

FireRock

ENERGY  SERVICES

Drilling Motors

4404 SW 134th Street
Oklahoma City, OK 73173
(405) 208-4455

Tilley **GROUP**

Motor	Rev/GAL	Flow Rate Range (gpm)	Max Torque	Bit Speed (RPM)	OFF BOTTOM PRESSURE (PSI)	Max. Differential Pressure	Stall Diff Press	Stall Torque
3 1/2" 5/6 Lobes 3.0 Stage	2.44	80-210	650	175-460	50	300.00	950.00	1,020.00
4 3/4" 7/8 Lobes 2.6 Stage	0.26	150 - 300	5,770	40 - 80	40	620.00	970.00	9,090.00
4 3/4" 7/8 Lobes 2.9 Stage	0.31	150 - 300	5,480	40 - 80	40	690.00	1,080.00	8,620.00
4 3/4" 7/8 Lobes 3.8 Stage	0.54	150 - 250	4,130	50 - 140	50	900.00	1,410.00	6,500.00
4 3/4" 7/8 Lobes 5.0 Stage	0.62	150 - 300	4,670	40 - 80	80	1,180.00	1,860.00	7,350.00
4 3/4" 5/6 Lobes 8.3 Stage	1.00	150 - 300	4,980	90 - 190	100	1,960.00	3,080.00	7,840.00
5" 6/7 Lobes 8.0 Stage	0.79	100 - 300	6,110	65 - 300	110	1,880.00	2,970.00	9,630.00
6 1/4" 7/8 Lobes 2.9 Stage	0.16	200 - 500	4,460	30 - 80	50	290.00	440.00	6,680.00
6 1/4" 7/8 Lobes 4.8 Stage	0.33	150 - 400	8,500	50 - 130	70	1,130.00	1,780.00	13,380.00
6 1/2" 7/8 Lobes 2.9 Stage	0.16	200 - 500	10,470	30 - 80	50	690.00	1,080.00	16,480.00
6 1/2" 7/8 Lobes 4.8 Stage	0.33	150 - 400	8,500	50 - 130	70	1,130.00	1,780.00	13,380.00
6 3/4" 7/8 Lobes 3.3 Stage	0.15	300 - 600	13,150	50 - 90	70	780.00	1,230.00	20,710.00
6 3/4" 7/8 Lobes 2.9 Stage	0.16	300 - 500	10,600	50 - 80	60	690.00	1,080.00	16,700.00
6 3/4" 7/8 Lobes 5.7 Stage	0.23	300 - 650	14,200	70 - 150	100	1,340.00	2,110.00	22,370.00
6 3/4" 7/8 Lobes 5.0 Stage	0.27	300 - 650	10,650	80 - 180	110	1,180.00	1,860.00	16,770.00
6 3/4" 4/5 Lobes 7.0 Stage	0.49	300 - 700	3,760	150 - 300	150	700.00	1,050.00	5,630.00
7" 7/8 Lobes 8.5 Stage	0.26	400 - 750	19,540	100 - 200	150	2,000.00	3,150.00	30,770.00
7" 6/7 Lobes 10.1 Stage	0.33	450 - 750	18,040	150 - 250	200	2,380.00	3,740.00	28,420.00
8" 7/8 Lobes 3.4 Stage	0.09	400 - 900	22,530	30 - 80	70	800.00	1,260.00	35,480.00
8" 7/8 Lobes 4.0 Stage	0.16	400 - 900	14,830	92 - 144	100	940.00	1,490.00	14,650.00
8" 7/8 Lobes 5.9 Stage	0.16	400 - 900	21,870	60 - 140	120	1,390.00	2,190.00	34,440.00
9 5/8" Combo 7/8 Lobes 3.4 Stage	0.09	400 - 900	22,530	30 - 80	70	800.00	1,260.00	35,480.00
9 5/8" Combo 7/8 Lobes 4.0 Stage	0.16	400 - 900	14,830	92 - 144	100	940.00	1,490.00	14,650.00
9 5/8" Combo 7/8 Lobes 5.9 Stage	0.16	400 - 900	21,870	60 - 140	120	1,390.00	2,190.00	34,440.00

FireRock

ENERGY SERVICES

4404 SW 134TH Str Oklahoma City, OK 73173

FireRock Energy Services is a full service directional provider and member of the Tilley Group. We offer multiple staging location throughout North America to lower shipping cost and reduce time. We are proud to provide a large selection of downhole motors, tubulars, MWD services and horizontal/directional drilling across the nation.

24hr service Contact (405) 208 - 4455

www.firerockenergyservices.com

Drilling Mud Motors

Firerock Energy Services mud motors are built to meet high stress and performance down hole needs. Quality, performance, and reliability are the core what makes Firerock motors the right choice. We offer mud lube and sealed motors with various options, fixed and adjustable housings, short radius bit to bends, and pin down, rss assist.

The information provided within this booklet is a summary but not limited to the tools Firerock Energy Services can provide. We welcome shop visits to help to share our drilling knowledge and capabilities to assist you with your performance goals.

Locations - We offer multiple stocking locations near major basins.

Odessa, Texas | Bossier, Louisiana | Zanesville, Ohio | Williston, North Dakota | Ft. Lupton,



FireRock Energy Services offer both Mud Lubricated and Sealed motors in specific sizes. We offer a range of configurations our motors can be set up for your specific need.

- *Short Radius fixed bit to bend motors**
- *Adjustable angle and straight motors**
- *Lower and upper stabilization packages**
- *Pin Down rss assist tools**
- *Air, water and oil based mud**
- *High temperature environments**

	Mud Lub.	Sealed	Short Radius	Pin Down
3 1/2"	X		X	
4 3/4"	X		X	
5"		X	X	
6 1/4"		X		
6 1/2"		X		
6 3/4"	X	X	X	X
7"	X		X	X
8"	X		X	
9 5/8"	X		X	



3.50" 5/6 Lobe 3.0 Stage

Motor Details

Lobes	5/6	3.0
Weight	290	lbs
FBH bit to bend	48	in.
ABH bit to bend	48	in.
Max WOB	28,000	ft-lbs
Max Bit Pull	60,000	ft-lbs
Max Body Pull	183,000	ft-lbs
Bit Connection	2 7/8" Reg Box	
Top Sub Connection	2 7/8" Reg Box	

Power Section Details

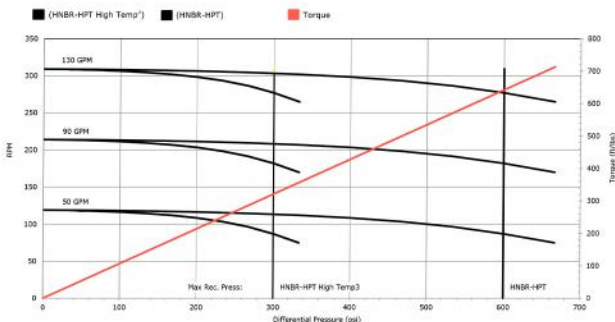
Rotation	2.44 rev./gal
Flow Range	80 - 210 gpm
Torque Slope	1.07 ft-lb/psi
Speed	175-460 rpm
Off Bottom Press	50 psi

Power Section Performance

Max Diff Pressure	300 psi
Max Torque	650 ft-lb
Stall Diff Pressure	950 psi
Stall Torque Pressure	1020 psi

Build Rate - ABH Slick

Deg	4 1/4	4 1/2	4 3/4
0.39	2.5	2.5	2.5
0.78	5.5	5.0	5.0
1.15	10.3	8.7	7.3
1.50	14.8	13.2	11.6
1.83	19.1	17.4	15.8
2.12	22.8	21.1	19.4
2.38	26.2	24.5	22.8
2.60	29.1	27.3	25.5
2.77	31.3	29.5	27.7
2.97	33.9	32.0	30.3
3.00	34.2	32.4	30.6





4.75" 7/8 Lobe 2.6 Stage

Motor Details

Lobes	7/8	2.6
Weight	1950	lbs
FBH bit to bend	52.69	in.
ABH bit to bend	63	in.
Max WOB	40,500	ft-lbs
Max Bit Pull	191,000	ft-lbs
Max Body Pull	400,000	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

