

Technical catalogue

Manual valves, pipe and fittings in PVC-C



Pressure piping fluids conveying



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PVC-C

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KEY ABBREVIATIONS

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General characteristics

PVC-C

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.
- **Physical characteristics:** PVC-C 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-C 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/mm ²)		
Test method	ASTM D648	
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 D696
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 D2863
Unit of measurement	%	
Value	Valves/fittings: 60 Pipes: 60	Valves/fittings: 60 Pipes: 60

Reference standards

PVC-C

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 cl.150**

Pipe flanges and flanged fittings-NPS 1/2 to NPS 24 mm / inch

- **ASTM D1784 cl. 23548**

Rigid PVC and PVC-C compounds (for industrial applications).

- **ASTM F 441**

PVC-C pipe, sch. 40 and 80.

- **ASTM F437**

PVC-C threaded pipe fittings, sch. 80.

- **ASTM F439**

PVC-C pipe fittings.

- **DIN 8079-8080**

PVC-C pipes, dimensions.

- **DVS 2204 - DVS 2221**

Adhesive bonding of thermoplastic PVC-C pipes and fittings

- **EN 10226**

Pipe threads where pressure tight joints are made on the threads

- **EN 1092-1**

Flanges and their joints - Circular flanges for pipes, valves and accessories - Part 1: Steel flanges, PN designated

- **EN 14728**

Imperfections in thermoplastic welds -classification

- **EN ISO 15493**

Plastic piping systems (Pipes, Fittings and Valves) in ABS, PVC-U, PVC-C for industrial applications

- **EN ISO 16135**

Industrial valves - Ball valves of thermoplastic material

- **EN ISO 16136**

Industrial valves - Butterfly valves of thermoplastic material

- **EN ISO 16137**

Industrial valves - Check valves of thermoplastic material

- **EN ISO 16138**

Industrial valves - Diaphragm valves of thermoplastic material

- **ISO 161-1**

Thermoplastics pipes for the conveyance of fluids -Nominal outside diameters and nominal pressures , metric series

- **ISO 228-1**

Pipe threads where pressure-tight joints are not made on the threads

- **ISO 5211**

Industrial valves – Part-turn actuator couplings

- **ISO 7**

Fittings with pressure-tight threaded joints

- **ISO 9393**

Thermoplastics valves – pressure test methods and requirements

- **ISO 9624**

Thermoplastic piping systems for fluids under pressure – flange adapters and loose backing flanges – Mating dimensions

- **UNI 11242**

Solvent welding of PVC-C pipes, fittings and valves

- **UNI EN 558**

Industrial valves – face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems – Part 1: PN designated valves.

Approvals and quality marks



• ABS

TemperFIP100® PVC-C system has been considered suitable for conveying, treating domestic and air conditioning waters on board of ships and other units classified by the American Bureau of Shipping (ABS)



• ACS

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



• Bureau Veritas

TemperFIP100® PVC-C system has been considered suitable for conveying, treating domestic and air conditioning waters on board of ships and other units classified by the Bureau Veritas – Marine Division



• DNV-GL

TemperFIP100® PVC-C system has been considered suitable for conveying, treating domestic and air conditioning waters on board ships and other units classified by the DNV-GL



• Lloyd's Register

TemperFIP100® PVC-C system has been considered suitable for conveying and treating sanitary and conditioning water onboard ships and other units classified by Lloyd's Register.



• KR - Korean Register

TemperFIP100® PVC-C system has been considered suitable for conveying, treating domestic and air conditioning waters on board ships and other units classified by the KR (Korean Register of Shipping)



• NSF (National Sanitation Foundation USA)

FIP valves in PVC-U, PVC-C, PPH are listed according to the NSF/ANSI Standard 61 – Drinking Water System Components – Health Effects.



• UKR SEPRO

FIP valves and fittings are listed according to Ukraine Safety and Quality standards



• WRAS

TemperFIP100® PVC-C system is recognised by the WRAS (Water Regulation Advisory Scheme – UK)



• Class NK -Nippon Kaiji Kyokai

TemperFIP100® PVC-C system has been considered suitable for conveying, treating domestic and air conditioning waters on board ships and other units classified by the ClassNK (Nippon Kaiji Kyokai)

Main properties

PVC-C

Properties of PVC-C		Benefits
Thermal resistance		• Service range 0-100 °C (see pressure/temperature regression curves)
Low surface roughness		• High flow coefficients (extremely smooth internal walls) • 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		• Non-conductive (immune to galvanic corrosion) • No condensation problems • Minimum heat loss
The thermoplastic with the lowest linear thermal expansion		• 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 cement jointing, is the longitudinal joining system for connecting rigid 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°. 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. The chamfering must be carried out using the appropriate chamfering tool (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 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”) .



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

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 drying: 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



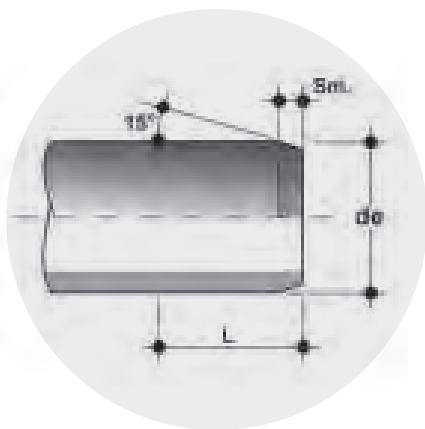
Fig. 7



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- applicators

External diameter 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 cracks 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

Installation instructions for threaded joints

To guarantee the hydraulic seal of the joint on fittings and valves with a threaded female end, we recommend you perform the following operations:

1. Start winding some PTFE sealing tape on the outside of the threaded male end, taking care not to obstruct the through-hole on the pipe, fitting or valve (fig. 1);
2. Complete the first winding layer by winding the tape clockwise until you reach the root of the thread. Remember to keep the tape taut throughout the entire process (fig. 2);
3. Press on the tips of the thread to make sure the tape adheres fully to the support clip;
4. Increase the thickness of the PTFE layer by continuing to apply the taut tape and winding it clockwise until you achieve the optimal level (fig. 3);
5. Connect the previously sealed male end to the female end and proceed manually by screwing the two elements;
6. Make sure the layer of PTFE is not removed during screwing, as this would compromise the hydraulic seal of the joint;
7. Complete screwing the two ends exploiting the entire length of the thread with the aid of a strap wrench or similar tool;
8. Avoid tightening the elements too much, as this could damage the threads or cause stress to the elements themselves.

Recommendations

For correct installation, we recommend you only use sealing tape in non-sintered PTFE. Under all circumstances avoid using materials such as hemp, lint or paints usually implemented for the hydraulic seal on metal threads.

Warnings

Avoid using threaded joints in the following cases:

- highly critical applications, such as for conveying chemically aggressive or toxic fluids,
- in the presence of medium or high pressures. In this case, we recommend the use of solvent welding joints, hot welding joints or flanged joints,
- systems subject to mechanical and/or thermal stresses such as water hammers, strong variations in temperature, bends, misalignments and cross tensions which could cause the threaded joint to break prematurely,
- coupling of elements with excessive distance from one another.

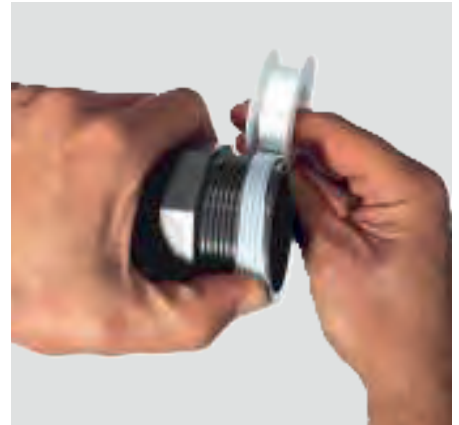


Fig. 1

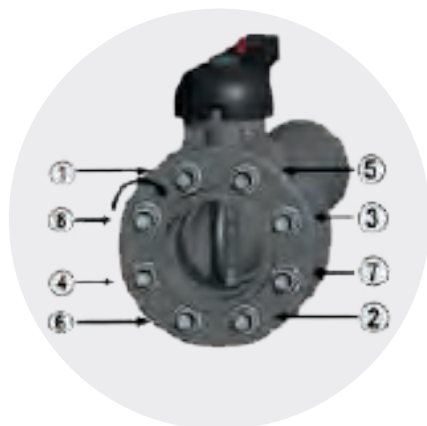


Fig. 2



Fig. 3

Installation instructions for flanged Joints



To guarantee the correct installation of flanged elements, we recommend you perform the following operations:

1. insert the possible backing ring onto the pipe, before proceeding with the installation of the stub;
2. in the event of a fixed flange, check the drilling is correctly aligned with the counter flange;
3. check that the position of the counter flange takes into account the overall dimensions of the face to face distance of the components;
4. insert the flat gasket between the stubs (this step is not necessary for butterfly valves), making sure the sealing surfaces of the flanges to be welded have not been separated by an excessive distance, since this would cause it to compress;
5. proceed with solvent welding or welding of the fixed flanges or stub (in the case of backing rings) following the welding or solvent welding instructions provided by FIP;
6. insert all the bolts, washers and nuts;
7. once the cooling time is up, proceed with tightening the bolts in a "cross-wise" order (fig.1);
8. complete the bolt tightening process using a torque wrench until the tightening torque values shown in the table are reached.

Tightening torque

Tightening torques for nuts and bolts to achieve the seal with flanges in PVC-U or PVC-C with gaskets in EPDM/FKM/NBR during the pressure test (1.5 x NP and water at 20°C),

DN	40	50	65	80	100	125	150	200	250	300	350	400
Nm	9	12	15	18	20	35	40	55	70	70	75	75

Please note that:

- the use of flanges in coated metal or fibreglass may allow the application of higher tightening torques, provided these do not exceed the elastoplastic limit of the material,
- the use of different elastomeric seal materials from those listed in the previous table may require slightly higher tightening torques,
- FIP always recommends the use of suitably sized washers for any bolt used in the coupling flange.

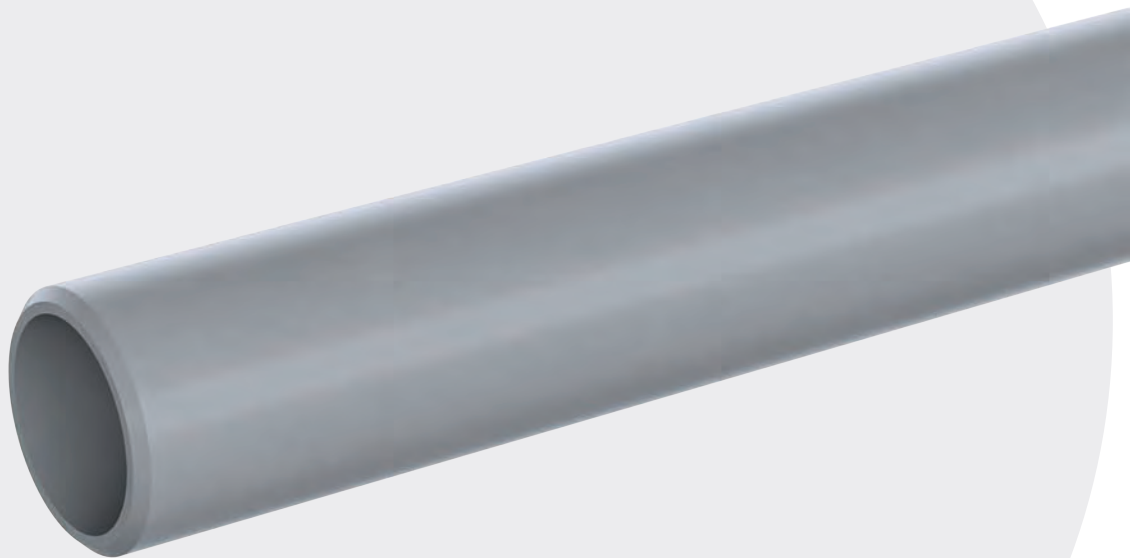
Minimum length of bolts

For flanged butterfly valves	
DN	Lmin
40	M 16x150
50	M 16x150
65	M 16x170
80	M 16x180
100	M 16x180
125	M 16x210
150	M 20x240
200	M 20x260
250	M 20x310
300	M 20x340
350	M 20x360
400	M 24x420

For flanged joints on pipes using backing rings		
d	DN	L min
20	15	M 12x70
25	20	M 12x70
32	25	M 12x70
40	32	M 16x85
50	40	M 16x85
63	50	M 16x95
75	65	M 16x95
90	80	M 16x105
110	100	M 16x105
125	125	M 16x115
140	125	M 16x120
160	150	M 20x135
200	200	M 20x140
225	200	M 20x140
250	250	M 20x150
280	250	M 20x160
315	300	M 20x180
355	350	M 20x180
400	400	M 22x180

PIPE ISO-UNI

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.

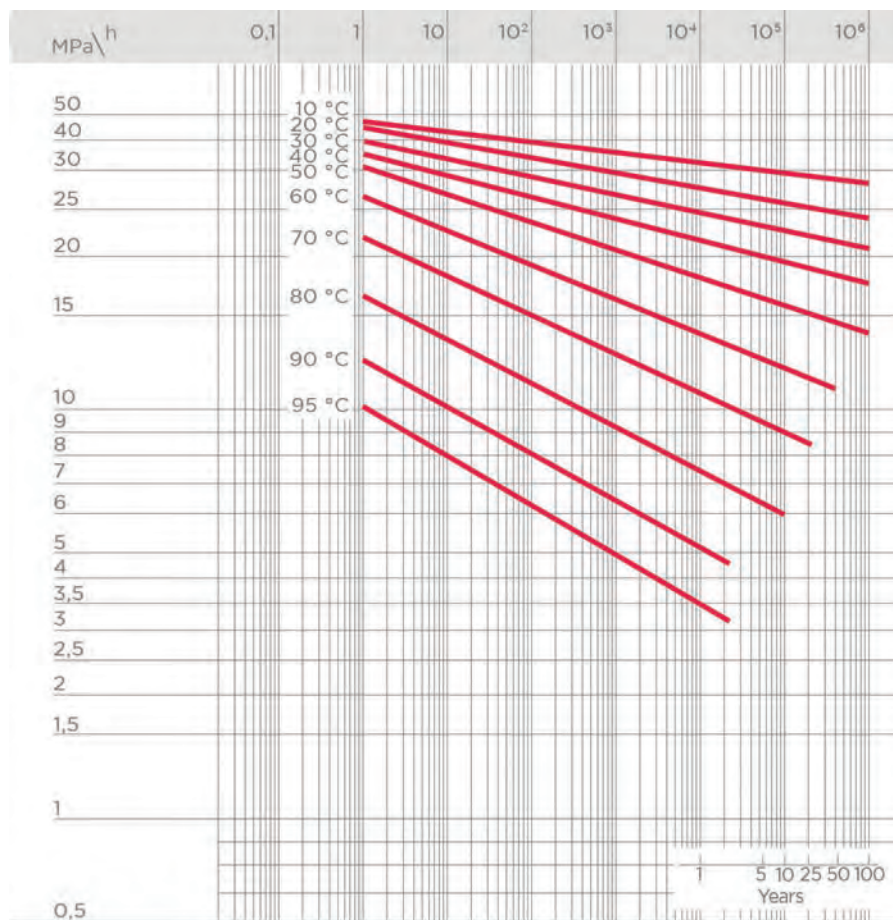
TEMPERFIP100® PRESSURE PIPE

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
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-C PIPE

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

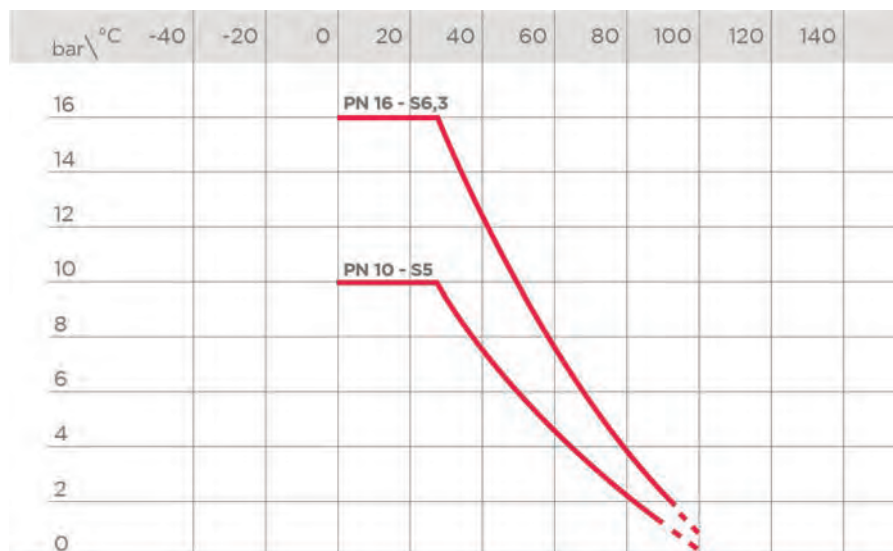


PRESSURE VARIATION ACCORDING TO TEMPERATURE

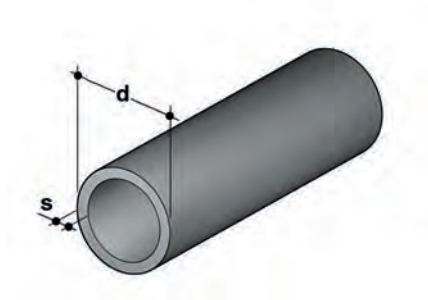
For water and non-hazardous fluids for which the material is classified as CHEMICALLY RESISTANT (life expectancy 25 years). In other cases, a reduction of the nominal pressure PN is required.

Note

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



DIMENSIONS

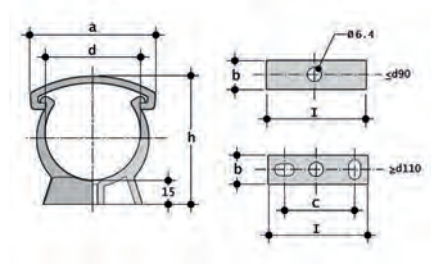


TemperFIP100® PRESSURE PIPE

PVC-C Corzan® pressure pipe according to standards EN ISO 15493 and DIN 8079/8080, light grey RAL 7040, standard length 5m

d	DN	S mm	kg/m	PN16 SDR 13,6 – S6,3 Code
16	10	1,4	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	8,1	4,310	PIPEC13110
160	150	11,8	9,040	PIPEC13160

d	DN	S mm	kg/m	PN10 SDR 21 – S10 Code
110	100	5,3	2,890	PIPEC21110
160	150	7,7	6,060	PIPEC21160

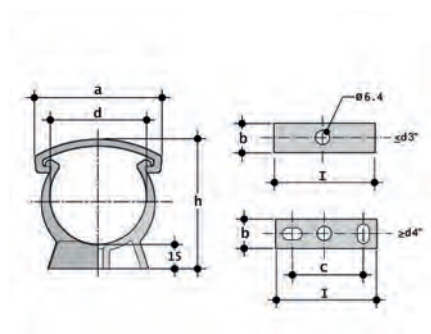


ZIKM

Pipe clip for ISO-DIN pipes in PP

d	a	b	C	h	l	g	Code
16	26	18	-	33	16	5	ZIKM016
20	33	14	-	38	20	6,4	ZIKM020
25	41	14	-	44	25	7,8	ZIKM025
32	49	15	-	51	32	11,5	ZIKM032
40	58	16	-	60	40	15,7	ZIKM040
50	68	17	-	71	60	23,2	ZIKM050
63	83	18	-	84	63	28,8	ZIKM063
75	96	19	-	97	75	35,5	ZIKM075
90	113	20	-	113	90	52,4	ZIKM090
110	139	23	40	134	125	71	ZIKM110
140	177	27	70	167	155	149,5	ZIKM140
160	210	30	90	190	180	218,4	ZIKM160
180	237	33	100	211	200	293,6	ZIKM180

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

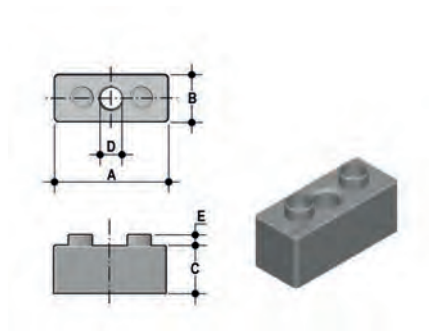


ZAKM

Pipe clip for ASTM pipes in PP

d	a	b	C	h	l	g	Code
1/2"	33	14	-	39	20	7	ZAKM012
3/4"	41	14	-	45	25	7,8	ZAKM034
1"	49	15	-	52	32	11,7	ZAKM100
1 1/4"	58	16	-	61	40	16	ZAKM114
1 1/2"	68	17	-	67	50	17,9	ZAKM112
2"	83	18	-	80	63	29	ZAKM200
2 1/2"	96	19	-	96	75	36	ZAKM212
3"	118	20	-	110	90	52,3	ZAKM300
4"	140	25	60	135	140	74	ZAKM400
6"	197	30	90	196	180	188	ZAKM600

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



DSM

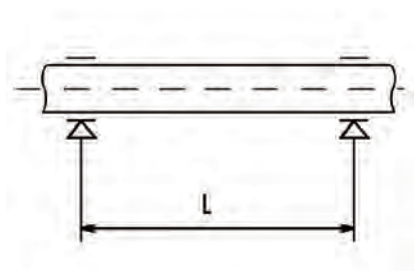
Distance plates in PP for ZIKM pipe clips

d	A	B	C	D	E	g	Pack	Master	Code
32	33	16	14	8	4	6,4	20	120	DSM032
40	41	17	17	8	4	8,2	10	80	DSM040
50	51	18	17	8	4	9,8	10	50	DSM050
63	64	19	22,5	8	4	13,4	10	40	DSM063
75	76	20	34,5	8	4	20,2	10	40	DSM075

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

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	< 20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	90 °C
16	1000	1150	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	< 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.

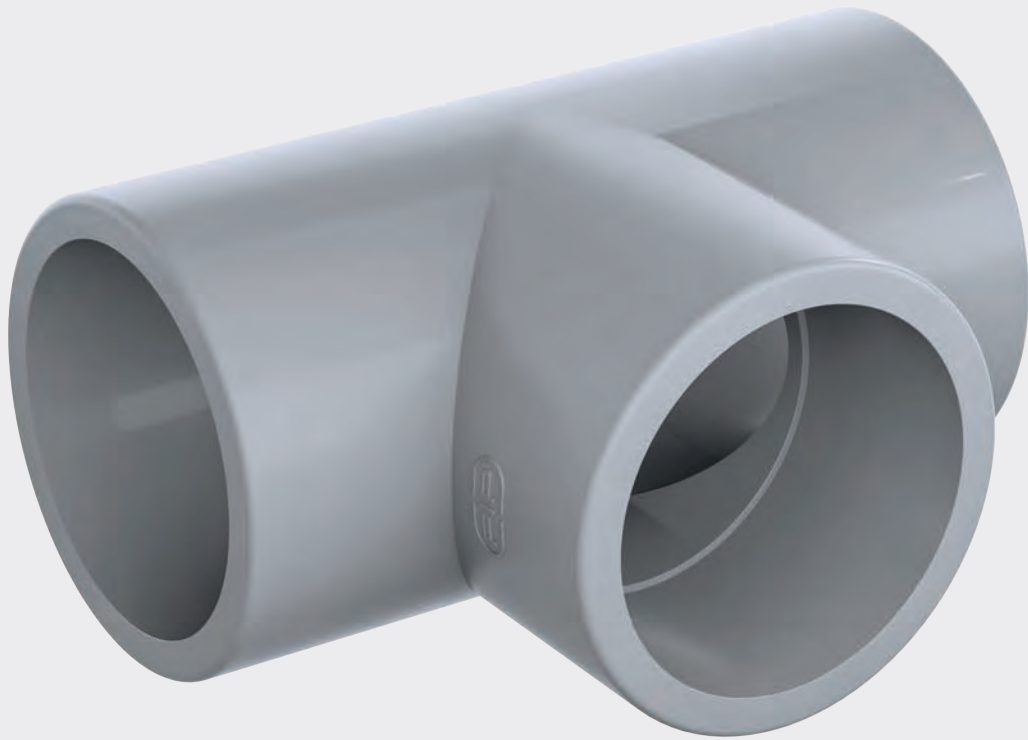
If the liquid being conveyed has a density other than 1 g/cm³, the distance L in the table must be multiplied by the factors in the table below.

Fluid density in g/cm ³	Support factor
1,25	0,96
1,50	0,92
< 0,01	1,40 for SDR21 / S10 / PN10 1,27 for SDR13,6 / S6,3 / PN16 1,23 for SDR11 / S5 / PN20

ISO-UNI FITTINGS



TemperFIP100® solvent weld fittings,
metric series



ISO-UNI FITTINGS

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.

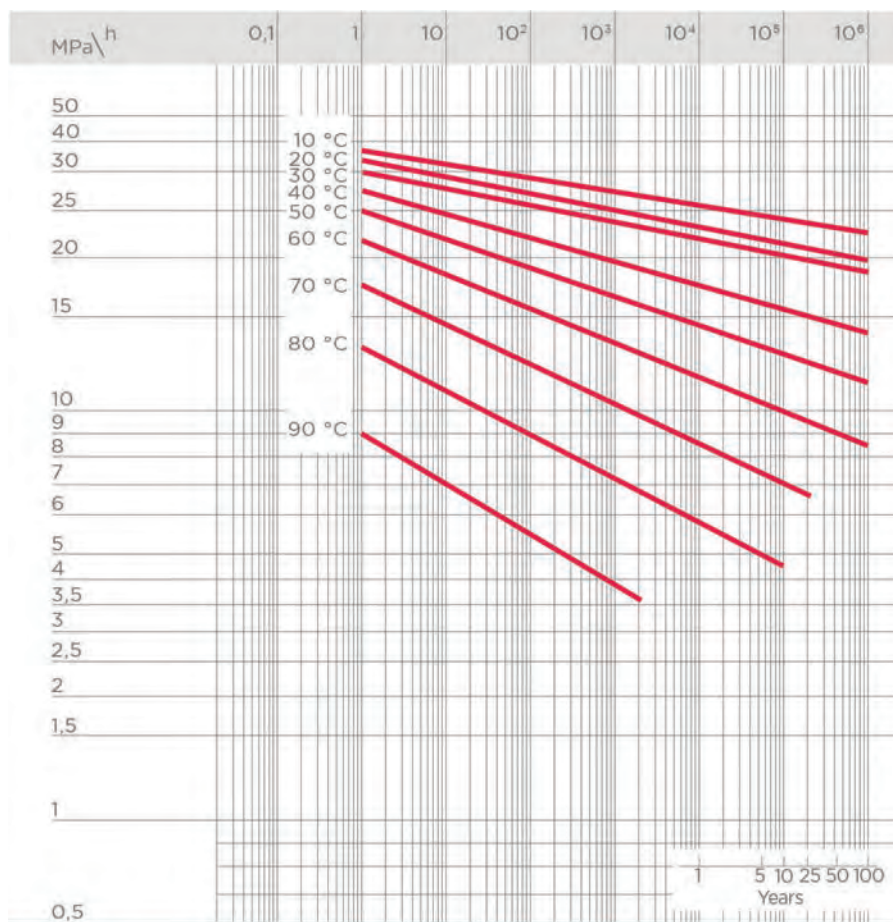
TEMPERFIP100® SOLVENT WELD FITTINGS, METRIC SERIES

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 9624, EN ISO 15493, EN 1092-1, 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, FKM

TECHNICAL DATA

REGRESSION CURVE FOR PVC-C FITTINGS

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

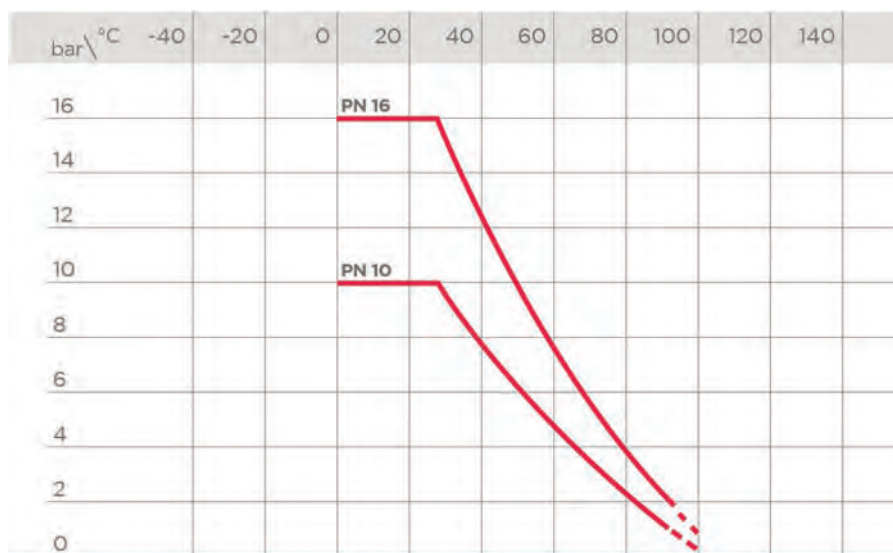


PRESSURE VARIATION ACCORDING TO TEMPERATURE

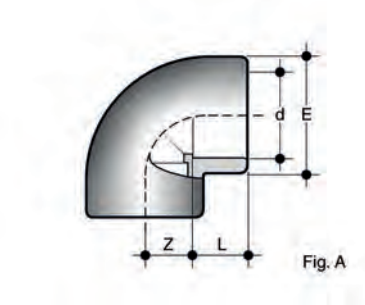
For water and non-hazardous fluids for which the material is classified as CHEMICALLY RESISTANT (life expectancy 25 years). In other cases, a reduction of the nominal pressure PN is required.

Note

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

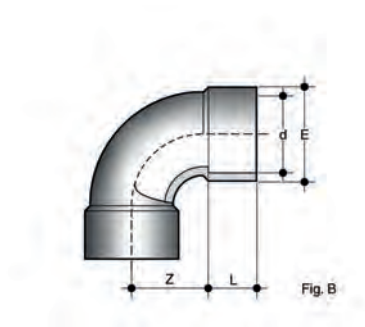


DIMENSIONS



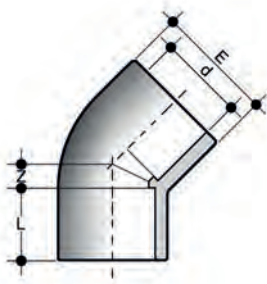
GIC
90° elbow with solvent weld sockets (fig. A)

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	194	87	93	4450	GIC160



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

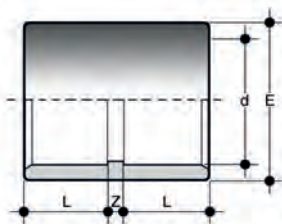
d	PN	E	L	Z	g	Code
225	10	258	119	172	9270	GIC225



HIC

45° elbow with solvent weld sockets

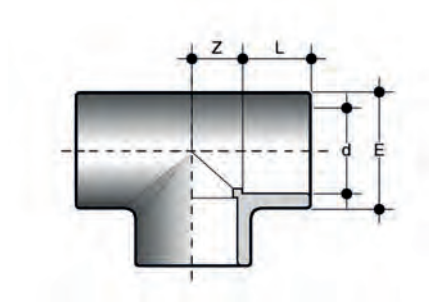
d	PN	E	L	Z	g	Code
20	16	28	16	5,5	20	HIC020
25	16	34	19	6	32	HIC025
32	16	42,5	22	7	58	HIC032
40	16	52	26	10,5	101	HIC040
50	16	64	31	11,7	175	HIC050
63	16	80	38	14	305	HIC063
75	16	90	44	17	344	HIC075
90	16	107	51	21,5	587	HIC090
110	16	130	61	26	1007	HIC110
160	16	192	86	38	3255	HIC160
225	10	260	121	55	7150	HIC225



MIC

Solvent weld double socket

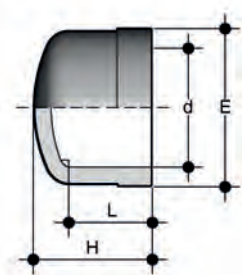
d	PN	E	L	Z	g	Code
16	16	22	14	3	9	MIC016
20	16	27	16	3	11	MIC020
25	16	33	19	3	21	MIC025
32	16	41	22	3	31	MIC032
40	16	50	26	3	58	MIC040
50	16	61	31	3	90	MIC050
63	16	75	38	3	160	MIC063
75	16	89	44	3	260	MIC075
90	16	108	51	5	465	MIC090
110	16	130	61	9	750	MIC110
160	16	186	86	9	1820	MIC160
225	10	260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



TIC

90° Tee with solvent weld sockets

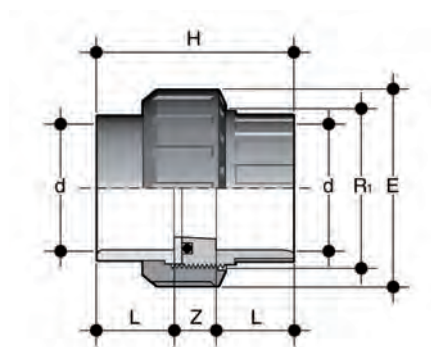
d	PN	E	L	Z	g	Code
16	16	22	14	9	15	TIC016
20	16	27	16	11	25	TIC020
25	16	33	19	14	45	TIC025
32	16	41	22	17,5	75	TIC032
40	16	50	26	22	125	TIC040
50	16	61	31	27	195	TIC050
63	16	76	38	33,5	394	TIC063
75	16	91	44	38,5	667	TIC075
90	16	109	51	48	1075	TIC090
110	16	133	61	61	1920	TIC110
160	16	192	86	89	5730	TIC160
225	10	258	119	114	10800	TIC225



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

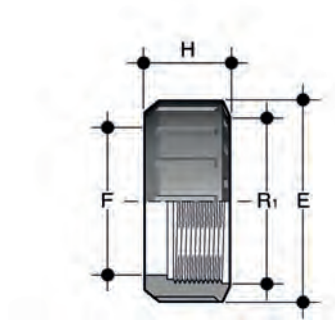


BIC

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

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

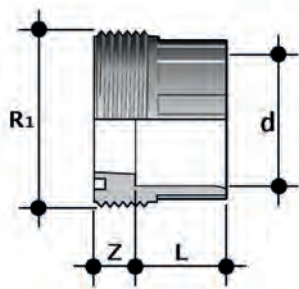
Note: The socket union FKM version can be supplied in EPDM version with FKM gasket included



EFC

PVC-C Union nut with BS parallel threads for BIC, BIFC, BIFOC, BIROC, BIFXC, BIRXC unions and for variable area flowmeters type FS,FC

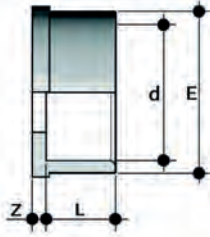
R ₁	d BIC	PN	E	F	H	g	Code
3/4"	16	16	33	22	21	9	EFC034
1"	20	16	41	28	22	13	EFC100
1 1/4"	25	16	50	36	25	22	EFC114
1 1/2"	32	16	58	42	27	30	EFC112
2"	40	16	72	53	30	50	EFC200
2 1/4"	50	16	79	59	34	68	EFC214
2 3/4"	63	16	98	74	38	120	EFC234



F/BIC

Union bush for solvent welding, metric series

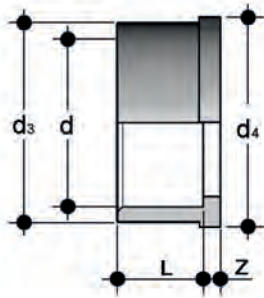
d	R ₁	PN	L	Z	g	Code
16	3/4"	16	14	10	9	FBIC016
20	1"	16	16	10	13	FBIC020
25	1 1/4"	16	19	10	25	FBIC025
32	1 1/2"	16	22	10	31	FBIC032
40	2"	16	26	12	58	FBIC040
50	2 1/4"	16	31	14	63	FBIC050
63	2 3/4"	16	38	19	119	FBIC063



Q/BIC

Union end for solvent welding, metric series

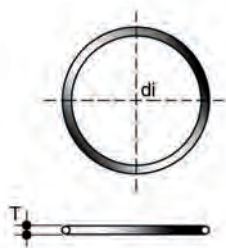
d	PN	E	L	Z	g	Code
16	16	22	14	3	5	QBIC016
20	16	27,5	16	3	10	QBIC020
25	16	36	19	3	16	QBIC025
32	16	41,5	22	3	23	QBIC032
40	16	53	26	3	40	QBIC040
50	16	59	31	3	44	QBIC050
63	16	74	38	3	82	QBIC063



Q/BAC

Union end for solvent welding, ASTM series

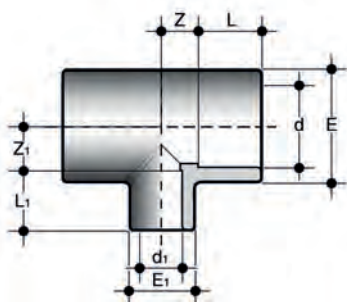
d	PN	d ₃	d ₄	L	Z	g	Code
1/2"	16	27,5	30,1	22,7	3,5	17	QBAC012
3/4"	16	36	38,8	25,9	3,7	25	QBAC034
1"	16	41,5	44,7	29,2	3	36	QBAC100
1 1/4"	16	53	56,5	32	5	63	QBAC114
1 1/2"	16	59	62,6	35	5	86	QBAC112
2"	16	74	78,4	38,5	5,5	143	QBAC200



O-RING

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

Union d	C	di	T	EPDM code	FKM 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



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

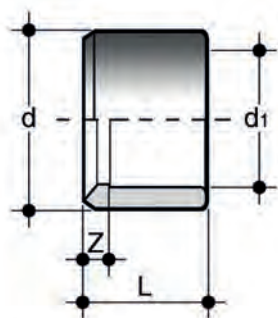
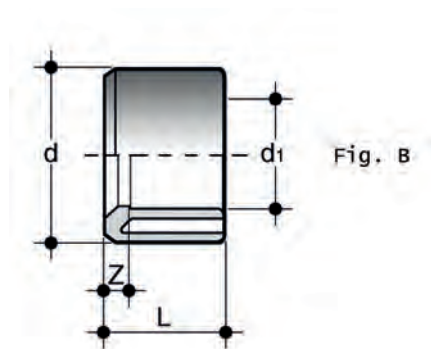


Fig. A

DIC

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

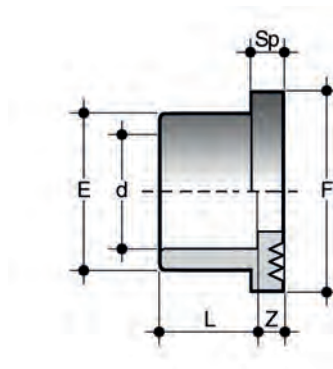
d x d ₁	PN	L	Z	g	Code
20 x 16	16	16	2	3	DIC020016
25 x 20	16	19	3	6	DIC025020
32 x 20	16	22	6	16	DIC032020
32 x 25	16	22	3	11	DIC032025
40 x 32	16	26	4	18	DIC040032
50 x 40	16	31	5	35	DIC050040
63 x 50	16	38	7	70	DIC063050
75 x 63	16	44	6	92	DIC075063
90 x 75	16	51	7	159	DIC090075
110 x 90	16	61	9	297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



DIC

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

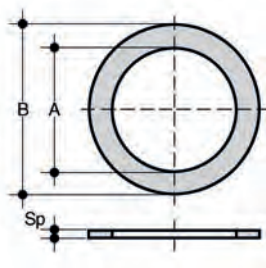
d x d ₁	PN	L	Z	g	Code
40 x 20	16	26	10	27	DIC040020
40 x 25	16	26	7	26	DIC040025
50 x 32	16	31	9	39	DIC050032
63 x 32	16	38	16	81	DIC063032
63 x 40	16	38	11,5	84	DIC063040
75 x 50	16	44	12	126	DIC075050
90 x 50	16	51	20	213	DIC090050
90 x 63	16	51	13	209	DIC090063
110 x 63	16	61	23	365	DIC110063
110 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 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	7	3,5	11	QRC020
25	20	16	33	41	19	7	3	17	QRC025
32	25	16	41	50	22	7	3	27	QRC032
40	32	16	50	61	26	8	3	43	QRC040
50	40	16	61	73	31	8	3	66	QRC050
63	50	16	76	90	38	9	3	116	QRC063
75	65	16	90	103	44	10	3	175	QRC075
90	80	16	108	125	51	10	5	305	QRC090
110	100	16	131	150	61	12	4	490	QRC110
160	150	16	188	212	86	16	4,5	1240	QRC160
225	200	10	245	273	119	25	5,5	1750	QRC225

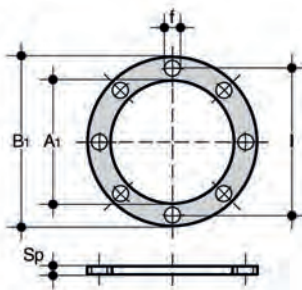


QHV/X

Flat gasket in EPDM and FKM for flanging system according to EN 1092-1

d	DN	A	B	Sp	EPDM code	FKM 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

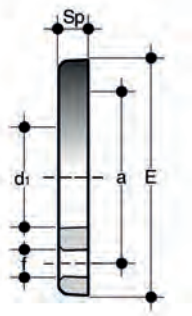


QHV/Y

Flat gasket in EPDM for flanging system according to EN 1092-1, 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	I	U	Sp	Code
20 - 1/2"	15	17	95	14	65	4	2	QHVY020E
25 - 3/4"	20	22	107	14	76,3	4	2	QHVY025E
32 - 1"	25	28	117	14	86,5	4	2	QHVY032E
40 - 1" 1/4	32	36	142,5	18	101	4	2	QHVY040E
50 - 1" 1/2	40	45	153,3	18	111	4	2	QHVY050E
63 - 2"	50	57	168	18	125,5	4	2	QHVY063E
75 - 2" 1/2	65	71	187,5	18	145,5	4	3	QHVY075E
90 - 3"	80	84	203	18	160	8	3	QHVY090E
110 - 4"	100	102	223	18	181	8	3	QHVY110E
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



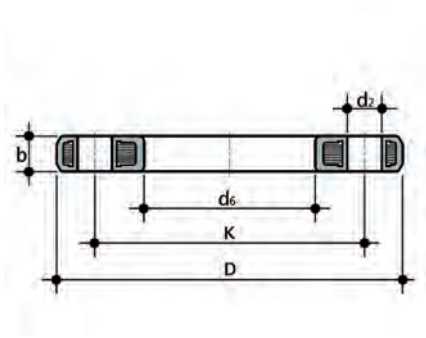
ODC

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

d	DN	*PMA (bar)	M	D	d ₂	d ₆	K	**Nm	n	b	g	Code
20	15	10	M12 x 70	96	14	28	65	10	4	11	66	ODC020
25	20	10	M12 x 70	107	14	34	75	10	4	12	93	ODC025
32	25	10	M12 x 70	116	14	42	85	10	4	14	122	ODC032
40	32	10	M16 x 85	142	18	51	100	13	4	15	200	ODC040
50	40	10	M16 x 85	153	18	62	110	13	4	16	245	ODC050
63	50	10	M16 x 95	168	18	78	125	15	4	18	310	ODC063
75	65	10	M16 x 95	188	18	91	145	17	4	19	425	ODC075
90	80	10	M16 x 105	199	18	109	160	18	8	20	455	ODC090
110	100	10	M16 x 105	219	18	132	180	20	8	22	545	ODC110

*PMA maximum admissible working pressure

**nominal tightening torque



ODT/ODT-SW

Wedge profile backing ring, with metal core and a PP-GR coating.

