

Diaval®



Diaphragm Valves
www.diaval.com

Weir Type Diaphragm Valves

Codification

W D 0 0 D I 1 0 D 1 0 0 5 0

BODY DESIGN

W	Weir
S	Straight Through
F	Full Flow

FACE TO FACE/DRILLING

DI10	DIN3202F1 PN10
AS15	BS5156 ASA 150
BS10	BS5156 PN10

BODY/BONNET MATERIAL

C	Cast iron
D	Ductile iron
A	Carbon steel
S	St. steel 316
I	Chr. iron 24%
J	Chr. iron 30%
B	Bronze
K	St. steel 316L
E	St. steel 304
M	Monel
H	Hastelloy
X	St. steel 1.4435
Y	St. steel 1.4435 BN2

DIAPHRAGM/SEALING

D10	Natural rubber
D15	White natural rubber
D20	EPDM
D2V	EPDM vacuum service
D30	Butyl
D40	NBR
D4V	NBR vacuum service
D50	Neoprene
D60	Hypalon
D70	Viton
D92	PTFE/EPDM
D93	PTFE/Butyl
D97	PTFE/Viton
DLN	Linatex
D9E	Laminated PTFE with EPDM back

BODY BASE MATERIAL

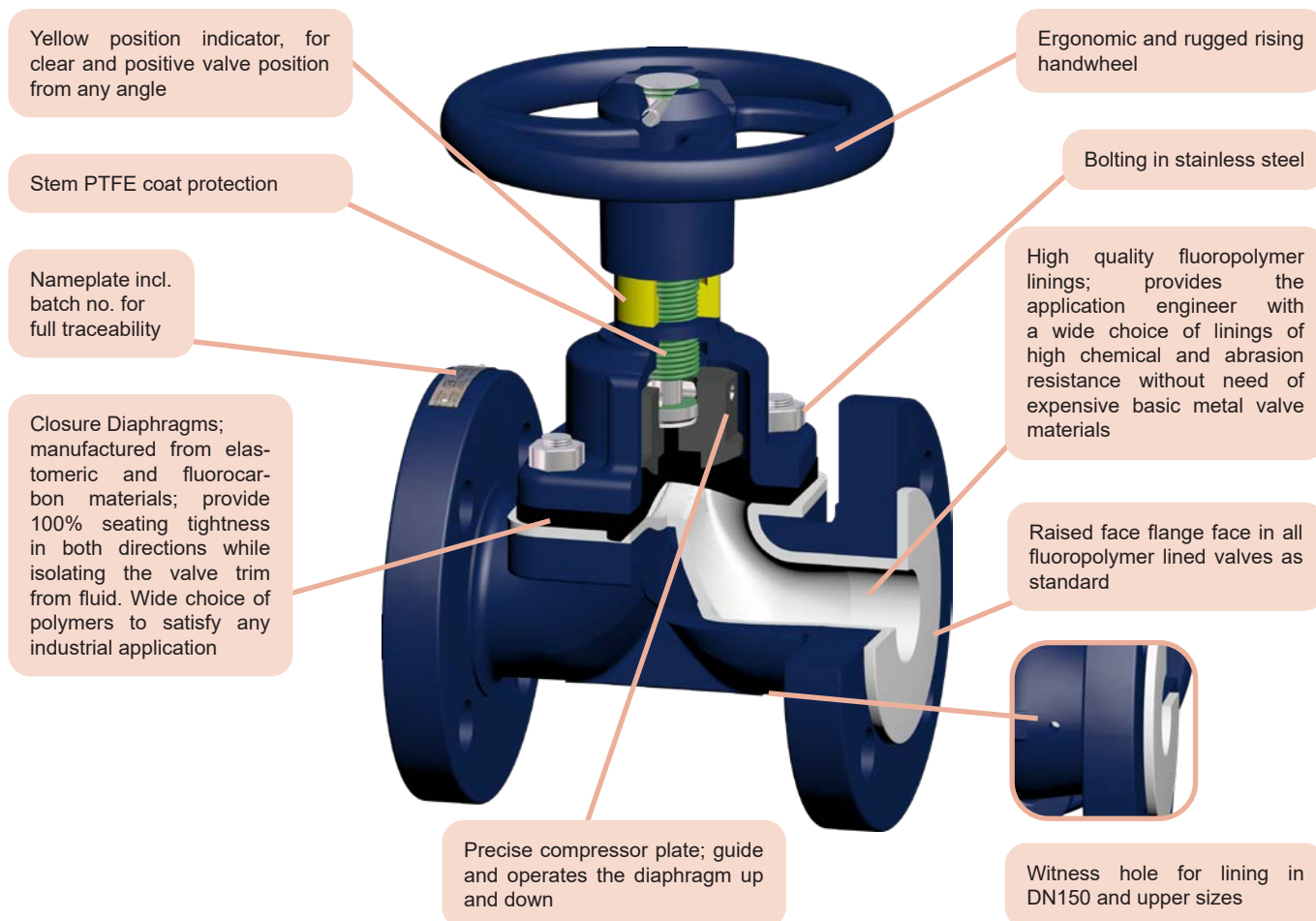
00	Unlined
HR	Hard rubber
SR	Soft rubber
BR	Butyl rubber
ER	EPDM rubber
NL	Neoprene rubber
HY	Hypalon® rubber
PF	PFA
FE	FEP
ET	ETFE
HL	Halar®
LN	Linatex

SIZE

015	DN15
050	DN50
100	DN100

Fluoropolymer Lined valves Design Attributes

Weir Type Diaphragm Valves are linear motion valves, bidirectional, for stopping or regulating the flow of the service fluid when necessary. Valves close by turning the handwheel clockwise. Valves are bolted bonnet, seatless design, with a diaphragm as closure element, with rising handwheel. Valves are offered with a broad range of diaphragms and linings materials to resist to abrasion and corrosion duties. The valves are inexpensive and easy to maintain, being the optimal solution for a large number of applications.



Main Features

Valve design: EN 13397, EN 12516

Face to face length: EN 558 Series 1 (DIN 3202F1) or EN 558 Series 7 (BS 5156)

Valve end connections: - Flanged to EN 1092-2 type 21/B, PN10/16 (DN15-150)*; PN10 (DN200-300)

**(valves DN65 with 4 holes as accepted variant in standard)
option drilling to ASA150#*

Marking: EN 19

Pressure Tests: EN 12266-1

Seat leakage rate: Rate A (full seat tightness in both directions)

Outside epoxy coating protection blue color similar to RAL5814 for Fluoropolymer lined. Min. average thickness 60µm

Product compliant with Directive 2014/68/EU on Pressure Equipment (PED) and Machinery Directive 2006/42/EC

Options

Other materials, other ratings and connexions, pneumatic or electric actuator, limit switches, sealed bonnet, interlocking arrangement, padlocking or handwheel hood to avoid non-authorized operation. Please consult us

Main Duties / Limits of use

Liquids compatible with materials of construction, acc. to Directive 2014/68/EU Annex II tables 8 (group 1*) & 9 (group 2*) up to category I **PTFE Diaph.**

PS:10 bar DN10-125 (Art.4-Parr.3)

PS:6 bar DN150 (Art.4-Parr.3)

