Knife gate valves

Pressure rating: up to 150 psi
Sizes: NPS 2–24 (DN 50–600)
All stainless steel
VELAN’S PROFILE

VELAN AT A GLANCE

History
• Founded in 1950

People
• Over 1,900 employees

Product line
A world-leading range of valves across all major industrial applications:
• Cast steel gate, globe, check, and ball valves
• Forged steel gate, globe, check, and ball valves
• Triple-offset butterfly valves
• Knife gate valves
• Severe service valves
• Bellows seal valves
• Steam traps

Primary industries served
• Fossil, nuclear, and cogeneration power
• Oil and gas
• Refining and petrochemicals
• Chemicals and pharmaceutical
• LNG and cryogenics
• Marine
• HVAC
• Mining
• Water and wastewater
• Pulp and paper
• Subsea

Velan holds major applicable approvals:
• ASME Section III N and NPT for nuclear valves (since 1970)
• ISO 9001 (since 1991) and ISO 14001
• OHSAS 18001
• PED
• SIL
• GOST
• API 6A and API 6D
• TA-Luft
• Comprehensive quality programs that are compliant with the most stringent industry standards such as ISO 9001, API Q1, API 624, NCA 4000, ASME NQA-1, and 10 CFR 50 Appendix B.
• Velan has been surveyed and audited by leading organizations around the world such as Bureau Veritas, API, ASME, NUPIC, Newport News Shipbuilding, and DCMA.
• Total Process Improvement Program, including Lean Manufacturing and Six Sigma.

Velan is one of the world’s leading manufacturers of industrial steel valves, supplying gate, globe, check, ball, triple-offset butterfly, knife gate, control, highly engineered severe service valves, and steam traps for critical applications in the chemical, petrochemical, oil and gas, fossil and nuclear power, cogeneration, pulp and paper, mining, marine and cryogenic industries. The company also supplies actuators and integrated control packages.

Founded in 1950, Velan has earned a reputation for product excellence and innovation by bringing to the market superior products with special emphasis on quality, safety, ease of operation, and long service life. Velan valves have an extremely broad installation base and are approved by major companies worldwide.

Velan concentrates on one business—the design, manufacture and marketing of steel valves in a broad range of types and sizes for high performance service in a wide range of applications. The company’s talented people are focused on Velan’s core values of quality, reliability, innovation, and integrity and mission to be the world’s leading valve brand.
VELAN’S GLOBAL NETWORK

Head office

Montreal, Canada
Velan Inc.

Manufacturing plants

North America
- Montreal, Canada
  Velan Inc., Plant 1 and 5
- Montreal, Canada
  Velan Inc., Plant 2 and 7
- Granby, Canada
  Velan Inc., Plant 4 and 6
- Williston, VT, U.S.A.
  Velan Valve Corp., Plant 3

Europe
- Lyon, France
  Velan S.A.S.
- Mennecy, France
  Segault S.A.
- Lisbon, Portugal
  Velan Válvulas Industriais, Lda.
- Lucca, Italy
  Velan ABV S.r.l., Plant 1
- Lucca, Italy
  Velan ABV S.r.l., Plant 2

Asia
- Ansan City, South Korea
  Velan Ltd., Plant 1
- Ansan City, South Korea
  Velan Ltd., Plant 2
- Taichung, Taiwan
  Velan Valvac Mfg. Co., Ltd.
- Suzhou, China
  Velan Valve (Suzhou) Co., Ltd.
- Coimbatore, India
  Velan Valves India Pvt. Ltd.

Distribution centers

- Granby, Canada
  VelCAN
- Benicia, CA, U.S.A.
  VelCAL
- Missouri City, TX, U.S.A.
  VelTEX
- Willich, Germany
  Velan GmbH

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ADVANTAGES OVER FABRICATED VALVES
- Cast stainless steel body and investment cast yoke. In fabricated valves, leakage of corrosive medium due to neglected maintenance on the packing or line pressure surges cause corrosion and failure of most carbon steel, cast iron, or welded stainless steel components.
- An all stainless steel valve offers better corrosion resistance than cast iron-lined valves. The total cost of ownership becomes more attractive than the initial savings.

