

Tomoseal[®]

Triple offset valve
2.0



Tomorrow's benchmark.

Bringing performance
to a new level.

VELAN

Bringing performance to a new level. Introducing Torqseal® 2.0

Velan's Torqseal® 2.0 triple offset valve is engineered to deliver repeatable full bi-directional zero leakage⁽¹⁾, lower torques, and superior fugitive emissions performance.

Robust, Reliable, Repeatable

Splined disc/shaft connection improves performance

Our unique center-weighted splined disc/shaft connection⁽²⁾ gives superior sealing that is designed to meet API 6D bi-directional leakage testing.

The new robust splined shaft, together with the new disc creates an even distribution of contact pressure between seat and seal ring, and increases the valve's life expectancy.

The splined connection is ideal for triple offset valve functionality allowing greater load capacity than a pin and key connection, and ensuring an effective torque transmission and reduced backlash.

Standard on Torqseal® 2.0

Internal fasteners with self-locking washers increase vibration resistance, maintaining fastener preload and gasket compression.

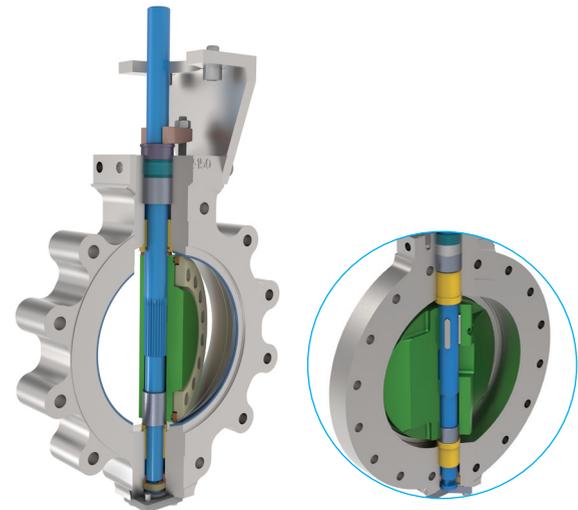
Top and bottom bearing protectors reducing ingress of particulates in the shaft, eliminating the likelihood of seizing.

Precision seating reduces wear and tear

The Torqseal® advanced design features a triple eccentricity and unique elliptical seat geometry that allows for friction free, non-rubbing operation of the valve during all of the valve travel. The Torqseal® 2.0 uses triple offset geometry to ensure that the seal ring contacts the body seat only at the final shut-off position. Torqseal® 2.0 has optimized fit-to-body offsets to offer lower operating torques with a more consistent torque profile.

NACE compliance is easy

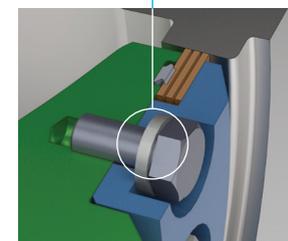
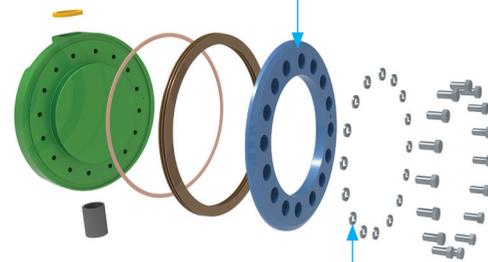
Our shaft materials are now standardized, making it easy to convert standard off-the-shelf valves to be fully NACE compliant.⁽³⁾



Up to 14" center-weighted splined connection

16" and above keyed connection

Increased thickness at fastener location reduces stress



Vibration resistant locking washers are standard on all TOV 2.0 valves

(1) Zero leakage implies that no visible leakage is present when tested with high pressure (water) and low pressure (air), according to the standards specified.

(2) Up to NPS 14 (DN 350) center-weighted splined design, NPS 16 (DN 400) and above keyed design connection.

(3) All the materials must conform to the metallurgical requirements of NACE MR0103 and NACE MR0175/ISO 15156. It is the equipment user's responsibility to ensure that all the materials are suitable for the intended NACE service.

1 New unique center-weighted splined disc/shaft connection⁽²⁾

- Unique centered splined connection ensures a symmetric and homogeneous distribution of the contact pressure between seat and seal resulting in repeatable, reliable sealing performance.
- Splines (covering a larger surface) are ideal for the triple offset valve drive-train allowing greater load capacity.
- The close-fitting construction of the splines between the disc and shaft minimizes hysteresis.
- Robust one-piece splined NACE compliant shaft is centered on two hardfaced shaft bearings.

3 Laminated duplex and graphite seal ring

- The self-adjusting, resilient seal flexes and energizes, assuming the shape of the seat.
- A replaceable seal ring that allows quick and easy repair.