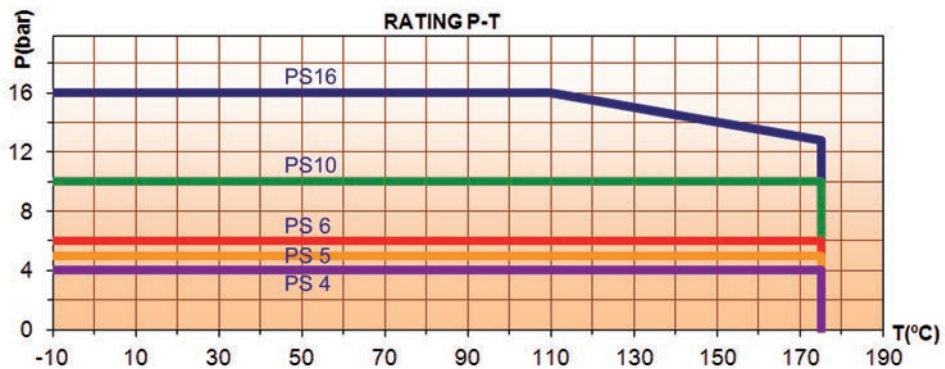
Combination of Body + Lining + Diaphragm determines the P-T limit of use of the valve

Questions referring to chemical resistance, please consult us

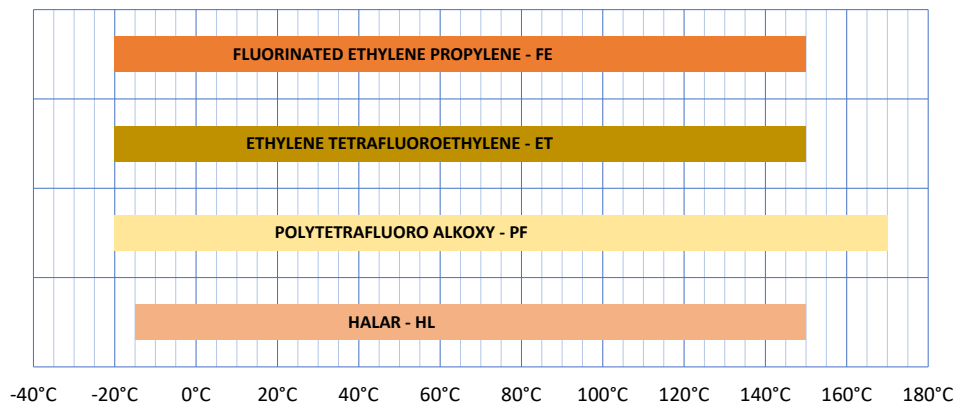
Observe also pressure/temperature limits on diagrams under

*Classification of fluids (group 1 or 2) acc. to Directive 2014/68/EU, Article 13

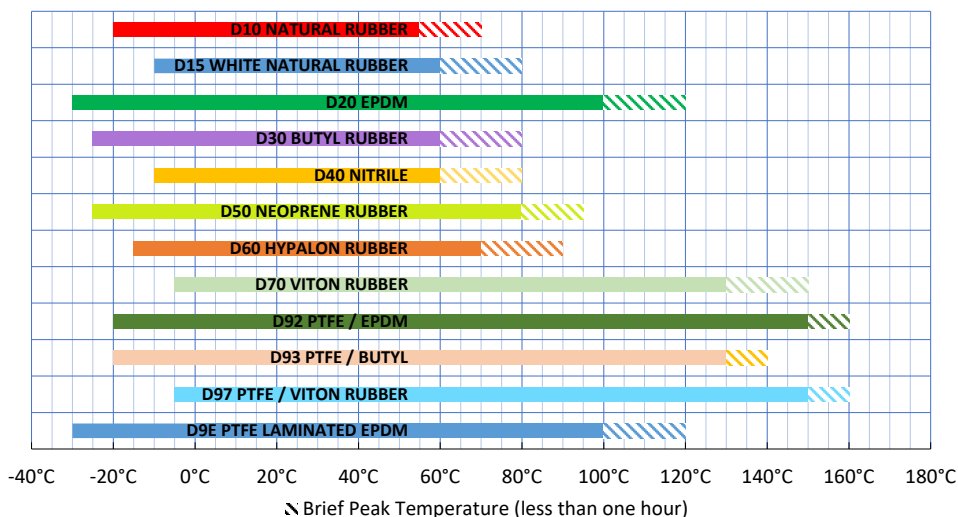
Bodies (Ductile iron)



Linings



Diaphragms



Temperature Values are for neutral fluids and not plotted against any pressure parameter, the application engineer should consider that working limits are affected by the actual pressure / temperature relationship. Temperature values also depends on medium through the valve.

Valves Flow Data

A valve flow coefficient represents the standard flow rate which flows through the valve at a given opening, referred to pre-established conditions:

* Kv value is the volume of water at 20°C, in cubic meters per hour (m³/h), that will flow through the valve at a static pressure drop of 1 bar across the valve

* Cv value is the volume of water at 60°F, in gallons per minute (gpm), that will flow through the valve at a static pressure drop of 1 psi across the valve

Conversion from Kv to Cv can be roughly calculated by means of the following expression:

$$Cv = Kv \times 1,17$$

Flow rate through the valve with other liquids can be calculated with the following expressions

$$Kv = q (SG / dp)^{1/2}$$

where

q = water flow (cubic meter per hour)

SG = specific gravity (1 for water)

dp = pressure drop (bar)

$$Cv = q (SG / dp)^{1/2}$$

where

q = water flow (US gallons per minute)

SG = specific gravity (1 for water)

dp = pressure drop (psi)

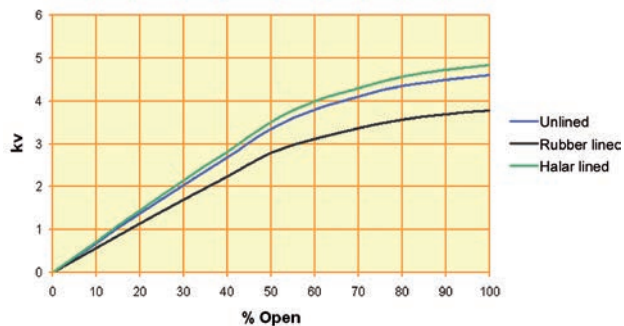
How to use the graphs:

The flow graphs in the following sheets provide the valve flow rate across the valve body at a determine opening degree.

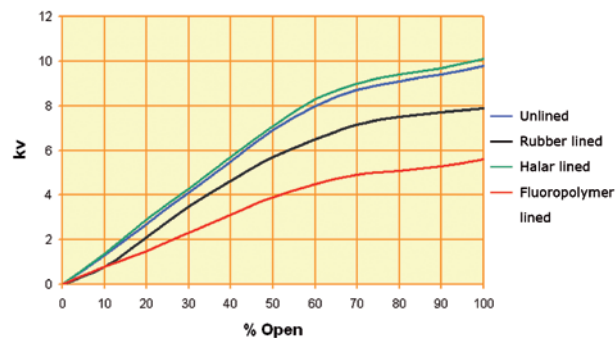
Choose the graph heading the valve Nominal Diameter which is being looked for; consider the valve inner lining features from a choice of unlined, rubber lined, ECTFE (Halar) lined or Fluoropolymer coated valve bodies and plot an intersection line upwards from the opening degree (in case of throttling) or full open to the colour representing the lining. The vertical axis will give the Kv value expressed in M³/h.

