

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)

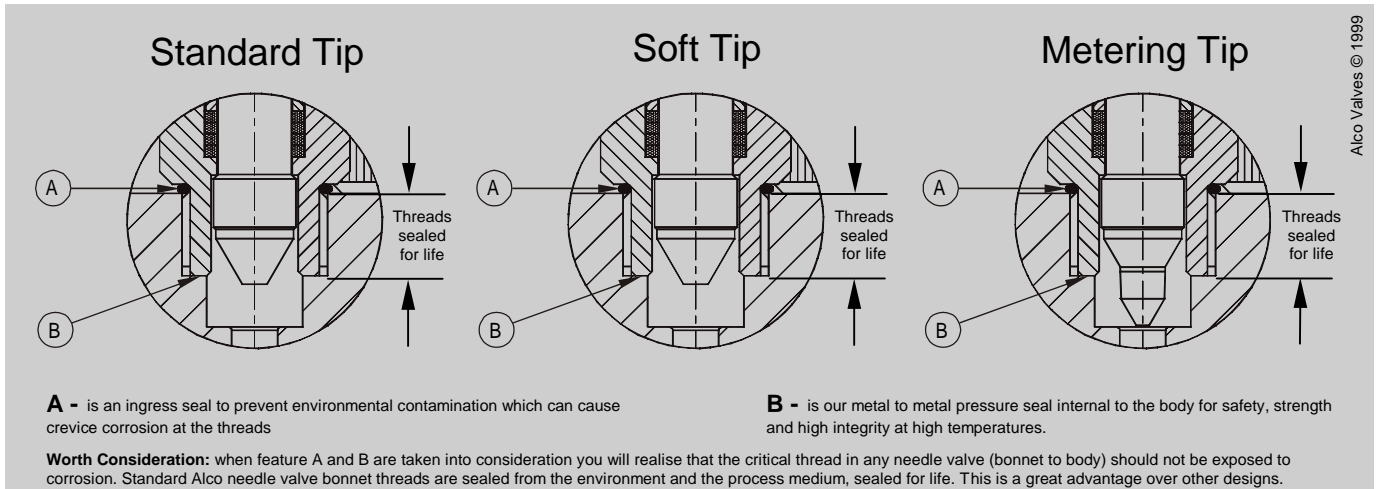
Tips, packings, hand wheels & more

Options for Needle Valves (2)

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

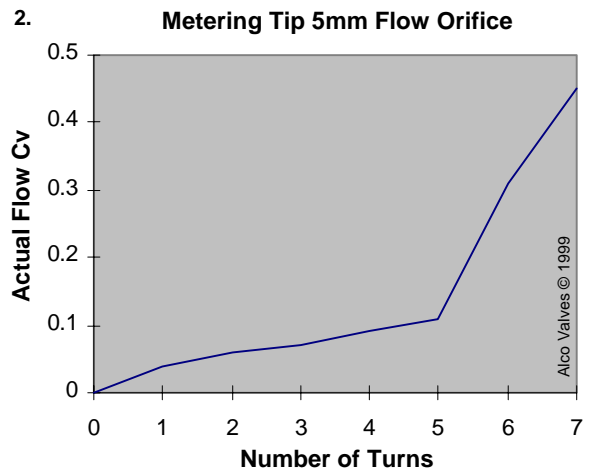
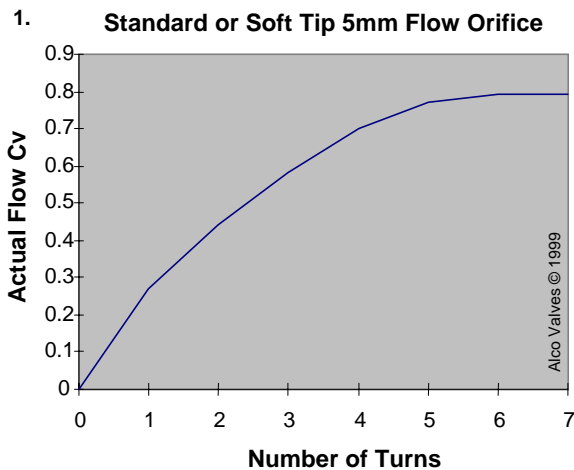
Needle Valve Head Data

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.

