Aliaxis
UTILITIES & INDUSTRY

FIP

PIPE, FITTINGS AND MANUAL VALVES

PVDF

The PVDF line consists of a comprehensive range of pipes, fittings and manual valves for use in the construction of process and service lines for conveying pressurised industrial fluids in a temperature range from -40° C to 140° C.

CONTENTS

PIPE, FITTINGS AND MANUAL VALVES IN PVDF

ORIGINE E QUALITÀ CONTROLLATA

PVDF
GENERAL CHARACTERISTICS

PVDF (polyvinylidene difluoride) is a fluorinated and semi-crystalline techno-polymer containing 59% of its weight in fluorine. This material is obtained through the polymerization of vinylidene fluoride. It boasts exceptional mechanical, physical and chemical resistance, guaranteeing excellent thermal stability up to 140° C.

The FIP PVDF line uses Solef® PVDF resins, manufactured by SOLVAY for industrial applications, for the production of pipes, fittings and valves made by extrusion and injection moulding. The entire line is made using Solef® resins by SOLVAY S.A. classified according to ASTM D 3222 and complying with the requirements of ISO 10931.

Thanks to its high purity and exceptional performance, PVDF is the best alternative to metal materials, and is extensively used in industrial applications (chemical, oil, pharmaceutical, pulp and paper, electronic, etc.), whether in process systems or otherwise.

Among the most important properties and advantages of Solef® PVDF, the following are particularly worthy of note:

- **Excellent chemical resistance:**

  the use of Solef® resin, a vinylidene fluoride polymer, ensures excellent resistance to corrosion and abrasion when conveying highly aggressive chemicals. PVDF is basically inert to most inorganic acids and bases, organic acids, aromatic and aliphatic hydrocarbons, alcohols and halogenated solvents. However, it is not recommended for use with fluorine, amines, ketones and oleum (sulfuric acid with sulfur trioxide).

- **Excellent thermal stability:**

  PVDF maintains its characteristics unchanged in a temperature range between -40° C and +140° C. PVDF pipes are particularly suitable in all applications requiring high operating temperatures, very low levels of fluid contamination and high resistance to ageing due to atmospheric agents and UV radiation. The material's excellent mechanical properties are retained even at high temperatures.

- **Fire resistance:**

  Solef® resins guarantee excellent fire resistance without the need for flame retardants (Limit Oxygen Index, LOI = 44%). In case of combustion, smoke emissions are moderated. Solef® PVDF resins are classified UL-94, class V-O.

- **Purity:**

  Solef® PVDF resin is an extremely pure polymer that does not contain stabilizers, plasticizers, lubricants or flame retardants. As a result, it is the ideal material for conveying ultra-pure water and chemicals, ensuring the non-contamination of the conveyed fluid. As it is physiologically non-toxic, it is suitable for conveying fluids and food products.

- **High abrasion resistance:**

  according to the Taber Abrasion Test (in which the weight loss of a material is measured after being exposed to an abrasive wheel for 1000 cycles), PVDF is the most resistant thermoplastic material (CS-10 Load 1kg - Weight Loss / 1000 cycles = 5-10 mg.)

Density		
Test method	ISO 1183	
Unit of measurement	g/cm^3	
Value	Valves/fittings: 1.78 - Pipes: 1.78	

Fluidity index (MFI 230° C, 5 kg)		
Test method	ISO 1133	ASTM D1238
Unit of measurement	g/(10 min)	g/(10 min)
Value	Valves/fittings: 6 - Pipes: 6	Valves/fittings: 24 - Pipes: 24

Modulus of elasticity		
Test method	ISO 527	ASTM D790
Unit of measurement	$MPa = N/mm^2$	$MPa = N/mm^2$
Value	Valves/fittings: 2100 - Pipes: 2100	Valves/fittings: 2200 - Pipes: 2100

IZOD notched impact strength at 23°C	
Test method	ASTM D256
Unit of measurement	J/m
Value	Valves/fittings: 55 - Pipes: 110

Ultimate elongation		
Test method	ISO 527-2	ASTM D 638
Unit of measurement	%	%
Value	Valves/fittings: 80 - Pipes: 80	Valves/fittings: 5-10 - Pipes: 20-50

Rockwell hardness	
Test method	ASTM D 785
Unit of measurement	R
Value	Valves/fittings: 110 - Pipes: 110

Tensile strength		
Test method	ISO 527	ASTM D 638
Unit of measurement	$MPa = N/mm^2$	$MPa = N/mm^2$
Value	Valves/fittings: 50 - Pipes: 50	Valves/fittings: 53-57 - Pipes: 53-57

Heat distortion temperature HDT (0.46 N/mm^2)		
Test method	ISO 75	ASTM D 648
Unit of measurement	°C	°C
Value	Valves/fittings: 145 - Pipes: 145	Valves/fittings: 148 - Pipes: 147

Thermal conductivity at 23° C		
Test method	DIN 52612-1	ASTM C 177
Unit of measurement	W/(m °C)	W/(m °C)
Value	Valves/fittings: 0.20 - Pipes: 0.20	Valves/fittings: 0.20 - Pipes: 0.20

Coefficient of linear thermal expansion		
Test method	DIN 53752	ASTM D 696
Unit of measurement	m/(m °C)	m/(m °C)
Value	Valves/fittings: $12x10^{-5}$ Pipes: $12x10^{-5}$	Valves/fittings: $12x10^{-5}$ Pipes: $12x10^{-5}$

Limiting Oxygen Index		
Test method	ISO 4859-1	ASTM D 2863
Unit of measurement	%	%
Value	Valves/fittings: 44 - Pipes: 44	Valves/fittings: 44 - Pipes: 44

Surface electrical resistivity	
Test method	ASTM D257
Unit of measurement	ohm
Value	Valves/fittings: $>10^{14}$ - Pipes: $>10^{14}$

Flammability	
Test method	UL94
Value	V-0

REFERENCE **STANDARDS**

Production of the PVDF Solef® lines is carried out according to the highest quality standards and in full compliance with the environmental restrictions set by the applicable laws in force and in accordance with **ISO 14001**.
All products are made in accordance with the quality guarantee system in compliance with **ISO 9001**.

- **ANSI B16.5**
  Pipe flanges and stubs - NPS 1/2 to NPS 24 mm/inch.
- **ASTM D3222**
  PVDF, material for extrusion moulding and coating.
- **DIN 2501**
  Flanges, dimensions
- **DIN 16962**
  PVDF fittings for socket and butt welding, dimensions.
- **DIN 16963**
  Pipe joints and pipe components for pressurised fluids in HDPE.
- **DVS 2202-1**
  Imperfections of PVDF welded joints, characteristics, descriptions and evaluations.
- **DVS 2207-15**
  Welding of components in PVDF.
- **DVS 2208-1**
  Machinery and equipment for thermocouple welding.
- **EN 558-1**
  Industrial valves - Overall dimensions of metal valves for use in flanged pipe systems - Part 1: PN designated valves.
- **EN 1092-1**
  Flanges and their joints - Circular flanges for pipes, valves and accessories - Part 1: Steel flanges, PN designated.
- **EN ISO 10931**
  Specifications for components (Pipes, Fittings and Valves) in PVDF for industrial applications.
- **ISO 5211**
  Part-turn actuator couplings.
- **ISO 7005-1**
  Metal flanges; part 1: steel flanges.

APPROVALS AND **QUALITY MARKS**

- **DVGW KTW, W270**
  Suitability of the SOLVAY PVDF Solef® resin for microbiological tests.

- **FDA (Food and Drug Administration - USA)**
  Suitability of the SOLVAY PVDF Solef® resin for contact with food.

- **NSF (National Sanitation Foundation USA)**
  Suitability of the SOLVAY PVDF Solef® resin for use in contact with drinking water.

- **DIBt**
  FIP PVDF Solef® valves have been tested and certified by DIBt (Deutsches Institut für Bautechnik)

- **GOST-R - EAC**
  PVDF Solef® valves and fittings are GOST-R and EAC certified in accordance with Russian regulations on Safety, Hygiene and Quality

- **TA-Luft**
  FIP PVDF Solef® valves have been tested and certified according to “TA-Luft” by MPA Stuttgart in compliance with the Technical Instruction on Air Quality Control TA-Luft/ VDI 2440

- **UKR SEPRO**
  PVDF Solef® valves and fittings are certified in accordance with Ukraine regulations on Safety, Hygiene and Quality

- **WRAS (Water regulations advisory scheme - UK)**
  Suitability of the SOLVAY PVDF Solef® resin for use in contact with drinking water.

MAIN **PROPERTIES**

Properties of PVDF		Benefits
Thermal resistance		- Operating range: - 40 + 140° C (see pressure/temperature regression curves)
Low surface roughness		- High flow coefficients (extremely smooth internal walls)
Chemical resistance		- Exceptional chemical resistance for conveying corrosive fluids (generally inert to inorganic acids and bases, aromatic and aliphatic hydrocarbons, organic acids, alcohols and halogenated solvents)
Abrasion resistance		- Extremely low operating costs due to its long service life
Fully recyclable and non-toxic		- Physiologically safe
Easy jointing (hot socket, butt and electrofusion welding, flanging and threading)		- Low installation costs
Excellent mechanical properties		- PVDF responds to the need to provide suitable mechanical resistance meeting the design requirements of industrial plants

SOCKET WELDING INSTRUCTIONS

Hot socket welding involves fusing the pipe in the fitting's socket. The joint is made by simultaneously fusing the male and female surfaces by means of special manual or automatic heating devices. These devices, in their simplest form, are composed of a heating plate on which a series of heating bushes are mounted. The devices comes with an appropriate heating system complete with an automatic temperature controller. No additional materials are required for this type of welding. Socket welding does not affect the chemical resistance of the PVDF, nor does it influence the inner pressure resistance of the assembled pipes and fittings. The pipe to be welded must be cut, chamfered and peeled if necessary. The external surface of the pipe and the internal surface of the fitting must be carefully cleaned, and the external surfaces of the pipe and fitting can be marked with a reference notch to eliminate the risk of inadvertent rotation while the joint is setting. The next step is to insert the pipe in the female bush and the fitting in the male bush and hold them in position for the necessary heating time; when this time has elapsed, the parts must be quickly removed from the bushes and then the pipe inserted into the fitting to the full previously determined insertion length, ensuring the reference notches are correctly aligned. The two elements must be supported for approximately 15 seconds after initial insertion and then left to cool at ambient temperature without using forced air flows or water immersion.

Procedure for hot socket welding

The method described below is applicable only when creating thermal socket welds that call for the use of manual type welding equipment (fig. 1). The use of automatic and semi-automatic appliances, which are particularly suitable for diameters greater than 63 mm, calls for a specific working knowledge of the welding tool. In this case, adhere strictly to the tool manufacturer's instructions

1) Select the female bushes and the male bushes of the required diameters, insert them and secure them to the heating plate (fig. 2).
2) Carefully clean the contact surfaces (fig. 3). When choosing the type of liquid detergent, use recommended products supplied by specialist producers: trichloroethane, chlorothene, ethyl alcohol and isopropyl alcohol are all suitable.
3) Set the temperature of the heating tool. To form the joint correctly, the temperature should be set between 250° C and 270° C.
4) When the appliance has reached the preset temperature, check the temperature of the heating plate using a fast acting thermoprobe.
5) Cut the pipe at right angles, chamfer it and if necessary peel it out (fig. 4-5). The peeling diameter and length and the chamfer depth must correspond to the values shown in the table named “Pipe peeling and chamfer dimensions”. The chamfering process can be performed either after peeling or concurrently with this operation, using special calibrated tools.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

6) Mark the pipe with the insertion length L1 (fig. 6), referring to the values indicated in the table named “Pipe insertion length” and checking that any peeling has been machined to the entire length shown in the table.

7) Mark a longitudinal reference line on the outside of the pipe and the fitting to prevent the two parts from rotating while the joint is being made (fig. 7).

8) Clean the fitting and pipe from any traces of oil or dust on the weld surfaces (fig. 8).

9) After having checked that the surface temperature of the heating plate has stabilized at the required value, insert the pipe into the female bush and the fitting in the male bush (fig. 9). Holding the parts inserted in the two bushes (fitting inserted to limit stop, pipe inserted up to the end of the peeling length), wait for the minimum heating time shown in the table named “Heating, welding and cooling times”.

10) When the minimum heating time has elapsed, quickly remove the elements from the bushes and fit the pipe into the fitting for the entire insertion length L1 marked previously (fig. 10). Do not turn the pipe in the fitting; ensure the longitudinal reference marks are perfectly aligned (fig. 11).

11) Hold the jointed elements for the welding time shown in the table named “Heating, welding and cooling times” and then leave them to cool slowly at ambient temperature without using forced air flows or water immersion.

12) When the internal and external surfaces have cooled sufficiently, pressurize the plant for the joint hydraulic test.

Fig. 6

Fig. 7

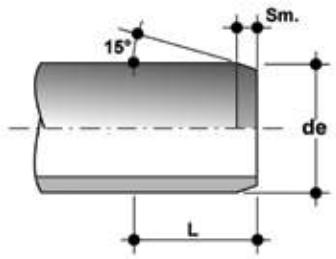
Fig. 8

Fig. 9

Fig. 10

Fig. 11

PIPE PEELING AND CHAMFER DIMENSIONS



External diameter de (mm)	Peeling length L (mm)	Chamfer Sm (mm)
16	13	2
20	14	2
25	16	2
32	18	2
40	20	2
50	23	2
63	27	3
75	31	3
90	35	3
110	41	3

PIPE INSERTION LENGTH

External diameter de (mm)	Length of insertion into the fitting's socket L_1 (mm)
16	12
20	14
25	15
32	17
40	18
50	20
63	26
75	29
90	32
110	35

HEATING, WELDING AND COOLING TIMES

	PVDF pipes according to: DVS 2207 Part 15			
de (mm)	Minimum thickness* (mm)	Heating time (sec)	Welding time (s)	Cooling time (min)
16	1.5	4	4	2
20	1.9	6	4	2
25	1.9	8	4	2
32	2.4	10	4	4
40	2.4	12	4	4
50	3	18	4	4
63	3	20	6	6
75	3	22	6	6
90	3	25	6	6
110	3	30	6	8

* For proper welding, we recommend using pipes with wall thickness exceeding 2 mm, and precisely:
- for d up to 50 mm: pipe series PN 10 and PN 16
- for d from 63 to 110 mm: pipe series PN 16, PN 10 and PN 6.

Aliaxis
UTILITIES & INDUSTRY

FIP

ISO-UNI PIPE
PVDF

Pressure pipe

PIPE
ISO-UNI

Pressure pipes for connection system by butt or socket welding.

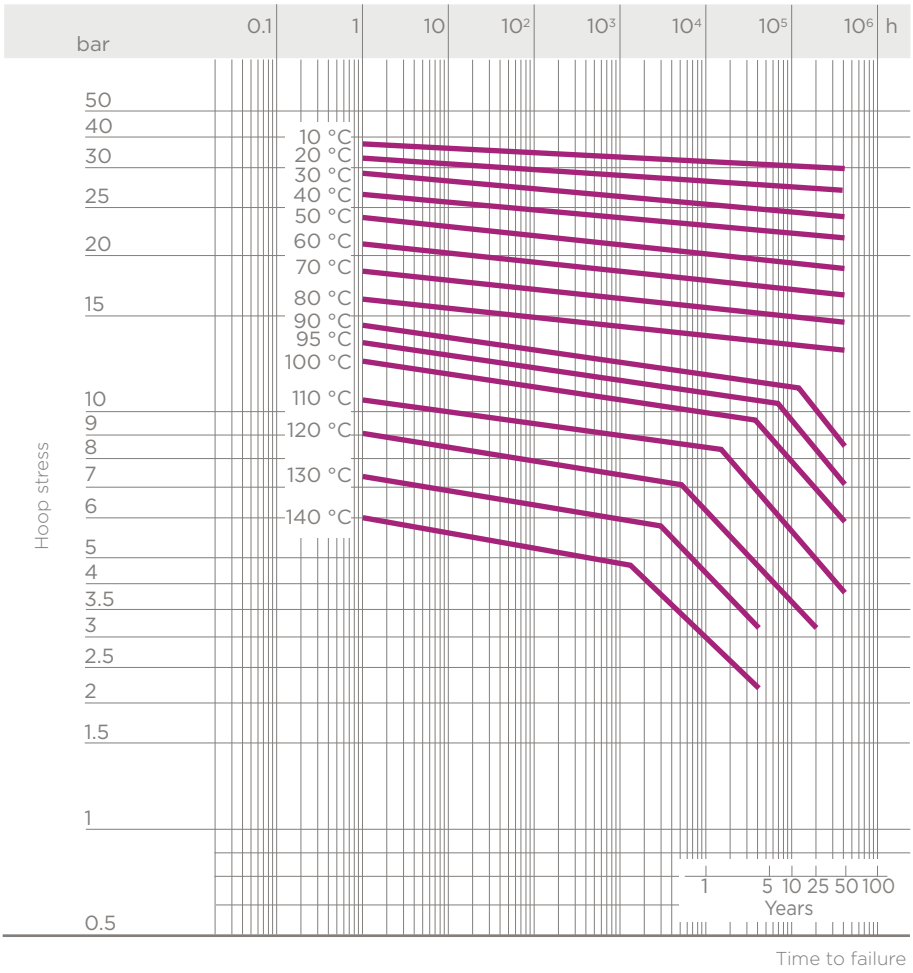
PRESSURE PIPE

Technical specifications	
Size range	d 16 ÷ d 110 (mm)
Nominal pressure	SDR 21 (PN16) with water at 20° C SDR 33 (PN10) with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
Reference standards	**Construction criteria:** EN ISO 10931
	Test methods and requirements: EN ISO 10931
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
Material	PVDF

TECHNICAL DATA

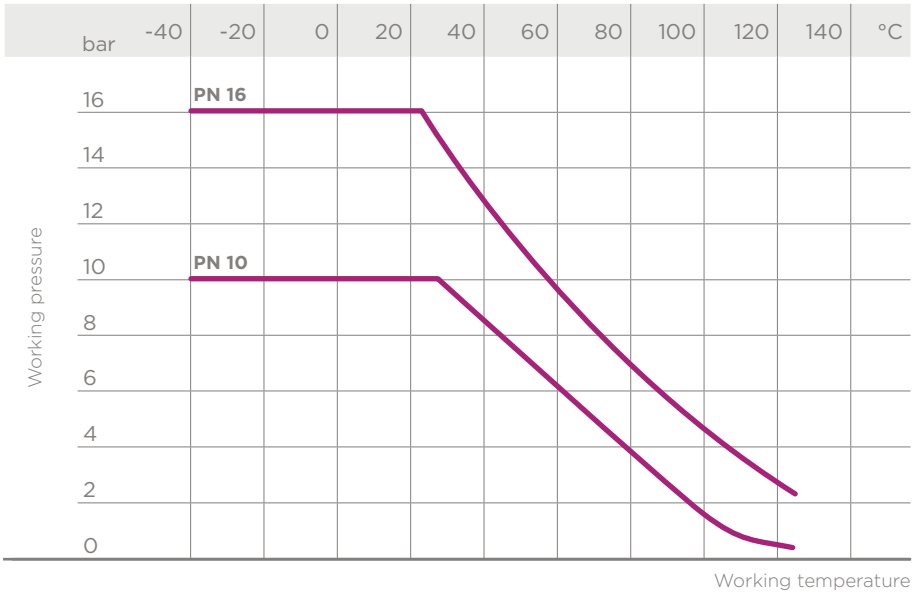
REGRESSION CURVES FOR PIPES IN PVDF

Regression coefficients according to ISO 10931 for MRS (minimum) = 25 N/mm² (MPa)



PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids for which the material is classified as CHEMICALLY RESISTANT (life expectancy 25 years). In other cases, a reduction of the nominal pressure PN is required.



The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

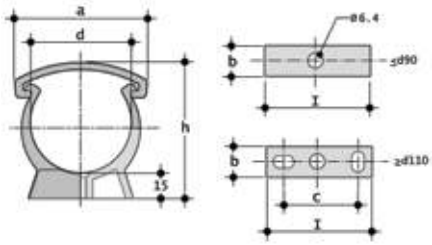
DIMENSIONS

PRESSURE PIPE

Pressure pipe in PVDF according to ISO 10931, translucent white, standard length 5m

d	DN	s (mm)	kg/m	PN16 Code SDR 21 - S10
16	10	1.9	0.137	PIPEF13016
20	15	1.9	0.21	PIPEF13020
25	20	1.9	0.269	PIPEF13025
32	25	2.4	0.435	PIPEF13032
40	32	2.4	0.553	PIPEF13040
50	40	3	0.825	PIPEF13050
63	50	3	1.09	PIPEF13063
75	65	3.6	1.55	PIPEF13075
90	80	4.3	2.22	PIPEF13090
110	100	5.3	3.33	PIPEF13110

d	DN	s (mm)	kg/m	PN10 Code SDR 33 - S16
63	50	2.5	0.93	PIPEF33063
75	65	2.5	1.11	PIPEF33075
90	80	2.8	1.48	PIPEF33090
110	100	3.4	2.20	PIPEF33110

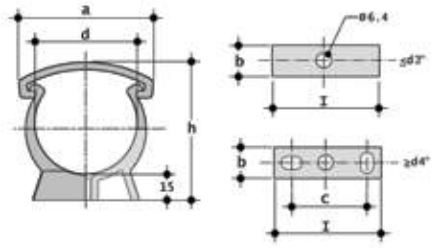


ZIKM

Pipe clip for ISO-DIN pipes in PP*

d	a	b	C	h	l	Code
**16	26	18	-	33	16	ZIKM016
**20	33	14	-	38	20	ZIKM020
**25	41	14	-	44	25	ZIKM025
**32	49	15	-	51	32	ZIKM032
**40	58	16	-	60	40	ZIKM040
**50	68	17	-	71	60	ZIKM050
**63	83	18	-	84	63	ZIKM063
**75	96	19	-	97	75	ZIKM075
**90	113	20	-	113	90	ZIKM090
**110	139	23	40	134	125	ZIKM110
**125	158	25	60	151	140	ZIKM125
**140	177	27	70	167	155	ZIKM140
**160	210	30	90	190	180	ZIKM160
**180	237	33	100	211	200	ZIKM180

*for pipe support systems, refer to guidelines DVS 2210-1 (Planning and execution - above-ground pipe systems)
**resale product

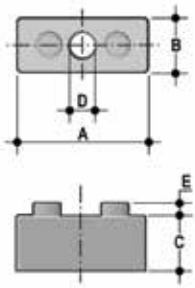


ZAKM

Pipe clip for ASTM pipes in PP*

d	a	b	C	h	l	Code
**3/8"	26	13	-	34	16	ZAKM038
**1/2"	33	14	-	39	20	ZAKM012
**3/4"	41	14	-	45	25	ZAKM034
**1"	49	15	-	52	32	ZAKM100
**1" 1/4	58	16	-	61	40	ZAKM114
**1" 1/2	68	17	-	67	50	ZAKM112
**2"	83	18	-	80	63	ZAKM200
**2" 1/2	96	19	-	96	75	ZAKM212
**3"	118	20	-	110	90	ZAKM300
**4"	140	25	60	135	140	ZAKM400
**6"	197	30	90	196	180	ZAKM600

*for pipe support systems, refer to guidelines DVS 2210-1 (Planning and execution - above-ground pipe systems)
**resale product



DSM

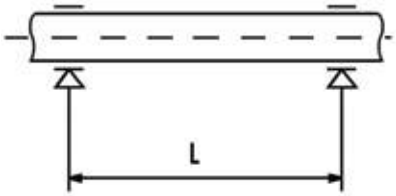
Spacers in PP for ZIKM pipe clips*

d	A	B	C	D	E	Pack	Master	Code
**32	33	16	14	8	4	20	120	DSM032
**40	41	17	17	8	4	10	80	DSM040
**50	51	18	17	8	4	10	50	DSM050
**63	64	19	22.5	8	4	10	40	DSM063
**75	76	20	34.5	8	4	10	40	DSM075

*for pipe support systems, refer to guidelines DVS 2210-1 (Planning and execution - above-ground pipe systems)
**resale product

INSTALLATION

POSITIONING OF ZIKM AND ZAKM PIPE CLIPS



The installation of thermoplastic pipe systems requires the use of support clips to prevent flexing and the resulting mechanical stresses.
The distance between the clips depends on the pipe material, SDR, surface temperature and the density of the conveyed fluid.
Before installing the clips, check the distances reported in the table below, as provided for by guidelines DVS 2210-01 for water pipes.

Supporting PVDF pipes conveying liquids of density 1 g/cm³ (water and other fluids of equal intensity).

For pipes of SDR 33 / S 16 / PN 10 and SDR 21 / S 10 / PN 16:

d	distance L in mm at different wall temperatures									
mm	≤ 20° C	30° C	40° C	50° C	60° C	70° C	80° C	100° C	120° C	140° C
16	725	700	650	600	575	550	500	450	400	300
20	850	800	750	750	700	650	600	500	450	400
25	950	900	850	800	750	700	675	600	500	450
32	1100	1050	1000	950	900	850	800	700	600	500
40	1200	1150	1100	1050	1000	950	900	750	650	550
50	1400	1350	1300	1200	1150	1100	1000	900	750	600

For pipes of SDR 33 / S 16 / PN 10:

d	distance L in mm at different wall temperatures									
mm	≤ 20° C	30° C	40° C	50° C	60° C	70° C	80° C	100° C	120° C	140° C
63	1400	1350	1300	1250	1200	1150	1100	950	800	650
75	1500	1450	1400	1350	1300	1250	1200	1050	850	700
90	1600	1550	1500	1450	1400	1350	1300	1100	950	850
110	1800	1750	1700	1650	1550	1500	1450	1250	1100	950
125	1900	1850	1800	1700	1650	1600	1500	1350	1200	1000
140	2000	1950	1900	1800	1750	1700	1600	1450	1250	1050
160	2150	2100	2050	1950	1850	1800	1700	1550	1350	1150
180	2300	2200	2150	2050	1950	1900	1800	1600	1400	1200
200	2400	2350	2250	2150	2100	2000	1900	1700	1500	1300
225	2550	2500	2400	2300	2200	2100	2000	1800	1600	1400
250	2650	2600	2500	2400	2300	2200	2100	1900	1700	1500
280	2850	2750	2650	2550	2450	2350	2250	2000	1800	1600
315	3000	2950	2850	2750	2600	2500	2400	2150	1900	1650
355	3200	3100	3000	2850	2750	2650	2500	2250	2000	1750
400	3400	3300	3200	3050	2950	2800	2650	2400	2100	1800

For different SDR values, multiply the data in the table by the following factors:
1.08 for SDR21 / S10 / PN16 size range d63 - d400
1.12 for SDR17 / S8 / PN20 entire size range

Supporting PVDF pipes conveying liquids of density other than 1 g/cm³.

If the liquid being conveyed has a density other than 1 g/cm³, the distance L must be multiplied by the factors in the table.

Fluid density in g/cm³	Support factor
1.25	0.96
1.50	0.92
1.75	0.88
2.00	0.84
< 0.01	1.48 for SDR33 / S16 / PN10 1.36 for SDR21 / S16 / PN16 1.31 for SDR17 / S8 / PN20

Aliaxis
UTILITIES & INDUSTRY

FIP

FITTINGS FOR SOCKET WELDING
PVDF

Fittings, metric series ISO-UNI

FITTINGS
FOR SOCKET WELDING

Series of fittings designed for conveying fluids under pressure with a hot weld connection system (socket welding).

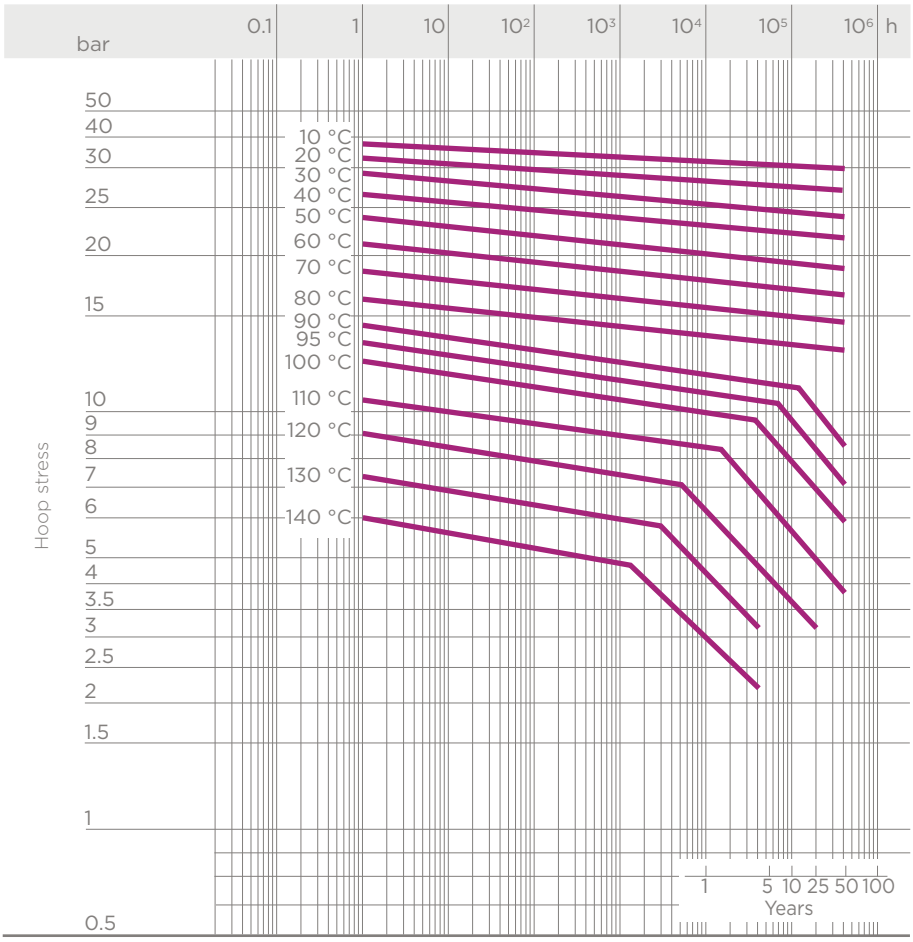
FITTINGS, METRIC SERIES ISO-UNI

Technical specifications	
Size range	d 16 ÷ d 110 (mm)
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Flanging system: ISO 7005-1, EN ISO 10931, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150
Reference standards	**Construction criteria:** EN ISO 10931
	Test methods and requirements: EN ISO 10931
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
Fitting material	PVDF
Seal material	FPM

TECHNICAL DATA

REGRESSION CURVES FOR FITTINGS IN PVDF

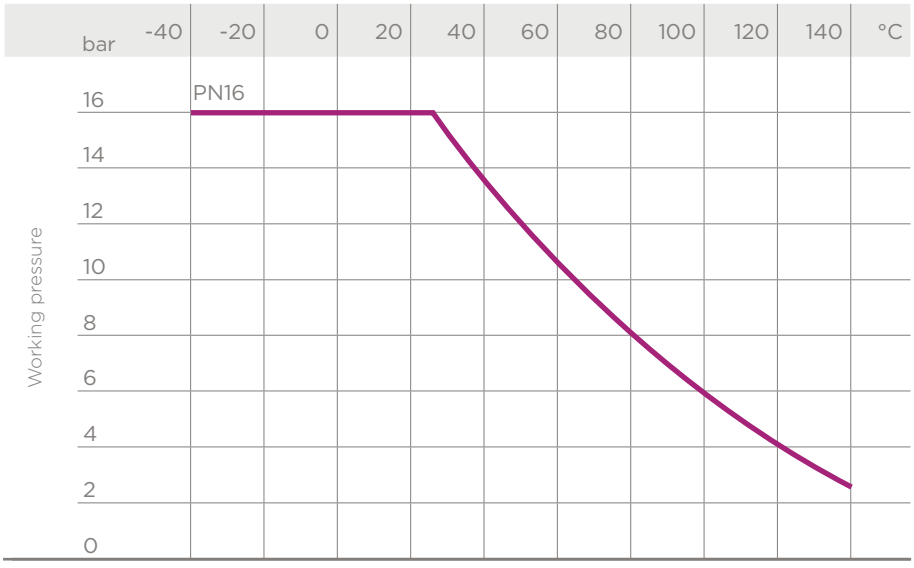
Regression coefficients according to ISO 10931 for MRS (minimum) = 25 N/mm² (MPa)



Time to failure

PRESSURE VARIATION ACCORDING TO TEMPERATURE

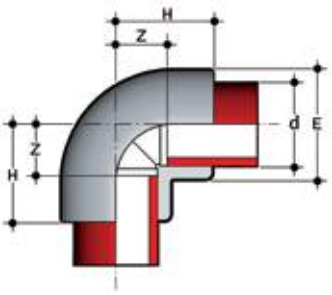
For water and non-hazardous fluids for which the material is classified as CHEMICALLY RESISTANT (life expectancy 25 years). In other cases, a reduction of the nominal pressure PN is required.



