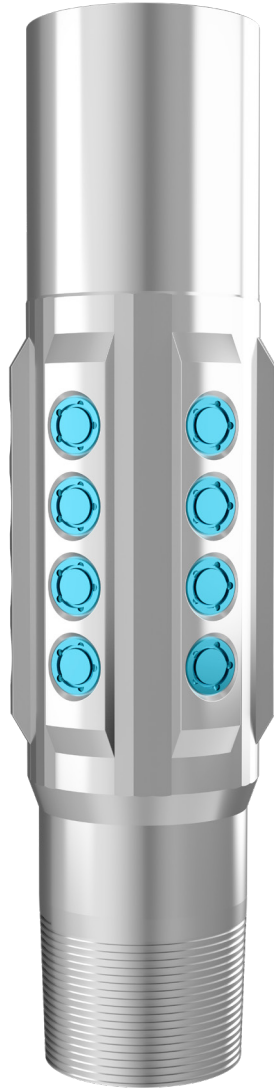


BPS Maxx Toe Initiation Sub

The BPS™ Maxx is designed for use in horizontal completions to establish injection of fluid at the toe without intervention. This feature eliminates the need for intervention using traditional tubing-conveyed perforating guns or wireline tractors as a means of gaining access to the formation at the toe. Eliminating intervention reduces the cost and risks normally associated with these operations. Once activated, the high flow area of the BPS Maxx allows for greater injection rates to support plug-and-perf or frac sleeve operations.

The BPS Maxx uses the same field-proven technology used with our standard BPS toe initiation sub (over 20,000 installations) but with approximately three times greater flow area than our standard offering. Larger flow areas mean less risk in plugging from debris left in the casing after cementing operations. The BPS Maxx is an integrated part of the production casing or liner and can be used in both cemented and uncemented applications. Full ID through the tool eliminates the need for special wiper plugs, thereby reducing operational risk and cost. The BPS Maxx is actuated by applying pressure from the surface of the well. BPS Maxx toe initiation subs can be installed as a single toe port or in multiples to create a full stage cluster. The large diameter of the ports reduces friction pressures through the injection ports.



Features

- Tool activated with applied pressure at surface
- Engineered rupture disc for desired opening pressure and flow area
- Full bore ID through tool
- High flow area through ports
- No moving parts
- Manufactured to match casing size, weight, material, and thread type

Benefits

- Eliminates need for intervention to initiate flow at the toe of a horizontal completion
- Increased accuracy using rupture disc vs. standard shear screws
- Large bore eliminates the need for special wiper plugs
- Atmospheric pressure design eliminates the need to calculate reservoir pressure
- No moving parts design ensures debris tolerance during activation
- Significant cost and time savings to traditional toe perforation methods
- No costly intervention for activation or re-establishment of flow
- Simple integrated design with no complex operations sequencing

Applications

- Cemented and open hole horizontal multistage completions
- Acid or proppant fracturing
- High-temperature applications, up to 450°F (232°C)
- Toe-frac initiation for plug-and-perf, ball-drop, coiled tubing shifted sliding sleeve, and other cemented installations

BPS Maxx - Toe Initiation Sub Specifications

Technical data

Sizes	Casing size in. (mm)	Length ¹ in. (mm)	OD in. (mm)	ID in. (mm)	Maximum pressure	Number of ports	Flow area per port in. ² (cm ²)
450	4.500 (114.30)	18.00 (457.20)	5.750 (146.05)	As per casing weight	Limited by casing pressure	Up to 25	0.44 (2.84)
450 (Slim Hole)	4.500 (114.30)	25.12 (638.05)	5.250 (133.35)	3.410 (86.61)	Limited by casing pressure	Up to 25	0.44 (2.84)
500	5.000 (127.00)	18.80 (477.52)	5.900 (149.86)	As per casing weight	Limited by casing pressure	Up to 25	0.44 (2.84)
500 (Slim Hole)	5.000 (127.00)	25.30 (642.62)	5.600 (142.24)	3.925 (99.69)	Limited by casing pressure	Up to 25	0.44 (2.84)
550	5.500 (139.70)	20.00 (508.00)	7.000 (177.80)	As per casing weight	Limited by casing pressure	Up to 24	0.44 (2.84)
550 (Slim Hole)	5.500 (139.70)	22.50 (571.50)	6.375 (161.93)	As per casing weight	Limited by casing pressure	Up to 24	0.44 (2.84)
600	6.000 (152.40)	25.200 (640.08)	7.000 (177.80)	As per casing weight	Limited by casing pressure	Up to 24	0.44 (2.84)
663	6.625 (168.28)	26.00 (660.40)	8.100 (205.74)	As per casing weight	Limited by casing pressure	Up to 24	0.44 (2.84)

¹ Premium threading will affect overall length
Standard Material: 4140-415, P110, 125 KSI MYS.