



Alco Valves
Industrial Valve Manufacturers

Digital Catalogue
Version 2

Welcome to The Alco Valves Catalogue

Ball Valve Catalogue

Needle Valve Catalogue

Introduction



Options For Ball Valves



Low Pressure / Fire-Safe



High Pressure / Severe Service



3-Way, 4-Way & 5-Way



Ball Valve Manifolds



Check / Actuated Valves



Needle Valve Features



Needle / Plug / Angle / Miniature



Gauge Valves & Air Distribution



Instrument & Gauge Manifolds



Severe Service Valves



Fittings & Accessories



Technical Data



Introduction

Introduction

The factory - International availability - Quality assurance

Where To Find Us

Map of how to get to Alco Valves, Brighouse, UK

Company Profile

Information about the company

Flexible Manufacturing and Delivery

Large export projects - Bespoke engineering

Introduction



Mission Works - Alco's U.K. plant.

Our Factory

Alco Valves Ltd., is a member of the XAMOL Group of companies. Alco Valves manufacture a wide range of high quality mechanical pipeline and instrumentation products. The Company is owned and managed by it's founder, and operates from a custom built facility in Brighouse, West Yorkshire, United Kingdom. The factory, Mission Works, was built for the express purpose of manufacturing high integrity valves and accessories for industry.

Mission Works and it's facilities are constantly benefiting from regular capital investments. This ensures that Alco is able to manufacture it's products using cutting edge technology and up-to-date internationally recognised engineering methods in the production processes and quality assurance programme. With over 25,000 sq. ft (4,200-sq. m) of workshop and machine shop area, large project work can be easily undertaken.

International Availability

Alco's wide range of products are available direct from the factory sales department or via a network of stocking distributors. Alco representatives are available 24 hours a day via the latest communication systems including e-mail and the information super highway - the Internet. Our network of distributors offer support to you and your clients world-wide 365 days a year. With our own "on the ground assets", partnerships and authorised distributors operating in over thirty countries, Alco is there to assist you and your clients globally. Alco products can be specified and sourced readily and with local support, wherever you are.

Quality Assurance, Safety & Reliability BS5750 now ISO 9000 Series (since 1982)

Quality assurance has acted as a cornerstone in the Company's success and has contributed greatly to Alco's world-wide appeal, growth and expansion to date. This is why Alco Valves sought and achieved BS5750 (now ISO9000 series) in 1982.

Alco Valves saw the need for consistently reliable and safe products for industrial use earlier than most, which is why BS5750 & ISO9000 series quality assurance systems were implemented in 1982, far sooner than other mainstream valve manufacturers around the world. The quality assurance system has been maintained and regularly audited by Lloyds Register (among others) and their international counterparts ever since.

Timely, high quality production and manufacturing techniques have always been employed by Alco to produce precision engineered valve solutions for some of the world's largest companies. Clients operating in some of the most inhospitable areas of the world often use Alco valves, therefore our high standards and product reliability counts.

Due to Alco's uncompromising standards of safety, design and reliability, stringent applications at high pressures and temperatures in corrosive environments can be easily dealt with. Every valve product is 100% pressure tested. All materials used to manufacture the major components are traceable and copies of original mill certificates are retained for future reference.

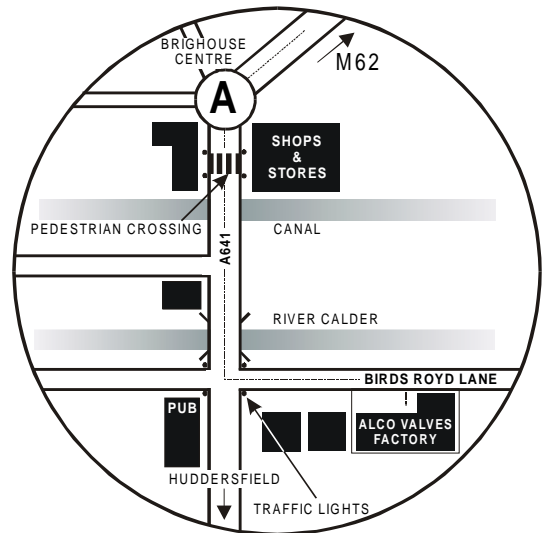
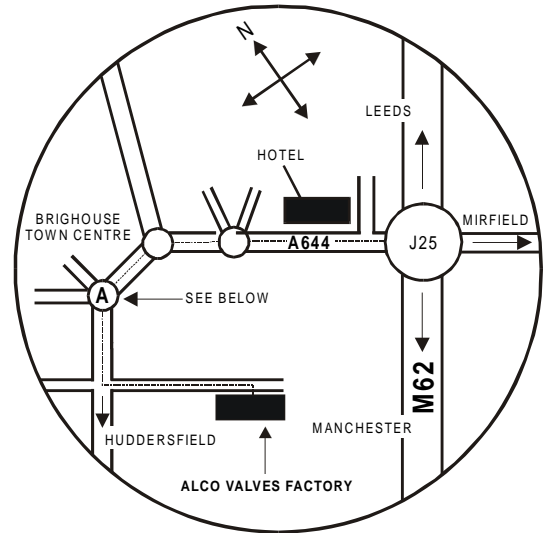
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Where to find us in the UK

Alco Valves U.K. manufacturing plant is located 1/2 a mile from junction 25 of the M62 road link. Alco Valves location is central to the U.K.'s national motorway and rail networks, and has the additional benefit of being located close to Manchester International and Leeds / Bradford international airports.

Our position in the country enables us to provide rapid delivery response times nationally and internationally 365 days a year by land, rail, air or sea.



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Company Profile

The Company

Founded in September 1977, Alco Valves Ltd. was incorporated with the express purpose of manufacturing a comprehensive range of technically advanced, precision made, high integrity valve products and accessories. The latest engineering techniques and standards are applied in Alco's 'in-house' machining facility and computerised drawing offices. With over twenty years of success behind it, Alco Valves has expanded to form the XAMOL Group, comprising of six companies, operating in over thirty countries world-wide with it's own office locations and partnerships around the world.

Our Team of People

Alco's staff are the Company's major asset. Alco Valves is a professionally managed manufacturing and marketing company with the ability to design innovative and quality products. Each team member has extensive experience in their field. All employees are aware of the Company's mission and the importance of the quality assurance programme and customer satisfaction requirements.

Areas of Use

The Alco Valves team are well equipped to offer valve products and accessories for use in high corrosive areas. Experienced staff are fully versed in the specification requirements to contend with almost any environment or application. When you or your client need to be sure that the valve you are specifying is safe, reliable and cost effective, Alco Valves easily rises to the challenge. Whether a valve is to be used in a refinery, offshore, sub sea, carrying dangerous chemicals or gases, or even within the influencing range of radiation from nuclear reactors, Alco Valves has the ability to offer a product for the application.

Our Client Base

Over the last 20 years Alco Valves are proud to be able to call most companies active in pressurised systems, and some of the largest and well respected oil, gas, petrochemical, engineering, contracting, nuclear and scientific research companies in the World "valued Alco clients". (Please see our most recent customer reference listing).

Our Capabilities

Using the latest computer aided design systems, machining centres and CNC lathes, Alco design and engineer standard and bespoke products from our "in-house" design office and machine shop facilities. Alco are able to proof test the products to destruction and carry out testing to stringent internationally recognised standards such as BS6755 Part II (Fire testing) among others. Speciality testing is also available with the development of Alco's own specialist testing bed. Alco equipment is specified by most of the world's major oil, offshore petrochemical and power generating companies and has significant applications in many other industries. Alco is dedicated to improve and expand it's product range and ensure the highest standard of safety and reliability in service.

Company General Policy Statement

Our Company policy is to safely and efficiently design, manufacture, assure quality, integrity test, package, sell and market the Alco brand name of world leading valve products. This offers our clients meaningful advantages whilst remaining forward facing, environmentally conscious and committed to the improvement of safety and the reduction of costs. The Alco Valves range is sold widely in domestic and international market places to recognised industrial and scientific users. We aim to deliver our products on time, at a reasonable cost with a high service level, with the intention of retaining profit for the company. This allows payment of suppliers, overheads and remuneration to our employees with the balance being used for improvement, inward capital investment, expansion, product research and development, certification and approvals by internationally recognised bodies. Millions of Alco products have been successfully installed and are in use by our clients today.

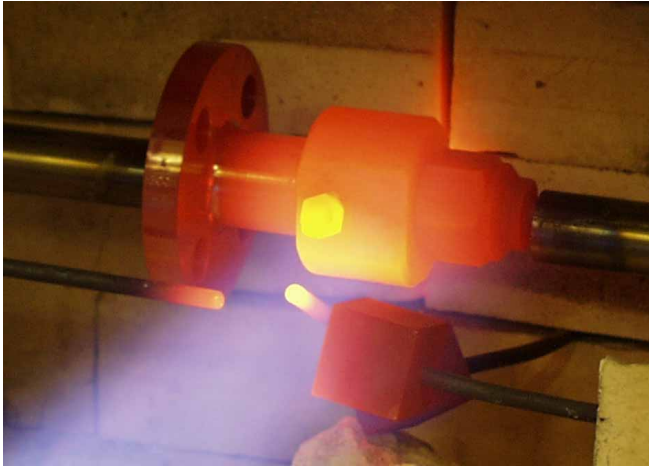
Our Mission Statement

To provide safe, defect free, instrumentation and pipeline products for industrial and scientific use. To meet and exceed our clients requirements, specifications and expectations. To provide customer service second to none, now and into the future.

This catalogue illustrates, with dimensional drawings, the range of products which we hope will enable you to select the correct valve for any given application. Dimensions and technical data including ratings maybe rounded up or approximated. Our experienced technical sales team are waiting to assist you. Due to changes in international specifications, client requirements and production techniques, Alco reserve the right to execute any changes without prior notification. All Trade Marks used in this catalogue are acknowledged and are the property of the respective owner / user / agent / party / body.

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Flexible Manufacturing & Delivery



Various in-house testing with third party certification



Large domestic and export project orders easily undertaken



Large and small volume special client designs



Purchase supply agreements undertaken at competitive prices to instrument manufacturers and O.E.M's



Tonnes of valve products shipped every single month



Flexible designs, bespoke engineering

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Options for Ball Valves

Ball Valve Features & Advantages

Physical features and design advantages of a typical 'B' Series

Trunnion & SSB Features & Advantages

Physical features of the trunnion 3-way & SSB firesafe ball valves

Options for Ball Valves (1)

Locking devices, handle types, end connections & more

Options for Ball Valves (2)

Actuators, colour coded handles, manual override features & more

Options for Ball Valves (3)

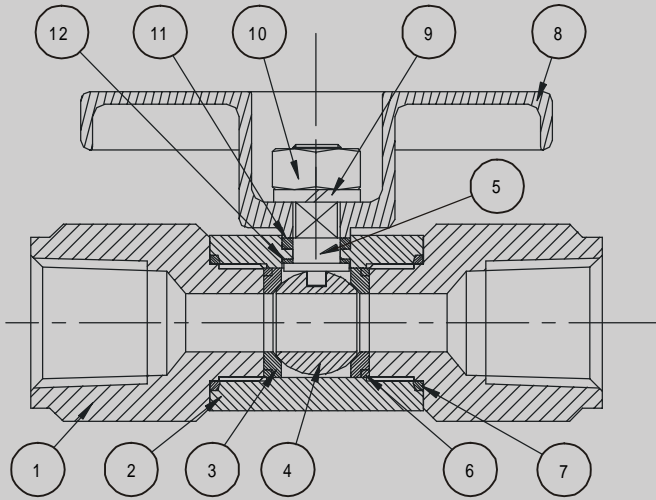
Double Flanges, ball types, bleed screws & more

Options for Ball Valves (4)

Low emission packing, flanged ball valves & more

Ball Valve Features & Advantages

Physical Features - Typical 'B' Series for liquids or gases

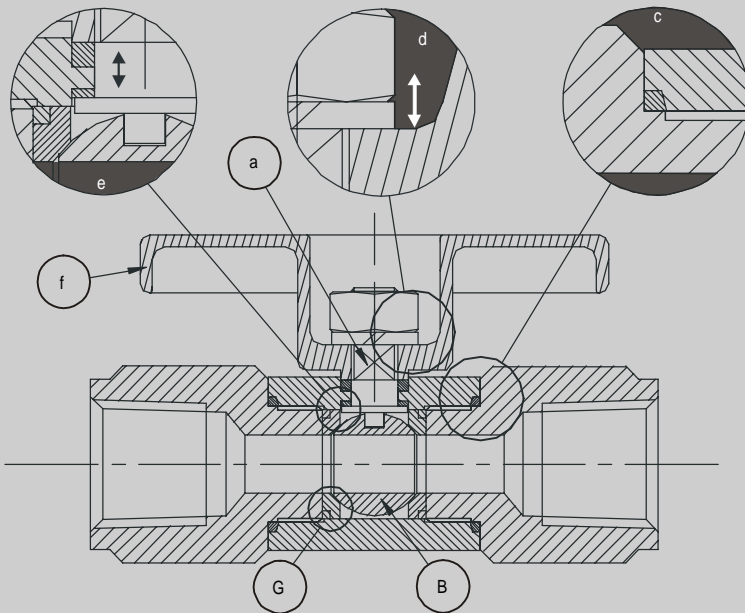


Standard Parts

- 1) Precision made female end connectors
- 2) Valve body
- 3) Valve seat, pressure dynamic - gas tight
- 4) Floating ball - high quality finish for superior bubble tight sealing
- 5) Pressure active, anti-blowout stem
- 6) Pressure energised backup ring (HP only)
- 7) Primary end connector seal
- 8) Compact "T" bar handle - lever handle also available
- 9) Handle / stem spring washer
- 10) Handle retaining nut
- 11) Top stem seal and bearing
- 12) Bottom stem seal and bearing

NB: this design is approved and widely used by many internationally recognised bodies. All 'B' series valves are 100% tested on gas.

Design Advantages - Typical 'B' Series



Standard Advantages

- a) Pressure dynamic anti-blow out stem for safety and protection should accidental over pressurisation or upstream component failure occur.
- b) Clear bore, precision made, pressure dynamic floating ball, the higher the pressure becomes, the greater the sealing effect becomes.
- c) Primary soft seal and high integrity secondary metal to metal end connector seal.
- d) Dual action spring washer and retainer keeps stem packing in compression & retaining nut locked.
- e) High pressure, high integrity stem seals / stem packings are under constant compression, line pressure energised bottom stem seal. Top seal is under compression at all times by the action of the spring washer. Dual action.
- f) Compact "T" bar handle which does not over extend the valve, helpful in tight panel work. Lever handle available as an option.
- g) Valve seat available in several materials to suit your application. The seat also acts as a thread seal. Seats and seals are replaceable should servicing or maintenance be required to extend field life even further.

Note: The above details are included in standard valves. Not all features and advantages apply to all variations, sizes, designs, specifications. For instance "B" series valves above 1" are two piece body design for safety. "T" bar handles are only available on valves up to 1".

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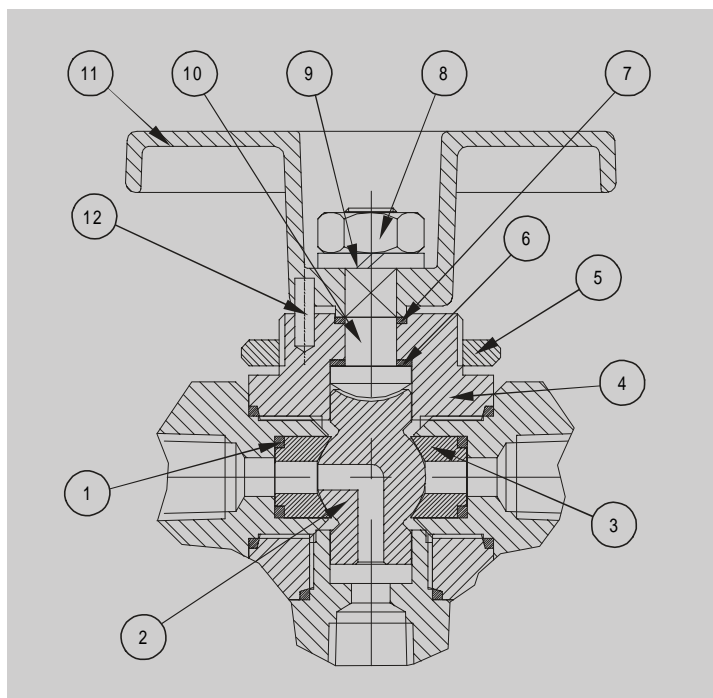
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REF: AVCAT2K007

REV: 00

Trunnion & SSB Features & Advantages

Physical Features - Typical Trunnion 3-Way Ball Valve



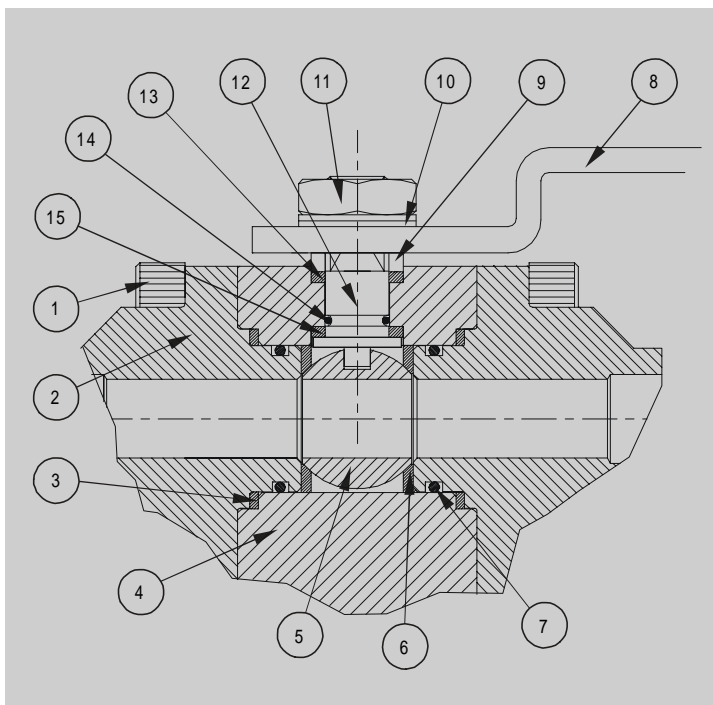
High Pressure Trunnion Ball Valves

The high pressure trunnion mounted ball valve from Alco Valves has pressure activated / dynamic seats which the line pressure energises. This system offers low torque, bubble tight, first time line isolation, or in the 3-way format line diversion. Available in two and 3-way designs, see pages 2, 3 & 9.

Trunnion Ball Valve

- | | |
|------------------------|---------------------|
| ● (1) Seat Backup Ring | ● (7) Top Stem Seal |
| ● (2) Trunnion Ball | ● (8) Handle Nut |
| ● (3) Valve Seat | ● (9) Spring Washer |
| ● (4) Valve Body | ● (10) Stem |
| ● (5) Mounting Nut | ● (11) T-bar Handle |
| ● (6) Bottom Stem Seal | ● (12) Stop Pin |

Physical Features - Typical SSB Series Ball Valve



SSB Series Ball Valves



The high performance SSB fire-safe design is a 3 piece bolt together or sandwich body and end cap configuration. This utilises the latest in high temperature and fire-proof sealing materials with high integrity primary soft sealing, and metal to metal secondary sealing. Tested and certified to API 6FA / API 607 and BS6755 Part 2.

SSB Series Ball Valves

- | | |
|------------------------|----------------------------|
| ● (1) Cap Screws | ● (9) Spacer |
| ● (2) End Flange | ● (10) Belleville Washer |
| ● (3) Flange Seal | ● (11) Nut |
| ● (4) Body | ● (12) Stem |
| ● (5) Ball | ● (13) Top Stem Seal |
| ● (6) Seat | ● (14) Stem Seal & Bearing |
| ● (7) Primary End Seal | ● (15) Bottom Stem Seal |
| ● (8) Handle | |

See technical section for important additional valve data.

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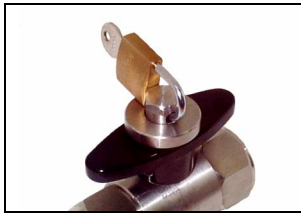
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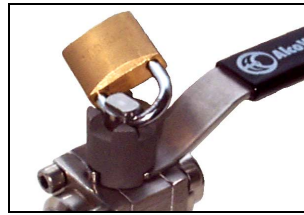
REV: 00

Options for ball valves

The following table shows the versatility of the Alco range and the many different types of end connections or options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please feel free to contact us for further details.



Security 'T' handle locking facility.



Security lever handle locking facility.



Lever handle for easy use.



Compact 'T' bar handle.



Extension handles
(Up to 40" inches).



Anti-tamper spanner flat handle
for safety (British gas approved).



Compact "C" shaped handle for
reduced space envelopes.



Panel mounting facility
(4 holes).



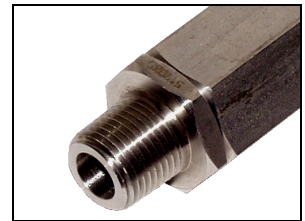
Stand pipe connections for direct
connection to a compression fitting.



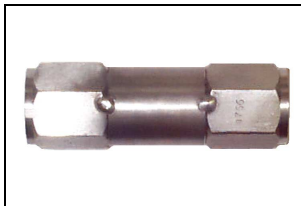
Metric and imperial compression end
connections (single or twin ferrule).



Female end connection
reduced or full bore.



Eliminate the use of fittings
with male end connections.



Tapped ends to prevent accidental
removal of end connectors.



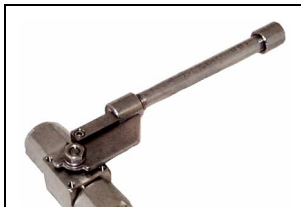
Double acting or spring return
actuation, Pneumatic, electric or
Hydraulic.



Compact locking device for
large bore valves.



Oval hand wheel option that
helps reduce accidental
operation. (-OVH)



Safety, spring return "dead mans
handle". Can be set to spring close
or open automatically.



Degreased valves for
special gas services to
several standards.



Extended end connections to suit
pipe gap or to prevent thermal seat
distortion when welding.



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PART NO.
ALCO WORKS ORDER
YOUR JOB NO.
YOUR PART NO.

NOTE: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K009

REV: 00

Options for ball valves

The following table shows the versatility of the Alco range, and the many different options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.



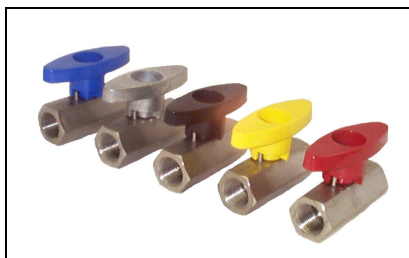
Compact Pneumatic or Electric Actuators.



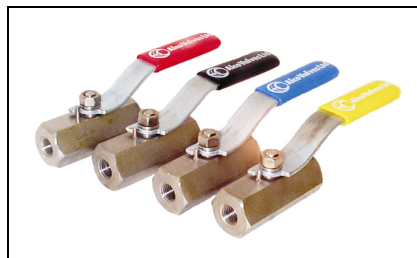
Position Indicators on manual valves to signal the orientation and status of remote valving.



Manual override features on actuated valves.



Compact marine handle
Coated to reduce corrosion
(choice of colours, see chart below).



Colour coded lever handles
For quick and easy use
(choice of colours see chart below).



Flow indicating handle
Manufactured in 316ss for high corrosion resistance.
Pt. No. -SAH.



Blank plug Pt. No. -BP
Vent plug Pt. No.-VP
Vent plug with 'T' bar Pt. No.-CVP



Mini vent valve
with Viton packing 6,000 psi
rated.
Pt. No. NVP4NS
Mini vent valve
with directional vent
tube 6,000 psi rated.
Pt. No. NVP4NS-P



'T' bar handle
Manufactured in 316ss for high
corrosion resistance.
Pt. No. -MS

All handles can be colour coded. The colour of the handle or sleeve offers a good visual indication of the pressure rating of the valves to which they are fitted according to the following:-

Handle Colour	Pressure Ratings	Bar	KPa	Kg/Cm ²
Black	1,000 psi	69 BAR	6,890	70.3
Blue	2,000 psi	138 BAR	13,800	141
Red	3,000 psi	207 BAR	20,700	211
Yellow	6,000 psi	414 BAR	41,400	422
Black	10,000 psi	689 BAR	68,900	703
Black / Stainless	15,000 psi	1030 BAR	103,000	1050
Black / Stainless	20,000 psi	1360 BAR	138,000	1410

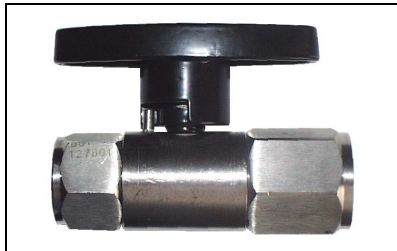
Valve pressure ratings are cold working, non-shock at ambient temperature of 24° Celsius.

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Options for ball valves

The following table shows the versatility of the Alco range, and the many different types of end connections and options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.



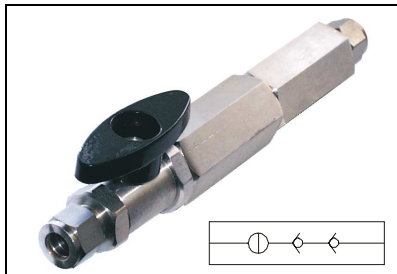
Different end sizes
(1/4" x 1/2") - flexibility when fitting.



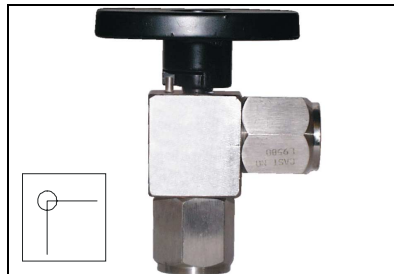
Socket & butt weld end
connections mixed.



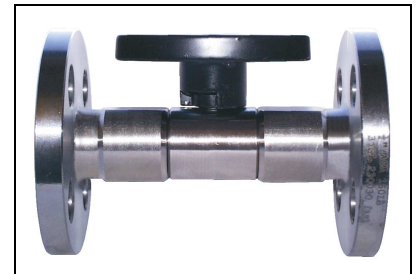
Ball Valve With Bleed Screw.



Ball valve isolation with single or
double safety check valve
(in one unit)



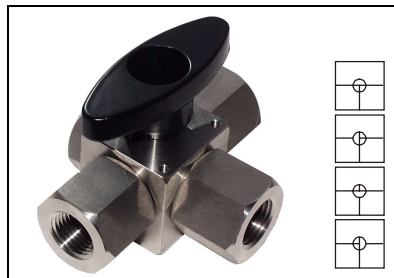
Angle style ball valve



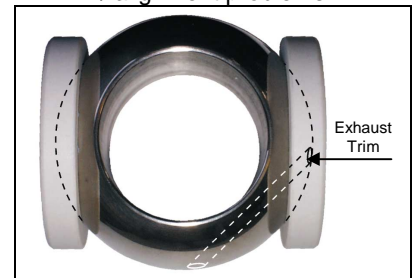
3 piece ball valve with rotating
flanged ends - to solve installation
/ alignment problems



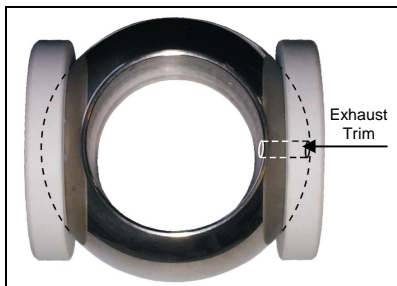
Ball valve with S.A.E ends.



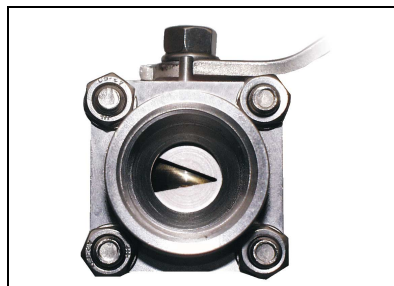
3-Way 'T' port ball valve.



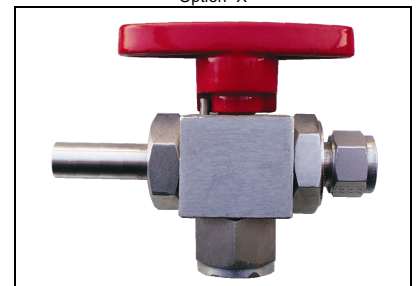
Downstream to atmosphere
exhaust trim (100 psi max).
Option -X



Cavity to downstream
exhaust trim
Option Cav-X



90° operation ball valve with flow
Control or "V" seat.



2 & 3-way highly flexible designs,
different ends.

Other options can be supplied

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Options for ball valves

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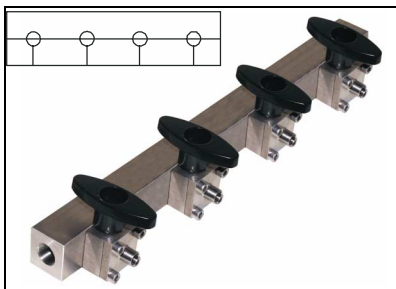
Hand Wheel.
Option - BVHW



Fast and easy assembly or
removal using face seal. Can be
remade hundreds of times over.



Bolt Together Flanged Ball Valve
Various Sizes up to 4" Bore.



High integrity modular
Distribution Manifold.

Note: the valves mount directly to the manifold.
Flexible, serviceable and compact up to 20 take-
offs. Single or double sided.



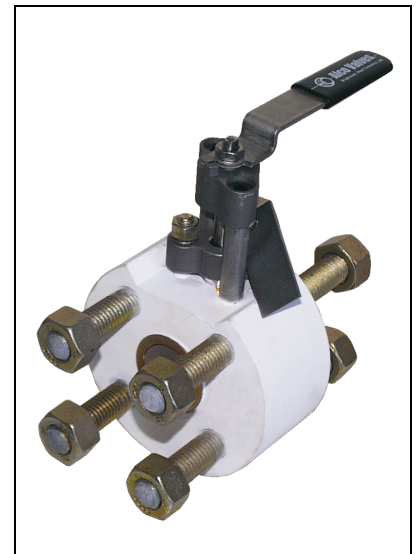
1 & 2 Piece Fire Safe Flanged
Ball Valve with Oval Handle.



Compact Flanged Ball Valve.



Ball Valve Low Emission Packing
& Outside Screw & Yoke - Fire
Safe Butt Weld Ends.



Ball Valve Wafer Type for Direct
Connection To / Between Flanges.

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Ball Valves up to 3,000 psi

MA Series

Miniature ball valves rated up to 2000 psi

A Series

Compact ball valves rated up to 2,000 psi

B Series

Medium pressure ball valves rated 1,000 psi to 3,000 psi

SB Series

Panel mounting ball valves rated 1,000 psi to 3,000 psi

B & SB (Compression Ended)

Rated 1,000 psi to 3,000 psi

S Series

Sandwich style ball valve rated 1,000 psi to 3,000 psi

SSB Series

Fire safe ball valves rated up to 3,000 psi

How to order the above

An explanation of the part numbering system

MA Series



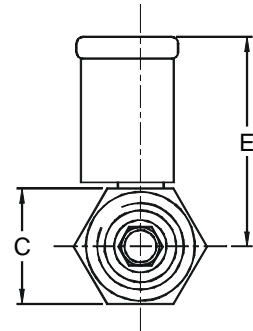
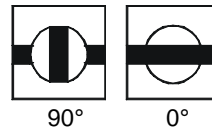
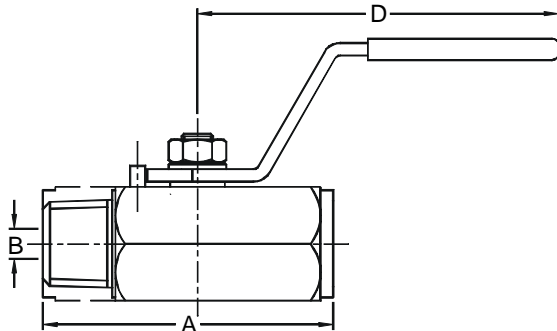
General Information

Miniature ball valves Rated up to 2,000 psi

High integrity barstock miniature ball valve, proven to be better than cast type products at this size. The MA series ball valve is a miniature version of the larger "A" series range. The "MA" series has been designed to be lighter and more compact at 1/4" size than the standard "A" series range of valves. The "MA" Series is available in a variety of configurations to suit many applications within the instrumentation, air distribution and general engineering industries. The "MA" series is 2,000 psi as standard. The valves come with a stainless steel lever handle as standard. Other options such as a base mounting bracket are available.

Design Features

- One piece design - prevents accidental removal of the internals when fitting or removing the valve from the pipeline.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Manufactured from high integrity, certified (316ss) barstock material.
- Smooth low torque 90° operation.
- Value for money, compact economical design.
- Compact overall length, reduced weight.
- Choice of trim materials.
- Available NPT, BSPP or BSPT threads.
- Temperature rating -50°C to 230°C.
- Available in female x female and male x female versions.
- Available in 316 stainless steel, other materials available.
- Anti-blow-out internally loaded stem for safety.
- Handle indicates open / closed position at a glance.
- Many options available such as locking devices, mounting brackets, 'C' shaped handle.
- Full material traceability.
- 100% Hydrostatic factory testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers & Dimensional Details

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	Cv	Kv	Weight (Kgs)
Female / Female									
MA2NS	1/4" NPT	46	5	18	56	32	1.7	1.4	0.1
MA2PS	1/4" BSPP	46	5	18	56	32	1.7	1.4	0.1
MA2TS	1/4" BSPT	46	5	18	56	32	1.7	1.4	0.1
Male / Female									
MA2NS-1M	1/4" NPT	46	5	18	56	32	1.7	1.4	0.1
MA2PS-1MP	1/4" BSPP	46	5	18	56	32	1.7	1.4	0.1
MA2TS-1M	1/4" BSPT	46	5	18	56	32	1.7	1.4	0.1

Stainless steel lever handle only.

Seat materials: 2000psi = RTFE Seal materials: Stem = RTFE

Dims are in mm (Appx)

See technical section for important additional valve data.

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A Series

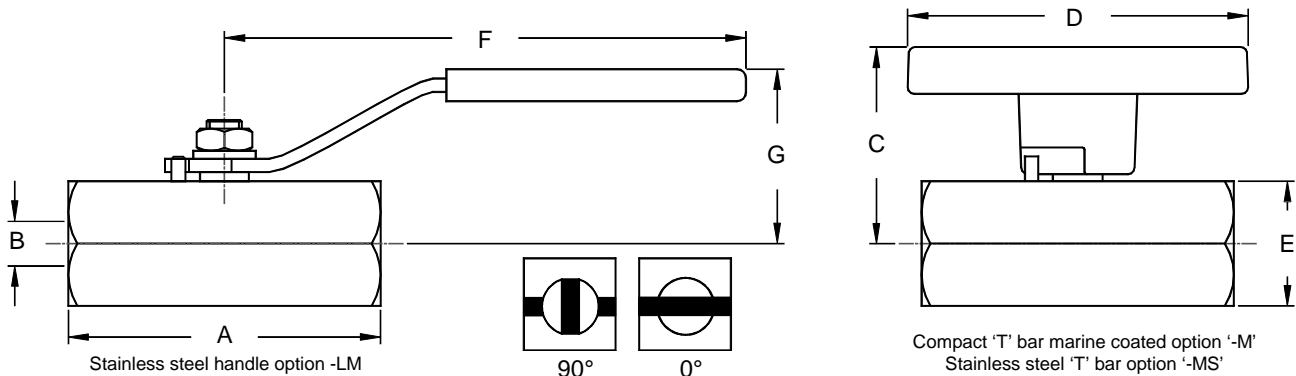
General Information

Compact ball valves Rated up to 2,000 psi

High integrity barstock ball valves proven to be better than cast type products. The high quality 'A' series low to medium pressure ball valve range is an economically designed valve with the internals being loaded through the threads. This design offers a safe and inexpensive style of valve suitable for a wide range of applications. It also offers fewer potential leak paths than cast or 3 piece valves and it is a rugged one piece solid body format. This valve is suitable for water, oil or gas applications. It comes with the compact 'T' bar handle as standard with many more options available such as lever handle or locking device etc.

Design Features

- One piece design - prevents accidental removal of the internals when fitting or removing the valve from the pipeline.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Manufactured for high integrity, certified (316ss) barstock material.
- Smooth low torque 90° operation.
- Value for money, compact economical design.
- Compact overall length, reduced weight.
- Anti blow-out internally loaded stem for safety.
- Available NPT, BSPP or BSPT threads.
- Temperature rating -50°C to 230°C.
- Pressure rating 2,000 psi (138) bar as standard.
- Choice of body and trim materials. Available in 316ss Monel / Duplex / Titanium / Ali-Bronze.
- Can be supplied male/female to order.
- Handle indicates open / closed positions at a glance.
- Many options available (such as locking devices)
- Full material traceability.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the Requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
A2NS	1/4" NPT	70	10	44	77	28	115	41	4.2	3.6	0.2
A3NS	3/8" NPT	70	10	44	77	28	115	41	4.4	3.8	0.2
A4NS	1/2" NPT	70	10	44	77	28	115	41	4.5	3.9	0.2
A6NS	3/4" NPT	76	13	46	77	32	115	43	7.8	6.7	0.3
A8NS	1" NPT	89	16	49	77	38	115	45	11.8	10.2	0.4
A12NS	1 1/2" NPT	99	25	58	100	57	150	50	23	19.9	1.0
A16NS	2" NPT	115	32	-	-	70	165	75	49	42.4	2.0

For BSPP threads change 'N' to 'P' i.e. A4PS

For BSPT threads change 'N' to 'T' i.e. A4TS

Lever handles standard on 2" version, sizes above 1" may be round Dia body

Seat materials: 2000psi = RTFE Seal materials: Stem = RTFE

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K015

REV: 01

B Series



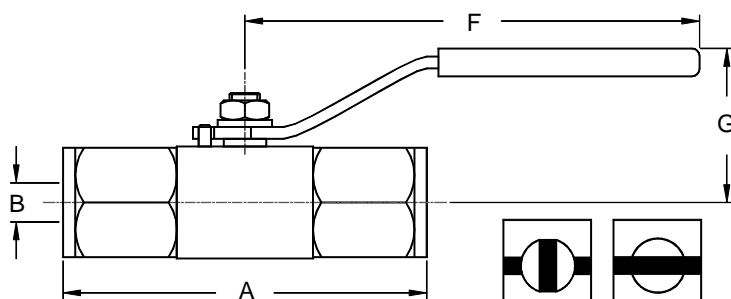
General Information

Medium pressure ball valves 1,000 psi to 3,000 psi versions

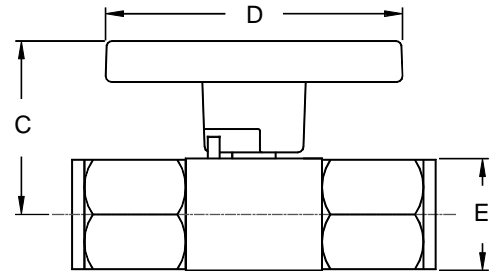
The B-Series is the original 3-piece screw together barstock range of valve. It is a flexible design with many options of end connection styles available, with a 1,000 psi as standard that can be up-rated to 3,000 psi. Also the benefit of having a three piece construction allows maintainability with service kits which are readily available. The Alco "B" series is a flexible design, with many possible combinations of end connectors available, "the original and still the best".

Design Features

- Flexible 3 piece design for easy maintenance.
- Full material traceability.
- 90° smooth, light positive action.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Available in 316 ss / Monel / Duplex / 6Mo / Titanium / Hastalloy / Zirconium / Carbon Steel / Ali-Bronze.
- Anti-blow-out internally loaded stem for extra safety.
- Handle indicates open / closed positions at a glance.
- Pressure / Temperature rating -50°C to 230°C - temperature differs for 3,000psi version.
- Repair kits available should the valve need servicing to prolong its life.
- 100% hydrostatic testing.
- A choice of handles and trim materials.
- Many options available such as locking device.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Stainless steel lever handle option -LM



Compact 'T' bar marine coated option '-M'
Stainless steel 'T' bar option '-MS'

Part Numbers

St/St Part No.	Connections Size	A		B (Bore)	C	D	E	F	G	Cv	Kv	Weight (kgs)
		BSPP	NPT									
B2NS	1/4"	61	68	10	43	77	25	115	38	4.2	3.6	0.3
B3NS	3/8"	74	74	10	43	77	25	115	38	4.4	3.8	0.3
B4NS	1/2"	78	93	10	43	77	28	115	38	4.5	3.9	0.3
B6NS	3/4"	85	95	13	45	77	32	115	40	7.8	6.7	0.5
B8NS	1"	109	116	19	56	100	42	150	50	16.7	14.4	1.1
B10NS	1 1/4"	110	110	25	64	100	Ø61	150	55	23	19.9	1.6
B12NS	1 1/2"	120	120	32	-	-	Ø70	165	80	49	42.4	3.0
B16NS	2"	150	150	38	-	-	Ø76	165	95	70	60.5	3.5
B20NS	2 1/2"	150	150	50	-	-	Ø110	140	110	119	103	6.0

For BSPP threads change 'N' for 'P' i.e. B4PS.

For BSPT threads change 'N' for 'T' i.e. B4TS

Sizes above 1" are round bodied, 2-piece design.

Lever handles standard on 1 1/2", 2" & 2 1/2" valves.

For higher pressure 3,000 psi version add prefix 'H' i.e. HB4NS.

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal Seal materials: Body = PTFE - Stem = RTFE

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K016

REV: 01

SB Series

General Information

Panel mounting ball valves 1,000 psi to 3,000 psi versions

The Panel Mount range or the 'SB' series is a variation of the standard 'B' series and as such retains its flexibility of end connections with the added advantage of the panel mounting facility onto a flat face. Using this flat face, the valve is easy to mount to a control panel or actuator. The major benefits of using four panel mount holes instead of one single nut type are that this design eliminates the possibility of the valve turning underneath a panel. This would cause undue stressing of a thread joint. Also four small holes can be beneficial for positioning, if access to the panel is reduced only two holes (diagonally opposite) can be used.

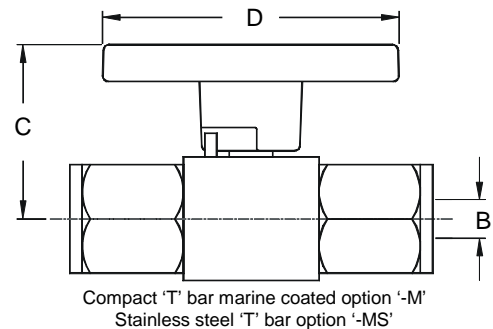
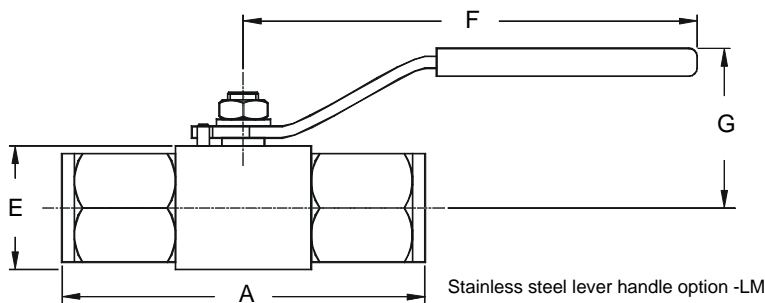
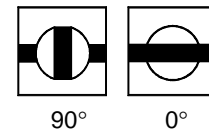
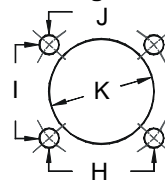
Design Features

- Bi-directional floating ball design to ensure leak-proof shut off on pressure or vacuum.
- Flexible 3 piece design for easy maintenance.
- Anti-blow-out system for safety.
- 90° quick action, indicates position.
- Choice of end connections.
- Repair kits available should the valve need servicing.
- Choice of handles and trim materials.
- Pressure / Temperature rating -50°C to 230°C - temperature differs for 3,000psi version.
- Panel mounting style – can be supplied suitable for actuation if specified.
- Full material traceability.
- 100% hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

VALVE SIZE	H	I	J	K
1/4"-3/4"	27	24	5	27
1"	38	38	5	38

4 – off M4 x 10 Mounting Holes

Mounting Details



Part Numbers

St/St Part No.	Connections Size	A		B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
		BSPP	NPT									
SB2NS	1/4"	61	68	10	43	77	32	115	38	4.2	3.6	0.4
SB3NS	3/8"	74	74	10	43	77	32	115	38	4.4	3.8	0.4
SB4NS	1/2"	78	93	10	43	77	32	115	38	4.5	3.9	0.5
SB6NS	3/4"	85	95	13	45	77	38	115	40	7.8	6.7	0.7
SB8NS	1"	109	116	19	56	100	51	150	50	16.7	14.4	1.0

For BSPP version change N for P i.e. SB4PS.

For BSPT version change "N" for "T" i.e. SB4TS

For 3,000 psi version add prefix 'H' i.e. HSB4NS.

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal Seal materials: Body = PTFE - Stem = RTFE

See technical section for important additional valve data.

Dims are in mm (Appx)

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REF: AVCAT2K017

REV: 01



B & SB Compression Ended

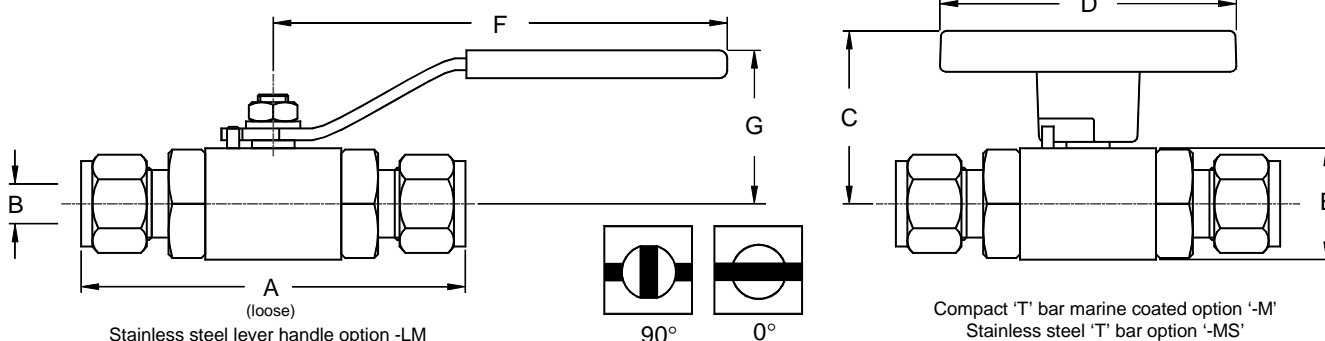
General Information

1,000 psi to 3,000 psi

The 'B' & 'SB' are three piece screw together barstock ranges of valve. They are a flexible design with options of single or twin ferrule compression type tube connector ends, with a 1,000 psi pressure rating as standard that can be up rated to 3,000 psi. The "SB" offers the opportunity to mount the valve to a control panel or actuator. The major benefits of using four panel mount holes instead of one single nut type are that this design eliminates the possibility of the valve turning underneath a panel.

Design Features

- Three piece design for easy maintenance.
- Instant installation into tubing pipework, no pipe thread or sealing problems.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Choice of single or twin ferrule ends to suit the requirements of most systems.
- Positive 90° action-position indication.
- Panel mount style can be supplied suitable for actuation.
- Repair kits available to extend valve life.
- Anti blow-out internally loaded stem for extra safety.
- Versatile design allows mixture of pipe threads, types and compression ends of different sizes.
- Full material traceability, valves 100 % tested.
- Pressure / Temperature rating -50°C to 230°C temperature differs for 3,000 psi version.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: for panel mount details see page 5

Part Numbers

Twin ferrule Part No.	Connection Size O.D.	A (loose)	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (kgs)
Imperial tube connections											
B2KS	1/4" O.D.	92	10	39	75	28	115	44	4.2	3.6	0.30
B3KS	3/8" O.D.	92	10	39	75	28	115	44	4.4	3.8	0.32
B4KS	1/2" O.D.	102	10	39	75	28	115	44	4.5	3.9	0.35
B6KS	3/4" O.D.	105	13	42	75	35	115	46	9.5	8.2	0.45
B8KS	1" O.D.	127	19	52	100	42	150	60	19	16.4	0.9
Metric tube connections											
BM6KS	6mm O.D.	92	10	39	75	28	115	44	2.1	1.8	0.30
BM8KS	8mm O.D.	94	10	39	75	28	115	44	2.6	2.2	0.32
BM10KS	10mm O.D.	95	10	39	75	28	115	44	3.8	3.3	0.35
BM12KS	12mm O.D.	102	10	39	75	28	115	44	4.2	3.6	0.45
BM15KS	15mm O.D.	102	10	39	75	28	115	44	4.4	3.8	0.45
BM20KS	20mm O.D.	127	13	51	100	48	150	60	9.5	8.2	0.9
BM22KS	22mm O.D.	127	19	51	100	48	150	60	19	16.4	0.9

Other sizes are available

For 3,000 psi version add H i.e. HB4KS

For single ferrule change K to Q i.e. B2QS

Bore is through the ball

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal Seal materials: Body = PTFE - Stem = RTFE

Dimensions in mm (Approx)

See technical section for important additional valve data.

Note: Bore may vary dependant upon end connection selected.

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REF: AVCAT2K018

REV: 00

S Series



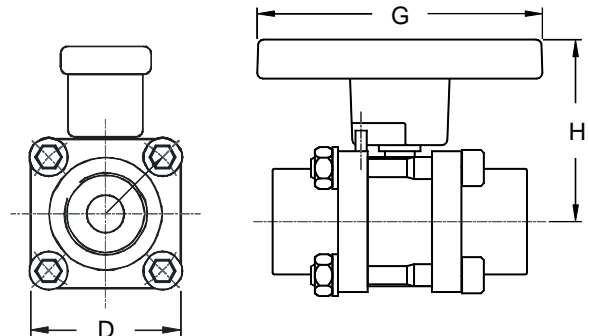
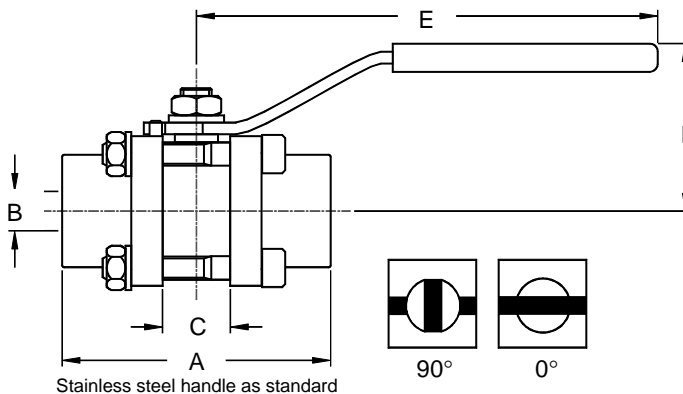
General Information

Sandwich style ball valve 1,000 psi to 3,000psi

The bolt together style or 'S' Series valve offers flexibility and interchangeability. It is manufactured with the choice of threaded, socket or butt weld ends for installing the valve into the pipeline. Once installed, it is easily maintained by removal of the centre section for renewal of the seats and seals prolonging the valve life. Being a 'Bolt together' design it is readily converted to actuator control. To ease maintenance, the centre section is sold separately, as are the maintenance / repair kits.

Design Features

- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Anti-blow-out internally loaded stem for safety.
- Replaceable centre section for economy.
- Can be actuated.
- Positive 90° action-position indication.
- Available in 3 pressure ranges S = 1,000 psi / RS = 2,000 psi / HS = 3,000 psi.
- Pressure / Temperature rating -50°C to 230°C, temperature differs for 3,000 psi version
- Full material traceability.
- Repair kits available to prolong valve life.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Compact 'T' bar marine coated option '-M'
Stainless steel 'T' bar option '-MS'

Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	G	H	CV	KV	Weight (kgs)
S2NS	1/4" NPT	68	10	17.4	38	115	37	75	47	4.2	3.6	0.4
S3NS	3/8" NPT	68	10	17.4	38	115	37	75	47	4.4	3.8	0.4
S4NS	1/2" NPT	68	10	17.4	38	115	37	75	47	4.5	3.9	0.4
S6NS	3/4" NPT	73	13	22.2	40	115	38	75	45	9.5	8.2	0.65
S8NS	1" NPT	102	19	32.5	50	150	44	75	52	19	16.4	1.0
S10NS	1 1/4" NPT	109	25	38.6	60	150	55	75	64	30	26	1.50
S12NS	1 1/2" NPT	118	32	47.6	76	170	90	-	-	49	42.4	2.70
S16NS	2" NPT	130	38	60.3	83	170	94	-	-	70	60.5	3.25
S20NS	2 1/2" NPT	150	50	69.9	114	215	83	-	-	119	103	6.00

For 3,000 psi version add 'H' i.e. HS4NS

For Socket Weld Substitute 'S' for 'P' i.e. S16SS.

For Butt Weld Substitute 'B' for 'P' i.e. S16BS.

For Centre Section Only Substitute 'O' for 'P' i.e. S16OS.

For 2,000 psi version add 'R' i.e. RS4NS

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal

Seal materials: Body = PTFE - Stem = RTFE

Note: 1 1/4" sizes and above are rated 2,000 psi max.

Dim's are in mm (Appx)

See technical section for important additional valve data.

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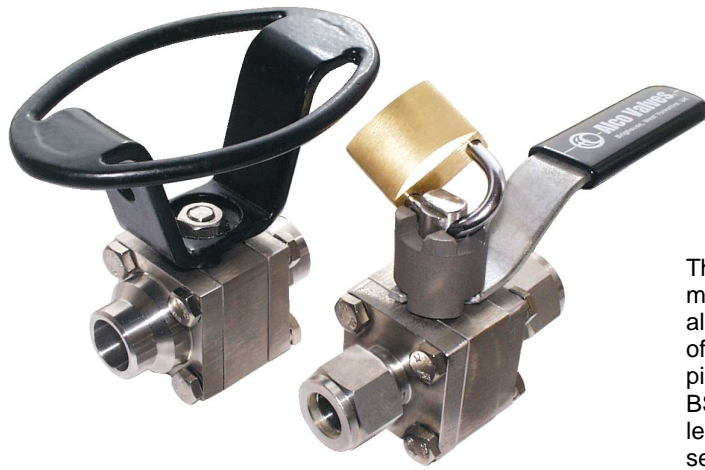


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REF: AVCAT2K019

REV: 01

SSB Series



Shown with oval Anti-accidental operation handle. Option -OVH Shown with St/St Security locking kit. Option -LLK-PAD

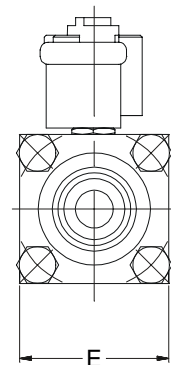
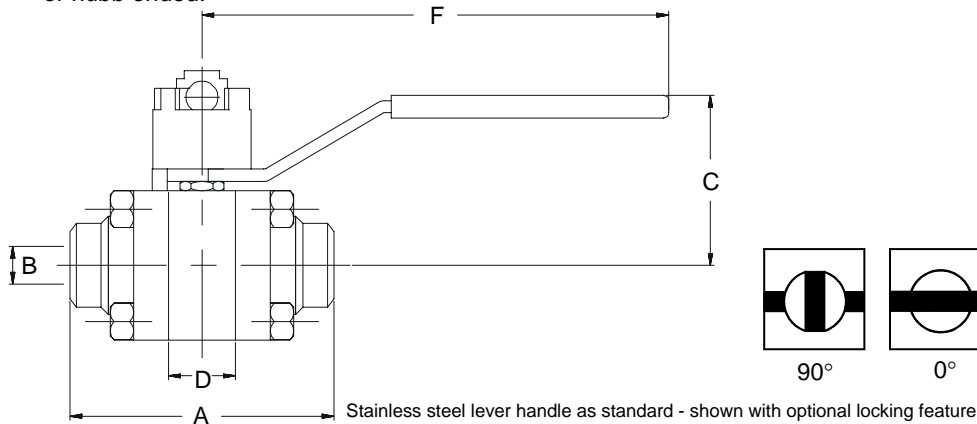
General Information

Fire safe ball valves Rated up to 3,000 psi

The rugged SSB range of Fire Safe Ball Valve is manufactured in 316 stainless steel (and certain super alloys). Available in sizes from 1/4" to 1". The SSB range offers Drop-centre accessibility for welding / positioning / pipe access or maintenance purposes. Fire safe tested to BS 6755 Part 2 and API 6FA / API 607. Available with lever handle and locking device for a higher level of security. The range can be fitted with pneumatic or electric actuators at our factory.

Design Features

- Pressure rated up-to 3,000psi as standard.
- Fire Safe to BS6755 Part-2 and API 607.
- All metallic sealing in fire conditions, with SLG / PTFE primary soft sealing for bubble tight shut off.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- 90° smooth action, low torque operation.
- Compact 3 piece, drop centre flexible design.
- Available in 316ss / Monel / Duplex / Hastalloy / 6MO
- Sizes from 1/8" to 1".
- Available with weld ends, threaded, flanges, compression or hubb ended.
- Pressure / Temperature rating -50°C to 230°C
- Bore sizes 10mm to 19mm.
- Repair kits sold separately for easy maintenance to extend service life.
- Highly flexible combinations of end connections due to 3 piece design i.e. 1" NPT female x 1/2" socket weld.
- Available with pneumatic, electric or hydraulic actuators.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	Cv	Kv	Weight (Kgs)
SSB2NS	1/4" NPT	68	10	45	18	50	115	2.5	2.2	0.7
SSB3NS	3/8" NPT	68	10	45	18	50	115	3.0	2.6	0.7
SSB4NS	1/2" NPT	68	10	45	18	50	115	4.2	3.6	0.65
SSB6NS	3/4" NPT	74	13	56	22	54	150	7.8	6.7	0.9
SSB8NS	1" NPT	102	19	60	32	64	150	16.7	14.4	1.8

Dim's are in mm (Appx)

For socket weld version change 'N' to 'S' i.e. SSB4SS

For butt weld version change 'N' to 'B' i.e. SSB4BS

For locking device and padlock add -LLK-PAD i.e. SSB4NS-LLK-PAD

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal Seal materials: Body = Graphoil - Stem = Graphoil

See technical section for important additional valve data.