FIRST ALL STAINLESS STEEL KNIFE GATE VALVE
- **Rugged one-piece body.** Cast in stainless steel to eliminate corrosion problems that are found with cast iron, or steel valves lined with stainless steel.
- **All stainless steel investment cast yoke.** Up to NPS 12 (DN 300).
- **Investment cast stainless steel packing flange.** The space between the blade and the packing flange is very small and critical on smaller size valves. For NPS 2–8 (DN 50–200) Velan knife gate valves feature high-precision investment cast packing flanges for a tight “contact-free” fit.

THICKER KNIFE GATE
- **Thicker knife gate.** To eliminate distortion under maximum differential pressure and to provide tight seating.
- **Precision ground blade.** On both sides for tighter packing chamber sealing. Sealing face of the gate is lapped to provide the best possible seat tightness.
- **Integral locking device.**
- **Precision machined beveled gate end.** Provides long life of seating components.
- **Gate guides and lugs.** 180° guiding for the moving gate, while jambs at the bottom hold the knife gate to assure proper seating.

RAISED FACE SEAT
- The groove around the seat permits the gate to push particles aside and prevents clogging. When the valve is open the flow cleans the groove.
- **Lapped seat.** Ensures tight closure.

RELIABLE PACKING CHAMBER
- Smooth and uniform chamber.
- Gate ground on both sides.
- Gland bolts easily accessible.
- Equally distributed gland bolts provide uniform compression of packing.

ALL NUTS SELF-LOCKING

LOW TORQUE STEM DRIVE ASSEMBLY
- **Ni-resist or bronze thrust bearing.** To prevent seizure of handwheel hub, NPS 2–12 (DN 50–300) valves.
- **Larger more comfortable malleable iron handwheel.** For easier operation.
- **Needle thrust bearings.** NPS 14–24 (DN 350–600) valves.
- **Grease fitting.**
- **Acid resistant Ni-resist or bronze stem nut.**

FACTORY TESTING
- **Each valve is pressure tested.** For seat tightness, shell and packing integrity including cycling tests to check for reliability of operation.
VELAN STANDARD KNIFE GATE VALVES

ALL STAINLESS STEEL WAFER-TYPE, METAL SEAT, NPS 2–24 (DN 50–600)
FULLY LUGGED, TYPE 310C TO TAPPI TIS 405-8, LARGE PORT

DIMENSIONS AND WEIGHTS

<table>
<thead>
<tr>
<th>SIZE</th>
<th>NPS</th>
<th>A</th>
<th>C</th>
<th>BD</th>
<th>Top size in (UNC)</th>
<th>Number of holes</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>Knife</th>
<th>O</th>
<th>lb</th>
<th>Kg</th>
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<td>2081</td>
<td>24.00</td>
<td>356</td>
</tr>
</tbody>
</table>

(1) Gear actuators. (2) Hole spacing meets MSS SP-44.

PART | STANDARD MATERIALS
--- | -------------------
Body(1) | CF8M (SS 316)  
| | CG3M (317L)  
Knife | SS 316  
| | SS 317L  
Yoke | CF8  
Stem(1) | SS 316 or SS 304  
Packing flange | CF8 (SS 304)  
Stem nut | Ni-resist or bronze  
Bolt | SS 304  
Nuts | SS 304 self-locking  
Packing | Graphite and PTFE-impregnated synthetic yarn (ph: 0–14)  
Thrust bearing | Steel, NPS 14–36 (DN 350–900)  
Handwheel | Malleable iron  
Handwheel nut | Malleable iron, zinc plated

(1) Other materials available (see page 15).

DESIGN FEATURES

- Designed to handle light slurries, pulp stock and corrosive fluids in process industries.
- Meets TAPPI standard TIS 405-8 and MSS SP-81 for wafer-type knife gate valves.
- Lug bolt pattern matches ASME B16.5 Class 150. Holes tapped.
- 150 psig (10.3 bar) maximum working pressure. 150°F (65°C) maximum working temperature. Applications outside of these conditions require special design considerations.
- These high-quality metal-seated knife gate valves, with ground knife gates and lapped seating faces, have maximum leakage rate 4-10 times less than the permissible rates shown in TAPPI 405-8 and MSS SP-81.
- Needle bearings on NPS 14–24 (DN 350–600) valves.
- Available with actuation (see page 13).

