



PIPE, FITTINGS AND MANUAL VALVES

PVC-C

The TemperFIP100® PVC-C 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 fluids at maximum operating temperatures of no more than 100 °C.

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PIPE, FITTINGS
AND MANUAL
VALVES
IN PVC-C

PVC-C GENERAL CHARACTERISTICS

Developed in 1958 by the company BF Goodrich, now LUBRIZOL, PVC-C (post-chlorinated polyvinyl chloride) is obtained by chlorinating the PVC resin in suspension. During the transformation, alternate hydrogen atom monomers in the PVC molecular chain are replaced by Chlorine atoms. The process produces a high performance resin with excellent thermal stability and chemical and mechanical strength up to temperatures of 100°C.

In 1986, FIP were the first European Company to produce an integrated system of valves, fittings and pipes called **TemperFIP100®**. The result was the creation of an entire series of products for industrial plants. Today, thanks to twenty years or more collaboration with the company LUBRIZOL EUROPE, the production of the TemperFIP line of extruded and injected moulded pipes, fittings and valves makes use of **PVC-C CORZAN™** resins, specifically designed for industrial applications.

PVC-C resins are fully compatible for use in transporting water to treatment plants, as well as for conveying demineralised water and spa water.

The PVC-C TemperFIP100® system represents one of the more economical solutions in the field of thermoplastic materials and metals, able to resolve the difficulties encountered in process and service lines transporting hot corrosive fluids in the industrial sector, as well as in domestic hot and cold water distribution systems.

The main reasons for this preference are the unique chemical-physical characteristics of the resin, which include:

- **High chemical resistance:**

the use of CORZAN™ resin, obtained through the chlorination of homopolymer PVC, can guarantee high chemical resistance, in particular against strong inorganic acids, saline and alkaline solutions and paraffin hydrocarbons. It is not recommended for the transport of polar organic compounds, including some types of chlorinated and aromatic solvents. Its electrochemical corrosion resistance guarantees excellent reliability for conveying domestic hot water in conventional and solar panel systems.

- **Optimum thermal and mechanical properties:**

TemperFIP100® PVC-C is typically used in temperatures between 20°C and 85°C and has extremely low thermal expansion coefficients, thus guaranteeing excellent mechanical strength able to withstand service pressures of around 10-16 bar at 20°C. Its excellent thermal stability (VICAT value according to EN ISO 15493) together with its optimum creep behaviour (circumferential breaking strength according to ASTM D 2837 equal to 1000 PSI 82 °C, 100,000 hours) allows it to be used at temperatures up to around 95 °C for special applications and to satisfy particular performance requirements. The reduced coefficient of thermal conductivity ($\lambda = 0.16 \text{ W/m } ^\circ\text{C}$ according to ASTM C177) virtually eliminates condensation problems and reduces heat loss when transporting hot fluids.

- **Physical characteristics:**

PVC-U resins are characterised by their low permeability to oxygen and reduced water absorption (0.07% at 23 °C according to ASTM D 570). The physical properties of the material render it highly resistant to ageing and aggression by atmospheric agents (UV radiation) thanks to the presence of Titanium dioxide in the compound.

- **Fire resistance:**

PVC-U resins also have excellent fire resistance with a flash point of 482 °C. The flame, in fact, only persists if the oxygen concentration is three times that of atmospheric or in the presence of a flame from an external source. **PVC-C CORZAN™** resins are also classified VO, 5VB and 5VA according to UL94.

Density		
Test method	ISO 1183	ASTM D792
Unit of measurement	g/cm ³	g/(10min)
Value	Valves/fittings: 1.50 Pipes: 1.50	Valves/fittings: 1.50 Pipes: 1.50

Modulus of elasticity		
Test method	ISO 178	ASTM D790
Unit of measurement	MPa = N/mm ²	MPa = N/mm ²
Value	Valves/fittings: 2800 Pipes: 2420	Valves/fittings: 2992 Pipes: 2689

IZOD notched impact strength at 23°C		
Test method	ASTM D256	
Unit of measurement	ftlbs/in	
Value	Valves/fittings: 1.8 - Pipes: 1.6	

Ultimate elongation		
Test method	ISO 527-1, ISO 527-2	
Unit of measurement	%	
Value	Valves/fittings: 16 - Pipes: 5	

Rockwell hardness		
Test method	ASTM D 785	
Unit of measurement	R	
Value	Valves/fittings: 120 - Pipes: 116	

Tensile strength		
Test method	ISO 527-1, ISO 527-2	
Unit of measurement	MPa = N/mm ²	
Value	Valves/fittings: 54 - Pipes: 54	

VICAT (1 kg) softening point		
Test method	EN ISO 15493	
Unit of measurement	°C	
Value	Valves/fittings: ≥ 103 - Pipes: ≤ 110	

Heat distortion temperature HDT (0.46 N/mm²)		
Test method	ASTM D 648	
Unit of measurement	°C	
Value	Valves/fittings: 110 - Pipes: 113	

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: 0.16 Pipes: 0.16	Valves/fittings: 0.16 Pipes: 0.16

Coefficient of linear thermal expansion		
Test method	DIN 53752	ASTM D 696
Unit of measurement	m/(m °C)	m/(m °C)
Value	Valves/fittings: 5.6 x 10 ⁻⁵ Pipes: 6.6 x 10 ⁻⁵	Valves/fittings: 5.6 x 10 ⁻⁵ Pipes: 6.6 x 10 ⁻⁵

Limiting Oxygen Index		
Test method	ISO 4859-1	ASTM D 2863
Unit of measurement	%	
Value	Valves/fittings: 60 Pipes: 60	

REFERENCE STANDARDS

Production of the TemperFIP100® PVC-C 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 standard **ISO 14001**. All products are manufactured in accordance with a quality assurance system complying with standard **ISO 9001**.

- **ANSI B16.5**
Pipe flanges and stubs-NPS 1/2 to NPS 24 mm/inch.
- **ASTM D1784 cl. 23548B**
Rigid PVC and PVC-C compounds (for industrial applications).
- **ASTM F437**
PVC-C threaded pipe fittings, sch. 80.
- **ASTM F439**
PVC-C pipe fittings.
- **ASTM F441**
PVC-C pipe, sch. 40 and 80.
- **BS 10**
Specification for flanges and bolts for pipes, valves and fittings.
- **BS 1560**
Flanges for pipes, valves and fittings (Class designated). Steel, cast iron and copper alloy flanges. Specification for steel flanges.
- **BS 4504**
Flanges for pipes, valves and fittings (PN designated).
- **DIN 2501**
Flanges, dimensions.
- **DIN 2999**
Threads for pipes and fittings.
- **DIN 8063**
Dimensions of PVC-C fittings.
- **DIN 8079-8080**
PVC-C pipes, dimensions.
- **DIN 16962**
PVC-C fittings for butt-welding or socket fusion, dimensions.
- **DIN 16963**
Pipe connections and pipe components for pressurised fluids in HDPE.
- **EN 558-1**
Industrial valves - face-to-face and centre-to-face 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 15493**
Specifications for components and the system (Pipes, Fittings and Valves) in PVC-C for industrial applications.
- **ISO 228-1**
PVC-C fittings with threaded connections.
- **ISO 5211**
Industrial valves - Part-turn actuator couplings

- **ISO 7005-1**

Pipe flanges - Part 1: Steel flanges.

- **JIS B 2220**

Steel pipe flanges.

- **UNI 11242**

Solvent welding of PVC-C pipes, fittings and valves

APPROVALS AND QUALITY MARKS



- **ABS**

The TemperFIP100® PVC-C system is recognised as suitable for conveying and treating sanitary and conditioning water onboard ships and other units classified by the American Bureau of Shipping (ABS).



- **ACS**

The TemperFIP100® PVC-C system is certified as suitable for coming into contact with water intended for human consumption according to the Attestation de conformité sanitaire (ACS).



- **Bureau Veritas**

The TemperFIP100® PVC-C system is recognised as suitable for conveying and treating sanitary and conditioning water onboard ships and other units classified by the Bureau Veritas - Marine Division.



- **DIBt**

TemperFIP100® PVC-C valves have been tested and certified by DIBt (Deutsche Institut für Bautechnik)



- **DNV**

The TemperFIP100® PVC-C system is recognised as suitable for conveying and treating sanitary and conditioning water onboard ships and other units classified by DNV.



- **GOST-R - EAC**

The TemperFIP100® PVC-C system is GOST-R and EAC certified in accordance with Russian regulations on Safety, Hygiene and Quality



- **Lloyd's Register**

The TemperFIP100® PVC-C pipes and fittings are recognised as suitable for conveying and treating sanitary and conditioning water onboard ships and other units classified by Lloyd's Register.



- **NSF (National Sanitation Foundation USA)**

FIP PVC-C ball valves are listed according to the NSF/ANSI Standard 61 - Drinking Water System Components - Health Effects.

TA-Luft

- **TA-Luft**

TemperFIP100® PVC-C 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**










TemperFIP100® PVC-C valves and fittings are certified in accordance with Ukrainian regulations on Safety, Hygiene and Quality.



- **WRAS**

TemperFIP100® PVC-C valves are recognised by the WRAS (Water Regulation Advisory Scheme - UK)

MAIN PROPERTIES

Properties of PVC-C		Advantages
Thermal resistance		- service range 0 °C -100 °C (see pressure/temperature regression curve)
Low surface roughness		<ul style="list-style-type: none"> - high flow coefficients (super smooth internal surface) - pressure drop constant over time - low risk of stoppages due to scaling - reduced transfer of material to the transported fluid
Chemical resistance		- excellent 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		- drastically reduced management costs thanks to the long service life
Insulating		<ul style="list-style-type: none"> - non-conductive (immune to galvanic corrosion) - no condensation problems - minimum heat loss
The thermoplastic with the lowest linear thermal expansion		<ul style="list-style-type: none"> - Reduced need for supports and expansion joints, resulting in considerable advantages in terms of plant design
Easy to join (solvent weld sockets)		- reduced installation costs thanks to the "solvent weld" joint effected using a suitable solvent cement
Excellent fire resistance		- more resistant to combustion than the more commonly used thermoplastics, also due to the presence of self-extinguishing chlorine
Optimum mechanical characteristics		- PVC-C satisfies the need to provide adequate mechanical strength and complies with the requirements of industrial plant design

SOLVENT WELDING INSTRUCTIONS

Solvent welding, or joining using solvent cement, is the longitudinal joining system used for connecting TemperFIP100® PVC-C pipes and fittings.

The "solvent welding" is carried out using solvent cements obtained by dissolving PVC-C polymer in a solvent mixture. This solvent liquefies the walls of the pipe and/or fitting, allowing the constituent material to chemically combine and be subsequently welded. Chemical welding allows permanent joints to be achieved possessing chemical and mechanical strength characteristics identical to those of the pipes and fittings joined. THE solvent cements must be selected according to the type of thermoplastic resin to weld, in that the nature of the solvents vary, as does the weld material contained in them. It must be remembered, therefore, that all the solvent cements designed for joining TemperFIP100® pipes and fittings and forming part of the TemperFIP100® system must be used to join pipes, fittings and valves of the same material.

The same solvent cement must not, under any circumstances, be used for joining other products with different thermoplastic resins to those used in the TemperFIP100® system .

To this end, FIP has designed special TemperGLUE and TemperGLUE/Weld-On 724 solvent cements using the same "PVC-C CORZAN™" resin used for the production of pipes, fittings and valves, and which guarantees highly reliable permanent joints.

Before starting any solvent welding operations, the efficiency and condition of the equipment used and the pieces to be assembled must be verified, in particular the uniformity, fluidity and expiry date of the solvent cement.

- 1) Cut the pipe perpendicular to its axis to obtain a clean square section, preferably using a wheeled pipe cutter designed specifically for thermoplastic pipes (fig. 1).
- 2) Chamfer the outer edges of the pipe in order to ensure that it enters the socket of the fitting at an angle of 15° (refer to the values reported in table "Insertion, solvent welding and chamfer length"). The chamfering operation must be carried out at all costs, otherwise the lack of chamfer can lead to the solvent being scraped off the surface of the fitting, thus compromising the effectiveness of the joint (fig. 2).
- 3) Measure the depth of the socket of the fitting to the internal shoulder and mark the corresponding distance on the end of the pipe (fig. 3-4).
- 4) Using a clean paper towel or applicator soaked in Cleaner-Primer or Primer P70 (TemperFIP), remove any traces of dirt or grease from the outer surface of the pipe for the entire cementing length. Repeat the same operation on the internal surface of the socket of the fitting, leaving the surfaces softened (fig. 3-4).

Leave the surfaces to dry for a few minutes before applying the solvent cement. Remember that, in addition to cleaning the joint surfaces, Cleaner-Primer

Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



TemperFIP100® or Primer P70 also performs the important role of softening and preparing the surface to receive the solvent cement, an operation that enables a perfect joint to be obtained.

- 5) Apply the TemperGLUE or TemperGLUE/Weld-On 724 solvent cement in a uniform manner longitudinally over both parts to be assembled (outer surface of the pipe and internal coupling surface of the fitting) using an applicator or suitably sized coarse brush (table “Characteristics and dimensions of brushes and applicators”).

It is advisable to use an applicator/brush of dimensions not less than half the diameter of the pipe (fig. 7-8).

The TemperGLUE solvent cement must be applied along the entire length of the joining surface of both the pipe and the fitting:

- for the entire depth of the socket of the fitting as far as the internal shoulder
- for the entire joint length of the pipe previously marked on the outer surface

- 6) Fully insert the pipe into the fitting immediately and without any rotation. Only after this operation will it be possible to slightly rotate both ends (max. 1/4 of a turn between pipe and fitting). This rotation movement will render the layer of applied solvent cement more uniform.
- 7) The pipe must be inserted in the fitting as soon and as quick as possible (after no more than 20-25 seconds is recommended).

Depending on the external diameter of the pipe and, as a result, possible handling difficulties, the insertion of the pipe into the fitting must be carried out:

- manually by one person for external diameters < 90 mm.
- manually by two people for external diameters from d 90 to d < 160 mm.
- using mechanical pipe-pullers for external diameters > 160 mm.

- 8) Immediately after fully inserting the pipe in the fitting, apply pressure to the joined parts for a few seconds. Then use crepe paper or a clean cloth to remove any excess solvent cement from the outer surfaces, and from internal surfaces where possible (fig. 9).

- 9) Solvent cement setting; the joined parts must be left to stand in order to allow the solvent cement to set naturally without generating any unnecessary stress. The setting time depends on the amount of stress that the joint will be placed under. In particular, the following minimum setting times must be respected according to the ambient temperature:

- before handling the joint:
 - from 5 to 10 minutes for ambient T. > 10 °C
 - from 15 to 20 minutes for ambient T. < 10 °C
- for repair joints on pipes of any size or pressure not subject to hydraulic testing:
 - 1 hour for each atm of applied pressure
- for joints in pipes and fittings of any diameter subject to pressure testing up to PN 16:
 - minimum 24 hours

The solvent cement setting times indicated are valid at ambient temperature (approx. 25 °C.). For particular climatic conditions (humidity, temperature, etc...), we recommend you contact our technical services department and/or the solvent cement manufacturer for more information.

Fig. 6



Fig. 7



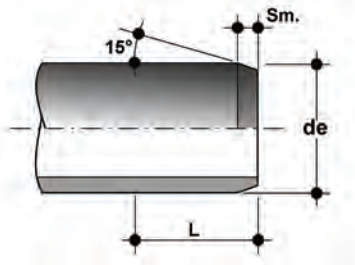
Fig. 8



Fig. 9



INSERTION, SOLVENT WELDING AND CHAMFER LENGTH



External diameter de (mm)	Solvent welding length L (mm)	Chamfer Sm (mm)
16	14	1.5
20	16	1.5
25	18.5	3
32	22	3
40	26	3
50	31	3
63	37.5	5
75	43.5	5
90	51	5
110	61	5
160	86	5
225	118.5	5÷6

CHARACTERISTICS AND DIMENSIONS OF BRUSHES AND APPLICATORS

de (mm)	Type and dimensions of Brush or Applicator
16 - 25	Round (8 - 10 mm)
32 - 63	Round (20 - 25 mm)
75 - 160	Rectangular / Round (45 - 50 mm)
>160	Rectangular / Cylindrical (45 - 50 mm)

WARNINGS

- In the case where the external diameter of the pipe and the internal diameter of the fitting are at opposite extremes of their tolerance values, the dry pipe cannot be inserted in the dry socket of the fitting. Insertion will only be possible after having applied the cleaner-primer and solvent cement to both parts to be joined.
- TemperGLUE and TemperGLUE/Weld-On 724 solvent cements are produced using the same PVC-C CORZAN™ resin that FIP uses for the production of the pipes, fittings and valves that make up the TemperFIP system. Unless otherwise specified, the solvent cement used on the surfaces to join must also be usable with the following tolerances:
 - Maximum interference 0.2 mm.
 - Maximum clearance 0.3 mm.
- A combination of TemperGLUE/Weld-On 724 and Primer P70 for PVC-C CORZAN™ is recommended for particularly aggressive chemical fluids (strong acids and bases).
- When using TemperGLUE solvent cement and Primer TemperFIP Cleaners, the following precautions should be adopted:
 - Use gloves and safety glasses to protect hands and eyes.
 - Use the cleaner and solvent cement in a working environment with sufficient ventilation to avoid the formation of pockets of air containing concentrations of evaporated solvent, which can irritate the respiratory tract and eyes.
- Due to the volatile nature of the solvents in the cleaner and cement, the containers must be closed immediately after use.
- Solvents in the gaseous phase tend to form flammable mixtures. Therefore, remove any ignition sources such as welding operations, accumulation of electrostatic charges, etc. from the work area, and do not smoke. In all cases, it is advisable to adhere strictly to the solvent cement manufacturer's warnings written on the packaging.
- IN ORDER to prevent a deterioration in the performance of the cleaner and solvent cement, the joining operations should be carried out within an ambient temperature range of between + 5 °C and + 40 °C.
- The amount of solvent cement used on the joints depends on a number of factors (environmental conditions, pipe size, cement viscosity, operator experience, etc.) which are often difficult to quantify. In this respect, Table "Rigid PVC-C pipes and fittings. Theoretical solvent cement consumption" reports the approximate quantities of cement normally used for joining various diameter pipes and fittings.
- After having completed all the joints and prior to putting the lines into service, make sure that the insides of the pipes and fittings are completely free of any solvent traces/vapours. This will prevent contamination of the fluids conveyed.

RIGID PVC-C PIPES AND FITTINGS THEORETICAL SOLVENT CEMENT CONSUMPTION

Pipe/Fitting diameter d (mm)	Number of joints per kg of solvent cement
16	550
20	500
25	450
32	400
40	300
50	200
63	140
75	90
90	60
110	40
160	15
225	6

MOST COMMON DEFECTS

The table reports the most common types of defect encountered if the correct solvent welding procedure is not followed.

Solvent cement too fluid (incorrect diluent addition)

Immediate effect	Solvent weld failure
Consequence	Joint separation or leaks from between the pipe and fitting

Excess solvent cement

Immediate effect	Internal and external runs beyond the joint zone
Consequence	Weakening of the outer surface of the joint area and formation of bubbles with micro-cracks/sources of fracture in the base material

Excessively dense solvent cement due to evaporated solvent

Immediate effect	Solvent weld failure
Consequence	Joint separation or leaks from between the pipe and fitting. Possible surface cracking triggering cracks in the base material

Insufficient and/or incorrect distribution of solvent cement

Immediate effect	Solvent weld failure or local weakness
Consequence	Joint separation or leaks from between the pipe and fitting

Incorrect pipe insertion (incomplete, excessive, misaligned)

Immediate effect	Imperfect joint
Consequence	Transmission of mechanical stresses from the pipe to the fitting and/or leaks from the joint

Impurities and/or humidity on the surfaces of the parts to join

Immediate effect	Imperfect joint
Consequence	Joint separation or leaks (fluid seepage) from between the pipe and fitting



ISO-UNI PIPE
PVC-C

TemperFIP100® pressure pipe

PIPE ISO-UNI

Pipes under pressure with cold chemical weld jointing systems (solvent welding) using suitable solvent cement (TemperGLUE WELD-ON) and primer-cleaner.

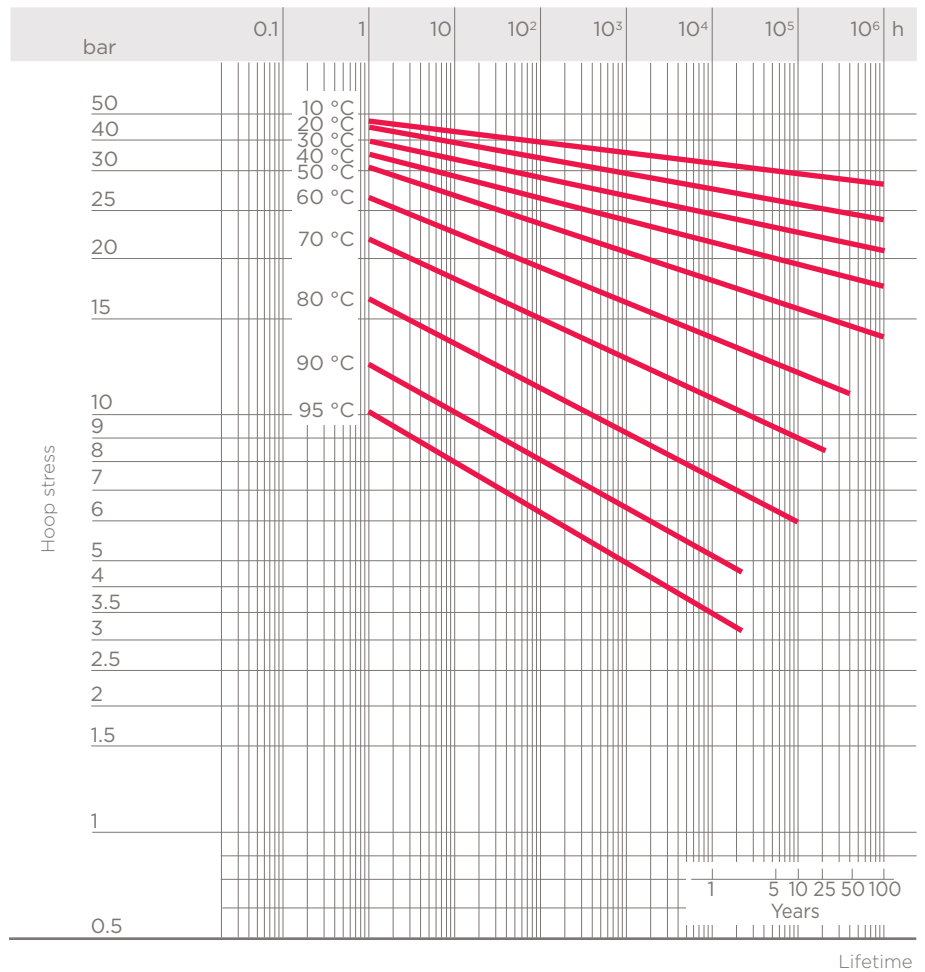
TemperFIP100® PRESSURE PIPE

Technical specifications	
Size range	d 16 ÷ d 225 (mm)
Nominal pressure	SDR 13.6 (PN16) with water at 20° C SDR 21 (PN10) with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493 Can be coupled to pipes according to EN ISO 15493
Reference standards	Construction criteria: EN ISO 15493 Test methods and requirements: EN ISO 15493 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Material	PVC-C

TECHNICAL DATA

REGRESSION CURVE FOR PVC-U PIPE

Regression coefficients in accordance with standard EN ISO 15493 for minimum MRS = 25 N/mm² (MPa).

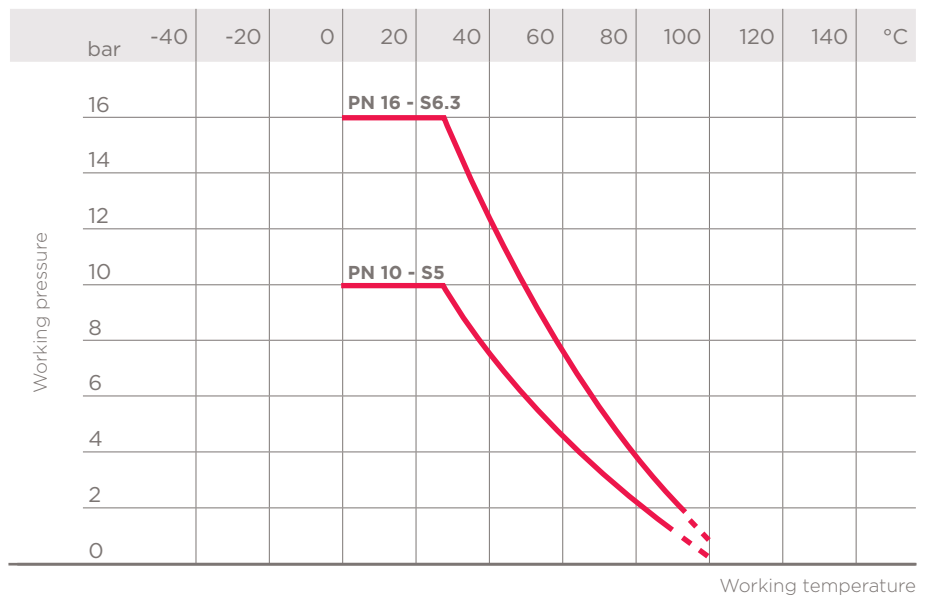


PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.

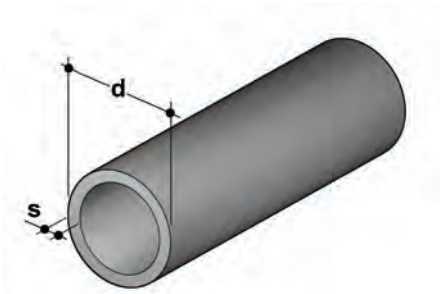
Note

When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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

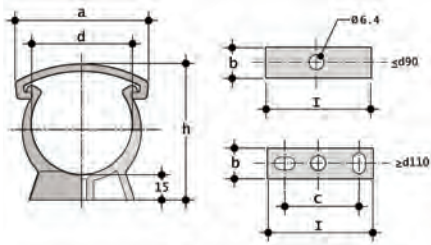


TemperFIP100® PRESSURE PIPE

PVC-C Corzan® pressure pipe according to standards EN ISO 15493 and DIN 8079/8080, light grey RAL 215, standard length 5m

d	DN	S mm	kg/m	PN16 Code SDR 13.6 - S6.3
16	10	1.2	0.110	PIPEC13016
20	15	1.5	0.170	PIPEC13020
25	20	1.9	0.260	PIPEC13025
32	25	2.4	0.420	PIPEC13032
40	32	3.0	0.630	PIPEC13040
50	40	3.7	0.970	PIPEC13050
63	50	4.7	1.530	PIPEC13063
75	65	5.6	2.200	PIPEC13075
90	80	6.7	2.880	PIPEC13090
110	100	8.2	4.310	PIPEC13110
160	150	11.8	9.040	PIPEC13160

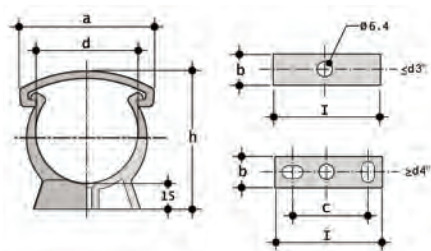
d	DN	S mm	kg/m	PN10 Code SDR 21 - S10
110	100	5.3	2.890	PIPEC21110
160	150	7.7	6.060	PIPEC21160
225	200	10.8	12.200	PIPEC21225



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

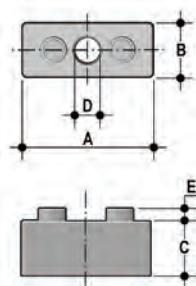
*for pipe support systems, refer to guidelines DVS 2210-1 (Planning and execution - above-ground pipe systems)
**resale product



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*

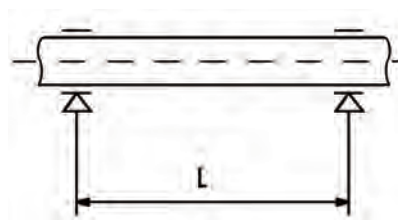
d	A	B	C	D	E	Pack	Master	Code
**32	33	16	14	8	4	20	120	DSM032
**40	41	17	17	8	4	10	80	DSM040
**50	51	18	17	8	4	10	50	DSM050
**63	64	19	22.5	8	4	10	40	DSM063
**75	76	20	34.5	8	4	10	40	DSM075

*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 PVC-C pipes conveying liquids of density 1 g/cm³ (water and other fluids of equal intensity).

For pipes of SDR 13.6 / S 6.3 / PN 16:

d mm	distance L in mm at different wall temperatures							
	≤ 20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	90 °C
16	1000	950	900	850	750	675	600	500
20	1150	1100	1025	950	875	775	700	600
25	1200	1150	1100	1000	900	800	700	600
32	1350	1250	1200	1100	1000	900	800	700

For pipes of SDR 21 / S 10 / PN 10:

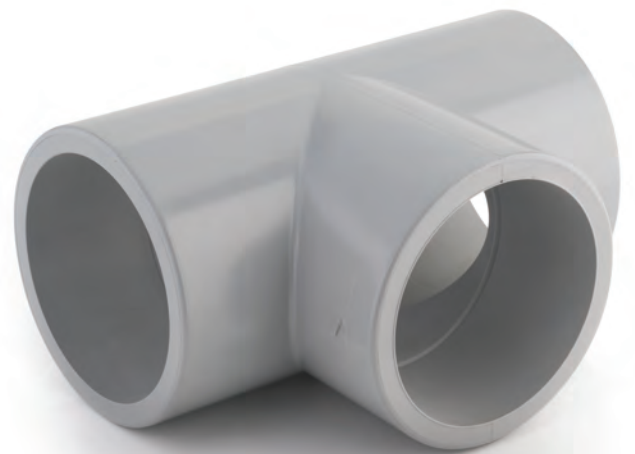
d mm	distance L in mm at different wall temperatures							
	≤ 20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	90 °C
40	1500	1400	1300	1250	1150	1050	900	800
50	1650	1600	1500	1400	1300	1200	1100	900
63	1850	1750	1650	1600	1500	1350	1250	1050
75	2050	1950	1850	1750	1650	1500	1350	1200
90	2250	2100	2000	1900	1800	1650	1500	1300
110	2500	2350	2200	2100	1950	1800	1650	1450
125	2650	2500	2350	2250	2100	1950	1750	1550
140	2800	2650	2500	2350	2200	2050	1820	1650
160	3000	2850	2700	2550	2400	2200	2000	1750
180	3150	3000	2850	2700	2500	2300	2100	1850
200	3350	3150	3000	2850	2650	2450	2200	1950
225	3550	3350	3200	3000	2800	2600	2350	2100
250	3750	3550	3350	3150	3000	2750	2500	2200
280	3950	3750	3550	3350	3150	2900	2650	2350
315	4200	4000	3750	3550	3350	3050	2800	2450
355	4450	4250	4000	3800	3550	3250	2950	2650
400	4750	4500	4250	4000	3750	3450	3150	2800

For different SDR values, multiply the data in the table by the following factors:
 1.08 for SDR 13.6 / S6.3 / PN16 size range d40 - d400
 1.12 for SDR 11 / S5 / PN20 entire size range

Supporting PVC-C 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 in the table must be multiplied by the factors in the table below.

Fluid density in g/cm ³	Support factor
1.25	0.96
1.50	0.92
< 0.01	1.40 for SDR 21 / S10 / PN10 1.27 for SDR 13.6 / S6.3 / PN16 1.23 for SDR 11 / S5 / PN20



ISO-UNI FITTINGS
PVC-C

TemperFIP100® solvent weld fittings, metric series

FITTINGS ISO-UNI

Series of fittings designed for conveying fluids under pressure with a cold chemical weld jointing system (solvent welding) using a suitable solvent cement (TemperGLUE WELD-ON) and cleaner-primer.

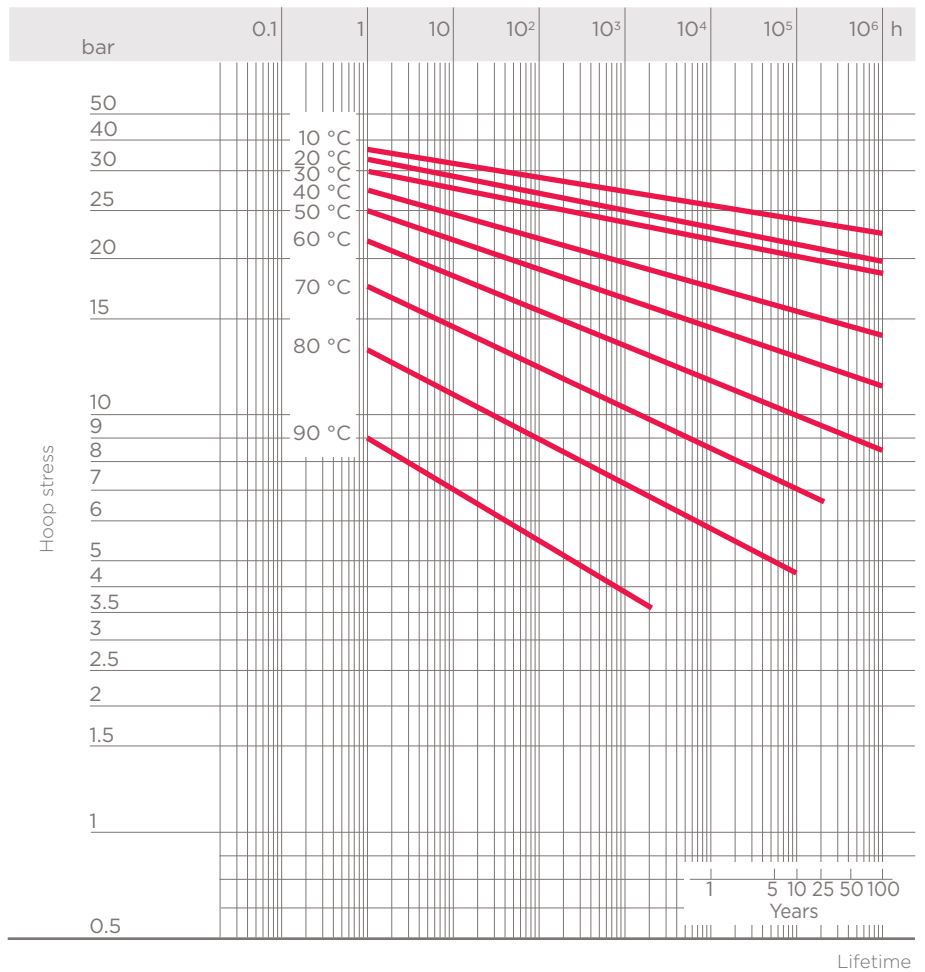
SOLVENT WELD FITTINGS, METRIC SERIES

Technical specifications	
Size range	d 16 ÷ 225 (mm)
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493 Can be coupled to pipes according to EN ISO 15493 Flanging system: ISO 7005-1, EN ISO 15493, DIN 2501, ANSI B.16.5 cl. 150
Reference standards	Construction criteria: EN ISO 15493 Test methods and requirements: EN ISO 15493 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Fitting material	PVC-C
Seal material	EPDM, FPM

TECHNICAL DATA

REGRESSION CURVE FOR PVC-C FITTINGS

Regression coefficients in accordance with standard EN ISO 15493 for minimum MRS = 20 N/mm² (MPa).

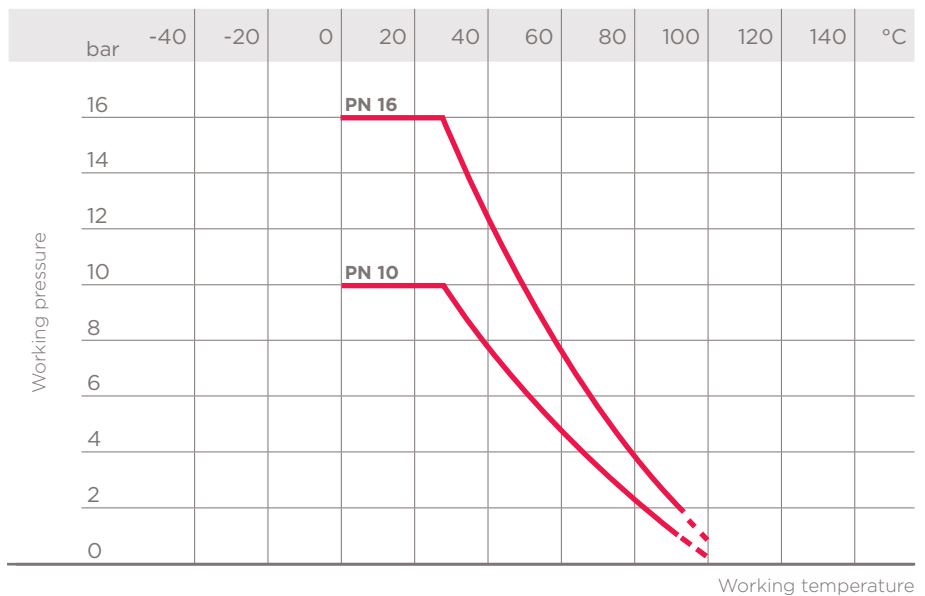


PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.

Note

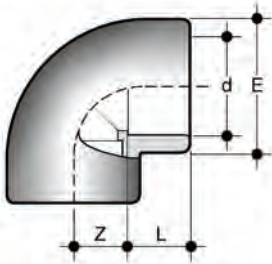
When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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

Fig. A

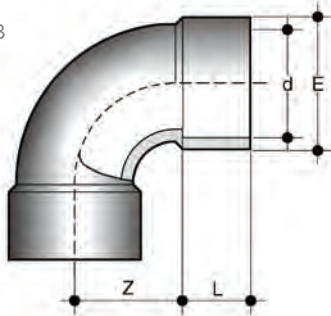


GIC

90° elbow with solvent weld sockets (fig. A)

d	PN	E	L	Z	g	Code
16	16	22	14	9	12	GIC016
20	16	27	16	11.5	20	GIC020
25	16	33	19	14	34	GIC025
32	16	41	22	16.5	56	GIC032
40	16	50	26	22.5	95	GIC040
50	16	61	31	27	155	GIC050
63	16	76	38	33.5	283	GIC063
75	16	91	44	40.3	490	GIC075
90	16	107	51	48	745	GIC090
110	16	130	61	60	1265	GIC110
160	16	193	86	88	4500	GIC160

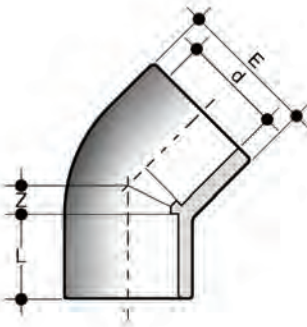
Fig. B



GIC

90° elbow with solvent weld sockets (fig. B)

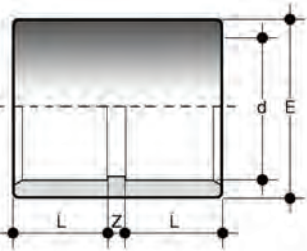
d	PN	E	L	Z	g	Code
225	10	258	119	172	9270	GIC225



HIC

45° elbow with solvent weld sockets

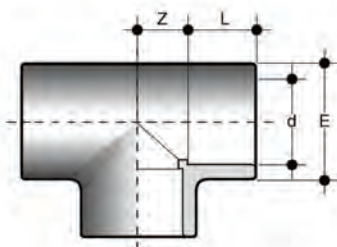
d	PN	E	L	Z	g	Code
20	16	28	16	5.5	20	HIC020
25	16	34	19	6	32	HIC025
32	16	42.5	22	7	58	HIC032
40	16	52	26	10.5	101	HIC040
50	16	64	31	11.7	175	HIC050
63	16	80	38	14	305	HIC063
75	16	90	44	17	344	HIC075
90	16	107	51	21.5	587	HIC090
110	16	130	61	26	1007	HIC110
160	16	192	86	38	3255	HIC160
225	10	260	121	55	7150	HIC225



MIC

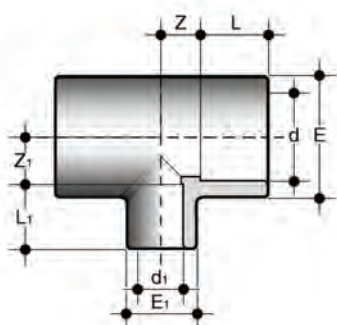
Solvent weld double socket

d	PN	E	L	Z	g	Code
16	16	22	14	3	9	MIC016
20	16	27	16	3	11	MIC020
25	16	33	19	3	21	MIC025
32	16	41	22	3	31	MIC032
40	16	50	26	3	58	MIC040
50	16	61	31	3	90	MIC050
63	16	75	38	3	160	MIC063
75	16	89	44	3	260	MIC075
90	16	108	51	5	465	MIC090
110	16	130	61	9	750	MIC110
160	16	186	86	9	1820	MIC160
225	10	260	119	11	5360	MIC225



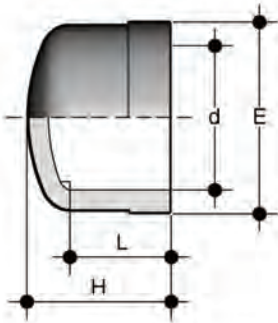
TIC
90° Tee with solvent weld sockets

d	PN	E	L	Z	g	Code
16	16	22	14	9	15	TIC016
20	16	27	16	11	25	TIC020
25	16	33	19	14	45	TIC025
32	16	41	22	17.5	75	TIC032
40	16	50	26	22	125	TIC040
50	16	61	31	27	195	TIC050
63	16	76	38	33.5	394	TIC063
75	16	91	44	38.5	667	TIC075
90	16	109	51	48	1075	TIC090
110	16	133	61	61	1920	TIC110
160	16	192	86	89	5730	TIC160
225	10	258	119	114	10800	TIC225



TRIC
90° reducing Tee with reduced branch and solvent weld sockets

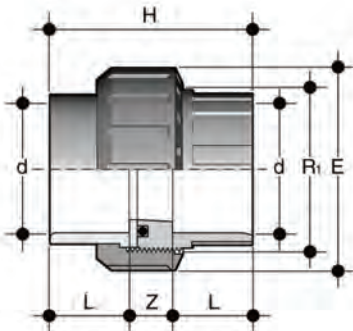
d x d ₁	PN	E	E ₁	L	L ₁	Z	Z ₁	g	Code
25 x 20	16	33	28	19	16	14	14	41	TRIC025020
32 x 20	16	41	28	22	16	17.5	17.5	66	TRIC032020
32 x 25	16	41	34	22	19	17.5	17.5	72	TRIC032025
40 x 20	16	50	29	26	16	22	22	111	TRIC040020
40 x 25	16	50	34	26	19	22	22	111	TRIC040025
50 x 25	16	61	35	31	19	27	27	176	TRIC050025
50 x 32	16	61	42	31	22	27	27	182	TRIC050032
63 x 25	16	76	36	38	19	33.5	33.5	320	TRIC063025
63 x 32	16	76	43	38	22	33.5	33.5	325	TRIC063032
75 x 25	16	91	33	44	16	40.5	39	470	TRIC075025
90 x 25	16	109	33	51	16	48.5	46	773	TRIC090025
110 x 25	16	133	33	61	16	61	56	1170	TRIC110025



CIC

End cap with solvent weld socket

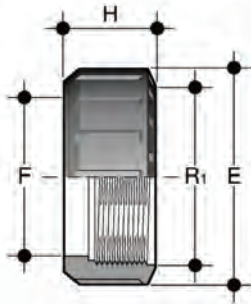
d	PN	E	H	L	g	Code
20	16	28	23	16	9	CIC020
25	16	34	27	19	16	CIC025
32	16	41	31	22	25	CIC032
40	16	51	36	26	42	CIC040
50	16	62	43	31	64	CIC050
63	16	77	51	38	115	CIC063
75	16	91	59	44	205	CIC075
90	16	110	69	51	260	CIC090
110	16	132	83	61	555	CIC110



BIC

Union with solvent weld socket, with O-Ring in EPM or FPM

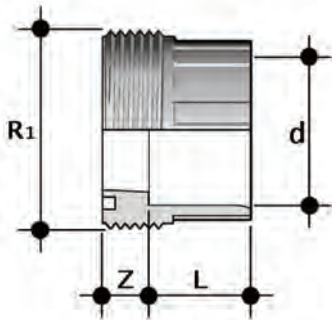
d	R ₁	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
16	3/4	10	16	33	41	14	13	23	BIC016E	BIC016F
20	1	15	16	41	45	16	13	39	BIC020E	BIC020F
25	1 1/4	20	16	50	51	19	13	68	BIC025E	BIC025F
32	1 1/2	25	16	58	57	22	13	94	BIC032E	BIC032F
40	2	32	16	72	67	26	15	163	BIC040E	BIC040F
50	2 1/4	40	16	79	79	31	17	190	BIC050E	BIC050F
63	2 3/4	50	16	98	98	38	22	355	BIC063E	BIC063F



EFC

Union nut with BSP thread for union types BIC, BIFC, BFC, BLC, BIRC, BIFOC, BIROC, BIFXC, BIRXC.