Flow Coefficients Kv (m³/h)

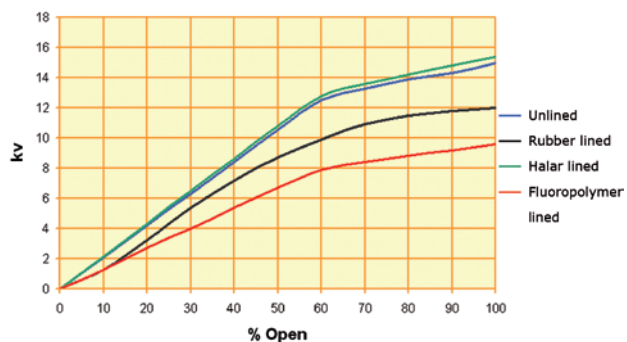
Weir Type DN15



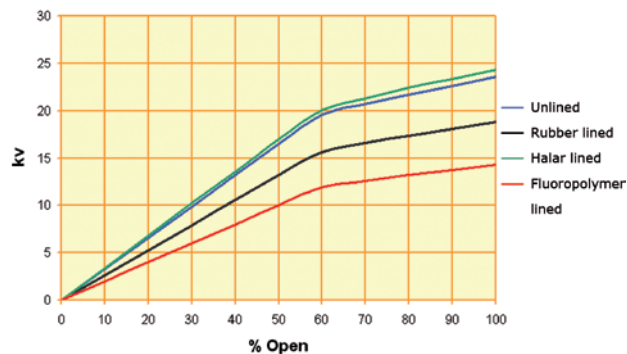
Weir Type DN20



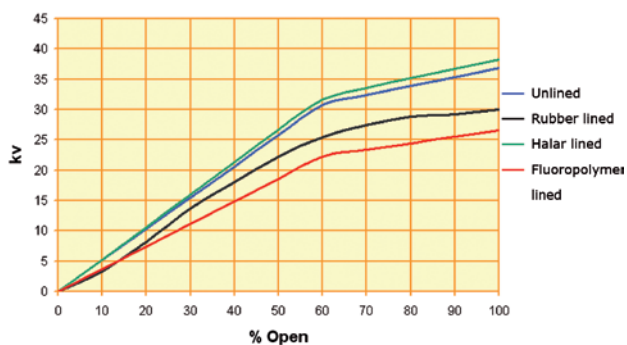
Weir Type DN25



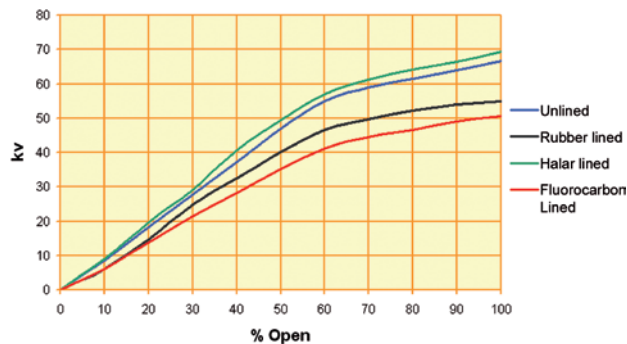
Weir Type DN32



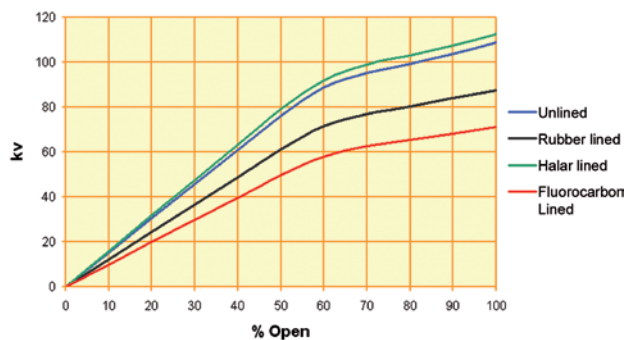
Weir Type DN40



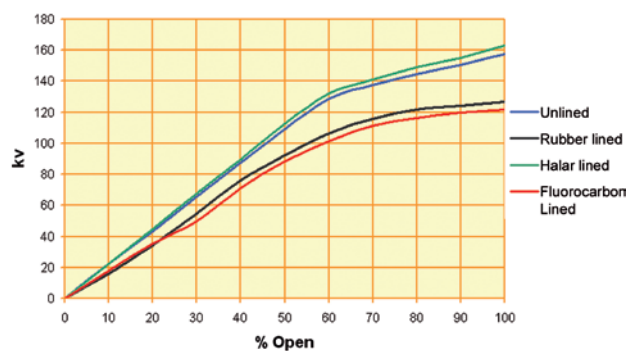
Weir Type DN50



Weir Type DN65

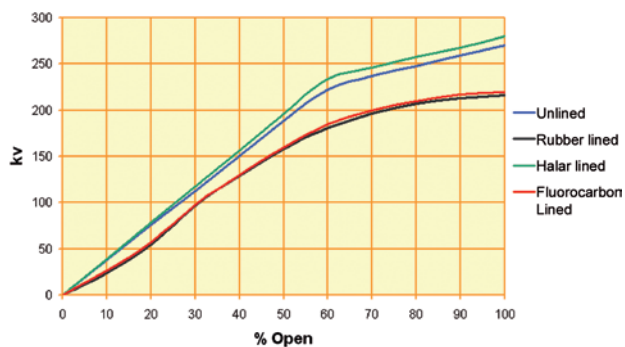


Weir Type DN80

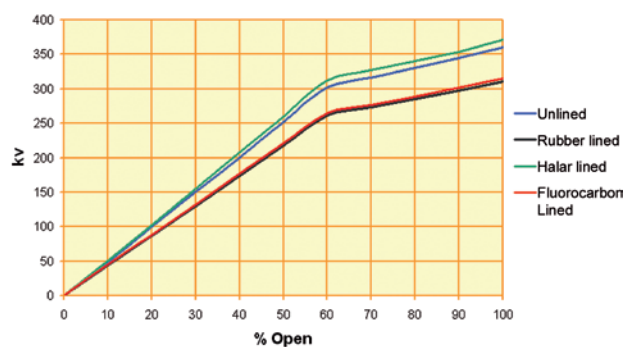


Flow Coefficients Kv (m³/h)