CV AND SEAT TIGHTNESS

<table>
<thead>
<tr>
<th>SIZE</th>
<th>STANDARD CV(1)</th>
<th>LEAKAGE(2) (cc/min.)</th>
</tr>
</thead>
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<td>24</td>
<td>60,000</td>
<td>960</td>
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(1) Tested in accordance with ASME/ISA-575-02.
(2) Test pressure 40 psi water (TAPPI and MSS SP81).

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VELAN STANDARD KNIFE GATE VALVES

WAFER-TYPE, RESILIENT SEAT, NPS 2–24 (DN 50–600)
FULLY LUGGED, TYPE 320C TO TAPPI TIS 405-8, LARGE PORT

DIMENSIONS AND WEIGHTS

<table>
<thead>
<tr>
<th>SIZE</th>
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<th>BD</th>
<th>Tap size</th>
<th>Number of holes</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>Knife</th>
<th>O</th>
<th>lb kg</th>
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CV AND SEAT TIGHTNESS

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<th>SIZE</th>
<th>STANDARD</th>
<th>LEAKAGE (cc/min)</th>
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(1) Tested in accordance with ASME/ISA-575-02.
(2) Test pressure 40 psi (0.8 bar) water (TAPPI and MSS SP81).

DESIGN FEATURES

- Designed to handle water, white water, pulp stock and corrosive fluids in process industries where applications call for resilient seat with zero leakage to 150 psi (10.3 bar) in main direction and limited tightness in opposite direction, at low pressure.
- Replaceable, resilient crimped seat rings on NPS 18 (DN 450) and larger.
- Meets TAPPI standard TIS 405-8 and MSS SP-81 for wafer-type knife gate valves.
- Non-clogging large port.
- 150 psig (10.3 bar) maximum working pressure. 150°F (65°C) maximum working temperature. Applications outside of these conditions require special design considerations.
- Needle bearings on NPS 14–24 (DN 350–600) valves.
- Available with Air actuation (see page 13).
- Lug bolt pattern matches ASME B16.5 Class 150. Holes tapped.

(1) Other materials available (see page 15).

(1) Gear actuators. (2) Hole spacing meets MSS SP-44.

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VELAN BOLTED BONNET KNIFE GATE VALVE

DESIGN FEATURES

NO LEAKAGE TO THE EXTERIOR THROUGH PACKING CHAMBER (UNLIKE STANDARD KNIFE GATE VALVES)

- **Bonneted design.** Standard flanged body-bonnet joint with an efficient non-asbestos reinforced fiber or PTFE gasket.
- **Long-life leakproof stem seal.** Standard cylindrical packing chamber with 125 RMS wall finish, burnished non-rotating stem and PTFE or graphite packing rings. **Far exceeds the cycle life of a standard knife gate valve.**
- **Virtually no contamination of the environment.** No dewatering of stock, unlike standard knife gate valves.
- **Easy repacking in-line.** (Valve should be de-pressurized when repacking in-line.)

TIGHTER SEATS WITH POSITIVE TORQUE CLOSURE OF KNIFE

- **Beveled knife-stem connection** locks the knife blade tight against the seat. The seat is sealed by **positive torque closure**—not media pressure—unlike most other knife gate valves.
- **Raised-face seat.** A groove around the seat collects particles pushed aside by the knife and prevents clogging. When the valve opens, media pressure cleans the groove.
- **Lapped seat** ensures tight closure.
- **Crimped resilient seat** ensures longer service life (see page 12).
- **Two seat designs:** Integral and resilient (see page 11).

EASY OPERATION

- **Lower running torque** due to reduced friction. Friction between stem and packing in bolted bonnet knife gate valve is far less than the friction between the blade and the packing in a standard knife gate valve.
- **Low-friction, acid-resistant Ni-resist stem nut.**
- **Valves can operate with smaller actuators** than standard knife gate valves, due to lower running torque.

ALL CAST STAINLESS STEEL DESIGN

- **One-piece stainless steel,** fully-lugged, cast body is stronger than welded bodies and less subject to distortion due to thermal stress. Posts are stainless steel instead of chrome-plated carbon steel for longer life.
- **Designed for vertical or horizontal** line operations.
- **Standard wafer, TAPPI face-to-face** for easy replacement of leaky standard knife gate valves.
- **Maintenance and adjustment-free.** Long cycle life.
- **Suitable for most pulp and paper applications.** Can be used throughout the mill as a general-purpose knife gate valve up to 5% pulp consistency.
VELAN BOLTED BONNET KNIFE GATE VALVE

DESIGN FEATURES

PROVIDES POSITIVE SEATING ON THE BOTTOM AND THE TOP OF THE BLADE

- **Unique knife–stem connection.** Unlike any other design, the stem head slides inside a circular cavity on the stem guides in the body and bonnet, and is connected to the knife blade by a taper slot. A cam follower prevents the stem from rotating.

