



## PIPES, FITTINGS AND MANUAL VALVES

PP-H

The PP-H line 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 at maximum working temperatures of no more than 100 °C.

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PIPE, FITTINGS  
AND MANUAL  
VALVES  
IN PP-H



ORIGINE E QUALITÀ CONTROLLATA

# PP-H

## GENERAL CHARACTERISTICS

Polypropylene is a thermoplastic and partially crystalline resin belonging to the family of polyolefins. PP is obtained through the polymerization of propylene (C<sub>3</sub>H<sub>6</sub>) 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 100° 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 100° 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.

<b>Density</b>	
Test method	ISO 1183
Unit of measurement	g/cm <sup>3</sup>
Value	Valves/fittings/pipes: 0.9

<b>Fluidity index (MFI 190° C, 5 kg)</b>	
Test method	ISO 1133
Unit of measurement	g/(10 min)
Value	Valves/fittings/pipes: 0.5

<b>Modulus of elasticity</b>	
Test method	ASTM D 790
Unit of measurement	MPa = N/mm <sup>2</sup>
Value	Valves/fittings/pipes: 1300

<b>IZOD notched impact strength at 23°C</b>	
Test method	ASTM D256
Unit of measurement	J/m
Value	Valves/fittings/pipes: 150

<b>Ultimate elongation</b>	
Test method	ISO 527
Unit of measurement	%
Value	Valves/fittings/pipes: >50

<b>Rockwell hardness</b>	
Test method	ASTM D785
Unit of measurement	R
Value	Valves/fittings/pipes: 100

<b>Tensile strength</b>	
Test method	ISO 527
Unit of measurement	MPa = N/mm <sup>2</sup>
Value	Valves/fittings/pipes: 30

<b>Heat distortion temperature HDT (0.46 N/mm<sup>2</sup>)</b>	
Test method	ASTM D648
Unit of measurement	°C
Value	Valves/fittings/pipes: 96

<b>Thermal conductivity at 20° C</b>	
Test method	DIN 5216
Unit of measurement	W/(m °C)
Value	Valves/fittings/pipes: 0.22

<b>Coefficient of linear thermal expansion</b>	
Test method	DIN 53752
Unit of measurement	m/(m °C)
Value	Valves/fittings/pipes: 16 x 10 <sup>-5</sup>

<b>Limiting Oxygen Index</b>	
Test method	ASTM D2863
Unit of measurement	%
Value	Valves/fittings/pipes: 17.5

<b>Surface electrical resistivity</b>	
Test method	ASTM D257
Unit of measurement	ohm
Value	Valves/fittings/pipes: >10 <sup>13</sup>

<b>Flammability</b>	
Test method	UL94
Value	94-HB

# REFERENCE STANDARDS

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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**.

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- **ANSI B16.5 cl.150**  
Pipe, flanges and stubs - NPS 1/2 to NPS 24 mm / inch.
- **ASTM D 4101-06**  
Polypropylene compound according to the classification PP0110B56000.
- **BS 10**  
Specification for flanges and bolts for pipes, valves and fittings.
- **BS 1560**  
Flanges for pipes, valves and fittings (Class designated). Steel, cast iron and copper alloy flanges. Specification for steel flanges.
- **BS 4504**  
Flanges for pipes, valves and fittings (PN designated).
- **DIN 2501**  
Flanges, dimensions.
- **DIN 2999**  
Whitworth thread for threaded pipes and fittings.
- **DIN 8077-8078**  
PP-H pipe dimensions, metric series.
- **DIN 16962**  
PP-H fittings for socket and butt welding, dimensions.
- **DIN 16963**  
Pipe joints and pipe components for pressurised fluids in HDPE.
- **DVS 2202-1**  
Imperfections of PP-H welded joints, characteristics, descriptions and evaluations.
- **DVS 2207-11**  
Socket and butt welding of PP-H components.
- **DVS 2208-1**  
Machinery and equipment for thermocouple welding pipes, pipe parts and panels.
- **EN 558-1**  
Industrial valves - Overall dimensions of metal valves for use in flanged pipe systems - Part 1: PN designated valves
- **EN 1092-1**  
Flanges and their joints - Circular flanges for pipes, fittings, valves and accessories - Part 1: Steel flanges, PN designated.
- **EN ISO 15494**  
Specifications for components (Pipes, Fittings and Valves) in PP-H for industrial applications.
- **ISO 228-1**  
Pipe threads for connections that do not seal in the thread.
- **ISO 5211**  
Part-turn actuator couplings.
- **ISO 7005-1**  
Metal flanges; part 1: steel flanges.

- **JIS B 2220**

Steel pipe flanges.

- **UNI 11318**

Socket welding of PP-H components.

- **UNI 11397**

Butt welding of PP-H components.

# APPROVALS AND QUALITY MARKS



- **DIBt**

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



- **GOST-R - EAC**

FIP PP-H valves are GOST-R and EAC certified in accordance with Russian regulations on Safety, Hygiene and Quality



- **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.



- **TA-Luft**

FIP PP-H valves have been tested and certified according to "TA-Luft" by MPA Stuttgart in compliance with the Technical Instruction on Air Quality Control TA-Luft/ VDI 2440



- **UKR SEPRO**

FIP PP-H valves and fittings are certified in accordance with Ukrainian regulations on Safety and Quality

# MAIN PROPERTIES

Properties of PP-H		Benefits
<b>Thermal resistance</b>		- service range 0 °C -100 °C (see pressure/temperature regression curves)
<b>Low surface roughness</b>		- 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
<b>Chemical resistance</b>		- suitable for conveying chemicals (excellent results with salts and highly alkaline solutions)
<b>Abrasion resistance</b>		- extremely low operating costs due to its long service life
<b>Insulating</b>		- non-conductive (immune to galvanic corrosion) - no condensation problems - minimum heat loss
<b>Non-toxic</b>		- physiologically safe - environmental compatibility
<b>Easy jointing (hot socket, butt and electrofusion welding, flanging and threading)</b>		- low installation costs - possible connection with many accessories and appliances
<b>Low specific weight</b>		- 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 assembled. 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 polypropylene, nor does it influence the inner pressure resistance of the assembled pipes and fittings. The pipe to be welded must be cut, chamfered and peeled if necessary. The external surface of the pipe and the internal surface of the fitting must be carefully cleaned, and the external surfaces of the pipe and fitting can be marked with a reference notch to eliminate the risk of inadvertent rotation while the joint is setting. The next step is to insert the pipe in the female bush and the fitting in the male bush and hold them in position for the necessary heating time; when this time has elapsed, the parts must be quickly removed from the bushes and then the pipe inserted into the fitting to the full previously determined insertion length, ensuring the reference notches are correctly aligned. The two elements must be supported for approximately 15 seconds after initial insertion and then left to cool at ambient temperature without using forced air flows or water immersion.

## Procedure for hot socket welding

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

- 1) Select the female bushes and the male bushes of the required diameters, insert them and secure them to the heating plate (fig. 2).
- 2) Carefully clean the contact surfaces (fig. 3). When choosing the type of liquid detergent, use recommended products supplied by specialist producers: trichloroethane, 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 cham-

Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



fering process can be performed either after peeling or concurrently with this operation, using special calibrated tools.

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

Fig. 6



Fig. 7



Fig. 8



Fig. 11



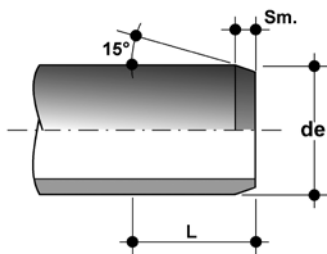
Fig. 9



Fig. 10



## PIPE PEELING AND CHAMFER DIMENSIONS



External diameter $d_e$ (mm)	Peeling length $L$ (mm)	Chamfer $Sm$ (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 $L_1$ (mm)
20	14
25	15
32	17
40	18
50	20
63	26
75	29
90	32
110	35

## HEATING, WELDING AND COOLING TIMES

$d_e$ (mm)	Minimum thickness* (mm)	Polypropylene pipes according to: DVS 2207 Part 11		
		Heating time (sec)	Welding 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	8	6
75	4.3	30	8	6
90	6.1	40	8	6
110	6.3	50	10	8

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

# 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, chloroethene, 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

Fig. 1



Fig. 2





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.

## 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, as described in the "Welding Cycle" table.

- **Contact and preheating:**

In this step, 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 lip (fig. 3). The pressure value  $p_1$  must be such that, when in contact with the heating element, the surfaces to be welded are subjected to a pressure of  $0.1 \text{ N/mm}^2$ ; 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.

- **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.

- **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  $17 \text{ }^\circ\text{C}$  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 time  $t_5$  (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. Cooling time must be at least the same as welding time  $t_5$ .

Fig. 3



Fig. 4



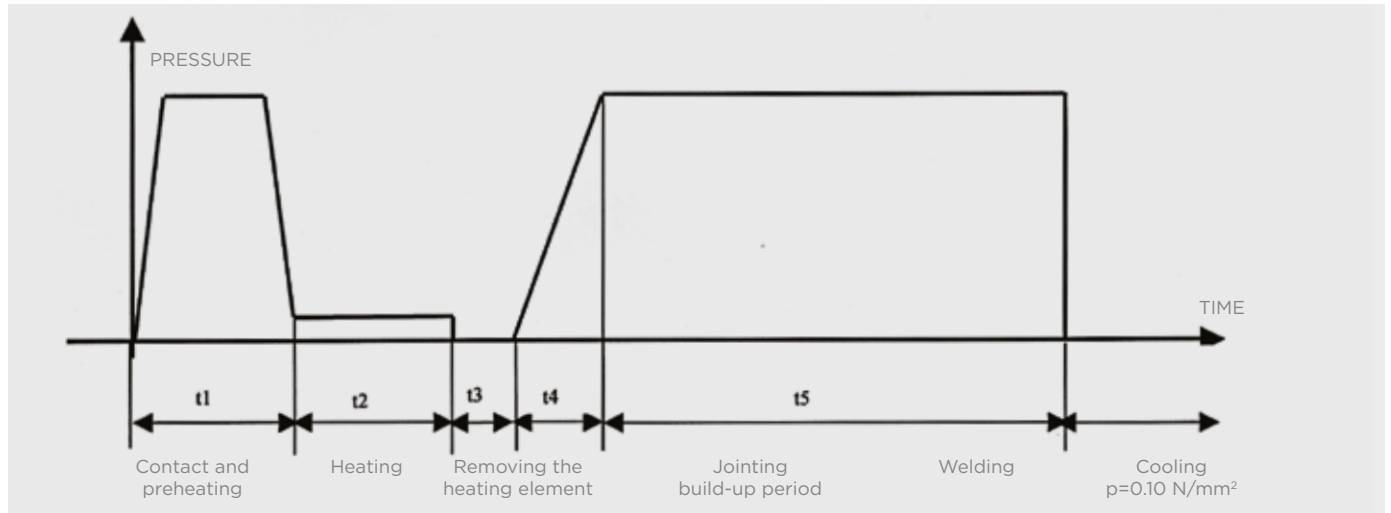
Fig. 5



Fig. 6



## WELDING CYCLE



Minimum pipe (mm)	Contact bead height (mm)	Preheating time (sec)	Heating element removal time max. (sec)	Jointing build-up period (sec)	Welding time (min)
... - 4.5	0.5	... - 135	5	6	6
4.5 - 7	0.5	135 - 175	5 - 6	6 - 7	6 - 12
7 - 12	1	175 - 245	6 - 7	7 - 11	12 - 20
12 - 19	1	245 - 330	7 - 9	11 - 17	20 - 30
19 - 26	1.5	330 - 400	9 - 11	17 - 22	30 - 40
26 - 37	2	400 - 485	11 - 14	22 - 32	40 - 55
37 - 50	2.5	485 - 560	14 - 17	32 - 43	55 - 70

## 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

<b>Possible causes</b>	Insufficiently meticulous preparation of ends to be welded with consequent uneven heat distribution
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### Reduced size of weld bead

<b>Possible causes</b>	Incorrect adjustment of welding parameters (temperature, pressure and time)
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### Notch in centre of bead is too deep

<b>Possible causes</b>	Temperature or pressure values are too low
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### Inclusions in the surface of the weld bead

<b>Possible causes</b>	Insufficient cleaning of the ends to be welded
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### Porosity of weld bead

<b>Possible causes</b>	Welding performed in excessively humid ambient conditions
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### Surface of weld bead presents an excessively smooth shiny finish

<b>Possible causes</b>	Overheating during welding
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### Misalignment exceeds 10% of the thickness of the pipe and the fitting

<b>Possible causes</b>	Incorrectly executed centring or excessive ovality of pipe
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## 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 (Table 1), 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 15494-1, 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).

## SAFETY FACTORS

Working temperature	Safety factor
10 °C < t ≤ 40 °C	1.6
40 °C < t ≤ 0 °C	1.4
t > 60 °C	1.25



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

SDR	ISO - S	Safety factor
11	5	1.6
17.6	8.3	1.6

## WALL THICKNESS

d	Wall thickness S (mm)	
	SDR 11 - ISO S 5	SDR 17.6 - ISO S 8.3
20	1.9	-
25	2.3	-
32	2.9	1.8
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	-	28.4
560	-	31.7
630	-	35.7
710	-	40.2
800	-	45.3







**ISO-UNI PIPE**  
PP-H

Pressure pipe

# PIPE ISO-UNI

Pressure pipes for connection system by butt or socket welding.

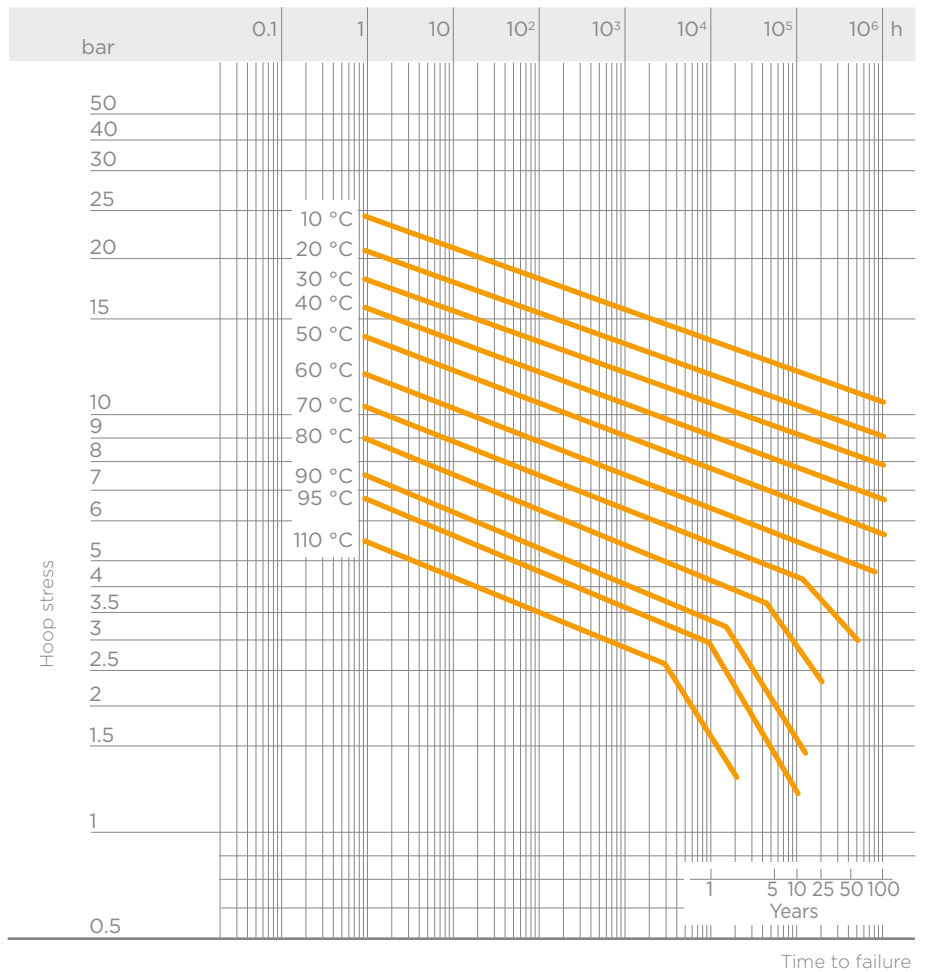
## PRESSURE PIPE

Technical specifications	
<b>Size range</b>	d 20 ÷ d 400 (mm)
<b>Nominal pressure</b>	SDR 17, 6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> EN ISO 15494 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318, UNI 11397
<b>Material</b>	PP-H

# TECHNICAL DATA

## REGRESSION CURVES FOR PIPES IN PP-H

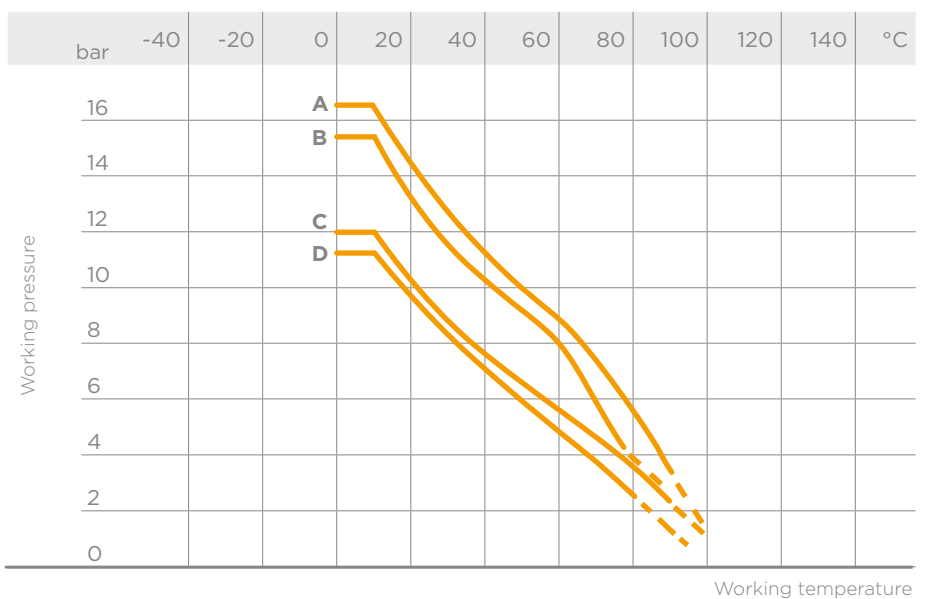
Regression coefficients in accordance with standards DIN and EN ISO for MRS = 10 N/mm<sup>2</sup>



## 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



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.

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

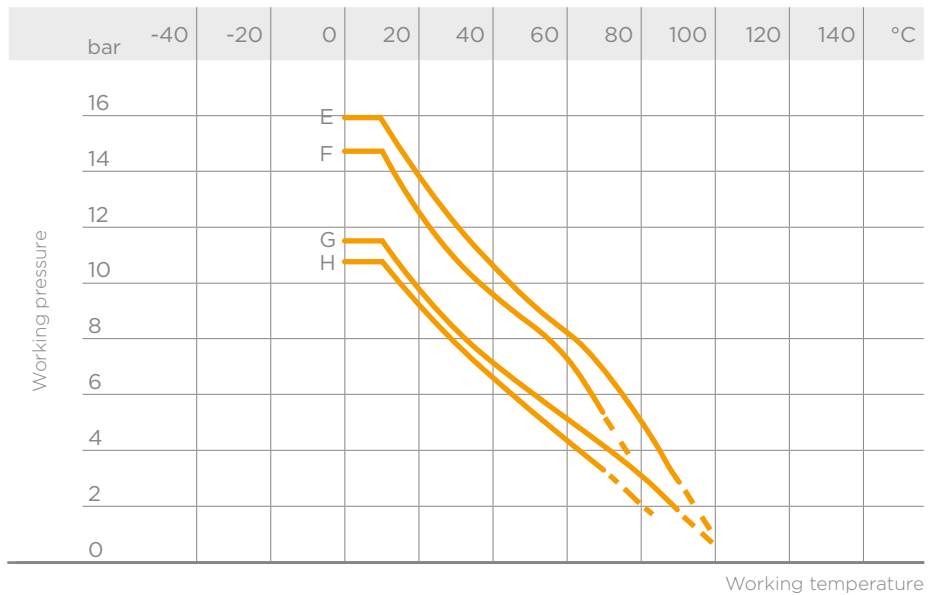
For water and non-hazardous fluids with regard to which the material is classified as CHEMICALLY RESISTANT. In other cases, a reduction of the nominal pressure PN is required.

E = SDR 11 ISO-S5 - 10 years

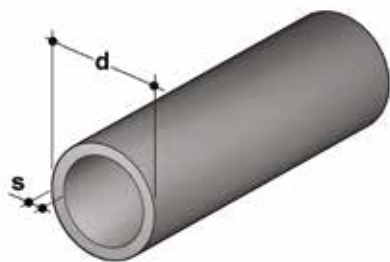
F = SDR 11 ISO-S5 - 50 years

G = SDR 17.6 ISO-S8.3 - 10 years

H = SDR 17.6 ISO-S8.3 - 50 years



# DIMENSIONS

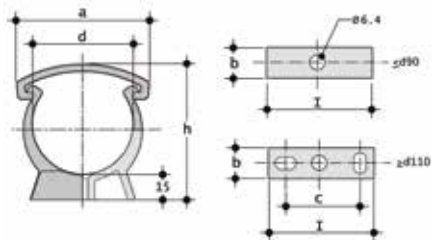


## Pressure pipe

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

d	DN	S mm	kg/m	PN6 Code SDR 17.6 - S 8.3
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

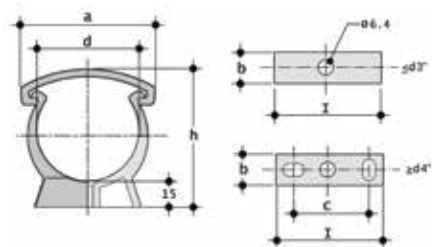
d	DN	S mm	kg/m	PN10 Code SDR 11 - S 5
20	15	1.9	0.11	PIPEM11020
25	20	2.3	0.16	PIPEM11025
32	25	2.9	0.26	PIPEM11032
40	32	3.7	0.41	PIPEM11040
50	40	4.6	0.64	PIPEM11050
63	50	5.8	1.01	PIPEM11063
75	65	6.8	1.41	PIPEM11075
90	80	8.2	2.03	PIPEM11090
110	100	10.0	3.01	PIPEM11110
125	100	11.4	3.91	PIPEM11125
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	10.00	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	40.00	PIPEM11400



**ZIKM**  
Pipe clip for ISO-DIN pipes in PP\*

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

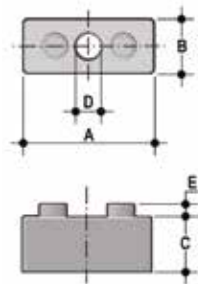
\*for pipe support systems, refer to guidelines DVS 2210-1 (Planning and execution - above-ground pipe systems)  
\*\*resale product



**ZAKM**  
Pipe clip for ASTM pipes in PP\*

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

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



**DSM**  
Spacers in PP for ZIKM pipe clips\*

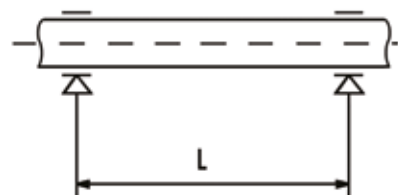
d	A	B	C	D	E	Pack	Master	Code
**32	33	16	14	8	4	20	120	DSM032
**40	41	17	17	8	4	10	80	DSM040
**50	51	18	17	8	4	10	50	DSM050
**63	64	19	22.5	8	4	10	40	DSM063
**75	76	20	34.5	8	4	10	40	DSM075

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



# INSTALLATION

## POSITIONING OF ZIKM AND ZAKM PIPE CLIPS



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

### Supporting PP-H pipes conveying liquids of density 1 g/cm<sup>3</sup> (water and other fluids of equal intensity)

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

d mm	distance L in mm at different wall temperatures*						
	≤ 20° C	30° C	40° C	50° C	60° C	70° C	80° C
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	1450	1400	1350	1300	1250
90	1650	1600	1550	1500	1450	1400	1350
110	1850	1800	1750	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/cm<sup>3</sup>.

If the liquid being conveyed has a density other than 1 g/cm<sup>3</sup>, the distance L must be multiplied by the factors in the table

Fluid density in g/cm <sup>3</sup>	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  
PP-H**

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

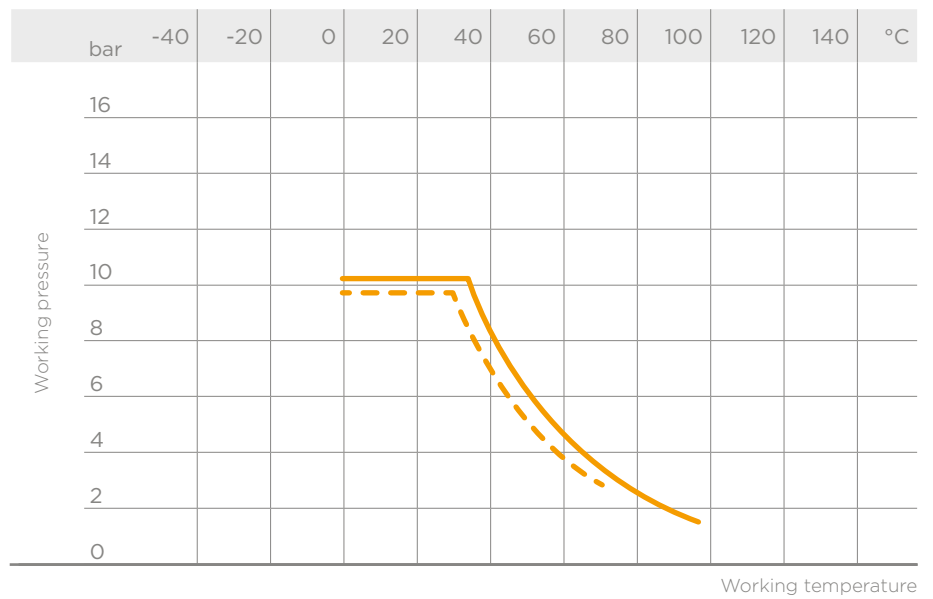
Technical specifications	
<b>Size range</b>	d 20 ÷ d 110 (mm)
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> EN ISO 15494 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Fitting material</b>	PP-H
<b>Seal material</b>	EPDM, FPM

# TECHNICAL DATA

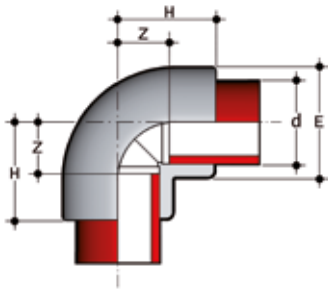
## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.

- 10 years
- - - 50 years

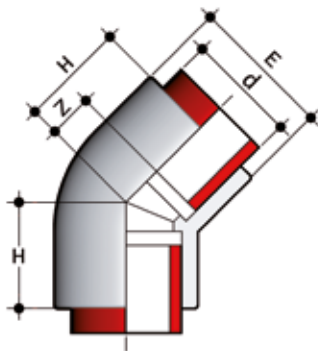


# DIMENSIONS



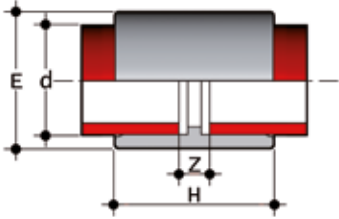
**GIM**  
90° elbow for socket welding

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



**HIM**  
45° elbow for socket welding

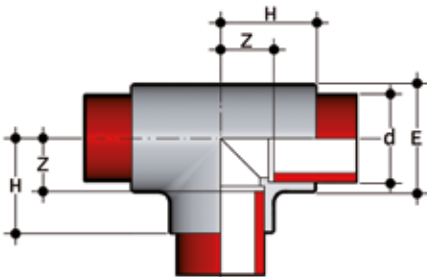
d	E	H	Z	g	Code
20	28	21	7	12	HIM020
25	34	25	9	19	HIM025
32	42	29	12	33	HIM032
40	52	36	15	57	HIM040
50	63	43	19	105	HIM050
63	79	51	24	182	HIM063
75	92	53	20	240	HIM075
90	113	61	23.5	430	HIM090
110	135	71	28	660	HIM110



### MIM

End connector for socket welding

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

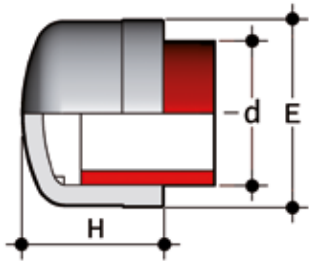


### TIM

90° Tee for socket welding

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

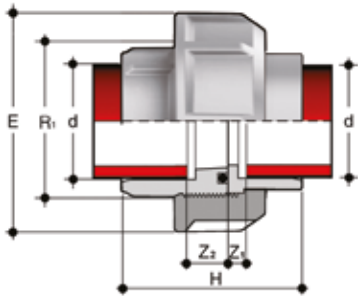




## CIM

End cap for socket welding

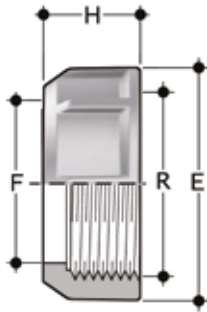
d	H	L	g	Code
20	28	25	7	CIM020
25	34	27	11	CIM025
32	42	32	19	CIM032
40	51	36	31	CIM040
50	63	41	50	CIM050
63	78	44	88	CIM063
75	91	48	116	CIM075
90	109	65	212	CIM090
110	132	71	349	CIM110



## BIGM

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

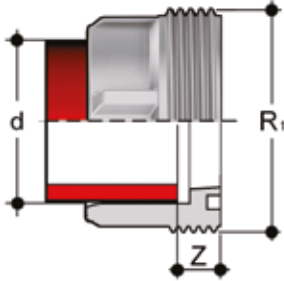
d	R <sub>1</sub>	PN	E	H	Z <sub>1</sub>	Z <sub>2</sub>	g	EPDM Code	FPM Code
20	1"	10	47	45.5	12	5.5	34	BIGM020E	BIGM020F
25	1"1/4	10	58	49.5	12	5.5	59	BIGM025E	BIGM025F
32	1"1/2	10	65	53.5	12	5.5	73	BIGM032E	BIGM032F
40	2"	10	78	59.5	14	5.5	115	BIGM040E	BIGM040F
50	2"1/4	10	85	67.5	16	5.5	146	BIGM050E	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

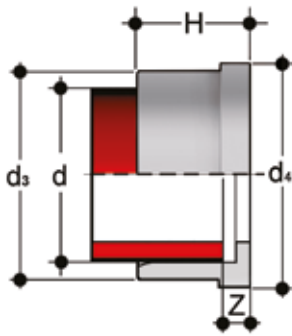
R	d BIGM	PN	E	F	H	g	Code
1"	20	10	47	28	22	19	EFGM100
1"1/4	25	10	58	36	25	29	EFGM114
1"1/2	32	10	65	42	27	40	EFGM112
2"	40	10	78	53	30	57	EFGM200
2"1/4	50	10	85	59	33	74	EFGM214
2"3/4	63	10	103	74	38	119	EFGM234



## F/BIGM

Union bush for socket welding, metric series

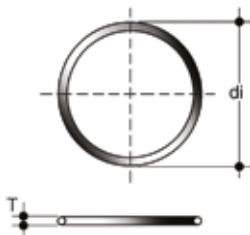
d	R <sub>1</sub>	PN	Z	g	Code
20	1"	10	12	10	FBIGM020
25	1"1/4	10	12	17	FBIGM025
32	1"1/2	10	12	24	FBIGM032
40	2"	10	14	39	FBIGM040
50	2"1/4	10	16	47	FBIGM050
63	2"3/4	10	18	89	FBIGM063



## Q/BIGM

Union end for socket welding, metric series

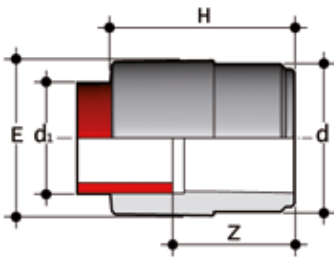
d	PN	d <sub>3</sub>	d <sub>4</sub>	H	Z	g	Code
20	10	27.5	30.1	19.5	5.5	7	QBIGM020
25	10	36	38.8	21.5	5.5	14	QBIGM025
32	10	41.5	44.7	23.5	5.5	17	QBIGM032
40	10	53	56.5	25.5	5.5	30	QBIGM040
50	10	59	62.6	28.5	5.5	30	QBIGM050
63	10	74	78.4	32.5	5.5	51	QBIGM063



## O-Ring

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

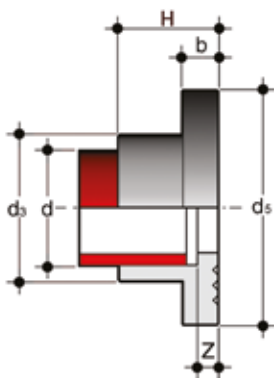
d Union	C	di	T	EPDM Code	FPM Code
16	3062	15.54	2.62	OR3062E	OR3062F
20	4081	20.22	3.53	OR4081E	OR4081F
25	4112	28.17	3.53	OR4112E	OR4112F
32	4131	32.93	3.53	OR4131E	OR4131F
40	6162	40.65	5.34	OR6162E	OR6162F
50	6187	47	5.34	OR6187E	OR6187F
63	6237	59.69	5.34	OR6237E	OR6237F
75	6300	75.57	5.34	OR6300E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



## RIM

Reducer: spigot (d), reduced socket for socket welding (d<sub>1</sub>)

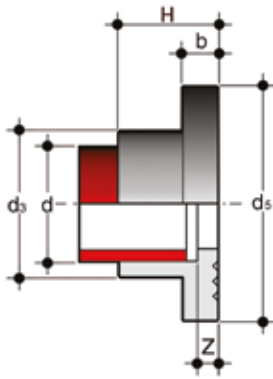
d x d <sub>1</sub>	E	H	Z	g	Code
25 x 20	28	39	25	10	RIM025020
32 x 20	36	43	30	13	RIM032020
32 x 25	34	46	30	17	RIM032025
40 x 25	42	48	33	24	RIM040025
40 x 32	42	51	33	27	RIM040032
50 x 32	52	54	36	39	RIM050032
50 x 40	52	57	36	44	RIM050040
63 x 32	65	61	44	69	RIM063032
63 x 50	65	68	44	76	RIM063050
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 ODB

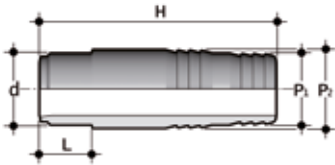
d	DN	b	d <sub>3</sub>	d <sub>4</sub>	H	Z	g	Code
20	15	7	27	45	20	6	12	QRNM020
25	20	9	33	58	22	6	24	QRNM025
32	25	10	41	68	25	6	36	QRNM032
40	32	11	50	78	27	6	47	QRNM040
50	40	12	61	88	30	6	63	QRNM050
63	50	14	76	102	34	6	94	QRNM063
75	65	16	90	122	38	6	149	QRNM075
90	80	17	108	138	44	8	213	QRNM090
110	100	18	131	158	50	8	297	QRNM110



## GRAM

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

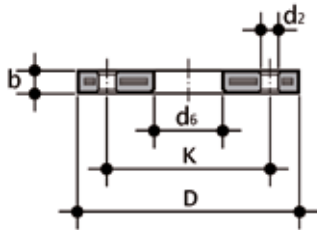
d	DN	OAB size	b	d <sub>3</sub>	d <sub>5</sub>	H	Z	g	Code
25	20	3/4"	9	33	54	22	6	24	GRAM034
32	25	1"	10	41	63	25	6	36	GRAM100
40	32	1"1/4	11	50	72	27	6	47	GRAM114
50	40	1"1/2	12	61	82	30	6	63	GRAM112
90	80	3"	17	108	132	44	8	213	GRAM300



## AIM

Hose adaptor with male end for socket welding

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



## ODB

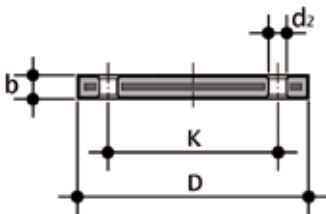
Steel core backing ring, PP/FRP coated, according to EN/ISO/DIN for stub QRNM.  
Drilling: PN 10/16

d	DN	*PMA (bar)	b	d <sub>2</sub>	d <sub>6</sub>	D	K	M	n	** (Nm)	g	Code
20	15	16	12	14	28	95	65	M12	4	15	290	ODB020
25	20	16	14	14	34	105	75	M12	4	15	410	ODB025
32	25	16	16	14	42	115	85	M12	4	15	610	ODB032
40	32	16	16	18	51	140	100	M16	4	20	880	ODB040
50	40	16	16	18	62	150	110	M16	4	30	810	ODB050
63	50	16	19	18	78	165	125	M16	4	35	940	ODB063
75	65	16	19	18	92	188	145	M16	4	40	1210	ODB075
90	80	16	21	18	109	200	160	M16	8	40	1480	ODB090
***125	100	16	20	18	134	220	180	M16	8	45	1570	ODB125

\*PMA maximum admissible working pressure

\*\*nominal tightening torque

\*\*\*d125: for stubs QRNM d 110



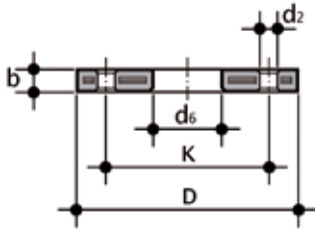
## ODBC

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

d	DN	*PMA (bar)	b	d <sub>2</sub>	D	K	M	n	** (Nm)	g	Code
20	15	16	12	14	95	65	M12	4	15	290	ODBC020
25	20	16	12	14	105	75	M12	4	15	390	ODBC025
32	25	16	16	14	115	85	M12	4	15	550	ODBC032
40	32	16	16	18	140	100	M16	4	25	820	ODBC040
50	40	16	16	18	150	110	M16	4	35	900	ODBC050
63	50	16	16	18	165	125	M16	4	35	1150	ODBC063
75	65	16	18	18	185	145	M16	4	40	1680	ODBC075
90	80	16	18	18	200	160	M16	8	40	2240	ODBC090
110	100	16	20	18	220	180	M16	8	45	2800	ODBC110

\*PMA maximum admissible working pressure

\*\*nominal tightening torque

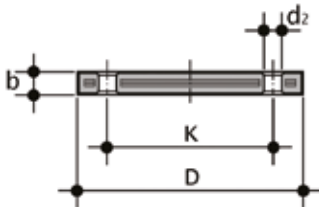


## OAB

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

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

\*PMA maximum admissible working pressure  
 \*\*nominal tightening torque

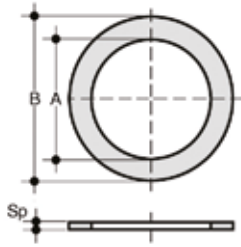


## OABC

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

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

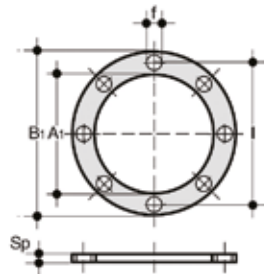
\*PMA maximum admissible working pressure  
 \*\*nominal tightening torque



## QHV/X

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

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



## QHV/Y

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

d	DN	A <sub>1</sub>	B <sub>1</sub>	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**  
PP-H

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

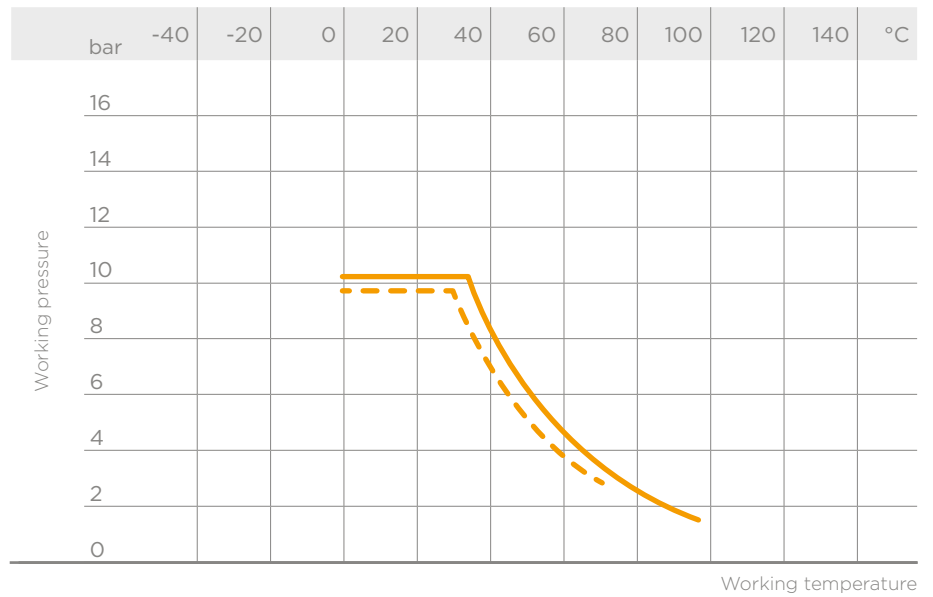
Technical specifications	
<b>Size range</b>	d 20 ÷ 63 (mm); R 3/8" ÷ 2"
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> EN ISO 15494 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM, FPM

# TECHNICAL DATA

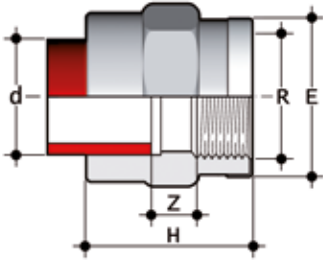
## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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.

