

Needle valve and multiport needle valve Model IV1

WIKA data sheet AC 09.22



For further approvals,
see page 8

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 & gas, petrochemical, chemical 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 BS 6755/ ISO 5208 leak rate A
- Customer-specific combination of valves and instruments (instrument hook-up) on request

Description

Needle valves and multiport needle valves separate the process from measuring instruments such as pressure gauges, switches or transmitters. By closing this valve the instrument can be safely dismantled for service work like calibration or replacement. Versions with an additional vent connection are able to vent the instrument to the atmosphere by means of the needle valve. The multiport needle valve is already equipped with two additional connections. These can be used either as vent connections or for the connection of additional instruments.

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



Fig. left: Model IV10, needle valve

Fig right: Model IV11, multiport needle valve

Configurator



Standard articles

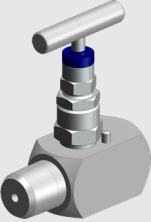
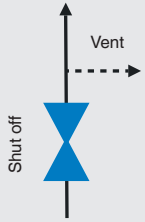
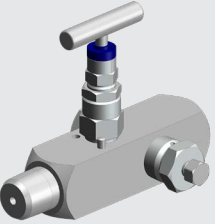
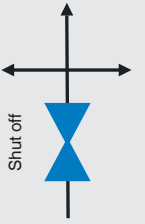
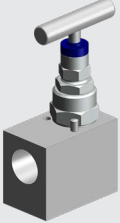
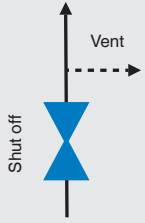
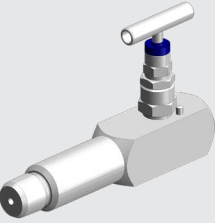
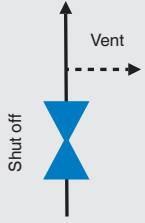
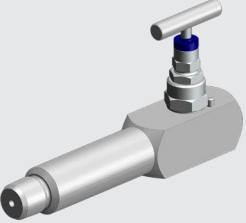
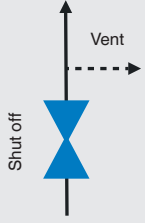
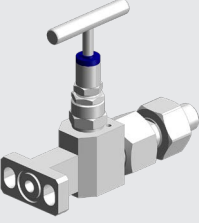



Through the blow-out proof design of the valve, working safety is improved, especially in applications with high pressure loading.

The natural gas design, model IV1N is available with a metering valve that enables both, instrument shut-off and flow control.

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.

Functionality

Model	Description	Functional diagram
	<p>IV10 Needle valve</p>	
	<p>IV11 Multiport needle valve</p>	
	<p>IV19 Needle valve, angled connections 90°</p>	
	<p>IV1A Needle valve, extended valve body, 75 mm [2.95 in]</p>	
	<p>IV1B Needle valve, extended valve body, 100 mm [3.94 in]</p>	
	<p>IV1N Needle valve, natural gas design</p>	

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) ■ Dielectric design (only available for model IV1N)
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

Bonnet	
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, 6 mm [0.24 in] bore size ¹⁾ ■ Bolted bonnet, 8 mm [0.31 in] bore size ■ Bolted bonnet, 10 mm [0.39 in] bore size ■ Bonnet for panel mounting, 4 mm [0.16 in] bore size ■ Metering bonnet for natural gas, 9.5 mm [0.375 in] bore size <p>→ For bonnet design, see page 5</p>
Bonnet variant	<ul style="list-style-type: none"> ■ Without ■ Anti-tamper for shut-off valve, padlock not included ■ Anti-tamper for shut-off 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 (only available for model IV1N) ■ Connection for EMICOgauge¹⁾ 								
Size	<table border="0"> <tr> <td>■ ¼ NPT</td> <td>■ G ¼</td> </tr> <tr> <td>■ ⅜ NPT</td> <td>■ G ⅜</td> </tr> <tr> <td>■ ½ NPT</td> <td>■ G ½</td> </tr> <tr> <td>■ ¾ NPT</td> <td>■ G ¾</td> </tr> </table>	■ ¼ NPT	■ G ¼	■ ⅜ NPT	■ G ⅜	■ ½ NPT	■ G ½	■ ¾ NPT	■ G ¾
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■ ⅜ NPT	■ G ⅜								
■ ½ NPT	■ G ½								
■ ¾ NPT	■ G ¾								
Vent connection	<ul style="list-style-type: none"> ■ Without ■ Lateral bleeder screw, plug screw included ■ 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 ■ Connection 2: with plug screw, connection 3: with bleeder screw²⁾ 								
Test connection	<ul style="list-style-type: none"> ■ Without ■ Test flange Ø 40 mm [1.57 in] 								

