

Ball valve

Process and instrument version

Model BV

WIKA data sheet AC 09.28



for further approvals
see page 7

Applications

- Oil and gas industry, chemical and petrochemical industries, power plants
- First shut-off valve for pressure tap to local instrument installation, media distribution, drain or vent pipelines
- Direct connection of pressure measuring instruments to pipelines or vessels
- For gaseous, liquid, aggressive and highly viscous media, also in aggressive environments

Special features

- Safety factor 4:1 for pressurised parts
- High-quality machining guarantees smooth operation with low torque and low wear
- Leak-tested tightness in accordance with BS6755 / ISO 5208 leakage rate A
- Large selection of materials and configurations available
- Customer-specific combination of valves and instruments (hook-up) on request

Description

The simple and robust design, with a safety factor of 4:1, enables model BV ball valves a wide spectrum of use. This ranges from the simple distribution of compressed air through to demanding applications in the oil and gas industry. The process version of the ball valve has been designed to meet the requirements of the process industry, in particular for natural gas and aggressive media applications.

For applications with liquid or gaseous media, ball valves are recommended due to easy cleaning of the straight-through internal bore.



Fig. left: Model BV, process version, square design

Fig. right: Model BV, instrument version, round design

The valve design and the high-quality sealing materials ensure high durability and tightness.

The ball valve can be mounted, depending on the installation conditions, directly onto a pipeline or in a control panel, or for the connection of several measuring instruments at the same location.

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

Model BV	
Standards used	
Design	<ul style="list-style-type: none"> ■ ASME B16.34, valves - flanged, threaded and welding end ■ MSS SP-99, valves for measuring instruments ■ 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 ■ ASME B16.5, pipe flanges and flange fittings ■ ASME B1.20.1, pipe threads, general purpose (inch)
Tests	<ul style="list-style-type: none"> ■ 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 ■ API 607, ISO 10497, BS 6755-2, type test for fire safety
Material requirements	<ul style="list-style-type: none"> ■ 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
Version (see from page 4)	
Instrument version	<ul style="list-style-type: none"> ■ Round design ■ Square design
Process version	<ul style="list-style-type: none"> ■ Square design ■ Multiport design
Nominal pressure	<ul style="list-style-type: none"> ■ 6,000 psi [413 bar] ■ 10,000 psi [690 bar]
Nominal width (DN)	<ul style="list-style-type: none"> ■ 1/4" ■ 3/8" ■ 1/2" ■ 3/4" ■ 1"
Valve bore size	<ul style="list-style-type: none"> ■ 10 mm [0.394 in] ■ 20 mm [0.787 in]
Pressure-temperature limits (for diagram, see page 6)	The limits for operating pressure and temperature depend on the version and the sealing material.
Connection type	<ul style="list-style-type: none"> ■ Threaded connection per ISO 228-1, code G ■ Threaded connection per ANSI / ASME B1.20.1, code NPT ■ Connection for welded sleeve ■ Connection for butt weld connection ■ Smooth pipe end ■ Compression fitting
Features	<ul style="list-style-type: none"> ■ Free-floating ball ■ Antistatic design ■ Blow-out proof valve spindle ■ Self-relieving valve seats ■ Opening and closing direction marked on lever handle ■ Quarter-turn of lever handle opens/closes ■ Locking pin limits rotation angle of lever handle ■ Bubble-tight shut-off ■ Bidirectional flow with minimal pressure drop ■ Hydrostatically tested ■ Mounting holes for panel mounting (option) ■ Mounting holes and valve stem for actuators (option)

Materials

Wetted parts

Valve body and fittings, ball, valve stem	<ul style="list-style-type: none"> ■ Stainless steel 316L ■ Duplex F51 (1.4462) ■ Super Duplex F55 (1.4501) ■ Hastelloy C276 (2.4819) ■ Monel 400 (2.4360) ■ Stainless steel 6Mo (1.4547) ■ Alloy 625 (2.4856) ■ Alloy 825 (2.4858)
Ball valve seat ^{1) 2)}	<ul style="list-style-type: none"> ■ PEEK, temperature range: -55 ... +260 °C [-67 ... +500 °F] ■ HTT (high-temperature thermoplastic), temperature range: -55 ... +350 °C [-67 ... +662 °F]

