Velan ABV

Delivering value through performance

VELAN ABV

Velan's global network

Head office: Velan group

Montreal, Canada
Velan Inc.

- **14 production facilities:**
  - **4 plants in North America**
  - **5 plants in Europe**
  - **5 plants in Asia**
- **4 stocking and distribution centers**
- **Hundreds of distributors worldwide**
- **Over 60 service shops**

Head office: Velan ABV

Lucca, Italy
Velan ABV S.r.l., Plant 1

Manufacturing plants

North America

Montreal, Canada
Velan Inc., Plant 1

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 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
Vel*CAN*

Benicia, CA, U.S.A.
Vel*CAL*

Missouri City, TX, U.S.A.
Vel*TEX*

Willich, Germany
Velan GmbH

N – ***ASME N-stamp accredited manufacturer***

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Velan ABV: Our products and services

What we offer

Velan ABV specializes in the design and manufacture of special valves and actuators for oil and gas, LNG, and offshore applications. Velan ABV's core business includes critical applications for high-pressure, high-and low-temperature, corrosive, and abrasive service. Our products are available in a variety of standard and unique materials such as Duplex, Super Duplex, Inconel, Titanium, and Monel. Velan ABV is licensed to API 6D and API 6A standards, and all valves are designed fire-safe and certified to API 6FA/API 607/ISO 10497 and BS6755-2 standards.

Velan ABV's Quality Management system is certified according to ISO 9001:2008 and 97/23/EC (module H1) of PED qualification for the CE mark of the valves for the European Market.

The company 's structure is solid, but its operations remain flexible and reliable. It targets full client satisfaction in manufacturing customized valves for even the most demanding clients in the oil and gas industry.

By combining our extensive experience in R&D, engineering, and field work, Velan ABV produces complete systems for on-off and control service.

On-off service

- Emergency shut-down service valves (ESDV)
- Blowdown valves (BDV)
- Riser valves
- High-integrity pressure protection systems (HIPPS)
- Surface safety valves (SSV)
- Subsea safety isolation valves (SSIV)
- Gas-over-oil systems (GHD)
- Pressure line break valves
- Cryogenic valves
- Shallow and deep water subsea valves

Control service

For oil and gas CHOKE applications

- Oil/gas production
- Water injection
- Gas injection
- Separator level control

For oil and gas throttling service

- Anti-surge
- Gas regulator
- Blowdown control valve
- Emergency depressurization

Inspection and tests

Velan ABV valves are tested according to our own internal specifications and procedures, which fully comply with the applicable standards as well as customers requirements. Chemical analysis and physical mechanical properties of valve components are reviewed by our Quality Control Department.

We conduct non-destructive examination (NDE):

- Positive material identification
- Dye penetrant testing
- Magnetic particle testing
- X and gamma ray testing
- Ultrasonic testing
- Visual and dimensional inspections

All Velan ABV valves are also subjected to tests in accordance with API 6D/API 6A acceptance criteria:

- Low-pressure pneumatic seat testing
- Verification of actual stem torque needed to open the valve at maximum differential pressure
- Drift testing for full bore API 6A valves

Optional tests

Velan ABV also conducts:

- High-pressure gas nitrogen tests
- Fugitive emission tests, according to ISO 15848–1 & 2
- Cryogenic tests to verify valve performances at -150°F (-101°C) and lower
- Fire tests: to verify the performance of valves when subjected to fire
- Hyperbaric chamber tests: to verify valves for subsea service
- Slurry tests

For further information concerning our Velan ABV valves or to request individual product catalogs, contact us at:

Tel: +39 0583 403 587 Fax: +39 0583 949 920
www.velanabv.com

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Trunnion ball valves

BT2-BT3 SIDE-ENTRY

Two- or three-piece split bolted body, side-entry trunnion ball valve with anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS ½–60 (DN 15–1500)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–$18^{3}/_{4}$ (DN 46– 476)
Classes: 2000–15000

MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low-temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

BTE TOP-ENTRY

Trunnion ball valve, top-entry, double block and bleed with self relieving seats, anti blow-out stem, antistatic device, fire safe design

API 6D
Sizes: NPS ½–60 (DN 15–1500)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–$18^{3}/_{4}$ (DN 46– 476)
Classes: 2000–15000

MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

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Trunnion ball valves

BTU FULLY WELDED BODY

Trunnion ball valve, fully welded body, anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS 2–60 (DN 50–1500)
Classes: 150–4500

