



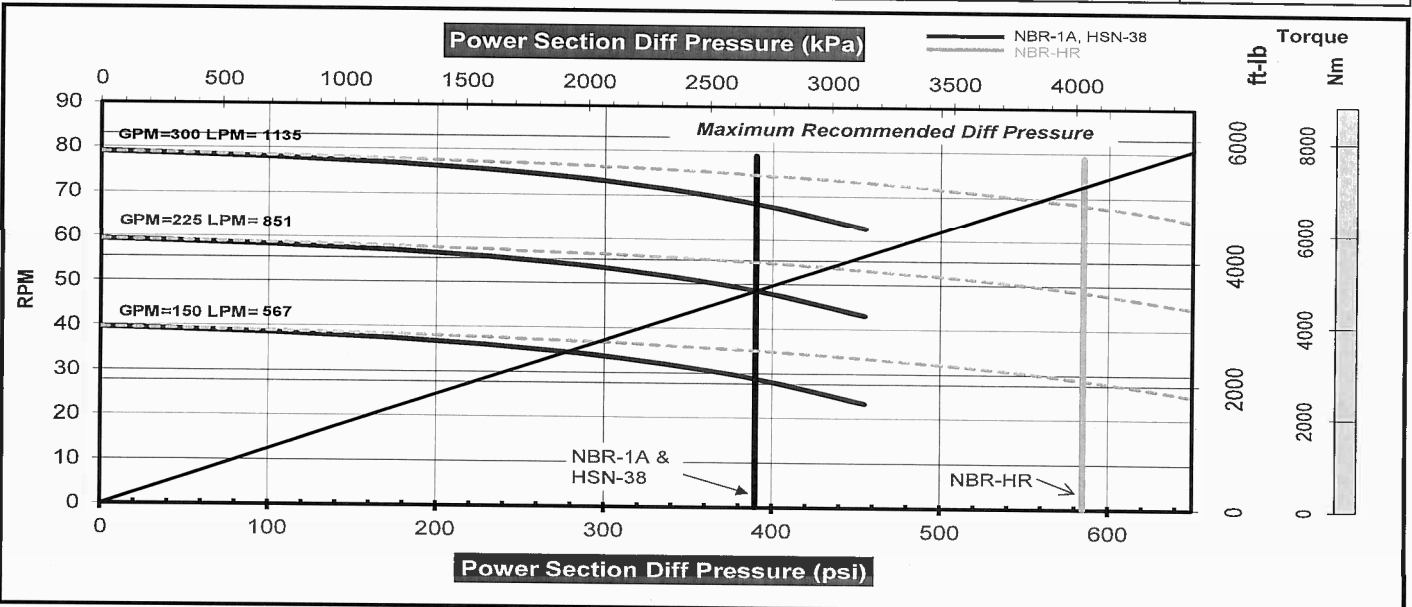
Discovery
Downhole
Services, Inc.

SHORT SUPERHAWK 475 - 7:8 Profile
2.6 Stage HR - 4 3/4" O.D.

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GENERAL DATA			
BIT SIZES	6" thru 7 7/8"	MAX. WOB - (w/flow)	28,750 lbs
BIT CONNECTION	3 1/2 REG	OPTIMUM WOB - (w/flow)	14,500 Lbs
TOP CONNECTION	3 1/2 IF	MAX. WOB - (w/o flow)	129,000 lbs
TORQUE - CONNECTIONS	8,500 ft-lb	MAX. BIT PULL - (w/damage)	190,000 lbs
TORQUE - ABH	9,000 ft-lb	MAX BODY PULL - (w/damage)	403,000 lbs

PHYSICAL PROPERTIES	
BIT TO BEND LENGTH (ABH)	51.45 in.
BIT TO BEND LENGTH (FIXED)	37.63 in.
NOMINAL LENGTH	319.4 in.
WEIGHT	1,200 lbs
PERFORMANCE DATA	
FLOW RANGE	150 - 300 gpm
SPEED RANGE	39 - 79 rpm
SPEED RATIO	.263 rev/gal
MAX. DIFFERENTIAL PRESSURE	590 psi
TORQUE RATIO	8.974 ft-lb/psi
TORQUE AT MAX DIFFERENTIAL	5,250 ft-lbs
STALL TORQUE	7,880 ft-lbs



Angle (Deg)	CALCULATED BUILD UP RATES - DEGREES / 100 ft.* (FIXED)							
	Hole Size (in) - Slick Sleeve				Hole Size (in) - Stabilized			
	6"	6 1/8"	6 3/4"	7 7/8"	6"	6 1/8"	6 3/4"	7 7/8"
0.25	2.9	2.6	1.2		1.6	1.7	2.2	3.0
0.50	4.3	4.0	2.6		3.4	3.5	3.9	4.7
0.75	5.7	5.5	4.1	1.6	5.1	5.2	5.6	6.4
1.00	7.2	6.9	5.5	3.0	6.8	6.9	7.3	8.1
1.25	8.6	8.3	7.0	4.5	8.5	8.6	9.0	9.8
1.50	10.0	9.8	8.4	5.9	10.2	10.3	10.8	11.5
1.75	11.5	11.2	9.8	7.4	12.0	12.0	12.5	13.3
2.00	12.9	12.6	11.3	8.8	13.7	13.8	14.2	15.0
2.25	14.4	14.1	12.7	10.2	15.4	15.5	15.9	16.7
2.50	15.8	15.5	14.1	11.7	17.1	17.2	17.6	18.4
2.75	17.2	17.0	15.6	13.1	18.8	18.9	19.3	20.1
3.00	18.7	18.4	17.0	14.5	20.5	20.6	21.1	21.8

Angle (Deg)	CALCULATED BUILD UP RATES - DEGREES / 100 ft.* (ABH)							
	Hole Size (in) - Slick Sleeve				Hole Size (in) - Stabilized			
	6"	6 1/8"	6 3/4"	7 7/8"	6"	6 1/8"	6 3/4"	7 7/8"
0.25	0.9				1.6	1.7	2.1	2.9
0.50	2.4	2.2	1.3		3.2	3.3	3.7	4.5
0.75	3.8	3.6	2.8	1.2	4.8	4.9	5.4	6.1
1.00	5.3	5.1	4.2	2.6	6.5	6.5	7.0	7.8
1.25	6.7	6.5	5.6	4.1	8.1	8.2	8.6	9.4
1.50	8.1	7.9	7.1	5.5	9.7	9.8	10.3	11.0
1.75	9.6	9.4	8.5	6.9	11.4	11.4	11.9	12.7
2.00	11.0	10.8	9.9	8.4	13.0	13.1	13.5	14.3
2.25	12.4	12.3	11.4	9.8	14.6	14.7	15.2	15.9
2.50	13.9	13.7	12.8	11.2	16.3	16.3	16.8	17.6
2.75	15.3	15.1	14.2	12.7	17.9	18.0	18.4	19.2
3.00	16.7	16.6	15.7	14.1	19.5	19.6	20.1	20.8

* Actual Build Up Rates subject to varying factors; including formation, weight on bit.