

# Monoblock

## With flange connection

### Models IBF2 and IBF3

WIKA data sheet AC 09.25

EAC

#### Applications

- Oil and gas industry, chemical and petrochemical industries, power plants
- For gaseous and liquid aggressive media that are highly viscous or crystallising, also in aggressive environments
- Direct connection of pressure measuring instruments to flanged pipelines or vessels without interface valves
- Shut-off valve with draining or venting function as tapping point for instrumentation
- Attached to level indicators or differential pressure instruments in level measurement

#### Special features

- Increased safety with metal enclosed seats and double body seal
- High-quality machining guarantees smooth operation with low torque and low wear
- Leak-tested tightness in accordance with BS6755 / ISO 5208 leakage rate A
- Customisable arrangement with ball and needle valves
- Customer-specific combination of valves and instruments (hook-up) on request

#### Description

The monoblock has been designed to meet the requirements of the process industry, especially for natural gas and aggressive fluid applications. The compact design integrates one or two shut-off valves to separate the process from the instrument side and a vent valve.

The modular monoblock design allows using an arrangement of ball valves and/or needle valves. For applications with liquid or dirty media, ball valves are recommended due to easy cleaning of the straight-through internal bore.

The valve seat design and the redundant seals of the valve body ensure high durability and tightness.



**Fig. left: Model IBF3, with flange connections**  
**Fig. right: Model IBF3, flange process connection and threaded instrument connection**

In case the soft valve seat fails, the metal-to-metal seat will ensure that the valve can still be operated and set to a safe position. The tightness is guaranteed for the connection between the process and the measuring instrument and towards the atmosphere.

The super-finished machining of the internal parts allows a very smooth and precise operation, even at high pressures and after long periods without valve operation. The surface finish is also minimising corrosion with aggressive media and makes it easier to clean.

Configurator



Standard articles



# Specifications

## Monoblock, models IBF2 and IBF3

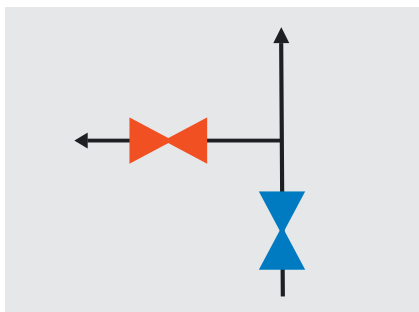
### Standards used

Design	<ul style="list-style-type: none"> <li>■ EEMUA publication 182, specification for integral block-and-bleed valve manifolds</li> <li>■ ASME B16.34, valves - flanged, threaded and welding end</li> <li>■ ASME BPVC section VIII, rules for construction of pressure vessels division 1</li> <li>■ ASME B31.1, power piping</li> <li>■ ASME B31.3, process piping</li> <li>■ ISO 17292, metal ball valves for petroleum, petrochemical and allied industries</li> <li>■ MSS SP-99, valves for measuring instruments</li> <li>■ ASME B16.5, pipe flanges and flange fittings</li> <li>■ ASME B1.20.1, pipe threads, general purpose (inch)</li> </ul>
Tests	<ul style="list-style-type: none"> <li>■ API 598, valve inspection and testing</li> <li>■ ISO 5208, pressure testing of metallic valves with leakage rate A</li> <li>■ MSS SP-61, pressure testing of valves</li> <li>■ DIN EN 12266-1, pressure tests, test procedures and acceptance criteria for industrial valves</li> <li>■ API607/API6FA/ISO 10497 fire test for valves</li> </ul>
Material requirements	<ul style="list-style-type: none"> <li>■ NACE MR0175 / ISO 15156, use in H<sub>2</sub>S-containing environments in oil and gas production</li> <li>■ NORSOK M-630, specification for use in pipelines (Norway)</li> </ul>
Marking	ASME B16.34, valves - flanged, threaded and welding end
Pressure-temperature limits (for diagram, see page 5)	The limits for operating pressure and temperature depend on the sealing material
Function (for functional diagram, see next page)	<ul style="list-style-type: none"> <li>■ Model IBF2: Block and bleed (shut off and vent)</li> <li>■ Model IBF3: Double block and bleed (2 x shut off and 1 x vent)</li> </ul>
Arrangement (for valve types, see next page)	The shut-off valve(s) and the vent valve can be defined individually as ball valve or needle valve.
Process connection	<ul style="list-style-type: none"> <li>■ Flange ½" ... 2" / class 150 ... class 2500, following ASME B16.5</li> <li>■ Flange DN 15 ... DN 25 / PN 16 ... PN 100, following EN 1092-1</li> </ul>
<b>Surface roughness Ra of the sealing face</b>	
Following ASME B16.5	<ul style="list-style-type: none"> <li>■ RF: 3.2 ... 6.3 µm [125 ... 250 µin] (spiral surface)</li> <li>■ RJ: 1.6 µm [63 µin]</li> </ul>
Following EN 1092-1	<ul style="list-style-type: none"> <li>■ Form B1: 3.2 ... 6.3 µm [125 ... 250 µin]</li> <li>■ Form B2: 0.8 ... 3.2 µm [32 ... 125 µin]</li> </ul>
Instrument connection	<ul style="list-style-type: none"> <li>■ ½ NPT female, axial</li> <li>■ ½ NPT female, swivel adapter, axial</li> <li>■ Flange connection</li> </ul>
Vent connection	½ NPT female, plug screw is included in delivery, though not pre-fitted.

