



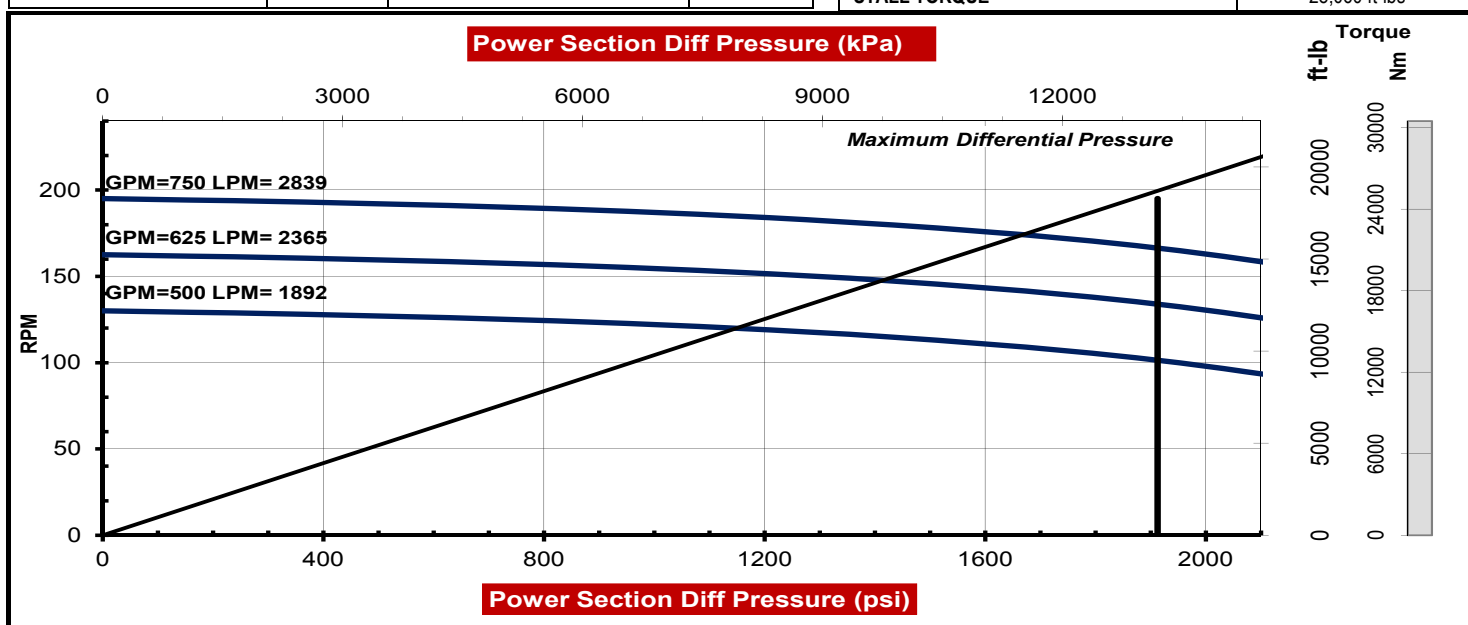
**Discovery
Downhole
Services, Inc.**

SHORT SUPERHAWK 700 – 7:8 Profile 8.5 Stage HR - 7.00" O.D.

Ph: 307-232-1234
Fax: 307-232-1238

GENERAL DATA			
BIT SIZES	8 1/2" thru 9 7/8"	MAX. WOB – (w/flow)	90,000 lbs
BIT CONNECTION	4 1/2 REG	OPTIMUM WOB - (w/flow)	45,000 Lbs
TOP CONNECTION	4 1/2 IF	MAX. WOB – (w/o flow)	250,000 lbs
TORQUE - CONNECTIONS	28,500 ft-lb	MAX. BIT PULL – (w/damage)	400,000 lbs
TORQUE - ABH	31,500 ft-lb	MAX BODY PULL – (w/damage)	975,000 lbs

