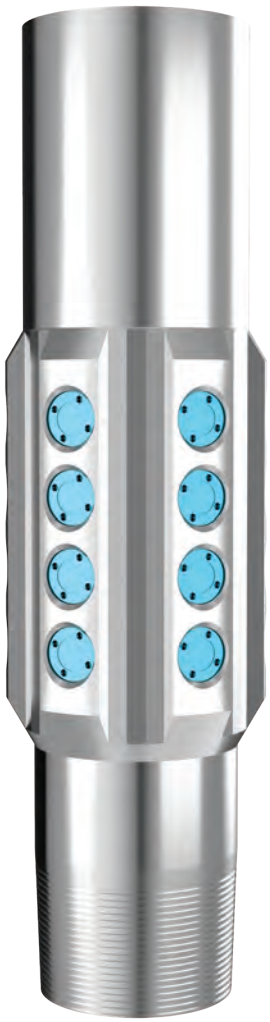
Burst Port System-Toe Initiation (BPS)

Traditionally, tubing-conveyed perforation guns have been the necessary means of gaining access to the formation at the toe of a horizontal well for stimulation purposes. This perforating method requires expensive setup and complicated operations to achieve what our BPS™ technology can accomplish at a fraction of the cost, and without tubing. BPS uses pressure-activated ports to create a conduit from the wellbore to the formation face. BPS collars contain predrilled holes covered by burst plates designed to open at a predetermined pressure. These collars are integrated into the production casing and are typically cemented in place. The BPS ports are opened by pressurizing the wellbore at surface.

BPS - toe fracturing

Multiple BPS collars can be installed throughout the toe section with predetermined spacing, resulting in the stimulation equivalent of multiple perforation clusters across the interval. To ensure all BPS ports are open, bio balls can be pumped from the surface to seal off the open ports in the collar. This allows for a subsequent pressure increase to rupture the remaining ports in all collars throughout the interval.



Features

- Manufactured to any casing specification
- Customized ports for desired flow area
- Full-bore ID maintained by collar

Benefits

- Significant cost and time savings compared to traditional toe perforation methods
- Reduced operational risk by eliminating the need for coiled tubing, workover rig, or wireline
- No ID restriction for easy passage of cementing equipment
- 100% casing pressure test available when combined with i-Seat™ technology

Applications

- Cemented and openhole horizontal multistage completions
- Acid or proppant fracturing
- High-temperature applications, up to 450°F (232°C)
- Underpressured reservoirs preventing the frac balls from easily flowing back
- Toe-frac initiation for plug-n-perf, and other cemented installations

Burst Port System-Toe Initiation (BPS) Specifications

Technical data

Sizes in.	Casing size in. (mm)	Length[1] in. (mm)	OD in. (mm)	ID[2] in. (mm)	Maximum pressure	Number of ports[3]	Flow area per port in.² (cm²)
3.500	3.500 (88.90)	27.70 (703.58)	4.500 (114.30)	As per casing weight	Limited by casing pressure	Up to 24	0.15 (0.97)
3.500 (Slim-Hole)	3.500 (88.90)	33.00 (838.20)	3.531 (89.69)	1.800 (45.72)	Limited by casing pressure	Up to 24	0.15 (0.97)
4.500	4.500 (114.30)	18.00. (457.20)	5.750 (146.05)	As per casing weight	Limited by casing pressure	Up to 25	0.15 (0.97)
4.500 (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	0.15 (0.97)
5.000	5.000 (127.00)	18.80 (477.52)	5.900 (149.86)	As per casing weight	Limited by casing pressure	Up to 25	0.15 (0.97)
5.000 (Slim Hole)	5.000 (127.00)	25.00 (635.00)	5.600 (142.24)	3.875 (98.43)	Limited by casing pressure	Up to 25	0.15 (0.97)
5.500	5.500 (139.70)	20.00 (508.00)	7.000 (177.80)	As per casing weight	Limited by casing pressure	Up to 24	0.15 (0.97)
5.500 (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	0.15 (0.97)
6.000	6.000 (152.40)	27.80 (706.13)	7.500 (190.50)	As per casing weight	Limited by casing pressure	Up to 24	0.15 (0.97)
6.625	6.625 (168.28)	26.00 (660.40)	8.100 (205.74)	As per casing weight	Limited by casing pressure	Up to 24	0.15 (0.97)

1 Premium threading will affect overall length

2 Minimum ID through the seat is customizable based on pressure differential requirements

3 Number of ports can be modified in design, consult applications for more options