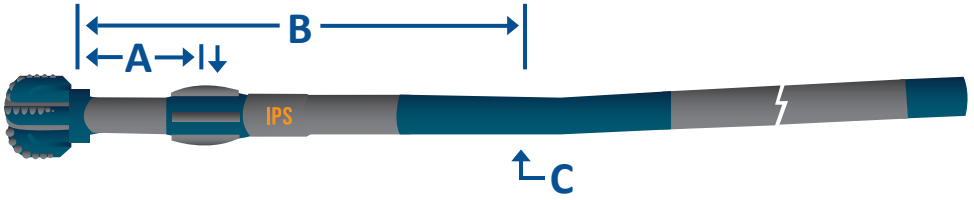




6 - 3/4" OR 7" MUD-LUBRICATED



| | |
|--|---|
| Description | High Performance Mud-Lubricated Bearing Section |
| Tool OD (in) | 6.90 Slick Bearing Housing 7.63 Thread Protector 6.75 U-Joint Housing and above |
| Bit to Center of Stabilizer Blade A | 30.5 in (2.5 ft) |
| Bit to Bend B | 74 in (6.2 ft) |
| Radius @ Adjusting Ring C | 3.84 in (0.32 ft) |
| Bit Box Connection | 4-1/2 Reg Box |
| Maximum WOB | 170,000 lbs |
| Maximum Overpull to Re-Run | 400,000 lbs |
| Absolute Overpull | 600,000 lbs |
| Top Sub Options | 4-1/2 Hughes Extra Hole 4R Float Bore Rotor Catch |
| 4-1/2 Hughes Extra Hole | 22,500 - 24,700 ft-lbs (6-1/2 x 2-13/16 collar) |
| 4-1/2 Reg | 19,000 ft-lbs |
| Near-Bit Stabilizer | 26,000 ft-lbs |
| Adjustable Bend Housing | 25,500 - 33,000 ft-lbs |



**6 3/4" OR 7"
MUD-LUBRICATED**

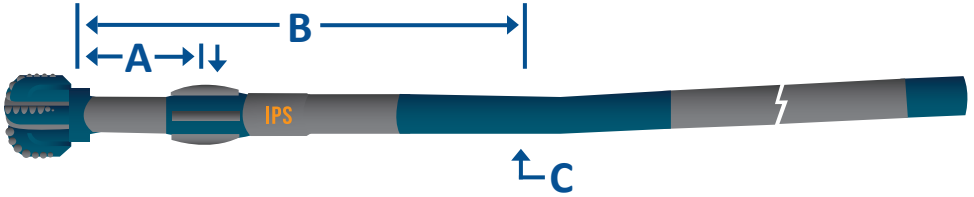
**PREDICTED BUILD RATES
DEGREES/100 FT (30M)**

| BEND SETTING | SLICK | | | ONE STABILIZER* | |
|-----------------|---------|---------|-------|-----------------|---------|
| | 8-1/2 | 8-3/4 | 9-7/8 | 8-1/2 | 8-3/4 |
| Deg | | | | | |
| 0.39 | 1.15 | 0.48 | - | 2.90 | 3.11 |
| 0.78 | 4.13 | 3.47 | 0.49 | 5.43 | 5.64 |
| 1.15 | 6.96 | 6.30 | 3.32 | 7.83 | 8.04 |
| 1.5 | 9.65 | 8.98 | 6.00 | 10.11 | 10.31 |
| 1.83 | 12.17 | 11.51 | 8.53 | 12.24 | 12.46 |
| 2.12 | 14.40 | 13.74 | 10.75 | 14.11 | 14.33 |
| 2.38 | (16.37) | 15.74 | 12.73 | 15.83 | 16.01 |
| 2.6 | (18.08) | 17.42 | 14.43 | (17.26) | 17.47 |
| 2.77 | (19.36) | 18.73 | 15.74 | (18.37) | 18.54 |
| 2.9 | (20.39) | (19.69) | 16.71 | (19.16) | (19.42) |
| 2.97 | (20.91) | (20.25) | 17.26 | (19.62) | (19.83) |
| 3 | (21.14) | (20.46) | 17.47 | (19.69) | (19.90) |