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REF: AVCAT2K020

REV: 00

How to order valves up to 3,000 psi

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

**1/2" NPT male x female 316 Stainless Steel bodied 'B' series ball valve,
Monel® ball & stem, compact "T" bar handle rated 207 Bar (3,000 psi).**

The part number shown below is made up using the system :-

Bore type	Rated pressure	Valve series	Valve size	End connections	Material of construction/ body parts	Trim material (Ball and stem)	Options		
H	B	4	N	S	-	5	-	1	M
Blank = Std Bore F = Full bore	No letter = Standard rating R = 2,000 psi (138) Bar H = 3,000 psi (207) Bar	2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4" 8 = 1" 10 = 1 1/4" 12 = 1 1/2" 16 = 2" 20 = 2 1/2" 24 = 3" 32 = 4"	B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO, Super Duplex, Zirconium are available	B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads M16 = M16 x 1.5 metric 9/16 = 9/16 UN x 18 thread	-U = Duplex -5 = Monel 400 -6 = Incoloy -7 = Ali-bronze -8 = Hastalloy -9 = Cupro nickle -S3 = 316ss	-1M = One end male -2M = Double male ends -CAV = Cavity filled seats -DAG = Actuated, double acting -DG = Degreased and cleaned -S = Spanner flat handle -TACK = Tack welded end connectors -TAG = Identification Tagging -LLK = Lever locking device -DMH = Dead mans handle -EL = Electric actuator -SRG = Actuated, spring return -X = Down stream exhaust -CAVX = Cavity to down stream exhaust trim -LM = St/St lever handle -DG02 = Degreased for oxygen service			

Socket weld and butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K013

REV: 00

Ball Valves 3,000 psi to 10,000 psi

SN Series

Single nut panel mounting 6,000 psi to 10,000 psi

PB Series

High pressure ball valves rated up to 6,000 psi

PSB Series

High pressure panel mounting ball valves rated up to 6,000 psi

PB & PSB Series (Tube Ended)

High pressure panel mounting ball valves rated up to 6,000 psi

E Series

High pressure two piece ball valve rated 6,000 psi

E Series (Compression Ended)

Ball valves with twin ferrule compression ends 6,000 psi rated

“O” Seal Ended Valves

1,000 psi & 3,000 psi versions

Centurion™ Valve

Heavy duty, high cycle ball valves

Actuated Centurion™

Actuated high cycle ball valves

Rhino Valve

2-Way heavy duty ball valves 6,000 psi & 10,000 psi

UB Series

Heavy duty high pressure ball valves 10,000 psi rated

UE Series

Two piece high pressure ball valves 10,000 psi rated

FBV Series

Forged body ball valves 10,000 psi rated

How to order the above

An explanation of the part numbering system

SN Series



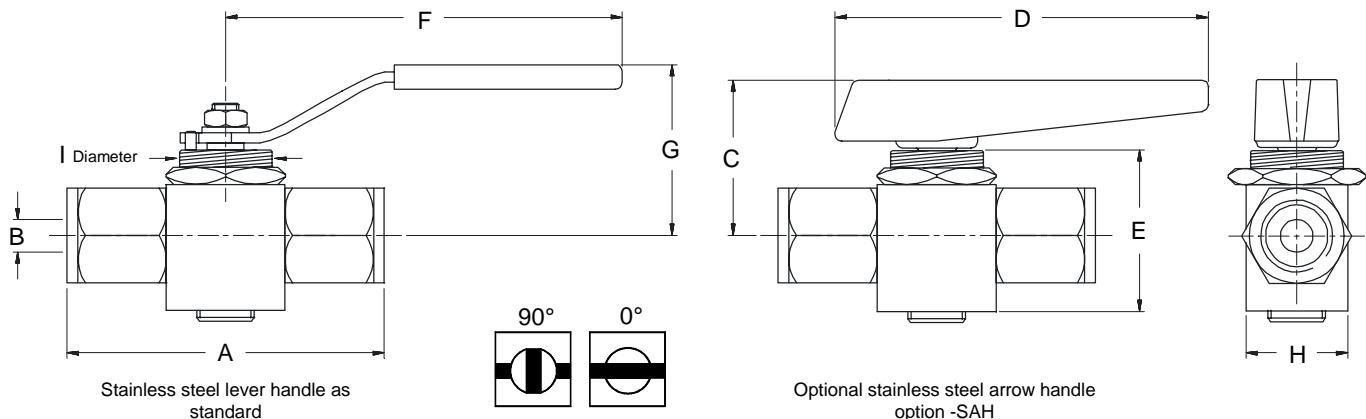
General Information

Single nut panel mounting 6,000 psi to 10,000 psi

The single nut mounted ball valve is rated from vacuum up to 10,000 psi dependent of seat selection. The single nut allows fast panel mounting. Max panel thickness is 10mm. A heavy duty yet compact design offering easy installation and maintainability. The "SN" is rated to 6,000 psi as standard with the option of 10,000 psi version.

Design Features

- Flexible 3 piece design for easy maintenance.
- Anti blow out internally loaded stem.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- 90° C low torque operation.
- Single nut panel mounting facility for ease of installation.
- Choice of ball and stem materials such as 316ss, Monel 400.
- Rated 6,000 psi as standard.
- Repair kits available to prolong the valves life.
- Pressure / Temperature rating -50°C to 250°C.
- Choice of end connections including NPT, BSPP, BSPT and twin ferrule compression ends.
- Choice of handle types stainless steel as standard, lever, compact flow indicating arrow style option -AS.
- 100% Hydrostatic testing.
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

Sv/St Part No.	Connections Size	A BSPP	A NPT	B (Bore)	C	D	E	F	G	H	I	CV	KV	Weight (Kgs)
SN2NS	1/4"	61	68	10	49	110	48	115	48	32	29	4.2	3.6	0.6
SN3NS	3/8"	74	74	10	49	110	48	115	48	32	29	4.4	3.8	0.6
SN4NS	1/2"	78	93	10	49	110	48	115	48	32	29	4.5	3.9	0.6
SN6NS	3/4"	85	95	13	52	110	51	115	51	38	29	7.8	6.7	0.8
SN8NS	1"	109	116	19	-	-	64	150	64	54	29	16.7	14.4	1.8

For BSPP change 'N' for 'P' i.e. SN4PS

For 10,000 psi (670 bar) version add 'U' i.e. USN4NS

Seat materials: 6,000 psi = Peek® - 10,000 = Peek® Seal Materials: Body = PTFE - Stem = Peek®

NOTE: 10,000 psi versions have reduced bores.

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K022

REV: 00

PB Series



Note: Also available with tube type compression ends (twin or single ferrule)

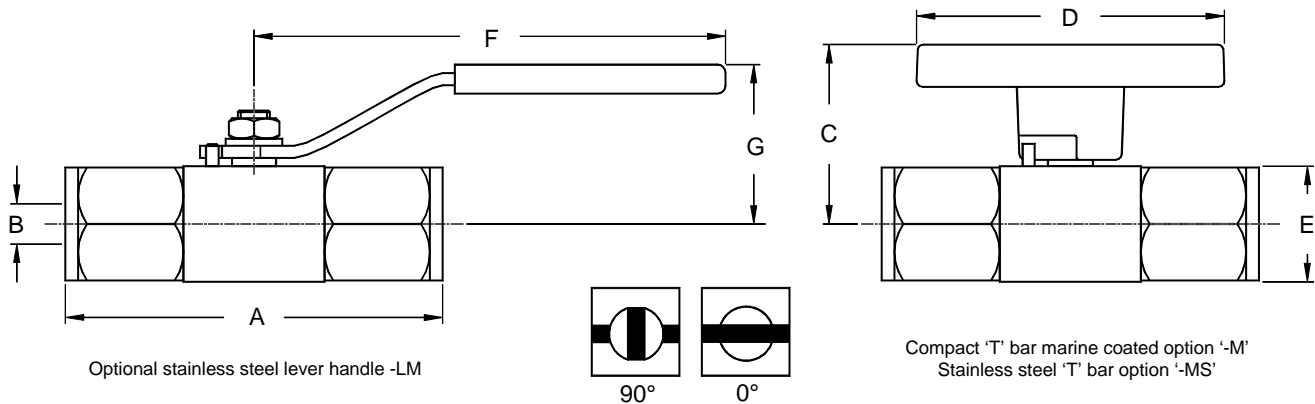
General information

High pressure ball valves Rated up to 6,000 psi

The 'PB' Series high pressure 3 piece ball valve, like it's lower pressure brother the 'B' Series, it offers flexibility where by the end connection sizes and types can be mixed i.e. PB4NS-12N offers 1/2" to 1/4" reduction in size across the valve. This design helps eliminate the use of fittings and additional unwanted potential leak paths. Rated at 414 Bar, the 'PB' Series is a reliable compact and flexible isolation ball valve with many options.

Design Features

- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Flexible 3 piece design for easy maintenance.
- Repair kits available should the valve need servicing to prolong its life.
- Available in 316ss / Monel / Duplex / Titanium / Hastalloy / Zirconium / Ali-Bronze.
- Anti-blow-out internally loaded stem for safety.
- Pressure / Temperature rating -50°C to 250°C
- Choice of handles and trim materials.
- Handle indicates OPEN/CLOSED position at a glance.
- Full material traceability
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Rated	Connections Size	A		B (Bore)	C	D	E	F	G	Cv	Kv	Weight (kgs)
			BSPP	NPT									
PB2NS	6,000 psi	1/4"	61	68	10	43	77	25	115	38	4.2	3.6	0.30
PB3NS	6,000 psi	3/8"	74	74	10	43	77	25	115	38	4.4	3.8	0.32
PB4NS	6,000 psi	1/2"	78	93	10	43	77	28	115	38	4.5	3.9	0.35
PB6NS	6,000 psi	3/4"	85	95	13	45	77	32	115	40	7.8	6.7	0.45
PB8NS	5,000 psi	1"	109	116	19	52	100	41	150	60	16.7	14.4	1.1

Dims are in mm (Appx)

For BSPP threads change 'N' to 'P' i.e. PB4PS.

Can be available full bore, contact our sales office for details

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

See technical section for important additional valve data.

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REF: AVCAT2K023

REV: 00

PSB Series

General Information

High pressure panel mounting ball valves Rated up to 6,000 psi

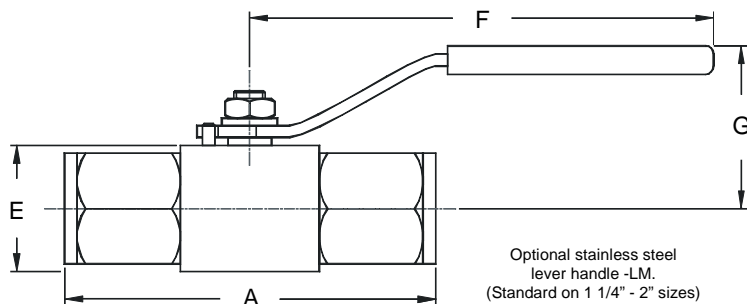
The Panel Mount range or 'PSB' Series is a variation of the standard 'PB' Series and as such retains its flexibility of end connection variations with the added advantage of the panel mounting facility onto a flat face. The 'PSB' valve is easy to mount to a control panel or actuator. The Major benefits of using four panel mount holes instead of one single nut type are that this design eliminates the possibility of the valve turning underneath a panel. This would cause undue stressing of the thread joint. Also four small holes can be beneficial for positioning, if access to the panel is reduced only two holes (diagonally opposite) can be used. The 'PSB' series has a pressure rating of 6,000 psi.

Design Features

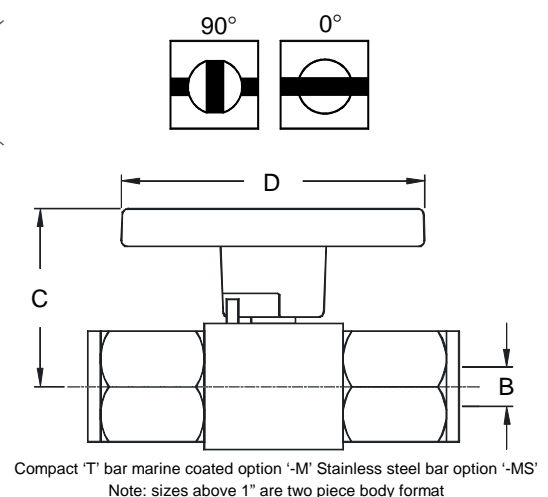
- Flexible 3 piece design for easy maintenance.
- Anti-blow-out internally loaded stem for safety.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Choice of handles & trim materials.
- 90° quick, light action handle indicates position.
- Repair Kits available should the valve need servicing.
- Pressure range 6,000 psi
- Pressure / Temperature rating -20°C to 250°C
- Choice of end connections.
- Can be supplied bare shaft & suitable for actuation (if specified)
- Full material traceability and 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

VALVE SIZE	H	I	J	K
1/4"-3/4"	27	24	5	27
1"	38	38	5	38
1 1/4"-2"	48	48	6	67

1/4"- 1" = 4 - off M4 Mounting Holes
1 1/4"- 2" = 4 - off M6 Mounting Holes



Optional stainless steel lever handle -LM.
(Standard on 1 1/4" - 2" sizes)



Compact 'T' bar marine coated option '-M' Stainless steel bar option '-MS'
Note: sizes above 1" are two piece body format

Part Numbers

St/St Part No.	Rated	Connections Size	A		B	C	D	E	F	G	Cv	Kv	Weight (kgs)
			BSPP	NPT									
PSB2NS	6,000 psi	1/4"	61	68	10	43	77	32	115	38	2.5	2.2	0.40
PSB3NS	6,000 psi	3/8"	74	74	10	43	77	32	115	38	3.0	2.6	0.43
PSB4NS	6,000 psi	1/2"	78	93	10	43	77	32	115	38	4.2	3.6	0.45
PSB6NS	6,000 psi	3/4"	85	95	13	45	77	38	115	40	7.8	6.7	0.70
PSB8NS	5,000 psi	1"	109	116	19	51	100	51	150	60	16.7	14.4	1.0
PSB10NS	6,000 psi	1 1/4"	165	165	25	-	-	91	170	90Ø	20	17.3	2.3
PSB12NS	6,000 psi	1 1/2"	165	165	25	-	-	91	170	90Ø	22	19	4
PSB16NS	6,000 psi	2"	165	165	25	-	-	91	170	90Ø	23	19.9	4.5

For BSPP change 'N' to 'P' i.e. PSB4PS

For BSPT change 'N' to 'T' i.e. PSB4TS

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K024

REV: 00



PB & PSB Tube ended

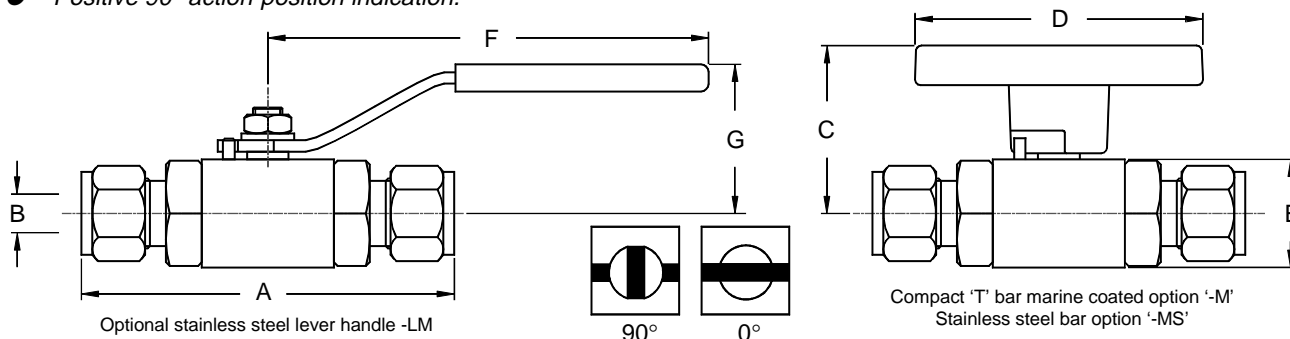
General Information

Ball valves with twin or single ferrule tube type compression ends. Rated up to 6,000 psi

Using the 'B' or 'SB' series centre section, the valve can be supplied in either single or twin ferrule style compression ends using the round body or the panel mount or 3-way body types to provide an economical method of installing the valve into instrumentation tubing systems. The PSB can be used for mounting actuators or fixing to panels.

Design Features

- Instant installation into tubing pipework, no pipe thread or sealing problems.
- Three piece design for easy maintenance.
- Repair kits available to extend valve life.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Choice of single or twin ferrule ends to suit the requirements of most systems.
- Rated 6,000 psi as standard.
- Positive 90° action-position indication.
- Pressure / Temperature rating -20°C to 250°C.
- Can be supplied bare shaft & suitable for actuation (if specified on the panel mount version).
- Anti blow-out internally loaded stem for extra safety.
- Versatile design allows mixture of pipe threads, types and compression ends of different sizes.
- Full material traceability, valves 100 % tested.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

Twin ferrule Part No.	Connections Size O.D	A	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (kgs)
Imperial tube connections		loose									
PB2KS	1/4" O.D	92	10	39	75	28	115	44	2.5	2.2	0.30
PB3KS	3/8" O.D	92	10	39	75	28	115	44	3.0	2.6	0.32
PB4KS	1/2" O.D	102	10	39	75	28	115	44	4.2	3.6	0.35
PB6KS	3/4" O.D	105	13	42	75	35	115	46	9.5	8.2	0.45
PB8KS	1" O.D	127	19	52	100	48	150	60	19	16.4	0.9
Metric tube connections											
PBM6KS	6mm O.D	92	10	39	75	28	115	44	2.1	1.8	0.30
PBM8KS	8mm O.D	94	10	39	75	28	115	44	2.6	2.2	0.32
PBM10KS	10mm O.D	95	10	39	75	28	115	44	3.8	3.3	0.35
PBM12KS	12mm O.D	102	10	39	75	28	115	44	4.2	3.6	0.45
PBM15KS	15mm O.D	102	10	39	75	28	115	44	4.4	3.8	0.45
PBM20KS	20mm O.D	105	13	42	75	35	115	46	9.5	8.2	0.45
PBM22KS	22mm O.D	127	19	51	100	48	150	60	19	16.4	0.9

For panel mount version (square body) change PB to PSB i.e. PSB4KS
For single ferrule change K to Q i.e. PB2QS

Bore shown is through the ball

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

Note: Bore may vary dependant upon end connection selected.

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REF: AVCAT2K025

REV: 00

E Series

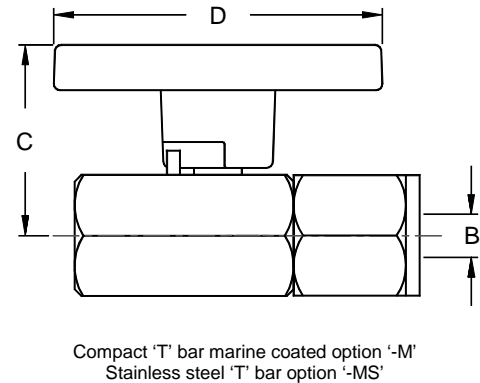
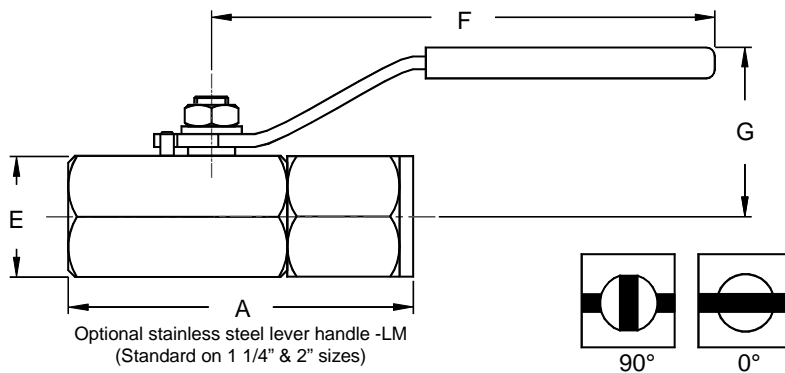
General Information

6,000 psi rated

The 'E' series ball valve is a hybrid of the 'A' and 'B' series ball valve range. The 'E' series has been designed to be lighter and more compact than the 'B' series range. It is available in a variety of configurations to suit many applications within the instrumentation and general engineering industries. The 'E' series comes with a compact 'T' bar handle as standard, or stainless steel lever. Other options are available including locking devices, extension handles etc.

Design Features

- Smooth low torque 90° operation.
- Two piece design means less leak paths
- Value for money by economical design.
- Compact overall length, reduced weight.
- Choice of trim materials.
- Available in BSPP, BSPT, NPT threads or twin ferrule Compression ends.
- Available in female x female, male x female or male x male versions.
- Anti-blow-out internally loaded stem for extra safety.
- Available in 316ss / Monel / Duplex.
- Pressure / Temperature rating -20°C to 250°C
- Repair kits available to extend valve life.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Many options available such as locking devices,
- Mounting brackets.
- Full material traceability.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

Stainless Steel	Connections Size	A	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
E2NS	1/4" NPT	67	10	44	77	28	115	38	2.5	2.2	0.30
E3NS	3/8" NPT	71	10	44	77	28	115	38	3.0	2.6	0.32
E4NS	1/2" NPT	80	10	44	77	28	115	38	4.2	3.6	0.36
E6NS	3/4" NPT	85	13	46	77	38	115	43	7.8	6.7	0.60
E8NS	1" NPT	111	19	48	100	50	150	52	16.7	14.4	1.20
E10NS	1 1/4" NPT	165	25	-	-	Ø83	170	90	20	17.3	5.80
E12NS	1 1/2" NPT	165	25	-	-	Ø83	170	90	22	19	5.70
E16NS	2" NPT	165	25	-	-	Ø83	170	90	23	19.9	5.50

For lever handle add '-LM' i.e. E4NS-LM.

For BSPP version change 'N' to 'P' i.e. E4PS.

For BSPT version change 'N' to 'T' i.e. E4TS.

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Note: Valves 1 1/4" size and above have lever handle only.

Valves above 1 1/4" size have round Ø body.

Dims are in mm(Appx)

See technical section for important additional valve data.

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REF: AVCAT2K026

REV: 00

E Series

Compression Tube Ended

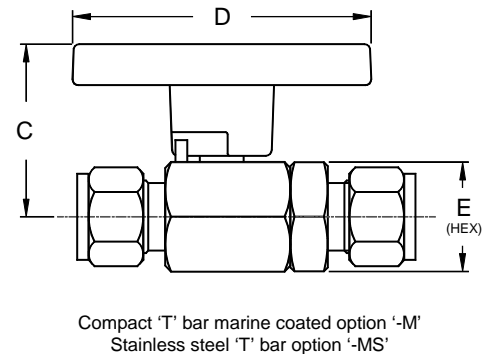
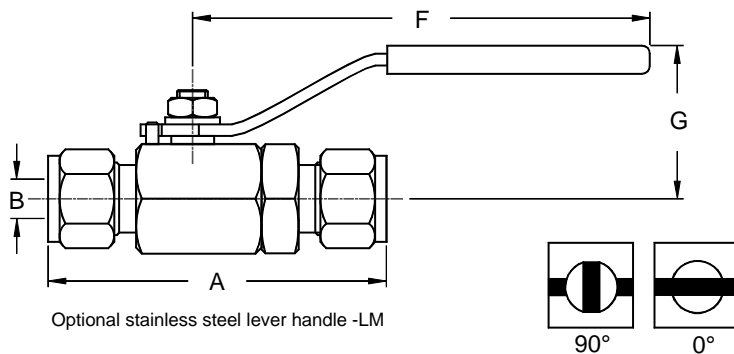
General Information

Ball valves with twin ferrule compression ends 6,000 psi rated

The 'E' series ball valve is a hybrid of the 'A' and 'B' series ball valve range. The 'E' series has been designed to be lighter and more compact than the 'B' series range with fewer potential leak paths having only one joint. It is available in a variety of configurations to suit many applications within the instrumentation and general engineering industries. The 'E' series comes with the compact 'T' bar handle as standard, or stainless steel lever. Other options are available including locking devices, extension handles etc.

Design Features

- Smooth low torque 90° operation.
- Value for money by economical two piece design.
- Compact overall length, reduced weight.
- Two piece design means less leak paths.
- Choice of trim materials i.e. monel, hastalloy etc.
- Twin or single ferrule compression end connectors.
- Anti-blow-out internally loaded stem for extra safety.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Service / spares kits available to extend service life.
- Many options available such as lever handle, tagged, locking devices etc.
- Pressure / Temperature rating -20°C to 250°C
- Twin ferrule compression ends are made by or interchangeable with other mainstream manufacturers brands.
- Metric sizes available 6mm / 8mm / 10mm / 12mm 15mm / 18mm / 22mm etc.
- Handle indicates open / closed positions at a glance.
- Working temperature up to 250°C at reduced pressure.
- Full material traceability.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	G	CV	KV	Weight (Kgs)
E2KS	1/4" Twin ferrule	83	10	44	77	28	115	41	2	1.73	0.25
E3KS	3/8" Twin ferrule	83	10	44	77	28	115	41	3	2.6	0.26
E4KS	1/2" Twin ferrule	87	10	44	77	28	115	41	4.2	3.6	0.30
E6KS	3/4" Twin ferrule	87	13	46	77	35	115	43	7.8	6.7	0.53
E8KS	1" Twin ferrule	127	19	51	100	42	150	60	16.7	14.4	0.7

Metric and imperial tube sizes available

For lever handle add '-LM' i.e. E4NS-LM.

For BSPP version change 'N' to 'P' i.e. E4PS.

For BSPT version change 'N' to 'T' i.e. E4TS.

Bore shown is through the bore

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K027

REV: 00



"O" Seal Ended Valves

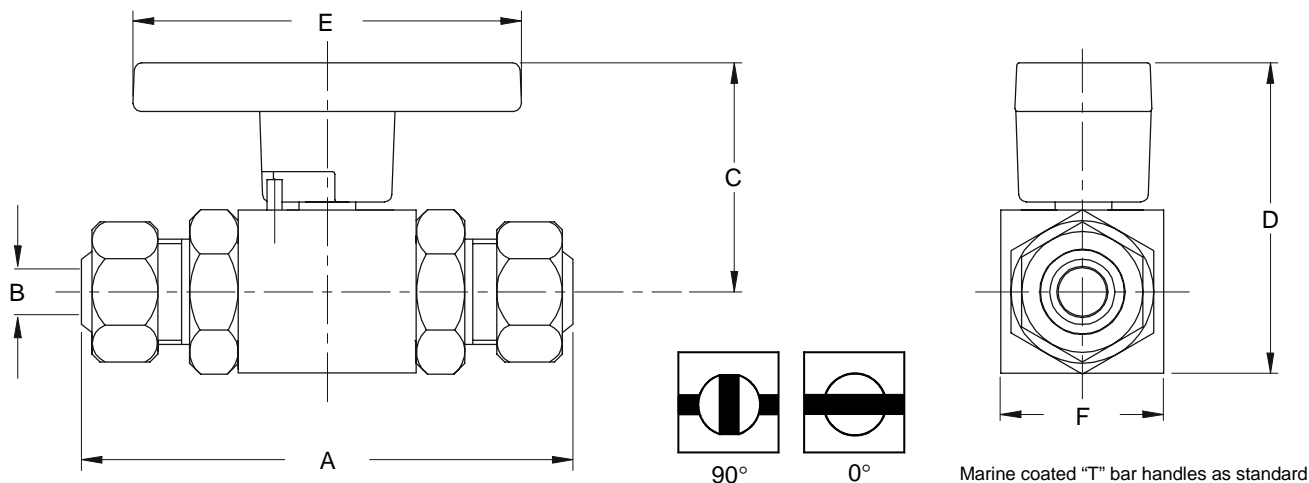
General Information

1,000 psi to 6,000 psi versions

The SB-Series is the original 3-piece screw together barstock range of valve. It is a flexible design with many options, rated at 1,000 psi as standard that can be up-rated to 6,000 psi. Having the benefit of a three-piece construction allows maintainability with service kits which are readily available. The SB is especially suited for use with the world renowned CPV "O" seal type tube connections. "O" seal utilises a polymer face ring, which due to the precision of this design, performs gas tight operation when tightened by hand. In addition to this "O" seal is virtually exempt from separation caused by vibration which can affect metal ring type fittings. CPV and Alco together bring you a reliable high performance precision made product with unique slip in slip out facility for high pressure gas or liquid services.

Design Features

- Flexible 3 piece design for easy maintenance.
- Full material traceability.
- 90° smooth action, handle indicates valve position.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Available in 316 ss / Monel / Duplex / 6Mo / Titanium / Hastalloy / Zirconium.
- Anti-blow-out internally loaded stem for safety.
- Slip in slip out design.
- Pressure / Temperature rating -20°C to 250°C.
- Can be supplied bare shaft & suitable for actuation (if specified)
- Repair kits available should the valve need servicing to prolong its life.
- 100% hydrostatic testing.
- A choice of handles and trim materials.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	Cv	Kv	Weight (kgs)
SB2CPVS	1/4"	85	10	45	62	77	32	2.5	2.2	0.3
SB3CPVS	3/8"	85	10	45	62	77	32	3.0	2.6	0.3
SB4CPVS	1/2"	93	10	45	62	77	32	4.2	3.6	0.3
SB6CPVS	3/4"	107	13	49	68	77	38	7.8	6.7	0.5
SB8CPVS	1"	124	19	55	81	100	51	16.7	14.4	1.1

Seat materials: 1000psi = PTFE - 2000psi = RTFE - 3000psi = Acetal - 6,000 psi = Peek
Seal materials: Body = PTFE - Stem = RTFE

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K028

REV: 00

One
Million
Cycle
Tested



Note: Shown with option -OVH handwheel

Centurion™ Valve

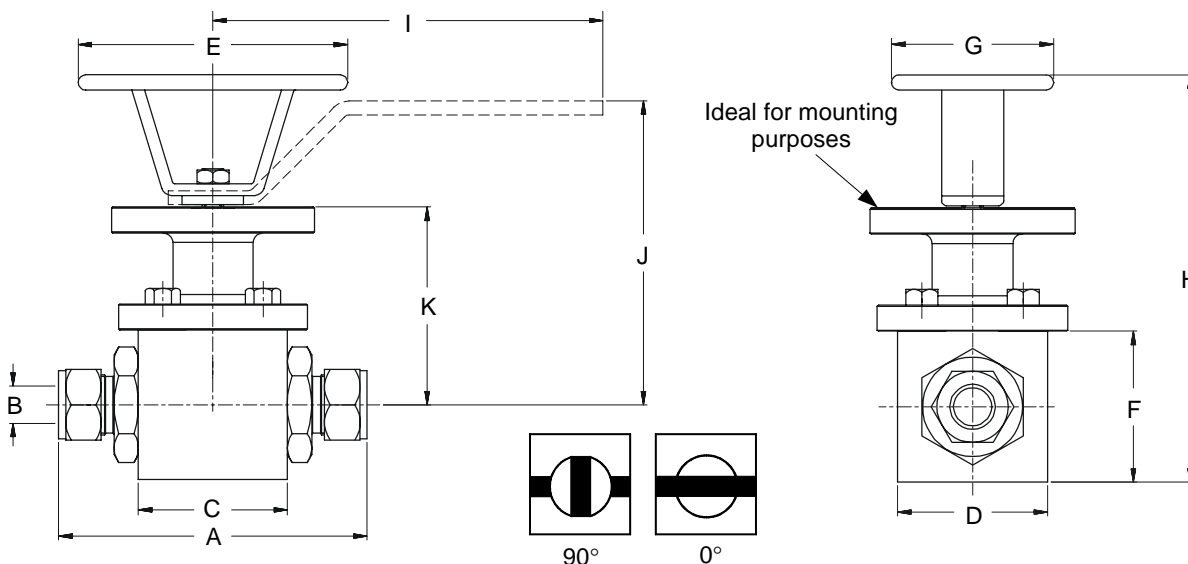
General Information

Heavy Duty, High Cycle Ball valve

The Alco Centurion valve was initially designed and developed as the primary isolation valve for the loading of natural gas powered public service vehicles. A duty where valve reliability and safety are the primary concerns. In order to prove the Centurion valves suitability for continuous repetitive operation it was cycle tested to one million cycles and far beyond, with the pressure integrity being tested with interim high pressure gas tests. The testing was third party witnessed and verified. This ensures that the Centurion is the optimum valve to select where the requirement calls for a long life maintenance free durable valve. The Centurion can also be fitted with CPV "O" seal flat face type tube connectors.

Design Features

- Rugged robust construction
- 6000 psi rated
- Bi-directional floating ball design
- Stem sealing which ensures leak proof operation under vacuum service
- Bubble tight shut off
- Certified and documented extended life data available
- Available with various connection options
- Readily adapted to powered actuation (ISO 5211 mounting flange optional)
- Operating temperature ranges of -20°C to +100°C (-4°F to 212°F)
- Accepts varying forms of handle and locks to suit customer requirements
- Manufactured in 316 St / St and other exotics.
- Full tracability of materials to DIN 50049 3.1.B for all major components
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	G	H	I	J	K	Weight (Kgs)
CBV4KS	1/2"	136	19	63	63	114	63	68	171	165	129	84	2.1
CBV6KS	3/4"	140	19	63	63	114	63	68	171	165	129	84	2.1
CBV8KS	1"	146	19	63	63	114	63	68	171	165	129	84	2.1

Dimension "B" is the bore through the ball

Seat material: 6,000 psi = Nylon 12 Seal material: Body = NBR - Stem = Turcon variseal

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K029

REV: 00



One
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Tested

Actuated Centurion™

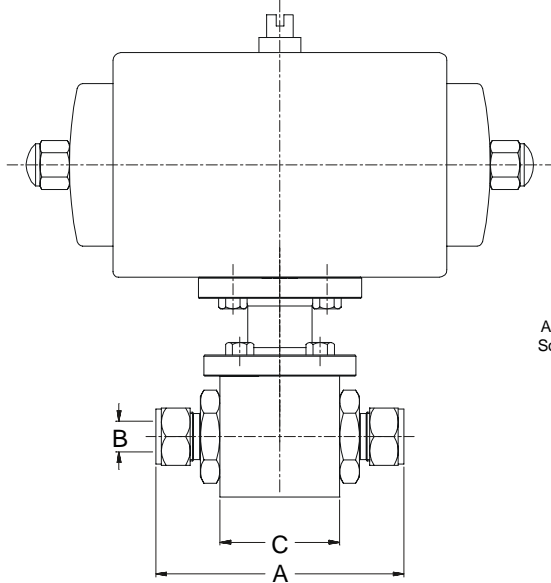
General Information

Rated up to 6,000 psi

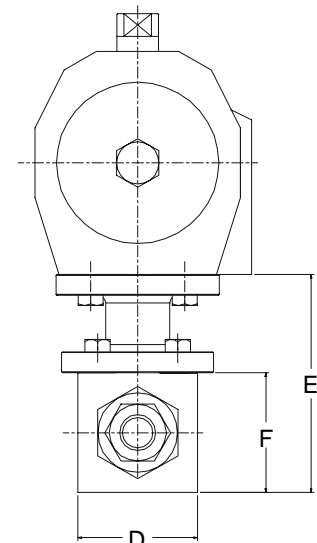
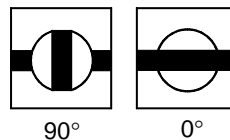
The Alco Centurion valve with its ISO 5211 mounting flange can be easily adapted to accept actuators for most forms of powered mechanical actuation hydraulic, pneumatic and electric. Customer specified or free issued actuators, which do not benefit from the ISO mounting, can be supplied via a bracket and drive piece. Shown is a double acting pneumatic actuator close coupled to a 19mm compression ended Centurion valve. The actuator is available in four sizes depending on the air supply available and has a torque output ranging from 64 to 2775 in/lbs (10 to 303 Nm).

Design Features

- Valve and actuator combination have undergone extensive third party witnessed extended life testing
- Available with all forms of powered actuation
- Actuators can be close coupled or mounted on spacer brackets
- Fail safe modes available, both open and closed whichever method of actuation is chosen
- Available with easily identifiable visual status indication
- Actuators can be fitted with limit switch boxes for open and closed positions
- Valve positioners can be fitted to enable the valves to operate in a closed loop control circuit
- Pneumatic actuators are available with NAMUR solenoid valve mounting pads
- Travel stops are integral with the actuators and adjustable
- Actuators have low hysteresis features incorporated
- Operating temperature ranges of -20°C to +100°C (-4°F to 212°F)
- Valve / actuator combination has been tested in salt spray environment for over 2000 hours without signs of corrosion
- Manual over rides available for most actuation forms



Available threaded NPT, BSPP, BSPT,
Socket Weld Ends, Butt Weld Ends etc.



Part Numbers

St/St Part No.	Connections Size	A (Loose)	B (Bore)	C	D	E	F	CV	KV	Weight (Kgs) Without Actuator
CBV4KS-ACT	1/2"	136	19	63	63	115	63	7.8	6.7	2.0
CBV6KS-ACT	3/4"	140	19	63	63	115	63	11.8	10.2	2.0
CBV8KS-ACT	1"	146	19	63	63	115	63	16.7	14.4	2.0

Bore shown is through the ball

Seat material: 6,000 psi = Nylon 12 Seal material: Body = NBR - Stem = Turcon variseal

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K030

REV: 00

General Information

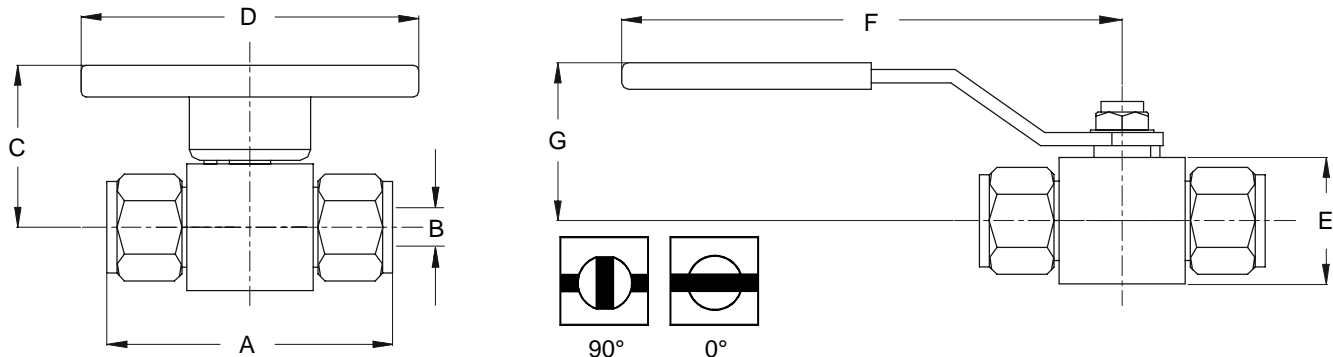
2 way Heavy duty ball valves 6,000 psi & 10,000 psi

The Rhino Range of valves are aptly named due to their tough, rugged, very strong construction and high design specification. The Rhino is a true "heavy duty small bore", multi-purpose ball valve that will withstand arduous services and unkind operator treatment. The Rhino can deliver a greater field life than other valves presently available in the market place. Rhino would suit any application where it may experience shock loading, impacts, thermal changes in excess of normal application parameters and anywhere that extra confidence in valving is required. The Rhino is available in sizes 1/4" to 1" with threaded, socket weld or even "quick to install" twin ferrule compression ends. Many standard options apply such as security locking feature, oval handle and actuated versions.



Design Features

- Rugged extra strong body construction with oversize handle, stem and ball for extra strength.
- *Rated upto 6,000 psi - to ASME B16.34 or 10,000 psi working pressure version.
- Seat options, PVDF / Peek
- Soft primary seating, with metal secondary seating.
- *Pressure / Temperature rating -20°C to 250°C
- Internally loaded anti-blow out stem for safety.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum services.
- Low operating torque under pressure.
- Flexible designs.
- Can be supplied fire safe to BS 6755 part 2 API 607.
- Light, quick and positive 90° action.
- Solid, strong and compact body construction.
- Available in 316ss / Monel / Duplex / Hastelloy other materials available on request.
- A choice of "T" bar or lever style handles, connection sizes and material of construction to suit your, or your clients application or safety level requirements.
- Panel mounting facility and stainless steel lever handle as standard.
- Full material traceability for all major components.
- 100% Hydrostatic and gas testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A NPT	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
RV2NS	1/4" female x female	70	10	52	100	42	150	48	2.5	2.2	0.58
RV3NS	3/8" female x female	74	10	52	100	42	150	48	3.0	2.6	0.60
RV4NS	1/2" female x female	86	10	52	100	42	150	48	4.2	3.6	0.62
RV6NS	3/4" female x female	95	13	56	100	45	150	52	7.8	6.7	0.9
RV8NS	1" female x female	125	19	-	-	63	200	62	16.7	14.4	1.8

Seat material: 6,000 psi = PVDF / Peek

*See pressure / temperature data

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REF: AVCAT2K031

REV: 00

UB Series

General Information

Heavy duty high pressure ball valve 10,000 psi rated

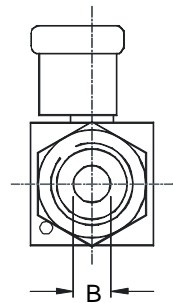
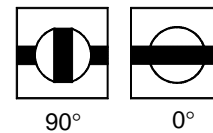
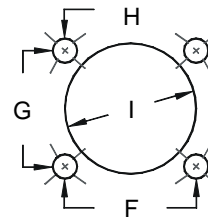
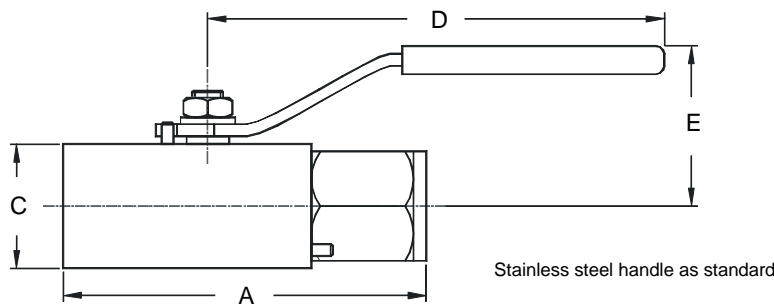
Alco are aware of the ever increasing operating pressures demanded by industry, and for this reason have developed the "UB" range of valves to accommodate these stringent requirements. The UB series high pressure valve has a working pressure of 10,000 psi with a body test at (15,000 psi). The UB Series is a tried and tested rugged design for high pressure applications. It comes with panel mounting holes and stainless steel handle as standard. Service / repair kits are available to prolong service / field life. Many options available such as locking device.

Design Features

- 2 piece design for safety.
- Quick 90° operation, lever handle standard.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Anti-blowout stem for safety.
- End pinned, stopping accidental removal or loosening by vibration.
- Available with 4-panel mounting holes M4 x 10 deep, can be actuated (if specified)
- Available in 316ss / Duplex / Monel.
- Pressure / Temperature rating -20°C to 250°C
- Available loose with socket weld or butt weld ends.
- Renewable seats and seals for long life.
- Repair kits available to prolong valve life.
- Floating ball design for first time seal.
- Available FULL bore or STANDARD bore.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

VALVE SIZE	F	G	H	I
1/4"-3/4"	27	24	5	27

4 – off M4 x 10 Mounting Holes



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	Cv	Kv	Weight (kgs)
UB2NS	1/4" NPT	89	10	32	115	36	2.5	2.2	0.7
UB3NS	3/8" NPT	92	10	32	115	36	3.0	2.6	0.7
UB4NS	1/2" NPT	95	10	32	115	36	4.2	3.6	0.7
UB6NS	3/4" NPT	110	13	38	140	40	7.8	6.7	1.0

For BSPT threads change 'N' to 'T' i.e. UB4TS

For BSPP version change "N" to "P" i.e. UB4PS

Note: check the international standards for pressure limitations of certain threads before you specify a thread form or end connection

Seat materials: 10,000psi = Peek® Seal materials: Body = PTFE - Stem = Peek

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K032

REV: 00

UE Series



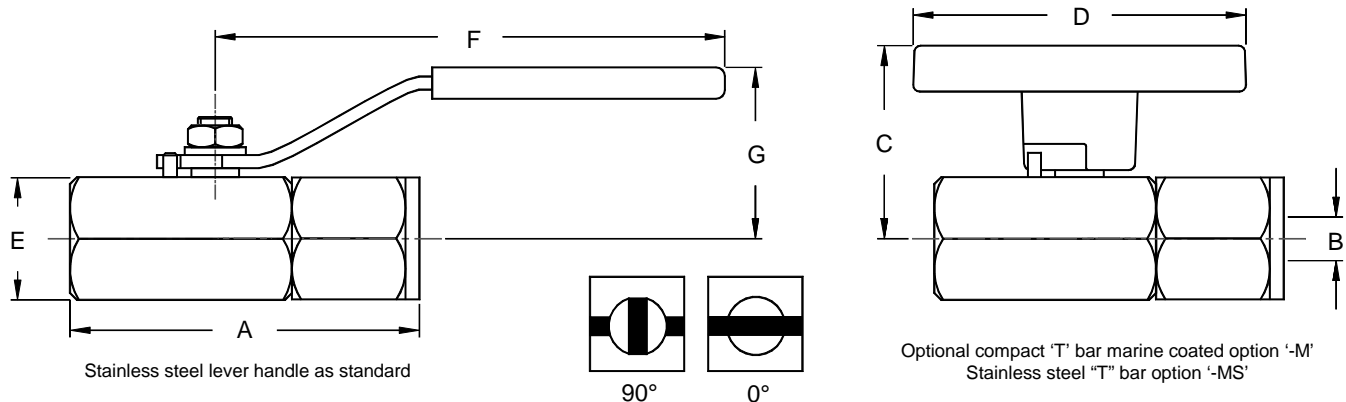
General Information

10,000 psi rated

The 'UE' series is a compact hybrid of the 'A' and 'B' series ball valve range. The UE series has been designed to be lighter and more compact than the 'UB' series range. It is available in a variety of configurations to suit many applications within the instrumentation and general engineering industries. The UE series comes with a stainless steel lever handle or the optional marine coated compact 'T' bar handle as standard. Fully floating ball for first time seal.

Design Features

- Smooth low torque 90° operation.
- Two piece design means less leak paths for extra safety.
- Value for money by economical design.
- Compact overall length, reduced weight.
- Choice of trim materials.
- Available in BSPP, BSPT, NPT threads or twin ferrule Compression ends (subject to rating).
- Available female x female, male x female or male x male.
- Available in 316ss / Monel / Duplex.
- Anti-blowout internally loaded stem for extra safety.
- Pressure / Temperature rating -20°C to 250°C
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Many options available such as locking devices,
- Service repair kits available to extend field life.
- Stainless steel lever handle as standard.
- Full material traceability.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
UE2NS	1/4" NPT	89	10	44	77	32	115	40	2.5	2.2	0.25
UE3NS	3/8" NPT	92	10	44	77	32	115	40	3.0	2.6	0.26
UE4NS	1/2" NPT	95	10	44	77	32	115	40	4.2	3.6	0.30
UE6NS	3/4" NPT	110	13	46	77	38	150	52	7.8	6.7	0.53
UE8NS	1" NPT	124	19	-	-	64	170	75	16.7	14.4	1.1

Standard valve has lever handle.

For 'T' bar handle add '-M' i.e. E4NS-M.

For BSPP version change 'N' to 'P' i.e. E4PS.

For BSPT version change 'N' to 'T' i.e. E4TS.

Seat materials: 10,000psi = Peek® Seal materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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FBV Series

General Information

Forged body ball valve 10,000 psi rated

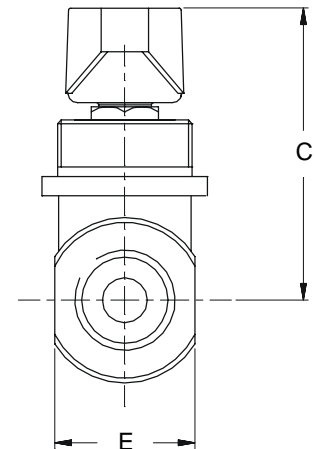
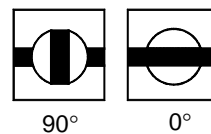
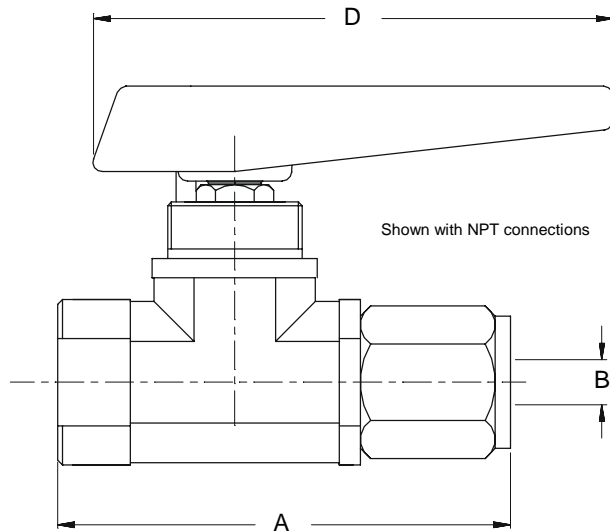


Shown with twin ferrule, tube type compression ends

High pressure, high integrity forged body construction. The Alco FBV series offers high pressure shut off with the added bonus of having very few potential leak paths. Single nut style panel mounting makes panel fitting easy and orientation difficulties are overcome. The FBV series comes as standard with a stainless steel flow indication arrow style handle. Twin ferrule compression end connectors are also available and due to the high specifications of the materials of construction the FBV is suitable for use in aggressive, corrosive environments.

Design Features

- 2 piece design for safety.
- Quick 90° operation, lever handle standard.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Anti-blowout stem for safety.
- Single nut panel mounting as standard.
- Available in 316ss / Duplex / Monel.
- Renewable seats and seals for long life.
- Pressure / Temperature rating -20°C to 250°C
- Available loose with socket weld or butt weld ends.
- Can be supplied with twin ferrule compression ends.
- Available FULL bore or STANDARD bore up to 1/2".
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B (Bore)	C	D	E	Cv	Kv	Weight (kgs)
FBV2NS	1/4" NPT	90	10	64	109	28	2.5	2.2	0.4
FBV3NS	3/8" NPT	93	10	64	109	28	3.0	2.6	0.4
FBV4NS	1/2" NPT	96	10	64	109	28	4.2	3.6	0.4
FBV6NS	3/4" NPT	105	13	64	109	38	7.8	6.7	0.8

Dims are in mm (Appx)

For compression ends change "N" to "K" i.e. FBV4KS
For 1/2" NPT male x 1/2" NPT female add 1M i.e. FBV4NS-1M
Seat materials: 10,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

See technical section for important additional valve data.

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REF: AVCAT2K034

REV: 00

How to order valves 3,000 to 10,000 psi

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

1/2" NPT male x female 316ss 'UB' series ball valve, Monel® trim, lever handle rated 680 BAR (10,000 psi)

The part number shown below is made up using the following system:-

Bore type	Valve series	Valve size	End connections	Material of construction/ body parts	Trim material (Ball and stem)	Options				
	U	B	4	N	S	-	5	-	1	M
Blank = Std Bore F = Full bore			2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4" 8 = 1" 10 = 1 1/4" 12 = 1 1/2" 16 = 2" 20 = 2 1/2"	D = Ali-Bronze H = Hastalloy C276 I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex T = Titanium Note: Other materials such as 6MO, Super Duplex, Zirconium are available	-U = Duplex -5 = Monel 400 -6 = Incoloy -7 = Ali-bronze -8 = Hastalloy -9 = Cupro nickle -S3 = 316ss					
PB = Series Barstock, three piece E = Series Barstock, two piece PSB = Square Body (Panel mounting) SN = Panel mounting single nut type FBV = 2 piece forged body UB = Two piece design UE = Two piece design			B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads			-1M = One end male -2M = Double male ends -CAV = Cavity filled seats -DAG = Actuated, double acting -DG = Degreased and cleaned -S = Spanner flat handle -TACK = Tack welded end connectors -TAG = Identification Tagging -CAVX = Cavity to down stream exhaust trim -DMH = Dead mans handle -EL = Electric actuator -SRG = Actuated, spring return -DG02 = Degreased for oxygen service				

Socket weld and butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

Multi-Way Ball Valves

3 Series

Ball valve multi-port gauge valves 1,000 psi to 6,000 psi

3-Way SB Series

Multi-port panel mounting ball valves rated 1,000 psi to 3,000 psi

3-Way PSB Series

High pressure Multi-port panel mounting ball valves rated up to 6,000 psi

3-Way USB Series

High pressure Multi-port ball valves rated up to 10,000 psi

3-Way Rhino Valve

3-Way heavy duty ball valves 6,000 psi & 10,000 psi

3T Series

3-Way T ported ball valves 6,000 psi rated

X4 Series

4-Way ball valves 6,000 psi rated

X5 Series

5-Way - 1 x bottom inlet x 4 selectable outlets 6,000 psi & 10,000 psi rated

Specialised ball Valves & Manifolds

Various types shown

How to order the above

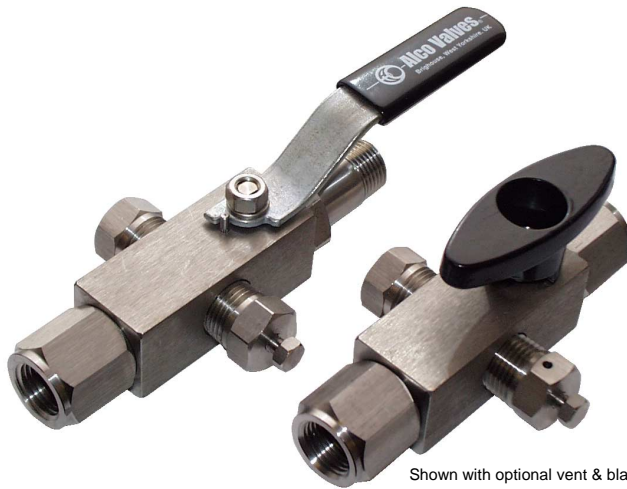
An explanation of the part numbering system

3 Series

General Information

Ball valve multi-port gauge valves 1,000 psi to 6,000 psi

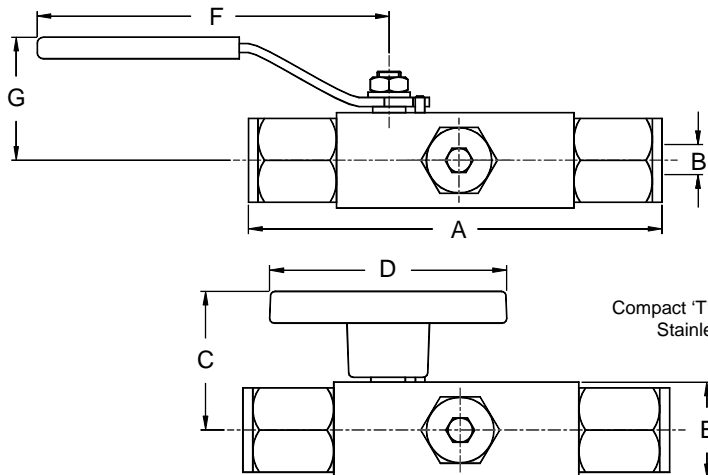
The multiport gauge (ball valve) is designed to provide an economical method for mounting gauges with the facility to test and calibrate gauges and pressure switches. The '3' series, being a ball valve construction / clear bore, offers roddability due to its straight through flow passage. The valve is available with male, female, compression end or standpipe inlet and 3 x outlets. It can also be supplied complete with a swivel gauge adapter for 360° rotation gauge positioning.



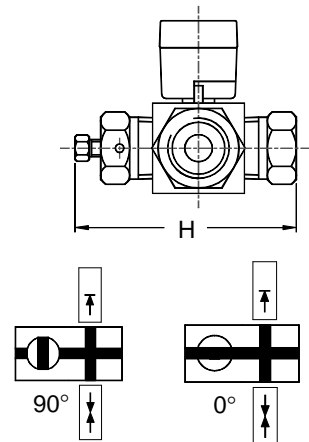
Shown with optional vent & blanking plugs

Design Features

- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Anti-blowout internally loaded stem for safety.
- Positive 90° action.
- Replaceable seats and seals for extended life.
- Choice of inlet style i.e. male, female, compression end or standpipe connection.
- Available with vent and blanking plugs (if specified).
- Pressure / Temperature rating -20°C to 250°C temperature differs at 3,000 psi.
- Extended versions are made to allow for pipe lagging of 50mm or 100mm.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Compact 'T' bar marine coated option '-M'
Stainless steel bar option '-MS'



Part Numbers

St/St Part No.	Connections Size	A NPT	B (Bore)	C	D	E	F	G	H	Cv *	Kv *	Weight (kgs)
32MNS	1/4" NPT MXF	121	10	48	75	32	115	38	70	2.0	1.7	0.7
32FNS	1/4" NPT FXF	111	10	48	75	32	115	38	70	2.2	1.9	0.6
34MNS	1/2" NPT MXF	152	10	48	75	32	115	38	70	4.2	3.6	0.8
34FNS	1/2" NPT FXF	137	10	48	75	32	115	38	70	4.2	3.6	0.7
32KNS	1/4" O.D. X 1/4" F NPT	126	10	48	75	32	115	38	70	4.2	3.6	0.6
34KNS	1/2" O.D. X 1/2" F NPT	140	10	48	75	32	115	38	70	4.2	3.6	0.7

* = Inline through bore connection.

For 3,000 psi add Prefix 'H' i.e. H34FNS

For 6,000 psi add Prefix 'P' i.e. P34FNS

For vent and blanking plugs add 'VP'-'BP' i.e. 34MNS - 'VP' - 'BP'

Seat materials: 1000 psi = PTFE - 2000 psi = RTFE - 3000 psi = Acetal - 6,000 psi = Peek®

Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.
Note: Bore may vary dependant upon end connection selected.

