

# 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***

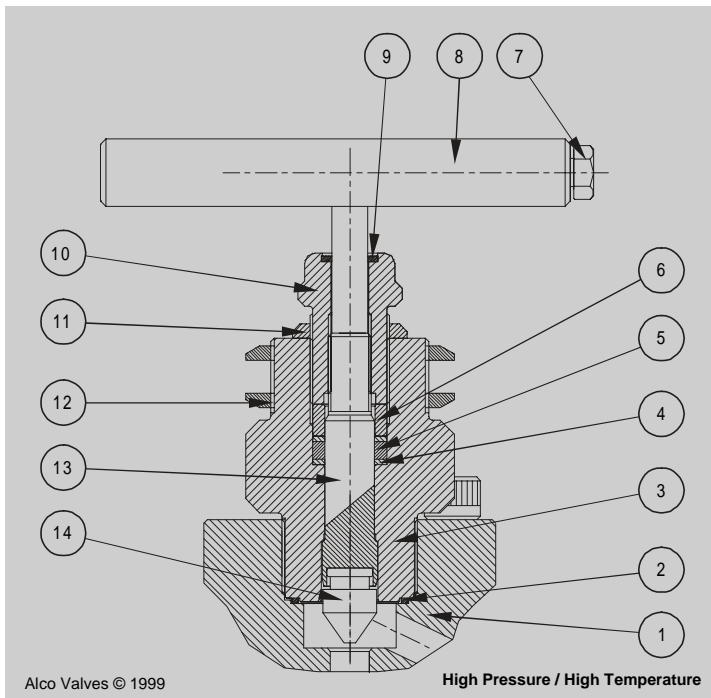
*Severe service 2 valve block - temperatures in excess of 700°C*

### ***How to order the above***

*An explanation of the part numbering system*

# Severe Service Needle Valve Data

## Physical Features - Typical Severe Service Head Unit



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High Pressure / High Temperature

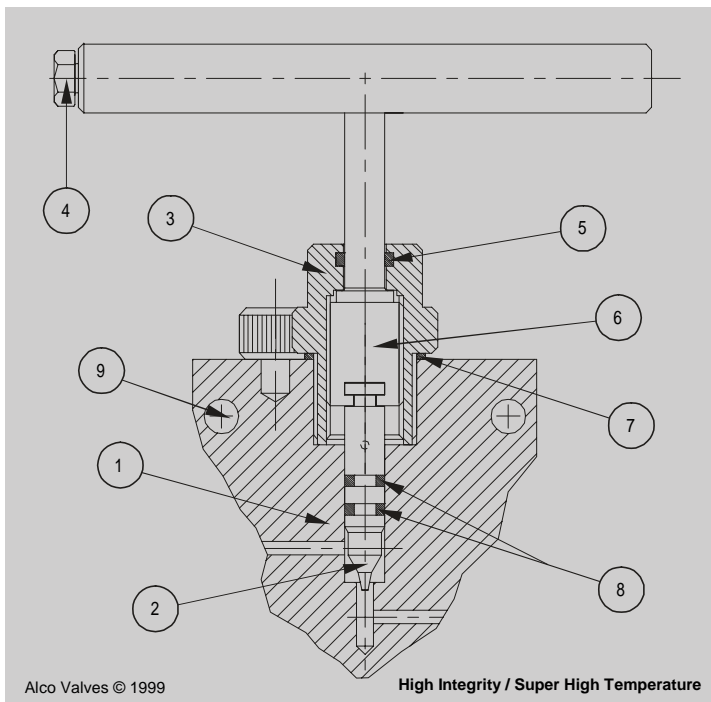
### Severe Service Needle Valve Units

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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International : ++ 44 1484 710511  
USA & Canada  
Tel: ++ 1 519 767 6655 Fax: ++ 1 519 767 6740  
<http://www.alco-valves.com>