() Stator Contact; Configuration Unstable *1/8" Under Gage



6-3/4" OR 7" SEALED BEARING



| | | |
|---|---|---|
| Bit to Center of Stabilizer Blade | A | 24 in (0.61 m) |
| Bit to Bend | B | 76 in (1.93 m) |
| Radius @ Adjusting Ring | C | 3.75 in (95 mm) |
| | | |
| Max Effective OD of Slick Motor @ Adjusting Ring @ 0° | | 7.50 in (191 mm) |
| Max OD of Slick Motor w/Straight Housing | | 7.13 in (181 mm) |
| Bit to Max Slick OD w/Straight Housing | | 51.36 in (1305 mm) |
| | | |
| Estimated Total Weight | | 2850 lbs (1293 kg) |
| Common Top Connection | | 4 1/2 REG, 4 1/2 IF, 4 1/2 H-90, 4 1/2 XH, 5 H-90 |
| Common Btm Connection | | 4 1/2 REG |



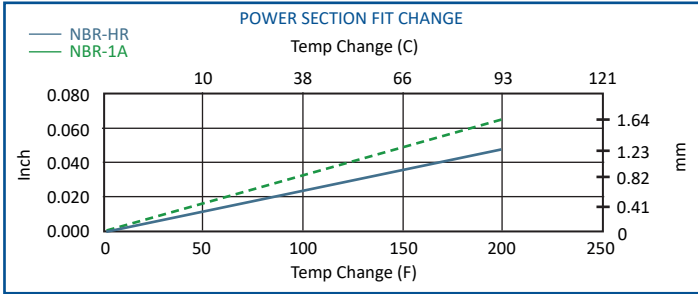
6-3/4" OR 7" SEALED BEARING

PREDICTED BUILD RATES DEGREES/100 FT (30M)

| BEND SETTING | SLICK | | | SINGLE STABILIZER | | | TWO STABILIZER | | |
|-----------------|-----------|-------|-------|-------------------|-------|-------|----------------|-------|-------|
| | HOLE SIZE | | | HOLE SIZE | | | HOLE SIZE | | |
| Deg | 8-1/2 | 8-3/4 | 9-7/8 | 8-1/2 | 8-3/4 | 9-7/8 | 8-1/2 | 8-3/4 | 9-7/8 |
| 0.39° | 1.1 | 1.1 | 1.1 | 1.8 | 1.9 | 2.3 | 1.3 | 1.3 | 1.4 |
| 0.78° | 2.7 | 2.2 | 2.1 | 3.7 | 3.8 | 4.2 | 3.3 | 3.3 | 3.3 |
| 1.15° | 4.7 | 4.2 | 3.1 | 5.5 | 5.6 | 5.9 | 5.2 | 5.2 | 5.2 |
| 1.50° | 6.7 | 6.2 | 4.1 | 7.2 | 7.3 | 7.6 | 7.0 | 7.0 | 7.0 |
| 1.83° | 8.5 | 8.0 | 5.9 | 8.8 | 8.8 | 9.1 | 8.7 | 8.7 | 8.7 |
| 2.12° | 10.1 | 9.6 | 7.4 | 10.2 | 10.2 | 10.5 | 10.1 | 10.1 | 10.1 |
| **2.25° | 10.8 | 10.3 | 8.1 | 10.8 | 10.9 | 11.1 | 10.8 | 10.8 | 10.8 |
| 2.38° | 11.5 | 11.0 | 8.8 | 11.5 | 11.5 | 11.7 | 11.6 | 11.5 | 11.4 |
| 2.60° | 12.7 | 12.2 | 10.0 | 12.7 | 12.5 | 12.8 | 12.9 | 12.6 | 12.6 |
| 2.77° | 13.7 | 13.2 | 10.9 | 13.7 | 13.4 | 13.6 | 13.9 | 13.4 | 13.4 |
| 2.89° | 14.4 | 13.8 | 11.6 | 14.4 | 13.9 | 14.1 | 14.6 | 14.1 | 14.0 |
| 2.97° | 14.8 | 14.3 | 12.0 | 14.8 | 14.3 | 14.5 | 15.1 | 14.5 | 14.4 |
| 3.00° | 15.0 | 14.4 | 12.2 | 15.0 | 14.5 | 14.7 | 15.3 | 14.6 | 14.6 |