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REF: AVCAT2K036

REV: 00

3-Way SB Series

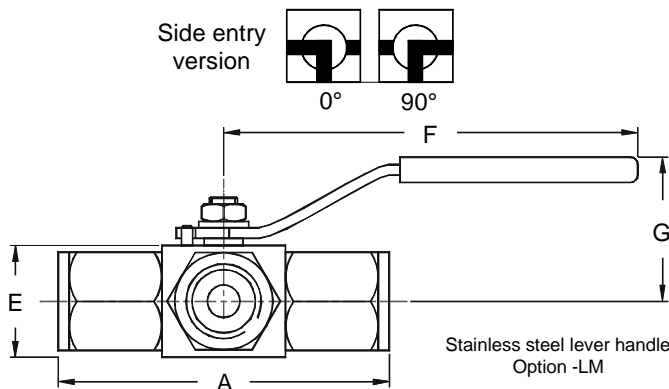
General Information

1,000 psi to 3,000 psi rated

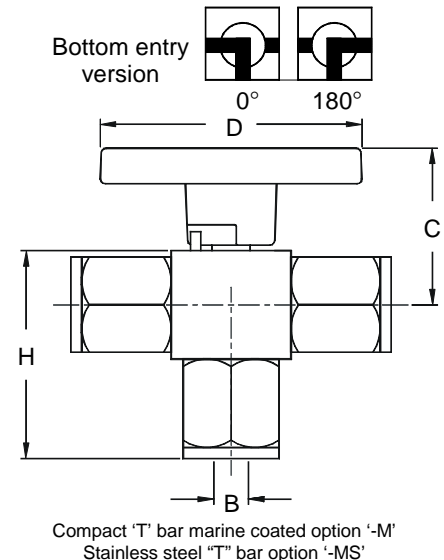
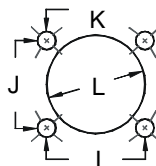
The 3-way L-Port diverter valves are an economical and safe method of diverting high pressure lines, where several high 2-way valves may have been used. Ensuring an altogether safe, compact and easy to install solution to low and high pressure diversion. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, brass, carbon steel, monel, hastalloy, titanium, duplex and other exotic alloys. Many options apply including locking devices, actuator operation etc.

Design Features

- Rated 1,000 psi (SB) and 3,000 psi (HSB).
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Suitable for panel mounting (with T bar) or actuation.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Available in 316ss/Monel / Duplex / Hastalloy / Titanium / Carbon Steel
- Pressure / Temperature rating -50°C to 230°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Low operating torque under pressure.
- Panel mounting facility as standard, ideal for actuation.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



VALVE SIZE	I	J	K	L
1/4"-3/4"	27	24	5	27
1"	38	38	5	38
4 Holes M4 x 10 mm deep				



Note: 1" valves come with lever handle only

Note: Should side loading be required consult factory.

Part Numbers

St/St Part No.	Connections FxFx Bottom entry	A BSPP	A NPT	B (Bore)	C	D	E	F	G	H BSPP	H NPT	Cv	Kv	Weight (kgs)
SB2NS-3B	1/4" NPT	61	68	10	39	77	25	115	38	54	57	1.5	1.3	0.6
SB3NS-3B	3/8" NPT	74	74	10	39	77	25	115	38	61	61	1.5	1.3	0.6
SB4NS-3B	1/2" NPT	78	93	10	39	77	28	115	38	61	70	1.5	1.3	0.6
SB6NS-3B	3/4" NPT	85	95	13	42	77	32	115	40	68	74	5.0	4.3	0.9
SB8NS-3B	1" NPT	109	116	19	48	100	41	150	60	85	89	11.3	9.8	1.7

Add 'H' for 3,000 psi version i.e. HSB4NS-3B
Change '3B' to '3L' for side entry version i.e. SB3NS-3L
Change 'N' to 'P' for BSPP threads i.e. SB4PS-3L
Change 'N' to 'T' for BSPT threads i.e. SB4TS-3L
Seat materials: 1,000 psi = PTFE - 2000 psi = RTFE - 3000 psi = Acetal
Note: temperatures differ on different pressure ratings

Seal Materials: Body = PTFE - Stem = RTFE

See technical section for important additional valve data.

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REF: AVCAT2K037

REV: 00

3-Way PSB Series

General Information

6,000 psi rated

The 3-way L-Port diverter valves are an economical and safe method of diverting high pressure lines, saving the use of several high pressure 2-way valves. Ensuring an altogether safe, compact and easy to install solution to high pressure diversion. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, monel, hastalloy, titanium, duplex and other exotic alloys.

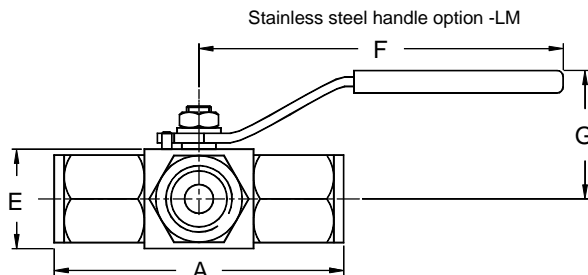
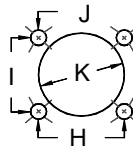


Design Features

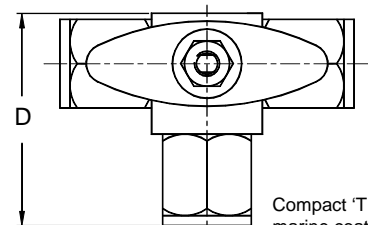
- Low operating torque under pressure.
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Can be supplied suitable for actuation if specified.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Repair kits available should the valve require maintenance to prolong its service life.
- Pressure / Temperature rating -20°C to 250°C
- Choices of 'T' bar or lever handle, connection sizes and material of construction.
- Panel mounting facility as standard (4 off M4 x 10mm).
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

VALVE SIZE	H	I	J	K
1/4"-3/4"	27	24	4	27
1"	38	38	4	38

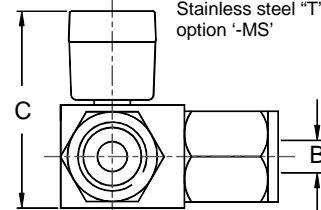
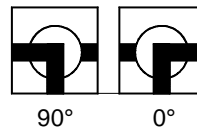
4 Holes M4 x 10 mm deep



Note: Should side loading be required, consult the factory



Compact 'T' bar
marine coated
option '-M'
Stainless steel 'T' bar
option '-MS'



Note: for severe service version, see our Rhino valve range

Part Numbers

St/St Part No.	Connections FxFx side entry	A BSPP	A NPT	B (Bore)	C	D NPT	D BSPP	E	F	G	CV	KV	Weight (Kgs)
PSB2NS-3L	1/4" NPT	61	68	6	58	52	48	32	115	42	1.5	1.3	0.6
PSB3NS-3L	3/8" NPT	74	74	6	58	55	53	32	115	42	1.5	1.3	0.6
PSB4NS-3L	1/2" NPT	78	93	6	58	64	55	32	115	42	1.5	1.3	0.6
PSB6NS-3L	3/4" NPT	85	95	13	58	68	62	38	115	42	5.0	4.3	0.8
PSB8NS-3L	1" NPT	109	116	19	84	85	81	50	165	80	11.3	9.8	1.2

Change '3L' to '3B' for bottom entry version i.e. PSB4NS-3B

Change 'N' to 'P' for BSPP threads i.e. PSB4PS-3L

Change 'N' to 'T' for BSPT threads i.e. PSB4TS-3L

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K038

REV: 01

3-Way USB Series

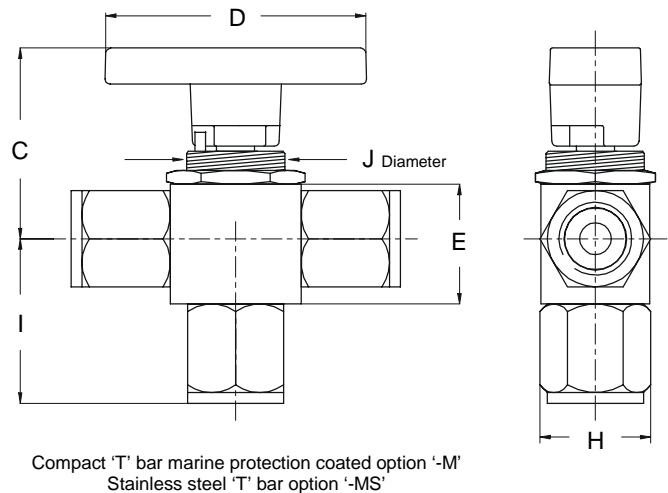
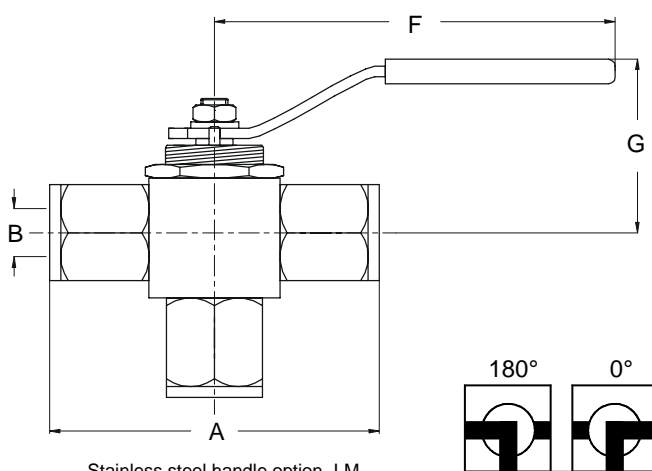
General Information

10,000 psi rated

The 10,000 psi 3-way L-Port Diverting ball valve range are bottom entry with 180° & 90° action. The USB offers low torque smooth positive action with floating seat design. 4-piece flexibility, with the added advantage of single nut panel mounting facility. Dynamic seats and Trunnion Mounted Ball design, a compact way to divert high pressure lines safely. Materials of construction include 316 stainless steel, monel, hastalloy, titanium, duplex and other exotic alloys. Many other standard options apply including lever handle, locking devices, actuators etc.

Design Features

- Rated up to 10,000 psi.
- Flexible 4 piece design.
- 180° operation as standard (90° operation version can be supplied).
- Anti blow out stem for safety.
- Dynamic Seats and Trunnion Mounted Ball.
- Light, quick and positive 180° action.
- Single nut type Panel mounting facility for easy panel installation or actuation.
- Pressure / Temperature rating -20°C to 250°C.
- Available in 316ss/Monel/Duplex.
- Repair Kits available to prolong valve life.
- Fitted with compact "T" bar handle as standard.
- A choice of handle, connection sizes and material of construction.
- 100% Hydrostatic testing & Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: this valve is for bottom entry use only

Part Numbers

St/St Part No.	Connections FxFxF Bottom entry	A BSPP	A NPT	B (Bore)	C	D	E	F	G	H	I BSPP	I NPT	J Clearance	CV	KV	Weight (kgs)
USB2NS-3B	1/4" NPT	62	68	5	58	78	32	115	42	32	33	37	28	1.5	1.3	0.9
USB3NS-3B	3/8" NPT	74	74	5	58	78	32	115	42	32	39	39	28	1.5	1.3	0.9
USB4NS-3B	1/2" NPT	78	93	5	58	78	32	115	42	32	41	48	28	1.5	1.3	0.9

For BSPT change 'N' to 'T' i.e. USB4TS-3B

For BSPP change 'N' to 'P' i.e. USB4PS-3B

For stainless steel lever handle add -LM

Seat materials: 10,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dimensions are in mm (Approx)

See technical section for important additional valve data.

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REF: AVCAT2K039

REV: 00

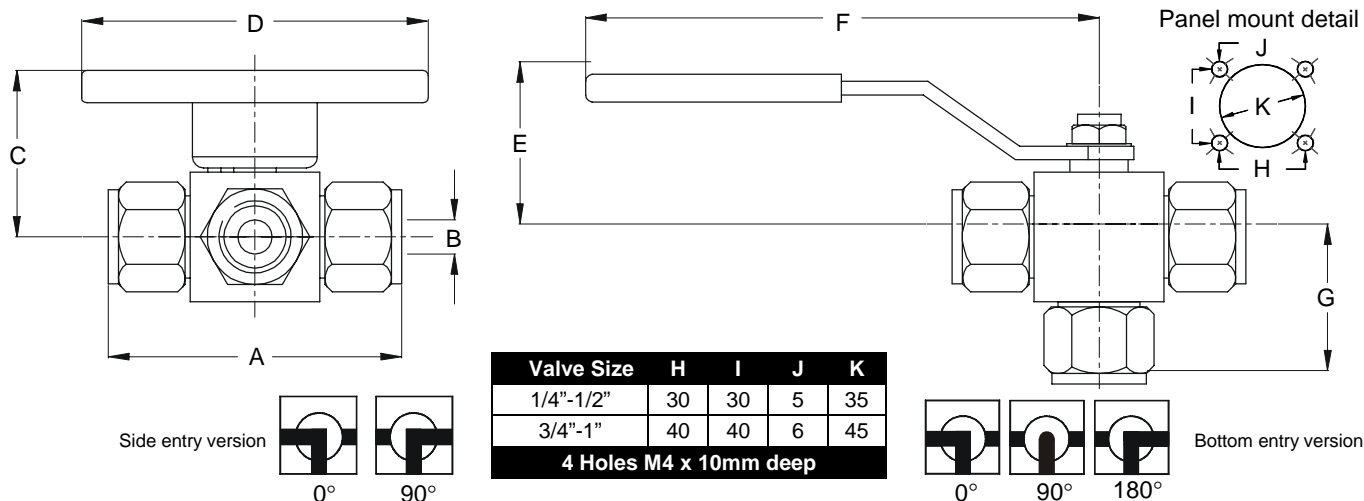
General Information

3 way heavy duty ball valves 6,000 psi & 10,000 psi

The Rhino valve is aptly named due to its strong and rugged construction and high design specification. The Rhino is a true "heavy duty small bore" multi-purpose ball valve that will withstand arduous services and unkind operator treatment. The Rhino can deliver a greater field life than other valves presently available in the market place. Because of this the Rhino would suit any application where it may experience shock loading, impacts, thermal changes in excess of normal application parameters. Or any application where extra confidence is required to be sure failure is minimised. The Rhino is available in sizes 1/4" to 1" with threaded, socket weld or twin ferrule compression ends. Available in side or bottom entry 3-way (L-ported) versions.

Design Features

- Oversize handle, stem and ball for extra strength.
- *Rated upto 6,000 psi - to ASME B16.34 or 10,000 psi working pressure version.
- Soft primary seating, with metal secondary seating.
- Available in 316ss / Monel / Duplex / Hastelloy.
- Panel mounting & stainless steel lever handle as standard.
- Internally loaded anti-blow out stem for safety.
- Low operating torque under pressure.
- Flexible design with strong and compact body.
- Light, quick and positive 90° action (180° action on bottom entry version).
- *Pressure / Temperature rating -20°C to 250°C or higher temperature option (-HT) see graph.
- A choice of "T" bar or lever style handles, connection sizes and material of construction.
- Full material traceability for all major components.
- 100% Hydrostatic and gas testing.
- Can be side loaded without the disadvantages of being a trunnion ball (small bore size).
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A NPT	B (Bore)	C	D	E	F	G	Cv	Kv	Weight (Kgs)
RV2NS-3L	1/4"	70	10	52	77	38	150	48	1.5	1.3	0.60
RV3NS-3L	3/8"	74	10	52	77	38	150	48	1.5	1.3	0.62
RV4NS-3L	1/2"	86	10	52	77	38	150	48	1.5	1.3	0.65
RV6NS-3L	3/4"	95	13	56	77	45	150	52	5	4.3	0.95
RV8NS-3L	1"	125	19	-	-	63	200	62	11.3	9.8	2

Note: BSPP & BSPT dims are equal to NPT dims - Change '3L' to '3B' for bottom entry version i.e. RV4NS-3B

Change 'N' to 'P' for BSPP threads i.e. RV4PS-3L - Change 'N' to 'T' for BSPT threads i.e. RV4TS-3L

Seat options, PTFE, Peek®, Graphoil (high temperature) Seal materials: body = PTFE - Stem = Peek® - HT = graphoil

See technical section for important additional valve data.

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REF: AVCAT2K040

REV: 00

3T Series



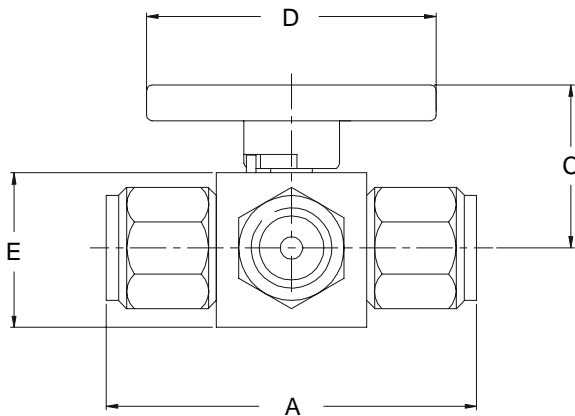
General Information

3-Way T Ported Ball 6,000 psi rated

The Alco 3T series "T" ported high pressure diverting ball valve range offers a compact and safe way to divert, control, vent, or sample high pressure liquid or gas mediums. Manufactured from high integrity bar-stock material the "3T" is suitable for use in hostile environments. Available in threaded sizes from 1/4" to 1". The "3T" is available in several flow configurations (shown below) offering more flexibility and usefulness to any system design. Various handle orientations can be specified at the time of the order, otherwise 3T1 (configuration 1) is supplied as standard. Lever handle, locking device and actuators can be fitted as options.

Design Features

- High pressure up to 6,000 psi.
- "T" ported ball design for various high pressure flow diversions or isolation orientation.
- Low operating torque under pressure.
- Flexible five piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Light, quick and positive 90° action side entry.
- 3 handle orientations for two flow formats.
- Soft seat for first time bubble tight diversion or isolation.
- Available in sizes from 1/4" to 1" thread connections.
- Pressure / Temperature rating -20°C to 250°C
- Suitable for actuation (if specified)
- Choices of 'T' bar or lever handle, connection sizes and material of construction.
- Repair kits available should the valve require maintenance to prolong its service life.
- Panel mounting facility as standard.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Handle

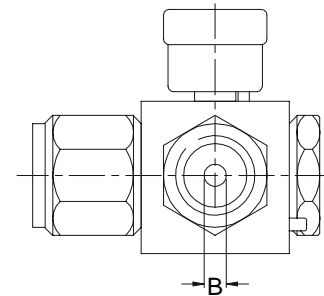
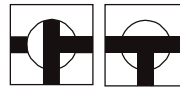
(3T1) Configuration (A)



(3T2) Configuration (B)



(3T3) Configuration (C)



Part Numbers

St / St Part No.	Flow Configuration Part No.			Connections F x F x F side entry	A	B (Bore)	C	D	E	CV	KV	Weight (Kgs)
	A	B	C									
SB2NS-	3T1	3T2	3T3	1/4"	78	6.5	48	77	40	1.0	0.86	0.7
SB3NS-	3T1	3T2	3T3	3/8"	78	6.5	48	77	40	1.0	0.86	0.75
SB4NS-	3T1	3T2	3T3	1/2"	97	6.5	48	77	40	1.0	0.86	0.8
SB6NS-	3T1	3T2	3T3	3/4"	120	10	55	100	51	1.8	1.55	1.4
SB8NS-	3T1	3T2	3T3	1"	130	10	55	100	51	1.8	1.55	1.7

To change flow configuration to configuration 2 change 1 to 2 i.e. SB4NS-3T2

Change 'N' to 'P' for BSPP threads i.e. SB4PS-3T2

Seat materials: 1,000 psi = PTFE Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K041

REV: 00

X4 Series



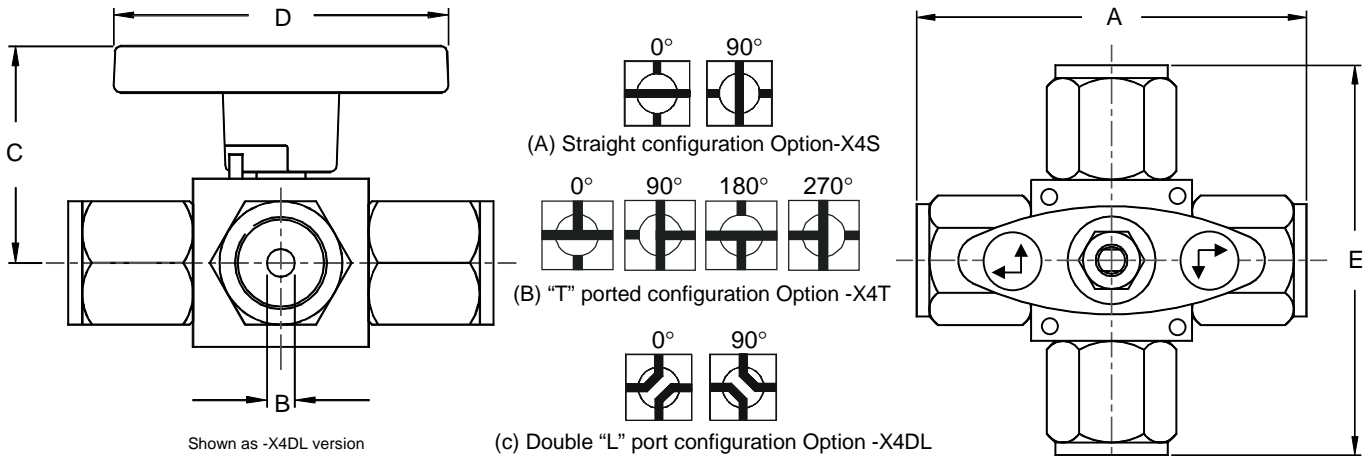
General Information

6,000 psi rated

The 4-way multi diverter valves are an economical and safe method of diverting high pressure lines, this replaces several high pressure 2-way valves. Ideal for sampling or vent / dumping applications. Ensuring an altogether safe, compact and easy to install solution to high pressure diversion, using the inlet pressure to actuate the floating ball ensuring a tight seal on the seat. Available in bottom or side entry body formats. Materials of construction include 316 stainless steel, brass, carbon steel, monel, hastalloy, titanium, duplex and other exotic alloys.

Design Features

- Rated 6,000 psi.
- Low operating torque under pressure.
- Flexible 4 piece design.
- Solid, strong yet compact body construction.
- Anti blow out stem for safety.
- Suitable for actuation.
- Light, quick and positive 90° action side entry & 180° action on bottom entry version.
- Panel mounting facility as standard.
- Pressure / Temperature rating -50°C to 260°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Choices of 'T' bar or lever handle, connection sizes and material of construction.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St / St Part No.	Flow Configuration Part No.			Connections (Female x Female x Female)	A	B (Bore)	C	D	E	CV	KV	Weight (Kgs)
	A	B	C									
SB2NS-	X4S	X4T	X4DL	1/4" NPT	78	6	48	77	78	1.0	0.86	1.1
SB3NS-	X4S	X4T	X4DL	3/8" NPT	78	6	48	77	78	1.0	0.86	1.1
SB4NS-	X4S	X4T	X4DL	1/2" NPT	97	6	48	80	100	1.0	0.86	1.1
SB6NS-	X4S	X4T	X4DL	3/4" NPT	120	10	55	100	130	1.5	1.3	1.5
SB8NS-	X4S	X4T	X4DL	1" NPT	130	10	55	100	130	1.5	1.3	1.8

Double 'L' ported version change -X4S to -X4DL i.e. SB4NS-X4DL

Change 'N' to 'P' for BSPP threads i.e. SB4PS-X4

Seat materials: 6,000 psi = PTFE Seal Materials: Body = PTFE - Stem = Peek®

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K042

REV: 00

X5 Series

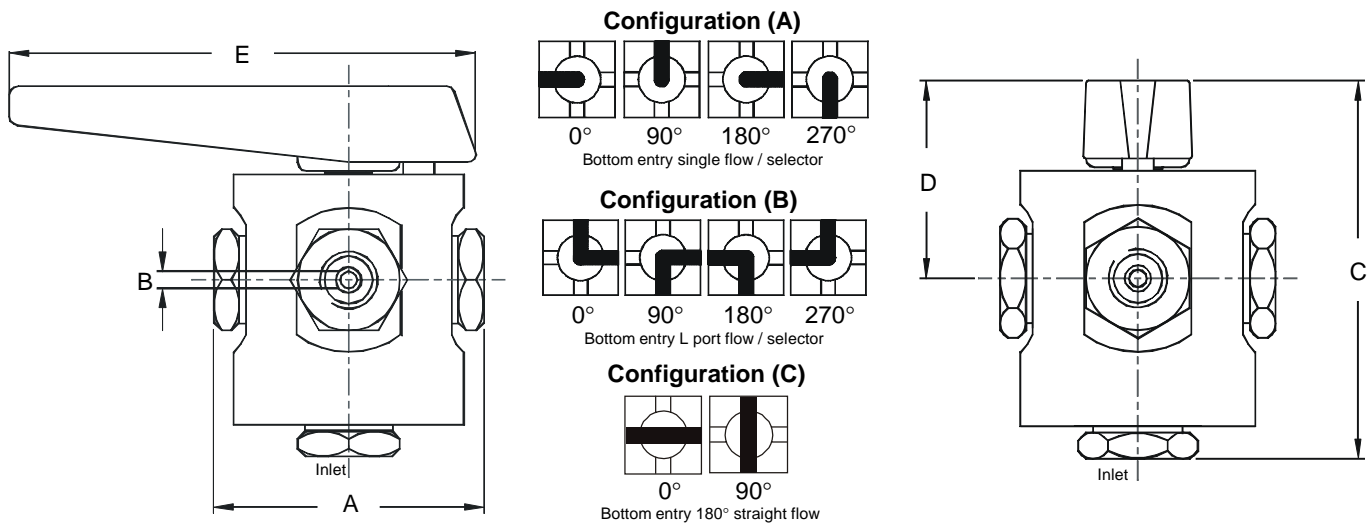
General Information

1 x bottom inlet x 4 selectable outlets 6,000 & 10,000 psi rated

The compact "X5" series eliminates the use of several 2 or 3 way ball valves and complicated fitting combinations. Rated up to 10,000 psi this versatile valve is a real time and space saver. One common inlet, and four outlets. The X5 is especially suited for panel work as it comes complete with 2 x M5 panel mounting holes or a panel mount nut. Pressure ranges from vacuum to 10,000 psi. The compact design offers a multitude of end connections and options. The "X5" Series is manufactured in all stainless steel marine specification fitted with a stainless steel flow indicating arrow style handle as standard.

Design Features

- Compact 4 way design (with optional added vent facility).
- Trunion mounted.
- Rated upto 10,000 psi.
- Bi-directional floating seat design to ensure leak-proof shut-off on pressure or vacuum.
- Light, quick and positive action.
- Low operating torque under pressure.
- Strong, compact body construction.
- Anti blow out stem for safety.
- Suitable for actuation.
- Pressure / Temperature rating -20°C to 250°C
- Repair kits available should the valve require maintenance to prolong its service life.
- Choices of flow indicating arrow (standard) or stainless steel lever handle.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Flow Configuration Part No.			Connections Size	A NPT	B (Bore)	C	D	E	CV	KV	Weight (kgs)
	A	B	C									
SB2NS-	X5A	X5B	X5C	1/4" NPT	64	5	90	48	110	1	0.86	1.1
SB3NS-	X5A	X5B	X5C	3/8" NPT	86	5	101	48	110	1	0.86	1.2
SB4NS-	X5A	X5B	X5C	1/2" NPT	108	5	112	48	110	1	0.86	1.4

Can be supplied with twin ferrule compression connections Change "N" for "K" i.e. SB4KS-X5A

6,000 psi as standard add "U" for 10,000 psi version i.e. USB2NS-X5A

Optional bleed valve / vent facility (-V) i.e. SB4NS X5A-V

Optional screw in vent valve (-V V) i.e. SB4NS X5A-V V

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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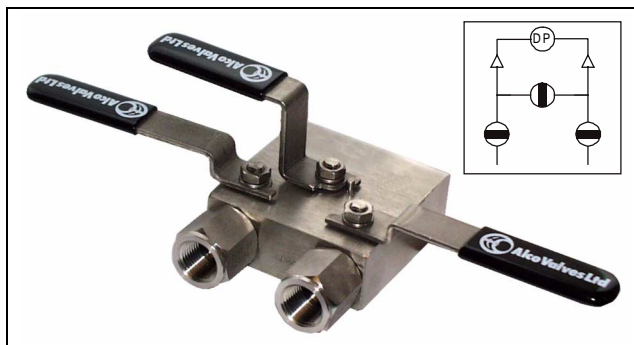
REF: AVCAT2K043

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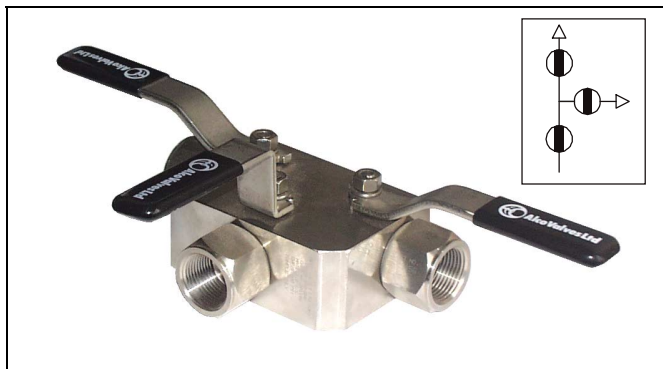
Specialised Ball Valves & Manifolds



2 valve manifolds for gauge / instrument applications



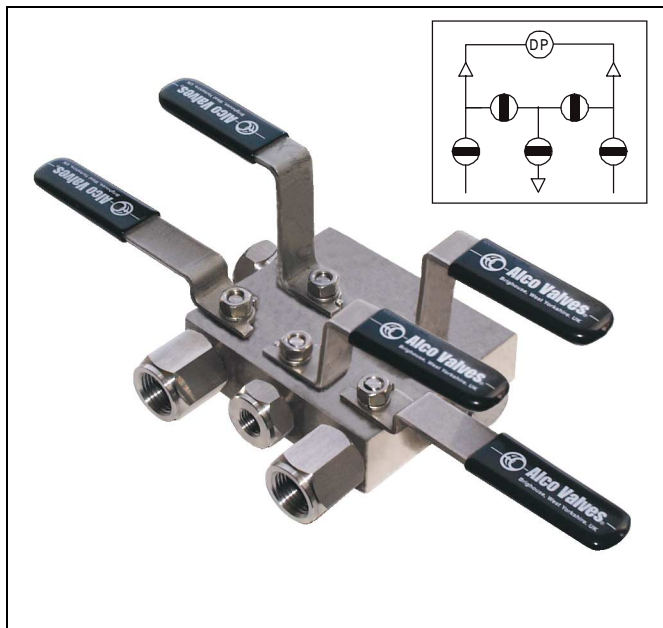
3 valve manifolds



Double block & bleed valve manifolds, various formats see our DBB catalogue.



Isolation and venting valve manifold construction offers 360° rotation of a gauge without the use of a swivel gauge adapter, orifice weld style



5 ball valve construction manifolds, remote or direct mounting style, rodable, viscous services, soft seat, high pressure.



The high cycle Alco Centurion™ ball valve, made to last. Using low emission packings Suitable for actuator use.

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REF: AVCAT2K044

REV: 00

How to order Multi-Way Valves

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

1/2" NPT female x female x female 316ss 'SB' series 3-way "L" ported bottom entry ball valve, Monel® ball & stem, fitted with compact "T" bar handle rated 414 BAR (6,000 psi).

The part number shown below is made up using the following system:-

Bore type	Rated pressure	Valve series	Valve size	End connections	Material of construction/ body parts	Trim material (Ball and stem)	Options		
P	SB	4	N	S	-	5	-	3	B
Blank = Std Bore F = Full bore	No letter = standard pressure R = 2,000 psi 138 Bar H = 3,000 psi 207 Bar P = 6,000 psi 414 Bar U = 10,000 psi 690 Bar	2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4" 8 = 1"	B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex T = Titanium Note: Other specialist material such as 6MO, Super Duplex, Zirconium are available	B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads	-U = Duplex -5 = Monel 400 -6 = Incoloy -7 = Ali-bronze -8 = Hastalloy -9 = Cupro nickle -S3 = 316ss -1M = One end male -2M = Double male ends -3B = 3 way bottom entry -3L = 3 way side entry -X5 = 5-way valve -X4 = 4-way valve -CAV = Cavity filled seats -DAG = Actuated, double acting -DG = Degreased and cleaned -S = Spanner flat handle -TACK = Tack welded end connectors -TAG = Identification Tagging -DMH = Dead mans handle -X = Down stream exhaust to atmosphere trim -CAVX = Cavity to down stream exhaust trim -EL = Electric actuator -SRG = Actuated, spring return				

Socket weld & butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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Ball Valve Manifolds

BVM2R Series

2 ball valve manifold, remote mount style rated up to 6,000 psi

BVM2D Series

2 ball valve manifold direct instrument mount style rated up to 6,000 psi

BVM3R Series

3 ball valve manifold, remote style rated up to 6,000 psi

BVM3D Series

3 ball valve manifold direct instrument mount style rated up to 6,000 psi

BVMDBB Series

Double block and bleed valve manifold rated up to 6,000 psi

BVM4R Series

4 ball valve manifold, remote style rated up to 6,000 psi

BVM5R Series

5 ball valve manifold, remote style rated up to 6,000 psi

BVM5D Series

5 ball valve manifold direct instrument mount style rated up to 6,000 psi

ADM-PRO™ Ball Valve Type

Air distribution manifolds rated up to 6,000 psi

How to order the above

An explanation of the part numbering system

BVM2R Series

General Information

2 ball valve manifold, remote mount style. Rated up to 6,000 psi

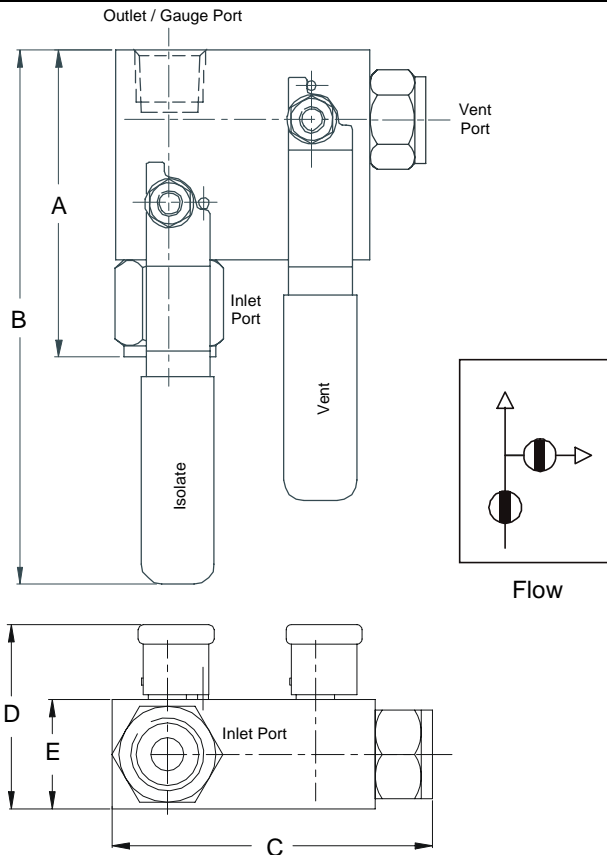
The BVM2R series block and bleed 2 ball valve configuration manifold is especially suited for applications where vicious process mediums are used. The manifold has a clear 10mm bore suitable for rodding. The BVM2R also has soft replaceable seats for easy "on site" maintenance and to extend service life. Being soft seated means the BVM2R offers bubble tight shut off with liquid and gas mixtures. Vent port is supplied 1/4" female fitted with a safety-blanking plug as standard.



Note: Can be supplied with mounting holes

Design Features

- Isolate and vent / block and bleed 2 valve manifold, floating balls, soft seated.
- Roddable 10mm clear bore.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Vent port supplied plugged as standard
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Compact overall, economical design.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- Full material traceability.
- 100 % Hydrostatic testing.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate (seats Graphoil)
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	Vent Port Size	Weight (Kgs)
BVM2R2NS	1/4" NPT female inlet x 1/4" NPT female outlet	80	161	93	54	32	1/4" NPT female (plugged)	1.4
BVM2R4NS	1/2" NPT female inlet x 1/2" NPT female outlet	92	161	93	54	32	1/4" NPT female (plugged)	1.5

For 6,000 psi version add "P" i.e. PBVM2R4NS

For male inlet add "-1M" i.e. BVM2R4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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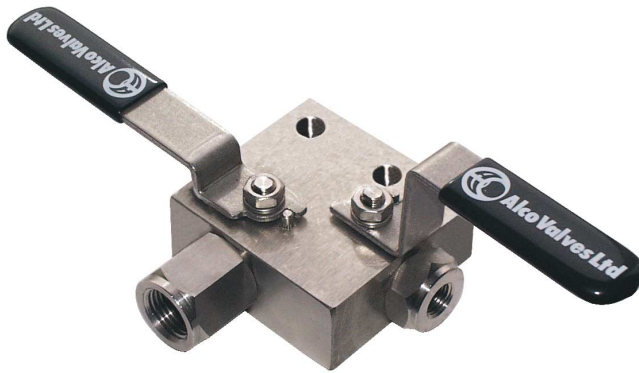
REF: AVCAT2K046

REV: 00

BVM2D Series

General Information

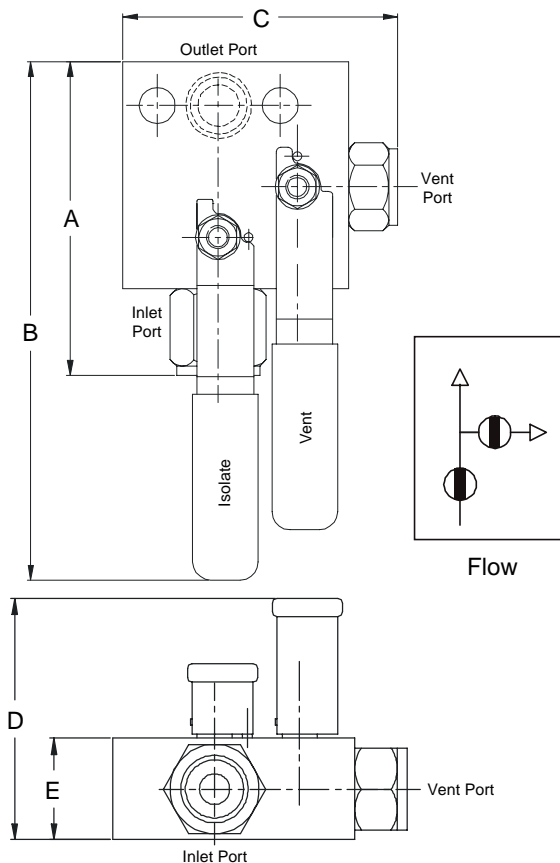
2 ball valve manifold, direct instrument mount style Rated up to 6,000 psi



Shown with mounting holes (option -MH)

The BVM2D series block and bleed 2 ball valve configuration manifold is especially suited for mounting directly to an instrument. Applications where vicious process mediums are used can also be dealt with easily due to the manifold having a clear 10mm bore suitable for rodding. The BVM2D also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM2D offers bubble tight shut off with liquid and gas mixtures. Vent port is supplied 1/4" female fitted with a safety blanking plug as standard.

Design Features



- Isolate and vent / block and bleed 2 valve manifold for direct mounting in one compact body.
- Roddable 10mm clear bore, floating balls, soft seated instrument manifold.
- Vent port supplied plugged as standard
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- Full material traceability.
- 100 % Hydrostatic testing.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	Vent Port Size	Weight (Kgs)
BVM2D2NS	1/4" NPT female inlet x 1/4" NPT female vent	93	174	93	76	32	1/4" NPT female (plugged)	1.8
BVM2D4NS	1/2" NPT female inlet x 1/2" NPT female vent	105	174	93	76	32	1/4" NPT female (plugged)	1.9

For 6,000 psi version add "P" i.e. PBVM2D4NS - For male inlet add "-1M" i.e. BVM2D4NS-1M
Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K047

REV: 00

BVM3R Series

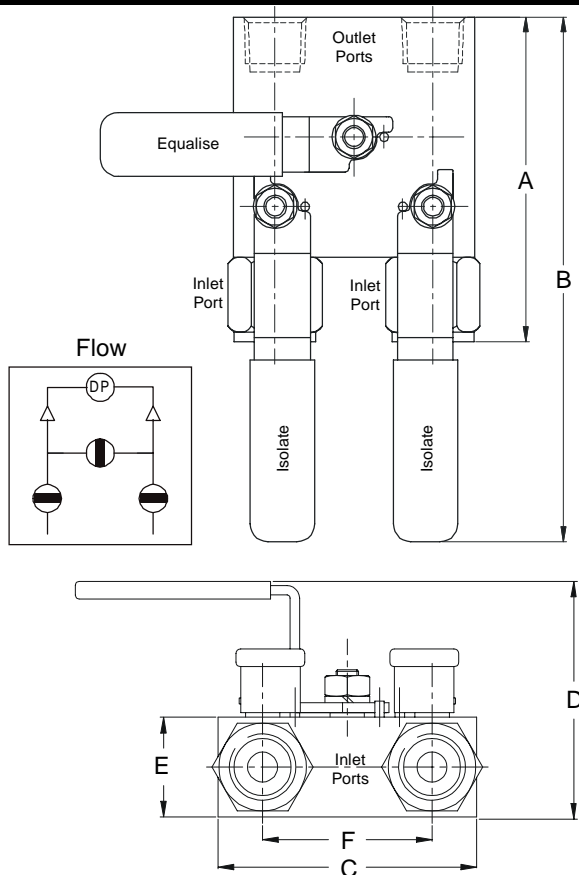
General Information

3 ball valve manifold, remote style Rated up to 6,000 psi

The BVM3R series 2 x isolate 1 x equalise 3 ball valve configuration manifold is especially suited for applications where vicious process mediums are used. Having an equalising valve allows easy calibration / zeroing of an instrument. The manifold has a clear 10mm bore suitable for rodding. The BVM3R also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM3R offers bubble tight shut off with liquid and gas mixtures.



Design Features



- 2 x isolation, 1 x equalise 3 valve manifold in one compact body, floating balls, soft seated.
- Roddable 10mm clear bore.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- 100 % Hydrostatic testing & full material traceability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Note: can be supplied with additional 1/4" female purge / drain ports (option -PP)

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	Weight (Kgs)
BVM3R2NS	1/4" NPT female inlet x 1/4" female outlet	99	180	82	75	32	54	1.8
BVM3R4NS	1/2" NPT female inlet x 1/2" female outlet	111	180	82	75	32	54	1.8

For 6,000 psi version add "P" i.e. PBVM3R4NS

For male inlet add "-1M" i.e. BVM3R4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K048

REV: 00

BVM3D Series

General Information

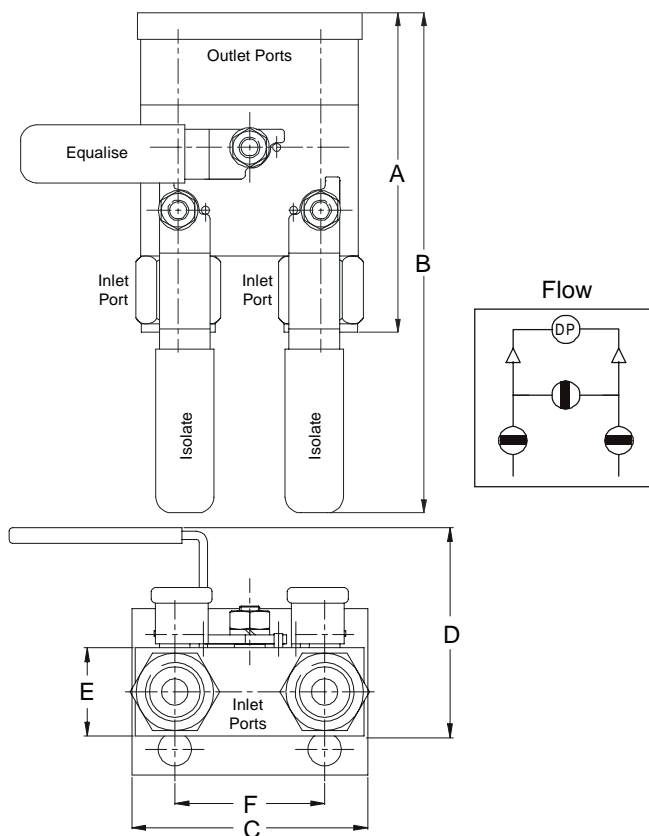
3 ball valve manifold, direct mount style Rated up to 6,000 psi

The BVM3D series 2 x isolate 1 x equalise 2 ball valve configuration manifold is especially suited for mounting directly to an instrument, applications where vicious process mediums are used are also dealt with easily due to the manifold having a clear 10mm bore suitable for rodding. Having an equalising valve allows easy calibration / zeroing of an instrument. The BVM3D also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM3D offers bubble tight shut off with liquid and gas mixtures.

Design Features

- 2 x isolation, 1 x equalise 3 valve manifold for direct mounting in one compact body.
- Roddable 10mm clear bore, floating balls, soft seated.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- 100 % Hydrostatic testing & full material tracability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Note: can be supplied with additional 1/4" female purge / drain ports. (option -PP)



Part Numbers

Sv/St Part No.	Connections Size	A	B	C	D	E	F	Weight (Kgs)
BVM3D2NS	1/4" NPT female x 54mm centres direct instrument mount	109	190	83	90	32	54	1.9
BVM3D4NS	1/2" NPT female x 54mm centres direct instrument mount	121	190	83	90	32	54	2.0

For 6,000 psi version add "P" i.e. PBVM3D4NS

For male inlet add "-1M" i.e. BVM3D4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dim's are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K049

REV: 00

BVMDBB Series

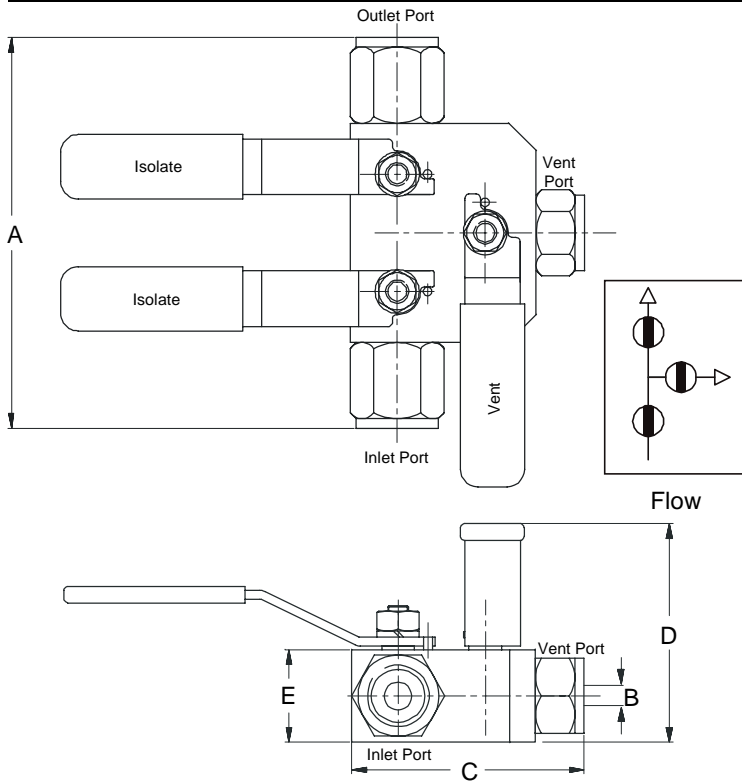
General Information

Double block & bleed valve manifold Rated up to 6,000 psi

The Alco BVM double block and bleed valve offers bubble tight primary isolation, captive venting and secondary isolation to an instrument. Available from vacuum to 10,000 psi rated pressures and -50°C to 240°C working temperature. Many other options apply such as anti-tamper locking devices and actuators. Repair / seat kits available to extend service life. A compact solution for piping to instrument applications.



Design Features



- 2 x isolation, 1 x vent in one compact body.
- Roddable 10mm clear bore.
- Anti blow-out internally loaded stem for safety.
- Vent port supplied plugged as standard.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- 100 % Hydrostatic testing & full material traceability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	Vent Port Size	Weight (Kgs)
BVMDBB4NS	1/2" NPT female in / out 1/4" NPT female vent port	133	10	80	75	32	1/4" NPT female (plugged)	1.4
BVMDBB6NS	3/4" NPT female in / out 1/4" NPT female vent port	160	12.5	92	81	38	1/4" NPT female (plugged)	2.3
BVMDBB8NS	1" NPT female in / out 1/4" NPT female vent port	220	19	115	95	50	1/4" NPT female (plugged)	5.8

For 6,000 psi version add "P" i.e. PBVMDBB4NS

For needle valve vent change Pt No. to BVMDBBBN4NS

For male inlet add "-1M" i.e. BVMDBB4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K050

REV: 00

BVM4R Series

General Information

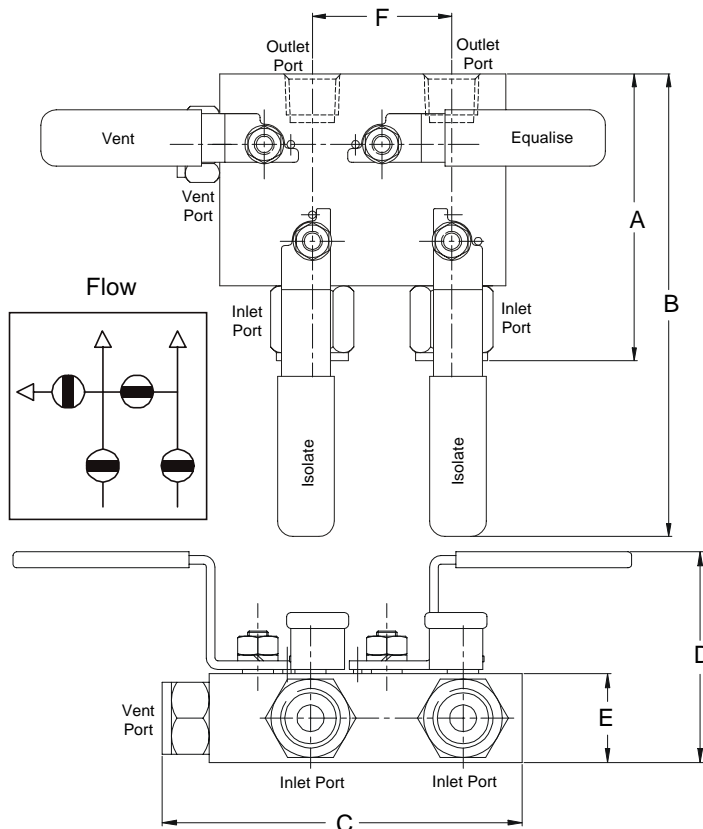
4 ball valve manifold, remote style Rated up to 6,000 psi

The BVM4R series 2 x isolate 1 x vent 1 x equalise 4 ball valve configuration manifold is especially suited for applications where vicious process mediums are used. Having an equalising valve allows easy calibration / zeroing of an instrument. The manifold has a clear 10mm bore suitable for rodding. The BVM4R also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM4R offers bubble tight shut off with liquid and gas mixtures. Vent port is supplied with a safety blanking plug as standard.

Design Features

- 2 x isolation, 1 x vent 1 x equalise 4 valve manifold in one compact design, floating balls, soft seated.
- Roddable 10mm clear bore.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- 100 % Hydrostatic testing & full material traceability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Note: Can be supplied with additional 1/4" female purge / drain ports. (option -PP)



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	Vent Port Size	Weight (Kgs)
BVM4R2NS	2 x 1/4" NPT female inlet x 2 x 1/4" NPT female instrument connection	100	180	128	75	32	54	1 x 1/4" NPT female (Plugged)	2.4
BVM4R4NS	2 x 1/2" NPT female inlet x 2 x 1/2" NPT female instrument connection	112	180	128	75	32	54	1 x 1/4" NPT female (Plugged)	2.5

For 6,000 psi version add "P" i.e. PBVM4R4NS

For male inlet add "-1M" i.e. BVM4R4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K051

REV: 00

BVM5R Series

General Information

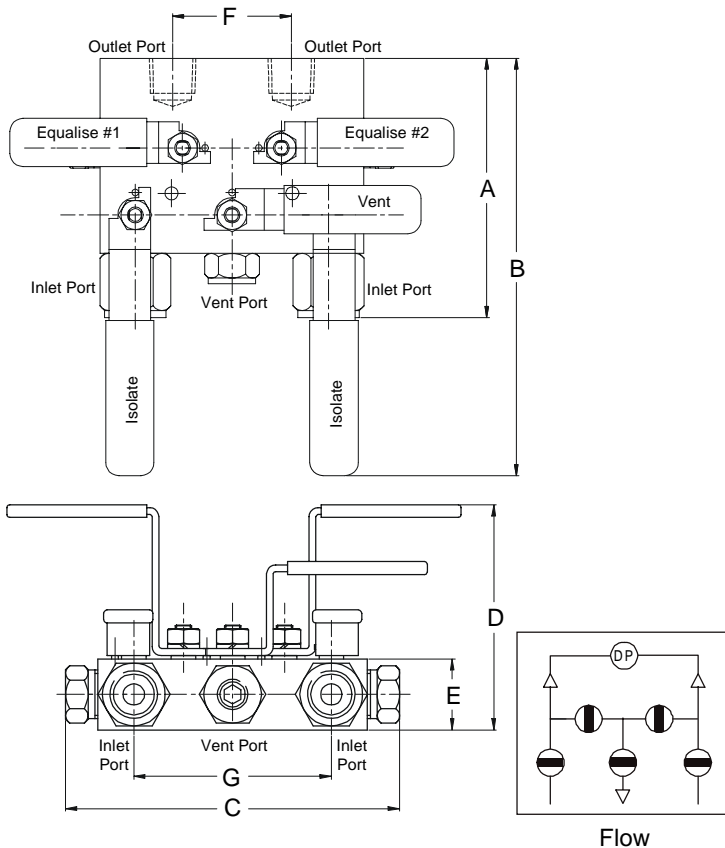
5 ball valve manifold, remote style Rated up to 6,000 psi

The BVM5R series 2 x isolate 2 x equalise 1 x vent 5 ball valve configuration manifold is especially suited for applications where vicious process mediums are used. Having an equalising valve allows easy calibration / zeroing of an instrument. The manifold has a clear 10mm bore suitable for rodding. The BVM5R also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM5R offers bubble tight shut off with liquid and gas mixtures. Vent ports are supplied with a safety blanking plug as standard.



Design Features

- 2 x isolation, 2 x equalise and 1 x vent 5 valve manifold in one compact body.
- Roddable 10mm clear bore, floating balls, soft seated.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- 100 % Hydrostatic testing & full material traceability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: Can be supplied with compact "T" bar handles. (option -M)

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	G	Vent Port Size	Weight (Kgs)
BVM5R2NS	2 x 1/4" NPT female inlet x 2 x 1/4" NPT female instrument connection	106	190	149	100	32	54	88	1/4" NPT female (Plugged)	2.7
BVM5R4NS	2 x 1/2" NPT female inlet x 2 x 1/2" NPT female instrument connection	118	190	149	100	32	54	88	1/4" NPT female (Plugged)	2.8

For 6,000 psi version add "P" i.e. PBVM5R4NS

For male inlet add "-1M" i.e. BVM5R4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K052

REV: 00

BVM5D Series

General Information

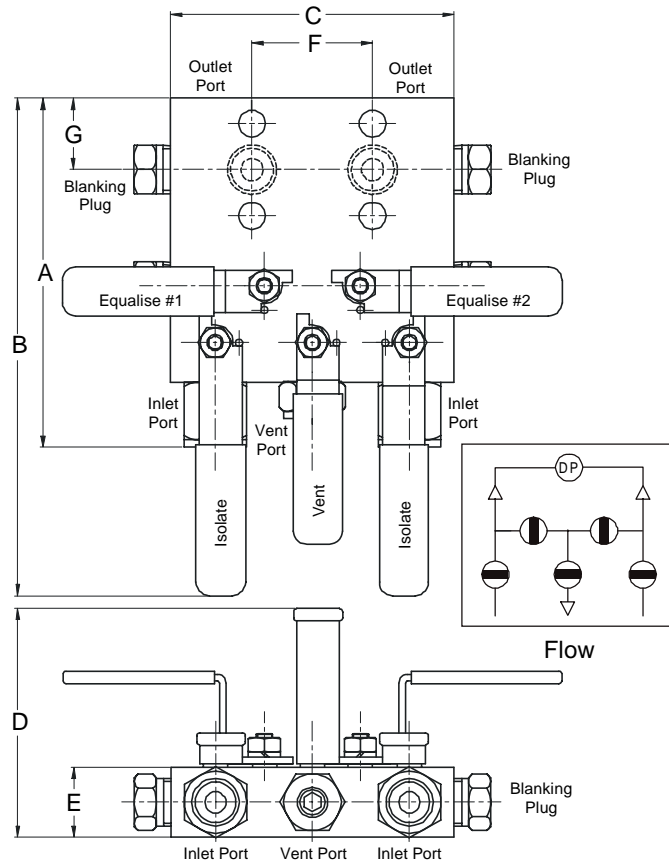
5 ball valve manifold, direct mount style Rated up to 6,000 psi

The BVM5D series 2 x isolate 2 x equalise 1 x vent 2 ball valve configuration manifold is especially suited for mounting directly to an instrument, applications where vicious process mediums are used are also dealt with easily due to the manifold having a clear 10mm bore suitable for rodding. Having an equalising valve allows easy calibration / zeroing of an instrument. The BVM5D also has soft replaceable seats for easy "on site" maintenance to extend service life. Being soft seated means the BVM5D offers bubble tight shut off with liquid and gas mixtures. Vent ports are supplied with a safety blanking plug as standard.

