



SPIRA[®] Power Sections

Specifications Handbook



Why SPIRA® ?



SPIRA®



SPIRA® TNT

Benefits of pre-contoured uniform rubber thickness SPIRA[®] stators

- Higher ROP by increased motor differential pressure
- Higher operating temperature
- High performance, high temperature NBR & HNBR rubber compounds
- Increased longevity / less tripping / to depth drilling
- Lends itself to low speed / high torque motor designs
- Higher torque at same length of conventional power sections
- Shorter power sections at same torque of conventional power sections
- Less swelling & stator profile distortion by aggressive drilling fluids
- Uniform swelling around stator contour
- Uniform heat expansion around stator contour
- Minimal stator profile distortion by heat expansion
- Excellent thermal conductivity through thin uniform rubber layer and contoured steel tube
- Minimal internal heat-build-up → no hysteresis
- High precision, consistent quality stators and rotors „Made in Germany“





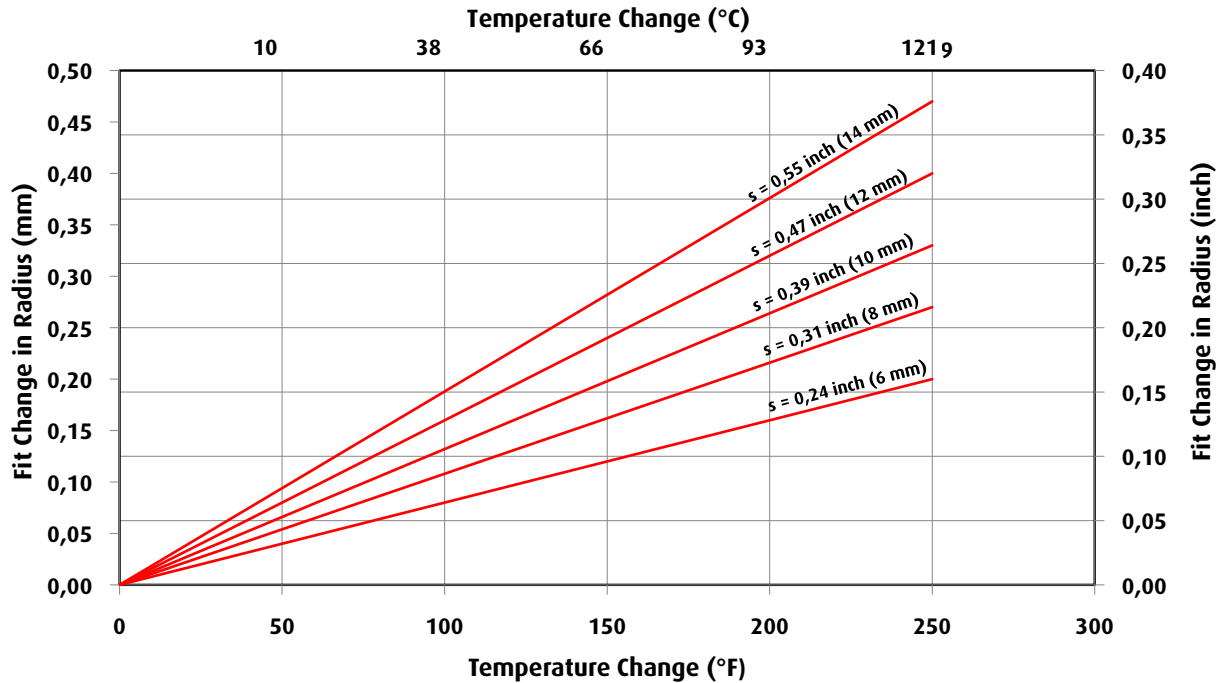
Table of Contents

| Type | Motor Output | | | Motor Input | | Physical Motor Data | | |
|--------------------------------|--------------|-----------------|-----------|-----------------------|----------------|---------------------|--------------|-----------------|
| | Bit Speed | Torque | Power Out | Flow Range | Motor Pressure | No. of Stages | No. of Lobes | Displacement |
| | rpm | ft-lbs (Nm) | HP (kw) | gqm (lpm) | psi (bar) | | | rev/gal (rev/l) |
| 2.875" 5/6 3.5 SPIRA | 181-362 | 510 (694) | 48 (36) | 60-120 (227-454) | 761 (53) | 3.5 | 5/6 | 3.333 (0.888) |
| 4.75" 5/6 3.4 SPIRA | 75-152 | 4,521 (6,149) | 78 (57) | 150-300 (568-1,136) | 740 (51) | 3.4 | 5/6 | 0.506 (0.134) |
| 4.75" 7/8 3.8 SPIRA TNT | 78-156 | 4,410 (5,998) | 110 (83) | 150-300 (568-1,136) | 827 (57) | 3.8 | 7/8 | 0.521 (0.138) |
| 6.75" 5/6 3.9 SPIRA | 61-182 | 8,622 (11,692) | 240 (178) | 200-600 (757-2,271) | 856 (59) | 3.9 | 5/6 | 0.304 (0.080) |
| 6.75" 5/6 5.3 SPIRA | 61-182 | 11,618 (15,754) | 327 (240) | 200-600 (757-2,271) | 1146 (79) | 5.3 | 5/6 | 0.304 (0.080) |
| 6.75" 7/8 5.0 SPIRA TNT | 58-173 | 11,576 (15,698) | 310 (227) | 200-600 (757-2,271) | 1088 (75) | 5.0 | 7/8 | 0.288 (0.076) |
| 6.75" 7/8 5.9 SPIRA TNT | 58-173 | 13,660 (18,523) | 365 (268) | 200-600 (757-2,271) | 1276 (88) | 5.9 | 7/8 | 0.288 (0.076) |
| 8.00" 5/6 3.3 SPIRA | 75-170 | 11,670 (15,871) | 324 (243) | 400-900 (1,514-3,407) | 725 (50) | 3.3 | 5/6 | 0.190 (0.050) |