6.75" 7/8 LOBES 2.9 STAGES

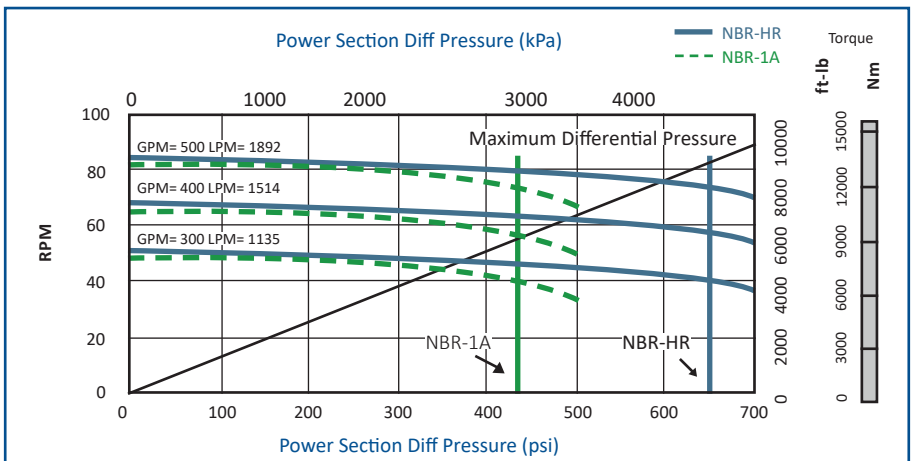


PERFORMANCE SPECIFICATIONS

| | | |
|------------------|------------------|------------------------|
| Torque Slope | 15.378 ft-lb/psi | 3.024 Nm/kPa |
| Flow Range | 300 to 500 GPM | 1140 to 1890 Litre/min |
| Rotation | 0.160 Rev/Gal | 0.042 Rev/Litre |
| Speed Range | 48 to 80 RPM | |
| Off Bottom Press | 66 psi | 460 kPa |

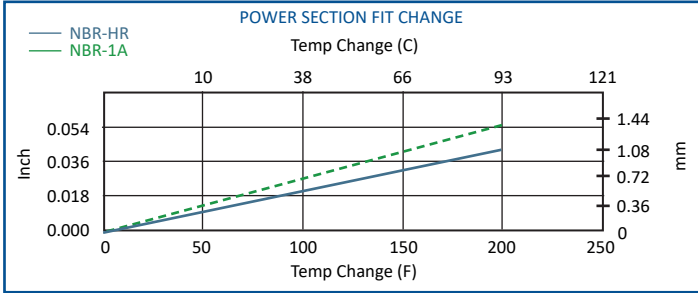
PERFORMANCE DETAILS

| | NBR - 1A | NBR - HR |
|----------------------------|---------------|---------------|
| Max Diff Press psi (kPa) | 440 (3000) | 650 (4500) |
| Max Torque ft-lb (Nm) | 6690 (9070) | 10030 (13600) |
| Stall Diff Press psi (kPa) | 650 (4500) | 980 (6750) |
| Stall Torque ft-lb (Nm) | 10030 (13600) | 15050 (20410) |
| Max Recommended HP (kW) | 102 (76) | 143 (107) |





6.75" 7/8 LOBES 3.0 STAGES

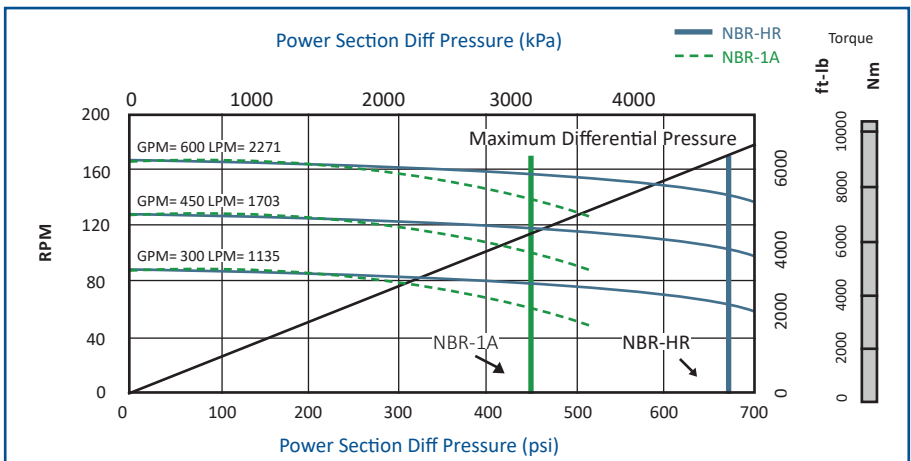


PERFORMANCE SPECIFICATIONS

| | |
|------------------|---------------------------------------|
| Torque Slope | 9.300 ft-lb/psi 1.829 Nm/kPa |
| Flow Range | 300 to 600 GPM 1140 to 2270 Litre/min |
| Rotation | 0.283 Rev/Gal 0.075 Rev/Litre |
| Speed Range | 84 to 170 RPM |
| Off Bottom Press | 111 psi 770 kPa |

