Diaphragm valve type 14 EL-PVDF

Body material	EL-PVDF		
Material of diaphragm	EL-PTFE with EPDM cushion	and	PVDF diffusion stop inlay
Working temperature[1)]	-40 °C up to 120 °C		
Nominal size	DN 15 up to DN 100		
Connection with pipe	• Flange connection acc. to DIN EN 1092-1 - PN 10[2)]		
Length	• DIN EN 558 - 1 series FTF 1 (DIN 3202 - series F 1)		
Actuator	Handwheel, optionally pneumatic or electric actuator		
Accessories	Limit switches, stem extension		

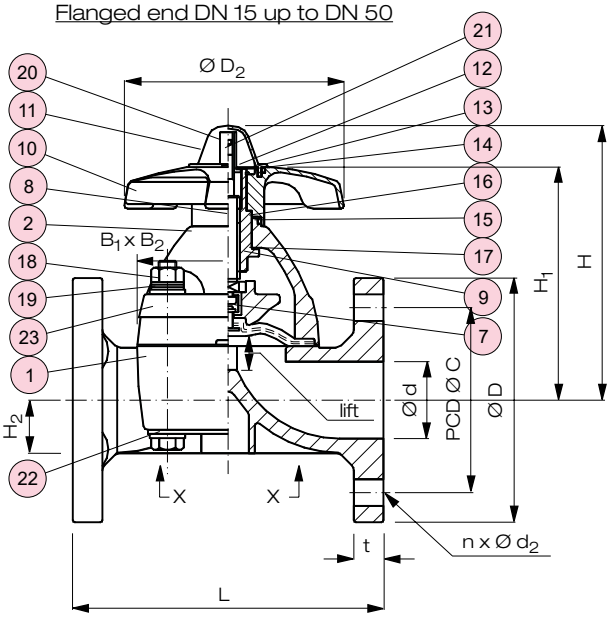
[1)] Designed for 10 years of use with a neutral medium (water)
[2)] Flange connection also acc. to ANSI available

Example for an invitation to tender text:
Diaphragm valve type 14, DN 50, PN 10, EL-PVDF / EL-PTFE / PVDF, flange connection acc. to DIN EN 1092-1 - PN 10, length acc. to DIN EN 558-1 series FTF 1, optical position indicator, adjustable stopper

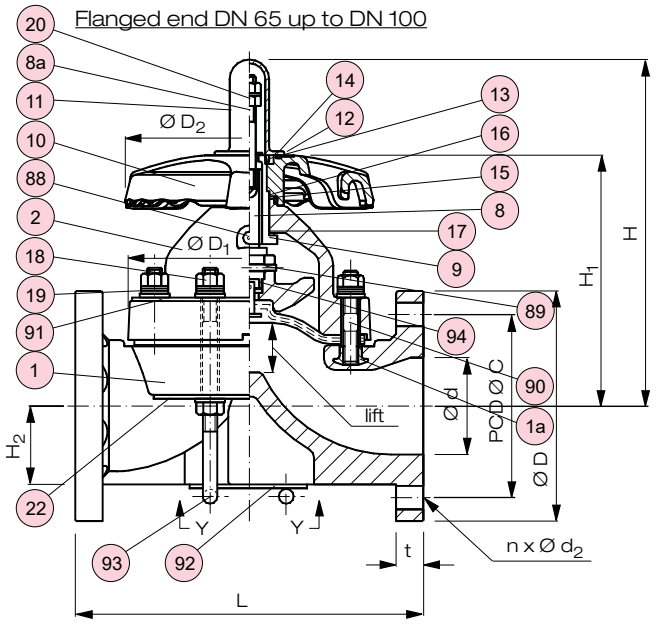
Document: *FRANK_DB_L1_Membranventil Typ 14 EL-PVDF_01-2024_EN*