REF: AVCAT2K106

REV: 00

# XN Series

## General Information

### 20,000 psi & 40,000 psi rated

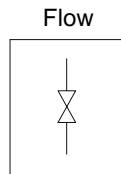
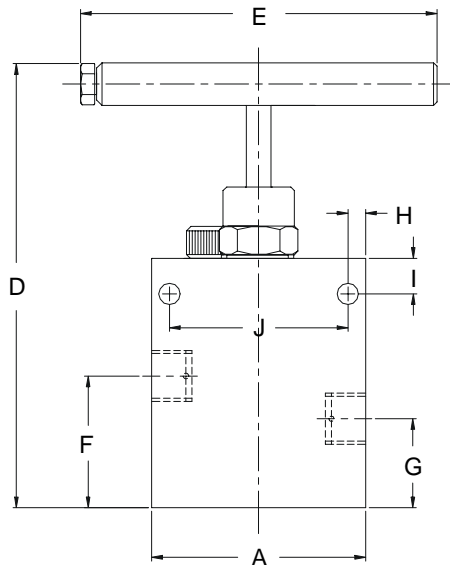
The "XN20" and "XN40" series needle valves are rated at 1,334 BAR (20,000 psi) and 2,667 BAR (40,000 psi) respectively cold working non shock. The tip assembly is specifically designed for heavy duty service with a fine metering tip to reduce impact on down stream equipment, instruments or test pieces. 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.



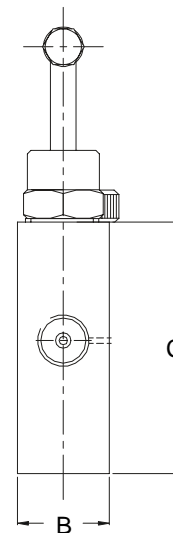
High pressure weep holes as standard for extra safety

## 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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International : ++ 44 1484 710511  
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REF: AVCAT2K107

REV: 00

# XN2V Series

## General Information

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

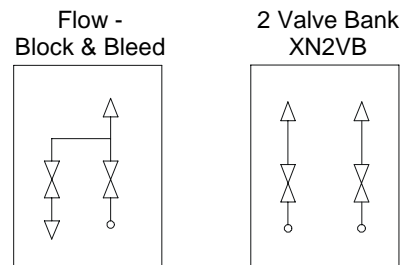
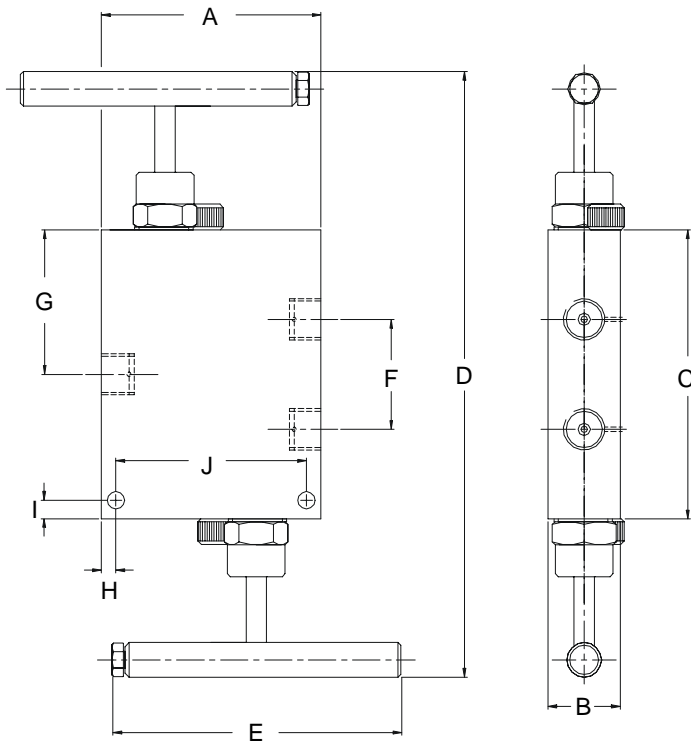


