370	307	370	540	540	12,5	14,5	20,5
40	86 x 67	200	150	21	160	220	280	280	210	250	320	370	307	370	540	540	15,0	17,0	23,0
50	111 x 86	230	165	33	-	-	-	-	210	260	330	380	307	380	550	550	-	20,5	26,5
65	128 x 108	290	185	45	-	-	-	-	-	-	-	-	307	420	590	590	-	-	34,0
80	169 x 134	310	200	46	-	-	-	-	-	-	-	-	307	445	615	615	-	-	40,0
100	Ø 200	350	220	59	-	-	-	-	-	-	-	-	307	525	695	695	-	-	54,0

* = shown offset by 90°

11 Add 5 mm for rubber-lined valves
12 Add 50 mm for limit switch configuration

Dimensions and weights of SISTO-LAP piston actuator



SISTO-LAP

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

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: spring-to-open/air-to-close (OF)

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: air-to-open/spring-to-close (SF)

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

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]
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 size of SISTO-LAD diaphragm actuator

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

Minimum required control pressure: 4 bar / maximum permissible control pressure: 6 bar

Symbols key

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

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

Actuator size	Stroke [mm]	DN 15-20	DN 25-40	DN 50	DN 65	DN 80	DN 100
LAD-AZ-100	20	4	3	↓	↓	↓	↓
LAD-AZ-150	35	10	10	10	↓	↓	↓
LAD-AZ-220	56	↑	↑	↑	10	7	6

Operating pressure in bar for actuator function spring-to-open/air-to-close (OF)

Actuator size	Stroke [mm]	DN 15-20	DN 25-40	DN 50	DN 65	DN 80	DN 100
LAD-OF-100.014	20	4	2	↓	↓	↓	↓
LAD-OF-150.102	35	10	9	8	↓	↓	↓
LAD-OF-220.001	56	↑	10	10	10	7	5

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

Actuator size	Stroke [mm]	DN 15-20	DN 25-40	DN 50	DN 65	DN 80	DN 100
LAD-SF-100.001.5	20	3	↓	↓	↓	↓	↓
LAD-SF-150.002	35	10	8	5	↓	↓	↓
LAD-SF-220.003.7	56	↑	10	10	7	4	2
LAD-SF-220.004.7S[13)]	56	↑	↑	↑	10	7	4

Other selection options on request

13 Min. 5 bar

Actuator size of SISTO-LAP piston actuator

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

Minimum required control pressure: 5.5 bar/maximum permissible control pressure: 10 bar

Symbols key

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

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

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	4	3	↓	↓	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	10	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 in bar for actuator function spring-to-open/air-to-close (OF)

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	3	↓	↓	↓	↓	↓	↓	↓
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[14)]	80	↑	↑	↑	↑	↑	↑	6	↓
LAP-OF-D250.012-F14	100	↑	↑	↑	↑	↑	↑	↑	6

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

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	↑	7	3	↓	↓	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	10	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[14)]	60/80	↑	↑	↑	↑	10	10	6	↓
LAP-SF-D300.035-F14	100	↑	↑	↑	↑	↑	↑	↑	6

Other selection options on request

14 Max. 7 bar

Diaphragm Valves

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

SISTO-16

Main applications

- Mining
- General irrigation systems
- Chemical industry
- Homogenisation
- Industry/process engineering
- Industrial recirculation systems
- Waste water treatment plants
- Air-conditioning systems
- Condensate transport
- Power stations
- 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
- High-temperature hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Fuels
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Oil
- Organic 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[1)]
Nominal size	DN 15 - 300
Max. permissible pressure [bar]	16[2)]
Min. permissible temperature [°C][3)]	≥ -10
Max. permissible temperature [°C][3)]	≤ +160

1 DN 250 - 300 = PN 10
2 DN 250 - 300 = 10 bar
3 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

SISTO-LAD diaphragm actuator

- Max. permissible control medium temperature: 80 °C
- Permissible control pressure: 4 - 6 bar

SISTO-LAP piston actuator

- Max. permissible control medium temperature: 80 °C

Permissible control pressure

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$
[mm]		[bar]
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

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 +160 °C
GX2CrNiMo19-11-2[6)]	1.4409	A351 Gr. CF3M (UNS J92800)	-10 °C to +160 °C

Model with flanged ends DN 15 - 300
Model with threaded socket ends DN 15 - 80

Design details

Design

- Models with flanged ends or threaded socket ends
- Soft-seated 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
- 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[7)]
- 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[8)]
- Lead-sealable cap (prevents unauthorised actuation)
- Stem extension
- Certification to customer specification

Actuators

SISTO-LAD diaphragm actuator

- Sliding stem sealed by O-rings
- Mechanical travel stops in the actuator for closed position and open position
- Manual override available as standard for spring-to-close design
- Leakage detection hole from MD 65

4 Double piston
5 ASTM materials similar to the materials indicated
6 Body with threaded socket ends
7 From DN 20
8 DN 250 - 300: max. operating pressure 6 bar

Actuator function

- Actuator type LAD-AZ
  - Air-to-open
  - Air-to-close
- Actuator type LAD-OF
  - Spring-to-open
  - Air-to-close
- Actuator type LAD-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

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 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.

Product information

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

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

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

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

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

Valves without electrical components do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAD (diaphragm actuator)	9211.1
Type series booklet SISTO-LAP (piston actuator)	9210.1

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 with flanged ends

DN	MD[9] [mm]	Kvs value [m³/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 unlined valves with threaded socket ends

DN	MD[9] [mm]	Kvs value [m³/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-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[10]	EN-GJS-400-18-LT	5.3103	10,0	10,0	10,0	10,0	9,9	9,8	9,0	8,0
	EN-GJL-250	5.1301	10,0	10,0	10,0	10,0	9,6	9,3	9,0	8,0

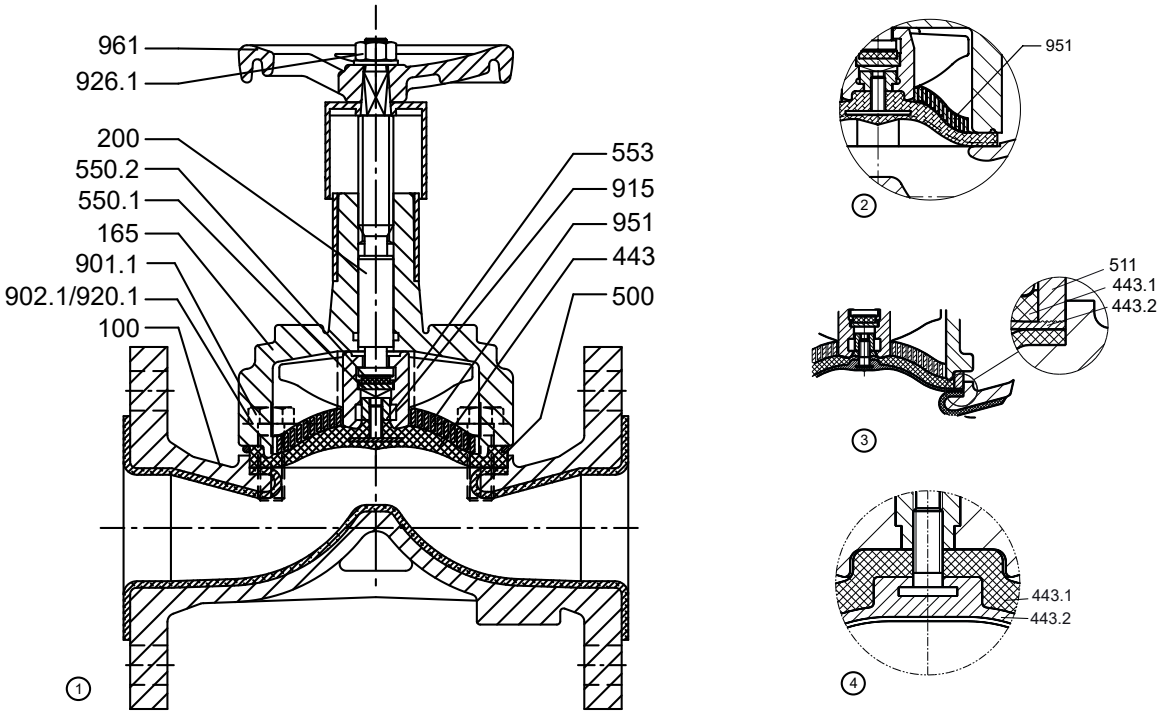
If a combination of different pressure enclosure materials is used, the respectively lowest permissible operating pressure shall apply.

9 MD = diaphragm diameter

10 DN 250 - 300

Materials

Materials of SISTO-16 manually operated valve with flanged ends



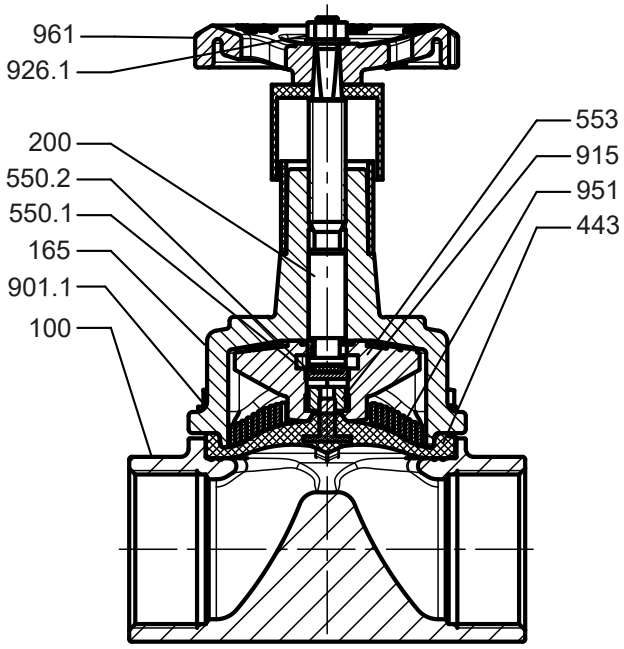
1	SISTO-16 manually operated valve with flanged ends	2	SISTO-16 manually operated valve with flanged ends, DN 250 - 300
3	Variant with 2-piece diaphragm, DN 15 - 200	4	Variant with 2-piece diaphragm, DN 250 - 300

Parts list

Part No.	Description	MD	Material	Material number	Note
100	Body	40	EN-GJS-400-18-LT	5.3103	NRH = 1.0619
		65 - 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[11)]	Diaphragm	40 - 415	EPDM	-	Standard
443.1[11)]	Backing diaphragm	40 - 415	EPDM	-	-
443.2[11)]	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	-
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	-	-
		65 - 415	EN-GJL-200	5.1300	-

11 Recommended spare parts

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



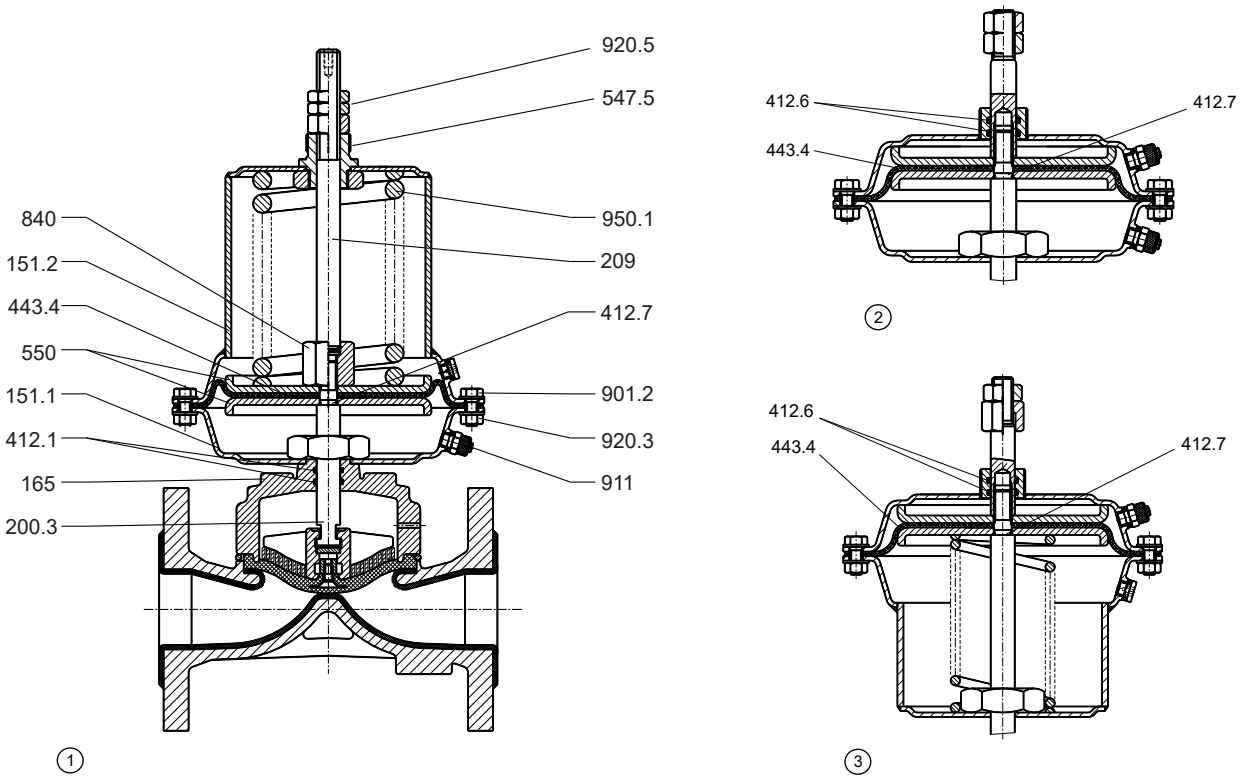
SISTO-16 manually operated valve with threaded socket ends, DN 15 - 80

Parts list

Part No.	Description	MD	Material	Material number	Note
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[12)]	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	-
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	-

12 Recommended spare parts

Materials of SISTO-LAD diaphragm actuator



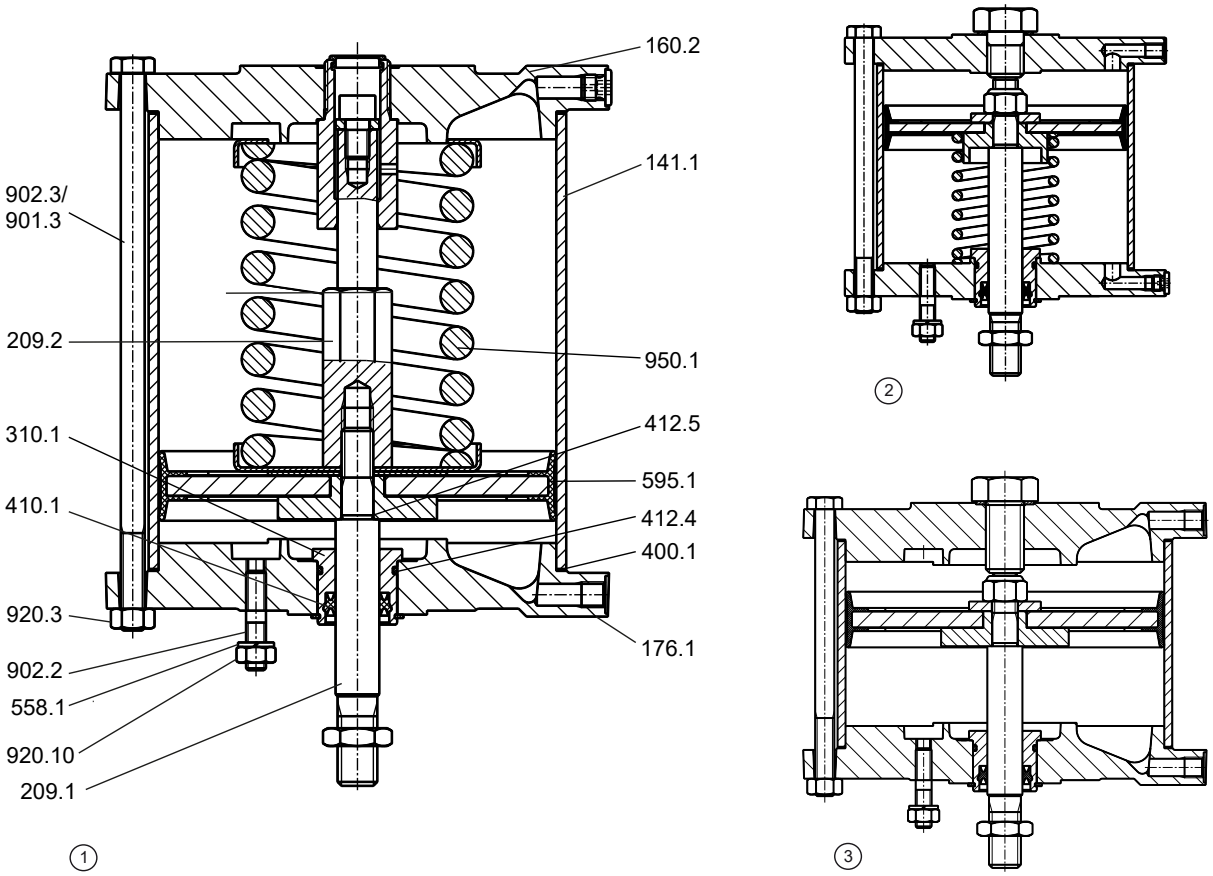
1	LAD-SF type	2	LAD-AZ type	3	LAD-OF type

Parts list

Part No.	Description	Material	Material number	Note
151.1	Lower housing section	Steel / PA-coated	-	-
151.2	Upper housing section	Steel / PA-coated	-	-
165	Bonnet	EN-GJS-400-18-LT	5.3103	-
200.3	Stem	X14CrMoS17	1.4104	-
209	Piston rod	X14CrMoS17	1.4104	-
412.1[13)]	O-ring	NBR	-	-
412.6[13) 14)]	O-ring	NBR	-	-
412.7[13) 14)]	O-ring	NBR	-	-
443.4[13)]	Actuator diaphragm	NBR	-	-
547.5	Guide bush	SoMs59	-	-
550[14)]	Diaphragm plate	Galvanised steel	-	-
840	Coupling	X14CrMoS17	1.4104	-
901.2	Hexagon head bolt	8.8 A2E	-	-
911	Compressed air port	Brass	-	For 8 x 1 polyamide (PA) hose
920.3	Nut	A2	-	-
920.5	Nut	A2	-	-
950.1	Spring	Spring steel	-	-

13 Recommended spare parts
14 We recommend having these parts replaced in our factory.

Materials of SISTO-LAP piston actuator



1	LAP-SF type	2	LAP-OF type	3	LAP-AZ type

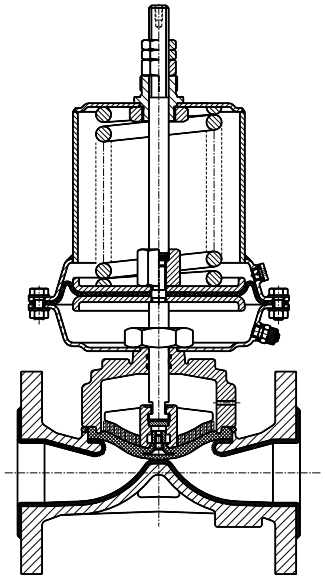
Parts list

Part No.	Description	Material	Material number	Piston diameter [mm]
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
176.1	Bottom end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 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[15) 16)]	Plain bearing	Plastic – POM	-	80 - 300
400.1[15) 16)]	Gasket	Plastic – AFM 30	-	80 - 300
410.1[15) 16)]	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4[15) 16)]	O-ring	NBR	-	80 - 300
412.5[15) 16)]	O-ring	NBR	-	80 - 300
558.1	Lock washer	A2	-	80 - 300
595.1[15) 16)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
901.3	Hexagon head bolt	8.8 galvanised	-	80 - 300
902.2	Stud	8.8 galvanised	-	80 - 300
902.3	Stud	A2-70	-	80 - 300
920.3	Nut	A2	-	80 - 300
920.10	Nut	A2	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

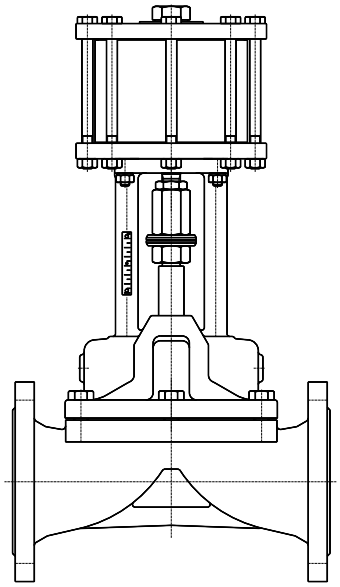
15 Recommended spare parts (= complete set of sealing elements)
16 We recommend having these parts replaced in our factory.

Variants

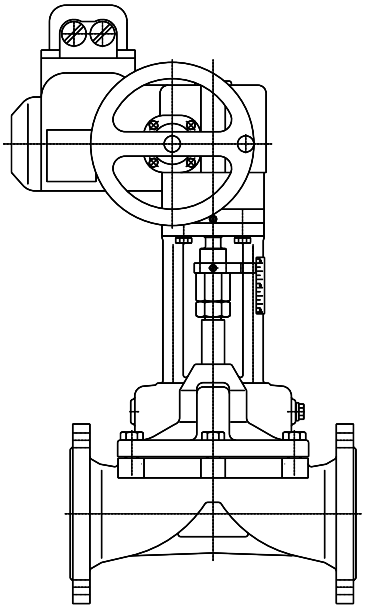
Illustrations of SISTO-16 manually operated valve variants



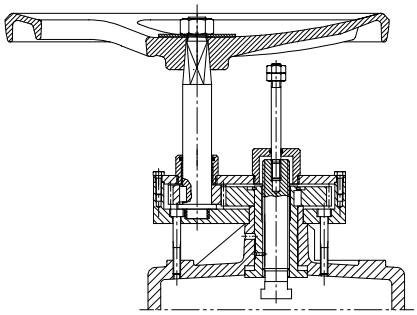
With SISTO-LAD



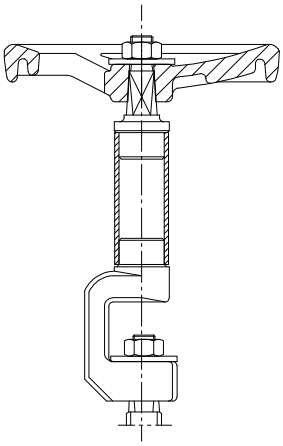
With SISTO-LAP



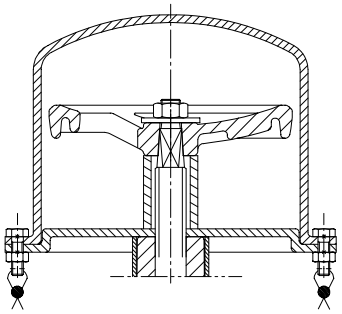
With electric actuator



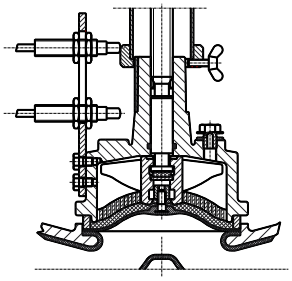
Gearbox



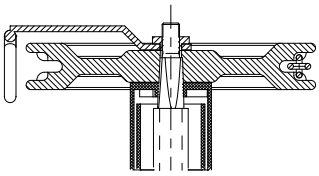
Stem extension



Lead-sealable cap

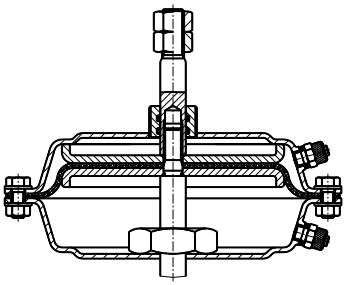


Limit switches, leakage detection hole, locking device

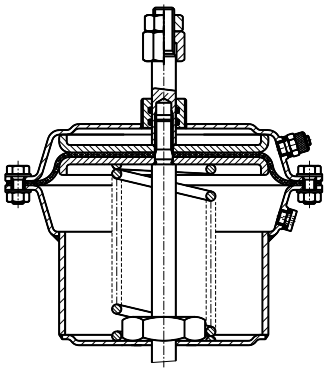


Chain wheel

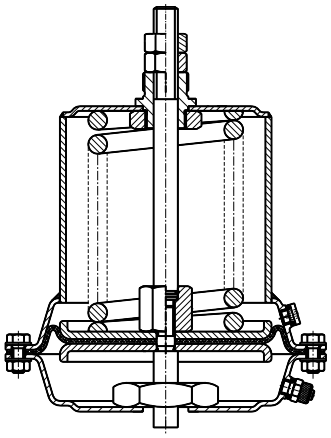
Variant illustrations of SISTO-LAD diaphragm actuator and accessories



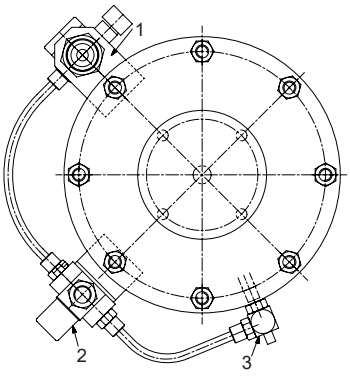
LAD-AZ type



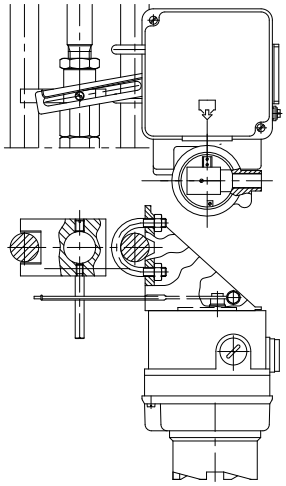
LAD-OF type



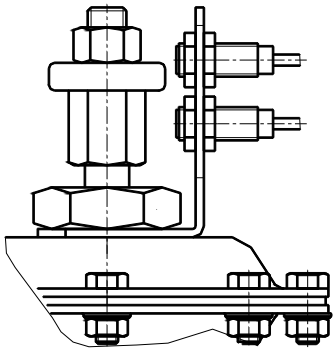
LAD-SF type



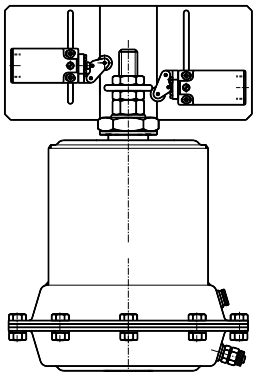
1) Filter/pressure reducer
2) Solenoid valve
3) Throttling valve