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

2) Only available for model IV11, multiport needle valve

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 bar¹⁾
Pressure and temperature limits	<p>The limits for operating pressure and temperature depend on the version and the sealing material. → For diagram, see page 7</p>

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

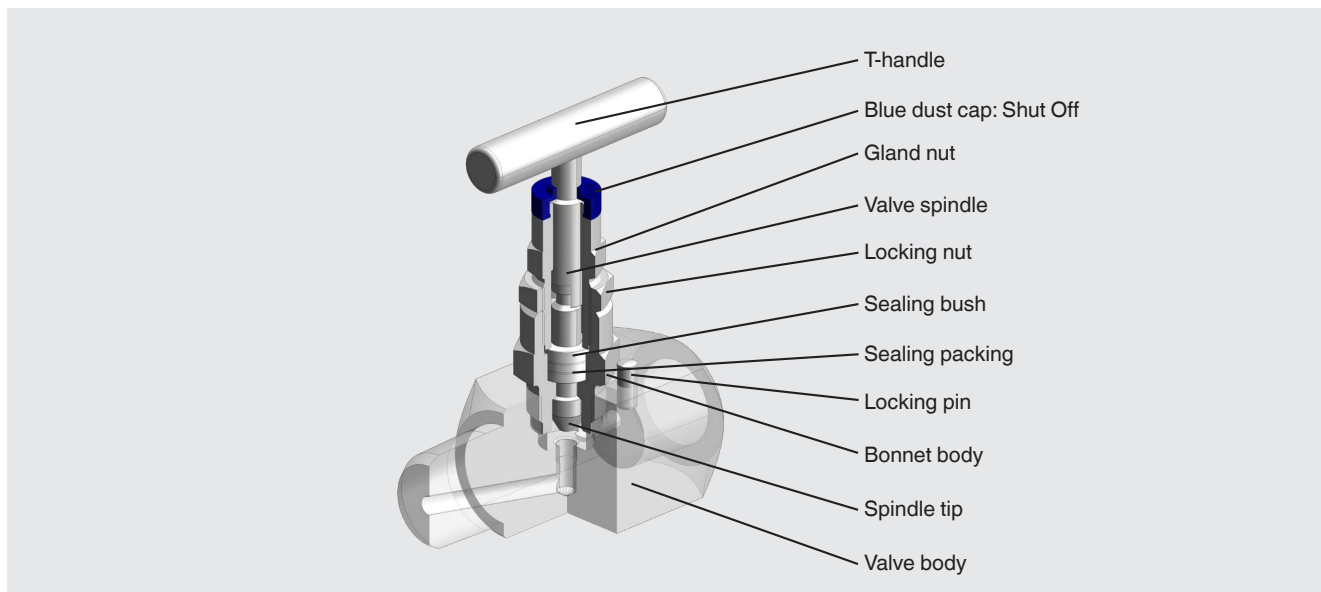
Material											
Wetted parts											
Valve body, bonnet body	<table border="0"> <tr> <td>■ Stainless steel 316/316L (1.4401/1.4404)</td> <td>■ Stainless steel 6Mo (1.4547)</td> </tr> <tr> <td>■ Stainless steel 321 (1.4541)</td> <td>■ Duplex F51 (1.4462)</td> </tr> <tr> <td>■ Monel 400 (2.4360)</td> <td>■ Super Duplex F55 (1.4501)</td> </tr> <tr> <td>■ Hastelloy C276 (2.4819)</td> <td>■ Inconel 625 (2.4856)</td> </tr> <tr> <td></td> <td>■ Incoloy 825 (2.4858)</td> </tr> </table>	■ Stainless steel 316/316L (1.4401/1.4404)	■ Stainless steel 6Mo (1.4547)	■ Stainless steel 321 (1.4541)	■ Duplex F51 (1.4462)	■ Monel 400 (2.4360)	■ Super Duplex F55 (1.4501)	■ Hastelloy C276 (2.4819)	■ Inconel 625 (2.4856)		■ Incoloy 825 (2.4858)
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■ Hastelloy C276 (2.4819)	■ Inconel 625 (2.4856)										
	■ Incoloy 825 (2.4858)										
Spindle tip	<table border="0"> <tr> <td>■ Stainless steel 316/316L (1.4401/1.4404)</td> <td>■ Duplex F51 (1.4462)</td> </tr> <tr> <td>■ Monel 400 (2.4360)</td> <td>■ Inconel 625 (2.4856)</td> </tr> <tr> <td>■ Hastelloy C276 (2.4819)</td> <td>■ Hardfaced with Stellite 6</td> </tr> </table>	■ Stainless steel 316/316L (1.4401/1.4404)	■ Duplex F51 (1.4462)	■ Monel 400 (2.4360)	■ Inconel 625 (2.4856)	■ Hastelloy C276 (2.4819)	■ Hardfaced with Stellite 6				
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■ Hastelloy C276 (2.4819)	■ Hardfaced with Stellite 6										
Sealing packing	<ul style="list-style-type: none"> ■ PTFE, temperature range: -55 ... +210 °C [-67 ... +410 °F] ■ Polar PTFE, temperature range: -70 ... +210 °C [-94 ... +410 °F] ■ Graphite, temperature range: -55 ... +538 °C [-67 ... +1,000 °F] ■ SIGRAFLEX® ZX graphite, nuclear quality, temperature range: -55 ... +538 °C [-67 ... +1,000 °F] ■ FKM, temperature range: -29 ... +180 °C [-20 ... +356 °F] ■ FKM AED¹⁾, temperature range: -46 ... +180 °C [-50 ... +356 °F] ■ RTFE²⁾, temperature range: -55 ... +180 °C [-67 ... +356 °F] 										
Non-wetted parts											
Gland nut, valve spindle, sealing bush, locking nut, locking pin	Stainless steel										
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



