

Block-and-bleed valve 2-valve manifold Model IV2

WIKA data sheet AC 09.22



For further approvals,
see page 9

Applications

- Shut off and vent pressure measuring instruments
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Process industry: oil and gas, chemical and petrochemical industries, power generation, water and wastewater

Special features

- Low-wear design due to non-rotating spindle tip in the bonnet
- Low torque and smooth operation of valve handle even at high pressure
- Enhanced safety due to blow-out proof bonnet design
- Valve seat tested for leak tightness per ISO 5208 leak rate A
- Customer-specific combination of valves and instruments (instrument hook-up) on request

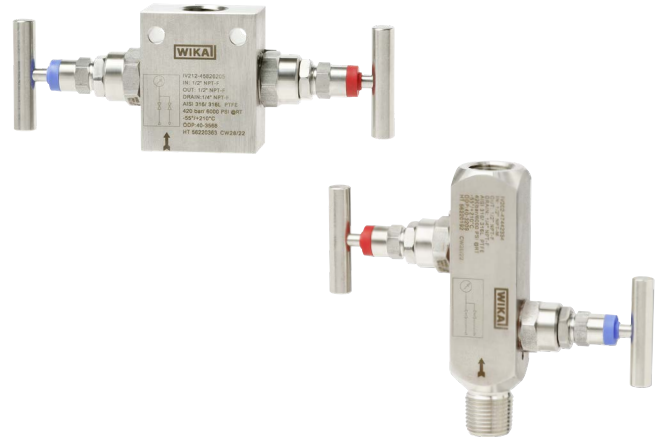


Fig. left: model IV212

Fig right: model IV202

Description

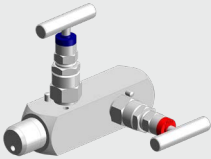
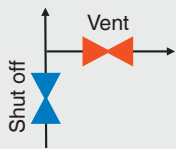
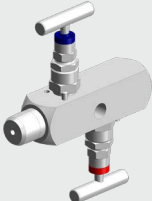
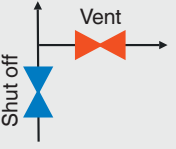
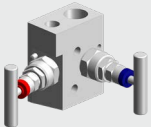
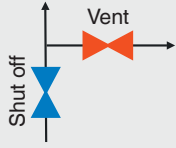
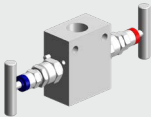
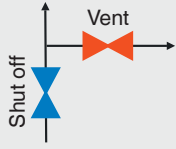
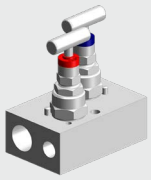
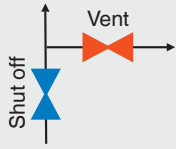
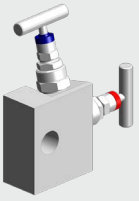
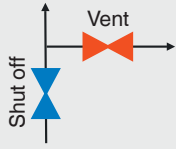
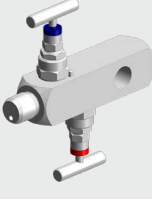
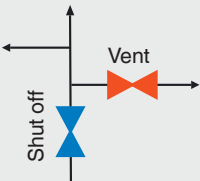
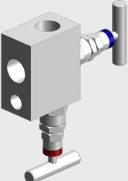
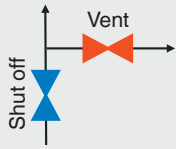
With 2-valve manifolds, the block-and-bleed version is standard. The shut-off valve separates the process from measuring instruments such as pressure gauges, switches or transmitters. By closing this valve the instrument can be safely dismantled for services like calibration or replacement. The vent valve allows the safe venting of the instrument, prior to the dismantling or for zero point check.

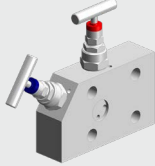
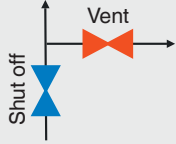
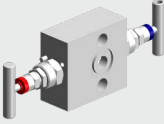
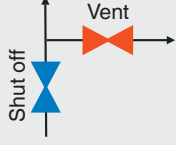
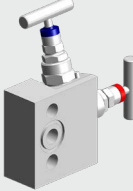
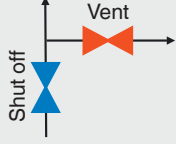
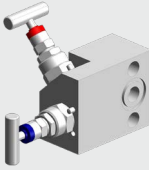
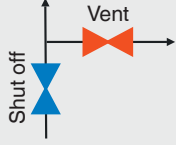
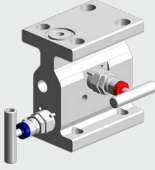
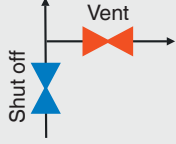
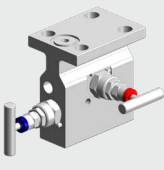
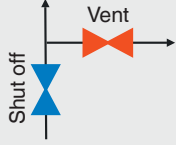
The non-rotating spindle tip reduces wear of the sealing elements. This results, particularly with frequent opening and closing, in a noticeable increase in the service life.

Through the blow-out proof design of the valve, working safety is improved, especially in applications with high pressure loading.

On request, WIKA offers the professional assembly of valves and pressure measuring instruments and also other accessories into a ready-to-install instrument hook-up. To ensure the performance of the complete system, an additional leak test is carried out on the instrument hook-up.