API 6A
Sizes: NPS 2 1/16–18 3/4 (DN 52–476)
Classes: 2000–15000

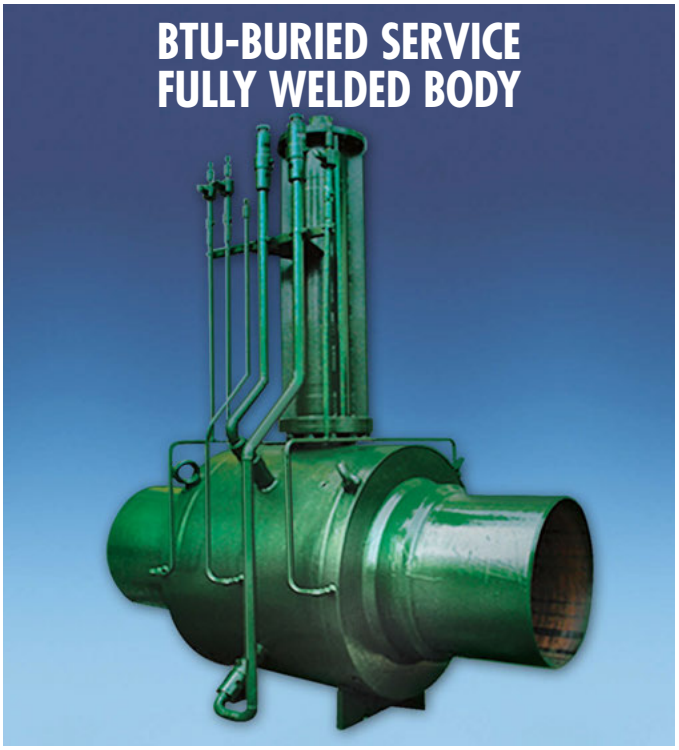
MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

BTU-BURIED SERVICE FULLY WELDED BODY



Trunnion ball valve, fully welded body for buried service, anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS 2–60 (DN 50–1500)
Classes: 150–4500

API 6A
Sizes: NPS 2 1/16–18 3/4 (DN 52–476)
Classes: 2000–15000

MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim
- Cavity relief arrangement
- Stem extension
- Drain, bleeder, and sealing injection with extension

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Trunnion and diverter ball valves

BT4 THREE-WAY TRUNNION

Three-way (three port) trunnion mounted ball, split bolted body, anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS 4–36 (DN 100–900)
Classes: 150–4500

API 6A
Sizes: NPS 4 1/16–11 (DN 103–279)
Classes: 2000–15000

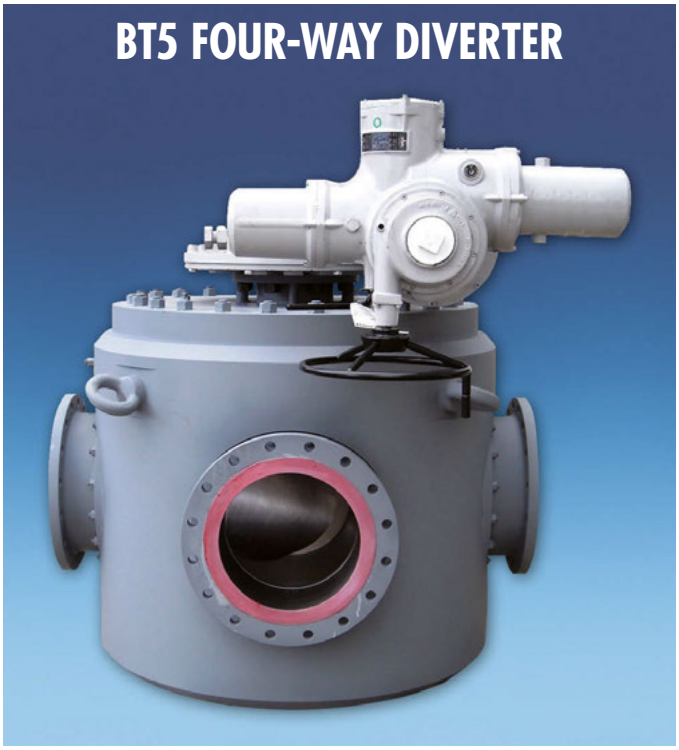
MAIN FEATURES

- Suitable for changing flow direction using the "L" port or diverting and mixing, connecting both the opening to the side opening using the "T" port
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

BT5 FOUR-WAY DIVERTER



Four-way double "L" port diverter valve suitable for changing flow directions with special design for avoiding the stop of the flow

API 6D
Sizes: NPS 4–36 (DN 100–900)
Classes: 150–4500

API 6A
Sizes: NPS 4 1/16–11 (DN 103–279)
Classes: 2000–15000

MAIN FEATURES

- Trunnion mounted ball, split bolted body, anti blow-out stem, antistatic device, and fire safe design
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic al loy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

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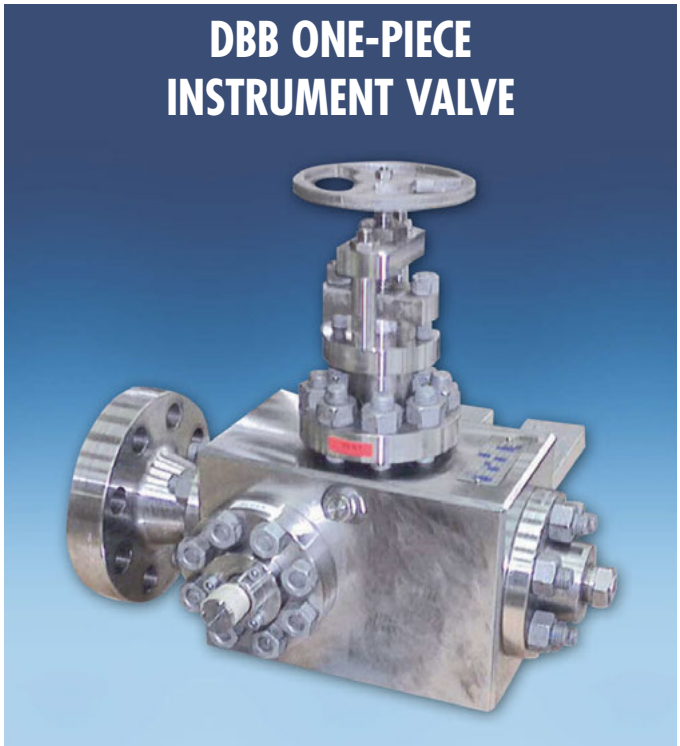
Modular double block and bleed valves

