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The Plug & Perf methodology utilizes a Frac Plug which, is landed below the planned perfs and is typically meant to be removed after the wells perfs are completed. The material utilized can be; steel/cast, aluminium, composite or dissolvable. Silver fox has a variety depending on customer preference as well as well parameters. Typically to be considered a Frac Plug the ID of the Plug is purposefully left open and engineered to be as large as possible to accommodate flow back once the well is active. However, Frac Bridge Plugs are also common in Plug and perf operations, wherein the ID of the Plug is plugged off preventing flow from occurring until Plug is removed.
The SPARTAN CF Series Composite Frac Plugs provide a dependable and cost efficient method to temporarily isolate multiple zones during high pressure stimulation stage frac operations in both horizontal and vertical applications. The CF Series is manufactured entirely from unique high grade composite materials, which provides an industry leading internal diameter bore while eliminating the need for metallic materials to be used in the mandrel for burst/collapse reinforcement. The high tensile strength of the composite materials eliminates the need for metallic or phenolic pins to be utilized to reinforce the mandrel/shoe connection.

The SPARTAN CF Series is a Ball Drop Flow Thru Frac Plug, which is sealed by dropping and pressuring against a Composite or Dissolvable Frac Ball. Due to the composite material utilized, the plugs can be efficiently milled and removed from the wellbore. SPARTAN CF Composites can be set securely in up to P110 grade casing while providing consistent drill times of 10-20 minutes.

Features:
- Plug made from 100% high grade composite material
- Traditional gray cast iron slips heat treated to wicker depth only
- Upper composite slip optional
- High thread tensile strength
- Holes drilled entirely through slip segments, which allows segment to break into smaller pieces during millout
- Pump Down Wiper is slotted and easily threaded into the machined groove of the guide shoe
- Can be drilled using conventional or coiled tubing
- Industry leading internal diameter
- Available for 4-1/2” and 5-1/2” casing (other sizes pending)
- Rated up to 10K PSI and 300°F (350°F option available)

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Casing</th>
<th>Setting Range</th>
<th>Tool Dimensions</th>
<th>Pressure Rating</th>
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<td>5-1/2</td>
<td>(4.55)</td>
<td>(4.89)</td>
<td>(1.50)</td>
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“SPARTAN CB SERIES” BRIDGE PLUG
COMPOSITE PLUG

The SPARTAN CB Series Composite Bridge Plugs provide a dependable and cost efficient method to fully isolate multiple zones during high pressure stage frac operations. The CB Series is manufactured entirely from unique high grade composite materials, eliminating the need for metallic materials to be used in the mandrel for burst/collapse reinforcement. The high tensile strength of the composite material eliminates the need for metallic or phenolic pins to be utilized or reinforce the mandrel/shoe connection.

The SPARTAN CB Series is a Solid Bore Bridge Plug, which blocks the flow from both above and below the tool. Due to the composition of the composite material utilized, the plugs can be efficiently milled and removed from the wellbore. SPARTAN CB composites can be set securely in up to P110 grade casing while providing consistent drill times of 10-20 minutes.

Features:
- Plug made from 100% high grade composite material
- Traditional gray cast iron slips heat treated to wicker depth only
- Upper composite slip optional
- High thread tensile strength
- Holes drilled entirely through slip segments, which allows segment to break into smaller pieces during millout
- Pump Down Wiper is slotted and easily threaded into the machined groove of the guide shoe
- Can be drilled using conventional or coiled tubing
- Available for 4-1/2” and 5-1/2” casing (other sizes pending)
- Rated up to 10K PSI and 300°F (350°F option available)

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<table>
<thead>
<tr>
<th>Casing OD</th>
<th>Wt T &amp; C</th>
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<th>Tool Dimensions</th>
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<td>(5-1/2)</td>
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The SPARTAN Shorty Series Composite Frac Plugs provide a compact, durable, and cost effective method to temporarily isolate multiple zones during high pressure stimulation stage frac operations in both horizontal and vertical applications. The SPARTAN Shorty Series is manufactured from unique high grade composite materials with a field proven design that provides a shorter overall length while maintaining the integrity needed for high pressure perforation applications. Unique features include multiple anti-preset safeguards, a one-piece shoe / mandrel combination, and the ability to run an integrated pump down wiper in the plug assembly.