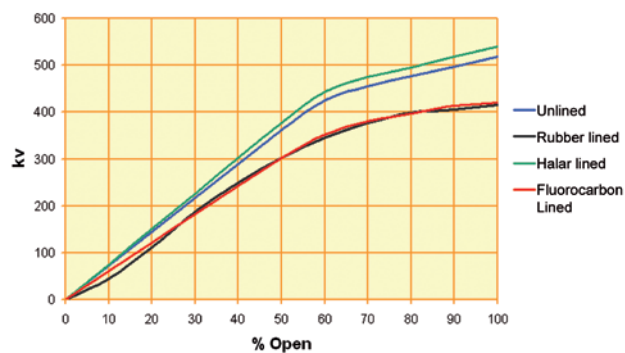
Weir Type DN100



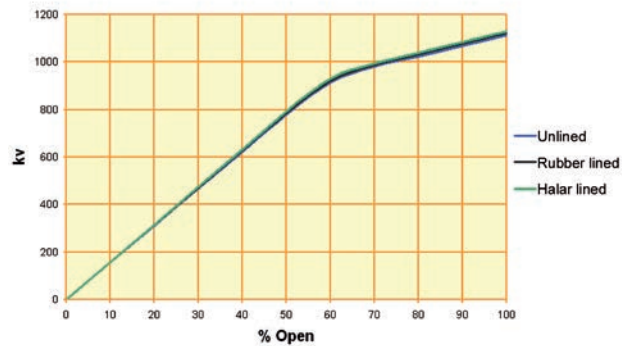
Weir Type DN125



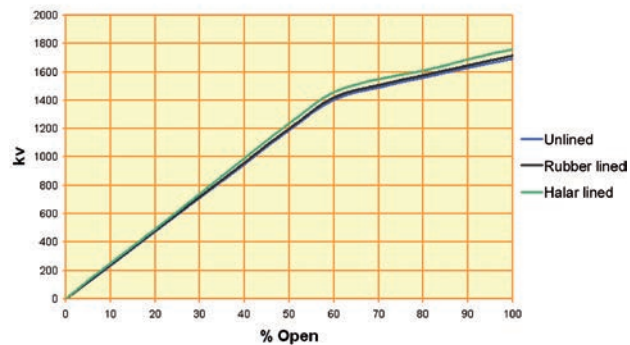
Weir Type DN150



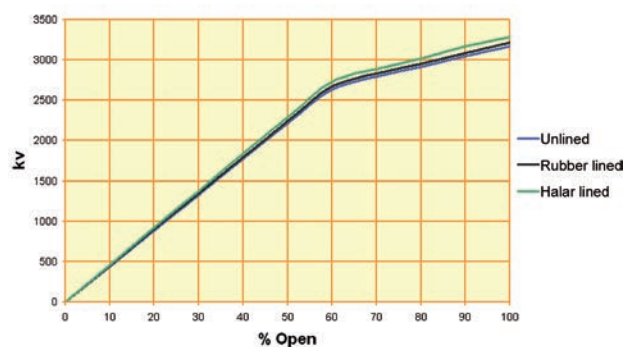
Weir Type DN200



Weir Type DN250

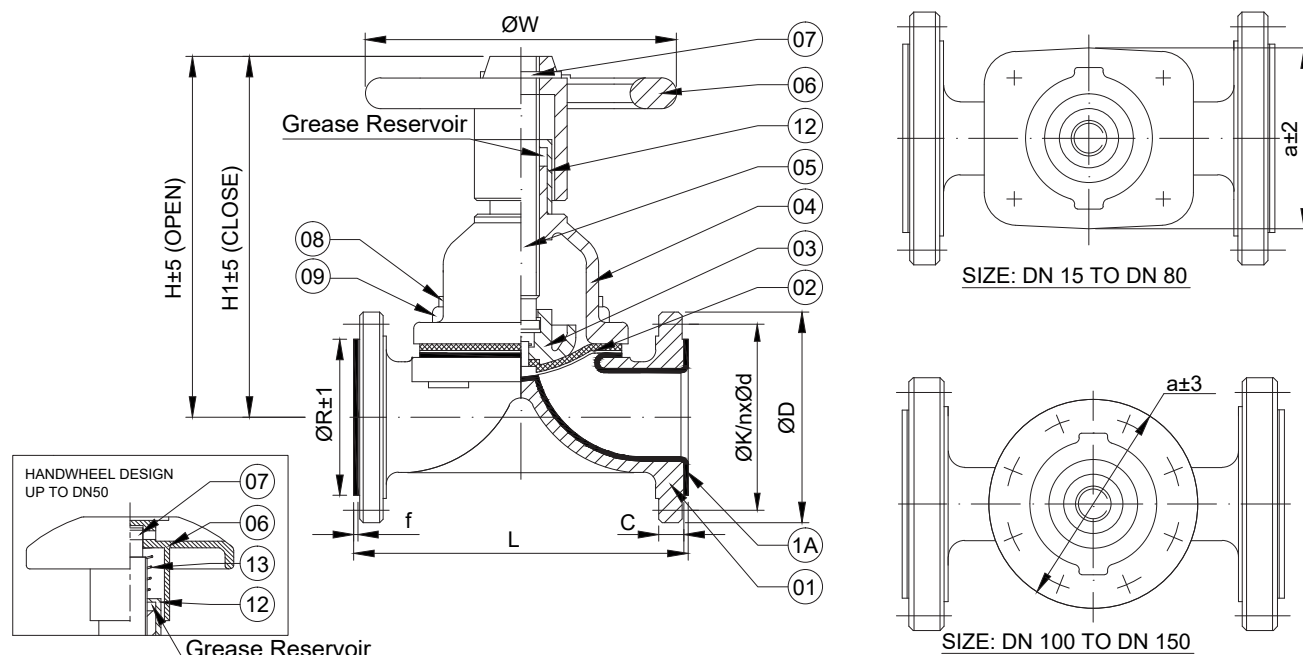


Weir Type DN300



Fluoropolymer lined valves with flanged ends

Main Parts and Materials



NO.	PART	MATERIAL
1	BODY	Nodular Iron (GGG40.3)
1A	LINING	PF PFA
		ET ETFE
		FE FEP
2	DIAPHRAGM + BACKING	RUBBER Natural (D10) / EPDM (D20) / Butyl (D30) / Nitrile (D40) / Neoprene (D50) / Hypalon (D60) / Viton (D70)
		PTFE + EPDM (D92) / PTFE + Butyl (D93) / PTFE + Viton (D97)
3	COMPRESSOR	Cast Steel A216 Gr.WCB

NO.	PART	MATERIAL
4	BONNET	Cast Steel A216 Gr.WCB
5	SPINDLE	Steel PTFE coated
6	HANDWHEEL	Cast Steel A216 Gr.WCB
7	H/W DOWEL PIN	Spring steel
8	BODY STUDS	St. Steel A2
9	BODY NUTS	St. Steel A2
12	POSITION INDICATOR SLEEVE	HDPE
13*	COMPRESOR SPRING	St. Steel

*For valves up to DN50

Main Valve Parameters

DN		15	20	25	32	40
L	EN 558 S7 (BS 5156)	114	123	133	152	165
	EN 558 S1 (DIN 3202 F1)	130	150	160	180	200
	H (open)	109	120	149	162	175
	H1 (close)	103	112	139	151	155
f		3	3	3	3	3
a		52	67	75	88	110
ØW		100	100	120	120	120
FLANGED ENDS TO EN PN10	ØD	95	105	115	140	150
	C	14	16	16	18	18
	ØR	45	58	68	78	88
	nxØd	4x14	4x14	4x14	4x18	4x18
	ØK	65	75	85	100	110
FLANGED ENDS TO ASA150#	ØD	89	98	108	117	127
	C	11,5	11,5	11,5	13	14,5
	ØR	35	43	51	64	73
	nxØd	4x16	4x16	4x16	4x16	4x16
	ØK	60,3	69,8	79,4	88,9	98,4
Approx. Weight	EN 558 S7 (BS 5156)	3,2	3,4	4,7	7	8,5
	EN 558 S1 (DIN 3202 F1)	3,5	3,7	5	8,2	9,5

*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Information / restriction of technical rules need to be observed!

