

Technical catalogue

Manual valves, pipe and fittings in PP-H



Pressure piping fluids conveying



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KEY ABBREVIATIONS

250

General characteristics

PP-H

Polypropylene is a thermoplastic and partially crystalline resin belonging to the family of polyolefins. PP is obtained through the polymerization of propylene with the aid of catalysts. For use in piping systems, the latest-generation Polypropylene Homopolymer variant, or PP-H, offers excellent performance at working temperatures of up to 95° C and a high resistance to chemicals due to the excellent physical and thermal characteristics of the resin.

The PP-H line in latest-generation Polypropylene Homopolymer consists of a comprehensive range of pipes, fittings and valves for use in the construction of process and service lines for conveying pressurised industrial fluids and for maximum operating temperatures of up to 95° C. The entire line is made of Polypropylene Homopolymer resins MRS 100 (PP-H 100) according to the classification DIN 8077-8078, DIN 16962 and approved by DIBt – Deutsches Institut für Bautechnik for use in industrial processes.

The main properties of the latest-generation Homopolymer resins are:

- **High chemical resistance:** in addition to ensuring excellent chemical resistance, especially against halogens and alkaline solutions, the use of PP-H resins with special additives also ensures excellent mechanical properties when conveying detergents and similar chemicals. PP-H resins are also fully compatible with the transport of drinking, unconditioned, demineralised and spa water for therapeutic and kinaesthetic uses.
- **Excellent thermal stability:** particularly in the intermediate temperature range between 10° C and 80° C typical of industrial applications, PP-H ensures excellent mechanical strength and impact resistance with high safety factors.
- **Resistance to ageing:** PP-H resins have a high circumferential breaking strength (Minimum Required Strength MRS ≥ 10.0 MPa at 20°C) and allow long installation lifetimes without showing any signs of significant physical-mechanical deterioration.

Density	
Test method	DIN EN 1183
Unit of measurement	g/cm ³
Value	0.91
Modulus of elasticity	
Test method	ISO 527
Unit of measurement	MPa = N/mm ²
Value	1300
Charpy impact strength at 23°C	
Test method	DIN EN ISO 179, ASTM D256
Unit of measurement	kJ/m ²
Value	7
Ultimate elongation	
Test method	ISO 527
Unit of measurement	%
Value	60
Shore hardness	
Test method	ISO 868
Unit of measurement	Shore D
Value	83
Tensile strength	
Test method	ISO 527
Unit of measurement	MPa = N/mm ²
Value	30
VICAT softening point (B/50)	
Test method	ISO 306
Unit of measurement	°C
Value	152
Heat distortion temperature HDT (0.46 N/mm²)	
Test method	ASTM D648
Unit of measurement	°C
Value	95-105
Thermal conductivity at 23°C	
Test method	EN 12664
Unit of measurement	W/(m °C)
Value	0.22
Coefficient of linear thermal expansion	
Test method	DIN 53752 – ASTM D696
Unit of measurement	m/(m °C)
Value	1.5 x 10 ⁻⁴
Limiting Oxygen Index	
Test method	ISO 4589-1 – ASTM D2863
Unit of measurement	%
Value	17.5

Reference standards

PP-H

Production of the PP-H (100) lines is carried out according to the highest quality standards and in full compliance with the environmental restrictions set by the applicable laws in force and in accordance with ISO 14001.

All products are made in accordance with the quality guarantee system in compliance with ISO 9001.

- **ANSI B16.5 cl.150**

Pipe flanges and stubs – NPS 1/2 to NPS 24 mm/inch

- **ASTM D4101**

Polypropylene materials suitable for injection molding and extrusion

- **DIN 8077-8078**

PP-H pipe dimensions, metric series

- **DVS 2207-11**

Welding of thermoplastics – Heated element welding of pipes, pipeline components and sheets made of PP

- **DVS 2208-1**

Machinery and equipment for thermocouple welding pipes, pipe parts and panels

- **EN 10226**

Pipe threads where pressure tight joints are made on the threads

- **EN 1092-1**

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

- **EN 12201**

Plastics piping systems for water supply, and for drains and sewers under pressure – Polyethylene

- **EN 14728**

Imperfections in thermoplastic welds – classification

- **EN ISO 15494**

Specifications for components (Pipes, Fittings and Valves) in PP-H 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 4427**

Plastics piping systems for water supply, and for drains and sewers under pressure
– Polyethylene

- **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 11318**

Socket welding of PP-H components.

- **UNI 11397**

Butt welding of PP-H components.

- **UNI EN 558-1**

Industrial valves – Overall dimensions of metal valves for use in flanged pipe systems – Part 1: PN designated valves

Approvals and quality marks



- **DIBt**

FIP PP-H valves and pipe have been tested and certified by DIBt (Deutsches Institut für Bautechnik)



- **RINA**

FIP PP-H valves have been recognised as suitable for conveying, treating domestic and air conditioning waters on board ships and other units classified by RINA.



- **UKR SEPRO**

FIP fittings and valves are certified in accordance with Ukrainian Health, Safety and Quality standards



- **NIZP**

FIP PP-H fittings and valves have been recognised as suitable for conveying drinking water by the NIZP (National Institute of Public Health - Poland)



- **NSF**

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

Main properties

PP-H

Properties of PP-H		Benefits
Thermal resistance		• Service range 0 °C - 95 °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		• Suitable for conveying chemicals (excellent results with saline solutions, acids, alkalis, alcohols, water and many organic solvents.)
Abrasion resistance		• Extremely low operating costs due to its long service life
Insulating		• Non-conductive (immune to galvanic corrosion) • No condensation problems • Minimum heat loss
Easy jointing (hot socket, butt and electrofusion welding, flanging and threading)		• Low installation costs • Possible connection with many accessories and appliances
Low specific weight		• Low transport costs • Ease of handling and installation

Socket welding instructions

Hot socket welding involves fusing the pipe in the fitting's socket.

The joint is made by simultaneously fusing the male and female surfaces by means of special manual or automatic heating devices.

These devices, in their simplest form, are composed of a heating plate on which a series of heating bushes are mounted.

The device comes with an appropriate heating system complete with an automatic temperature controller. No additional materials are required for this type of welding.

Socket welding does not affect the chemical resistance of the PVDF, nor does it influence the inner pressure resistance of the assembled pipes and fittings.

The pipe to be welded must be cut, chamfered and peeled if necessary.

The external surface of the pipe and the internal surface of the fitting must be carefully cleaned, and the external surfaces of the pipe and fitting can be marked with a reference notch to eliminate the risk of inadvertent rotation while the joint is setting.

The next step is to insert the pipe in the female bush and the fitting in the male bush and hold them in position for the necessary heating time; when this time has elapsed, the parts must be quickly removed from the bushes and then the pipe inserted into the fitting to the full previously determined insertion length, ensuring the reference notches are correctly aligned.

The two elements must be supported for approximately 15 seconds after initial insertion and then left to cool at ambient temperature without using forced air flows or water immersion.

Procedure for hot socket welding

The method described below is applicable only when creating thermal socket welds that call for the use of manual type welding equipment (fig. 1).

The use of automatic and semi-automatic appliances, which are particularly suitable for diameters greater than 63 mm, calls for a specific working knowledge of the welding tool. In this case, adhere strictly to the tool manufacturer's instructions.

1) Select the female bushes and the male bushes of the required diameters, insert them and secure them to the heating plate (fig. 1).

2) Carefully clean the contact surfaces (fig. 3). When choosing the type of liquid detergent, use recommended products supplied by specialist producers: trichloroethane, chloroethene, ethyl alcohol and isopropyl alcohol are all suitable.

3) Set the temperature of the heating tool. To form the joint correctly, the temperature should be set between 250° C and 270° C.

4) When the appliance has reached the preset temperature, check the temperature of the heating plate using a fast acting thermoprobe.

5) Cut the pipe at right angles, chamfer it and if necessary peel it out (fig. 4-5). The peeling diameter and length and the chamfer depth must correspond to the values shown in the table named "Pipe peeling and chamfer dimensions". The chamfering process can be performed either after peeling or concurrently with this operation, using special calibrated tools.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

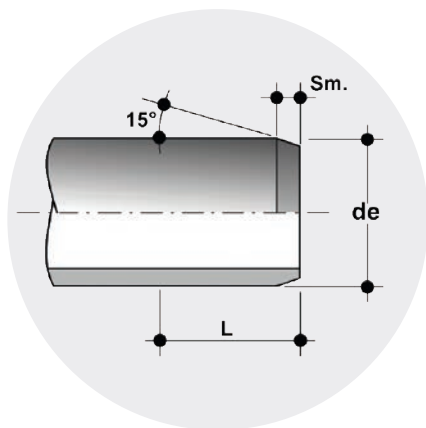


Fig. 10



Fig. 11

- 6) Mark the pipe with the insertion length L1 (fig. 6), referring to the values indicated in the table named "Pipe insertion length" and checking that any peeling has been machined to the entire length shown in the table.
- 7) Mark a longitudinal reference line on the outside of the pipe and the fitting to prevent the two parts from rotating while the joint is being made (fig. 7).
- 8) Clean the fitting and pipe from any traces of oil or dust on the weld surfaces (fig. 8).
- 9) After having checked that the surface temperature of the heating plate has stabilized at the required value, insert the pipe into the female bush and the fitting in the male bush (fig. 9). Holding the parts inserted in the two bushes (fitting inserted to limit stop, pipe inserted up to the end of the peeling length), wait for the minimum heating time shown in the table named "Heating, welding and cooling times".
- 10) When the minimum heating time has elapsed, quickly remove the elements from the bushes and fit the pipe into the fitting for the entire insertion length L1 marked previously (fig. 10). Do not turn the pipe in the fitting; ensure the longitudinal reference marks are perfectly aligned (fig. 11).
- 11) According to the table named "Heating, welding and cooling times", hold the jointed elements for the welding time, called "Changeover time". Then let them to cool down for the "Cooling time". It is important to remark that this step should be at ambient temperature and without using forced air flows or water immersion.
- 12) When the internal and external surfaces have cooled sufficiently, pressurize the plant for the joint hydraulic test.



Pipe peeling and chamfer dimensions

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

Pipe insertion length

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

Heating, welding and cooling times

De (mm)	PP pipes according to: DVS 2207 Part 11				
	Minimum thickness* (mm)	Heating time SDR 11 (sec)	Heating time SDR 17,6 (sec)	Change over time (s)	Cooling time (min)
20	2.5	5	–	4	2
25	2.7	7	–	4	2
32	3	8	–	6	4
40	3.7	12	–	6	4
50	4.6	18	–	6	4
63	3.6	24	10	8	6
75	4.3	30	15	8	6
90	6.1	40	22	8	6
110	6.3	50	30	10	8

* For proper welding, we recommend using pipes with wall thickness exceeding 2 mm, and precisely:

- for De up to 50 mm: pipe series PN 10 and PN 16;
- for De from 63 to 110 mm: pipe series PN 16, PN 10 and PN 6.

Butt welding instructions

Butt welding with contact heating elements is the process of joining two elements (pipes and/or fittings) of the same diameter and thickness, the joining surfaces of which are heated until fusion by contact with a heating element and then, after the heating element has been removed, are pressed together to form the weld. The following instructions are provided for reference purposes only. Installers must be properly trained and have an in-depth knowledge of the procedures to be followed according to the type of welding equipment being used.

Preliminary checks before welding

To ensure the joint is made properly:

- Ambient temperatures must be within the range from +5 °C to +40 °C.
- When inspecting the elements to be welded together, check the dimensions (check for excess ovality).
- Check the working temperature of the heating element with a calibrated contact thermometer. This measurement must be made 10 minutes after the rated temperature has been reached, thus allowing the element to heat up over its entire surface area and depth. Fusion temperature must be between 200° C and 220° C.
- Check the surface of the heating element (integrity of the non-stick coating) and clean with a lint-free cloth or soft paper wipe.
- Check that the welding unit is functioning correctly.
- Check the efficiency of the welding unit jaw clamps; ensure they are able to guarantee the correct alignment between the two sides of the joint and that the contact surfaces are perfectly parallel.
- Check the pulling force of the carriage, both in terms of friction and in relation to the load to be moved (pipes or fittings).
- Check the efficiency of the measuring instruments (pressure gauge and timer).
- Check that the pipes and/or fittings to be welded together are of the same diameter and thickness (same SDR).

Preparing for welding

- **Cleaning the surfaces:** Before positioning the parts to be welded, remove all traces of dirt, grease, oil, dust, etc., from the external and internal surfaces of the ends, using a clean, lint-free cloth soaked in a suitable detergent. When choosing the type of liquid detergent, use recommended products supplied by specialist producers: trichloroethane, chlorothene, ethyl alcohol and isopropyl alcohol are all suitable.
- **Clamping the ends:** The ends of the two parts to be welded must be clamped in such a way that axial misalignment does not exceed 10% of the thickness (fig. 1).
- **Planing the edges to be welded:** to guarantee proper parallelism and flatness, and, equally important, to eliminate the film of oxide that forms, the ends of the two parts to be joined must be planed. When this procedure is concluded, bring the two ends into contact and ensure that any clearances between them do not exceed 0.5 mm. The shavings must form continuously on both the edges to be welded (fig. 2). It is good practice, after the planing stage, to inspect the resulting shavings to verify the absence of manufacturing defects. Shavings must be removed from the internal surface of the components to be welded using a brush or a clean cloth. In any event, after planing, the two surfaces must not be touched or contaminated in any other way; for this reason the welding operations must be performed immediately after preparation. If any traces of dust have settled on the planed surfaces, before they can be welded they should be cleaned with a cloth soaked in specific detergent.

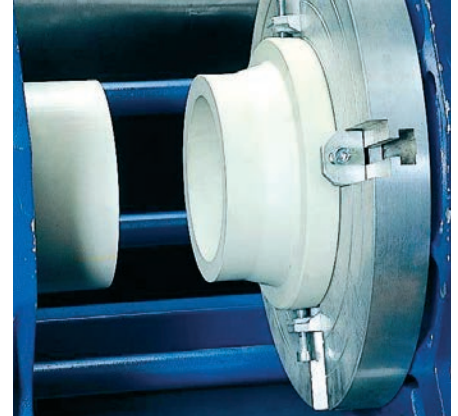


Fig. 1

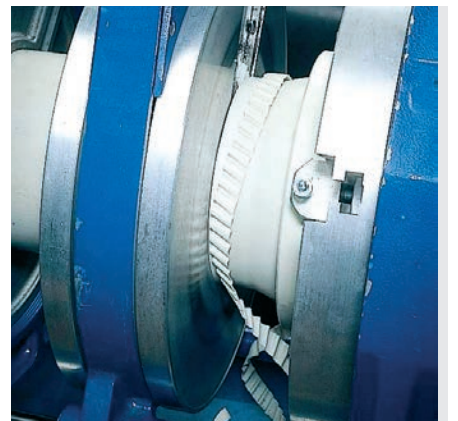


Fig. 2

Butt welding procedure

The butt fusion welding of pipes and/or fittings using contact heating elements must be performed by carrying out all the steps in the welding cycle, and picture at the end of this chapter.

- **Equalizing:** As shown in the welding cycle, equalizing is the first step, where the two edges to be welded are located against the heating element at a pressure equal to $p_1 + p_t$, for the necessary time, with the purpose of creating a uniform internal and external bead (fig. 3).

This equalizing step is finished when the bead heights around the entire pipe circumference have reached the values specified in the next table. The equalizing pressure value must be such that, when in contact with the heating element, the surfaces to be welded are subjected to the pressure described in the table.; to achieve this condition, p_1 pressure values must be taken from the tables supplied by manufacturer of the fusion jointing machine, because, apart from the diameter and thickness of the elements to be welded, these values also depend on the cross section of the thrust cylinder in the welder circuit and can therefore alter in accordance with the specific model of welding unit you are using.

The symbol p_t indicates the pulling pressure required to overcome the friction offered by the welding unit and the weight of the pipe locked in the mobile guide, combining to impede the free movement of the guide. This reading is taken on the pressure gauge supplied with the machine, while moving the mobile guide (fig. 4). In any event, it must never be higher than the pressure value p_1 , otherwise it may prove necessary to use carriages or suspension systems to facilitate movement of the pipe.

- **Pre-heating:** after the lip has formed, the pressure is lowered (10% of the contact and preheating value), thus allowing the material to heat up uniformly through its entire depth.

- **Changeover (Removing the heating element):** this phase must be performed as rapidly as possible, detaching the pipe edges to be welded from the heating element, extracting the element without damaging the softened surfaces and then immediately bringing the two edges to be welded into contact with each other. This procedure must be performed quickly to avoid the risk of excessive cooling of the edges (surface temperature falls by 17 °C in just 3 seconds)

- **Jointing build-up period:** the two edges are brought into contact and the relative pressure is increased progressively to the value $(p_5 + p_t)$, where $p_5 = p_1$ and p_t is the pulling pressure (fig. 5).

- **Welding:** Welding pressure must be maintained for the time described in the cooling time for joining pressure column. (fig. 6).

- **Cooling:** once the joint has been welded, contact pressure is removed and the joined parts can be removed from the fusion jointing machine, although it must not be subjected to mechanical stress until it has cooled completely. Time requested to get a complete cooling is the same described in the table in "Cooling time" column.

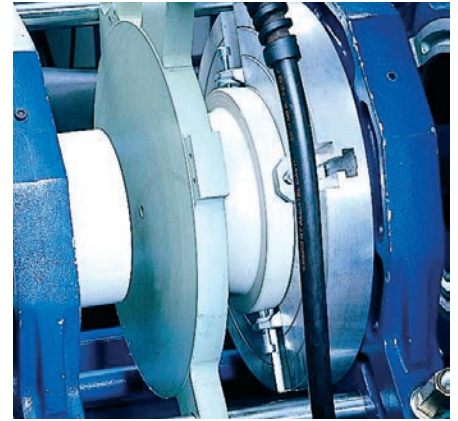


Fig. 3

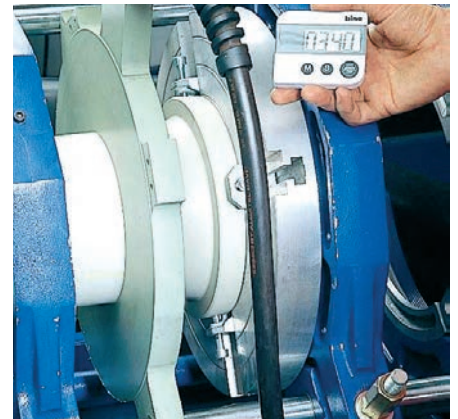


Fig. 4

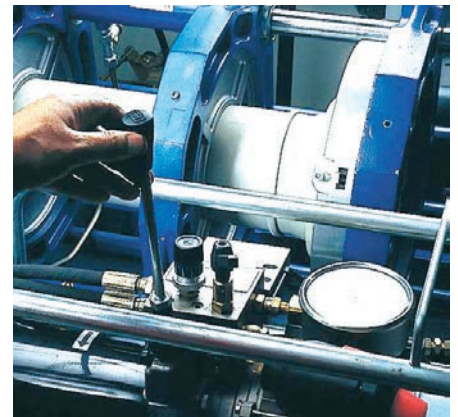
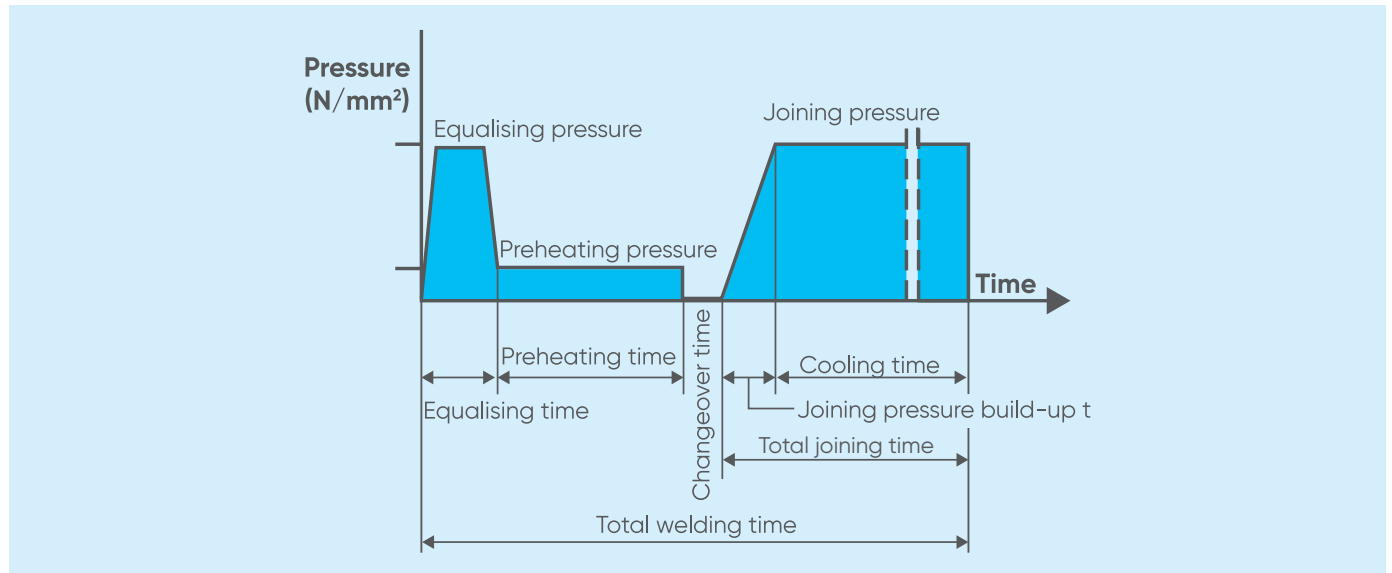


Fig. 5



Fig. 6

Welding cycle



Nominal wall thickness (mm)	Equalizing Bead height on heating element at end of equalizing time (minimum values) (equalizing $p=0.15\pm0.01 \text{ N/mm}^2$) (mm)	Preheating Preheating time=10x nominal wall thickness (preheating $p\leq0.01 \text{ N/mm}^2$) (sec)	Changeover Changeover time (maximum) (sec)	Joining pressure build-up time (Maximum time, may be undercut by up to 50%) (sec)	Cooling time (minimum values) at joining pressure $p=0.15\pm0.01 \text{ N/mm}^2$ (min)
up to 4.5	0.5	up to 53	5	6	table below
4.5 - 7	0.5	53 - 81	5 - 6	6 - 7	
7 - 12	1	81 - 135	6 - 7	7 - 11	
12 - 19	1	135 - 206	7 - 9	11 - 17	
19 - 26	1.5	206 - 271	9 - 11	17 - 22	
26 - 37	2	271 - 362	11 - 14	22 - 32	
37 - 50	2.5	362 - 450	14 - 17	32 - 43	
50 - 70	3	450 - 546	17 - 22	43	

Nominal wall thickness (mm)	Cooling time (minimum values) at joining pressure $p=0.10\pm0.01$ N/mm ² as a function of ambient temperature			
	Up to 15°C (min)	15°C - 25°C (min)	25°C - 40°C Cooling time (min)	Cooling time (minimum values) at pressure welding $p= 0.10\pm0.01$ N/mm ² in special conditions* (min)
up to 4.5	4	5	6.5	3.5
4.5 - 7	4 - 6	5 - 7.5	6.5 - 9.5	3.5 - 5
7 - 12	6 - 9.5	7.5 - 12	9.5 - 15.5	5 - 8
12 - 19	9.5 - 14	12 - 18	15.5 - 24	8 - 12
19 - 26	14 - 19	18 - 24	24 - 32	12 - 16
26 - 37	19 - 27	24 - 34	32 - 45	16 - 23
37 - 50	27 - 36	34 - 46	45 - 61	23 - 31
50 - 70	36 - 50	46 - 64	61 - 85	31 - 43

* These cooling times apply only under the following conditions:

- welding done in the laboratory/workshop;
- the removal of the part from the welding machine and its temporary storage until it has completely cooled down for the defined time in accordance with the fifth column above causes negligible loading of the joint connection.



WARNINGS

During the butt welding, take care of the following recommendations:

- Always wear appropriate personal protective equipment (for example, gloves and safety glasses to protect hands and eyes).
- Follow all the safety instructions specified by welding equipment manufacturer.
- It is a good practice, after the planing stage, to inspect the resulting shavings to verify the absence of manufacturing defects. Shavings must be removed from the internal surface of the components to be welded using a brush or a clean cloth.
- In any event, after planing, the two surfaces must not be touched or contaminated in any other way; for this reason, the welding operations must be performed immediately after preparation.
- If any traces of dust have settled on the planed surfaces, before they can be welded, they should be cleaned with a cloth soaked in specific detergent.

Checking the quality of the welded joint

Joints can be checked using two alternative techniques: non-destructive tests and destructive tests. While these latter tests call for the use of special equipment, the quality of the joint can also be checked with a simple visual inspection.

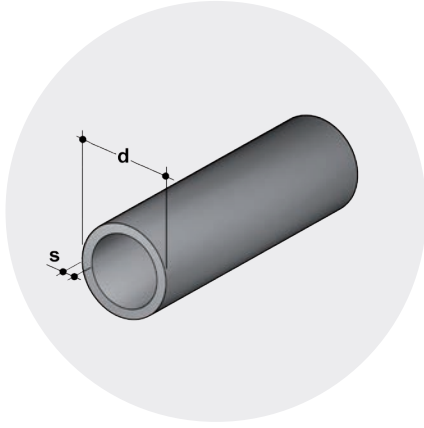
Visual inspections should assess the following points:

- a) The weld bead must be uniform around the entire circumference of the joint;
- b) The notch in the centre of the bead must remain above the outside diameter of the welded parts;
- c) The external surface of the bead must not show any signs of porosity or inclusions of dust or other contaminants;
- d) There should be no visible signs of surface breakup;
- e) The surface of the weld bead should not have a very highly reflective finish, as this is a sign of overheating;
- f) Axial misalignment of the welded parts must be no greater than 10% of their thickness.

Most common defects

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

Irregular path of the weld bead around the circumference of the pipe	
Possible causes	Insufficiently meticulous preparation of ends to be welded with consequent uneven heat distribution
Reduced size of weld bead	
Possible causes	Incorrect adjustment of welding parameters (temperature, pressure and time)
Notch in centre of bead is too deep	
Possible causes	Temperature or pressure values are too low
Inclusions in the surface of the weld bead	
Possible causes	Insufficient cleaning of the ends to be welded
Porosity of weld bead	
Possible causes	Welding performed in excessively humid ambient conditions
Surface of weld bead presents an excessively smooth shiny finish	
Possible causes	Overheating during welding
Misalignment exceeds 10% of the thickness of the pipe and the fitting	
Possible causes	Incorrectly executed centring or excessive ovality of pipe



Compatibility and safety factors

PP-H components can be welded to compatible components in PPR and PPB without problems, once that the compatibility of the MFI value according to the DVS standard is verified. Because of the difference between PP-H and PPR in terms of MRS (MRS10 for PP-H, MRS8 for PPR, where MRS or Minimum Required Strength is the minimum guaranteed breaking strength of the material, subjected to tangential tension using hydrostatic pressure, at a temperature of 20 °C and for a lifetime of 50 years) and the consequent safety factors to be adopted, exact correspondence of the wall thickness / outside diameter ratio is of the maximum importance.

For this purpose, both the SDR (Standard Dimension Ratio) and the Series of thicknesses S have been introduced. In accordance with standard EN ISO 15494, the safety factor to be adopted and the SDR/Series determine the reference nominal pressure value PN (PN: max. working pressure in bar at 20 °C, for a duration of 50 years, in water).

$$\text{SDR} = \frac{d}{s} \quad \sigma = \frac{\text{MRS}}{c} \quad s = \frac{(\text{SDR} - 1)}{2} \quad \text{PN} = \frac{\sigma}{s}$$

SDR	s
11	5
17.6	8.3

Wall thickness

d	Wall thickness S (mm)	
	SDR 11 - ISO S 5	SDR 17,6 - ISO S 8.3
12	1.8	-
16	1.8	-
20	1.9	1.8
25	2.3	1.8
32	2.9	1.9
40	3.7	2.3
50	4.6	2.9
63	5.8	3.6
75	6.8	4.3
90	8.2	5.1
110	10	6.3
125	11.4	7.1
140	12.7	8.0
160	14.6	9.1
180	16.4	10.2
200	18.2	11.4
225	20.5	12.8
250	22.7	14.2
280	25.4	15.9
315	28.6	17.9
355	32.2	20.1
400	36.3	22.7
450	40.9	25.5
500	45.4	28.3
560	50.8	31.7
630	-	35.7
710	-	40.2
800	-	45.3

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

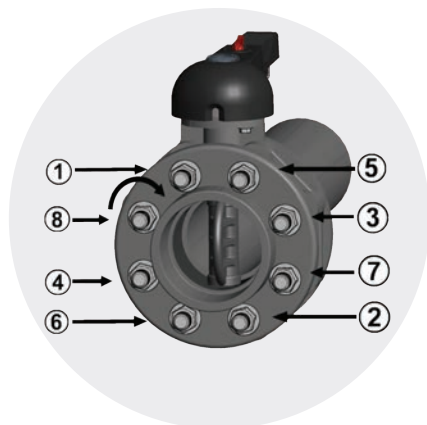


Fig. 1

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

Here the maximum suggested tightening torques for ODT backing rings

DN	20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	250	280	315
Nm	10	15	15	20	25	35	35	35	35	35	45	70	70	70	70	70	70	90

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.

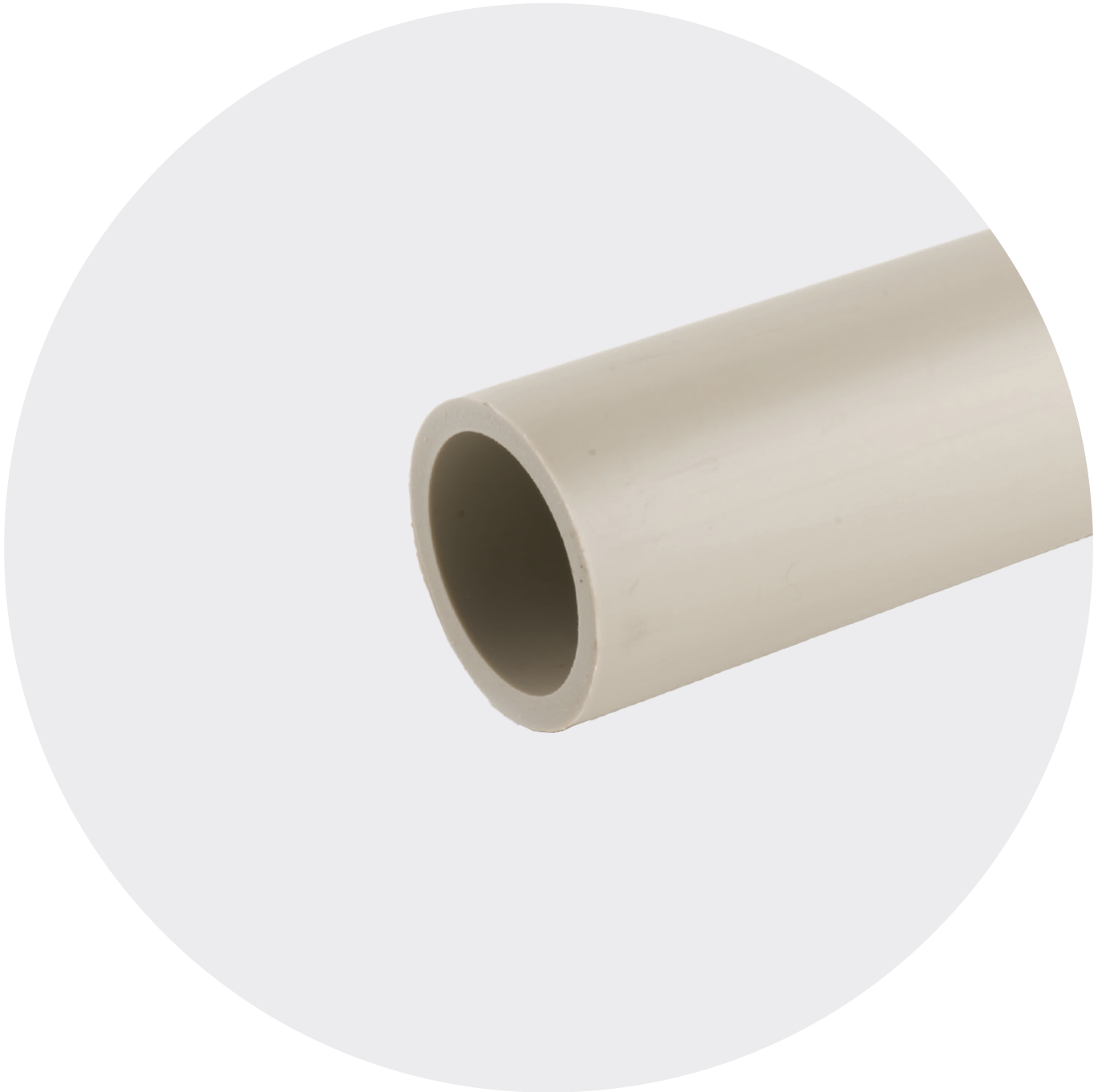
Minimum length of bolts

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	Bolts	Lenght for stub end SDR11	Lenght for stub end SDR17
20	15	M 12	65	-
25	20	M 12	70	-
32	25	M 12	80	-
40	32	M 16	90	90
50	40	M 16	90	90
63	50	M 16	100	100
75	65	M 16	110	100
90	80	M 16	110	110
110	100	M 16	110	110
125	125	M 16	130	120
140	125	M 16	140	120
160	150	M 20	140	130
180	150	M 20	150	130
200	200	M 20	160	140
225	200	M 20	160	140
250	250	M 20	180	150
280	250	M 20	180	150
315	300	M 20	190	160
355	350	M 20	200	180
400	400	M 24	230	210

ISO-UNI PIPE

Pressure pipe



ISO-UNI PIPE

Pressure pipes for connection system
by butt or socket welding.

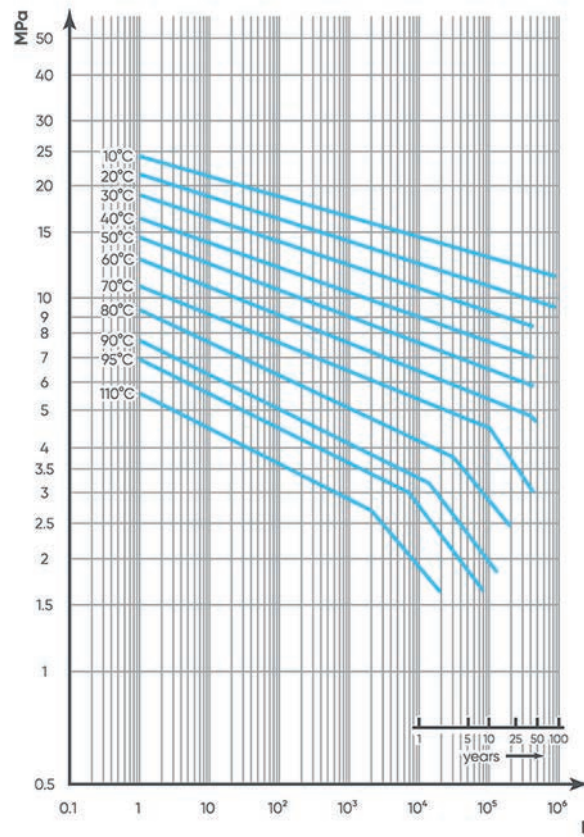
PRESSURE PIPE

Technical specifications	
Size range	d 20 ÷ d 400 (mm)
Nominal pressure	SDR 17,6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494 Can be coupled to pipes according to EN ISO 15494
Reference standards	Construction criteria: EN ISO 15494
	Test methods and requirements: EN ISO 15494
	Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318, UNI 11397
Material	PP-H, PP-R

TECHNICAL DATA

REGRESSION CURVES FOR PIPES IN PP-H

Regression coefficients in accordance
with standards DIN and EN ISO for MRS
= 10 N/mm²

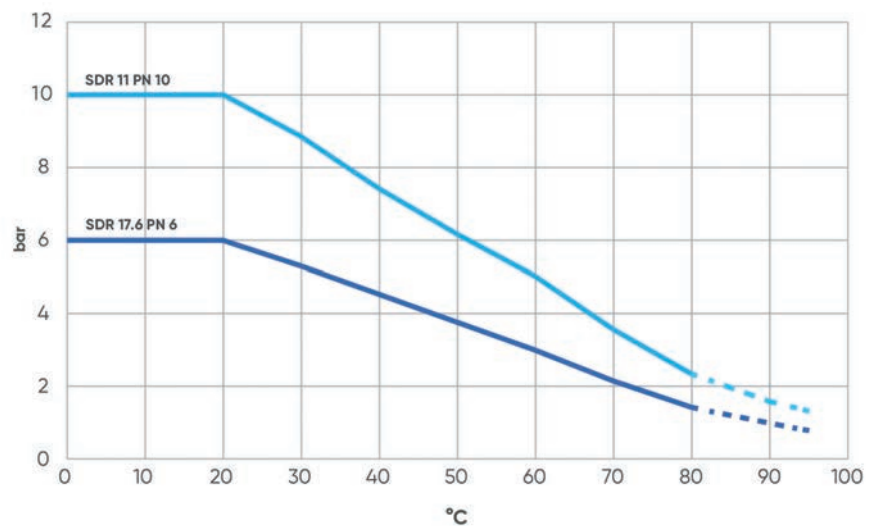


PRESSURE VARIATION ACCORDING TO TEMPERATURE

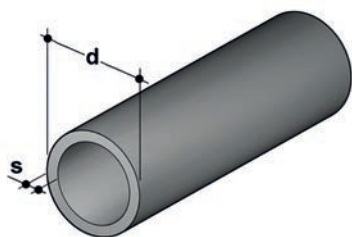
For water and non-hazardous fluids
with regard to which the material is
classified as CHEMICALLY RESISTANT. In
other cases, a reduction of the nominal
pressure PN is required.

SDR 11 ISO-S5 - 25 years

SDR 17.6 ISO-S8.3 - 25 years



DIMENSIONS



PIPE PN6

PP-H pressure pipe according to DIN 8077/8078, Beige - RAL 7032, standard length 5m PN6

d	DN	S (mm)	kg/m	PN6 code SDR 17,6 - S 8,3
*25	20	1,8	0,13	PIPEM17025
*32	25	1,9	0,17	PIPEM17032
*40	32	2,3	0,27	PIPEM17040
*50	40	2,9	0,42	PIPEM17050
*63	50	3,6	0,66	PIPEM17063
*75	65	4,3	0,94	PIPEM17075
*90	80	5,1	1,33	PIPEM17090
*110	100	6,3	1,99	PIPEM17110
*125	100	7,1	2,55	PIPEM17125
*140	125	8,0	3,20	PIPEM17140
*160	150	9,1	4,17	PIPEM17160
*180	150	10,2	5,25	PIPEM17180
*200	200	11,4	6,50	PIPEM17200
*225	200	12,8	8,19	PIPEM17225
*250	250	14,2	10,10	PIPEM17250
*280	250	15,9	12,60	PIPEM17280
*315	300	17,9	16,00	PIPEM17315
*355	350	20,1	20,30	PIPEM17355
*400	400	22,7	25,70	PIPEM17400
*450	500	25,5	32,50	PIPEM17450
*500	500	28,4	40,20	PIPEM17500
*560	600	31,7	50,30	PIPEM17560
*630	600	35,7	63,70	PIPEM17630
*710	700	40,2	80,80	PIPEM17710
*800	800	45,3	103,00	PIPEM17800

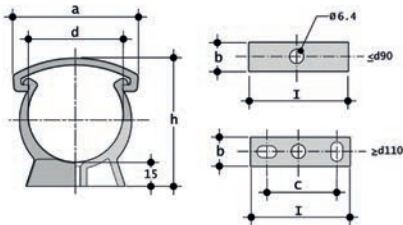
*resale products

PIPE PN10

PP-H Pipe according to DIN 8077/8078, Beige - RAL 7032, standard length 5m PN10

d	DN	S (mm)	kg/m	PN10 code SDR 11 - S 5
*12	8	1,8	0,06	PIPEM11012
*16	12	1,8	0,08	PIPEM11016
20	15	1,9	0,11	PIPEM11020
25	20	2,3	0,16	PIPEM11025
32	25	2,9	0,26	PIPEM11032
40	32	3,7	0,41	PIPEM11040
50	40	4,6	0,64	PIPEM11050
63	50	5,8	1,01	PIPEM11063
75	65	6,8	1,41	PIPEM11075
90	80	8,2	2,03	PIPEM11090
110	100	10,0	3,01	PIPEM11110
125	100	11,4	3,91	PIPEM11125
140	125	12,8	4,87	PIPEM11140
160	150	14,6	6,38	PIPEM11160
*180	150	16,4	8,07	PIPEM11180
*200	200	18,2	10	PIPEM11200
*225	200	20,5	12,60	PIPEM11225
*250	250	22,7	15,50	PIPEM11250
*280	250	25,4	19,40	PIPEM11280
*315	300	28,6	24,60	PIPEM11315
*355	350	32,2	31,20	PIPEM11355
*400	400	36,3	40	PIPEM11400
*450	500	40,9	50,10	PIPEM11450
*500	500	45,9	61,80	PIPEM11500

*resale products

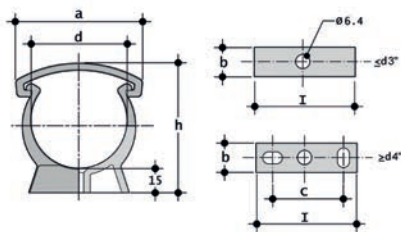


ZIKM

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)

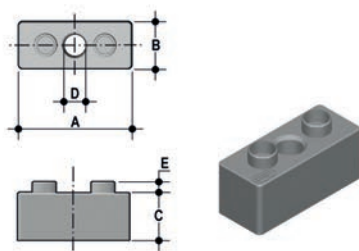


ZAKM

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)



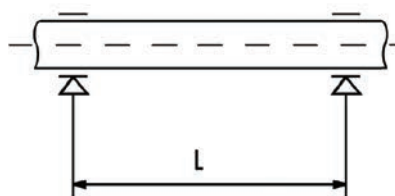
DSM

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



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 PP-H pipes conveying liquids of density 1 g/cm³ (water and other fluids of equal intensity)

For pipes of SDR 11 / S 5 / PN 10:

d mm	< 20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C
16	650	625	600	575	550	525	500
20	700	675	650	625	600	575	550
25	800	775	750	725	700	675	650
32	950	925	900	875	850	800	750
40	1100	1075	1050	1000	950	925	875
50	1250	1225	1200	1150	1100	1050	1000
63	1450	1425	1400	1350	1300	1250	1200
75	1550	1500	1500	1400	1350	1300	1250
90	1650	1600	1700	1500	1450	1400	1350
110	1850	1800	1800	1700	1600	1500	1400
125	2000	1950	1900	1800	1700	1600	1500
140	2100	2050	2000	1900	1800	1700	1600
160	2250	2200	2100	2000	1900	1800	1700
180	2350	2300	2200	2100	2000	1900	1800
200	2500	2400	2300	2200	2100	2000	1900
225	2650	2550	2450	2350	2250	2150	2000
250	2800	2700	2600	2500	2400	2300	2150
280	2950	2850	2750	2650	2550	2450	2300
315	3150	3050	2950	2850	2700	2600	2450
355	3350	3250	3150	3000	2850	2750	2600
400	3550	3450	3350	3200	3050	2900	2750

* The distance L can be increased by 30% in case of vertical installation of the pipe

For different SDR values, multiply the data in the table by the following factors:

0,91 for SDR 17 and SDR 17,6

Supporting PP-H pipes conveying liquids of density other than 1 g/cm³.

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

Fluid density in g/cm ³	Support factor
1,25	0,96
1,50	0,92
1,75	0,88
2,00	0,94
< 0,01	1.30 for SDR11 1.47 for SDR17.6

FITTINGS FOR SOCKET WELDING

Fittings, metric series ISO-UNI



FITTINGS FOR SOCKET WELDING

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

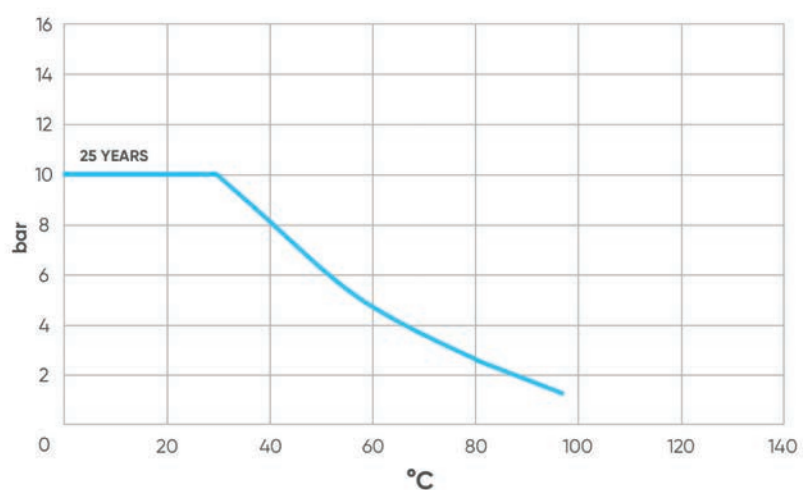
FITTINGS, METRIC SERIES ISO-UNI

Technical specifications	
Size range	d 20 ÷ d 110 (mm)
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 Flanging system: ISO 7005-1, EN 1092-1, EN ISO 15494, ANSI B16.5 cl.150
Reference standards	Construction criteria: EN ISO 15494 Test methods and requirements: EN ISO 15494 Installation criteria: DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
Fitting material	PP-H
Seal material	EPDM, FKM

TECHNICAL DATA

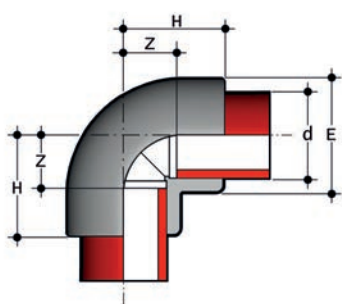
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.



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.