- 10 years
- - - 50 years



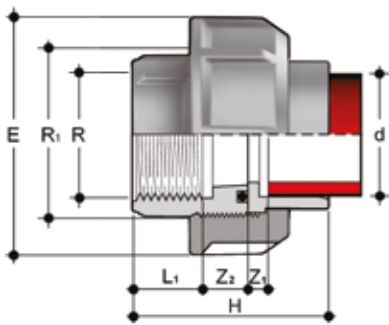
# DIMENSIONS



## MIMM

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

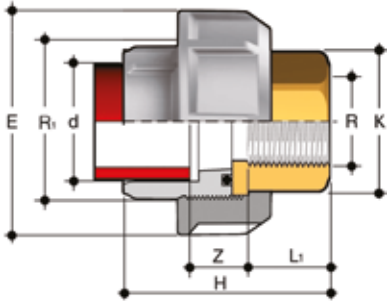
d x R	E	H	Z	g	Code
20 x 1/2"	30	39	8	14	MIMMO20012
25 x 3/4"	39	41	8	23	MIMMO25034
32 x 1"	47	45	7	40	MIMMO32100
40 x 1" 1/4	55	50	8	46	MIMMO40114
50 x 1" 1/2	66	55	9	92	MIMMO50112
63 x 2"	83	63	9	150	MIMMO63200



## BIFGM

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

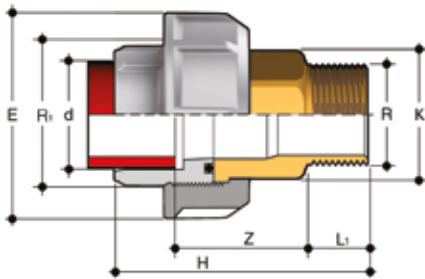
d x R	R <sub>1</sub>	PN	E	H	L <sub>1</sub>	Z <sub>1</sub>	Z <sub>2</sub>	g	EPDM Code	FPM Code
20 x 1/2"	1"	10	47	50.5	15	5.5	16	43	BIFGM020012E	BIFGM020012F
25 x 3/4"	1" 1/4	10	58	54.5	16.3	5.5	16.7	68	BIFGM025034E	BIFGM025034F
32 x 1"	1" 1/2	10	65	59.5	19.1	5.5	16.9	94	BIFGM032100E	BIFGM032100F
40 x 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

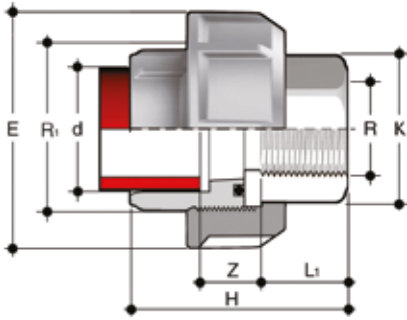
d x R	R <sub>1</sub>	PN	E	H	K	L <sub>1</sub>	Z	g	EPDM Code
20 x 1/2"	1"	10	47	48.5	25	16.5	18	89	BIFOM020012E
25 x 3/4"	1 1/4"	10	58	53.5	32	18.5	19	159	BIFOM025034E
32 x 1"	1 1/2"	10	65	57.5	38	19.5	20	180	BIFOM032100E
40 x 1 1/4"	2"	10	78	64.5	48	21.5	23	357	BIFOM040114E
50 x 1 1/2"	2 1/4"	10	85	78.5	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

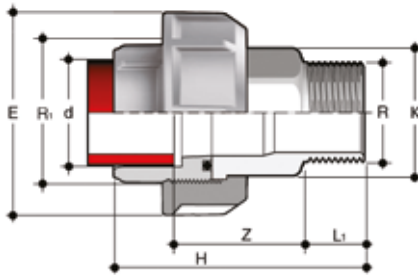
d x R	R <sub>1</sub>	PN	E	H	K	L <sub>1</sub>	Z	g	EPDM Code
20 x 1/2"	1"	10	47	65	25	13.5	37.5	134	BIROM020012E
25 x 3/4"	1 1/4"	10	58	71.5	32	15	40.5	227	BIROM025034E
32 x 1"	1 1/2"	10	65	78	38	17.5	42.5	287	BIROM032100E
40 x 1 1/4"	2"	10	78	87	48	19.5	47.5	534	BIROM040114E
50 x 1 1/2"	2 1/4"	10	85	95	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 FPM

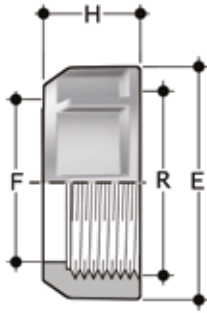
d x R	R <sub>1</sub>	PN	E	H	K	L <sub>1</sub>	Z	g	EPDM Code	FPM Code
20 x 1/2"	1"	10	47	48.5	25	16.5	18	82	BIFXM020012E	BIFXM020012F
25 x 3/4"	1 1/4"	10	58	53.5	32	18.5	19	146	BIFXM025034E	BIFXM025034F
32 x 1"	1 1/2"	10	65	57.5	38	19.5	20	165	BIFXM032100E	BIFXM032100F
40 x 1 1/4"	2"	10	78	64.5	48	21.5	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 FPM

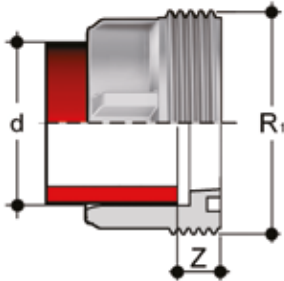
d x R	R <sub>1</sub>	PN	E	H	K	L <sub>1</sub>	Z	g	EPDM Code	FPM Code
20 x 1/2"	1"	10	47	65	25	13.5	37.5	123	BIRXM020012E	BIRXM020012F
25 x 3/4"	1 1/4"	10	58	71.5	32	15	40.5	208	BIRXM025034E	BIRXM025034F
32 x 1"	1 1/2"	10	65	78	38	17.5	42.5	263	BIRXM032100E	BIRXM032100F
40 x 1 1/4"	2"	10	78	87	48	19.5	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

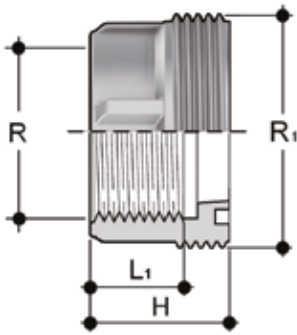


## F/BIGM

Union bush for socket welding, metric series

d	R <sub>1</sub>	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

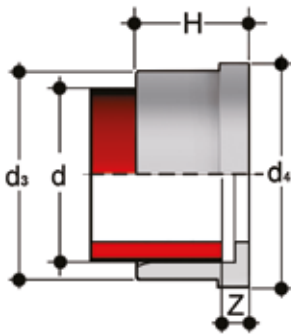




## F/BFGM

Union bush with BSP female thread

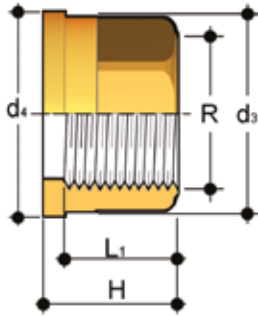
R	R <sub>1</sub>	PN	H	L <sub>1</sub>	g	Code
1/2"	1"	10	31	15	15	FBFGM012
3/4"	1 1/4"	10	33	16.3	21	FBFGM034
1"	1 1/2"	10	36	19.1	35	FBFGM100
1 1/4"	2"	10	41	21.4	55	FBFGM114
1 1/2"	2 1/4"	10	45	21.4	75	FBFGM112
2"	2 3/4"	10	50	25.7	105	FBFGM200



## Q/BIGM

Union end for socket welding, metric series

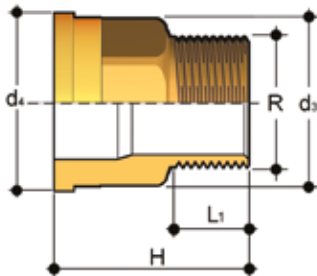
d	PN	d <sub>3</sub>	d <sub>4</sub>	H	Z	g	Code
20	10	27.5	30.1	19.5	5.5	7	QBIGM020
25	10	36	38.8	21.5	5.5	14	QBIGM025
32	10	41.5	44.7	23.5	5.5	17	QBIGM032
40	10	53	56.5	25.5	5.5	30	QBIGM040
50	10	59	62.6	28.5	5.5	30	QBIGM050
63	10	74	78.4	32.5	5.5	51	QBIGM063



## Q/BFO

Union end in brass with BSP female thread

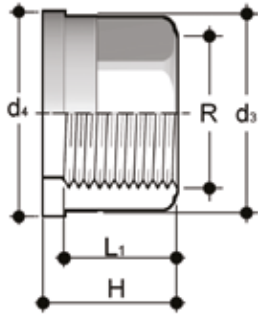
R	d <sub>3</sub>	d <sub>4</sub>	H	L <sub>1</sub>	g	Code
3/8"	22	24	21.5	13.5	38	QBFO038
1/2"	27.5	30.1	22.5	16.5	60	QBFO012
3/4"	36	38.8	25.5	18.5	116	QBFO034
1"	41.5	44.7	27.5	19.5	144	QBFO100
1 1/4"	53	56.5	30.5	21.5	260	QBFO114
1 1/2"	59	62.6	33.5	23	325	QBFO112
2"	74	78.4	38.5	27	578	QBFO200



## Q/BRO

Union end in brass with BSP male thread

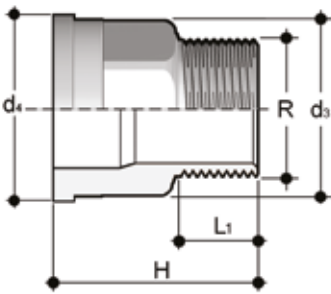
R	d <sub>3</sub>	d <sub>4</sub>	H	L <sub>1</sub>	g	Code
3/8"	22	24	34.5	10.5	64	QBRO038
1/2"	27.5	30.1	39	13.5	105	QBRO012
3/4"	36	38.8	43.5	15	184	QBRO034
1"	41.5	44.7	48	17.5	251	QBRO100
1 1/4"	53	56.5	53	19.5	437	QBRO114
1 1/2"	59	62.6	56	19.5	545	QBRO112
2"	74	78.4	65.5	24	937	QBRO200



### Q/BFX

Union end in A316L STAINLESS steel with female BSP thread

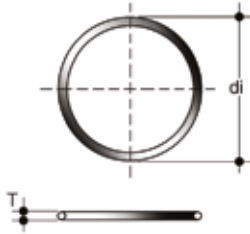
R	d <sub>3</sub>	d <sub>4</sub>	H	L <sub>1</sub>	g	Code
3/8"	22	24	21.5	13.5	34	QBFX038
1/2"	27.5	30.1	22.5	16.5	54	QBFX012
3/4"	36	38.8	25.5	18.5	104	QBFX034
1"	41.5	44.7	27.5	19.5	130	QBFX100
1 1/4"	53	56.5	30.5	21.5	234	QBFX114
1 1/2"	59	62.6	33.5	23	293	QBFX112
2"	74	78.4	38.5	27	520	QBFX200



### Q/BRX

Union end in A316L STAINLESS steel with male BSP thread

R	d <sub>3</sub>	d <sub>4</sub>	H	L <sub>1</sub>	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 BIC, BIFC, BIFOC, BIFXC, BIRXC

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





**FITTINGS  
FOR BUTT WELDING**  
PP-H

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	
<b>Size range</b>	d 20 ÷ d 400 (mm)
<b>Nominal pressure</b>	SDR 17, 6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> EN ISO 15494 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11397
<b>Fitting material</b>	PP-H
<b>Seal material</b>	EPDM, FPM

# 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

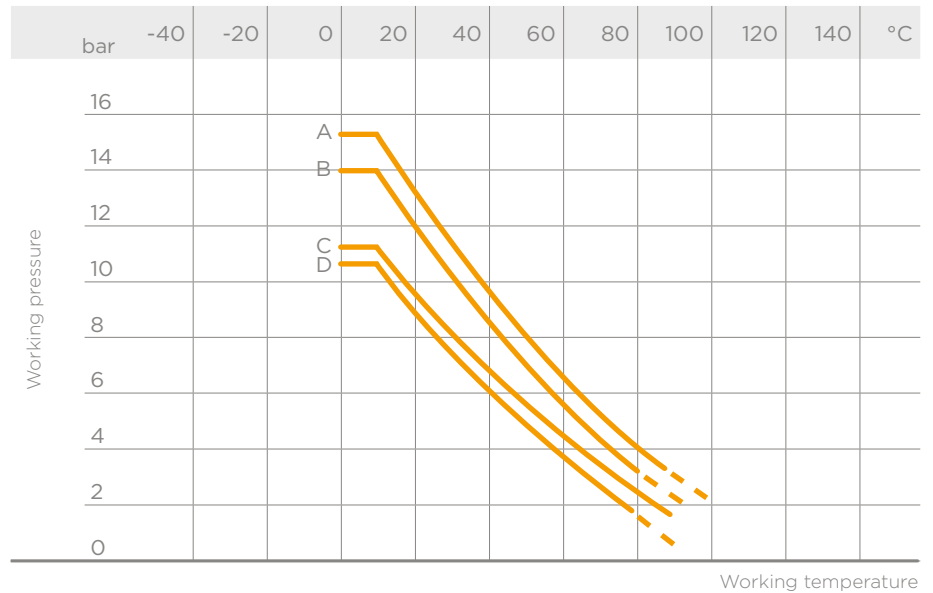
B = SDR 11 ISO-S5 - 25 years

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

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

Permissible internal pressure for PP-H fittings for butt welding according to DIN 16962.

Safety factor = 1.7



## 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.

E = SDR 11 ISO-S5 - 10 years

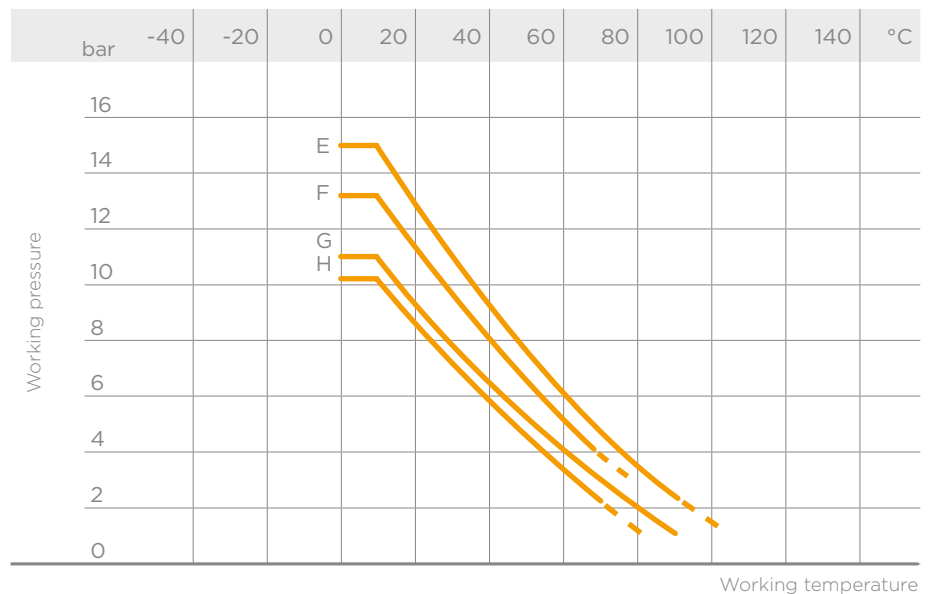
F = SDR 11 ISO-S5 - 50 years

G = SDR 17.6 ISO-S8.3 - 10 years

H = SDR 17.6 ISO-S8.3 - 50 years

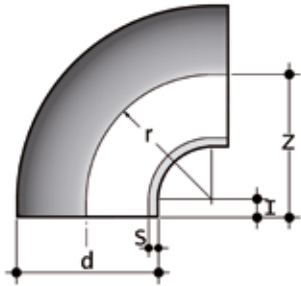
Permissible internal pressure for fittings for butt welding according to DIN 16962 and for PP-H pipes according to DIN 8077.

Safety factor = 1.7



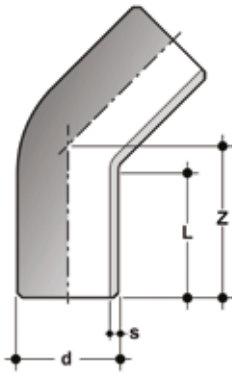


# DIMENSIONS



**GBM**  
90° bend, short spigot for butt welding

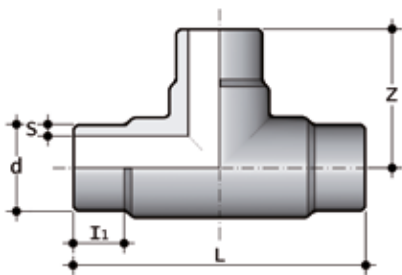
d	l	r	Z	SDR 17.6 - S 8.3		SDR 11 - S 5		Code SDR 17.6 - S 8.3	Code SDR 11 - S 5
				s	g	s	g		
20	3	24	27	-	-	1.9	5	-	GBM11020
25	5	27	32	-	-	2.3	9	-	GBM11025
32	5	35	40	-	-	2.9	17	-	GBM11032
40	7	44	51	2.3	27	3.7	36	GBM17040	GBM11040
50	7	55	62	2.9	47	4.6	66	GBM17050	GBM11050
63	8	69	77	3.6	89	5.8	124	GBM17063	GBM11063
75	10	75	85	4.3	152	6.8	210	GBM17075	GBM11075
90	10	90	100	5.1	245	8.2	355	GBM17090	GBM11090
110	10	110	120	6.3	422	10	616	GBM17110	GBM11110
125	15	125	140	7.1	652	11.4	945	GBM17125	GBM11125
140	15	140	155	8	900	12.7	1300	GBM17140	GBM11140
160	15	160	175	9.1	1231	14.6	1870	GBM17160	GBM11160
180	15	180	195	10.2	1875	16.4	2767	GBM17180	GBM11180
200	15	200	215	11.4	2423	18.2	3604	GBM17200	GBM11200
225	20	225	245	12.8	3469	20.5	5292	GBM17225	GBM11225
250	25	250	275	14.2	4568	22.7	7210	GBM17250	GBM11250
280	30	280	310	15.9	6550	25.4	10020	GBM17280	GBM11280
315	35	315	350	17.9	9728	28.6	13965	GBM17315	GBM11315
355	40	300	340	21.1	11320	32.2	17040	GBM17355	GBM11355
400	49	300	349	23.7	14580	36.3	21980	GBM17400	GBM11400



## HBM

45° bend, long spigot for butt welding

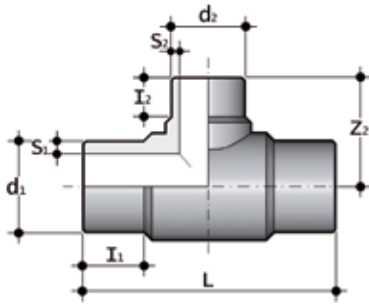
d	L	Z	SDR 17.6 - S 8.3		L	Z	s	SDR 11 - S 5		Code SDR 17.6 - S 8.3	Code SDR 11 - S 5
			s	g				g			
20	-	-	-	-	39	44	1.9	10	-	HBM11020	
25	-	-	-	-	42	48	2.3	16	-	HBM11025	
32	-	-	-	-	49	57	2.9	33	-	HBM11032	
40	-	-	-	-	53	63	3.7	51	-	HBM11040	
50	-	-	-	-	57	70	4.6	91	-	HBM11050	
63	66	80	3.8	110	67	80	5.8	169	HBM17063	HBM11063	
75	70	90	4.5	175	72.5	90	6.8	259	HBM17075	HBM11075	
90	79	101	5.4	291	82	104	8.2	422	HBM17090	HBM11090	
110	82	112	6.6	481	85	114	10	668	HBM17110	HBM11110	
125	99.5	130.5	7.4	670	99.5	132.5	11.4	1015	HBM17125	HBM11125	
140	102	137	8.3	847	100	136	12.7	1340	HBM17140	HBM11140	
160	116.5	156.5	9.5	1280	116.5	156.5	14.6	1960	HBM17160	HBM11160	
180	133.5	178.5	10.7	1960	131.5	176.5	16.4	2780	HBM17180	HBM11180	
200	122.5	166	11.9	2200	120.5	170.5	18.2	3440	HBM17200	HBM11200	
225	128	184	13.4	3040	128	182.5	20.5	4660	HBM17225	HBM11225	
250	160	217	14.8	4580	160	217	22.7	6760	HBM17250	HBM11250	
280	175	232	16.6	6200	173	243	25.4	8940	HBM17280	HBM11280	
315	180	251	18.7	8320	179	256	28.6	12260	HBM17315	HBM11315	



## TBM

90° Tee, short spigot for butt welding

d	l <sub>1</sub>	L	Z	SDR 17.6 - S 8.3		SDR 11 - S 5		Code SDR 17.6 - S8.3	Code SDR 11 - S5
				s	g	s	g		
20	8	50	25	-	-	1.9	11	-	TBM11020
25	10	60	30	-	-	2.3	15	-	TBM11025
32	12	80	40	-	-	2.9	30	-	TBM11032
40	16	88	44	2.3	40	3.7	55	TBM17040	TBM11040
50	21	116	58	2.9	80	4.6	115	TBM17050	TBM11050
63	24	146	73	3.6	175	5.8	230	TBM17063	TBM11063
75	28	170	85	4.3	295	6.8	390	TBM17075	TBM11075
90	23	200	100	5.1	480	8.2	645	TBM17090	TBM11090
110	43	240	120	6.3	790	10	1040	TBM17110	TBM11110
125	26	250	125	7.1	1150	11.4	1480	TBM17125	TBM11125
140	32	280	140	8	1455	12.7	2060	TBM17140	TBM11140
160	40	320	160	9.1	2170	14.6	2925	TBM17160	TBM11160
180	73	390	195	10.2	3315	16.4	4665	TBM17180	TBM11180
200	64	430	215	11.4	4600	18.2	6470	TBM17200	TBM11200
225	72	490	245	12.8	6530	20.5	9220	TBM17225	TBM11225
250	86	550	275	14.2	8145	22.7	12650	TBM17250	TBM11250
280	105	620	310	15.9	13000	25.4	18205	TBM17280	TBM11280
315	111	700	350	17.9	18375	28.6	25700	TBM17315	TBM11315
355	105	690	345	21.1	19700	32.2	30620	TBM17355	TBM11355
400	103	700	355	23.7	27740	36.3	38760	TBM17400	TBM11400

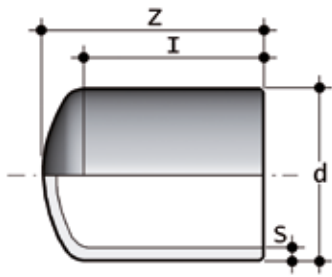


## TRBM

90° reducing Tee, short spigot for butt welding

d <sub>1</sub>	d <sub>2</sub>	SDR 17.6 - S 8.3								SDR 11 - S 5				Code			
		l <sub>1</sub>	l <sub>2</sub>	L	s <sub>1</sub>	s <sub>2</sub>	Z <sub>2</sub>	g	l <sub>1</sub>	l <sub>2</sub>	L	s <sub>1</sub>	s <sub>2</sub>	Z <sub>2</sub>	g	SDR 17.6 - S 8.3	SDR 11 - S 5
*63	50	63	56	220	3.8	3	103	210	63	56	220	5.8	4.6	103	300	TRBM17063050	TRBM11063050
*75	32	-	-	-	-	-	-	-	70	46	256	6.8	2.9	103	500	-	TRBM11075032
*75	50	70	55	253	4.5	3	113	410	70	56	253	6.8	4.6	113	510	TRBM17075050	TRBM11075050
*75	63	70	63	260	4.5	3.8	117	420	70	63	260	6.8	5.8	117	430	TRBM17075063	TRBM11075063
90	32	-	-	-	-	-	-	-	53	23	213	8.2	2.9	85	560	-	TRBM11090032
90	50	-	-	-	-	-	-	-	53	28	213	8.2	4.6	100	580	-	TRBM11090050
*90	63	79	63	275	5.4	3.8	137	570	79	64	272	8.2	5.8	139	780	TRBM17090063	TRBM11090063
*90	75	74	70	278	5.4	4.5	138	570	73	68	272	8.2	6.8	138	790	TRBM17090075	TRBM11090075
110	32	-	-	-	-	-	-	-	66	22	244	10	2.9	94	920	-	TRBM11110032
110	50	-	-	-	-	-	-	-	66	27	244	10	4.6	103	1000	-	TRBM11110050
*110	63	85	66	315	6.6	3.8	159	960	87	65	315	10	5.8	159	1210	TRBM17110063	TRBM11110063
*110	75	82	70	315	6.6	4.5	157	850	87	65	315	10	6.8	157	1180	TRBM17110075	TRBM11110075
*110	90	82	79	315	6.6	5.4	155	900	84	79	315	10	8.2	155	1240	TRBM17110090	TRBM11110090
125	63	70	31	271	7.4	3.8	112	1030	70	31	278	11.4	5.8	112	1360	TRBM17125063	TRBM11125063
*125	90	-	-	-	-	-	-	-	112	92	340	11.4	8.2	170	1640	-	TRBM11125090
*125	110	87	82	340	7.4	6.6	170	1240	90	83	340	11.4	10	169	1860	TRBM17125110	TRBM11125110
140	63	83	32	300	8.3	3.8	120	1310	83	32	305	12.7	5.8	120	1760	TRBM17140063	TRBM11140063
140	75	81	35	300	8.3	4.5	130	1400	81	35	305	12.7	6.8	130	2020	TRBM17140075	TRBM11140075
140	90	81	41	300	8.3	5.4	130	1380	81	41	305	12.7	8.2	130	1840	TRBM17140090	TRBM11140090
140	110	50	47	300	8.3	6.6	137	1640	50	47	305	12.7	10	141	2200	TRBM17140110	TRBM11140110
*160	63	98	64	347	9.5	3.8	175	1850	100	67	347	14.6	5.8	175	2640	TRBM17160063	TRBM11160063
*160	75	98	75	348	9.5	4.5	179	1910	101	76	348	14.6	6.8	180	2600	TRBM17160075	TRBM11160075
*160	90	100	81	349	9.5	5.4	182	1940	101	80	349	14.6	8.2	182	2640	TRBM17160090	TRBM11160090
*160	110	98	85	400	9.5	6.6	202	2360	98	83	400	14.6	10	202	3220	TRBM17160110	TRBM11160110
160	125	58	47	315	9.5	7.4	150	2040	59	48	325	14.6	11.4	150	2730	TRBM17160125	TRBM11160125
180	63	125	30	358	10.7	3.8	134	2060	125	30	358	16.4	5.8	134	3040	TRBM17180063	TRBM11180063
180	75	112	30	360	10.7	4.5	140	2100	112	30	352	16.4	6.8	140	3020	TRBM17180075	TRBM11180075
*180	90	134	97	420	10.7	5.4	200	2800	136	95	395	16.4	8.2	202	4240	TRBM17180090	TRBM11180090
180	110	106	48	365	10.7	6.6	158	2160	-	-	-	-	-	-	-	TRBM17180110	-
*180	110	-	-	-	-	-	-	-	140	98	395	16.4	10	210	4580	-	TRBM11180110
180	125	92	50	358	10.7	7.4	156	2240	96	101	366	16.4	11.4	166	3240	TRBM17180125	TRBM11180125
*180	160	105	91	412	10.7	9.5	204	3070	105	94	411	16.4	14.6	205	4390	TRBM17180160	TRBM11180160
*200	63	134	80	550	11.9	3.8	225	4960	145	32	388	18.2	5.8	144	6710	TRBM1720063	TRBM1120063
*200	90	134	95	550	11.9	5.4	227	4900	125	38	388	18.2	8.2	163	6680	TRBM1720090	TRBM1120090
*200	110	134	103	560	11.9	6.6	245	5110	120	40	388	18.2	10	160	6940	TRBM17200110	TRBM11200110
*200	125	134	110	550	11.9	7.4	240	5060	115	43	388	18.2	11.4	165	6920	TRBM17200125	TRBM11200125
*200	160	134	114	550	11.9	9.5	265	6150	98	53	388	18.2	14.6	178	8180	TRBM17200160	TRBM11200160
*225	75	120	75	451	13.4	4.5	226	4630	120	75	451	20.5	6.8	227	6560	TRBM1722575	TRBM1122575
*225	90	120	79	450	13.4	5.4	224	4820	120	79	450	20.5	8.2	225	6620	TRBM1722590	TRBM1122590
*225	110	120	86	449	13.4	6.6	226	4960	120	85	449	20.5	10	227	6520	TRBM17225110	TRBM11225110
225	125	135	40	445	13.4	7.4	180	4190	135	40	456	20.5	11.4	178	6120	TRBM17225125	TRBM11225125
*225	160	120	98	498	13.4	9.5	250	6130	101	98	498	20.5	14.6	247	8280	TRBM17225160	TRBM11225160
*225	180	134	134	558	13.4	10.7	280	7100	135	135	558	20.5	16.4	280	9540	TRBM17225180	TRBM11225180
250	110	135	38	455	14.8	6.6	197	5420	135	38	450	22.7	10	197	7700	TRBM17250110	TRBM17250110
250	160	110	58	450	14.8	9.5	219	5620	110	58	458	22.7	14.6	213	8040	TRBM17250160	TRBM17250160

\* long spigot

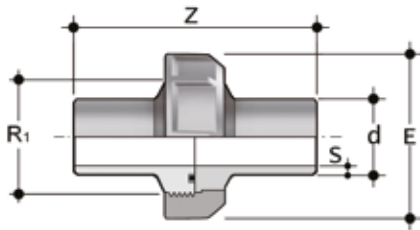


## CBM

Long spigot end cap for butt welding

d	I	S	SDR 17.6 - S 8.3		I	S	SDR 11 - S 5		Code SDR 17.6 - S 8.3	Code SDR 11 - S 5
			Z	g			Z	g		
20	-	-	-	-	35	1.9	45	10	-	CBM11020
25	-	-	-	-	40	2.3	52	10	-	CBM11025
32	-	-	-	-	44	2.9	58	20	-	CBM11032
40	-	-	-	-	50	3.7	67	30	-	CBM11040
50	-	-	-	-	55	4.6	75	50	-	CBM11050
63	62	3.6	85	70	62	5.8	85	90	CBM17063	CBM11063
75	63	4.3	95	100	63	6.8	95	130	CBM17075	CBM11075
90	79	5.1	110	190	79	8.2	110	230	CBM17090	CBM11090
110	88	6.3	127	300	88	10.0	127	400	CBM17110	CBM11110
125	95	7.1	124	160	102	11.4	138	210	CBM17125	CBM11125
140	110	8.0	140	180	106	12.7	144	320	CBM17140	CBM11140
160	121	9.1	152	400	119	14.6	167	570	CBM17160	CBM11160
180	134	10.2	169	500	141	16.4	191	730	CBM17180	CBM11180
200	140	11.4	184	690	127	18.2	181	1060	CBM17200	CBM11200
225	160	12.8	200	960	141	20.5	211	1360	CBM17225	CBM11225
250	160	14.2	230	1500	152	22.7	230	3760	CBM17250	CBM11250
280	162	15.9	257	2100	162	25.4	257	5240	CBM17280	CBM11280
315	171	17.9	262	2900	180	28.6	262	6870	CBM17315	CBM11315
*355	-	-	-	-	63	32.2	124	6060	-	CBM11355
*400	-	-	-	-	72	36.3	132	8220	-	CBM11400

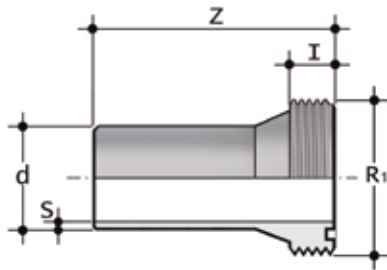
\* short spigot



### BBM-L

Long spigot union for butt welding with seal in EPDM or FPM

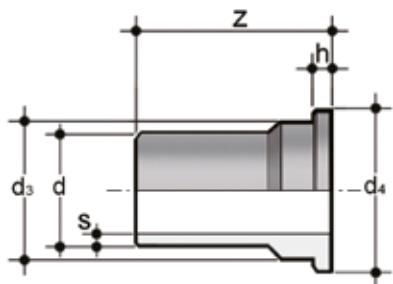
d	DN	R <sub>1</sub>	E	Z	SDR 11 - S 5 S	g	EPDM Code	FPM Code
20	15	1"	46	190	1.9	70	BBML11020E	BBML11020F
25	20	1"1/4	56	190	2.3	105	BBML11025E	BBML11025F
32	25	1"1/2	66	190	2.9	140	BBML11032E	BBML11032F
40	32	2"	79	190	3.7	210	BBML11040E	BBML11040F
50	40	2"1/4	87	190	4.6	295	BBML11050E	BBML11050F
63	50	2"3/4	107	190	5.8	480	BBML11063E	BBML11063F



### F/BBM-L

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

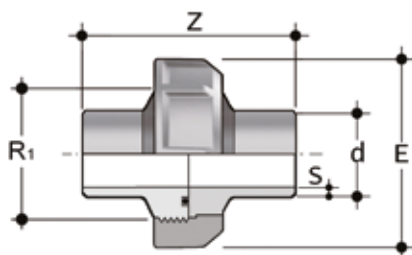
d	R <sub>1</sub>	I	SDR 11 - S 5 S	Z	g	Code
20	1"	13	1.9	95	25	FBBML11020
25	1"1/4	13	2.3	95	40	FBBML11025
32	1"1/2	14	2.9	95	50	FBBML11032
40	2"	16	3.7	95	80	FBBML11040
50	2"1/4	18	4.6	95	115	FBBML11050
63	2"3/4	20	5.8	95	185	FBBML11063
75	3"1/2	24	6.8	130	250	FBBML11075
90	4"	25	8.2	150	380	FBBML11090
110	5"	28	10	170	630	FBBML11110



### Q/BBM-L

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

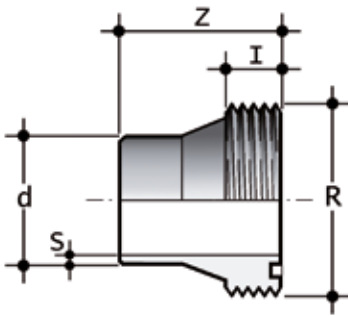
d	d <sub>3</sub>	d <sub>4</sub>	h	SDR 11 - S	5	S	Z	g	Code
20	25	29.6	5	1.9		95	20	QBBML11020	
25	33	38.5	6	2.3		95	40	QBBML11025	
32	39	44.2	6	2.9		95	45	QBBML11032	
40	51	56	7	3.7		95	75	QBBML11040	
50	57	62.2	7	4.6		95	110	QBBML11050	
63	72	77.9	8	5.8		95	160	QBBML11063	
75	83	96.7	9	6.8		130	290	QBBML11075	
90	98	109.4	10	8.2		150	357	QBBML11090	
110	118	134.8	11	10		170	630	QBBML11110	



### BBM-C

Short spigot union for butt welding with seal in EPDM or FPM

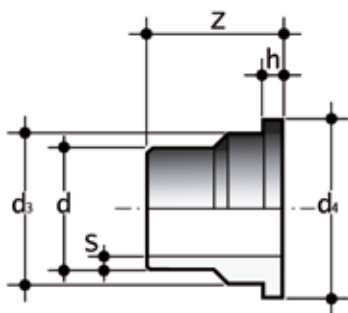
d	DN	E	Z	S	g	EPDM Code	FPM Code
20	15	46	110	1.9	80	BBMC11020E	BBMC11020F
25	20	56	110	2.3	75	BBMC11025E	BBMC11025F
32	25	66	110	2.9	120	BBMC11032E	BBMC11032F
40	32	79	110	3.7	175	BBMC11040E	BBMC11040F
50	40	87	110	4.6	240	BBMC11050E	BBMC11050F
63	50	107	110	5.8	440	BBMC11063E	BBMC11063F



### F/BBM-C

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

d	R	l	Z	R	S	g	Code
20	1"	13	55		1.9	20	FBBMC11020
25	1 1/4"	13	55		2.3	27	FBBMC11025
32	1 1/2"	14	55		2.9	40	FBBMC11032
40	2"	16	55		3.7	60	FBBMC11040
50	2 1/4"	18	55		4.6	86	FBBMC11050
63	2 3/4"	20	55		5.8	147	FBBMC11063
75	3 1/2"	24	55		6.8	200	FBBMC11075
90	4"	25	90		8.2	310	FBBMC11090
110	5"	28	90		10	600	FBBMC11110

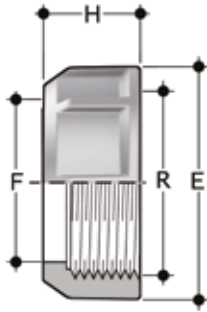


### Q/BBM-C

Union end, short spigot, for butt welding for union BBM-C

d	d <sub>3</sub>	d <sub>4</sub>	h	Z	S	g	Code
20	25	30	5	55	1.9	20	QBBMC11020
25	33.5	38.5	6	55	2.3	22	QBBMC11025
32	38	44.5	6	55	2.9	36	QBBMC11032
40	49.5	56.2	7	55	3.7	54	QBBMC11040
50	55	62.2	7	55	4.6	76	QBBMC11050
63	70	78.3	8	55	5.8	118	QBBMC11063
75	82.5	96.5	9	55	6.8	250	QBBMC11075
90	97.5	109.5	10	90	8.2	310	QBBMC11090
110	117.5	134.5	11	90	10	610	QBBMC11110

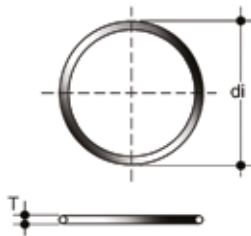




## EFGM

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

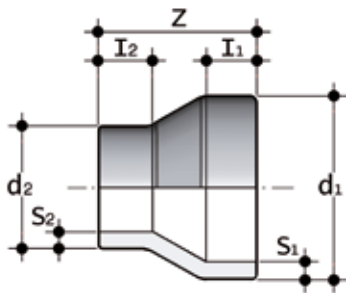
R	d BIGM	PN	E	F	H	g	Code
1"	20	10	47	28	22	19	EFGM100
1"1/4	25	10	58	36	25	29	EFGM114
1"1/2	32	10	65	42	27	40	EFGM112
2"	40	10	78	53	30	57	EFGM200
2"1/4	50	10	85	59	33	74	EFGM214
2"3/4	63	10	103	74	38	119	EFGM234



## O-Ring

Seal for union types BIV, BIFV, BFV, BLV, BIRV, BIFOV, BIROV, BIFXV, BIRXV

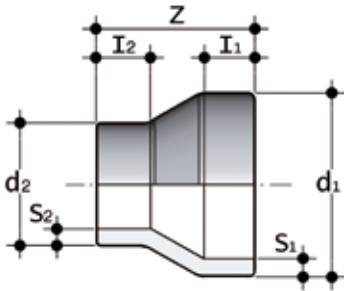
d Union	C	di	T	EPDM Code	FPM Code
16	3062	15.54	2.62	OR3062E	OR3062F
20	4081	20.22	3.53	OR4081E	OR4081F
25	4112	28.17	3.53	OR4112E	OR4112F
32	4131	32.93	3.53	OR4131E	OR4131F
40	6162	40.65	5.34	OR6162E	OR6162F
50	6187	47	5.34	OR6187E	OR6187F
63	6237	59.69	5.34	OR6237E	OR6237F
75	6300	75.57	5.34	OR6300E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



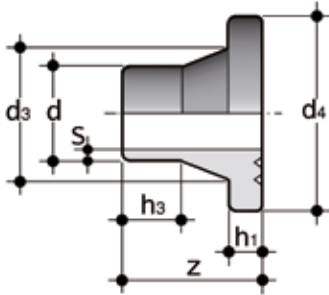
## RBM

Concentric reducer, short spigot, for butt welding

d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Z	SDR 17,6 - S 8,3			SDR 11 - S 5			Code SDR 17,6 - S 8,3	Code SDR 11 - S 5
					s <sub>1</sub>	s <sub>2</sub>	g	s <sub>1</sub>	s <sub>2</sub>	g		
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	2.3	1.9	9	3.7	1.9	13	RBM17040020	RBM11040020
40	25	12	12	50	2.3	2	10	3.7	2.3	15	RBM17040025	RBM11040025
40	32	12	12	50	2.3	2	11	3.7	3	18	RBM17040032	RBM11040032
50	25	12	12	55	2.9	2	10	4.6	2.3	23	RBM17050025	RBM11050025
50	32	12	12	55	2.9	2	17	4.6	3	25	RBM17050032	RBM11050032
50	40	12	12	55	2.9	2.3	20	4.6	3.7	29	RBM17050040	RBM11050040
63	32	16	12	65	3.6	2	32	5.8	3	43	RBM17063032	RBM11063032
63	40	16	12	65	3.6	2.3	36	5.8	3.7	50	RBM17063040	RBM11063040
63	50	16	12	65	3.6	2.9	38	5.8	4.6	55	RBM17063050	RBM11063050
75	32	19	12	80	4.3	2	55	6.8	3	70	RBM17075032	RBM11075032
75	40	19	12	71	4.3	2.3	50	6.8	3.7	71	RBM17075040	RBM11075040
75	50	19	12	71	4.3	2.9	54	6.8	4.6	79	RBM17075050	RBM11075050
75	63	19	16	71	4.3	3.6	60	6.8	5.8	89	RBM17075063	RBM11075063
90	50	22	12	80	5.1	2.9	86	8.2	4.6	125	RBM17090050	RBM11090050
90	63	22	16	80	5.1	3.6	82	8.2	5.8	129	RBM17090063	RBM11090063
90	75	22	19	80	5.1	4.3	102	8.2	6.9	155	RBM17090075	RBM11090075
110	50	28	12	105	6.3	2.9	100	10	4.6	150	RBM17110050	RBM11110050
110	63	28	16	97	6.3	3.6	100	10	5.8	200	RBM17110063	RBM11110063
110	75	28	19	97	6.3	4.3	90	10	6.9	160	RBM17110075	RBM11110075
110	90	28	22	97	6.3	5.1	160	10	8.2	140	RBM17110090	RBM11110090
125	63	30	16	112	7.1	3.6	120	11.4	5.8	180	RBM17125063	RBM11125063
125	75	32	19	108	7.1	4.3	130	11.4	6.9	200	RBM17125075	RBM11125075
125	90	32	22	108	7.1	5.1	130	11.4	8.2	200	RBM17125090	RBM11125090
125	110	32	28	108	7.1	6.3	150	11.4	10	220	RBM17125110	RBM11125110
140	75	35	19	123	8	4.3	160	12.7	6.9	240	RBM17140075	RBM11140075
140	90	35	22	115	8	5.1	170	12.7	8.2	260	RBM17140090	RBM11140090
140	110	35	28	115	8	6.3	140	12.7	10	210	RBM17140110	RBM11140110
140	125	35	32	115	8	7.1	150	12.7	11.4	220	RBM17140125	RBM11140125
160	90	40	22	135	9.1	5.1	400	14.6	8.2	700	RBM17160090	RBM11160090
160	110	40	28	124	9.1	6.3	350	14.6	10	430	RBM17160110	RBM11160110
160	125	40	32	124	9.1	7.1	400	14.6	11.4	700	RBM17160125	RBM11160125
160	140	40	35	124	9.1	8	250	14.6	12.8	370	RBM17160140	RBM11160140
180	90	45	22	157	10.2	5.1	600	16.4	8.2	660	RBM17180090	RBM11180090
180	110	45	28	157	10.2	6.3	630	16.4	10	900	RBM17180110	RBM11180110
180	125	45	32	136	10.2	7.1	370	16.4	11.4	510	RBM17180125	RBM11180125
180	140	45	35	136	10.2	8	510	16.4	12.8	610	RBM17180140	RBM11180140
180	160	45	40	136	10.2	9.1	500	16.4	14.6	700	RBM17180160	RBM11180160
200	140	50	35	154	11.4	8	750	18.2	12.8	730	RBM17200140	RBM11200140
200	160	50	40	151	11.4	9.1	670	18.2	14.6	700	RBM17200160	RBM11200160
200	180	50	45	151	11.4	10.2	920	18.2	16.4	1300	RBM17200180	RBM11200180



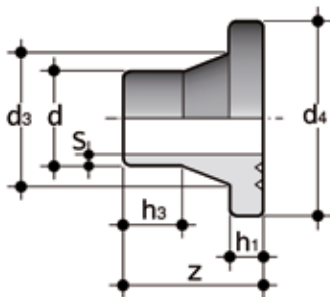
d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	Z	SDR 17.6 - S 8.3			SDR 11 - S 5			Code	Code
					s <sub>1</sub>	s <sub>2</sub>	g	s <sub>1</sub>	s <sub>2</sub>	g	SDR 17.6 - S 8.3	SDR 11 - S 5
225	140	60	50	160	12.8	8	1400	20.5	12.8	1800	RBM17225140	RBM11225140
225	160	55	40	171	12.8	9.1	700	20.5	14.6	960	RBM17225160	RBM11225160
225	180	55	45	171	12.8	10.2	580	20.5	16.4	1020	RBM17225180	RBM11225180
225	200	55	50	171	12.8	11.4	700	20.5	18.2	1200	RBM17225200	RBM11225200
250	160	60	40	194	14.2	9.1	880	22.7	14.6	1480	RBM17250160	RBM11250160
250	180	60	45	182	14.2	10.2	660	22.7	16.4	1200	RBM17250180	RBM11250180
250	200	60	50	182	14.2	11.4	730	22.7	18.2	1110	RBM17250200	RBM11250200
250	225	60	55	182	14.2	12.8	680	22.7	20.5	1040	RBM17250225	RBM11250225
280	200	85	70	200	15.9	11.4	2400	25.4	18.2	3600	RBM17280200	RBM11280200
280	225	85	72	200	15.9	12.8	2500	25.4	20.5	3700	RBM17280225	RBM11280225
280	250	85	80	200	15.9	14.2	2600	25.4	22.8	3800	RBM17280250	RBM11280250
315	200	95	85	230	17.9	11.4	3400	28.6	18.2	5100	RBM17315200	RBM11315200
315	225	95	88	230	17.9	12.8	3400	28.6	20.5	5200	RBM17315225	RBM11315225
315	250	95	95	230	17.9	14.2	3500	28.6	22.8	3500	RBM17315250	RBM11315250
315	280	95	107	230	17.9	15.9	3500	28.6	25.5	5400	RBM17315280	RBM11315280
355	200	57	40	160	20.1	11.4	3220	32.3	18.2	4400	RBM17355200	RBM11355200
355	225	57	40	140	20.1	12.8	3400	32.3	20.5	4390	RBM17355225	RBM11355225
355	250	54	40	130	20.1	14.2	2300	32.3	22.8	3560	RBM17355250	RBM11355250
355	280	53	40	120	20.1	15.9	1900	32.3	25.5	2950	RBM17355280	RBM11355280
355	315	53	40	110	20.1	17.9	1520	32.3	28.7	2170	RBM17355315	RBM11355315
400	225	64	40	160	22.7	12.8	5300	36.3	20.5	6300	RBM17400225	RBM11400225
400	250	61	40	150	22.7	14.2	4800	36.3	22.8	6000	RBM17400250	RBM11400250
400	280	60	40	140	22.7	15.9	4000	36.3	25.5	5800	RBM17400280	RBM11400280
400	315	50	40	120	22.7	17.9	3600	36.3	28.7	4800	RBM17400315	RBM11400315
400	355	51	40	110	22.7	20.1	3100	36.3	32.3	3400	RBM17400355	RBM11400355



## QBM

Short spigot stub for butt welding for backing rings ISO/DIN ODB

d	d <sub>3</sub>	d <sub>4</sub>	Z	SDR 17.6 - S 8.3				SDR 11 - S 5				Code SDR 17.6 - S 8.3	Code SDR 11 - S 5
				h <sub>1</sub>	h <sub>3</sub>	S	g	h <sub>1</sub>	h <sub>3</sub>	S	g		
20	27	45	50	-	-	-	-	7	30	1.9	15	-	QBM11020
25	33	58	50	-	-	-	-	9	26	2.3	30	-	QBM11025
32	40	68	50	-	-	-	-	10	25	2.9	45	-	QBM11032
40	50	78	50	11	24	2.3	60	11	24	3.7	66	QBM17040	QBM11040
50	61	88	50	12	23	2.9	77	12	21	4.6	87	QBM17050	QBM11050
63	75	102	50	14	18	3.6	115	14	16	5.8	129	QBM17063	QBM11063
75	89	122	50	16	35	4.3	180	16	14	6.8	200	QBM17075	QBM11075
90	105	138	80	17	43	5.1	280	17	33	8.2	322	QBM17090	QBM11090
110	125	158	80	18	37	6.3	365	18	27	10	430	QBM17110	QBM11110
125	132	158	80	18	42	7.1	390	25	35	11.4	490	QBM17125	QBM11125
140	155	188	80	18	34	8	530	25	27	12.7	715	QBM17140	QBM11140
160	175	212	80	18	34	9.1	660	25	27	14.6	915	QBM17160	QBM11160
180	182	212	80	20	30	10.2	610	30	50	16.4	890	QBM17180	QBM11180
200	232	268	100	24	36	11.4	1440	32	28	18.2	1900	QBM17200	QBM11200
225	235	268	100	24	46	12.8	1290	32	38	20.5	1780	QBM17225	QBM11225
250	285	320	100	25	35	14.2	2035	35	25	22.7	2865	QBM17250	QBM11250
280	291	320	100	25	45	15.9	1825	35	35	25.4	2600	QBM17280	QBM11280
315	335	370	100	25	35	17.9	2525	35	25	28.6	3500	QBM17315	QBM11315
355	373	430	120	30	30	21.1	3400	40	20	32.2	4720	QBM17355	QBM11355
400	427	482	120	33	42	23.7	4920	46	29	36.3	7320	QBM17400	QBM11400