Design Features

- 2 x isolation, 2 x equalise and 1 x vent 5 valve manifold for direct mounting in one compact body.
- Roddable 10mm clear bore, floating balls, soft seated.
- Anti blow-out internally loaded stem for safety.
- Can be supplied male or female inlet.
- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Smooth low torque 90° operation of valves.
- Two pressure ratings 2,000 psi (138 bar) or 6,000 psi (408 bar) versions, to suit most instrument ratings
- Pressure / Temperature rating -20°C To 250°C (see technical section).
- Choice of body and trim materials such as 316ss Monel / Duplex / Titanium.
- Many options available, such as locking devices.
- Seat materials available PTFE, Peek®, PVDF®, Devol® others also available (see technical section).
- Manufactured in high integrity, certified (316ss) barstock material.
- Full material traceability & full material traceability.
- Can be supplied fire safe to BS6755 Part 2 or API 607 standard as appropriate.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Note: Can be supplied with compact "T" bar handles. (option -M)



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	G	Vent Port Size	Weight (Kgs)
BVM5D2NS	1/4" NPT female x 54mm centres direct instrument mount	144	223	127	103	32	54	32	1/4" NPT female (plugged)	4.1
BVM5D4NS	1/2" NPT female x 54mm centres direct instrument mount	156	223	127	103	32	54	32	1/4" NPT female (plugged)	4.2

For 6,000 psi version add "P" i.e. PBVM5D4NS

For male inlet add "-1M" i.e. BVM5D4NS-1M

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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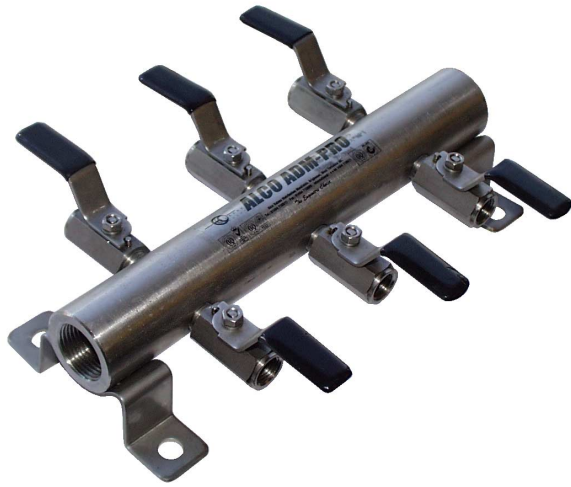
REF: AVCAT2K053

REV: 00

ADM-PRO™ Ball Valve Type

General Information

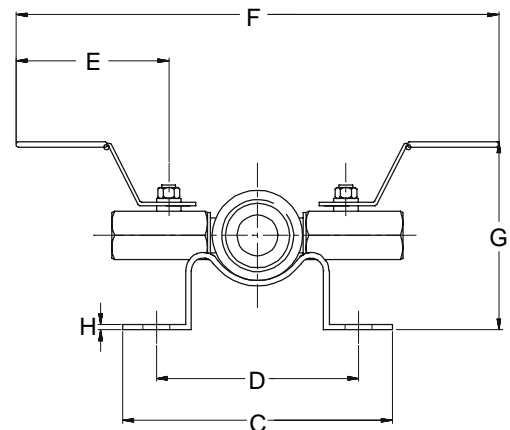
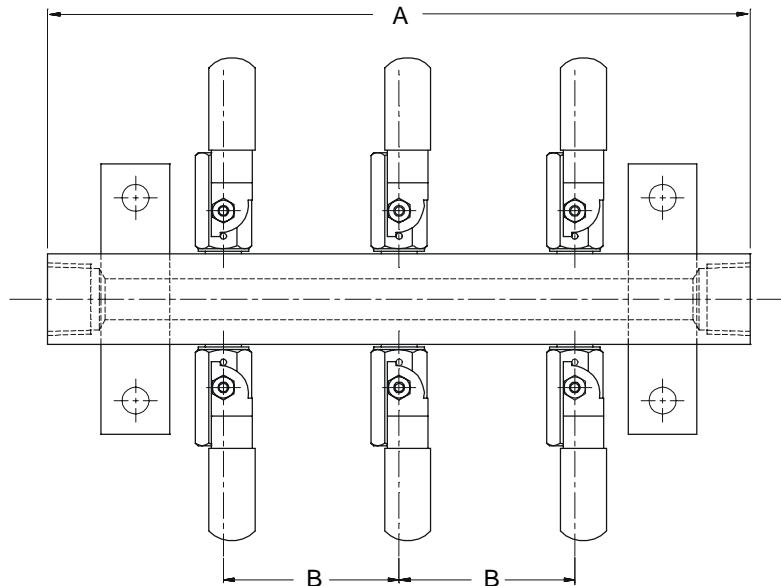
Air distribution manifolds Rated up to 6,000 psi



The Alco ADM-PRO™ range of compact, economical air distribution manifolds come in our standard configuration (shown below) or to client specifications. ADM-PRO™ can be supplied with up to 40 take-off valves, ball or needle valves. Inlet and drain connections can be made to specification, this includes flanges i.e. 150 lbs. Rf. or even socket / butt weld. Mounting legs are supplied as standard to make installation easier. Take off sizes can vary from 1/4" to 1" in size. Working pressures range from 2,000 psi up to 6,000 psi, also see needle valve version in section 9 page 5 & 6

Design Features

- Bi-directional floating ball design to ensure leak-proof shut-off on pressure or vacuum.
- Manufactured from high integrity, certified (316ss) barstock material.
- Smooth low torque 90° operation.
- Value for money, compact economical design.
- Compact overall length, reduced weight.
- Choice of trim materials.
- Available NPT, BSPP or BSPT threads.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Temperature rating -20°C to 250°C.
- Available in female x female and male x female versions.
- Available in 316 stainless steel, other materials available.
- Anti-blow-out internally loaded stem for safety.
- Handle indicates open / closed position at a glance.
- Many options available such as locking devices, mounting brackets, 'C' shaped handle.
- Full material traceability.
- 100% Hydrostatic factory testing before despatch.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: supplied with mounting legs as standard

Part Numbers

St/St Part No.	Inlet / Outlet	No. of take offs	A	B	C	D	E	F	G	H	Weight (Kgs)
ADM6-MA2NS	3/4" NPT Female Inlet / outlet 1/4" NPT takeoffs	6	260	65	100	75	57	179	70	2/3	2.0

Seat materials: 6,000 psi = Peek® Seal Materials: Body = PTFE - Stem = Peek®

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K054

REV: 00

How to order ball valve manifolds

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

316ss ball valve manifold, 5 valve direct version. 1/2" NPT female process connections x direct instrument mount (54mm centres) rated 10,000 psi with Monel® 400 trim & identification tagging.

The part number shown below is made up using the system :-

Rated pressure	Valve series	Connections	Connection type	Material of construction/ body parts	Trim material (Ball and stem)	Options			
U	BVM	5D	4	N	S	-	5	-	TAG
No letter = Up to 6,000 psi. U = 10,000 psi.		2 = 1/4". 3 = 3/8". 4 = 1/2".		D = Ali-Bronze. H = Hastalloy C. I = Incoloy 625. M = Monel 400. N = Cupro-Nickel. S = 316 St. St. U = Duplex. Note: Other specialist material such as 6MO, Super Duplex, Zirconium are available.	-U = Duplex. -5 = Monel 400. -6 = Incoloy. -7 = Ali-bronze. -8 = Hastalloy. -X = Down stream exhaust to atmosphere trim.				
BVM = Ball valve manifold. DBB = Double block & bleed valve ball, ball, ball, 2 x isolate 1 x vent.		2R = 2 valve (isolate + vent) remote style threaded x threaded. 2D = 2 valve (isolate + vent) direct mount x threaded. 3R = 3 valve (2 x isolate 1 x equalise) remote style threaded x threaded. 3D = 3 valve (2 x isolate 1 x equalise) direct mount x threaded. 4R = 4 valve (2 x isolate 1 x equalise 1 x vent) remote style threaded x threaded. 4D = 4 valve (2 x isolate 1 x equalise 1 x vent) direct mount x threaded. 5R = 5 valve (2 x isolate 2 x equalise 1 x vent) remote style threaded x threaded. 5D = 5 valve (2 x isolate 2 x equalise 1 x vent) direct mount x threaded. BNB = Ball, needle, ball. NNN = Needle, needle, needle. ADM = ADM-PRO		B = Butt weld. F = Flanged. K = Twin ferrule (compression ends). N = NPT Female threads. P = BSPP Female threads. Q = Single ferrule (compression ends). S = Socket weld. T = BSPT Female threads.		-2M = male inlet & outlet connections. -2M1 = Double male ends (inlet side). -2M2 = Double male ends (outlet side). -CAV = Cavity filled seats. -DG = Degreased and cleaned. -TAG = Identification Tagging. -I-DA2 = Isolation valves actuated. -IE-DA2 = Equalise valve actuated. -AV-DA2 = All valves actuated.			

Socket weld and butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco Valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

NOTE 3: The flow diagram schematics shown may not agree with the handle orientation exactly, they are for representation only.

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Check Valves & Actuated Valves

C & UC Series

Piston non-return valves rated 6,000 psi & 10,000 psi

XC Series

Piston non-return valves rated 20,000 psi

Pneumatic Actuators

Pneumatically actuated valves

Electric Actuators

Electrically actuated valves

Actuator Accessories

Limit switch boxes and solenoids available to various specifications

How to order the above

An explanation of the part numbering system

C & UC Series

General Information

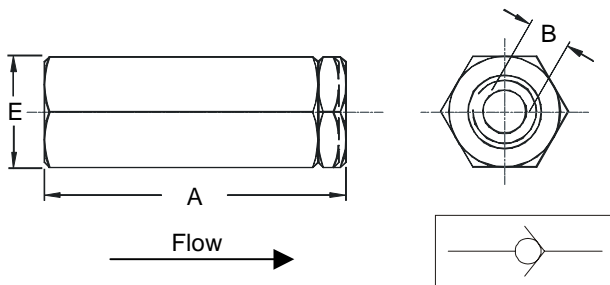
6,000 & 10,000 psi rated Piston non-return valves

The Alco Valves Non Return Valve is designed for high flow and low pressure drop in a pressurised medium. The "C" series valve has a wide range of body and trim materials available, several types of sealing materials can be used to cope with most aggressive mediums. Having a soft primary seat means it is suitable for gases or liquids. Altogether a very compact unit suitable for many arduous duties. Various cracking pressures are available.

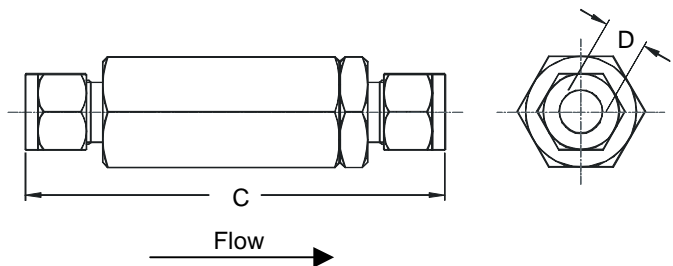
Design Features

- Primary soft seal for bubble tight close, with secondary metal to metal secondary seal.
- Large orifice sizes for high flow and low pressure drop across your system.
- Soft seat for bubble tight / shut off seal on pressure or vacuum.
- Heavy duty corrosion resistant spring for long life.
- Close tolerance guided spring and piston to prevent crabbing or seizure.
- Repair kits available.
- Pressure / Temperature rating -15°C to 170°C depending on seal materials used.
- Available in 316 / monel/ duplex / hastalloy or titanium.
- Many piston and spring material options available to cope with aggressive mediums.
- Fire safe design version available.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Threaded version



Compression ended version



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E		Standard cracking pressure ± 20% (psi)	Cv	Kv	Weight (Kgs)	
			Bore	Comp Ended	Tube Size	C	UC				6000 psi	10,000 psi
C2NS	1/4" NPT	58	7	80	6.3	22	28	20	0.54	1.47	0.18	0.28
C3NS	3/8" NPT	87	12	110	9.5	35	38	20	1.5	1.30	0.6	0.75
C4NS	1/2" NPT	87	12	120	12.7	35	38	20	1.6	1.39	0.6	0.75
C6NS	3/4" NPT	104	12	136	19	38		20	1.6	1.39	0.8	0.8
C8NS	1" NPT	114	12	146	25	44		20	1.6	1.39	1.2	1.2
C12NS	1 1/2" NPT	180	32	-	38.1	76		20	9.0	7.78	5.2	5.2
C16NS	2" NPT	195	32	-	50.8	76		20	9.0	7.78	5.7	5.7

For BSPP change 'N' for 'P' i.e. C2PS.

For compression ends change N for K i.e. C2KS

For 10,000 psi Version add 'U' i.e. UC4NS.

Note: 1 1/2" & 2" have a maximum pressure rating of 6,000 psi

Cracking pressure can be adjusted to suit your application

Dims are in mm (Appx)

See technical section for important additional valve data.

Note: bore ends may vary dependent upon end connection selected.

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REF: AVCAT2K056

REV: 00

XC Series

General Information

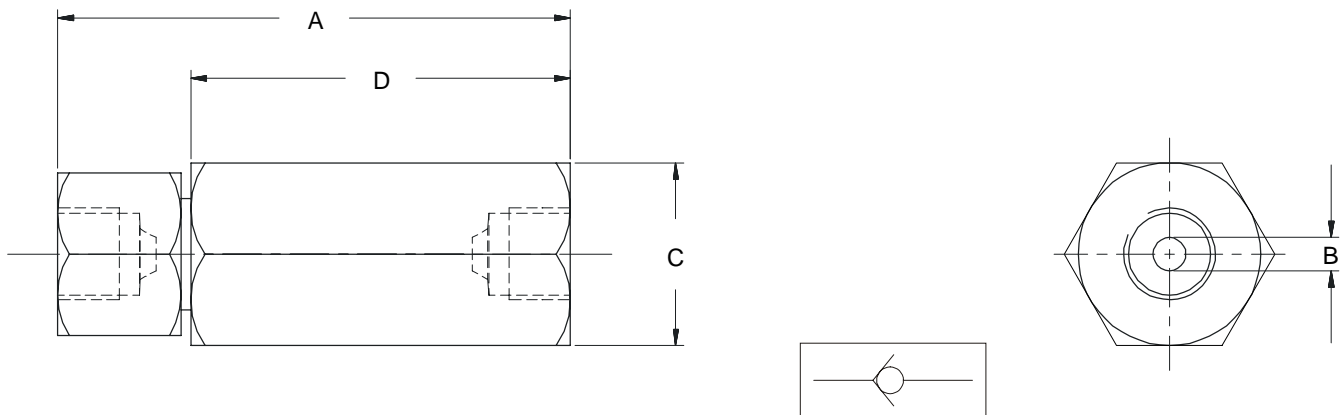
20,000 psi rated Piston non-return valves

The Alco "XC" Non Return Valve is designed for very high pressure service. This valve has a wide range of body and trim materials available, several types of sealing materials can be used to cope with most aggressive mediums. Altogether a very compact unit suitable for many arduous duties. Ideal for use on high pressure test rigs, pumps, injection skids etc. Various cracking pressures are available.



Design Features

- Primary soft seal for bubble tight close, with metal to metal secondary seal.
- Soft seat for bubble tight shut off on pressure or vacuum.
- Heavy duty corrosion resistant spring for long life.
- Close tolerance guided spring and piston to prevent crabbing or seizure.
- High pressure & compact design.
- Many end connection options available including threaded or weld ends.
- Available in 316 / monel/ duplex / hastalloy or titanium.
- Pressure / Temperature rating -15°C to 170°C depending on seal materials used.
- Many piston and spring material options available to cope with aggressive mediums.
- Can be supplied as fire-safe design.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

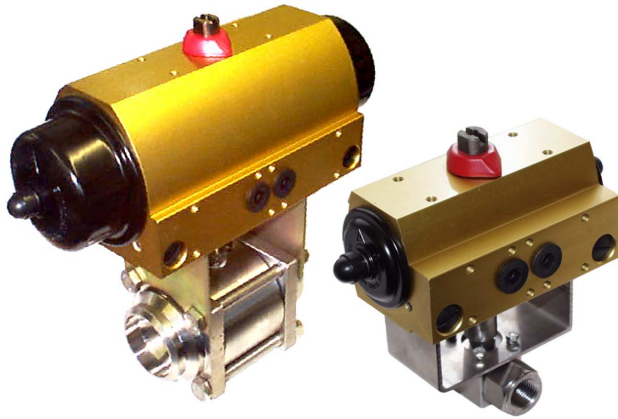
St/St Part No.	Connections Size	A	B	C A / F HEX	D	Standard cracking pressure $\pm 20\%$	Cv	Kv	Weight (Kgs)
XC207/16NS	7/16" UNF	75	2.7	25	60	50	0.08	0.07	0.25
XC209/16NS	9/16" UNF	80	5.1	28	60	50	0.13	0.11	0.35
XC2013/16NS	13/16" UNF	105	9	35	82	50	0.4	0.35	0.7

Dim's are in mm (Appx)

See technical section for important additional valve data.
Note: bore ends may vary dependent upon end connection selected.

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Pneumatic Actuators



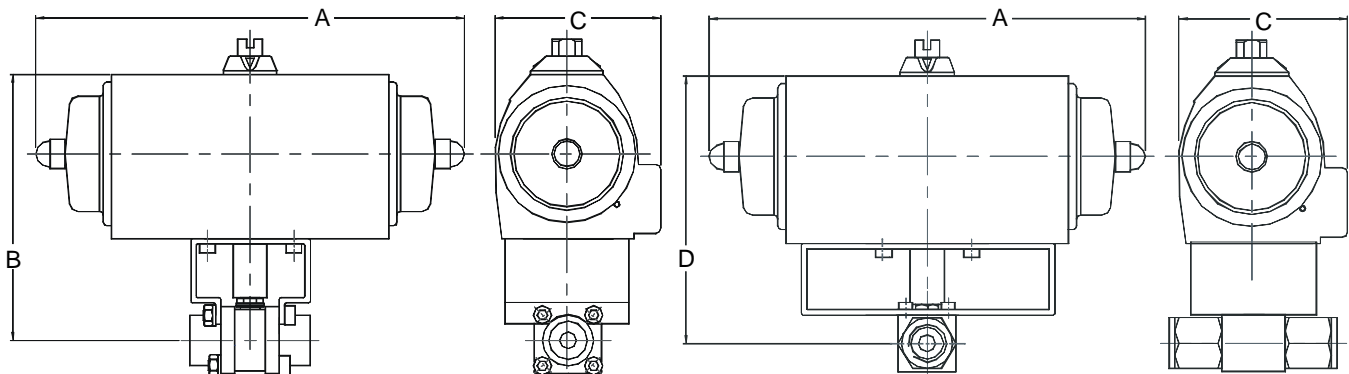
Actuated 'S & SB' Series Range.

General Information

A full range of actuated ball valves can be supplied sizes 1/4" to 2 1/2". pressure ranges from 1,000 psi to 10,000 psi. The range includes pneumatic, hydraulic and electric actuation, double acting and spring return, a full complement of accessories can also be supplied, i.e. limit switches, solenoids, etc.

As seen on the drawing Alco's panel mount 'SB' series and 'S' series ball valves are particularly suited for actuation, offering three piece ball valve flexibility with the minimum of maintenance and simple 4 bolt assembly to the actuator bracket. The latest actuator specifications can be supplied from various manufacturers from around the world - please enquire. See specific valve data sheets for further valve information.

General Arrangement



Actuated 'S' series

Actuated 'SB' series

Pneumatically Actuated 'S' & 'SB' series (typical sizes)

Actuator type	Part no.	A	B	C	D	Operating Pressure of actuator	Alco Valve Size
90° single acting spring return (air open, spring close)	SRG-1	187	129	76	126	80 – 100 psi	1/4" - 3/4"
	SRG-2	242	160	93	155	80 – 100 psi	1" - 1 1/4"
	SRG-3	307	186	105	184	80 – 100 psi	1 1/2" - 2"
90° double acting (air open, air close)	DAG-1	187	129	76	126	80 – 100 psi	1/4" - 3/4"
	DAG-2	242	160	93	155	80 – 100 psi	1" - 1 1/4"
	DAG-3	307	186	105	184	80 – 100 psi	1 1/2" - 2"

Actuator / valve sizing are based upon reduced bore versions.

Actuator manufacturer may vary due to performance requirements therefore the details shown may also vary. Please consult our technical sales departments. Relevant actuator manufacturers reserve the right to change their specifications at any time. Valves supplied for actuation by client are delivered pressure tight - it is the responsibility of the client to ensure packings remain under compression and lock nut/s remain tight and/or adjusted to compensate for wear.

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Electric Actuators

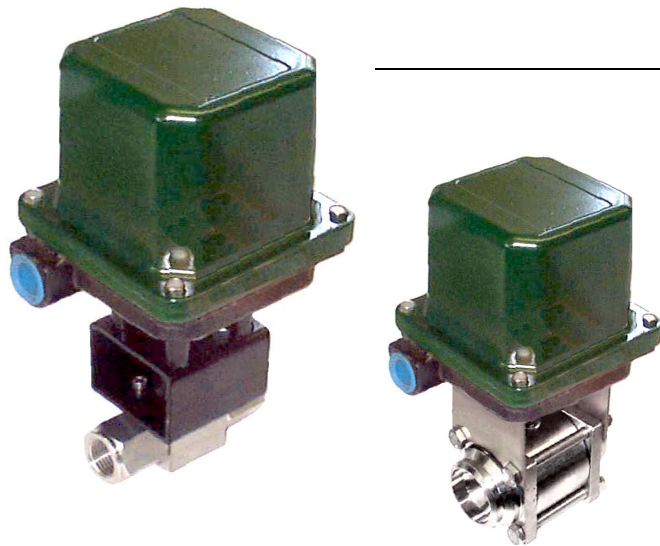
General Information

A full range of electrically actuated ball valves can be supplied sizes 1/4" to 2 1/2". pressure ranges from 1,000 psi to 10,000 psi. A full complement of accessories can also be supplied, i.e. limit switches, solenoids, etc.

As seen on the drawing Alco's panel mount 'SB' series and 'S' series ball valves are particularly suited for actuation, offering three piece ball valve flexibility with the minimum of maintenance. See specific valve data sheets for further information.

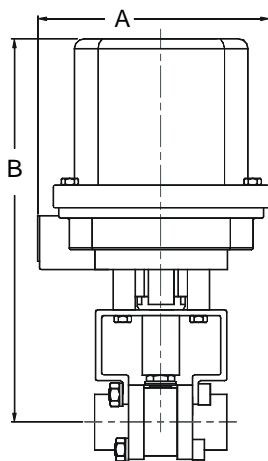
Ratings available:

12 volt D.C.
24 volt D.C.
110 volt A.C.
240 volt A.C.

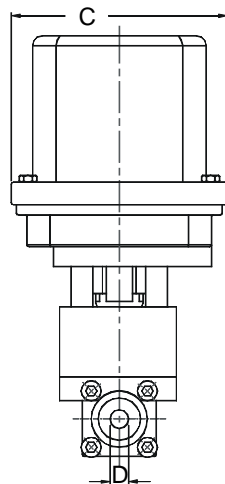


Actuated 'S & SB' Series

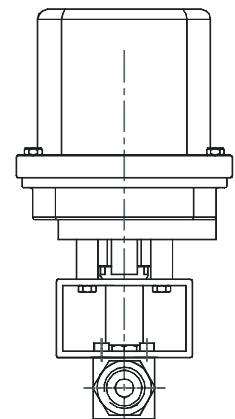
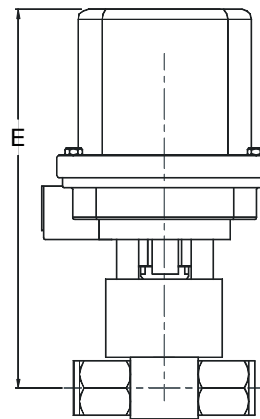
General Arrangement



Actuated 'S' series



Actuated 'SB' series



Electrically Actuated 'S' & 'SB' Series (typical sizes)

Actuator type	A	B	C	D	E	Operating Voltages	Alco Valve Size
MAR 8/9.6	112	194 - 208	112	10 - 25	200 - 215	12V or 24V	1/4" - 1 1/4"
MAR 10/12	194	303 - 307	154	32 - 38	305 - 312	12VDC OR 24VDC	1 1/2" - 2"
MAR 8/2.4	112	194 - 208	112	10 - 25	200 - 215	110V AC or 240V AC	1/4" - 3/4"
MAR 8/9.6	112	202 - 208	112	10 - 25	204 - 215	110V or 240V	1" - 1 1/4"
MAR 10/12	194	215 - 222	154	32 - 38	285 - 300	110V AC or 240V AC	1 1/2" - 2"

Actuator / valve sizing are based upon reduced bore versions

Actuator manufacturer may vary due to performance requirements therefore the details shown may also vary. Please consult our technical sales departments. Relevant actuator manufacturers reserve the right to change their specifications at any time. Valves supplied for actuation by client are delivered pressure tight - it is the responsibility of the client to ensure packings remain under compression and lock nut/s remain tight and/or adjusted to compensate for wear.

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Actuator Accessories

Limit switch boxes and solenoids available to various specifications

General Information

Alco can supply the latest technology and specification direct mounted limit switch enclosures in conjunction with or without actuator to monitor the status of a valve in both open and closed positions to confirm that a valve has completed a cycle, or actual valve positioning can be monitored throughout the valve movement. The method of indication or feedback is dependent on the control system utilised. Limit switches can be connected in the case of isolating valve, back to a mimic board in a process control room to show operatives the open and closed process flow paths.

Switches can be from a variety of manufacturers and be of constant or proximity types, dependent on the application and can be sited in the enclosures to suit various area classifications and categories.

Certain enclosures have the additional benefit of visual status monitoring in addition to electronic feedback.



Explosion Proof Limit Switch Box
(Eexd IIC T6 IP66)



Actuator
Solenoid
Operator



IP67 Limit Switch Box



Miniature Switch Box

Manufacturer may vary due to performance requirements therefore the details shown may also vary. Please consult our technical sales department. Relevant manufacturers reserve the right to change their specifications at any time.

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REF: AVCAT2K060

REV: 00

How to order check valves

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

1/2" NPT male inlet x female outlet 316ss 'C' series piston check valve, Monel® K500 piston with Viton® seal Rated 690 bar (10,000 psi)

The part number shown below is made up using the following system:-

Rated pressure	Valve series	Valve size	End connections	Material of construction/ body parts	Piston material	Options
U	C	4	N	S	-	1
No letter = Standard rating U = 10,000 psi 690 Bar X20 = 20,000 psi	C = Piston check non-return valve range	1 = 1/8" 2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4" 8 = 1" 10 = 1 1/4" 12 = 1 1/2" 16 = 2"	B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads	B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO, Super Duplex, Zirconium are available	-U = Duplex -5 = Monel 400® -6 = Incoloy -7 = Ali-bronze -8 = Hastalloy -9 = Cupro nickle	-1M = One end male (make sure you specify inlet or outlet side, otherwise Alco standard applies). -2M = Double male ends -TAG = Identification Tagging -PTFE = PTFE coated in Viton seal -IS = Inconel spring -PC = PTFE coated spring (for extra protection against corrosion) -NC = Nickel coated spring (for extra protection against corrosion) -EPDM = EPDM seal -FFKM = FFKM seal

Socket weld & butt weld end connectors may be extended for thermal protection of the valve internals

Note: Pressure ratings may vary dependant upon the material of construction i.e. brass construction limited up to 3,000 psi.

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K055

REV: 00

Needle Valve Features

Needle Valve Head Data

Tip arrangements & flow data

Needle & Mini Valve Head Data

Design advantages of the needle valve & mini needle valve

Plug Valve Head Data

Design advantages of the plug valve

Plug Valve Seat Data

Tip arrangements, flow characteristics & seat location device

Pressure / Temperature Data (1)

Sealing pressure / temperature data

Pressure / Temperature Data (2)

Low & High temperature packing material data

Options for Needle Valves (1)

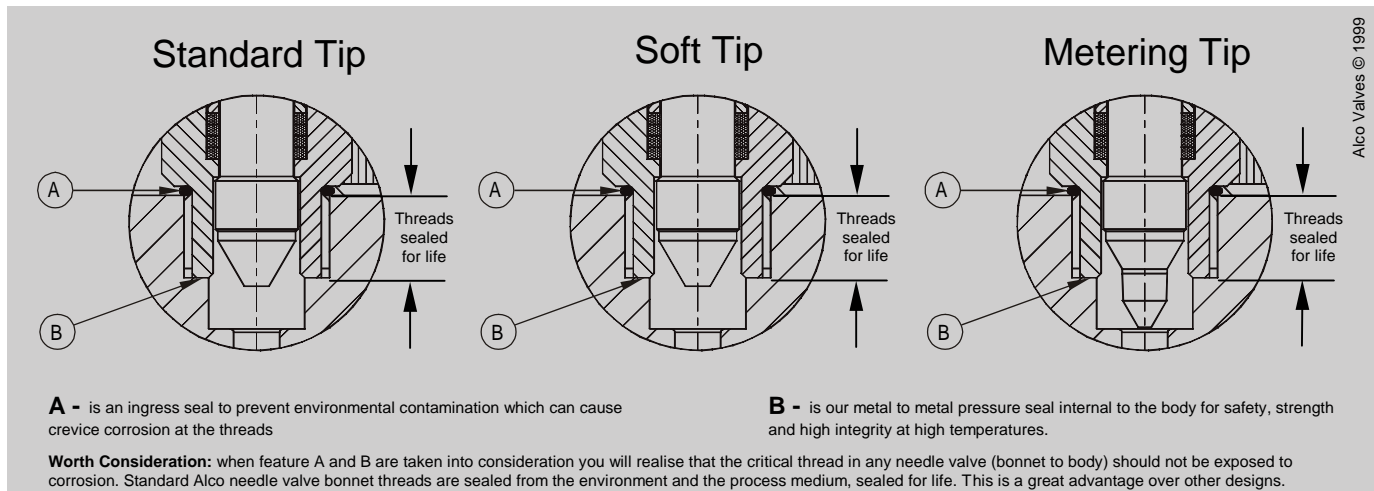
Tips, packings, hand wheels & more

Options for Needle Valves (2)

Specialist options, outside screw & yoke, sub sea applications & more

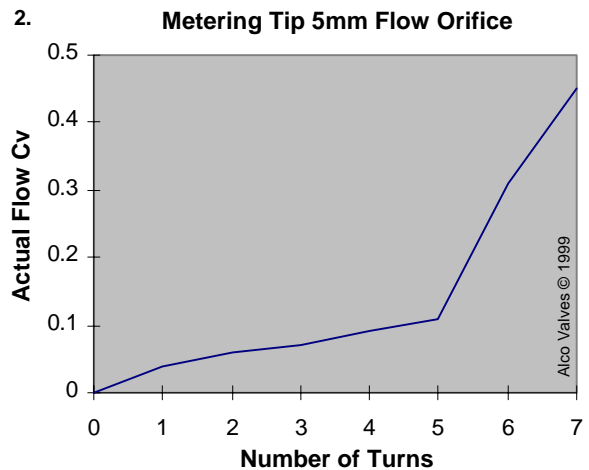
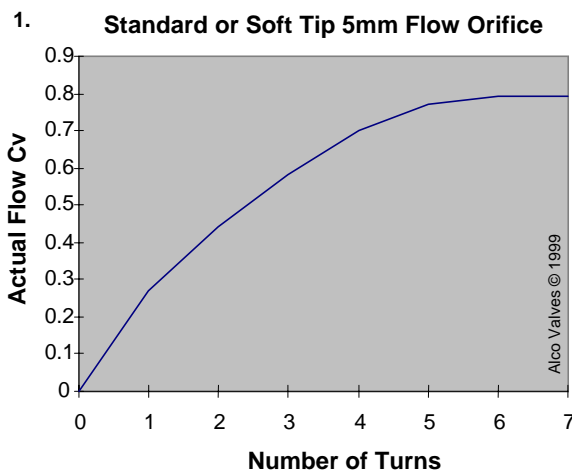
Needle Valve Head Data

Optional Tip Arrangements



As shown, the optional tip feature allows selection of the most effective flow rate for your application. The standard tip offers excellent control of the process medium, however, the metering tip offers finer control of the high pressure process medium. Other tip materials can be supplied such as Monel®, K500, Duplex, Hastalloy® C276 & B2, Ceramic, Kevlar®, Delrin®, Peek® etc. Please enquire.

Needle Valve Flow Data



The precision made Alco series N rising stem Needle Valve can be fitted with a number of alternative flow tips which offer different characteristics. Tips can be manufactured in different materials to satisfy individual customer applications i.e. Monel K500. Two basic flow / lift characteristics are available, for these solutions, as shown in table above.

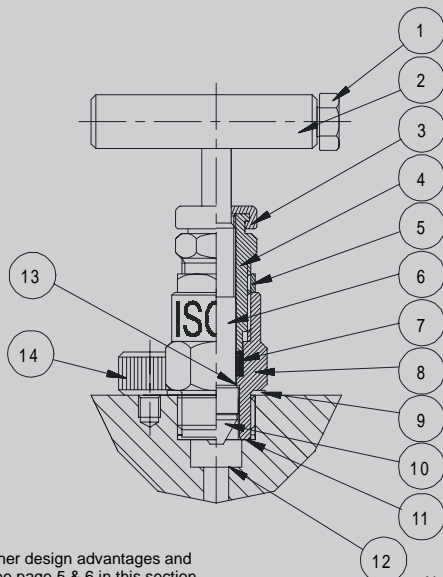
Table 1. shows the flow CV obtainable, for a given number of turns of the tee style handle, when fitted with a standard flow characterised tip. While table 2. shows the flow / lift characteristic obtainable with the metering tip fitted. The metering tip is selected when fine control adjustment at low flows is required. When the metering tip is manufactured to give positive shut off, good control range ability can be obtained. Both styles of flow tip are fitted into needle valve bodies with a maximum drilled orifice size of 5-mm diameter, other sizes available.

See technical section for important additional valve data.

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Needle Valve & Mini Valve Head Data

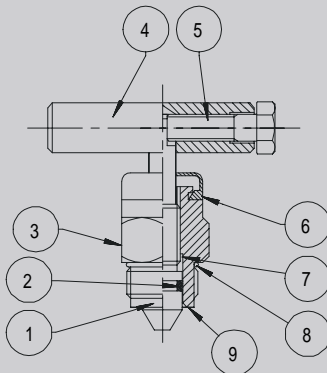
Standard Head



Note: for further design advantages and information see page 5 & 6 in this section

Alco Valves © 1999

Mini Head



Alco Valves © 1999

Needle Valve Units

Our needle valve 2-piece non-rotating stem tip arrangement has a 17-4PH tip and back sealing facility. This unit is suitable for 6,000 psi and 10,000 psi use. Different packing materials are available, to suit a wide range of applications, process medium requirement or line temperature. RTFE and Graphoil (high temperature use) are just a few of the packing materials available. Also different tip materials are available such as 17-4PH, Delrin, Monel K500, Hastalloy. Altogether a flexible design with several additional safety features ensuring long safe field life.

Design Advantages

Needle Valve Head

- (1) Handle retainer
- (2) Positive non-slip handle
- (3) Dust cap - colour coded
- (4) Gland adjuster
- (5) Gland adjuster nut
- (6) Valve stem
- (7) Packing
- (8) Bonnet housing
- (9) Environmental ingress seal
- (10) Stem tip
- (11) Metal to metal body to bonnet seal
- (12) Metal to metal high integrity seat
- (13) Metal to metal back seal
- (14) Locking cam

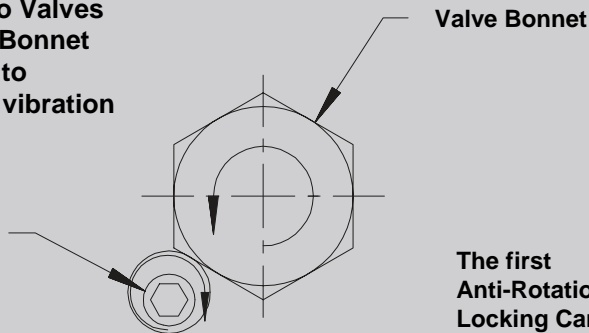
Mini Valve Head

- (1) Rotating spindle mini
- (2) Packing seal
- (3) Mini bonnet housing
- (4) Needle valve "T" handle
- (5) M6 bolt
- (6) Dust cap
- (7) Back seal for longer life
- (8) Ingress seal
- (9) Metal to metal body to bonnet seal

Anti Rotational Bonnet Cam Locking Device - Effective, Simple & Safe

The Alco Valves
Unique Bonnet
System to
combat vibration

Lock
Screw



The first
Anti-Rotational
Locking Cam
Device

The original cam locking safety feature, many times stronger than conventional pinning. It is also easy to remove should internal inspection be required. No difficult bent and distorted pins to re-fit. Saves time and ensure a higher level of safety in body to bonnet connections. Any forces that try to unscrew the bonnet are met by a greater resistance by the cam, the more force, the more the locking cam engages. Effective, simple & safe.

See technical section for important additional valve data.

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REF: AVCAT2K064

REV: 00

Plug Valve Head Data

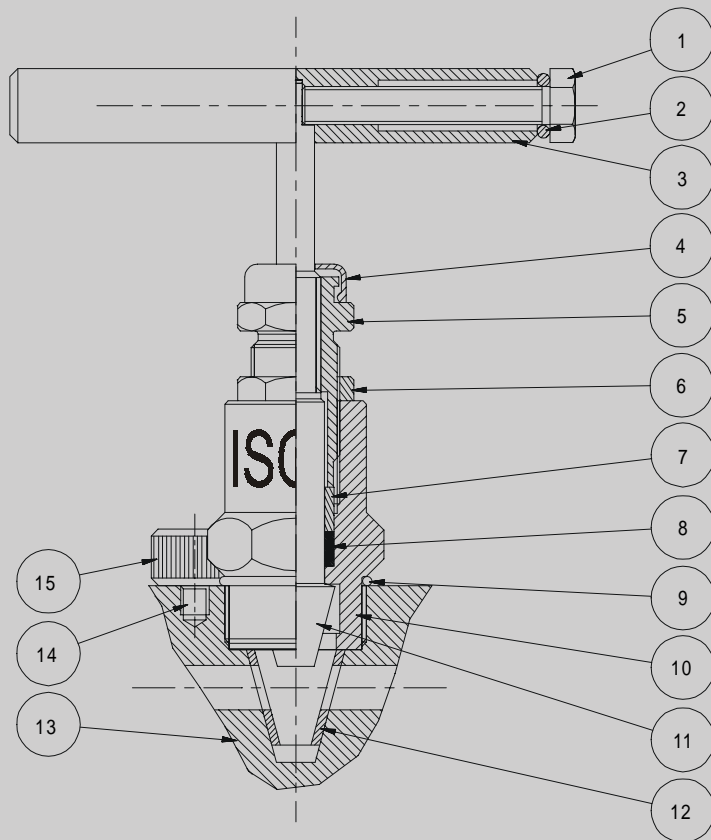
General Information

Plug valve Units

The plug valve 1-piece rotating spindle arrangement has a 316ss tip and back sealing facility. This unit is suitable for 6,000 psi and 10,000 psi use. Different packing materials are available, to suit a wide range of applications, process medium requirement or temperature. PTFE, graphoil (high temperature use) and peek® are just a few of the packing materials available. Also different spindle materials 17-4PH, Monel K500, Hastalloy are available to suit the application. Altogether a flexible design with several additional safety features ensuring long safe field life.

Design Advantages

- (1) Handle Retainer
- (2) Ingress Seal
- (3) Handle
- (4) Dust Cap / colour coded
- (5) Gland adjuster
- (6) Gland adjuster nut
- (7) Spacer
- (8) Packing
- (9) Ingress Seal
- (10) Bonnet Housing
- (11) Valve Spindle
- (12) Seat
- (13) Body
- (14) Cam Screw
- (15) Locking cam



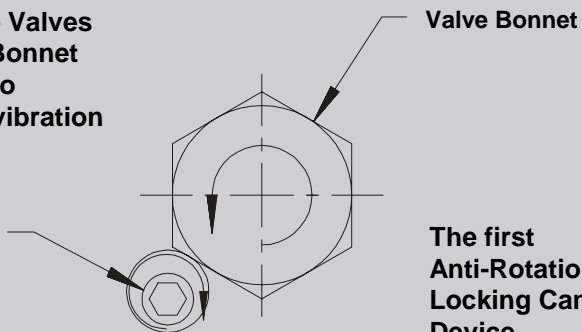
Note: for further design advantages and information see page 8

Alco Valves © 1999

Anti Rotational Bonnet Cam Locking Device – Effective, Simple & Safe

The Alco Valves
Unique Bonnet
System to
combat vibration

Lock
Screw



The first
Anti-Rotational
Locking Cam
Device

The original cam locking safety feature, many times stronger than conventional pinning. It is also easy to remove should internal inspection be required. No difficult bent and distorted pins to re-fit. Saves time and ensure a higher level of safety in body to bonnet connections. Any forces that try to unscrew the bonnet are met by a greater resistance by the cam, the more force, the more the locking cam engages. Effective, simple & safe.

See technical section for important additional valve data.

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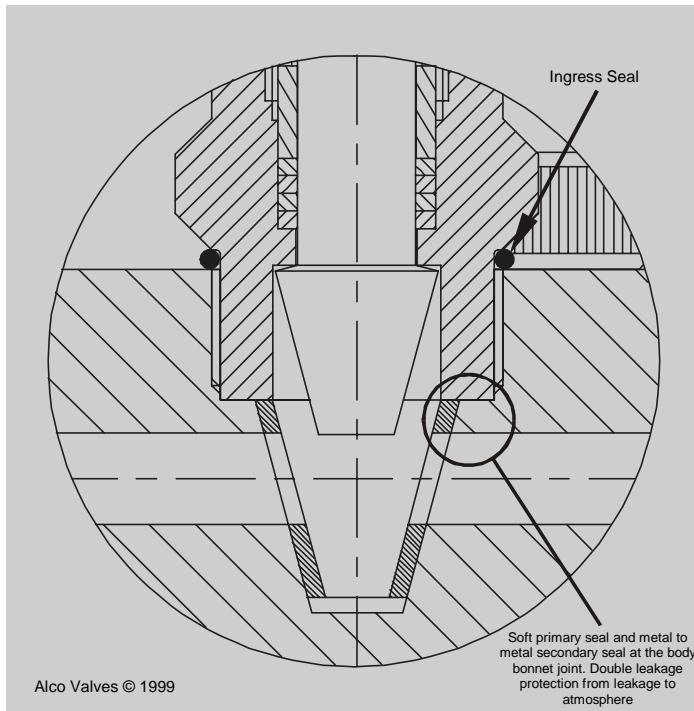
REF: AVCAT2K065

REV: 00

Plug Valve Seat Data

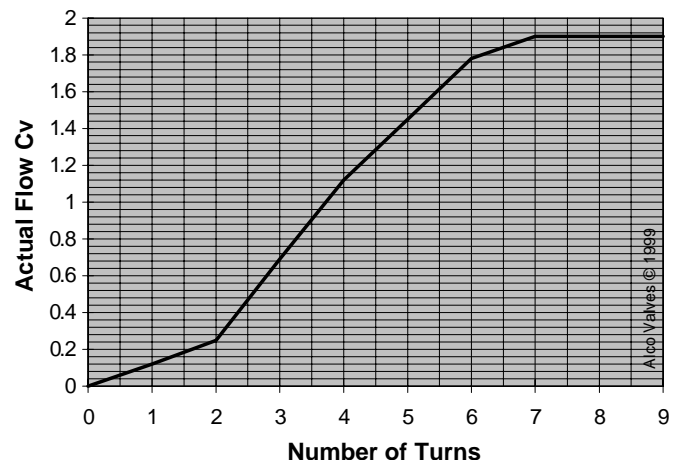
Tip Arrangement – clear roddable bore

7mm flow orifice



As you can see below, the tip feature allows selection of the most effective flow rate for your application. The plug tip offers control and high flow. The roddable clear bore with bubble tight soft seat is especially good for thick viscous mediums such as grease or waxy mediums. Standard seat material is Delrin® with the option of peek for higher temperatures of up to 250°C.

Plug Valve 7mm Orifice Flow Characteristics



Seat Location Device



The Alco PV series seat design has an extra safety feature - not seen in many other manufacturer products, this is our no-turn / no-slip seat location device. This prevents the seat turning due to the flow through the valve or the rotational forces applied to the seat by the rotation of the stem and tip assembly, which would obscure the orifice or cause stoppage / constriction when rodding the bore. Much better than a metal pin device as seen with other manufacturers, which can collect debris or even come loose. The seat can be manufactured in several different materials to suit your applications.

The Alco Series PV rising stem Plug Valve is available with a 7mm-diameter orifice size. The construction of the plug valve provides for a much smoother flow passage compared to the needle valves. This is reflected in the flow / lift curve shown in the table above, where the maximum throughput is over double that of the needle valve fitted with the standard tip. In common with the needle valve, the plug valve can be manufactured so as to give positive shut off and fine control of the flow through the valve.

See technical section for important additional valve data.

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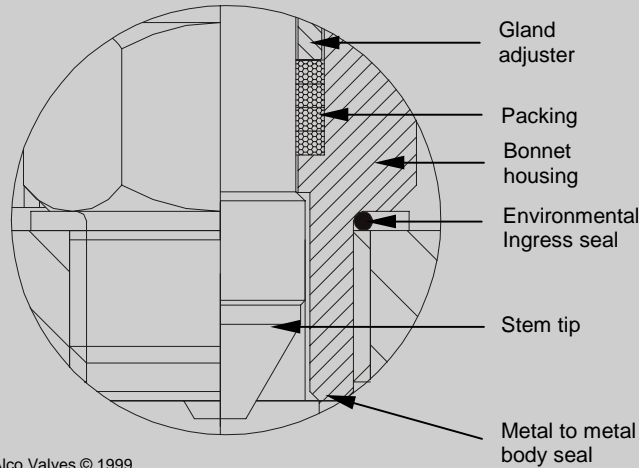
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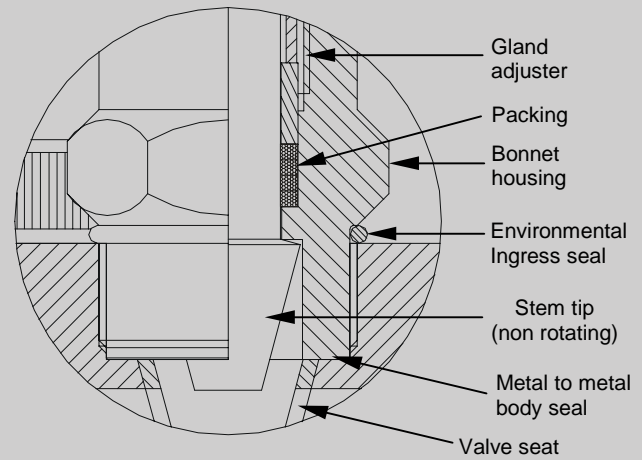
Pressure / Temperature Data

Needle valve head



Alco Valves © 1999

Plug valve head



Sealing Pressure/Temperature Data

Packing Materials

Due to the many diverse applications and operating conditions that the Alco needle valve head unit can be used, this simple yet effective chart (shown below) has been created to aid you, the client, to choose the correct packing choice for your specific application. Should you require any further information, please feel free to contact our technical sales department.

Stem Packing Materials - Sealing Pressure/Temperature Data

This table shows the stem sealing performance obtainable with the valves standard operating torque of 5lbs/ft. Improved stem sealing, up to the maximum temperatures given, can be obtained at increased torque load values. Consult factory for details.

Temperatures shown are those of the line fluid, and the maximum which can be used for the application. Temperatures at the stem packings have reduced values, due to the valve bonnet design acting as a heat sink.

Graphoil 98% Graphite

Gland Packing Sealing Pressures at different Temperatures °C

Material	0°C	100°C	200°C	300°C	400°C	500°C	600°C
DELRIN®	6,000 PSI	6,000 PSI	110°C				
VITON®	6,000 PSI	6,000 PSI	170°C max				
PTFE	6,000 PSI	6,000 PSI	5,000 PSI	230°C max			
RTFE	10,000 PSI	10,000 PSI	8,600 PSI	250°C max			
Peek®	6,000 PSI	5,800 PSI	4,700 PSI	250°C max			
Graphoil®	10,000 PSI	10,000 PSI	8,900 PSI	8,500 PSI	6,700 PSI	3,500 PSI	570°C max (NOTE 2)

Note 1: Temperatures shown are those of the line fluid, and the maximum which can be used for the application. The temperatures at the stem packings will have reduced values, due to the cooling effect of the valve bonnet design.

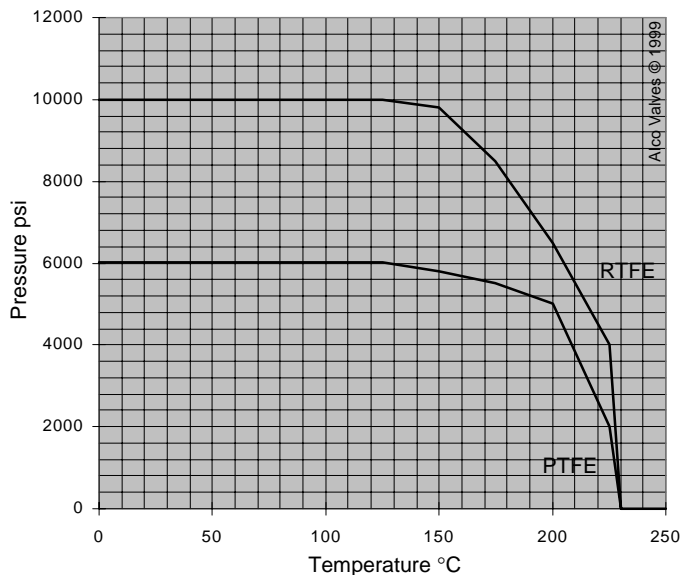
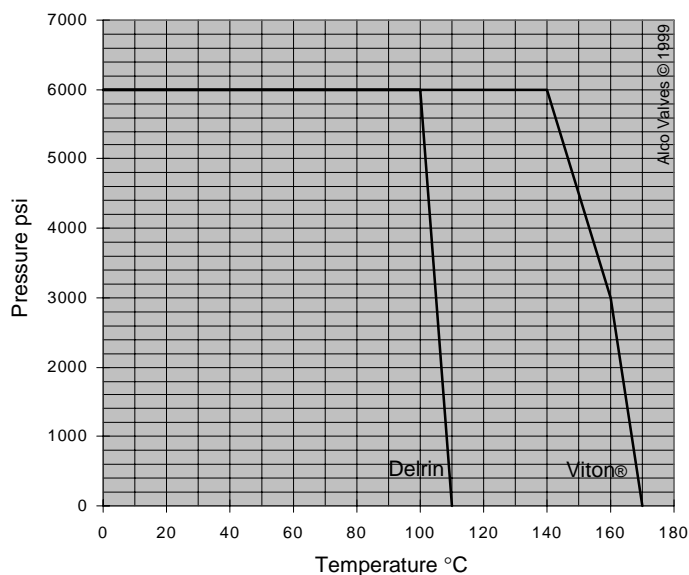
Note 2: Temperatures shown are those of the line fluid, and the maximum which can be used for the application. The temperatures at the stem packings will have reduced values, due to the cooling effect of the valve bonnet design - non-oxidising conditions.

See technical section for important additional valve data.

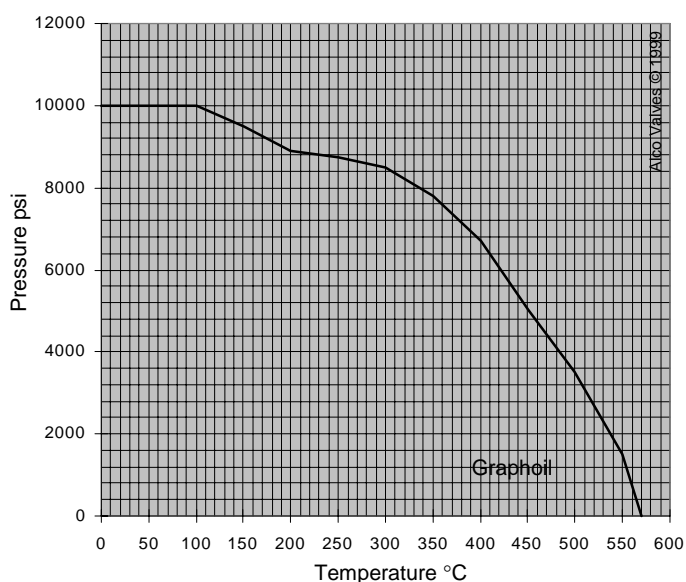
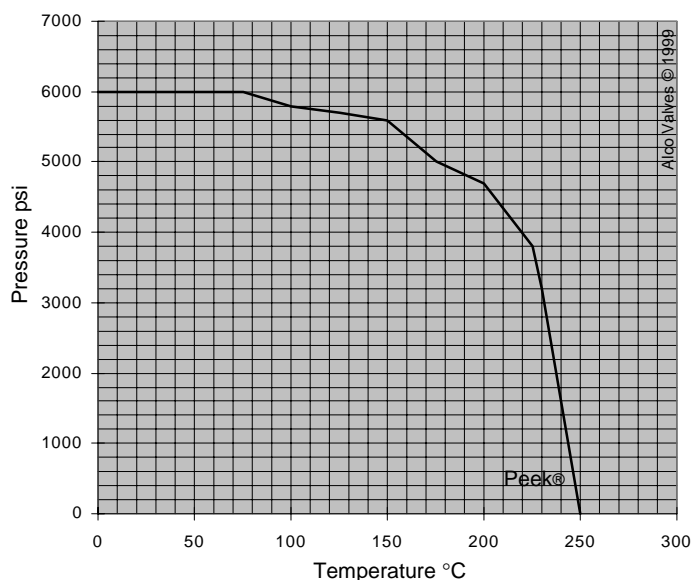
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Pressure / Temperature Data

Low Temperature Packing Materials



High Temperature Packing Materials



Standard Colour Coding - Needle Valves

Needle valves have colour coded caps to indicate general specification

Blue cap = 6,000 psi

Orange cap 10,000 psi

Green cap = Graphoil® high temperature packing

Note 1: Temperatures shown are those of the line fluid, and the maximum which can be used for the application. The temperatures at the stem packings will have reduced values, due to the cooling effect of the valve bonnet design.

Note 2: Plug valves can be fitted with any of the above packing material however the working temperature of the valve may be limited by the performance of the seat material. If in doubt contact our technical sales department.

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See technical section for important additional valve data.

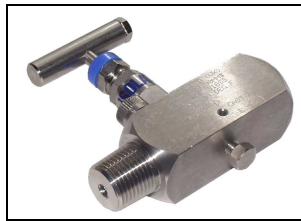
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Options for needle valves

The following table shows the versatility of the Alco range of valves and the many different types of end connections and options that can be used in order to make up a valve that suits your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.



Hand wheel
Option -HW



Internal vent facility
Option -V



Panel mounting facility
Option -PM



Tagging up to 30 Characters



Double or single ferrule
compression end connections for
quick and easy installation or
removal



Extension stem for easy access



Base mounting bracket (BKT)



Butt weld or socket weld end
connectors



Variety of tip types & materials
including Monel® K500 /
Hastalloy® B2 / ceramic



Metering tip for fine control (-MT)
& ball tip (-BT)



Plug valve seats in various
materials to suit your application



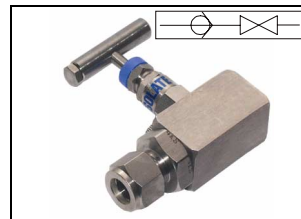
Fire safe option to
BS6755 part 2 API 607 (-FS)



Security locking devices
Op -NLK Padlock Op -PAD



Additional porting for vents,
instruments, purging etc.



(NCV)
Check & needle combination to
prevent back flow



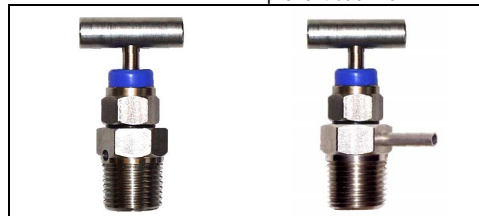
Many types of packing and
seals to suit your application



Blank plug
Pt. No. -BP

Vent plug
Pt. No. -VP

Vent plug with
'T' bar
Pt. No. -CVP



Mini vent valve
Viton packing 6,000 psi rated
Pt. No. NVP4NS

Mini vent valve
with directional vent tube
6,000 psi rated
Pt. No. NVP4NS-P



Degreased valves for special
gas services to several
standards

NOTE: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K069

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Options for needle valves

The following table shows the versatility of the Alco range of valves and the many different types of end connections and options that can be used in order to make up a valve that suits your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.



