

Torus insert safety valve

Enable safe production enhancement—without a rig

The **Torus™ insert safety valve** delivers a new level of efficiency and flexibility in through-tubing completion operations by enabling single-trip, rigless deployment of production enhancement equipment with an API 14A-tested safety valve. The Torus valve—which enables passage of through-tubing coiled tubing, capillary lines, or cables—provides fail-safe protection while allowing faster, more economical operations to extend the productive life of existing wells.

Although installing electrical submersible pumping (ESP) systems, gas lift systems, velocity strings, and chemical injection systems are common approaches to boosting production, maintaining a reliable safety barrier during the installation and the subsequent production phase is complex and cost prohibitive. This is because traditional safety valves with flapper-style closure mechanisms require an unobstructed inside diameter (ID) for operation, which doesn't allow for the passage of insert strings. Consequently, a rig has to be mobilized to install these valves below the strings, driving up costs and HSE risks, and often, delaying operations due to rig availability and mobilization logistics.

By using a patented sliding sleeve design to control flow instead of a flapper mechanism, the Torus valve maintains functionality—during installation and production—while providing a permanent conduit through its center. The Torus valve is also tested to API 14A to ensure reliable sealing and full compliance with regulatory and safety requirements. This allows customers to carry out rigless insert string installations in wells that require a safety valve, reducing OPEX by an average of 50% while also lowering HSE risks. Wells that are underperforming or shut in can quickly be brought back online without rig-related logistics, costs, or delays.

The Torus valve's bottom sub is modular and can be easily changed out to accommodate different applications ranging from chemical injection to permanent monitoring. The valve can also be deployed in three different configurations including through-conduit, split-conduit, and capillary-controlled. When run on a capillary line, the Torus valve can be controlled as the line simultaneously injects chemical treatments into the wellbore below, making it an ideal solution for wells with minimal facilities. A small number of pressure seals in the valve minimizes leak paths for improved reliability.

Applications

- Equipment installations where a qualified safety barrier is legally required or preferred
- Insert ESP, PCP, and gas lift completions and recompletions
- Temporary or permanent installation of monitoring gauges/fiber-optic cables
- Foam/chemical injection
- Velocity strings

Benefits

- Provides a permanent conduit through the center of the valve
- Enables rigless, single-trip deployment of production enhancement equipment in wells requiring a safety valve
- Eliminates rig-related delays, logistics, and HSE risks
- Reduces OPEX by 50%
- Simplifies deployment

The Torus valve can also be combined with the Baker Hughes **TransCoil™ rigless-deployed ESP system** to provide a completely rigless solution for ESP installations where a safety valve is required.

Contact your local Baker Hughes representative today to learn more about how the Torus insert safety valve can reduce OPEX and risks in your next production enhancement campaign.

Specifications					
Sizes	Working Pressure	Max. Valve OD	Min. Valve ID	Temp. Rating	API 14A Rating
2 7/8 in.	3,000 psi	2.302 in.	0.876 in.	300°F (148.9°C)	V4-1
3 1/2 in.	5,000 psi	2.803 in.	1.296 in.		V3
4 1/2 in.	5,000 psi	3.739 in.	1.848 in.		V3
5 1/2 in.	6,500 psi	4.255 in.	2.200 in.		V3
7 in.	5,000 psi	5.760 in.	3.335 in.		V3

Options

Body metallurgy	Customer specified
	ESPs
	Fiber-optic and electrical monitoring systems
	PCPs
	Capillary injection systems
Compatible through-tubing technology	Coiled-tubing inverse gas lift systems
	Coiled-tubing velocity string
	Self-set lock
	Dual-check injection valves
Optional accessories	Through-conduit packing sub
	Capillary and coiled-tubing connectors
	Gas lift valves
	Sealbore spacer
	Release sub stinger



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