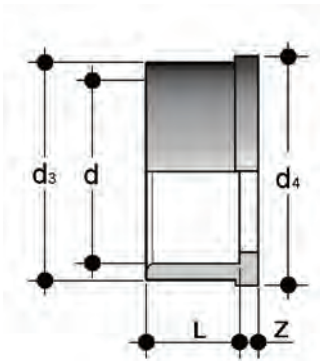
R ₁	d BIC	PN	E	F	H	g	Code
3/4"	16	16	33	22	21	9	EFC034
1"	20	16	41	28	22	13	EFC100
1"1/4	25	16	50	36	25	22	EFC114
1"1/2	32	16	58	42	27	30	EFC112
2"	40	16	72	53	30	50	EFC200
2"1/4	50	16	79	59	34	68	EFC214
2"3/4	63	16	98	74	38	120	EFC234



F/BIC

Union bush for solvent welding, metric series

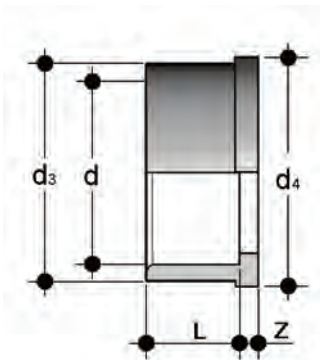
d	R ₁	PN	L	Z	g	Code
16	3/4"	16	14	10	9	FBIC016
20	1"	16	16	10	13	FBIC020
25	1"1/4	16	19	10	25	FBIC025
32	1"1/2	16	22	10	31	FBIC032
40	2"	16	26	12	58	FBIC040
50	2"1/4	16	31	14	63	FBIC050
63	2"3/4	16	38	19	119	FBIC063



Q/BIC

Union end for solvent welding, metric series

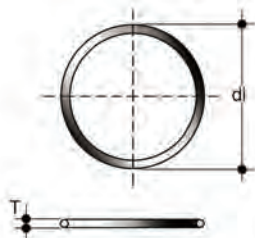
d	PN	d ₃	d ₄	L	Z	g	Code
16	16	22	24	14	3	5	QBIC016
20	16	27.5	30.1	16	3	10	QBIC020
25	16	36	38.8	19	3	16	QBIC025
32	16	41.5	44.7	22	3	23	QBIC032
40	16	53	56.5	26	3	40	QBIC040
50	16	59	62.6	31	3	44	QBIC050
63	16	74	78.4	38	3	82	QBIC063



Q/BAC

Union end for solvent welding, ASTM series

d	PN	d ₃	d ₄	L	Z	g	Code
1/2"	16	27.5	30.1	22.7	3.5	17	QBAC012
3/4"	16	36	38.8	25.9	3.7	25	QBAC034
1"	16	41.5	44.7	29.2	3	36	QBAC100
1"1/4	16	53	56.5	32	5	63	QBAC114
1"1/2	16	59	62.6	35	5	86	QBAC112
2"	16	74	78.4	38.5	5.5	143	QBAC200

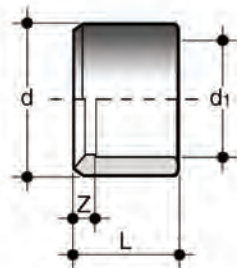


O-Ring

O-Ring for union types BIC, BIFC, BIFOC, BIFXC, BIRXC

Union d	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

Fig. A

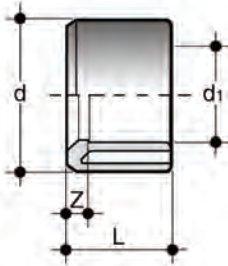


DIC

Reducing bush with solvent weld spigot (d) and solvent weld socket (d₁ reduced) (fig. A)

d x d ₁	PN	L	Z	g	Code
20 x 16	16	16	2	3	DIC020016
25 x 20	16	19	3	6	DIC025020
32 x 20	16	22	6	16	DIC032020
32 x 25	16	22	3	11	DIC032025
40 x 32	16	26	4	18	DIC040032
50 x 40	16	31	5	35	DIC050040
63 x 50	16	38	7	70	DIC063050
75 x 63	16	44	6	92	DIC075063
90 x 75	16	51	7	159	DIC090075
110 x 90	16	61	9	297	DIC110090

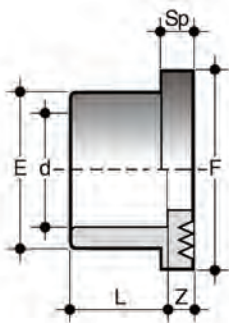
Fig. B



DIC

Reducing bush with solvent weld spigot (d) and solvent weld socket (d₁ reduced) (fig. B)

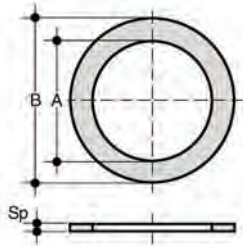
d x d ₁	PN	L	Z	g	Code
40 x 20	16	26	10	27	DIC040020
40 x 25	16	26	7	26	DIC040025
50 x 32	16	31	9	39	DIC050032
63 x 32	16	38	16	81	DIC063032
63 x 40	16	38	11.5	84	DIC063040
75 x 50	16	44	12	126	DIC075050
90 x 50	16	51	20	213	DIC090050
90 x 63	16	51	13	209	DIC090063
110 x 63	16	61	23	365	DIC110063
110 x 75	16	61	17	386	DIC110075
160 x 110	16	86	25	1040	DIC160110
225 x 160	10	119	33	2100	DIC225160



QRC

Stub with serrated face according to DIN 8063 PN 10/16 with solvent weld socket, for use with flat gasket (for gasket sizes, see QHV)

d	DN	PN	E	F	L	Sp	Z	g	Code
20	15	16	27	34	16	3.5	3.5	11	QRC020
25	20	16	33	41	19	3	3	17	QRC025
32	25	16	41	50	22	3	3	27	QRC032
40	32	16	50	61	26	3	3	43	QRC040
50	40	16	61	73	31	3	3	66	QRC050
63	50	16	76	90	38	3	3	116	QRC063
75	65	16	90	103	44	3	3	175	QRC075
90	80	16	108	125	51	5	5	305	QRC090
110	100	16	131	150	61	4	4	490	QRC110
160	150	16	188	212	86	4.5	5	1240	QRC160
225	200	10	245	273	119	25	6	1850	QRC225

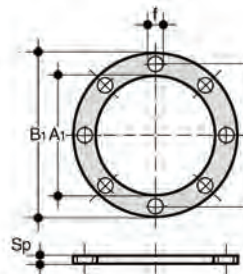


QHV/X

Flat gasket in EPDM and FPM for flanging system 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
125	125	125	166	3	QHVX125E	QHVX125F
140	125	140	186	3	QHVX140E	QHVX140F
160 - 6"	150	160	211	3	QHVX160E	QHVX160F
200	200	200	252	4	QHVX200E	-
225 - 8"	200	225	270	4	QHVX225E	-

Note: for flat gaskets QHV/X d 250 see PVC-U Fittings Catalogue

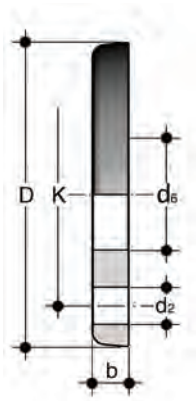


QHV/Y

Flat gasket in EPDM for flanging system according to DIN 2501, EN 1092, self-centring for flanges drilled PN 10/16 up to DN 150 and PN 10 from DN 200

d	DN	A ₁	B ₁	f	l	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
125	125	132	250	18	210	8	3	QHVY125E
140	125	132	250	18	210	8	3	QHVY140E
160 - 6"	150	152	288.5	22	241.5	8	4	QHVY160E
200	200	192	340	22	295	8	4	QHVY200E
225 - 8"	200	215	340	22	295	8	4	QHVY225E

Note: for flat gaskets QHV/Y from d250 to d400, see PVC-U Fittings Catalogue

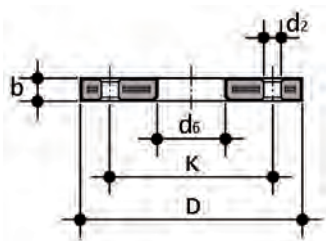


ODC

Backing ring in PVC-C for stubs QRC EN/ISO/DIN.
Drilling: PN10 up to DN100

d	DN	*PMA (bar)	b	d ₂	d ₆	D	K	M	n	** (Nm)	g	Code
20	15	10	11	14	28	96	65	M12x70	4	10	66	ODC020
25	20	10	12	14	34	107	75	M12x70	4	10	93	ODC025
32	25	10	14	14	42	116	85	M12x70	4	10	122	ODC032
40	32	10	15	18	51	142	100	M16x85	4	13	200	ODC040
50	40	10	16	18	62	153	110	M16x85	4	13	245	ODC050
63	50	10	18	18	78	168	125	M16x95	4	15	310	ODC063
75	65	10	19	18	91	188	145	M16x95	4	17	425	ODC075
90	80	10	20	18	109	199	160	M16x105	8	18	455	ODC090
110	100	10	22	18	132	219	180	M16x105	8	20	545	ODC110

*PMA maximum admissible working pressure
**nominal tightening torque

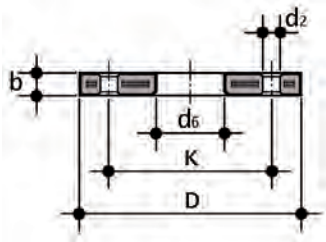


ODB

Steel core backing ring, PP/FRP coated, according to EN/ISO/DIN for stubs QRC
Drilled PN 10/16 up to DN 150

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	14	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	185	145	M16	4	40	1210	ODB075
90	80	16	21	18	109	200	160	M16	8	40	1480	ODB090
***125	100	16	22	18	134	220	180	M16	8	40	1570	ODB125
****180	150	16	27	22	191	285	240	M20	8	60	3470	ODB180

*maximum admissible pressure values according to EN/ISO/DIN.
** nominal tightening torque
*** for use with stubs QRC110
**** for use with stubs QRC160

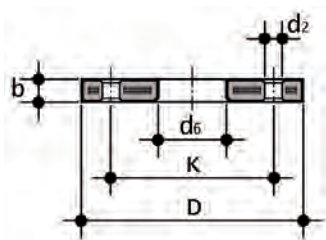


ODB-SW

Steel core backing ring, PP/FRP coated, according to EN/ISO/DIN for stubs QRC

d	DN	*PMA (bar)	b	d ₂	d ₆	D	k	M	n	** (Nm)	g	Code
225	200	16	27	22	247	340	295	M20	8	75	5060	SWOBD225DN200

*PMA maximum admissible working pressure
**nominal tightening torque

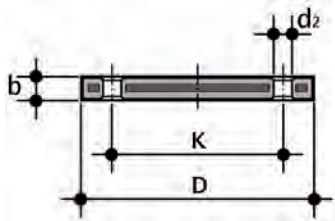


OAB

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

d	DN	*PMA (bar)	b	mm d ₂	inch d ₂	d ₆	D	mm K	inch K	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

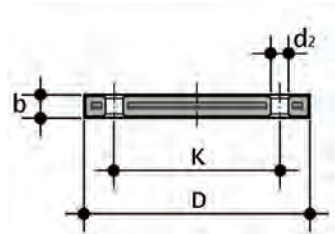


ODBC

Steel core blind flange, PP/FRP coated, 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
110/125	100	16	20	18	220	180	M16	8	40	2800	ODBC110
160/180	150	16	24	22	285	240	M20	8	60	5080	ODBC160

*PMA maximum admissible working pressure
 **nominal tightening torque



OABC

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

d	DN	*PMA (bar)	b	mm d ₂	inch d ₂	D	mm K	inch K	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



ISO-BSP FITTINGS
PVC-C

TemperFIP100® adapter fittings

FITTINGS

ISO-BSP

Series of fittings designed for conveying fluids under pressure with threaded and cold chemical solvent weld jointing systems (solvent welding) using suitable solvent cement (TemperGLUE WELD-ON) and cleaner-primer.

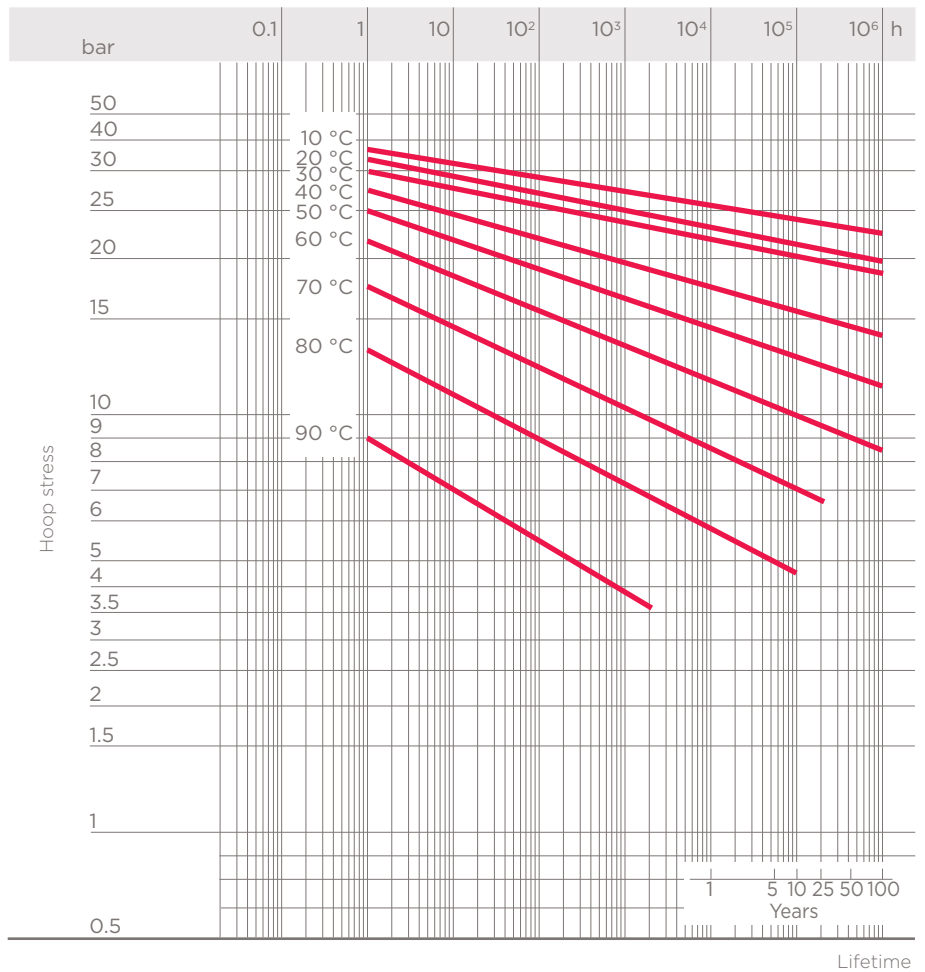
ADAPTOR FITTINGS

Technical specifications	
Size range	d 16 ÷ 63 (mm); R 3/8" ÷ 2"
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493 Can be coupled to pipes according to EN ISO 15493 Thread: ISO 228-1, DIN 2999
Reference standards	Construction criteria: EN ISO 15493 Test methods and requirements: EN ISO 15493 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Fitting material	PVC-C
Seal material	EPDM, FPM

TECHNICAL DATA

REGRESSION CURVE FOR PVC-C FITTINGS

Regression coefficients in accordance with standard EN ISO 15493 for minimum MRS = 20 N/mm² (MPa).

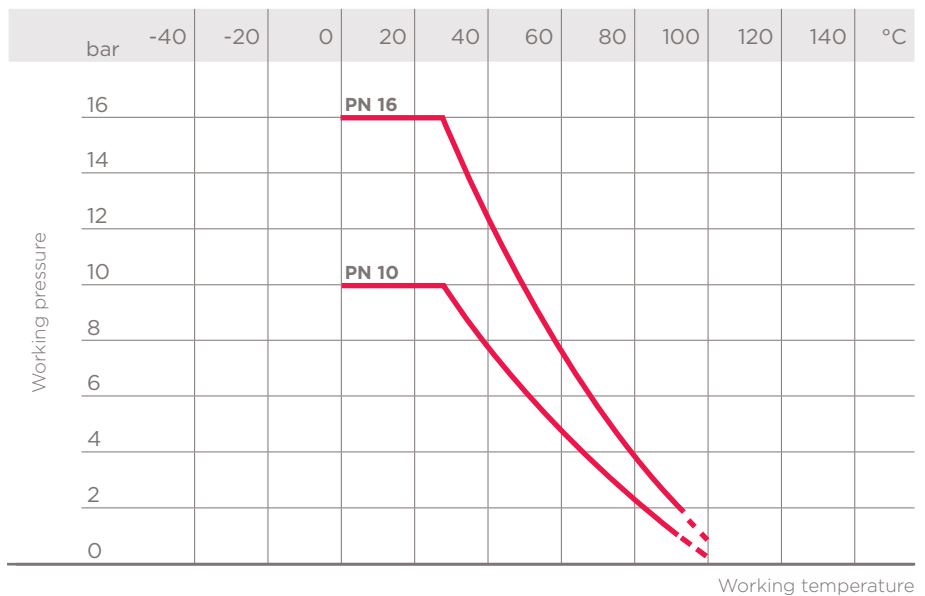


PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.

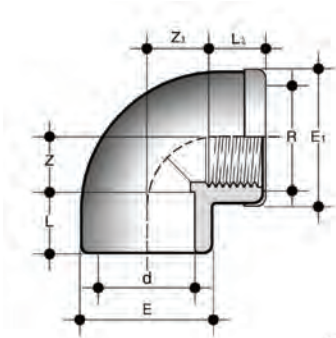
Note

When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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.

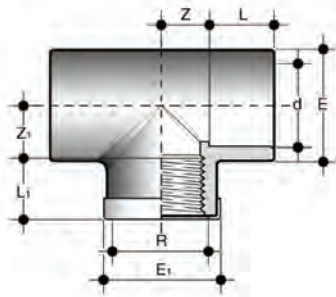
DIMENSIONS



GIMC

90° elbow with reinforced solvent weld socket d and BSP threaded female end R with STAINLESS steel reinforcing ring

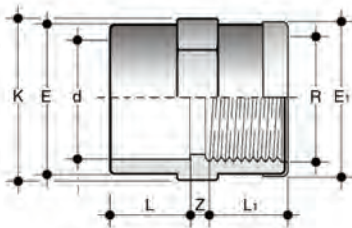
d x R	PN	E	E ₁	L	L ₁	Z	Z ₁	g	Code
16 x 3/8"	16	23.5	24.5	14	11.4	10	13	22	GIMC016038
20 x 1/2"	16	28.5	29.5	16	15	12	13	33	GIMC020012
25 x 3/4"	16	35	36	19	16.3	14	17	53	GIMC025034
32 x 1"	16	43	44	22	19.1	18	20.5	94	GIMC032100
40 x 1" 1/4	16	50	51	26	21.4	22	27	104	GIMC040114
50 x 1" 1/2	16	61	62	31	21.4	27	37	203	GIMC050112
63 x 2"	16	76	77	38	25.7	33	46	380	GIMC063200



TIMC

90° Tee with reinforced solvent weld socket d and BSP threaded female end R with STAINLESS steel reinforcing ring

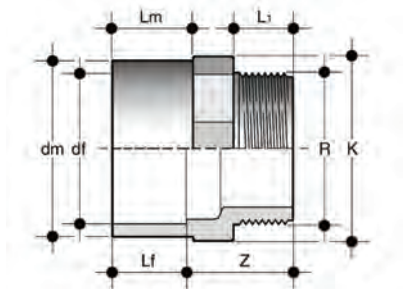
d x R	PN	E	E ₁	L	L ₁	Z	Z ₁	g	Code
16 x 3/8"	16	23.5	24.5	14	11.4	9	11	25	TIMC016038
20 x 1/2"	16	28.5	29.5	16	15	12	13	40	TIMC020012
25 x 3/4"	16	35	36	19	16.3	15	17	63	TIMC025034
32 x 1"	16	43	44	22	19.1	18	21	118	TIMC032100
40 x 1" 1/4	16	50	51	26	21.4	21.5	27	137	TIMC040114
50 x 1" 1/2	16	61	62	31	21.4	27	37	231	TIMC050112
63 x 2"	16	76	77	38	25.7	33.5	46	457	TIMC063200



MIMC

Double socket with solvent weld socket d and BSP threaded female end r with STAINLESS steel reinforcing ring

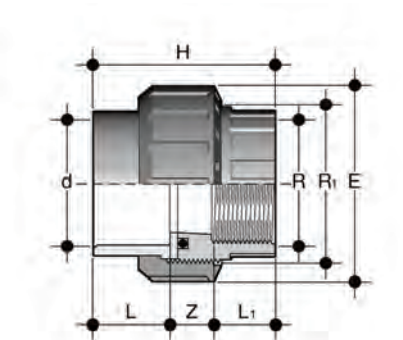
d x R	PN	E	E ₁	K	L	L ₁	Z	g	Code
16 x 3/8"	16	23.5	24.5	24	14	11.4	5.6	15	MIMC016038
20 x 1/2"	16	28.5	29.5	29	16	15	4	25	MIMC020012
25 x 3/4"	16	35	36	35	19	16.3	5	38	MIMC025034
32 x 1"	16	43	44	43	22	19.1	6	58	MIMC032100
40 x 1" 1/4	16	50	51	50	26	21.4	5	66	MIMC040114
50 x 1" 1/2	16	61	62	61	31	21.4	8	109	MIMC050112
63 x 2"	16	76	77	76	38	25.7	7.5	196	MIMC063200



KIFC

Double adaptor with solvent weld socket df , solvent weld spigot dm and BSP threaded male end R

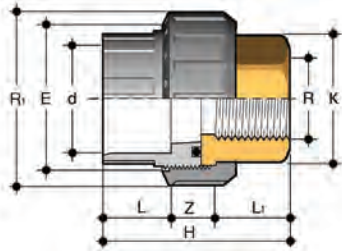
$dm \times df \times R$	PN	K	L_1	L_f	L_m	Z	g	Code
20 x 16 x 3/8"	16	22	11.4	14	16	20	7	KIFC020016038
25 x 20 x 1/2"	16	28	15	16	19	25	13	KIFC025020012
32 x 25 x 3/4"	16	34	16.3	19	22	27	23	KIFC032025034
40 x 32 x 1"	16	42	19.1	22	26	30.5	38	KIFC040032100
50 x 40 x 1" 1/4	16	52	21.4	26	31	35	65	KIFC050040114
63 x 50 x 1" 1/2	16	65	21.4	31	38	35	113	KIFC063050112
75 x 63 x 2"	16	75	25.7	38	44	41	158	KIFC075063200



BIFC

Union with solvent weld socket d and BSP threaded female end R with O-ring in EPDM

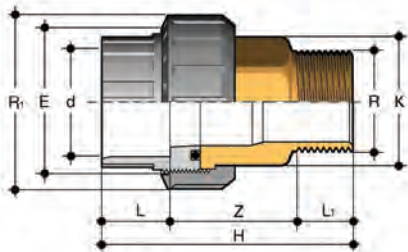
$d \times R$	R_1	PN	E	H	L	L_1	Z	g	Code
16 x 3/8"	3/4"	16	33	41	14	11.4	15.6	25	BIFC016038E
20 x 1/2"	1"	16	41	45	16	15	14	40	BIFC020012E
25 x 3/4"	1" 1/4	16	51	51	19	16.3	15.7	68	BIFC025034E
32 x 1"	1" 1/2	16	58	57	22	19.1	15.9	93	BIFC032100E
40 x 1" 1/4	2"	16	72	67	26	21.4	19.6	158	BIFC040114E
50 x 1" 1/2	2" 1/4	16	79	72	31	21.4	19.6	193	BIFC050112E
63 x 2"	2" 3/4	16	98	88	38	25.7	24	345	BIFC063200E



BIFOC

Adaptor union in PVC-C/brass with solvent weld socket d and BSP threaded brass female end R with O-Ring in EPDM

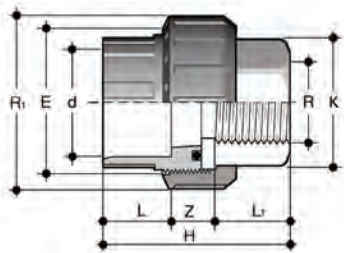
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	Code
16 x 3/8"	3/4"	16	33	45.5	20	14	13.5	18	55	BIFOC016038E
20 x 1/2"	1"	16	41	48.5	25	16	16.5	16	88.5	BIFOC020012E
25 x 3/4"	1 1/4"	16	50	54.5	32	19	18.5	17	165	BIFOC025034E
32 x 1"	1 1/2"	16	58	59.5	38	22	19.5	18	187	BIFOC032100E
40 x 1 1/4"	2"	16	72	68.5	48	26	21.5	21	379	BIFOC040114E
50 x 1 1/2"	2 1/4"	16	79	84.5	55	31	23	30.5	475	BIFOC100112E
63 x 2"	2 3/4"	16	98	94.5	69	38	27	29.5	837	BIFOC063200E



BIROC

Adaptor union in PVC-C/brass with solvent weld socket d and BSP threaded brass male end R with O-Ring in EPDM

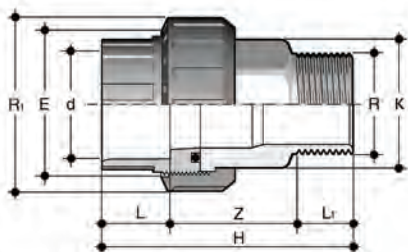
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	Code
16 x 3/8"	3/4"	16	33	58.5	20	14	10.5	34	81	BIROC016038E
20 x 1/2"	1"	16	41	65	25	16	13.5	35.5	133.5	BIROC020012E
25 x 3/4"	1 1/4"	16	50	72.5	32	19	15	38.5	223	BIROC025034E
32 x 1"	1 1/2"	16	58	80	38	22	17.5	40.5	294	BIROC032100E
40 x 1 1/4"	2"	16	72	91	48	26	19.5	45.5	558	BIROC040114E
50 x 1 1/2"	2 1/4"	16	79	101	55	31	19.5	50.5	696	BIROC100112E
63 x 2"	2 3/4"	16	98	122.5	69	38	24	60.5	1196	BIROC063200E



BIFXC

Adaptor union in PVC-C/STAINLESS steel with solvent weld socket d and BSP threaded STAINLESS steel female end R with O-Ring in EPDM or FPM

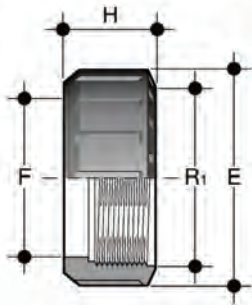
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	EPDM Code	FPM Code
16 x 3/8"	3/4"	16	33	45.5	20	14	13.5	18	52	BIFXC016038E	BIFXC016038F
20 x 1/2"	1"	16	41	48.5	25	16	16.5	16	83.5	BIFXC020012E	BIFXC020012F
25 x 3/4"	1 1/4"	16	50	54.5	32	19	18.5	17	156	BIFXC025034E	BIFXC025034F
32 x 1"	1 1/2"	16	58	59.5	38	22	19.5	18	176	BIFXC032100E	BIFXC032100F
40 x 1 1/4"	2"	16	72	68.5	48	26	21.5	21	361	BIFXC040114E	BIFXC040114F
50 x 1 1/2"	2 1/4"	16	79	84.5	55	31	23	30.5	450	BIFXC100112E	BIFXC100112F
63 x 2"	2 3/4"	16	98	94.5	69	38	27	29.5	792	BIFXC063200E	BIFXC063200F



BIRXC

Adaptor union in PVC-C/STAINLESS steel with solvent weld socket d and BSP threaded STAINLESS steel male end R with O-Ring in EPDM or FPM

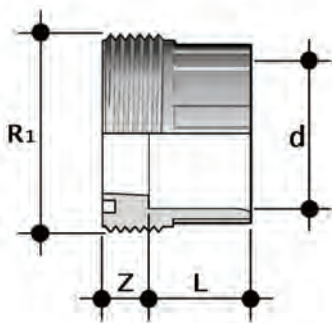
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	EPDM Code	FPM Code
16 x 3/8"	3/4"	16	33	58.5	20	14	10.5	34	76	BIRXC016038E	BIRXC016038F
20 x 1/2"	1"	16	41	65	25	16	13.5	35.5	125.5	BIRXC020012E	BIRXC020012F
25 x 3/4"	1 1/4"	16	50	72.5	32	19	15	38.5	219	BIRXC025034E	BIRXC025034F
32 x 1"	1 1/2"	16	58	80	38	22	17.5	40.5	275	BIRXC032100E	BIRXC032100F
40 x 1 1/4"	2"	16	72	91	48	26	19.5	45.5	524	BIRXC040114E	BIRXC040114F
50 x 1 1/2"	2 1/4"	16	79	101	55	31	19.5	50.5	654	BIRXC100112E	BIRXC100112F
63 x 2"	2 3/4"	16	98	122.5	69	38	24	60.5	1124	BIRXC063200E	BIRXC063200F



EFC

Union nut with BSP thread for union types BIC, BIFC, BFC, BLC, BIRC, BIFOC, BIROC, BIFXC, BIRXC.

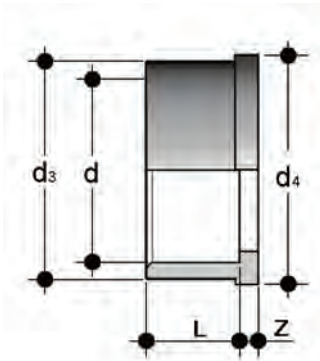
R ₁	d BIC	PN	E	F	H	g	Code
3/4"	16	16	33	22	21	9	EFC034
1"	20	16	41	28	22	13	EFC100
1"1/4	25	16	50	36	25	22	EFC114
1"1/2	32	16	58	42	27	30	EFC112
2"	40	16	72	53	30	50	EFC200
2"1/4	50	16	79	59	34	68	EFC214
2"3/4	63	16	98	74	38	120	EFC234



F/BIC

Union bush for solvent welding, metric series

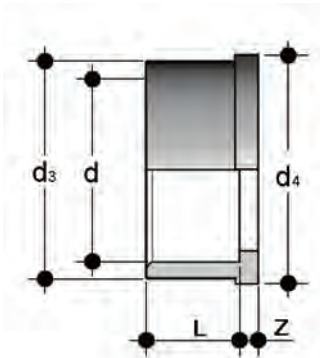
d	R ₁	PN	L	Z	g	Code
16	3/4"	16	14	10	9	FBIC016
20	1"	16	16	10	13	FBIC020
25	1"1/4	16	19	10	25	FBIC025
32	1"1/2	16	22	10	31	FBIC032
40	2"	16	26	12	58	FBIC040
50	2"1/4	16	31	14	63	FBIC050
63	2"3/4	16	38	19	119	FBIC063



Q/BIC

Union end for solvent welding, metric series

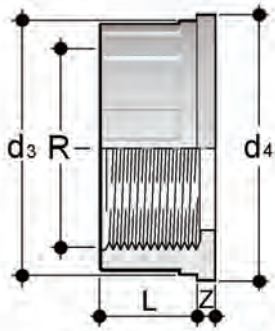
d	PN	d ₃	d ₄	L	Z	g	Code
16	16	22	24	14	3	5	QBIC016
20	16	27.5	30.1	16	3	10	QBIC020
25	16	36	38.8	19	3	16	QBIC025
32	16	41.5	44.7	22	3	23	QBIC032
40	16	53	56.5	26	3	40	QBIC040
50	16	59	62.6	31	3	44	QBIC050
63	16	74	78.4	38	3	82	QBIC063



Q/BAC

Union end for solvent welding, ASTM series

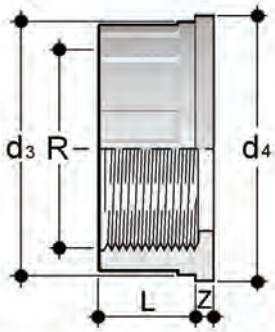
d	PN	d ₃	d ₄	L	Z	g	Code
1/2"	16	27.5	30.1	22.7	3.5	17	QBAC012
3/4"	16	36	38.8	25.9	3.7	25	QBAC034
1"	16	41.5	44.7	29.2	3	36	QBAC100
1"1/4	16	53	56.5	32	5	63	QBAC114
1"1/2	16	59	62.6	35	5	86	QBAC112
2"	16	74	78.4	38.5	5.5	143	QBAC200



Q/BFC

Union end with BSP female thread

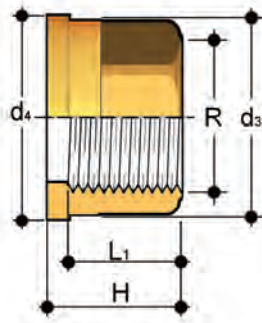
R	PN	d ₃	d ₄	L	Z	g	Code
3/8"	16	22	24	11.4	4.5	5	QBFC038
1/2"	16	27.5	30.1	15	5	9	QBFC012
3/4"	16	36	38.8	16.3	5	17	QBFC034
1"	16	41.5	44.7	19.1	5.5	23	QBFC100
1"1/4	16	53	56.5	21.4	5.5	37	QBFC114
1"1/2	16	59	62.6	21.4	5.5	44	QBFC112
2"	16	74	78.4	25.7	5.5	79	QBFC200



Q/BNC

Union end with NPT female thread

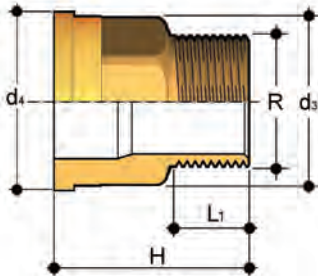
R	PN	d ₃	d ₄	L	Z	g	Code
3/8"	16	22	24	12.7	6.3	11	QBNC038
1/2"	16	27.5	30.1	17.8	5.2	17	QBNC012
3/4"	16	36	38.8	18	5.2	22	QBNC034
1"	16	41.5	44.7	22.6	5.7	33	QBNC100
1"1/4	16	53	56.5	25.1	7.3	61	QBNC114
1"1/2	16	59	62.6	24.7	7	77	QBNC112
2"	16	74	78.4	29.6	7.8	127	QBNC200



Q/BFO

Union end in brass with female BSP thread

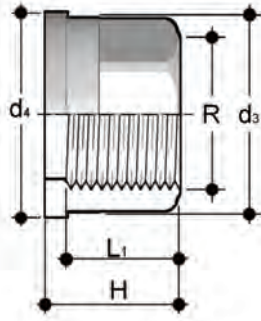
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	21.5	13.5	38	QBFO038
1/2"	27.5	30.1	22.5	16.5	60	QBFO012
3/4"	36	38.8	25.5	18.5	116	QBFO034
1"	41.5	44.7	27.5	19.5	144	QBFO100
1 1/4"	53	56.5	30.5	21.5	260	QBFO114
1 1/2"	59	62.6	33.5	23	325	QBFO112
2"	74	78.4	38.5	27	578	QBFO200



Q/BRO

Union end in brass with male BSP thread

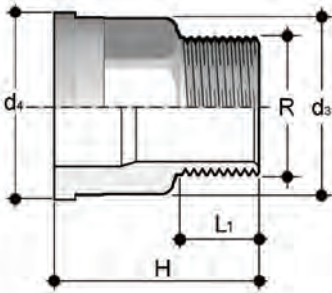
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	34.5	10.5	64	QBRO038
1/2"	27.5	30.1	39	13.5	105	QBRO012
3/4"	36	38.8	43.5	15	184	QBRO034
1"	41.5	44.7	48	17.5	251	QBRO100
1 1/4"	53	56.5	53	19.5	437	QBRO114
1 1/2"	59	62.6	56	19.5	545	QBRO112
2"	74	78.4	65.5	24	937	QBRO200



Q/BFX

Union end in A316L stainless steel with female BSP thread

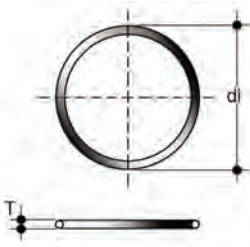
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	21.5	13.5	34	QBFX038
1/2"	27.5	30.1	22.5	16.5	54	QBFX012
3/4"	36	38.8	25.5	18.5	104	QBFX034
1"	41.5	44.7	27.5	19.5	130	QBFX100
1 1/4"	53	56.5	30.5	21.5	234	QBFX114
1 1/2"	59	62.6	33.5	23	293	QBFX112
2"	74	78.4	38.5	27	520	QBFX200



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

O-Ring for union types BIC, BIFC, BIFOC, BIFXC, BIRXC

Union d	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



VKD DN 10÷50
PVC-C

DUAL BLOCK® 2-way ball valve

VKD DN 10÷50

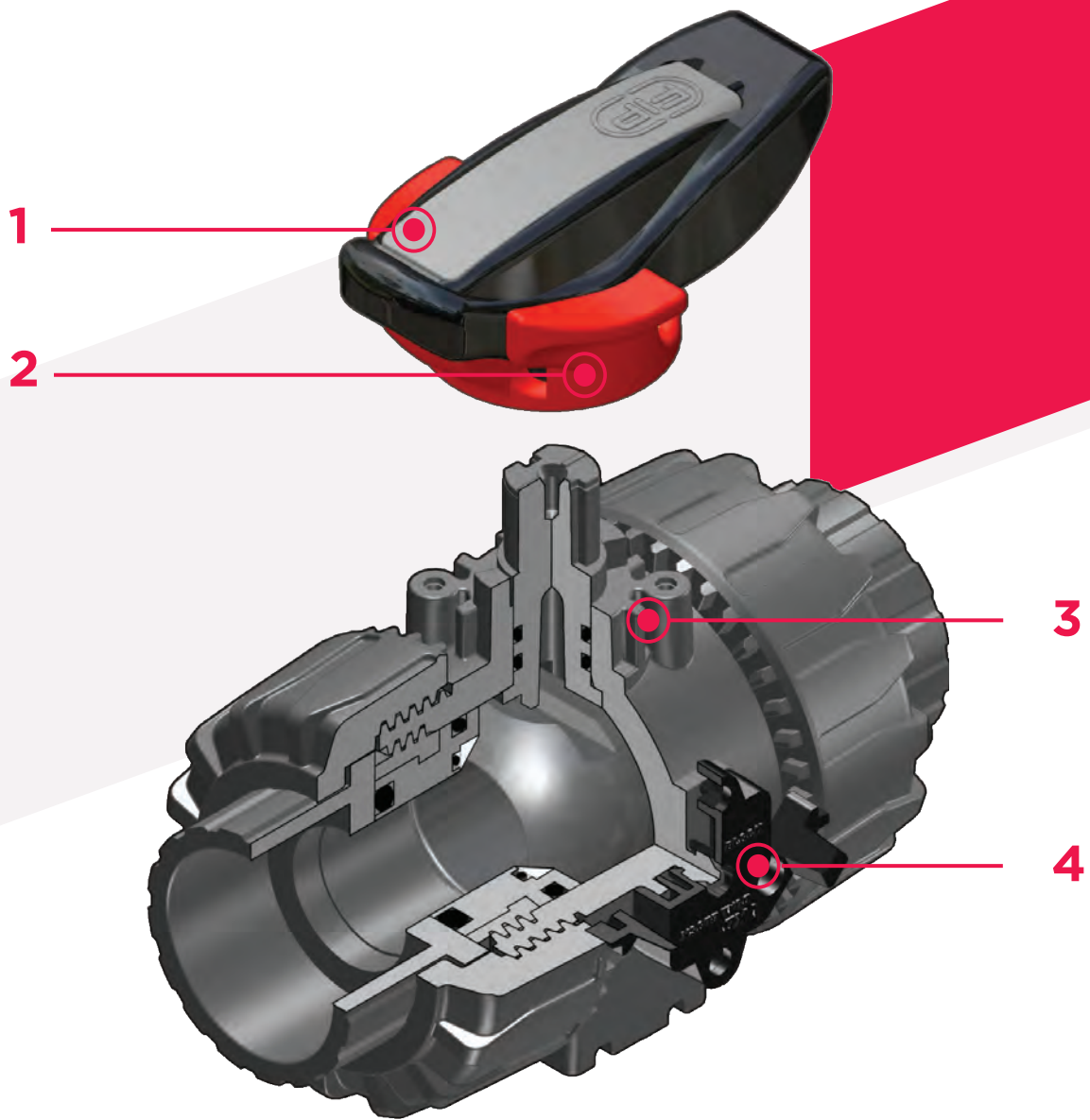
FIP has developed a VKD DUAL BLOCK® 2-way ball valve to introduce a high reference standard in thermoplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications.



DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for solvent weld, threaded and flanged joints
- Patented **SEAT STOP®** ball seat 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 rigid PVC-C 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
- **Carrier integrated** in the body for valve anchoring
- Ball seat carriers can be adjusted using the **Easytorque adjustment kit**
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FPM), with water, drinking water and other food substances as per **current regulations**

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	0 °C ÷ 100 °C
Coupling standards	<p>Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441</p> <p>Thread: ISO 228-1, DIN 2999, ASTM F437</p> <p>Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150, JIS B 2220</p>
Reference standards	<p>Construction criteria: EN ISO 16135, EN ISO 15493</p> <p>Test methods and requirements: ISO 9393</p> <p>Installation criteria: DVS 2204, DVS 2221, UNI 11242</p> <p>Actuator couplings: ISO 5211</p>
Valve material	PVC-C
Seal material	EPDM, FPM (standard size O-Ring); 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 block 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)

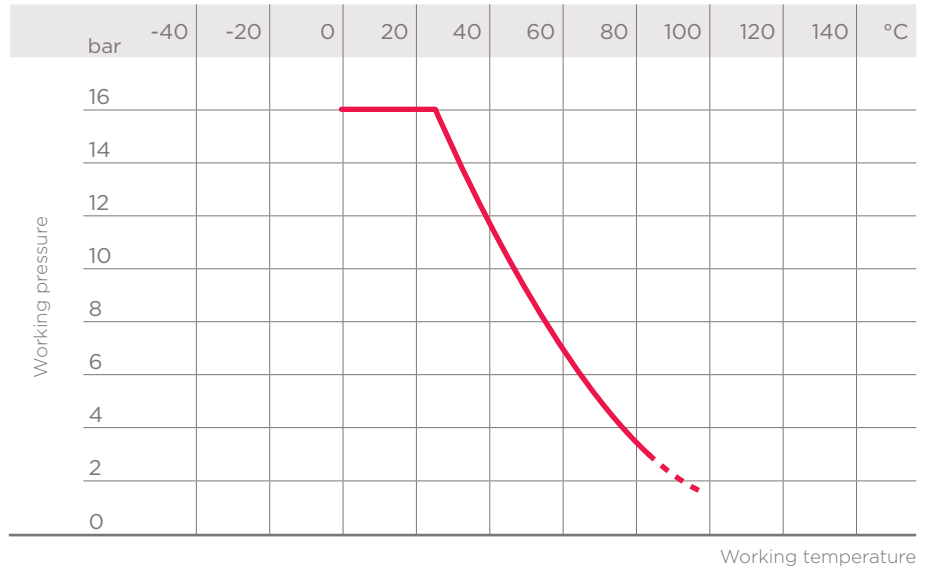
4 **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation

TECHNICAL DATA

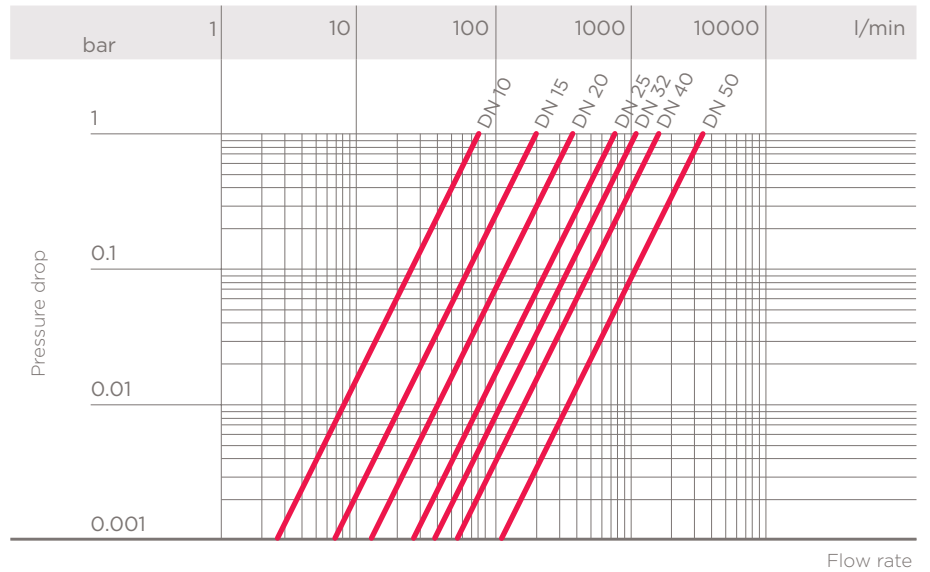
PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids 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).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



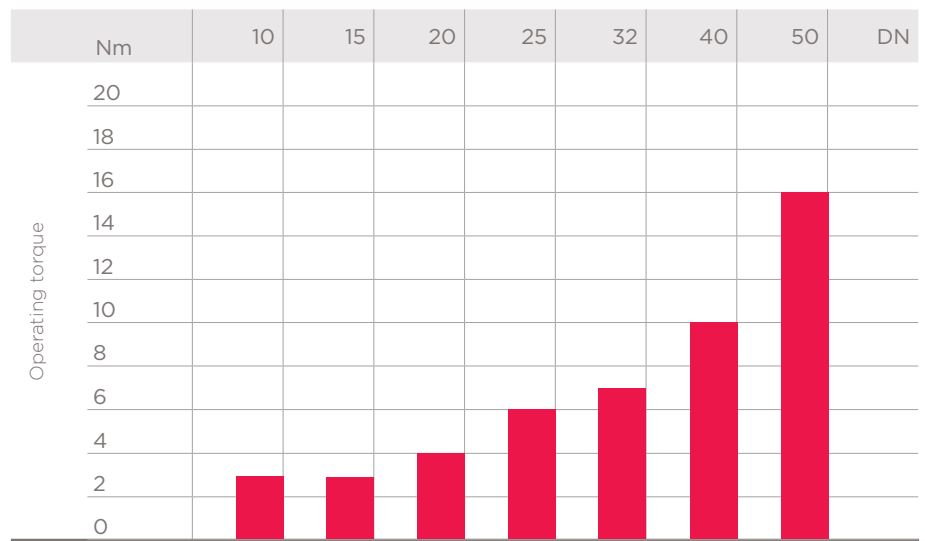
K_v100 FLOW COEFFICIENT

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.

