Aliaxis
UTILITIES & INDUSTRY

FIP

DK DN 15÷65
PVC-U

DIALOCK® 2-way diaphragm valve

DK
DN 15÷65

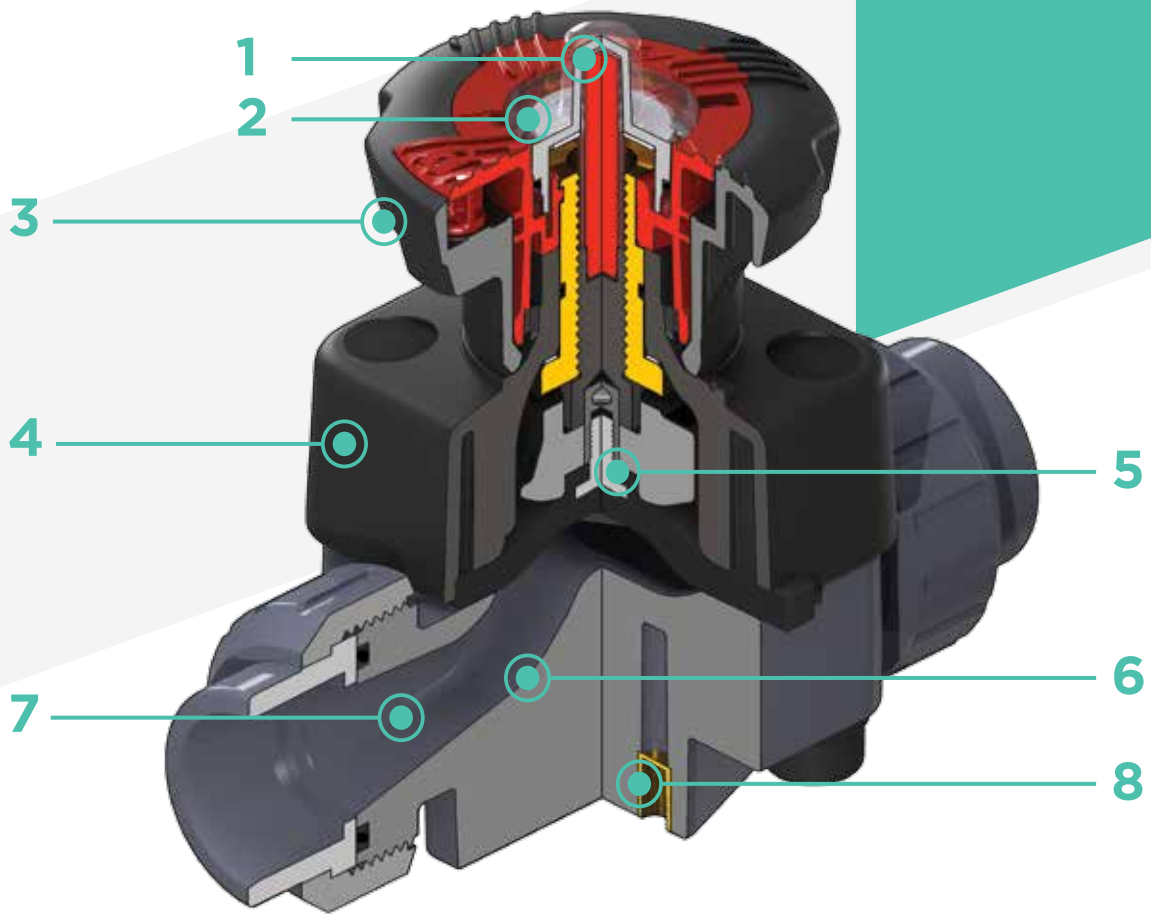
The new DK DIALOCK® diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids. The new internal geometry of the body optimises fluid dynamic efficiency by increasing the flow rate and ensuring an optimum linearity of the flow adjustment curve.
The DK is extremely compact and very light. The innovative handwheel is equipped with a patented immediate and ergonomic operating locking device that allows it to be adjusted and locked in any position.

Dialock®

DIALOCK® 2-WAY DIAPHRAGM VALVE

- Connection system for solvent weld, threaded and flanged joints
- **Optimised fluid dynamic design:** maximum output flow rate thanks to the optimised efficiency of the fluid dynamics that characterise the new internal geometry of the body
- **Internal components in metal, totally isolated from the fluid** and external environment
- **Modularity of the range:** only 2 handwheel and 4 diaphragm and bonnet sizes for 7 different valve sizes
- Non-rising handwheel that stays at the same height during rotation, equipped with a graduated optical indicator protected by a transparent PVC cap with seal O-Ring
- Bonnet fastening screws in AISI 316 steel protected against the external environment by PE plugs. Absence of metal parts exposed to the external environment to prevent any risk of corrosion
- **CDSA** (Circular Diaphragm Sealing Angle) system that, thanks to the uniform distribution of shutter pressure on the diaphragm seal, offers the following advantages:
  - reduction in the tightening torque of the screws fixing the actuator to the valve body
  - reduced mechanical stress on all valve components (actuator, body and diaphragm)
  - easy to clean valve interior
  - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation
  - operating torque reduction