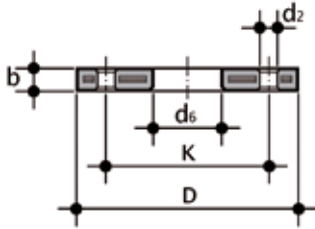


## QBAM

Short spigot stub for butt welding for backing rings ANSI B16.5 cl.150 OAB\*

d	OAB size	d <sub>3</sub>	d <sub>4</sub>	Z	SDR 17.6 - S 8.3				SDR 11 - S 5				Code SDR 17.6 - S 8.3	Code SDR 11 - S 5
					h <sub>1</sub>	h <sub>3</sub>	S	g	h <sub>1</sub>	h <sub>3</sub>	S	g		
25	3/4"	33	54	50	-	-	-	-	9	26	2.3	30	-	QBAM11034
32	1"	40	63.5	50	-	-	-	-	10	25	2.9	45	-	QBAM11100
40	1 1/4"	50	72	50	11	24	2.3	60	11	24	3.7	66	QBAM17114	QBAM11114
50	1 1/2"	61	84.5	50	12	23	2.9	77	12	21	4.6	87	QBAM17112	QBAM11112
90	3"	105	132	80	17	43	5.1	280	17	33	8.2	322	QBAM17300	QBAM11300

\* for other dimensions use QBM



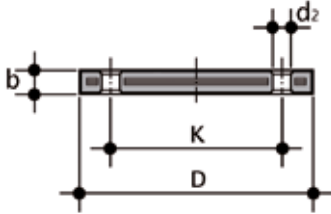
## ODB

Steel core backing ring, PP/FRP coated, according to EN/ISO/DIN for stub QBM.  
Drilling PN 10/16 up to d180, PN 10 from d200 to d400

d	DN	*PMA (bar)	b	d <sub>2</sub>	d <sub>6</sub>	D	K	M	n	** (Nm)	g	Code
20	15	16	12	14	28	95	65	M12	4	15	232	ODB020
25	20	16	14	14	34	105	75	M12	4	15	288	ODB025
32	25	16	14	14	42	115	85	M12	4	15	544	ODB032
40	32	16	16	18	51	140	100	M16	4	20	836	ODB040
50	40	16	16	18	62	150	110	M16	4	30	902	ODB050
63	50	16	19	18	78	165	125	M16	4	35	1074	ODB063
75	65	16	19	18	92	188	145	M16	4	40	1368	ODB075
90	80	16	21	18	109	200	160	M16	8	40	1516	ODB090
110	100	16	22	18	128	220	180	M16	8	40	1960	ODB110
125	100	16	22	18	134	220	180	M16	8	40	1938	ODB125
140	125	16	26	18	158	250	210	M16	8	50	2866	ODB140
160	150	16	27	22	178	285	240	M20	8	60	3576	ODB160
180	150	16	27	22	191	285	240	M20	8	60	3298	ODB180
200	200	16	28	22	235	340	295	M20	8	70	5032	ODB200
225	200	16	28	22	238	340	295	M20	8	70	4900	ODB225
250	250	16	31	22	288	395	350	M20	12	80	10182	ODB250
280	250	16	31	22	294	395	350	M20	12	80	9860	ODB280
315	300	16	34	22	338	445	400	M20	12	100	13150	ODB315
355	350	16	40	22	376	514	460	M20	16	160	22200	ODB355
400	400	16	40	26	430	571	515	M24	16	170	26214	ODB400

\*PMA maximum admissible working pressure

\*\*nominal tightening torque

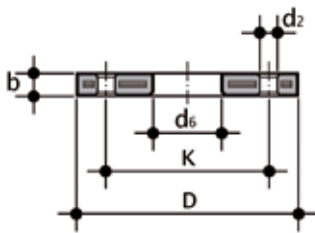


## ODBC

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

d	DN	*PMA (bar)	b	d <sub>2</sub>	D	K	M	n	** (Nm)	g	Code
20	15	16	12	14	95	65	M12	4	15	290	ODBC020
25	20	16	12	14	105	75	M12	4	15	390	ODBC025
32	25	16	16	14	115	85	M12	4	15	520	ODBC032
40	32	16	16	18	140	100	M16	4	25	800	ODBC040
50	40	16	16	18	150	110	M16	4	35	940	ODBC050
63	50	16	16	18	165	125	M16	4	35	1150	ODBC063
75	65	16	18	18	185	145	M16	4	40	1640	ODBC075
90	80	16	18	18	200	160	M16	8	40	1960	ODBC090
110/125	100	16	20	18	220	180	M16	8	45	2720	ODBC110
140	125	16	24	18	250	210	M16	8	50	3920	ODBC140
160/180	150	16	24	22	285	240	M20	8	60	5060	ODBC160
200/225	200	16	24	22	340	295	M20	8	70	7800	ODBC200
250/280	250	10	30	22	409	350	M20	12	100	15400	ODBC250
315	300	10	34	22	463	400	M20	12	110	26000	ODBC315
355	350	10	42	22	515	460	M20	16	160	39620	ODBC355
400	400	10	46	27	574	515	M24	16	170	50080	ODBC400

\*PMA maximum admissible working pressure  
\*\*nominal tightening torque

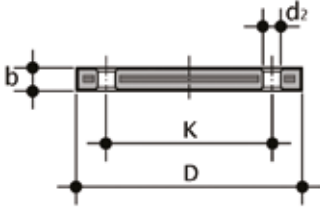


## OAB

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

Size	DN	*PMA (bar)	b	d <sub>2</sub> mm	d <sub>2</sub> inch	d <sub>6</sub>	D	K mm	K inch	n	** (Nm)	g	Code
1/2"	15	16	12	16	5/8"	28	95	60.45	2"3/8	4	15	200	OAB012
3/4"	20	16	12	16	5/8"	34	102	69.85	2"3/4	4	15	240	OAB034
1"	25	16	16	16	5/8"	42	114	79.25	3"1/8	4	15	490	OAB100
1"1/4	32	16	16	16	5/8"	51	130	88.9	3"1/2	4	25	670	OAB114
1"1/2	40	16	18	16	5/8"	62	133	98.55	3"7/8	4	35	640	OAB112
2"	50	16	18	20	3/4"	78	162	120.65	4"3/4	4	35	1000	OAB200
2"1/2	65	16	18	20	3/4"	92	184	139.7	5"1/2	4	40	1310	OAB212
3"	80	16	18	20	3/4"	111	194	152.4	6"	4	40	1250	OAB300
4"	100	16	18	20	3/4"	133	229	190.5	7"1/2	8	40	1660	OAB400
6"	150	16	24	22	7/8"	178	283	241.3	9"1/2	8	60	3750	OAB600
8"	200	10	24	22	7/8"	236	345	298.45	11"3/4	8	70	5140	OAB800
10"	250	10	27	25	1"	288	412	361.95	14"1/4	12	100	8080	OAB810
12"	315	10	32	25	1"	338	487	431.8	17"	12	110	15380	OAB812
14"	355	10	42	28.5	1"1/8	376	533	476.2	17"3/4	12	110	24940	OAB814
16"	400	10	44	28.5	1"1/8	430	596	539.7	18"13/32	16	110	34770	OAB816

\*PMA maximum admissible working pressure  
\*\*nominal tightening torque



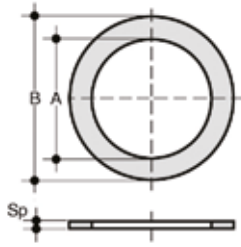
## OABC

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

Size	DN	*PMA (bar)	b	d <sub>2</sub> mm	d <sub>2</sub> inch	D	K mm	K inch	n	** (Nm)	g	Code
1/2"	15	16	12	16	5/8"	95	60.45	2"3/8	4	15	200	OABC012
3/4"	20	16	12	16	5/8"	102	69.85	2"3/4	4	15	240	OABC034
1"	25	16	16	16	5/8"	114	79.25	3"1/8	4	15	370	OABC100
1"1/4	32	16	16	16	5/8"	130	88.90	3"1/2	4	25	530	OABC114
1"1/2	40	16	18	16	5/8"	133	98.55	3"7/8	4	35	560	OABC112
2"	50	16	18	20	3/4"	162	120.65	4"3/4	4	35	810	OABC200
2"1/2	65	16	18	20	3/4"	184	139.70	5"1/2	4	40	1070	OABC212
3"	80	16	18	20	3/4"	194	152.40	6"	4	40	1030	OABC300
4"	100	16	18	20	3/4"	229	190.50	7"1/2	8	40	1570	OABC400
6"	150	16	24	22	7/8"	283	241.30	9"1/2	8	60	2400	OABC600
8"	200	16	24	22	7/8"	345	298.45	11"3/4	8	70	3500	OABC800
10"	250	16	27	25	1"	412	361.95	14"1/4	12	100	6200	OABC810
12"	300	16	32	25	1"	487	431.80	17"	12	110	13040	OABC812

\*PMA maximum admissible working pressure

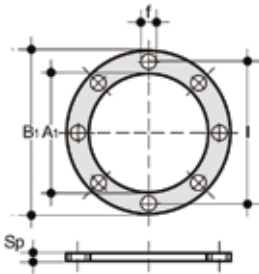
\*\*nominal tightening torque



## QHV/X

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

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



## QHV/Y

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

d	DN	A <sub>1</sub>	B <sub>1</sub>	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**  
PP-H

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	
<b>Size range</b>	d 20 ÷ 63 (mm); R 1/2" ÷ 2"
<b>Nominal pressure</b>	SDR 17, 6 (PN6) with water at 20 °C SDR 11 (PN10) with water at 20 °C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> EN ISO 15494 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11397
<b>Valve material</b>	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

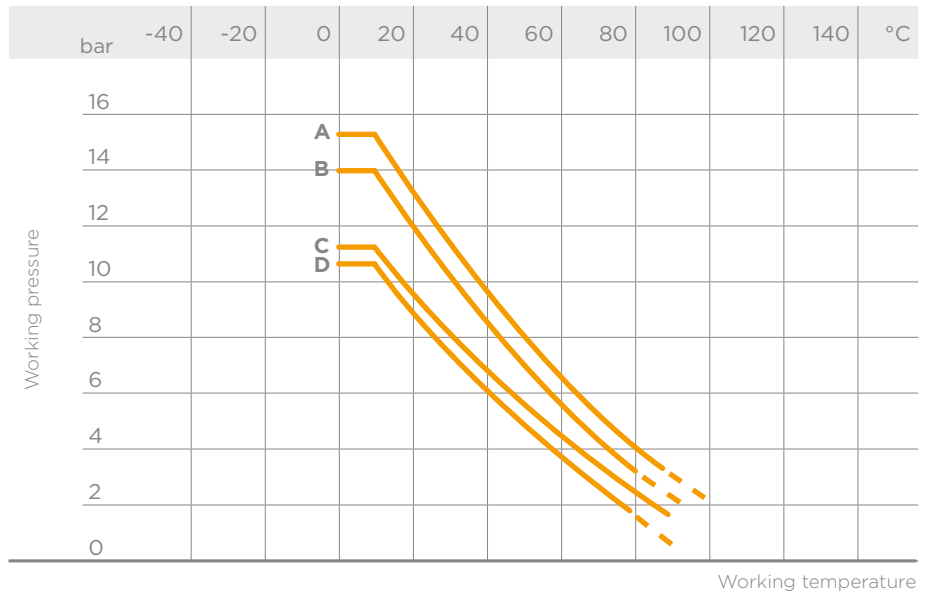
B = SDR 11 ISO-S5 - 25 years

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

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

Permissible internal pressure for PP-H fittings for butt welding according to DIN 16962.

Safety factor = 1.7



## 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.

E = SDR 11 ISO-S5 - 10 years

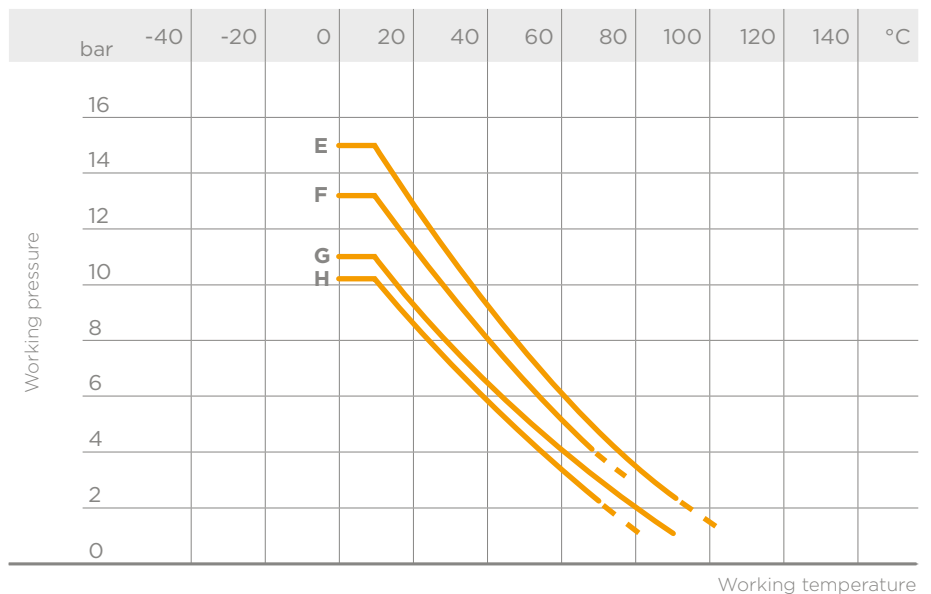
F = SDR 11 ISO-S5 - 50 years

G = SDR 17.6 ISO-S8.3 - 10 years

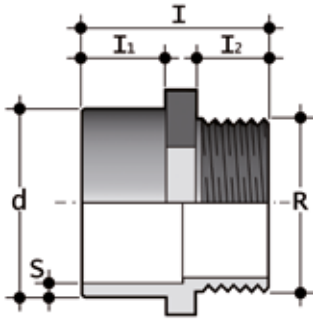
H = SDR 17.6 ISO-S8.3 - 50 years

Permissible internal pressure for fittings for butt welding according to DIN 16962 and for PP-H pipes according to DIN 8077.

Safety factor = 1.7



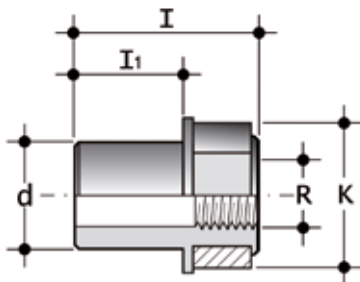
# DIMENSIONS



## KBFM

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

d x R	I	I <sub>1</sub>	I <sub>2</sub>	SDR 11 - S 5 S	g	Code
20 x 1/2"	46	19	18	1.9	6	KBFM11020012
25 x 3/4"	51	22	20	2.3	9	KBFM11025034
32 x 1"	61	28	24	2.9	20	KBFM11032100
40 x 1" 1/4	66	29	26	3.7	37	KBFM11040114
50 x 1" 1/2	74	32	28	4.6	57	KBFM11050112
63 x 2"	80	35	31	5.8	91	KBFM11063200



## DBMM

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

d x R	K	I	I <sub>1</sub>	SDR 11 - S 5 S	g	Code
20 x 1/2"	39	65	40	1.9	19	DBMM11020012
25 x 1/2"	39	65	40	2.3	21	DBMM11025012
25 x 3/4"	49	66	40	2.3	31	DBMM11025034
32 x 1/2"	39	69	44	2.9	28	DBMM11032012
32 x 3/4"	49	70	44	2.9	35	DBMM11032034
32 x 1"	55	72	44	2.9	44	DBMM11032100
40 x 3/4"	49	69	45	3.7	47	DBMM11040034
40 x 1"	55	76	49	3.7	51	DBMM11040100
40 x 1" 1/4	66	80	49	3.7	58	DBMM11040114
50 x 1/2"	50	76	55	4.6	53	DBMM11050012
50 x 1"	55	78	50	4.6	64	DBMM11050100
50 x 1" 1/4	66	85	55	4.6	61	DBMM11050114
50 x 1" 1/2	83	86	55	4.6	122	DBMM11050112
63 x 2"	94	100	63	5.8	197	DBMM11063200







**VKD DN 10÷50**  
PP-H

DUAL BLOCK® 2-way ball valve



# VKD DN 10÷50

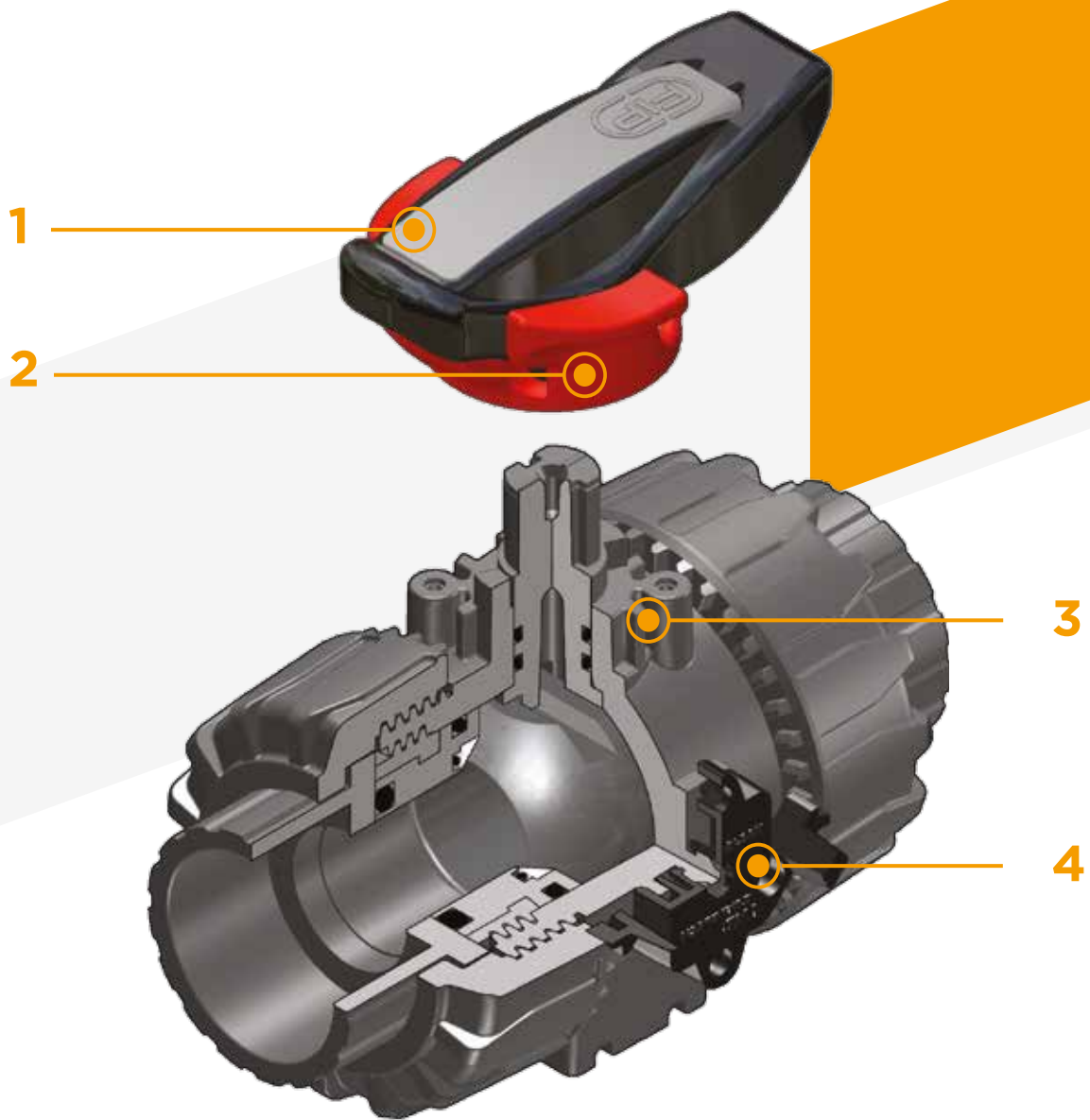
FIP has developed a VKD DUAL BLOCK® 2-WAY ball valve to introduce a high reference standard in thermosplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications.



## DUAL BLOCK® 2-WAY BALL VALVE

- Connection system for weld, 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**

Technical specifications	
<b>Construction</b>	2-way True Union ball valve with locked carrier and lockable union nuts.
<b>Size range</b>	DN 10 ÷ 50
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<p><b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494</p> <p><b>Thread:</b> ISO 228-1, DIN 2999</p> <p><b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150</p>
<b>Reference standards</b>	<p><b>Construction criteria:</b> EN ISO 16135, EN ISO 15494</p> <p><b>Test methods and requirements:</b> ISO 9393</p> <p><b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318</p> <p><b>Actuator couplings:</b> ISO 5211</p>
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM, FPM (standard size O-Rings); PTFE (ball seats)
<b>Control options</b>	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 lockable

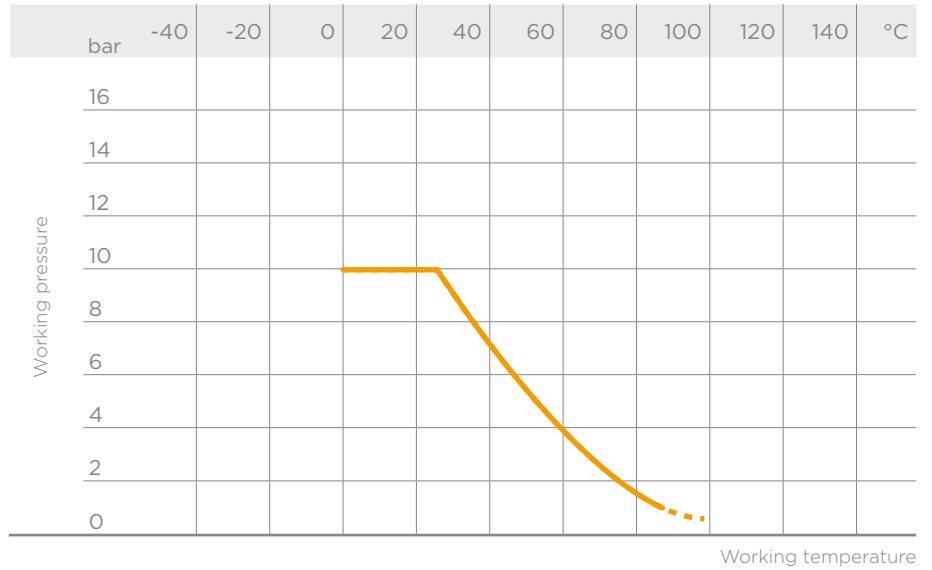
**3** Robust **integrated bracket for valve anchoring**, for easy and quick automation even after valve installation on the system via the Power Quick module (optional)

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

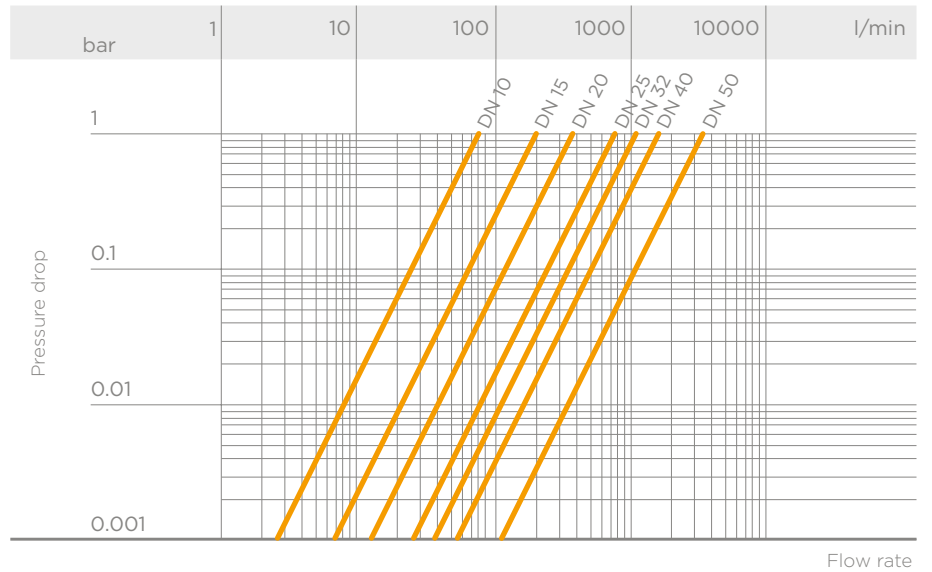
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



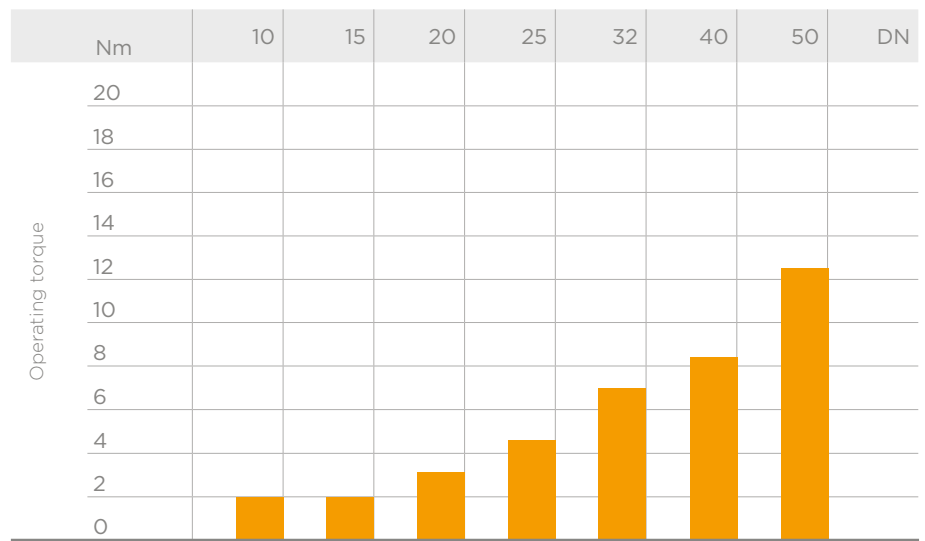
## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

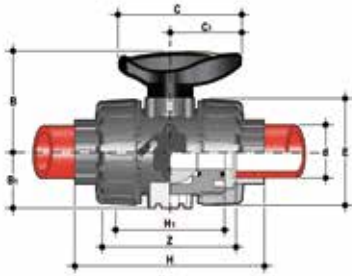
DN	10	15	20	25	32	40	50
K <sub>v</sub> 100 l/min	80	200	385	770	1100	1750	3400

## OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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

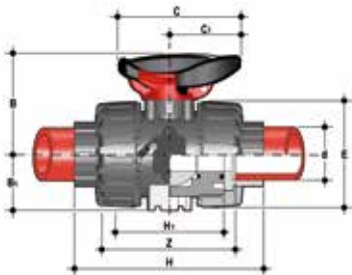
# DIMENSIONS



## VKDIM

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

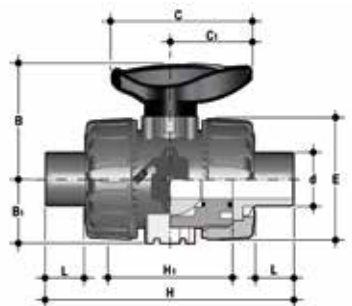
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	Z	g	EPDM Code	FPM Code
16	10	10	54	29	67	40	54	102	65	74.5	150	VKDIM016E	VKDIM016F
20	15	10	54	29	67	40	54	102	65	73	145	VKDIM020E	VKDIM020F
25	20	10	65	34.5	85	49	65	114	70	82	218	VKDIM025E	VKDIM025F
32	25	10	69.5	39	85	49	73	126	78	90	298	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

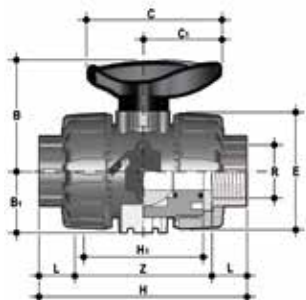
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	Z	g	EPDM Code	FPM Code
16	10	10	54	29	67	40	54	102	65	74.5	160	VKDIMSHX016E	VKDIMSHX016F
20	15	10	54	29	67	40	54	102	65	73	155	VKDIMSHX020E	VKDIMSHX020F
25	20	10	65	34.5	85	49	65	114	70	82	228	VKDIMSHX025E	VKDIMSHX025F
32	25	10	69.5	39	85	49	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

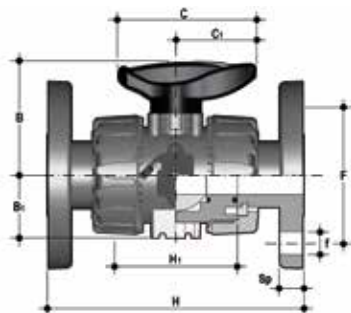
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	g	EPDM Code	FPM Code
16	10	10	54	29	67	40	54	-	-	-	-	VKDDM016E	VKDDM016F
20	15	10	54	29	67	40	54	124	65	16	153	VKDDM020E	VKDDM020F
25	20	10	65	34.5	85	49	65	144	70	18	222	VKDDM025E	VKDDM025F
32	25	10	69.5	39	85	49	73	154	78	20	303	VKDDM032E	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

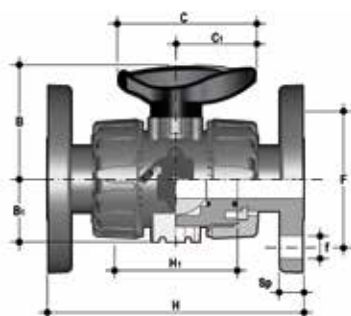
R	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
1/2"	15	10	54	29	67	40	54	110	65	15	80	145	VKDFM012E	VKDFM012F
3/4"	20	10	65	34.5	85	49	65	116	70	16	83	220	VKDFM034E	VKDFM034F
1"	25	10	69.5	39	85	49	73	134	78	19	96	298	VKDFM100E	VKDFM100F
1 1/4"	32	10	82.5	46	108	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

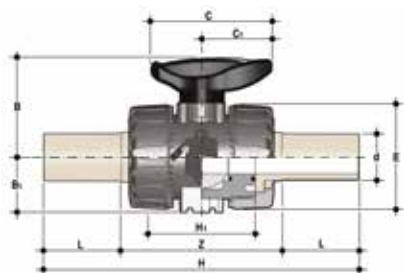
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	f	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code
20	15	10	54	29	67	40	65	14	130	65	11	4	387	VKDOM020E	VKDOM020F
25	20	10	65	34.5	85	49	75	14	150	70	14	4	504	VKDOM025E	VKDOM025F
32	25	10	69.5	39	85	49	85	14	160	78	14	4	697	VKDOM032E	VKDOM032F
40	32	10	82.5	46	108	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

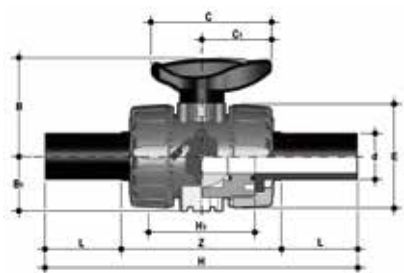
Size	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	f	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code
1/2"	15	10	54	29	67	40	60.3	15.9	143	65	11	4	387	VKDOAM012E	VKDOAM012F
3/4"	20	10	65	34.5	85	49	69.9	15.9	172	70	14	4	504	VKDOAM034E	VKDOAM034F
1"	25	10	69.5	39	85	49	79.4	15.9	187	78	14	4	697	VKDOAM100E	VKDOAM100F
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 <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
20	15	10	54	29	67	40	54	175	65	41	93	220	VKDBM020E	VKDBM020F
25	20	10	65	35	85	49	65	210	70	52	106	340	VKDBM025E	VKDBM025F
32	25	10	70	39	85	49	73	226	78	55	116	443	VKDBM032E	VKDBM032F
40	32	10	83	46	108	64	86	243	88	56	131	593	VKDBM040E	VKDBM040F
50	40	10	89	52	108	64	98	261	93	58	145	945	VKDBM050E	VKDBM050F
63	50	10	108	62	134	76	122	293	111	66	161	1607	VKDBM063E	VKDBM063F

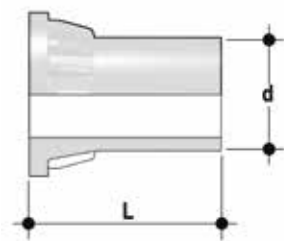


### VKDBEM

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

d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
20	15	10	54	29	67	40	54	175	65	41	94	210	VKDBEM020E	VKDBEM020F
25	20	10	65	34.5	85	49	65	210	70	52	106	325	VKDBEM025E	VKDBEM025F
32	25	10	69.5	39	85	49	73	226	78	55	117	420	VKDBEM032E	VKDBEM032F
40	32	10	82.5	46	108	64	86	243	88	56	131	570	VKDBEM040E	VKDBEM040F
50	40	10	89	52	108	64	98	261	93	58	145	900	VKDBEM050E	VKDBEM050F
63	50	10	108	62	134	76	122	293	111	66	161	1500	VKDBEM063E	VKDBEM063F

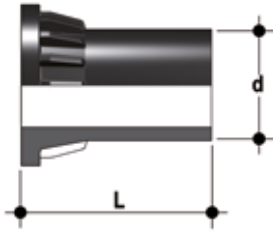
## ACCESSORIES



### 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
52	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063



## CVDE

Long spigot PE100 SDR 11 PN 16 end connectors for joints with electrofusion fittings or for butt welding

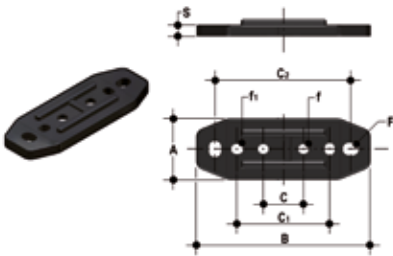
d	DN	PN	L	SDR	Code
20	15	16	55	11	CVDE11020
25	20	16	70	11	CVDE11025
32	25	16	74	11	CVDE11032
40	32	16	78	11	CVDE11040
52	40	16	84	11	CVDE11050
63	50	16	91	11	CVDE11063



## SHKD

Handle block kit 0° - 90° lockable

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



## PMKD

Wall mounting plate

d	DN	A	B	C	C <sub>1</sub>	C <sub>2</sub>	F	f	f <sub>1</sub>	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 <sub>1</sub>	A <sub>2</sub>	E	B	B <sub>1</sub>	B <sub>min</sub>	Code
16	10	32	25	32	54	70	29	139.5	PSKD020
20	15	32	25	32	54	70	29	139.5	PSKD020
25	20	32	25	40	65	89	34.5	164.5	PSKD025
32	25	32	25	40	73	93.5	39	169	PSKD032
40	32	40	32	50	86	110	46	200	PSKD040
50	40	40	32	50	98	116	52	206	PSKD050
63	50	40	32	59	122	122	62	225	PSKD063



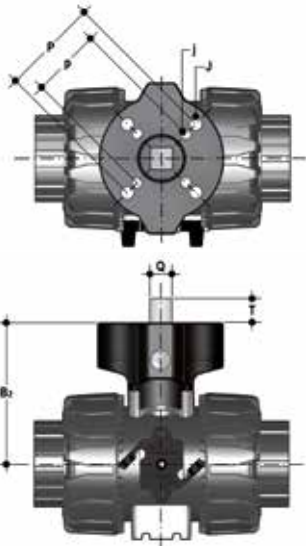


## EASYTORQUE KIT

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

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

\*calculated in ideal installation conditions

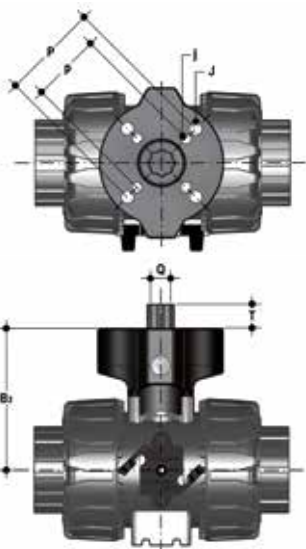


## POWER QUICK CP

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

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

\*F04 x 5.5 on request

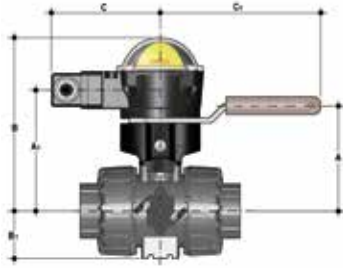


## POWER QUICK CE

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

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

\*F04 x 5.5 on request

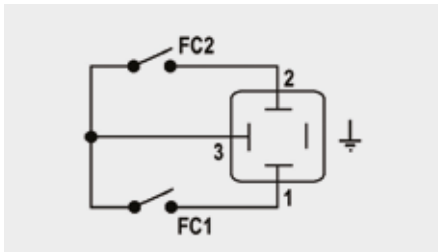


## MSKD

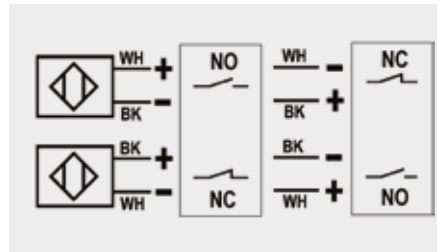
MSKD is a limit switch box with electromechanical or inductive micro switches to remotely signal the valve position. Manual valve installation is possible using the Power Quick actuation module.

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

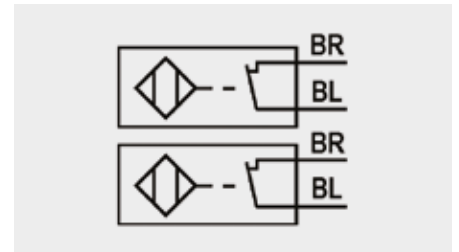
d	DN	A	A <sub>1</sub>	B	B <sub>1</sub>	C	C <sub>1</sub>	Code electromechanical	Code inductive	Code Namur
16	10	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
20	15	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
25	20	70.5	96	143.5	34.5	88.5	134	MSKD1M	MSKD1I	MSKD1N
32	25	74	101	148.5	39	88.5	134	MSKD1M	MSKD1I	MSKD1N
40	32	116	118	165.5	46	88.5	167	MSKD2M	MSKD2I	MSKD2N
50	40	122	124	171.5	52	88.5	167	MSKD2M	MSKD2I	MSKD2N
63	50	139	141	188.5	62	88.5	167	MSKD2M	MSKD2I	MSKD2N



Electromechanical



Inductive



Namur

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

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

\* To be used with an amplifier

\*\* Outside areas with explosion risks

## FASTENING AND SUPPORTING

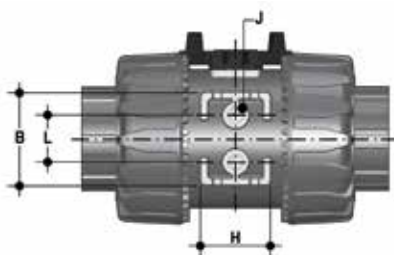


All valves, whether manual or actuated, must be adequately supported in many applications.

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

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

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

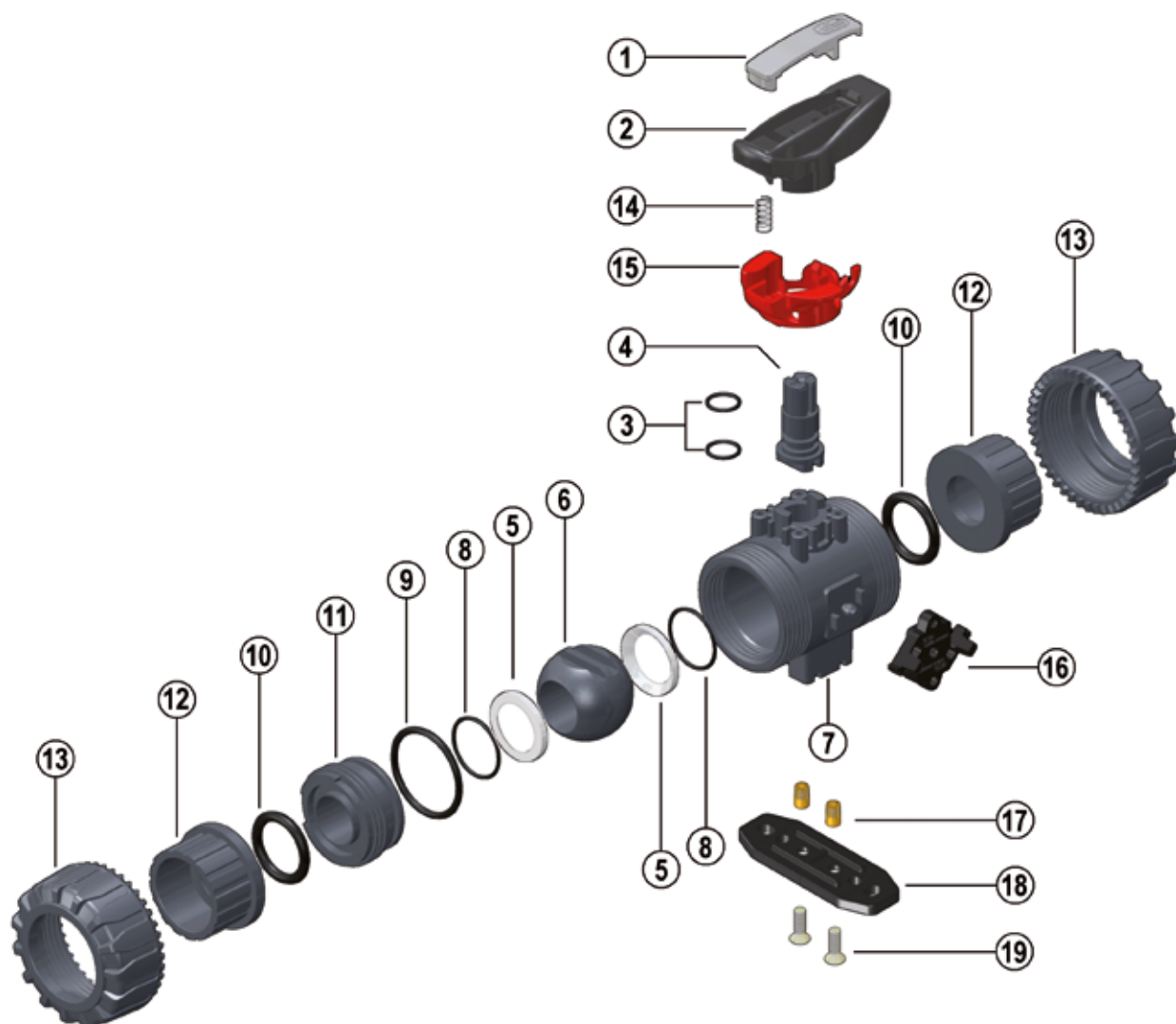


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

\* With threaded inserts

# COMPONENTS

## EXPLODED VIEW



- 1 · Handle insert (PVC - 1)
- 2 · Handle (HIPVC - 1)
- 3 · Stem O-ring (EPDM or FPM - 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-Ring (EPDM or FPM - 2)\*
- 9 · Radial seal O-Ring (EPDM or FPM - 1)\*
- 10 · Socket seal O-Ring (EPDM or FPM - 2)\*
- 11 · Ball seat carrier (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 material of the component and the quantity supplied are indicated between brackets

## DISASSEMBLY

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

## ASSEMBLY

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



**Note:** during assembly, 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 installed on the valve body.
- 3) To release the union nuts, axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
- 4) Unscrew the union nuts (13) and insert them on the pipe segments.
- 5) Solvent weld or screw the end connectors (12) onto the pipe ends.
- 6) Position the valve body between the end connectors and fully tighten the union nuts (13) manually by rotating clockwise without using wrenches or other tools that could damage the union nut surface.
- 7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.

8) If necessary, support the pipework with FIP pipe clips or by means of the carrier built into the valve itself (see paragraph "fastening and supporting").