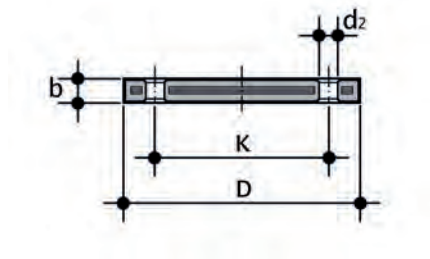
According to EN/ISO/DIN to be used with stub flange QRC. Drilled: PN 10/16 up to DN 150 - PN 10 from DN 200.

d	DN	*PMA (bar)	b	d ₂	d ₆	D	K	M	n	**Nm	g	Code
20	15	16	13	14.6	28	100	65	M12	4	10	215	ODT020
25	20	16	15	14.6	34	111	75	M12	4	15	308	ODT025
32	25	16	17	14.6	42	120.2	85	M12	4	15	449	ODT032
40	32	16	18	18.6	51	140	100	M16	4	20	682	ODT040
50	40	16	19	18.6	62	150	110	M16	4	25	808	ODT050
63	50	16	19	18.6	78	164	125	M16	4	35	1100	ODT063
75	65	16	19	18.6	92	186	145	M16	4	35	1200	ODT075
90	80	16	20	18.6	109	200.8	160	M16	8	35	1430	ODT090
110	100	16	20	18.6	135	221	180	M16	8	35	1330	SWODTD110DN100
140	125	16	24	18.6	166	251	210	M16	8	60	2031	SWODTD140DN125
160	150	16	25	22.6	191	284	240	M20	8	70	2590	SWODTD160DN150
225	200	16	27	22.6	250	340	295	M20	8	75	3946.8	SWODTD225DN200

*PMA: maximum allowable pressure

**maximum recommended tightening torque

n = number of bolts



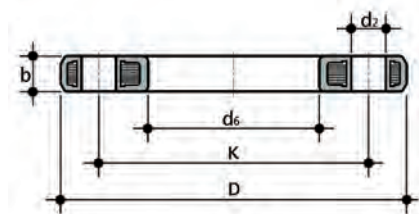
ODBC

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	10	16	14	95	65	M12	4	15	290	ODBC020
25	20	10	12	18	105	75	M12	4	15	380	ODBC025
32	25	10	18	14	115	85	M12	4	15	600	ODBC032
40	32	10	17	18	140	100	M16	4	25	830	ODBC040
50	40	10	18	18	150	110	M16	4	35	1105	ODBC050
63	50	10	18	18	165	125	M16	4	35	1308	ODBC063
75	65	10	18	18	185	145	M16	4	40	1580	ODBC075
90	80	10	20	18	200	160	M16	8	40	2244	ODBC090
110	100	10	20	18	220	180	M16	8	45	2829	ODBC110
160	150	10	22	22	285	240	M20	8	60	7181	ODBC160
200/225	200	10	24	22	340	295	M20	8	10580		ODBC200

*PMA maximum admissible working pressure

**nominal tightening torque

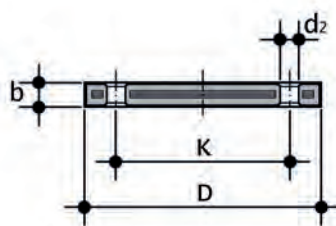


OAT

Wedge profile backing ring, with metal core and a PP-GR coating.
According to ANSI B16.5 cl.150 for stub for QRC.

d(inch)	DN	d (pollici)	DN	b	d ₂ (mm)	d ₂ (pollici)	d ₆	D	k(mm)	k(pollici)	n	**Nm	g	Code
1/2"	15	1/2"	15	13	16	5/8	28	97	60.3	2" 3/8	4	10	209	OAT012
3/4"	20	3/4"	20	15	16	5/8	34	109	69.9	2" 3/4	4	15	316	OAT034
1"	25	1"	25	17	16	5/8	42	117	79.4	3" 1/8	4	15	433	OAT100
1 1/4"	32	1 1/4"	32	18	16	5/8	51	139	88.9	3" 1/2	4	20	702	OAT114
1 1/2"	40	1 1/2"	40	19	16	5/8	62	149	98.4	3" 7/8	4	25	804	OAT112
2"	50	2"	50	19	20	3/4	78	163	120.7	4" 3/4	4	35	918	OAT200
2 1/2"	65	2 1/2"	65	19	20	3/4	92	186	139.7	5" 1/2	4	35	1155	OAT212
3"	80	3"	80	20	20	3/4	111	198	152.4	6"	4	35	1175	OAT300
4"	100	4"	100	20	20	3/4	133	232	190.5	7" 1/2	8	35	1570	OAT400

**maximum recommended tightening torque
n = number of bolts



OABC

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

d (inch)	DN	*PMA (bar)	B	D	d ₂ (mm)	d ₂ (inch)	k(mm)	k(inch)	**Nm	n	g	Code
1/2"	15	16	12	95	16	5/8"	60,45	2"3/8	15	4	200	OABC012
3/4"	20	16	12	102	16	5/8"	69,85	2"3/4	15	4	240	OABC034
1"	25	16	16	114	16	5/8"	79,25	3"1/8	15	4	370	OABC100
1"1/4	32	16	16	130	16	5/8"	88,90	3"1/2	25	4	530	OABC114
1"1/2	40	16	18	133	16	5/8"	98,55	3"7/8	35	4	560	OABC112
2"	50	16	18	162	20	3/4"	120,65	4"3/4	35	4	810	OABC200
2"1/2	65	16	18	184	20	3/4"	139,70	5"1/2	40	4	1070	OABC212
3"	80	16	18	194	20	3/4"	152,40	6"	40	4	1030	OABC300
4"	100	16	18	229	20	3/4"	190,50	7"1/2	40	8	1570	OABC400

*PMA maximum admissible working pressure
**nominal tightening torque

ISO-BSP FITTINGS

TemperFIP100® adaptor fittings



ISO-BSP FITTINGS

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.

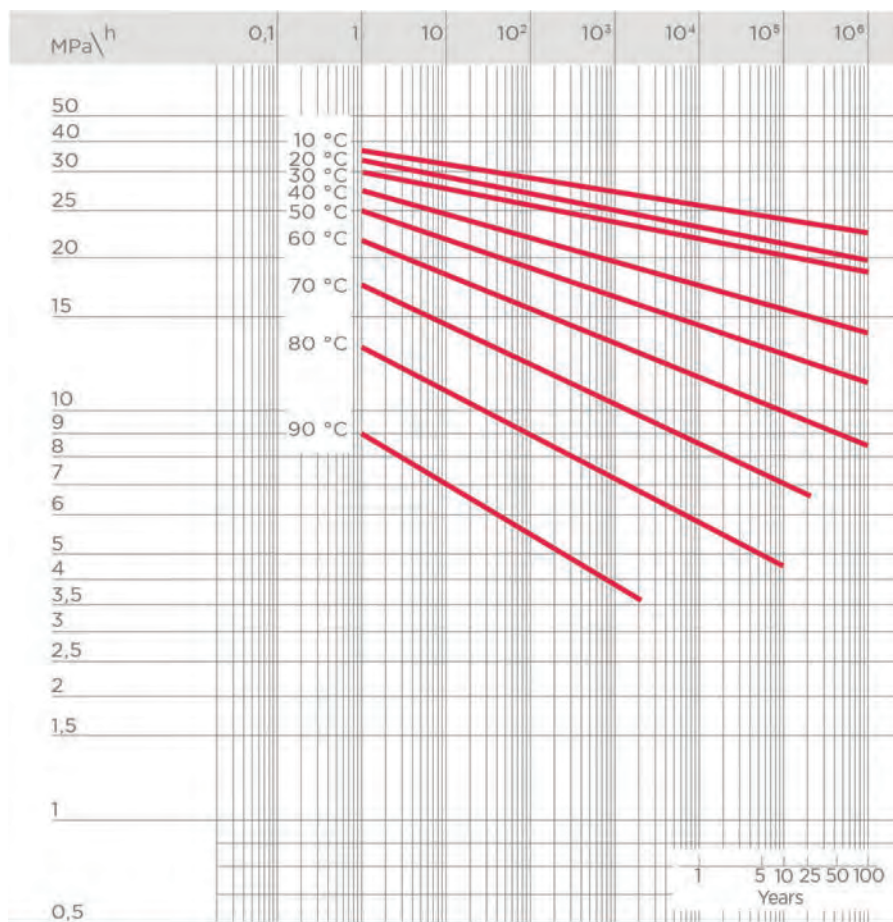
TEMPERFIP100® ADAPTOR FITTINGS

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, EN 10226-1/2
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, FKM

TECHNICAL DATA

REGRESSION CURVE FOR PVC-C FITTINGS

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

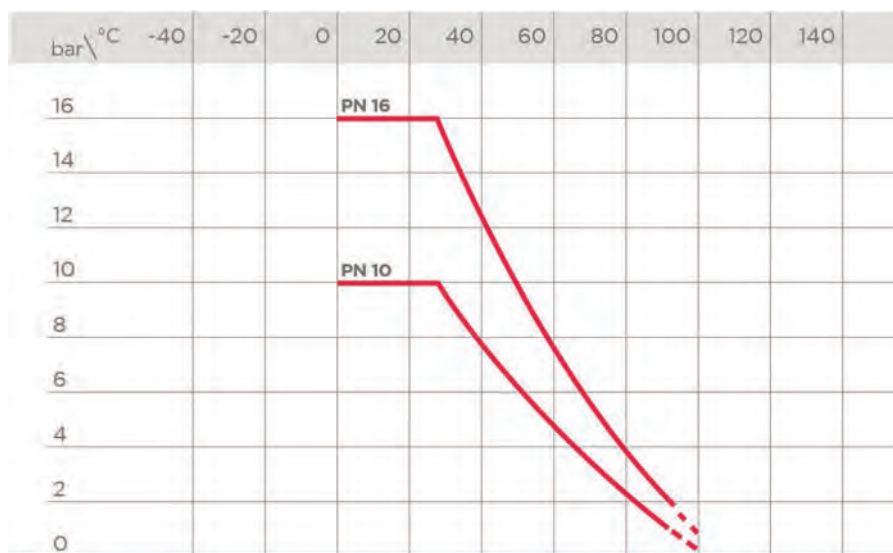


PRESSURE VARIATION ACCORDING TO TEMPERATURE

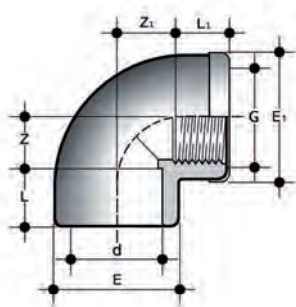
For water and non-hazardous fluids for which the material is classified as CHEMICALLY RESISTANT (life expectancy 25 years). In other cases, a reduction of the nominal pressure PN is required.

Note

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



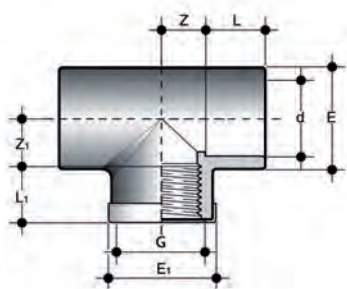
DIMENSIONS



GIMC

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

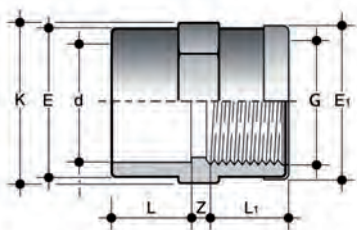
d x R	PN	E	E ₁	L	L ₁	Z	Z ₁	g	Code
16 x 3/8"	16	23,5	24,5	14	11,4	10	13	22	GIMC016038
20 x 1/2"	16	28,5	29,5	16	15	12	13	33	GIMC020012
25 x 3/4"	16	35	36	19	16,3	14	17	53	GIMC025034
32 x 1"	16	43	44	22	19,1	18	20,5	94	GIMC032100
40 x 1 1/4"	16	50	51	26	21,4	22	27	104	GIMC040114
50 x 1 1/2"	16	61	62	31	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

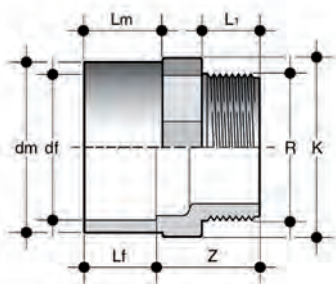
d x R	PN	E	E ₁	L	L ₁	Z	Z ₁	g	Code
16 x 3/8"	16	23,5	24,5	14,5	11,4	9,0	11	25	TIMC016038
20 x 1/2"	16	28,5	29,5	16,5	15	11,5	13	40	TIMC020012
25 x 3/4"	16	35	36	19,5	16,3	14	17	63	TIMC025034
32 x 1"	16	43	44	22	19,1	18,5	21	118	TIMC032100
40 x 1 1/4"	16	50	51	26	21,4	22	27	137	TIMC040114
50 x 1 1/2"	16	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

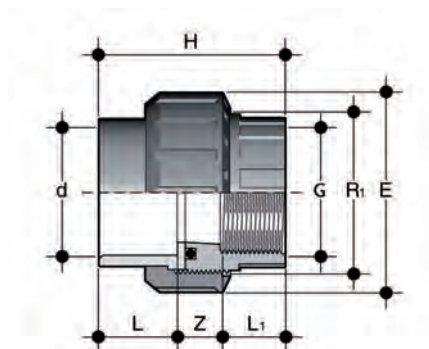
d x R	PN	E	E ₁	K	L	L ₁	Z	g	Code
16 x 3/8"	16	23,5	24,5	24	14	11,4	5,6	15	MIMC016038
20 x 1/2"	16	28,5	29,5	29	16	15	4	25	MIMC020012
25 x 3/4"	16	35	36	35	19	16,3	5	38	MIMC025034
32 x 1"	16	43	44	43	22	19,1	6	58	MIMC032100
40 x 1 1/4"	16	50	51	50	26	21,4	5	66	MIMC040114
50 x 1 1/2"	16	61	62	61	31	21,4	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

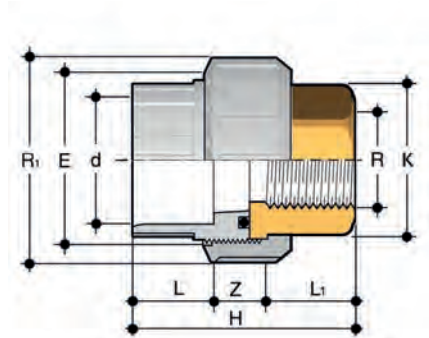
dm x df x R	PN	K	L ₁	Lf	Lm	Z	g	Code
20 x 16 x 3/8"	16	24	11,4	14	16	25,5	7	KIFC020016038
25 x 20 x 1/2"	16	30	15	16	19	30	16	KIFC025020012
32 x 25 x 3/4"	16	34	16,3	19	22	27,5	23	KIFC032025034
40 x 32 x 1"	16	42	19,1	22	26	32	38	KIFC040032100
50 x 40 x 1 1/4"	16	52	21,4	26	31	35,5	65	KIFC050040114
63 x 50 x 1 1/2"	16	65	21,4	31	38	39,5	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

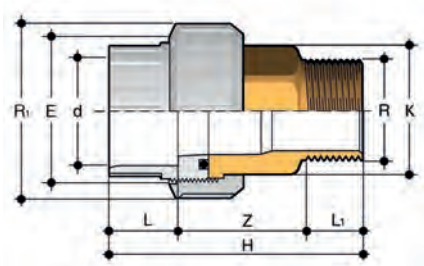
d x R	R _t	PN	E	H	L	L ₁	Z	g	Code
16 x 3/8"	3/4"	16	33	41	14	11,4	15,6	25	BIFC016038E
20 x 1/2"	1"	16	41	45	16	15	14	40	BIFC020012E
25 x 3/4"	1 1/4"	16	51	51	19	16,3	15,7	68	BIFC025034E
32 x 1"	1 1/2"	16	58	57	22	19,1	15,9	93	BIFC032100E
40 x 1 1/4"	2"	16	72	67	26	21,4	19,6	158	BIFC040114E
50 x 1 1/2"	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

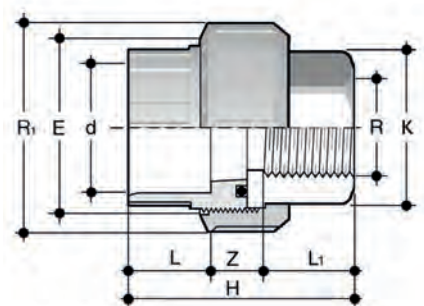
d x R	R _t	PN	E	H	K	L	L ₁	Z	g	Code
16 x 3/8"	3/4"	16	33	45,5	20	14	13,5	18	55	BIFOC016038E
20 x 1/2"	1"	16	41	48,5	25	16	16,5	16	88,5	BIFOC020012E
25 x 3/4"	1 1/4"	16	50	54,5	32	19	18,5	17	165	BIFOC025034E
32 x 1"	1 1/2"	16	58	59,5	38	22	19,5	18	187	BIFOC032100E
40 x 1 1/4"	2"	16	72	68,5	48	26	21,5	21	379	BIFOC040114E
50 x 1 1/2"	2 1/4"	16	79	84,5	55	31	23	30,5	475	BIFOC050112E
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

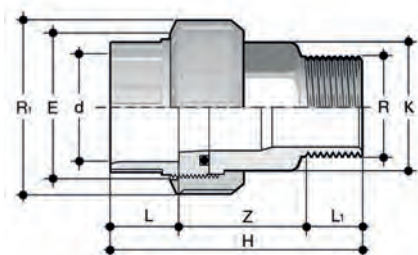
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	Code
16 x 3/8"	3/4"	16	33	58,5	20	14	10,5	34	81	BIROC016038E
20 x 1/2"	1"	16	41	65	25	16	13,5	35,5	133,5	BIROC020012E
25 x 3/4"	1 1/4"	16	50	72,5	32	19	15	38,5	223	BIROC025034E
32 x 1"	1 1/2"	16	58	80	38	22	17,5	40,5	294	BIROC032100E
40 x 1 1/4"	2"	16	72	91	48	26	19,5	45,5	558	BIROC040114E
50 x 1 1/2"	2 1/4"	16	79	101	55	31	19,5	50,5	696	BIROC050112E
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 FKM

d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	EPDM code	FKM 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	BIFXC050112E	BIFXC050112F
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 FKM

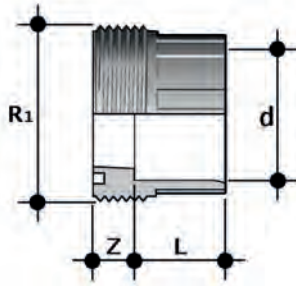
d x R	R ₁	PN	E	H	K	L	L ₁	Z	g	EPDM code	FKM code
16 x 3/8"	3/4"	16	33	58,5	20	14	10,5	34	76	BIRXC016038E	BIRXC016038F
20 x 1/2"	1"	16	41	65	25	16	13,5	35,5	125,5	BIRXC020012E	BIRXC020012F
25 x 3/4"	1 1/4"	16	50	72,5	32	19	15	38,5	219	BIRXC025034E	BIRXC025034F
32 x 1"	1 1/2"	16	58	80	38	22	17,5	40,5	275	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	BIRXC050112E	BIRXC050112F
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.

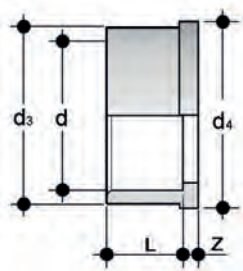
R ₁	d BIV	PN	E	F	H	g	Code
3/4"	16	16	33	22	21	9	EFC034
1"	20	16	41	28	22	13	EFC100
1 1/4"	25	16	50	36	25	22	EFC114
1 1/2"	32	16	58	42	27	30	EFC112
2"	40	16	72	53	30	50	EFC200
2 1/4"	50	16	79	59	34	68	EFC214
2 3/4"	63	16	98	74	38	120	EFC234



F/BIC

Union bush for solvent welding, metric series

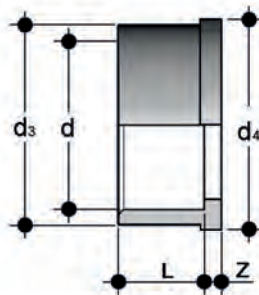
d	R ₁	PN	L	Z	g	Code
16	3/4"	16	14	10	9	FBIC016
20	1"	16	16	10	13	FBIC020
25	1 1/4"	16	19	10	25	FBIC025
32	1 1/2"	16	22	10	31	FBIC032
40	2"	16	26	12	58	FBIC040
50	2 1/4"	16	31	14	63	FBIC050
63	2 3/4"	16	38	19	119	FBIC063



Q/BIC

Union end for solvent welding, metric series

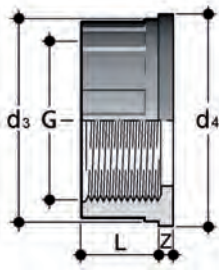
d	PN	d ₃	d ₄	L	Z	g	Code
16	16	22	24	14	3	5	QBIC016 (solo catalogo)
20	16	27,5	30,1	16	3	10	QBIC020
25	16	36	38,8	19	3	16	QBIC025
32	16	41,5	44,7	22	3	23	QBIC032
40	16	53	56,5	26	3	40	QBIC040
50	16	59	62,6	31	3	44	QBIC050
63	16	74	78,4	38	3	82	QBIC063



Q/BAC

Union end for solvent welding, ASTM series

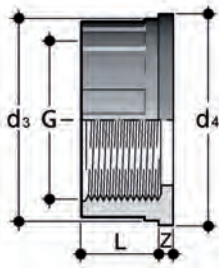
d	PN	d ₃	d ₄	L	Z	g	Code
1/2"	16	27,5	30,1	22,7	3,5	17	QBAC012
3/4"	16	36	38,8	25,9	3,7	25	QBAC034
1"	16	41,5	44,7	29,2	3	36	QBAC100
1"1/4	16	53	56,5	32	5	63	QBAC114
1"1/2	16	59	62,6	35	5	86	QBAC112
2"	16	74	78,4	38,5	5,5	143	QBAC200



Q/BFC

Union end with BSP female thread

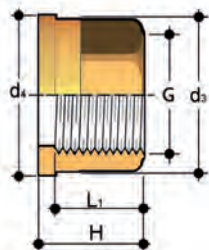
R	PN	d ₃	d ₄	L	Z	g	Code
3/8"	16	22	24	11,4	4,5	5	QBFC038
1/2"	16	27,5	30,1	15	5	9	QBFC012
3/4"	16	36	38,8	16,3	5	17	QBFC034
1"	16	41,5	44,7	19,1	5,5	23	QBFC100
1 1/4"	16	53	56,5	21,4	5,5	37	QBFC114
1 1/2"	16	59	62,6	21,4	5,5	44	QBFC112
2"	16	74	78,4	25,7	5,5	79	QBFC200



Q/BNC

Union end with NPT female thread

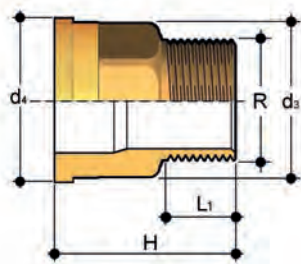
R	PN	d ₃	d ₄	L	Z	g	Code
3/8"	16	22	24	12,7	6,3	11	QBNC038
1/2"	16	27,5	30,1	17,8	5,2	17	QBNC012
3/4"	16	36	38,8	18	5,2	22	QBNC034
1"	16	41,5	44,7	22,6	5,7	33	QBNC100
1 1/4"	16	53	56,5	25,1	7,3	61	QBNC114
1 1/2"	16	59	62,6	24,7	7	77	QBNC112
2"	16	74	78,4	29,6	7,8	127	QBNC200



Q/BFO

Union end in brass with female BSP thread

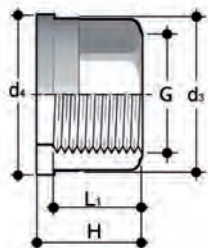
R	d ₁	d ₂	H	L ₁	g	Code
3/8"	22	24	21,5	13,5	38	QBFO038
1/2"	27,5	30,1	22,5	16,5	60	QBFO012
3/4"	36	38,8	25,5	18,5	116	QBFO034
1"	41,5	44,7	27,5	19,5	144	QBFO100
1 1/4"	53	56,5	30,5	21,5	260	QBFO114
1 1/2"	59	62,6	33,5	23	325	QBFO112
2"	74	78,4	38,5	27	578	QBFO200



Q/BRO

Union end in brass with male BSP thread

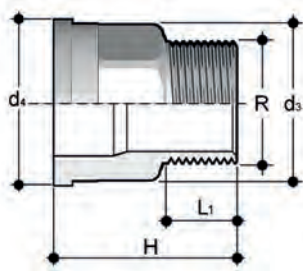
R	d ₁	d ₂	H	L ₁	g	Code
3/8"	22	24	34,5	10,5	64	QBRO038
1/2"	27,5	30,1	39	13,5	105	QBRO012
3/4"	36	38,8	43,5	15	184	QBRO034
1"	41,5	44,7	48	17,5	251	QBRO100
1 1/4"	53	56,5	53	19,5	437	QBRO114
1 1/2"	59	62,6	56	19,5	545	QBRO112
2"	74	78,4	65,5	24	937	QBRO200



Q/BFX

Union end in A316L stainless steel with female BSP thread

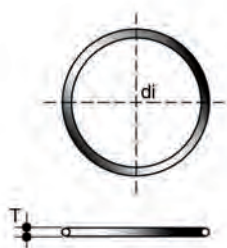
R	d ₄	d ₃	H	L ₁	g	Code
3/8"	22	24	21,5	13,5	34	QBFX038
1/2"	27,5	30,1	22,5	16,5	54	QBFX012
3/4"	36	38,8	25,5	18,5	104	QBFX034
1"	41,5	44,7	27,5	19,5	130	QBFX100
1 1/4"	53	56,5	30,5	21,5	234	QBFX114
1 1/2"	59	62,6	33,5	23	293	QBFX112
2"	74	78,4	38,5	27	520	QBFX200



Q/BRX

Union end in A316L stainless steel with male BSP thread

R	d ₄	d ₃	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	FKM 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



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.

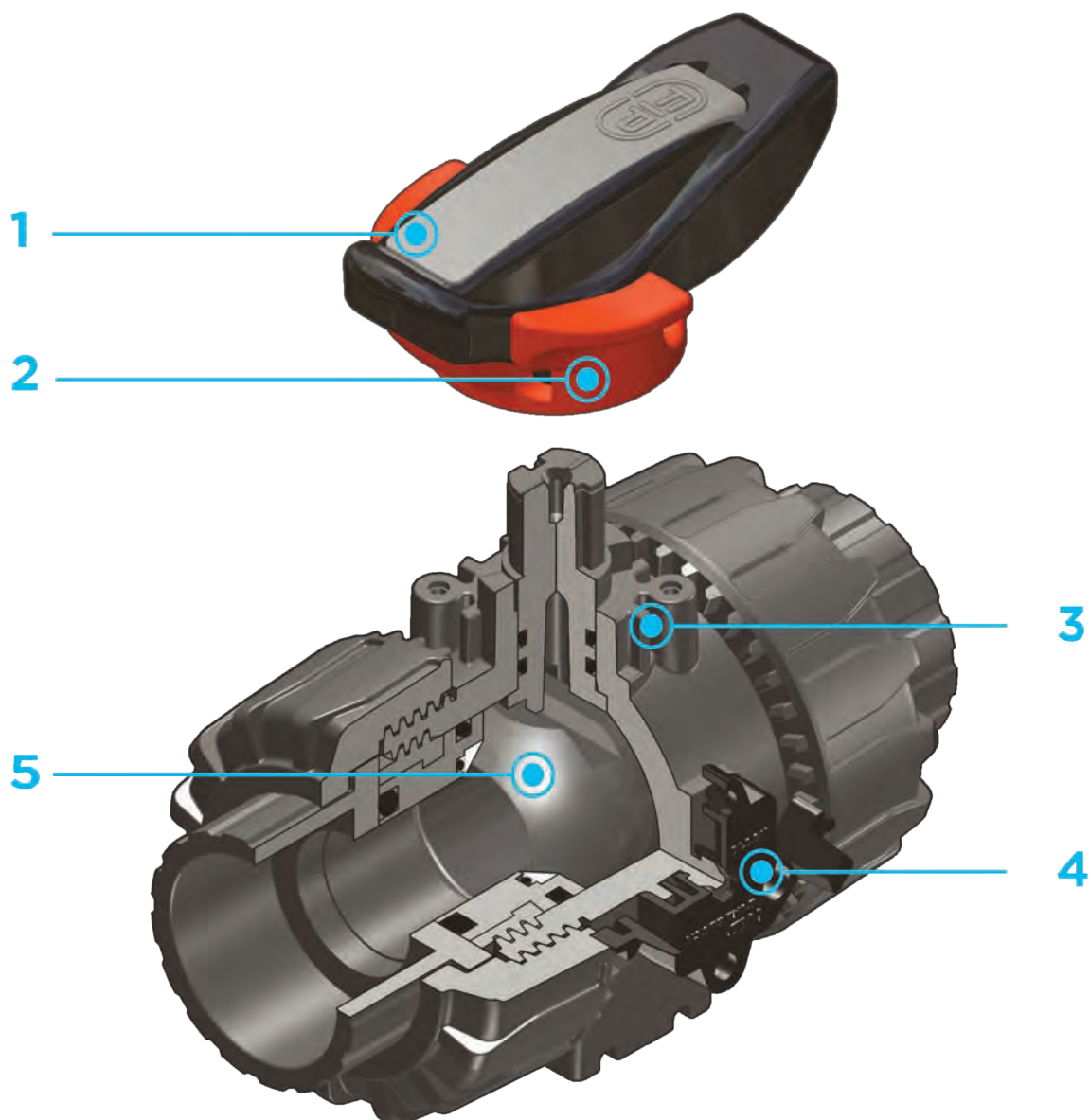


DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for solvent weld, threaded and flanged joints
- Patented **SEAT STOP®** ball carrier system that lets you micro-adjust ball seats and minimise the axial force effect
- Easy radial dismounting 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 **Easylorque adjustment kit**
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FKM), with water, drinking water and other food substances as per **current regulations**
- Possibility to have handle with integrated LSQT limit micro switch, even as a retrofit in existing installations

Technical specifications

Construction	2-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, EN 10226-1/2, ASTM F 437 Flanging system: ISO 9624, EN ISO 15493, UNI EN 558, EN 1092-1, ANSI B.16.5 cl. 150, JIS B 2220.
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, FKM, On request FEP+FKM, FFKM (standard size O-Ring); PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



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

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

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

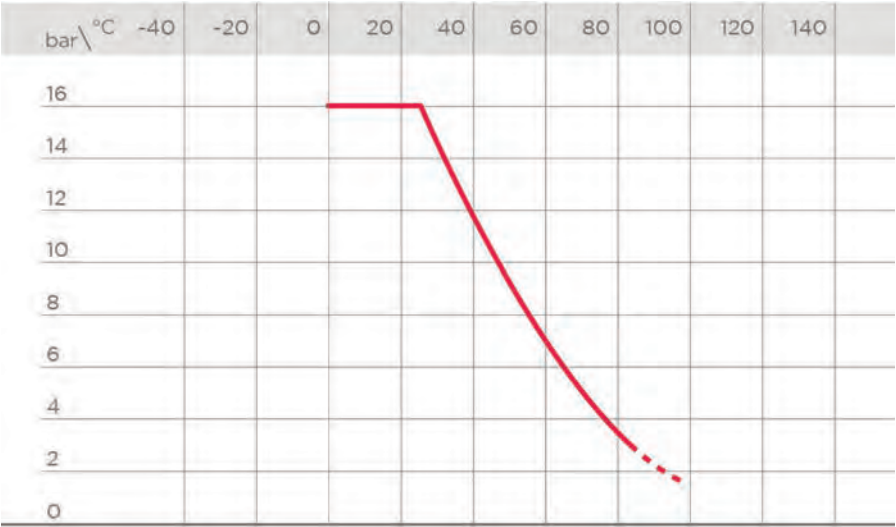
tightening hold even in severe conditions such as vibrations or heat dilation

5 Machined high surface finish ball that guarantees a smooth operation and increased reliability

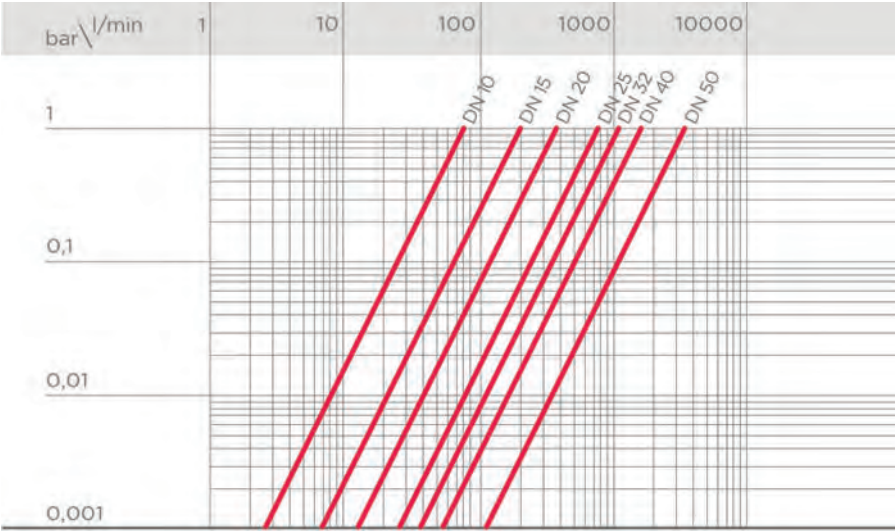
TECHNICAL DATA

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 PN pressure is required (25 years with safety factor).



PRESSURE DROP GRAPH

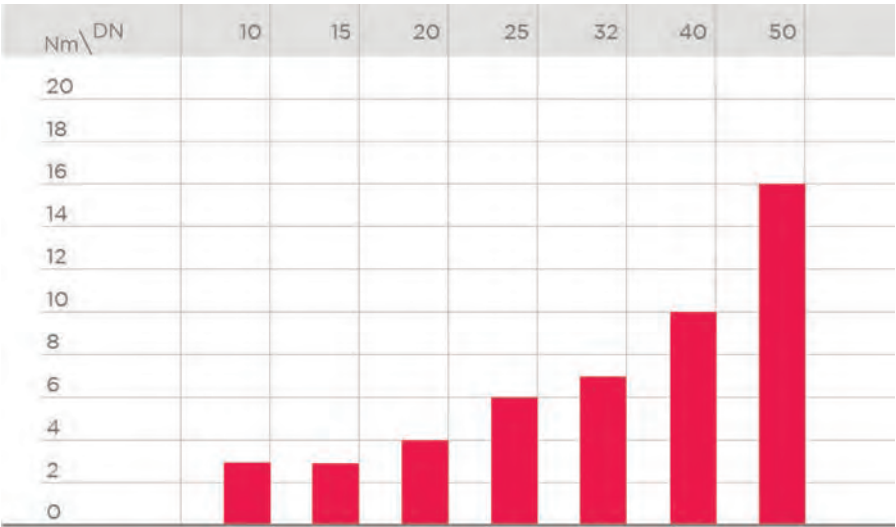


K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

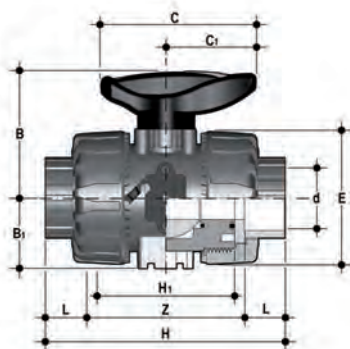
DN	10	15	20	25	32	40	50
Kv100 l/min	80	200	385	770	1100	1750	3400

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.

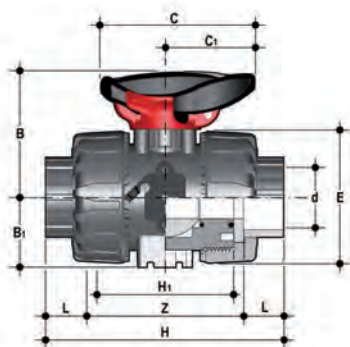
DIMENSIONS



VKDIC

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

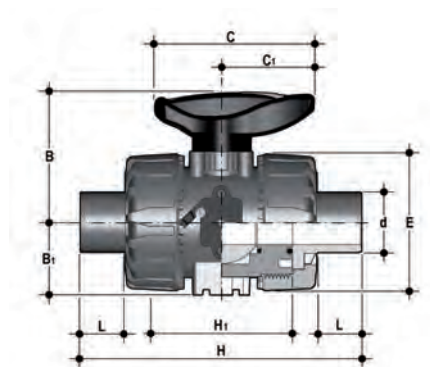
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
16	10	16	54	29	67	40	54	103	65	14	75	234	VKDIC016E	VKDIC016F
20	15	16	54	29	67	40	54	103	65	16	71	223	VKDIC020E	VKDIC020F
25	20	16	65	34,5	85	49	65	115	70	19	77	358	VKDIC025E	VKDIC025F
32	25	16	69,5	39	85	49	73	128	78	22	84	476	VKDIC032E	VKDIC032F
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

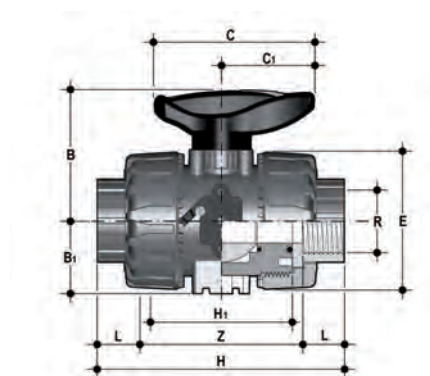
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
16	10	16	54	29	67	40	54	103	65	14	75	244	VKDICSHX016E	VKDICSHX016F
20	15	16	54	29	67	40	54	103	65	16	71	233	VKDICSHX020E	VKDICSHX020F
25	20	16	65	34,5	85	49	65	115	70	19	77	368	VKDICSHX025E	VKDICSHX025F
32	25	16	69,5	39	85	49	73	128	78	22	84	486	VKDICSHX032E	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

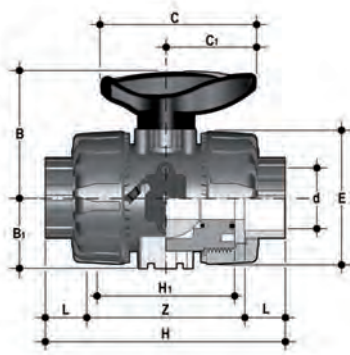
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM code	FKM code
20	15	16	54	29	67	40	54	124	65	16	239	VKDDC020E	VKDDC020F
25	20	16	65	34,5	85	49	65	144	70	19	369	VKDDC025E	VKDDC025F
32	25	16	69,5	39	85	49	73	154	78	22	482	VKDDC032E	VKDDC032F
40	32	16	82,5	46	108	64	86	174	88	26	753	VKDDC040E	VKDDC040F
50	40	16	89	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

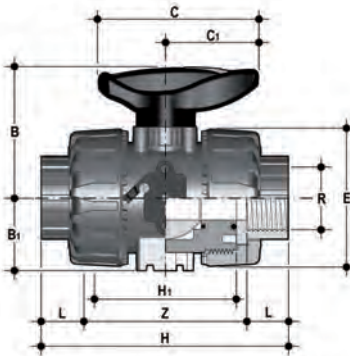
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	29	67	40	54	111	65	17,8	75,4	228	VKDFC012E	VKDFC012F
3/4"	20	16	65	34,5	85	49	65	117	70	18	81	364	VKDFC034E	VKDFC034F
1"	25	16	69,5	39	85	49	73	135	78	22,6	89,8	487	VKDFC100E	VKDFC100F
1" 1/4	32	16	82,5	46	108	64	86	153	88	25,1	102,8	737	VKDFC114E	VKDFC114F
1" 1/2	40	16	89	52	108	64	98	156	93	24,7	106,6	1040	VKDFC112E	VKDFC112F
2"	50	16	108	62	134	76	122	186	111	29,6	126,8	1815	VKDFC200E	VKDFC200F



VKDAC

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

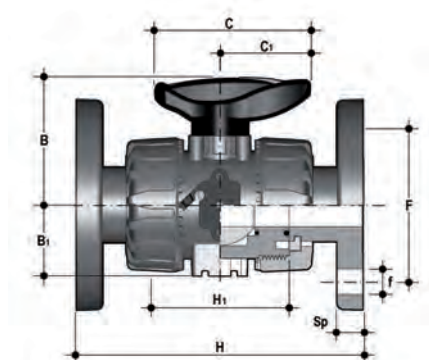
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	29	67	40	54	117	65	22,5	72	234	VKDAC012E	VKDAC012F
3/4"	20	16	65	34,5	85	49	65	129	70	25,5	78	375	VKDAC034E	VKDAC034F
1"	25	16	69,5	39	85	49	73	142	78	28,7	84,6	487	VKDAC100E	VKDAC100F
1" 1/4	32	16	82,5	46	108	64	86	162	88	32	98	780	VKDAC114E	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

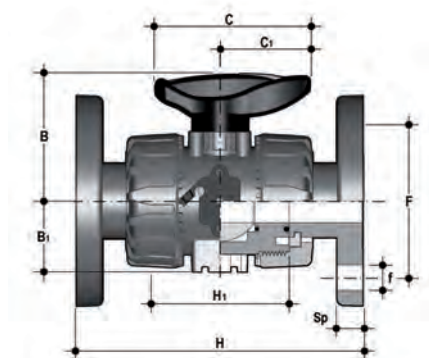
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	29	67	40	54	111	65	17,8	75,4	228	VKDNC012E	VKDNC012F
3/4"	20	16	65	34,5	85	49	65	117	70	18	81	364	VKDNC034E	VKDNC034F
1"	25	16	69,5	39	85	49	73	135	78	22,6	89,8	487	VKDNC100E	VKDNC100F
1" 1/4	32	16	82,5	46	108	64	86	153	88	25,1	102,8	737	VKDNC114E	VKDNC114F
1" 1/2	40	16	89	52	108	64	98	156	93	24,7	106,6	1040	VKDNC112E	VKDNC112F
2"	50	16	108	62	134	76	122	186	111	29,6	126,8	1815	VKDNC200E	VKDNC200F



VKDOC

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

d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code
20	15	16	54	29	67	40	65	14	130	65	11	4	488,1	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

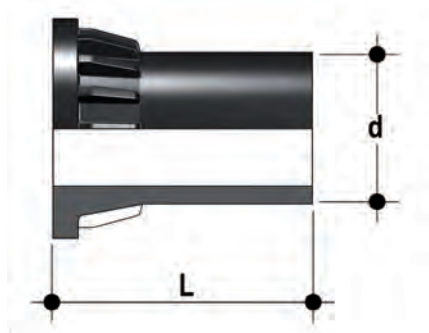
DUAL BLOCK® 2-way ball valve with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM 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
50	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063

SHKD

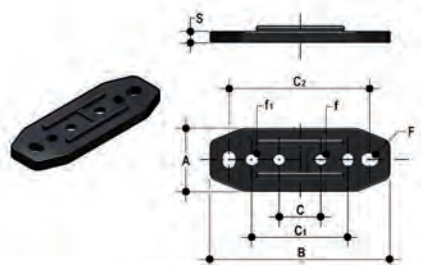
Handle block kit 0° - 90° lockable



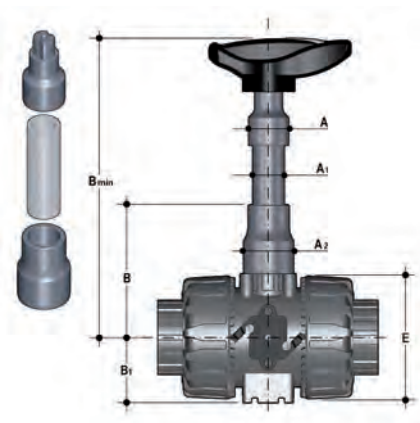
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063

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	175	PSKD050
63	50	40	32	59	122	122	62	225	PSKD063

* Pipe and glue not included in the KIT

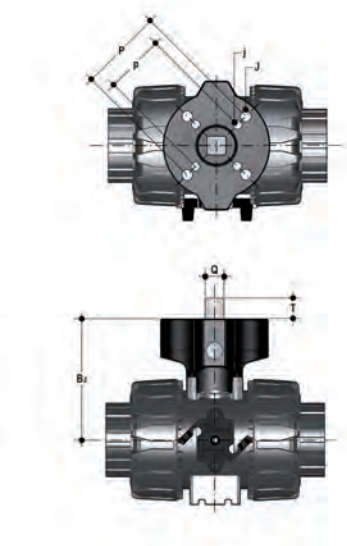


Easytorque Kit

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

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

*calculated in ideal installation conditions

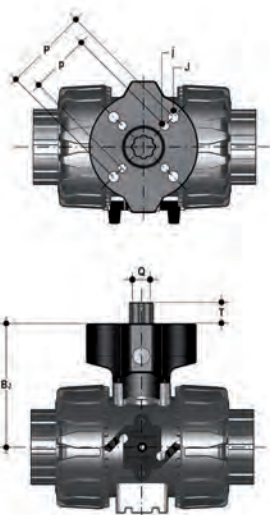


Power Quick/CP

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

d	DN	B ₁	Q	T	p x j	P x J	Code
16	10	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
20	15	58	11	12	F03 x 5,5	F04 x 5,5	PQCP020
25	20	69	11	12	*F03 x 5,5	F05 x 6,5	PQCP025
32	25	74	11	12	*F03 x 5,5	F05 x 6,5	PQCP032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCP040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCP050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCP063

*F04 x 5.5 on request

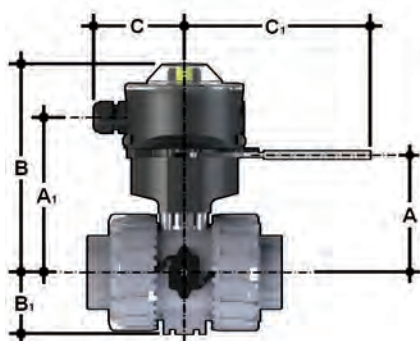


Power Quick/CE

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

d	DN	B ₂	Q	T	p x j	P x J	Code
16	10	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
20	15	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
25	20	69	14	16	*F03 x 5,5	F05 x 6,5	PQCE025
32	25	74	14	16	*F03 x 5,5	F05 x 6,5	PQCE032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCE040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCE050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCE063

*F04 x 5.5 on request



LS Quick Kit

The Limit Switch Quick Kit allows the fast and secure installation of the FIP LSQT to the VKD valves. The body is in PP-GR and the handle in stainless steel AISI 316. The handle block at 0° and 90° is also available by default (hole diameter 6.5 mm). The kit can be assembled on the valve even if already installed on the system. For technical data of the LSQT box see FIP actuated valves catalogue.

d	DN	A	A ₁	B	B ₁	C	C ₁	Code
16	10	60	91,5	137	29	76,5	157,5	LSQKIT20
20	15	60	91,5	137	29	76,5	157,5	LSQKIT20
25	20	71	102,5	148	34,5	76,5	157,5	LSQKIT25
32	25	76	107,5	153	39	76,5	157,5	LSQKIT32
40	32	93	124,5	170	46	76,5	157,5	LSQKIT40
50	40	99	130,5	176	52	76,5	157,5	LSQKIT50
63	50	116	147,5	193	62	76,5	157,5	LSQKIT63

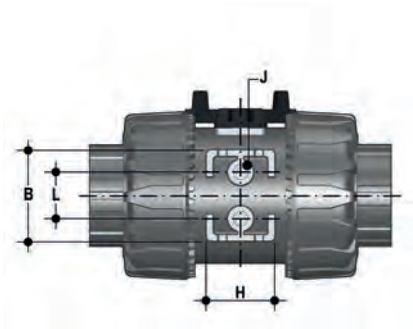
FASTENING AND SUPPORTING



All valves, whether manual or actuated, must be adequately supported in many applications. The VKD valve series is therefore ready to be equipped with threaded supporting brackets (optional) 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.