Working temperature

The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

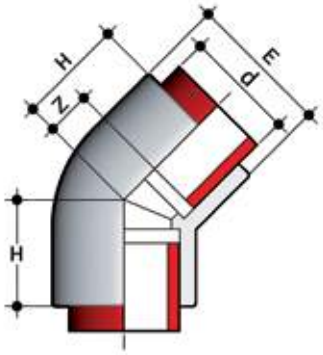
DIMENSIONS



GIF

90° elbow for socket welding

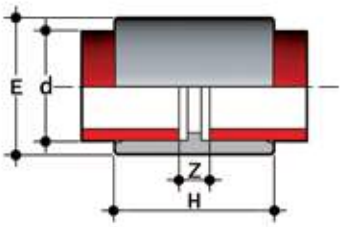
d	PN	E	H	Z	g	Code
16	16	22	23	10	14	GIF016
20	16	28	27	13	28	GIF020
25	16	33	32	16	43	GIF025
32	16	41	37	19	65	GIF032
40	16	52	43	23	125	GIF040
50	16	63	51	27	195	GIF050
63	16	77	61	34	340	GIF063
75	16	92	73	42	575	GIF075
90	16	110	83	47	850	GIF090
110	16	133	99	58	1470	GIF110



HIF

45° elbow for socket welding

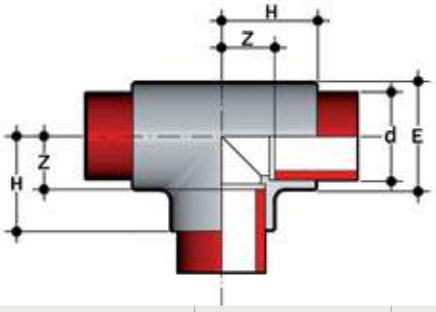
d	PN	E	H	Z	g	Code
20	16	28	22	7	24	HIF020
25	16	33	25	9	37	HIF025
32	16	42	30	12	63	HIF032
40	16	51	37	16	110	HIF040
50	16	63	43	19	202	HIF050
63	16	79	52	25	337	HIF063
75	16	88	61	30	395	HIF075
90	16	105	73	37	645	HIF090
110	16	127	87	46	1095	HIF110



MIF

Double socket for socket welding

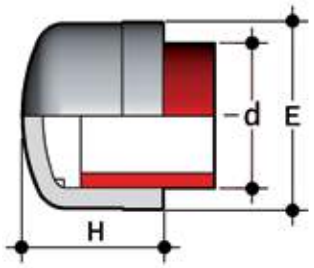
d	PN	E	H	Z	g	Code
20	16	28	36	7	20	MIF020
25	16	33	40	8	28	MIF025
32	16	42	44	8	48	MIF032
40	16	51	49	8	70	MIF040
50	16	63	55	8	120	MIF050
63	16	77	64	9	185	MIF063
75	16	90	72	10	275	MIF075
90	16	108	79	8	415	MIF090
110	16	131	94	11	710	MIF110



TIF

90° Tee for socket welding

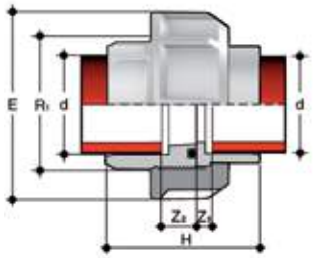
d	PN	E	H	Z	g	Code
16	16	22	23	10	18	TIF016
20	16	28	27	13	35	TIF020
25	16	33	32	16	55	TIF025
32	16	41	37	19	90	TIF032
40	16	51	43	22	150	TIF040
50	16	63	52	29	270	TIF050
63	16	79	63	35	470	TIF063
75	16	93	71	40	665	TIF075
90	16	109	82	46	1025	TIF090
110	16	133	99	58	1800	TIF110



CIF

End cap for socket welding

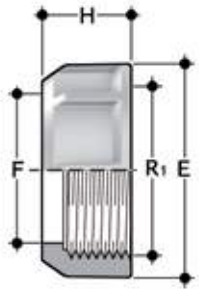
d	PN	H	E	g	Code
16	16	20	23	7	CIF016
20	16	23	28	11	CIF020
25	16	27	33	19	CIF025
32	16	31	41	32	CIF032
40	16	36	50	47	CIF040
50	16	43	61	75	CIF050
63	16	51	76	135	CIF063
75	16	58	90	215	CIF075
90	16	68	109	400	CIF090
110	16	81	130	630	CIF110



BIGF

Union for socket welding

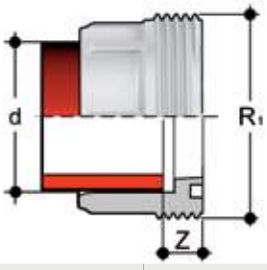
d	R1	PN	E	H	Z_1	Z_2	g	Code
20	1”	16	47	45.5	12	5.5	59	BIGF020F
25	1”1/4	16	58	49.5	12	5.5	99	BIGF025F
32	1”1/2	16	65	53.5	12	5.5	141	BIGF032F
40	2”	16	78	59.5	14	5.5	218	BIGF040F
50	2”1/4	16	85	67.5	16	5.5	290	BIGF050F
63	2”3/4	16	103	79.5	20	5.5	476	BIGF063F



EFGF

Union nut with BSP thread for union types BIGF, BIFXF and BIRXF

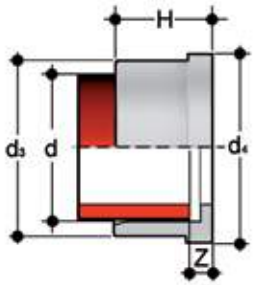
R1	d BIGF	E	F	H	g	Code
1”	20	47	28	22	30	EFGF100
1”1/4	25	58	36	25	46	EFGF114
1”1/2	32	65	42	27	63	EFGF112
2”	40	78	53	30	90	EFGF200
2”1/4	50	85	59	33	117	EFGF214
2”3/4	63	103	74	38	188	EFGF234



F/BIGF

Union bush for socket welding, metric series

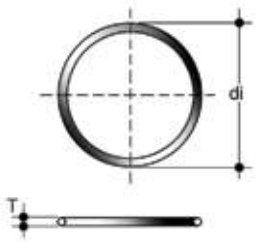
d	R_1	PN	Z	g	Code
20	1”	16	12	16	FBIGF020
25	1”1/4	16	12	27	FBIGF025
32	1”1/2	16	12	38	FBIGF032
40	2”	16	14	62	FBIGF040
50	2”1/4	16	16	74	FBIGF050
63	2”3/4	16	18	141	FBIGF063



Q/BIGF

Union end for socket welding, metric series

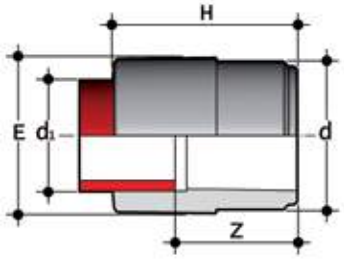
d	PN	d_3	d_4	H	Z	g	Code
20	16	27.5	30.1	19.5	5.5	13	QBIGF020
25	16	36	38.8	21.5	5.5	27	QBIGF025
32	16	41.5	44.7	23.5	5.5	32	QBIGF032
40	16	53	56.5	25.5	5.5	57	QBIGF040
50	16	59	62.6	28.5	5.5	57	QBIGF050
63	16	74	78.4	32.5	5.5	97	QBIGF063



O-Ring

Seals for union types BIGF, BIFXF and BIRXF

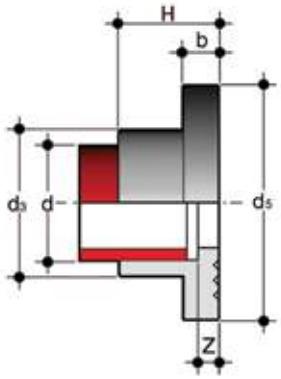
d Union	C	di	T	EPDM Code	FPM Code
16	3062	15.54	2.62	OR3062E	OR3062F
20	4081	20.22	3.53	OR4081E	OR4081F
25	4112	28.17	3.53	OR4112E	OR4112F
32	4131	32.93	3.53	OR4131E	OR4131F
40	6162	40.65	5.34	OR6162E	OR6162F
50	6187	47	5.34	OR6187E	OR6187F
63	6237	59.69	5.34	OR6237E	OR6237F
75	6300	75.57	5.34	OR6300E	OR6300F
90	6362	91.45	5.34	OR6362E	OR6362F
110	6450	113.67	5.34	OR6450E	OR6450F



RIF

Reducer: spigot (d), reduced socket for socket welding (d_1)

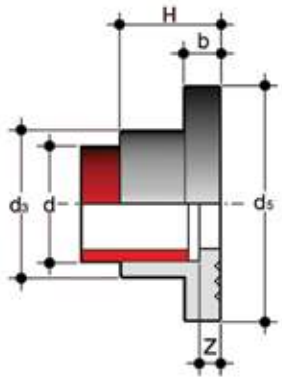
d X d_1	PN	H	E	Z	g	Code
20x16	16	35	20	22	11	RIF020016
25x20	16	40	26	26	15	RIF025020
32x25	16	46	32	30	28	RIF032025
40x25	16	51	32	35	40	RIF040025
40x32	16	54	40	36	47	RIF040032
50x32	16	59	39	41	55	RIF050032
50x40	16	63	47	43	70	RIF050040
63x32	16	67	40	49	100	RIF063032
63x50	16	76	60	53	130	RIF063050
75x63	16	89	75	61	220	RIF075063
90x63	16	97	73	70	280	RIF090063
90x75	16	104	87	73	335	RIF090075
110x90	16	121	103	85	520	RIF110090



QRNF

Stub with serrated face (according to DIN standards) for socket welding, for use with backing rings ODB

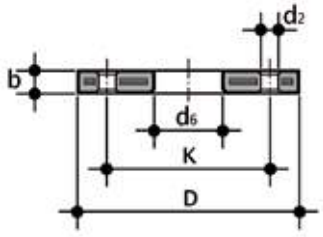
d	DN	PN	b	d_3	d_5	H	Z	g	Code
20	15	16	7	27	45	20	6	23	QRNF020
25	20	16	9	34	58	22	6	46	QRNF025
32	25	16	10	41	68	25	6	58	QRNF032
40	32	16	11	50	78	27	6	91	QRNF040
50	40	16	12	61	88	30	6	122	QRNF050
63	50	16	14	76	102	34	6	181	QRNF063
75	65	16	16	90	122	38	7	288	QRNF075
90	80	16	17	108	138	44	8	411	QRNF090
110	100	16	18	131	158	50	8	573	QRNF110



QRAF

Stub with serrated face for socket welding, for used with backing rings OAB (for other dimensions use QRNF)

d	DN	OAB size	PN	b	d_3	d_5	H	Z	g	Code
25	20	3/4"	16	9	34	58	22	6	46	QRAF034
32	25	1"	16	10	41	68	25	6	58	QRAF100
40	32	1"1/4	16	11	50	78	27	6	91	QRAF114
50	40	1"1/2	16	12	61	88	30	6	122	QRAF112
90	80	3"	16	17	108	138	44	8	411	QRAF300

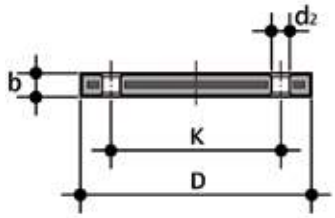


ODB

Steel core backing ring, PP/FRP coated, according to EN/ISO/DIN for stub QRNF.
Drilling: PN 10/16

d	DN	*PMA (bar)	b	d_2	d_6	D	K	M	n	**(Nm)	g	Code
20	15	16	12	14	28	95	65	M12	4	15	290	ODB020
25	20	16	14	14	34	105	75	M12	4	15	410	ODB025
32	25	16	16	14	42	115	85	M12	4	15	610	ODB032
40	32	16	16	18	51	140	100	M16	4	20	880	ODB040
50	40	16	16	18	62	150	110	M16	4	30	810	ODB050
63	50	16	19	18	78	165	125	M16	4	35	940	ODB063
75	65	16	19	18	92	188	145	M16	4	40	1210	ODB075
90	80	16	21	18	109	200	160	M16	8	40	1480	ODB090
***125	100	16	20	18	134	220	180	M16	8	45	1570	ODB125

*PMA maximum admissible working pressure
**nominal tightening torque
***d125: for stubs QRNF d 110

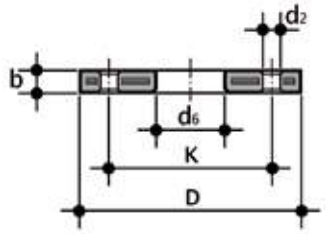


ODBC

Steel core blind flange, PP/FRP according to EN/ISO/DIN Drilling: PN 10/16

d	DN	*PMA (bar)	b	d_2	D	K	M	n	**(Nm)	g	Code
20	15	16	12	14	95	65	M12	4	15	290	ODBC020
25	20	16	12	14	105	75	M12	4	15	390	ODBC025
32	25	16	16	14	115	85	M12	4	15	550	ODBC032
40	32	16	16	18	140	100	M16	4	25	820	ODBC040
50	40	16	16	18	150	110	M16	4	35	900	ODBC050
63	50	16	16	18	165	125	M16	4	35	1150	ODBC063
75	65	16	18	18	185	145	M16	4	40	1680	ODBC075
90	80	16	18	18	200	160	M16	8	40	2240	ODBC090
110	100	16	20	18	220	180	M16	8	45	2800	ODBC110

*PMA maximum admissible working pressure
**nominal tightening torque

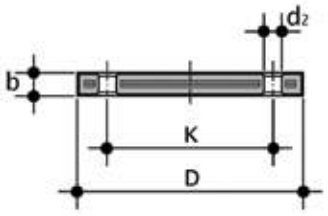


OAB

Steel core backing ring, PP/FRP coated according to ANSI B16.5 cl.150 for stubs QRNF and QRAF

Size	DN	*PMA (bar)	b	d_2 mm	d_2 inch	d_6	D	K mm	K mm	n	**(Nm)	g	Code
1/2”	15	16	12	16	5/8”	28	95	60.45	2 3/8”	4	15	220	OAB012
3/4”	20	16	12	16	5/8”	34	102	69.85	2 3/4”	4	15	240	OAB034
1”	25	16	16	16	5/8”	42	114	79.25	3 1/8”	4	15	390	OAB100
1”1/4	32	16	16	16	5/8”	51	130	88.9	3 1/2”	4	25	510	OAB114
1”1/2	40	16	18	16	5/8”	62	133	98.55	3 7/8”	4	35	580	OAB112
2”	50	16	18	20	3/4”	78	162	120.65	4 3/4”	4	35	860	OAB200
2”1/2	65	16	18	20	3/4”	92	184	139.7	5 1/2”	4	40	1100	OAB212
3”	80	16	18	20	3/4”	111	194	152.4	6”	4	40	1040	OAB300
4”	100	16	18	20	3/4”	133	229	190.5	7 1/2”	8	40	1620	OAB400

*PMA maximum admissible working pressure
**nominal tightening torque

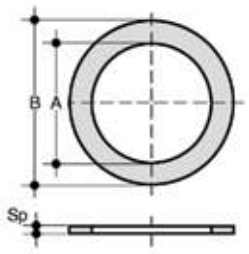


OABC

Steel core blind flange, PP/FRP coated according to ANSI B16.5 cl.150

Size	DN	*PMA (bar)	b	d_2 mm	d_2 inch	D	K mm	K inch	n	**(Nm)	g	Code
1/2”	15	16	12	16	5/8”	95	60.45	2 3/8”	4	15	200	OABC012
3/4”	20	16	12	16	5/8”	102	69.85	2 3/4”	4	15	240	OABC034
1”	25	16	16	16	5/8”	114	79.25	3 1/8”	4	15	370	OABC100
1”1/4	32	16	16	16	5/8”	130	88.90	3 1/2”	4	25	530	OABC114
1”1/2	40	16	18	16	5/8”	133	98.55	3 7/8”	4	35	560	OABC112
2”	50	16	18	20	3/4”	162	120.65	4 3/4”	4	35	810	OABC200
2”1/2	65	16	18	20	3/4”	184	139.70	5 1/2”	4	40	1070	OABC212
3”	80	16	18	20	3/4”	194	152.40	6”	4	40	1030	OABC300
4”	100	16	18	20	3/4”	229	190.50	7 1/2”	8	40	1570	OABC400

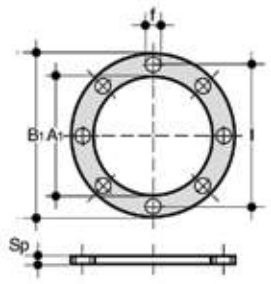
*PMA maximum admissible working pressure
**nominal tightening torque



QHV/X

Flat gasket in EPDM and FPM for flanges according to DIN 2501, EN 1092

d	DN	A	B	Sp	EPDM Code	FPM Code
20 - 1/2”	15	20	32	2	QHVX020E	QHVX020F
25 - 3/4”	20	24	38.5	2	QHVX025E	QHVX025F
32 - 1”	25	32	48	2	QHVX032E	QHVX032F
40 - 1” 1/4	32	40	59	2	QHVX040E	QHVX040F
50 - 1” 1/2	40	50	71	2	QHVX050E	QHVX050F
63 - 2”	50	63	88	2	QHVX063E	QHVX063F
75 - 2” 1/2	65	75	104	2	QHVX075E	QHVX075F
90 - 3”	80	90	123	2	QHVX090E	QHVX090F
110 - 4”	100	110	148	3	QHVX110E	QHVX110F



QHV/Y

Flat gasket in EPDM for flanges according to DIN 2501, EN 1092, self-centring for flanges drilled PN 10/16

d	DN	A_1	B_1	f	I	U	Sp	Code
20 - 1/2”	15	17	95	14	65	4	2	QHVY020E
25 - 3/4”	20	22	107	14	76.3	4	2	QHVY025E
32 - 1”	25	28	117	14	86.5	4	2	QHVY032E
40 - 1” 1/4	32	36	142.5	18	101	4	2	QHVY040E
50 - 1” 1/2	40	45	153.3	18	111	4	2	QHVY050E
63 - 2”	50	57	168	18	125.5	4	2	QHVY063E
75 - 2” 1/2	65	71	187.5	18	145.5	4	3	QHVY075E
90 - 3”	80	84	203	18	160	8	3	QHVY090E
110 - 4”	100	102	223	18	181	8	3	QHVY110E

Aliaxis
UTILITIES & INDUSTRY

FIP

FITTINGS FOR SOCKET WELDING
PVDF

ISO-BSP adaptor fittings

FITTINGS
FOR SOCKET WELDING

Series of fittings designed for conveying fluids under pressure with a hot thread and weld connection system (socket welding).

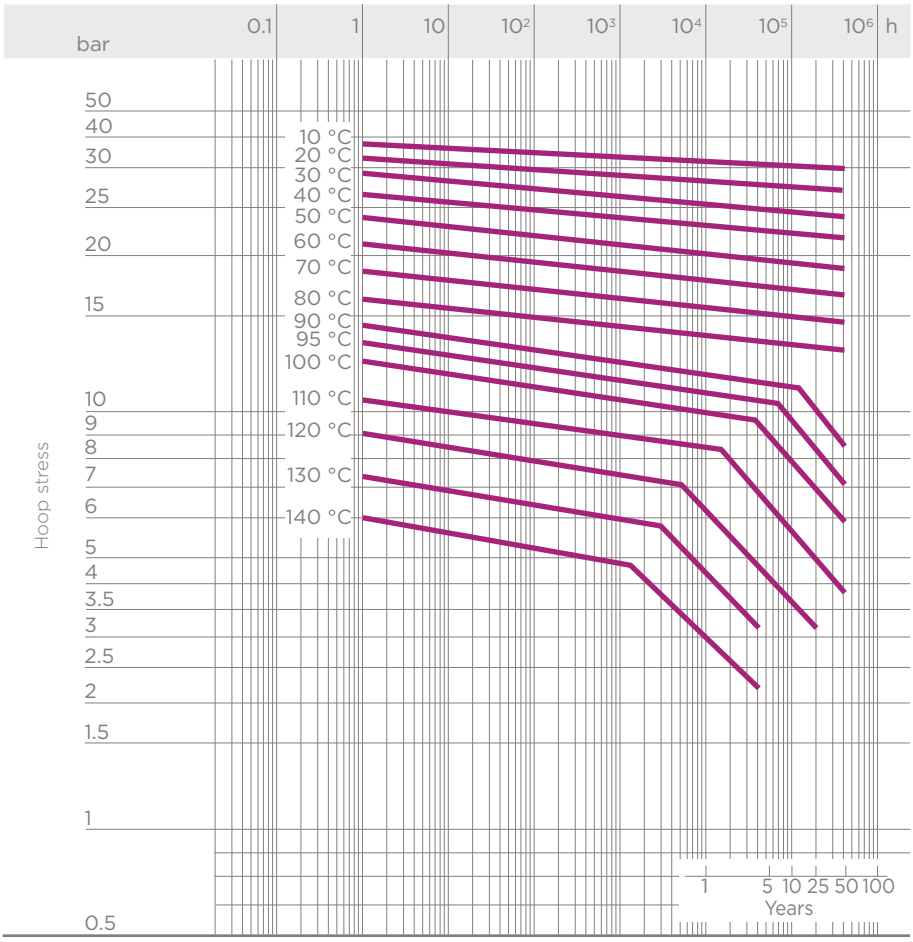
ISO-BSP ADAPTOR FITTINGS

Technical specifications	
Size range	d 20 ÷ 63 (mm); R 3/8" ÷ 2"
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Thread: ISO 228-1, DIN 2999
Reference standards	**Construction criteria:** EN ISO 10931
	Test methods and requirements: EN ISO 10931
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
Valve material	PVDF
Seal material	FPM

TECHNICAL DATA

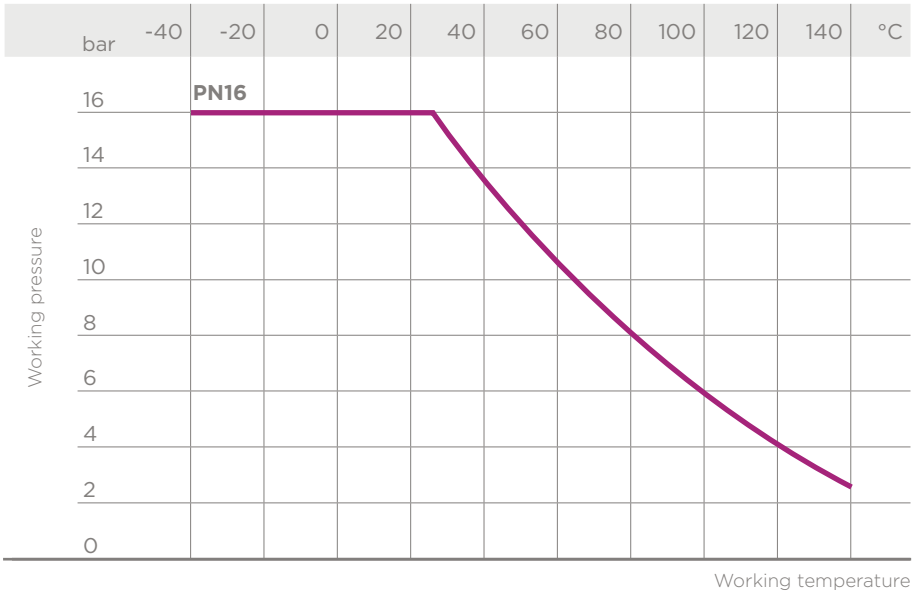
REGRESSION CURVES FOR FITTINGS IN PVDF

Regression coefficients according to ISO 10931 for MRS (minimum) = 25 N/mm² (MPa)

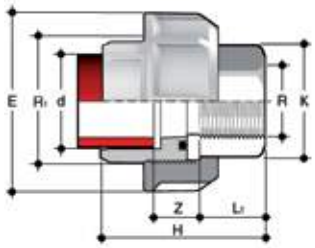


PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required.



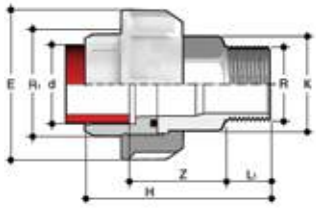
DIMENSIONS



BIFXF

Adaptor union in PVDF/STAINLESS steel for socket welding (d),
BSP (R) threaded A316L STAINLESS steel female end with O-Ring in FPM

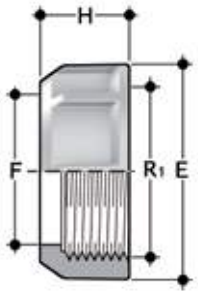
d x R	R1	PN	E	H	K	L_1	Z	g	Code
20 x 1/2"	1"	16	47	48.5	25	16.5	18	139	BIFXF020012F
25 x 3/4"	1"1/4	16	58	53.5	32	18.5	19	242	BIFXF025034F
32 x 1"	1"1/2	16	65	57.5	38	19.5	20	333	BIFXF032100F
40 x 1" 1/4	2"	16	78	64.5	48	21.5	23	558	BIFXF040114F
50 x 1" 1/2	2"1/4	16	85	78.5	55	23	32.5	700	BIFXF050112F
63 x 2"	2"3/4	16	103	85.5	69	27	31.5	1200	BIFXF063200F



BIRXF

Adaptor union in PP-H/STAINLESS steel for socket welding (d),
BSP (R) threaded A316L STAINLESS steel male end with O-Ring in FPM

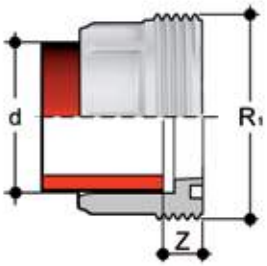
d x R	R_1	PN	E	H	K	L_1	Z	g	Code
20 x 1/2"	1"	16	47	65	25	13.5	37.5	139	BIRXF020012F
25 x 3/4"	1"1/4	16	58	71.5	32	15	40.5	242	BIRXF025034F
32 x 1"	1"1/2	16	65	78	38	17.5	42.5	333	BIRXF032100F
40 x 1" 1/4	2"	16	78	87	48	19.5	47.5	558	BIRXF040114F
50 x 1" 1/2	2"1/4	16	85	95	55	19.5	52.5	700	BIRXF050112F
63 x 2"	2"3/4	16	103	113.5	69	24	62.5	1200	BIRXF063200F



EFGF

Union nut with BSP thread for union types BIGF, BIFXF and BIRXF

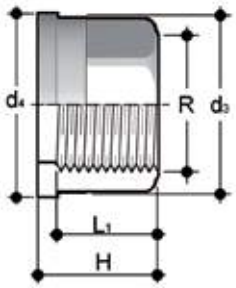
R_1	d BIGF	E	F	H	g	Code
1”	20	47	28	22	30	EFGF100
1”1/4	25	58	36	25	46	EFGF114
1”1/2	32	65	42	27	63	EFGF112
2”	40	78	53	30	90	EFGF200
2”1/4	50	85	59	33	117	EFGF214
2”3/4	63	103	74	38	188	EFGF234



F/BIGF

Union bush for socket welding, metric series

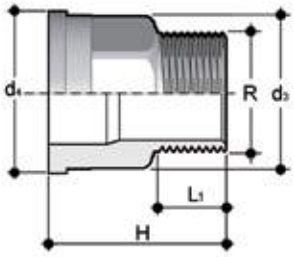
d	R_1	PN	Z	g	Code
20	1”	16	12	16	FBIGF020
25	1”1/4	16	12	27	FBIGF025
32	1”1/2	16	12	38	FBIGF032
40	2”	16	14	62	FBIGF040
50	2”1/4	16	16	74	FBIGF050
63	2”3/4	16	18	141	FBIGF063



Q/BFX

Union end in A316L STAINLESS steel with female BSP thread

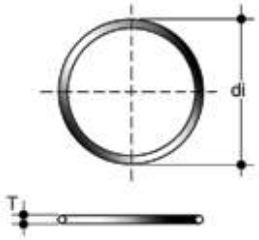
R	d_3	d_4	H	L_1	g	Code
3"3/8	22	24	21.5	13.5	34	QBFX038
1/2"	27.5	30.1	22.5	16.5	54	QBFX012
3/4"	36	38.8	25.5	18.5	104	QBFX034
1"	41.5	44.7	27.5	19.5	130	QBFX100
1"1/4	53	56.5	30.5	21.5	234	QBFX114
1"1/2	59	62.6	33.5	23	293	QBFX112
2"	74	78.4	38.5	27	520	QBFX200



Q/BRX

Union end in A316L STAINLESS steel with male BSP thread

R	d_3	d_4	H	L_1	g	Code
3/8"	22	24	34.5	10.5	58	QBRX038
1/2"	27.5	30.1	39	13.5	95	QBRX012
3/4"	36	38.8	43.5	15	166	QBRX034
1"	41.5	44.7	48	17.5	226	QBRX100
1"1/4	53	56.5	53	19.5	393	QBRX114
1"1/2	59	62.6	56	19.5	491	QBRX112
2"	74	78.4	65.5	24	843	QBRX200



O-Ring

Seals for union types BIGF, BIFXF and BIRXF

d Union	C	di	T	EPDM Code	FPM Code
16	3062	15.54	2.62	OR3062E	OR3062F
20	4081	20.22	3.53	OR4081E	OR4081F
25	4112	28.17	3.53	OR4112E	OR4112F
32	4131	32.93	3.53	OR4131E	OR4131F
40	6162	40.65	5.34	OR6162E	OR6162F
50	6187	47	5.34	OR6187E	OR6187F
63	6237	59.69	5.34	OR6237E	OR6237F
75	6300	75.57	5.34	OR6300E	OR6300F
90	6362	91.45	5.34	OR6362E	OR6362F
110	6450	113.67	5.34	OR6450E	OR6450F

Aliaxis
UTILITIES & INDUSTRY

FIP

VKD DN 10÷50
PVDF

DUAL BLOCK® 2-way ball valve

Aliaxis
UTILITIES & INDUSTRY

FIP

VKD DN 65÷100
PVDF

DUAL BLOCK® 2-way ball valve

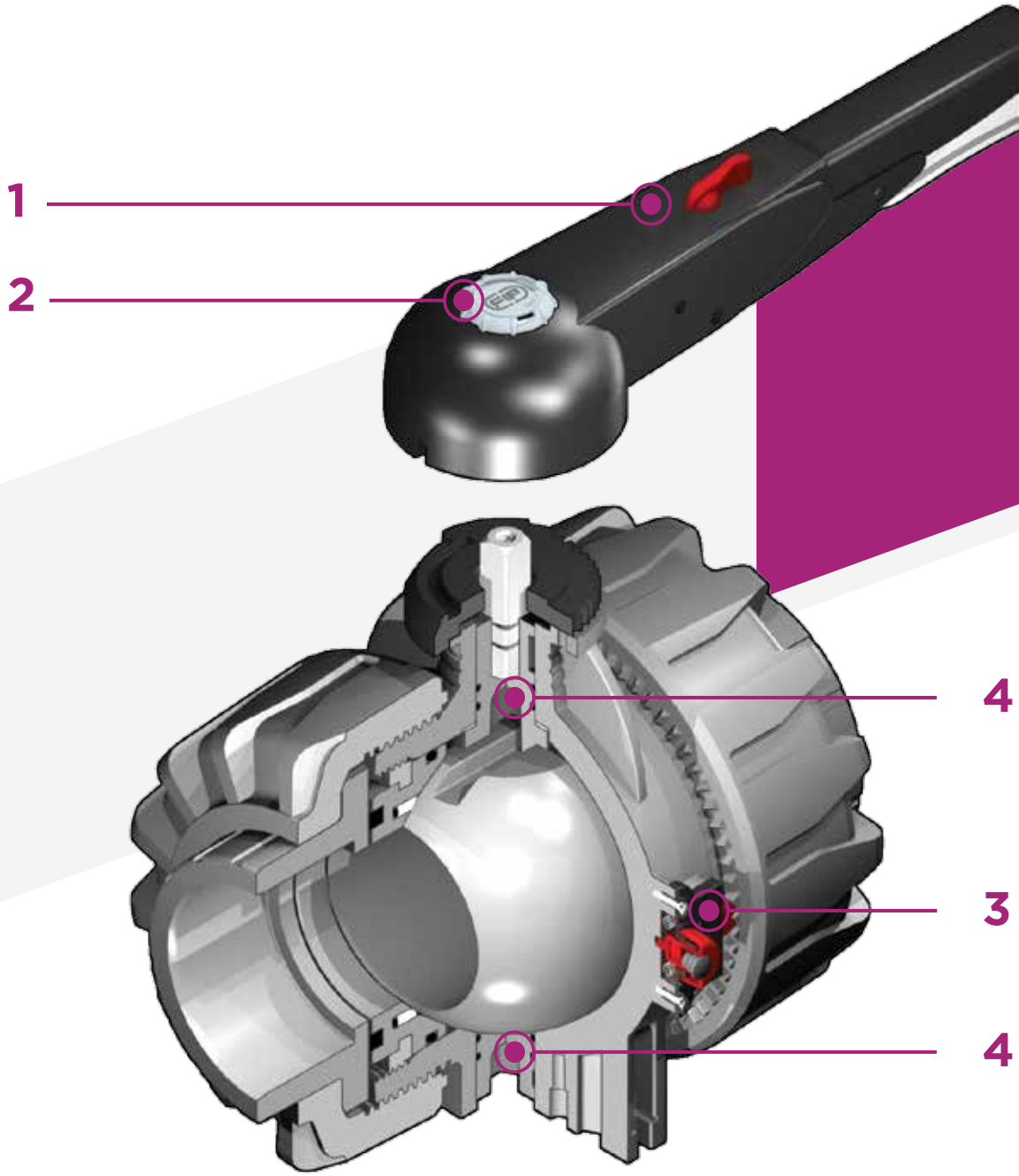
VKD
DN 65÷100

FIP has developed a VKD DUAL BLOCK® ball valve to introduce a high reference standard in thermosplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications.
This valve is also equipped with a customising Labelling System.