DBB ONE-PIECE INSTRUMENT VALVE



Modular double block and bleed valve, designed for instrument applications, possibility of connection with other valves or with control instruments

API 6D
Sizes: NPS 1/2–2 (DN 15–50)
Classes: 150–4500

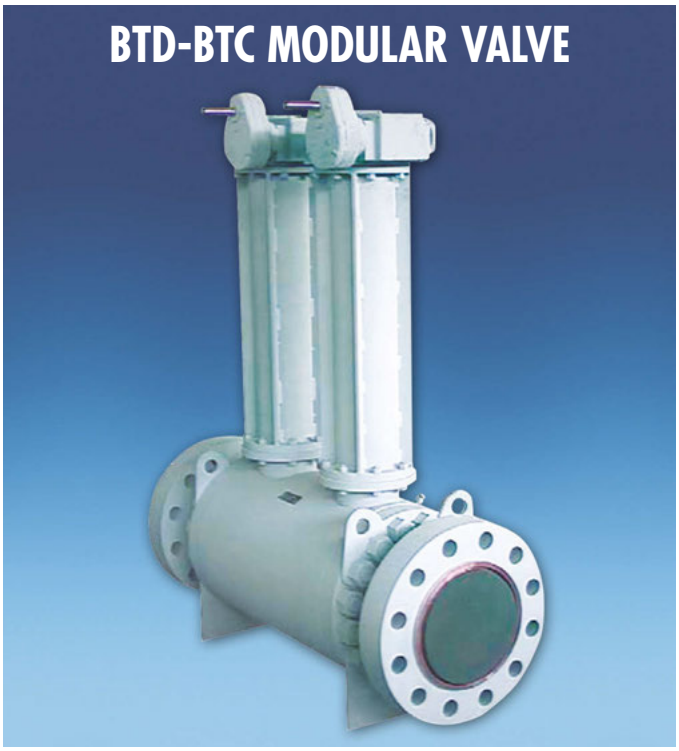
MAIN FEATURES

- One-piece forged steel with floating balls and soft seals
- Design in compliance with: API 6D, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -51 to 842°F (-46 to 450°C)
- Face-to-face according to manufacturer's standard
- Configuration: ball – needle – ball
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all type of fluids, methanol included

OPTIONS

- Different kinds of end connections (RF/RTJ flanges or hub)
- Materials in accordance with NACE MR 01-75 for sour service
- Injection quills, conveniently shaped pipe firmly connected to the valve, suitable to inject fluids and liquid chemicals into pipelines
- Injection quills available with different lengths and materials as per customer specifications

BTD-BTC MODULAR VALVE



Modular trunnion ball valve, three-piece split bolted body side-entry, anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS 2–48 (DN 50–1200)
Classes: 150–4500

API 6A
Sizes: NPS 2 1/16–18 3/4 (DN 52–476)
Classes: 2000–15000

MAIN FEATURES

- Designed to optimize the face-to-face dimension.
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all types of fluids and aggressive environments including corrosive, sour (H_2S), abrasive, and oxygen service; slurries and solid suspension in gases and air; and clean or dirty vapour (including steam).

OPTIONS

- Soft (leakage rate: A) or metal-seated (leakage rate: D, better on request)
- Single or double piston effect seats
- Sealing injection for seats and stem
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Electro-plated nickel trim

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Cryogenic trunnion ball valves

BTK CRYOGENIC TRUNNION

Ball valve, trunnion mounted with extended bonnet designed for cryogenic applications within -321°F (-196°C), anti blow-out stem, antistatic device, and fire safe design