Technical specifications	
Construction	Diaphragm valve with maximized flow rate and DIALOCK® lockable handwheel
Size range	DN 15 ÷ 65
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 60 °C
Coupling standards	**Solvent welding:** EN ISO 1452, EN ISO 15493, BS 4346-1, DIN 8063, NF T54-028, ASTM D 2467. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, DIN 8062, NF T54-016, ASTM D 1785
	Thread: ISO 228-1, DIN 2999, ASTM D 2464,
	Flanging system: ISO 7005-1, EN ISO 1452, EN ISO 15493, EN 558-1, DIN 2501, ANSI B16.5 Cl.150, JIS B2220
Reference standards	**Construction criteria:** EN ISO 16138, EN ISO 1452, EN ISO 15493
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	**Body:** PVC-U **Bonnet and handwheel:** PP-GR **Position indicator cap:** PVC
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Manual control; pneumatic actuator



1 **High visibility graduated optical position indicator** protected by a transparent cap with seal O-Ring

2 **Customisation plate:** the customisation lets you identify the valve on the system according to specific needs

3 **DIALOCK® SYSTEM**: innovative handwheel with a patented immediate and ergonomic operating locking device that allows it **to be adjusted and locked in over 300 positions**

4 **Handwheel and bonnet in** high mechanical strength and chemically resistant **PP-GR**, providing full protection by isolating all internal metal parts from contact with external agents

5 **Floating pin connection** between the control screw and diaphragm to prevent concentrated loads, improve the seal and extend its lifetime

6 **New design of valve body interior: substantially increased flow coefficient** and reduced pressure drop. The degree of efficiency reached has also enabled **the size and weight** of the valve to be **reduced**

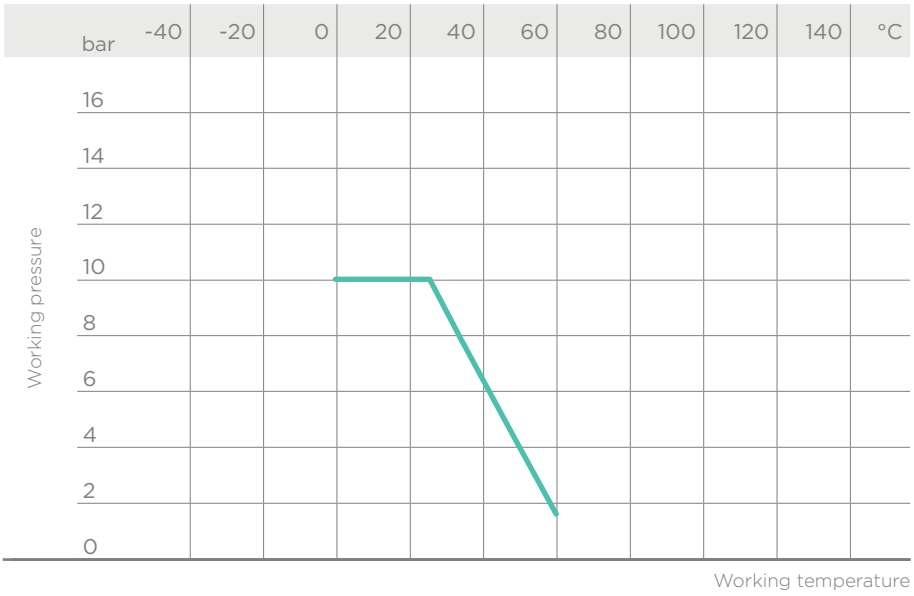
7 **Adjustment linearity:** the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter

8 **Valve anchoring** bracket **integrated in the body,** with threaded metal inserts allowing **simple panel or wall mounting** using the PMDK mounting plate (supplied as an accessory)

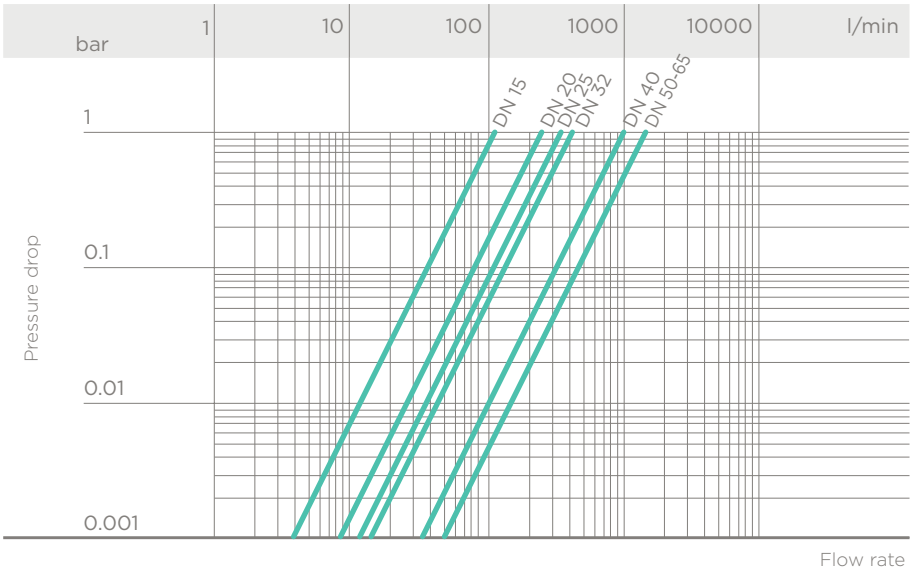
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and harmless fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

