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TSI-11 Instrument Needle Valves

Product Catalogue

Integral Bonnet, Union Bonnet, Screwed Bonnet,
High-Pressure and Locked Bonnet Designs



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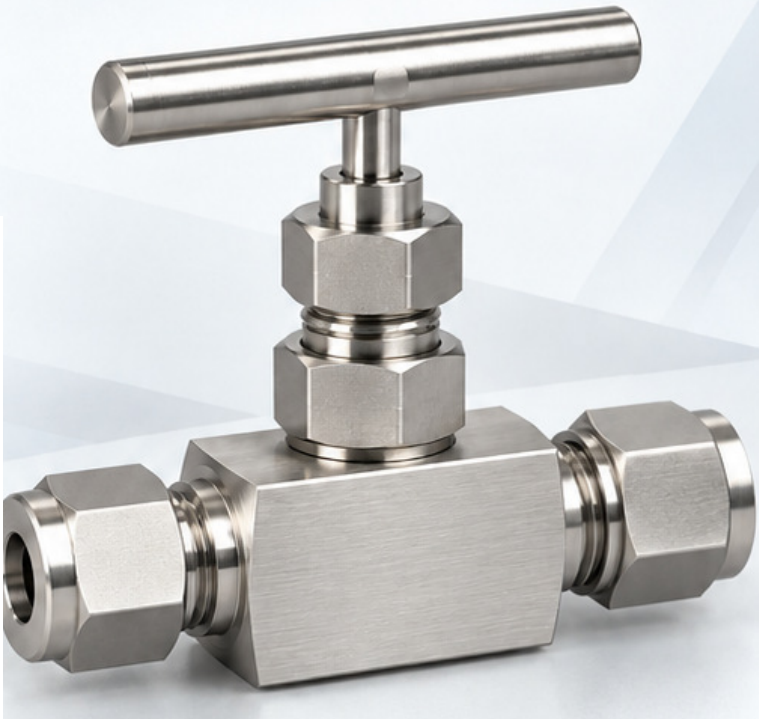
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TSI-11-001

Integral Bonnet Needle Valve

Straight Pattern

Instrument Needle Valves



Overview

Compact straight-pattern isolation and manual regulation for instrument tubing, impulse lines and gauge assemblies. The selected VB16 benchmark uses a one-piece body / integral bonnet with a spring-loaded chevron packing system. Final connection and tubing wall ratings govern the assembled system.

Key Features

- Integral bonnet; in-line two-port flow
- Stainless steel T-bar and Vee metal stem
- Live-loaded chevron packing system
- Two compression tube-fitting ends
- Use: sample, analyzer and impulse lines

Technical Information

Engineering reference	DK-Lok VB16A-D-4T-S; comparative model only
Bonnet / pattern	Integral; straight / in-line
Connection shown	1/4 in DK-Lok tube fitting x 1/4 in tube fitting
Size alternatives	1/4 in reference; other VB16 ends/sizes need separate order code
Body material	316 stainless steel; confirm exact ASTM / heat certificate
CRA alloy enquiry	UNS N06625, N08825, N04400, N10276, S32750, S32760: separate qualification
Pressure at 100 F	Up to 6,000 psig (413 bar), selected 316/PFA Vee configuration
Temperature, packing	-65 to +450 F (-54 to +232 C), selected Vee/PFA version
Stem / seat	Vee stem, metal seat; soft PCTFE option has lower temp limit
Orifice / maximum Cv	3.2 mm (0.125 in) / 0.21 for reference code
GA reference dimensions	L 62.5 mm; H 43.1 mm; refer to manufacturer SKU drawing
End-system verification	Tubing OD/wall, hardness, ferrules and pressure derating
Documentation on RFQ	Heat traceability; EN 10204 3.1 if agreed; GA / pressure test
Application / service	Manual shutoff / regulation; no automatic metering accuracy claim