2-WAY DUAL BLOCK® BALL VALVE

- Connection system for weld and flanged joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- PN16 **True Union valve body** made for PVDF injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- **Full bore ball** with high surface finish
- **Integrated bracket** for valve anchoring
- Possibility of installing a gear box or pneumatic and/or electric actuators by applying an ISO standard bore PP-GR flange
- **STAINLESS steel co-moulded stem**, with square section as per ISO 5211

Technical specifications	
Construction	2-way True Union ball valve with locked carrier and union nuts.
Size range	DN 65 ÷ 100
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Flanging system: ISO 7005-1, EN ISO 10931, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150
Reference standards	**Construction criteria:** EN ISO 16135, EN ISO 10931,
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
	Actuator couplings: ISO 5211
Valve material	PVDF
Seal material	FPM (standard size O-Ring, EPDM on request); PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



1 HIPVC ergonomic multifunctional handle for quick operation, **lock and graduated adjustment in 10 positions**. Possibility of inhibiting rotation with a lock

2 Customisable Labelling System: built-in LCE module made of a transparent protection plug and **customisable tag holder** using the LSE set (available as an accessory). The customisation lets you identify the valve on the system according to specific needs

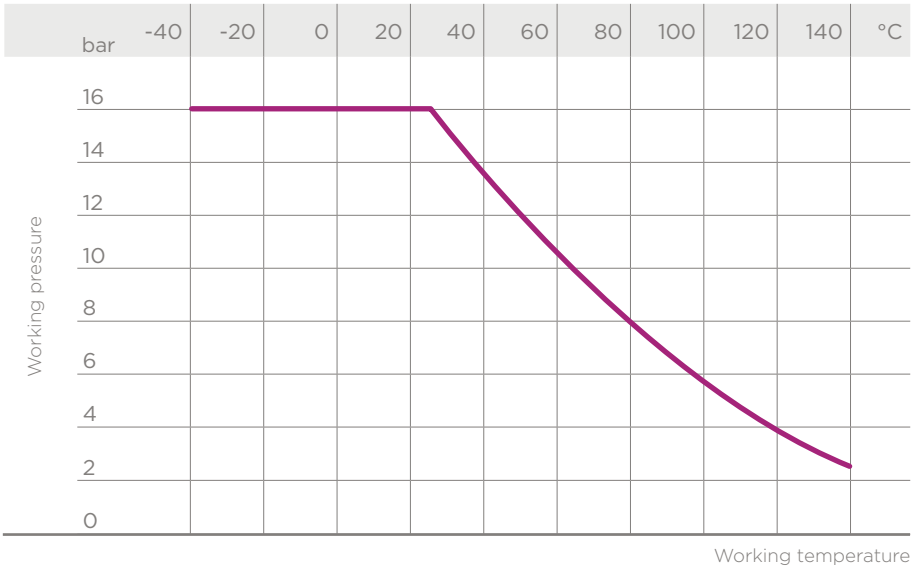
3 **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation

4 **Double stem** with double O-Rings for ball centring and operating torque reduction

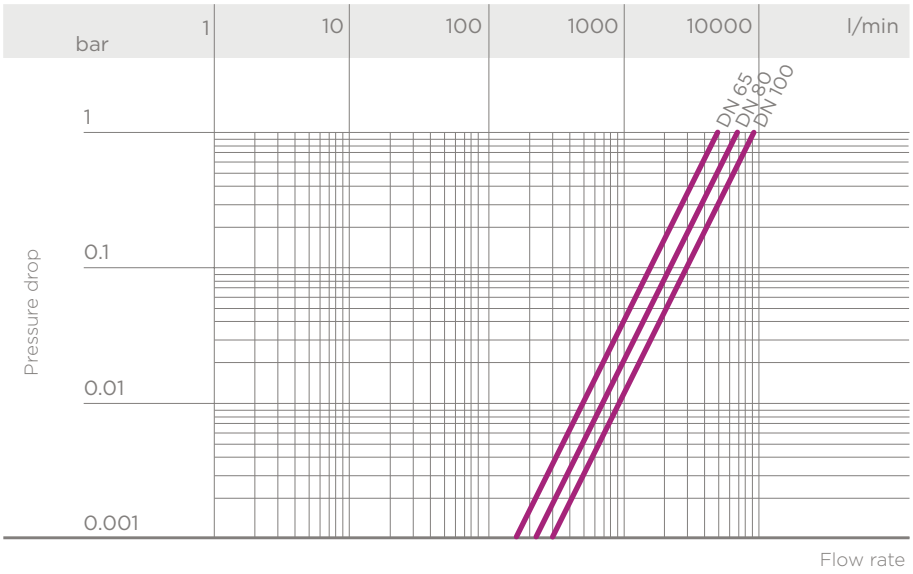
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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



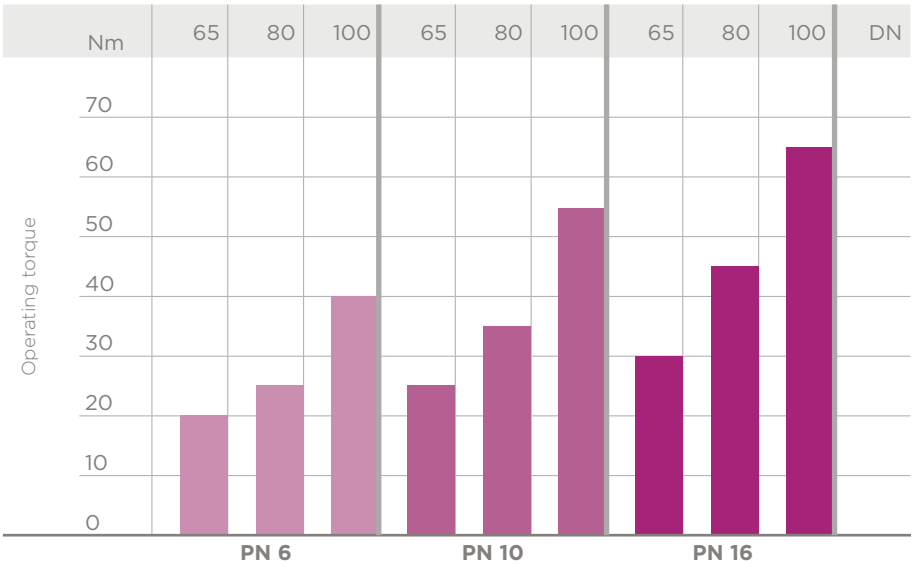
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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.

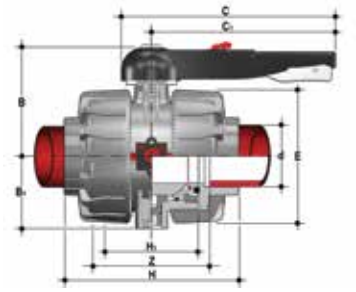
The K_v100 values shown in the table are calculated with the valve completely open.

DN	65	80	100
K_v100 l/min	5250	7100	9500

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



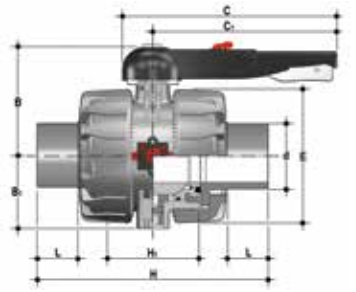
DIMENSIONS



VKDIF

DUAL BLOCK® 2-way ball valve with female ends for socket welding, metric series

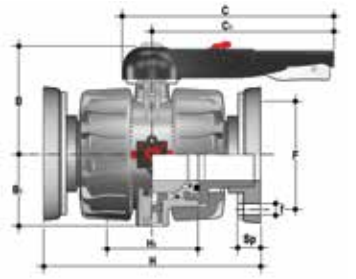
d	DN	PN	B	B_1	C	C_1	E	H	H_1	Z	g	Code
75	65	16	164	87	225	175	162	213	133	153	4380	VKDIF075F
90	80	16	177	105	327	272	202	239	149	173	7200	VKDIF090F
110	100	16	195	129	385	330	236	268	167	199	11141	VKDIF110F



VKDDF

DUAL BLOCK® 2-way ball valve with male ends for socket welding, metric series

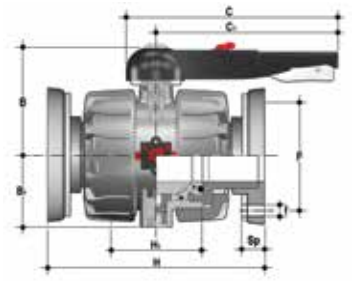
d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	g	Code
75	65	16	164	87	225	175	162	284	133	44	4420	VKDDF075F
90	80	16	177	105	327	272	202	300	149	51	6930	VKDDF090F
110	100	16	195	129	385	330	236	340	167	61	10950	VKDDF110F



VKDOF

DUAL BLOCK® 2-way ball valve with fixed flanges, drilled EN/ISO/DIN PN10/16.
Face to face according to EN 558-1

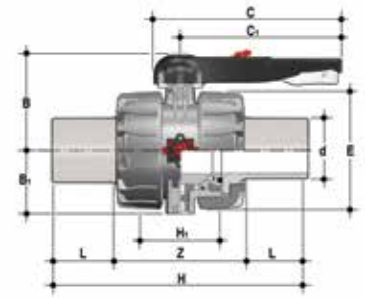
d	DN	PN	B	B_1	C	C_1	F	f	H	H_1	U	Sp	g	Code
75	65	16	164	87	225	175	145	17	290	133	4	21	8588	VKDOF075F
90	80	16	177	105	327	272	160	17	310	149	8	21.5	12122	VKDOF090F
110	100	16	195	129	385	330	180	17	350	167	8	21.5	17949	VKDOF110F



VKDOAF

DUAL BLOCK® 2-way ball valve with fixed flanges, drilled ANSI B16.5 cl.150 #FF. Face to face according to EN 558-1

d	DN	PN	B	B_1	C	C_1	F	f	H	H_1	U	Sp	g	Code
2"1/2	65	16	164	87	225	175	139.7	18	290	133	4	21	8588	VKDOAF075F
3"	80	16	177	105	327	272	152.4	18	310	149	8	21.5	12122	VKDOAF090F
4"	100	16	195	129	385	330	190.5	18	350	167	8	21.5	17949	VKDOAF110F



VKDBF

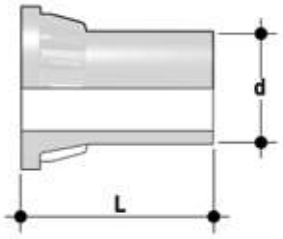
DUAL BLOCK® 2-way ball valve with long spigot male ends in PVDF SDR 21 for butt welding/IR (CVDF)

d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	Z	g	Code
75	65	16	164	87	225	175	162	284	133	71	142	4700	VKDBF075F
90	80	16	177	105	327	272	202	300	149	88	124	7150	VKDBF090F
110	100	16	195	129	385	330	236	340	167	92	156	11300	VKDBF110F

ACCESSORIES

CVDF

End connector in PVDF SDR 21 PN 16, long spigot, for butt welding



d	DN	PN	L	SDR	Code
75	65	16	110.5	21	CVDF21075
90	80	16	118.5	21	CVDF21090
110	100	16	130.5	21	CVDF21110

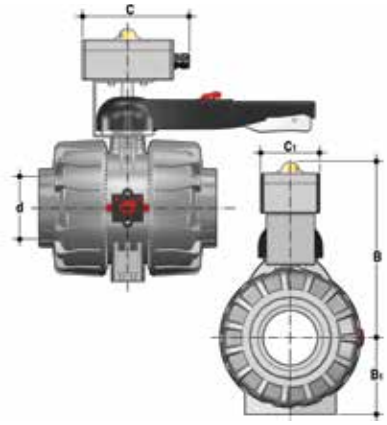
LSE

Customisation and label printing set for Easyfit handle made up of precut adhesive sheets and software for guided label creation

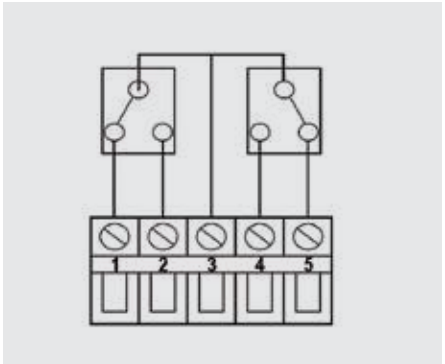
d	DN	Code
75	65	LSE040
90	80	LSE040
110	100	LSE040

VKD-MS

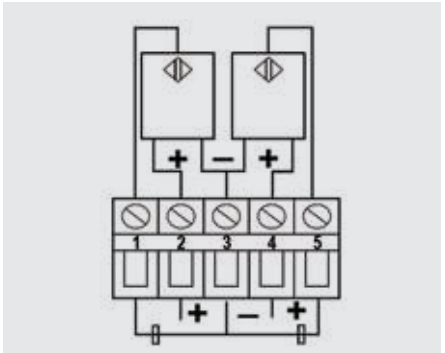
The MS kit lets you install a limit switch box with electromechanical or inductive micro switches on a manual VKD valve to remotely signal the valve position (open-closed). The kit can be assembled on the valve even if already installed on the system.



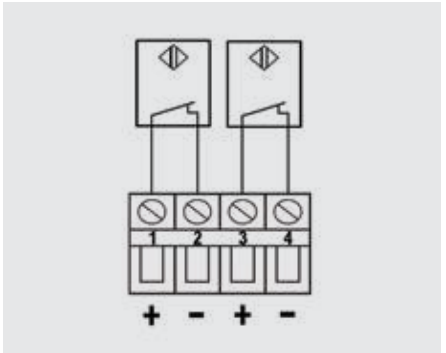
d	DN	B	B_1	C	C_1	Protection rate	Code electromechani-cal	Code induc-tive	Code Namur
75	65	266	87	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
90	80	279	105	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
110	100	297	129	150	80	IP67	FKMS1M	FKMS1I	FKMS1N



Electromechanical

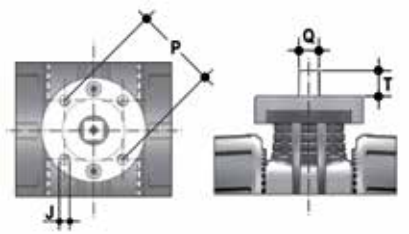


Inductive



Namur*

* To be used with an amplifier



ACTUATOR MOUNTING FLANGE

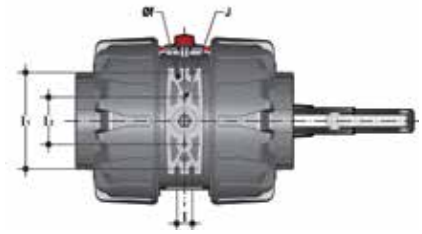
The valve can be equipped with standard pneumatic or electric actuators and gearbox for heavy-duty operations, using a flange in PP-GR reproducing the drilling pattern provided for by standard ISO 5211 F07

d	DN	P x J	T	Q
75	65	F07 x 9	16	14
90	80	F07 x 9	16	14
110	100	F07 x 9	19	17

FASTENING AND SUPPORTING

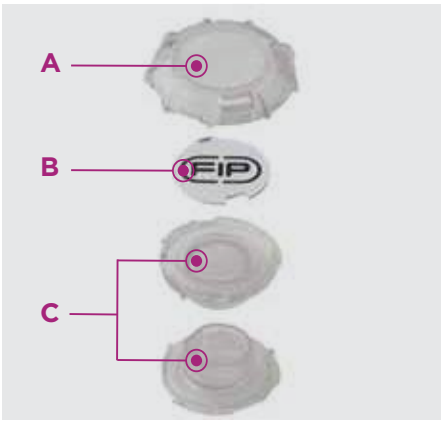
All valves, whether manual or actuated, must be adequately supported in many applications.

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



d	DN	J	f	l	l_1	l_2
75	65	M6	6.3	17.4	90	51.8
90	80	M6	8.4	21.2	112.6	63
110	100	M8	8.4	21.2	137	67

CUSTOMISATION



The VKD DN 65÷100 valve is equipped with the customisable Labelling System.

This system lets you create special labels to insert in the handle. This makes it extremely easy to apply company logos, identification serial numbers or service indications such as, for example, the valve function in the system, the transported fluid, but also specific information for customer service, such as the customer name or installation date or location on the valves.

The specific LCE module is a standard supply and is made up of a rigid transparent water-resistant PVC plug (A-C) and white tag holder (B) made of the same material, bearing on the FIP logo one side.

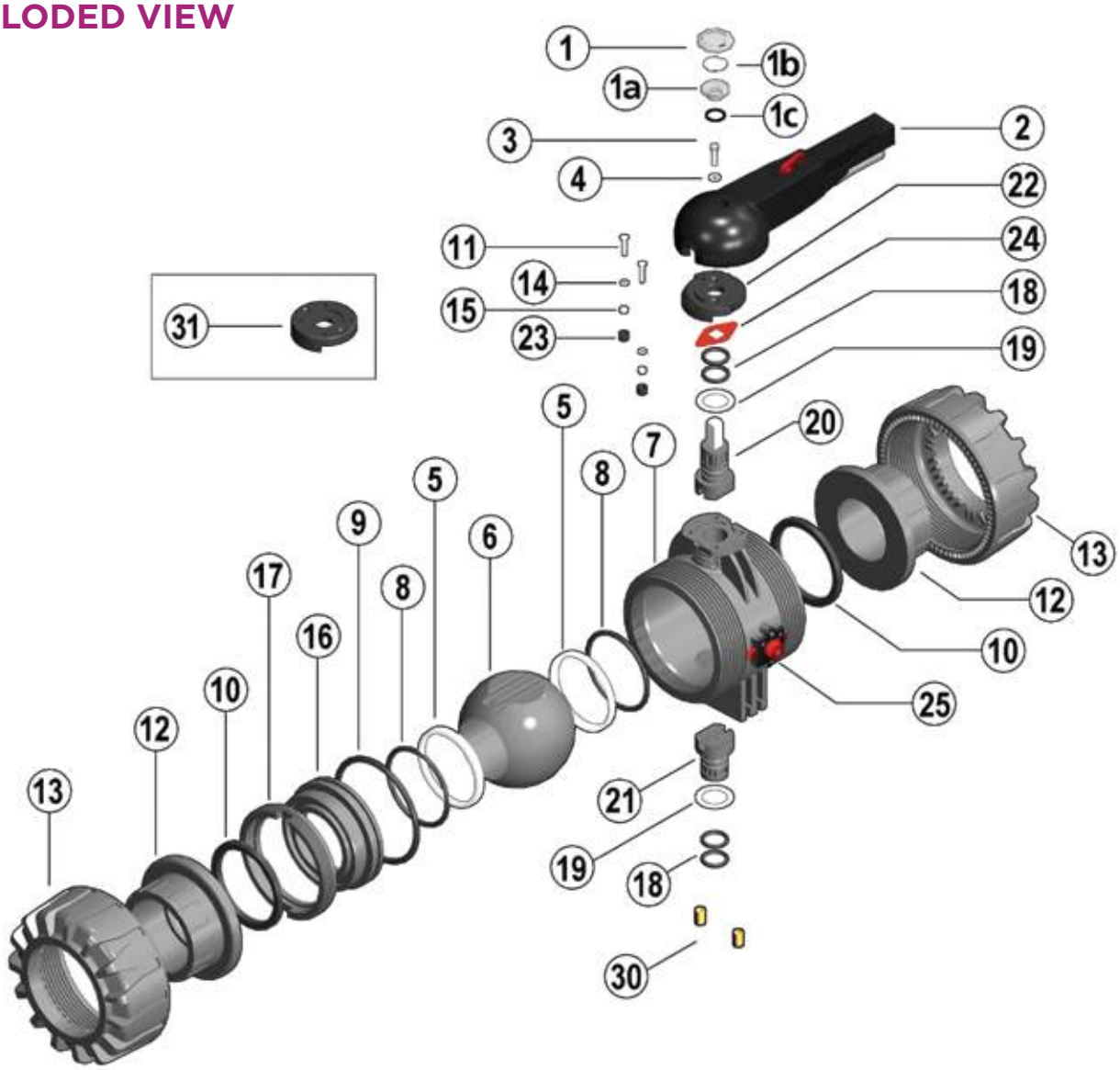
The plate, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

Proceed as follows to apply the label on the valve:

1) Remove the upper part of the transparent plug (A) rotating it counter-clockwise as indicated by the "Open" label on the plug and remove it.
2) Extract the tag holder from its housing on the lower part of the plug (C)
3) Apply the adhesive label on the tag holder (B) to align the profiles matching the tab position.
4) Reinsert the tag holder in its housing at the bottom of the plug
5) Reposition the top of the plug in the housing rotating it clockwise; this way the label is protected against the elements.

COMPONENTS

EXPLODED VIEW



1-1a · Transparent protection plug (PVC - 1)
1b · Tag holder (PVC - 1)
1c · O-Ring (NBR - 1)
2 · Handle (HIPVC - 1)
3 · Screw (Stainless steel - 1)
4 · Stop washer (STAINLESS steel - 1)
5 · Ball seat (PTFE - 2)*
6 · Ball (PVDF - 1)*
7 · Body (PVDF - 1)
8 · Ball seat O-ring (FPM - 2)*
9 · Radial seal O-Ring (FPM - 1)*
10 · Socket seal O-Ring (FPM - 2)*
11 · Screw (Stainless steel - 2)
12 · End connector (PVDF - 2)*
13 · Union nut(PVDF - 2)*
14 · Stop washer (Stainless steel - 2)
15 · Nut (Stainless steel - 2)
16 · Ball seat carrier(PVDF - 1)
17 · Threaded ring (PVDF - 1)
18 · Stem O-Ring (FPM - 4)*
19 · Anti-friction disk (PTFE - 2)*
20 · Upper stem (PVDF/STAINLESS steel - 1)
21 · Loser stem (PVDF - 1)
22 · Plate (PP-GR - 1)
23 · Protection plug (PE - 2)
24 · Position indicator (PA - 1)
25 · DUAL BLOCK® (PP-GR + various- 1)
30 · Threaded insert (Brass - 2)**
31 · Actuation plate (PP-GR - 1)**

* 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) Release the union nuts by rotating the button (25) to the left, pointing the arrow on the open lock (fig. 1).
3) Unscrew the union nuts (13) and extract the body (7) (fig. 2).
4) Before dismounting, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
5) Open the valve.
6) Remove the protection plug on the handle (2) and unscrew the screw (3) with the washer (4).
7) Remove the handle (2).
8) Remove the screws (11) and plate (22) from the body (7).
9) Insert the two supplied wrench protrusions in the corresponding apertures on the threaded ring (17), extracting it by rotating counter-clockwise with the ball seat carrier (16) (fig. 3).
10) Press on the ball (6), being careful not to scratch it, and remove it from the body.
11) Press the upper stem (20) inwards and extract it from the body and remove the lower stem (21). Remove the anti-friction disks (19).
12) Remove the O-Ring (8, 9, 10, 18) and PTFE ball seats (5) extracting them from their grooves, as illustrated in the exploded view.

ASSEMBLY

1) All the O-rings (8, 9, 10, 18) must be inserted in their grooves as shown in the exploded view.
2) Place the anti-friction disks (19) on the stems (20-21) and insert the stems in their housings in the body.
3) Place the PTFE ball seats (5) in the housings in the body (7) and in the ball seat carrier (16).
4) Insert the ball (6) rotating it to the closed position.
5) Insert the carrier with threaded ring (17) into the body and tighten up in the clockwise direction using the supplied tool, to limit stop.
6) Position the plate (22) with rack on the body, and screw in the screws (11) washers (14) and nuts (15).
7) The handle (2) with protection plug (1, 1a, 1b, 1c) should be placed on the stem (20) (fig. 4).
8) Screw in the screw (3) with the washer (4) and position the protection plug (1, 1a, 1b, 1c).
9) Insert the valve between the end connectors (12) and tighten the union nuts (13), making sure that the socket seal O-rings (10) do not exit their seats.
10) Release the union nuts by rotating the button (25) to the right, pointing the arrow on the closed lock (fig. 1).

⚠

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

Fig. 1

Fig. 2

Fig. 3

Fig. 4

INSTALLATION

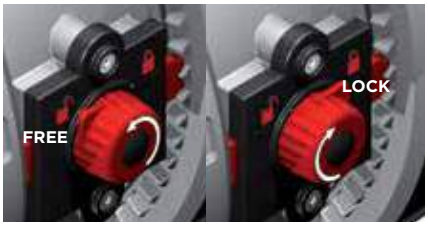
Before proceeding with installation, please follow these instructions carefully:

1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
2) Make sure the DUAL BLOCK® union nut lock system (25) is in the FREE position.
3) Unscrew the union nuts (13) and insert them on the pipe segments.
4) Solvent weld or screw the end connectors (12) onto the pipe ends.
5) Position the valve body between the end connectors and fully tighten the union nuts (13) clockwise with an appropriate wrench.
6) Lock the union nuts rotating the button (25) clockwise (see paragraph "union nut lock").
7) 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”).

Adjust the ball seat carriers using the supplied tool (fig. 3).

The seals can be adjusted later with the valve installed on the pipe by simply tightening the union nuts. This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of manoeuvres.

UNION NUT LOCK



Rotate the button to the left, pointing the arrow on the open lock to unlock DUAL BLOCK®: the valve union nuts are free to rotate clockwise and counter-clockwise. Rotate the button to the right, pointing the arrow on the closed lock to lock DUAL BLOCK®: the valve union nuts are blocked in the desired position.

HANDLE LOCK

Thanks to the multifunctional handle and the red manoeuvre button on the lever, you can perform a 0°-90° operation and a graduated operation by means of the 10 intermediate positions and a stop lock: the handle can be locked in each of the 10 positions by simply pressing the Free-lock button. A lock can also be installed on the handle to protect the system against tampering.

The valve is two-way and can be installed in any position. It can also be installed at end line or tank.

⚠ WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H2O2) or Sodium Hypochlorite (NaClO) are used, for safety reasons we recommend you contact the service centre. These liquids, upon vaporising, could create hazardous over pressures in the area between the body and ball.
- Always avoid sudden closing operations and protect the valve from accidental operations.

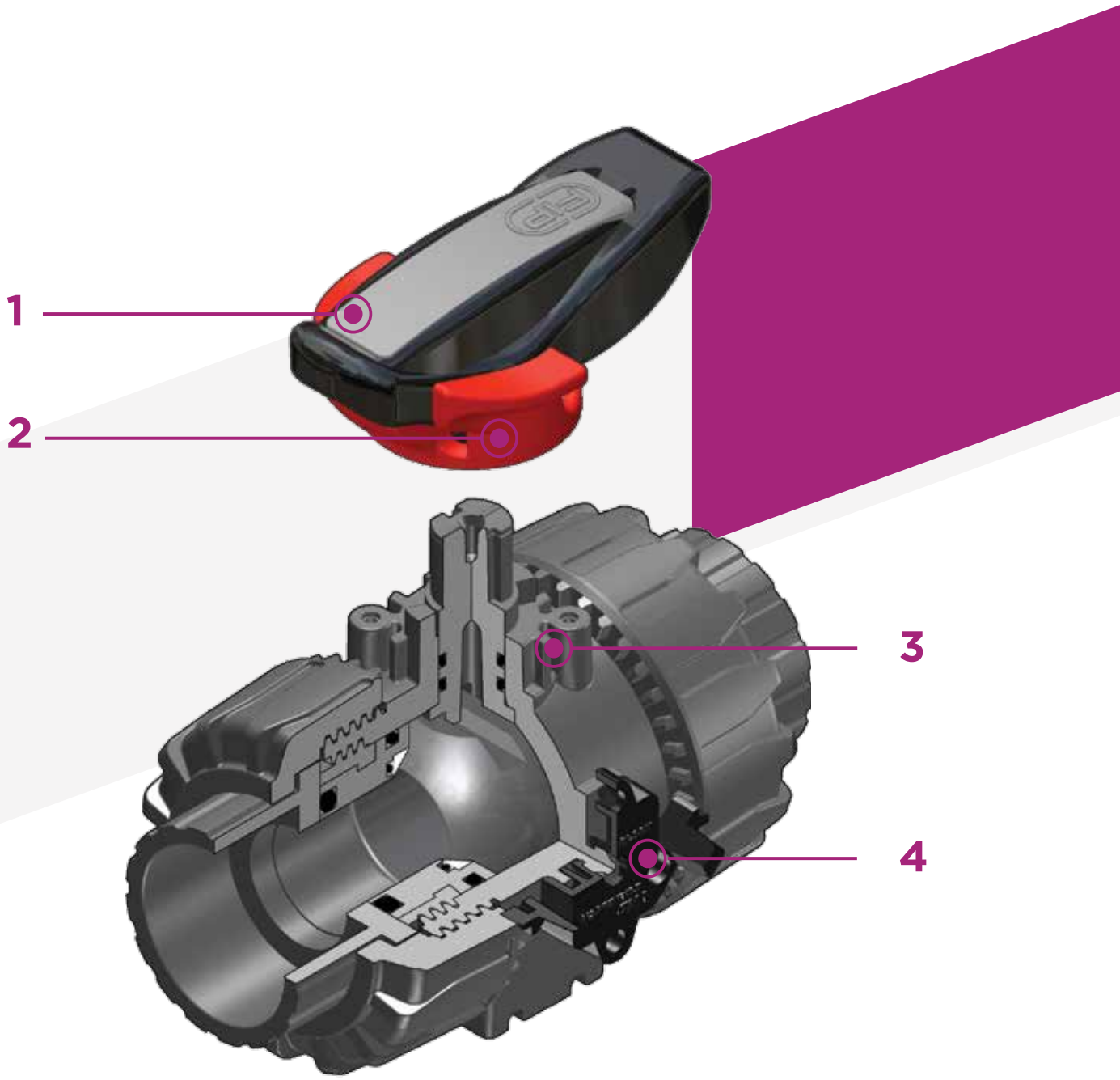
VKD
DN 10÷50

FIP has developed a VKD DUAL BLOCK® 2-way ball valve to introduce a high reference standard in thermosplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications.

DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for weld and flanged joints
- Patented **SEAT STOP®** ball carrier system that lets you micro-adjust ball seats and minimise the axial force effect.
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN16 True Union valve body** made for PVDF injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- **Floating full bore ball** with high surface finish
- **Integrated bracket** for valve anchoring
- Ball seat carriers can be adjusted using the **Easytorque adjustment kit**

Technical specifications	
Construction	2-way True Union ball valve with locked carrier and lockable union nuts.
Size range	DN 10 ÷ 50
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Flanging system: ISO 7005-1, EN ISO 10931, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150
Reference standards	**Construction criteria:** EN ISO 16135, EN ISO 10931,
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
	Actuator couplings: ISO 5211
Valve material	PVDF
Seal material	FPM (standard size O-Ring, EPDM on request); PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



1 HIPVC Ergonomic multifunctional handle equipped with **removable tool** to **adjust the ball seat carrier.**

2 **Handle lock 0°- 90°** SHKD (available as an accessory) ergonomically operable during service and lockable

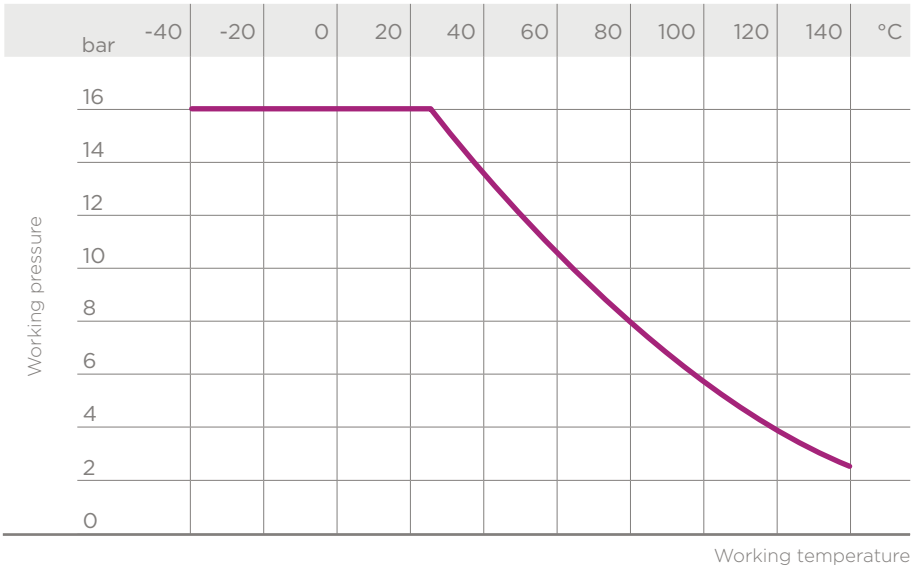
3 Robust **integrated bracket for valve anchoring**, for easy and quick automation even after valve installation on the system via the Power Quick module (optional)

4 **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation

TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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

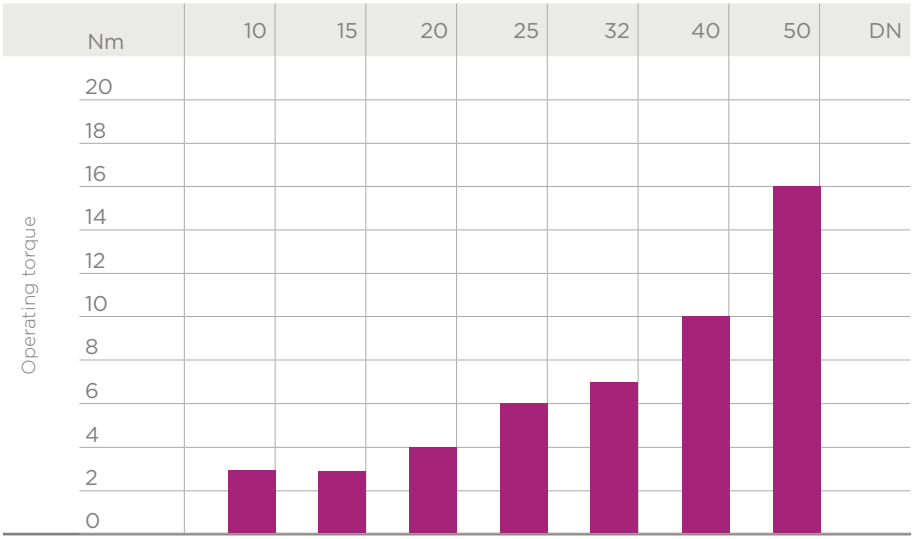
K_V100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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.

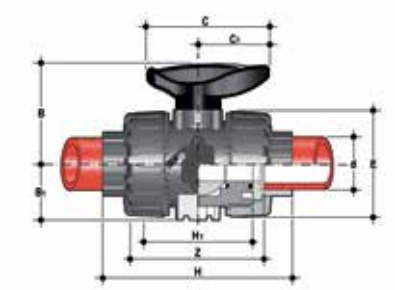
The K_v100 values shown in the table are calculated with the valve completely open.

DN	10	15	20	25	32	40	50
K_v100 l/min	80	200	385	770	1100	1750	3400

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



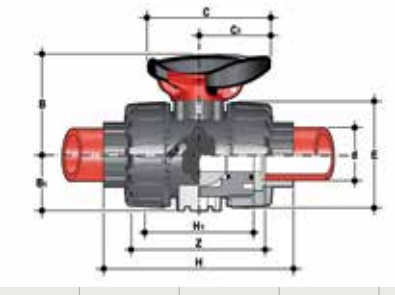
DIMENSIONS



VKDIF

DUAL BLOCK® 2-way ball valve with female ends for socket welding, metric series

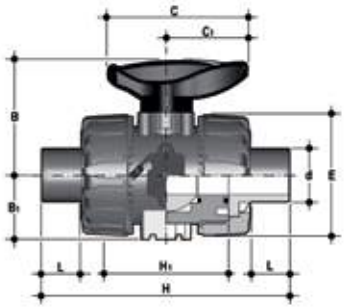
d	DN	PN	B	B_1	C	C_1	E	H	H_1	Z	g	Code
16	10	16	54	29	67	40	54	102	65	74.5	291	VKDIF016F
20	15	16	54	29	67	40	54	102	65	73	272	VKDIF020F
25	20	16	65	34.5	85	49	65	114	70	82	445	VKDIF025F
32	25	16	69.5	39	85	49	73	126	78	90	584	VKDIF032F
40	32	16	82.5	46	108	64	86	141	88	100	938	VKDIF040F
50	40	16	89	52	108	64	98	164	93	117	1242	VKDIF050F
63	50	16	108	62	134	76	122	199	111	144	2187	VKDIF063F



VKDIF/SHX

DUAL BLOCK® 2-way ball valve with handle lock and STAINLESS steel threaded inserts for fastening, with female ends for butt welding, metric series

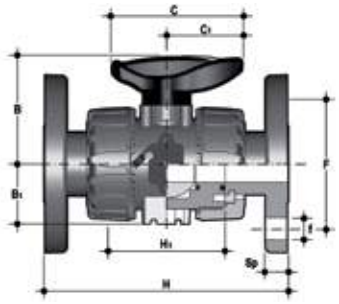
d	DN	PN	B	B_1	C	C_1	E	H	H_1	Z	g	Code
16	10	16	54	29	67	40	54	102	65	74.5	291	VKDIFSHX016F
20	15	16	54	29	67	40	54	102	65	73	272	VKDIFSHX020F
25	20	16	65	34.5	85	49	65	114	70	82	445	VKDIFSHX025F
32	25	16	69.5	39	85	49	73	126	78	90	584	VKDIFSHX032F
40	32	16	82.5	46	108	64	86	141	88	100	938	VKDIFSHX040F
50	40	16	89	52	108	64	98	164	93	117	1242	VKDIFSHX050F
63	50	16	108	62	134	76	122	199	111	144	2187	VKDIFSHX063F



VKDDF

DUAL BLOCK® 2-way ball valve with male ends for socket welding, metric series

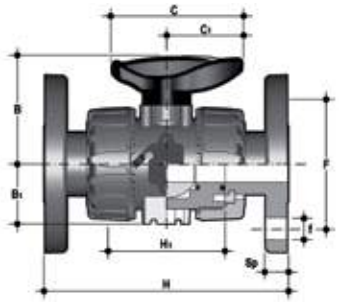
d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	g	Code
16	10	16	54	29	67	40	54	-	-	-	-	VKDDF016F
20	15	16	54	29	67	40	54	124	65	16	299	VKDDF020F
25	20	16	65	34.5	85	49	65	144	70	18	466	VKDDF025F
32	25	16	69.5	39	85	49	73	154	78	20	604	VKDDF032F
40	32	16	82.5	46	108	64	86	174	88	22	951	VKDDF040F
50	40	16	89	52	108	64	98	194	93	23	1284	VKDDF050F
63	50	16	108	62	134	76	122	224	111	29	2229	VKDDF063F



VKDOF

DUAL BLOCK® 2-way ball valve with fixed flanges, drilled EN/ISO/DIN PN10/16.
Face to face according to EN 558-1

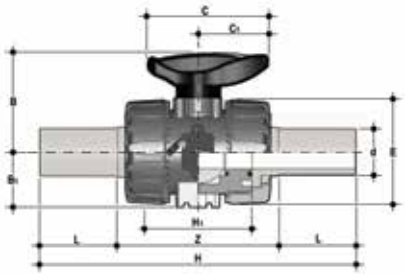
d	DN	PN	B	B_1	C	C_1	F	f	H	H_1	U	Sp	g	Code
20	15	16	54	29	67	40	65	14	130	65	4	11	547	VKDOF020F
25	20	16	65	34.5	85	49	75	14	150	70	4	14	772	VKDOF025F
32	25	16	69.5	39	85	49	85	14	160	78	4	14	1024	VKDOF032F
40	32	16	82.5	46	108	64	100	18	180	88	4	14	1583	VKDOF040F
50	40	16	89	52	108	64	110	18	200	93	4	16	2024	VKDOF050F
63	50	16	108	62	134	76	125	18	230	111	4	16	3219	VKDOF063F



VKDOAF

DUAL BLOCK® 2-way ball valve with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	DN	PN	B	B_1	C	C_1	F	f	H	H_1	U	Sp	g	Code
1/2”	15	16	54	29	67	40	60.3	15.9	143	65	4	11	547	VKDOAF012F
3/4”	20	16	65	34.5	85	49	69.9	15.9	172	70	4	14	772	VKDOAF034F
1”	25	16	69.5	39	85	49	79.4	15.9	187	78	4	14	1024	VKDOAF100F
1”1/4	32	16	82.5	46	108	64	88.9	15.9	190	88	4	14	1583	VKDOAF114F
1”1/2	40	16	89	52	108	64	98.4	15.9	212	93	4	16	2024	VKDOAF112F
2”	50	16	108	62	134	76	120.7	19.1	234	111	4	16	3219	VKDOAF200F



VKDBF

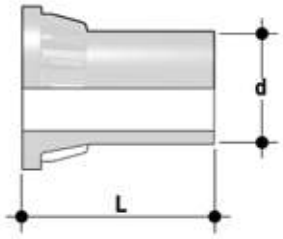
DUAL BLOCK® 2-way ball valve with long spigot male ends in PVDF for butt welding/ IR (CVDF)

d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	Z	g	Code
20	15	16	54	29	67	40	54	171	65	41	89	450	VKDBF020F
25	20	16	65	35	85	49	65	204	70	52	100	516	VKDBF025F
32	25	16	70	39	85	49	73	220	78	55	110	664	VKDBF032F
40	32	16	83	46	108	64	86	238	88	56	126	1020	VKDBF040F
50	40	16	89	52	108	64	98	254	93	58	138	1350	VKDBF050F
63	50	16	108	62	134	76	122	286	111	66	154	2330	VKDBF063F

ACCESSORIES

CVDF

End connector in PVDF SDR 21 PN 16, long spigot, for butt welding



d	DN	PN	L	SDR	Code
20	15	16	55	21	CVDF21020
25	20	16	70	21	CVDF21025
32	25	16	74	21	CVDF21032
40	32	16	78	21	CVDF21040
52	40	16	84	21	CVDF21050
63	50	16	91	21	CVDF21063

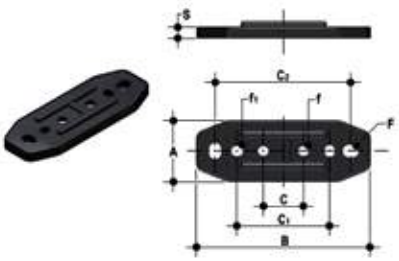
SHKD

Handle block kit 0° - 90° lockable

d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063

PMKD

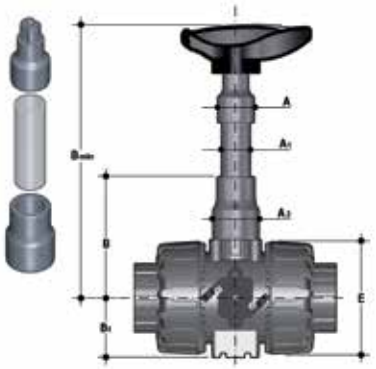
Wall mounting plate



d	DN	A	B	C	C_1	C_2	F	f	f_1	S	Code
16	10	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
20	15	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
25	20	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
32	25	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
40	32	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2
50	40	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2
63	50	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2

PSKD

Stem extension



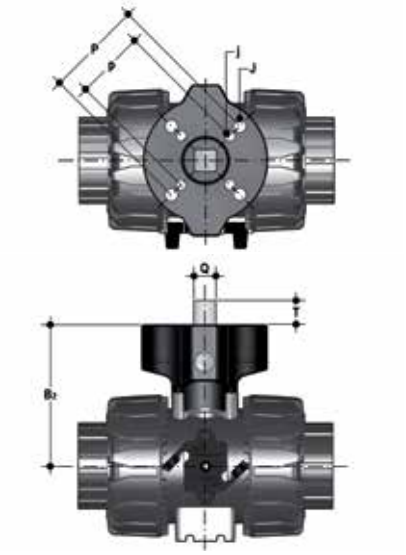
d	DN	A	A_1	A_2	E	B	B_1	B min	Code
16	10	32	25	32	54	70	29	139.5	PSKD020
20	15	32	25	32	54	70	29	139.5	PSKD020
25	20	32	25	40	65	89	34.5	164.5	PSKD025
32	25	32	25	40	73	93.5	39	169	PSKD032
40	32	40	32	50	86	110	46	200	PSKD040
50	40	40	32	50	98	116	52	206	PSKD050
63	50	40	32	59	122	122	62	225	PSKD063

EASYTORQUE KIT

Kit for ball seat carrier tightening adjustment for DUAL BLOCK® DN 10÷50 series valves

d	DN	Tightening torque recommended*	Code
3/8”-1/2”	10-15	3 N m - 2,21 Lbf ft	KET01
3/4”	20	4 N m - 2,95 Lbf ft	KET01
1”	25	5 N m - 3,69 Lbf ft	KET01
1”1/4	32	5 N m - 3,69 Lbf ft	KET01
1”1/2	40	7 N m - 5,16 Lbf ft	KET01
2”	50	9 N m - 6,64 Lbf ft	KET01

*calculated in ideal installation conditions

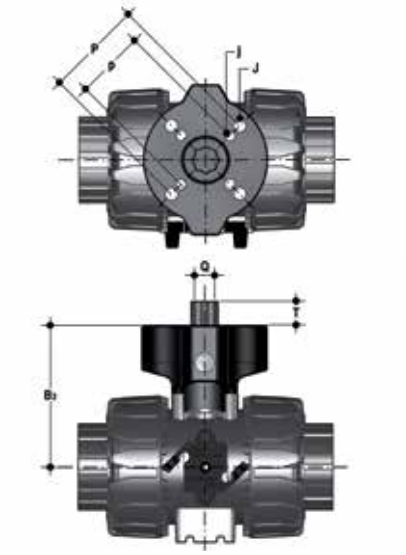


POWER QUICK CP

The valve can be equipped with pneumatic actuators, using the PP-GR module reproducing the drilling pattern foreseen by ISO 5211

d	DN	B_2	Q	T	p x j	P x J	Code
16	10	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
20	15	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
25	20	69	11	12	*F03 x 5,5	F05 x 6,5	PQCP025
32	25	74	11	12	*F03 x 5,5	F05 x 6,5	PQCP032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCP040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCP050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCP063

*F04 x 5.5 on request

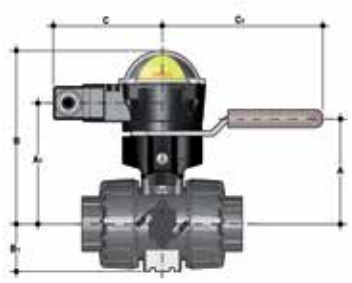


POWER QUICK CE

The valve can be equipped with electric actuators, using the PP-GR module reproducing the drilling pattern foreseen by ISO 5211

d	DN	B_2	Q	T	p x j	P x J	Code
16	10	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
20	15	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
25	20	69	14	16	*F03 x 5,5	F05 x 6,5	PQCE025
32	25	74	14	16	*F03 x 5,5	F05 x 6,5	PQCE032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCE040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCE050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCE063

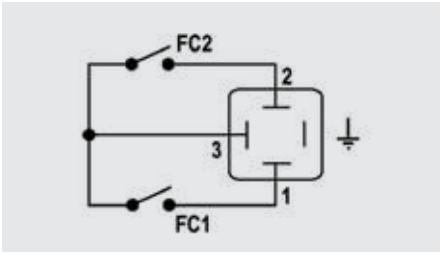
*F04 x 5.5 on request



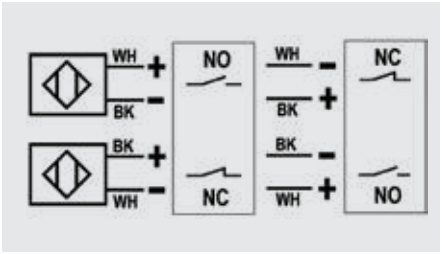
MSKD

MSKD is a limit switch box with electromechanical or inductive micro switches to remotely signal the valve position. Manual valve installation is possible using the Power Quick actuation module.
The box can be assembled on the VKD valve even if already installed on the system.

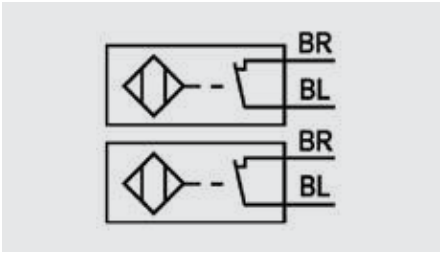
d	DN	A	A_1	B	B_1	C	C_1	Code electromechanical	Code inductive	Code Namur
16	10	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
20	15	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
25	20	70.5	96	143.5	34.5	88.5	134	MSKD1M	MSKD1I	MSKD1N
32	25	74	101	148.5	39	88.5	134	MSKD1M	MSKD1I	MSKD1N
40	32	116	118	165.5	46	88.5	167	MSKD2M	MSKD2I	MSKD2N
50	40	122	124	171.5	52	88.5	167	MSKD2M	MSKD2I	MSKD2N
63	50	139	141	188.5	62	88.5	167	MSKD2M	MSKD2I	MSKD2N



Electromechanical



Inductive



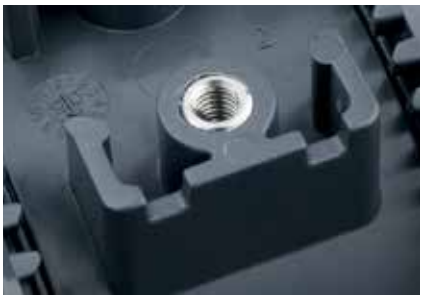
Namur

WH = white; BK = black; BL = blue; BR = brown

Type switches	Flow rate	Lifetime [drives]	Rated operating	Rated voltage	Operating current	Voltage drop	Empty current	Protection rate
Electromechanical	250 V - 5 A	3 x 10^7	-	-	-	-	-	IP65
Inductive	-	-	5 ÷ 36 V	-	4 ÷ 200 mA	< 4,6 V	< 0,8 mA	IP65
Namur*	-	-	7,5 ÷ 30 V DC**	8,2 V DC	< 30 mA**	-	-	IP65

* To be used with an amplifier
** Outside areas with explosion risks

FASTENING AND SUPPORTING

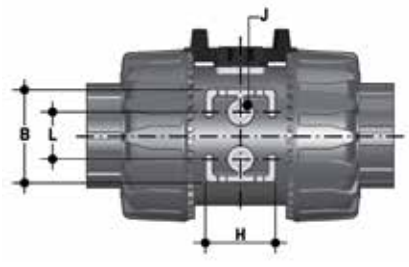


All valves, whether manual or actuated, must be adequately supported in many applications.

The VKD 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 PMKD mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

PMKD plates also allow VKD valve alignment with FIP ZIKM pipe clips as well as allowing different sizes of valves to be aligned.

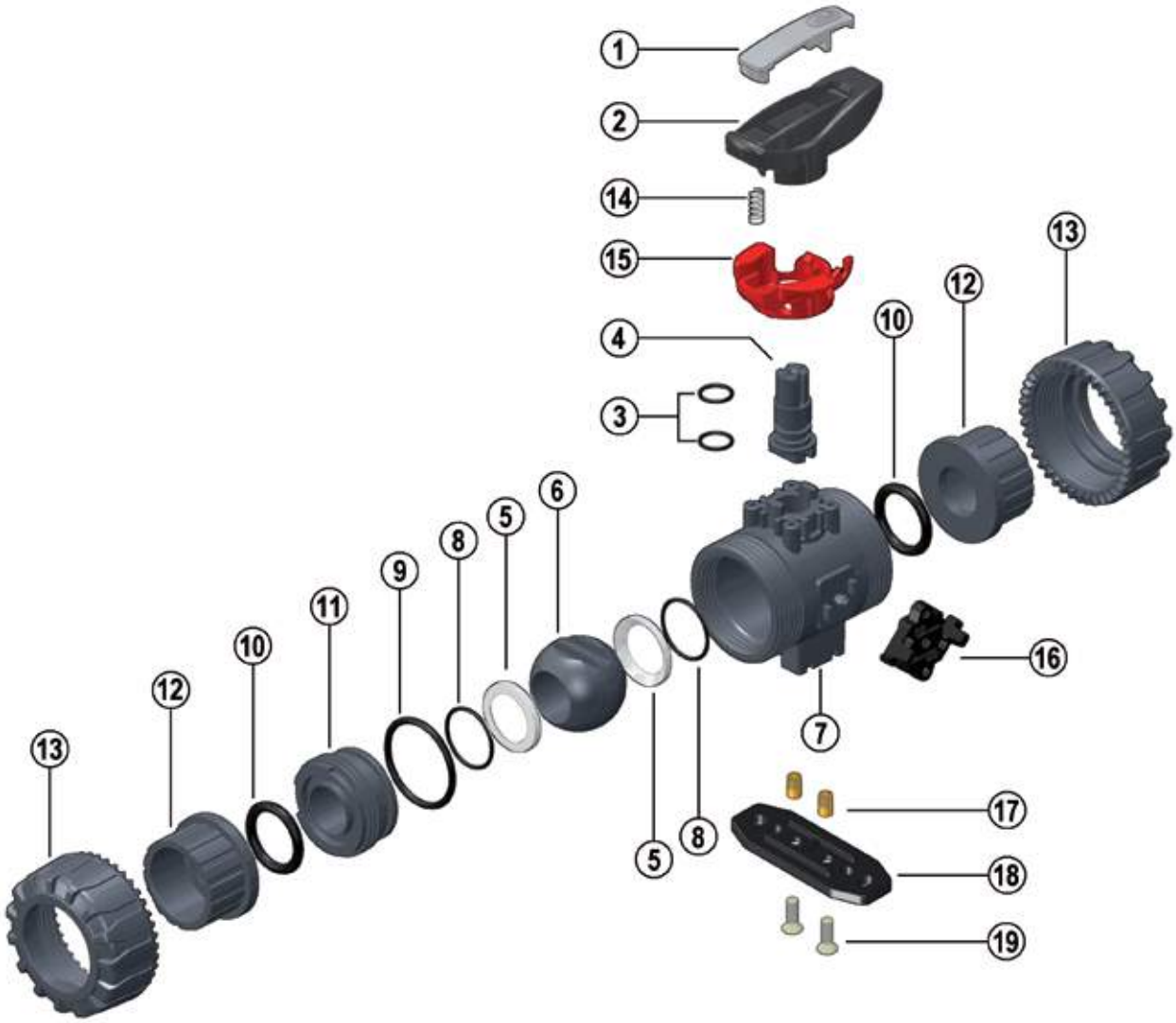


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

* With threaded inserts

COMPONENTS

EXPLODED VIEW



1 · Handle insert (PVC - 1)
2 · Handle (HIPVC - 1)
3 · Stem O-Ring (FPM - 2)*
4 · Stem (PVDF - 1)
5 · Ball seat (PTFE - 2)*
6 · Ball (PVDF - 1)*
7 · Body (PVDF - 1)
8 · Ball seat O-ring (FPM - 2)*
9 · Radial seal O-Ring (FPM - 1)*
10 · Socket seal O-Ring (FPM - 2)*
11 · Ball seat carrier (PVDF - 1)
12 · End connector (PVDF - 2)
13 · Union nut (PVDF - 2)*
14 · Spring (STAINLESS steel - 1)**
15 · Handle safety block (PP-GR - 1)**
16 · DUAL BLOCK® (POM - 1)
17 · Threaded inserts (STAINLESS steel or Brass - 2)**
18 · Distance plate (PP-GR - 1)**
19 · 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) Unlock the union nuts by pressing the lever on the DUAL BLOCK® (16) along the axis and separate it from the union nut (fig. 1-2). IT is also possible to completely remove the locking device from the valve body.
3) Fully unscrew the union nuts (13) and extract the body sideways.
4) Before dismounting, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
5) After closing the valve, remove the special insert (1) from the handle (2) and push the two projecting ends into the corresponding recesses on the ball seat carrier (11). Rotate the stop ring anti-clockwise to extract it (fig. 3-4).
6) Pull the handle (2) upwards to remove it from the valve stem (4).
7) Press on the ball from the side opposite the "REGULAR - ADJUST" label, being sure not to scratch it, until the ball seat carrier exits (11), then extract the ball (6).
8) Press the stem (4) inwards until it exits the valve body.
9) Remove the O-Ring (3, 8, 9, 10) and PTFE ball seats (5) extracting them from their grooves, as illustrated in the exploded view.

ASSEMBLY

1) All the O-rings (3, 8, 9, 10) must be inserted in their grooves as shown in the exploded view.
2) Insert the stem (4) from inside the valve body (7).
3) Place the PTFE ball seats (5) in the housings in the body (7) and in the ball seat carrier (11).
4) Insert the ball (6) rotating it to the closed position.
5) Screw the carrier (11) into the body and tighten up in the clockwise direction using the handle (2) to limit stop.
6) Insert the valve between the end connectors (12) and tighten the union nuts (13) making sure that the socket seal O-rings (10) do not exit their seats.
7) The handle (2) should be placed on the valve stem (4).

⚠

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

Fig. 1

Fig. 2

Fig. 3

Fig. 4

INSTALLATION

Before proceeding with installation. please follow these instructions carefully:

1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
2) Check that the DUAL BLOCK® union nut locking device (16) is fitted to the valve body.
3) To release the union nuts, axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
4) Unscrew the union nuts (13) and insert them on the pipe segments.
5) Solvent weld or screw the end connectors (12) onto the pipe ends.
6) Position the valve body between the end connectors and fully tighten the union nuts (13) manually by rotating clockwise without using wrenches or other tools that could damage the union nut surface.
7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.

8) 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”).

The VKD valve can be equipped with a handle lock to prevent ball rotation (supplied separately).

When the handle safety block (14, 15) is installed, lift the lever (15) and rotate the handle (fig. 6-7).

A lock can also be installed on the handle to protect the system against tampering (fig. 8).

Seal can be adjusted using the extractable insert on the handle (fig. 3-4).

The seals can be adjusted later with the valve installed on the pipe by simply tightening the union nuts. This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of manoeuvres.

The Easytorque kit can also be used for micro adjustments (fig. 5).

⚠ WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H2O2) or Sodium Hypochlorite (NaClO) are used, for safety reasons we recommend you contact the service centre. These liquids, upon vaporising, could create hazardous over pressures in the area between the body and ball.
- Always avoid sudden closing operations and protect the valve from accidental operations.

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Aliaxis
UTILITIES & INDUSTRY

FIP

VKR DN 10÷50
PVDF

DUAL BLOCK® regulating ball valve

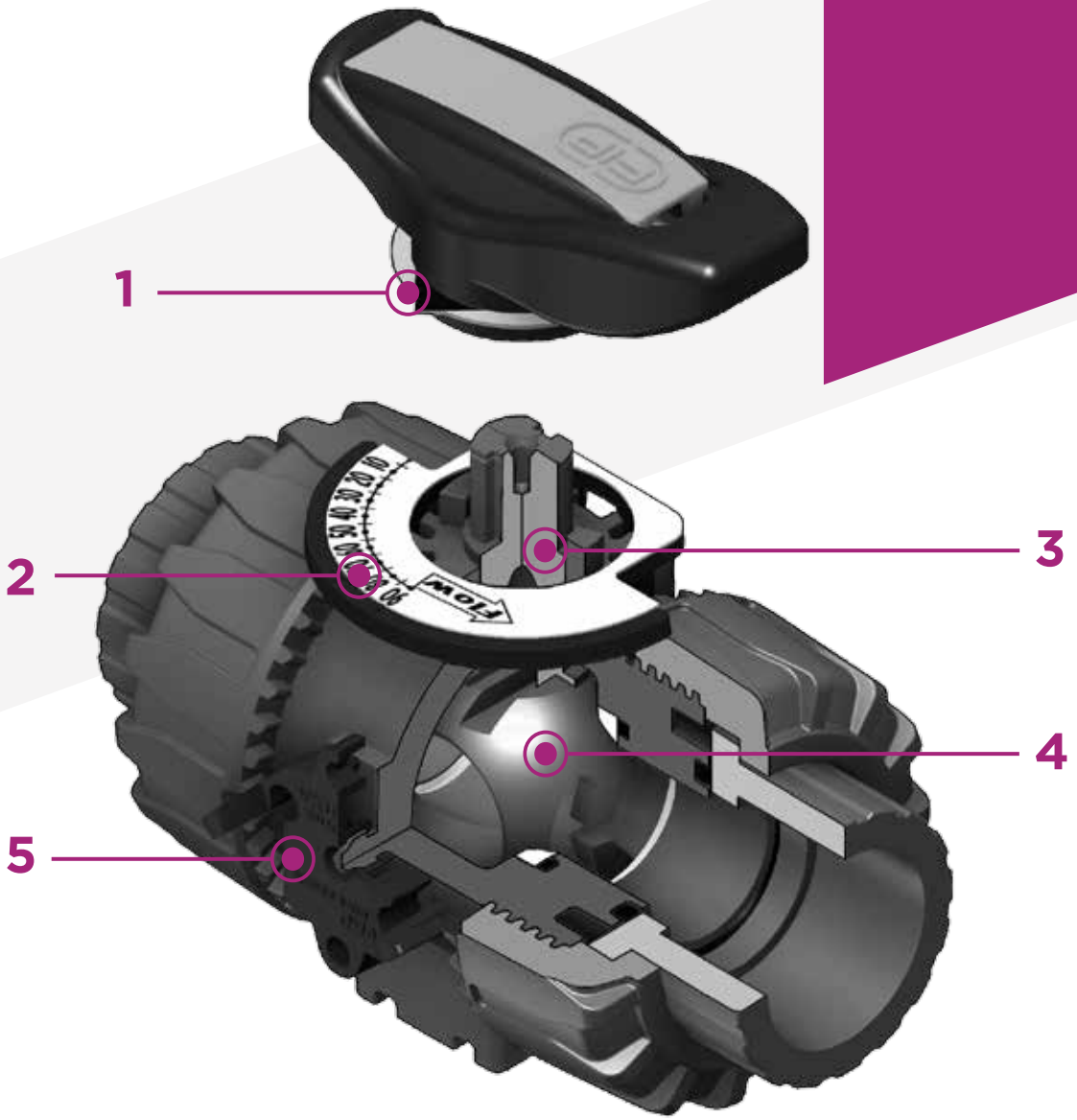
VKR
DN 10÷50

The VKR DUAL BLOCK® valve combines high reliability and safety aspects typical of VKD full bore ball valves with the new flow adjustment function with typical linear curve that meets the most stringent needs typical of industrial applications.