Model overview

Model	Description	Functional diagram
	<ul style="list-style-type: none"> ■ Square design ■ Angled bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Square design ■ In-line bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Flat design ■ Angled bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Flat design ■ In-line bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Flat design ■ Side-by-side bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Flat design ■ L-shaped bonnet position ■ In-line connections 	
	<ul style="list-style-type: none"> ■ Square design ■ In-line bonnet position ■ Double connection for pressure outlet 	
	<ul style="list-style-type: none"> ■ Flat design ■ Angled bonnet position ■ Angled connections 	

Model		Description	Functional diagram
	IV2C1	<ul style="list-style-type: none"> ■ Flat design ■ Angled bonnet position ■ Integral flange mounting 	
	IV2F2	<ul style="list-style-type: none"> ■ Flat design ■ In-line bonnet position ■ Direct flange mounting 	
	IV2F7	<ul style="list-style-type: none"> ■ Flat design ■ L-shaped bonnet position ■ Direct flange mounting 	
	IV2F8	<ul style="list-style-type: none"> ■ Flat design ■ Vent bonnet position under 45° ■ Direct flange mounting 	
	IV2H1	<ul style="list-style-type: none"> ■ H-shaped design ■ Angled bonnet position ■ Direct flange mounting 	
	IV2T1	<ul style="list-style-type: none"> ■ T-shaped design ■ Angled bonnet position ■ Direct flange mounting 	

Specifications

Basic information	
Basic features	<ul style="list-style-type: none"> ■ Blow-out proof valve spindle ■ Non-rotating, low-wear spindle tip ■ Metal-to-metal back seat design
Special design features	<ul style="list-style-type: none"> ■ Without ■ For oxygen, oil- and grease-free ■ ASME B31.1, power piping (only available with graphite sealing packing)
Valve body	<ul style="list-style-type: none"> ■ Square design ■ Flat design ■ H-shaped design ■ T-shaped design
Standards used	
Basic design	<ul style="list-style-type: none"> ■ MSS SP-99, valves for measuring instruments ■ MSS SP-105, instrument valves for code applications ■ ASME B16.34, valves – flanged, threaded and welding end ■ ASME B1.20.1, pipe threads, general purpose (inch) ■ ASME B31.3, process piping ■ ASME BPVC, section VIII, division 1
Special design	<ul style="list-style-type: none"> ■ Without ■ ISO 10497, API 6FA and API 607, type test for fire safety ■ TA-Luft (VDI 2440) and ISO 15848-1, type test for fugitive emissions
Tests	MSS SP-61, pressure testing of valves
Special tests	<ul style="list-style-type: none"> ■ Without ■ API 598, valve inspection and testing ■ ISO 5208, pressure testing of metallic valves with leakage rate A
Material requirements	NACE MR0175 / ISO 15156, use in H ₂ S-containing environments in oil and gas production
Special material requirements	<ul style="list-style-type: none"> ■ Without ■ NORSOK M-630, specification for use in pipelines (Norway)
Marking	MSS SP-25, standard marking system for valves
Mounting	<ul style="list-style-type: none"> ■ Without mounting holes ■ Suitable for mounting bracket, with mounting holes ¹⁾

1) For available mounting brackets, see "Accessories"

Bonnet	
Bonnet position	<ul style="list-style-type: none"> ■ In-line ■ Angled ■ Vent angled under 45° ■ Side-by-side ■ L-shaped
Bonnet design	<ul style="list-style-type: none"> ■ Screwed bonnet, 4 mm [0.16 in] bore size ■ Bonnet with extended handle, 4 mm [0.16 in] bore size ■ Miniature bonnet, 4 mm [0.16 in] bore size ■ Cryogenic bonnet for medium temperatures to -196 °C [-320 °F], 4 mm [0.16 in] bore size ■ OS&Y bonnet, bolted, 8 mm [0.31 in] bore size ¹⁾ ■ Bolted bonnet, 8 mm [0.31 in] bore size <p>→ For bonnet design, see page 6</p>
Bonnet variant	<ul style="list-style-type: none"> ■ Without ■ Anti-tamper for shut-off and vent valve, padlock not included ■ Anti-tamper for shut-off and vent valve, padlock included ■ Anti-tamper for vent valve, padlock not included ■ Anti-tamper for vent valve, padlock included ■ Small T-handle ■ T-handle from stainless steel 316L (1.4404)

1) Type tested for fire safety per ISO 10497, API 6FA and API 607

Process connection / Instrument connection		
Standard	<ul style="list-style-type: none"> ■ Threaded connection per ANSI B1.20.1, code NPT ■ Threaded connection per ISO 228-1, code G ■ Swivel connection ■ Weld-in connection ■ Compression fitting ■ Flange connection per IEC 61518, Form A or Form B ¹⁾ ■ Connection for EMICOgauge ²⁾ 	
Size	<ul style="list-style-type: none"> ■ ¼ NPT ■ ⅜ NPT ■ ½ NPT ■ ¾ NPT 	<ul style="list-style-type: none"> ■ G ¼ ■ G ⅜ ■ G ½ ■ G ¾
Vent connection	<ul style="list-style-type: none"> ■ ¼ NPT female, plug screw included ■ ½ NPT female, plug screw included ■ ¼ NPT female with installed bleeder screw ■ G ¼ female, plug screw included ■ G ½ female, plug screw included ■ 2 x ¼ NPT female, plug screw included and bleeder screw installed ³⁾ 	

1) Available threaded bolts for flange connections:

- Carbon steel, 8.8, included in delivery, though not pre-fitted
- Stainless steel, A4-70, see "Accessories"

2) For assembly with pressure gauge model 23x.30 or 26x.30, see data sheet PM 02.04 or PM 02.33

3) Only available for model IV222

Operating conditions	
Permissible operating pressure	<ul style="list-style-type: none"> ■ ≤ 3,000 psi or ≤ 206 bar ■ ≤ 6,000 psi or ≤ 420 bar ■ ≤ 10,000 psi or ≤ 690 bar ¹⁾
Pressure and temperature limits	<p>The limits for operating pressure and temperature depend on the version and the sealing material. → For diagram, see page 8</p>

1) Not available for flange connections. Only available with material of the sealing packing from PTFE, see page 5