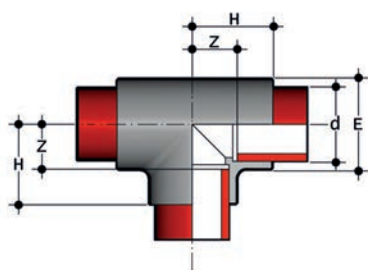
DIMENSIONS



GIM

90° elbow for socket welding

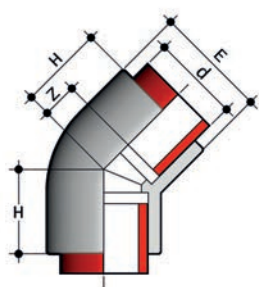
d	DN	PN	E	H	Z	g	Code
20	15	10	28	28	13	14	GIM020
25	20	10	34	32	16	23	GIM025
32	25	10	42	37	20	37	GIM032
40	32	10	52	43	22	64	GIM040
50	40	10	64	51	28	105	GIM050
63	50	10	79	61	34	180	GIM063
75	65	10	93	73	42	300	GIM075
90	80	10	111	85	49	455	GIM090
110	100	10	135	101	59	815	GIM110



TIM

90° Tee for socket welding

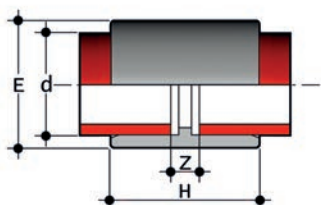
d	DN	PN	E	H	Z	g	Code
20	15	10	28	28	13	19	TIM020
25	20	10	34	32	16	30	TIM025
32	25	10	42	37	19	47	TIM032
40	32	10	52	43	23	80	TIM040
50	40	10	64	52	29	145	TIM050
63	50	10	80	63	35	250	TIM063
75	65	10	93	71	40	370	TIM075
90	80	10	111	82	46	560	TIM090
110	100	10	135	100	58	990	TIM110



HIM

45° elbow for socket welding

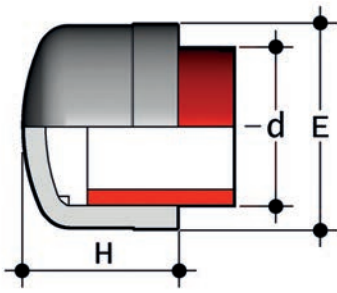
d	DN	PN	E	H	Z	g	Code
20	15	10	28	21	7	12	HIM020
25	20	10	34	25	9	19	HIM025
32	25	10	42	29	12	33	HIM032
40	32	10	52	36	15	57	HIM040
50	40	10	63	43	19	105	HIM050
63	50	10	79	51	24	182	HIM063
75	65	10	92	53	20	200	HIM075
90	80	10	113	61	23,5	335	HIM090
110	100	10	135	71	28	610	HIM110



MIM

Double socket for socket welding

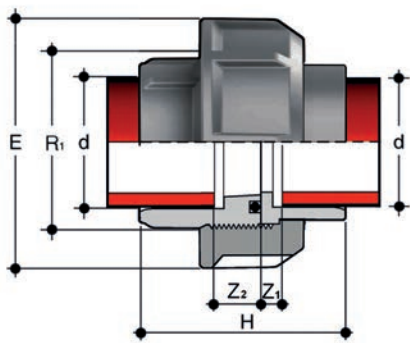
d	DN	PN	E	H	Z	g	Code
20	15	10	28	36	8	10	MIM020
25	20	10	34	39	8	16	MIM025
32	25	10	42	43	9	25	MIM032
40	32	10	52	47	8	39	MIM040
50	40	10	63	55	8	62	MIM050
63	50	10	78	61	9	96	MIM063
75	65	10	91	70	10	145	MIM075
90	80	10	109	80	10	230	MIM090
110	100	10	132	93	12	370	MIM110



CIM

End cap for socket welding

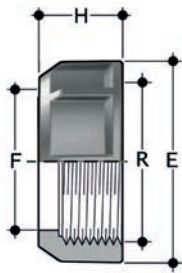
d	DN	PN	E	H	g	Code
20	15	10	28	25	7	CIM020
25	20	10	34	27	11	CIM025
32	25	10	42	32	19	CIM032
40	32	10	51	36	31	CIM040
50	40	10	63	41	50	CIM050
63	50	10	78	44	88	CIM063
75	65	10	91	48	116	CIM075
90	80	10	109	65	212	CIM090
110	100	10	132	71	349	CIM110



BIGM

Union for socket welding with O-Ring in EPDM or FKM

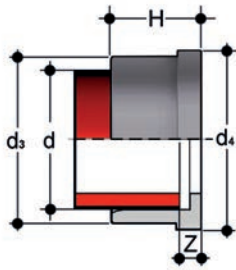
d	R ₁	PN	E	H	Z ₁	Z ₂	g	EPDM code	FKM code
20	1"	10	47	45,5	12	5,5	34	BIGM020E	BIGM020F
25	1 1/4"	10	58	49,5	12	5,5	59	BIGM025E	BIGM025F
32	1 1/2"	10	65	53,5	12	5,5	73	BIGM032E	BIGM032F
40	2"	10	78	59,5	14	5,5	115	BIGM040E	BIGM040F
50	2 1/4"	10	85	67,5	16	5,5	146	BIGM050E	BIGM050F
63	2 3/4"	10	103	79,5	20	5,5	249	BIGM063E	BIGM063F



EFGM

Union nut with BSP thread for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

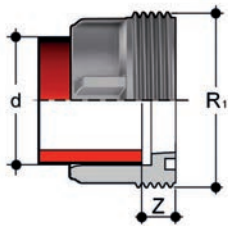
R	d BIGM	PN	E	F	H	g	Code
1"	20	10	47	28	22	19	EFGM100
1 1/4"	25	10	58	36	25	29	EFGM114
1 1/2"	32	10	65	42	27	40	EFGM112
2"	40	10	78	53	30	57	EFGM200
2 1/4"	50	10	85	59	33	74	EFGM214
2 3/4"	63	10	103	74	38	119	EFGM234



Q/BIGM

Union end for socket welding, metric series

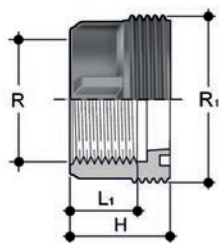
d	PN	d ₃	d ₄	H	Z	g	Code
20	10	27,5	30,1	19,5	5,5	7	QBIGM020
25	10	36	38,8	21,5	5,5	14	QBIGM025
32	10	41,5	44,7	23,5	5,5	17	QBIGM032
40	10	53	56,5	25,5	5,5	30	QBIGM040
50	10	59	62,6	28,5	5,5	30	QBIGM050
63	10	74	78,4	32,5	5,5	51	QBIGM063



F/BIGM

Union bush for socket welding, metric series

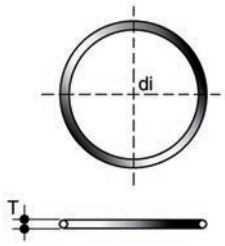
d	R ₁	PN	Z	g	Code
20	1"	10	12	10	FBIGM020
25	1"1/4	10	12	17	FBIGM025
32	1"1/2	10	12	24	FBIGM032
40	2"	10	14	39	FBIGM040
50	2"1/4	10	16	47	FBIGM050
63	2"3/4	10	18	89	FBIGM063



F/BFGM

Union bush for socket welding, metric series

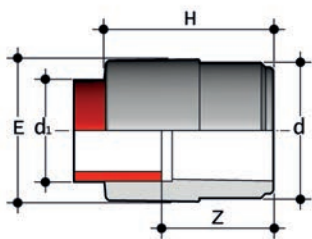
R	R ₁	PN	Z	g	Code
1/2"	31	10	15	15	FBFGM012
3/4"	33	10	16,3	21	FBFGM034
1"	36	10	19,1	35	FBFGM100
1 1/4"	41	10	21,4	35	FBFGM112
1 1/2"	45	10	21,4	75	FBFGM114
2"	50	10	25,7	105	FBFGM200



O-RING

Seals for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

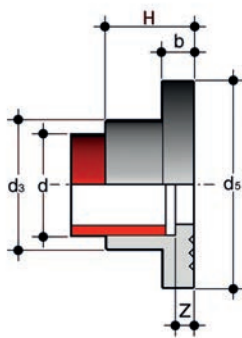
d union	C	di	T	Code	Code
16	3062	15,54	2,62	OR3062E	OR3062F
20	4081	20,22	3,53	OR4081E	OR4081F
25	4112	28,17	3,53	OR4112E	OR4112F
32	4131	32,93	3,53	OR4131E	OR4131F
40	6162	40,65	5,34	OR6162E	OR6162F
50	6187	47	5,34	OR6187E	OR6187F
63	6237	59,69	5,34	OR6237E	OR6237F
75	6300	75,57	5,34	OR6300E	OR6300F
90	6362	91,45	5,34	OR6362E	OR6362F
110	6450	113,67	5,34	OR6450E	OR6450F



RIM

Reducer: spigot (d), reduced socket for socket welding (d₁)

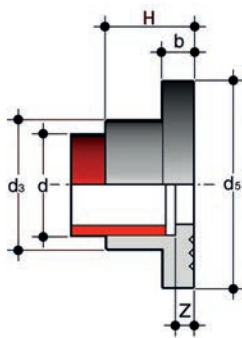
d x d ₁	E	H	Z	g	Code
25 x 20	28	39	25	10	RIM025020
32 x 20	36	43	30	13	RIM032020
32 x 25	34	46	30	17	RIM032025
40 x 25	42	48	33	24	RIM040025
40 x 32	42	51	33	27	RIM040032
50 x 32	52	54	36	39	RIM050032
50 x 40	52	57	36	44	RIM050040
63 x 32	65	61	44	69	RIM063032
63 x 50	65	68	44	76	RIM063050
75 x 50	78	69	47	106	RIM075050
75 x 63	78	75	47	115	RIM075063
90 x 63	92	82	56	156	RIM090063
90 x 75	92	88	56	175	RIM090075
110 x 63	112	93	66	290	RIM110063
110 x 90	112	102	66	305	RIM110090



QRNM

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

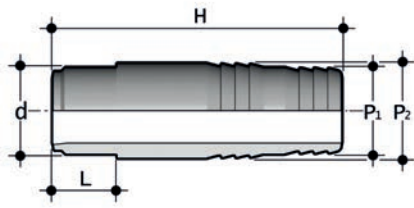
d	DN	PN	b	d ₃	d ₅	H	Z	g	Code
20	15	10	7	27	45	20	6	12	QRNM020
25	20	10	9	33	58	22	6	24	QRNM025
32	25	10	10	41	68	25	6	36	QRNM032
40	32	10	11	50	78	27	6	47	QRNM040
50	40	10	12	61	88	30	6	63	QRNM050
63	50	10	14	76	102	34	6	94	QRNM063
75	65	10	16	90	122	38	6	149	QRNM075
90	80	10	17	108	138	44	8	213	QRNM090
110	100	10	18	131	158	50	8	297	QRNM110



GRAM

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

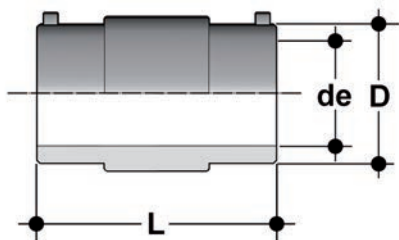
d	DN	PN	OAB size	b	d ₃	d ₅	H	Z	g	Code
25	20	10	3/4"	9	33	22	6	24	24	GRAM034
32	25	10	1"	10	41	25	6	36	36	GRAM100
40	32	10	1 1/4"	11	50	27	6	47	47	GRAM114
50	40	10	1 1/2"	12	61	30	6	63	63	GRAM112
90	80	10	3"	17	108	44	8	213	213	GRAM300



AIM

Hose adaptor with male end for socket welding

d x P ₂ x P ₁	PN	H	L	g	DN	Code
20 x 22 x 20	10	67	16	11	15	AIM020022020
25 x 27 x 25	10	81	18	20	20	AIM025027025
32 x 32 x 30	10	95	20	33	25	AIM032032030
40 x 42 x 40	10	104	22	68	32	AIM040042040
50 x 52 x 50	10	111	25	100	40	AIM050052050
63 x 64 x 60	10	122	29	150	50	AIM063064060

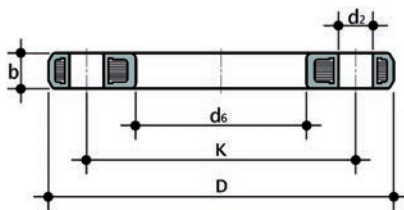


MIMEF

Socket coupling for electrofusion SDR 11 and 17,6

de	D	L	g	Code
*20	30	69	42	MIMEF1117020
*25	35	77	50	MIMEF1117025
*32	44	79	73	MIMEF1117032
40*	53	92	96	MIMEF1117040
*50	64	102	131	MIMEF1117050
*63	80	117	227	MIMEF1117063
*75	95	128	333	MIMEF1117075
*90	112	144	486	MIMEF1117090
*110	136	159	813	MIMEF1117110
*125	153	170	1089	MIMEF1117125
*140	170	183	1365	MIMEF1117140
*160	194	185	1651	MIMEF1117160
*180	218	210	2800	MIMEF1117180
*200	250	210	3700	MIMEF1117200
*225	273	210	3900	MIMEF1117225
*250	315	250	7200	MIMEF1117250
*280	355	290	10800	MIMEF1117280
*315	376	290	9600	MIMEF1117315

*made in PPR
All resale products



ODT/ODT-SW

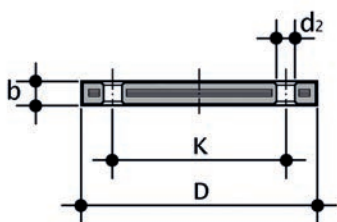
Wedge profile backing ring, with metal core and a PP-GR coating. According to EN/ISO/DIN for stub QRNM. Drilling: PN 10/16.

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

* PMA: maximum allowable pressure

**maximum recommended tightening torque

n = number of bolts



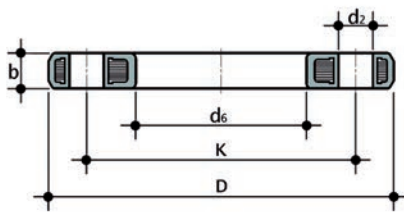
ODBC

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

d	DN	*PMA (bar)	b	d ₂	D	k	M	n	**Nm	g	Code
20	15	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

*PMA maximum admissible working pressure

**nominal tightening torque

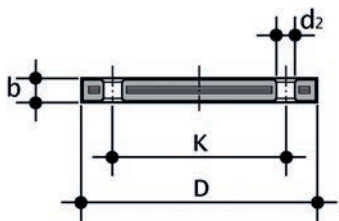


OAT

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

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

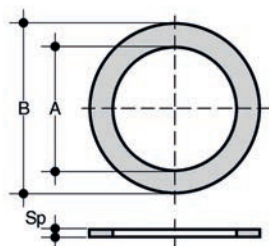


OABC

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

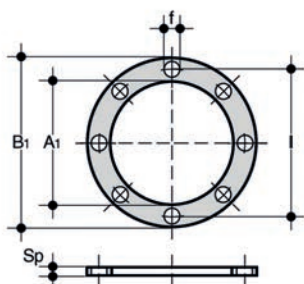
*PMA maximum admissible working pressure
**nominal tightening torque



QHV/X

Flat gasket in EPDM and FKM for flanges 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



QHV/Y

Flat gasket in EPDM for flanges according to EN 1092-1, self-centring for flanges drilled PN 10/16

d	DN	A	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

FITTINGS FOR SOCKET WELDING

ISO-BSP adaptor fittings



FITTINGS FOR SOCKET WELDING

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

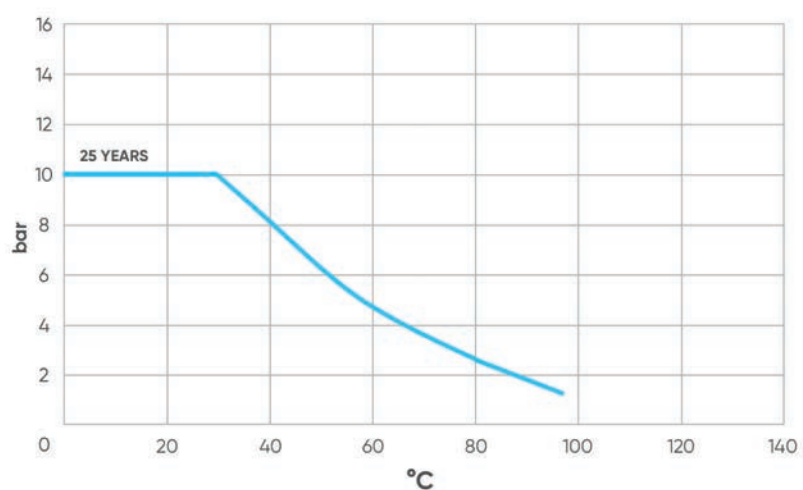
ISO-BSP ADAPTOR FITTINGS

Technical specifications	
Size range	d 20 ÷ 63 (mm); R 3/8" ÷ 2"
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 Thread: ISO 228-1, EN 10226-1/2
Reference standards	Construction criteria: EN ISO 15494 Test methods and requirements: EN ISO 15494 Installation criteria: DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
Fitting material	PP-H
Seal material	EPDM, FKM

TECHNICAL DATA

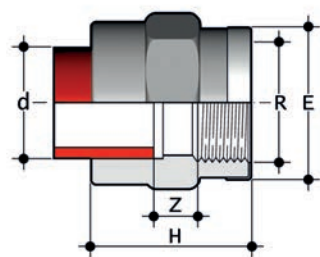
PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.



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.

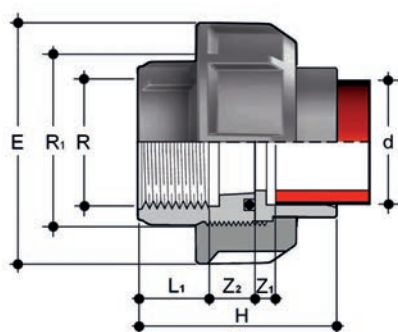
DIMENSIONS



MIMM

Double socket for socket welding (d) and with female BSP thread (R), with STAINLESS steel reinforcing ring

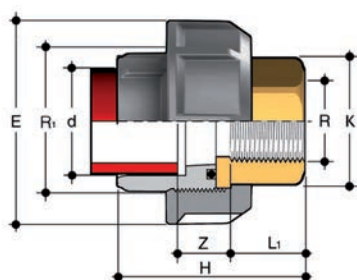
d x R	PN	E	H	Z	g	Code
20 x 1/2"	10	30	39	8	14	MIMM020012
25 x 3/4"	10	39	41	8	23	MIMM025034
32 x 1"	10	47	45	7	40	MIMM032100
40 x 1 1/4"	10	55	50	8	46	MIMM040114
50 x 1 1/2"	10	66	55	9	92	MIMM050112
63 x 2"	10	83	63	9	150	MIMM063200



BIFGM

Union for socket welding (d), BSP (R) threaded female end with O-Ring in EPDM or FKM.

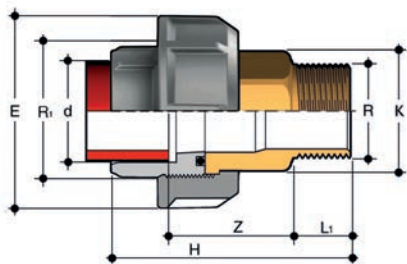
d x R	R ₁	PN	E	H	L ₁	Z ₁	Z ₂	g	EPDM code	FKM code
20 x 1/2"	1"	10	47	50,5	15	5,5	16	43	BIFGM020012E	BIFGM020012F
25 x 3/4"	1 1/4"	10	58	54,5	16,3	5,5	16,7	68	BIFGM025034E	BIFGM025034F
32 x 1"	1 1/2"	10	65	59,5	19,1	5,5	16,9	94	BIFGM032100E	BIFGM032100F
40 x 1 1/4"	2"	10	78	66,5	21,4	5,5	19,6	145	BIFGM040114E	BIFGM040114F
50 x 1 1/2"	2 1/4"	10	85	73,5	21,4	5,5	23,6	196	BIFGM050112E	BIFGM050112F
63 x 2"	2 3/4"	10	103	82,5	25,7	5,5	24,3	312	BIFGM063200E	BIFGM063200F



BIFOM

Adaptor union in PP-H/brass for socket welding (d), BSP (R) threaded brass female end with O-Ring in EPDM

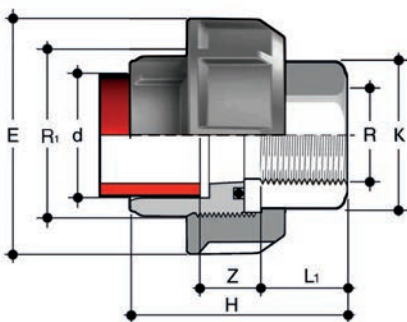
d x R	R ₁	PN	E	H	K	L ₁	Z	g	EPDM code
20 x 1/2"	1"	10	47	48,5	25	16,5	18	89	BIFOM020012E
25 x 3/4"	1 1/4"	10	58	53,5	32	18,5	19	159	BIFOM025034E
32 x 1"	1 1/2"	10	65	57,5	38	19,5	20	180	BIFOM032100E
40 x 1 1/4"	2"	10	78	64,5	48	21,5	23	357	BIFOM040114E
50 x 1 1/2"	2 1/4"	10	85	78,5	55	23	32,5	448	BIFOM050112E
63 x 2"	2 3/4"	10	103	85,5	69	27	31,5	785	BIFOM063200E



BIROM

Adaptor union in PP-H/brass for socket welding (d), BSP threaded brass male end R with O-Ring in EPDM

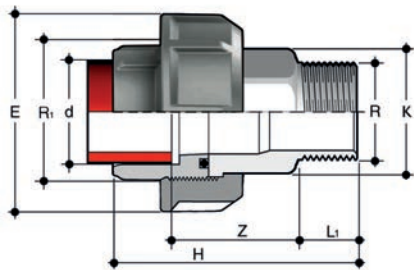
d x R	R ₁	PN	E	H	K	L ₁	Z	g	EPDM code
20 x 1/2"	1"	10	47	65	25	13,5	37,5	134	BIROM020012E
25 x 3/4"	1 1/4"	10	58	71,5	32	15	40,5	227	BIROM025034E
32 x 1"	1 1/2"	10	65	78	38	17,5	42,5	287	BIROM032100E
40 x 1 1/4"	2"	10	78	87	48	19,5	47,5	534	BIROM040114E
50 x 1 1/2"	2 1/4"	10	85	95	55	19,5	52,5	668	BIROM050112E
63 x 2"	2 3/4"	10	103	113,5	69	24	62,5	1144	BIROM063200E



BIFXM

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

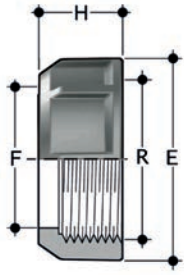
d x R	R ₁	PN	E	H	K	L ₁	Z	g	EPDM code	FKM code
20 x 1/2"	1"	10	47	48,5	25	16,5	18	82	BIFXM020012E	BIFXM020012F
25 x 3/4"	1 1/4"	10	58	53,5	32	18,5	19	146	BIFXM025034E	BIFXM025034F
32 x 1"	1 1/2"	10	65	57,5	38	19,5	20	165	BIFXM032100E	BIFXM032100F
40 x 1 1/4"	2"	10	78	64,5	48	21,5	23	328	BIFXM040114E	BIFXM040114F
50 x 1 1/2"	2 1/4"	10	85	78,5	55	23	32,5	411	BIFXM050112E	BIFXM050112F
63 x 2"	2 3/4"	10	103	85,5	69	27	31,5	720	BIFXM063200E	BIFXM063200F



BIRXM

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

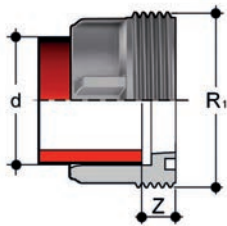
d x R	R ₁	PN	E	H	K	L ₁	Z	g	EPDM code	FKM code
20 x 1/2"	1"	10	47	65	25	13,5	37,5	123	BIRXM020012E	BIRXM020012F
25 x 3/4"	1 1/4"	10	58	71,5	32	15	40,5	208	BIRXM025034E	BIRXM025034F
32 x 1"	1 1/2"	10	65	78	38	17,5	42,5	263	BIRXM032100E	BIRXM032100F
40 x 1 1/4"	2"	10	78	87	48	19,5	47,5	490	BIRXM040114E	BIRXM040114F
50 x 1 1/2"	2 1/4"	10	85	95	55	19,5	52,5	613	BIRXM050112E	BIRXM050112F
63 x 2"	2 3/4"	10	103	113,5	69	24	62,5	1050	BIRXM063200E	BIRXM063200F



EFGM

Union nut with BSP thread for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

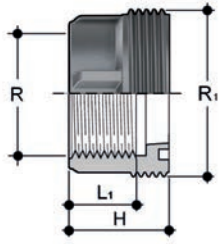
R	d BIGM	PN	E	F	H	g	Code
1"	20	10	47	28	22	19	EFGM100
1 1/4"	25	10	58	36	25	29	EFGM114
1 1/2"	32	10	65	42	27	40	EFGM112
2"	40	10	78	53	30	57	EFGM200
2 1/4"	50	10	85	59	33	74	EFGM214
2 3/4"	63	10	103	74	38	119	EFGM234



F/BIGM

Union bush for socket welding, metric series

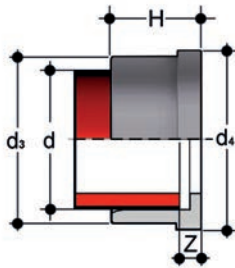
d	R ₁	PN	Z	g	Code
20	1"	10	12	10	FBIGM020
25	1 1/4"	10	12	17	FBIGM025
32	1 1/2"	10	12	24	FBIGM032
40	2"	10	14	39	FBIGM040
50	2 1/4"	10	16	47	FBIGM050
63	2 3/4"	10	18	89	FBIGM063



F/BFGM

Union bush with BSP female thread

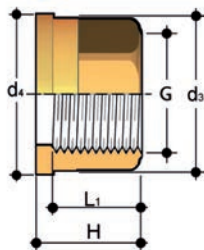
R	R ₁	PN	H	L ₁	g	Code
1/2"	1"	10	31	15	15	FBFGM012
3/4"	1 1/4"	10	33	16,3	21	FBFGM034
1"	1 1/2"	10	36	19,1	35	FBFGM100
1 1/4"	2"	10	41	21,4	55	FBFGM114
1 1/2"	2 1/4"	10	45	21,4	75	FBFGM112
2"	2 3/4"	10	50	25,7	105	FBFGM200



Q/BIGM

Union end for socket welding, metric series

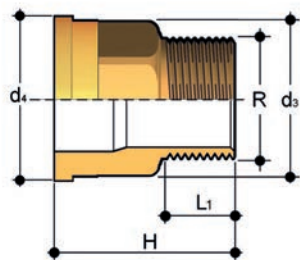
d	PN	d ₃	d ₄	H	Z	g	Code
20	10	27,5	30,1	19,5	5,5	7	QBIGM020
25	10	36	38,8	21,5	5,5	14	QBIGM025
32	10	41,5	44,7	23,5	5,5	17	QBIGM032
40	10	53	56,5	25,5	5,5	30	QBIGM040
50	10	59	62,6	28,5	5,5	30	QBIGM050
63	10	74	78,4	32,5	5,5	51	QBIGM063



Q/BFO

Union end in brass with BSP female thread

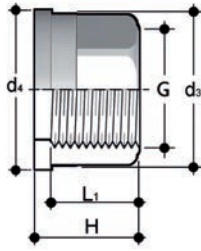
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	21,5	13,5	38	QBFO038
1/2"	27,5	30,1	22,5	16,5	60	QBFO012
3/4"	36	38,8	25,5	18,5	116	QBFO034
1"	41,5	44,7	27,5	19,5	144	QBFO100
1 1/4"	53	56,5	30,5	21,5	260	QBFO114
1 1/2"	59	62,6	33,5	23	325	QBFO112
2"	74	78,4	38,5	27	578	QBFO200



Q/BRO

Union end in brass with BSP male thread

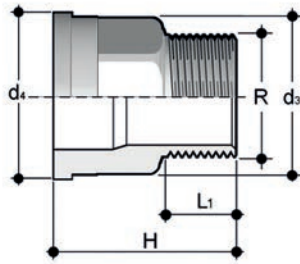
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	34,5	10,5	64	QBRO038
1/2"	27,5	30,1	39	13,5	105	QBRO012
3/4"	36	38,8	43,5	15	184	QBRO034
1"	41,5	44,7	48	17,5	251	QBRO100
1 1/4"	53	56,5	53	19,5	437	QBRO114
1 1/2"	59	62,6	56	19,5	545	QBRO112
2"	74	78,4	65,5	24	937	QBRO200



Q/BFX

Union end in A316L STAINLESS steel with female BSP thread

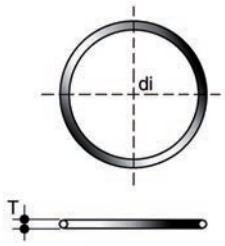
R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	21,5	13,5	34	QBFX038
1/2"	27,5	30,1	22,5	16,5	54	QBFX012
3/4"	36	38,8	25,5	18,5	104	QBFX034
1"	41,5	44,7	27,5	19,5	130	QBFX100
1 1/4"	53	56,5	30,5	21,5	234	QBFX114
1 1/2"	59	62,6	33,5	23	293	QBFX112
2"	74	78,4	38,5	27	520	QBFX200



Q/BRX

Union end in A316L STAINLESS steel with male BSP thread

R	d ₃	d ₄	H	L ₁	g	Code
3/8"	22	24	34,5	10,5	58	QBRX038
1/2"	27,5	30,1	39	13,5	95	QBRX012
3/4"	36	38,8	43,5	15	166	QBRX034
1"	41,5	44,7	48	17,5	226	QBRX100
1 1/4"	53	56,5	53	19,5	393	QBRX114
1 1/2"	59	62,6	56	19,5	491	QBRX112
2"	74	78,4	65,5	24	843	QBRX200



O-RING

Seals for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

d union	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

FITTINGS FOR BUTT WELDING

Fittings, metric series ISO-UNI



FITTINGS FOR BUTT WELDING

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

FITTINGS, METRIC SERIES ISO-UNI

Technical specifications	
Size range	d 20 ÷ d 630 (mm)
Nominal pressure	SDR 17, 6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 Flanging system: ISO 7005-1, EN 1092-1, EN ISO 15494, ANSI B16.5 cl.150
Reference standards	Construction criteria: EN ISO 15494 Test methods and requirements: EN ISO 15494 Installation criteria: DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11397
Fitting material	PP-H
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.

A = SDR 11 ISO-S5 - 5 years

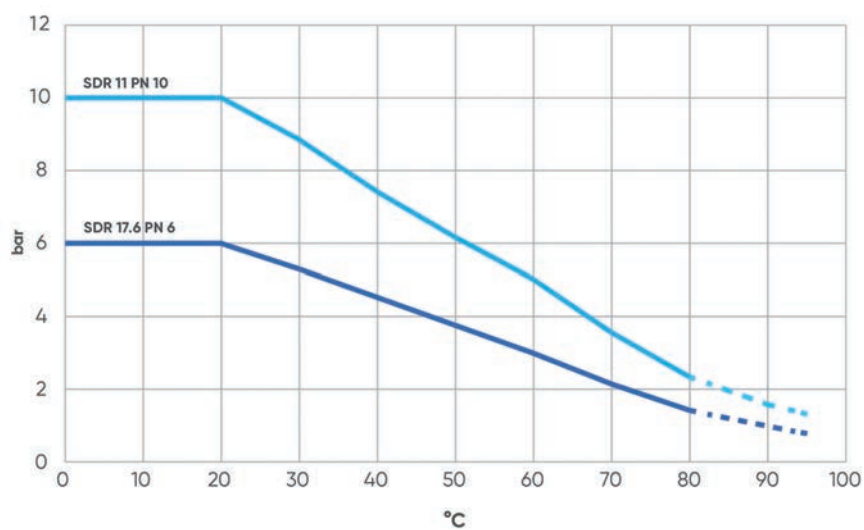
B = SDR 11 ISO-S5 - 25 years

C = SDR 17.6 ISO-S8.3 - 5 years

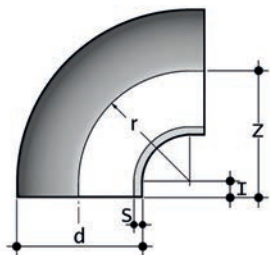
D = SDR 17.6 ISO-S8.3 - 25 years

Permissible internal pressure .Safety

factor = 1.7



DIMENSIONS

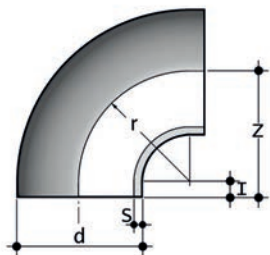


GBM/GKM

90° bend, short spigot for butt welding SDR 17,6 – 8,3

d	l	r	s	Z	g	PN6 code SDR 17,6 – S 8,3
50	23	36	2,9	62	48,7	GKM17050
63	21	65	3,6	77	101,1	GKM17063
75	21	75	4,3	85	137,7	GKM17075
90	22	90	5,1	100	234	GKM17090
110	25	110	6,3	120	412	GKM17110
125	15	125	7,1	140	652	GKM17125
140	15	140	8,0	155	900	GKM17140
160	15	160	9,1	175	1231	GKM17160
180	15	180	10,2	195	1875	GBM17180
200	15	200	11,4	215	2423	GBM17200
225	20	225	13,4	245	3469	GBM17225
250	25	250	14,2	275	4568	GBM17250
280	30	280	15,9	310	6550	GBM17280
315	35	315	17,9	350	9728	GBM17315
*355	38	355	20,1	385	12760	GBM17355
*400	41	400	22,7	438	18500	GBM17400
*450	60	450	25,5	510	40800	GBM17450
*500	60	500	28,3	560	52150	GBM17500

*resale products

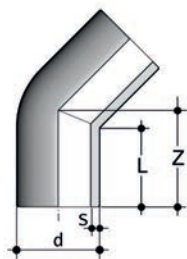


GBM/GKM

90° bend, short spigot for butt welding SDR 11 – S 5

d	l	r	s	Z	g	PN 10 code SDR 11 – S 5
20	20	18	1,9	34	6,9	GKM11020
25	20	18	2,3	37	11	GKM11025
32	21	20	2,9	40	19,1	GKM11032
40	22	35	3,7	51	37,4	GKM11040
50	23	36	4,6	62	70	GKM11050
63	21	65	5,8	77	139,5	GKM11063
75	21	75	6,8	85	199,6	GKM11075
90	22	90	8,2	100	341,1	GKM11090
110	25	110	10,0	120	598,9	GKM11110
125	15	125	11,4	140	945	GKM11125
140	15	140	12,7	155	1300	GKM11140
160	15	160	14,6	175	1870	GKM11160
180	15	180	16,4	195	2767	GBM11180
200	15	200	18,2	215	3604	GBM11200
225	15	225	20,5	235	4844	GBM11225
250	25	250	22,7	275	7210	GBM11250
280	30	280	25,4	310	10020	GBM11280
315	35	315	28,6	350	13965	GBM11315
355	28	355	32,2	378	19370	GBM11355
*400	41	400	36,3	438	28650	GBM11400
*450	60	450	40,9	510	52551	GBM11450
*500	60	500	45,4	560	67410	GBM11500

*resale products

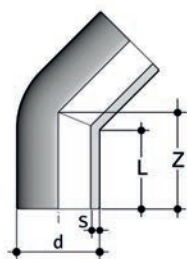


HBM

45° bend, long spigot for butt welding SDR 17,6 - 8,3

d	L	Z	s	g	PN6 code SDR 17,6 - S 8,3
*50	62	76	2,9	80	HBM17050
*63	66	88	3,6	142	HBM17063
*75	71	90	4,3	196	HBM17075
*90	82	105	5,1	325	HBM17090
*110	93	121	6,3	560	HBM17110
*125	98	137	7,1	790	HBM17125
*140	120	168	8	1245	HBM17140
*160	143	190	9,1	1850	HBM17160
*180	141	196	10,2	2335	HBM17180
*200	152	207	11,4	3130	HBM17200
*225	153	210	12,8	3970	HBM17225
*250	133	220	14,2	5780	HBM17250
*280	142	227	15,9	7285	HBM17280
*315	155	250	17,9	9850	HBM17315

*resale products

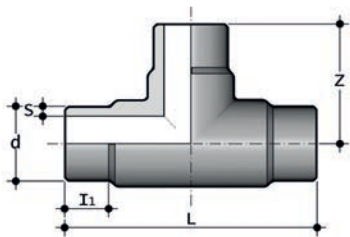


HBM

45° bend, long spigot for butt welding SDR 11 - S 5

d	L	Z	s	g	PN10 code SDR 11 - S 5
*20	52	72	1,9	19	HBM11020
*25	57	76	2,3	30	HBM11025
*32	71	90	2,9	56	HBM11032
*40	73	95	3,7	88	HBM11040
*50	62	76	4,6	110	HBM11050
*63	66	88	5,8	205	HBM11063
*75	71	90	6,8	290	HBM11075
*90	83	105	8,2	460	HBM11090
*110	93	121	10	785	HBM11110
*125	98	137	11,4	1130	HBM11125
*140	122	168	12,7	1685	HBM11140
*160	143	190	14,6	2550	HBM11160
*180	141	196	16,4	3285	HBM11180
*200	153	207	18,2	4540	HBM11200
*225	153	210	20,5	5750	HBM11225
*250	134	220	22,7	7875	HBM11250
*280	143	227	25,4	10060	HBM11280
*315	155	250	28,6	13675	HBM11315

*resale products

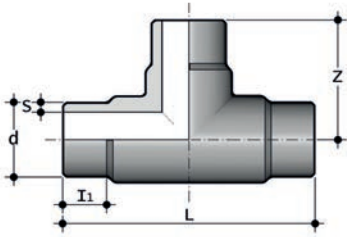


TBM

90° Tee, short spigot for butt welding SDR 17,6 - S 5

d	I ₁	L	s	Z	g	PN6 code SDR 17,6 - S 8,3
50	21	124	2,9	62	80	TBM17050
63	24	156	3,6	78	175	TBM17063
75	28	180	4,3	90	280	TBM17075
90	42	200	5,1	100	540	TBM17090
*110	57	260	6,3	130	925	TBM17110
*125	50	320	7,1	125	1133	TBM17125
*140	63	320	8,0	160	1765	TBM17140
*160	57	320	9,1	160	2335	TBM17160
*180	97	434	10,2	217	4000	TBM17180
*200	94	440	11,4	220	5060	TBM17200
*225	75	454	12,8	227	6870	TBM17225
*280	88	532	15,9	266	10680	TBM17280
*315	86	566	17,9	283	14105	TBM17315
*355	103	690	20,1	345	21900	TBM17355
*400	105	734	22,7	367	26300	TBM17400
*450	138	838	25,5	419	42715	TBM17450
*500	165	954	28,3	477	59500	TBM17500

*resale products

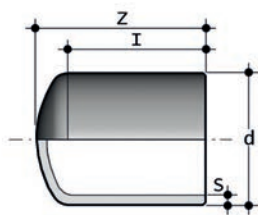


TBM

90° Tee, short spigot for butt welding SDR 11 - S 5

d	l ₁	L	s	Z	g	PN10 code SDR 11 - S 5
20	8	50	1,9	25	11	TBM11020
25	10	60	2,3	30	15	TBM11025
32	12	80	2,9	40	30	TBM11032
40	16	96	3,7	48	55	TBM11040
50	21	124	4,6	62	115	TBM11050
63	24	156	5,8	78	230	TBM11063
75	28	180	6,8	90	390	TBM11075
90	23	200	8,2	100	645	TBM11090
110	43	240	10,0	120	1040	TBM11110
*125	52	250	11,4	125	1600	TBM11125
140	63	318	12,7	159	2480	TBM11140
160	57	320	14,6	160	3250	TBM11160
*180	94	430	16,4	215	5475	TBM11180
*200	90	440	18,2	220	6810	TBM11200
225	76	450	20,5	225	9240	TBM11225
*250	68	454	22,7	227	10400	TBM11250
280	87	534	25,4	267	15170	TBM11280
315	86	566	28,6	283	20330	TBM11315
*355	103	698	32,2	349	30200	TBM11355
*400	105	720	36,3	360	39100	TBM11400
*450	137	838	40,9	419	61129	TBM11450
*500	160	930	45,4	465	84230	TBM11500

*resale products

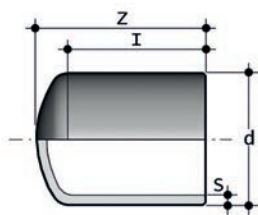


CBM

Long spigot end cap for butt welding SDR 17,6 – S 8,3

d	I	S	Z	g	PN6 code SDR 17,6 – S 8,3
125	95	7,1	124	360	CBM17125
140	110	8	136	485	CBM17140
160	121	9,1	161	735	CBM17160
180	134	10,2	167	990	CBM17180
200	140	11,4	184	1310	CBM17200
225	160	12,8	200	1790	CBM17225
*250	-	14,2	45	1520	CBM17250
*280	-	15,9	45	2070	CBM17280
*315	-	17,9	50	2940	CBM17315
*355	-	20,1	55	4170	CBM17355
*400	-	22,7	60	5960	CBM17400
*450	-	25,5	70	8520	CBM17450
*500	-	28,4	75	11600	CBM17500
*560	-	31,7	80	16000	CBM17560
*630	-	35,7	90	22900	CBM17630
*710	-	40,2	120	33500	CBM17710
*800	-	45,3	130	47500	CBM17800

*short spigot
all resale products

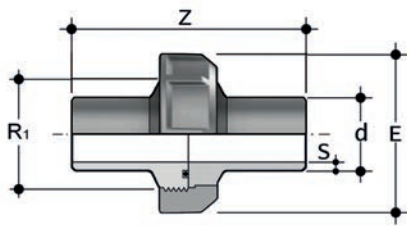


CBM

Long spigot end cap for butt welding SDR 11 – S 5

d	I	S	Z	g	PN10 code SDR 11 – S 5
20	42	1,9	49	5	CBM11020
25	42	2,3	52	6	CBM11025
32	47	2,9	57	16	CBM11032
40	51	3,7	64	23	CBM11040
50	59	4,6	72	48	CBM11050
63	67	5,8	86	87	CBM11063
75	73	6,8	94	138	CBM11075
90	83	8,2	112	222	CBM11090
110	90	10,0	124	375	CBM11110
125	94	11,4	130	520	CBM11125
140	99	12,7	142	695	CBM11140
160	109	14,6	162	1040	CBM11160
180	141	16,4	191	1375	CBM11180
200	127	18,2	181	1860	CBM11200
225	129	20,5	205	2680	CBM11225
*250	-	22,7	50	1840	CBM11250
*280	-	25,4	55	2560	CBM11280
*315	-	28,6	60	3600	CBM11315
*355	-	32,2	65	5040	CBM11355
*400	-	36,3	70	7240	CBM11400
*450	-	40,9	80	10200	CBM11450
*500	-	45,4	85	14000	CBM11500

*short spigot
all resale products



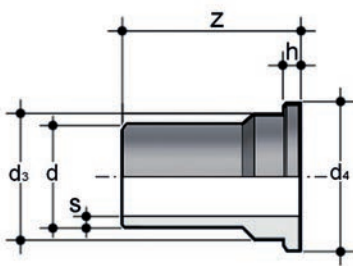
BBM-L

Long spigot union for butt welding with seal in EPDM or FKM SDR 11 – S5

d	DN	R ₁	E	s	Z	g	*EPDM PN10 code SDR 11 – S 5	**FKM PN10 code SDR 11 – S 5
20	15	1"	46	1,9	190	70	BBML11020E	BBML11020F
25	20	1 1/4"	56	2,3	190	105	BBML11025E	BBML11025F
32	25	1 1/2"	66	2,9	190	140	BBML11032E	BBML11032F
40	32	2"	79	3,7	190	210	BBML11040E	BBML11040F
50	40	2 1/4"	87	4,6	190	295	BBML11050E	BBML11050F
63	50	2 3/4"	107	5,8	190	480	BBML11063E	BBML11063F

* EPDM O-ring

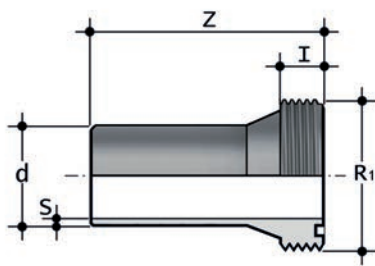
** FKM O-ring



Q/BBM-L

Union end, long spigot, for butt welding for union BBM-L SDR 11 – S5

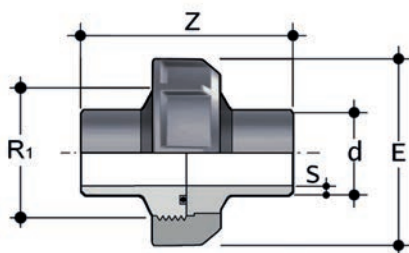
d	d ₃	d ₄	h	s	Z	g	PN10 code SDR 11 – S 5
20	27,4	30	5	1,9	95	20	QBBML11020
25	35,9	38,7	6	2,3	95	40	QBBML11025
32	41,4	44,6	6	2,9	95	45	QBBML11032
40	52,8	56,4	7	3,7	95	75	QBBML11040
50	58,8	62,5	7	4,6	95	110	QBBML11050
63	73,8	78,3	8	5,8	95	160	QBBML11063



F/BMM-L

Union bush, long spigot, for butt welding for union BBM-L SDR 11 - S5

d	R ₁	I	s	Z	g	PN10 code SDR 11 - S 5
20	1"	13	1,9	95	25	FBBML11020
25	1 1/4"	13	2,3	95	40	FBBML11025
32	1 1/2"	14	2,9	95	50	FBBML11032
40	2"	16	3,7	95	80	FBBML11040
50	2 1/4"	18	4,6	95	115	FBBML11050
63	2 3/4"	20	5,8	95	185	FBBML11063



BBM-C

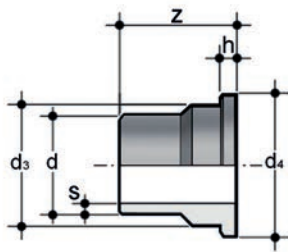
Short spigot union for butt welding with seal in EPDM or FKM SDR 11 - S5

d	DN	E	S	Z	g	*EPDM PN10 code SDR 11 - S 5	**FKM PN10 code SDR 11 - S 5
20	15	46	1,9	108	80	BBMC11020E	BBMC11020F
25	20	56	2,3	108	75	BBMC11025E	BBMC11025F
32	25	66	2,9	108	120	BBMC11032E	BBMC11032F
40	32	79	3,7	108	175	BBMC11040E	BBMC11040F
50	40	87	4,6	108	240	BBMC11050E	BBMC11050F
63	50	107	5,8	108	440	BBMC11063E	BBMC11063F
***75	65	120	6,8	108	648	BBMC11075E	BBMC11075F
***90	80	153	8,2	180	898	BBMC11090E	BBMC11090F
***110	100	163	10,0	180	1658	BBMC11110E	BBMC11110F

* EPDM O-ring

** FKM O-ring

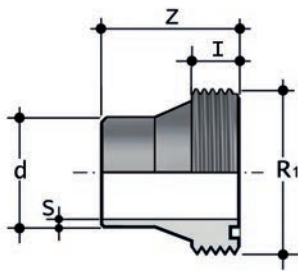
***Reduced PN (6 bar), with PVC nut only



Q/BBM-C

Short spigot PP-H end connectors for butt welding SDR 11 - S5

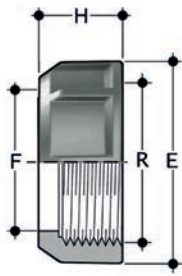
d	d ₃	d ₄	h	s	z	g	PN10 code SDR 11 - S 5
20	27,4	30	5	1,9	54	20	QBBMC11020
25	35,9	38,7	6	2,3	54	22	QBBMC11025
32	41,4	44,6	6	2,9	54	36	QBBMC11032
40	52,8	56,4	7	3,7	54	54	QBBMC11040
50	58,8	62,5	7	4,6	54	76	QBBMC11050
63	73,8	78,3	8	5,8	54	118	QBBMC11063



F/BBM-C

Union bush, short spigot, for butt welding for union BBM-C SDR 11 - S5

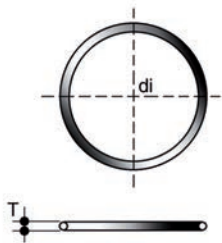
d	R	I	s	z	g	PN10 code SDR 11 - S 5
20	1"	13	1,9	54	20	FBBMC11020
25	1 1/4"	13	2,3	54	27	FBBMC11025
32	1 1/2"	14	2,9	54	40	FBBMC11032
40	2"	16	3,7	54	60	FBBMC11040
50	2 1/4"	18	4,6	54	86	FBBMC11050
63	2 3/4"	20	5,8	54	147	FBBMC11063



EFGM

Union nut with BSP thread for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

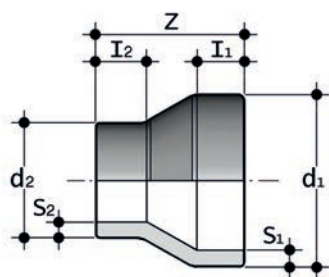
R	d BIGM	PN	E	F	H	g	Code
1"	20	10	47	28	22	19	EFGM100
1 1/4"	25	10	58	36	25	29	EFGM114
1 1/2"	32	10	65	42	27	40	EFGM112
2"	40	10	78	53	30	57	EFGM200
2 1/4"	50	10	85	59	33	74	EFGM214
2 3/4"	63	10	103	74	38	119	EFGM234