Power Section Details

Rotation	0.26 rev./gal
Flow Range	150 - 300 gpm
Torque Slope	9.44 ft-lb/psi
Speed	40 - 80 rpm
Off Bottom Press	40 psi

Power Section Performance

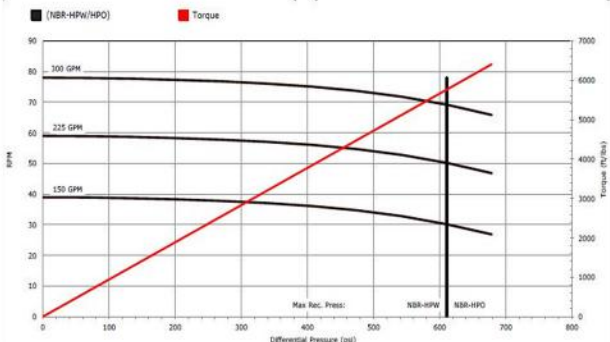
Max Diff Pressure	620 psi
Max Torque	5770 ft-lb
Stall Diff Pressure	970 psi
Stall Torque Pressure	9090 psi

Build Rate - ABH Slick

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.30	1.10	0.30	
0.50	2.80	2.70	1.90	
0.75	4.40	4.20	3.40	2.00
1.00	5.90	5.80	5.00	3.60
1.25	7.50	7.30	6.60	5.10
1.50	9.10	8.90	8.10	6.70
1.75	10.6	10.5	9.70	8.30
2.00	12.2	12	11.2	9.80
2.25	13.7	13.9	12.8	11.4
2.50	15.3	15.1	14.4	12.9
2.75	16.9	16.7	15.9	14.5
3.00	18.4	18.3	17.5	16.1

Build Rate - FBH Stabilized

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.70	1.80	2.30	3.30
0.50	3.40	3.50	4.10	5.00
0.75	5.20	5.30	5.80	6.80
1.00	6.90	7.00	7.60	8.50
1.25	8.70	8.80	9.30	10.3
1.50	10.4	10.5	11.1	12.0
1.75	12.2	12.3	12.8	13.8
2.00	13.9	14.0	14.6	15.5
2.25	15.7	15.8	16.3	17.3
2.50	17.4	17.5	18.1	19.0
2.75	19.2	19.3	19.8	20.8
3.00	20.9	21.0	21.6	22.5





4.75" 7/8 Lobe 2.9 Stage

Motor Details

Lobes	7/8	2.9
Weight	1950	lbs
FBH bit to bend	52.69	in.
ABH bit to bend	63	in.
Max WOB	40,500	ft-lbs
Max Bit Pull	191,000	ft-lbs
Max Body Pull	400,000	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

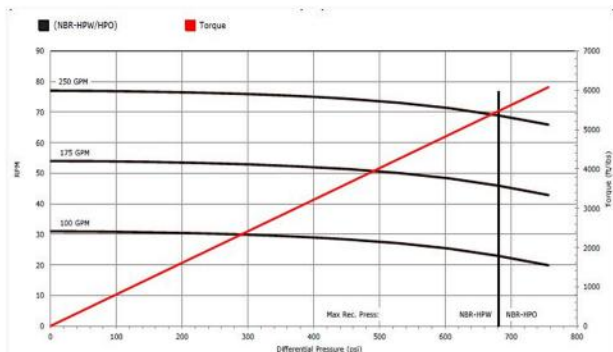
Power Section Details

Rotation	0.31 rev./gal
Flow Range	150 - 300 gpm
Torque Slope	9.44 ft-lb/psi
Speed	40 - 80 rpm
Off Bottom Press	40 psi

Power Section Performance

Max Diff Pressure	690 psi
Max Torque	5480 ft-lb
Stall Diff Pressure	1080 psi
Stall Torque Pressure	8620 psi

Build Rate - ABH Slick					Build Rate - FBH Stabilized				
Deg	6	6 1/8	6 3/4	7 7/8	Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.30	1.10	0.30		0.25	1.70	1.80	2.30	3.30
0.50	2.80	2.70	1.90		0.50	3.40	3.50	4.10	5.00
0.75	4.40	4.20	3.40	2.00	0.75	5.20	5.30	5.80	6.80
1.00	5.90	5.80	5.00	3.60	1.00	6.90	7.00	7.60	8.50
1.25	7.50	7.30	6.60	5.10	1.25	8.70	8.80	9.30	10.3
1.50	9.10	8.90	8.10	6.70	1.50	10.4	10.5	11.1	12.0
1.75	10.6	10.5	9.70	8.30	1.75	12.2	12.3	12.8	13.8
2.00	12.2	12	11.2	9.80	2.00	13.9	14.0	14.6	15.5
2.25	13.7	13.9	12.8	11.4	2.25	15.7	15.8	16.3	17.3
2.50	15.3	15.1	14.4	12.9	2.50	17.4	17.5	18.1	19.0
2.75	16.9	16.7	15.9	14.5	2.75	19.2	19.3	19.8	20.8
3.00	18.4	18.3	17.5	16.1	3.00	20.9	21.0	21.6	22.5





4.75" 7/8 Lobe 3.8 Stage

Motor Details

Lobes	7/8	3.8
Weight	1200	lbs
FBH bit to bend	52.69	in.
ABH bit to bend	63	in.
Max WOB	85,000	ft-lbs
Max Bit Pull	191,000	ft-lbs
Max Body Pull	400,000	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

Power Section Details

Rotation	0.54 rev./gal
Flow Range	150 - 250 gpm
Torque Slope	4.62 ft-lb/psi
Speed	50 - 140 rpm
Off Bottom Press	50 psi

Power Section Performance

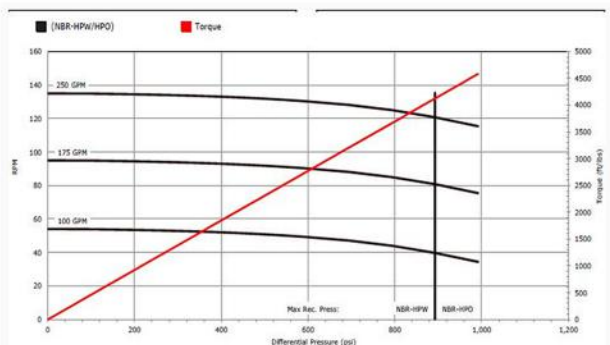
Max Diff Pressure	900 psi
Max Torque	4130 ft-lb
Stall Diff Pressure	1410 psi
Stall Torque Pressure	6500 psi

Build Rate - ABH Slick

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.30	1.10	0.30	
0.50	2.80	2.70	1.90	
0.75	4.40	4.20	3.40	2.00
1.00	5.90	5.80	5.00	3.60
1.25	7.50	7.30	6.60	5.10
1.50	9.10	8.90	8.10	6.70
1.75	10.6	10.5	9.70	8.30
2.00	12.2	12	11.2	9.80
2.25	13.7	13.9	12.8	11.4
2.50	15.3	15.1	14.4	12.9
2.75	16.9	16.7	15.9	14.5
3.00	18.4	18.3	17.5	16.1

Build Rate - FBH Stabilized

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.70	1.80	2.30	3.30
0.50	3.40	3.50	4.10	5.00
0.75	5.20	5.30	5.80	6.80
1.00	6.90	7.00	7.60	8.50
1.25	8.70	8.80	9.30	10.3
1.50	10.4	10.5	11.1	12.0
1.75	12.2	12.3	12.8	13.8
2.00	13.9	14.0	14.6	15.5
2.25	15.7	15.8	16.3	17.3
2.50	17.4	17.5	18.1	19.0
2.75	19.2	19.3	19.8	20.8
3.00	20.9	21.0	21.6	22.5





4.75" 7/8 Lobe 5.0 Stage

Motor Details

Lobes	7/8	5.0
Weight	1950	lbs
FBH bit to bend	52.69	in.
ABH bit to bend	63	in.
Max WOB	40,500	ft-lbs
Max Bit Pull	191,000	ft-lbs
Max Body Pull	400,000	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