API 6D
Sizes: NPS ½–36 (DN 15–900)
Classes: 150–4500

API 6A
Sizes: NPS 1 13/16–18¾ (DN 46–476)
Classes: 2000–15000

MAIN FEATURES

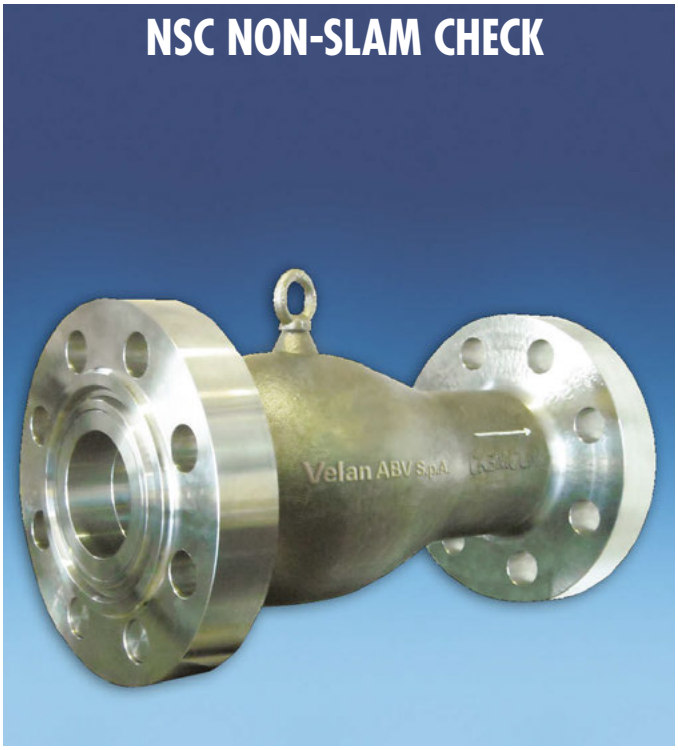
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Cryogenic standards: BS 6364:1984; Shell MESC SPE 77/306
- Fire safe design as per API 6FA and API 607
- Temperature range: -321 to 212°F (-196 to 100°C)
- Available in stainless, duplex, and exotic alloy steels
- Suitable for LNG storage/distribution and for all the cryogenic applications; CO_2 and nitrogen injection, liquid and gaseous oxygen for steel production; and petroleum refining for unleaded gasoline

OPTIONS

- Bonnet extension configuration with a customizable length
- Bolted, top-entry, or fully welded construction
- High strength (XM-19 or Inconel 718) stem, blow-out proof design
- Soft seat (PEEK, PTFE, PCTFE) or metal seat
- Self relieving seats and ball with pressure relief hole on the upstream side to prevent over pressure of the body cavity from thermal expansion
- Fugitive emissions tested on bonnet in case the leakage of toxic or volatile organic compounds cannot be tolerated
- Welded extended bonnet
- Overlay on sealing surfaces available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves available in tungsten carbide
- Materials in accordance with NACE MR 01-75 for sour service

Check valves

NSC NON-SLAM CHECK



Non return valve spring assisted, metal-seated, designed with internal venturi pattern for very fast transient response

API 6D
Sizes: NPS 2–60 (DN 50–1500)
Classes: 150–4500

API 6A
Sizes: NPS 1 13/16–18¼ (DN 46–476)
Classes: 2000–15000

MAIN FEATURES

- Suitable to prevent water hammer and pump protection
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Cast body available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Interchangeable spring
- Low cracking pressure
- Compact face-to-face as per manufacturer's standards
- Internal FBE coating for corrosion protection
- Hardfacing available in tungsten carbide and Stellite® GR.6
- Materials in accordance with NACE MR 01-75 for sour service

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Check valves

CVS SWING CHECK

Non return valve with swing arm suitable for pipeline pigging operations, and fire safe design

API 6D
Sizes: NPS 2–36 (DN 50–900)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–$18^{3}/_{4}$ (DN 46– 476)
Classes: 2000–15000

MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless, duplex, and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Integral or renewable seat
- Manual override to fully open the valve for pigging operations
- Hydraulic slam retarder
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing available in tungsten carbide and Stellite® GR.6
- Materials in accordance with NACE MR 01-75 for sour service

Gate valves

GTC SLAB THROUGH CONDUIT GATE

Block valve designed to offer minimal resistance to the flow

API 6D
Sizes: NPS 2–36 (DN 50–900)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–$18^{3}/_{4}$ (DN 46– 476)
Classes: 2000–15000

MAIN FEATURES

- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless steel, duplex and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Soft or metal-seated
- Reverse acting slab
- Hardfacing available in tungsten carbide and Stellite® GR.6
- Materials in accordance with NACE MR 01-75 for sour service
- Integral actuator

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Gate valves

GTX DOUBLE EXPANDING GATE

Block valve with wedge formed by two pieces, and moveable seats with angle compensation

API 6D
Sizes: NPS 2–36 (DN 50–900)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–$18^{3}/_{4}$ (DN 46– 476)
Classes: 2000–15000

MAIN FEATURES

- Designed to offer the minimum resistance to the flow and when DB&B feature is required for isolating the cavity from the line
- Design in compliance with: API 6D, API 6A, ASME B16.34, PED
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Available in carbon, low temperature carbon, stainless steel, duplex and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Soft or metal-seated
- Reverse acting slab
- Hardfacing available in tungsten carbide and Stellite® GR.6
- Materials in accordance with NACE MR 01-75 for sour service
- Integral actuator

Control valves

KEY-C & KEY-O CONTROL BALL VALVE

Control ball valve with special caged trim for noise reduction and to prevent cavitation/flashing phenomena; trunnion mounted

API 6D
Sizes: NPS 2–48 (DN 50–1200)
Classes: 150–4500

API 6A
Sizes: NPS $2^{1}/_{16}$–$18^{3}/_{4}$ (DN 52–476)
Classes: 150–4500

MAIN FEATURES

- Two- or three-piece split bolted body, side-entry ball valve with anti-blow-out stem, antistatic device, and fire safe design. Suitable for severe control services
- Sizing standards: ISA 75.01, ISA 75.11
- Design as per: API 6D, API 6A, ASME B16.34, PED
- Test procedures: ISA 75.19, FCI 70-2
- Fire safe design as per API 6FA and API 607
- Temperature range: -150 to 842°F (-101 to 450°C)
- Modified equal percentage characteristic
- Unidirectional operating flow, with one metal seat mounted on the up-stream part.
- The **caged trim** is **self cleaning**. Periodic movement of the ball allows self cleaning of the trim located inside the sphere.
- Available in carbon, low temperature carbon, stainless steel, duplex and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Bi-directional tightness mounting a DPE seat
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service
- Trim electro-plated nickel