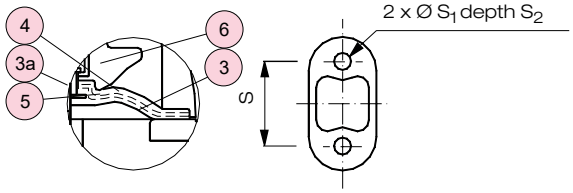
Diaphragm valve type 14 EL-PVDF

Flanged end DN 15 up to DN 50

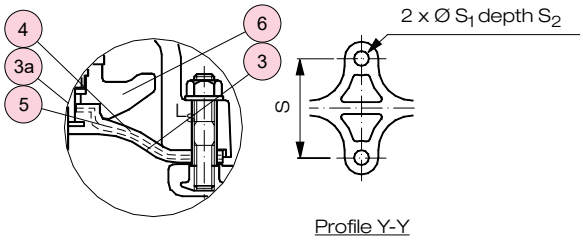


Flanged end DN 65 up to DN 100





Profile X-X



Profile Y-Y

No.	Description	Number	Material
1	Base body	1	EL-PVDF
2	Bonnet	1	PP-G (PVDF on request)
1a	Thread insert[1)]	1	Brass CW615N (C 3604)
3	Diaphragm[*]	1	EL-PTFE
3a	Inserted metal of diaphragm	1	Special alloy
4	Cushion	1	EPDM
5	Diffusion stop inlay	1	PVDF
6	Compressor	1	PVDF
7	Joint[2)]	1	Special alloy
8	Stem	1	Brass C 3604
8a	Indicator rod	1	A2 - 1.4301 (SUS 304)
9	Sleeve	1	Brass CW615N (C 3604)
10	Hand wheel	1	PP
11	Gauge cover	1	PC
12	Name plate	1	PVC
13	Retaining ring	1	A2 - 1.4301 (SUS 304)
14	O-ring (A)	1	EPDM

No.	Description	Number	Material
15	O-ring (B)	1	EPDM
16	Thrust ring (A)	1	UHMWPE
17	Thrust ring (B)	1	UHMWPE
18	Bolt, nut, washer	4	A2 - 1.4301 (SUS 304)
19	Disk spring package	4	A2 - 1.4301 (SUS 304)
20	Stopper	1	Brass C 3604[2)] / 1.4301[1)]
21	Screw[2)]	1	A2 - 1.4301 (SUS 304)
22	Body liner	2	A2 - 1.4301 (SUS 304)
23	Bonnet liner[2,3)]	1	A2 - 1.4301 (SUS 304)
89	Compressor pin[1)]	1	Special alloy
90	Stud bolt, nut, washer[1)]	4	A2 - 1.4301 (SUS 304)
91	Upper bonnet liner[1)]	1	A2 - 1.4301 (SUS 304)
92	Bridge liner[1)]	1	A2 - 1.4301 (SUS 304)
93	U-bolt, nut, washer[1)]	2/4/4	A2 - 1.4301 (SUS 304)
94	Inserted metal of diaphragm[1)]	1	Special alloy

[*)] Wearing parts [1)]DN 65 - DN 100 only [2)]DN 15 - DN 50 only
[3)] PVDF-Bonnet only

Diaphragm valve type 14 EL-PVDF

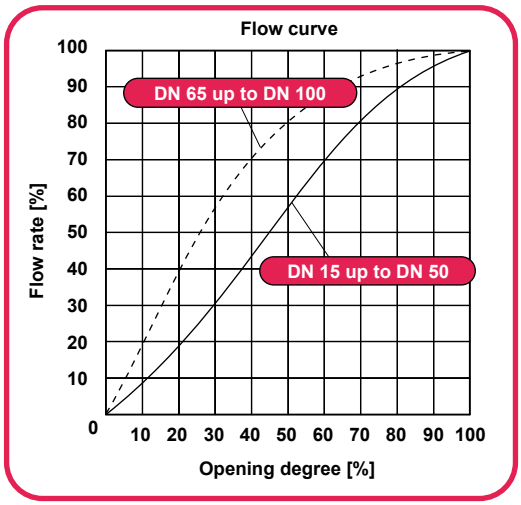
Dimensions and weights - flange connection

Dimensions in mm																	Weight in kg / pc.
DN	d	C	D	B_1	B_2	D_1	D_2	L	H	H_1	H_2	t	S	S_1	S_2	Lift	n x d_2	EL-PVDF
15	16	65	95	54	66	-	100	130	104	86	19,5	12	25	7	13	10	4 x 14	0,9
20	20	75	105	54	66	-	100	150	106	88	17,5	13	25	7	13	10	4 x 14	1,0
25	25	85	115	67	80	-	100	160	111	93	18,5	13	25	7	13	12	4 x 14	1,3
32	32	100	140	67	80	-	100	180	116	97	22,5	16	25	7	13	12	4 x 18	1,7
40	40	110	150	108	108	-	156	200	177	144	27,5	20	45	9	15	21	4 x 18	3,2
50	52	125	165	123	123	-	156	230	191	158	36	22	45	9	15	25	4 x 18	4,3
65	67	145	185	-	-	175	220	290	266	188	61	22	85	11	20	34	4 x 18	6,6
80	78	160	200	-	-	201	220	310	280	202	63	24	100	15	28	42	8 x 18	8,1
100	100	180	220	-	-	241	257	350	329	241	78	26	120	15	28	50	8 x 18	11,9