rev. 11/2016



Power Section Fit Change



s = rubber thickness



Artemis 2.875" 5/6 3.5 SPIRA®

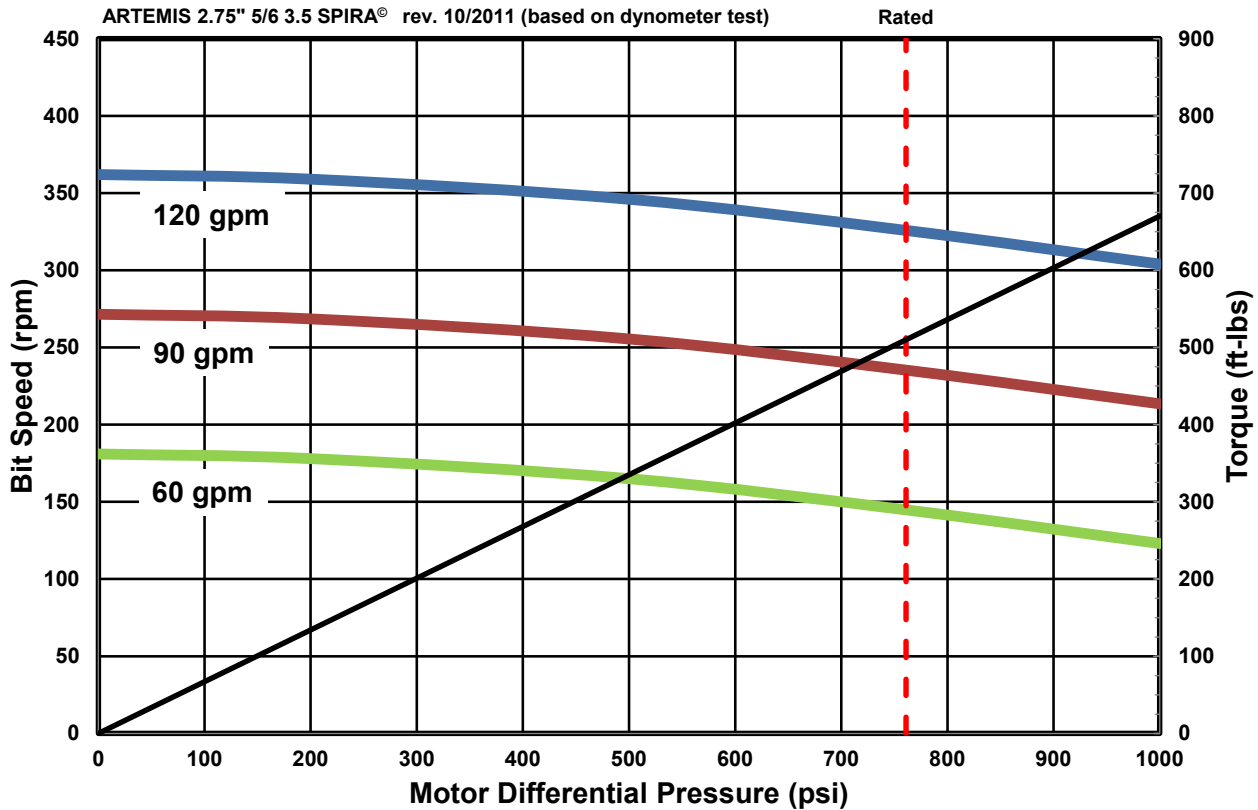


| | | |
|---------------------------|-----------------------------|-----------|
| No. of Stages | 3.5 | |
| No. of Lobes Rotor/Stator | 5/6 | |
| Overall Length | 98.4 (2,500) | inch (mm) |
| Rubber Cutback | 6.89 (175) | inch (mm) |
| Max. OD | 2.875 (73) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |



| | | |
|----------------|------------------|-----------------|
| Bit Speed | 181-362 | rpm |
| Flow Range | 60-120 (227-454) | gqm (lpm) |
| Displacement | 3.333 (0.888) | rev/gal (rev/l) |
| Motor Pressure | 761 (53) | psi (bar) |
| Torque | 510 (694) | ft-lbs (Nm) |
| Power Out | 48 (36) | HP (Kw) |

Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.



