

# DynaForce high-performance drilling motors

Increase torque output for higher ROP

## Applications

- Performance drilling
- Harsh drilling environments
- High-volume shale plays

## Benefits

- Improves ROP with increased torque output
- Maximizes performance in PowerDrive vorteX\* powered rotary steerable system (RSS) applications
- Increases reliability with proprietary in-house motor design

## Features

- DynaPower XP\* extreme-power motor elastomer
- DynaPower XR\* extreme-wear-resistant motor elastomer
- DynaPower HR\* high-torque motor elastomer
- Proprietary motor engineering design includes
  - Keyed technology on drive shaft joints
  - Double-shoulder, triple-start internal connections
  - Enlarged rotor-shaft connection
- Increased limits on maximum operating torque
- Extended operating window
- Fatigue-resistant fixed-bend housing options
- No pressure drop requirement for bearing lubrication
- Compatibility with all Schlumberger RSSs

DynaForce\* high-performance drilling motors provide the highest torque at bit with improved reliability in performance drilling applications. Engineered with proprietary technology to increase operating windows, DynaForce motors outperform conventional motors in high-volume drilling, high-dogleg well profiles, and harsh environments. Choose from a wide variety of motor configurations, bit speeds, flow ranges, and power outputs.

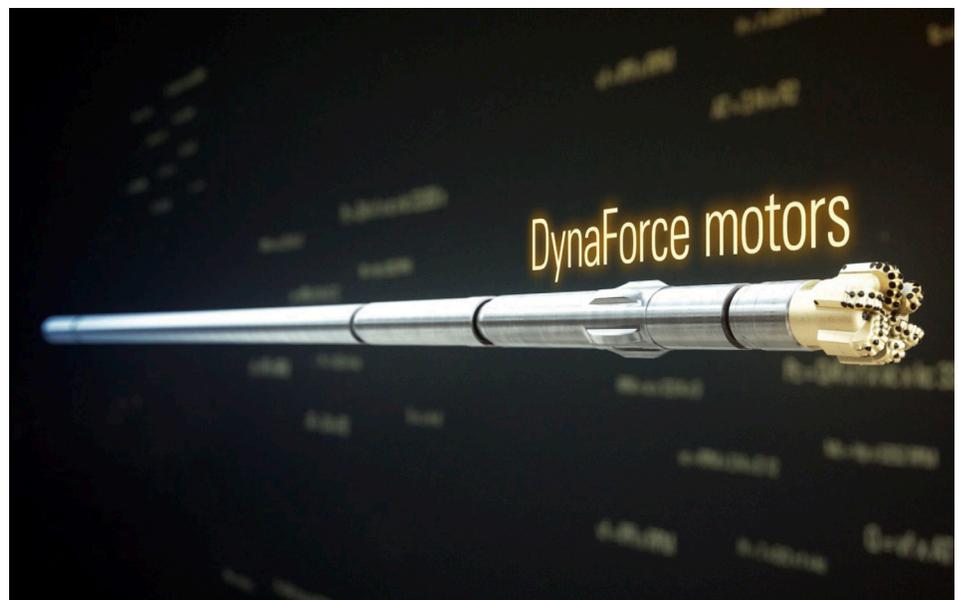
## Increase torque output in high-volume drilling

The engineering advances central to DynaForce motors increase torque output for higher ROP and better overall performance. Superior torque transmission is made possible with the addition of double-shoulder, triple-start internal connections; an enlarged motor-shaft connection; and keyed technology on drive shaft joints. As a result, DynaForce motors lead the industry in maximum operating torque.

## Enhance performance in motorized RSS configurations

This motor family is now the drive system for all PowerDrive vorteX RSS configurations. Internalization of the motor technology design ensures the best possible performance from PowerDrive vorteX RSSs.

Beyond ROP improvement, DynaForce motors are engineered to deliver more reliable performance. Internal flow area has been increased to minimize erosion, and fatigue-resistant fixed-bend housing enables drilling higher-dogleg-severity curves.

