Weatherford®

Thru-Tubing Intervention

MacDrill™ Motor

Weatherford's *MacDrill* motor is a revolutionary high-temperature hydraulic motor for milling and well-cleaning operations. The motor is up to 50 percent shorter than conventional motors, resulting in faster rig-up time and easier transportation. A fully sealed, pressure-balanced bearing pack greatly enhances motor performance and longevity.

The *MacDrill* motor works on the positive displacement principle but features a stainless steel stator rather than the elastomers found in conventional motors. With no elastomer in the stator, the motor can operate at temperatures up to 500°F (260°C) and can be powered by hydrocarbon-based solvents, acids, and gases. In applications where conventional motor life is shortened or elastomeric stators are unusable, such as in high-temperature, pressure-sensitive, or geothermal wells, the MacDrill motor has proved to be a solid solution to the inconsistent performance of motors that rely on elastomeric stators.

Applications

- Running on dry nitrogen gas, natural gas with high distillate content, gas oil (a rubber-attacking cutting solvent), inhibited acidizing solutions (plus rubber-degrading pacifiers), naphtha, brine, and freshwater
- Operation in high-temperature wells for extended periods

Features, Advantages and Benefits

- The compact length (50 percent shorter than conventional motors) enables faster rig-up and often saves money by eliminating the need for a lubricator. In addition, the short length allows the motor to negotiate short radius curves and severe doglegs that conventional motors cannot manage.
- The motor will not overspeed or suffer decompression problems during gas-driven applications, saving time over the course of operations.
- Concentric power section rotation eliminates eccentric motion, obviating the need for a universal joint and increasing efficiency by reducing vibration and wear on downhole tools.
- Elevated weight on bit (WOB) rating enables the motor to safely carry the higher loads experienced in heavy-duty milling and drilling operations.
- Sealed bearings provide unparalleled longevity.
- Ability to operate in high-temperature wells for extended time periods, changing from liquid to gas or spot acid drive fluid, all in a single drill motor in a single trip, offers great operational flexibility and leads to significant time and cost savings.

Weatherford International Ltd.
515 Post Oak Blvd., Suite 600
Houston, Texas 77027 USA
Tel: 713-693-4000
weatherford.com

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Specifications

Performance

OD (in./*mm*)	Maximum Torque Output (ft-lb/*N•m*)	Maximum Bit Pressure Drop (psi/*MPa*)	Minimum Flow Rate (GPM/*LPM*)	Maximum Flow Rate (GPM/*LPM*)	Speed Range (RPM)	Maximum Weight on Bit (lb/*kg*)	Maximum Temperature (°F/°*C*)	Maximum Overpull (lb/*kg*)
1-11/16 *42.900*	86 *116*	2,000 *13.79*	15 *56.78*	40 *151.42*	1,500 to 2,200	7,920 *3,592*	500 *260*	12,000 *5,443*
2-1/8 *53.975*	121 *244*		20 *75.70*	60 *227.12*	1,000 to 1,750	9,240 *4,191*		18,250 *8,278*
2-7/8 *73.025*	480 *650*		40 *151.42*	100 *378.54*	250 to 480	18,240 *8,274*		34,000 *15,422*

Equipment

OD (in./*mm*)	Overall Length (ft/*m*)	Weight (lb/*kg*)	Standard Thread Connections	Makeup Torque (ft-lb/*N•m*)	Bit Size Range (in./*mm*)
1-11/16 *42.900*	4.84 *1.47*	44 *19.96*	1-in. AMMT	399 *541*	1-13/16 to 2-3/8 *46.04 to 60.33*
2-1/8 *53.975*	5.50 *1.68*	52 *23.59*	1 1/2-in. AMMT	672 *911*	2-1/4 to 3-1/2 *57.15 to 88.90*
2-7/8 *73.025*	9.06 *2.76*	110 *49.90*	2 3/8-in. PAC	2,693 *3,651*	3-1/4 to 4-3/4 *82.55 to 120.65*

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