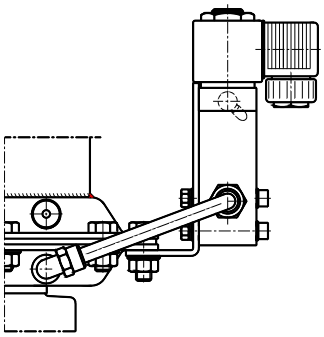
Configuration with positioner



Configuration with proximity sensor

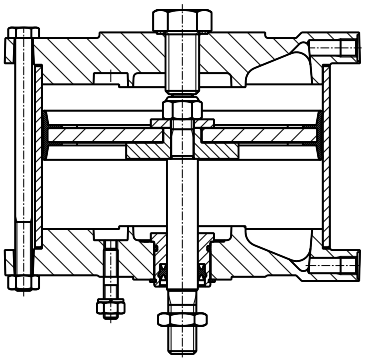


Configuration with mechanical limit switches

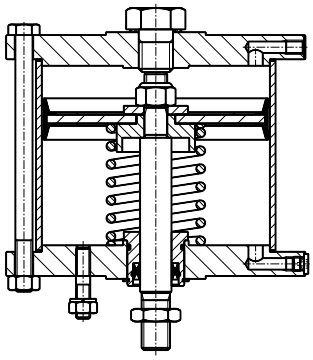


Configuration with solenoid valve

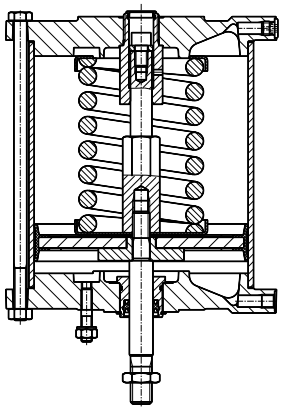
Variant illustrations of SISTO-LAP piston actuator and accessories



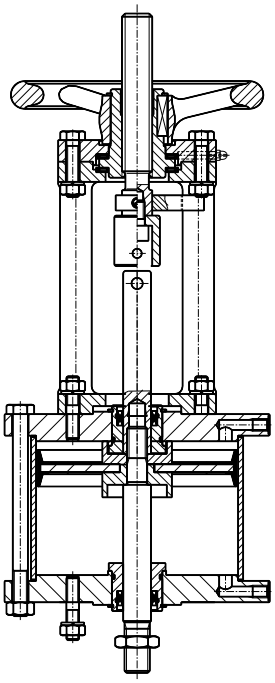
LAP-AZ type



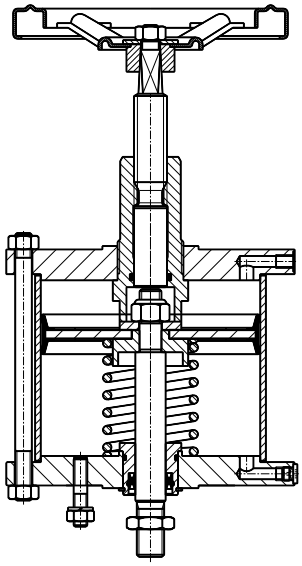
LAP-OF type



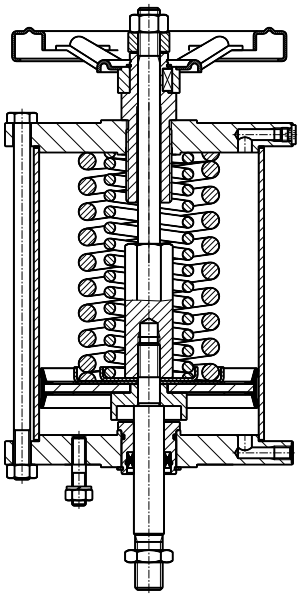
LAP-SF type



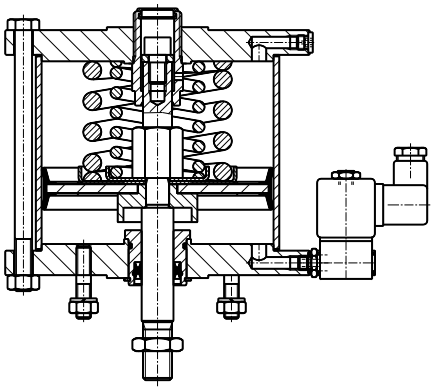
LAP-AZ type with emergency handwheel



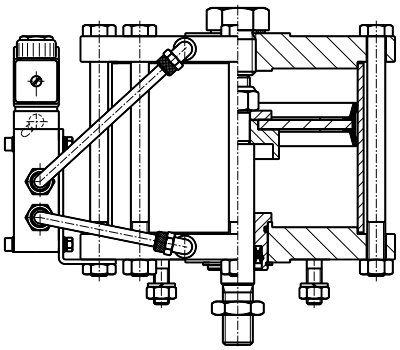
LAP-OF type with emergency handwheel



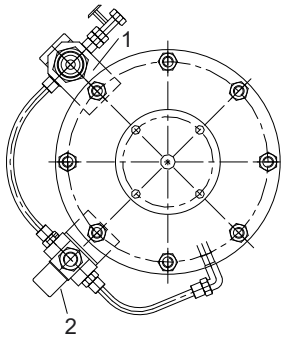
LAP-SF type with emergency handwheel



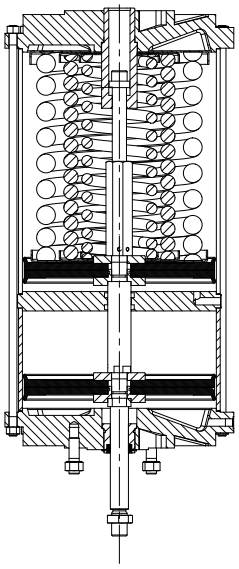
LAP-SF type with 3/2 directional control valve



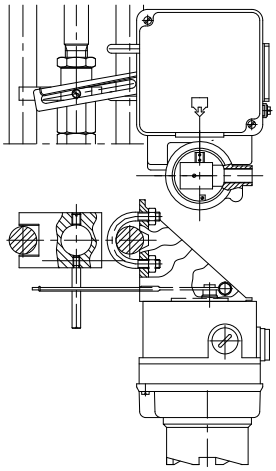
LAP-AZ type with 5/2 directional control valve



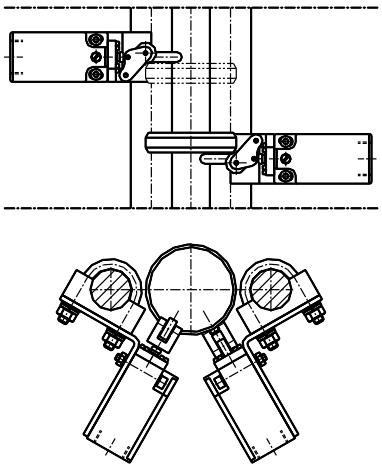
1) Filter/pressure reducer
2) Solenoid valve



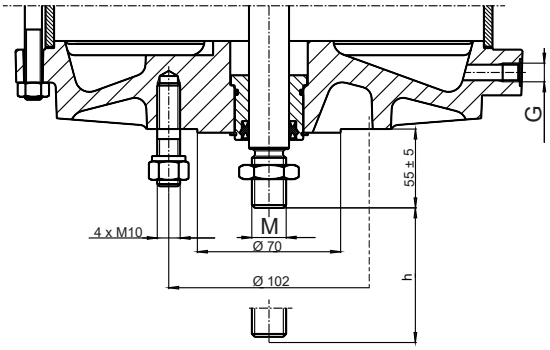
LAP-SF type with double piston



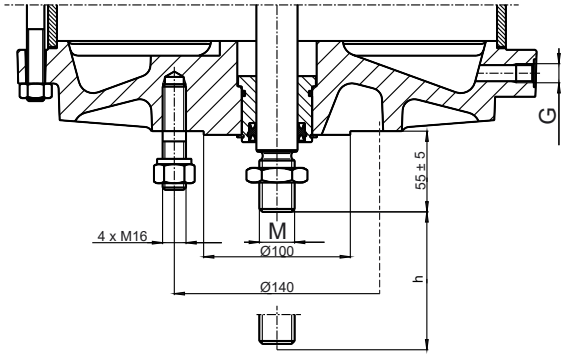
Configuration with positioner



Configuration with limit switches



Flange connection F10



Flange connection F14

Symbols key

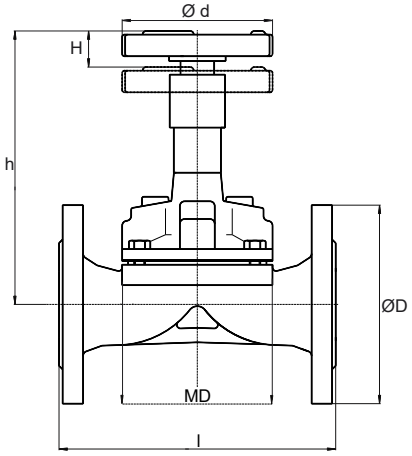
Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

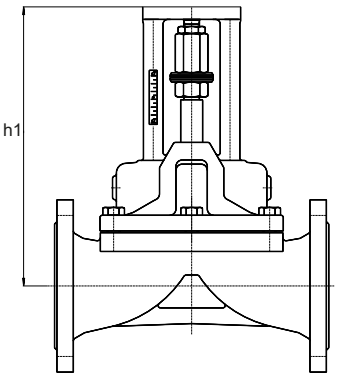
Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

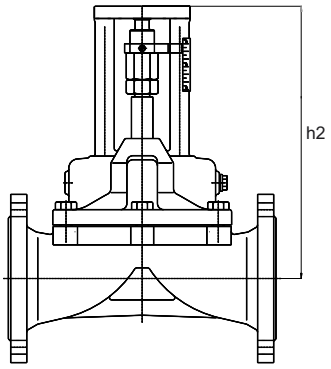
Dimensions and weights of SISTO-16 manually operated valve with flanged ends



SISTO-16 manually operated valve with flanged ends, DN 15 - 300



Prepared for SISTO-LAP (from MD 65)



Prepared for electric actuator (from MD 65)

Dimensions and weights

DN	MD[17] [mm]	l [mm]	Ø D [mm]	H [mm]	Manually operated valve				Prepared for actuator		
					h[18] [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height SISTO-LAP h1 [mm][18]	Centre-to-top height of electric actuator h2[18]	
										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	3,5	220	220	-
25	65	160	115	13	150	100	4	4,0	220	220	-
32	92	180	140	22	192	100	7	7,0	245	245	-
40	92	200	150	22	192	100	7	7,5	245	245	-
50	115	230	165	30	231	125	8	11,0	265	285	-
65	168	290	185	45	322	200 (250)[19]	9	20,5	350	370	-
80	168	310	200	45	322	200 (250)[19]	9	23,0	350	370	-
100	202	350	220	60	388	250 (315)[19]	12	36,5	390	410	-
125	202	400	250	60	388	250 (315)[19]	12	44,0	390	410	-
150	280	480	285	80	512	400 (500)[19]	13	80,0	500	520	540
200[20]	280	600	340	80	512	400 (500)[19]	13	95,0	500	520	540
250[21]	415	730	400	115	645	400	20	190,0	600	-	640
300[21]	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

17 MD = diaphragm diameter

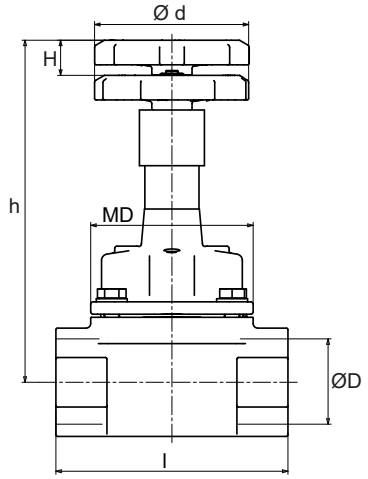
18 Add 5 mm to centre-to-top height for rubber-lined valves

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

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

21 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



SISTO-16 manually operated valve with threaded socket ends
DN 15 - 80

Dimensions and weights

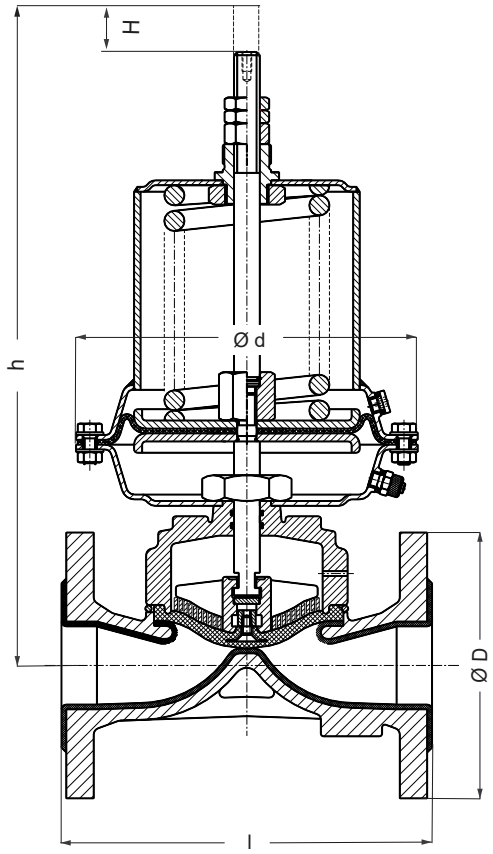
DN	MD[22] [mm]	Ø D [inch]	l [mm]	h [mm]	Ø d [mm]	H [mm]	[kg]
15	40	½	85	93	63	7	0,5
20	40	¾	95	96	63	7	0,6
25	65	1	105	151	100	13	2,5
32	65	1¼	120	154	100	13	2,5
40	65	1½	130	157	100	13	3,0
50	92	2	150	201	100	22	5,0
65	115	2½	185	248	125	30	8,0
80	168	3	220	329	200	45	16,5

Mating dimensions as per standard

Face-to-face lengths: DIN EN 16722

22 MD = diaphragm diameter

Dimensions and weights of SISTO-LAD diaphragm actuator



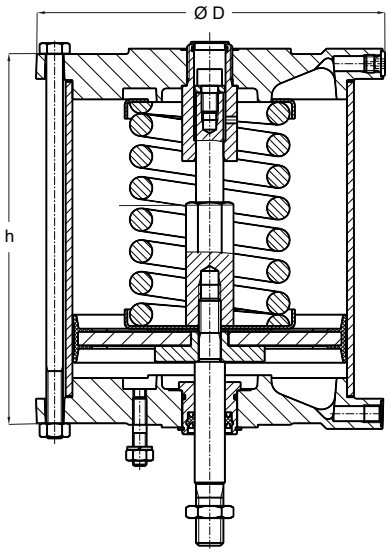
Diaphragm valve with SISTO-LAD

Dimensions and weights (for material 5.3103/1.0619)

DN	MD[23] [mm]	l [mm]	Ø D [mm]	H [mm]	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	LAD-SF type		
					Actuator size 100				Actuator size 150				Actuator size 220				100	150	220
					Ø d [mm]	h[24)25)] [mm]			Ø d [mm]	h[24)25)] [mm]			Ø d [mm]	h[24)25)] [mm]			[kg]	[kg]	[kg]
15	40	130	95	8	160	165	225	225	210	-	-	-	-	-	-	-	9,5	-	-
20	65	150	105	13	160	165	225	225	210	205	275	325	-	-	-	-	10,0	12,0	-
25	65	160	115	13	160	165	225	225	210	205	275	325	-	-	-	-	11,0	13,0	-
32	92	180	140	22	160	210	270	270	210	210	280	330	307	350	520	520	12,5	14,5	-
40	92	200	150	22	160	210	270	270	210	210	280	330	307	350	520	520	15,0	17,0	-
50	115	230	165	30	-	-	-	-	210	210	280	330	307	370	540	540	-	20,5	26,5
65	168	290	185	45	-	-	-	-	-	-	-	-	307	430	600	600	-	-	34,0
80	168	310	200	45	-	-	-	-	-	-	-	-	307	430	600	600	-	-	40,0
100	202	350	220	60	-	-	-	-	-	-	-	-	307	530	700	700	-	-	54,0
125	202	400	250	60	-	-	-	-	-	-	-	-	307	530	700	700	-	-	68,0

23 MD = diaphragm diameter
24 Add 5 mm for rubber-lined valves
25 Add 50 mm for limit switch configuration

Dimensions and weights of SISTO-LAP piston actuator



SISTO-LAP

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

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: spring-to-open/air-to-close (OF)

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

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]
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: air-to-open/spring-to-close (SF)

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 size of SISTO-LAD diaphragm actuator

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

Minimum required control pressure: 4 bar / maximum permissible control pressure: 6 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-AZ-100	20	16	16	9	↓	↓	↓
LAD-AZ-150	35	↑	↑	16	11	↓	↓
LAD-AZ-220	56	↑	↑	↑	16	13	7

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-OF-100.014	20	16	14	7	↓	↓	↓
LAD-OF-150.102	35	↑	16	16	9	↓	↓
LAD-OF-220.001	56	↑	↑	↑	16	10	5

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-SF-100.001.5	20	16	9	4	↓	↓	↓
LAD-SF-150.002	35	↑	16	13	7	↓	↓
LAD-SF-220.003.7	56	↑	↑	↑	16	8	3
LAD-SF-220.004.7S[26)]	56	↑	↑	↑	↑	10	4

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

Minimum required control pressure: 4 bar / maximum permissible control pressure: 6 bar

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-AZ-100	20	16	12	↓	↓	↓	↓
LAD-AZ-150	35	↑	16	16	6	↓	↓
LAD-AZ-220	56	↑	↑	↑	15	7	↓

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-OF-100.014	20	16	10	↓	↓	↓	↓
LAD-OF-150.102	35	↑	16	14	5	↓	↓
LAD-OF-220.001	56	↑	↑	16	13	3	↓

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-SF-100.001.5	20	16	4	↓	↓	↓	↓
LAD-SF-150.002	35	↑	16	9	3	↓	↓
LAD-SF-220.003.7	56	↑	↑	16	8	↓	↓
LAD-SF-220.004.7S[26)]	56	↑	↑	↑	16	5	2

Other selection options on request

26 Min. 5 bar

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 control pressure: 10 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	12	7	3	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	10	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	9	5	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	15	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	8	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	12	6
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	9
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	12
LAP-AZ-D300-F14[27)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	8	4	2	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	16	8	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	16	8	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	14	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	6	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	9	4
LAP-OF-300.002-F10[27)]	60	↑	↑	↑	↑	15	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	7
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	10
LAP-OF-D300.012-F14[27)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	8	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	↑	5	2	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	13	6	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	10	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	14	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	4	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	7	3
LAP-SF-300.034-F10	60	↑	↑	↑	16	11	↓
LAP-SF-300.034-F14[27)]	80	↑	↑	↑	↑	↓	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	8
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	11

Other selection options on request

27 Max. 7 bar

Actuator size of SISTO-LAP piston actuator

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

Minimum required control pressure: 5.5 bar / maximum permissible control pressure: 10 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	10	↓	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	5	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	10	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	3	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	16	9	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	3	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	10	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14[28)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	5	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	8	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	6	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	12	3	↓
LAP-OF-300.002-F10[28)]	60	↑	↑	↑	16	11	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	8
LAP-OF-D300.012-F14[28)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	4	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	8	3	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	5	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	7	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	9	3	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	16	8	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	5	↓
LAP-SF-300.034-F10	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10[28)]	60	↑	↑	↑	16	12	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request

28 Max. 7 bar

Diaphragm Valves

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

SISTO-16S

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
- Paints and varnishes
- River water, lake water and groundwater
- Gas
- Fluids posing a health hazard
- Toxic fluids
- High-temperature 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][1)]	≥ -20
Max. permissible temperature [°C][1)]	≤ +160

SISTO-LAD diaphragm actuator

- Max. permissible control medium temperature: 80 °C
- Permissible control pressure: 4 - 6 bar

SISTO-LAP piston actuator

- Max. permissible control medium temperature: 80 °C

Permissible control pressure

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$
[mm]		[bar]
80 - 250	F10	5,5 - 10
250	F14	5,5 - 10
300	F10	5,5 - 7
300	F14	5,5 - 10
D250[2)]	F14	5,5 - 10
D300[2)]	F14	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.

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

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 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), temperature limit: +90 °C
- Body coated with PA (Rilsan), 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[3)]
- 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

3 From DN 20

Variants

Overview of SISTO-16S variants

DN	Body material	Bonnet material	Lining				Coating	
			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

SISTO-LAD diaphragm actuator

- Sliding stem sealed by O-rings
- Mechanical travel stops in the actuator for closed position and open position
- Manual override available as standard for spring-to-close design

Actuator function

- Actuator type LAD-AZ
  - Air-to-open
  - Air-to-close
- Actuator type LAD-OF
  - Spring-to-open
  - Air-to-close
- Actuator type LAD-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

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 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.

Product information

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

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

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

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

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

Valves without electrical components do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAD (diaphragm actuator)	9211.1
Type series booklet SISTO-LAP (piston actuator)	9210.1

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

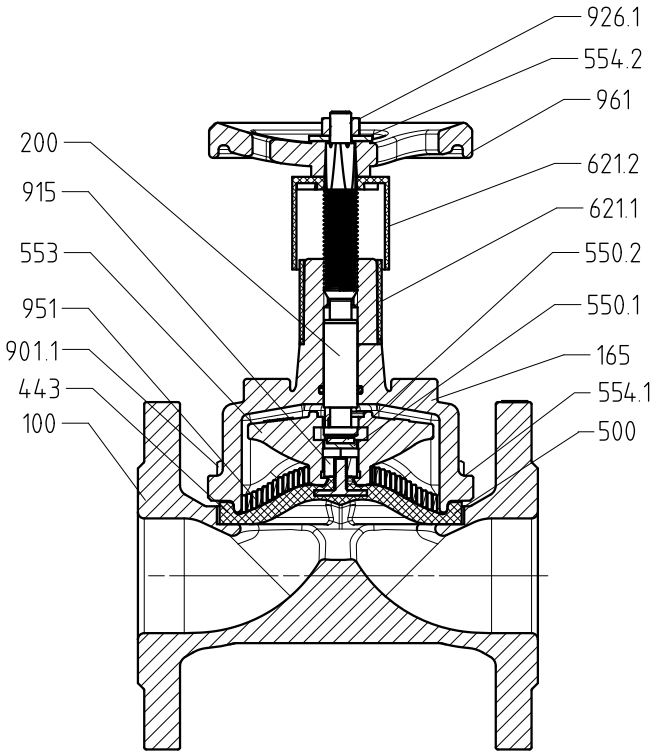
Pressure/temperature ratings

Permissible operating pressure [bar]

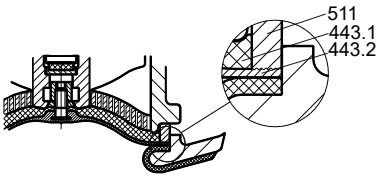
PN	Material		[°C]	
	Designation	Number	-20 to +140	+160
16	EN-GJS-400-18-LT	5.3103	16	12
	GP240GH	1.0619		

Materials

Materials of SISTO-16S manually operated valve



SISTO-16S manually operated valve



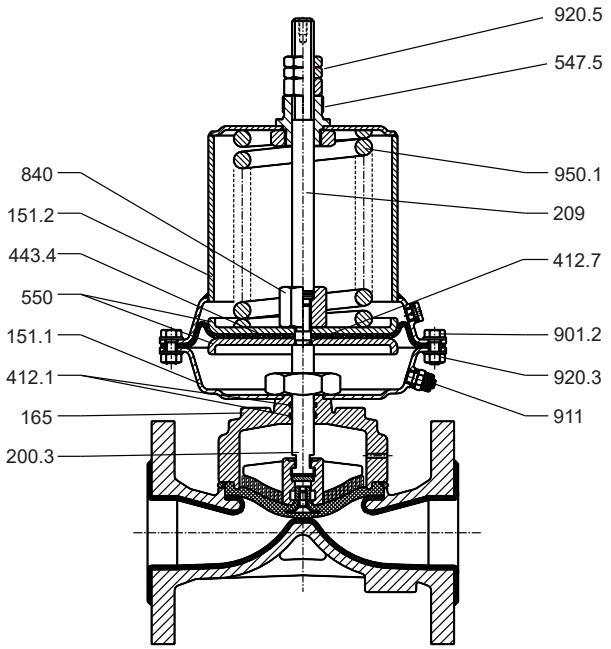
Variant with 2-piece diaphragm

Parts list

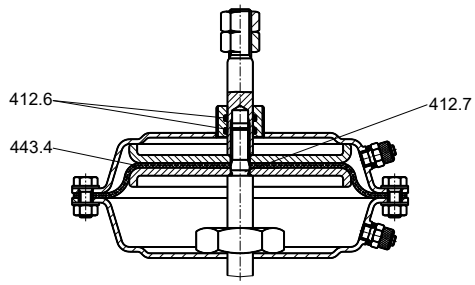
Part No.	Description	Material	Material number	Note
100	Body	EN-GJS-400-18-LT	5.3103	DN 15 = 1.0619 with PFA lining
165	Bonnet	EN-GJS-400-18-LT	5.3103	DN 15 = 1.0619
200	Stem	X14CrMoS17	1.4104	-
443[4)]	Diaphragm	EPDM	-	Standard
443.1[4)]	Backing diaphragm	EPDM	-	-
443.2[4)]	Diaphragm	TFM	-	-
500	Ring	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	-	PTFE/TFM variant: material 8.8
915	Floating nut	11SMnPb30	1.0718	-
926.1	Prevailing torque nut	A2-70	-	-
951	Support spiral	St 2K BK	-	From diaphragm diameter 65
961	Handwheel	EN-GJL-200	5.1300	DN 15 = PC

4 Recommended spare parts

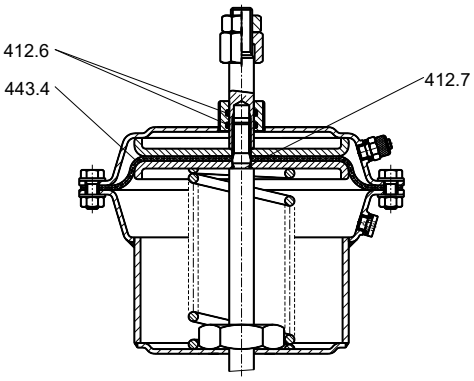
Materials of SISTO-LAD diaphragm actuator



