

ProMILL* Underreamer (PMUR)

High Ratio Underreamer

APPLICATIONS

- Plug and abandonment (P&A) operations requiring rock-to-rock isolation
- Casing scraper
- Removing excess cement, filter cake and enlarging open hole to expose virgin formation

BENEFITS

- Enlarges wellbore sections beyond the original drilled hole size
- Single trip BHA that can simultaneously mill a section and underreamed in a single run
- Remains dormant during section milling operations with ball-drop activation when required
- PDC cutter arms capable of underreaming variable formations
- As part of the ProMILL* system, the ProMILL Underreamer reduces rig time by eliminating additional trips to underream after completing a section milled window

High Ratio expansion with multiple cutter arms

The ProMILL Underreamer (PMUR) is designed to enlarge wellbore sections up to 100% of the pilot hole diameter. This is primarily required for well abandonment applications. The PMUR has extended reach arms relative to the tool body diameter. This allows it to easily drift through a casing restriction and then open the hole to a larger diameter than the original hole size.

The PMUR is designed with PDC cutters that are capable of underreaming cement or variable formations in different sizes. A simple change of arms is required to achieve this.

Activation

The PMUR can be activated downhole by dropping a ball or using flow. As the tool activates three cutter arms expand and begin underreaming. The tool remains open as long as a minimum pressure drop is maintained.



ProMILL Underreamer

Tool Series	5500	8000	11625
Body OD (inch)	5.50	8.0	11.625
Arms Opening Sizes (inch)	8.50, 9.75 and 13.5	12.25, 13.5, 15 and 20	20 and 22
Top Sub Connection (inch)	3 1/2 IF Box	6 5/8 REG Box	6 5/8 Reg Box
Fishing Neck OD (inch)	4.75	7.25	11.0
Weight (pounds)	319	722	2732

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Single Trip BHA

When the PMUR is combined with the K-Master mill, it provides a single-trip system. Once the BHA is at the section milling depth, milling can be performed without activating the PMUR. Upon completion of milling the PMUR is activated with a ball drop to complete the underreaming.

This combination of a K-Master mill and ProMILL Underreamer enables the delivery of a milled and underreamed window in a single trip. This allows the placement of a rock-to-rock abandonment barrier plug.

Jar

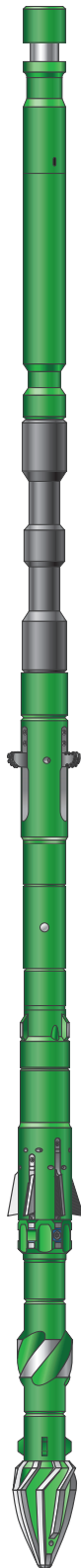
Heavyweight drillpipe

ProMILL underreamer

K-Master section mill

Undergauge stabilizer

Undergauge taper mill



BHA example incorporating taper mill, stabilizer, K-Master section mill and ProMILL Underreamer