

Installation and Maintenance Manual

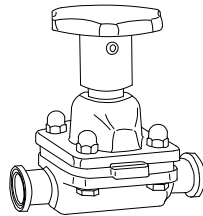
DIAPHRAGM VALVES



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Unpacking

Check the contents:



- diaphragm valve

Remove all packaging material.

Clean the valve and parts to remove any residue left by the packaging material.

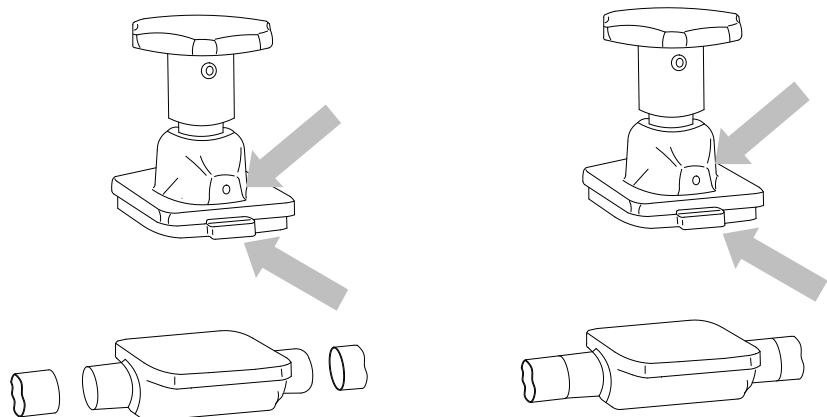
Inspection

Inspect the valve and parts for any damage which might have occurred during transit.

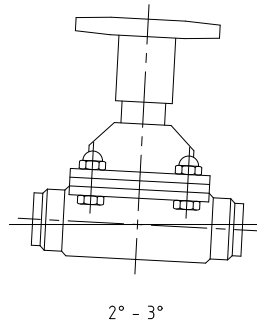
Installation

Installation procedures:

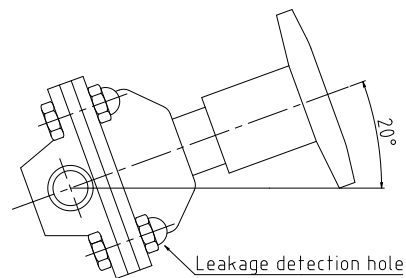
- disassemble the valve as per the diagram below;
- weld the ends of the pipes to the flanges;
- reassemble the valve tightening the screws with a dynamometric key up to Nm 20; make sure that the diaphragm external strip is aligned with the leakage detection hole (see diagram below).



For a correct self-draining installation pipeline should have an inclination of 2-3° as per diagram below.



For correct self-draining valve should be installed tilted along the pipeline axis as per diagram below. Tilt should be towards the valve side where the leakage detection hole is placed to ensure that it will be at the lowest point in the installed position.



Three-way and sampling valves can only be installed on horizontal pipelines.



CAUTION!

Pay particular attention to:

- vibrations;
- thermal expansion of the pipeline;
- excess pressure in the pipeline.

It is imperative that the valve be disassembled before welding the ends of the pipes to the flanges.

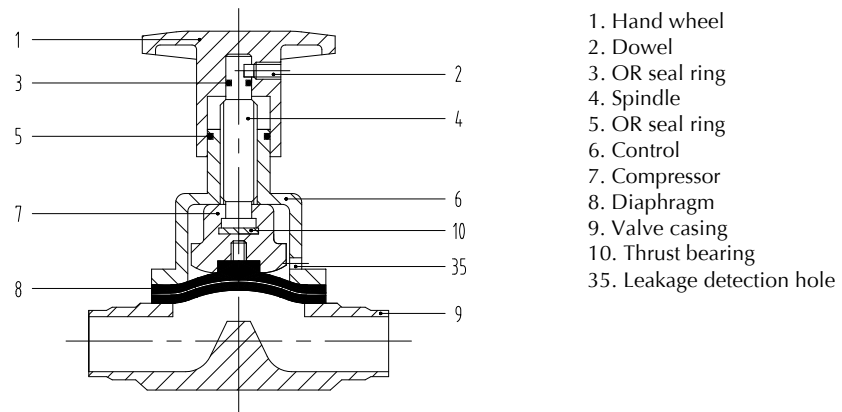
Make sure that after servicing the valve bonnet is reassembled with the leakage detection hole on the correct valve side.