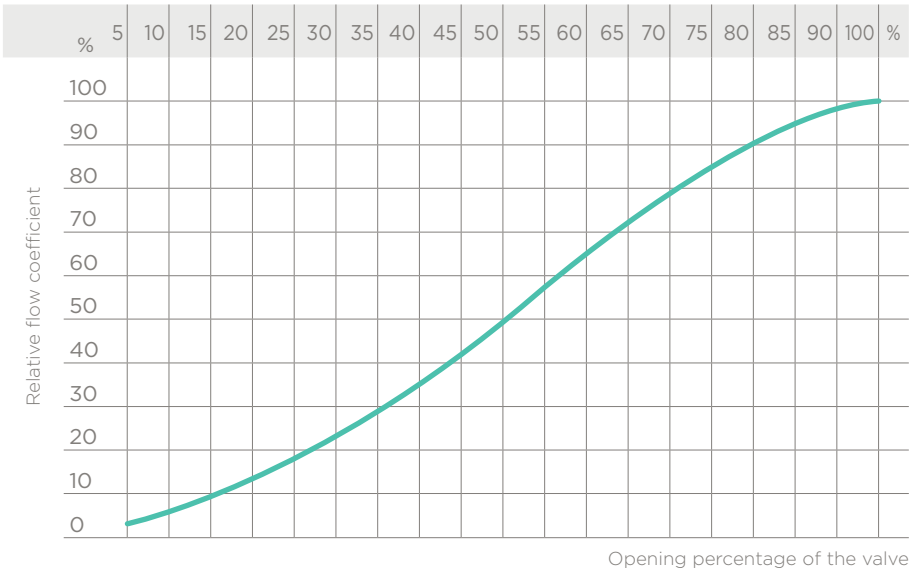
The K_v100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K_v100 values shown in the table are calculated with the valve completely open.

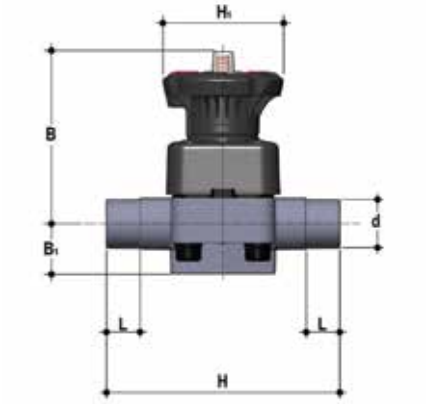
DN	15	20	25	32	40	50	65
K_v100 l/min	112	261	445	550	1087	1648	1600

RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient refers to the variation in the flow rate as a function of the valve opening stroke.



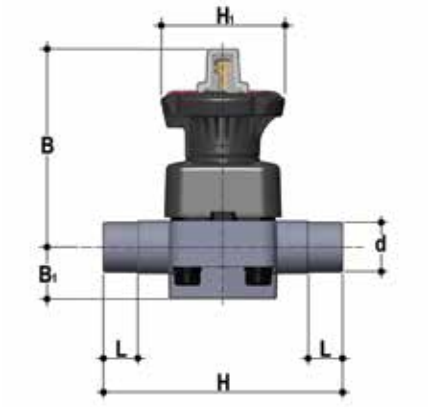
DIMENSIONS



DKDV

DIALOCK® diaphragm valve with male ends for solvent welding, metric series

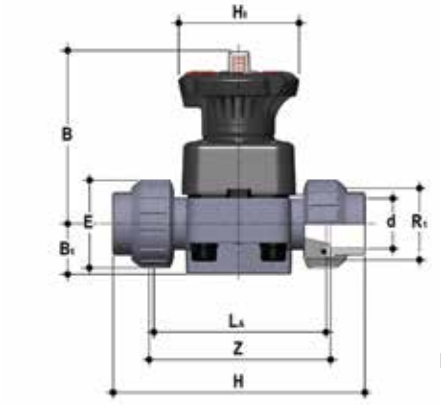
d	DN	PN	B	B_1	H	H_1	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	124	80	16	460	DKDV020E	DKDV020F	DKDV020P
25	20	10	105	30	144	80	19	482	DKDV025E	DKDV025F	DKDV025P
32	25	10	114	33	154	80	22	682	DKDV032E	DKDV032F	DKDV032P
40	32	10	119	30	174	80	26	726	DKDV040E	DKDV040F	DKDV040P
50	40	10	147	35	194	120	31	1525	DKDV050E	DKDV050F	DKDV050P
63	50	10	172	46	224	120	38	2389	DKDV063E	DKDV063F	DKDV063P
75	65	10	172	46	284	120	44	2519	DKDV075E	DKDV075F	DKDV075P