Flow rate characteristic value[1] k_{VS} in m^3/h

	Lift of stem			
DN	25 %	50 %	75 %	100 %
15	0,98	2,34	3,53	4,10
20	1,09	2,58	3,90	4,53
25	1,74	4,14	6,25	7,26
32	2,26	5,36	8,09	9,40
40	5,33	12,67	19,11	22,22
50	8,82	20,95	31,61	36,75
65	34,51	58,12	68,29	72,65
80	46,69	78,63	92,39	98,29
100	75,11	126,50	148,63	158,12

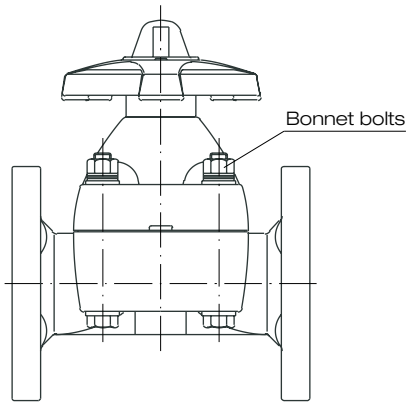
[1] Definition k_{VS}-value see chapter T2 / technical information



Diaphragm valve type 14 EL-PVDF

Tightening torque $Md_{min/max}$ in Nm for bonnet bolts

DN	EL-PTFE-diaphragm with EPDM cushion cover	
	Md_{min}	Md_{max}
15 - 20	5	7
25 - 32	8	10
40	15	17
50	20	23
65	15	17
80	20	22
100	40	43



Drive torque[1)] M_A in Nm for stem movement

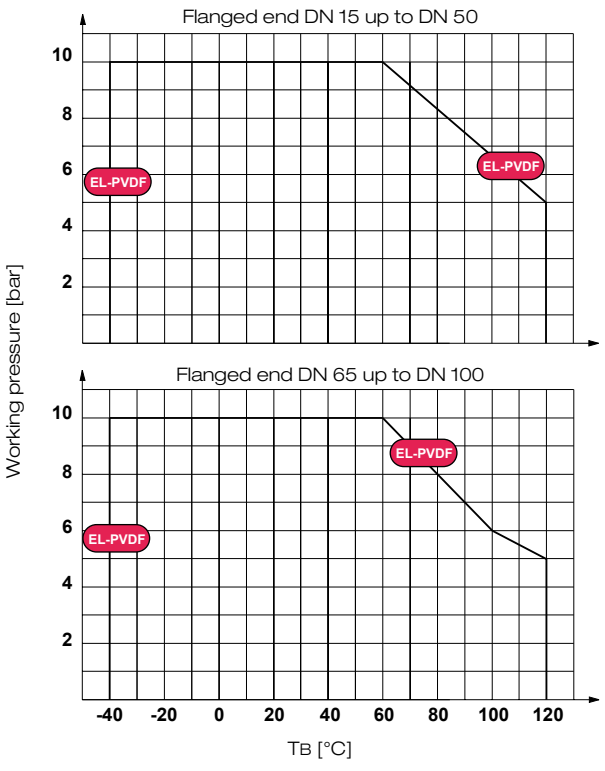
DN	rot / lift	M_A
15	5	4
20	5	4
25	6	5
32	6	5
40	5	12
50	6	12
65	8	23
80	10	31
100	10	38

1) Referring to maximum working pressure

Working pressure[2)] p_B in bar

Body material	T_B in °C	DN 15 - 50	DN 65 - 100
EL-PVDF	-40 up to 60	10	10
	80	8,3	8
	100	6,7	6
	120	5	5