O-RING

Seals for union types BIGM, BIFGM, BIFOM, BIROM, BIFXM, BIRXM

d union	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

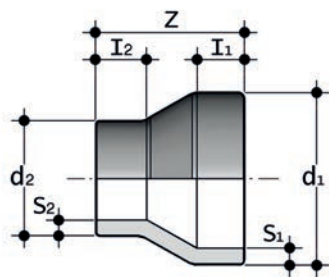


RBM

Concentric reducer, short spigot, for butt welding SDR 17,6 - S 8,3

d ₁	d ₂	I ₁	I ₂	Z	S ₁	S ₂	g	PN6 code SDR 17,6 - S 8,3
50	32	12	12	55	2,9	2,0	17	RBM17050032
50	40	12	12	55	2,9	2,3	20	RBM17050040
63	32	16	12	65	3,6	2,0	32	RBM17063032
63	40	16	12	65	3,6	2,3	36	RBM17063040
63	50	16	12	65	3,6	2,9	38	RBM17063050
75	50	19	12	71	4,3	2,9	54	RBM17075050
75	63	19	16	71	4,3	3,6	60	RBM17075063
90	63	22	16	80	5,1	3,6	82	RBM17090063
*90	75	31	26	91	5,1	4,3	120	RBM17090075
*110	63	40	36	105	6,3	3,6	170	RBM17110063
*110	75	40	28	96	6,3	4,3	170	RBM17110075
*110	90	42	42	100	6,3	5,1	190	RBM17110090
*160	110	40	34	129	9,1	6,3	500	RBM17160110
*180	90	53	42	145	10,2	5,1	600	RBM17180090
*200	160	62	52	145	11,4	9,1	900	RBM17200160
*225	160	65	53	162	12,8	9,1	1150	RBM17225160
*280	200	85	70	200	15,9	11,4	2340	RBM17280200
*280	225	70	55	200	15,9	12,8	2370	RBM17280225
*315	250	95	95	230	17,9	14,2	3450	RBM17315250
*400	225	74	40	170	22,7	12,7	5700	RBM17400225
*400	250	66	40	155	22,7	14,2	4900	RBM17400250
*400	280	59	40	140	22,7	15,9	4300	RBM17400280
*400	315	55	40	125	22,7	17,9	3700	RBM17400315
*400	355	46	40	105	22,7	20,1	3000	RBM17400355
*450	280	70	40	165	25,5	15,9	6700	RBM17450280
*450	315	65	40	150	25,5	17,9	6000	RBM17450315
*450	355	57	40	130	25,5	20,1	4900	RBM17450355
*450	400	45	40	105	25,5	22,7	3700	RBM17450400
*500	315	75	40	175	28,4	17,9	9000	RBM17500315
*500	355	67	40	155	28,4	20,1	7600	RBM17500355
*500	400	60	40	135	28,4	22,7	6400	RBM17500400
*500	450	50	40	110	28,4	25,5	4900	RBM17500450
*560	400	73	40	165	31,7	22,7	10400	RBM17560400
*560	450	62	40	140	31,7	25,5	8300	RBM17560450
*560	500	52	40	115	31,7	28,4	6500	RBM17560500
*630	400	87	40	200	35,7	22,7	16900	RBM17630400
*630	450	77	40	175	35,7	25,5	14100	RBM17630450
*630	500	67	40	150	35,7	28,4	11500	RBM17630500
*630	560	54	40	120	35,7	31,7	8600	RBM17630560
*710	500	88	40	195	40,2	25,5	8900	RBM17710500
*710	560	76	40	165	40,2	28,4	16600	RBM17710560
*710	630	61	40	130	40,2	35,7	12200	RBM17710630
*800	560	95	40	210	45,3	31,7	28700	RBM17800560
*800	630	80	40	175	45,3	35,7	22500	RBM17800630
*800	710	63	40	135	45,3	40,2	16100	RBM17800710

*resale products



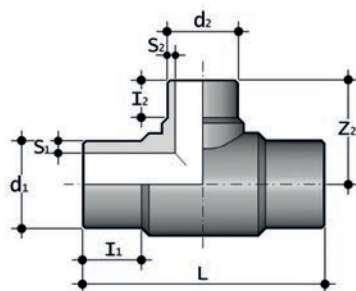
RBM

Concentric reducer, short spigot, for butt welding SDR 11 - S 5

d ₁	d ₂	I ₁	I ₂	Z	S ₁	S ₂	g	PN10 code SDR 11 - S 5
25	20	12	12	37	2,3	1,9	5	RBM11025020
32	20	12	12	43	2,9	1,9	8	RBM11032020
32	25	12	12	43	2,9	2,3	10	RBM11032025
40	20	12	12	50	3,7	1,9	13	RBM11040020
40	25	12	12	50	3,7	2,3	15	RBM11040025
40	32	12	12	50	3,7	3,0	18	RBM11040032
50	25	12	12	55	4,6	2,3	23	RBM11050025
50	32	12	12	55	4,6	3,0	25	RBM11050032
50	40	12	12	55	4,6	3,7	29	RBM11050040
63	32	27	25	89	5,8	2,9	64	RBM11063032
63	40	16	12	65	5,8	3,7	50	RBM11063040
63	50	25	25	87	5,8	4,6	79	RBM11063050
*75	50	19	14	59	6,8	4,6	70	RBM11075050
75	63	25	26	89	6,8	5,8	112	RBM11075063
90	50	28	25	93	8,2	4,6	145	RBM11090050
90	63	22	16	80	8,2	5,8	129	RBM11090063
*90	75	31	26	90	8,2	6,8	174	RBM11090075
*110	50	28	20	96	10	4,6	210	RBM11110050
110	63	28	16	97	10,0	5,8	200	RBM11110063
110	75	40	28	96	10,0	6,8	263	RBM11110075
*110	90	41	40	105	10,0	8,2	280	RBM11110090
*125	110	40	40	100	11,4	10	380	RBM11125110
140	90	50	40	130	12,7	8,2	530	RBM11140090
140	110	50	40	120	12,7	10,0	540	RBM11140110
*140	125	35	32	115	12,7	11,4	600	RBM11140125
160	90	48	34	141	14,6	8,2	695	RBM11160090
160	110	40	28	124	14,6	10,0	430	RBM11160110
*160	125	40	32	122	14,6	11,4	725	RBM11160125
160	140	49	38	125	14,6	12,7	725	RBM11160140
200	160	50	40	151	18,2	14,6	700	RBM11200160
*225	140	61	48	157	20,5	12,7	1575	RBM11225140
225	160	55	40	171	20,5	14,6	960	RBM11225160
*280	200	75	54	214	25,4	18,2	3450	RBM11280200
*280	225	72	57	203	25,4	20,5	3425	RBM11280225
*315	200	80	50	200	28,6	18,2	4000	RBM11315200
315	225	84	60	237	28,6	20,5	5110	RBM11315225
*315	250	86	63	231	28,6	22,7	5105	RBM11315250
*315	280	80	70	222	28,6	25,4	5130	RBM11315280
*400	225	79	40	175	36,3	20,5	7700	RBM11400225
*400	250	71	40	160	36,3	22,7	6800	RBM11400250
*400	280	64	40	145	36,3	25,4	6100	RBM11400280
*400	315	60	40	130	36,3	28,6	5600	RBM11400315
*400	355	51	40	110	36,3	32,2	4600	RBM11400355
*450	280	80	40	175	40,9	25,4	9800	RBM11450280
*450	315	70	40	155	40,9	28,6	8400	RBM11450315
*450	355	62	40	135	40,9	32,2	7200	RBM11450355
*450	400	55	40	115	40,9	36,3	6200	RBM11450400

d_1	d_2	I_1	I_2	Z	S_1	S_2	g	PN10 code SDR 11 - S 5
*500	315	85	40	185	45,4	28,6	13000	RBM11500315
*500	355	77	40	165	45,4	32,2	11400	RBM11500355
*500	400	65	40	140	45,4	36,3	9400	RBM11500400
*500	450	55	40	115	45,4	40,9	7600	RBM11500450

*resale products

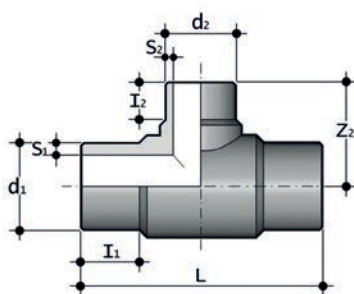


TRBM

90° reducing Tee, short spigot for butt welding SDR 17,6 - S 8,3

d_1	d_2	i_1	I_2	L	s_1	s_2	Z_2	g	PN6 code SDR 17,6 - S 8,3
*63	50	63	56	220	3,8	3	103	208	TRBM17063050
*75	50	70	55	253	4,5	3	113	406	TRBM17075050
*75	63	70	63	260	4,5	3,8	117	415	TRBM17075063
*90	63	79	63	275	5,4	3,8	137	591	TRBM17090063
*90	75	74	70	278	5,4	4,5	138	570	TRBM17090075
*110	63	85	66	315	6,6	3,8	159	957	TRBM17110063
*110	75	82	70	315	6,6	4,5	157	850	TRBM17110075
*110	90	82	79	315	6,6	5,4	155	915	TRBM17110090
*125	63	70	31	271	7,4	3,8	112	1380	TRBM17125063
*125	110	87	82	340	7,4	6,6	170	1235	TRBM17125110
140	63	86	32	302	8,3	3,8	120	1311	TRBM17140063
140	75	86	35	300	8,3	4,5	130	1400	TRBM17140075
140	90	86	42	300	8,3	5,4	130	1320	TRBM17140090
140	110	50	53	300	8,3	6,6	139	1640	TRBM17140110
*160	63	98	64	347	9,5	3,8	175	1920	TRBM17160063
*160	75	98	75	348	9,5	4,5	179	1905	TRBM17160075
*160	90	100	81	349	9,5	5,4	182	1940	TRBM17160090
*160	110	98	85	400	9,5	6,6	202	2360	TRBM17160110
160	125	62	48	315	9,5	7,4	150	2040	TRBM17160125
180	63	130	32	358	10,7	3,8	139	2060	TRBM17180063
180	75	120	31	360	10,7	4,5	140	2100	TRBM17180075
*180	90	134	97	420	10,7	5,4	200	3100	TRBM17180090
180	110	106	48	365	10,7	6,6	160	2160	TRBM17180110
180	125	92	50	358	10,7	7,4	156	2240	TRBM17180125
*200	63	134	80	550	11,9	3,8	225	4963	TRBM17200063
*200	90	134	95	550	11,9	5,4	227	5124	TRBM17200090
*200	110	134	103	560	11,9	6,6	245	5220	TRBM17200110
*200	125	134	110	550	11,9	7,4	240	5260	TRBM17200125
*200	160	134	114	550	11,9	9,5	265	6154	TRBM17200160
*225	75	120	75	451	13,4	4,5	226	4900	TRBM17225075
*225	90	120	79	450	13,4	5,4	224	5000	TRBM17225090
*225	110	120	86	449	13,4	6,6	226	4960	TRBM17225110
225	125	140	45	455	13,4	7,4	180	4190	TRBM17225125
*225	160	120	98	498	13,4	9,5	250	6260	TRBM17225160
*225	180	134	134	558	13,4	10,7	280	7100	TRBM17225180

*long spigot
All resale products

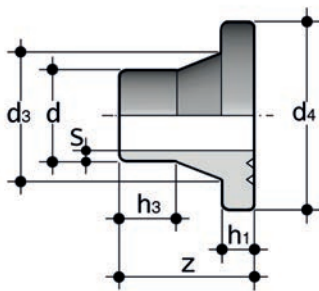


TRBM

90° reducing Tee, short spigot for butt welding SDR 11 - S 5

d ₁	d ₂	i ₁	i ₂	L	s ₁	s ₂	Z ₂	g	PN10 code SDR 11 - S 5
*63	50	63	56	220	4,6	4,6	103	292	TRBM11063050
*75	32	70	46	256	6,8	2,9	103	498	TRBM11075032
*75	50	75	56	265	4,6	4,6	113	530	TRBM11075050
*75	63	72	63	260	5,8	5,8	117	537	TRBM11075063
90	32	53	23	203	8,2	2,9	85	562	TRBM11090032
90	50	53	28	213	8,2	4,6	100	563	TRBM11090050
*90	63	82	66	282	8,2	5,8	127	739	TRBM11090063
*90	75	73	68	280	8,2	6,8	138	796	TRBM11090075
110	32	66	22	234	10	2,9	91	906	TRBM11110032
110	50	70	27	244	10	4,6	103	945	TRBM11110050
*110	63	88	68	328	10	5,8	149	1240	TRBM11110063
*110	75	86	70	320	10	6,8	151	1180	TRBM11110075
*110	90	86	79	320	10	8,2	158	1261	TRBM11110090
125	63	76	31	280	11,4	5,8	112	1400	TRBM11125063
*125	90	112	92	340	11,4	8,2	170	1640	TRBM11125090
*125	110	90	83	341	11,4	10	170	1850	TRBM11125110
140	63	87	32	302	12,7	5,8	120	1800	TRBM11140063
140	75	54	35	305	12,7	6,8	130	1920	TRBM11140075
140	90	88	42	305	12,7	8,2	130	1840	TRBM11140090
140	110	50	44	291	12,7	10	140	2180	TRBM11140110
*160	63	100	67	347	14,6	5,8	175	2560	TRBM11160063
*160	75	98	74	343	14,6	6,8	180	2620	TRBM11160075
*160	90	104	83	412	14,6	8,2	190	2620	TRBM11160090
*160	110	104	89	414	14,6	10	200	3160	TRBM11160110
160	125	62	52	335	14,6	11,4	158	2720	TRBM11160125
180	63	134	32	367	16,4	5,8	144	3040	TRBM11180063
180	75	123	31	366	16,4	6,8	148	3100	TRBM11180075
*180	90	138	97	427	16,4	8,2	200	4240	TRBM11180090
*180	110	148	101	464	16,4	10	225	4600	TRBM11180110
180	125	100	52	366	16,4	11,4	166	3280	TRBM11180125
*200	63	122	63	500	18,2	5,8	190	6940	TRBM11200063
*200	90	122	79	498	18,2	5,1	207	6860	TRBM11200090
*200	110	122	82	500	18,2	6,3	215	6980	TRBM11200110
*200	125	115	43	388	18,2	11,4	165	6920	TRBM11200125
*200	160	122	98	500	18,2	9,1	234	8340	TRBM11200160
*225	75	120	70	555	20,5	6,8	227	6620	TRBM11225075
*225	90	129	82	556	20,5	8,2	228	6660	TRBM11225090
*225	110	130	86	556	20,5	10	238	6660	TRBM11225110
225	125	135	40	456	20,5	11,4	178	6120	TRBM11225125
225	180	135	135	558	20,5	16,4	280	9800	TRBM11225180
*225	110	135	38	450	22,7	10	197	12460	TRBM11250110
*250	160	110	58	458	22,7	14,6	213	12960	TRBM11250160
*250	110	150	82	695	28,6	10	277	15680	TRBM11315110
*315	160	150	102	695	28,6	14,6	290	17020	TRBM11315160
*315	225	170	145	650	28,6	20,5	335	20580	TRBM11315225
*315	250	150	130	695	28,6	22,7	325	21840	TRBM11315250

*long spigot -all resale products

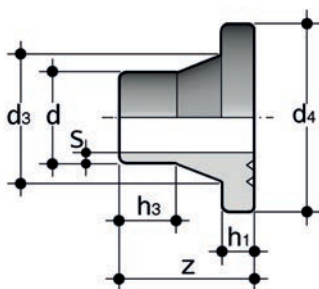


QBM

Short spigot stub for butt welding for backing rings ISO/DIN ODT/ODB SDR 17,6 - S 8,3

d	d ₃	d ₄	h ₁	h ₃	S	Z	g	PN6 code SDR 17,6 - S 8,3
63	75	102	14	18	3,6	50	115	QBM17063
75	89	122	16	35	4,3	50	180	QBM17075
90	105	138	17	43	5,1	80	280	QBM17090
110	125	158	18	37	6,3	80	365	QBM17110
125	132	158	18	45	7,1	88	380	QBM17125
140	155	188	18	39	8,0	83	510	QBM17140
160	175	212	18	52	9,1	100	745	QBM17160
180	186	212	20	62	10,2	83	650	QBM17180
200	233	268	24	75	11,4	140	1756	QBM17200
225	235	268	24	65	12,8	121	1460	QBM17225
*250	285	320	25	61	14,2	120	2170	QBM17250
280	291	321	25	88	15,9	150	1975	QBM17280
315	335	370	25	90	17,9	155	3600	QBM17315
355	373	430	30	99	20,1	184	5400	QBM17355
400	427	482	33	98	22,7	195	7120	QBM17400
*450	514	585	46	60	25,5	142	10700	QBM17450
*500	530	585	46	60	28,4	138	9195	QBM17500
*560	615	685	50	60	31,7	139	13150	QBM17560
*630	642	685	50	60	35,7	140	11685	QBM17630

*resale products

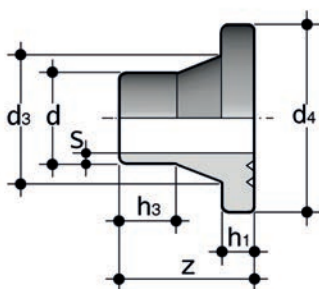


QBM

Short spigot stub for butt welding for backing rings ISO/DIN ODT/ODB SDR 11 - S 5

d	d ₃	d ₄	h ₁	h ₃	S	Z	g	PN10 code SDR 11 - S 5
20	26	46	7	29	1,9	52	18	QBM11020
25	32	59	10	27	2,3	52	33	QBM11025
32	40	68	10	26	2,9	50	44	QBM11032
40	49	78	11	24	3,7	52	65	QBM11040
50	60	89	12	27	4,6	57	85	QBM11050
63	75	102	14	16	5,8	50	129	QBM11063
75	89	122	16	14	6,8	50	200	QBM11075
90	105	138	17	33	8,2	80	322	QBM11090
110	125	158	18	27	10,0	80	430	QBM11110
125	132	158	25	40	11,4	90	540	QBM11125
140	155	188	25	39	12,7	83	715	QBM11140
160	175	212	25	27	14,6	80	915	QBM11160
180	186	212	30	65	16,4	127	1300	QBM11180
200	232	268	32	50	18,2	120	2160	QBM11200
225	235	268	32	65	20,5	127	2165	QBM11225
*250	285	320	35	51	22,7	121	2915	QBM11250
280	291	320	35	83	25,4	155	2900	QBM11280
315	335	370	35	80	28,6	155	5525	QBM11315
355	373	430	40	90	32,2	180	7730	QBM11355
400	427	482	46	95	36,3	195	10485	QBM11400
*450	514	585	60	60	40,9	139	13350	QBM11450
*500	530	585	60	60	45,4	138	12730	QBM11500

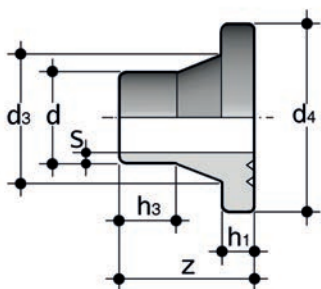
*resale products



QBM special stub flange for butterfly valves PN6 SDR 17,6

Chamfered stub flange short spigot for butt welding to be used with FE/FK butterfly valves

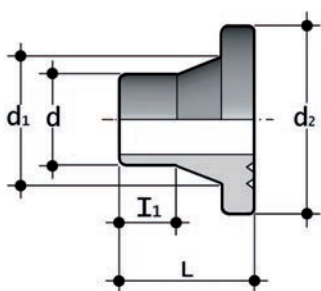
Valve d	Pipe d	d ₃	d ₄	h ₁	h ₃	S	g	PN6 code SDR 17,6 - S 8,3
225	200	233	268	24	58	11,4	1760	QBM17FK200
280	250	285	320	25	61	14,2	2170	QBM17FK250
315	315	335	370	25	86	17,9	3600	QBM17FK315
355	355	373	430	30	99	20,1	5400	QBM17FK355
400	400	427	482	33	98	22,7	7120	QBM17FK400



QBM special stub flange for butterfly valves PN10 SDR 11

Chamfered stub flange short spigot for butt welding, to be used with FE/FK butterfly valves

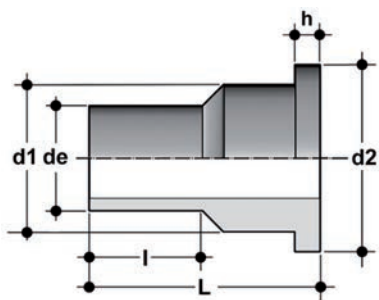
Valve d	Tubo d	d ₃	d ₄	h ₁	h ₃	S	g	PN10 code SDR 11 - S 5
160	160	175	212	25	52	14,6	1120	QBM11FK160
225	200	232	268	32	50	18,2	2160	QBM11FK200
225	225	235	268	32	65	20,5	2170	QBM11FK225
280	250	285	320	35	51	22,7	2920	QBM11FK250
280	280	291	320	35	45	22,7	3200	QBM11FK280
315	315	335	370	35	86	28,6	5530	QBM11FK315
355	355	373	430	40	90	32,2	7730	QBM11FK355
400	400	427	482	46	95	36,3	10490	QBM11FK400



QPM Stub flange for butterfly and wafer check valves

Flat Stub flange short spigot for butt welding, for butterfly valves FE-FK and inlet side for wafer check valves CR-FR

d	DN	d ₁	d ₂	L	I ₁	PN6 code SDR 17,6 - S 8,3	PN10 code SDR 11 - S 5
50	40	61	88	47	21	QPM17050	QPM11050
63	50	75	102	47	16	QPM17063	QPM11063
75	65	89	122	47	14	QPM17075	QPM11075
90	80	105	138	76,5	33	QPM17090	QPM11090
110	100	125	158	76,5	27	QPM17110	QPM11110
125	125	132	158	76,5	35	QPM17125	QPM11125
140	125	155	188	76,5	27	QPM17140	QPM11140
160	150	175	212	76,5	34	QPM17160	QPM11160
180	150	182	212	76,5	30	QPM17180	QPM11180
200	200	232	268	96	36	QPM17200	QPM11200
225	200	235	268	96	46	QPM17225	QPM11225
250	200	285	320	96	35	QPM17250	QPM11250
280	250	291	320	96	45	QPM17280	QPM11280

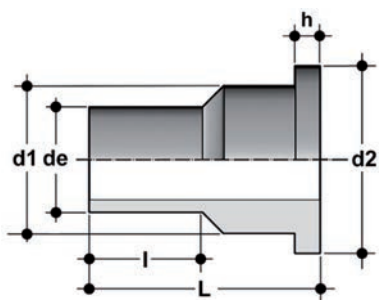


QBXM Stub flange exit side for clapet wafer check valves SDR17,6 - S8,3

Stub flange short spigot for butt welding, exit side for clapet wafer check valves

de	DN	h	l	d ₁	d ₂	L	PN6 code SDR 17,6 - S8,3
*50	40	12	20	61	90	50	QBXM17050
*63	50	14	20	77	105	54	QBXM17063
*75	65	16	20	91	125	65	QBXM17075
*90	80	17	35	107	138	95	QBXM17090
*110	100	18	35	127	160	100	QBXM17110
*125	125	25	35	132	160	100	QBXM17125
*140	125	18	35	157	190	110	QBXM17140
*160	150	18	35	186	216	125	QBXM17160
*180	150	20	40	186	216	120	QBXM17180
*200	200	24	40	236	272	180	QBXM17200
*225	200	24	40	236	272	155	QBXM17225
*250	200	25	40	292	328	205	QBXM17250
*280	250	25	40	292	328	185	QBXM17280

*resale products

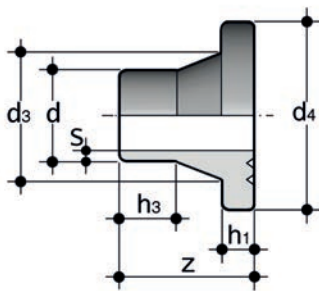


QBXM Stub flange exit side for clapet wafer check valves SDR 11 - S5

Stub flange short spigot for butt welding, exit side for clapet wafer check valves

de	DN	h	l	d ₁	d ₂	L	PN10 code SDR 11 - S5
*50	40	12	20	61	90	50	QBXM11050
*63	50	14	20	77	105	60	QBXM11063
*75	65	16	20	91	125	75	QBXM11075
*90	80	17	35	107	138	100	QBXM11090
*110	100	18	35	132	160	108	QBXM11110
*125	125	25	35	132	160	100	QBXM11125
*140	125	25	35	157	190	120	QBXM11140
*160	150	25	35	186	216	125	QBXM11160
*180	150	30	40	186	216	120	QBXM11180
*200	200	32	40	236	272	190	QBXM11200
*225	200	32	40	236	272	180	QBXM11225
*250	200	35	40	292	328	210	QBXM11250
*280	250	35	40	292	328	200	QBXM11280

*resale products

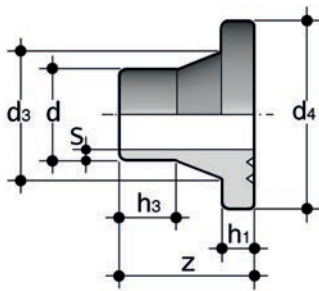


QBAM

Short spigot stub for butt welding for backing rings ANSI B16.5 cl.150 OAT* SDR 17,6 - S 8,3

d	OAB size	d ₃	d ₄	h ₁	h ₃	S	Z	g	PN6 code SDR 17,6 - S 8,3
40	1" 1/4	50	72	11	24	2,3	50	60	QBAM17114
50	1" 1/2	61	84,5	12	23	2,9	50	77	QBAM17112
90	3"	105	132	17	43	5,1	80	280	QBAM17300

for other dimensions use QBM

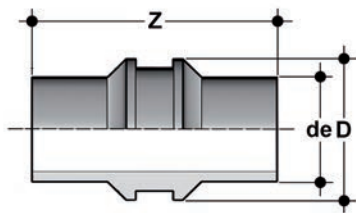


QBAM

Short spigot stub for butt welding for backing rings ANSI B16.5 cl.150 OAY* SDR 11 - S 5

d	OAB size	d ₃	d ₄	h ₁	h ₃	S	Z	g	PN10 code SDR 11 - S 5
25	3/4"	33	54	9	26	2,3	50	30	QBAM11034
32	1"	40	63,5	10	25	2,9	50	45	QBAM11100
40	1" 1/4	50	72	11	24	3,7	50	66	QBAM11114
50	1" 1/2	61	84,5	12	21	4,6	50	87	QBAM11112
90	3"	105	132	17	33	8,2	80	322	QBAM11300

for other dimensions use QBM

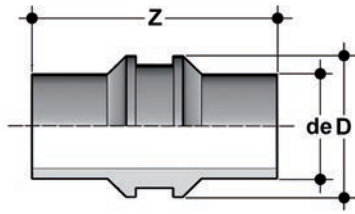


FIXP SDR 17,6

Fixed point for pipe clamp SDR 17,6

de	D	Z	g	PN6 code SDR 17,6 -S 8,3
*110	146	260	1000	FIXP17110
*125	156	260	1100	FIXP17125
*140	172	260	1400	FIXP17140
*160	184	260	1500	FIXP17160
*180	206	330	2600	FIXP17180
*200	231	330	3400	FIXP17200
*225	281	330	5300	FIXP17225
*250	286	330	5100	FIXP17250
*280	331	330	7000	FIXP17280
*315	340	330	6700	FIXP17315
*355	381	330	8300	FIXP17355
*400	426	390	12100	FIXP17400
*450	525	390	20400	FIXP17450
*500	538	390	19800	FIXP17500
*560	623	420	30400	FIXP17560
*630	678	420	34500	FIXP17630
*710	780	420	46900	FIXP17710
*800	830	420	48600	FIXP17800

*made in PPR
All resale products

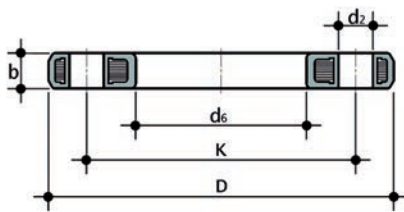


FIXP SDR 11

Fixed point for pipe clamp SDR 11

de	D	Z	g	PN10 code SDR 11 - S 5
*110	146	260	1300	FIXP11110
*125	156	260	1500	FIXP11125
*140	172	260	1800	FIXP11140
*160	184	260	2100	FIXP11160
*180	206	330	3600	FIXP11180
*200	231	330	4500	FIXP11200
*225	281	330	6700	FIXP11225
*250	286	330	6900	FIXP11250
*280	331	330	9300	FIXP11280
*315	340	330	9500	FIXP11315
*355	381	330	12000	FIXP11355
*400	426	390	17500	FIXP11400
*450	525	390	27300	FIXP11450
*500	538	390	28300	FIXP11500

*made in PPR
All resale products



ODT

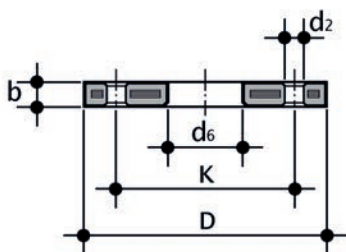
Wedge profile backing ring, with metal core and a PP-GR coating.

According to EN/ISO/DIN for stub QBM. Drilled: PN10/16 up to d180, PN10 from d200 to d315.

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	128	221	180	M16	8	35	1498	ODT110
125	100	16	20	18.6	135	221	180	M16	8	35	1330	ODT125
140	125	16	24	18.6	158	251	210	M16	8	45	2200	ODT140
160	150	16	25	22.6	178	284	240	M20	8	70	3120	ODT160
180	150	16	25	22.6	191	284	240	M20	8	70	2590	ODT180
200	200	16	27	22.6	235	340	295	M20	8	70	4181	ODT200
225	200	16	27	22.6	238	340	295	M20	8	70	4002	ODT225
250	250	16	30	22.6	288	395.6	350	M20	12	70	5660	ODT250
280	250	16	30	22.6	294	395.6	350	M20	12	70	5182	ODT280
315	300	16	32	22.6	338	446	400	M20	12	90	7123	ODT315

*PMA maximum admissible working pressure

**maximum recommended tightening torque
n = number of bolts



ODB

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

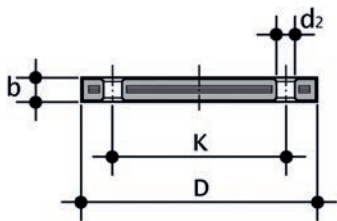
d	DN	*PMA (bar)	b	d ₂	d ₆	D	K	M	n	**Nm	g	Code
*355	350	10	39	22	376	505	460	M20	16	120	15580	ODB355
*400	400	10	44	26	429.5	570	515	M24	16	140	19890	ODB400
*450	500	10	44	26	517	670	620	M24	20	150	26010	ODB450
*500	500	10	44	26	532.5	670	620	M24	20	150	25310	ODB500
*560	600	10	50	30	618	799	725	M27	20	170	49500	ODB560
*630	600	10	50	30	645	799	725	M27	20	170	41190	ODB630

PMA maximum admissible working pressure

**nominal tightening torque

n = number of bolts

*resale products



ODBC

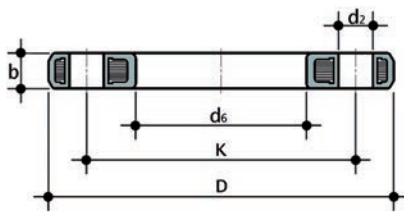
Steel core blind flange, PP/FRP coated, according to EN/ISO/DIN. Drilling PN 10/16 up to d160/180, PN 10 from d200/225 to d400

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
*140	125	10	24	18	250	210	M16	8	50	3920	ODBC140
*160	150	10	22	22	285	240	M20	8	60	7181	ODBC160
*180	150	10	24	22	285	240	M20	8	60	7130	ODBC180
*200	200	10	24	22	340	295	M20	8	70	10580	ODBC200
*250	250	10	30	22	395	350	M20	12	100	14040	ODBC250
*280	250	10	30	22	395	350	M20	12	100	14040	ODBC280
*315	300	16	34	22	445	400	M20	12	110	26480	ODBC315
*350	350	10	39	22	505	460	M20	16	160	39000	ODBC355
*400	400	10	46	25	574	515	M24	16	170	50400	ODBC400

PMA maximum admissible working pressure

**nominal tightening torque

*resale products

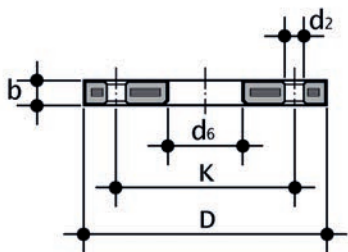


OAT

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

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
6"	150	6"	150	25	22.6	7/8	178	284	240	9" 1/2	8	70	3120	ODT160
8"	200	8"	200	28	22	7/8	236	342	298.5	11" 3/4	8	70	4200	OAT800
10"	250	10"	250	30	25	1	288	414	362	14" 1/4	12	70	6800	OAT810
12"	300	12"	300	32	25	1	338	490	431.8	17"	12	90	11060	OAT812

**maximum recommended tightening torque
n = number of bolts

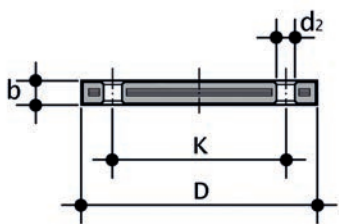


OAB

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

d(inch)	DN	d (pollici)	DN	b	d ₂ (mm)	d ₂ (pollici)	d ₆	D	k(mm)	k(pollici)	n	**Nm	g	Code
*14"	355	*14"	355	42	28,5	1"1/8	376	533	476,2	17"3/4	12	110	24940	OAB814
*16"	400	*16"	400	44	28,5	1"1/8	430	596	539,7	18"13/32	16	110	34770	OAB816

**nominal tightening torque
*resale products



OABC

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

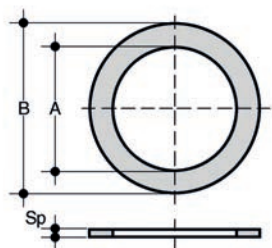
Inch	DN	*PMA (bar)	B	D	d ₂ (mm)	d ₂ (inch)	K(mm)	K(inch)	**Nm	n	g	Code
*1/2"	15	16	12	95	16	5/8"	60,45	2"3/8	15	4	200	OABC012
*3/4"	20	16	12	102	16	5/8"	69,85	2"3/4	15	4	240	OABC034
*1"	25	16	16	114	16	5/8"	79,25	3"1/8	15	4	370	OABC100
*1"1/4	32	16	16	130	16	5/8"	88,90	3"1/2	25	4	530	OABC114
*1"1/2	40	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
*6"	150	16	24	283	22	7/8"	241,3	9" 1/2	60	8	2400	OABC600
*8"	200	16	24	345	22	7/8"	298,45	11" 3/4	70	8	3500	OABC800
*10"	250	16	27	412	25	1"	361,95	14" 1/4	100	12	6200	OABC810
*12"	300	16	32	487	25	1"	431,8	17"	110	12	13040	OABC812

PMA maximum admissible working pressure

**nominal tightening torque

n= number of bolts

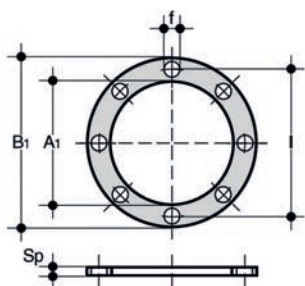
*resale products



QHV/X

Flat gasket in EPDM and FKM for flanges 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



QHV/Y

Flat gasket in EPDM for flanges according to EN 1092-1, self-centring for flanges drilled PN 10/16

d	DN	A	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

FITTINGS FOR BUTT WELDING

ISO-BSP adaptor fittings



FITTINGS FOR BUTT WELDING

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

ISO-BSP ADAPTOR FITTINGS

Technical specifications	
Size range	d 20 ÷ 63 (mm); R 1/2" ÷ 2"
Nominal pressure	SDR 17, 6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 Thread: ISO 228-1, EN 10226-1/2
Reference standards	Construction criteria: EN ISO 15494 Test methods and requirements: EN ISO 15494 Installation criteria: DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11397
Fitting material	PP-H

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.

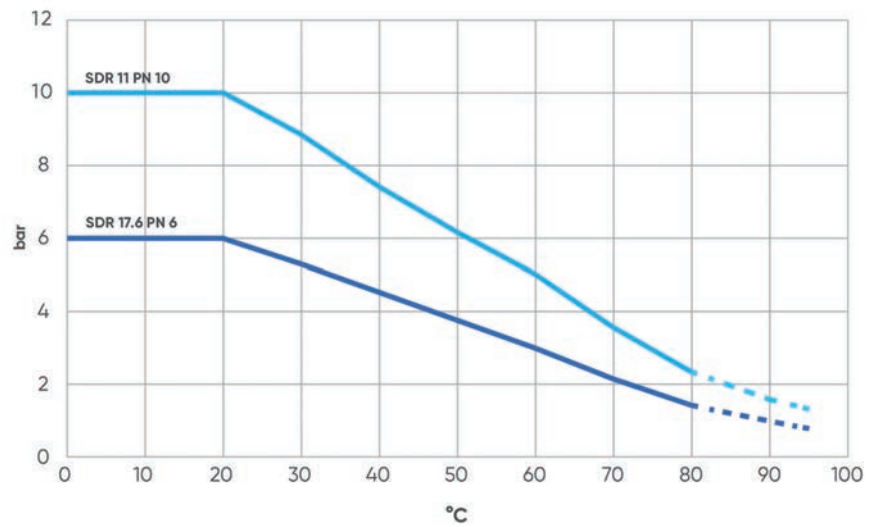
A = SDR 11 ISO-S5 - 5 years

B = SDR 11 ISO-S5 - 25 years

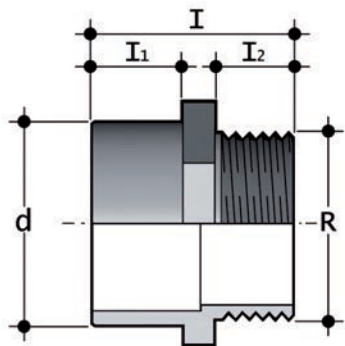
C = SDR 17.6 ISO-S8.3 - 5 years

D = SDR 17.6 ISO-S8.3 - 25 years

Permissible internal pressure. Safety factor = 1.7

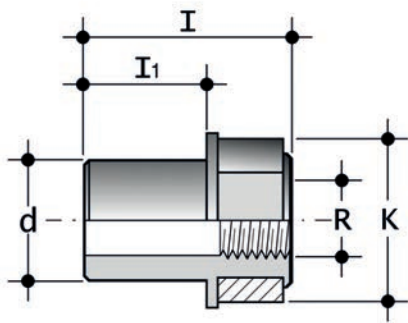


DIMENSIONS



KBFM
Double adaptor for butt welding (d), BSP (R) threaded male end

d x R	I	I ₁	I ₂	g	PN10 code SDR 11 - S 5
20 x 1/2"	46	20	18,0	7	KBFM11020012
25 x 3/4"	51.5	23	20,5	10	KBFM11025034
32 x 1"	60	28	24,0	20	KBFM11032100
40 x 1 1/4"	66.5	30	26,5	35	KBFM11040114
50 x 1 1/2"	72	33	27,0	59	KBFM11050112
63 x 2"	79.5	35	32,5	90	KBFM11063200



DBMM
Double adaptor for butt welding (d), BSP (R) threaded female end

d x R	K	I	I ₁	g	PN10 code SDR 11 - S 5
*20 x 1/2"	30	65	39	16	DBMM11020012
*25 x 3/4"	36	67	41	21	DBMM11025034
*32 x 1"	46	71	44	40	DBMM11032100
*40 x 1 1/4"	55	79	49	58	DBMM11040114
*50 x 1 1/2"	62	89	55	80	DBMM11050112
*63 x 2"	75	100	63	140	DBMM11063200

*resale products

VKD DN 10÷50



DUAL BLOCK® 2-way ball valve



VKD DN 10÷50

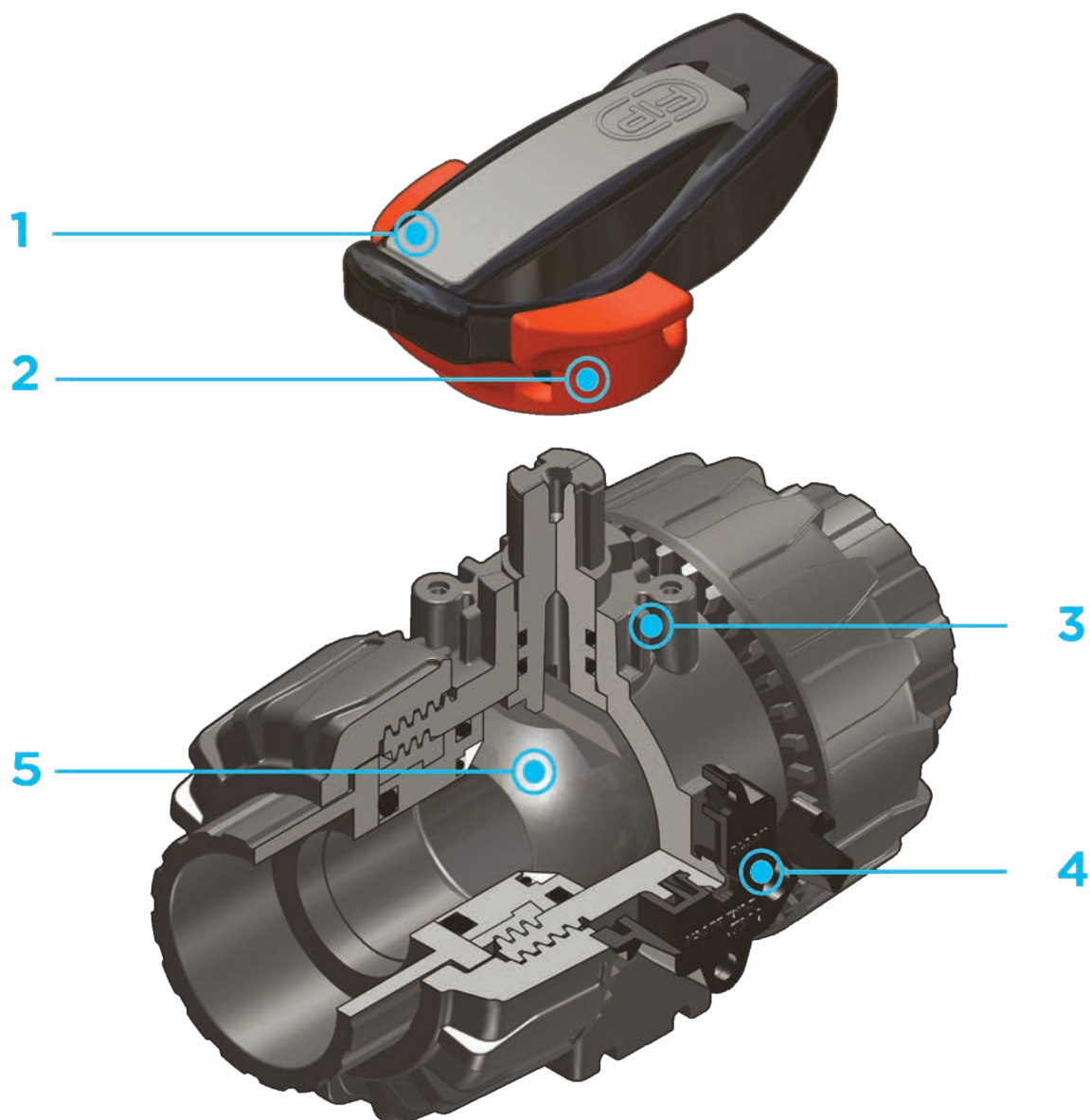
FIP has developed a VKD DUAL BLOCK® 2-WAY ball valve to introduce a high reference standard in thermoplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications.



DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for weld, threaded and flanged joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN10 True Union valve body** made for PP-H injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- Floating **full bore ball** with high surface finish
- **Integrated bracket** for valve anchoring
- Ball seat carriers can be adjusted using the **Easytorque adjustment kit**
- 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 lockable union nuts
Size range	DN 10 ÷ 50
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494 Can be coupled to pipes according to EN ISO 15494 Thread: ISO 228-1, EN 10226-1/2 Flanging system: ISO 9624, EN 1092-1, EN ISO 15494, EN 558-1, ANSI B.16.5 cl. 150
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15494 Test methods and requirements: ISO 9393 Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318 Actuator couplings: ISO 5211
Valve material	PP-H
Seal material	EPDM, FKM (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

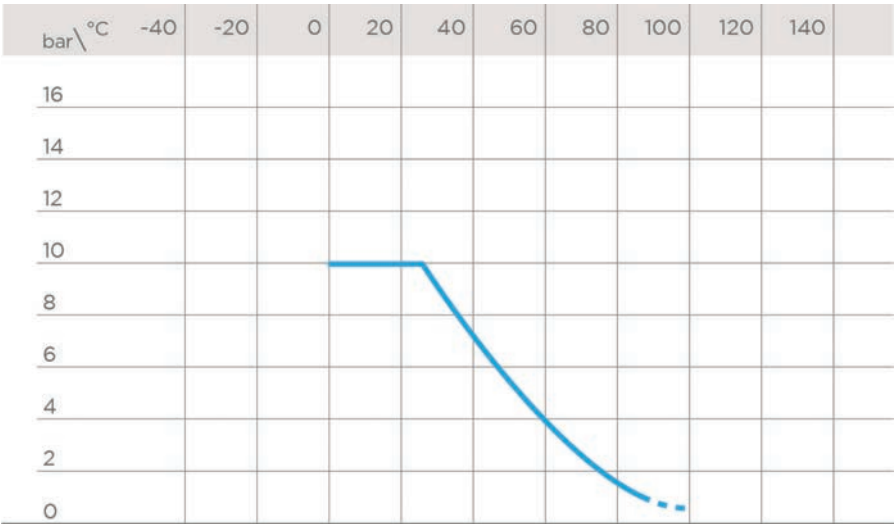
tightening hold even in severe conditions such as vibrations or heat dilation

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

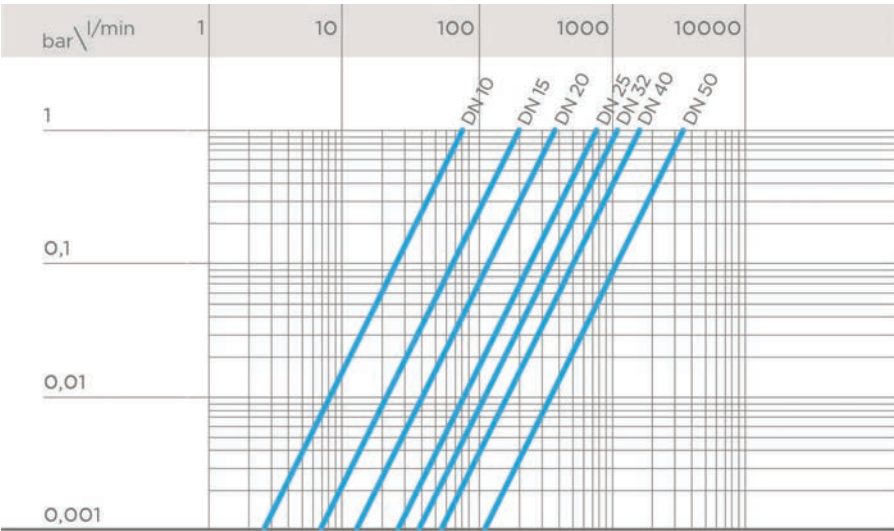
TECHNICAL DATA

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

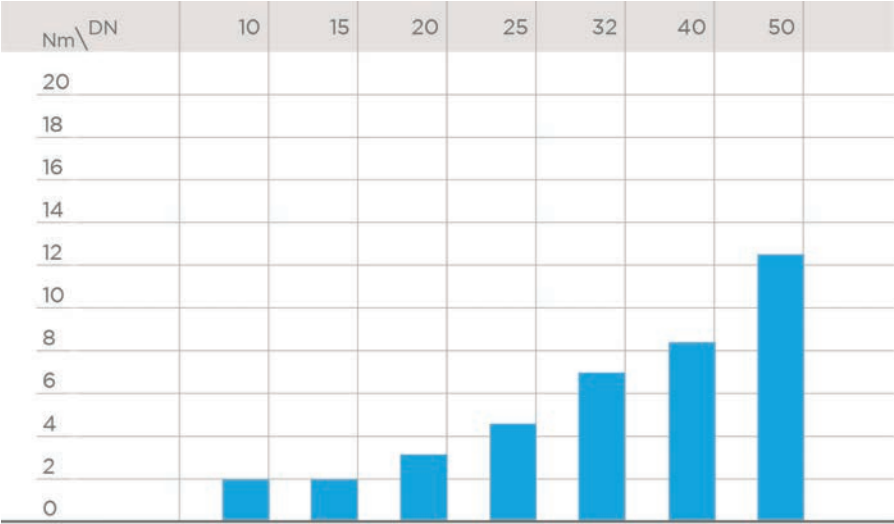


K_v100 FLOW COEFFICIENT

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.