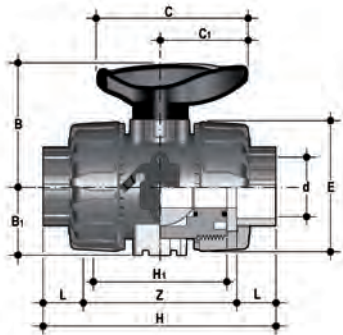
DN	10	15	20	25	32	40	50
K _v 100 l/min	80	200	385	770	1100	1750	3400

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

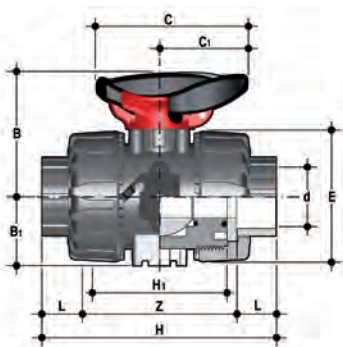
DIMENSIONS



VKDIC

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

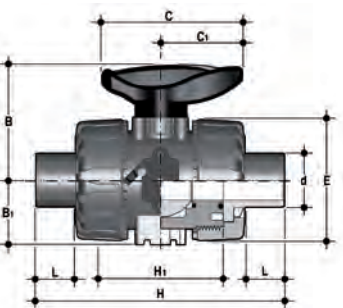
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
16	10	16	54	29	67	40	54	103	65	14	75	234	VKDIC016E	VKDIC016F
20	15	16	54	29	67	40	54	103	65	16	71	223	VKDIC020E	VKDIC020F
25	20	16	65	34.5	85	49	65	115	70	19	77	358	VKDIC025E	VKDIC025F
32	25	16	69.5	39	85	49	73	128	78	22	84	476	VKDIC032E	VKDIC032F
40	32	16	82.5	46	108	64	86	146	88	26	94	753	VKDIC040E	VKDIC040F
50	40	16	89	52	108	64	98	164	93	31	102	1007	VKDIC050E	VKDIC050F
63	50	16	108	62	134	76	122	199	111	38	123	1717	VKDIC063E	VKDIC063F



VKDIC/SHX

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

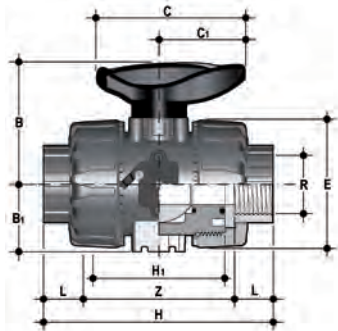
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
16	10	16	54	29	67	40	54	103	65	14	75	244	VKDICSHX016E	VKDICSHX016F
20	15	16	54	29	67	40	54	103	65	16	71	233	VKDICSHX020E	VKDICSHX020F
25	20	16	65	34.5	85	49	65	115	70	19	77	368	VKDICSHX025E	VKDICSHX025F
32	25	16	69.5	39	85	49	73	128	78	22	84	486	VKDICSHX032E	VKDICSHX032F
40	32	16	82.5	46	108	64	86	146	88	26	94	763	VKDICSHX040E	VKDICSHX040F
50	40	16	89	52	108	64	98	164	93	31	102	1017	VKDICSHX050E	VKDICSHX050F
63	50	16	108	62	134	76	122	199	111	38	123	1727	VKDICSHX063E	VKDICSHX063F



VKDDC

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

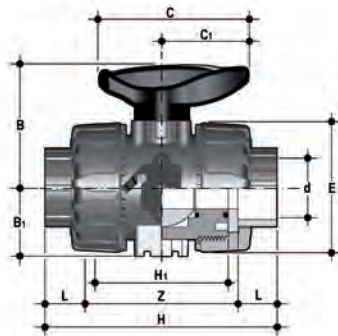
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM Code	FPM Code
20	15	16	54	29	67	40	54	124	65	16	239	VKDDC020E	VKDDC020F
25	20	16	65	34.5	85	49	65	144	70	19	369	VKDDC025E	VKDDC025F
32	25	16	69.5	39	85	49	73	154	78	22	482	VKDDC032E	VKDDC032F
40	32	16	82.5	46	108	64	86	174	88	26	753	VKDDC040E	VKDDC040F
50	40	16	89	52	108	64	98	194	93	31	1029	VKDDC050E	VKDDC050F
63	50	16	108	62	134	76	122	224	111	38	1749	VKDDC063E	VKDDC063F



VKDFC

DUAL BLOCK® 2-way ball valve with BSP threaded female ends

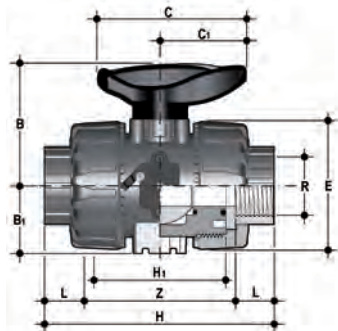
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	54	29	67	40	54	111	65	17.8	75.4	228	VKDFC020E	VKDFC020F
3/4"	20	16	65	34.5	85	49	65	117	70	18	81	364	VKDFC025E	VKDFC025F
1"	25	16	69.5	39	85	49	73	135	78	22.6	89.8	487	VKDFC032E	VKDFC032F
1 1/4"	32	16	82.5	46	108	64	86	153	88	25.1	102.8	737	VKDFC040E	VKDFC040F
1 1/2"	40	16	89	52	108	64	98	156	93	24.7	106.6	1040	VKDFC050E	VKDFC050F
2"	50	16	108	62	134	76	122	186	111	29.6	126.8	1815	VKDFC063E	VKDFC063F



VKDAC

DUAL BLOCK® 2-way ball valve with female ends for solvent welding, ASTM series

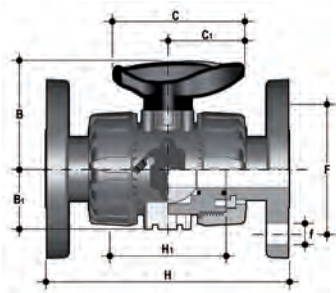
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	54	29	67	40	54	117	65	22.5	72	234	VKDAC012E	VKDAC012F
3/4"	20	16	65	34.5	85	49	65	129	70	25.5	78	375	VKDAC034E	VKDAC034F
1"	25	16	69.5	39	85	49	73	142	78	28.7	84.6	487	VKDAC100E	VKDAC100F
1 1/4"	32	16	82.5	46	108	64	86	162	88	32	98	780	VKDAC114E	VKDAC114F
1 1/2"	40	16	89	52	108	64	98	172	93	35	102	1062	VKDAC112E	VKDAC112F
2"	50	16	108	62	134	76	122	199	111	38.2	122.6	1864	VKDAC200E	VKDAC200F



VKDNC

DUAL BLOCK® 2-way ball valve with female ends, NPT thread

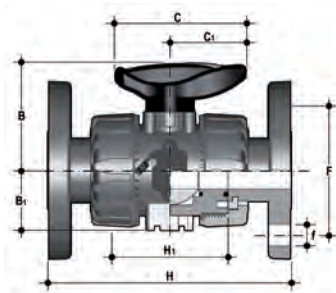
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	54	29	67	40	54	111	65	17.8	75.4	228	VKDNC020E	VKDNC020F
3/4"	20	16	65	34.5	85	49	65	117	70	18	81	364	VKDNC025E	VKDNC025F
1"	25	16	69.5	39	85	49	73	135	78	22.6	89.8	487	VKDNC032E	VKDNC032F
1 1/4"	32	16	82.5	46	108	64	86	153	88	25.1	102.8	737	VKDNC040E	VKDNC040F
1 1/2"	40	16	89	52	108	64	98	156	93	24.7	106.6	1040	VKDNC050E	VKDNC050F
2"	50	16	108	62	134	76	122	186	111	29.6	126.8	1815	VKDNC063E	VKDNC063F



VKDOC

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	Sp	U	g	EPDM Code	FPM Code
20	15	16	54	29	67	40	65	14	130	65	11	4	481.1	VKDOC020E	VKDOC020F
25	20	16	65	34.5	85	49	75	14	150	70	13.5	4	663.1	VKDOC025E	VKDOC025F
32	25	16	69.5	39	85	49	85	14	160	78	14	4	895.9	VKDOC032E	VKDOC032F
40	32	16	82.5	46	108	64	100	18	180	88	14	4	1379	VKDOC040E	VKDOC040F
50	40	16	89	52	108	64	110	18	200	93	16	4	1761	VKDOC050E	VKDOC050F
63	50	16	108	62	134	76	125	18	230	111	16	4	2741	VKDOC063E	VKDOC063F

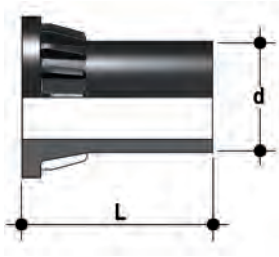


VKDOAC

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	Sp	U	g	EPDM Code	FPM Code
1/2"	15	16	54	29	67	40	60.3	15.9	143	65	11	4	481.1	VKDOAC012E	VKDOAC012F
3/4"	20	16	65	34.5	85	49	69.9	15.9	172	70	13.5	4	663.1	VKDOAC034E	VKDOAC034F
1"	25	16	69.5	39	85	49	79.4	15.9	187	78	14	4	895.9	VKDOAC100E	VKDOAC100F
1" 1/4	32	16	82.5	46	108	64	88.9	15.9	190	88	14	4	1379	VKDOAC114E	VKDOAC114F
1" 1/2	40	16	89	52	108	64	98.4	15.9	212	93	16	4	1761	VKDOAC112E	VKDOAC112F
2"	50	16	108	62	134	76	120.7	19.1	234	111	16	4	2741	VKDOAC200E	VKDOAC200F

ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

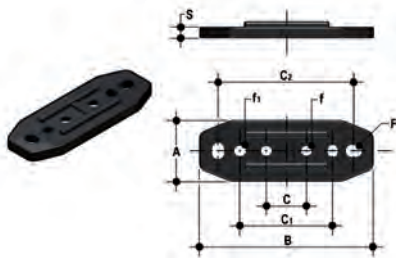
d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
52	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



SHKD

Handle block kit 0° - 90° lockable

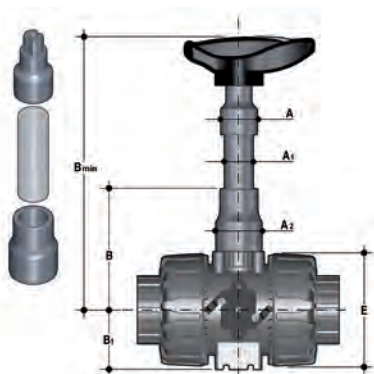
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063



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

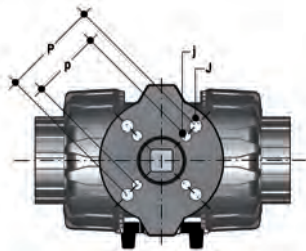


EASYTORQUE KIT

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

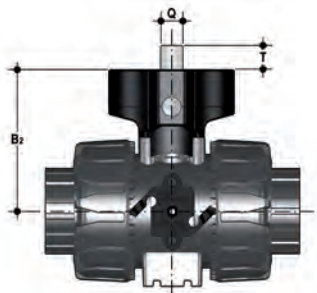
d	DN	Torque recommended*	Code
3/8"-1/2"	10-15	3 N m - 2,21 Lbf ft	KETO1
3/4"	20	4 N m - 2,95 Lbf ft	KETO1
1"	25	5 N m - 3,69 Lbf ft	KETO1
1 1/4"	32	5 N m - 3,69 Lbf ft	KETO1
1 1/2"	40	7 N m - 5,16 Lbf ft	KETO1
2"	50	9 N m - 6,64 Lbf ft	KETO1

*calculated in ideal installation conditions



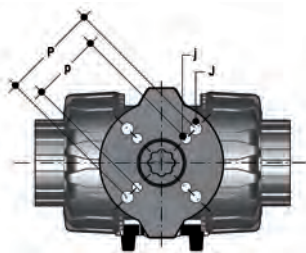
POWER QUICK CP

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



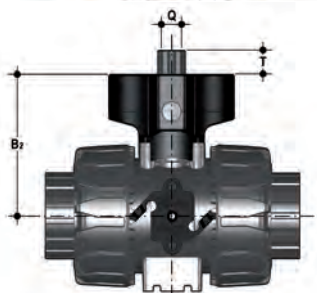
d	DN	B ₂	Q	T	p x j	P x J	Code
16	10	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
20	15	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
25	20	69	11	12	*F03 x 5,5	F05 x 6,5	PQCP025
32	25	74	11	12	*F03 x 5,5	F05 x 6,5	PQCP032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCP040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCP050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCP063

*F04 x 5.5 on request



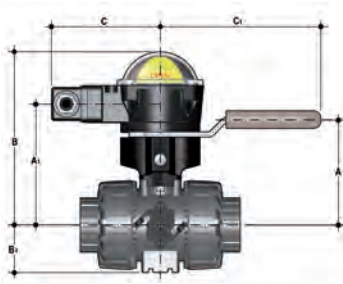
POWER QUICK CE

The valve can be equipped with electric actuators, using the PP-GR module reproducing the drilling pattern provided for 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

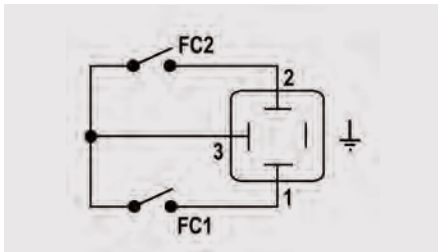


MSKD

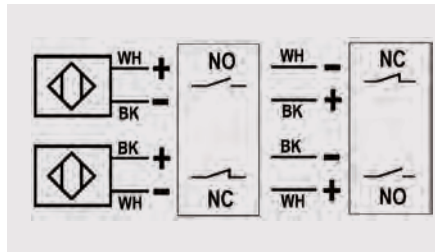
MSKD is a limit switch box with electromechanical or inductive micro switches to remotely signal the valve position. Manual valve installation is possible using the Power Quick actuation module.

The box can be assembled on the VKD valve even if already installed on the system.

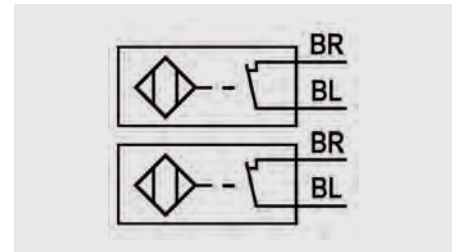
d	DN	A	A ₁	B	B ₁	C	C ₁	Code electromechanical	Code inductive	Code Namur
16	10	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
20	15	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
25	20	70.5	96	143.5	34.5	88.5	134	MSKD1M	MSKD1I	MSKD1N
32	25	74	101	148.5	39	88.5	134	MSKD1M	MSKD1I	MSKD1N
40	32	116	118	165.5	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

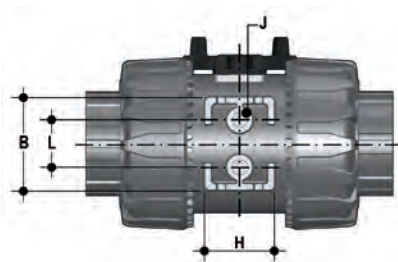


All valves, whether manual or driven, must be adequately supported in many applications.

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.

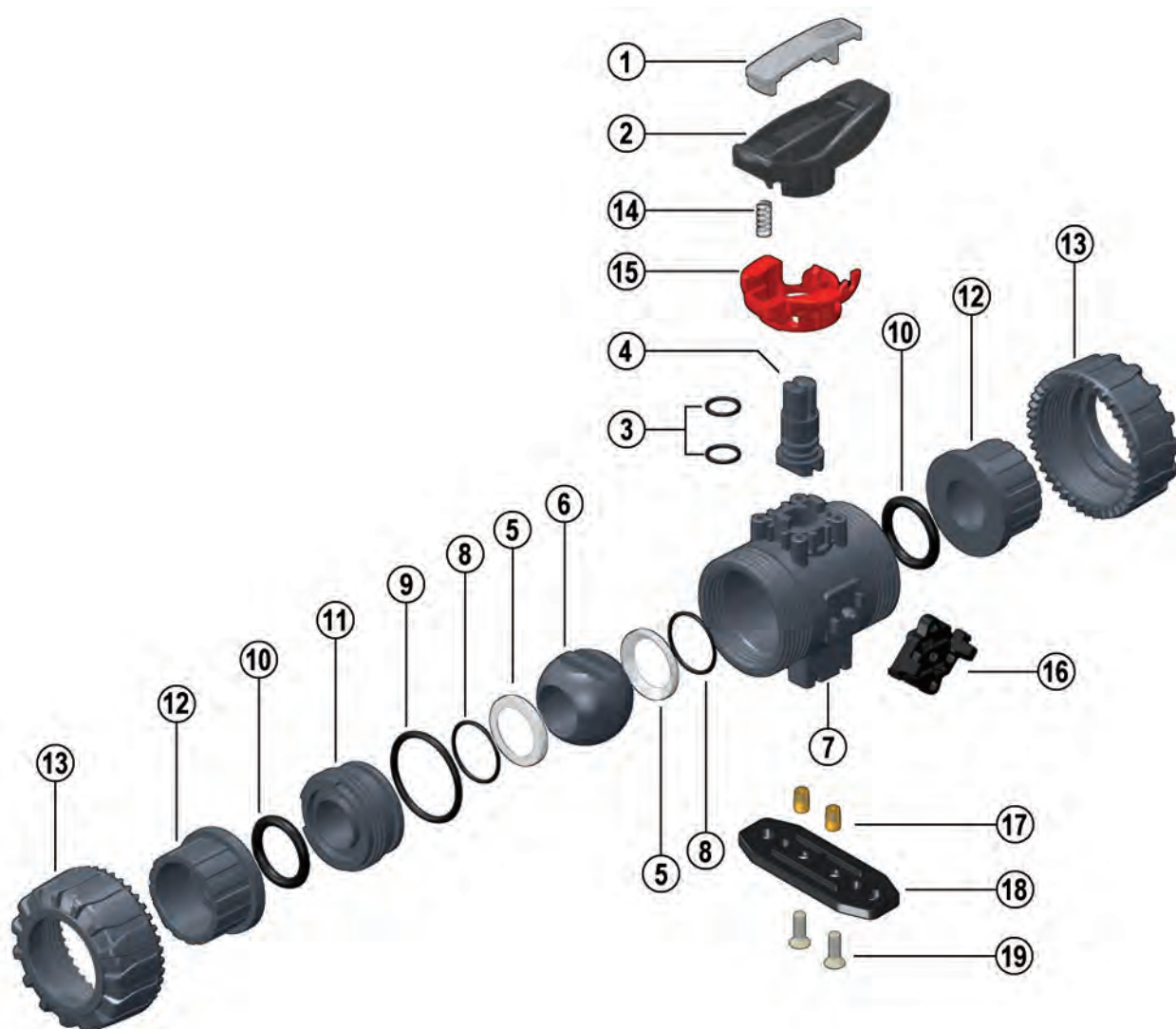


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

* With threaded inserts

COMPONENTS

EXPLODED VIEW



1 · Handle insert (PVC-U - 1)

2 · Handle (HIPVC - 1)

3 · Stem O-ring
(EPDM o FPM - 2)*

4 · Stem (PVC-C - 1)

5 · Ball seat (PTFE - 2)*

6 · Ball (PVC-C - 1)

7 · Body (PVC-C - 1)

8 · Ball seat O-Ring
(EPDM or FPM - 2)*

9 · Radial seal O-Ring
(EPDM or FPM - 1)*

10 · Socket seal O-Ring
(EPDM or FPM - 2)*

11 · Ball seat carrier (PVC-C - 1)

12 · End connector (PVC-C - 2)*

13 · Union nut(PVC-C - 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) Release 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 disassembling, 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 body.
- 9) Remove the O-Rings (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 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, 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 block 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





VKD DN 65÷100
PVC-C

DUAL BLOCK® 2-way ball valve

VKD DN 65÷100

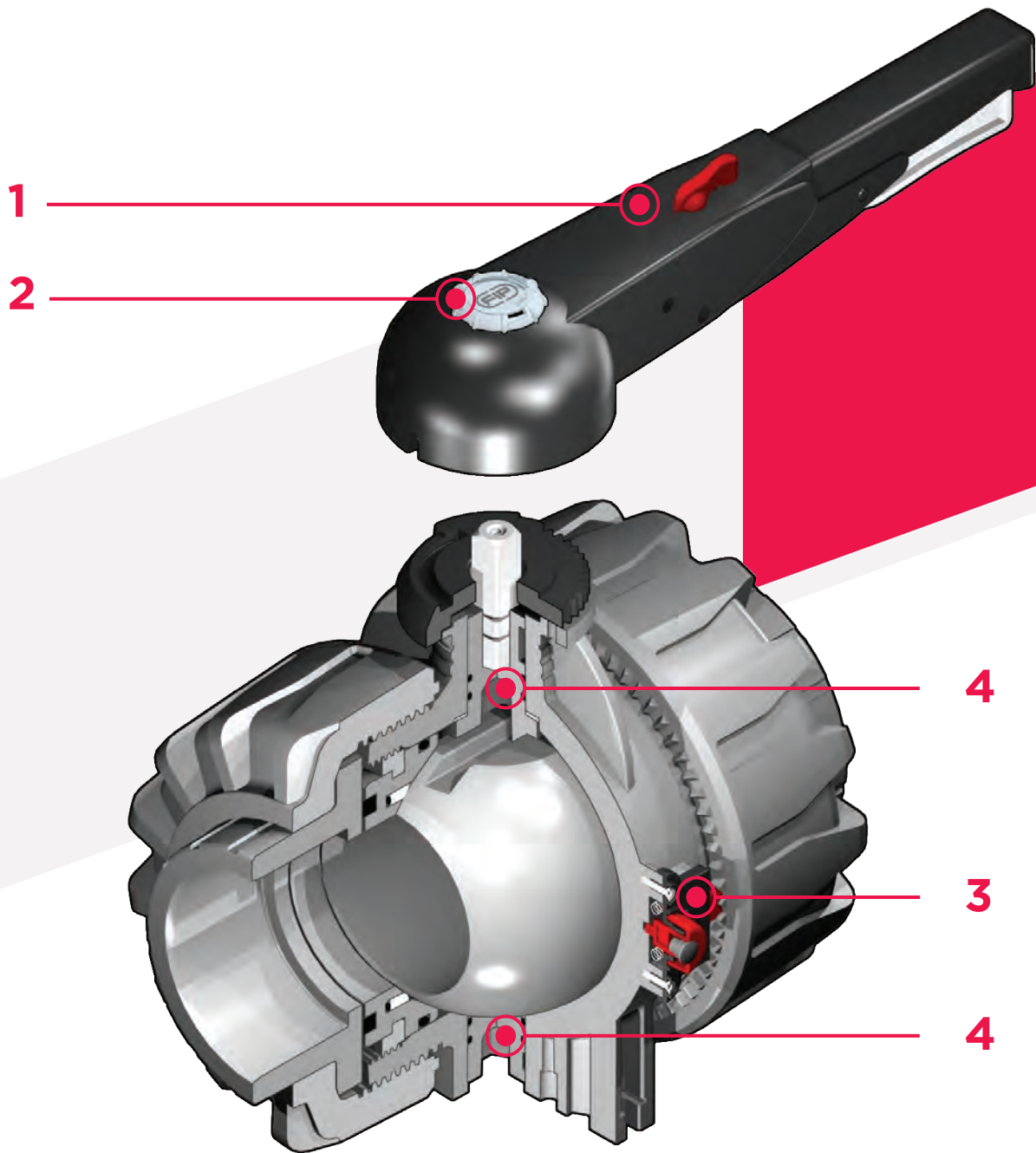
FIP has developed a VKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications. This valve is also equipped with a customising Labelling System.



DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for solvent weld, threaded and flanged joints
- Patented **SEAT STOP®** ball seat 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 rigid PVC-C 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
- **Carrier integrated in the body** for valve anchoring
- Possibility of installing a manual reducer or pneumatic and/or electric actuators by applying an ISO standard drilling pattern PP-GR flange
- **STAINLESS steel molded-in stem**, with square section as per ISO 5211
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FPM), with water, drinking water and other food substances as per **current regulations**

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	0 °C ÷ 100 °C
Coupling standards	<p>Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441</p> <p>Thread: ISO 228-1, DIN 2999, ASTM F437</p> <p>Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150, JIS B 2220</p>
Reference standards	<p>Construction criteria: EN ISO 16135, EN ISO 15493</p> <p>Test methods and requirements: ISO 9393</p> <p>Installation criteria: DVS 2204, DVS 2221, UNI 11242</p> <p>Actuator couplings: ISO 5211</p>
Valve material	PVC-C
Seal material	EPDM, FPM; PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



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

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

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

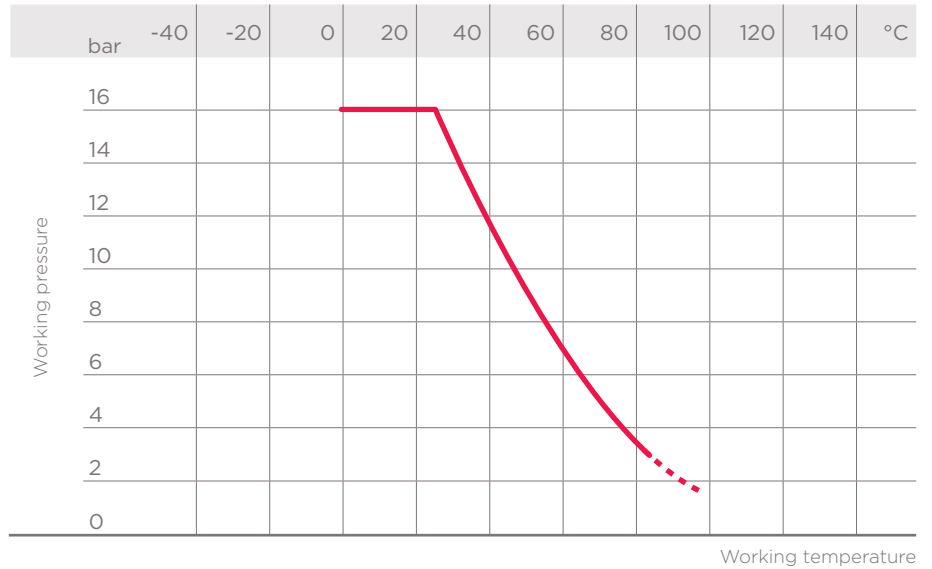
4 **Double stem** with double O-Rings for ball centring and operating torque reduction

TECHNICAL DATA

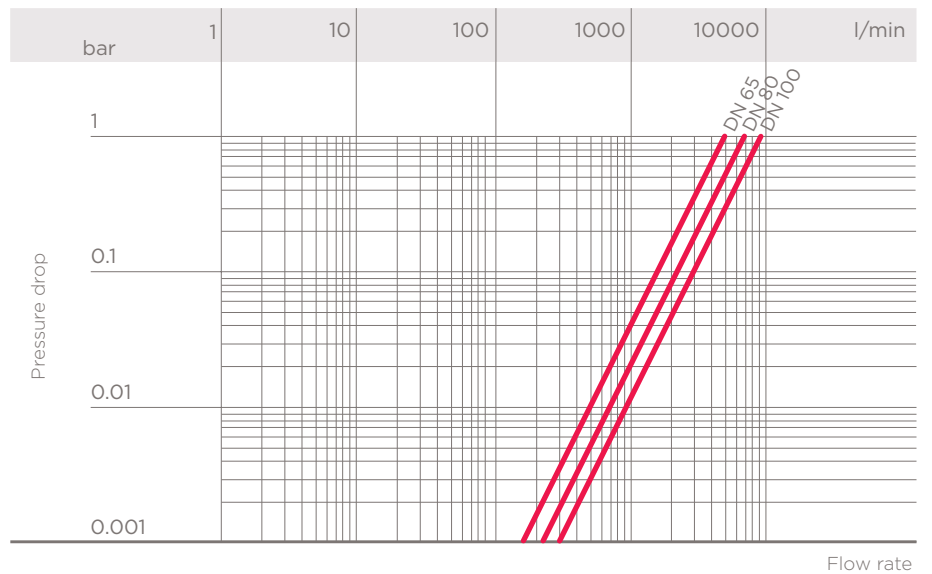
PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids 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).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



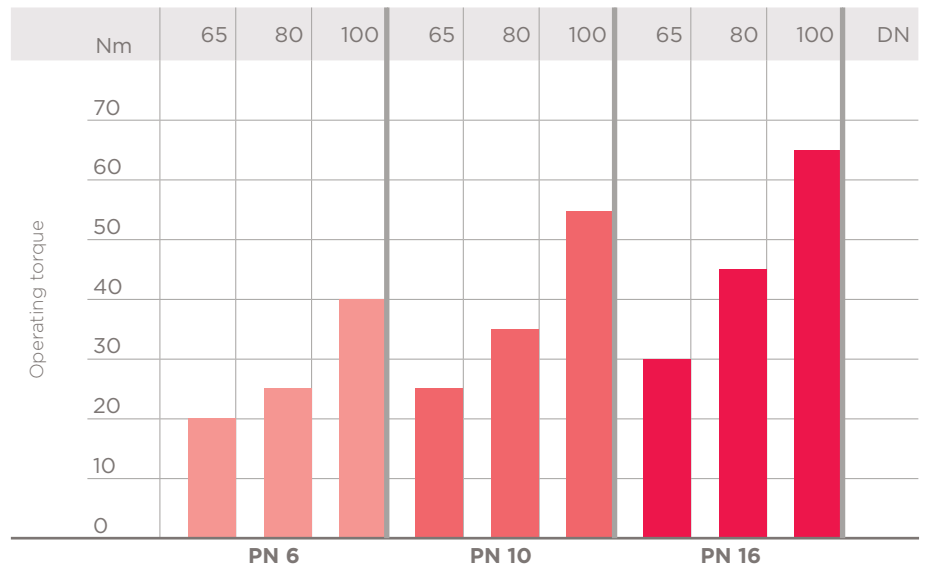
K_v100 FLOW COEFFICIENT

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 $\Delta p = 1$ bar pressure drop at a certain valve position.

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

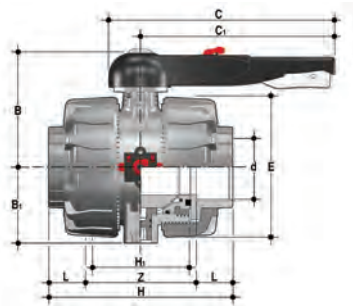
DN	65	80	100
K _v 100 l/min	5250	7100	9500

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

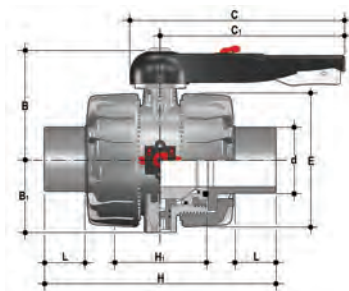
DIMENSIONS



VKDIC

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

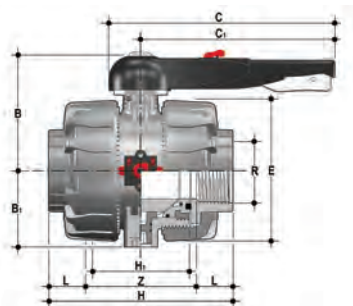
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
75	65	16	164	87	225	175	164	235	133	44	147	4750	VKDIC075E	VKDIC075F
90	80	16	177	105	327	272	203	270	149	51	168	7838	VKDIC090E	VKDIC090F
110	100	16	195	129	385	330	238	308	167	61	186	12137	VKDIC110E	VKDIC110F



VKDDC

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

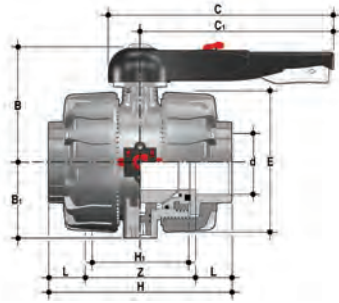
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM Code	FPM Code
75	65	16	164	87	225	175	164	235	133	44	4789	VKDDC075E	VKDDC075F
90	80	16	177	105	327	272	203	270	149	51	7691	VKDDC090E	VKDDC090F
110	100	16	195	129	385	330	238	308	167	61	11931	VKDDC110E	VKDDC110F



VKDFC

DUAL BLOCK® 2-way ball valve with BSP threaded female ends

R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
2"1/2	65	16	164	87	225	175	164	235	133	33.2	168.6	4769	VKDFC212E	VKDFC212F
3"	80	16	177	105	327	272	203	270	149	35.5	199	7910	VKDFC300E	VKDFC300F
4"	100	16	195	129	385	330	238	308	167	37.6	232.8	12262	VKDFC400E	VKDFC400F

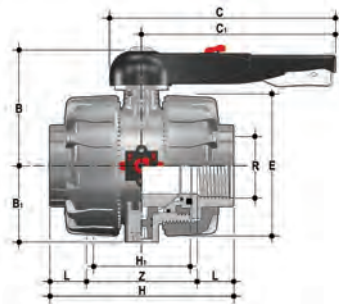


VKDAC

DUAL BLOCK® 2-way ball valve with female ends for solvent welding, ASTM series

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
2"1/2	65	16	164	87	225	175	164	235	133	44.5	146	4762	VKDAC212E	VKDAC212F
3"	80	16	177	105	327	272	203	270	149	48	174	7850	VKDAC300E	VKDAC300F
4"	100	16	195	129	385	330	238	308	167	57.5	193	12222	VKDAC400E	VKDAC400F

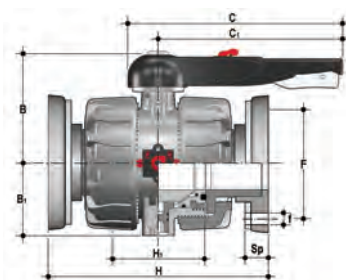
* PPH versions are all PN 10



VKDNC

DUAL BLOCK® 2-way ball valve with NPT threaded female ends

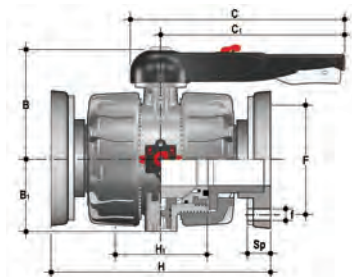
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM Code	FPM Code
2"1/2	65	16	164	87	225	175	164	235	133	33.2	168.6	4769	VKDNC212E	VKDNC212F
3"	80	16	177	105	327	272	203	270	149	35.5	199	7910	VKDNC300E	VKDNC300F
4"	100	16	195	129	385	330	238	308	167	37.6	232.8	12262	VKDNC400E	VKDNC400F



VKDOC

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	Sp	U	g	EPDM Code	FPM Code
75	65	16	164	87	327	175	145	17	290	133	21	4	6413	VKDOC075E	VKDOC075F
90	80	16	177	105	327	272	160	17	310	149	21.5	8	9669	VKDOC090E	VKDOC090F
110	100	16	195	129	385	330	180	17	350	167	21.5	8	14697	VKDOC110E	VKDOC110F

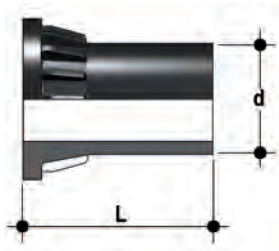


VKDOAC

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	Sp	U	g	EPDM Code	FPM Code
2"1/2	65	16	164	87	327	175	139.7	18	290	133	21	4	6413	VKDOC075E	VKDOC075F
3"	80	16	177	105	327	272	152.4	18	310	149	21.5	8	9669	VKDOC090E	VKDOC090F
4"	100	16	195	129	385	330	190.5	18	350	167	21.5	8	14697	VKDOC110E	VKDOC110F

ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

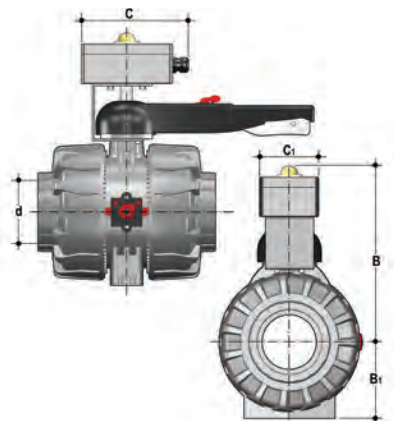
d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090
110	100	16	132	11	CVDE11110



LSE

Customisation and label printing set for Easyfit handle made up of pre-cut adhesive sheets and software for guided label creation.

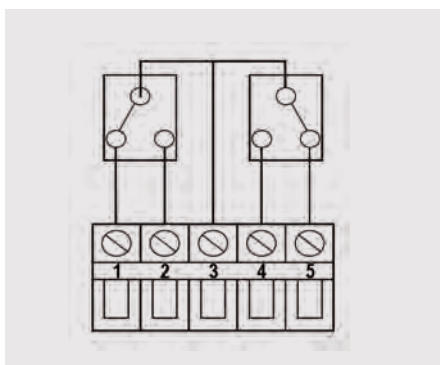
d	DN	Code
75	65	LSE040
90	80	LSE040
110	100	LSE040



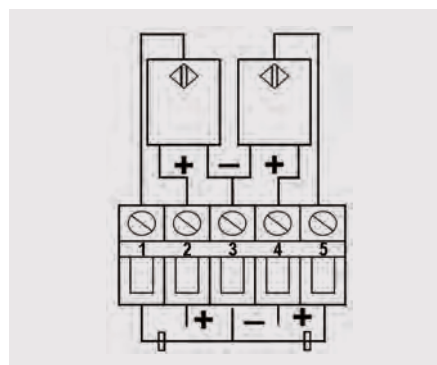
VKD-MS

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.

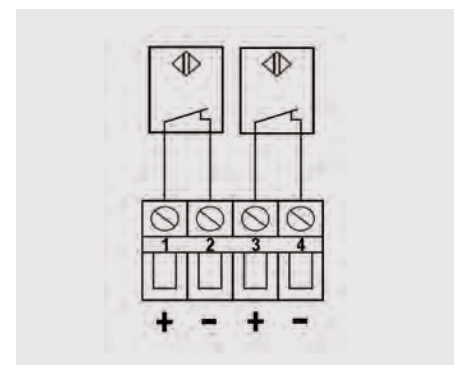
d	DN	B	B ₁	C	C ₁	Protection rate	Code electromechanical	Code inductive	Code Namur
75	65	266	87	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
90	80	279	105	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
110	100	297	129	150	80	IP67	FKMS1M	FKMS1I	FKMS1N



Electromechanical

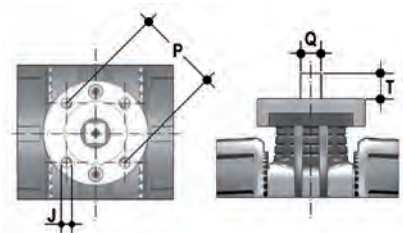


Inductive



Namur*

* To be used with an amplifier



ACTUATOR MOUNTING FLANGE

The valve can be equipped with pneumatic or electric standard actuators and handwheel reduces for heavy-duty operations, using the PP-GR module reproducing the drilling pattern foreseen by 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

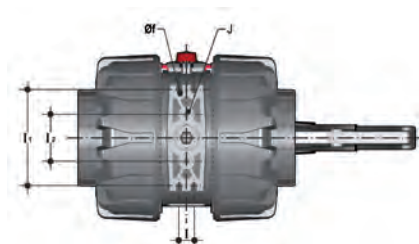


All valves, whether manual or driven, must be adequately supported in many applications.

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.

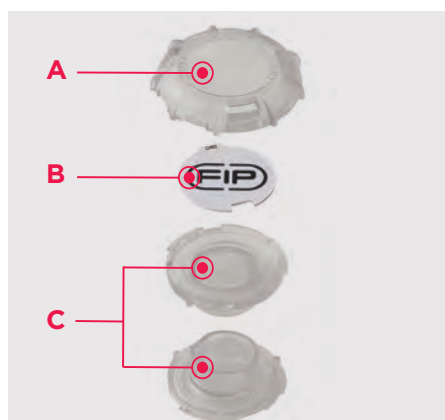
For wall installation, dedicated PMKD mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation.

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	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.

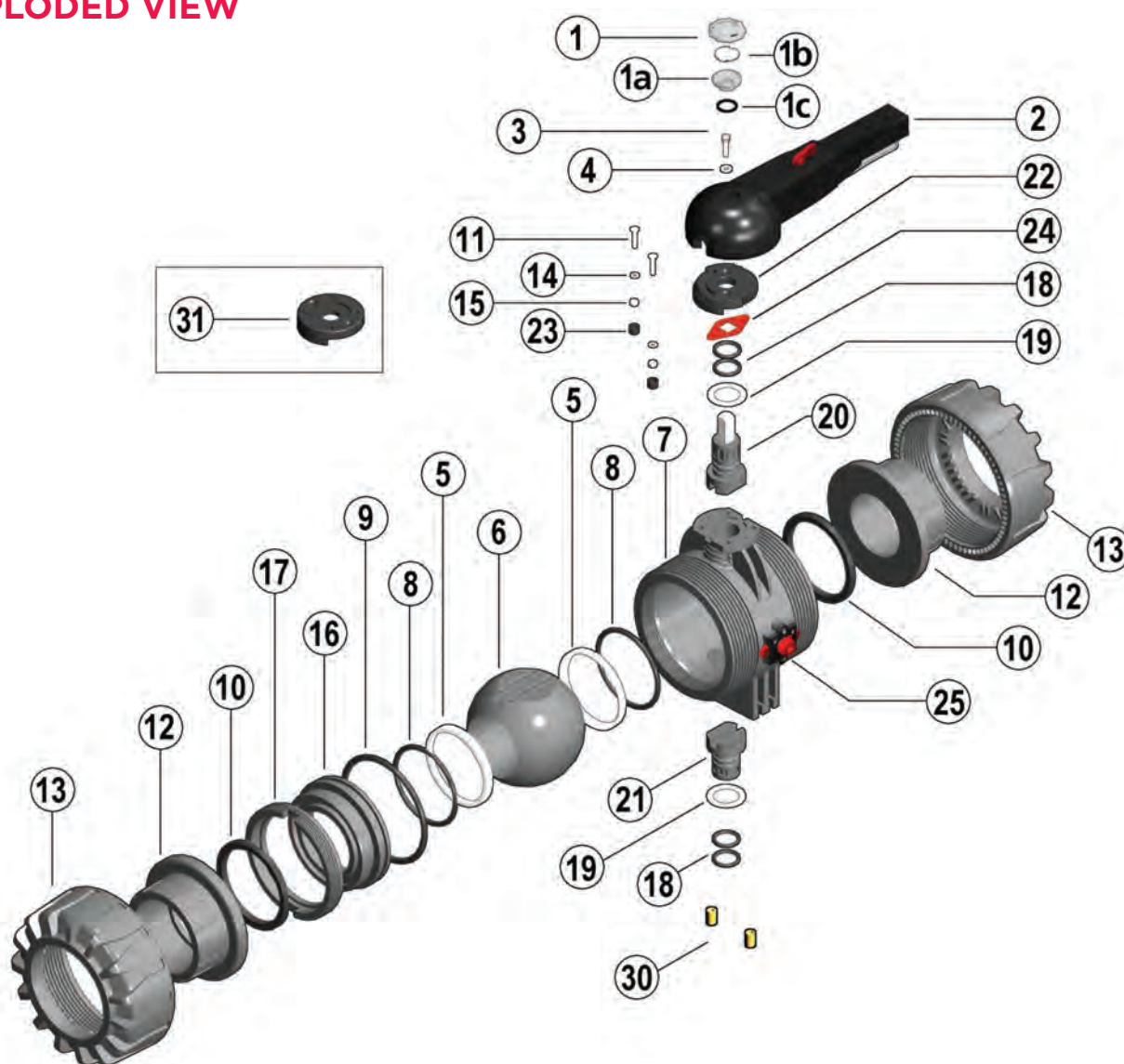
The plate, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

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 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 · Washer (STAINLESS steel - 1)

5 · Ball seat (PTFE - 2)*

6 · Ball (PVC-C - 1)

7 · Body (PVC-C - 1)

8 · Ball seat carrier O-ring (EPDM or FPM - 2)*

9 · Radial seal O-Ring (EPDM or FPM - 1)*

10 · socket seal O-ring (EPDM or FPM - 2)*

11 · Screw (STAINLESS steel - 2)

12 · End connector (PVC-C - 2)

13 · Union nut(PVC-C - 2)

14 · Washer (Acciaio INOX - 2)

15 · Nut (STAINLESS steel - 2)

16 · Ball seat carrier (PVC-C - 1)

17 · Threaded ring (PVC-C - 1)

18 · stem O-ring (EPDM or FPM - 4)*

19 · Anti-friction disk (PTFE - 2)*

20 · Upper stem (PVC-C/STAINLESS STEEL - 1)

21 · Lower stem (PVC-C - 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 inserts (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 disassembling, 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-Rings (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 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, 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

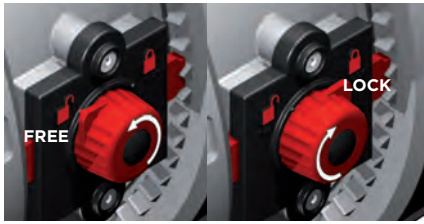
Before proceeding with installation, please follow these instructions carefully:

- 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 and point the arrow on the closed lock to lock DUAL BLOCK® : the valve union nuts are blocked in the desired position.

HANDLE BLOCK



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.



TKD DN 10÷50
PVC-C

DUAL BLOCK® 3-way ball valve

TKD DN 10÷50

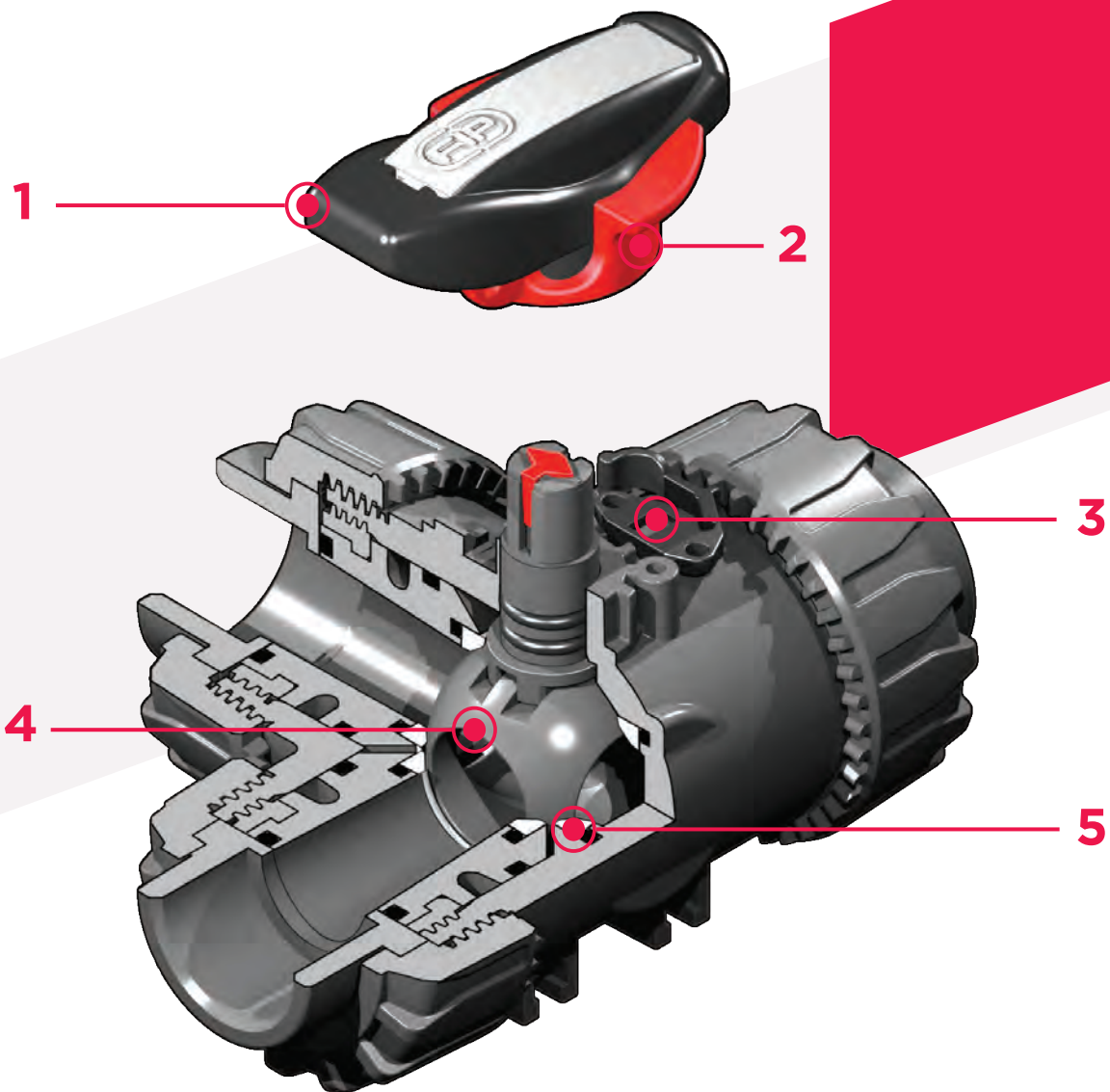
FIP has developed a VKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. TKD is a True Union diverting and mixing ball valve that meets the most stringent needs required in industrial applications.



DUAL BLOCK® 3-WAY BALL VALVE

- Connection system for solvent weld and threaded 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 rigid PVC-C 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 connection key to the ball, equipped with **optical position indicator** for correct handle installation
- **Carrier integrated in the body** for valve anchoring
- Possibility of installing pneumatic and/or electric actuators thanks to the robust integrated bracket for valve anchoring for easy and quick automation using the **Power Quick module** (optional)
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FPM), with water, drinking water and other food substances as per **current regulations**

Technical specifications	
Construction	3-way True Union ball valve with locked carrier and union nuts.
Size range	DN 10 ÷ 50
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM F437
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242 Actuator couplings: ISO 5211
Valve material	PVC-C
Seal material	EPDM, FPM (standard size O-Ring); PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



1 HIPVC Ergonomic handle equipped with tool to adjust the ball seat carrier. Possibility of installing the **LTKD stroke limiter** (available as an accessory) that permits ball and handle rotation only for set opening and closing angles at 90° or 180°

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

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

4 **Ball shutter** high surface finish with floating type full passage with **T or L port**

5 **4 PTFE ball seat** system that compensates axial force guaranteeing optimal manageability and long working life

TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

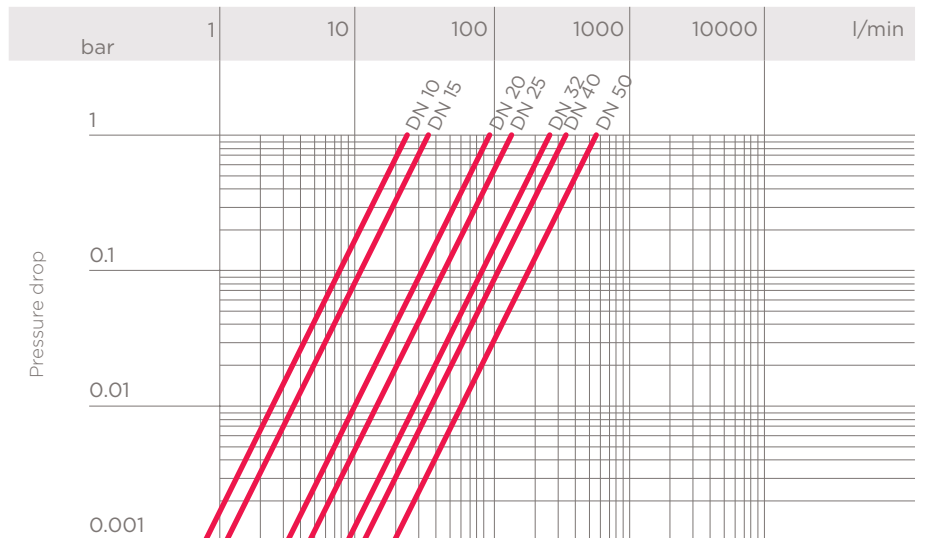
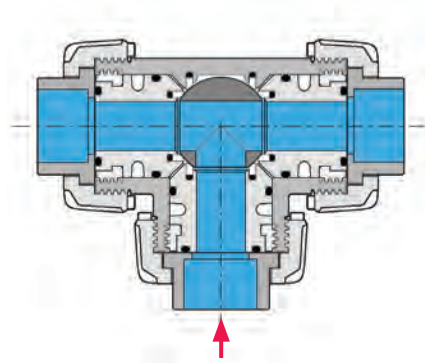
For water and non-hazardous fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.