### Functional diagram

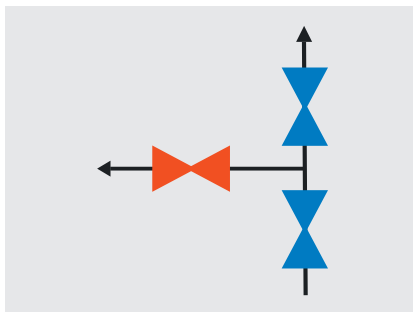
#### Model IBF2

Block and bleed (shut off and vent)



#### Model IBF3

Double block and bleed  
(2 x shut off and 1 x vent)



Colour code    Blue: Shut off  
                    Red: Vent

## Materials

### Wetted parts

Valve body and fittings, ball, valve seats, valve stem, bonnet body, spindle tip	<ul style="list-style-type: none"> <li>■ Stainless steel 316L (standard)</li> <li>■ Duplex F51 (1.4462)</li> <li>■ Super Duplex F55 (1.4501)</li> <li>■ Hastelloy C276 (2.4819)</li> <li>■ Monel 400 (2.4360)</li> <li>■ Steel A350 LF2 (1.0566), galvanised carbon steel per ISO/EN 2081 <sup>1) 2)</sup></li> </ul>
Sealing <sup>3)</sup>	<ul style="list-style-type: none"> <li>■ PEEK (ball valve seat)</li> <li>■ RTFE (ball valve seat)</li> <li>■ Graphite (needle valve sealing packing)</li> </ul>

### Non-wetted parts

Handle, bonnet, spindle, locking plate, locking pin, product label, screws	Stainless steel
Handle grip	PVC

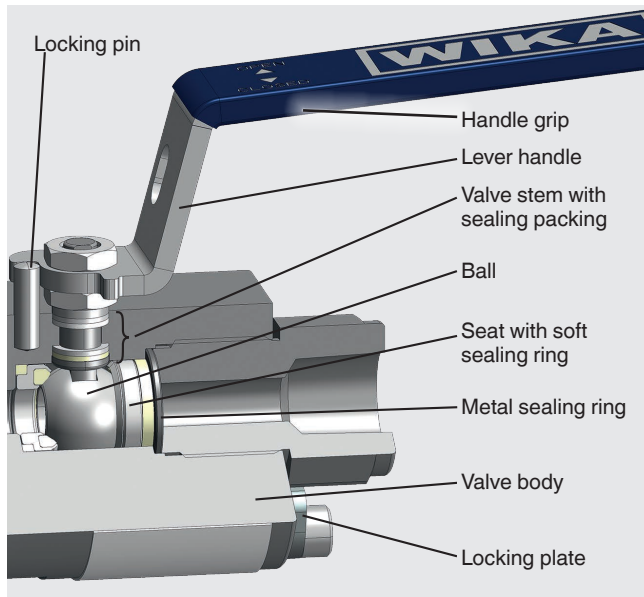
1) Valves can be painted in accordance with the customer specifications