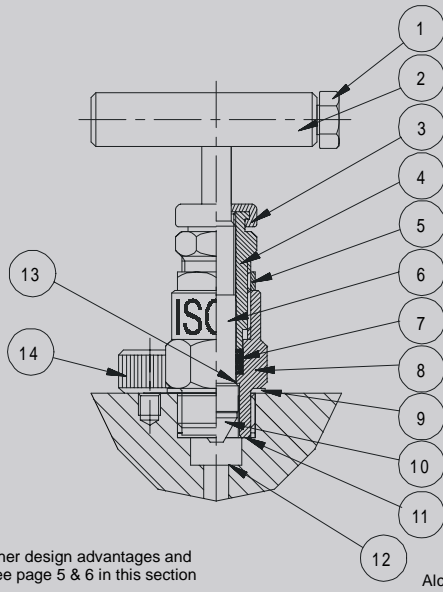
Table 1. shows the flow CV obtainable, for a given number of turns of the tee style handle, when fitted with a standard flow characterised tip. While table 2. shows the flow / lift characteristic obtainable with the metering tip fitted. The metering tip is selected when fine control adjustment at low 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

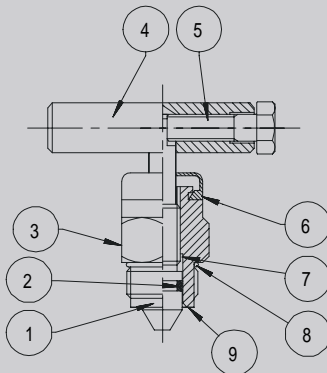
Standard Head



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

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Mini Head



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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

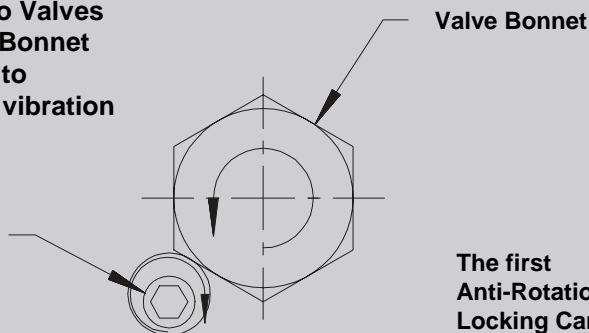
Mini Valve Head

- (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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Plug Valve Head Data