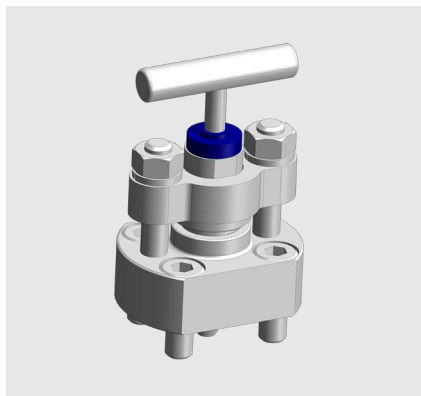
Miniature bonnet



Cryogenic bonnet



OS&Y bonnet



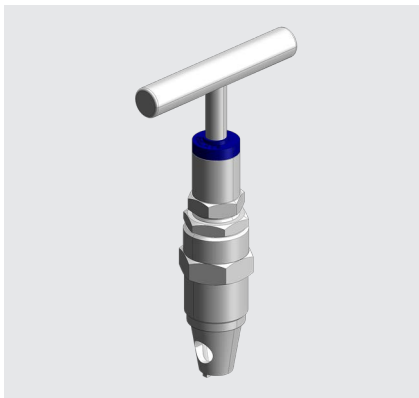
Bolted bonnet



Bonnet for panel mounting



Metering bonnet for natural gas

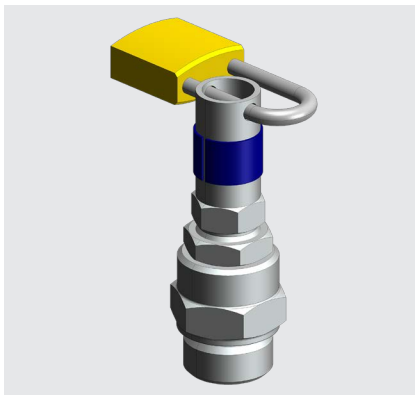


Bonnet variant

Anti-tamper variant



Anti-tamper variant with padlock

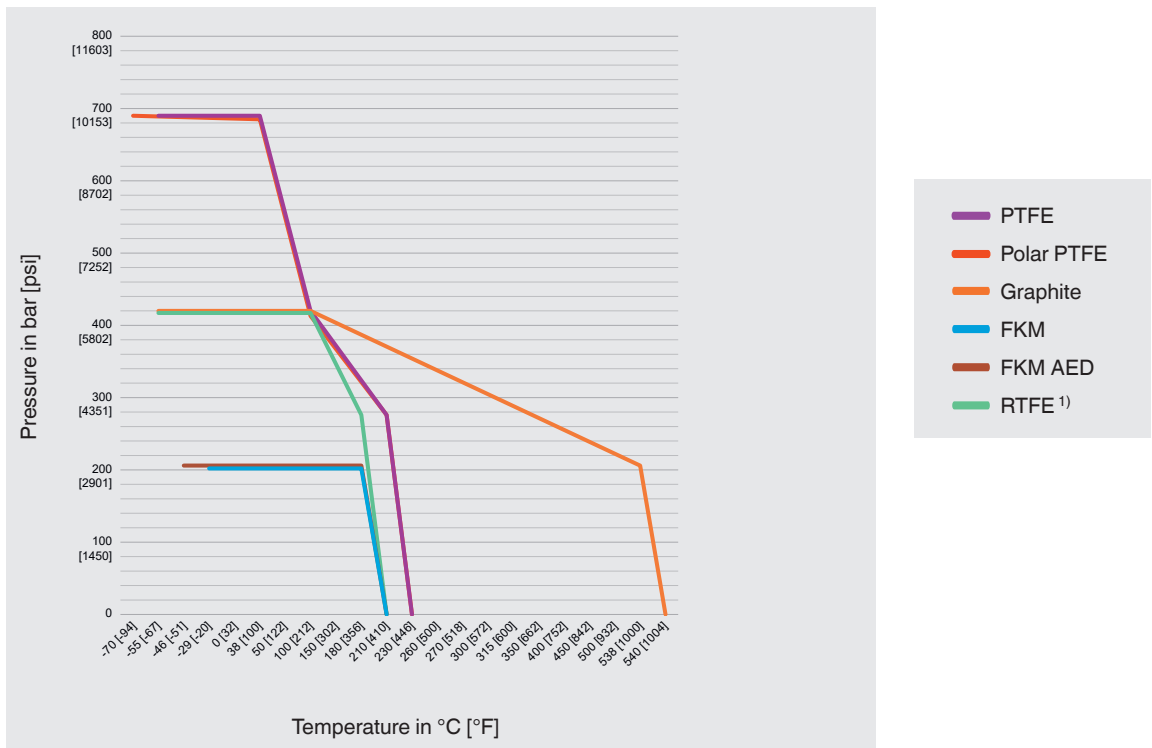


Accessory: Anti-tamper key



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

Pressure-temperature diagram



Sealing packing	Max. allowable operating 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 210 °C
	10,000 psi at -67 °F	10,000 psi	10,000 psi	4,000 psi at 410 °F
Polar PTFE	690 bar at -70 °C	690 bar	690 bar	276 bar at 210 °C
	10,000 psi at -94 °F	10,000 psi	10,000 psi	4,000 psi at 410 °F
Graphite or SIGRAFLEX® ZX graphite	420 bar at -55 °C	420 bar	420 bar	206 bar at 538 °C