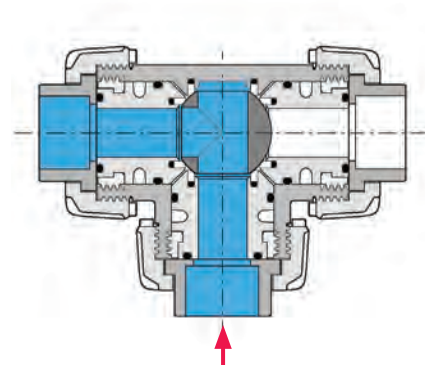


PRESSURE DROP GRAPH AND WORKING POSITIONS

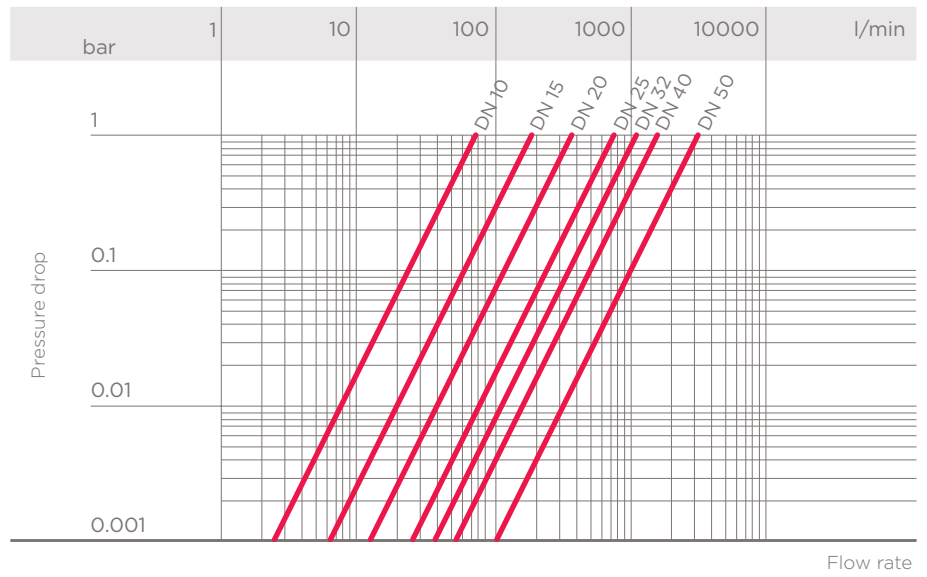
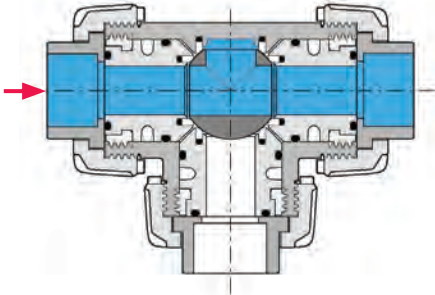
A - T-port ball valve:
0° - Mixing



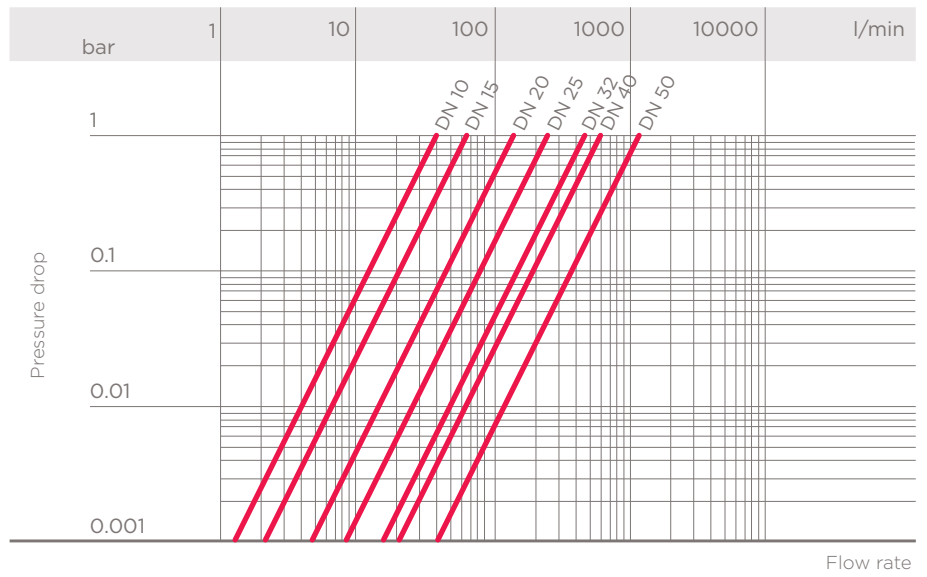
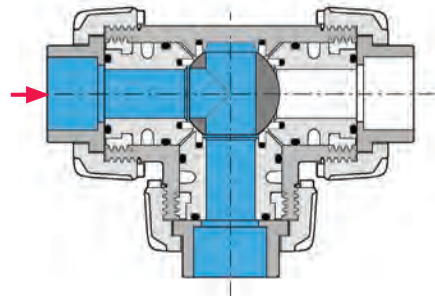
B - T-port ball valve:
90° - Diverting



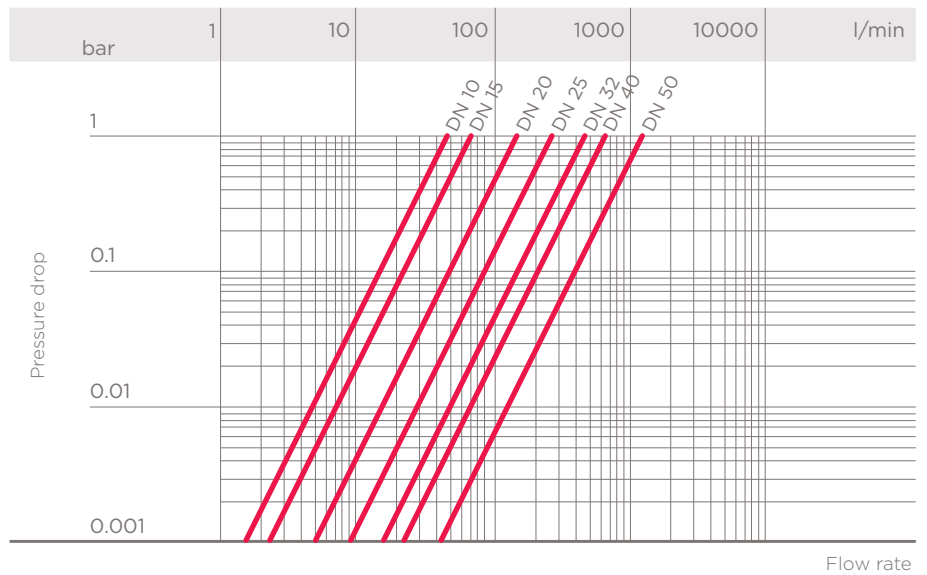
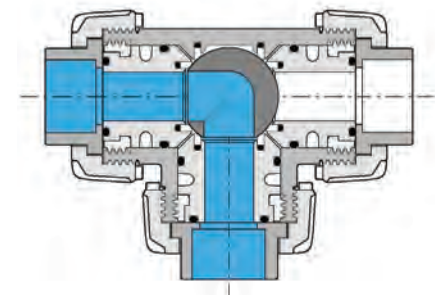
C - T-port ball valve:
180° - Branch closed/direct
flow



D - T-port ball valve:
270° - Diverting



E - L-port ball valve:
0°/270° - Diverting



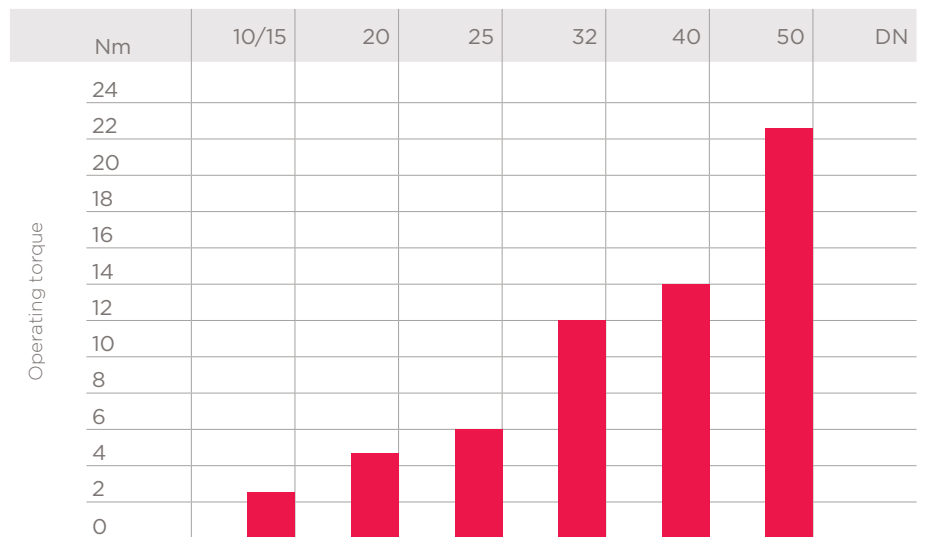
K_v100 FLOW COEFFICIENT

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.

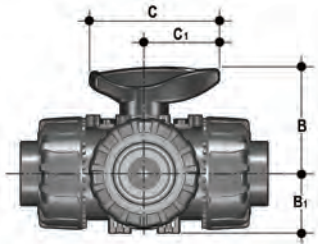
	DN	10	15	20	25	32	40	50
K _v 100 l/min	A	25	35	95	140	270	330	620
	B	37	55	135	205	390	475	900
	C	78	195	380	760	1050	1700	3200
	D	40	65	145	245	460	600	1200
	E	48	73	150	265	475	620	1220

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



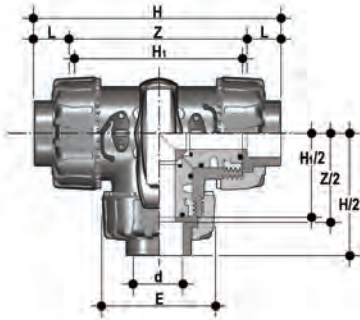
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

DIMENSIONS



Dimensions shared by all versions

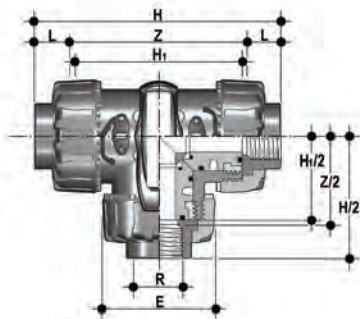
d	DN	B	B ₁	C	C ₁
16	10	54	29	67	40
20	15	54	29	67	40
25	20	65	34.5	85	49
32	25	69.5	39	85	49
40	32	82.5	46	108	64
50	40	89	52	108	64
63	50	108	62	134	76



TKDIC - LKDIC

DUAL BLOCK® 3-way ball valve with female ends for solvent welding, metric series.
TKDIC - T-port ball/ LKDIC - L-port ball

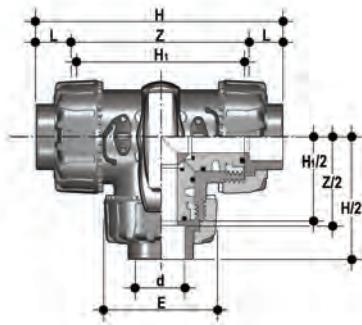
d	DN	PN	E	H	H ₁	L	Z	g	TKDIC EPDM Code	TKDIC FPM Code	LKDIC EPDM Code	LKDIC FPM Code
16	10	16	54	118	80	14	90	310	TKDIC016E	TKDIC016F	LKDIC016E	LKDIC016F
20	15	16	54	118	80	16	86	310	TKDIC020E	TKDIC020F	LKDIC020E	LKDIC020F
25	20	16	65	145	100	19	107	550	TKDIC025E	TKDIC025F	LKDIC025E	LKDIC025F
32	25	16	73	160	110	22	116	790	TKDIC032E	TKDIC032F	LKDIC032E	LKDIC032F
40	32	16	86	188.5	131	26	136.5	1275	TKDIC040E	TKDIC040F	LKDIC040E	LKDIC040F
50	40	16	98	219	148	31	157	1660	TKDIC050E	TKDIC050F	LKDIC050E	LKDIC050F
63	50	16	122	266.5	179	38	190.5	2800	TKDIC063E	TKDIC063F	LKDIC063E	LKDIC063F



TKDFC - LKDFC

Dual Block® 3-way ball valve with BSP threaded female ends.
TKDFC - T-port ball/ LKDFC - L-port ball

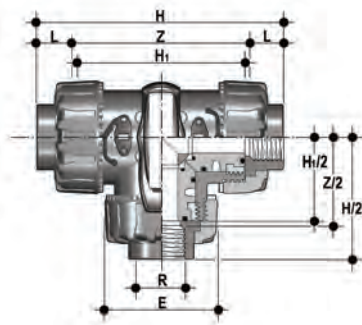
R	DN	PN	E	H	H ₁	L	Z	g	TKDFC EPDM Code	TKDFC FPM Code	LKDFC EPDM Code	LKDFC FPM Code
1/2"	15	16	54	126	80	18	90.4	310	TKDFC012E	TKDFC012F	LKDFC012E	LKDFC012F
3/4"	20	16	65	146.4	100	18	110.4	550	TKDFC034E	TKDFC034F	LKDFC034E	LKDFC034F
1"	25	16	73	166.6	110	22.6	121.4	790	TKDFC100E	TKDFC100F	LKDFC100E	LKDFC100F
1 1/4"	32	16	86	195.8	131	25.1	145.6	1275	TKDFC114E	TKDFC114F	LKDFC114E	LKDFC114F
1 1/2"	40	16	98	211.4	148	24.7	162	1660	TKDFC112E	TKDFC112F	LKDFC112E	LKDFC112F
2"	50	16	122	253.8	179	29.6	194.6	2800	TKDFC200E	TKDFC200F	LKDFC200E	LKDFC200F



TKDAC - LKDAC

DUAL BLOCK® 3-way ball valve with female ends for solvent welding, ASTM series.
TKDAC - T-port ball/ LKDAC - L-port ball

d	DN	PN	E	H	H ₁	L	Z	g	TKDAC EPDM Code	TKDAC FPM Code	LKDAC EPDM Code	LKDAC FPM Code
1/2"	15	16	54	132.2	80	23	87.2	310	TKDAC012E	TKDAC012F	LKDAC012E	LKDAC012F
3/4"	20	16	65	159.2	100	25.5	108.2	550	TKDAC034E	TKDAC034F	LKDAC034E	LKDAC034F
1"	25	16	73	174	110	28.7	116.6	790	TKDAC100E	TKDAC100F	LKDAC100E	LKDAC100F
1 1/4"	32	16	86	205	131	32	141	1275	TKDAC114E	TKDAC114F	LKDAC114E	LKDAC114F
1 1/2"	40	16	98	227.6	148	35	157.6	1660	TKDAC112E	TKDAC112F	LKDAC112E	LKDAC112F
2"	50	16	122	267	179	38.2	190.6	2800	TKDAC200E	TKDAC200F	LKDAC200E	LKDAC200F

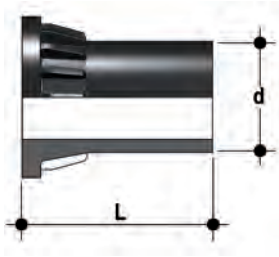


TKDNC - LKDNC

DUAL BLOCK® 3-way ball valve with female ends, NPT thread.
TKDNC - T-port ball/ LKDNC - L-port ball

d	DN	PN	E	H	H ₁	L	Z	g	TKDNC EPDM Code	TKDNC FPM Code	LKDNC EPDM Code	LKDNC FPM Code
1/2"	15	16	54	126	80	18	90.4	310	TKDNC012E	TKDNC012F	LKDNC012E	LKDNC012F
3/4"	20	16	65	146.4	100	18	110.4	550	TKDNC034E	TKDNC034F	LKDNC034E	LKDNC034F
1"	25	16	73	166.6	110	22.6	121.4	790	TKDNC100E	TKDNC100F	LKDNC100E	LKDNC100F
1 1/4"	32	16	86	195.8	131	25.1	145.6	1275	TKDNC114E	TKDNC114F	LKDNC114E	LKDNC114F
1 1/2"	40	16	98	211.4	148	24.7	162	1660	TKDNC112E	TKDNC112F	LKDNC112E	LKDNC112F
2"	50	16	122	253.8	179	29.6	194.6	2800	TKDNC200E	TKDNC200F	LKDNC200E	LKDNC200F

ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
52	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



SHKD

Handle block kit 0° - 90° lockable

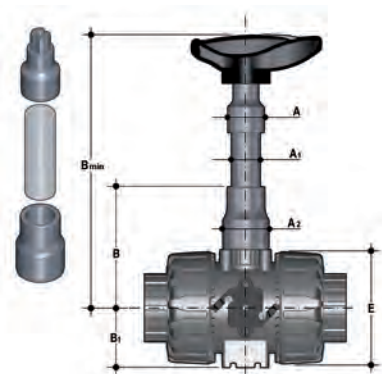
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063



LTKD

The LTKD stroke limiter specifically permits handle and ball rotation only at set opening and closing angles. The LTKD090 version permits operations for 90° angles while the LTKD180 version for 180° angles. The LTKD stroke limiter is made up of a single removable plate made of technopolymer. Designed for ISO 5211 bore and specifically designed to be directly housed on the valve body mounting flange. It is secured to the valve body by self-tapping screws or plastic rivets.

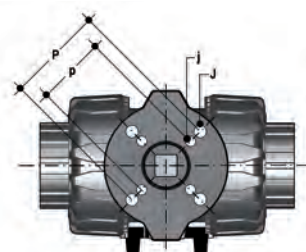
d	DN	Code 90°	Code 180°
16 - 20	10 - 15	LTKD090020	LTKD180020
25 - 32	20 - 25	LTKD090032	LTKD180032
40 - 50	32 - 40	LTKD090050	LTKD180050
63	50	LTKD090063	LTKD180063



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

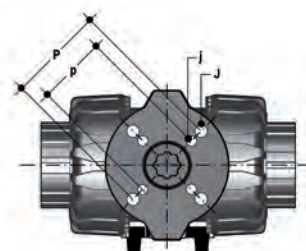


POWER QUICK CP

The valve can be equipped with pneumatic actuators, using the PP-GR module reproducing the drilling pattern provided for 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 upon request

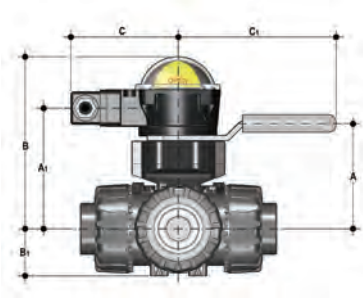


POWER QUICK CE

The valve can be equipped with electric actuators, using the PP-GR module reproducing the drilling pattern provided for 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

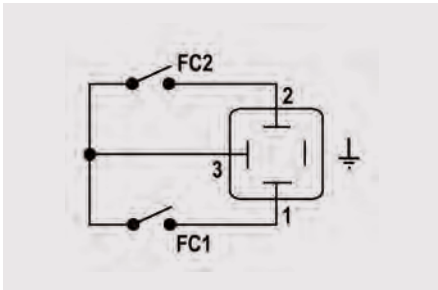
*F04 x 5.5 upon request



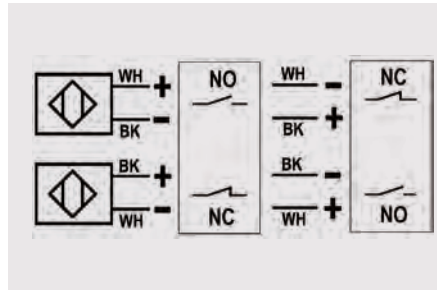
MSKD

MSKD is a limit switch box with electromechanical or inductive micro switches to remotely signal the valve position (maximum 90° rotation). Manual valve installation is possible using the Power Quick actuation module. The box can be assembled on the TKD valve even if already installed on the system.

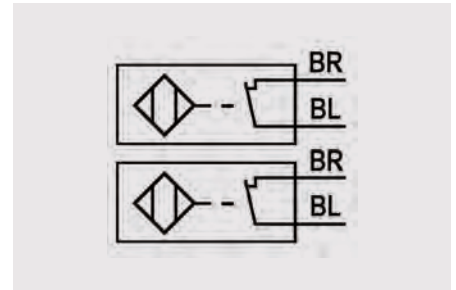
d	DN	A	A ₁	B	B ₁	C	C ₁	Code electromechanical	Code inductive	Code Namur
16	10	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
20	15	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
25	20	70.5	96	143.5	34.5	88.5	134	MSKD1M	MSKD1I	MSKD1N
32	25	74	101	148.5	39	88.5	134	MSKD1M	MSKD1I	MSKD1N
40	32	116	118	165.5	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

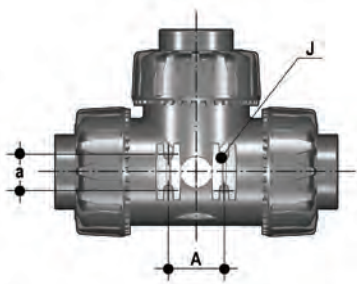
FASTENING AND SUPPORTING



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

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

Using standard threaded nuts (not included) made of stainless steel, you can anchor the valve on 4 fastening points.

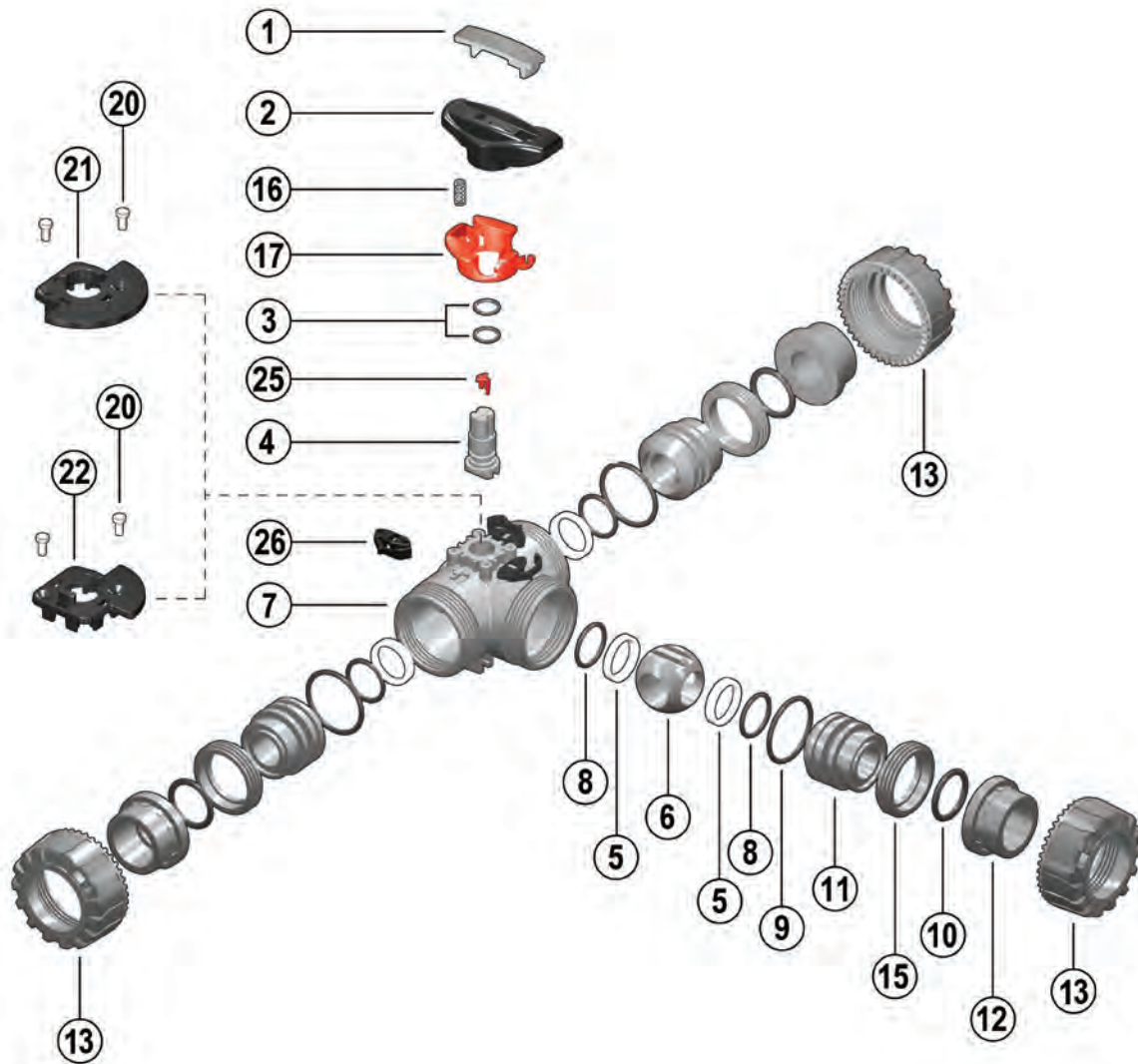


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

* With threaded inserts

COMPONENTS

EXPLODED VIEW



1 · Handle insert (PVC-U - 1)

2 · Handle (HIPVC - 1)

3 · Stem O-ring
(EPDM or FPM - 2)*

4 · Stem (PVC-C - 1)

5 · Ball seat (PTFE - 4)*

6 · Ball (PVC-C - 1)

7 · Body (PVC-C - 1)

8 · Ball seat O-Ring
(EPDM or FPM - 4)*

9 · Radial seal O-Ring
(EPDM or FPM - 3)

10 · Socket seal O-Ring
(EPDM or FPM - 3)*

11 · Ball seat carrier (PVC-C - 3)

12 · End connector (PVC-C - 3)*

13 · Union nut(PVC-C - 3)

15 · Threaded ring (PVC-C - 3)

16 · Spring - SHKD accessory

(STAINLESS steel - 1)**

17 · Handle safety block - SHKD
accessory (PP-GR - 1)**

20 · Rivet for LTKD (POM - 2)**

21 · LTKD 180° (POM - 1)**

22 · LTKD 90° (POM - 1)**

25 · Position indicator
(POM - 1)

26 · DUAL BLOCK® (POM - 3)

* 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 pressing the lever on the DUAL BLOCK® (26) 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) Unscrew the union nuts (13) and extract the body (7).
- 4) After turning the handle (2) to the position with the three arrows pointing at the three ports (for L-port ball with two arrows facing the ports a and b), extract the insert (1) from the handle (2) and insert the two protrusions in the corresponding apertures in the threaded rings (15), extracting the carriers (11) by turning counter-clockwise.
- 5) Extract the ball (6) from the central port being careful not to damage the seat surface.
- 6) Remove the PTFE ball seats (5) and O-Rings (8, 9, 10) from the carriers (11).
- 7) Pull the handle (2) upwards to remove it from the stem (4).
- 8) Press the stem (4) into the body and extract it.
- 9) Remove the PTFE ball seat (5) with relevant O-ring (8) from inside the valve body.
- 10) Remove the stem (4) O-rings (3) from their seats.

ASSEMBLY

- 1) Insert the O-rings (3) on the stem (4).
- 2) Insert the O-ring (8) in the seat in the valve body and, next, the PTFE ball seat (5).
- 3) Insert the stem (4), from the interior, in the body, being sure the three bores correspond to the three outlets.
- 4) Insert the ball (6) from the central port b, being careful that the three bores match the three outlets (for L-port ball, the two bores must match the a and b outlets).
- 5) Insert the O-rings (8), PTFE ball seats (5), socket seal O-rings (10) and radial seal O-rings (9) in their seats on the carriers (11).
- 6) Insert the three carriers (11) with the relevant threaded rings (15), screwing in clockwise with the handle insert (1) and starting from the one on the central outlet b.
- 7) Press the handle (2) on the stem (4), being careful to match the printed arrows with the lines on the stem (fig. 2-3).
- 8) Return the insert (1) in the handle (2)
- 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.



Note: 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.

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 (26) 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 three 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 TKD valve can be equipped with a handle block to prevent ball rotation (available as an accessory). When the block (16, 17) is installed, lift the lever (17) and rotate the handle.

A lock can also be installed on the handle to protect the system against tampering (fig. 4).

Seals can be adjusted using the extractable insert on the handle (fig. 5-6). After positioning the ball as in figure 7-8, using this insert as a tool you can adjust the seals by screwing in the carriers following the indicated sequence (fig. 7-8).

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 high number of manoeuvres.

Fig. 5



Fig. 6



Fig. 7

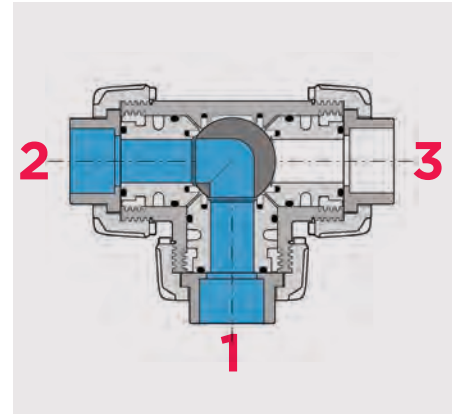
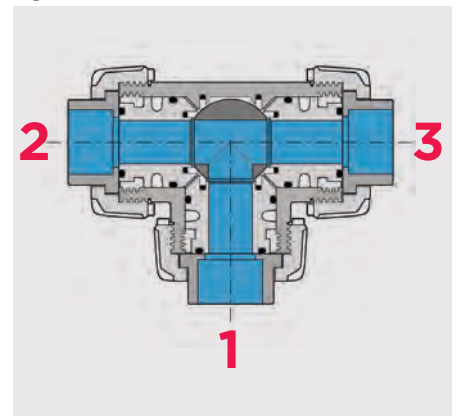


Fig. 8



WARNINGS

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



VXE DN 10÷50
PVC-C

Easyfit 2-way ball valve

VXE DN 10÷50

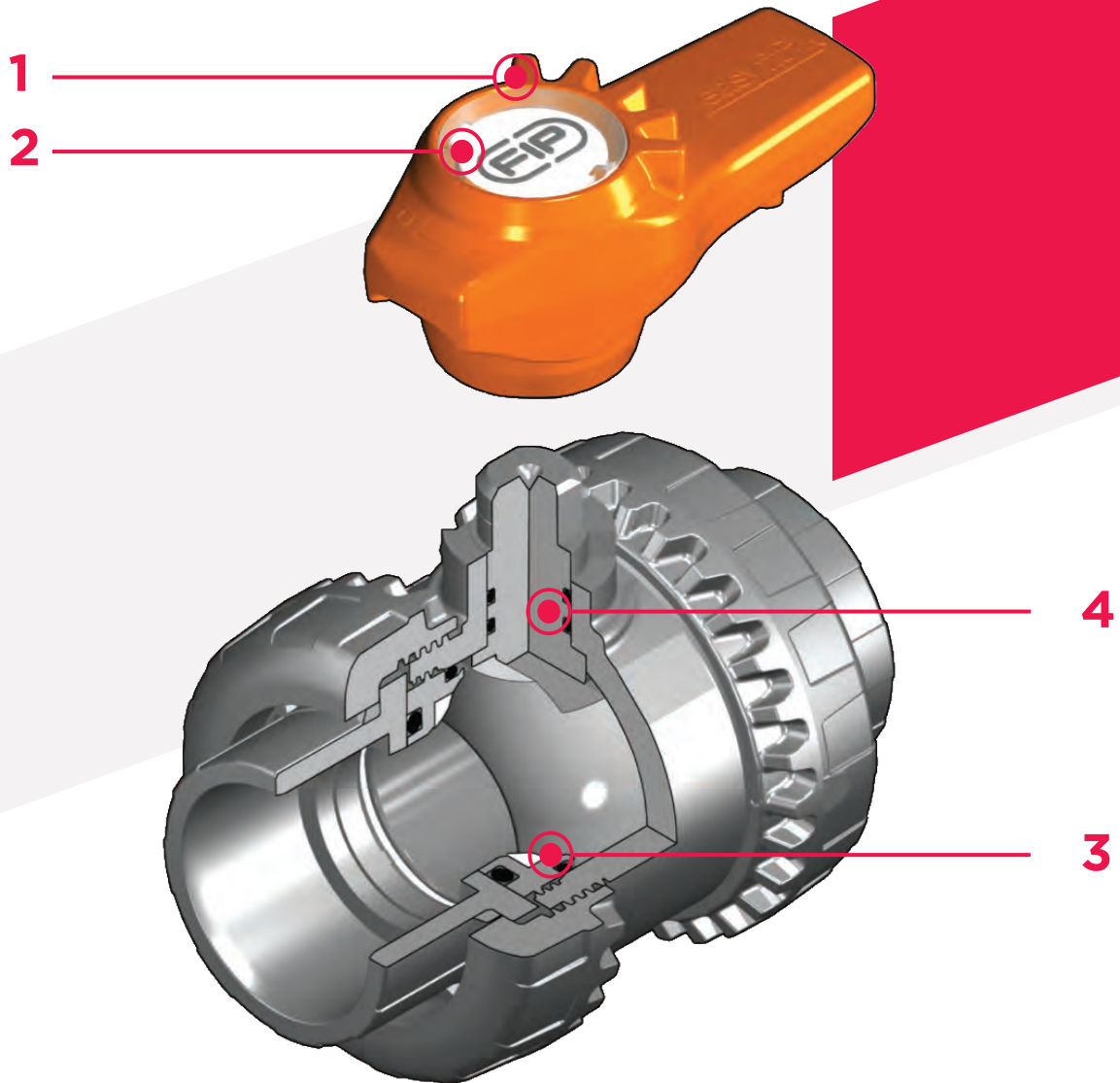
FIP and Giugiaro Design designed and developed VXE Easyfit, the innovative True union ball valve with union nut tightening control system that permits simple and safe installation for reliable service in time. This valve is also equipped with the customisable Labelling System.



EASYFIT 2-WAY BALL VALVE

- **Patented Easyfit system:** innovative mechanism based on the principle of the bevel gear pair that controls valve union nut rotation during installation.
- Connection system for solvent weld and threaded joints
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FPM), with water, drinking water and other food substances as per **current regulations**
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- PN16 **True Union valve body** made for PVC-C injection moulding and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- **Short face to face dimension** according to international regulation ISO 7508 series III "short" and fully interchangeable with previous VX Ergo series models
- Option of disassembling downstream pipes with the valve in the closed position
- Floating **full bore ball** with high surface finish made in CNC work stations to achieve precise dimensional tolerance and high surface finish

Technical specifications	
Construction	Easyfit 2-way True Union ball valve with locked carrier
Size range	DN 10 ÷ 50
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM F437
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	PVC-C
Seal material	EPDM, FPM (standard size O-Ring); PTFE (ball seats)
Control options	Manual control



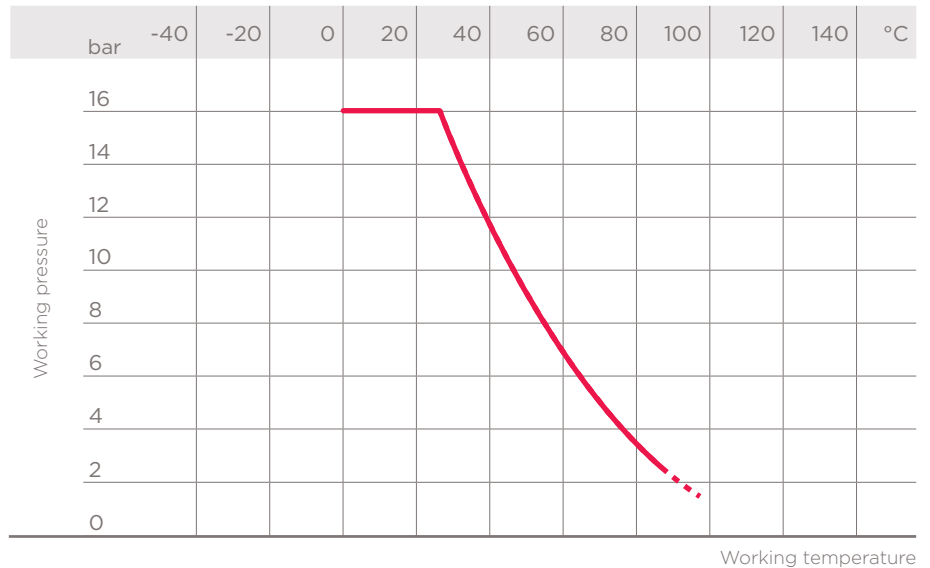
- 1** Two position Easyfit ergonomic multifunctional handle with union nut tightening control which can be used to adjust the ball seat carriers. Handle use is especially indicated for maintenance work where space is limited and hard to access
- 2** Customisable Labelling System: built-in LCE module on the handle made up of a transparent protection plug and customisable tag holder with LSE set (available as accessory). The customisation lets you identify the valve on the system according to specific needs
- 3** The PTFE ball seat system with locked carrier adjustable via Easyfit multifunctional handle or Easytorque adjustment kit (available as an accessory)
- 4** High surface finish stem with double O-Ring, produced in CNC work stations to achieve precise dimensional tolerance and high surface finish

TECHNICAL DATA

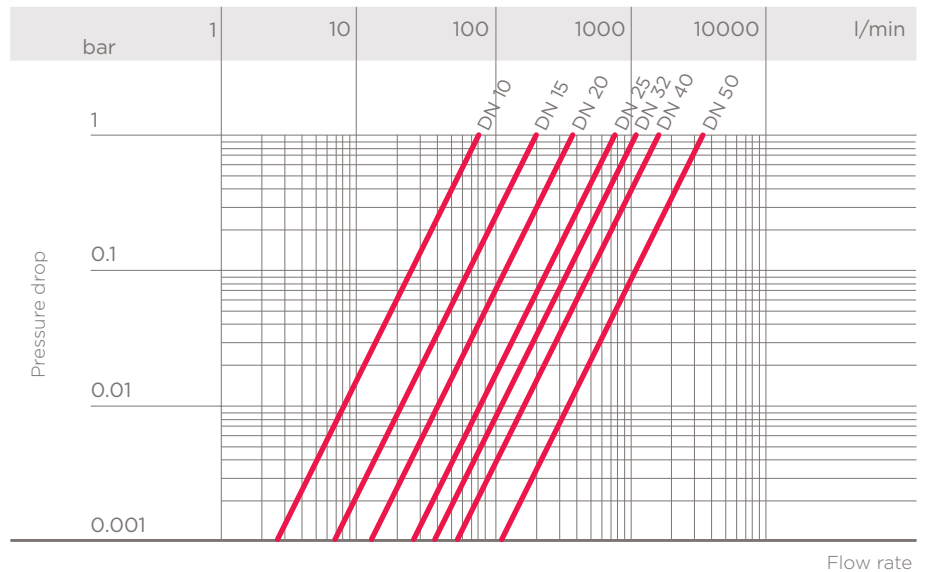
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

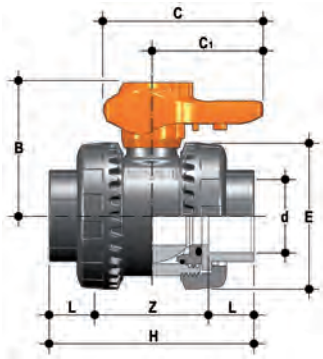
The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position.

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

DN	10	15	20	25	32	40	50
K _v 100 l/min	80	200	385	770	1100	1750	3400

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.

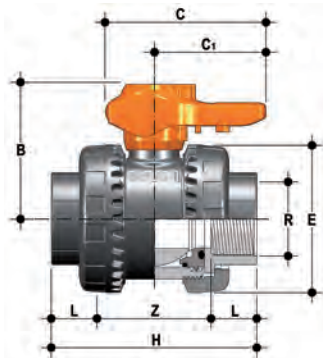
DIMENSIONS



VXEIC

Easyfit 2-way ball valve with female ends for solvent welding, metric series

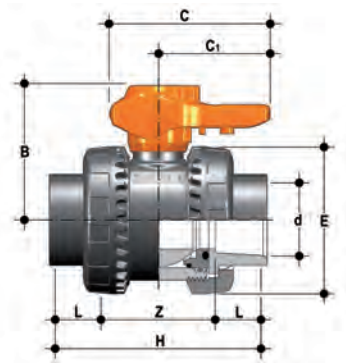
d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
16	20	16	49	64	20	54	82	16	50	180	VXEIC016E	VXEIC016F
20	15	16	49	64	20	54	82	16	50	175	VXEIC020E	VXEIC020F
25	20	16	62	78	23	63	91	19	53	260	VXEIC025E	VXEIC025F
32	25	16	71	87	27	72	103	22	59	365	VXEIC032E	VXEIC032F
40	32	16	82	102	30	85	120	26	68	565	VXEIC040E	VXEIC040F
50	40	16	92	109	33	100	139	31	77	795	VXEIC050E	VXEIC050F
63	50	16	110	133	39	118	174	38	98	1325	VXEIC063E	VXEIC063F



VXEFC

Easyfit 2-way ball valve with BSP threaded female ends

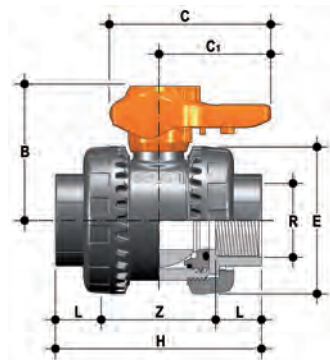
R	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	49	64	20	54	90	17.8	54.4	175	VXEFC012E	VXEFC012F
3/4"	20	16	62	64	23	63	93	18	57	260	VXEFC034E	VXEFC034F
1"	25	16	71	78	27	72	110	22.6	64.8	365	VXEFC100E	VXEFC100F
1 1/4"	32	16	82	87	30	85	127	25.1	76.8	565	VXEFC114E	VXEFC114F
1 1/2"	40	16	92	102	33	100	131	24.7	81.6	795	VXEFC112E	VXEFC112F
2"	50	16	110	109	39	118	161	29.6	101.8	1325	VXEFC200E	VXEFC200F



VXEAC

Easyfit 2-way ball valve with female ends for solvent welding, ASTM series

d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	49	64	20	54	96	22.5	22.5	175	VXEAC012E	VXEAC012F
3/4"	20	16	62	78	23	63	105	25.5	25.5	260	VXEAC034E	VXEAC034F
1"	25	16	71	87	27	72	117	28.7	28.7	365	VXEAC100E	VXEAC100F
1 1/4"	32	16	82	102	30	85	136	32	32	565	VXEAC114E	VXEAC114F
1 1/2"	40	16	92	109	33	100	147	35	35	795	VXEAC112E	VXEAC112F
2"	50	16	110	133	39	118	174	38.2	38.2	1325	VXEAC200E	VXEAC200F

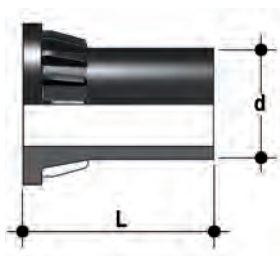


VXENC

Easyfit 2-way ball valve with female ends, NPT thread

R	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	49	64	20	54	90	17.8	54.4	175	VXENC012E	VXENC012F
3/4"	20	16	62	78	23	63	93	18	57	260	VXENC034E	VXENC034F
1"	25	16	71	87	27	72	110	22.6	64.8	365	VXENC100E	VXENC100F
1 1/4"	32	16	82	102	30	85	127	25.1	76.8	565	VXENC114E	VXENC114F
1 1/2"	40	16	92	109	33	100	131	24.7	81.6	795	VXENC112E	VXENC112F
2"	50	16	110	133	39	118	161	29.6	101.8	1325	VXENC200E	VXENC200F

ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
52	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



EASYTORQUE KIT

Kit for union nut tightening adjustment and ball seat carrier for Easyfit DN 10÷50 valves.

d	DN	Torque union nuts*	Torque carrier*	Code
3/8"-1/2"	10-15	5 N m - 3,69 Lbf ft	3 N m - 2,21 Lbf ft	KET01
3/4"	20	5 N m - 3,69 Lbf ft	3 N m - 2,21 Lbf ft	KET01
1"	25	6 N m - 4,43 Lbf ft	4 N m - 2,95 Lbf ft	KET01
1"1/4	32	7 N m - 5,16 Lbf ft	4 N m - 2,95 Lbf ft	KET01
1"1/2	40	8 N m - 5,90 Lbf ft	5 N m - 3,69 Lbf ft	KET01
2"	50	10 N m - 7,38 Lbf ft	6 N m - 4,43 Lbf ft	KET01

*calculated in ideal installation conditions



LCE

Transparent protection plug with tag holder

d	DN	Code
16	10	LCE020
20	15	LCE020
25	20	LCE025
32	25	LCE032
40	32	LCE040
50	40	LCE050
63	50	LCE063



LSE

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

d	DN	Code
16	10	LSE020
20	15	LSE020
25	20	LSE025
32	25	LSE032
40	32	LSE040
50	40	LSE050
63	50	LSE063

CUSTOMISATION

The VXE DN 10÷50 Easyfit valve is equipped with a 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) and white label plate (B) made of the same material, located next to the FIP logo (fig. 1).

The 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) Extract the handle from the valve body and extract the transparent plug.
- 2) Extract the label plate from the transparent plug (fig. 2).
- 3) Apply the adhesive label on the holder to align the profiles matching the tab position.
- 4) Reinsert the tag holder in the transparent plug so that the label is protected against the elements.
- 5) Apply the transparent plug on the handle matching the two fittings (one narrow and one wide) with their housings (fig. 3).

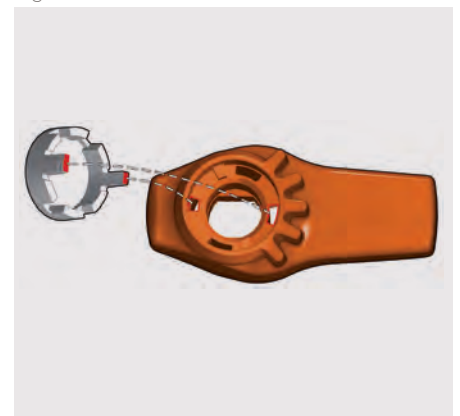
Fig. 1



Fig. 2

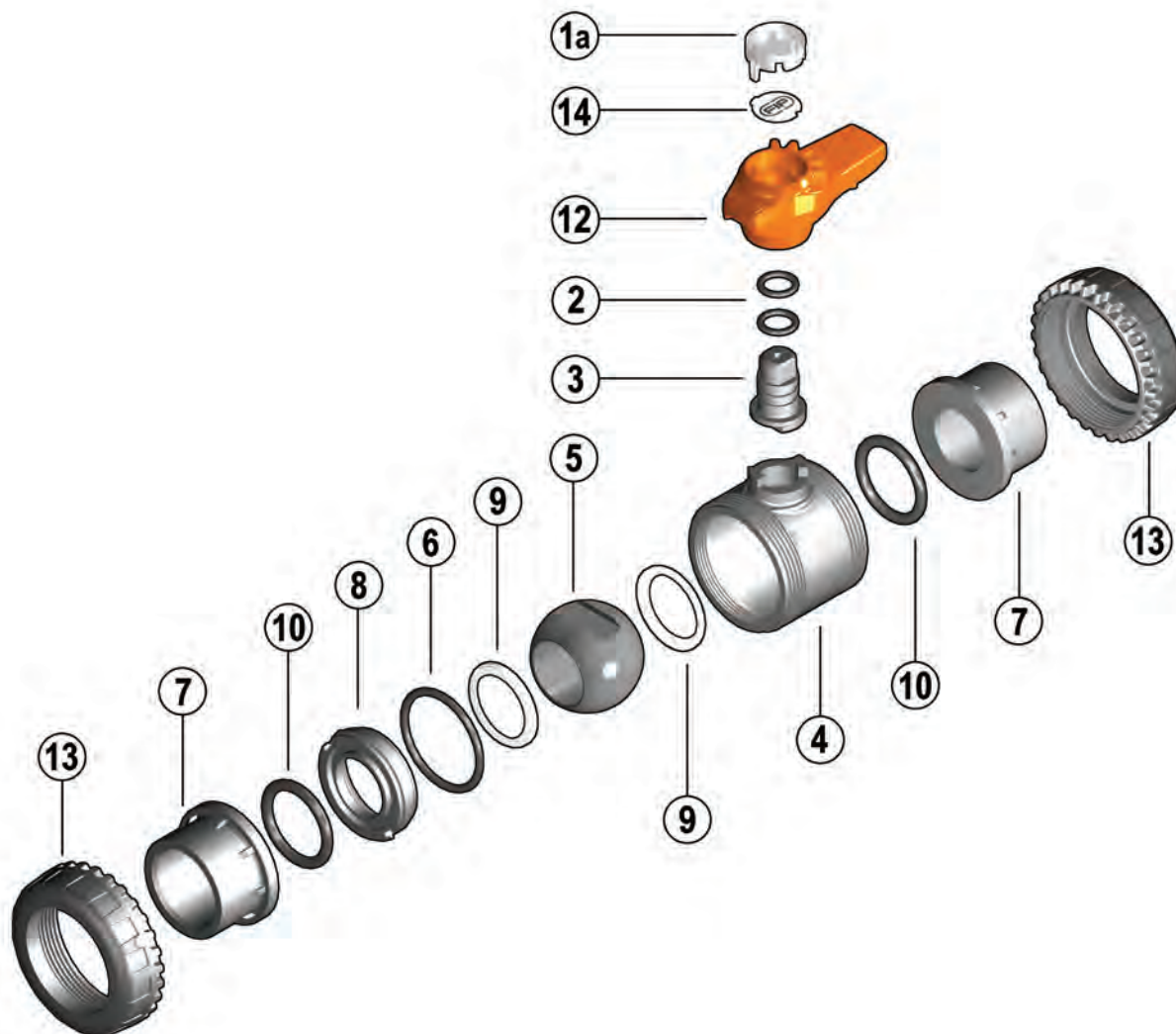


Fig. 3



COMPONENTS

EXPLODED VIEW



1a · Transparent protection plug (PVC - 1)

2 · Stem O-ring (EPDM or FPM - 2)*

3 · Stem (PVC-C - 1)

4 · Body (PVC-C - 1)

5 · Ball (PVC-C - 1)

6 · Radial seal O-Ring (EPDM or FPM - 1)*

7 · End connector (PVC-C - 2)

8 · Ball seat carrier (PVC-C - 1)

9 · Ball seat (PTFE - 2)*

10 · Socket seal O-Ring (EPDM or FPM - 2)*

12 · Handle (HIPVC - 1)

13 · Union nut (PVC-C - 2)

14 · Tag holder (PVC - 1)

* Spare parts

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) Fully unscrew the union nuts (13) from the valve body and slide the body out sideways (fig. 4-5).
To do this, we recommend you use the Easyfit handle as a tool (fig. 8-9)
- 3) Before disassembling, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
- 4) After closing the valve, remove the handle (12) (fig. 6) and insert the two protrusions in the lower side in the two apertures and in the carrier passage bore (8) extracting it by turning counter-clockwise (fig. 7).
- 5) Press on the ball from the side opposite the "REGULAR" label, being sure not to scratch it, until the ball seat exits (9), then extract the ball (5).
- 6) Press the stem (3) inwards until it exits the body.
- 7) Remove the O-Rings (2, 6, 10) and ball seats (9) extracting them from their seats, as illustrated in the exploded view.