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

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

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

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

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

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

## WARNINGS

- If volatile liquid such as Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>) 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**  
PP-H

DUAL BLOCK® 2-way ball valve



# VKD DN 65÷100

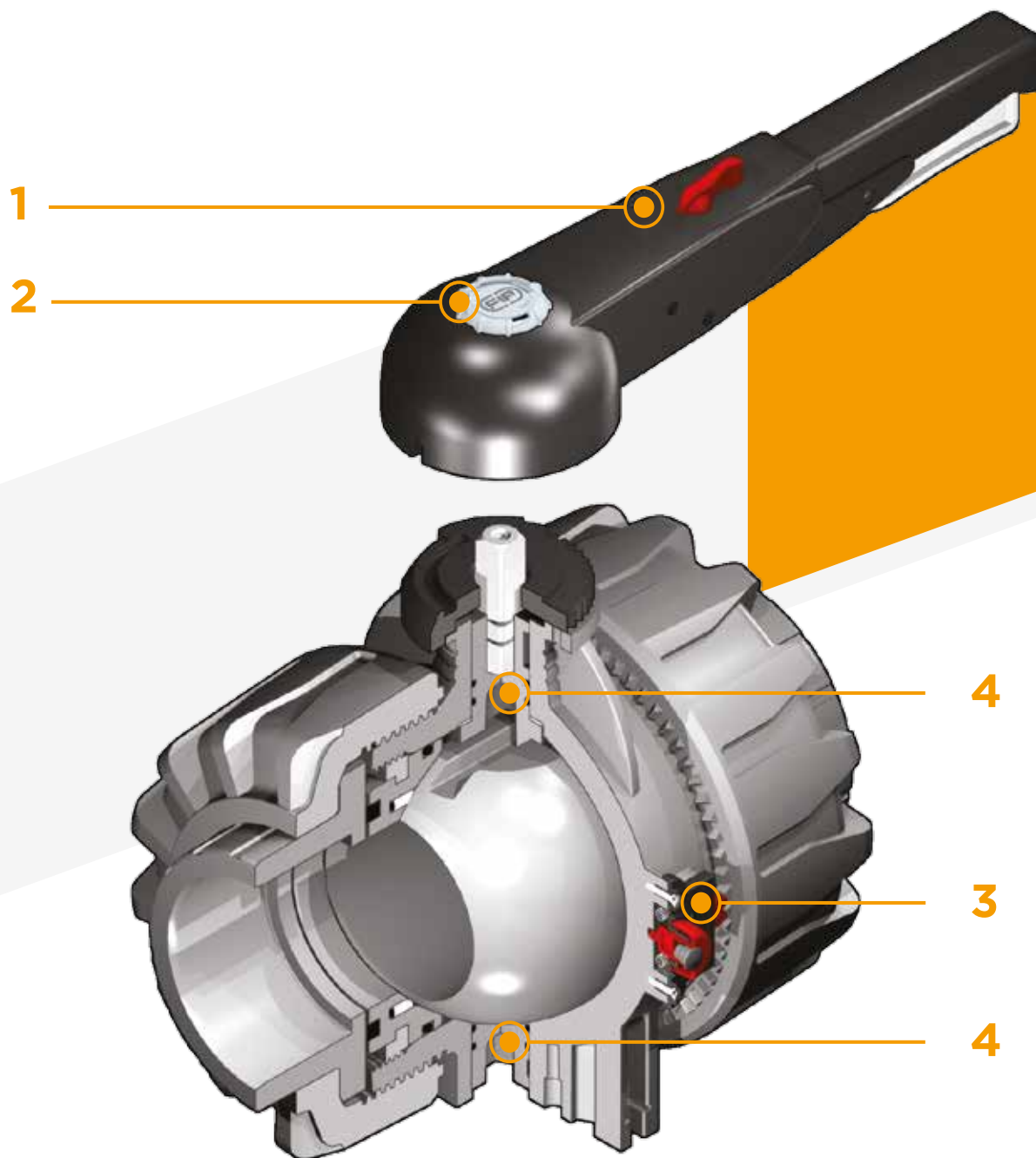
FIP has developed a VKD DUAL BLOCK® ball valve to introduce a high reference standard in thermoplastic valve design. VKD is a True Union ball valve that meets the most stringent needs required by industrial applications. This valve is also equipped with a customisable Labelling System.



## 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

Technical specifications	
<b>Construction</b>	2-way True Union ball valve with locked carrier and union nuts
<b>Size range</b>	DN 65 ÷ 100
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<p><b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494</p> <p><b>Thread:</b> ISO 228-1, DIN 2999</p> <p><b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150</p>
<b>Reference standards</b>	<p><b>Construction criteria:</b> EN ISO 16135, EN ISO 15494</p> <p><b>Test methods and requirements:</b> ISO 9393</p> <p><b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318</p> <p><b>Actuator couplings:</b> ISO 5211</p>
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM, FPM; PTFE (ball seats)
<b>Control options</b>	Manual control; electric actuator; pneumatic actuator



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

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

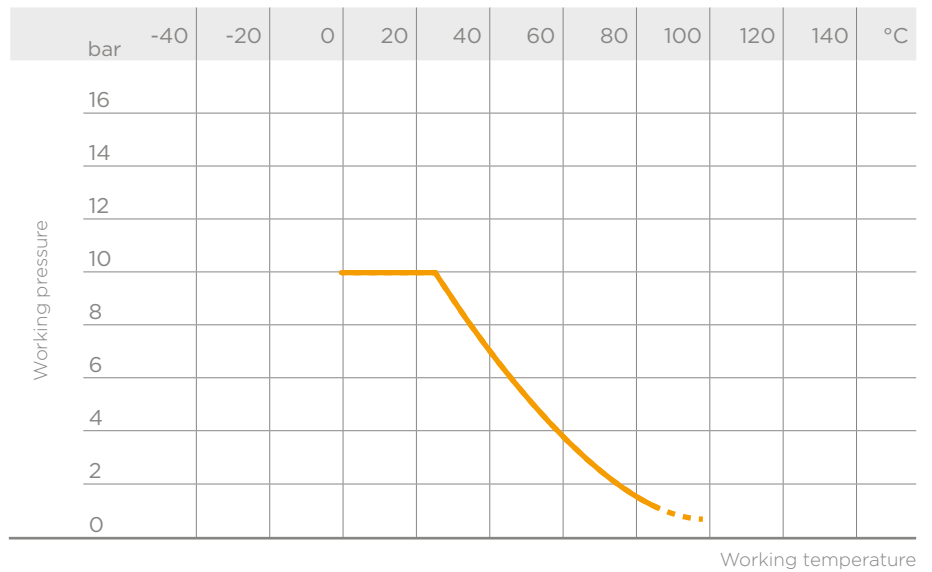
**3** **DUAL BLOCK®** patented lock system that ensures union nut tightening hold even in severe conditions such as vibrations or heat dilation

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

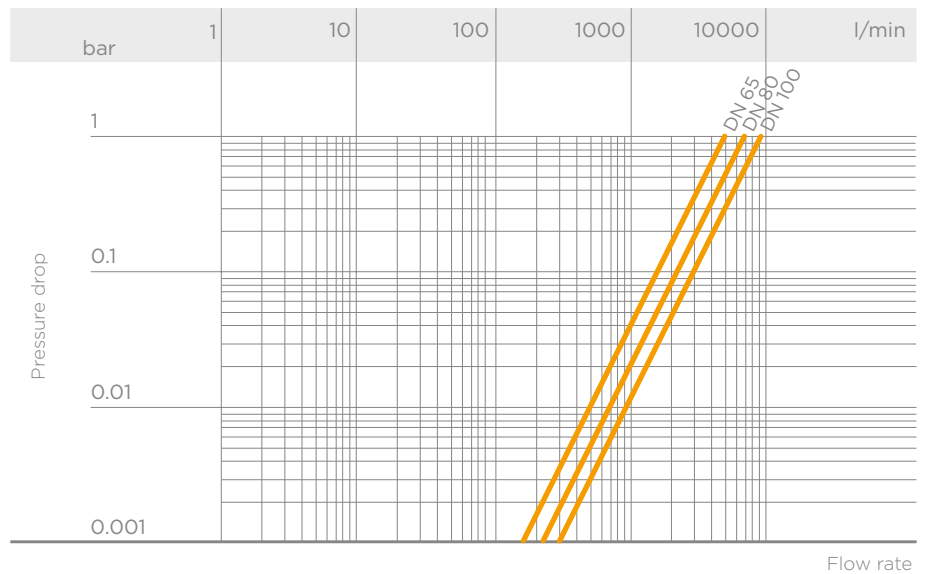
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



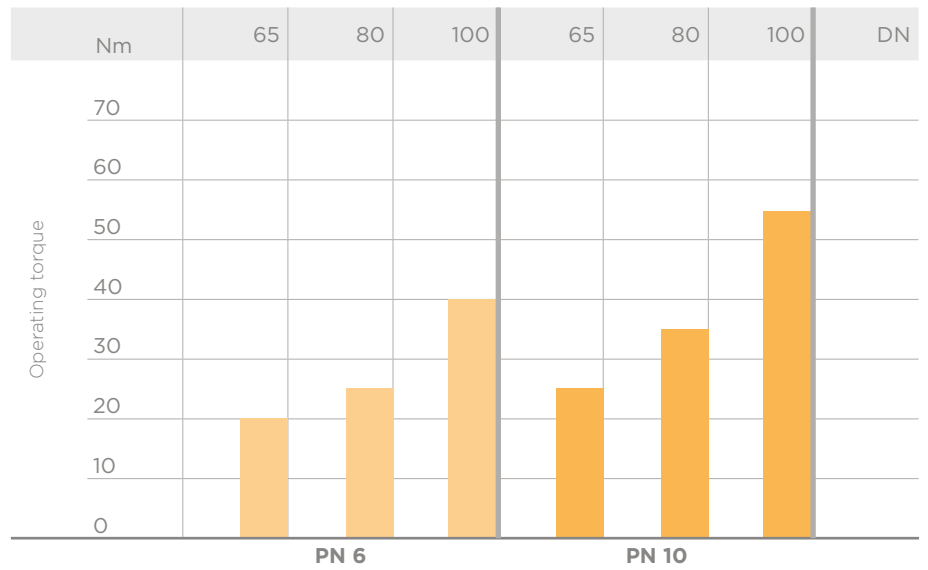
## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate  $\Delta p = 1$  bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

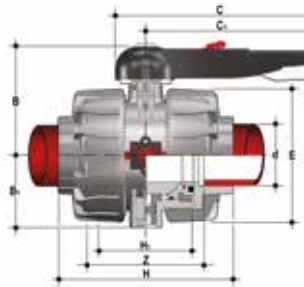
DN	65	80	100
K <sub>v</sub> 100 l/min	5250	7100	9500

## 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.

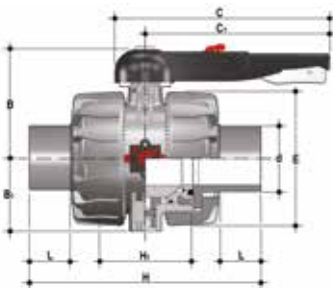
# DIMENSIONS



## VKDIM

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

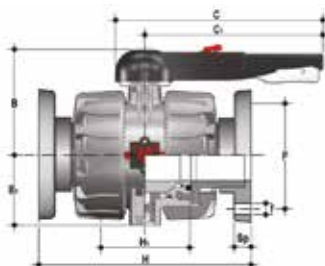
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
75	65	10	164	87	225	175	162	213	133	30	153	3090	VKDIM075E	VKDIM075F
90	80	10	177	105	327	272	202	239	149	33	173	5080	VKDIM090E	VKDIM090F
110	100	10	195	129	385	330	236	268	167	34.5	199	7725	VKDIM110E	VKDIM110F



## VKDDM

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

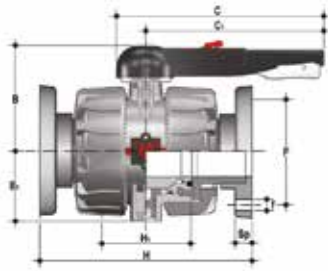
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	g	EPDM Code	FPM Code
75	65	10	164	87	225	175	162	284	133	44	3190	VKDDM075E	VKDDM075F
90	80	10	177	105	327	272	202	300	149	51	5280	VKDDM090E	VKDDM090F
110	100	10	195	129	385	330	236	340	167	61	8010	VKDDM110E	VKDDM110F



## VKDOM

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

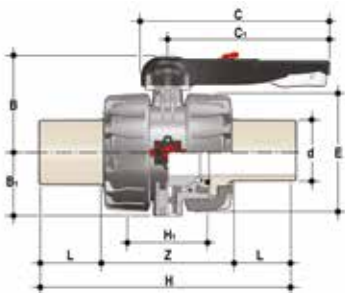
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	f	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code
75	65	10	164	87	225	175	145	17	290	133	24	4	4500	VKDOM075E	VKDOM075F
90	80	10	177	105	327	272	160	17	310	149	25	8	6455	VKDOM090E	VKDOM090F
110	100	10	195	129	385	330	180	17	350	167	25	8	9090	VKDOM110E	VKDOM110F



## VKDOAM

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

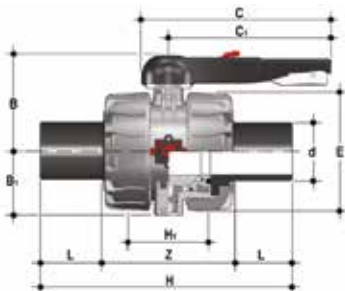
Size	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	f	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code
2"1/2	65	10	164	87	225	175	139.7	18	290	133	24	4	4500	VKDOM075E	VKDOM075F
3"	80	10	177	105	327	272	152.4	18	310	149	25	8	6455	VKDOM090E	VKDOM090F
4"	100	10	195	129	385	330	190.5	18	350	167	25	8	9090	VKDOM110E	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 <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM 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

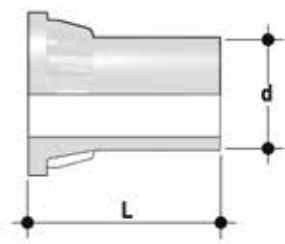


## VKDBEM

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

d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM 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

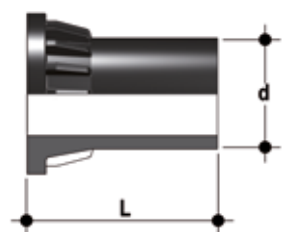
# ACCESSORIES



## 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
100	100	10	132	11	CVDM11110



## CVDE

Long spigot PE100 SDR 11 PN 16 end connectors for joints with electrofusion fittings or for butt welding

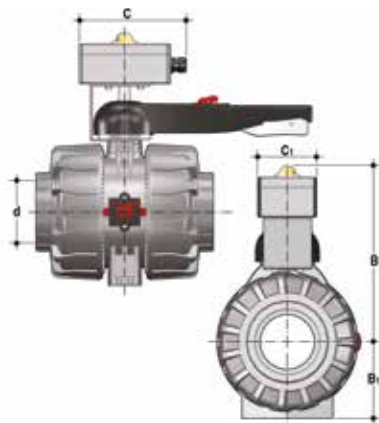
d	DN	PN	L	SDR	Code
75	65	16	111	11	CVDE11075
90	80	16	118	11	CVDE11090
100	100	16	132	11	CVDE11110



## LSE

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

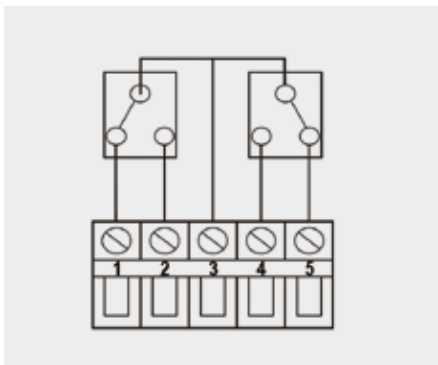
d	DN	Code
75	65	LSE040
90	80	LSE040
110	100	LSE040



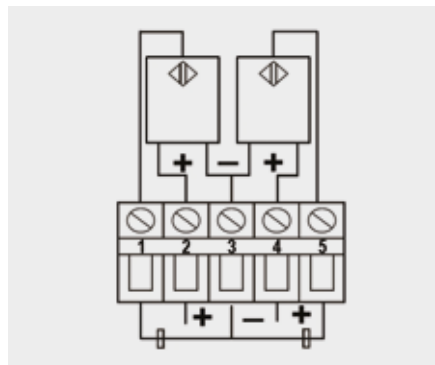
## VKD-MS

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

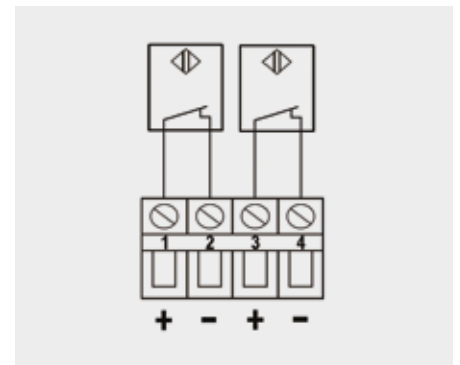
d	DN	B	B <sub>1</sub>	C	C <sub>1</sub>	Protection rate	Code electromechanical	Code inductive	Code Namur
75	65	266	87	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
90	80	279	105	150	80	IP67	FKMS1M	FKMS1I	FKMS1N
110	100	297	129	150	80	IP67	FKMS1M	FKMS1I	FKMS1N



Electromechanical

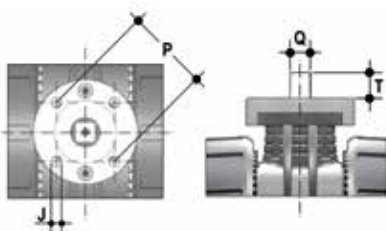


Inductive



Namur\*

\* To be used with an amplifier



## Actuator mounting flange

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

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

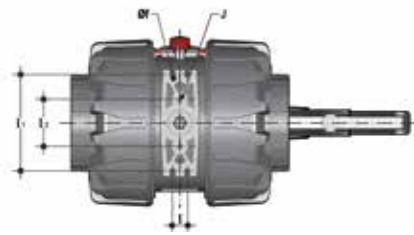


# FASTENING AND SUPPORTING



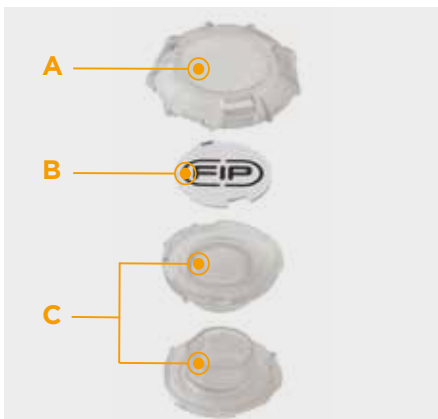
All valves, whether manual or actuated, must be adequately supported in many applications.

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



d	DN	J	f	l	l <sub>1</sub>	l <sub>2</sub>
75	65	M6	6.3	17.4	90	51.8
90	80	M6	8.4	21.2	112.6	63
110	100	M8	8.4	21.2	137	67

# CUSTOMISATION



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

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

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

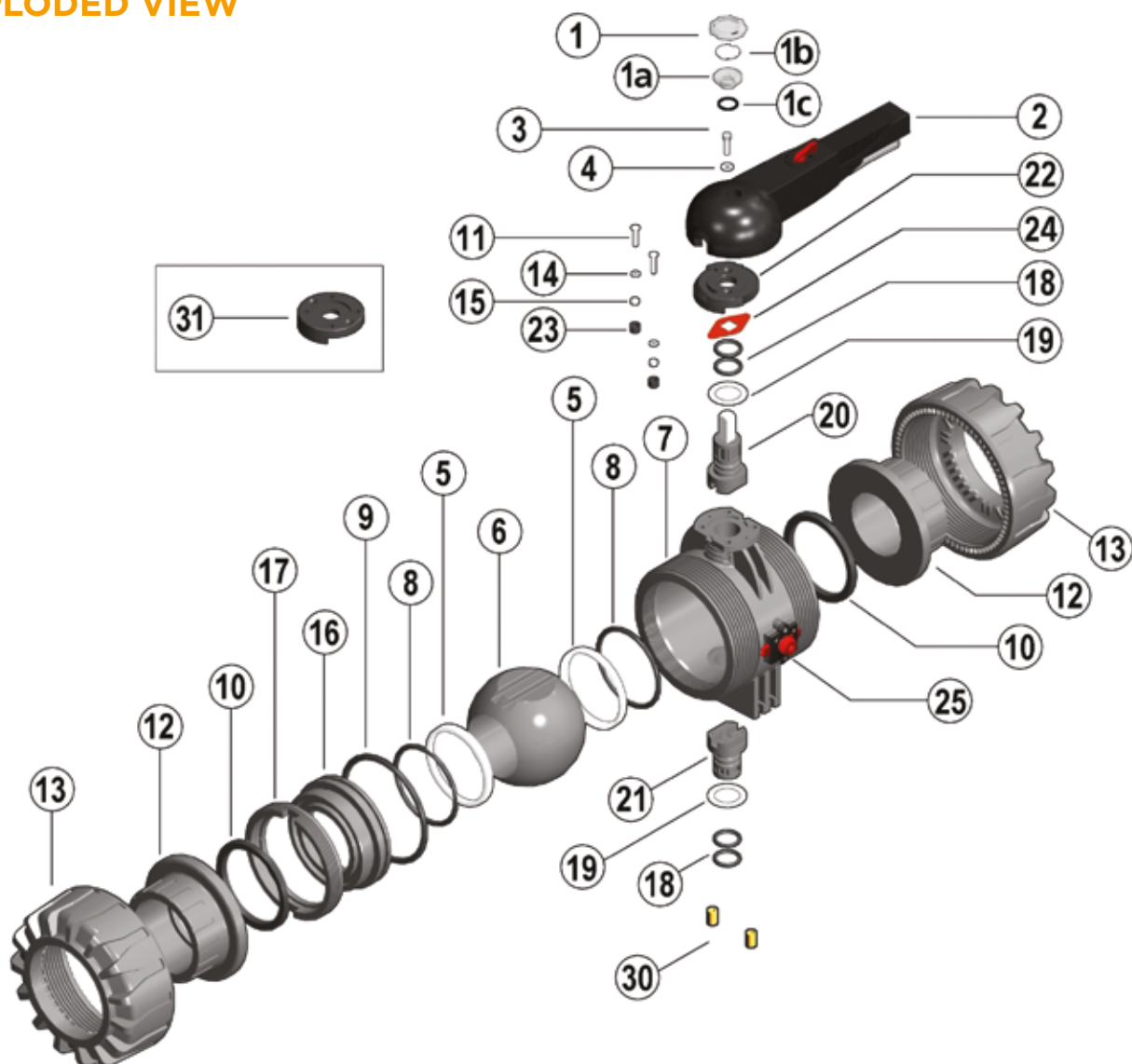
The plate, inserted in the plug, can be removed and, once overturned, used for customisation by applying labels printed with the software supplied with the LSE set.

Proceed as follows to apply the label on the valve:

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

# COMPONENTS

## EXPLODED VIEW



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

**1b** · Tag holder (PVC - 1)

**1c** · O-Ring (NBR - 1)

**2** · Handle (HIPVC - 1)

**3** · Screw (Stainless steel - 1)

**4** · Washer (STAINLESS steel - 1)

**5** · Ball seat (PTFE - 2)\*

**6** · Ball (PP-H - 1)

**7** · Body (PP-H - 1)

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

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

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

**11** · Screw (Stainless steel - 2)

**12** · End connector (PP-H - 2)

**13** · Union nut (PP-H - 2)

**14** · Washer (STAINLESS steel - 2)

**15** · Nut (Stainless steel - 2)

**16** · Ball seat carrier (PP-H - 1)

**17** · Threaded ring (PP-H - 1)

**18** · Stem O-Ring (EPDM or FPM - 4)\*

**19** · Anti-friction disk (PTFE - 2)\*

**20** · Upper stem (PP-H/STAINLESS steel - 1)

**21** · Lower stem (PP-H - 1)

**22** · Plate (PP-GR - 1)

**23** · Protection plug (PE - 2)

**24** · Position indicator (PA - 1)

**25** · DUAL BLOCK® (PP-GR + various- 1)

**30** · Threaded insert (Brass - 2)\*\*

**31** · Actuation plate (PP-GR - 1)\*\*

\* Spare parts

\*\* Accessories

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

## DISASSEMBLY

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

## ASSEMBLY

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



**Note:** during assembly, 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) Make sure the DUAL BLOCK® union nut locking device (25) is in the FREE position.
- 3) Unscrew the union nuts (13) and insert them on the pipe segments.
- 4) Solvent weld or screw the end connectors (12) onto the pipe ends.
- 5) Position the valve body between the end connectors and fully tighten the union nuts (13) clockwise with an appropriate wrench.
- 6) Lock the union nuts rotating the button (25) clockwise (see paragraph "union nut lock").
- 7) If necessary, support the pipework with FIP pipe clips or by means of the carrier built into the valve itself (see paragraph "fastening and supporting").

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

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

Fig. 1



Fig. 2



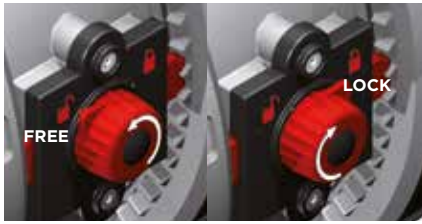
Fig. 3



Fig. 4



## 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 (H<sub>2</sub>O<sub>2</sub>) 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**  
PP-H

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.

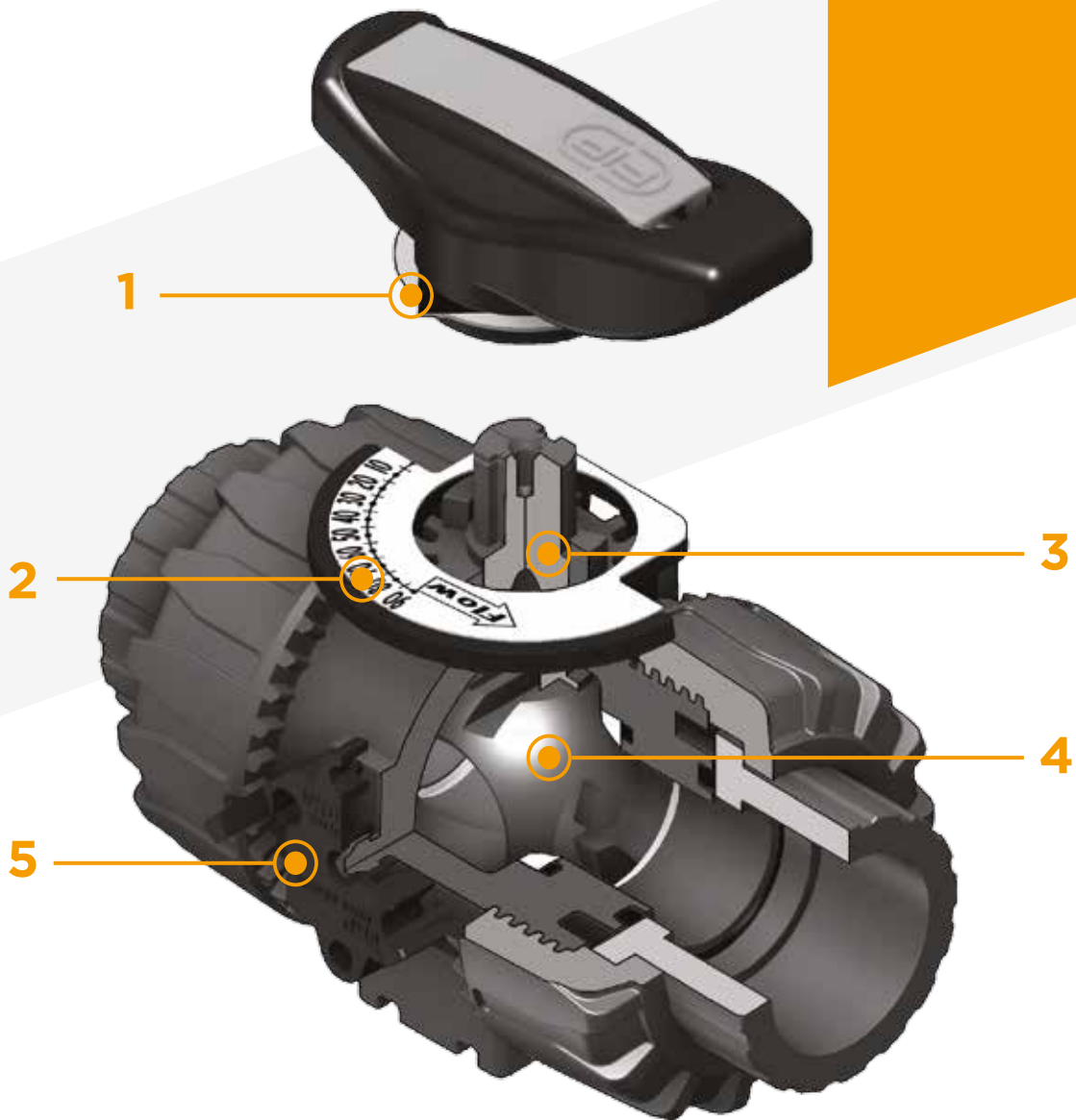


## DUAL BLOCK® REGULATING BALL VALVE

- 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	
<b>Construction</b>	2-way True Union regulating ball valve with locked carrier and lockable union nuts
<b>Size range</b>	DN 10 ÷ 50
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<p><b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494</p> <p><b>Thread:</b> ISO 228-1, DIN 2999</p> <p><b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150</p>
<b>Reference standards</b>	<p><b>Construction criteria:</b> EN ISO 16135, EN ISO 15494</p> <p><b>Test methods and requirements:</b> ISO 9393</p> <p><b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318</p> <p><b>Actuator couplings:</b> ISO 5211</p>
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM, FPM (standard size O-Rings); PTFE (ball seats)
<b>Control options</b>	Manual control; electric actuator





- 1** HIPVC ergonomic multifunctional handle with **position indicator** and removable key to **adjust the ball seat carrier**
- 2** Flow direction indication plate and opening angle with **graduated scale with 5° detail** for clear and accurate readings

- 3** 90° operating angle that permits the use of **standard quarter turn actuators**
- 4** The patented ball design provides **linear flow adjustment** throughout its range of operation even when the valve is open just a few degrees and guarantees minimum pressure drops

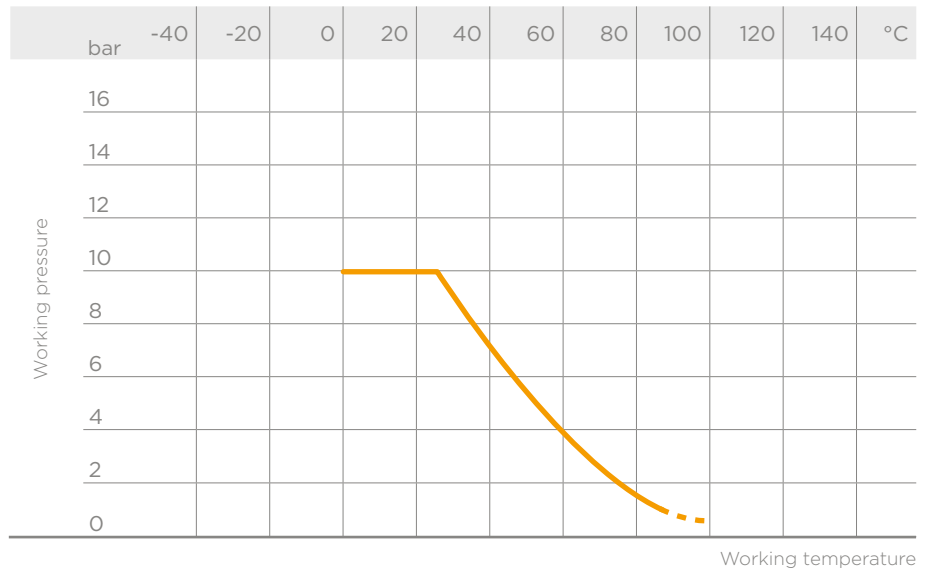
- 5** Patented **DUAL BLOCK®** system: prevents union nuts from loosening even under extreme operating conditions: e.g. vibration or thermal expansion



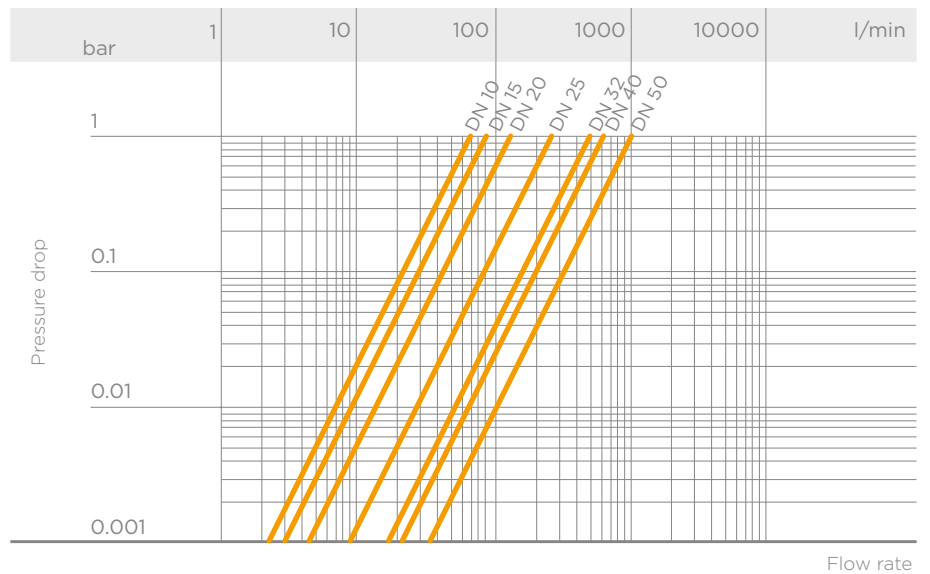
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



## K<sub>v</sub>100 FLOW COEFFICIENT

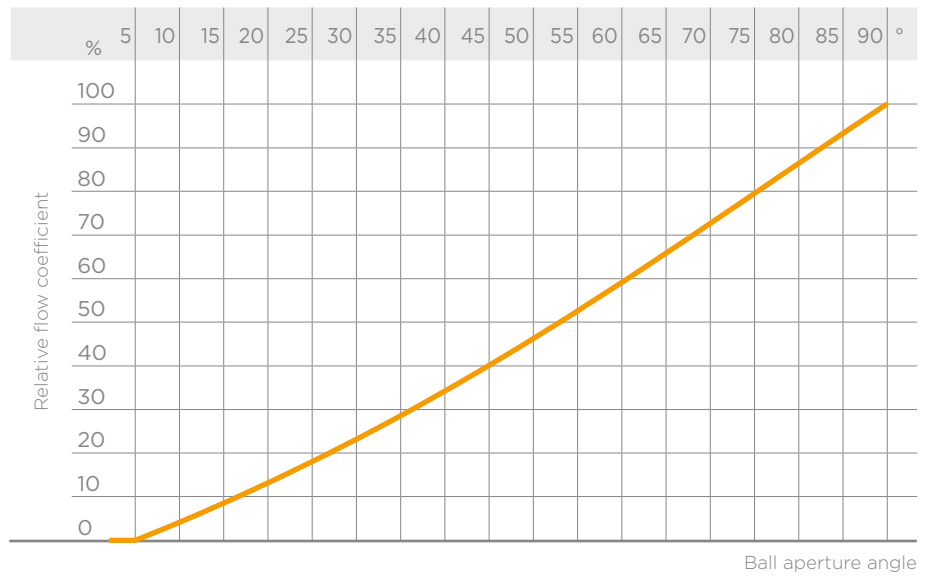
The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

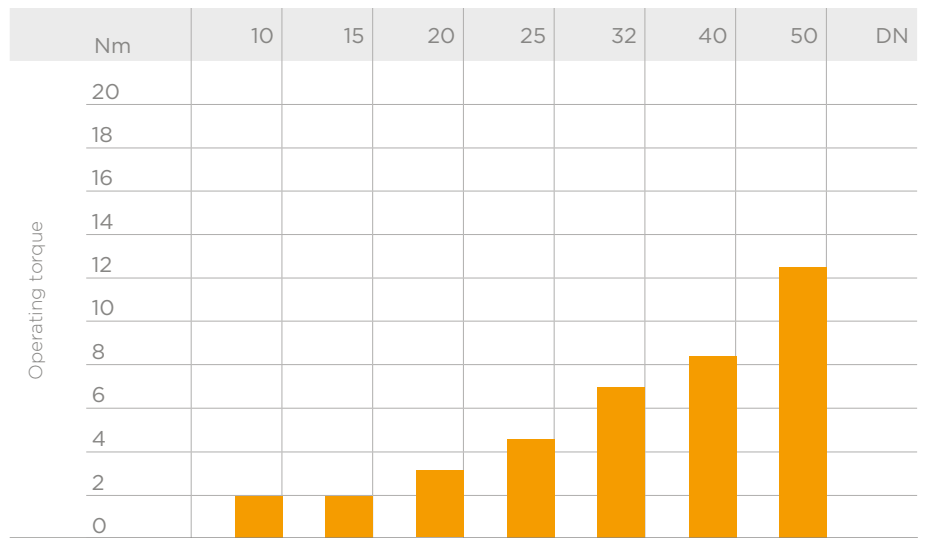
DN	10	15	20	25	32	40	50
K <sub>v</sub> 100 l/min	83	88	135	256	478	592	1068

## RELATIVE FLOW COEFFICIENT GRAPH

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

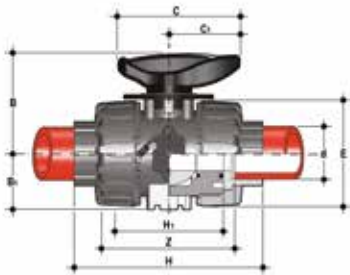


## OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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.

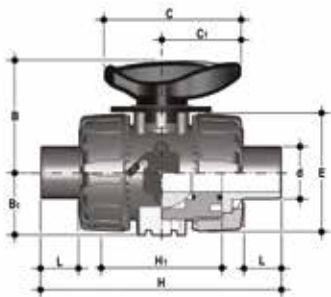
# DIMENSIONS



## VKRIM

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

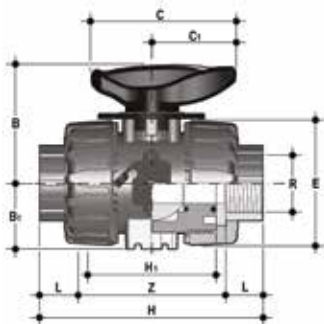
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	Z	g	EPDM Code	FPM Code
16	10	10	54	29	67	40	54	102	65	74.5	150	VKRIM016E	VKRIM016F
20	15	10	54	29	67	40	54	102	65	73	145	VKRIM020E	VKRIM020F
25	20	10	65	34.5	85	49	65	114	70	82	218	VKRIM025E	VKRIM025F
32	25	10	69.5	39	85	49	73	126	78	90	298	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

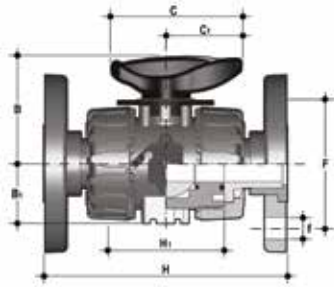
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	g	EPDM Code	FPM Code
16	10	10	54	29	67	40	54	124	65	16	153	VKRDM016E	VKRDM016F
20	15	10	54	29	67	40	54	144	70	18	222	VKRDM020E	VKRDM020F
25	20	10	65	34.5	85	49	65	154	78	20	303	VKRDM025E	VKRDM025F
32	25	10	69.5	39	85	49	73	174	88	22	485	VKRDM032E	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

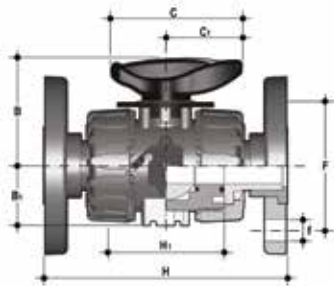
R	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
3/8"	10	10	54	29	67	40	54	103	65	15	80	145	VKRFM038E	VKRFM038F
1/2"	15	10	54	29	67	40	54	110	65	16	83	220	VKRFM012E	VKRFM012F
3/4"	20	10	65	34.5	85	49	65	116	70	19	96	298	VKRFM034E	VKRFM034F
1"	25	10	69.5	39	85	49	73	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	1181	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

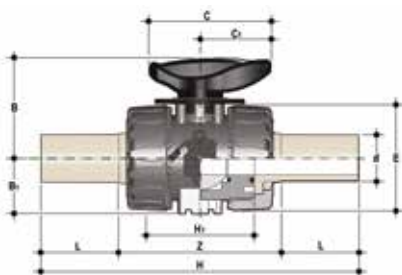
d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	H	H <sub>1</sub>	U	f	Sp	g	EPDM Code	FPM Code
20	15	10	54	29	67	40	65	130	65	4	14	11	387	VKROM020E	VKROM020F
25	20	10	65	34.5	85	49	75	150	70	4	14	14	504	VKROM025E	VKROM025F
32	25	10	69.5	39	85	49	85	160	78	4	14	14	697	VKROM032E	VKROM032F
40	32	10	82.5	46	108	64	100	180	88	4	18	14	1075	VKROM040E	VKROM040F
50	40	10	89	52	108	64	110	200	93	4	18	16	1346	VKROM050E	VKROM050F
63	50	10	108	62	134	76	125	230	111	4	18	16	2060	VKROM063E	VKROM063F



## VKROAM

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

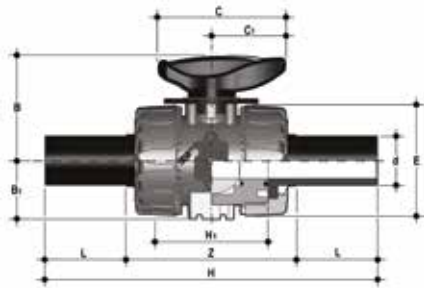
Size	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	F	H	H <sub>1</sub>	U	f	Sp	g	EPDM Code	FPM Code
1/2"	15	10	54	29	67	40	60.3	143	65	4	15.9	11	387	VKROAM012E	VKROAM012F
3/4"	20	10	65	34.5	85	49	69.9	172	70	4	15.9	14	504	VKROAM034E	VKROAM034F
1"	25	10	69.5	39	85	49	79.4	187	78	4	15.9	14	697	VKROAM100E	VKROAM100F
1 1/4"	32	10	82.5	46	108	64	88.9	190	88	4	15.9	14	1075	VKROAM114E	VKROAM114F
1 1/2"	40	10	89	52	108	64	98.4	212	93	4	15.9	16	1346	VKROAM112E	VKROAM112F
2"	50	10	108	62	134	76	120.7	234	111	4	19.1	16	2060	VKROAM200E	VKROAM200F



## 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 <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
20	10	10	54	29	67	67	54	175	65	41	93	220	VKRBM020E	VKRBM020F
25	15	10	65	35	85	85	65	210	70	52	106	340	VKRBM025E	VKRBM025F
32	20	10	70	39	85	85	73	226	78	55	116	443	VKRBM032E	VKRBM032F
40	25	10	83	46	108	108	86	243	88	56	131	593	VKRBM040E	VKRBM040F
50	32	10	89	52	108	108	98	261	93	58	145	945	VKRBM050E	VKRBM050F
63	40	10	108	62	134	134	122	293	111	66	161	1607	VKRBM063E	VKRBM063F

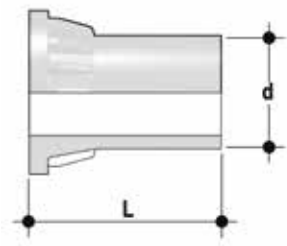


## VKRBEM

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

d	DN	PN	B	B <sub>1</sub>	C	C <sub>1</sub>	E	H	H <sub>1</sub>	L	Z	g	EPDM Code	FPM Code
20	15	10	54	29	67	40	54	175	65	41	94	210	VKRBEM020E	VKRBEM020F
25	20	10	65	34.5	85	49	65	210	70	52	106	325	VKRBEM025E	VKRBEM025F
32	25	10	69.5	39	85	49	73	226	78	55	117	420	VKRBEM032E	VKRBEM032F
40	32	10	82.5	46	108	64	86	243	88	56	131	570	VKRBEM040E	VKRBEM040F
50	40	10	89	52	108	64	98	261	93	58	145	900	VKRBEM050E	VKRBEM050F
63	50	10	108	62	134	76	122	293	111	66	161	1500	VKRBEM063E	VKRBEM063F

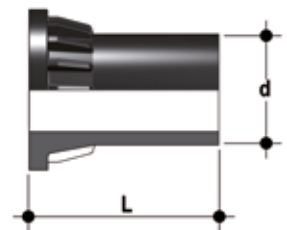
## ACCESSORIES



### 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
52	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063



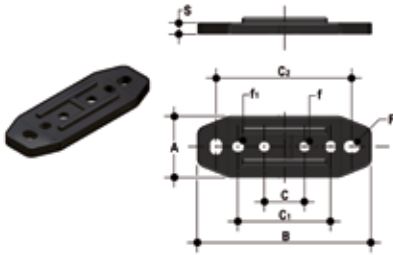
### CVDE

Long spigot PE100 SDR 11 PN 16 end connectors for joints with electrofusion fittings or for butt welding

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

## PMKD

Wall mounting plate



d	DN	A	B	C	C <sub>1</sub>	C <sub>2</sub>	F	f	f <sub>1</sub>	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	5.3	5.5	6	PMKD2
50	40	40	122	30	72	102	6.5	5.3	5.5	6	PMKD2
63	50	40	122	30	72	102	6.5	5.3	5.5	6	PMKD2

## EASYTORQUE KIT

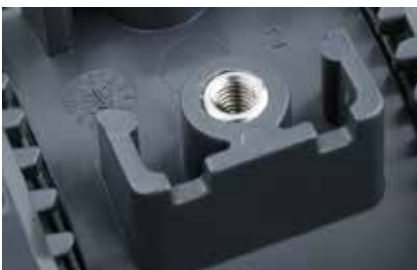
Kit for ball seat carrier tightening adjustment for DUAL BLOCK® DN 10÷50 series valves



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

\*calculated in ideal installation conditions

# FASTENING AND SUPPORTING

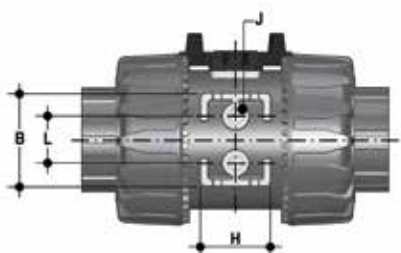


All valves, whether manual or actuated, must be adequately supported in many applications.