Installation, Operating and Maintenance Manual can be downloaded at www.comeval.es

Dimensions in mm subject to manufacturing tolerance / Weights in kg

The engineer, designing a system or a plant, is responsible for the selection of the correct valve Product suitability must be verified, contact manufacturer for information

Fluoropolymer lined valves with flanged ends

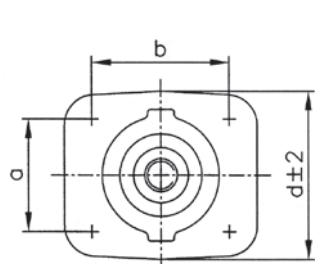
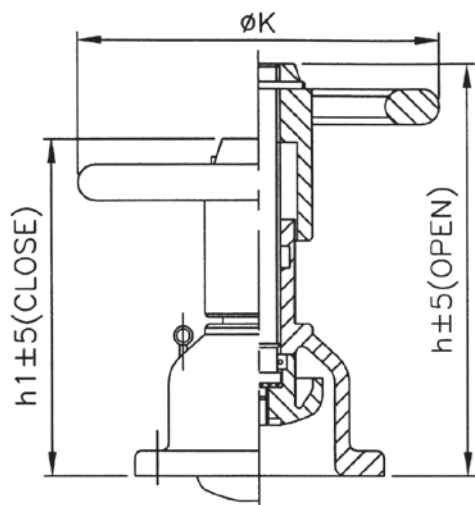
Main Valve Parameters

DN		50	65	80	100	125	150
L	EN 558 S7 (BS 5156)	196	222	260	313	364	414
	EN 558 S1 (DIN 3202 F1)	230	290	310	350	400	480
	H (open)	190	253	243	327	392	462
	H1 (close)	166	218	203	276	328	384
f		3	3	3	4	4	4
a		127	146	190	Ø230	Ø265	Ø320
ØW		164	220	240	270	270	360
FLANGED ENDS TO EN PN10	ØD	165	185	200	220	250	285
	C	20	20	22	24	26	26
	ØR	102	122	138	158	188	212
	nxØd	4x18	4x18	8x18	8x18	8x18	8x22
	ØK	125	145	160	180	210	240
FLANGED ENDS TO ASA150#*	ØD	152	178	191	229	254	279
	C	16	17,5	19,5	24	24	25,5
	ØR	92	105	127	157	186	216
	nxØd	4x19	4x19	4x19	8x19	8x22	8x22
	ØK	120,6	139,7	152,4	190,5	215,9	241,3
Approx. Weight	EN 558 S7 (BS 5156)	12	22	26	38	54	76
	EN 558 S1 (DIN 3202 F1)	13,3	22,5	28,5	40	57	81

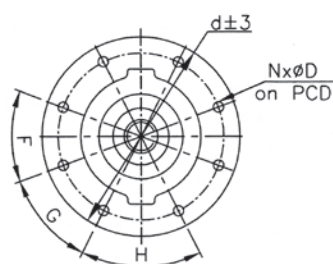
*Unless specific agreement with COMEVAL, valves with flanges 150# will be usually supplied as EN/DIN flanges with 150# drilling, since pressure is limited to EN/DIN

Dimensions in mm subject to manufacturing tolerance / Weights in kg

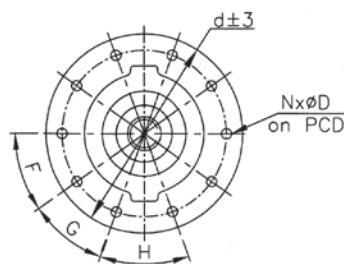
Main Bonnet Dimensions



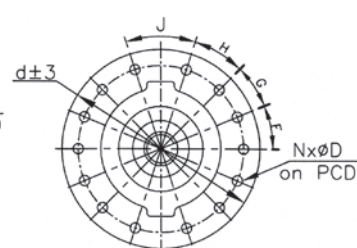
SIZE: DN 15 TO DN 80



SIZE: DN 100 & 125



SIZE: DN 150



SIZE: DN 200 TO DN 300

DN	a	b ØPCD	d	h	h1	ØK	NxØD	Weight	ANGLES BETWEEN THE HOLES			
									F	G	H	J
15	33	37	52	84	78	100	4x6,5	0,9	---	---	---	---
20	40	44	67	90	82	100	4x7	1,1	---	---	---	---
25	46	54	75	115	105	120	4x9	2,0	---	---	---	---
32	60	67	88	117	106	120	4x9	2,0	---	---	---	---
40	65	70	110	133	113	120	4x11	2,5	---	---	---	---
50	78	83	127	155	131	164	4x11	4,5	---	---	---	---
65	95	102	146	194	159	220	4x13	8,5	---	---	---	---
80	114	127	190	201	161	240	4x16,5	9,5	---	---	---	---
100		Ø194	Ø230	258	207	270	8x13	14,5	40°	42°	56°	---
125		Ø222	Ø265	307	243	270	8x16,5	18,5	43°20'	43°20'	50°	---
150		Ø273	Ø320	358	280	360	10x16	27,0	35°	35°	40°	---
200		Ø381	Ø420	549	429	460	14x16	63,0	22°30'	22°30'	27°	36°
250		Ø438	Ø502	697	552	600	14x21	90,0	22°30'	22°30'	22°30'	45°
300		Ø508	Ø569	804	629	700	14x21	147,0	24°	24°	24°	36°

Dimensions in mm subject to manufacturing tolerance / Weights in kg

Pneumatic Actuator Series DP for Weir Type Diaphragm Valves

Main Features

- For DIAVAL manufactured valves in weir and straight through type, with rubber diaphragms and PTFE / rubber backed diaphragms.
- Rugged & compact design, long life span at the plant. Favourable size / performance ratio.
- Rolling diaphragm design, allowing long cycle operations.
- Single acting (Direct and reverse actions).
- High quality spring, large thrust.
- Visual position indicator for open / close.
- Burnished stem protected by bellow.
- Maintenance-free O-ring sealing with flexible guiding.
- Possibility of assembly of additional devices / accessories.
- Operating ambient temperatures -40°C to +100°C.
- Fully traceable at the manufacture facility, identified by aluminum riveted plates.
- Optional top mounted emergency hand wheels for manual operation.
- Compliant with Machinery Directive 2006/42/EC



DP Direct Acting



DP Reverse Acting



Working Principle

Direct Acting actuator is designed to operate from a normally open position. Air pressure on the top side of actuator diaphragm closes the valve and the spring opens the valve when the air is released from the actuator.

Reverse Acting actuator is designed to operate from a normally closed position. Air pressure on the bottom side of the actuator diaphragm opens the valve. When air is released spring closes the valve.