ASSEMBLY

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



Note: 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.

Fig. 4



Fig. 5



Fig. 6



Fig. 7



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) Unscrew the union nuts from the valve body (4) and slide them onto the pipe.
- 3) Solvent weld or screw the end connectors (7) onto the pipe segments.
- 4) Position the valve body between the end connectors (fig. 5).
Warning: if a high pressure test is required, always position the body with the "REGULAR" label upstream from the fluid direction.
- 5) Fit the union nuts on the valve body and manually tighten clockwise until they become hard to turn; do not use wrenches or other tools that can damage the union nut surfaces.
- 6) Extract the handle (12) from the valve body and extract the transparent plug (1a).
- 7) Overturn the handle and insert it on the valve stem matching the handle teeth (A) with the union nut teeth (B) (fig. 8-9).
- 8) Turn the handle counter-clockwise to fully tighten the union nut. The rotation directions to tighten (TIGHTEN) and loosen (UNTIGHTEN) the union nuts are indicated on the handle (fig. 10). Generally, if pipes are not offset, one turn is sufficient for correct tightening.

9) Repeat point 7 for the other union nut.

Note: A small force applied on the handle develops a torque much higher than manual tightening.

You can also, using the Easytorque kit (fig. 11), supplied as an accessory, tighten union nuts using a torque wrench to quantify the force and thus monitor the stress applied to the thermoplastic threads according to the installation indications in the instructions enclosed with the kit.

10) Apply the plug (1a) on the handle (12) matching the two fittings (one narrow and one wide) with the relevant housings on the handle (fig. 3).

11) Install the handle (12) on the stem (3) again.

12) If necessary, support the pipe with FIP pipe clip model ZIKM and DSM spacers.

WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H₂O₂) or Sodium Hypochlorite (NaClO) is 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.
- Do not use compressed air or other gases to test thermoplastic lines.
- Always avoid sudden closing manoeuvres and protect the valve from accidental manoeuvres.

Fig. 8



Fig. 9

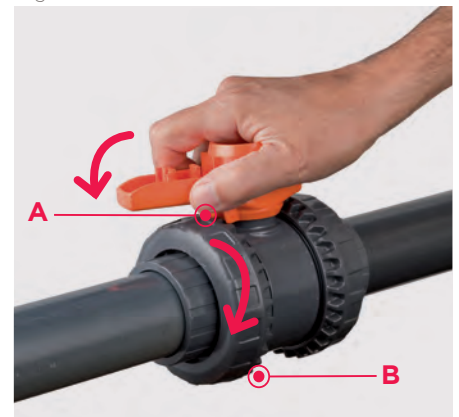
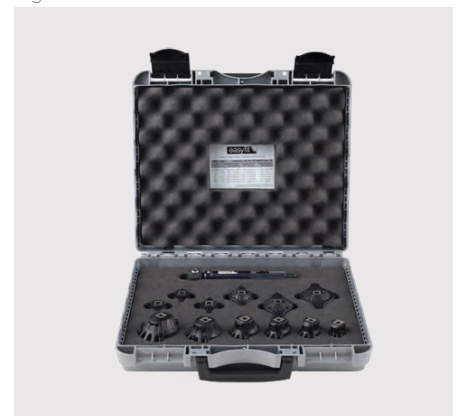


Fig. 10



Fig. 11





VXE DN 65÷100
PVC-C

Easyfit 2-way ball valve

VXE

DN 65÷100

FIP and Giugiaro Design designed and developed VXE Easyfit, the innovative True union ball valve with union nut tightening control system that permits simple and safe installation for reliable service in time. This valve is also equipped with the customisable Labelling System.

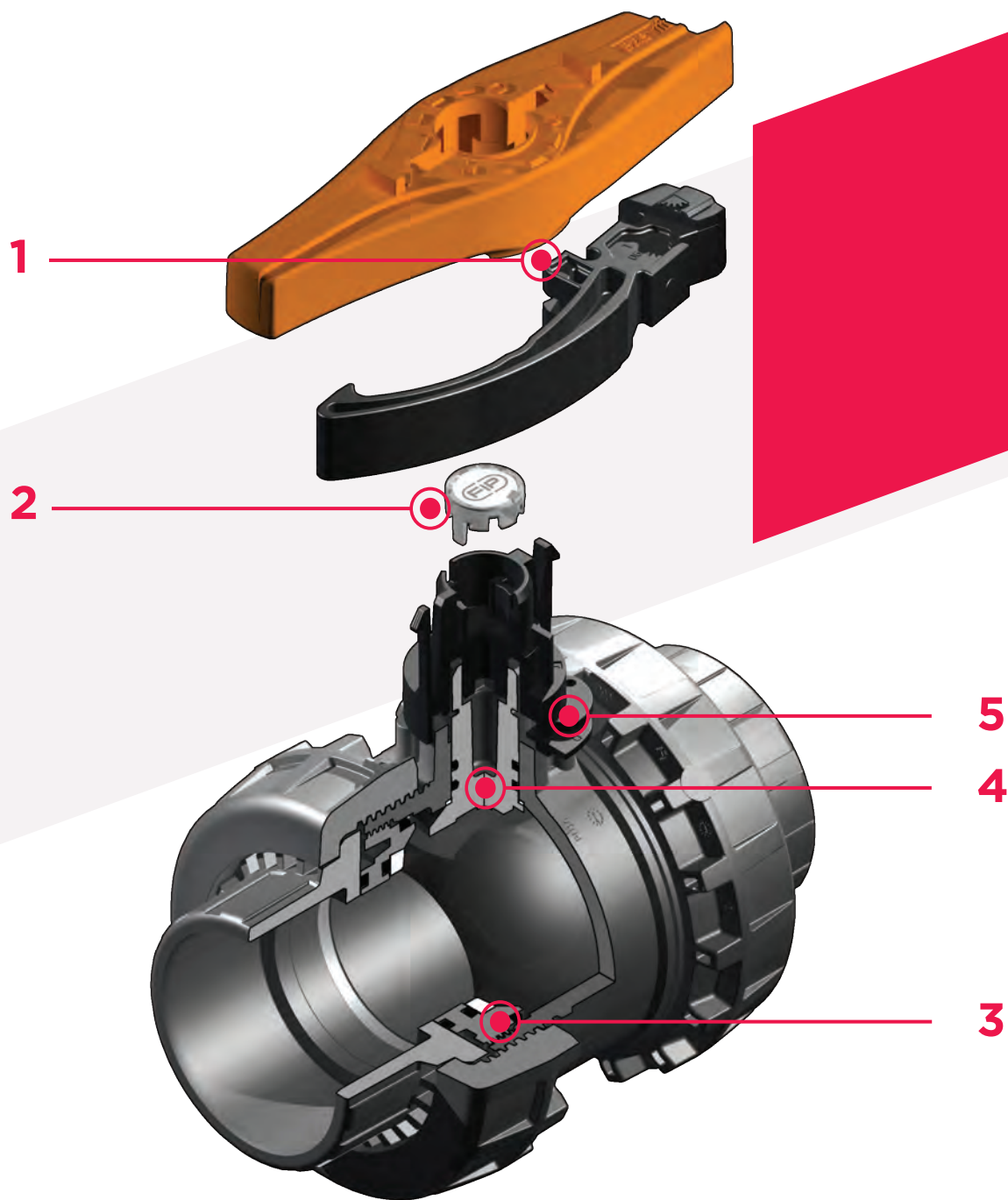


EASYFIT 2-WAY BALL VALVE

- **Patented Easyfit system:** innovative mechanism based on the multifunctional handle quick release mechanism that permits union nut rotation during valve installation and ball seat carrier adjustment
- Connection system for solvent weld and threaded joints
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FPM), with water, drinking water and other food substances as per **current regulations**
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN16 True Union valve body** made for PVC-C injection moulding and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- Valve body with built in anchoring frame for the special **Power Quick module** dedicated to accessory or pneumatic and electric actuator installation
- Option of disassembling downstream pipes with the valve in the closed position
- Floating **full bore ball** with high surface finish made in CNC work stations to achieve precise dimensional tolerance and high surface finish

Technical specifications

Construction	Easyfit 2-way True Union ball valve with locked carrier
Size range	DN 65 ÷ 100
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	<p>Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441</p> <p>Thread: ISO 228-1, DIN 2999, ASTM F437</p> <p>Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B.16.5 cl. 150, JIS B 2220</p>
Reference standards	<p>Construction criteria: EN ISO 16135, EN ISO 15493</p> <p>Test methods and requirements: ISO 9393</p> <p>Installation criteria: DVS 2204, DVS 2221, UNI 11242</p> <p>Actuator couplings: ISO 5211</p>
Valve material	PVC-C
Control options	Manual control, electric actuator, pneumatic actuator



1 Innovative Easyfit quick release handle made up of a central hub firmly coupled with the stem valve and **dual spoke grip** that can be released from the hub with a simple operation and used as a **ball seat adjustment tool** and as a **union nut tightening tool** thanks to the hooked insert that, perfectly adapting to their external profile, allows the handle to transform into a wrench to control union nut rotation

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

3 PTFE ball seat system with locked carrier adjustable via the Easyfit quick release handle

4 Stem with high surface finish and **double O-Ring and PTFE anti-friction disk** that limits friction to a minimum and grants excellent operating torque

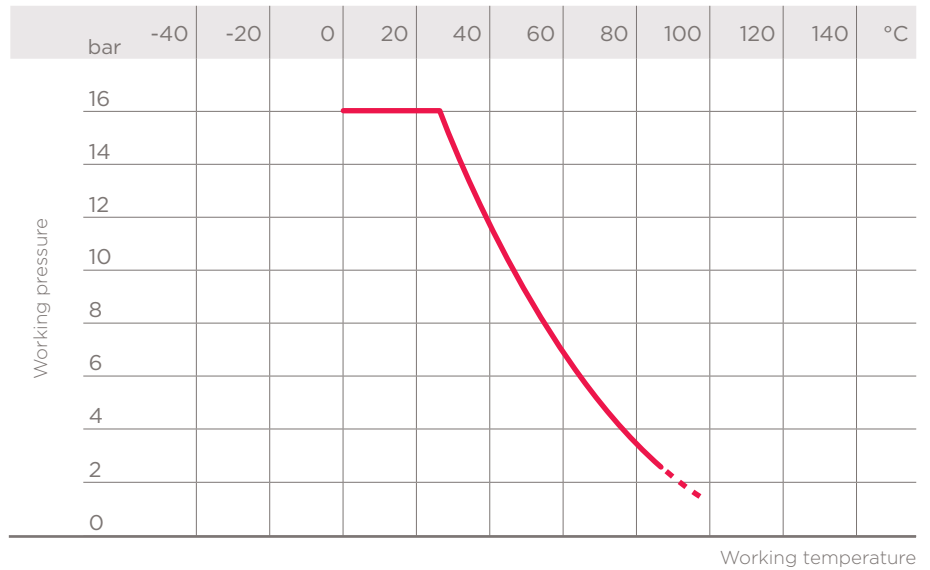
5 Locking device in closing and opening via lock

TECHNICAL DATA

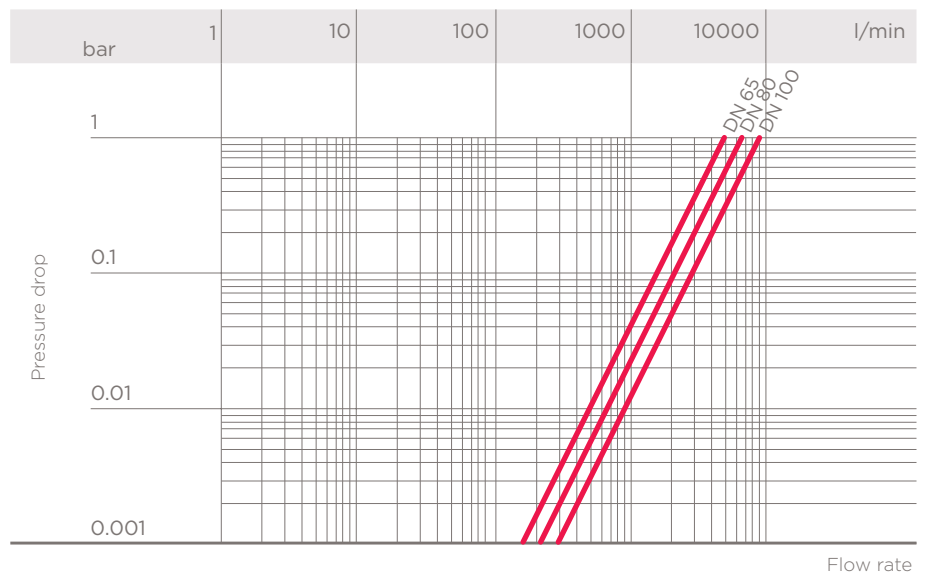
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



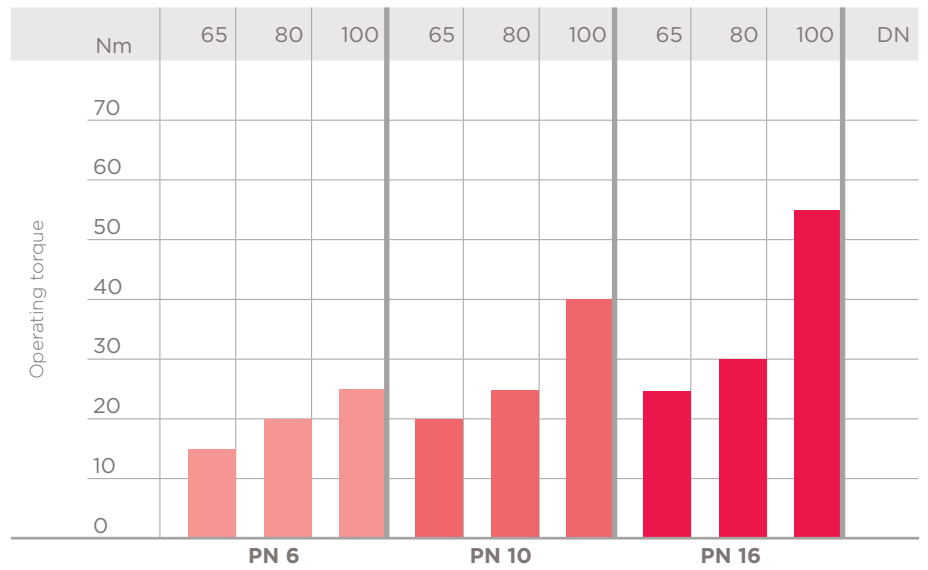
K_v100 FLOW COEFFICIENT

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 $\Delta p = 1$ bar pressure drop at a certain valve position.

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

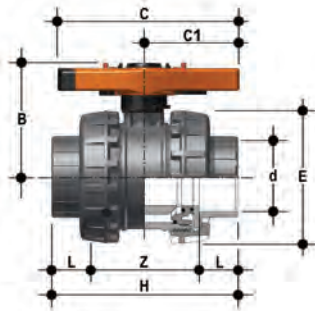
DN	65	80	100
K _v 100 l/min	5000	7000	9400

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

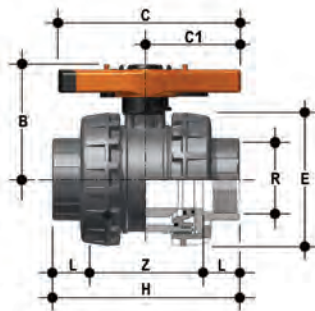
DIMENSIONS



VXEIC

Easyfit 2-way ball valve with female ends for solvent welding, metric series

d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
75	65	16	142	214	115	157	211	44	123	2998	VXEIC075E	VXEIC075F
90	80	16	151	239	126	174	248	51	146	3741	VXEIC090E	VXEIC090F
110	100	16	174.5	270	145	212	283	61	161	6337	VXEIC110E	VXEIC110F



VXEFC

Easyfit 2-way ball valve with BSP threaded female ends

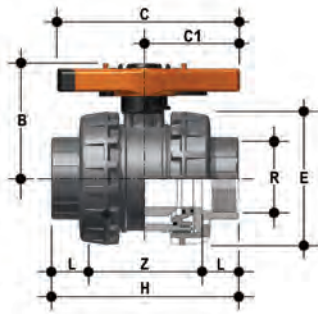
R	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	142	214	115	157	211	30.2	150.6	2998	VXEFC212E	VXEFC212F
3"	80	16	151	239	126	174	248	33.3	181.4	3741	VXEFC300E	VXEFC300F
4"	100	16	174.5	270	145	212	283	39.3	204.4	6337	VXEFC400E	VXEFC400F



VXEAC

Easyfit 2-way ball valve with female ends for solvent welding, ASTM series

d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	142	214	115	157	211	44.5	122	2998	VXEAC212E	VXEAC212F
3"	80	16	151	239	126	174	248	48	152	3741	VXEAC300E	VXEAC300F
4"	100	16	174.5	270	145	212	283	57.5	168	6337	VXEAC400E	VXEAC400F

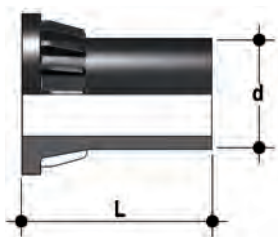


VXENC

Easyfit 2-way ball valve with female ends, NPT thread

R	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	142	214	115	157	211	33.2	144.6	2998	VXENC212E	VXENC212F
3"	80	16	151	239	126	174	248	35.5	177	3741	VXENC300E	VXENC300F
4"	100	16	174.5	270	145	212	283	37.6	207.8	6337	VXENC400E	VXENC400F

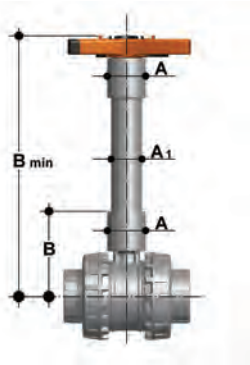
ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090VXE
110	100	16	127	11	CVDE11110VXE



PSE

Stem extension

d	inch	DN	A	A ₁	B	B min	Code ISO pipe	Code ASTM-BS pipe
75	2"1/2	65	76	63	159	364	PSE090	PSE300
90	3"	80	76	63	166	371	PSE090	PSE300
110	4"	100	76	63	186	433	PSE110	PSE400



LCE

Transparent protection plug with tag holder

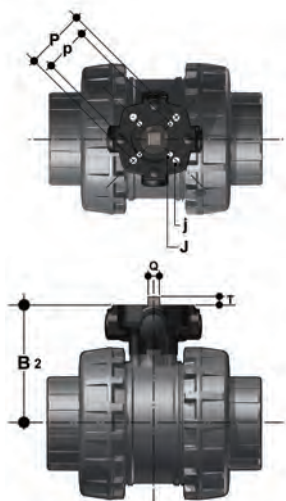
d	DN	Code
75	65	LCE040
90	80	LCE040
110	100	LCE040



LSE

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

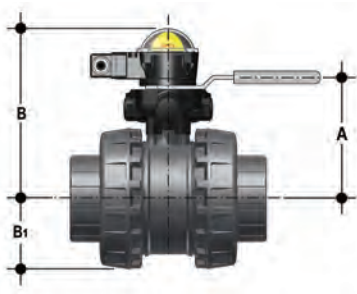
d	DN	Code
75	65	LSE040
90	80	LSE040
110	100	LSE040



POWER QUICK EASYFIT

The valve can be equipped with pneumatic or electric standard actuators and gearbox for heavy-duty operations, 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
75	65	129	14	16	F05 x 6,5	F07 x 8,5	PQE090
90	80	136	14	16	F05 x 6,5	F07 x 8,5	PQE090
110	100	156	17	19	F05 x 6,5	F07 x 8,5	PQE110

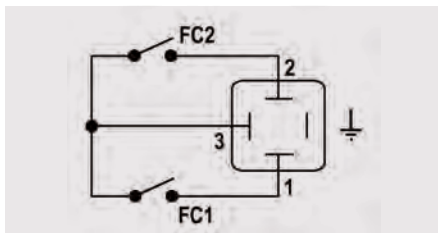


MSE

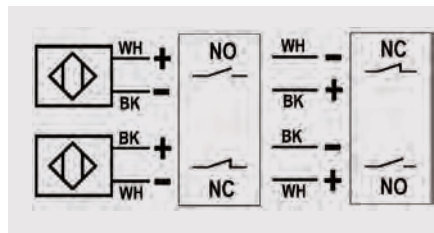
MSE is a limit switch box with electromechanical or inductive micro switches to remotely signal the valve position. Manual valve installation is possible using the Power Quick Easyfit actuation module.

The box can be assembled on the VXE valve even if already installed on the system.

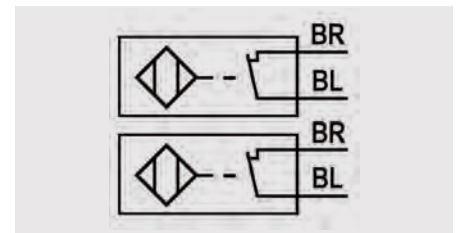
d	DN	A	B	B ₁	Code electromechanical	Code inductive	Code Namur
75	65	139	203	79	MSE1M	MSE1I	MSE1N
90	80	146	210	87	MSE1M	MSE1I	MSE1N
110	100	166	231	106	MSE2M	MSE2I	MSE2N



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	3×10^7	-	-	-	-	-	IP65
Inductive	-	-	$5 \div 36$ V	-	$4 \div 200$ mA	< 4,6 V	< 0,8 mA	IP65
Namur*	-	-	$7,5 \div 30$ V DC**	8,2 V DC	< 30 mA**	-	-	IP65

* To be used with an amplifier

** Outside areas with explosion risks

CUSTOMISATION

The VXE DN 65÷100 Easyfit valve is equipped with a 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) and white tag holder (B) made of the same material, one side of which bears the FIP logo (fig. 1).

The 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) Release the handle from the central hub (C) and extract the transparent plug.
- 2) Extract the tag holder from the transparent plug (fig. 2).
- 3) Apply the adhesive label on the holder to align the profiles matching the tab position.
- 4) Reinsert the tag holder in the transparent plug so that the label is protected against the elements.
- 5) Apply the transparent plug on the central hub matching the two fittings (one narrow and one wide) with the relevant housings.

Fig. 1

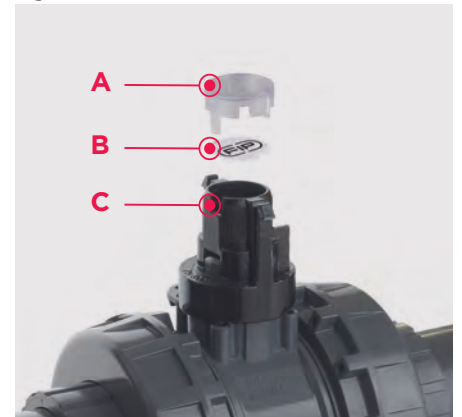
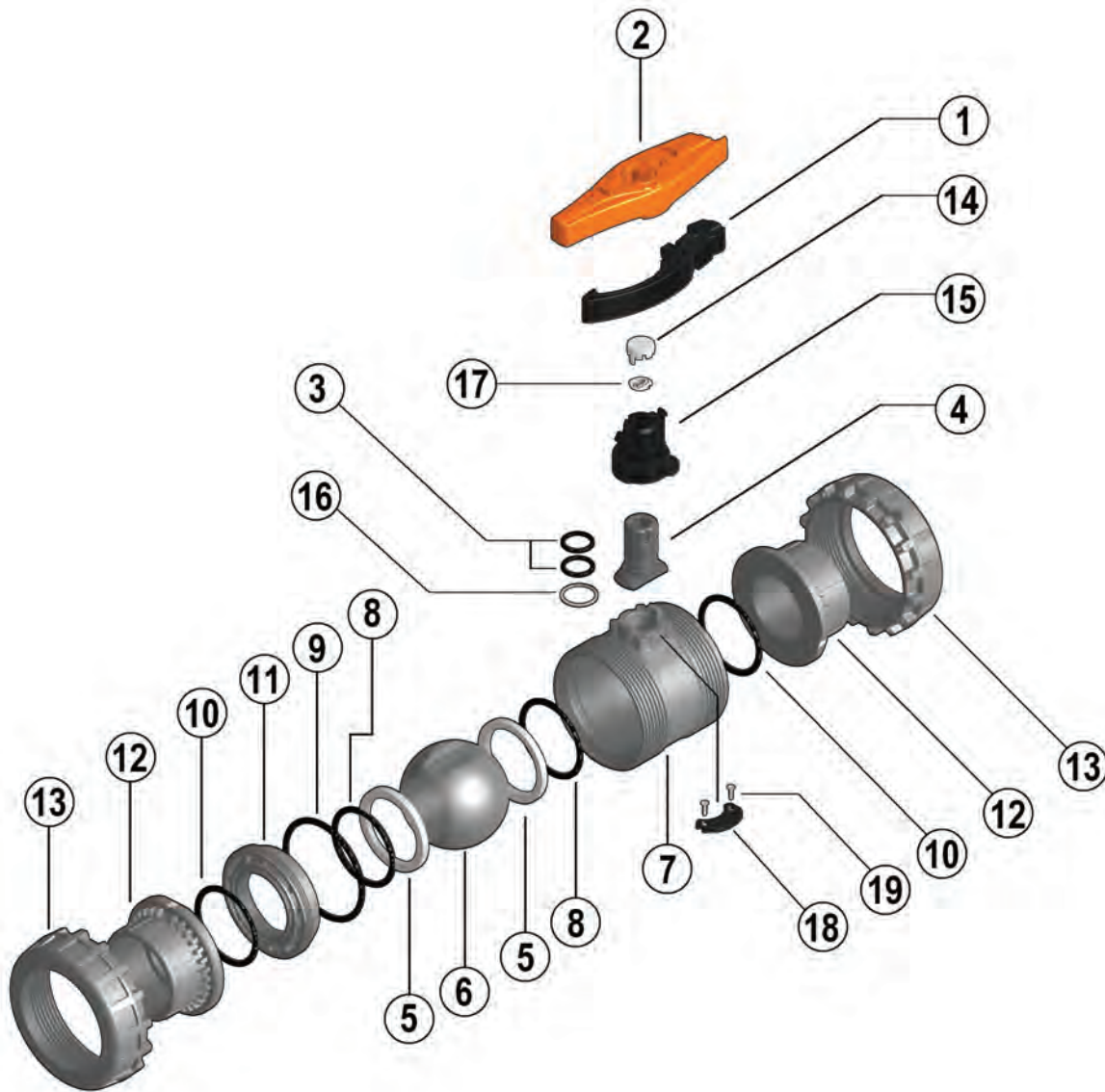


Fig. 2



COMPONENTS

EXPLODED VIEW



- 1** • Easyfit multifunctional handle insert hooked(PP-GR - 1)
- 2** • Easyfit multifunctional handle (HIPVC - 1)
- 3** • Stem O-Ring (EPDM or FPM - 2)*
- 4** • Stem (PVC-C - 1)
- 5** • Ball seat (PTFE - 2)*
- 6** • Ball (PVC-C - 1)*
- 7** • Body (PVC-C - 1)

- 8** • Ball seat O-Ring (EPDM or FPM - 2)*
- 9** • Radial seal O-Ring (EPDM or FPM - 1)*
- 10** • Socket seal O-Ring (EPDM or FPM - 2)*
- 11** • Ball seat carrier (PVC-C - 1)
- 12** • End connector (PVC-C - 2)
- 13** • Union nut(PVC-C - 2)
- 14** • Transparent protection plug (PVC - 1)

- 15** • Central hub (HIPVC - 1)
- 16** • Anti-friction disk (PTFE - 1)*
- 17** • Tag holder (PVC-U - 1)
- 18** • Locking device plate (HIPVC - 1)
- 19** • Self-threading screw (STAINLESS steel - 2)

* Spare parts

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) Extract the Easyfit multifunctional handle from the central hub pressing on the centre of the hub hinges (fig. 5) and use it as a wrench to fully unscrew the union nuts (13) from the valve body and slide the body out sideways (fig. 5).
- 3) Reposition the handle on the central hub.
- 4) Before disassembling, 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 ball seat carrier (11) using the Easyfit quick release handle. Insert the two protrusions at the top of the handle in the seat carriers (11) and unscrew, extracting it by turning counter-clockwise (fig. 6).
- 7) Press on the ball from the side opposite the "REGULAR" label, being sure not to scratch it, until the ball seat exits (5), then extract the ball (6).
- 8) Remove the central hub (15) firmly sliding it off the stem (4). Press the stem inwards and extract it from the body and remove the anti-friction disk (16).
- 9) Remove the O-Ring (3, 8, 9, 10) and ball seats (5) extracting them from their seats, 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) Place the anti-friction disk (16) on the stem (4) and insert it in the body (7).
- 3) Place the ball seats (5) in the housings in the body (7) and in the 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) Place the central hub (15) on the stem (4) firmly pressing down to match the internal hub key with one of the two seats on the stem.
- 7) Position the valve between the end connectors (12) and tighten the union nuts clockwise (13) using the Easyfit multifunctional handle (fig. 9) and being sure the socket seal O-rings (10) do not exit the seats.
- 8) Re-insert the hooked insert (1) in the housing on the handle (2).
- 9) Reposition the handle on the central hub making sure the two grooves in the central handle bore match the two grooves on the side of the hub and slightly press down until the two hinges click.



Note: 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

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) Unscrew the union nuts (13) from the body (7) and insert them in the pipe segments.
- 3) Solvent weld or screw the end connectors (12) onto the pipe segments.
- 4) Position the valve body between the end connectors.
Warning: if a high pressure test is required, always position the body with the "REGULAR" label upstream from the fluid direction.
- 5) Place the union nuts on the valve body and start tightening manually clockwise until they are hard to turn. To complete tightening, extract the Easyfit quick release multifunctional handle (2) pushing on the centre of the central hub hinges (15) (fig. 3 and 4)

Fig. 3



Fig. 4



Fig. 5



Fig. 6



- 6) Extract the hooked insert (1) in the handle (fig. 7) overturn it and fit it in the seat on the lower part of the handle (fig. 8).
- 7) Fit the tool (fig. 8) on the external union nut profile until firmly and safely secured, allowing for adequate torque without damaging the union nut in any way (fig. 9).
- 8) Repeat point 7 for the other union nut.
- 9) When tightened, remove the hooked insert and replace it in its seat in the handle.
- 10) Reposition the handle on the central hub making sure the two grooves in the central handle bore match the two grooves on the side of the hub and slightly press down until the two hinges click.
- 11) If necessary, support the pipe with FIP pipe clip model ZIKM and DSM spacers. The VXE valve is equipped with a locking device to protect the system against tampering (fig. 10).

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 manoeuvres and protect the valve from accidental manoeuvres.

Fig. 7



Fig. 8



Fig. 9



Fig. 10





SXE DN 10÷50
PVC-C

Easyfit True Union ball check valve

SXE DN 10÷50

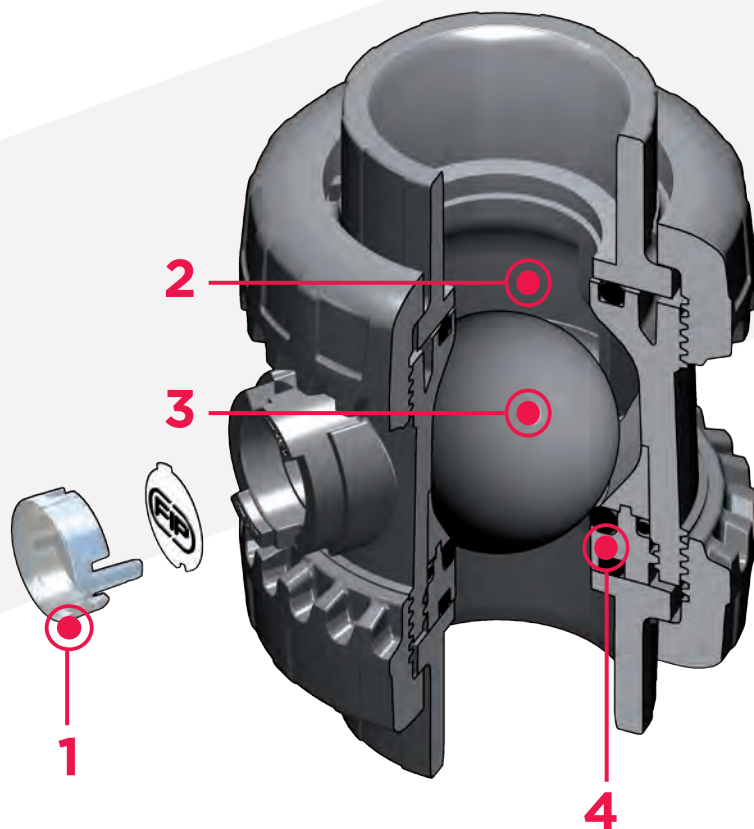
The SXE Easyfit check valve with ball shutter line developed with Giugiaro Design stands out for the innovative installation method that guarantees reliable service over time. This valve is also equipped with a customising Labelling System.



EASYFIT TRUE UNION BALL CHECK VALVE

- Connection system for solvent weld and threaded joints
- Valve material compatibility **(PVC-C) with water conveyance, drinking water and other food substances according to** current regulations
- **PN16 True Union valve body** made for PVC-C injection moulding and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- **Short face to face dimension** according to international regulation ISO 7508 series III "short" and fully interchangeable with VXE DN 10÷50 ball valve models
- Union nuts with rack for tightening adjustment via Easyfit handle or via Easytorque adjustment kit (available as accessories)
- Can be **installed** in either a **vertical** (preferable) or **horizontal** position

Technical specifications	
Construction	Easyfit True Union ball check valve with locked carrier
Size range	DN 10 ÷ 50
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM F437
Reference standards	Construction criteria: EN ISO 16137, EN ISO 15493, Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	PVC-C
Seal material	EPDM, FPM



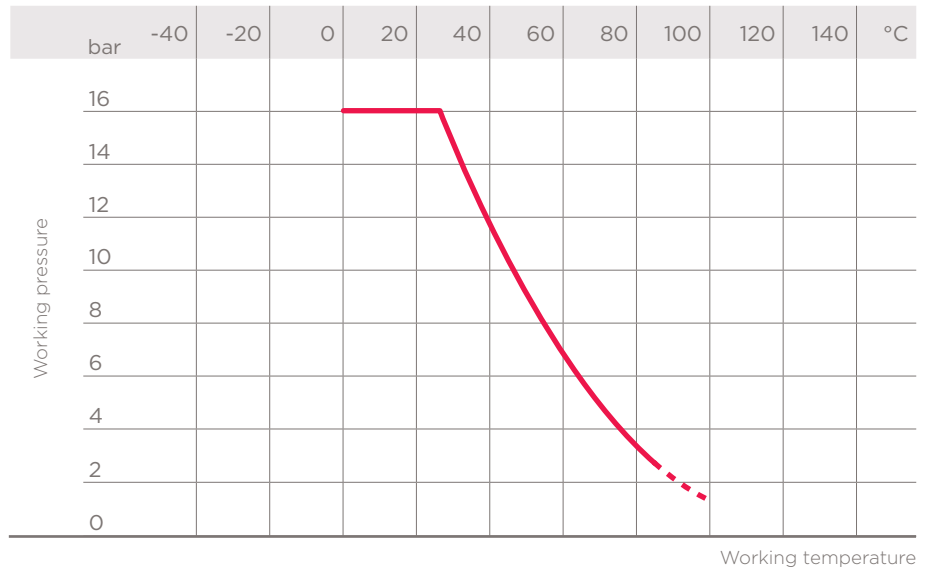
- 1 Customisable Labelling System: built-in LCE module** on the valve body made up of transparent protection plug and customisable tag holder using the LSE set (available as accessory). The customisation lets you **identify the valve on the system according to specific needs**
- 2 Optimised dynamic fluid design:** energy savings due to the improved valve Kv value and consequent reduced pressure drop
- 3 High surface finish ball shutter:** **wear reduction**, increase in working life and reduced valve maintenance. Ideal for conveying dirty fluids, even with suspended solids and filaments thanks to the special design that permits **internal valve self-cleaning**
- 4 Locked ball seat carrier:** safe disassembly for maintenance with the Easyfit multifunctional handle or Easytorque kit

TECHNICAL DATA

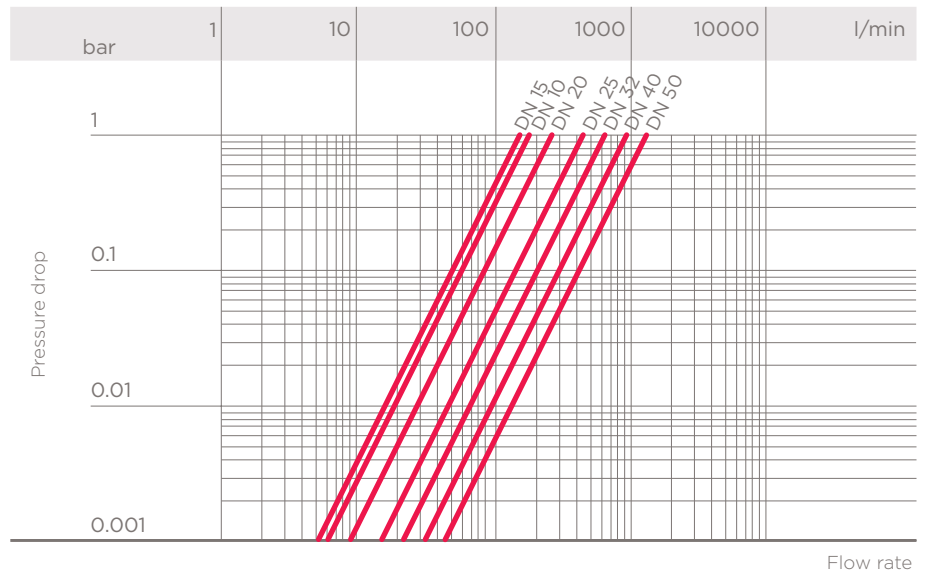
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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 SXE valve completely open.

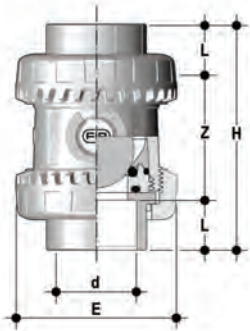
DN	10	15	20	25	32	40	50
K _v 100 l/min	172	152	258	433	643	928	1343

MINIMUM VALVE SEALING PRESSURE

DN	10	15	20	25	32	40	50
SXE (bar)	0.2	0.2	0.2	0.2	0.2	0.2	0.2

The PVC-U SXE valve can only be used with liquids with specific weight under 1.50 g/cm^3 .

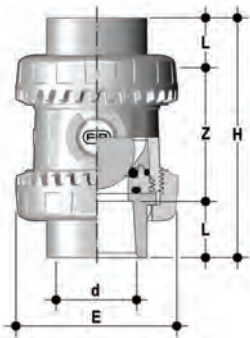
DIMENSIONS



SXEIC

Easyfit ball check valve with female ends for solvent welding, metric series

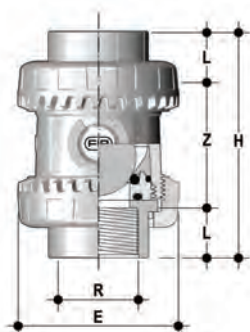
d	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
16	10	16	54	82	14	54	145	SXEIC016E	SXEIC016F
20	15	16	54	82	16	50	148	SXEIC020E	SXEIC020F
25	20	16	63	91	19	53	190	SXEIC025E	SXEIC025F
32	25	16	72	103	22	59	300	SXEIC032E	SXEIC032F
40	32	16	85	120	26	68	460	SXEIC040E	SXEIC040F
50	40	16	100	139	31	77	675	SXEIC050E	SXEIC050F
63	50	16	118	174	38	98	1080	SXEIC063E	SXEIC063F



SXEAC

Easyfit ball check valve with female ends, ASTM series

d	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	54	96	22.5	51	148	SXEAC012E	SXEAC012F
3/4"	20	16	63	105	25.5	54	190	SXEAC034E	SXEAC034F
1"	25	16	72	117	28.7	59.5	300	SXEAC100E	SXEAC100F
1 1/4"	32	16	85	136	32	72	460	SXEAC114E	SXEAC114F
1 1/2"	40	16	100	147	35	77	675	SXEAC112E	SXEAC112F
2"	50	16	118	174	38.2	97.6	1080	SXEAC200E	SXEAC200F

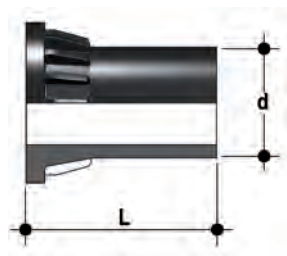


SXENC

Easyfit ball check valve with female ends, NPT thread

R	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	54	90	17.8	54.4	148	SXENC012E	SXENC012F
3/4"	20	16	63	93	18	57	190	SXENC034E	SXENC034F
1"	25	16	72	110	22.6	64.8	300	SXENC100E	SXENC100F
1 1/4"	32	16	85	127	25.1	76.8	460	SXENC114E	SXENC114F
1 1/2"	40	16	100	131	24.7	81.6	675	SXENC112E	SXENC112F
2"	50	16	118	161	29.6	101.8	1080	SXENC200E	SXENC200F

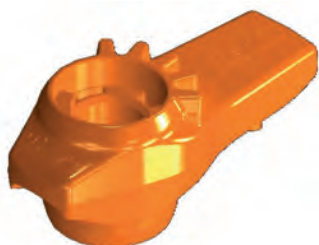
ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
52	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



EASYFIT HANDLE DN 10÷50

Easyfit multifunctional handle for union nuts tightening SXE-SSE DN 10÷50

d	DN	Code
16 - 20	10 - 15	HAVXE020
25	20	HAVXE025
32	25	HAVXE032
40	32	HAVXE040
52	40	HAVXE050
63	50	HAVXE063

EASYTORQUE KIT

Kit for union nut tightening adjustment and ball seat carrier for Easyfit DN 10÷50 valves.



d	DN	Torque union nuts*	Torque carrier*	Code
3/8"-1/2"	10-15	5 N m - 3,69 Lbf ft	3 N m - 2,21 Lbf ft	KET01
3/4"	20	5 N m - 3,69 Lbf ft	3 N m - 2,21 Lbf ft	KET01
1"	25	6 N m - 4,43 Lbf ft	4 N m - 2,95 Lbf ft	KET01
1"1/4	32	7 N m - 5,16 Lbf ft	4 N m - 2,95 Lbf ft	KET01
1"1/2	40	8 N m - 5,90 Lbf ft	5 N m - 3,69 Lbf ft	KET01
2"	50	10 N m - 7,38 Lbf ft	6 N m - 4,43 Lbf ft	KET01

*calculated in ideal installation conditions





LSE

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

d	DN	Code
16	10	-
20	15	-
25	20	-
32	25	LSE020
40	32	LSE025
50	40	LSE032
63	50	LSE032

CUSTOMISATION

The SXE DN 10+50 Easyfit valve is equipped with a Labelling System.

This system lets you create special labels to affix to the valve body. 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 and white label plate made of the same material, located next to 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) Extract the transparent plug from the seat on the valve body (fig. 1).
- 2) Extract the label plate from the transparent plug (fig. 2).
- 3) Apply the adhesive label on the tag holder to align the profiles matching the tab position.
- 4) Reinsert the tag holder in the transparent plug so that the label is protected against the elements.
- 5) Replace the transparent plug in its seat on the valve body.

Fig. 1



Fig. 2

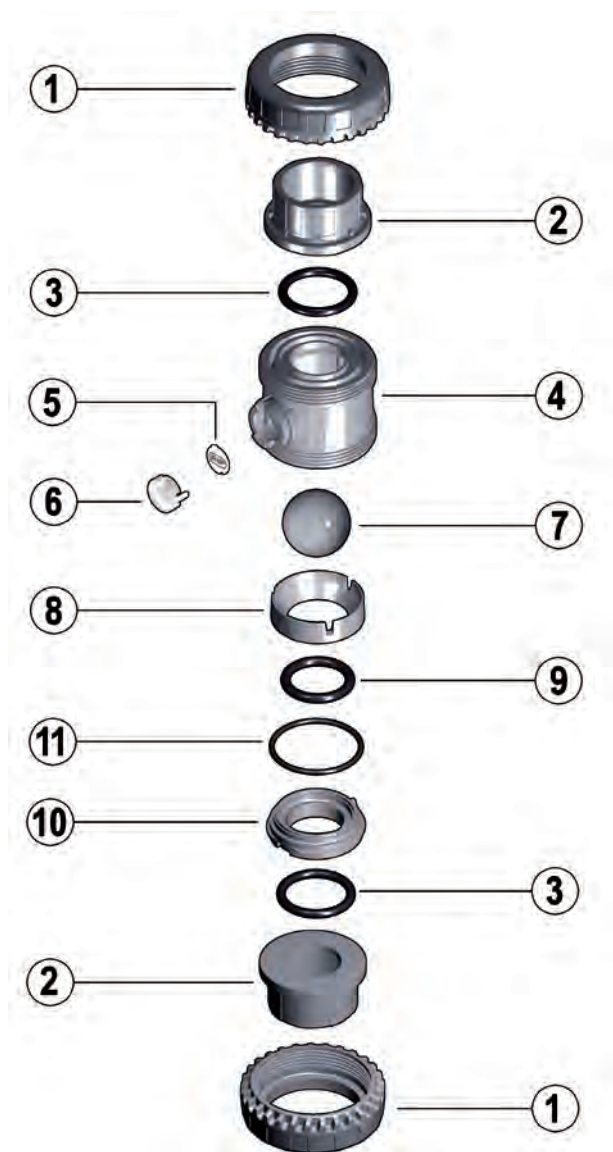


Fig. 3



COMPONENTS

EXPLODED VIEW



1 • Union nut (PVC-C - 2)

2 • End connector (PVC-C - 2)

3 • Socket seal O-Ring
(EPDM o FPM - 2)

4 • Body (PVC-C - 1)

5 • Tag holder
(PVC - 1)

6 • Transparent protection plug
(PVC - 1)

7 • Ball (PVC-C - 1)

8 • Gland packing ring
(PVC-C - 1)

9 • Ball seat O-Ring (EPDM
or FPM - 1)

10 • Ball seat carrier (PVC-C - 1)

11 • Radial seal O-Ring
(EPDM or FPM - 1)

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

DISASSEMBLY

SXE valves do not require maintenance in normal operating conditions. In the event of leaks or wear, before performing maintenance, cut-off fluid upstream from the valve and make sure it is de-pressurised (downstream drain if necessary).