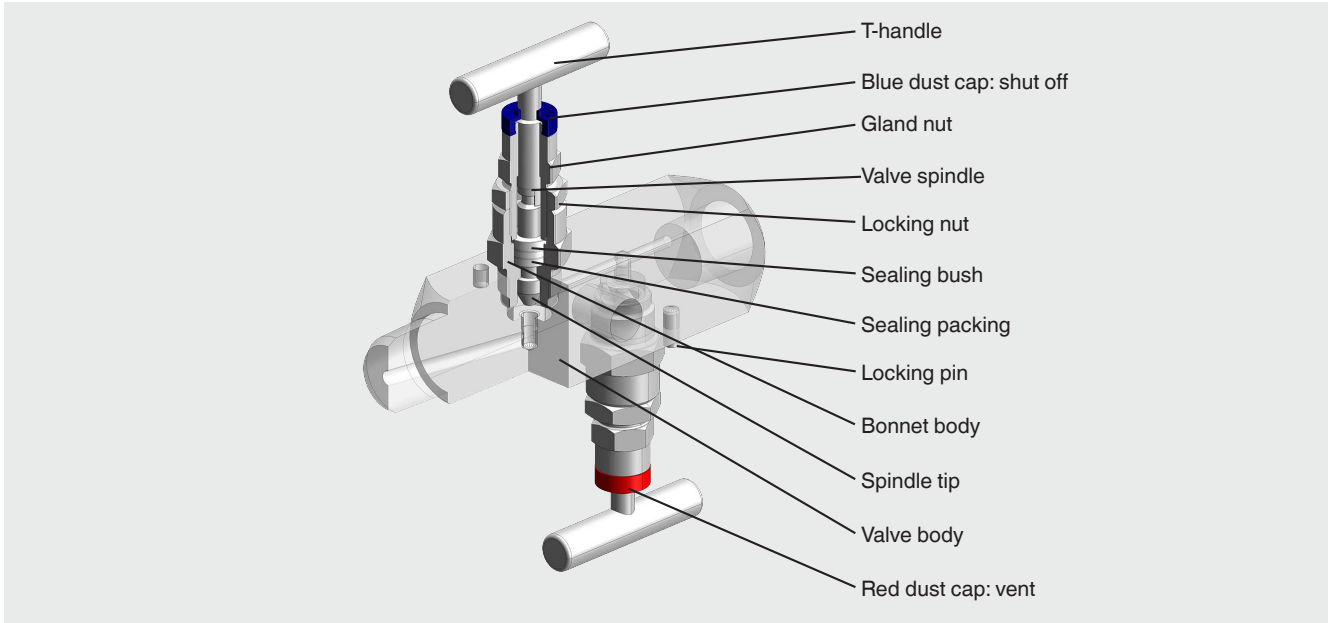
Material		
Wetted parts		
Valve body, bonnet body	<ul style="list-style-type: none"> ■ Stainless steel 316/316L (1.4401/1.4404) ■ Stainless steel 321 (1.4541) ■ Monel 400 (2.4360) ■ Hastelloy C276 (2.4819) 	<ul style="list-style-type: none"> ■ Stainless steel 6Mo (1.4547) ■ Duplex F51 (1.4462) ■ Super Duplex F55 (1.4501) ■ Inconel 625 (2.4856) ■ Incoloy 825 (2.4858)
Spindle tip	<ul style="list-style-type: none"> ■ Stainless steel 316/316L (1.4401/1.4404) ■ Monel 400 (2.4360) ■ Hastelloy C276 (2.4819) 	<ul style="list-style-type: none"> ■ Duplex F51 (1.4462) ■ Inconel 625 (2.4856) ■ Hardfaced with Stellite 6
Sealing packing	<ul style="list-style-type: none"> ■ PTFE, temperature range: -55 ... +204 °C [-67 ... +400 °F] ■ Polar PTFE, temperature range: -70 ... +204 °C [-94 ... +400 °F] ■ Graphite, temperature range: -55 ... +500 °C [-67 ... +932 °F] ■ SIGRAFLEX® ZX graphite, nuclear quality, temperature range: -55 ... +500 °C [-67 ... +932 °F] ■ FKM, temperature range: -29 ... +180 °C [-20 ... +356 °F] ■ FKM AED ¹⁾, temperature range: -46 ... +180 °C [-50 ... +356 °F] ■ RTFE ²⁾, temperature range: -55 ... +180 °C [-67 ... +356 °F] 	
Non-wetted parts		
Gland nut, valve spindle, seal bush, locking nut, locking pin	Stainless steel 316L (1.4404)	
Handle	<ul style="list-style-type: none"> ■ Stainless steel 303 (1.4305) ■ Stainless steel 316/316L (1.4401/1.4404) 	

1) Anti-explosive decompression

2) Reinforced PTFE, material for optional certificate "Emission protection in accordance with TA-Luft (VDI 2440) and ISO 15848-1"