Artemis 4.75" 5/6 3.4 SPIRA®

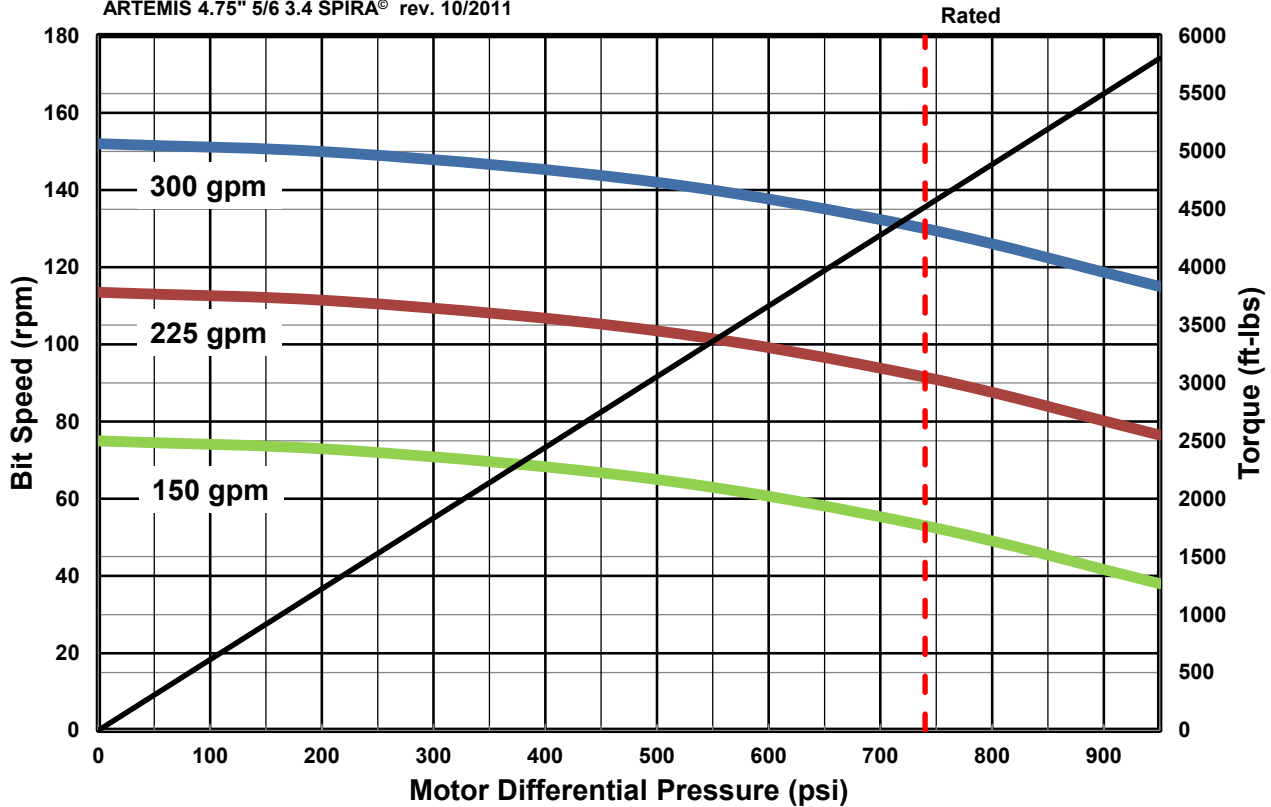


| | | |
|---------------------------|----------------------------------|-----------|
| No. of Stages | 3.4 | |
| No. of Lobes Rotor/Stator | 5/6 | |
| Overall Length | 196 (4,978) | inch (mm) |
| Rubber Cutback | 9.0 (229) | inch (mm) |
| Max. OD | 4.8 (122) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 5" terminals available | |



| | | |
|----------------|---------------------|-----------------|
| Bit Speed | 75-152 | rpm |
| Flow Range | 150-300 (568-1,136) | gqm (lpm) |
| Displacement | 0.506 (0.134) | rev/gal (rev/l) |
| Motor Pressure | 740 (51) | psi (bar) |
| Torque | 4,521 (6,149) | ft-lbs (Nm) |
| Power Out | 78 (57) | HP (Kw) |

Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.