2) Valve body from steel A350 LF2 (1.0566), wetted and non-wetted parts from stainless steel 316/316L

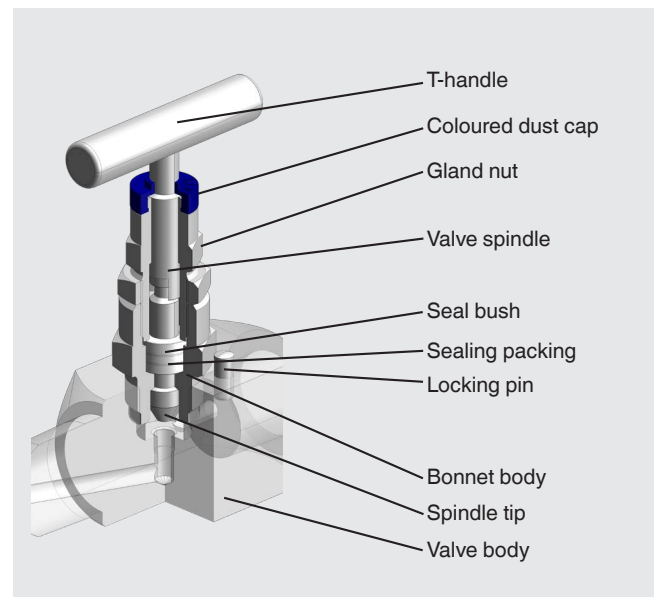
3) Other materials available on request

## Valve type

### Ball valve



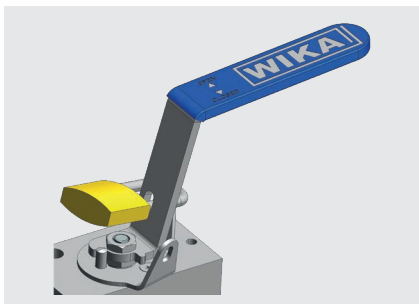
### Needle valve



Specification	Ball valve	Needle valve
<b>Design</b>	<ul style="list-style-type: none"> <li>■ Antistatic design</li> <li>■ Blow-out-safe valve stem</li> <li>■ Self-relieving valve seats</li> </ul>	<ul style="list-style-type: none"> <li>■ Non-rotating spindle tip</li> <li>■ Blow-out-safe spindle tip</li> <li>■ Back seat design</li> <li>■ Metal-to-metal seat</li> </ul>
<b>Colour code</b>	Blue: Shut off Red: Vent	
<b>Valve bore size</b>	10 mm [0.394 in]	5 mm [0.197 in]