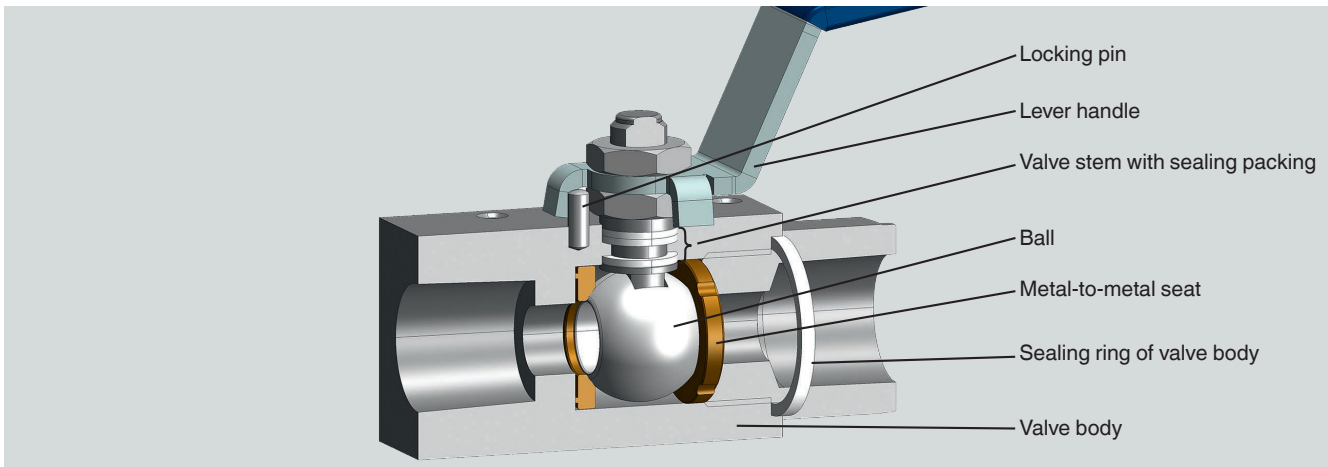
Non-wetted parts

Locking pin, screws	Stainless steel 316/316L
Lever handle	Stainless steel 316/316L, PVC coated

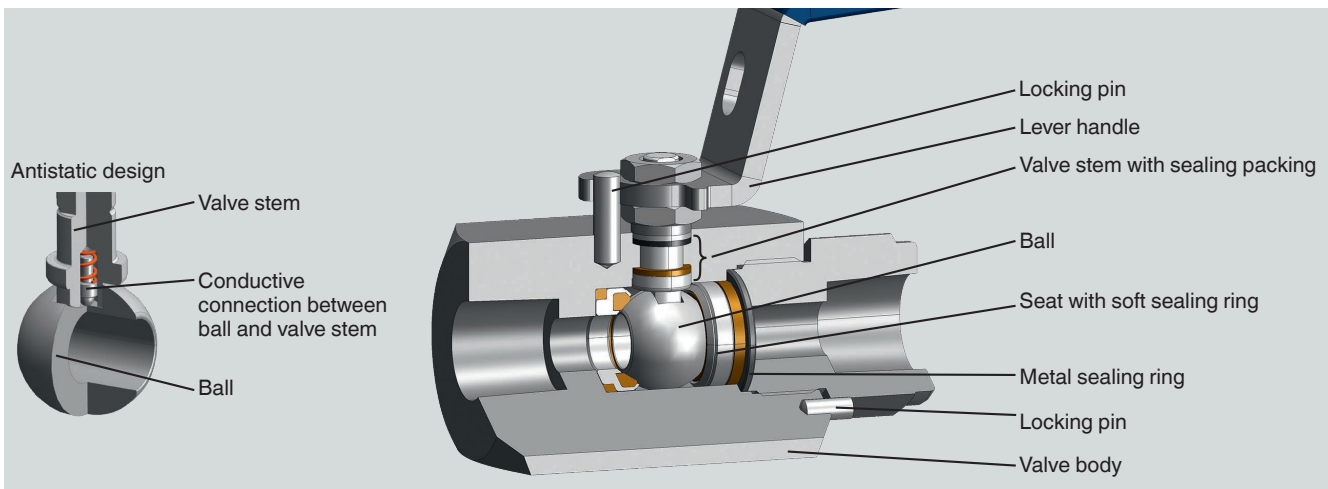
1) Other materials available on request

2) For the process version, additional compressed graphite 99 % is used (with certification for fire protection)