Bonnet design

Screwed bonnet



Bonnet with extended handle



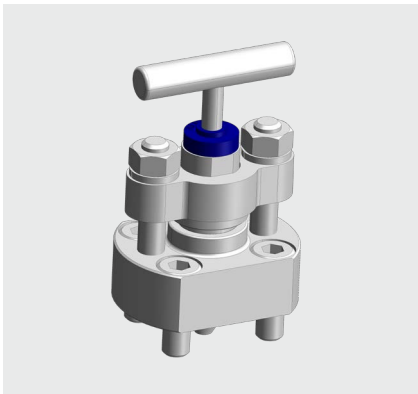
Miniature bonnet



Cryogenic bonnet



OS&Y bonnet

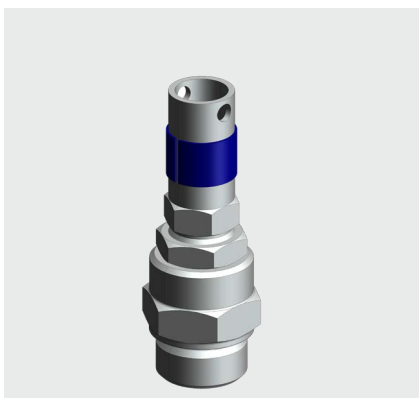


Bolted bonnet

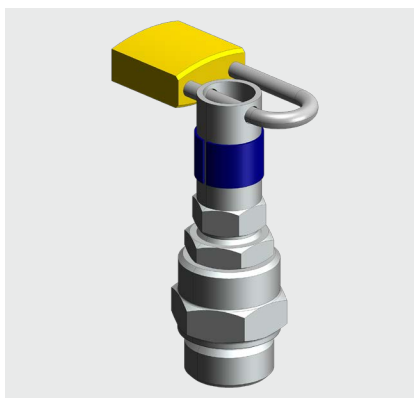


Bonnet variant

Anti-tamper variant



Anti-tamper variant with padlock

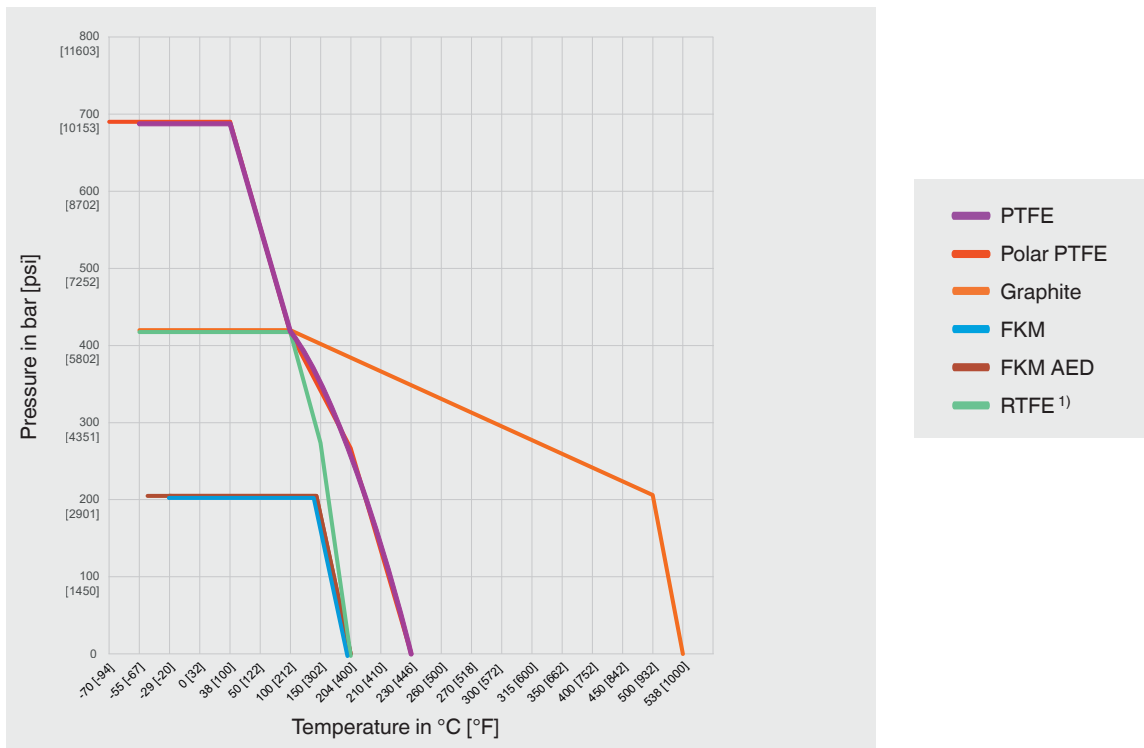


Accessory: anti-tamper key



The anti-tamper key is included in the scope of delivery for the anti-tamper variants.

Pressure-temperature diagram



Sealing packing	Max. allowable working pressure at defined temperatures			
	Minimum temperature	Temperature of 0 °C [32 °F]	Temperature of 20 °C [68 °F]	Maximum temperature
PTFE	690 bar at -55 °C	690 bar	690 bar	276 bar at 204 °C
	10,000 psi at -67 °F	10,000 psi	10,000 psi	4,000 psi at 400 °F
Polar PTFE	690 bar at -70 °C	690 bar	690 bar	276 bar at 204 °C
	10,000 psi at -94 °F	10,000 psi	10,000 psi	4,000 psi at 400 °F
Graphite or SIGRAFLEX® ZX graphite	420 bar at -55 °C	420 bar	420 bar	206 bar at 500 °C
	6,000 psi at -67 °F	6,000 psi	6,000 psi	2,987 psi at 932 °F
FKM	206 bar at -29 °C	206 bar	206 bar	206 bar at 180 °C
	2,987 psi at -20 °F	2,987 psi	2,987 psi	2,987 psi at 356 °F
FKM AED	206 bar at -46 °C	206 bar	206 bar	206 bar at 180 °C
	2,987 psi at -50 °F	2,987 psi	2,987 psi	2,987 psi at 356 °F
RTFE 1)	420 bar at -55 °C	420 bar	420 bar	276 bar at 180 °C
	6,000 psi at -67 °F	6,000 psi	6,000 psi	4,000 psi at 356 °F


1) Reinforced PTFE, material for optional certificate "Emission protection in accordance with TA-Luft (VDI 2440) and ISO 15848-1"

The table above provides information about the characteristics of the sealing packing at the respective process parameters. To maximise the service life, it is recommended that the valve should not be operated continuously at the temperature limits.

The minimum design temperature for most needle valves is -55 °C [-67 °F]. Some versions have other design temperatures due to material specifications.

For continuously low operating temperatures ≤ -55 °C [≤ -67 °F] a special polar design is needed.

Optional approvals

Logo	Description	Country
	EAC Pressure Equipment Directive	Eurasian Economic Community
-	Bureau Veritas Ships, shipbuilding (e.g. offshore)	International
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer's declaration

Logo	Description
-	Information on Pressure Equipment Directive (PED) Design, manufacturing and testing carried out in accordance with sound engineering practise
-	PMI ¹⁾ test certificate Valve body
-	Hydrogen for general use ²⁾ Suitable for general hydrogen applications under the following conditions: <ul style="list-style-type: none"> - Material proof for all wetted parts per NACE MR0175 - Temperature range -55 ... +210 °C [-67 ... +410 °F] - Max. allowable operating pressure: 6,000 psi [420 bar] at 20 °C [68 °F] - With fugitive emission protection in accordance with TA-Luft (VDI 2440) and ISO 15848-1
-	Oil- and grease-free per ASTM G93-03 level C (< 66 mg/m²) <ul style="list-style-type: none"> - Sealing packing and lubricants in accordance with BAM requirements - Suitable for oxygen applications under the following temperature and pressure conditions (BAM): PTFE sealing packing: T ≤ 150 °C [302 °F] p ≤ 20 bar [290 psi] Graphite sealing packing: T ≤ 250 °C [482 °F] p ≤ 150 bar [2,175 psi]
-	Type tested for fire safety in accordance with API 607, ISO 10497, BS 6755-2 ³⁾
-	Suitability for drinking water per NSF/ANSI 61-G and NSF/ANSI 372
-	Fugitive emission protection in accordance with TA-Luft (VDI 2440) and ISO 15848-1 <ul style="list-style-type: none"> - Tightness class: AH - Endurance class: C01 - Temperature class: -29 ... +180 °C [-20 ... +356 °F]