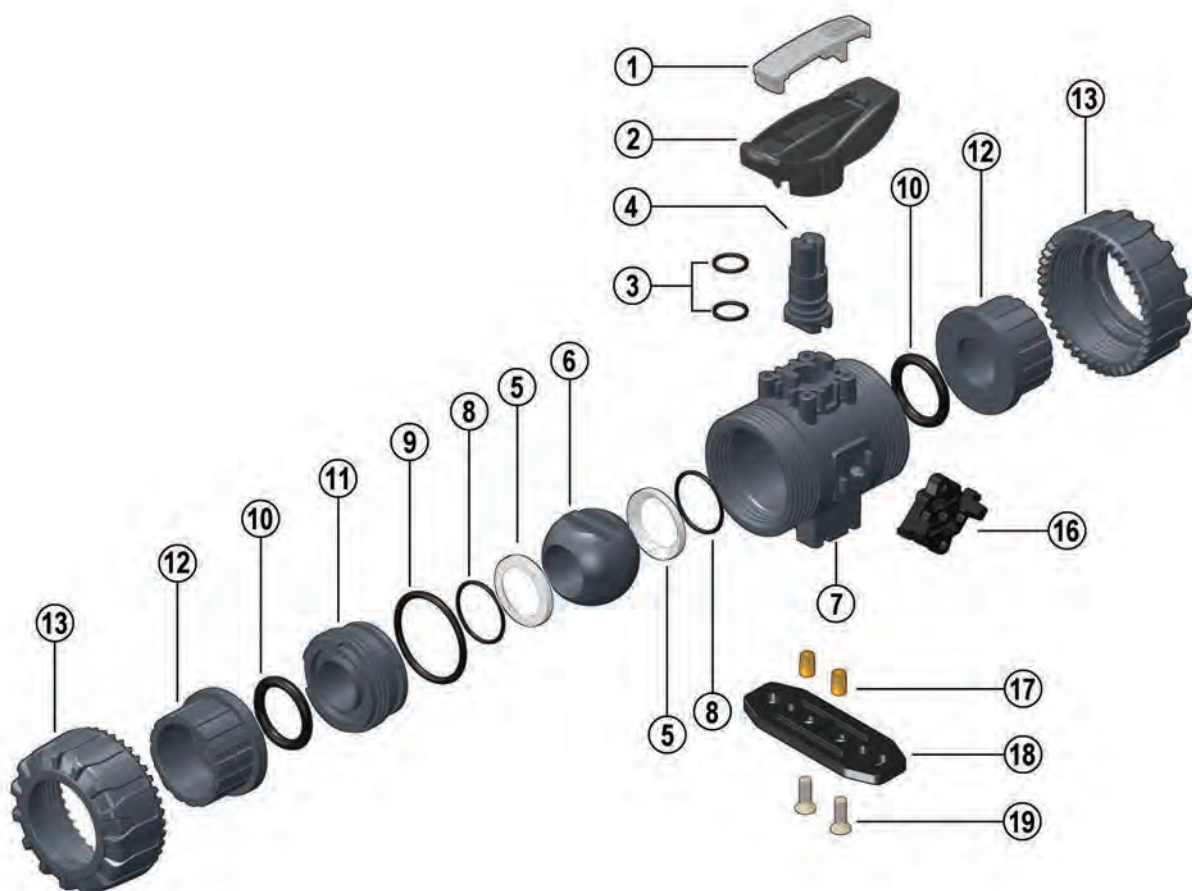
d	DN	g	H	L	J*
16	10	31,5	27	20	M4 x 6
20	15	31,5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	30	M6 x 10
50	40	50	35	30	M6 x 10
63	50	60	40	30	M6 x 10

* With threaded inserts



COMPONENTS

EXPLODED VIEW



1 Handle insert (PVC-U - 1)

2 Handle (HIPVC - 1)

3 Stem O-rings (EPDM-FKM - 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-Rings (EPDM or FKM - 2)*

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

10 Socket seal O-Ring (EPDM or FKM - 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 component material and quantity supplied are indicated in the parentheses.

DISASSEMBLY

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

ASSEMBLY

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



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

Fig. 1



Fig. 2



Fig. 3



Fig. 4



INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

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

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

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

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

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

The seals can be adjusted later with the valve installed on the pipe by simply tightening the union nuts. This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of operations. The Easytorque kit can also be used for micro adjustments (fig. 5).

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

Fig.5

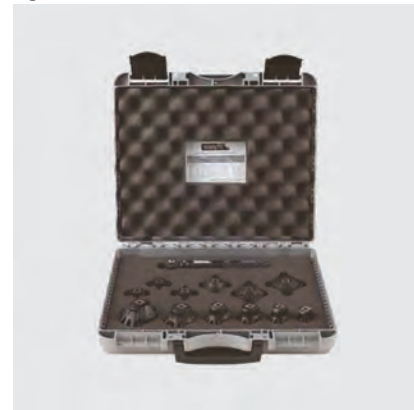


Fig.6



Fig.7



Fig.8



VKD DN 65÷100

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.

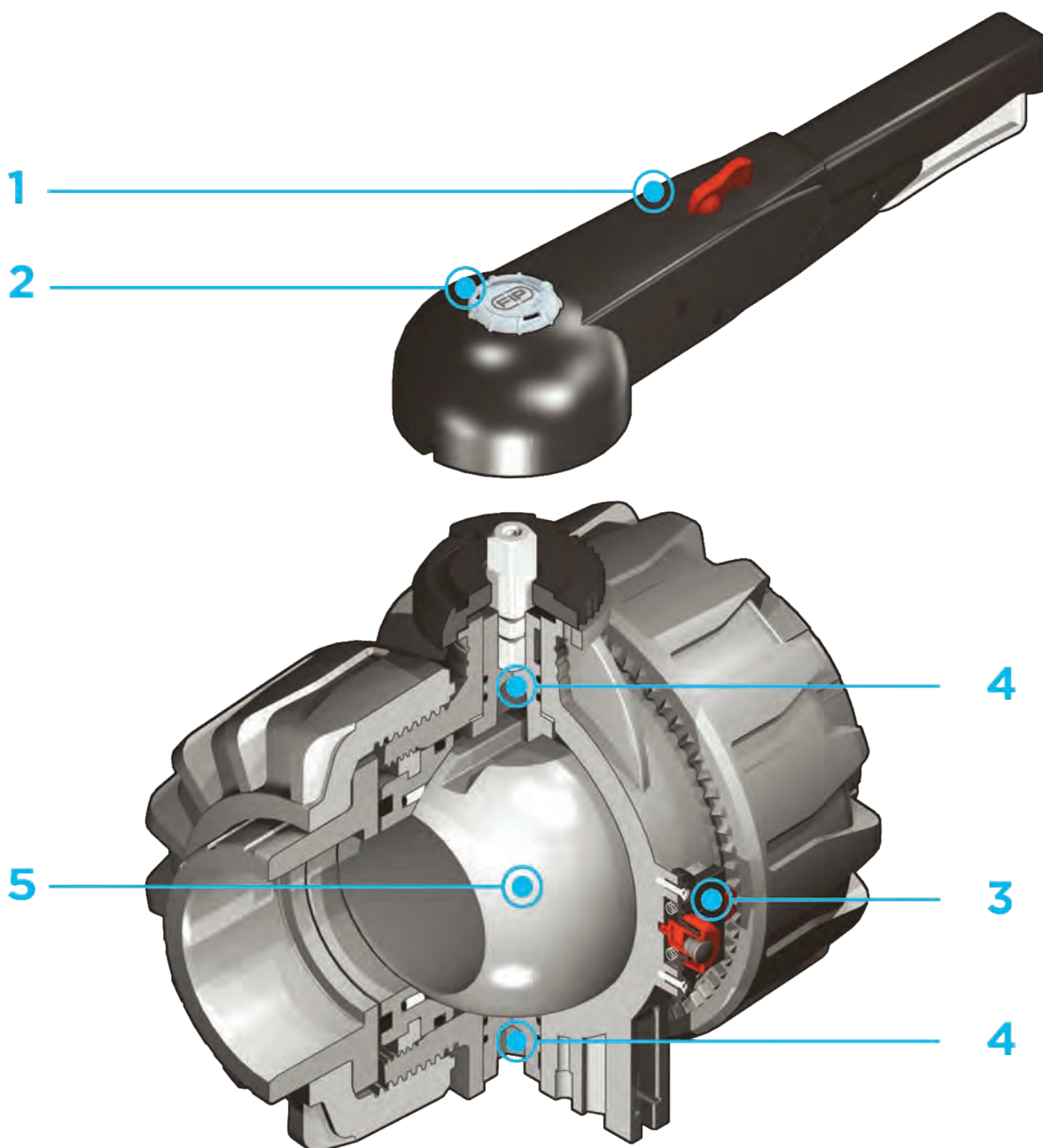


DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for solvent weld, threaded and flanged joints
- Patented **SEAT STOP®** ball carrier system that lets you micro-adjust seals 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
- **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 co-moulded stem**, with square section as per ISO 5211
- **Valve material compatibility** (PVC-C) and elastomer **seal elements** (EPDM or FKM), with water, drinking water and other food substances as per **current regulations**
- Possibility to have handle with integrated LSQT limit micro switch, even as a retrofit in existing installations

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	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, EN 10226-1/2, ASTM F 437. Flanging system: ISO 9624, EN ISO 15493 UNI EN 558, EN 1092-1, ANSI B.16.5 cl.150, JIS B 2220.
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, FKM; PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



- 1** HIPVC ergonomic multifunctional handle for quick operation, **lock and graduated adjustment in 10 positions**. Possibility of inhibiting rotation with a lock
- 2** Customisable Labelling System: LCE module made of a transparent protection plug and **customisable tag holder** using the LSE set

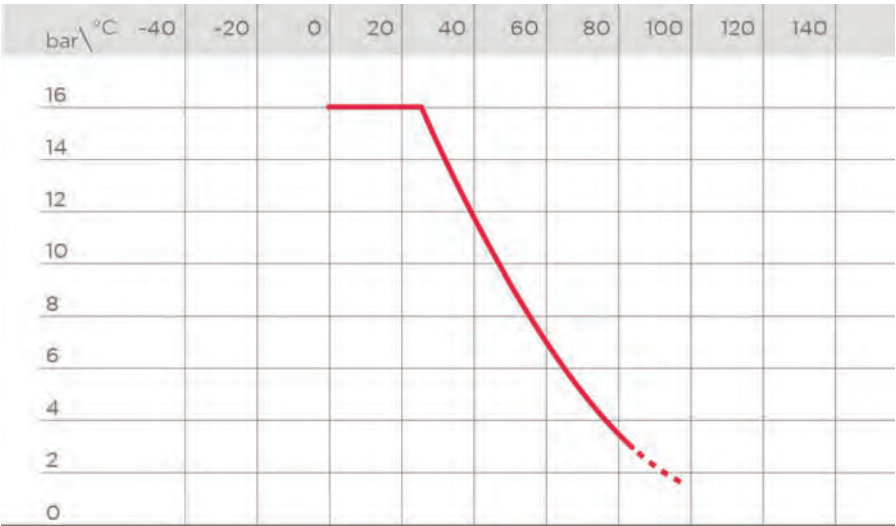
- 3** **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation (available as accessory). The customisation lets you identify the valve on the system according to specific needs

- 4** **Double stem** with double O-Rings for ball centring and operating torque reduction
- 5** Machined high surface finish ball that guarantees a smooth operation and increased reliability

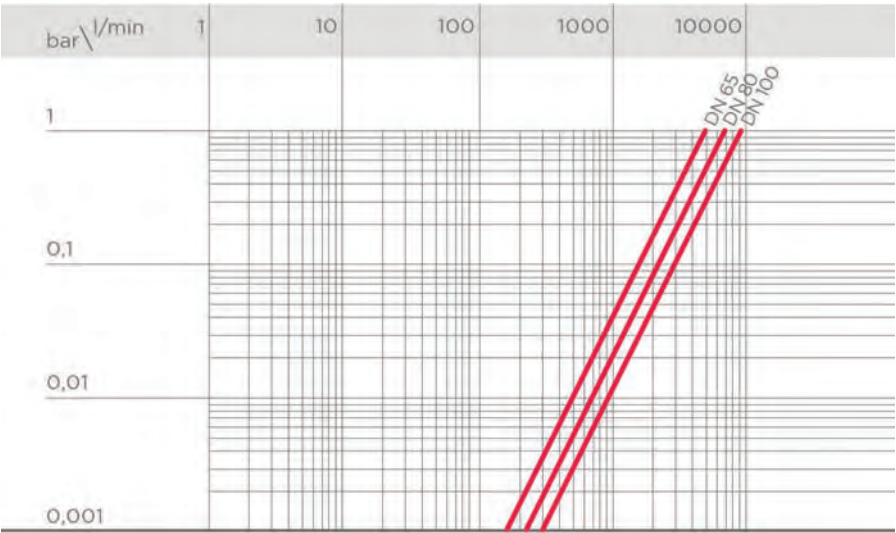
TECHNICAL DATA

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 PN pressure is required (25 years with safety factor).



PRESSURE DROP GRAPH

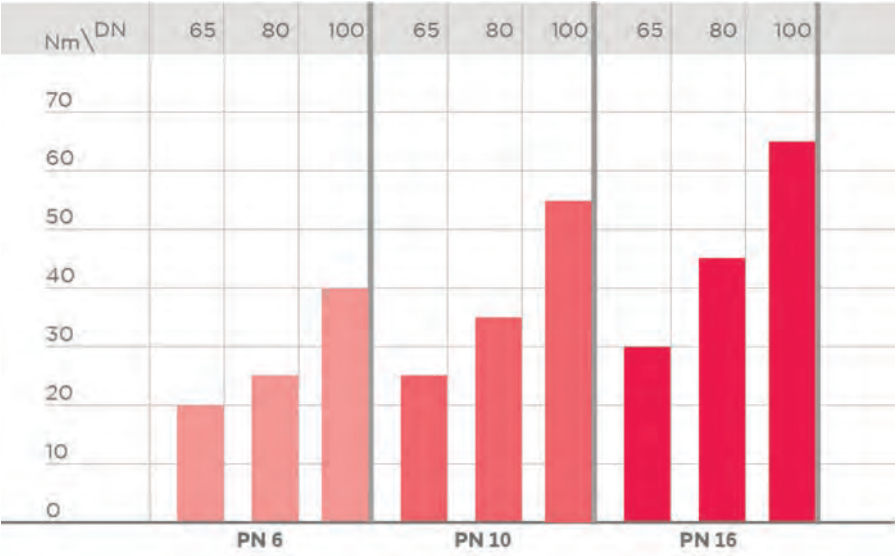


K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

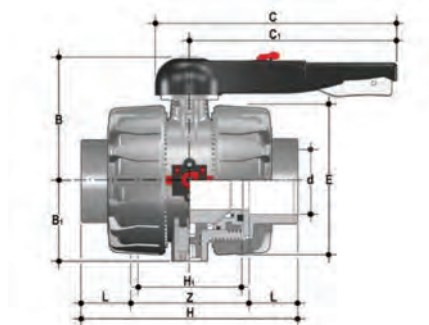
DN	65	80	100
K _v 100 l/min	5250	7100	9500

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.

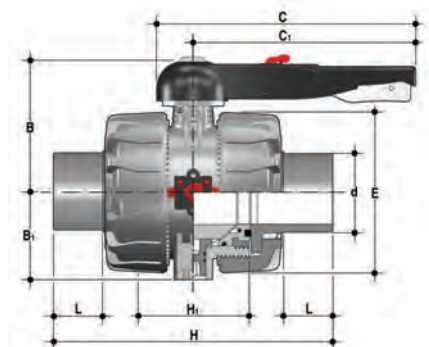
DIMENSIONS



VKDIC

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

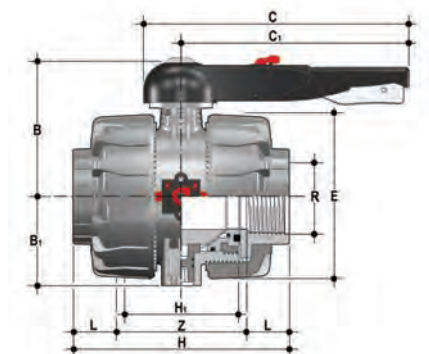
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
75	65	16	164	87	225	175	164	235	133	44	147	4750	VKDIC075E	VKDIC075F
90	80	16	177	105	327	272	203	270	149	51	168	7838	VKDIC090E	VKDIC090F
110	100	16	195	129	385	330	238	308	167	61	186	12137	VKDIC110E	VKDIC110F



VKDDC

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

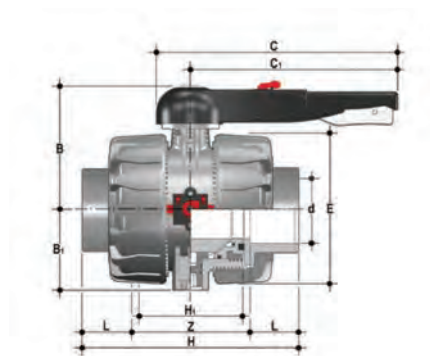
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM code	FKM code
75	65	16	164	87	225	175	164	235	133	44	4789	VKDDC075E	VKDDC075F
90	80	16	177	105	327	272	203	270	149	51	7691	VKDDC090E	VKDDC090F
110	100	16	195	129	385	330	238	308	167	61	11931	VKDDC110E	VKDDC110F



VKDFC

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

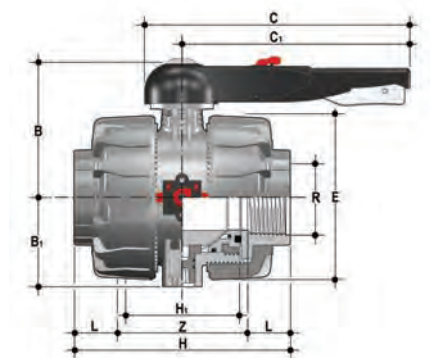
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
2" 1/2	65	16	164	87	225	175	164	235	133	33,2	168,6	4769	VKDFC212E	VKDFC212F
3"	80	16	177	105	327	272	203	270	149	35,5	199	7910	VKDFC300E	VKDFC300F
4"	100	16	195	129	385	330	238	308	167	37,6	232,8	12262	VKDFC400E	VKDFC400F



VKDAC

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

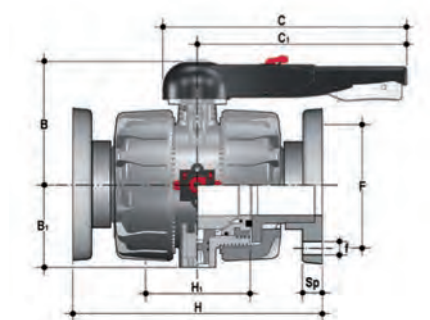
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
2" 1/2	60	16	164	87	225	175	164	235	133	44,5	146	4762	VKDAC212E	VKDAC212F
3"	80	16	177	105	327	272	203	270	149	48	174	7850	VKDAC300E	VKDAC300F
4"	100	16	195	129	385	330	238	308	167	57,5	193	12222	VKDAC400E	VKDAC400F



VKDNC

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

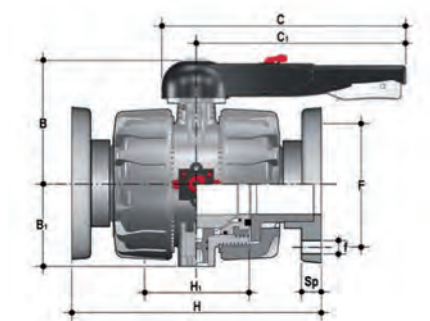
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
2" 1/2	65	16	164	87	225	175	164	235	133	33,2	168,6	4769	VKDNC212E	VKDNC212F
3"	80	16	177	105	327	272	203	270	149	35,5	199	7910	VKDNC300E	VKDNC300F
4"	100	16	195	129	385	330	238	308	167	37,6	232,8	12262	VKDNC400E	VKDNC400F



VKDOC

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

d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM 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	14967	VKDOC110E	VKDOC110F

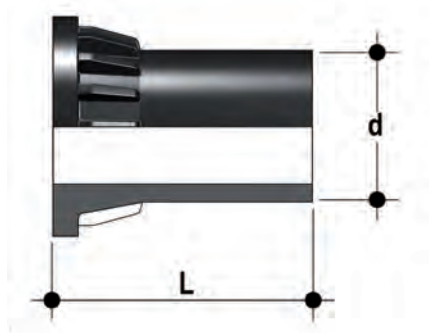


VKDOAC

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

Size	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM 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

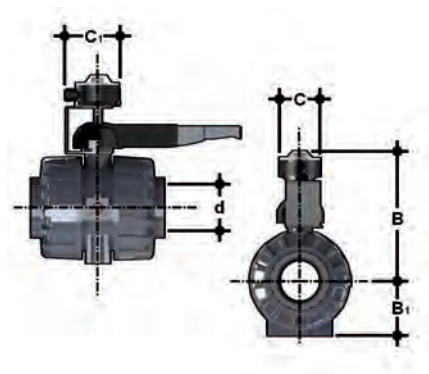
d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090
110	100	16	132	11	CVDE11110



LSE

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

d	DN	VKD* code
75	65	LSE040
90	80	LSE040
110	100	LSE040



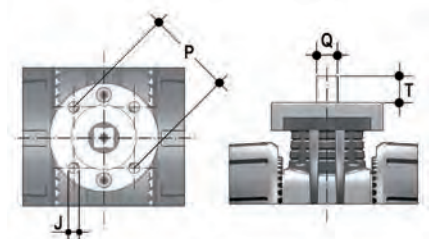
LS Quick Kit

The Limit Switch Quick Kit allows the fast and secure installation of the FIP LSQT to the VKD valves. The body is in PP-GR and the handle is in stainless steel AISI 316. The handle block at 0° and 90° is also available by default (hole diameter 6.5 mm). The kit can be assembled on the valve even if already installed on the system. For technical data of the LSQT box see FIP actuated valves catalogue.

d	DN	B	B ₁	C	C ₁	Code
75	65	275	87	103	126,9	LSQKIT75160
90	80	286,7	105	103	126,9	LSQKIT75160
110	100	305,5	129	103	126,9	LSQKIT75160

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.



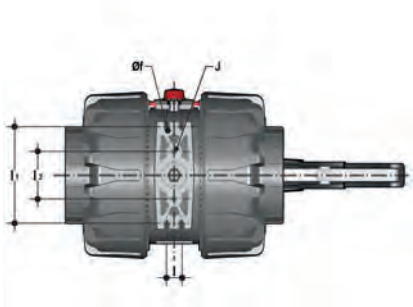
d	DN	P x J	T	Code
75	65	F07 x 9	16	14
90	80	F07 x 9	16	14
110	100	F07 x 9	19	17

FASTENING AND SUPPORTING

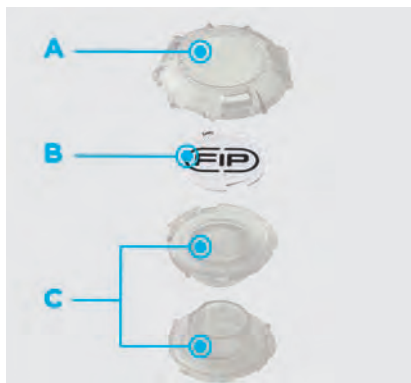


All valves, whether manual or actuated, must be adequately supported in many applications. The VKD DN 65÷100 valve series is therefore ready to be equipped with threaded supporting brackets (optional) that permits direct anchoring on the valve body without the need of other components. Using standard threaded nuts (not included) made of STAINLESS steel, you can anchor the valve on 4 fastening points.

d	DN	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, one side of which bears the FIP logo.

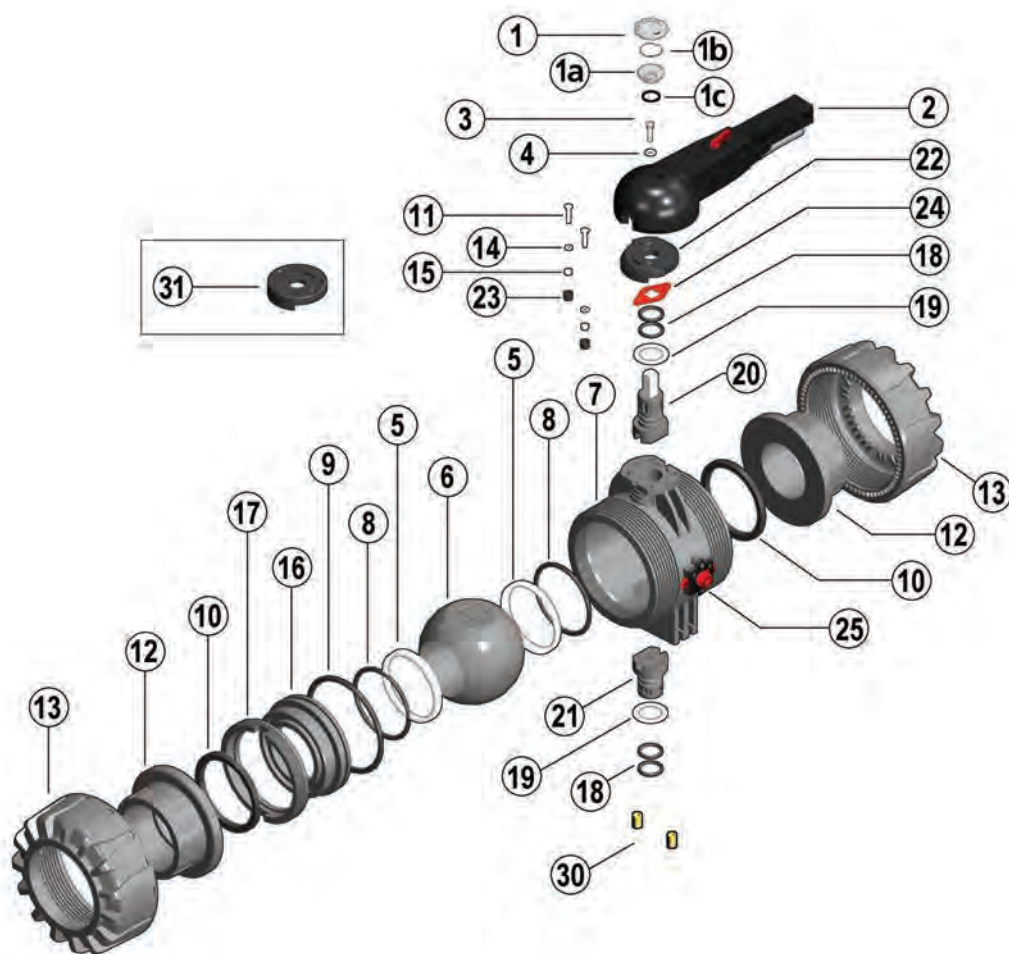
The holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

Proceed as follows to apply the label on the valve:

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

COMPONENTS

EXPLODED VIEW



1-1a Transparent protection plug (PVC - 1)

1b Tag holder (PVC - 1)

1c O-Ring (NBR - 1)

2 Handle (HIPVC - 1)

3 Screw (STAINLESS steel - 1)

4 Washer (STAINLESS steel - 1)

5 Ball seat (PTFE - 2)*

6 Ball (PVC-C - 1)

7 Body (PVC-C - 1)

8 Ball seat O-ring (EPDM or FKM - 2)*

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

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

11 Screw (STAINLESS steel - 2)

12 End connector (PVC-C - 2)

13 Union nut (PVC-C - 2)

14 Washer (STAINLESS steel - 2)

15 Nut (STAINLESS steel - 2)

16 Ball seat carrier (PVC-C - 1)

17 Threaded ring (PVC-C - 1)

18 Stems O-rings (EPDM-FKM - 4)*

19 Anti-friction disk (PTFE - 2)*

20 Upper stem (PVC/INOX - 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 component material and quantity supplied are indicated in the parentheses.

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Release the union nuts by rotating the button (25) to the left, pointing the arrow on the open lock (fig. 1).
- 3) Unscrew the union nuts (13) and extract the body (7) (fig. 2).
- 4) Before dismounting, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
- 5) Open the valve.
- 6) Remove the protection plug on the handle (2) and unscrew the screw (3) with the washer (4).
- 7) Remove the handle (2).
- 8) Remove the screws (11) and plate (22) from the body (7).
- 9) Insert the two supplied wrench protrusions in the corresponding apertures on the threaded ring (17), extracting it by rotating counterclockwise with the ball seat carrier (16) (fig. 3).
- 10) Press on the ball (6), being careful not to scratch it, and remove it from the body.
- 11) Press the upper stem (20) inwards and extract it from the body and remove the lower stem (21). Remove the anti-friction disks (19).
- 12) Remove the O-Ring (8, 9, 10, 18) and PTFE ball seats (5) extracting them from their housings, 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 valve 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 operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig.1



Fig.2



Fig.3



Fig.4



INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Make sure the DUAL BLOCK® union nut lock system (25) is in the FREE position.
- 3) Unscrew the union nuts (13) and insert them on the pipe segments.
- 4) Solvent weld or screw the end connectors (12) onto the pipe ends.
- 5) Position the valve body between the end connectors and fully tighten the union nuts (13) clockwise with an appropriate wrench.
- 6) Lock the union nuts rotating the button (25) clockwise (see paragraph "union nut lock").
- 7) If necessary, support the piping 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 installed later with the valve installed on the pipe by simply tightening the union nuts. This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of operations.

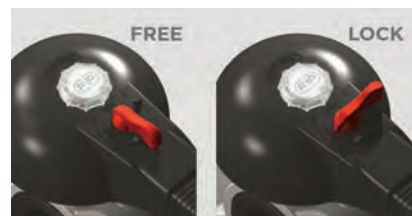
UNION NUT LOCK

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



HANDLE LOCK

Thanks to the multifunctional handle and the red manoeuvre button on the lever, you can perform a 0°-90° operation and a graduated operation by means of the 10 intermediate positions and a stop lock: the handle can be locked in each of the 10 positions by simply pressing the Free-lock button. A lock can also be installed on the handle to protect the system against tampering. The valve is two-way and can be installed in any position. It can also be installed at end line or tank.



WARNINGS

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

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

TKD DN 10÷50



DUAL BLOCK® 3-WAY BALL VALVE



TKD DN 10÷50

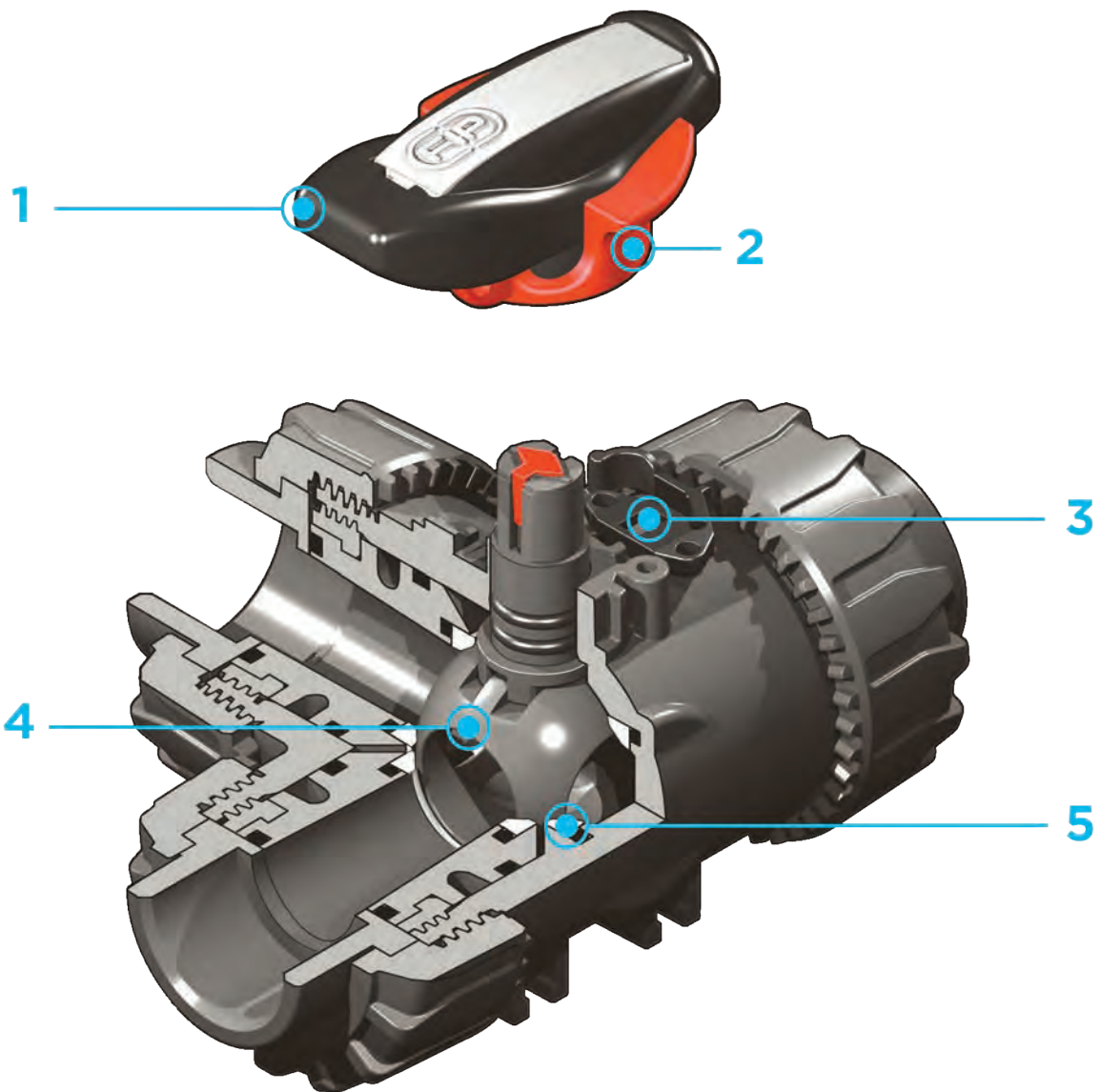
FIP has developed a TKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. TKD is a True Union diverting and mixing ball valve that meets the most stringent needs required in industrial applications.



