Monoblock
With flange connection
Models IBF2 and IBF3

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.

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.
Specifications

Monoblock, models IBF2 and IBF3

Standards used

- EEMUA publication 182, specification for integral block-and-bleed valve manifolds
- ASME B16.34, valves - flanged, threaded and welding end
- ASME BPVC section VIII, rules for construction of pressure vessels division 1
- ASME B31.1, power piping
- ASME B31.3, process piping
- ISO 17292, metal ball valves for petroleum, petrochemical and allied industries
- MSS SP-99, valves for measuring instruments
- ASME B16.5, pipe flanges and flange fittings
- ASME B1.20.1, pipe threads, general purpose (inch)

Tests

- API 598, valve inspection and testing
- ISO 5208, pressure testing of metallic valves with leakage rate A
- MSS SP-61, pressure testing of valves
- DIN EN 12266-1, pressure tests, test procedures and acceptance criteria for industrial valves
- API607/API6FA/ISO 10497 fire test for valves

Material requirements

- NACE MR0175 / ISO 15156, use in H₂S-containing environments in oil and gas production
- NORSOK M-630, specification for use in pipelines (Norway)

Marking

ASME B16.34, valves - flanged, threaded and welding end

Pressure-temperature limits

The limits for operating pressure and temperature depend on the sealing material

Function

- Model IBF2: Block and bleed (shut off and vent)
- Model IBF3: Double block and bleed (2 x shut off and 1 x vent)

Arrangement

The shut-off valve(s) and the vent valve can be defined individually as ball valve or needle valve.

Process connection

- Flange ½” … 2” / class 150 … class 2500, following ASME B16.5
- Flange DN 15 … DN 25 / PN 16 … PN 100, following EN 1092-1

Surface roughness Ra of the sealing face

Following ASME B16.5
  - RF: 3.2 … 6.3 μm [125 … 250 μin] (spiral surface)
  - RJ: 1.6 μm [63 μin]

Following EN 1092-1
  - Form B1: 3.2 … 6.3 μm [125 … 250 μin]
  - Form B2: 0.8 … 3.2 μm [32 … 125 μin]

Instrument connection

- ½ NPT female, axial
- ½ NPT female, swivel adapter, axial
- Flange connection

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

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
</table>
| Valve body and fittings, ball, seats, valve stem, bonnet body, spindle tip | Stainless steel 316L (standard)  
Duplex F51 (1.4462)  
Super Duplex F55 (1.4501)  
Hastelloy C276 (2.4819)  
Monel 400 (2.4360)  
Steel A350 LF2 (1.0566), galvanised carbon steel per ISO/EN 2081  
1) 2) |
| Sealing 3)            | PEEK (ball valve seat)  
RTFE (ball valve seat)  
Graphite (needle valve sealing packing)  
PTFE (needle valve sealing packing) |

#### Non-wetted parts

<table>
<thead>
<tr>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handle, bonnet spindle, locking plate, locking pin, product label, screws</td>
<td>Stainless steel 316/316L</td>
</tr>
<tr>
<td>Handle grip</td>
<td>PVC</td>
</tr>
</tbody>
</table>

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 upon request

### Valve type

#### Ball valve

- Antistatic design
- Blow-out-safe valve stem
- Self-relieving valve seats

#### Needle valve

- Non-rotating spindle tip
- Blow-out-safe spindle tip
- Back seat design
- Metal-to-metal seat

#### Colour code

- Blue: Shut off
- Red: Vent

#### Valve bore size

- Ball valve: 10 mm [0.394 in]
- Needle valve: 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

Order number: 81640006
### Pressure-temperature diagram

<table>
<thead>
<tr>
<th>Material of the sealing</th>
<th>Max. permissible operating pressure in bar at temperature in °C</th>
<th>Max. permissible operating pressure in psi at temperature in °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball valve seat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEEK ¹)</td>
<td>690 bar at 38 °C</td>
<td>10,000 psi at 100 °F</td>
</tr>
<tr>
<td></td>
<td>276 bar at 260 °C</td>
<td>4,000 psi at 500 °F</td>
</tr>
<tr>
<td>RTFE ²)</td>
<td>210 bar at 38 °C</td>
<td>3,000 psi at 100 °F</td>
</tr>
<tr>
<td></td>
<td>138 bar at 204 °C</td>
<td>2,000 psi at 400 °F</td>
</tr>
<tr>
<td>Needle valve sealing packing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>420 bar at 38 °C</td>
<td>6,000 psi at 100 °F</td>
</tr>
<tr>
<td></td>
<td>209 bar at 538 °C</td>
<td>3,030 psi at 1.000 °F</td>
</tr>
<tr>
<td>PTFE</td>
<td>690 bar at 38 °C</td>
<td>10,000 psi at 100 °F</td>
</tr>
<tr>
<td></td>
<td>276 bar at 204 °C</td>
<td>4,000 psi at 400 °F</td>
</tr>
</tbody>
</table>