The SPARTAN Shorty Series Frac Plug is a Ball Drop Flow Thru plug, which is sealed by dropping and pressuring against a composite or dissolvable frac ball (Ball can be run in place inside of the Wireline Adapter Kit). Due to the compact overall length and the materials utilized, the plugs can be efficiently milled and removed from the wellbore. SPARTAN Shorty Frac Plugs can be set securely in up to P110 Grade casing and be consistently removed from the wellbore in 10-12 minutes.

**Features:**
- Plug made from 100% high grade composite material
- Rated up to 10K PSI and 300°F (350°F option available)
- Industry leading internal diameter, leaving less material to drill out.
- Traditional gray cast iron slips heat treated to wicker depth only
  - Composite upper slip optional
- Holes drilled entirely through slip segments, which allows segment to break into smaller pieces during millout
- Integrated Pump Down Wiper available
- Can be drilled using conventional or coiled tubing

**Setting Equipment:**
- Can be set using Baker 10 or 20 depending on plug size

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Casing OD (mm)</th>
<th>Wt T &amp; C (kg/m lbs/ft)</th>
<th>Setting Range Min ID (mm)</th>
<th>Max ID (mm)</th>
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<td>112.17 (4.41)</td>
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The SIGMA Series Dissolvable Frac Plug is the latest addition to the Silver Fox Plug & Perf Product Line.

SIGMA Series Plugs utilize a compact design and the latest in Dissolvable Alloy and Rubber technologies to allow the user to put the well on production following fracking operations without the need for mechanical intervention. SIGMA Series Plugs improve the time and overall costs associated with contemporary plug and perf removal and upon dissolution of the plugs, immediate access to full bore production is available. In addition, there is no need for the costs and risks associated with coil tubing intervention. Reliability without costly intervention.

A unique GALAXY Magnesium Alloy Frac Ball is utilized to seat and seal on the upper portion of the plug. The frac ball then dissolves with standard 3% or 5% KCL frac fluids at a minimum of 150 degrees Fahrenheit.

Features:
- Available for 5 ½” casing, 17-26# (other sizes pending)
- 10,000 PSI pressure differential rating
- 300 Degree Fahrenheit rating
- Can be set with traditional wireline setting tools
- Manufactured from materials that dissolve based on temperature and salinity (see Dissolution chart)
- Designed for efficient pumpdown rates

<table>
<thead>
<tr>
<th>Casing</th>
<th>Setting Range</th>
<th>Tool Dimensions</th>
<th>Pressure Rating</th>
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<td>OD</td>
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<td>ID</td>
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<tr>
<td>mm (in)</td>
<td>mm (in)</td>
<td>mm (in)</td>
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<td>139.7</td>
<td>115.52 (4.55)</td>
<td>124.21 (4.89)</td>
<td>35.05 (1.38)</td>
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(5-1/2) (17.0 - 26.0)
The TITAN SF Series Large Bore Frac Plug provides optimal operation efficiency by eliminating the need for coiled tubing intervention.

TITAN SF plugs feature a large internal diameter allowing the user to put the well on production following fracking operations without milling the plugs from the wellbore.

A unique GALAXY Magnesium Alloy Frac Ball is utilized to seat and seal on the upper portion of the plug. The frac ball then dissolves with standard 3% or 5% KCL frac fluids at a minimum of 150 degrees Fahrenheit.

Features:
- Available for 4-1/2” and 5-1/2” Casing
- Can be set with traditional wireline setting tools (Baker #10 / Baker #20)
- Rated for 10K PSI and 350 degrees Fahrenheit
- Patent Pending
- 5-1/2” size w/Standard 3.00” ID
- 4-1/2” size w/Standard 2.50” ID

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>OD</th>
<th>Casing</th>
<th>Wt T &amp; C</th>
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The **GALAXY** Magnesium Alloy Frac Ball is utilized to seat and seal during multi-stage stimulation and plug and perf applications with large bore plugs.

**GALAXY** Frac Balls dissolve with standard 3% or 5% KCI frac fluids at 150 degrees Fahrenheit

- Manufactured from high strength Magnesium Alloy
- Pressure Rated up to 10,000 PSI
- Temperature Rated up to 350 Degrees
- Offered in a multitude of different sizes
- Fully dissolves in standard 3% or 5% KCI Frac Fluids in well temperatures of 150 Degrees

**IMPACT TEST**

- 24 mph = approximately 30 barrels per minute in 4.5” casing or 45 barrels per minute in 5.5” casing
- 36 mph = approximately 50 barrels per minute in 4.5” casing or 70 barrels per minute in 5.5” casing