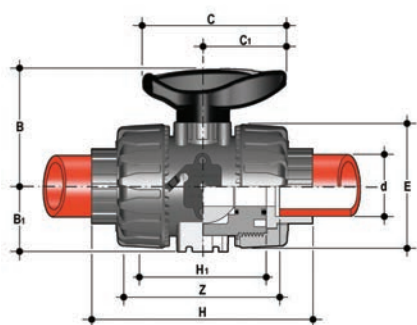
DN	10	15	20	25	32	40	50
Kv100 l/min	80	200	385	770	1100	1750	3400

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.

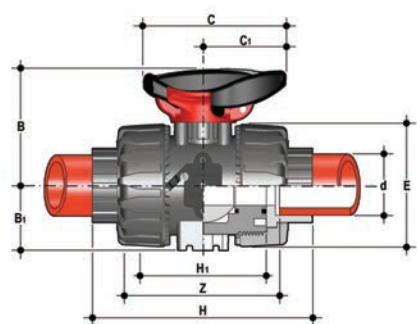
DIMENSIONS



VKDIM

Dual Block® 2-way ball valve with female ends for socket welding, metric series

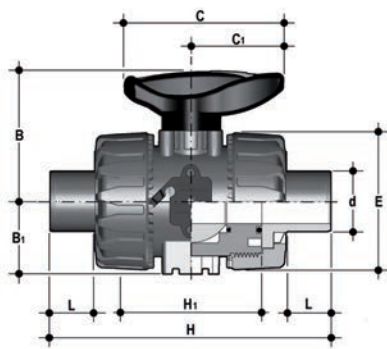
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	Z	g	EPDM code	FKM code
16	10	10	54	29	67	40	54	102	65	74,5	150	VKDIM016E	VKDIM016F
20	15	10	54	29	67	40	54	102	65	73	145	VKDIM020E	VKDIM020F
25	20	10	65	34,5	85	49	65	114	70	82	218	VKDIM025E	VKDIM025F
32	25	10	69,5	39	85	49	73	126	78	90	298	VKDIM032E	VKDIM032F
40	32	10	82,5	46	108	64	86	141	88	100	480	VKDIM040E	VKDIM040F
50	40	10	89	52	108	64	98	164	93	117	682	VKDIM050E	VKDIM050F
63	50	10	108	62	134	76	122	199	111	144	1166	VKDIM063E	VKDIM063F



VKDIM/SHX

Dual Block® 2-way ball valve with handle lock and STAINLESS steel threaded inserts with female ends for socket welding, metric series

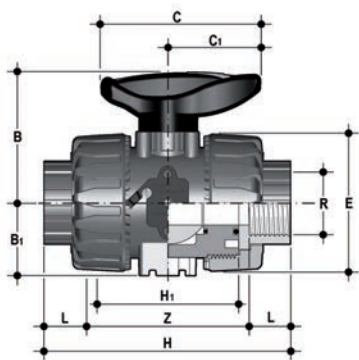
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	Z	g	EPDM code	FKM code
16	10	10	54	29	67	40	54	102	65	74,5	160	VKDIMSHX016E	VKDIMSHX016F
20	15	10	54	29	67	40	54	102	65	73	155	VKDIMSHX020E	VKDIMSHX020F
25	20	10	65	34,5	85	49	65	114	70	82	228	VKDIMSHX025E	VKDIMSHX025F
32	25	10	69,5	39	85	49	73	126	78	90	308	VKDIMSHX032E	VKDIMSHX032F
40	32	10	82,5	46	108	64	86	141	88	100	490	VKDIMSHX040E	VKDIMSHX040F
50	40	10	89	52	108	64	98	164	93	117	692	VKDIMSHX050E	VKDIMSHX050F
63	50	10	108	62	134	76	122	199	111	144	1176	VKDIMSHX063E	VKDIMSHX063F



VKDDM

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

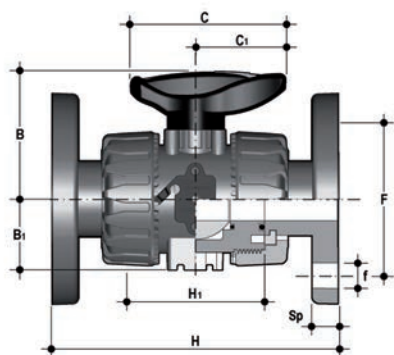
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	124	65	16	153	VKDDM020E	VKDDM020F
25	20	10	65	34,5	85	49	65	144	70	18	222	VKDDM025E	VKDDM025F
32	25	10	69,5	39	85	49	73	154	78	20	303	VKDDM032E	VKDDM032F
40	32	10	82,5	46	108	64	86	174	88	22	485	VKDDM040E	VKDDM040F
50	40	10	89	52	108	64	98	194	93	23	672	VKDDM050E	VKDDM050F
63	50	10	108	62	134	76	122	224	111	29	1176	VKDDM063E	VKDDM063F



VKDFM

Dual Block® 2-way ball valve with BSP threaded female ends

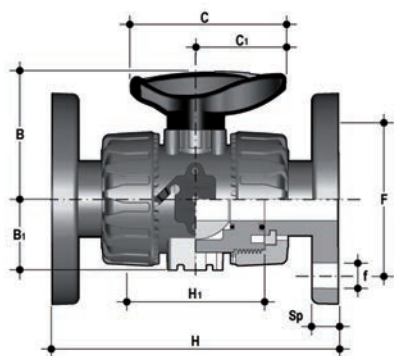
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	10	54	29	67	40	54	110	65	15	80	145	VKDFM012E	VKDFM012F
3/4"	20	10	65	34,5	85	49	65	116	70	16	83	220	VKDFM034E	VKDFM034F
1"	25	10	69,5	39	85	49	73	134	78	19	96	298	VKDFM100E	VKDFM100F
1" 1/4	32	10	82,5	46	108	64	86	153	88	21	110	488	VKDFM114E	VKDFM114F
1" 1/2	40	10	89	52	108	64	98	156	93	21	113	682	VKDFM112E	VKDFM112F
2"	50	10	108	62	134	76	122	186	111	26	135	1181	VKDFM200E	VKDFM200F



VKDOM

DUAL BLOCK® 2-way ball valve with fixed flanges, drilled EN/ISO/DIN PN 10/16. Face to face according to EN 558-1

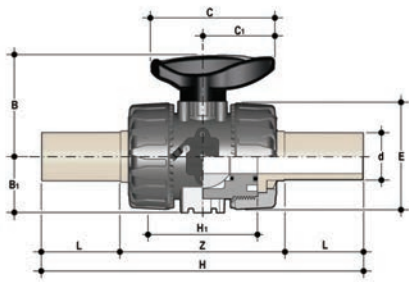
d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code
20	15	10	54	29	67	40	65	14	130	65	11	4	387	VKDOM020E	VKDOM020F
25	20	10	65	34,5	85	49	75	14	150	70	14	4	504	VKDOM025E	VKDOM025F
32	25	10	69,5	39	85	49	85	14	160	78	14	4	697	VKDOM032E	VKDOM032F
40	32	10	82,5	46	108	64	100	18	180	88	14	4	1075	VKDOM040E	VKDOM040F
50	40	10	89	52	108	64	110	18	200	93	16	4	1346	VKDOM050E	VKDOM050F
63	50	10	108	62	134	76	125	18	230	111	16	4	2060	VKDOM063E	VKDOM063F



VKDOAM

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

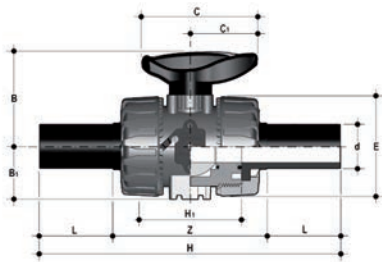
d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code
1/2"	15	10	54	29	67	40	60,3	15,9	143	65	11	4	387	VKDOAM012E	VKDOAM012F
3/4"	20	10	65	34,5	85	49	69,9	15,9	172	70	14	4	504	VKDOAM034E	VKDOAM034F
1"	25	10	69,5	39	85	49	79,4	15,9	187	78	14	4	697	VKDOAM100E	VKDOAM100F
1" 1/4	32	10	82,5	46	108	64	88,9	15,9	190	88	14	4	1075	VKDOAM114E	VKDOAM114F
1" 1/2	40	10	89	52	108	64	98,4	15,9	212	93	16	4	1346	VKDOAM112E	VKDOAM112F
2"	50	10	108	62	134	76	120,7	19,1	234	111	16	4	2060	VKDOAM200E	VKDOAM200F



VKDBM

DUAL BLOCK® 2-way ball valve with long spigot male ends in PP-H SDR 11 for butt welding or electrofusion (CVDM)

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	175	65	40,5	94	220	VKDBM020E	VKDBM020F
25	20	10	65	35	85	49	65	212	70	54	106	340	VKDBM025E	VKDBM025F
32	25	10	70	39	85	49	73	226	78	56	117	443	VKDBM032E	VKDBM032F
40	32	10	83	46	108	64	86	246	88	56	131	593	VKDBM040E	VKDBM040F
50	40	10	89	52	108	64	98	271	93	60,5	145	945	VKDBM050E	VKDBM050F
63	50	10	108	62	134	76	122	300	111	65,5	161	1607	VKDBM063E	VKDBM063F



VKDBEM

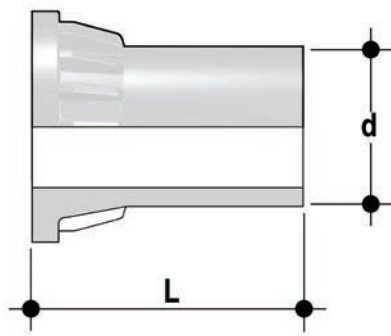
DUAL BLOCK® 2-way ball valve with PE100 SDR 11 male end connectors for butt welding or electrofusion (CVDE)

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	175	65	40,5	94	210	VKDBEM020E	VKDBEM020F
25	20	10	65	34,5	85	49	65	213	70	54	106	325	VKDBEM025E	VKDBEM025F
32	25	10	69,5	39	85	49	73	228	78	56	117	420	VKDBEM032E	VKDBEM032F
40	32	10	82,5	46	108	64	86	247	88	56	131	570	VKDBEM040E	VKDBEM040F
50	40	10	89	52	108	64	98	271	93	60,5	145	900	VKDBEM050E	VKDBEM050F
63	50	10	108	62	134	76	122	300	111	65,5	161	1500	VKDBEM063E	VKDBEM063F

ACCESSORIES

CVDM

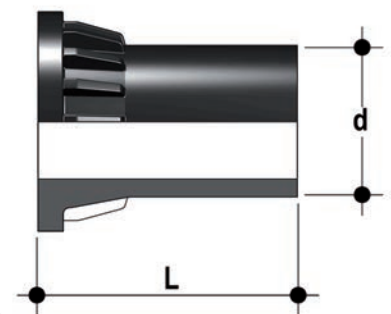
End connectors in PP-H SDR 11 PN 10, long spigot, for butt welding



d	DN	PN	L	SDR	Code
20	15	10	55	11	CVDM11020
25	20	10	70	11	CVDM11025
32	25	10	74	11	CVDM11032
40	32	10	78	11	CVDM11040
50	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063

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

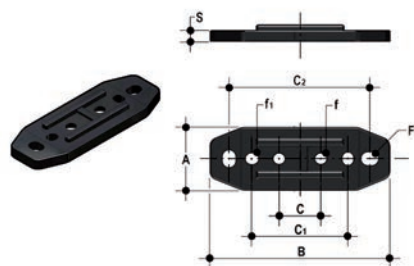
Handle block kit 0° - 90° lockable



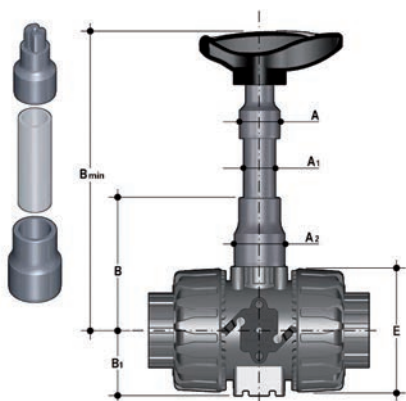
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063

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

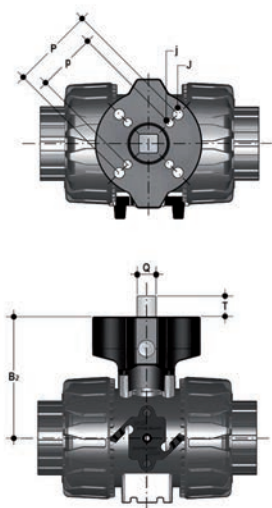


Easytorque Kit

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

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

*calculated in ideal installation conditions

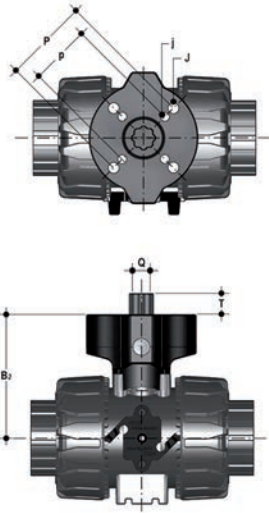


Power Quick/CP

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

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

*F04 x 5.5 on request

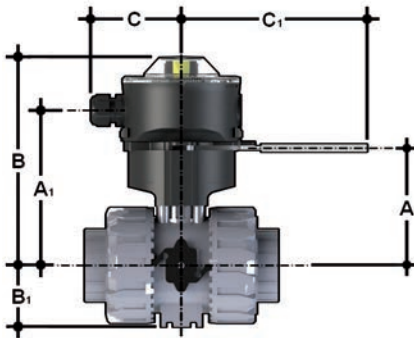


Power Quick/CE

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

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

*F04 x 5.5 on request



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	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

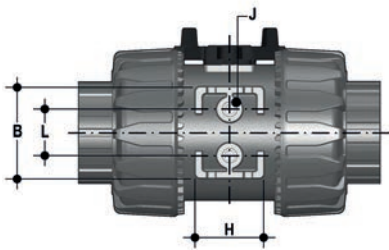
FASTENING AND SUPPORTING



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.

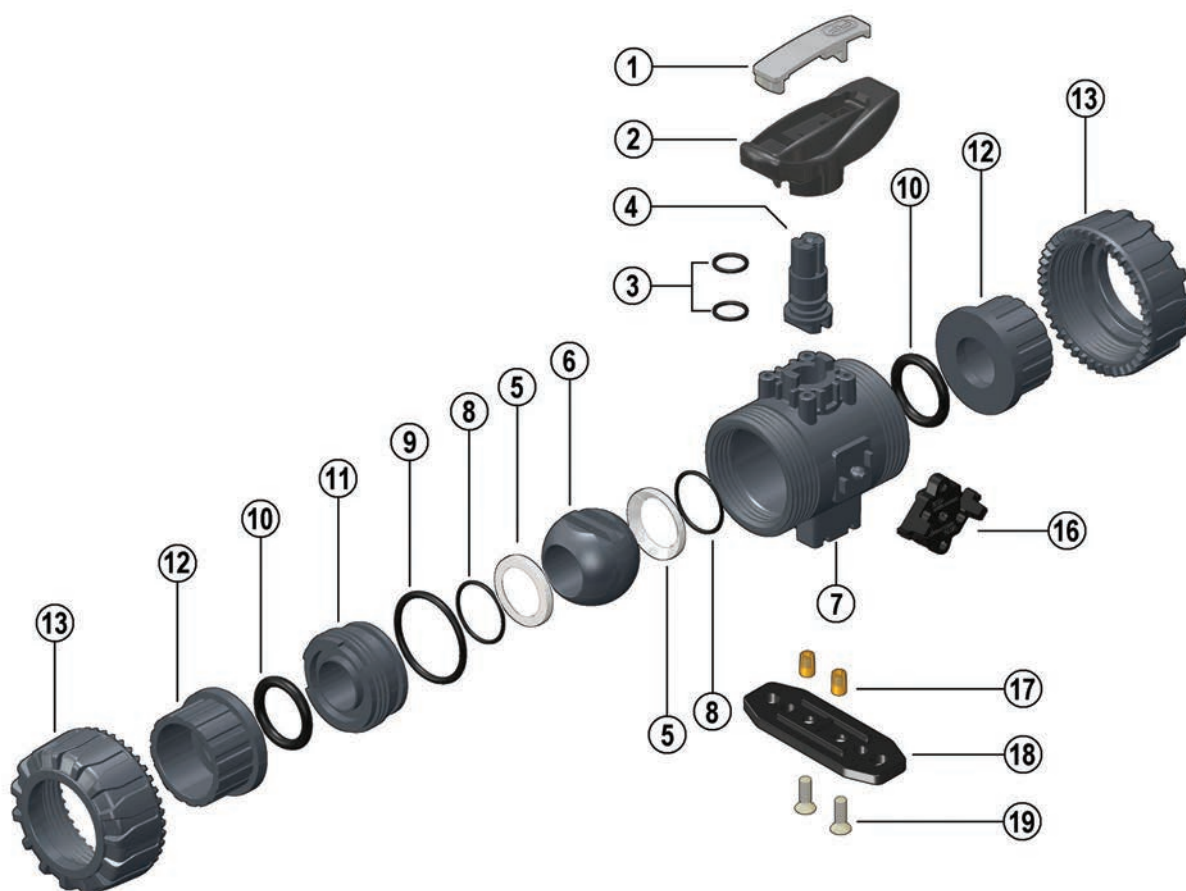
d	DN	g	H	L	J*
16	10	31,5	27	20	M4 x 6
20	15	31,5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	30	M6 x 10
50	40	50	35	30	M6 x 10
63	50	60	40	30	M6 x 10

* With threaded inserts



COMPONENTS

EXPLODED VIEW



- 1** Handle insert (PVC - 1)
- 2** Handle (HIPVC - 1)
- 3** Stem O-rings (EPDM o FKM - 2)*
- 4** Stem (PP-H - 1)
- 5** Ball seat (PTFE - 2)*
- 6** Ball (PP-H - 1)
- 7** Body (PP-H - 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 (PP-H - 1)
- 12** End connector (PP-H - 2)*
- 13** Union nut (PP-H - 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 (H₂O₂) or Sodium Hypochlorite (NaClO) are used, for safety reasons we recommend you contact the service centre. These liquids, upon vaporising, could create hazardous over pressures in the area between the body and ball.
- Always avoid sudden closing operations and protect the valve from accidental operations.

Fig.5

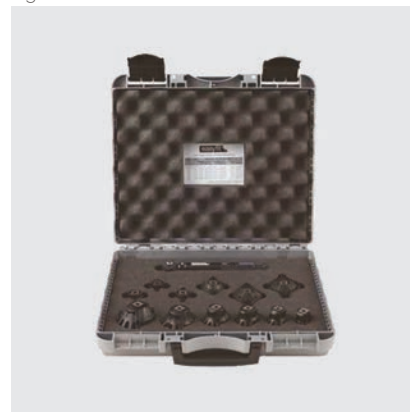


Fig.6



Fig.7



Fig.8



VKD DN 65÷100

DUAL BLOCK® 2-way ball valve



VKD DN 65÷100

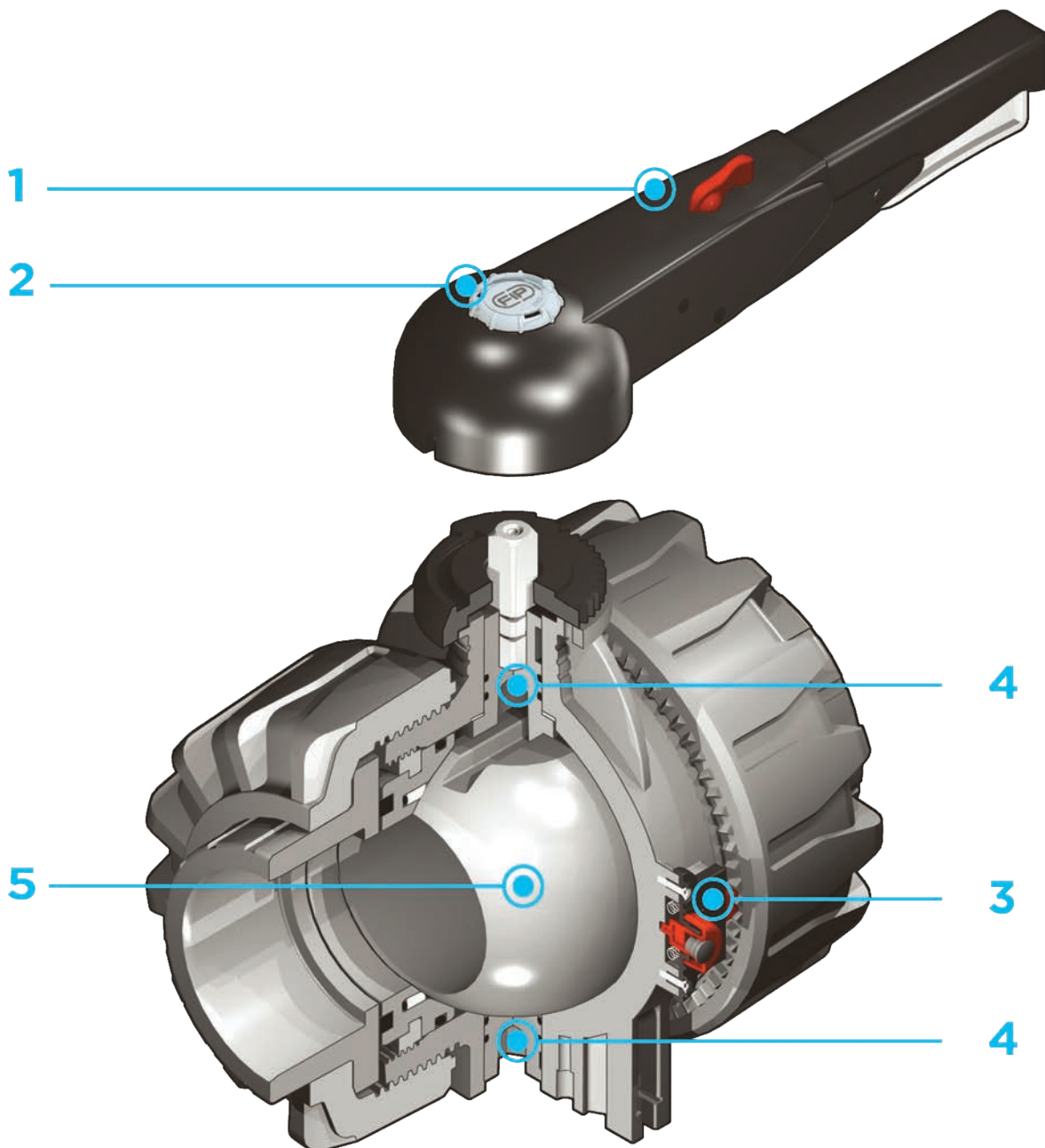
FIP has developed a VKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications. This valve is also equipped with a customisable Labelling System.



DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for weld, threaded and flanged joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN10 True Union valve body** made for PP-H injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- **Full bore ball** with high surface finish
- **Integrated bracket** for valve anchoring
- Possibility of installing a gear box or pneumatic and/or electric actuators by applying an ISO standard bore PP-GR flange
- **STAINLESS steel co-moulded stem**, with square section as per ISO 5211
- 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 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494
	Thread: ISO 228-1, EN 10226-1/2
	Flanging system: ISO 9624, EN ISO 1092-1, EN ISO 15494 EN 558-1, ANSI B.16.5 cl.150
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15494
	Test methods and requirements: ISO 9393
	Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318
	Actuator couplings: ISO 5211
Valve material	PP-H
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

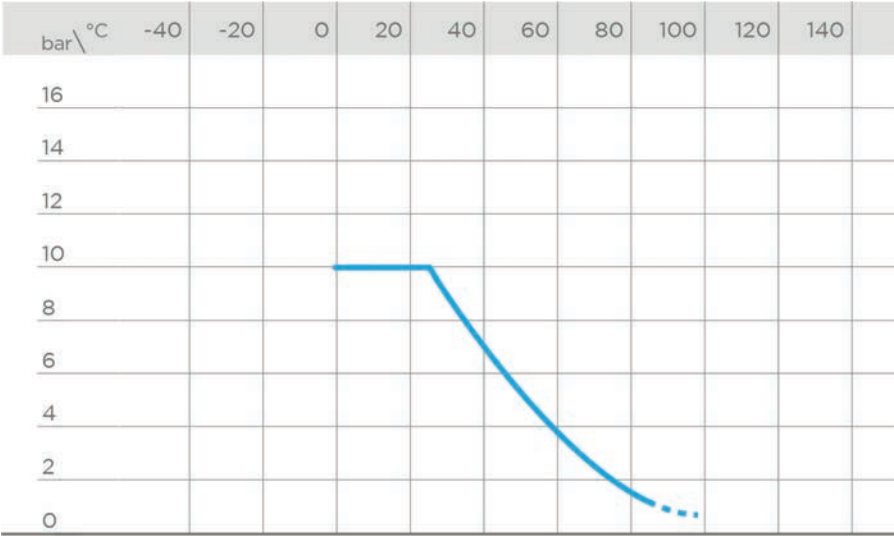
- 3** **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation (available as accessory). The customisation lets you identify the valve on the system according to specific needs

- 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

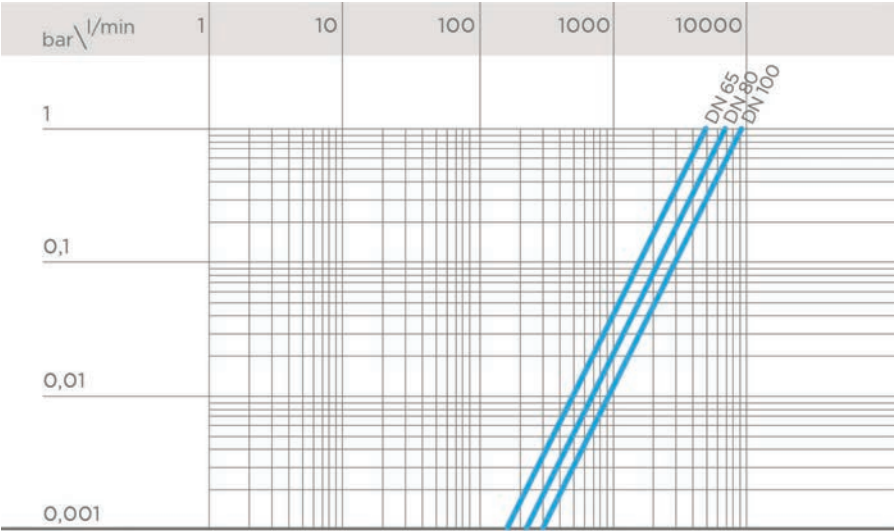
TECHNICAL DATA

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

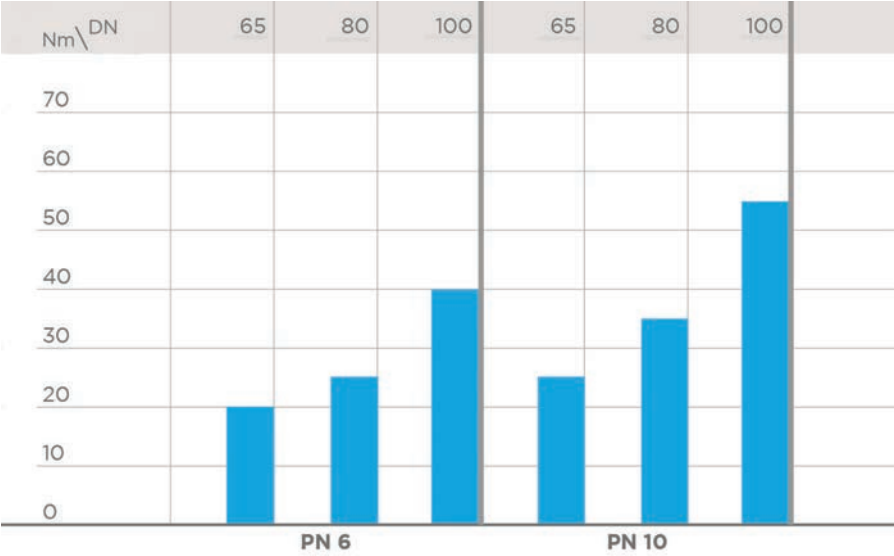


K_v100 FLOW COEFFICIENT

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 Δp= 1 bar pressure drop at a certain valve position. The Kv100 values shown in the table are calculated with the valve completely open.

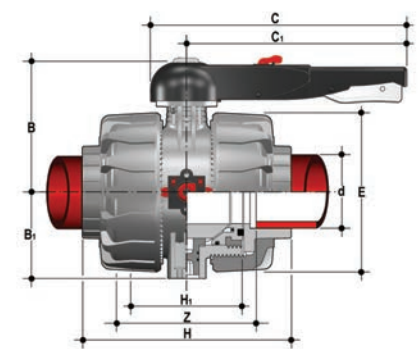
DN	65	80	100
K _v 100 l/min	5250	7100	9500

OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



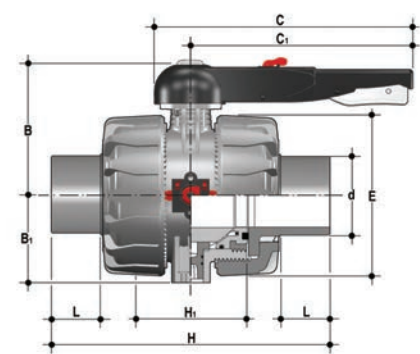
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

DIMENSIONS



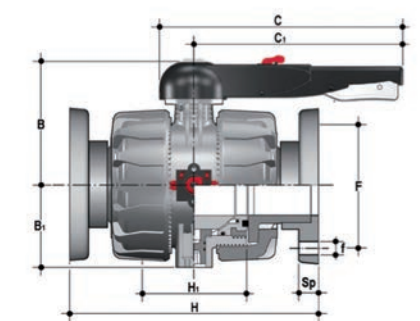
VKDIM
DUAL BLOCK® 2-way ball valve with female ends for socket welding, metric series

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
75	65	10	164	87	225	175	162	213	133	30	153	3090	VKDIM075E	VKDIM075F
90	80	10	177	105	327	272	202	239	149	33	173	5080	VKDIM090E	VKDIM090F
110	100	10	195	129	385	330	236	268	167	34,5	199	7725	VKDIM110E	VKDIM110F



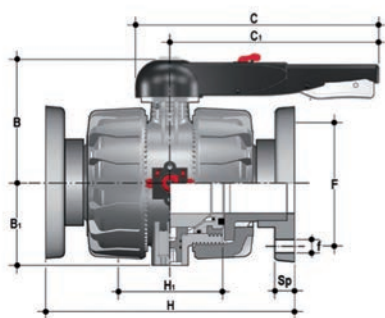
VKDDM
DUAL BLOCK® 2-way ball valve with male ends for socket welding, metric series

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM code	FKM code
75	65	10	164	87	225	175	162	284	133	44	3190	VKDDM075E	VKDDM075F
90	80	10	177	105	327	272	202	300	149	51	5280	VKDDM090E	VKDDM090F
110	100	10	195	129	385	330	236	340	167	61	8010	VKDDM110E	VKDDM110F



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

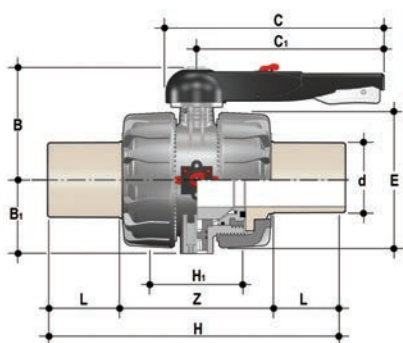
d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code
75	65	10	164	87	225	175	145	17	290	133	24	4	4500	VKDOM075E	VKDOM075F
90	80	10	177	105	327	272	160	17	310	149	25	8	6455	VKDOM090E	VKDOM090F
110	100	10	195	129	385	330	180	17	350	167	25	8	9090	VKDOM110E	VKDOM110F



VKDOAM

DUAL BLOCK® ball valve with ANSI B16.5 cl.150#FF fixed flanges *

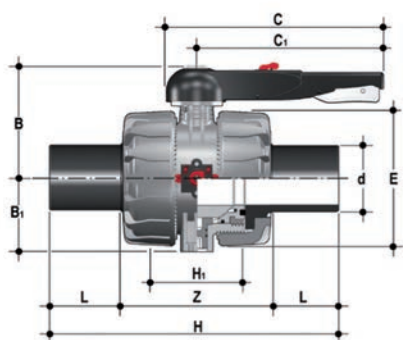
d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code
2 1/2"	65	10	164	87	225	175	145	17	290	133	24	4	4500	VKDOM075E	VKDOM075F
3"	80	10	177	105	327	272	160	17	310	149	25	8	6455	VKDOM090E	VKDOM090F
4"	100	10	195	129	385	330	180	17	350	167	25	8	9090	VKDOM110E	VKDOM110F



VKDBM

DUAL BLOCK® 2-way ball valve with long spigot male ends in PP-H SDR 11 for butt welding or electrofusion (CVDM)

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
75	65	10	164	87	225	175	162	356	133	71	214	3150	VKDBM075E	VKDBM075F
90	80	10	177	105	327	272	202	390	149	88	214	5240	VKDBM090E	VKDBM090F
110	100	10	195	129	385	330	236	431	167	92	247	7970	VKDBM110E	VKDBM110F

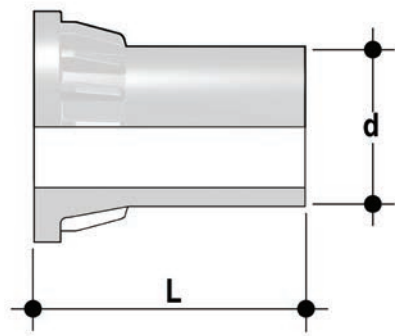


VKDBEM

DUAL BLOCK® 2-way ball valve with PE100 SDR 11 male end connectors for butt welding or electrofusion (CVDE).

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
75	65	10	164	87	225	175	162	356	133	71	214	3100	VKDBEM075E	VKDBEM075F
90	80	10	177	105	327	272	202	390	149	88	214	5180	VKDBEM090E	VKDBEM090F
110	100	10	195	129	385	330	236	431	167	92	247	7800	VKDBEM110E	VKDBEM110F

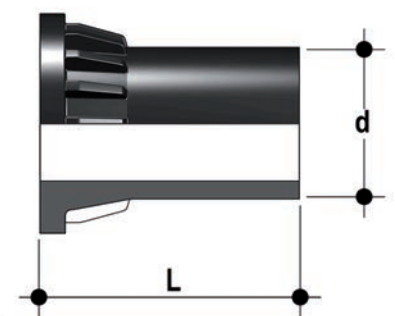
ACCESSORI



CVDM

End connectors in PP-H SDR 11 PN 10, long spigot, for butt welding

d	DN	PN	L	SDR	Code
75	65	10	111	11	CVDM11075
90	80	10	118	11	CVDM11090
110	100	10	132	11	CVDM11110



CVDE

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

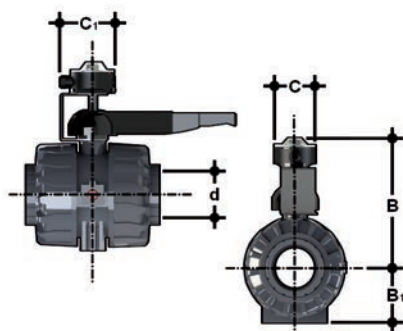
d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090
110	100	16	132	11	CVDE11110



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



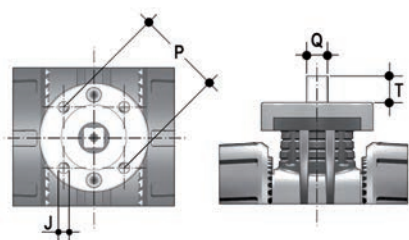
LS Quick Kit

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 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

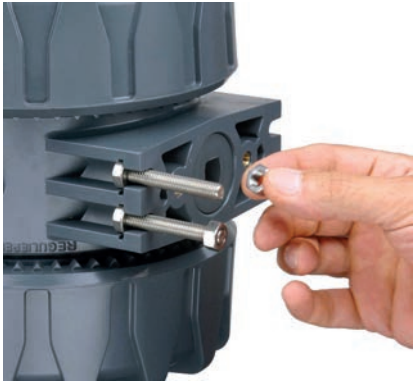
ACTUATOR MOUNTING FLANGE

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



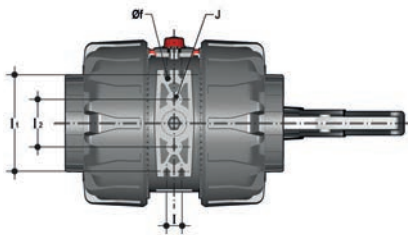
d	DN	P x J	T	Q
75	65	F07 x 9	16	14
90	80	F07 x 9	16	14
110	100	F07 x 9	19	17

FASTENING AND SUPPORTING

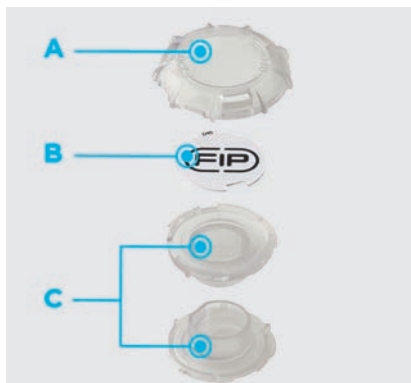


All valves, whether manual or actuated, must be adequately supported in many applications. The VKD DN 65÷100 valve series is therefore ready to be equipped with threaded supporting brackets (optional) that permits direct anchoring on the valve body without the need of other components. Using standard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

d	DN	J	f	l	l1	l2
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.

EXPLODED VIEW



- * 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 dismantling, 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.

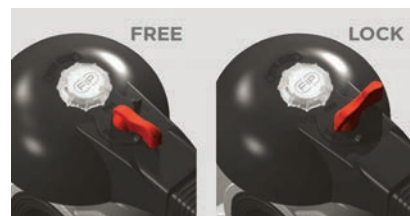
UNION NUT LOCK

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.

VKR DN 10÷50



DUAL BLOCK® regulating ball valve



VKR DN 10÷50

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

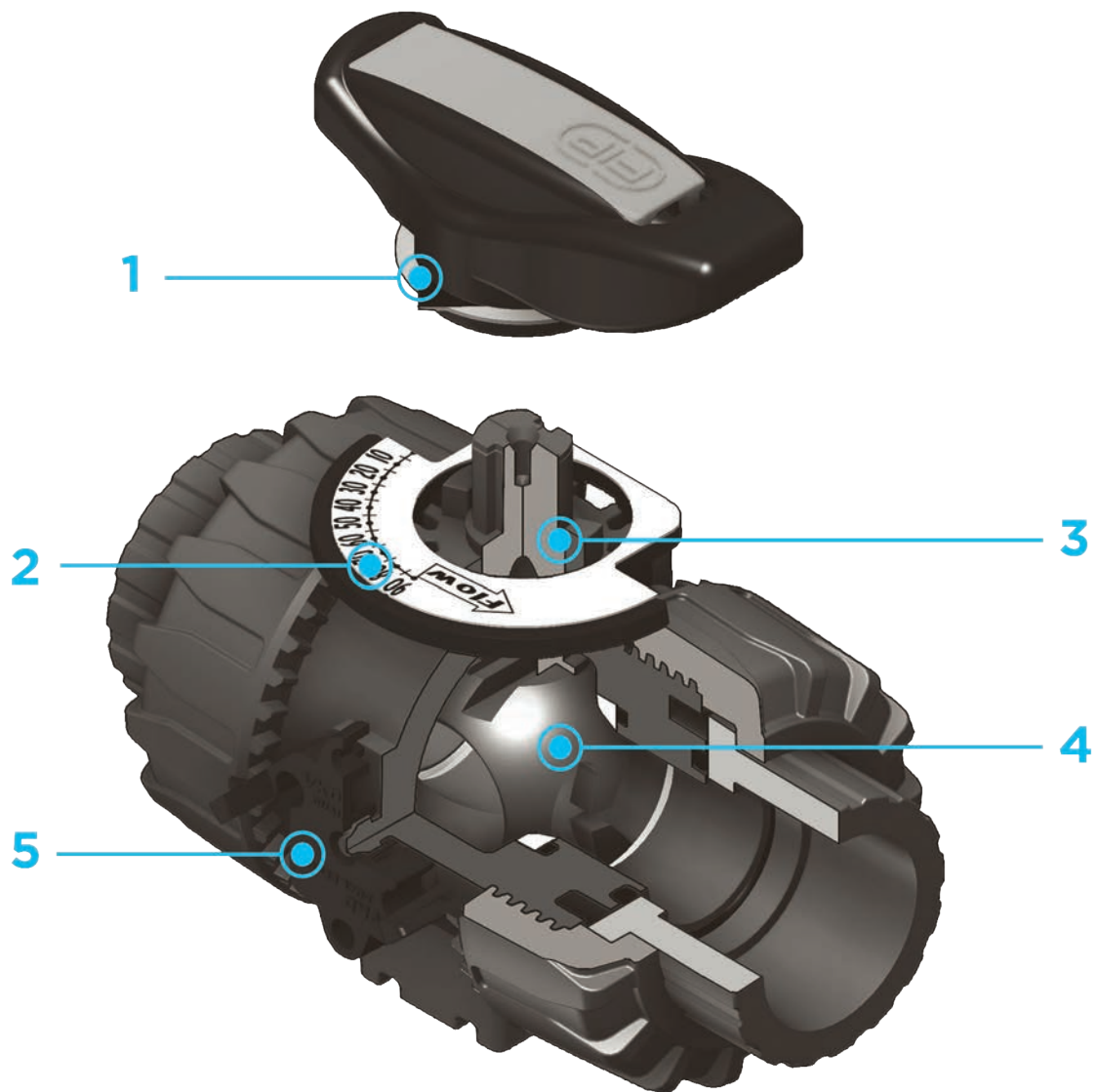


DUAL BLOCK® REGULATING BALL VALVE

- Connection system for weld, threaded and flanged joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- **PN10 True Union valve body** made for PP-H injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- High surface finish stem with double O-Ring and double groove ball connection
- **Integrated bracket** for valve anchoring
- Ball seat carrier can be adjusted using the **Easytorque adjustment kit**
- Actuation option: version with electric modulating actuator with 4-20 mA / 0-10 V inlet and 4-20 mA / 0-10 V outlet to monitor the position
- Valve suitable for carrying fluids that are clean and free of suspended particles

Technical specifications

Construction	2-way True Union regulating ball valve with locked carrier and lockable union nuts
Size range	DN 10 ÷ 50
Nominal pressure	PN 10 con acqua a 20 °C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494 Can be coupled to pipes according to EN ISO 15494 Thread: ISO 228-1, EN 10226-1/2 Flanging system: ISO 9624, EN ISO 1092-1, EN ISO 15494, EN 558-1, ANSI B.16.5 cl. 150
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15494 Test methods and requirements: ISO 9393 Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318 Actuator couplings: ISO 5211
Valve material	PP-H
Seal material	EPDM, FKM (standard size O-Rings); PTFE (ball seats)
Control options	Manual control; electric actuator



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

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

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

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

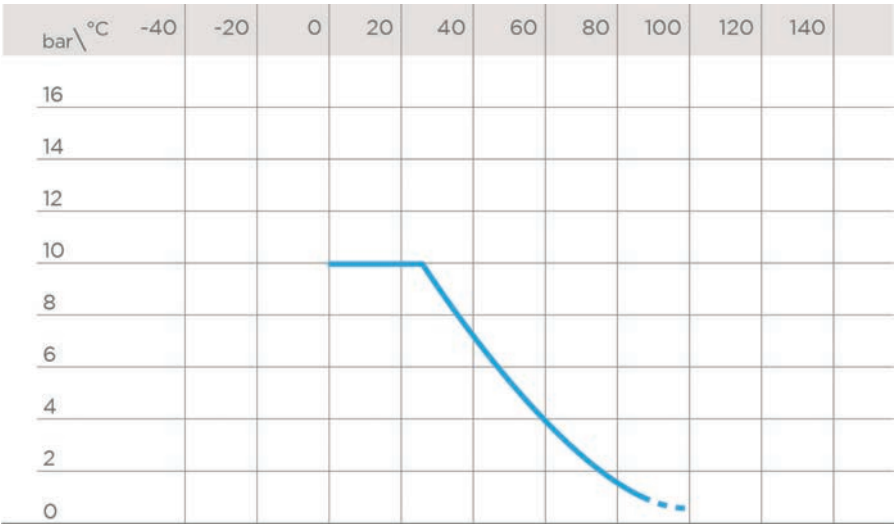
degrees.

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

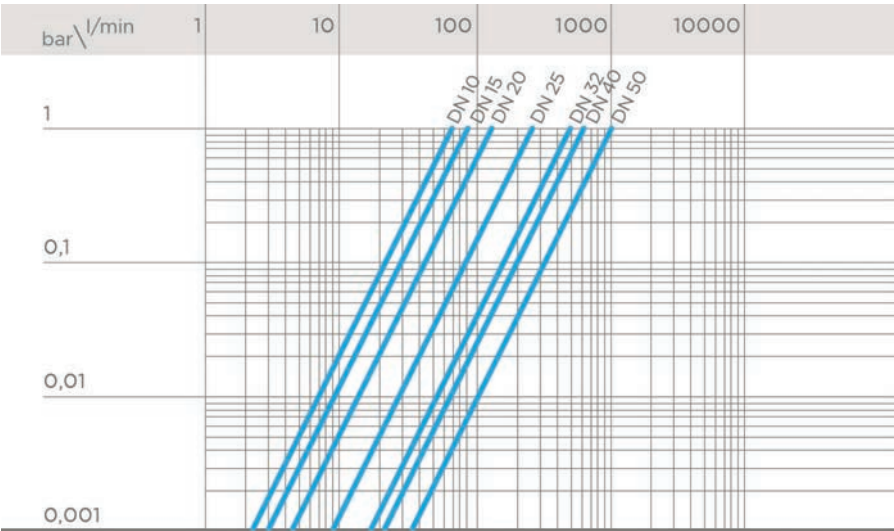
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

For water and 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



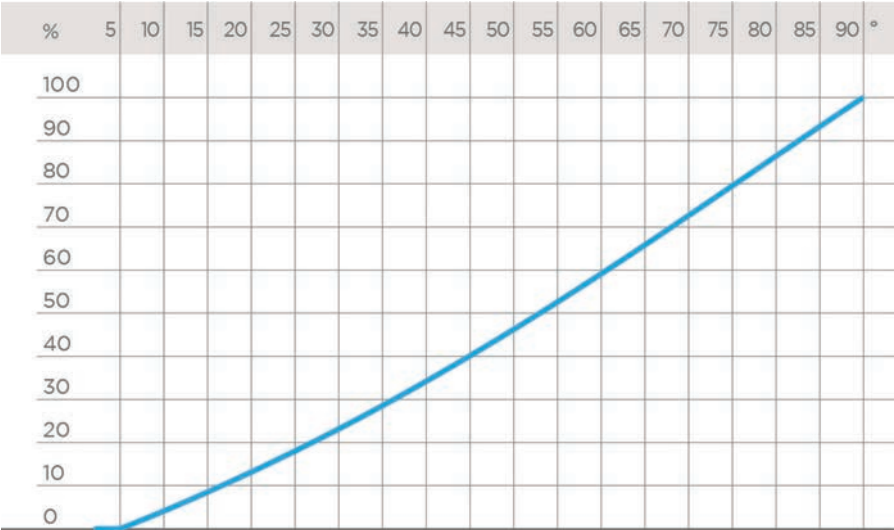
K_v100 FLOW COEFFICIENT

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.