DKLDV

DIALOCK® diaphragm valve with stroke limiter and male ends for solvent welding, metric series

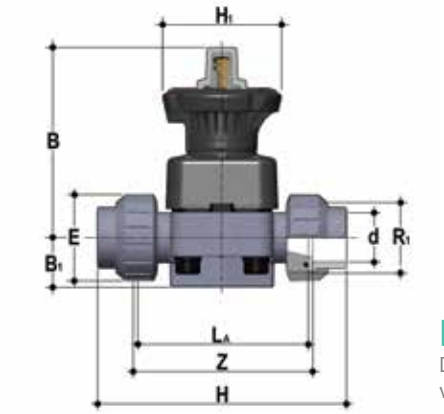
d	DN	PN	B	B_1	H	H_1	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	124	80	16	490	DKLDV020E	DKLDV020F	DKLDV020P
25	20	10	118	30	144	80	19	512	DKLDV025E	DKLDV025F	DKLDV025P
32	25	10	127	33	154	80	22	712	DKLDV032E	DKLDV032F	DKLDV032P
40	32	10	132	30	174	80	26	756	DKLDV040E	DKLDV040F	DKLDV040P
50	40	10	175	35	194	120	31	1585	DKLDV050E	DKLDV050F	DKLDV050P
63	50	10	200	46	224	120	38	2449	DKLDV063E	DKLDV063F	DKLDV063P
75	65	10	200	46	284	120	44	2579	DKLDV075E	DKLDV075F	DKLDV075P



DKUIV

DIALOCK® diaphragm valve with female union ends for solvent welding, metric series

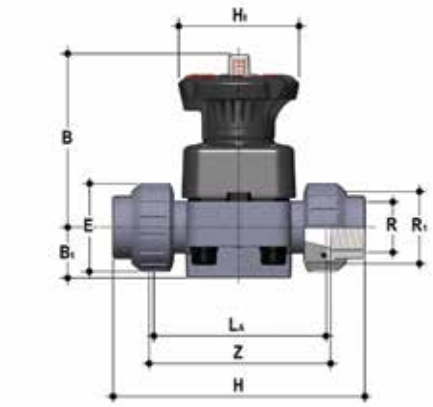
d	DN	PN	B	B_1	E	H	H_1	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	41	129	80	90	1”	100	500	DKUIV020E	DKUIV020F	DKUIV020P
25	20	10	105	30	50	154	80	108	1” 1/4	116	562	DKUIV025E	DKUIV025F	DKUIV025P
32	25	10	114	33	58	168	80	116	1” 1/2	124	790	DKUIV032E	DKUIV032F	DKUIV032P
40	32	10	119	30	72	192	80	134	2”	140	916	DKUIV040E	DKUIV040F	DKUIV040P
50	40	10	147	35	79	222	120	154	2” 1/4	160	1737	DKUIV050E	DKUIV050F	DKUIV050P
63	50	10	172	46	98	266	120	184	2” 3/4	190	2785	DKUIV063E	DKUIV063F	DKUIV063P



DKLUIV

DIALOCK® diaphragm valve with stroke limiter and female union ends for solvent welding, metric series

d	DN	PN	B	B_1	E	H	H_1	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	41	129	80	90	1”	100	490	DKLUIV020E	DKLUIV020F	DKLUIV020P
25	20	10	118	30	50	154	80	108	1” 1/4	116	512	DKLUIV025E	DKLUIV025F	DKLUIV025P
32	25	10	127	33	58	168	80	116	1” 1/2	124	712	DKLUIV032E	DKLUIV032F	DKLUIV032P
40	32	10	132	30	72	192	80	134	2”	140	756	DKLUIV040E	DKLUIV040F	DKLUIV040P
50	40	10	175	35	79	222	120	154	2” 1/4	160	1585	DKLUIV050E	DKLUIV050F	DKLUIV050P
63	50	10	200	46	98	266	120	184	2” 3/4	190	2449	DKLUIV063E	DKLUIV063F	DKLUIV063P

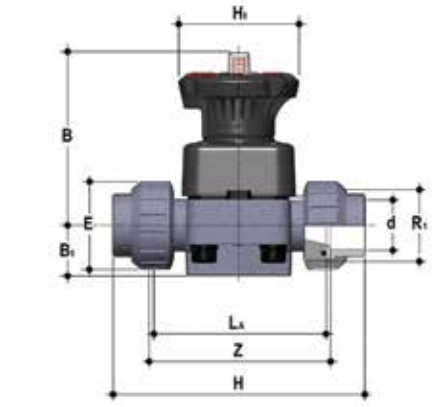


DKUFV

DIALOCK® diaphragm valve with BSP threaded female union ends

R	DN	PN	B	B_1	E	H	H_1	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
1/2”	15	10	102	25	41	131	80	90	1”	97	500	DKUFV012E	DKUFV012F	DKUFV012P
3/4”	20	10	105	30	50	151	80	108	1” 1/4	118	562	DKUFV034E	DKUFV034F	DKUFV034P
1”	25	10	114	33	58	165	80	116	1” 1/2	127	790	DKUFV100E	DKUFV100F	DKUFV100P
1” 1/4	32	10	119	30	72	188	80	134	2”	145	916	DKUFV114E	DKUFV114F	DKUFV114P
1” 1/2	40	10	147	35	79	208	120	154	2” 1/4	165	1737	DKUFV112E	DKUFV112F	DKUFV112P
2”	50	10	172	46	98	246	120	184	2” 3/4	195	2785	DKUFV200E	DKUFV200F	DKUFV200P