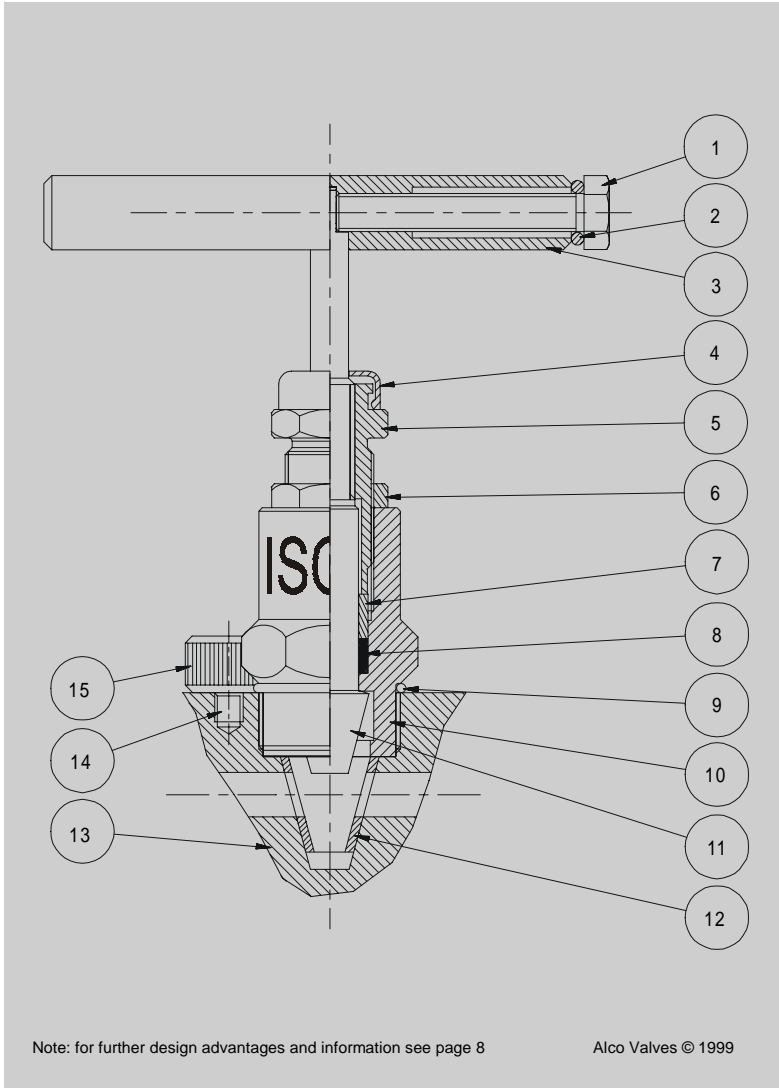
General Information

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

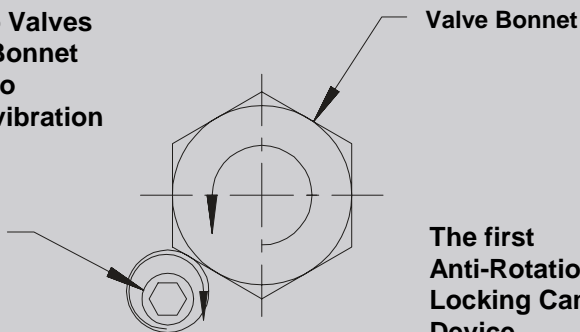
- (1) Handle Retainer
- (2) Ingress Seal
- (3) Handle
- (4) Dust Cap / colour coded
- (5) Gland adjuster
- (6) Gland adjuster nut
- (7) Spacer
- (8) Packing
- (9) Ingress Seal
- (10) Bonnet Housing
- (11) Valve Spindle
- (12) Seat
- (13) Body
- (14) Cam Screw
- (15) Locking cam



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

The Alco Valves
Unique Bonnet
System to
combat vibration

Lock
Screw



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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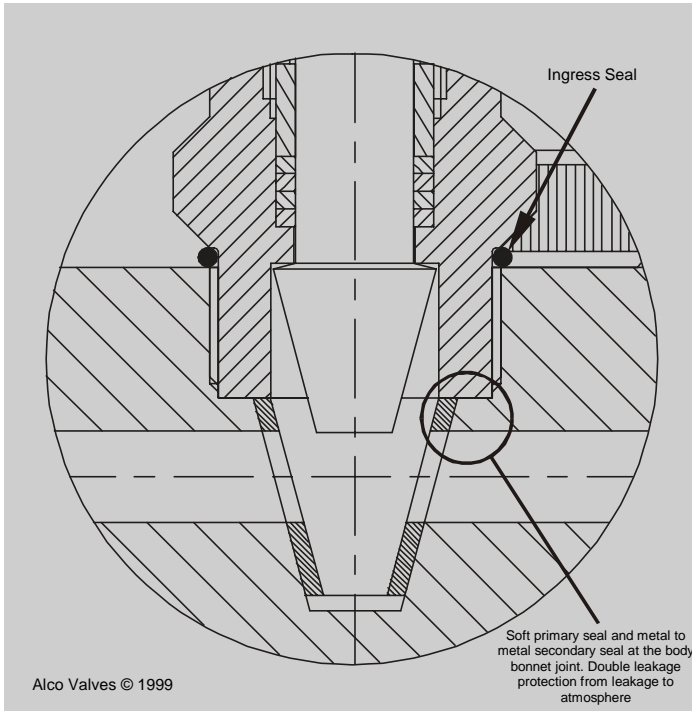
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Plug Valve Seat Data