5 Topworks bracket

- Bolts placed on the outside of the topworks bracket allows for easy removal of bracket when maintenance is required.
- Actuator mounting flange conforms to industry standards (ISO 5211 / MSS-SP-101) to facilitate actuation options.



7 Seat design

- Seat is hardfaced with Stellite™ Gr. 21 to maximize durability and wear resistance in normal and severe conditions.
- Raised conical seat prevents solids build-up from interfering with the seal.
- Metal-to-metal seating surface, inherently fire safe.
- Integral seat, no leak path.

Specifications

Available body types

Wall body thickness in accordance to API 600 (gate valve) wall thickness allowing for higher corrosion allowance.

No cavity body design eliminates solids build-up.

Double flanged/ short pattern

– Face-to-face to ISO 5752

Double flanged/ long pattern

– Face-to-face to B16.10 (gate)

Lug & wafer type

– Face-to-face to API 609 (Cat. B)

Construction materials⁽⁴⁾

Valve bodies and disc are available in WCB carbon steel, and CF8M stainless steel as standard

Sizes and ASME Classes⁽⁵⁾

– Sizes: NPS 3–96 (DN 80–2400)

– ASME Classes: 150–600

Temperature range

– -50° to 800°F (-46° to 427°C).

For applications above 800°F (427°C), contact Velan.

Certifications and approvals

ISO 9001: 2015, Quality management system

Fire tested

– API 607 (7th edition) and ISO 10497

– API 6FA (4th edition)

Fugitive emission testing

– Dual qualified API 641 and ISO-15848-1

Seat testing

– API 598 (Resilient seat criteria, zero leakage)

– API 6D capable (5-minute seat test only)

ASME N and NPT for Nuclear valves

Designed and tested to B16.34

Designed and tested to API 609

CRN (Canadian Registration number)

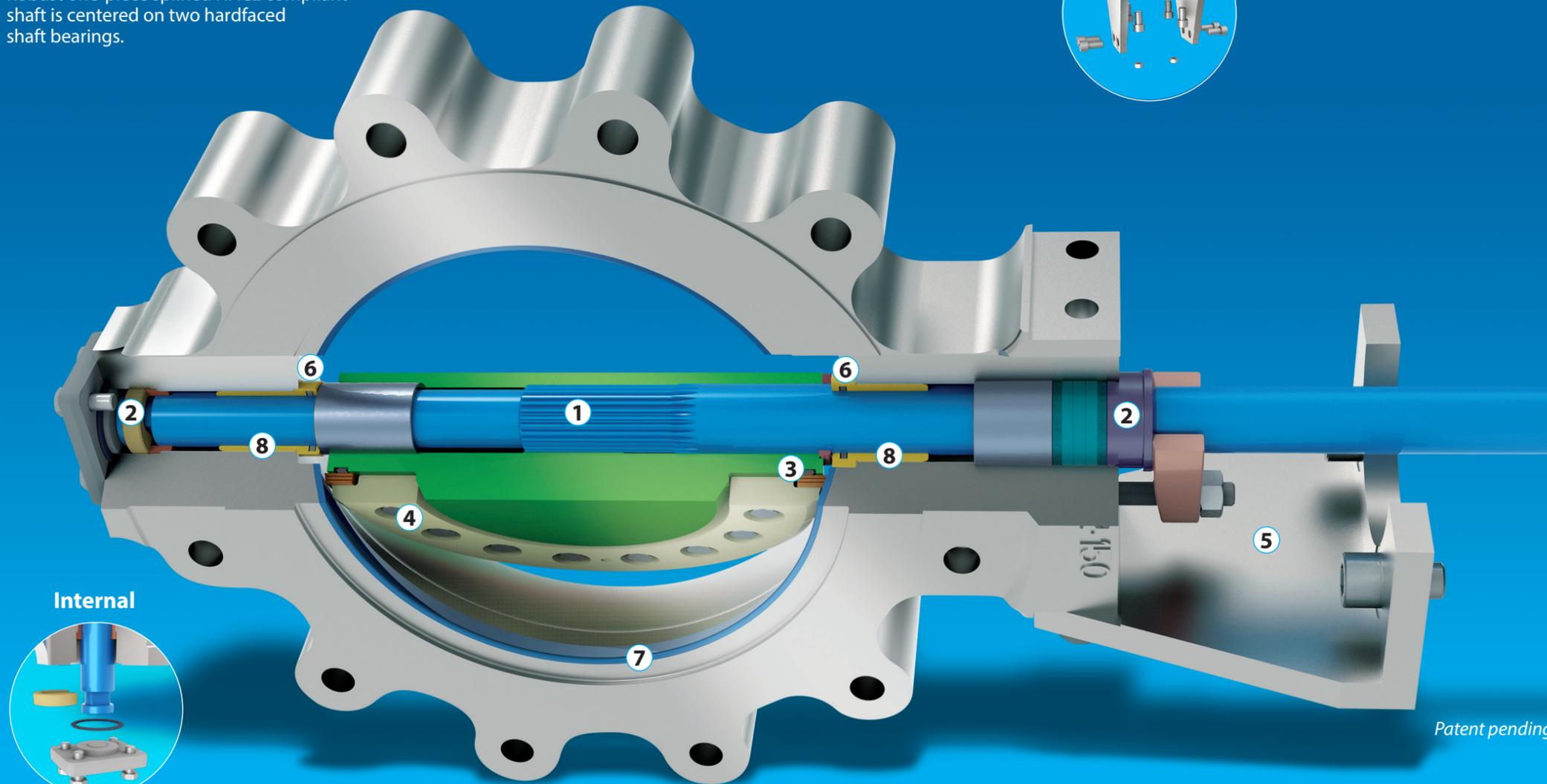
PED (European Pressure Equipment Directive) / CE marking

