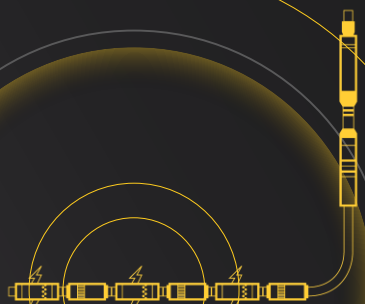
Frontier
Oil Tools

TECH DATA SHEET

Frontier Drop Ball Frac Sleeve



OVERVIEW

The Ball-Open Frac Valve is actuated by a corresponding ball to seat combination. Once a ball is dropped and pumped down onto a seat, hydraulic differential pressure causes the inner sleeve to shift down into the open position, Communication with the annulus is now established and the breakdown of the formation creates a flow path which allows the fracturing treatment of that zone to begin. Each zone led into the well bore is incrementally progressive from the toe to the heel.

FEATURES

- 10,000 PSI differential pressure rating
- 50+ Stages
- Full casing ID (After Drill Out)
- Field Adjustable Opening Pressure
- Compact Design for Easy of Handling
- Ball & Seat Optimized to Give Required Pressure Rating
- Compatible with Dissolvable or Composite Frac Balls
- Flow Area Through Ports Greater than Liner ID
- Re-Closeable Options Available

APPLICATIONS

- Open hole uncemented multistage isolations
- Cemented installations

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Specifications and Dimensions

Size (in)	Weight (lbs. ft)	Nominal OD (in)	Max. Tool Length (in)	Min. Tool ID (in)	Open Hole Size (in)	Pressure Rating (PSI)	Setting Force per Pin (lbs)	Min. Setting Force (lbs)
4-1/2	11.6# - 15.1#	5.705	23	4.000	6.125	10,000	4660	37,280

Seal Element Material	Thread Type	Material/ Grade	Max. Number of Shear Pins	Shear Pin Value (PSI/Pin)
90 Duro HNBR	BTC/LTC 8rd	L-80	8	277
90 Duro HNBR	BTC/LTC 8rd	P-110	8	277

Max. Temperature (F)	Shear Value (PSI)	Piston Area (SQIN)	Flow Area Thru Ports (SQIN)
325	2,216 psi (8 pins)	16.31	19.5

15% +/- Shear Tolerance on Shear Values