DUAL BLOCK® 3-WAY BALL VALVE

- Connection system for solvent weld, threaded and threaded joints
- Patented **SEAT STOP®** ball carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN16 True Union valve body** made for 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 **visual ball 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 FKM), with water, drinking water and other food substances as per **current regulations**
- Possibility to have handle with integrated LSQT limit micro switch, even as a retrofit in existing installations

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, EN 10226-1/2, ASTM F 437
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, FKM, On request FEP+FKM, FFKM (standard size O-Ring); PTFE (ball seats)
Control options	Manual control; electric actuator; pneumatic actuator



1 Ergonomic HIPVC handle equipped with removable 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 lock 0° - 90° SHKD

(available as an accessory) ergonomically operable during service and padlockable

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

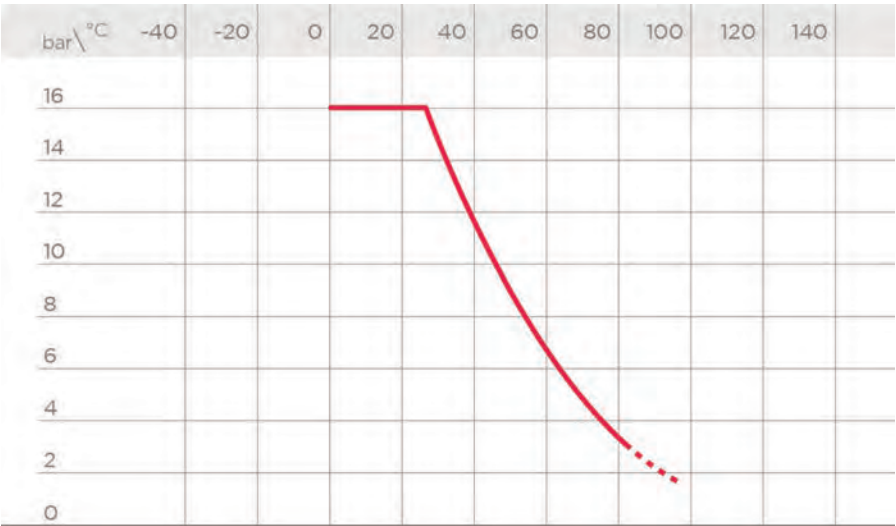
4 **Ball shutter** high surface finish with floating type full passage with **T or L port**

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

TECHNICAL DATA

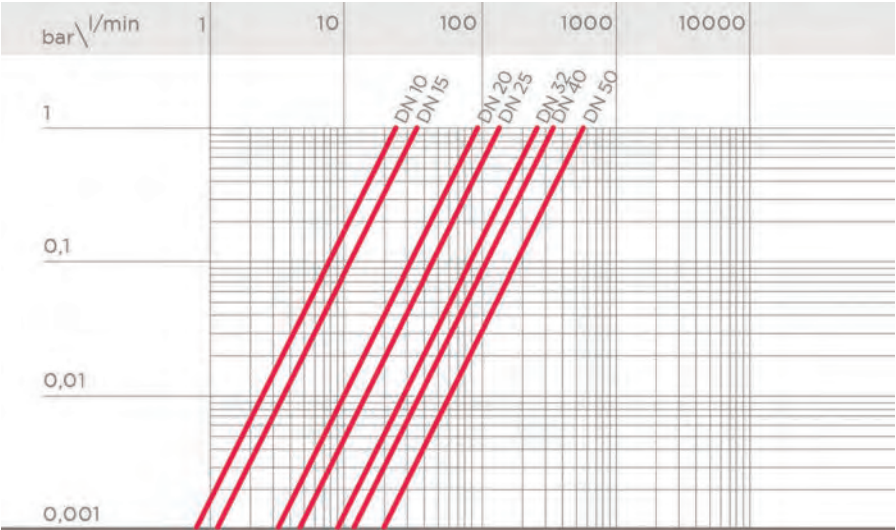
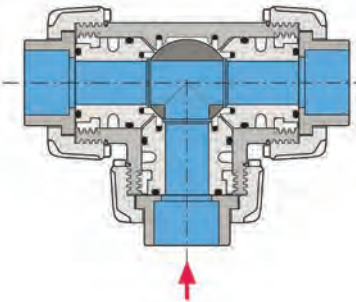
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

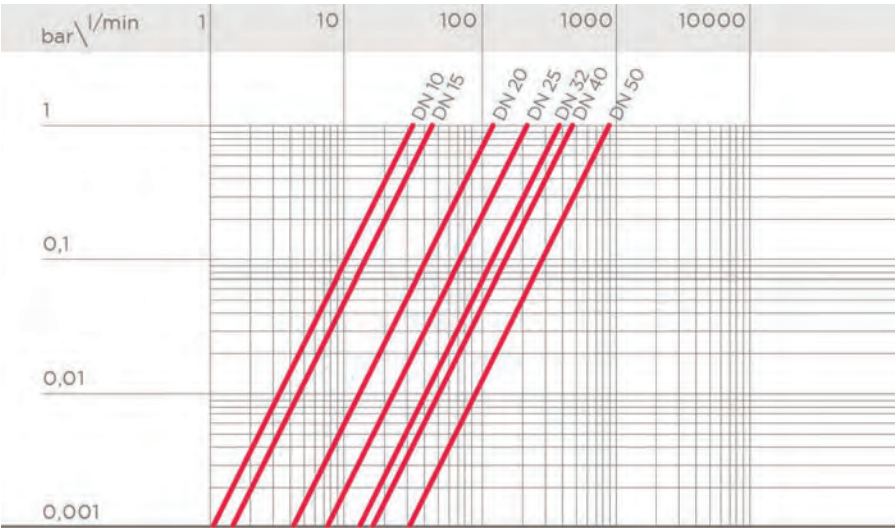
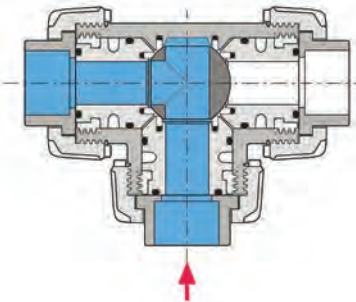


PRESSURE DROP GRAPH AND WORK POSITIONS

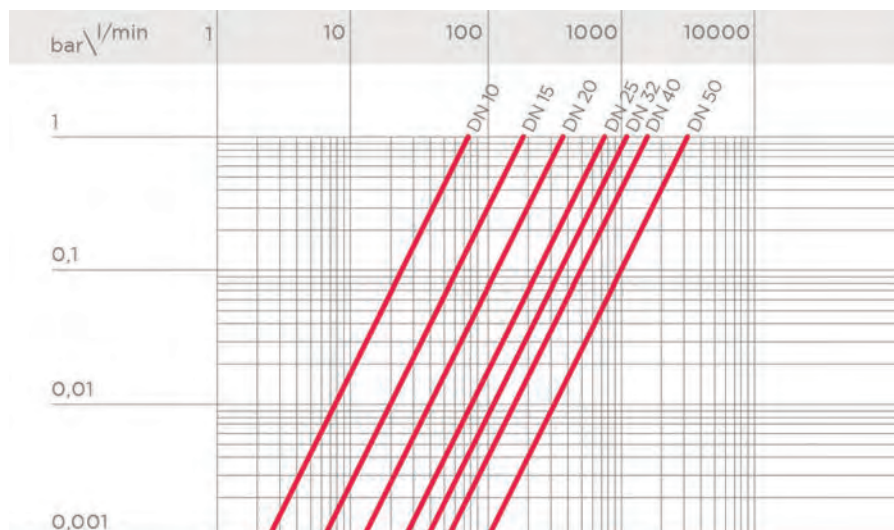
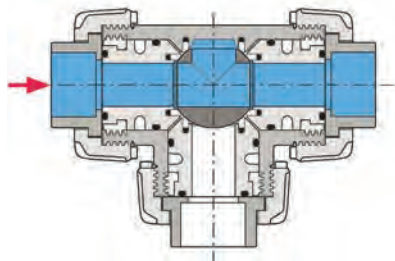
A - T-port ball valve:
0° - Mixing



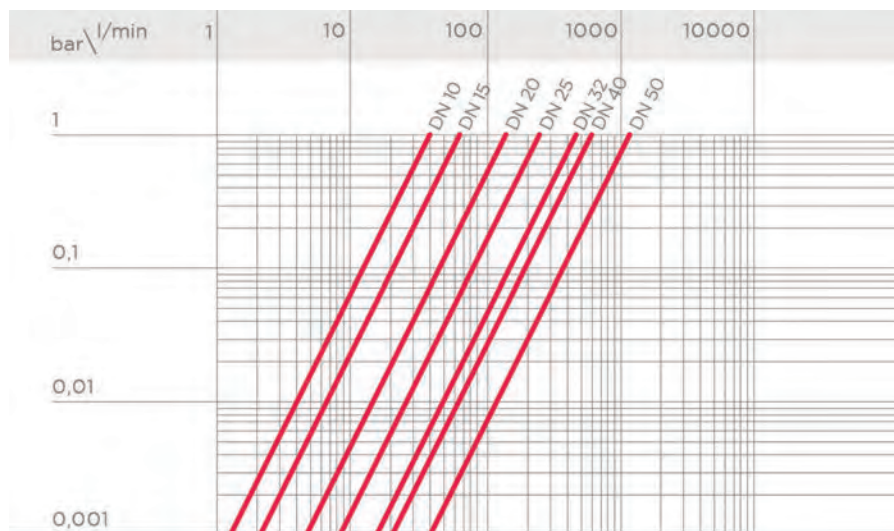
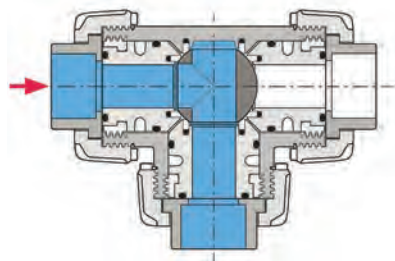
B - T-port ball valve:
90° - Diverting



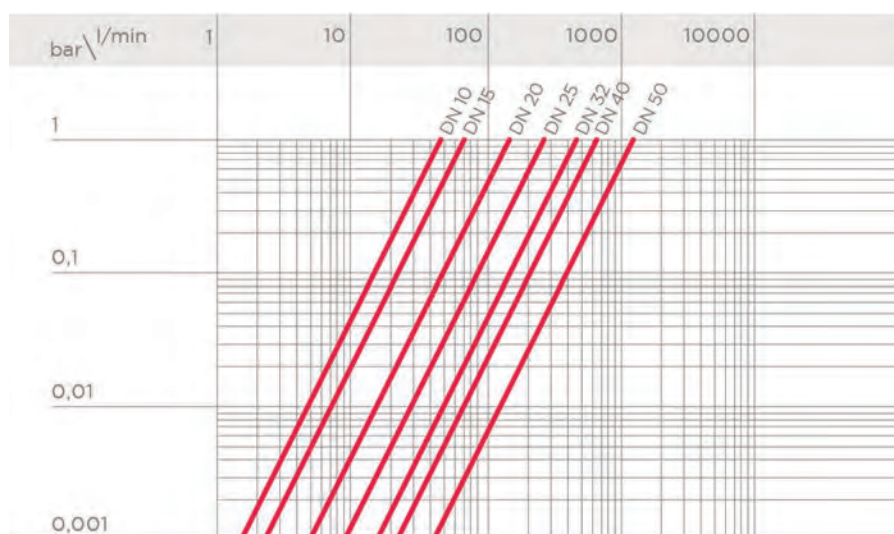
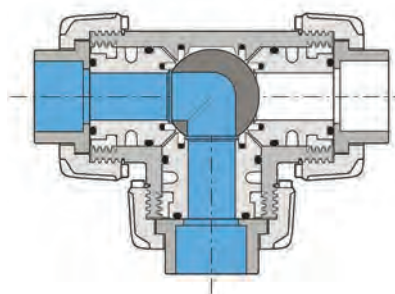
C - T-port ball valve:
180° - Branch closed/direct flow



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



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

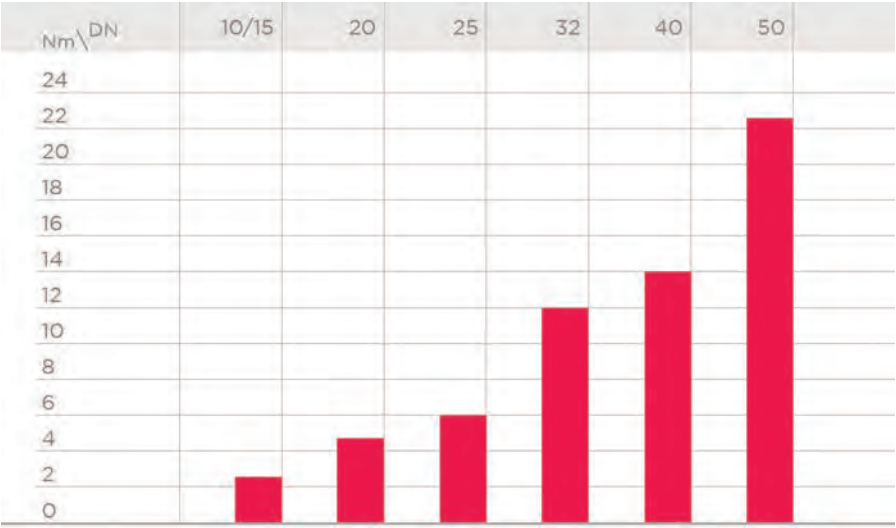


K_v100 FLOW COEFFICIENT

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 Kv100 values shown in the table are calculated with the valve completely open.

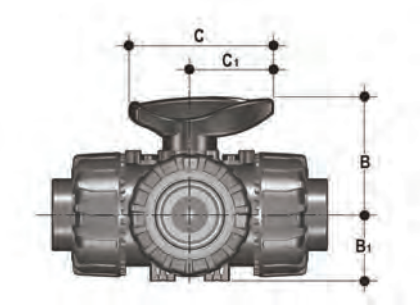
DN	10	15	20	25	32	40	50
A	25	35	95	140	270	330	620
B	37	55	135	205	390	475	900
C	78	195	380	760	1050	1700	3200
D	40	65	145	245	460	600	1200
E	48	73	150	265	475	620	1220

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



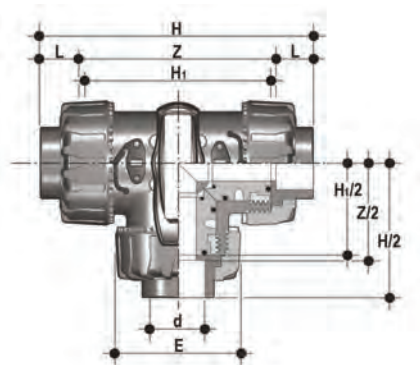
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

DIMENSIONS



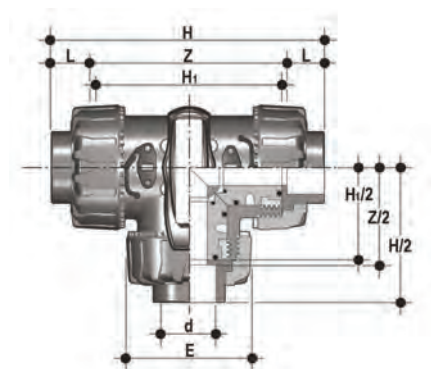
Dimensions shared by all versions

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
DUAL BLOCK® 3-way ball valve with metric plain socket ends for solvent welding, T bore

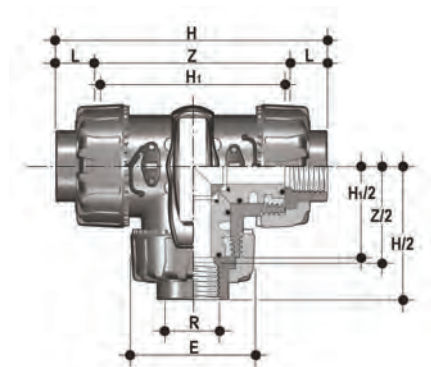
d	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
16	10	16	54	118	80	14	90	310	TKDIC016E	TKDIC016F
20	15	16	54	118	80	16	86	310	TKDIC020E	TKDIC020F
25	20	16	65	145	100	19	107	550	TKDIC025E	TKDIC025F
32	25	16	73	160	110	22	116	790	TKDIC032E	TKDIC032F
40	32	16	86	188.5	131	26	136.5	1275	TKDIC040E	TKDIC040F
50	40	16	98	219	148	31	157	1660	TKDIC050E	TKDIC050F
63	50	16	122	266.5	179	38	190.5	2800	TKDIC063E	TKDIC063F



LKDIC

DUAL BLOCK® 3-way ball valve with metric plain socket ends for solvent welding, L bore.

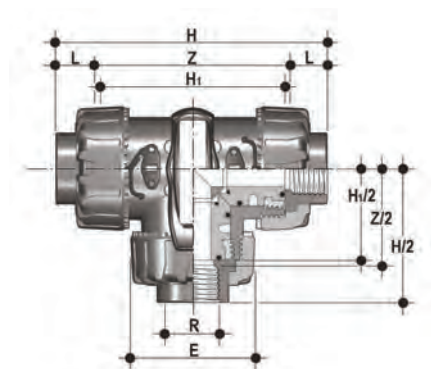
d	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
16	10	16	54	118	80	14	90	310	LKDIC016E	LKDIC016F
20	15	16	54	118	80	16	86	310	LKDIC020E	LKDIC020F
25	20	16	65	145	100	19	107	550	LKDIC025E	LKDIC025F
32	25	16	73	160	110	22	116	790	LKDIC032E	LKDIC032F
40	32	16	86	188.5	131	26	136.5	1275	LKDIC040E	LKDIC040F
50	40	16	98	219	148	31	157	1660	LKDIC050E	LKDIC050F
63	50	16	122	266.5	179	38	190.5	2800	LKDIC063E	LKDIC063F



TKDFC

Dual Block® 3-way ball valve with BSP threaded female ends, T-port ball.

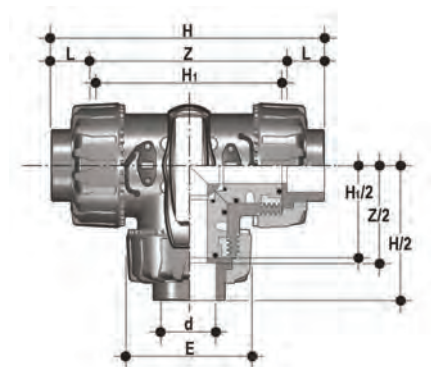
R	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	126	80	18	90,4	310	TKDFC012E	TKDFC012F
3/4"	20	16	65	146,4	100	18	110,4	550	TKDFC034E	TKDFC034F
1"	25	16	73	166,6	110	22,6	121,4	790	TKDFC100E	TKDFC100F
1" 1/4	32	16	86	195,8	131	25,1	145,6	1275	TKDFC114E	TKDFC114F
1" 1/2	40	16	98	211,4	148	24,7	162	1660	TKDFC112E	TKDFC112F
2"	50	16	122	253,8	179	29,6	194,6	2800	TKDFC200E	TKDFC200F



LKDFC

Dual Block® 3-way ball valve with BSP threaded female ends, L-port ball.

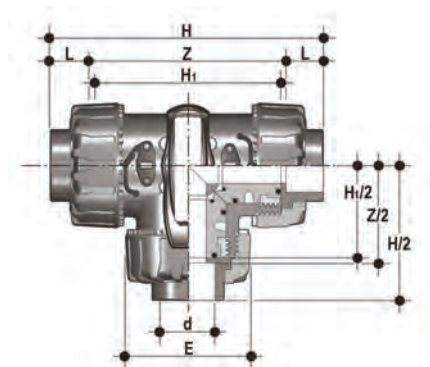
R	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	126	80	18	90,4	310	LKDFC012E	LKDFC012F
3/4"	20	16	65	146,4	100	18	110,4	550	LKDFC034E	LKDFC034F
1"	25	16	73	166,6	110	22,6	121,4	790	LKDFC100E	LKDFC100F
1" 1/4	32	16	86	195,8	131	25,1	145,6	1275	LKDFC114E	LKDFC114F
1" 1/2	40	16	98	211,4	148	24,7	162	1660	LKDFC112E	LKDFC112F
2"	50	16	122	253,8	179	29,6	194,6	2800	LKDFC200E	LKDFC200F



TKDAC

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

d	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	132,2	80	23	87,2	310	TKDAC012E	TKDAC012F
3/4"	20	16	65	159,2	100	25,5	108,2	550	TKDAC034E	TKDAC034F
1"	25	16	73	174	110	28,7	116,6	790	TKDAC100E	TKDAC100F
1" 1/4	32	16	86	205	131	32	141	1275	TKDAC114E	TKDAC114F
1" 1/2	40	16	98	227,6	148	35	157,6	1660	TKDAC112E	TKDAC112F
2"	50	16	122	267	179	38,2	190,6	2800	TKDAC200E	TKDAC200F

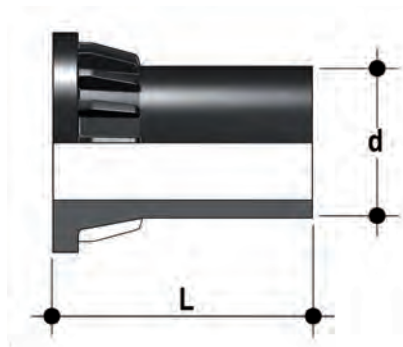


LKDAC

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

d	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	132,2	80	23	87,2	310	LKDAC012E	LKDAC012F
3/4"	20	16	65	159,2	100	25,5	108,2	550	LKDAC034E	LKDAC034F
1"	25	16	73	174	110	28,7	116,6	790	LKDAC100E	LKDAC100F
1" 1/4	32	16	86	205	131	32	141	1275	LKDAC114E	LKDAC114F
1" 1/2	40	16	98	227,6	148	35	157,6	1660	LKDAC112E	LKDAC112F
2"	50	16	122	267	179	38,2	190,6	2800	LKDAC200E	LKDAC200F

ACCESSORIES



CVDE

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

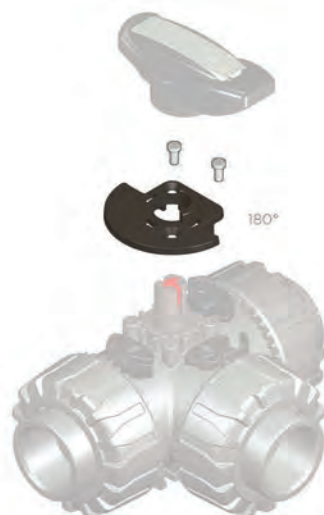
d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
50	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



SHKD

Handle block kit 0° - 90° lockable

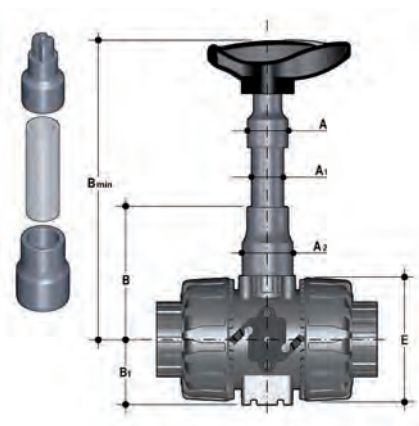
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063



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

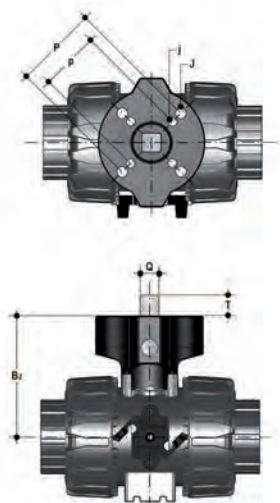


PSKD

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	175	PSKD050
63	50	40	32	59	122	122	62	225	PSKD063

* Pipe and glue not included in the KIT

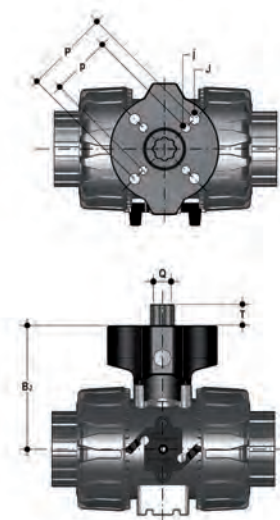


Power Quick/CP

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

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

*F04 x 5.5 on request

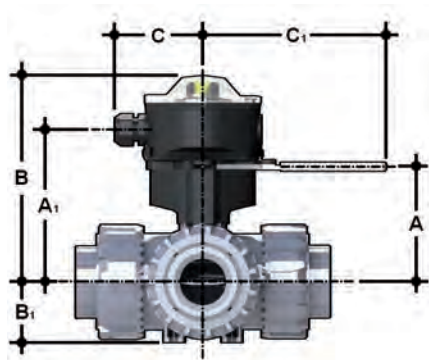


Power Quick/CE

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

d	DN	B ₂	Q	T	p x j	P x J	Code
16	10	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
20	15	58	14	16	F03 x 5,5	F04 x 5,5	PQCE020
25	20	69	14	16	*F03 x 5,5	F05 x 6,5	PQCE025
32	25	74	14	16	*F03 x 5,5	F05 x 6,5	PQCE032
40	32	91	14	16	F05 x 6,5	F07 x 8,5	PQCE040
50	40	97	14	16	F05 x 6,5	F07 x 8,5	PQCE050
63	50	114	14	16	F05 x 6,5	F07 x 8,5	PQCE063

*F04 x 5.5 on request



LS Quick Kit

The Limit Switch Quick Kit allows the fast and secure installation of the FIP LSQT to the VKD valves. The body is in PP-GR and the handle in stainless steel AISI 316. The handle block at 0° and 90° is also available by default (hole diameter 6.5 mm). The kit can be assembled on the valve even if already installed on the system. For technical data of the LSQT box see FIP actuated valves catalogue.

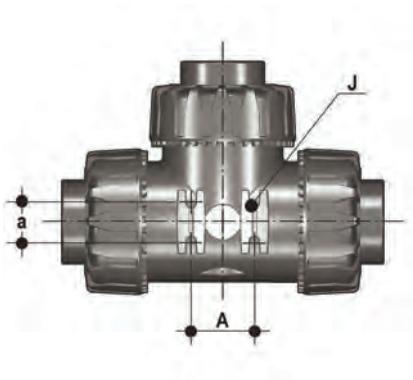
d	DN	A	A ₁	B	B ₁	C	C ₁	Code
16	10	60	91,5	137	29	76,5	157,5	LSQKIT20
20	15	60	91,5	137	29	76,5	157,5	LSQKIT20
25	20	71	102,5	148	34,5	76,5	157,5	LSQKIT25
32	25	76	107,5	153	39	76,5	157,5	LSQKIT32
40	32	93	124,5	170	46	76,5	157,5	LSQKIT40
50	40	99	130,5	176	52	76,5	157,5	LSQKIT50
63	50	116	147,5	193	62	76,5	157,5	LSQKIT63

FASTENING AND SUPPORTING



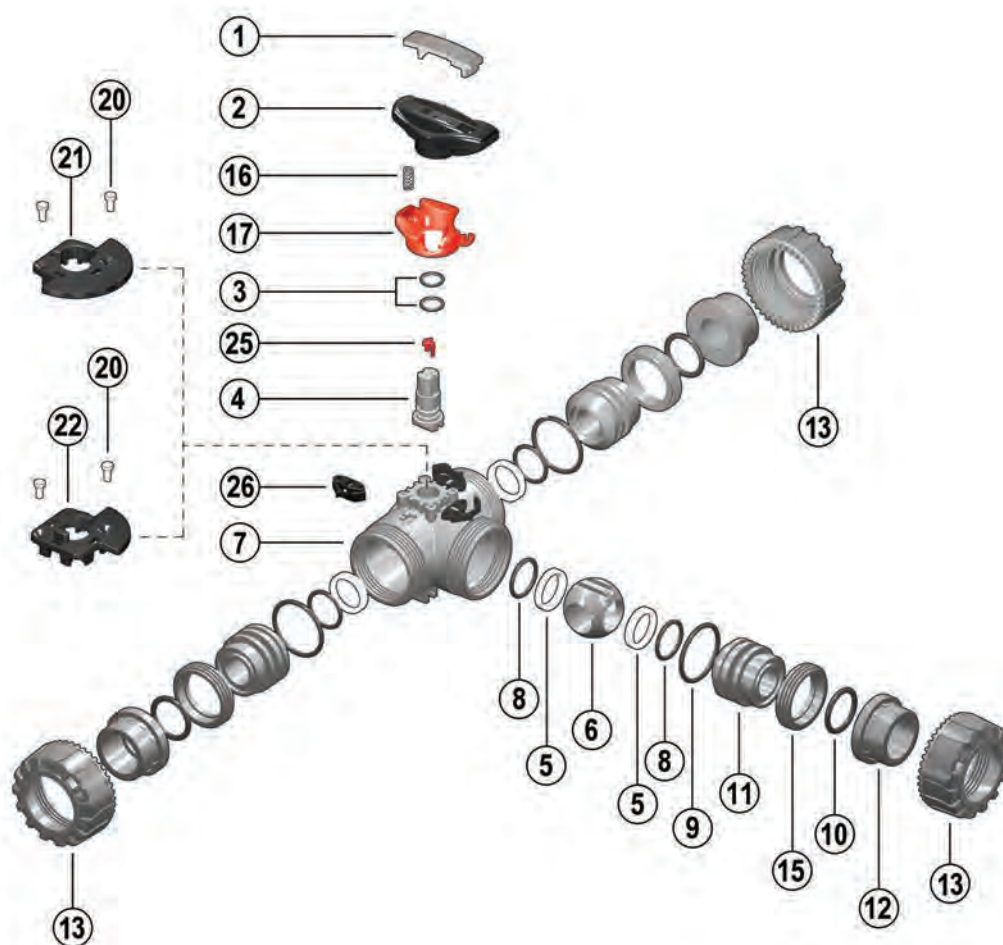
All valves, whether manual or actuated, must be adequately supported in many applications. The TKD valve series is therefore ready to be equipped with threaded supporting brackets (optional) bracket that permits direct anchoring of the valve body without the need of other components. Using standard threaded nuts (not included) made of STAINLESS steel, you can anchor the valve on 4 fastening points.

d	DN	A	a	J
16	10	31	20	M5 x 8
20	15	31	20	M5 x 8
25	20	31	20	M5 x 8
32	25	31	20	M5 x 8
40	32	50	30	M6 x 10
50	40	50	30	M6 x 10
63	50	50	30	M6 x 10



COMPONENTS

EXPLODED VIEW



- 1** Handle insert (PVC-U - 1)
- 2** Handle (HIPVC - 1)
- 3** Stem O-ring (EPDM or FKM - 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-Rings (EPDM or FKM - 4)*

- 9** Radial seal O-Ring (EPDM or FKM - 3)
- 10** Socket seal O-Ring (EPDM or FKM - 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** Safety handle 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 component material and quantity supplied are indicated in the parentheses.

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Unlock the union nuts by pressing the lever on the DUAL BLOCK® (26) along the axis and separate it from the union nut (fig. 1). It is also possible to completely remove the block device from the body of the valve.
- 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 counterclockwise.
- 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.

Fig. 1



Fig. 2



Fig. 3



Fig. 4



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 marks on the socket 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 operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

INSTALLATION

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 (12) 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 union 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 lock to prevent ball rotation (available as an accessory). When the block (16, 17) is installed, lift the lever (17) and rotate the handle.

A padlock 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).

A further fine-tuning of the seals can be done with the valve installed on the pipe by simply tightening the union nuts.

This "micro adjustment", only possible with FIP valves thanks to the patented "Seat stop system", allows the seal to be recovered where PTFE ball seats are worn due to a high number of operations.

Fig.5



Fig.6



Fig.7

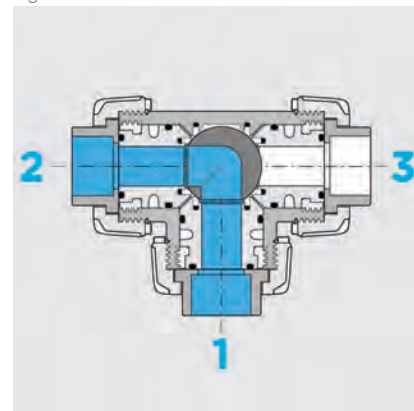
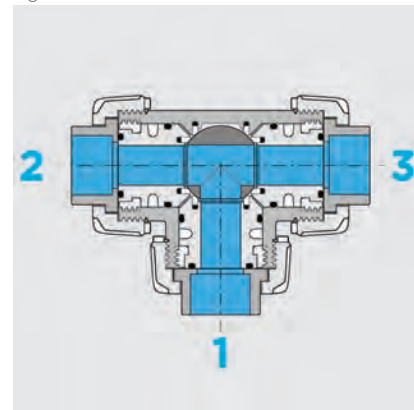


Fig.8



WARNINGS

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

VXE DN 10÷50

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.

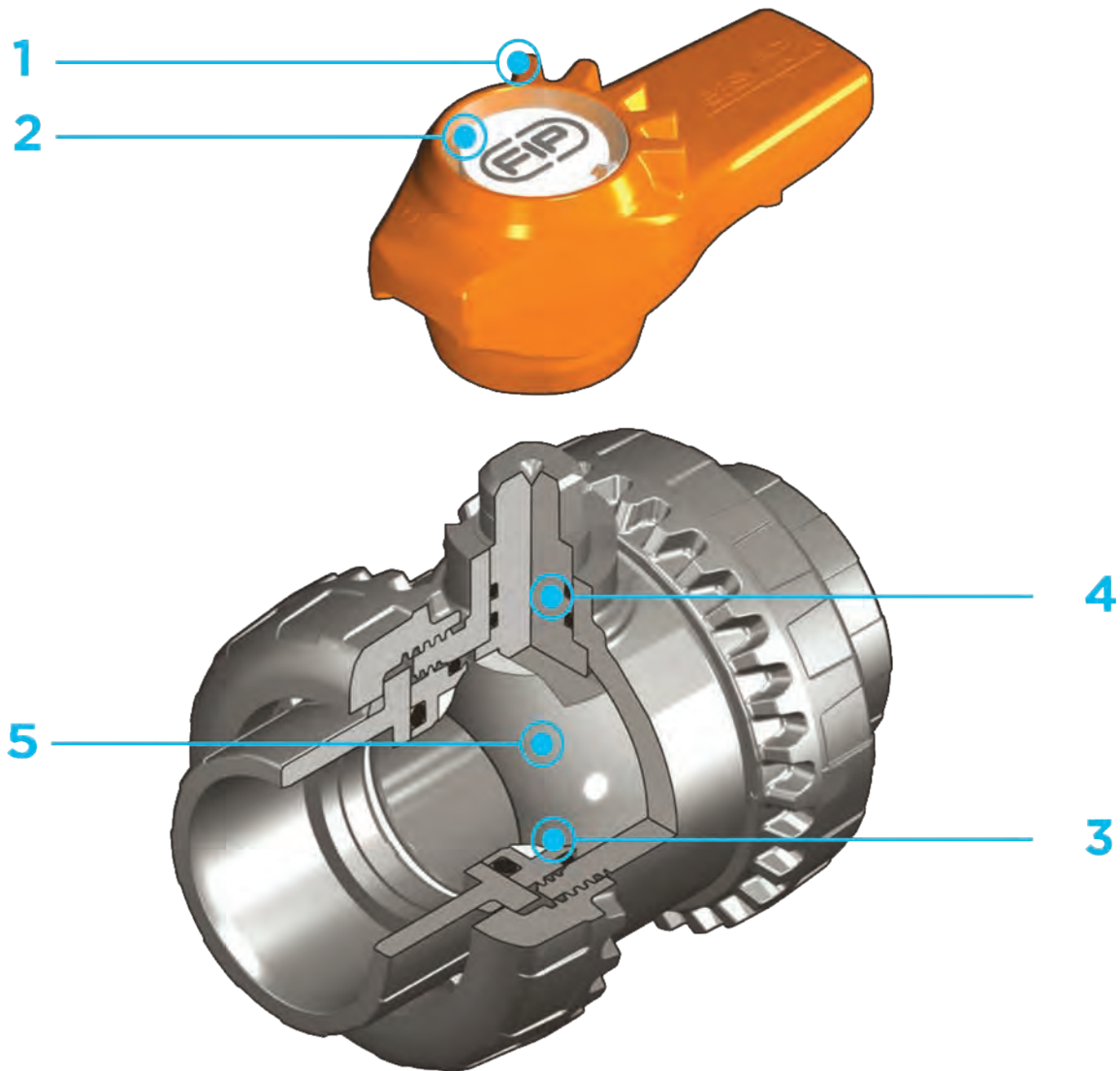


EASYFIT 2-WAY BALL VALVE

- **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 FKM), 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 2014/68/EU (PED) compliant for pressurised equipment. ISO 9393 compliant test requirements
- 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, EN 10226-1/2, ASTM F 437.
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, FKM (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 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 potential 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 **valve stem with double O-Ring**, produced in CNC work stations to achieve precise dimensional tolerance and increased reliability

5 Machined high surface finish ball that guarantees a smooth operation and increased reliability

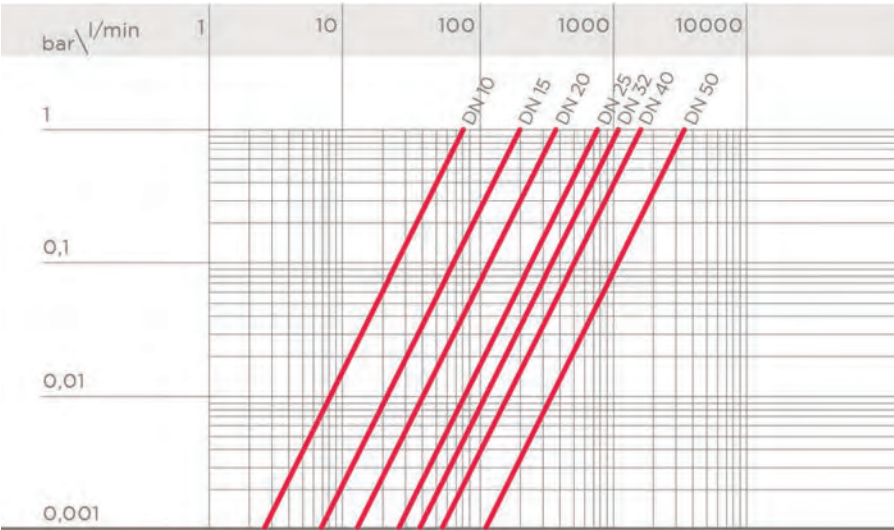
TECHNICAL DATA

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 PN pressure is required (25 years with safety factor).



PRESSURE DROP GRAPH



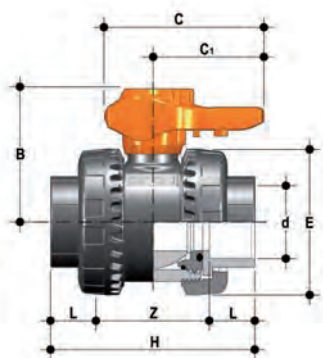
K_v 100 FLOW COEFFICIENT

The K_v 100 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 Kv100 values shown in the table are calculated with the valve completely open.

DN	10	15	10	25	32	40	50
K _v 100 l/min	80	200	385	770	1110	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.

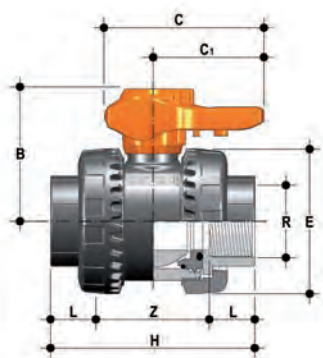
DIMENSIONS



VXEIC

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

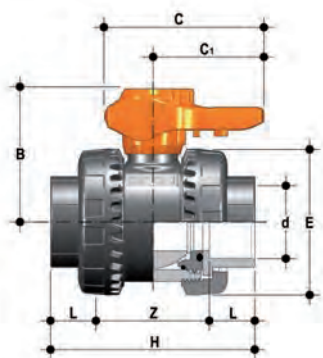
d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM code	FKM code
16	10	16	49	64	44	54	82	16	50	180	VXEIC016E	VXEIC016F
20	15	16	49	64	44	54	82	16	50	175	VXEIC020E	VXEIC020F
25	20	16	62	78	55	63	91	19	53	260	VXEIC025E	VXEIC025F
32	25	16	71	87	60	72	103	22	59	365	VXEIC032E	VXEIC032F
40	32	16	82	102	72	85	120	26	68	565	VXEIC040E	VXEIC040F
50	40	16	92	109	76	100	139	31	77	795	VXEIC050E	VXEIC050F
63	50	16	110	133	94	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	FKM code
1/2"	15	16	49	64	44	54	90	17,8	54,4	175	VXEFC012E	VXEFC012F
3/4"	20	16	62	64	55	63	93	18	57	260	VXEFC034E	VXEFC034F
1"	25	16	71	78	60	72	110	22,6	64,8	365	VXEFC100E	VXEFC100F
1" 1/4	32	16	82	87	72	85	127	25,1	76,8	565	VXEFC114E	VXEFC114F
1" 1/2	40	16	92	102	76	100	131	24,7	81,6	795	VXEFC112E	VXEFC112F
2"	50	16	110	109	94	118	161	29,6	101,8	1325	VXEFC200E	VXEFC200F

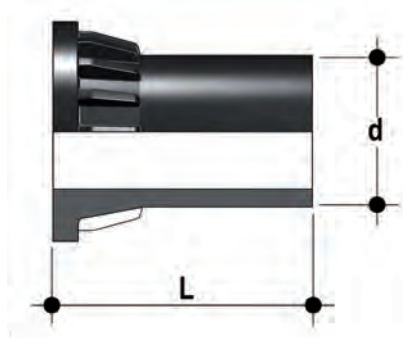


VXEAC

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	FKM code
1/2"	15	16	49	64	44	54	96	22,5	51	175	VXEAC012E	VXEAC012F
3/4"	20	16	62	78	55	63	105	25,5	54	260	VXEAC034E	VXEAC034F
1"	25	16	71	87	60	72	117	28,7	59,5	365	VXEAC100E	VXEAC100F
1" 1/4	32	16	82	102	72	85	136	32	72	565	VXEAC114E	VXEAC114F
1" 1/2	40	16	92	109	76	100	147	35	77	795	VXEAC112E	VXEAC112F
2"	50	16	110	133	94	118	174	38,2	97,6	1325	VXEAC200E	VXEAC200F

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
50	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	Union nut tightening torque*	Seat carrier tightening torque*	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	VEE 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	VEE-VXE code
16	10	LSE020
20	15	LSE020
25	20	LSE025
32	25	LSE032
40	32	LSE040
50	40	LSE050
63	50	LSE063

CUSTOMISATION

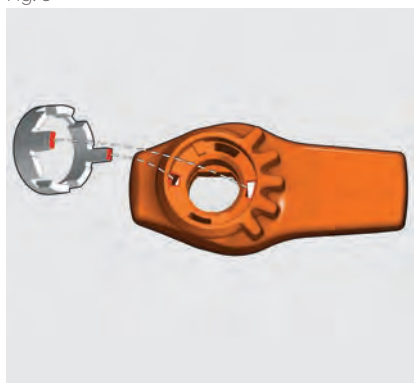
Fig. 1



Fig. 2



Fig. 3



The VXE DN 10÷50 Easyfit 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) and white tag holder (B) made of the same material, one side of which bears the FIP logo (fig. 1).

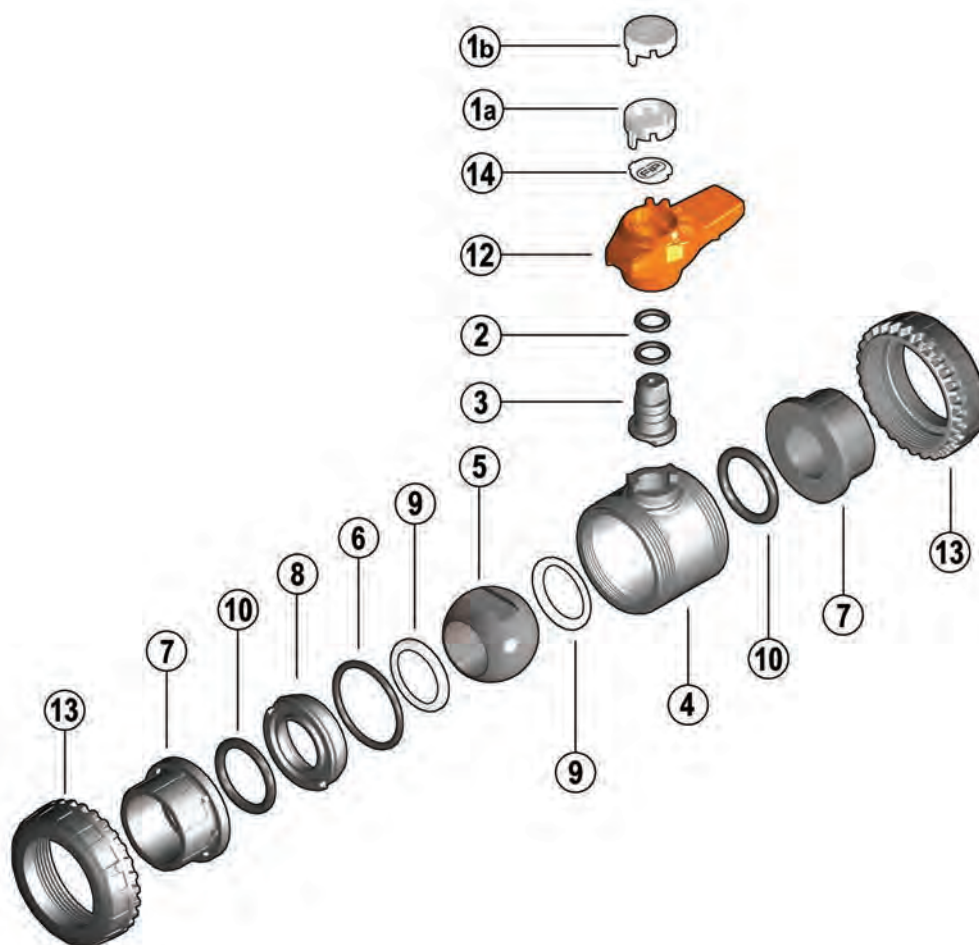
The holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

Proceed as follows to apply the label on the valve:

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

COMPONENTS

EXPLODED VIEW



1a Transparent protection plug (PVC - 1)

2 Stem O-rings (EPDM o FKM - 2)*

3 Stem (PVC-C - 1)

4 Body (PVC-C - 1)

5 Ball (PVC-C - 1)

6 Radial seal O-Ring (EPDM or FKM - 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 FKM - 2)*

12 Handle (HIPVC - 1)

13 Union nut (PVC-C - 2)

14 Tag holder (PVC- 1)

* Spare parts

The component material and quantity supplied are indicated in the parentheses.

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

Fig. 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 distance plates

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

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.