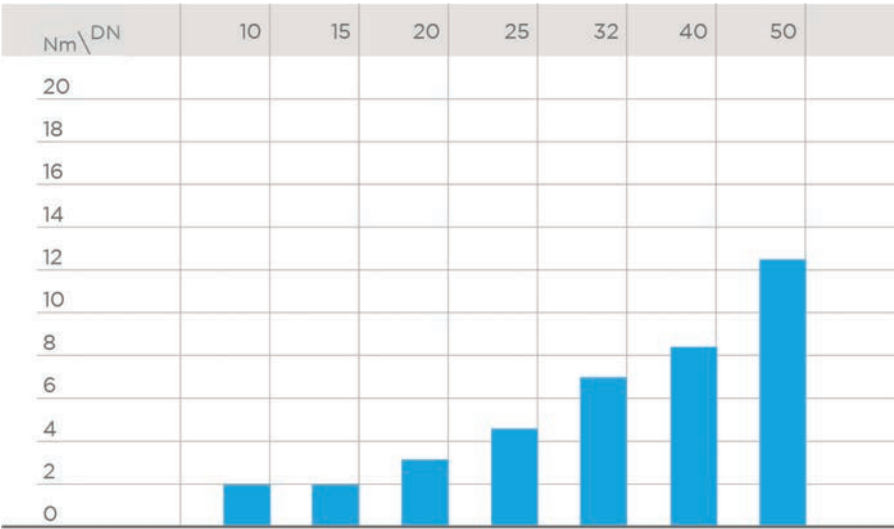
DN	10	15	20	25	32	40	50
Kv100 l/min	83	118	158	208	278	378	508

RELATIVE FLOW COEFFICIENT DIAGRAM

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

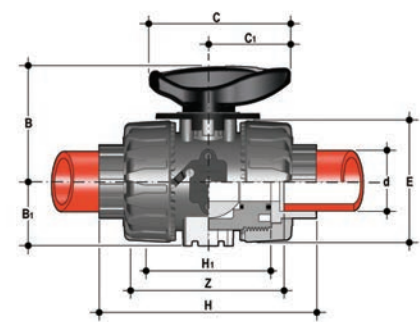


OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



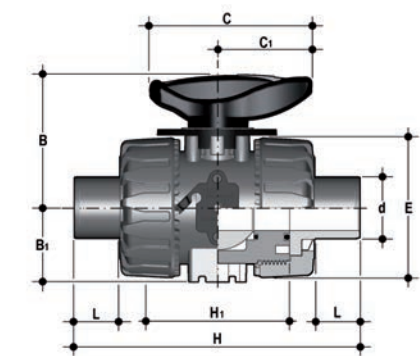
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

DIMENSIONS



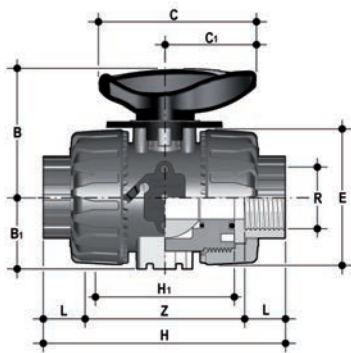
VKRIM
DUAL BLOCK® regulating ball valve with female ends for socket welding, metric series

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	Z	g	EPDM code	FKM code
16	10	10	54	29	67	40	54	102	65	74,5	150	VKRIM016E	VKRIM016F
20	15	10	54	29	67	40	54	102	65	73	145	VKRIM020E	VKRIM020F
25	20	10	65	34,5	85	49	65	114	70	82	218	VKRIM025E	VKRIM025F
32	25	10	69,5	39	85	49	73	126	78	90	298	VKRIM032E	VKRIM032F
40	32	10	82,5	46	108	64	86	141	88	100	480	VKRIM040E	VKRIM040F
50	40	10	89	52	108	64	98	164	93	117	682	VKRIM050E	VKRIM050F
63	50	10	108	62	134	76	122	199	111	144	1166	VKRIM063E	VKRIM063F



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

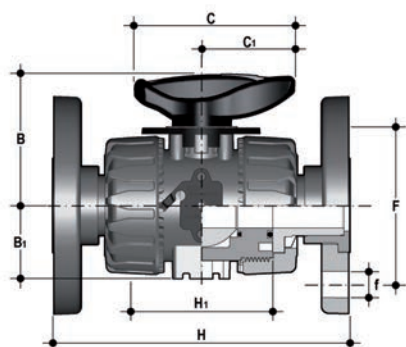
d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	144	70	18	222	VKRDM020E	VKRDM020F
25	20	10	65	34,5	85	49	65	154	78	20	303	VKRDM025E	VKRDM025F
32	25	10	69,5	39	85	49	73	174	88	22	485	VKRDM032E	VKRDM032F
40	32	10	82,5	46	108	64	86	194	93	23	672	VKRDM040E	VKRDM040F
50	40	10	89	52	108	64	98	224	111	29	1176	VKRDM050E	VKRDM050F
63	50	10	108	62	134	76	122	224	111	38	1607	VKRDM063E	VKRDM063F



VKRFM

DUAL BLOCK® regulating ball valve with BSP threaded female ends

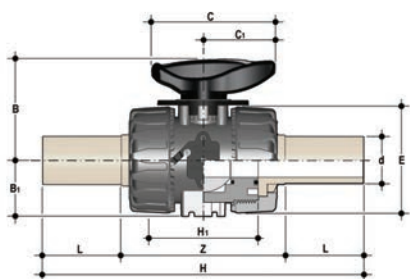
R	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
3/8"	10	10	54	29	67	40	54	103	65	15	80	145	VKRFM038E	VKRFM038F
1/2"	15	10	54	29	67	40	54	110	65	16	83	220	VKRFM012E	VKRFM012F
3/4"	20	10	65	34,5	85	49	65	116	70	19	96	298	VKRFM034E	VKRFM034F
1"	25	10	69,5	39	85	49	73	134	78	21	110	488	VKRFM100E	VKRFM100F
1" 1/4	32	10	82,5	46	108	64	86	153	88	21	113	682	VKRFM114E	VKRFM114F
1" 1/2	40	10	89	52	108	64	98	156	93	26	135	1161	VKRFM112E	VKRFM112F
2"	50	10	108	62	134	76	122	186	111	26	135	1667	VKRFM200E	VKRFM200F



VKROM

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

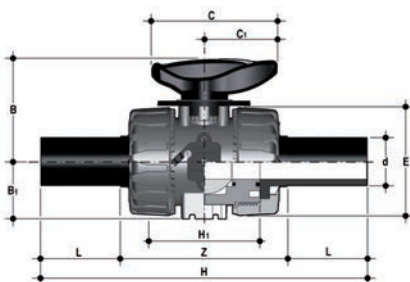
d	DN	PN	B	B ₁	C	C ₁	F	f	H	H ₁	U	Sp	g	EPDM code	FKM code
20	15	10	54	29	67	40	65	14	130	65	4	11	387	VKROM020E	VKROM020F
25	20	10	65	34,5	85	49	75	14	150	70	4	14	504	VKROM025E	VKROM025F
32	25	10	69,5	39	85	49	85	14	160	78	4	14	697	VKROM032E	VKROM032F
40	32	10	82,5	46	108	64	100	18	180	88	4	14	1075	VKROM040E	VKROM040F
50	40	10	89	52	108	64	110	18	200	93	4	16	1346	VKROM050E	VKROM050F
63	50	10	108	62	134	76	125	18	230	111	4	16	2060	VKROM063E	VKROM063F



VKRBM

DUAL BLOCK® regulating ball valve with long spigot male ends in PP-H for butt welding or electrofusion (CVDM)

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	175	65	40,5	94	220	VKRBM020E	VKRBM020F
25	20	10	65	35	85	49	65	212	70	54	106	340	VKRBM025E	VKRBM025F
32	25	10	70	39	85	49	73	226	78	56	117	443	VKRBM032E	VKRBM032F
40	32	10	83	46	108	64	86	246	88	56	131	593	VKRBM040E	VKRBM040F
50	40	10	89	52	108	64	98	271	93	60,5	145	945	VKRBM050E	VKRBM050F
63	50	10	108	62	134	76	122	300	111	65,5	161	1607	VKRBM063E	VKRBM063F

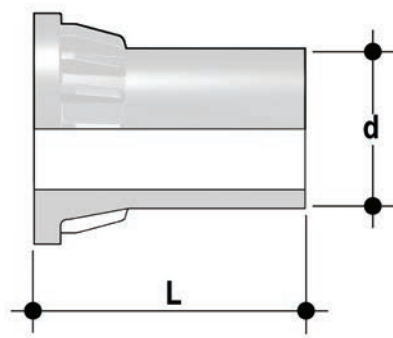


VKRBEM

Dual Block® regulating ball valve with PE100 SDR 11 male end connectors for butt welding or electrofusion (CVDE)

d	DN	PN	B	B ₁	C	C ₁	E	H	H ₁	L	Z	g	EPDM code	FKM code
20	15	10	54	29	67	40	54	175	65	40,5	94	210	VKRBEM020E	VKRBEM020F
25	20	10	65	34,5	85	49	65	213	70	54	106	325	VKRBEM025E	VKRBEM025F
32	25	10	69,5	39	85	49	73	228	78	56	117	420	VKRBEM032E	VKRBEM032F
40	32	10	82,5	46	108	64	86	247	88	56	131	570	VKRBEM040E	VKRBEM040F
50	40	10	89	52	108	64	98	271	93	60,5	145	900	VKRBEM050E	VKRBEM050F
63	50	10	108	62	134	76	122	300	111	65,5	161	1500	VKRBEM063E	VKRBEM063F

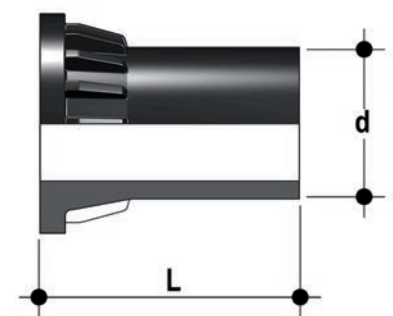
ACCESSORI



CVDM

End connectors in PP-H SDR 11 PN 10, long spigot, for butt welding

d	DN	PN	L	SDR	Code
20	15	10	55	11	CVDM11020
25	20	10	70	11	CVDM11025
32	25	10	74	11	CVDM11032
40	32	10	78	11	CVDM11040
50	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063



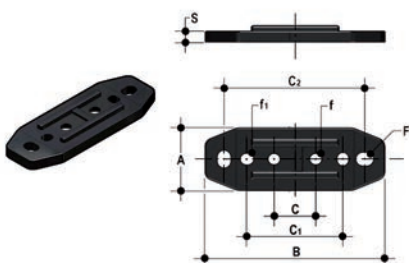
CVDE

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

PMKD

Wall mounting plate



d	DN	A	B	C	C ₁	C ₂	F	f	f ₁	S	Code
16	10	30	86	20	46	67,5	6,5	5,3	5,5	5	PMKD1
20	15	30	86	20	46	67,5	6,5	5,3	5,5	5	PMKD1
25	20	30	86	20	46	67,5	6,5	5,3	5,5	5	PMKD1
32	25	30	86	20	46	67,5	6,5	5,3	5,5	5	PMKD1
40	32	40	122	30	72	102	6,5	6,3	6,5	6	PMKD2
50	40	40	122	30	72	102	6,5	6,3	6,5	6	PMKD2
63	50	40	122	30	72	102	6,5	6,3	6,5	6	PMKD2

Easytorque Kit

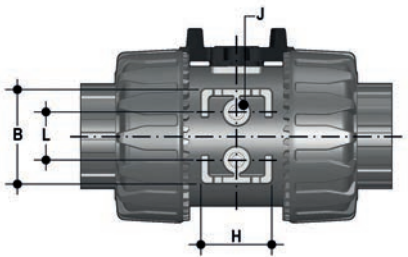
Kit for ball seat carrier tightening adjustment for DUAL BLOCK® DN 10÷50 series valves



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

*calculated in ideal installation conditions

FASTENING AND SUPPORTING



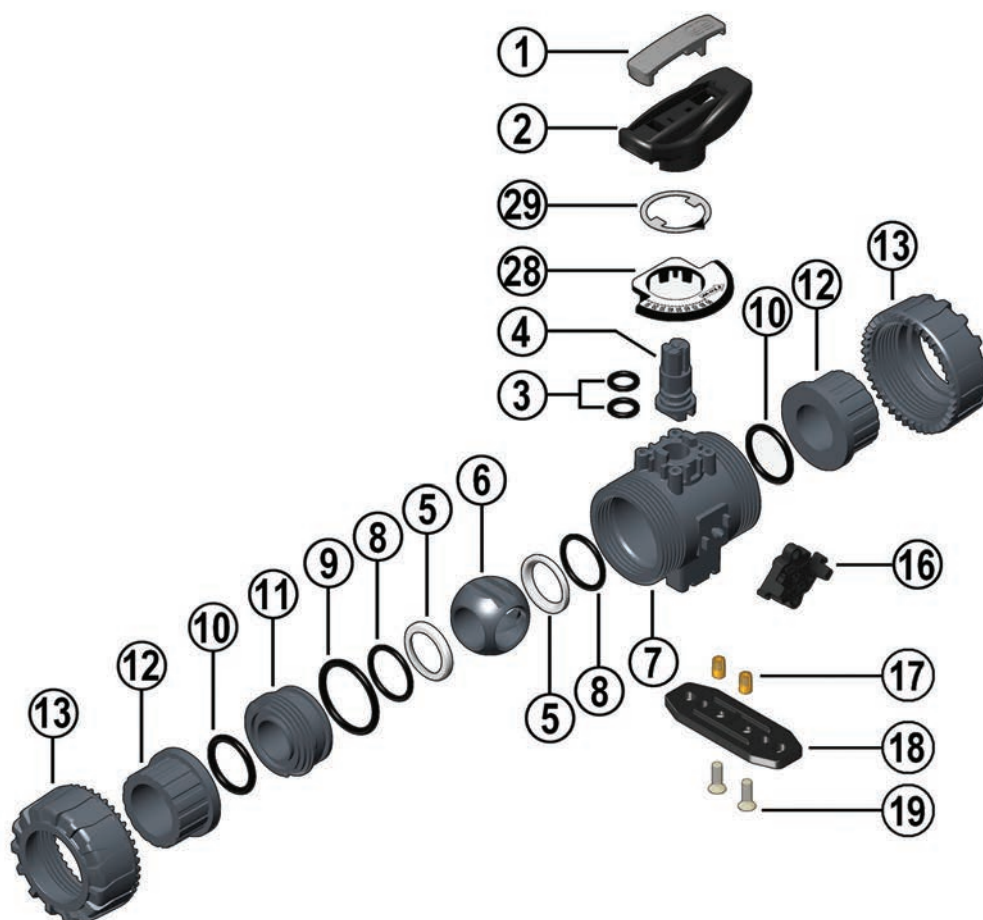
All valves, whether manual or driven, must be adequately supported in many applications. The VKR valve series is therefore ready to be equipped with threaded supporting brackets (optional) that permits direct anchoring of the valve body without the need of other components. For wall installation, dedicated 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 VKR 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 - 1) | 8 Ball seat O-Rings (EPDM or FKM - 2)* | 13 Union nut (PP-H - 2) |
| 2 Handle (HIPVC - 1) | 9 Radial seal O-Ring (EPDM or FKM - 1)* | 16 DUAL BLOCK® (POM - 1) |
| 3 Stem O-ring (EPDM or FKM - 2)* | 10 Socket seal O-Ring (EPDM or FKM - 2)* | 17 Threaded inserts (STAINLESS steel or Brass - 2)** |
| 4 Stem (PP-H - 1) | 11 Ball seat carrier (PP-H - 1) | 18 Distance plate (PP-GR - 1)** |
| 5 Ball seat (PTFE - 2)* | 12 End connector (PP-H - 2)* | 19 Screw (STAINLESS steel - 2)** |
| 6 Patented ball design (PP-H - 1) | | 28 Graduated plate (POM-PVC - 1) |
| 7 Body (PP-H - 1) | | 29 Indicator (PVC - 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) Unlock the union nuts by pressing the lever on the DUAL BLOCK® (16) along the axis and separate it from the union nut (fig. 1). It is also possible to completely remove the 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.
- 6) Pull the handle (2) upwards to remove it from the valve stem (4).
- 7) Make sure that the position indicator (29) remains properly fastened to the handle (2).
- 8) Press on the ball from the side opposite the "REGULAR - ADJUST" label, being sure not to scratch it, until the ball seat carrier exits (11), then extract the ball (6).
- 9) Press the stem (4) inwards until it exits the valve body.
- 10) All the O-rings (3, 8, 9, 10) and PTFE ball seats (5) must be removed from their grooves, as shown in the exploded view.

ASSEMBLY

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



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

Fig. 1



Fig. 2



Fig. 3



Fig. 4

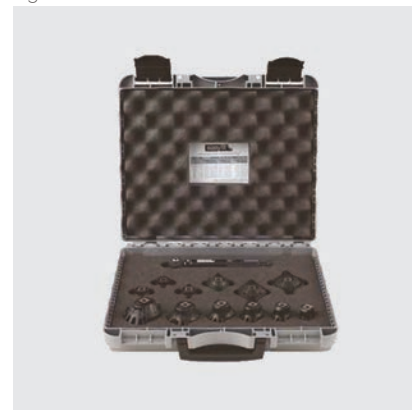


INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
 - 2) Check that the DUAL BLOCK® union nut locking device (16) is fitted to the valve body.
 - 3) To release the union nuts (13), axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
 - 4) Unscrew the union nuts (13) and insert them on the pipe segments.
 - 5) Solvent weld or screw the end connectors (12) onto the pipe ends.
 - 6) Position the valve between the pipe end connectors making sure the that direction of flow is the same as shown on the plate (Fig.4). Hand tighten the union nuts in the clockwise direction. Do not use a wrench or other tools which might damage the surface.
 - 7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.
 - 8) If necessary, support the pipework with FIP pipe clips or by means of the carrier built into the valve itself (see paragraph "fastening and supporting").
- Seals can be adjusted using the removable insert on the handle.
The seals can be 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.
The Easytorque kit can also be used for micro adjustments (fig. 5).

Fig.5



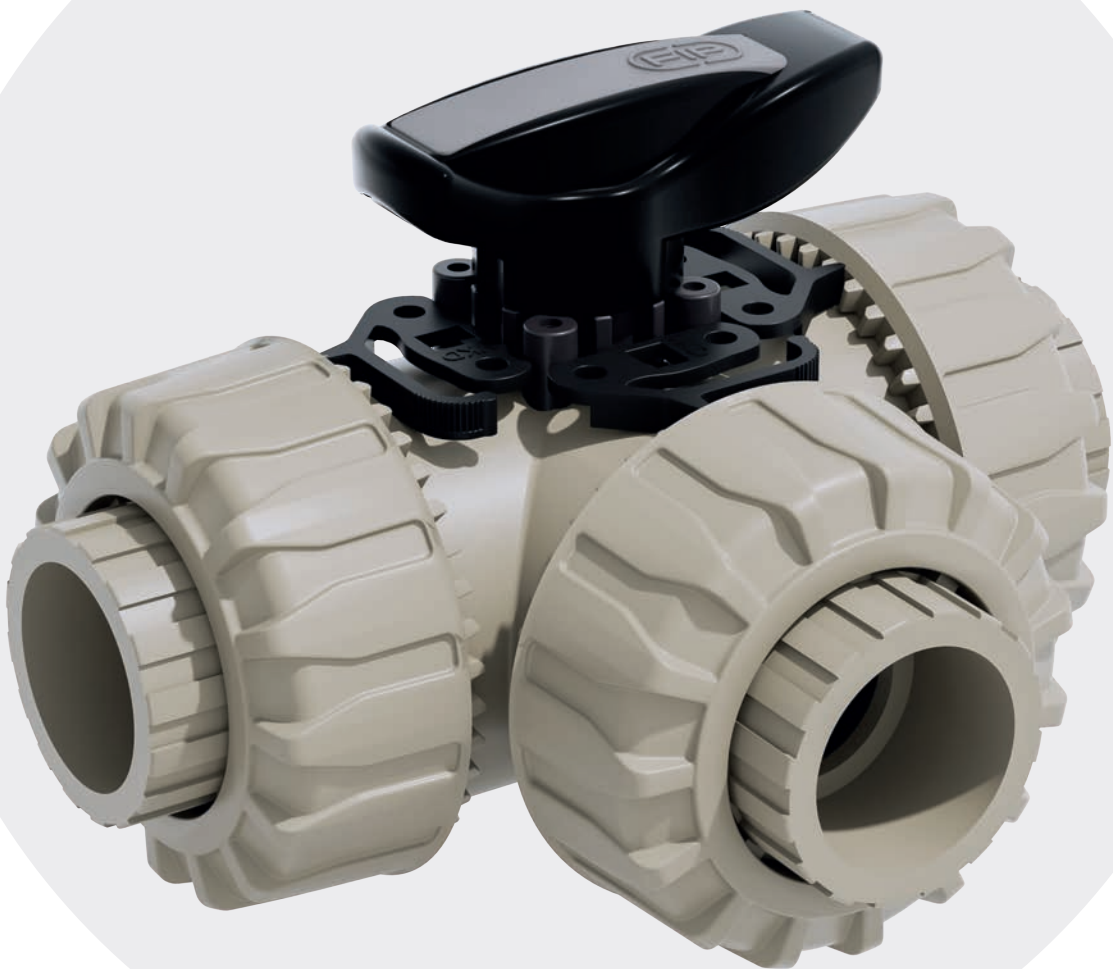
WARNINGS

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

TKD DN 15÷50



DUAL BLOCK® 3-way ball valve



TKD DN 15÷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.

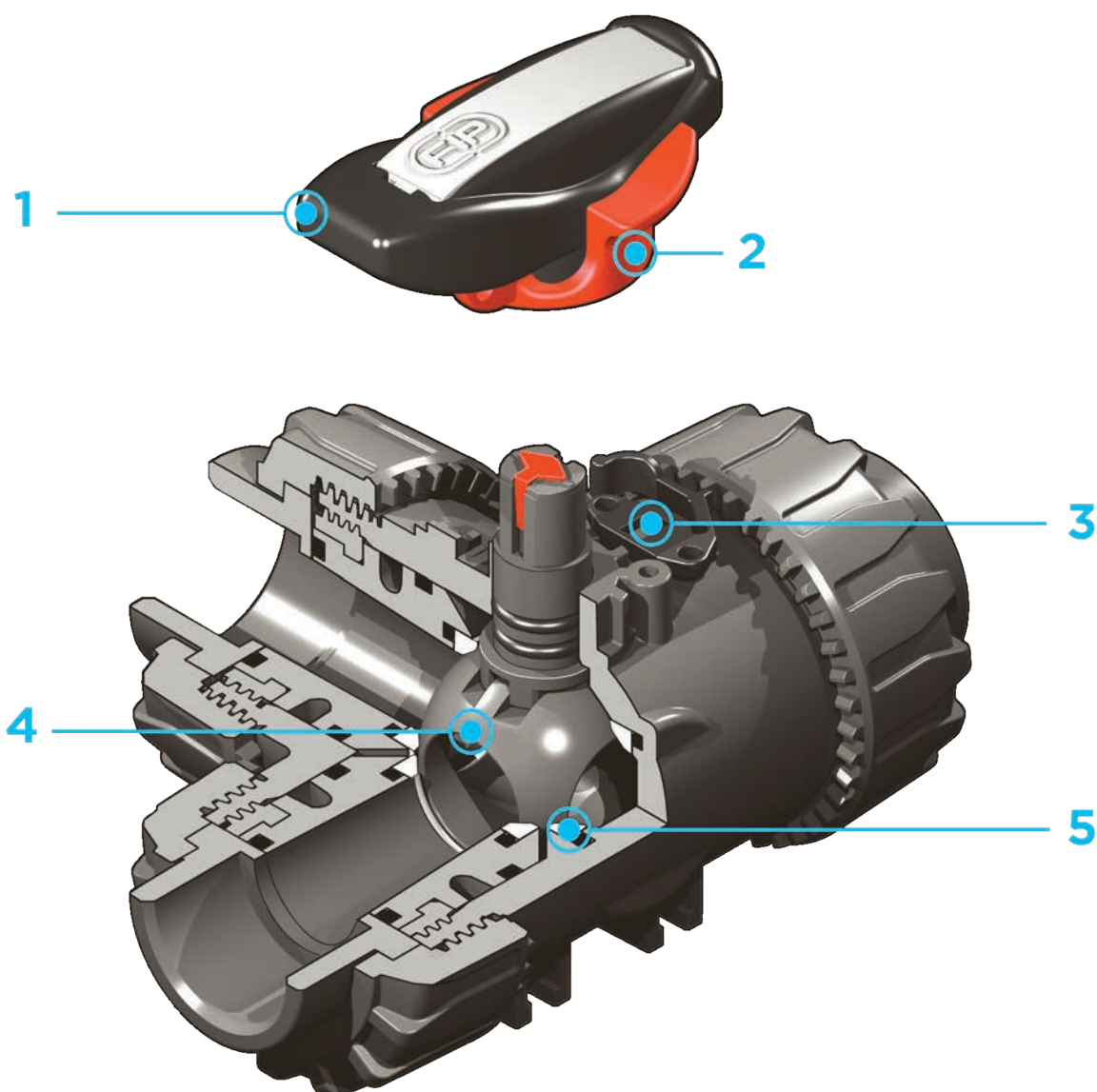


DUAL BLOCK® 3-WAY BALL VALVE

- Connection system for weld and threaded joints
- Patented **SEAT STOP®** ball seat carrier system that lets you micro-adjust ball seats and minimise axial force effects
- Easy radial disassembly allowing quick replacement of O-rings and ball seats without any need for tools
- PN10 **True Union valve body** made for PP-H injection moulding equipped with built-in bores for actuation. ISO 9393 compliant test requisites
- Option of disassembling downstream pipes with the valve in the closed position
- High surface finish stem with double O-Ring and double groove ball connection, equipped with **optical position indicator** for correct handle installation
- **Integrated bracket** 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)
- 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 lockable union nuts
Size range	DN 15 ÷ 50
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494 Can be coupled to pipes according to EN ISO 15494 Thread: ISO 228-1, EN 10226-1/2
Reference standards	Construction criteria: EN ISO 16135, EN ISO 15494 Test methods and requirements: ISO 9393 Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318 Actuator couplings: ISO 5211
Valve material	PP-H
Seal material	EPDM, FKM (standard size O-Rings); 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

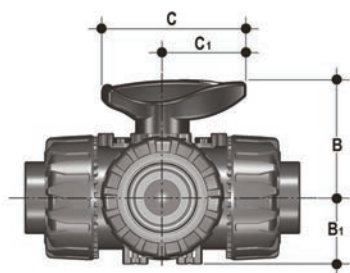
(available as an accessory) ergonomically operable during service and padlockable

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**

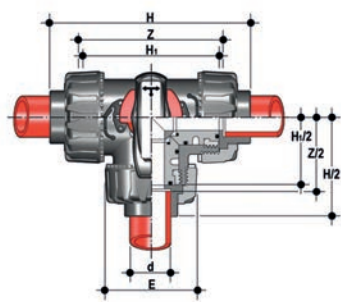
5 **4 PTFE ball seat system** that compensates axial force guaranteeing optimal manageability and long working life

DIMENSIONS



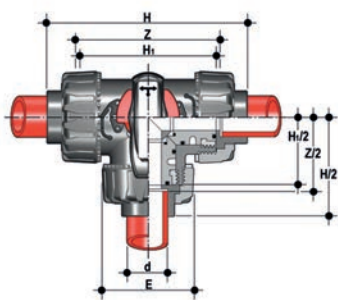
Dimensions shared by all versions

d	DN	B	B ₁	C	C ₁
20	15	54	29	67	40
25	20	65	35	85	49
32	25	70	39	85	49
40	32	83	46	108	64
50	40	89	52	108	64
63	50	108	62	134	76



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

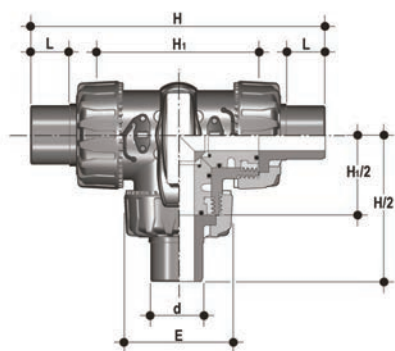
d	DN	PN	E	H	H ₁	Z	g	EPDM code	FKM code
20	15	10	54	117	80	88	195	TKDIM020E	TKDIM020F
25	20	10	65	144	100	112	350	TKDIM025E	TKDIM025F
32	25	10	73	158	110	122	505	TKDIM032E	TKDIM032F
40	32	10	86	184	131	143	820	TKDIM040E	TKDIM040F
50	40	10	98	219	148	172	1070	TKDIM050E	TKDIM050F
63	50	10	122	267	179	212	1795	TKDIM063E	TKDIM063F



LKDIM

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

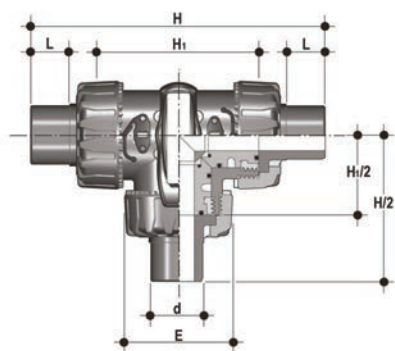
d	DN	PN	E	H	H ₁	Z	g	EPDM code	FKM code
20	15	10	54	117	80	88	195	LKDIM020E	LKDIM020F
25	20	10	65	144	100	112	350	LKDIM025E	LKDIM025F
32	25	10	73	158	110	122	505	LKDIM032E	LKDIM032F
40	32	10	86	184	131	143	820	LKDIM040E	LKDIM040F
50	40	10	98	219	148	172	1070	LKDIM050E	LKDIM050F
63	50	10	122	267	179	212	1795	LKDIM063E	LKDIM063F



TKDDM

DUAL BLOCK® 3-way ball valve with male ends for socket welding, metric series, T-port ball.

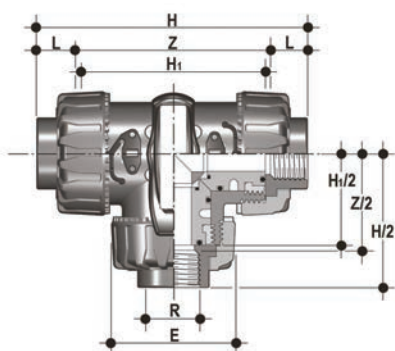
d	DN	PN	E	H	H ₁	L	g	EPDM code	FKM code
20	15	10	54	140	80	16	205	TKDDM020E	TKDDM020F
25	20	10	65	175	100	18	360	TKDDM025E	TKDDM025F
32	25	10	73	188	110	20	515	TKDDM032E	TKDDM032F
40	32	10	86	220	131	22	835	TKDDM040E	TKDDM040F
50	40	10	98	251	148	23	1100	TKDDM050E	TKDDM050F
63	50	10	122	294	179	29	1830	TKDDM063E	TKDDM063F



LKDDM

DUAL BLOCK® 3-way ball valve with male ends for socket welding, metric series, L-port ball.

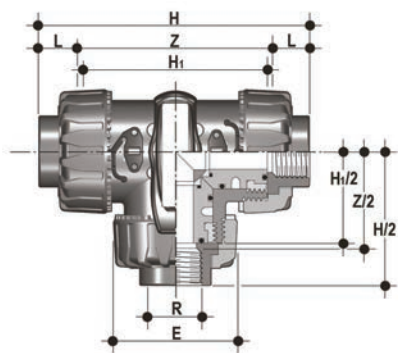
d	DN	PN	E	H	H ₁	L	g	EPDM code	FKM code
20	15	10	54	140	80	16	205	LKDDM020E	LKDDM020F
25	20	10	65	175	100	18	360	LKDDM025E	LKDDM025F
32	25	10	73	188	110	20	515	LKDDM032E	LKDDM032F
40	32	10	86	220	131	22	835	LKDDM040E	LKDDM040F
50	40	10	98	251	148	23	1100	LKDDM050E	LKDDM050F
63	50	10	122	294	179	29	1830	LKDDM063E	LKDDM063F



TKDFM

DUAL BLOCK® 3-way ball valve with BS parallel socket threaded ends, T bore.

R	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	10	54	117	80	15	87	195	TKDFM012E	TKDFM012F
3/4"	20	10	65	143	100	16	114	350	TKDFM034E	TKDFM034F
1"	25	10	73	157	110	19	120	505	TKDFM100E	TKDFM100F
1" 1/4	32	10	86	185	131	21	140	820	TKDFM114E	TKDFM114F
1" 1/2	40	10	98	217	148	21	172	1070	TKDFM112E	TKDFM112F
2"	50	10	122	266	179	26	211	1795	TKDFM200E	TKDFM200F

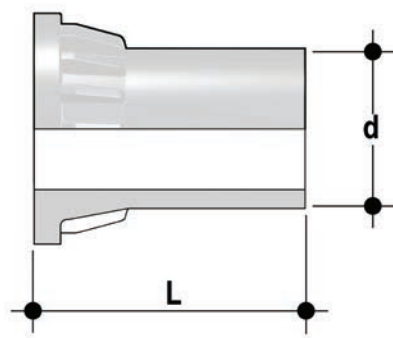


LKDFM

DUAL BLOCK® 3-way ball valve with BS parallel socket threaded ends, L bore.

R	DN	PN	E	H	H ₁	L	Z	g	EPDM code	FKM code
1/2"	15	10	54	117	80	15	87	195	LKDFM012E	LKDFM012F
3/4"	20	10	65	143	100	16	114	350	LKDFM034E	LKDFM034F
1"	25	10	73	157	110	19	120	505	LKDFM100E	LKDFM100F
1" 1/4	32	10	86	185	131	21	140	820	LKDFM114E	LKDFM114F
1" 1/2	40	10	98	217	148	21	172	1070	LKDFM112E	LKDFM112F
2"	50	10	122	266	179	26	211	1795	LKDFM200E	LKDFM200F

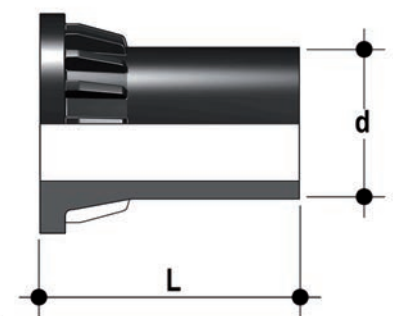
ACCESSORI



CVDM

End connectors in PP-H SDR 11 PN 10, long spigot, for butt welding

d	DN	PN	L	SDR	Code
20	15	10	55	11	CVDM11020
25	20	10	70	11	CVDM11025
32	25	10	74	11	CVDM11032
40	32	10	78	11	CVDM11040
50	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063



CVDE

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

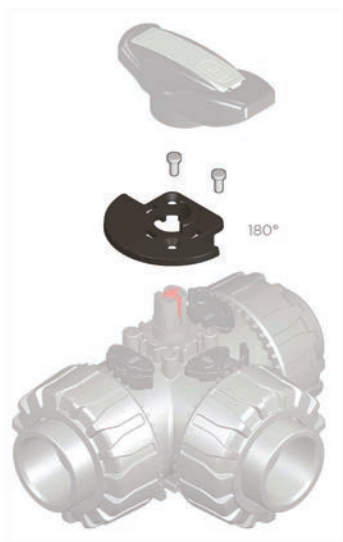
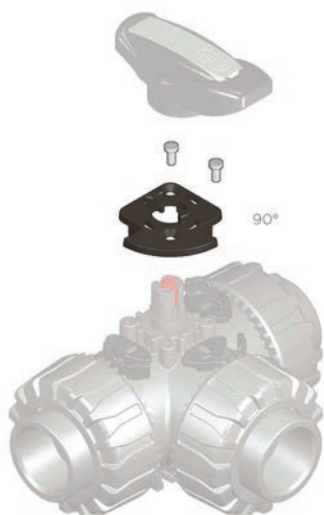
d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
50	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



SHKD

Handle block kit 0° - 90° lockable

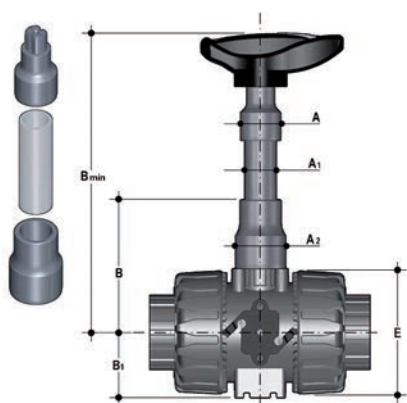
d	DN	Code
16 - 20	10 - 15	SHKD020
25 - 32	20 - 25	SHKD032
40 - 50	32 - 40	SHKD050
63	50	SHKD063



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.

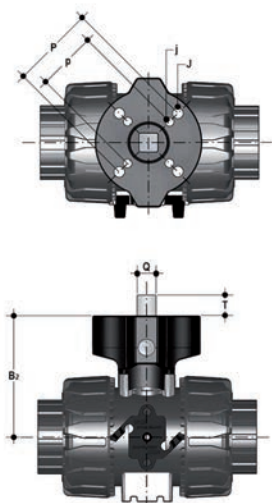
d	DN	90° code	180° code
16 - 20	10 - 15	LTKD090020	LTKD180020
25 - 32	20 - 25	LTKD090032	LTKD180032
40 - 50	32 - 40	LTKD090050	LTKD180050
63	50	LTKD090063	LTKD180063



PSKD

Stem extension

d	DN	A	A ₁	A ₂	E	B	B ₁	B _{min}	Code
20	15	32	25	32	54	70	29	139,5	PSKD020
25	20	32	25	40	65	89	34,5	164,5	PSKD025
32	25	32	25	40	73	93,5	39	169	PSKD032
40	32	40	32	50	86	110	46	200	PSKD040
50	40	40	32	50	98	116	52	206	PSKD050
63	50	40	32	59	122	122	62	225	PSKD063

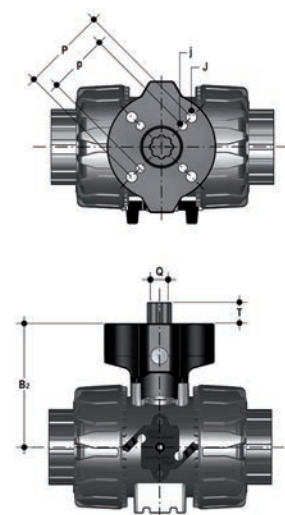


Power Quick/CP

The valve can be equipped with pneumatic actuators, using the PP-GR module reproducing the drilling pattern 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	F05-07*	F07 x 8,5	PQCP040
50	40	97	14	16	F05-07*	F07 x 8,5	PQCP050
63	50	114	14	16	F05-07*	F07 x 8,5	PQCP063

*F04 x 5.5 on request

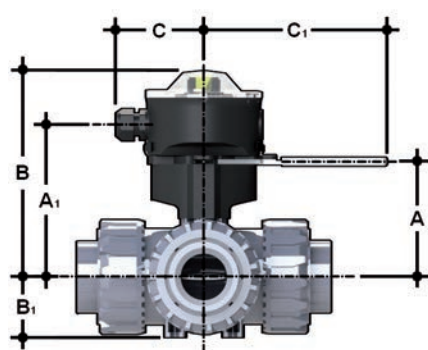


Power Quick/CE

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 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	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

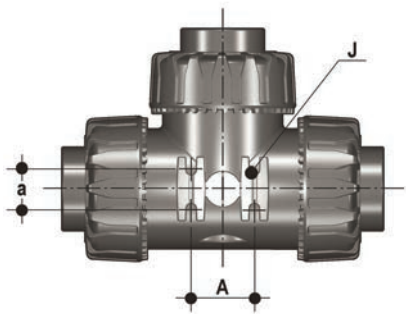
FASTENING AND SUPPORTING



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) 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.

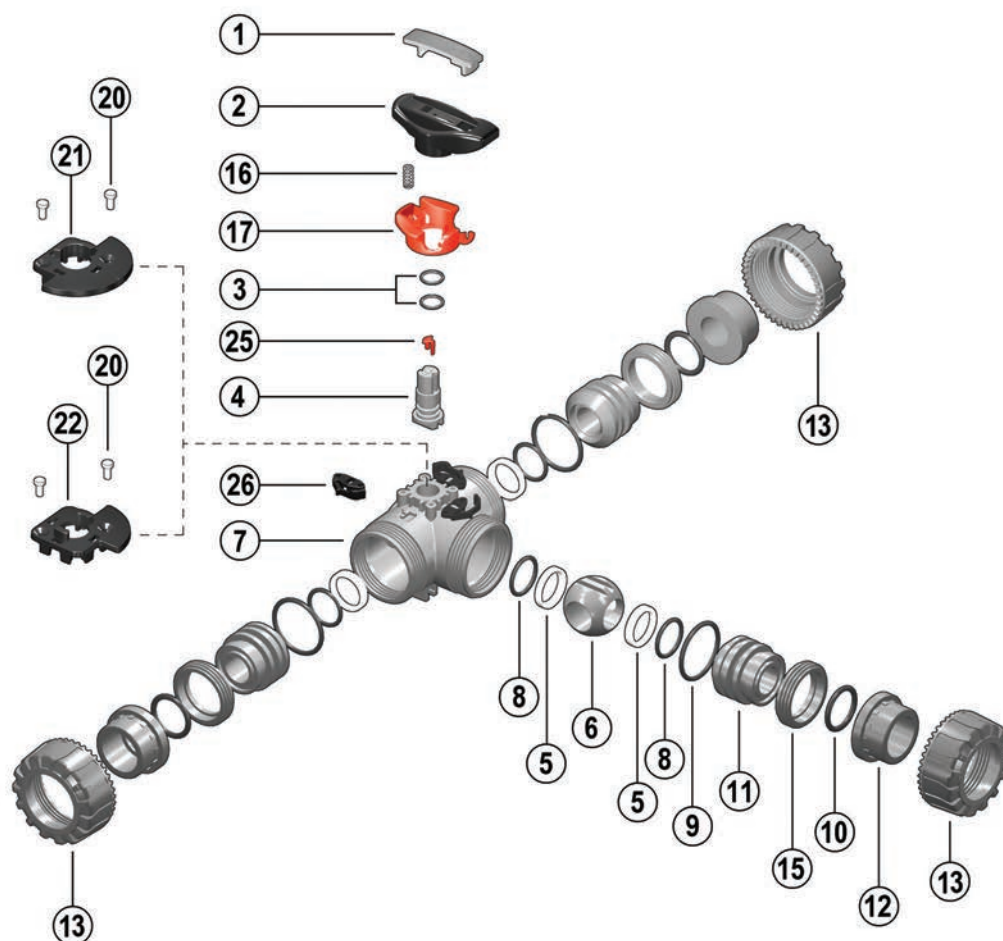
d	DN	A	a	J
16	10	31	20	M5 x 8
20	15	31	20	M5 x 8
25	20	31	20	M5 x 8
32	25	31	20	M5 x 8
40	32	50	30	M6 x 10
50	40	50	30	M6 x 10

* With threaded inserts



COMPONENTS

EXPLODED VIEW



- 1** Handle insert (PVC-U - 1)
- 2** Handle (HIPVC - 1)
- 3** Stem O-ring (EPDM or FKM - 2)*
- 4** Stem (PP-H - 1)
- 5** Ball seat (PTFE - 4)*
- 6** Ball (PP-H - 1)
- 7** Body (PP-H - 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 (PP-H - 3)
- 12** End connector (PP-H - 3)*
- 13** Union nut (PP-H - 3)
- 15** Threaded ring (PP-H - 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

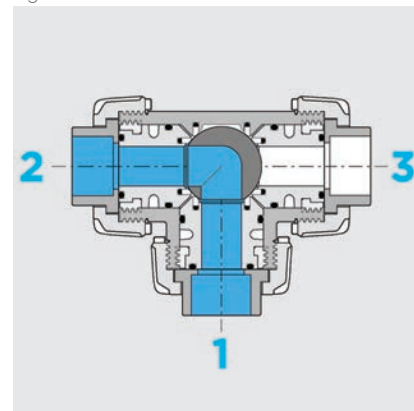
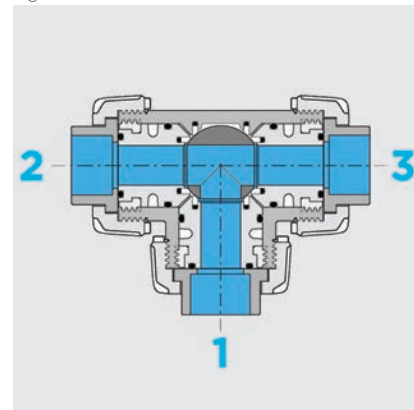


Fig.8



WARNINGS

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

SR DN 15÷50

Ball check valve



SR DN 15÷50

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

BALL CHECK VALVE

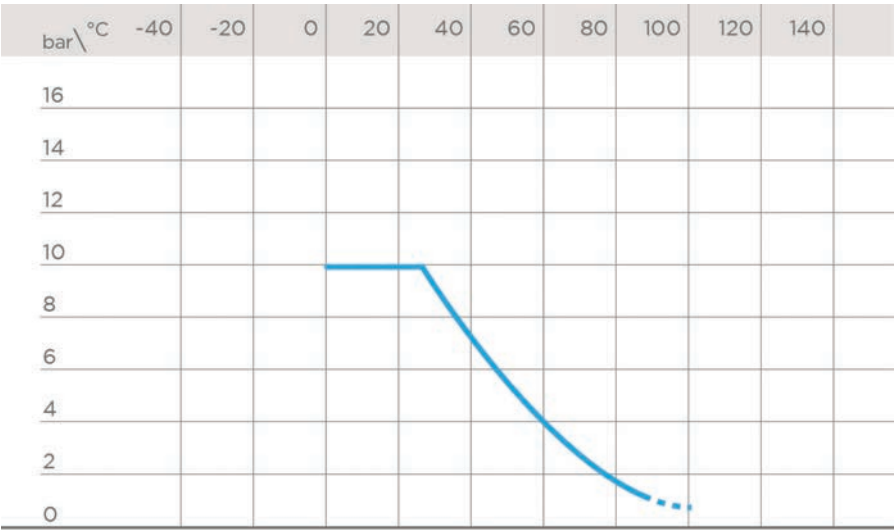
- Connection system for weld joints
- PN10 **valve body made for PP-H injection moulding** and European Directive 2014/68/EU (PED) compliant for pressurised equipment. ISO 9393 compliant test requirements
- The valve can only be used with fluids with specific weight under 1,20 g/cm³
- **Sealing system with antiblow out design**
- Ball entirely in talc-filled PP
- Can be maintained with the valve body installed
- Can be **installed** in either a **vertical** (preferable) or **horizontal position**

Technical specifications	
Construction	Ball check valve
Size range	DN 15 ÷ 50
Nominal pressure	PN 10 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494
Reference standards	Construction criteria: EN ISO 16137, EN ISO 15494
	Test methods and requirements: ISO 9393
	Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318
Valve material	Body: PP-H Ball: PP
Seal material	FKM (spare set in EPDM available on request)

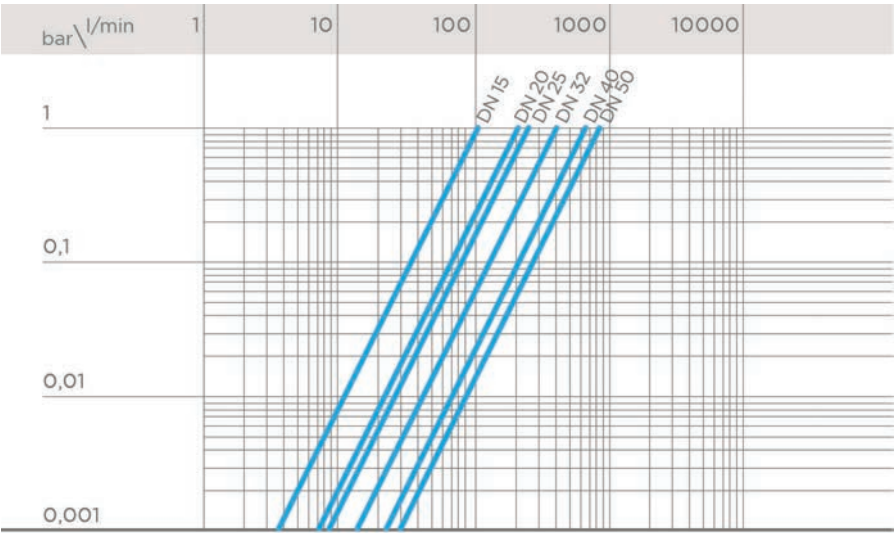
TECHNICAL DATA

PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



PRESSURE DROP GRAPH



MINIMUM PRESSURE

Minimum sealing pressure (valve in horizontal position)

