



## Valbart™ TCSGV

API 6D monogrammed through conduit slab gate valve for liquid and gas applications



*Experience In Motion*

# Tight shut-off with slab gate durability

The Valbart TCSGV through conduit slab gate valve is the oil and gas industry's choice for liquid and gas applications requiring reliable, tight shut-off to prevent leakage and minimize losses from process contamination.

The TCSGV valve is ideal for pipeline applications requiring pigging capability. Its full-bore design features spring-energized seats and a floating slab gate to ensure both low- and high-pressure sealing capabilities. Robust design elements, such as slab gate guides and an engineered ribs profile, improve valve performance and increase product longevity.

## Key benefits

- Tight shut-off performance with dependable bi-directional sealing on upstream and downstream sides — even at low pressures — ensured by floating slab and energized seat ring
- Increased working life of sealing components enabled by low-friction coatings and slab gate guiding mechanism, which reduce wear
- High strength-to-weight ratio due to optimized structural design with engineered ribs profile that minimizes deformation

## Typical applications

- Mainline block valves
- Tank farm and station valves
- Launcher/receiver trap valves
- Emergency shutdown valves





## Engineered to exceed industry standards

Whether tank farm or terminal, liquid or gas, you demand reliable shut-off performance and durability out of your pipeline valves. The Valbart TCSGV gate valve is designed to dependably tackle the toughest midstream applications.

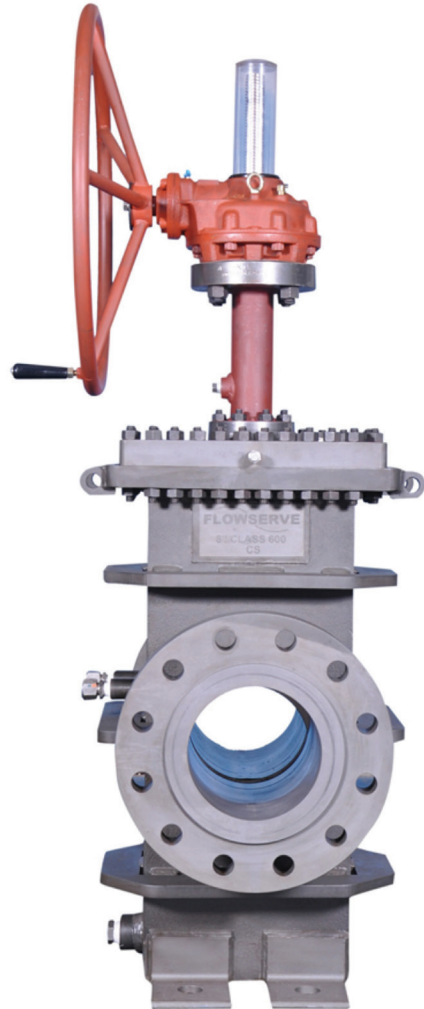
- Engineered pipeline design — Functionally qualified and monogrammed per API 6D to meet the most stringent pipeline standards
- Ensured fire safety — Tested and certified to API 607 and API 6FA fire-safe standards to provide pipeline protection in the event of fire
- Improved seat leakage resistance — Seat tightness conforms to API 6D and ISO 5208 standards
- Minimized fugitive emissions — Proven stem seal design meets ISO 15848 – 2 Class B, to satisfy the most demanding fugitive emissions specifications
- Higher corrosion resistance — Materials and fabrication welds are selected and qualified to hardness and NDE requirements of NACE MR0175

## Cost-effective application versatility

The Valbart TCSGV gate valve design meets functional and isolation requirements commonly specified in the pipeline industry, including:

- Block and bleed
- Double isolation bleed (DIB - 1)
- Double block and bleed
- Cavity relief

The valve is well-suited for a wide variety of liquids and gas pipeline service applications, providing industry-leading value through an engineered design that is cost-effective and requires low maintenance.