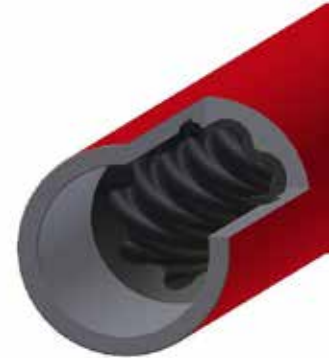


Artemis 4.75" 7/8 3.8 SPIRA® TNT

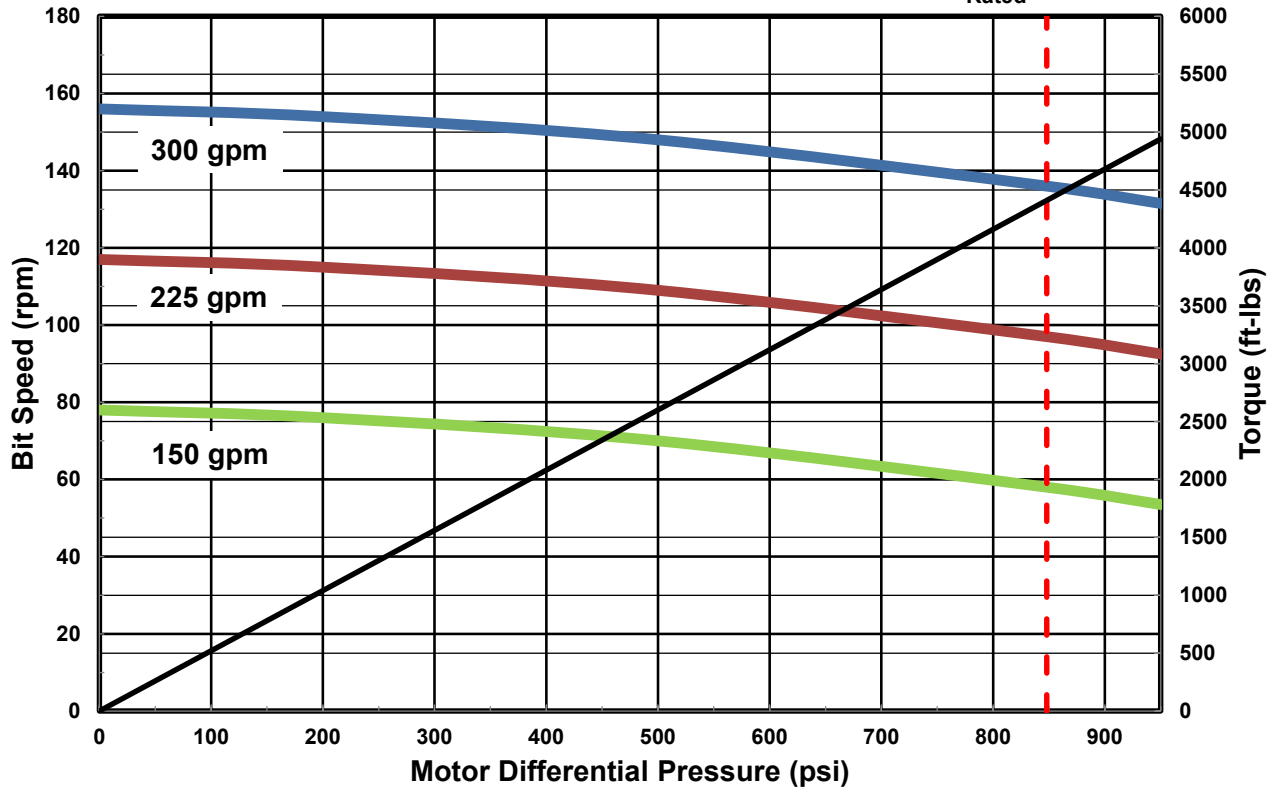


| | | |
|----------------------------------|----------------------------------|-----------|
| No. of Stages | 3.8 | |
| No. of Lobes Rotor/Stator | 7/8 | |
| Overall Length | 200 (5,080) | inch (mm) |
| Rubber Cutback | 10.0 (254) | inch (mm) |
| Max. OD | 4.8 (122) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 5" terminals available | |

| | | |
|-----------------------|---------------------|-----------------|
| Bit Speed | 78-156 | rpm |
| Flow Range | 150-300 (568-1,136) | gpm (lpm) |
| Displacement | 0.521 (0.138) | rev/gal (rev/l) |
| Motor Pressure | 827 (57) | psi (bar) |
| Torque | 4,410 (5,998) | ft-lbs (Nm) |
| Power Out | 110 (83) | HP (Kw) |



Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.