- 1) Fully drain residual liquid that could be aggressive for the operator and, if possible, circulate water to internally clean the valve.
- 2) To easily unscrew the union nuts when disassembling, use the Easyfit multifunctional handle (supplied as an accessory) (fig. 4) or Easytorque kit (fig. 5-6).
- 3) Unscrew the seal carrier (10) with the Easyfit multifunctional handle (fig. 7) or Easytorque kit (fig. 8).
- 4) Remove all internal components.

ASSEMBLY

- 1) Reconstruct the valve following the exploded diagram on the previous page
- 2) Tighten the ball seat carrier (10) using the Easyfit multifunctional handle (fig. 7) or Easytorque torque wrench (fig. 8) according to the torque indicated in the enclosed instructions. This way valve installation and excellent operations are guaranteed.
- 3) Position the valve between the end connectors (2) and tighten the union nuts clockwise (1) using the Easyfit multifunctional handle (fig. 4) or Easytorque kit (fig. 5-6), being sure the socket seal O-ring (3) does not exit the seats.



Note: 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.

Fig. 4

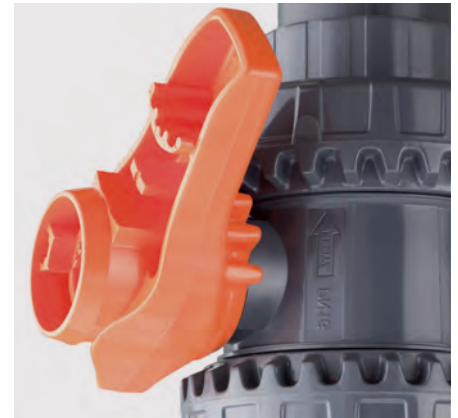


Fig. 5



Fig. 6



Fig. 7



INSTALLATION

SXE valves can be installed both vertically (upward flow) or horizontally (with a minimum 0.2 bar back pressure).

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) Unscrew the union nuts (1) from the body (4) and insert them in the pipe segments.
- 3) Solvent weld or screw the end connectors (2) onto the pipe segments.
- 4) Position the valve body between the end connectors (fig. 9).
- 5) Fit the union nuts on the valve body and manually tighten clockwise until they become hard to turn; do not use wrenches or other tools that can damage the union nut surfaces.
- 6) For easy union nut tightening in assembly, use the Easyfit multifunctional handle (supplied as an accessory).
- 7) Overturn the handle and insert it on the valve stem so the handle teeth (A) match the union nut teeth (B) (fig. 10).
- 8) Turn the handle counter-clockwise to fully tighten the union nut (fig. 10). The rotation directions to tighten (TIGHTEN) and loosen (UNTIGHTEN) the union nuts are indicated on the handle (fig. 11). Generally, if pipes are not offset, a single turn is sufficient for correct tightening.
- 9) Repeat point 7 for the other union nut.

Note: A small force applied on the handle develops a torque much higher than manual tightening.

YOU can also, using the Easytorque kit (fig. 5-6), supplied as an accessory, tighten union nuts using a torque wrench to quantify the force and thus monitor the stress applied to the thermoplastic threads according to the installation indications in the instructions enclosed with the kit.

- 10) If necessary, support pipes with FIP pipe clip model ZIKM and DSM spacers.

Fig. 8



Fig. 9



Fig. 10



Fig. 11



⚠ WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H_2O_2) 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.
- Do not use compressed air or other gases to test thermoplastic lines.
- Always avoid sudden closing manoeuvres and protect the valve against accidental manoeuvres.



SXE DN 65÷100
PVC-C

Easyfit True Union ball check valve

SXE DN 65÷100

The SXE Easyfit check valve with ball shutter line developed with Giugiaro Design stands out for the innovative installation method that guarantees reliable service over time. This valve is also equipped with a customising Labelling System.

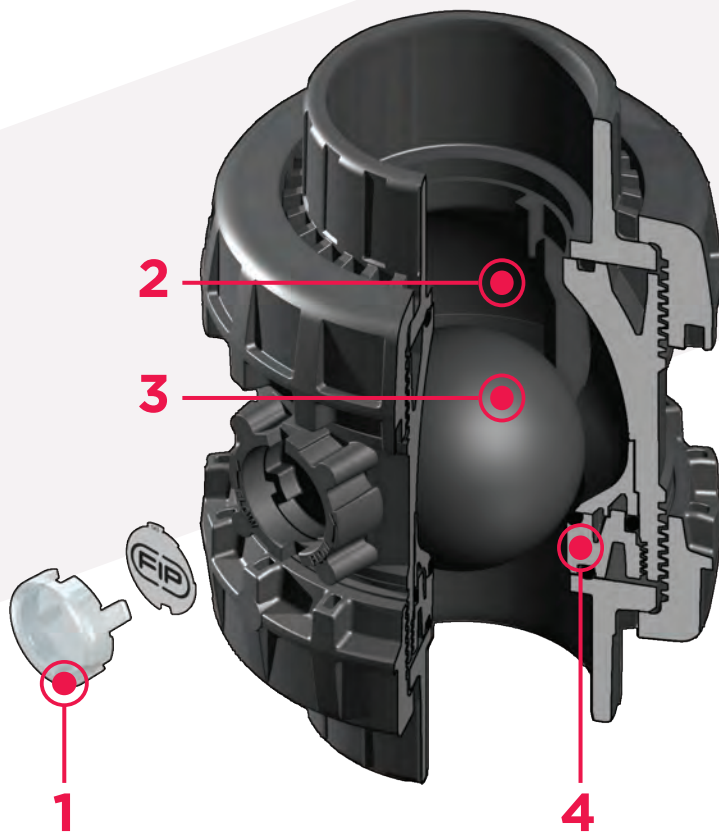


EASYFIT TRUE UNION BALL CHECK VALVE

- Connection system for solvent weld and threaded joints
- Valve material compatibility **(PVC-C) with water conveyance, drinking water and other food substances according to** current regulations
- **PN16 True Union valve body** made for PVC-C injection moulding and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- Easy radial disassembly and fully interchangeable with VXE 65-100 valve models
- Union nut profile that perfectly adapts to the Easyfit multifunctional handle hooked insert (available as an accessory) that lets you control union nut rotation
- Can be **installed** in either a **vertical** (preferable) or **horizontal** position

Technical specifications

Construction	Easyfit True Union ball check valve with locked carrier
Size range	DN 65 ÷ 100
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999, ASTM F437
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	PVC-C
Seal material	EPDM, FPM (standard size O-Ring)



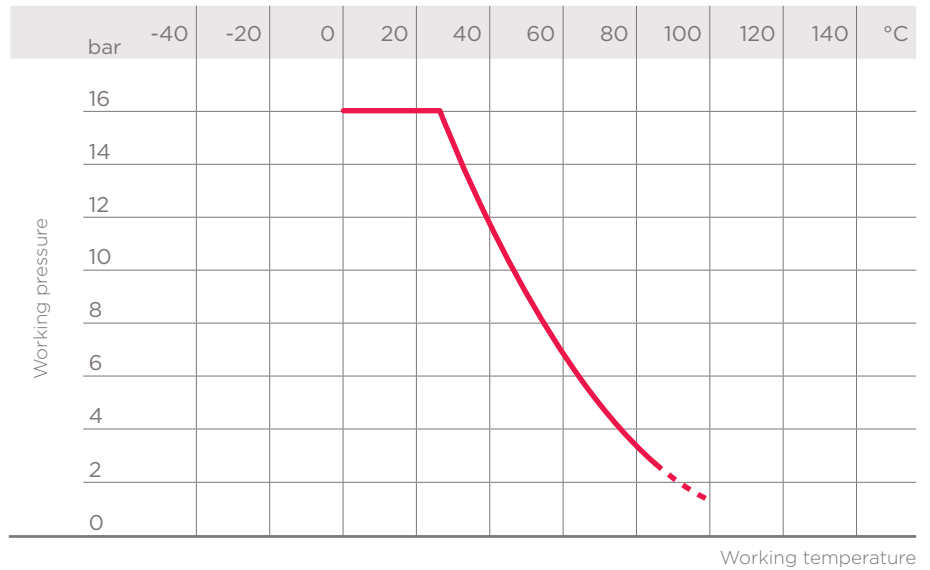
- 1 Customisable Labelling System: built-in LCE module** on the valve body made up of transparent protection plug and customisable tag holder using the LSE set (available as accessory). The customisation lets you **identify the valve on the system according to specific needs**
- 2 Optimised dynamic fluid design:** energy savings due to the improved valve Kv value and consequent reduced pressure drop
- 3 High surface finish ball shutter: **reduced wear****, longer working life and reduced valve maintenance. Ideal to convey dirty fluids, even with suspended fluids or filaments, thanks to the special design that permits **internal valve self-cleaning**
- 4 Locked ball seat carrier:** safe disassembly for maintenance with the Easyfit multifunctional handle

TECHNICAL DATA

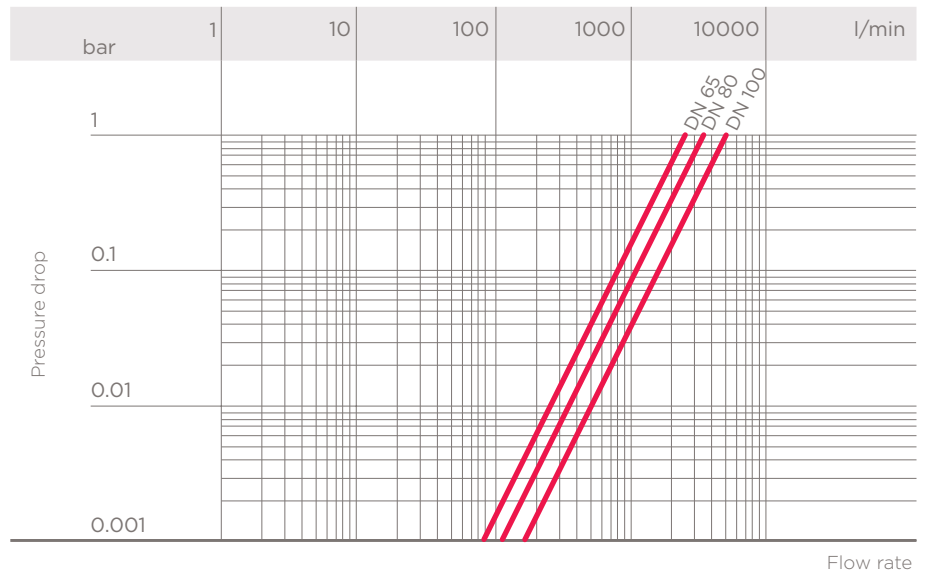
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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 $\Delta p = 1$ bar pressure drop at a certain valve position.

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

DN	65	80	100
K _v 100 l/min	2586	3444	5093

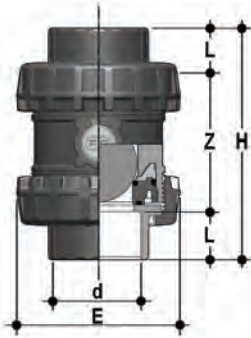
MINIMUM VALVE SEALING PRESSURE

DN	65	80	100
SXE (bar)	0.2	0.2	0.2

The PVC-C SXE valve can only be used with liquids with specific weight under 1.50 g/cm^3 .

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.

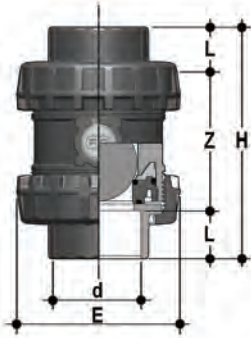
DIMENSIONS



SXEIC

Easyfit ball check valve with female ends for solvent welding, metric series

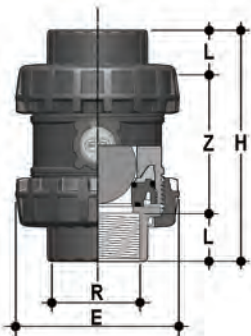
d	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
75	65	16	157	211	44	123	2839	SXEIC075E	SXEIC075F
90	80	16	174	248	51	146	3597	SXEIC090E	SXEIC090F
110	100	16	212	283	61	161	6289	SXEIC110E	SXEIC110F



SXEAC

Easyfit ball check valve with female ends for solvent welding, ASTM series

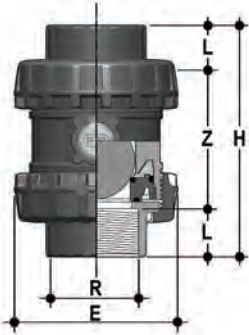
d	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	157	211	44.5	122	2839	SXEAC212E	SXEAC212F
3"	80	16	174	248	48	152	3597	SXEAC300E	SXEAC300F
4"	100	16	212	283	57.5	168	6289	SXEAC400E	SXEAC400F



SXENC

Easyfit ball check valve with female ends, NPT thread

R	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	157	211	33.2	144.6	2839	SXENC212E	SXENC212F
3"	80	16	174	248	35.5	177	3597	SXENC300E	SXENC300F
4"	100	16	212	283	37.6	207.8	6289	SXENC400E	SXENC400F

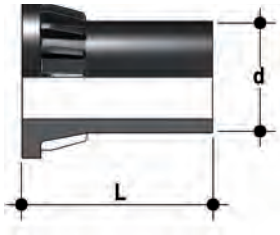


SXEFC

Easyfit ball check valve with BSP threaded female ends

R	DN	PN	E	H	L	Z	g	EPDM Code	FPM Code
2" 1/2	65	16	157	211	30.2	150.6	2839	SXEFC212E	SXEFC212F
3"	80	16	174	248	33.3	181.4	3597	SXEFC300E	SXEFC300F
4"	100	16	212	283	39.3	204.4	6289	SXEFC400E	SXEFC400F

ACCESSORIES



CVDE

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090VXE
110	100	16	127	11	CVDE11110VXE



EASYFIT HANDLE DN 65÷100

Easyfit multifunctional handle for union nuts tightening SXE-SSE DN 65÷100

d	DN	Code
75	65	HSVXE075
90	80	HSVXE090
110	100	HSVXE110



LSE

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

d	DN	Code
75	65	LSE063
90	80	LSE063
110	100	LSE063

CUSTOMISATION

The SXE DN 65÷100 Easyfit valve is equipped with a Labelling System.

This system lets you create special labels to affix to the valve body. 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 and white tag holder made of the same material, one side of which bears the FIP logo.

The 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.

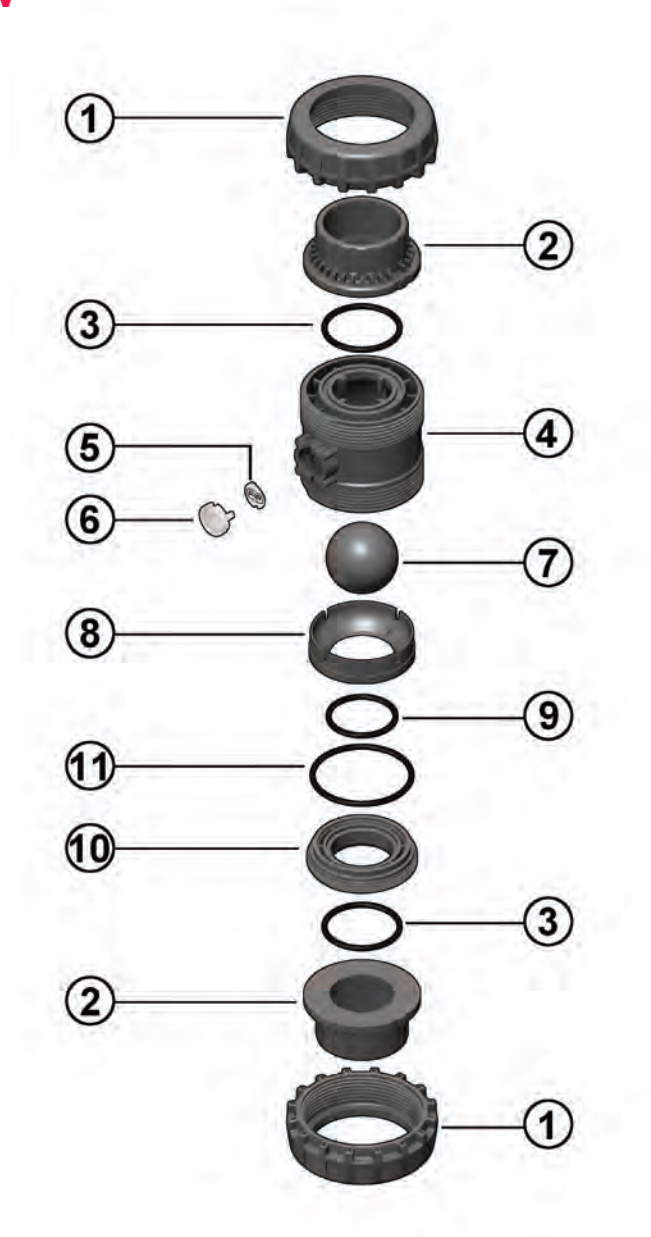
Proceed as follows to apply the label on the valve:

- 1) Remove the transparent plug from the housing on the valve body.
- 2) Extract the tag holder from the transparent plug.
- 3) Apply the adhesive label on the tag holder to align the profiles matching the tab position.
- 4) Reinsert the tag holder in the transparent plug so that the label is protected against the elements.
- 5) Replace the transparent plug in its seat on the valve body.



COMPONENTS

EXPLODED VIEW



- 1 • Union nut (PVC-C - 2)
- 2 • End connector (PVC-C - 2)
- 3 • Socket seal O-ring (EPDM o FPM - 2)
- 4 • Body (PVC-C - 1)
- 5 • Tag holder (PVC - 1)

- 6 • Transparent protection plug (PVC - 1)
- 7 • Ball (PVC-C - 1)
- 8 • Gland packing ring (PVC-C - 1)
- 9 • Ball seat O-Ring (EPDM o FPM - 1)
- 10 • Ball seat carrier (PVC-C - 1)

- 11 • Radial seal O-Ring (EPDM o FPM - 1)

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

DISASSEMBLY

SXE valves do not require maintenance in normal operating conditions. In the event of leaks or wear, before performing maintenance, cut-off fluid upstream from the valve and make sure it is depressurised (downstream drain if necessary).

- 1) Fully drain residual liquid that could be aggressive for the operator and, if possible, circulate water to internally clean the valve.
- 2) For easy union nut tightening in assembly, use the Easyfit multifunctional handle (supplied as an accessory).
- 3) Unscrew the ball seat carrier (10) with the Easyfit multifunctional handle: introduce the two protrusion on the top of the handle in the grooves in the carrier (10) and unscrew, extracting it counter-clockwise.
- 4) Remove all internal components.

ASSEMBLY

- 1) Reconstruct the valve following the exploded view on the previous page.
- 2) Tighten the ball seat carrier (10) using the Easyfit multifunctional handle. This ensures optimal valve installation and operations (fig. 3).
- 3) Position the valve between the end connectors (2) and tighten the union nuts clockwise (1) using the Easyfit multifunctional handle (fig. 7) being sure the socket seal O-ring (3) does not exit the seats.



Note: 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.

Fig. 1



Fig. 2



Fig. 3



Fig. 4



INSTALLATION

SXE valves can be installed both vertically (upward flow) or horizontally (with a minimum 0.2 bar back pressure).

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) Unscrew the union nuts (1) from the body (4) and insert them in the pipe segments.
- 3) Solvent weld or screw the end connectors (2) onto the pipe segments.
- 4) Position the valve body between the end connectors (fig. 1).
- 5) Place the union nuts on the valve body and start tightening manually clockwise until they are hard to turn. Do not use wrenches or other tools that can damage the union nut surface (fig. 2).
- 6) For easy union nut tightening in assembly, use the Easyfit multifunctional handle (supplied as an accessory).
- 7) Extract the hooked insert in the handle (fig. 5) overturn it and fit it in the seat on the lower part of the handle (fig. 6).
- 8) Fit the tool on the external union nut profile until firmly and safely secured that allows for adequate torque without damaging the union nut in any way (fig. 7).
- 9) Repeat point 7 for the other union nut.
- 10) When tightened, remove the hooked insert and replace it in its seat in the handle.
- 11) If necessary, support the pipe with FIP pipe clip model ZIKM and DSM spacers.

WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H_2O_2) 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.
- Do not use compressed air or other gases to test thermoplastic lines.
- Always avoid sudden closing manoeuvres and protect the valve against accidental manoeuvres.

Fig. 5



Fig. 6



Fig. 7



Fig. 8





FK DN 40÷300
PVC-C

Butterfly valve

FK

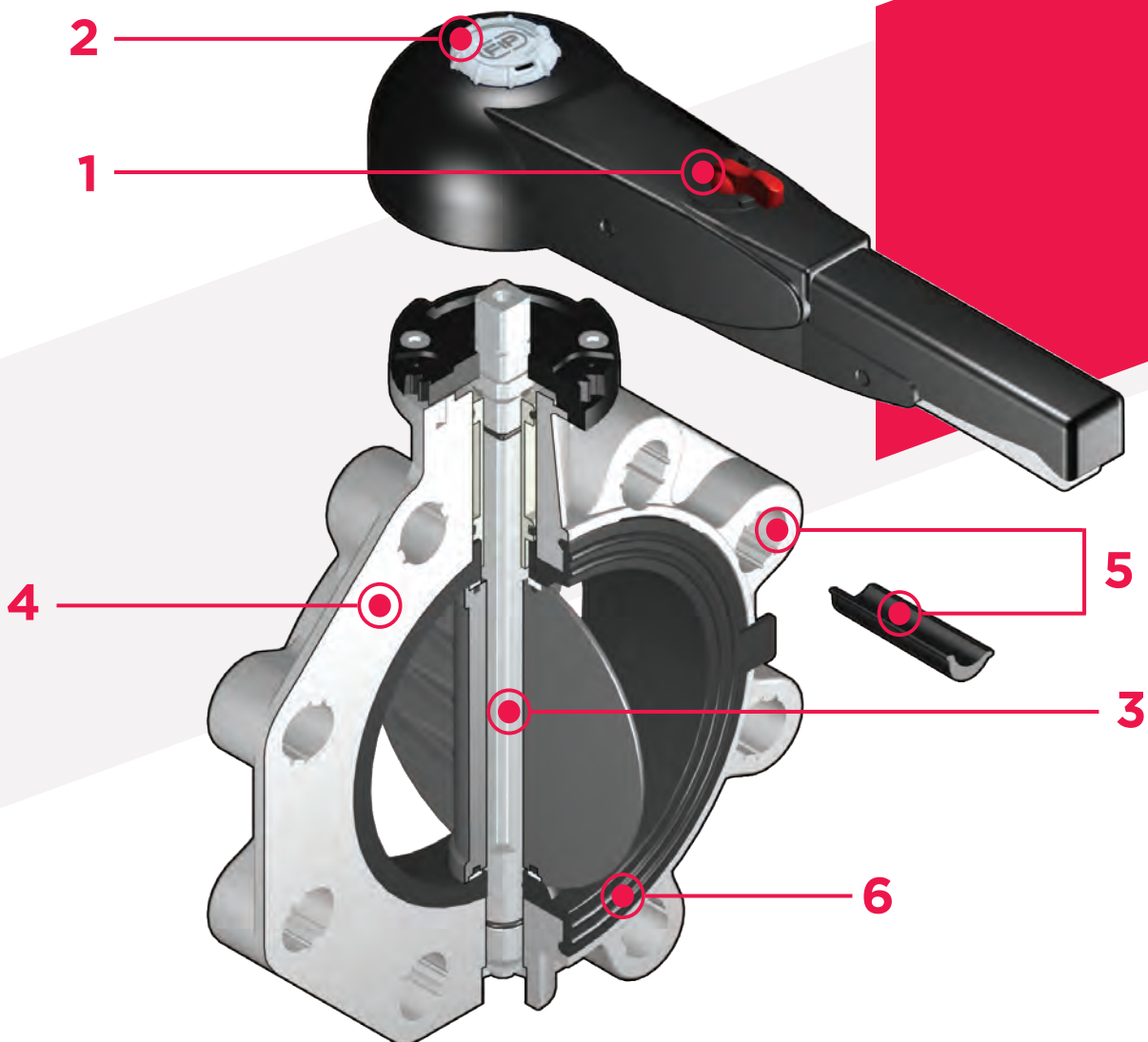
DN 40÷300

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 PVC-C with through shaft, available in different thermoplastic materials: PVC-U, PP-H, ABS, PVDF
- 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 to DIN 2501 or ANSI B16.5 cl.150 with **molded-in AISI 316 stainless steel threaded inserts**
- Possibility of installing a manual reducer or pneumatic and/or electric actuators by applying ISO standard drilling pattern 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 with drilling 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 15493, DIN 2501, ISO 7005-1, EN 1092-1, ASTM B16.5 Cl.150
Reference standards	Construction criteria: EN ISO 16136, EN ISO 15493 Test methods and requirements: ISO 9393 Actuator couplings: ISO 5211
Valve material	Body: PP-GR Disk: PVC-C Stem: STAINLESS steel AISI 420. On request STAINLESS steel AISI 316
Seal material	Liner: EPDM, FPM. On request NBR
Control options	Hand lever operated (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: integrated module in the handle, made of a transparent protection plug customisable tag holder using the LSE set (available as 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 complying with standard 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 with 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

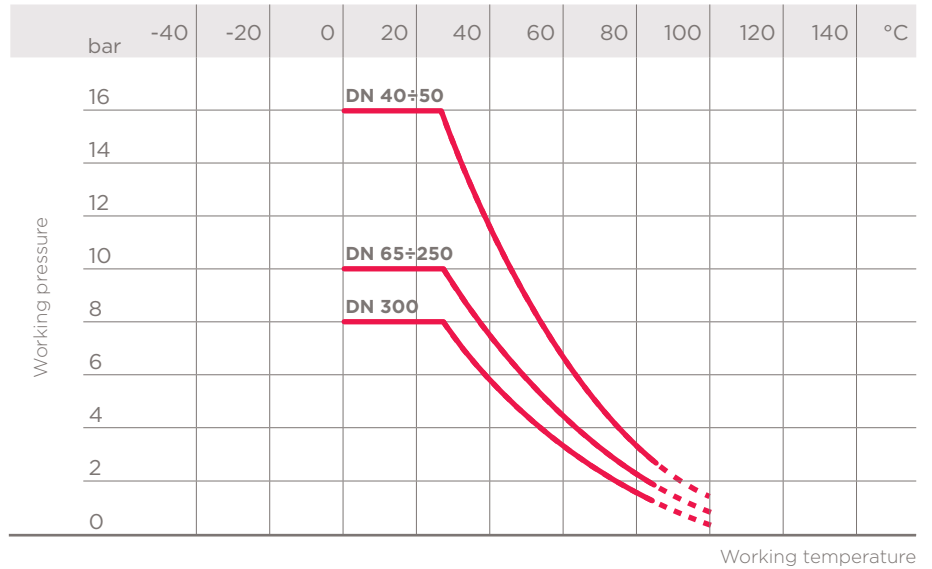
6 Interchangeable liner with the dual function of forming a hydraulic seal and isolating the body from the fluid

TECHNICAL DATA

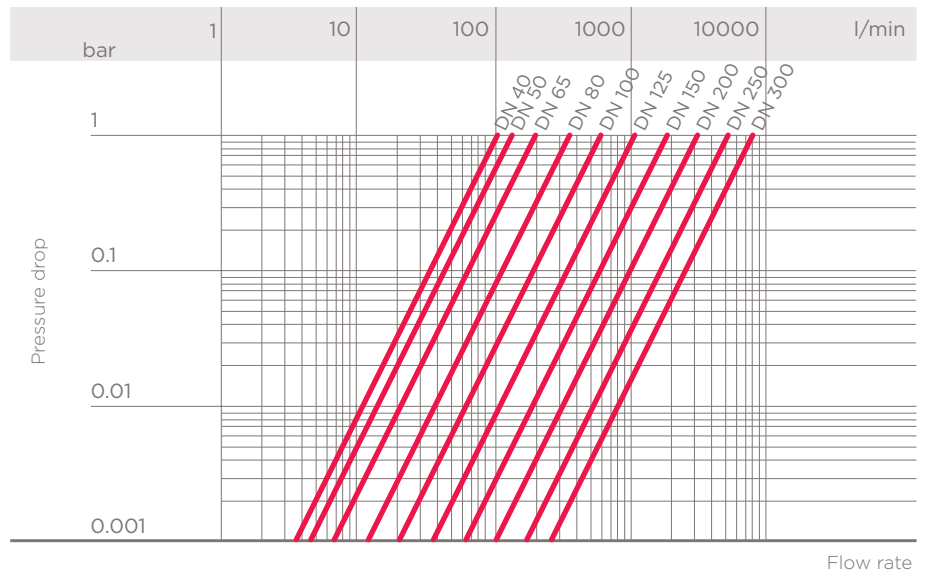
PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids 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).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



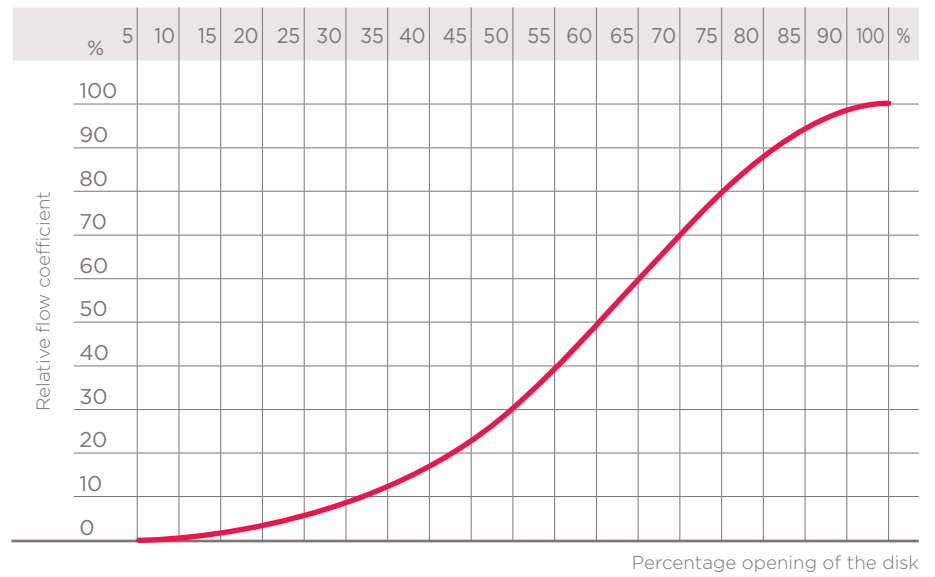
K_v100 FLOW COEFFICIENT

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.

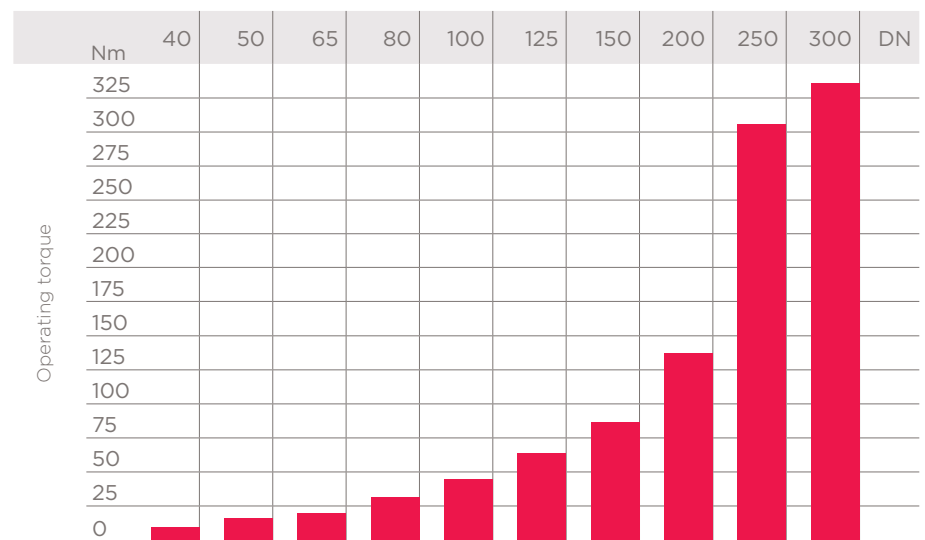
The K_v100 values shown in the table are calculated with the valve completely open.

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

RELATIVE FLOW COEFFICIENT GRAPH

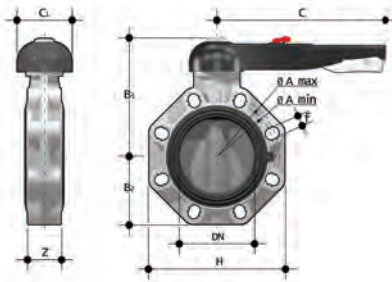


OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

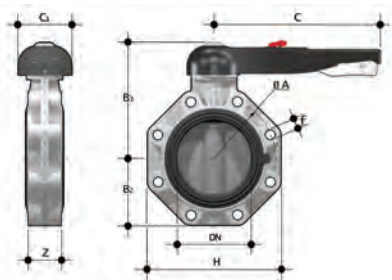
DIMENSIONS



FKOC/LM

Hand operated Butterfly valve

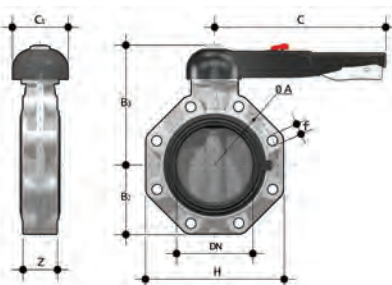
d - Size	DN	PN	A min	A max	B ₂	B ₃	C	C ₁	H	U	Z	g	EPDM Code	FPM Code
50 - 1" 1/2	40	16	99	109	60	137	175	100	132	4	33	900	FKOCLM050E	FKOCLM050F
63 - 2"	50	16	115	125.5	70	143	175	100	147	4	43	1080	FKOCLM063E	FKOCLM063F
75 - 2" 1/2	65	10	128	144	80	164	175	110	165	4	46	1470	FKOCLM075E	FKOCLM075F
90 - 3"	80	10	145	160	93	178	272	110	185	8	49	1870	FKOCLM090E	FKOCLM090F
110 - 4"	100	10	165	190	107	192	272	110	211	8	56	2220	FKOCLM110E	FKOCLM110F
140 - 5"	125	10	204	215	120	212	330	110	240	8	64	3100	FKOCLM140E	FKOCLM140F
160 - 6"	150	10	230	242	134	225	330	110	268	8	70	3850	FKOCLM160E	FKOCLM160F
225 - 8"	200	10	280	298	161	272	420	122	323	8	71	6750	FKOCLM225E	FKOCLM225F



FKOC/LM LUG ISO-DIN

Hand operated Butterfly valve, version Lug ISO-DIN

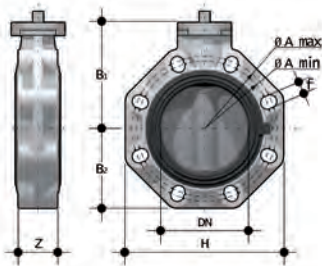
d	DN	PN	øA	B ₂	B ₃	C	C ₁	f	H	U	Z	g	EPDM Code	FPM Code
75	65	10	145	80	164	175	110	M16	165	4	46	1870	FKOLCLM075E	FKOLCLM075F
90	80	10	160	93	178	272	100	M16	185	8	49	2670	FKOLCLM090E	FKOLCLM090F
110	100	10	180	107	192	272	110	M16	211	8	56	3020	FKOLCLM110E	FKOLCLM110F
140	125	10	210	120	212	330	110	M16	240	8	64	4700	FKOLCLM140E	FKOLCLM140F
160	150	10	240	134	225	330	110	M20	268	8	70	5450	FKOLCLM160E	FKOLCLM160F
225	200	10	295	161	272	420	122	M20	323	8	71	8350	FKOLCLM225E	FKOLCLM225F



FKOC/LM LUG ANSI

Hand operated Butterfly valve, version Lug ANSI

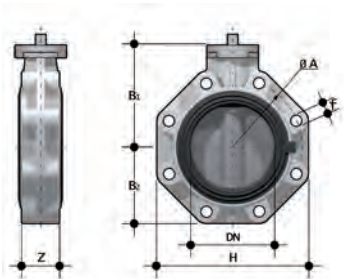
d	DN	PN	øA	B ₁	B ₂	C	C ₁	f	H	U	Z	g	EPDM Code	FPM Code
2"1/2	65	10	139.7	119	80	175	110	5/8"	165	4	46	1870	FKOALCLM212E	FKOALCLM212F
3"	80	10	152.4	133	93	272	100	5/8"	185	8	49	2670	FKOALCLM300E	FKOALCLM300F
4"	100	10	190.5	147	107	272	110	5/8"	211	8	56	3020	FKOALCLM400E	FKOALCLM400F
5"	125	10	215.9	167	120	330	110	3/4"	240	8	64	4700	FKOALCLM500E	FKOALCLM500F
6"	150	10	241.3	180	134	330	110	3/4"	268	8	70	5450	FKOALCLM600E	FKOALCLM600F
8"	200	10	298.4	227	161	420	122	3/4"	323	8	71	8350	FKOALCLM800E	FKOALCLM800F



FKOC/FM

Butterfly valve with bare shaft

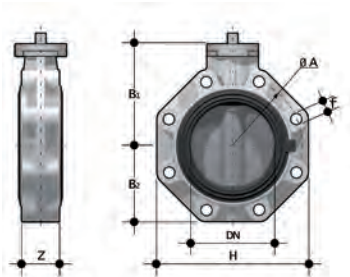
d - Size	DN	PN	A min	A max	øA	B ₁	B ₂	f	H	U	Z	g	EPDM Code	FPM Code
50 - 1" 1/2	40	16	99	109	-	106	60	19	132	4	33	574	FKOCFM050E	FKOCFM050F
63 - 2"	50	16	115	125.5	-	112	70	19	147	4	43	754	FKOCFM063E	FKOCFM063F
75 - 2" 1/2	65	10	128	144	-	119	80	19	165	4	46	1000	FKOCFM075E	FKOCFM075F
90 - 3"	80	10	145	160	-	133	93	19	185	8	49	1400	FKOCFM090E	FKOCFM090F
110 - 4"	100	10	165	190	-	147	107	19	211	8	56	1750	FKOCFM110E	FKOCFM110F
140 - 5"	125	10	204	215	-	167	120	23	240	8	64	2550	FKOCFM140E	FKOCFM140F
160 - 6"	150	10	230	242	-	180	134	23	268	8	70	3300	FKOCFM160E	FKOCFM160F
225 - 8"	200	10	280	298	-	227	161	23	323	8	71	6000	FKOCFM225E	FKOCFM225F
280	250	10	-	-	350	248	210	22	405	12	114	12000	FKOCFM280E	FKOCFM280F
315	300	8	-	-	400	305	245	29	475	12	114	19000	FKOCFM315E	FKOCFM315F
10"	250	10	-	-	350	248	210	25.4	405	12	114	12000	FKOACFM810E	FKOACFM810F
12"	300	8	-	-	400	305	245	25.4	475	12	114	19000	FKOACFM812E	FKOACFM812F



FKOC/FM LUG ISO-DIN

Butterfly valve with bare shaft, version Lug ISO-DIN

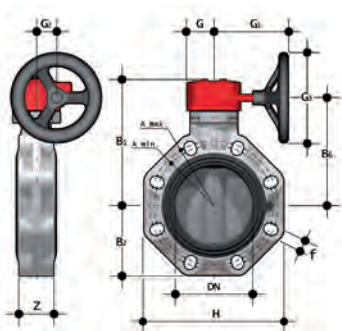
d	DN	PN	øA	B ₁	B ₂	f	H	U	Z	g	EPDM Code	FPM Code
75	65	10	145	119	80	M16	165	4	46	1400	FKOLCFM075E	FKOLCFM075F
90	80	10	160	133	93	M16	185	8	49	2200	FKOLCFM090E	FKOLCFM090F
110	100	10	180	147	107	M16	211	8	56	2550	FKOLCFM110E	FKOLCFM110F
140	125	10	210	167	120	M16	240	8	64	4150	FKOLCFM140E	FKOLCFM140F
160	150	10	240	180	134	M20	268	8	70	4900	FKOLCFM160E	FKOLCFM160F
225	200	10	295	227	161	M20	323	8	71	7600	FKOLCFM225E	FKOLCFM225F



FKOC/FM LUG ANSI

Butterfly valve with bare shaft, version Lug ANSI

d	DN	PN	øA	B ₁	B ₂	f	H	U	Z	g	EPDM Code	FPM Code
2"1/2	65	10	145	119	80	5/8"	165	4	46	1400	FKOALCFM212E	FKOALCFM212F
3"	80	10	160	133	93	5/8"	185	8	49	2200	FKOALCFM300E	FKOALCFM300F
4"	100	10	180	147	107	5/8"	211	8	56	2550	FKOALCFM400E	FKOALCFM400F
5"	125	10	210	167	120	3/4"	240	8	64	4150	FKOALCFM500E	FKOALCFM500F
6"	150	10	240	180	134	3/4"	268	8	70	4900	FKOALCFM600E	FKOALCFM600F
8"	200	10	295	227	161	3/4"	323	8	71	7600	FKOALCFM800E	FKOALCFM800F
10"	250	6	362	248	210	7/8"	405	12	114	16800	FKOALCFM810E	FKOALCFM810F
12"	300	6	431.8	305	245	7/8"	475	12	114	23800	FKOALCFM812E	FKOALCFM812F



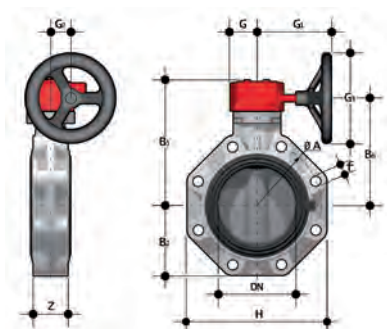
FKOC/RM

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	EPDM Code	FPM Code
75 - 2" 1/2	65	10	128	144	-	80	174	146	48	135	39	125	165	4	46	2400	FKOACRM075E	FKOACRM075F
90 - 3"	80	10	145	160	-	93	188	160	48	135	39	125	185	8	49	2800	FKOACRM090E	FKOACRM090F
110 - 4"	100	10	165	190	-	107	202	174	48	135	39	125	211	8	56	3150	FKOACRM110E	FKOACRM110F
140 - 5"	125	10	204	215	-	120	222	194	48	144	39	200	240	8	64	4450	FKOACRM140E	FKOACRM140F
160 - 6"	150	10	230	242	-	134	235	207	48	144	39	200	268	8	70	5200	FKOACRM160E	FKOACRM160F
225 - 8"	200	10	280	298	-	161	287	256	65	204	60	200	323	8	71	9300	FKOACRM225E	FKOACRM225F
*280	250	10	335	362	350	210	317	281	88	236	76	250	405	8	114	18600	FKOACRM280E	FKOACRM280F
*315	300	8	390	432	400	245	374	338	88	236	76	250	475	12	114	25600	FKOACRM315E	FKOACRM315F
**10"	250	10	-	362	350	210	317	281	88	236	-	250	405	12	114	18600	FKOACRM810E	FKOACRM810F
**12"	300	8	-	431.8	400	245	374	338	88	236	-	250	475	12	114	25600	FKOACRM812E	FKOACRM812F

* ISO-DIN

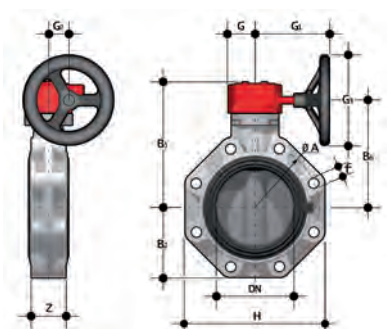
** ANSI B16.5 cl.150



FKOC/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	EPDM Code	FPM Code
75	65	10	145	80	174	146	M16	48	135	39	125	165	4	46	2800	FKOLCRM075E	FKOLCRM075F
90	80	10	160	93	188	160	M16	48	135	39	125	185	8	49	3600	FKOLCRM090E	FKOLCRM090F
110	100	10	180	107	202	174	M16	48	135	39	125	211	8	56	3950	FKOLCRM110E	FKOLCRM110F
140	125	10	210	120	222	194	M16	48	144	39	200	240	8	64	6050	FKOLCRM140E	FKOLCRM140F
160	150	10	240	134	235	207	M20	48	144	39	200	268	8	70	6800	FKOLCRM160E	FKOLCRM160F
225	200	10	295	161	287	256	M20	65	204	60	200	323	8	71	10900	FKOLCRM225E	FKOLCRM225F



FKOC/RM LUG ANSI

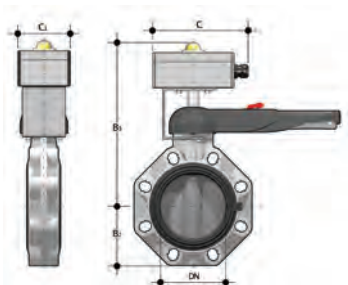
Gearbox operated Butterfly valve, version Lug ANSI

d	DN	PN	B ₂	B ₅	B ₆	H	Z	øA	f	G	G ₁	G ₂	G ₃	U	g	EPDM Code	FPM Code
2"1/2	65	10	80	174	146	165	46	139.7	5/8"	48	135	39	125	4	2800	FKOALCRM212E	FKOALCRM212F
3"	80	10	93	188	160	185	49	152.4	5/8"	48	135	39	125	8	3600	FKOALCRM300E	FKOALCRM300F
4"	100	10	107	202	174	211	56	190.5	5/8"	48	135	39	125	8	3950	FKOALCRM400E	FKOALCRM400F
5"	125	10	120	222	194	240	64	215.9	3/4"	48	144	39	200	8	6050	FKOALCRM500E	FKOALCRM500F
6"	150	10	134	235	207	268	70	241.3	3/4"	48	144	39	200	8	6800	FKOALCRM600E	FKOALCRM600F
8"	200	10	161	287	256	323	71	298.4	3/4"	65	204	60	200	8	10900	FKOALCRM800E	FKOALCRM800F
10"	250	6	210	317	281	405	114	362	7/8"	88	236	76	250	12	23400	FKOALCRM810E	FKOALCRM810F
12"	300	6	245	374	338	475	114	431.8	7/8"	88	236	76	250	12	30400	FKOALCRM812E	FKOALCRM812F

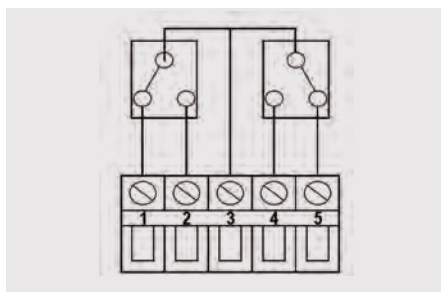
ACCESSORIES

FK MS

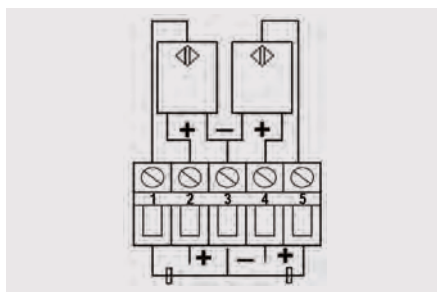
The MS kit lets you install a limit switch box with electromechanical or inductive micro switches on a manual FK/LM valve to remotely signal the valve position (open-closed). The kit can be assembled on the valve even if already installed on the system.