Maintenance

Valve Maintenance Program:

	PREVENTATIVE MAINTENANCE	MAINTENANCE AFTER LEAKAGE
DIAPHRAGM	Replace after 12 months	Replace as soon as possible

MAINTENANCE PROCEDURES FOR MANUAL DIAPHRAGM VALVES:



1. Lay the valve on a clean, flat surface.
2. Turn the hand wheel (pos. 1) anticlockwise until the valve is in the fully open position.
3. Remove the screws and separate the valve casing (pos. 9) from the bonnet.
4. Remove the EPDM and FTM diaphragm (pos. 8) by turning it anticlockwise; remove the PTFE diaphragm (pos. 8) by turning it either clockwise or anticlockwise by 1/4 turn.
5. Replace the diaphragm.
6. Reassemble the valve parts as follows:
 - a. insert the EPDM and FTM diaphragm (pos. 8) in the compressor (pos. 7) by turning it clockwise; insert the PTFE diaphragm in the compressor by turning it either clockwise or anticlockwise by 1/4 turn.

- b. assemble the valve casing (pos. 9) and the bonnet; make sure that the bonnet is reassembled with the leakage detection hole on the valve side that is tilted towards the pipeline.
- c. tighten the screws (pos. 3).

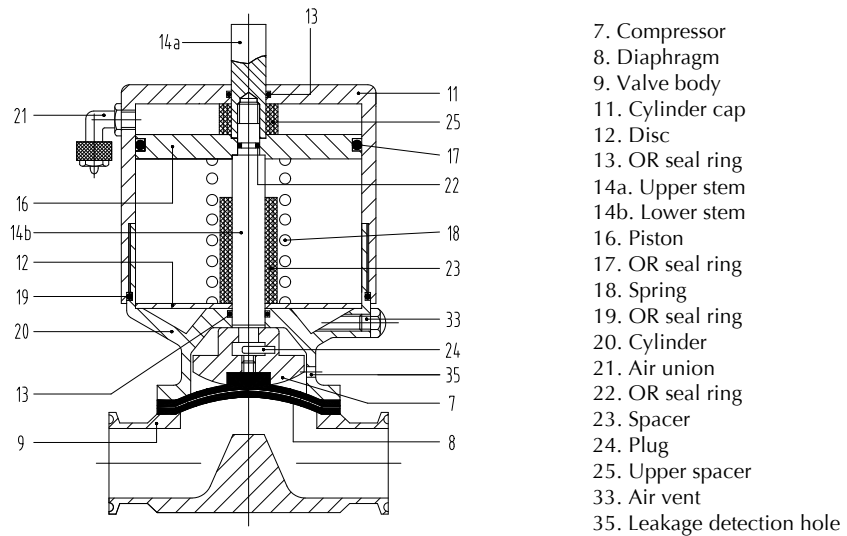


CAUTION!

After carrying out maintenance it is imperative that the valve be tested before being reinstalled.

Close the hand wheel a few times to check that it moves smoothly.

MAINTENANCE PROCEDURES FOR NORMALLY OPEN PNEUMATIC DIAPHRAGM VALVES:



1. Lay the valve on a clean, flat surface.
2. Remove the screws and separate the valve casing (pos. 9) from the cylinder (pos. 20).
3. Remove the EPDM and FTM diaphragm (pos. 8) by turning it anticlockwise; remove the PTFE diaphragm (pos. 8) by turning it either clockwise or anticlockwise by 1/4 turn.
4. Replace the diaphragm.

5. Reassemble the valve parts as follows:
 - a. insert the EPDM and FTM diaphragm (pos. 8) in the compressor (pos. 7) by turning it clockwise; insert the PTFE diaphragm in the compressor by turning it either clockwise or anticlockwise by 1/4 turn.
 - b. assemble the valve casing (pos. 9) and the cylinder (pos. 20); make sure that the cylinder is reassembled with the leakage detection hole on the valve side that is tilted towards the pipeline.
 - c. tighten the screws (pos. 3).

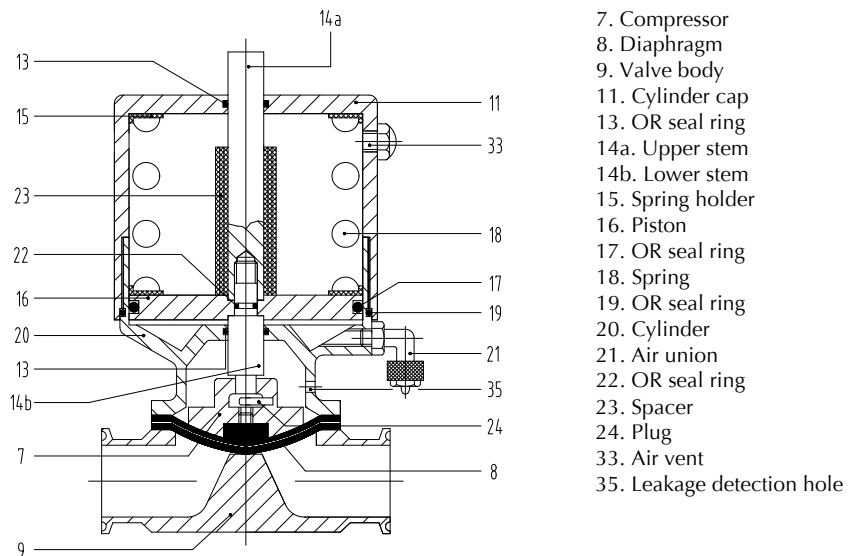


CAUTION!