Power Section Details

Rotation	0.62 rev./gal
Flow Range	150 - 300 gpm
Torque Slope	9.44 ft-lb/psi
Speed	40 - 80 rpm
Off Bottom Press	80 psi

Power Section Performance

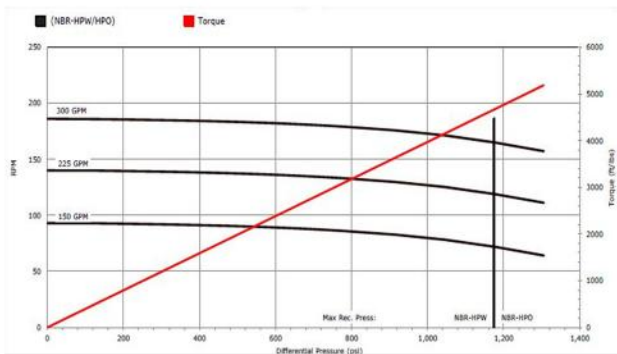
Max Diff Pressure	1180 psi
Max Torque	4670 ft-lb
Stall Diff Pressure	1860 psi
Stall Torque Pressure	7350 psi

Build Rate - ABH Slick

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.30	1.10	0.30	
0.50	2.80	2.70	1.90	
0.75	4.40	4.20	3.40	2.00
1.00	5.90	5.80	5.00	3.60
1.25	7.50	7.30	6.60	5.10
1.50	9.10	8.90	8.10	6.70
1.75	10.6	10.5	9.70	8.30
2.00	12.2	12	11.2	9.80
2.25	13.7	13.9	12.8	11.4
2.50	15.3	15.1	14.4	12.9
2.75	16.9	16.7	15.9	14.5
3.00	18.4	18.3	17.5	16.1

Build Rate - FBH Stabilized

Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.70	1.80	2.30	3.30
0.50	3.40	3.50	4.10	5.00
0.75	5.20	5.30	5.80	6.80
1.00	6.90	7.00	7.60	8.50
1.25	8.70	8.80	9.30	10.3
1.50	10.4	10.5	11.1	12.0
1.75	12.2	12.3	12.8	13.8
2.00	13.9	14.0	14.6	15.5
2.25	15.7	15.8	16.3	17.3
2.50	17.4	17.5	18.1	19.0
2.75	19.2	19.3	19.8	20.8
3.00	20.9	21.0	21.6	22.5





4.75" 5/6 Lobe 8.3 Stage

Motor Details

Lobes	5/6	8.3
Weight	1950	lbs
FBH bit to bend	52.69	in.
ABH bit to bend	63	in.
Max WOB	40,500	ft-lbs
Max Bit Pull	191,000	ft-lbs
Max Body Pull	400,000	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

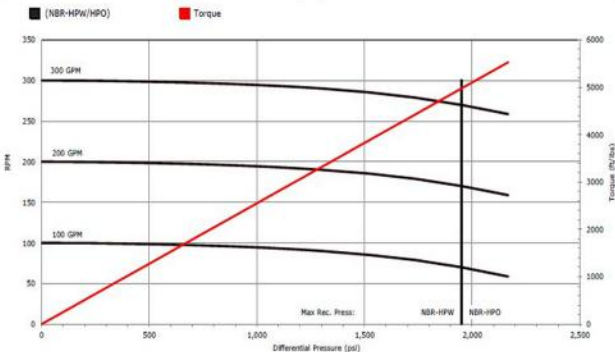
Power Section Details

Rotation	1 rev./gal
Flow Range	150 - 300 gpm
Torque Slope	3.97 ft-lb/psi
Speed	90 - 190 rpm
Off Bottom Press	100 psi

Power Section Performance

Max Diff Pressure	1960 psi
Max Torque	4980 ft-lb
Stall Diff Pressure	3080 psi
Stall Torque Pressure	7840 psi

Build Rate - ABH Slick					Build Rate - FBH Stabilized				
Deg	6	6 1/8	6 3/4	7 7/8	Deg	6	6 1/8	6 3/4	7 7/8
0.25	1.30	1.10	0.30		0.25	1.70	1.80	2.30	3.30
0.50	2.80	2.70	1.90		0.50	3.40	3.50	4.10	5.00
0.75	4.40	4.20	3.40	2.00	0.75	5.20	5.30	5.80	6.80
1.00	5.90	5.80	5.00	3.60	1.00	6.90	7.00	7.60	8.50
1.25	7.50	7.30	6.60	5.10	1.25	8.70	8.80	9.30	10.3
1.50	9.10	8.90	8.10	6.70	1.50	10.4	10.5	11.1	12.0
1.75	10.6	10.5	9.70	8.30	1.75	12.2	12.3	12.8	13.8
2.00	12.2	12	11.2	9.80	2.00	13.9	14.0	14.6	15.5
2.25	13.7	13.9	12.8	11.4	2.25	15.7	15.8	16.3	17.3
2.50	15.3	15.1	14.4	12.9	2.50	17.4	17.5	18.1	19.0
2.75	16.9	16.7	15.9	14.5	2.75	19.2	19.3	19.8	20.8
3.00	18.4	18.3	17.5	16.1	3.00	20.9	21.0	21.6	22.5





5" 6/7 Lobe 8.0 Stage

Motor Details

Lobes	6/7	8.0
Weight	1446	lbs
FBH bit to bend	45.7	in.
ABH bit to bend	56.3	in.
Max WOB	71,500	ft-lbs
Max Bit Pull	328,000	ft-lbs
Max Body Pull	-	ft-lbs
Bit Connection	3 1/2 Reg Box	
Top Sub Connection	3 1/2 IF Box	

Power Section Details

Rotation	0.79 rev./gal
Flow Range	100 - 300 gpm
Torque Slope	2.55 ft-lb/psi
Speed	65 - 300 rpm
Off Bottom Press	110 psi

Power Section Performance

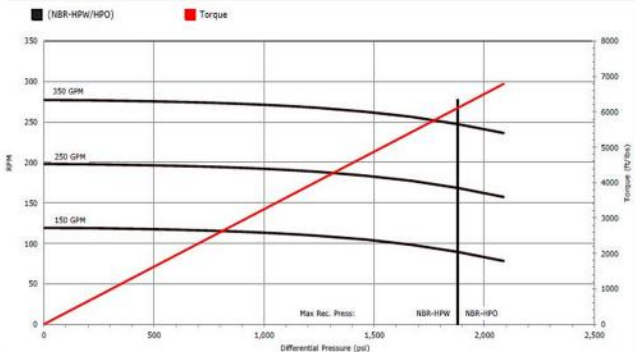
Max Diff Pressure	1880 psi
Max Torque	6110 ft-lb
Stall Diff Pressure	2970 psi
Stall Torque Pressure	9630 psi

Build Rate - ABH Slick

Deg	5 7/8	6	6 1/8	6 1/4
0.39	2.50	2.10	1.70	1.20
0.78	5.30	4.90	4.50	4.10
1.15	7.90	7.50	7.10	6.70
1.50	10.50	10.10	9.70	9.30
1.83	12.90	12.50	12.10	11.70
2.12	15.00	14.60	14.20	13.80
2.38	16.80	16.40	16.00	15.60
2.60	18.40	18.00	17.60	17.20
2.77	19.70	19.30	18.90	18.50
2.90	20.60	20.20	19.80	19.40
2.97	21.10	20.70	20.30	19.90
3.00	21.30	20.90	20.50	20.10

Build Rate - FBH Stabilized

Deg	5 7/8	6	6 1/8	6 1/4
0.39	2.50	2.10	1.70	1.20
0.78	5.30	4.90	4.50	4.10
1.15	7.90	7.50	7.10	6.70
1.50	10.50	10.10	9.70	9.30
1.83	12.90	12.50	12.10	11.70
2.12	15.00	14.60	14.20	13.80
2.38	16.80	16.40	16.00	15.60
2.60	18.40	18.00	17.60	17.20
2.77	19.70	19.30	18.90	18.50
2.90	20.60	20.20	19.80	19.40
2.97	21.10	20.70	20.30	19.90
3.00	21.30	20.90	20.50	20.10