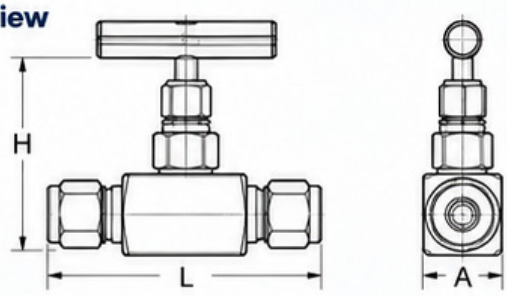
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3D View



2D / GA View



TSI-11-002
Integral Bonnet Needle Valve
Angle Pattern

Instrument Needle Valves



Overview

Right-angle integral-bonnet needle valve for compact instrument routing and controlled flow adjustment. The selected Swagelok angle-pattern model has two 1/8 in tube-fitting ports, a phenolic knob and a regulating stem. Its published 100 F and elevated-temperature pressure figures are different.

Key Features

- Integral bonnet; 90-degree angle flow path
- Phenolic black round handle
- 316 stainless body and regulating stem
- Two 1/8 in compression tube fittings
- Published model-specific Cv: 0.09

Technical Information

Engineering reference	Swagelok SS-ORS2-A; comparative model only
Bonnet / pattern	Integral; 2-way angle
Connection shown	1/8 in tube fitting x 1/8 in tube fitting
Size alternatives	1/8 in reference; 1/4, 3/8, 1/2 in exist in other family SKUs
Body / stem tip	316 stainless steel / 316 stainless steel
CRA alloy enquiry	UNS N06625, N08825, N04400, N10276: different qualified part required
Pressure at 100 F	5,000 psig (344 bar) for SS-ORS2-A
At 450 F (232 C)	3,435 psig (236 bar); use maker P-T curve for other points
Temperature envelope	-65 to +600 F (-53 to +315 C); conditions / packing apply
Stem / handle	Regulating stem / phenolic knob
Orifice / maximum Cv	0.080 in (2.03 mm) / 0.09
End fitting selection	Tube pressure, ferrules, routing and tightening must be checked
Inspection / documents	Model-specific test, MTC / EN 10204 3.1 only when available
Application / service	Instrument angle routing and manual flow adjustment

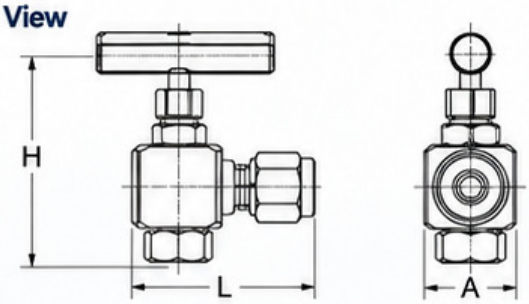
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3D View



2D / GA View



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TSI-11-003
Integral Bonnet Needle Valve
Panel Mounting

Instrument Needle Valves



Overview

Panel-mountable straight-pattern integral needle valve for analyzer cabinets and control panels. The Hy-Lok NV family shows a black knob and optional panel retaining hardware. The exact illustrated assembly is a family representation: lock the order code, panel hardware and end connections before procurement.

Key Features

- NV family integral bonnet / straight path
- Panel nut and bonnet projection to be specified
- Black knob; alternative handles by model
- Orifice options vary by NV1 / NV2 frame
- Verify panel thickness and fitting clearance

Technical Information

Engineering reference	Hy-Lok NV1M-2N-S316 family screenshot; ordering options to lock
Bonnet / pattern	Integral; straight with optional panel mounting
Reference size	1/8 in class (NV1); confirm end connection of ordered code
Family size options	1/8 to 3/4 in pipe/tube, by NV variant / port style
Reference material	316 stainless steel; brass / UNS N04400 occur elsewhere in NV
Other CRA requests	UNS N06625, N08825, N10276, S32750: not confirmed for NV
Published NV family max	Up to 5,000 psig (345 bar) at 100 F: Hy-Lok USA NV page
Standard PTFE range	-65 to +450 F (-54 to +232 C)
Optional PEEK packing	Up to +600 F (+315 C), variant-specific derating
Orifice / Cv example	NV1 2.0 mm; Cv about 0.09 for selected NV1 size
Handle / stem	Knob / Vee; regulating or PCTFE options depend on SKU
Panel assembly / GA	Nut, panel hole and max thickness must match final CAD
Tests / documentation	Request manufacturer P-T / material / GA / EN 10204 3.1
Application / service	Analyzer panels, gauge panels and test assemblies