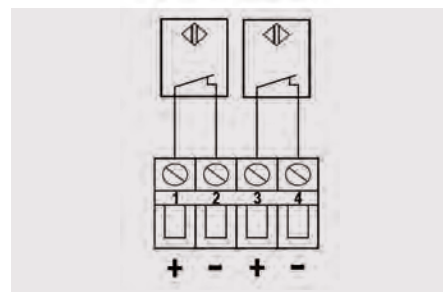
DN	B ₂	B ₃	C ₁	Protection rate	Code electromechanical	Code inductive	Code Namur
40	60	248	80	IP67	FKMS0M	FKMS0I	FKMS0N
50	70	254	80	IP67	FKMS0M	FKMS0I	FKMS0N
65	80	261	80	IP67	FKMS0M	FKMS0I	FKMS0N
80	93	275	80	IP67	FKMS1M	FKMS1I	FKMS1N
100	107	289	80	IP67	FKMS1M	FKMS1I	FKMS1N
125	120	309	80	IP67	FKMS1M	FKMS1I	FKMS1N
150	134	322	80	IP67	FKMS1M	FKMS1I	FKMS1N
200	161	369	80	IP67	FKMS2M	FKMS2I	FKMS2N



Electromechanical



Inductive



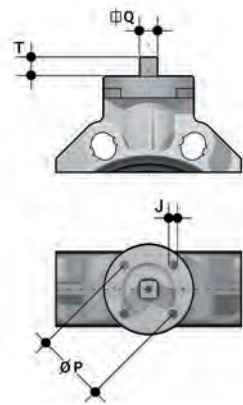
Namur

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).

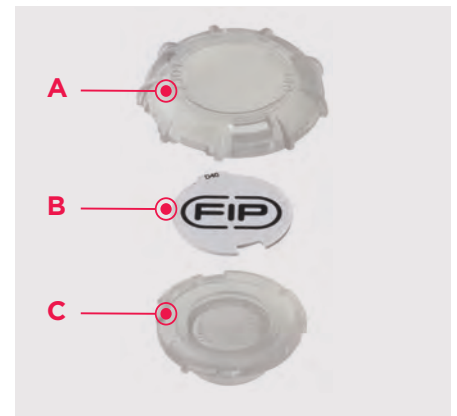
The tag holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set. Proceed as follows to apply the label on the valve:

- 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

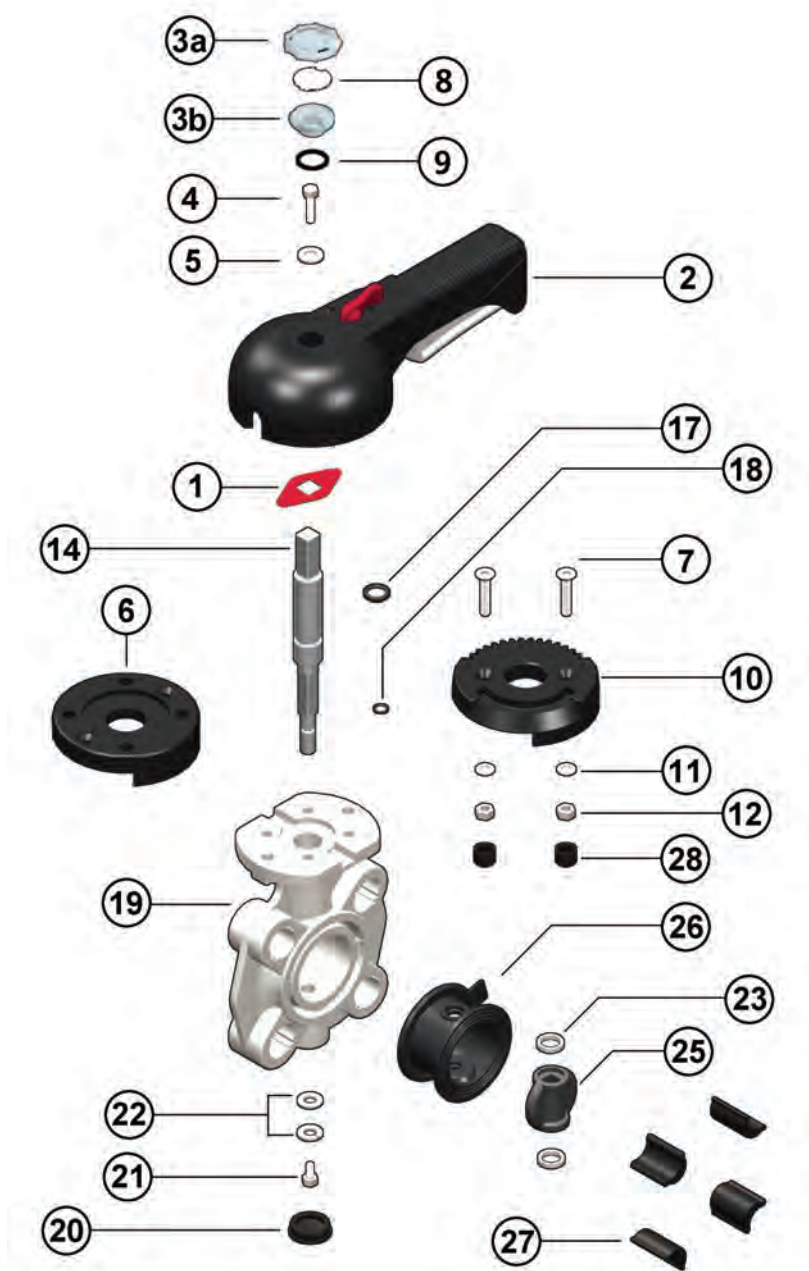


Fig. 2



COMPONENTS

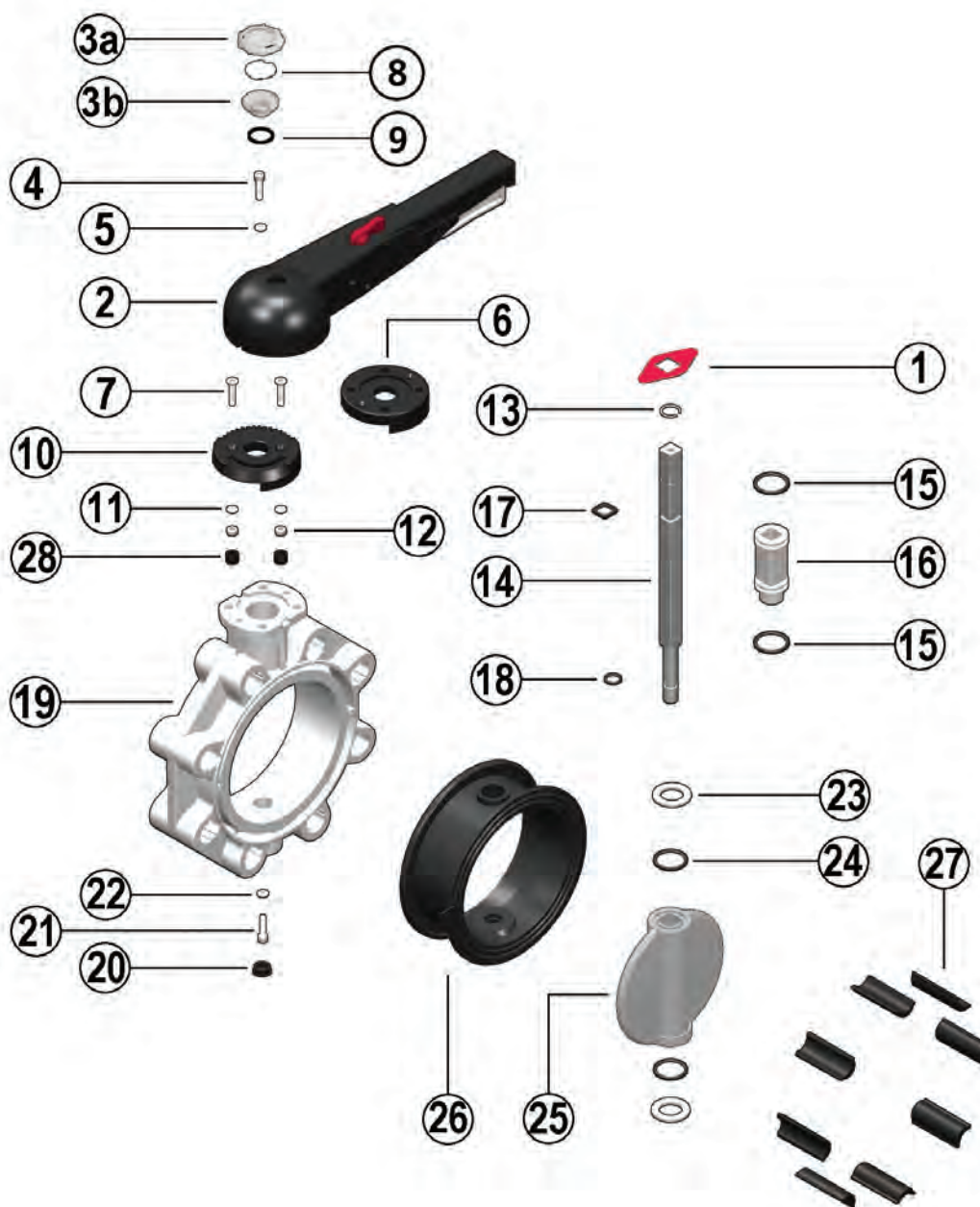
EXPLODED VIEW DN 40÷50



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

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

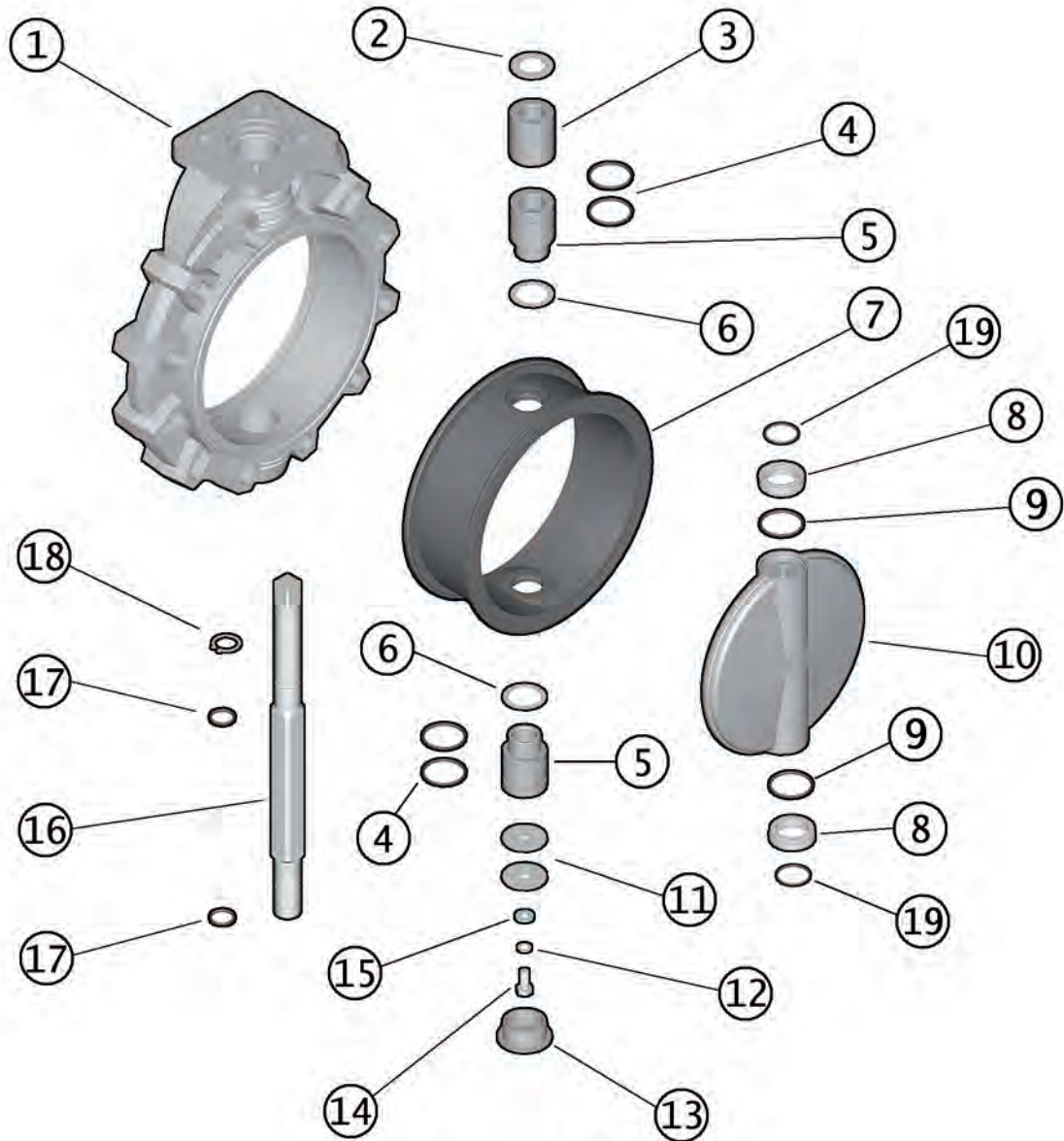
EXPLODED VIEW DN 65÷200



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

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

EXPLODED VIEW DN 250÷300



- | | | |
|--|--|---|
| 1 • Body (PP-GR - 1) | 9 • Disk O-Ring (EPDM or FPM - 2) | 16 • Stem (STAINLESS steel - 1) |
| 2 • Washer (STAINLESS steel - 1) | 10 • Disk (PVC-C - 1) | 17 • Stem O-Ring (EPDM or FPM - 2) |
| 3 • Bush (PP - 1) | 11 • Washer (STAINLESS steel - 2) | 18 • Seeger ring (STAINLESS steel - 1) |
| 4 • Bush O-Ring (EPDM or FP - 4) | 12 • Washer (STAINLESS steel - 1) | 19 • O-Ring (EPDM or FPM - 2) |
| 5 • Bush (PP - 2) | 13 • Protection plug (PE - 1) | |
| 6 • Washer (PTFE - 2) | 14 • Screw (STAINLESS steel - 1) | |
| 7 • Liner (EPDM or FPM - 1) | 15 • Washer (STAINLESS steel - 1) | |
| 8 • Anti-friction ring (PTFE - 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 O-Rings (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 rings (8).
- 5) Position the washers (8) in the seatings on the disk (10), and the disk inside the body (1) after having lubricated the liner (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).

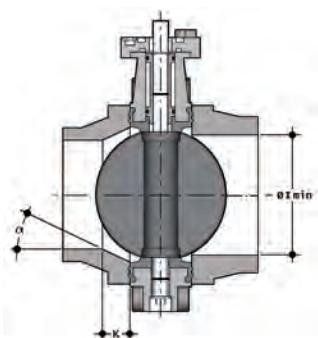
Fig. 3



Note: during assembly, it is advisable to lubricate the rubber seals. It should be remembered that 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.

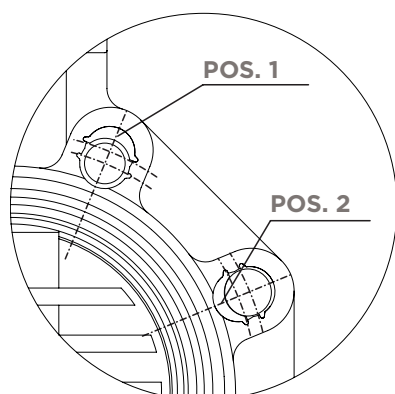
DN	l min.
40	25
50	28
65	47
80	64
100	84
125	108
150	134
200	187
250	225
300	280

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	63	75	90	110	125	140	160	180	200	225	250	280	315
			40	50	65	80	100	100	125	150	150	200	200	250	250	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	BS 10 table A-D-E Spec D-E	BS 1560 cl.150, ANSI B16.5 cl.150 *	JIS B 2220 K5
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
DN 80	Pos. 1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
DN 100	Pos. 1	Pos. 2	Pos. 1	Pos. 2	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
DN 200	Pos. 1	PN 10 Pos. 2	Pos. 2	Pos. 2	Pos. 1

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

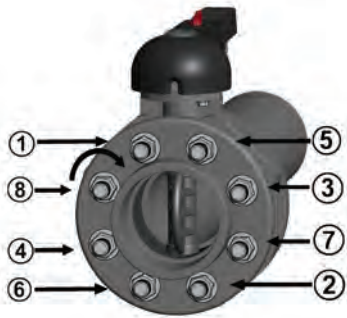
POSITIONING THE VALVE

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.

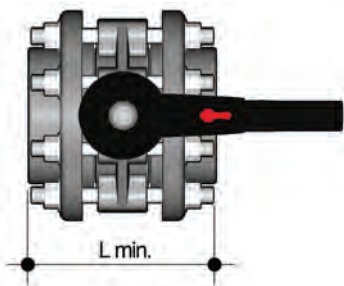
Where possible comply with the following requirements:

- 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)

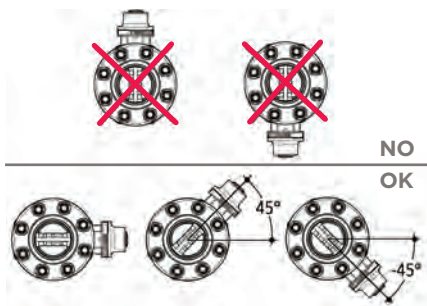
HANDLE BLOCK



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.



DK DN 15÷65
PVC-C

DIALOCK® 2-way diaphragm valve

DK DN 15÷65

The new DK DIALOCK® diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids. The new internal geometry of the body optimises fluid dynamic efficiency by increasing the flow rate and ensuring an optimum linearity of the flow adjustment curve.

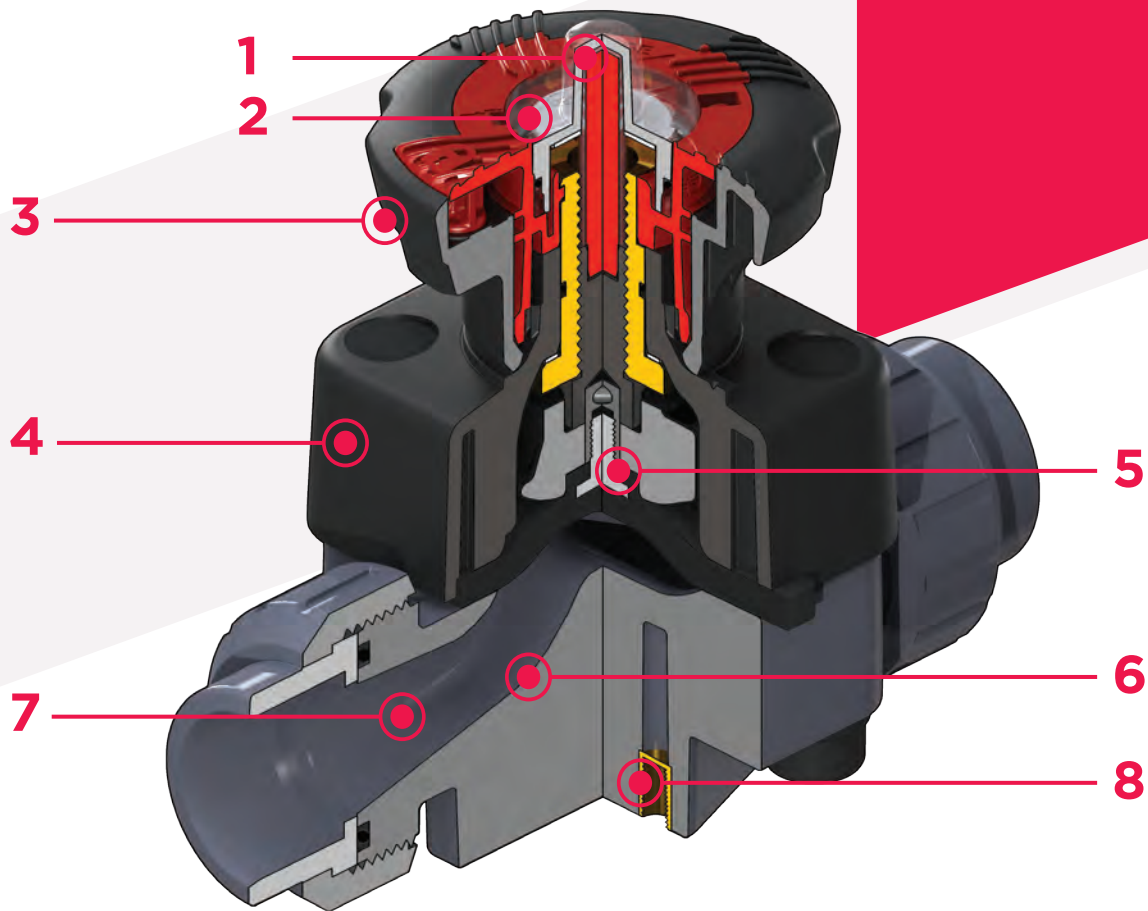
The DK is extremely compact and very light. The innovative handwheel is equipped with a patented immediate and ergonomic operating that allows it to be adjusted and locked in any position.

Dialock®

DIALOCK® 2-WAY DIAPHRAGM VALVE

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

Technical specifications	
Construction	Diaphragm valve with maximized flow rate and DIALOCK® lockable handwheel
Size range	DN 15 ÷ 65
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999 Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B16.5 Cl.150
Reference standards	Construction criteria: EN ISO 16138, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PVC-C Bonnet and handwheel: PP-GR Position indicator cap: PVC
Diaphragm material	EPDM, FPM, PTFE (on request NBR)
Control options	Manual control; pneumatic actuator

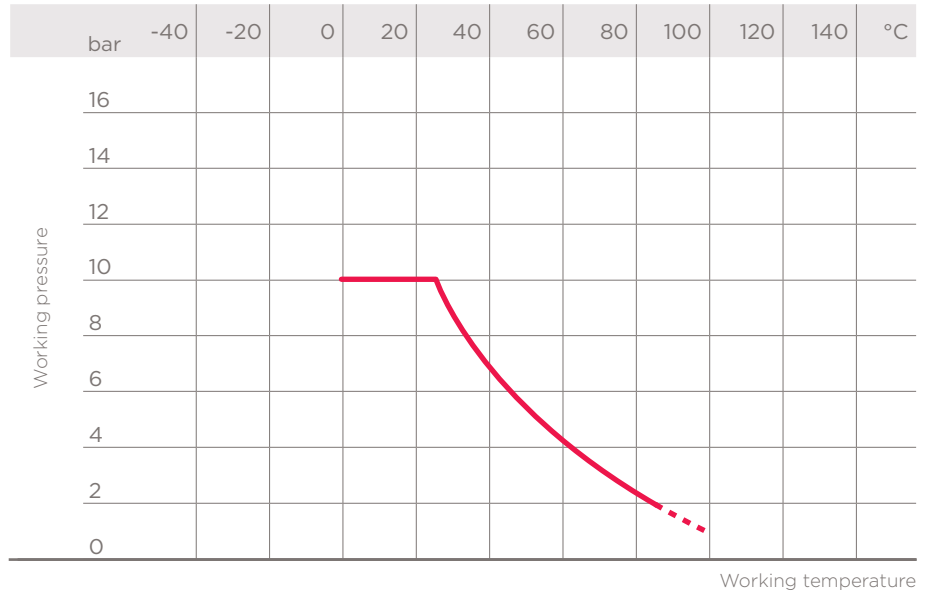


- 1 High visibility graduated optical position indicator** protected by a transparent cap with seal O-Ring
- 2 Customisation plate:** the using the customisation plate. The customisation lets you identify the valve on the system according to specific needs
- 3 DIALOCK® SYSTEM:** innovative handwheel with a patented immediate and ergonomic operating locking device that allows it **to be adjusted and locked in over 300 positions**
- 4 Handwheel and bonnet in** high mechanical strength and chemically resistant **PP-GR**, providing full protection by isolating all internal metal parts from contact with external agents
- 5 Floating pin connection** between the control screw and diaphragm to prevent concentrated loads, improve the seal and extend its lifetime
- 6 New design of valve body interior: substantially increased flow coefficient** and reduced pressure drop. The degree of efficiency reached has also enabled **the size and weight** of the valve to be **reduced**
- 7 Adjustment linearity:** the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter
- 8 Valve anchoring** bracket **integrated in the body**, with threaded metal inserts allowing **simple panel or wall mounting** using the PMDK mounting plate (supplied as an accessory)

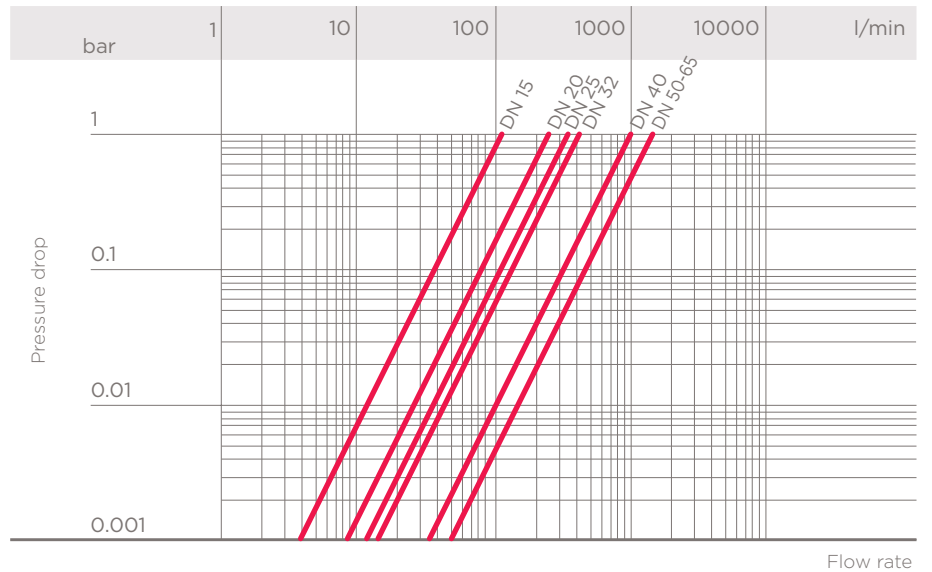
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

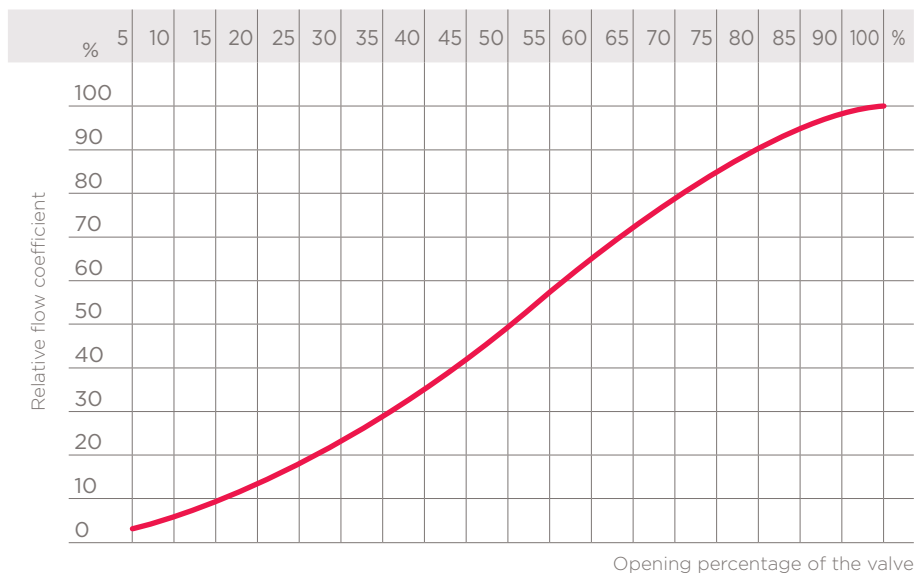
The K_v100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

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

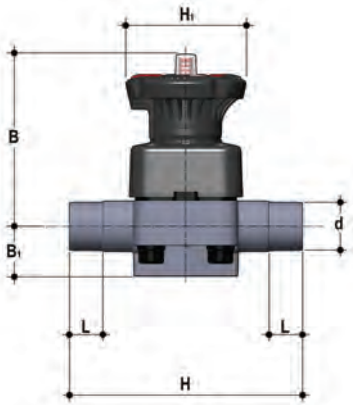
DN	15	20	25	32	40	50	65
K _v 100 l/min	112	261	445	550	1087	1648	1600

RELATIVE FLOW COEFFICIENT GRAPH

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



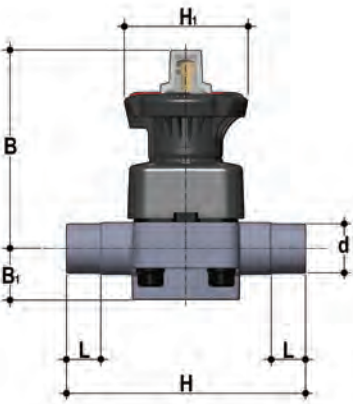
DIMENSIONS



DKDC

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

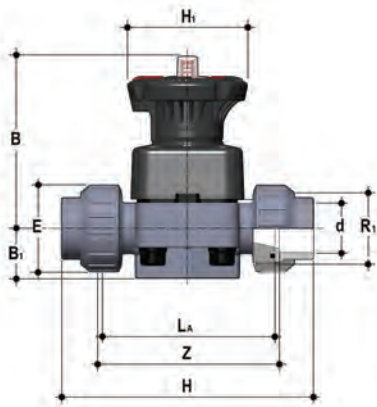
d	DN	PN	B	B ₁	H	H ₁	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	124	80	16	460	DKDC020E	DKDC020F	DKDC020P
25	20	10	105	30	144	80	19	482	DKDC025E	DKDC025F	DKDC025P
32	25	10	114	33	154	80	22	682	DKDC032E	DKDC032F	DKDC032P
40	32	10	119	30	174	80	26	726	DKDC040E	DKDC040F	DKDC040P
50	40	10	147	35	194	120	31	1525	DKDC050E	DKDC050F	DKDC050P
63	50	10	172	46	224	120	38	2389	DKDC063E	DKDC063F	DKDC063P
75	65	10	172	46	284	120	44	2519	DKDC075E	DKDC075F	DKDC075P



DKLDC

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

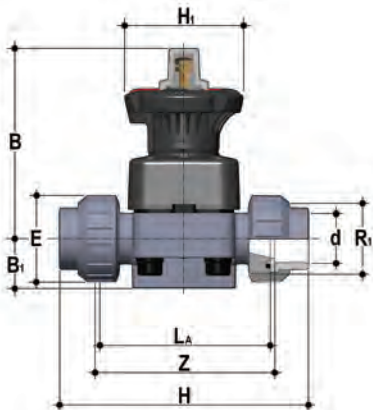
d	DN	PN	B	B ₁	H	H ₁	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	124	80	16	490	DKLDC020E	DKLDC020F	DKLDC020P
25	20	10	118	30	144	80	19	512	DKLDC025E	DKLDC025F	DKLDC025P
32	25	10	127	33	154	80	22	712	DKLDC032E	DKLDC032F	DKLDC032P
40	32	10	132	30	174	80	26	756	DKLDC040E	DKLDC040F	DKLDC040P
50	40	10	175	35	194	120	31	1585	DKLDC050E	DKLDC050F	DKLDC050P
63	50	10	200	46	224	120	38	2449	DKLDC063E	DKLDC063F	DKLDC063P
75	65	10	200	46	284	120	44	2579	DKLDC075E	DKLDC075F	DKLDC075P



DKUIC

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

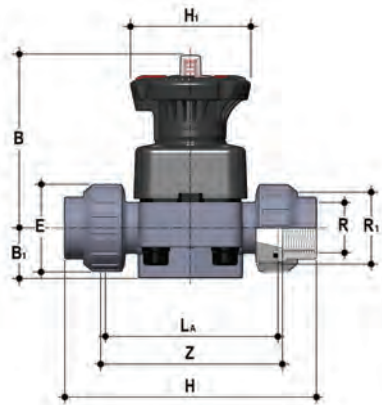
d	DN	PN	B	B ₁	E	H	H ₁	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	41	129	80	90	1"	100	500	DKUIC020E	DKUIC020F	DKUIC020P
25	20	10	105	30	50	154	80	108	1" 1/4	116	562	DKUIC025E	DKUIC025F	DKUIC025P
32	25	10	114	33	58	168	80	116	1" 1/2	124	790	DKUIC032E	DKUIC032F	DKUIC032P
40	32	10	119	30	72	192	80	134	2"	140	916	DKUIC040E	DKUIC040F	DKUIC040P
50	40	10	147	35	79	222	120	154	2" 1/4	160	1737	DKUIC050E	DKUIC050F	DKUIC050P
63	50	10	172	46	98	266	120	184	2" 3/4	190	2785	DKUIC063E	DKUIC063F	DKUIC063P



DKLUIC

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

d	DN	PN	B	B ₁	E	H	H ₁	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	41	129	80	90	1"	100	490	DKLUIC020E	DKLUIC020F	DKLUIC020P
25	20	10	118	30	50	154	80	108	1" 1/4	116	512	DKLUIC025E	DKLUIC025F	DKLUIC025P
32	25	10	127	33	58	168	80	116	1" 1/2	124	712	DKLUIC032E	DKLUIC032F	DKLUIC032P
40	32	10	132	30	72	192	80	134	2"	140	756	DKLUIC040E	DKLUIC040F	DKLUIC040P
50	40	10	175	35	79	222	120	154	2" 1/4	160	1585	DKLUIC050E	DKLUIC050F	DKLUIC050P
63	50	10	200	46	98	266	120	184	2" 3/4	190	2449	DKLUIC063E	DKLUIC063F	DKLUIC063P

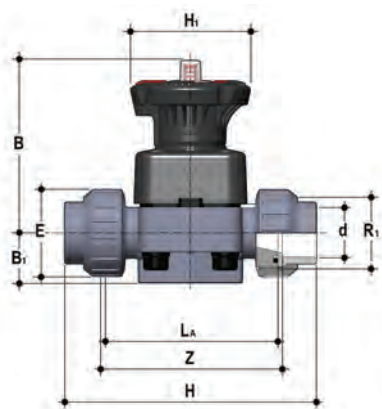


DKUFC

DIALOCK® diaphragm valve with BSP threaded female union ends

R	DN	PN	B	B ₁	E	H	H ₁	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	102	25	41	131	80	90	1"	97	500	DKUFC012E	DKUFC012F	DKUFC012P
3/4"	20	10	105	30	50	151	80	108	1" 1/4	118	562	DKUFC034E	DKUFC034F	DKUFC034P
1"	25	10	114	33	58	165	80	116	1" 1/2	127	790	DKUFC100E	DKUFC100F	DKUFC100P
1" 1/4	32	10	119	30	72	188	80	134	2"	145	916	DKUFC114E	DKUFC114F	DKUFC114P
1" 1/2	40	10	147	35	79	208	120	154	2" 1/4	165	1737	DKUFC112E	DKUFC112F	DKUFC112P
2"	50	10	172	46	98	246	120	184	2" 3/4	195	2785	DKUFC200E	DKUFC200F	DKUFC200P

DKLUFC version available on request

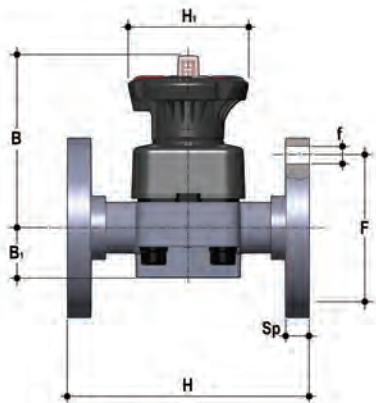


DKUAC

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

d	DN	PN	B	B ₁	E	H	H ₁	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	102	25	41	143	80	90	1"	98	500	DKUAC012E	DKUAC012F	DKUAC012P
3/4"	20	10	105	30	50	167	80	108	1" 1/4	115	562	DKUAC034E	DKUAC034F	DKUAC034P
1"	25	10	114	33	58	180	80	116	1" 1/2	122	790	DKUAC100E	DKUAC100F	DKUAC100P
1" 1/4	32	10	119	30	72	208	80	134	2	144	916	DKUAC114E	DKUAC114F	DKUAC114P
1" 1/2	40	10	147	35	79	234	120	154	2" 1/4	164	1737	DKUAC112E	DKUAC112F	DKUAC112P
2"	50	10	172	46	98	272	120	184	2" 3/4	195	2785	DKUAC200E	DKUAC200F	DKUAC200P

DKLUAC version available on request

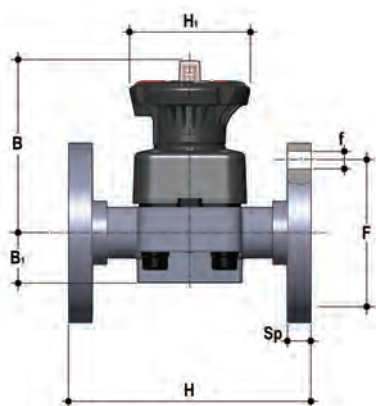


DKOC

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

d	DN	PN	B	B ₁	f	F	H	H ₁	Sp	U	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	14	65	130	80	13.5	4	690	DKOC020E	DKOC020F	DKOC020P
25	20	10	105	30	14	75	150	80	13.5	4	682	DKOC025E	DKOC025F	DKOC025P
32	25	10	114	33	14	85	160	80	14	4	972	DKOC032E	DKOC032F	DKOC032P
40	32	10	119	30	18	100	180	80	14	4	1186	DKOC040E	DKOC040F	DKOC040P
50	40	10	147	35	18	110	200	120	16	4	2100	DKOC050E	DKOC050F	DKOC050P
63	50	10	172	46	18	125	230	120	16	4	3159	DKOC063E	DKOC063F	DKOC063P
75	65	10	225	55	18	145	290	120	21	4	3619	DKOC075E	DKOC075F	DKOC075P

DKLOC version available on request



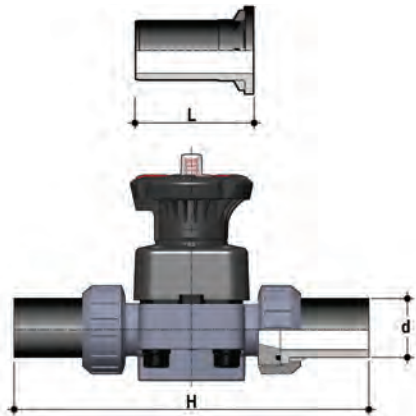
DKOAC

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

d	DN	PN	B	B ₁	f	F	H	H ₁	Sp	U	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	102	25	14	60.3	108	80	13.5	4	667	DKOAC012E	DKOAC012F	DKOAC012P
3/4"	20	10	105	30	15.7	69.9	150	80	13.5	4	682	DKOAC034E	DKOAC034F	DKOAC034P
1"	25	10	114	33	15.7	79.4	160	80	14	4	972	DKOAC100E	DKOAC100F	DKOAC100P
1" 1/4	32	10	119	30	15.7	88.9	180	80	14	4	1186	DKOAC114E	DKOAC114F	DKOAC114P
1" 1/2	40	10	147	35	15.7	98.4	200	120	16	4	2100	DKOAC112E	DKOAC112F	DKOAC112P
2"	50	10	172	46	19	120.7	230	120	16	4	3159	DKOAC200E	DKOAC200F	DKOAC200P
75	65	10	172	46	19	139.7	290	120	21	4	3619	DKOC075E	DKOC075F	DKOC075P

DKLOAC version available on request

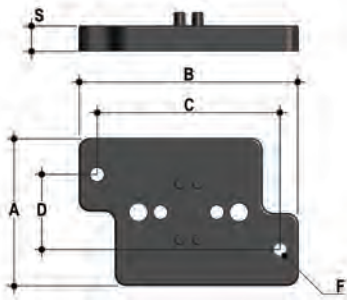
ACCESSORIES



Q/BBE-L

Long spigot PE100 end connectors for electrofusion or butt welding

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



PMDK

Wall mounting plate

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

FASTENING AND SUPPORTING

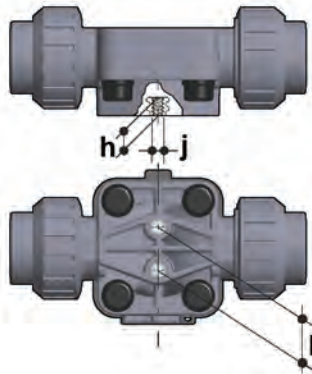


All valves, whether manual or actuated, must be adequately supported in many applications.

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

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

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



d	DN	h	i	j
20	15	10	25	M6
25	20	10	25	M6
32	25	10	25	M6
40	32	10	25	M6
50	40	13	44,5	M8
63	50	13	44,5	M8
75	65	13	44,5	M8

CUSTOMISATION

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

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

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

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

Fig. 1



Fig. 2



Fig. 3

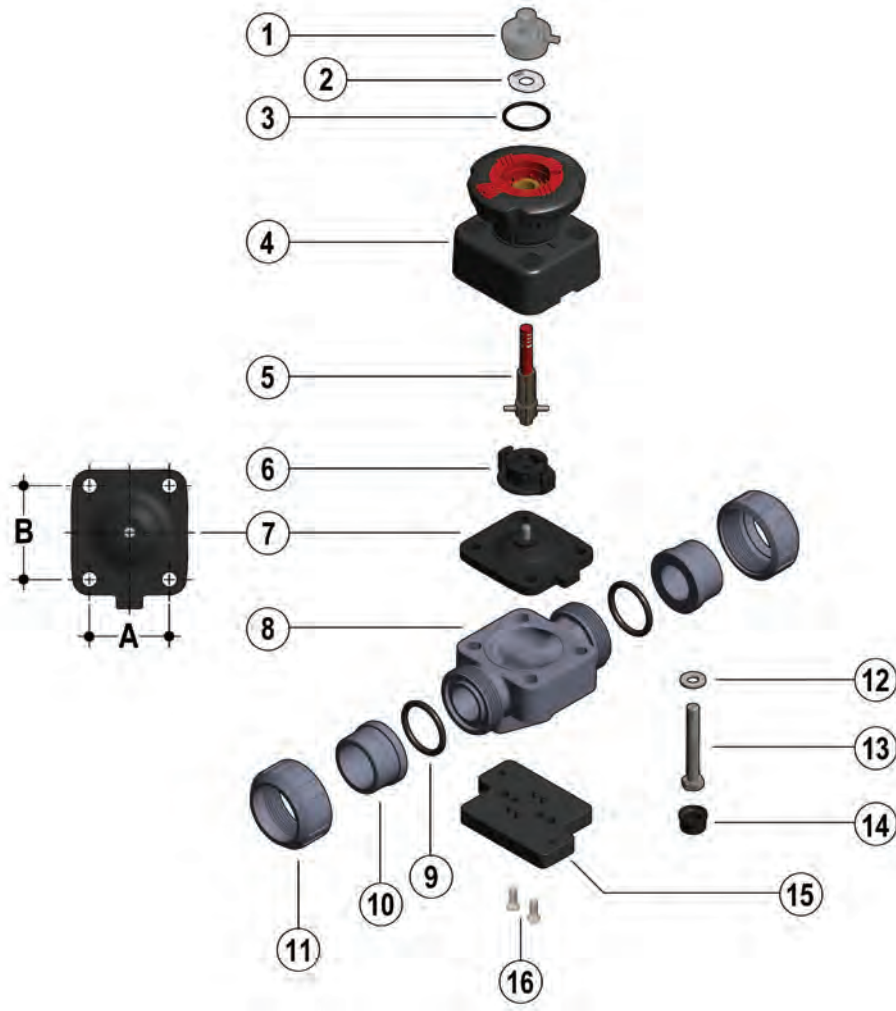


Fig. 4



COMPONENTS

EXPLODED VIEW DN 15÷50



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

- 1** · Transparent protection cap (PVC - 1)*
- 2** · Customisation plate (PVC - 1)
- 3** · O-Ring (EPDM - 1)
- 4** · Operating mechanism (PP-GR / PVDF - 1)
- 5** · Threaded stem - Indicator (Stainless steel - 1)

- 6** · Compressor (IXEF® - 1)
- 7** · Diaphragm seal (EPDM, FPM, PTFE - 1)*
- 8** · Valve body (PVC-C - 1)*
- 9** · Socket seal O-ring (EPDM-FPM - 2)*
- 10** · End connector (PVC-C - 2)*
- 11** · Union nut (PVC-C - 2)*

- 12** · Washer (Stainless steel - 4)
- 13** · Bolt (Stainless steel - 4)
- 14** · Protection plug (PE - 4)
- 15** · Distance plate (PP-GR - 1)**
- 16** · Screw (Stainless steel - 2)**

* Spare parts

** Accessories

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

DISASSEMBLY

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

ASSEMBLY

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



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

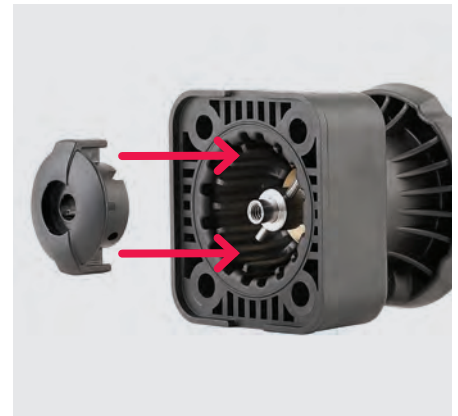
Fig. 5



Fig. 6



Fig. 7



INSTALLATION

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

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

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

Fig. 9



LOCKING DEVICE



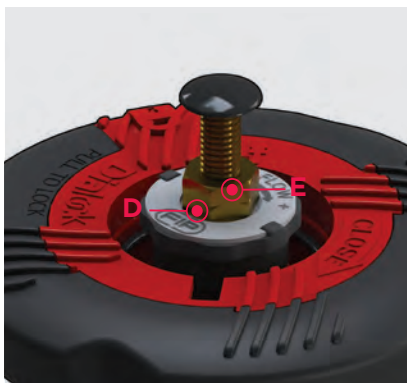
The DK valve is equipped with a DIALOCK® handwheel locking system that prevents the valve from being operated.

The system can be engaged by simply lifting the handwheel once the required position has been reached (fig. 8).

To release the operating mechanism, simply return the handwheel to its previous position by pushing it downwards (fig. 6).

When the system is in the locked position, a lock can be installed to protect the plant against unwanted interference (fig. 9).

STROKE LIMITER



The DKL version of the diaphragm valve is equipped with a handwheel stroke control system which allows the minimum and maximum flows to be preset and the diaphragm to be preserved from an excessive compression during closing.

The system allows the valve stroke to be modified using the two independent adjusting screws, which determine the mechanical limits of the valve during opening and closing. The valve is sold with the stroke limiters positioned such that does not limit the opening or closing stroke.

To access and set the adjusting screws, remove the transparent protection cap (A) as previously described (see chapter "Customisation").

Travel stop adjustment. Minimum flow rate or closed valve.

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

Stroke limiter adjustment. Maximum flow rate

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



VM DN 15÷100
PVC-C

Diaphragm valve

VM

DN 15÷100

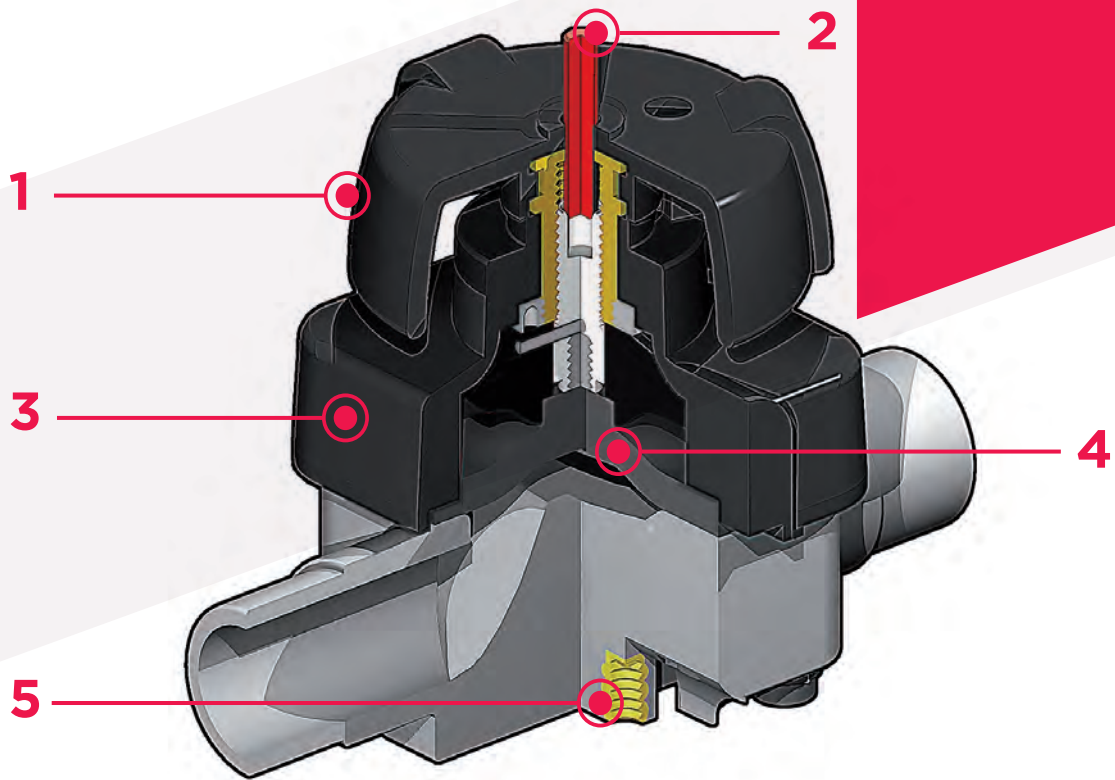
The VM is particularly suitable for shutting off and regulating abrasive or dirty fluids.