DKLUFV version available on request

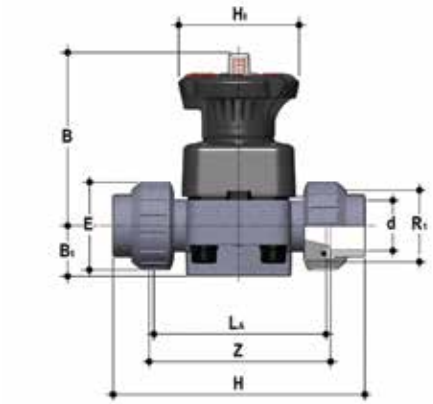


DKUAV

DIALOCK® diaphragm valve with female union ends for solvent welding, ASTM series

d	DN	PN	B	B_1	E	H	H_1	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
1/2”	15	10	102	25	41	143	80	90	1”	98	500	DKUAV012E	DKUAV012F	DKUAV012P
3/4”	20	10	105	30	50	167	80	108	1” 1/4	115	562	DKUAV034E	DKUAV034F	DKUAV034P
1”	25	10	114	33	58	180	80	116	1” 1/2	122	790	DKUAV100E	DKUAV100F	DKUAV100P
1” 1/4	32	10	119	30	72	208	80	134	2	144	916	DKUAV114E	DKUAV114F	DKUAV114P
1” 1/2	40	10	147	35	79	234	120	154	2” 1/4	164	1737	DKUAV112E	DKUAV112F	DKUAV112P
2”	50	10	172	46	98	272	120	184	2” 3/4	195	2785	DKUAV200E	DKUAV200F	DKUAV200P

DKLUAV version available on request

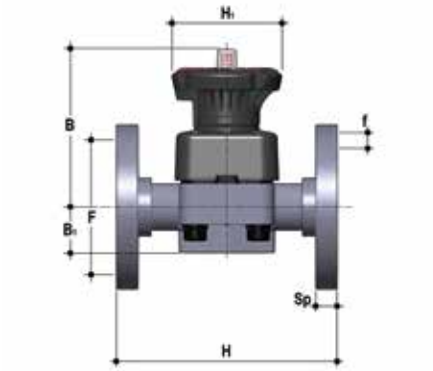


DKULV

DIALOCK® diaphragm valve with female union ends for solvent welding, BS series

d	DN	PN	B	B_1	E	H	H_1	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
1/2”	15	10	102	25	41	131	80	90	1”	97	500	DKULV012E	DKULV012F	DKULV012P
3/4”	20	10	105	30	50	154	80	108	1” 1/4	116	562	DKULV034E	DKULV034F	DKULV034P
1”	25	10	114	33	58	166	80	116	1” 1/2	121	790	DKULV100E	DKULV100F	DKULV100P
1” 1/4	32	10	119	30	72	194	80	134	2”	142	916	DKULV114E	DKULV114F	DKULV114P
1” 1/2	40	10	147	35	79	222	120	154	2” 1/4	162	1737	DKULV112E	DKULV112F	DKULV112P
2”	50	10	172	46	98	266	120	184	2” 3/4	194	2785	DKULV200E	DKULV200F	DKULV200P

DKLULV version available on request

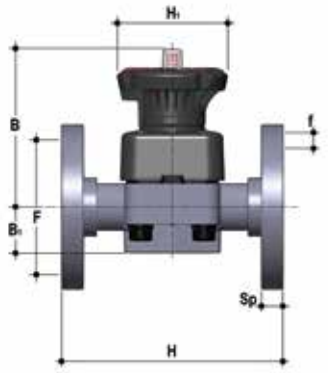


DKOV

DIALOCK® diaphragm valve with fixed flanges, drilled PN10/16. Face to face according to EN 558-1

d	DN	PN	B	B_1	f	F	H	H_1	Sp	U	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	14	65	130	80	13.5	4	690	DKOV020E	DKOV020F	DKOV020P
25	20	10	105	30	14	75	150	80	13.5	4	682	DKOV025E	DKOV025F	DKOV025P
32	25	10	114	33	14	85	160	80	14	4	972	DKOV032E	DKOV032F	DKOV032P
40	32	10	119	30	18	100	180	80	14	4	1186	DKOV040E	DKOV040F	DKOV040P
50	40	10	147	35	18	110	200	120	16	4	2100	DKOV050E	DKOV050F	DKOV050P
63	50	10	172	46	18	125	230	120	16	4	3159	DKOV063E	DKOV063F	DKOV063P
75	65	10	225	55	18	145	290	120	21	4	3619	DKOV075E	DKOV075F	DKOV075P