Artemis 6.75" 5/6 3.9 SPIRA®

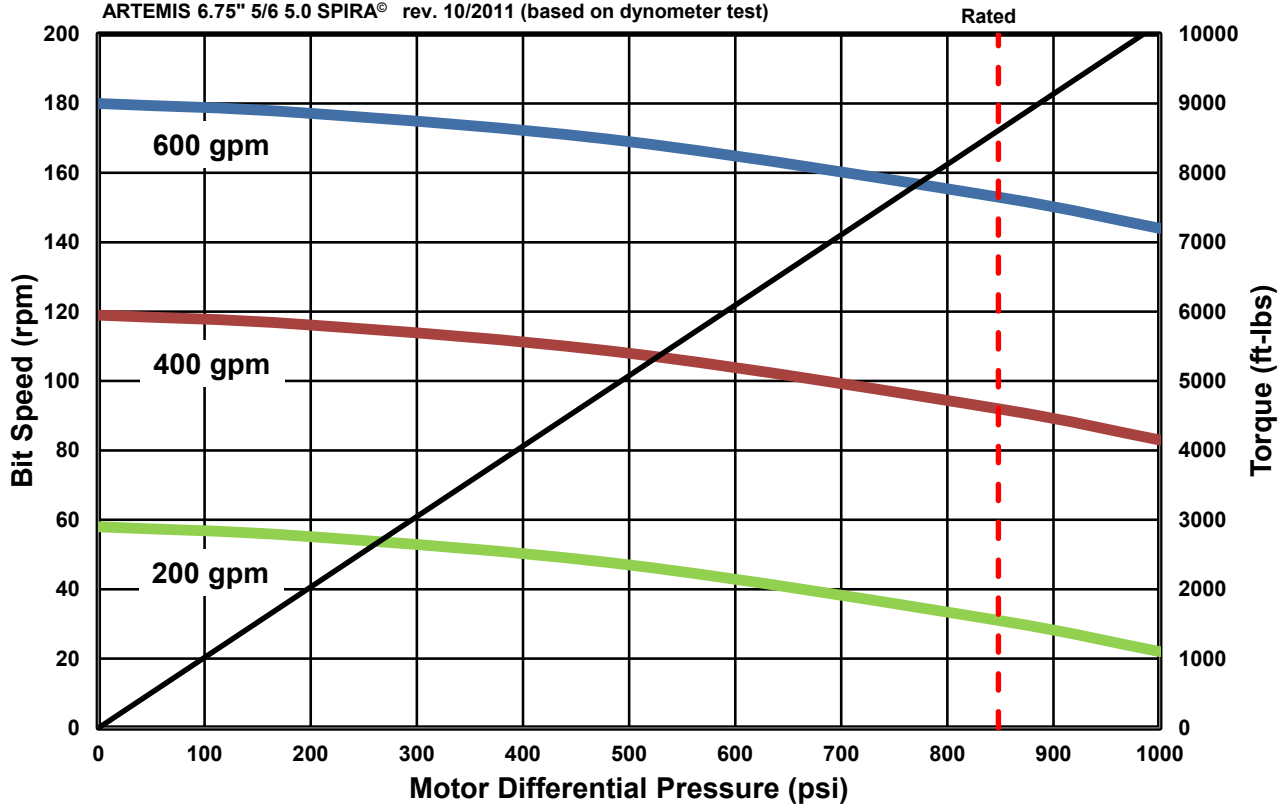


| | | |
|----------------------------------|----------------------------------|-----------|
| No. of Stages | 3.9 | |
| No. of Lobes Rotor/Stator | 5/6 | |
| Overall Length | 177.5 (4,508) | inch (mm) |
| Rubber Cutback | 10.0 (254) | inch (mm) |
| Max. OD | 6.93 (176) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 7" terminals available | |

| | | |
|-----------------------|---------------------|-----------------|
| Bit Speed | 61-182 | rpm |
| Flow Range | 200-600 (757-2,271) | gpm (lpm) |
| Displacement | 0.304 (0.080) | rev/gal (rev/l) |
| Motor Pressure | 856 (59) | psi (bar) |
| Torque | 8,622 (11,692) | ft-lbs (Nm) |
| Power Out | 240 (178) | HP (Kw) |

Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.

ARTEMIS 6.75" 5/6 5.0 SPIRA® rev. 10/2011 (based on dynamometer test)



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Artemis 6.75" 5/6 5.3 SPIRA®

