ZoneSelect® MASS Stimulation Sleeve

Enables multistage plug-and-perf stimulations, groups up to five sleeves in a single zone, and actuates with a single ball drop and expandable seats

Applications

- Limited-entry perforation (LEP) applications
- Multistage horizontal or vertical wells
- Openhole or cemented wells

Features and Benefits

- Multiple sleeves can be grouped—up to 5 sleeves in a single zone, with a maximum of 31 zones—to increase reservoir drainage length.
- Flow ports have a greater flow area than the tubing inside diameter (ID), which reduces erosion at the ports and eliminates port-window pressure loss in the cluster.
- Port diffusers prevent preferential flow during stimulation.
- An antirotation feature locks the inner sleeve in place, which ensures ball seats are efficiently milled.

Tool Description

The Weatherford ZoneSelect Multi-Array Stimulation Sleeve (MASS) is part of the ZoneSelect fracture completion system. Multiple MASS sleeves can be placed between isolation packers or cemented in place when used in multistage completions. The MASS stimulation sleeve functions with applied hydraulic pressure, and it can actuate multiple sleeves with a single ball drop. Each ball-drop sequence can group up to five MASS stimulation sleeves in a single zone—with a maximum of 31 total zones—to increase reservoir drainage length.

During the MASS shifting process, the segmented ball seat expands and releases the ball through the ball seat and on to the next MASS stimulation sleeve. The process of seating the ball, opening the sleeve, and releasing the ball repeats until the ball lands on a MASS SingleShot sleeve. The inner sleeve of the MASS sliding sleeve opens farther than most other sliding sleeves, which provides an unobstructed stimulation-fluid path to the reservoir. Port diffusers installed in the sleeves normalize the pressure drop across the target interval, which ensures that all sleeves are actuated and stimulation is evenly placed across the target formation.

After the pumping operation, the well is typically flowed back and the balls are recovered at the surface. The sliding sleeves lock in the open position and cannot be reclosed, ensuring an uninterrupted flow-back process. Cast-iron ball seats and dogs can be quickly milled out to increase the flow area through the sleeves and provide fullbore passage of tools for future remediation operations. The metallic hybrid Invisiball® dissolvable frac ball is compatible with the MASS stimulation sleeve.

The MASS stimulation sleeve enables multistage fracturing by combining the benefits of multipoint stimulation with the benefits of a ball-drop system.

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Specifications

Measurement

Sleeve size	4 1/2 in.	5 1/2 in.
Tubing size	4.5 in. (114.3 mm)	5.5 in. (139.7 mm)
Tubing weight	13.5 lb/ft (20.09 kg/m)	23 lb/ft (34.22 kg/m)
Burst rating, 110k*	14,300 psi (96.53 MPa)	16,500 psi (113.76 MPa)
Collapse rating, 110k	13,500 psi (93.07 MPa)	15,500 psi (106.87 MPa)
Tensile rating	496,000 lb/ft (2,206,000 n•m)	719,000 lb/ft (3,198,000 n•m)
Maximum OD	5.65 in. (142.24 mm)	6.75 in. (171.45 mm)
Minimum ID	3.90 in. (99.56 mm)	4.56 in. (115.95 mm)
Maximum seat ID	3.54 in. (89.92 mm)	3.63 in. (92.20 mm)
Minimum seat ID	1.82 in. (46.23 mm)	
Maximum temperature	325°F (163°C)	

** Burst, collapse, and tensile ratings are calculated at ambient temperature.*

** ZoneSelect and Invisiball are registered trademarks in the U.S.*