2) Definition see chapter T2 / technical information



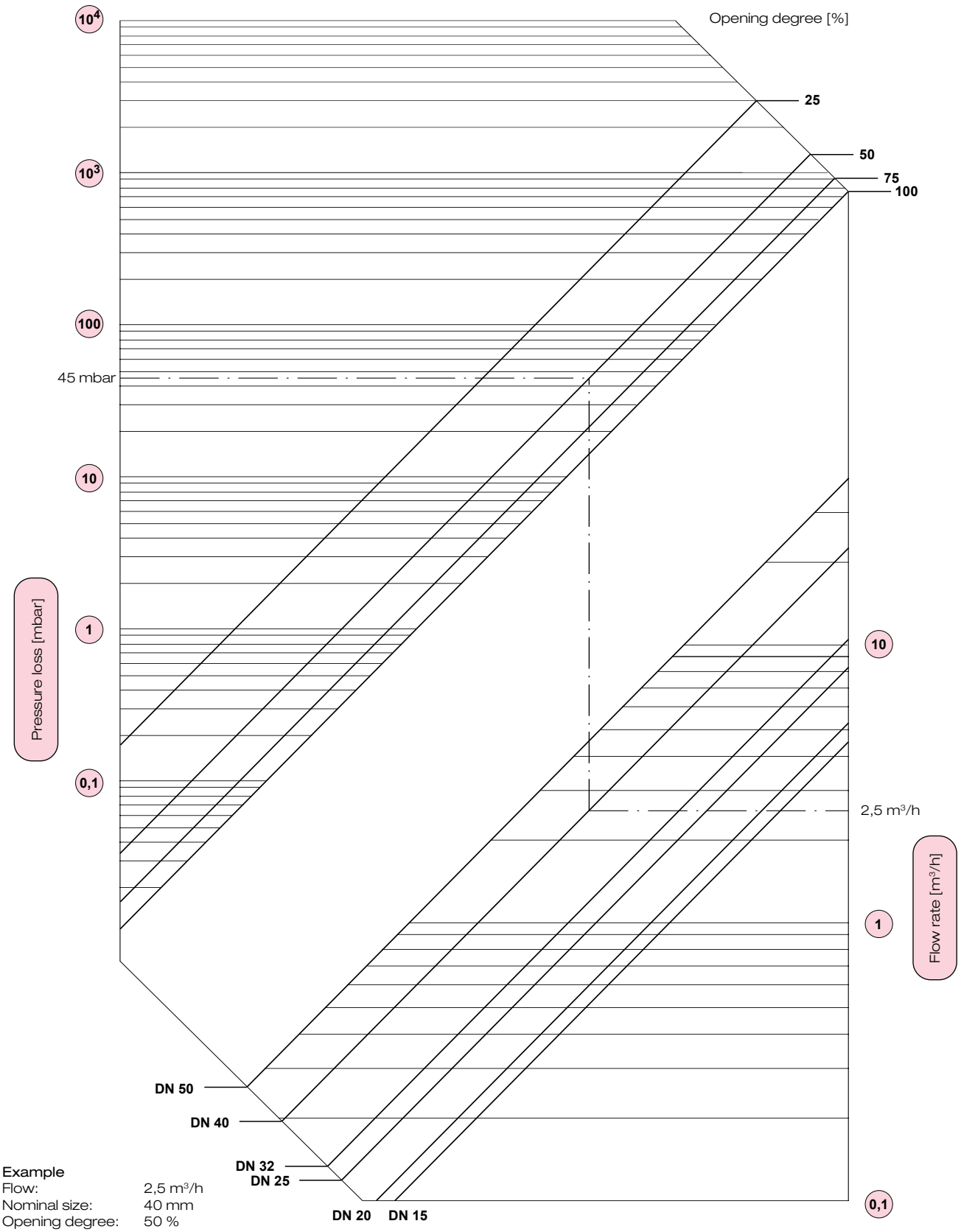
Vacuum resistance[3)] in bar

DN	Vacuum resistance
15 - 50	1,0
65 - 100	0,5

3) Referring to maximum working temperature

Diaphragm valve type 14 EL-PVDF

Pressure loss diagram for DN 15 up to DN 50

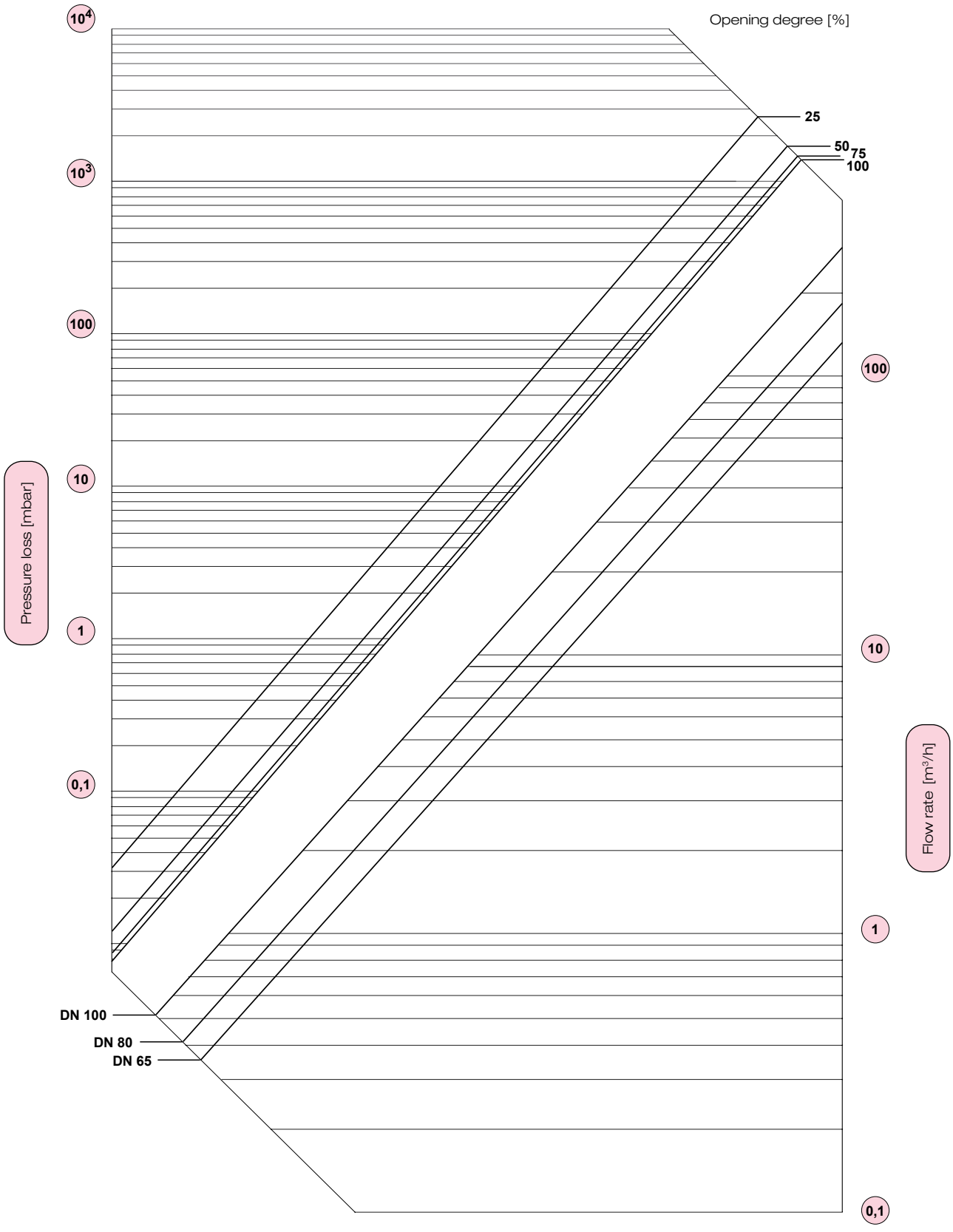


Example

Flow:	2,5 m³/h
Nominal size:	40 mm
Opening degree:	50 %
Pressure loss:	45 mbar

Diaphragm valve type 14 EL-PVDF

Pressure loss diagram for DN 65 up to DN 100



Diaphragm valve type 14 EL-PVDF

Maintenance and installation

DN 15-50	DN 65-100

Required tools:

DN	15-32	40, 50
Allen key	3	4
Spanner	8; 2x13	10; 2x19
Circlip-pliers	19-60	19-60
Pin driver	-	-

Required tools:

DN	65	80	100
Allen key	-	-	-
Spanner	2x17	2x17; 19	2x17; 24
Circlip-pliers	19-60	19-60	19-60
Pin driver	5	5	5

Disassembly of the valve

Attention: *Never dismantle the valve when the pipe is under pressure.*

- Dismantle the valve from the pipe remove flange bolts
- Bring the valve in half opened position. Loosen the bonnet bolts **18** and remove the bonnet **2**.

alike DN 15-50

- Remove gauge cover **11**.