High pressure weep holes as standard for extra safety

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



## 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

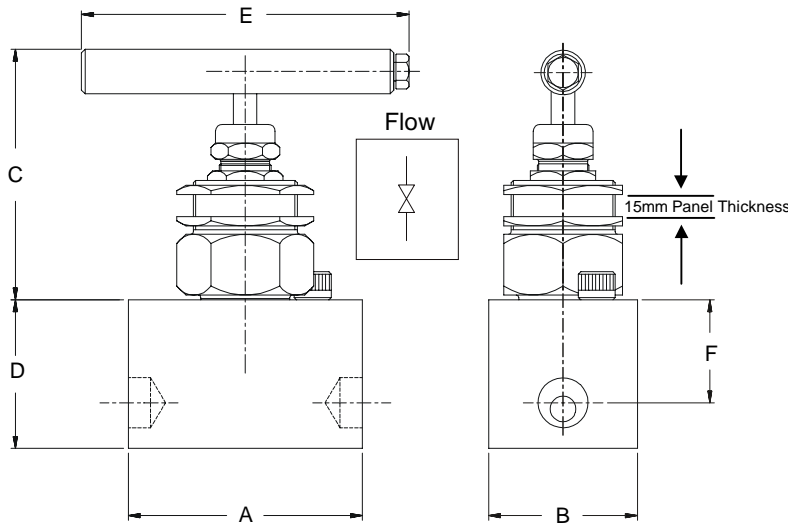
### Temperatures in excess of 700° Celsius

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 oil 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.

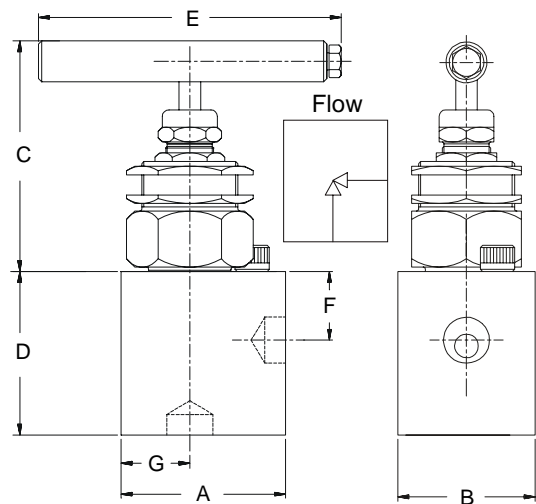
## Design Features

- 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	G	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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International : ++ 44 1484 710511

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REF: AVCAT2K109

REV: 00

# NVSS2V Series

Severe Service Needle Type 2 Valve Block

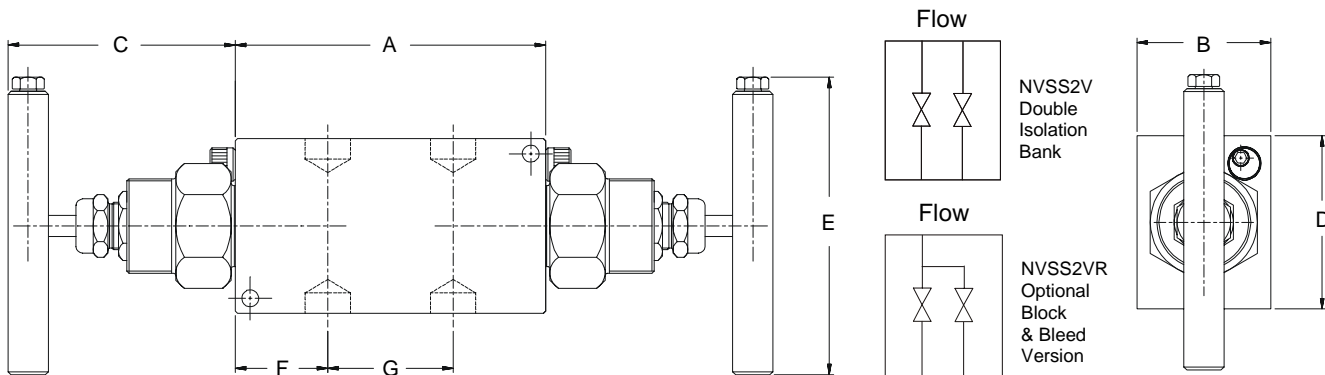
## General Information

### 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			
<b>NVSS</b>	<b>14</b>	<b>S</b>	<b>S</b>	<b>-</b>	<b>5</b>	<b>-</b>	<b>H</b>	<b>W</b>
<b>NVSS</b>	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 <b>Note:</b> 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				
<b>XN20</b>	16 = M16 9/16 = 9/16"							
<b>XN40</b>	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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