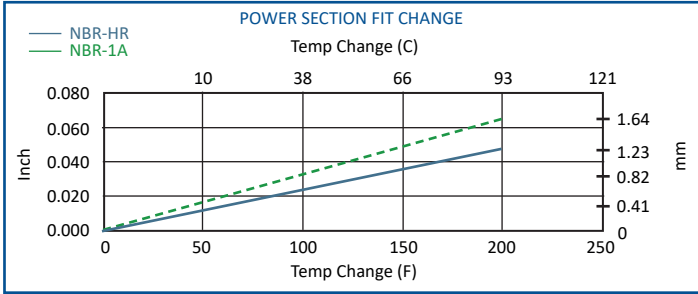
PERFORMANCE DETAILS

| | NBR - 1A | NBR - HR |
|----------------------------|-------------|--------------|
| Max Diff Press psi (kPa) | 450 (3100) | 680 (4650) |
| Max Torque ft-lb (Nm) | 4190 (5670) | 6280 (8510) |
| Stall Diff Press psi (kPa) | 680 (4650) | 1010 (6980) |
| Stall Torque ft-lb (Nm) | 6280 (8510) | 9420 (12770) |
| Max Recommended HP (kW) | 135 (101) | 190 (142) |





6.75" 6/7 LOBES 5.0 STAGES

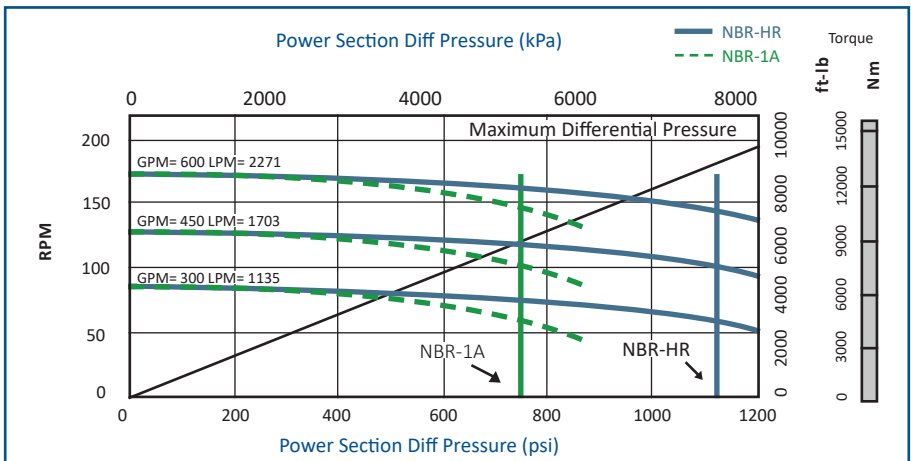


PERFORMANCE SPECIFICATIONS

| | |
|------------------|---------------------------------------|
| Torque Slope | 8.313 ft-lb/psi 1.635 Nm/kPa |
| Flow Range | 300 to 600 GPM 1140 to 2270 Litre/min |
| Rotation | 0.292 Rev/Gal 0.077 Rev/Litre |
| Speed Range | 87 to 180 RPM |
| Off Bottom Press | 110 psi 760 kPa |

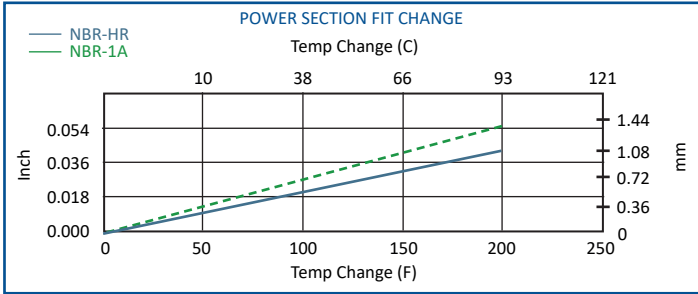
PERFORMANCE DETAILS

| | NBR - 1A | NBR - HR |
|----------------------------|--------------|---------------|
| Max Diff Press psi (kPa) | 750 (5170) | 1130 (7760) |
| Max Torque ft-lb (Nm) | 6230 (8450) | 9350 (12680) |
| Stall Diff Press psi (kPa) | 1130 (7760) | 1690 (11630) |
| Stall Torque ft-lb (Nm) | 9350 (12680) | 14030 (19020) |
| Max Recommended HP (kW) | 208 (155) | 290 (216) |