**Options for ball valve**

**Anti-tamper version with padlock**



**Extended lever handle**



**Options for needle valve**

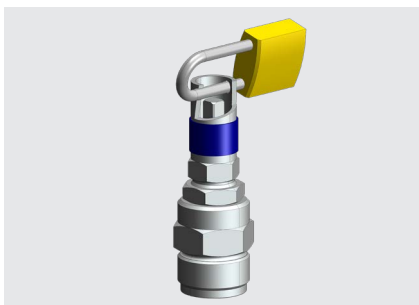
**Anti-tamper version**



**Anti-tamper key**



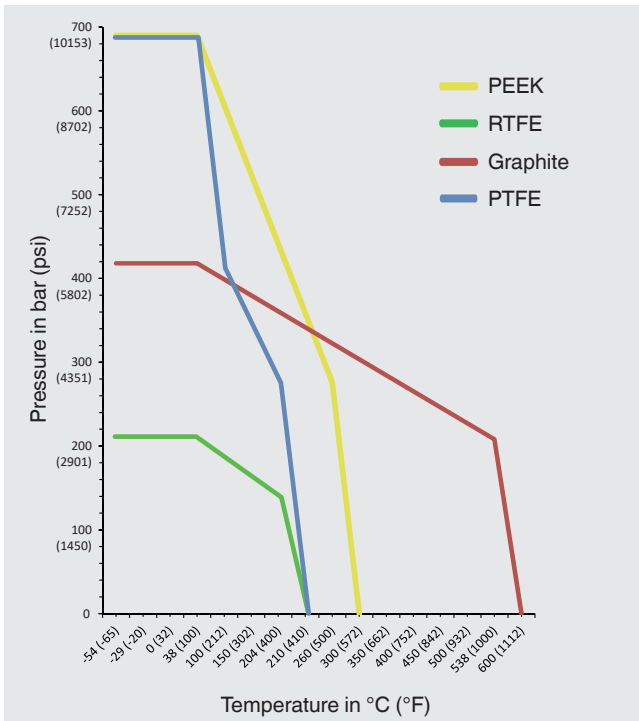
**Anti-tamper version with padlock**



**Extended handle**



## Pressure-temperature diagram



	Sealing material	Max. permissible operating pressure in bar at temperature in °C	Max. permissible operating pressure in psi at temperature in °F
Ball valve seat	PEEK <sup>1)</sup>	690 bar at 38 °C	10,000 psi at 100 °F
		276 bar at 260 °C	4,000 psi at 500 °F
	RTFE <sup>2)</sup>	210 bar at 38 °C	3,000 psi at 100 °F
		138 bar at 204 °C	2,000 psi at 400 °F
Needle valve sealing packing	Graphite	420 bar at 38 °C	6,000 psi at 100 °F
		209 bar at 538 °C	3,030 psi at 1,000 °F
	PTFE	690 bar at 38 °C	10,000 psi at 100 °F
		276 bar at 204 °C	4,000 psi at 400 °F

1) Polyetheretherketone

2) Reinforced PTFE

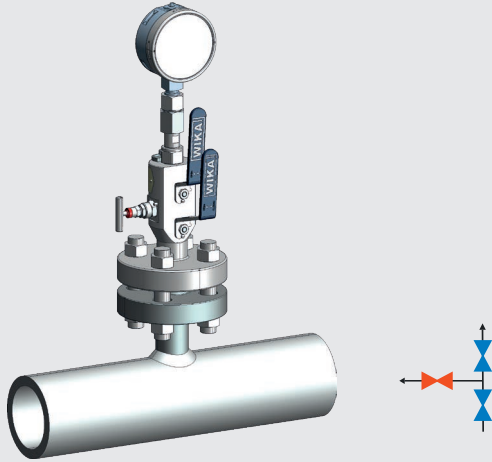
The minimum design temperature is -54 °C [-65 °F]. For permanently low operating temperatures of  $\leq -54$  °C [ $\leq -65$  °F], a special design is required.

## Installation examples

### Model IBF3 with pressure gauge

Shut off: 2 x ball valve  
Vent: 1 x needle valve

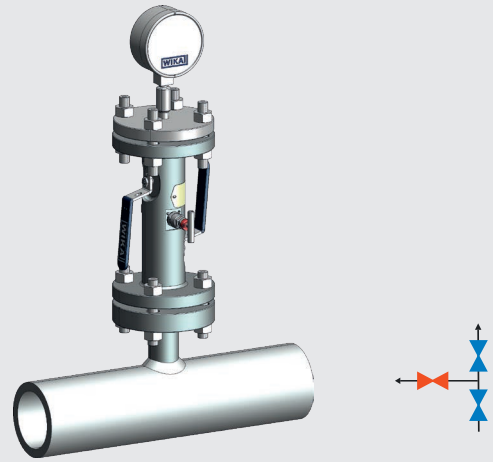
Process side: Flange  
Instrument side: Thread