DKLOV version available on request



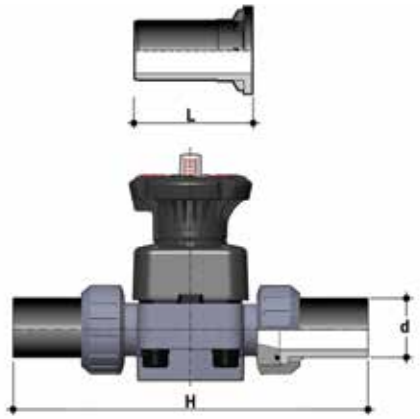
DKOAV

DIALOCK® diaphragm valve with fixed flanges, drilled ANSI B16.5 cl. 150 #FF

d	DN	PN	B	B_1	f	F	H	H_1	Sp	U	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	102	25	14	60.3	108	80	13.5	4	667	DKOAV012E	DKOAV012F	DKOAV012P
3/4"	20	10	105	30	15.7	69.9	150	80	13.5	4	682	DKOAV034E	DKOAV034F	DKOAV034P
1"	25	10	114	33	15.7	79.4	160	80	14	4	972	DKOAV100E	DKOAV100F	DKOAV100P
1" 1/4	32	10	119	30	15.7	88.9	180	80	14	4	1186	DKOAV114E	DKOAV114F	DKOAV114P
1" 1/2	40	10	147	35	15.7	98.4	200	120	16	4	2100	DKOAV112E	DKOAV112F	DKOAV112P
2"	50	10	172	46	19	120.7	230	120	16	4	3159	DKOAV200E	DKOAV200F	DKOAV200P
75	65	10	172	46	19	139.7	290	120	21	4	3619	DKOV075E	DKOV075F	DKOV075P

DKLOAV version available on request

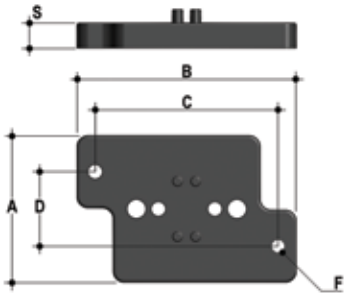
ACCESSORIES



Q/BBE-L

Long spigot PE100 end connectors for electrofusion or butt welding

d	DN	L	H	SDR	Code
20	15	95	280	11	QBBEL11020
25	20	95	298	11	QBBEL11025
32	25	95	306	11	QBBEL11032
40	32	95	324	11	QBBEL11040
50	40	95	344	11	QBBEL11050
63	50	95	374	11	QBBEL11063

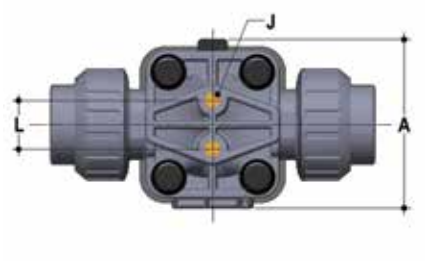


PMDK

Wall Mounting plate

d	DN	A	B	C	D	F	S	Code
20	15	65	97	81	33	5.5	11	PMDK1
25	20	65	97	81	33	5.5	11	PMDK1
32	25	65	97	81	33	5.5	11	PMDK1
40	32	65	97	81	33	5.5	11	PMDK2
50	40	65	144	130	33	6.5	11	PMDK2
63	50	65	144	130	33	6.5	11	PMDK2
75	65	65	144	130	33	6.5	11	PMDK2

FASTENING AND SUPPORTING



All valves, whether manual or actuated, must be adequately supported in many applications.

The DK valve series is therefore provided with an integrated bracket that permits direct anchoring of the valve body without the need of other components.

For wall installation, dedicated PMDK mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

The PMDK plate also allows the DK valve to be aligned with FIP ZIKM pipe clips.

d	DN	A	L	J
20	15	74	25	M6 x 10
25	20	74	25	M6 x 10
32	25	87	25	M6 x 10
40	32	87	25	M6 x 10
50	40	114	44.5	M8 x 14
63	50	136	44.5	M8 x 14
75	65	136	44.5	M8 x 14

CUSTOMISATION

The DIALOCK® DK DN 15÷65 valve can be customised using a customisation plate in white PVC.

The customisation plate (B), housed in the transparent protection cap (A), can be removed and, once overturned, used for indicating identification serial numbers or service indications on the valves such as, for example, the valve function in the system, the conveyed fluid, but also specific information for customer service, such as the customer name or installation date or location on the valves. The waterproof transparent protection cap with seal O-Ring protect the customisation plate against deterioration.

To access the customisation plate, make sure that the handwheel is in the release position and proceed as follows:

1) Rotate the transparent protection cap fully anticlockwise (fig. 1) and remove it by pulling upwards. If necessary, insert a screwdriver in slot (C) to make the operation easier (fig. 2).
2) Remove the plate from inside the transparent protection cap and customise as required (fig. 3).
3) Re-assemble everything making sure that the transparent protection cap O-Ring remains in its seating fig. 4).