¹) Polyetheretherketone  
²) Reinforced PTFE

The minimum design temperature is -54 °C [-65 °F]. For permanently low operating temperatures ≤ -54 °C [≤ -65 °F] a special design is required.
Installation examples

Model IBF3 with pressure gauge
Shut off: 2 x ball valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Thread

Model IBF3 with diaphragm seal system
Shut off: 2 x ball valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Flange

Model IBF3
Shut off: 2 x ball valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Thread

Arrangement examples

Model IBF3
Shut off: 2 x ball valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Thread

Model IBF3
Shut off: 2 x ball valve  Process side: Flange
Vent: 1 x ball valve  Instrument side: Thread

Model IBF2
Shut off: 1 x needle valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Thread

Model IBF2
Shut off: 1 x ball valve  Process side: Flange
Vent: 1 x needle valve  Instrument side: Thread
### Dimensions in mm [in]

**Monoblock, model IBF3**

Shut off: 2 x ball valve  
Process side: Flange  
Vent: 1 x needle valve  
Instrument side: Thread

![Diagram of Monoblock IBF3](image)

**Flange connection, up to DN 2" class 150**

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

### Flange connection per ASME B 16.5

<table>
<thead>
<tr>
<th>DN</th>
<th>Class</th>
<th>Dimensions in mm [in]</th>
<th></th>
<th></th>
<th></th>
<th>x 1)</th>
<th>Weight kg [lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>300/600</td>
<td>225.4 [8.87] 20.1 [0.81] 19.85 [0.78] 14.3 [0.56] 95.2 [3.75] 176.8 [6.96] 176 [6.93] 4</td>
<td>3.0 [8.04]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>300/600</td>
<td>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</td>
<td>3.5 [9.38]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>300/600</td>
<td>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</td>
<td>4.0 [10.72]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>300/600</td>
<td>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</td>
<td>4.5 [12.06]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Number of screws
### Monoblock, model IBF3

**Shut off:** 2 x ball valve  
**Process side:** Flange  
**Vent:** 1 x needle valve  
**Instrument side:** Flange

#### Flange connection, up to DN 2" class 150

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

#### Dimensions in mm [in]

<table>
<thead>
<tr>
<th>DN</th>
<th>Class</th>
<th>Dimensions in mm [in]</th>
<th>x</th>
<th>Weight kg [lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B for RF</td>
<td>B for RJ</td>
<td>C</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>150</td>
<td>11.1 [0.44]</td>
<td>-</td>
<td>9.6 [0.37]</td>
</tr>
<tr>
<td></td>
<td>300/600</td>
<td>20.7 [0.81]</td>
<td>19.85 [0.78]</td>
<td>14.3 [0.56]</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>150</td>
<td>12.7 [0.50]</td>
<td>-</td>
<td>11.1 [0.44]</td>
</tr>
<tr>
<td></td>
<td>300/600</td>
<td>22.1 [0.87]</td>
<td>22.1 [0.87]</td>
<td>15.7 [0.62]</td>
</tr>
<tr>
<td></td>
<td>300/600</td>
<td>24 [0.94]</td>
<td>23.9 [0.94]</td>
<td>17.5 [0.69]</td>
</tr>
<tr>
<td>1 1/4&quot;</td>
<td>150</td>
<td>17.5 [0.69]</td>
<td>22.3 [0.88]</td>
<td>15.9 [0.62]</td>
</tr>
<tr>
<td></td>
<td>2500</td>
<td>50.8 [2.0]</td>
<td>52.3 [2.06]</td>
<td>44.4 [1.75]</td>
</tr>
<tr>
<td>2&quot;</td>
<td>150</td>
<td>19.05 [0.75]</td>
<td>23.8 [0.94]</td>
<td>17.4 [0.68]</td>
</tr>
</tbody>
</table>

1) Number of screws
Approvals

<table>
<thead>
<tr>
<th>Logo</th>
<th>Description</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAC</td>
<td>EAC (option)</td>
<td>Eurasian Economic Community</td>
</tr>
<tr>
<td></td>
<td>Machinery directive</td>
<td></td>
</tr>
</tbody>
</table>

Manufacturer's information and certificates

<table>
<thead>
<tr>
<th>Logo</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PMI(^1) test certificate (option)</td>
</tr>
<tr>
<td></td>
<td>All wetted parts</td>
</tr>
<tr>
<td></td>
<td>Type tested for fire safety in accordance with API 607, ISO 10497, BS 6755-2(^2)</td>
</tr>
</tbody>
</table>

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 \(^3\)

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