6.75" 7/8 LOBES 5.0 STAGES

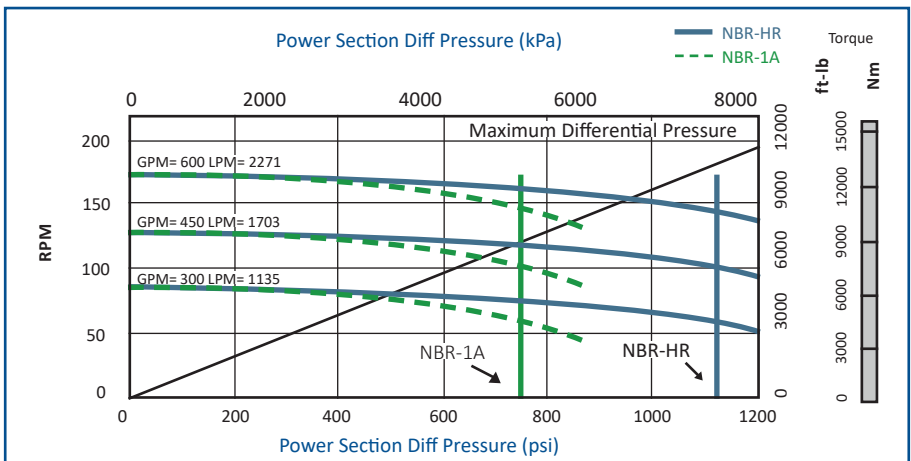


PERFORMANCE SPECIFICATIONS

| | |
|------------------|---------------------------------------|
| Torque Slope | 9.300 ft-lb/psi 1.829 Nm/kPa |
| Flow Range | 300 to 600 GPM 1140 to 2270 Litre/min |
| Rotation | 0.288 Rev/Gal 0.076 Rev/Litre |
| Speed Range | 86 to 180 RPM |
| Off Bottom Press | 137 psi 940 kPa |

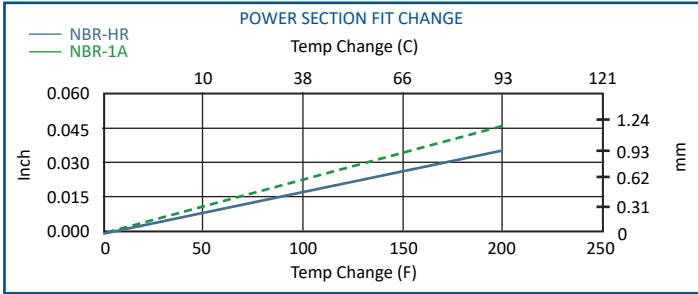
PERFORMANCE DETAILS

| | NBR - 1A | NBR - HR |
|----------------------------|---------------|---------------|
| Max Diff Press psi (kPa) | 750 (5170) | 1130 (7760) |
| Max Torque ft-lb (Nm) | 6980 (9460) | 10460 (14190) |
| Stall Diff Press psi (kPa) | 1130 (7760) | 1690 (11630) |
| Stall Torque ft-lb (Nm) | 10460 (14190) | 15690 (21280) |
| Max Recommended HP (kW) | 229 (171) | 323 (241) |