- Unscrew gauge cover **11** counter-clockwise.

- Remove o-ring **14** and name plate **12**.
- Turn the hand wheel **10** clockwise to the stopper, then turn it back slightly.
- Turn the diaphragm **3** of 90°, pull diaphragm **3** and compressor **6** off the stem **8**.

alike DN 15-50

- Pull joint **7** off stem **8**.
- Hold stopper **20** with spanner to prevent it from turning and loosen screw **21** with an allen key. Unsrew the stopper from the stem.

- Drive compressor pin **89** out of compressor **6**, so that the compressor can be removed from stem **8**.
- Remove group of parts **20**, consisting of stopper, red washer, nut and blank washer, from the stem. Loosen the nut first.

- Remove the retaining c-type ring **13** with the circlip-pliers from sleeve **9**.
- Pull the hand wheel **10** off the sleeve **9**.
- Remove the thrust rings **16** + **17** and o-ring **14** from the bonnet.

Assembly of the valve

- The valve assembly ist to be performed in reverse order to the disassembly.
- Before the assembly all parts have to be checked for damages.
- All parts have to be clean.

alike DN 15-50

- To mount the diaphragm, put the joint **7** on the stem **8**. The slot must be in 90° position to the axle between the guiding slots in the inner side of bonnet **2**.

- To mount the diaphragm, put the compressor **6** on the stem **8**. Drive pin **89** into compressor **6** so that it is flush with it.

- The diaphragm flag must be positioned in the clearances of body and bonnet.

Stopper adjustment

- Close the valve by turning the hand wheel 10 clockwise by hand. Check the diaphragm`s position in the valve body: In closed position it must completely cover the nose piece of the body.

alike DN 15-50

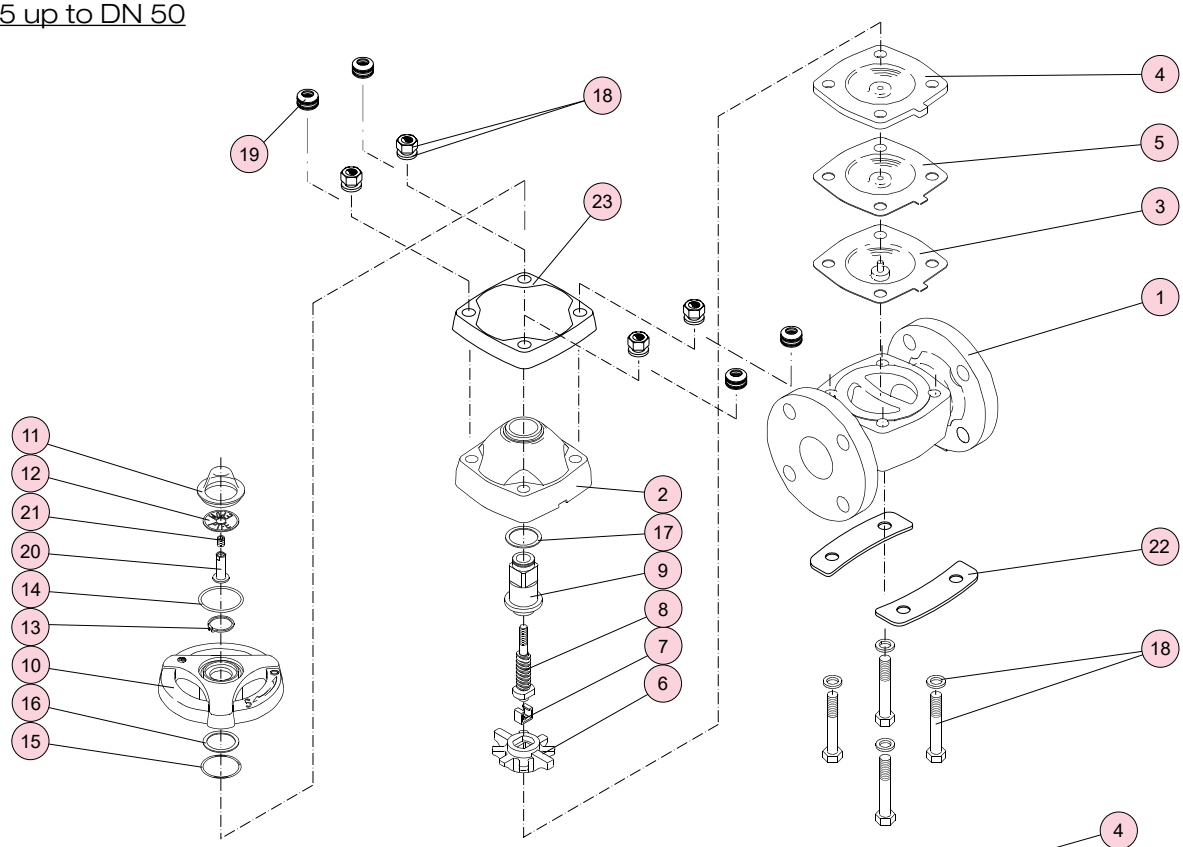
- Tighten the stopper **20** with medium force and hold it with a spanner to prevent it from turning. Tighten screw **21** with an allen key.