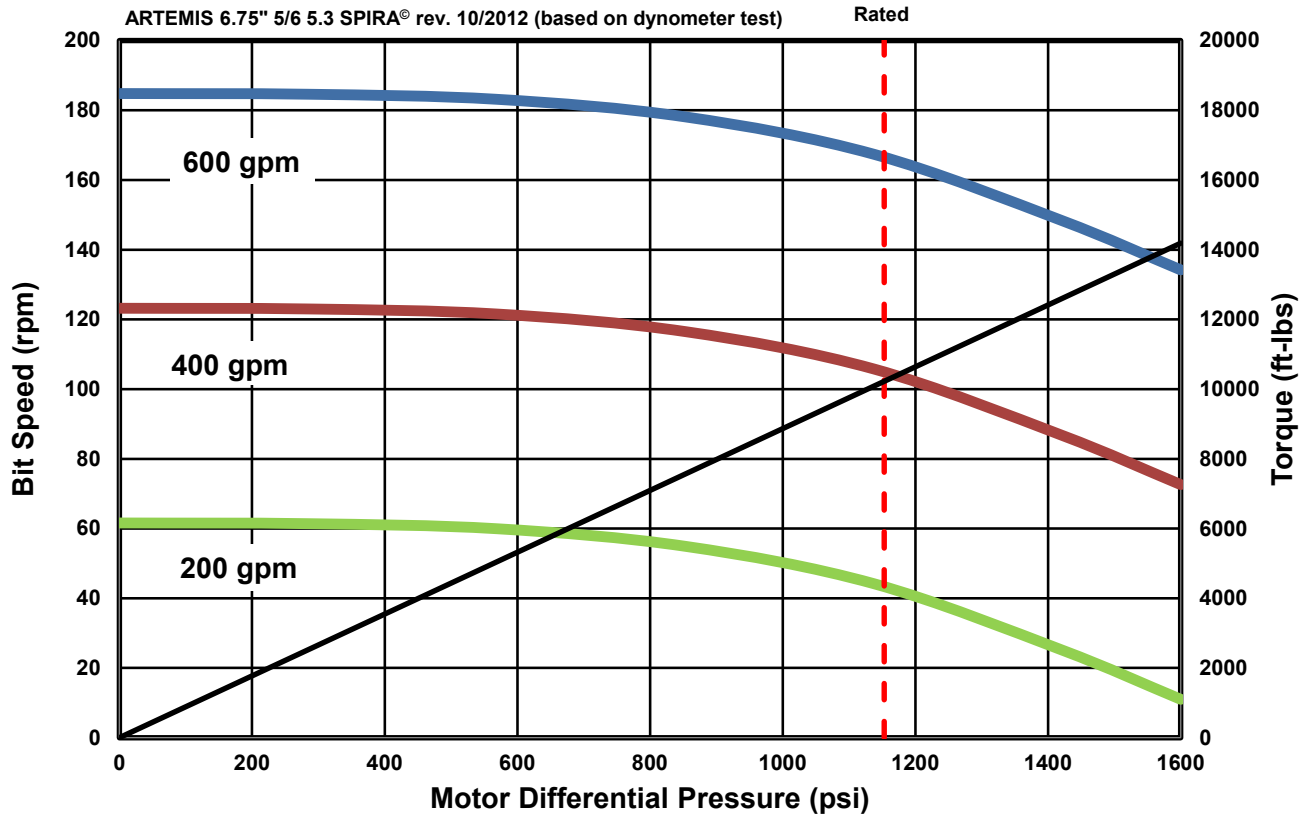


| | | |
|----------------------------------|----------------------------------|-----------|
| No. of Stages | 5.3 | |
| No. of Lobes Rotor/Stator | 5/6 | |
| Overall Length | 235.8 (5,990) | inch (mm) |
| Rubber Cutback | 10.0 (254) | inch (mm) |
| Max. OD | 6.93 (176) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 7" terminals available | |



| | | |
|-----------------------|---------------------|-----------------|
| Bit Speed | 61-182 | rpm |
| Flow Range | 200-600 (757-2,271) | gpm (lpm) |
| Displacement | 0.304 (0.080) | rev/gal (rev/l) |
| Motor Pressure | 1146 (79) | psi (bar) |
| Torque | 11,618 (15,754) | ft-lbs (Nm) |
| Power Out | 327 (240) | HP (Kw) |

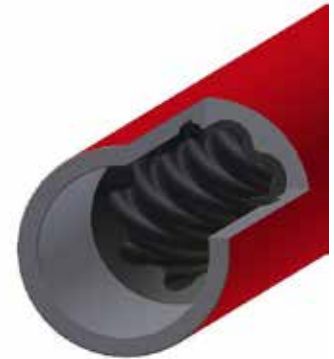
Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.



Artemis 6.75" 7/8 5.0 SPIRA® TNT



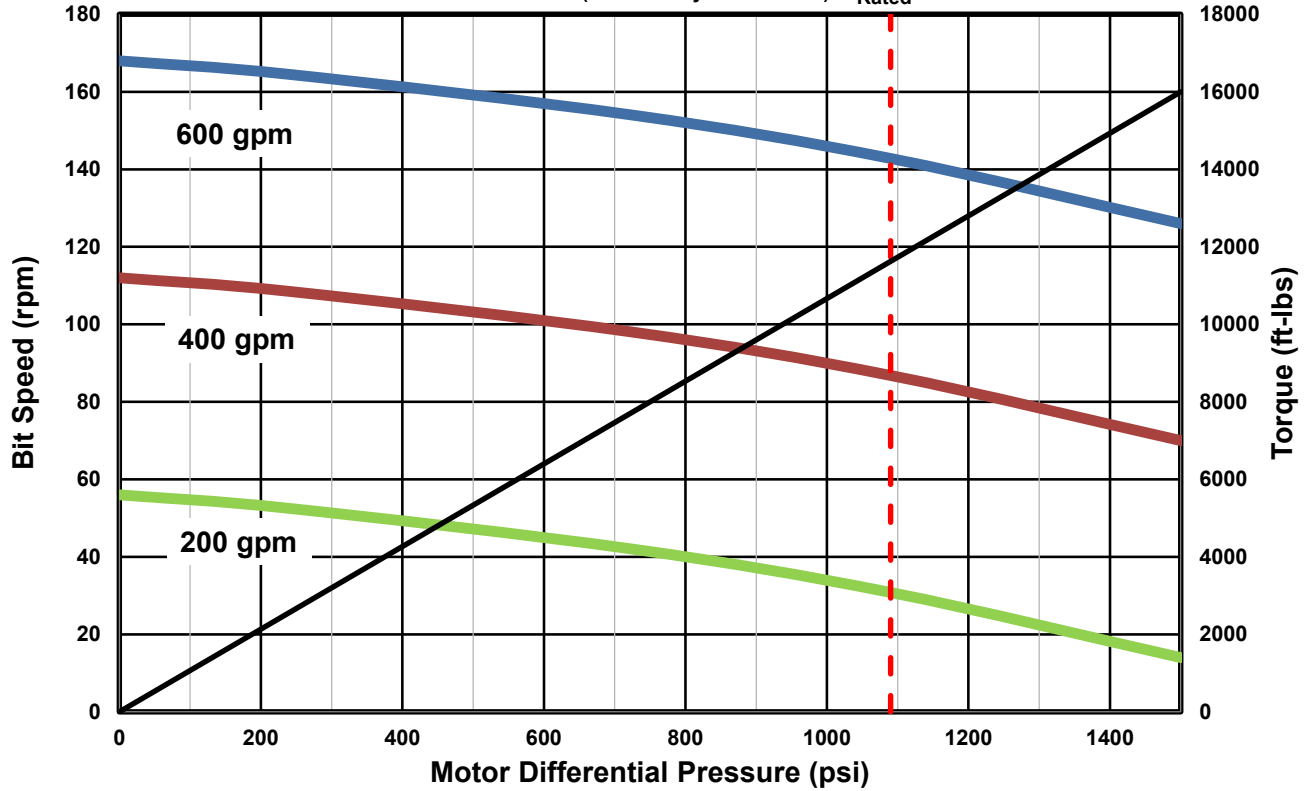
| | | |
|----------------------------------|----------------------------------|-----------|
| No. of Stages | 5.0 | |
| No. of Lobes Rotor/Stator | 7/8 | |
| Overall Length | 200 (5,080) | inch (mm) |
| Rubber Cutback | 10.0 (259) | inch (mm) |
| Max. OD | 6.89 (173) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 7" terminals available | |