(-LKHS)
Special security locking devices



(-NVSP)
Seal pots with various capacities



(-OSY)
Outside screw & yoke design to satisfy piping specifications and allow live adjustments



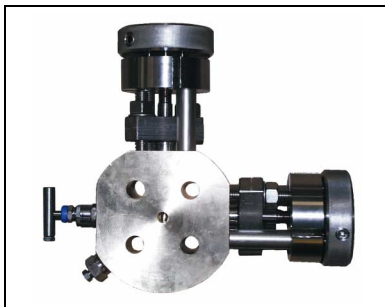
(2VB)
Compact valve blocks and manifolds for any application - to your designs



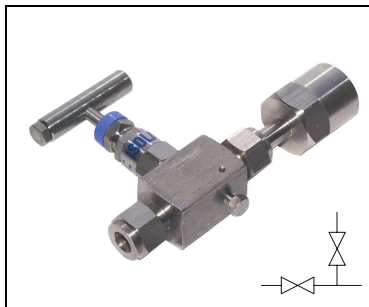
(SSDBB)
Special body designs to suit your application



(SSNV)
Needle valves for sub sea applications



Double Block & Bleeds
Wafer Style With OS&Y



(NGV)
Needle valve with integral vent facility & swivel gauge adapter 360° rotation of any valve and gauge



Mono Flanges / wafer style

Tips	Option Code
Monel®	- 5
Delrin®	- D
Metering Tip	- MT
Hastalloy®	- 8
Ceramic	- C
Peek®	- P

Packing Materials	Option Code
RTFE	Standard
Mini - Viton®	Standard
Graphoil® 570°C	- GP
PTFE coated Viton®	- PV
Other Options	St / St tagging up to 30 characters - TAG
	Double bagged and thermally sealed - DG

NOTE: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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Needle Valves / Plug Valves / Angle Pattern / Miniature Valves

N Series

Needle valves 6,000 psi & 10,000 psi rated

Tube Ended N Series

Compression ended needle valves

UNV Series

Problem solver - unrivalled flexibility of end connections 6,000 psi rated

PV Series

Soft seated plug valves 6,000 psi and 10,000 psi rated

MN Series

Economical mini series 6,000 psi rated

The Alco Midget™ Valve

Compact soft tip needle valve 3,000 psi rated

OB Series

Oblique needle valve 6,000 psi and 10,000 psi rated

AV Series

Angle pattern needle valve 6,000 psi and 10,000 psi rated

FN Series

Compact forged body needle valves

How to order the above

An explanation of the part numbering system

N Series

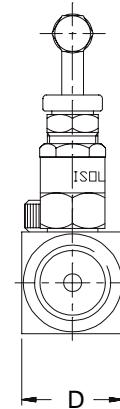
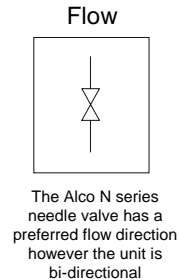
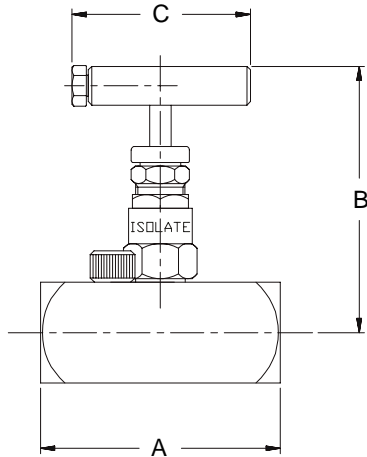
General Information

Needle Valves 6,000 psi & 10,000 psi

The precision made 'N' series, single isolation hand valve utilising metal to metal seat and body to bonnet connection for superior, bubble tight sealing capabilities at both extreme pressures and temperatures. The "N" series also offers non-rotating hardened tip for extended service life. The unique anti-vibration cam locking device at the body bonnet connection is for extra safety. Working pressures are 6,000 psi and 10,000 psi. Maximum working temperature up to 230°C and up to 570°C with GP option at reduced pressure.

Design Features

- Bubble tight metal to metal seat for positive shut off.
- 2 piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Unique bonnet locking cam. No accidental removal of head unit, or loosening due to vibration.
- Positive no slack stem action.
- Bi-directional flow, with preferred flow indicated.
- Back sealing stem to extend packing life.
- Available NPT, BSPP, BSPT threaded.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Repair / service kits available to extend field life further.
- Actuating threads are above the packings to prevent contamination by the process medium.
- Body to bonnet ingress seal fitted as standard to prevent crevice corrosion.
- Full material traceability of major components.
- 100 % Hydrostatic testing.
- Available fire safe to BS6755 Part 2 API 607.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St / St Part No.	Connections Size	A	B (Open)	Orifice size	C	D	CV	KV	Weight (Kgs)
N2NS	1/4" NPT	61	73	5	50	26	0.3	0.26	0.35
N3NS	3/8" NPT	61	73	5	50	26	0.75	0.65	0.35
N4NS	1/2" NPT	68	75	5	50	28	0.75	0.65	0.38
N6NS	3/4" NPT	76	77	5	50	38	0.75	0.65	0.7
N8NS	1" NPT	85	85	8	50	45	1.8	1.6	1.1

For 10,000 psi version add "U" i.e. UN4NS
 For BSPP threads change "N" to "P" i.e. N2PS
 For BSPT threads change "N" to "T" i.e. N2TS
 Packing materials: RTFE (standard) graphoil high temperature option -GP
 Orifice may vary with rating

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K072

REV: 00

Tube Ended N Series

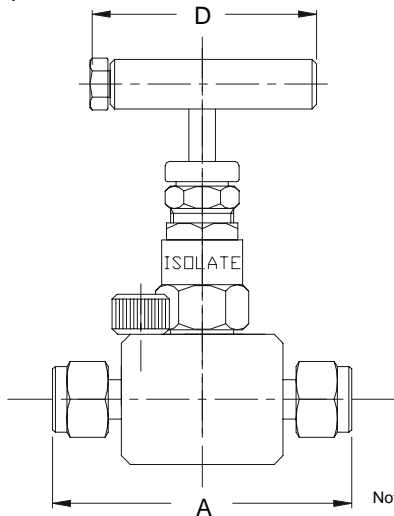
General Information

Compression Ended Needle Valve

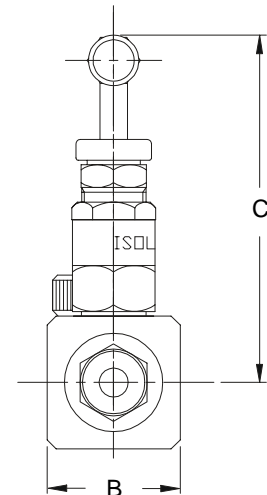
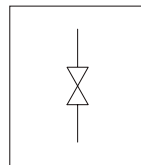
The standard 'N' series with compression type tube fitting ends. Single isolation hand valve utilising metal to metal seat and body to bonnet connection for superior, bubble tight sealing capabilities at both extreme pressures and temperatures. The N series also offers non-rotating hardened tip for extended service life. The unique anti-vibration cam locking device at the body bonnet connection is for extra safety. Working pressures are 6,000 psi and 10,000 psi. Maximum working temperature up to 230°C and up to 570°C with GP option at reduced pressure.

Design Features

- Twin or single ferrule, quick & easy to install compression end connectors.
- Bubble tight metal to metal seat for positive shut off.
- 2 piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Rated 6,000 psi as standard.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Positive no slack stem action.
- Bi-directional flow, with preferred flow indicated.
- Back sealing stem to extend packing life.
- Repair / Service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Unique bonnet locking cam. No accidental removal of head unit, or loosening due to vibration.
- Actuating threads are above the packings to prevent contamination by the process medium.
- Body to bonnet ingress seal fitted as standard to prevent crevice corrosion of bonnet threads.
- Available fire safe to BS 6755 Part 2 API 607.
- Full material traceability of major components.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Flow



Metric O.D. tube sizes available i.e. 6mm / 8mm / 10mm / 15mm etc.
Note: pressure may be limited by the rating of the tube fitting type specified

Part Numbers

St / St Part No.	Connections Size	A	B	C	D	CV	KV	Weight (Kgs)
N2KS	1/4" O.D. x 1/4" O.D.	77	25	74	50	0.3	0.26	0.3
N3KS	3/8" O.D. x 3/8" O.D.	77	25	74	50	0.75	0.65	0.3
N4KS	1/2" O.D. x 1/2" O.D.	90	29	76	50	0.75	0.65	0.35
N6KS	3/4" O.D. x 3/4" O.D.	104	29	76	50	0.75	0.65	0.4
N8KS	1" O.D. x 1" O.D.	120	38	81	50	1.8	1.6	0.9

Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. UN2KS

Dims are in mm (Appx)
See technical section for important additional valve data.

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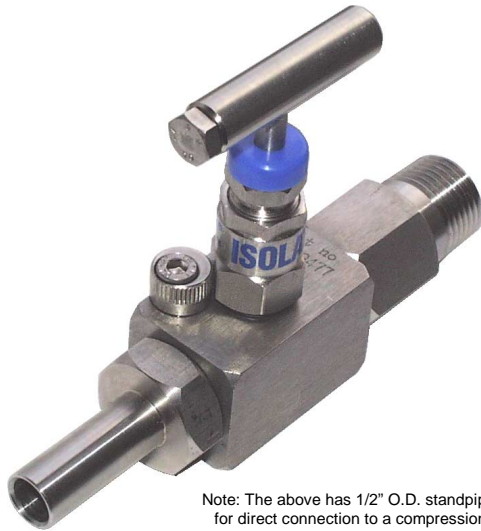
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REV: 00

UNV Series

General Information

Problem solver - unrivalled flexibility of end connections 6000 psi rated

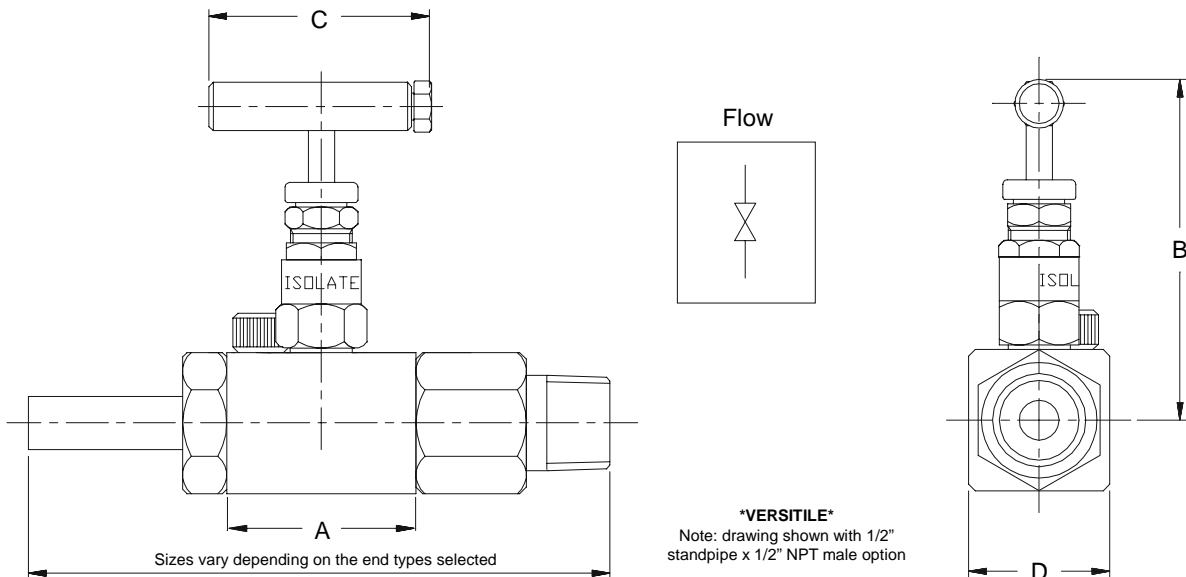


Note: The above has 1/2" O.D. standpipe end (suitable for direct connection to a compression fitting) x 1/2" NPT male thread all with the same valve.

The unique range of universal body needle valves offers the ultimate in instrument valve flexibility, any combination of end types i.e. 1/2" socket weld x 1/8" compression end or 1/2" NPT x 3/8" BSPP male. The combinations from 1/8" to 1/2" are limitless, why use reducers, male studs or adapters when you can now buy custom made valves. Less fittings used at the time of installation means more money is saved and the safer it will be. All joints are pre-tested at our factory. Available in straight or angle pattern body style. The UNV is a compact problem solver - and its available in small quantities.

Design Features

- Absolute flexibility - any end type combination
- 2 piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Ingress seal fitted as standard.
- Temperature rating -50°C to 230°C
- Actuating threads are above the packings to prevent contamination by the process medium.
- Available in straight or 90° angle pattern body style.
- Repair / service kit available to extend field life further.
- 100 % Hydrostatic testing
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B Open	C	D	CV	KV	Weight (KGs)
UNV4NS-13PS	1/2" NPT (F) X 3/8" BSPP (F)	44	76	50	28	0.75	0.65	0.35
UNV2PS-14S	1/4" BSPP (F) X 1/2" Socket Weld	44	76	50	28	0.75	0.65	0.45
UNV3TS-1M4P	3/8" BSPP (F) X 1/2" BSPP (M)	44	76	50	28	0.75	0.65	0.3

For angle pattern add "A" i.e. UNAV4NS-13P
Packing materials: RTFE (standard) graphoil option -GP

See technical section for important additional valve data.

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REF: AVCAT2K074

REV: 00

PV Series

General Information

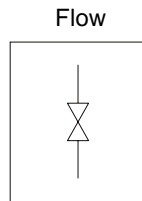
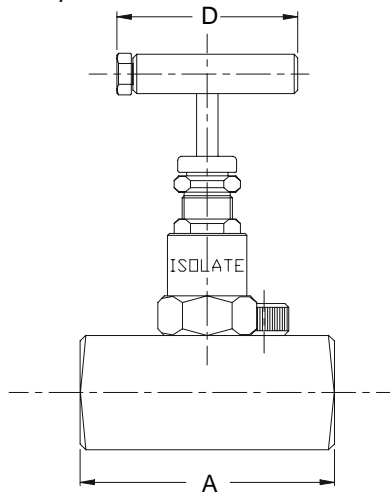
Soft Seated Plug Valves 6,000 psi & 10,000 psi



The rising plug valve offers bubble tight isolation with a renewable soft seat. It is also roddable with 7mm clear bore, high flow with accurate control. Excellent for use with viscous materials at high pressure. The "PV" series, single isolation plug type hand valve utilises soft seat and metal to metal body to bonnet connection for superior, bubble tight sealing capabilities at extreme pressures. The "PV" series also offers non-rotating spindle for extended service life. The unique anti-vibration cam locking safety device at the body bonnet connection is for extra safety. Working pressures are 6,000 psi and 10,000 psi. Maximum working temperature up to 110°C and 250°C with Peek® seat option (at reduced pressure).

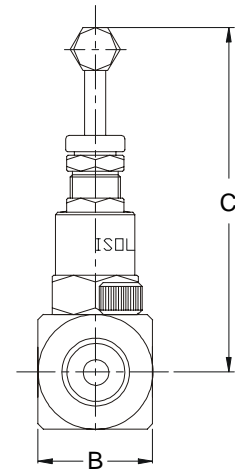
Design Features

- Isolation valves have 2-piece non-rotating plug.
- Soft seat for bubble tight shut off.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Replaceable seat.
- Ingress seal fitted as standard.
- Full material traceability.
- Large clear 7mm roddable bore.
- Repair / service kit available to extend field life further.
- Temperature rating -60°C to 110°C
- Delrin seats as standard & various other seat materials available to suit your application including Peek®, RTFE®, Devol®, KEL-F® and PVDF®.
- Actuating threads are above the packings to prevent contamination by the process medium.
- 100% Hydrostatic testing.
- High flow rate with fine control.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Viscous fluid no problem with large 7mm bore.

option -HW For hand wheel
option -PS for Peek® seat to increase max working temperature to 250°C (at reduced pressure)



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	CV	KV	Weight (kgs)
PV2NS	1/4" NPT female x female	71	32	96	50	1.2	1.1	0.60
PV3NS	3/8" NPT female x female	71	32	96	50	1.5	1.3	0.55
PV4NS	1/2" NPT female x female	71	32	96	50	1.8	1.6	0.50
PV6NS	3/4" NPT female x female	76	38	99	50	1.8	1.6	0.8
PV8NS	1" NPT female x female	85	44	102	50	1.8	1.6	1.2

For BSPP threads change "N" to "P" i.e. PV2PS
Packing materials: PTFE (standard) - Peek® option -PS
For 10,000 psi version add 'U' i.e. UPV2NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K075

REV: 00

MN Series



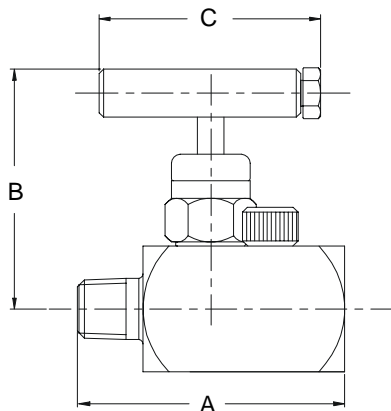
General Information

Economical mini series 6,000 psi

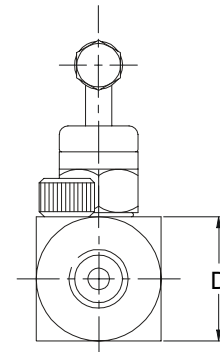
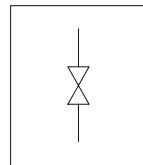
The compact economical mini series needle valve is manufactured to the highest standards. The Mini design is lightweight and easy to operate due to the low torque, dynamic packing seal arrangement, thus reducing cost and installation space required. The mini series is rated up to 6,000 psi (408 bar). The mini series has a high integrity metal to metal body bonnet seal suitable for high pressure use and is fitted with the cam locking device for extra safety.

Design Features

- Compact and lightweight.
- Solid one-piece hardened 17/4 PH tip to ensure bubble tight shut-off.
- Unique bonnet locking cam for safety.
- Pressure responsive Viton® packing seal arrangement.
- Metal to metal body bonnet seal for high pressure use up to 6,000 psi.
- Packing seal below actuating threads to prevent thread contamination by the process medium.
- Positive no slack stem action.
- Bi-directional flow, with preferred flow indicated.
- Temperature rating -15°C to 170°C
- Unique body locking cam. No accidental removal of head unit, or loosening due to vibration.
- Ingress seal fitted as standard.
- Repair / service kit available to extend field life further.
- Full material traceability of major components.
- 100% Hydrostatic testing.
- Back sealing stem to extend packing life.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Flow



Note: M x F & F x F threaded versions are equal in length

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	CV	KV	Weight (kgs)
MN2NS	1/4" NPT	47	51	50	19	0.3	0.26	0.3
MN3NS	3/8" NPT	61	54	50	25	0.75	0.65	0.3
MN4NS	1/2" NPT	68	55	50	28	0.75	0.65	0.35
COMPRESSION ENDS (IMPERIAL) APPROX WHEN TIGHTENED								
MN2KS	1/4" OD	77	54	50	25	0.3	0.26	0.25
MN3KS	3/8" OD	77	54	50	25	0.75	0.65	0.25
MN4KS	1/2" OD	90	55	50	28	0.75	0.65	0.3
COMPRESSION ENDS (METRIC)								
MNM6KS	6mm OD	77	54	50	23	0.3	0.26	0.25
MNM10KS	10mm OD	77	54	50	25	0.75	0.65	0.25
MNM12KS	12mm OD	90	55	50	28	0.75	0.65	0.3

For BSPP change 'N' for 'P' i.e. MN4PS

For BSPT change 'N' for 'T' i.e. MN4TS

Packing materials: Viton® (standard) - PTFE coated option -PV - EPDM option -EPDM

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K076

REV: 00

The Alco Midget™ Valve

General Information

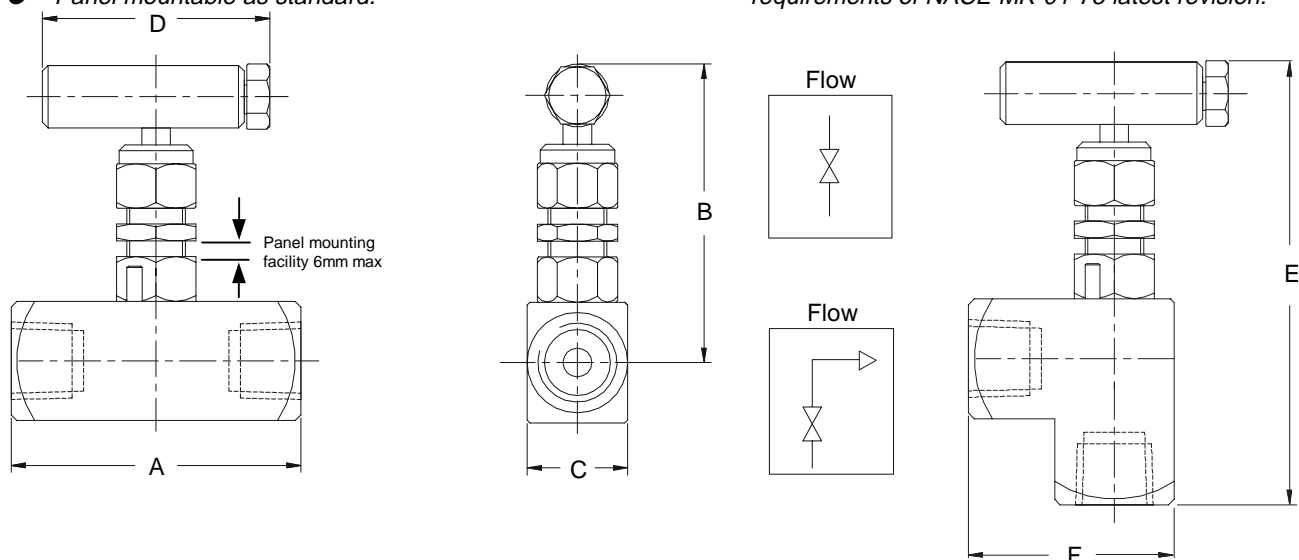
Compact, 3,000 psi, Soft Tip

The Alco Midget™ needle valve is an economical and compact solution for medium or low pressure applications. The Alco Midget™ has a soft tip for low pressure sealing on gas applications. Rated up to 3,000 psi the Midget is the baby of our needle valve range. It has significant applications in most industries where medium and high pressure gases are used. PTFE and Viton® packings are used -50°C up to +170°C (see temperature curve) options such as hand wheels or locking devices are also available.



Design Features

- The Alco Midget™ needle valve is a compact solution for medium pressure liquid or gas applications.
- Soft, bubble tight tip for first time sealing.
- Various end connections available, FxF, MxF, MxM or even quick and easy to fit twin ferrule compression ends.
- Available straight or angle type body format.
- 3,000 psi rated and up to 100°C.
- 2 piece non-rotating tip.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Positive no slack stem action.
- Panel mountable as standard.
- Temperature rating -50°C to 170°C
- Body to bonnet ingress seal fitted as standard to prevent crevice corrosion.
- Full material traceability of major components.
- No slip bolted handle arrangement.
- Back sealing stem to extend packing life.
- Repair / service kit available to extend field life further.
- 100 % Hydrostatic testing.
- Bonnet locking interference pin to prevent loosening caused by vibration or accidental removal by operator.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: the midget uses a bonnet locking pin

Part Numbers

St/St Part No.	Connections Size	A	B (OPEN)	C	D	E	F	CV	KV	Weight (KGS)
MGN2NS	1/4" NPT Female x Female	46	52	18	40	75	35	0.3	0.26	0.13
MGN2NS-1M	1/4" NPT Male x Female	46	52	18	40	75	35	0.3	0.26	0.13
MGN2NS-2M	1/4" NPT Male x Male	46	52	18	40	75	35	0.3	0.26	0.13
MGN2KS	1/4" O.D x 1/4" O.D compression ended	60	52	18	40	85	40	0.3	0.26	0.15

For angle style version add "A" i.e. MGAN2NS

For hand wheel add HW i.e. MGN2NS-HW

Packing materials: Viton (standard) - PTFE coated option -PV - EPDM option -EPDM

See technical section for important additional valve data.

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REF: AVCAT2K077

REV: 00

OB series

General Information

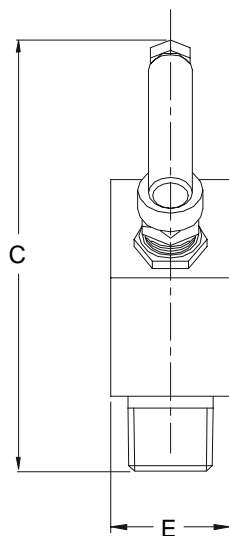
Oblique Needle Valve 6,000 and 10,000 psi rated

The in-line oblique needle valve, 6,000 psi and 10,000 psi versions. Far less pressure drop and flow restriction than a standard needle valve due to the near-straight bore through the valve. Operator friendly due to the angled head unit and handle. Particularly good for use with heavy or viscous fluids. Available in male x female and female x female versions. Options such as hand wheel and locking device available.

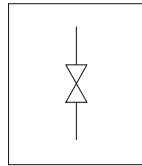


Design Features

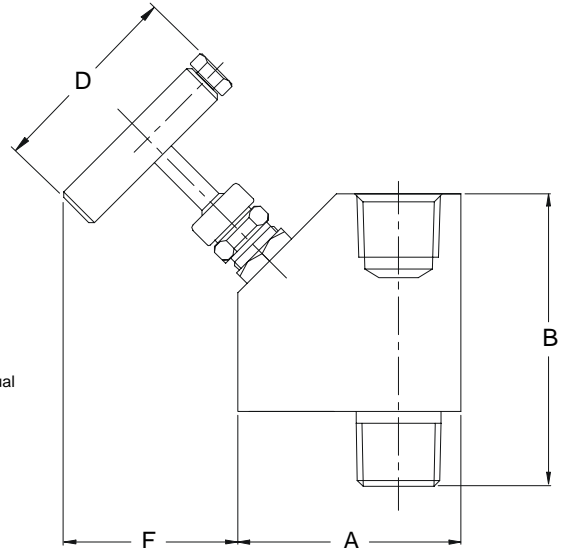
- Bubble tight metal to metal seat for positive shut off.
- 2 piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Positive no slack stem action.
- Bi-directional flow, with preferred flow indicated.
- Oblique style for high flow and ease of operation.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C
- Can be fitted with graphoil packings for high temperature use (570°C).
- Available male x female, female x female formats
- Available NPT, BSPP, BSPT.
- Full material traceability.
- 100% Hydrostatic testing.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Flow



Note: male x female and female x female dimensions are equal



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	Cv	Kv	Weight (Kgs)
OBN2NS	1/4" NPT male x female	50	63	103	50	25	44	0.3	0.26	0.6
OBN3NS	3/8" NPT male x female	56	70	108	50	28	44	0.75	0.65	0.8
OBN4NS	1/2" NPT male x female	56	80	113	50	30	44	0.75	0.65	1
OBN6NS	3/4" NPT male x female	63	80	113	50	38	44	0.75	0.65	1.4
OBN8NS	1" NPT male x female	75	95	125	50	44	44	1.8	1.6	2.2

For male inlet add -1M i.e. OBN4NS-1M.

Packing materials: RTFE (standard) graphoil option -GP

For 10,000 psi version add 'U' i.e. UOBN4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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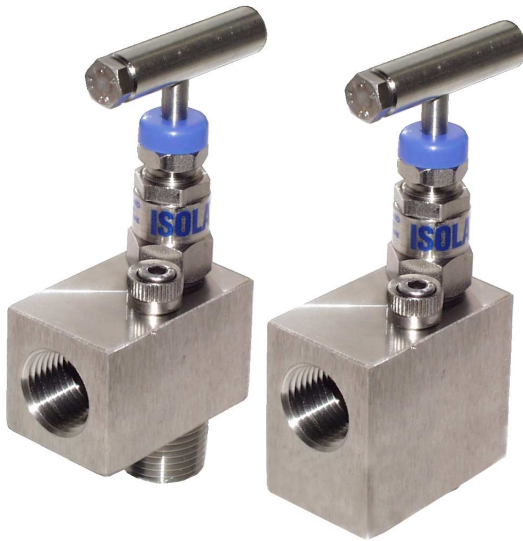
REF: AVCAT2K078

REV: 00

AV series

General Information

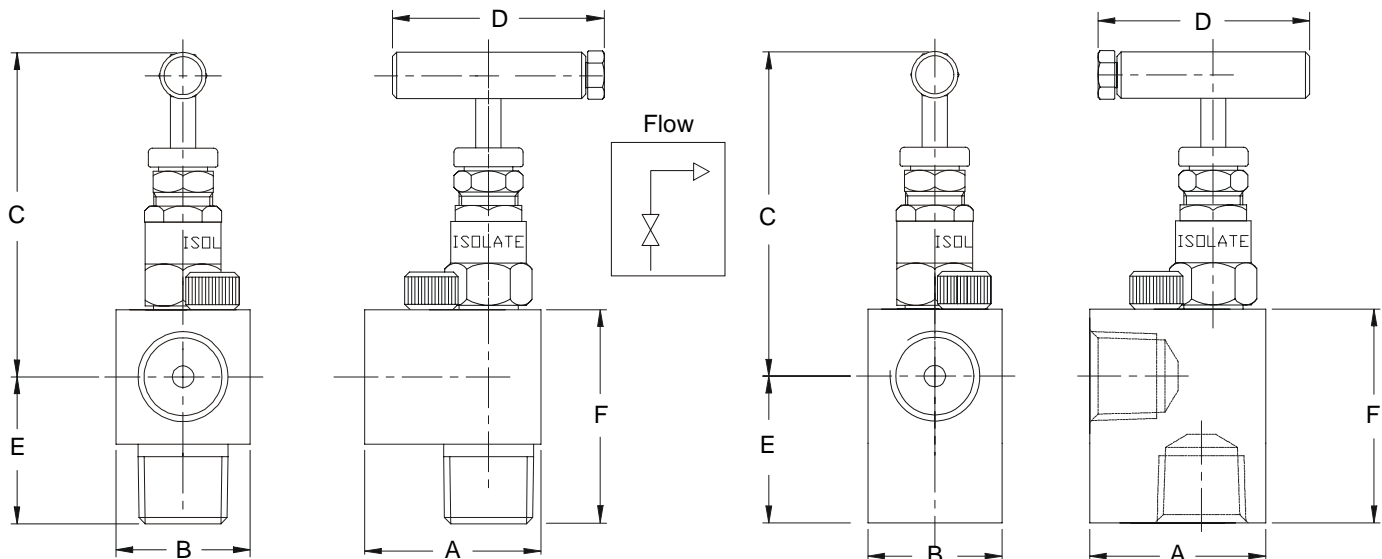
6,000 and 10,000 psi Angle Pattern Needle Valve



The 90° angle pattern needle valve offers high pressure bubble tight sealing in a compact body allowing pipe work origination to change by 90° at the valve. The "AV" offers many different connections, male x male, male x female, threaded and even compression type tube ends. Pressure ratings 6,000 psi and 10,000 psi. Sizes from 1/4" to 1". Several options such as locking device and hand wheel operator are available. The "AV" series is made in 316 stainless steel as standard and various super alloys.

Design Features

- 2-piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seal fitted as standard.
- Full material traceability.
- 100% Hydrostatic testing.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	CV	KV	Weight Kgs
AV2NS	1/4" NPT female x female	38	25	76	50	29	44	0.3	0.26	0.3
AV3NS	3/8" NPT female x female	38	25	77	50	33	48	0.75	0.65	0.35
AV4NS	1/2" NPT female x female	42	28	77	50	35	51	0.75	0.65	0.4
AV6NS	3/4" NPT female x female	45	38	83	50	41	63	0.75	1.65	0.7
AV8NS	1" NPT female x female	50	45	86	50	45	70	1.8	1.6	1.1

Dims are in mm (Appx)

For male inlet add -1M i.e. AV4NS-1M
Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. UAV4NS-1M

See technical section for important additional valve data.

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REF: AVCAT2K079

REV: 00

FN Series

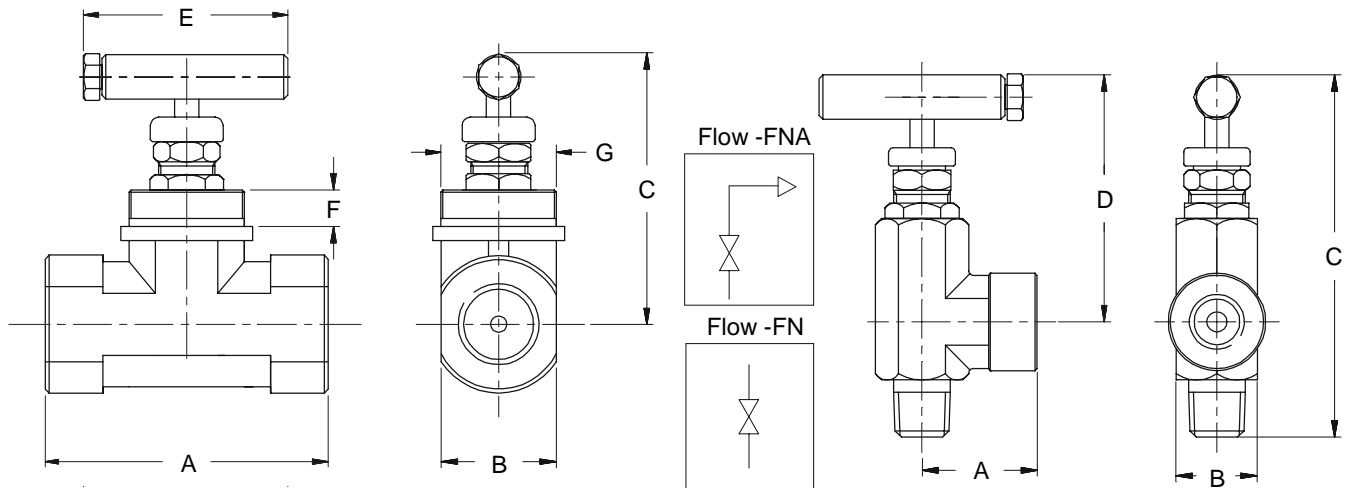
General Information

Compact, Forged Body Needle Valves

The 'FN' series, forged body valve range utilising a one piece high strength forged 316 stainless steel body. The 'FN' series also offers non-rotating hardened tip for extended service life. Working pressures are 6,000 psi and 10,000 psi. Maximum working temperature up to 230°C and up to 570°C with GP option (at reduced pressure). The FN series is available in straight or 90° angle pattern body version with many other standard options available such as single nut style panel mounting facility, hand wheel and locking device.

Design Features

- Compact, one piece high strength forged body as standard.
- Bubble tight 2 piece non-rotating hardened (17-4PH) tip.
- Pressure responsive multi-ring / piston packing with compression and pressure dynamic sealing.
- Available with single nut panel mounting facility.
- Available in straight or angle pattern body format.
- Various end connections available f x f, m x f, m x m and compression ends.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Positive no slack stem action.
- Repair / service kit available to extend field life further.
- Full material traceability of major components.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.
- 100 % Hydrostatic testing.



Shown with panel mount option

Note: pressure rating may be limited by the rating of the tube fitting type specified

Part Numbers

St / St Pt No.	Connections Size	A		B (Open)		C		D		E	F Max Panel Thickness	G	Cv	Kv	Weight (Kgs)
		Straight	Angle	Straight	Angle	Straight	Angle	Straight	Angle						
FN2NS	1/4" NPT	58	28	20	20	75	89	63	61	50	7	20	0.3	0.26	0.25
FN3NS	3/8" NPT	58	28	20	28	75	112	63	74	50	7	20	0.75	0.65	0.25
FN4NS	1/2" NPT	74	38	28	28	90	112	73	74	50	9	29	0.75	0.65	0.4
FN6NS	3/4" NPT	80	41	38	38	94	118	73	77	50	9	29	0.75	0.65	0.8

For angle pattern add 'A' i.e. FNA4NS

For twin ferrule compression end connections change 'N' to 'K' i.e. FN4KS

Packing materials: RTFE (standard) graphoil option -GP

For panel mounting facility add 'PM' i.e. FN4NS-PM

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K080

REV: 00

How to order Needle & Plug Valves

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

**1/2" NPT female x female needle valve constructed in 316 stainless steel.
Fitted RTFE (25% glass fibre filled) packing, complete with Monel K500® tip
and hand wheel operator, rated 10,000 psi (690 Bar).**

The part number shown below is made up using the system :-

Rated pressure	Valve series	Valve size	End connections	Material of construction/ body parts	Trim material (stem)	Options
U	N	4	N	S	- 5 -	H W
Blank = Std Rating U = 10,000 psi	N = Needle Valve FN = Forged Needle Valve PV = Plug Valve MGN = Midget™ Range OB = Oblique Pattern XN = High Pressure Range AV = Angle Pattern MN = Mini Series	2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4" 8 = 1"	B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads	B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO®, Super Duplex, Zirconium® are available	-U = Duplex -5 = Monel 400 -8 = Hastalloy -P = peek® tip -D = Delrin tip -MT = Metering tip -C = Ceramic tip	No digit = T Bar HW = Hand wheel NLK = Locking device with indicator & key PM = Panel mount DG = degreased & cleaned Pad = Pad lock & keys FS = Fire safe to BS6755 Part 2 V = Internal vent facility 1M = Male thread - one side 2M = Double male thread

Socket weld and butt weld end connectors may be extended for thermal protection of the valve internals.
Note: Pressure ratings may vary dependant upon the material of construction i.e. brass construction limited up to 3,000 psi.

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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Gauge Valves / Multi-Port Valves & Air Distribution Manifolds

OV Series

Orifice valves 6,000 psi and 10,000 psi rated

GV Series

Multi-port gauge valves 6,000 psi and 10,000 psi rated

GPV Series

Rising plug multi-port gauge valves 6,000 psi and 10,000 psi rated

ADM-PRO™ Needle Valve Style

Air distribution manifolds rated up to 10,000 psi

NVDM Series

Integral needle valve distribution manifolds 6,000 psi and 10,000 psi rated

How to order the above

An explanation of the part numbering system

OV Series

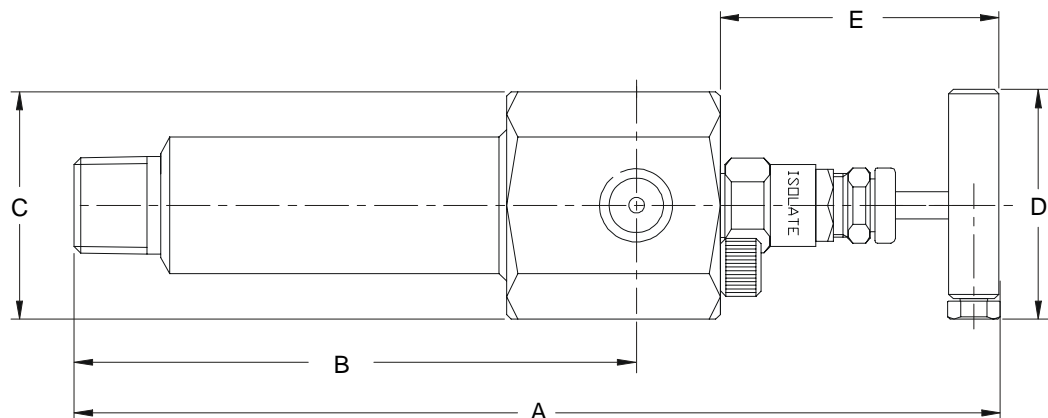
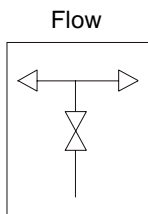
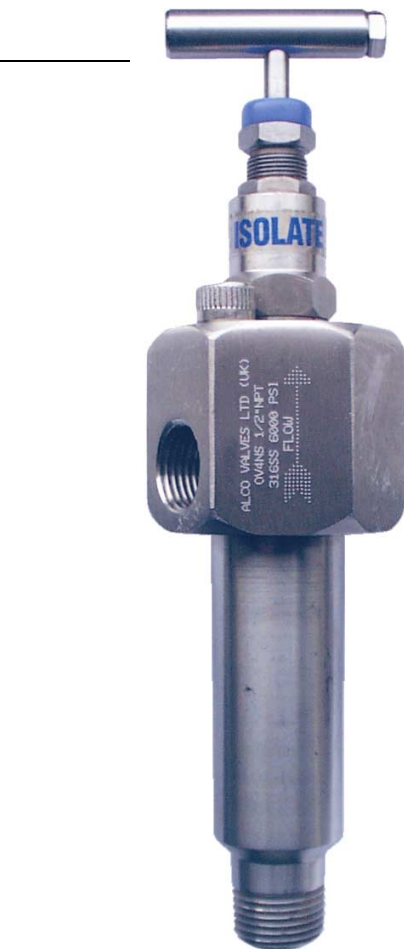
General Information

6,000 & 10,000 psi Rated

The OV series is an orifice or root valve used as a single pipeline sample / vent or for mounting in pairs across an orifice plate for extended interface of an instrument in a pipeline. The OV series single isolation valve utilises metal to metal seat and body to bonnet connection for superior, bubble tight sealing capabilities at both extreme pressures and temperatures. The OV series also offers non-rotating hardened tip for extended service life. The unique anti-vibration cam locking safety device at the body bonnet connection is for extra safety. Working pressures are 6,000 psi and 10,000 psi. Maximum working temperature up to 260°C and up to 570°C with GP option at reduced pressure. Can be supplied in welded or threaded connections.

Design Features

- Temperature rating -50°C to 230°C (570°C with GP option).
- Unique bonnet locking cam.
- Ingress seal fitted as standard.
- 100 % Hydrostatic testing.
- Absolute flexibility.
- 2 piece non-rotating hardened (17-4PH) tip for first time seal.
- Repair / service kit available to extend field life further.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Bubble tight shut off.
- Positive no slack stem action.
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A (Open)	B	C	D	E	CV	KV	Weight (KGs)
OV4NS	1/2" NPT (M) inlet x 2 x 1/2" (F) outlets	203	110	50	50	61	0.75	0.65	1.1
OV6NS	3/4" NPT (M) inlet x 2 x 3/4" (F) outlets	203	110	50	50	61	0.75	0.65	1.2

For high pressure 10,000 psi version add "U" i.e. UOV4NS
Packing materials: RTFE (standard) graphoil option -GP

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REF: AVCAT2K082

REV: 00

GV Series



Note: shown with vent & blank plug (optional)

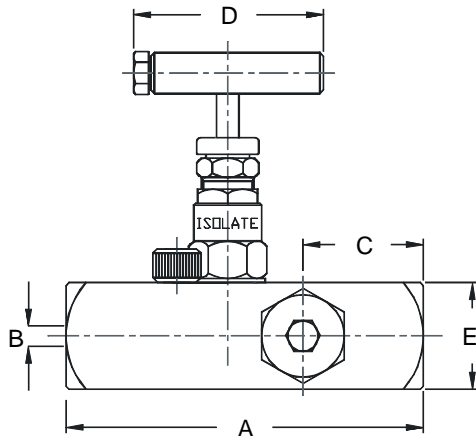
General Information

Multiport Gauge Valves 6,000 psi & 10,000 psi

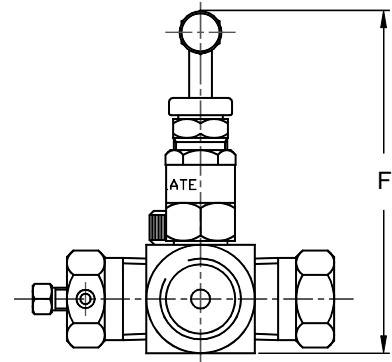
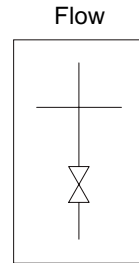
The GV series multiport gauge valve provides an economical method of mounting pressure gauges, manometers, pressure transducers or transmitters and includes vent and blanked port facilities or additional drains in a circuit or system. Both 1/2" and 3/4" have 1/2" side ports. Especially suited as a method of using a manometer and a sample manometer or a transmitter and manometer simultaneously. Compact 1/4" all around version available. Other options such as hand wheels and locking devices are available.

Design Features

- 2-piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Positive no slack stem action.
- Bubble tight, metal to metal seat for positive shut off.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- 50mm and 100mm extended versions are available.
- Temperature rating -50°C to 230°C.
- Ingress seal fitted as standard to prevent crevice corrosion.
- Repair /service kits available to extend service life further.
- Full material traceability of major components.
- 100% Hydrostatic testing.
- Vent and blanking plugs available. Option VP-BP.
- Weld ends available (butt or socket type).
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75.



Add -VP-BP for vent & blank plug.
Shown with F x F connections and optional vent & blanking plugs.



Note: can be supplied with soft tip for bubble tight first time sealing on gas applications

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E sq.	F	CV	KV	Weight (kgs)
GV2NS	1/4" NPT MALE INLET 3 X 1/4" NPT FEMALE OUTLETS	84	5	24	50	25	86	0.3	0.26	0.4
GV4NS	1/2" NPT MALE INLET 3 X 1/2" NPT FEMALE OUTLETS	95	5	32	50	28	90	0.75	0.65	0.8
GV4NS-16MN	3/4" NPT MALE INLET 3 X 1/2" NPT FEMALE OUTLETS	95	5	35	50	32	93	0.75	0.65	0.8
GV6NS	3/4" NPT MALE X 3/4" NPT FEMALE AND 1/2" NPT SIDE PORTS	100	5	35	50	38	99	0.75	0.65	0.85

For 50mm extended male end add EXT50 i.e. GV4NS-EXT50
For BSPT version change 'N' to 'T' i.e. GV4TS
Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add 'U' i.e. UGV4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K083

REV: 00

GVP Series

General Information

6,000 & 10,000 psi

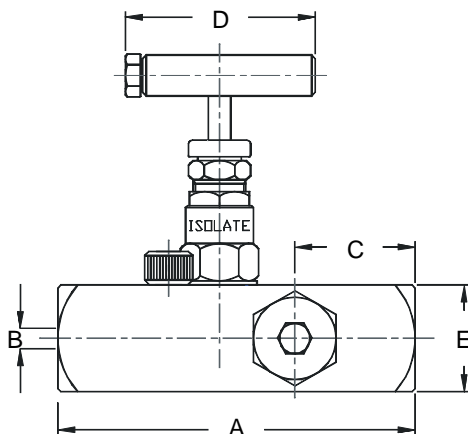


Note: shown with vent & blank plug (optional)

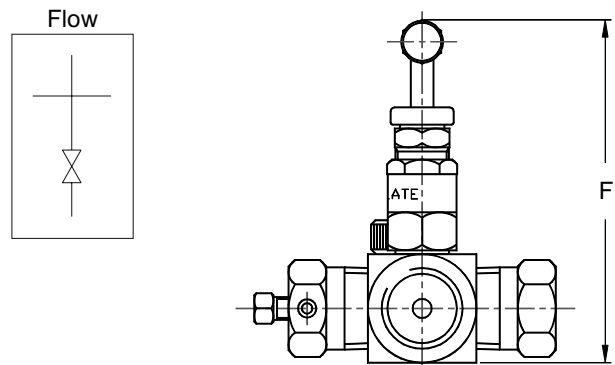
The "GVP" series multiport gauge valve provides an economical method of mounting pressure gauges, manometers, pressure transducers, or transmitters and including vent port facilities or additional drains in a circuit or system. Side ports are 1/2" NPT female as standard. Especially suited as a method of using a manometer and a sample manometer or a transmitter and manometer simultaneously. The "GVP" series rising plug multiport gauge valve offers bubble tight shut off high flow with accurate control, fully roddable clear bore, soft replaceable seat. Excellent for use with viscous materials at high pressure.

Design Features

- Soft seat for bubble tight shut-off.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and temperature use.
- Replaceable seat.
- Ingress seal fitted as standard.
- High flow rate with fine control.
- Handles viscous fluids easily with a large 7mm clear roddable bore.
- Temperature rating -60°C to 110°C
- Repair / service kit available to extend field life further.
- Vent and blanking plugs available. Option VP-BP.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75.
- 50mm and 100mm extended versions are available i.e. GVP4NS – Ext50 = 50mm Extended.
GVP4NS – Ext100 = 100mm Extended.



Add -VP-BP for vent & blank plug, shown with F x F connections & optional vent plug



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	CV	KV	Weight (kgs)
GVP4NS	1/2" NPT MALE INLET 3 X 1/2" NPT FEMALE OUTLETS	114	5	38	50	32	93	0.75	0.65	0.8
GVP4NS-F	1/2" NPT FEMALE INLET 3 X 1/2" NPT FEMALE OUTLETS	114	5	38	50	32	93	0.75	0.65	0.8

For 50mm extended male end add EXT50 i.e. GVP4NS-EXT50
For BSPT change 'N' to 'T' GVP4TS
Packing materials: RTFE (standard) graphoil option -GP
For 10,000psi version add 'U' i.e. UGVP4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K084

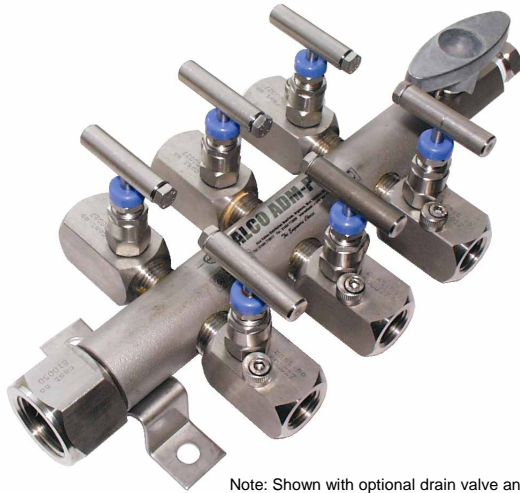
REV: 00

ADM-PRO™

General Information

Rated up to 10,000 psi

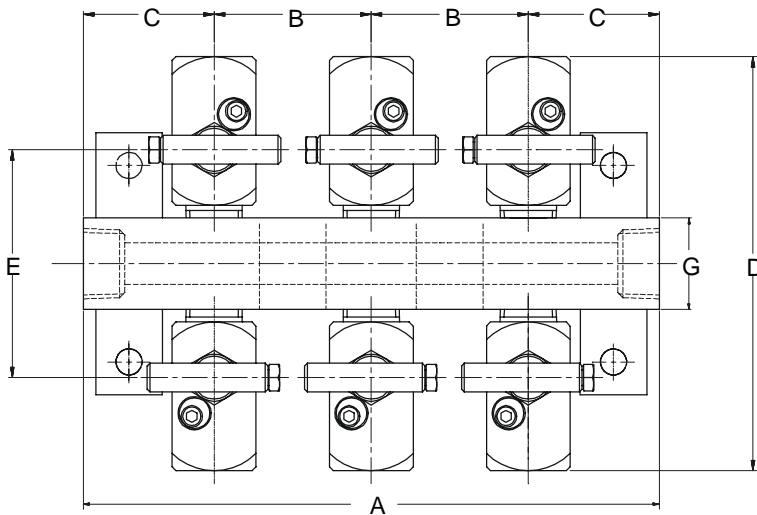
The economical ADM-PRO™ range of compact, air distribution manifolds come in our standard configuration (shown below) or to client specifications. ADM-PRO™ can be supplied with up to 40 take-off valves. Inlet and drain connections are threaded as standard however, can be made to your specification, this includes flanges i.e. 150 lbs. RF. or even socket / butt weld. Mounting legs are supplied as standard to make installation easier. Take off sizes can vary from 1/4" to 1" in size. Working pressures range from 750 psi version up to 10,000 psi. Other options such as hand wheels and locking devices can be supplied.



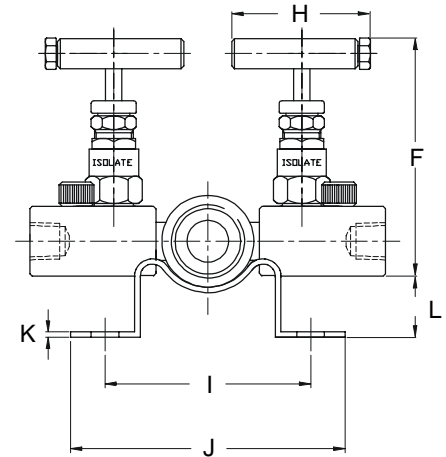
Note: Shown with optional drain valve and plug

Design Features

- 2-piece non-rotating hardened (17-4PH) tip for first time seal and long service life.
- Bubble tight metal to metal seat for positive shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Mounting legs as standard.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seal fitted as standard.
- Repair / service kit available to extend field life further.
- Full material traceability.
- 100% Hydrostatic testing.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Note: Inlet and drain is supplied threaded as standard.
Please specify separately if valves are required.



Note: Various mounting brackets can be supplied - please specify at the time of ordering.

Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	J	K	L	Weight (kgs)
ADM6-N4NS	3/4" Inlet / Outlet 6 x 1/2" NPT take offs	220	60	50	158	87	94	35	50	75	100	2	18	3.5

Packing materials: RTFE (standard) graphoil option -GP
Locking device available:
-LKT = All take off valves lockable
-LKI = Inlet valve lockable
-LKD = Drain valve lockable
-LKA = All valves lockable

Dims are in mm (Appx)
Sizes and dimensions will vary according to format valves used and specification.

See technical section for important additional valve data.

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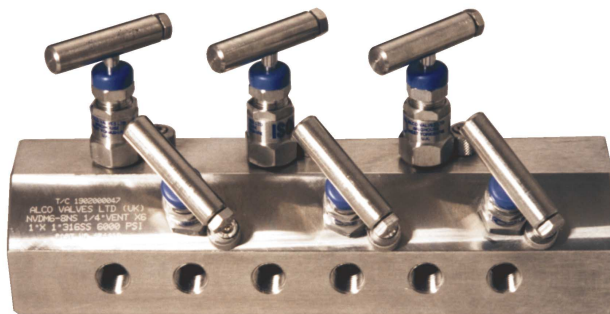
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REF: AVCAT2K085

REV: 00

General Information

High Pressure Distribution Manifolds 6,000 psi & 10,000 psi Rated



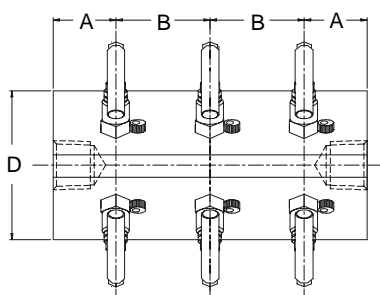
Note: version shown is type B - 6-way with 1/4" take offs

The Alco NVDM compact, integral needle valve type, high integrity distribution manifolds come in our standard configuration (shown below) or to client specifications. NVDM can be supplied with up to 20 take-off valves. Inlet and drain connections can be made to specification, this includes flanges i.e. 150 lbs. RF socket / butt weld, threaded or even compression type tube connectors. M10 base mounting holes are supplied as standard to make installation easier. Take off connections are 1/4" or 1/2" in size. Working pressures range from vacuum up to 6,000 psi & 10,000 psi. Valve orientations come in 3 formats type A, B or C for ease of use and maximise space envelope utilisation and operator access.

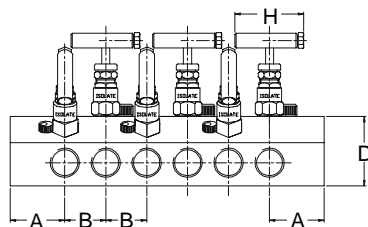
Design Features

- Isolation valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam on each valve.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Ingress seals fitted as standard.
- Many formats to suit your application.
- Maximum temperature 230°C (570°C with GP option).
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Repair / service kit available to extend field life further.
- Full material traceability.
- 100% Hydrostatic testing.
- High Pressure (up to 10,000 psi).
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.

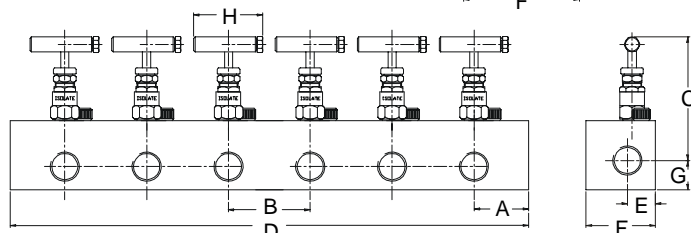
Type A
(Double)



Type B
(Angled)



Type C
(Single)



Type A (Part No. NVDMA6-4NS)		Appx Weight 6kg
A	40	
B	60	
C	116	
D	95	
E	47	
F	156	
G	22	
H	50	
Type B (Part No. NVDMB6-4NS)		Appx Weight 4.5kg
A	40	
B	30	
C	112	
D	51	
E	34	
F	85	
G	15	
H	50	
I	21	
J	17	
Type C (Part No. NVDMC6-4NS)		Appx Weight 7.6kg
A	40	
B	60	
C	91	
D	380	
E	30	
F	51	
G	21	
H	50	

Dim's are in mm (Appx)

Packing materials: RTFE (standard) graphoil (max 560°C) option -GP

See technical section for important additional valve data.

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REF: AVCAT2K086

REV: 00

How to order gauge valves & Air Distribution Manifolds

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

Multi port gauge valves, 1/2" Male inlet x 1/2" NPT Female outlet with 2 x 1/2" NPT Female side ports. Constructed in 316 St/St. RTFE packing rated 6,000 psi complete with hand wheel.

The part number shown below is made up using the system :-

Rated pressure	Type	Connection size	Threads / ends	Material of construction / body parts	Options		
	GV	4	N	S	-	H	W
Blank = Std Rating U = 10,000 psi		2 = 1/4" 3 = 3/8" 4 = 1/2" 6 = 3/4"		B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO®, Super Duplex, Zirconium® are available			
			B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads			No digit = T Bar HW = Hand wheel NLK = Locking device with indicator & key LKT = All take offs locking LKI = Inlet locking LKD = Drain locking LKA = All valves locking PM = Panel mount DG = degreased & cleaned Pad = Pad lock & keys 1M = male thread - one side 2M = Double male thread	
GV = Multi-port gauge valve GVP = Multi-port gauge valve plug type OV = orifice needle valve ADM = ADM-PRO™ air distribution manifolds (followed by No. of take offs & valve type). NVDM = High pressure integral type distribution manifolds (followed by No. of take offs & valve type).							