Instrument version



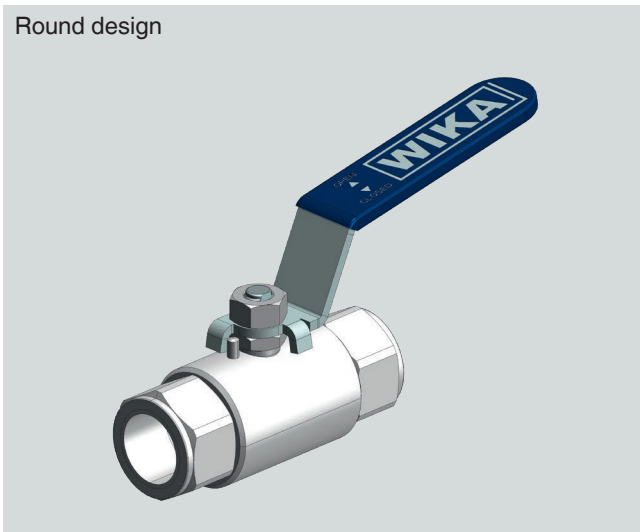
Process version



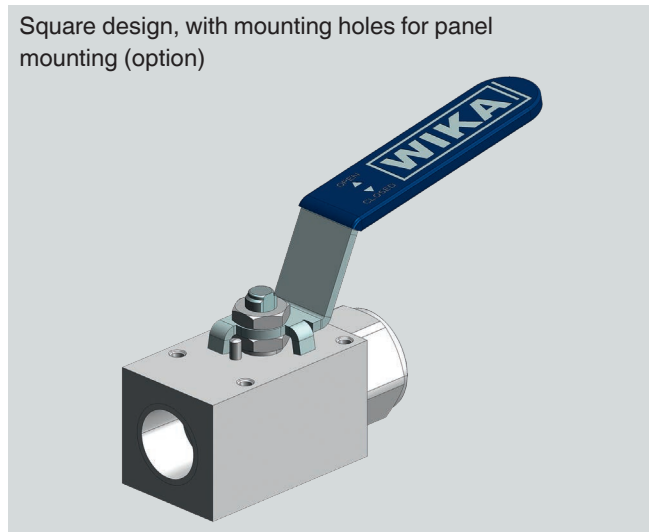
Standards used	
Instrument version	Process version
<ul style="list-style-type: none"> ■ MSS SP-99, valves for measuring instruments 	<ul style="list-style-type: none"> ■ ASME B16.34, valves - flanged, threaded and welding end ■ API 607, ISO 10497, BS 6755-2, type test for fire safety

Instrument version

Round design

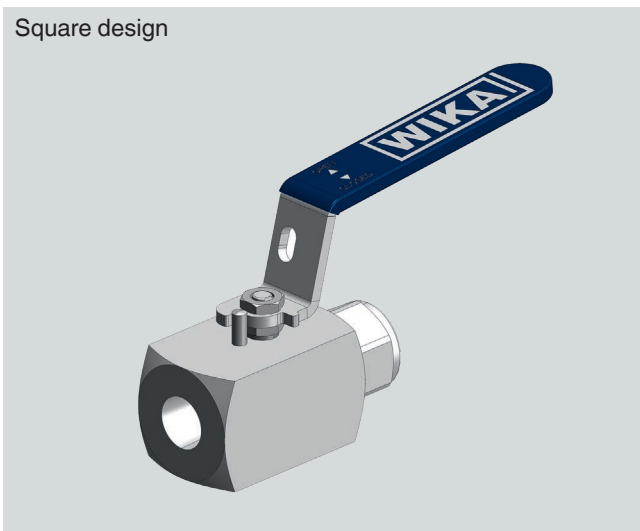


Square design, with mounting holes for panel mounting (option)