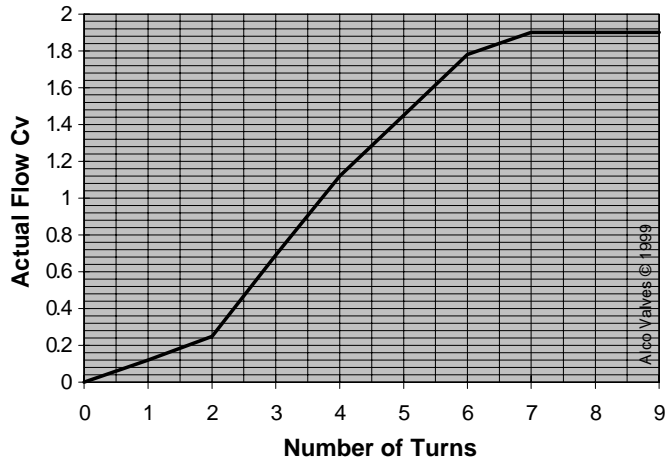
Tip Arrangement – clear roddable bore

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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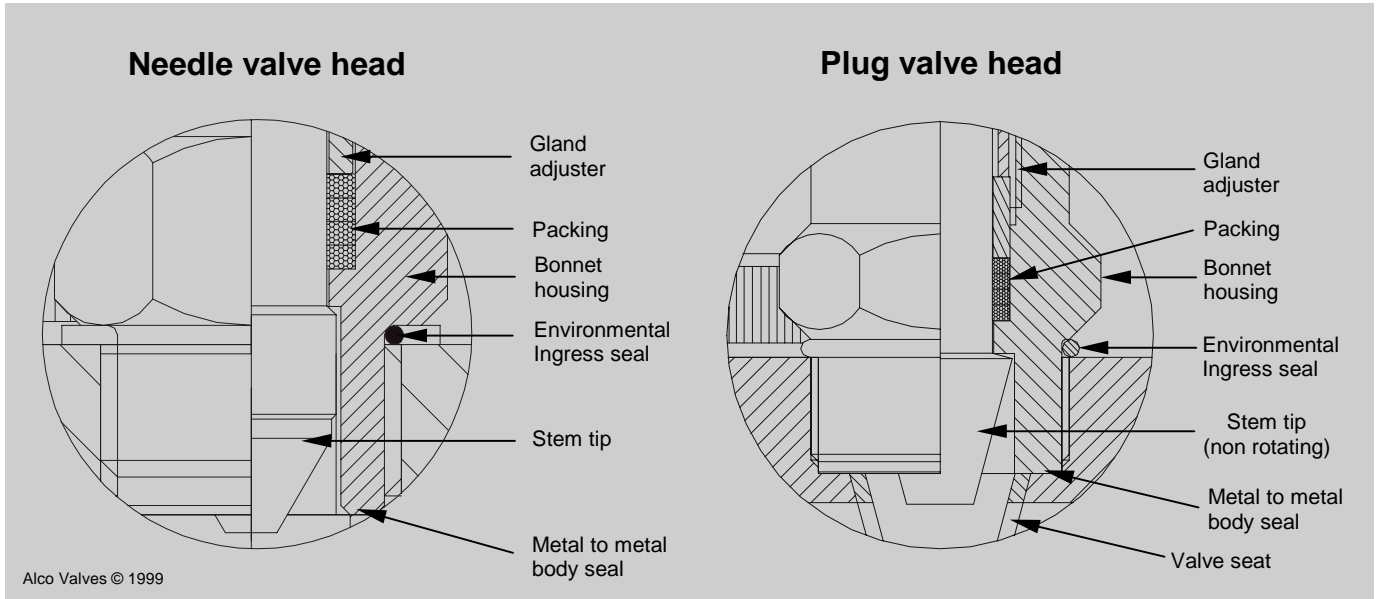