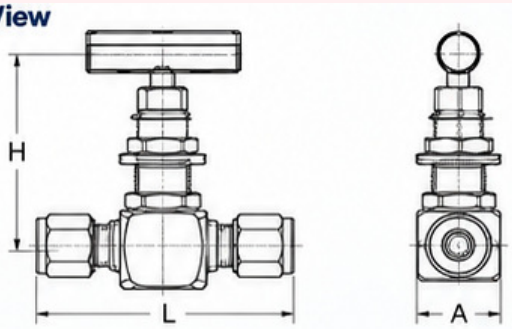
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3D View



2D / GA View



TSI-11-004
Union Bonnet Needle Valve
Straight Pattern

Instrument Needle Valves



Overview

Union-bonnet straight needle valve intended for severe instrument isolation and regulation duties. The selected Hy-Lok GB2H benchmark uses a distinct union nut, a rectangular stainless bar handle and 1/2 in compression fittings on both sides. The published 6,000-psig class is at 100 F, not at maximum temperature.

Key Features

- Distinct removable union-bonnet assembly
- Straight body / 1/2 in tube ends
- Stainless steel rectangular bar handle
- Standard PTFE; PEEK / graphite are alternatives
- Reference series supports multiple stem tips

Technical Information

Engineering reference	Hy-Lok GB2H-8T-S316; comparative model only
Bonnet / pattern	Union bonnet; straight
Connection shown	1/2 in Hy-Lok tube fitting x 1/2 in tube fitting
Family size choices	1/8 to 1 in tubing/pipe; order-specific threads/welds
Body / wetted material	316 stainless steel; verify exact wetted trim to selected stem
Family alternatives	UNS N04400; other CRAs require supplier/grade validation
Pressure at 100 F	Up to 6,000 psig (413.7 bar), 316 family rating
PTFE working envelope	-65 to +450 F (-54 to +232 C)
Optional packing ranges	PEEK to +600 F; graphite to +1,200 F; verify P-T derating
Orifice / Cv	6.40 mm / 0.86 for GB2H-8T-S316
GA dimensions	L 77.8 mm / H 93.7 mm (manufacturer reference)
Stem options	Non-rotating Vee standard; regulating, ball and soft by model
Tests / records	Manufacturer nitrogen / hydrotest; certificate upon agreed PO
End-fitting rating	Assembly limited by tubing OD/wall and fitting pressure

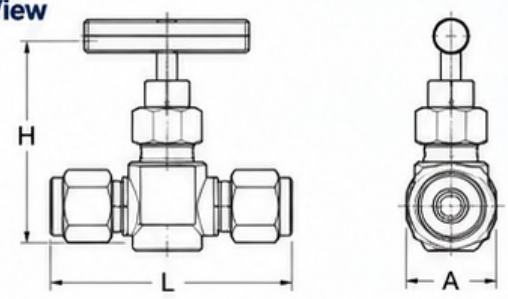
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3D View



2D / GA View



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TSI-11-005
Union Bonnet Needle Valve
Angle Pattern

Union Bonnet Needle Valves



Overview

Angle-pattern GB union-bonnet valve with orthogonal ports for compact impulse and process take-offs. The referenced Hy-Lok GB2HA is a physically distinct 90-degree configuration, not a rotated straight valve. Bonnet joints, tube ends and handle dimensions follow the selected order code.