	206 bar at -67 °F	6,000 psi	6,000 psi	2,987 psi at 1,000 °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 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 needle valves is -55 °C [-67 °F].

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
	DNV Ships, shipbuilding (e.g. offshore)	International
-	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: - Material proof for all wetted parts per NACE MR0103/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) - 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⁾
-	Fugitive emission protection in accordance with TA-Luft (VDI 2440) and ISO 15848-1 - 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 MR0103/MR0175 - Confirmation of pressure tests per MSS SP-61 ¹⁾ - Confirmation of pressure tests per API 598 or API 6D

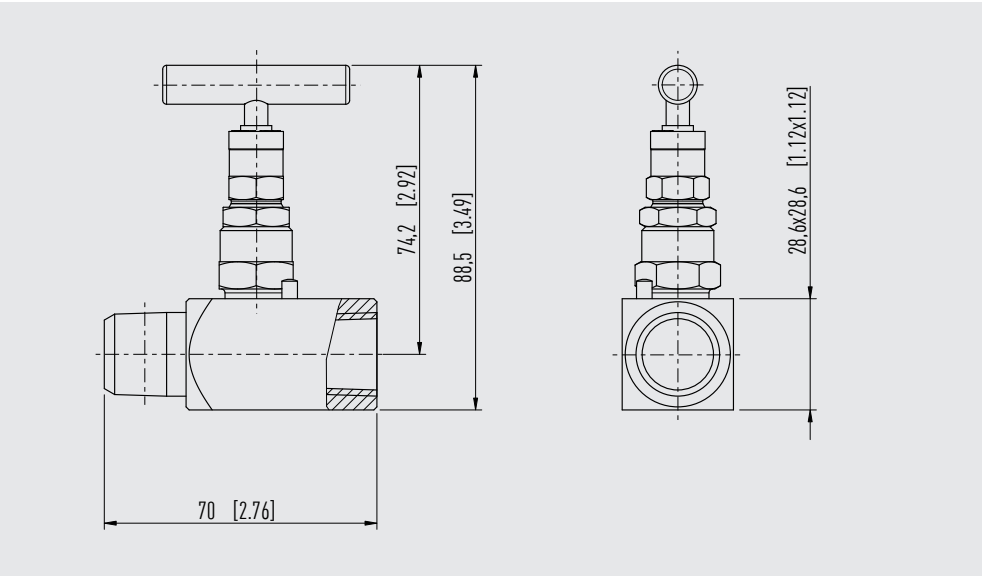
1) The following tests are performed on 100 % of the valves:

- 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

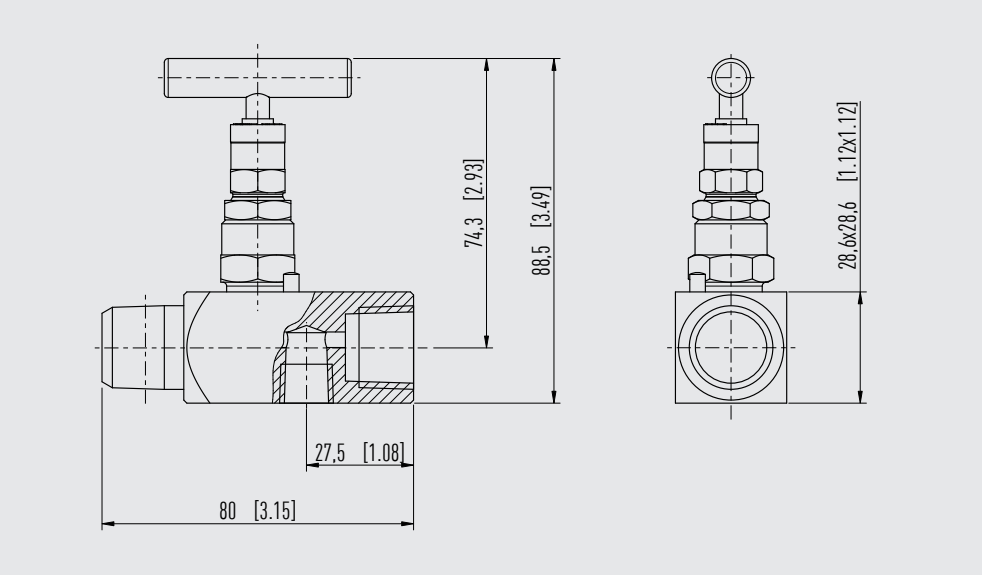
Dimensions in mm [in]