6 1/4" 7/8 Lobe 2.9 Stage

6 1/2" 7/8 Lobe 2.9 Stage

Motor Details

Lobes	7/8	2.9
Weight	2040	lbs
FBH bit to bend	71	in.
ABH bit to bend	75	in.
Max WOB	77,000	ft-lbs
Max Bit Pull	215,000	ft-lbs
Max Body Pull	515,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" XH	

Power Section Details

Rotation	0.164 rev./gal
Flow Range	200 - 500 gpm
Torque Slope	15.35 ft-lb/psi
Speed	30 - 80 rpm
Off Bottom Press	50 psi

Power Section Performance

Max Diff Pressure	690 psi
Max Torque	10470 ft-lb
Stall Diff Pressure	1080 psi
Stall Torque Pressure	16480 psi

Build Rate - ABH

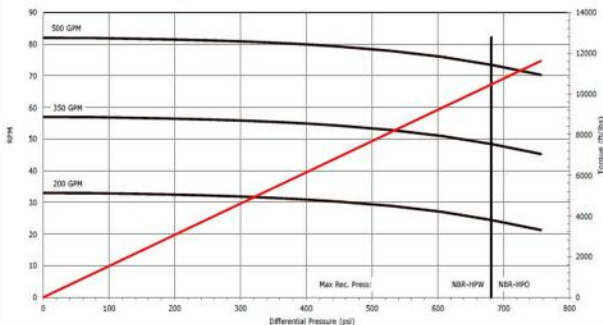
Slick

Stabilizer

Deg	7 7/8	8 1/2	8 3/4	7 7/8	8 1/2	8 3/4
0.39	1.20	1.40	1.20	2.20	2.50	2.60
0.78	3.20	2.40	2.40	4.30	4.60	4.70
1.15	5.40	4.10	3.60	6.20	6.50	6.60
1.50	7.60	6.30	5.70	8.10	8.30	8.40
1.83	9.6	8.30	7.70	9.8	10.1	9.8
2.12	11.4	10.0	9.5	11.4	11.6	11.6
2.38	13.0	11.6	11.1	13.0	12.9	13.0
2.60	14.3	12.9	12.4	14.3	14.1	14.1
2.77	15.3	14.0	13.4	15.3	15.0	15.0
2.89	16.1	14.7	14.1	16.1	15.6	15.7
2.97	16.6	15.2	14.6	16.6	16.0	16.1
3.00	16.8	15.3	14.8	16.8	16.2	16.8

■ (NBR-HPW/HPO)

■ Torque





6 1/4" 7/8 Lobe 4.8 Stage

6 1/2" 7/8 Lobe 4.8 Stage

Motor Details

Lobes	7/8	4.8
Weight	2040	lbs
FBH bit to bend	71	in.
ABH bit to bend	75	in.
Max WOB	77,000	ft-lbs
Max Bit Pull	215,000	ft-lbs
Max Body Pull	515,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" XH	

Power Section Details

Rotation	0.33 rev./gal
Flow Range	150 - 400 gpm
Torque Slope	7.53 ft-lb/psi
Speed	50 - 130 rpm
Off Bottom Press	70 psi

Power Section Performance

Max Diff Pressure	1130 psi
Max Torque	8500 ft-lb
Stall Diff Pressure	1780 psi
Stall Torque Pressure	13380 psi

Build Rate - ABH

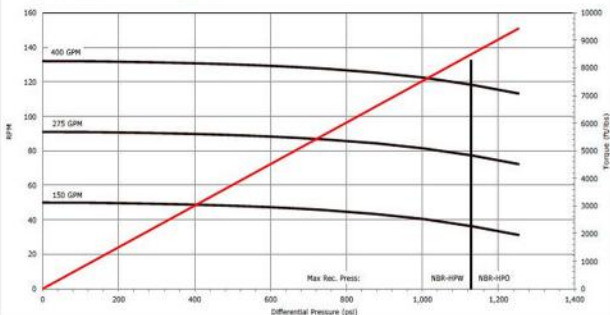
Slick

Stabilizer

Deg	7 7/8	8 1/2	8 3/4	7 7/8	8 1/2	8 3/4
0.39	1.20	1.40	1.20	2.20	2.50	2.60
0.78	3.20	2.40	2.40	4.30	4.60	4.70
1.15	5.40	4.10	3.60	6.20	6.50	6.60
1.50	7.60	6.30	5.70	8.10	8.30	8.40
1.83	9.6	8.30	7.70	9.8	10.1	9.8
2.12	11.4	10.0	9.5	11.4	11.6	11.6
2.38	13.0	11.6	11.1	13.0	12.9	13.0
2.60	14.3	12.9	12.4	14.3	14.1	14.1
2.77	15.3	14.0	13.4	15.3	15.0	15.0
2.89	16.1	14.7	14.1	16.1	15.6	15.7
2.97	16.6	15.2	14.6	16.6	16.0	16.1
3.00	16.8	15.3	14.8	16.8	16.2	16.8

■ (NBR-HPW/HPO)

■ Torque





6 3/4" 7/8 Lobe 3.3 Stage

Motor Details

Lobes	7/8	3.3
Weight	2600	lbs
FBH bit to bend	64.25	in.
ABH bit to bend	82.5	in.
Max WOB	75,000	ft-lbs
Max Bit Pull	380,000	ft-lbs
Max Body Pull	675,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

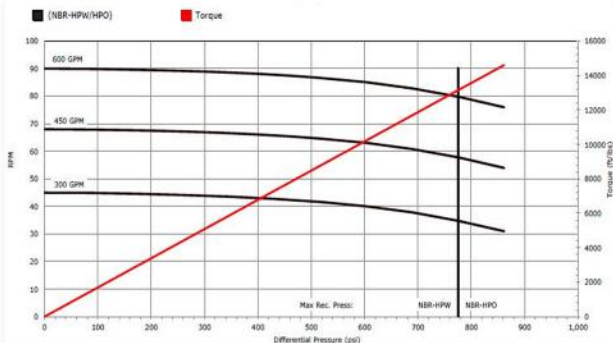
Power Section Details

Rotation	0.15 rev./gal
Flow Range	300 - 600 gpm
Torque Slope	16.95 ft-lb/psi
Speed	50 - 90 rpm
Off Bottom Press	70 psi

Power Section Performance

Max Diff Pressure	780 psi
Max Torque	13150 ft-lb
Stall Diff Pressure	1230 psi
Stall Torque Pressure	20710 psi

Build Rate - ABH					Build Rate - FBH				
Slick					Stabilized				
Deg	7 7/8	8 1/2	8 3/4	9 7/8	Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	2.7	2.2	2	1.1	0.25	1.1	1.8	2	2.8
0.5	4.1	3.6	3.4	2.3	0.5	2.3	3.4	3.6	4.4
0.75	5.5	5	4.9	4	0.75	4	5	5.1	5.9
1	7	6.5	6.3	5.4	1	5.4	6.1	6.7	7.5
1.25	8.4	7.9	7.7	6.8	1.25	6.8	7.6	8.2	9
1.5	9.8	9.3	9.1	8.2	1.5	8.2	9.2	9.8	10.6
1.75	11.2	10.7	10.5	9.7	1.75	9.7	10.7	11.3	12.1
2	12.6	12.2	12	11.1	2	11.1	12.3	12.9	13.7
2.25	14.1	13.6	13.4	12.5	2.25	12.5	13.8	14.4	15.2
2.5	15.5	15	14.8	13.9	2.5	13.9	15.4	16	16.8
2.75	16.9	16.4	16.2	15.4	2.75	15.4	16.9	17.6	18.4
3	18.3	17.9	17.7	16.8	3	16.8	18.5	19.1	19.9





6 3/4" 7/8 Lobe 2.9 Stage

Motor Details

Lobes	7/8	2.9
Weight	2600	lbs
FBH bit to bend	52.36	in.
ABH bit to bend	71.1	in.
Max WOB	75,000	ft-lbs
Max Bit Pull	380,000	ft-lbs
Max Body Pull	675,000	ft-lbs
Bit Connection	4 1/2" Reg	
	4 1/2" IF	
Top Sub Connection	4 1/2" XH	