LAD-SF type



LAD-AZ type



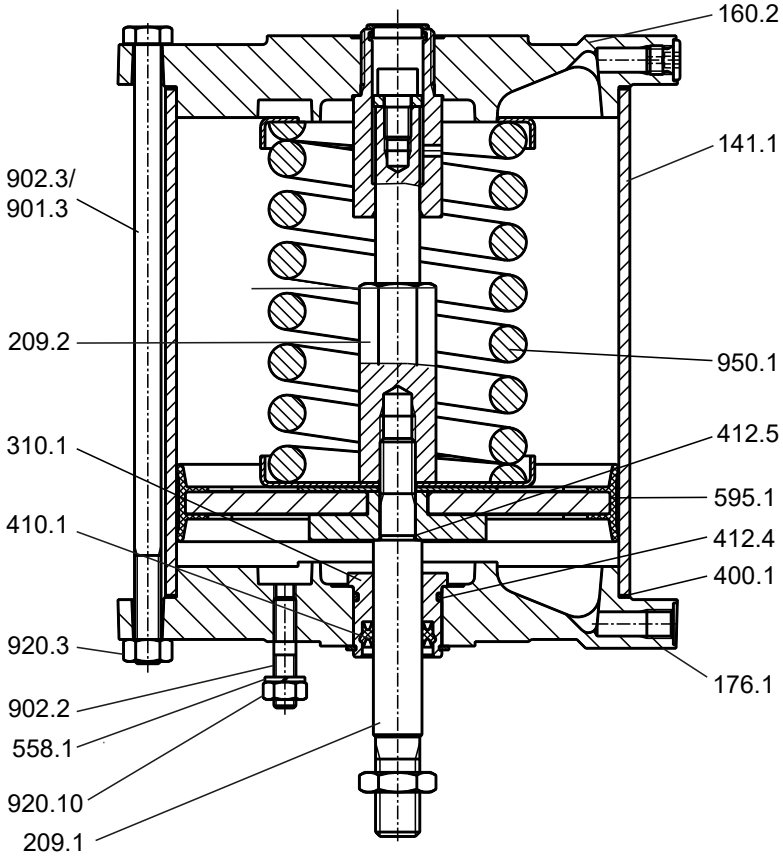
LAD-OF type

Parts list

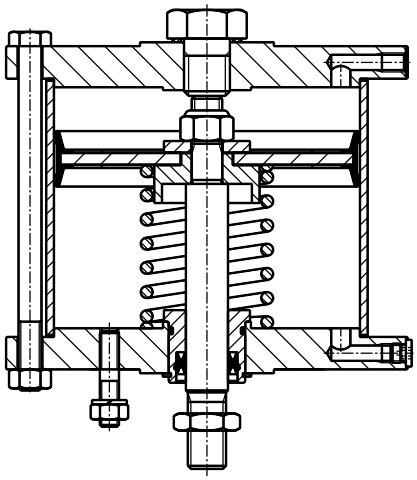
Part No.	Description	Material	Material number	Note
151.1	Lower housing section	St 37/RN	-	-
151.2	Upper housing section	St 37/RN	-	-
165	Bonnet	EN-GJS-400-18-LT	5.3103	-
200.3	Stem	X14CrMoS17	1.4104	-
209	Piston rod	X14CrMoS17	1.4104	-
412.1[5)]	O-ring	NBR	-	-
412.6[5) 6)]	O-ring	NBR	-	-
412.7[5) 6)]	O-ring	NBR	-	-
443.4[5)]	Actuator diaphragm	NBR	-	-
547.5	Guide bush	SoMs59	-	-
550[6)]	Diaphragm plate	St 37/galvanised	-	-
840	Coupling	X14CrMoS17	1.4104	-
901.2	Hexagon head bolt	8.8 A2E	-	-
911	Compressed air port	Brass	-	For 8 x 1 polyamide (PA) hose
920.3	Nut	A2	-	-
920.5	Nut	A2	-	-
950.1	Spring	Spring steel	-	-

5 Recommended spare parts
6 We recommend having these parts replaced in our factory.

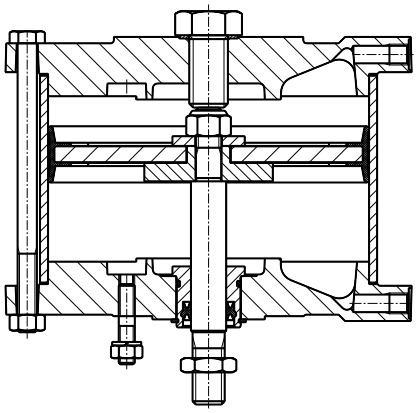
Materials of SISTO-LAP piston actuator



LAP-SF type



LAP-OF type



LAP-AZ type

Parts list

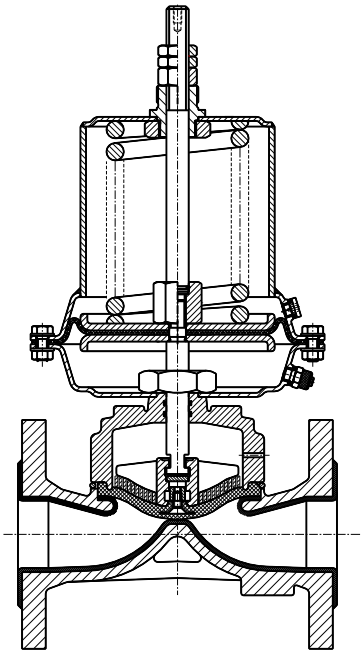
Part No.	Description	Material	Material number	Piston diameter [mm]
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
176.1	Bottom end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
209.1	Lower piston rod	Stainless steel - X14CrMoS17	1.4104	80 - 300
209.2	Upper piston rod	Stainless steel - X14CrMoS17	1.4104	80 - 300
310.1[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	-	-
412.5[7) 8)]	O-ring	NBR	-	-
558.1	Lock washer	A2	-	-
595.1[7) 8)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
901.3	Hexagon head bolt	8.8 A2E	-	-
902.2	Stud	8.8 A2E	-	-
902.3	Stud	A2-70	-	-

7 Recommended spare parts (= complete set of sealing elements)
8 We recommend having these parts replaced in our factory.

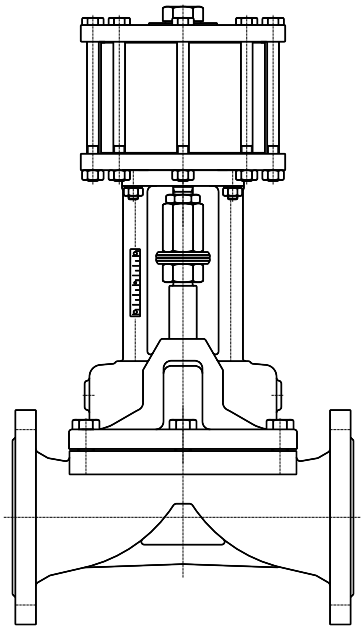
Part No.	Description	Material	Material number	Piston diameter [mm]
920.3	Nut	A2	-	-
920.10	Nut	A2	-	-
950.1	Spring	Spring steel	-	80 - 300

Variants

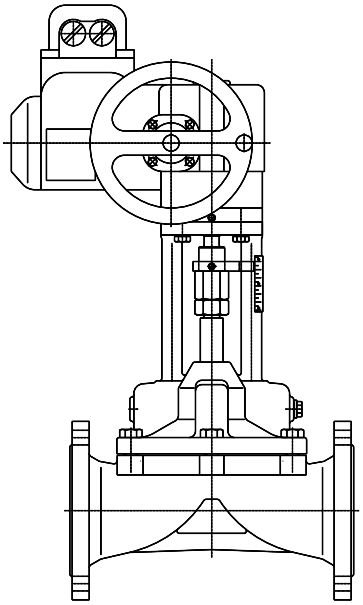
Illustrations of SISTO-16S manually operated valve variants



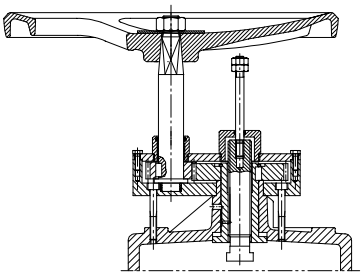
With SISTO-LAD



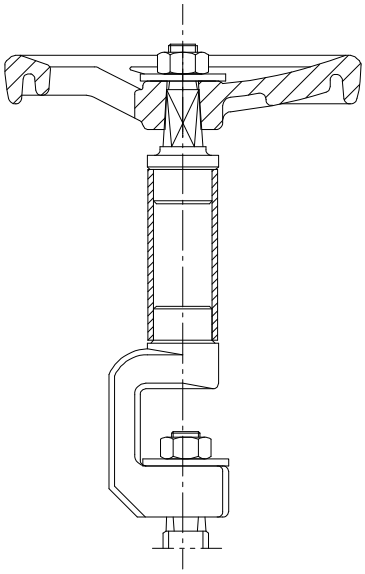
With SISTO-LAP



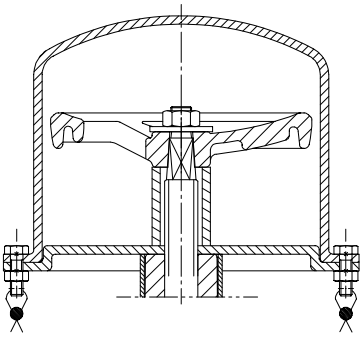
With electric actuator



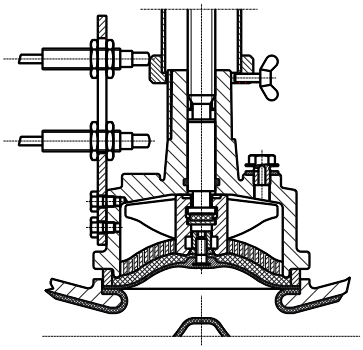
Gearbox



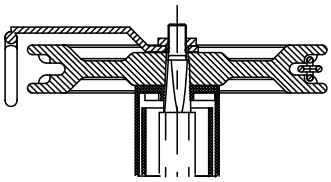
Stem extension



Lead-sealable cap

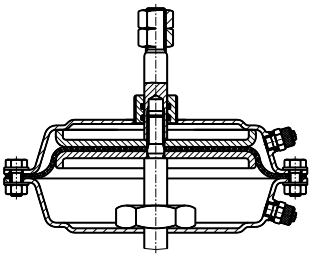


Limit switches, leakage detection hole, locking device

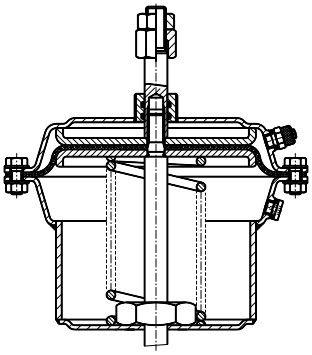


Chain wheel

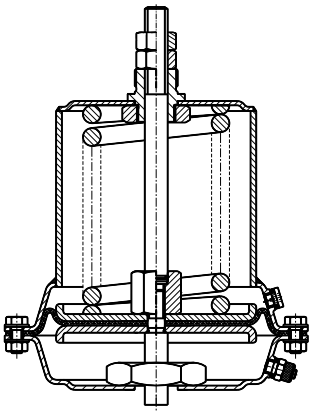
Variant illustrations of SISTO-LAD diaphragm actuator and accessories



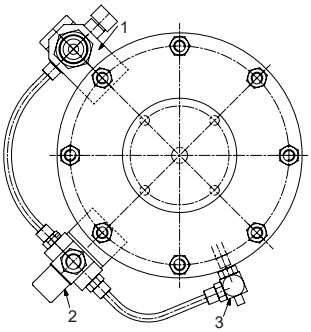
LAD-AZ type



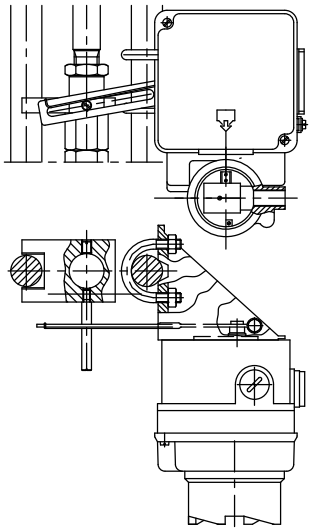
LAD-OF type



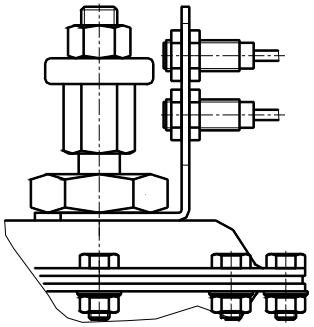
LAD-SF type



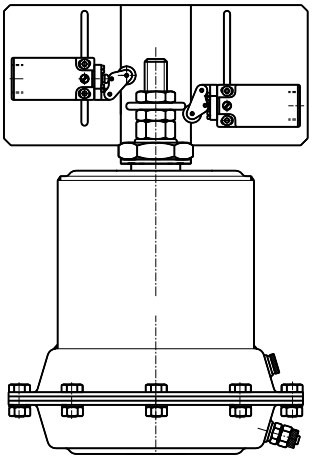
1) Filter/pressure reducer
2) Solenoid valve
3) Throttling valve



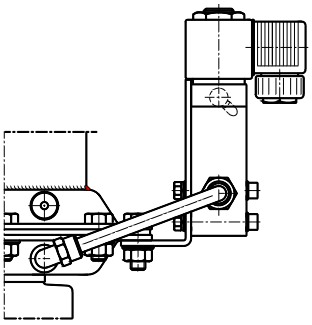
Configuration with positioner



Configuration with proximity sensor

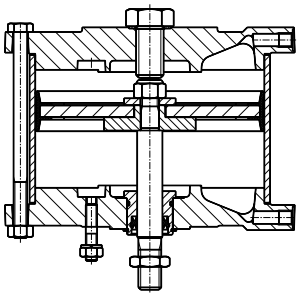


Configuration with mechanical limit switches

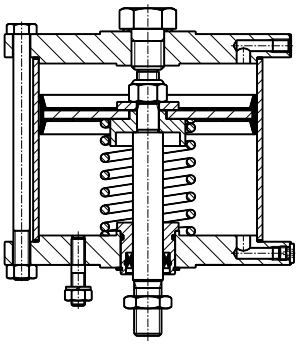


Configuration with solenoid valve

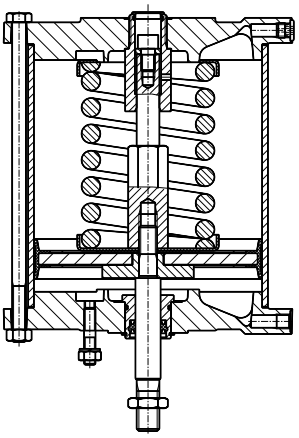
Variant illustrations of SISTO-LAP piston actuator and accessories



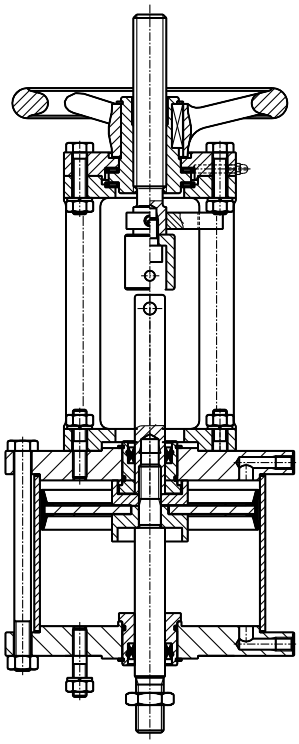
LAP-AZ type



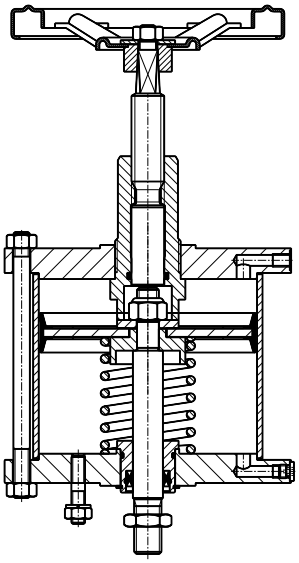
LAP-OF type



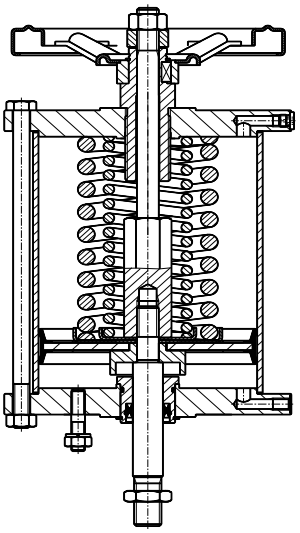
LAP-SF type



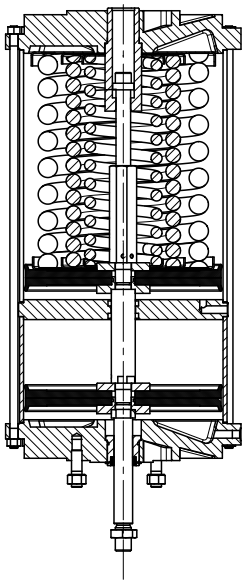
LAP-AZ type
with emergency handwheel



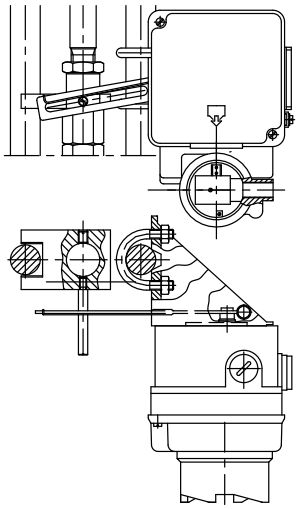
LAP-OF type
with emergency handwheel



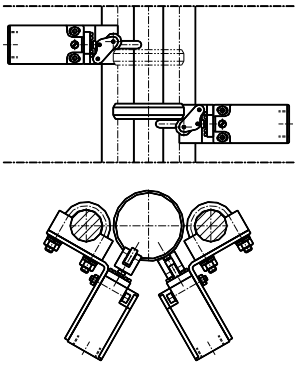
LAP-SF type
with emergency handwheel



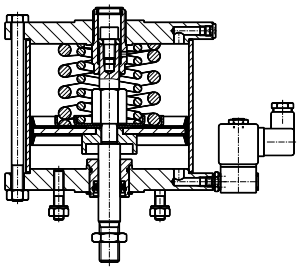
LAP-SF type with double piston



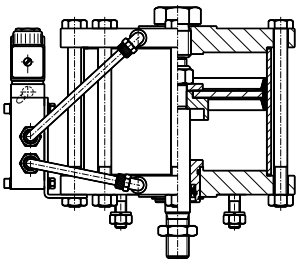
Configuration with positioner



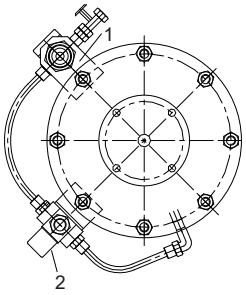
Configuration with limit switches



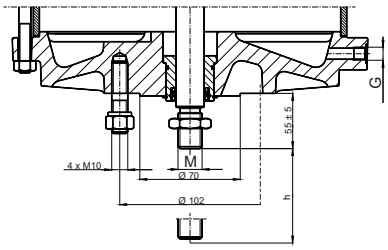
LAP-SF type with 3/2 directional control valve



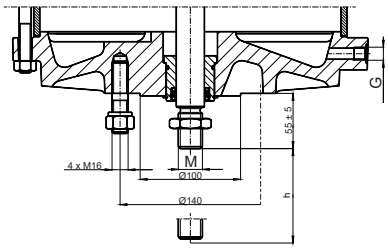
LAP-AZ type with 5/2 directional control valve



1) Filter/pressure reducer
2) Solenoid valve



Flange connection F10



Flange connection F14

Symbols key

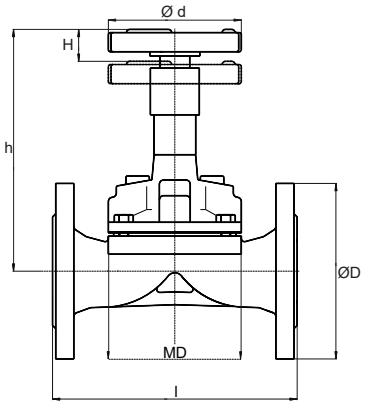
Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

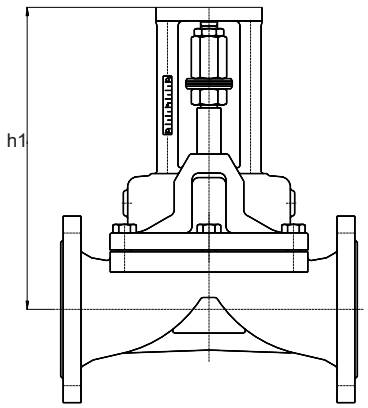
Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

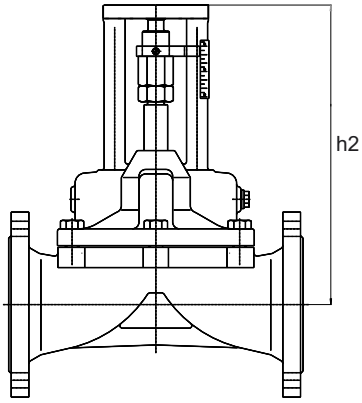
Dimensions and weights of SISTO-16S manually operated valve



Manually operated valve



Prepared for SISTO-LAP



Prepared for electric actuator

Dimensions and weights

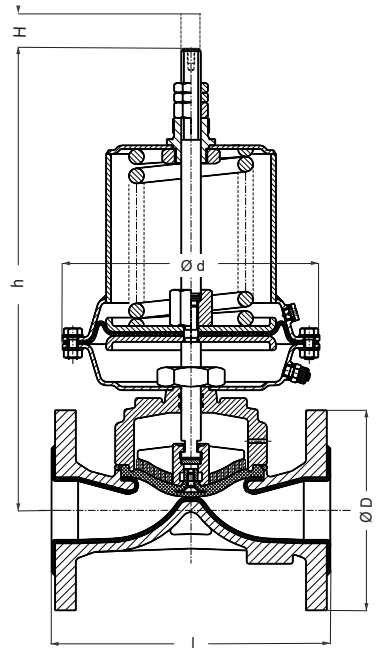
DN	MD [mm][9]	l [mm][10]	Ø D [mm]	H [mm]	Manually operated valve				Prepared for actuator		
					h [mm][11]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height with SISTO-LAP h1 [mm][11]	Centre-to-top height with electric actuator h2[11]	
										F07/F10 [mm]	F14 [mm]
15[12]	40	108	95	8	104	60	3	3,0	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	231	125	8	10,5	250	250	-
65	115	216	185	30	231	125	8	12,5	250	250	-
80	168	254	200	45	322	200 (250)[13]	9	21,5	305	320	-
100	202	305	220	60	388	250 (315)[13]	12	35,0	355	370	-
125	202	356	250	60	388	250 (315)[13]	12	40,0	355	370	-
150	280	406	285	80	512	400 (500)[13]	13	72,0	435	460	480
200	280	521	340	80	512	400 (500)[13]	13	90,0	435	460	480

Mating dimensions as per standard

Face-to-face length:	EN 558-1 R7
Flanges:	Bolt hole pattern ASME B 16.5 - 2013 Cl. 150
	DIN EN-1092-2
Flange facing:	DIN EN 1092-2, type B

9 MD = diaphragm diameter
10 Add 6 mm to face-to-face length for rubber-lined and PTFE/TFM-lined valves
11 Add 5 mm to centre-to-top height for rubber-lined valves
12 With PFA lining only
13 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-LAD diaphragm actuator



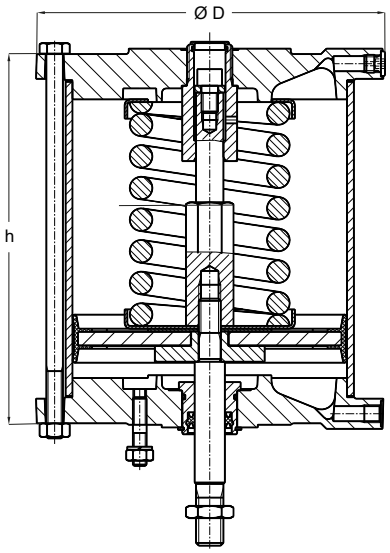
Diaphragm valve with SISTO-LAD

Dimensions and weights

DN	MD [mm][14]	l [mm][17]	Ø D [mm]	H [mm]	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	LAD-SF type		
					Actuator size 100				Actuator size 150				Actuator size 220				100	150	220
					Ø d [mm]	h [mm][15][16]			Ø d [mm]	h [mm][16][17]			Ø d [mm]	h [mm][16][17]			[kg]	[kg]	[kg]
15	40	108	95	8	160	165	225	225	-	-	-	-	-	-	-	-	9,5	-	-
20	65	117	105	13	160	165	225	225	210	205	275	325	-	-	-	-	10,0	12,0	-
25	65	127	115	13	160	165	225	225	210	205	275	325	-	-	-	-	11,0	13,0	-
40	92	159	150	22	160	210	270	270	210	210	280	330	307	350	520	520	15,0	17,0	-
50	115	190	165	30	-	-	-	-	210	210	280	330	307	370	540	540	-	20,5	26,5
65	115	216	185	30	-	-	-	-	210	-	-	-	307	430	600	600	-	-	34,0
80	168	254	200	45	-	-	-	-	-	-	-	-	307	430	600	600	-	-	40,0
100	202	305	220	60	-	-	-	-	-	-	-	-	307	530	700	700	-	-	54,0
125	202	356	250	60	-	-	-	-	-	-	-	-	307	530	700	700	-	-	68,0

14 MD = diaphragm diameter
15 Add 5 mm for rubber-lined valves
16 Add 50 mm for limit switch configuration
17 Add 6°mm for rubber-lined and PTFE/TFM-lined valves

Dimensions and weights of SISTO-LAP piston actuator



SISTO-LAP

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

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: spring-to-open/air-to-close (OF)

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

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]
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: air-to-open/spring-to-close (SF)

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 size of SISTO-LAD diaphragm actuator