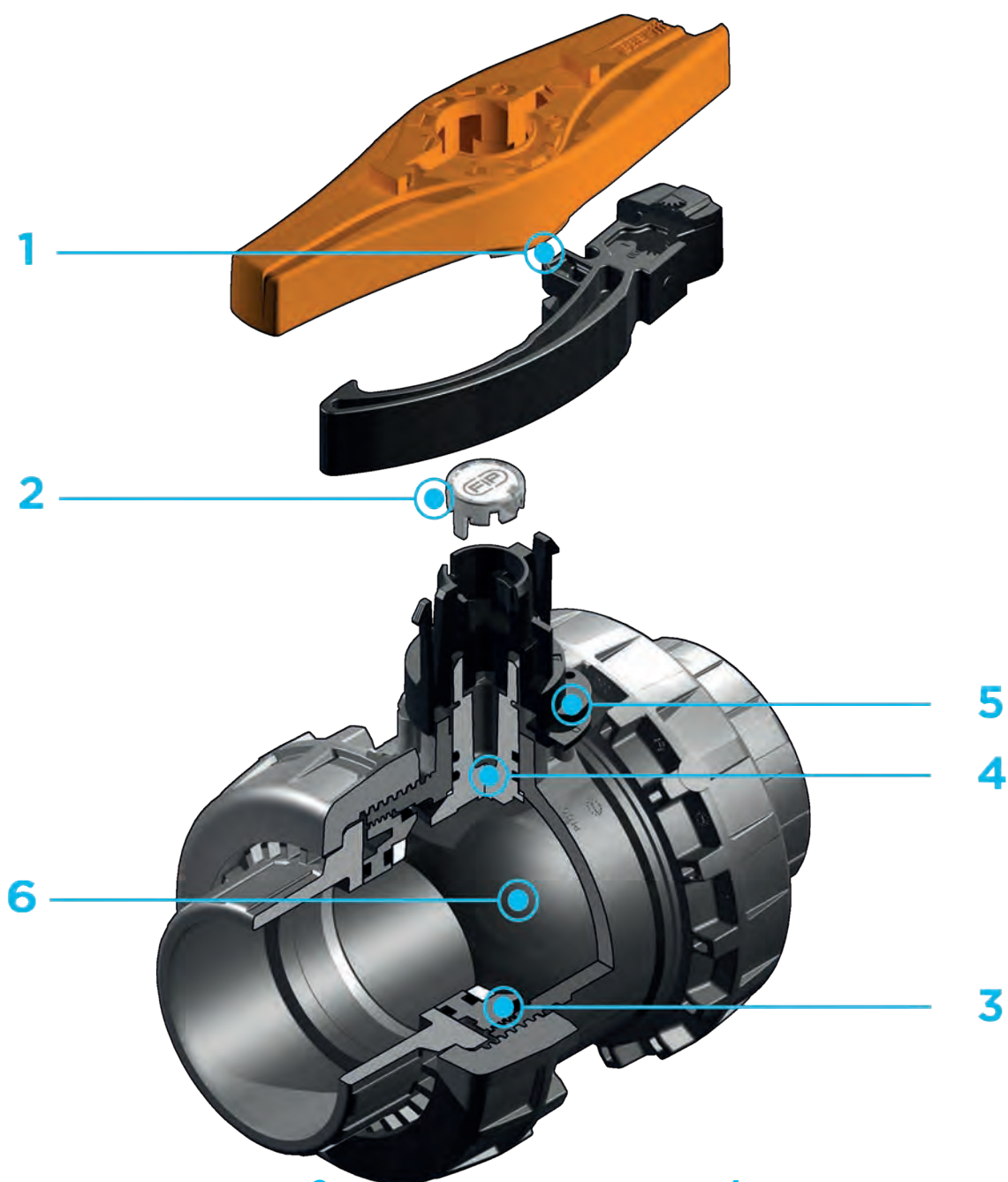


EASYFIT 2-WAY BALL VALVE

- **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 FKM), 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 2014/68/EU (PED) compliant for 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 ÷ 60 °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, EN 10226-1/2, ASTM F 437 Flanging system: ISO 9624, EN ISO 15493, UNI EN 558, EN 1092-1, ANSI B.16.5 cl. 150, JIS B 2220
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
Seal material	EPDM, FKM (standard size O-Ring); PTFE (ball seats)
Valve material	PVC-C
Control options	Manual control, electric actuator, pneumatic actuator

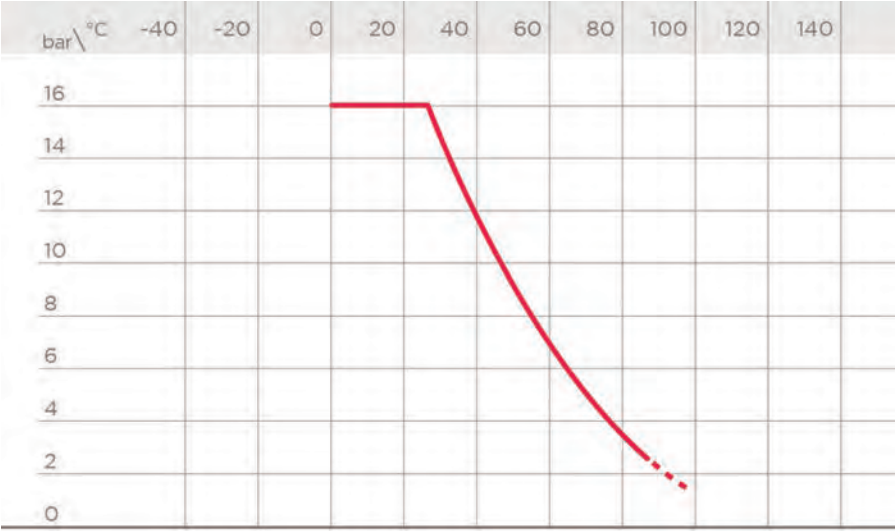


- 1 Innovative Easyfit quick release handle** made up of a central hub firmly coupled with the stem valve and **dual spoke grip** that can be released from the hub with a simple operation and used as a **ball seat adjustment tool** and as a **union nut tightening tool** thanks to the hooked insert that, 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 potential 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 antifriction disk** that limits friction to a minimum and grants excellent operating torque
- 5 Locking device** in closing and opening via lock
- 6 Machined high surface finish ball** that guarantees a smooth operation and increased reliability

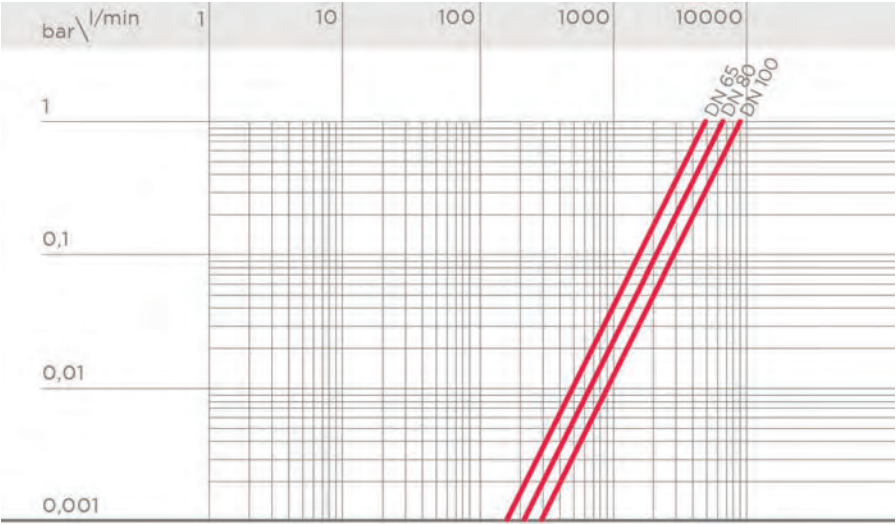
TECHNICAL DATA

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 PN pressure is required (25 years with safety factor).



PRESSURE DROP GRAPH

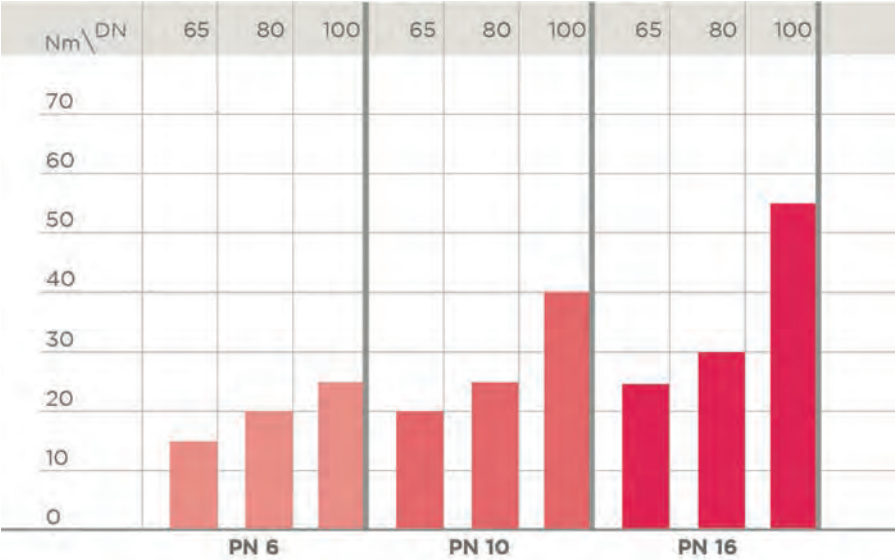


K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

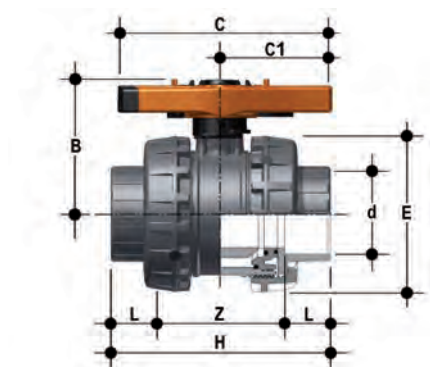
DN	65	80	100
K _v 100 l/min	5000	7000	9400

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.

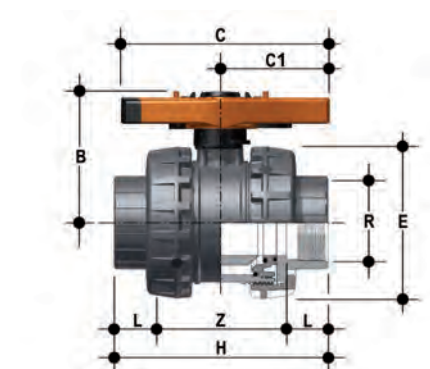
DIMENSIONS



VXEIC

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

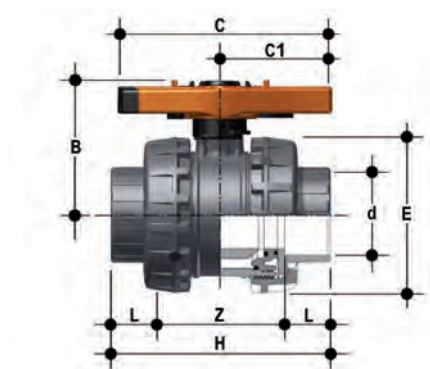
d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM code	FKM code
75	65	16	142	214	115	157	211	44	123	2998	VXEIC075E	VXEIC075F
90	80	16	151	239	126	174	248	51	146	3741	VXEIC090E	VXEIC090F
110	100	16	174,5	270	145	212	283	61	161	6337	VXEIC110E	VXEIC110F



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	FKM 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

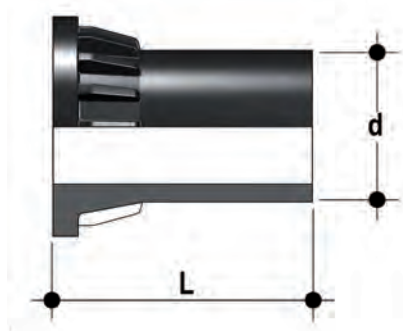
Easyfit 2-way ball valve with female ends for solvent welding, ASTM series

d	DN	PN	B	C	C ₁	E	H	L	Z	g	EPDM code	FKM 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

ACCESSORIES

CVDE

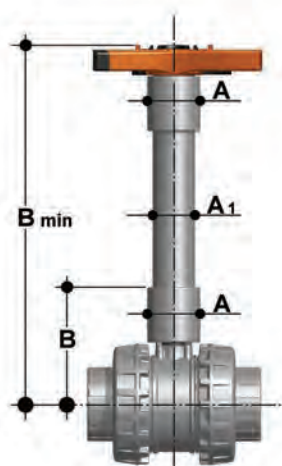
Long spigot PE100 end connectors for joints with electrofusion fittings or for butt welding



d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	10	118	11	CVDE11090VXE
110	100	10	127	11	CVDE11110VXE

PSE

Stem extension



d	inch	DN	A	A ₁	B	B min	ISO pipe code	ASTM-BS pipe code
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



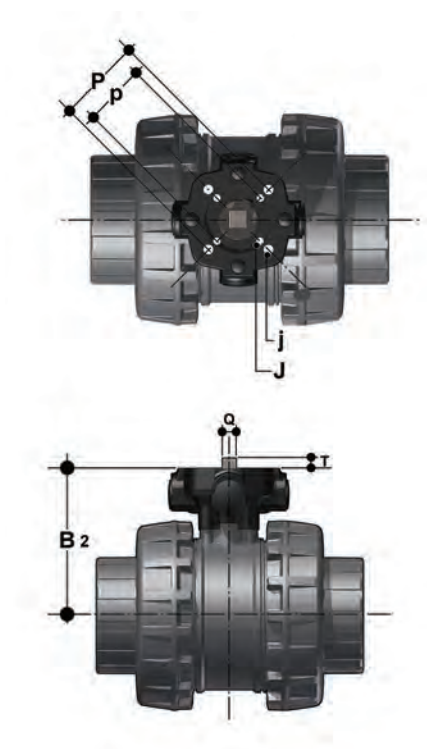
d	DN	VEE code
75	65	LCE040
90	80	LCE040
110	100	LCE040



LSE

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

d	DN	VXE - VEE 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

CUSTOMISATION

Fig. 1

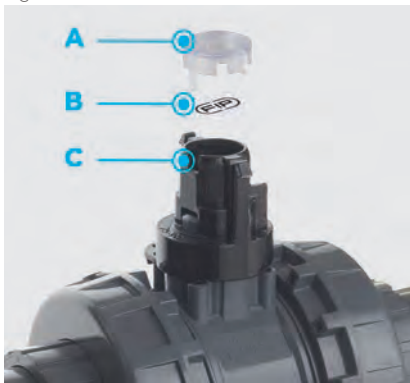


Fig. 2



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

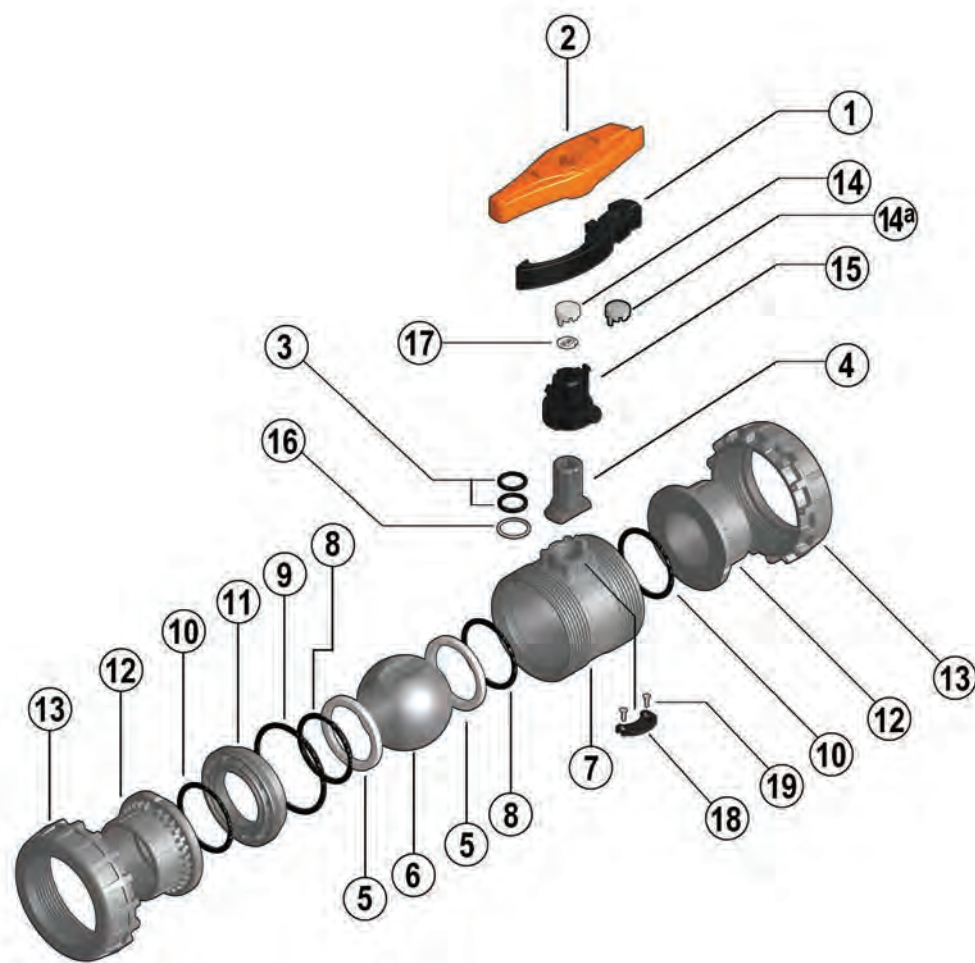
The holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

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 tag holder to align the profiles matching the tab position.
- 4) Re-insert the tag holder in the transparent plug so that the label is protected from the elements.
- 5) Apply the transparent plug on the central hub matching the two fittings (one narrow and one wide) with the relevant housings.

COMPONENTS

EXPLODED VIEW



- | | | |
|---|--|--|
| 1 Hooked Easyfit multifunctional handle insert (PP-GR - 1) | 8 Ball seat O-Ring (FKM, EPDM** - 2)* | 14 Transparent protection plug (PVC - 1) |
| 2 Easyfit multifunctional handle (HIPVC - 1) | 9 Radial seal O-Ring (FKM, EPDM** - 1)* | 14a Grey protection plug for VXE-PE version (PVC - 1) |
| 3 Stem O-rings (FKM, EPDM** - 2)* | 10 Socket seal O-Ring (EPDM-FKM - 2)* | 15 Central hub (HIPVC - 1) |
| 4 Stem (PVC-U - 1) | 11 Ball seat carrier (PVC-U - 1) | 16 Anti-friction disk (PTFE - 1)* |
| 5 Ball seat (PTFE, PE** - 2)* | 12 End connector (PVC-U - 2) | 17 Tag holder (PVC-U - 1) |
| 6 Ball (PVC-U - 1)* | 13 Union nut (PVC-U - 2) | 18 Locking device plate (HIPVC - 1) |
| 7 Body (PVC-U - 1) | | 19 Self-tapping screw (STAINLESS steel - 2) |

* Spare parts

** For the VXE-PE version: EPDM O-ring (3, 8, 9, 10), PE ball seat (5)

The component material and quantity supplied are indicated in the parentheses.

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 dismounting, hold the valve in a vertical position and open it 45° to drain any liquid that might remain.
- 5) Open the valve.
- 6) Remove the 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 operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 1



Fig. 2



Fig. 3



Fig. 4



INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
 - 2) 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)
 - 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 distance plates.
- 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 (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.

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

Fig.5



Fig.6

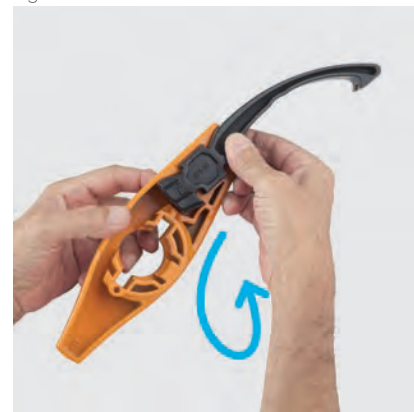


Fig.7



Fig.8



SSE DN 10÷50



EASYFIT TRUE UNION SPRING CHECK
VALVE



SSE DN 10÷50

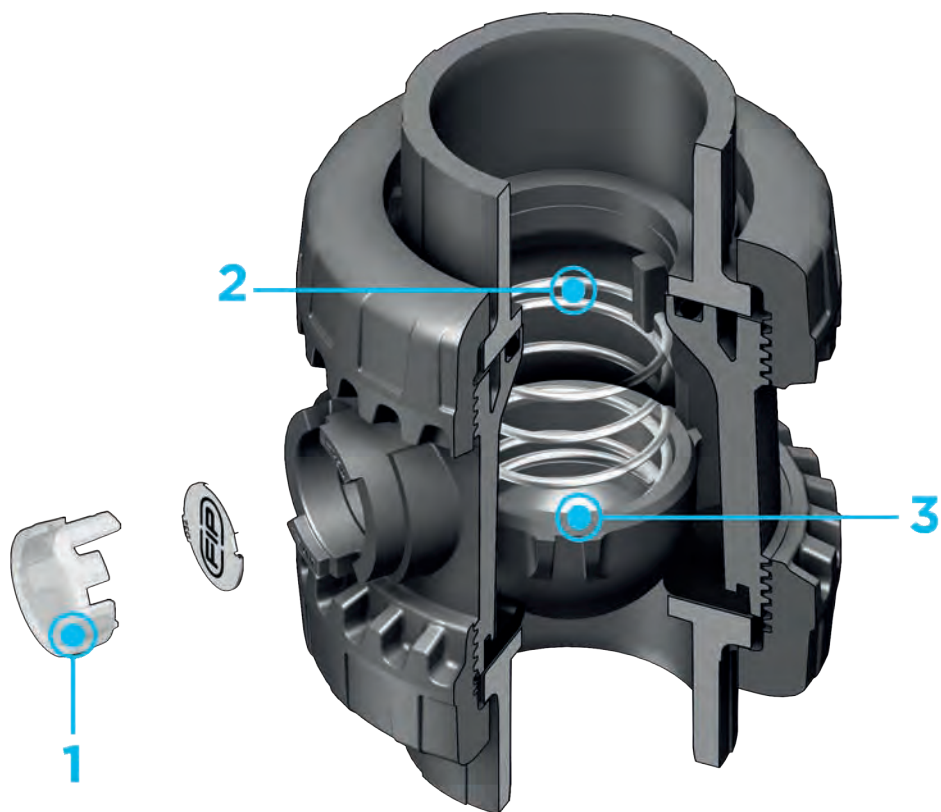
The SSE Easyfit check valve with spring loaded shutter developed with Giugiaro Design stands out for the innovative installation method that guarantees reliable service over time. This valve is also equipped with a customising Labelling System.



EASYFIT TRUE UNION SPRING 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 2014/68/EU (PED) compliant for 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 Easy-torque adjustment kit (available as accessories)
- Can be **installed** in either a **vertical** or **horizontal** position

Technical specifications	
Construction	Easyfit True Union spring check valve
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, EN 10226-1/2, ASTM F 437
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, FKM
Spring material (SSE)	Available in STAINLESS steel 316, Hastelloy C276, A316 PTFE encapsulated (DN 32, DN 40 and DN 50 only)



- 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 potential **lets you identify the valve on the system**

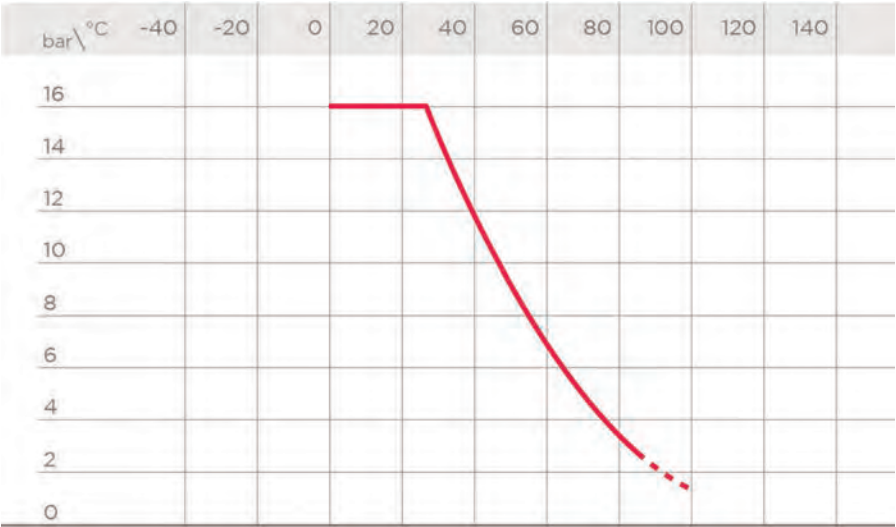
- 2** according to specific needs.
- 2** Ideal for horizontal installations: **perfect seal even with low back pressure. Silent** and durable even with strong vibrations and pulsating fluid

- 3** PVC-C shutter and springs available made of STAINLESS steel 316, Hastelloy C276, A316 PTFE encapsulated: maximum reliability in a wide field of applications from salt water to aggressive acids

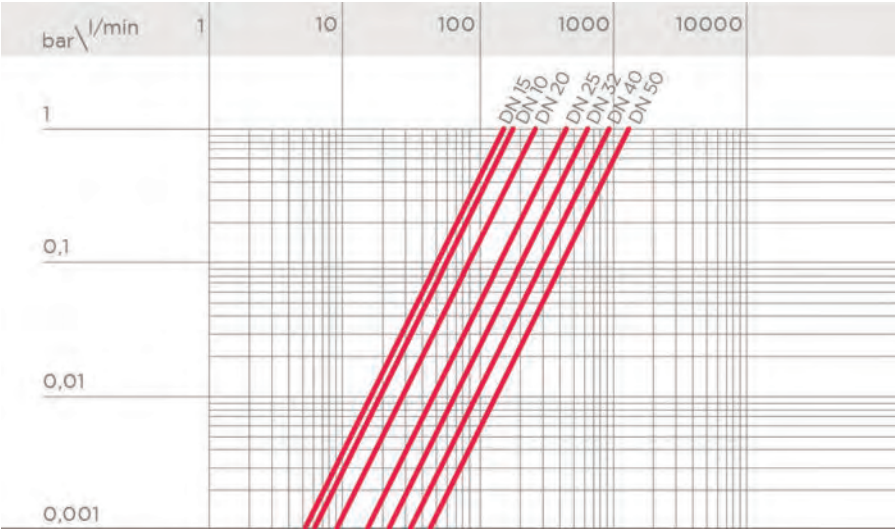
TECHNICAL DATA

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 PN pressure 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 Kv100 values shown in the table are calculated with the valve completely open.

DN	10	15	20	25	32	40	50
Kv100 l/min	172	152	258	433	643	928	1343

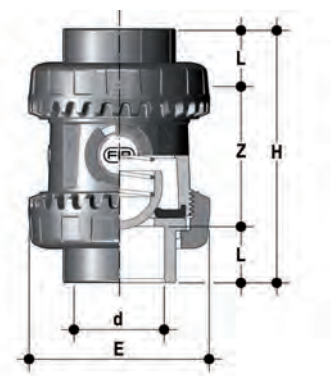
MINIMUM VALVE SEALING PRESSURE

The PVC-U SSE valve can only be used with liquids with specific weight under 1.37g/cm³.

DN	10	15	20	25	32	40	50
SSE (bar)	0,08	0,08	0,08	0,08	0,08	0,08	0,08

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.

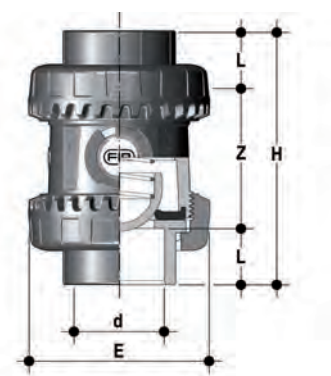
DIMENSIONS



SSEIC

True Union Spring Check Valve Easyfit with metric plain socket ends for solvent welding

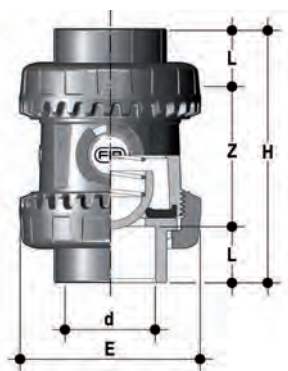
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
16	10	16	54	82	14	54	157	SSEIC016E	SSEIC016F
20	15	16	54	82	16	50	160	SSEIC020E	SSEIC020F
25	20	16	63	91	19	53	198	SSEIC025E	SSEIC025F
32	25	16	72	103	22	59	315	SSEIC032E	SSEIC032F
40	32	16	85	120	26	68	481	SSEIC040E	SSEIC040F
50	40	16	100	139	31	77	688	SSEIC050E	SSEIC050F
63	50	16	118	174	38	98	1090	SSEIC063E	SSEIC063F
16	10	16	54	82	14	54	157	SSEIC016E	SSEIC016F
20	15	16	54	82	16	50	160	SSEIC020E	SSEIC020F
25	20	16	63	91	19	53	198	SSEIC025E	SSEIC025F
32	25	16	72	103	22	59	315	SSEIC032E	SSEIC032F
40	32	16	85	120	26	68	481	SSEIC040E	SSEIC040F
50	40	16	100	139	31	77	688	SSEIC050E	SSEIC050F
63	50	16	118	174	38	98	1090	SSEIC063E	SSEIC063F



SSEIC - Hastelloy Spring

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

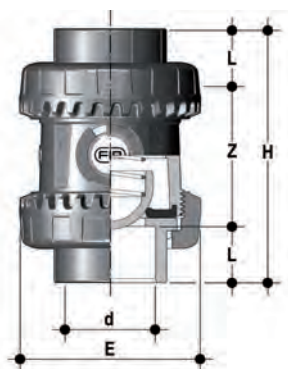
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
16	10	16	54	82	14	54	157	SSEIC016EH	SSEIC016FH
20	15	16	54	82	16	50	160	SSEIC020EH	SSEIC020FH
25	20	16	63	91	19	53	198	SSEIC025EH	SSEIC025FH
32	25	16	72	103	22	59	315	SSEIC032EH	SSEIC032FH



SSEIC - A316/PTFE encapsulated Spring

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

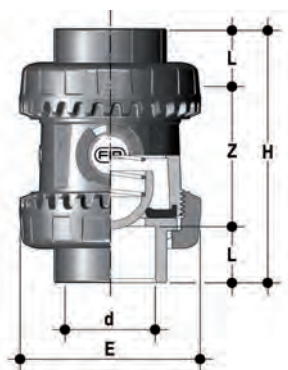
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
40	32	16	85	120	26	68	481	SSEIC040E0P	SSEIC040F0P
50	40	16	100	139	31	77	688	SSEIC050E0P	SSEIC050F0P
63	50	16	118	174	38	98	1090	SSEIC063E0P	SSEIC063F0P



SSEAC

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

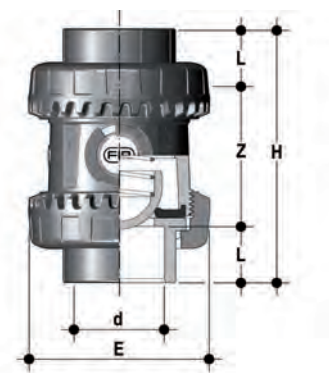
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	96	22,5	51	158	SSEAC012E	SSEAC012F
3/4"	20	16	63	105	25,5	54	200	SSEAC034E	SSEAC034F
1"	25	16	72	117	28,7	59,5	315	SSEAC100E	SSEAC100F
1" 1/4	32	16	85	136	32	72	505	SSEAC114E	SSEAC114F
1" 1/2	40	16	100	147	35	77	686	SSEAC112E	SSEAC112F
2"	50	16	118	174	38,2	97,6	1119	SSEAC200E	SSEAC200F



SSEAC - Hastelloy Spring

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

d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
1/2"	15	16	54	96	22,5	51	158	SSEAC012EH	SSEAC012FH
3/4"	20	16	63	105	25,5	54	200	SSEAC034EH	SSEAC034FH
1"	25	16	72	117	28,7	59,5	315	SSEAC100EH	SSEAC100FH

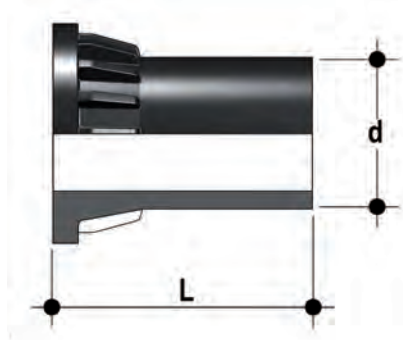


SSEAC - A316/PTFE encapsulated Spring

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

d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
1"1/4	32	16	54	96	22,5	51	158	SSEAC114E0P	SSEAC114F0P
1"1/2	40	16	63	105	25,5	54	200	SSEAC112E0P	SSEAC112F0P
2"	50	16	72	117	28,7	59,5	315	SSEAC200E0P	SSEAC200F0P

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
50	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



Easyfit handle

Easyfit multifunctional handle for union nut 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	Union nut tightening torque*	Seat carrier tightening torque*	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 and label printing set for Easyfit handle made up of precut adhesive sheets and software for guided label creation.

d	DN	SXE-SSE code
16	10	-
20	15	-
25	20	-
32	25	LSE020
40	32	LSE025
50	40	LSE032
63	50	LSE032

CUSTOMISATION

Fig. 1



Fig. 2



Fig. 3



SSE DN 10÷50 Easyfit valve is equipped with a customisable 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 (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 transparent plug from the seat on the valve body (fig. 1).
- 2) Extract the tag holder from the transparent plug (fig. 2).
- 3) Apply the adhesive label on the tag holder to align the profiles matching the tab position.
- 4) Re-insert the tag holder in the transparent plug so that the label is protected from the elements.
- 5) Replace the transparent plug in its seat on the valve body.

COMPONENTS

EXPLODED VIEW



- | | | |
|---|--|---|
| 1 Union nut (PVC-C - 2) | 5 Tag holder (PVC - 1) | 9 Shutter gasket (EPDM, FKM - 1) |
| 2 End connector (PVC-C - 2) | 6 Transparent protection plug (PVC - 1) | 10 Ball seat carrier (PVC-C - 1) |
| 3 Socket seal O-Ring (EPDM, FKM - 2) | 7 Shutter (PVC-C - 1) | 11 Radial seal O-Ring (EPDM,FKM - 1) |
| 4 Body (PVC-C - 1) | 8 Gland packing ring (PVC-C - 1) | 12 Spring (STAINLESS steel* - 1) |

The component material and quantity supplied are indicated in the parentheses.

DISASSEMBLY

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 dismantling, use the Easyfit multifunctional handle (fig. 4) or Easytorque kit (fig. 5-6).
- 3) Extract the ball seat O-ring (9).
- 4) Remove all internal components.

ASSEMBLY

- 1) Reconstruct the valve following the exploded view on the previous page.
- 2) 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 operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 4



Fig. 5



Fig. 6



Fig. 7



INSTALLATION

SSE valve can be installed both vertically (upward flow) or horizontally. 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 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 distance plates.

WARNINGS

Do not use compressed air or other gases to test thermoplastic lines.

Always avoid sudden closing manoeuvres and protect the valve against accidental manoeuvres

Leave a straight section of pipe of length equal to 5 times the nominal diameter before and after the valve

Fig. 8



Fig. 9



Fig. 10



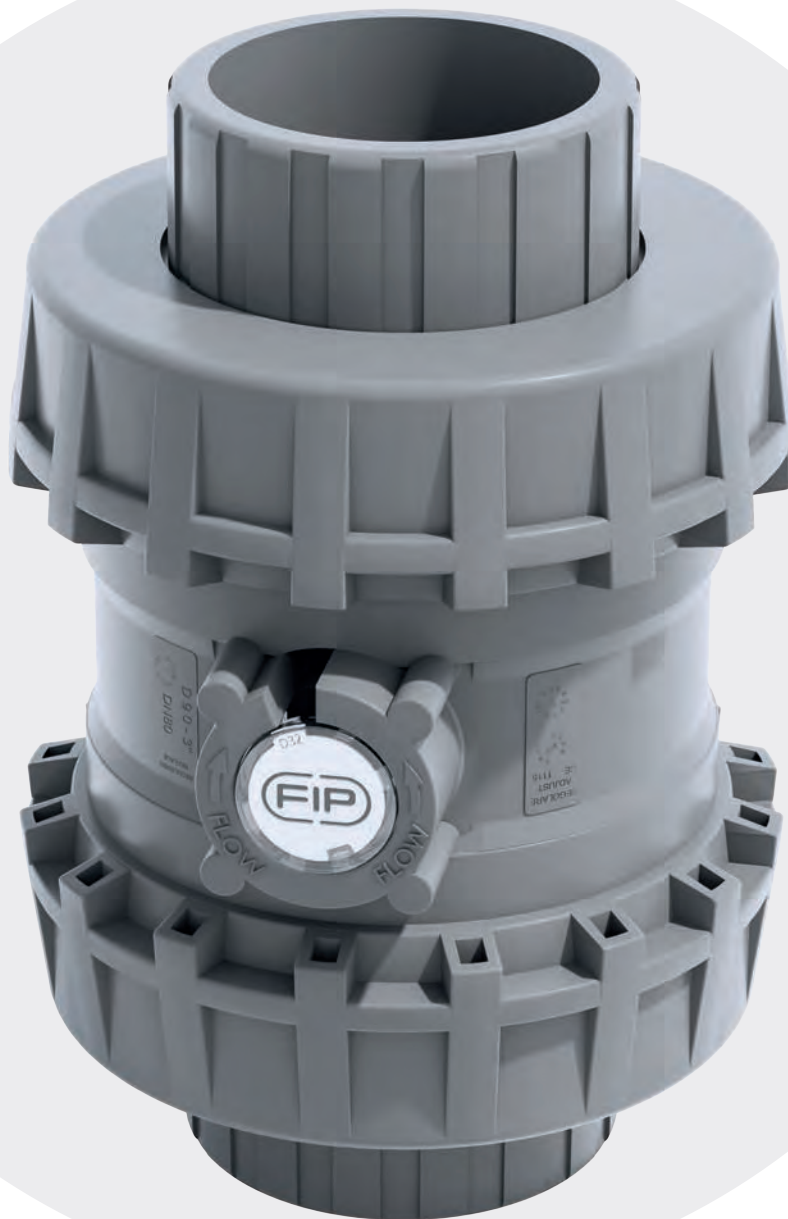
Fig. 11



SSE DN 65÷100



EASYFIT TRUE UNION SPRING CHECK
VALVE



SSE DN 65÷100

The SSE Easyfit check valve with spring loaded shutter 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.

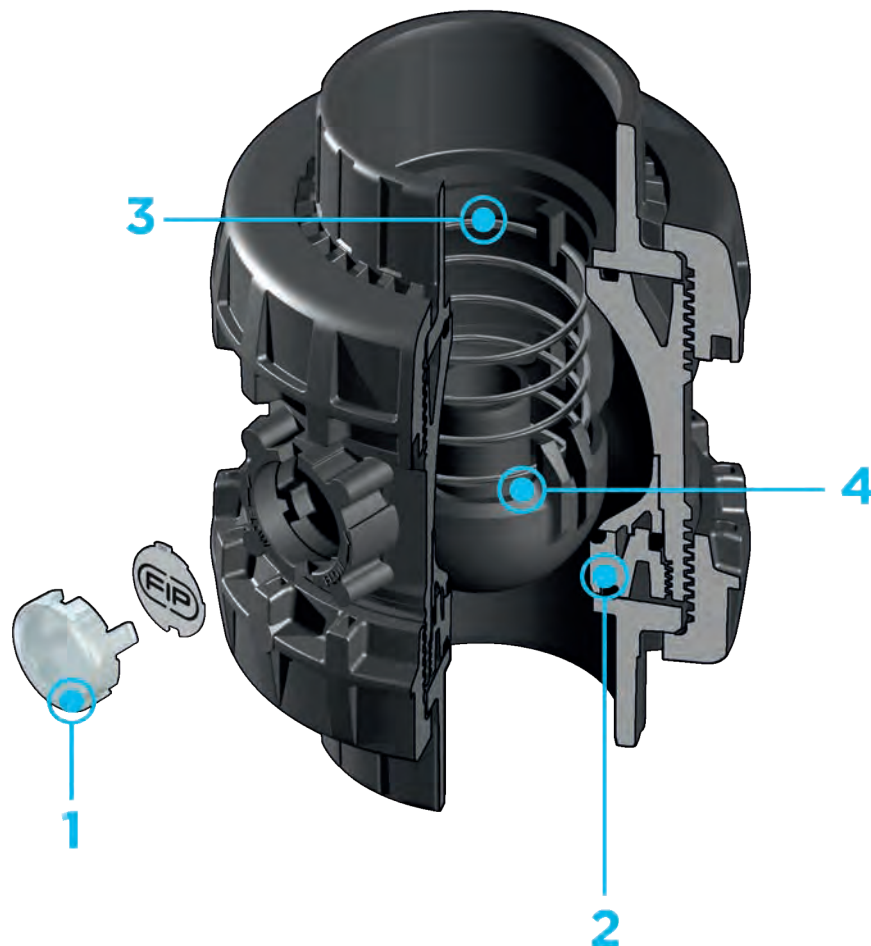


EASYFIT TRUE UNION SPRING CHECK VALVE

- 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 2014/68/EU (PED) compliant for 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** or **horizontal** position

Technical specifications

Construction	Easyfit True Union spring check valve
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, EN 10226-1/2, ASTM F 437
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, FKM (standard size O-Ring)
Spring material (SSE)	Available in STAINLESS steel 316, A316 PTFE encapsulated



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 potential **lets you identify the valve on the system** according to specific needs

2 Locked ball seat carrier safe dismantling for maintenance with the Easyfit multifunctional handle

3 Ideal for horizontal installations: perfect seal even with low back pressure. Silent and durable even with strong vibrations and

pulsating fluid

4 PVC-U shutter and springs available in STAINLESS Steel 316, A316 PTFE encapsulated: maximum reliability in a wide field of applications from salt water to aggressive acids

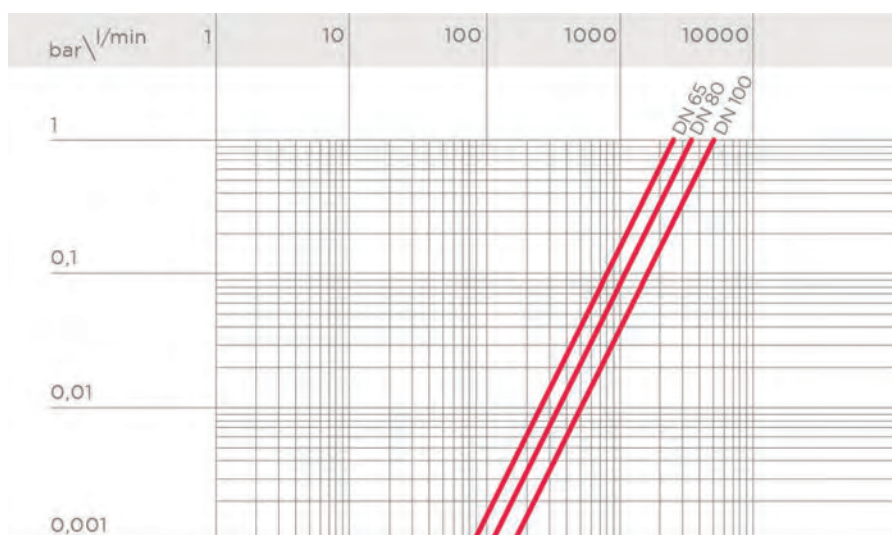
TECHNICAL DATA

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 PN pressure 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 Kv100 values shown in the table are calculated with the valve completely open.

DN	65	80	100
Kv100 l/min	2586	3444	5093

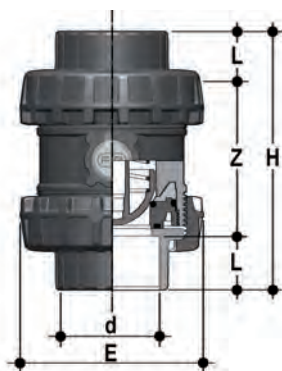
MINIMUM VALVE SEALING PRESSURE

The PVC-U SSE valve can only be used with liquids with specific weight under 1,37g/cm³.

DN	65	80	100
SSE (bar)	0,08	0,08	0,08

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.

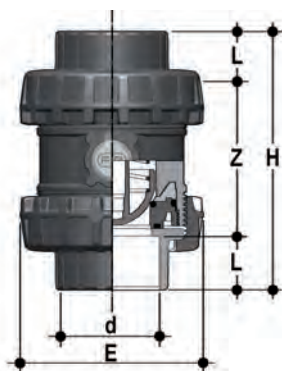
DIMENSIONS



SSEIC - A316 Spring

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

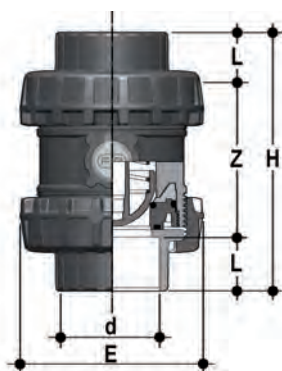
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
75	65	16	157	211	44	123	2652	SSEIC075E	SSEIC075F
90	80	16	174	248	51	146	3365	SSEIC090E	SSEIC090F
110	100	16	212	283	61	161	5898	SSEIC110E	SSEIC110F



SSEIC - A316/PTFE encapsulated Spring

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

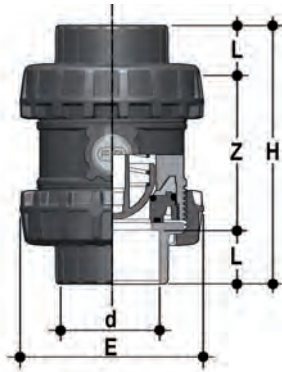
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
75	65	16	157	211	44	123	2652	SSEIC075E0P	SSEIC075F0P
90	80	16	174	248	51	146	3365	SSEIC090E0P	SSEIC090F0P
110	100	16	212	283	61	161	5898	SSEIC110E0P	SSEIC110F0P



SSEAC - A316 Spring

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

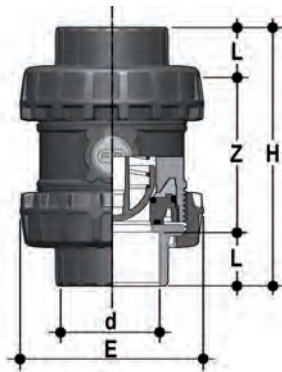
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
2" 1/2	65	16	157	211	44,5	122	2654	SSEAC212E	SSEAC212F
3"	80	16	174	248	48	152	3321	SSEAC300E	SSEAC300F
4"	100	16	212	283	57,5	168	5870	SSEAC400E	SSEAC400F



SSEAC - A316/PTFE encapsulated Spring

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

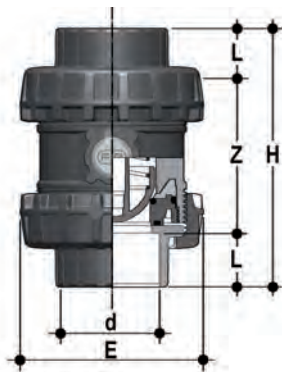
d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
2" 1/2	65	16	157	211	44,5	122	2654	SSEAC212E0P	SSEAC212F0P
3"	80	16	174	248	48	152	3321	SSEAC300E0P	SSEAC300F0P
4"	100	16	212	283	57,5	168	5870	SSEAC400E0P	SSEAC400F0P



SSEIC

True Union Check Valve Easyfit with metric plain socket ends for solvent welding

d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
75	65	16	157	211	44	123	2652	SSEIC075E	SSEIC075F
90	80	16	174	248	51	146	3365	SSEIC090E	SSEIC090F
110	100	16	212	283	61	161	5898	SSEIC110E	SSEIC110F

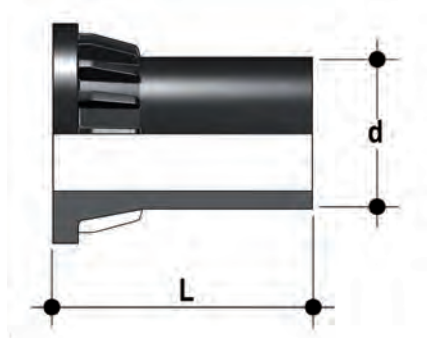


SSEAC

True Union Check Valve Easyfit with ASTM plain socket ends for solvent welding

d	DN	PN	E	H	L	Z	g	EPDM code	FKM code
2" 1/2	65	16	157	211	44,5	122	2654	SSEAC212E	SSEAC212F
3"	80	16	174	248	48	152	3321	SSEAC300E	SSEAC300F
4"	100	16	212	283	57,5	168	5870	SSEAC400E	SSEAC400F

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	10	118	11	CVDE11090VXE
110	100	10	127	11	CVDE11110VXE



EASYFIT HANDLE DN 65÷100

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

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



LSE

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

d	DN	SXE - SSE code
75	65	LSE063
90	80	LSE063
110	100	LSE063

CUSTOMISATION



SSE DN 65÷100 Easyfit valve is equipped with a customisable 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.