Key Features

- True 90-degree flow route / union bonnet
- Two 1/2 in Hy-Lok tube fittings
- Stainless rectangular T-bar handle
- Serviceable packing and stem geometry
- Compact outlet redirection for instrument lines

Technical Information

Engineering reference	Hy-Lok GB2HA-8T-S316; comparative model only
Bonnet / pattern	Union bonnet; angle / 90 degrees
Connection shown	1/2 in Hy-Lok tube fitting x 1/2 in tube fitting
Size alternatives	GB range 1/8 to 1 in; angle code / GA must be checked
Body / wetted material	316 stainless steel for benchmark; verify wetted trim
Family alloy alternatives	UNS N04400 within GB; other UNS CRAs require confirmation
Pressure at 100 F	Up to 6,000 psig (413.7 bar) for selected GB 316 class
Temperature / PTFE	-65 to +450 F (-54 to +232 C), reference packing
High-temperature options	PEEK to +600 F; graphite to +1,200 F, P-T derating required
Orifice / Cv	6.4 mm / 0.86 listed on GB2HA product page
Reference dimensions	L 77.8 mm; H 93.7 mm; angle-specific dimensions per CAD
Stem / handle	Non-rotating Vee class / SS bar; other tips vary
Quality documents	Request 3.1, pressure/leak test and dimensional drawing
Service example	Analyzer tap-offs and 90-degree instrument routing

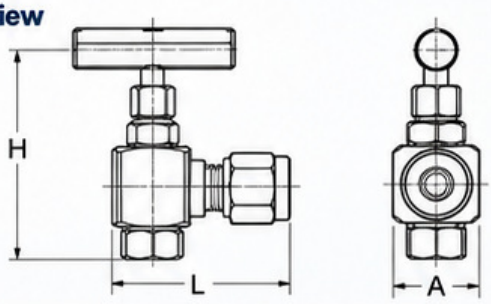
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TSI-11-006

Screwed Bonnet Needle Valve

Straight Pattern

Screwed Bonnet Needle Valves



Overview

Screwed-bonnet straight valve for reliable manual isolation and controlled process adjustment. FITOK NB employs a rising non-rotating lower stem and screwed bonnet, with a two-piece stem that separates threaded drive elements from the medium. NB is distinct from locked-bonnet and union-bonnet constructions.

Key Features

- Screwed bonnet with two-piece rising stem
- Straight metal body / internal NPT ports
- Stem packing isolated from upper threads
- Panel mounting is a separate Y option
- Metal stem / back seating by configuration

Technical Information

Engineering reference	FITOK NBSS-FNS4-8; comparative model only
Bonnet / pattern	Screwed bonnet; straight
Connection shown	1/4 in FNPT x 1/4 in FNPT
Size alternatives	NB family: 1/4, 3/8, 1/2 in FNPT; other port types exist
Material reference	316 stainless steel body; verify ASTM and wetted trims
Other maker materials	UNS N10276 / N04400 occur in NB family with other ratings
Pressure at 100 F	316 NB family up to 6,000 psig (414 bar)
Alloy pressure difference	UNS N04400: 5,000 psig; UNS N10276: 6,000 psig class
Packing / temperature	PTFE -65 to +450 F; PEEK +500 F; graphite +1,200 F
Orifice / maximum Cv	6.4 mm (0.25 in) / about 0.85, NBSS-FNS4-8
Stem / body	Two-piece rising stem, cold-drawn bar body
Dimensions / mounting	Consult NB B-88/B-89; panel Y not implied for stock model
Documents on PO	GA, pressure/leak test, heat traceability, 3.1 if agreed
Application / duty	Instrument isolation / sampling / utility process lines

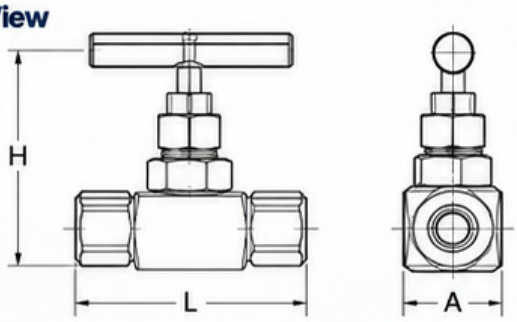
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3D View