6.75" 7/8 LOBES 5.7 STAGES

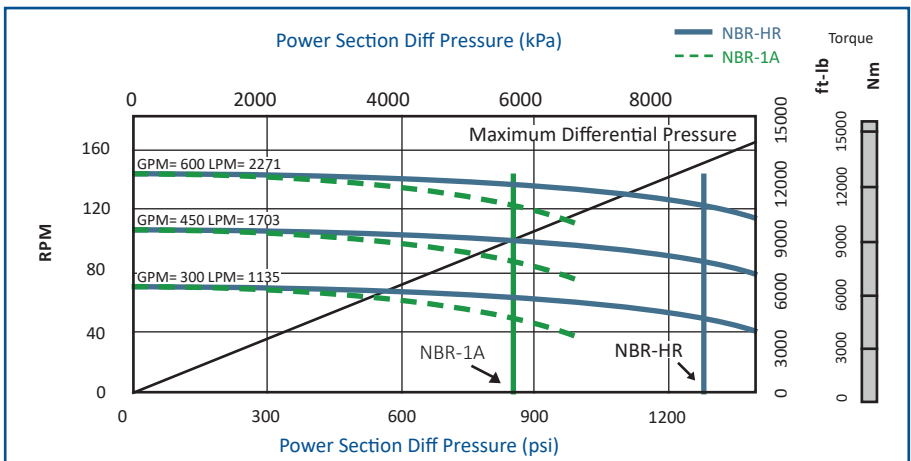


PERFORMANCE SPECIFICATIONS

| | |
|------------------|---------------------------------------|
| Torque Slope | 10.698 ft-lb/psi 2.104 Nm/kPa |
| Flow Range | 300 to 600 GPM 1140 to 2270 Litre/min |
| Rotation | 0.242 Rev/Gal 0.064 Rev/Litre |
| Speed Range | 72 to 150 RPM |
| Off Bottom Press | 106 psi 730 kPa |

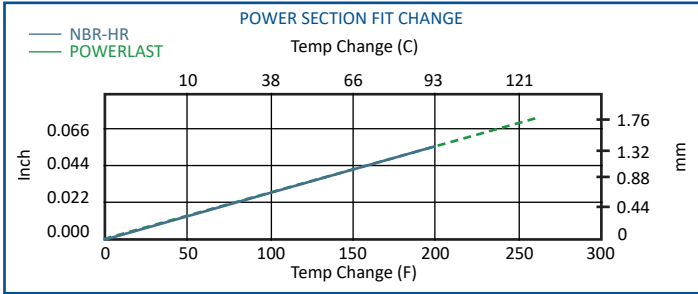
PERFORMANCE DETAILS

| | NBR - 1A | NBR - HR |
|----------------------------|---------------|---------------|
| Max Diff Press psi (kPa) | 860 (5900) | 1280 (8840) |
| Max Torque ft-lb (Nm) | 9150 (12400) | 13720 (18600) |
| Stall Diff Press psi (kPa) | 1280 (8840) | 1920 (13260) |
| Stall Torque ft-lb (Nm) | 13720 (18600) | 20580 (27910) |
| Max Recommended HP (kW) | 253 (188) | 355 (265) |





6.75" 4/5 LOBES 7.0 STAGES

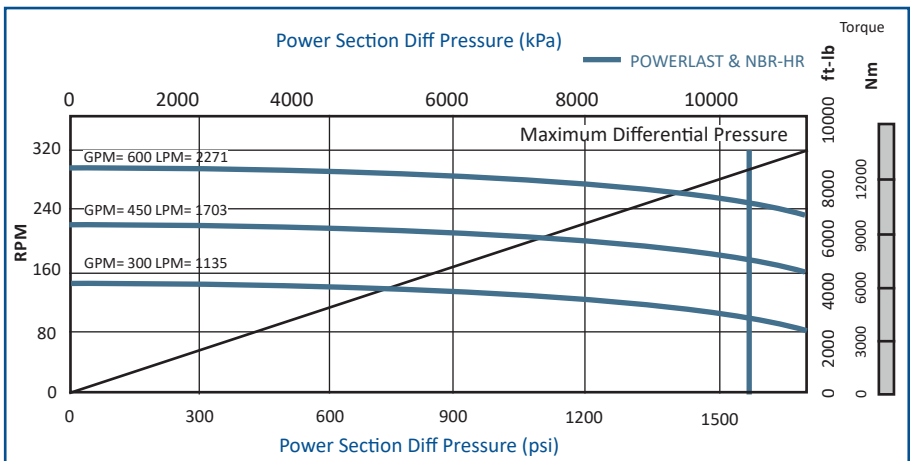


PERFORMANCE SPECIFICATIONS

| | |
|------------------|---------------------------------------|
| Torque Slope | 5.770 ft-lb/psi 1.135 Nm/kPa |
| Flow Range | 300 to 600 GPM 1140 to 2270 Litre/min |
| Rotation | 0.497 Rev/Gal 0.131 Rev/Litre |
| Speed Range | 149 to 300 RPM |
| Off Bottom Press | 161 psi 1110 kPa |