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

Minimum required control pressure: 4 bar / maximum permissible control pressure: 6 bar

Symbols key

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

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-AZ-100	20	16	16	9	↓	↓	↓
LAD-AZ-150	35	↑	↑	16	11	↓	↓
LAD-AZ-220	56	↑	↑	↑	16	13	7

Operating pressure in bar for actuator function spring-to-open/air-to-close (OF)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-OF-100.014	20	16	14	7	↓	↓	↓
LAD-OF-150.102	35	↑	16	16	9	↓	↓
LAD-OF-220.001	56	↑	↑	↑	16	10	5

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-SF-100.001.5	20	16	9	4	↓	↓	↓
LAD-SF-150.002	35	↑	16	13	7	↓	↓
LAD-SF-220.003.7	56	↑	↑	↑	16	8	3
LAD-SF-220.004.7S[18)]	56	↑	↑	↑	↑	10	4

Selection table for maximum permissible operating pressure in bar for SISTO valve with PTFE diaphragm

Minimum required control pressure: 4 bar / maximum permissible control pressure: 6 bar

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-AZ-100	20	16	12	↓	↓	↓	↓
LAD-AZ-150	35	↑	16	16	6	↓	↓
LAD-AZ-220	56	↑	↑	↑	15	7	↓

Operating pressure in bar for actuator function spring-to-open/air-to-close (OF)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-OF-100.014	20	16	10	↓	↓	↓	↓
LAD-OF-150.102	35	↑	16	14	5	↓	↓
LAD-OF-220.001	56	↑	↑	16	13	3	↓

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

Actuator size	Stroke [mm]	DN 15	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125
LAD-SF-100.001.5	20	16	4	↓	↓	↓	↓
LAD-SF-150.002	35	↑	16	9	3	↓	↓
LAD-SF-220.003.7	56	↑	↑	16	8	↓	↓
LAD-SF-220.004.7S[18)]	56	↑	↑	↑	16	5	2

Other selection options on request

18 5 bar minimum

Actuator size of SISTO-LAP piston actuator

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

Minimum required control pressure: 5.5 bar/maximum permissible control pressure: 10 bar

Symbols key

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

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-AZ-80-F10	15/30	12	7	3	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	10	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	9	5	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	15	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	8	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	12	6
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	9
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	12
LAP-AZ-D300-F14[19)]	80	↑	↑	↑	↑	↑	16

Operating pressure in bar for actuator function spring-to-open/air-to-close (OF)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-OF-80.101-F10	15/30	8	4	2	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	16	8	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	16	8	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	14	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	6	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	9	4
LAP-OF-300.002-F10[19)]	60	↑	↑	↑	↑	15	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	7
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	10
LAP-OF-D300.012-F14[19)]	80	↑	↑	↑	↑	↑	16

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-SF-80.001.5-F10	15	8	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	↑	5	2	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	13	6	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	10	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	14	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	4	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	7	3
LAP-SF-300.034-F10[19)]	60	↑	↑	↑	16	11	↓
LAP-SF-300.034-F14	80	↑	↑	↑	↑	↓	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	8
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	11

Other selection options on request

19 Max. 7 bar

Actuator size of SISTO-LAP piston actuator

Selection table for maximum permissible operating pressure in bar for SISTO valve with PTFE diaphragm

Minimum required control pressure: 5.5 bar/maximum permissible control pressure: 10 bar

Symbols key

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

Operating pressure in bar for actuator function air-to-open/air-to-close (AZ)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-AZ-80-F10	15/30	10	↓	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	5	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	10	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	3	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	16	9	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	3	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	10	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14[20)]	80	↑	↑	↑	↑	↑	16

Operating pressure in bar for actuator function spring-to-open/air-to-close (OF)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-OF-80.101-F10	15/30	5	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	8	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	6	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	12	3	↓
LAP-OF-300.002-F10[20)]	60	↑	↑	↑	16	11	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	8
LAP-OF-D300.012-F14[20)]	80	↑	↑	↑	↑	↑	16

Operating pressure in bar for actuator function air-to-open/spring-to-close (SF)

Actuator size	Stroke [mm]	DN 20-25	DN 40	DN 50-65	DN 80	DN 100-125	DN 150-200
LAP-SF-80.001.5-F10	15	4	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	8	3	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	5	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	7	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	9	3	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	16	8	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	5	↑
LAP-SF-300.034-F10[20)]	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10[20)]	60	↑	↑	↑	16	12	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request

20 Max. 7 bar

Diaphragm Valves

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

SISTO-16RGAMaXX

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

Table 1: 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

Table 2: Overview of available materials

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

Design details

Design

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

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.

Product information

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

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/ .

Certifications

Table 3: Overview

Label	Effective in:
	Germany[1)]
	Switzerland[1)]
	Belgium
	Denmark[1)]

Related documents

Table 4: 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:

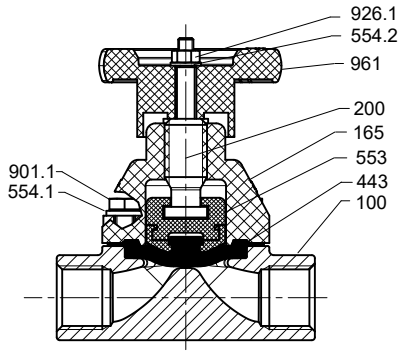
1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Fluid handled
8. Pipe connection
9. Variants
10. Number of type series booklet
11. Certificate

Flow coefficients

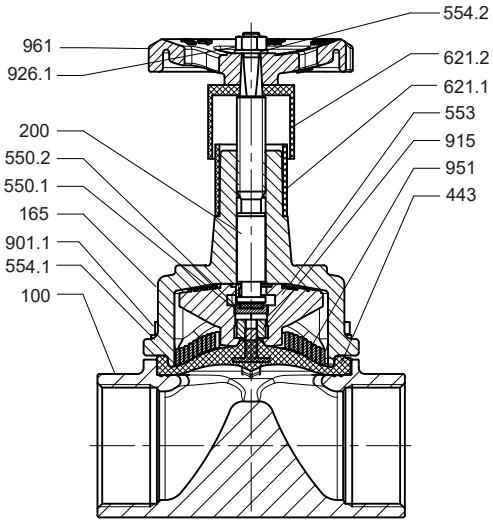
Table 5: Flow coefficients for unlined valves with threaded socket ends

DN	MD[2)] [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



DN 15-20
Rp ½-¾ in.

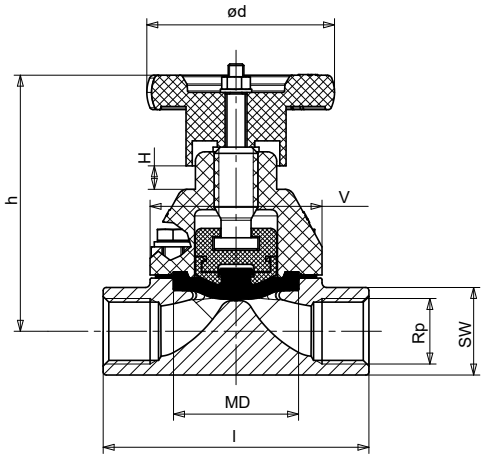


DN 25-80
Rp 1-3 in.

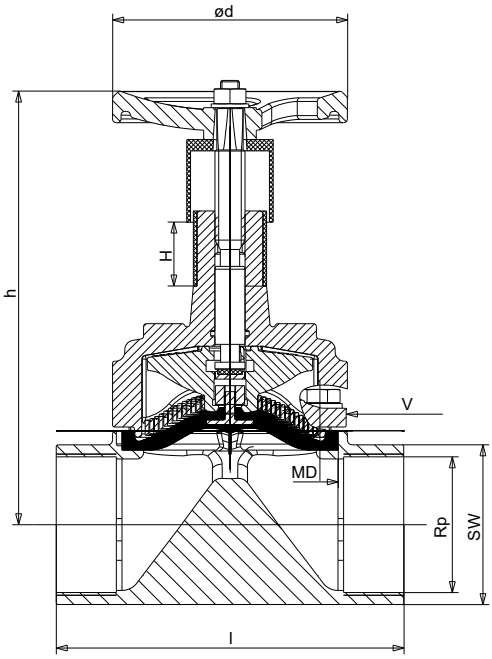
Table 6: Parts list

Part No.	Description	Diaphragm diameter 40 DN 15 - 20 Rp ½ - ¾ in.		Diaphragm diameters 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[3)]	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

Dimensions and weights of SISTO-16RGAMaXX manually operated valve



DN 15-20
Rp ½-¾ in.



DN 25-80
Rp 1-3 in.

Table 7: Dimensions and weights

DN	MD[4)] [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

Diaphragm Valves

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

SISTO-16TWA

Main applications

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

Fluids handled

SISTO-16TWA

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

SISTO-16HWA

- Hot water up to 140 °C
- Service water

SISTO-16DLU

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

Operating data

Operating properties

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

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

SISTO-16TWA

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

Variants

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

1 From DN 100 and operating pressures > 10 bar using a gearbox is recommended.
2 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

Product benefits

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

Product information

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

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

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

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

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

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

Certifications

SISTO-16TWA

Overview

Label	Effective in:
DIN DVGW CERT	Germany[3)] DN 15 - 100
SVGW SSIGE	Switzerland[3)] DN 15 - 100
ÖVGW GEPRÜFT	Austria[3)] DN 15 - 100
BELGAQUA	Belgium DN 15 - 200

Related SISTO documents

Information/documents

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

Purchase order specifications

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

Valve

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

Actuator

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

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

Flow coefficients

Flow coefficients for SISTO-16TWA

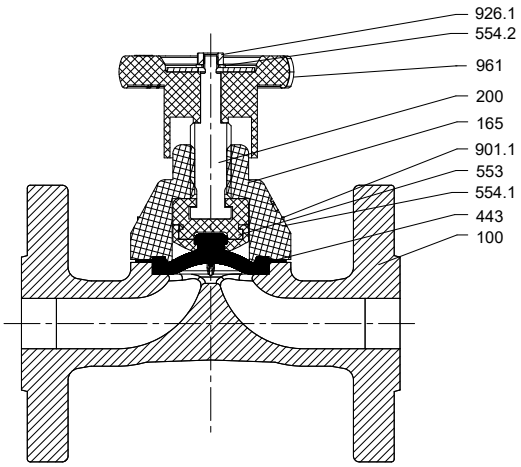
DN	MD[4] [mm]	Kvs value [m³/h]	DN	MD[4] [mm]	Kvs value [m³/h]
15	40	7,5	65	115	140,0
20	40	8,0	80	168	270,0
25	65	29,0	100	168	285,0
32	65	30,0	125	202	298,0
40	65	31,0	150	280	601,0
50	92	85,0	200	280	478,0

Flow coefficients for SISTO-16HWA/DLU

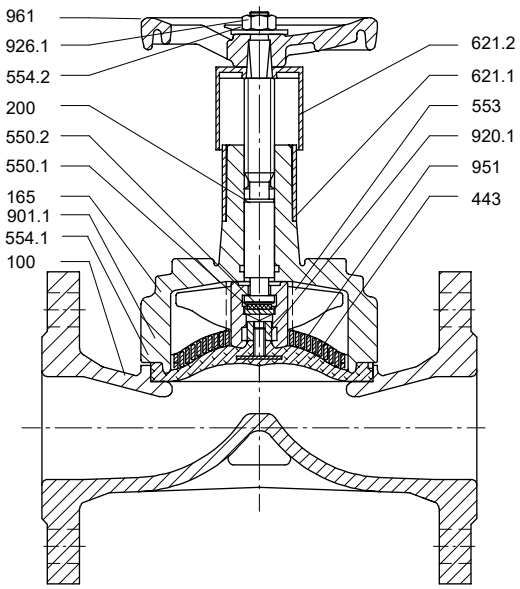
DN	MD[4] [mm]	Kvs value [m³/h]	DN	MD[4] [mm]	Kvs value [m³/h]
15	40	4,0	65	168	141,0
20	65	11,5	80	168	195,0
25	65	14,0	100	202	304,0
32	92	35,0	125	202	298,0
40	92	43,0	150	280	601,0
50	115	72,0	200	280	478,0

4 MD = diaphragm diameter

Materials of SISTO-16TWA manually operated valve



DN 15-20

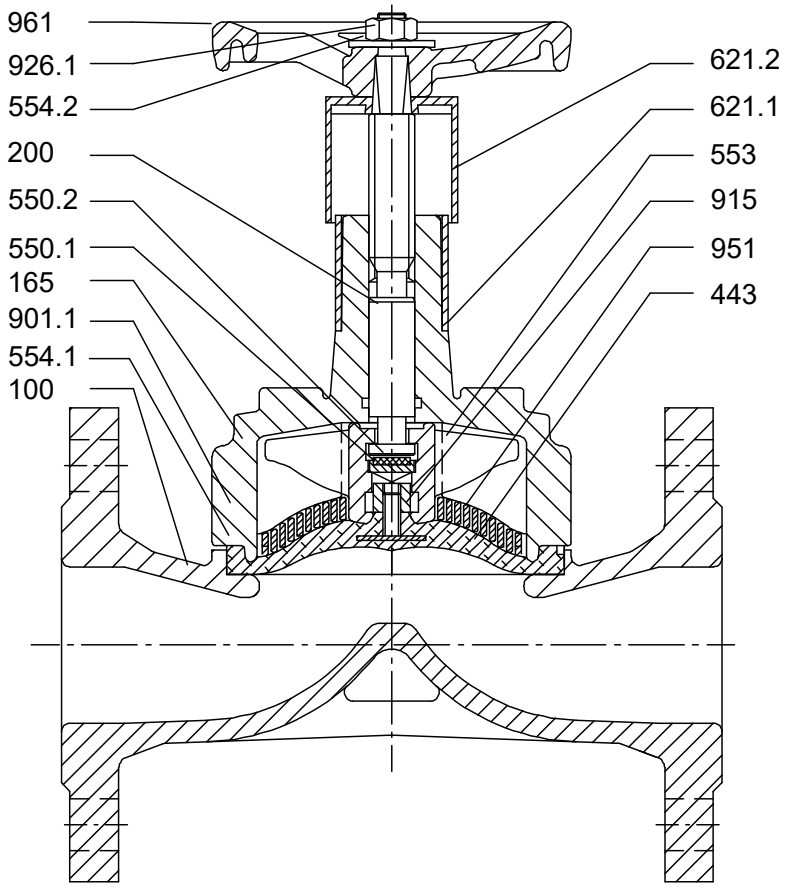


DN 25-200

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

5 Recommended spare parts

Materials of SISTO-16HWA/DLU manually operated valve

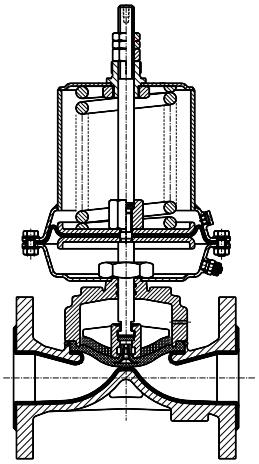


DN 15-200

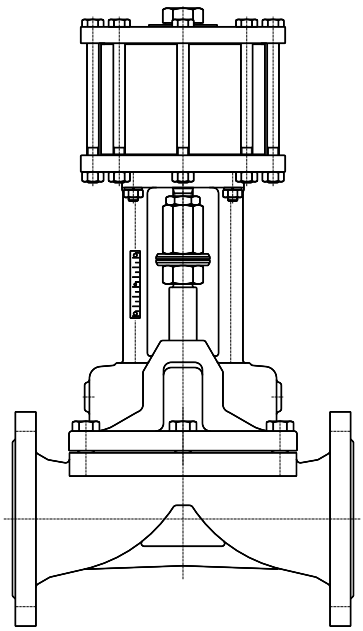
Part No.	Description	SISTO-16HWA Diaphragm diameters 40-280 DN 15-200		SISTO-16DLU Diaphragm diameters 40-280 DN 15-200	
		Material		Material	
		Designation	Number	Designation	Number
100	Body	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301	EN-GJL-250 DN 15 + DN 200 = 5.3103	5.1301
165	Bonnet	EN-GJL-250 DN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

6 Recommended spare parts

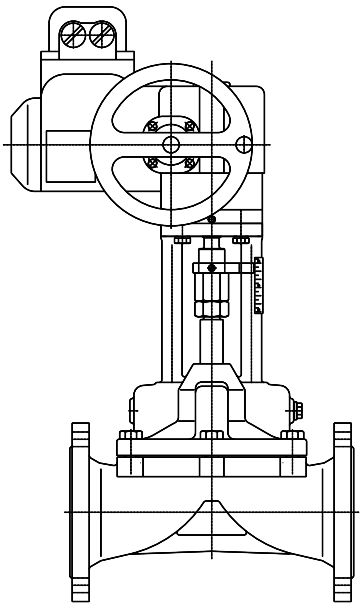
Variants



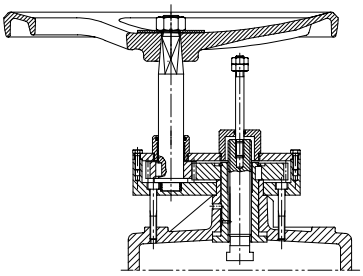
With SISTO-LAD



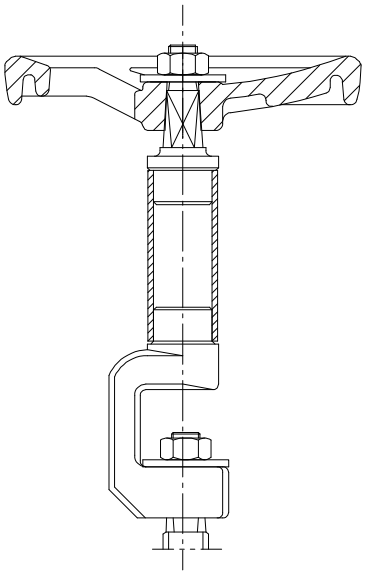
With SISTO-LAP



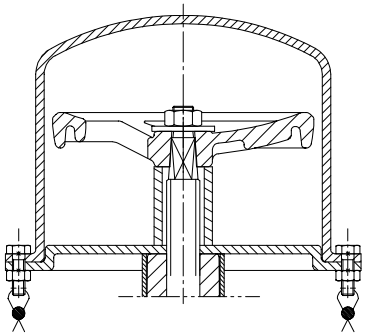
With electric actuator



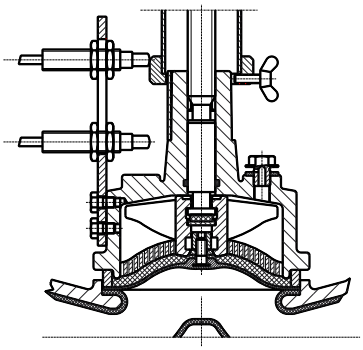
Gearbox



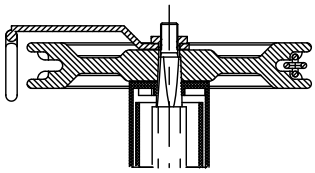
Stem extension



Lead-sealable cap

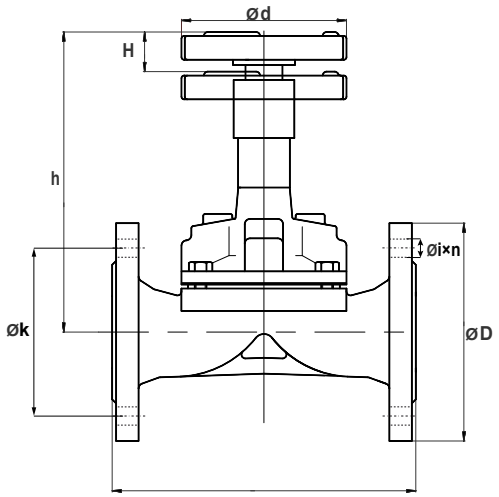


Limit switches, leakage detection hole,
locking device

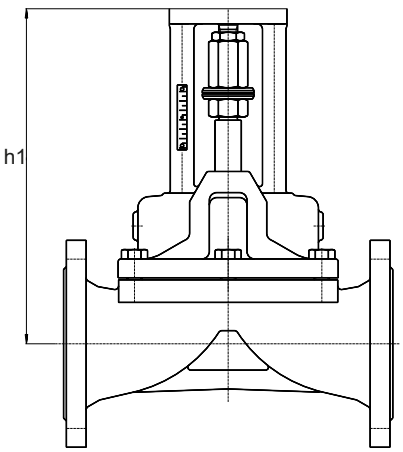


Chain wheel

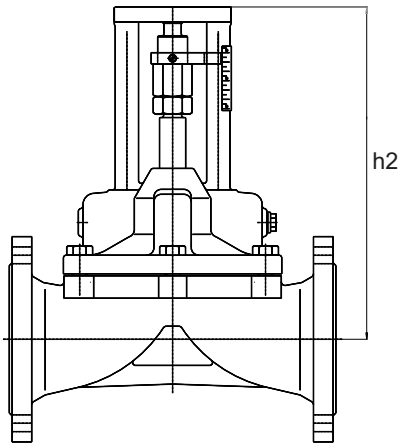
Dimensions and weights



Manually operated valve



Prepared for SISTO-LAP



Prepared for electric actuator

Dimensions and weights of SISTO-16TWA

DN	MD[7] [mm]	l [mm]	Ø D [mm]	Ø k [mm]	Ø i [mm]×n	H [mm]	Manually operated valve			[kg]
							h [mm]	Ø d [mm]	Handwheel turns approx.	
15	40	130	95	65	14×4	8	98	60	3	1,9
20	40	150	105	75	14×4	8	101	60	3	2,6
25	65	160	115	85	14×4	13	154	100	4	4,4
32	65	180	140	100	18×4	13	159	100	4	5,7
40	65	200	150	110	18×4	13	163	100	4	6,5
50	92	230	165	125	18×4	22	206	100	7	9,3
65[8]	115	290	185	145	18×4	30	240	125	8	13.1
80	168	310	200	160	18×8	45	328	200 (250)[9]	9	23,9
100	168	350	220	180	18×8	45	343	200 (250)[9]	9	26,1
125	202	400	250	210	19×8[10]	60	388	250 (315)[9]	12	44,0
150	280	480	285	240	23×8[10]	80	512	400 (500)[9]	13	82,0
200	280	600	340	295	23×12[10]	80	512	400 (500)[9]	13	100,0

Valid for SISTO-16TWA
DN 15-200:

Mating dimensions as per standard

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

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

Mating dimensions as per standard

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

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

Dimensions and weights of SISTO-16HWA/DLU

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

Mating dimensions as per standard

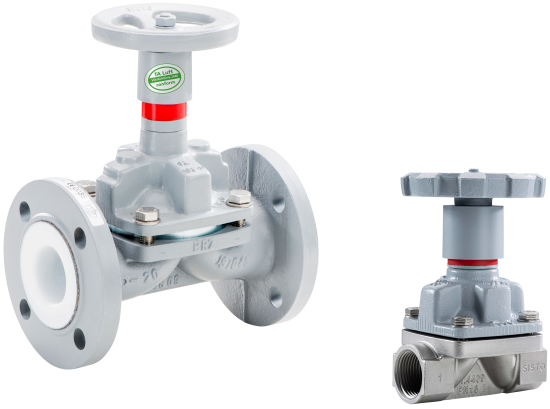
Face-to-face length:	EN 558-1 R1
Flanges:	DIN EN 1092-2
Flange facing:	DIN EN 1092-2, type B

11 On option for operating pressures > 10 bar

Diaphragm Valves

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

SISTO-20



Main applications

- Mining
- General irrigation systems
- Chemical industry
- Homogenisation
- Industry/process engineering
- Industrial recirculation systems
- Waste water treatment plants
- Air-conditioning systems
- Condensate transport
- Power stations
- 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
- High-temperature hot water
- Highly aggressive fluids
- Condensate
- Corrosive fluids
- Fuels
- Cooling water
- Volatile fluids
- Solvents
- Seawater
- Fluids containing mineral oils
- Oil
- Organic 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[1)]
Nominal size	DN 15 - 300
Max. permissible pressure [bar]	16[2)]
Min. permissible temperature [°C][3)]	≥ -20
Max. permissible temperature [°C][3)]	≤ +160

1 DN 250 - 300 = PN 10
2 DN 250 - 300 = 10 bar
3 The temperatures indicated are for orientation only; they are not valid for all operating conditions.

SISTO-LAD diaphragm actuator

- Max. permissible control medium temperature: 80 °C
- Permissible control pressure: 4 - 6 bar

SISTO-LAP piston actuator

- Max. permissible control medium temperature: 80 °C

Permissible control pressure

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$
[mm]		[bar]
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

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-GJS-400-18U-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

Model with flanged ends DN 15 - 300
Model with threaded socket ends DN 15 - 80
Model with socket weld ends DN 15 - 80

Design details

Design

- Models with flanged ends, threaded socket ends or socked weld ends
- Soft-seated 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 (anti-static), temperature limit: +160 °C, up to DN 200
- 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 coated with ECTFE (Halar), temperature limit: +90 °C
- Body coated with ETFE DN 250 - 300, temperature limit: +150 °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[6)]
- 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[7)]

4 Double piston
5 ASTM materials similar to the materials indicated
6 From DN 20
7 DN 250 - 300: max. operating pressure 6 bar

- Three-piece diaphragm made of TFM/PVDF/EPDM, temperature limit: +160 °C[8)]

- Lead-sealable cap (prevents unauthorised actuation)
- Stem extension
- Certification to customer specification

Overview of variants

Overview of SISTO-20 variants

DN	Body material	Bonnet material		Lining				Coating	
		Standard	Optional	None	PTFE/TFM	IIR	NRH	PA (Rilsan)	ECTFE (Halar)
15	1.0619	1.0619	-	-	PFA	-	x	-	-
15	5.3103	1.0619	-	x	-	-	-	x	x
15 - 20	1.4409	1.0619	1.4409	x	-	-	-	x	x
20 - 300	5.3103	5.3103	-	x	x[9)]	x	x	x	x
25 - 200	1.4409	5.3103	1.4409	x	-	-	-	x	x

Actuators

SISTO-LAD diaphragm actuator

- Sliding stem sealed by O-rings
- Mechanical travel stops in the actuator for closed position and open position
- Manual override available as standard for spring-to-close design
- Leakage detection hole from MD 65

Actuator function

- Actuator type LAD-AZ
  - Air-to-open
  - Air-to-close
- Actuator type LAD-OF
  - Spring-to-open
  - Air-to-close
- Actuator type LAD-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 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**

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

9 DN 250 - 300 = ETFE

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.