## Flowserve — solving the world's toughest fluid and control challenges

Flowserve is one of the world's leading providers of fluid motion and control products and services. Globally, we produce engineered and industrial pumps, valves, seals, systems and automation equipment, and provide a range of related flow management services. Our solutions move even the most volatile and corrosive fluids safely and securely through some of the most extreme temperatures, terrain and challenging operating environments on the planet. Flowserve products and services are specified for use in a vast range of industries, including oil and gas, chemical, power generation and various general industries.

# Key product features

## Slab gate guiding system enhances reliability

A two-bar guiding system keeps the slab in position within the valve body to ensure precise opening and closing operation in both vertical and horizontal mounting orientations. The guides are coated with low friction materials to minimize operating friction and reduce wear between them and the slab gate. Unlike traditional horizontally mounted, welded gate valve designs, the TCSGV gate valve provides improved and longer-lasting sealing performance. The unique slab gate guiding system eliminates damage to the seats caused by the weight of the slab.

## Engineered ribs profile improves performance

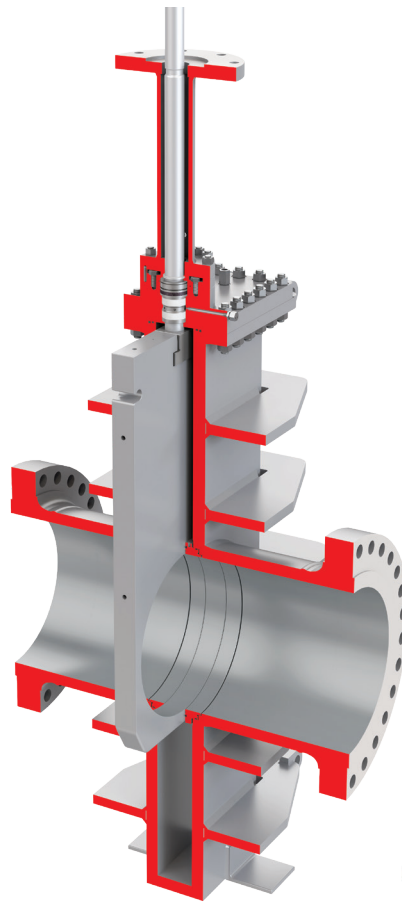
An engineered ribs profile enhances the robustness of the valve body in critical areas. Finite element analysis was used to optimize the strength-to-weight ratio, reinforce stress points, and minimize body and seat housing deflection. The resulting design improves sealing performance up to the rated valve pressure and increases product longevity.

## Easy in-line maintenance maximizes availability

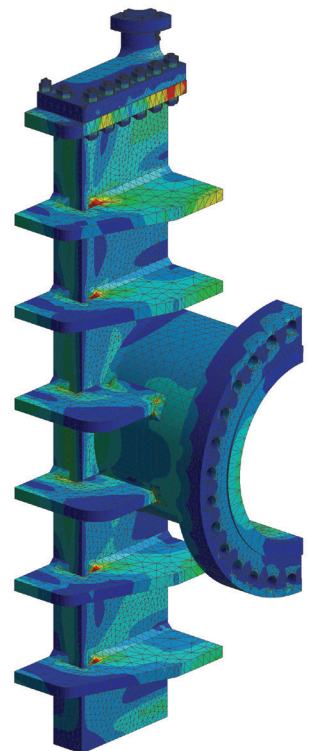
Simplified maintenance and repair are enabled by a top-entry design that allows for easy access to valve components while the valve is still in-line. Equipment downtime is dramatically reduced, as trim and internal components can be replaced with ease in a relatively short period of time.

## Bore sealing by stem position eliminates wedging effect

Sealing is achieved through a simple operation of the slab sliding to close the valve. This eliminates the wedging effect commonly seen in other valve designs that cause the interior components to expand from temperature and pressure, making it difficult to un-wedge the obturator.



Slab gate

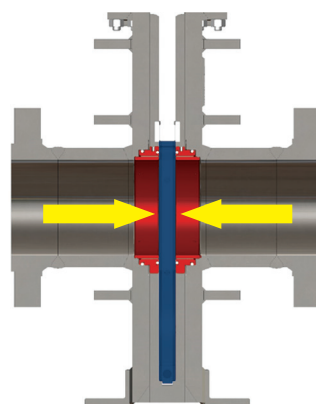


Engineered ribs profile

## Bi-directional, bubble-tight sealing increases system efficiency

Bi-directional, bubble-tight sealing is guaranteed by spring-energized seats which are compressed against the slab to provide tight shut-off at low and maximum (rating) pressure. The upstream and downstream seats provide two sealing barriers in each direction. The floating trim design energizes both seats against the slab.

