

StrataForce™ Motor

INCREASED POWER AND TORQUE

OVERVIEW

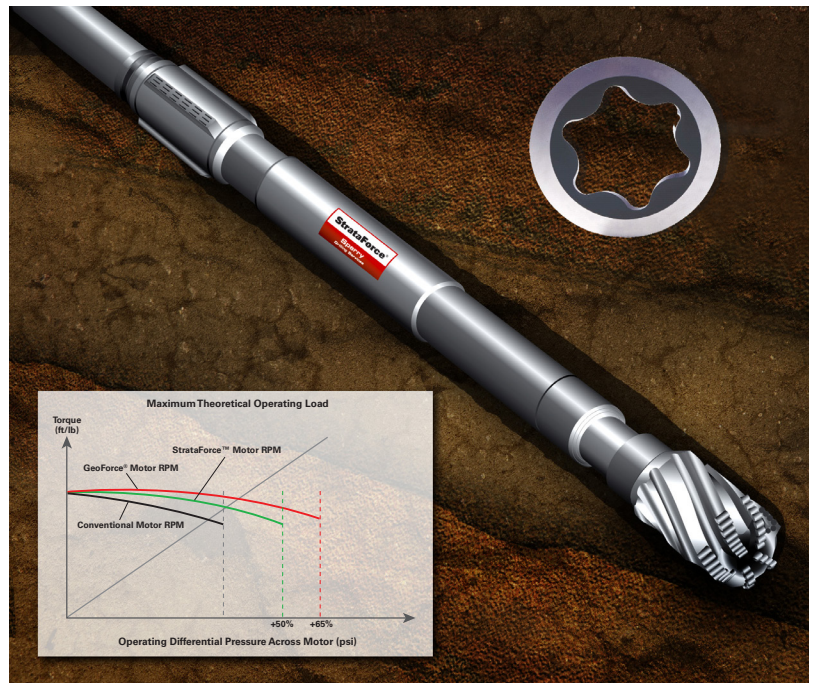
The StrataForce™ motor from Halliburton Sperry Drilling delivers increased power and torque for optimal drilling. The motor, featuring extended-length conventional power sections, employs state-of-the-art highly-resilient elastomer technology for tough drilling applications. The StrataForce motor's resilient elastomers are capable of holding higher differential pressure, which increases torque and reliability and reduces nonproductive time.

The StrataForce motor is available in a complete range of rotor/stator lobe configurations to provide maximum efficiency in any drilling environment. The StrataForce motor ensures efficiency by delivering consistent torque to the bit throughout the operating range, which equates to less stalling, reduced bit damage, better tool face control, and higher ROP.

With a conventional extended-length power section, the StrataForce motor delivers greater power and significantly improves reliability in drilling motor applications. The StrataForce motor highly-resilient elastomers enhance performance by reducing heat generation and holding higher differential pressure-up to 225 psi/stage. The elastomers also improve fluid resistance, which can reduce failures associated with chemical-induced swelling.

STRATAFORCE™ MOTOR APPLICATIONS

- » Vertical, directional, and horizontal wells
- » High temperature
- » Synthetic-, oil-, and water-based mud systems
- » Performance drilling
- » Extended-reach wells
- » Shale plays
- » Motor above rotary steerable system (MARSS)



The StrataForce™ motor features an extended-length power section with a conventional stator and a state-of-the-art highly-resilient elastomer to deliver higher torque and power.

STRATAFORCE™ MOTOR FEATURES

- » Extended-length power sections featuring state-of-the-art highly resilient elastomers
- » More effective rotor-to-stator seal for more efficient power production

STRATAFORCE™ MOTOR BENEFITS

- » Delivers 50 percent more torque per unit length
- » Provides higher differential pressure capability
- » Delivers more consistent RPM and torque applied to the bit, increasing ROP and bit life
- » Operates in higher temperature (320°F/160°C)
- » Improves reliability and performance in harsh environments
- » Improves hole quality, performance, and steerability; reduces vibration; and increases bit life when run in FullDrift® configuration
- » Reduces failures associated with chemical-induced swelling