Power Section Details

Rotation	0.16 rev./gal
Flow Range	300 - 500 gpm
Torque Slope	15.55 ft-lb/psi
Speed	50 - 80 rpm
Off Bottom Press	60 psi

Power Section Performance

Max Diff Pressure	690 psi
Max Torque	10600 ft-lb
Stall Diff Pressure	1080 psi
Stall Torque Pressure	16700 psi

Build Rate - ABH

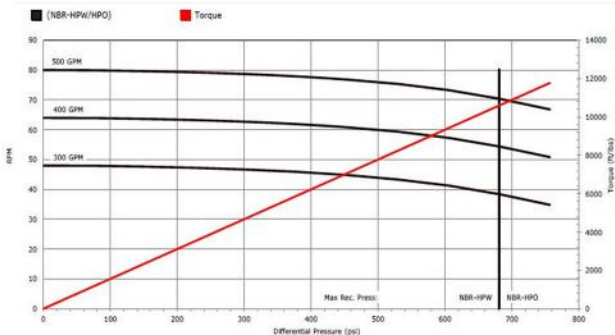
Slick

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	2.7	2.2	2	1.1
0.5	4.1	3.6	3.4	2.3
0.75	5.5	5	4.9	4
1	7	6.5	6.3	5.4
1.25	8.4	7.9	7.7	6.8
1.5	9.8	9.3	9.1	8.2
1.75	11.2	10.7	10.5	9.7
2	12.6	12.2	12	11.1
2.25	14.1	13.6	13.4	12.5
2.5	15.5	15	14.8	13.9
2.75	16.9	16.4	16.2	15.4
3	18.3	17.9	17.7	16.8

Build Rate - FBH

Stabilized

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	1.1	1.8	2	2.8
0.5	2.3	3.4	3.6	4.4
0.75	4	5	5.1	5.9
1	5.4	6.1	6.7	7.5
1.25	6.8	7.6	8.2	9
1.5	8.2	9.2	9.8	10.6
1.75	9.7	10.7	11.3	12.1
2	11.1	12.3	12.9	13.7
2.25	12.5	13.8	14.4	15.2
2.5	13.9	15.4	16	16.8
2.75	15.4	16.9	17.6	18.4
3	16.8	18.5	19.1	19.9





6 3/4" 7/8 Lobe 5.7 Stage

Motor Details

Lobes	7/8	5.7
Weight	2860	lbs
FBH bit to bend	64.25	in.
ABH bit to bend	82.5	in.
Max WOB	75,000	ft-lbs
Max Bit Pull	380,000	ft-lbs
Max Body Pull	675,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

Power Section Details

Rotation	0.23 rev./gal
Flow Range	300 - 650 gpm
Torque Slope	10.6 ft-lb/psi
Speed	70 - 150 rpm
Off Bottom Press	100 psi

Power Section Performance

Max Diff Pressure	1340 psi
Max Torque	14200 ft-lb
Stall Diff Pressure	2110 psi
Stall Torque Pressure	22370 psi

Build Rate - ABH

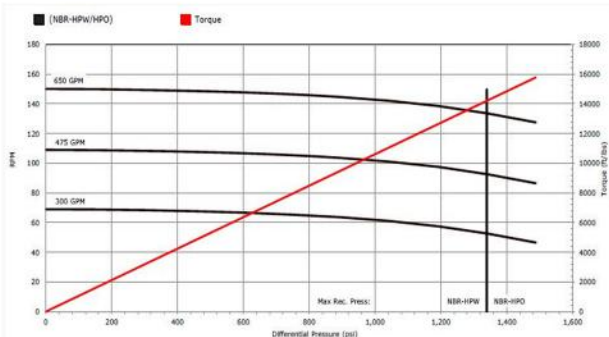
Slick

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	2.7	2.2	2	1.1
0.5	4.1	3.6	3.4	2.3
0.75	5.5	5	4.9	4
1	7	6.5	6.3	5.4
1.25	8.4	7.9	7.7	6.8
1.5	9.8	9.3	9.1	8.2
1.75	11.2	10.7	10.5	9.7
2	12.6	12.2	12	11.1
2.25	14.1	13.6	13.4	12.5
2.5	15.5	15	14.8	13.9
2.75	16.9	16.4	16.2	15.4
3	18.3	17.9	17.7	16.8

Build Rate - FBH

Stabilized

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	1.1	1.8	2	2.8
0.5	2.3	3.4	3.6	4.4
0.75	4	5	5.1	5.9
1	5.4	6.1	6.7	7.5
1.25	6.8	7.6	8.2	9
1.5	8.2	9.2	9.8	10.6
1.75	9.7	10.7	11.3	12.1
2	11.1	12.3	12.9	13.7
2.25	12.5	13.8	14.4	15.2
2.5	13.9	15.4	16	16.8
2.75	15.4	16.9	17.6	18.4
3	16.8	18.5	19.1	19.9





6 3/4" 7/8 Lobe 5.0 Stage

Motor Details

Lobes	7/8	5.0
Weight	2415	lbs
FBH bit to bend	64.25	in.
ABH bit to bend	82.5	in.
Max WOB	75,000	ft-lbs
Max Bit Pull	380,000	ft-lbs
Max Body Pull	675,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

Power Section Details

Rotation	0.27 rev./gal
Flow Range	300 - 650 gpm
Torque Slope	9.06 ft-lb/psi
Speed	80 - 180 rpm
Off Bottom Press	110 psi

Power Section Performance

Max Diff Pressure	1180 psi
Max Torque	10650 ft-lb
Stall Diff Pressure	1860 psi
Stall Torque Pressure	16770 psi

Build Rate - ABH

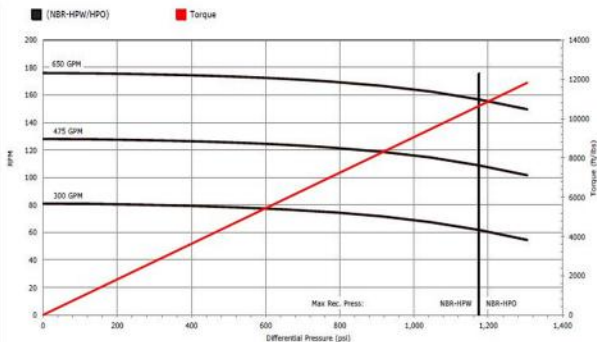
Slick

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	2.7	2.2	2	1.1
0.5	4.1	3.6	3.4	2.3
0.75	5.5	5	4.9	4
1	7	6.5	6.3	5.4
1.25	8.4	7.9	7.7	6.8
1.5	9.8	9.3	9.1	8.2
1.75	11.2	10.7	10.5	9.7
2	12.6	12.2	12	11.1
2.25	14.1	13.6	13.4	12.5
2.5	15.5	15	14.8	13.9
2.75	16.9	16.4	16.2	15.4
3	18.3	17.9	17.7	16.8

Build Rate - FBH

Stabilized

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	1.1	1.8	2	2.8
0.5	2.3	3.4	3.6	4.4
0.75	4	5	5.1	5.9
1	5.4	6.1	6.7	7.5
1.25	6.8	7.6	8.2	9
1.5	8.2	9.2	9.8	10.6
1.75	9.7	10.7	11.3	12.1
2	11.1	12.3	12.9	13.7
2.25	12.5	13.8	14.4	15.2
2.5	13.9	15.4	16	16.8
2.75	15.4	16.9	17.6	18.4
3	16.8	18.5	19.1	19.9





6 3/4" 4/5 Lobe 7.0 Stage

Motor Details

Lobes	4/5	7.0
Weight	2600	lbs
FBH bit to bend	64.25	in.
ABH bit to bend	82.5	in.
Max WOB	75,000	ft-lbs
Max Bit Pull	380,000	ft-lbs
Max Body Pull	675,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

Power Section Details

Rotation	0.494 rev./gal
Flow Range	300 - 700 gpm
Torque Slope	5.36 ft-lb/psi
Speed	150 - 300 rpm
Off Bottom Press	150 psi