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco Valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K081

REV: 00

Instrument Manifolds

2VR Series

2 valve manifold 6,000 psi and 10,000 psi rated

2VG Series

Inline 2 valve manifold 6,000 psi and 10,000 psi rated

2VBD Series

Direct mount 2 valve manifold 6,000 psi and 10,000 psi rated

2VBM Series Base Mounted

Direct mount 2 valve manifold 6,000 psi & 10,000 psi rated

3VR Series

Remote mount 3 valve manifold 6,000 psi and 10,000 psi rated

3VBD Series

Direct mount 3 valve manifold 6,000 psi and 10,000 psi rated

3VD Series

Direct flange mounted (T section) 3 valve manifold 6,000 psi rated

3VBM Series Base Mounted

Direct mount 3 valve manifold 6,000 psi rated

5VR Series

Remote mount 5 valve manifold 6,000 psi rated

5VBD Series

Direct mount 5 valve manifold 6,000 psi rated

5VD Series

Direct flange mounted (T section) 5 valve manifold 6,000 psi rated

5VBM Series Base Mounted

Direct mount 5 valve manifold 6,000 psi rated

3 Valve Manifold Block

Direct mount 3 valve manifold 6,000 psi rated

5 Valve Manifold Block

Direct mount 5 valve manifold 6,000 psi rated

3 Valve H Section Manifold

Direct mount 3 valve H Section manifold 6,000 psi rated

5 Valve H Section Manifold

Direct mount 5 valve H Section manifold 6,000 psi rated

Manifold Accessories

Direct mount 5 valve H Section manifold 6,000 psi rated

How to order the above

An explanation of the part numbering system

2VR Series

General Information

2 Valve Manifold 6,000 psi and 10,000 psi rated

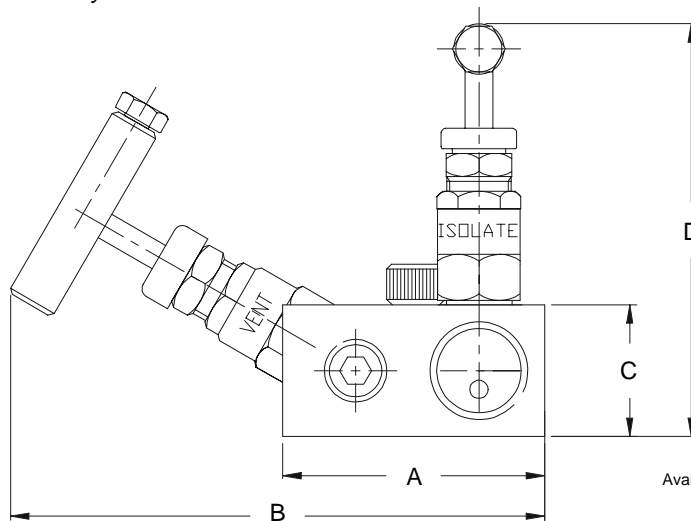


Note: This product comes with the vent port plugged for safety

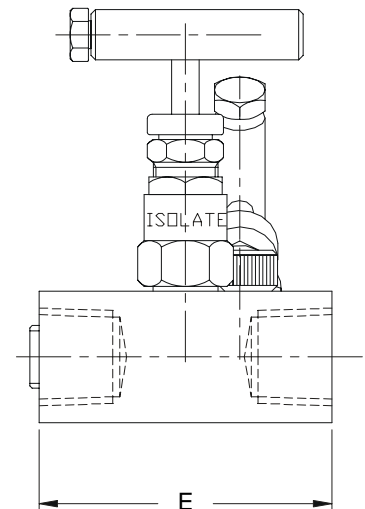
The two-valve isolating and venting manifold used mainly in gauge and static instrument applications such as pressure switches, pressure transmitters and manometers. The manifold will isolate instrumentation from the process and allow venting of the instrument for calibration / removal from the circuit without effecting the process / application and or recovery of a sample etc. Standard 1/2" inlet x 1/2" outlet with a 1/4" vent port supplied plugged as standard for safety. Incorporated are all the standard long service life features of the standard 'N' series needle valve, multi-ring piston style packings, back sealing facility. Safe anti-rotational cam locking device. Most standard options such as locking devices are available. Mounting holes supplied as standard for pipe or wall mounting to suit quick installation.

Design Features

- Offset vent valve for ease of operation.
- Valve flow can be reversed so calibration can be conducted in situ.
- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard, for bubble tight shut off and long service life.
- Metal to metal body bonnet seal for high pressure and temperature sealing.
- Unique bonnet locking cam device.
- Positive no slack stem action.
- Vent port 1/4" NPT supplied plugged (as standard) for safety.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Accurate and fine control of venting.
- Repair / service kit available to extend field life further.
- Ingress seals fitted as standard.
- Mounting holes as standard to allow for fixing to pipe stands or enclosures.
- 100 % Hydrostatic testing.
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Available in 316 Stainless Steel, Monel, Duplex or super alloys



Part Numbers

St / St Part No.	Connections Size	A	B (OPEN)	C	D (OPEN)	E	F	Weight (KGs)
2VR2NS	1/4" NPT female x female	57	116	29	89	64	29	0.9
2VR4NS	1/2" NPT female x female	57	116	29	89	64	29	0.9

Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. U2VR2NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K088

REV: 00

2VG Series

General Information

In-line 2 Valve Manifold 6,000 psi and 10,000 psi rated

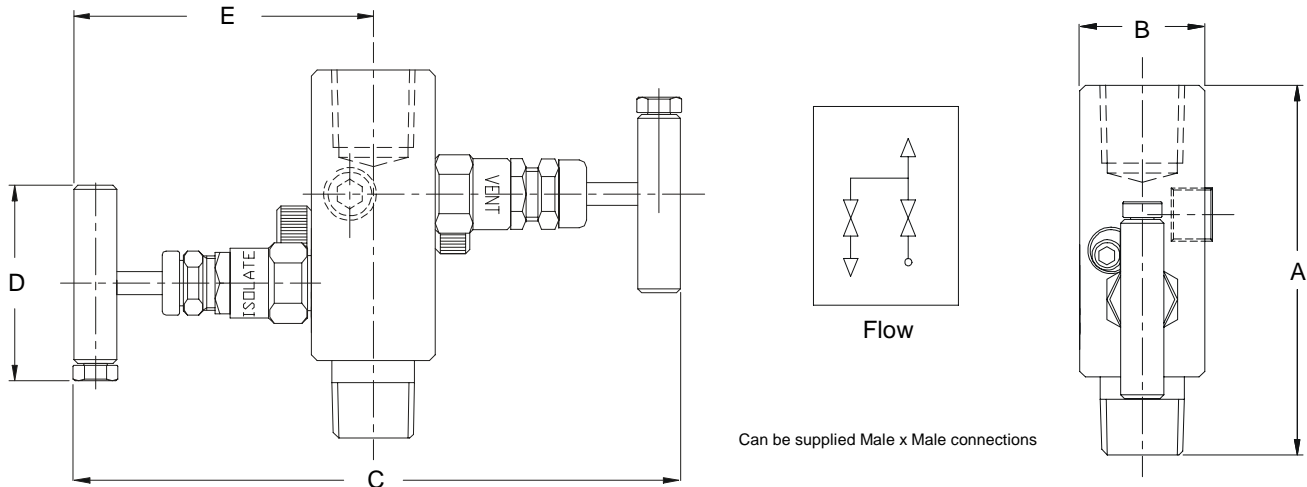


Note: This product comes with the vent port plugged for safety

The '2VG' series 2 valve gauge manifold offering single process isolation and controlled venting. Unlike the '2VR' series, the '2VG' series can be offered with male inlet and female outlet connections. Available 6,000 psi and 10,000 psi versions, a slim-line and compact 2 valve manifold (vent port plugged as standard). The '2VG' series, utilises metal to metal seat and body to bonnet connection for superior, bubble tight sealing capabilities at both extreme pressures and temperatures. The "2VG" series also offers non-rotating hardened tip for extended service life. The unique anti-vibration cam locking safety device at the body bonnet connection is for extra safety. Maximum working temperature up to 230°C and up to 570°C with -GP option at reduced pressure. Many options available including hand wheels and locking devices.

Design Features

- All valves have 2-piece non-rating hardened (17-4PH) tips as standard for bubble tight shut off and long service life.
- Positive no slack stem action.
- Unique bonnet locking cam device.
- Metal to metal body bonnet seals for high pressure and temperature use.
- Ingress seals fitted as standard.
- Vent port 1/4" NPT supplied plugged (as standard) for safety.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Repair / service kit available to extend field life further.
- 2" and 4" extended versions are available.
i.e. 2VG4NS – Ext. 2" = 2" Extended
2VG4NS – Ext. 4" = 4" Extended.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	Weight (kgs)
2VG2NS	1/4" NPT male inlet x 1/4" NPT female outlet	84	25	147	50	74	0.5
2VG2NS-F	1/4" NPT female inlet x female outlet	84	25	147	50	74	0.5
2VG4NS	1/2" NPT male inlet x 1/2" NPT female outlet	95	32	157	50	77	0.85
2VG4NS-F	1/2" NPT female inlet x 1/2" NPT female outlet	95	32	157	50	77	0.85

Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. U2VG4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K089

REV: 00

2VBD Series

General Information

Direct Mount 2 Valve Manifold 6,000 psi and 10,000 psi rated

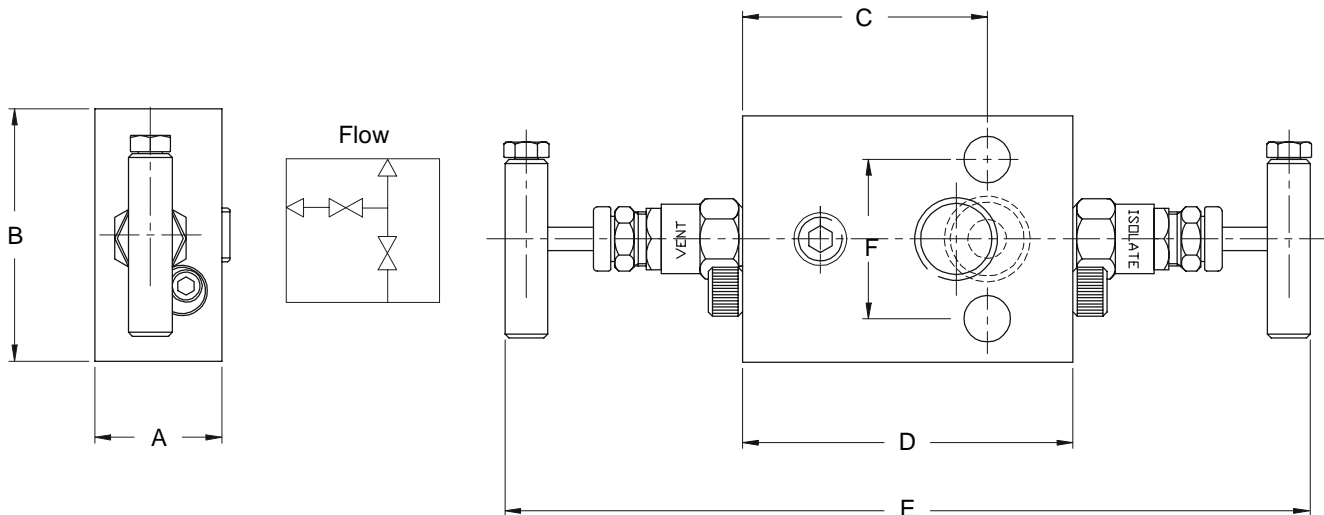


Note: This product comes with bolt pack, seal and the vent port plugged for safety as standard

Two valve direct mount manifold, designed for use with pressure transmitters. The manifold will isolate instrumentation from the process and allow venting of the instrument for calibration / removal from the circuit without effecting the process / application and or recovery of a sample etc. This compact unit offers single isolation, and vent / test facility. Vent port 1/4" NPT (vent port plugged as standard for safety). Supplied with bolt pack and seal as standard. The 2VBD can be supplied with additional tapped holes in it's base for mounting purposes. Other options apply such as anti-tamper, lockable vent valve.

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard for bubble tight shut off and long service life.
- Positive no slack action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Pressure responsive multi-ring / piston packing for compressive and pressure dynamic sealing.
- Vent port 1/4" NPT supplied plugged (as standard) for safety.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- High temperature version up to 570°C with graphoil option (-GP).
- Valve flow can be reversed so as calibration can take place in situ.
- Ingress seals fitted as standard.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01075 latest revision.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	Weight (kgs)
2VBD4NS	1/2" NPT (F)	32	64	63	85	207	41	1.7

Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. U2VBD4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K090

REV: 00

2VBM Series Base Mounted

General Information

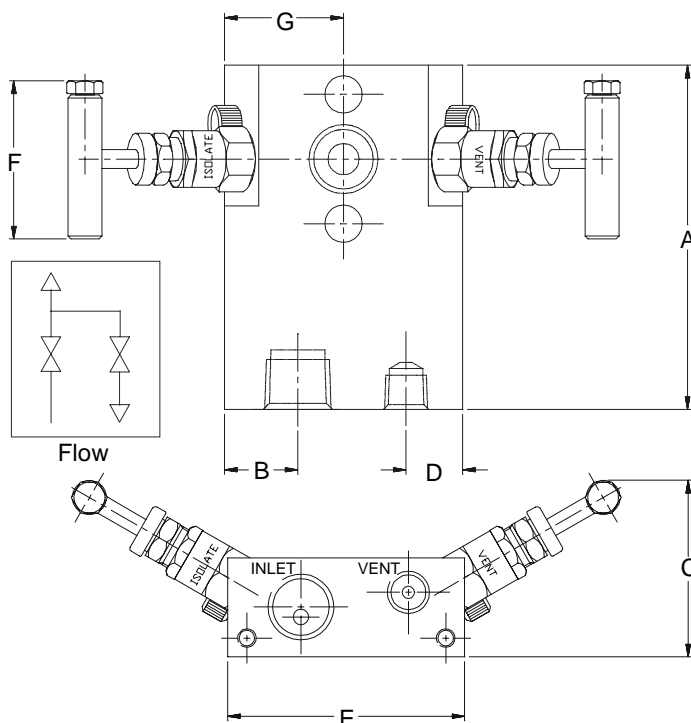
Direct Mount 2 Valve Manifold 6,000 psi & 10,000 psi rated



Note: This product comes with bolt pack, spare seal & the vent port plugged for safety as standard

Two valve direct mount manifold for base mounting to an enclosure or mounting plate, designed for use with pressure gauge transmitter. The manifold will isolate the instrumentation from the process and allow safe venting of the instrument for calibration / removal from the circuit without effecting the process / application and or recovery of a sample etc. This compact unit offers single isolation, and vent / test facility. Vent port supplied 1/4" NPT (vent port plugged as standard for safety). Being base mounted facilitates quick and easy installation of the instrument. No additional fitting or brackets required, the manifold supports the instrument. Supplied with bolt pack and seal as standard.

Design Features



- Bubble tight metal to metal seat for positive shut off.
- All valves have 2-piece non-rotating hardened (17-4PH) tip for first time seal. Every time.
- Temperature rating -50°C to 230°C (570°C with GP option).
- High temperature version up to 570°C with graphoil option (-GP).
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Vent port is 1/4" and supplied plugged for safety.
- Unique bonnet locking cam. No accidental removal of head unit, or loosening due to vibration.
- Positive no slack stem action.
- Body to bonnet ingress seal fitted as standard to prevent crevice corrosion.
- Available fire safe to BS6755 Part 2 API 607
- Easy access angled valves and handles.
- Repair / service kit available to extend field life further.
- No additional brackets or fittings required.
- Full material traceability of major components.
- Back sealing stem to extend packing life.
- 100 % Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.

Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	Weight (kgs)
2VBM2NS	1/4" NPT female x instrument connection	110	23	57	18	76	50	38	2.6
2VBM4NS	1/2" NPT female x instrument connection	110	23	57	18	76	50	38	2.5

Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. U2VBM4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K091

REV: 00

3VR Series

General Information

Remote Mount 3 Valve Manifold 6,000 psi and 10,000 psi Rated

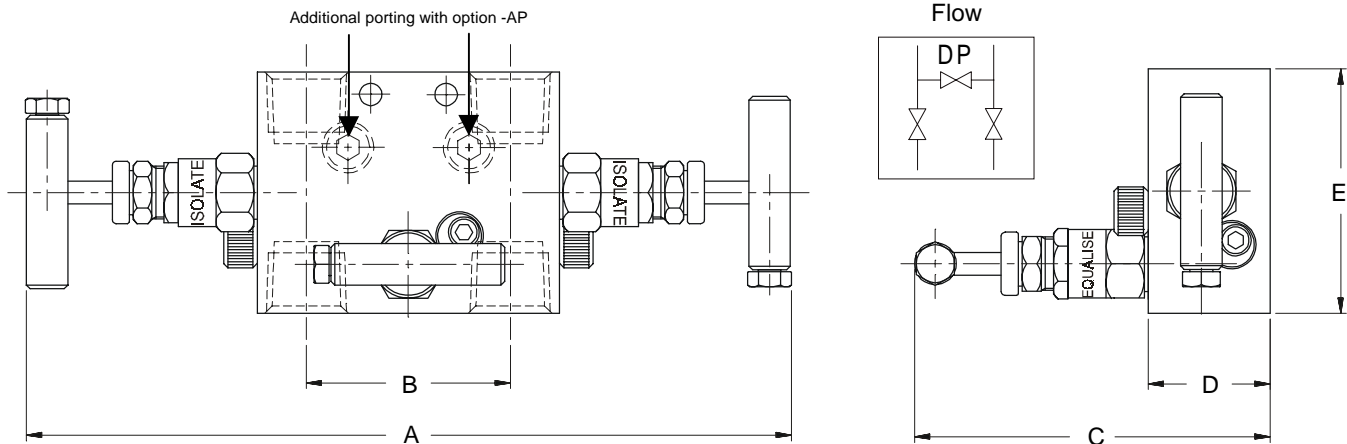
The three-valve isolation manifold remote mounted (pipe to pipe). Used mainly in differential pressure transmitters and static instrument applications. The 3VR has two process isolation valves and one equalisation valve to equalise the two sides. Standard 1/2" inlet x 1/2" outlet. Incorporated all the standard long service life features of the standard "N" series needle valve, multi-ring piston style packings, back sealing facility. Safe anti-rotational cam locking device. Most standard options such as locking devices are available. Mounting holes supplied as standard for wall or bracket mounting. Process and instrument sides are both on 54mm centres to correspond with transmitter connections.



Note: 2 x 6mm diameter mounting holes as standard

Design Features

- 2 x isolation and 1 x equalising valve for instrument balancing applications.
- Additional purge ports available option -AP.
- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard for bubble tight shut off & long service life.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- 2 x 6mm diameter mounting holes as standard.
- Positive no slack stem action.
- Unique Anti-rotational cam locking device for extra safety.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seals fitted as standard.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Mounting holes as standard to allow for fixing to pipe stands or enclosures.
- 100 % Hydrostatic testing
- Full material traceability.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St / St Part No.	Connections Size	A (OPEN)	B	C	D	E	Weight (Kgs)
3VR2NS	2 x 1/4" NPT female x female	203	54	93	32	64	1.5
3VR4NS	2 x 1/2" NPT female x female	203	54	93	32	64	1.4

For BSPT version change "N" to "T" i.e. 3VR4TS

Purge ports in bottom of manifold option -AP

Packing materials: RTFE (standard) graphoil option -GP

For 10,000 psi version add "U" i.e. U3VR4NS

See technical section for important additional valve data.

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REF: AVCAT2K092

REV: 00

3VBD Series

General Information

Direct Mount 3 Valve Manifold 6,000 psi and 10,000 psi Rated

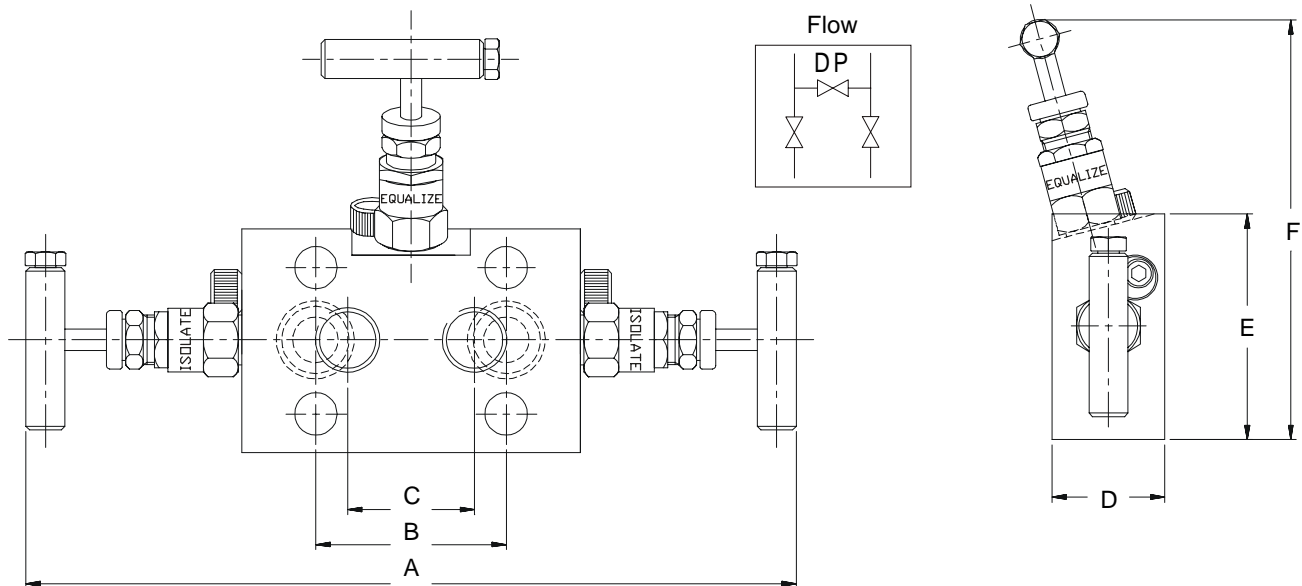
Direct mounted three-valve manifold, instrument mount to pipe connection. Offering two isolation valves, and one equalising valve for differential pressure transmitter or static instrument applications. Supplied with bolt pack and spare seals as standard. This slim, compact 3-valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block that mounts directly to an instrument.



Note: This product comes with bolt pack and spare seals as standard

Design Features

- Compact bodied instrument manifold block.
- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard for first time seal and long service life.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Ingress seal fitted as standard.
- Can be supplied with additional mounting holes in base.
- 54mm (2 1/8") instrument centres.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- High temperature version up to 570°C (-GP)
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Full material traceability.
- 100% Hydrostatic testing.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	Weight (kgs)
3VBD4NS	2 x 1/2" NPT female x direct mount	219	54	36	32	64	118	1.7

For BSPT version change "N" to "T" i.e. 3VBD4TS
Packing materials: RTFE (standard) graphoil option -GP
For 10,000 psi version add "U" i.e. U3VBD4NS

Dims are in mm (Appx)

See technical section for important additional valve data.

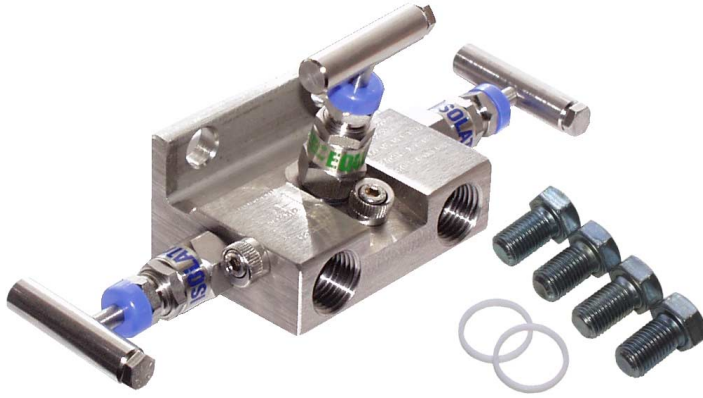
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3VD Series

General Information

Direct Flange Mounted (T Section) 3 Valve Manifold 6,000 psi rated

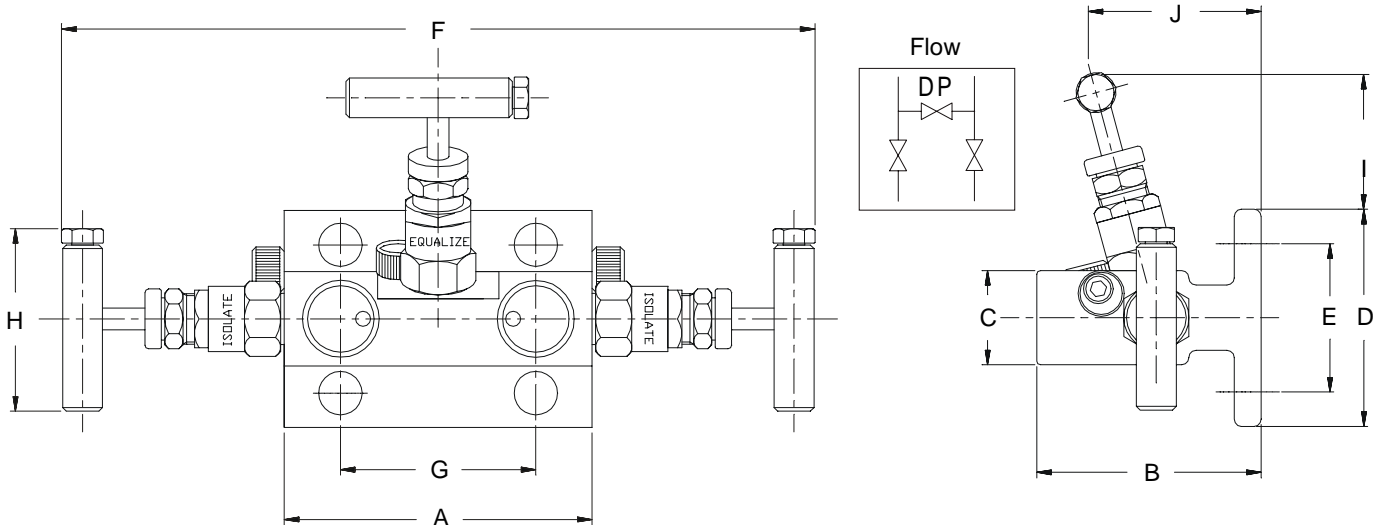
Direct mounted three-valve manifold, instrument mount to pipe connection. Having a "T" section body format allows reasonable space envelope between the instrument and process lines. The 3VD offers two isolation valves, and one equalising valve. Supplied with bolt pack and spare seals as standard. This slim, compact 3 valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block.



Note: This product comes with bolt pack and seals as standard

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Offset equalise valve for ease of operation.
- Bubble tight shut off.
- Positive no slack stem action.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Ingress seals fitted as standard.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- 54mm (2 1/8") instrument centres.
- Unique bonnet locking cam.
- Full material traceability.
- 100% Hydrostatic testing.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	Weight (kgs)
3VD4NS	1/2" NPT female x direct mount	85	62	26	60	41	208	54	50	37	1.5
Mini heads											
M3VD4NS	1/2" NPT female x direct mount	85	62	26	60	41	168	54	50	17	1.3

Packing materials: RTFE (standard) graphoil option -GP

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K094

REV: 00

3VBM Series Base Mounted

General Information

Direct Mount 3 Valve Manifold 6,000 psi rated

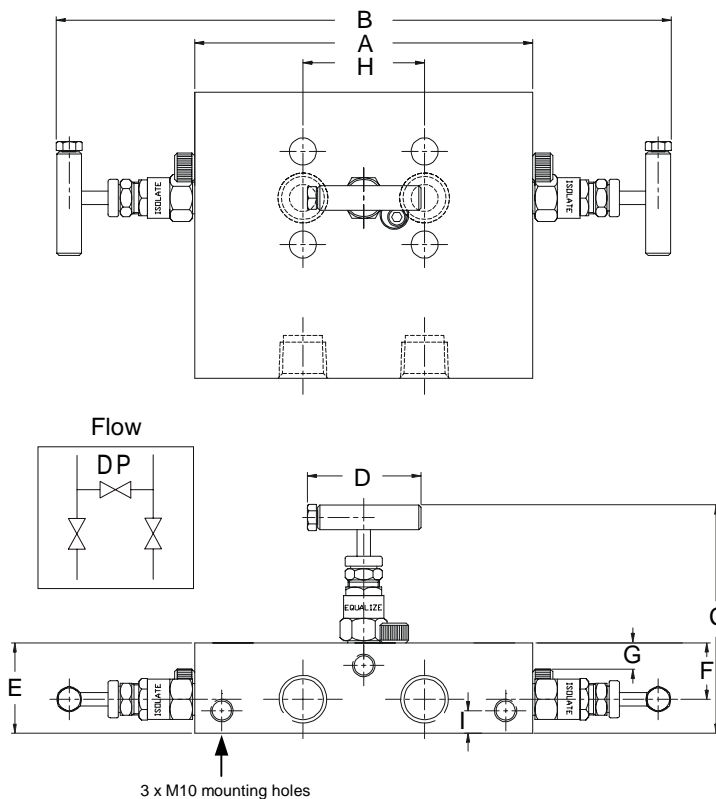


Note: This product comes complete with bolt pack and seals as standard.

Three valve direct mount manifold for base mounting to an enclosure or mounting plate, designed for use with pressure transmitter. The manifold will isolate the instrumentation from the process and allow safe equalisation between the high pressure and low pressure sides of the pipe-work arrangement without effecting the process / application. Being base mounted facilitates quick and easy installation of the instrument. No additional fitting or brackets required, the manifold supports the instrument. Supplied with bolt pack and seals as standard. The 3VBM can be supplied with additional steam trace porting. Other options are available such as locking / anti-tamper equalisation valve.

Design Features

- Bubble tight metal to metal seat for positive shut off.
- Easy access and use of valve handles due to configuration.
- All valves have 2 piece non-rotating hardened (17-4PH) tip for first time seal. Every time.
- Pressure responsive multi-ring / piston packing for compression and pressure dynamic sealing.
- Metal to metal body bonnet seal for high pressure and high temperature sealing.
- Unique bonnet locking cam. No accidental removal of head unit, or loosening due to vibration.
- Positive no slack stem action.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Body to bonnet ingress seal fitted as standard to prevent crevice corrosion.
- Easy access angled valves and handles.
- No additional brackets or fittings required.
- Full material traceability of major components.
- Back sealing stem to extend packing life.
- 100 % Hydrostatic testing.
- Available fire safe to BS6755 Part 2 API 607.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Note: Available with steam tracing

Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	Weight (kgs)
3VBM4NS	2 x 1/2" NPT female x direct mount	150	275	54	50	40	25	12	54	10	6

Packing materials: RTFE (standard) graphoil option -GP

Dims are in mm (Appx)

See technical section for important additional valve data.

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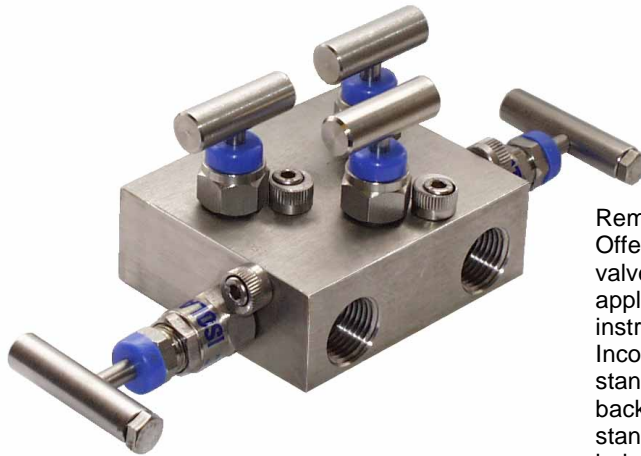
REF: AVCAT2K095

REV: 00

5VR Series

General Information

Remote mount 5 valve manifold 6,000 psi rated

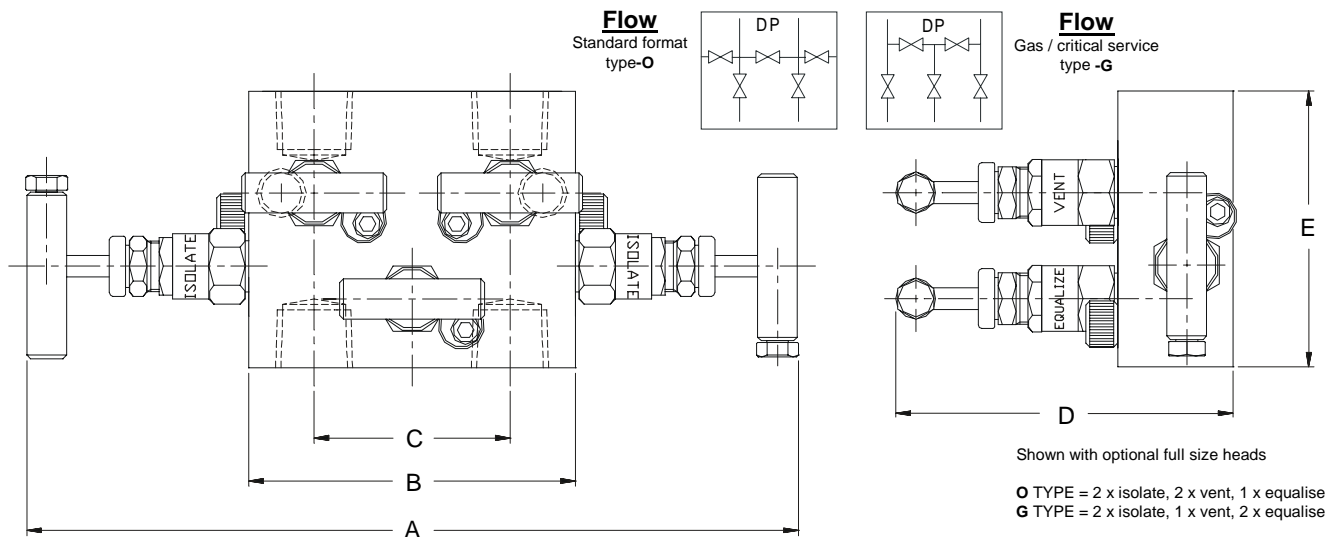


Note: This product comes with blanking plugs on vents for safety.

Remote mounted, pipe to pipe configuration five valve manifold. Offering two isolation valves, two vent valves and one equalising valve. Used in differential pressure transmitters and static instrument applications. Standard 2 x 1/2" inlet x 2 x 1/2" outlet all on 54mm instrument centres with 2 x 1/4" plugged vent port supplied plugged. Incorporated all the standard long service life features of the standard N series needle valve, multi-ring piston style packings, back sealing facility. Safe anti-rotational cam locking device. Most standard options such as locking devices are available. Mounting holes supplied as standard for wall or bracket mounting. All additional ports supplied plugged as standard.

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Positive no slack stem action.
- Bubble tight shut off.
- Vent porting in base for piping away (supplied plugged).
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Unique bonnet locking cam.
- Repair / service kit available to extend field life further.
- Ingress seals fitted as standard.
- Temperature rating -15°C to 170°C (570°C with GP option).
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- 54mm (2 1/8") instrument centres.
- Full material traceability.
- 100% Hydrostatic testing.
- Two valve configurations available.
- Materials of construction can be supplied to meet the requirements of NACE MR-01-75 latest revision.



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	Weight (kgs)
5VR4NS-O	1/2" NPT (F)	213	90	54	93	76	2

If gas / critical service manifold is required change 'O' for 'G'
i.e. 5VR4NS-G which offers 2 x isolation, 2 x equalise & 1 x vent
Packing materials: RTFE (standard) Graphoil (option -GP)

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K096

REV: 00

5VBD Series

General Information

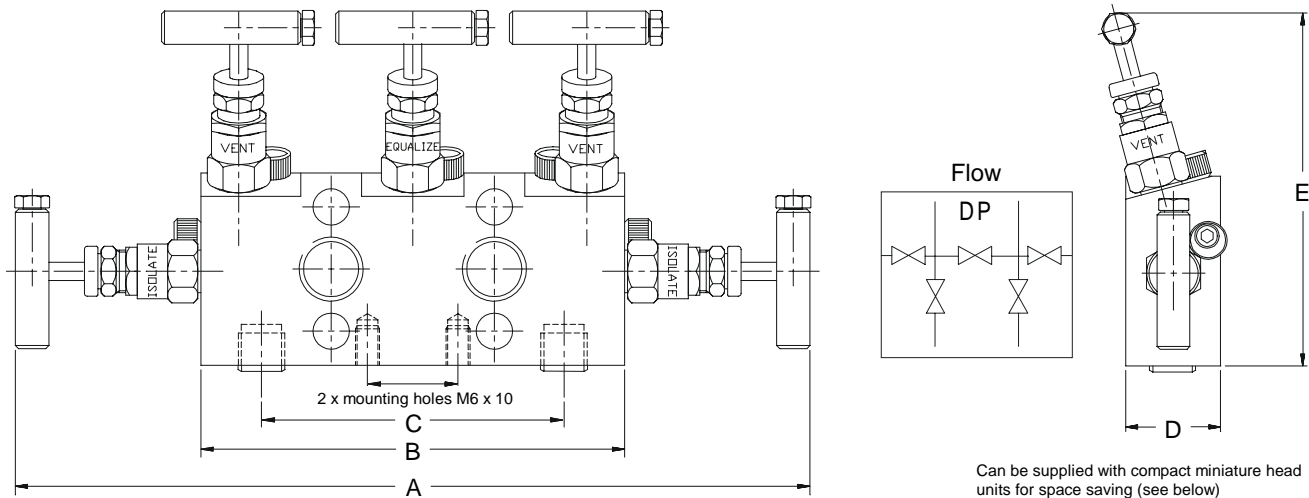
Direct mount 5 valve manifold 6,000 psi rated

Direct style block mounted five-valve manifold, instrument mount to pipe connection. Offering two isolation valves, two vent valves and one equalising valve. Used in differential pressure transmitters and static instrument applications. Standard 2 x 1/2" inlet x direct mount (54mm centres) with 2 x 1/4" plugged vent port supplied plugged. This slim, compact valve incorporates all the standard long service life features of the standard N series needle valve, multi-ring piston style packings, back sealing facility. Safe anti-rotational cam locking device. Most standard options such as locking devices are available. Mounting holes supplied as standard for wall or bracket mounting. All additional ports supplied plugged as standard.

Note: This product comes with safety blanking plugs on vents, bolt pack and spare seals

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- High temperature version up to 570°C (-GP)
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Ingress seals fitted as standard.
- Full material traceability.
- 54mm (2 1/8") instrument centres.
- 100% Hydrostatic testing.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Can be supplied with compact miniature head units for space saving (see below)

Part Numbers

St / St Part No.	Connections Size	A (Open)	B	C	D	E (Open)	Weight (kgs)
5VBD4NS	2 x 1/2" NPT female x direct mount 2 x 1/4" NPT vents	263	140	100	32	118	2.75
Mini Heads							
M5VBD4NS	2 x 1/2" NPT female x direct mount 2 x 1/4" NPT vents	215	140	100	32	98	2.5

Packing materials: RTFE (standard) graphoil option -GP
For BSPT process connections change "N" to "T" i.e. 5VBD4TS

Dims are in mm (Appx)
See technical section for important additional valve data.

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REF: AVCAT2K097

REV: 00

5VD Series

General Information

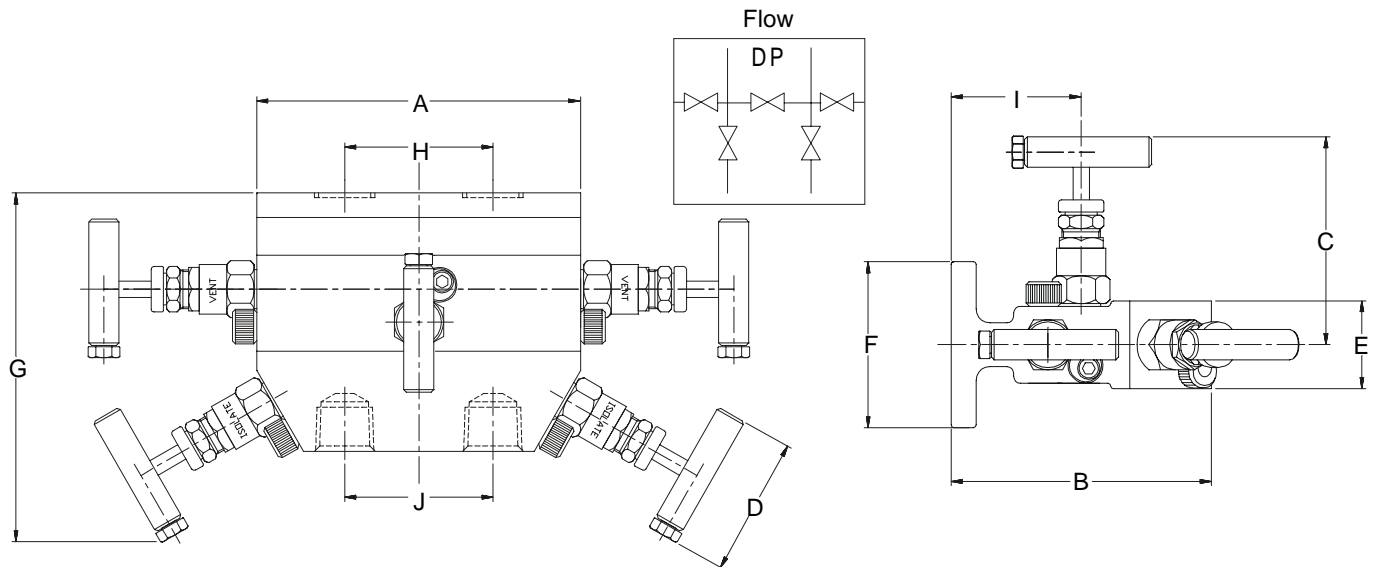
Direct Flange Mounted (T Section) 5 Valve Manifold 6,000 psi rated

Direct mounted five-valve manifold, instrument mount to pipe connection. Having a "T" section body format allows a reasonable space envelope between the instrument and process lines. The 5VD offers two isolation valves, two vent valves and one equalising valve. Supplied with bolt pack and spare seals. This elongated 5 valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block. All additional porting supplied plugged as standard. Other options such as lockable vent valves & hand wheel are available.

Note: This product comes with bolt pack, spare seals & safety blanking plugs on vent ports as standard

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Supplied with bolt pack and extra PTFE seals.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seals fitted as standard.
- Direct mounting to instruments.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Full material traceability.
- 100% Hydrostatic testing.
- 54mm (2 1/8") instrument centres.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Part Numbers

St/St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	J	Weight (kgs)
5VD4NS	2 x 1/2" NPT female x direct mount 2 x 1/4" NPT vents	118	94	75	51	32	60	127	54	47	54	2.8

Packing materials: RTFE (standard) graphoil option -GP
For optional hand wheel add -HW

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K098

REV: 00

5VBM Valve Base Mounted

General Information

Direct Mount 5 Valve Manifold 6,000 psi rated

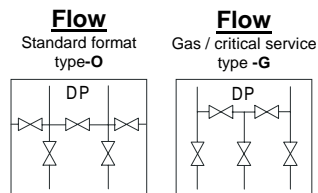
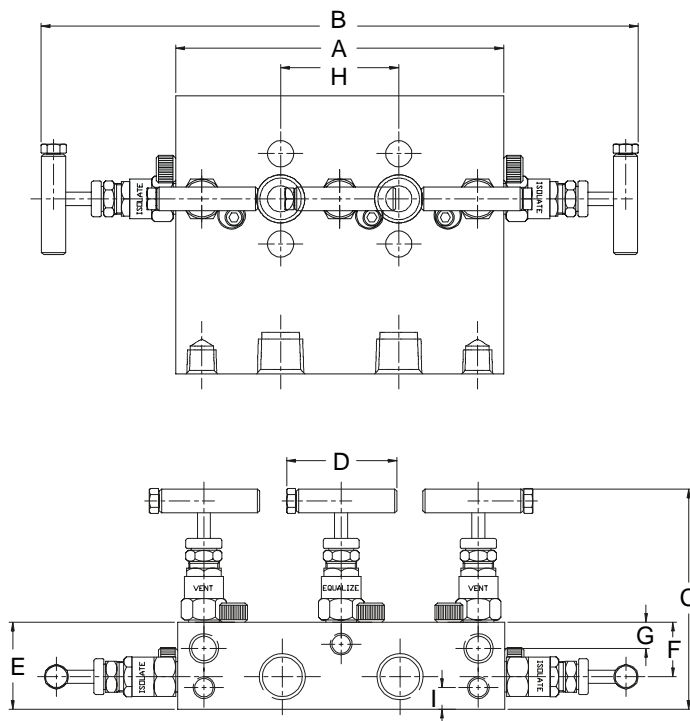


Note: This product comes with bolt pack, spare seals & safety blanking plugs on vents as standard.

Five valve direct mount manifold for base mounting to an enclosure or mounting plate, designed for use with pressure gauge transmitter. The manifold will isolate the instrumentation from the process and allow safe venting of the instrument for calibration / removal from the circuit without effecting the process / application and or recovery of a sample etc. This compact unit offers single isolation, and vent / test facility. Vent port supplied 1/4" NPT (vent port plugged as standard). Being base mounted facilitates quick and easy installation of the instrument. No additional fitting or brackets required, the manifold supports the instrument. Supplied with bolt pack and spare seals as standard. Certain options such as locking devices and hand wheels etc are available.

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seals fitted as standard.
- Repair / service kit available to extend field life further.
- Base mounting holes to allow fixing to enclosure or mounting boss
- Full material traceability.
- 100% Hydrostatic testing.
- 54mm (2 1/8") instrument centres.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Note: Base mounting holes are supplied as standard.
Can be supplied with steam trace porting

Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	Weight (kgs)
5VBM4NS	2 x 1/2" NPT x direct mount 2 x 1/4" NPT vents	150	275	54	50	40	25	12	54	10	6.2

Packing materials: RTFE (standard) graphoil option -GP
For optional hand wheel add -HW

Dims are in mm (Appx)

See technical section for important additional valve data.

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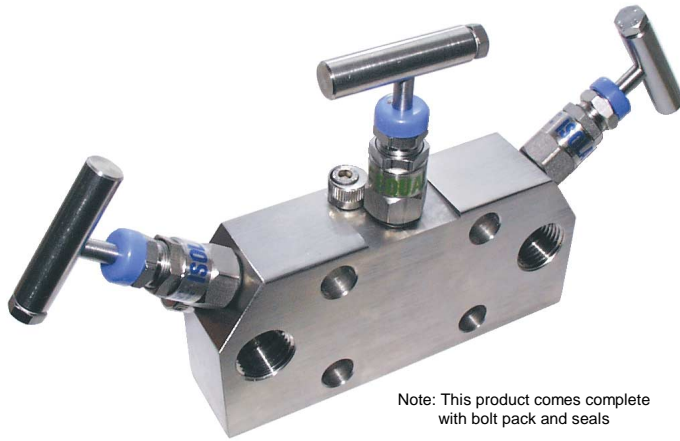
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REV: 00

3 Valve Manifold Block

General Information

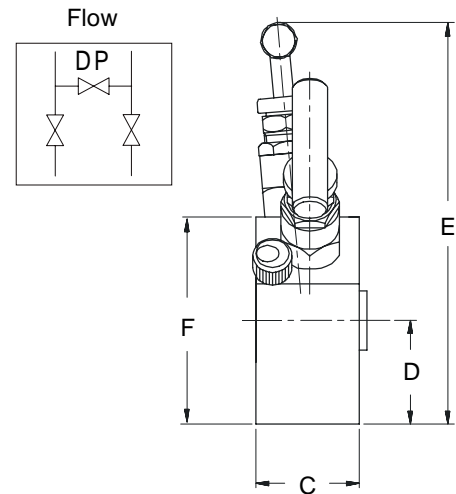
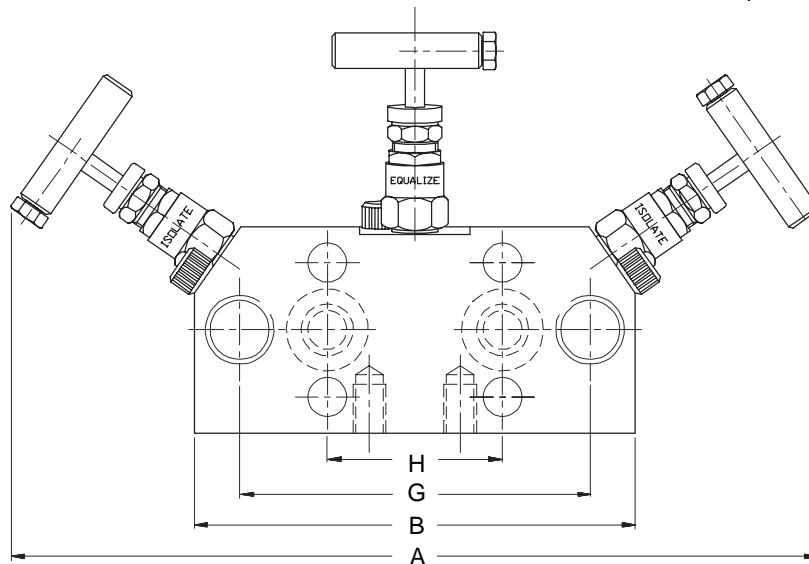
Direct mount 3 Valve Manifold 6,000 psi rated



Direct mounted three-valve manifold, instrument mount to pipe connection. Offering two isolation valves, and one equalising valve. Supplied with bolt pack and spare seals. This slim, compact 3 valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block. All additional porting supplied plugged as standard. Can be supplied to DIN 19 213 mounting specification in the 100 bar (1,500 psi) or 420 bar (6,000 psi).

Design Features

- Compact overall size manifold body saving weight and space.
- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and temperature use.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Ingress seals fitted as standard.
- Repair / service kit available to extend field life further.
- Full material traceability.
- 100% Hydrostatic testing.
- 54mm (2 1/8") instrument centres alternative instrument centres available
- Available DIN style mounting:
Form B1 = 100 bar (1,450 psi)
Form B2 = 420 bar (6,000 psi)
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Can be supplied to DIN mounting specifications

Part Numbers

St / St Part No.	Connections Size	A (OPEN)	B	C	D	E (OPEN)	F	G	H	Weight (kgs)
3VBDD4NS	1/2" inlet x direct mount outlet	248	136	32	32	123	63	107	54	2.0

Packing materials: RTFE (standard) graphoil option -GP i.e. 3VBDD4NS-GP
Additional purge ports located on top face add -PP i.e. 3VBDD4NS-PP

Dims are in mm (Appx)

See technical section for important additional valve data.

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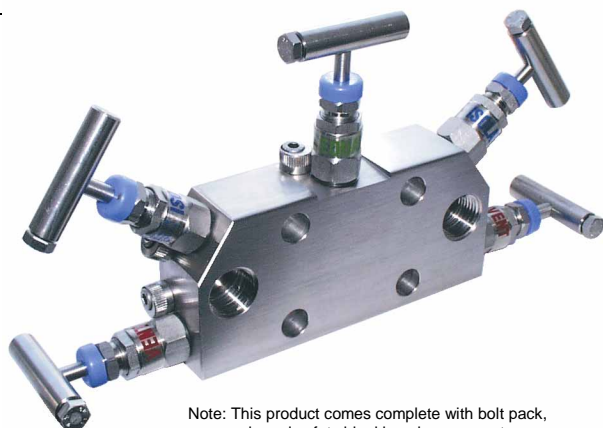
REF: AVCAT2K100

REV: 00

5 Valve Manifold Block

General Information

Direct Mount 5 Valve Manifold 6,000 psi rated

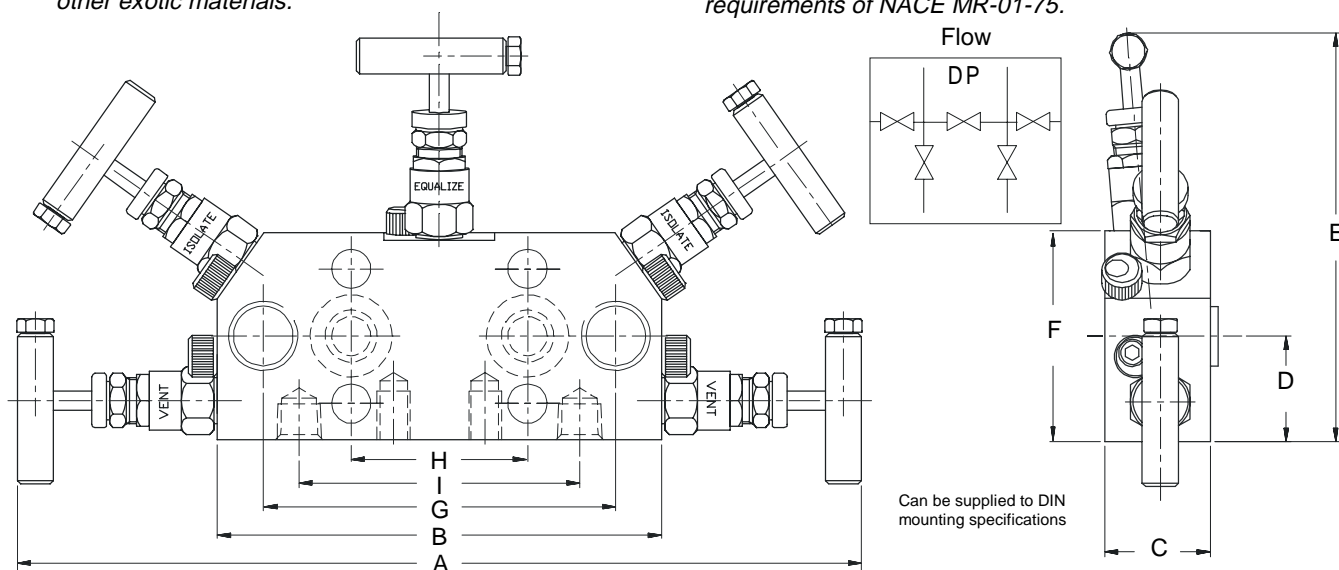


Note: This product comes complete with bolt pack, seals and safety blanking plugs on vents

Direct block mounted five-valve manifold, instrument mount to pipe connection. Offering two isolation valves, two vent valves and one equalising valve. Used mainly in differential pressure transmitters and static instrument applications. Standard 2 x 1/2" inlet x 2 x 1/2" outlet with 2 x 1/4" vent port supplied plugged. Incorporated all the standard long service life features of the standard N series needle valve, multi-ring piston style packings, back sealing facility. Safe anti-rotational cam locking device. Most standard options such as locking devices are available. Mounting holes as standard (for wall or bracket mounting). All additional ports supplied plugged. Comes with bolt pack and spare seals. Can be supplied to DIN 19 213 mounting.

Design Features

- Compact overall size manifold body saving weight and space.
- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and temperature use.
- Base mounting holes to allow fixing to enclosure or mounting boss.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Temperature rating -50°C to 230°C (570°C with GP option).
- High temperature version up to 570°C (-GP)
- Ingress seals fitted as standard.
- Repair / service kit available to extend field life further.
- Full material traceability.
- 100% Hydrostatic testing.
- 54mm (2 1/8") instrument centres alternative instrument centres available.
- Available DIN style mounting:
Form B1 = 100 bar (1,450 psi)
Form B2 = 420 bar (6,000 psi)
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	H	I	Weight (kgs)
5VBDD4NS	1/2" inlet x direct outlet 2 x 1/4" vent	258	108	32	32	123	63	107	54	86	2.0

Packing materials: RTFE (standard) graphoil option -GP i.e. 5VBDD4NS-GP

Dims are in mm (Appx)

See technical section for important additional valve data.

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REF: AVCAT2K101

REV: 00

3 Valve H Section Manifold

General Information

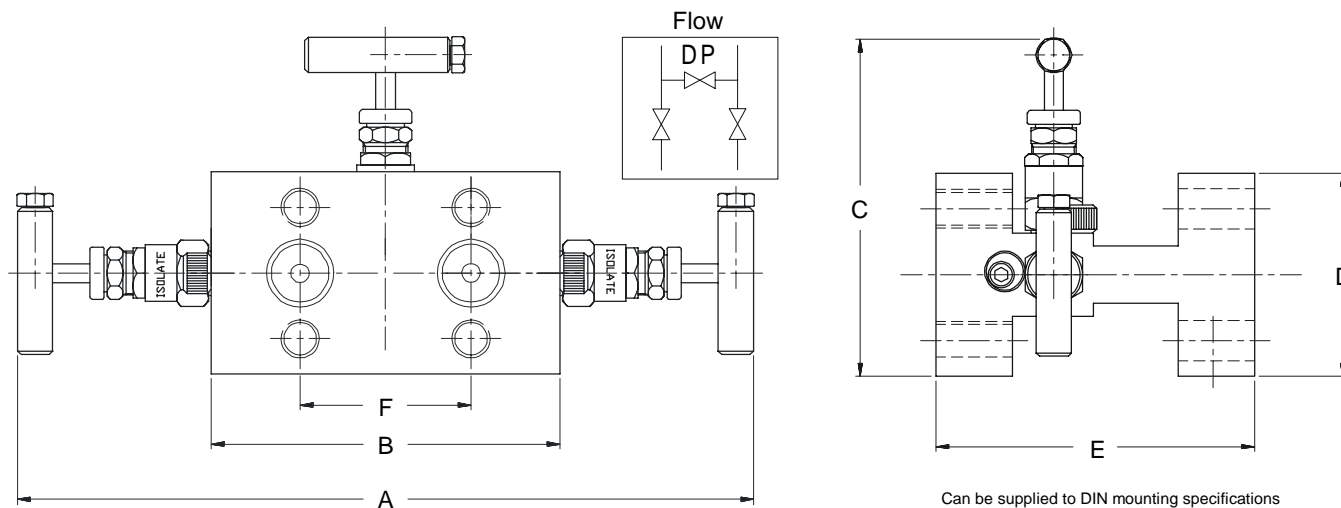
Direct Mount 3 Valve Manifold 6,000 psi Rated

Direct mounted three-valve manifold, instrument mount to pipe connection. Having a "H" section body format allows compact space envelope between the instrument and process lines. The 3VDH offers two isolation valves, and one equalising valve. Supplied with bolt pack and spare seals. This slim, compact 3 valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block for direct mounting to a pressure instrument available flange mount connection x 1/2" NPT female or flange x flange configuration. Certain options are available such as locking devices, high temperature option (570°C) or hand wheel operation. Can be supplied to DIN 19 213 mounting specification in the 100 bar (1,500 psi) or 420 bar (6,000 psi).

Note: This product comes with bolt pack and seals.
Various connections available

Design Features

- All valves have two-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Ingress seals fitted as standard.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Repair / service kit available to extend field life further.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Full material traceability.
- 100% Hydrostatic testing.
- 54mm (2 1/8") instrument centres, alternative instrument centres available.
- Available DIN style mounting:
Form B1 = 100 bar (1,450 psi)
Form B2 = 420 bar (6,000 psi)
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	Weight (kgs)
3VHD4S	1/2" direct mount x 1/2" direct mount	232	110	105	63	100	54	4.2

Packing materials: RTFE (standard) graphoil option -GP

Dims are in mm (Appx)

See technical section for important additional valve data.