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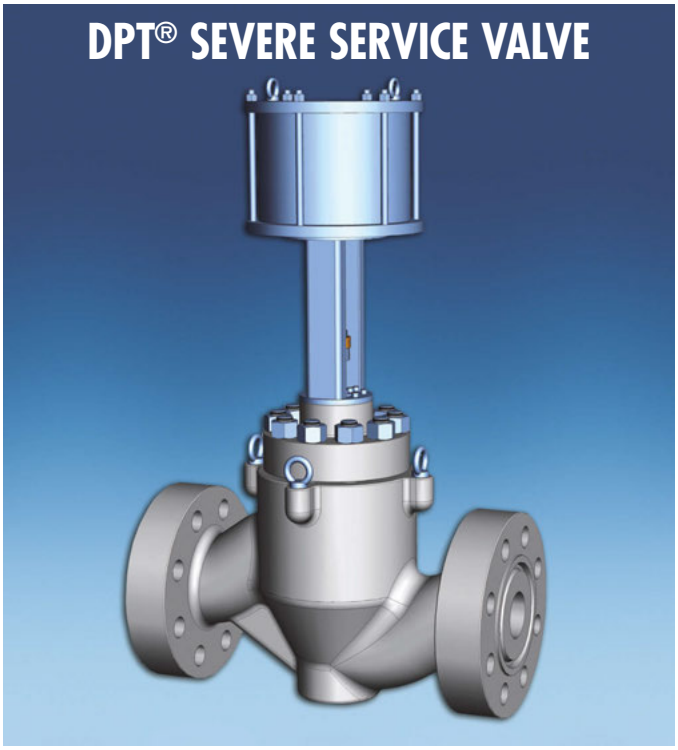
Control valves



Globe or angle valve with DTP (discrete tortuous path) multi-stage trim

Sizes: NPS 1–24 (DN 25–600 mm)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–11 (DN 46–279)
Classes: 2000–15000

MAIN FEATURES

- Specially designed to provide the highest performances over a complete range of applications up to the highest levels of differential pressure and temperature
- Sizing standards: ISA 75.01, ISA 75.11
- Design as per: API 6A, ASME B16.34, PED
- Test procedures: ISA 75.19, FCI 70-2
- Fire safe design as per API 6FA and API 607
- Temperature range: -214 to 1112°F (-101 to 600°C)
- Extremely high temperature combined with high pressure drop
- Low maintenance cost; long trim life and easy change trim
- Available in alloy steel for very high temperature, stainless, duplex, and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Linear or modified linear characteristic
- Under or over the seat fluid direction
- Plug available in balanced, unbalanced, or pressurized types
- Trim material with the highest mechanical performances: Inconel 718 or fully tungsten carbide
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Trim material with the highest mechanical performances in Inconel 718 or fully tungsten carbide
- Hardfacing for metal-seated valves is available in tungsten carbide and chromium carbide (for high temperature applications)
- Materials in accordance with NACE MR 01-75 for sour service

Choke valves

Traditional robust angle valves with a multi-stage cage and corresponding plug

Sizes: NPS 1–12 (DN 25–300)
Classes: 150–4500

API 6A
Sizes: NPS $1^{13}/_{16}$–9 (DN 46–228)
Classes: 2000–15000

MAIN FEATURES

- Specifically designed to provide the highest level of quality and reliability for pressure control applications where high energy dissipation is required (choke service). Suitable for oil and gas wellhead control
- Sizing standards: ISA 75.01, ISA 75.11
- Design as per: API 6A, ASME B16.34, PED
- Test procedures: ISA 75.19, FCI 70-2
- Fire safe design as per API 6FA and API 607
- Temperature range: -140 to 392°F (-60 to 200°C)
- Plug and trim material with excellent erosion resistance properties
- Low maintenance cost; trim has a long life and is easy to change
- Available carbon, stainless, duplex, and exotic alloy steels
- Suitable for all type of fluids and aggressive environments including corrosive, sour (H_2S), and abrasive service

OPTIONS

- Linear or modified linear characteristic
- Under or over the seat fluid direction
- Plug type: balanced, unbalanced, or pressurized
- Trim material with the highest mechanical performances in Inconel 718 or fully tungsten carbide
- Overlay on sealing surface available in alloy 625, alloy 825, and stainless steel
- Fully internal cladding available in alloy 625, alloy 825, and stainless steel
- Hardfacing for metal-seated valves available in tungsten carbide and Stellite® GR.6
- Materials in accordance with NACE MR 01-75 for sour service

