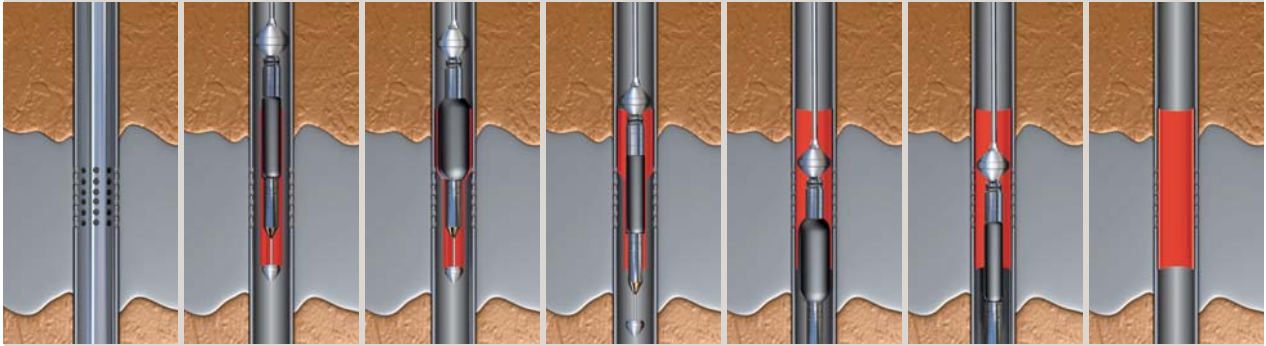


EXPANDABLE STEEL PATCH



Applications

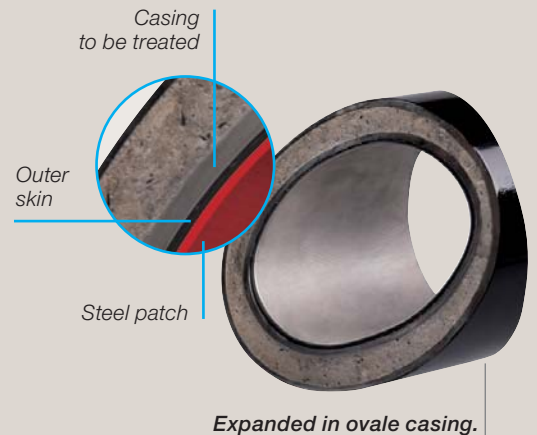
The Saltel Expandable Steel Patch is a permanent solution used to repair a zone of damaged tubing or casing, to shut-off unwanted perforations, to seal a leaking sliding sleeve, or other remedial operations.



Operating Principles

Made from high quality steel or stainless steel with an elastomer outer skin with a profiled sealing system, the Expandable Steel Patch is run on tubing, drill pipe, or coil tubing.

At depth the Patch is expanded using a high pressure inflatable packer, and pushed against the casing to activate the outer seals. The setting tools are extracted to leave a pressure resistant inner lining inside the well.



Running Procedures

The Down hole expansion tool is positioned inside the Expandable Steel Patch. The inflatable packer section is then inflated enough to grip the inside of the Patch (not enough to start expansion).

The assembly is Run In Hole to the setting zone.

The packer is inflated using pressure from surface to expand the top of the Patch, anchoring it in place

The packer is then deflated, run in 3 ft / 1 m, and the next section is expanded.

This is repeated as often as necessary until the full length is expanded, and BHA is pulled back to surface.

EXPANDABLE STEEL PATCH



Features and benefits

- A real time setting controller verifies the ID of the set Patch during the operation
- Any anomaly can be immediately detected and corrected
- Tubulars made from stainless steel or high quality carbon steel
- Outer skin in hydrogenated nitrile (HNBR) profiled to ensure a good seal
- The Patch will set effectively in any intermediate diameter within its range
- The high expansion ratio enables running the Patch with a large clearance, avoiding sticking problems while running in hole
- Seals effectively even with ovalisation up to 20% in casing or open hole
- A second patch can be run through a previous Patch and set below (except in heavy weight casing / thick Patch, see products specs)
- The Patch can be tested immediately after setting by running a Saltel-Industries high pressure packer through the sleeve, inflating below, and pressure testing.



**Simple
Adaptable
Reliable
Resistant**

The Expandable Steel Patch's can be used in a wide range of casing weights and sizes.



*Downhole Expansion Tool
and Packer after Setting.*

Standard models are available for 4 ½in, 5 ½in, and 7in casings, with a choice of a slim line model, to maximize ID after setting, or a thicker reinforced model for higher pressure ratings.

Each Patch will fit the full range of casing weights in a given size.

Running lengths are from 10 - 40 ft (3 - 12 meters), which will shorten by 3% to 6% during setting depending on the expansion ratio.

Patch's can also be customized and optimized for specific well conditions, please consult Saltel-Industries for a personalized study.

- Patch's for casing from 4 ½ up to 13 ¾in, or for open hole from 4in up to 12 ½in
- Thickness' from 0.08in to 0.5ins (2 mm up to 12,5 mm)
- Steel expansion ratios up to + 25%
- Downhole tools rated to 300°F / 150°C
- Expansion pressures up to 10,000 psi / 700 bar