Product information

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

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

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

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

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

Valves without electrical components do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821
Type series booklet SISTO-LAD (diaphragm actuator)	9211.1
Type series booklet SISTO-LAP (piston actuator)	9210.1
Engineering information SISTO-20	8643.030

Purchase order specifications

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

Valve

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

Actuator

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

Flow coefficients

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

DN	MD[10] [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 unlined valves with flanged ends **(Material: 1.4409)**

DN	MD[10] [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	298
150	280	601
200	280	478

Flow coefficients for unlined valves with threaded socket ends

DN	MD[10] [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

10 MD = diaphragm diameter

Pressure/temperature ratings

Permissible operating pressure [bar]

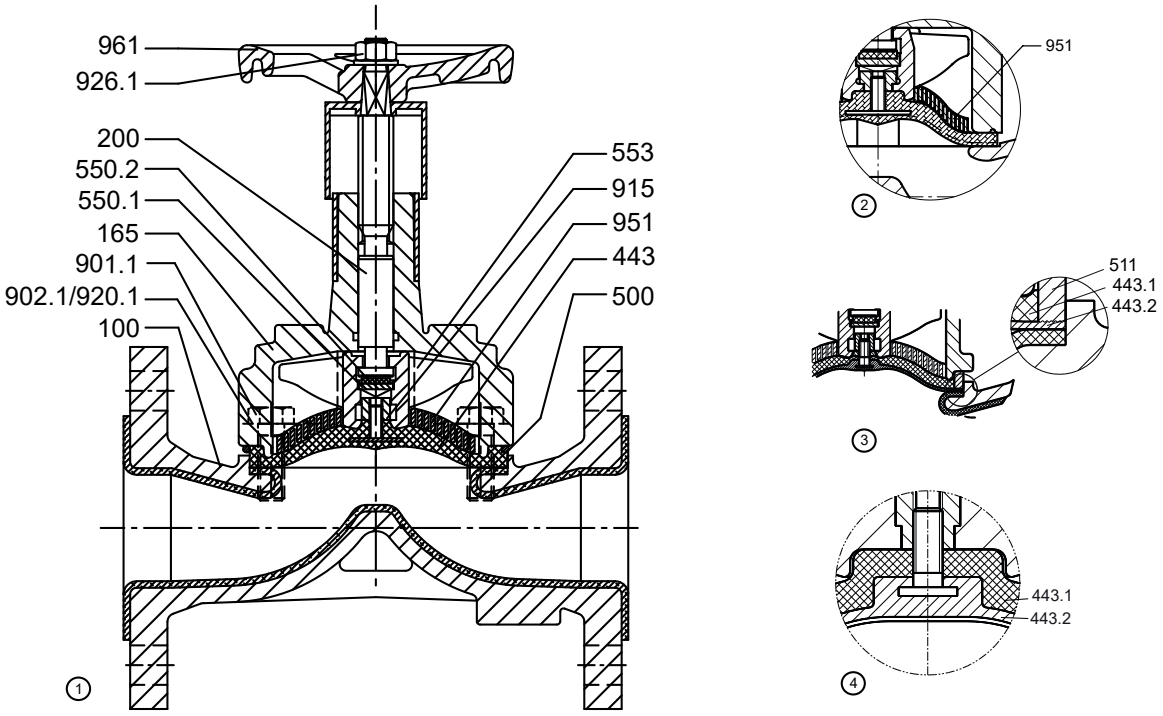
PN	Material		[°C]							
	Designation	Number	-20 to +50	+100	+110	+120	+130	+140	+150	+160
16	EN-GJS-400-18-LT	5.3103	16,0	16,0	16,0	16,0	15,8	15,6	14,0	12,0
	GP240GH	1.0619	16,0	14,8	14,6	14,4	14,3	14,1	14,0	12,0
	GX2CrNiMo19-11-2	1.4409	16,0	15,1	14,8	14,5	14,2	13,9	13,7	12,0
10[11)]	EN-GJS-400-18-LT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

11 DN 250 - 300

Materials

Materials of SISTO-20 manually operated valve with flanged ends



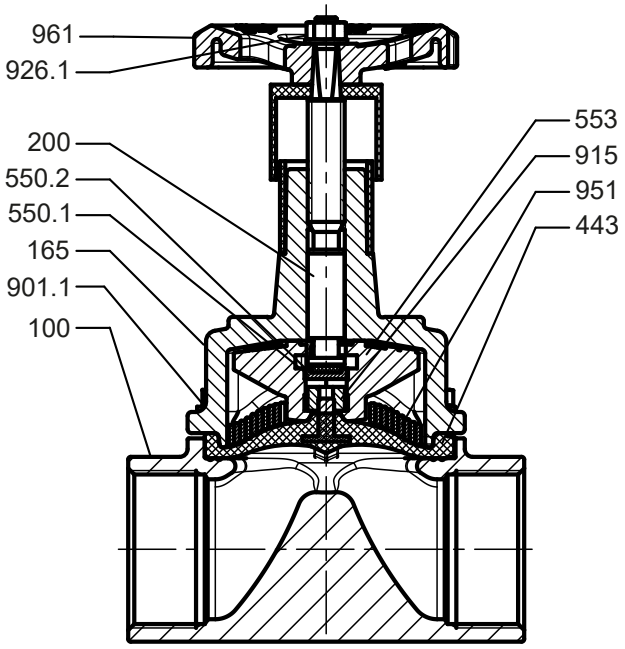
1	SISTO-20 manually operated valve with flanged ends	2	SISTO-20 manually operated valve with flanged ends, DN 250 - 300
3	Variant with 2-piece diaphragm, DN 15 - 200	4	Variant with 2-piece diaphragm, DN 250 - 300

Parts list

Part No.	Description	MD	Material	Material number	Note
100	Body	40	GP240GH	1.0619	-
		65 - 415	EN-GJS-400-18-LT	5.3103	-
165	Bonnet	40	GP240GH	1.0619	-
		65 - 415	EN-GJS-400-18-LT	5.3103	-
200	Stem	40 - 415	X14CrMoS17	1.4104	-
443[12)]	Diaphragm	40 - 415	EPDM	-	Standard
443.1[12)]	Backing diaphragm	40 - 415	EPDM	-	-
443.2[12)]	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	-
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	-	-
		65 - 415	EN-GJL-200	5.1300	-

12 Recommended spare parts

Materials of SISTO-20 manually operated valve with threaded socket ends



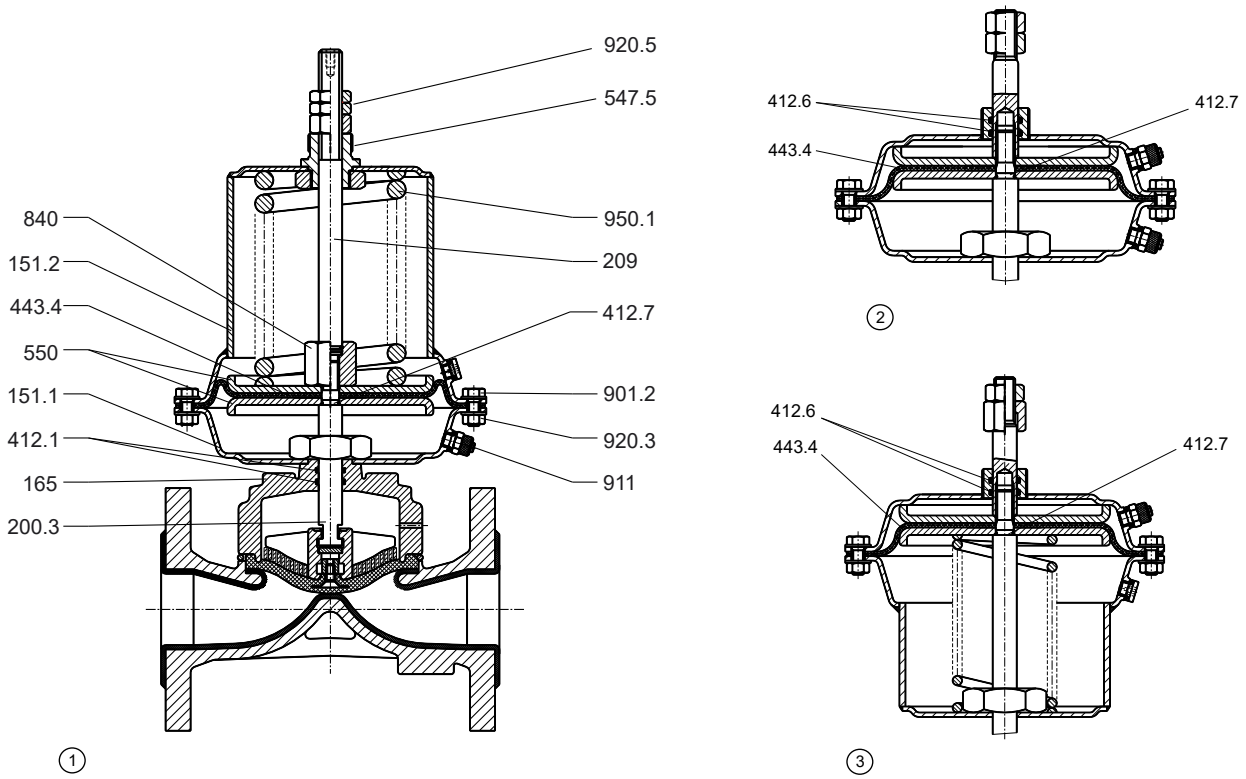
SISTO-20 manually operated valve with threaded socket ends, DN 15 - 80

Parts list

Part No.	Description	MD	Material	Material number	Note
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[13)]	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	-
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	-

13 Recommended spare parts

Materials of SISTO-LAD diaphragm actuator



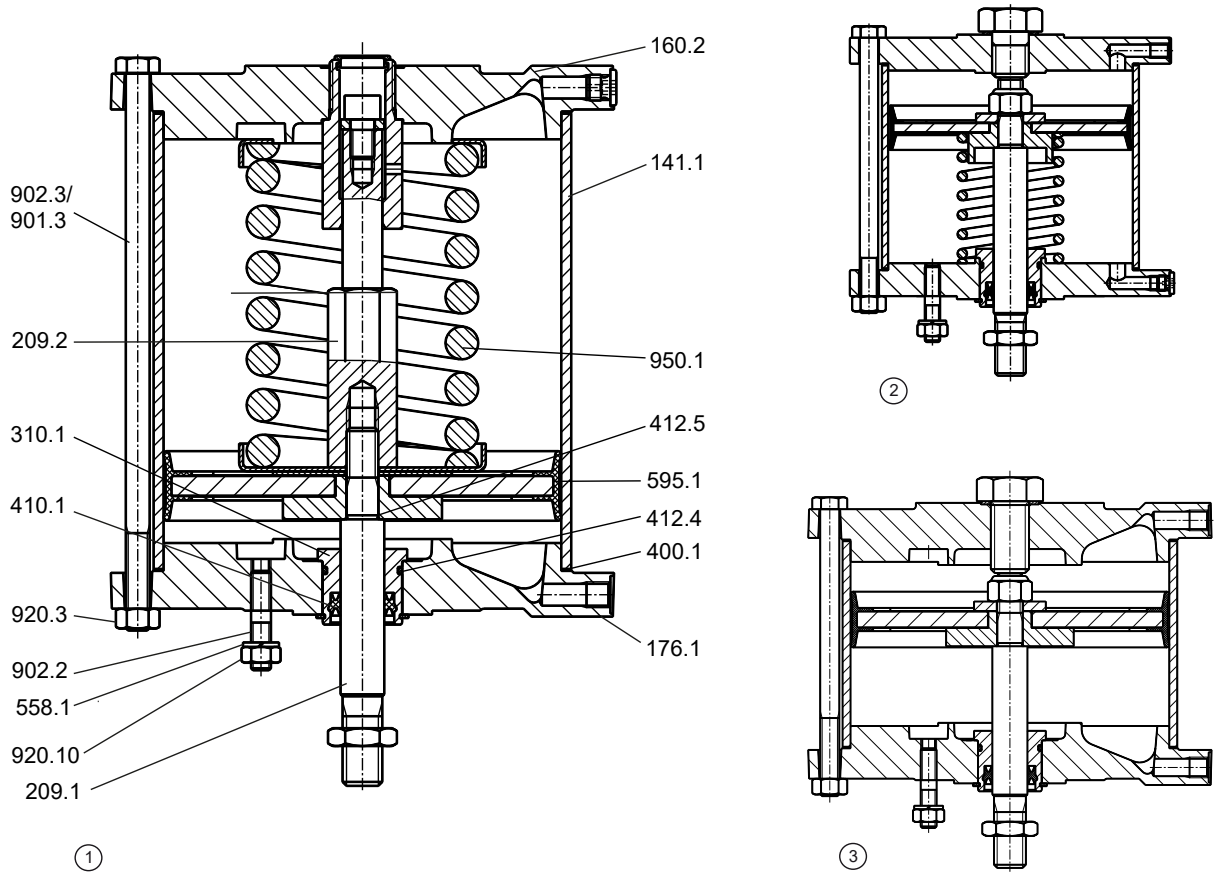
1	LAD-SF type	2	LAD-AZ type	3	LAD-OF type

Parts list

Part No.	Description	Material	Material number	Note
151.1	Lower housing section	Steel / PA-coated	-	-
151.2	Upper housing section	Steel / PA-coated	-	-
165	Bonnet	EN-GJS-400-18-LT	5.3103	-
200.3	Stem	X14CrMoS17	1.4104	-
209	Piston rod	X14CrMoS17	1.4104	-
412.1[14)]	O-ring	NBR	-	-
412.6[14) 15)]	O-ring	NBR	-	-
412.7[14) 15)]	O-ring	NBR	-	-
443.4[14)]	Actuator diaphragm	NBR	-	-
547.5	Guide bush	SoMs59	-	-
550[15)]	Diaphragm plate	Galvanised steel	-	-
840	Coupling	X14CrMoS17	1.4104	-
901.2	Hexagon head bolt	8.8 A2E	-	-
911	Compressed air port	Brass	-	For 8 x 1 polyamide (PA) hose
920.3	Nut	A2	-	-
920.5	Nut	A2	-	-
950.1	Spring	Spring steel	-	-

14 Recommended spare parts
15 We recommend having these parts replaced in our factory.

Materials of SISTO-LAP piston actuator



1	LAP-SF type	2	LAP-OF type	3	LAP-AZ type

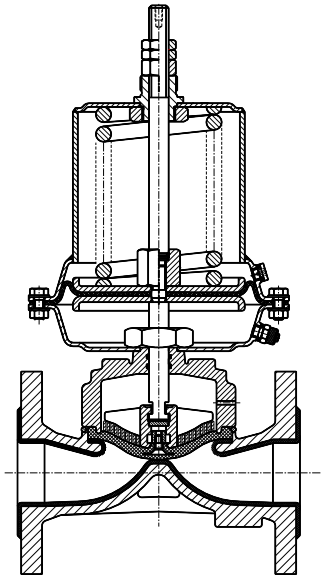
Parts list

Part No.	Description	Material	Material number	Piston diameter [mm]
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
176.1	Bottom end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 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[16) 17)]	Plain bearing	Plastic – POM	-	80 - 300
400.1[16) 17)]	Gasket	Plastic – AFM 30	-	80 - 300
410.1[16) 17)]	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4[16) 17)]	O-ring	NBR	-	80 - 300
412.5[16) 17)]	O-ring	NBR	-	80 - 300
558.1	Lock washer	A2	-	80 - 300
595.1[16) 17)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
901.3	Hexagon head bolt	8.8 galvanised	-	80 - 300
902.2	Stud	8.8 galvanised	-	80 - 300
902.3	Stud	A2-70	-	80 - 300
920.3	Nut	A2	-	80 - 300
920.10	Nut	A2	-	80 - 300
950.1	Spring	Spring steel	-	80 - 300

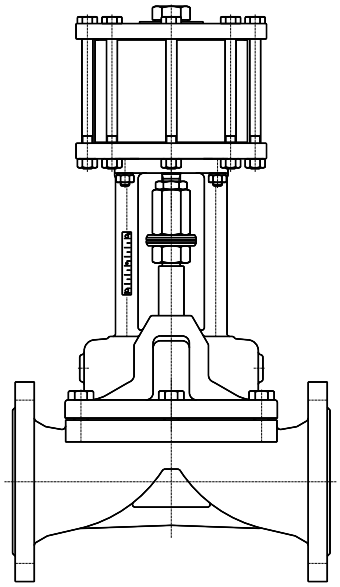
16 Recommended spare parts (= complete set of sealing elements)
17 We recommend having these parts replaced in our factory.

Variants

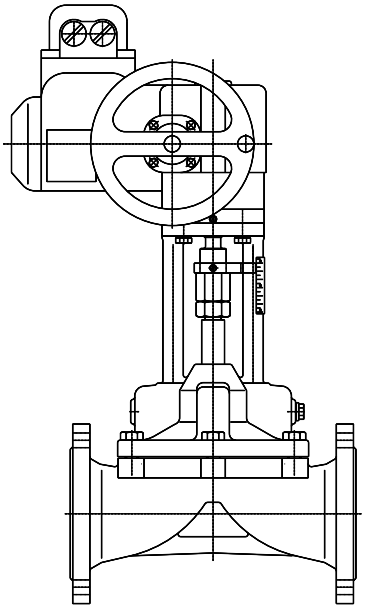
Illustrations of SISTO-20 manually operated valve variants



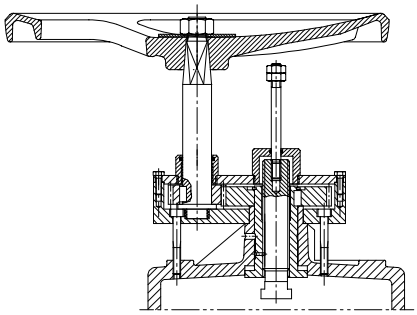
With SISTO-LAD



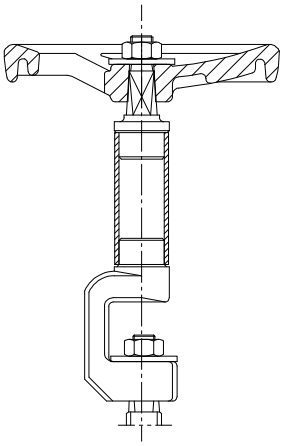
With SISTO-LAP



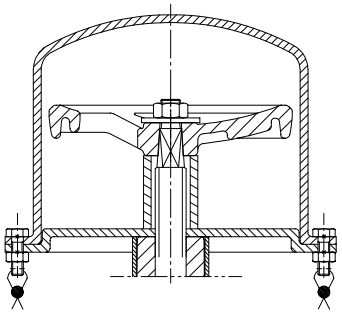
With electric actuator



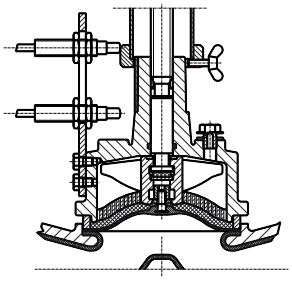
Gearbox



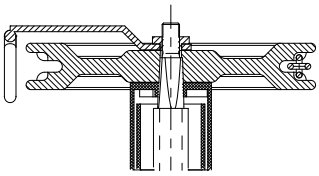
Stem extension



Lead-sealable cap

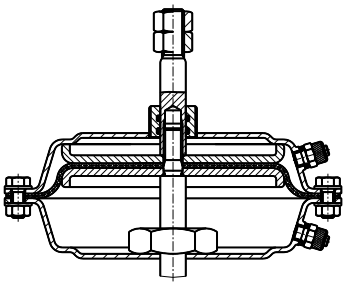


Limit switches, leakage detection hole, locking device

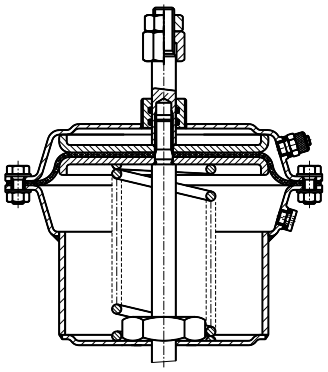


Chain wheel

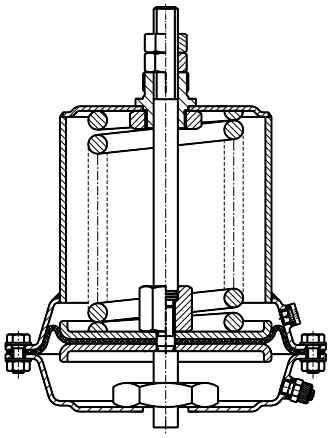
Variant illustrations of SISTO-LAD diaphragm actuator and accessories



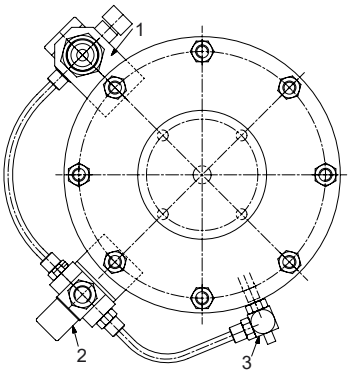
LAD-AZ type



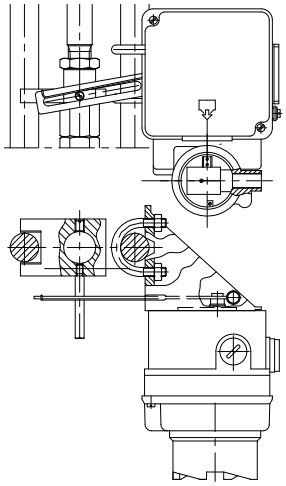
LAD-OF type



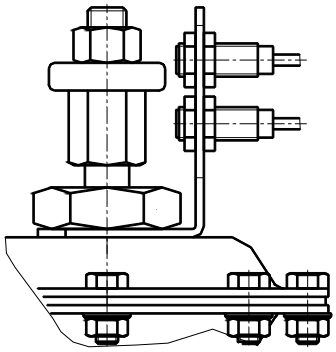
LAD-SF type



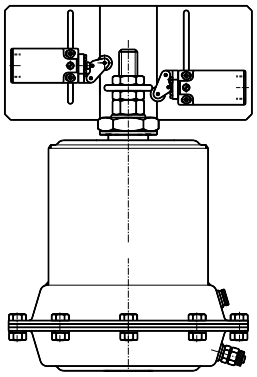
1) Filter/pressure reducer
2) Solenoid valve
3) Throttling valve



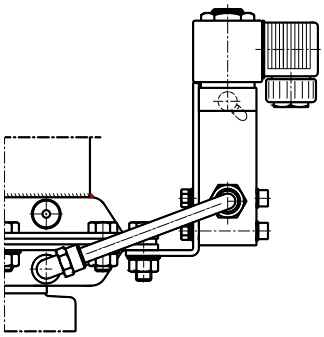
Configuration with positioner



Configuration with proximity sensor

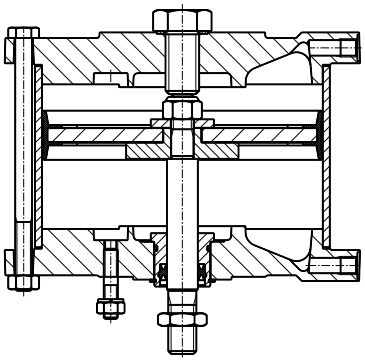


Configuration with mechanical limit switches

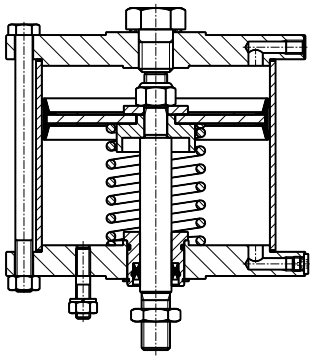


Configuration with solenoid valve

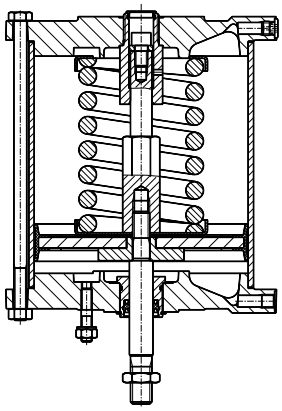
Variant illustrations of SISTO-LAP piston actuator and accessories



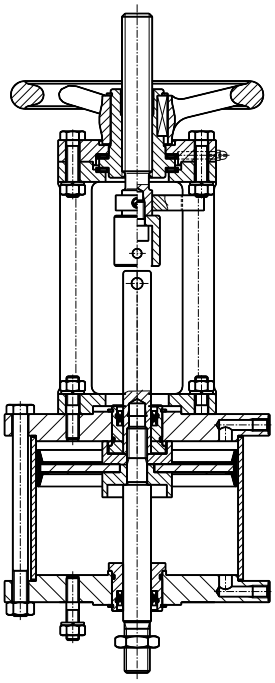
LAP-AZ type



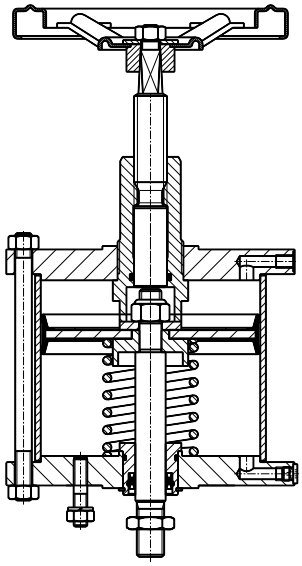
LAP-OF type



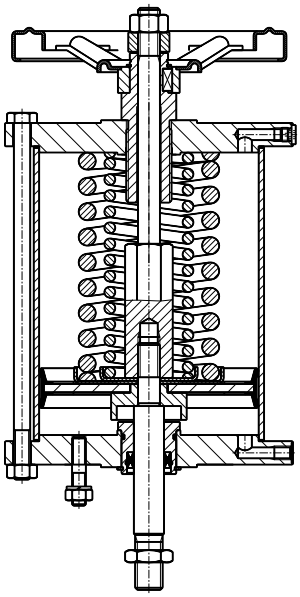
LAP-SF type



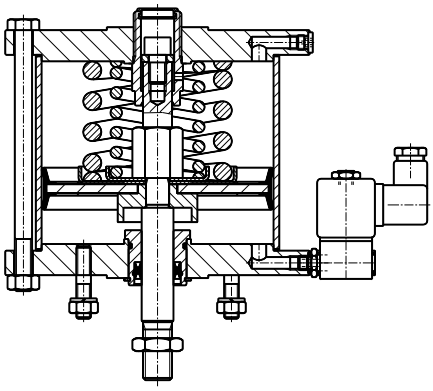
LAP-AZ type with emergency handwheel



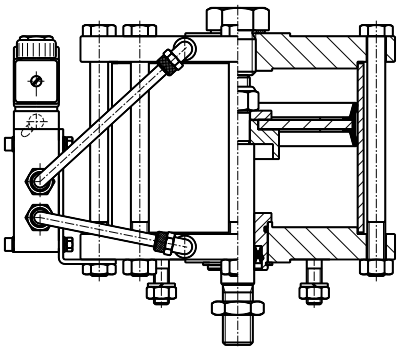
LAP-OF type with emergency handwheel



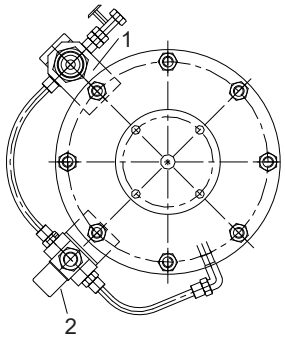
LAP-SF type with emergency handwheel



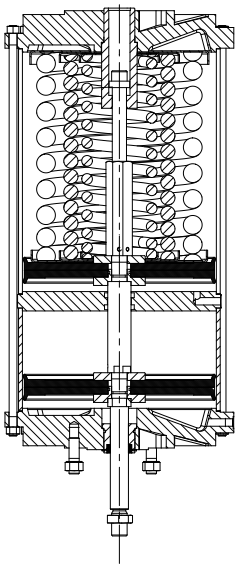
LAP-SF type with 3/2 directional control valve



