

DEPLOYMENT ENHANCEMENT



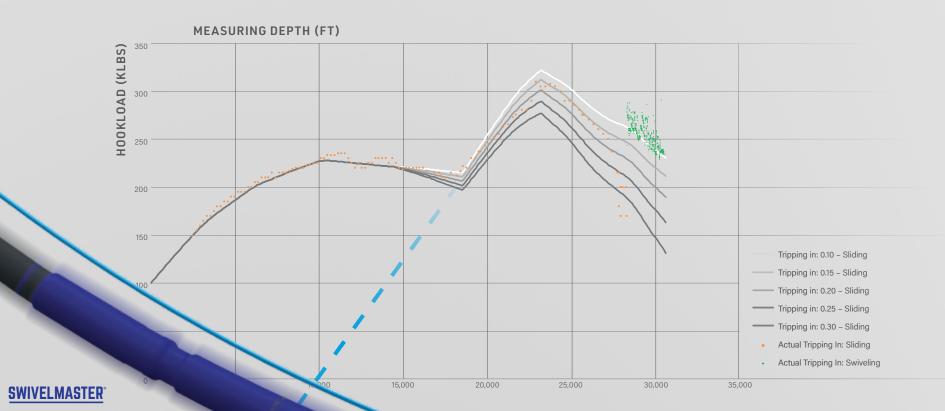
SELECTIVE ROTATION TECHNOLOGY

The **SwivelMASTER** is leading edge of the Selective Rotation Technologies, which allows the rotation of the upper portion of the string without rotation or torque being applied to the string below the tool.

FEATURES

Conventionally, the SwivelMASTER is run in 'Swivel' mode, allowing the operator to engage upper string rotation when needed. The tool can be converted to a 'Locked' mode, by design, or for contingency reasons, during the operations.

The SwivelMASTER holds heavy duty compression & tension bearings, providing long liner deployment and pulling capabilities



For over a decade, the SwivelMASTER has been used extensively in challenging ERD liners and completions deployment operations, mitigating excessive drag and hookload limitations, helical buckling, differential sticking, and providing additional available weight to unlock well design restrictions and overcome unexpected wellbore instabilities.

This challenging deployment (16,000ft, + of 6-5/8" pre-perforated liner including multiple swell packers) was initiated in conventional Slack-off mode. Actual Hookload point highlights smooth deployment down to 27,800ft. From that depth, unexpected severe hookload occured, ultimately preventing any further progress and compromising the full well completion. Landing string rotation was then initiated, providing an additional 109 klbs of additional weight. Selective string rotation was maintained to successfully land the completion at Target Depth.

Large ID

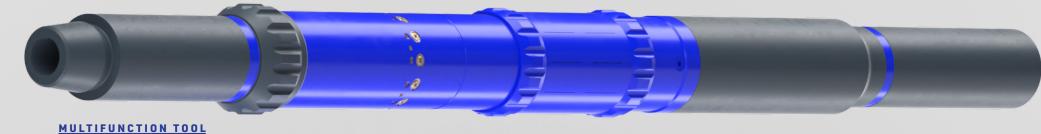
High torque capacity clutch in locked mode

Standard rotary connections

SELECTIVE ROTATION TECHNOLOGY

The SwivelMASTER **MultiFunction**(MF) is a drill pipe deployed tool that can be run in either locked or swivel mode and is hydraulically converted by applying differential pressure.

The multiple conversion capability provided by the SwivelMASTER MF provides additional flexibility and operational efficiency when the successive sequences of deployment, tool activation and tool release require alternative optimum drag reduction and weight transmission (selective string rotation); followed by necessary torque or rotation transmission below the Swivel (tool orientation, activation, drilling, contingency release).



Derived from the
SwivelMASTER Technology,
the **TerraSWIVEL** is a robust
single mode technology,
allowing the necessary rotation
of the upper string to be
isolated from the string below.

By reducing the frictional drag on the upper string, the TerraSWIVEL will facilitate the deployment of drill pipe conveyed logging tools in complex well geometries such as high inclination or long horizontal sections. In dedicated hole cleaning operations, the TerraSWIVEL allows high RPM to be applied on the upper string, while preserving sensitive equipment included in the lower string.

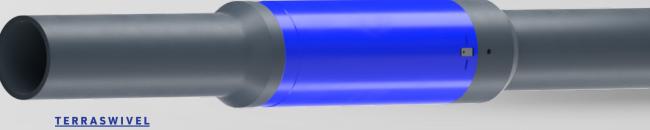
The **CasingSWIVEL** is a permanent addition to the casing or production liner string, enhancing and extending the well design capabilities in ERD and high step out wells.

Incorporated into production liners further down the string, the CasingSWIVEL allows substantial additional weight capability, which can be invested in extended reservoir exposition, or in avoiding multiple segmented liner runs. Included in intermediate or production casing strings, the CasingSWIVEL allows partial string rotation while ensuring torsional limits are not exceeded.

Reduces the recovery cost of a stuck in hole incident by increasing pulling capabilities

Provides an improved cement bond over the area that is rotating

Easy to deploy





SPECIALITY DEPLOYMENT

NaviSHOE will improve the probability of casings and liners reaching TD when rotation cannot be applied.