Fig. 1

Fig. 2

Fig. 3

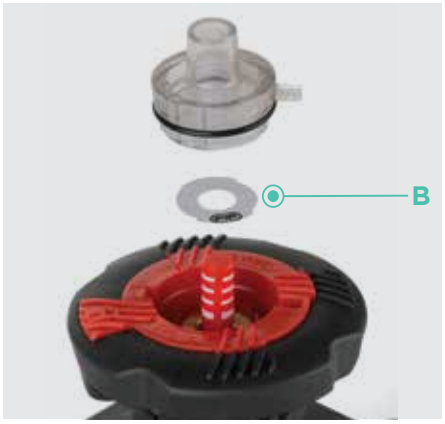
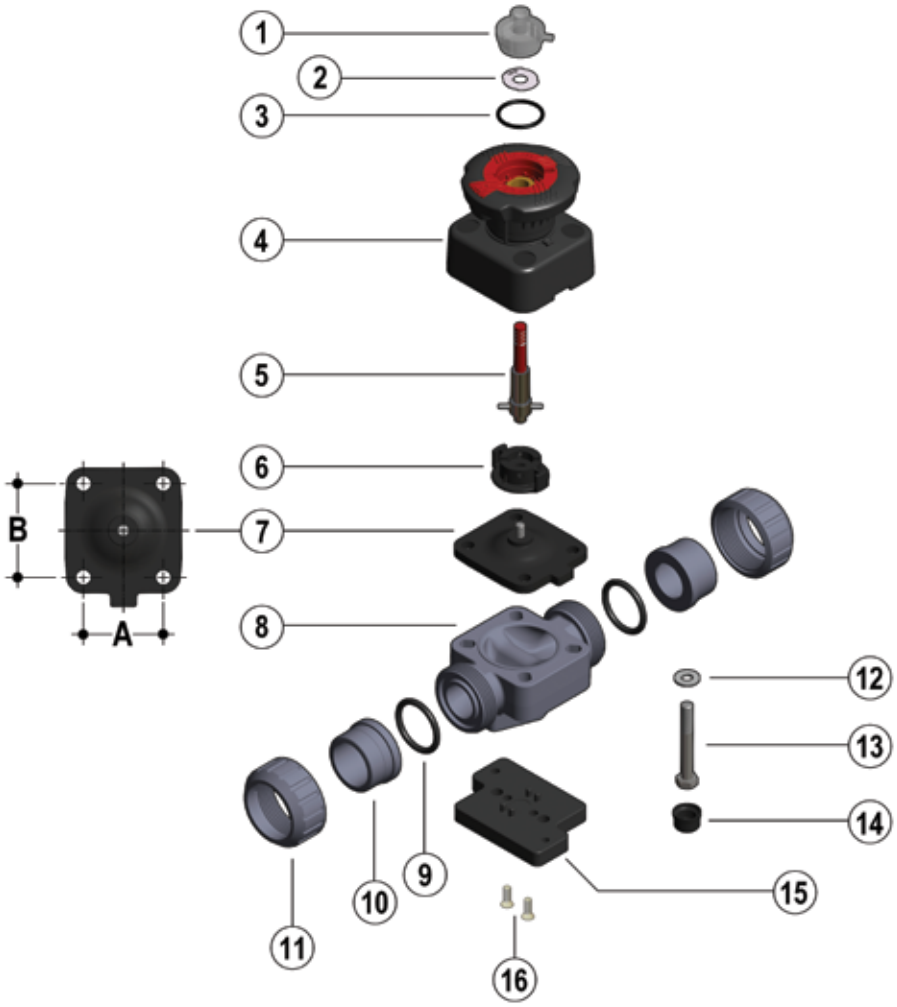


Fig. 4

COMPONENTS

EXPLODED VIEW DN 15÷50



DN	15	20	25	32	40	50	65
A	40	40	46	46	65	78	78
B	44	44	54	54	70	82	82

1 · Transparent protection cap (PVC - 1)*
2 · Customisation plate (PVC - 1)
3 · O-Ring (EPDM - 1)
4 · Operating mechanism (PP-GR / PVDF - 1)
5 · Threaded stem - Indicator (Stainless steel - 1)
6 · Compressor (IXEF® - 1)
7 · Diaphragm seal (EPDM, FPM, PTFE - 1)*
8 · Valve body (PVC-U - 1)*
9 · Socket seal O-ring (EPDM-FPM - 2)*
10 · End connector (PVC-U - 2)*
11 · Union nut (PVC-U - 2)*
12 · Washer (Stainless steel - 4)
13 · Bolt (Stainless steel - 4)
14 · Protection plug (PE - 4)
15 · Distance plate (PP-GR - 1)**
16 · Screw (Stainless steel - 2)**

* Spare parts
** Accessories
The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

1) Isolate the valve from the line (release the pressure and empty the pipeline).
2) If necessary, release the handwheel by pressing downwards (fig.5) and rotating anticlockwise to fully open the valve.
3) Unscrew the union nuts (11) and extract the valve sideways.
4) Remove the protection plugs (14) and bolts (13) with the relative washers (12).
5) Separate the valve body (8) from the internal components (4).
6) Rotate the handwheel clockwise to free the threaded stem (5), compressor (6) and diaphragm (7)
7) Unscrew the diaphragm (7) and remove the shutter (6).