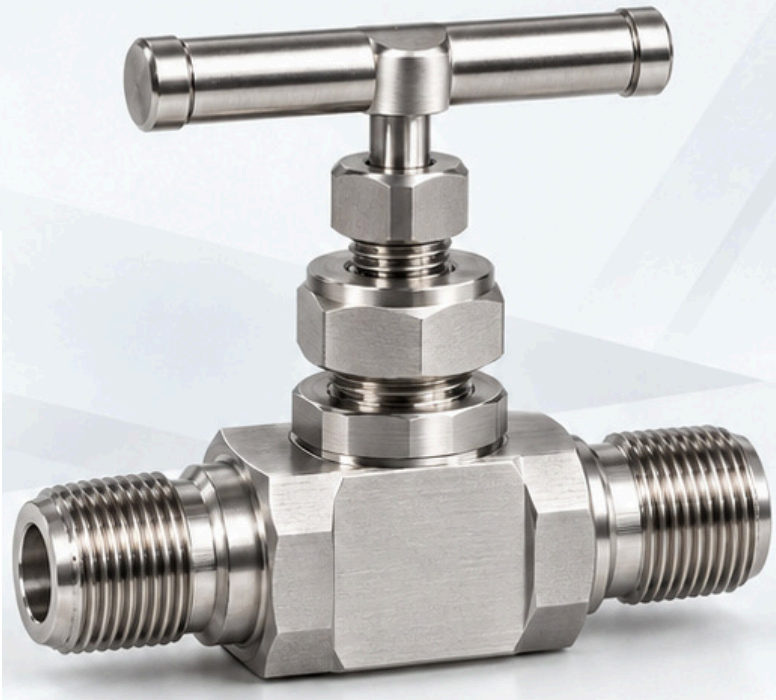
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TSI-11-008
High-Pressure Needle Valve
Straight Pattern

High-Pressure Needle Valves



Overview

High-pressure straight union-bonnet needle valve for selected 10,000-psig instrumentation duties. FITOK NUHSS-NS8-8 is a 316 stainless steel model with two 1/2 in male NPT ends and standard PTFE packing. The 10,000-psig figure is a 100 F catalogue rating, not a universal elevated-temperature allowance.

Key Features

- NUH union bonnet / straight path
- Two external 1/2 in Male NPT connections
- 316 stainless body / metal bar handle
- PTFE stem packing for -65 to +450 F
- Higher-pressure control: check P-T derating

Technical Information

Engineering reference	FITOK NUHSS-NS8-8; comparative model only
Bonnet / pattern	High-pressure union bonnet; straight
Connection shown	1/2 in MNPT x 1/2 in MNPT
Alternative sizes	NUH 1/8, 1/4 FNPT; 1/4 MNPT; 1/2 MNPT; weld types
Body / wetted metal	316 stainless steel; do not transfer class to other alloys
Special alloy enquiries	UNS N06625, N08825, N10276 etc. require distinct rated SKU
Pressure at 100 F	Up to 10,000 psig (690 bar) for NUH 316 configuration
Packing / temperature	PTFE -65 to +450 F (-54 to +232 C)
High-temp alternatives	Not included in this SKU; prove permitted trim and derating
Orifice / Cv	6.4 mm (0.25 in) / 0.86 listed in NUH dimension table
Stem / handle	Metal stem; verify exact opening and union hardware
Thread standard	NPT - check mating pipe/thread, sealing & installation
Documentation on PO	P-T curve, drawing, hydro/leak test and 3.1 as agreed
Application / duty	High-pressure gauge and impulse service

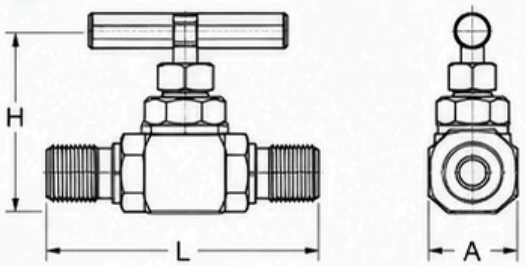
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TSI-11-009
High-Pressure Needle Valve
Angle Pattern

High-Pressure Needle Valves



Overview

Forged-body high-pressure angle-pattern needle valve for a genuine 90-degree route. The referenced FITOK NFH code uses two 1/4 in Female NPT ports and a stainless bar handle. The Y suffix specifies panel-mount hardware; it must be visible and dimensioned on the chosen GA.