The standard sealing mechanisms are primary metal-to-metal seat and secondary soft seat for a combination of reliable metal sealing and efficient soft sealing in severe service applications.



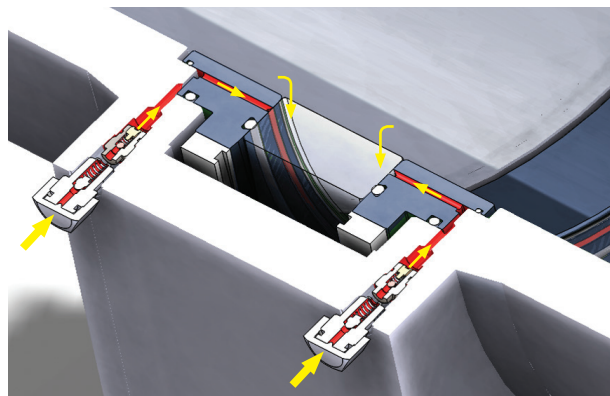
Bi-directional sealing

## Minimized damage to soft inserts

The collection of process fluid debris in the soft sealing area is eliminated by the metal seat. The self-cleaning seat improves uptime and reliability by acting as a scraper to remove any debris and dust that have accumulated on the slab.

## Seat and stem sealant injector simplifies maintenance

The Valbart TCSGV gate valve incorporates a seat and stem sealant injector design. These ports facilitate the addition of sealant to restore the sealing capability of the valve.



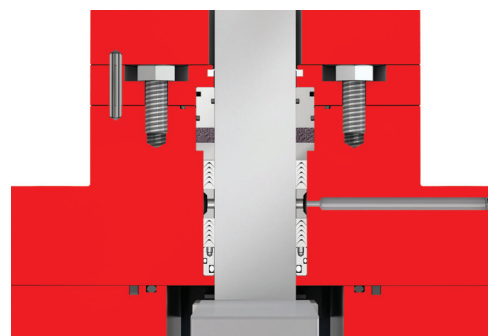
Sealant injection path for emergency seat sealing

## Chevron-style stem seal reduces emissions

PTFE chevron-style stem seal packing provides a highly effective stem seal, with low operating force and long life. An additional graphite ring in the seal arrangement provides fire-safe protection for the stem seal. The double set of packing gives assurance in limiting potential fugitive emissions from the valve.

## Blowout-proof stem design ensures safety

The TCSGV gate valve's stem design — retained in the stem cover per API 6D requirements — improves personnel and plant safety.



Chevron-style stem seal

# Design options

## Stem extensions for buried service

Meets buried service requirements with optional extensions and butt-weld end connections. Stem extensions provide grade-level operator access, while extensions to sealant and drain lines permit emergency sealant injection.

## Variety of end connections

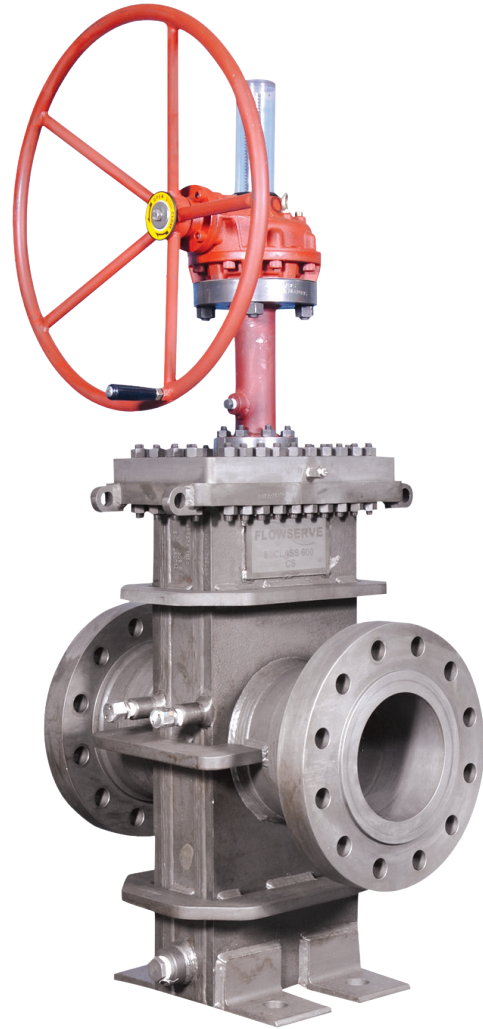
End connections can be provided to meet multiple specification requirements, including: standard flanged ends, and optional ring joint and butt-weld connections. Pup connections of varying lengths are also available.