- Mount group of parts **20**: put the blank washer on stem **8**, put the red washer between the stopper and the nut and lock it by tightening the nut.

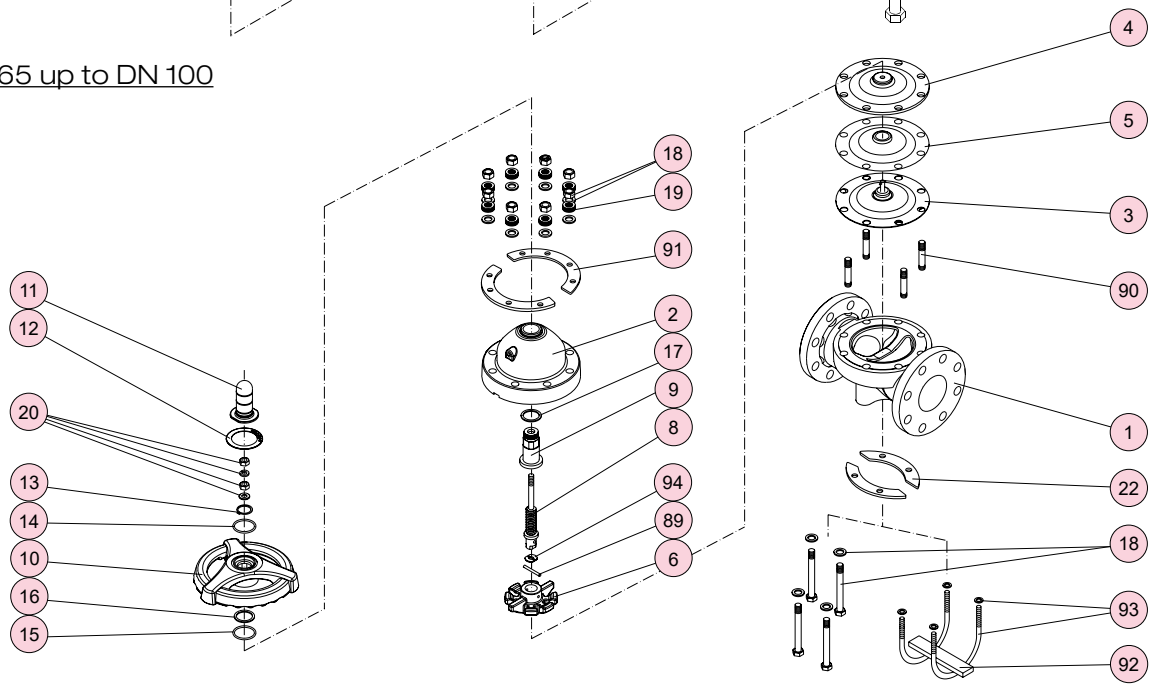
Diaphragm valve type 14 EL-PVDF

Assembly and maintenance procedure

DN 15 up to DN 50



DN 65 up to DN 100



all DN

Notes for correct installation

- The valve must be installed stress-free in the pipe (plane parallelism, axial, overall length).
- Flange version:
  Tighten the connecting screws evenly and crosswise (observe tightening torques).
  In general, use washers for the nuts and bolts in plastic flanges.