DN	15	20	25	32	40	50
bar	0,4	0,4	0,4	0,4	0,4	0,4

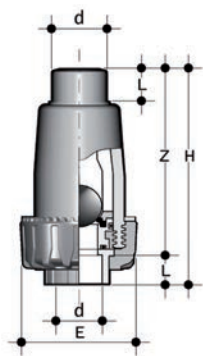
K_v100 FLOW COEFFICIENT

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	15	20	25	32	40	50
Kv100 l/min	110	205	240	410	650	840

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

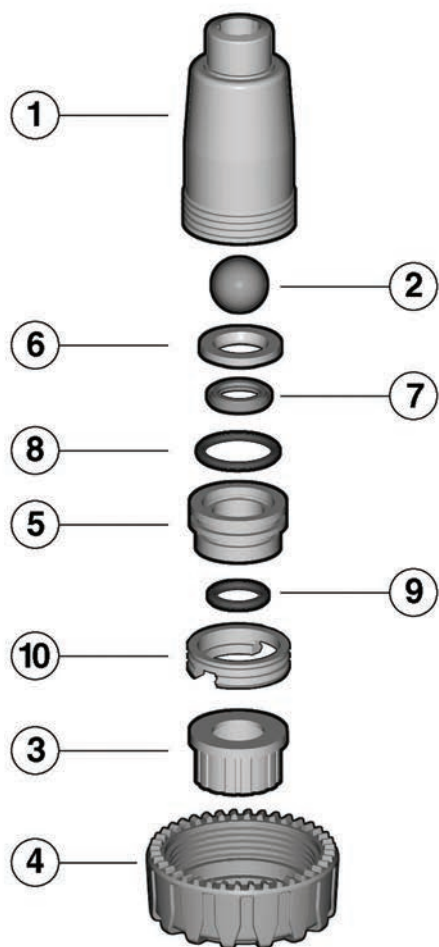


SRIM
 Ball check valve with ends for socket welding, metric series

d	DN	PN	E	H	L	Z	g	FKM code
20	15	10	55	105	16	89	75	SRIM020F
25	20	10	66	126	19	107	140	SRIM025F
32	25	10	74	148	22	126	215	SRIM032F
40	32	10	86	172	26	146	320	SRIM040F
50	40	10	99	189	31	158	440	SRIM050F
63	50	10	120	224	38	186	750	SRIM063F

COMPONENTS

EXPLODED VIEW



- 1 Body (PP-H - 1)
- 2 Ball (PP-H talc filled - 1)*
- 3 End connector (PP-H - 1)*
- 4 Union nut (PP-H - 1)*

- 5 Support clip (PP-H - 1)
- 6 Ball seat (EPDM or FKM - 1)*
- 7 Gland packing ring (PP-H - 1)

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

* Spare parts

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

DISASSEMBLY

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

ASSEMBLY

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



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

INSTALLATION

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

FK DN 40÷400

Butterfly valve



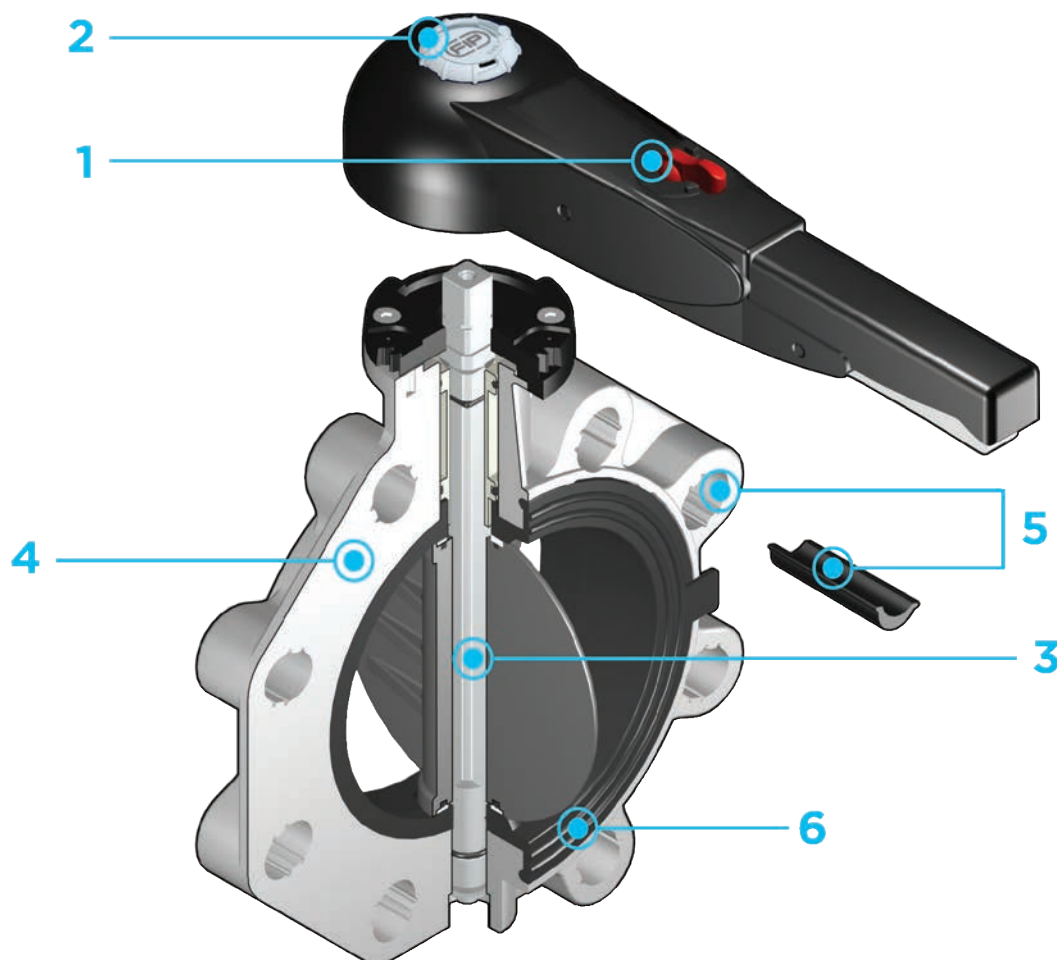
FK DN 40÷400

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 PP-H with through shaft, available in different thermo-plastic materials: PVC-U, PVC-C, ABS, PVDF
- Overall dimensions of the valve in accordance with standard ISO 5752 and EN 558-1 (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 according to EN 1092-1 or ANSI B16.5 cl.150 with molded-in AISI 316 stainless steel threaded inserts
- **Valve material compatibility** (PP-H) with water conveyance, drinking water and other food substances according to current regulations
- Possibility of installing a manual reducer or pneumatic and/or electric actuators by applying an ISO standard drilling PP-GR flanges. DN 40 ÷ 200 valve equipped with plate with rack in PP-GR. For actuated versions with flange drilled according to ISO 5211 F05, F07, F10. DN 250÷300 valve, fitted with one-piece top flange in high mechanical strength PP-GR with mounting flange for internal components drilled according to standard ISO 5211 F10 (excluding DN 350÷400), 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 ÷ 400
Nominal pressure	Wafer version DN 40 ÷ 250: PN 10 with water at 20° C DN 300: PN 8 with water at 20° C DN 350: PN 7 with water at 20° C DN 400: PN 6 with water at 20° C Lug version DN 65÷200: PN 10 with water at 20° C DN 250÷300: PN 6 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Flanging system: EN ISO 15494, ISO 9624, EN 1092-1, ANSI B16.5 Cl.150, JIS B2220
Reference standards	Construction criteria: EN ISO 16136, EN ISO 15494
	Test methods and requirements: ISO 9393
	Actuator couplings: ISO 5211
Valve material	Body: PP-GR Disk: PP-H Stem: AISI steel 316
Seal material	Liner: EPDM, FKM
Control options	Manual control (DN 40÷200); Gearbox, pneumatic actuator, electric actuator



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

2 Customisable Labelling System: 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÷400: 27 mm

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

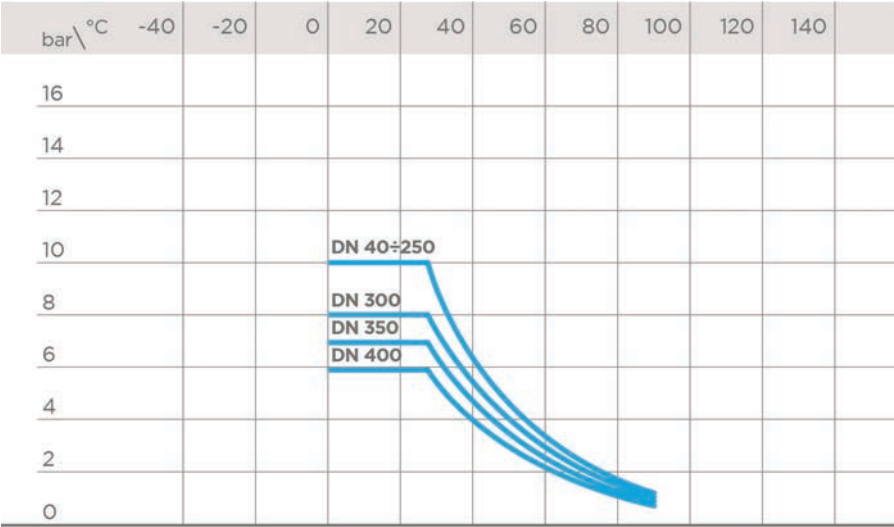
5 Drilling pattern using oval slots that allow coupling to flanges according to numerous international standards. The special **self-centring inserts in ABS** supplied for DN 40÷200 guarantee the **correct axial alignment** of the valve during installation. For DN 250÷400 valves, the drilling pattern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

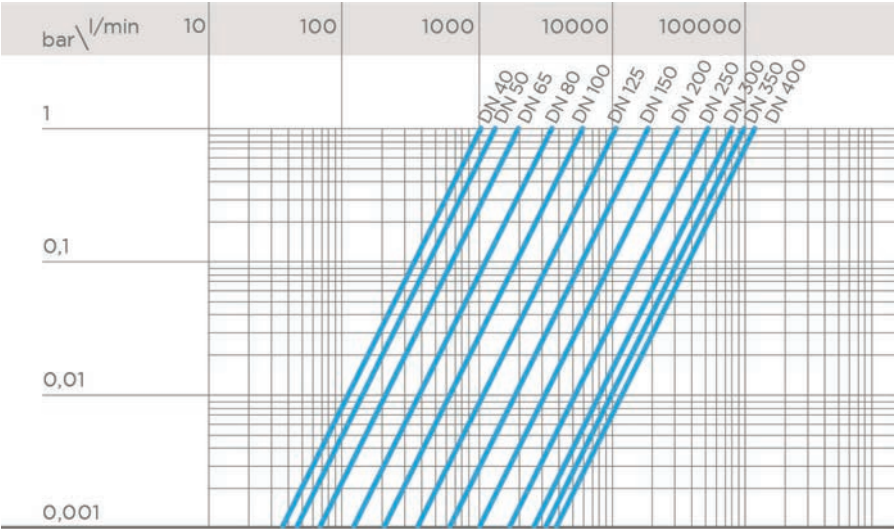
TECHNICAL DATA

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).



PRESSURE DROP GRAPH



K_v100 FLOW COEFFICIENT DN 40÷200

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
Kv100 l/min	1000	1285	1700	3550	5900	9850	18700	30500

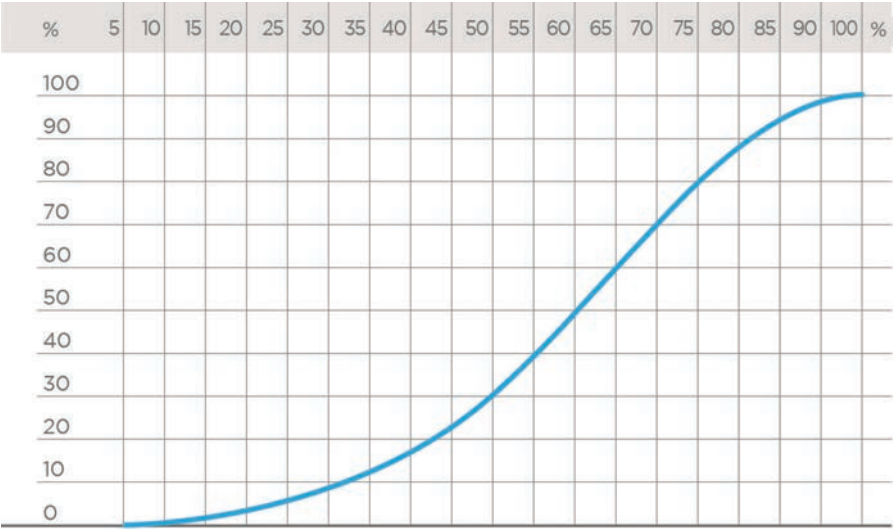
K_v100 FLOW COEFFICIENT DN 250÷400

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.

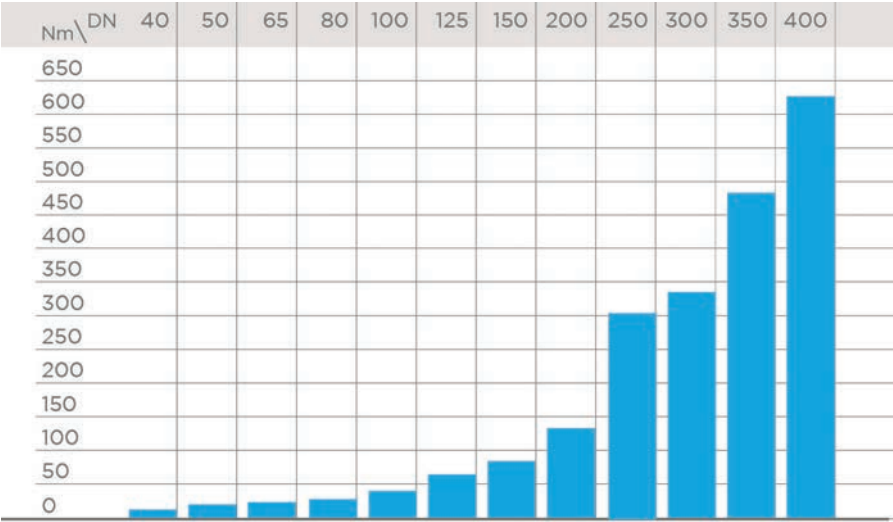
DN	250	300	350	400
Kv100 l/min	53200	81600	94100	124900

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

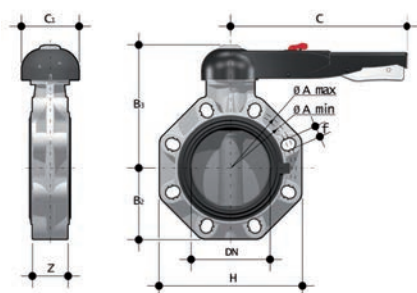


OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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



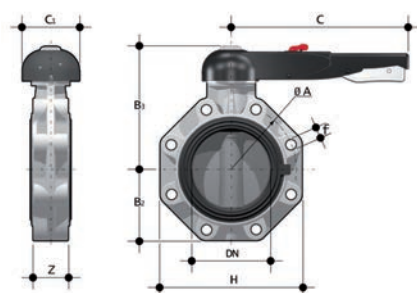
FKOM/LM

Hand operated Butterfly valve

d - Size	DN	PN	A min	A max	B ₂	B ₃	C	C ₁	H	U	Z	g	EPDM code	FKM code
50 - 1 1/2"	40	10	99	109	60	137	175	100	132	4	33	800	FKOMLM050E	FKOMLM050F
63 - 2"	50	10	115	125,5	70	143	175	100	147	4	43	980	FKOMLM063E	FKOMLM063F
75 - 2 1/2"	65	10	128	144	80	164	175	110	165	4	46	1370	FKOMLM075E	FKOMLM075F
90 - 3"	80	10	145	160	93	178	272	100	185	12	49	1770	FKOMLM090E	FKOMLM090F
110 - 4"	100	10	165	190	107	192	272	110	211	8	56	2120	FKOMLM110E	FKOMLM110F
125/140 - 5"	125	10	204	215	120	212	330	110	240	8	64	3000	FKOMLM140E	FKOMLM140F
160*/180* - 6"	150	10	230	242	134	225	330	110	268	8	70	3750	FKOMLM160E	FKOMLM160F
200*/225* - 8"	200	10	280	298	161	272	420	122	323	8	71	6650	FKOMLM225E	FKOMLM225F

Note:

* The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6



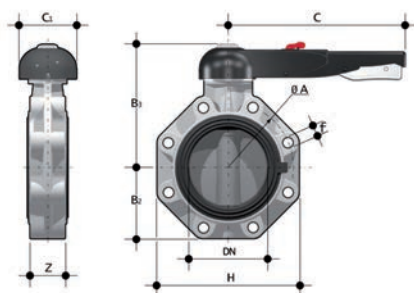
FKOM/LM LUG ISO-DIN

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	1100	FKOLMLM050E	FKOLMLM050F
63	50	10	125	70	143	175	100	M16	147	4	43	1380	FKOLMLM063E	FKOLMLM063F
75	65	10	145	80	164	175	110	M16	165	4	46	1770	FKOLMLM075E	FKOLMLM075F
90	80	10	160	93	178	272	100	M16	185	12	49	2570	FKOLMLM090E	FKOLMLM090F
110	100	10	180	107	192	272	110	M16	211	8	56	2920	FKOLMLM110E	FKOLMLM110F
125/140	125	10	210	120	212	330	110	M16	240	8	64	4600	FKOLMLM140E	FKOLMLM140F
160*/180*	150	10	240	134	225	330	110	M20	268	8	70	5350	FKOLMLM160E	FKOLMLM160F
200*/225*	200	10	295	161	272	420	122	M20	323	8	71	8250	FKOLMLM225E	FKOLMLM225F

Note:

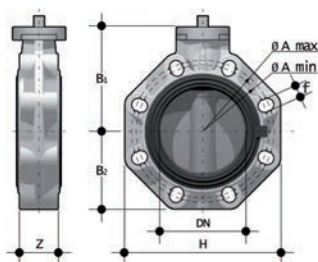
* The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6



FKOM/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	1100	FKOALMLM112E	FKOALMLM112F
2"	50	10	120,6	112	70	175	100	5/8"	147	4	43	1380	FKOALMLM200E	FKOALMLM200F
2 1/2"	65	10	140	119	80	175	110	5/8"	165	4	46	1770	FKOALMLM212E	FKOALMLM212F
3"	80	10	152	133	93	272	100	5/8"	185	12	49	2570	FKOALMLM300E	FKOALMLM300F
4"	100	10	191	147	107	272	110	5/8"	211	8	56	2920	FKOALMLM400E	FKOALMLM400F
5"	125	10	216	167	120	330	110	3/4"	240	8	64	4600	FKOALMLM500E	FKOALMLM500F
6"	150	10	241	180	134	330	110	3/4"	268	8	70	5350	FKOALMLM600E	FKOALMLM600F
8"	200	10	298	227	161	420	122	3/4"	323	8	71	8250	FKOALMLM800E	FKOALMLM800F



FKOM/FM

Butterfly valve with bare shaft

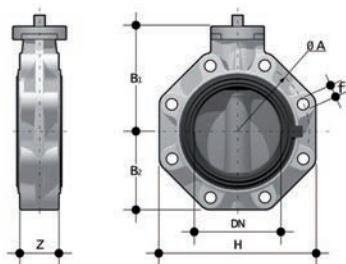
d - Size	DN	PN	A min	A max	øA	B ₁	B ₂	f	H	U	Z	g	EPDM code	EPDM code
50 - 1 1/2"	40	10	99	109	-	106	60	19	132	4	33	474	FKOMFM050E	FKOMFM050F
63 - 2"	50	10	115	126	-	112	70	19	147	4	43	654	FKOMFM063E	FKOMFM063F
75 - 2 1/2"	65	10	128	144	-	119	80	19	165	4	46	900	FKOMFM075E	FKOMFM075F
90 - 3"	80	10	145	160	-	133	93	19	185	12	49	1300	FKOMFM090E	FKOMFM090F
110 - 4"	100	10	165	190	-	147	107	19	211	8	56	1650	FKOMFM110E	FKOMFM110F
125/140 - 5"	125	10	204	215	-	167	120	23	240	8	64	2450	FKOMFM140E	FKOMFM140F
160*/180 - 6"	150	10	230	242	-	180	134	23	268	8	70	3200	FKOMFM160E	FKOMFM160F
200*/225* - 8"	200	10	280	298	-	227	161	23	323	8	71	5900	FKOMFM225E	FKOMFM225F
250*/280*	**250	10	-	-	350	248	210	22	405	12	114	11800	FKOMFM280E	FKOMFM280F
315*	**300	8	-	-	400	305	245	22	475	12	114	18700	FKOMFM315E	FKOMFM315F
355*	**350	7	-	-	460	330	280	22	530	16	129	23315	FKOMFM355E	FKOMFM355F
400*	**400	6	-	-	515	350	306	26	594	16	169	30310	FKOMFM400E	FKOMFM400F
10"	***250	10	-	-	362	248	210	25,4	405	12	114	11800	FKOAMFM810E	FKOAMFM810F
12"	***300	8	-	-	432	305	245	25,4	475	12	114	18700	FKOAMFM812E	FKOAMFM812F
14"	***350	7	-	-	476	330	280	28,5	530	12	129	23315	FKOAMFM814E	FKOAMFM814F
16"	***400	6	-	-	540	350	306	28,5	594	16	169	30310	FKOAMFM816E	FKOAMFM816F

Note:
FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250), 14" (DN350) and 16" (DN400).

* The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6

**ISO-DIN

***ANSI B.16.5 150



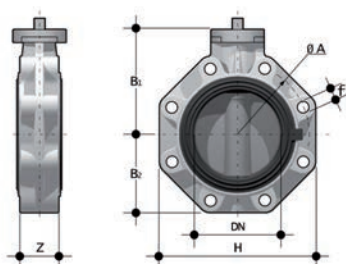
FKOM/FM LUG ISO-DIN

Butterfly valve with bare shaft, version Lug ISO-DIN

d	DN	PN	øA	B ₁	B ₂	f	H	U	Z	g	EPDM code	FKM code
50	40	10	110	106	60	M16	132	4	33	770	FKOLMFM050E	FKOLMFM050F
63	50	10	125	112	70	M16	147	4	43	1050	FKOLMFM063E	FKOLMFM063F
75	65	10	145	119	80	M16	165	4	46	1300	FKOLMFM075E	FKOLMFM075F
90	80	10	160	133	93	M16	185	12	49	2100	FKOLMFM090E	FKOLMFM090F
110	100	10	180	147	107	M16	211	8	56	2450	FKOLMFM110E	FKOLMFM110F
125/140	125	10	210	167	120	M16	240	8	64	4050	FKOLMFM140E	FKOLMFM140F
160*/180	150	10	240	180	134	M20	268	8	70	4800	FKOLMFM160E	FKOLMFM160F
200*/225*	200	10	295	227	161	M20	323	8	71	7500	FKOLMFM225E	FKOLMFM225F
315	300	6	400	305	245	M20	475	12	114	23500	FKOLMFM315E	FKOLMFM315F

Note:

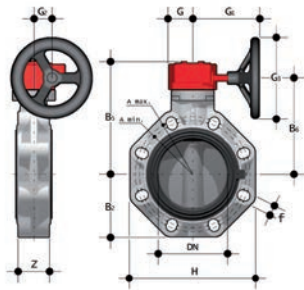
*The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6



FKOM/FM LUG ANSI

Butterfly valve with bare shaft, version Lug ANSI

d	DN	PN	øA	B ₁	B ₂	f	H	U	Z	g	EPDM code	FKM code
1 1/2"	40	10	98,4	106	60	1/2"	132	4	33	770	FKOALMFM112E	FKOALMFM112F
2"	50	10	120,6	112	70	5/8"	147	4	43	1050	FKOALMFM200E	FKOALMFM200F
2 1/2"	65	10	139,7	119	80	5/8"	165	4	46	1300	FKOALMFM212E	FKOALMFM212F
3"	80	10	152,4	133	93	5/8"	185	12	49	2100	FKOALMFM300E	FKOALMFM300F
4"	100	10	190,5	147	107	5/8"	211	8	56	2450	FKOALMFM400E	FKOALMFM400F
5"	125	10	215,9	167	120	3/4"	240	8	64	4050	FKOALMFM500E	FKOALMFM500F
6"	150	10	241,3	180	134	3/4"	268	8	70	4800	FKOALMFM600E	FKOALMFM600F
8"	200	10	298,4	227	161	3/4"	323	8	71	7500	FKOALMFM800E	FKOALMFM800F
10"	250	6	362	248	210	7/8"	405	12	114	16600	FKOALMFM810E	FKOALMFM810F
12"	300	6	432	305	245	7/8"	475	12	114	23500	FKOALMFM812E	FKOALMFM812F



FKOM/RM

Gearbox operated Butterfly valve

d	DN	PN	A _{min}	A _{max}	øA	B ₂	B ₅	B ₆	G	G ₁	G ₂	G ₃	H	U	Z	g	EPDM code	FKM code
75 - 2 1/2"	65	10	128	144	-	80	174	146	48	135	39	125	165	4	46	2300	FKOMRM075E	FKOMRM075F
90 - 3"	80	10	145	160	-	93	188	160	48	135	39	125	185	12	49	2700	FKOMRM090E	FKOMRM090F
110 - 4"	100	10	165	190	-	107	202	174	48	135	39	125	211	8	56	3050	FKOMRM110E	FKOMRM110F
125/140 - 5"	125	10	204	215	-	120	222	194	48	144	39	200	240	8	64	4350	FKOMRM140E	FKOMRM140F
160*/180 - 6"	150	10	230	242	-	134	235	207	48	144	39	200	268	8	70	5100	FKOMRM160E	FKOMRM160F
200*/225 - 8"	200	10	280	298	-	161	287	256	65	204	60	200	323	8	71	9200	FKOMRM225E	FKOMRM225F
250*/280*	**250	10	-	-	350	210	317	281	88	236	76	250	405	12	114	18400	FKOMRM280E	FKOMRM280F
315*	**300	8	-	-	350	245	317	281	88	236	76	250	405	12	114	25450	FKOMRM315E	FKOMRM315F
355*	**350	7	-	-	460	280	438	390	88	361	80	300	530	16	129	31725	FKOMRM355E	FKOMRM355F
400*	**400	6	-	-	515	306	438	390	88	361	80	300	594	16	169	38760	FKOMRM400E	FKOMRM400F
10"	***250	10	-	-	350	210	317	281	88	236	76	250	405	12	114	18450	FKOAMRM810E	FKOAMRM810F
12"	***300	8	-	-	400	245	374	338	88	236	76	250	475	12	114	25450	FKOAMRM812E	FKOAMRM812F
14"	***350	7	-	-	476	280	438	390	88	361	80	300	530	12	129	31765	FKOAMRM814E	FKOAMRM814F
16"	***400	6	-	-	540	306	438	390	88	361	80	300	594	16	169	38760	FKOAMRM816E	FKOAMRM816F

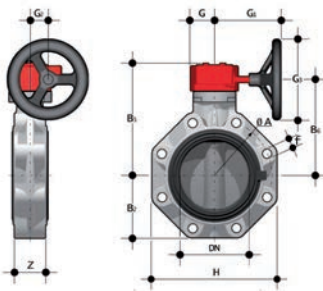
Note:

FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250), 14" (DN350) and 16" (DN400).

*The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6

**ISO-DIN

***ANSI B.16.5 150



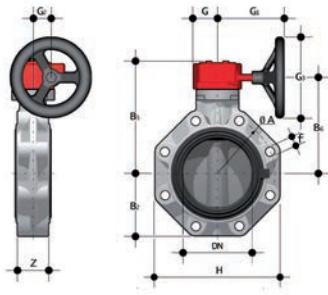
FKOM/RM LUG ISO-DIN

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	2300	FKOLMRM050E	FKOLMRM050F
63	50	10	125	70	167	139	M16	48	135	39	125	147	4	43	2580	FKOLMRM063E	FKOLMRM063F
75	65	10	145	80	174	146	M16	48	135	39	125	165	4	46	2700	FKOLMRM075E	FKOLMRM075F
90	80	10	160	93	188	160	M16	48	135	39	125	185	12	49	3500	FKOLMRM090E	FKOLMRM090F
110	100	10	180	107	202	174	M16	48	135	39	125	211	8	56	3850	FKOLMRM110E	FKOLMRM110F
125/140	125	10	210	120	222	194	M16	48	144	39	200	240	8	64	5950	FKOLMRM140E	FKOLMRM140F
160*/180	150	10	240	134	235	207	M20	48	144	39	200	268	8	70	6700	FKOLMRM160E	FKOLMRM160F
200*/225*	200	10	295	161	287	256	M20	65	204	60	200	323	8	71	10800	FKOLMRM225E	FKOLMRM225F
315	300	6	400	245	374	338	M20	88	236	76	250	475	12	114	30250	FKOLMRM315E	FKOLMRM315F

Note:

* The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6

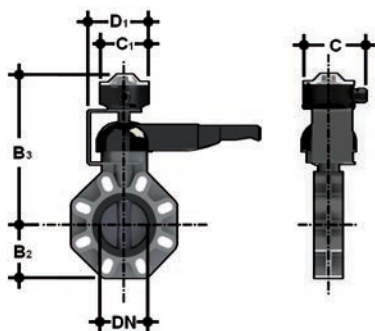


FKOM/RM LUG ANSI

Gearbox operated Butterfly valve, version Lug ANSI

d	DN	PN	øA	B ₂	B ₅	B ₆	f	G	G ₁	C 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	2300	FKOALMRM112E	FKOALMRM112F
2"	50	10	125	70	167	139	5/8"	48	135	39	125	147	4	43	2580	FKOALMRM200E	FKOALMRM200F
2 1/2"	65	10	140	80	174	146	5/8"	48	135	39	125	165	4	46	2700	FKOALMRM212E	FKOALMRM212F
3"	80	10	152	93	188	160	5/8"	48	135	39	125	185	12	49	3500	FKOALMRM300E	FKOALMRM300F
4"	100	10	191	107	202	174	5/8"	48	135	39	125	211	8	56	3850	FKOALMRM400E	FKOALMRM400F
5"	125	10	216	120	222	194	3/4"	48	144	39	200	240	8	64	5950	FKOALMRM500E	FKOALMRM500F
6"	150	10	241	134	235	207	3/4"	48	144	39	200	268	8	70	6700	FKOALMRM600E	FKOALMRM600F
8"	200	10	298	161	287	256	3/4"	65	204	60	200	323	8	71	10800	FKOALMRM800E	FKOALMRM800F
10"	250	6	362	210	317	281	7/8"	88	236	76	250	405	12	114	23200	FKOALMRM810E	FKOALMRM810F
12"	300	6	432	245	374	338	7/8"	88	236	76	250	475	12	114	30250	FKOALMRM812E	FKOALMRM812F

ACCESSORI



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.

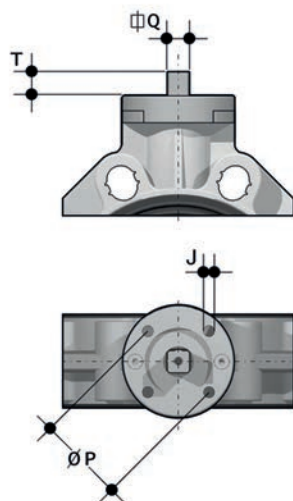
DN	B ₂	B ₃	C	C ₁	D ₁	Code
40	60	260,5	126,9	103	123,5	LSQKITFK5063
50	70	266,5	126,9	103	123,5	LSQKITFK5063
65	80	273,5	126,9	103	123,5	LSQKIT75160
80	93	287,5	126,9	103	123,5	LSQKIT75160
100	107	301,5	126,9	103	123,5	LSQKIT75160
125	120	321,5	126,9	103	123,5	LSQKIT75160
150	134	334,5	126,9	103	123,5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

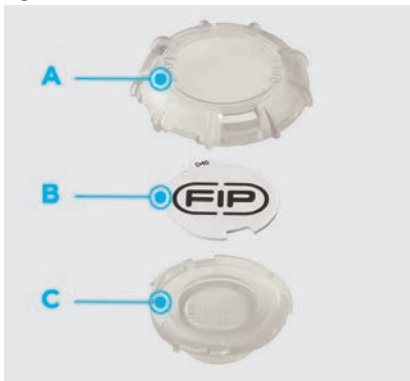
DN	J	P	Ø	T	Q
40	7	50	F 05	12	11
50	7	50	F 05	12	11
65	7/9	50/70	F 05/ F 07	12	11
80	9	70	F 07	16	14
100	9	70	F 07	16	14
125	9	70	F 07	19	17
150	9	70	F 07	19	17
200	11	102	F 10	24	22
200	11	102	F 10	24	22
250	11/13/17	102/125/140	F 10/ F 12/ F 14	29	27
300	11/13/17	102/125/140	F 10/ F 12/ F 14	29	27
350	14/18	125/140	F 12/ F 14	29	27
400	14/18	125/140	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).

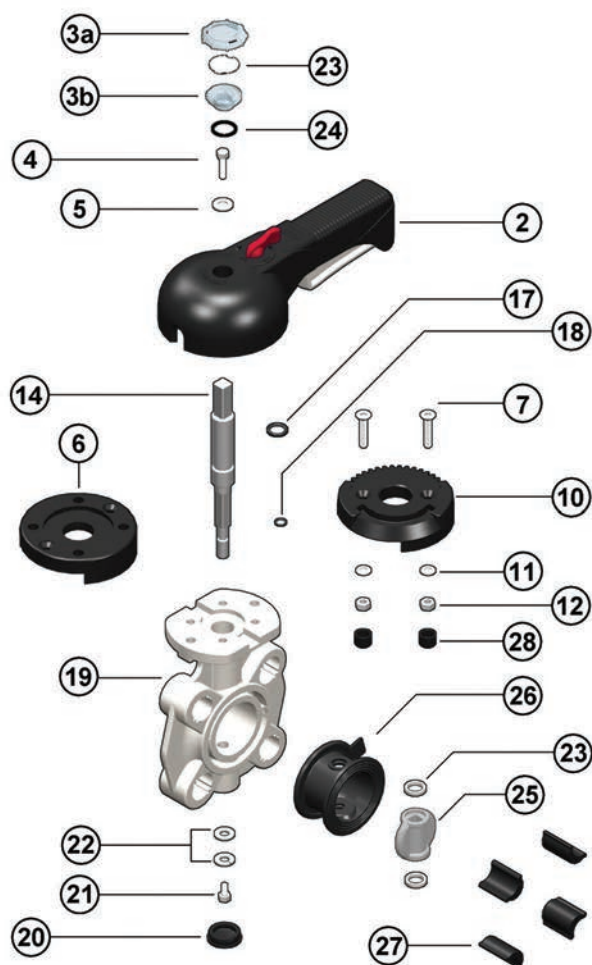
The tag holder, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

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

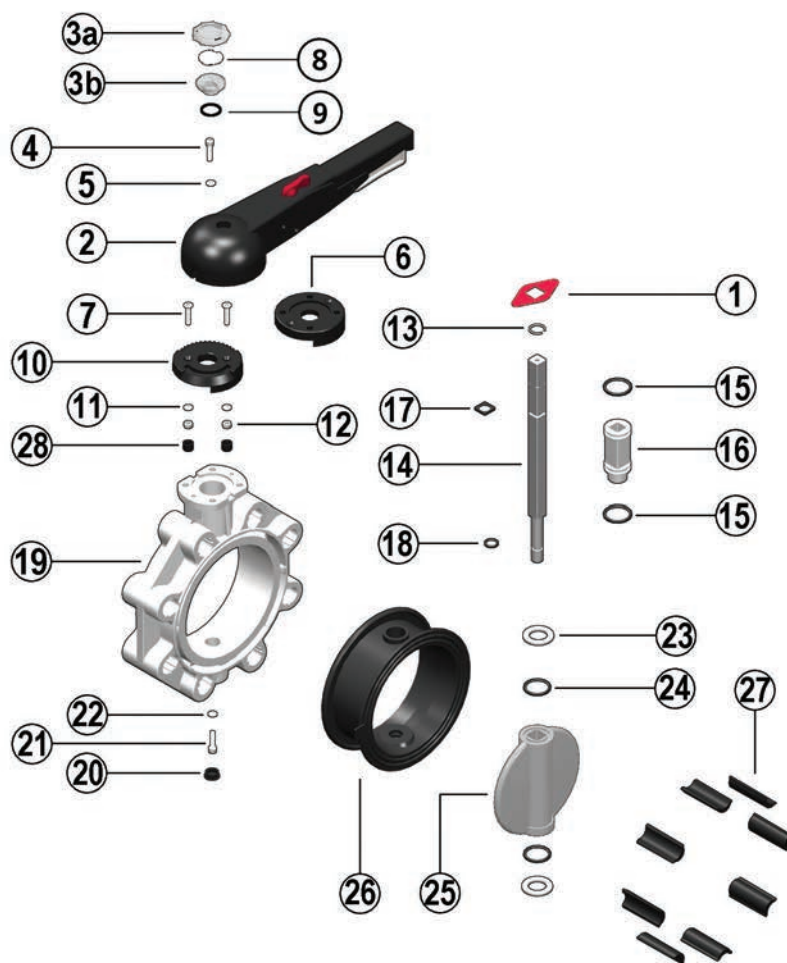
EXPLODED VIEW DN 40÷65



- | | | |
|---|--|---|
| 1 Position indicator (PA - 1) | 8 Tag holder (PVC - 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 (PP-H - 1) |
| 6 Flange (PP-GR - 1) | 14 Stem (STAINLESS steel 316 - 1) | 26 Liner (EPDM o 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.

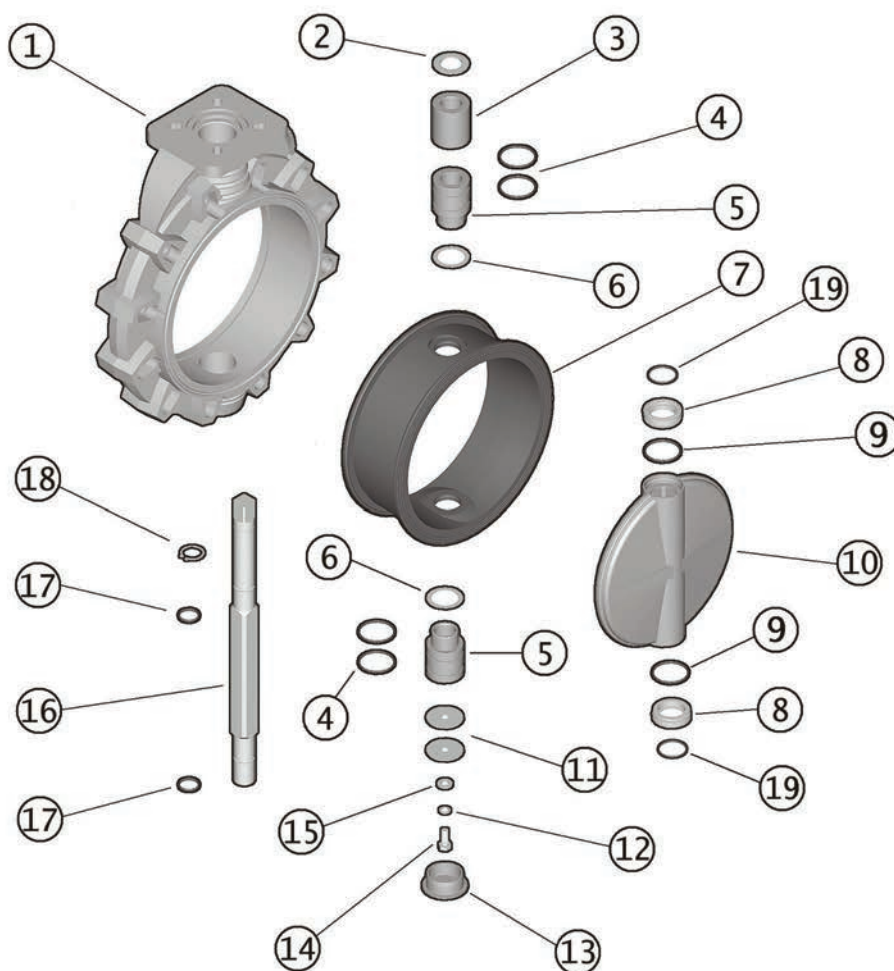
EXPLODED VIEW DN 80÷200



- | | | |
|---|---|---|
| 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 (PP-H - 1) |
| 8 Tag holder (PVC - 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 316 - 1) |
| 3 Bush (PP - 1) | 10 Disk (PP-H - 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.

EXPLODED VIEW DN 350÷400



- | | | |
|--|--|---|
| 1 Body (PP-GR - 1) | 8 Anti-friction ring (PTFE - 2) | 16 Stem (STAINLESS steel 316 - 1) |
| 2 Washer (STAINLESS steel - 1) | 9 Disk O-Ring (EPDM or FKM - 2) | 17 Stem O-Ring (EPDM or FKM - 2) |
| 3 Bush (PP-H - 1) | 10 Disk (PP-H - 1) | 18 Seeger ring (STAINLESS steel - 1) |
| 4 Bush O-Ring (EPDM or FKM - 6) | 11 Washer (STAINLESS steel - 1) | 20 Gearbox (Al, Steel - 1) |
| 5 Bush (PP-H - 1) | 12 Washer (STAINLESS steel - 1) | 21 Pin (STAINLESS steel - 2) |
| 6 Washer (PP-H - 2) | 13 Protection plug (PE - 1) | 22 Washer (STAINLESS steel - 1) |
| 7 Liner (EPDM o FKM - 1) | 14 Screw (STAINLESS steel - 1) | 23 Position indicator (PA - 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).

DN 350÷400

- 1) Remove the position indicator (23) from the stem (16).
- 2) Remove the protection plug (13) from the body (1).
- 3) Remove the screw (14) and the washers (11) and (22).
- 4) Extract the stem unit (16) from the disk.
- 5) Extract the lower bush unit (5) from the lower part of the body (1).
- 6) Remove the disk unit (10) from the body (1).

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).

DN 350÷400

- 1) Insert the lower bush (5) complete with O-rings (4) on the body (1), subsequently inserting the gland packing washer (6) between the bush and the body.
- 2) Insert the second gland packing washer (6) on the liner (7) and fit these inside the body (1).
- 3) Insert the O-rings (9) and anti-friction rings (8) on the disks (10).
- 4) Lubricate the disk (10) and insert it into the liner (7).
- 5) Insert the upper bush complete with O-rings (3 + 4) on the stem (16) joined to the O-rings (17); insert the washer (2) above the upper bush (3) and insert Seeger ring (18) in the appropriate housing on the stem (16). Insert this unit in the body's upper hole (1).
- 6) Overlap washer (22) on washer (11) equipped with pins (21), and insert this unit on the lower part of the stem (16), fastening it with screw (14) and locking washer (12).
- 7) Insert the protection plug (13) on the body (1).
- 8) Insert the position indicator (23) on the upper part of the stem (16).



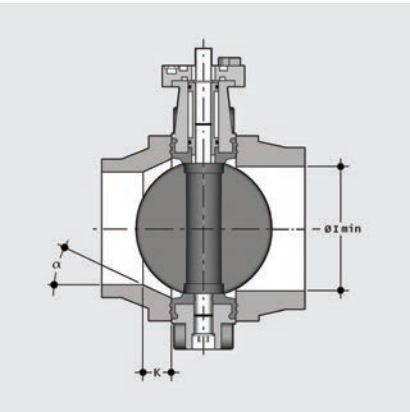
Note: during assembly operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 1



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
350	324
400	362

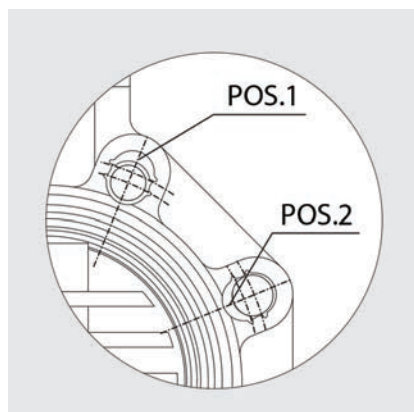
PP-PE STUBS

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	63	75	90	110	125	140	160	180	200	225	250	280	315	355	400
			40	50	65	80	100	100	125	150	150	200	200	250	250	300	350	400
FK	50	40																
	63	50																
	75	65																
	90	80																
	110	100																
	140	125																
	160	150																
	225	200																
	280	250																
	315	300																
	355	350																
	400	400																
SDR	17/17,6											k=26,5 a=20°		k=15,7 a=25°		k=13,3 a=25°	k=45 a=25°	k=55 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°	k=55 a=25°	k=80 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°		
	33																k=17 a=30°	k=25 a=35°

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 ISO 15493	BS 10 table A-D-E Spec D-E	ANSI B16.5 cl.150*	JIS B 2220 K5	JIS 2211 K10**
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	Pos. 2
80	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 1
100	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 1
125	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	-
150	Pos.1	Pos. 2	Pos. 1	Pos. 2	Pos. 1	Pos. 2
200	Pos.1	PN 10 Pos. 2	Pos. 1	Pos. 2	Pos. 1	N/A

* DN 50 without inserts

** DN 40, 50, 125 without inserts

POSITIONING THE VALVE

Position the valve between two flanged stubs, taking care to respect the installation tolerances Z. It is advisable to always install the valve with the disk partially closed (it must not exit the body) and avoid any misalignment of the flanges, as this would cause

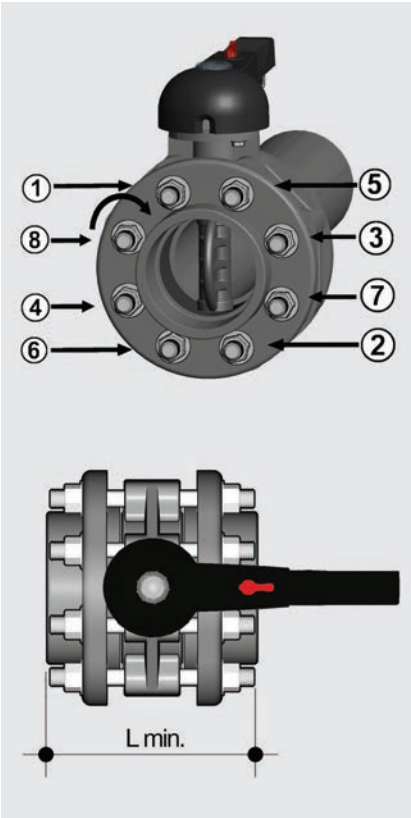
leaks. Where possible comply with the following requirements:

- Conveying dirty fluids: position the valve with the stem inclined at an angle of 45° to the pipe support plane.
- Conveying fluids with sediment: position the valve with the stem parallel to the pipe support plane.
- Conveying clean fluids: position the valve with the stem perpendicular to the pipe support plane.

JIS FLANGED OPTIONS

FK suitable for flanged JIS K10 wafer installation is also available on request in the size 10" (DN250), 14" (DN350) and 16" (DN400) 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
350	M20 x 360	75
400	M24 x 420	75

* 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.