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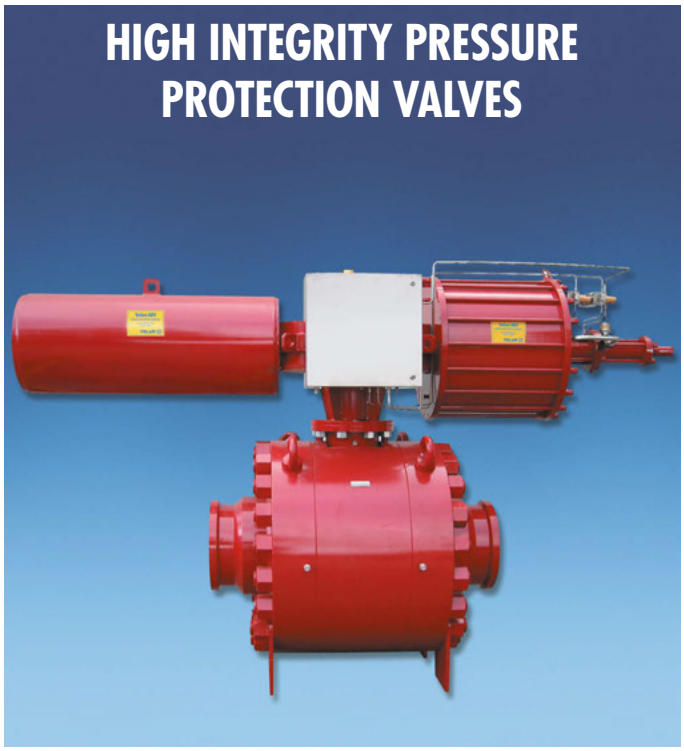
HIPPS: High-integrity, pressure-protection systems



The HIPPS is the final element of the high-integrity, pressure-protection system

API 6D
Sizes: NPS 2–36 (DN 50–900)
Classes: 900–2500

API 6A
Sizes: NPS 1 13/16–11 (DN 46–279)
Classes: 10000–15000

MAIN FEATURES

This system is an independent system that is able to prevent overpressurization of the downstream pipe automatically, without operator intervention.

It consists of:

- **Pressure transmitters** (generally in 2oo3 logic) that sense the high-level pressure and transmit the signal to the logic solver
- **Logic solver** (with degrees of redundancy as per customer-specific request) that, once integrated in a cabinet with a PC interface, is able to sense the signal coming from the pressure transmitters and then give the signal to the solenoid valve(s) of the HIPPS valve(s)
- **HIPPS valve(s)** that can be in 1oo1 or 1oo2 logic (commonly), are composed of a valve plus an actuator plus a control panel with solenoid valve(s); the solenoid valve(s) are operated by the logic solver, and are thus able to control the valve position (open or closed)

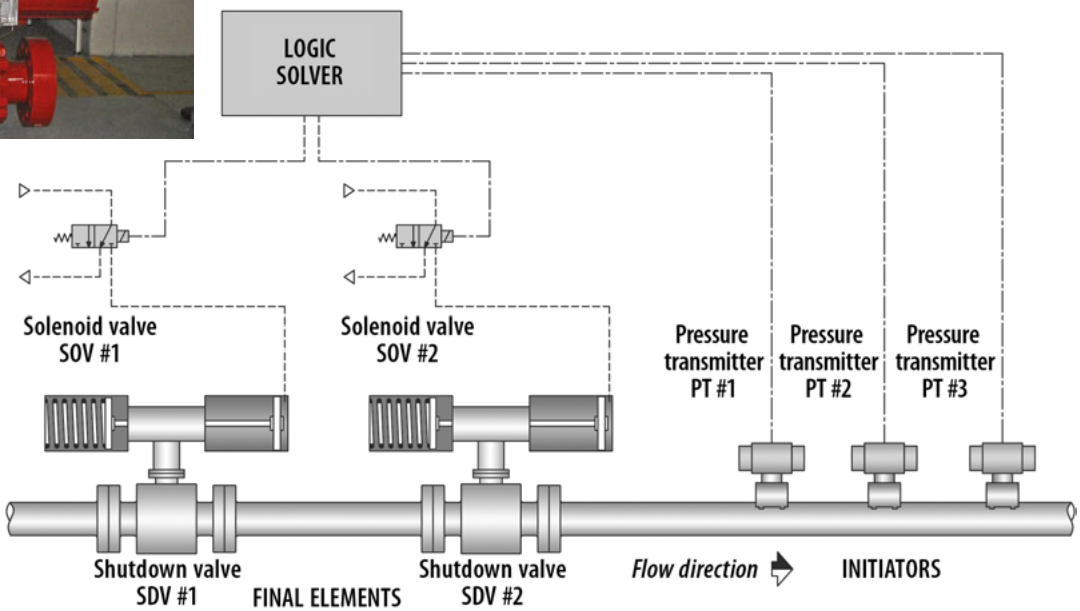
The HIPPS valve has a functionality similar to an ESDV (emergency shutdown valve), with a fail close emergency action, but it is designed to guarantee a higher safety level.

In particular, when the valve is closed, it must be guaranteed that all the downstream line pressure is below the upper safe limit, while the upstream line may be in a much higher pressure condition. For this reason, the HIPPS valve is generally designed for a high-pressure classes and it is SIL certified.

Furthermore, it is generally provided with electromechanical or electronic components used to perform the partial stroke functionality and consequently verify if the valve is correctly operating during the first degrees of its closing action, without having to completely close the production line (by closing the valve completely).

