

Samurai™

Intervention-less Plug-and-Perf Technology

Technical Specifications

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

Darts are displaced from surface and each dart will perforate the Samurai Subs in the dart's corresponding stage, starting at the toe of the well. Each dart can perforate up to 12 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 well is stimulated. After treatment operations are completed the darts partially dissolve leaving a slight restriction at each isolation sub equal to 96% of API drift.

Features

- Custom perf port sizing from .375 inch to 1.00 inch with optional burst disc for opening confirmation is available.
- Partially dissolvable dart and ball assemblies are all the same inner and outer diameter - no graduated seats are required.
- Perf subs 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 30 bpm (5 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 most well temperatures and fluid composition.



Samurai™ Sub and Actuation Dart

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

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Benefits

- Increase PnP well length without the need for dissolvable frac plugs, wireline pumpdowns or extended reach interventions.
- **Substantial reduction in equipment needed at the wellsite.**
- **Significantly lower cost than sliding sleeve technologies.**
- Samurai™ stimulation subs work with current well design including cement program, shoe track equipment, centralizers.
- Samurai subs can be torqued through and made up with top drive and CRT or casing tongs.
- Reduced water requirements.
- Lower stimulation horsepower requirements and surface pressures vs. ball drop completions.

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
Perf Port Flow Area Sizing	0.375 - 1.00 inch	9.5 - 25.4 mm
Number of Perf Ports Per Sub	1 - 10	1 - 10
Number of Perf Subs per Stage	1 - 12	1 - 12