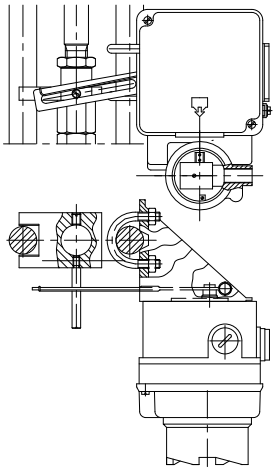
LAP-AZ type with 5/2 directional control valve



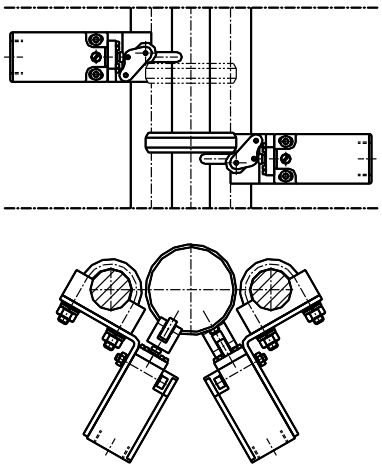
1) Filter/pressure reducer
2) Solenoid valve



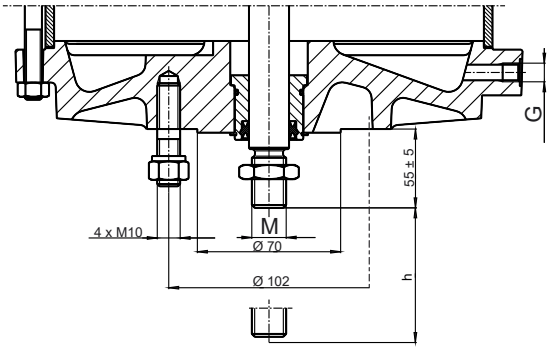
LAP-SF type with double piston



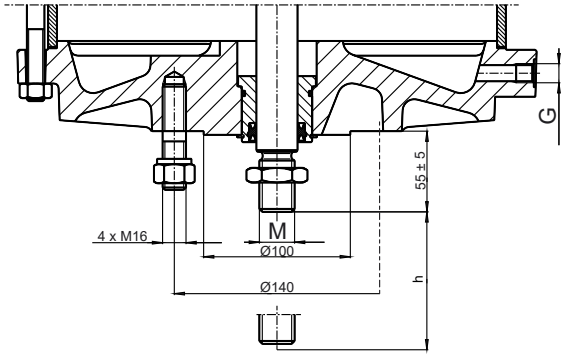
Configuration with positioner



Configuration with limit switches



Flange connection F10



Flange connection F14

Symbols key

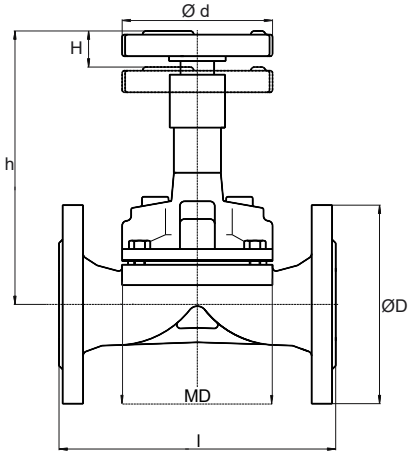
Symbol	Description
G	G1/8 in. for piston diameters 80/125/160 G1/4 in. for piston diameters 200/250/300
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameters D300/F14 optional

Mating dimensions as per standard

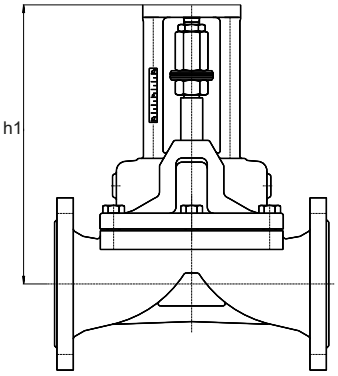
Flange connection: DIN ISO 5210 / DIN 3358
Pipe connection: DIN ISO 228 G1/8 in. and G1/4 in.

Dimensions and weights

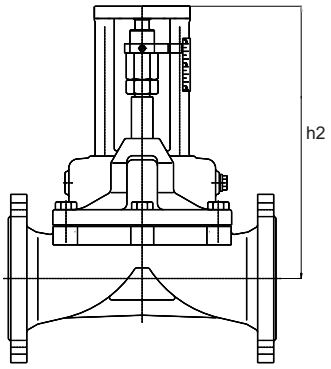
Dimensions and weights of SISTO-20 manually operated valve with flanged ends



SISTO-20 manually operated valve with flanged ends, DN 15 - 300



Prepared for SISTO-LAP (from MD 65)



Prepared for electric actuator (from MD 65)

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

DN	MD[18] [mm]	l [mm]	Ø D [mm]	H [mm]	Manually operated valve				Prepared for actuator		
					h[19] [mm]	Ø d [mm]	Handwheel turns approx.	[kg]	Centre-to-top height SISTO-LAP h1[19] [mm]	Centre-to-top height of electric actuator h2	
										F07/F10 [mm]	F14 [mm]
15	40	130	95	7	104	60	3	3,0	On request	On request	-
20	65	150	105	13	150	100	4	3,5	220	220	-
25	65	160	115	13	150	100	4	4,0	220	220	-
32	92	180	140	22	192	100	7	7,0	245	245	-
40	92	200	150	22	192	100	7	7,5	245	245	-
50	115	230	165	30	231	125	8	11,0	265	285	-
65	168	290	185	45	322	200 (250)[20]	9	20,5	350	370	-
80	168	310	200	45	322	200 (250)[20]	9	23,0	350	370	-
100	202	350	220	60	388	250 (315)[20]	12	36,5	390	410	-
125	202	400	250	60	388	250 (315)[20]	12	44,0	390	410	-
150	280	480	285	80	512	400 (500)[20]	13	80,0	500	520	540
200[21]	280	600	340	80	512	400 (500)[20]	13	95,0	500	520	540
250[22]	415	730	400	115	645	400	20	190,0	600	-	640
300[22]	415	850	445	115	645	400	20	210,0	600	-	640

Mating dimensions as per standard

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

18 MD = diaphragm diameter

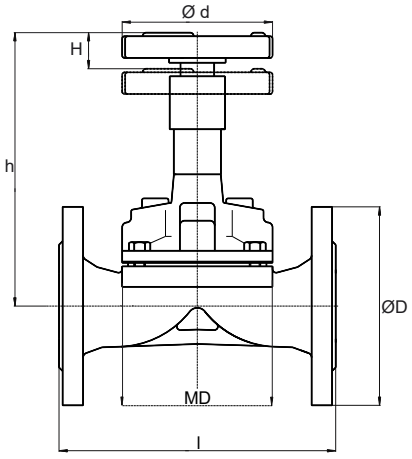
19 Add 5 mm to centre-to-top height for rubber-lined valves

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

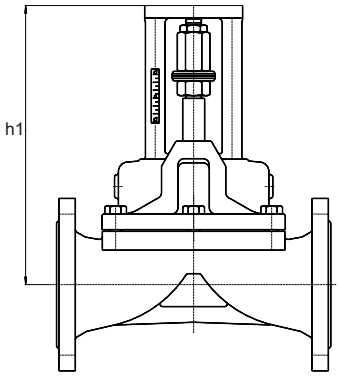
21 Alternative: bolt hole pattern to DIN EN 1092-2 PN 10.

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

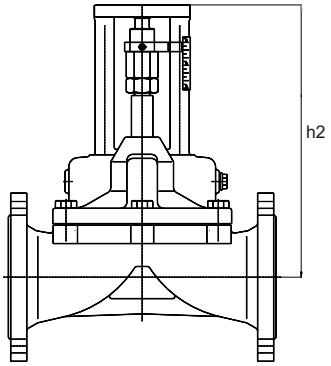
Dimensions and weights of SISTO-20 manually operated valve with flanged ends



SISTO-20 manually operated valve with flanged ends, DN 15 - 200



Prepared for SISTO-LAP (from MD 65)



Prepared for electric actuator (from MD 65)

Dimensions and weights for **material 1.4409**

DN	MD[23] [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 of electric actuator h2	
										F07/F10 [mm]	F14 [mm]
15	40	130	95	7	98	60	3	1,9	On request	On request	-
20	40	150	105	7	101	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[24]	115	290	185[24]	30	240	125	8	13,1	275	295	-
80	168	310	200	45	328	200 (250)[25]	9	23,9	365	385	-
100	168	350	220	45	343	200 (250)[25]	9	26,1	380	400	-
125	202	400	250	60	388	250 (315)[25]	12	44,0	390	410	-
150	280	480	285	80	512	400 (500)[25]	13	80,0	500	520	540
200	280	600	340	80	512	400 (500)[25]	13	95,0	500	520	540

Mating dimensions as per standard

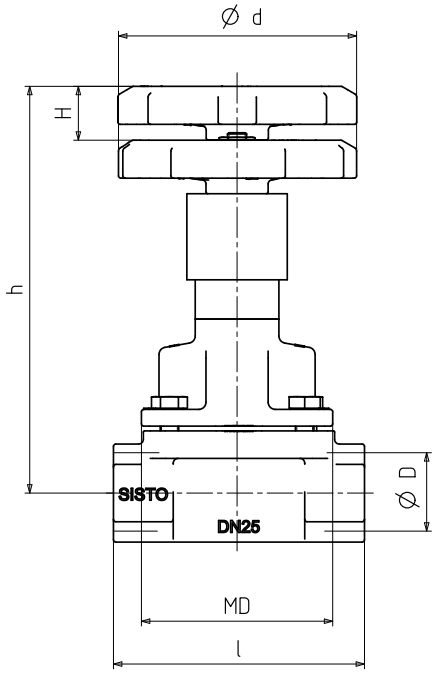
Face-to-face lengths:	EN 558 R1
Flanges:	DIN EN 1092-1
Flange facing:	DIN EN 1092-1, type B

23 MD = diaphragm diameter

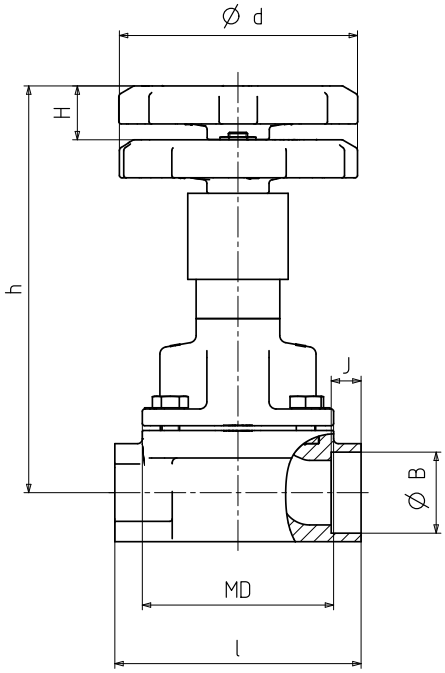
24 Number of flange holes: 4

25 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 manually operated valve with threaded socket ends or socket weld ends



SISTO-20 manually operated valve with threaded socket ends
DN 15 - 80



SISTO-20 manually operated valve with socket weld ends (ASME B16.11)
DN 15 - 80

Dimensions and weights

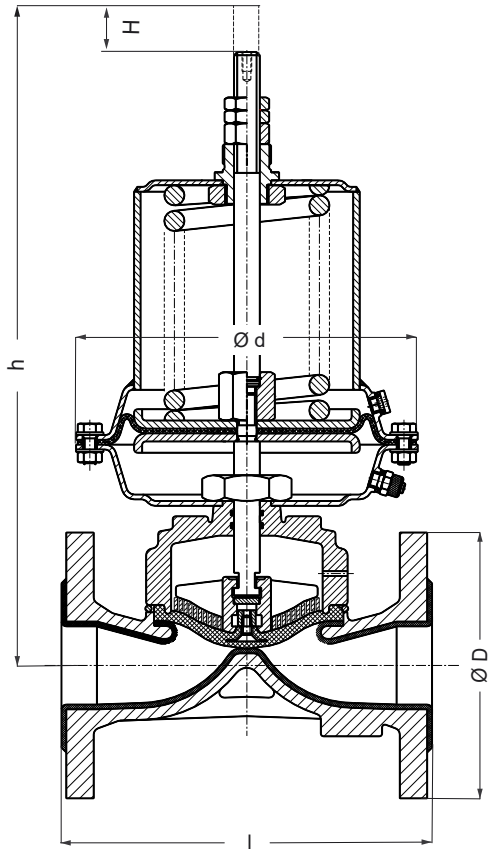
DN	MD[26] [mm]	Ø D [inch]	Ø B [mm]	J [mm]	l [mm]	h [mm]	Ø d [mm]	H [mm]	[kg]
15	40	½	21,8	9,5	85	93	63	7	0,5
20	40	¾	27,2	12,5	95	96	63	7	0,6
25	65	1	33,9	12,5	105	151	100	13	2,5
32	65	1¼	42,7	12,5	120	154	100	13	2,5
40	65	1½	48,8	12,5	130	157	100	13	3,0
50	92	2	61,2	16	150	201	100	22	5,0
65	115	2½	73,9	16	185	248	125	30	8,0
80	168	3	89,8	16	220	329	200	45	16,5

Mating dimensions as per standard

Face-to-face lengths: DIN EN 16722
Socket weld ends: ASME B16.11

26 MD = diaphragm diameter

Dimensions and weights of SISTO-LAD diaphragm actuator



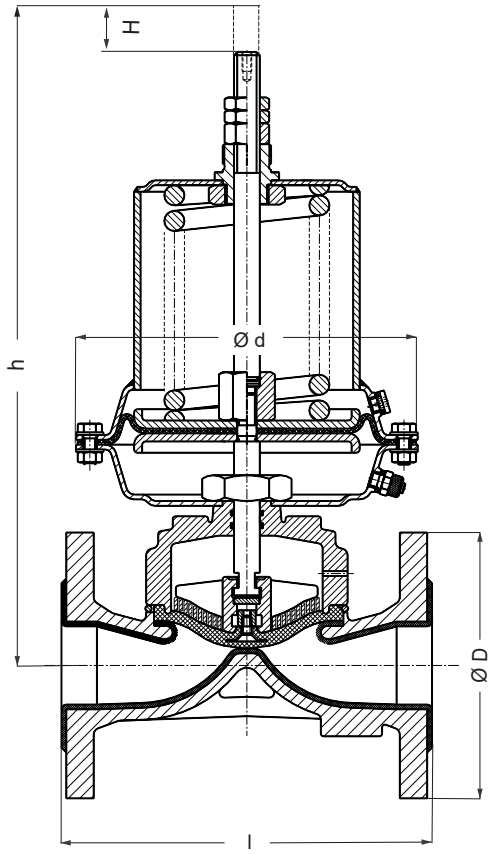
Diaphragm valve with SISTO-LAD

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

DN	MD[27] [mm]	l [mm]	Ø D [mm]	H [mm]	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	LAD-SF type		
					Actuator size 100				Actuator size 150				Actuator size 220				100	150	220
					Ø d [mm]	h[28)29)] [mm]			Ø d [mm]	h[28)29)] [mm]			Ø d [mm]	h[28)29)] [mm]			[kg]	[kg]	[kg]
15	40	130	95	7	160	200	245	255	210	-	-	-	-	-	-	-	9,5	-	-
20	65	150	105	13	160	200	245	255	210	225	300	365	-	-	-	-	10,0	12,0	-
25	65	160	115	13	160	200	245	255	210	225	300	365	-	-	-	-	11,0	13,0	-
32	92	180	140	22	160	240	285	295	210	265	335	400	307	340	420	505	12,5	14,5	-
40	92	200	150	22	160	240	285	295	210	265	335	400	307	340	420	505	15,0	17,0	-
50	115	230	165	30	-	-	-	-	210	290	365	430	307	365	445	530	-	20,5	26,5
65	168	290	185	45	-	-	-	-	-	-	-	-	307	415	495	580	-	-	34,0
80	168	310	200	45	-	-	-	-	-	-	-	-	307	415	495	580	-	-	40,0
100	202	350	220	60	-	-	-	-	-	-	-	-	307	470	550	630	-	-	54,0
125	202	400	250	60	-	-	-	-	-	-	-	-	307	470	550	630	-	-	68,0

27 MD = diaphragm diameter
28 Add 5 mm for rubber-lined valves
29 Add 50 mm for limit switch configuration

Dimensions and weights of SISTO-LAD diaphragm actuator



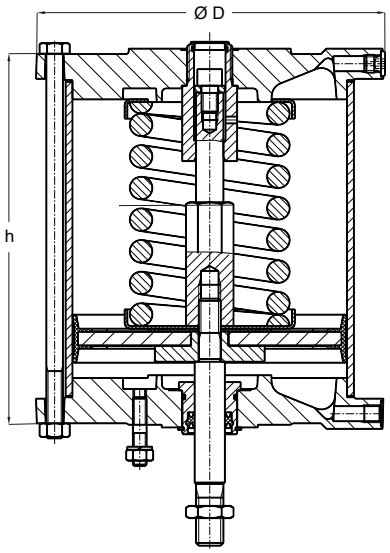
Diaphragm valve with SISTO-LAD

Dimensions and weights for **material 1.4409**

DN	MD[30] [mm]	l [mm]	Ø D [mm]	H [mm]	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	AZ/OF/SF	AZ	OF	SF	LAD-SF type		
					Actuator size 100				Actuator size 150				Actuator size 220				100	150	220
					Ø d [mm]	h[31] [mm]			Ø d [mm]	h[31] [mm]			Ø d [mm]	h[31] [mm]			[kg]	[kg]	[kg]
15	40	130	95	7	160	200	245	255	210	-	-	-	-	-	-	-	9,5	-	-
20	40	150	105	7	160	205	250	260	210	-	-	-	-	-	-	-	10,5	-	-
25	65	160	115	13	160	210	250	260	210	235	305	375	-	-	-	-	10,5	12,5	-
32	65	180	140	13	160	215	255	265	210	240	310	380	-	-	-	-	10,5	14,0	-
40	65	200	150	13	160	220	260	270	210	245	315	385	-	-	-	-	12,5	16,0	-
50	92	230	165	22	-	260	305	315	210	285	355	420	307	360	440	520	16,0	18,0	-
65[32]	115	290	185	30	-	-	-	-	-	310	365	450	307	385	465	550	-	22,0	22,0
80	168	310	200	45	-	-	-	-	-	-	-	-	307	430	515	595	-	-	39,0
100	168	350	220	45	-	-	-	-	-	-	-	-	307	450	530	610	-	-	47,5
125	202	400	250	60	-	-	-	-	-	-	-	-	307	470	550	630	-	-	68,0

30 MD = diaphragm diameter
31 Add 50 mm for limit switch configuration
32 Number of flange holes: 4

Dimensions and weights of SISTO-LAP piston actuator



SISTO-LAP

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

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: spring-to-open/air-to-close (OF)

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

Type	Stroke [mm]	Ø D [mm]	h [mm]	[kg]
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: air-to-open/spring-to-close (SF)

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 size of SISTO-LAD diaphragm actuator

Selection table for maximum permissible operating pressure in bar for SISTO-20 valve with elastomer diaphragm[33)]

Materials 5.3103/1.0619

Minimum required control pressure: 4 bar/maximum permissible control pressure: 6 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-AZ-100	20	16	16	9	↓	↓	↓
LAD-AZ-150	35	↑	↑	16	11	↓	↓
LAD-AZ-220	56	↑	↑	↑	16	13	7

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-OF-100.014	20	16	14	7	↓	↓	↓
LAD-OF-150.102	35	↑	16	16	9	↓	↓
LAD-OF-220.001	56	↑	↑	↑	16	10	5

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-SF-100.001.5	20	16	9	4	↓	↓	↓
LAD-SF-150.002	35	↑	16	13	7	↓	↓
LAD-SF-220.003.7	56	↑	↑	↑	16	8	3
LAD-SF-220.004.7S[34)]	56	↑	↑	↑	↑	10	4

Selection table for maximum permissible operating pressure in bar for SISTO-20 valve with PTFE diaphragm[33)]

Materials 5.3103/1.0619

Minimum required control pressure: 4 bar/maximum permissible control pressure: 6 bar

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-AZ-100	20	16	12	↓	↓	↓	↓
LAD-AZ-150	35	↑	16	16	6	↓	↓
LAD-AZ-220	56	↑	↑	↑	15	7	↓

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-OF-100.014	20	16	10	↓	↓	↓	↓
LAD-OF-150.102	35	↑	16	14	5	↓	↓
LAD-OF-220.001	56	↑	↑	16	13	3	↓

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

Actuator size	Stroke [mm]	MD 40	MD 65	MD 92	MD 115	MD 168	MD 202
LAD-SF-100.001.5	20	16	4	↓	↓	↓	↓
LAD-SF-150.002	35	↑	16	9	3	↓	↓
LAD-SF-220.003.7	56	↑	↑	16	8	↓	↓
LAD-SF-220.004.7S[34)]	56	↑	↑	↑	16	5	2

Other selection options on request

33 Selection of actuators for SISTO-20 with body 1.4409 on request

34 Min. 5 bar

Actuator size of SISTO-LAP piston actuator

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

Materials 5.3103/1.0619[35)]

Minimum required control pressure: 5.5 bar / maximum permissible control pressure: 10 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	12	7	3	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	10	↓	↓	↓
LAP-AZ-125-F10	45/60	↑	↑	↑	5	↓	↓
LAP-AZ-160-F10	30	↑	↑	16	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	9	5	↓
LAP-AZ-200-F10	30/45	↑	↑	↑	15	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↑	8	3
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	12	6
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	9
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	12
LAP-AZ-D300-F14[36)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	8	4	2	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	16	8	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	↑	16	8	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	↑	14	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	↑	6	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	16	9	4
LAP-OF-300.002-F10[36)]	60	↑	↑	↑	↑	15	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	7
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	10
LAP-OF-D300.012-F14[36)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	8	↓	↓	↓	↓	↓
LAP-SF-80.001-F10	30	↑	5	2	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	13	6	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	10	4	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	14	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	16	9	↓	↓
LAP-SF-200.003-F10	60/80	↑	↑	↑	↓	4	↓
LAP-SF-250.004.7-F10	45	↑	↑	↑	14	↓	↓
LAP-SF-250.004F10/F14	60/80	↑	↑	↑	↓	7	3
LAP-SF-300.034-F10	60	↑	↑	↑	16	11	↓
LAP-SF-300.034-F14[36)]	80	↑	↑	↑	↑	↓	5
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	16	8
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	11

Other selection options on request

35 Selection of actuators for SISTO-20 with body 1.4409 on request

36 Max. 7 bar

Actuator size of SISTO-LAP piston actuator

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

Materials 5.3103/1.0619[37)]

Minimum required control pressure: 5.5 bar / maximum permissible control pressure: 10 bar

Symbols key

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

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-AZ-80-F10	15/30	10	↓	↓	↓	↓	↓
LAP-AZ-125-F10	15/30	16	16	5	↓	↓	↓
LAP-AZ-160-F10	30	↑	↑	10	↓	↓	↓
LAP-AZ-160-F10	45/60	↑	↑	↑	3	↓	↓
LAP-AZ-200-F10	30/45	↑	↑	16	9	↓	↓
LAP-AZ-200-F10	60/80	↑	↑	↑	↓	3	↓
LAP-AZ-250-F10/F14	60/80	↑	↑	↑	16	10	↓
LAP-AZ-300-F10/F14	60/80	↑	↑	↑	↑	16	5
LAP-AZ-D250-F14	80	↑	↑	↑	↑	↑	10
LAP-AZ-D300-F14[38)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-OF-80.101-F10	15/30	5	↓	↓	↓	↓	↓
LAP-OF-125.101-F10	15/30	16	↓	↓	↓	↓	↓
LAP-OF-160.102-F10	30/45	↑	16	8	↓	↓	↓
LAP-OF-200.102-F10	30/45	↑	↑	16	↓	↓	↓
LAP-OF-200.001-F10	45/60	↑	↑	↑	6	↓	↓
LAP-OF-250.002-F10/F14	60/80	↑	↑	↑	12	3	↓
LAP-OF-300.002-F10[38)]	60	↑	↑	↑	16	11	↓
LAP-OF-300.012-F14	80	↑	↑	↑	↑	↑	2
LAP-OF-D250.012-F14	80	↑	↑	↑	↑	16	8
LAP-OF-D300.012-F14[38)]	80	↑	↑	↑	↑	↑	16

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

Actuator size	Stroke [mm]	MD 65	MD 92	MD 115	MD 168	MD 202	MD 280
LAP-SF-80.001.5-F10	15	4	↓	↓	↓	↓	↓
LAP-SF-125.002.5-F10	15	16	↓	↓	↓	↓	↓
LAP-SF-125.002-F10	30	↑	8	3	↓	↓	↓
LAP-SF-160.012-F10	30/45	↑	16	5	↓	↓	↓
LAP-SF-200.003.5-F10	30	↑	↑	7	↓	↓	↓
LAP-SF-200.003.7-F10	45	↑	↑	9	3	↓	↓
LAP-SF-250.004.7-F10	45	↑	↑	16	8	↓	↓
LAP-SF-250.004-F10	60	↑	↑	↑	↑	5	↓
LAP-SF-300.034-F10	60	↑	↑	↑	16	12	↓
LAP-SF-D300.034-F10[38)]	60	↑	↑	↑	16	12	↓
LAP-SF-D300.005-F14	80	↑	↑	↑	↑	↑	5
LAP-SF-D300.345-F14	80	↑	↑	↑	↑	↑	10

Other selection options on request

37 Selection of actuators for SISTO-20 with body 1.4409 on request

38 Max. 7 bar

Swing Check Valves

Swing Check Valves

Swing Check Valves to DIN/EN

SISTO-RSK/-RSKS

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

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
- 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.