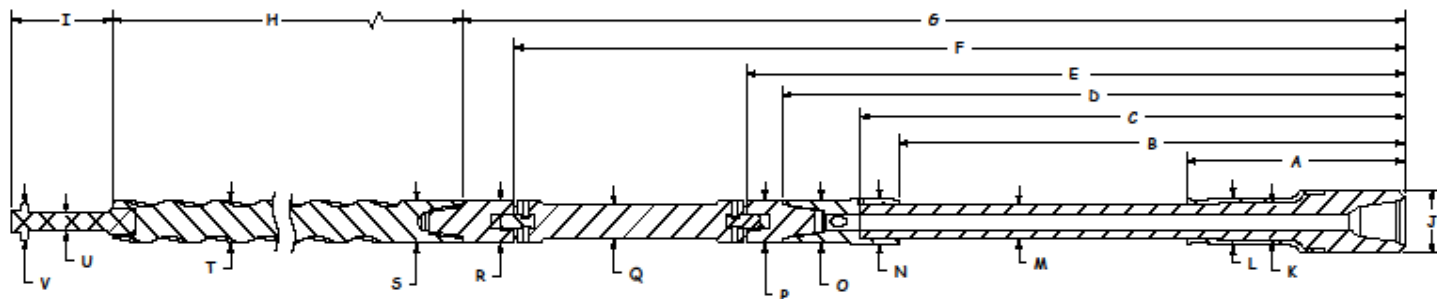
PHYSICAL PROPERTIES	
BIT TO BEND LENGTH (ABH)	66.44 in.
BIT TO BEND LENGTH (FIXED)	48.13 in.
NOMINAL LENGTH	410.67 in.
WEIGHT	3300 lbs
PERFORMANCE DATA	
FLOW RANGE	300 - 750 gpm
SPEED RANGE	130 - 200 rpm
SPEED RATIO	.26 rev/gal
MAX. DIFFERENTIAL PRESSURE	1910 psi
TORQUE RATIO	9.783 ft-lb/psi
TORQUE AT MAX DIFFERENTIAL	18,710 ft-lbs
STALL TORQUE	28,060 ft-lbs



CALCULATED BUILD UP RATES – DEGREES / 100 ft.* (FIXED)								
Angle (Deg)	Hole Size (in) – Slick Sleeve				Hole Size (in) - Stabilized			
	7 7/8"	8 1/2"	8 3/4"	9 7/8"	7 7/8"	8 1/2"	8 3/4"	9 7/8"
0.25	0.8				1.1	1.3	1.4	1.9
0.50	1.9	1.0	0.7		2.4	2.7	2.8	3.3
0.75	3.0	2.2	1.8	0.3	3.7	4.0	4.1	4.6
1.00	4.1	3.3	2.9	1.4	5.1	5.3	5.4	5.9
1.25	5.3	4.4	4.1	2.5	6.4	6.7	6.8	7.2
1.50	6.4	5.5	5.2	3.6	7.7	8.0	8.1	8.6
1.75	7.5	6.6	6.3	4.8	9.1	9.3	9.4	9.9
2.00	8.6	7.8	7.4	5.9	10.4	10.7	10.8	11.2
2.25	9.7	8.9	8.5	7.0	11.7	12.0	12.1	12.6
2.50	10.9	10.0	9.7	8.1	13.1	13.3	13.4	13.9
2.75	12.0	11.1	10.8	9.2	14.4	14.7	14.8	15.2
3.00	13.1	12.2	11.9	10.4	15.7	16.0	16.1	16.6

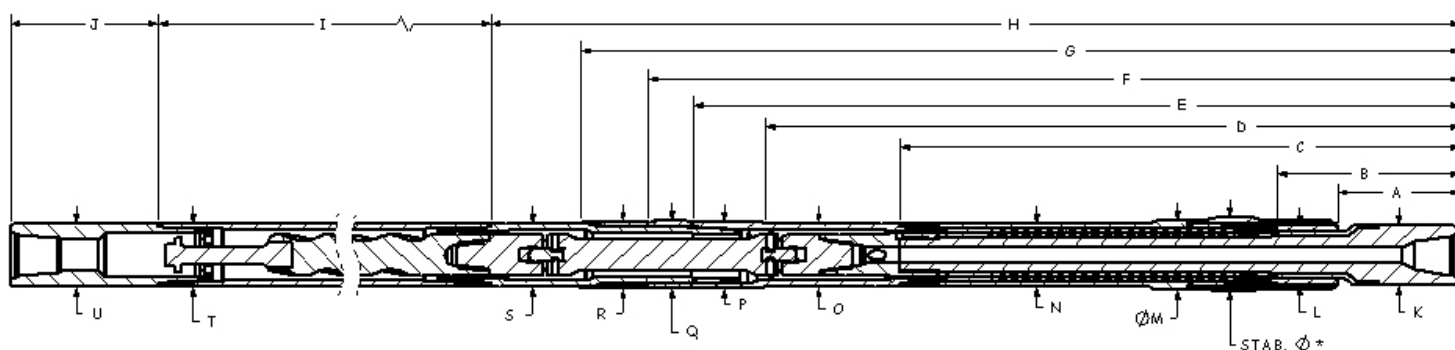
CALCULATED BUILD UP RATES – DEGREES / 100 ft.* (ABH)								
Angle (Deg)	Hole Size (in) – Slick Sleeve				Hole Size (in) - Stabilized			
	7 7/8"	8 1/2"	8 3/4"	9 7/8"	7 7/8"	8 1/2"	8 3/4"	9 7/8"
0.25	1.0	0.4	0.2		1.0	1.3	1.4	1.9
0.50	2.1	1.6	1.4		2.3	2.5	2.6	3.1
0.75	3.2	2.7	2.5	1.5	3.5	3.8	3.9	4.4
1.00	4.3	3.8	3.6	2.6	4.8	5.1	5.2	5.6
1.25	5.5	4.9	4.7	3.7	6.1	6.3	6.4	6.9
1.50	6.6	6.0	5.8	4.9	7.3	7.6	7.7	8.2
1.75	7.7	7.2	6.9	6.0	8.6	8.9	9.0	9.4
2.00	8.8	8.3	8.1	7.1	9.9	10.1	10.2	10.7
2.25	9.9	9.4	9.2	8.2	11.1	11.4	11.5	12.0
2.50	11.0	10.5	10.3	9.3	12.4	12.7	12.8	13.2
2.75	12.2	11.6	11.4	10.4	13.7	13.9	14.0	14.5
3.00	13.3	12.7	12.5	11.6	14.9	15.2	15.3	15.8