- **Handwheel torque or actuator force provides positive seat-knife closure.** During closure, the stem slides down pushing the knife into contact with the two bottom body lugs. The taper stem head then transfers a vertical closing force to a lateral force, which positively seats the top of the knife against the seat face.

  Stem force, not line pressure, maintains seating contact in this unique design, ensuring tight seating in both directions (see alternative seat designs on page 11). During the opening and closing cycle, the guides ensure proper alignment of the knife.

BYPASS TO PREVENT CLOGGING OF BONNET

- **Bypass** lets pulp circulate inside the bonnet when valve is opened, preventing clogging.

UNIQUE ANTI-CLOGGING DESIGN

The bonnet and body are specially designed to permit pulp circulation. This prevents clogging up to a consistency of 5%.
VELAN BOLTED BONNET KNIFE GATE VALVES

ALL STAINLESS STEEL FULL PORT, METAL SEAT, NPS 4–24 (DN 100–600)
FULLY LUGGED, TYPE 310B, FOR BI-DIRECTIONAL SHUTOFF UP TO 150 PSI (10.3 BAR)

DESIGN FEATURES

- All stainless steel construction.
- Seat tightness achieved with torque as opposed to line pressure.
- Suitable for bi-directional operation.
- Thoroughly tested in a variety of applications including: clean pulp up to a consistency of 5%, waste water and secondary effluent.
- Bypass unit cast into the bonnet prevents clogging.
- Conventional packing chamber eliminates leakage problems associated with standard knife valves.
- 150 psig (10.3 bar) maximum working pressure.
- 150°F (65°C) maximum working temperature.
- Lug bolt pattern matches ASME B16.5 Class 150. Holes tapped.

PART

<table>
<thead>
<tr>
<th>BODY(1)</th>
<th>STANDARD MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF8M (SS316)</td>
<td>CG8M (SS317)</td>
</tr>
<tr>
<td>Bonnet</td>
<td>CG8M</td>
</tr>
<tr>
<td>Post</td>
<td>SS316</td>
</tr>
<tr>
<td>Knife</td>
<td>SS316</td>
</tr>
<tr>
<td>Integral</td>
<td>CF8M (SS316)</td>
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<tr>
<td>Hardfaced</td>
<td>CoCr alloy</td>
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<td>Stem(1)</td>
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<tr>
<td>Stem nut</td>
<td>Ni-resist or bronze</td>
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<tr>
<td>Gland bushing</td>
<td>SS316 or SS304</td>
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<tr>
<td>Packing flange</td>
<td>CF8M or CF8</td>
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<tr>
<td>Bolt</td>
<td>SS304 or SS316</td>
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<tr>
<td>Nuts</td>
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<tr>
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<td>Graphite and PTFE-impregnated synthetic yarn (ph: 0-14)</td>
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<tr>
<td>Cam follower</td>
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</tr>
<tr>
<td>Gasket</td>
<td>PTFE or reinforced fiber</td>
</tr>
<tr>
<td>Handwheel</td>
<td>Malleable iron</td>
</tr>
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</table>

(1) Other materials available (see page 15).

DIMENSIONS AND WEIGHTS

For Cv and seat tightness chart on page 5.

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DESIGN FEATURES

- All stainless steel construction.
- Seat tightness achieved with torque as opposed to line pressure.
- Suitable for bi-directional operation.
- Thoroughly tested in a variety of applications including white water and weak black liquor.
- Bypass unit cast into the bonnet prevents clogging.
- Conventional packing chamber eliminates leakage problems associated with standard knife valves.
- 150 psig (10.3 bar) maximum working pressure. 150°F (65°C) maximum working temperature.
- Lug bolt pattern matches ASME B16.5 Class 150. Holes tapped.