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

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

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

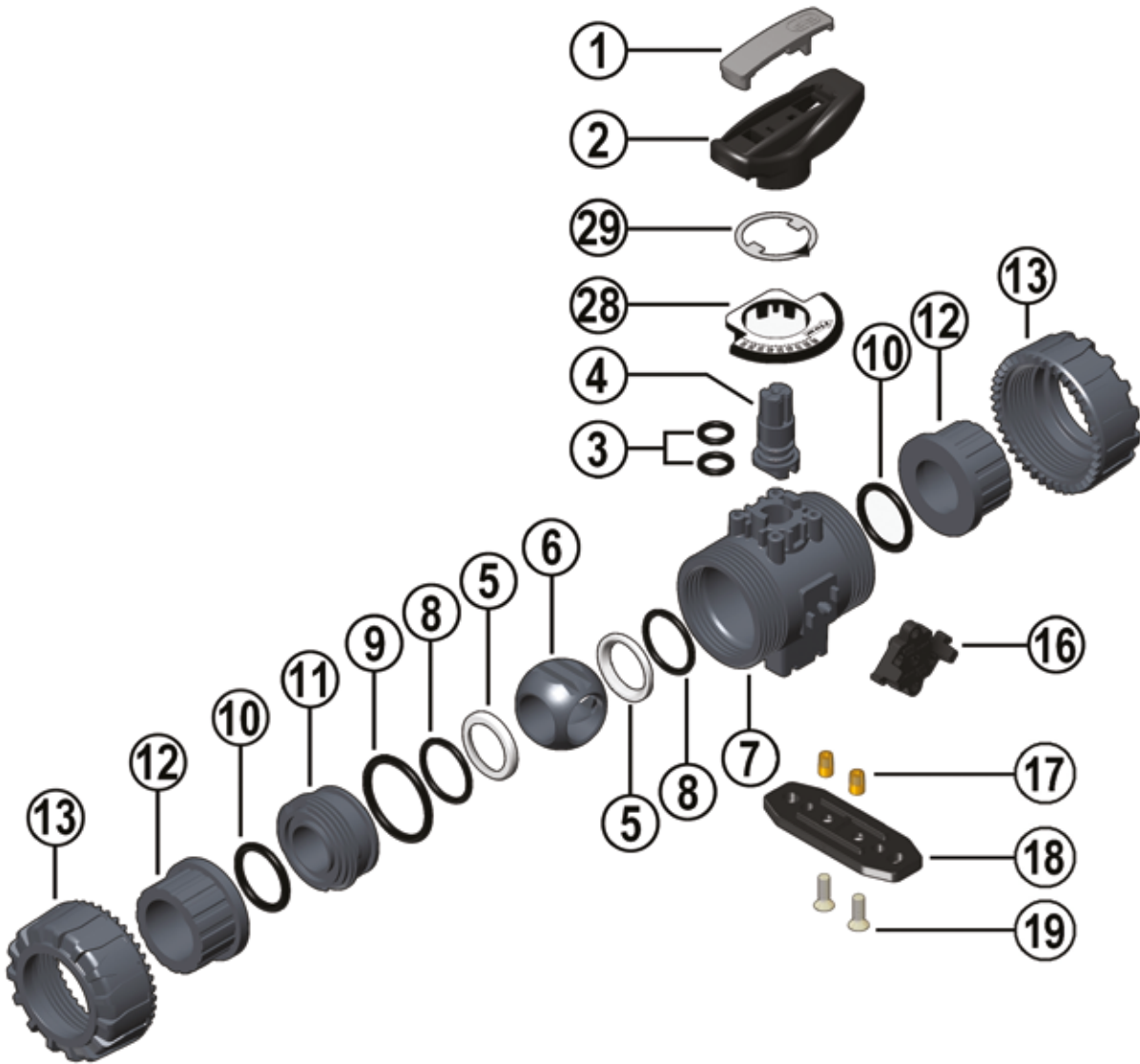


d	DN	B	H	L	J*
16	10	31.5	27	20	M4 x 6
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

\* With threaded inserts

# COMPONENTS

## EXPLODED VIEW



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

\* Spare parts

\*\* Accessories

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

## DISASSEMBLY

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

## ASSEMBLY

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



**Note:** during assembly, 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 installed on 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 body between the pipe end connectors making sure that the direction of flow is the same as shown on the plate (Fig.4). Hand tighten the union nuts (13) in the clockwise direction. Do not use a wrench or other tools which might damage the surface.
- 7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.



8) If necessary, support the pipework with FIP pipe clips or by means of the carrier built into the valve itself (see paragraph "fastening and supporting").

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

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

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

Fig. 5



## **WARNINGS**

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







**TKD DN 15÷50**  
PP-H

DUAL BLOCK® 3-way ball valve

# TKD DN 15÷50

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

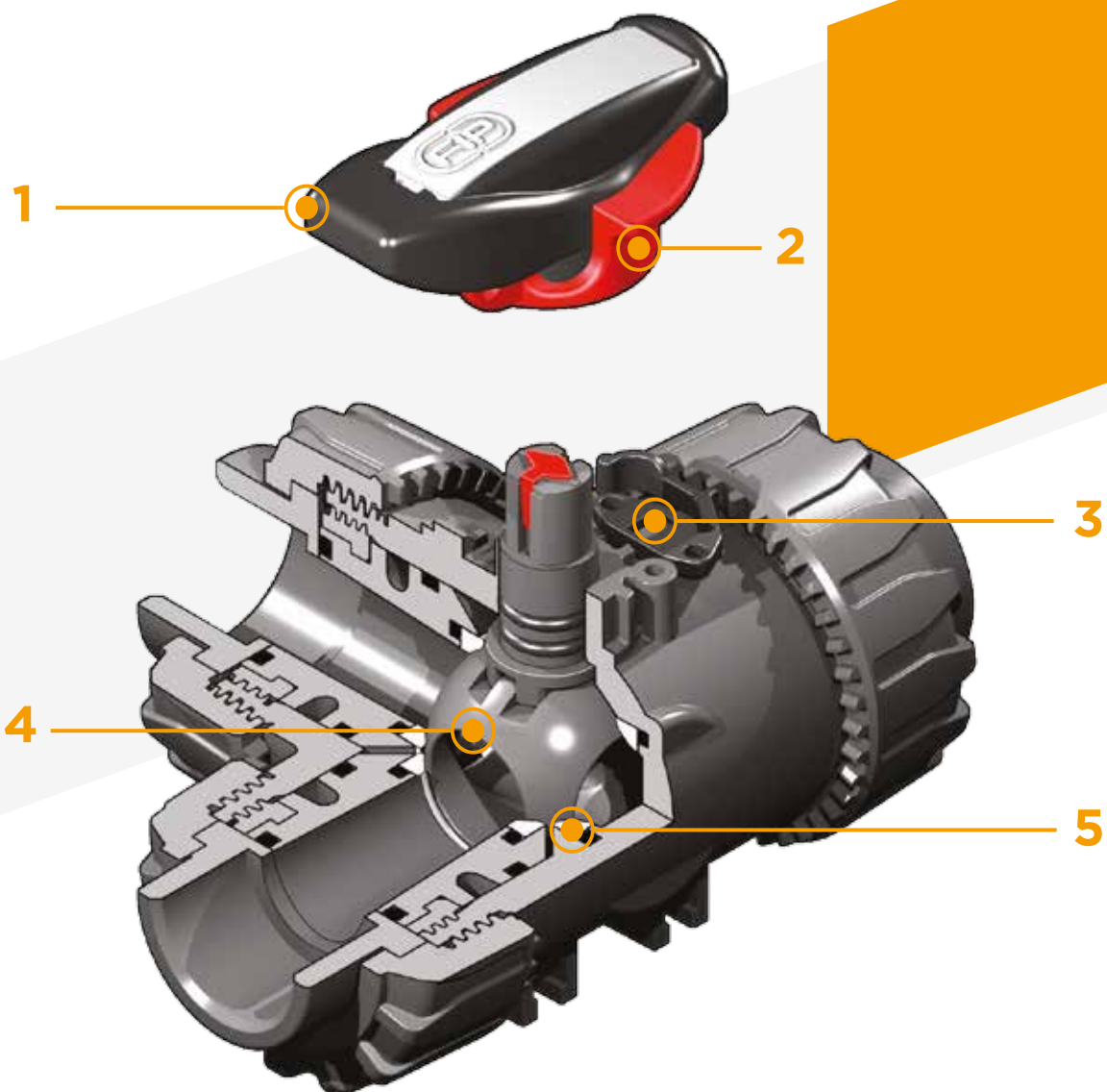


## DUAL BLOCK® 3-WAY BALL VALVE

- Connection system for 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)

### Technical specifications

<b>Construction</b>	3-way True Union ball valve with locked carrier and lockable union nuts
<b>Size range</b>	DN 15 ÷ 50
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16135, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318 <b>Actuator couplings:</b> ISO 5211
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM, FPM (standard size O-Rings); PTFE (ball seats)
<b>Control options</b>	Manual control; electric actuator; pneumatic actuator



**1** Ergonomic HIPVC handle equipped with removable key to adjust the carrier of the ball seats. 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 lockable

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

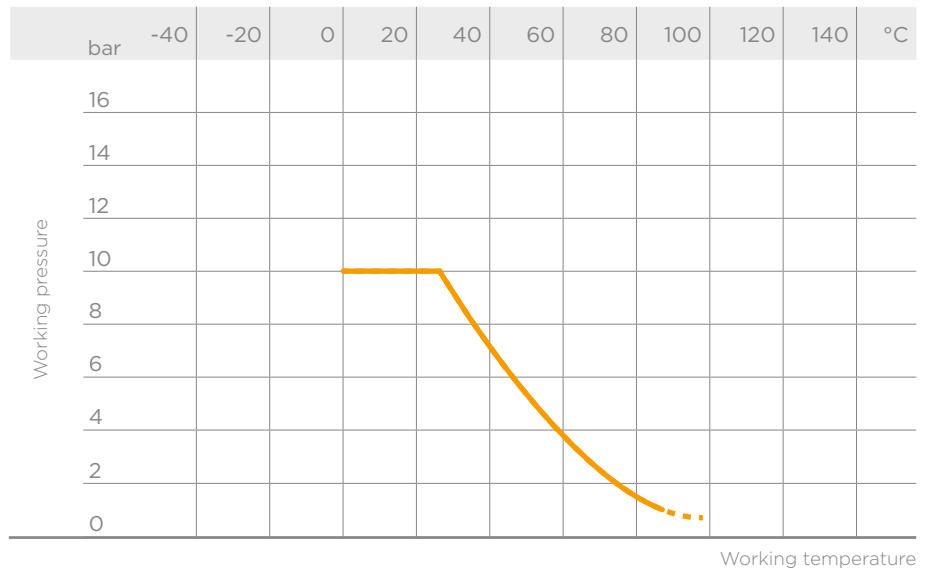
**4** **Ball shutter** high surface finish with floating type full passage with **T or L port**

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

# TECHNICAL DATA

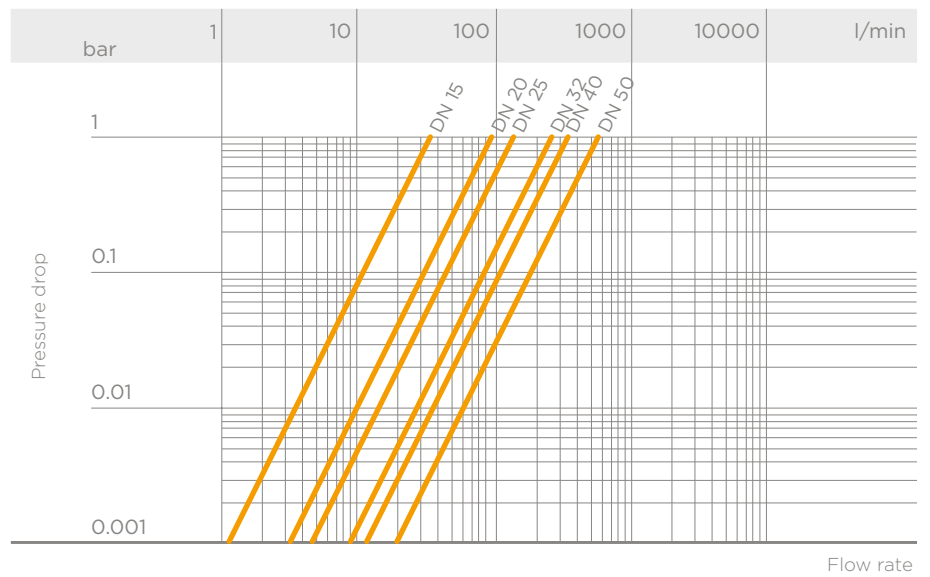
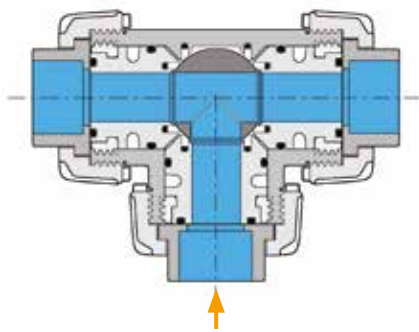
## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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

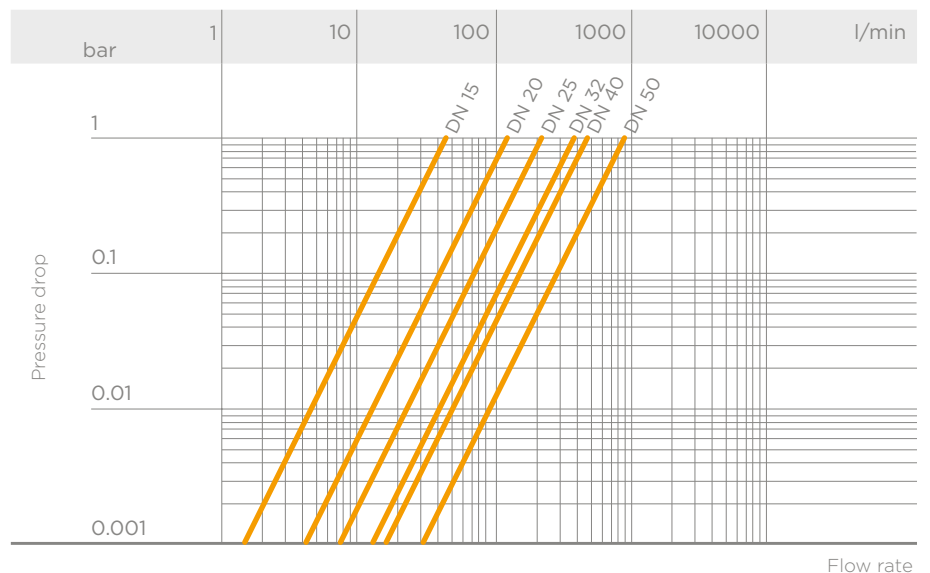
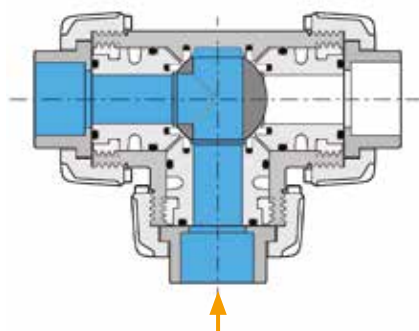


## PRESSURE DROP GRAPH AND WORKING POSITIONS

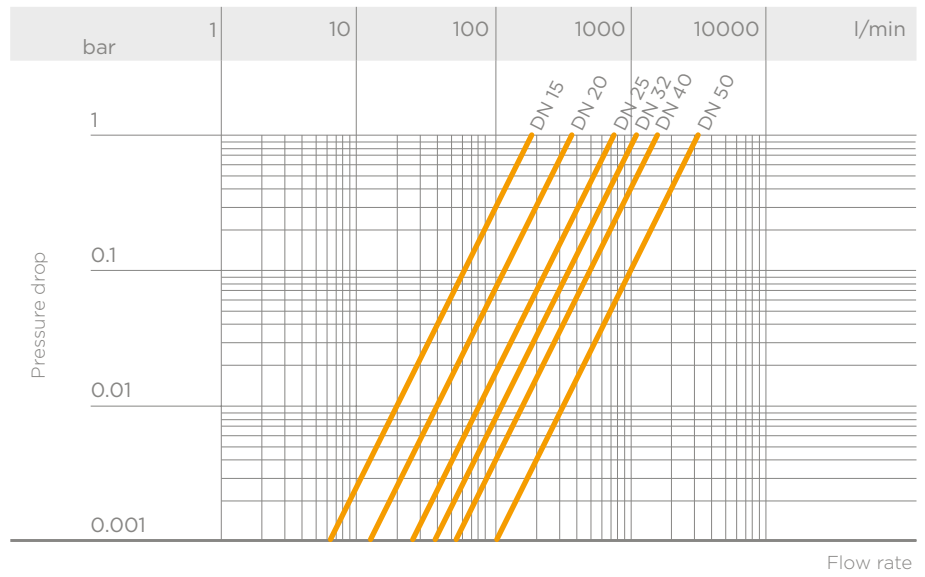
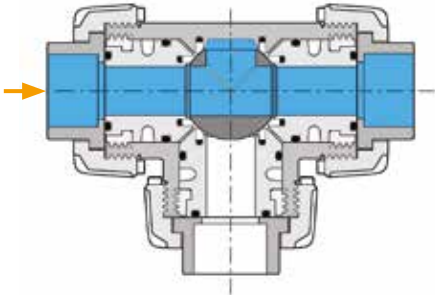
**A** - T-port ball valve:  
0° - Mixing



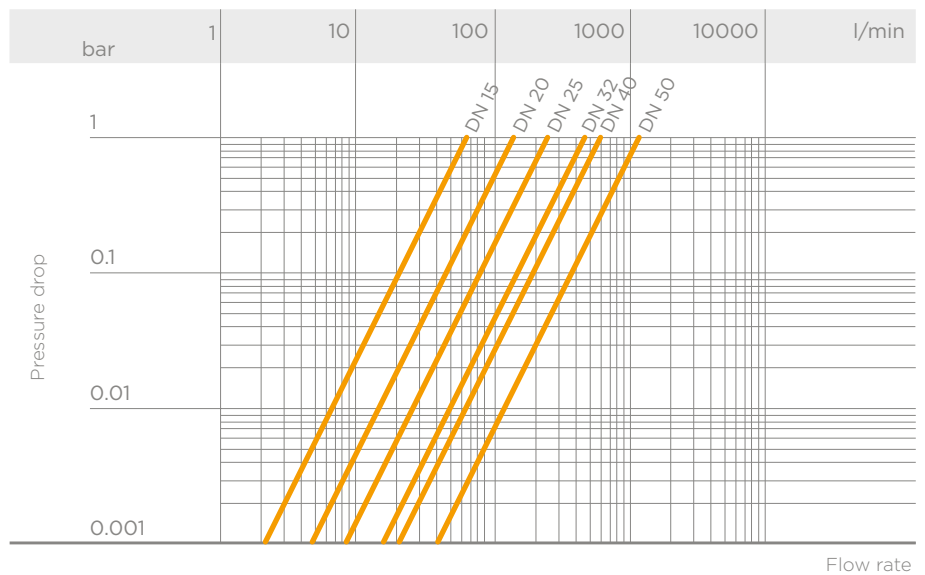
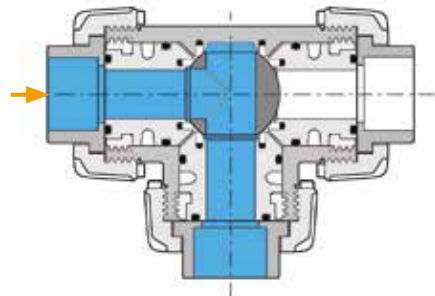
**B** - T-port ball valve:  
90° - Diverting



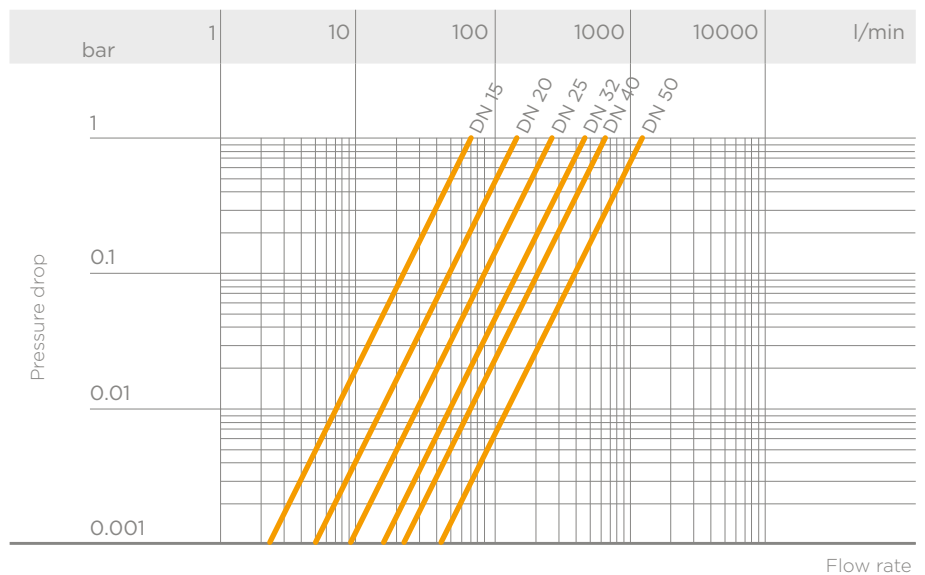
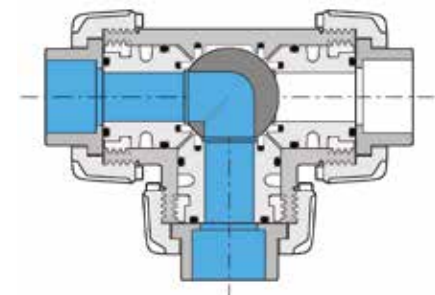
**C** - T-port ball valve:  
180° - Branch closed/direct  
flow



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



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





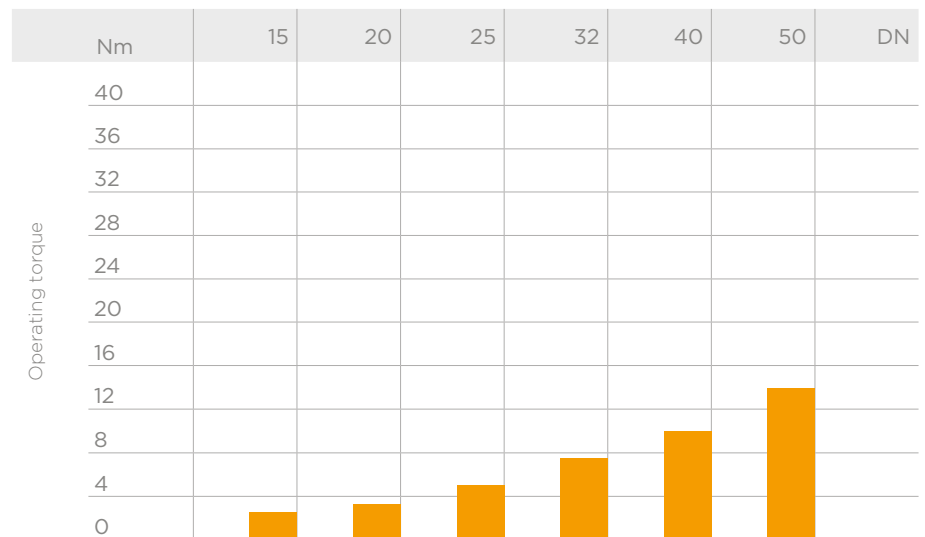
## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

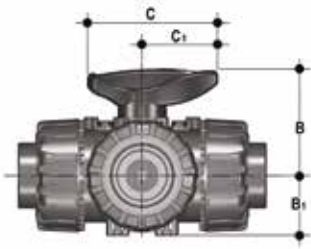
	DN	15	20	25	32	40	50
K <sub>v</sub> 100 l/min	<b>A</b>	35	95	140	270	330	620
	<b>B</b>	55	135	205	390	475	900
	<b>C</b>	195	380	760	1050	1700	3200
	<b>D</b>	65	145	245	460	600	1200
	<b>E</b>	73	150	265	475	620	1220

## OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



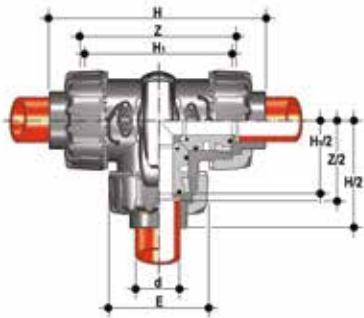
The information in this leaflet is provided in good faith. No liability will be accepted concerning technical data that is not directly covered by recognised international standards. FiP reserves the right to carry out any modification. Products must be installed and maintained by qualified personnel.

# DIMENSIONS



Dimensions shared by all versions

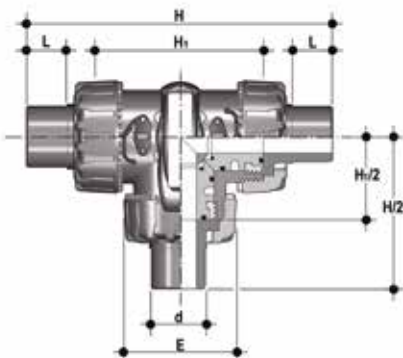
d	DN	B	B <sub>1</sub>	C	C <sub>1</sub>
20	15	54	29	67	40
25	20	65	35	85	49
32	25	70	39	85	49
40	32	83	46	108	64
50	40	89	52	108	64
63	50	108	62	134	76



## TKDIM - LKDIM

DUAL BLOCK® 3-way ball valve with female ends for socket welding, metric series.  
TKDIM - T-port ball/ LKDIM - L-port ball

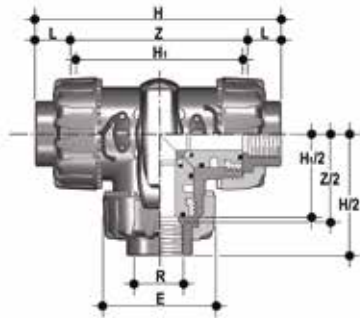
d	DN	PN	E	H	H <sub>1</sub>	Z	g	TKDIM EPDM Code	TKDIM FPM Code	LKDIM EPDM Code	LKDIM FPM Code
20	15	10	54	117	80	88	195	TKDIM020E	TKDIM020F	LKDIM020E	LKDIM020F
25	20	10	65	144	100	112	350	TKDIM025E	TKDIM025F	LKDIM025E	LKDIM025F
32	25	10	73	158	110	122	505	TKDIM032E	TKDIM032F	LKDIM032E	LKDIM032F
40	32	10	86	184	131	143	820	TKDIM040E	TKDIM040F	LKDIM040E	LKDIM040F
50	40	10	98	219	148	172	1070	TKDIM050E	TKDIM050F	LKDIM050E	LKDIM050F
63	50	10	122	267	179	212	1795	TKDIM063E	TKDIM063F	LKDIM063E	LKDIM063F



## TKDDM - LKDDM

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

d	DN	PN	E	H	H <sub>1</sub>	L	g	TKDDM EPDM Code	TKDDM FPM Code	LKDDM EPDM Code	LKDDM FPM Code
20	15	10	54	140	80	16	205	TKDDM020E	TKDDM020F	LKDDM020E	LKDDM020F
25	20	10	65	175	100	18	360	TKDDM025E	TKDDM025F	LKDDM025E	LKDDM025F
32	25	10	73	188	110	20	515	TKDDM032E	TKDDM032F	LKDDM032E	LKDDM032F
40	32	10	86	220	131	22	835	TKDDM040E	TKDDM040F	LKDDM040E	LKDDM040F
50	40	10	98	251	148	23	1100	TKDDM050E	TKDDM050F	LKDDM050E	LKDDM050F
63	50	10	122	294	179	29	1830	TKDDM063E	TKDDM063F	LKDDM063E	LKDDM063F

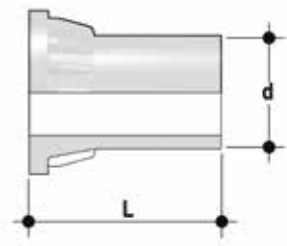


## TKDFM - LKDFM

DUAL BLOCK® 3-way ball valve with BSP threaded female ends.  
TKDFM - T-port ball/ LKDFM - L-port ball

R	DN	PN	E	H	H <sub>1</sub>	L	Z	g	TKDFM EPDM Code	TKDFM FPM Code	LKDFM EPDM Code	LKDFM FPM Code
1/2"	15	10	54	117	80	15	87	195	TKDFM012E	TKDFM012F	LKDFM012E	LKDFM012F
3/4"	20	10	65	143	100	16	114	350	TKDFM034E	TKDFM034F	LKDFM034E	LKDFM034F
1"	25	10	73	157	110	19	120	505	TKDFM100E	TKDFM100F	LKDFM100E	LKDFM100F
1 1/4"	32	10	86	185	131	21	140	820	TKDFM114E	TKDFM114F	LKDFM114E	LKDFM114F
1 1/2"	40	10	98	217	148	21	172	1070	TKDFM112E	TKDFM112F	LKDFM112E	LKDFM112F
2"	50	10	122	266	179	26	211	1795	TKDFM200E	TKDFM200F	LKDFM200E	LKDFM200F

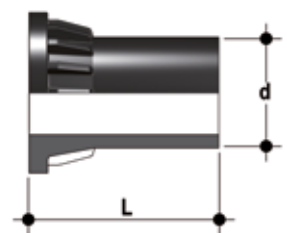
## ACCESSORIES



### 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
52	40	10	84	11	CVDM11050
63	50	10	91	11	CVDM11063



### CVDE

Long spigot PE100 SDR 11 PN 16 end connectors for joints with electrofusion fittings or for butt welding

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



## SHKD

Handle block kit 0° - 90° lockable

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



## LTKD

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

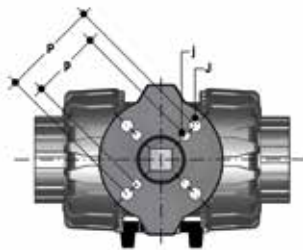
d	DN	Code 90°	Code 180°
16 - 20	15	LTKD090020	LTKD180020
25 - 32	20 - 25	LTKD090032	LTKD180032
40 - 50	32 - 40	LTKD090050	LTKD180050
63	50	LTKD090063	LTKD180063



## PSKD

Stem extension

d	DN	A	A <sub>1</sub>	A <sub>2</sub>	E	B	B <sub>1</sub>	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



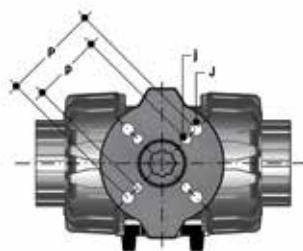
## POWER QUICK CP

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



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

\*F04 x 5.5 upon request



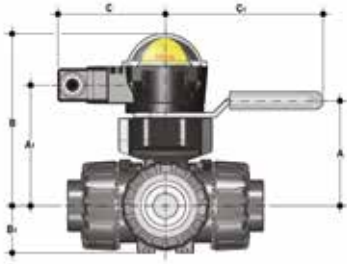
## POWER QUICK CE

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



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

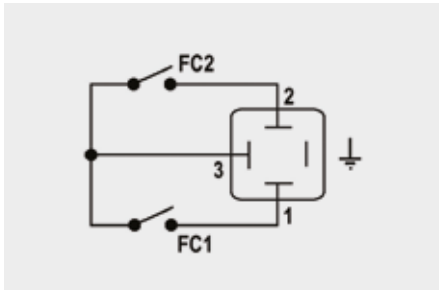
\*F04 x 5.5 upon request



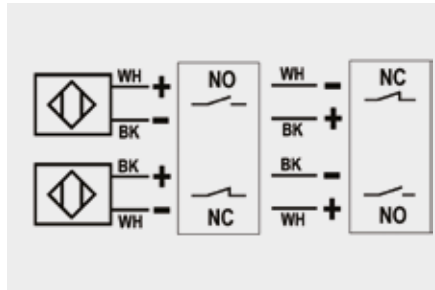
## MSKD

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

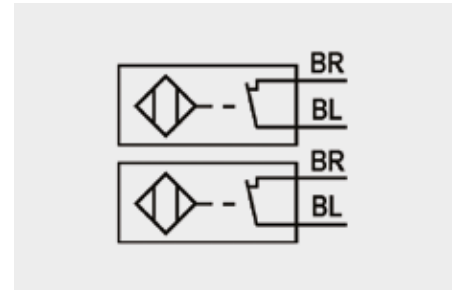
d	DN	A	A <sub>1</sub>	B	B <sub>1</sub>	C	C <sub>1</sub>	Code electromechanical	Code inductive	Code Namur
20	15	58	85	132.5	29	88.5	134	MSKD1M	MSKD1I	MSKD1N
25	20	70.5	96	143.5	34.5	88.5	134	MSKD1M	MSKD1I	MSKD1N
32	25	74	101	148.5	39	88.5	134	MSKD1M	MSKD1I	MSKD1N
40	32	116	118	165.5	46	88.5	167	MSKD2M	MSKD2I	MSKD2N
50	40	122	124	171.5	52	88.5	167	MSKD2M	MSKD2I	MSKD2N
63	50	139	141	188.5	62	88.5	167	MSKD2M	MSKD2I	MSKD2N



Electromechanical



Inductive



Namur

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

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

\* To be used with an amplifier

\*\* Outside areas with explosion risks

## FASTENING AND SUPPORTING



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

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

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

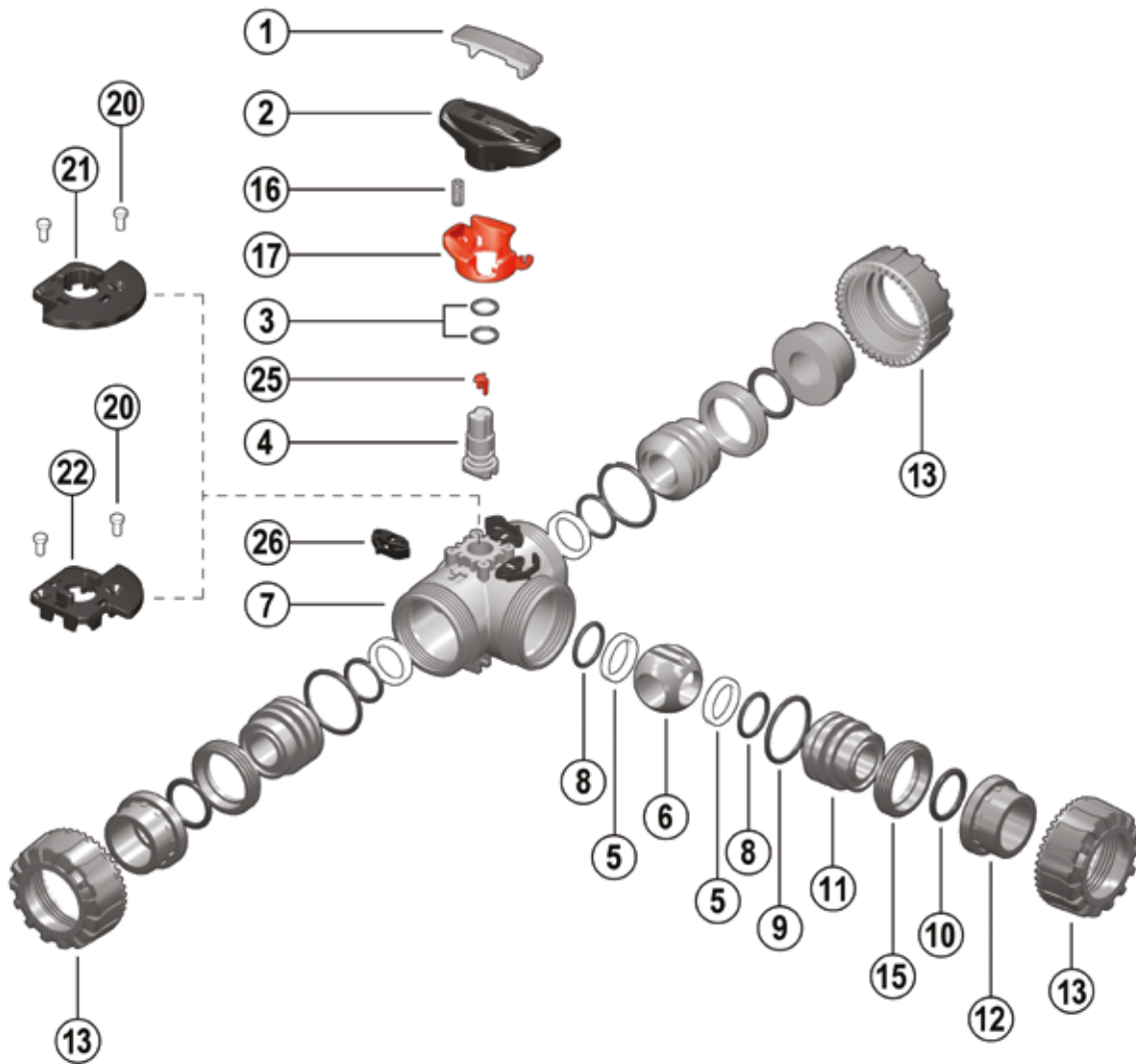


d	DN	B	H	L	J*
20	15	31.5	27	20	M4 x 6
25	20	40	30	20	M4 x 6
32	25	40	30	20	M4 x 6
40	32	50	35	20	M6 x 10
50	40	50	35	20	M6 x 10
63	50	60	40	20	M6 x 10

\* With threaded inserts

# COMPONENTS

## EXPLODED VIEW



- 1 · Handle insert (PVC-U - 1)
- 2 · Handle (HIPVC - 1)
- 3 · Stem O-ring (EPDM or FPM - 2)\*
- 4 · Stem (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 FPM - 4)\*

- 9 · Radial seal O-Ring (EPDM or FPM - 3)
- 10 · Socket seal O-Ring (EPDM or FPM - 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 · Handle safety block - SHKD accessory (PP-GR - 1)\*\*
- 20 · Rivet for LTKD (POM - 2)\*\*
- 21 · LTKD 180° (POM - 1)\*\*
- 22 · LTKD 90° (POM - 1)\*\*
- 25 · Position indicator (POM - 1)
- 26 · DUAL BLOCK® (POM - 3)

\* Spare parts

\*\* Accessories

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

## DISASSEMBLY

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

## ASSEMBLY

- 1) Insert the O-rings (3) on the stem (4).
- 2) Insert the O-ring (8) in the seat in the valve body and, next, the PTFE ball seat (5).
- 3) Insert the stem (4), from the interior, in the body, being sure the three 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, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 1



Fig. 2



Fig. 3



Fig. 4



## INSTALLATION

Before proceeding with installation, please follow these instructions carefully:

- 1) Check that the pipes to be connected to the valve are aligned in order to avoid mechanical stress on the threaded joints.
- 2) Check that the DUAL BLOCK® union nut locking device (26) is installed on the valve body.
- 3) To release the union nuts (13), axially press the release lever to separate the lock and then unscrew it in the counter-clockwise direction.
- 4) Unscrew the three union nuts (13) and insert them on the pipe segments.
- 5) Solvent weld or screw the end connectors (12) onto the pipe ends.
- 6) Position the valve body between the end connectors and fully tighten the union nuts (13) manually by rotating clockwise without using wrenches or other tools that could damage the union nut surface.
- 7) Lock the union nuts by returning the DUAL BLOCK® to its housing, pressing on it until the hinges lock on the nuts.
- 8) If necessary, support the pipework with FIP pipe clips or by means of the carrier built-into the valve itself (see paragraph "fastening and supporting").



The TKD valve can be equipped with a handle 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 lock can also be installed on the handle to protect the system against tampering (fig. 4).

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

The seals can be adjusted later with the valve installed on the pipe by simply tightening the union nuts.

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

## WARNINGS

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

Fig. 5



Fig. 6



Fig. 7

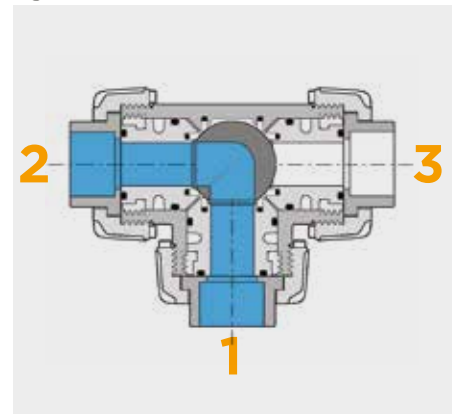
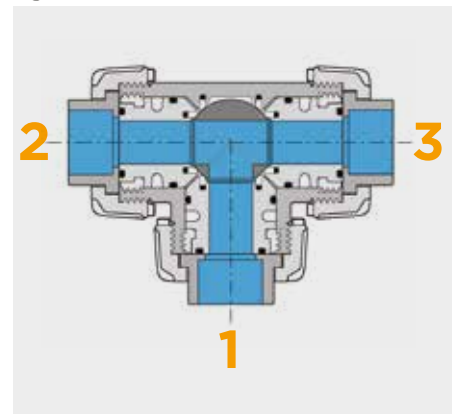


Fig. 8









**SR DN 15÷50**  
PP-H

Ball check valve

# SR DN 15÷50

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

## BALL CHECK VALVE

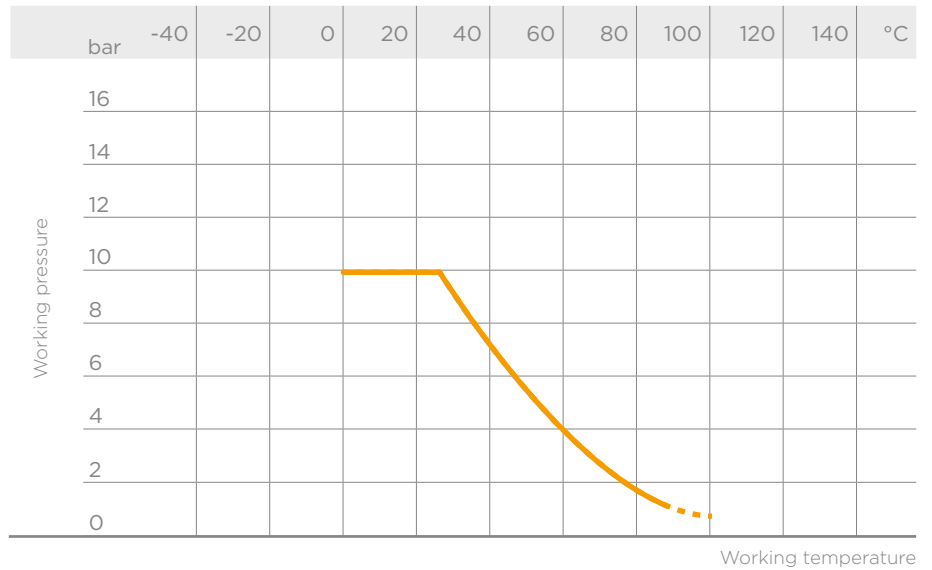
- Connection system for weld joints
- PN10 **valve body made for PP-H injection moulding** and European Directive 97/23/EC compliant for PED pressurised equipment. ISO 9393 compliant test requirements
- The valve can only be used with fluids with specific weight under 1,20 g/cm<sup>3</sup>
- **Sealing 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	
<b>Construction</b>	Ball check valve
<b>Size range</b>	DN 15÷50
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16137, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	<b>Body:</b> PP-H <b>Ball:</b> PP
<b>Seal material</b>	FPM (spare set in EPDM available on request)

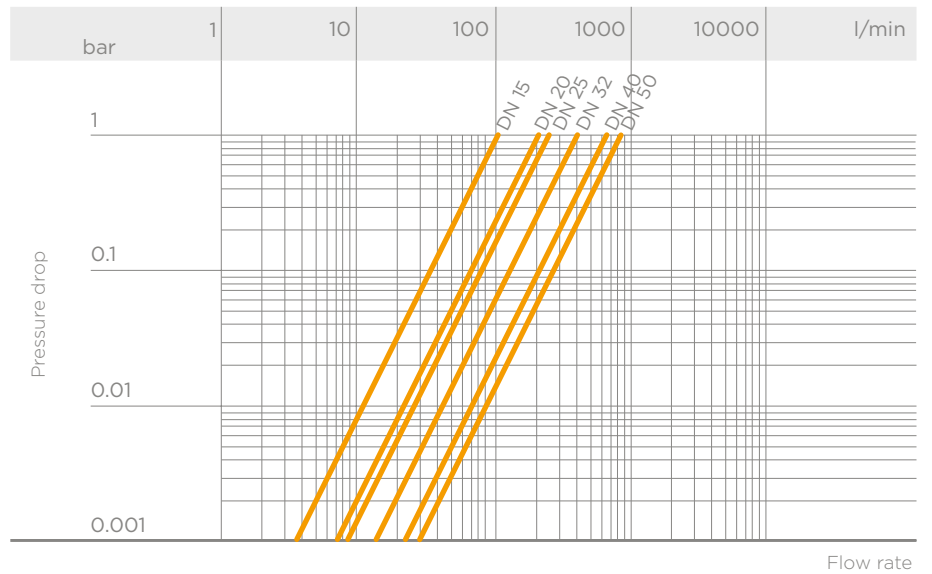
# TECHNICAL DATA

## 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<sub>v</sub>100 FLOW COEFFICIENT**

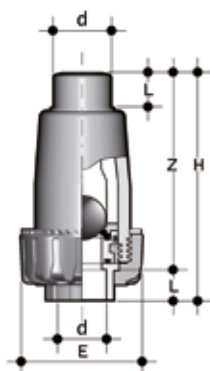
The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate  $\Delta p = 1$  bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

DN	15	20	25	32	40	50
K <sub>v</sub> 100 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

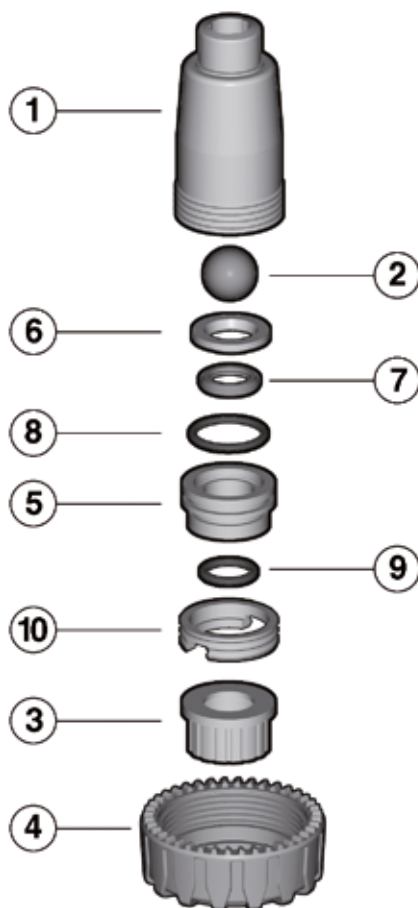
Ball check valve with ends for socket welding, metric series

d	DN	PN	E	H	L	Z	g	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 (talc-filled PP-H - 1)\*

3 • End connector (PP-H - 1)\*

4 • Union nut (PP-H - 1)\*

5 • Carrier (PP-H - 1)

6 • Gland packing ring  
(PP-H - 1)

7 • Ball seat (EPDM or FPM - 1)\*

8 • Radial seal O-Ring  
(EPDM or FPM - 1)\*

9 • Socket seal O-ring (EPDM or  
FPM - 1)\*

\* Spare parts

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

## DISASSEMBLY

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

## ASSEMBLY

- 1) Insert the ball (2) in the body (1).
- 2) Place the O-rings (9) and (8) in the carrier housings (5).
- 3) Place the seal (7) between the carrier (5) and the gland packaging 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**  
PP-H

Butterfly valve

# FK

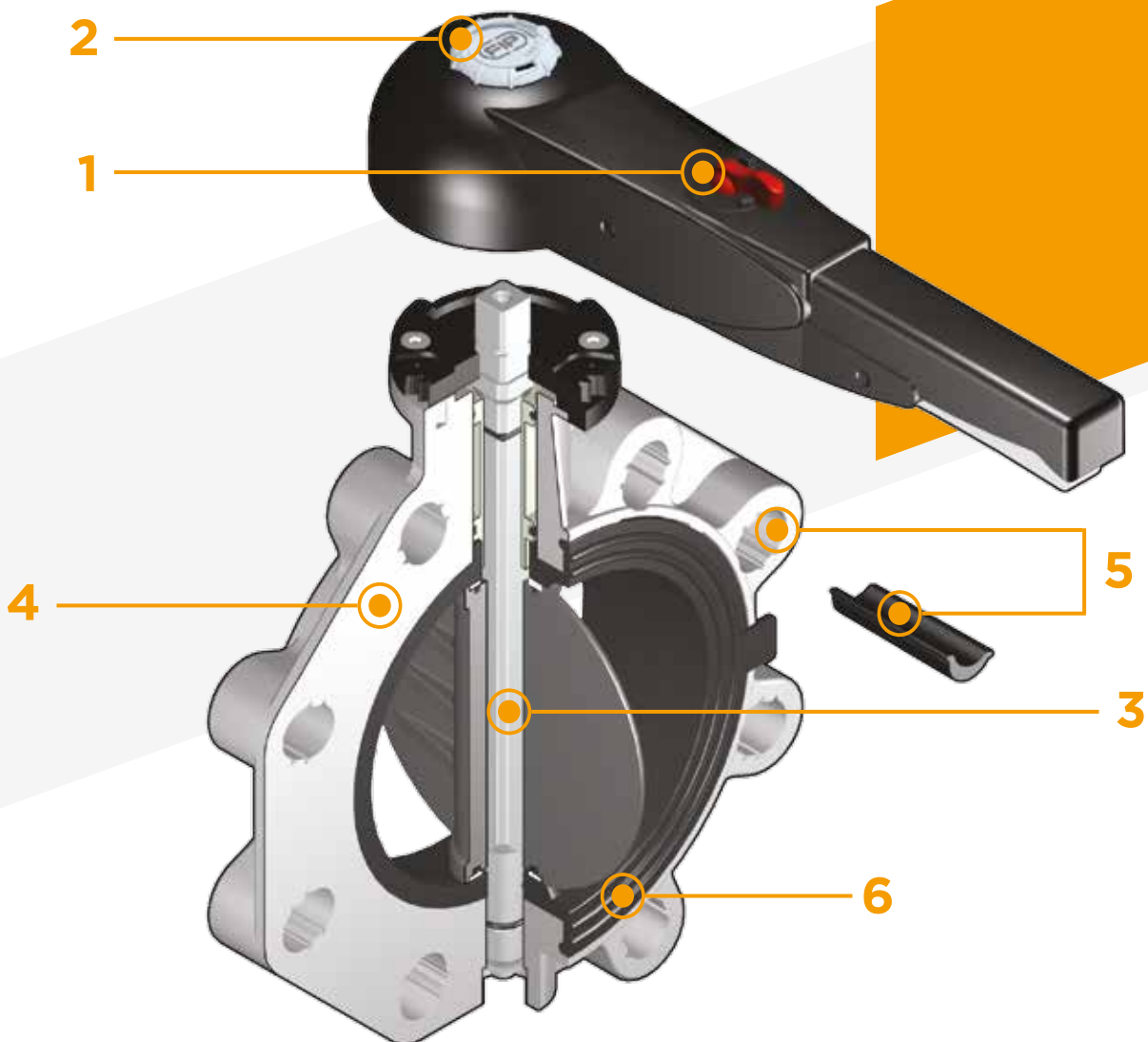
## DN 40÷400

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 long-term reliability. This valve is also equipped with the customisable Labelling System.