### Model IBF3 with diaphragm seal system

Shut off: 2 x ball valve  
Vent: 1 x needle valve

Process side: Flange  
Instrument side: Flange

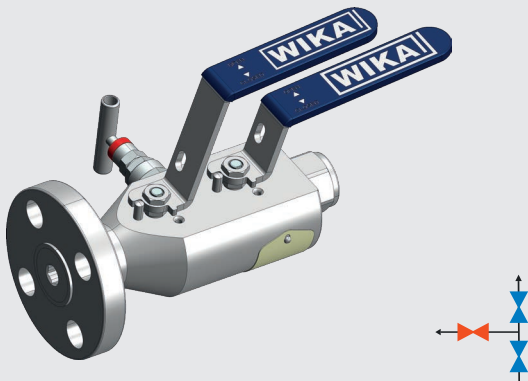


## Arrangement examples

### Model IBF3

Shut off: 2 x ball valve  
Vent: 1 x needle valve

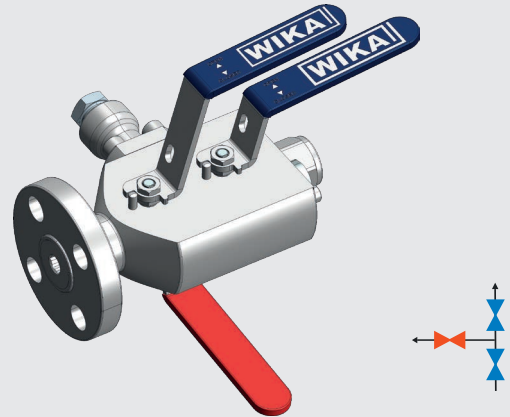
Process side: Flange  
Instrument side: Thread



### Model IBF3

Shut off: 2 x ball valve  
Vent: 1 x ball valve

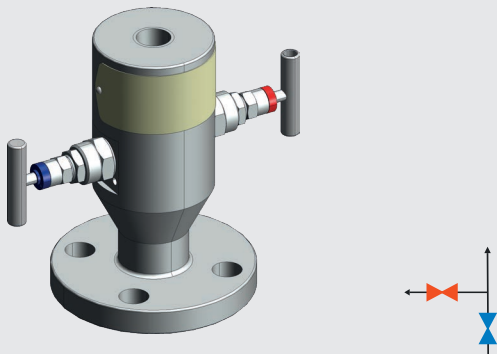
Process side: Flange  
Instrument side: Thread



### Model IBF2

Shut off: 1 x needle valve  
Vent: 1 x needle valve

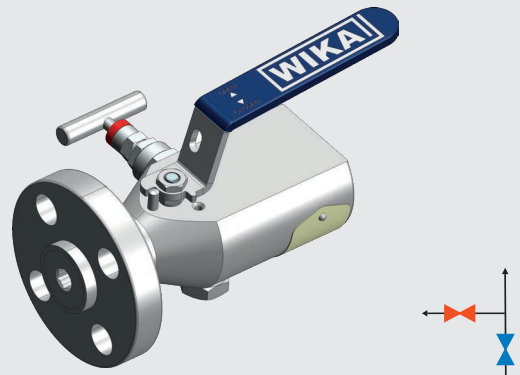
Process side: Flange  
Instrument side: Thread