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][1)]	≥ -20
Max. permissible temperature [°C][1)]	≤ +140

1 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	ASTM[2)]	Temperature limit
EN-GJS-400-18-LT (GGG40.3)	5.3103	A536 Gr. 60-40-18	-20 °C to +140 °C

Design details

Design

- Marked in accordance with DIN EN 19 (ISO 5209)
- Internally mounted hinge pin
- 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), temperature limit: +90 °C
- **Model approved for drinking water:** Body and cover coated with PA (Rilsan)[3)] 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
- With flushing connection

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.

Product information

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

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

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

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

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

Valves without electrical components do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 1 (zones 0+20), category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 2014/34/EU. Components such as electric actuators, position switches, block terminals, solenoid valves, etc. may in certain circumstances be covered by Article 1 of Directive 2014/34/EU. They must be subjected to a conformity assessment procedure and separate evidence of compliance must be provided (e.g. EC Declaration of Conformity or manufacturer's declaration).

Related documents

Information/documents

Document	Reference number
Operating manual	0570.821

Purchase order specifications

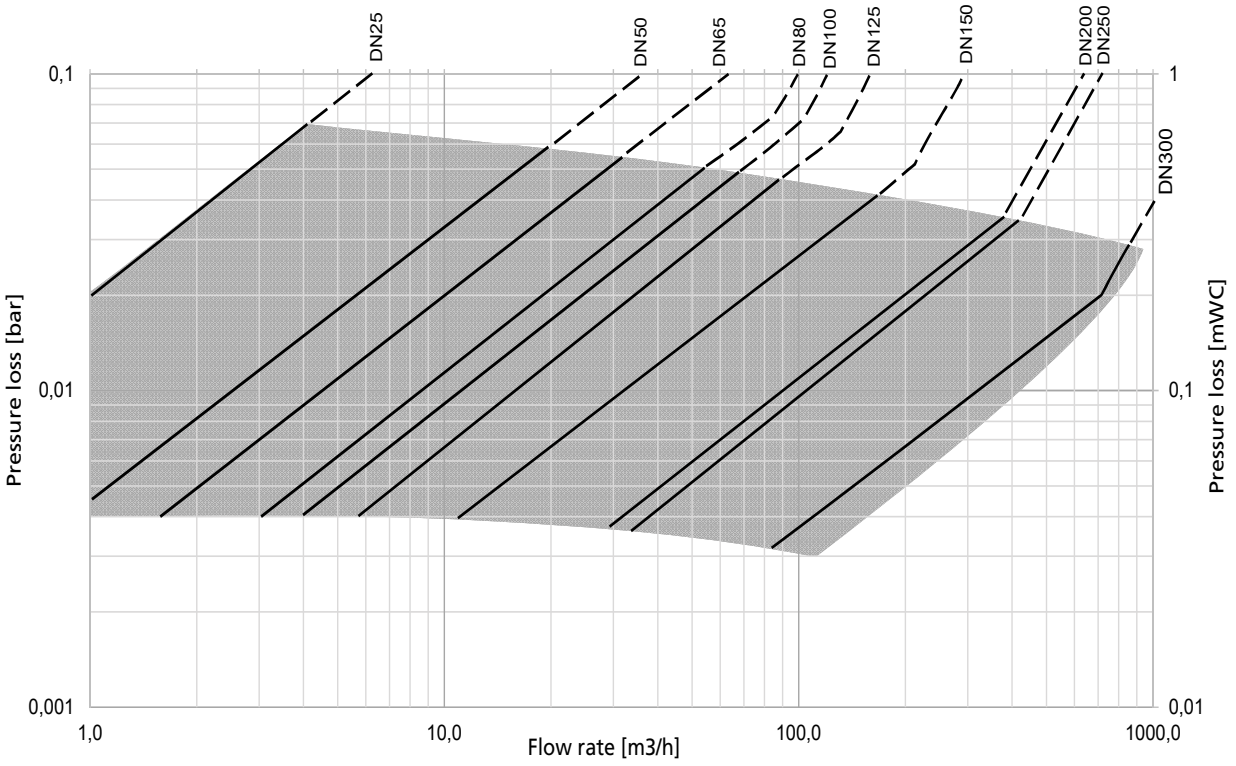
Please specify the following information in all enquiries or purchase orders:

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

2 ASTM materials similar to the materials indicated

3 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

Flow coefficients

Flow coefficients for unlined valves

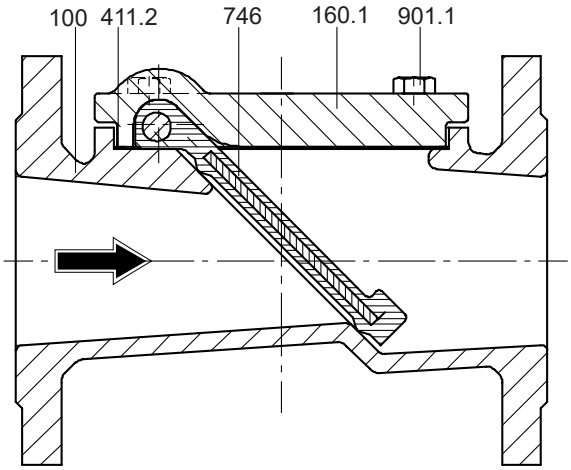
DN	Kvs value [m³/h]	
	RSK	RSKS
25	24.0	-
40	115,0	115,0
50	115,0	115,0
65	-	186,0
80	310,0	310,0
100	380,0	380,0
125	500,0	500,0
150	1010,0	1010,0
200	-	2000,0
250	-	2250,0
300	-	5000,0

Pressure/temperature ratings

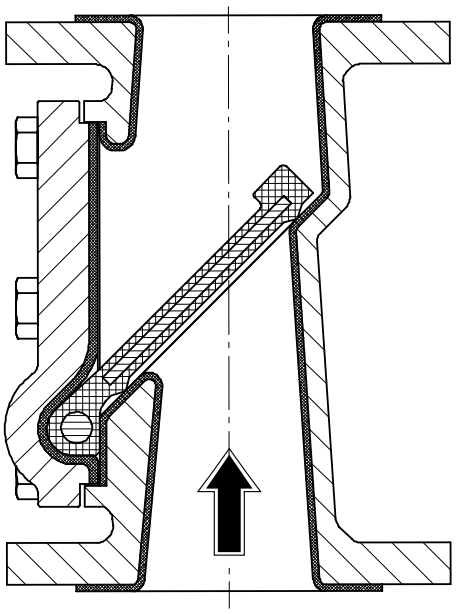
Permissible operating pressure [bar]

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

Materials



Horizontal installation position[4)]
(Shown: variant without lining)



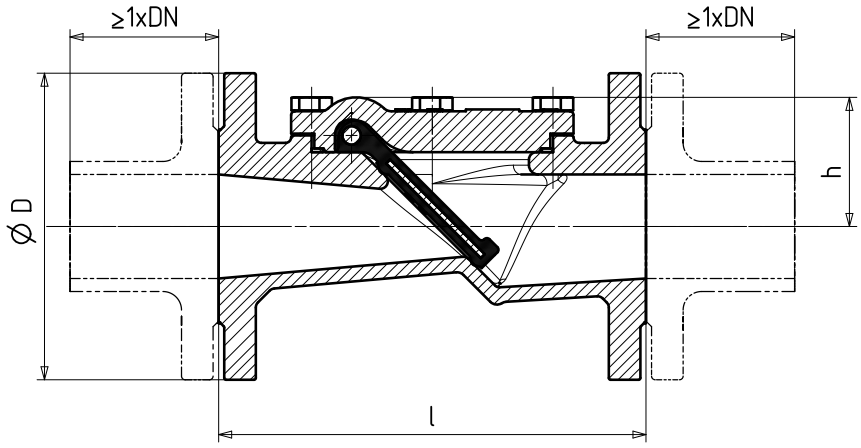
Vertical installation position [5)]
(Shown: variant with lining)

Parts list

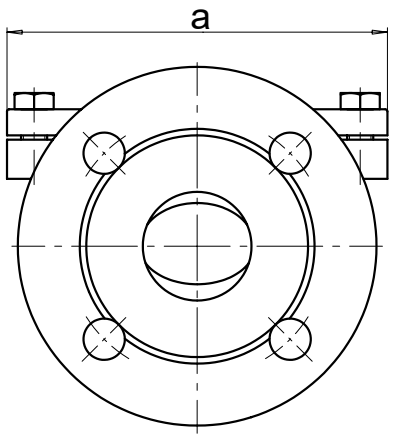
Part No.	Description	Material	Material number	Note
100	Body	EN-GJS-400-18-LT	5.3103	Standard
160.1	Cover	EN-GJS-400-18-LT	5.3103	Standard
411.2[6)]	Joint ring	EPDM	-	Standard
746[6)]	Valve disc	S355/IIR	-	Standard
901.1	Hexagon head bolt	A2-70	-	-

4 Recommended installation position
5 Vertical installation is only permitted if the fluid does not contain any solids.
6 Recommended spare parts

Dimensions and weights



SISTO-RSK/-RSKS
Front view / Sectional drawing
with upstream/downstream stabilisation distance



SISTO-RSK/-RSKS
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[7)]	164	164	78	150	12,8	12,9
50	230	200	175	164	78	165	12,8	13,1
65	-	240	-	164	78	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	130	250	50	45,7
150	480	400	290	290	130	285	55,5	61,5
200	-	500	-	390	190	340	-	108,7
250	-	600	-	390	190	405	-	138,9
300	-	700	-	550	260	460	-	285,8

Mating dimensions as per standard

RSK face-to-face length:	EN 558-1 R1
RSKS face-to-face length:	EN 558-1 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: (⇨ Page 7)).

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 7)).

Recommended stabilisation distances upstream and downstream of the swing check valve ≥ 1 x DN (see drawing above).

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

Actuators

Pneumatic Actuators

Diaphragm Actuators

SISTO-LAD

SISTO-LAD product description

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

They are 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 medium temperature: 80 °C
- Permissible ambient temperature: -10 °C to +80 °C

Actuator size [mm]	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $P_{ctr.\ perm.}$ [bar]	Stroke [max. mm]
100	F07	6	20
150	F10	6	35
220	F10	6	55

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

- Actuator rod sealed by U-ring and scraper ring
- Double-acting actuator diaphragm with or without spring
- Adjustable travel stop in closing direction
- Flanges to DIN ISO 5210/DIN 3358
- Mechanical travel stop in opening direction
- Installation kit and mating dimensions see type series booklet of the valve type series
- Manual override available as standard for spring-to-close design

Actuator function

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

Accessories

- Exhaust regulator
- Throttling valve
- Actuator rods protruding from both ends (stroke limited in closing direction)
- Filter/pressure reducer
- Solenoid valves
- Limit switch(es)
- Silencer
- Positioner (not applicable for AZ)

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

Product information

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

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/ .

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

Purchase order specifications

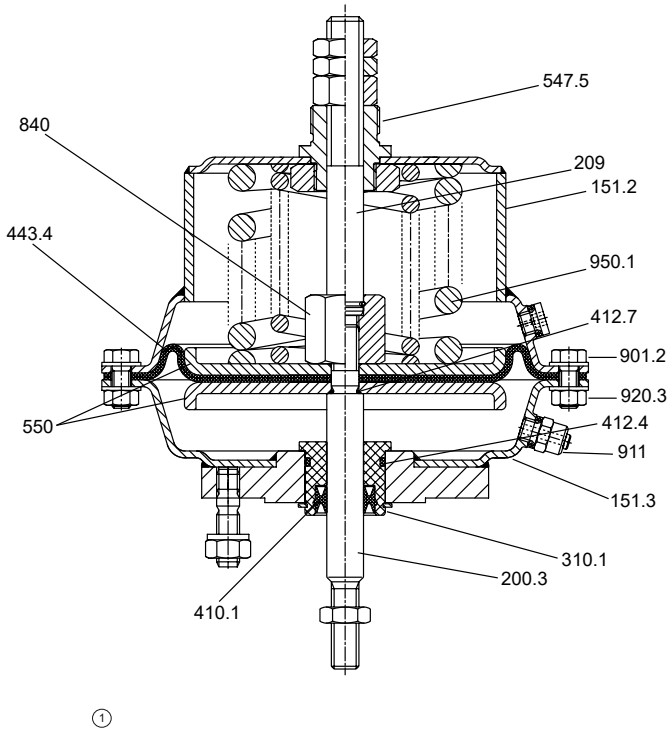
Actuator

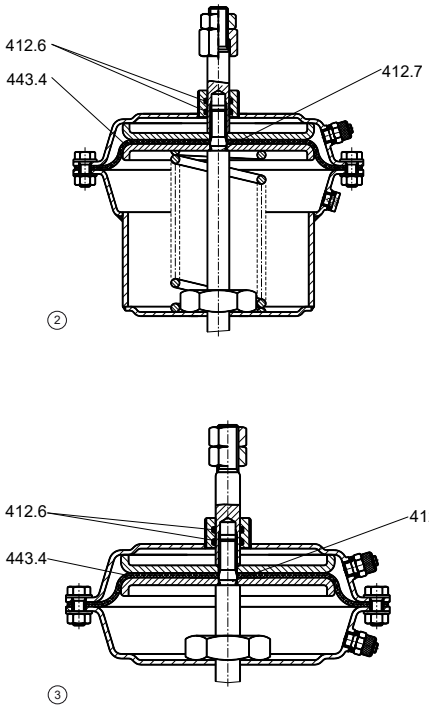
Please specify the following information in all enquiries or purchase orders:

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

SISTO-LAD diaphragm actuator





1	LAD-SF type	2	LAD-OF type	3	LAD-AZ type

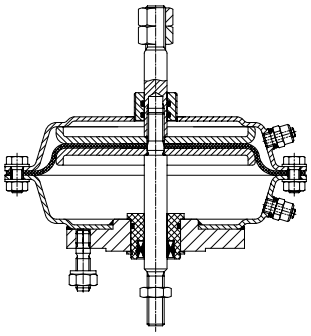
Parts list

Part No.	Description	Material	Material number
151.2	Upper housing section	Steel / PA-coated	-
151.3	Lower housing section with actuator flange	Steel / PA-coated	-
200.3	Stem	X14CrMoS17	1.4104
209	Piston rod	X14CrMoS17	1.4104
310.1[1)2)]	Plain bearing	Plastic - POM	-
410.1[1)2)]	Seal/wiper set	Plastic - L96-SFR/NBR	-
412.4[1)2)]	O-ring	NBR	-
412.6[1)2)]	O-ring	FPM	-
412.7[1)2)]	O-ring	NBR	-
443.4[1)]	Actuator diaphragm	NBR	-
547.5	Guide bush	SoMs59	-
550[2)]	Diaphragm plate	Galvanised steel	-
840	Coupling	X14CrMoS17	1.4104
901.2	Hexagon head bolt	A2-70	-
911[3)]	Compressed air port	MS	-
920.3	Nut	A2	-
950.1	Spring	Spring steel	-

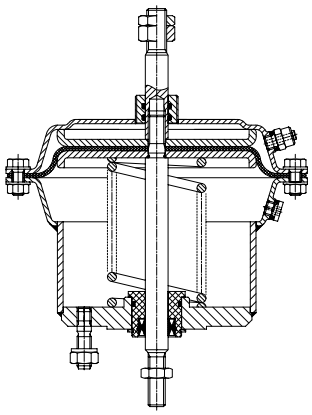
1 Recommended spare parts (= complete set of sealing elements)
2 We recommend having these parts replaced in our factory.
3 For 8x1 PA hose

Variants

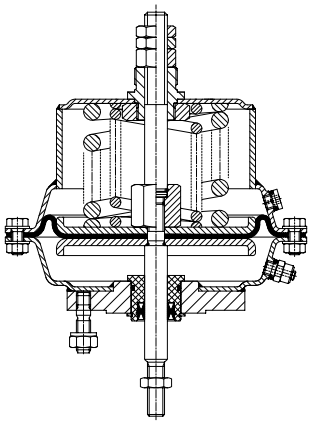
SISTO-LAD diaphragm actuator and accessories



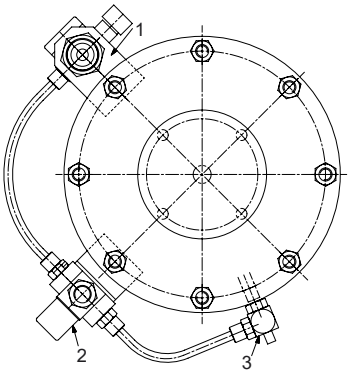
LAD-AZ type



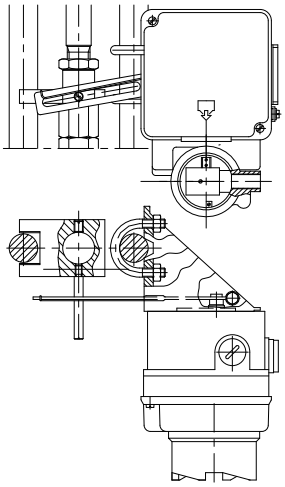
LAD-OF type



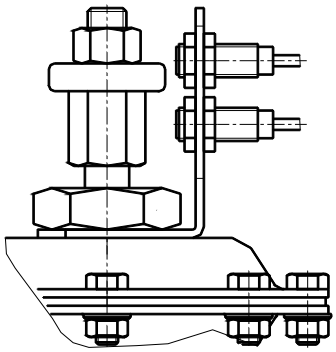
LAD-SF type



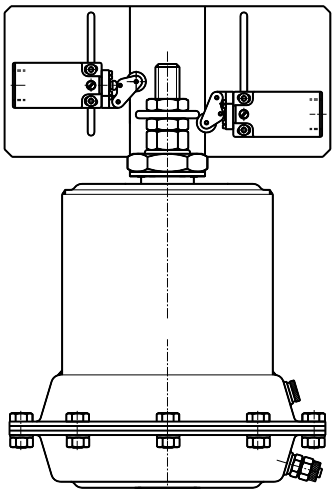
1) Filter/pressure reducer
2) Solenoid valve
3) Throttling valve



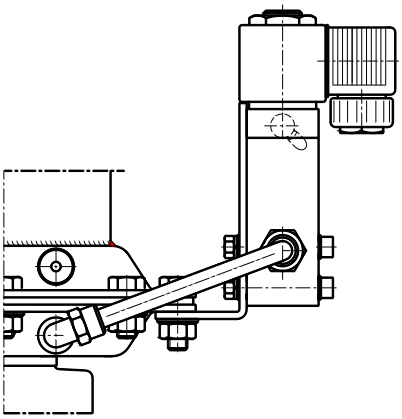
Configuration with positioner



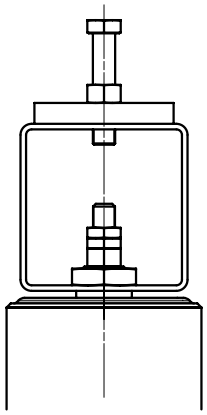
Configuration with proximity sensor



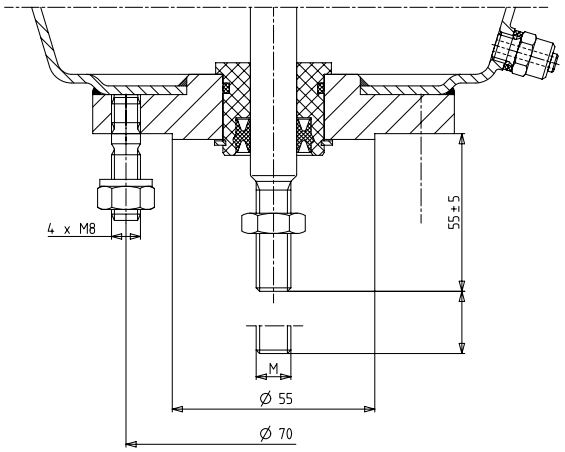
Configuration with mechanical limit switches



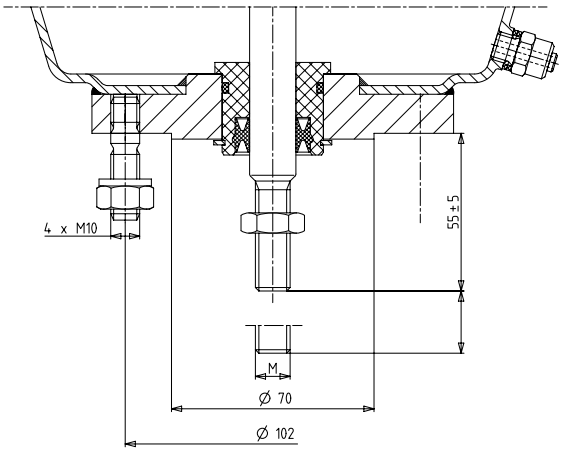
Configuration with solenoid valve



Adjustable travel stop in opening direction (optional)



Flange connection F07[4)]



Flange connection F10[4)]

Symbols key

Symbol	Description
M	M12 for LAD 100/150 M20 for LAD 220

Mating dimensions as per standard

Flange connection: DIN ISO 5210 / DIN 3358

4 See "Symbols key" table

Pneumatic Actuators

Piston Actuators

SISTO-LAP

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 medium temperature: 80 °C
- Permissible ambient temperature: -10 °C to +80 °C

Permissible control pressure

Piston diameter	Actuator flange DIN ISO 5210 / DIN 3358	Permissible control pressure $p_{ctrl.\ perm.}$
[mm]		[bar]
80 - 250	F10	5,5 - 10
250	F14	5,5 - 10
300	F10	5,5 - 7
300	F14	5,5 - 10
D250[1)]	F14	5,5 - 7
D300[1)]	F14	5,5 - 7
500	F25	4-10
D500[1)]	F25	4-7

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.

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

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

Product information

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

For information as per chemicals Regulation (EC) No 1907/2006 (REACH), see https://www.ksb.com/ksb-de/konzern/Unternehmerische_Verantwortung/reach/

1 Double piston

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

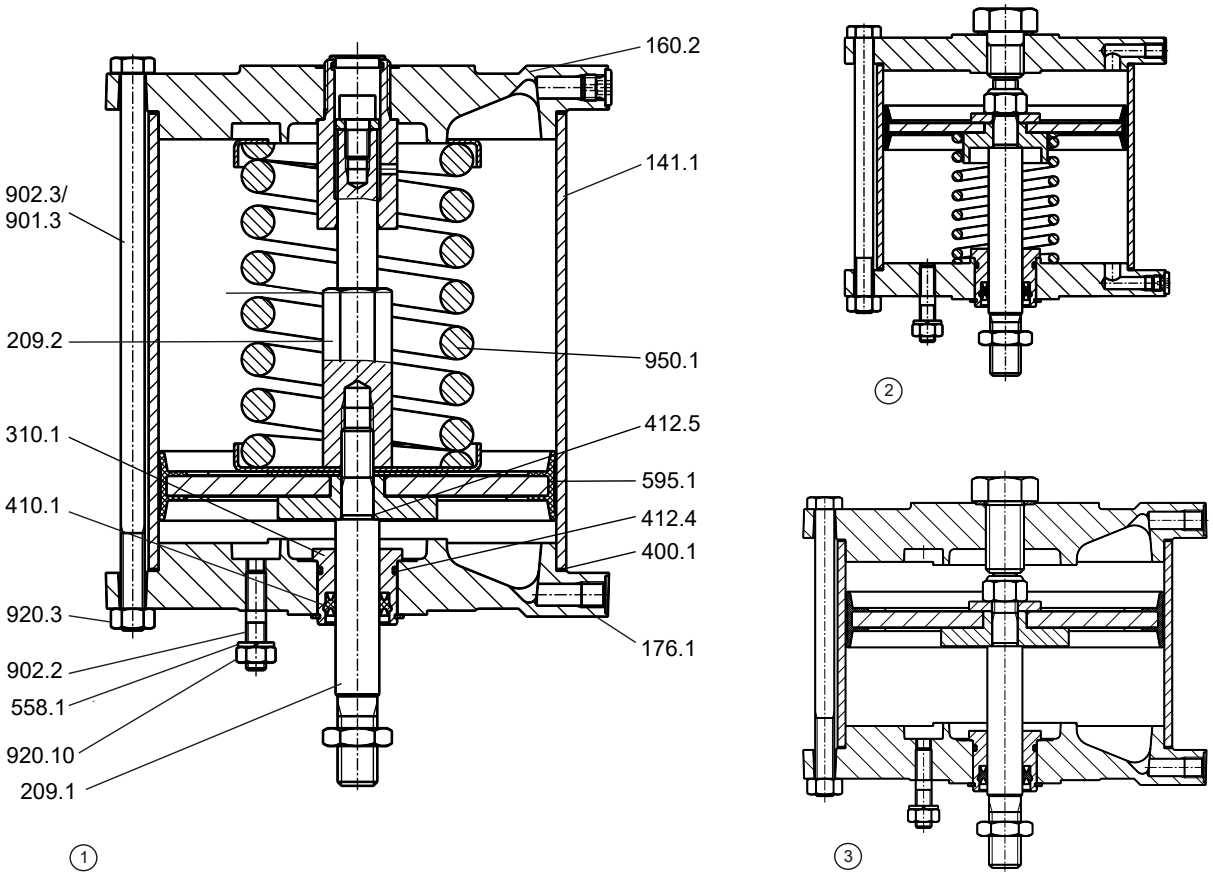
Purchase order information

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



1	LAP-SF type	2	LAP-OF type	3	LAP-AZ type

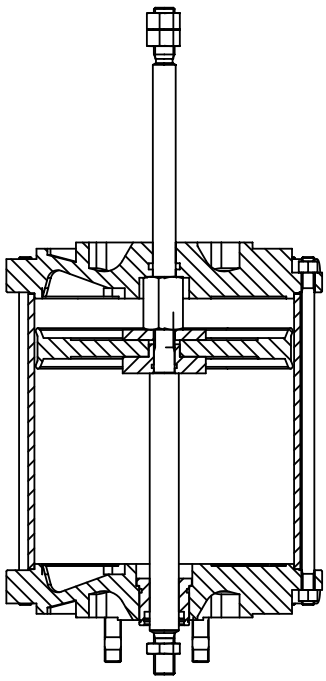
Parts list

Part No.	Description	Material	Material number	Piston diameter [mm]
141.1	Cylinder	AlMgSi	3.3206	80 - 300
160.2	Top end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 300
176.1	Bottom end cap	AlCu4PbMgMn AlSi7Mg0.3	3.1645 3.2371	80 - 160 200 - 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[2) 3)]	Plain bearing	Plastic – POM	-	80 - 300
400.1[2) 3)]	Gasket	Plastic – AFM 30	-	80 - 300
410.1[2) 3)]	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.4[2) 3)]	O-ring	NBR	-	-
412.5[2) 3)]	O-ring	NBR	-	-
558.1	Lock washer	A2	-	-
595.1[2) 3)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
901.3	Hexagon head bolt	8.8 A2E	-	-
902.2	Stud	8.8 A2E	-	-
902.3	Stud	A2-70	-	-
920.3	Nut	A2	-	-
920.10	Nut	A2	-	-
950.1	Spring	Spring steel	-	80 - 300

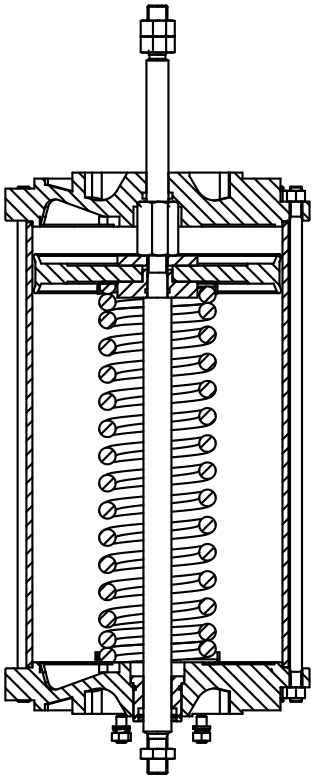
2 Recommended spare parts (= complete set of sealing elements)
3 We recommend having these parts replaced in our factory.