Key Features

- One-piece forged high-pressure body
- True 90-degree angle configuration
- Two female NPT threaded end ports
- Optional panel mounting identified by Y suffix
- Design rating based on 316 NFH at 100 F

Technical Information

Engineering reference	FITOK NFHSS-FNS4-7-YM-A; comparative model only
Bonnet / pattern	NFH forged-body; 90-degree angle
Connection shown	1/4 in FNPT x 1/4 in FNPT
Other NFH size options	1/8-1/2 in NPT; FITOK or weld types by separate SKU
Body / trim reference	316 stainless steel; 316L / F91 variants need separate tables
CRA alloy enquiries	UNS N06625, N08825, N10276, S32750: not this rating
Pressure at 100 F	Up to 10,000 psig (690 bar) for NFH 316 reference
Standard PTFE limits	-65 to +450 F (-54 to +232 C)
Other packing choices	PEEK +500 F / graphite +1,200 F: verify derating
Orifice / Cv	4.0 mm (0.16 in) / Cv 0.35 (NFH family table)
Handle / panel	Metal bar; Y designates panel mount / verify GA
Mounting dimensions	Check panel hole, maximum thickness and bonnet stack
Documents / tests	Maker GA, P-T, hydraulic test and MTC as agreed
Application / duty	High-pressure compact 90-degree process isolation

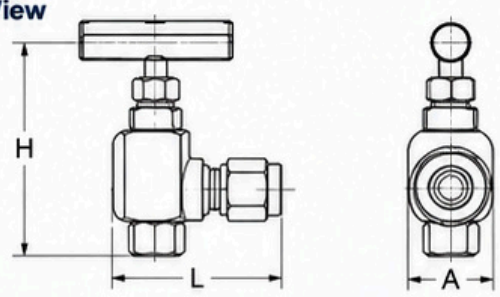
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3D View



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TSI-11-007
Locked Bonnet Needle Valve
Straight Pattern

Instrument Needle Valves



Overview

Locked-bonnet straight needle valve for demanding instrument isolation and metering. SSP LN6M-4PF-HC is an actual special-alloy variant with a UNS N10276 body, a chrome-plated UNS N10276 metering stem and two 1/4 in Female NPT ends. The bonnet-retaining lock is different from a plain screwed bonnet.

Key Features

- Mechanical bonnet lock and retaining feature
- Live-loaded packing / metallic T-handle
- Reference alloy is UNS N10276, not generic 316
- Two internally threaded 1/4 in NPT ends
- Metering stem with 0.78 catalogued Cv

Technical Information

Engineering reference	SSP LN6M-4PF-HC; comparative model only
Bonnet / pattern	Locked bonnet; straight; LN6M metering form
Connection shown	1/4 in FNPT x 1/4 in FNPT (per inlet/outlet fields)
Other LN options	1/8-1/2 in NPT / tube ends in other LN4/6/8 SKUs
Body / wetted alloy	UNS N10276 (C-276) for the referenced SKU
Other family materials	316 stainless steel / UNS N04400 available under other LN codes
Pressure at 100 F	Up to 6,000 psig (413 bar), selected LN reference class
PTFE temperature limit	PTFE packing up to +450 F (+232 C)
Graphite / PEEK options	Different configurations may allow higher T; P-T derating required
Stem / handle	Chrome-plated UNS N10276 metering stem / SS T-handle
Orifice / maximum Cv	0.25 in (6.4 mm) / 0.78 for LN6M-4PF-HC
Reference GA dimensions	A 2.25 in; H(open) 3.9 in; check actual maker drawing
Product data note	SSP generic Connects field conflicts with detailed FNPT fields
Quality on RFQ	3.1 alloy MTC, lock design, P-T curve, GA, test records

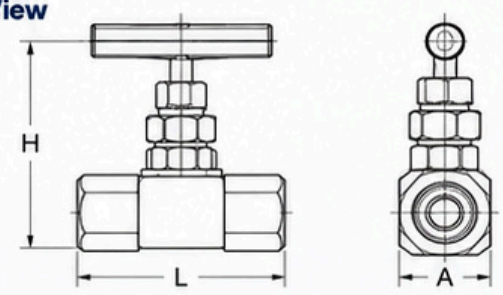
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2D / GA View



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