Power Section Performance

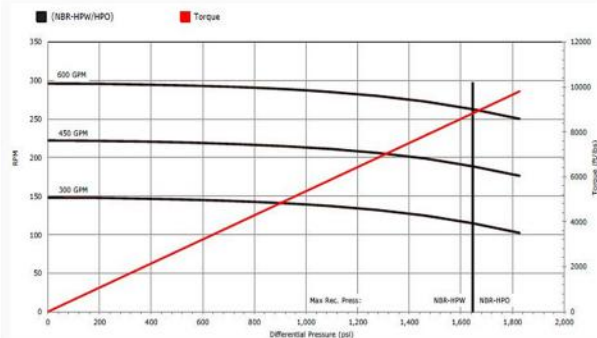
Max Diff Pressure	700 psi
Max Torque	3760 ft-lb
Stall Diff Pressure	1050 psi
Stall Torque Pressure	5630 psi

Build Rate - ABH Slick

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	2.7	2.2	2	1.1
0.5	4.1	3.6	3.4	2.3
0.75	5.5	5	4.9	4
1	7	6.5	6.3	5.4
1.25	8.4	7.9	7.7	6.8
1.5	9.8	9.3	9.1	8.2
1.75	11.2	10.7	10.5	9.7
2	12.6	12.2	12	11.1
2.25	14.1	13.6	13.4	12.5
2.5	15.5	15	14.8	13.9
2.75	16.9	16.4	16.2	15.4
3	18.3	17.9	17.7	16.8

Build Rate - FBH Stabilized

Deg	7 7/8	8 1/2	8 3/4	9 7/8
0.25	1.1	1.8	2	2.8
0.5	2.3	3.4	3.6	4.4
0.75	4	5	5.1	5.9
1	5.4	6.1	6.7	7.5
1.25	6.8	7.6	8.2	9
1.5	8.2	9.2	9.8	10.6
1.75	9.7	10.7	11.3	12.1
2	11.1	12.3	12.9	13.7
2.25	12.5	13.8	14.4	15.2
2.5	13.9	15.4	16	16.8
2.75	15.4	16.9	17.6	18.4
3	16.8	18.5	19.1	19.9





7" 7/8 Lobe 8.5 Stage

Motor Details

Lobes	7/8	8.5
Weight	3648	lbs
FBH bit to bend	52.36	in.
ABH bit to bend	71.1	in.
Max WOB	85,000	ft-lbs
Max Bit Pull	225,000	ft-lbs
Max Body Pull	650,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

Power Section Details

Rotation	0.26 rev./gal
Flow Range	400 - 750 gpm
Torque Slope	9.78 ft-lb/psi
Speed	100 - 200 rpm
Off Bottom Press	150 psi

Power Section Performance

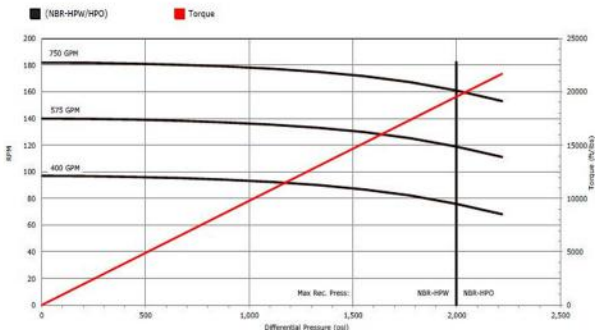
Max Diff Pressure	2000 psi
Max Torque	19540 ft-lb
Stall Diff Pressure	3150 psi
Stall Torque Pressure	30770 psi

Build Rate - ABH Slick

Deg	8 1/2"	9 7/8"
1.00	5.57	6.10
1.25	6.84	7.37
1.50	8.10	8.64
1.75	9.37	9.91
1.83	9.78	10.31
2.00	10.64	11.18
2.12	11.25	11.79
2.25	11.91	12.45
2.38	12.57	13.11
2.50	13.18	13.72
2.75	14.45	14.99
3.00	15.72	16.26

Build Rate - FBH Stabilized

Deg	8 1/2"	9 7/8"
0.25	4.85	4.41
0.50	6.07	4.72
0.75	7.28	4.80
1.00	8.50	5.28
1.25	8.88	6.13
1.50	9.71	7.18
1.75	10.29	7.85
2.00	10.92	8.58
2.25	11.55	9.24
2.50	12.14	9.81
2.75	13.35	10.88
3.00	14.56	11.89





7" 6/7 Lobe 10.1 Stage

Motor Details

Lobes	6/7	10.1
Weight	3648	lbs
FBH bit to bend	52.36	in.
ABH bit to bend	71.1	in.
Max WOB	85,000	ft-lbs
Max Bit Pull	225,000	ft-lbs
Max Body Pull	650,000	ft-lbs
Bit Connection	4 1/2" Reg	
Top Sub Connection	4 1/2" IF	
	4 1/2" XH	

Power Section Details

Rotation	0.33 rev./gal
Flow Range	450 - 750 gpm
Torque Slope	7.6 ft-lb/psi
Speed	150 - 250 rpm
Off Bottom Press	200 psi

Power Section Performance

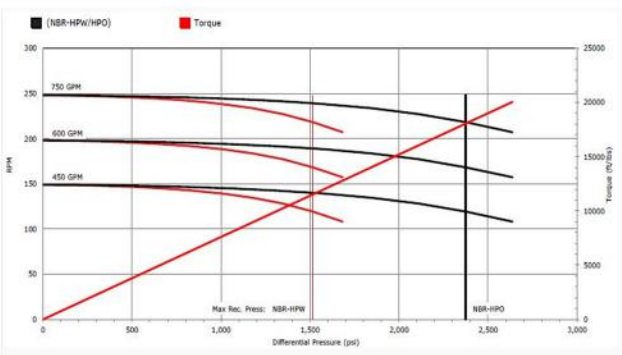
Max Diff Pressure	2380 psi
Max Torque	18040 ft-lb
Stall Diff Pressure	3740 psi
Stall Torque Pressure	28420 psi

Build Rate - ABH Slick

Deg	8 1/2"	9 7/8"
1.00	5.57	6.10
1.25	6.84	7.37
1.50	8.10	8.64
1.75	9.37	9.91
1.83	9.78	10.31
2.00	10.64	11.18
2.12	11.25	11.79
2.25	11.91	12.45
2.38	12.57	13.11
2.50	13.18	13.72
2.75	14.45	14.99
3.00	15.72	16.26

Build Rate - FBH Stabilized

Deg	8 1/2"	9 7/8"
0.25	4.85	4.41
0.50	6.07	4.72
0.75	7.28	4.80
1.00	8.50	5.28
1.25	8.88	6.13
1.50	9.71	7.18
1.75	10.29	7.85
2.00	10.92	8.58
2.25	11.55	9.24
2.50	12.14	9.81
2.75	13.35	10.88
3.00	14.56	11.89





8" 7/8 Lobe 3.4 Stage

(9 5/8" combo lower bearing assembly available)

Motor Details

Lobes	7/8	3.4
Weight	3875	lbs
FBH bit to bend	68.5	in.
ABH bit to bend	88.5	in.
Max WOB	120,000	ft-lbs
Max Bit Pull	540,000	ft-lbs
Max Body Pull	1,200,00	ft-lbs
Bit Connection	6 5/8" Reg	
Top Sub Connection	6 5/8" Reg	

Power Section Details

Rotation	0.087 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	28.19 ft-lb/psi
Speed	30 - 80 rpm
Off Bottom Press	70 psi

Power Section Performance

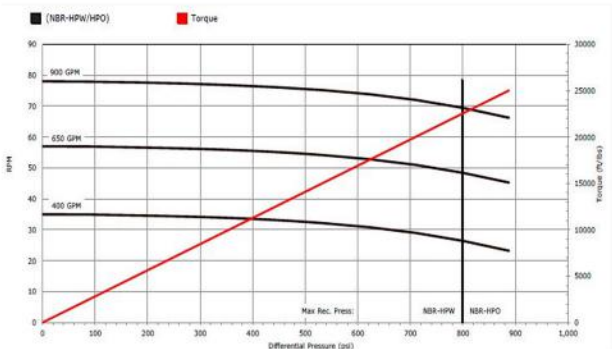
Max Diff Pressure	800 psi
Max Torque	22530 ft-lb
Stall Diff Pressure	1260 psi
Stall Torque Pressure	35480 psi