1) Positive material identification

2) Please contact WIKA for hydrogen applications with different specifications

3) Only available for the OS&Y bonnet

Certificates (option)

Certificates	
Certificates	<ul style="list-style-type: none"> ■ 3.1 inspection certificate per EN 10204 <ul style="list-style-type: none"> - Material proof for all wetted parts per NACE MR0175 - Confirmation of pressure tests per MSS SP-61 ¹⁾ - Confirmation of pressure tests per API 598 or API 6D

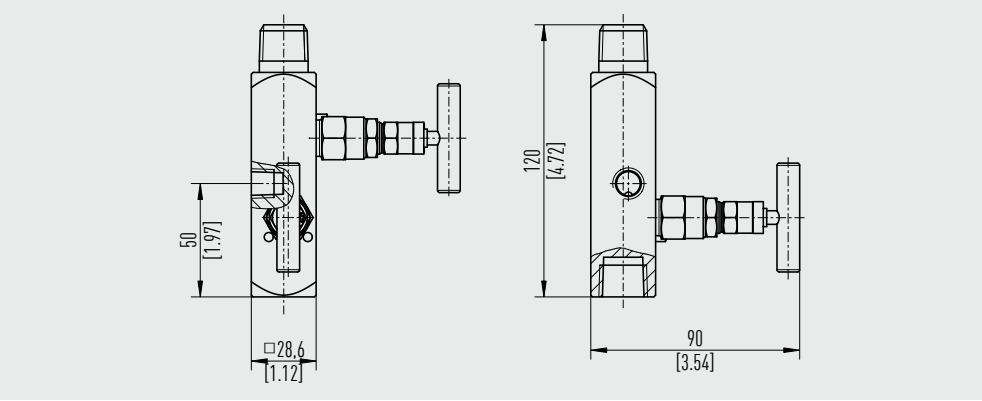
1) The following tests are performed on 100 % of the valves:

- Valve shell test: 15 s test duration with 1.5 times the allowable working pressure
- Valve seat test: 15 s test duration with 1.1 times the allowable working pressure on the shut-off bonnet

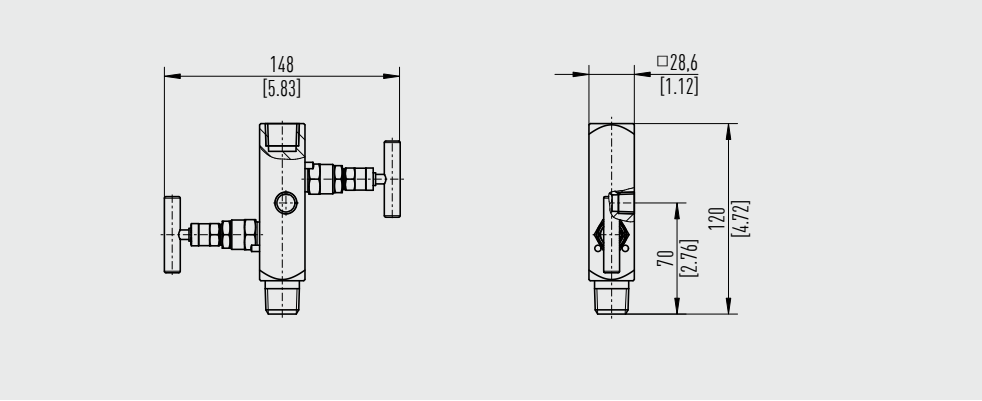
Dimensions in mm [in]

The following dimensions are for versions made of stainless steel 316/316L (1.4401/1.4404). With other materials the dimensions and shape may change.

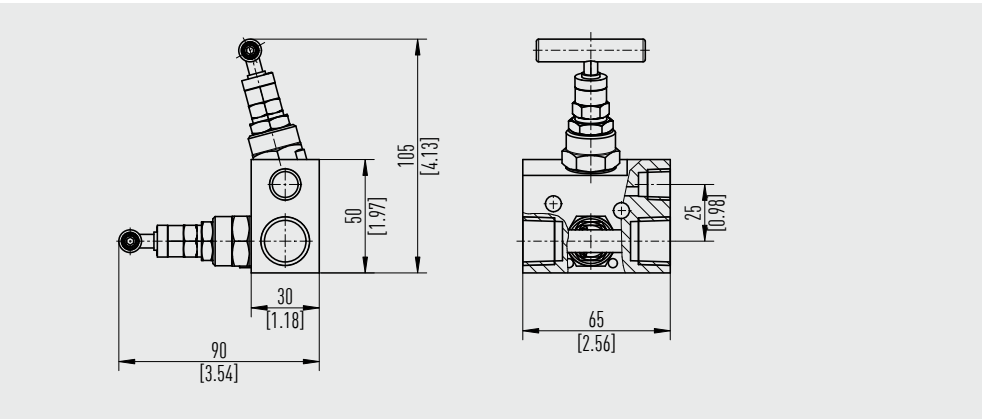
Model IV201, square design, 90° angled bonnet position, in-line connections



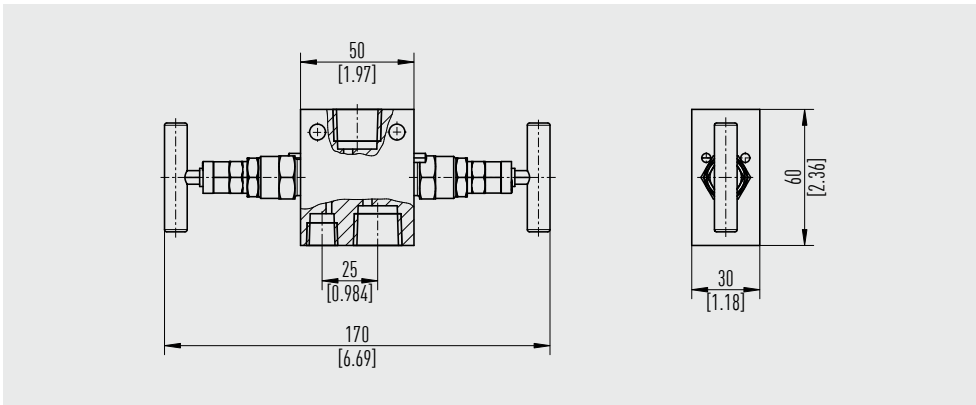
Model IV202, square design, in-line bonnet position, in-line connections