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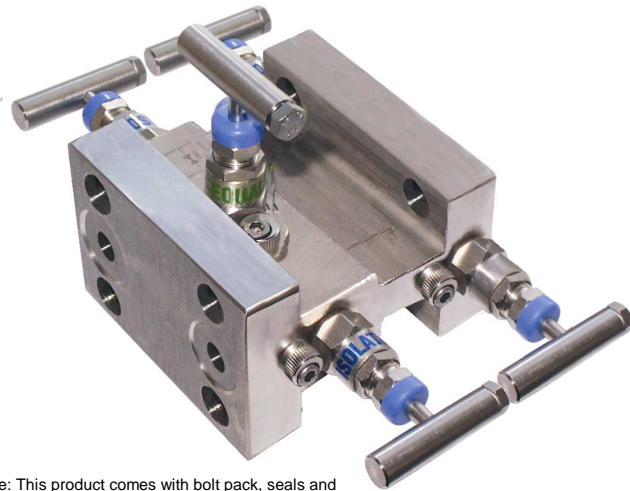


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REF: AVCAT2K102

REV: 00

5 Valve H Section Manifold



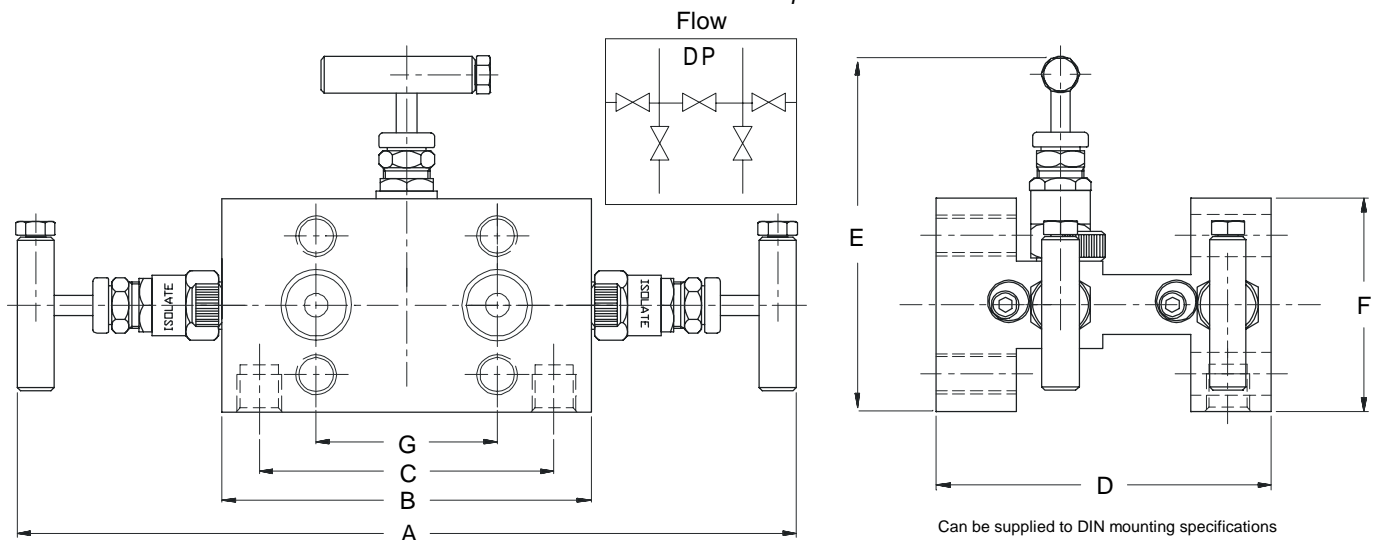
Note: This product comes with bolt pack, seals and safety blanking plugs on vents. Various connections available.

General Information

Direct mounted five-valve manifold, instrument mount to pipe connection. Having a "H" section body format allows compact space envelope between the instrument and process lines. The 5VDH offers two isolation valves, two vent valves and one equalising valve. Supplied with bolt pack and spare seals. This slim, compact 5 valve manifold offers all the features of Alco's high integrity needle valve head design incorporated in one common instrument manifold block for direct mounting to a pressure instrument available flange mount connection x 1/2" NPT female or flange x flange configuration. All additional porting supplied plugged as standard. Certain options are available such as locking devices, high temperature option (570°C) or hand wheel operation. Can be supplied to DIN 19 213 mounting specification in the 100 bar (1,500 psi) or 420 bar (6,000 psi).

Design Features

- All valves have 2-piece non-rotating hardened (17-4PH) tips as standard.
- Bubble tight shut off.
- Positive no slack stem action.
- Unique bonnet locking cam.
- Metal to metal body bonnet seal for high pressure and high temperature use.
- Ingress seals fitted as standard.
- Repair / service kit available to extend field life further.
- Available in 316 Stainless Steel, Monel, Duplex & other exotic materials.
- Temperature rating -50°C to 230°C (570°C with GP option).
- Available DIN style mounting:
Form B1 = 100 bar (1,450 psi)
Form B2 = 420 bar (6,000 psi)
- Full material traceability.
- 100% Hydrostatic testing.
- 2 1/8" (54mm) instrument centres, alternative instrument centres available.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Part Numbers

St / St Part No.	Connections Size	A	B	C	D	E	F	G	Weight (kgs)
5VHD4S	1/2" direct mount x 1/2" direct mount	232	110	88	100	105	63	54	4.5

Packing materials: RTFE (standard) graphoil option -GP

Dim's are in mm (Appx)

See technical section for important additional valve data.

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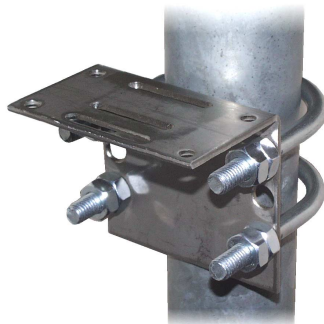


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REF: AVCAT2K103

REV: 00

Manifold Accessories



Manifold Bracket for 2" stand pipe includes "U" bolts, nuts and washers, designed to support most Alco manifolds and instruments, made from heavy duty plate.
-BKT-1 Carbon Steel as standard.
-BKT-3 Stainless Steel version.



Spare bolt and seal packs

2 - valve kits are supplied with 1 spare seal, 3 & 5 valve kits have 2 spare seals. If spare PTFE seal alone is required order part number MFP10030.



Kidney flanges and various flange adapters threaded or with twin ferrule compression tube fitting / adapters / weld fittings / extenders / converters available in Stainless Steel, Monel 400, Duplex and other super alloys.



Manifold heaters and enclosure temperature control devices to various specifications to suit your application. Manufactured in 316 stainless steel and other alloys.



Manifold adapters to convert threaded / remote manifold valves to direct instrument connection - available in Carbon Steel, 316 Stainless Steel and Duplex



A wide range of GRP instrument and manifold enclosures and sun shades. Manufactured to the highest standards, to clients specifications and to suit the application.

See technical section for important additional valve data.

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REF: AVCAT2K104

REV: 00

How to order Instrument Manifolds

Our part number system is made up of alphanumeric / generic code system as explained below.

An example is :-

5 valve instrument manifold compact “BD” block style in 316 Stainless Steel, 1/2” NPT process connections x 54mm direct instrument connection. 2 x isolation valves 2 x vent valves and 1 x equalising valve. Fitted RTFE (25% glass fibre filled) packings rated 6,000 psi. All additional ports supplied plugged as standard. Complete with locking vent valves for safety.

The part number shown below is made up using the system :-

Rated pressure	No. of valves	Manifold type	Inlet Connection size	Inlet Threads / ends	Material of construction/ body parts	Options
	5V	BD	4	N	S	- LKV
Blank = Std Rating U = 10,000 psi	2V = Two valve format 3V = Three valve format 4V = Four valve format 5V = Five valve format		2 = 1/4” 3 = 3/8” 4 = 1/2”	N = NPT T = BSPT K = Twin Ferrule Tube Fittings P = BSPP S = Socket weld	B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO, Super Duplex, Zirconium are available	GP = Graphoil Packings HW = Hand wheel LKI = Locking isolation valves LKV = Locking vent valves LKE = Locking equalisation valves LKA = All valves locking PAD = Pad lock BDD = DIN type design AP = Additional Porting DG = degreased & cleaned
R = Remote mount threaded process connections & threaded instrument connections. BDD = Direct mounting to transmitter, DIN style mounting available. BD = Direct block threaded inlet to instrument connection. BM = Direct block threaded inlet to instrument connection base mount manifold. D = Direct "T" section instrument mount threaded inlet to instrument connection. H = Direct "H" section threaded inlet to instrument connection.						

Socket weld and butt weld end connectors may be extended for thermal protection of the valve internals

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco Valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method as they vary.

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REF: AVCAT2K087

REV: 00

Severe Service Valves

Severe Service Needle Valve Data

Physical features of the severe service needle valve head

XN Series

20,000 psi & 40,000 psi rated

XN2V Series

20,000 psi & 40,000 psi rated manifold valves

NVSS Series

Severe service needle valve - Temperatures in excess of 700°C

NVSS2V Series

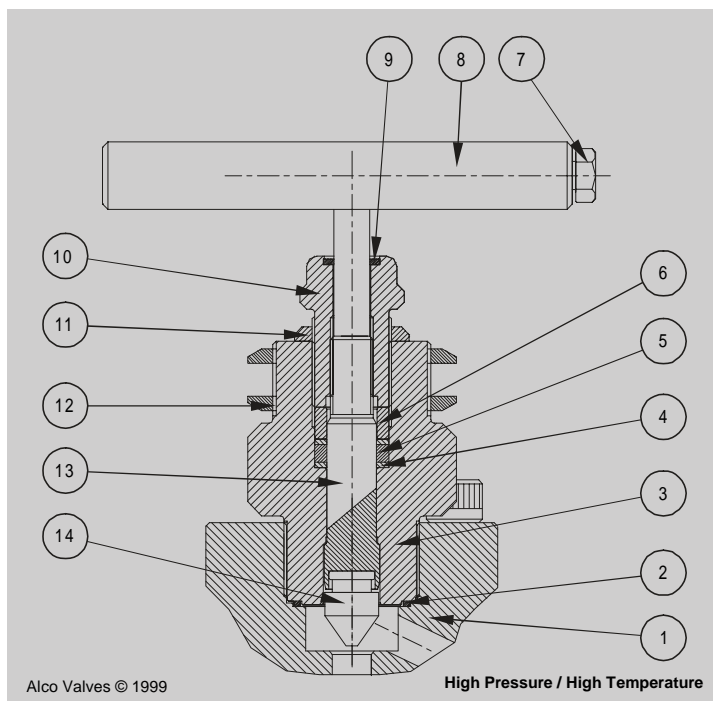
Severe service 2 valve block - temperatures in excess of 700°C

How to order the above

An explanation of the part numbering system

Severe Service Needle Valve Data

Physical Features - Typical Severe Service Head Unit



Alco Valves © 1999

High Pressure / High Temperature

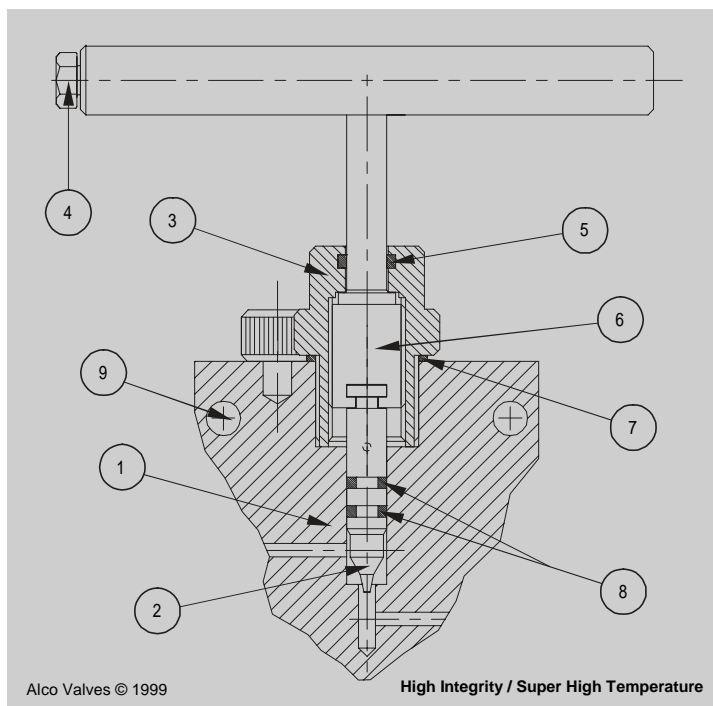
Severe Service Needle Valve Units

The NVSS severe service needle valve range has been specifically designed to cope with very high temperature / high pressure applications. Designed to meet the requirements of ASME B16.34 and fire tested to BS6755 part 2. Large 6, 8, 10, & 11mm bore as standard for high flow, metal seated, metal to metal body bonnet seal, high performance packings. Can be supplied with Stellite faced internals.

Severe Service Head Unit

- | | |
|---------------------------|---|
| ● (1) Valve Body | ● (8) Handle |
| ● (2) Metal to Metal Seal | ● (9) Wiper / Seal |
| ● (3) Bonnet | ● (10) Gland Adjuster |
| ● (4) Packing Washer | ● (11) Gland Lock Nut |
| ● (5) Packing | ● (12) Mounting Nut |
| ● (6) Packing Follower | ● (13) Stem |
| ● (7) Handle Bolt | ● (14) Tip (hardened) optional stellite |

Physical Features - Typical XN Series Head Unit



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High Integrity / Super High Temperature

Super High Pressure Needle Valve Units

The XN series needle valve has a large diameter needle for extra strength and safety. It also uses double stem seal arrangement which minimises the possibility of stem packing leakage and the XN uses high integrity metal to metal body bonnet seal. For use on very high pressure process lines and test equipment or for systems where standard pressure ratings are exceeded for extra safety.

XN Head Unit

- | | |
|-------------------------|-------------------------|
| ● (1) Valve Body | ● (6) Strong Valve Stem |
| ● (2) Valve Tip (fine) | ● (7) Ingress Seal |
| ● (3) Bonnet Housing | ● (8) Piston Seal |
| ● (4) Handle Bolt | ● (9) Mounting Holes |
| ● (5) Double Stem Seals | |

See technical section for important additional valve data.

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REF: AVCAT2K106

REV: 00

XN Series

General Information

20,000 psi & 40,000 psi rated

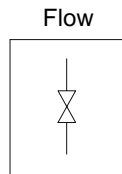
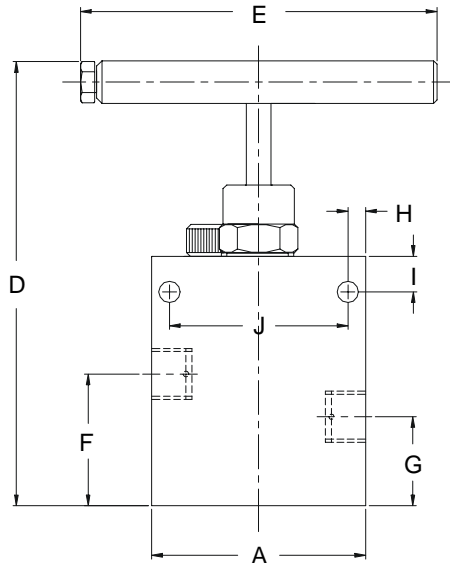
The "XN20" and "XN40" series needle valves are rated at 1,334 BAR (20,000 psi) and 2,667 BAR (40,000 psi) respectively cold working non shock. The tip assembly is specifically designed for heavy duty service with a fine metering tip to reduce impact on down stream equipment, instruments or test pieces. For use on very high pressure process lines and test equipment or for systems where standard pressure ratings are exceeded for extra safety. The "XN" comes with over-pressure or seal failure weep holes for extra safety. The "XN" is available in 316 stainless steel and certain other corrosion resistant super alloys. Certain options are available such as locking device and hand wheel etc.



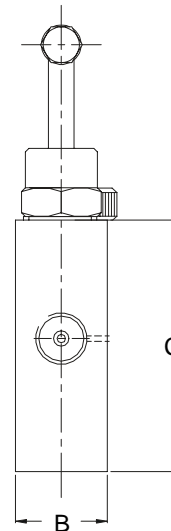
High pressure weep holes as standard for extra safety

Design Features

- 2-piece non-rotation tip which extends service life.
- Heavy duty wide stem design that will not bend or distort in normal service.
- Leak tight shut off.
- Mounting holes as standard.
- Unique Anti-rotational body bonnet locking cam for extra safety.
- Rugged heavy duty body design.
- Fine control metering tip design.
- Extended handle for low torque operation.
- Compact manifold version available (see XN2V).
- Repair / service kit available to extend field life further.
- Temperature rating -15°C to 170°C
- Weep-ports for extra safety should metal sealing become compromised by vibration etc.
- High integrity metal to metal body bonnet seal for high pressure sealing.
- Ingress seal fitted as standard to prevent environmental contamination or corrosion.
- 100 % Hydrostatic testing
- Full material traceability.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75.



Note: also available in block and bleed format (see XN2V)
Also available with base inlet i.e. angle style type XNA



Part Numbers

St/St Part No.	Connections Size	A	B (OPEN)	C	D	E	F	G	H	I	J	Cv	Kv	Weight (KGs)
XN20-M16S	M16 X 1.5	60	25	70	125	100	37	25	5	10	50	0.75	0.65	0.9
XN20-9/16S	9/16 UN X 18	60	25	70	125	100	37	25	5	10	50	0.75	0.65	0.9

For 40,000 psi version change 20 to 40 i.e. XN40-M16S

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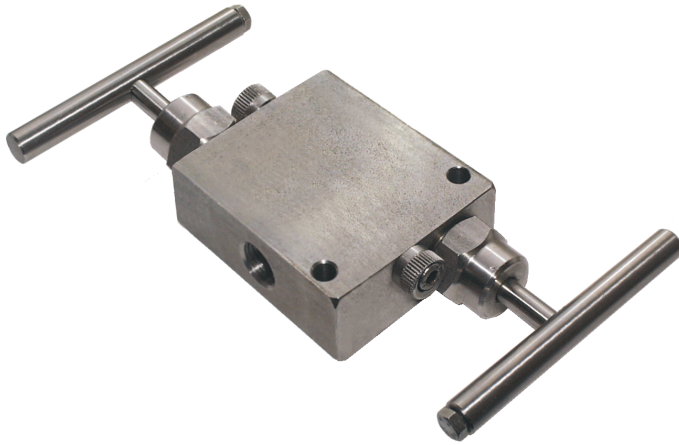
REF: AVCATZK107

REV: 00

XN2V Series

General Information

20,000 psi & 40,000 psi manifold valves

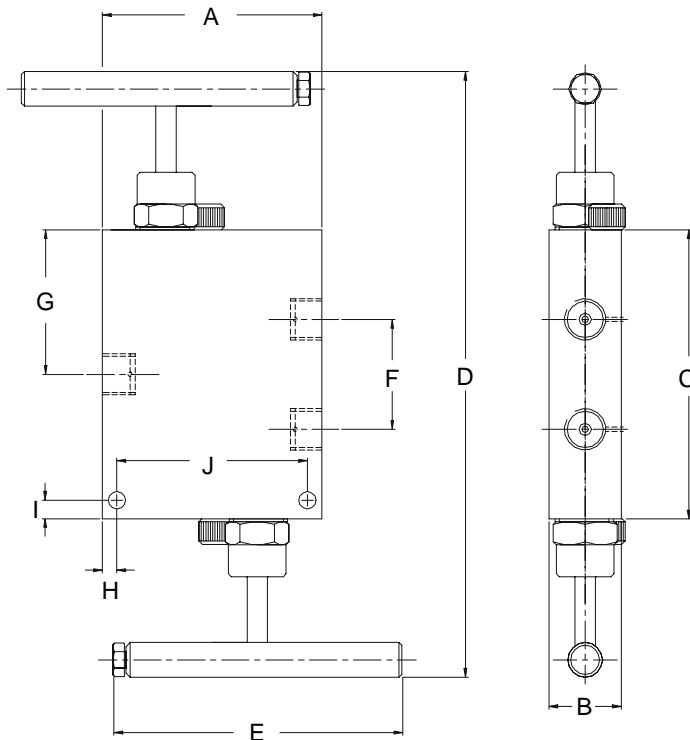


High pressure weep holes as standard for extra safety

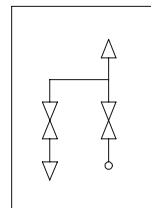
The "XN20" and "XN40" series 2-valve manifold valves are rated at 1,334 BAR (20,000 psi) and 2,667 BAR (40,000 psi) respectively cold working non shock. The tip assembly is specifically designed for heavy duty service with a fine metering tip to reduce impact on down stream equipment, instruments or test pieces. The XN2V makes an ideal safe block and bleed for high pressure test rigs. For use on very high pressure process lines, test equipment, gauges or for systems where standard pressure ratings for extra safety need to be exceeded. The XN2V comes with over-pressure or seal failure weep holes for extra safety.

Design Features

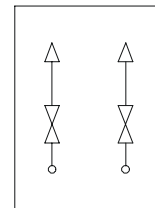
- Large extended handle for low torque operation.
- Weep ports for extra safety should metal sealing become compromised.
- Metal to metal body bonnet seal.
- Ingress seal fitted as standard.
- Service kit available to extend field life further.
- Life extending non rotation tip.
- Heavy duty wide stem design.
- Leak tight shut off.
- Temperature rating -15°C to 170°C.
- Mounting holes as standard.
- Unique Anti-rotational body bonnet locking cam for extra safety.
- Rugged heavy body design.
- Fine control.
- 100 % Hydrostatic testing.
- Full material traceability.
- Material of construction can be supplied to meet the requirements of NACE MR-01-75



Flow -
Block & Bleed



2 Valve Bank
XN2VB



Part Numbers

St/St Part No.	Connections Size	A	B (OPEN)	C	D	E	F	G	H	I	Weight (KGs)
XN2V20-M16S	M16 X 1.5	76	25	100	210	100	50	50	5	6	1.5
XN2V20-9/16S	9/16 UN X 18	76	25	100	210	100	50	50	5	6	1.5

For 40,000 psi version change 20 to 40 i.e. XN2V40-M16S
Inlet, outlet and vent have the same port size

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REF: AVCAT2K108

REV: 00



NVSS Series

Severe service needle valve range

General Information

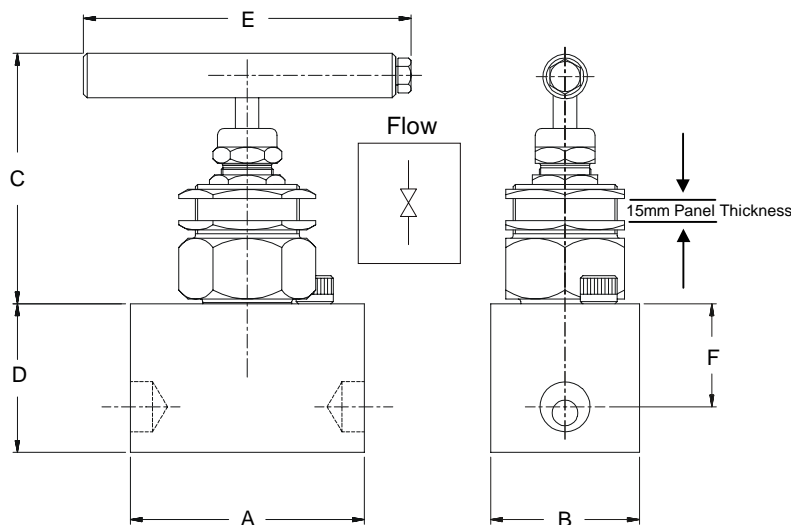
Temperatures in excess of 700° Celsius

The NVSS severe service needle valve range has been specifically designed to cope with very high temperature / high pressure applications. Designed to meet the requirements of ASME B16.34 and fire tested to BS6755 part 2. This rugged severe service valve can be used with confidence by our clients on applications where standard equipment would only offer a limited field life. Applications such as steam lines, hot gas, hot oils and abrasive mediums, particularly in power stations can be dealt with comfortably. Large 11mm bore as standard for high flow, metal seated, metal to metal body bonnet seal, high performance packings. Can be supplied with Stellite faced internals.

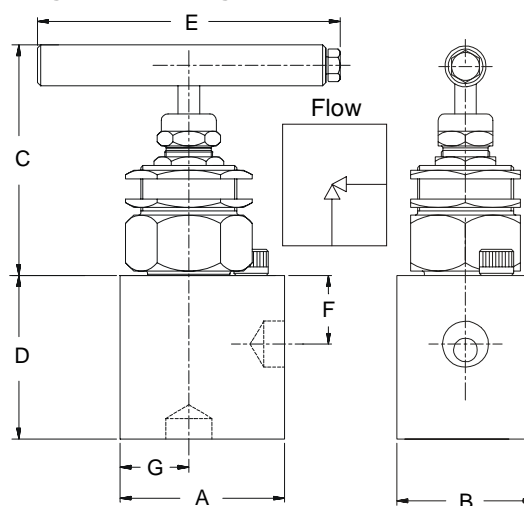
Design Features

- Heavy duty / rugged construction for severe services.
- Standard large bore size 11mm for high flow – other bore sizes available, 13mm, 15mm, 19mm.
- Welded end connections socket weld, butt-weld and metal ferrule compression fittings (other ends available).
- Non rotating, self-centering hard tip for long service life.
- Optional stellite faced tip and / or seat.
- Anti-rotational cam locking device extra safety
- High strength stem allowing in excess of 120 ft/lbs (160Nm) torque loading.
- Actuating threads above the packing to prevent contamination of threads by process medium and galling.
- Metal to metal gas tight body / bonnet seal for a high level of safety, reliability & strength at high temperatures.
- Standard construction material is 316 Stainless steel, other materials are available which satisfy API 6A.
- Panel mounting facility as standard. Panel mount nuts act as a heat dissipation device.
- High temperature Graphoil packings with stem protection wiper. Low emission stem packings are available for extra protection, verified on Helium tests to pass less than 1SCF/YEAR.
- * Valve temperature rating in excess of 700° Celsius (1,300°F).
- * Max pressure 10,800 psi (745 Bar).
- Options such as locking devices, hand wheel.
- Service kit available to extend field life further.
- Can be supplied to the requirements of NACE MR-01-84
- Fire safe to BS6755 Part 2 (API 607).
- Design code ASME B16.34.

Standard Single Isolation



Angle Pattern Single Isolation



Part Numbers

Metric Sizes	Connections Size	A	B	C Open	D	E	F	Cv	Kv	Weight (kgs)	
NVSS14SS	14mm o.d. x 10mm deep socket weld	100	64	106	64	140	44	0.75	1.65	2	
NVSS25SS	25mm o.d. x 10mm deep socket weld	100	76	106	76	140	42	1.8	1.6	2	
Angle Pattern		A	B	C	D	E	F	G	Cv	Kv	Weight
NVASS14SS	14mm o.d. x 10mm deep socket weld	76	64	106	76	140	32	32	0.75	1.65	2
NVASS25SS	25mm o.d. x 10mm deep socket weld	89	76	106	76	140	38	38	1.8	1.6	2

*See pressure / temperature data

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REF: AVCAT2K109

REV: 00

NVSS2V Series

Severe Service Needle Type 2 Valve Block

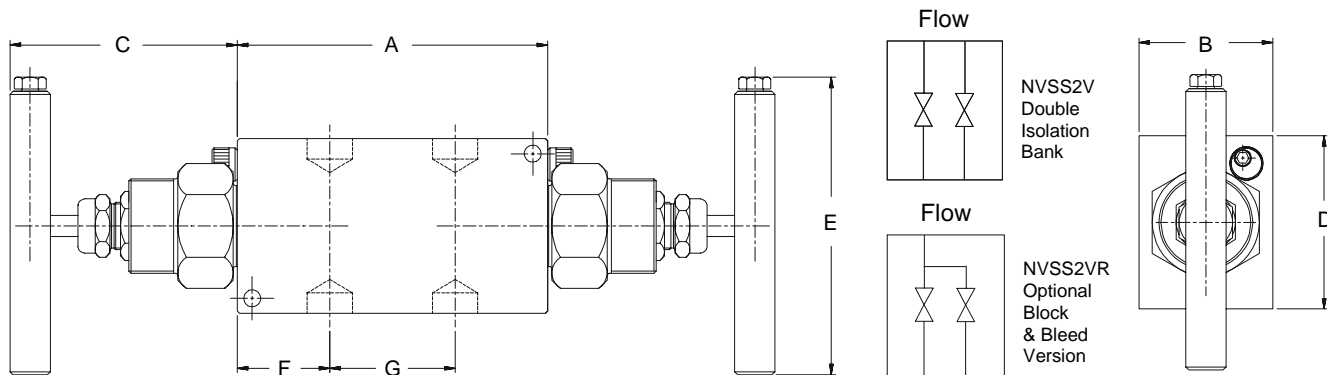
General Information

Temperatures in excess of 700° Celsius

The NVSS severe service needle valve range has been specifically designed to cope with very high temperature / high pressure applications. Designed to meet the requirements of ASME B16.34 and fire tested to BS6755 part 2. This rugged severe service valve can be used with confidence by our clients on applications where standard equipment would only offer a limited field life. Applications such as steam lines, hot gas, hot oils and abrasive mediums, particularly in power stations can be dealt with comfortably. Large 11mm bore as standard for high flow, metal seated, metal to metal body bonnet seal, high performance packings.

Design Features

- Heavy duty / rugged construction for severe services.
- Standard large bore size 11mm for high flow – other bore sizes available, 13mm, 15mm, 19mm.
- Welded end connections socket weld, butt-weld and metal ferrule compression fittings (other ends available).
- Non rotating, self-centring hard tip for long service life.
- Optional stellite faced tip and / or seat.
- Anti-rotational cam locking device for extra safety.
- High strength stem allowing in excess of 120 ft/lbs (160Nm) torque loading.
- Actuating threads above the packing to prevent contamination of threads by process medium and galling.
- Metal to metal gas tight body / bonnet seal for a high level of safety, reliability & strength at high temperatures.
- Standard construction material is 316 Stainless steel, other materials are available which satisfy API 6A.
- Panel mounting facility as standard. Panel mount nuts act as a heat dissipation device.
- High temperature Graphoil packings with stem protection wiper.
- Low emission stem packings are available for extra protection, verified on Helium tests to pass less than 1SCF/YEAR.
- * Valve temperature rating in excess of 700° Celsius (1,300°F).
- * Max pressure 10,800 psi (745 Bar).
- Service kit available to extend field life further.
- Options such as locking devices, hand wheel.
- Can be supplied to the requirements of NACE MR-01-84
- Fire safe to BS6755 Part 2 (API 607).
- Design code ASME B16.34.



3-valve version with two isolates and one equalise is available

Note: Standard format is two isolation valves in one body, however block & bleed version is available, Pt No. NVSS2VR14SS

Note: can be supplied with 2 x 10mm mounting holes

Part Numbers

Metric Size	Connections Size	A	B	C	D	E	F	G	Cv	Kv	Weight (kgs)
NVSS2VB14SS	14mm o.d. x 10mm deep socket weld	146	64	106	82	140	44	38	2.40	2.10	3.5
Imperial Size											
NVSS2VB4SS	1/2" o.d. x 3/8" deep socket weld	146	64	106	82	140	44	38	2.40	2.10	3.5

Other socket weld sizes available from 6mm to 25mm
Add -PM for panel mounted head units i.e. NVSS2VB4SS-PM

*See pressure / temperature data

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REF: AVCAT2K110

REV: 00

How to order Severe Service Valves

Our part number system is made up of alphanumeric / generic code system as explained below.
An example is :-

Severe service needle valve

The part number shown below is made up using the system :-

Valve Type	Connection size	Threads / ends	Material of construction/ body parts	Tip	Options
NVSS	14	S	S	-	5
NVSS	14 = M14 16 = M16 20 = M20 2 = 1/4" 4 = 1/2" 6 = 3/4" 8 = 1"		B = Brass C = C/Steel D = Ali-Bronze H = Hastalloy C I = Incoloy 625 M = Monel 400 N = Cupro-Nickel S = 316 St. St. U = Duplex Note: Other specialist material such as 6MO®, Super Duplex, Zirconium® are available	-U = Duplex -5 = Monel 400 -8 = Hastalloy -P = peek® tip -D = Delrin tip -MT = Metering tip -C = Ceramic tip	
XN20	16 = M16 9/16 = 9/16"				
XN40	16 = M16 9/16 = 9/16"				
			B = Butt weld F = Flanged K = Twin ferrule (compression ends) N = NPT Female threads P = BSPP Female threads Q = Single ferrule (compression ends) S = Socket weld T = BSPT Female threads		No digit = T Bar HW = Hand wheel NLK = Locking device with indicator & key LKT = All take offs locking LKI = Inlet locking LKD = Drain locking LKA = All valves locking PM = Panel mount DG = degreased & cleaned Pad = Pad lock & keys

NOTE 1: The pressure ratings quoted within our literature are maximum hydrostatic pressure ratings for the valves. Certain options available are the products / designs of other manufacturers, Alco Valves cannot accept any responsibility for these products unsuitability or failure in service.

NOTE 2: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method.

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Fittings & Accessories

Single & Twin Ferrule Compression Fittings

Tube fittings in 316 stainless steel & super alloys

DIN 2353 Compression Fittings

Compression fittings in 316 stainless steel

“O” Seal Range by CPV Inc. (USA)

Range of “O” Seal tube fittings in various formats

BSP & NPT Adaptors

Range of 316 stainless steel pipe fittings & accessories

Tube - Regulators - Gauge Adaptors / Siphons

Tube to different specifications, pressure regulators & gauge adaptors

Economy Valve Ranges

A full range of cast ball valves & check valves

High Pressure Fittings & Accessories

The following table shows the versatility of the Alco range, and the many different types of end connections and options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.

Single & Twin Ferrule Compression / Ring Type Tube Fittings In 316ss & Super Alloys



Straight coupling



Male x standpipe



Female stud coupling



Male stud coupling



Bulk head connector



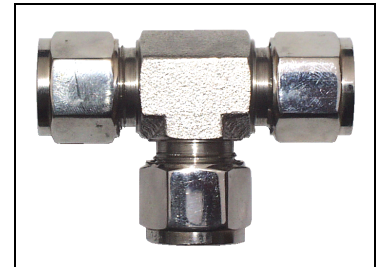
Male stud coupling (BSPP)



360° swivel union



Tube to tube reducer



Equal tee



Female elbow



Equal Cross Type



Unequal straight

**All the fittings above are available in NPT, BSPP, or BSPT threads.
Pressures 3,000 psi, 6,000 psi and 10,000 psi.**

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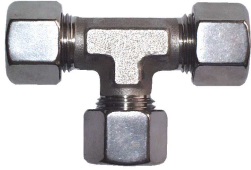
REF: AVCAT2K111

REV: 00

Fittings & Accessories

The following table shows the versatility of the Alco range, and the many different types of end connections and options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.

DIN 2353 Single Ferrule Tube Fittings in 316ss



Compression tee



Male stud



Straight coupling



Female stud coupling



Equal compression elbow



Weld stud



Male stud stand pipe



Bulk head connector



Male stud elbow



Banjo's



Locking plugs



Swivel elbow

**All the fittings above are available in NPT, BSPP, or BSPT threads.
Single ferrule DIN 2353 compression fittings available in 'L' & 'S' series**

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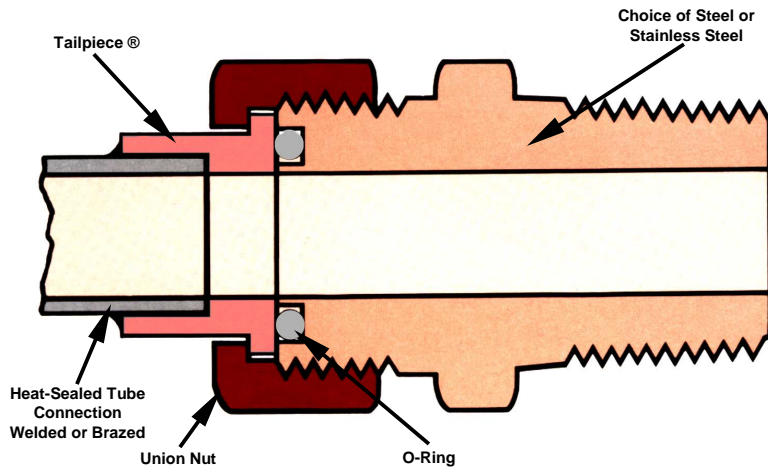
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REF: AVCAT2K112

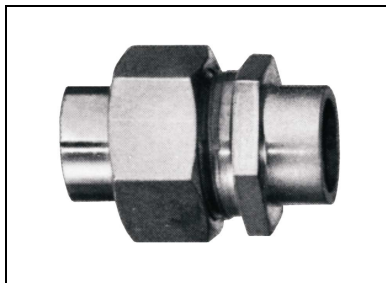
REV: 00

Fittings & Accessories

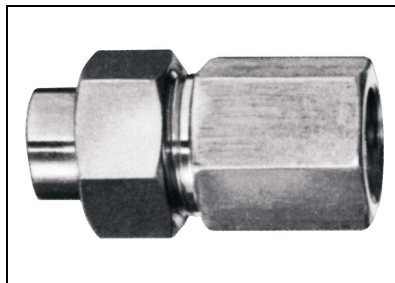
"O" Seal range by CPV Inc. (USA)



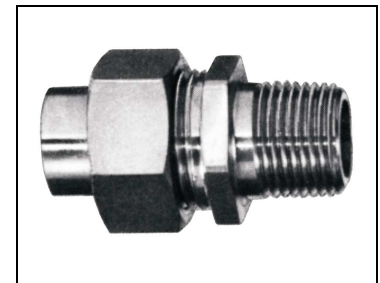
The CPV "O" seal range of fittings are best used in conjunction with the Alco "O" seal ball valve (section 3 page 8)



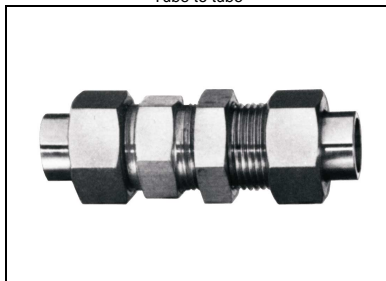
Union
Tube to tube



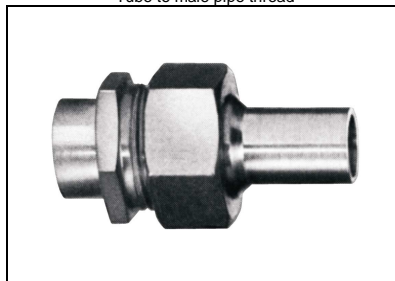
Male Connector
Tube to male pipe thread



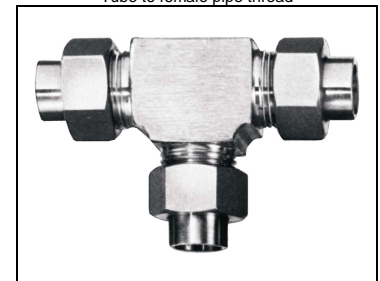
Female Connector
Tube to female pipe thread



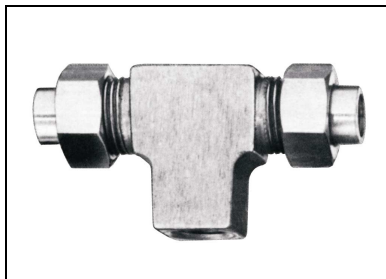
Bulkhead Union
Tube to tube



Union
Female tube to male tube



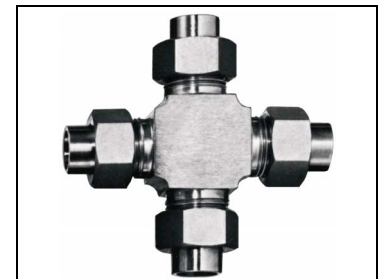
Union Tee
Tube to tube to tube



Female branch tee
Tube to tube to female pipe thread



Male elbow
Tube to straight thread



Union Cross
4 x tube connections

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REF: AVCAT2K113

REV: 00

Fittings & Accessories

The following table shows the versatility of the Alco range, and the many different types of end connections and options that can be used to build a valve to suit your requirements. Examine at your leisure the different options displayed below, perhaps you will find just what you need – if not please do not hesitate to contact us for further details.



Reducing Bush



Equal tee



90° equal elbow



Barrel nipple



Hexagon nipple



Male x female adapter



Weld tee



Hexagon reducing nipple



Weld adapter



Hose fittings



PTFE tape, Glues,
sealant & lubricants



Various seals & seal rings

**All the fittings above are available in NPT, BSPP, or BSPT threads.
Twin or single ferrule compression type. Pressures 3,000 psi, 6,000 psi and 10,000 psi.**

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Fittings & Accessories

Precision Made Tube



We stock large quantities of precision made tube in metric and imperial sizes

- Stainless Steel Tube in grades 304/L - 316/L - 316ti & 321
- Metric sizes from 6mm OD - 50mm OD inclusive
- Imperial size's 1/8" to 2" O.D. inclusive
- Special materials available on request
- All fully certified



Pipe clips



Pipe clamps

316 Stainless Steel Pressure Regulators

Regulators

A comprehensive range of pressure reducing and back pressure controllers in spring and dome loaded forms. Available in stainless steel, brass and aluminium from 1/2" to 3" sizes to control pressures up to 400 bar. All stainless steel bar stock regulators are available with flanges (to Din or ANSI), weld stubs or CPV flat face connection.

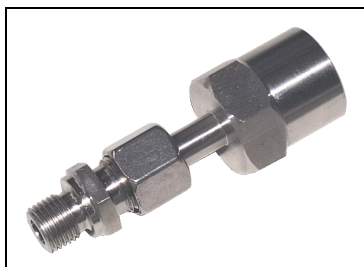
More specialised regulators include:

- Ratio regulators
- Tank blanketing regulators
- High purity gas regulators



RHPS High Pressure Gas Regulators

Gauge Adapters / Siphons



E-Type Swivel Gauge Adapter



G4NS



GS4NS

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Fittings & Accessories

Economical Valve Ranges



**Economical cast ball valve
range up to 2,000 psi**



**Economical three piece ball
valves**



Three way ball valves



Non-Return Valve



**Low Pressure Swing Check
Valves**



Wing handle format



Brass 3-way range



Brass gate valve range



**Economical brass
full bore range**



Low pressure check valves



Low pressure filter



**High pressure brass range
up to 3,000 psi**

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Technical Data

Ball Valve Sealing Pressures

Pressure conversion table

Ball Valve Sealing Pressure / Temperature data

Pressure / temperature ratings of seat materials

Ball Valve Flow Formulae

Flow calculations for liquids

Operating Torque Requirements

Operating torque figures for ball valves

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Flow calculations for gases and vapour

Testing Options / Test data / Procedures

Standard test pressures and other test options available

Chemical Resistance Chart (A-C)

The chemical resistance of the materials used by Alco Valves

Chemical Resistance Chart (C-L)

The chemical resistance of the materials used by Alco Valves

Chemical Resistance Chart (L-S)

The chemical resistance of the materials used by Alco Valves

Chemical Resistance Chart (S-Z)

The chemical resistance of the materials used by Alco Valves

Some Terms Used in This Catalogue (A-L)

Dictionary of some of the technical terms used in this catalogue

Some Terms Used in This Catalogue (L-Z)

Dictionary of some of the technical terms used in this catalogue

General Terms (A-L)

General valve terminology

General Terms (L-Z)

General valve terminology

Alco Valves Terms & Conditions of Sale

Ball Valve Sealing Pressures

Equivalent Valve Working Pressure

Lb / in ²	Bar	Kpa	Kgf / Cm ²	N / mm ²
0.0145 psi	0.001	0.1	0.001019	0.0001
1 psi	0.0689	6.89	0.0703	0.00689
750 psi	51.7	5170	52.7	5.17
1,000 psi	68.9	6890	70.3	6.89
2,000 psi	138	13800	141	13.8
3,000 psi	207	20700	211	20.7
5,000 psi	345	34500	352	34.5
6,000 psi	414	41400	422	41.4
10,000 psi	690	69000	704	69

Units are Appx.

Seat Sealing Pressures at Different Temperatures (Ball Valves)

Material	0°C	100°C	200°C	300°C
Acetal	3,000 PSI	95°C max		
Nylon 12	6,000 PSI	100°C max		
PEEK® & O Ring	6,000 PSI	6,000 PSI	170°C max	
PVDF	6,000 PSI	5,000 PSI	150°C max	
PTFE	1,000 PSI	900 PSI	500 PSI	230°C max
RTFE	2,000 PSI	1,700 PSI	1,000 PSI	230°C max
PEEK®	10,000 PSI	10,000 PSI	7,500 PSI	250°C max

Note 1: This table shows the seat sealing performance obtainable with the valve standard operating torque of 8lbf – ft (10.8Nm) for a 19mm size ball valve with Delrin seats. Improved seat sealing, up to the maximum temperatures given can be obtained at increased torque load values. Consult the Alco Valves technical department for details.

Note 2: Temperatures shown are those of the line fluid, and the maximum which can be used for the application.

Pressure ratings for valves

All handles can be colour coded. The colour of the handle or sleeve offers a good visual indication of the pressure rating of the valves to which they are fitted according to the following:-

Handle Colour	Pressure Ratings	Bar	KPa	Kg/Cm ²
Black	1,000 psi	69 BAR	6,890	70.3
Blue	2,000 psi	138 BAR	13,800	141
Red	3,000 psi	207 BAR	20,700	211
Yellow	6,000 psi	414 BAR	41,400	422
Black	10,000 psi	690 BAR	69,000	704
Black / Stainless	15,000 psi	1030 BAR	103,000	1050
Black / Stainless	20,000 psi	1360 BAR	138,000	1410

Valve pressure ratings are cold working, non-shock.

The above temperature figures include a 10% safety factor subject to the non-oxidisation of the line fluid

For other seat materials consult factory

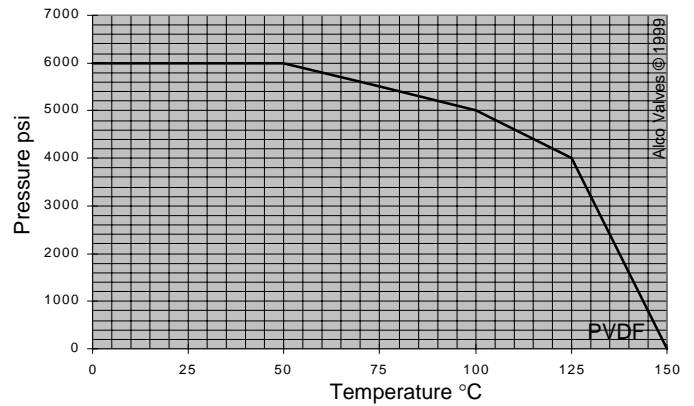
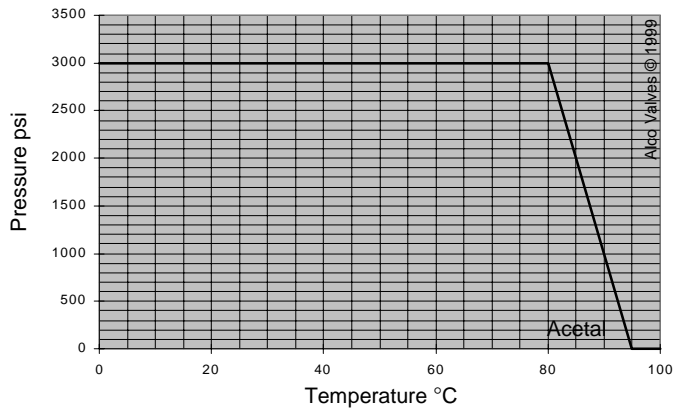
NOTE: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method.

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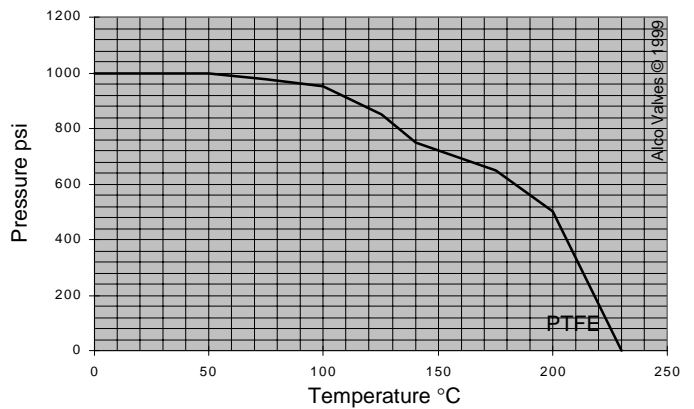
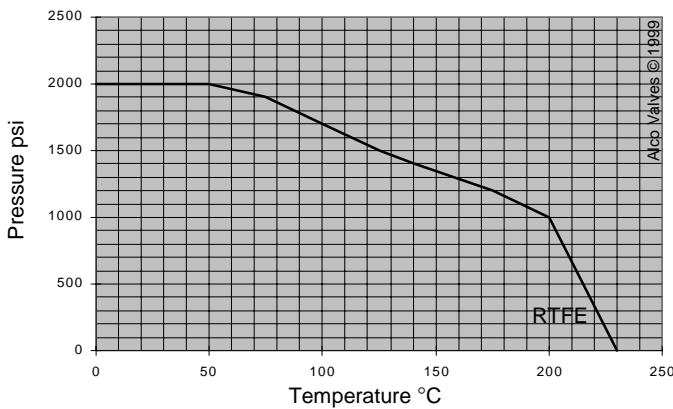
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Ball Valve Sealing Pressure / Temp Data

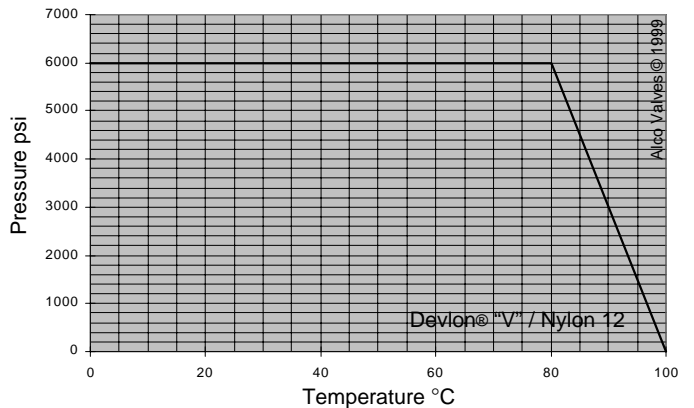
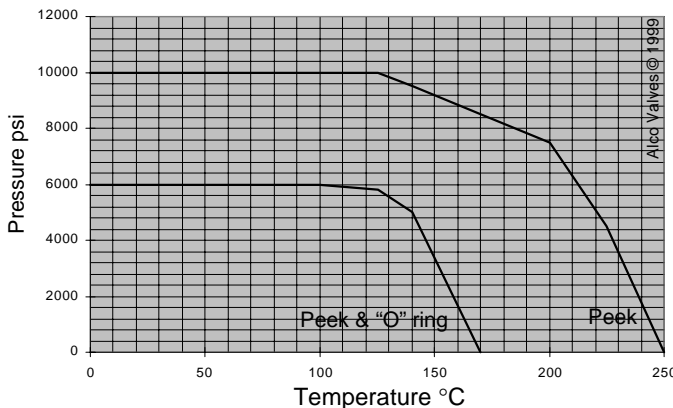
Acetal / PVDF



RTFE (25% glass filled) / PTFE



Peek® / Peek® & Viton "O" Ring / Nylon 12 / Devlon® "V"



The above figures include a 10% safety factor subject to the non-oxidisation of the line fluid

Fahrenheit = $9/5^{\circ}\text{C} + 32$ (Appx)

For other seat materials consult factory

NOTE: It is always advisable to refer to specific product literature or contact our technical sales department when ordering valves as some of these options are available only on certain styles of valves. Any special end connections such as compression ends or butt / socket weld may limit the rated working pressure of the valve or component supplied in accordance with the relevant specification of design or use of that method of connection. The valve or component will still carry the maximum working pressure markings in accordance with the valve or component design not the connection method.

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Ball Valve Flow Formulae

Valve Flow Coefficients

All valve products manufactured by Alco valves are sized using the flow coefficients Cv and Kv.

Flow Coefficient Cv

The amount of water in U.S. gallons per minute at a temperature of 60°F, which will flow through the valve with a differential pressure of one lbs f / in².

Flow Coefficient Kv

The amount of water in cubic metres per hour at a temperature of 15°C which will flow through the valve with a differential pressure of one bar.

The two flow coefficients are related by the expression
Cv = 1.156 Kv

The Cv or Kv shown in the technical data sections for individual valves and should be used for calculating flow through the valve for maximum capacity.

Sub Critical Flow Formulae for liquids - (No cavitation or flashing taking place.)

Imperial Units

Flow coefficient formulae

$$C_v = Q \sqrt{\frac{SG}{\Delta P}}$$

Liquid flow rate

$$Q = C_v \sqrt{\frac{\Delta P}{SG}}$$

Differential pressure

$$\Delta P = \frac{Q^2}{C_v^2} \times SG$$

Metric Units

Metric flow coefficient formulae

$$K_v = Q \sqrt{\frac{\rho}{\Delta P}}$$

Liquid flow rate

$$Q = K_v \sqrt{\frac{\Delta P}{\rho}}$$

Differential pressure

$$\Delta P = \frac{Q^2}{K_v^2} \times \rho$$

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Where:

Cv	=	US flow coefficient
Q	=	Liquid flow in U.S. gallons per minute
ΔP	=	Differential pressure lbf / in ²
SG	=	Liquid specific gravity

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Where:

Kv	=	Metric flow coefficient
Q	=	Liquid flow rate m ³ / hr
ΔP	=	Differential pressure
ρ	=	Liquid density kg / dm ³

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NB. The above is to be used as a guide only

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REF: AVCAT2K120

REV: 00

Operating Torque Requirements For Ball Valves.

Table of Break Out Torques for Full Differential & Zero Pressure Conditions

Seat Materials	Break Out Torques	Valve Sizes							
		1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
PTFE 1,000 psi	Full Differential	1	1	1	4	7	16	20	29
	0 pressure	1	1	1	2	5	9	12	15
RTFE 2,000 psi	Full Differential	1	1	1	4	7	14	21	32
	0 pressure	1	1	1	2	5	9	12	15
Acetal® 3,000 psi	Full Differential	3.5	3.5	3.5	9	14	51	64	72
	0 pressure	1	1	1	3	5	15	18	23
Nylon 12® 5,000 psi	Full Differential	-	-	-	-	-	76	76	76
	0 pressure	-	-	-	-	-	28	28	28
Pek® 6,000 psi	Full Differential	7	7	7	14	28	-	-	-
	0 pressure	3	3	3	5	8	-	-	-
Pek® 10,000 psi	Full Differential	12.5	12.5	12.5	19	31	-	-	-
	0 pressure	7	7	7	5	8	-	-	-

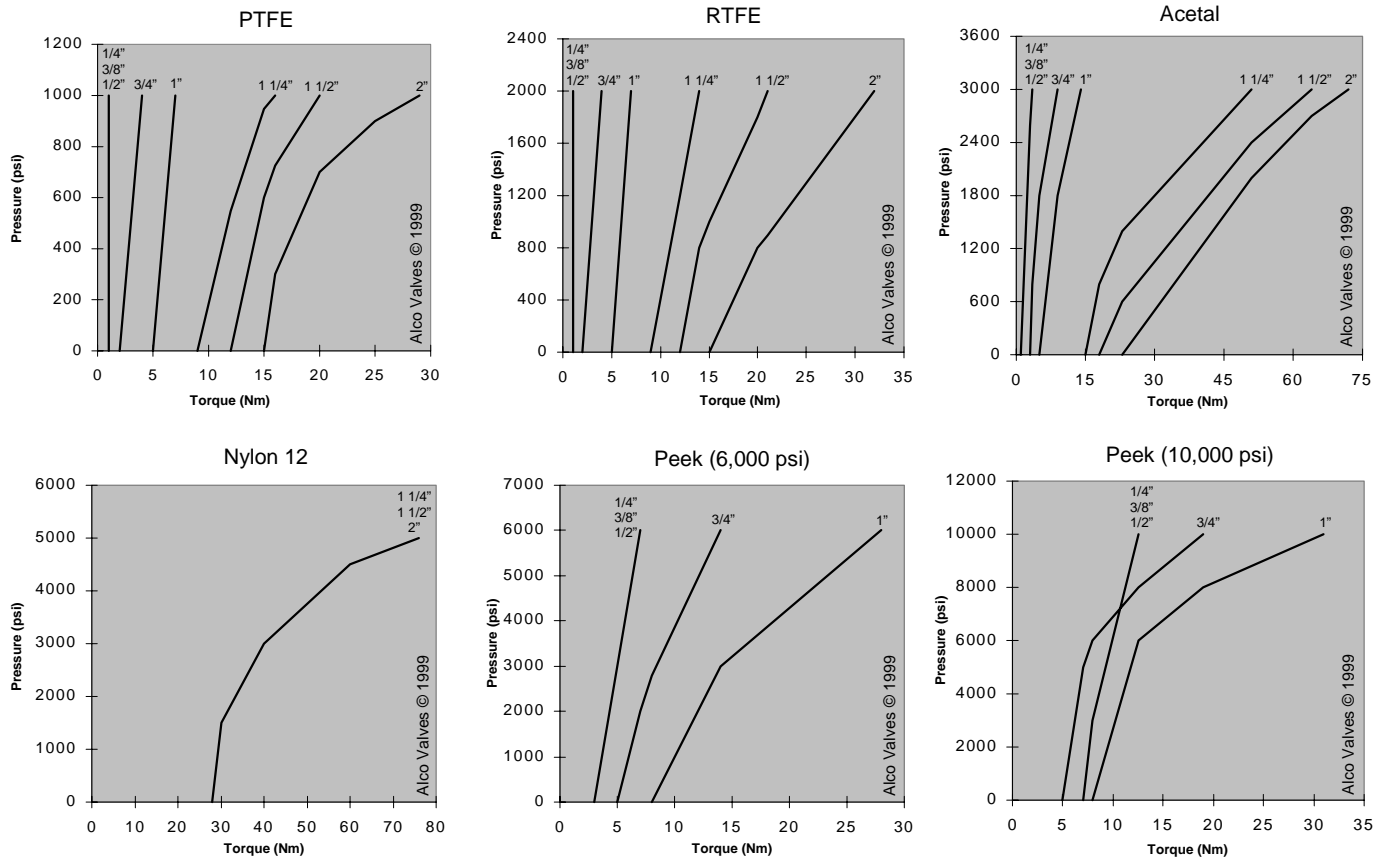
Torque values given in Newton metres.