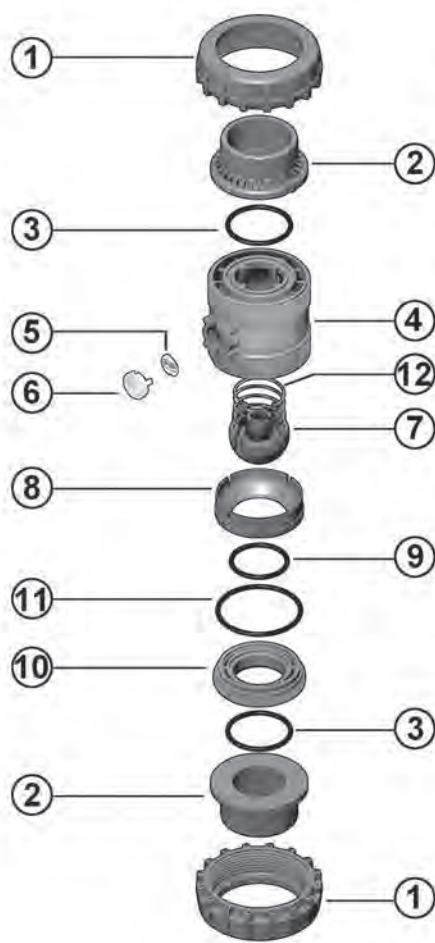
The holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

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 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) | 5 Tag holder (PVC - 1) | 9 Shutter gasket (EPDM, FKM - 1) |
| 2 End connector (PVC-C - 2) | 6 Transparent protection plug (PVC - 1) | 10 Shutter seat O-ring (PVC-C - 1) |
| 3 Socket seal O-Ring (EPDM, FKM - 2) | 7 Shutter (PVC-C - 1) | 11 Radial seal O-Ring (EPDM,FKM - 1) |
| 4 Body (PVC-C - 1) | 8 Gland packing ring (PVC-C - 1) | 12 Spring (STAINLESS steel* - 1) |

The component material and quantity supplied are indicated in the parentheses.

DISASSEMBLY

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

Fig. 1



Fig. 2



Fig. 3



Fig. 4



INSTALLATION

SSE valve can be installed both vertically (upward flow) and horizontally.

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 distance plates.

WARNINGS

Do not use compressed air or other gases to test thermoplastic lines.

Always avoid sudden closing manoeuvres and protect the valve against accidental manoeuvres.

Leave a straight section of pipe of length equal to 5 times the nominal diameter before and after the valve

Fig. 5



Fig. 6



Fig. 7

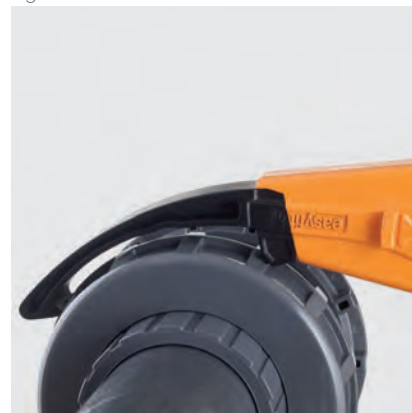


Fig. 8



FK DN 40÷300

BUTTERFLY VALVE



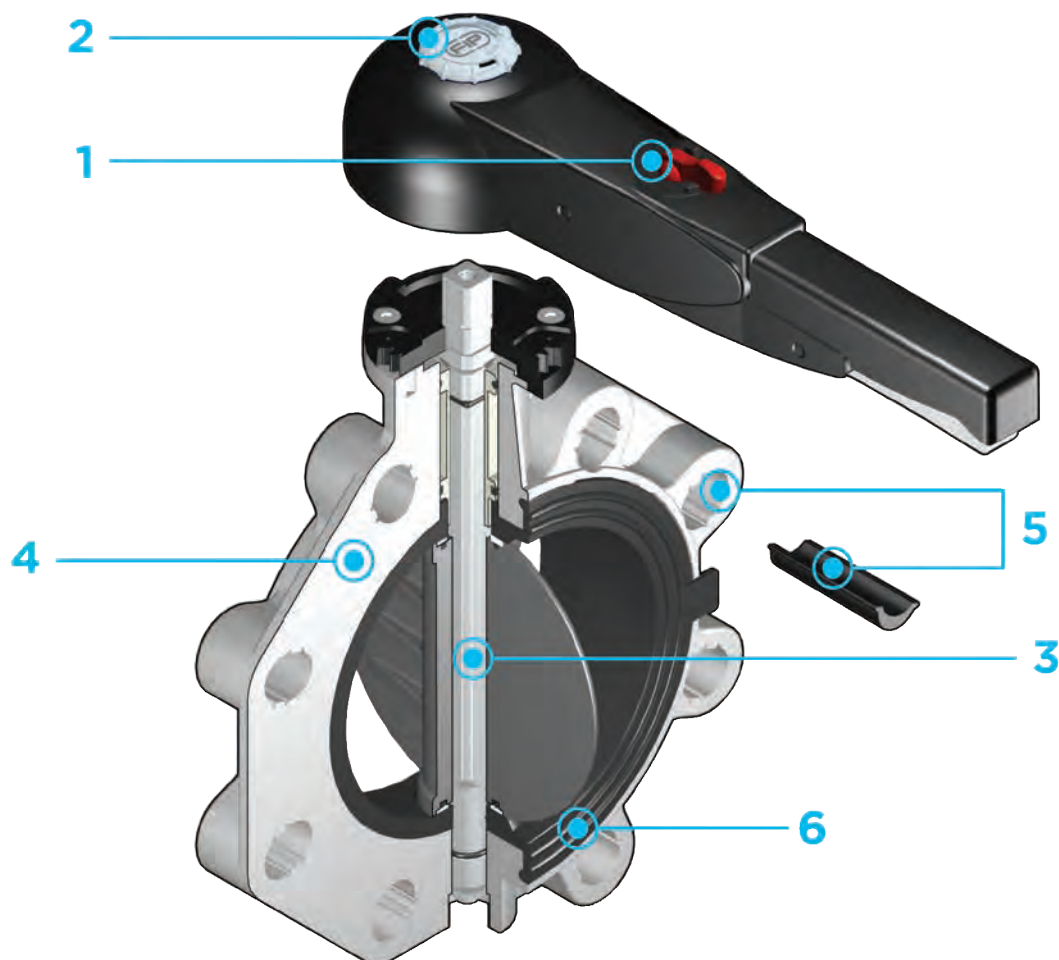
FK DN 40÷300

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 longterm reliability. This valve is also equipped with the customisable Labelling System.

BUTTERFLY VALVE

- Interchangeable Disk in PVC-C with through shaft, available in different thermo-plastic materials: PVC-U, PP-H, ABS, PVDF
- Overall dimensions of the valve in accordance with standard ISO 5752 and UNI EN 558 (DN 40÷65 and DN 250÷350 Long Series 16, DN 80÷200 Medium Series 25, DN 400 according to internal specifications)
- Can also be installed as an end line valve, bottom discharge valve or tank dump valve
- **Special Lug version** PN 10 fully drilled to EN 1092-1 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
- Possibility to have handle with integrated LSQT limit micro switch, even as a retrofit in existing installations

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 40÷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, ISO 9624, EN 1092-1, ANSI B16.5 Cl.150, JIS B2220
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 316
Seal material	Liner: EPDM, FKM
Control options	Hand lever operated (DN 40÷200), Gear Box, 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 and a customisable tag holder using the LSE set (available as an accessory). The **customisation** lets you **identify the**

valve on the system according to specific needs.

3 **STAINLESS steel square section stem** completely isolated from the fluid 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**.

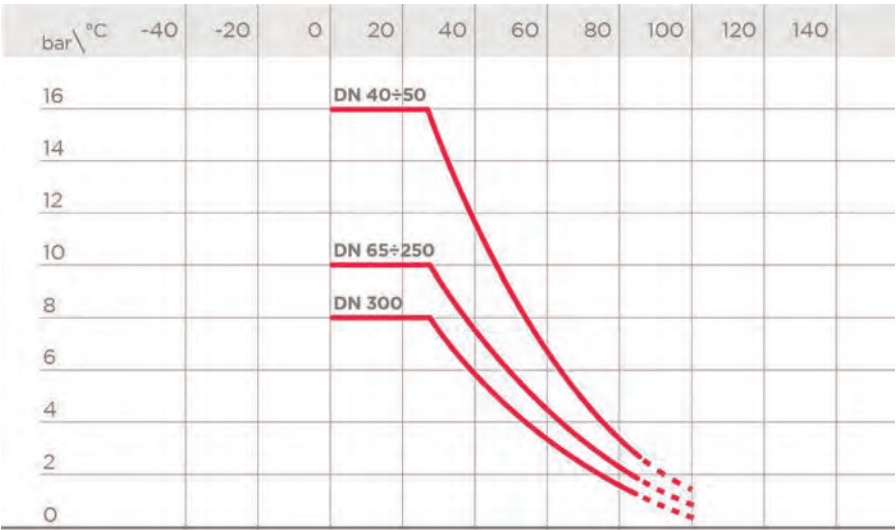
5 **Drilling pattern using oval slots** that allow coupling to flanges according to numerous international standards. The special **self-centring inserts in ABS** supplied for DN 40÷200 guarantee the **correct axial alignment** of the valve during installation. For DN 250÷400 valves, the drilling pattern for the selfcentring 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.

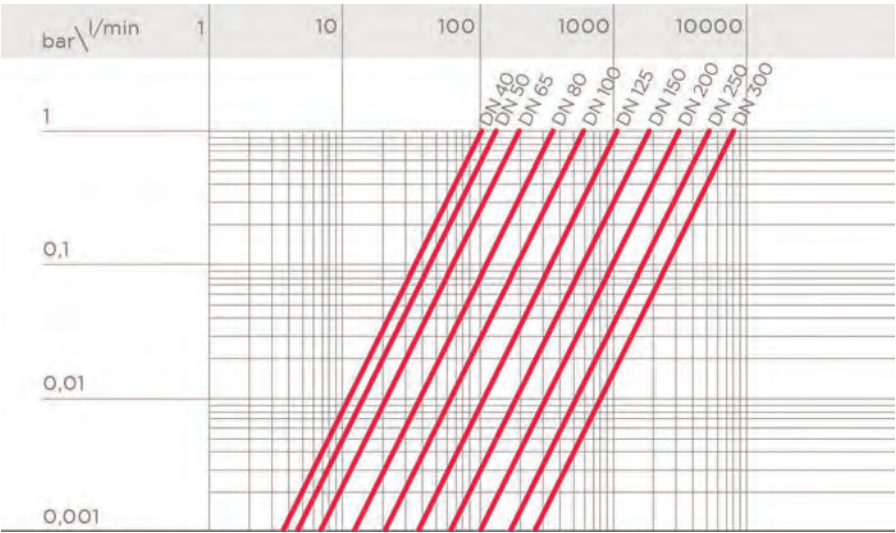
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and harmless fluids to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal PN pressure 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 Kv100 values shown in the table are calculated with the valve completely open.

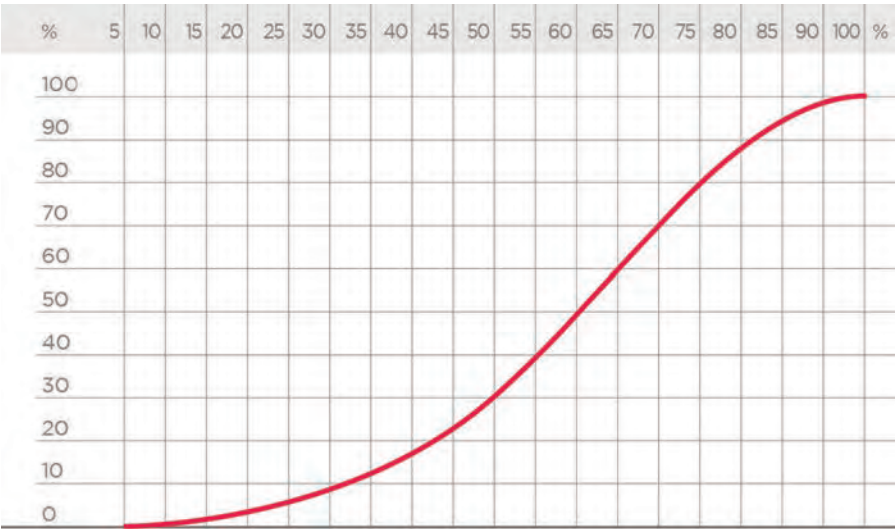
DN	40	50	65	80	100	125	150	200	250	300
Kv100 l/min	1000	1285	1700	3550	5900	9850	18700	30500	53200	81600

RELATIVE FLOW COEFFICIENT GRAPH

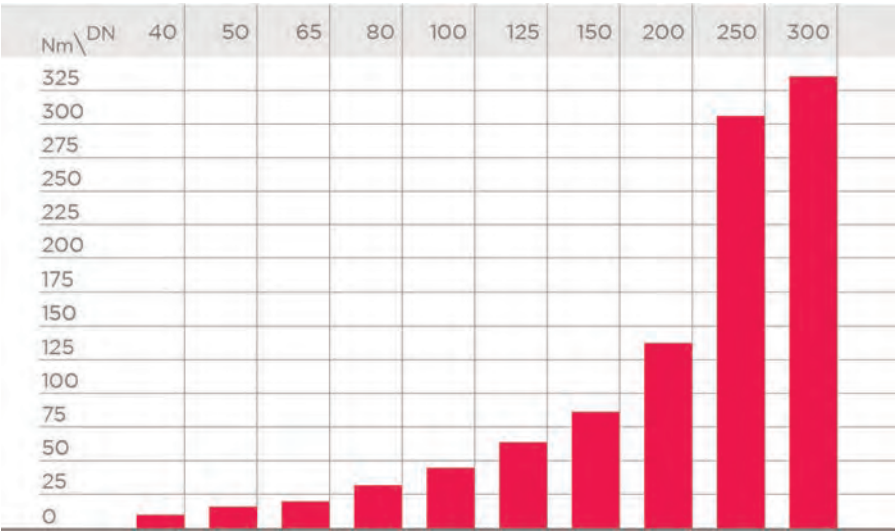
The relative flow coefficient is the flow rate through the valve as a function of the degree of valve opening.

Horizontal axis: Percentage opening of the disk

Vertical axis: Relative flow coefficient

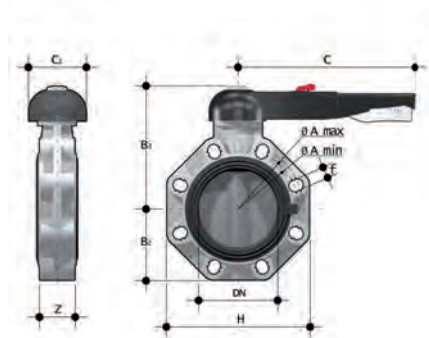


OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

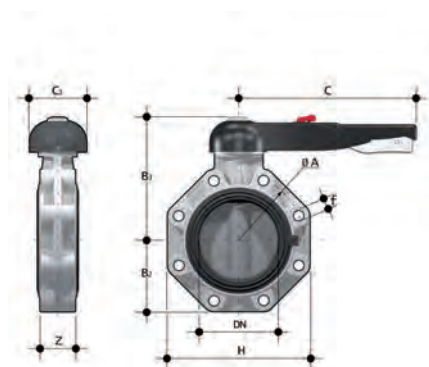
DIMENSIONS



FKOC/LM

Hand operated Butterfly valve

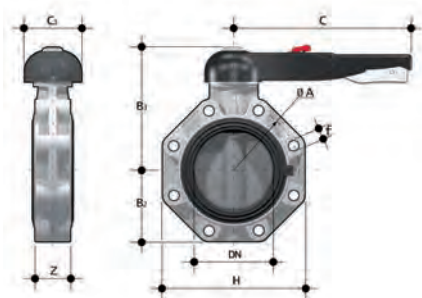
d-Size	DN	PN	A min	A max	B ₂	B ₃	C	C ₁	f	H	U	Z	g	EPDM code	FKM code
50 - 1 1/2"	40	16	99	109	60	137	175	100	19	132	4	33	918	FKOCLM050E	FKOCLM050F
63 - 2"	50	16	115	125,5	70	143	175	100	19	147	4	43	1081	FKOCLM063E	FKOCLM063F
75 - 2 1/2"	65	10	128	144	80	164	175	110	19	165	4	46	1254	FKOCLM075E	FKOCLM075F
90 - 3"	80	10	145	160	93	178	272	110	19	185	12	49	1987	FKOCLM090E	FKOCLM090F
110 - 4"	100	10	165	190	107	192	272	110	19	211	8	56	2405	FKOCLM110E	FKOCLM110F
140 - 5"	125	10	204	215	120	212	330	110	23	240	8	64	3347	FKOCLM140E	FKOCLM140F
160 - 6"	150	10	230	242	134	225	330	110	23	268	8	70	4212	FKOCLM160E	FKOCLM160F
225 - 8"	200	10	280	298	161	272	420	122	23	323	8	71	7250	FKOCLM225E	FKOCLM225F



FKOC/LM LUG ISO-DIN

Hand operated Butterfly valve, version Lug ISO-DIN

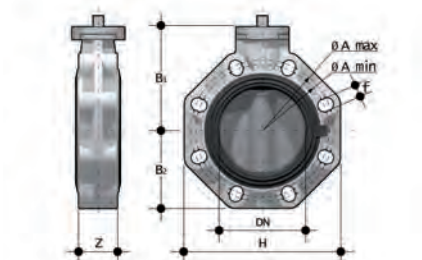
d	DN	PN	øA	B ₂	B ₃	C	C ₁	f	H	U	Z	g	EPDM code	FKM code
50	40	10	110	60	137	175	100	M16	132	4	33	1220	FKOLCLM050E	FKOLCLM050F
63	50	10	125	70	143	175	100	M16	147	4	43	1490	FKOLCLM063E	FKOLCLM063F
75	65	10	145	80	164	175	110	M16	165	4	46	1554	FKOLCLM075E	FKOLCLM075F
90	80	10	160	93	178	272	100	M16	185	12	49	2342	FKOLCLM090E	FKOLCLM090F
110	100	10	180	107	192	272	110	M16	211	8	56	3257	FKOLCLM110E	FKOLCLM110F
140	125	10	210	120	212	330	110	M16	240	8	64	4345	FKOLCLM140E	FKOLCLM140F
160	150	10	240	134	225	330	110	M20	268	8	70	5820	FKOLCLM160E	FKOLCLM160F
225	200	10	295	161	272	420	122	M20	323	8	71	8896	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	FKM code
1 1/2"	40	10	98,4	106	60	175	100	1/2"	132	4	33	1200	FKOALCLM112E	FKOALCLM112F
2"	50	10	126,6	112	70	175	100	5/8"	147	4	43	1480	FKOALCLM200E	FKOALCLM200F
2 1/2"	65	10	139,7	119	80	175	110	5/8"	165	4	46	1554	FKOALCLM212E	FKOALCLM212F
3"	80	10	152,4	133	93	272	110	5/8"	185	12	49	2342	FKOALCLM300E	FKOALCLM300F
4"	100	10	190,5	147	107	272	110	5/8"	211	8	56	3257	FKOALCLM400E	FKOALCLM400F
5"	125	10	215,9	167	120	330	110	3/4"	240	8	64	4345	FKOALCLM500E	FKOALCLM500F
6"	150	10	241,3	180	134	330	110	3/4"	268	8	70	5820	FKOALCLM600E	FKOALCLM600F
8"	200	10	298,4	227	161	420	122	3/4"	323	8	71	8896	FKOALCLM800E	FKOALCLM800F



FKOC/FM

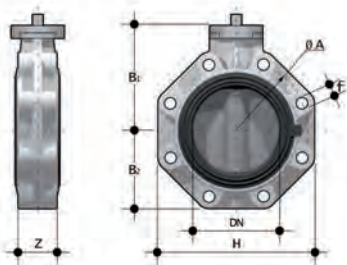
Butterfly valve with bare shaft

d - Size	DN	PN	A min	A max	øA	B ₁	B ₂	f	H	U	Z	g	EPDM code	FKM code
50 - 1 1/2"	40	16	99	109	-	106	60	19	132	4	33	597	FKOCFM050E	FKOCFM050F
63 - 2"	50	16	115	125,5	-	112	70	19	147	4	43	760	FKOCFM063E	FKOCFM063F
75 - 2 1/2"	65	10	128	144	-	119	80	19	165	4	46	933	FKOCFM075E	FKOCFM075F
90 - 3"	80	10	145	160	-	133	93	19	185	12	49	1388	FKOCFM090E	FKOCFM090F
110 - 4"	100	10	165	190	-	147	107	19	211	8	56	1806	FKOCFM110E	FKOCFM110F
140 - 5"	125	10	204	215	-	167	120	23	240	8	64	2659	FKOCFM140E	FKOCFM140F
160 - 6"	150	10	230	242	-	180	134	23	268	8	70	3524	FKOCFM160E	FKOCFM160F
225 - 8"	200	10	280	298	-	227	161	23	323	8	71	6284	FKOCFM225E	FKOCFM225F
280	*250	10	-	-	350	248	210	22	405	12	114	13654	FKOCFM280E	FKOCFM280F
315	*300	8	-	-	400	305	245	29	475	12	114	17931	FKOCFM315E	FKOCFM315F
10"	**250	10	-	-	350	248	210	25,4	405	12	114	13654	FKOACFM810E	FKOACFM810F
12"	**300	8	-	-	400	305	245	25,4	475	12	114	17931	FKOACFM812E	FKOACFM812F

FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250)

*ISO-DIN

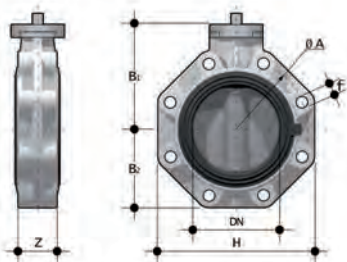
**ANSI B.16.5 cl.150



FKOC/FM LUG ISO-DIN

Butterfly valve with bare shaft, version Lug ISO-DIN

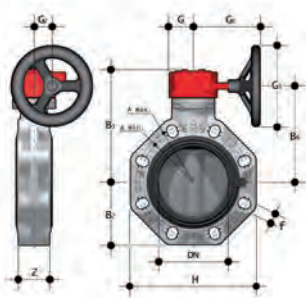
d	DN	PN	ϕA	B_1	B_2	f	H	U	Z	g	EPDM code	FKM code
50	40	10	110	106	60	M16	132	4	33	890	FKOLCFM050E	FKOLCFM050F
63	50	10	125	112	70	M16	147	4	43	1160	FKOLCFM063E	FKOLCFM063F
75	65	10	145	119	80	M16	165	4	46	1233	FKOLCFM075E	FKOLCFM075F
90	80	10	160	133	93	M16	185	12	49	1743	FKOLCFM090E	FKOLCFM090F
110	100	10	180	147	107	M16	211	8	56	2658	FKOLCFM110E	FKOLCFM110F
140	125	10	210	167	120	M16	240	8	64	3657	FKOLCFM140E	FKOLCFM140F
160	150	10	240	180	134	M20	268	8	70	5132	FKOLCFM160E	FKOLCFM160F
225	200	10	295	227	161	M20	323	8	71	7930	FKOLCFM225E	FKOLCFM225F
315	300	6	400	305	245	M20	475	12	114	23800	FKOLCFM315E	FKOLCFM315F



FKOC/FM LUG ANSI

Butterfly valve with bare shaft, version Lug ANSI

d	DN	PN	ϕA	B_1	B_2	f	H	U	Z	g	EPDM code	FKM code
1 1/2"	40	10	98,4	106	60	1/2"	132	4	33	890	FKOALCFM112E	FKOALCFM112F
2"	50	10	120,6	112	70	5/8"	147	4	43	1160	FKOALCFM200E	FKOALCFM200F
2 1/2"	65	10	139,7	119	80	5/8"	165	4	46	1233	FKOALCFM212E	FKOALCFM212F
3"	80	10	152,4	133	93	5/8"	185	12	49	1743	FKOALCFM300E	FKOALCFM300F
4"	100	10	190,5	147	107	5/8"	211	8	56	2658	FKOALCFM400E	FKOALCFM400F
5"	125	10	215,9	167	120	3/4"	240	8	64	3657	FKOALCFM500E	FKOALCFM500F
6"	150	10	241,3	180	134	3/4"	268	8	70	5132	FKOALCFM600E	FKOALCFM600F
8"	200	10	298,4	227	161	3/4"	323	8	71	7930	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



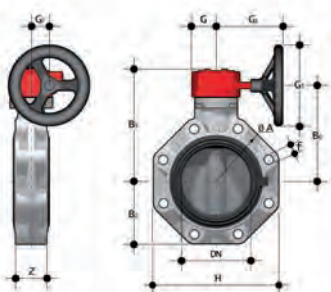
FKOC/RM

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	f	H	U	Z	g	EPDM code	FKM code
75 - 2"1/2	65	10	128	144	-	80	174	146	48	135	39	125	19	165	4	46	2608	FKOCRM075E	FKOCRM075F
90 - 3"	80	10	145	160	-	93	188	160	48	135	39	125	19	185	12	49	3063	FKOCRM090E	FKOCRM090F
110 - 4"	100	10	165	190	-	107	202	174	48	135	39	125	19	211	8	56	3481	FKOCRM110E	FKOCRM110F
140 - 5"	125	10	204	215	-	120	222	194	48	144	39	200	23	240	8	64	4434	FKOCRM140E	FKOCRM140F
160 - 6"	150	10	230	242	-	134	235	207	48	144	39	200	23	268	8	70	5299	FKOCRM160E	FKOCRM160F
225	200	10	280	298	-	161	287	256	65	204	60	200	23	323	8	71	8945	FKOCRM225E	FKOCRM225F
250	*250	10	335	362	350	210	317	281	88	236	76	250	22	405	8	114	8945	FKOCRM280E	FKOCRM280F
280	*250	10	335	362	350	210	317	281	88	236	76	250	22	405	8	114	18727	FKOCRM280E	FKOCRM280F
315	*300	8	390	432	400	245	374	338	88	236	76	250	29	475	12	114	23004	FKOCRM315E	FKOCRM315F
10"	**250	10	-	362	350	210	317	281	88	236	-	250	25,4	405	12	114	18727	FKOACRM810E	FKOACRM810F
12"	**300	8	-	431,8	450	245	374	338	88	236	-	250	25,4	475	12	114	23004	FKOACRM812E	FKOACRM812F

FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250)
*ISO-DIN

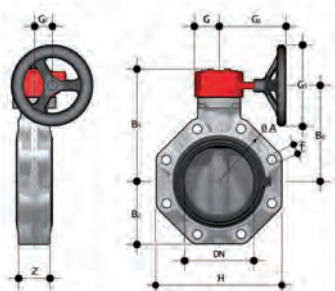
**ANSI B.16.5 cl.150



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	FKM code
50	40	10	110	60	161	133	M16	48	135	39	125	132	4	33	2420	FKOLCRM050E	FKOLCRM050F
63	50	10	125	70	167	139	M16	48	135	39	125	147	4	43	2690	FKOLCRM063E	FKOLCRM063F
75	65	10	145	80	174	146	M16	48	135	39	125	165	4	46	2908	FKOLCRM075E	FKOLCRM075F
90	80	10	160	93	188	160	M16	48	135	39	125	185	12	49	3418	FKOLCRM090E	FKOLCRM090F
110	100	10	180	107	202	174	M16	48	135	39	125	211	8	56	4333	FKOLCRM110E	FKOLCRM110F
140	125	10	210	120	222	194	M16	48	144	39	200	240	8	64	5432	FKOLCRM140E	FKOLCRM140F
160	150	10	240	134	235	207	M20	48	144	39	200	268	8	70	6907	FKOLCRM160E	FKOLCRM160F
225	200	10	295	161	287	256	M20	65	204	60	200	323	8	71	10591	FKOLCRM225E	FKOLCRM225F
315	300	6	400	245	374	338	M20	88	236	76	250	475	12	114	30400	FKOLCRM315E	FKOLCRM315F

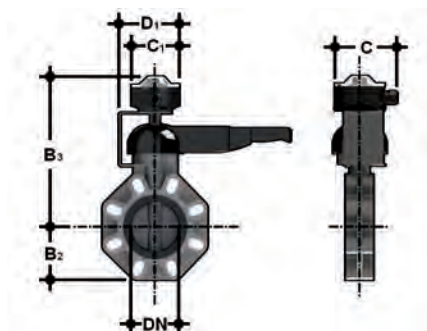


FKOC/RM LUG ANSI

Gearbox operated Butterfly valve, version Lug ANSI

d	DN	PN	øA	B ₁	B ₂	B ₃	f	G	G ₁	G ₂	G ₃	H	U	Z	g	EPDM code	FKM code
1 1/2"	40	10	98,4	60	161	133	1/2"	48	135	39	125	132	4	33	2420	FKOALCRM112E	FKOALCRM112F
2"	50	10	125	70	167	139	5/8"	48	135	39	125	147	4	43	2690	FKOALCRM200E	FKOALCRM200F
2 1/2"	65	10	139,7	80	174	146	5/8"	48	135	39	125	165	4	46	2908	FKOALCRM212E	FKOALCRM212F
3"	80	10	152,4	93	188	160	5/8"	48	135	39	125	185	12	49	3418	FKOALCRM300E	FKOALCRM300F
4"	100	10	190,5	107	202	174	5/8"	48	135	39	125	211	8	56	4333	FKOALCRM400E	FKOALCRM400F
5"	125	10	215,9	120	222	194	3/4"	48	144	39	200	240	8	64	5432	FKOALCRM500E	FKOALCRM500F
6"	150	10	241,3	134	235	207	3/4"	48	144	39	200	268	8	70	6907	FKOALCRM600E	FKOALCRM600F
8"	200	10	298,4	161	287	256	3/4"	65	204	60	200	323	8	71	10591	FKOALCRM800E	FKOALCRM800F
10"	250	6	362	210	317	281	7/8"	88	236	76	250	405	12	114	23400	FKOALCRM810E	FKOALCRM810F
12"	300	6	431,8	245	374	338	7/8"	88	236	76	250	475	12	114	30400	FKOALCRM812E	FKOALCRM812F

ACCESSORIES



LS Quick Kit

The Limit Switch Quick Kit allows the fast and secure installation of the FIP LSQT module to the FK/LM valves. The kit can be assembled on the valve even if already installed on the system. For technical data of the LSQT box see FIP actuated valves catalogue.

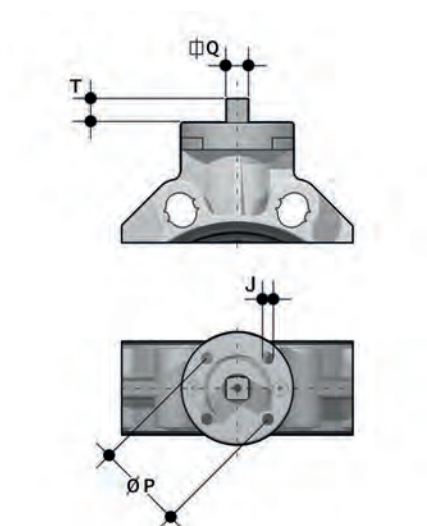
DN	B ₂	B ₃	C	C ₁	D ₁	Code
40	60	260,5	126,9	103	123,5	LSQKITFK5063
50	70	266,5	126,9	103	123,5	LSQKITFK5063
65	80	273,5	126,9	103	123,5	LSQKIT75160
80	93	287,5	126,9	103	123,5	LSQKIT75160
100	107	301,5	126,9	103	123,5	LSQKIT75160
125	120	321,5	126,9	103	123,5	LSQKIT75160
150	134	334,5	126,9	103	123,5	LSQKIT75160
200	161	385	126,9	103	129,8	LSQKIT225



LSE

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

DN	FE* - FK* 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.

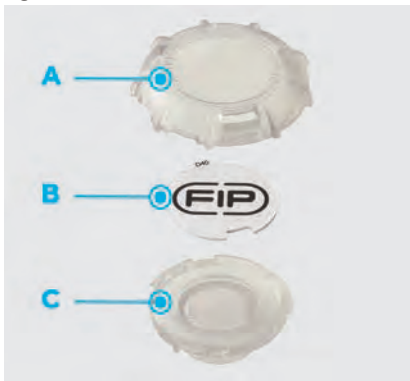
DN	J	P	Ø	T	Q
40	7	50	F 05	12	11
50	7	50	F 05	12	11
65	7/9	50/70	F 05/F 07	12	11
80	9	70	F 07	16	14
100	9	70	F 07	16	14
125	9	70	F 07	19	17
150	9	70	F 07	19	17
200	11	102	F 10	24	22
200	11	102	F 10	24	22
250	11/13/17	102/125/140	F 10/ F 12/ F 14	29	27
300	11/13/17	102/125/140	F 10/ F 12/ F 14	29	27

CUSTOMISATION

Fig. 1



Fig. 2



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).

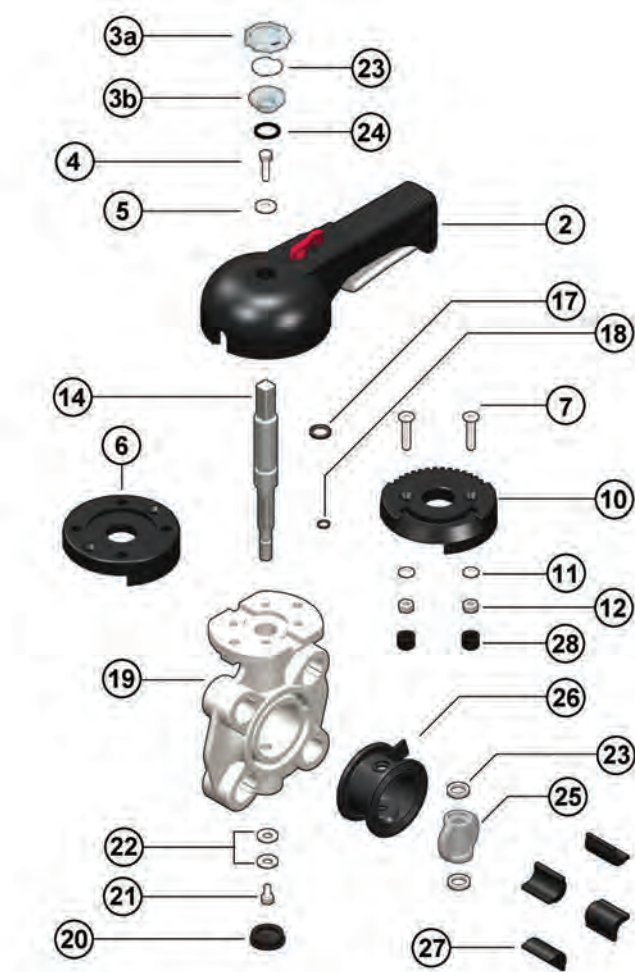
The tag holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

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.

COMPONENTS

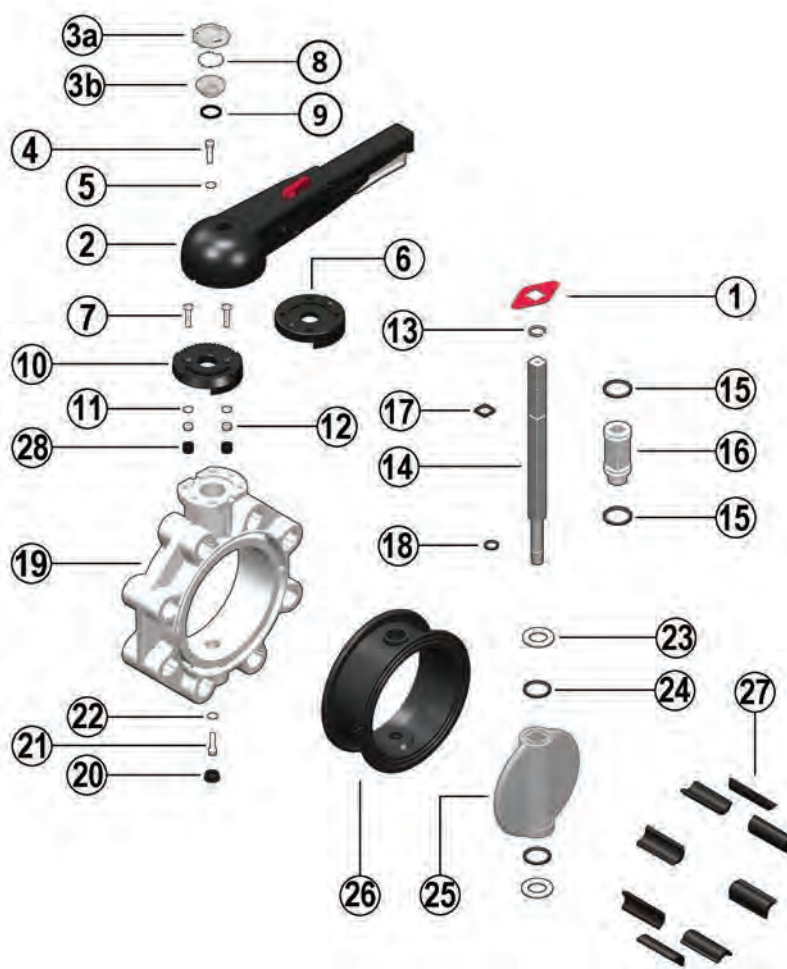
EXPLODED VIEW DN 40÷65



- | | | |
|---|--|---|
| 1 Position indicator (PA - 1) | 8 Tag holder (PVC-U - 1) | 20 Protection plug (PE - 1) |
| 2 Handle (HIPVC - 1) | 9 O-Ring (NBR - 1) | 21 Screw (STAINLESS steel - 1) |
| 3a/b Transparent protection plug (PVC - 1) | 10 Plate (PP-GR - 1) | 22 Washer (STAINLESS steel - 2) |
| 4 Fastening screw (STAINLESS steel - 1) | 11 Washer (STAINLESS steel - 2) | 23 Anti-friction ring (PTFE - 2) |
| 5 Washer (STAINLESS steel - 1) | 12 Nut (STAINLESS steel - 2) | 25 Disk (PVC-C - 1) |
| 6 Flange (PP-GR - 1) | 14 Stem (STAINLESS steel 316 - 1) | 26 Liner (EPDM or FKM - 1) |
| 7 Screw (STAINLESS steel - 2) | 17 Stem O-Ring (EPDM or FKM - 1) | 27 Inserts (ABS - 4-8) |
| | 18 Stem O-Ring (EPDM or FKM - 1) | 28 Plug (PE - 2) |
| | 19 Body (PP-GR - 1) | |

The component material and quantity supplied are indicated in the parentheses.

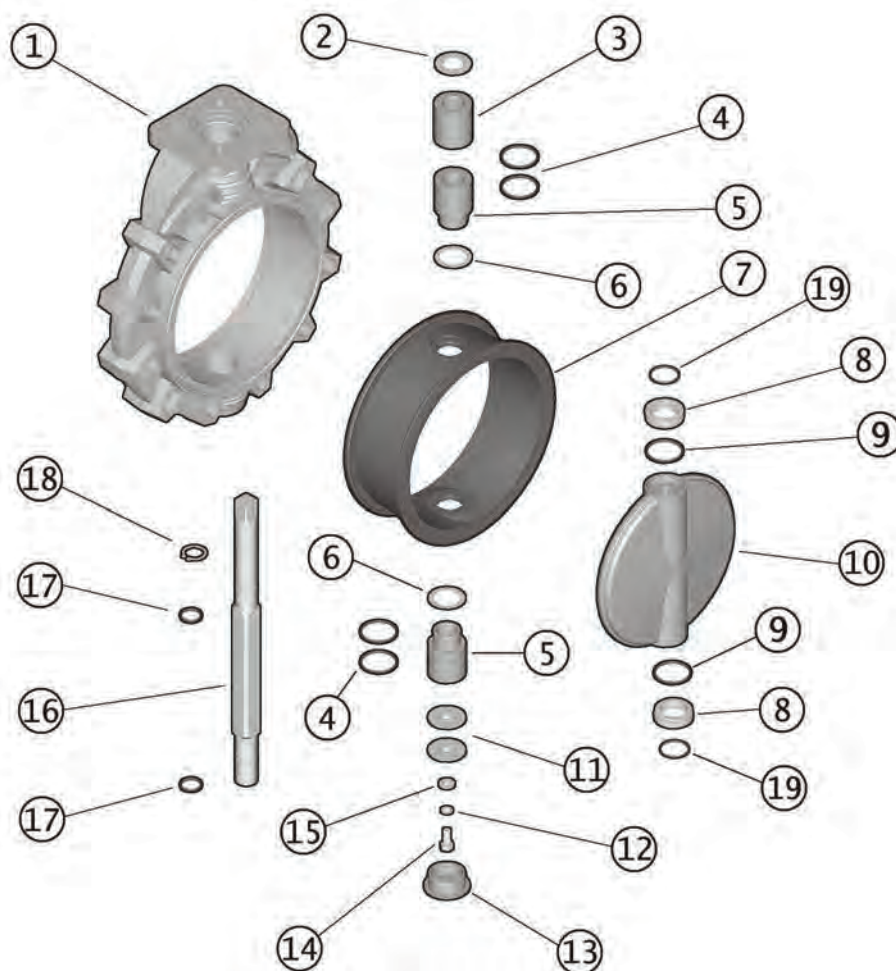
EXPLODED VIEW DN 80÷200



- | | | |
|---|---|---|
| 1 Position indicator (PA - 1) | 9 O-Ring (NBR - 1) | 19 Body (PP-GR - 1) |
| 2 Handle (HIPVC - 1) | 10 Plate (PP-GR - 1) | 20 Protection plug (PE - 1) |
| 3a-b Transparent protection plug (PVC - 1) | 11 Washer (STAINLESS steel - 2) | 21 Screw (STAINLESS steel - 1) |
| 4 Fastening screw (STAINLESS steel - 1) | 12 Nut (STAINLESS steel - 2) | 22 Washer (STAINLESS steel - 2) |
| 5 Washer (STAINLESS steel - 1) | 13 Seeger ring (STAINLESS steel - 1) | 23 Anti-friction ring (PTFE - 2) |
| 6 Flange (PP-GR - 1) | 14 Stem (STAINLESS steel 316 - 1) | 24 Disk O-Ring (EPDM or FKM - 2) |
| 7 Screw (STAINLESS steel - 2) | 15 Bush O-Ring (EPDM or FKM - 2) | 25 Disk (PVC-C- 1) |
| 8 Tag holder (PVC-U - 1) | 16 Bush (Nylon - 1) | 26 Liner (EPDM o FKM - 1) |
| | 17 Stem O-Ring (EPDM or FKM - 1) | 27 Inserts (ABS - 4-8) |
| | 18 Stem O-Ring (EPDM or FKM - 1) | 28 Plug (PE - 2) |

The component material and quantity supplied are indicated in the parentheses.