After carrying out maintenance it is imperative that the valve be tested before being reinstalled.

Check that the valve is opening and closing properly with compressed air.

MAINTENANCE PROCEDURES FOR NORMALLY CLOSED PNEUMATIC DIAPHRAGM VALVES:



1. Lay the valve on a clean, flat surface.
2. Turn normally closed valves to the open position with compressed air.

**CAUTION!**

Before carrying out maintenance the compressed air must be turned off.

3. Remove the screws and separate the valve casing (pos. 9) from the cylinder (pos. 20).
 4. Remove the EPDM and FTM diaphragm (pos. 8) by turning it anticlockwise; remove the PTFE diaphragm (pos. 8) by turning it either clockwise or anticlockwise by $\frac{1}{4}$ turn.
 5. Replace the diaphragm.
 6. Reassemble the valve parts as follows:
 - a. insert the EPDM and FTM diaphragm (pos. 8) in the compressor (pos. 7) by turning it clockwise; insert the PTFE diaphragm in the compressor by turning it either clockwise or anticlockwise by $\frac{1}{4}$ turn.
 - b. assemble the valve casing (pos. 9) and the cylinder (pos. 20); make sure that the cylinder is reassembled with the leakage detection hole on the valve side that is tilted towards the pipeline.
 - c. tighten the screws (pos. 3).
 7. Turn normally closed valves to the closed position with compressed air.
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**CAUTION!**

After carrying out maintenance it is imperative that the valve be tested before being reinstalled.

Check that the valve is opening and closing properly with compressed air.

Safety

Do not handle the valve or pipeline when operating with hot fluids or during sterilization procedures.

Do not carry out maintenance procedures while the valve is hot.

Relieve pressure in the valve, pneumatic actuator and pipeline before carrying out maintenance procedures.

Do not touch the valve outlets if the valve is connected to compressed air.

Always release compressed air after use.

Technical Data

Operating pressure: max 7 bars.

Diaphragms:

- EPDM (-40°C +150°C, -40°F +300°F);
- PTFE (-10°C +150°C, +15°F +300°F);
- FTM (-15°C +220°C, +5°F +430°F);

Finish:

- $Ra \leq 0.8 \mu\text{m}$;
- $Ra \leq 0.4 \mu\text{m}$;
- $Ra \leq 0.2 \mu\text{m}$.

Pneumatic actuators:

- vertical simple effect;
- vertical double effect.

Optional electrical components:

- proximity contact;
- electric microswitch;
- pneumatic microswitch;
- solenoid valve (24V AC, 24V DC);
- connector;
- cable gland.

Product range: from DN 6 (1/4") to DN 51 (2").

Ends

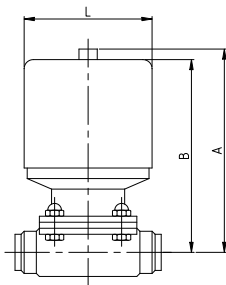
DN	O.D.	BS		O.D.	SCHEDULE			ISO		DIN					
		+16 Th.	18 Th.		5S Th.	10S Th.	40S Th.	O.D.	Th.	Serie 1		Serie 2		Serie 3	
15	12.70	1.63	1.22	21.34	1.65	2.11	2.77	21.3	1.6	18	1	19	1.5	20	2
20	19.05	1.63	1.22	26.67	1.65	2.11	2.87	26.9	1.6	22	1	23	1.5	24	2
25	25.40	1.63	1.22	33.40	1.65	2.77	3.38	33.7	2.0	28	1	29	1.5	30	2
40	38.10	1.63	1.22	48.26	1.65	2.77	3.68	48.3	2.0	40	1	41	1.5	42	2
50	50.80	1.63	1.22	60.33	1.65	2.77	3.91	60.3	2.6	52	1	53	1.5	54	2