### Model IBF2

Shut off: 1 x ball valve  
Vent: 1 x needle valve

Process side: Flange  
Instrument side: Thread

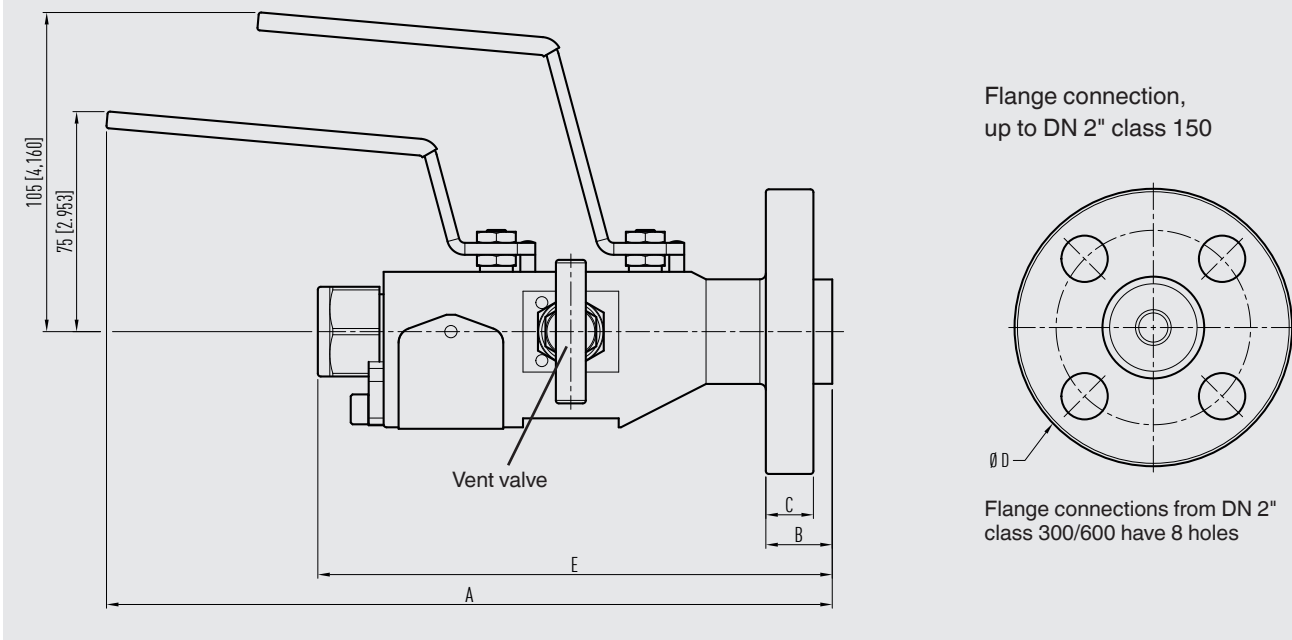


## Dimensions in mm [in]

### Monoblock, model IBF3

Shut off: 2 x ball valve  
Vent: 1 x needle valve

Process side: Flange  
Instrument side: Thread



### Flange connection per ASME B 16.5

DN	Class	Dimensions in mm [in]							x <sup>1)</sup>	Weight kg [lb]
		A	B for RF	B for RJ	C	Ø D	E for RF	E for RJ		
½"	150	225.4 [8.87]	11.1 [0.44]	-	9.6 [0.37]	88.9 [3.5]	170 [6.71]	-	4	2.7 [7.33]
	300/600	225.4 [8.87]	20.7 [0.81]	19.85 [0.78]	14.3 [0.56]	95.2 [3.75]	176.8 [6.96]	176 [6.93]	4	3.0 [8.04]
	900/1500	235.4 [9.27]	28.7 [1.13]	28.7 [1.13]	22.3 [0.88]	120.6 [4.75]	182 [7.17]	182 [7.17]	4	4.0 [10.72]
	2500	245.4 [9.66]	36.6 [1.44]	36.6 [1.44]	30.2 [1.19]	133.4 [5.25]	190.5 [7.5]	190.5 [7.5]	4	5.5 [14.74]
¾"	150	225.4 [8.87]	12.7 [0.50]	-	11.1 [0.44]	98.4 [3.87]	170 [6.71]	-	4	3.0 [8.04]
	300/600	225.4 [8.87]	22.1 [0.87]	22.1 [0.87]	15.7 [0.62]	117.5 [4.63]	178 [7.0]	178 [7.0]	4	3.5 [9.38]
	900/1500	235.4 [9.27]	31.8 [1.25]	31.8 [1.25]	25.4 [1.0]	130.2 [5.13]	180.5 [7.11]	180.5 [7.11]	4	4.7 [12.59]
	2500	245.4 [9.66]	38.1 [1.50]	38.1 [1.5]	31.75 [1.25]	139.7 [5.50]	190.5 [7.5]	190.5 [7.5]	4	6.0 [16.08]