EXPLODED VIEW DN 250÷300



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

The component material and quantity supplied are indicated in the parentheses.

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 antifriction rings (8).
- 5) Position the washers (8) in the housings 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).



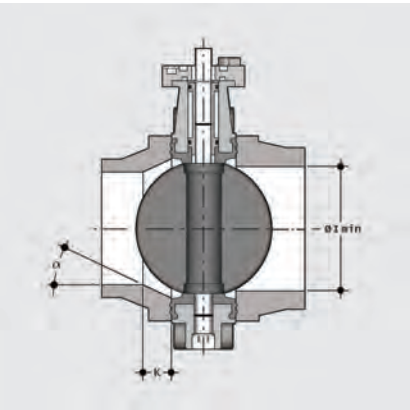
Note: during assembly operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 3



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

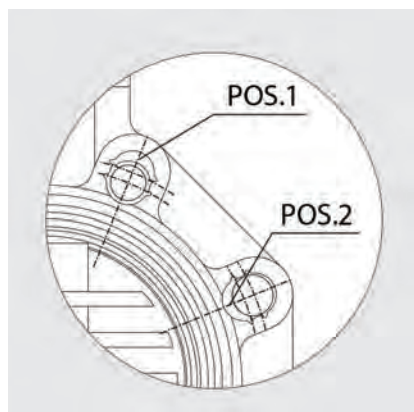
PP-PE STUBS

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

	d	DN	50 40	63 50	75 65	90 80	110 100	125 100	140 125	160 150	180 150	200 200	225 200	250 250	280 250	315 300
FK	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

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	EN1092-1	EN1092-1, EN ISO15493	BS 10 table A-D-E Spec D-E	ANSI B16.5 cl.150*	JIS B 2220 K5
40	Pos.1	Pos. 2	Pos. 1	Pos. 1	Pos. 1
50	Pos.1	Pos. 2	Pos. 1	-	N/A
65	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
80	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
100	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
125	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
150	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1
200	Pos.1	PN 10 Pos. 2	Pos. 1	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

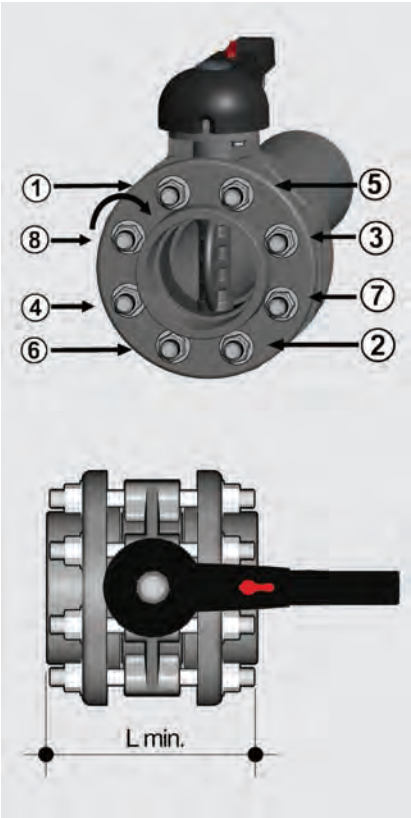
leaks. Where possible comply with the following requirements:

- 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.

JIS FLANGED OPTIONS

FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250) and in JIS K5 in the size of 10" (DN250) and 12" (DN300)

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	M16 x 150	9
50	M16 x 150	12
65	M16 x 170	15
80	M16 x 180	18
100	M16 x 180	20
125	M16 x 210	35
150	M20 x 240	40
200	M20 x 260	55
250	M20 x 310	70
300	M20 x 340	70

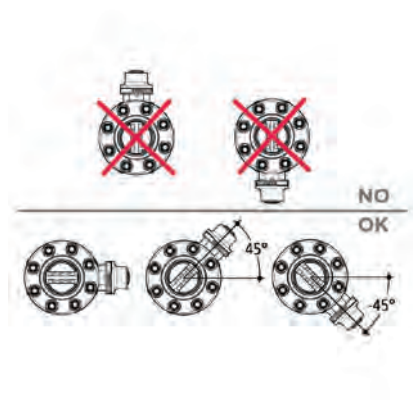
* Tightening torques for nuts and bolts on couplings with backing rings.
Values required to obtain the hydraulic test seal (1.5xPN at 20°C) (new or lubricated nuts and bolts)

HANDLE LOCK



Thanks to the multifunctional handle and the red manoeuvre button on the lever, you can perform a 0°-90° operation and a graduated operation by means of the 10 intermediate positions and a stop lock: the handle can be locked in each of the 10 positions by simply pressing the Free-lock button. A lock can also be installed on the handle to protect the system against tampering. The valve is two-way and can be installed in any position. It can also be installed at end line or tank.

WARNINGS



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

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

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

DK DN 15÷65



DIALOCK® 2-WAY DIAPHRAGM VALVE



DK DN 15÷65

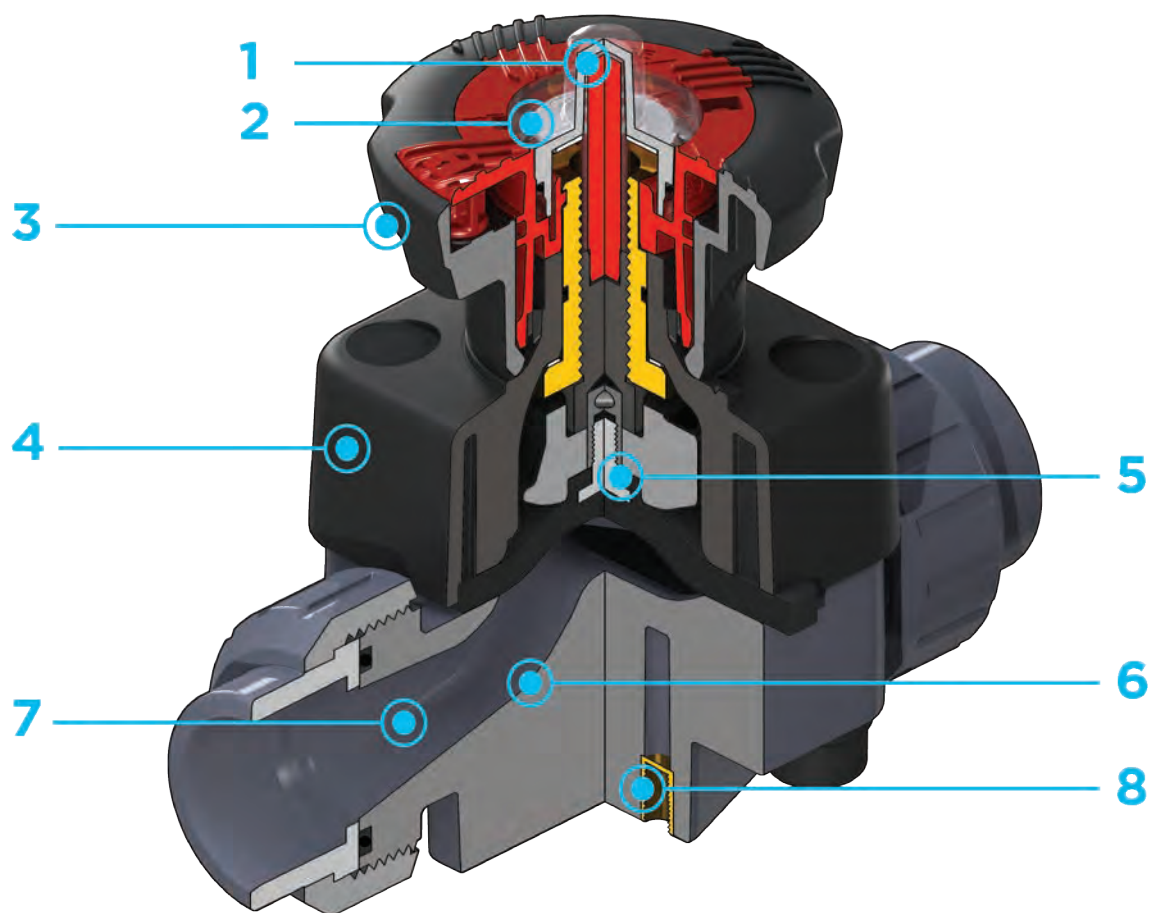
The DK DIALOCK® diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids. The new internal geometry of the body increases flow coefficient, reduce pressure drop and allows a sensitive and precise adjustment along the entire stroke of the shutter. The DK is extremely compact and very light. The innovative handwheel is equipped with a patented immediate and ergonomic operating locking device that allows it to be adjusted and locked in any position.

Dialock®

DIALOCK® 2-WAY DIAPHRAGM VALVE

- Connection system for solvent weld, threaded and flanged joints
- **Optimised fluid dynamic design:** maximum output flow rate thanks to the optimised efficiency of the fluid dynamics that characterise the new internal geometry of the body
- **Internal components in metal, totally isolated from the fluid** and external environment
- **Modularity of the range:** only 2 handwheel and 4 diaphragm and bonnet sizes for 7 different valve sizes
- Non-rising handwheel that stays at the same height during rotation, equipped with a graduated optical indicator protected by a transparent PVC cap with seal O-Ring
- Bonnet fastening screws in 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
- **New flanged bodies:** the new bodies, characterised by a monolithic flanged structure, are available in PVC-U, PVC-C, PP-H and PVDF. This design, free from body and flange joints, greatly reduces mechanical stress and increases system performance.
- **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, EN 10226-1/2. Flanging system: ISO 9624, EN ISO 15493, UNI EN 558, EN 1092-1, ANSI B.16.5 cl.
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
Seal material	EPDM, FKM, PTFE
Control options	Manual control; pneumatic actuator



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

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

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

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

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

6 **New design of valve body interior:** **substantially increased flow coefficient** and reduced pressure drop. The degree of efficiency

reached has also enabled **the size and weight** of the valve to be **reduced**

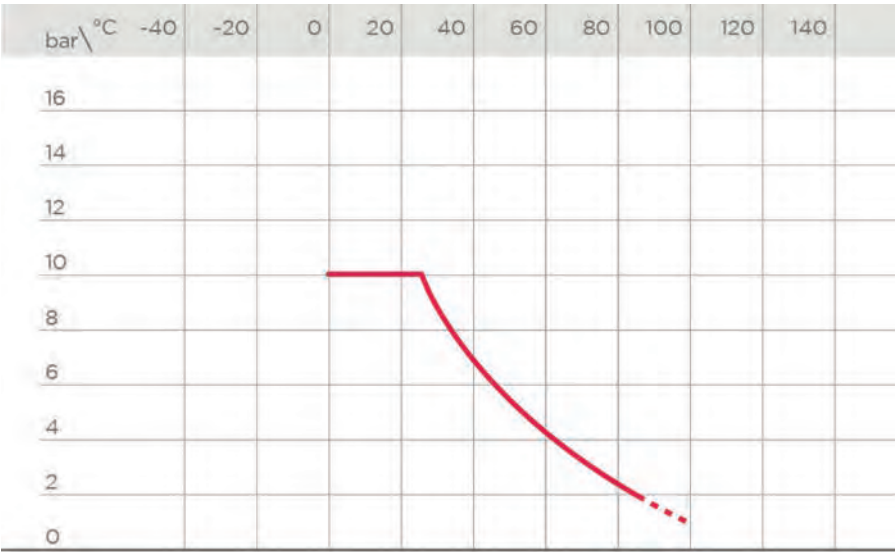
7 **Adjustment linearity:** the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter

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

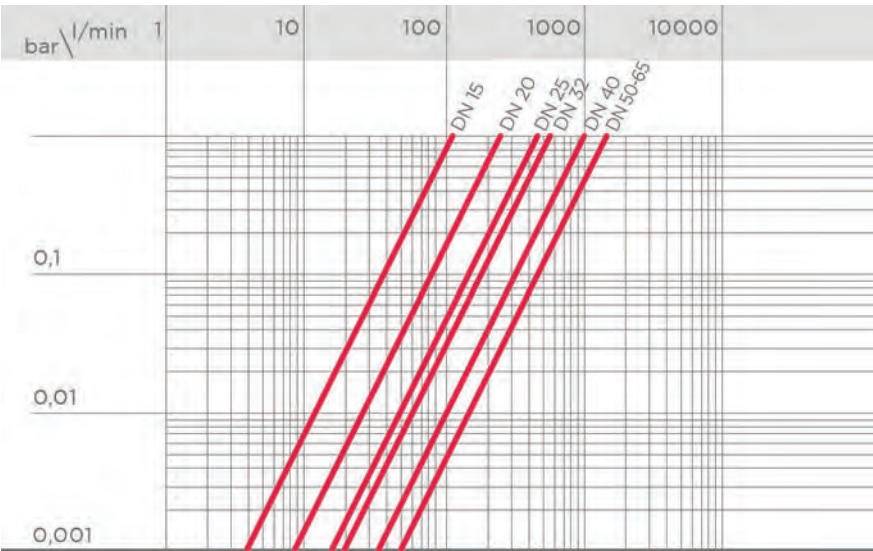
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



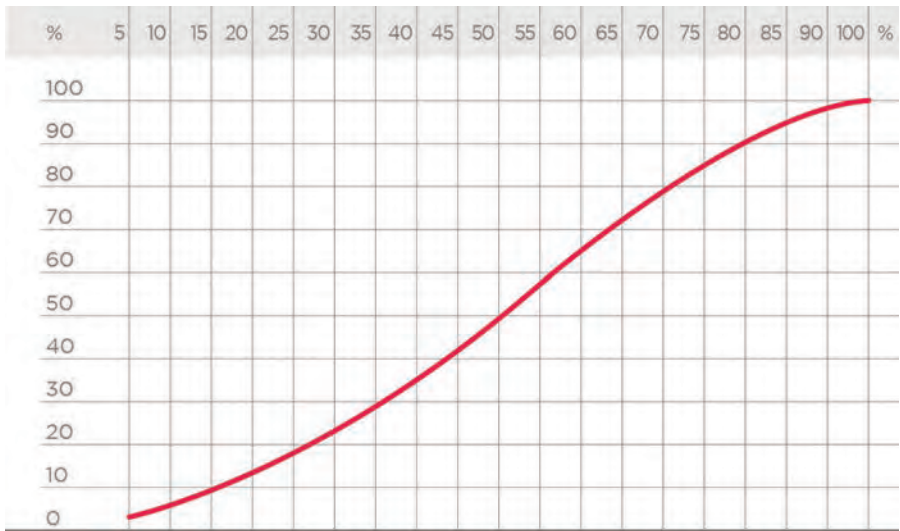
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ 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
Kv100 l/min	112	261	445	550	1087	1648	1600

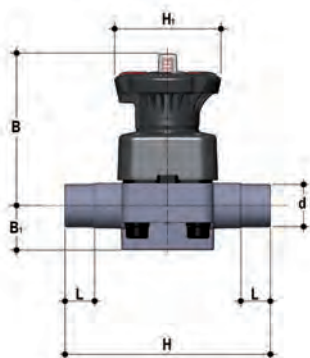
RELATIVE FLOW COEFFICIENT GRAPH

The relative flow coefficient is the flow rate through the valve as a function of the degree of valve opening.
Horizontal axis: Percentage opening of the valve
Vertical axis: Relative flow coefficient



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.

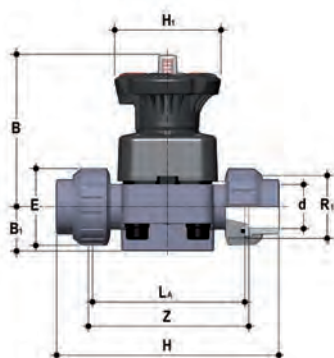
DIMENSIONS



DKDC

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

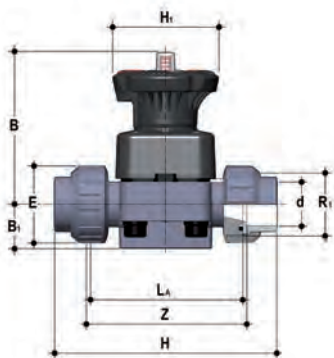
d	DN	PN	B	B ₁	H	H ₁	L	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	124	80	16	466	DKDC020E	DKDC020F	DKDC020P
25	20	10	105	30	144	80	19	491	DKDC025E	DKDC025F	DKDC025P
32	25	10	114	33	154	80	22	696	DKDC032E	DKDC032F	DKDC032P
40	32	10	119	30	174	80	26	743	DKDC040E	DKDC040F	DKDC040P
50	40	10	149	35	194	120	31	1574	DKDC050E	DKDC050F	DKDC050P
63	50	10	172	46	224	120	38	2310	DKDC063E	DKDC063F	DKDC063P
75	65	10	172	46	284	120	44	2430	DKDC075E	DKDC075F	DKDC075P



DKUIC

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

d	DN	PN	B	B ₁	E	H	H ₁	La	R ₁	Z	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	41	129	80	90	1"	100	509	DKUIC020E	DKUIC020F	DKUIC020P
25	20	10	105	30	50	154	80	108	1 1/4"	116	576	DKUIC025E	DKUIC025F	DKUIC025P
32	25	10	114	33	58	168	80	116	1 1/2"	124	812	DKUIC032E	DKUIC032F	DKUIC032P
40	32	10	119	30	72	192	80	134	2"	140	945	DKUIC040E	DKUIC040F	DKUIC040P
50	40	10	149	35	79	222	120	154	2 1/4"	160	1814	DKUIC050E	DKUIC050F	DKUIC050P
63	50	10	172	46	98	266	120	184	2 3/4"	190	2752	DKUIC063E	DKUIC063F	DKUIC063P

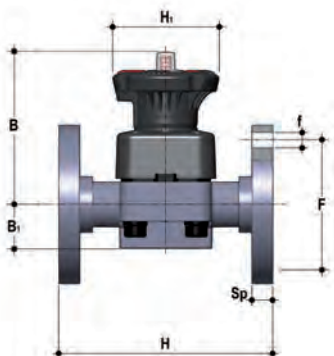


DKUAC

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

d	DN	PN	B	B ₁	E	H	H ₁	L ₁	R ₁	Z	g	EPDM code	FKM code	PTFE code
1/2"	15	10	102	25	41	143	80	90	1"	98	509	DKUAC012E	DKUAC012F	DKUAC012P
3/4"	20	10	105	30	50	167	80	108	1 1/4"	115	576	DKUAC034E	DKUAC034F	DKUAC034P
1"	25	10	114	33	58	180	80	116	1 1/2"	122	812	DKUAC100E	DKUAC100F	DKUAC100P
1 1/4"	32	10	119	30	72	208	80	134	2"	144	945	DKUAC114E	DKUAC114F	DKUAC114P
1 1/2"	40	10	149	35	79	234	120	154	2 1/2"	164	1814	DKUAC112E	DKUAC112F	DKUAC112P
2"	50	10	172	46	98	272	120	184	2 3/4"	195	2752	DKUAC200E	DKUAC200F	DKUAC200P

DKLUAC version available on request

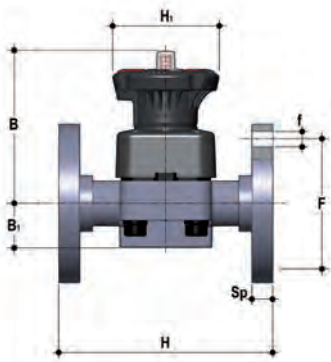


DKOC

DIALOCK® diaphragm valve with flanged monolithic body, drilled PN10/16. Face to face according to UNI EN 558

d	DN	PN	B	B ₁	f	F	H	H ₁	Sp	U	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	65	14	130	80	13,5	4	962	DKOC020E	DKOC020F	DKOC020P
25	20	10	105	30	75	14	150	80	13,5	4	1038	DKOC025E	DKOC025F	DKOC025P
32	25	10	114	33	85	14	160	80	13,5	4	1122	DKOC032E	DKOC032F	DKOC032P
40	32	10	119	30	100	18	180	80	14	4	1364	DKOC040E	DKOC040F	DKOC040P
50	40	10	149	35	110	18	200	120	16	4	2299	DKOC050E	DKOC050F	DKOC050P
63	50	10	172	46	125	18	230	120	16	4	3200	DKOC063E	DKOC063F	DKOC063P
75	65	10	172	46	145	18	290	120	21	4	3873	DKOC075E	DKOC075F	DKOC075P

DKLOC version available on request



DKOAC

DIALOCK® diaphragm valve with flanged monolithic body, drilled ANSI B16.5 cl. 150 #FF

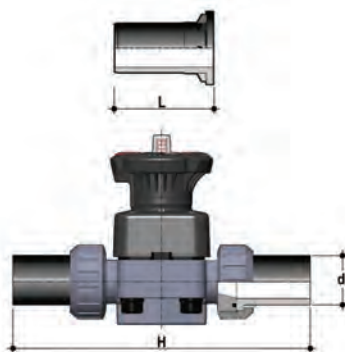
d	DN	PN	B	B ₁	f	F	H	H ₁	Sp	U	g	EPDM code	FKM code	PTFE code
1/2"	15	10	102	25	60.3	14	108	80	13,5	4	962	DKOAC012E	DKOAC012F	DKOAC012P
3/4"	20	10	105	30	70	15.7	120	80	13,5	4	1038	DKOAC034E	DKOAC034F	DKOAC034P
1"	25	10	114	33	80	15.7	131	80	13,5	4	1122	DKOAC100E	DKOAC100F	DKOAC100P
1" 1/4	32	10	119	30	89	15.7	162	80	14	4	1364	DKOAC114E	DKOAC114F	DKOAC114P
1" 1/2	40	10	149	35	99	15.7	180	120	16	4	2299	DKOAC112E	DKOAC112F	DKOAC112P
2"	50	10	172	46	121	19	210	120	16	4	3200	DKOAC200E	DKOAC200F	DKOAC200P
2" 1/2	65	10	172	46	140	19	250	120	21	4	3873	DKOAC212E	DKOAC212F	DKOAC212P

DKOAC version available on request
For installation prior to october 2017 please contact Fip Technical Support

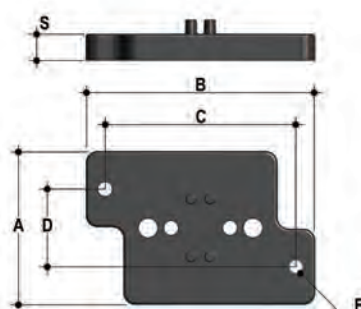
ACCESSORIES

Q/BBE-L

Long spigot PE100 end connectors for electrofusion or butt welding



d	DN	PN	L	H	SDR	Code
20	15	16	95	280	11	QBBEL11020
25	20	16	95	298	11	QBBEL11025
32	25	16	95	306	11	QBBEL11032
40	32	16	95	324	11	QBBEL11040
50	40	16	95	344	11	QBBEL11050
63	50	16	95	374	11	QBBEL11063

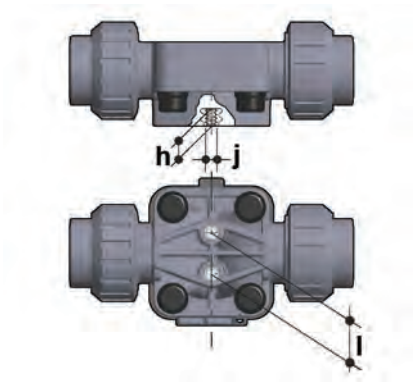


PMDK

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 or panel installation, dedicated PMDK mounting plates which are available as accessories can be used. These plates should be fastened to the valve before wall installation. PMDK plates also allow DK valve alignment with FIP ZIKM pipe clips.

d	DN	h	l	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

Fig. 1



Fig. 2



Fig. 3



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 protects the customisation plate against deterioration.

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

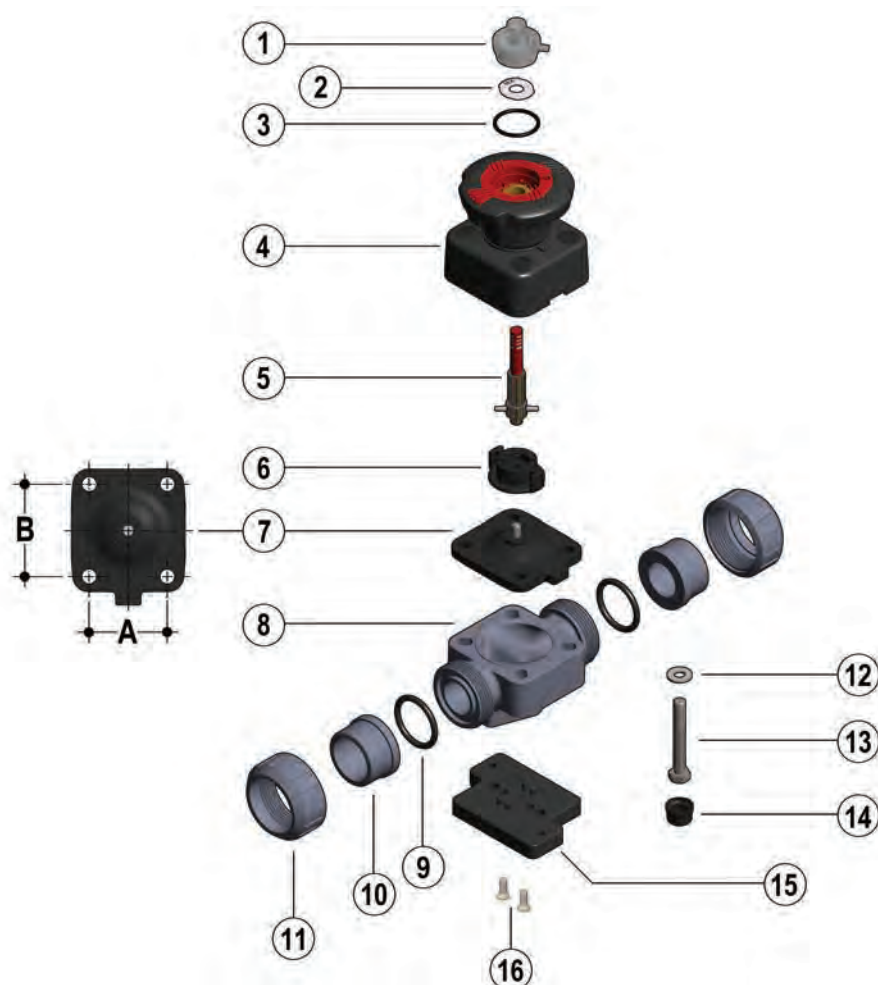
- 1) Turn the transparent protection cap anti-clockwise to limit stop (fig. 1) and remove it by pulling it upwards and, if necessary, by inserting a screwdriver into the slot (C) to facilitate operation (fig. 2).
- 2) Remove the plate inside the transparent protection cap and customise it as required (fig. 3).
- 3) Re-assemble, making sure that the seal O-Ring of the transparent protection cap remains in its seating (fig. 4).

Fig. 4



COMPONENTS

EXPLODED VIEW



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-U - 1)
- 3** O-Ring (EPDM - 1)
- 4** Operating mechanism (PP-GR / PVDF - 1)
- 5** Threaded stem – Indicator (STAINLESS steel - 1)

- 6** Compressor (PA-GR IXEF® - 1)
- 7** Diaphragm seal (EPDM, FKM, PTFE - 1)*
- 8** Valve body (PVC-C - 1)*
- 9** Socket seal O-Ring (EPDM-FKM - 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 in brackets

DISASSEMBLY

- 1) Isolate the valve from the line (release the pressure and empty the pipeline).
- 2) Unlock the handwheel if necessary by pushing it downwards (fig.5), and open the valve completely by turning it counter-clockwise.
- 3) Unscrew the union nuts (11) and extract the valve.
- 4) Remove the protection plugs (14) and remove the bolts (13) with the relative washers (12).
- 5) Separate the valve body (8) from the operating mechanism (4).
- 6) Rotate the handwheel clockwise until the threaded stem (5), the compressor (6) and the diaphragm (7) are released.
- 7) Unscrew the diaphragm (7) and remove the shutter (6).

ASSEMBLY

- 1) Insert the compressor (6) onto the threaded stem (5), aligning it correctly with the stem pin.
- 2) Screw the diaphragm (7) onto the threaded stem (5).
- 3) Lubricate the threaded stem (5) and insert it into the operating mechanism (4), then turn the handwheel counter-clockwise until the stem is fully screwed in (5). Make sure that the compressor (6) and the diaphragm are properly aligned with the respective slots in the operating mechanism (4) (fig. 7).
- 5) Assemble the operating mechanism (4) on the body of the valve (8) and tighten the bolts (13) with the relative washers (12).
- 6) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 7) Replace the protection plugs (14).
- 8) 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.
- 9) If necessary, lock the handwheel by gripping it and pulling it upwards (fig.6).



Note: during assembly operations, 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: (instructions refer to versions with union ends). 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 the socket seal O-Rings (9) do not exit the 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 used simply by lifting the handwheel once it reaches the desired position (fig. 8).

To unlock, simply move the handwheel back to the previous position by pressing downwards (fig. 6).

When the system is in a locked position, it is also possible to install a lock to protect the system against tampering (fig. 9).

The diameter of the hole to put the padlock in is 4,5 mm for the dimensions between DN 15 and DN 32 and 6,5 mm for the dimensions between DN 40 and DN 65.



STROKE LIMITER

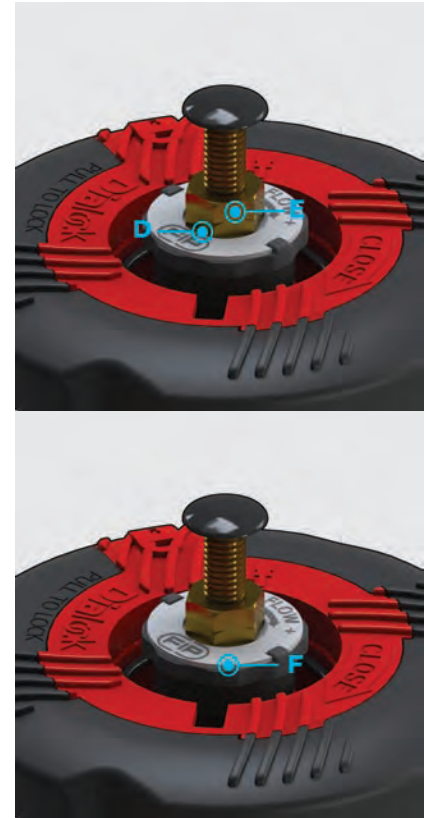
The DKL version of the diaphragm valve is equipped with a handwheel stroke control system which allows the minimum and maximum flows to be preset and preserves the diaphragm from excessive compression during closing operations. The system allows the valve stroke to be modified using the two independent adjusting screws, which determine the mechanical limits of the valve during opening and closing. The valve is sold with the stroke limiters positioned so as not to limit the stroke both during closing and opening. 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 valve closed.

- 1) Turn the handwheel clockwise until the desired minimum flow rate or the closed position is reached.
- 2) Fully screw the nut (D) to limit stop, and lock it in this position by tightening the locknut (E). If you want to exclude the stroke limiting function during closing, unscrew the nuts (D and E) completely. In this way, the valve will close completely.
- 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) Turn the handwheel counter-clockwise until the desired maximum flow rate is reached.
- 2) Turn the knob (F) counter-clockwise to limit stop. The plate shows the direction of rotation of the wheel to obtain a smaller or greater maximum flow rate. If it is not necessary to limit the opening stroke, turn the knob (F) clockwise several times. In this way, the valve will open completely.
- 3) Re-assemble the transparent protection cap making sure that the seal O-Ring remains in its seating.



VM DN 80÷100

DIAPHRAGM VALVE



VM

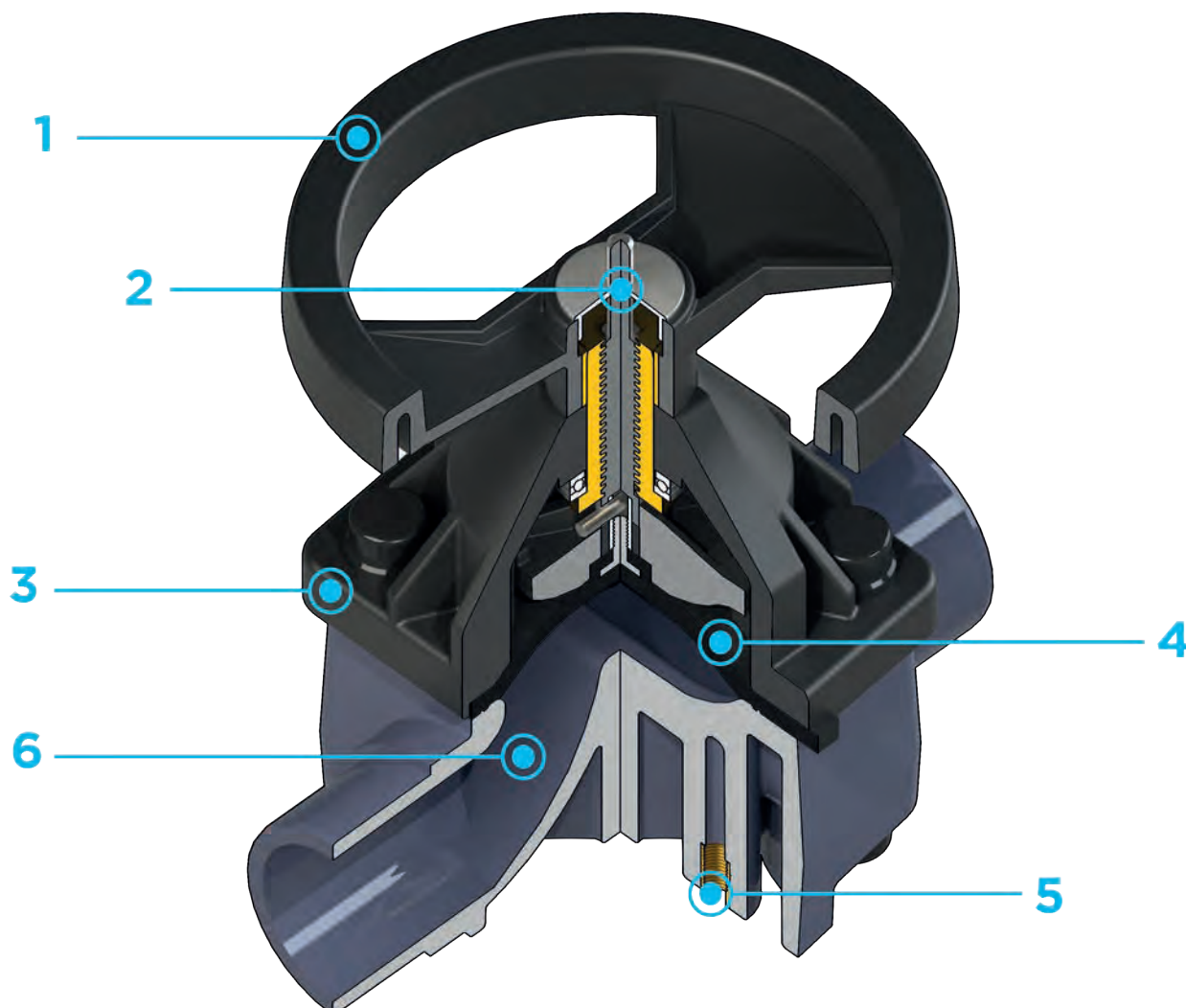
DN 80÷100

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 welding and for 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.
- Handwheel that stays at the same height during rotation, with internal bearing to minimise friction and operating torque
- Standard optical indicator
- **Internal operating components in metal** totally isolated from the conveyed fluid
- Bonnet fastening screws in STAINLESS steel protected against the external environment by PE plugs
- **New flanged bodies:** the new bodies, characterised by a monolithic flanged structure, are available in PVC-U, PVC-C, PP-H and PVDF. This design, free from body and flange joints, greatly reduces mechanical stress and increases system performance.

Technical specifications	
Construction	Single wear diaphragm valve
Size range	DN 80 ÷ 100
Nominal pressure	PN 10 with water at 20° C PN 6 with water at 20° C (PTFE version)
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. Flanging system: ISO 9624, EN ISO 15493, UNI EN 558, EN1092-1, ANSI B.16.5 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: PP-GR Handwheel PA-GR
Seal material	EPDM, FKM, PTFE (on request NBR)
Control options	Manual control; pneumatic actuator

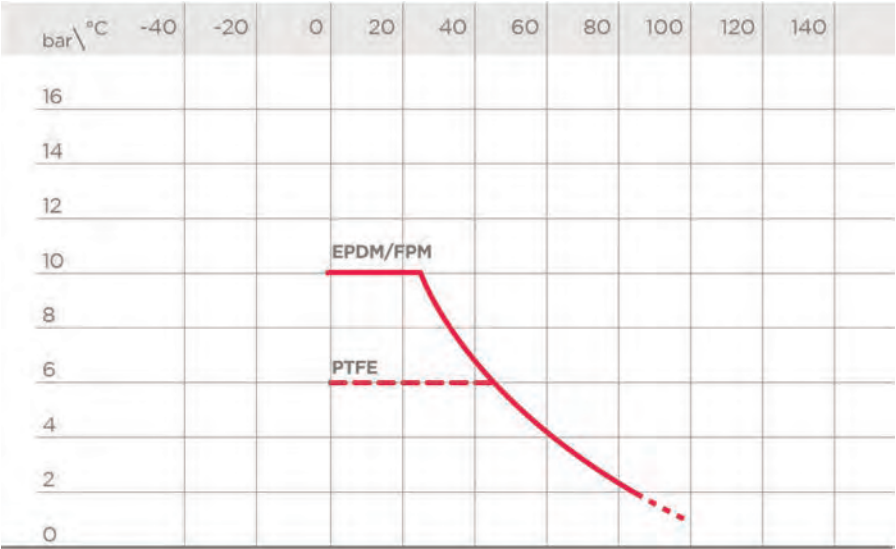


- 1 Handwheel** in (PA-GR) with high mechanical strength and ergonomic **grip for optimum manageability**
- 2 Metal optical position indicator** supplied as standard
- 3 Full protection bonnet in PP-GR**
Internal circular and symmetrical diaphragm sealing area
- 4** Diaphragm available in EPDM, FPM, PTFE (NBR on request) and easy to replace
- 5 Threaded metal inserts** for anchoring the valve
- 6 New valve body internal design:** substantially higher flow coefficient resulting in lower pressure drops. Optimised adjustment curve for effective and precise flow rate regulation

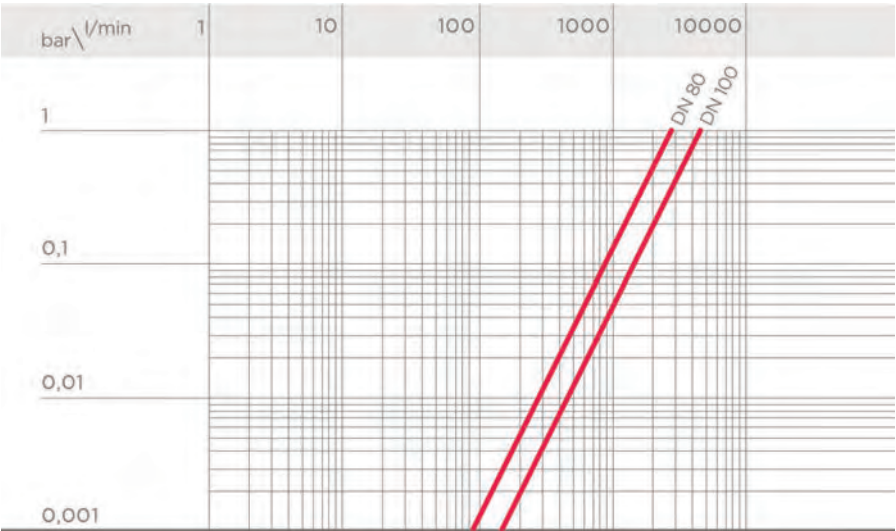
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



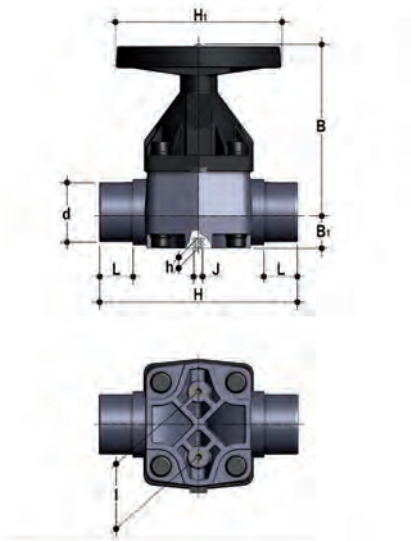
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

DN	80	100
Kv100 l/min	2910	4620

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DIMENSIONS

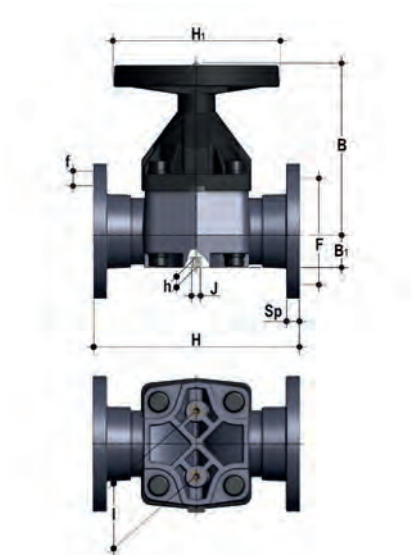


VMDC

Diaphragm valve with male ends for solvent welding, metric series

d	DN	PN	B	B ₁	H	I	H ₁	h	J	L	g	EPDM code	FKM code	PTFE code
90	80	*10	225	55	300	200	23	100	M12	51	7290	VMDC090E	VMDC090F	VMDC090P
110	100	*10	295	69	340	250	23	120	M12	61	10900	VMDC110E	VMDC110F	VMDC110P

*PTFE PN6

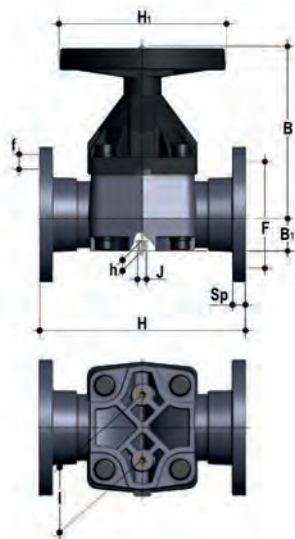


VMOC

Diaphragm valve with flanged monolithic body, drilled EN/ISO/DIN PN10/16. Face to face according to UNI EN 558

d	DN	PN	B	B ₁	H	I	H ₁	J	F	f	U	Sp	g	EPDM code	FKM code	PTFE code
90	80	*10	225	64	310	100	200	M12	160	18	8	21,5	9140	VMOC090E	VMOC090F	VMOC090P
110	100	*10	295	72	350	120	250	M12	180	18	8	22,5	13120	VMOC110E	VMOC110F	VMOC110P

*PTFE PN6



VMOAC

Diaphragm valve with flanged monolithic body, drilled ANSI B16.5 cl.150 #FF

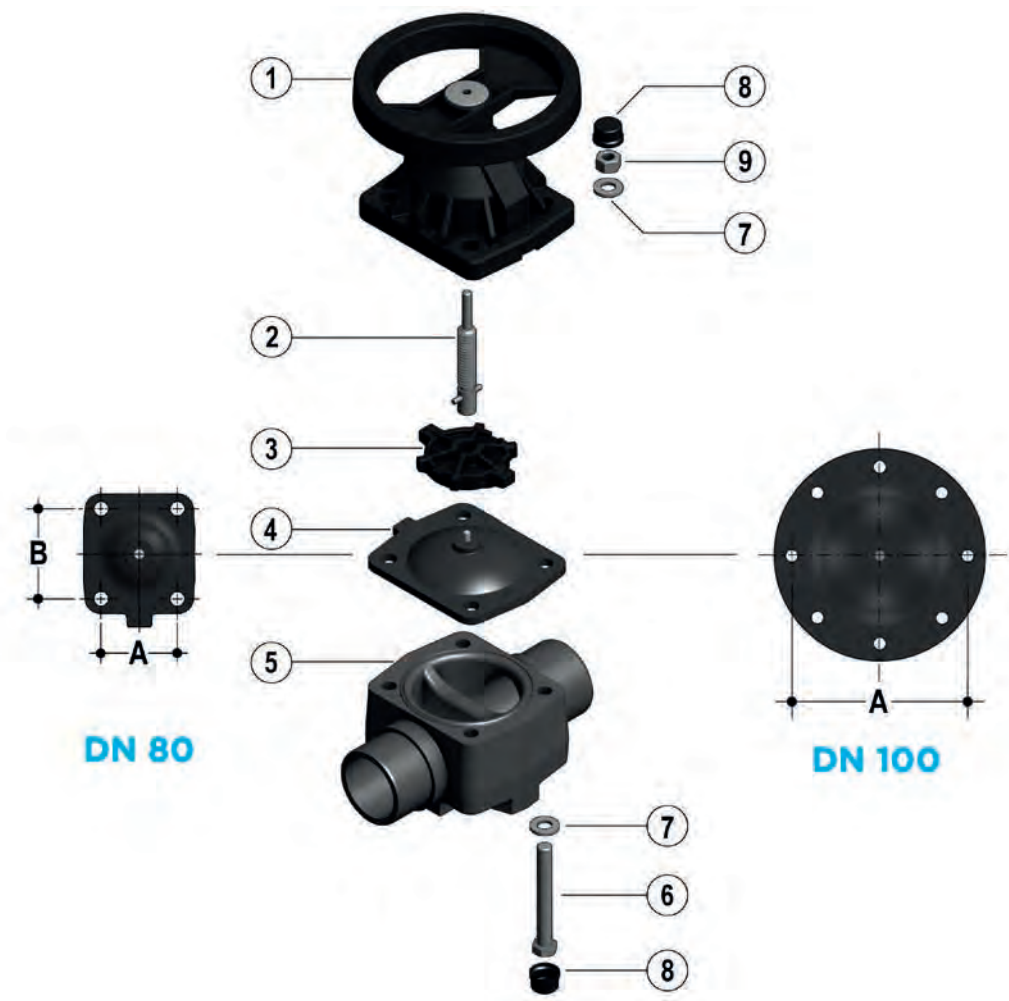
d	PN	B	B ₁	F	f	H	H ₁	I	J	Sp	U	g	EPDM code	FKM code	PTFE code
3"	*10	225	64	152,4	19,1	263	200	100	M12	21,5	4	9140	VMOAC300E	VMOAC300F	VMOAC300P
4"	*10	295	72	190,5	19,1	328	250	120	M12	22,5	8	13120	VMOAC400E	VMOAC400F	VMOAC400P

*PTFE PN6

For installation prior to october 2017 please contact Fip Technical Support

COMPONENTS

EXPLODED VIEW



DN	80	100
A	114	193
B	127	-

- 1 Bonnet (PP-GR - 1); Handwheel (PA-GR - 1)

2 Indicator - stem (STAINLESS steel - 1)

3 Shutter (PBT - 1)
- 4 Diaphragm seal (EPDM, FKM, PTFE - 1)

5 Body (PVC-C - 1)

6 Hexagonal screw (Zinc plated steel - 4)
- 7 Washer (Zinc plated steel - 4)

8 Protection plug (PE - 4)

9 Nut (Zinc plated steel - 4)

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

DISASSEMBLY

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) Cut-off fluid upstream from the valve and make sure it is de-pressurised (downstream drain if necessary).
- 2) Unscrew the four screws (6) and separate the body (5) from the internal components.
- 3) Unscrew the diaphragm (4) from the shutter (3). Rotate the handwheel clockwise to free the stem-shutter unit. Clean or replace the diaphragm, if necessary (4). If necessary, lubricate the stem (2).