* Test medium oil

* The above figures are mean torques subject to +/- 20%

Graphs of Break Out Torques for Full Differential & Zero Pressure Conditions

Sizes shown are valve bore sizes



Note: The above is to be used as a guide only, a more detailed version of the above graphs is available from our technical department if required.

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Technical Flow Formulae

Sub Critical Flow Formulae For Gas and Vapour

To be used when $P < 0.38P_1$ for needle valves and $\Delta P < 0.18P_1$ for ball valves.

For valve sizing outside these parameters consult the factory.

English Units		Metric Units	
Flow by weight	$C_v = \frac{W}{3.22 \sqrt{\Delta P (P_1 + P_2) G_F}}$	Flow by weight	$K_v = \frac{0.0408W}{\sqrt{\Delta P (P_1 + P_2) G_F}}$
Volumetric Flow	$C_v = \frac{Q}{963} \sqrt{\frac{GT}{\Delta P (P_1 + P_2)}}$	Volumetric Flow	$K_v = \frac{Q}{341} \sqrt{\frac{GT}{\Delta P (P_1 + P_2)}}$

Where:

Cv	=	US flow coefficient	Alco Valves © 1999
G	=	Gas specific gravity (air = 1.0)	
G _F	=	Specific gravity @ flowing temperature	
P ₁	=	Upstream pressure, lbf / in ² A	
P ₂	=	Downstream pressure, lbf / in ² A	
ΔP	=	Differential pressure P ₁ - P ₂ psi	
Q	=	Gas flow rate at 14.7 psia and 60 °F SCFH	
T	=	Flowing temperature, °R, (460 + °F)	
W	=	Mass flow, lb / h	

Where:

Kv	=	Metric flow coefficient	Alco Valves © 1999
G	=	Gas specific gravity (air = 1.0)	
G _F	=	Specific gravity @ flowing temperature	
P ₁	=	Upstream pressure, bars absolute	
P ₂	=	Downstream pressure, bars absolute	
ΔP	=	Differential pressure P ₁ - P ₂ bar	
Q	=	Gas flow rate at 15 °C & 1013 milibars abs., m ³ / h	
T	=	Flowing temperature, °K, (273 + °C)	
W	=	Mass flow, kg / h	

NB. The above is to be used as a guide only

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Testing Options / Testing Data / Procedures

At Alco, all of our valves are tested in accordance to internationally recognised standards or our own more stringent internal test procedures. In addition to this we also offer specialist testing to our clients requirements.

Shown below are typical test pressures for Alco's valve ranges:

Valve Rating	Seat Test	Body / Shell Test
1,000 psi	1,100 psi	1,500 psi
2,000 psi	2,200 psi	3,000 psi
3,000 psi	3,300 psi	4,500 psi
6,000 psi	6,600 psi	9,000 psi
10,000 psi	11,000 psi	15,000 psi
15,000 psi	16,500 psi	22,500 psi
20,000 psi	22,000 psi	30,000 psi

NB. We reserve the right to change design ratings at any time. The above ratings are based on valves constructed from 316ss, other materials may be lower rated. If you have any queries contact our technical department.

Hydrostatic testing with Air, Oxygen free Nitrogen or Water / Oil mixture at room temperatures (18°C).

Please Note: Where compressed gases are used ensure valves and fittings are free from all contamination i.e. oil. You can have our products degreased and cleaned for special gas service at extra cost when specified. Specifying degreased and cleaned option must be done at the time of order.

Other special testing is available, should you or your client wish to seek specific testing data Alco Valves can accommodate most recognised tests "in-house".

In House Testing Options:

Gas Testing up to 15,000 psi

Gas mediums used - Air, Oxygen free Nitrogen, Helium (1% - 99%). Other gases by request.

Hydraulic Testing up to 60,000 psi

Liquid mediums used – Water, Oil, Emulsion or client approved hydraulic medium.

Temperature Tests from -196° Celsius

(cooled enclosure using liquid nitrogen) to +950° Celsius (heated enclosure gas fired), also hot oil facility available up to 500°C

Cycle Testing

Many thousands even over 1,000,000 cycles can be performed. Client to specify number of cycles and conditions of test.

Fire Testing

In house fire testing in accordance with BS6755 part 2 (API607)

All of the above can be witnessed and certified by our own Q.C. representative or by an internationally recognised third party inspection company of your choice.

Note: Testing up and above our standard procedures normally incurs additional cost at a set-up charge then per hour rate and part thereof. There are also costs relating to third party inspection and tests that can be negotiated at the time.

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Chemical Resistance Chart

The information given in the following tables is a general guide to the chemical resistance of the materials used by Alco Valves.

Note 1: It should be noted that many factors affect the media, i.e. :- temperature, concentration, pressure and a degree of contamination etc which may change the suitability of the materials given.

Note 2: We therefore advise that the information given be used as a guide only for your choice of materials and not as the absolute answer. If in doubt consult an industrial metallurgist / chemist, who will advise you.

Chemical Test Results

A = Excellent

C = Fair, probably unsuitable

Blank = No information

B = Good

D = Not recommended

Note: Ratings are based on media at ambient temperatures unless otherwise stated.

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nylatron	Peek®
Acetaldehyde	C	A	B	A	-	A	D	A	A	A	B	-
Acetate Solvents	B	A	A	A	A	A	A	A	A	B	A	-
Acetic Acid 10%	C	A	B	A	A	A	A	A	A	B	C	A
Acetic Acid 60%	C	A	B	A	A	A	A	A	A	-	-	A
Acetic Acid, Glacial	C	A	B	A	A	A	A	A	A	B	C	B
Acetic Acid Vapours	D	A	B	-	-	A	B	-	A	-	-	-
Acetic Anhydride	D	A	B	A	B	A	B	A	A	-	-	A
Acetone	A	A	A	A	A	A	A	A	A	B	A	-
Acetylene	A	A	A	A	A	A	D	-	A	-	-	-
Acrylonitrile	C	A	A	A	A	A	B	A	A	-	A	A
Adipic Acid 15 25%	-	A	-	-	-	-	-	A	A	-	-	-
Alcohols	C	A	A	A	A	A	A	A	A	A	-	-
Aliphatic Esters	-	A	A	A	B	B	A	A	A	A	-	-
Aliphatic Hydrocarbons	-	A	A	A	A	A	B	A	A	-	-	-
Alkyl Chlorides, Pure	-	B	A	A	A	B	A	-	A	-	-	-
Alum	-	A	B	A	-	B	B	A	A	-	-	-
Aluminium Chloride	C	B	B	A	A	B	B	A	A	-	-	A
Aluminium Sulphate	C	A	A	A	A	A	B	A	A	-	-	A
Amines	B	A	B	A	A	A	D	-	A	-	-	-
Ammonia (gas)	B	A	D	A	A	A	D	A	A	-	B	-
Ammonium Bicarbonate	B	A	D	A	A	A	D	A	A	-	-	-
Ammonium Carbonate	B	A	B	A	A	A	D	A	A	-	A	-
Ammonium Chloride	D	B	A	A	A	A	D	A	A	-	-	-
Ammonium Hydroxide	C	A	C	A	A	A	D	A	A	-	-	B
Ammonium Nitrate 10%	D	A	-	A	B	A	D	A	A	-	-	B

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nylatron	Peek®
Ammonium Sulphate	C	A	A	A	A	A	A	A	A	-	-	A
Amyl Acetate	C	A	A	A	A	A	A	A	A	-	A	A
Amyl Chloride	-	A	A	A	A	A	B	-	A	-	-	-
Aqua Regia	D	D	D	D	D	D	D	A	A	-	-	-
Aromatic Hydrocarbons	-	A	A	A	A	A	A	A	A	-	-	-
Barium Chloride	C	A	A	A	A	A	B	A	A	-	A	A
Barium Hydroxide	B	A	A	A	A	A	A	A	A	-	-	-
Barium Nitrate	-	A	-	A	A	A	D	A	A	-	-	-
Beer at 71 °C	D	A	A	A	A	A	B	-	A	-	-	-
Benzene	B	A	A	A	A	A	A	A	A	A	A	-
Benzoic Acid	D	A	A	A	A	A	B	A	A	-	C	-
Boric Acid	D	B	B	A	A	A	B	A	A	-	A	-
Brines	C	C	A	A	A	A	A	A	A	-	-	-
Bromine (dry)	D	D	A	A	A	A	B	D	B	-	-	A
Bromine (wet)	D	D	C	D	-	B	D	D	B	-	-	A
Butadiene	C	A	A	A	A	A	A	A	A	-	-	-
Butane	B	A	A	A	A	A	A	A	A	-	-	-
Butyl Acetate	C	A	A	A	A	A	A	A	A	-	B	A
Butyl Alcohol	-	A	A	A	A	A	A	A	A	-	-	-
Butyric Acid	D	A	A	A	A	A	B	A	A	-	B	-
Calcium Bisulphate	D	A	D	A	-	A	B	A	A	-	-	-
Calcium Chloride	C	B	A	A	A	A	A	A	A	-	A	A
Calcium Hydroxide	C	A	A	A	A	A	B	A	A	-	-	-
Calcium Hypochlorite	D	B	C	B	-	A	D	A	A	-	-	-
Calcium Nitrate	-	A	A	A	A	A	A	-	A	-	-	A

See Note 1 & 2

Note: The above is to be used as a guide only.

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REF: AVCAT2K124

REV: 00

Chemical Resistance Chart

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nyatron	Peek®
Carbolic Acid	D	A	A	A	A	A	B	A	A	-	-	-
Carbon Disulphide	D	A	A	A	-	-	B	A	A	-	A	-
Carbonic Acid	D	A	A	A	A	A	B	-	A	A	-	-
Carbon Tetrachloride (dry)	B	A	A	A	A	A	B	A	A	A	A	A
Castor Oil	B	A	A	A	A	A	A	-	A	-	-	-
Chloric Acid	-	D	D	B	D	A	D	-	A	-	-	-
Chlorinated Hydrocarbons	B	B	A	B	B	A	B	A	A	-	-	-
Chlorinated Water (saturated)	-	C	C	B	-	A	C	A	A	-	-	-
Chlorine (dry gas)	B	B	A	C	-	A	B	C	A	-	C	-
Chlorine (wet gas)	D	D	C	D	D	B	D	A	A	-	C	-
Chlorine Dioxide	-	D	C	D	B	A	D	A	A	-	-	-
Chloroacetic Acid	D	D	B	D	A	A	D	A	A	-	-	-
Chloro-Benzene (dry)	B	A	A	A	A	A	A	A	A	-	A	A
Chloroform (dry)	B	A	A	A	A	A	A	A	B	-	C	A
Chloro-Sulphonic Acid	D	C	B	B	A	B	C	-	A	-	C	-
Chromic Acid Dilute	D	A	C	A	A	A	D	A	A	-	B	-
Chromic Acid 50%	D	C	C	B	D	B	D	A	A	-	-	A
Citric Acid	D	A	A	A	A	A	B	A	A	-	B	-
Copper Chloride	D	D	D	D	D	A	D	A	A	-	-	-
Copper Nitrate	D	A	D	A	-	A	D	A	A	-	-	-
Copper Sulphate	D	A	C	A	-	A	D	A	A	-	-	-
Creosote (hot)	B	A	A	A	A	A	B	-	A	-	-	-
Cresol	-	A	B	A	A	A	B	-	A	-	D	-
Cresylic Acid	D	A	B	A	A	A	B	-	A	-	-	-
Cyanide Solutions	-	A	D	A	-	B	D	-	A	-	-	-
Cyclohexane	A	A	A	A	A	A	A	-	A	-	A	A
Detergents Synthetic	A	A	B	A	A	A	A	-	A	-	-	-
Diacetone Alcohol	A	A	A	A	A	A	A	-	A	-	-	-
Dichloro-Benzene	-	B	A	A	A	A	A	-	A	-	-	-
Dichloroethylene	-	A	A	A	A	A	B	-	A	-	A	-
Diesel Oil	A	A	A	A	A	A	A	A	A	-	A	A
Diethylamine	A	A	D	A	-	A	D	A	A	-	-	-
Diethylene Glycol	-	A	A	A	A	A	B	A	A	-	-	-
Esters	B	A	A	A	A	A	B	-	A	-	-	-
Ethers	C	A	A	A	A	A	A	A	A	A	A	A
Ethyl Acetate	B	A	A	A	A	A	A	A	A	-	-	-
Ethyl Alcohol	B	A	A	A	A	A	A	A	A	-	-	-
Ethyl Chloride (dry)	B	A	A	A	A	A	B	A	A	-	A	-

Note: The above is to be used as a guide only.

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nyatron	Peek®
Ethyl Chloride (wet)	D	B	B	A	A	A	C	A	A	-	A	-
Ethylene Glycol	B	A	A	A	A	A	B	A	A	-	B	A
Fatty Acids	D	A	B	A	A	A	B	A	A	-	-	-
Ferric Chloride	D	D	C	D	D	B	D	A	A	-	C	A
Ferric Nitrate	D	A	D	A	C	A	D	A	A	-	-	-
Ferric Sulphate	D	A	D	A	D	A	D	A	A	-	-	-
Ferrous Sulphate	D	B	B	A	A	A	B	A	A	-	-	-
Fluorinated Hydro Carbons (freons)	B	B	A	B	A	A	B	-	A	-	-	-
Fluorine (dry gas)	-	A	A	A	B	A	B	D	A	-	D	-
Fluorine (wet gas)	B	D	A	-	B	A	D	-	A	-	D	-
Fluosilicic Acid	D	B	B	B	A	A	D	D	A	-	D	-
Formaldehyde 40%	C	B	A	A	B	B	B	A	A	A	B	A
Formic Acid 50%	D	A	A	A	B	A	B	C	A	D	C	C
Fruit Juices	D	A	B	A	A	A	B	-	A	-	B	-
Fuel Oil	B	A	A	A	A	A	B	A	A	-	-	-
Furfural	B	A	A	A	A	A	B	A	A	-	A	B
Gallic Acid 25%	D	A	-	-	A	A	-	-	A	-	-	-
Gelatine	D	A	A	A	A	A	B	A	A	-	-	-
Glucose	B	A	A	A	A	A	A	A	A	-	-	-
Glycerine	B	A	A	A	A	A	B	A	A	-	-	-
Glycols	B	A	B	A	A	A	A	A	A	-	-	-
Hydrobromic Acid	D	D	C	C	A	B	D	A	A	-	D	-
Hydrochloric Acid 10% (Hot)	D	D	C	D	A	B	D	B	A	-	D	A
Hydrochloric Acid 10%	D	D	D	D	A	C	D	D	A	D	D	B
Hydrocyanic Acid	C	A	C	A	-	A	D	-	A	-	-	-
Hydrofluoric Acid 40%	D	D	A	C	A	A	D	D	A	D	D	-
Hydrogen Chloride (dry)	D	A	A	A	A	A	B	-	A	-	-	-
Hydrogen Chloride (wet)	D	D	C	D	A	A	D	-	A	-	-	-
Hydrogen per Oxide	D	B	B	A	C	A	D	D	A	D	D	-
Hydrogen Sulphide (dry)	B	A	B	A	B	A	B	A	A	-	-	-
Hydrogen Sulphide (wet)	D	A	D	A	A	A	C	A	A	C	B	-
Hypochlorites	D	D	D	D	C	A	D	A	A	-	-	-
Hypochlorous Acid	-	D	D	D	C	A	D	A	A	-	-	-
Iodine (wet)	D	D	D	D	-	B	D	-	A	-	D	-
Ketones	A	A	A	A	A	A	A	A	A	-	-	-
Lactic Acid 10%	D	A	C	A	A	A	D	A	A	B	C	A
Lead Acetate	D	A	B	A	A	A	D	A	A	-	B	-
Lead Nitrate 50%	D	A	A	A	A	A	-	-	A	-	-	-

See Note 1 & 2

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REF: AVCAT2K125

REV: 00

Chemical Resistance Chart

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nyatron	Peek®
Lime	-	A	A	A	A	A	B	A	A	-	-	-
Linseed Oil	A	A	B	A	A	A	B	-	A	A	A	-
Lithium Bromide	-	B	A	A	A	A	A	A	A	-	D	-
Lithium Chloride	-	B	A	A	A	A	A	A	A	A	A	-
Lubricating Oils	A	A	A	A	A	A	A	A	A	A	A	-
Magnesium Carbonate	D	A	A	A	A	A	B	A	A	-	-	-
Magnesium Chloride	D	B	B	A	A	A	A	A	A	A	A	A
Magnesium Hydroxide	B	A	A	A	A	A	B	A	A	A	A	-
Magnesium Nitrate	D	A	B	A	D	A	B	A	A	-	-	-
Magnesium Sulphate	B	A	A	A	A	A	B	A	A	A	A	-
Maleic Acid	B	B	A	A	A	A	B	A	A	-	-	-
Mercuric Chloride	D	C	C	C	D	A	D	A	A	B	C	-
Mercuric Cyanide 5%	D	A	C	A	A	A	D	A	A	-	-	-
Mercuric Iodine	D	-	C	C	-	A	-	C	A	-	-	-
Mercuric Nitrate 5%	-	A	B	A	C	A	D	-	A	-	-	-
Mercurous Nitrate 5%	-	A	C	A	-	A	D	A	A	-	-	-
Mercury	A	A	B	A	B	A	D	A	A	A	A	-
Methyl Alcohol	B	A	A	A	A	A	A	A	A	-	-	-
Methyl Chloride (dry)	B	B	A	A	A	A	B	-	A	-	-	-
Methylene Chloride (dry)	B	A	A	A	A	A	A	-	A	C	C	-
Methyl Ethyl Ketone	B	A	A	A	A	A	A	A	A	B	A	A
Methyl Isobutyl Ketone	-	A	A	A	A	A	A	A	A	-	-	-
Methyl Methacrylate	-	A	-	-	-	-	-	A	A	-	-	-
Milk	D	A	A	A	-	-	C	A	A	A	A	-
Mixed Acids (nitric & sulphuric)	C	B	D	A	D	B	D	B	A	-	-	-
Molasses	D	A	A	A	A	A	A	A	A	-	-	-
Naphtha	B	A	A	A	A	-	B	A	A	-	-	-
Naphthalene	B	B	A	A	-	A	B	A	A	-	A	-
Nickel Chloride	D	C	A	A	A	A	D	A	A	-	-	-
Nickel Nitrate 5 10%	D	A	C	A	B	A	D	A	A	-	-	-
Nickel Sulphate	D	A	A	A	-	A	B	A	A	-	A	-
Nitric Acid 25%	D	A	C	A	D	A	D	A	A	D	C	-
Nitric Acid 70%	D	A	C	A	D	A	D	A	A	D	D	-
Nitric Acid 100%	C	A	C	A	D	C	D	C	A	D	D	-
Nitrobenzene	B	A	A	A	D	A	B	A	A	B	C	A
Nonylphenol	-	A	-	-	-	-	-	-	A	-	-	-
Oils, Essential	B	A	A	A	-	-	A	A	A	A	A	-
Oils, Mineral	B	A	A	A	A	A	B	A	A	A	A	A

Note: The above is to be used as a guide only.

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nyatron	Peek®
Oils, Vegetable & Animal	A	A	A	A	A	A	B	A	A	-	-	-
Oleic acid	C	B	A	A	B	A	B	A	A	C	A	-
Oleum	C	B	C	A	A	A	D	A	A	D	D	-
Oxalic acid 10%	D	B	A	A	A	A	B	B	A	C	C	-
Oxalic Acid 50% Boiling	D	C	A	-	A	A	B	-	A	D	D	-
Palmitic Acid	C	A	B	A	B	B	B	-	A	-	-	-
Paraffins	B	A	A	A	A	A	A	A	A	A	A	-
Petrol	C	A	A	A	A	A	A	A	A	A	A	-
Phenol	D	A	A	A	A	A	B	A	A	D	-	-
Phosphoric Acid 10%	D	A	B	A	A	A	C	E	A	C	D	A
Phosphoric Acid 30%	D	A	A	A	A	A	D	C	A	D	D	A
Phosphoric Acid 50%	D	A	A	A	A	A	D	C	A	D	D	B
Phosphoric Acid 10% Boiling	D	B	A	A	A	A	D	-	A	-	-	C
Phosphorus Trichloride, (dry)	-	B	B	-	A	-	C	A	A	-	-	-
Phthalic Acid	C	A	B	-	A	-	D	-	A	-	B	-
Picric Acid	D	A	C	A	B	A	D	-	A	-	-	-
Potassium Bromide	D	A	B	A	-	A	B	A	A	-	A	-
Potassium Carbonate	B	A	A	A	A	A	B	A	A	-	A	-
Potassium Chlorate	B	B	A	A	C	A	B	A	A	-	-	-
Potassium Chloride	B	B	A	A	A	A	B	A	A	-	A	-
Potassium Chromate	-	A	A	A	A	A	C	A	A	-	-	-
Potassium Cyanide	B	A	B	B	A	-	D	B	A	-	-	-
Potassium Dichromate	C	A	A	A	C	A	C	B	A	-	C	-
Potassium Ferricyanide 25%	C	A	A	A	B	A	B	B	A	-	A	-
Potassium Hydroxide 10%	B	A	A	A	A	A	B	A	A	-	A	-
Potassium Hydroxide 50%	B	B	A	B	A	B	C	B	A	-	C	-
Potassium Nitrate	B	A	A	A	D	A	B	A	A	B	A	-
Potassium Permanganate Dilute	B	A	B	A	-	A	B	A	A	A	D	A
Potassium Silicate	C	A	A	A	A	A	B	A	A	-	-	-
Potassium Sulphate	C	A	A	A	A	A	B	A	A	-	A	-
Propane	B	A	A	A	A	A	A	A	A	-	A	-
Propyl Acetate	B	A	A	A	A	A	A	-	A	-	-	-
Propyl Alcohol	B	A	A	A	A	A	A	A	A	-	-	-
Pyridine	B	A	A	A	A	A	C	-	A	A	A	C
Pyrogalllic Acid	C	A	B	A	A	A	B	-	A	-	-	-
Salicylic Acid	D	A	A	A	B	A	B	-	A	-	A	-
Sea Water	D	B	A	A	A	A	A	A	A	-	-	-
Siliconers	B	A	A	A	A	A	A	A	A	-	A	-

See Note 1 & 2

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REF: AVCAT2K126

REV: 00

Chemical Resistance Chart

MEDIA	BODY MATERIAL								SEATS			
	Carbon Steel	316 St. Steel	Monel 400	Incoloy Alloy 825	Hastelloy B	Hastelloy C	Aluminium bronze	Titanium	PTFE	Delrin	Nylatron	Peek®
Silver Bromide	-	D	A	B	B	A	D	-	A	-	-	-
Silver Chloride	-	D	B	B	B	A	D	-	A	-	-	A
Silver Nitrate	D	B	C	A	A	B	D	A	A	A	A	-
Soaps	A	A	A	A	A	A	A	A	A	A	A	-
Sodium Acetate	B	A	A	A	-	A	B	A	A	-	B	-
Sodium Aluminate	C	B	B	A	A	A	B	A	A	-	-	-
Sodium Bicarbonate	C	A	A	A	A	A	A	A	A	A	A	A
Sodium Bisulphate	D	B	A	A	A	A	B	B	A	-	-	-
Sodium Bisulphite	D	A	B	-	-	A	B	-	A	-	A	-
Sodium Borate (hot)	C	A	A	A	A	A	B	A	A	-	-	-
Sodium Bromide	D	B	A	B	A	A	B	B	A	-	A	-
Sodium Carbonate	B	A	A	A	A	A	B	B	A	A	A	A
Sodium Chloride	C	B	A	A	B	A	A	A	A	A	A	A
Sodium Chromate	B	A	B	A	A	A	C	A	A	-	-	A
Sodium Cyanide	B	A	C	A	-	-	D	A	A	A	A	-
Sodium Dichromate	-	B	C	A	D	B	C	A	A	-	-	-
Sodium Hydroxide 30%	B	A	A	A	A	A	B	A	A	C	A	C
Sodium Hypochlorite	D	C	D	D	C	A	D	A	A	C	D	A
Sodium Metaphosphate	B	A	A	A	A	A	B	A	A	-	-	-
Sodium Metasilicate	C	A	A	A	A	A	B	-	A	-	-	-
Sodium Nitrate	B	A	B	A	-	A	C	A	A	A	A	-
Sodium Perborate	B	A	A	A	A	A	B	-	A	-	B	-
Sodium Peroxide 10%	C	A	A	A	A	A	D	-	A	-	-	-
Sodium Phosphate Tribasic	C	B	A	A	A	A	C	A	A	-	A	-
Sodium Sulphate	B	A	A	A	A	A	B	A	A	-	A	A
Sodium Sulphide	B	B	B	A	A	C	D	A	A	-	A	B
Sodium Sulphite	B	A	B	A	-	A	C	A	A	-	-	A
Sodium Thiosulphate	B	A	B	-	A	A	B	-	A	A	A	-
Stannic Chloride	D	B	C	B	B	A	D	-	A	-	C	-
Stannous Chloride	D	B	C	B	B	A	D	-	A	-	-	-
Starch	C	A	A	A	A	A	B	A	A	-	-	-
Steam	A	A	A	A	A	A	B	A	A	-	-	-
Stearic Acid	C	A	C	A	A	A	C	A	A	-	A	-
Sugar Liquors	B	A	A	A	A	A	B	A	A	-	-	-
Sulphonic Acids	-	B	-	A	B	A	-	B	A	-	-	-
Sulphur (fused)	C	A	A	A	A	A	D	A	A	A	A	-
Sulphur Dioxide (dry)	C	A	B	B	B	A	B	B	A	B	B	-
Sulphur Dioxide (wet)	C	B	D	B	C	A	D	B	A	C	C	-

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REF: AVCAT2K127

REV: 00

Some terms used in this catalogue

A		
Actuated	=	A method of opening & closing a valve.
Alco	=	Alco Valves Ltd. Mission Works, Birds Royd Lane, Brighouse, West Yorkshire.
API	=	American Petroleum Institute.
ANSI B16.34	=	(American National Standards Institute) e.g. designed to satisfy the requirements of ANSI / ASME B16.34.
Anti-tamper	=	Cannot be operated without specific attachment or key.
B		
Ball valve	=	An isolation valve with a spherical closure member.
Bar	=	A unit of pressure which equals 14.5 psi.
Bar handle	=	Used to assist manual actuation of valves.
Barstock	=	Form of metal.
Bi-directional	=	Valve can be used with flow from either direction.
Butt weld	=	Lips formed on the ends of the valve to butt against the connecting pipes.
BS 5750	=	Now equal to ISO 9000 Series Q.A. systems.
BS6755 Pt. 2	=	A British Standard relating to fire testing.
C		
Cracking pressure	=	Typically pressure at which a check valve or similar device begins to open.
Cavitation	=	A localised gaseous condition in a liquid stream caused by sudden expansion in which pressure falls below the critical pressure.
Cavity filled seats	=	Seat whereby any cavity normally existing within a ball valve using standard seats, is eliminated by extra material.
Compression	=	An increase in the pressure at an interface.
Compression ends	=	A mechanical method of mating tubes or valves normally utilising rings / olives.
Cv	=	Flow co-efficient in US units.
D		
De-greased	=	Removal of contamination to a specific standard.
DP or ΔP	=	Differential pressure.
Drop Tight	=	A valve that will not pass fluid droplets when closed.
Duplex	=	Corrosion resistant steel. Strong mechanical properties.
Dynamic seats	=	Seat used to provide a seal around a moving element such as a valve ball.
E		
Elastomer	=	A seal consisting of base polymers.
Energise	=	To become active.
Equalise valve	=	A valve position to equalise between two lines - normally within a manifold.
Equilibrium	=	A balance condition.

F		
Fire safe	=	See BS 6755 Pt. 2 for testing procedure.
Floating ball	=	Normally pressure pushes a ball to a seat to effect a seal.
Fire safe design	=	A valve which is designed to be fluid tight in a fire after any polymers in its construction have disintegrated.
Flow	=	Fluid movement in a pipe.
Fluid	=	Liquid or gas or vapour state.
G		
Gall	=	Normally when threads begin to fail.
Galvanise	=	Zinc or similar coating, normally applied as corrosion protection.
Gasket	=	A material used for sealing a joint in a piping system.
Gauge	=	Device to measure pressure or vacuum.
H		
Hard Facing	=	A hard material normally cobalt or Nickel based that is applied to the valve trim.
Hastalloy®	=	Exotic super alloy known for corrosion resistance.
High pressure	=	In this catalogue pressures over 3,000 psi.
HT/HP	=	High temperature and high pressure.
Humidity	=	A degree of water contained in a gas - normally air measured in % content.
Hydro-static testing	=	Testing with liquid at a pressure normally 1.5 x the maximum working pressure.
I		
Imperial	=	British based system for units of measurement.
Inconel®	=	High nickel content super alloy.
Installation	=	Act of connecting the valve into the pipeline system.
Instrument	=	A device with the ability to measure, record, indicate or control.
Insulation	=	Material applied to a piping system to reduce noise or heat transfer.
J		
Joint	=	The point at which two or more components meet / make a pressure tight seal / are held together.
K		
Kg	=	Kilogram, mass approximately equal to the international measure known as Kg. (=2.204 lbs / 35.3 ounces / 1000 g).
Kv	=	Flow co-efficient in metric units.
L		
Leak path	=	A joint or area where corruption is most likely to occur
Live Loading	=	A gland assembly where a load is continuously applied to prevent leakage.
Low pressure	=	In this catalogue pressures below 3,000 psi.
LPI	=	A non destructive examination by liquid penetrant inspection.

The information on this sheet is given as a guide only, please contact our technical department or a specialist. E & OE.

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Some terms used in this catalogue

M		
Manifold	=	A series of valves in a common housing.
Mazak	=	Zinc based alloy incandescent.
Manometer	=	A device used for measuring pressure by displacing a liquid in a column or tube
MSS	=	Manufacturers Standardisation Society (of the valve and fitting industry of America).
Monel®	=	A group of Alloys comprising mainly of Nickel & Copper
MPI	=	A non-destructive examination of magnetic particle inspection.
N		
NACE	=	MR - 01 - 75 National Associate corrosion Engineers.
Needle valve	=	An isolation valve with a number of rotations to close, also used for flow control.
Nickel Alloy	=	An alloy used for valve trim to resist the effects of steam.
O		
Oblique valve	=	A valve with near clear bore - often rod-able to some degree.
Orifice	=	A restriction whose length is short to its diameter.
Orifice valve	=	A valve for use at an orifice plate.
P		
Panel mount	=	A valve suitable for mounting within a panel containing other instruments.
Peek®	=	An engineered plastic with good chemical resistance & high temperature characteristics.
PTFE	=	A polymer which is almost chemically inert in the temperature range -195 to +232.
Q		
Quarter turn	=	A valve or device that operates through 90°
R		
Remote mounted	=	A remotely located valve.
Resilience	=	The ability of a seal to return to its original shape after deformation.
Rhino Valve	=	See section 6 page 1.
S		
Salt Spray Environment	=	A corrosion test or splash zone on an oil rig
Security handle	=	Normally low to medium level of security locking device.
Shear Action, Ball	=	A type of valve action in which the flow is controlled by a ported ball.
Soft seat	=	A valve seat usually made from a polymer.

Socket weld	=	Where a pipe is inserted into a bore and welded to form a permanent joint.
Stellite®	=	A cobalt based material used to protect valve wear surfaces.
T		
"T" bar	=	A form of handle used on ball or needle valves for manual operation.
Testing	=	The process of physical or mechanical inspection of a valve or its components.
Titanium	=	A strong light-weight material used in valve applications to resist corrosion & wear.
Traceable material	=	Materials which can be traced back to the original manufacturers base production process.
Torque	=	Rotational effort applied to the valve operator.
Trim	=	The internal valve components exposed to the flowing fluid.
Trunion ball	=	A valve in which the operating ball is supported on integral bearings in order to prevent lateral movement.
U		
Up stream pressure	=	Pressure on the inlet side of a valve.
V		
Vacuum	=	A pressure below that of the atmosphere.
Velocity	=	Speed of flow in a valve or pipe.
Vent	=	Normally a method of relieving pressure.
Virtually free	=	Less than normally expected.
Viscous media	=	Fluids with high viscosity.
Vital components	=	Valve parts the failure of which would render the valve useless.
Viton®	=	A fluorocopolymer with excellent resistance to petroleum products.
W		
Wafer style	=	A valve that usually fits between flanges.
Wall mounting	=	See panel mounting.
Wire Drawing	=	Erosion of a valve seat under high velocity whereby thin wire-like gullies are eroded away.
W.O.G	=	Water - Oil - Gas.
XYZ		
Zero-ing	=	Calibration of an instrument to a predetermined datum - normally zero pressure 0 psi gauge.
Zirconium	=	Used in partially stabilised form as a trim material to offset the effects of erosion and wear.
Others		
0 psia	=	Absolute zero pressure
2 piece body	=	A valve with two major body components.

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General terms

A		
Absolute Pressure	=	The total pressure measured from an absolute vacuum.
Absolute Temperature	=	Temperature measured from absolute zero in °Kelvin or °Rankine.
Angle Valve	=	A style of Globe Valve where the inlet and outlet ports are at 90° to one another.
ANSI	=	American National Standards Institute.
ASME	=	American Society of Mechanical Engineers.
ASTM	=	American Society for Testing Materials.
B		
Bleed Valve	=	A valve used to vent a system.
Block & Bleed Valve	=	An isolating valve fitted with an integral bleed connection.
Body	=	The main part the pressure envelope for a valve. It contains the seats, the inlet, the outlet and the flow passages.
Bonnet	=	The part of the valve that forms the upper pressure envelope and seals the top of the body.
BSPP	=	British Standard Pipe Parallel thread.
BSPT	=	British Standard Pipe Taper thread.
BVAMA	=	British Valve and Actuator Manufacturers Association.
C		
Capacity	=	The mass flow rate through a valve under the specified conditions.
Certification	=	Documents that may be supplied with valves detailing the results of chemical, mechanical, physical properties, and / or pressure tests.
Check Valve	=	An automatic valve which is designed to prevent reverse flow, also known as a Non Return Valve.
Cock	=	A form of valve possessing a hole in a taper plug which can be rotated to provide a flow path for fluid.
Cold rating	=	The maximum pressure that a valve or fitting is designed to withstand at room temperature.
Compression Ends	=	A socket connection made between a fitting and a pipe, where a metal ring or olive fits over the pipe.
Compressible fluid	=	A gaseous fluid that has a significant change in volume & density as pressure increases.
Control Valve	=	A valve designed for finely regulating, or controlling fluid.
D		
Density	=	Mass per unit volume.
Design Conditions	=	All conditions that are present in a system which must be taken into account when designing a component of that system.
Design pressure	=	The pressure in a system used to design pressure vessels and other equipment.
Differential Pressure	=	The maximum difference in pressure measured between the valve inlet and outlet, against which the valve is expected to operate.
Direct Acting	=	A mode of operation of a valve.
Dry Saturated Steam	=	Saturated steam that does not contain any droplets of water.
E		
Emergency shut down Valve	=	A valve that uses energy which is stored in an actuator, in order to rapidly close in an emergency.
End to End Dimension	=	The distance, on a butt weld end straight pattern valve, between the extremities.
Equalising connection	=	A pipe which connects the body chamber of the Parallel Slide Valve to a Bypass Valve.
Equivalent Length	=	The pressure drop through a valve expressed as a straight length of pipe (measured in feet or metres), which would give the same pressure drop under the same conditions.
Erosion	=	A loss of material which occurs due to the action of a fluid flowing over it.
Explosion proof	=	Electrical equipment which is designed to operate in extremely hazardous areas.
F		
Female Thread	=	An internal thread used on fittings and fasteners to make a screwed connection.
Fire Safe Valves	=	A valve which is designed to be fluid tight in a fire.
Flange	=	A connection (often circular) used to bolt either two components together, or a valve or fitting to a pipe work system.

Flow characteristics	=	The relationship between flow, or pressure loss coefficient, and the valve opening position.
Full Bore	=	A valve where the flow area through the seat is equal to the flow area through the inlet outlet.
G		
Galling	=	An action which can occur when unsuitable materials, particularly stainless steels, rub together.
Gauge Pressure	=	The pressure measured above atmospheric pressure and suffixed with the letter g.
Gland	=	The component that is used to compress the gland packing.
Gland Nut	=	The nut(s) which is (are) used to exert force on the gland.
Gland Packing	=	A soft compressible material fitted to a valve stuffing box, in order to seal between the spindle and cover.
Graphite	=	A form of Carbon which has excellent temperature and chemical resistance.
H		
Hand wheel	=	The manual input device used to open and close the valve.
Head	=	A measure of pressure as would be exerted by a vertical column of liquid.
Head Loss	=	The pressure that fluid loses as it flows through a valve or fitting.
Hose	=	A flexible line used to conduct a fluid.
Hot Tapping	=	An operation carried out where a live pipeline is safely cut into without shutting down a process.
Hysteresis	=	The failure to follow the same path in the forward direction as in the backward direction.
I		
Incompressible Flow	=	A fluid such as water, which has no significant change in volume and density as the pressure increases.
Indicator	=	A device fitted to valves (and actuators) in order to show the degree of valve opening.
Inhibitor	=	A substance which prevents chemical reaction such as oxidation corrosion etc.
Inlet Port	=	The part of a valve or fitting connected to the upstream side of a fluid system.
Input	=	An incoming signal of pressure etc. in a control system.
Inspection	=	A means of quality control to ensure that the valve conforms to specification.
J		
Joule	=	A unit of energy in SI units. One joule is one Newton metre.
Junction Valve	=	See angle valve.
K		
K	=	Resistance Coefficient. A constant for particular valve or fitting, which is used in fluid flow calculations.
Kj	=	Kilojoule, i.e. 1 x 10 ³ joule.
L		
Lapping	=	The process of "polishing" the mating faces of seats and discs.
Leakage	=	The amount of fluid passing a valve seal. Although this normally is used in reference to the seat and disc seal, it can also apply to gland and gasket seals.
Limit Switch	=	A small electrical switch fitted to a valve, usually at the limits of its travel, in order to produce a signal indicating whether the valve is opened or closed.
Locked Bonnet	=	A screwed bonnet or cover which is secured to the body in order to prevent it unscrewing in service.
Locking Device	=	A device or mechanism incorporated into a valve in order to prevent unauthorised operation.
Low Carbon Steel	=	A grade of casting or forging steel where the carbon content is closely controlled at a low level.
Lox	=	Abbreviation for Liquid Oxygen
Lubricator	=	A device used to add lubricants into a fluid power system.

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General terms

M

Maintenance	=	The process of inspection, adjustment, and / or replacement of parts as necessary in order to ensure reliable and efficient operation.
Male Thread	=	An external thread used on fittings and fasteners to make a screwed connection.
Manometer	=	A device used for measuring pressure by displacing liquid in a column or tube.
Maximum Pressure Differential	=	The maximum difference between the upstream pressure and the downstream pressure at specific locations, often across the inlet and outlet of a valve.
Metal to Metal Seal	=	Where the seal between seat and disc is achieved by metal to metal contact of these components, i.e. no soft seat is used.
Micron	=	A unit of length being 1,000,000 th of a meter.

N

Name Plate	=	A circular or rectangular engraved, embossed or painted plate which contains reference details of the valve.
Nipple	=	A short length of tubing or pipe used for jointing piping elements.
Nozzle	=	A device used to convert pressure energy into velocity energy.
NPT	=	National Pipe Thread.
NRS	=	Non Rising Stem. A type of spindle and cover design, where, as the valve is operated and the obturator rises and falls, the spindle only rotates.

O

Operating Conditions	=	The pressure and temperature that a system operates at, together with any other requirements, e.g. valve closing time.
"O"-Ring	=	A type of seal in the shape of a torus or ring with a circular cross section. These seals are available in a wide range of synthetic materials.
OS & Y	=	Outside Screw and Yoke. A type of spindle and cover design where the spindle actuating thread is not in contact with the system fluid, and is supported by two arms that extend from the cover (also see yoke).
Outlet Port	=	That part of a valve or fitting which is connected to the downstream part of a piping system.
Overpressure	=	The pressure increase above the set pressure of a safety valve. Normally expressed as a percentage of the set pressure.

P

Packing	=	A deformable material used to seal a valve or other components.
Perfect Vacuum	=	0 psi, 0 bar.
Plug Valve	=	A valve where the fluid passes through a hole in a tapered or parallel plug. The flow is stopped by rotating the plug through 90°.
Pressure	=	Force per Unit Area. Units may be bar, Pa, Mpa, lb/in ² , etc.
PSI	=	Pounds per Square Inch, (lb/in ²). The unit of pressure used in British Units.

Q

Quality Assurance	=	Is a management system to ensure that quality control procedures are implemented, and that they are effective in ensuring that the specified standards and requirements are met.
Quality Control	=	The process of ensuring that the specified quality of materials, components, and finished products are supplied. This is achieved by inspection and process control.
Quarter Turn Valve	=	A valve which can be moved from open to closed, or closed to open by moving a lever through 90°.
Quick acting Valve	=	A valve which can be moved from open to closed, or closed to open in one movement of short duration.
Quick closing Valve	=	A valve which can be moved from open to closed in one movement of short duration.

R

Rating	=	An alpha numeric classification used to define the pressure capability of a pipe-work system and its components.
Relief Valve	=	A term used to describe a type of safety valve which prevents safe pressures being exceeded in a fluid system.
Re-seating	=	When the valve head in a safety or relief valve remakes contact with the seat after opening, and seals the flow of fluid.
Reverse Acting	=	A mode of operation of a valve, where it is normally closed, and uses force generated by the fluid to open.
Rising Stem	=	A valve spindle which rises and falls with the obturator as the valve is operated.
RTJ	=	Ring Type Joint. A type of flange seal that is produced by compressing a solid metal ring into machined grooves in matching flange faces.

S

Screwed End	=	An end connection on a valve or fitting which is used to attach it to a system. The thread is usually female on a valve.
Seal	=	That which prevents fluid from passing between two parts, eg packing, gasket, seat & disc, etc.
Seat	=	That part of a valve with which the disc or valve plug makes contact and effects a seal.
Set Pressure	=	The pressure at which a safety or relief valve starts to open, allowing fluid to flow.
Socket Weld	=	A connection which is made by entering a pipe into a matching socket in the end of a valve or fitting, and welding the two together.

T

Tag	=	A rectangular strip of stainless steel/ Brass, aluminium or plastic, which is engraved or embossed with reference details.
Temperature	=	A measure of hotness or coldness of a material or fluid.
Testing	=	The process of physical and / or mechanical inspection of a valve or its components.
Thermocouple	=	A temperature sensitive device consisting of two dissimilar metals between which an EMF is established.
Tongue & Groove Joint	=	A type of joint used on high pressure / high temperature installations where a tongue fits into a groove to assure alignment.

U

Union Bonnet	=	A connection between cover and body, which is produced by a nut passing over the cover, screwing onto the body and clamping both together.
Units	=	Two systems of units are commonly used in the valve industry, Metric and Imperial.

V

Valve	=	A device which is used to control the flow of fluids
Valve Application	=	The full system operating conditions which are applicable to the valve installation.
Valve Head	=	That part of a valve (obturator) which stops the fluid flow.
Vapour Pressure	=	The pressure at which, for a given temperature, vapour bubbles form liquid.
Vena Contracta	=	The region of smallest cross section in a fluid stream.

W

Water Hammer	=	Vibration in a fluid system due to a rapid decrease in the velocity of a liquid such as closing a valve.
Weatherproof	=	A term used to describe pieces of equipment which can withstand certain atmospheric conditions.
Weber Number	=	The ratio of inertia forces to surface tension
Wet Saturated Steam	=	Saturated steam that contains droplets of water.
WSP	=	Working Steam Pressure.

XYZ

Yoke	=	The part of the valve which connects the valve actuating mechanism to the valve body (see OS&Y).
Zero Leakage	=	The minimum leakage rate as specified in BS 6755 Part 1.

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ALCO VALVES CONDITIONS OF SALE

1. PARTIES

In these conditions the above named Company is referred to as "the Company" and the person, firm or Company placing the order of otherwise dealing with the Company as "the Customer" and reference to any control or terms or conditions is a reference solely to the conditions set out below.

2. BASIS AND APPLICATION OF CONDITIONS

- (i) All prices quoted by the Company are based upon these conditions and are fixed by reference to the scope of the Company's rights and liabilities in the contract. In the event of any Customer wishing to Contract with the Company otherwise than on the basis of such conditions, special arrangements can be made and a revised price quoted by the Company.
- (ii) In the absence of any such special arrangement, (which shall not bind the Company unless made in writing and signed on the Company's behalf by a person duly authorised for that purpose) all quotations given and all contracts made by the Company and any additions or amendments thereto shall be subject to these conditions which supersede and shall override any terms or conditions proposed or stipulated or relied upon by the Customer.
- (iii) No order from the customer shall be binding upon the Company until the customer has received from the Company an appropriate acknowledgement of order on the Company's printed form duly signed on the Company's behalf by a person authorised for that purpose, which shall constitute the Company's acceptance of the order.

3. PRICES

- (i) Prices are subject to alteration without notice by the Company at any time.
- (ii) Unless otherwise agreed in writing, orders are accepted by the Company on condition that delivery will be made at the price current at the date of despatch.
- (iii) All prices quoted by the Company are exclusive of Value Added Tax, unless otherwise stated.
- (iv) Unless otherwise agreed in writing, all goods are despatched by the Company on an "ex-works" basis. The Company reserves the right to charge carriage and packing as extra.

4. QUOTATIONS

- (i) Unless otherwise agreed in writing, all quotations given by the Company shall be valid for a period of 30 days only from the date thereof.
- (ii) The Company reserves the right to accept the order at the current price should a price change have occurred during the 30 day period.
- (iii) All goods quoted "ex-stock" are subject to prior sale.
- (iv) The Company reserves the right to correct at any time stenographic or clerical errors contained in any quotation.

5. DELIVERY AND COMPLETION

The Company will use its best endeavours to adhere to any time or date given for the despatch or delivery of goods or for the commencement or completion of work but any such time or date whether specified in the contract or otherwise given by the Company shall be taken only as an estimate made in good faith and shall not be binding upon the Company either as a term of the contract or otherwise. In no circumstances shall the Company be liable for any loss damage, however caused, sustained by the Customer in consequence of any failure by the Company to adhere to such times or dates, or in consequence of any other delay in despatch, delivery, commencement or completion. Delivery may be made by instalments at the sole discretion of the Company.

6. DRAWINGS AND DESCRIPTIONS

- (i) Under no circumstances shall any contract be deemed to be a contract description.
- (ii) All illustrations drawings or other representations accompanying any quotation from the Company or contained in the Company's price lists, advertisements or other literature shall be regarded as approximate representations only.
- (iii) All specifications, descriptions or particulars of goods offered by the Company are stated in good faith as being approximately correct but the Company shall not be liable for deviations there from however arising, nor shall deviations in any way invalidate any contracts between the Company and the Customer in respect of such goods.
- (iv) All drawings and copies of drawings are the Company's copyright and may not be copied or distributed without the express permission of the Company in writing given by a person authorised for that purpose.
- (v) The Company reserves the right to up date and amend any specification of goods without notice to the purchaser.
- (vi) If the goods are supplied according to the Customer's drawings or specifications, the Customer shall indemnify the Company against any claims and any costs, expenses or liability of the Company or action or infringement of any patent, trade mark, registered design, copyright or other industrial property, right of any third party in respect of their manufacture or repair by the Company.

7. CANCELLATIONS

The Customer shall indemnify the Company for all storage and other costs incurred by the Company as a result of the Customer's failure to accept delivery of the goods delivered at the Customer's premises during normal business hours at a time previously agreed by the Customer. The Company may dispose of any goods after 30 days from the date of delivery should the customer fail or refuse to take delivery of goods.

8. GOODS RETURNED FOR CREDIT

Returned goods will only be accepted by the Company after agreement and subject to a minimum handling charge of 10% of the sale price and by the allocation of a returned goods number, to ensure identification of goods at all stages of receipt and inspection. If such agreement is reached, the Company will accept the return of standard, current products in a clean, re-saleable condition, subject to these goods being returned to us delivered free to our works. The goods will be inspected upon receipt and credit will be allowed depending upon the condition as received, such credit being entirely at our discretion.

9. PASSING OF PROPERTY AND RISK

- (i) Until all monies due to the Company have been paid by the Customer, the goods shall remain the sole and absolute property of the Company as legal and equitable owner.
- (ii) In the event of delivery of the goods being made to the customer prior to the passing of title, the Customer shall be in possession of the goods

- solely as bailee for the Company until such time as the title has passed pursuant to Clause (i) above.
- (iii) Notwithstanding that title to the goods shall remain with the Company, the goods shall be at the risk of the Customer as soon as they are delivered by the Company to the premises or otherwise to the order of the Customer. The Customer will insure to their full value any goods wherein the risk, but not the title, has passed to it and indemnify the Company for loss, damage to or destruction of any such goods. Or any insurance monies payable in respect of such goods shall be held in trust for the Company.
- (iv) Until the title to the goods shall pass as aforesaid:
- (a) The Customer shall store and label the goods in such a manner that they shall at all times remain separate from the other goods in the Customer's possession and be readily identifiable as the Company's goods.
- (b) The Company agrees to permit the Customer to dispose of the goods in the course of its business as agent of the Company and to pass title to the goods to its Customer, being a bona fide purchaser for the value without notice of the Company's rights provided that such permission may be revoked at any time by notice by the Company.
- (c) Without prejudice to the provisions of sub-clause (i) above, the Company consents to the use of the goods by the Customer in the assembly of some other goods incorporating the goods, notwithstanding that title in the goods shall not have passed to the Customer, provided that such assembly does not result in the goods being changed by any manufacturing process and the goods may be recovered by disassembly of the goods assembled. In the event of the goods becoming incorporated in assembled goods, the provisions contained in clauses (i), (ii) and (iii) of this clause shall apply to the storage the re-taking and the sale and proceeds of sale of the assembled goods so that the Company's rights shall not in any event be extended beyond the ownership of the goods forming a part of the assembled goods and the right to re-take the goods (without liability for any loss to the Customer resulting from the disassembly of the assembled goods) and to so much of the proceeds of sale thereof as is attributable to the goods.
- (d) If the Customer has not received payment for a disposal under sub-clause (iii) above, the Customer shall upon notice in writing by the Company, assign to the Company all its rights against its Customer in respect of that disposal.

10. DIVERSION

The Company reserves the right to divert orders to its official stockists or distributors without prior notification of the Customer.

11. TERMS OF PAYMENT

- (i) Unless otherwise agreed in writing, all accounts are monthly and strictly nett, and are due for payment by the end of the month following the month of despatch. If despatch is delayed as a result of a Customer's inability to take delivery or otherwise at the request of the Customer, payment shall be made by the end of the month following that in which the Customer is notified that the goods are ready for despatch.
- (ii) If the price of any part thereof remains unpaid after the date of payment, the amount unpaid shall bear interest at the rate of 4% over the Bank of England Base Rate for each month or part thereof during which the same amount remains unpaid.
- (iii) Unless otherwise agreed in writing, goods for delivery abroad must be paid for in full before shipment.
- Notice of (iv) Notice of all payments made by Trader's Credit must be given to the Company within two days of the date of payment. (v) Where any sum I owed by the Customer to the Company, the Customer shall not be entitled to exercise any right of set-off or lien against the Company.

12. LOSS OR DAMAGE IN TRANSIT

- (i) In the event of its assuming responsibility for all or part of the carriage of goods the Company shall not be liable for any loss of, or damage to such goods while in transit unless written notice thereof is given to the Company by the Customer.
- (a) In the case of loss from or damage to goods delivered to the Customer within three days of the date of delivery.
- (b) In the case of non-delivery of goods, within 21 days of the date upon which the Customer is notified that the goods have been consigned for delivery.
- Provided that if the Customer proves:
- (a) That it was not reasonably possible for him to give such notice to the Company within the appropriate period and
- (b) Notice was given within a reasonable period, the Company shall not be entitled to rely upon the time limits stipulated by this condition.
- (ii) Any liability which the Company may incur for the loss or damage to goods while in transit shall in any event be limited to the invoice value of the goods and in no circumstances shall the Company be liable for any indirect or consequential loss, however caused.
- (iii) The customer shall inspect the goods immediately on delivery. If the Customer shall not give notice in accordance with sub-clause (i)(a) above, the goods shall be conclusively presumed to have been accepted by the purchaser.

13. TESTING

The Company will provide facilities to the Customer for the inspection and testing of goods at the Company's works prior to despatch, normally such facilities will be provided free of charge. Special test or test/inspection in the absence of the buyer or his representative, unless otherwise agreed, must be made at our works and will be charged for, as will test/inspection made of necessity by independent organisations.

14. GUARANTEE

- (i) GOODS: The Company will, at its option, replace, repair or refund the full purchase price upon the return of goods which are, or within twelve months of delivery become defective by reason of provable faulty materials or workmanship, provided that the customer has notified the Company in writing of the defect within one month of the occurrence of the defect.
- (ii) WORK: Where the contract provides for the execution of work, the Company will at its own expense make good any defect in such work, attributable to provable bad workmanship or the use of unsatisfactory materials which occurs and becomes apparent within twelve months of the completion thereof, provided that the Customer has notified the Company in writing of the defect within one month of the defect becoming apparent.

15. EXCLUSION OF LIABILITY

- (i) The above guarantee is given by the Company and accepted by the Customer in substitution for any rights which the Customer might otherwise become entitled to assert against the Company, its

- servants or agents;
- (a) By virtue of any express or implied representation, condition or warranty, statutory or otherwise as to
- (i) the quality of the goods and
- (ii) the standard of the Company's workmanship and the quality of any material supplied in connection therewith and all such conditions are hereby expressly excluded.
- (b) In negligence or otherwise in tort arising out of or in connection with the supply of any goods or materials to or to the order of the Customer or for the execution of any work for the Customer and all such liability however arising is hereby expressly excluded. Provided that nothing in this condition shall excuse the Company from any liability which it may incur for death or personal injury resulting from negligence.
- (ii) Except for any such liability as it may incur for death or personal injury resulting from negligence, the Company shall not be liable in any manner whatsoever, whether under this contract or in tort, in misrepresentation or otherwise for any indirect or consequential loss, damage or injury however caused which may arise out of or in connection with the supply of goods or materials to or to the order of the Customer or the execution of any work for the Customer.
- (iii) The Company shall not be liable for any injury or damage arising out of any non-compliance with any requirement imposed by or under enactment or with any obligation arising under the Treaty of Rome or from any of the organs of the European Community, save insofar as this provision expressly contradicts Section 7 Consumer Protection Act 1987.
- (iv) In no case shall the Company's liability exceed £1,000.00.
- (v) The Company shall be entitled to the benefit in full of the defences and protections provided by Sections 4 and 5 Consumer Protection Act 1987 or to any extension or variation of that legislation.
- (vi) Notwithstanding Section 7 Consumer Protection Act 1987, the Company reserves the right to claim an indemnity or contribution against the Customer in respect of any liability which may accrue to it under the Consumer Protection Act 1987.
- (vii) In this condition the words "goods" "material" and "work" shall include goods and materials supplied and work executed under the guarantee.

16. ADVICE

The Company shall be under no liability whatsoever in respect of any advice given or views expressed to the Customer whether or not such advice or such views are expressed at the Customer's request.

17. DEFAULT OF THE CUSTOMER

- If the Customer shall make default in the punctual payment of any sum due to the Company under the contract or if any distress or execution may be levied upon the Customer's assets or if the Customer shall make or offer to make any arrangement or composition with creditors or commit any act of bankruptcy or if any petition or receiving order in bankruptcy is made or presented against the Customer or if the Customer is a limited Company and resolution or petition to wind-up its business (other than for the purposes of amalgamation or reconstruction) shall be passed or presented or if a receiver or administrator of such Company's assets or any part thereof shall be appointed, the Company shall be entitled to determine the contract with the Customer without prejudice to any other claims or rights which the Company might possess.
- (ii) Upon the determination of the contract by the Company and in the event of the Customer defaulting in the punctual payment of any sum due to the Company thereunder or upon the occurrence of any of the events specified in paragraph
- (i) of this condition the Customer's right under condition 9 hereof to sell goods for which full payment has not been made shall forthwith cease and the Company shall be entitled to take possession of all such goods in the possession or under the control of the Customer for which purpose the Customer authorises the Company, its servants or agents to enter upon any land or premises on or in which such goods may be situated.

18. LIEN

The Company shall have a lien over all goods of the Customer in the Company's possession not only for monies due in respect of such goods but also for any other monies due from the Customer to the Company, if any monies due from the Customer to the Company remain unpaid at the expiry of six months after notice has been given that such goods are being detained the Company shall thereupon have the irrevocable authority of the Customer to sell the goods by public auction or otherwise and to apply the proceeds of sale (after deducting the expense thereof) in discharge of the Customer's indebtedness and thereafter account to the Customer for any balance remaining.

19. FORCE MAJEURE

The Company shall be relieved of all or any of its obligations under the contract to the extent that performance of such obligations is affected as a result of any statute, regulation or order of any Government, Council or other authority or any strike, lock-out or trade dispute (whether involving the Company's employees or other parties) or any other cause whether or not of a like or similar nature beyond the Company's control.

20. DISPUTES

Should any question arise as to the interpretation of this agreement and/or the parties rights thereunder or as to any order placed by the Customer with the Company, the same shall be subject to and constructed in accordance with English law. The parties hereto submit to the jurisdiction of the English Courts. At its own option, the Company may elect to refer such question to arbitration by a Judge of the Commercial Court as an arbitrator sitting with or without assessors as he shall direct.

21. EXPORT SALES

It is hereby agreed between the parties that the uniform law on international sales and the United Nations Convention on international sale of goods shall not apply to any contract pursuant to these conditions.

22. GENERAL

- (i) Any notice required or permitted to be given by either party to the other under these Conditions shall be in writing, addressed to the Company at its Registered Office marked for the attention of the Company Secretary and the purchaser at its Registered Office or principal place of business or such other address as may at the relevant time have been notified to the Company pursuant to this provision.
- (ii) If any provision of these conditions is held by any competent authority to be invalid or unenforceable in whole or in part the invalidity of these conditions and the remainder of the provisions in question shall not be affected thereby.
- (i) No granting of time by the Company or any other failure by the Company to enforce any of these terms and conditions shall be construed as a waiver to any extent of its rights hereunder.