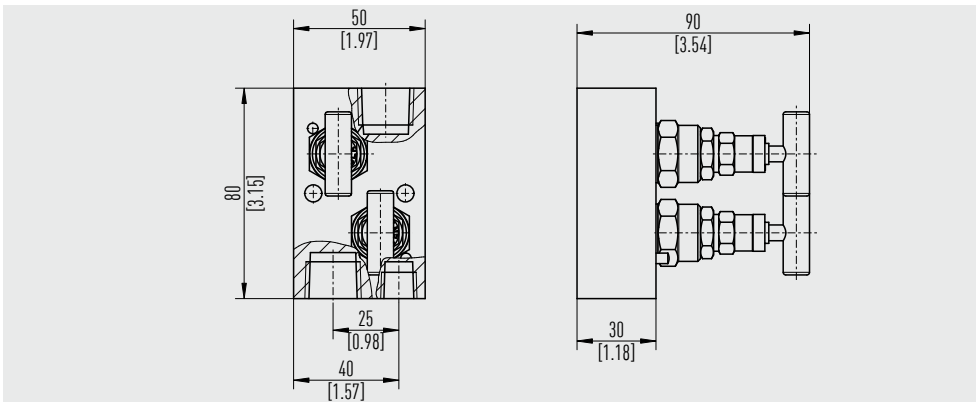
Model IV211, flat design, angled bonnet position, in-line connections



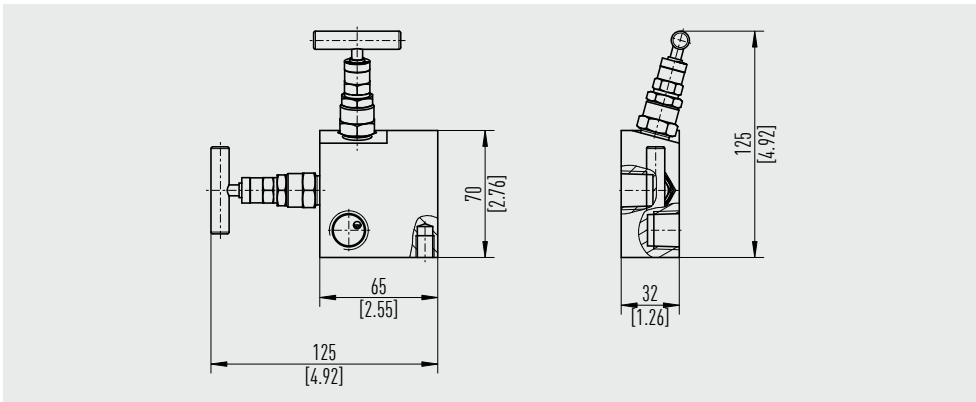
Model IV212, flat design, in-line bonnet position, in-line connections



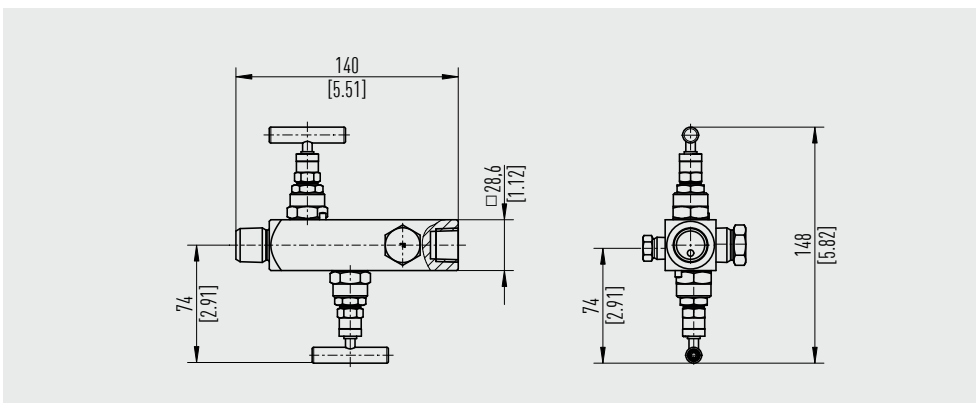
Model IV213, flat design, side-by-side bonnet position, in-line connections



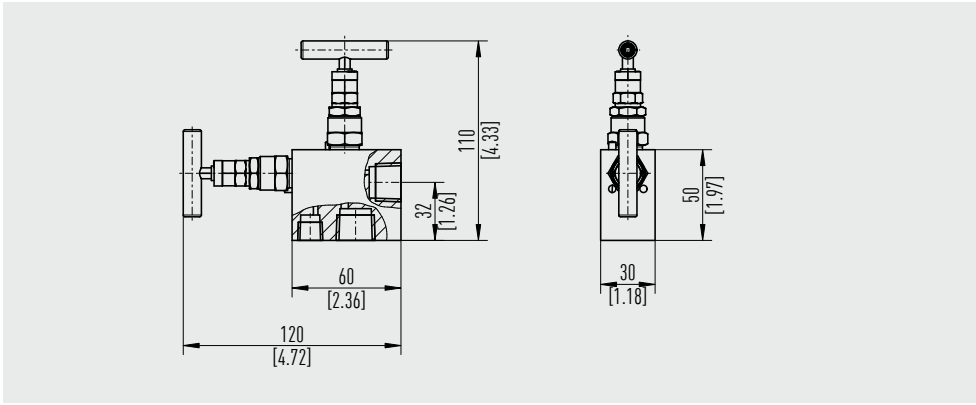
Model IV217, flat design, L-shaped bonnet position, in-line connections



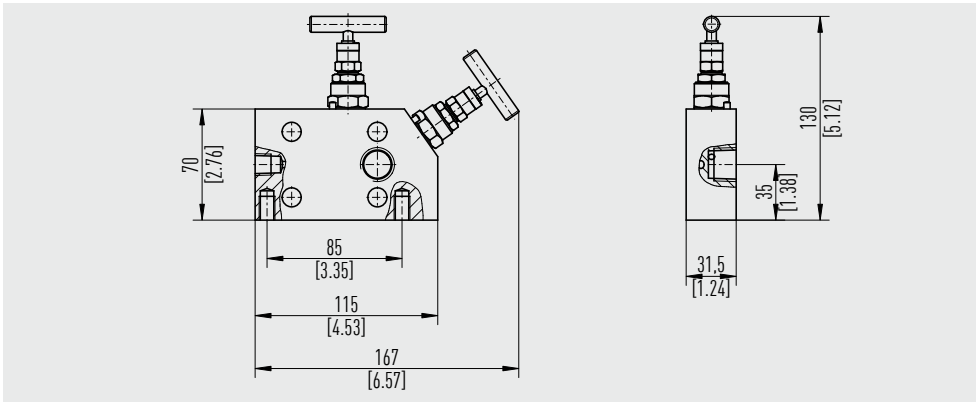
Model IV222, square design, in-line bonnet position, double connection for pressure outlet