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 solvent weld, threaded 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 molded-in bushes 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	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: ISO 228-1, DIN 2999 Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B16.5 Cl.150
Reference standards	Construction criteria: EN ISO 16138, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PVC-C 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 available in EPDM, FPM, PTFE (NBR on request) and easy to replace

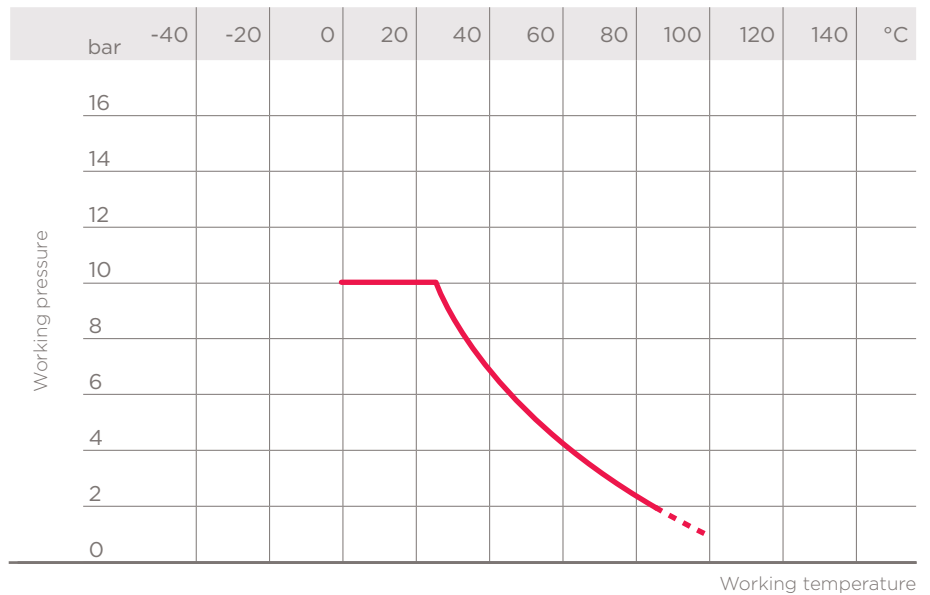
5 Threaded metal inserts for anchoring the valve

TECHNICAL DATA

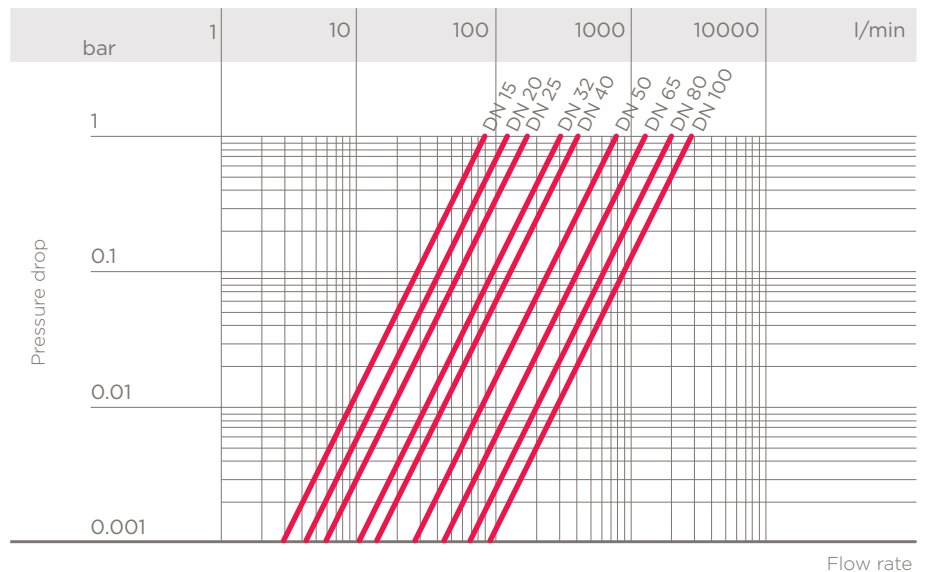
PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids 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).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

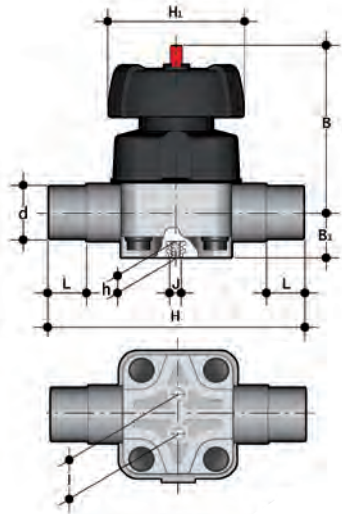
The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position.

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 _v 100 l/min	93	136	175	300	416	766	1300	2000	2700

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

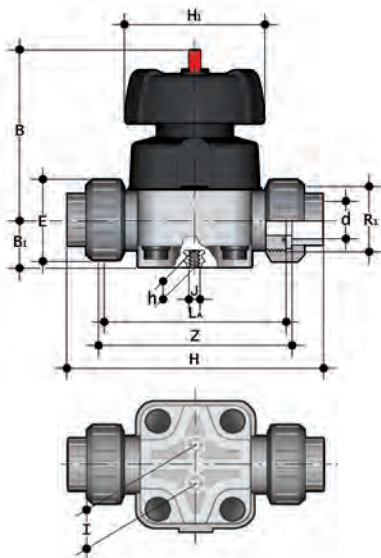


VMDC

Diaphragm valve with male ends for solvent welding, metric series

d	DN	PN	B	B ₁	H	h	H ₁	l	J	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	124	12	90	25	M6	16	720	VMDC020E	VMDC020F	VMDC020P
25	20	10	95	26	144	12	90	25	M6	19	720	VMDC025E	VMDC025F	VMDC025P
32	25	10	95	26	154	12	90	25	M6	22	720	VMDC032E	VMDC032F	VMDC032P
40	32	10	126	40	174	18	115	44.5	M8	26	1560	VMDC040E	VMDC040F	VMDC040P
50	40	10	126	40	194	18	115	44.5	M8	31	1560	VMDC050E	VMDC050F	VMDC050P
63	50	10	148	40	224	18	140	44.5	M8	38	2500	VMDC063E	VMDC063F	VMDC063P
75	65	*10	225	55	284	23	200	100	M12	44	7260	VMDC075E	VMDC075F	VMDC075P
90	80	*10	225	55	300	23	200	100	M12	51	7260	VMDC090E	VMDC090F	VMDC090P
110	100	*10	295	69	340	23	250	120	M12	61	10860	VMDC110E	VMDC110F	VMDC110P

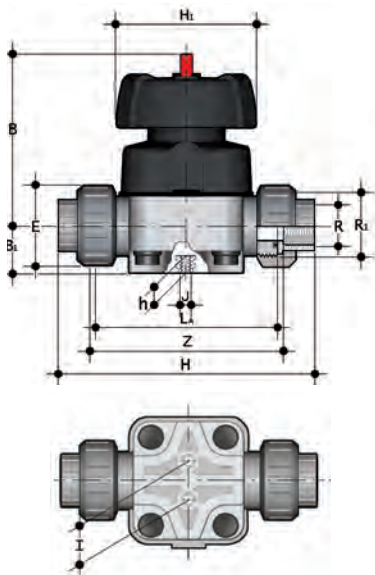
*PTFE PN6



VMUIC

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

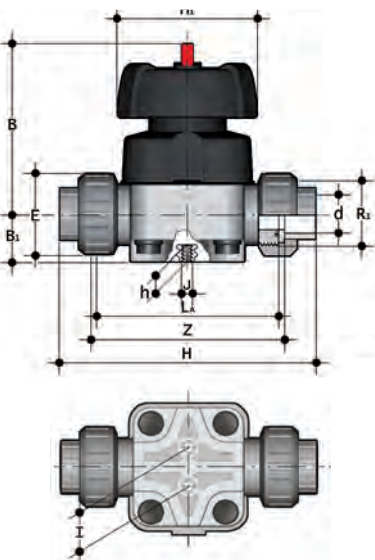
d	DN	PN	B	B ₁	E	H	h	H ₁	l	J	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	41	147	12	90	25	M6	108	1"	115	860	VMUIC020E	VMUIC020F	VMUIC020P
25	20	10	95	26	50	154	12	90	25	M6	108	1 1/4"	116	895	VMUIC025E	VMUIC025F	VMUIC025P
32	25	10	95	26	58	168	12	90	25	M6	116	1 1/2"	124	930	VMUIC032E	VMUIC032F	VMUIC032P
40	32	10	126	40	72	192	16	115	44.5	M8	134	2"	140	1720	VMUIC040E	VMUIC040F	VMUIC040P
50	40	10	126	40	79	222	16	115	44.5	M8	154	2 1/4"	160	1800	VMUIC050E	VMUIC050F	VMUIC050P
63	50	10	148	40	98	266	16	140	44.5	M8	184	2 3/4"	190	2915	VMUIC063E	VMUIC063F	VMUIC063P



VMUFC

Diaphragm valve with BSP threaded female union ends

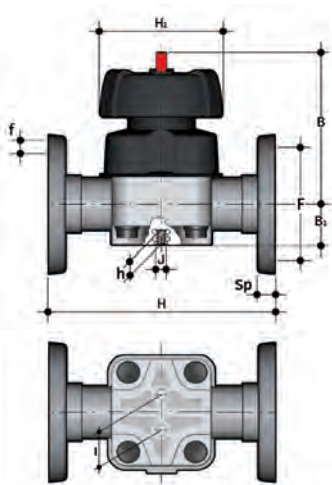
d	DN	PN	B	B ₁	E	H	h	H ₁	I	J	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	95	26	41	148	12	90	25	M6	108	1"	118	860	VMUFC012E	VMUFC012F	VMUFC012P
3/4"	20	10	95	26	50	151	12	90	25	M6	108	1 1/4"	118	895	VMUFC034E	VMUFC034F	VMUFC034P
1"	25	10	95	26	58	165	12	90	25	M6	116	1 1/2"	127	930	VMUFC100E	VMUFC100F	VMUFC100P
1 1/4"	32	10	126	40	72	188	16	115	44.5	M8	134	2"	145	1720	VMUFC114E	VMUFC114F	VMUFC114P
1 1/2"	40	10	126	40	79	208	16	115	44.5	M8	154	2 1/4"	165	1800	VMUFC112E	VMUFC112F	VMUFC112P
2"	50	10	148	40	98	246	16	140	44.5	M8	184	2 3/4"	195	2915	VMUFC200E	VMUFC200F	VMUFC200P



VMUAC

Diaphragm valve with female union ends for solvent welding, ASTM series

d	DN	PN	B	B ₁	E	H	h	H ₁	I	J	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	95	26	41	160	12	90	25	M6	108	1"	115	860	VMUAC012E	VMUAC012F	VMUAC012P
3/4"	20	10	95	26	50	167	12	90	25	M6	108	1 1/4"	115	895	VMUAC034E	VMUAC034F	VMUAC034P
1"	25	10	95	26	58	180	12	90	25	M6	116	1 1/2"	122	930	VMUAC100E	VMUAC100F	VMUAC100P
1 1/4"	32	10	126	40	72	208	16	115	44.5	M8	134	2"	144	1720	VMUAC114E	VMUAC114F	VMUAC114P
1 1/2"	40	10	126	40	79	234	16	115	44.5	M8	154	2 1/4"	164	1800	VMUAC112E	VMUAC112F	VMUAC112P
2"	50	10	148	40	98	272	16	140	44.5	M8	184	2 3/4"	195	2915	VMUAC200E	VMUAC200F	VMUAC200P

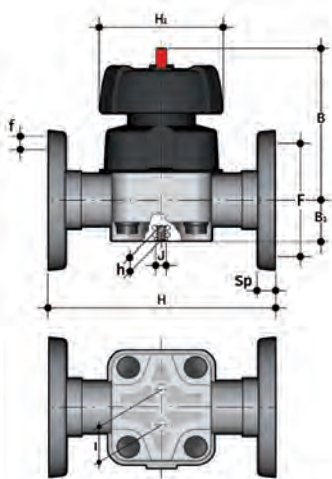


VMOC

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	l	J	Sp	U	g	EPDM Code	FPM Code	PTFE Code
20	15	10	95	26	65	14	130	90	25	M6	11	4	910	VMOC020E	VMOC020F	VMOC020P
25	20	10	95	26	75	14	150	90	25	M6	13.5	4	970	VMOC025E	VMOC025F	VMOC025P
32	25	10	95	26	85	14	160	90	25	M6	14	4	1060	VMOC032E	VMOC032F	VMOC032P
40	32	10	126	40	100	18	180	115	44.5	M8	14	4	2120	VMOC040E	VMOC040F	VMOC040P
50	40	10	126	40	110	18	200	115	44.5	M8	16	4	2225	VMOC050E	VMOC050F	VMOC050P
63	50	10	148	40	125	18	230	140	44.5	M8	16	4	3320	VMOC063E	VMOC063F	VMOC063P
75	65	*10	225	55	145	18	290	200	100	M12	21	4	8500	VMOC075E	VMOC075F	VMOC075P
90	80	*10	225	55	160	18	310	200	100	M12	21.5	8	9150	VMOC090E	VMOC090F	VMOC090P
110	100	*10	295	69	180	18	350	250	120	M12	22.5	8	13200	VMOC110E	VMOC110F	VMOC110P

*PTFE PN6



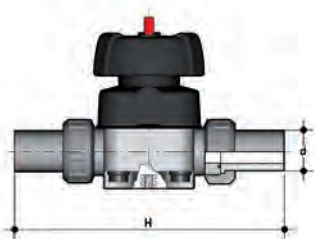
VMOAC

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

d	PN	B	B ₁	F	f	H	H ₁	l	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	910	VMOAC012E	VMOAC012F	VMOAC012P
3/4"	10	95	26	69.9	15.9	150	90	25	M6	13.5	4	970	VMOAC034E	VMOAC034F	VMOAC034P
1"	10	95	26	79.4	15.9	160	90	25	M6	14	4	1060	VMOAC100E	VMOAC100F	VMOAC100P
1 1/4"	10	126	40	88.9	15.9	180	115	44.5	M8	14	4	2120	VMOAC114E	VMOAC114F	VMOAC114P
1 1/2"	10	126	40	98.4	15.9	200	115	44.5	M8	16	4	2225	VMOAC112E	VMOAC112F	VMOAC112P
2"	10	148	40	120.7	19.1	230	140	44.5	M8	16	4	3320	VMOAC200E	VMOAC200F	VMOAC200P
2 1/2"	*10	225	55	139.7	19.1	290	200	100	M12	21	4	8500	VMOC075E	VMOC075F	VMOC075P
3"	*10	225	55	152.4	19.1	310	200	100	M12	21.5	4	9150	VMOAC300E	VMOAC300F	VMOAC300P
4"	*10	295	69	190.5	19.1	350	250	120	M12	22.5	8	13200	VMOC110E	VMOC110F	VMOC110P

*PTFE PN6

ACCESSORIES



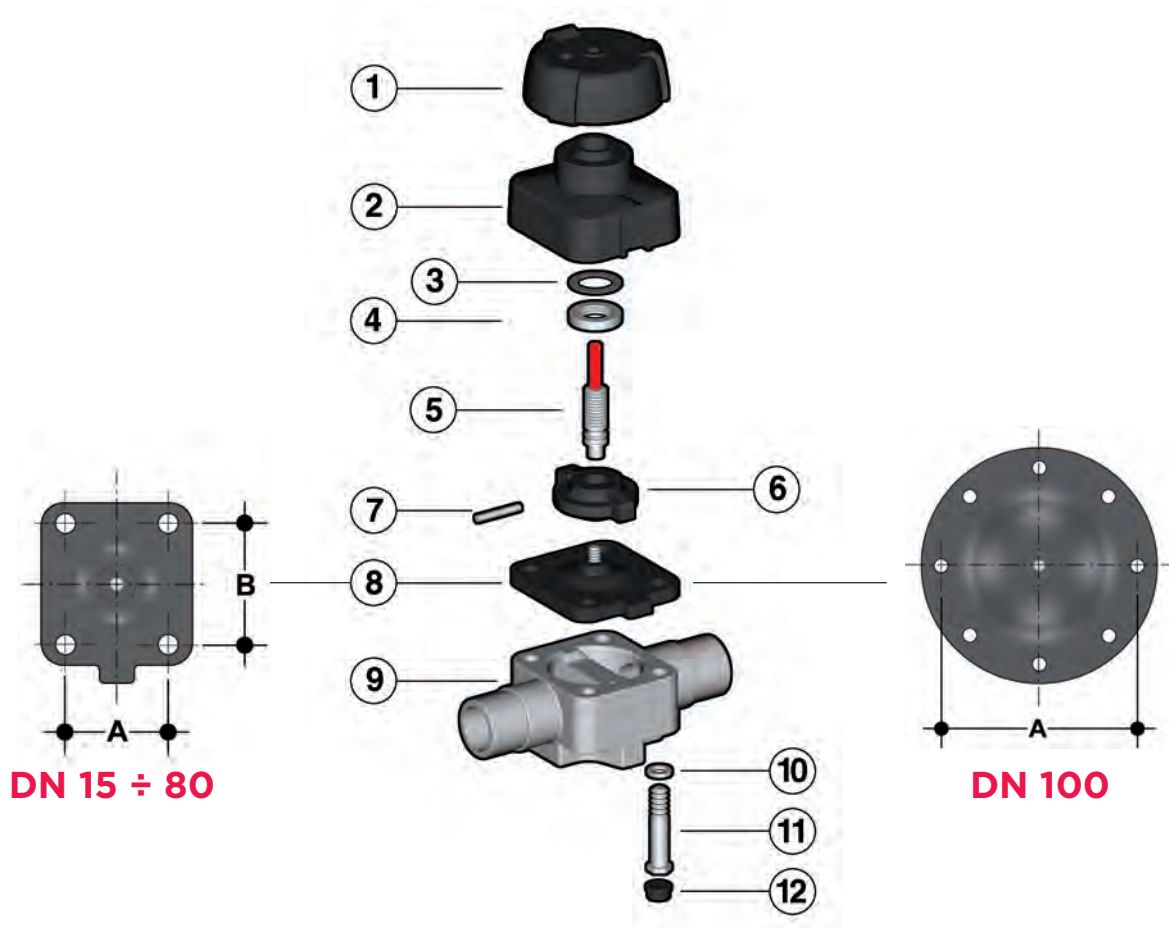
Q/BBE-L

Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding

d	DN	PN	L	H	SDR	Code
20	15	16	95	298	11	QBBEL11020
25	20	16	95	298	11	QBBEL11025
32	25	16	95	314	11	QBBEL11032
40	32	16	95	330	11	QBBEL11040
50	40	16	95	350	11	QBBEL11050
63	50	16	95	380	11	QBBEL11063

COMPONENTS

EXPLODED VIEW



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 · Indicator - stem
(STAINLESS steel - 1)

6 · Shutter (PBT - 1)

7 · Pin (STAINLESS steel - 1)

8 · Diaphragm seal
(EPDM, FPM, PTFE - 1)

9 · Body (PVC-C - 1)

10 · Washer (Zinc plated steel - 4)

11 · Hexagonal screw
(Zinc plated 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 handwheel. Then, the diaphragm seal (8) must be screwed fully to the bonnet and then rotated in the opposite direction until the holes in the diaphragm coincide 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. Do not forget to insert the 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).



CM DN 12÷15
PVC-C

Compact diaphragm valve

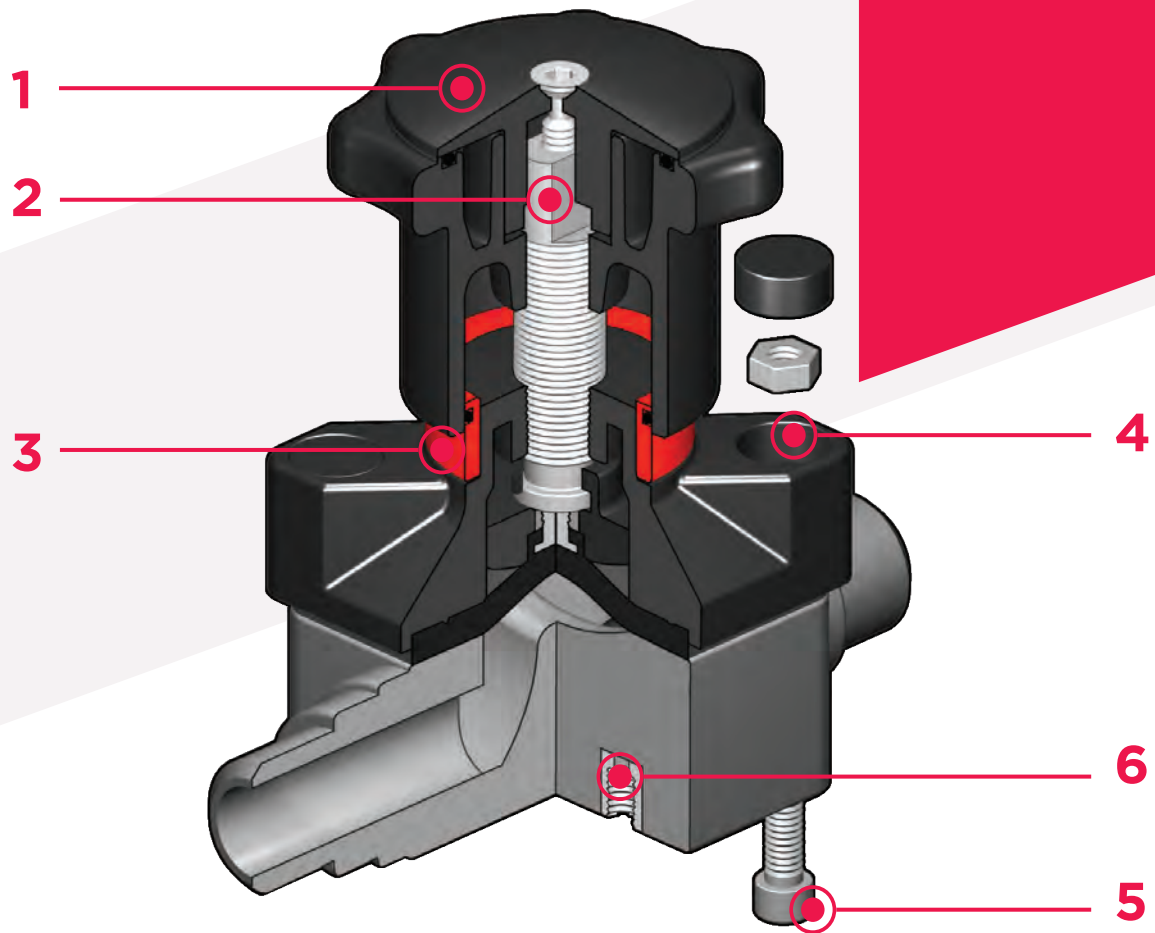
CM DN 12÷15

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 solvent weld joints
- Extremely compact construction
- **Internal components in metal totally isolated from the conveyed fluid**
- Valve stem in STAINLESS steel
- **Compressor with floating diaphragm carrier**
- 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	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493. Can be coupled to pipes according to EN ISO 15493
Reference standards	Construction criteria: EN ISO 16138, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PVC-C 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

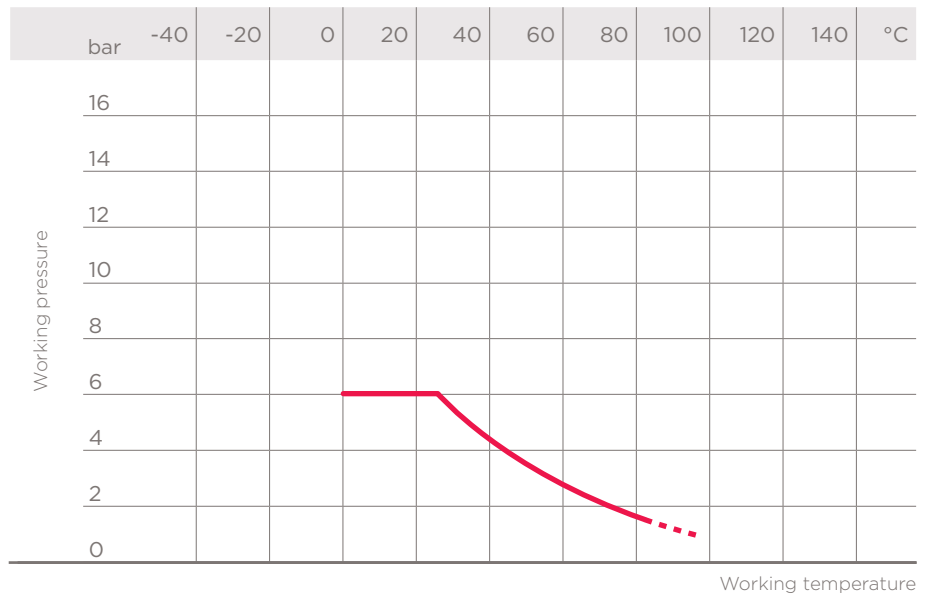
- 5** STAINLESS steel bolts, can also be inserted from above
- 6** Threaded metal inserts for anchoring the valve

TECHNICAL DATA

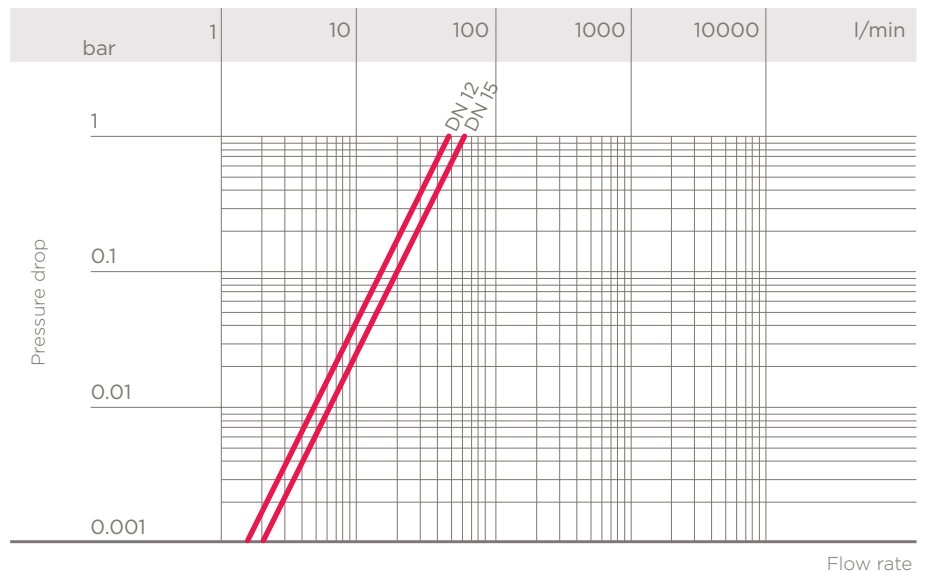
PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids 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).

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

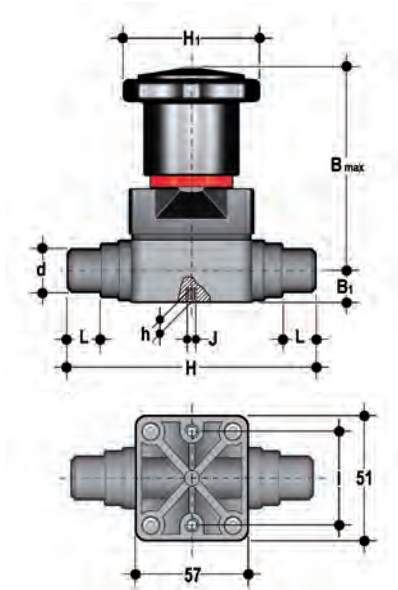
The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position.

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

DN	12	15
K _v 100 l/min	47	60

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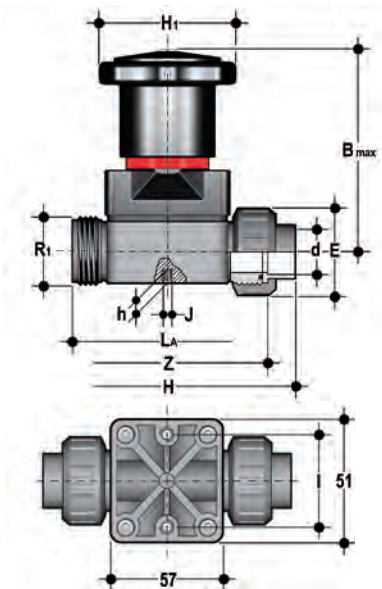
DIMENSIONS



CMDC

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

d	DN	PN	B _{max}	B ₁	H	h	H ₁	I	J	L	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	15	124	8	58.5	35	M5	17	310	CMDC020E	CMDC020F	CMDC020P



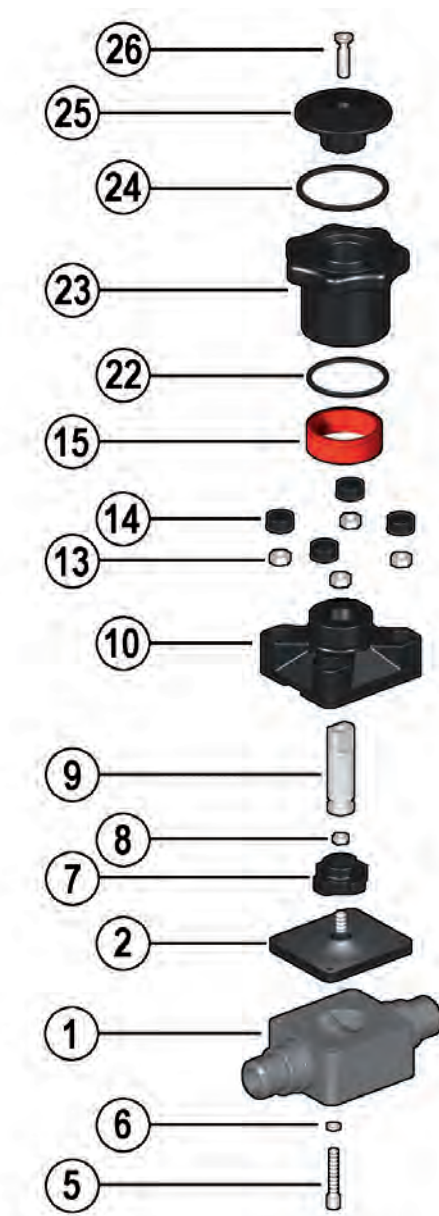
CMUIC

Compact diaphragm valve with female union ends for solvent welding

d	DN	PN	B _{max}	E	H	h	H ₁	I	J	L _A	R ₁	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	41	129.5	8	58.5	35	M5	90	1"	97.5	285	CMUIC020E	CMUIC020F	CMUIC020P

COMPONENTS

EXPLODED VIEW



1 • Body (PVC-C - 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 internal components.
- 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 line up 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 on the handwheel.

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

Each turn of the handwheel corresponds to 1.75 mm travel.



RV DN 15÷50
PVC-C

Sediment strainer

RV DN 15÷50

The RV Sediment strainer limits the passage of any solid particles present in the fluid by means of a strainer.

SEDIMENT STRAINER

- Connection system for solvent weld, threaded and flanged joints
- **Strainer** mounted on an easily removed **support** that facilitates the cleaning or replacement
- **Valve material compatibility** (PVC-C) with water conveyance, drinking water and other food substances according to **current regulations**
- Can be maintained with the valve body installed

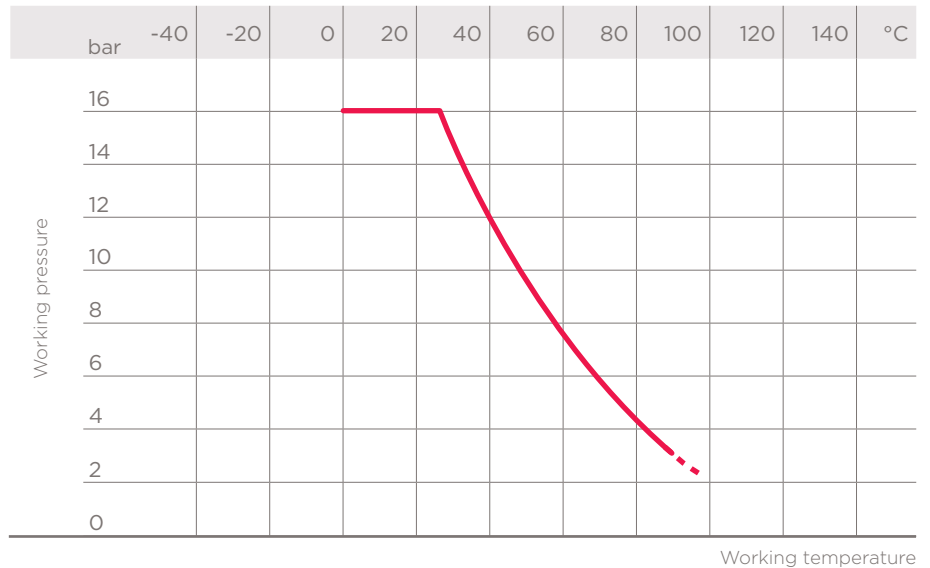
Technical specifications	
Construction	Sediment strainer
Size range	DN 15÷50
Nominal pressure	PN 16 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Solvent welding: EN ISO 15493, ASTM F 439. Can be coupled to pipes according to EN ISO 15493, ASTM F 441 Thread: UNI ISO 228-1, DIN 2999, ASTM F 437 Flanging system: ISO 7005-1, EN ISO 15493, EN 558-1, DIN 2501, ANSI B.16.5 cl.150
Reference standards	Construction criteria: EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PVC-C Strainer: PP
Seal material	EPDM or FPM

TECHNICAL DATA

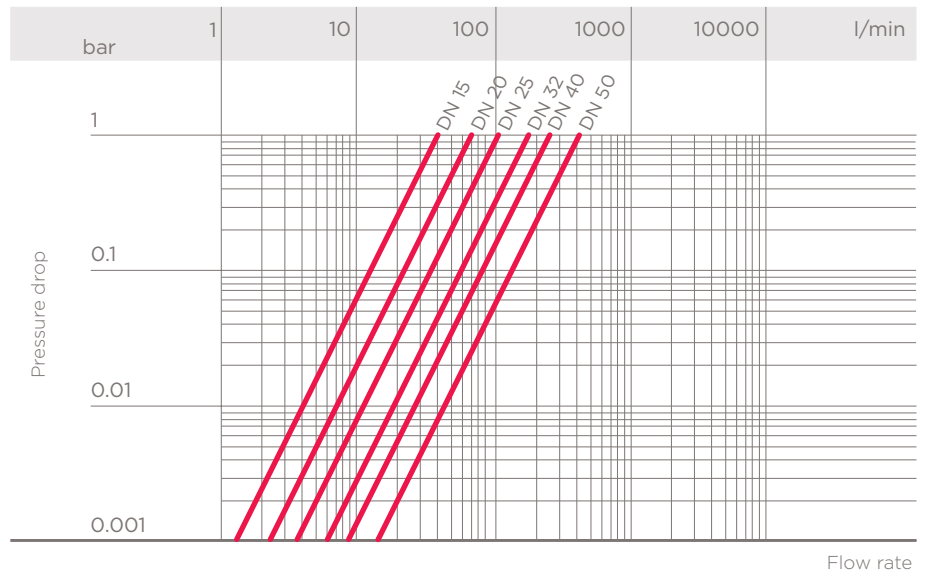
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

Note: When using PVC-C at working temperatures higher than 90°, it is advisable to first contact the service centre.



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
K _v 100 l/min	40	70	103	188	255	410

STRAINER DIMENSIONS

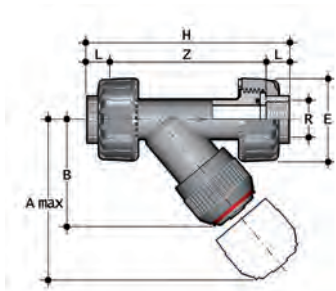
Pitch (mm)	1.5
number of holes per cm ²	42
ASTM series equivalent in mesh	20
ø equivalent hole μm	800
strainer material	PP

TOTAL FILTER AREA A_{tot} (cm²)

DN	15	20	25	32	40	50
A _{tot}	16	23.5	36	53	69	101

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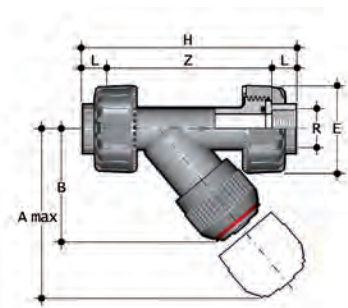
DIMENSIONS



RVUIC

Sediment strainer with female union ends for solvent welding, metric series

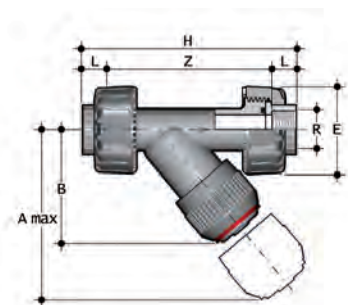
d	DN	PN	A max	B	E	H	L	Z	g	EPDM Code	FPM Code
20	15	16	125	72	55	135	16	103	231	RVUIC020E	RVUIC020F
25	20	16	145	84	66	158	19	120	392	RVUIC025E	RVUIC025F
32	25	16	165	95	75	176	22	132	576	RVUIC032E	RVUIC032F
40	32	16	190	111	87	207	26	155	802	RVUIC040E	RVUIC040F
50	40	16	210	120	100	243	31	181	1199	RVUIC050E	RVUIC050F
63	50	16	240	139	120	298	38	222	2018	RVUIC063E	RVUIC063F



RVUAC

Sediment strainer with female union ends for solvent welding, ASTM series

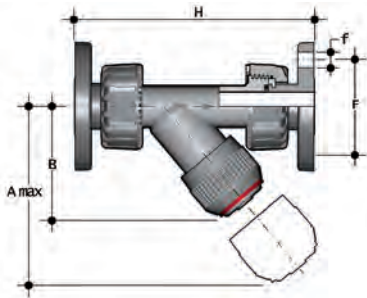
d	DN	PN	A max	B	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	125	72	55	149	22.5	104	231	RVUAC012E	RVUAC012F
3/4"	20	16	145	84	66	172	25.5	121	392	RVUAC034E	RVUAC034F
1"	25	16	165	95	75	190	28.7	132.6	576	RVUAC100E	RVUAC100F
1 1/4"	32	16	190	111	87	223	32	159	802	RVUAC114E	RVUAC114F
1 1/2"	40	16	210	120	100	251	35	181	1199	RVUAC112E	RVUAC112F
2"	50	16	240	139	120	298	38.2	221.6	2018	RVUAC200E	RVUAC200F



RVUNC

Sediment strainer with NPT threaded female union ends

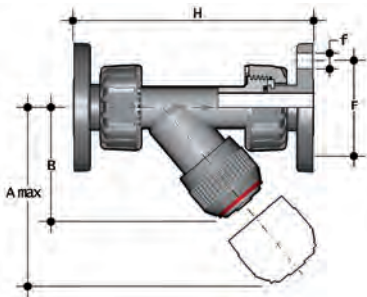
R	DN	PN	A max	B	E	H	L	Z	g	EPDM Code	FPM Code
1/2"	15	16	125	72	55	142	17.8	106.4	231	RVUNC012E	RVUNC012F
3/4"	20	16	145	84	66	159	18	123	392	RVUNC034E	RVUNC034F
1"	25	16	165	95	75	183	22.6	137.8	576	RVUNC100E	RVUNC100F
1 1/4"	32	16	190	111	87	214	23.5	167	812	RVUNC114E	RVUNC114F
1 1/2"	40	16	210	120	100	235	28.5	178	1211	RVUNC112E	RVUNC112F
2"	50	16	240	139	120	285	35.7	213.6	2051	RVUNC200E	RVUNC200F



RVUOC

Sediment strainer with fixed flanges, drilled EN/ISO/DIN PN10/16.

d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
20	15	16	125	72	65	14	163	360	RVUOC020E	RVUOC020F
25	20	16	145	84	75	14	193	495	RVUOC025E	RVUOC025F
32	25	16	165	95	85	14	211	660	RVUOC032E	RVUOC032F
40	32	16	190	111	100	18	244	1000	RVUOC040E	RVUOC040F
50	40	16	210	120	110	18	277	1320	RVUOC050E	RVUOC050F
63	50	16	240	139	125	18	331	1910	RVUOC063E	RVUOC063F



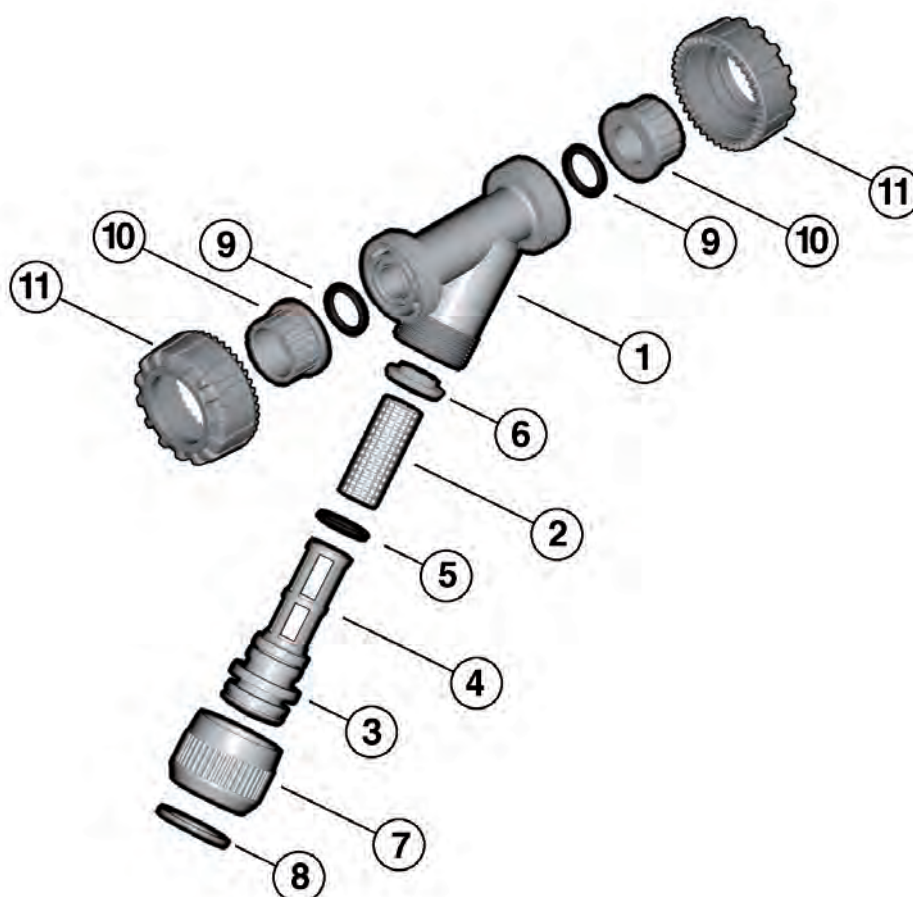
RVUOAC

Sediment strainer with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
1/2"	15	16	125	72	60.3	15.9	175	360	RVUOAC012E	RVUOAC012F
3/4"	20	16	145	84	69.9	15.9	214	495	RVUOAC034E	RVUOAC034F
1"	25	16	165	95	79.4	15.9	237	660	RVUOAC100E	RVUOAC100F
1 1/4"	32	16	190	111	88.9	15.9	253	1000	RVUOAC114E	RVUOAC114F
1 1/2"	40	16	210	120	98.4	15.9	289	1320	RVUOAC112E	RVUOAC112F
2"	50	16	240	139	120.7	19.1	333	1910	RVUOAC200E	RVUOAC200F

COMPONENTS

EXPLODED VIEW



1 • Body (PVC-C - 1)

2 • Strainer (PP-H - 1)*

3 • Bonnet (PVC-C - 1)

4 • Strainer support (PVC-C - 1)

5 • O-Ring (EPDM o FPM - 1)*

6 • Washer (PVC-C - 1)

7 • Union nut (PVC-C - 1)

8 • Retaining ring (PVC-C - 1)

9 • Socket seal O-ring
(EPDM or FPM - 2)*

10 • End connector (PVC-C - 2)*

11 • Union nut(PVC-C - 2)

* Spare parts

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

DISASSEMBLY

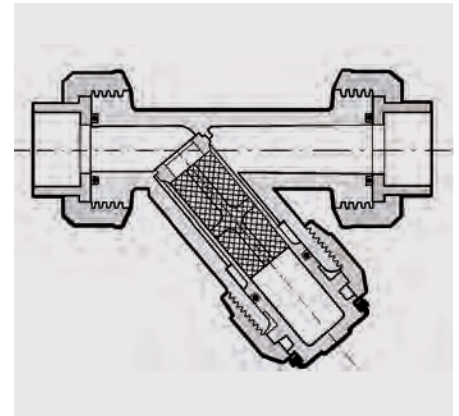
- 1) Isolate the sediment strainer from the fluid flow and empty the system upstream.
- 2) Unscrew the nut (7) and separate the bonnet-support (3-4) from the body (1).
- 3) Remove the bottom washer (6) from the bonnet-support (3-4).
- 4) Remove the retaining ring (8) and separate the union nut (7) from the bonnet (3).
- 5) Remove the O-Ring from the bonnet (5).

ASSEMBLY

- 1) Insert the O-Ring (5) in its seating in the bonnet (3).
- 2) Insert the bonnet (3) in union nut (7) and fix the two components using the retaining ring (8).
- 3) Insert the strainer (2) in the bonnet-support (3-4) and hold in place with the washer (6).
- 4) Insert the bonnet (3) in the body (1) and tighten the union nut (7).



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

The sediment strainer can be installed in any position, making sure that the arrow stamped on the body indicates the direction of fluid flow and that the strainer part is facing downwards. To avoid damaging the strainer, appropriate devices must be installed on the line to prevent backflow.

- 1) Unscrew the union nuts (11) and slide them onto the pipe.
- 2) Heat weld the end connectors (10) onto the pipe segments.
- 3) Position the sediment strainer between the connectors
- 4) Tighten the union nuts.

WARNINGS

- sediment strainers with a transparent body allow the passage of light, thus promoting the internal growth of algae and micro-organisms.
- sediment strainers with a transparent body are not protected against solar rays. Use in an open-air system will accelerate the ageing process of the material and reduce its working life.
- The sediment strainers with a transparent body located near pumps should be protected against vibrations.
- Always check the cleanliness of the filter elements.

KEY ABBREVIATIONS

C O-Ring code

d nominal external diameter in mm

DN nominal internal diameter in mm

EPDM Ethylene-Propylene-Diene-Monomer

FPM (FKM) fluoroelastomer

g weight in grams

HIPVC PVC high impact

K lid key

L length in metres

M bolts

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

n number of flange holes

NBR nitrile butadiene rubber

PA-GR fibreglass reinforced polyamide

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 standard thickness = $\frac{SDR-1}{2}$

s pipe thickness in millimetres

SDR standard dimension ratio = d / s

Sp flange thickness on flanged valves

U number of flange holes on flanged valves



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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



Code LEVARAC