### BUTTERFLY VALVE

- Interchangeable Disk in PP-H with through shaft, available in different thermoplastic materials: PVC-U, PVC-C, ABS, PVDF
- Overall dimensions of the valve in accordance with standard ISO 5752 (DN 40÷200 Medium series 25, DN 250÷ 300 Long Series 16) and DIN 3202 K2 and ISO 5752 (DN DN 65÷200 K2, DN 250÷300 K3)
- Can also be installed as an end line valve, bottom discharge valve or tank dump valve
- **Special Lug version** PN 10 fully drilled according to DIN 2501 or ANSI B16.5 cl.150 **with molded-in AISI 316 stainless steel threaded inserts**
- **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.

Technical specifications	
<b>Construction</b>	Bi-directional centric butterfly valve
<b>Size range</b>	DN 40÷400
<b>Nominal pressure</b>	<b>Wafer version</b> <b>DN 40÷250:</b> PN 10 with water at 20° C <b>DN 300:</b> PN 8 with water at 20° C <b>DN 350:</b> PN 7 with water at 20° C <b>DN 400:</b> PN 6 with water at 20° C <b>Lug version</b> <b>DN 65÷200:</b> PN 10 with water at 20° C <b>DN 250÷300:</b> PN 6 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Flanging system:</b> EN ISO 15494, DIN 2501, ISO 7005-1, EN 1092-1, ASTM B16.5 cl.150, JIS B 2220
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16136, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Actuator couplings:</b> ISO 5211
<b>Valve material</b>	<b>Body:</b> PP-GR <b>Disk:</b> PP-H <b>Stem:</b> AISI steel 316
<b>Seal material</b>	Liner: EPDM, FPM. On request NBR
<b>Control options</b>	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.

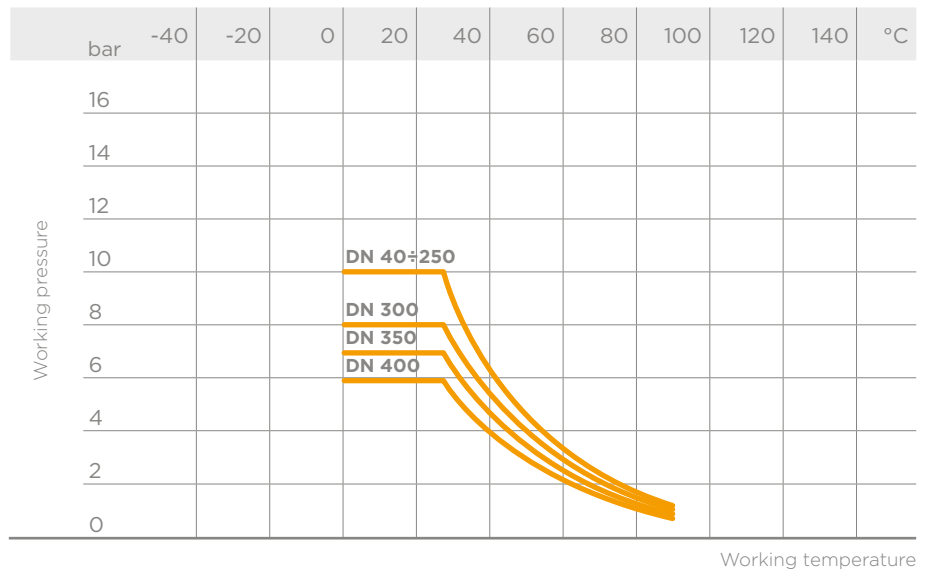
For DN 250÷400 valves, the drilling pattern for the self-centring system is of the traditional type according to DIN and ANSI standards.

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

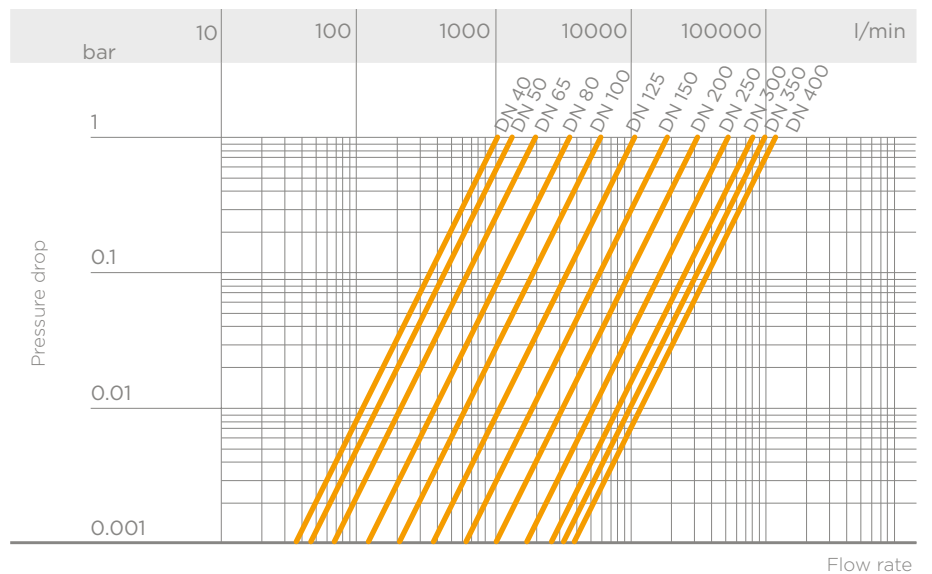
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



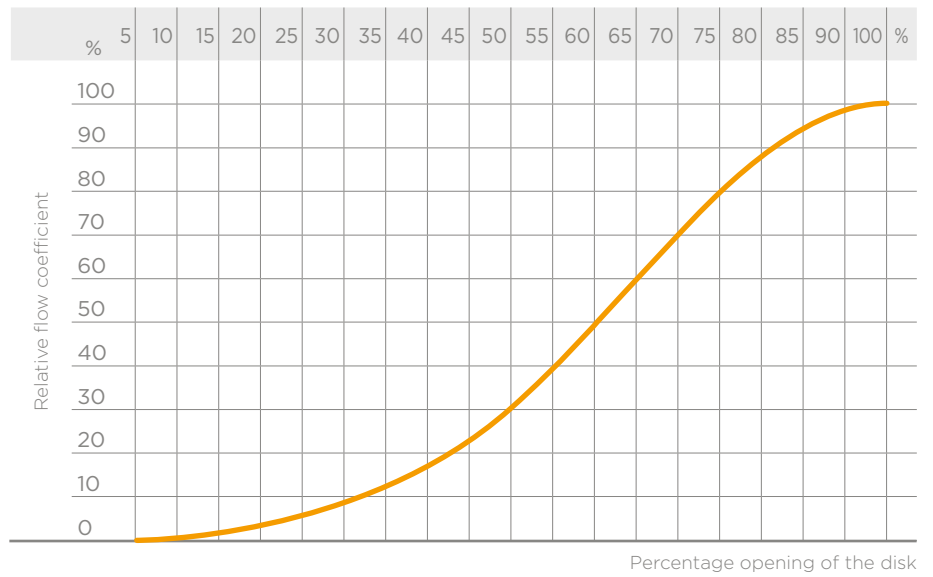
## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

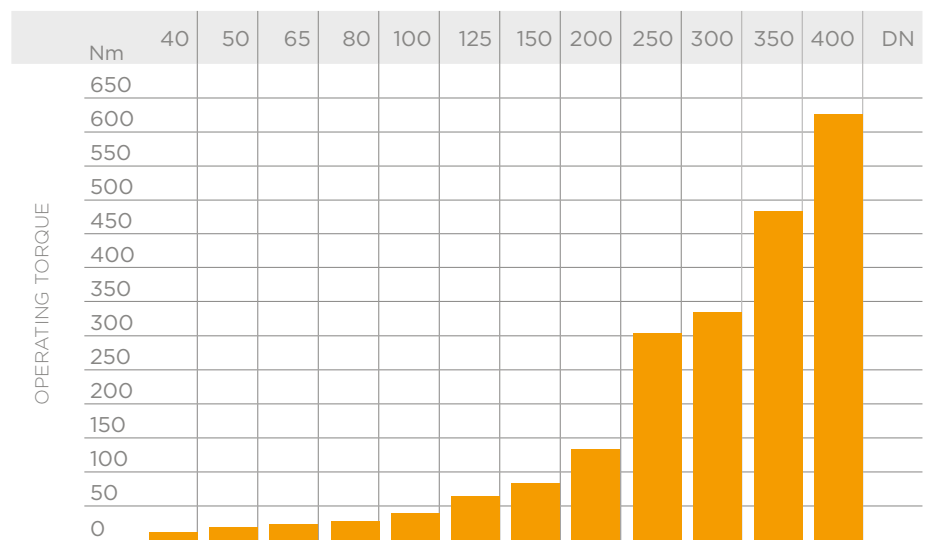
The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

DN	40	50	65	80	100	125	150	200	250	300	350	400
K <sub>v</sub> 100 l/min	1000	1285	1700	3550	5900	9850	18700	30500	53200	81600	94100	124900

## RELATIVE FLOW COEFFICIENT GRAPH



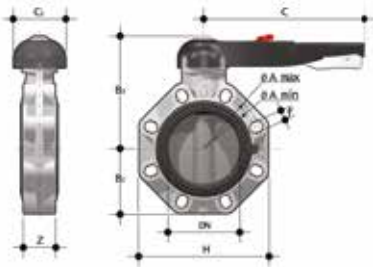
## OPERATING TORQUE AT MAXIMUM WORKING PRESSURE



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



# DIMENSIONS



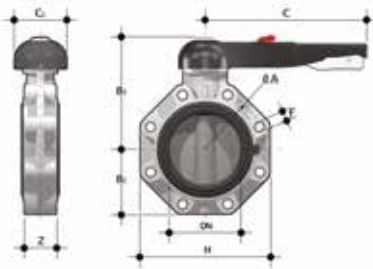
## FKOM/LM

Hand operated Butterfly valve

d - Size	DN	PN	A min	A max	B <sub>2</sub>	B <sub>3</sub>	C	C <sub>1</sub>	H	U	Z	g	EPDM Code	FPM 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	175	100	185	8	49	1770	FKOMLM090E	FKOMLM090F
110 - 4"	100	10	165	190	107	192	272	110	211	8	56	2120	FKOMLM110E	FKOMLM110F
140 - 5"	125	10	204	215	120	212	330	110	240	8	64	3000	FKOMLM140E	FKOMLM140F
160 - 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: NBR liners are available for d75÷225

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



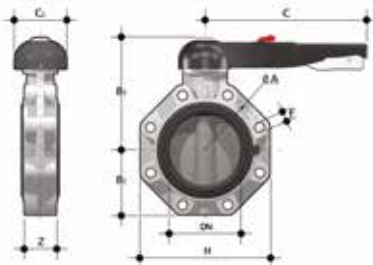
## FKOM/LM LUG ISO-DIN

Hand operated butterfly valve, version Lug ISO-DIN

d	DN	PN	øA	B <sub>2</sub>	B <sub>3</sub>	C	C <sub>1</sub>	f	H	U	Z	g	EPDM Code	FPM Code
75	65	10	145	80	164	175	110	M16	165	4	46	1770	FKOLMLM075E	FKOLMLM075F
90	80	10	160	93	178	175	100	M16	185	8	49	2570	FKOLMLM090E	FKOLMLM090F
110	100	10	180	107	192	272	110	M16	211	8	56	2920	FKOLMLM110E	FKOLMLM110F
140	125	10	210	120	212	330	110	M16	240	8	64	4600	FKOLMLM140E	FKOLMLM140F
160	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: NBR liners are available for d75÷225

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

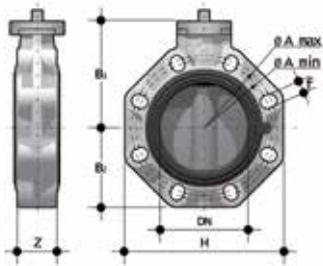


## FKOM/LM LUG ANSI

Hand operated Butterfly valve, version Lug ANSI

d	DN	PN	øA	B <sub>1</sub>	B <sub>2</sub>	C	C <sub>1</sub>	f	H	U	Z	g	EPDM Code	FPM Code
2" 1/2	65	10	140	119	80	175	110	5/8"	165	4	46	1770	FKOALMLM212E	FKOALMLM212F
3"	80	10	152	133	93	175	100	5/8"	185	8	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

Note: NBR liners are available for d 2 1/2" ÷ 8"



## FKOM/FM

Butterfly valve with bare shaft

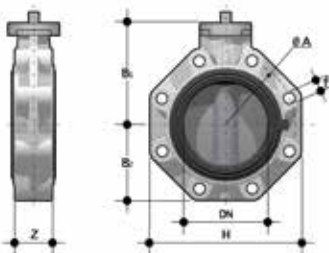
d - Size	DN	PN	A min	A max	øA	B <sub>1</sub>	B <sub>2</sub>	f	H	U	Z	g	EPDM Code	FPM Code
50 - 1" 1/2	40	10	99	109	-	106	60	19	132	4	33	474	FKOMFM050E	FKOMFM050F
63 - 2"	50	10	115	126	-	112	70	19	147	4	43	654	FKOMFM063E	FKOMFM063F
75 - 2" 1/2	65	10	128	144	-	119	80	19	165	4	46	900	FKOMFM075E	FKOMFM075F
90 - 3"	80	10	145	160	-	133	93	19	185	8	49	1300	FKOMFM090E	FKOMFM090F
110 - 4"	100	10	165	190	-	147	107	19	211	8	56	1650	FKOMFM110E	FKOMFM110F
140 - 5"	125	10	204	215	-	167	120	23	240	8	64	2450	FKOMFM140E	FKOMFM140F
160 - 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	**250	10	-	-	350	248	210	22	405	12	114	11800	FKOMFM280E	FKOMFM280F
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	-	-	400	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: NBR liners are available for d75÷225

\* 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

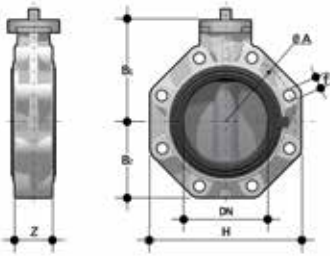


## FKOM/FM LUG ISO-DIN

Bare shaft Butterfly valve, version Lug ISO-DIN

d	DN	PN	øA	B <sub>1</sub>	B <sub>2</sub>	f	H	U	Z	g	EPDM Code	FPM Code
75	65	10	145	119	80	M16	165	4	46	1300	FKOLMFM075E	FKOLMFM075F
90	80	10	160	133	93	M16	185	8	49	2100	FKOLMFM090E	FKOLMFM090F
110	100	10	180	147	107	M16	211	8	56	2450	FKOLMFM110E	FKOLMFM110F
140	125	10	210	167	120	M16	240	8	64	4050	FKOLMFM140E	FKOLMFM140F
160	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

Note: NBR liners are available for d75÷225 \*The special chamfered stubs QBM from d160 to d315 are available for installation on pipes in PP-H SDR 11 and 17.6

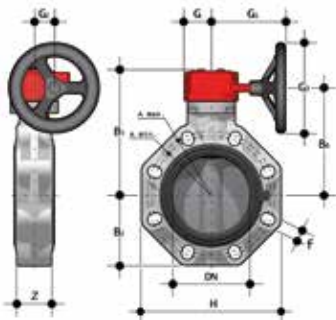


## FKOM/FM LUG ANSI

Bare shaft Butterfly valve, version Lug ANSI

d	DN	PN	øA	B <sub>1</sub>	B <sub>2</sub>	f	H	U	Z	g	EPDM Code	FPM Code
2" 1/2	65	10	140	119	80	5/8"	165	4	46	1300	FKOALMFM212E	FKOALMFM212F
3"	80	10	152	133	93	5/8"	185	8	49	2100	FKOALMFM300E	FKOALMFM300F
4"	100	10	191	147	107	5/8"	211	8	56	2450	FKOALMFM400E	FKOALMFM400F
5"	125	10	216	167	120	3/4"	240	8	64	4050	FKOALMFM500E	FKOALMFM500F
6"	150	10	241	180	134	3/4"	268	8	70	4800	FKOALMFM600E	FKOALMFM600F
8"	200	10	298	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

Note: NBR liners are available for d 2" 1/2÷ 8"

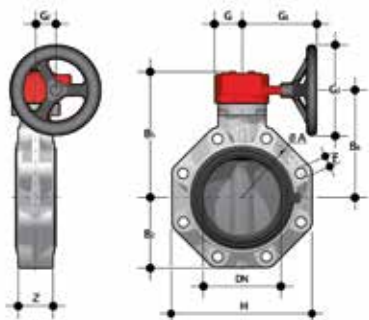


## FKOM/RM

Gearbox operated Butterfly valve

d - Size	DN	PN	A <sub>min</sub>	A <sub>max</sub>	øA	B <sub>2</sub>	B <sub>5</sub>	B <sub>6</sub>	G	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	U	Z	g	EPDM Code	FPM Code
75 - 2" 1/2	65	10	128	144	-	80	174	146	48	135	39	125	165	4	46	2300	FKOMRM075E	FKOMRM075F
90 - 3"	80	10	145	160	-	93	188	160	48	135	39	125	185	8	49	2700	FKOMRM090E	FKOMRM090F
110 - 4"	100	10	165	190	-	107	202	174	48	135	39	125	211	8	56	3050	FKOMRM110E	FKOMRM110F
140 - 5"	125	10	204	215	-	120	222	194	48	144	39	200	240	8	64	4350	FKOMRM140E	FKOMRM140F
160 - 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	10	-	-	350	210	317	281	88	236	76	250	405	12	114	18400	FKOMRM315E	FKOMRM315F
***355	350	7	-	-	460	280	438	390	88	361	80	300	530	16	129	31765	FKOMRM355E	FKOMRM355F
***400	400	6	-	-	515	306	438	390	88	361	80	300	594	16	169	38760	FKOMRM400E	FKOMRM400F
10"	***250	10	-	-	400	245	374	338	88	236	76	250	475	12	114	25450	FKOAMRM810E	FKOAMRM810F
12"	***300	8	-	-	350	210	317	281	88	236	76	250	405	12	114	18400	FKOAMRM812E	FKOAMRM812 F
****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	FKOAMRM816E

Note: NBR liners are available for d75÷225 \*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



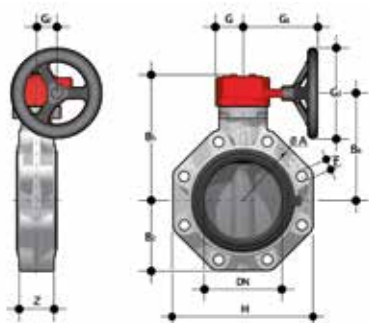
## FKOM/RM LUG ISO-DIN

Gearbox operated Butterfly valve, version Lug ISO-DIN

d	DN	PN	øA	B <sub>2</sub>	B <sub>5</sub>	B <sub>6</sub>	f	G	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	H	U	Z	g	EPDM Code	FPM Code
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	8	49	3500	FKOLMRM090E	FKOLMRM090F
110	100	10	180	107	202	174	M16	48	135	39	125	211	8	56	3850	FKOLMRM110E	FKOLMRM110F
140	125	10	210	120	222	194	M16	48	144	39	200	240	8	64	5950	FKOLMRM140E	FKOLMRM140F
160	150	10	240	134	235	207	M20	48	144	39	200	268	8	70	6700	FKOLMRM160E	FKOLMRM160F
200*/225	200	10	295	161	256	256	M20	65	204	60	200	323	8	71	10800	FKOLMRM225E	FKOLMRM225F

Note: NBR liners are available for d75÷225

\* 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

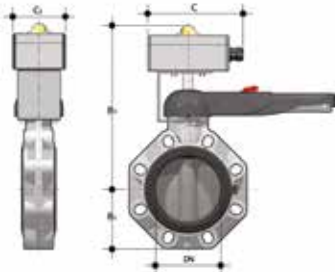
d	DN	PN	B <sub>2</sub>	B <sub>5</sub>	B <sub>6</sub>	H	Z	øA	f	G	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	U	g	EPDM Code	FPM Code
2" 1/2	65	10	80	174	146	165	46	140	5/8"	48	135	39	125	4	2700	FKOALMRM212E	FKOALMRM212F
3"	80	10	93	188	160	185	49	152	5/8"	48	135	39	125	8	3500	FKOALMRM300E	FKOALMRM300F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

Note: NBR liners are available for d 2 1/2" ÷ 8", see IR price list

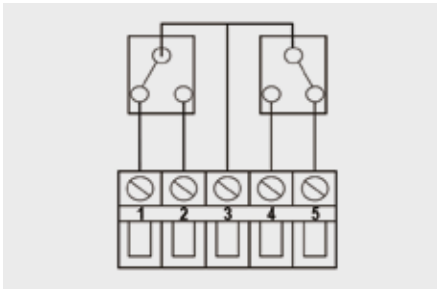
# ACCESSORIES

## FK MS

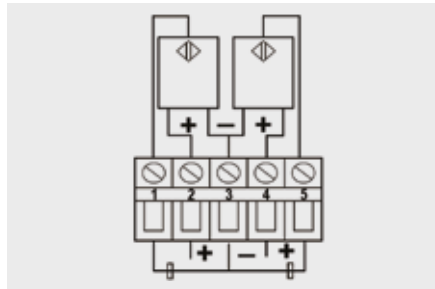
The MS kit lets you install a limit switch with electromechanical or inductive micro switches on a manual FK/LM valve to remotely signal the valve position (open-closed). The kit can be assembled on the valve even if already installed on the system.



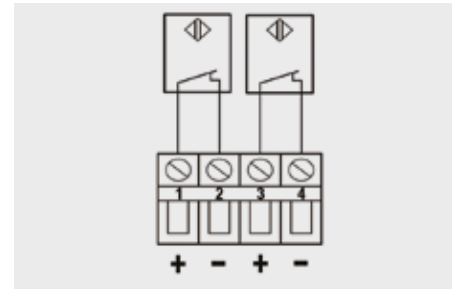
DN	B <sub>2</sub>	B <sub>3</sub>	C <sub>1</sub>	Protection rate	Code electromechanical	Code inductive	Code Namur
40	60	248	80	IP67	FKMS0M	FKMS0I	FKMS0N
50	70	254	80	IP67	FKMS0M	FKMS0I	FKMS0N
65	80	261	80	IP67	FKMS0M	FKMS0I	FKMS0N
80	93	275	80	IP67	FKMS1M	FKMS1I	FKMS1N
100	107	289	80	IP67	FKMS1M	FKMS1I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



Electromechanical



Inductive



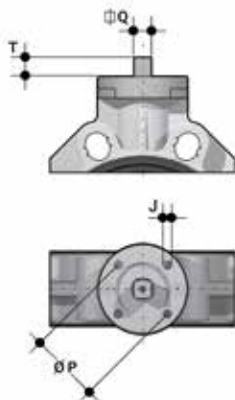
Namur

## LSE

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



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



## Actuator mounting flange

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

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

## CUSTOMISATION

The FK valve is equipped with the customisable Labelling System.

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

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

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

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

Fig. 1

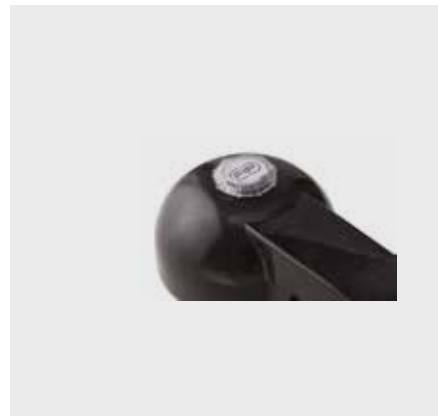
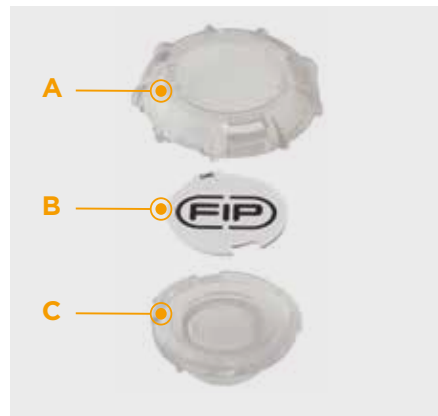
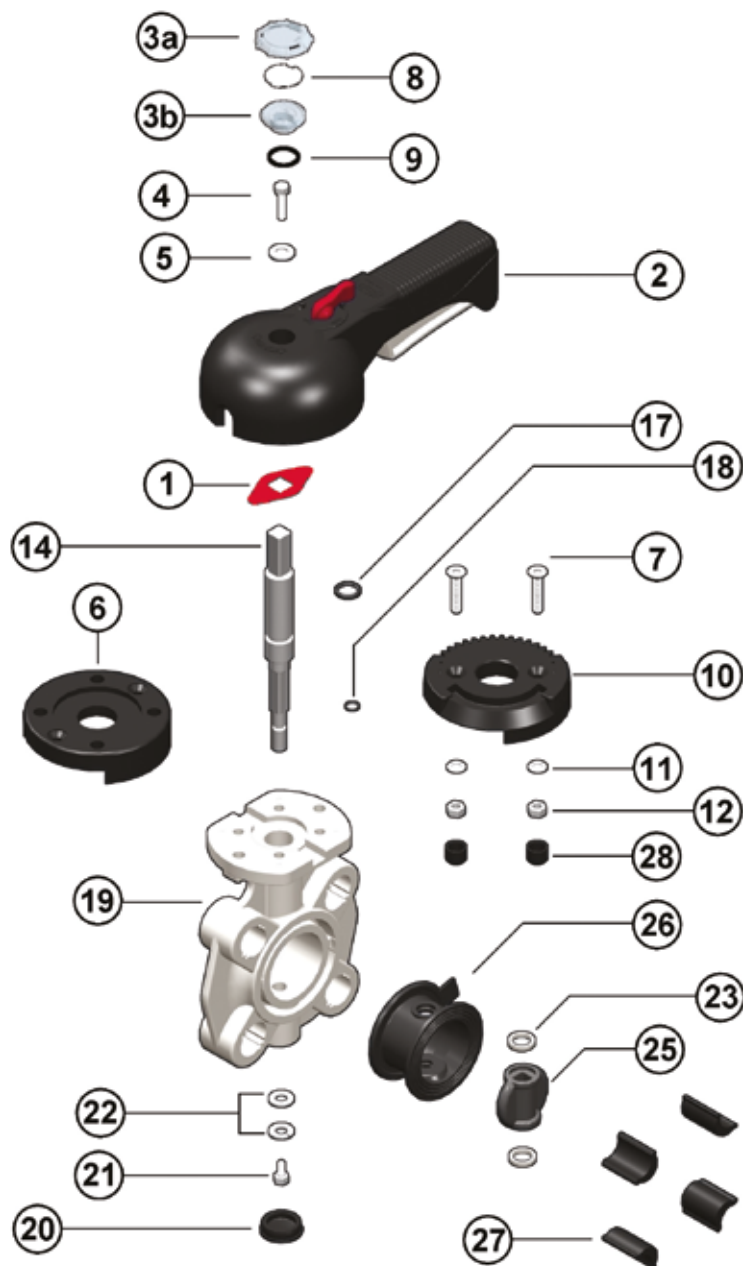


Fig. 2



# COMPONENTS

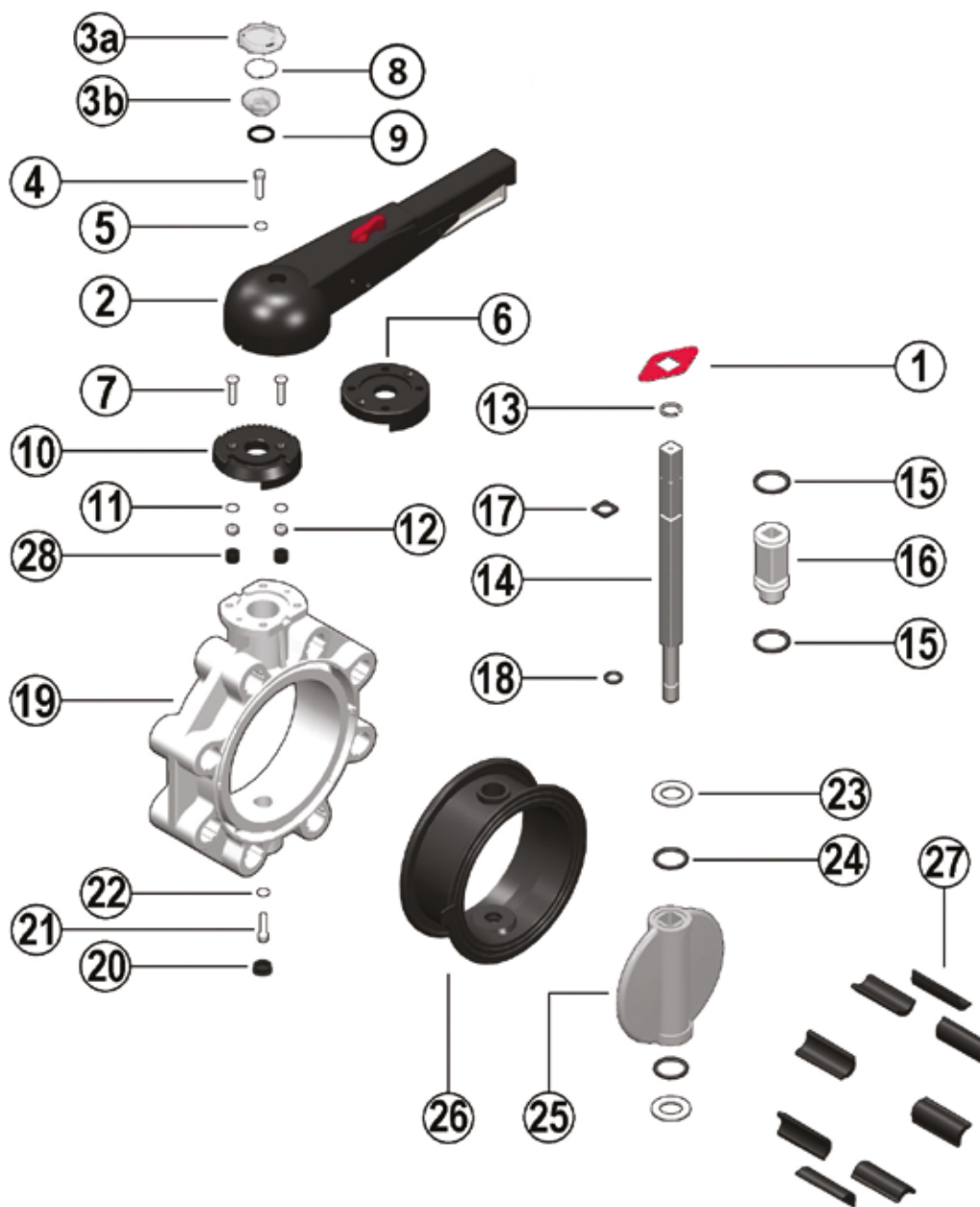
## EXPLODED VIEW DN 40÷50



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

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

## EXPLODED VIEW DN 65÷200

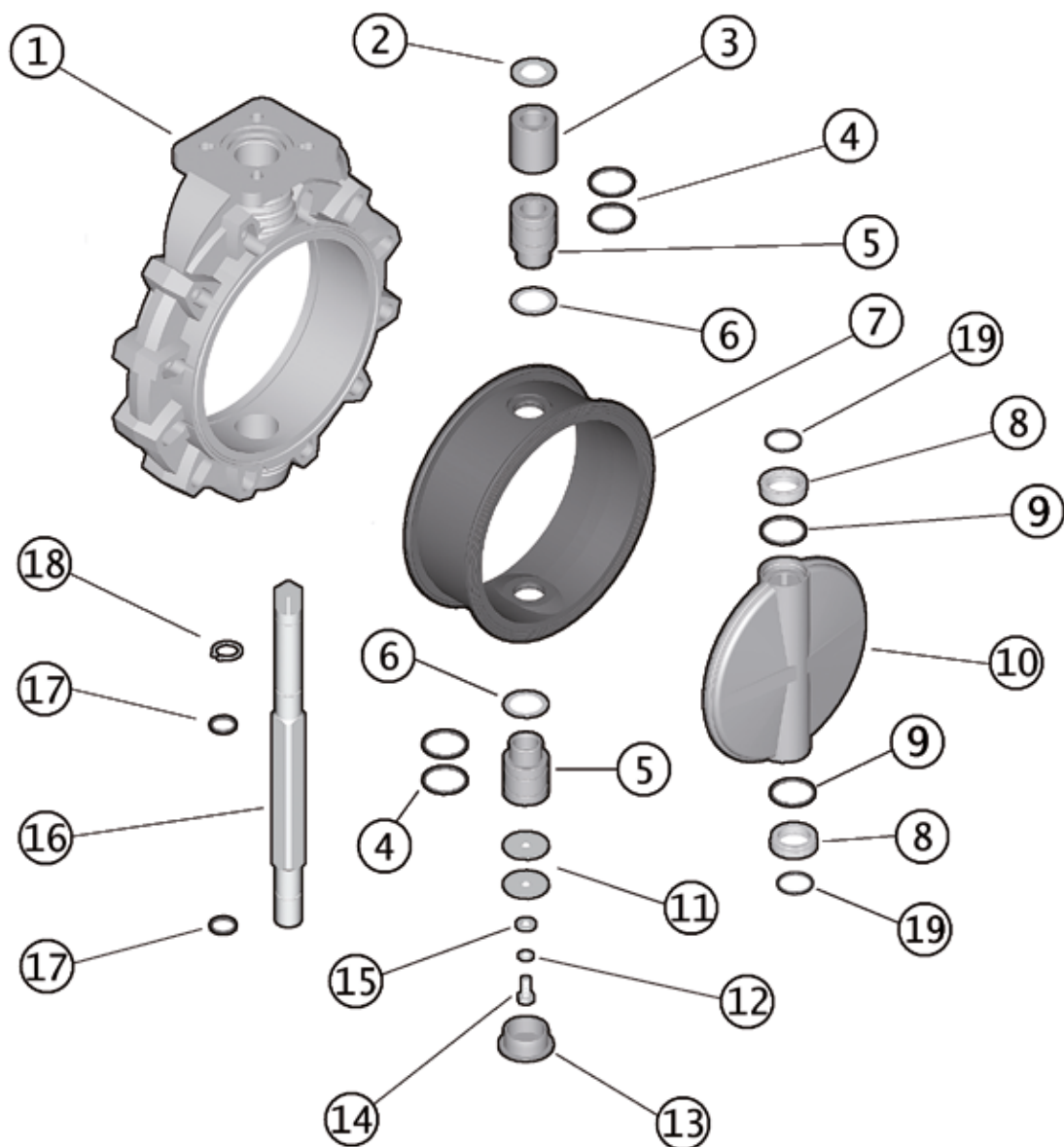


- |   |   |   |
|---|---|---|
| <b>1</b> · Position indicator (PA - 1)              | <b>9</b> · O-Ring (NBR - 1)                   | <b>20</b> · Protection plug (PE - 1)      |
| <b>2</b> · Handle (HIPVC - 1)                       | <b>10</b> · Plate (PP-GR - 1)                 | <b>21</b> · Screw (STAINLESS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

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



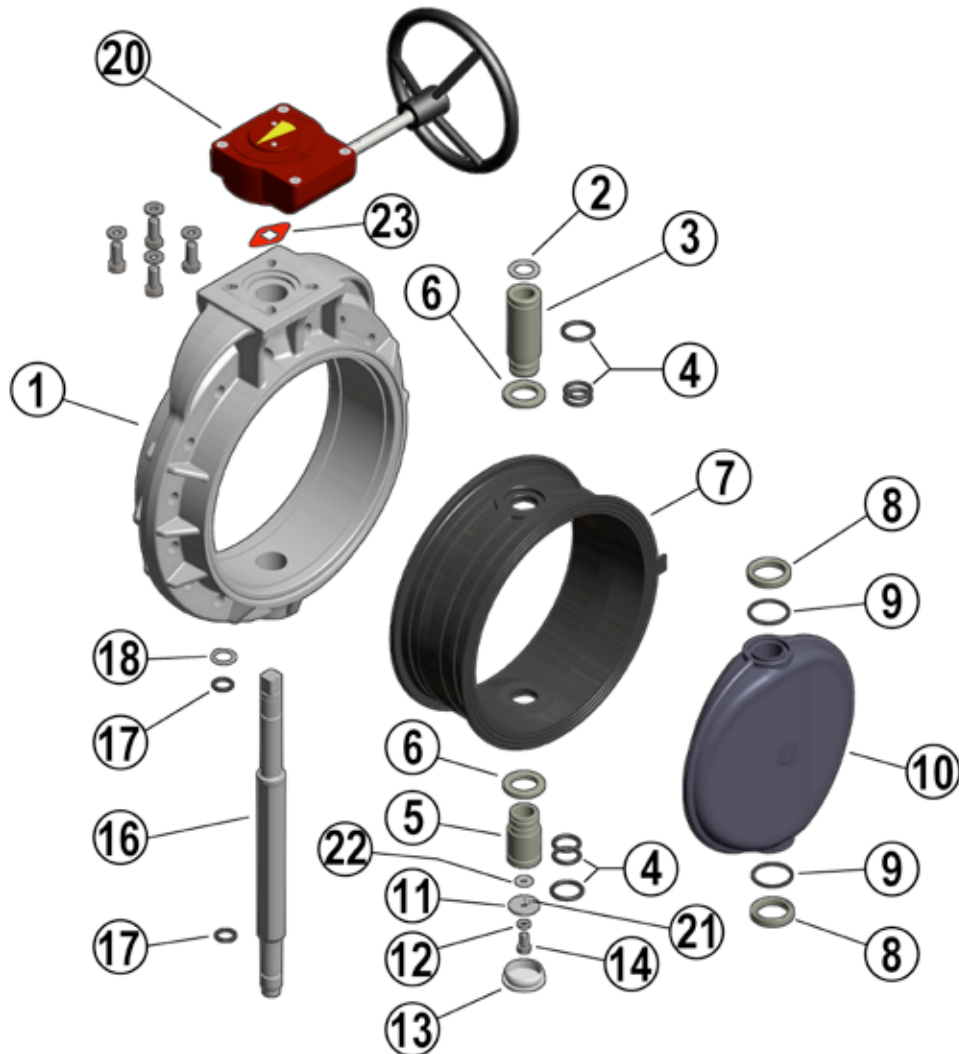
## EXPLODED VIEW DN 250÷300



- |                                   |                                   |  |
|-----------------------------------|-----------------------------------|--|
| 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 FPM - 2) | 17 · Stem O-Ring (EPDM or FPM - 2)     |
| 3 · Bush (PP - 1)                 | 10 · Disk (PP-H - 1)              | 18 · Seeger ring (STAINLESS steel - 1) |
| 4 · Bush O-Ring (EPDM or FPM - 4) | 11 · Washer (STAINLESS Steel - 2) | 19 · O-Ring (EPDM or FPM - 2)          |
| 5 · Bush (PP - 2)                 | 12 · Washer (STAINLESS Steel - 1) |  |
| 6 · Washer (PTFE - 2)             | 13 · Protection plug (PE - 1)     |  |
| 7 · Liner (EPDM or FPM - 1)       | 14 · Screw (STAINLESS Steel - 1)  |  |
|                                   | 15 · Washer (STAINLESS Steel - 1) |  |

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

## EXPLODED VIEW DN 350÷400



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

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

## DISMOUNTING

### 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 anti-friction 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)



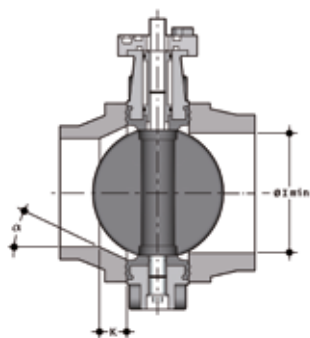
**Note:** during assembly operations, it is advisable to lubricate the rubber seals. Mineral oils are not recommended for this task as they react aggressively with EPDM rubber.