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 IV10, needle valve

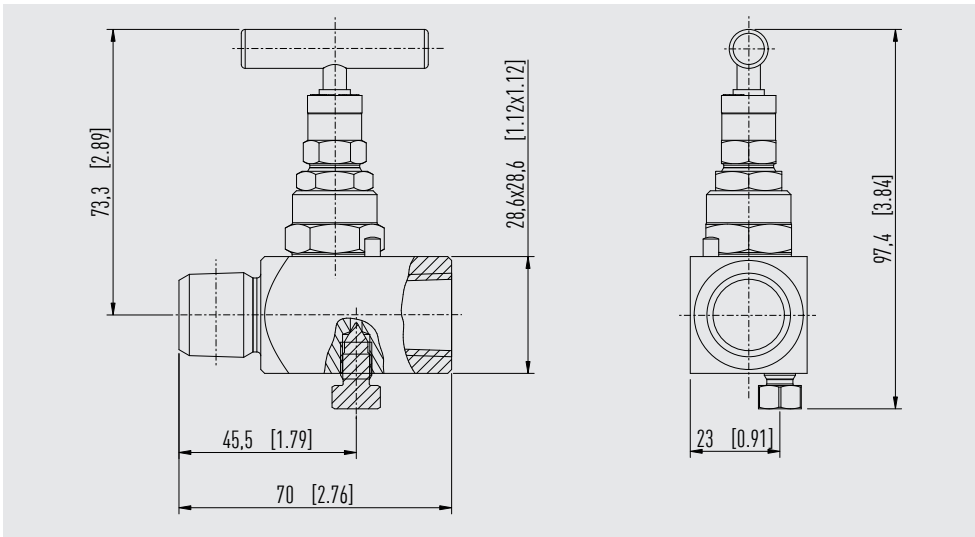


Model IV10, needle valve, with vent connection



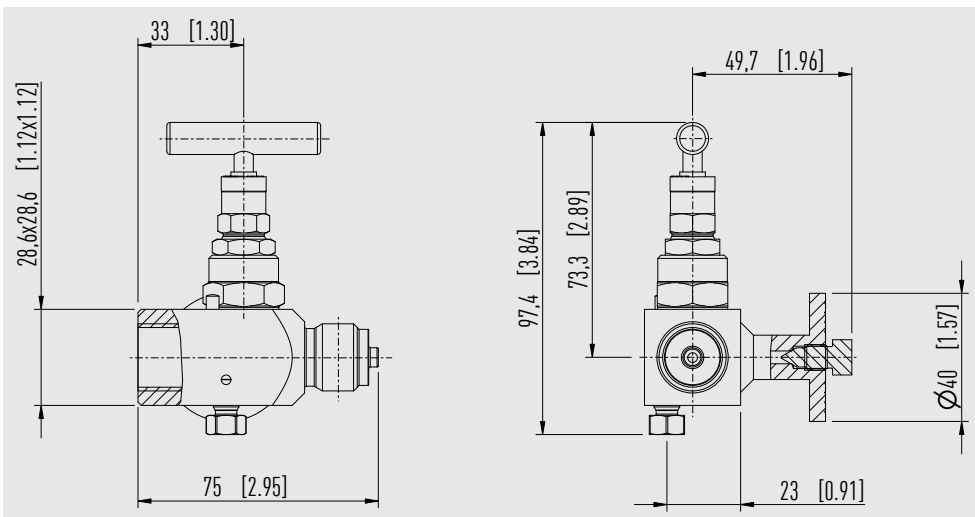
Plug screw and bleeder screw is included in delivery, though not pre-fitted.

Model IV10, needle valve, with lateral bleeder screw



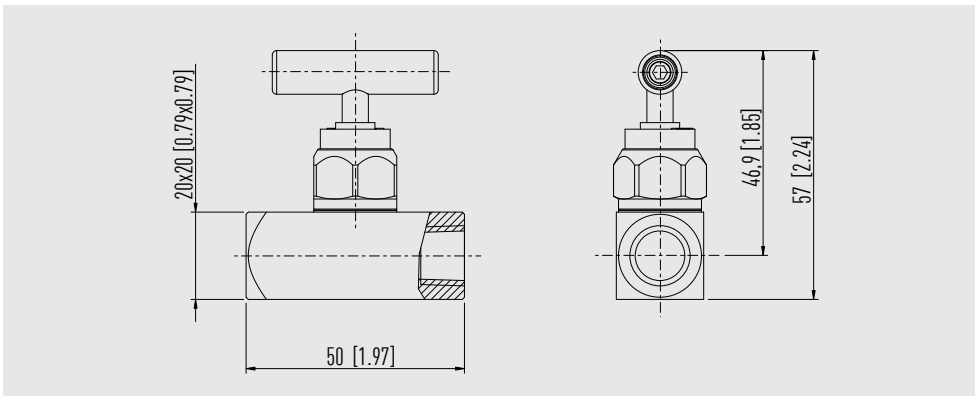
Plug screw and bleeder screw is included in delivery, though not pre-fitted.

Model IV10, needle valve, with lateral bleeder screw and test flange Ø 40 mm [1.57 in]

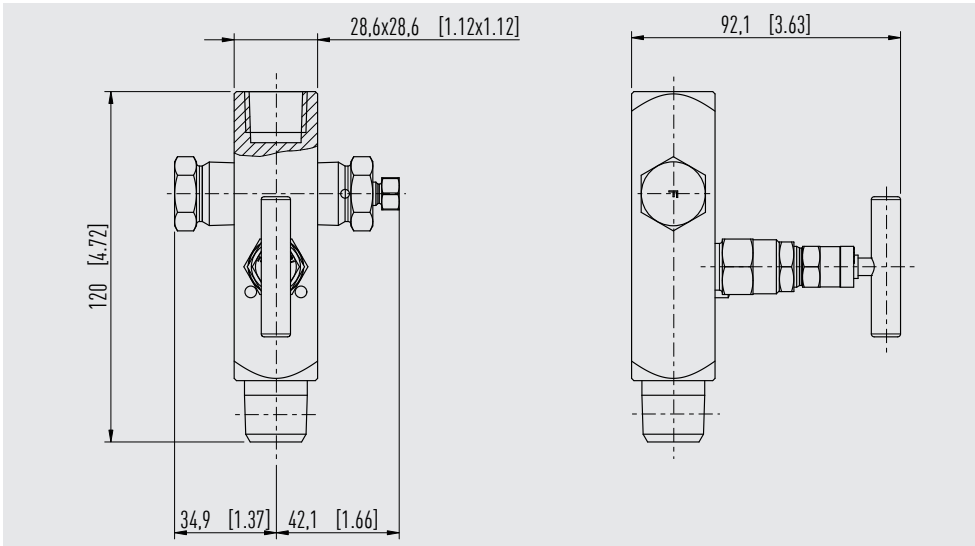


Plug screw and bleeder screw is included in delivery, though not pre-fitted.