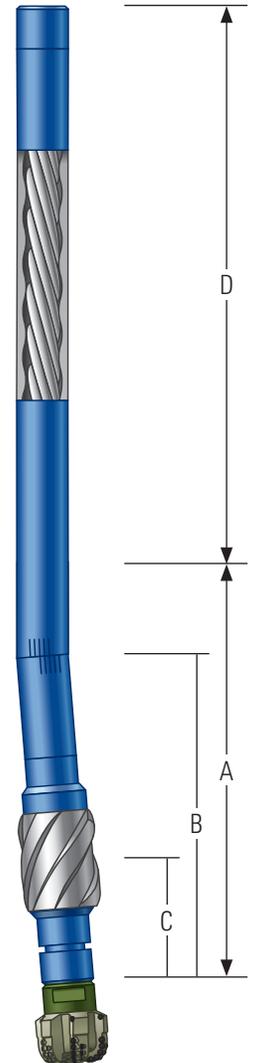


Lower End Specifications	DynaForce 500 motor	DynaForce 700 motor	DynaForce 962 motor
<b>Mechanical</b>			
Bit size, in	6 to 6¾	8⅝ to 9⅝	12 to 17½
Top thread connection, in	3½ REG box	4½ IF box	6⅝ REG box
	3½ IF box	4½ XH box	6⅝ H-90 box
	3½ XH box	4½ REG box	7⅝ REG box
Bottom thread connection, in		5½ REG box	
	3½ REG box	4½ REG box	6⅝ REG box
	3½ IF pin	4½ IF box	7⅝ REG box
		6⅝ REG box	8⅝ REG box
		4½ IF pin	6⅝ REG pin
			7⅝ REG pin
Nominal length	Dependent of lower end and power section length	Dependent of lower end and power section length	Dependent of lower end and power section length
Lower end nominal lengths (A), in [m] <sup>†</sup>	79.1 [2.01]	101.4 [2.58]	138.0 [3.51]
Bit box to fixed bend (B), in [cm]	42.3 [107.6]	48 [122]	Not applicable
Bit box to adjustable bend (B), in [cm]	52.7 [133.9]	68.4 [173.7]	90 [228.6]
Bit box to center of stabilizer (C), in [cm]	22.0 [55.9]	30.2 [76.7]	34.6 to 38.9 [87.9 to 98.8] <sup>‡</sup>
Bearing housing stabilizer, in	Slick or integral blade, 5⅝ to 6⅝	Slick or integral blade, 7¾ to 9¾	Slick or sleeve, 12 to 26
	Straight or spiral blades	Straight or spiral blades	Straight or spiral blades
Bent housing	Fixed-bend or adjustable-bend housing	Fixed-bend or adjustable-bend housing	Adjustable-bend housing
<b>Operating</b>			
Operating flow range, galUS/min [L/min]	100 to 350 [380 to 1,320]	200 to 800 [757 to 3,028]	400 to 1,200 [1,514 to 4,542]
Max. WOB with flow (no motor damage), lbf	30,000	55,000	120,000
Max. operating torque, lbf.ft [N.m]	12,000 [16,270]	30,000 [40,675]	65,000 [88,128]
Max. overpull (tension), lbf	450,000	910,000	1,340,000
Working overpull, lbf	72,000	192,000	350,000
<b>Mud properties</b>			
Max. mud weight, lbm/gal	18	18	18
Max. lost circulation material, lbm/bbl	Medium nut plug: 50	Medium nut plug: 50	Medium nut plug: 50
Max. sand content, %	2	2	2

<sup>†</sup> Lengths are for adjustable bend configuration.

<sup>‡</sup> Varies based on stabilizer gauge size.

Note: Schlumberger provides assessment of critical rpms for different bottomhole assembly configurations using the IDEAS\* integrated dynamic design and analysis platform.



Power Section Specifications					
Size	Configuration	Power section lengths (D), in [m]	Speed, rev/galUS	Max. diff. pressure, psi	Max. torque, lbs.ft
500	7/8 8.4 HR <sup>†</sup>	250 [6.35]	0.700	1,850	6,700
500	5/6 8.3 HR	243 [6.16]	1.000	1,870	4,810
500	7/8 2.6 HR	229 [5.82]	0.263	590	5,350
500	6/7 10.4 HR	227 [5.77]	1.000	2,340	6,030
675	4/5 7.0 HR	210 [5.33]	0.497	1,580	9,090
675	7/8 3.4 DTX <sup>‡</sup>	175 [4.45]	0.270	1,550	13,760
675	7/8 5.0 HR	194.5 [4.94]	0.288	1,130	10,460
700	7/8 6.8 HR	246 [6.25]	0.304	1,530	14,360
725	6/7 10.7 HR	300 [7.62]	0.360	2,410	17,230
962	3/4 6.0 HR	228 [5.79]	0.221	1,350	17,210
962	7/8 3.9 HR	300 [7.62]	0.068	880	33,750
962	7/8 3.7 DTX	212 [5.38]	0.107	1,450	39,400

<sup>†</sup> Hard rubber

<sup>‡</sup> Thin wall power section

Other power section specifications are at [slb.com/DynaForce](http://slb.com/DynaForce).

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