Hole cleaning is considered one of the key performance issues for drilling process. THE REMOVER® is a true axial pump for cuttings removal – charged and enhanced by hydrodynamics. Cuttings are picked up from the low side of the hole by direct scooping during rotation. Cuttings will also be continuously attracted to the low-pressure chamber. From this pump cavity, cuttings will be streamlined to the high flow zone by spiralled grooves emanating from the chamber. This gives the tool the ability to convey cuttings from low side to high side even at zero rotation due to the pressure gradient developed by the low-pressure chamber.

THE REMOVER® sub is a unique and innovative integral design, manufactured to exacting standards and engineered to be stronger than equivalent drill pipe. The tool joints have two smooth hard banded upsets which eliminate the risk of increased torque and drag by holding the action grooves off the bore wall. The risk of increased torque is further reduced by the marine, or fluid bearing effect, enhanced by overall hydrodynamic design of the tool. The two upsets also protect the adjacent tool joints from wear and ensure a unique lateral stability during drilling and back-reaming operations.
FEATURES

• New sub for hole-cleaning featuring efficient dynamics and hydraulics.
• Streamlined and balanced design for flow pattern and stability enhancement.
• Design optimised for ECD reduction and complete cuttings bed removal.
• Scooping grooves held off bore wall – eliminating risk of increased torque or backward whirl.
• Unique combination of hydrodynamic and hydromechanical action for efficiency in cuttings removal.
• Equivalent Turbopump effect, enhanced by continuous attraction into low pressure chamber, will lift and re-circulate cuttings at any RPM – including at zero rotation while sliding.
• Maximum hole cleaning efficiency at well inclination angles of 30° to 90°.
• Especially efficient in the critical cuttings avalanche zone from 45° to 60°.
• Unique continuous cuttings attraction and cuttings bed removal established by low pressure chamber adjacent to the scooping grooves.
• Upsets are dressed with appropriate hard banding which can be applied and re-applied by machine.
• Material is 4330 steel engineered to be stronger than the equivalent drill pipe.

BENEFITS

• Reduced total circulating time with bottoms-up achieved closer to theoretical timing.
• Reduced torque and drag, lower ECD and better average ROP.
• Larger cuttings size at surface indicating less re-grinding while circulating.
• Faster and safer tripping with fewer, if any wiper trips.
• Casing installs smoother and faster in a clean hole.

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