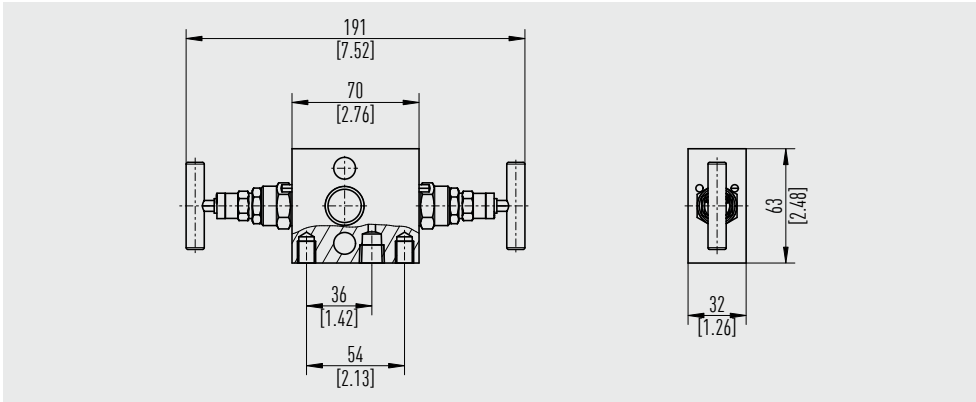
Model IV291, flat design, angled bonnet position, angled connections



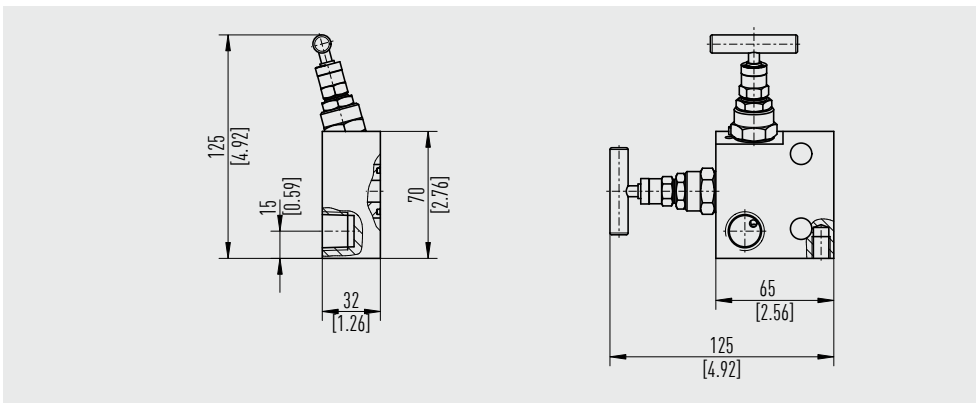
Model IV2C1, flat design, angled bonnet position, integral flange mounting



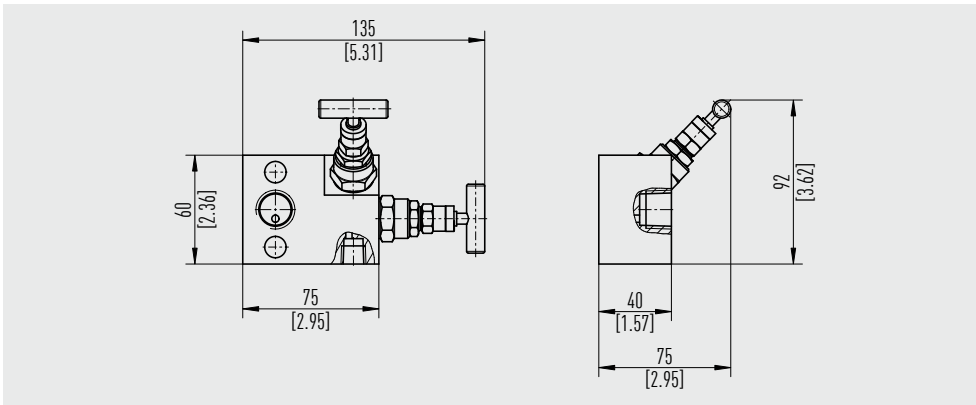
Model IV2F2, flat design, in-line bonnet position, direct flange mounting



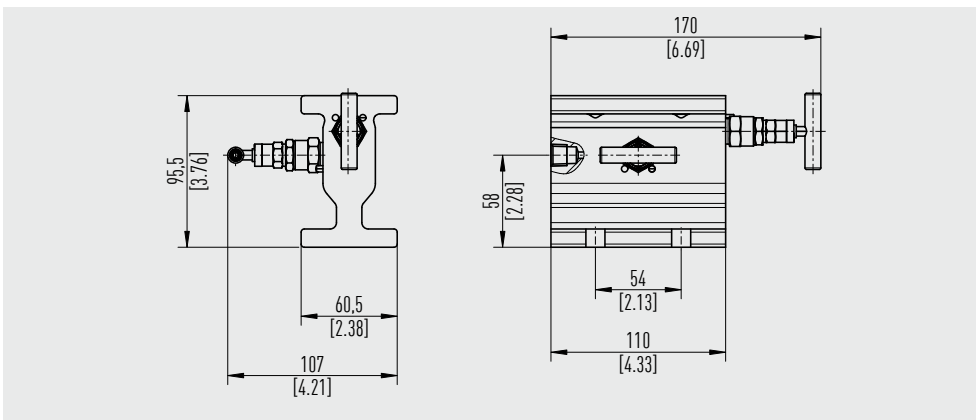
Model IV2F7, flat design, L-shaped bonnet position, direct flange mounting