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



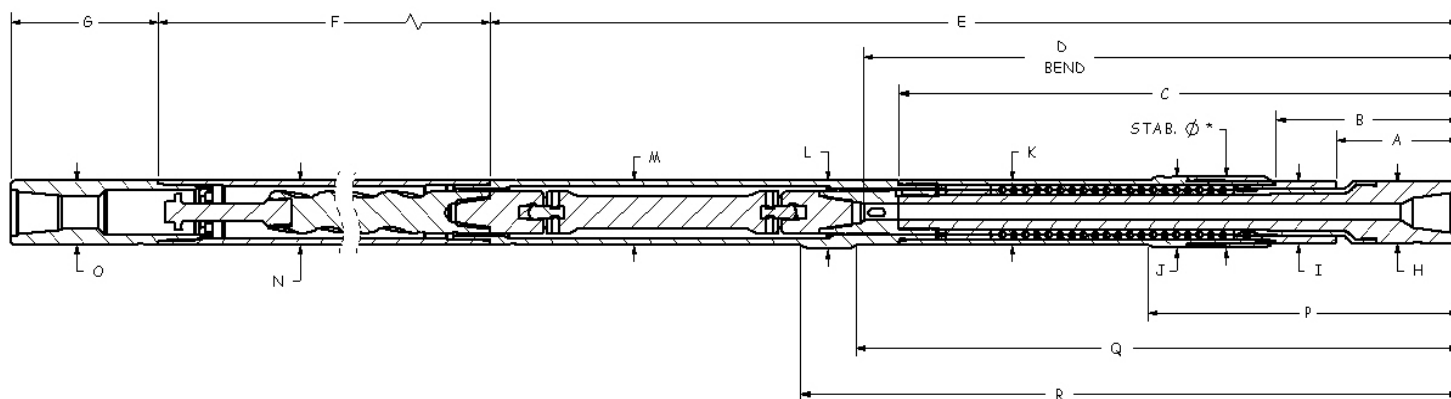
INNER FISHING DIMENSIONS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
22.53	39.96	44.32	55.90	56.84	82.61	88.34	291	10.9	6.80	4.11	5.069	3.74	5.0	4.665	5.0	4.0	5.0	4.38	4.669	1.88	3.8



OUTER FISHING DIMENSIONS (ABH)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
13.03	18.17	44.32	58.65	66.70	71.26	78.51	88.28	300	22.38	6.80	6.80	7.76	7.00	7.00	7.38	7.75	7.38	7.38	7.38	7.38



OUTER FISHING DIMENSIONS (FIXED)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
13.03	18.17	44.32	48.13	88.28	300	22.38	6.80	6.80	7.76	7.00	7.188	7.00	7.00	7.00	33.53	46.92	52.04

- * IF RUNNING SLICK SLEEVE THEN SAME AS BEARING HOUSING UPSET DIMENSION
- * IF RUNNING SLICK HOUSING THEN SAME AS BEARING HOUSING DIMENSION