1"	150	225.4 [8.87]	14.2 [0.56]	19 [0.75]	12.6 [0.50]	107.9 [4.25]	170 [6.70]	175 [6.9]	4	3.5 [9.38]
	300/600	225.4 [8.87]	24 [0.94]	23.9 [0.94]	17.5 [0.69]	123.8 [4.87]	171 [6.71]	171 [6.71]	4	4.0 [10.72]
	900/1500	245.4 [9.66]	34.8 [1.4]	34.8 [1.4]	28.4 [1.12]	149.2 [5.87]	190 [7.5]	190 [7.5]	4	6.3 [16.88]
	2500	245.4 [9.66]	41.4 [1.63]	41.4 [1.63]	35.0 [1.38]	158.7 [6.25]	191 [7.51]	191 [7.51]	4	7.5 [20.09]
1½"	150	225.4 [8.87]	17.5 [0.69]	22.3 [0.88]	15.9 [0.62]	127 [5.0]	170 [6.71]	175.2 [6.96]	4	4.5 [12.06]
	300/600	235.4 [9.27]	28.7 [1.13]	28.7 [1.13]	22.3 [0.88]	155.6 [6.13]	188.5 [7.42]	188.5 [7.42]	4	5.8 [15.54]
	900/1500	257.4 [10.13]	38.1 [1.5]	38.1 [1.5]	31.7 [1.25]	177.8 [7.0]	202.5 [8.0]	202.5 [8.0]	4	9.0 [24.11]
	2500	275.4 [10.84]	50.8 [2.0]	52.3 [2.06]	44.4 [1.75]	203.2 [8.0]	220.5 [8.7]	222 [8.7]	4	14.0 [37.51]
2"	150	235.4 [9.27]	19.05 [0.75]	23.8 [0.94]	17.4 [0.68]	152.4 [6.0]	180 [7.1]	185.1 [7.3]	4	5.8 [15.54]
	300/600	235.4 [9.27]	31.8 [1.25]	33.3 [1.31]	25.4 [1.0]	165.1 [6.50]	180.5 [7.1]	182 [7.2]	8	7.0 [18.75]
	900/1500	275.4 [10.84]	44.5 [1.75]	46.02 [1.81]	38.1 [1.5]	216 [8.50]	220.5 [8.7]	222 [8.74]	8	14.0 [37.51]
	2500	275.4 [10.84]	57.2 [2.25]	58.7 [2.31]	50.8 [2.0]	235 [9.25]	220.5 [8.7]	222 [8.74]	8	19.0 [50.91]

