Horizontal Tree Isolation Plugs

Compared to conventional trees, horizontal spool trees save time and money during workovers and completions. This technology has proven itself in the North Sea, Gulf of Mexico, Australia and Africa.

Plug Running Tool

Plug Pulling Tool

One of the components critical to the effectiveness of trees manufactured by companies such as OneSubsea, Aker Solutions, GE Oil & Gas, Dril-Quip and FMC is the Elmar Horizontal Spool Tree Isolation Plug. This patented, high performance product is unsurpassed for reliable pressure control, even in the harshest environments.

The Elmar 'LSB' (Longitudinal Seal Bore) Lock Mandrel Upper Isolation Plug is a high pressure, high temperature elastomeric sealing unit with a no-go lock system that positively aligns the plug within its corresponding nipple profile. It is designed to hold pressure from below by key/nipple engagement and to hold pressure from above by no-go/nipple arrangement.

The Elmar LSB Plug is typically installed above a CSB (Conical Seal Bore) Metal Sealing Lock Mandrel Lower Isolation Plug, although a CSB Plug may also be used in the upper position. Our CSB Lock Mandrel Isolation Plug is designed with a combination of primary metal seal and a secondary Polymeric/Elastomeric seal system, plus an erosion target that protects the metal seal from sand bombardment. Even after prolonged use, the metal-to-metal seal retains its integrity offering 100% seal energization over its lifetime.

"Nothing performs better under pressure than the Elmar plug, and it certainly can take the heat!"

The systems sophisticated design is compact enough for use in a short tree, is simple to operate and maintain, yet is extremely robust and reliable. Such a degree of reliability is the product of space age materials that provide a combination of metal-to-metal and elastomeric seals for H_2S and CO_2 service conditions and Elmar's stringent ISO 9001 quality assurance system. Each Plug is rigourously PR2 tested for design approval under API6A and 17D.

Operating the Elmar plug is very simple; it is set with an Elmar Running Tool, that is attached to the plug and lowered into the nipple. Fluid pressure is applied above the plug helping energize the metal seals nose. When fully energized, the metal seal no-go's on the hanger nipple profile, ensures the correct alignment of the key and key profile.

While fluid pressure is maintained, downward 'jarring' action is applied driving the Expander Sleeve downward, pushing the keys outward into nipple profile and locking the plug into place. Upward 'jarring' releases the running tool, which also inhibits premature release of the plug, while a 'telltale' pin confirms the setting status. The taper-on keys and Expander Sleeve act as the primary hold-down mechanism. Unidirectional check 'bullets' act as the secondary hold-down mechanism and a measure against vibratory movement. Releasing the Plug requires deforming the check mechanism to allow the Expander Sleeve to move upwards to retract the keys.

Typical Technical Specifications

In-service Pressure (differential) rating:	10,000psi (from above/below)
Temperature rating:	-20°F to +300°F
Material Class:	FF/HH
PSL Level:	3/4
Product Verification Testing (type):	Full PR2 Tested per API 6A/17D
Product Testing (each plug):	Elmar FAT & SI289/913

Elmar design, manufacture and certify Pressure Control Products to meet and exceed the following established industry standards:

- API 6A
- API 17D
- NACE MR0175
- NPD Regulations
- Statutory Instrument 1996 No. 913
- Statutory Instrument 1998 No. 2306
- Statutory Instrument 1998 No. 2307

Plug Systems Available

- 2", 3", 4", 5" and 7" Plug Systems

Products are fully traceable and interchangeable, inspected 100% to assure a product of the highest quality exceeds our customer expectations in accordance with Elmar established QMS accredited to BS EN ISO 9001:2008