Control Accesories

There is a number of control accessories available to be assembled on to the ARI actuators. These accessories are comprehensive of limit switches (mechanical or inductive type), proximity sensors, solenoid valves, air speed regulators, positioners, air gauge sets... and many other customized solutions.

Control accessories may be specified and provided by the customer or by DIAVAL, however, only those accessories installed and tested at any DIAVAL facilities are covered by a performance guarantee.

Tests - After Market

All actuators are tested after assembly and before dispatch. Tests are comprehensive of visual and functional tests as per EN-12266-1/DIN 3230 P.3 - EN.10.204/2.2

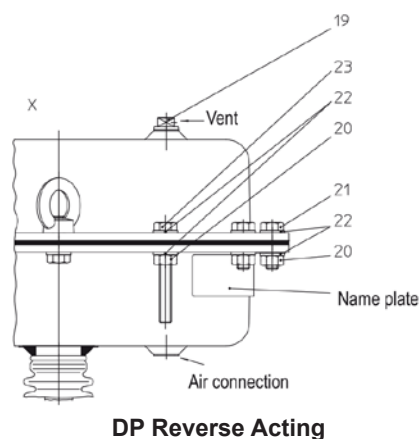
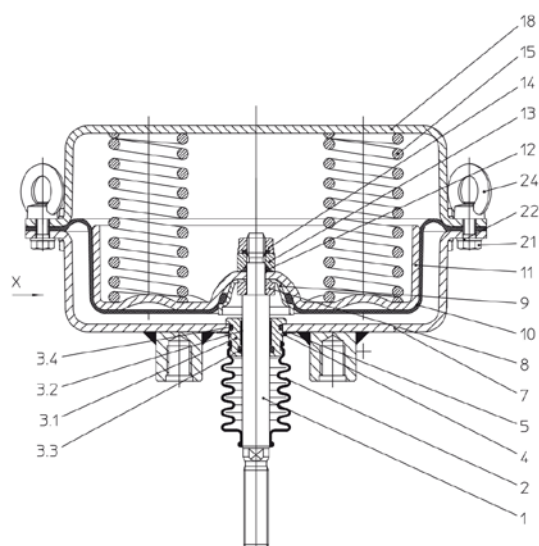
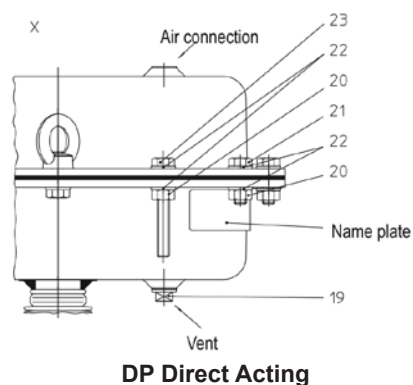
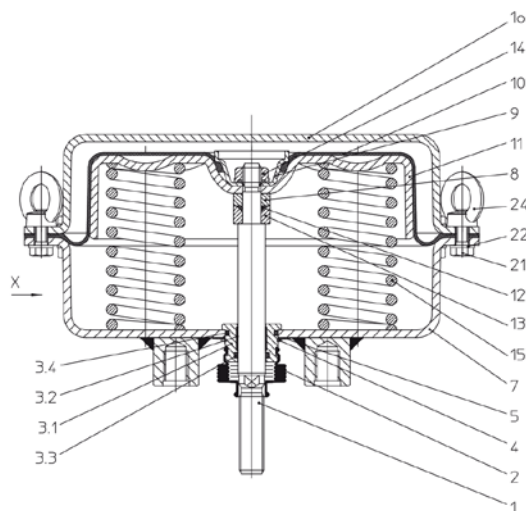
Actuators can be serviced at DIAVAL facilities where a stock of common spares is permanently available. Off site service engineers are available on demand and against usual service rates.

Operating and Maintenance Instructions

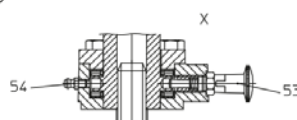
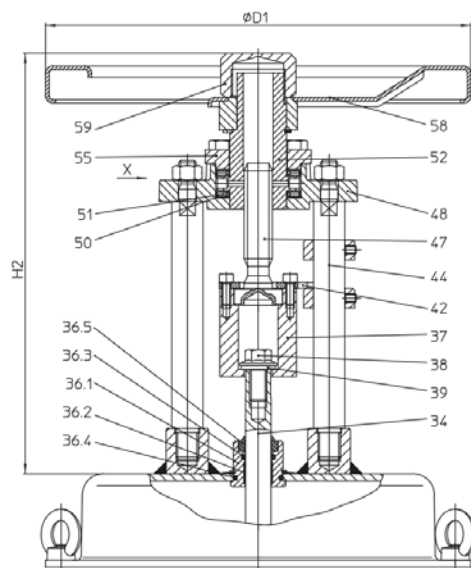
Please ensure that the DIAVAL Operating and Maintenance Instructions are provided by your supplier along with the valves. Do not try to start maintenance without having read and understood the Essential Safety Guidelines. Please consult us for further information.

Standard Materials

Only the best quality materials are incorporated to the DIAVAL manufacturing process and are subject to a strict quality control by our DIAVAL engineers at the assembly plant.



DP reverse & direct	DP30	DP32	DP33	DP34
Actuator weight (kg)	5	9	15	45



Dimensions and weights	DP30	DP32	DP33	DP34
ØD1	225	225	300	397
H2	284	284	297	458
Weight (with actuator)	10	14	20	62

Dimensions in mm subject to manufacturing tolerance / Weight in kg

Top Handwheel (Optional)

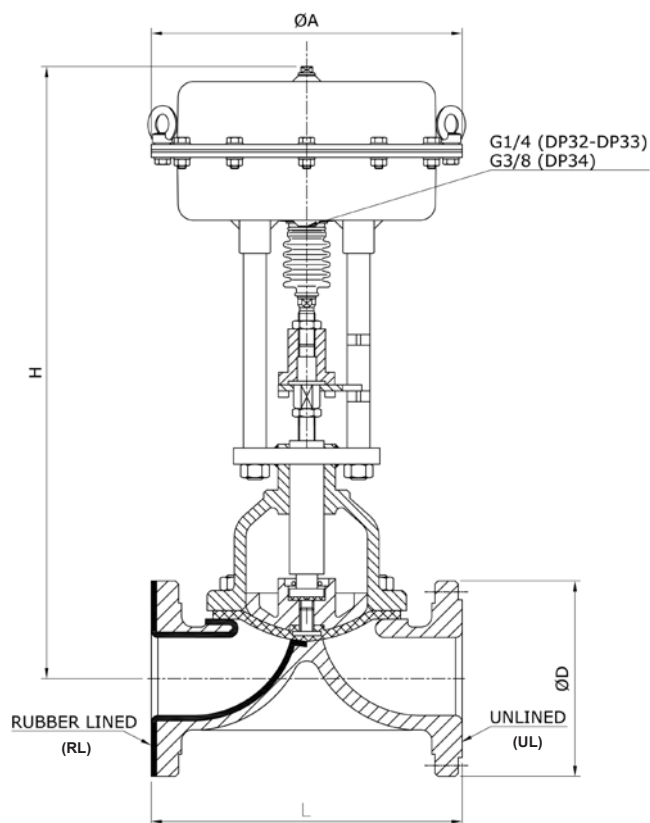
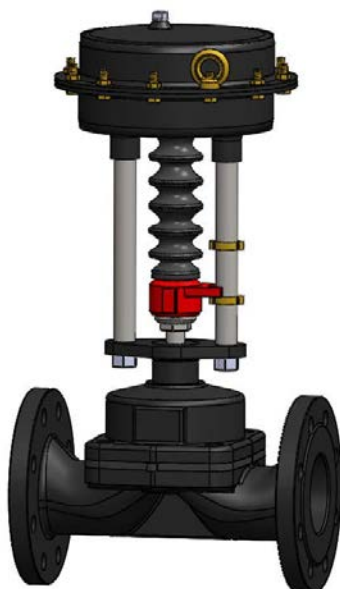
Standard Materials

