

DepthStar® Tubing-Retrievable Safety Valve

**HELPS TO ELIMINATE SETTING DEPTH CONSTRAINTS,
INCREASE RELIABILITY, AND REDUCE CAPEX**

OVERVIEW

The DepthStar® tubing-retrievable safety valve (TRSV) is a revolutionary concept in the realm of surface-controlled subsurface safety valves. Unlike other TRSVs, the DepthStar valve functions completely independent of well pressure; therefore, it is able to operate at consistently low hydraulic pressures, making it an ideal solution for deepwater, ultra-deepwater, high-pressure/high-temperature (HP/HT), and gas storage applications.

Previously, solutions to wellbore isolation of the piston required additional seals and/or gas-charged chambers where their reliability is heavily dependent on elastomeric seals and the permanent, long-term containment of a dome charge. The DepthStar valve, through the use of a revolutionary magnetic coupler, allows for positioning the hydraulic actuator completely out of the tubing wellbore.

By repositioning the hydraulic actuator outside the tubing wellbore, the DepthStar valve became the world's first 100% metal-to-metal safety valve that contains no moving seals within the tubing wellbore. This reduction in seals, combined with an intrinsically simple design, makes the DepthStar valve inherently reliable.

FEATURES

- » No moving seals exposed to the tubing wellbore
- » 100% metal-to-metal sealing within the tubing wellbore
- » 100% isolation of hydraulic actuator piston from wellbore
- » Less than 5,000-psi maximum valve opening capability, regardless of setting depth or pressure
- » Minimized number of body connections
- » Proven metal-to-metal, non-elastomer hydraulic actuator
- » Isolated flow tube

BENEFITS

- » No possibility of tubing to control line leakage
- » Low-hydraulic-operating pressure
- » Unconstrained valve setting depth
- » Optimum reliability and durability
- » Superior well containment and safety
- » Increased valve life



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TESTING AND APPLICATION

Using a unique magnetic coupler, the actuation piston and hydraulic operating system connected to the DepthStar® tubing-retrievable safety valve (TRSV) is isolated from the tubing wellbore. The outer and inner magnetic sleeves are separated by a well pressure-containing housing, which creates a chamber for the actuating piston that is absolutely isolated from the wellbore. The magnetic coupler makes it possible to completely remove all moving seals normally found in a subsurface safety valve (SSSV) from the wellbore environment.

The DepthStar valve was subjected to tests specifically related to the magnetic coupler to determine whether there would be any effect on through-tubing operations. For example, electric coils, perforator detonators, collar locators, thermal multi-decay logging tools, memory gauges, metal shavings, DPU® downhole power unit, RMT Elite™ reservoir monitor tool, firing heads, hostile gamma neutron tools, tubing-encapsulated conductor (TEC) line, and fiber-optic cables were run through the DepthStar valve. All tools performed normally with no affect from the magnetic coupler.

The unique DepthStar valve design provides the flexibility to place the SSSV at a depth based on the completion requirements and objectives — not on the safety valve limitations.

DepthStar® Tubing-Retrievable Safety Valve Specifications

Tubing Size in. (mm)	Maximum OD in. (mm)	Internal Packing Bore in. (mm)	Pressure Rating psi (MPa)
4 1/2 (114.3)	7.87 (199.89)	3.813 (96.85)	7,500 (51.71) - 10,000 (68.95)
	7.87 (199.89)	3.562 (90.47)	15,000 (103.42)
5 1/2 (139.7)	8.62 (218.95)	4.562 (115.87)	7,500 (51.71) - 12,500 (86.18)

These ratings are guidelines only. For more information, contact your local Halliburton representative.

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