CV and KV Values*

%	DN 15 1/2"		DN 20 3/4"		DN 25 1"		DN 40 1 1/2"		DN 50 2"	
	OPENING	CV	KV	CV	KV	CV	KV	CV	KV	CV
100	6.7	1.6	13.3	3.16	20	4.76	50	12	101	24.04
90	6.4	1.5	12.8	3.04	19.2	4.57	48	11.4	97	23.1
80	6.11	1.45	12.3	2.9	18.4	4.37	46	11	92.9	22.1
70	5.85	1.4	11.7	2.8	17.6	4.2	44	10.5	88.9	21.15
60	5.58	1.32	11.2	2.65	16.8	4	42	10	84.83	20.2
50	4.65	1.1	9.3	2.2	14	3.33	35	8.4	70.7	16.83
40	3.7	0.9	7.45	1.76	11.2	2.66	28	6.7	56.5	13.46
30	2.8	0.65	5.6	1.3	8.4	2	21	5	42.4	10.1
20	1.85	0.43	3.7	0.9	5.6	1.33	14	3.8	28.27	6.73
10	0.92	0.21	1.85	0.43	2.8	0.66	7	1.66	14.13	3.36
0	0	0	0	0	0	0	0	0	0	0

* CV values = US gal/min; KV values = l/s.

Dimensions, Air Volumes and Operating Times



Valve diam.	A	B	L	Vol. Air closes	Vol. Air opens	Time
mm	mm	mm	mm	cm ³	cm ³	s
15	125	120	70	50	20	1
20	140	135	89	230	65	1
25	145	140	89	230	65	1
40	208	203	129	1000	250	2
50	220	215	129	1000	350	2

Valve diam.	A	B	L	Vol. Air closes	Vol. Air opens	Time
in	in	in	in	in ³	in ³	s
1/2"	5"	4"	2"	3	1	1
3/4"	5"	5 3/8"	3"	13	4	1
1"	5"	5"	3"	13	4	1
1 1/2"	8"	8"	5"	60.5	15	2
2"	9"	8"	5"	61	20	2

Parts

Manual Diaphragm Valves:

POS.	CODE	STANDARD	1/2"	3/4"	1"	1 1/2"	2"	MAT.	DET.
1	57		12/19	12/19	25	38	51	6L	01
2	GRA		M6	M6	M6	M8	M8	4L	
3	OR		2018	2018	106	114	114	N	
4	57		12/19	12/19	25	38	51	6L	04
5	OR		3056	3056	3068	3100	3100	N	
6	57		12	19	25	38	51	6L	06
7	57	E	12	19	25	38	51	6L	07
7	57	T	12	19	25	38	51	6L	07
8	57		12	19	25	38	51	E/T	08
9	57	W	12.7	19.05	25.4	38.1	50.8	6L	09
9	57	W	21.3	26.9	33.7	48.3	60.3	6L	09
9	57	L	12	18/22	28	40	52	6L	09
9	57	D	10	15/20	25	40	50	6L	09
9	57	K	12	19	25	38	51	6L	09
10	57	E	12/19	12/19	25	38/51	38/51	OT	10
10	57	T	12/19	12/19	25	38/51	38/51	OT	10

Pneumatic Diaphragm Valves:

POS.	CODE	STANDARD	1/2"	3/4"	1"	1 1/2"	2"	MAT.	DET.
7	57	E	12	19	25	38	51	6L	07
7	57	T	12	19	25	38	51	6L	07
8	57		12	19	25	38	51	E	08
8	57		12	19	25	38	51	T	08
9	57	W	12.7	19.05	25.4	38.1	50.8	6L	09
9	57	K	12	19	25	38	51	6L	09
11	58		12	19/25	19/25	38/51	38/51	4L	11
12	58	NA	12	19/25	19/25	38/51	38/51	4L	12
13	OR		3056	123	123	123	123	N	
14a	58	NA	12	19	25	38	51	6L	14a
14b	58	NA	12	19/25	19/25	38/51	38/51	6L	14b
14a	58	NC	12	19	25	38	51	6L	14a
14b	58	NC	12	19/25	19/25	38/51	38/51	6L	14b
15	58		12	12	12	12	12	T	15
16	58		12	19/25	19/25	38/51	38/51	AL	16
17	OR		6150	6275	6275	6400	6400	N	
18	58		NA12	12	12	NA38/51	NA38/51	4L	18
19	OR		3206	3325	3325	3450	3450	N	
20	58		12	19	25	38	51	6L	20
21	58		1/8"	1/8"	1/8"	1/8"	1/8"	4L	
22	OR		106	108	108	108	108	N	
23	58	NA	12	19	25	38	51	T	23
23	58	NC	12	19	25	38	51	T	23
24	58		3x15	3x15	3x15	3x15	3x15	6L	24
25	58	NA	12	19	25	38	51	T	25
33	58		1/8"	1/8"	1/8"	1/8"	1/8"	4L	33