PART STANDARD MATERIALS

<table>
<thead>
<tr>
<th>PART</th>
<th>STANDARD MATERIALS</th>
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<td>Post</td>
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<tr>
<td>Knife</td>
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<td>Seat(1)</td>
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<td>Stem(2)</td>
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<tr>
<td>Handwheel</td>
<td>Malleable iron</td>
</tr>
</tbody>
</table>

(1) PTFE recommended as standard. Other materials available.
(2) Other materials available (see page 15).

DIMENSIONS AND WEIGHTS

For Cv and seat tightness chart on page 5.
VELAN KNIFE GATE VALVE OPTIONS

OPTIONAL SEAT DESIGNS

INTEGRAL SEAT
- Pulp and paper
- Chemical industry
- Agriculture
- Petrochemical industries
- Textile industry (fibers and waste water)

RESILIENT SEAT
- Pulp and paper
- Chemical industry
- Petrochemical industries
- Textile industry

EASY MAINTENANCE

Easy seat maintenance due to replaceable seat retainer ring on standard knife gate valves from NPS 18–24 (DN 450–600) and bolted bonnet knife gate valves from NPS 4–24 (DN 100–600).

Simply grinding off the seat ring retainers on the valve body permits extraction of the seat through the packing chamber. Since Velan features a crimped seat, the O-ring cannot be replaced. A new seat ring, including a crimped O-ring, can easily be put back into place and secured there by tack welding the retainers.

This operation can be done many times, ensuring that the Velan knife gate valve gives years of reliable service.

For complete maintenance procedure including important pipe flange bolt torquing specifications, please refer to the knife gate valve maintenance manual VEL-KGVM.
Integral crimped resilient seat

A NEW INTEGRAL CRIMPED RESILIENT SEAT IS NOW STANDARD ON NPS 2–16 (DN 50–400) STANDARD KNIFE GATE VALVES

Old “snap-in” style seats could be too easily extracted accidentally by friction caused by heavy or infrequent cycling. Velan’s new “crimped seat” makes accidental extraction virtually impossible. The seat will wear normally but the crimped design keeps it tight inside the seat retainer ring for a longer cycle life.

STANDARD KNIFE GATE VALVES NPS 18–24 (DN 450–600) AND ALL SIZES OF BOLTED BONNET KNIFE GATE VALVES

Stainless steel seat ring with replaceable crimped resilient seat option prevents accidental extraction

CRIMPING THE SEAT STEP-BY-STEP

1. The stainless steel seat ring is manufactured with a slight inside taper.
2. The O-ring is inserted.
3. Seat ring is progressively cramped on a lathe to imprison the O-ring in it.

LOW RESTRICTION LUGS BOTTOM

An important breakthrough in bottom lug design for pulp and paper applications, the Velan bolted bonnet knife gate valve features a bottom lug that permits longer fibers to circulate on each side preventing clogging during closing. This improvement is currently available on most sizes.

<table>
<thead>
<tr>
<th>STANDARD RESILIENT SEAT MATERIAL</th>
<th>TYPE</th>
<th>MAX. TEMP.</th>
<th>USE</th>
</tr>
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<tbody>
<tr>
<td>Viton, standard on bolted bonnet knife gate valve</td>
<td>400°F</td>
<td>Chemicals</td>
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<tr>
<td>PTFE</td>
<td>400°F</td>
<td>Pulp and paper waste water</td>
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</table>
If specified by the customer, Velan valves can be furnished with mounting pads for most steel cylinders or valve positioners for throttling control.

### ENGINEERING DATA

**Flow chart characteristics**

**"O" Port**

<table>
<thead>
<tr>
<th>Valve size (NPS)</th>
<th>C</th>
<th>B</th>
<th>C</th>
<th>B</th>
<th>C</th>
<th>B</th>
<th>C</th>
<th>B</th>
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<td>12</td>
<td>14</td>
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</tbody>
</table>

**NOTE:** Above sizes are based on 80 psi air pressure.  
C = conventional  B = bolted bonnet

**OPERATION**

Handwheel, bevel gear, on-off air cylinder actuators.

**GEAR ACTUATORS**

Our standard handwheels suffice to reduce rimpull to acceptable levels. An optional VT-20 gear actuator can be supplied for NPS 16–24 (DN 400–600) valves.

**CYLINDER ACTUATORS**

Various types of cylinders are available for operating Velan knife gate valves. The most commonly used cylinders are operated by air.