Pos.	Description	Material
1	Stem	X20Cr13+QT, 1.4021+QT
2	Bellow seal	EPDM50 or 42CR
3	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.1	Stem guiding *	X20Cr13+QT, 1.4021+QT
3.2	Guiding band *	PTFE + 25%C
3.3	O-ring (stem) *	NBR
3.4	O-ring (guiding) *	NBR
3.5	Scraper *	NBR
4	Retaining ring	FSt - A3B
5	Spring plate	FSt (Fe/Zn12B)
6 / 7	Lower diaphragm casing (DP32-34Tri)	DD13+QT, 1.0335+QT (powder coated)
7	Lower diaphragm casing (DP35)	P265GH, 1.0425 / S235JR, 1.0037
8	Bushing	X20Cr13+QT, 1.4021+QT
9	Diaphragm langle	DD13+QT, 1.0335+QT (Fe/Zn12B) or X20Cr13+QT,
10	Rolling diaphragm *	NBR + webbing
11	Diaphragm plate (DP32-34Tri)	1.4021+QT
11	Diaphragm plate (DP35) *	DD13+QT, 1.0335+QT (Fe/Zn12B)
12	O-ring	St 52-3 G 03 g, 1.0570 G 03 g
13	Bushing	NBR
14	Flange nut	X20Cr13+QT, 1.4021+QT
15	Compression spring *	8 - A4G
16	Spring centring	FDSiCr
17	Spring centring	DC01, 1.0330 (Fe/Zn12B)
18	Upper diaphragm casing (DP32-34Tri)	St 52-3 G 03 g, 1.0570 G 03 g
18	Upper diaphragm casing (DP35)	DD13+QT, 1.0335+QT (powder coated)
19	Screwed cap	P265GH, 1.0425 / S235JR, 1.0037
20	Hexagon nut (DP32-34Tri) 1)	Polyäthylen
20	Hexagon nut (DP35) 1)	8 - A4G

Pos.	Description	Material
21	Hexagon screw (DP32-34Tri) 1)	C35E, 1.1181
21	Hexagon screw (DP35) 1)	8.8 - A4G
22	Washer	8.8 - A4G
23	Hexagon screw (DP32-34Tri) 1)	St - A4G
23	Hexagon screw (DP35) 1)	8.8 - A4G
24	Eye nut 1)	10.9 - A2G
34	Stem extension	8-A4G
36.1	Bellow seal *	X20Cr13+QT, 1.4021+QT
36.2	Guiding band *	X14CrMoS17+QT, 1.4104+QT
36.3	O-ring *	PTFE +25%C
36.4	O-ring *	NBR
36.5	Scraper *	NBR
37	Bushing	NBR
38	Hexagon screw	X20Cr13+QT, 1.4021+QT
39	Washer	8.8 - A4G
42	Torsion lock	X20Cr13+QT, 1.4021+QT
44 1	Distance column	8.8 - A4G
47	Stem	1SMn30+C, 1.0715+C (Fe/Zn12B)
48	Traverse	X20Cr13+QT, 1.4021+QT
50	Axial-washer	EN-JS1049, EN-GJS-400-18U-LT (Fe/Zn12B)
51	Axial-dial ring	St
52	Threaded bush	St
53	Catch pin	CuZn35Ni3Mn2Al-Pb-R490, CW710RR490
54	Lubricating nipple	St, Cu
55	Covering for traverse	5.8 - A4G
58	Handwheel	S235JR, 1.0037 (Fe/Zn12B)
59	Safety cap	Fe P01, 1.0330 (epoxy coating)

Weir Type Diaphragm Valves with Reverse Acting Pneumatic Actuator- PTFE Diaphragm

Main Dimensions



DN	L			H	ØD	ØA
	EN 558 S1 (DIN 3202 F1)	EN 558 S7 (BS 5156)				
	UL/RL	UL	RL			
15	130	108	114	415	95	250
20	150	117	123	427	105	250
25	160	127	133	434	115	250
32	180	146	152	444	140	250
40	200	159	165	476	150	250
50	230	190	196	471	165	250
65	290	216	222	503	185	250
80	310	254	260	520	200	250
100	350	305	313	736	220	405
125	400	356	364	786	250	405
150	480	406	414	856	285	405

Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Actuation Selection Chart

Reverse Acting (actuator closes at air failure, air to open/spring to close).

Valve Size	Actuator Type	Max. Closing Pressure 100% ΔP (bar)	Max. Closing Pressure 0% ΔP (bar)	Air Supply to Open (bar)
DN15	DP32041220NC	6	6	2,0-2,5
DN20	DP32041220NC	6	6	2,0-2,5
DN25	DP32082420NC	6	6	3,0-3,5
DN32	DP32082420NC	6	6	3,0-3,5
DN40	DP32152920NC	6	4	3,0-3,5
DN50	DP32152920NC	6	4	3,5-4,0
DN65	DP33153030NC	6	4	4,0-4,5
DN80	DP33204030NC	6	4	4,5-5,0
DN100	DP34204050NC	6	4	5,0-5,5
DN125	DP34204065NC	6	4	5,0-5,5
DN150	DP34204065NC	5	3	5,0-5,5