DUAL BLOCK® REGULATING BALL VALVE

- Connection system for weld and flanged joints
- Patented **SEAT STOP®** ball carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN16 True Union valve body** made for PVDF injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- High surface finish stem with double O-Ring and double groove ball connection
- **Integrated bracket** for valve anchoring
- Ball seat carrier can be adjusted using the **Easytorque adjustment kit**
- Actuation option: version with electric modulating actuator with 4-20 mA / 0-10 V inlet and 4-20 mA / 0-10 V outlet to monitor the position
- Valve suitable for carrying fluids that are clean and free of suspended particles

Technical specifications	
Construction	2-way True Union regulating ball valve with locked carrier and lockable union nuts.
Size range	DN 10 ÷ 50
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Flanging system: ISO 7005-1, EN ISO 10931, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150
Reference standards	**Construction criteria:** EN ISO 16135, EN ISO 10931,
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
	Actuator couplings: ISO 5211
Valve material	PVDF
Seal material	FPM (standard size O-Ring, EPDM on request); PTFE (ball seats)
Control options	Manual control; electric actuator



1 HIPVC ergonomic multifunctional handle with **position indicator** and removable key to **adjust the ball seat carrier**

2 Flow direction indication plate and opening angle with **graduated scale with 5° detail** for clear and accurate readings

3 90° operating angle that permits the use of **standard quarter turn actuators**

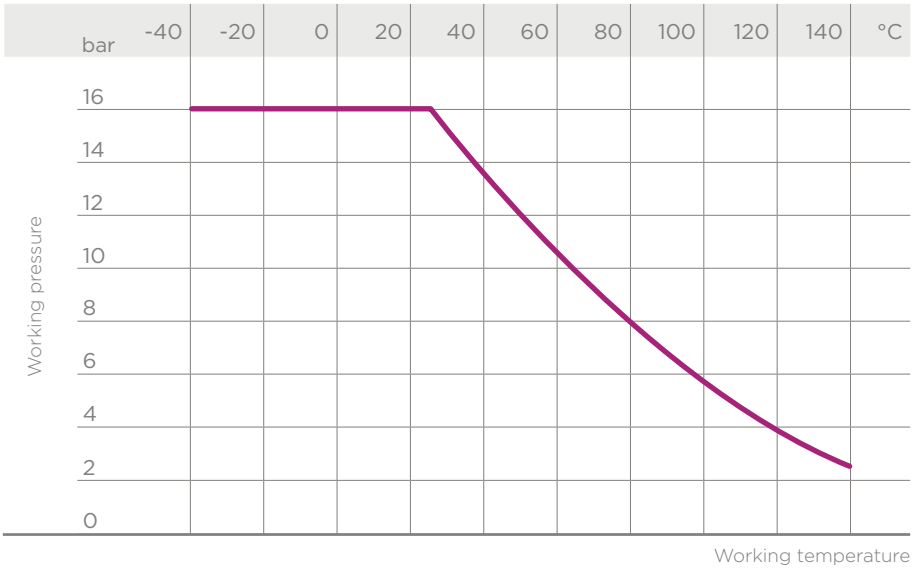
4 The patented ball design provides **linear flow adjustment** throughout its range of operation even when the valve is open just a few degrees and guarantees minimum pressure drops

5 Patented **DUAL BLOCK®** system: prevents union nuts from loosening even under extreme operating conditions: e.g. vibration or thermal expansion

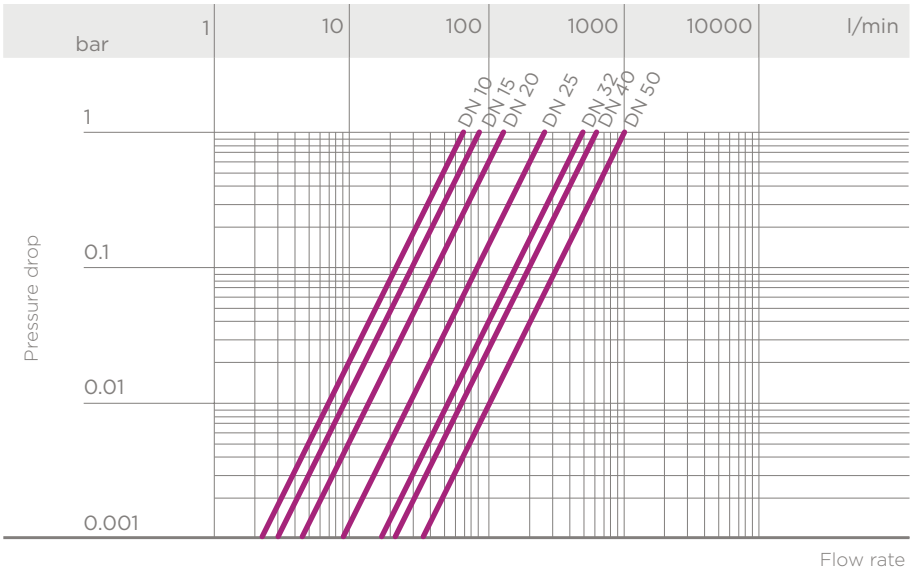
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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

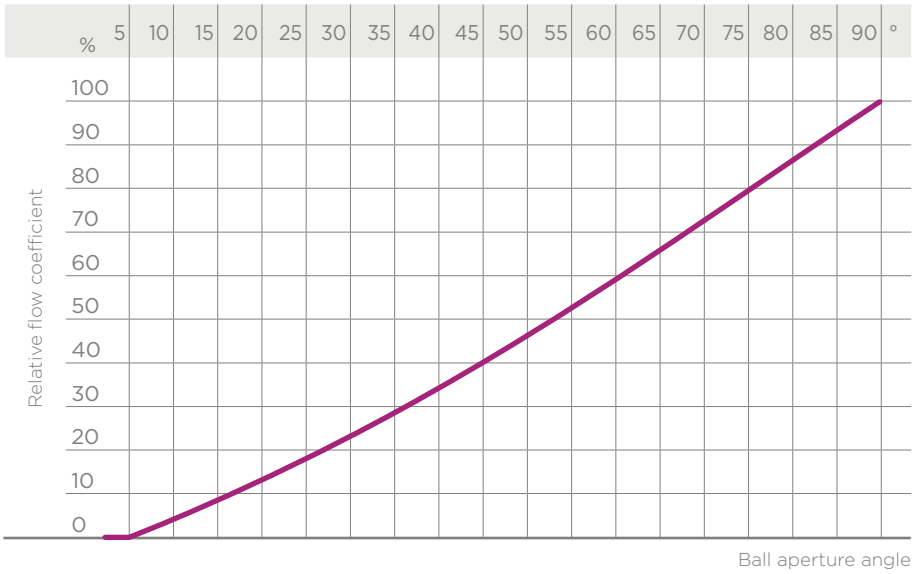
The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

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

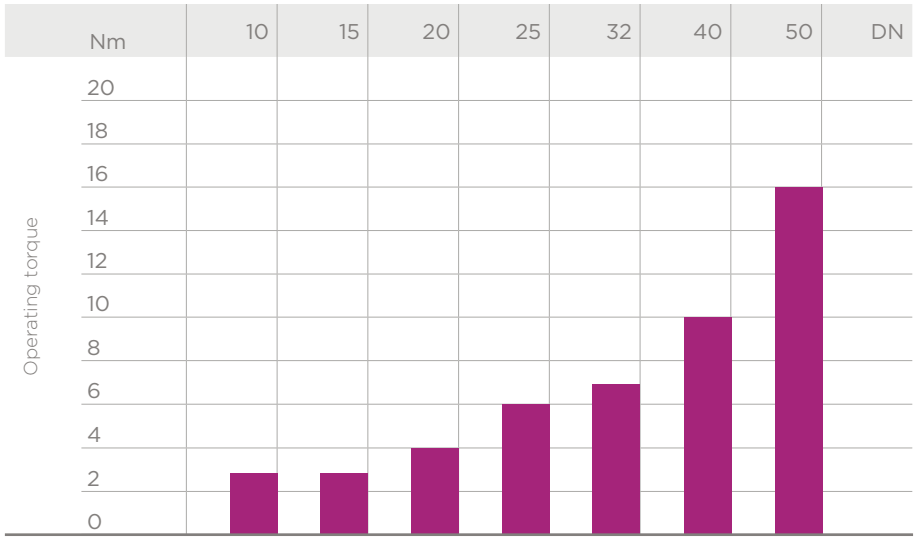
DN	10	15	20	25	32	40	50
K_v100 l/min	83	88	135	256	478	592	1068

RELATIVE FLOW COEFFICIENT GRAPH

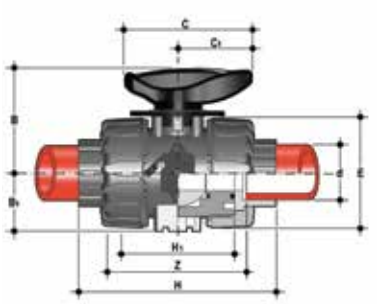
The relative flow coefficient is the flow rate through the valve as a function of the degree of valve opening.



OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



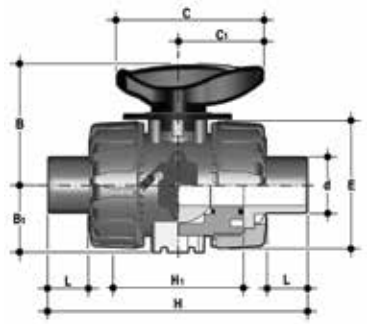
DIMENSIONS



VKRIF

DUAL BLOCK® regulating ball valve with female ends for socket welding, metric series

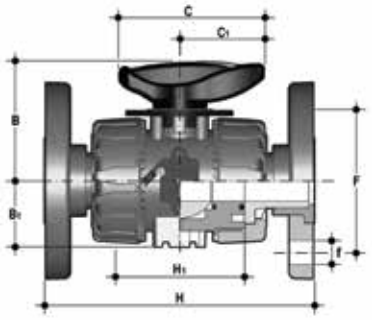
d	DN	PN	B	B_1	C	C_1	E	H	H_1	Z	g	Code
16	10	16	54	29	67	40	54	102	65	74.5	291	VKRIF016F
20	15	16	54	29	67	40	54	102	65	73	272	VKRIF020F
25	20	16	65	34.5	85	49	65	114	70	82	445	VKRIF025F
32	25	16	69.5	39	85	49	73	126	78	90	584	VKRIF032F
40	32	16	82.5	46	108	64	86	141	88	100	938	VKRIF040F
50	40	16	89	52	108	64	98	164	93	117	1242	VKRIF050F
63	50	16	108	62	134	76	122	199	111	144	2187	VKRIF063F



VKRDF

DUAL BLOCK® regulating ball valve with male ends for socket welding, metric series

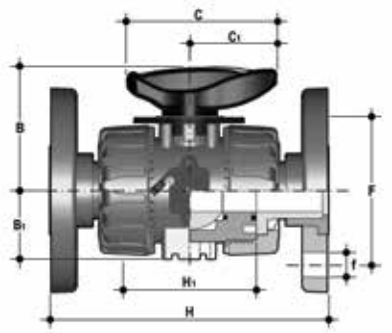
d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	g	Code
20	15	16	54	29	65	40	54	124	65	16	299	VKRDF020F
25	20	16	65	34.5	70	49	65	144	70	18	466	VKRDF025F
32	25	16	69.5	39	78	49	73	154	78	20	604	VKRDF032F
40	32	16	82.5	46	88	64	86	174	88	22	951	VKRDF040F
52	40	16	89	52	93	64	98	194	93	23	1284	VKRDF050F
63	50	16	108	62	111	76	122	224	111	29	2229	VKRDF063F



VKROF

DUAL BLOCK® regulating ball valve with EN/ISO/DIN fixed flange, drilled PN10/16. Face to face according to EN 558-1

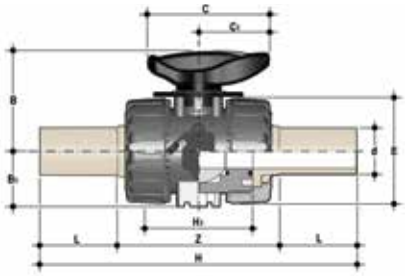
d	DN	PN	B	B_1	C	C_1	F	f	H	H_1	Sp	U	g	Code
20	15	16	54	29	67	40	65	14	130	65	11	4	547	VKROF020F
25	20	16	65	34.5	85	49	75	14	150	70	14	4	772	VKROF025F
32	25	16	69.5	39	85	49	85	14	160	78	14	4	1024	VKROF032F
40	32	16	82.5	46	108	64	100	18	180	88	14	4	1583	VKROF040F
52	40	16	89	52	108	64	110	18	200	93	16	4	2024	VKROF050F
63	50	16	108	62	134	76	125	18	230	111	16	4	3219	VKROF063F



VKROAF

DUAL BLOCK® regulating ball valve with ANSI B16.5 cl.150#FF fixed flange bore

Size	DN	PN	B	B_1	C	C_1	F	f	H	H_1	Sp	U	g	Code
1/2"	15	16	54	29	67	40	60.3	15.9	143	65	11	4	547	VKROAF012F
3/4"	20	16	65	34.5	85	49	69.9	15.9	172	70	14	4	772	VKROAF034F
1"	25	16	69.5	39	85	49	79.4	15.9	187	78	14	4	1024	VKROAF100F
1"1/4	32	16	82.5	46	108	64	88.9	15.9	190	88	14	4	1583	VKROAF114F
1"1/2	40	16	89	52	108	64	98.4	15.9	212	93	16	4	2024	VKROAF112F
2"	50	16	108	62	134	76	120.7	19.1	234	111	16	4	3219	VKROAF200F



VKRBF

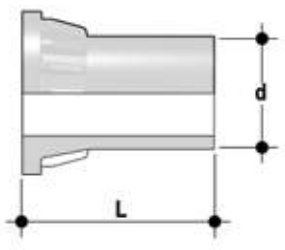
DUAL BLOCK® regulating ball valve with long spigot male ends in PVDF for butt welding/IR (CVDF)

d	DN	PN	B	B_1	C	C_1	E	H	H_1	L	Z	g	Code
20	15	16	54	29	67	40	54	171	65	41	89	450	VKRBF020F
25	20	16	65	35	85	49	65	204	70	52	100	516	VKRBF025F
32	25	16	70	39	85	49	73	220	78	55	110	664	VKRBF032F
40	32	16	83	46	108	64	86	238	88	56	126	1020	VKRBF040F
50	40	16	89	52	108	64	98	254	93	58	138	1350	VKRBF050F
63	50	16	108	62	134	76	122	286	111	66	154	2330	VKRBF063F

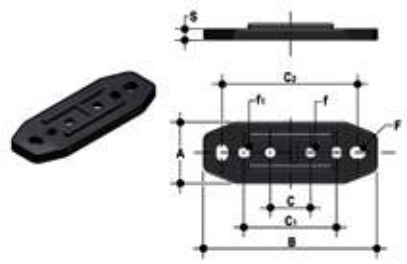
ACCESSORIES

CVDF

End connector in PVDF SDR 21 PN 16, long spigot, for butt welding



d	DN	PN	L	SDR	Code
20	15	16	55	21	CVDF21020
25	20	16	70	21	CVDF21025
32	25	16	74	21	CVDF21032
40	32	16	78	21	CVDF21040
52	40	16	84	21	CVDF21050
63	50	16	91	21	CVDF21063



PMKD

Wall mounting plate

d	DN	A	B	C	C_1	C_2	F	f	f_1	S	Code
16	10	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
20	15	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
25	20	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
32	25	30	86	20	46	67.5	6.5	5.3	5.5	5	PMKD1
40	32	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2
50	40	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2
63	50	40	122	30	72	102	6.5	6.3	6.5	6	PMKD2

EASYTORQUE KIT

Kit for ball seat carrier tightening adjustment for DUAL BLOCK® DN 10÷50 series valves

d	DN	Tightening torque recommended*	Code
3/8"-1/2"	10-15	3 N m - 2,21 Lbf ft	KET01
3/4"	20	4 N m - 2,95 Lbf ft	KET01
1"	25	5 N m - 3,69 Lbf ft	KET01
1"1/4	32	5 N m - 3,69 Lbf ft	KET01
1"1/2	40	7 N m - 5,16 Lbf ft	KET01
2"	50	9 N m - 6,64 Lbf ft	KET01

*calculated in ideal installation conditions

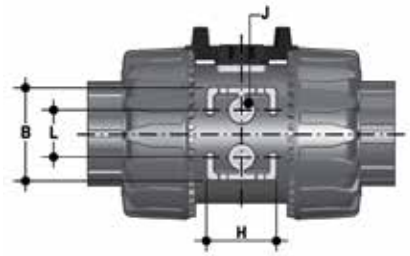
FASTENING AND SUPPORTING

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

The VKD 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 PMKD mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

PMKD plates also allow VKD valve alignment with FIP ZIKM pipe clips as well as allowing different sizes of valves to be aligned.

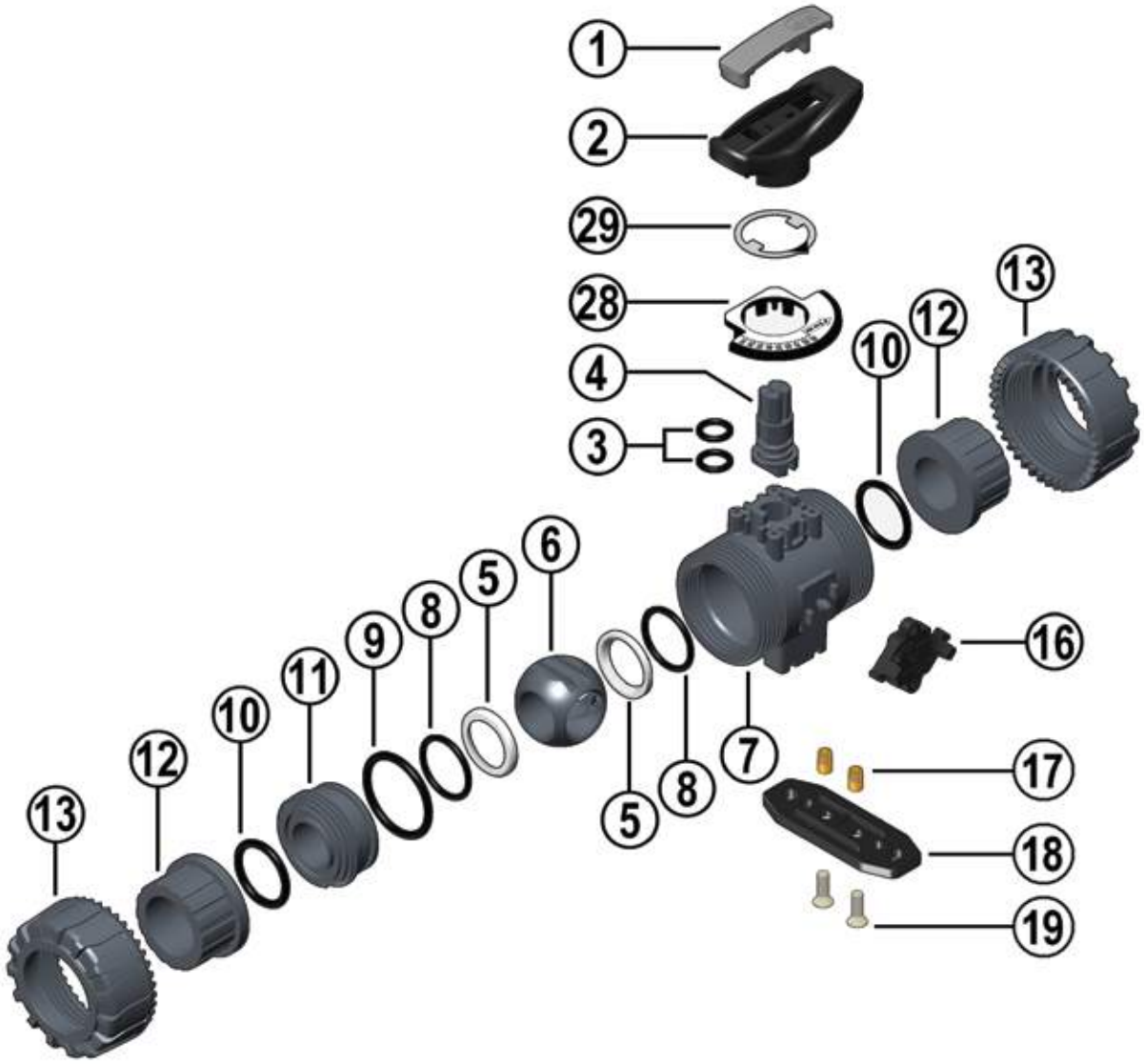


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

* With threaded inserts

COMPONENTS

EXPLODED VIEW



1 · Handle insert (PVC - 1)
2 · Handle (HIPVC - 1)
3 · Stem O-ring (FPM - 2)*
4 · Stem (PVDF - 1)
5 · Ball seat (PTFE - 2)*
6 · Patented ball design (PVDF - 1)
7 · Body (PVDF - 1)
8 · Ball seat O-ring (FPM - 2)*
9 · Radial seal O-Ring (FPM - 1)*
10 · Socket seal O-Ring (FPM - 2)*
11 · Ball seat carrier (PVDF - 1)
12 · End connector (PVDF - 2)
13 · Union nut(PVDF - 2)*
16 · DUAL BLOCK® (POM - 1)
17 · Threaded inserts (STAINLESS steel or Brass - 2)**
18 · Distance plate (PP-GR - 1)**
19 · Screw (STAINLESS steel - 2)**
28 · Graduated plate (POM-PVC - 1)
29 · Indicator (PVC - 1)

* 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) Unlock the union nuts by pressing the lever on the DUAL BLOCK® (16) along the axis and separate it from the union nut (fig. 1). It is also possible to completely remove the locking device from the valve body.
3) Fully unscrew the union nuts (13) and extract the body sideways.
4) Before dismounting, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
5) After closing the valve, remove the special insert (1) from the handle (2) and push the two projecting ends into the corresponding recesses on the ball seat carrier (11). Rotate the stop ring anti-clockwise to extract it.
6) Pull the handle (2) upwards to remove it from the valve stem (4).
7) Make sure that the position indicator (29) remains properly fastened to the handle (2).
8) Press on the ball from the side opposite the "REGULAR - ADJUST" label, being sure not to scratch it, until the ball seat carrier exits (11), then extract the ball (6).
9) Press the stem (4) inwards until it exits the valve body.
10) All the O-rings (3, 8, 9, 10) and PTFE ball seats (5) must be removed from their grooves, as shown in the exploded view.

ASSEMBLY

1) All the O-rings (3, 8, 9, 10) must be inserted in their grooves as shown in the exploded view.
2) Insert the stem (4) from inside the valve body (7).
3) Place the PTFE ball seats (5) in the housings in the body (7) and in the ball seat carrier (11).
4) Insert the ball (6) in the body as shown in Fig. 3
5) Screw the carrier (11) into the body and tighten up in the clockwise direction using the special insert (1) to limit stop.
6) Position the indicator (29) on the handle with the pointer set to 0 on the graduated scale while making sure that the valve is in the closed position (fig. 2-3).
7) Insert the handle (2) with the insert (1) in its housing on the stem (4).
8) Insert the valve between the end connectors (12) making sure that they match the direction of flow shown on the plate (fig. 2) then tighten the union nuts (13) making sure that the socket seal O-rings (10) do not come out of their grooves.

⚠

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

Fig. 1

Fig. 2

Fig. 3

Fig. 4

INSTALLATION

Before proceeding with installation. please follow these instructions carefully:

1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
2) Check that the DUAL BLOCK® union nut locking device (16) is fitted to the valve body.
3) To release the union nuts (13), axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
4) Unscrew the union nuts (13) and insert them on the pipe segments.
5) Solvent weld or screw the end connectors (12) onto the pipe ends.
6) Position the valve between the pipe end connectors making sure that the direction of flow is the same as shown on the plate (Fig.4). Hand tighten the union nuts in the clockwise direction. Do not use a wrench or other tools which might damage the surface.
7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.

8) 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”).

Seals can be adjusted using the removable insert on the handle.

The seals can be adjusted later with the valve installed on the pipe by simply tightening the union nuts. This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of operations.

The Easytorque kit can also be used for micro adjustments (fig. 5).

Fig. 5

⚠ WARNINGS

- Always avoid sudden closing operations and protect the valve from accidental operations.

Aliaxis
UTILITIES & INDUSTRY

FIP

SR DN 15÷50
PVDF

Ball check valve

SR
DN 15÷50

The SR check valve allows the passage of fluid in a single direction.

BALL CHECK VALVE

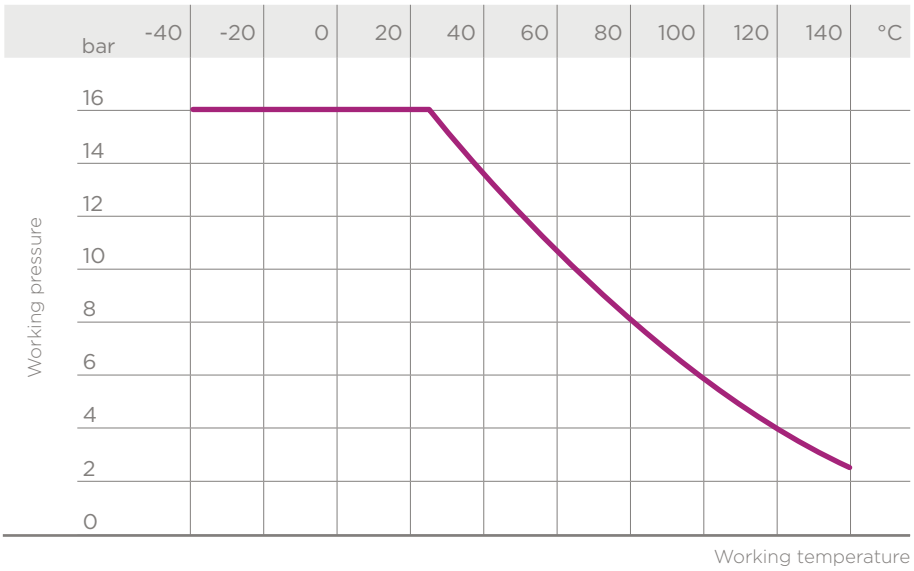
- Connection system for weld joints
- **PN16 valve body made for PVDF injection moulding** and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- The valve can only be used with fluids with specific weight under 1,78 g/cm^3.
- Sealing system **with antiblow out design**
- Ball completely in PVDF
- Can be maintained with the valve body installed
- Can be **installed** in either **a vertical** (preferable) or **horizontal position**

Technical specifications	
Construction	Ball check valve
Size range	DN 15÷50
Nominal pressure	PN 16 with water at 20° C
Temperature range	-40 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
Reference standards	**Construction criteria:** EN ISO 16137, EN ISO 10931,
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2202-1, DVS 2207-15, DVS 2208-1
Valve material	**Body:** PVDF **Ball:** PVDF
Seal material	FPM (spare set in EPDM available on request)

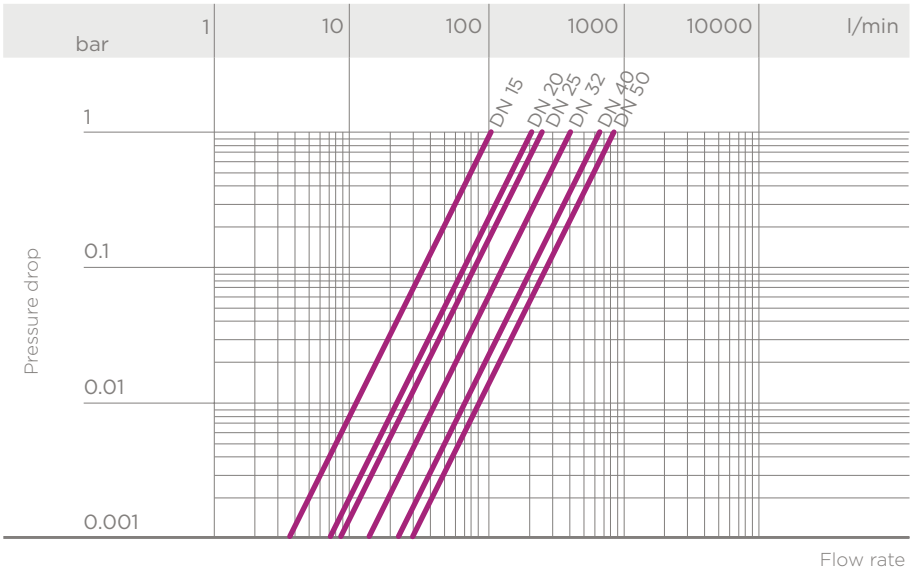
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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



MINIMUM PRESSURE

Minimum sealing pressure (valve in horizontal position)

DN	15	20	25	32	40	50
bar	0.2	0.2	0.2	0.2	0.2	0.2

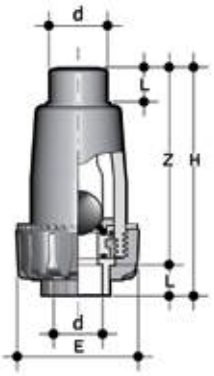
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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
K_v100 l/min	110	205	240	410	650	840

DIMENSIONS



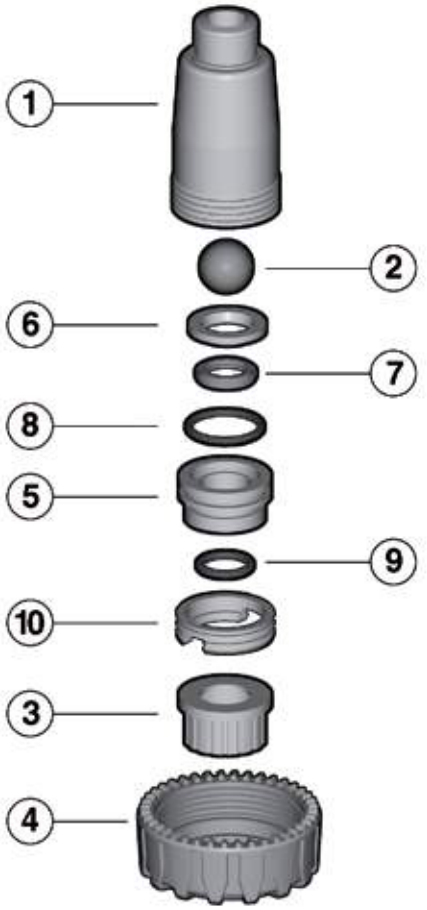
SRIF

Ball check valve with ends for socket welding, metric series

d	DN	PN	E	H	L	Z	g	Code
20	15	16	54	104	16	88	150	SRIF020F
25	20	16	65	125	19	106	260	SRIF025F
32	25	16	74	148	22	126	390	SRIF032F
40	32	16	86	171	26	145	600	SRIF040F
50	40	16	98	189	31	158	820	SRIF050F
63	50	16	119	222	38	184	1420	SRIF063F

COMPONENTS

EXPLODED VIEW



1 · Body (PVDF - 1)
2 · Ball (PVDF - 1)*
3 · End connector (PVDF - 1)*
4 · Union nut (PVDF - 1)*
5 · Carrier (PVDF - 1)
6 · Gland packing ring (PVDF - 1)
7 · Ball seat (FPM - 1)*
8 · Radial seal O-Ring (FPM - 1)*
9 · Socket seal O-ring (FPM - 1)*

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

DISASSEMBLY

1) Isolate the valve from the flow.
2) Unscrew the union nut (4).
3) Unscrew the carrier (5) using the VKD valve handle insert supplied; remove the gland packaging ring (6) to access the ball seat (7).
4) Remove the ball (2) from inside the body (1).

ASSEMBLY

1) Insert the ball (2) in the body (1).
2) Place the O-rings (9) and (8) in the carrier housings (5).
3) Place the seal (7) between the carrier (5) and the gland packing ring (6).
4) Screw the carrier (5) into the body (1) to limit stop, using the VKD valve handle insert supplied.
5) Insert the stub (3) and screw the union nut (4) making sure that the socket seal O-ring (9) does not exit its seat.