Fig. 3



# INSTALLATION

## JOINTS



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

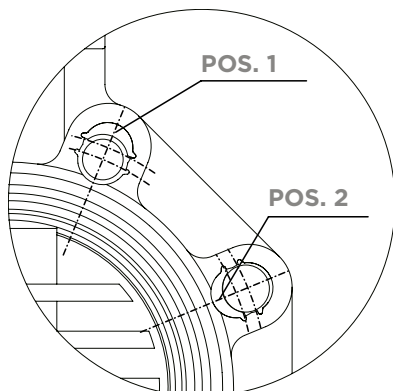
DN	l min.
40	25
50	28
65	47
80	64
100	84
125	108
150	134
200	187
250	225
300	280
350	324
400	362

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	50	63	75	90	110	125	140	160	180	200	225	250	280	315	355	400	
	DN	40	50	65	80	100	100	125	150	150	200	200	250	250	300	350	400	
FK valve	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 and DIN 16962/16963 and flange

## POSITIONING THE INSERTS



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

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

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

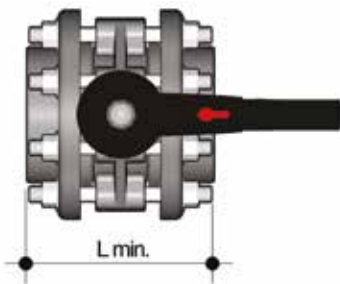
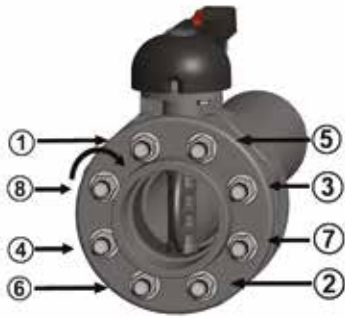
## POSITIONING THE VALVE

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

Where possible comply with the following requirements:

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

## TIGHTENING THE STUD-BOLTS



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

DN	L min.	*Nm
40	M16x150	9
50	M16x150	12
65	M16x170	15
80	M16x180	18
100	M16x180	20
125	M16x210	35
150	M20x240	40
200	M20x260	55
250	M20x310	70
300	M20x340	70
350	M20x360	75
400	M24x420	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)

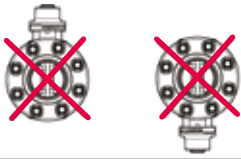
## HANDLE LOCK



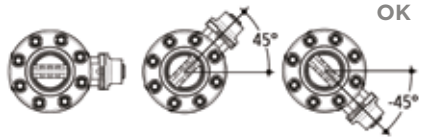
Thanks to the multifunctional handle and the red manoeuvre button on the lever, you can perform a 0°-90° operation and a graduated operation by means of the 10 intermediate positions and a stop lock: the handle can be locked in each of the 10 positions by simply pressing the Free-lock button. A lock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

## WARNINGS



(NO)



OK

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

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

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







**DK DN 15÷65**  
PP-H

DIALOCK® 2-way diaphragm valve

# DK DN 15÷65

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

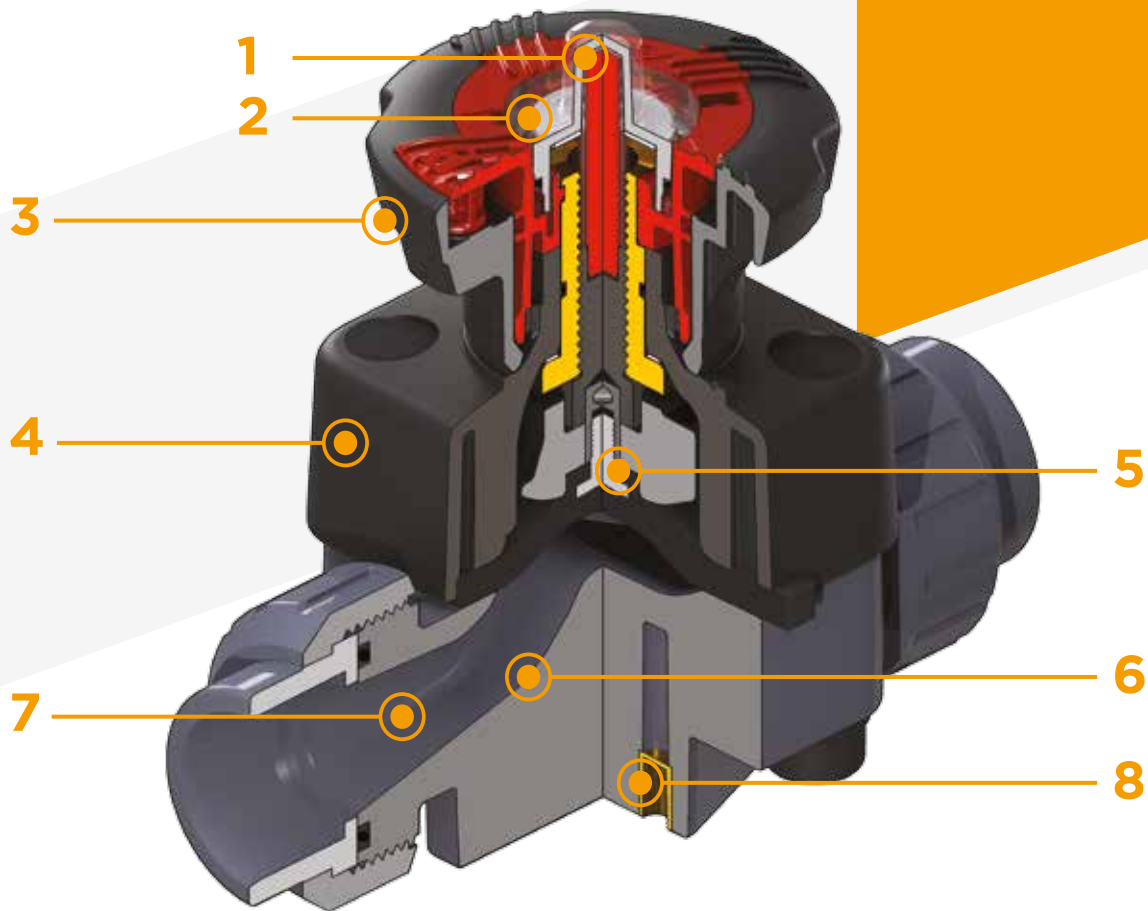
**Dialock**®

## DIALOCK® 2-WAY DIAPHRAGM VALVE

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

### Technical specifications

<b>Construction</b>	Diaphragm valve with maximized flow rate and DIALOCK® lockable handwheel
<b>Size range</b>	DN 15 ÷ 65
<b>Nominal pressure</b>	PN 10 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16138, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	<b>Body:</b> PP-H <b>Bonnet and handwheel:</b> PP-GR <b>Position indicator cap:</b> PVC
<b>Diaphragm material</b>	EPDM, FPM, PTFE (on request NBR)
<b>Control options</b>	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**

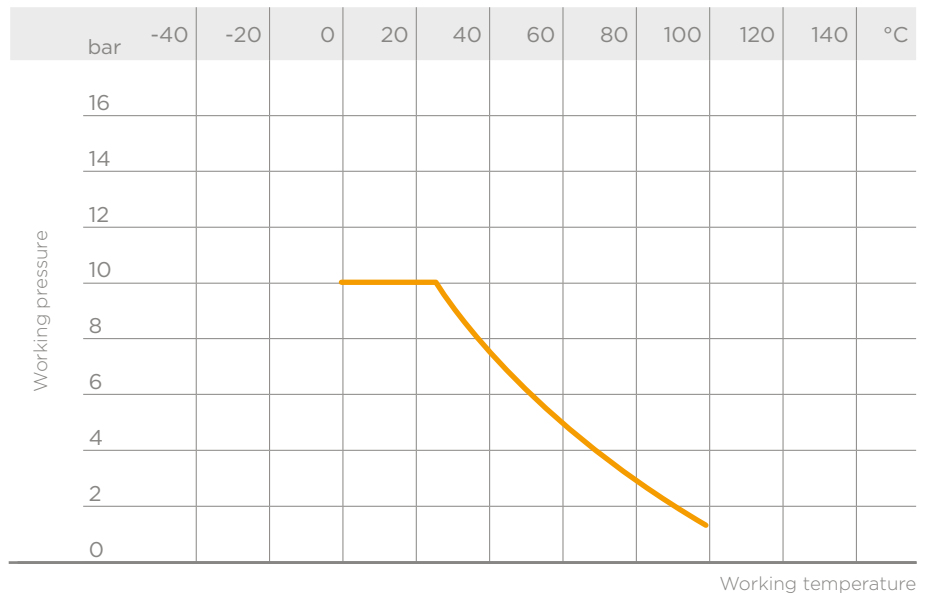
**7 Adjustment linearity:** the internal profiles of the valve also greatly improve its characteristic curve, resulting in **extremely sensitive and precise adjustment** along the entire stroke of the shutter

**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)

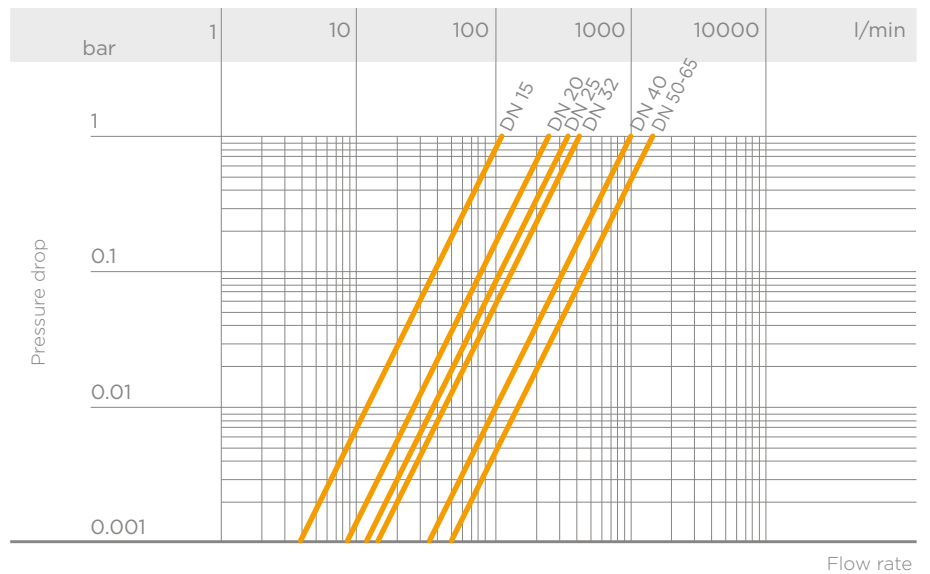
# TECHNICAL DATA

## 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<sub>v</sub>100 FLOW COEFFICIENT

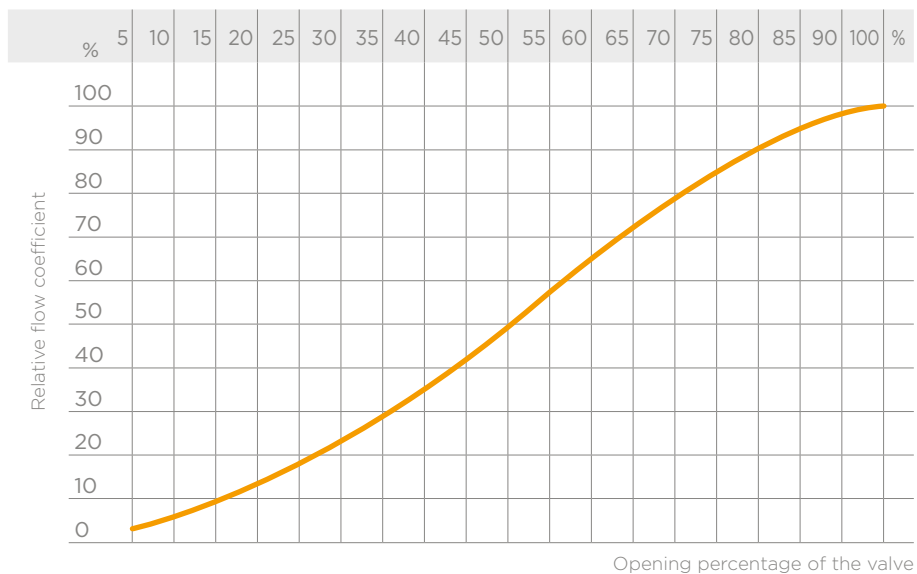
The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate  $\Delta p = 1$  bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

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

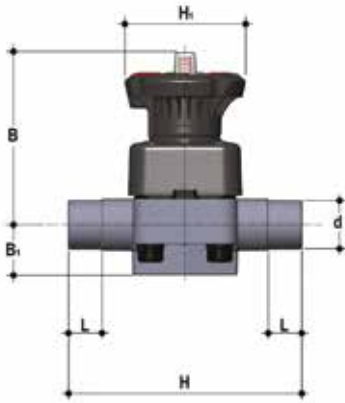
## RELATIVE FLOW COEFFICIENT GRAPH

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



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.

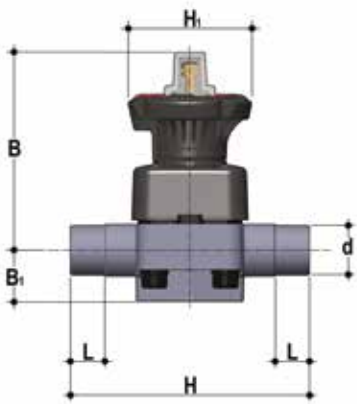
# DIMENSIONS



## DKDM

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

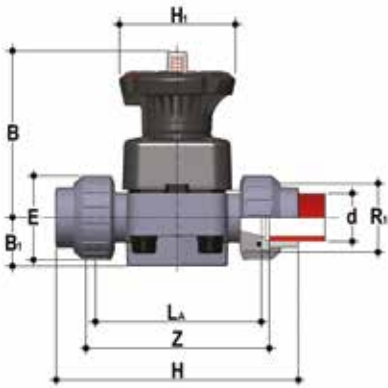
d	DN	PN	B	B <sub>1</sub>	H	H <sub>1</sub>	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	124	80	16	430	DKDM020E	DKDM020F	DKDM020P
25	20	10	105	30	144	80	19	445	DKDM025E	DKDM025F	DKDM025P
32	25	10	114	33	154	80	22	620	DKDM032E	DKDM032F	DKDM032P
40	32	10	119	30	174	80	26	650	DKDM040E	DKDM040F	DKDM040P
50	40	10	147	35	194	120	31	1380	DKDM050E	DKDM050F	DKDM050P
63	50	10	172	46	224	120	38	2135	DKDM063E	DKDM063F	DKDM063P
75	65	10	172	46	284	120	44	2225	DKDM075E	DKDM075F	DKDM075P



## DKLDM

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

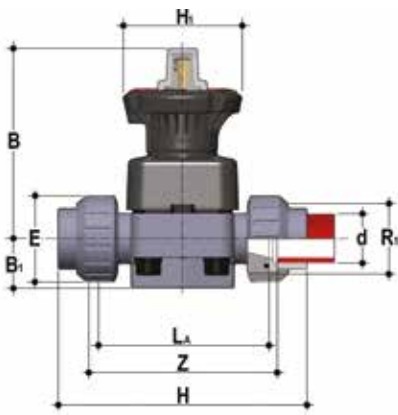
d	DN	PN	B	B <sub>1</sub>	H	H <sub>1</sub>	L	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	124	80	16	460	DKLDM020E	DKLDM020F	DKLDM020P
25	20	10	118	30	144	80	19	475	DKLDM025E	DKLDM025F	DKLDM025P
32	25	10	127	33	154	80	22	650	DKLDM032E	DKLDM032F	DKLDM032P
40	32	10	132	30	174	80	26	680	DKLDM040E	DKLDM040F	DKLDM040P
50	40	10	175	35	194	120	31	1440	DKLDM050E	DKLDM050F	DKLDM050P
63	50	10	200	46	224	120	38	2195	DKLDM063E	DKLDM063F	DKLDM063P
75	65	10	200	46	284	120	44	2285	DKLDM075E	DKLDM075F	DKLDM075P



## DKUIM

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

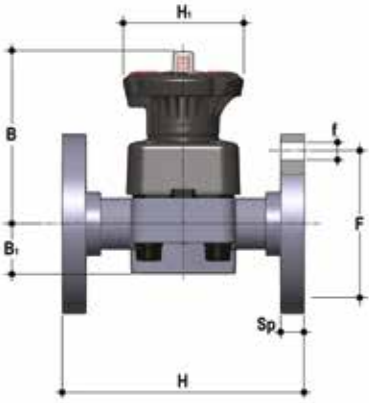
d	DN	PN	B	B <sub>1</sub>	E	H	H <sub>1</sub>	L <sub>A</sub>	R <sub>1</sub>	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	41	128	80	90	1"	101	457	DKUIM020E	DKUIM020F	DKUIM020P
25	20	10	105	30	50	150	80	108	1" 1/4	119	500	DKUIM025E	DKUIM025F	DKUIM025P
32	25	10	114	33	58	163	80	116	1" 1/2	127	695	DKUIM032E	DKUIM032F	DKUIM032P
40	32	10	119	30	72	184	80	134	2"	145	781	DKUIM040E	DKUIM040F	DKUIM040P
50	40	10	147	35	79	210	120	154	2" 1/4	165	1526	DKUIM050E	DKUIM050F	DKUIM050P
63	50	10	172	46	98	248	120	184	2" 3/4	195	2410	DKUIM063E	DKUIM063F	DKUIM063P



## DKLUIM

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

d	DN	PN	B	B <sub>1</sub>	E	H	H <sub>1</sub>	L <sub>A</sub>	R <sub>1</sub>	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	10	115	25	41	128	80	90	1"	101	487	DKLUIM020E	DKLUIM020F	DKLUIM020P
25	20	10	118	30	50	150	80	108	1" 1/4	119	530	DKLUIM025E	DKLUIM025F	DKLUIM025P
32	25	10	127	33	58	163	80	116	1" 1/2	127	725	DKLUIM032E	DKLUIM032F	DKLUIM032P
40	32	10	132	30	72	184	80	134	2"	145	811	DKLUIM040E	DKLUIM040F	DKLUIM040P
50	40	10	175	35	79	210	120	154	2" 1/4	165	1586	DKLUIM050E	DKLUIM050F	DKLUIM050P
63	50	10	200	46	98	248	120	184	2" 3/4	195	2470	DKLUIM063E	DKLUIM063F	DKLUIM063P

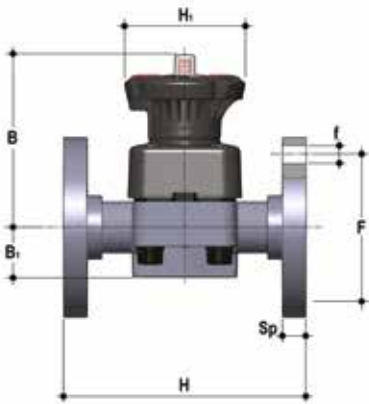


## DKOM

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

d	DN	PN	B	B <sub>1</sub>	f	F	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code	PTFE Code
20	15	10	102	25	14	65	130	80	13.5	4	588	DKOM020E	DKOM020F	DKOM020P
25	20	10	105	30	14	75	150	80	13.5	4	645	DKOM025E	DKOM025F	DKOM025P
32	25	10	114	33	14	85	160	80	14	4	910	DKOM032E	DKOM032F	DKOM032P
40	32	10	119	30	18	100	180	80	14	4	1110	DKOM040E	DKOM040F	DKOM040P
50	40	10	147	35	18	110	200	120	16	4	1955	DKOM050E	DKOM050F	DKOM050P
63	50	10	172	46	18	125	230	120	16	4	2905	DKOM063E	DKOM063F	DKOM063P
75	65	10	225	55	18	145	290	120	21	4	3325	DKOM075E	DKOM075F	DKOM075P

DKLOM version available on request



## DKOAM

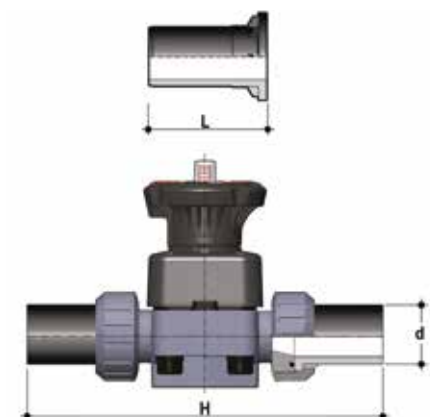
DIALOCK® diaphragm valve with fixed flanges, drilled ANSI B16.5 cl. 150 #FF

Size	DN	PN	B	B <sub>1</sub>	f	F	H	H <sub>1</sub>	Sp	U	g	EPDM Code	FPM Code	PTFE Code
1/2"	15	10	102	25	14	60.3	108	80	13.5	4	572	DKOAM012E	DKOAM012F	DKOAM012P
3/4"	20	10	105	30	15.7	69.9	150	80	13.5	4	645	DKOAM034E	DKOAM034F	DKOAM034P
1"	25	10	114	33	15.7	79.4	160	80	14	4	910	DKOAM100E	DKOAM100F	DKOAM100P
1" 1/4	32	10	119	30	15.7	88.9	180	80	14	4	1110	DKOAM114E	DKOAM114F	DKOAM114P
1" 1/2	40	10	147	35	15.7	98.4	200	120	16	4	1955	DKOAM112E	DKOAM112F	DKOAM112P
2"	50	10	172	46	19	120.7	230	120	16	4	2905	DKOAM200E	DKOAM200F	DKOAM200P
75	65	10	172	46	19	139.7	290	120	21	4	3325	DKOM075E	DKOM075F	DKOM075P

DKLOAM version available on request



# ACCESSORIES



## Q/BBM-L

Long spigot PP-H end connectors for butt welding

d	DN	L	H	SDR	Code
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

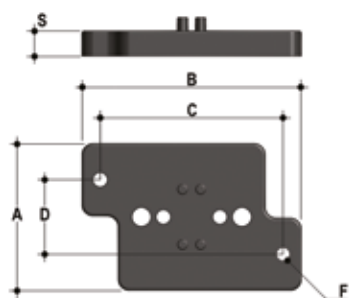
Short spigot PP-H end connectors for butt welding

d	DN	L	H	SDR	Code
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

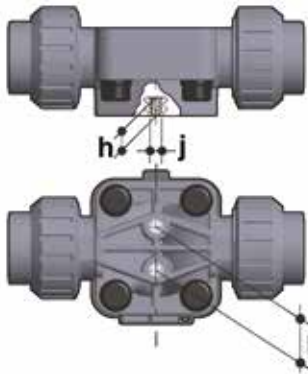


All valves, whether manual or actuated, must be adequately supported in many applications.

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

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



d	DN	h	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

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

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

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

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

Fig. 1



Fig. 2



Fig. 3

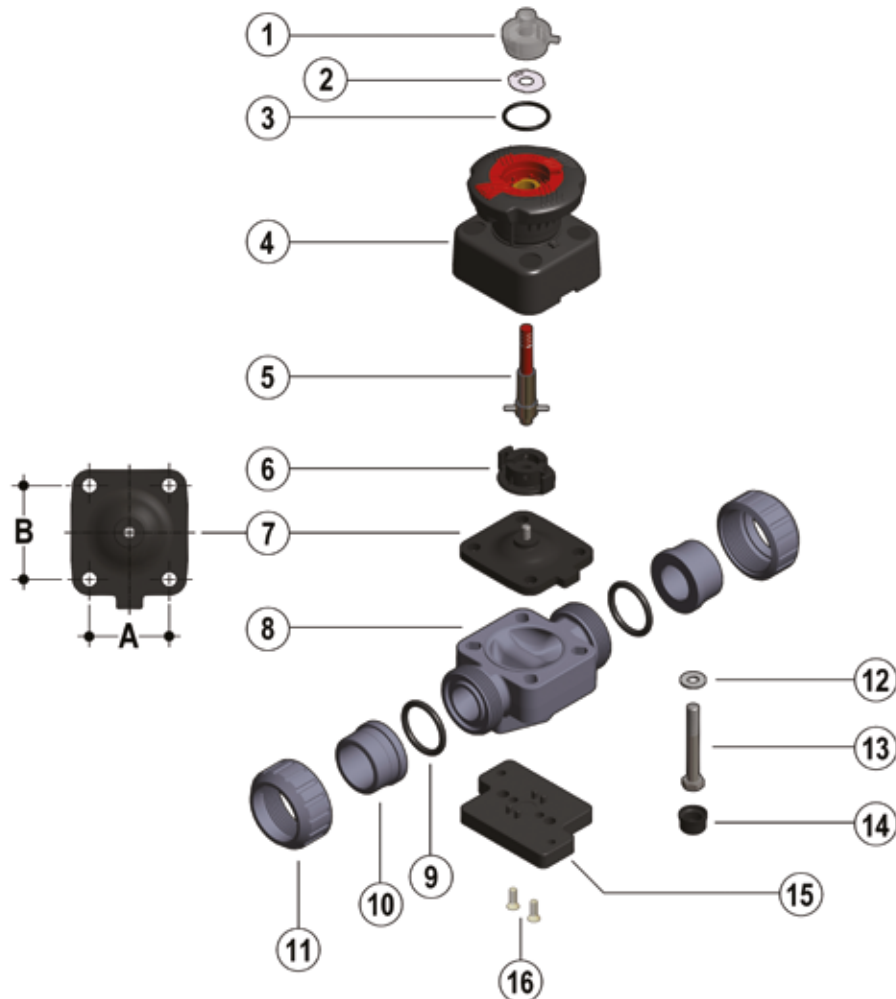


Fig. 4



# COMPONENTS

## EXPLODED VIEW DN 15÷50



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

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

- 6** · Compressor (IXEF® - 1)
- 7** · Diaphragm seal (EPDM, FPM, PTFE - 1)\*
- 8** · Valve body (PP-H - 1)\*
- 9** · Socket seal O-ring (EPDM-FPM - 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 between brackets

## DISASSEMBLY

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

## ASSEMBLY

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



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

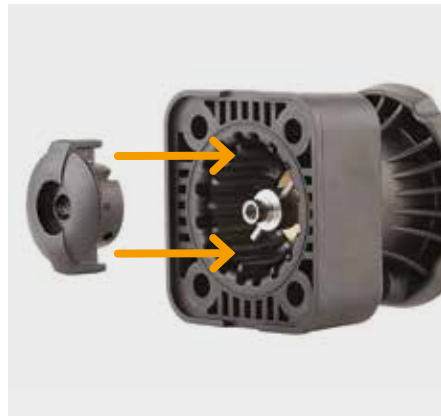
Fig. 5



Fig. 6



Fig. 7



# INSTALLATION

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

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

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

Fig. 9



## LOCKING DEVICE



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

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

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

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

## STROKE LIMITER



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

The system allows the valve stroke to be modified using the two independent adjusting screws, which determine the mechanical limits of the valve during opening and closing.

The valve is sold with the stroke limiters positioned such that does not limit the opening or closing stroke.

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

### Travel stop adjustment. Minimum flow rate or closed valve.

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

### Stroke limiter adjustment. Maximum flow rate

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





**VM DN 80÷100**  
PP-H

Diaphragm valve



# VM

## DN 80÷100

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

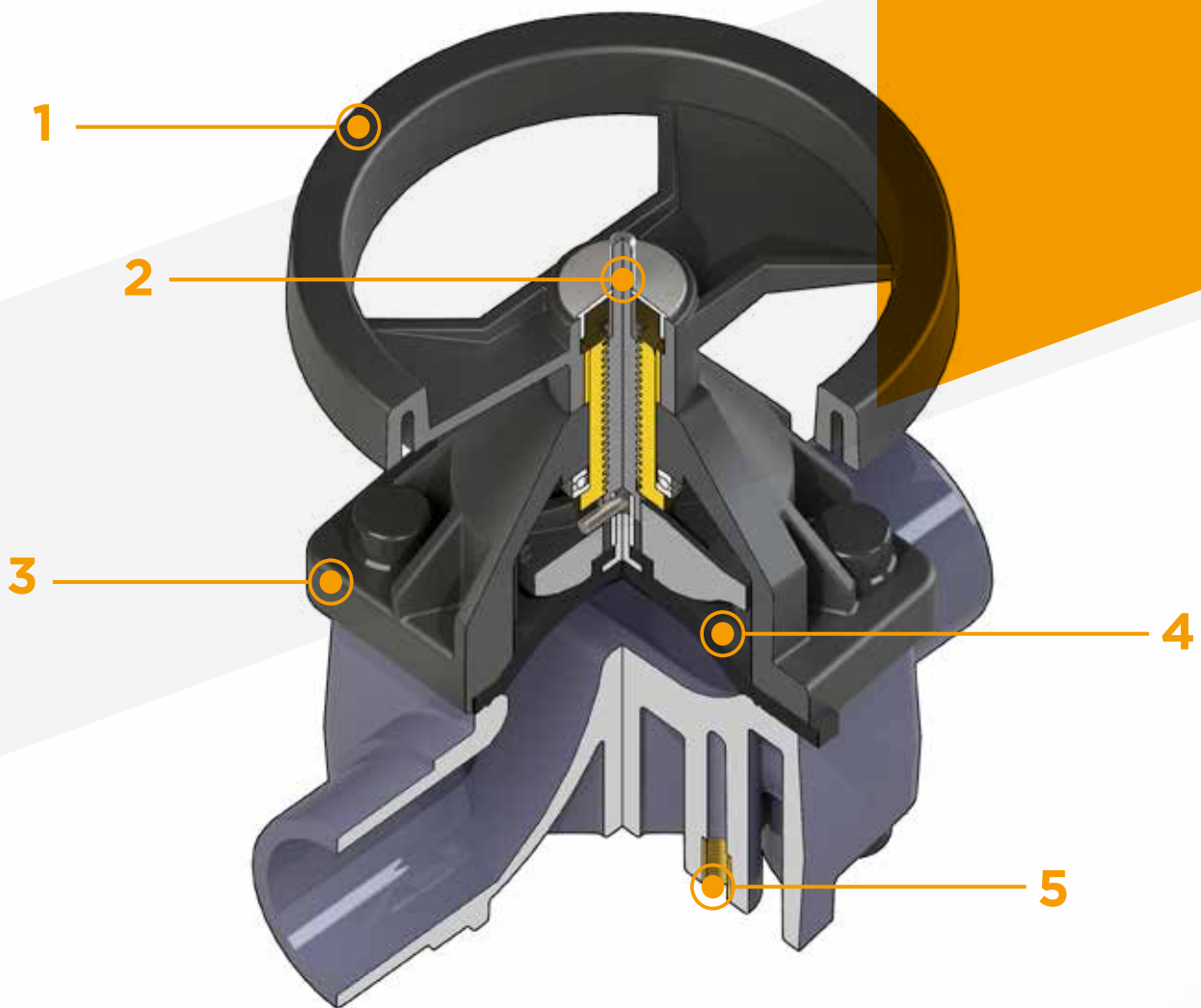
The handwheel control and diaphragm seal provide precise and effective control, while reducing the risk of water hammer to a minimum.

### DIAPHRAGM VALVE

- Connection system for weld, threaded and flanged joints
- Compact and lightweight construction
- High flow coefficient and minimum pressure drop
- **Internal components in metal totally isolated from the conveyed fluid**, with anti-friction disk to reduce friction to a minimum
- **Modularity of the range:** only 5 diaphragm and bonnet sizes for 9 different valve sizes
- Handwheel that stays at the same height during rotation

Technical specifications	
<b>Construction</b>	Single wear diaphragm valve
<b>Size range</b>	DN 80 ÷ 100
<b>Nominal pressure</b>	PN 10 with water at 20° C PN 6 with water at 20° C (PTFE version)
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16138, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	<b>Body:</b> PP-H <b>Bonnet:</b> PP-GR <b>Handwheel:</b> PA-GR
<b>Diaphragm material</b>	EPDM, FPM, PTFE (on request NBR)
<b>Control options</b>	Manual control; pneumatic actuator





- 1 Handwheel** in (PA-GR) with high mechanical strength and ergonomic **grip for optimum manageability**
- 2 Metal optical position indicator**

- supplied as standard
- 3 Full protection bonnet in PP-GR.** Internal circular and symmetrical diaphragm sealing area

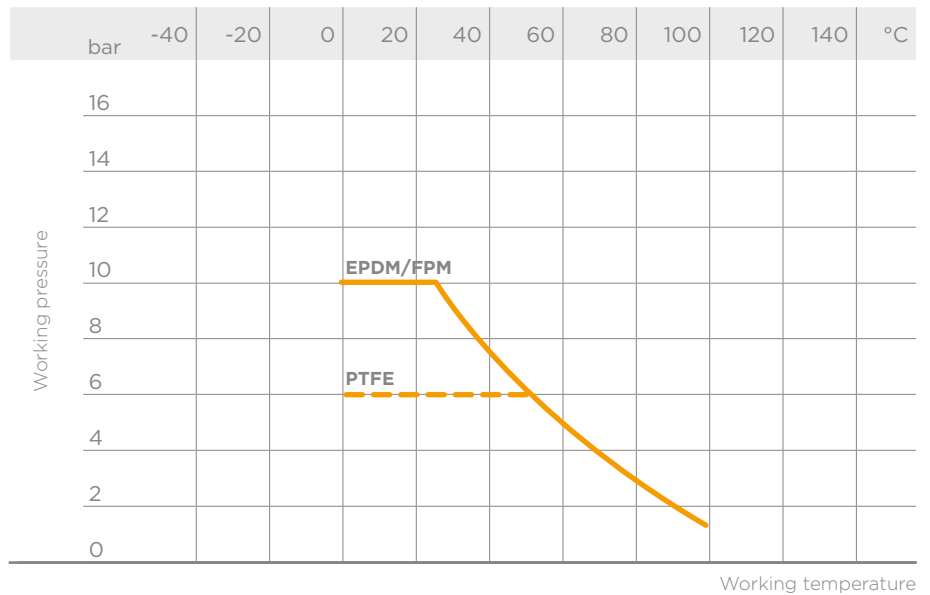
- 4** Diaphragm available in EPDM,

- FPM, PTFE (NBR on request) and easy to replace
- 5 Threaded metal inserts** for anchoring the valve

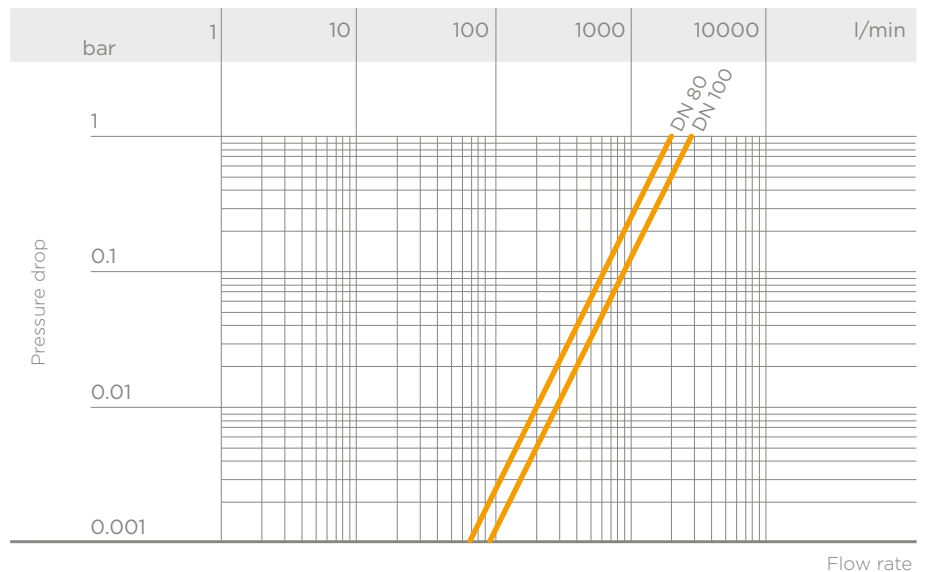
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



## K<sub>v,100</sub> FLOW COEFFICIENT

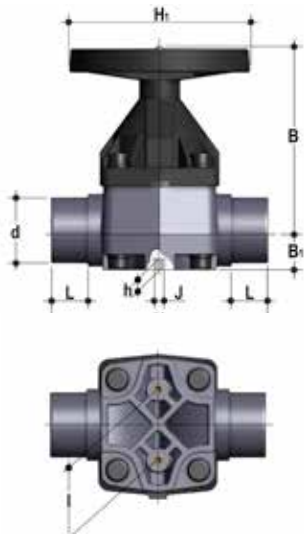
The K<sub>v,100</sub> flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K<sub>v,100</sub> values shown in the table are calculated with the valve completely open.

DN	80	100
K <sub>v,100</sub> l/min	2000	2700

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

# DIMENSIONS

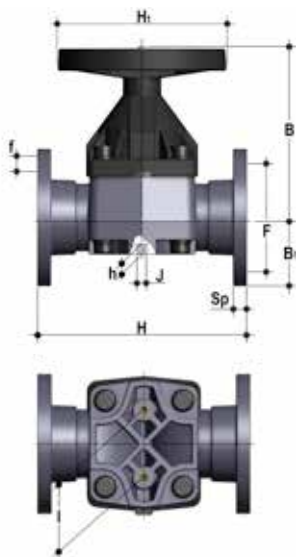


## VMDM

Diaphragm valve with male ends for socket welding, metric series

d	DN	PN	B	B <sub>1</sub>	H	h	H <sub>1</sub>	l	J	L	g	EPDM Code	FPM Code	PTFE Code
90	80	*10	225	55	300	23	200	100	M12	51	6040	VMDM090E	VMDM090F	VMDM090P
110	100	*10	295	69	340	23	250	120	M12	61	9160	VMDM110E	VMDM110F	VMDM110P

\*PTFE PN6

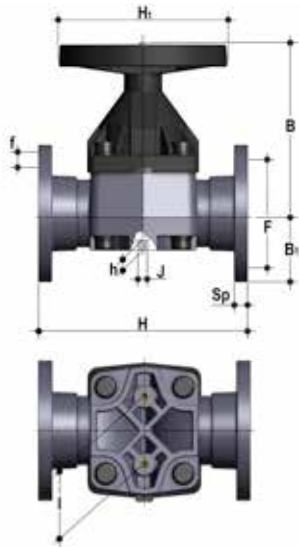


## VMOM

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

d	DN	PN	B	B <sub>1</sub>	F	f	H	H <sub>1</sub>	l	J	Sp	U	g	EPDM Code	FPM Code	PTFE Code
90	80	*10	225	55	160	18	310	200	100	M12	22	8	7500	VMOM090E	VMOM090F	VMOM090P
110	100	*10	295	69	180	18	350	250	120	M12	23	8	10480	VMOM110E	VMOM110F	VMOM110P

\*PTFE PN6



## VMOAM

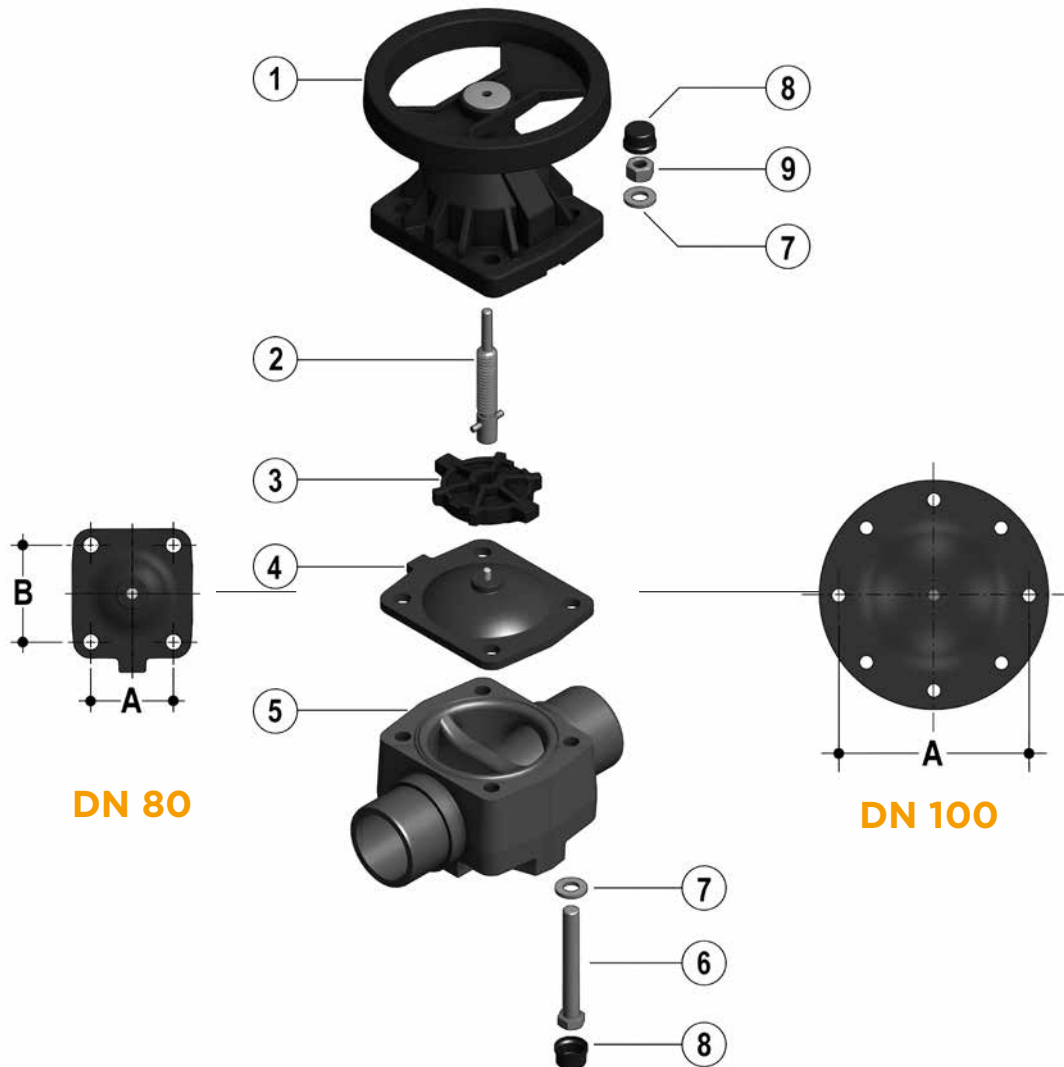
Diaphragm valve with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d	PN	B	B <sub>1</sub>	F	f	H	H <sub>1</sub>	l	J	Sp	U	g	EPDM Code	FPM Code	PTFE Code
3"	*10	225	55	152.4	19	310	200	100	M12	22	4	7500	VMOAM300E	VMOAM300F	VMOAM300P
4"	*10	295	69	190.5	19	350	250	120	M12	23	8	10480	VMOAM110E	VMOAM110F	VMOAM110P

\*PTFE PN6

# COMPONENTS

## EXPLODED VIEW DN 80÷100



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 (EPDM, FPM, 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.

## DISMOUNTING

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) 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).