SIL 3 (per IEC 61508)

⁽⁴⁾ For other materials please consult our full product data sheet on velan.com.

⁽⁵⁾ For valve sizes, ASME classes, and designs not shown, please consult **Velan Engineering**.

Stellite™ is a trademark of Kennametal Inc.



Patent pending

Internal



2 Internal and external blowout protection

- Multiple blowout stem protection fully conforms to API-609 design and safety requirements.

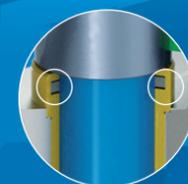
4 New disc design

- Full profile surrounding the shaft is more streamlined, resulting in better open flow and throttling performance.
- Increase of overall stiffness reduces edge deflection under pressure loads.



6 Shaft bearing protectors

- Offered as standard, reducing ingress of particulates in the shaft, eliminating the likelihood of seizing.



8 Hardfaced shaft bearings (pin-less design)

- The splined disc connection allows for an axial motion that is independent of the shaft.
- The bearings guide the disc allowing it to “float” and find its center in the seat, resulting in repeatable and reliable seat/seal contact.

Torqseal[®]

Triple offset valve 2.0

At Velan, we know what it takes to design and manufacture industry-leading valves that stand the test of time. Since 1950 we have offered products and services that not only meet but consistently exceed customer expectations. Velan's number one priority is quality. Our commitment to continuous improvement drives us to always create engineered design solutions that bring performance to new levels.

Becoming tomorrow's benchmark

We have leveraged our 20 years of triple offset valve experience in handling critical applications in the navy, nuclear, and process industries, and an extensive R&D program, to bring customer driven enhancements and optimizations to our Torqseal[®] 2.0 design. This versatile valve provides lower cost of ownership through improved service life, fugitive emissions control, less downtime, and lower maintenance.

A range of tough applications

Offering a bi-directional zero leakage closure with a metal-to-metal seat, the Torqseal[®] triple offset valve is the right solution when a tight seal is required. The Torqseal's all metal construction results in an inherently fire-safe design that can stand up to the most demanding services.

Industry-leading emission control

With global emissions challenges facing the industry, Torqseal[®] triple offset valves are designed with the highest attention to controlling fugitive emissions, meeting API 641/ ISO FE standards.

Lower life cycle costs

The Torqseal[®] triple offset valve's compact, quarter-turn design saves space and weight, minimizing installation and maintenance costs, while the lightweight design requires less pipe bracing. Lower torque for this valve translates into smaller actuators.

Reduced maintenance and downtime

The Torqseal[®] triple offset valve's cavity-free body and sealing mechanism prevents solids from building-up and interfering with the seal, resulting in low maintenance, consistent torques, and longer valve life. Friction-free closing and opening also extend valve life. A replaceable seal ring allows quick and easy repair, keeping downtime to a minimum.



VELAN



Velan's extensive product range includes gate, globe, check, ball, triple offset, and engineered severe service valves as well as steam traps — all of which are installed world-wide to handle diverse applications in the following industries:

Industries

- Oil & Gas
- Refineries
- Hydrocarbons storage & transportation
- Chemical & Petrochemical plants
- Power generation
- Offshore platforms
- Water treatment and distribution

Applications

- Steam (saturate & superheated)
- Hydrocarbons
- Hydrogen
- Oxygen
- Hot gases
- Sulphur
- Chlorinated solvents
- Chemical solvents



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To find your local Velan representative:

For more information about Velan, visit velan.com or call: 514 748 7743

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