| | | |
|-----------------------|---------------------|-----------------|
| Bit Speed | 58-173 | rpm |
| Flow Range | 200-600 (757-2,271) | gpm (lpm) |
| Displacement | 0.288 (0.076) | rev/gal (rev/l) |
| Motor Pressure | 1088 (75) | psi (bar) |
| Torque | 11,576 (15,698) | ft-lbs (Nm) |
| Power Out | 310 (227) | HP (Kw) |

Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.

ARTEMIS 6.75" 7/8 5.0 SPIRA® TNT rev. 10/2011 (based on dynamometer test) Rated



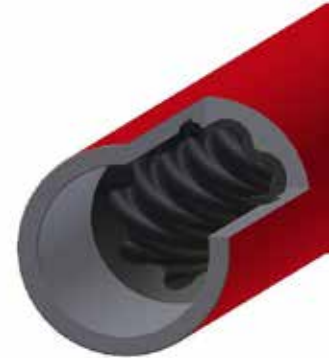
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Artemis 6.75" 7/8 5.9 SPIRA® TNT



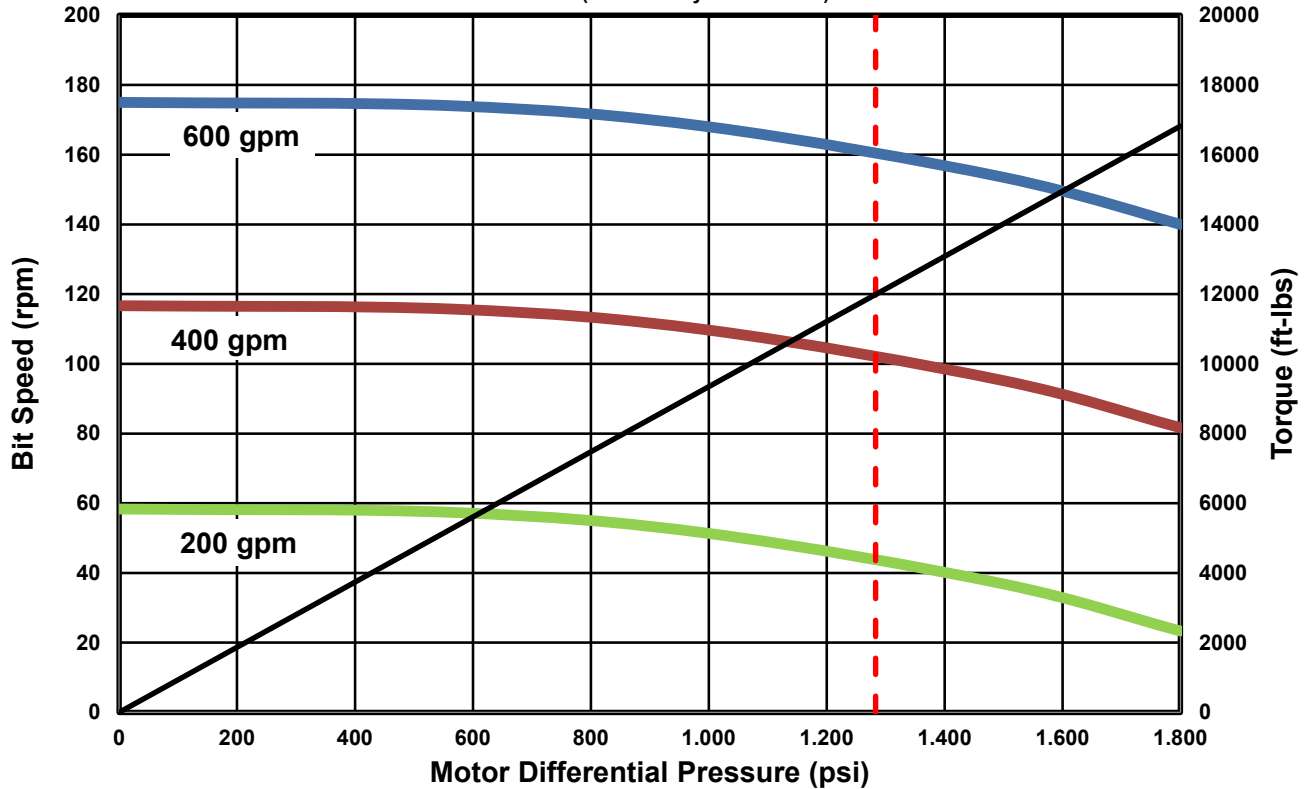
| | | |
|----------------------------------|----------------------------------|-----------|
| No. of Stages | 5.9 | |
| No. of Lobes Rotor/Stator | 7/8 | |
| Overall Length | 235.8 (5,990) | inch (mm) |
| Rubber Cutback | 10.0 (259) | inch (mm) |
| Max. OD | 6.89 (175) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | also with 7" terminals available | |

| | | |
|-----------------------|---------------------|-----------------|
| Bit Speed | 58-173 | rpm |
| Flow Range | 200-600 (757-2,271) | gpm (lpm) |
| Displacement | 0.288 (0.076) | rev/gal (rev/l) |
| Motor Pressure | 1276 (88) | psi (bar) |
| Torque | 13,660 (18,523) | ft-lbs (Nm) |
| Power Out | 365 (268) | HP (Kw) |



Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.