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**  
PP-H

Compact diaphragm valve



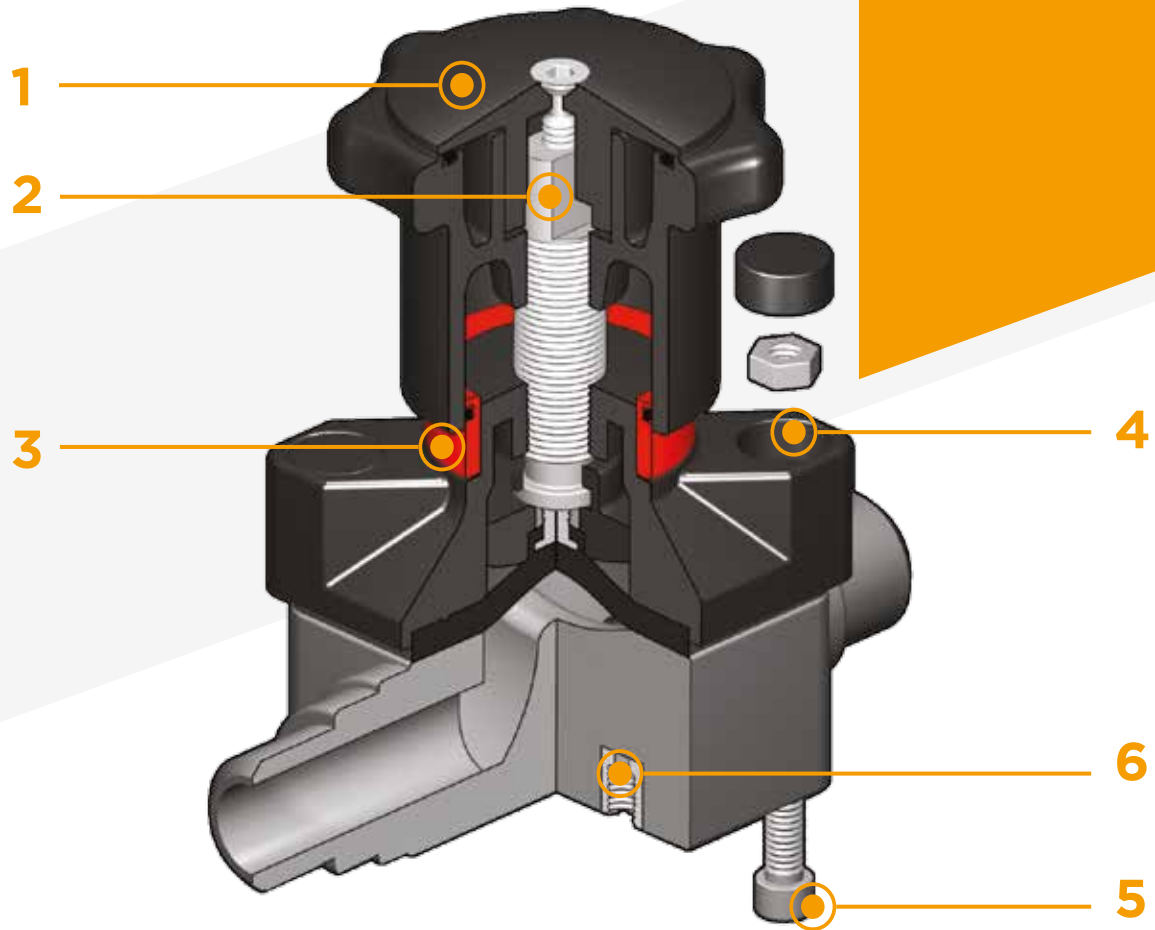
# CM DN 12÷15

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

## COMPACT DIAPHRAGM VALVE

- Connection system for weld and threaded joints
- Extremely compact construction
- **Internal operating components in metal totally isolated from the conveyed fluid**
- Valve stem in STAINLESS steel
- **Compressor with floating diaphragm support**
- Easy to replace diaphragm seal
- Corrosion-proof internal components
- **Innovative CDSA** (Circular Diaphragm Sealing Angle) system offering the following advantages:
  - uniform distribution of shutter pressure on the diaphragm seal
  - reduction in the tightening torque of the screws fixing the actuator to the valve body
  - reduced mechanical stress on all valve components (actuator, body and diaphragm)
  - easy to clean valve interior
  - low risk of the accumulation of deposits, contamination or damage to the diaphragm due to crystallisation
  - operating torque reduction

Technical specifications	
<b>Construction</b>	Compact single wear diaphragm valve
<b>Size range</b>	DN 12÷15
<b>Nominal pressure</b>	PN 6 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cI.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16138, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	<b>Body:</b> PP-H <b>Bonnet and handwheel:</b> PA-GR
<b>Diaphragm material</b>	EPDM, FPM, PTFE
<b>Control options</b>	Manual control; pneumatic actuator



- 1 Handwheel in PA-GR, completely sealed**, high mechanical strength with ergonomic grip for optimum manageability
- 2 Integrated adjustable torque limiter** designed to prevent excessive compression of the diaphragm and always guarantee a minimum fluid flow

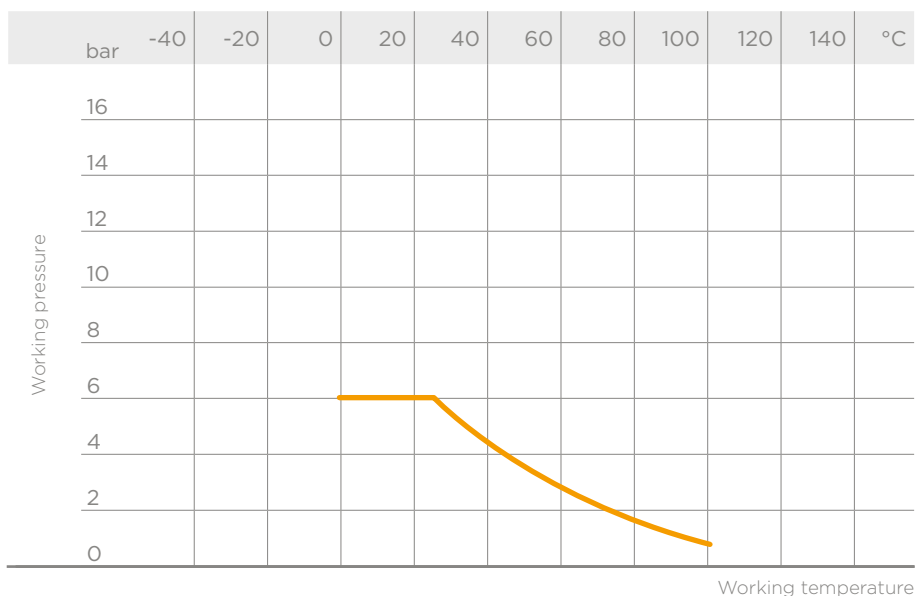
- 3 Optical position indicator** supplied as standard
- 4 Bonnet in PA-GR with STAINLESS steel nuts** fully protected by plastic plugs to eliminate zones where impurities may accumulate. Internal circular and symmetrical diaphragm sealing area

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

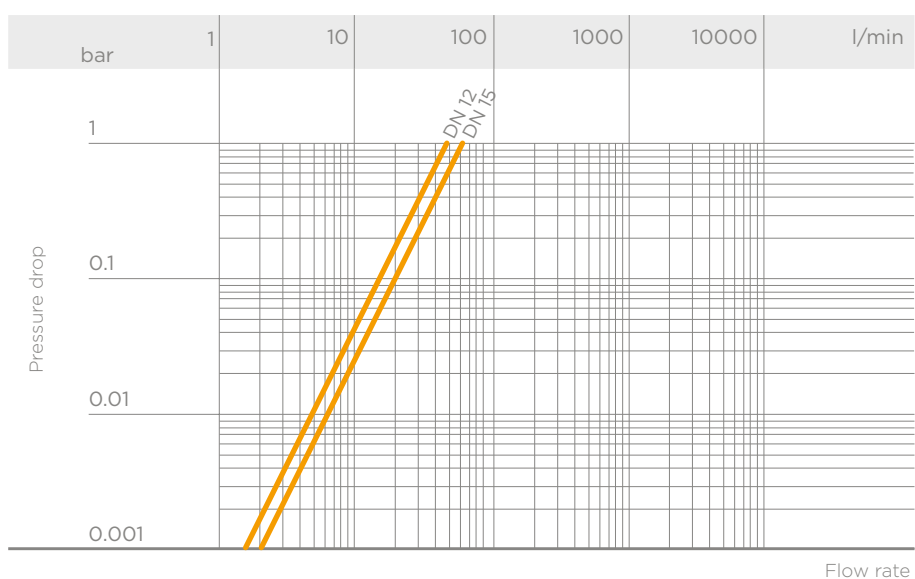
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



## K<sub>v</sub>100 FLOW COEFFICIENT

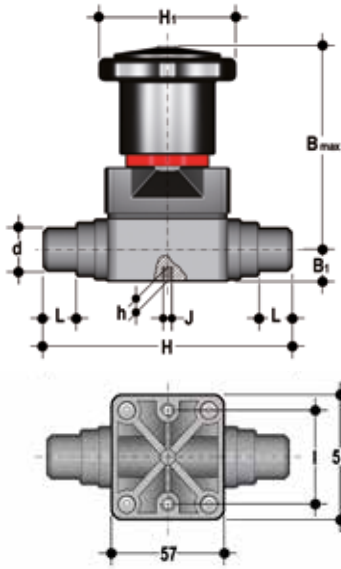
The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate  $\Delta p = 1$  bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

DN	12	15
K <sub>v</sub> 100 l/min	47	60

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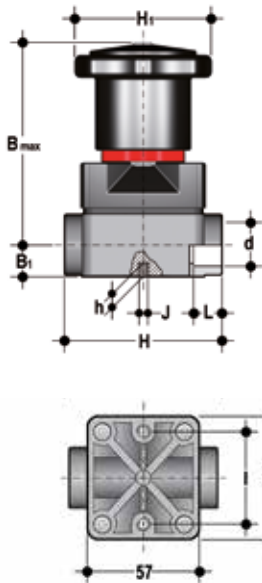
# DIMENSIONS



## CMDM

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

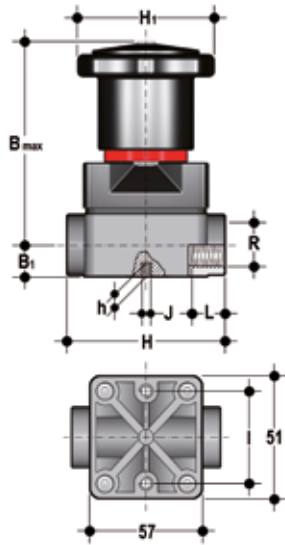
d	DN	PN	B max	B <sub>1</sub>	H	h	H <sub>1</sub>	I	J	L	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	15	124	8	59	35	M5	17	270	CMDM020E	CMDM020F	CMDM020P



## CMIM

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

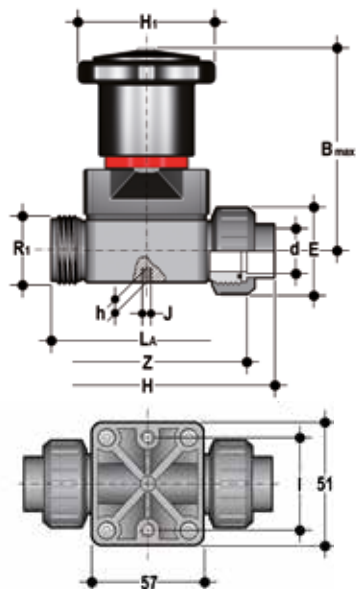
d	DN	PN	B max	B <sub>1</sub>	H	h	H <sub>1</sub>	I	J	L	g	EPDM Code	FPM Code	PTFE Code
16	12	6	86	15	75	8	59	35	M5	14	240	CMIM016E	CMIM016F	CMIM016P
20	15	6	86	15	75	8	59	35	M5	16	240	CMIM020E	CMIM020F	CMIM020P



## CMFM

Compact diaphragm valve with BSP threaded female ends

R	DN	PN	B max	B <sub>1</sub>	H	h	H <sub>1</sub>	I	J	L	g	EPDM Code	FPM Code	PTFE Code
3/8"	12	6	86	15	75	8	59	35	M5	12	240	CMFM038E	CMFM038F	CMFM038P
1/2"	15	6	86	15	75	8	59	35	M5	15	240	CMFM012E	CMFM012F	CMFM012P



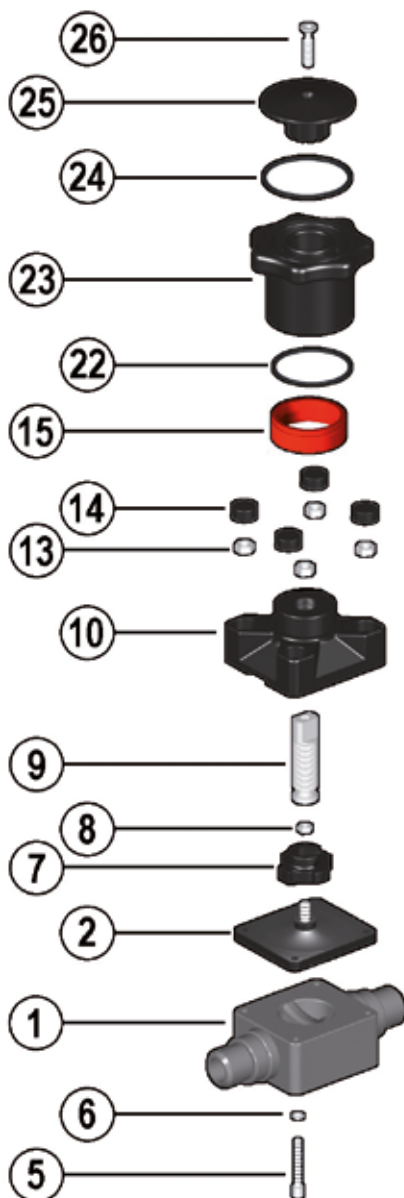
## CMUIM

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

d	DN	PN	B max	E	H	h	H <sub>1</sub>	I	J	L <sub>A</sub>	R <sub>1</sub>	Z	g	EPDM Code	FPM Code	PTFE Code
20	15	6	86	47.5	130	8	59	35	M5	90	1"	98	255	CMUIM020E	CMUIM020F	CMUIM020P

# COMPONENTS

## EXPLODED VIEW



1 • Body (PP-H - 1)

2 • Diaphragm seal  
(EPDM, FPM, PTFE - 1)

5 • Fastening screw  
(STAINLESS steel - 4)

6 • Washer (STAINLESS steel - 4)

7 • Shutter (PA-GR - 1)

8 • Nut (STAINLESS steel - 1)

9 • Stem (STAINLESS steel - 1)

10 • Bonnet (PA-GR - 1)

13 • Nut (STAINLESS steel - 4)

14 • Protection plug  
(POM - 4)

15 • Optical position indicator  
(PVDF - 1)

22 • O-Ring (NBR - 1)

23 • Handwheel (PA-GR - 1)

24 • O-Ring (NBR - 1)

25 • Bonnet (PA-GR - 1)

26 • Fastening screw  
(STAINLESS steel - 1)

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

## DISASSEMBLY

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

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

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

## ASSEMBLY

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

# INSTALLATION

The valve can be installed in any position and in any direction.

When starting up the plant, make sure that there are no leaks from between the diaphragm and the valve body. If necessary, tighten the fastening screws (5).

### SETTING

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

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

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

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

Each turn of the handwheel corresponds to 1.75mm travel.









**RV DN 15÷100**  
PP-H

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

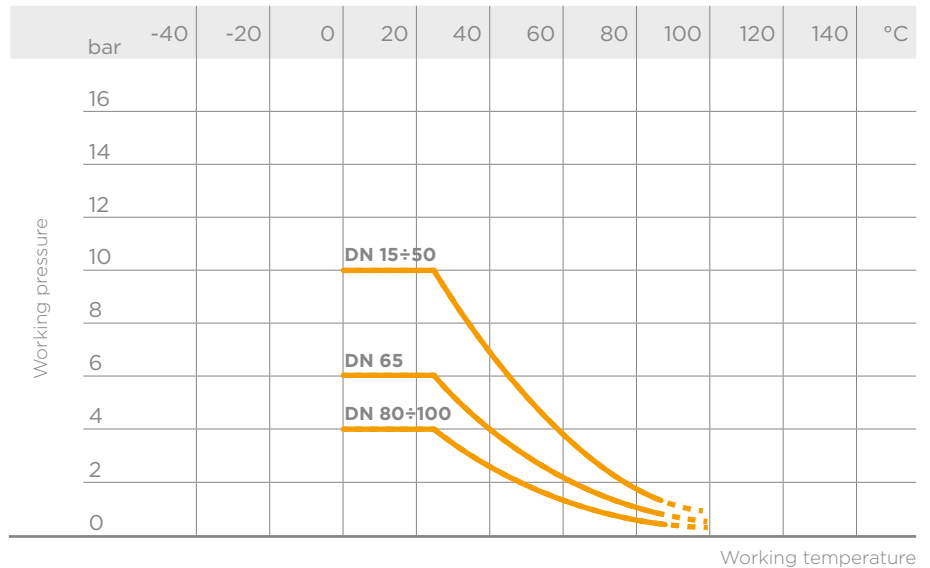
- Connection system for weld, threaded and flanged joints
- **Strainer** assembled on an **easily removed support** that facilitates cleaning or replacement
- **Valve material compatibility** (PP-H) with water conveyance, drinking water and other food substances according to **current regulations**
-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

Technical specifications	
<b>Construction</b>	Sediment strainer
<b>Size range</b>	DN 15÷100
<b>Nominal pressure</b>	<b>DN 15÷50:</b> PN 10 with water at 20° C <b>DN 65:</b> PN 6 with water at 20° C <b>DN 80÷100:</b> PN 4 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	<b>Body:</b> PP-H <b>Strainer:</b> PP
<b>Seal material</b>	EPDM or FPM

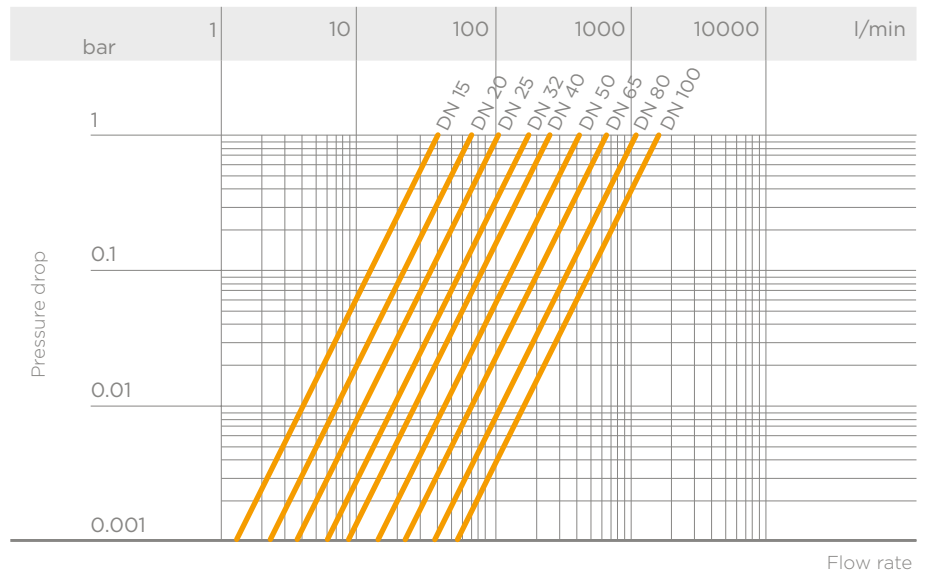
# TECHNICAL DATA

## PRESSURE VARIATION ACCORDING TO TEMPERATURE

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



## PRESSURE DROP GRAPH



## K<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow of litres per minute of water at a temperature of 20°C that will generate Δp= 1 bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

DN	15	20	25	32	40	50	65	80	100
K <sub>v</sub> 100 l/min	40	70	103	188	255	410	650	1050	1700

## STRAINER DIMENSIONS

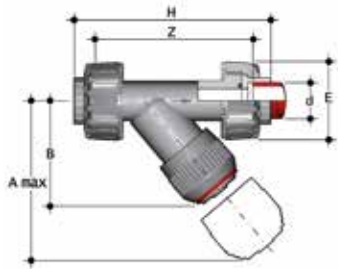
Pitch (mm)	1.5
number of holes per cm <sup>2</sup>	42
ASTM series equivalent in strainer	20
ø equivalent hole μm	800
strainer material	PP

## TOTAL FILTER AREA A<sub>tot</sub> (cm<sup>2</sup>)

DN	15	20	25	32	40	50	65	80	100
A <sub>tot</sub>	16	23.5	36	53	69	101	197	247	396

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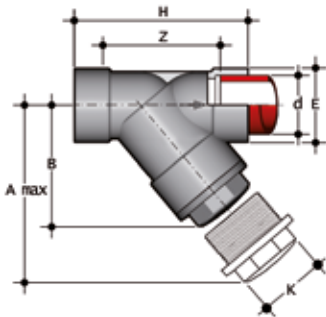
# DIMENSIONS



## RVUIM

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

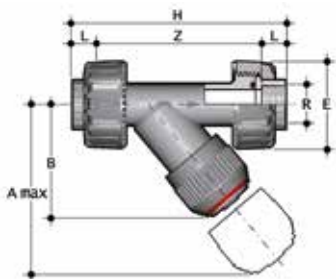
d	DN	PN	A max	B	E	H	Z	Fig.	g	EPDM Code	FPM Code
20	15	10	125	71	55	138	109	A	148	RVUIM020E	RVUIM020F
25	20	10	145	83	65	157	125	A	195	RVUIM025E	RVUIM025F
32	25	10	165	94	74	179	143	A	297	RVUIM032E	RVUIM032F
40	32	10	190	109	86	205	164	A	475	RVUIM040E	RVUIM040F
50	40	10	210	119	99	244	197	A	675	RVUIM050E	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

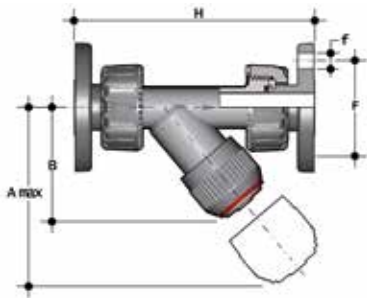
d	DN	PN	A max	B	E	H	K	Z	Fig.	g	EPDM Code	FPM Code
75	65	6	300	176	103	241	96	179	B	1580	RVIM075E	RVIM075F
90	80	4	325	193	115	260	105	189	B	1920	RVIM090E	RVIM090F
110	100	4	385	229	138	323	-	240	C	3000	RVIM110E	RVIM110F



## RVUFM

Sediment strainer with BSP threaded female union ends

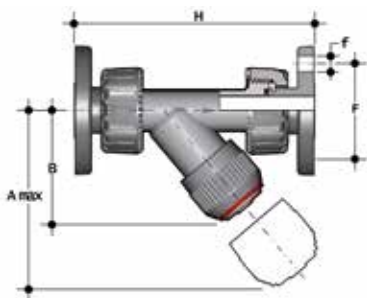
d	DN	PN	A max	B	E	H	Z	Fig.	g	EPDM Code	FPM Code
1/2"	15	10	125	71	55	142	112	A	148	RVUFM012E	RVUFM012F
3/4"	20	10	145	83	65	159	126	A	195	RVUFM034E	RVUFM034F
1"	25	10	165	94	74	183	145	A	297	RVUFM100E	RVUFM100F
1 1/4"	32	10	190	109	86	214	171	A	475	RVUFM114E	RVUFM114F
1 1/2"	40	10	210	119	99	235	192	A	675	RVUFM112E	RVUFM112F
2"	50	10	240	143	120	285	234	A	1100	RVUFM200E	RVUFM200F



## RVUOM

Sediment strainer with female union ends and fixed flanges, drilled EN/ISO/DIN PN10/16

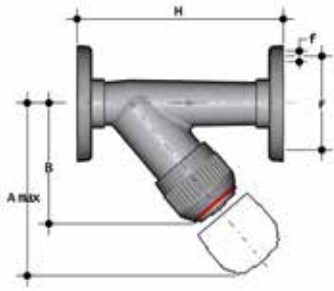
d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
20	15	10	125	72	65	14	163	248	RVUOM020E	RVUOM020F
25	20	10	145	84	75	14	193	295	RVUOM025E	RVUOM025F
32	25	10	165	95	85	14	211	397	RVUOM032E	RVUOM032F
40	32	10	190	111	100	18	244	625	RVUOM040E	RVUOM040F
50	40	10	210	120	110	18	277	825	RVUOM050E	RVUOM050F
63	50	10	240	139	125	18	331	1250	RVUOM063E	RVUOM063F



## RVUOAM

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

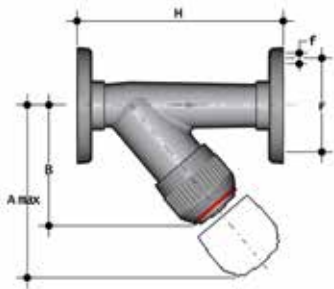
Size	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
1/2"	15	10	125	72	60	16	175	248	RVUOAM012E	RVUOAM012F
3/4"	20	10	145	84	70	16	214	295	RVUOAM034E	RVUOAM034F
1"	25	10	165	95	79	16	237	397	RVUOAM100E	RVUOAM100F
1 1/4"	32	10	190	111	89	16	253	625	RVUOAM114E	RVUOAM114F
1 1/2"	40	10	210	120	98	16	289	825	RVUOAM112E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



## RVOM

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

d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
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	RVOM100E	RVOM100F



## RVOAM

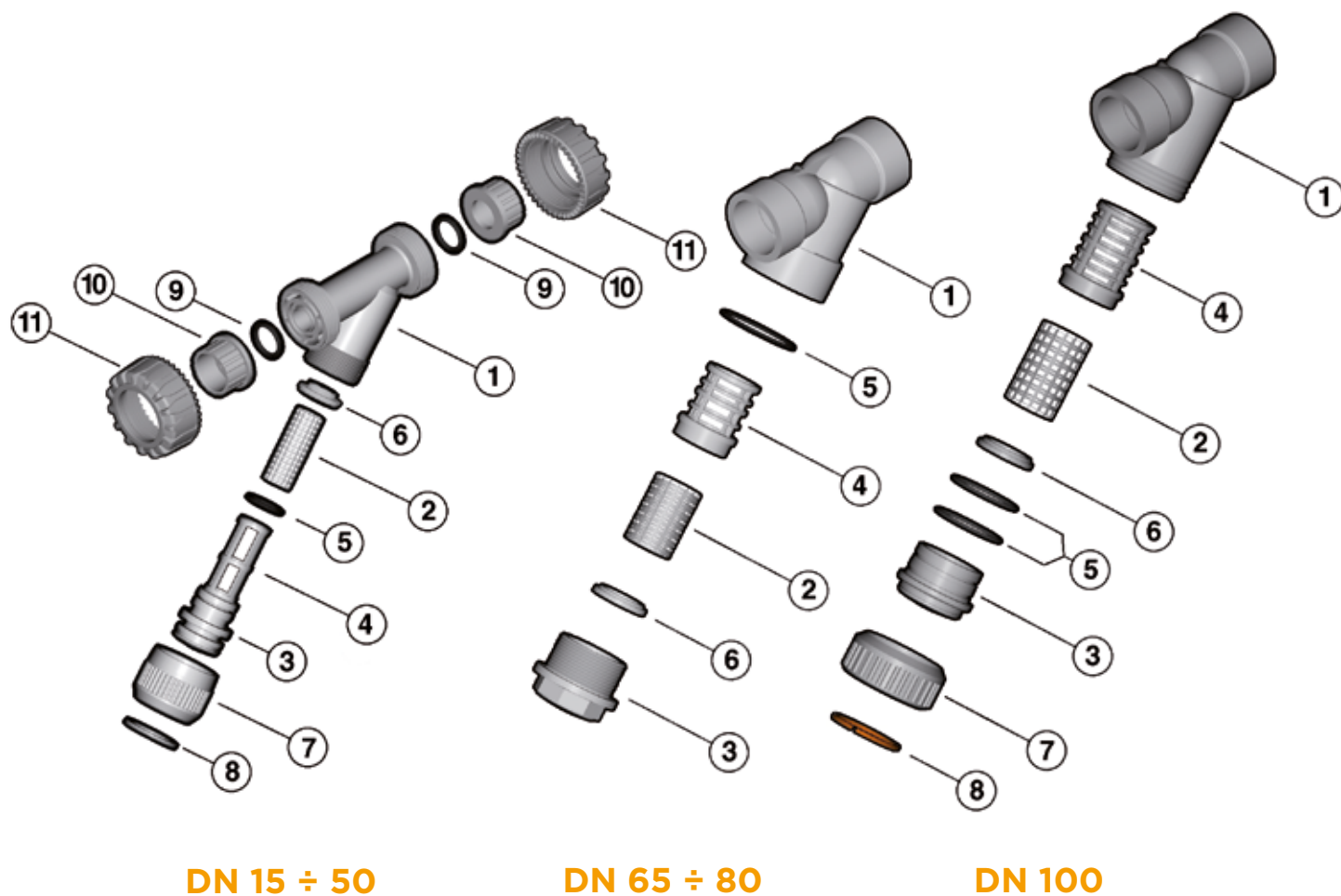
Sediment strainer with fixed flanges, drilled ANSI B16.5 cl.150 #FF

d - Size	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
75 - 2" 1/2	65	6	300	176	139.7	18	356	4725	RVOAM075E	RVOAM075F
90 - 3"	80	4	325	192	152.4	18	404	5175	RVOAM090E	RVOAM090F
110 - 4"	100	4	385	231	190.5	18	475	7405	RVOAM100E	RVOAM100F



# COMPONENTS

## EXPLODED VIEW



1 · Body (PP-H - 1)

2 · Strainer (PP-H - 1)\*

3 · Bonnet (PP-H - 1)

4 · Strainer support (PP-H - 1)

5 A-B · O-Ring (EPDM or FPM - 1)\*

5 C · O-Ring (EPDM or FPM - 2)\*

6 · Washer (PP-H - 1)

7 · Union nut (PP-H - 1)

8 · Retaining ring (PP-H - 1)

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

10 · End connector (PP-H - 2)\*

11 · Union nut (PP-H - 2)

\* 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 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

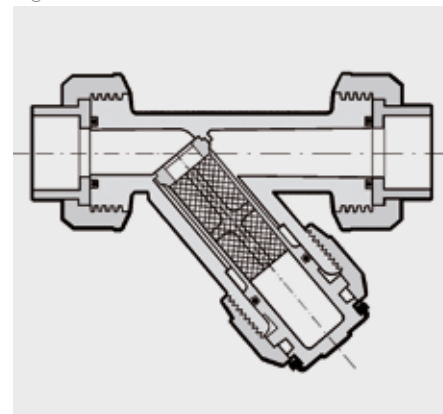


Fig. B

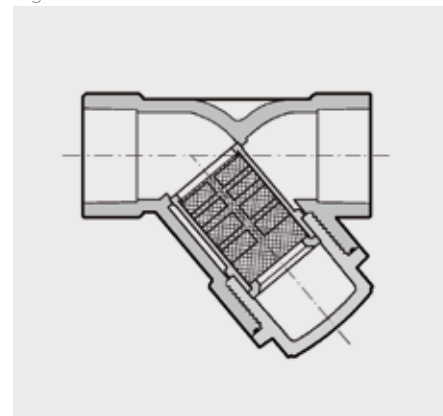
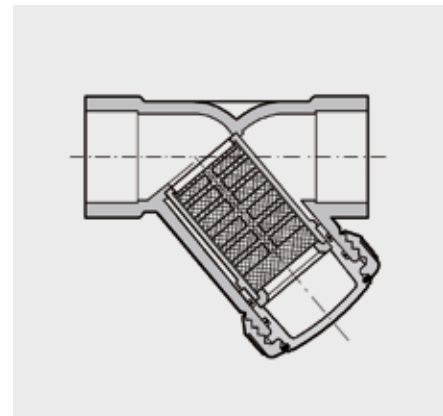


Fig. C



## INSTALLATION

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.

### DN 15÷50 (fig. A)

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

### DN 65÷80 (fig. B) and DN 100 (fig. C)

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



## WARNINGS

- Always check the cleanliness of the filter elements.





**VR DN 15÷80**  
PP-H

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

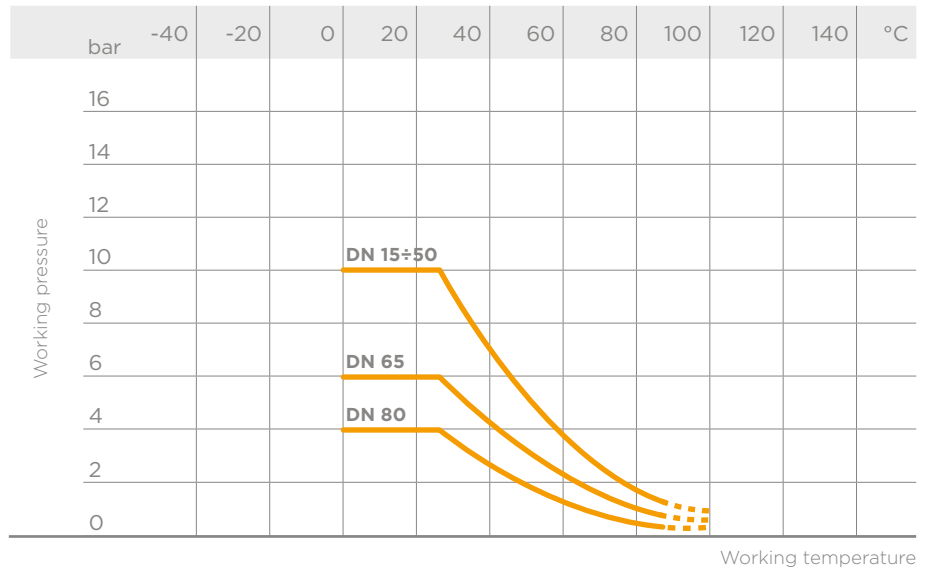
- Connection system for weld, threaded and flanged joints
- **No metal parts in contact with the fluid**
- **Piston with counterweight** able to work with high intensity fluid
- Limited pressure drop. Only minimum back pressure is required for the hermetic seal
- **Valve material compatibility (PP-H)**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

Technical specifications	
<b>Construction</b>	Angle seat check valve
<b>Size range</b>	DN 15 ÷ 80
<b>Nominal pressure</b>	<b>DN 15÷50:</b> PN 10 with water at 20° C <b>DN 65:</b> PN 6 with water at 20° C <b>DN 80:</b> PN 4 with water at 20° C
<b>Temperature range</b>	0 °C ÷ 100 °C
<b>Coupling standards</b>	<b>Welding:</b> EN ISO 15494. Can be coupled to pipes according to EN ISO 15494 <b>Thread:</b> ISO 228-1, DIN 2999 <b>Flanging system:</b> ISO 7005-1, EN 1092-1, EN ISO 15494, EN 558-1, DIN 2501, ANSI B16.5 cl.150
<b>Reference standards</b>	<b>Construction criteria:</b> EN ISO 16137, EN ISO 15494 <b>Test methods and requirements:</b> ISO 9393 <b>Installation criteria:</b> DVS 2202-1, DVS 2207-11, DVS 2208-1, UNI 11318
<b>Valve material</b>	PP-H
<b>Seal material</b>	EPDM or FPM

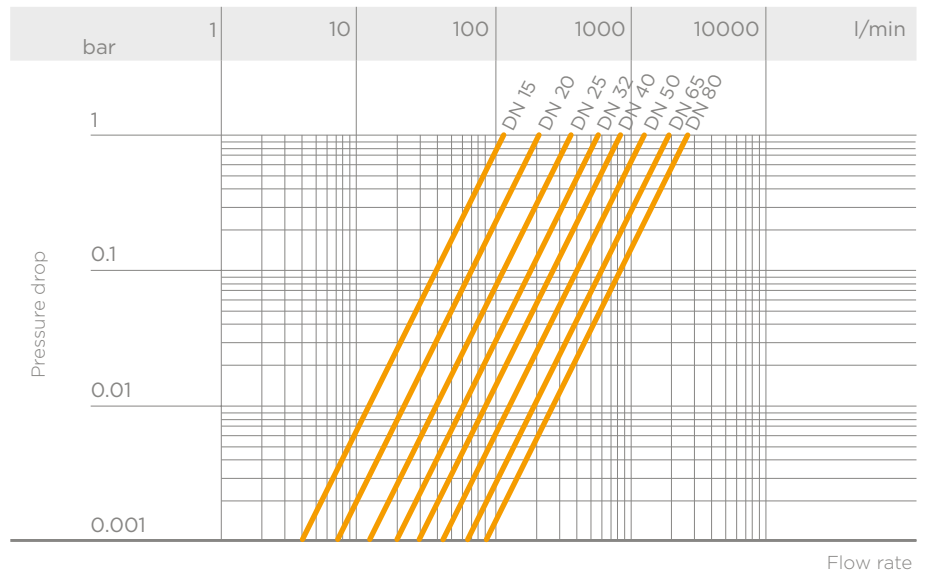
# TECHNICAL DATA

## 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<sub>v</sub>100 FLOW COEFFICIENT

The K<sub>v</sub>100 flow coefficient is the Q flow rate of litres per minute of water at a temperature of 20°C that will generate  $\Delta p = 1$  bar pressure drop at a certain valve position.

The K<sub>v</sub>100 values shown in the table are calculated with the valve completely open.

DN	15	20	25	32	40	50	65	80
K <sub>v</sub> 100	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

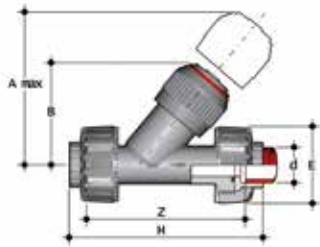
## MINIMUM SEALING PRESSURE (PISTON IN CLOSED POSITION)

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

The figures refer to the seals that are not worn.

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.

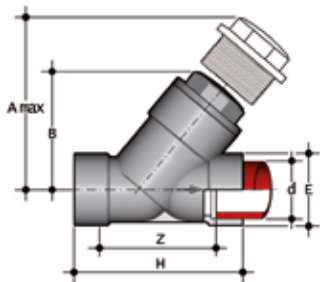
# DIMENSIONS



## VRUIM

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

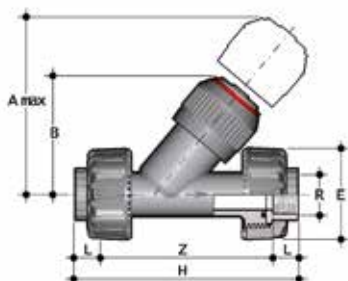
d	DN	PN	A max	B	E	H	Z	g	EPDM Code	FPM Code
20	15	10	125	71	55	138	109	165	VRUIM020E	VRUIM020F
25	20	10	145	83	65	157	125	227	VRUIM025E	VRUIM025F
32	25	10	165	94	74	179	143	380	VRUIM032E	VRUIM032F
40	32	10	190	109	86	205	164	645	VRUIM040E	VRUIM040F
50	40	10	210	119	99	244	197	915	VRUIM050E	VRUIM050F
63	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	FPM 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

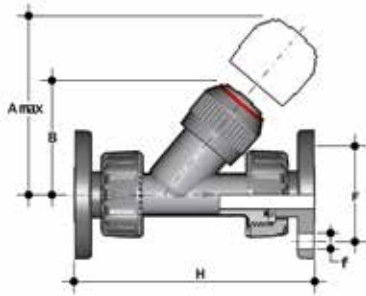


## VRUFM

Check valve with BSP threaded female union ends

d	DN	PN	A max	B	E	H	Z	g	EPDM Code	FPM 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

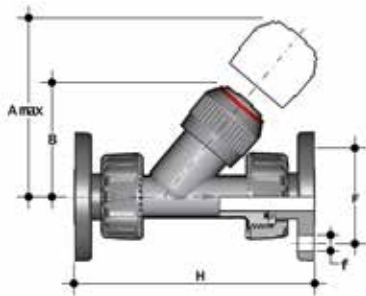




## VRUOM

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

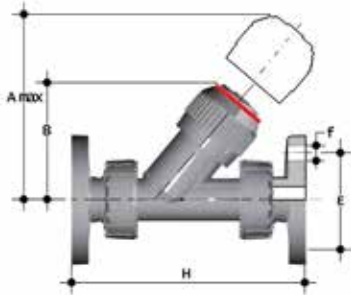
d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
20	15	10	125	72	65	14	163	265	VRUOM012E	VRUOM012F
25	20	10	145	84	75	14	193	327	VRUOM034E	VRUOM034F
32	25	10	165	95	85	14	211	480	VRUOM100E	VRUOM100F
40	32	10	190	111	100	18	244	795	VRUOM114E	VRUOM114F
50	40	10	210	120	110	18	277	1065	VRUOM112E	VRUOM112F
63	50	10	240	139	125	18	331	1705	VRUOM200E	VRUOM200F



## VRUOAM

Check valve with union ends and fixed flanges, drilled ANSI B16.5 cl.150 #FF

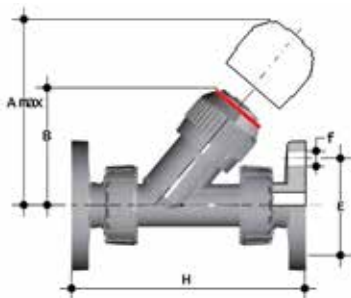
Size	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
1/2"	15	10	125	72	60	16	175	265	VRUOAM012E	VRUOAM012F
3/4"	20	10	145	84	70	16	214	327	VRUOAM034E	VRUOAM034F
1"	25	10	165	95	79	16	237	480	VRUOAM100E	VRUOAM100F
1 1/4"	32	10	190	111	89	16	253	795	VRUOAM114E	VRUOAM114F
1 1/2"	40	10	210	120	98	16	289	1065	VRUOAM112E	VRUOAM112F
2"	50	10	240	139	121	19	333	1705	VRUOAM200E	VRUOAM200F



## VROM

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

d	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM Code
75	65	6	300	176	145	18	356	5990	VROM075E	VROM075F
90	80	4	325	192	160	18	404	7230	VROM090E	VROM090F



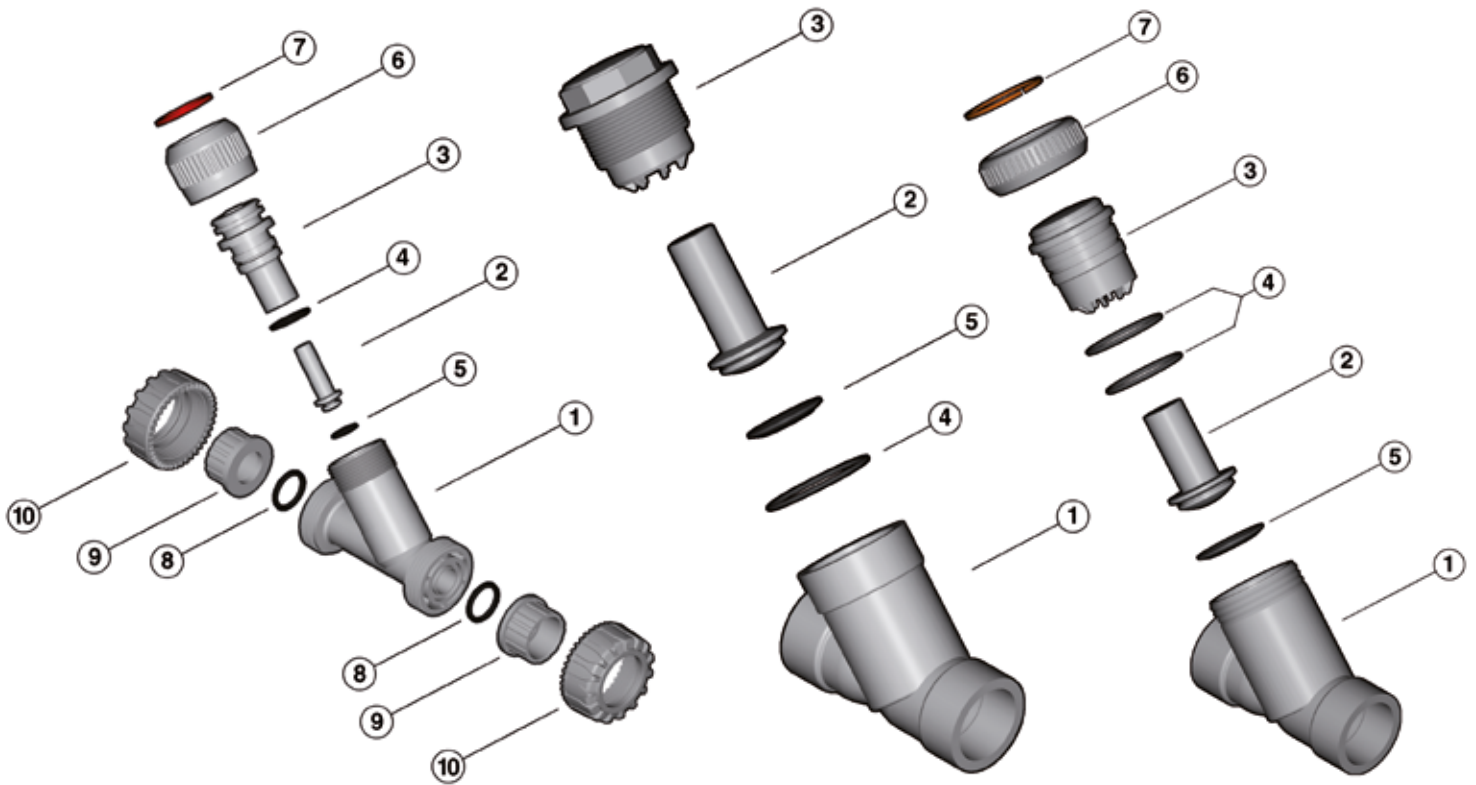
## VROAM

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

d - Size	DN	PN	A max	B	F	f	H	g	EPDM Code	FPM 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**

**DN 100**

- |                                 |   |   |
|---------------------------------|---|---|
| 1 · Body (PP-H - 1)             | 5 · Piston flat gasket (EPDM or FPM - 1)* | 8 · Socket seal O-Ring (EPDM or FPM - 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 FPM - 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 bonnet 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

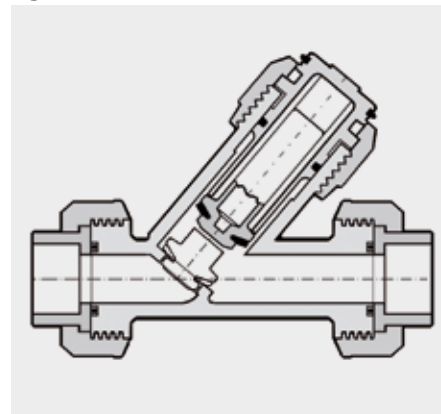
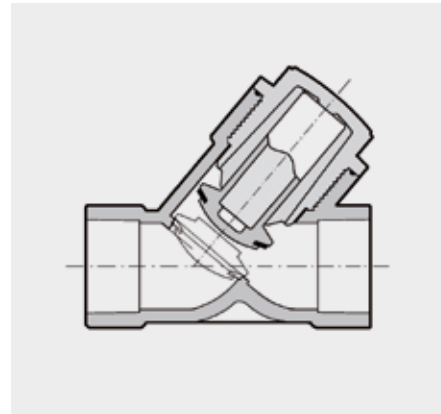


Fig. B



## INSTALLATION

- 1) 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.
- 2) 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.
- 3) 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.



# KEY ABBREVIATIONS

<b>C</b>	O-Ring code	<b>PE</b>	polyethylene
<b>d</b>	nominal external diameter in mm	<b>PN</b>	nominal pressure in bar (max. operating pressure at 20 °C water)
<b>DN</b>	nominal internal diameter in mm	<b>POM</b>	polyoxymethylene
<b>EPDM</b>	ethylene propylene elastomer	<b>PP-GR</b>	fibreglass reinforced polypropylene
<b>FPM (FKM)</b>	fluoroelastomer	<b>PP-H</b>	polypropylene homopolymer
<b>g</b>	weight in grams	<b>PVC-C</b>	chlorinated polyvinyl chloride
<b>HIPVC</b>	PVC high impact	<b>PVC-U</b>	unplasticized polyvinylchloride
<b>K</b>	bonnet key	<b>PVDF</b>	polyvinylidene difluoride
<b>Kg</b>	weight in kilograms	<b>PTFE</b>	polyethrafluorethylene
<b>L</b>	length in metres	<b>R</b>	nominal thread size in inches
<b>M</b>	bolts	<b>S</b>	thickness series = $\frac{SDR-1}{2}$
<b>MRS</b>	minimum guaranteed breaking strength of the material at 20° C - water - for 50 years of service	<b>s</b>	pipe thickness in mm
<b>n</b>	number of flange holes	<b>SDR</b>	standard dimension ratio = $d / s$
<b>NBR</b>	acrylonitrile butadiene elastomer	<b>Sp</b>	flange thickness on flanged valves
<b>PA-GR</b>	fibreglass reinforced polyamide	<b>U</b>	number of flange holes for flanged valves
<b>PBT</b>	polybutylene terephthalate		











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