

Crypto™ Toe Initiation Subs

Dissolvable toe ports with check valves

Technical Specifications

Crypto™, with its extremely simple design, has no moving parts, no shear pins, no atmospheric chambers, no burst discs, no sliding sleeves, no internal connections and is pressure testable up to 10 days from the cement job being bumped an unlimited number of times.

Multiple Crypto™ Toe Subs can be installed in the toe of the well so that the toe stage can mimic the Plug and Perf (PnP) cluster spacing and treatment schedule of the uphole stages resulting in no lost reserves, no lost production and a full-rate-treatable toe stage at a fraction of the cost of conventional toe sleeves.

Features and Benefits

- All ports within one Crypto™ Sub, even though they are redundant backups to one another, will all open after the first port is opened and the reservoir is accepting fluid.
- Multiple Crypto™ subs can be ran in the toe of the well resulting in stage one of the well having the same cluster spacing, the same pumping schedule and same pumping rates as the other well stages resulting in no lost reserves, and no lost production due to toe stage pumping inefficiencies.
- Unlimited pressure test cycles.
- Crypto™ toe subs remain a primary well barrier during pressure testing and up until they are pumped through during treatment or offline toe opening operations..
- 100% success rate for hydraulic toe openings and full treatment pump rate and schedule toe treatment.
- Full Drift ID means Crypto™ toe subs are plug-play with all cement wiper plugs and float equipment including large OD float collar latchdowns.
- An optional ball seat .125 inch below drift can be run for contingency pressure tests up to 15,000 psi.



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Technical Specifications

- Crypto™ Subs are installed by the drilling rig as part of the production casing or liner string and can be torqued through using casing tongs or casing running tools and top drives.
- The Crypto™ Subs, each weighing less than 25 lbs and having a box by pin design, can be installed on the rig floor, catwalk or the casing racks.
- Crypto™ Subs can be cemented through or installed as part of an open hole style completion design with no alterations to the completion or cementing jewelry.
- The Crypto™ Subs are immediately pressure testable by the cementing units after the cement plug bump and can also be pressure tested offline of drilling and completion operations up to two weeks from cement plug bump to casing body burst pressures.
- The Crypto™ Subs remain primary well barriers to 15,000 psi pressure ratings until they are opened by online or offline treatment pumping operations.

Tool Nominal Size	4.5, 5.0, 5.5, 6.0, 7.0 inch	114, 127, 139, 152, 177 mm
Casing Weight	All available	All available
Tool Connection	As requested	As requested
Burst Rating	As per casing body specs	As per casing body specs
Collapse Rating	As per casing body specs	As per casing body specs
Tensile Rating	As per casing body specs	As per casing body specs
Torsional Strength	As per casing body specs	As per casing body specs
Port Differential Rating (Burst, Collapse)	20,000 psi	137.9 MPa
Maximum Body OD	5.700 in, 6.100 in, 6.700 in	144.8 mm, 154.9 mm, 170.2 mm
Tool ID before Treatment	100% of API Drift	100% of API Drift
Tool ID after Treatment	100% of API Drift	100% of API Drift
Maximum Temperature	350° F	168 °C
Length (incl. pin cnx)	16 inch	0.4 m
Opening Pressure after 10-14 days	10 psi	69 kPa
Sub Port Flow Area Sizing	One to six 0.75 inch ports	One to six 19 mm ports
Sub Port Phasing	As requested	As requested
Number of Openable Subs per Stage	Unlimited	Unlimited
Max Number of Pressure Test Cycles	Unlimited	Unlimited
Max Recommended Pressure Test Pressure	15, 000 psi	103.4 MPa
Recommended Pressure Test Window	0 - 72 hours after bump	0 - 72 hours after bump
Option Ball Seat ID for Pressure Testing	0.125 inch below API Drift	3 mm under API Drift