DK DN 15÷65

DIALOCK® 2-way diaphragm valve



DK DN 15÷65

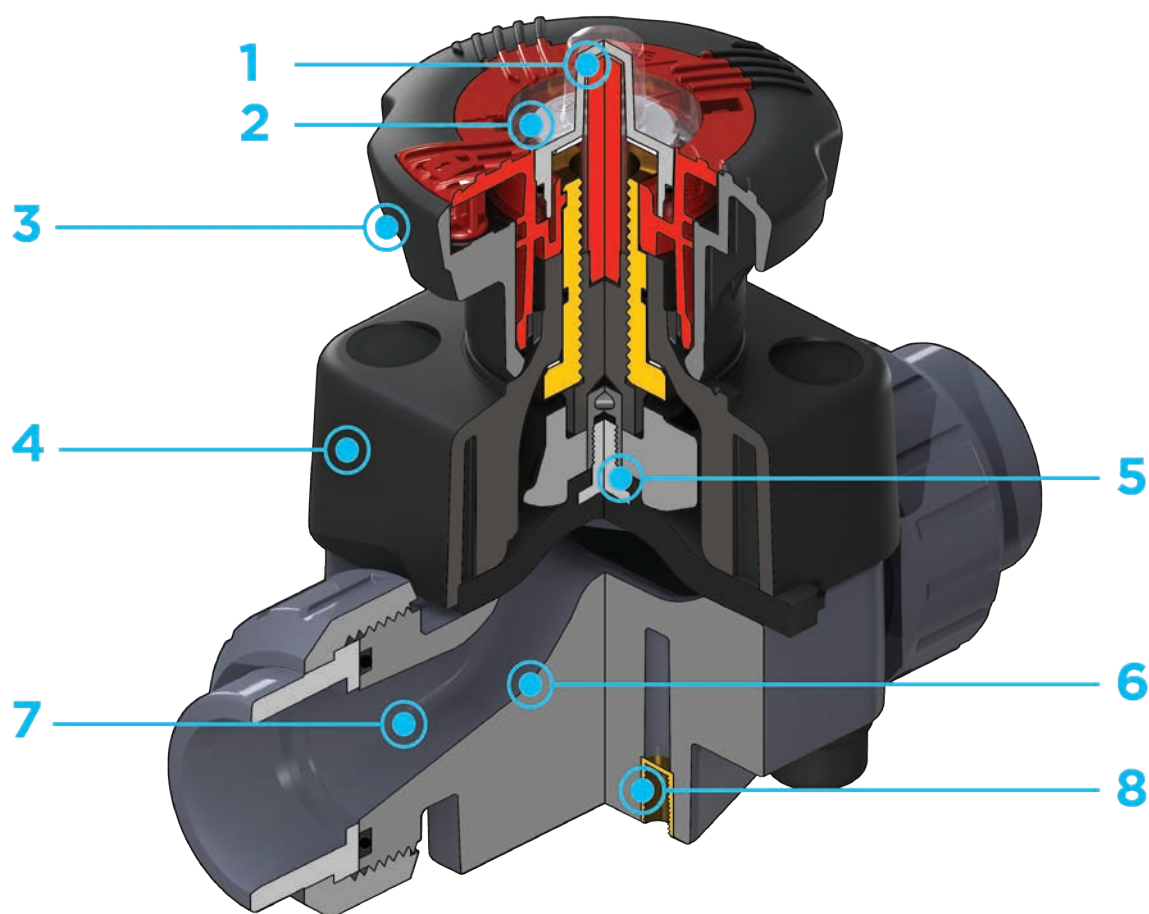
The DK DIALOCK® diaphragm valve is particularly suitable for shutting off and regulating abrasive or dirty fluids. The new internal geometry of the body increases flow coefficient, reduce pressure drop and allows a sensitive and precise adjustment along the entire stroke of the shutter. The DK is extremely 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 specification	
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	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494.
	Thread: ISO 228-1, EN 10226-1/2.
	Flanging system: ISO 9624, EN ISO 1092-1, EN 15494, EN 558-1, ANSI B.16.5 cl.150
Reference standards	Construction criteria: EN ISO 16138, EN ISO 15494
	Test methods and requirements: ISO 9393
	Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318
Valve material	Body: PP-H 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**

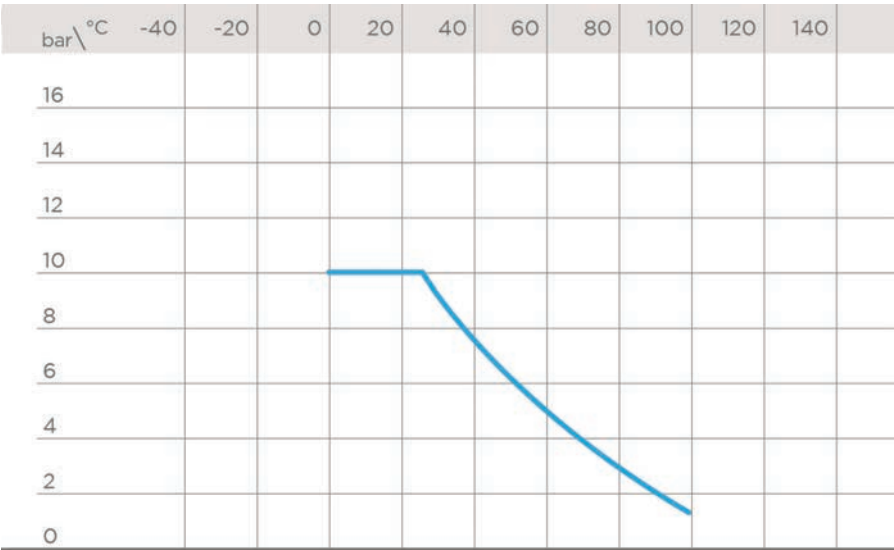
7 Adjustment linearity: the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter

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)

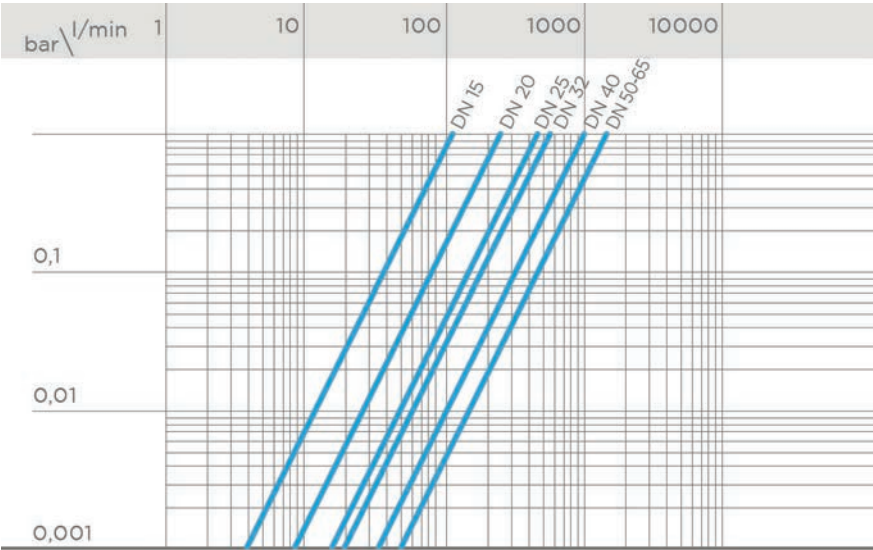
TECHNICAL DATA

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



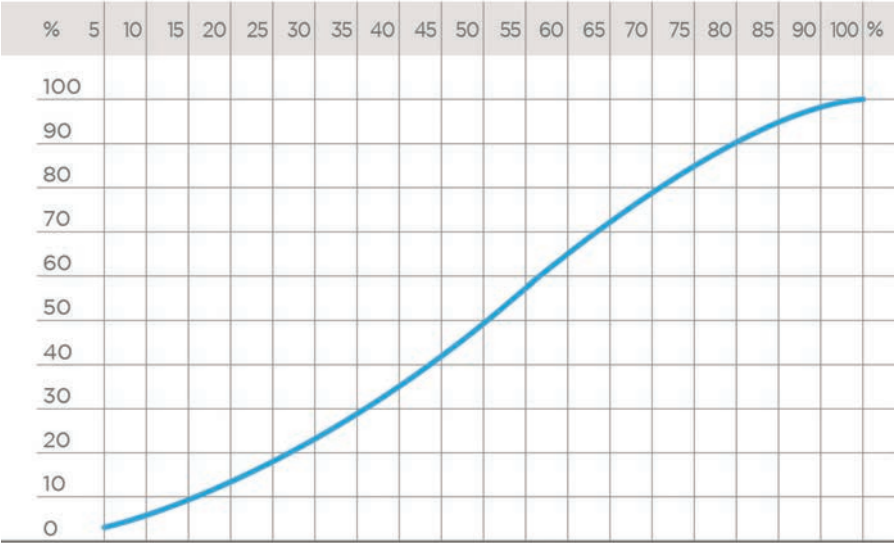
K_v100 FLOW COEFFICIENT

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 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	15	20	25	32	40	50	65
Kv100 l/min	112	261	445	550	1087	1648	1600

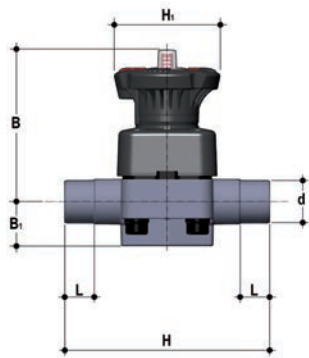
RELATIVE FLOW COEFFICIENT GRAPH

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



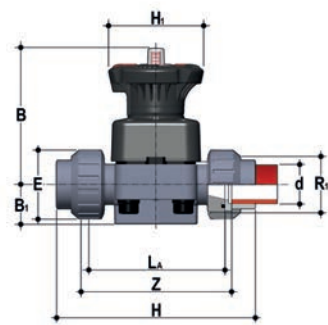
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FIP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

DIMENSIONS



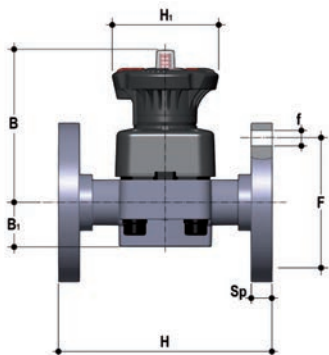
DKDM
DIALOCK® diaphragm valve with male ends for socket welding, metric series

d	DN	PN	B	B ₁	H	H _t	L	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	124	80	16	430	DKDM020E	DKDM020F	DKDM020P
25	20	10	105	30	144	80	19	445	DKDM025E	DKDM025F	DKDM025P
32	25	10	114	33	154	80	22	620	DKDM032E	DKDM032F	DKDM032P
40	32	10	119	30	174	80	26	650	DKDM040E	DKDM040F	DKDM040P
50	40	10	149	35	194	120	31	1380	DKDM050E	DKDM050F	DKDM050P
63	50	10	172	46	224	120	38	2136	DKDM063E	DKDM063F	DKDM063P
75	65	10	172	46	284	120	44	2225	DKDM075E	DKDM075F	DKDM075P



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

d	DN	PN	B	B ₁	E	H	H _t	La	R ₁	Z	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	41	129	80	90	1"	100	457	DKUIM020E	DKUIM020F	DKUIM020P
25	20	10	105	30	50	154	80	108	1 1/4"	116	500	DKUIM025E	DKUIM025F	DKUIM025P
32	25	10	114	33	58	168	80	116	1 1/2"	124	695	DKUIM032E	DKUIM032F	DKUIM032P
40	32	10	119	30	72	192	80	134	2"	140	781	DKUIM040E	DKUIM040F	DKUIM040P
50	40	10	149	35	79	222	120	154	2 1/4"	160	1557	DKUIM050E	DKUIM050F	DKUIM050P
63	50	10	172	46	98	266	120	184	2 3/4"	190	2293	DKUIM063E	DKUIM063F	DKUIM063P

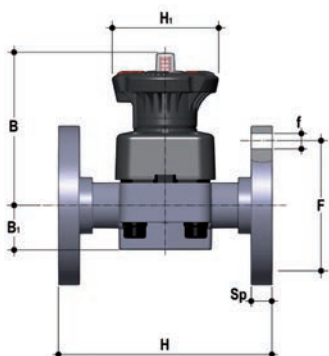


DKOM

DIALOCK® diaphragm valve with flanged monolithic body, drilled PN10/16. Face to face according to EN 558-1

d	DN	PN	B	B ₁	F	f	H	H ₁	Sp	U	g	EPDM code	FKM code	PTFE code
20	15	10	102	25	65	14	130	80	13,5	4	817	DKOM020E	DKOM020F	DKOM020P
25	20	10	105	30	75	14	150	80	13,5	4	850	DKOM025E	DKOM025F	DKOM025P
32	25	10	114	33	85	14	160	80	13,5	4	892	DKOM032E	DKOM032F	DKOM032P
40	32	10	119	30	100	18	180	80	14	4	1005	DKOM040E	DKOM040F	DKOM040P
50	40	10	149	35	110	18	200	120	16	4	1771	DKOM050E	DKOM050F	DKOM050P
63	50	10	172	46	125	18	230	120	16	4	2453	DKOM063E	DKOM063F	DKOM063P
75	65	10	172	46	145	18	290	120	21	4	2997	DKOM075E	DKOM075F	DKOM075P

DKLOM version available on request



DKOAM

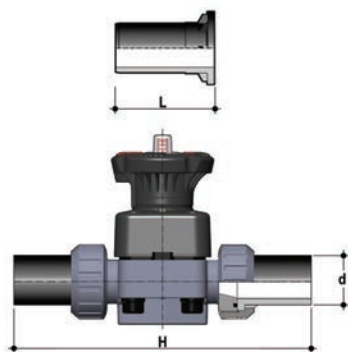
DIALOCK® diaphragm valve with flanged monolithic body, drilled ANSI B16.5 cl. 150 #FF

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	817	DKOAM012E	DKOAM012F	DKOAM012P
3/4"	20	10	105	30	70	15.7	120	80	13,5	4	850	DKOAM034E	DKOAM034F	DKOAM034P
1"	25	10	114	33	80	15.7	131	80	13,5	4	892	DKOAM100E	DKOAM100F	DKOAM100P
1" 1/4	32	10	119	30	89	15.7	162	80	14	4	1005	DKOAM114E	DKOAM114F	DKOAM114P
1" 1/2	40	10	149	35	99	15.7	180	120	16	4	1771	DKOAM112E	DKOAM112F	DKOAM112P
2"	50	10	172	46	121	19	210	120	16	4	2453	DKOAM200E	DKOAM200F	DKOAM200P
2" 1/2	65	10	172	46	140	19	250	120	21	4	2997	DKOAM212E	DKOAM212F	DKOAM212P

DKLOAM version available on request

For installation prior to october 2017 please contact Fip Technical Support

ACCESSORI



Q/BBM-L

Union end, long spigot, for butt welding for union BBM-L

d	DN	L	H	SDR	PN10 code SDR 11 - S 5
20	15	95	280	11	QBBML11020
25	20	95	298	11	QBBML11025
32	25	95	306	11	QBBML11032
40	32	95	324	11	QBBML11040
50	40	95	344	11	QBBML11050
63	50	95	374	11	QBBML11063

Q/BBM-C

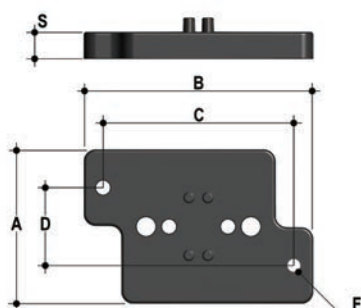
Short spigot PP-H end connectors for butt welding

d	DN	L	H	SDR	PN10 code SDR 11 - S 5
20	15	55	200	11	QBBMC11020
25	20	55	218	11	QBBMC11025
32	25	55	226	11	QBBMC11032
40	32	55	244	11	QBBMC11040
50	40	55	264	11	QBBMC11050
63	50	55	294	11	QBBMC11063

Q/BBE-L

Long spigot PE100 end connectors for electrofusion or butt welding

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

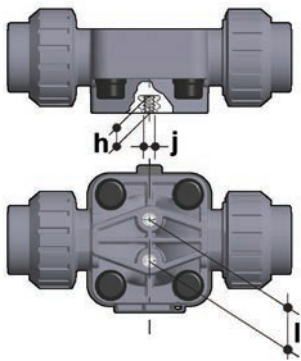


PMDK

Wall mounting plate

d	DN	A	B	C	D	F	S	Code
20	15	65	97	81	33	5,5	11	PMDK1
25	20	65	97	81	33	5,5	11	PMDK1
32	25	65	97	81	33	5,5	11	PMDK1
40	32	65	97	81	33	5,5	11	PMDK2
50	40	65	144	130	33	6,5	11	PMDK2
63	50	65	144	130	33	6,5	11	PMDK2
75	65	65	144	130	33	6,5	11	PMDK2

FASTENING AND SUPPORTING



All valves, whether manual or actuated, must be adequately supported in many applications. The DK valve series is therefore provided with an integrated bracket that permits direct anchoring of the valve body without the need of other components. For wall 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:

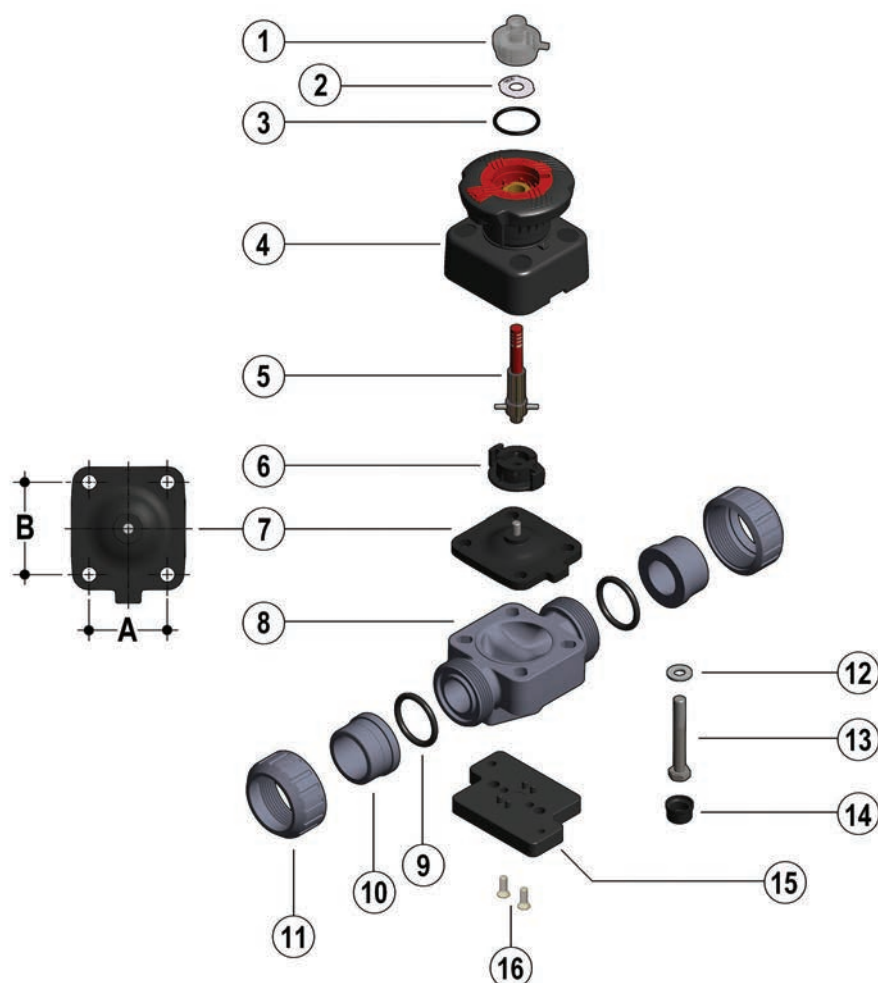
- 1) Turn the transparent protection cap anti-clockwise to limit stop (fig. 1) and remove it by pulling it upwards and, if necessary, by inserting a screwdriver into the slot (C) to facilitate operation (fig. 2).
- 2) Remove the plate inside the transparent protection cap and customise it as required (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 (PP-H - 1)*
- 9** Socket seal O-Ring (EPDM-FKM - 2)*
- 10** End connector (PP-H - 2)*

- 11** Union nut (PP-H - 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).
- 4) Assemble the operating mechanism (4) on the body of the valve (8) and tighten the bolts (13) with the relative washers (12).
- 5) Tighten the bolts (13) evenly (diagonally) to the tightening torque suggested on the relative instruction sheet.
- 6) Replace the protection plugs (14).
- 7) Position the valve body between the end connectors (10) and tighten the union nuts (11), making sure that the socket seal O-rings (9) do not exit their seats.
- 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").

Fig. 8



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

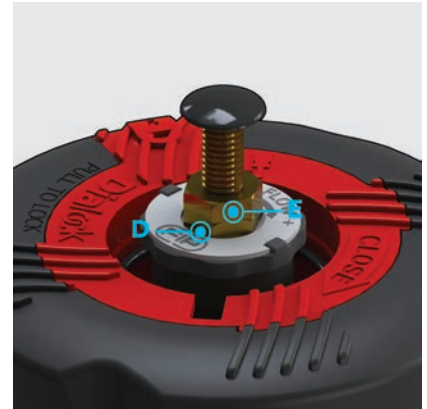
The DKL version of the diaphragm valve is equipped with a handwheel stroke control system which allows the minimum and maximum flows to be preset and preserves the diaphragm from excessive compression during closing operations. The system allows the valve stroke to be modified using the two independent 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



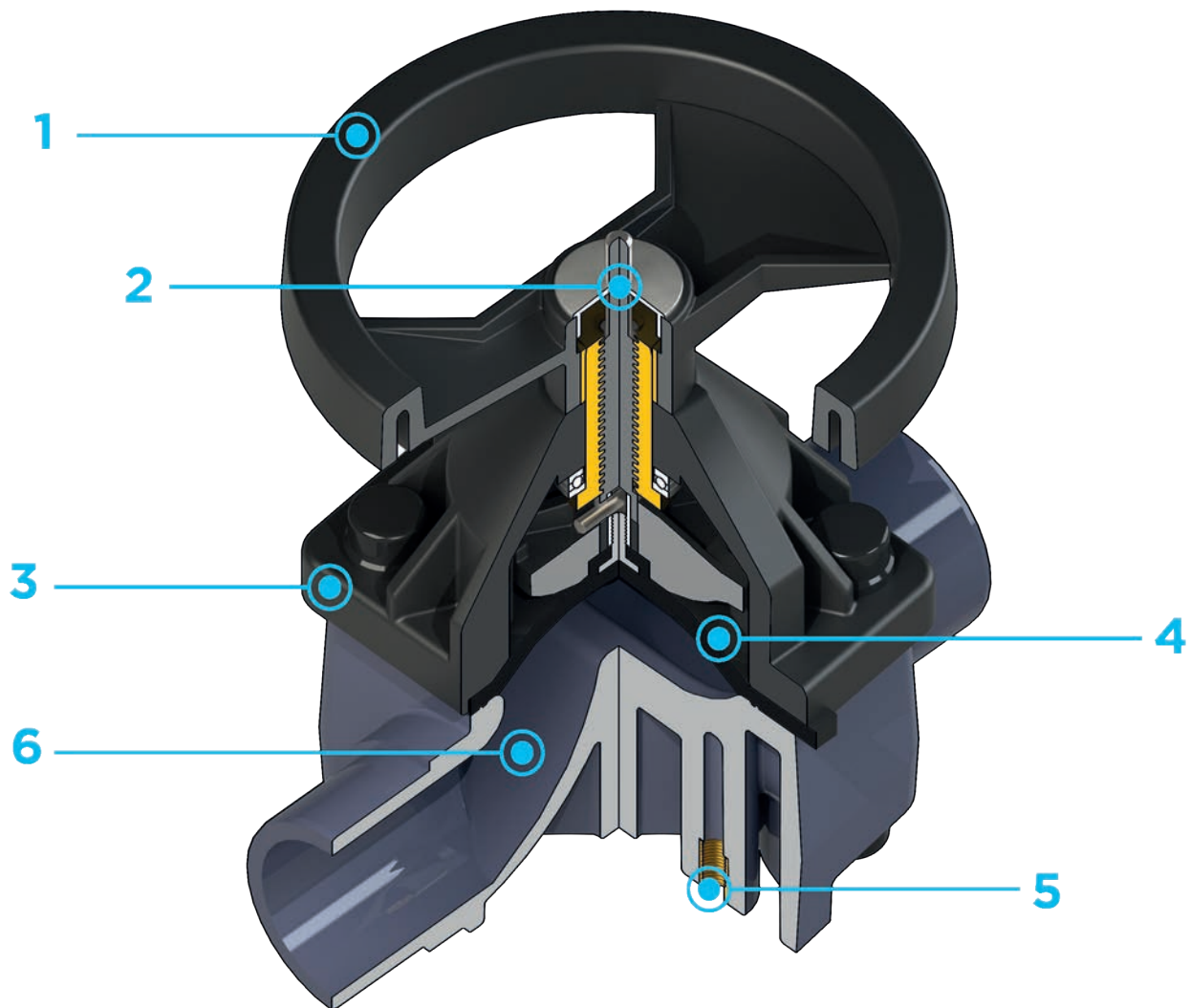
VM DN 80÷100

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	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494. Flanging system: ISO 9624, EN 1092-1, EN ISO 15494, EN 558-1, ANSI B.16.5 cl. 150.
Reference standards	Construction criteria: EN ISO 16138, EN ISO 15494 Test methods and requirements: ISO 9393 Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318.
Valve material	Body: PP-H Bonnet: PP-GR Handwheel PA-GR
Seal material	EPDM, FKM, PTFE (on request NBR)
Control options	Manual control; pneumatic actuator

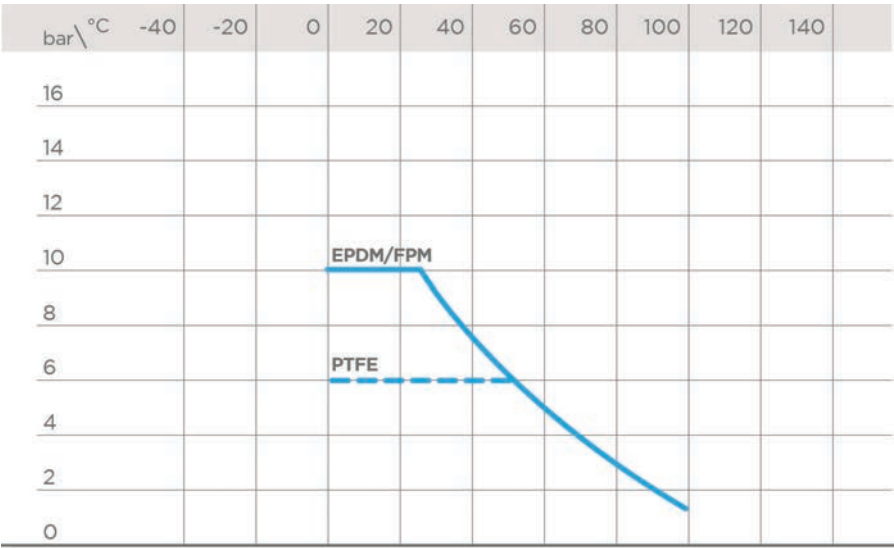


- | | | |
|---|---|---|
| <p>1 Handwheel in (PA-GR) with high mechanical strength and ergonomic grip for optimum manageability</p> | <p>3 Full protection bonnet in PP-GR
Internal circular and symmetrical diaphragm sealing area</p> | <p>5 Threaded metal inserts for anchoring the valve</p> |
| <p>2 Metal optical position indicator
supplied as standard</p> | <p>4 Diaphragm available in EPDM, FPM, PTFE (NBR on request) and easy to replace</p> | <p>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</p> |

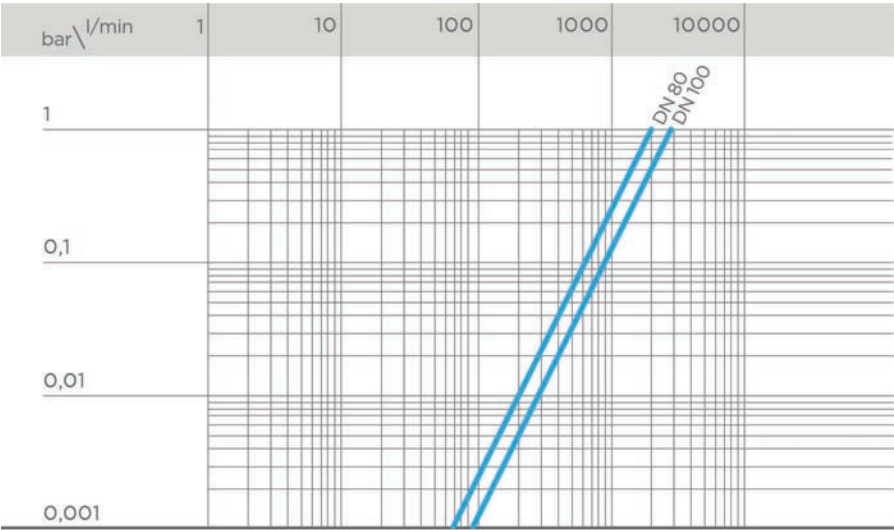
TECHNICAL DATA

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



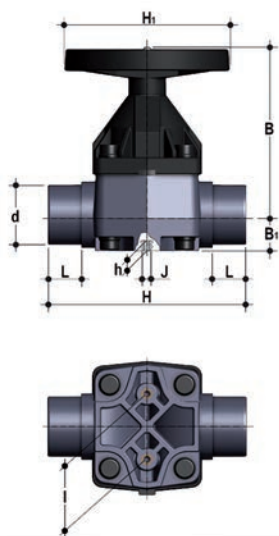
K_v100 FLOW COEFFICIENT

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

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

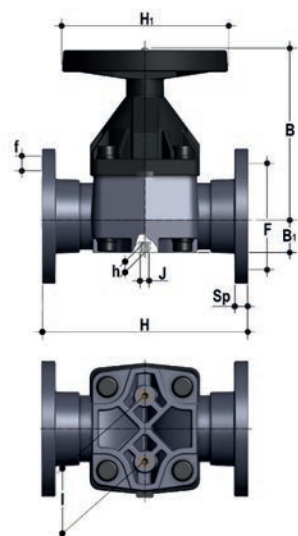


VMDM

Diaphragm valve with male ends for socket welding, metric series

d	DN	PN	B	B ₁	H	H ₁	h	I	J	L	g	EPDM code	FKM code	PTFE code
90	80	*10	225	55	300	200	23	100	M12	51	6040	VMDM090E	VMDM090F	VMDM090P
110	100	*10	295	69	340	250	23	120	M12	61	9160	VMDM110E	VMDM110F	VMDM110P

*PTFE PN6

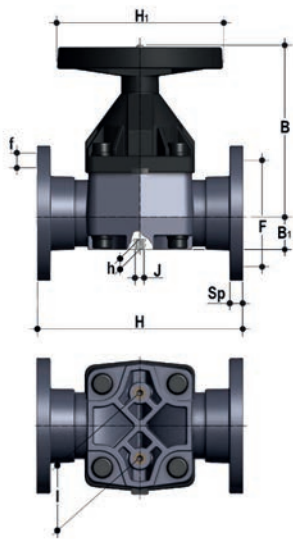


VMOM

Diaphragm valve with flanged monolithic body, drilled EN/ISO/DIN PN10/16. Face to face according to EN 558-1

d	DN	PN	B	B ₁	F	f	H	H ₁	I	J	Sp	U	g	EPDM code	FKM code	PTFE code
90	80	*10	225	64	160	18	310	200	100	M12	22	8	7500	VMOM090E	VMOM090F	VMOM090P
110	100	*10	295	72	180	18	350	250	120	M12	23	8	10480	VMOM110E	VMOM110F	VMOM110P

*PTFE PN6



VMOAM

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

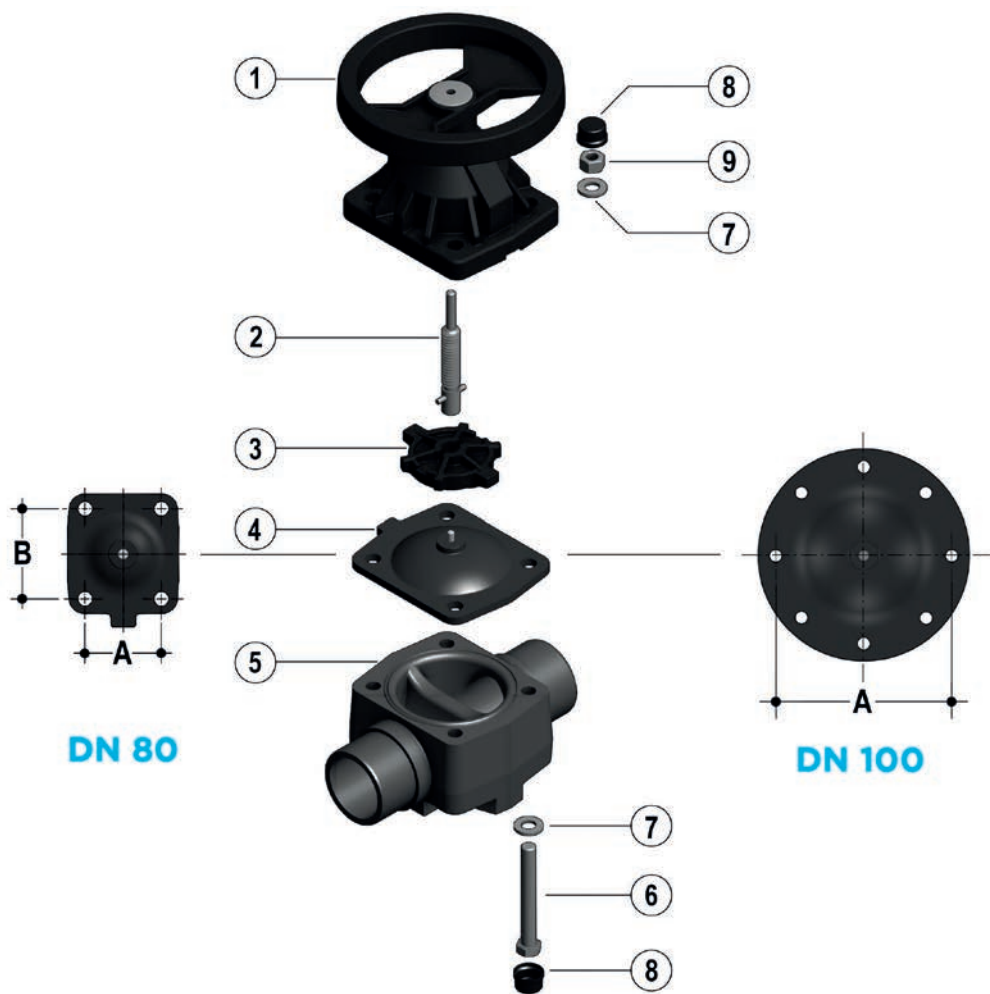
d	DN	PN	B	B ₁	F	f	H	H ₁	I	J	Sp	U	g	EPDM code	FKM code	PTFE code
3"	80	*10	225	64	152,4	19	263	200	100	M12	22	4	7500	VMOAM300E	VMOAM300F	VMOAM300P
4"	100	*10	295	72	190,5	19	328	250	120	M12	23	8	10480	VMOAM400E	VMOAM400F	VMOAM400P

*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 (PP-H - 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



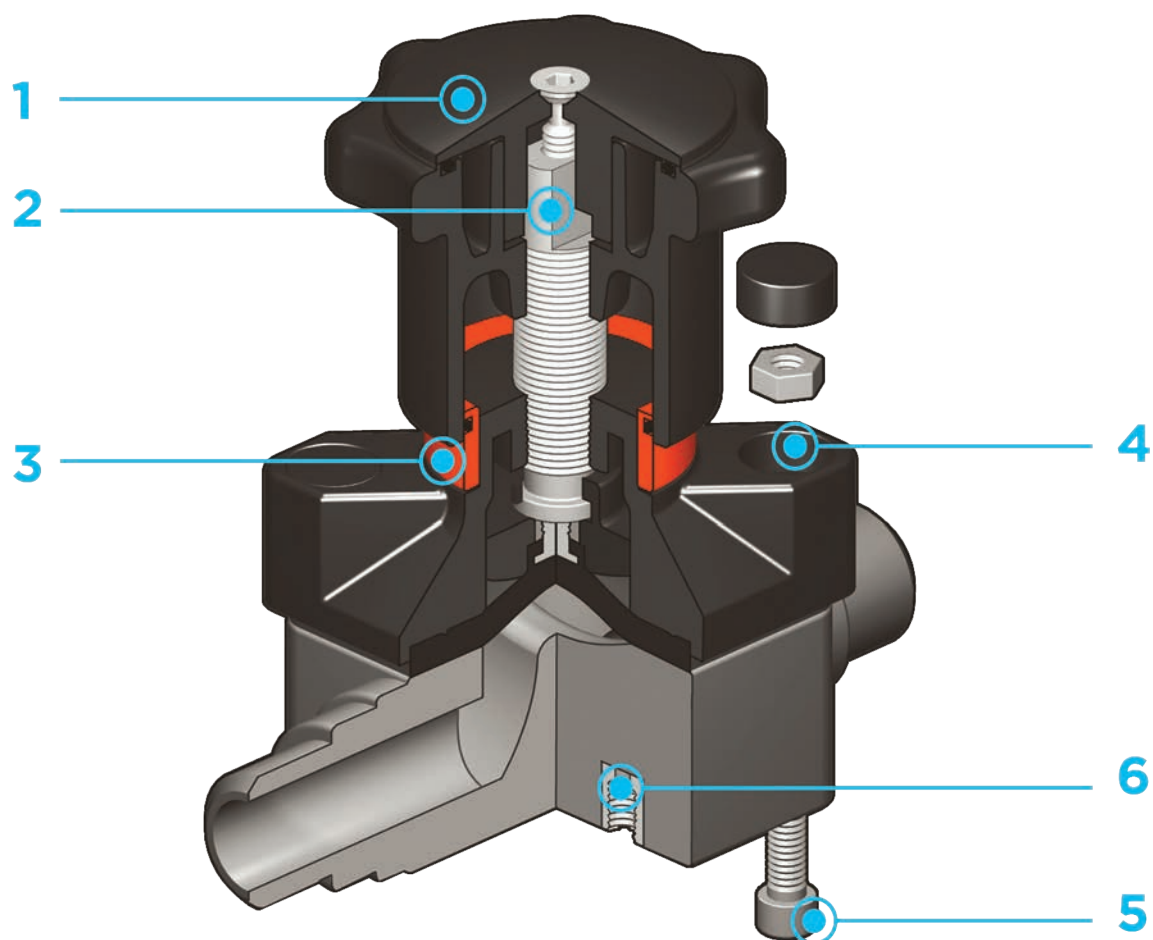
CM DN 12÷15

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 ÷ 60 °C
Coupling standards	Solvent welding: EN ISO 1452, EN ISO 15493, BS 4346-1, , NF T54-028, ASTM D 2467, JIS K 6743. Can be coupled to pipes according to EN ISO 1452, EN ISO 15493, DIN 8062, NF T54-016, ASTM D 1785, JIS K 6741. Thread: ISO 228-1, EN 10226-1/2, ASTM D 2464, JIS B 0203.
Reference standards	Construction criteria: EN ISO 16138, EN ISO 1452, EN ISO 15493 Test methods and requirements: ISO 9393 Installation criteria: DVS 2204, DVS 2221, UNI 11242
Valve material	Body: PP-H 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

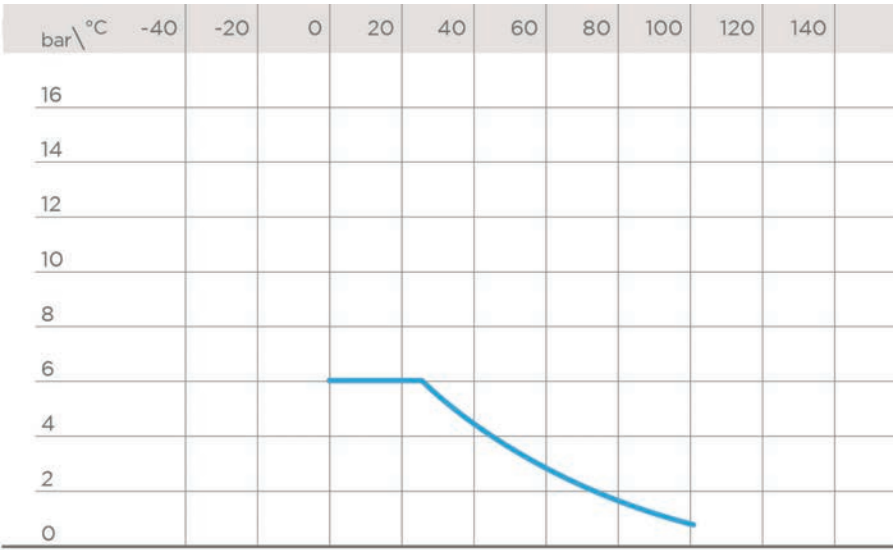
5 STAINLESS steel bolts, can also be inserted from above

6 Threaded metal inserts for anchoring the valve

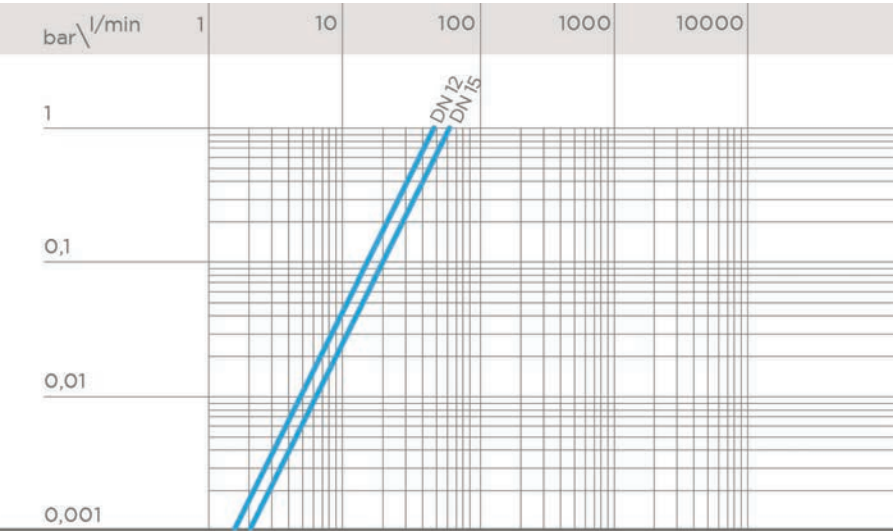
TECHNICAL DATA

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



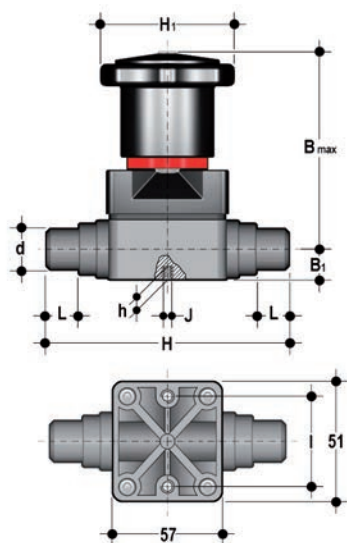
K_v100 FLOW COEFFICIENT

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 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	12	15
Kv100 l/min	47	60

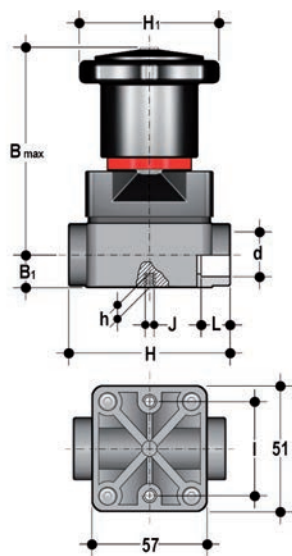
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DIMENSIONS



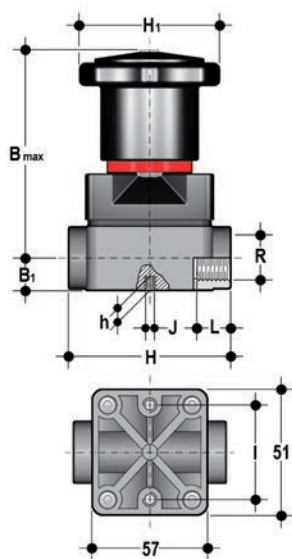
CMDM
Compact diaphragm valve with male ends for socket welding, metric series

d	DN	PN	B _{max}	B ₁	H	H ₁	h	l	J	L	g	EPDM code	FKM code	PTFE code
20	15	6	86	15	124	59	8	35	M5	17	270	CMDM020E	CMDM020F	CMDM020P



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

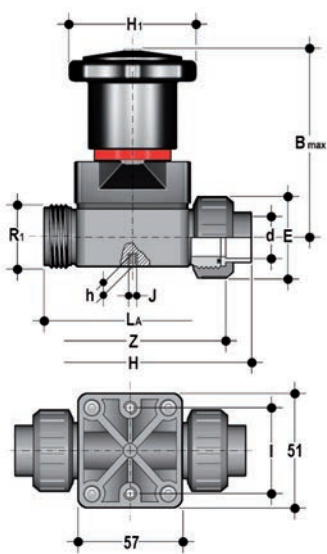
d	DN	PN	B _{max}	B ₁	H	H ₁	h	l	J	L	g	EPDM code	FKM code	PTFE code
16	12	6	86	15	75	59	8	35	M5	14	240	CMIM016E	CMIM016F	CMIM016P
20	15	6	86	15	75	59	8	35	M5	16	240	CMIM020E	CMIM020F	CMIM020P



CMFM

Compact diaphragm valve with BSP threaded female ends

R	DN	PN	B _{max}	B ₁	H	H ₁	h	I	J	L	g	EPDM code	FKM code	PTFE code
3/8"	12	6	86	15	75	59	8	35	M5	12	240	CMFM038E	CMFM038F	CMFM038P
1/2"	15	6	86	15	75	59	8	35	M5	15	240	CMFM012E	CMFM012F	CMFM012P



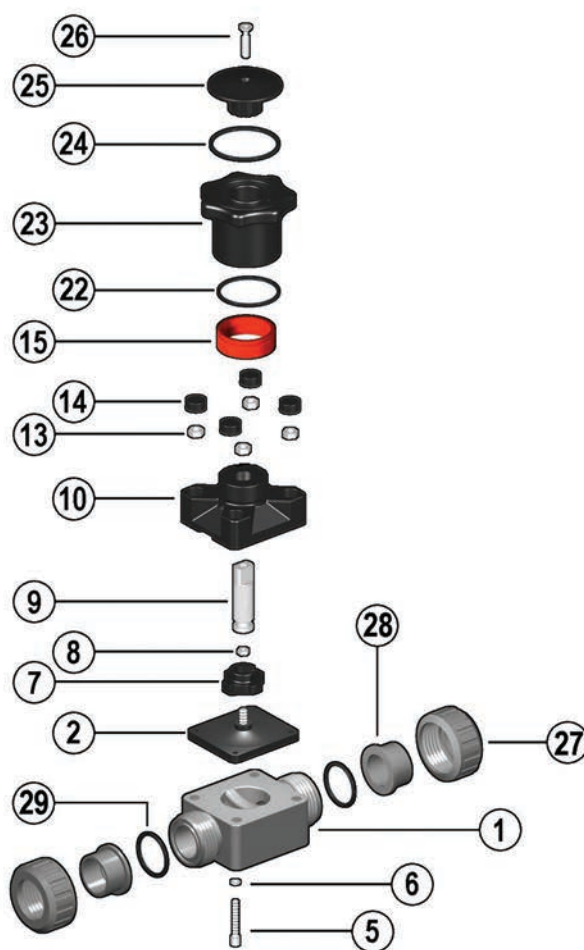
CMUIM

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

d	DN	PN	B _{max}	E	H	H ₁	h	I	J	LA	R ₁	Z	g	EPDM code	FKM code	*PTFE code
20	15	6	86	47,5	130	59	8	35	M5	90	1"	98	255	CMUIM020E	CMUIM020F	CMUIM020P

COMPONENTS

EXPLODED VIEW



- | | | |
|--|---|---|
| 1 Body (PP-H - 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÷100

Sediment strainer



RV DN 15÷100

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

SEDIMENT STRAINER

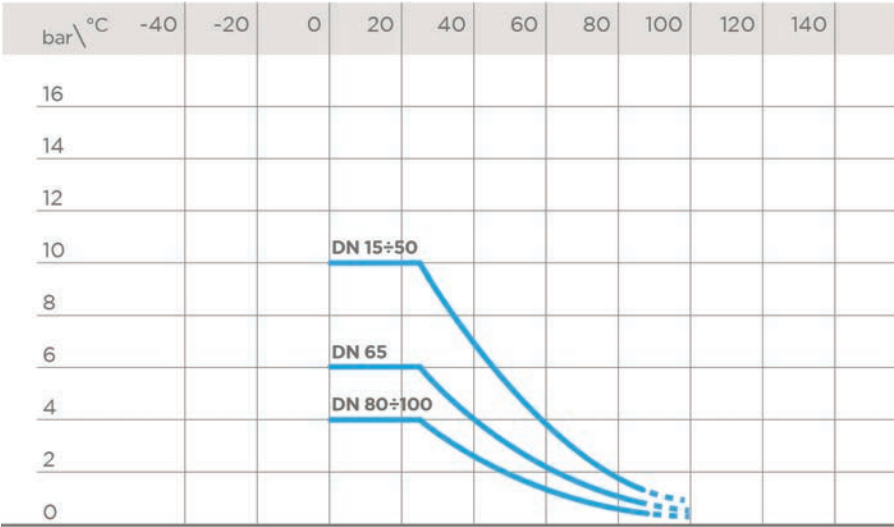
- Connection system for weld, threaded and flanged joints
- **Strainer** assembled on an **easily removed support** that facilitates cleaning or replacement
- **Valve material compatibility** (PP-H) with water conveyance, drinking water and other food substances according to **current regulations**
-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

Technical specifications	
Construction	Sediment strainer
Size range	DN 15 ÷ 100
Nominal pressure	DN 15÷50: PN 10 with water at 20° C DN 65: PN 6 with water at 20° C DN 80÷100: PN 4 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 Thread: UNI ISO 228-1, EN 10226-1/2 Flanging system: ISO 9624, EN ISO 1092-1, EN ISO 15494, EN 558-1, ANSI B.16.5 cl. 150
Reference standards	Construction criteria: EN ISO 15494 Test methods and requirements: ISO 9393 Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318
Valve material	Body: PP-H Strainer: PP
Seal material	EPDM, FKM

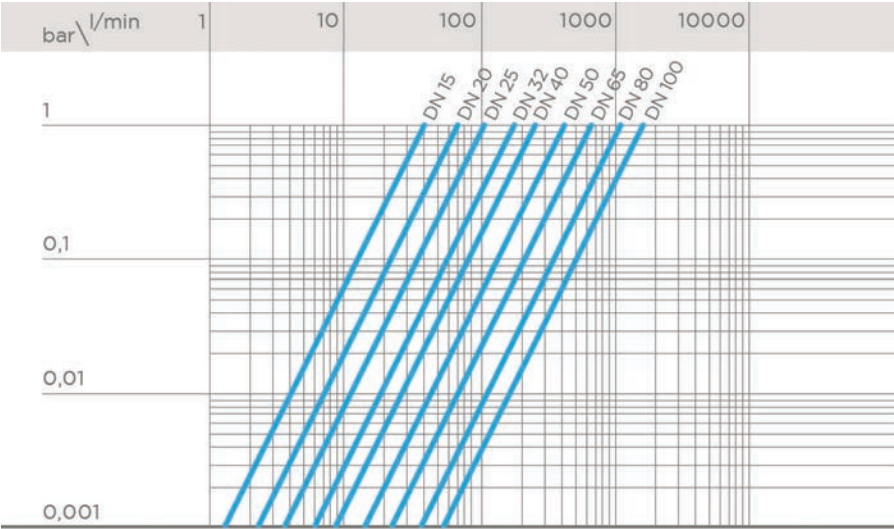
TECHNICAL DATA

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).