ASSEMBLY

1) Insert the compressor (6) on the threaded stem (5) aligning it correctly with the reference pin on the stem.
2) Screw the diaphragm (7) on the threaded stem (5).
3) Lubricate the threaded stem (5), insert it in the operating mechanism (4) and rotate the handwheel anticlockwise until the stem is fully screwed in (5).
   Make sure that the compressor (6) and diaphragm are correctly aligned with the housings in the operating mechanism (4) (fig. 7).
4) Fit the operating mechanism (4) on the valve body (8) and tighten the bolts (13) with the relative washers (12).
5) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
6) Replace the protection plugs (14)
7) Position the valve body between the end connectors (10) and tighten the union nuts (11), making sure that the socket seal O-rings (9) do not exit their seats.
8) If necessary, block the handwheel by grasping it and pulling it upwards (fig. 6).

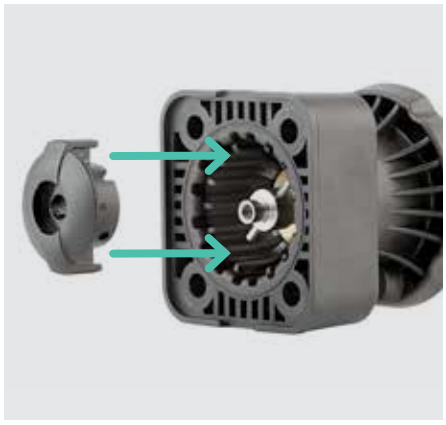
⚠

Note: during assembly, it is advisable to lubricate the threaded stem.
Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 5

Fig. 6

Fig. 7



INSTALLATION

Before proceeding with installation. please follow these instructions carefully: (these instructions refer to union end versions). The valve can be installed in any position and in any direction.

1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
2) Unscrew the union nuts (11) and insert them on the pipe segments.
3) Solvent weld or screw the end connectors (10) onto the pipe ends.
4) Position the valve body between the end connectors, making sure that the socket seal O-rings (9) do not exit their seats.
5) Fully tighten the union nuts (11).
6) If necessary, support the pipework with FIP pipe clips or by means of the carrier built into the valve itself (see paragraph “Fastening and supporting”).

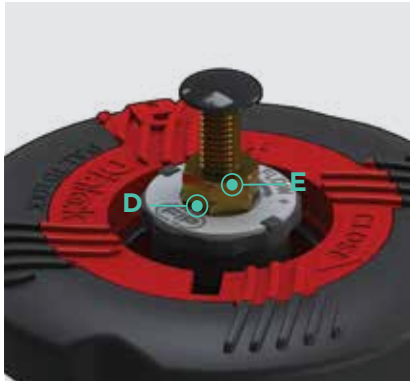
Fig. 9

Note: Before putting the valve into service, check that the bolts on the valve body (13) are tightened correctly at the suggested torque.

LOCKING DEVICE

The DK valve is equipped with a DIALOCK® handwheel locking system that prevents the valve from being operated.
The system can be engaged by simply lifting the handwheel once the required position has been reached (fig. 8).
To release the operating mechanism, simply return the handwheel to its previous position by pushing it downwards (fig. 6).
When the system is in the locked position, a lock can be installed to protect the plant against unwanted interference (fig. 9).

STROKE LIMITER



The DKL version of the diaphragm valve is equipped with a handwheel stroke control system which allows the minimum and maximum flows to be preset and the diaphragm to be preserved from an excessive compression during closing.
The system allows the valve stroke to be modified using the two independent adjusting screws, which determine the mechanical limits of the valve during opening and closing.
The valve is sold with the stroke limiters positioned such that does not limit the opening or closing stroke.
To access and set the adjusting screws, remove the transparent protection cap (A) as previously described (see chapter “Customisation”).

Travel stop adjustment. Minimum flow rate or closed valve.

1) Rotate the handwheel clockwise until the required minimum flow rate is reached or the valve is closed.
2) Screw in nut (D) as far as it will go and lock it in this position by tightening the locknut (E).
   To deactivate the function of limiting the closing stroke, completely unscrew nuts (D and E). In this way, the valve will fully close.
3) Re-assemble the transparent protection cap making sure that the seal O-Ring remains in its seating.

Stroke limiter adjustment. Maximum flow rate

1) Rotate the handwheel anticlockwise until the required maximum flow rate is reached.
2) Rotate knob (F) anticlockwise as far as the stop. The plate indicates the direction of rotation of the wheel required to obtain a higher or lower maximum flow rate.
   If the opening stroke does not need to be limited, rotate the knob (F) clockwise a number of times. In this way, the valve will fully open.
3) Re-assemble the transparent protection cap making sure that the seal O-Ring remains in its seating.

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