Note: maintenance operations can be carried out with the valve body installed. During assembly, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

INSTALLATION

1) The SR check valve can be installed on vertical or horizontal axis pipes.
2) Install the valve such that the arrow on the body indicates the direction of fluid flow.

Aliaxis
UTILITIES & INDUSTRY

FIP

FK DN 40÷300
PVDF

Butterfly valve

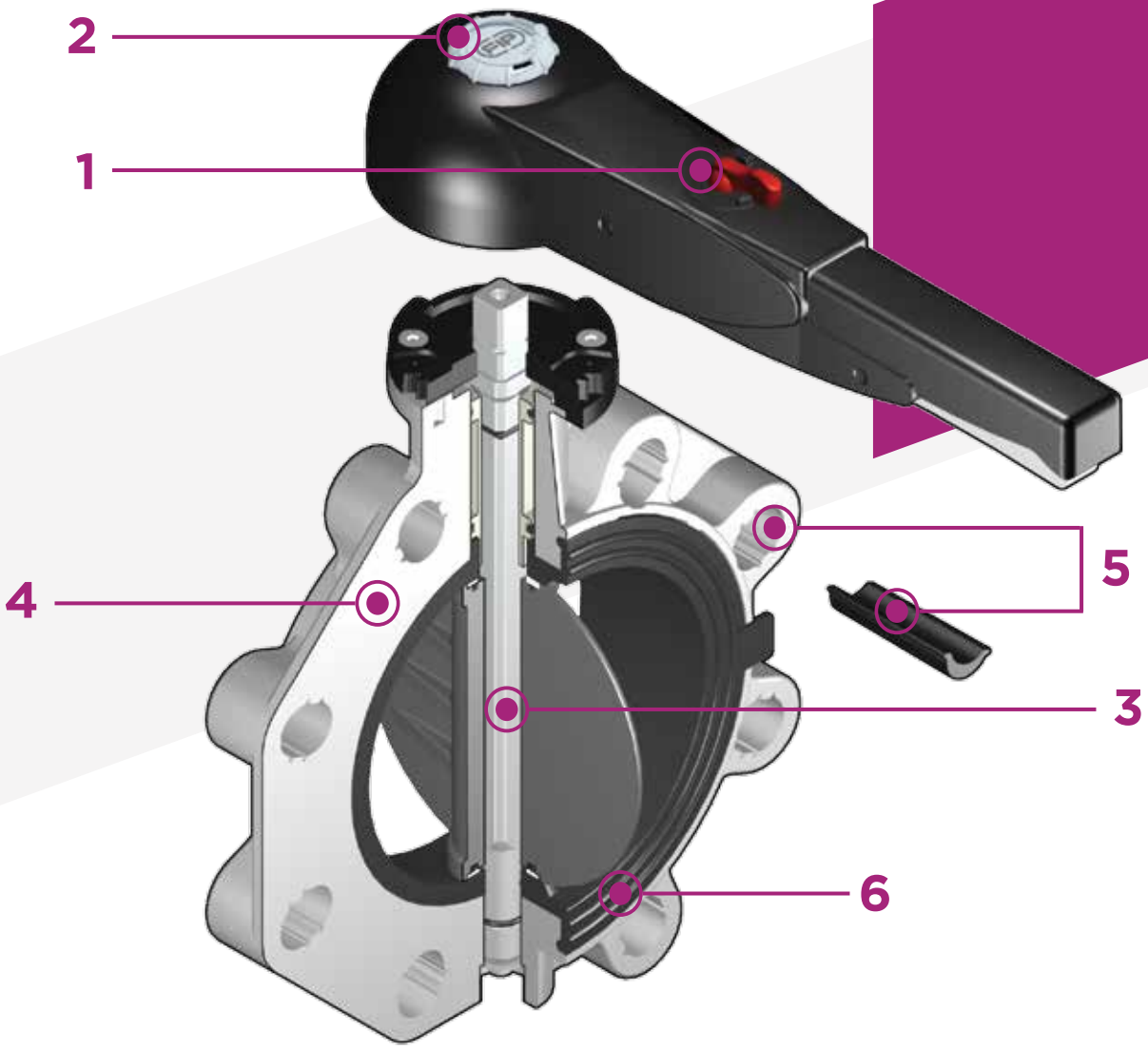
FK
DN 40÷300

The FK is a butterfly valve for shutting off or regulating flow, with structural characteristics that make it ideal for industrial applications requiring high performance and long-term reliability. This valve is also equipped with the customisable Labelling System.

BUTTERFLY VALVE

- Interchangeable Disk in PVDF with through shaft, available in different thermoplastic materials: PVC-U, PP-H, PVC-C, ABS
- Overall dimensions of the valve in accordance with standard ISO 5752 (DN 40÷200 Medium Series 25, DN 250÷ 300 Long Series 16) and DIN 3202 K2 and ISO 5752 (DN 65÷200 K2, DN 250÷300 K3)
- Can also be installed as an end line valve, bottom discharge valve or tank dump valve
- **Special Lug version** PN 10 fully drilled according to DIN 2501 or ANSI B16.5 cl.150 **with molded-in AISI 316 stainless steel threaded inserts**
- Possibility of installing a gearbox or pneumatic and/or electric actuators by applying ISO standard drilling PP-GR flanges. DN 40 ÷ 200 valve fitted with plate with rack in PP-GR. For actuated versions with flange drilled according to ISO 5211 F05, F07, F10. DN 250÷300 valve, fitted with one-piece top flange in high mechanical strength PP-GR with mounting flange for internal components drilled according to standard ISO 5211 F10, F12, F14

Technical specifications	
Construction	Bi-directional centric butterfly valve
Size range	DN 40÷300
Nominal pressure	**Wafer version** **DN 40÷50:** PN 16 with water at 20° C **DN 65÷250:** PN 10 with water at 20° C **DN 300:** PN 8 with water at 20° C **Lug version** **DN 65÷200:** PN 10 with water at 20° C **DN 250÷300:** PN 6 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	**Flanging system:** EN ISO 10931, DIN 2501, ISO 7005-1, EN 1092-1, ASTM B16.5 Cl.150
Reference standards	**Construction criteria:** EN ISO 16136, EN ISO 10931
	Test methods and requirements: ISO 9393
	Actuator couplings: ISO 5211
Valve material	**Body:** PP-GR **Disk:** PVDF **Stem:** STAINLESS steel AISI 420. On request STAINLESS steel AISI 316
Seal material	Liner: FPM On request EPDM or NBR
Control options	Manual control (DN 40÷200); Gearbox, pneumatic actuator, electric actuator



1 **Ergonomic handle in HIPVC** equipped with **locking and unlocking device, release, quick operation and graduated adjustment** in 10 intermediate positions (DN 40÷200). The operating range, starting from the first few degrees of valve opening, also guarantees extremely low pressure drops.

2 **Customisable Labelling System:** built-in module in the handle, made of a transparent protection plug and a customisable tag holder using the LSE set (available as an accessory). The **customisation** lets you **identify the valve on the system according** to specific needs

3 **STAINLESS steel square section stem completely isolated** from the fluid according to ISO 5211:
DN 40÷65: 11 mm
DN 80÷100: 14 mm
DN 125÷150: 17 mm
DN 200: 22 mm
DN 250÷300: 27 mm

4 **Body in polypropylene** based compound **reinforced with fibreglass** (PP-GR) **resistant to UV rays** and characterised by **high mechanical strength**

5 **Drilling pattern using oval slots that allow coupling** to flanges according to numerous international standards. The special **self-centring inserts in ABS supplied for** DN 40÷200 guarantee the **correct axial alignment of the valve during installation.**

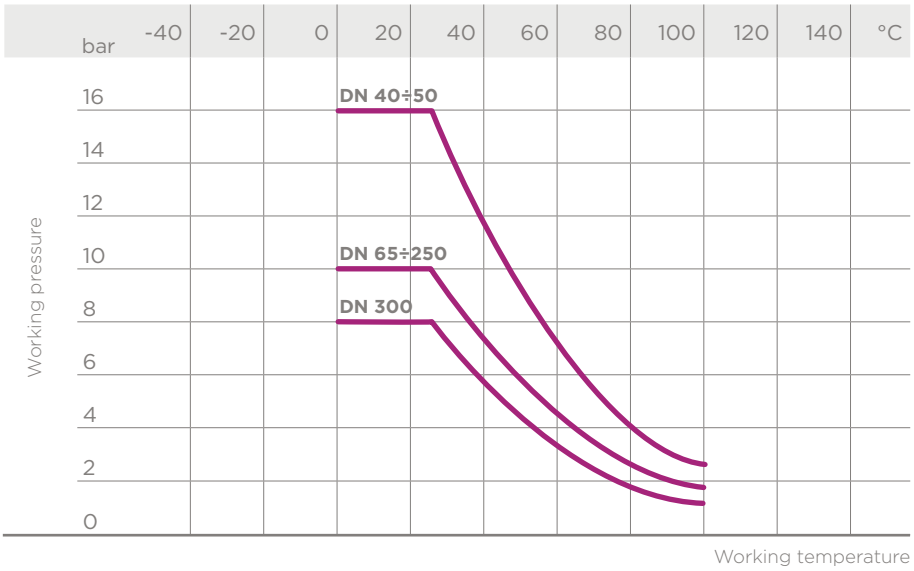
For DN 250÷300 valves, the drilling pattern for the self-centring system is of the traditional type according to DIN and ANSI standards

6 **Interchangeable liner with the dual** function of forming a hydraulic seal and isolating the body from the fluid

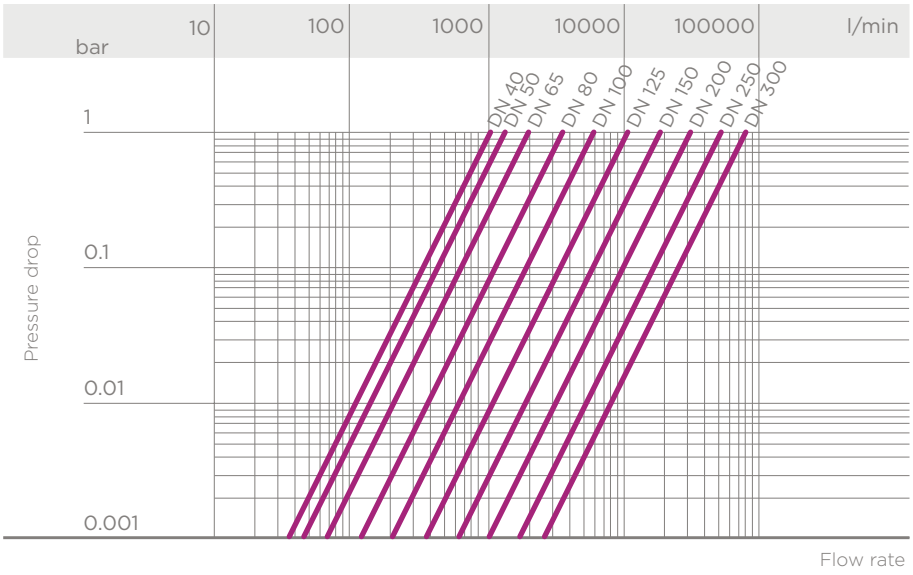
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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



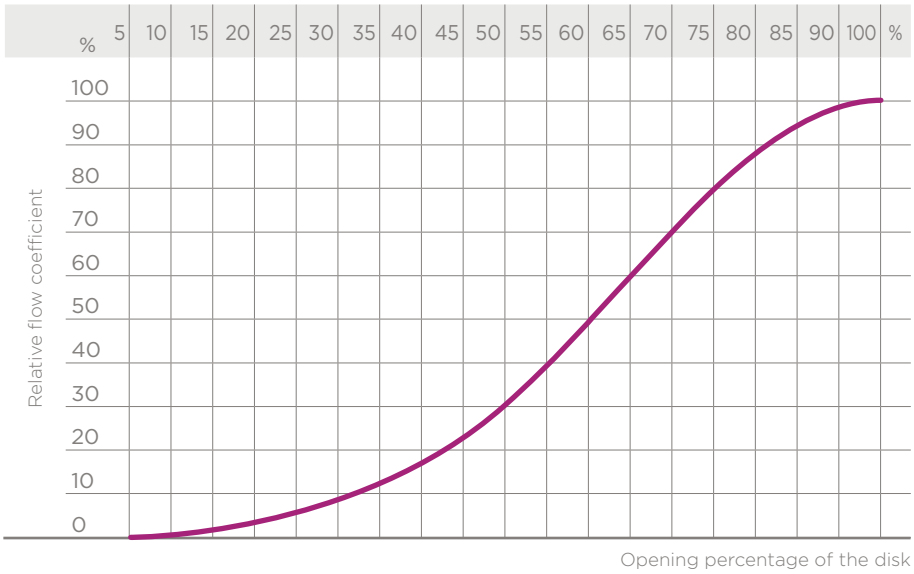
K_V100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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.

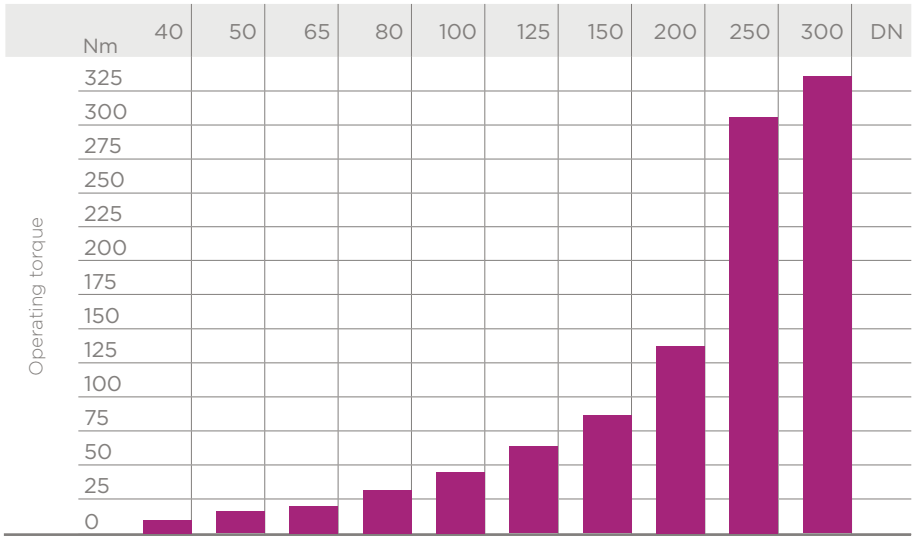
The K_v100 values shown in the table are calculated with the valve completely open.

DN	40	50	65	80	100	125	150	200	250	300
K_v100 l/min	1000	1285	1700	3550	5900	9850	18700	30500	53200	81600

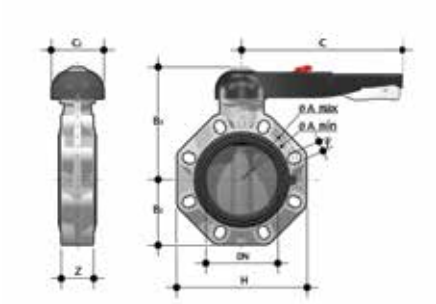
RELATIVE FLOW COEFFICIENT GRAPH



OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



DIMENSIONS

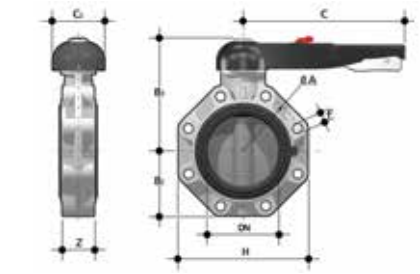


FKOF/LM

Hand operated Butterfly valve

d - Size	DN	PN	A min	A max	B_2	B_3	C	C_1	H	U	Z	g	Code
50 - 1" 1/2	40	16	99	109	60	137	175	100	132	4	33	1000	FKOFLM050F
63 - 2"	50	16	115	125.5	70	143	175	100	147	4	43	1180	FKOFLM063F
75 - 2" 1/2	65	10	128	144	80	164	175	110	165	4	46	1570	FKOFLM075F
90 - 3"	80	10	145	160	93	178	175	100	185	8	49	2020	FKOFLM090F
110 - 4"	100	10	165	190	107	192	272	110	211	8	56	2370	FKOFLM110F
140 - 5"	125	10	204	215	120	212	330	110	240	8	64	3300	FKOFLM140F
160 - 6"	150	10	230	242	134	225	330	110	268	8	70	4100	FKOFLM160F
225 - 8"	200	10	280	298	161	272	420	122	323	8	71	7050	FKOFLM225F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"

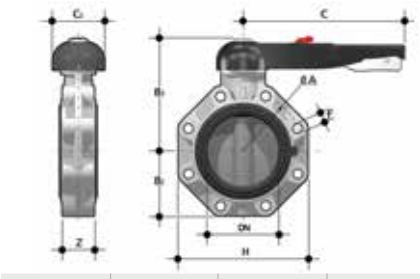


FKOF/LM LUG ISO-DIN

Hand operated Butterfly valve, version Lug ISO-DIN

d	DN	PN	øA	B_2	B_3	C	C_1	f	H	U	Z	g	Code
75	65	10	145	80	164	175	110	M16	165	4	46	1970	FKOLFLM075F
90	80	10	160	93	178	175	100	M16	185	8	49	2820	FKOLFLM090F
110	100	10	180	107	192	272	110	M16	211	8	56	3170	FKOLFLM110F
140	125	10	210	120	212	330	110	M16	240	8	64	4900	FKOLFLM140F
160	150	10	240	134	225	330	110	M20	268	8	70	5700	FKOLFLM160F
225	200	10	295	161	272	420	122	M20	323	8	71	8650	FKOLFLM225F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"

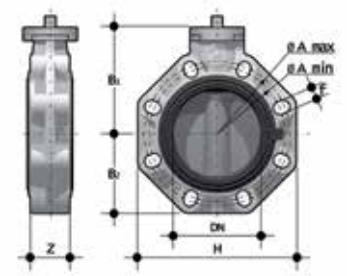


FKOF/LM LUG ANSI

Hand operated Butterfly valve, version Lug ANSI

Size	DN	PN	øA	B_2	B_3	f	H	U	Z	g	Code
2"1/2	65	10	139.7	119	80	5/8"	165	4	46	1970	FKOALFLM212F
3"	80	10	152.4	133	93	5/8"	185	8	49	2820	FKOALFLM300F
4"	100	10	190.5	147	107	5/8"	211	8	56	3170	FKOALFLM400F
5"	125	10	215.9	167	120	3/4"	240	8	64	4900	FKOALFLM500F
6"	150	10	241.3	180	134	3/4"	268	8	70	5700	FKOALFLM600F
8"	200	10	298.4	227	161	3/4"	323	8	71	8650	FKOALFLM800F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"

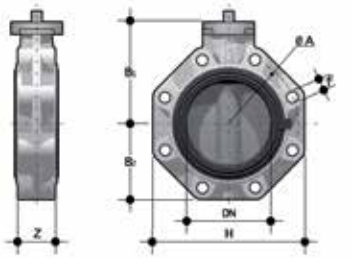


FKOV/FM

Butterfly valve with bare shaft

d - Size	DN	PN	øA	A min	A max	B_1	B_2	f	H	U	Z	g	Code
50 - 1" 1/2	40	16	-	99	109	106	60	19	132	4	33	674	FKOFFM050F
63 - 2"	50	16	-	115	125.5	112	70	19	147	4	43	854	FKOFFM063F
75 - 2" 1/2	65	10	-	128	144	119	80	19	165	4	46	1100	FKOFFM075F
90 - 3"	80	10	-	145	160	133	93	19	185	8	49	1550	FKOFFM090F
110 - 4"	100	10	-	165	190	147	107	19	211	8	56	1900	FKOFFM110F
140 - 5"	125	10	-	204	215	167	120	23	240	8	64	2750	FKOFFM140F
160 - 6"	150	10	-	230	242	180	134	23	268	8	70	3550	FKOFFM160F
225 - 8"	200	10	-	280	298	227	161	23	323	8	71	6300	FKOFFM225F
250	*250	10	350	-	-	248	210	22	405	12	114	13000	FKOFFM280F
280	*250	10	350	-	-	248	210	22	405	12	114	13000	FKOFFM280F
315	*300	8	400	-	-	305	245	22	475	12	114	21000	FKOFFM315F
10"	**250	10	362	-	-	248	210	25.4	405	12	114	13000	FKOAFFM810F
12"	**300	8	432	-	-	305	245	25.4	475	12	114	21000	FKOAFFM812F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"
*ISO-DIN
**ANSI B.16.5 150

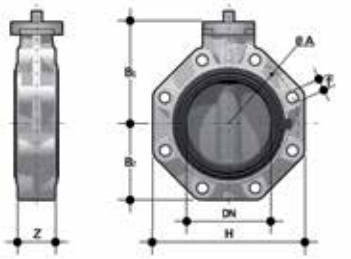


FKOF/FM LUG ISO-DIN

Butterfly valve with bare shaft, version Lug ISO-DIN

d	DN	PN	øA	B_1	B_2	f	H	U	Z	g	Code
75	65	10	145	119	80	M16	165	4	46	1500	FKOLFFM075F
90	80	10	160	133	93	M16	185	8	49	2350	FKOLFFM090F
110	100	10	180	147	107	M16	211	8	56	2700	FKOLFFM110F
140	125	10	210	167	120	M16	240	8	64	4350	FKOLFFM140F
160	150	10	240	180	134	M20	268	8	70	5150	FKOLFFM160F
225	200	10	295	227	161	M20	323	8	71	7900	FKOLFFM225F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"



FKOF/FM LUG ANSI

Butterfly valve with bare shaft, version Lug ANSI

Size	DN	PN	øA	B_1	B_2	f	H	U	Z	g	Code
2"1/2	65	10	139.7	119	80	5/8"	165	4	46	1500	FKOALFFM212F
3"	80	10	152.4	133	93	5/8"	185	8	49	2350	FKOALFFM300F
4"	100	10	190.5	147	107	5/8"	211	8	56	2700	FKOALFFM400F
5"	125	10	215.9	167	120	3/4"	240	8	64	4350	FKOALFFM500F
6"	150	10	241.3	180	134	3/4"	268	8	70	5150	FKOALFFM600F
8"	200	10	298.4	227	161	3/4"	323	8	71	7900	FKOALFFM800F
10"	250	6	362	248	210	7/8"	405	12	114	17800	FKOALFFM810F
12"	300	6	431.8	305	245	7/8"	475	12	114	25800	FKOALFFM812F

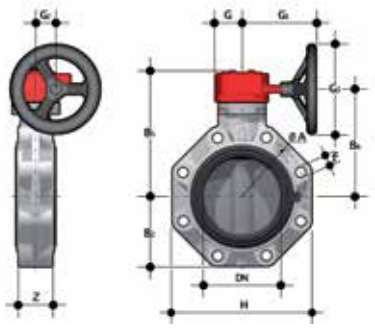
Note: NBR liners are available for d75÷225 and 2" 1/2÷8"

FKOF/RM

Gearbox operated Butterfly valve

d - Size	DN	PN	A min	A max	øA	B_2	B_5	B_6	G	G_1	G_2	G_3	H	U	Z	g	Code
75 - 2" 1/2	65	10	128	144	-	80	174	146	48	135	39	125	165	4	46	2500	FKOFRM075F
90 - 3"	80	10	145	160	-	93	188	160	48	135	39	125	185	8	49	3050	FKOFRM090F
110 - 4"	100	10	165	190	-	107	202	174	48	135	39	125	211	8	56	3300	FKOFRM110F
140 - 5"	125	10	204	215	-	120	222	194	48	144	39	200	240	8	64	4650	FKOFRM140F
160 - 6"	150	10	230	242	-	134	235	207	48	144	39	200	268	8	70	5450	FKOFRM160F
225 - 8"	200	10	280	298	-	161	287	256	65	204	60	200	323	8	71	9600	FKOFRM225F
*280	250	10	-	-	350	210	317	281	88	236	76	250	405	12	114	19600	FKOFRM250F
*315	250	10	-	-	350	210	317	281	88	236	76	250	405	12	114	19600	FKOFRM280F
**10"	300	8	-	-	400	245	374	338	88	236	76	250	475	12	114	27600	FKOFRM315F
**12"	250	10	-	-	362	210	317	281	88	236	76	250	405	12	114	19600	FKOAFRM810F
**12"	300	8	-	-	432	245	374	338	88	236	76	250	475	12	114	27600	FKOAFRM812F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"
* ISO-DIN
** ANSI B16.5 cl.150

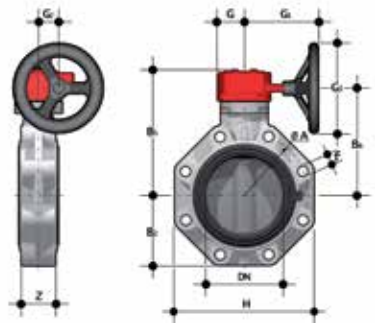


FKOF/RM LUG ISO-DIN

Gearbox operated Butterfly valve, version Lug ISO-DIN

d	DN	PN	øA	B_2	B_5	B_6	f	G	G_1	G_2	G_3	H	U	Z	g	Code
75	65	10	145	80	174	146	M16	48	135	39	125	165	4	46	2900	FKOLFRM075F
90	80	10	160	93	188	160	M16	48	135	39	125	185	8	49	3750	FKOLFRM090F
110	100	10	180	107	202	174	M16	48	135	39	125	211	8	56	4100	FKOLFRM110F
140	125	10	210	120	222	194	M16	48	144	39	200	240	8	64	6250	FKOLFRM140F
160	150	10	240	134	235	207	M20	48	144	39	200	268	8	70	7050	FKOLFRM160F
225	200	10	295	161	287	256	M20	65	204	60	200	323	8	71	11200	FKOLFRM225F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"



FKOF/RM LUG ANSI

Gearbox operated Butterfly valve, version Lug ANSI

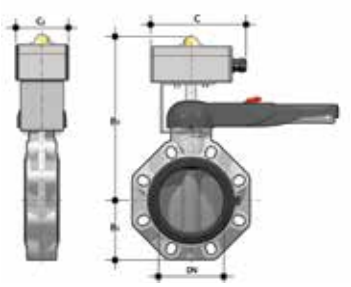
Size	DN	PN	øA	B_2	B_5	B_6	f	G	G_1	G_2	G_3	H	U	Z	g	Code
2"1/2	65	10	139.7	80	174	146	5/8"	48	135	39	125	165	4	46	2900	FKOALFRM212F
3"	80	10	152.4	93	188	160	5/8"	48	135	39	125	185	8	49	3750	FKOALFRM300F
4"	100	10	190.5	107	202	174	5/8"	48	135	39	125	211	8	56	4100	FKOALFRM400F
5"	125	10	215.9	120	222	194	3/4"	48	144	39	200	240	8	64	6250	FKOALFRM500F
6"	150	10	241.3	134	235	207	3/4"	48	144	39	200	268	8	70	7050	FKOALFRM600F
8"	200	10	298.4	161	287	256	3/4"	65	204	60	200	323	8	71	11200	FKOALFRM800F
10"	250	6	362	210	317	281	7/8"	88	236	76	250	405	12	114	24400	FKOALFRM810F
12"	300	6	431.8	245	374	338	7/8"	88	236	76	250	475	12	114	32450	FKOALFRM812F

Note: NBR liners are available for d75÷225 and 2" 1/2÷8"

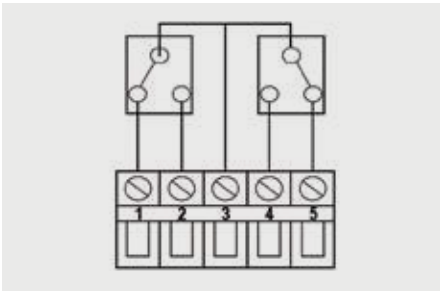
ACCESSORIES

FK MS

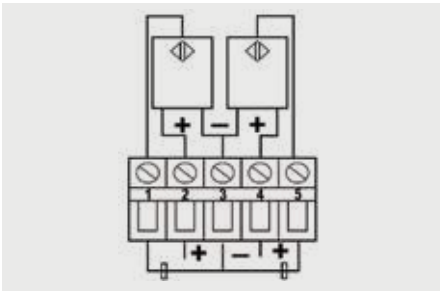
The MS kit lets you install a limit switch with electromechanical or inductive micro switches on a manual FK/LM valve to remotely signal the valve position (open-closed). The kit can be assembled on the valve even if already installed on the system.



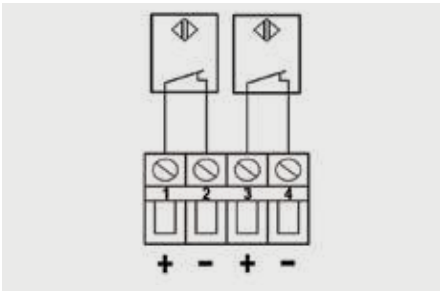
DN	B_2	B_3	C_1	Protection rate	Code electromechani-cal	Code inductive	Code Namur
40	60	248	80	IP67	FKMS0M	FKMS0I	FKMS0N
50	70	254	80	IP67	FKMS0M	FKMS0I	FKMS0N
65	80	261	80	IP67	FKMS0M	FKMS0I	FKMS0N
80	93	275	80	IP67	FKMS1M	FKMS1I	FKMS1N
100	107	289	80	IP67	FKMS1M	FKMS1I	FKMS1N
125	120	309	80	IP67	FKMS1M	FKMS1I	FKMS1N
150	134	322	80	IP67	FKMS1M	FKMS1I	FKMS1N
200	161	369	80	IP67	FKMS2M	FKMS2I	FKMS2N



Electromechanical



Inductive

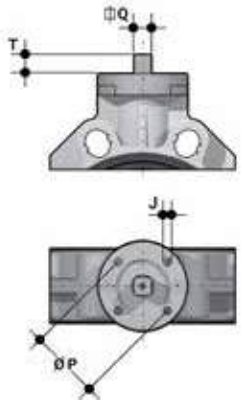


Namur

LSE

Customisation and label printing set for Easyfit handle made up of precut adhesive sheets and software for guided label creation

DN	Code
40	LSE040
50	LSE040
65	LSE040
80	LSE040
100	LSE040
125	LSE040
150	LSE040
200	LSE040



ACTUATOR MOUNTING FLANGE

The valve can be equipped with standard pneumatic or electric actuators and gearbox for heavy-duty operations, using a flange in PP-GR reproducing the drilling pattern provided for by standard ISO 5211

DN	J	P	Ø	T	Q
40	7	50	F 05	12	11
50	7	50	F 05	12	11
65	7/9	50/70	F 05/F 07	12	11
80	9	70	F 07	16	14
100	9	70	F 07	16	14
125	9	70	F 07	19	17
150	9	70	F 07	19	17
200	11	102	F 10	24	22
200	11	102	F 10	24	22
250	11/13/17	102/125/140	F 10/F 12/F 14	29	27
300	11/13/17	102/125/140	F 10/F 12/F 14	29	27

CUSTOMISATION

The FK valve is equipped with the customisable Labelling System.

This system lets you create special labels to insert in the handle. This makes it extremely easy to apply company logos, identification serial numbers or service indications such as, for example, the valve function in the system, the transported fluid, but also specific information for customer service, such as the customer name or installation date or location on the valves.

The specific LCE module is a standard supply and is made up of a rigid transparent water-resistant PVC plug (A-C) and white tag holder (B) made of the same material, one side of which bears the FIP logo (fig. 1).

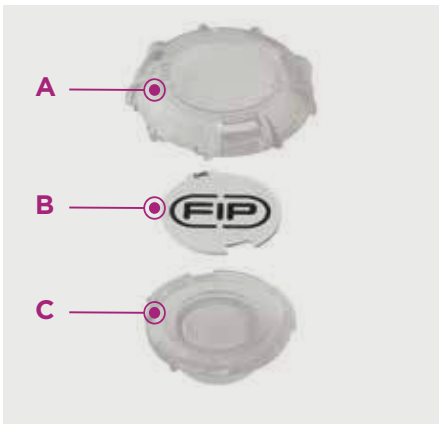
The tag holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

Proceed as follows to apply the label on the valve:

1) Remove the upper part of the transparent plug (A) rotating it counter-clockwise as indicated by the word "Open" on the plug and remove it.
2) Extract the tag holder from its housing on the lower part of the plug (C).
3) Apply the adhesive label on the holder (B) to align the profiles matching the tab position.
4) Reinsert the tag holder in its housing at the bottom of the plug.
5) Reposition the top of the plug in the housing rotating it clockwise; this way the label is protected against the elements.