Model IV10, needle valve, miniature bonnet

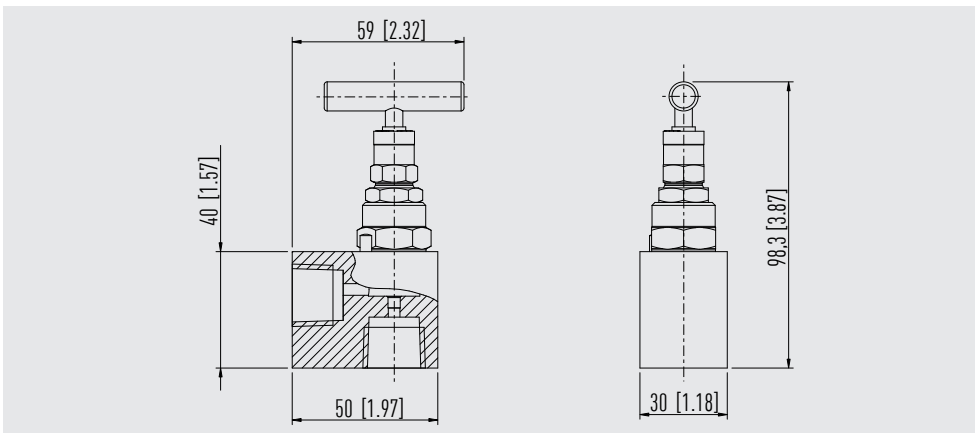


Model IV11, multiport needle valve



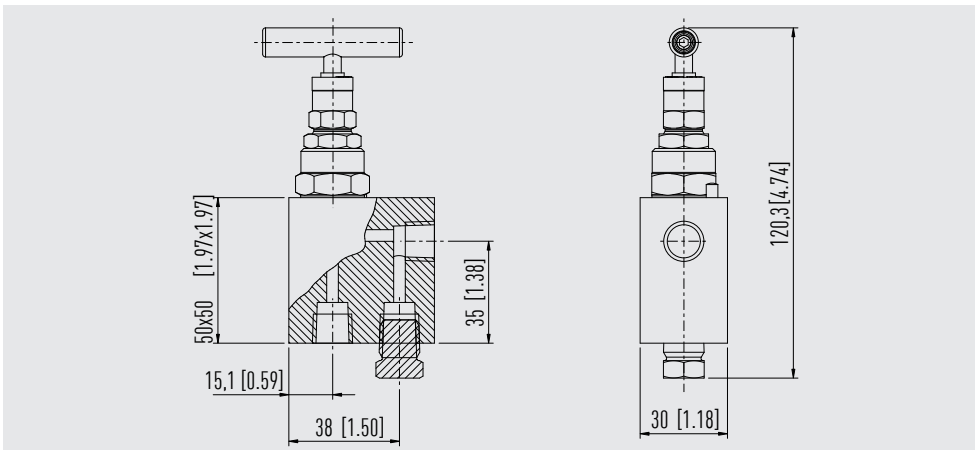
Plug screw and bleeder screw is included in delivery, though not pre-fitted.

Model IV19, needle valve, angled connections 90°



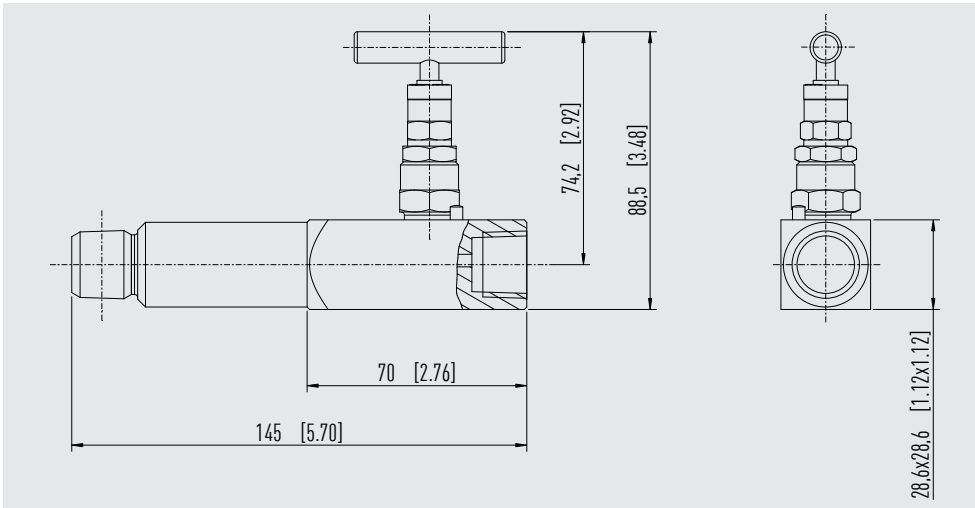
Plug screw for vent connection is included in delivery, though not pre-fitted.