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Pressure / Temperature Data



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
DELTRIN®	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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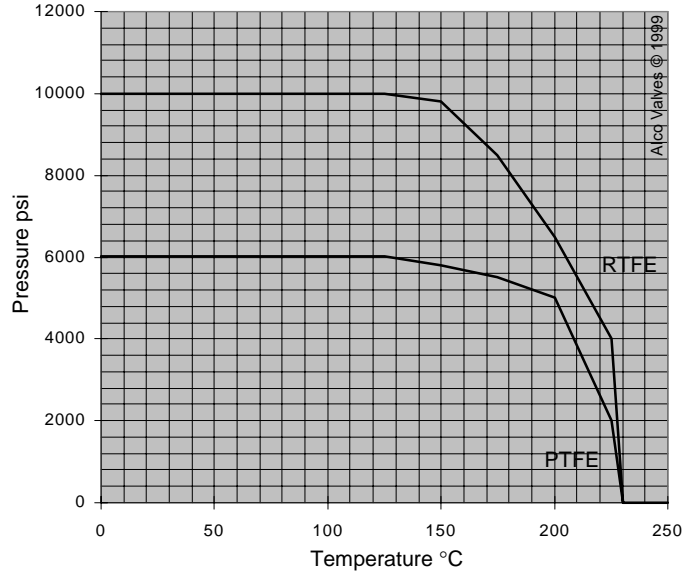
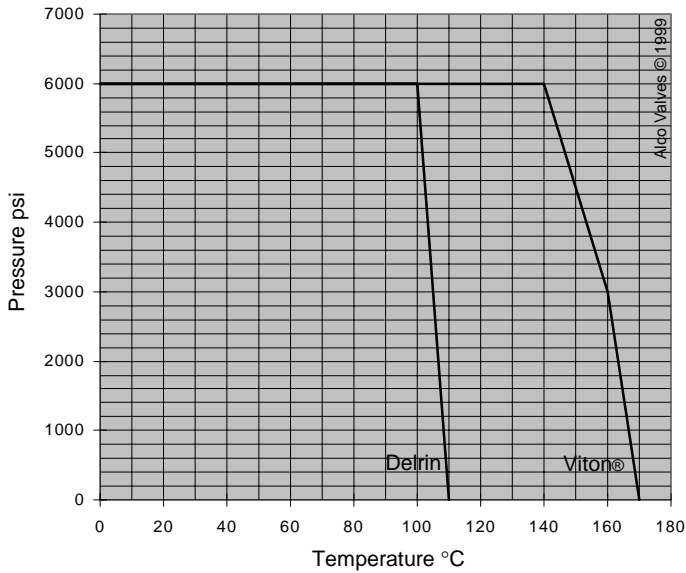
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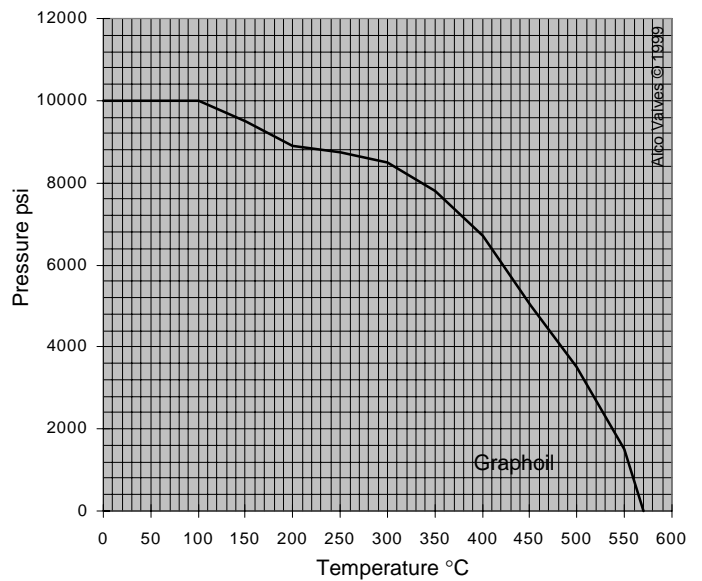
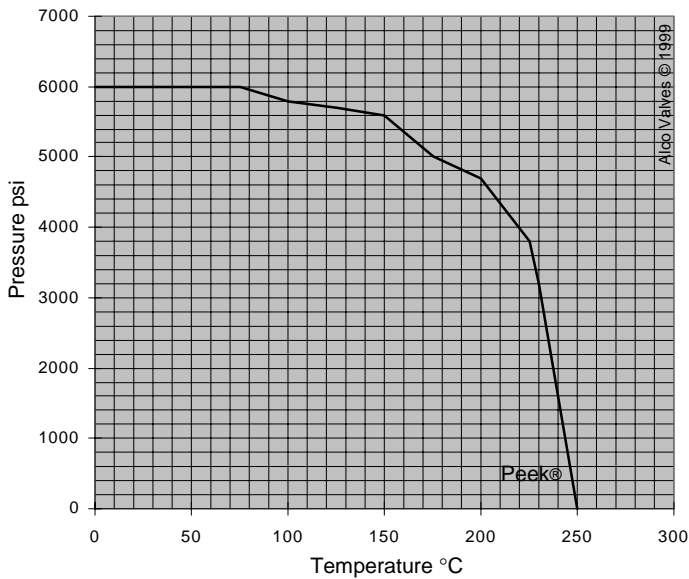
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Pressure / Temperature Data

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



ALCO VALVES LTD. (UK)
PART NO.
ALCO WORKS ORDER
YOUR JOB NO.
YOUR PART NO.
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



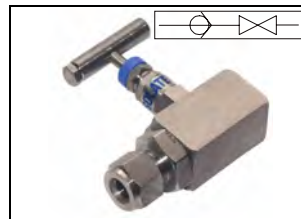
Fire safe option to
BS6755 part 2 API 607 (-FS)



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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Options for needle valves

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(-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



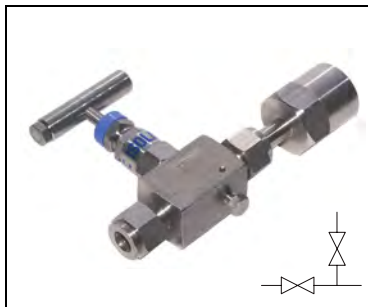
(SSDBB)
Special body designs to suit your application



(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

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