ARTEMIS 6.75" 7/8 5.9 SPIRA® TNT rev. 10/2012 (based on dynamometer test) Rated



Artemis 8.00" 5/6 3.3 SPIRA®

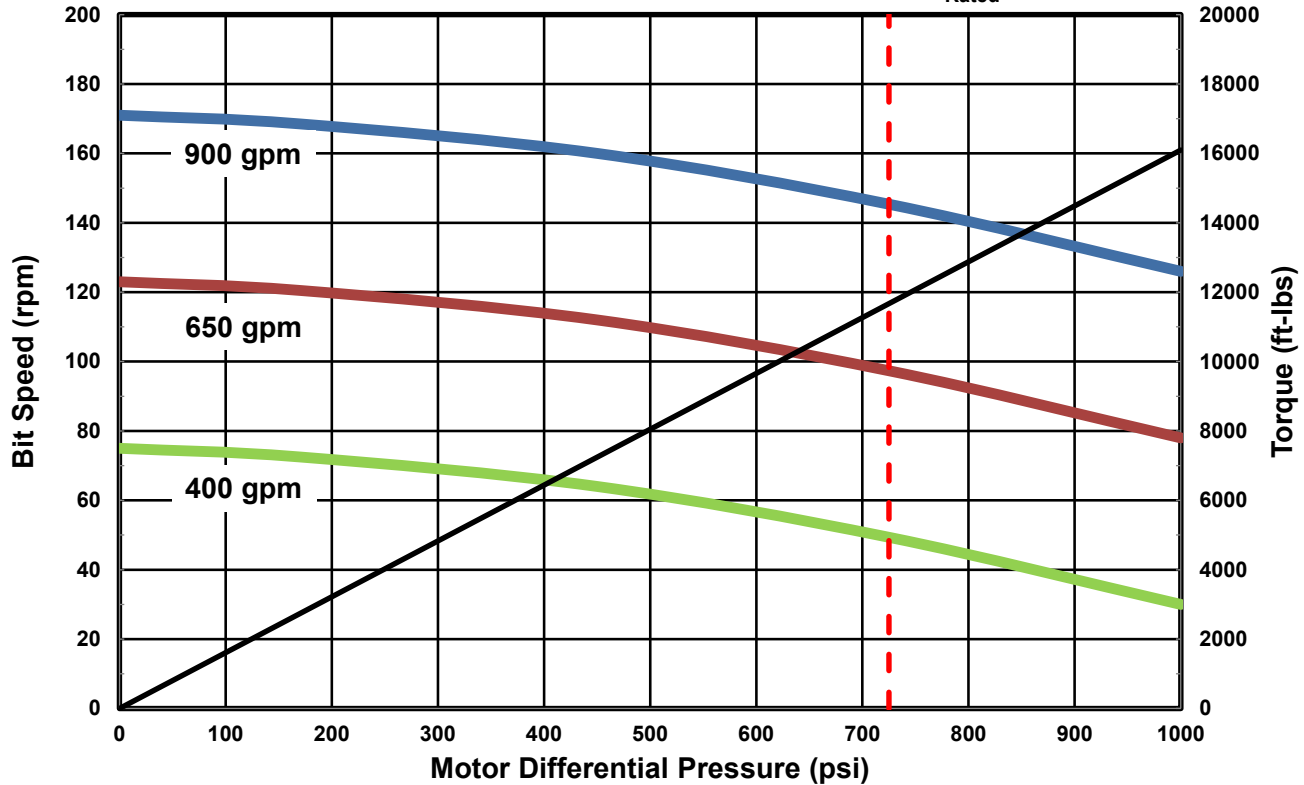


| | | |
|----------------------------------|--|-----------|
| No. of Stages | 3.3 | |
| No. of Lobes Rotor/Stator | 5/6 | |
| Overall Length | 177.5 (4,508) | inch (mm) |
| Rubber Cutback | 9 (229) | inch (mm) |
| Max. OD | 8.25 (210) | inch (mm) |
| Connections | to customer's specification | |
| Rubber Types | NBR, HNBR | |
| Options | Terminal for 9 5/8" Lower Section avail. | |



| | | |
|-----------------------|-----------------------|-----------------|
| Bit Speed | 75-170 | rpm |
| Flow Range | 400-900 (1,514-3,407) | gpm (lpm) |
| Displacement | 0.190 (0.050) | rev/gal (rev/l) |
| Motor Pressure | 725 (50) | psi (bar) |
| Torque | 11,670 (15,871) | ft-lbs (Nm) |
| Power Out | 324 (243) | HP (Kw) |

Performance curves are for reference only (@ 175 °F). Actual power section performance may vary depending on operating conditions (e.g. chosen rotor/stator interference fit, possible rubber swelling by drilling fluid, actual downhole temperature, actual stator temperature, physical properties of the drilling fluid). Data subject to change without notice.





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