## Trim materials

Carbon steel trim material is offered as standard to meet most operating conditions. Stainless steel trim materials are also available for sour services requiring NACE compliance as well as a range of other services such as brine, low-temperature, NGLs, and other liquids and gases.

## Actuation configurations

With multi-turn (standard), linear and direct hand-wheel options for smaller sizes, valves can be supplied as per ISO 5210 or MSS SP-102 standards, with the following configurations: electric, pneumatic, hydraulic and gas over oil.



## Industry-leading automation

Limitorque® MX electric actuators, V Series gearboxes and controls from Flowserve provide reliable automation of both the TCSGV and CEGV valves. Limitorque has a long history of providing high-performance, long-lasting actuators for a variety of industries. Pairing Limitorque automation with the TCSGV and CEGV valves results in an automated valve package with single-source engineering, supply and service.



# Specifications

<b>Size and pressure ratings<sup>1</sup></b>	NPS 4 to 36; Class 150
	NPS 4 to 36; Class 300
	NPS 4 to 36; Class 600
	NPS 4 to 20; Class 900
	NPS 4 to 12; Class 1500
<b>Flow direction</b>	Bi-directional
<b>End connection</b>	Flanged RF/RJ, butt weld, hub end
<b>Face-to-face dimension<sup>2</sup></b>	As per API 6D and ASME B16.10
<b>Trim area</b>	Full bore (piggable) and reduced bore to API 6D
<b>Design</b>	API 6D, ASME VIII
<b>Stem seal<sup>3</sup></b>	PTFE chevron packing with graphite ring
<b>Leakage rates</b>	API 6D, ISO 5208 (Rate A soft seat; Rate D metal seat)
<b>Operating temperature range<sup>4</sup></b>	-29°C to 190°C (-20.2°F to 374°F)
<b>Design temperature range</b>	-46°C to 210°C (-50.8°F to 410°F)
<b>Fire-safe</b>	API 607, API 6FA
<b>Fugitive emissions</b>	ISO 15848 — 2 Class B

- (1) Other sizes available upon request
- (2) Special face-to-face dimensions available upon request
- (3) Full graphite packing or o-rings available as optional stem seal
- (4) -46°C to 210°C (-50.8°F to 410°F) materials available

## Unparalleled service: day or night, worldwide

Flowserve services precision quality pumps, valves, seals and automation equipment for a diverse range of industries worldwide. Our Quick Response Centers (QRC) are equipped with thousands of parts, including OEM and custom-built products. Each has the manpower and equipment to expedite time-sensitive repairs of any size.

Flowserve service technicians can restore all types of automated, control, manual-operated or pressure relief valves to original quality. Should any valve prove unrepairable, we can usually replace it with a new valve within the same time frame.



### Service when and where you need it most

Flowserve QRCs are strategically located around the world to ensure rapid response to your time-critical repair needs. They serve as a local, single point of contact for the full inventory of Flowserve products and services, including the machinery to manufacture custom-built units. We offer better than 95% on-time performance for all repairs and can turn around new and custom-built units within 72 hours.

### Time-critical repairs

Flowserve offers 24-hour emergency repair, free pickup and delivery within QRC service areas, mobile and on-site repair. When a service technician is needed, we can have one on-site within 24 hours anywhere in North America, and 48 hours outside of North America.



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