ASSEMBLY

- 1) Apply the shutter (3) to the stem (2), ensuring the stem pin is positioned correctly.
- 2) Screw the diaphragm (4) onto the stem (2), taking care not to stretch it.
- 3) Open the valve.
- 4) Place the bonnet-handwheel unit (1) on the body (5) and join the two components with bolts.
- 5) Press the protection plugs into place (8).

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 (6).

WARNINGS

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

Moreover, as the diaphragm seal is compressed between the body and the actuator, the valve body stud-bolts and nuts must be checked and tightened, if necessary, prior to installation.

CM DN 12÷15

COMPACT DIAPHRAGM VALVE



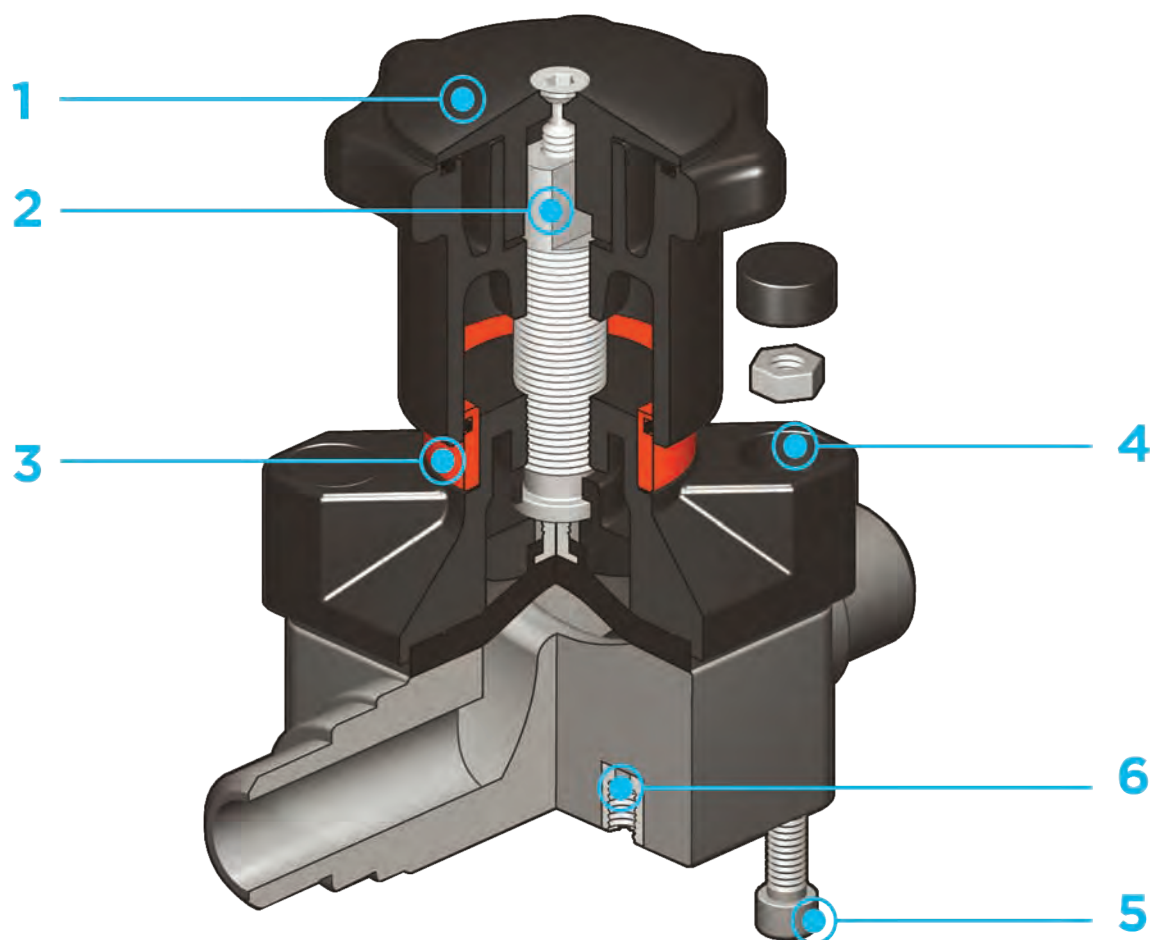
CM DN 12÷15

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
Seal material	EPDM, FKM, PTFE
Control options	Manual control; pneumatic actuator



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

2 Integrated adjustable torque limiter designed to prevent excessive compression of the diaphragm and always guarantee

a minimum fluid flow

3 Optical position indicator supplied as standard

4 Bonnet in PA-GR with STAINLESS steel nuts fully protected by plastic plugs to eliminate zones where impurities may accumulate.

Internal circular and symmetrical diaphragm sealing area

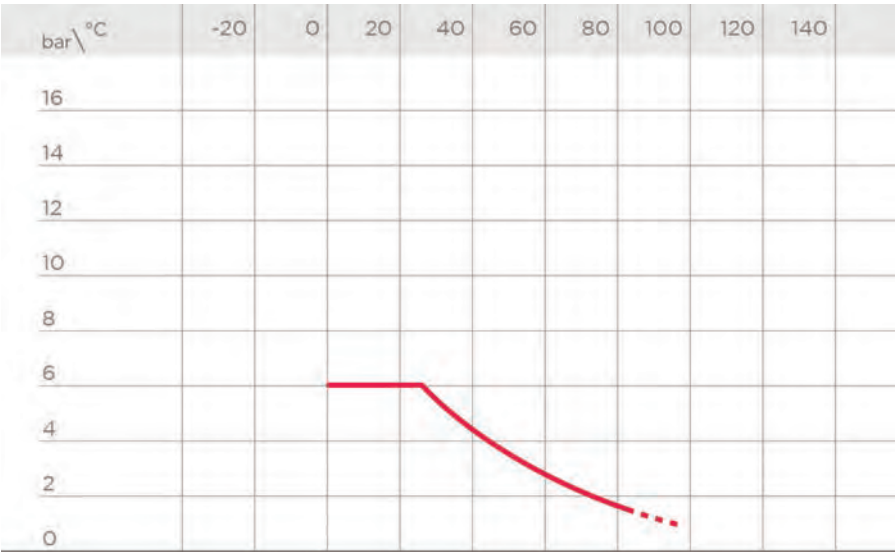
5 STAINLESS steel bolts, can also be inserted from above

6 Threaded metal inserts for anchoring the valve

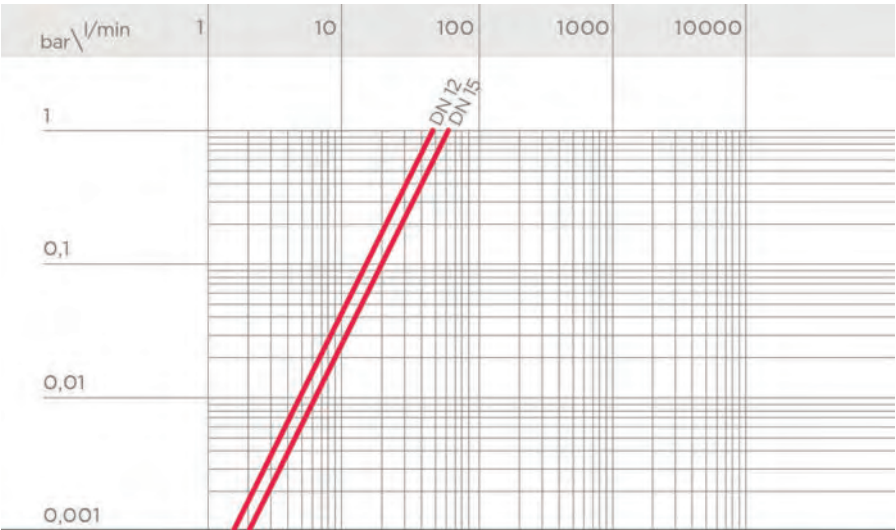
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



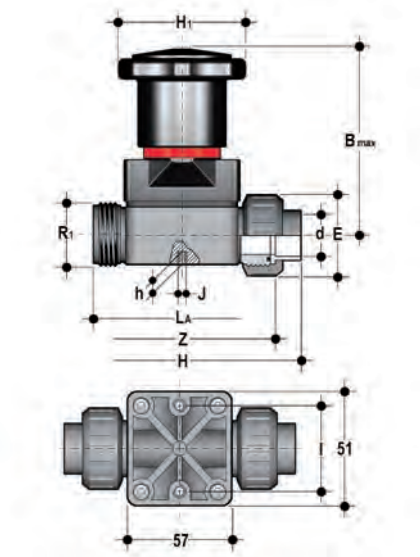
K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate $\Delta p = 1$ bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

DN	12	15
Kv100 l/min	47	60

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DIMENSIONS

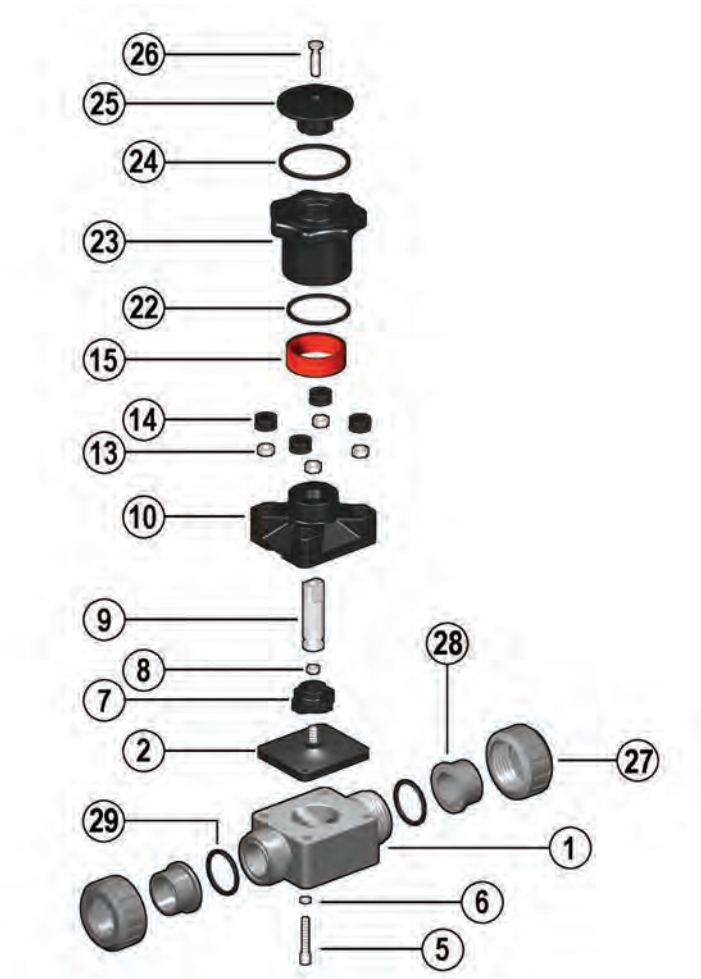


CMUIC
 Compact diaphragm valve with female union ends for solvent welding

d	DN	PN	B _{max}	E	H	H ₁	h	I	J	L _A	R ₁	Z	g	EPDM code	FKM code	*PTFE code
20	15	6	86	41	129,5	58,5	8	35	M _s	90	1"	97,5	310	CMUIC020E	CMUIC020F	CMUIC020P

COMPONENTS

EXPLODED VIEW



- | | | |
|--|---|---|
| 1 Body (PVC-C - 1) | 8 Nut (STAINLESS steel - 1) | 22 O-Ring (NBR - 1) |
| 2 Diaphragm seal (EPDM, FKM, PTFE - 1) | 9 Stem (STAINLESS steel - 1) | 23 Handwheel (PA-GR - 1) |
| 5 Fastening screw (STAINLESS steel - 4) | 10 Bonnet (PA-GR - 1) | 24 O-Ring (NBR - 1) |
| 6 Washer (STAINLESS steel - 4) | 13 Nut (STAINLESS steel - 4) | 25 Bonnet (PA-GR - 1) |
| 7 Shutter (PA-GR - 1) | 14 Protection plug (POM - 4) | 26 Fastening screw (STAINLESS steel - 1) |
| | 15 Optical position indicator (PVDF - 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 seal (2) from the shutter (7).
- 3) If necessary, clean or replace the diaphragm seal (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 in the handwheel.

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

Each turn of the handwheel corresponds to 1.75mm travel.

RV DN 15÷50

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 ÷ 60 °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, EN 10226-1/2, ASTM F 437
	Flanging system: ISO 96241, EN ISO 15493, UNI EN 558, EN 1092-1, 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, FKM

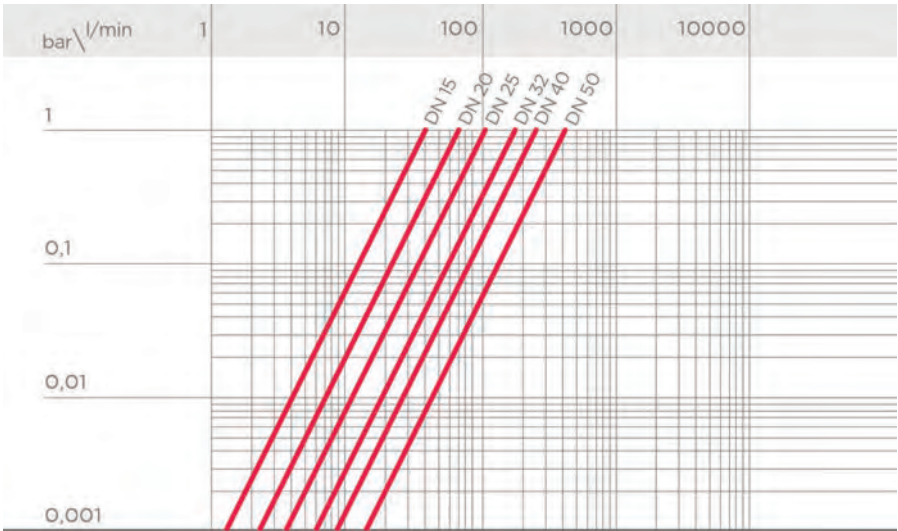
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required (25 years with safety factor).
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 Kv100 values shown in the table are calculated with the valve completely clean.

DN	15	20	25	32	40	50
Kv100 l/min	40	70	103	188	255	410

STRAINER DIMENSIONS

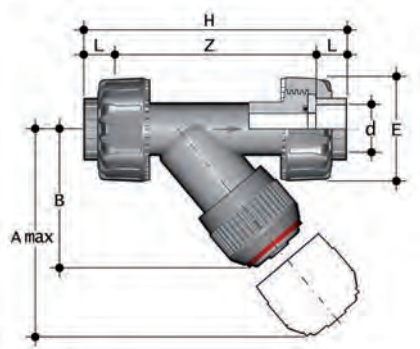
DN	15÷20	25÷50
number of holes per cm²	37	32
ASTM series equivalent in strainer	18	20
ø equivalent hole µm	1016	889
strainer material	PP	PP

TOTAL STRAINER 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

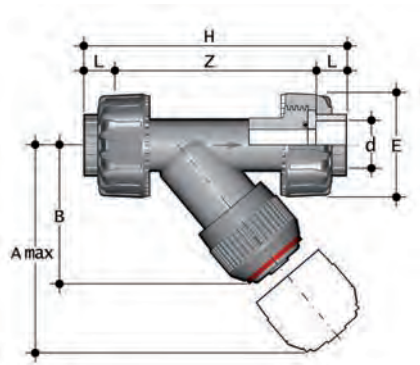


RVUIC

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

d	DN	PN	A max	B	E	H	L	Z	g	EPDM code	FKM 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

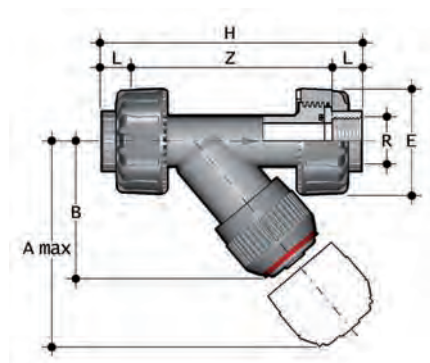
Note: Standard filter screen is in PP-H, pitch 1,5mm



RVUAC

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

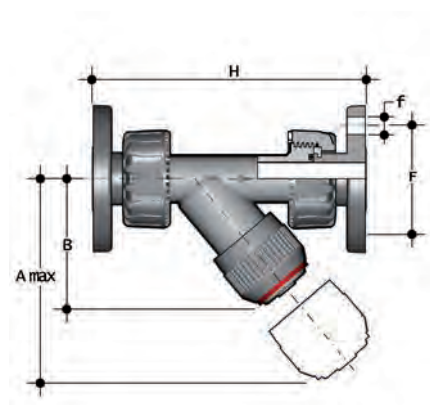
d	DN	PN	A max	B	E	H	L	Z	g	EPDM code	FKM code
1/2"	15	16	125	72	55	149	22,5	104	231	RVUAC012E	RVUAC012F
3/4"	20	16	145	84	66	172	25,5	121	392	RVUAC034E	RVUAC034F
1"	25	16	165	95	75	190	28,7	132,6	576	RVUAC100E	RVUAC100F
1" 1/4	32	16	190	111	87	223	32	159	802	RVUAC114E	RVUAC114F
1" 1/2	40	16	210	120	100	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

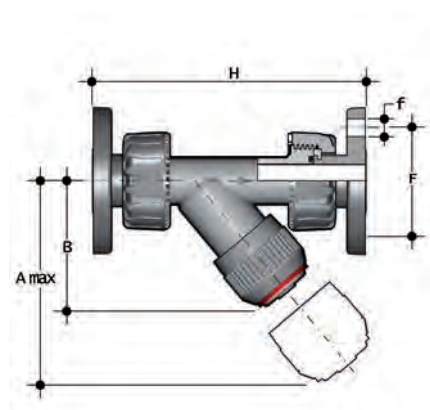
R	DN	PN	A max	B	E	H	L	Z	g	EPDM code	FKM code
1/2"	15	16	125	72	55	143	17,8	107,4	231	RVUNC012E	RVUNC012F
3/4"	20	16	145	84	66	159	18	123	392	RVUNC034E	RVUNC034F
1"	25	16	165	95	75	183	22,6	137,8	576	RVUNC100E	RVUNC100F
1" 1/4	32	16	190	111	87	214	25,1	163,8	812	RVUNC114E	RVUNC114F
1" 1/2	40	16	210	120	100	235	24,7	185,6	1211	RVUNC112E	RVUNC112F
2"	50	16	240	139	120	285	29,6	275,8	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	FKM 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



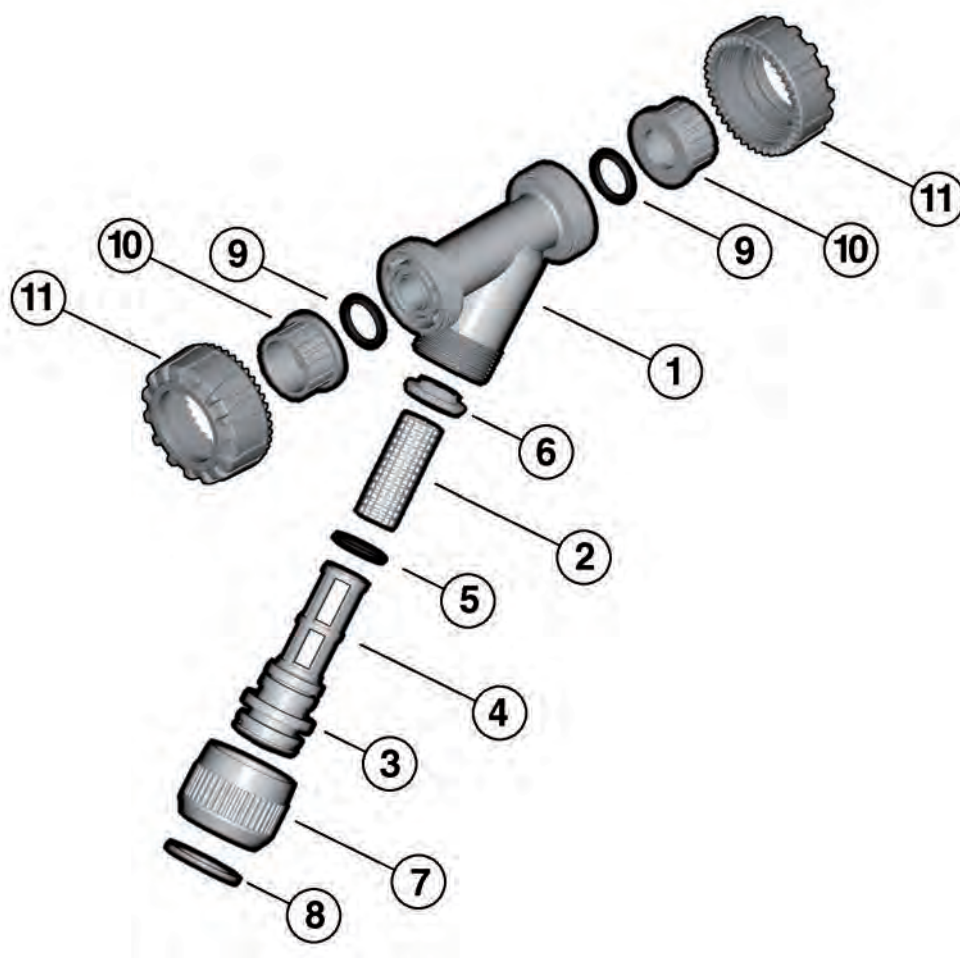
RVUOAC

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

Size	DN	PN	A max	B	F	f	H	g	EPDM code	FKM 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) | 5 | O-Ring (EPDM or FKM - 1)* | 9 | Socket seal O-Ring (EPDM or FKM - 2)* |
| 2 | Strainer (PP-H - 1)* | 6 | Washer (PVC-C - 1) | 10 | End connector (PVC-C - 2)* |
| 3 | Bonnet (PVC-C - 1) | 7 | Union nut (PVC-C - 1) | 11 | Union nut (PVC-C - 2) |
| 4 | Strainer support (PVC-C - 1) | 8 | Retaining ring (PVC-C - 1) | | |

* 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 union 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).

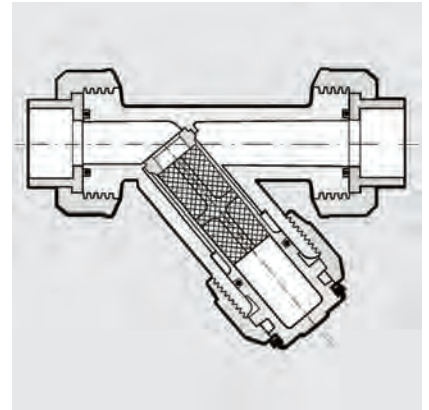
ASSEMBLY

- 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.

Fig.1



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 end 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 strainer elements.

Leave a straight section of pipe of length equal to 5 times the nominal diameter before and after the valve

FR DN 32÷400

Wafer check valve



FR DN 32÷400

The FR wafer check valve is designed to be installed directly between stubs and flanges in accordance with ISO/DIN, ANSI standards.

Available also with springs for low backpressure applications.

WAFER CHECK VALVE

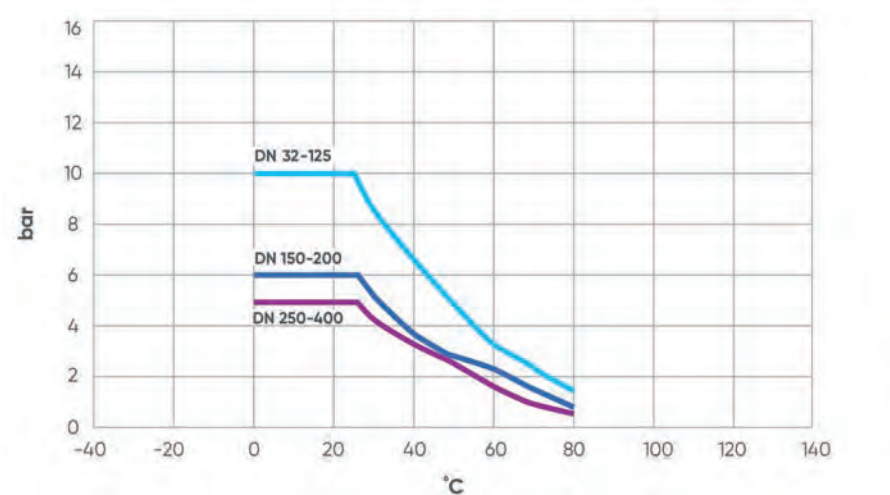
- **Metal support for easy and precise centring of the valve** during installation
- Can be installed in either a vertical or horizontal position
- Models with springs in INOX 316 stainless steel or Hastelloy for the conveyance of aggressive fluids.
- Sealing system with O-Rings for secure fastening and installation without flat gaskets

Technical specifications	
Construction	Wafer check valve
Size range	DN 32 ÷ 400
Nominal pressure	PN 10 (DN32-125), PN 6 (DN150-200), PN 5 (DN250-400) - in water at 20°C
Temperature range	0 °C ÷ 80°C
Coupling standards	Flanging system: EN 1092-1, EN ISO 1452, EN ISO 15493, ANSI B16.5 cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16137 EN ISO 1452, EN ISO 15493
	Test methods and requirements: ISO 9393
	Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	PVC-C
Seal material	EPDM, FKM
Spring material	SS 316, Hastelloy C4

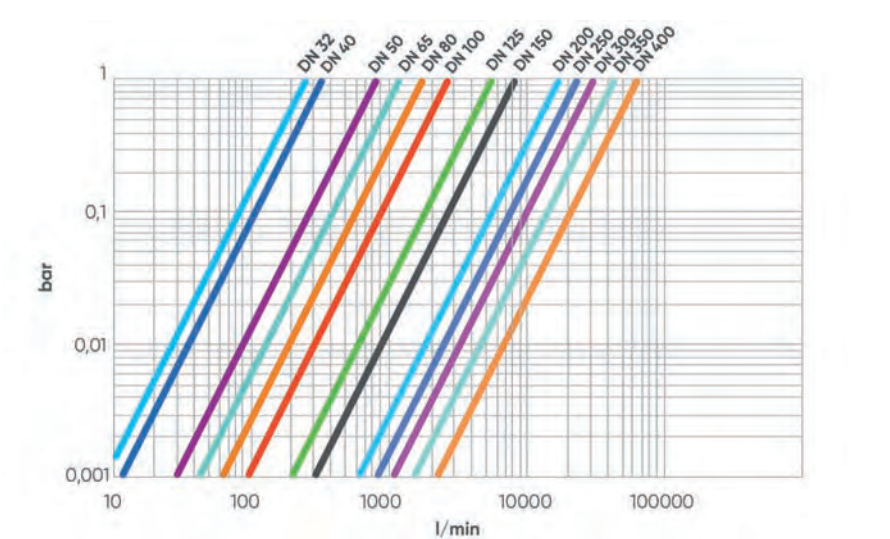
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT

The K_v100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
Kv100 l/min	270	370	900	1250	1867	2867	5700	8167	18800	25000	31900	46700	61700

MINIMUM PRESSURE REQUIRED TO OPEN THE VALVE IN A VERTICAL FLOW

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	2	2	3	3	3	3	3	3	4	4	4	5	7

WITHOUT SPRING

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	4	4	5	5	5	5	5	5	6	6	6	7	9

WITH SPRING

MINIMUM PRESSURE REQUIRED TO OPEN THE VALVE IN A HORIZONTAL FLOW

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,3

WITHOUT SPRING

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
mbar	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,2	2,3

WITH SPRING

MINIMUM VALVE SEALING PRESSURES

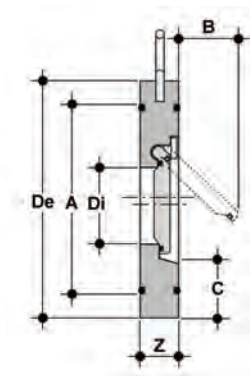
DN	32	40	50	65	80	100	125	150	200	250	300	350	400
bar	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

TIGHTENING TORQUE

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

DN	32	40	50	65	80	100	125	150	200	250	300	350	400
Nm*	15	15	20	20	20	20	25	30	35	40	45	50	60

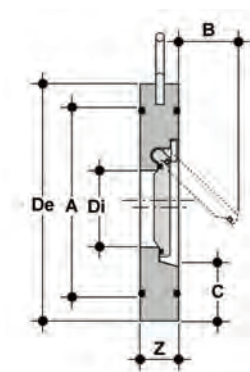
DIMENSIONS



FROC

Wafer check valve PVC-C without spring, version ISO-DIN

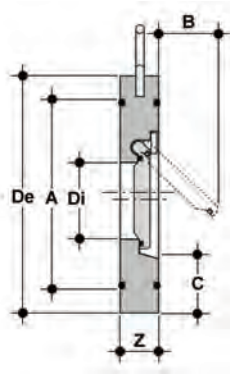
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	130	FROC040E	FROC040F
50	40	10	72	25	28	95	22	16	173	FROC050E	FROC050F
63	50	10	86	37	29	109	32	18	290	FROC063E	FROC063F
75	65	10	105	50	31	129	40	20	368	FROC075E	FROC075F
90	80	10	119	61	32	144	54	20	441	FROC090E	FROC090F
110	100	10	146	77	31	164	70	23	616	FROC110E	FROC110F
140	125	10	173	94	35	195	92	23	834	FROC140E	FROC140F
160	150	6	197	100	40	220	105	26	1233	FROC160E	FROC160F
225	200	6	255	152	38	275	154	34	2333	FROC225E	FROC225F
280	250	5	312	180	41	330	192	40	3919	FROC280E	FROC280F
315	300	5	363	215	41	380	227	45	5874	FROC315E	FROC315F
350	350	5	416	245	44	440	266	49	8538	FROC355E	FROC355F
400	400	5	467	285	50	491	310	65	14103	FROC400E	FROC400F



FROC - Spring in A316

Wafer check valve PVC-C with spring, version ISO-DIN

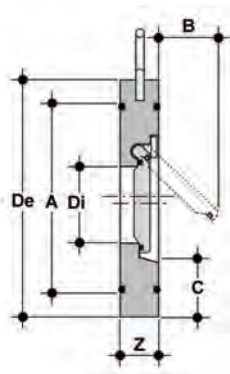
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	130	FROC040EMLX	FROC040FMLX
50	40	10	72	25	28	95	22	16	173	FROC050EMLX	FROC050FMLX
63	50	10	86	37	29	109	32	18	290	FROC063EMLX	FROC063FMLX
75	65	10	105	50	31	129	40	20	368	FROC075EMLX	FROC075FMLX
90	80	10	119	61	32	144	54	20	441	FROC090EMLX	FROC090FMLX
110	100	10	146	77	31	164	70	23	616	FROC110EMLX	FROC110FMLX
140	125	10	173	94	35	195	92	23	834	FROC140EMLX	FROC140FMLX
160	150	6	197	100	40	220	105	26	1233	FROC160EMLX	FROC160FMLX
225	200	6	255	152	38	275	154	34	2333	FROC225EMLX	FROC225FMLX
280	250	5	312	180	41	330	192	40	3919	FROC280EMLX	FROC280FMLX
315	300	5	363	215	41	380	227	45	5874	FROC315EMLX	FROC315FMLX
350	350	5	416	245	44	440	266	49	8538	FROC355EMLX	FROC355FMLX
400	400	5	467	285	50	491	310	65	14103	FROC400EMLX	FROC400FMLX



FROC in Hastelloy

Wafer check valve PVC-C with spring, version ISO-DIN

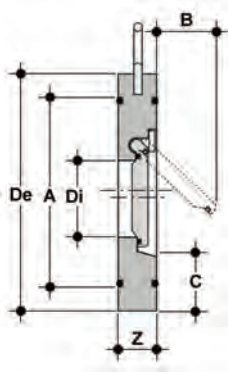
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	130	FROC040EMLH	FROC040FMLH
50	40	10	72	25	28	95	22	16	173	FROC050EMLH	FROC050FMLH
63	50	10	86	37	29	109	32	18	290	FROC063EMLH	FROC063FMLH
75	65	10	105	50	31	129	40	20	368	FROC075EMLH	FROC075FMLH
90	80	10	119	61	32	144	54	20	441	FROC090EMLH	FROC090FMLH
110	100	10	146	77	31	164	70	23	616	FROC110EMLH	FROC110FMLH
140	125	10	173	94	35	195	92	23	834	FROC140EMLH	FROC140FMLH
160	150	6	197	100	40	220	105	26	1233	FROC160EMLH	FROC160FMLH
225	200	6	255	152	38	275	154	34	2333	FROC225EMLH	FROC225FMLH
280	250	5	312	180	41	330	192	40	3919	FROC280EMLH	FROC280FMLH
315	300	5	363	215	41	380	227	45	5874	FROC315EMLH	FROC315FMLH
350	350	5	416	245	44	440	266	49	8538	FROC355EMLH	FROC355FMLH
400	400	5	467	285	50	491	310	65	14103	FROC400EMLH	FROC400FMLH



FROAC

Wafer check valve PVC-C without spring, version ANSI

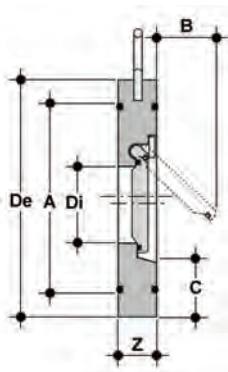
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	130	FROAC114E	FROAC114F
1"1/2	40	10	72	25	28	83	22	16	173	FROAC112E	FROAC112F
2"	50	10	86	37	29	105	32	18	290	FROAC200E	FROAC200F
2"1/2	65	10	105	50	31	124	40	20	368	FROAC212E	FROAC212F
3"	80	10	119	61	32	137	54	20	441	FROAC300E	FROAC300F
4"	100	10	146	77	31	175	70	23	616	FROAC400E	FROAC400F
5"	125	10	173	94	35	197	92	23	834	FROAC500E	FROAC500F
6"	150	6	197	100	40	222	105	26	1233	FROAC600E	FROAC600F
8"	200	6	255	152	38	279	154	34	2333	FROAC800E	FROAC800F
10"	250	5	312	180	41	340	192	40	3919	FROAC810E	FROAC810F
12"	300	5	363	215	41	410	227	45	5874	FROAC812E	FROAC812F
14"	350	5	416	245	44	451	266	49	8538	FROAC814E	FROAC814F
16"	400	5	467	285	50	514	310	65	14103	FROAC816E	FROAC816F



FROAC - Spring in A316

Wafer check valve PVC-C with spring, version ANSI

d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	130	FROAC114EMLX	FROAC114FMLX
1"1/2	40	10	72	25	28	83	22	16	173	FROAC112EMLX	FROAC112FMLX
2"	50	10	86	37	29	105	32	18	290	FROAC200EMLX	FROAC200FMLX
2"1/2	65	10	105	50	31	124	40	20	368	FROAC212EMLX	FROAC212FMLX
3"	80	10	119	61	32	137	54	20	441	FROAC300EMLX	FROAC300FMLX
4"	100	10	146	77	31	175	70	23	616	FROAC400EMLX	FROAC400FMLX
5"	125	10	173	94	35	197	92	23	834	FROAC500EMLX	FROAC500FMLX
6"	150	6	197	100	40	222	105	26	1233	FROAC600EMLX	FROAC600FMLX
8"	200	6	255	152	38	279	154	34	2333	FROAC800EMLX	FROAC800FMLX
10"	250	5	312	180	41	340	192	40	3919	FROAC810EMLX	FROAC810FMLX
12"	300	5	363	215	41	410	227	45	5874	FROAC812EMLX	FROAC812FMLX
14"	350	5	416	245	44	451	266	49	8538	FROAC814EMLX	FROAC814FMLX
16"	400	5	467	285	50	514	310	65	14103	FROAC816EMLX	FROAC816FMLX



FROAC - Spring in Hastelloy

Wafer check valve PVC-C with spring, version ANSI

d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	130	FROAC114EMLH	FROAC114FMLH
1"1/2	40	10	72	25	28	83	22	16	173	FROAC112EMLH	FROAC112FMLH
2"	50	10	86	37	29	105	32	18	290	FROAC200EMLH	FROAC200FMLH
2"1/2	65	10	105	50	31	124	40	20	368	FROAC212EMLH	FROAC212FMLH
3"	80	10	119	61	32	137	54	20	441	FROAC300EMLH	FROAC300FMLH
4"	100	10	146	77	31	175	70	23	616	FROAC400EMLH	FROAC400FMLH
5"	125	10	173	94	35	197	92	23	834	FROAC500EMLH	FROAC500FMLH
6"	150	6	197	100	40	222	105	26	1233	FROAC600EMLH	FROAC600FMLH
8"	200	6	255	152	38	279	154	34	2333	FROAC800EMLH	FROAC800FMLH
10"	250	5	312	180	41	340	192	40	3919	FROAC810EMLH	FROAC810FMLH
12"	300	5	363	215	41	410	227	45	5874	FROAC812EMLH	FROAC812FMLH
14"	350	5	416	245	44	451	266	49	8538	FROAC814EMLH	FROAC814FMLH
16"	400	5	467	285	50	514	310	65	14103	FROAC816EMLH	FROAC816FMLH

INSTALLATION

During installation, make sure that the following requirements are complied with:

- 1) Check that the operating temperature and pressure are below those allowed by the PN of the specific model.
- 2) Leave a straight section of pipe of length equal to 5 times the nominal diameter before and after the valve.
- 3) Do not install the valve directly on the pump flange. The use of flat gaskets is recommended in order to guarantee a perfect seal between the valve and stubs with serrated face.
- 4) The spring loaded versions are advised in case of pulsating flow in order to avoid noises.
- 5) The FR valve can be used on vertical pipes only if the fluid flow is upwards.
- 6) After having aligned the valve with the stub, tighten the flange bolts in a diagonal sequence to the required torque. Run a test before starting the full operation.

The use on piping with an SDR higher than 17 for dimensions above d63 is not advised (SDR11, d75-110).

d	Angle α for PN10 pipes	K (mm) for PN10 pipes
110	15°	5

Key

Abbreviations

ABS	Acrylonitrile butadiene styrene
b	Bolts
c	O-ring code
d	Nominal external diameter of the pipe in mm
DA	Double acting
DN	Nominal internal diameter of the pipe in mm
EPDM	Ethylene-Propylene-Diene-Monomer
FKM (FPM)	Fluoroelastomer
g	Weight in grams
HIPVC	PVC high impact
K	Lid key
Kg	Weight in kilograms
L	Length in meters
MRS	minimum guaranteed breaking strength of the material at 20°C - water - for 50 years of service
n	Number of flange holes
NBR	Nitrile butadiene rubber
OP	Working pressure
P	Hose adaptor
PA	Polyamide
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

PPS	Polifenilensulfide
PPSU	Polifenilsulfone
PTFE	Politetrafluoroetilene
PVC-C	Chlorinated polyvinyl chloride
PVC-U	Unplasticized polyvinylchloride
PVDF	Polyvinylidene difluoride
R	Nominal thread size in inches
s	Pipe thickness in mm
S	Thickness series = $(SDR - 1)/2$
SA	Single acting
SDR	Standard dimension ratio = d/s
Sp	Flange thickness on flanged valves
U	Number of holes for flanged version



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