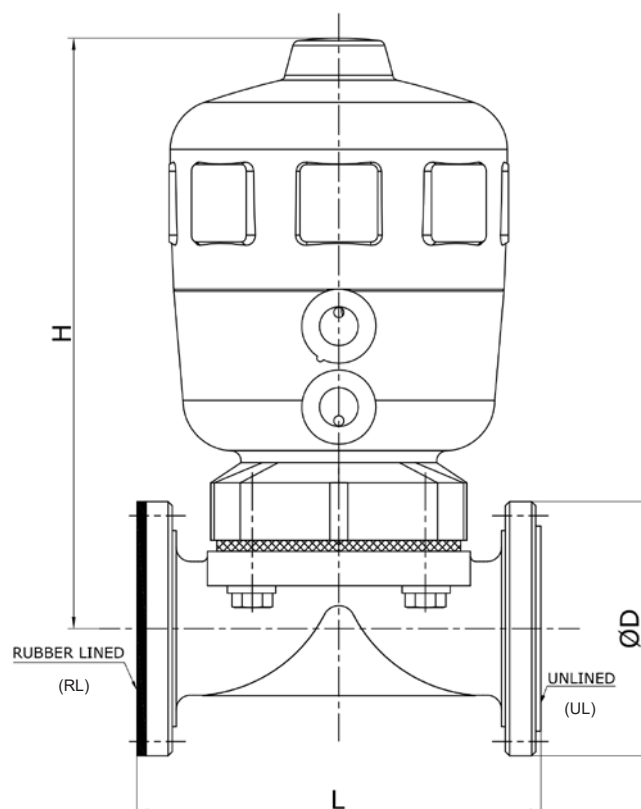
Piston Pneumatic Actuator

Main Dimensions



Actuator shell material:
PA Polyamide
Temperature: -10°C to 60°C*

*For higher temperature also available PPS Polyphenylene sulfide version



DN	L			H (ptfe diaphragm)	Port connection	ØD
	EN 558 S1 (DIN 3202 F1) UL/RL	EN 558 S7 (BS 5156) UL	EN 558 S7 (BS 5156) RL			
15	130	108	114	132	1/8" BSPP	95
20	150	117	123	153	1/4" BSPP	105
25	160	127	133	174	1/4" BSPP	115
32	180	146	152	229	1/4" BSPP	140
40	200	159	165	270	1/4" BSPP	150
50	230	190	196	275	1/4" BSPP	165
65	290	216	222	381	1/4" BSPP	185

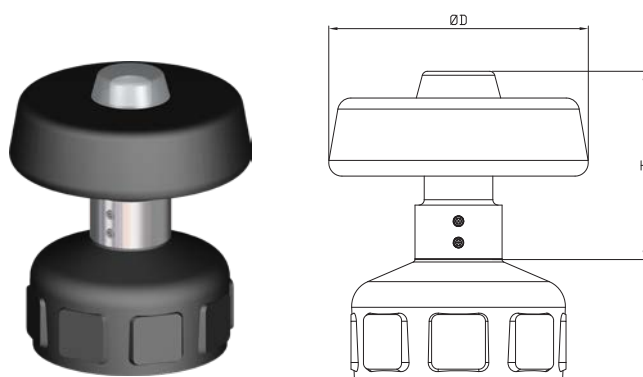
Dimensions in mm subject to manufacturing tolerance.

Dimensions are based on the serialized manufacture and should be taken as preliminary.

Please, bear in mind the service clearance area when planning a skid or when installation happens in a very tight area.

Accessories

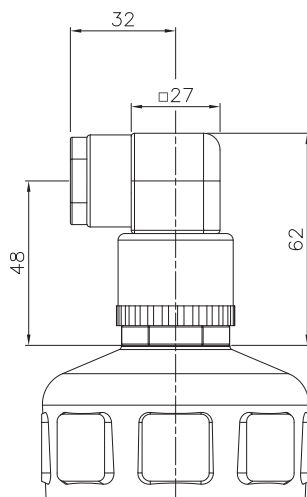
Manual Override (only suitable for reverse acting actuators / actuator closes at air failure)



VALVE SIZE	Code	ØD	H
DN 15-25	B636822	80	68
DN 32-65	B636823	150	82

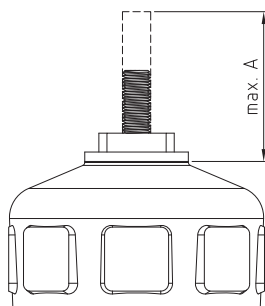
Accessories

Electrical feedback signaller



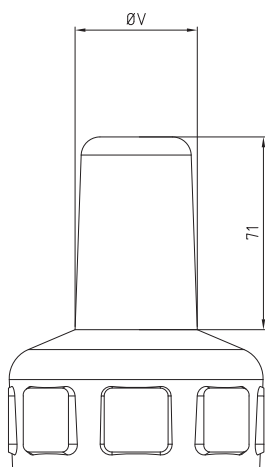
VALVE SIZE	CODE
DN15-25	B701515
DN32-65	B701516

Max. stroke limitation



VALVE SIZE	CODE	max. A
DN15-25	B637866	40
DN32-50	B637867	55
DN65	B637868	55

Min./max. stroke limitation



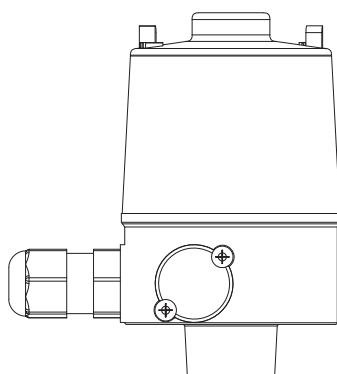
VALVE SIZE	CODE	ØV
DN15-25	B636820	39
DN32-50	B636821	53
DN65	B640703	53

In combination with limit switch box series 8697

VALVE SIZE	CODE	ØV
DN15-20	B689353	39
DN25	B689354	53
DN32-65	B689355	53

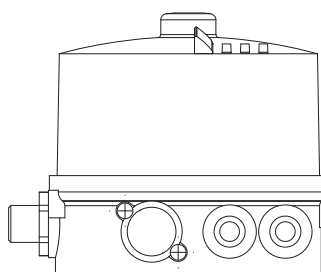
Accessories

Limit switch box series 8697



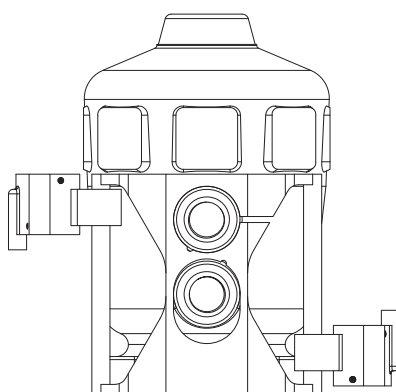
CODE	DESCRIPTION
B248833	2 micro switch 24VDC
B248825	2 micro switch 50-250VAC/DC
B248826	2 inductive detectors 24Vdc, PNP, 3 wire, with LEDs
B248827	2 inductive detectors NAMUR, 8,2Vdc, 2 wire, with LEDs
B248831	2 inductive detectors schließer, 2 wire, with LEDs

Limit switch box series 8690



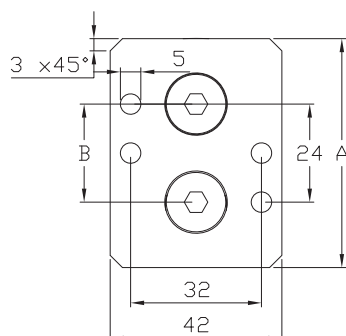
CODE	DESCRIPTION
B227236	2 micro switch 24VDC
B265146	2 inductive detector 3 wires, 24Vdc, PNP
B248831	2 induct. detectors NAMUR, 8Vdc, zone 21/1

External magnetic inductive position feedback



VALVE SIZE	CODE
DN15	B2FCINME3MP050
DN20	B2FCINME3MP063
DN25	B2FCINME3MP080
DN32-50	B2FCINME3MP100
DN65	B2FCINME3MP125

Namur-adapter for pilot valves



VALVE SIZE	CODE	A	B
DN20-50	B637113	46	24
DN65	B637114	58	30

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