Model IV19, needle valve, angled connections 90°, with vent connection

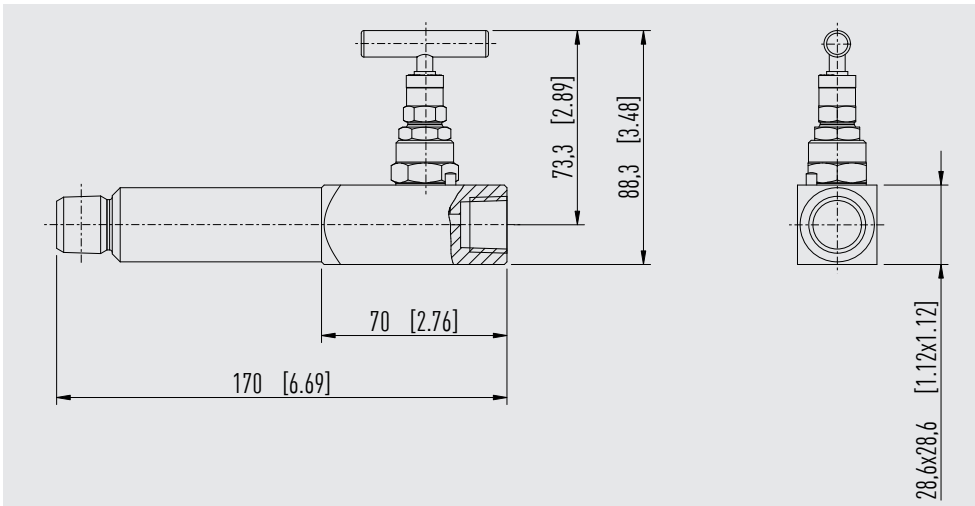


Plug screw for vent connection is included in delivery, though not pre-fitted.

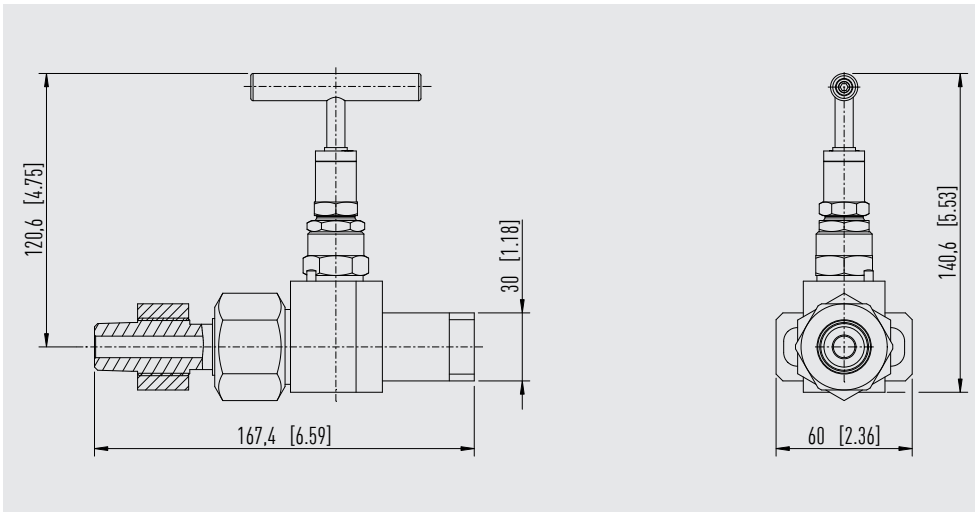
Model IV1A, needle valve, extended body, 75 mm [2.95 in]



Model IV1B, needle valve, extended body, 100 mm [3.94 in]



Model IV1N, needle valve, natural gas design



Accessories

Description	Order number
Anti-tamper key, stainless steel 303 (1.4305)	81640006
Adapter ½ NPT, female - ¼ 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, stainless steel 316/316L (1.4401/1.4404)	81506704
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
PTFE seal for G ½	81652355
Graphite seal for G ½	81652602
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 ¾ 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 ¾ 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 ¾ 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 feature / Options



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