Materials

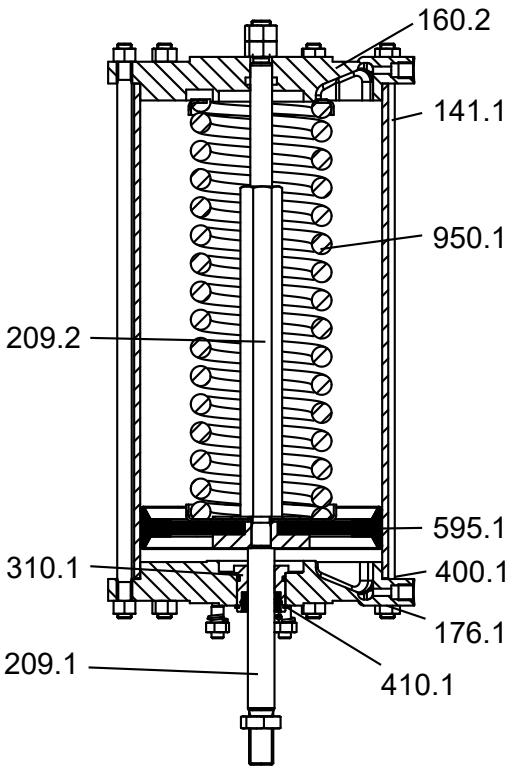
SISTO-LAP piston actuator
(with piston rods protruding from both cylinder end caps)



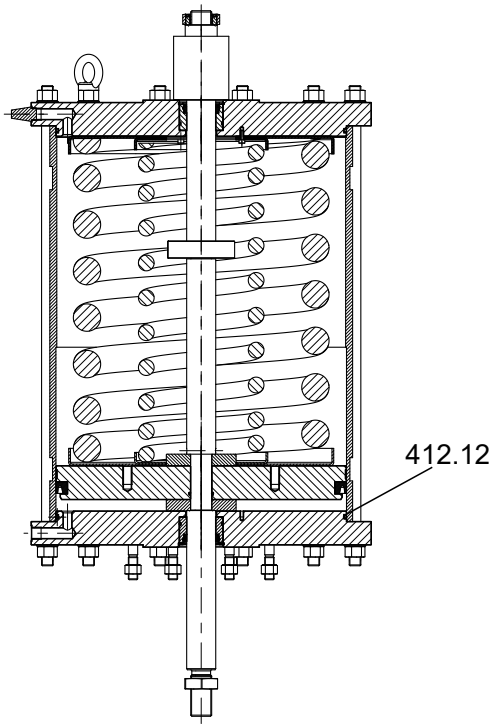
LAP-AZ....DK



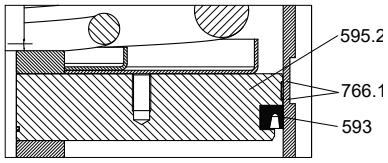
LAP-OF....DK



LAP-SF....DK



LAP-SF 500....DK



Piston 500

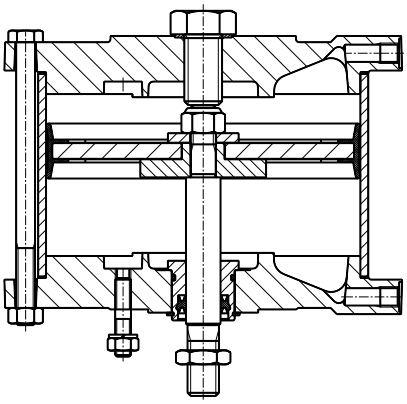
Parts list

Part No.	Description	Material	Material numbers	Piston diameter [mm] DK
141.1	Cylinder	AlMgSi0.5F22 St E355	3.3206 1.0580	80 - 300 500
160.2	Top end cap	AlCuMgPb AlSiMg AW2017A	3.1645 3.2371	80 - 160 200 - 300 500
176.1	Bottom end cap	AlCuMgPb AlSiMg AW2017A	3.1645 3.2371	80 - 160 200 - 300 500
209.1	Lower piston rod	Stainless steel - X12CrMoS17	1.4104	80 - 500
209.2	Upper piston rod	Stainless steel - X12CrMoS17	1.4104	80 - 500
310.1[4) 5)]	Plain bearing	Plastic - POM CWR710R	 2.0540	80 - 300 500
400.1[4) 5)]	Gasket	Plastic – AFM 30	-	80 - 300
410.1[4) 5)]	Seal/wiper set	Plastic – L96-SFR/NBR	-	80 - 300
412.12	O-ring	NBR	-	500
593[4) 5)]	Piston seal	Acrylonitrile butadiene rubber – NBR	-	500
595.1[4) 5)]	Piston assembly	Steel/acrylonitrile butadiene rubber – St/NBR	-	80 - 300
595.2	Piston	Cast aluminium alloy – G-AlSi7Mg AW2017A	3.2371	500
766.1[4) 5)]	Guide strap	PTFE	-	500
950.1	Spring	Spring steel	-	80 - 500

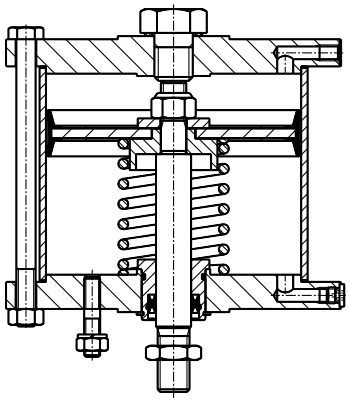
4 Recommended spare parts (= complete set of sealing elements)
5 We recommend having these parts replaced in our factory.

Variants

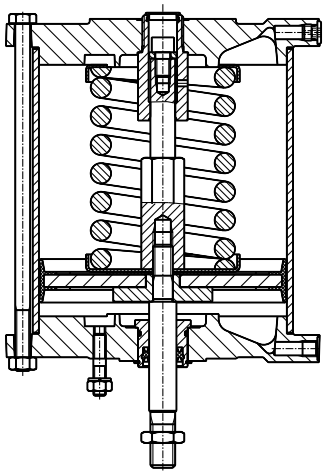
SISTO-LAP piston actuator and accessories



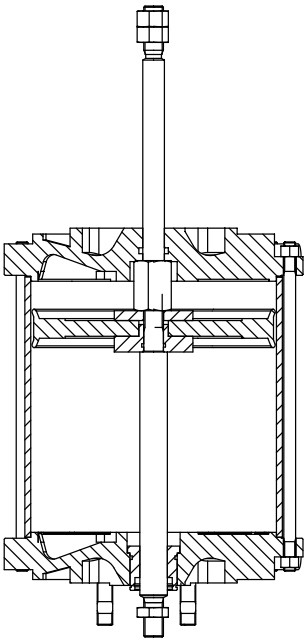
LAP-AZ type



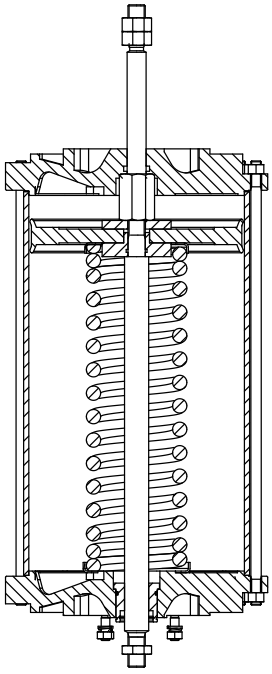
LAP-OF type



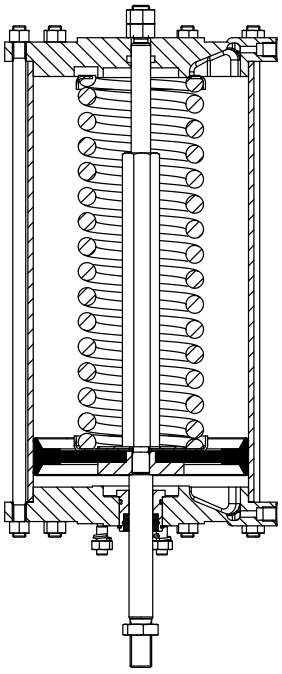
LAP-SF type



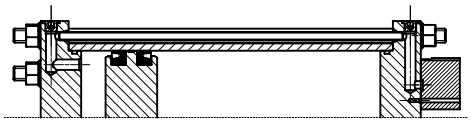
LAP-AZ....DK type



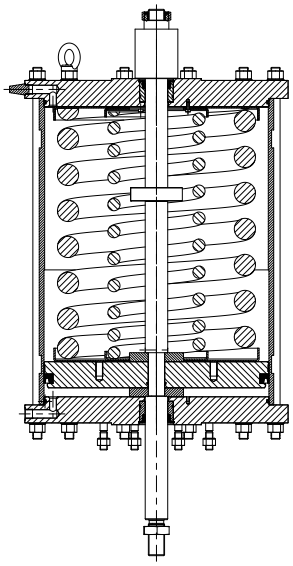
LAP-OF....DK type



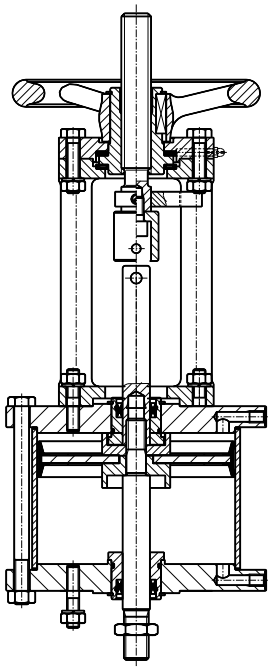
LAP-SF....DK type



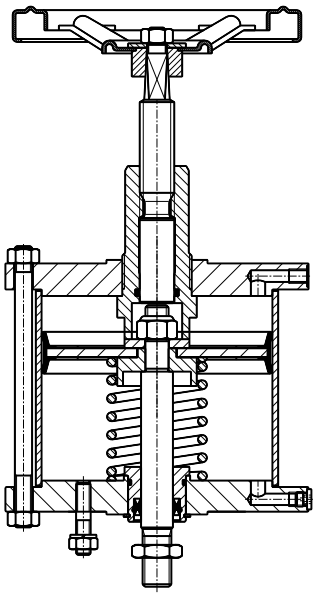
Internal air routing, example: LAP-AZ-500
(only available for LAP-500 design)



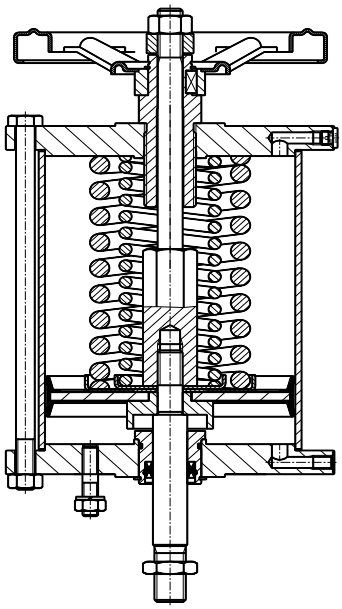
LAP-SF-500....DK type
(design with piston rods protruding from both cylinder end caps only)



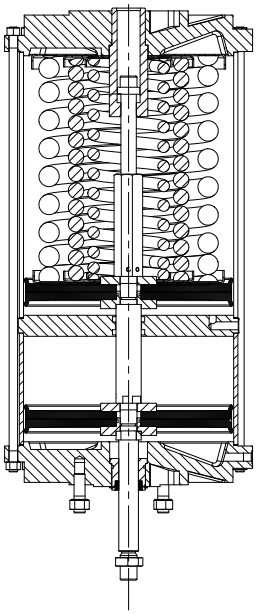
LAP-AZ type with emergency handwheel



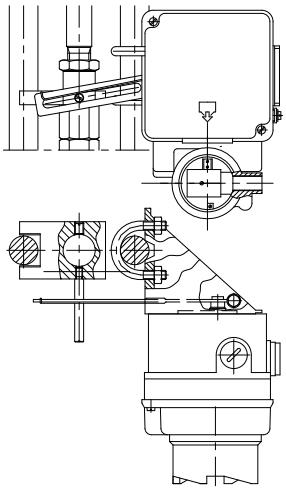
LAP-OF type with emergency handwheel



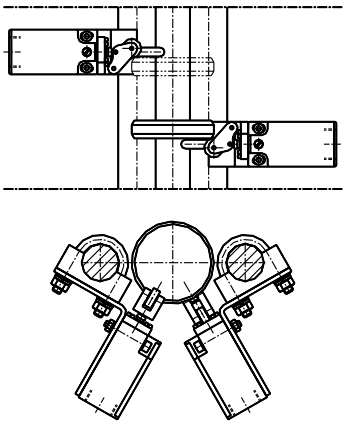
LAP-SF type with emergency handwheel



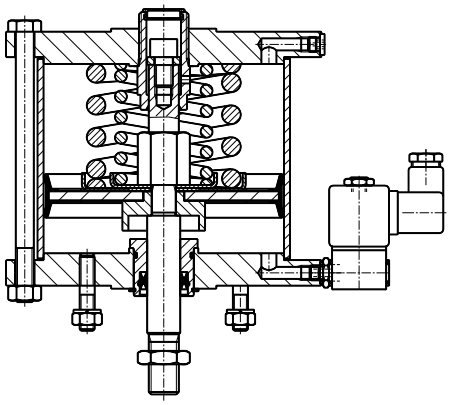
LAP-SF type with double piston



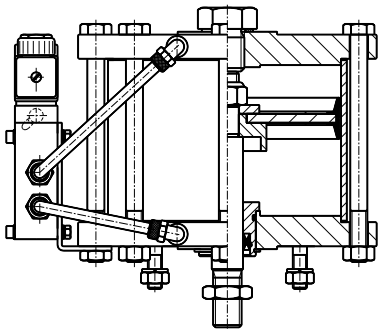
Configuration with positioner



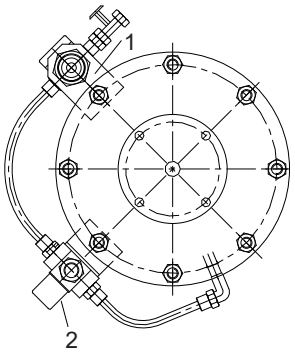
Configuration with limit switches



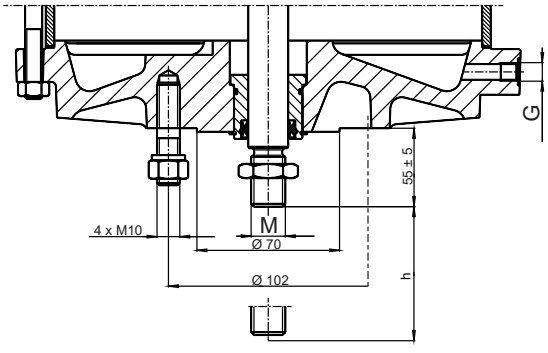
LAP-SF type with 3/2 directional control valve



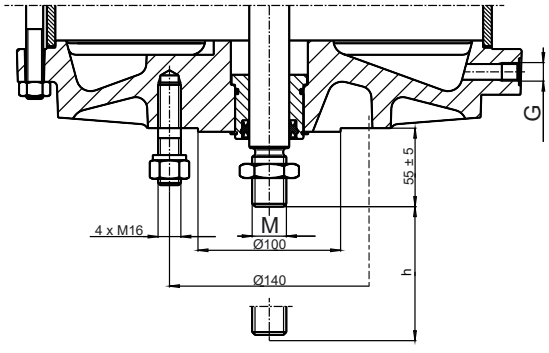
LAP-AZ type with 5/2 directional control valve



1) Filter/pressure reducer
2) Solenoid valve

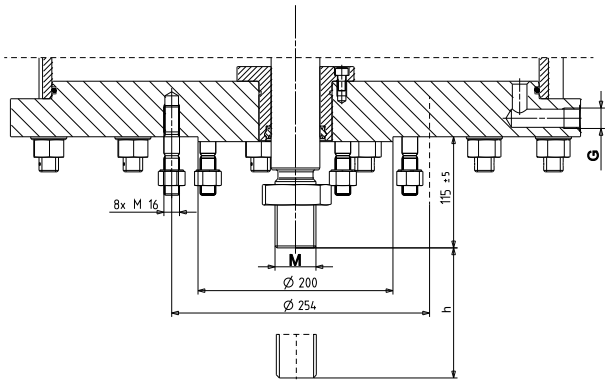


Flange connection F10[6)]



Flange connection F14[6)]

6 See "Symbols key" table



Flange connection F25[6)]

Symbols key

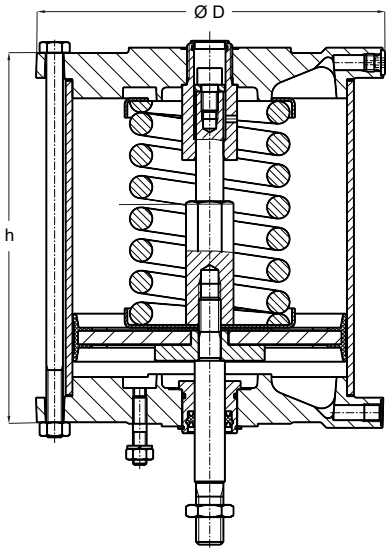
Symbol	Description
G	G1/8" for piston diameters 80/125/160 G1/4" for piston diameters 200/250/300 G 1/2" for piston diameter 500
M	M12 for piston diameters 80/125 M20 for piston diameters 160 to 300 M24 for piston diameter D 300/F14 optional M36x3 for piston diameter 500

Mating dimensions as per standard

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

Dimensions and weights

SISTO-LAP piston actuator



SISTO-LAP

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

Type	Stroke [mm]	Ø D[mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
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: air-to-open/spring-to-close (SF) 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
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

Type	Stroke [mm]	Ø D[mm]	h [mm]	[kg]	Opening force [N]	Closing force [N]
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
PSL or AUMA

PSL product description

Electric linear actuators of PSL type range for open-close and simplified control actuation

Operating mode: S4 – 80% (PSL 202 – 204)
and
S4 – 50% (PSL 208 – 214)

Ambient temperature -20 °C to +60 °C,
operation with 230V/50Hz single-phase AC motor

Types: PSL 202
PSL 204
PSL 208
PSL 210
PSL 214

Basic version:

- Easily adjustable limit switches for open/close position
- Defined closing force by cup springs in closing position
- Motor overload protection (PSL 202 – 210), thermo switch (PSL 214) – Handwheel for manual operation
- Enclosure Protection IP65 (PSL 202-210)
- Enclosure Protection IP67 (PSL214)

For technical information and data sheets, please visit:
www.ps-automation.de/de/downloads

AUMA product description

Electric multi-turn actuators of SA type range for open-close duty with 3-phase AC motors;
for short-time duty S2 – 15 min, 400V/50 Hz
Ambient temperature -40 °C to +80 °C
Drive speed 32 rpm; output drive type B1
Driven by AUMA 3-phase AC motor 400 V/50 Hz, insulation class F, Motor protection:
thermo switches connection to motor plug/socket connector

Types: SA 07.2-B1-32
SA 07.6-B1-32
SA 10.2-B1-32
SA 14.2-B1-32

For technical information and data sheets, please visit:
www.auma.com

Basic version:

- Counter gear mechanism, easily adjustable for limit seating in end positions OPEN and CLOSED
- Adjustable torque switching for directions OPEN and CLOSE
- Blinker transmitter for running indication
- Heater in switch compartment suitable for 110 V - 250 V
- Corrosion protection: KS, powder coated, AUMA silver-grey (similar to RAL 7037)
- Internal wiring in compliance with terminal plan TPA00R1AA-101-000 to plug/socket connector
- Handwheel for setting and emergency operation. Manual operation is automatically disengaged when switching on the motor and handwheel does not rotate during electrical operation
- Enclosure protection of multi-turn actuators IP68 in compliance with EN 60529

Appendix

DECLARATION OF CONFORMITY

Hereby we,

SISTO ARMATUREN S.A.
18, rue Martin Maas
L-6468 Echternach

declare, that the valves listed below comply with the specific safety requirements in accordance with appendix 1 of the Pressure Equipment Directive 2014/68/EU.

Description of the valve types:

Diaphragm Valves
Manually and Pneumatically Actuated Valves

SISTO-KB		PN 10	DN 32 - 200
SISTO-KBS		PN 10	DN 32 - 200 (ND 1 ¼ " - 8")
SISTO-10		PN 10	DN 32 - 300
SISTO-10S		PN 10	DN 32 - 200 (ND 1 ¼ " - 8")
SISTO-10M		PN 10	Rp 1 ¼ " - 3"
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 ¼ " - 3")
SISTO-16S		PN 16	DN 32 - 200 (ND 1 ¼ " - 8")
SISTO-20	DIN	PN 16	DN 32 - 200
		PN 10	DN 250 - 300
		PN 16	DN 32 - 80 (Rp 1 ¼ " - 3")
	ISO	PN 20	DN 32 - 125
SISTO-B		PN 10	DN 32 - 100
SISTO-C		PN 16	DN 32 - 300

Swing Check Valves

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

suitable for: Fluid group 1 and 2

Conformity Assessment Procedure: Modul H

Name and address of the authorizing and monitoring notified body:
TÜV Rheinland - Zertifizierungsstelle
für Druckgeräte der
TÜV Rheinland Industrie Service GmbH
Am Grauen Stein
D-51105 Köln

Number of notified body: 0035

Number of Certificate: 01 202 L/Q-04 0004

Nominal sizes ≤ DN 25 (Rp 1") are developed and manufactured according to the same specifications as fittings > DN 25 (Rp 1") and are therefore subject to „sound engineering practice" in accordance with Article 4(3). A CE marking is not affixed.

Head of
Design and Development

Integrated Management
Manager

Echternach, 08.04.2021

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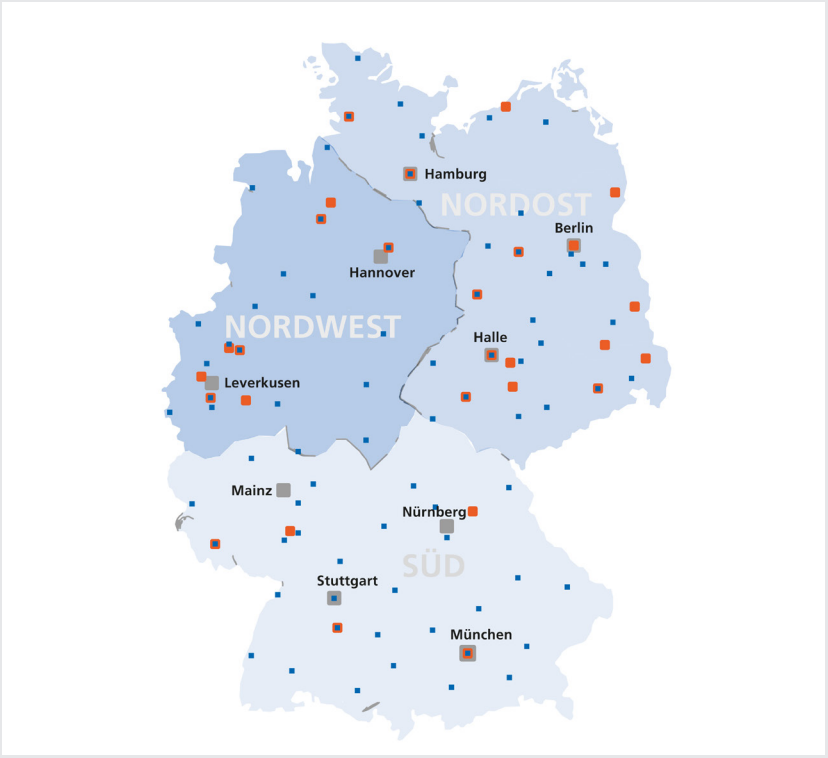

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