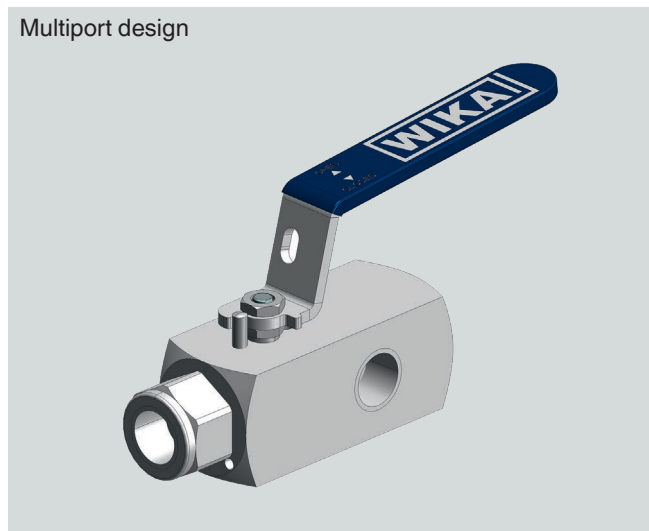


Process version

Square design

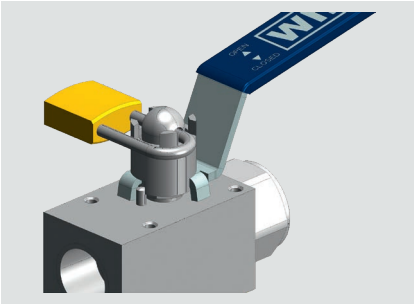


Multiport design



Options

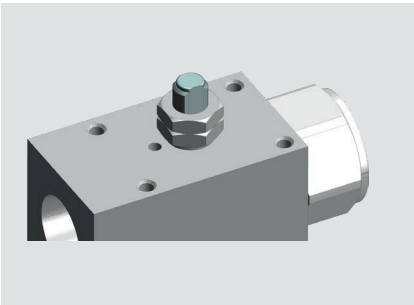
Anti-tamper version with padlock



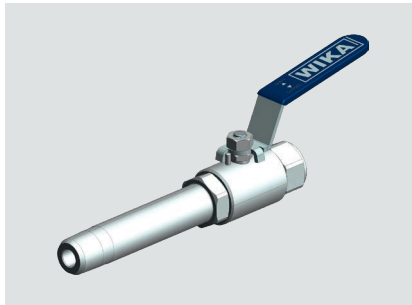
Extended lever handle



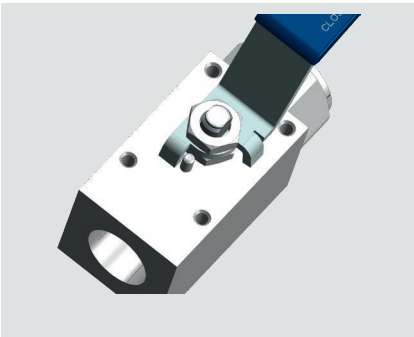
Mounting holes and valve stem for actuators



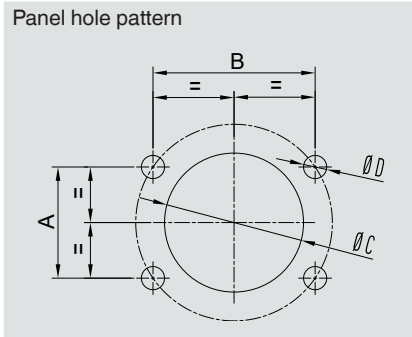
Extended valve body, suitable for flushing rings



Mounting holes for panel mounting (option)