Build Rate - ABH

	Slick			
Deg	9 7/8	10 5/8	11 1/4	12 1/4
0.25	1.8	1.3	0.9	0.2
0.5	3.2	2.7	2.2	1.3
0.75	4.5	4	3.6	2.9
1	5.8	5.3	4.9	4.3
1.25	7.2	6.7	6.3	5.6
1.5	8.5	8	7.6	7
1.75	9.9	9.4	9	8.3
2	11.2	10.7	10.3	9.7
2.25	12.6	12.1	11.7	11
2.5	13.9	13.4	13	12.3
2.75	15.3	14.8	14.3	13.7
3	16.6	16.1	15.7	15

Build Rate - FBH

	Stabilized			
Deg	9 7/8	10 5/8	11 1/4	12 1/4
0.25	2	2.5	2.9	3.6
0.5	3.5	4	4.4	5
0.75	5	5.5	5.9	6.5
1	6.4	6.9	7.3	8
1.25	7.9	8.4	8.8	9.4
1.5	9.4	9.9	10.3	10.9
1.75	10.9	11.3	11.7	12.4
2	12.3	12.8	13.2	13.8
2.25	13.8	14.3	14.7	15.3
2.5	15.3	15.7	16.1	16.8
2.75	16.7	17.2	17.6	18.2
3	18.2	18.7	19.1	19.7





8" 7/8 Lobe 4.0 Stage

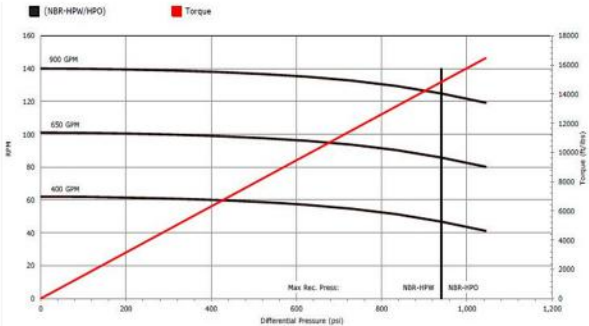
(9 5/8" combo lower bearing assembly available)

Motor Details			
Lobes	7/8	4.0	
Weight	3875	lbs	
FBH bit to bend	68.5	in.	
ABH bit to bend	88.5	in.	
Max WOB	133,000	ft-lbs	
Max Bit Pull	540,000	ft-lbs	
Max Body Pull		ft-lbs	
Bit Connection	6 5/8" Reg		
Top Sub Connection	6 5/8" Reg		

Power Section Details	
Rotation	0.155 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	15.77 ft-lb/psi
Speed	92 - 144 rpm
Off Bottom Press	100 psi

Power Section Performance	
Max Diff Pressure	940 psi
Max Torque	14830 ft-lb
Stall Diff Pressure	1490 psi
Stall Torque Pressure	14650 psi

Build Rate - ABH					Build Rate - FBH				
Slick					Stabilized				
Deg	9 7/8	10 5/8	11 1/4	12 1/4	Deg	9 7/8	10 5/8	11 1/4	12 1/4
0.25	1.8	1.3	0.9	0.2	0.25	2	2.5	2.9	3.6
0.5	3.2	2.7	2.2	1.3	0.5	3.5	4	4.4	5
0.75	4.5	4	3.6	2.9	0.75	5	5.5	5.9	6.5
1	5.8	5.3	4.9	4.3	1	6.4	6.9	7.3	8
1.25	7.2	6.7	6.3	5.6	1.25	7.9	8.4	8.8	9.4
1.5	8.5	8	7.6	7	1.5	9.4	9.9	10.3	10.9
1.75	9.9	9.4	9	8.3	1.75	10.9	11.3	11.7	12.4
2	11.2	10.7	10.3	9.7	2	12.3	12.8	13.2	13.8
2.25	12.6	12.1	11.7	11	2.25	13.8	14.3	14.7	15.3
2.5	13.9	13.4	13	12.3	2.5	15.3	15.7	16.1	16.8
2.75	15.3	14.8	14.3	13.7	2.75	16.7	17.2	17.6	18.2
3	16.6	16.1	15.7	15	3	18.2	18.7	19.1	19.7





8" 7/8 Lobe 5.9 Stage

(9 5/8" combo lower bearing assembly available)

Motor Details

Lobes	7/8	5.9
Weight	3875	lbs
FBH bit to bend	68.5	in.
ABH bit to bend	88.5	in.
Max WOB	120,000	ft-lbs
Max Bit Pull	540,000	ft-lbs
Max Body Pull	1,200.00	ft-lbs
Bit Connection	6 5/8" Reg	
Top Sub Connection	6 5/8" Reg	

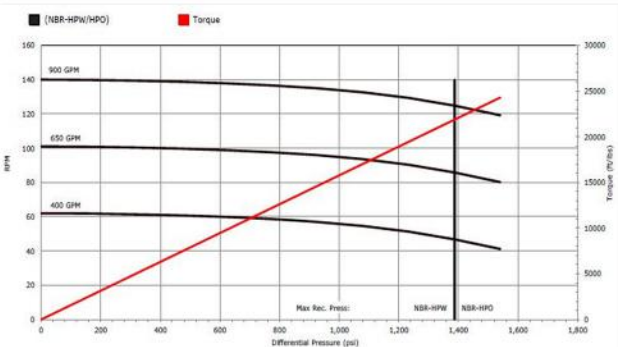
Power Section Details

Rotation	0.155 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	15.77 ft-lb/psi
Speed	60 - 140 rpm
Off Bottom Press	120 psi

Power Section Performance

Max Diff Pressure	1390 psi
Max Torque	21870 ft-lb
Stall Diff Pressure	2190 psi
Stall Torque Pressure	34440 psi

Build Rate - ABH					Build Rate - FBH				
Slick					Stabilized				
Deg	9 7/8	10 5/8	11 1/4	12 1/4	Deg	9 7/8	10 5/8	11 1/4	12 1/4
0.25	1.8	1.3	0.9	0.2	0.25	2	2.5	2.9	3.6
0.5	3.2	2.7	2.2	1.3	0.5	3.5	4	4.4	5
0.75	4.5	4	3.6	2.9	0.75	5	5.5	5.9	6.5
1	5.8	5.3	4.9	4.3	1	6.4	6.9	7.3	8
1.25	7.2	6.7	6.3	5.6	1.25	7.9	8.4	8.8	9.4
1.5	8.5	8	7.6	7	1.5	9.4	9.9	10.3	10.9
1.75	9.9	9.4	9	8.3	1.75	10.9	11.3	11.7	12.4
2	11.2	10.7	10.3	9.7	2	12.3	12.8	13.2	13.8
2.25	12.6	12.1	11.7	11	2.25	13.8	14.3	14.7	15.3
2.5	13.9	13.4	13	12.3	2.5	15.3	15.7	16.1	16.8
2.75	15.3	14.8	14.3	13.7	2.75	16.7	17.2	17.6	18.2
3	16.6	16.1	15.7	15	3	18.2	18.7	19.1	19.7





9 5/8" 7/8 Lobe 3.4 Stage

Motor Details

Lobes	7/8	3.4
Weight	4980	lbs
FBH bit to bend	na	in.
ABH bit to bend	95	in.
Max WOB	90,000	ft-lbs
Max Bit Pull	480,000	ft-lbs
Max Body Pull	1,000,000	ft-lbs
Bit Connection	6 5/8" Reg	
Top Sub Connection	6 5/8" Reg	

Power Section Details

Rotation	0.087 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	28.19 ft-lb/psi
Speed	30 - 80 rpm
Off Bottom Press	70 psi

