

# Crypto™ Straddle System

Pressure-Testable Stimulation System for use with Straddle Packers

## Technical Specifications

Crypto™, with its revolutionarily innovative design, **has minimal moving parts**, no shear pins, no atmospheric chambers, no burst discs and can be pressure-testable up to 10 days from the production string cement job being bumped **allowing the well's pressure integrity to be proven before treatment operations.**

An unlimited number of Crypto™ Straddle Subs can be installed in the the well's production casing or liner string. Stimulation of the reservoir will be performed via coiled tubing or a work string and a cup-to-cup packer straddle BHA. When the cup-to-cup BHA is position over the Crypto Sub and pressure is applied the port will open and the stimulation at that zone can be pumped.

**Crypto™ Straddle Subs being only 16 inches long and having minimal moving parts will significantly reduce costs vs. perforating or burst disc straddle treatment completions.**

## Features and Benefits

- Minimal moving parts, no shear pins, no atmospheric chambers and no burst discs making the Crypto™ the most reliable and most cost effective straddle sub ever constructed.
- **All ports within one Crypto Sub, even though they are redundant backups to one another, will all open even after the first port is opened and the reservoir is accepting fluid.**
- An unlimited number of Crypto™ subs can be ran in the well and treatment operations can be placed in a single-point-of-entry or limited-entry fashion.
- Crypto™ subs remain a primary well barrier during pressure testing and up until they are pumped through during treatment operations.
- Full Drift ID means Crypto™ subs are plug-play with all cement wiper plugs and float equipment including large OD wiper plug latchdowns.
- HPHT compatible (320 F, 15,000 psi burst and collapse rating)
- **Unlimited pressure test cycles.**



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## Technical Specifications

### Operation

- 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 or the casing racks. If desired a Box by Box design can be ordered if desired.
- 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 10 days from cement plug bump to 15,000 psi.
- The Crypto™ Subs remain primary well barriers up to casing body collapse pressure ratings until they are opened by treatment pumping operations.
- To open a Crypto sub the straddle BHA is placed on depth and pressure is applied to the tubing string. Treatment operations and pumping schedules may commence through the tubing.
- The stages may be opened in any order.

Tool Nominal Size	4.500, 5.000, 5.500 inch	114.3, 127.0, 139.7 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)	15,000 psi	103.4 MPa
Maximum Body OD	5.50 in, 6.00 in, 6.50 in	139.5, 152.4, 165.1 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	320° F	162 °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	Limited by BHA Length	Limited by BHA Length
Max Number of Pressure Test Cycles	Unlimited	Unlimited
Time Sleeves are Pressure Testable	2 - 10 days	2 - 10 days
Max Recommended Pressure Test Pressure	12,000 psi	82.7 MPa
Recommended Pressure Test Window	48 - 72 hours after bump	48 - 72 hours after bump