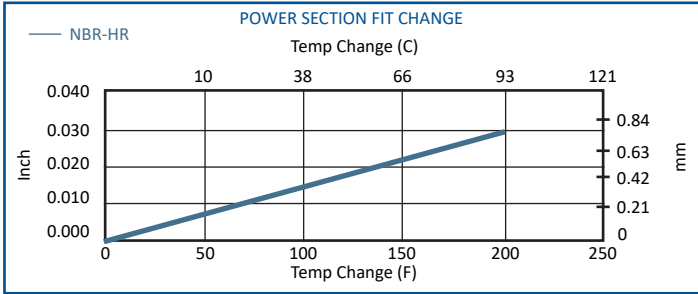
PERFORMANCE DETAILS

| | POWERLAST & NBR-HR |
|----------------------------|--------------------|
| Max Diff Press psi (kPa) | 1580 (10860) |
| Max Torque ft-lb (Nm) | 9090 (12330) |
| Stall Diff Press psi (kPa) | 2360 (16290) |
| Stall Torque ft-lb (Nm) | 13630 (18490) |
| Max Recommended HP (kW) | 482 (360) |

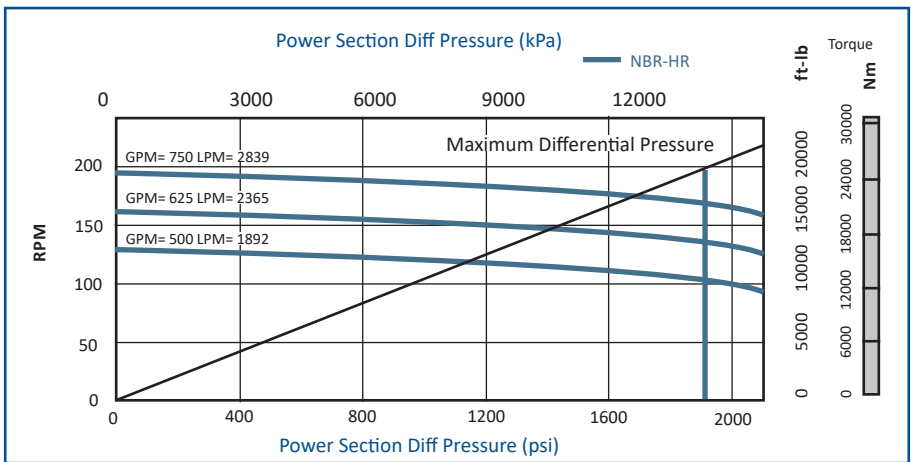




7" 7/8 LOBES 8.5 STAGES



| PERFORMANCE SPECIFICATIONS | | PERFORMANCE DETAILS | |
|----------------------------|---------------------------------------|----------------------------|---------------|
| Torque Slope | 9.783 ft-lb/psi 1.924 Nm/kPa | Max Diff Press psi (kPa) | 1910 (13190) |
| Flow Range | 500 to 750 GPM 1890 to 2840 Litre/min | Max Torque ft-lb (Nm) | 18710 (25370) |
| Rotation | 0.260 Rev/Gal 0.069 Rev/Litre | Stall Diff Press psi (kPa) | 2870 (19780) |
| Speed Range | 130 to 200 RPM | Stall Torque ft-lb (Nm) | 20060 (38060) |
| Off Bottom Press | 179 psi 1230 kPa | Max Recommended HP (kW) | 651 (486) |





7" 6/7 LOBES 8.4 STAGES

PERFORMANCE SPECIFICATIONS

| | |
|------------------|-----------------|
| Torque Slope | 8.38 ft-lb/ psi |
| Flow Range | 350 - 750 GPM |
| Rotation | 0.300 Rev/Gal |
| Speed Range | 130 to 200 RPM |
| Off Bottom Press | 160 psi |

PERFORMANCE DETAILS

| | NBR | NBR-HPX/HPW |
|----------------------|-------------|-------------|
| Max Diff Press psi | 1260 psi | 1980 psi |
| Max Torque ft-lb | 10560 ft-lb | 16550 ft-lb |
| Stall Diff Press psi | 1890 psi | 3110 psi |
| Stall Torque ft-lb | 15840 ft-lb | 26060 ft-lb |