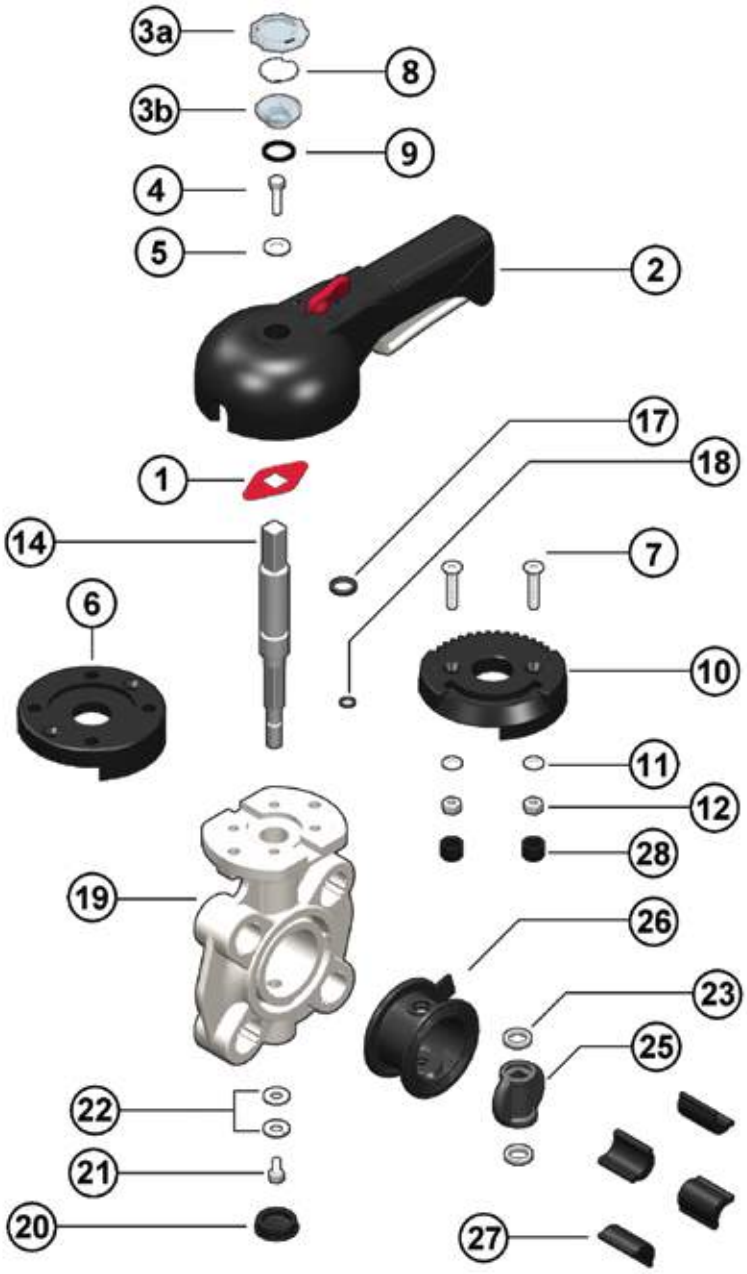
Fig. 1

Fig. 2



COMPONENTS

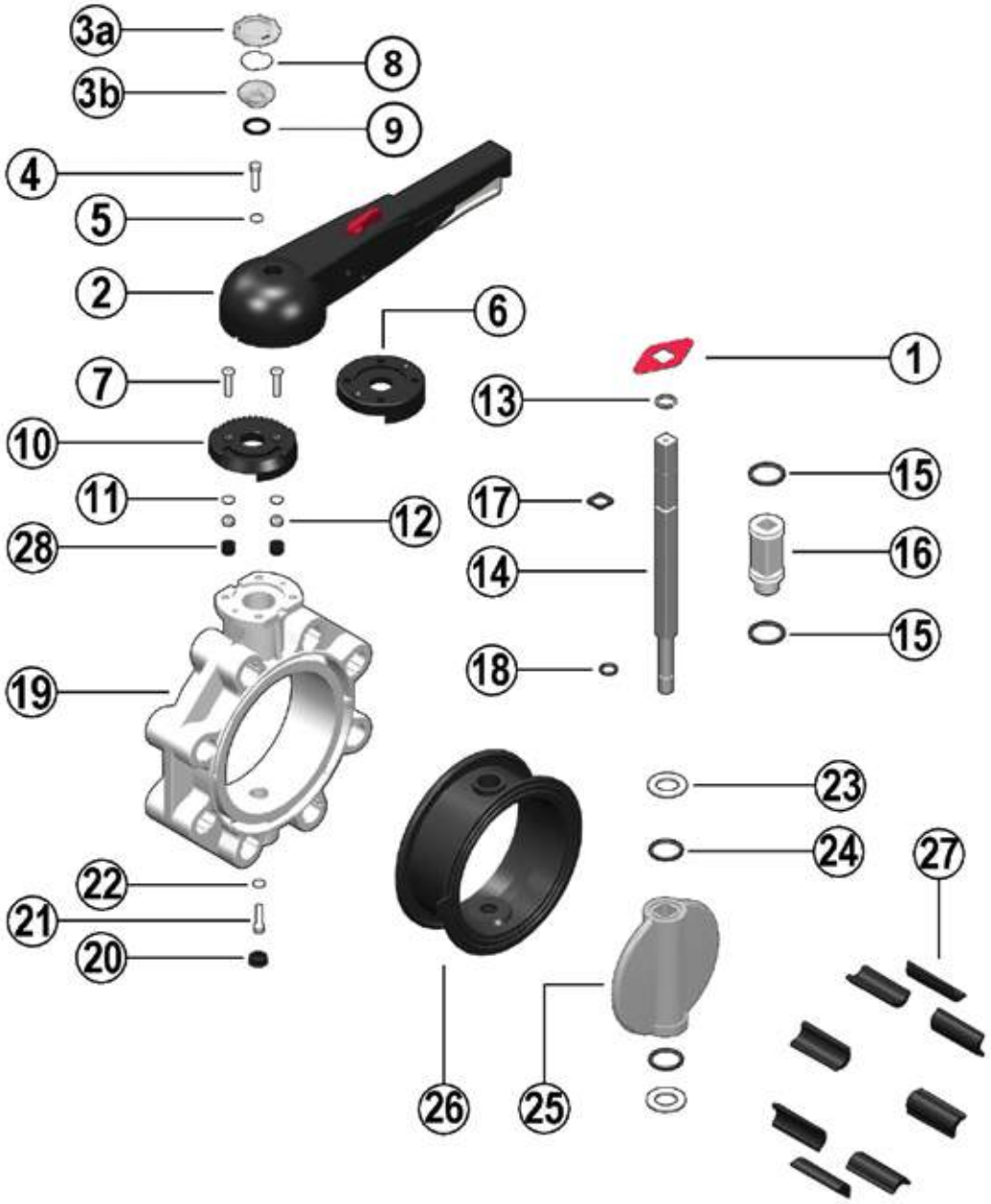
EXPLODED VIEW DN 40÷50



1 · Position indicator (PA - 1)
2 · Handle (HIPVC - 1)
3 a/b · Transparent protection plug (PVC - 1)
4 · Fastening screw (STAINLESS steel - 1)
5 · Washer (STAINLESS steel - 1)
6 · Flange (PP-GR - 1)
7 · Screw (STAINLESS steel - 2)
8 · Tag holder (PVC-U - 1)
9 · O-Ring (NBR - 1)
10 · Plate (PP-GR - 1)
11 · Washer (STAINLESS steel - 2)
12 · Nut (STAINLESS steel - 2)
13 · Seeger ring (STAINLESS steel - 1)
14 · Stem (STAINLESS steel - 1)
15 · Bush O-Ring (FPM - 2)
16 · Bush (Nylon - 1)
17 · Stem O-Ring (FPM - 1)
18 · Stem O-Ring (FPM - 1)
19 · Body (PP-GR - 1)
20 · Protection plug (PE - 1)
21 · Screw (STAINLESS steel - 1)
22 · Washer (STAINLESS steel - 1)
23 · Anti-friction ring (PTFE - 2)
24 · Disk O-Ring (FPM - 2)
25 · Disk (PVDF - 1)
26 · Liner (FPM - 1)
27 · Inserts (ABS - 4-8)
28 · Plug (PE - 2)

The material of the component and the quantity supplied are indicated between brackets

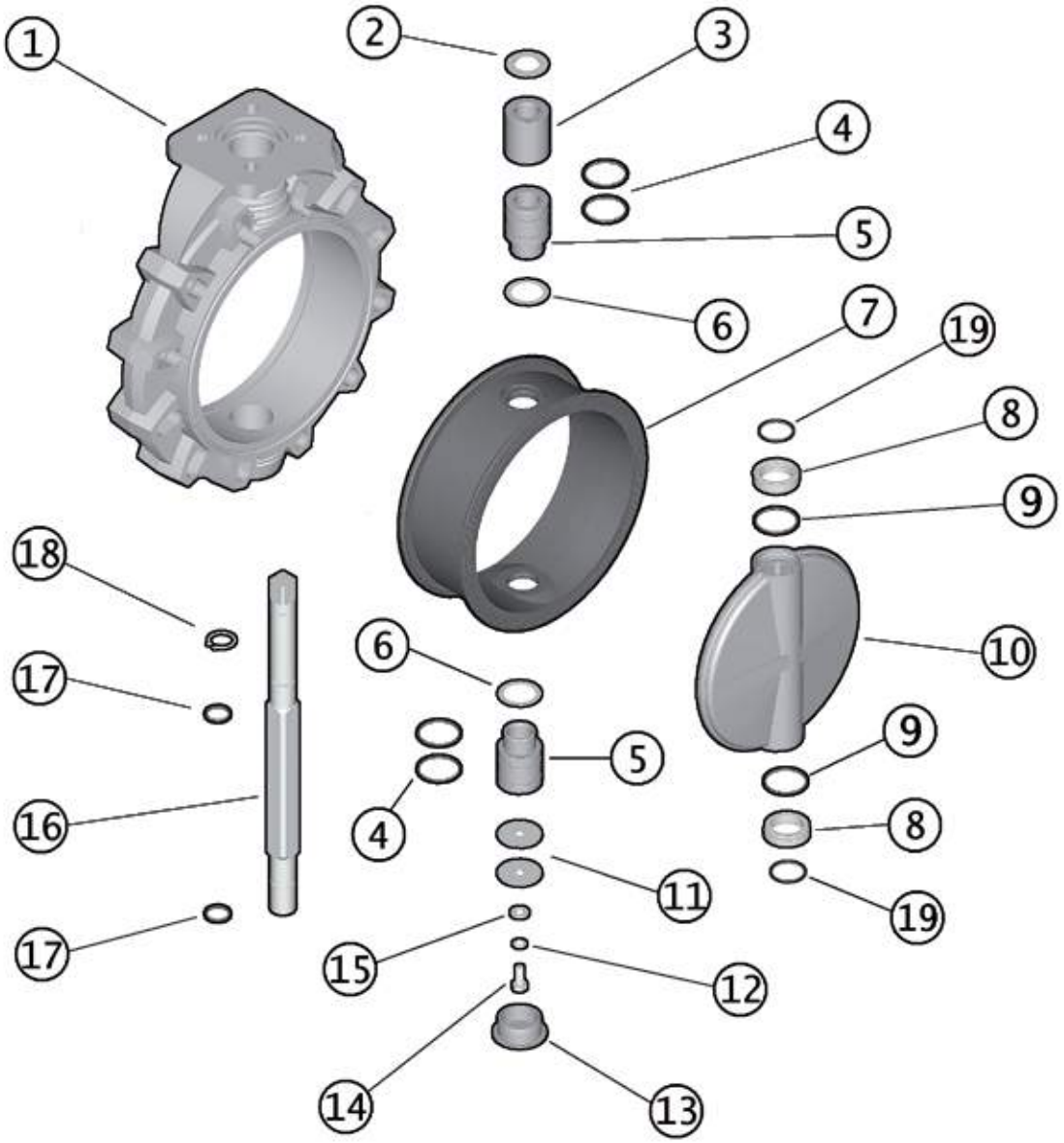
EXPLODED VIEW DN 65÷200



1 · Position indicator (PA - 1)
2 · Handle (HIPVC - 1)
3 a/b · Transparent protection plug (PVC - 1)
4 · Fastening screw (STAINLESS steel - 1)
5 · Washer (STAINLESS steel - 1)
6 · Flange (PP-GR - 1)
7 · Screw (STAINLESS steel - 2)
8 · Tag holder (PVC-U - 1)
9 · O-Ring (NBR - 1)
10 · Plate (PP-GR - 1)
11 · Washer (STAINLESS steel - 2)
12 · Nut (STAINLESS steel - 2)
13 · Seeger ring (STAINLESS steel - 1)
14 · Stem (STAINLESS steel - 1)
15 · Bush O-Ring (FPM - 2)
16 · Bush (Nylon - 1)
17 · Stem O-Ring (FPM - 1)
18 · Stem O-Ring (FPM - 1)
19 · Body (PP-GR - 1)
20 · Protection plug (PE - 1)
21 · Screw (STAINLESS steel - 1)
22 · Washer (STAINLESS steel - 1)
23 · Anti-friction ring (PTFE - 2)
24 · Disk O-Ring (FPM - 2)
25 · Disk (PVDF - 1)
26 · Liner (FPM - 1)
27 · Inserts (ABS - 4-8)
28 · Plug (PE - 2)

The material of the component and the quantity supplied are indicated between brackets

EXPLODED VIEW DN 250÷300



1 · Body (PP-GR - 1)
2 · Washer (STAINLESS steel - 1)
3 · Bush (PP - 1)
4 · Bush O-Ring (FPM - 4)
5 · Bush (PP - 2)
6 · Washer (PTFE - 2)
7 · Liner (FPM - 1)
8 · Anti-friction ring (PTFE - 2)
9 · Disk O-Ring (FPM - 2)
10 · Disk (PVDF - 1)
11 · Washer (STAINLESS steel - 2)
12 · Washer (STAINLESS steel - 1)
13 · Protection plug (PE - 1)
14 · Screw (STAINLESS steel - 1)
15 · Washer (STAINLESS steel - 1)
16 · Stem (STAINLESS steel - 1)
17 · Stem O-Ring (FPM - 2)
18 · Seeger ring (STAINLESS steel - 1)
19 · O-Ring (FPM - 2)

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

DN 40÷200

1) Remove the LCE module consisting of the rigid transparent PVC plug (3a-3b) and white tag holder (8) and remove screw (2) and washer (3) (fig.3).
2) Remove the handle (2).
3) Remove the screws (7) and plate (10) from the body (19).
4) Remove the protection plug (20) and screw (21) with the washer (22).
5) Extract the stem (14) and disk (25).
6) Remove the anti-friction rings (23) and (DN 65÷200 only) O-Rings (24).
7) Remove the liner (26) from the body (19).
8) Remove the Seeger ring (13) and (DN 65÷200 only) guide bush (16).
9) Remove (DN 65÷200 only) the O-Rings (15) and (17, 18).

DN 250÷300

1) Remove the protection plug (13) and screw (14) with the washers (11-15).
2) Extract the stem (16) and disk (10).
3) Remove the seal (7) from the body (1).
4) Remove the Seeger ring (18) and guide bushes (5-3) with washer (2).
5) Extract the lower bush (5).
6) Remove O-Rings (4) and (17).

ASSEMBLY

DN 40÷200

1) Place the liner (26) on the body (19).
2) Insert the O-Rings (17) and (18) on the stem (14).
3) Insert the O-Rings (15) on the guide bush (16) and the bush on the stem. Lock the bush using the Seeger ring (13).
4) Position the O-Rings (24) and then the anti-friction rings (23) on the disk (25) and the disk inside the body, after having lubricated the liner (26).
5) Insert the through stem (14) in the body (19) and disk (25).
6) Tighten screw (21) with washer (22) and insert the protection plug (20).
7) Position the plate (10) on the body (19) and tighten screws (7).
8) Position the handle (2) on the stem (14).
9) Tighten screw (4) with washer (5) and replace the LCE module consisting of the rigid transparent PVC plug (3a-3b) and white tag holder (8).

DN 250÷300

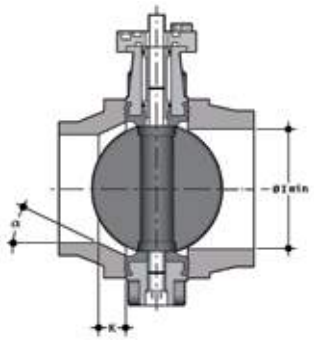
1) Place the liner (7) on the body (1).
2) Insert the O-Rings (4) and washer (6) on bushes (5).
3) Insert the seals (17) on the stem (16); insert the upper bush (5), bush (3), washer (2) on the stem and fix them with Seeger ring (18).
4) Insert the seals (19-9) on the anti-friction washers (8).
5) Position the washers (8) in the seatings on the disk (10), and the disk inside the body (1) after having lubricated the seal (7).
6) Insert the through stem (16) in the body and disk.
7) Position the lower bush (5) from below.
8) Tighten screws (14) with washers (11-15) and insert the protection plug (13).

Fig. 3

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

INSTALLATION

JOINTS



Before proceeding with the installation of the stubs, check that the bore of the fittings has sufficient clearance to allow the valve disk to open correctly.
Also check the maximum coupling distance for the liner. Before proceeding with the installation of the FK valve, check that the bore of the stub allows the correct opening of the disk.

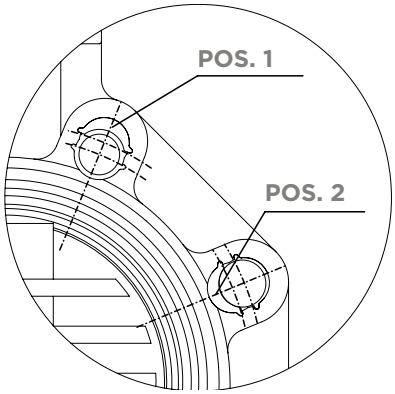
DN	l min.
40	25
50	28
65	47
80	64
100	84
125	108
150	134
200	187
250	225
300	280

For the installation of PP-PE stubs, for butt welding a short spigot or electrofusion/butt welding a long spigot, check the valve-stub-flange couplings and the K - a chamfer dimensions where necessary according to the different SDR's in the following table.

	d	DN	50 40	63 50	75 65	90 80	110 100	125 100	140 125	160 150	180 150	200 200	225 200	250 250	280 250	315 300
FK valve	50	40	■													
	63	50		■												
	75	65			■											
	90	80				■										
	110	100					■	■								
	140	125							■							
	160	150								■	■					
	225	200										■	■			
	280	250												■	■	
	315	300														■
SDR		17/17.6										k=26.5 a=20°		k=15.7 a=25°		k=13.3 a=25°
		11								k=35 a=20°		k=35 a=25°	k=40 a=15°	k=32.5 a=25°	k=35 a=25°	k=34.5 a=25°
		7.4				k=10 a=35°	k=15 a=35°		k=20 a=30°	k=35 a=20°	k=15 a=35°	k=40 a=20°	k=35 a=30°	k=55 a=30°	k=35 a=30°	k=65 a=30°

Short/long spigot stubs according to EN ISO 15494 and DIN 16962/16963 and flange

POSITIONING THE INSERTS



Place the inserts in the holes according to the positions indicated in the table, from the side corresponding to the letters D and DN in order to facilitate the insertion of the stud-bolts and the coupling with the flanges (DN 40 ÷ 200). The self-centring inserts must be inserted in the guides in the slots in the valve body on the side with the writing, with the writing facing upwards, and positioned according to the type of flange drilling, as indicated in the following table:

DN	DIN 2501 PN6, EN 1092-1, BS 4504 PN6, DIN 8063 PN6	DIN 2501 PN10/16, EN 1092-1, BS 4504 PN 10/16, DIN 8063 PN 10/16, EN ISO 15493, EN ISO 1452	BS 10 table A-D-E Spec D-E	BS 1560 cl.150, ANSI B16.5 cl.150 *	JIS B 2220 K5	JIS 2211 K10**
DN 40	Pos. 1	Pos. 2	Pos. 1	Pos. 1	Pos. 1	-
DN 50	Pos. 1	Pos. 2	Pos. 1	-	N/A	-
DN 65	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 2
DN 80	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 1
DN 100	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 1
DN 125	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	-
DN 150	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 2
DN 200	Pos. 1	PN 10 Pos. 2	Pos. 2	Pos. 2	Pos. 1	N/A

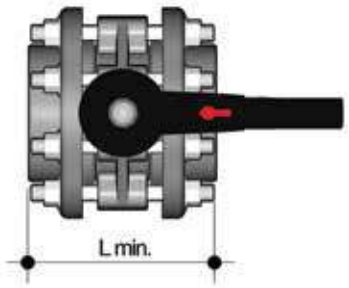
* DN 50 without inserts
** DN 40, 50, 125 without inserts

POSITIONING THE VALVE

Position the valve between two flanged stubs, taking care to respect the installation tolerances Z. It is advisable to always install the valve with the disk partially closed (it must not exit the body) and avoid any misalignment of the flanges, as this would cause leaks.
Where possible comply with the following requirements:
- Conveying dirty fluids: position the valve with the stem inclined at an angle of 45° to the pipe support plane.
- Conveying fluids with sediment: position the valve with the stem parallel to the pipe support plane.
- Conveying clean fluids: position the valve with the stem perpendicular to the pipe support plane.

TIGHTENING THE STUD-BOLTS

Before tightening the stud-bolts, it is advisable to open the disk in order to prevent damage to the seal. Tighten the stud-bolts in a uniform manner, in the order indicated in the figure, to the nominal operating torque value indicated in the table.
The stud-bolts do not need to be excessively tightened in order to produce a perfect hydraulic seal. Overtightening could adversely affect the operating torque of the valve.



DN	L min.	*Nm
40	M16x150	9
50	M16x150	12
65	M16x170	15
80	M16x180	18
100	M16x180	20
125	M16x210	35
150	M20x240	40
200	M20x260	55
250	M20x310	70
300	M20x340	70

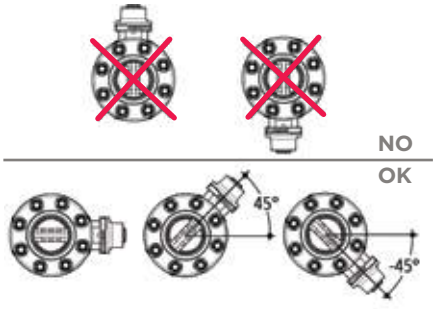
* Tightening torques for nuts and bolts on couplings with backing rings.
Values required to obtain the hydraulic test seal (1.5xPN at 20°C) (new or lubricated nuts and bolts)

HANDLE LOCK

Thanks to the multifunctional handle and the red manoeuvre button on the lever, you can perform a 0°-90° operation and a graduated operation by means of the 10 intermediate positions and a stop lock: the handle can be locked in each of the 10 positions by simply pressing the Free-lock button. A lock can also be installed on the handle to protect the system against tampering.

The valve is two-way and can be installed in any position. It can also be installed at end line or tank.

⚠ WARNINGS



Make sure that the valves installed on the system are suitably supported for their weight.

Always avoid sudden closing manoeuvres and protect the valve from accidental operations. To this end, it is advisable to install a reduction gear, available on request.

In the case of dirty fluids or those with sediments, install the valve inclined as shown in the figure.

Aliaxis
UTILITIES & INDUSTRY

FIP

VM DN 15÷100
PVDF

Diaphragm valve

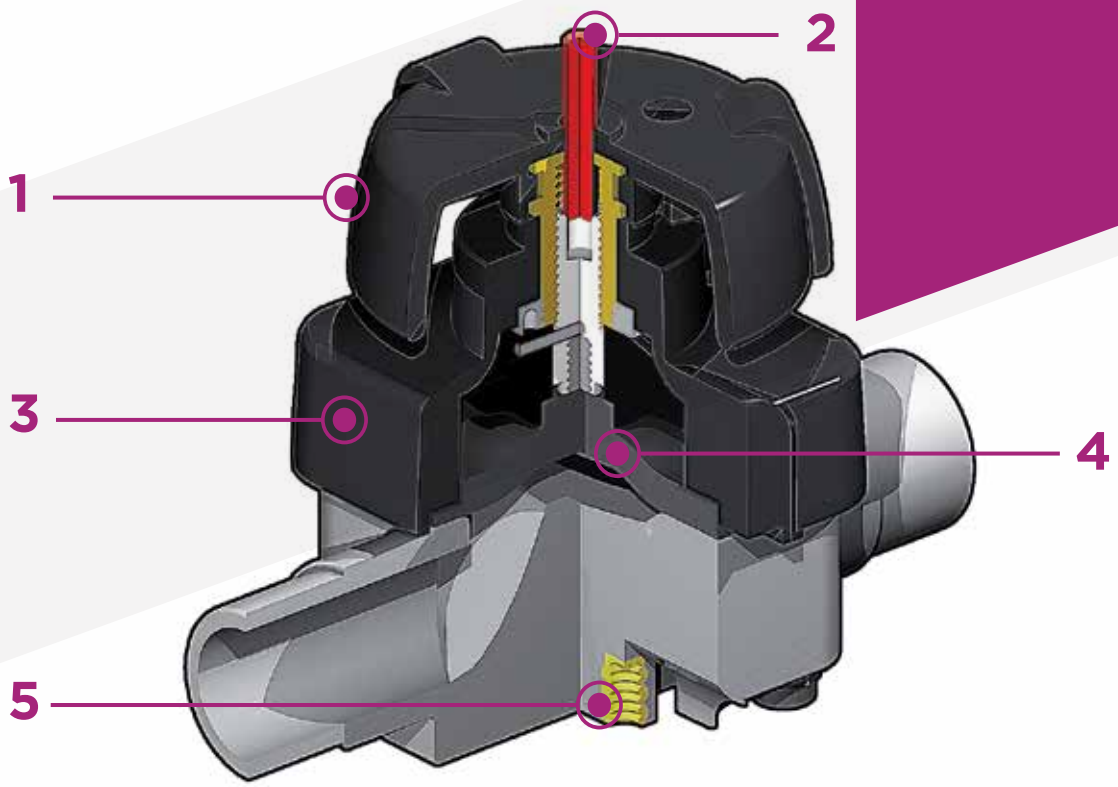
VM
DN 15÷100

The VM is particularly suitable for isolating and regulating abrasive or dirty fluids.
The handwheel control and diaphragm seal provide precise and effective control, while reducing the risk of water hammer to a minimum.

DIAPHRAGM VALVE

- Connection system for weld and flanged joints
- Compact and lightweight construction
- High flow coefficient and minimum pressure drop
- **Internal components in metal totally isolated from the conveyed fluid**, with anti-friction disk to reduce friction to a minimum
- **Modularity of the range:** only 5 diaphragm and bonnet sizes for 9 different valve sizes
- Handwheel that stays at the same height during rotation
- Bonnet fastening screws that screw into the built-in bush preventing the deposit of dirt or impurities
- **Innovative CDSA** (Circular Diaphragm Sealing Angle) system used up to DN50, offering the following advantages:
  - uniform distribution of shutter pressure on the diaphragm seal
  - 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	Single wear diaphragm valve
Size range	DN 15 ÷ 100
Nominal pressure	PN 10 with water at 20° C
Temperature range	-20 °C ÷ 120 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Flanging system: ISO 7005-1, EN ISO 10931, EN 558-1, DIN 2501, ANSI B16.5 Cl.150
Reference standards	**Construction criteria:** EN ISO 16138, EN ISO 10931
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
Valve material	**Body:** PVDF **Bonnet and handwheel:** PP-GR
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Manual control; pneumatic actuator



1 **Handwheel** in (PP-GR) with high mechanical strength and **ergonomic grip for optimum manageability**

2 **Optical position indicator** supplied as standard

3 **Full protection bonnet in PP-GR,** no protruding bolts, no areas where impurities can accumulate.