StrataForce™ Motor : Input/Output Characteristics

| | | | | | U.S. Standard | | | | | Metric | | | | |
|----------------|-----|-------|--------|----------------|-----------------|-----------|-------------------------------|--------------------------|------------------------------------|-----------------|-------------|-----------------------------|--------------------------|------------------------------------|
| Motor Size in. | mm | Lobes | Stages | Bit Speed, rpm | Flow Range, gpm | Rev./ Gal | Max. Operating Torque, lbf.ft | Max. Operating Power, hp | Max. Operating Diff. Pressure, psi | Flow Range, lpm | Rev./ Liter | Max. Operating Torque, daNm | Max. Operating Power, kW | Max. Operating Diff. Pressure, MPa |
| 4.75 | 121 | 4:5 | 6.3 | 155 to 309 | 150 to 300 | 1.03 | 3,856 | 181 | 1,418 | 568 to 1136 | 0.272 | 523 | 135 | 9.77 |
| 4.75 | 121 | 5:6 | 8.3 | 150 to 300 | 150 to 300 | 1.00 | 4,856 | 222 | 1,868 | 568 to 1136 | 0.264 | 658 | 165 | 12.88 |
| 4.75 | 121 | 7:8 | 2.9 | 45 to 90 | 150 to 300 | 0.30 | 5,285 | 72 | 653 | 568 to 1136 | 0.079 | 717 | 54 | 4.50 |
| 4.75 | 121 | 7:8 | 3.8 | 83 to 165 | 150 to 300 | 0.55 | 4,190 | 105 | 855 | 568 to 1136 | 0.145 | 568 | 79 | 5.90 |
| 5.00 | 127 | 6:7 | 8.0 | 142 to 243 | 175 to 300 | 0.81 | 6,012 | 223 | 1,800 | 662 to 1136 | 0.214 | 815 | 166 | 12.41 |
| 5.00 | 127 | 6:7 | 8.8 | 102 to 238 | 150 to 350 | 0.68 | 7,088 | 257 | 1,980 | 568 to 1136 | 0.180 | 961 | 192 | 13.65 |
| 6.25 | 159 | 4:5 | 7.5 | 160 to 330 | 250 to 500 | 0.66 | 7,088 | 356 | 1,688 | 946 to 1893 | 0.174 | 961 | 266 | 11.63 |
| 6.25 | 159 | 7:8 | 2.9 | 40 to 80 | 250 to 500 | 0.16 | 9,983 | 122 | 653 | 946 to 1893 | 0.042 | 1354 | 91 | 4.50 |
| 6.25 | 159 | 7:8 | 4.8 | 83 to 165 | 250 to 500 | 0.33 | 8,424 | 212 | 1,080 | 946 to 1893 | 0.087 | 1142 | 158 | 7.45 |
| 6.75 | 171 | 4:5 | 7.0 | 150 to 300 | 300 to 600 | 0.50 | 8,820 | 403 | 1,575 | 1136 to 2271 | 0.132 | 1196 | 301 | 10.86 |
| 6.75 | 171 | 6:7 | 5.0 | 87 to 174 | 300 to 600 | 0.29 | 9,675 | 256 | 1,125 | 1136 to 2271 | 0.077 | 1312 | 191 | 7.76 |
| 6.75 | 171 | 6:7 | 6.0 | 87 to 174 | 300 to 600 | 0.29 | 11,610 | 308 | 1,350 | 1136 to 2271 | 0.077 | 1574 | 229 | 9.31 |
| 6.75 | 171 | 7:8 | 2.9 | 51 to 102 | 300 to 600 | 0.17 | 10,244 | 159 | 653 | 1136 to 2271 | 0.045 | 1389 | 119 | 4.50 |
| 6.75 | 171 | 7:8 | 3.3 | 42 to 84 | 300 to 600 | 0.14 | 13,514 | 173 | 743 | 1136 to 2271 | 0.037 | 1832 | 129 | 5.12 |
| 6.75 | 171 | 7:8 | 5.7 | 72 to 144 | 300 to 600 | 0.24 | 13,851 | 304 | 1,283 | 1136 to 2271 | 0.063 | 1878 | 227 | 8.84 |
| 7.00 | 178 | 7:8 | 7.5 | 93 to 186 | 300 to 600 | 0.31 | 14,428 | 409 | 1,688 | 1136 to 2271 | 0.082 | 1956 | 305 | 11.63 |
| 8.00 | 203 | 4:5 | 5.3 | 117 to 234 | 450 to 900 | 0.26 | 13,356 | 476 | 1,193 | 1703 to 3407 | 0.069 | 1811 | 355 | 8.22 |
| 8.00 | 203 | 6:7 | 4.0 | 77 to 153 | 450 to 900 | 0.17 | 15,840 | 369 | 900 | 1703 to 3407 | 0.045 | 2148 | 275 | 6.21 |
| 8.00 | 203 | 6:7 | 5.0 | 81 to 162 | 450 to 900 | 0.18 | 17,258 | 426 | 1,125 | 1703 to 3407 | 0.048 | 2340 | 318 | 7.76 |
| 8.00 | 203 | 7:8 | 3.0 | 41 to 81 | 450 to 900 | 0.09 | 21,668 | 267 | 675 | 1703 to 3407 | 0.024 | 2938 | 199 | 4.65 |
| 8.00 | 203 | 7:8 | 3.4 | 41 to 81 | 450 to 900 | 0.09 | 21,428 | 264 | 765 | 1703 to 3407 | 0.024 | 2905 | 197 | 5.27 |
| 9.63 | 286 | 3:4 | 6.0 | 138 to 276 | 600 to 1200 | 0.23 | 17,172 | 722 | 1,350 | 2271 to 4542 | 0.061 | 2328 | 538 | 9.31 |
| 9.63 | 245 | 6:7 | 5.0 | 78 to 156 | 600 to 1200 | 0.13 | 23,738 | 564 | 1,125 | 2271 to 4542 | 0.034 | 3218 | 421 | 7.76 |
| 9.63 | 245 | 6:7 | 6.0 | 78 to 156 | 600 to 1200 | 0.13 | 27,918 | 663 | 1,350 | 2271 to 4542 | 0.034 | 3785 | 495 | 9.31 |
| 11.25 | 286 | 3:4 | 6.0 | 138 to 276 | 600 to 1200 | 0.23 | 17,172 | 722 | 1,350 | 2271 to 4542 | 0.061 | 2328 | 538 | 9.31 |
| 11.25 | 286 | 5:6 | 4.6 | 54 to 108 | 600 to 1200 | 0.09 | 32,696 | 538 | 1,035 | 2271 to 4542 | 0.024 | 4433 | 401 | 7.14 |
| 11.25 | 286 | 6:7 | 5.5 | 81 to 162 | 900 to 1,800 | 0.09 | 37,038 | 914 | 1,238 | 3407 to 6814 | 0.024 | 5022 | 682 | 8.53 |
| 11.25 | 286 | 6:7 | 6.0 | 78 to 156 | 600 to 1,200 | 0.13 | 27,918 | 663 | 1,350 | 2271 to 4542 | 0.034 | 3785 | 495 | 9.31 |

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