

Samurai™

Intervention-less Plug-and-Perf Technology

Technical Specifications

This **industry-changing intervention-less technology** provides the efficiency of plug-and-perf zipper operations **without** the need for e-line, explosives, ballistics or millout interventions at a fraction of the cost of sliding sleeve technologies and conventional plug-and-perf.

Darts are displaced from surface and each dart will perforate the Samurai Sleeves in the d^oart's corresponding stage, starting at the toe of the well . Each dart can perforate up to 10 clusters per stage and a maximum of 100 stages can be perforated and isolated per wellbore. Stimulation stages are opened and treated sequentially starting from the deepest stages and moving to shallower stages as the stages are completed. After treatment operations are completed the darts partially dissolve leaving a slight restriction at each stage.

Features

- Extreme limited-entry (XLE) port sizing and hardening is available.
- Dissolvable dart and ball assemblies are all the same inner and outer diameter - no graduated seats are required.
- Casing sleeves are all API Drift ID - before and after treatment operations with no millout required.
- Wear resistant materials integrated with a proprietary erosion reducing geometry eliminates washouts, missed engagements and missed isolations.
- Engineered biasing force allows darts to perforate and latch at stimulation treatment pump rates - up to 60 bpm (10 m³/min).
- Darts can be displaced using proppant treatment train. No extra flushes required between activation darts and treatment fluids.
- Compatible with offshore and onshore well designs and most upper completion designs.
- HPHT compatible (325°F, 15,000 psi differential rating)
- Custom dissolvable materials available for any well temperatures and fluids.



Samurai™ Sub and Actuation Dart

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Call 1-844-4NOCOIL
 Email sales@8sigmaes.com

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Benefits

- Increase stage count up to 100 stages per wellbore and up to 10 entry points per stage.
- Increase stimulation density and Stimulated Rock Volume with more proppant and acid placed per linear length.
- **Substantial reduction in completion costs and reduction in pumping times.**
- Longer laterals and faster stimulation operations.
- Cemented or open-hole packer compatible.
- Samurai™ stimulation sleeves work with current well design including cement program, shoe track equipment, centralizers.
- Stimulation sleeves can be torqued through and made up with top drive and CRT or casing tongs.
- Reduced water requirements.
- Lower surface pressures and wellhead, stimulation-iron pressure ratings vs. ball drop completions.
- Lower stimulation horsepower requirements and surface pressures vs. ball drop completions.
- No coiled-tubing or wireline is required to open the stimulation ports or remove the actuation darts.

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
Maximum Body OD	5.250 in, 5.750 in, 6.250 in	133.3 mm, 146.01 mm, 158.75 mm
Min. Tool ID before stimulation	100% of API Drift	100% of API Drift
Min. Tool ID 10 days after stimulation	96% of API Drift	96% of API Drift
Maximum Temperature	325° F	163°C
Length (incl. pin cnx)	24 inch	0.61 m
Max Dart Differential Pressure	15,000 psi	103 MPa
Perforating Pressure	1500 psi	10.3 MPa
Port Flow Area Sizing	As requested	As requested