Internal circular and symmetrical diaphragm sealing area

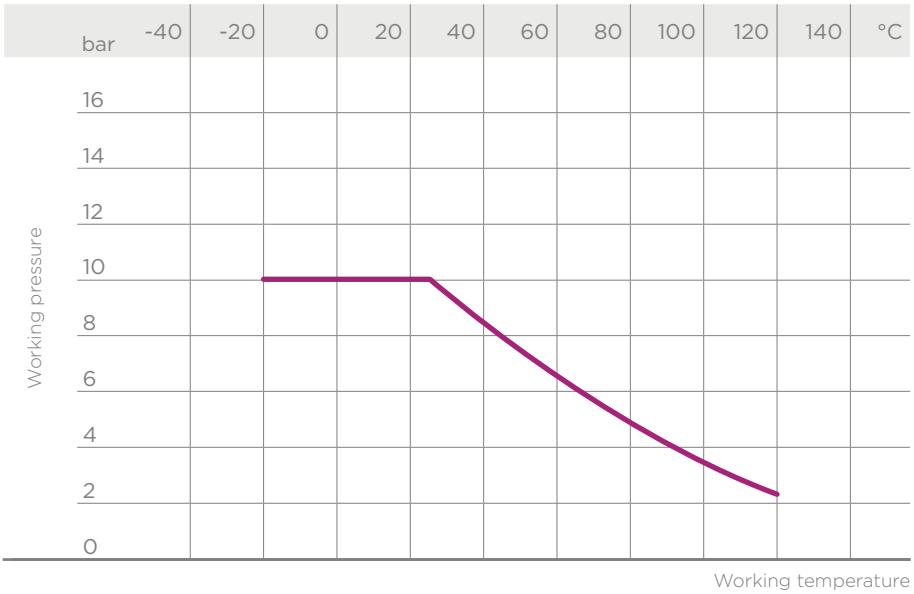
4 Diaphragm seal available in EPDM, FPM, PTFE (NBR on request) and easy to replace

5 **Threaded metal inserts** for anchoring the valve

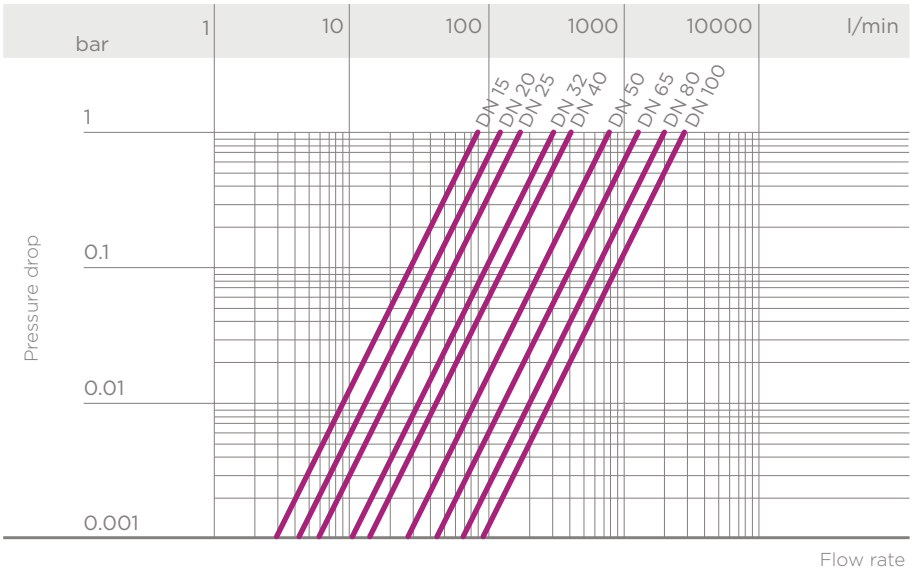
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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



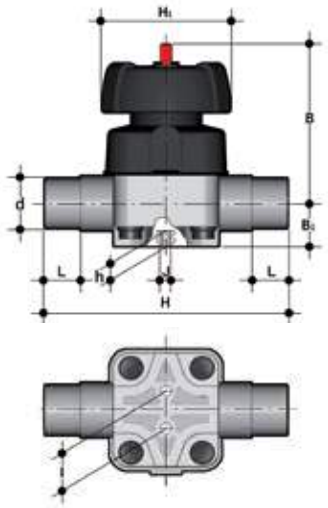
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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	80	100
K_v100 l/min	93	136	175	300	416	766	1300	2000	2700

DIMENSIONS

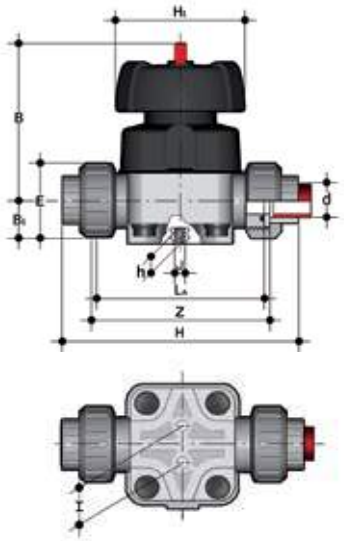


VMDF

Diaphragm valve with male ends for socket welding, metric series

d	DN	PN	B	B_1	H	h	H_1	I	J	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	124	12	90	25	M6	16	772	VMDF020E	VMDF020F	VMDF020P
25	20	10	95	26	144	12	90	25	M6	19	772	VMDF025E	VMDF025F	VMDF025P
32	25	10	95	26	154	12	90	25	M6	22	772	VMDF032E	VMDF032F	VMDF032P
40	32	10	126	40	174	18	115	44.5	M8	26	1709	VMDF040E	VMDF040F	VMDF040P
50	40	10	126	40	194	18	115	44.5	M8	31	1709	VMDF050E	VMDF050F	VMDF050P
63	50	10	148	40	224	18	140	44.5	M8	38	2713	VMDF063E	VMDF063F	VMDF063P
75	65	*10	225	55	284	23	200	100	M12	44	7838	VMDF075E	VMDF075F	VMDF075P
90	80	*10	225	55	300	23	200	100	M12	51	7778	VMDF090E	VMDF090F	VMDF090P
110	100	*10	295	69	340	23	250	120	M12	61	11637	VMDF110E	VMDF110F	VMDF110P

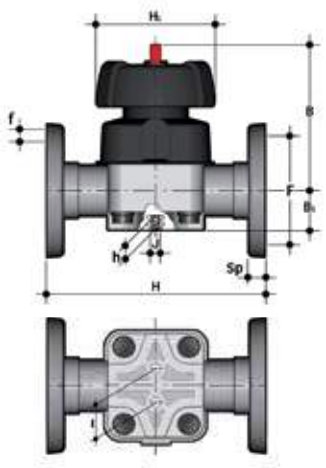
*PTFE PN6



VMUIF

Diaphragm valve with female union ends for socket welding, metric series

d	DN	PN	B	B_1	E	H	h	H_1	I	L_A	J	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	41	158	12	90	25	116	M6	130	1054	VMUIF020E	VMUIF020F	VMUIF020P
25	20	10	95	26	50	162	12	90	25	116	M6	130	1125	VMUIF025E	VMUIF025F	VMUIF025P
32	25	10	95	26	58	166	12	90	25	116	M6	130	1185	VMUIF032E	VMUIF032F	VMUIF032P
40	32	10	126	40	72	210	16	115	44.5	154	M8	170	2086	VMUIF040E	VMUIF040F	VMUIF040P
50	40	10	126	40	79	216	16	115	44.5	154	M8	170	2173	VMUIF050E	VMUIF050F	VMUIF050P
63	50	10	148	40	98	254	16	140	44.5	184	M8	200	3447	VMUIF063E	VMUIF063F	VMUIF063P

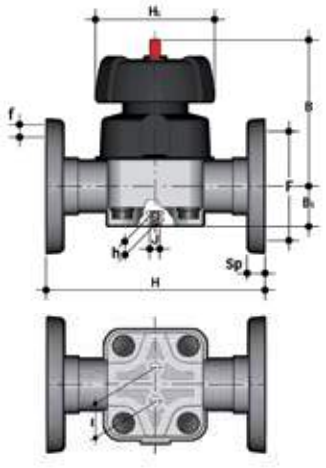


VMOF

Diaphragm valve with fixed flanges, drilled EN/ISO/DIN PN10/16.
Face to face according to EN 558-1

d	DN	PN	B	B_1	F	f	H	H_1	I	J	Sp	U	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	65	14	130	90	25	M6	11	4	1001	VMOF020E	VMOF020F	VMOF020P
25	20	10	95	26	75	14	150	90	25	M6	14	4	1107	VMOF025E	VMOF025F	VMOF025P
32	25	10	95	26	85	14	160	90	25	M6	14	4	1157	VMOF032E	VMOF032F	VMOF032P
40	32	10	126	40	100	18	180	115	44.5	M8	14	4	2424	VMOF040E	VMOF040F	VMOF040P
50	40	10	126	40	110	18	200	115	44.5	M8	16	4	2490	VMOF050E	VMOF050F	VMOF050P
63	50	10	148	40	125	18	230	140	44.5	M8	16	4	3710	VMOF063E	VMOF063F	VMOF063P
75	65	*10	225	55	145	18	290	200	100	M12	21	4	9230	VMOF075E	VMOF075F	VMOF075P
90	80	*10	225	55	160	18	310	200	100	M12	22	8	9151	VMOF090E	VMOF090F	VMOF090P
110	100	*10	295	69	180	18	350	250	120	M12	23	8	13997	VMOF110E	VMOF110F	VMOF110P

*PTFE PN6



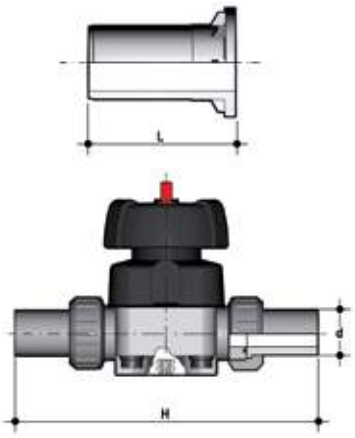
VMOAF

Diaphragm valve with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	PN	B	B_1	F	f	H	H_1	I	J	Sp	U	g	EPDM Code	FPM Code	PTFE Code
1/2”	10	95	26	60.3	15.9	130	90	25	M6	11	4	1001	VMOAF012E	VMOAF012F	VMOAF012P
3/4”	10	95	26	69.9	15.9	150	90	25	M6	14	4	1107	VMOAF034E	VMOAF034F	VMOAF034P
1”	10	95	26	79.4	15.9	160	90	25	M6	14	4	1157	VMOAF100E	VMOAF100F	VMOAF100P
1”1/4	10	126	40	88.9	15.9	180	115	44.5	M8	14	4	2424	VMOAF114E	VMOAF114F	VMOAF114P
1”1/2	10	126	40	98.4	15.9	200	115	44.5	M8	16	4	2490	VMOAF112E	VMOAF112F	VMOAF112P
2”	10	148	40	120.7	19.1	230	140	44.5	M8	16	4	3710	VMOAF200E	VMOAF200F	VMOAF200P
2”1/2	*10	225	55	139.7	19.1	290	200	100	M12	21	4	9230	VMOF075E	VMOF075F	VMOF075P
3”	*10	225	55	152.4	19.1	310	200	100	M12	22	4	9151	VMOAF300E	VMOAF300F	VMOAF300P
4”	*10	295	69	190.5	19.1	350	250	120	M12	23	8	13997	VMOF110E	VMOF110F	VMOF110P

*PTFE PN6

ACCESSORIES



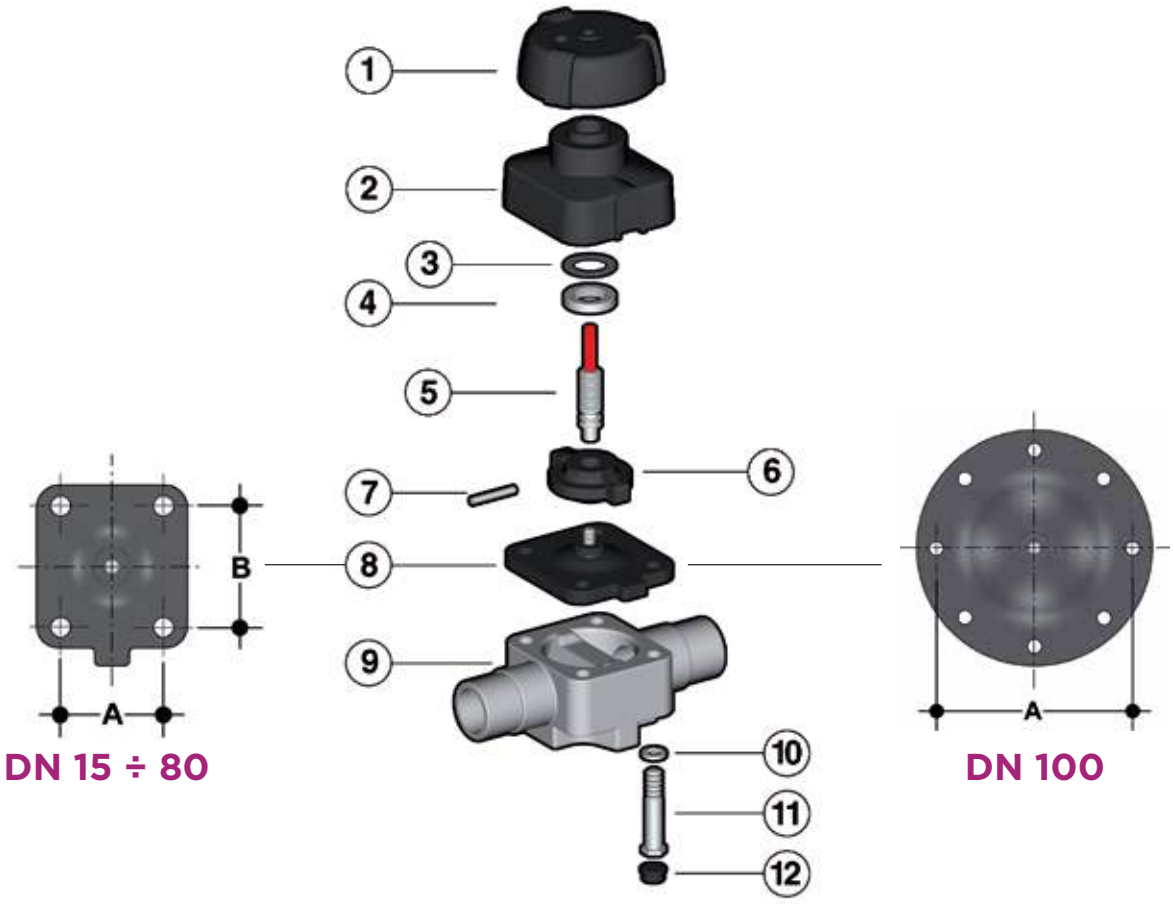
CVDFBIF

Double socket in PVDF SDR 21 PN 10, long spigot, for butt welding

d	DN	PN	L	H	SDR	Code
20	15	10	95	298	21	CVDFBIF21020
25	20	10	95	298	21	CVDFBIF21025
32	25	10	95	314	21	CVDFBIF21032
40	32	10	95	330	21	CVDFBIF21040
52	40	10	95	350	21	CVDFBIF21050
63	50	10	95	380	21	CVDFBIF21063

COMPONENTS

EXPLODED VIEW DN 15÷50



DN 15 ÷ 80

DN 100

DN	15	20	25	32	40	50	65	80	100
A	46	46	46	65	65	78	114	114	193
B	54	54	54	70	70	82	127	127	-

1 · Handwheel (PP-GR - 1)
2 · Bonnet (PP-GR - 1)
3 · Anti-friction disk (POM - 1)
4 · Lock nut (Brass - 1)
5 · Indicatore - stem (STAINLESS steel - 1)
6 · Shutter (PBT - 1)
7 · Pin (STAINLESS steel - 1)
8 · Diaphragm seal (EPDM, FPM, PTFE - 1)
9 · Body (PVDF - 1)
10 · Washer (STAINLESS steel - 4)
11 · Hexagonal screw (STAINLESS steel - 4)
12 · Protection plug (PE - 4)

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

If the valve is already installed on the line, shut-off the fluid flow upstream and make sure that there is no pressure. If necessary, fully drain the system downstream. If there are hazardous fluids present, drain and ventilate the valve.
The diaphragm constitutes the part of the valve more subject to mechanical and chemical stress from the fluid. Consequently, the condition of the diaphragm must be checked at regular intervals in accordance with the service conditions. To do this, it must be disconnected from the handwheel and from the valve body.

1) Unscrew the four screws (11) and separate the body (9) from the internal components.
2) Unscrew the diaphragm (8) from the shutter (6). Rotate the handwheel clockwise to free the stem-shutter unit.
3) If necessary, clean or replace the diaphragm (8).
4) If necessary, lubricate the stem (5).

ASSEMBLY

1) Insert the handwheel in the bonnet (2)
2) The anti-friction disk (3) must be positioned on the handwheel sleeve over the bonnet. Fully tighten the lock nut (4). To ensure a perfect seal, use a liquid sealing compound such as Loctite.
3) Subsequently, the shutter (6) must be removed from the stem (5) and fixed using the pin. Warning: the pin must be well secured in the seating hole in the stem.
4) The stem (5) must now be screwed to the threaded handwheel sleeve. Warning: left-hand thread. The shutter (6) must be oriented such that the guide pins correspond with the grooves in the bonnet.
5) The shutter (5) must be fully tightened on the bonnet by rotating the handhweel. Then, the diaphragm seal (8) must be screwed fully into the bonnet and then rotated in the opposite direction until the holes in the diaphragm coincides with the holes in the bonnet.
6) Place the bonnet with the diaphragm in the correct position in the body (9). Fix the protection plugs (12) using the hexagonal screws and washers (10). Tighten evenly (cross-like).

INSTALLATION

The valve can be installed in any position and in any direction.
When starting up the plant, make sure that there are no leaks from between the diaphragm and the valve body. If necessary, tighten the fastening screws (11).

Aliaxis
UTILITIES & INDUSTRY

CM DN 12÷15
PVDF

Compact diaphragm valve

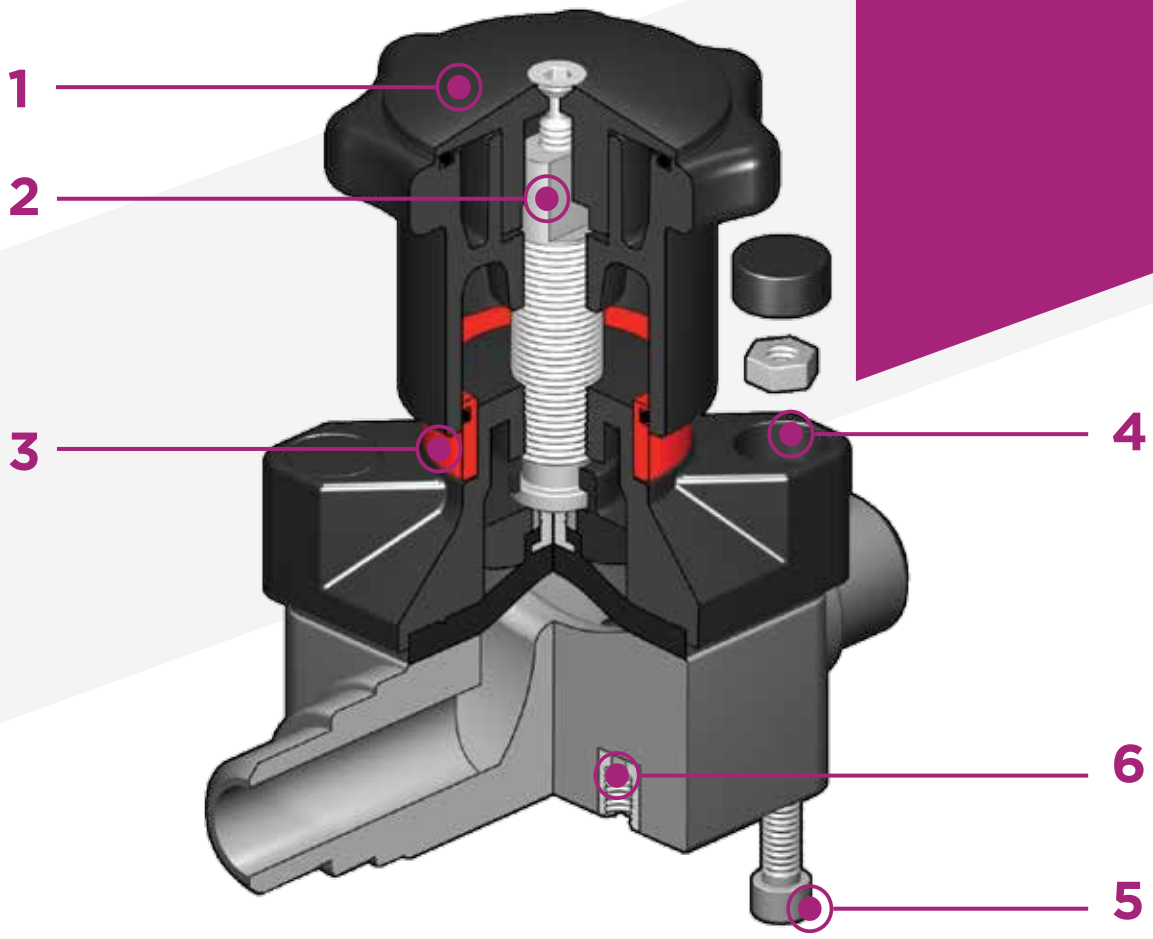
CM
DN 12÷15

The CM is a manually operated diaphragm valve of reduced dimensions and particularly compact structure, ideal for use in confined spaces.

COMPACT DIAPHRAGM VALVE

- Connection system for weld and threaded joints
- Extremely compact construction
- **Internal operating components in metal totally isolated from the conveyed fluid**
- Valve stem in STAINLESS steel
- **Compressor with floating diaphragm support**
- Easy to replace diaphragm seal
- Corrosion-proof internal components
- **Innovative CDSA** (Circular Diaphragm Sealing Angle) system offering the following advantages:
  - uniform distribution of shutter pressure on the diaphragm seal
  - 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	Compact single wear diaphragm valve
Size range	DN 12÷15
Nominal pressure	PN 6 with water at 20° C
Temperature range	-20 °C ÷ 140 °C
Coupling standards	**Welding:** EN ISO 10931. Can be coupled to pipes according to EN ISO 10931
	Thread: ISO 228-1, DIN 2999
Reference standards	**Construction criteria:** EN ISO 16138, EN ISO 10931
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2201-1, DVS 2207-15, DVS 2208-1
Valve material	**Body:** PVDF **Bonnet and handwheel:** PA-GR
Diaphragm material	EPDM, FPM, PTFE
Control options	Manual control; pneumatic actuator



1 **Handwheel in PA-GR, completely sealed,** high mechanical strength with ergonomic grip for optimum manageability

2 **Integrated adjustable torque limiter** designed to prevent excessive compression of the diaphragm and always guarantee a minimum fluid flow

3 **Optical position indicator** supplied as standard

4 **Bonnet in PA-GR with STAINLESS steel nuts** fully protected by plastic plugs to eliminate zones where impurities may accumulate. Internal circular and symmetrical diaphragm sealing area

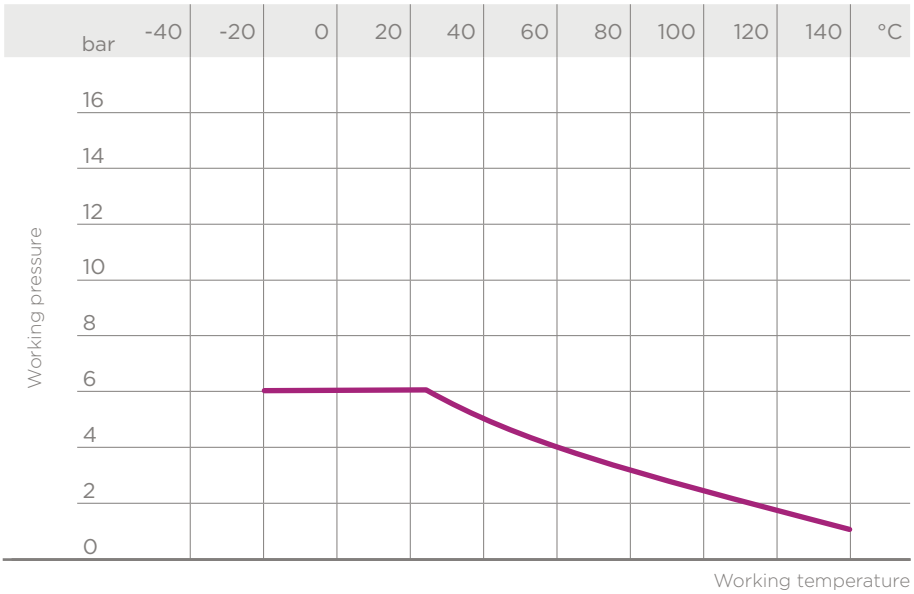
5 **STAINLESS steel bolts**, can also be inserted from above

6 **Threaded metal inserts** for anchoring the valve

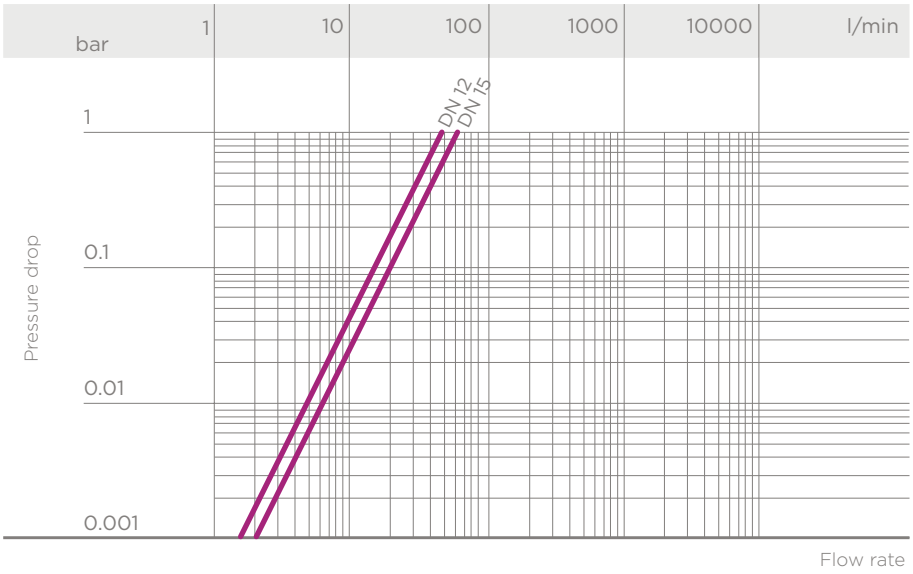
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard 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



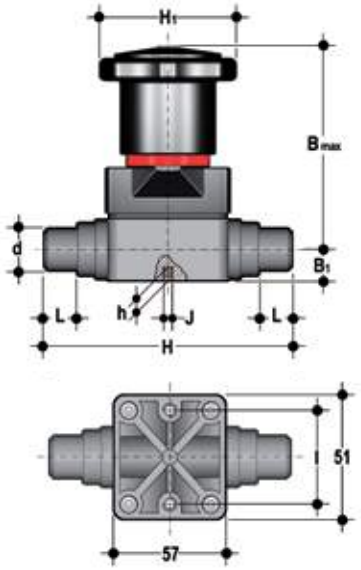
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate 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	12	15
K_v100 l/min	47	60

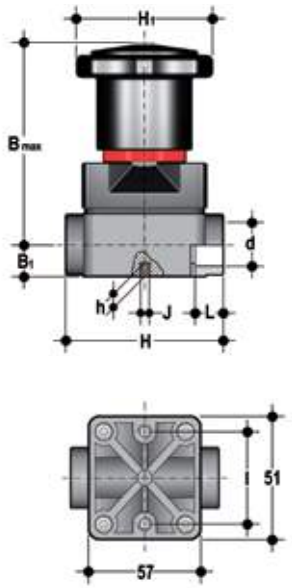
DIMENSIONS



CMDF

Compact diaphragm valve with male ends for socket welding, metric series

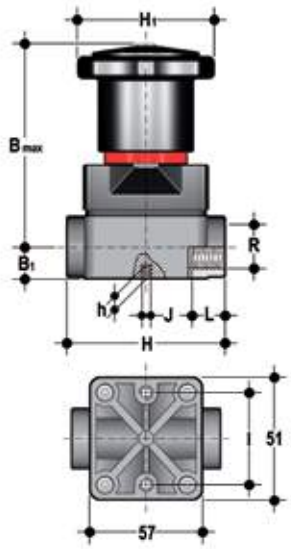
d	DN	PN	B max	B_1	H	H_1	h	I	J	L	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	15	124	58.5	8	35	M5	17	330	CMDF020E	CMDF020F	CMDF020P



CMIF

Compact diaphragm valve with female ends for socket welding, metric series

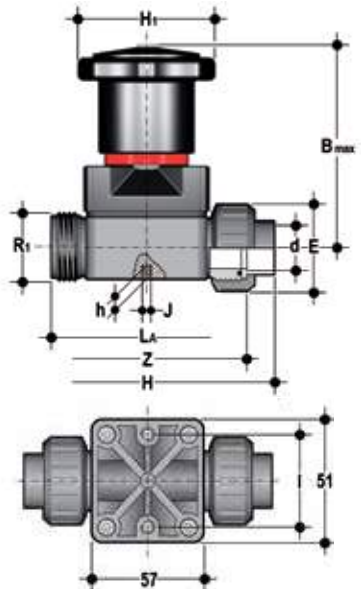
d	DN	PN	B max	B_1	H	H_1	h	I	J	L	g	EPDM Code	FPM Code	PTFE Code
16	12	6	86	15	75	58.5	8	35	M5	14	290	CMIF016E	CMIF016F	CMIF016P
20	15	6	86	15	75	58.5	8	35	M5	16	290	CMIF020E	CMIF020F	CMIF020P



CMFF

Compact diaphragm valve with BSP threaded female ends

R	DN	PN	B max	B_1	H	H_1	h	I	J	L	g	EPDM Code	FPM Code	PTFE Code
3/8"	12	6	86	15	75	58.5	8	35	M5	11.5	290	CMFF038E	CMFF038F	CMFF038P
1/2"	15	6	86	15	75	58.5	8	35	M5	15	290	CMFF012E	CMFF012F	CMFF012P



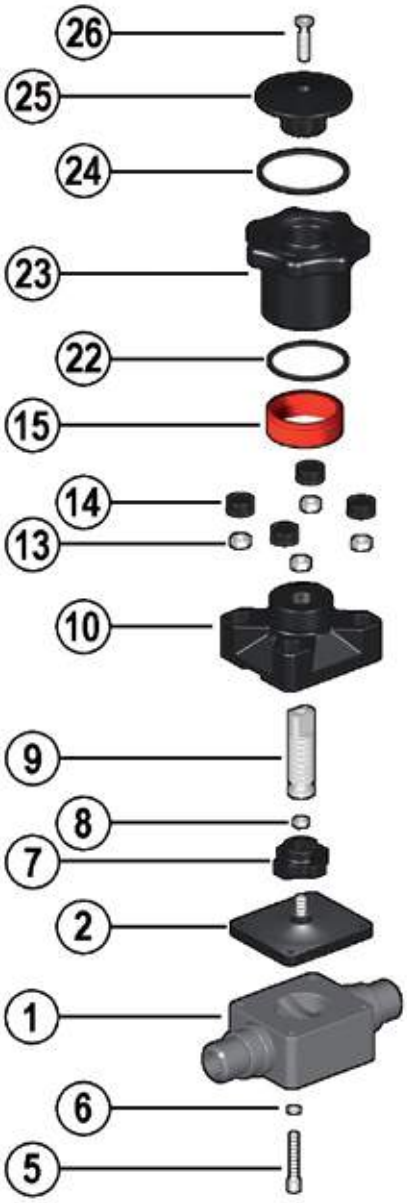
CMUIF

Compact diaphragm valve with female union ends for socket welding, metric series

d	DN	PN	B max	E	H	H_1	h	I	J	L_A	R_1	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	41	129.5	58.5	8	35	M5	90	1"	97.5	285	CMUIF020E	CMUIF020F	CMUIF020P

COMPONENTS

EXPLODED VIEW



1 · Body (PVDF - 1)
2 · Diaphragm seal (EPDM, FPM, PTFE - 1)
5 · Fastening screw (STAINLESS steel - 4)
6 · Washer (STAINLESS steel - 4)
7 · Shutter (PA-GR - 1)
8 · Nut (STAINLESS steel - 1)
9 · Stem (STAINLESS steel - 1)
10 · Bonnet (PA-GR - 1)
13 · Nut (STAINLESS steel - 4)
14 · Protection plug (POM - 4)
15 · Optical position indicator (PVDF - 1)
22 · O-Ring (NBR - 1)
23 · Handwheel (PA-GR - 1)
24 · O-Ring (NBR - 1)
25 · Bonnet (PA-GR - 1)
26 · Fastening screw (STAINLESS steel - 1)

The material of the component and the quantity supplied are indicated between brackets

DISASSEMBLY

If the valve is already installed on the line, shut-off the fluid flow upstream and make sure that there is no pressure. If necessary, fully drain the system downstream. If there are hazardous fluids present, drain and ventilate the valve.

The diaphragm constitutes the part of the valve more subject to mechanical and chemical stress from the fluid. Consequently, the condition of the diaphragm must be checked at regular intervals in accordance with the service conditions. To do this, it must be disconnected from the handwheel and from the valve body.

1) Unscrew the four screws (5) and separate the body (1) from the operating mechanism.
2) Unscrew the diaphragm (2) from the shutter (7).
3) If necessary, clean or replace the diaphragm (2).
4) If necessary, lubricate the stem (9).

ASSEMBLY

1) The diaphragm seal (2) must be screwed fully into the compressor (7) in a clockwise direction. If necessary, unscrew slightly in an anticlockwise direction to centre the screw holes.
2) Fix the bonnet (10) to the body (1) using screws (5). Tighten the screws, making sure not to over-compress the diaphragm.

INSTALLATION

The valve can be installed in any position and in any direction.
When starting up the plant, make sure that there are no leaks from between the diaphragm and the valve body. If necessary, tighten the fastening screws (5).

SETTING

The valve is factory set to guarantee a permanent seal without requiring any further intervention. To adjust the setting, rotate the handwheel to the required minimum opening position, remove screw (26) using a hex key.

Remove the bonnet (25) and rotate the handwheel (23) clockwise until a resistance to the rotation is felt.

If necessary, replace the O-Ring (24) in its seating and re-insert the bonnet (25) in the handwheel: the double D connection must fit over the stem (9) and, with a slight twisting action, align the ribs in the bonnet with those in the handwheel.

Tighten screw (26) to a sufficiently high torque value.

Each turn of the handwheel corresponds to 1.75 mm travel.

KEY ABBREVIATIONS

C O-Ring code

d nominal external diameter in mm

DN nominal internal diameter in mm

EPDM ethylene propylene elastomer

FPM (FKM) fluoroelastomer

g weight in grams

HIPVC PVC high impact

kg weight in kilograms

L length in metres

M bolts

MRS minimum guaranteed breaking strength of the material at 20° C - water - for 25 years of service

n number of flange holes

NBR acrylonitrile butadiene elastomer

PBT polybutylene terephthalate

PE polyethylene

PN nominal pressure in bar (max. operating pressure at 20° C water)

POM polyoxymethylene

PP-GR fibreglass reinforced polypropylene

PP-H polypropylene homopolymer

PVC-C chlorinated polyvinyl chloride

PVC-U unplasticized polyvinylchloride

PVDF polyvinylidene difluoride

PTFE polyethrafluorethylene

R nominal thread size in inches

S thickness series = $\frac{\text{SDR-1}}{2}$

s pipe thickness in mm

SDR standard dimension ratio = d / s

U number of flange holes for flanged valves

Code LEVARAF

Aliaxis
UTILITIES & INDUSTRY

FIP - Formatura Iniezione Polimeri
Loc. Pian di Parata, 16015 Casella Genova Italy
Tel. +39 010 9621.1
Fax +39 010 9621.209
info.fip@aliaxis.com
www.fipnet.com

FIP