

NitroForce® 2.0 High-Torque, High-Flow Motor

RE-ENGINEERED TO EXPAND THE DRILLING ENVELOPE

OVERVIEW

As operators strive to drill faster, they require a motor with the strength and agility to efficiently and reliably deliver consistent shoe-to-shoe performance. The re-engineered NitroForce® high-torque, high-flow motor from Sperry Drilling expands the drilling envelope to provide the power and performance to consistently deliver faster and longer runs for efficient well delivery.

DRILLING MADE RELIABLE

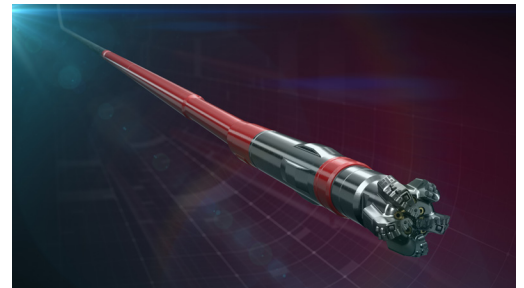
The re-engineered NitroForce motors have larger PDC thrust bearings for increased loading capacity to drill through challenging environments. The motor is equipped with a high-strength titanium flex shaft transmission that supports higher torque limits with increased durability. With fewer connections, the motor improves reliability and reduces turnaround time. A larger outer diameter (OD) collar allows system-matching the new higher torque connections with proprietary power sections from Sperry Drilling.

FASTER DELIVERY WITH AN EXPANDED DRILLING ENVELOPE

The NitroForce motor proprietary power sections have higher flow rates that improve hole cleaning and increase horsepower at the bit, resulting in a faster rate of penetration (ROP). The PDC thrust bearings matched with the higher-torque connections and flow capacity allows higher weight on bit (WOB). With the variety of elastomers and new bearing section, NitroForce motors are capable of drilling in the industry's most demanding applications.

CONSISTENTLY ACHIEVE LONGER RUNS

The extended life of the NitroForce motor can deliver complex laterals in a single run. The power sections are customized with resilient, long-lasting elastomers to support fits, speeds, and horsepower for any environment. To withstand high-temperature environments for extended periods, the new lower end eliminates failure points including rubber boots and seals. NitroForce motors can take conventional drilling to another level when combined with the Sperry Drilling LOGIX® autonomous drilling platform, which enables real-time vibration mitigation and collision avoidance to consistently drill wells while improving overall well delivery.



BENEFITS

- » Stay on target with LOGIX® autonomous drilling platform
- » Extend lateral length to maximize reservoir contact
- » Deliver shoe-to-shoe runs with improved performance
- » Minimize trips and NPT with longer motor life
- » Decrease well delivery time with faster ROP from higher horsepower and WOB
- » Reach drilling targets in a single run

FEATURES

- » High flow capacity
- » True-to-size outer diameters
- » High-strength titanium flex shaft transmission
- » High-capacity mud-lubricated PDC thrust bearings
- » Matched on/off bottom load capacity for higher WOB and RPM
- » Proprietary high-torque connections
- » Integral blade stabilizers with increased flow capacity
- » Proprietary high-performance elastomers
- » Catchers on both the rotor and mandrel
- » Integrates with autonomous drilling solutions

NitroForce® Motor 2.0: Input/Output Characteristics

Motor Size	Lobes	Stages	Bit Speed	Flow Range	Revolutions Per Unit Flow	Max. Operating Torque	Max. Operating Power	Max. Operating Diff. Pressure
5.00 in. (127 mm)	6:7	8.8	102-272 rpm	150-400 gpm (568-1514 lpm)	0.68 rev./gal (0.18 rev./litre)	7,088 lbf-ft (961 daN.m)	367 HP (274 kW)	1,980 psi (13.65 MPa)
5.00 in. (127 mm)	6:7	10	126-294 rpm	150-350 gpm (568-1325 lpm)	0.84 rev./gal (0.22 rev./litre)	6,615 lbf-ft (897 daN.m)	370 HP (276 kW)	2,250 psi (15.51 MPa)
5.00 in. (127 mm)	7:8	7.5	75-175 rpm	150-350 gpm (568-1325 lpm)	0.50 rev./gal (0.13 rev./litre)	8,488 lbf-ft (1151 daN.m)	283 HP (211 kW)	1,688 psi (11.64 MPa)
5.125 in. (130 mm)	5:6	13	150-350 rpm	150-350 gpm (568-1325 lpm)	1.00 rev./gal (0.26 rev./litre)	7,254 lbf-ft (984 daN.m)	483 HP (360 kW)	2,925 psi (20.17 MPa)
7.00 in. (178 mm)	4:5	10	140-300 rpm	350-750 gpm (1325-2839 lpm)	0.40 rev./gal (0.11 rev./litre)	14,513 lbf-ft (1968 daN.m)	829 HP (618 kW)	2,250 psi (15.51 MPa)
7.00 in. (178 mm)	6:7	6.5	81-173 rpm	350-750 gpm (1136-2839 lpm)	0.23 rev./gal (0.06 rev./litre)	15,971 lbf-ft (2165 daN.m)	525 HP (391 kW)	1,463 psi (10.09 MPa)
7.00 in. (178 mm)	6:7	8.4	105-225 rpm	350-750 gpm (1325-2839 lpm)	0.30 rev./gal (0.08 rev./litre)	15,838 lbf-ft (2147 daN.m)	679 HP (506 kW)	1,890 psi (13.03 MPa)

For more information, contact your local Halliburton representative or visit us on the web at www.halliburton.com

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