Power Section Performance

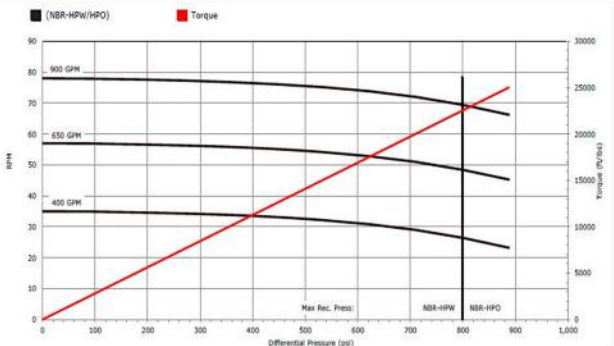
Max Diff Pressure	800 psi
Max Torque	22530 ft-lb
Stall Diff Pressure	1260 psi
Stall Torque Pressure	35480 psi

Build Rate - ABH Slick

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31				
0.62				
0.93	0.14			
1.22	1.97			
1.50	3.73	1.14		
1.76	5.37	2.77	0.26	
2.00	6.88	4.28	1.76	
2.23	8.33	5.72	3.2	
2.42	9.53	6.91	4.39	
2.60	10.66	8.04	5.52	0.27
2.74	11.54	8.92	6.39	1.14
2.85	12.23	9.61	7.08	1.82
2.93	12.74	10.11	7.58	2.32
2.98	13.05	10.43	7.89	2.63
3.00	13.18	10.55	8.02	2.75

Build Rate - ABH Stabilized

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31	2.51	3.18	3.84	5.29
0.62	4.22	4.89	5.55	6.98
0.93	5.94	6.60	7.25	8.67
1.22	7.54	8.20	8.85	10.26
1.50	9.09	9.74	10.39	11.8
1.76	10.53	11.2	11.8	13.2
2.00	11.86	12.5	13.1	14.5
2.23	13.13	13.8	14.4	15.8
2.42	14.19	14.8	15.5	16.8
2.60	15.18	15.8	16.4	17.8
2.74	15.96	16.6	17.2	18.56
2.85	16.57	17.2	17.8	19.16
2.93	17.01	17.63	18.25	19.59
2.98	17.29	17.91	18.53	19.87
3.00	17.4	18.02	18.64	19.98





9 5/8" 7/8 Lobe 4.0 Stage

Motor Details

Lobes	7/8	4.0
Weight	4140	lbs
FBH bit to bend	na	in.
ABH bit to bend	95	in.
Max WOB	90,000	ft-lbs
Max Bit Pull	480,000	ft-lbs
Max Body Pull	1,000,000	ft-lbs
Bit Connection	6 5/8" Reg	
Top Sub Connection	6 5/8" Reg	

Power Section Details

Rotation	0.155 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	15.77 ft-lb/psi
Speed	92 - 144 rpm
Off Bottom Press	100 psi

Power Section Performance

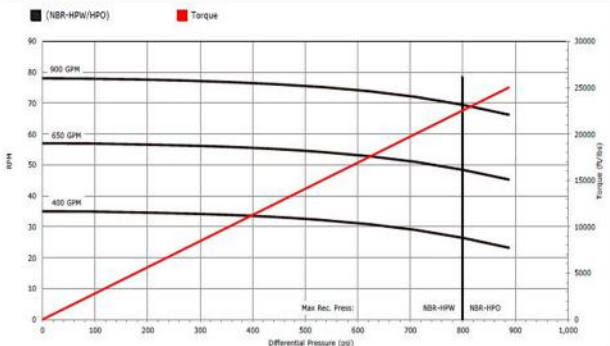
Max Diff Pressure	940 psi
Max Torque	14830 ft-lb
Stall Diff Pressure	1490 psi
Stall Torque Pressure	14650 psi

Build Rate - ABH Slick

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31				
0.62				
0.93	0.14			
1.22	1.97			
1.50	3.73	1.14		
1.76	5.37	2.77	0.26	
2.00	6.88	4.28	1.76	
2.23	8.33	5.72	3.2	
2.42	9.53	6.91	4.39	
2.60	10.66	8.04	5.52	0.27
2.74	11.54	8.92	6.39	1.14
2.85	12.23	9.61	7.08	1.82
2.93	12.74	10.11	7.58	2.32
2.98	13.05	10.43	7.89	2.63
3.00	13.18	10.55	8.02	2.75

Build Rate - ABH Stabilized

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31	2.51	3.18	3.84	5.29
0.62	4.22	4.89	5.55	6.98
0.93	5.94	6.60	7.25	8.67
1.22	7.54	8.20	8.85	10.26
1.50	9.09	9.74	10.39	11.8
1.76	10.53	11.2	11.8	13.2
2.00	11.86	12.5	13.1	14.5
2.23	13.13	13.8	14.4	15.8
2.42	14.19	14.8	15.5	16.8
2.60	15.18	15.8	16.4	17.8
2.74	15.96	16.6	17.2	18.56
2.85	16.57	17.2	17.8	19.16
2.93	17.01	17.63	18.25	19.59
2.98	17.29	17.91	18.53	19.87
3.00	17.4	18.02	18.64	19.98





9 5/8" 7/8 Lobe 5.9 Stage

Motor Details

Lobes	7/8	5.9
Weight	5120	lbs
FBH bit to bend	na	in.
ABH bit to bend	95	in.
Max WOB	90,000	ft-lbs
Max Bit Pull	480,000	ft-lbs
Max Body Pull	1,000,000	ft-lbs
Bit Connection	6 5/8" Reg	
Top Sub Connection	6 5/8" Reg	

Power Section Details

Rotation	0.155 rev./gal
Flow Range	400 - 900 gpm
Torque Slope	15.77 ft-lb/psi
Speed	60 - 140 rpm
Off Bottom Press	120 psi

Power Section Performance

Max Diff Pressure	1390 psi
Max Torque	21870 ft-lb
Stall Diff Pressure	2190 psi
Stall Torque Pressure	34440 psi

Build Rate - ABH

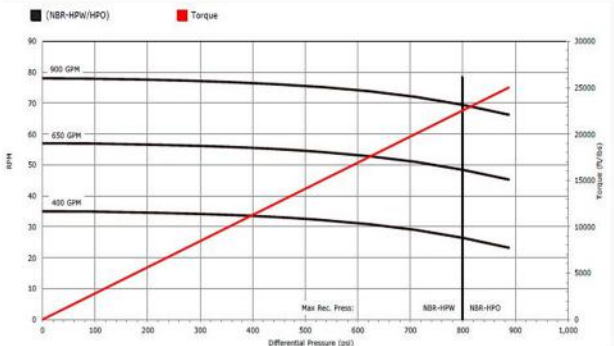
Slick

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31				
0.62				
0.93	0.14			
1.22	1.97			
1.50	3.73	1.14		
1.76	5.37	2.77	0.26	
2.00	6.88	4.28	1.76	
2.23	8.33	5.72	3.2	
2.42	9.53	6.91	4.39	
2.60	10.66	8.04	5.52	0.27
2.74	11.54	8.92	6.39	1.14
2.85	12.23	9.61	7.08	1.82
2.93	12.74	10.11	7.58	2.32
2.98	13.05	10.43	7.89	2.63
3.00	13.18	10.55	8.02	2.75

Build Rate - ABH

Stabilized

Deg	12 1/4	13 1/2	14 3/4	17 1/2
0.31	2.51	3.18	3.84	5.29
0.62	4.22	4.89	5.55	6.98
0.93	5.94	6.60	7.25	8.67
1.22	7.54	8.20	8.85	10.26
1.50	9.09	9.74	10.39	11.8
1.76	10.53	11.2	11.8	13.2
2.00	11.86	12.5	13.1	14.5
2.23	13.13	13.8	14.4	15.8
2.42	14.19	14.8	15.5	16.8
2.60	15.18	15.8	16.4	17.8
2.74	15.96	16.6	17.2	18.56
2.85	16.57	17.2	17.8	19.16
2.93	17.01	17.63	18.25	19.59
2.98	17.29	17.91	18.53	19.87
3.00	17.4	18.02	18.64	19.98



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