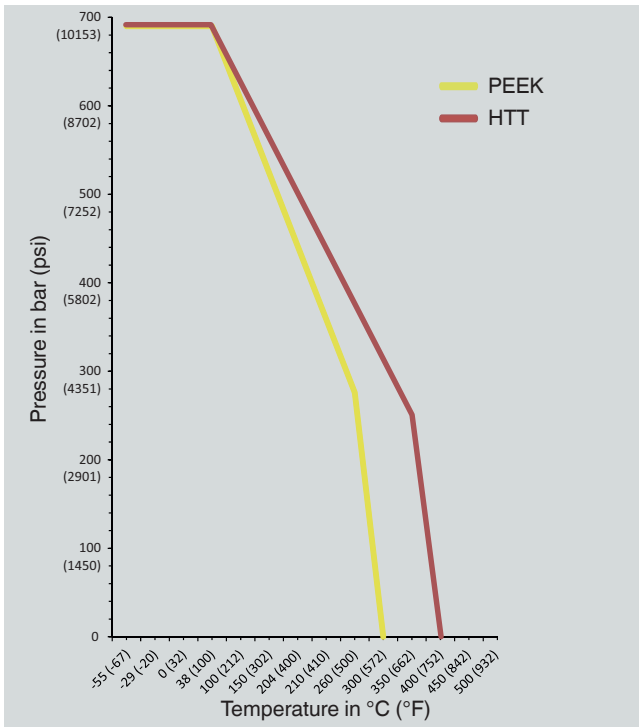


Panel hole pattern



DN	Dimensions in mm [in]				
	A	B	C	D	Panel
¼"	24 [0.94]	35 [1.38]	30 [1.18]	5 [0.28]	3 [0.12]
⅜"	24 [0.94]	35 [1.38]	30 [1.18]	5 [0.28]	3 [0.12]
½"	24 [0.94]	35 [1.38]	30 [1.18]	5 [0.28]	3 [0.12]
¾"	46 [1.81]	50 [1.97]	45 [1.77]	7 [0.27]	3 [0.12]
1"	46 [1.81]	50 [1.97]	45 [1.77]	7 [0.27]	3 [0.12]

Pressure-temperature diagram



	Sealing material	Max. permissible operating pressure in bar at temperature in °C	Max. permissible operating pressure in bar at temperature in °C
Ball valve seat	PEEK ¹⁾	690 bar at 38 °C	10,000 psi at 100 °F
		276 bar at 260 °C	4,000 psi at 500 °F
	HTT (high-temperature thermoplastic)	690 bar at 38 °C	10,000 psi at 100 °F
		250 bar at 350 °C	3,655 psi at 662 °F

1) Polyetheretherketone

The minimum design temperature is -55 °C [-67 °F]. For permanently low operating temperatures of ≤ -55 °C [≤ -67 °F] a special design is required.

Approvals

Logo	Description	Country
	EAC (option) Machinery directive	Eurasian Economic Community

Manufacturer's information and certifications

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

1) Positive material identification

2) Valid only for process version

Certificates (option)

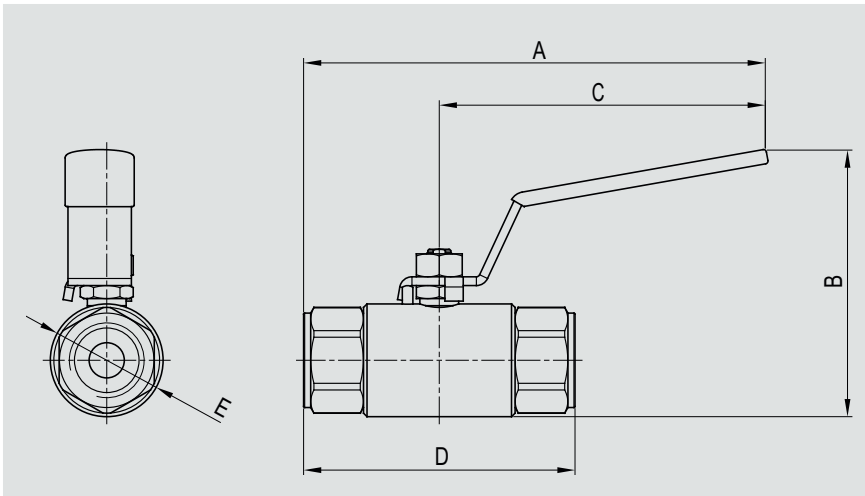
- 3.1 inspection certificate per EN 10204
 - Material certificate for all wetted parts per NACE MR0103/MR0175
 - Confirmation of pressure tests per API 598 ³⁾

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

Dimensions in mm [in]

Model BV, instrument version, round design, 3-part

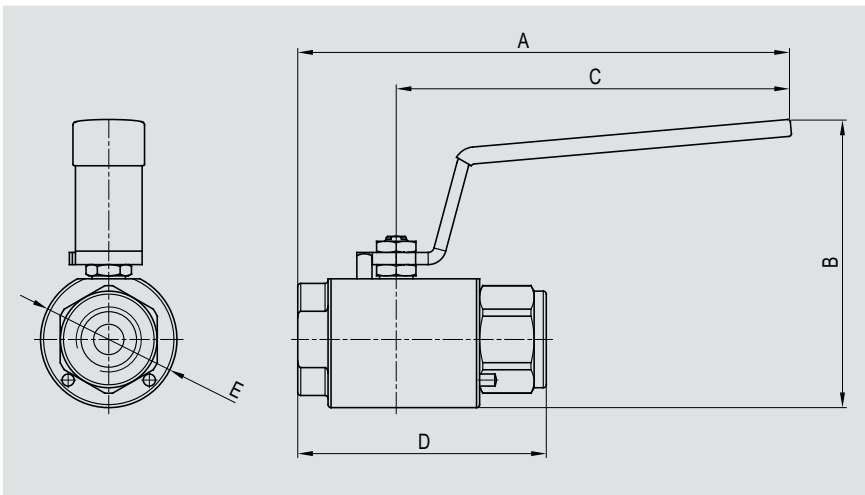
Nominal pressure: 6,000 psi [413 bar]