In most designs, the valve stem serves as a piston rod, with the knife fastened directly to the actuator. Actuators with double-ended piston rod option can be supplied to install position indicators or limit switches and for connecting an emergency device for manual actuation of the valve.

Handwheels and gear boxes can be mounted on top of the cylinders for emergency operation due to loss of operating medium in the cylinder.
Multiple pump discharge isolation with pressure 70-90 psi (4.8-6.2 bar) white water.

Centrifical cleaner isolation. Pressure around 25-35 psi (1.7-2.4 bar) 2.5% pulp.

Due to unique torque closure of its seat, the Velan bolted bonnet knife gate valve is an ideal solution for low-pressure, high-cycling, environmentally sensitive services and bi-directional applications.

Post refiner line isolation.

Filter isolation installation.

Pump discharge shutoff 5% pulp at 70 psi (4.8 bar) cycling over 75 times a day.
### How to Order Knife Gate Valves

**A. TYPE OF CONNECTION**
- **L** Lug

**B. SIZE OF CONNECTION**
Customers have the choice of specifying valve size as part of the valve figure number (B) using the numbers below, or indicating valve size separately. Sizes shown in NPS (DN)

**EXAMPLES:**
- L14 - 0310C - 13SL (valve size is part of figure number)
- NPS 6 0310C - 13SL (valve size is shown separately)

**C. PRESSURE RATING**
- 0 150

**D. TYPE**
- 31 Metal seat
- 32 Resilient seat

**E. FACE-TO-FACE DESIGN**
- 0 Tappi standard (wafer)
- B Cast (bolted bonnet)
- C Cast (bonnetless)

### ASTM Designation

<table>
<thead>
<tr>
<th>ASTM DESIGNATION</th>
<th>Cast</th>
<th>Bar stock</th>
<th>Plate</th>
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<td>316</td>
<td>316L</td>
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<td>CK3McuN</td>
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<tr>
<td>A</td>
<td>A351 CF8M</td>
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<td>A351 CG8M</td>
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<tr>
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<td>A351 CF3M</td>
<td>A351 CG8M</td>
</tr>
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<td>C</td>
<td>A351 CF8M</td>
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<td>H</td>
<td>A351 CF8M</td>
<td>A351 CF3M</td>
<td>A351 CG8M</td>
</tr>
</tbody>
</table>

**NOTICE**
1. Knife gate valves should preferably not be opened or closed against reverse pressure.
2. Lugs should not be overtightened to adjust for misalignment in piping.
3. Velan reserves the right to take exception to warranty when misapplications / third party automation and other operations are carried out without Velan’s prior knowledge.
4. Consult Velan sales for standard factory warranty.

---

### Material Specifications

- Carbon 0.08 0.03 0.08 0.03 0.03 0.03 0.08 0.08 0.08
- Manganese 1.50 1.50 1.50 1.50 1.20 1.20 2.00 2.00 2.00
- Phosphorus 0.04 0.04 0.04 0.04 0.05 0.05 0.045 0.045 0.045
- Sulphur 0.04 0.04 0.04 0.04 0.01 0.01 0.030 0.030 0.030
- Silicon 1.50 1.50 1.5 1.5 1.0 1.0 1.00 1.00 0.75
- Nickel 9.00–12.00 9.00–13.00 9.00–13.00 9.00–13.00 9.00–13.00 9.00–13.00 20.00–21.00 20.00–21.00 20.00–21.00
- Chromium 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00 18.00–21.00
- Molybdenum 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00 2.00–3.00
- Heat treatment Solution anneal water quench or rapid cool
- Tensile ksi min. 70 70 75 75 80 75 75 75 75
- Yield ksi min. 30 30 35 35 35 30 30 30 30
- Elong. % min. 30 30 25 25 35 30 30 40 40
- R. area % min. 36 36 36 36 36 36 36 36 36
- Hardness HB max. 187 187 187 187 217
- Parts Body, bonnet Stem, post Knife

---

**Example:** Lug NPS 6 (DN 150) class 150 metal-seated cast stainless steel knife gate valve.
The most comprehensive line of industrial forged and cast steel gate, globe, check, ball, butterfly, and knife gate valves and steam traps.

ASME pressure classes 150–4500 in carbon, alloy, and stainless steel

A world-leading valve product range

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