Upon request, we can also perform a seat integrity test without closing the valve.

For more specific information on our HIPPS system valve contact the company or visit our website at www.velanabv.com



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Introduction to subsea valving and flow control

Velan ABV manufactures completely integrated subsea valve units, consisting of a subsea valve, actuator, and ROV receptacle tool. With a very strong quality assurance program and engineering department, Velan ABV is able to design and manufacture the most specific and customized actuated valves according to the project requirements.

Subsea valves and actuators are critical components to any offshore installation. Any subsea intervention is costly, time consuming, and extremely difficult, and any failure would result in loss of profit for the operators and end users.

Types of subsea applications

- Pipeline subsea valves
- Subsea manifolds
- Jacket flooding valves
- SSIV (subsea isolation valves)
- PLEM ESDV and on/off valves
- Line tees for future tie-ins
- Semi-submersible buoy and turret

Type of valves used in subsea environments

Ball valves
Generally piggable, these valves are normally used in subsea pipelines, and their seat design can include metal-to-metal tungsten carbide overlay. They also feature corrosion-resistant alloys on the valve's dynamic sealing parts and ring joint grooves as well as redundant sealing, for increased reliability of the valve.

Through conduit slab and double expanding gate valves
These valves are normally used in subsea manifolds or pipelines when there are fluid mixes of liquid, gas, and sand. The valve design is suitable for a high percentage of sand or solid particles inside the fluid and very high pressures (normally above 5000 psi). Thanks to their through conduit design, they are also fully piggable.

Their seat design can also include metal-to-metal tungsten carbide overlay. These double expanding gate valves are used when a DB&B is required for isolating the downstream cavity.

Types of operators

Shallow water (normally down to 75 meters)
- By diver
- By ROV receptacle tool
- Remotely operated vehicle by hydraulic actuators with or without ROV receptacle tool/handwheel override

Deepwater (normally to a depth of 3,500 meters)
- By ROV receptacle tool
- By hydraulic actuators with or without ROV receptacle tool override in case of hydraulic failure

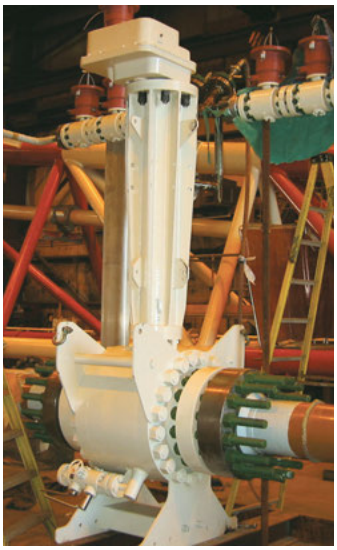
Subsea valves and actuator testing

Subsea valves and actuators are tested and inspected in accordance with ISO 10423API 6A (at PSL level).

Other types of testing (other than the standards for the above surface valves and actuators) include: gas testing according to API 6D/API 6A PSL 3G, performance verification testing according to API 6A PR 2, hyperbaric testing, bending calculation and testing, and seismic testing.

MAIN STANDARDS

Approvals	Description
API 17D/ISO 13628-4	Specification of subsea equipment and well head equipment
API 17A/ ISO 13628-1	Design and operation of subsea production systems
API 17H/ ISO 13628-8	Remotely operated vehicle (ROV) interfaces on subsea production systems)
API 6DSS/ISO 14723	Specification on subsea pipeline valve
ISO 10423	Drilling and production equipment
Norsok –U-001	Subsea production system
Norsok – L-001	Piping and valves
Norsok – M-001	Material selection



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Actuators and control systems

Velan ABV manufactures actuators as part of our valve control system packages, which are specifically designed to operate quarter-turn valves (i.e., ball, butterfly, and plug valves) suitable for on-off and modulating service. Velan ABV actuators have their own trademark, MOSS®.

Velan ABV's MOSS® actuators have a **scotch yoke** modular-type construction, wich means that the actuator's components can be positioned with different actuators configurations.

The yoke mechanism is available with two different design configurations (symmetric or canted) and in different standard sizes. The mechanism is fully contained in a housing designed for a minimum of 100,000 actuations and tested against full differential pressure.

According to specific needs, a **hydraulic** or **pneumatic cylinder**, and if necessary, a **spring cartridge** for emergency operations (on spring-return actuators), can be connected to the left or to the right side of the housing.

The actuator is designed for heavy-duty service and for maximum reliability. The spring container is designed considering the maximum safety criteria to avoid any risk during assembly and during work.

Standard and compact actuators can be installed parallel or perpendicular with regards to the flow line, and in a vertical, horizontal, or oblique plane. The ambient temperature range will be from -4°F (-20°C) up to 185°F (85°C).

On request, all actuators can be provided with a suitable manual override, consisting of a handwheel or a hydraulic handpump for emergency or local operation. Velan ABV can also develop different types of actuators, (e.g., linear actuators) depending on specific customer needs.