DN	Parts	Dimensions in mm [in]					
		Bore size	A	B	C	D	E
¼"	3	10 [0.394]	128 [5.039]	77 [3.031]	93 [3.661]	72 [2.835]	32 [1.26]
⅜"	3	10 [0.394]	128 [5.039]	77 [3.031]	93 [3.661]	72 [2.835]	32 [1.26]
½"	3	10 [0.394]	131 [5.157]	77 [3.031]	93 [3.661]	72 [2.835]	32 [1.26]
¾"	3	20 [0.787]	197 [7.756]	120 [4.724]	140 [5.512]	113 [4.449]	60 [2.362]
1"	3	20 [0.787]	200 [7.874]	120 [4.724]	140 [5.512]	119 [4.685]	60 [2.362]

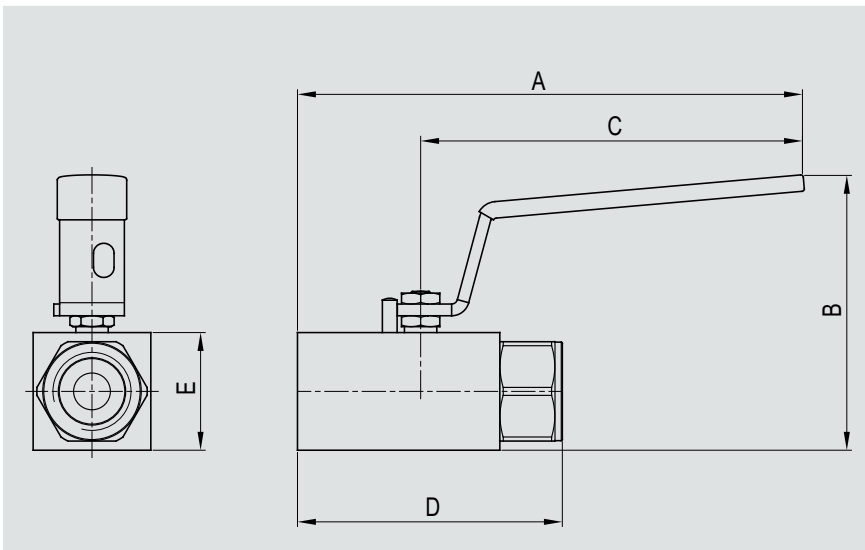
Model BV, instrument version, round design, 2-part

Nominal pressure: 10,000 psi [690 bar]



DN	Parts	Dimensions in mm [in]					
		Bore size	A	B	C	D	E
¼"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	45 [1.772]
⅜"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	45 [1.772]
½"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	45 [1.772]
¾"	2	20 [0.787]	188 [7.402]	129 [5.079]	140 [5.512]	104 [4.094]	68 [2.677]
1"	2	20 [0.787]	188 [7.402]	129 [5.079]	140 [5.512]	107 [4.213]	68 [2.677]

Model BV, instrument version, square design



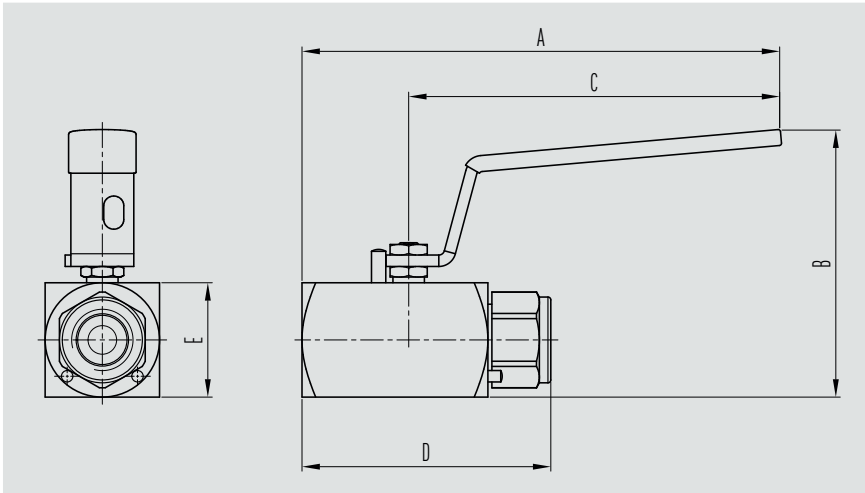
Nominal pressure: 6,000 psi [413 bar]