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	65	80	100
Kv100 l/min	40	70	103	188	255	410	650	1050	1700

STRAINER DIMENSIONS

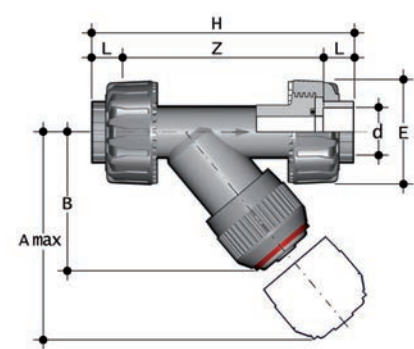
DN	15÷20	25÷100
number of holes per cm²	37	32
ASTM series equivalent in strainer	18	20
ø equivalent hole µm	1016	889
strainer material	PP	PP

TOTAL STRAINER AREA
A_{TOT} (CM²)

DN	15	20	25	32	40	50	65	80	100
A _{tot}	16	23,5	36	53	69	101	197	247	396

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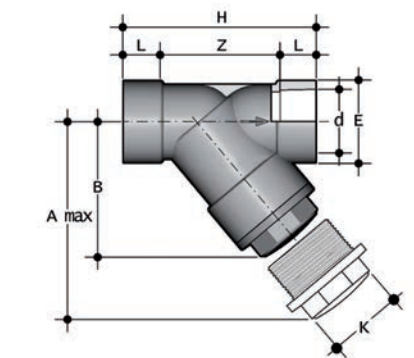
DIMENSIONS



RVUIM

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

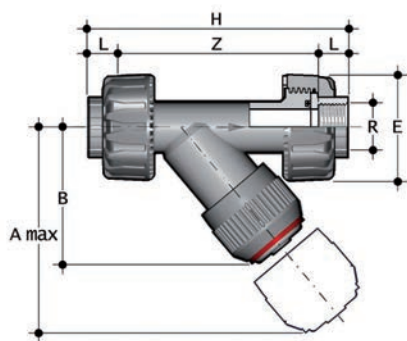
d	DN	PN	A max	B	E	H	Z	Fig.	g	EPDM code	FKM code
20	15	10	125	71	55	138	109	A	148	RVUIM020E	RVUIM020F
25	20	10	145	83	66	157	125	A	195	RVUIM025E	RVUIM025F
32	25	10	165	94	74	179	143	A	297	RVUIM032E	RVUIM032F
40	32	10	190	109	86	205	164	A	475	RVUIM040E	RVUIM040F
50	40	10	210	119	99	244	197	A	675	RVUIM050E	RVUIM050F
63	50	10	240	142,5	120	294	239	A	1100	RVUIM063E	RVUIM063F



RVIM

Sediment strainer with female ends for socket welding, metric series

d	DN	PN	A max	B	E	H	K	Z	Fig.	g	EPDM code	FKM code
75	65	6	300	176	103	241	96	179	B	1580	RVIM075E	RVIM075F
90	80	4	325	193	115	260	105	189	B	1920	RVIM090E	RVIM090F
110	100	4	385	229	138	323	-	240	C	3000	RVIM110E	RVIM110F



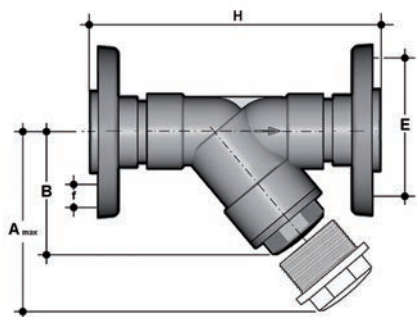
RVUFM

Sediment strainer with BSP threaded female union ends

R	DN	PN	A max	B	E	H	Z	Fig.	g	EPDM code	FKM code
1/2"	15	10	125	71	55	142	112	A	148	RVUFM012E	RVUFM012F
3/4"	20	10	145	83	66	159	126	A	195	RVUFM034E	RVUFM034F
1"	25	10	165	94	74	183	145	A	297	RVUFM100E	RVUFM100F
1" 1/4	32	10	190	109	86	214	171	A	475	RVUFM114E	RVUFM114F
1" 1/2	40	10	210	119	99	235	192	A	675	RVUFM112E	RVUFM112F
2"	50	10	240	143	120	285	234	A	1100	RVUFM200E	RVUFM200F

Note 1: The sediment strainer RVUFM/FKM might be supplied in RVUIM/FKM version with 2 threaded sockets included

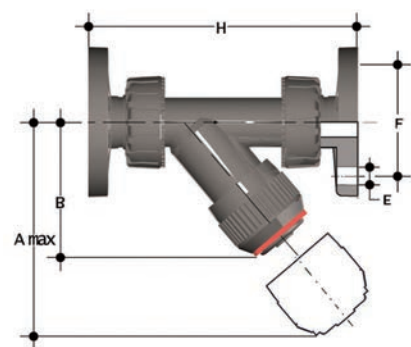
Note 2: Standard filter screen is in PP-H, pitch 1,5 mm



RVOM

Sediment strainer with steel core backing ring , PP/FRP coated, drilled EN/ISO/DIN PN10/16

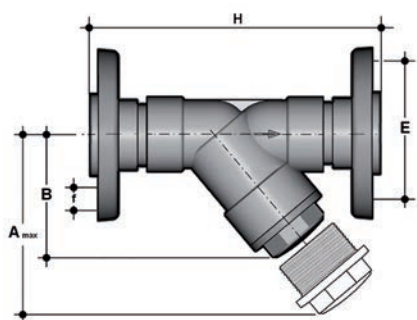
d	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
75	65	6	300	176	145	18	356	5120	RVOM075E	RVOM075F
90	80	4	325	192	160	18	404	6020	RVOM090E	RVOM090F
110	100	4	385	231	180	18	475	7965	RVOM110E	RVOM110F



RVUOAM

Sediment strainer with female union ends and fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
1/2"	15	10	125	72	60	16	175	248	RVUOAM012E	RVUOAM012F
3/4"	20	10	145	84	70	16	214	295	RVUOAM034E	RVUOAM034F
1"	25	10	165	95	79	16	237	397	RVUOAM100E	RVUOAM100F
1 1/4"	32	10	190	111	89	16	253	625	RVUOAM114E	RVUOAM114F
1 1/2"	40	10	210	120	98	16	289	825	RVUOAM112E	RVUOAM112F
2"	50	10	240	139	121	19	333	1250	RVUOAM200E	RVUOAM200F



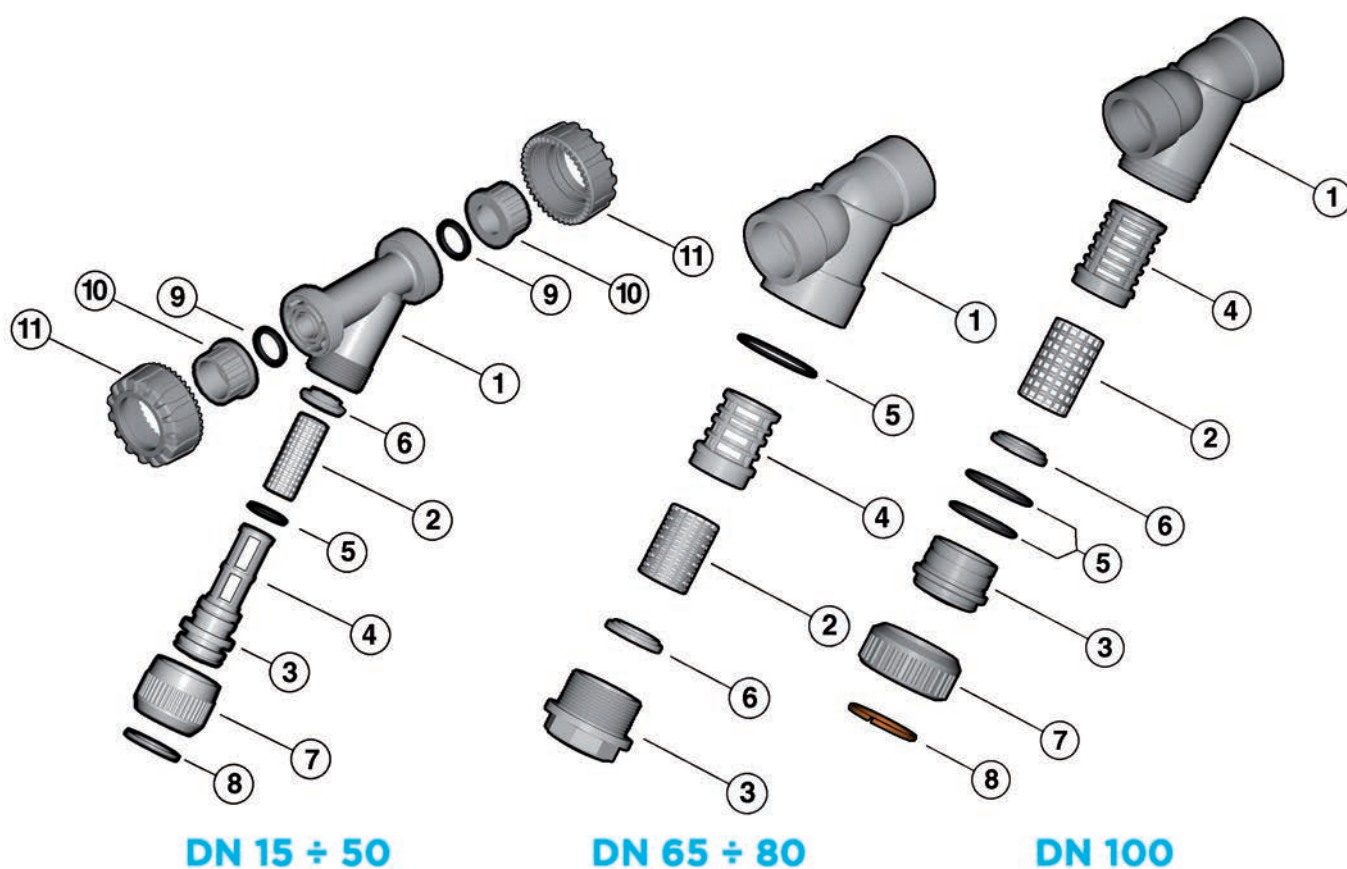
RVOAM

Sediment strainer with steel core backing ring , PP/FRP coated, drilled ANSI B16.5 cl.150 #FF

d - Size	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
75 - 2 1/2"	65	6	300	179	139,7	18	356	4725	RVOAM212E	RVOAM212F
90 - 3"	80	4	325	192	152,4	18	404	5175	RVOAM300E	RVOAM300F
110 - 4"	100	4	385	231	190,5	18	475	7405	RVOAM400E	RVOAM400F

COMPONENTS

EXPLODED VIEW



- | | | |
|--------------------------------------|--------------------------------------|--|
| 1 Body (PP-H - 1) | 5 O-Ring (EPDM or FKM - 1)* | 8 Retaining ring (PP-H - 1) |
| 2 Strainer (PP-H - 1)* | A-B | 9 Socket seal O-Ring (EPDM or FKM - 2)* |
| 3 Bonnet (PP-H - 1) | 5 C O-Ring (EPDM or FKM - 2)* | 10 End connector (PP-H - 2)* |
| 4 Strainer support (PP-H - 1) | 6 Washer (PP-H - 1) | 11 Union nut (PP-H - 2) |
| | 7 Union nut (PP-H - 1) | |

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

DISASSEMBLY

DN 15÷50 (FIG. A) - DN 100 (FIG. C)

- 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).

DN 65÷80 (FIG. B)

- 1) Isolate the sediment strainer from the fluid flow and empty the system upstream.
- 2) Unscrew the bonnet (3) and separate it from the body (1).
- 3) Remove the support (4) from the bonnet (3).
- 4) Remove the washer (6) from the bonnet (3) and the O-Ring (5) from its seating in the body.

ASSEMBLY

DN 15÷50 (FIG. A) - DN 100 (FIG. C)

- 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).

DN 65÷80 (FIG. B)

- 1) Insert the O-Ring (5) in the body (1)
- 2) Insert the washer (6) in the bonnet (3)
- 3) Insert the strainer (2) in its support (4)
- 4) Insert the support (4) in the bonnet (3)
- 5) Screw the bonnet (3) in the body (1)



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. A

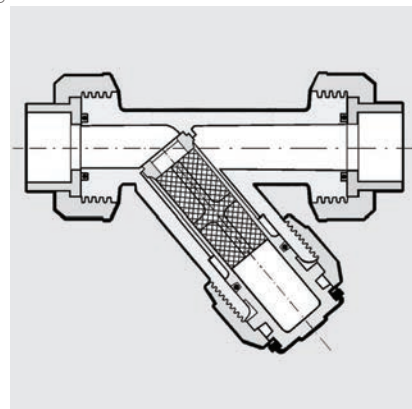


Fig. B

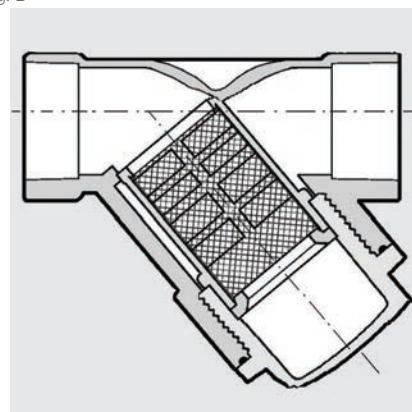
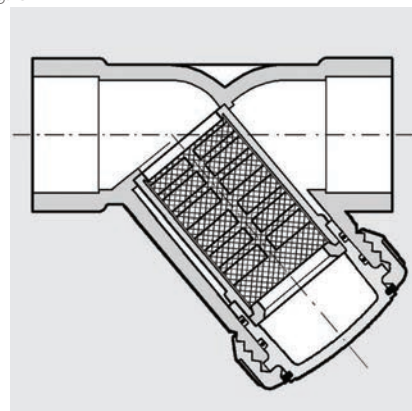


Fig. C



INSTALLATION

DN 15÷50 (fig. A)

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.

DN 65÷80 (fig. B) e DN 100 (fig. C)

The joint must be made by solvent welding the pipe directly into the socket of the valve body.

WARNINGS

- Always check the cleanliness of the filter elements.

VR DN 15÷80

Check valve



VR DN 15÷80

The VR is an angle seat check valve with weighted PP-H piston that allows the passage of fluid in one direction only.

CHECK VALVE

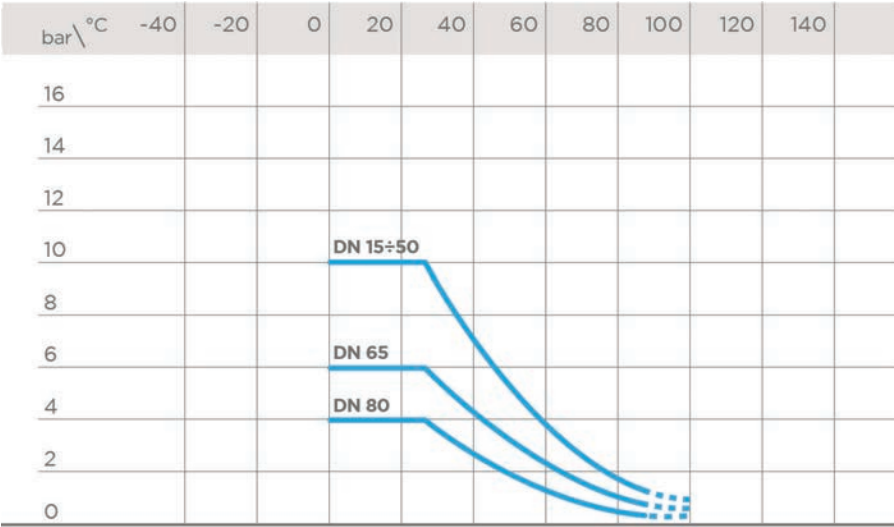
- Connection system for weld, threaded and flanged joints
- **No metal parts in contact with the fluid**
- **Piston with counterweight** able to work with high intensity fluid
- Limited pressure drop. Only minimum back pressure is required for the hermetic seal
- **Valve material compatibility** (PP-H) with water conveyance, drinking water and other food substances according to **current regulations**
- Can be maintained with the valve body installed

Technical specifications	
Construction	Angle seat check valve
Size range	DN 15 ÷ 80
Nominal pressure	DN 10÷50: PN 10 with water at 20° C DN 65 PN 6 with water at 20° C DN 80: PN 4 with water at 20° C
Temperature range	0 °C ÷ 100 °C
Coupling standards	Welding: EN ISO 15494. Can be coupled to pipes according to EN ISO 15494
	Thread: ISO 228-1, EN 10226-1/2
	Flanging system: ISO 9624, EN 1092-1, EN ISO 15494, EN 558-1, ANSI B.16.5 cl. 150
Reference standards	Construction criteria: EN ISO 16137, EN ISO 15494
	Test methods and requirements: ISO 9393
	Installation criteria: EN 14728, DVS 2207-11, DVS 2208-1, UNI 11318
Valve material	PP-H
Seal material	EPDM or FKM

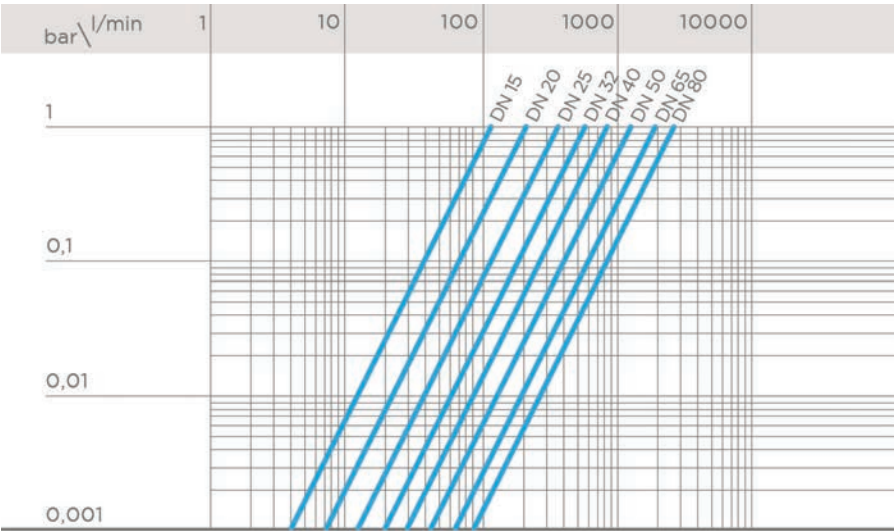
TECHNICAL DATA

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).



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	15	20	25	32	40	50	65	80
Kv100 l/min	110	205	375	560	835	1300	1950	2600

MINIMUM PRESSURE REQUIRED TO LIFT THE PISTON

DN	15	20	25	32	40	50	65	80
bar	0,008	0,009	0,014	0,017	0,018	0,021	0,022	0,022

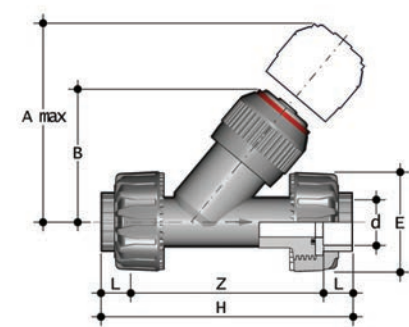
**MINIMUM SEALING
PRESSURE (PISTON IN
CLOSED POSITION)**

The figures refer to the seals that are not worn.

DN	15	20	25	32	40	50	65	80
mm H ₂ O	150	200	350	350	350	350	350	350

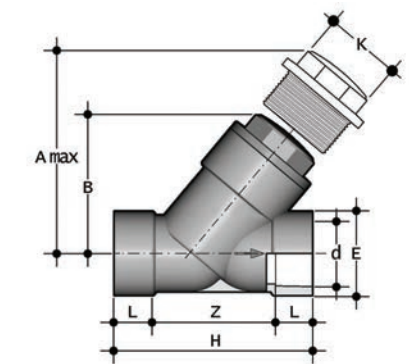
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DIMENSIONS



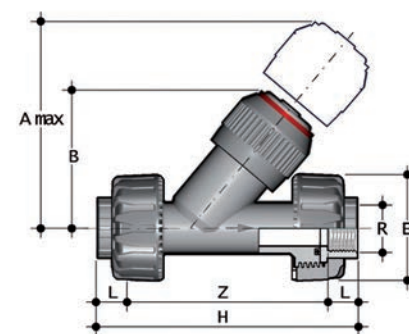
VRUIM
Check valve with female union ends for socket welding, metric series

d	DN	PN	A max	B	E	H	Z	g	EPDM code	FKM code
20	15	10	125	71	55	138	109	165	VRUIM020E	VRUIM020F
25	20	10	145	83	66	157	125	227	VRUIM025E	VRUIM025F
32	25	10	165	94	74	179	143	380	VRUIM032E	VRUIM032F
40	32	10	190	109	86	205	164	645	VRUIM040E	VRUIM040F
50	40	10	210	119	99	244	197	915	VRUIM050E	VRUIM050F
63	50	10	240	143	120	294	239	1555	VRUIM063E	VRUIM063F



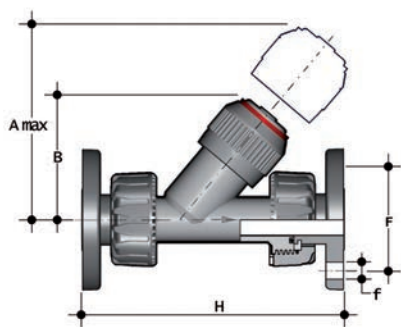
VRIM
Check valve with female ends for socket welding, metric series

d	DN	PN	A max	B	E	H	K	Z	g	EPDM code	FKM code
75	65	6	300	176	103	241	96	179	2450	VRIM075E	VRIM075F
90	80	4	325	192	115	260	105	189	3130	VRIM090E	VRIM090F



VRUFM
Check valve with BSP threaded female union ends

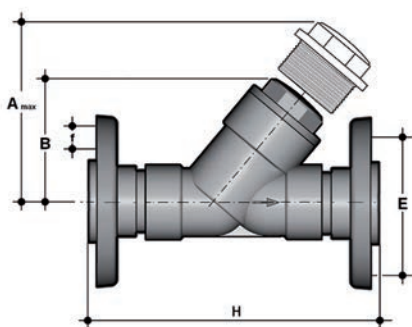
R	DN	PN	A max	B	E	H	Z	g	EPDM code	FKM code
1/2"	15	10	125	71	55	143	113	165	VRUFM012E	VRUFM012F
3/4"	20	10	145	83	65	160	127	227	VRUFM034E	VRUFM034F
1"	25	10	165	94	74	183	145	380	VRUFM100E	VRUFM100F
1" 1/4	32	10	190	109	86	214	171	645	VRUFM114E	VRUFM114F
1" 1/2	40	10	210	119	99	235	192	915	VRUFM112E	VRUFM112F
2"	50	10	240	143	120	285	234	1555	VRUFM200E	VRUFM200F



VRUOM

Check valve with union ends and fixed flanges, drilled EN/ISO/DIN PN10/16

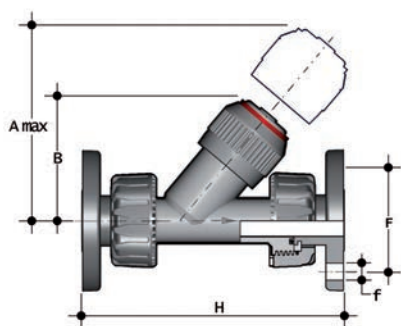
d	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
20	15	10	125	72	65	14	163	265	VRUOM020E	VRUOM020F
25	20	10	145	84	75	14	193	327	VRUOM025E	VRUOM025F
32	25	10	165	95	85	14	211	480	VRUOM032E	VRUOM032F
40	32	10	190	111	100	18	244	795	VRUOM040E	VRUOM040F
50	40	10	210	120	110	18	277	1065	VRUOM050E	VRUOM050F
63	50	10	240	139	125	18	331	1705	VRUOM063E	VRUOM063F



VROM

Check valve with steel core backing ring, PP/FRP coated, drilled EN/ISO/DIN PN10/16

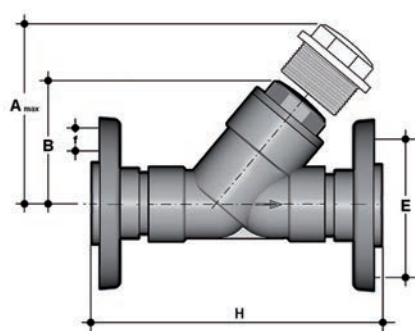
d	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
75	65	6	300	179	145	18	356	5990	VROM075E	VROM075F
90	80	4	325	192	160	18	404	7230	VROM090E	VROM090F



VRUOAM

Check valve with union ends and 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	10	125	72	60	16	175	265	VRUOAM012E	VRUOAM012F
3/4"	20	10	145	84	70	16	214	327	VRUOAM034E	VRUOAM034F
1"	25	10	165	95	79	16	237	480	VRUOAM100E	VRUOAM100F
1 1/4"	32	10	190	111	89	16	253	795	VRUOAM114E	VRUOAM114F
1 1/2"	40	10	210	120	98	16	289	1065	VRUOAM112E	VRUOAM112F
2"	50	10	240	139	121	19	333	1705	VRUOAM200E	VRUOAM200F



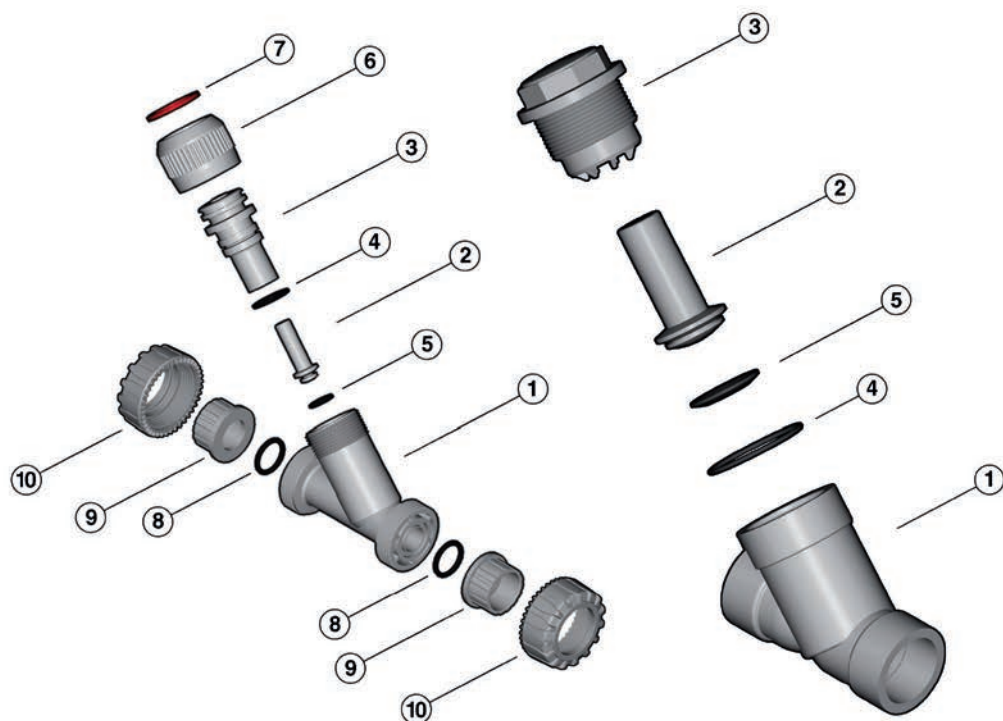
VROAM

Check valve with steel core backing ring, PP/FRP coated, drilled ANSI B16.5 cl.150 #FF

d - Size	DN	PN	A max	B	F	f	H	g	EPDM code	FKM code
75 - 2 1/2"	65	6	300	176	139,7	18	356	5595	VROAM075E	VROAM075F
90 - 3"	80	4	325	192	152,4	18	404	6385	VROAM090E	VROAM090F

COMPONENTS

EXPLODED VIEW



DN 15÷50

DN 65÷80

- | | | |
|--------------------------------------|---|--|
| 1 Body (PP-H - 1) | 5 Piston flat gasket (EPDM o FKM - 1)* | 8 Socket seal O-Ring (EPDM or FKM - 2)* |
| 2 Piston (PP-H - 1) | 6 Union nut (PP-H - 1) | 9 End connector (PP-H - 2)* |
| 3 Bonnet (PP-H - 1) | 7 Retaining ring (PP-H - 1) | 10 Union nut (PP-H - 2) |
| 4 O-Ring (EPDM or FKM - 1/2)* | | |

* Spare parts

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

DISASSEMBLY

DN 15÷50 (FIG.A)

- 1) Isolate the valve from the fluid flow.
- 2) Unscrew the union nut (6) and separate the bonnet (3) from the body (1).
- 3) Remove the piston (2) and flat gasket (5).
- 4) Remove the retaining ring (7) and separate the union nut (6) from the bonnet (3).
- 5) Remove the O-Ring from the bonnet (4).

DN 65÷80 (FIG. B)

- 1) Isolate the valve from the fluid flow.
- 2) Unscrew the bonnet (3) from the body (1).
- 3) Remove the O-Ring (4) from its seating in the body (1).
- 4) Remove the piston (2) and relative flat gasket (5).

ASSEMBLY

DN 15÷50 (FIG. A)

- 1) Insert the O-Ring (4) in its seating in the bonnet (3).
- 2) Insert the bonnet (3) in union nut (6) and fix the two components using the retaining ring (7).
- 3) Insert the piston (2) complete with flat gasket (5) in the bonnet (3), then fit the bonnet on the body (1).
- 4) Screw the union nut (6) on the body (1)

DN 65÷80 (FIG. B)

- 1) Insert the piston (2) complete with flat gasket (5) in the bonnet (3).
- 2) Insert the O-ring (4) in the body (1) seating.
- 3) Screw the bonnet (3) to the body (1)



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. A

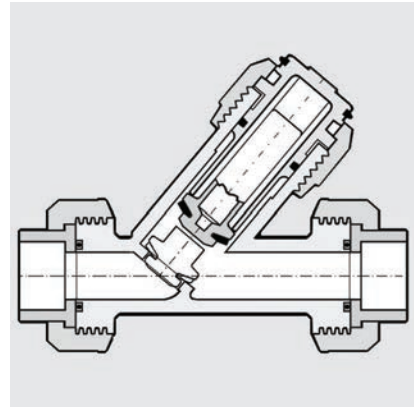
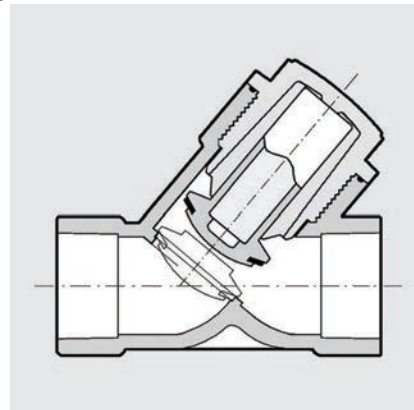


Fig. B



INSTALLATION

The check valve can be installed on vertical or horizontal axis pipes. The bonnet (3) must however always be turned upwards as the piston works by gravity.

If the valve is installed in a vertical position, if the connection is solvent welded, make sure that the solvent cement does not enter inside the body, as this would damage the seating of the seal.

Install the valve such that the arrow stamped on the body indicates the direction of fluid flow .

WARNINGS

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

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

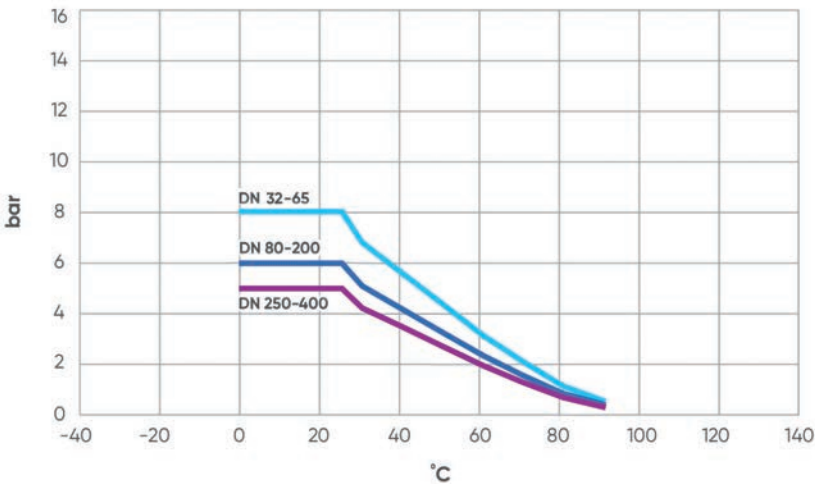
- **Metal support for easy and precise centring of the valve** during installation
- Can be installed in either a vertical or horizontal position
- Models with springs in INOX 316 stainless steel or Hastelloy for the conveyance of aggressive fluids.
- Sealing system with O-Rings for secure fastening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

Technical specifications	
Construction	Wafer check valve
Size range	DN 32 ÷ 400
Nominal pressure	PN 8 (DN32-65), PN 6 (DN80-200), PN 5 (DN250-400) - in water at 20°C
Temperature range	0 °C ÷ 90°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	PP-H
Seal material	EPDM, FKM
Spring material	SS 316, Hastelloy C4

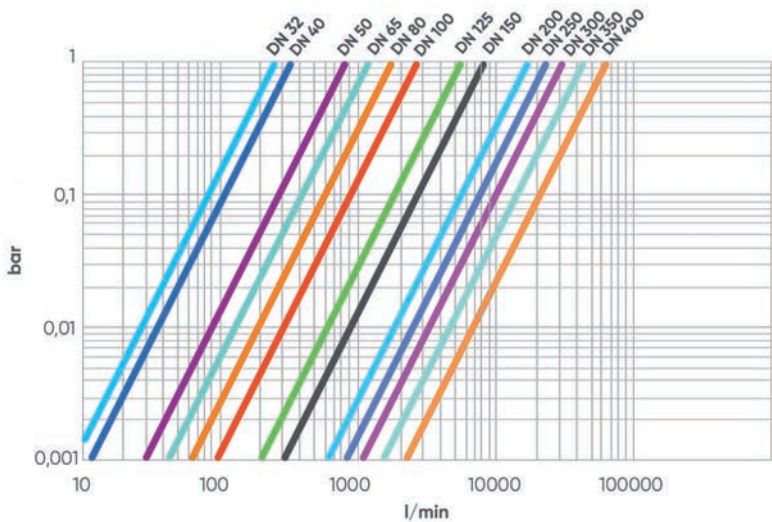
TECHNICAL DATA

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
 $\Delta p=1$ bar pressure drop at a certain
valve position. The Kv100 values shown
in the table are calculated with the
valve completely open.

DN	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

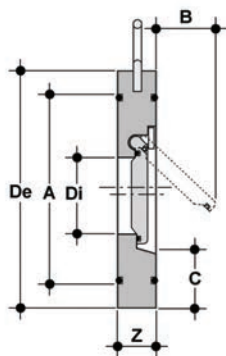
DN	32	40	50	65	80	100	125	150	200	250	300	350	400
bar	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3

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

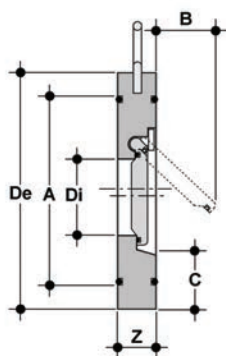
DIMENSIONS



FROM

Wafer check valve PP-H without spring, version ISO-DIN

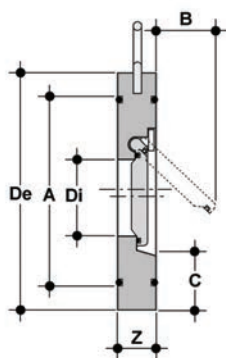
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040E	FROM040F
50	40	8	72	25	28	95	22	16	100	FROM050E	FROM050F
63	50	8	86	37	29	109	32	18	180	FROM063E	FROM063F
75	65	8	105	50	31	129	40	20	230	FROM075E	FROM075F
90	80	6	119	61	32	144	54	20	270	FROM090E	FROM090F
110	100	6	146	77	31	164	70	23	380	FROM110E	FROM110F
140	125	6	173	94	35	195	92	23	510	FROM140E	FROM140F
160	150	6	197	100	40	220	105	26	760	FROM160E	FROM160F
225	200	6	255	152	38	275	154	34	1430	FROM225E	FROM225F
280	250	5	312	180	41	330	192	40	2440	FROM280E	FROM280F
315	300	5	363	215	41	380	227	45	3570	FROM315E	FROM315F
350	350	5	416	245	44	440	266	49	5123	FROM355E	FROM355F
400	400	5	467	285	50	491	310	65	8462	FROM400E	FROM400F



FROM - Spring in A316

Wafer check valve PP-H with spring, version ISO-DIN

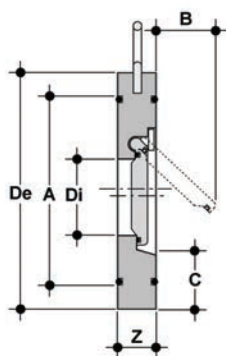
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040EMLX	FROM040FMLX
50	40	8	72	25	28	95	22	16	100	FROM050EMLX	FROM050FMLX
63	50	8	86	37	29	109	32	18	180	FROM063EMLX	FROM063FMLX
75	65	8	105	50	31	129	40	20	230	FROM075EMLX	FROM075FMLX
90	80	6	119	61	32	144	54	20	270	FROM090EMLX	FROM090FMLX
110	100	6	146	77	31	164	70	23	380	FROM110EMLX	FROM110FMLX
140	125	6	173	94	35	195	92	23	510	FROM140EMLX	FROM140FMLX
160	150	6	197	100	40	220	105	26	760	FROM160EMLX	FROM160FMLX
225	200	6	255	152	38	275	154	34	1430	FROM225EMLX	FROM225FMLX
280	250	5	312	180	41	330	192	40	2440	FROM280EMLX	FROM280FMLX
315	300	5	363	215	41	380	227	45	3570	FROM315EMLX	FROM315FMLX
350	350	5	416	245	44	440	266	49	5123	FROM355EMLX	FROM355FMLX
400	400	5	467	285	50	491	310	65	8462	FROM400EMLX	FROM400FMLX



FROM in Hastelloy

Wafer check valve PP-H with spring, version ISO-DIN

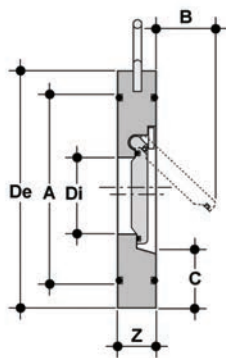
d	DN	PN	A	B	C	De	Di	Z	g	EPDM Code	FKM Code
40	32	10	59	22	25	85	18	15	90	FROM040EMLH	FROM040FMLH
50	40	8	72	25	28	95	22	16	100	FROM050EMLH	FROM050FMLH
63	50	8	86	37	29	109	32	18	180	FROM063EMLH	FROM063FMLH
75	65	8	105	50	31	129	40	20	230	FROM075EMLH	FROM075FMLH
90	80	6	119	61	32	144	54	20	270	FROM090EMLH	FROM090FMLH
110	100	6	146	77	31	164	70	23	380	FROM110EMLH	FROM110FMLH
140	125	6	173	94	35	195	92	23	510	FROM140EMLH	FROM140FMLH
160	150	6	197	100	40	220	105	26	760	FROM160EMLH	FROM160FMLH
225	200	6	255	152	38	275	154	34	1430	FROM225EMLH	FROM225FMLH
280	250	5	312	180	41	330	192	40	2440	FROM280EMLH	FROM280FMLH
315	300	5	363	215	41	380	227	45	3570	FROM315EMLH	FROM315FMLH
350	350	5	416	245	44	440	266	49	5123	FROM355EMLH	FROM355FMLH
400	400	5	467	285	50	491	310	65	8462	FROM400EMLH	FROM400FMLH



FROAM

Wafer check valve PP-H without spring, version ANSI

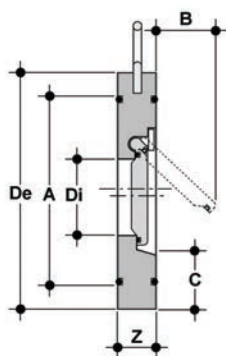
d	DN	PN	A	B	C	De	Di	Z	g	EPDM code	FKM Code
1"1/4	32	10	59	22	25	74	18	15	90	FROAM114E	FROAM114F
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112E	FROAM112F
2"	50	8	86	37	29	105	32	18	180	FROAM200E	FROAM200F
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212E	FROAM212F
3"	80	6	119	61	32	137	54	20	270	FROAM300E	FROAM300F
4"	100	6	146	77	31	175	70	23	380	FROAM400E	FROAM400F
5"	125	6	173	94	35	197	92	23	510	FROAM500E	FROAM500F
6"	150	6	197	100	40	222	105	26	760	FROAM600E	FROAM600F
8"	200	6	255	152	38	279	154	34	1430	FROAM800E	FROAM800F
10"	250	5	312	180	41	340	192	40	2440	FROAM810E	FROAM810F
12"	300	5	363	215	41	410	227	45	3570	FROAM812E	FROAM812F
14"	350	5	416	245	44	451	266	49	5123	FROAM814E	FROAM814F
16"	400	5	467	285	50	514	310	65	8462	FROAM816E	FROAM816F



FROAM - Spring in A316

Wafer check valve PP-H 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	90	FROAM114EMLX	FROAM114FMLX
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112EMLX	FROAM112FMLX
2"	50	8	86	37	29	105	32	18	180	FROAM200EMLX	FROAM200FMLX
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212EMLX	FROAM212FMLX
3"	80	6	119	61	32	137	54	20	270	FROAM300EMLX	FROAM300FMLX
4"	100	6	146	77	31	175	70	23	380	FROAM400EMLX	FROAM400FMLX
5"	125	6	173	94	35	197	92	23	510	FROAM500EMLX	FROAM500FMLX
6"	150	6	197	100	40	222	105	26	760	FROAM600EMLX	FROAM600FMLX
8"	200	6	255	152	38	279	154	34	1430	FROAM800EMLX	FROAM800FMLX
10"	250	5	312	180	41	340	192	40	2440	FROAM810EMLX	FROAM810FMLX
12"	300	5	363	215	41	410	227	45	3570	FROAM812EMLX	FROAM812FMLX
14"	350	5	416	245	44	451	266	49	5123	FROAM814EMLX	FROAM814FMLX
16"	400	5	467	285	50	514	310	65	8462	FROAM816EMLX	FROAM816FMLX



FROAM - Spring in Hastelloy

Wafer check valve PP-H 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	90	FROAM114EMLH	FROAM114FMLH
1"1/2	40	8	72	25	28	83	22	16	100	FROAM112EMLH	FROAM112FMLH
2"	50	8	86	37	29	105	32	18	180	FROAM200EMLH	FROAM200FMLH
2"1/2	65	8	105	50	31	124	40	20	230	FROAM212EMLH	FROAM212FMLH
3"	80	6	119	61	32	137	54	20	270	FROAM300EMLH	FROAM300FMLH
4"	100	6	146	77	31	175	70	23	380	FROAM400EMLH	FROAM400FMLH
5"	125	6	173	94	35	197	92	23	510	FROAM500EMLH	FROAM500FMLH
6"	150	6	197	100	40	222	105	26	760	FROAM600EMLH	FROAM600FMLH
8"	200	6	255	152	38	279	154	34	1430	FROAM800EMLH	FROAM800FMLH
10"	250	5	312	180	41	340	192	40	2440	FROAM810EMLH	FROAM810FMLH
12"	300	5	363	215	41	410	227	45	3570	FROAM812EMLH	FROAM812FMLH
14"	350	5	416	245	44	451	266	49	5123	FROAM814EMLH	FROAM814FMLH
16"	400	5	467	285	50	514	310	65	8462	FROAM816EMLH	FROAM816FMLH

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.
- 7) For installation on PP-H or PE piping with butt welding fusion: The use of special stubs QBXM or QBXE on the outlet side of the valve is advised in order to allow a complete valve opening.
- 8) For the installation of FR valves on PP-H or PVDF piping with socket welding fusion: the use of QRX spacers of the designed material on the outlet side of the valve is advised to allow full opening of the FR. Please ask your commercial contact or FIP technical support for further information.
- 9) The spacer needs to be installed between the valve and the QRNM or QRNF stub; the flat side of the spacer needs to be installed on the side of the valve and a flat gasket needs to be installed between the spacer and the stub. It is recommended to remove the welded material after the fusion from the stub to be installed on the outlet side of the valve.

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
d	Nominal external diameter of the pipe in mm
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
NBR	Nitrile butadiene rubber
OP	Working pressure
P	Hose adaptor
PA	Poliammide
PA-GR	Fibreglass reinforced polyamide
PBT	Polybutylene terephthalate
PE	Polyethylene
PN	Nominal pressure in bar (max.operating pressure at 20°C water)
POM	Polyoxymethylene
PP-GR	Fibreglass reinforced polypropylene
PP-H	Polypropylene homopolymer
PVC-C	Chlorinated polyvinyl chloride
PVC-U	Unplasticized polyvinylchloride
PVDF	Polyvinylidene difluoride
PTFE	Polyethrafluorethylene
R	Nominal thread size in inches
s	Pipe thickness in mm
SDR	Standard dimension ratio = d/s
U	Number of flange holes for flanged valves

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