Type P&H pneumatic and hydraulic actuator

Torque range	• 400 Nm up to 650,000 Nm	
Applications	• Automation of ball, butterfly, and plug valves • Automation of any quarter turn mechanism	
Types available	• Pneumatic • Direct gas • Hydraulic	• Double or single acting • Gas over oil
Compliance	• ASME VIII • ATEX	
Materials	• Carbon steel • Stainless steel cylinder and piston (optional) • Duplex stainless steel cylinder and piston (optional)	

For more specific details including available models, download our Velan ABV actuator brochure from our company website at www.velanabv.com

ACTUATORS

- **Series P:** Pneumatic spring return/double acting
- **Series H:** Hydraulic spring return/double acting
- **Series C:** Compact pneumatic spring return/double acting
- **Series GH:** Gas hydraulic–control systems
- **Series SMG:** Subsea mechanical gear operator with API 17D ROV.
- **Series SH:** Subsea hydraulic actuator

COMPLIANCE AND CERTIFICATIONS

- PED compliant
- ATEX certified

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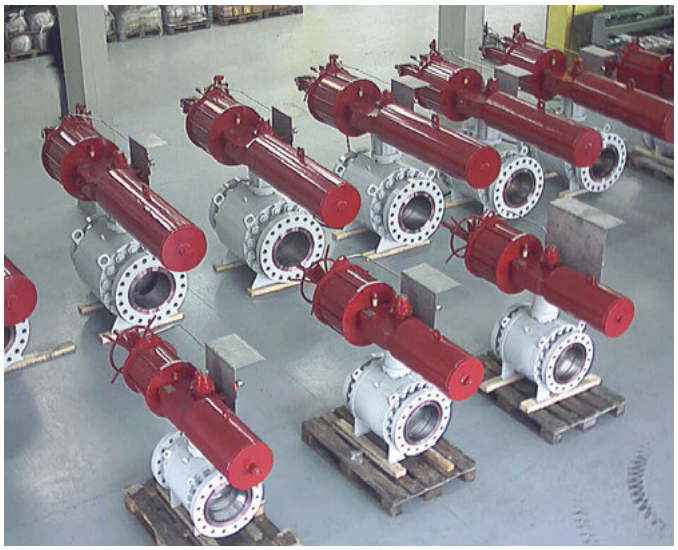


Actuation options

- Control system for ESDV service
- NACE for sour gas
- Handwheel or hydraulic pump
- Override partial stroking system
- Fire proof box/jacket
- Low ambient temperature (-85°F/-65°C)
- High temperature
- Linear
- Compact design upon request for special applications
- Gas over oil (with or without line break system)
- Subsea service (with ROV override upon request)

PNEUMATIC OPERATING PRESSURE

Minimum supply pressure:		3.0 barg	(43.5 PSIg)
Maximum supply pressure:	up to	12.0 barg	(174 PSIg)
Cylinder design pressure:		12.0 barg	(174 PSIg)

HYDRAULIC OPERATING PRESSURE

Minimum supply pressure:		100.0 barg	(1450 PSIg)
Maximum supply pressure:	up to	210.0 barg	(3045 PSIg)
Cylinder design pressure:		210.0 barg	(3045 PSIg)

On request up to 650 barg
Non-standard pressure ranges are available upon request.

OUTPUT TORQUE

Compact size:	up to	2500 Nm	(22100 lb in)
Standard size:	up to	650000 Nm	(5750000 lb in)

Higher values with special versions.

Standards

Yoke housings

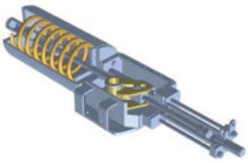
- Standard housing fabricated in carbon steel, weatherproof type
- Compact housing fabricated in ductile cast iron housing, weatherproof type
- Chromium plated guide bar for alignment and transversal thrust support purposes
- Bronze bushings and slidings to guarantee high efficiency and self lubricating
- Visual valve position indicator

Cylinders

- Compact sizes have ductile cast iron piston (die cast aluminum piston for weight limitation)
- Electroless plated nickel cylinder tube to ensure perfect dynamic seal, corrosion resistance, and low friction
- Floating type piston seal to guarantee minimum wear and minimum friction avoiding stick slip effect
- On request, cylinders materials according to NACE MR 0175 (for sour gas service)
- Suitable for low temperature and arctic temperature (down to -85°F/-65°C).
- Seals suitable for different kinds of supply fluids: instrument air, sweet gas, and sour gas
- Adjustable travel stop will be equipped to provide a minimum of 5° of rotation adjustment at the end of each actuator stroke

Spring cartridges

- Standard sizes have a totally welded spring container for maximum safety and long-life spring design
- Compact sizes: dual valve mounting interface, so the failure mode can be changed by simply upsetting the whole actuator



Example of a Series HS actuator with a spring cartridge.

Control components

Several control panels can be provided in accordance with customer specifications, assembling the following main components:

- Filters/filter regulators
- Solenoid/manual valves
- Pressure pilots (low and high)
- Differential pressure pilots
- Pressure regulators/flow regulators
- Line break systems
- Gas over oil systems
- Positioners
- Partial stroke tests

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With innovative solutions and services, Velan ABV designs, manufactures, and supports highly reliable actuated valves and control systems in the energy market:

- **Oil and gas**
- **Up stream, mid stream, and down stream**
- **Geothermal process**
- **Chemicals and petrochemicals**
- **Oil and gas transportation**

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