



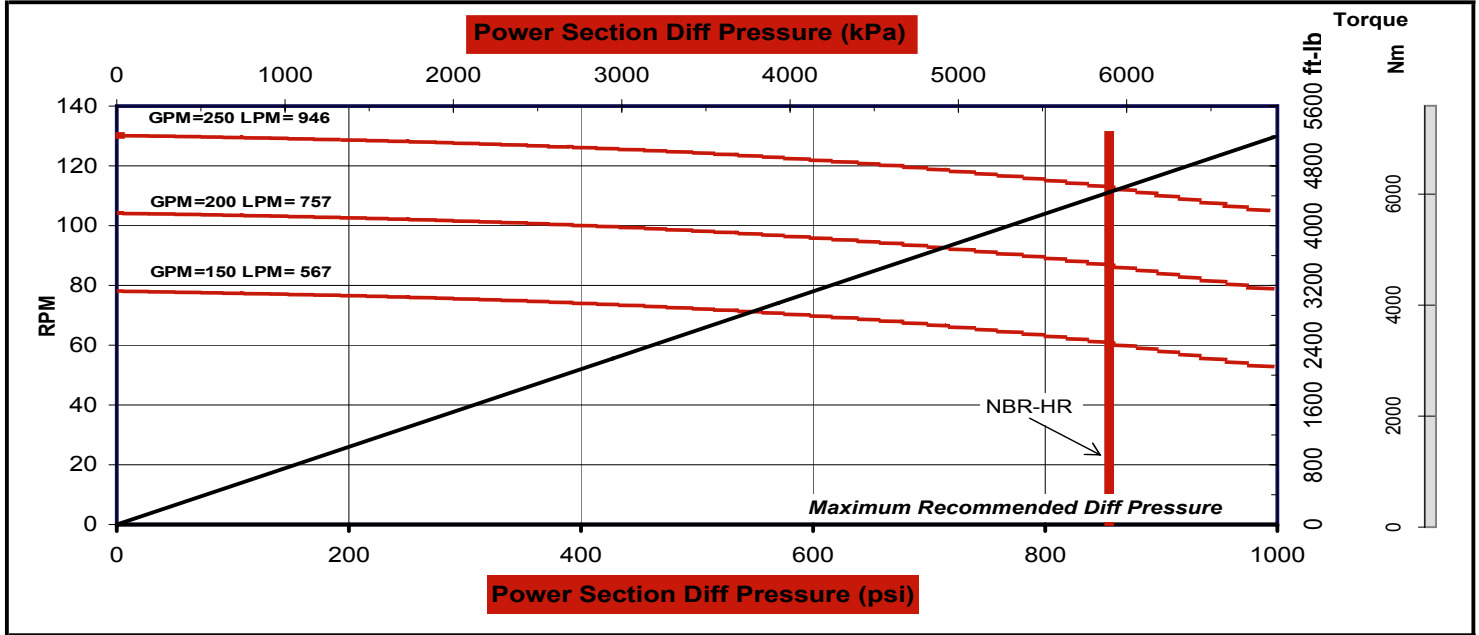
**Discovery
Downhole
Services, Inc.**

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**SUPERHAWK 475 – 7:8 Profile
3.8 Stage HR - 4 3/4" O.D.**

GENERAL DATA			
BIT SIZES	6" thru 7 7/8"	MAX. WOB – (w/flow)	38,500 lbs
BIT CONNECTION	3 1/2 REG	OPTIMUM WOB - (w/flow)	19,250 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)	63.00 in.
BIT TO BEND LENGTH (FIXED)	52.69 in.
NOMINAL LENGTH	289 in.
WEIGHT	1,150 lbs
PERFORMANCE DATA	
FLOW RANGE	150 - 250 gpm
SPEED RANGE	78 - 140
SPEED RATIO	.521 rev/gal
MAX. DIFFERENTIAL PRESSURE	860 psi
TORQUE RATIO	5.20 ft-lb/psi
TORQUE AT MAX DIFFERENTIAL	4,450 ft-lbs
STALL TORQUE	6,670 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	3.0	2.8	2.1		1.8	1.9	2.4	3.4
0.50	4.5	4.4	3.6		3.6	3.7	4.2	5.2
0.75	6.1	5.9	5.2	3.8	5.3	5.4	6.0	6.9
1.00	7.6	7.5	6.7	5.3	7.1	7.2	7.7	8.7
1.25	9.2	9.0	8.3	6.9	8.9	9.0	9.5	10.5
1.50	10.7	10.6	9.8	8.4	10.6	10.7	11.3	12.2
1.75	12.3	12.1	11.4	10.0	12.4	12.5	13.0	14.0
2.00	13.8	13.7	12.9	11.5	14.2	14.3	14.8	15.8
2.25	15.4	15.2	14.5	13.1	15.9	16.0	16.6	17.5
2.50	16.9	16.8	16.0	14.6	17.7	17.8	18.3	19.3
2.75	18.5	18.3	17.6	16.2	19.5	19.6	20.1	21.1
3.00	20.0	19.9	19.1	17.7	21.2	21.3	21.9	22.8

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	1.6	1.4			1.7	1.8	2.4	3.3
0.50	3.1	3.0	2.5		3.4	3.5	4.0	5.0
0.75	4.7	4.6	4.1	3.1	5.1	5.2	5.7	6.7
1.00	6.3	6.2	5.6	4.7	6.8	6.9	7.4	8.4
1.25	7.8	7.7	7.2	6.3	8.5	8.6	9.1	10.1
1.50	9.4	9.3	8.8	7.8	10.2	10.3	10.8	11.8
1.75	11.0	10.9	10.4	9.4	11.8	12.0	12.5	13.5
2.00	12.5	12.4	11.9	11.0	13.5	13.6	14.2	15.1
2.25	14.1	14.0	13.5	12.6	15.2	15.3	15.9	16.8
2.50	15.7	15.6	15.1	14.1	16.9	17.0	17.6	18.5
2.75	17.3	17.1	16.6	15.7	18.6	18.7	19.2	20.2
3.00	18.8	18.7	18.2	17.3	20.3	20.4	20.9	21.9

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