DN	Parts	Dimensions in mm [in]					
		Bore size	A	B	C	D	E
¼"	3	10 [0.394]	122 [4.803]	77 [3.031]	93 [3.661]	65 [2.559]	32 [1.26]
⅜"	3	10 [0.394]	122 [4.803]	77 [3.031]	93 [3.661]	65 [2.559]	32 [1.26]
½"	3	10 [0.394]	127 [5]	77 [3.031]	93 [3.661]	72 [2.835]	32 [1.26]
¾"	3	20 [0.787]	188 [7.402]	120 [4.724]	140 [5.512]	104 [4.094]	60 [2.362]
1"	3	20 [0.787]	190 [7.48]	120 [4.724]	140 [5.512]	110 [4.331]	60 [2.362]

Nominal pressure: 10,000 psi [690 bar]

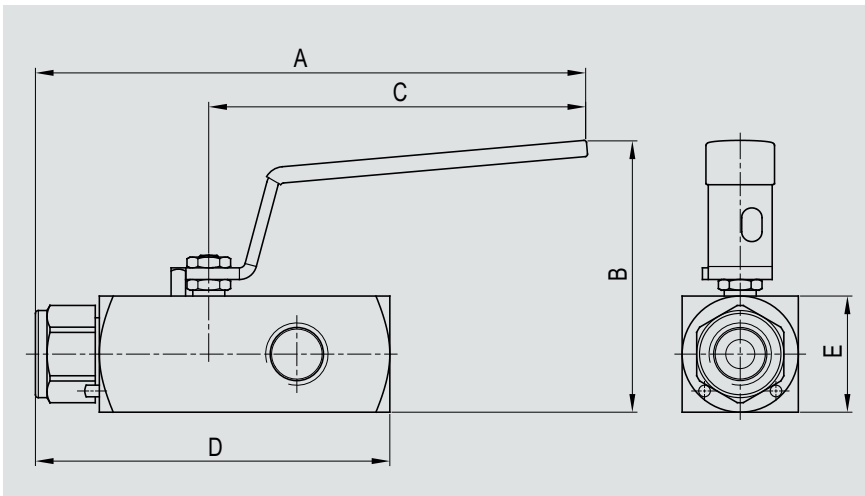
DN	Parts	Dimensions in mm [in]					
		Bore size	A	B	C	D	E
¼"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	40 [1.575]
⅜"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	40 [1.575]
½"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	40 [1.575]
¾"	2	20 [0.787]	188 [7.402]	120 [4.724]	140 [5.512]	104 [4.094]	65 [2.559]
1"	2	20 [0.787]	188 [7.402]	120 [4.724]	140 [5.512]	107 [4.213]	65 [2.559]

Model BV, process version, square design
Nominal pressure: 10,000 psi [690 bar]



DN	Parts	Dimensions in mm [in]					
		Bore size	A	B	C	D	E
¼"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	40 [1.575]
⅜"	2	10 [0.394]	164 [6.457]	94 [3.701]	132 [5.197]	82 [3.228]	40 [1.575]
½"	2	10 [0.394]	168 [6.614]	94 [3.701]	132 [5.197]	87 [3.425]	40 [1.575]
¾"	2	20 [0.787]	175 [6.89]	94 [3.701]	132 [5.197]	93 [3.661]	40 [1.575]

Model BV, multiport design
Nominal pressure: 10,000 psi [690 bar]



DN	Class	Parts	Dimensions in mm [in]					
			Bore size	A	L	C	D	E
¼"	10,000	2	10 [0.394]	182 [7.165]	94 [3.701]	132 [5.197]	117 [4.606]	40 [1.575]
⅜"	10,000	2	10 [0.394]	182 [7.165]	94 [3.701]	132 [5.197]	117 [4.606]	40 [1.575]