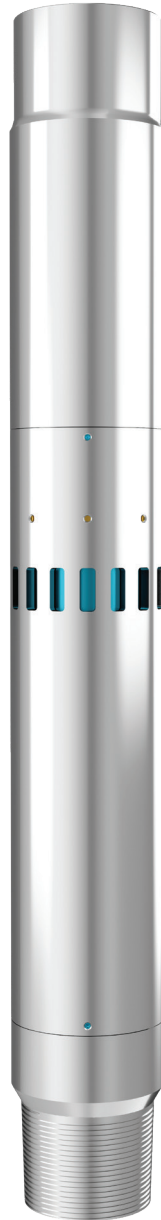


Defender

The Defender is a cementable multistage frac valve, actuated by internal pressure. This valve features full casing flow area, and is opened using configurable, accurately controlled initiation pressures. The valve may also be reclosed with a mechanical shifting tool if desired.



Features

- Variable activation pressures
- Activation pressure is based on absolute internal pressure
- Full casing frac port flow area
- Each sleeve can be closed after treatment with a mechanical shifting tool
- May be used as a multistage frac valve, or as a pressure activated toe port
- Small 5.3 in. OD
- Full bore ID

Benefits

- Accurate initiation pressure does not rely on formation pressure
- Compatible with both cemented and open hole applications
- Can be run with hydraulically activated or swellable packers
- Unlimited number of stages

Applications

- Acid or proppant stimulations
- Single point entry completions
- High stage counts
- Formations with high frequency of screenouts
- Formations with water shutoff concerns
- Ball drop system toe initiation

Technical data

Defender	OD in. (mm)	ID in. (mm)	Length in. (mm)	Flow through area in ² (Cm ²) in. (mm)	Max thread torque ft lb (Nm)	Pressure rating psi (MPa)	Threads
450	5.330 (135.4)	3.930 (99.82)	1.032 (40.63)	12.08 (77.9)	4.500 (6.500)	10,000 (68.9)	Customer specification