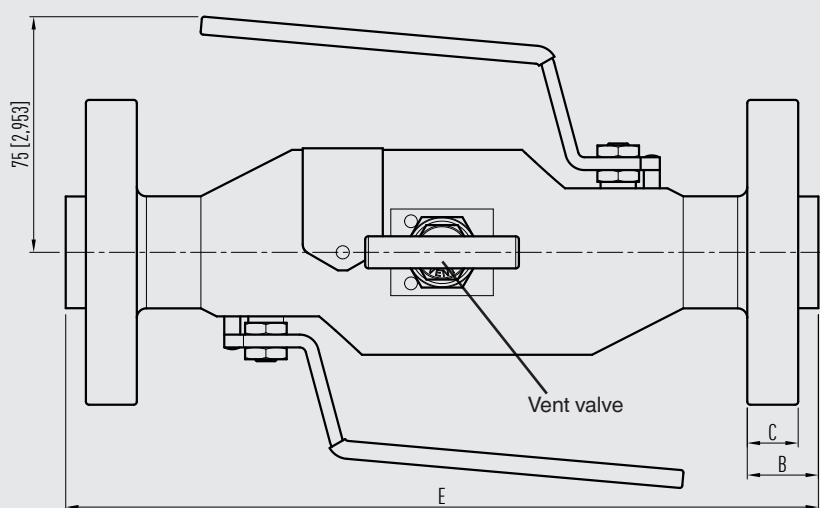
1) Number of screws

## Dimensions in mm [in]

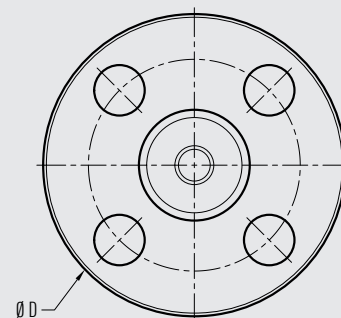
### Monoblock, model IBF3

Shut off: 2 x ball valve  
Vent: 1 x needle valve

Process side: Flange  
Instrument side: Flange



Flange connection,  
up to DN 2" class 150



Flange connections from DN 2" class 300/600 have 8 bores

### Flange connection per ASME B 16.5

DN	Class	Dimensions in mm [in]						x <sup>1)</sup>	Weight kg [lb]
		B for RF	B for RJ	C	Ø D	E for RF	E for RJ		
½"	150	11.1 [0.44]	-	9.6 [0.37]	88.9 [3.5]	232 [9.13]	-	4	4.5 [12.06]
	300/600	20.7 [0.81]	19.85 [0.78]	14.3 [0.56]	95.2 [3.75]	232 [9.13]	230.3 [9.07]	4	4.5 [12.06]
	900/1500	28.7 [1.13]	28.7 [1.13]	22.3 [0.88]	120.6 [4.75]	251.2 [9.89]	251.2 [9.89]	4	7.0 [18.75]
	2500	36.6 [1.44]	36.6 [1.44]	30.2 [1.19]	133.4 [5.25]	264 [10.4]	264 [10.4]	4	7.0 [18.75]
¾"	150	12.7 [0.50]	-	11.1 [0.44]	98.4 [3.87]	232 [9.13]	-	4	5.0 [13.40]
	300/600	22.1 [0.87]	22.1 [0.87]	15.7 [0.62]	117.5 [4.63]	232 [9.13]	232 [9.13]	4	6.0 [16.08]
	900/1500	31.8 [1.25]	31.8 [1.25]	25.4 [1.0]	130.2 [5.13]	251 [9.88]	251 [9.88]	4	8.5 [22.77]
	2500	38.1 [1.50]	38.1 [1.5]	31.75 [1.25]	139.7 [5.50]	264 [10.4]	264 [10.4]	4	11.0 [29.47]
1"	150	14.2 [0.56]	19 [0.75]	12.6 [0.50]	108 [4.25]	232 [9.13]	241.2 [9.50]	4	6.0 [16.08]
	300/600	24 [0.94]	23.9 [0.94]	17.5 [0.69]	123.8 [4.87]	251.2 [9.89]	251.2 [9.89]	4	7.0 [18.75]
	900/1500	34.8 [1.4]	34.8 [1.4]	28.4 [1.12]	149.2 [5.87]	263.6 [10.4]	263.6 [10.4]	4	11.0 [29.47]
	2500	41.4 [1.63]	41.4 [1.63]	35.0 [1.38]	158.8 [6.25]	263.6 [10.4]	263.6 [10.4]	4	14.5 [38.85]
1 ½"	150	17.5 [0.69]	22.3 [0.88]	15.9 [0.62]	127 [5.0]	232 [9.12]	241.6 [9.51]	4	7.5 [20.09]
	300/600	28.7 [1.13]	28.7 [1.13]	22.3 [0.88]	155 [6.10]	254.2 [10.0]	254.2 [10.0]	4	10.5 [28.13]
	900/1500	38.1 [1.5]	38.1 [1.5]	31.7 [1.25]	177.8 [7.0]	263.6 [10.4]	263.6 [10.4]	4	16.0 [42.87]
	2500	50.8 [2.0]	52.3 [2.06]	44.4 [1.75]	203.2 [8.0]	311 [12.2]	314 [12.4]	4	26.5 [71.00]
2"	150	19.05 [0.75]	23.8 [0.94]	17.4 [0.68]	152.4 [6.0]	250.7 [9.8]	260.3 [10.25]	4	10.0 [26.79]
	300/600	31.8 [1.25]	33.3 [1.31]	25.4 [1.0]	165 [6.5]	263.6 [10.4]	267 [10.51]	8	11.5 [30.81]
	900/1500	44.5 [1.75]	46.02 [1.81]	38.1 [1.5]	216 [8.5]	311 [12.2]	314 [12.4]	8	26.0 [69.66]
	2500	57.2 [2.25]	58.7 [2.31]	50.8 [2.0]	235 [9.25]	331 [13.0]	334 [13.15]	8	37.5 [100.47]

1) Number of screws



## Approvals

Logo	Description	Country
	<b>EAC (option)</b> Machinery directive	Eurasian Economic Community

## Manufacturer's information and certificates

Logo	Description
-	<b>PMI <sup>1)</sup> test certificate (option)</b> All wetted parts
-	<b>Type tested for fire safety in accordance with API 607, ISO 10497, BS 6755-2 <sup>2)</sup></b>

1) Positive material identification  
2) Only for ball valve

## Certificates

- 2.2 test report per EN 10204
- 3.1 inspection certificate per EN 10204 (option)
  - Material certificate for all wetted parts per NACE MR0103/MR0175
  - Confirmation of pressure tests per API 598 <sup>3)</sup>

3) Shell test: 15 s test duration with 1.5 times the permissible working air pressure  
Seat test: 15 s test duration with 6 bar air/nitrogen



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