Advanced casing shoe system allowing an eccentric nose to be gradually indexed through compression on the BHA, guiding and facilitating deployment across obstructions.

Can be used on cemented or uncemented casing strings, completions, liners and sand control screens

Supplied with customer specified casing connections

Drill out ID matches casing being run

Available in most standard casing/ liner versus open-hole combinations

Strength to suit casing specifications Available with a freerotating shoe option

Flow by areas have been maximized for circulation and cementation

Continuous ratchet with higher strength than connection

Also available in a NaviREAM option

SINGLE RUN MOTOR SYSTEMS

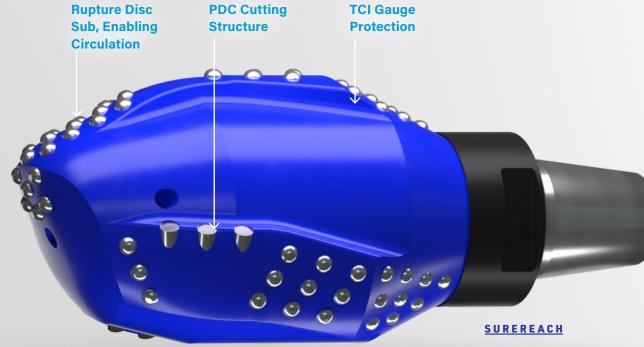
Working past ledges to avoid unnecessary NPT; the SureREACH Motor System is a low cost reaming method that is easy to use, not complicating the final string installation.

SureREACH Motor systems are designed to be run on the bottom of the final casing or liner string to ream or drill to planned TD through pumping only. The motor is available in a wide range of sizes, stages and rotor stator configurations to suit your applications.

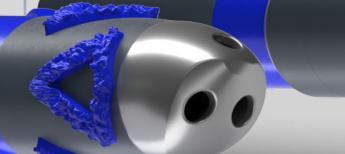
SureREACH Reamer

Used as part of the SureREACH Motor System, the SureREACH Reamer is a sacrificial eccentric nose reamer with a PDC cutting structure and TCI reaming/gauge protection. The tool reams and drills borehole variances without the risk of side tracking and is applied as an alternative to a conventional bit.





NAVIREAM



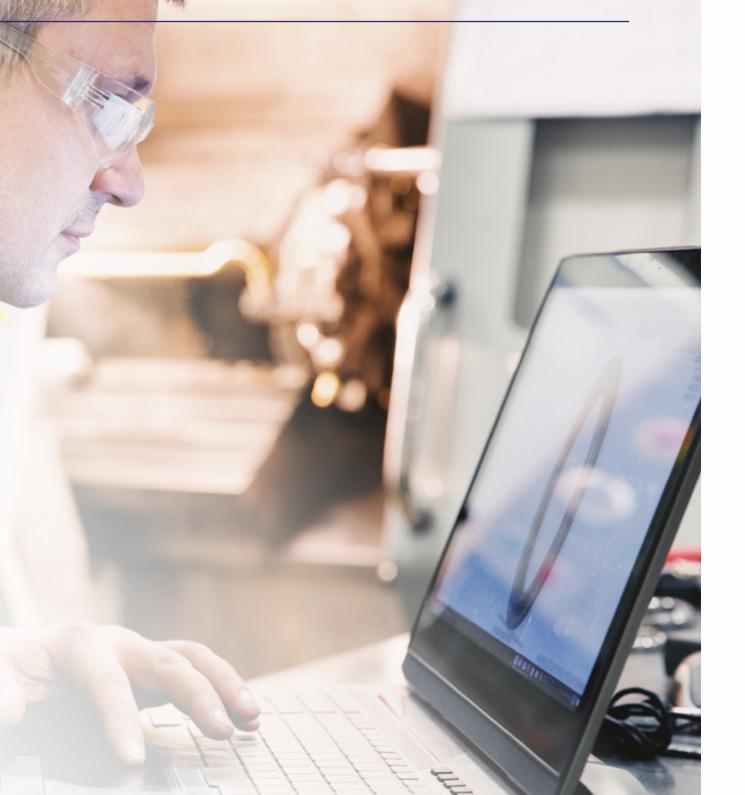
NAVISHOE

Innovex engineering team is dedicated to developing and continually modifying our equipment to meet the evolving needs of the industry and our customers.

Our hands-on approach includes performing pre-run modeling and post-run analysis on many of our technologies. Our technical procedure analyzes the wellbore schematic and interacts with the drilling engineer. Innovex defines the general themes and operating practices in the specific drilling area, including bottomhole temperatures, expected mud weights, planned tops of cement, potential depleted zones and other influencing factors.

Innovex's focused applications and design engineers, research and development projects and testing initiatives effectively aid our customers in reaching TD safely and cost-effectively, achieving zonal isolation and establishing long-term wellbore integrity.

TO LEARN MORE ABOUT OUR WELL SOLUTIONS ENGINEERING APPROACH VISIT OUR WEBSITE.







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