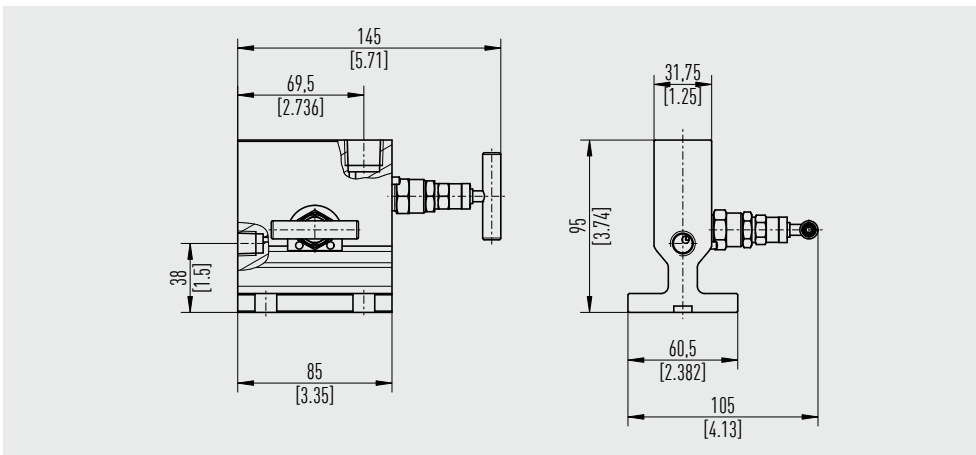
Model IV2F8, flat design, vent bonnet position under 45°, direct flange mounting



Model IV2H1, H-shaped design, angled bonnet position, direct flange mounting



Model IV2T1, T-shaped design, angled bonnet position, direct flange mounting



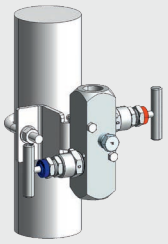
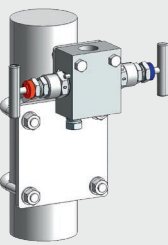
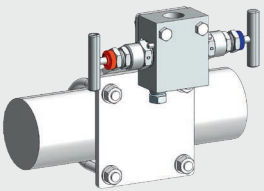
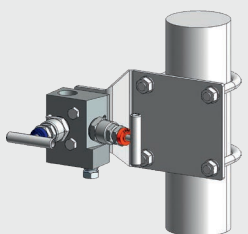
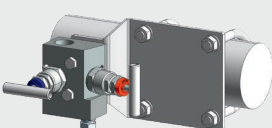
Accessories

Mounting bracket with mounting material

Only for versions with model code "R": suitable for mounting bracket, with mounting holes

Scope of delivery: 1 mounting bracket, 1 or 2 U-bolts, 2 screws for valve mounting

Material: stainless steel

For model		Alignment of the pipeline	Order number
IV201, IV202		Vertical	14252307
IV212, IV213		Vertical	14147672
		Horizontal	
IV211		Vertical	14252309
		Horizontal	

Description	Order number
Anti-tamper key, stainless steel 303 (1.4305)	81640006
Adapter ½ NPT, female - ¾ NPT, male, stainless steel 316/316L (1.4401/1.4404)	81655622
Adapter ½ NPT, male - ¼ NPT; female, stainless steel 316/316L (1.4401/1.4404)	81655620
Bleeder screw ¼ NPT, stainless steel 316/316L (1.4401/1.4404)	81652317
Plug screw ½ NPT, stainless steel 316/316L (1.4401/1.4404)	81652353
Plug screw ¼ NPT, stainless steel 316/316L (1.4401/1.4404)	81652350
Plug screw G ¼, male, stainless steel 316/316L (1.4401/1.4404)	81652351
PTFE seal for G ½	81652355
PTFE seal for flange connection per IEC 61518, Form A	81657562
PTFE seal for flange connection per IEC 61518, Form B	81652603
Graphite seal for G ½	81652602
Graphite seal for flange connection per IEC 61518, Form A	81657563
Graphite seal for flange connection per IEC 61518, Form B	81652605
2 x threaded bolt 7/16" UNF - 1", stainless steel 316/316L (1.4401/1.4404)	81655987
2 x threaded bolt 7/16" UNF - 1 ¾", stainless steel 316/316L (1.4401/1.4404)	81655989
2 x threaded bolt 7/16" UNF - 2", stainless steel 316/316L (1.4401/1.4404)	81655981
Adapter Minimes 1215 - ¼ NPT, male, carbon steel	81655625
Adapter Minimes 1620 - G ¼, male, stainless steel 316Ti (1.4571)	14503075
Swivel adapter ½ NPT, male - ½ NPT, female, max. pressure 10,000 psi [690 bar], stainless steel 316/316L (1.4401/1.4404)	81655619
Swivel adapter ½ NPT, male - G ½, female, with retaining ring, max. pressure 6,000 psi [420 bar], stainless steel 316/316L (1.4401/1.4404)	81655624
Swivel adapter G ⅜ A, male - G ½ A, male, max. pressure 6,000 psi [420 bar], stainless steel 316/316L (1.4401/1.4404)	81655618
Swivel adapter G ⅜ A, male - G ¼ A, male, max. pressure 6,000 psi [420 bar], stainless steel 316/316L (1.4401/1.4404)	81655617
Swivel adapter G ⅜ A, male - G ½, female, with retaining ring, max. pressure 6,000 psi [420 bar], stainless steel 316/316L (1.4401/1.4404)	81655621
Swivel adapter G ½, male - G ½, female, with retaining ring, max. pressure 6,000 psi [420 bar], stainless steel 316/316L (1.4401/1.4404)	81655623
Adapter tube fitting 6 mm OD - ¼ NPT, male, stainless steel 316/316L (1.4401/1.4404)	81643499
Adapter tube fitting 10 mm OD - ⅜ NPT, female, stainless steel 316/316L (1.4401/1.4404)	81643536
Adapter tube fitting 6 mm OD - ½ NPT, female, stainless steel 316/316L (1.4401/1.4404)	81643562
Adapter tube fitting 12 mm OD - ⅜ NPT, male, stainless steel 316/316L (1.4401/1.4404)	81643526

Other accessories on request

Ordering information

Model / Bonnet design / Bonnet variant / Sealing packing / Special design features / Options

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In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.

