

# Flow Release Mechanical (FRM) Spear

High-pulling capacity inline spear

## Applications

- Single-trip casing pulling operations

## Features and Benefits

- Simple, dual-release function allows for disengagement at surface and/or downhole by either fluid flow or rotation
- Modular design enables tool to be run in conjunction with casing cutters and conventional pulling BHAs
- Durable and reliable design with a pulling capability of 1,433,000 lbs. (650 tonne) (SWL)
- Passive status during cutting operation provides cutting-depth flexibility
- Only engages when located at the top of the fish
- Two standard chassis' sizes cover six configurations and cover a wide range of casing and liner sizes
- Ability to fish short and light casing sections

## Tool Description

The Weatherford flow release mechanical (FRM) spear is a next-generation casing spear using mechanical- and flow-release mechanisms with no grapples to break or slip. Designed to work in harmony with the downhole power tool (DHPT) to maximize pulling forces. The FRM spear functions as a standalone alternative to conventional casing spears.



The Weatherford flow release mechanical spear functions as a standalone alternative to conventional casing spears with mechanical and flow-release mechanisms with no grapples to break or slip.



# Flow Release Mechanical (FRM) Spear

## Specifications

FRM spear*	9-5/8 in. (244.5 mm)	10-3/4 in. (273.1 mm)	11-3/4 in. (298.5 mm)	13-3/8 & 14 in. (339.8 & 355.6 mm)	18-5/8 in. (473.1 mm)
Top connection	6-5/8 in. Reg Box				
Bottom connection	6-5/8 in. Reg Pin				
Max body OD	8.220 in. (208.79 mm)		10.230 in. (259.84 mm)	12.125 in. (307.98 mm)	17.125 in. (434.98 mm)
Friction blocks OD	9.050 in. (229.87 mm)	9.920 in. (251.97 mm)	11.220 in. (284.99 mm)	13.030 in. (330.96 mm)	17.990 in. (456.95 mm)
Min ID (no nozzle)	1.50 in. (38.1 mm)				
Nozzle size available	0.50 in. and 1.00 in. (12.7 mm and 25.4 mm)				
Grapple catch range	32.3 - 61.1 ppf (48.07 - 90.93 kg/m)	55.0 - 65.7 ppf (81.85 - 97.77 kg/m)	47.0 - 71.0 ppf (69.94 to 105.66 kg/m)	48.0 - 77.0 ppf (71.43 to 114.59 kg/m)	94.5 - 117.5 ppf (140.63 to 174.86 kg/m)
Casing range IDs	8.755 - 8.435 in. (222.38 - 214.25 mm)	9.760 - 9.560 in. (247.90 - 242.82 mm)	11.000 - 10.587 in. (279.40 - 268.91 mm)	12.715 - 12.275 in. (322.96 - 311.79 mm)	17.990 - 17.200 in. (456.94 - 436.88 mm)
Piston area	Standard 21.6 in. <sup>2</sup> (548.6 mm <sup>2</sup> )				
	FRM HD 19.2 in. <sup>2</sup> (487.7 mm <sup>2</sup> )				
Pressure to release	Standard 454 psi (31.30 bar)				
	FRM HD 468 psi (32.27 bar)				
Max torsional strength below slips	Standard 10,000 ft-lbs. (13,558 Nm)				
	FRM HD 20,000 ft-lbs. (27,116 Nm)				
Min closing load	Standard 9,800 lbs. (4,445 kg)				
	FRM HD 9,000 lbs. (4,082 kg)				N/A
Max pressure	5,000 psi (344.74 bar)				
Max overpull (SWL)	1,433,004 lbs. (650,000 kg)				
Max tensile strength below FRM	485,016 lbs. (220,000 kg)				

\*FRM HD figures shown where they differ from standard FRM spear specifications.

