



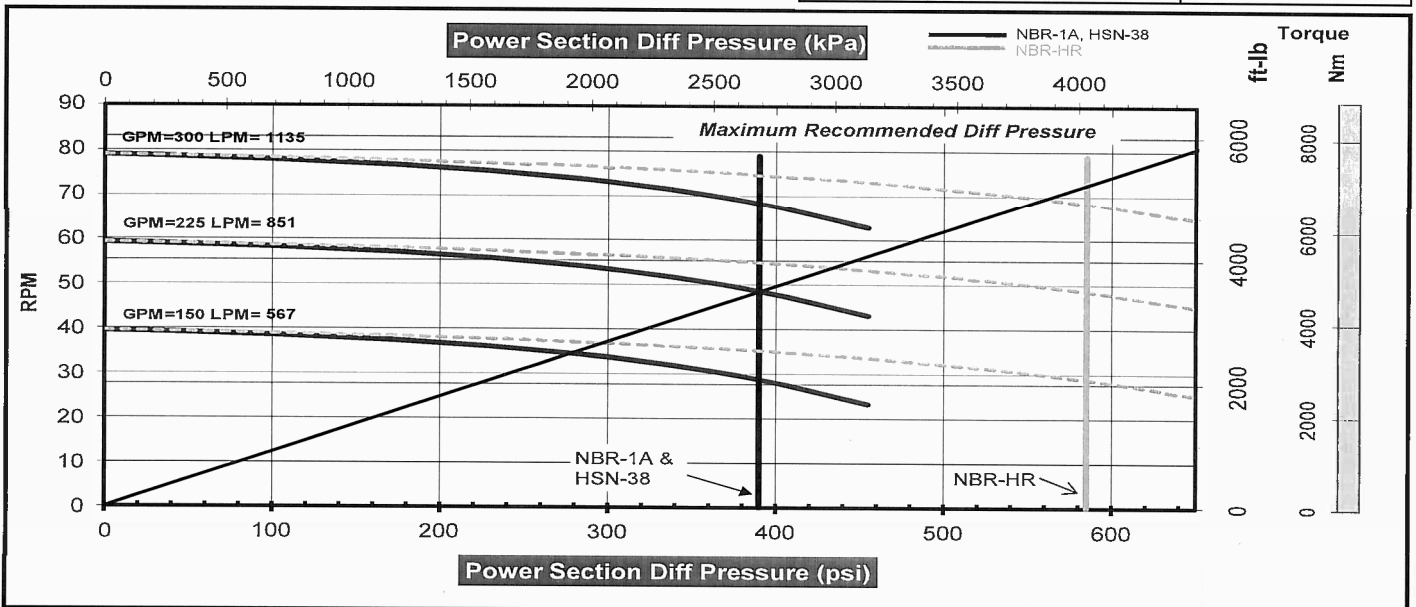
Discovery  
Downhole  
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**SUPERHAWK 475 - 7:8 Profile**  
**2.6 Stage HR - 4 3/4" O.D.**

| 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             | 330.9 in.       |
| WEIGHT                     | 1,250 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    |



| CALCULATED BUILD UP RATES - DEGREES / 100 ft.* (FIXED) |                               |        |        |        |                             |        |        |        |
|--|-------------------------------|--------|--------|--------|-----------------------------|--------|--------|--------|
| Angle (Deg)  | 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   | 2.5                           | 2.4    | 1.6    |        | 1.5                         | 1.6    | 2.0    | 2.7    |
| 0.50   | 3.9                           | 3.7    | 2.9    |        | 3.1                         | 3.1    | 3.5    | 4.3    |
| 0.75   | 5.3                           | 5.1    | 4.3    | 2.9    | 4.6                         | 4.7    | 5.1    | 5.9    |
| 1.00   | 6.6                           | 6.5    | 5.7    | 4.2    | 6.2                         | 6.3    | 6.7    | 7.4    |
| 1.25   | 8.0                           | 7.8    | 7.0    | 5.6    | 7.8                         | 7.9    | 8.3    | 9.0    |
| 1.50   | 9.4                           | 9.2    | 8.4    | 7.0    | 9.4                         | 9.4    | 9.9    | 10.6   |
| 1.75   | 10.7                          | 10.6   | 9.8    | 8.3    | 10.9                        | 11.0   | 11.4   | 12.2   |
| 2.00   | 12.1                          | 11.9   | 11.1   | 9.7    | 12.5                        | 12.6   | 13.0   | 13.7   |
| 2.25   | 13.5                          | 13.3   | 12.5   | 11.1   | 14.1                        | 14.2   | 14.6   | 15.3   |
| 2.50   | 14.8                          | 14.7   | 13.9   | 12.4   | 15.7                        | 15.8   | 16.2   | 16.9   |
| 2.75   | 16.2                          | 16.0   | 15.2   | 13.8   | 17.3                        | 17.3   | 17.7   | 18.5   |
| 3.00   | 17.6                          | 17.4   | 16.6   | 15.2   | 18.8                        | 18.9   | 19.3   | 20.1   |

| CALCULATED BUILD UP RATES - DEGREES / 100 ft.* (ABH) |                               |        |        |        |                             |        |        |        |
|--|-------------------------------|--------|--------|--------|-----------------------------|--------|--------|--------|
| Angle (Deg)  | 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   | 1.2                           | 1.0    |        |        | 1.4                         | 1.5    | 1.9    | 2.6    |
| 0.50   | 2.5                           | 2.4    | 1.8    |        | 2.9                         | 3.0    | 3.4    | 4.2    |
| 0.75   | 3.9                           | 3.8    | 3.2    | 2.2    | 4.5                         | 4.5    | 4.9    | 5.7    |
| 1.00   | 5.3                           | 5.2    | 4.6    | 3.5    | 6.0                         | 6.1    | 6.5    | 7.2    |
| 1.25   | 6.7                           | 6.6    | 6.0    | 4.9    | 7.5                         | 7.6    | 8.0    | 8.7    |
| 1.50   | 8.1                           | 7.9    | 7.4    | 6.3    | 9.0                         | 9.1    | 9.5    | 10.2   |
| 1.75   | 9.4                           | 9.3    | 8.7    | 7.7    | 10.5                        | 10.6   | 11.0   | 11.8   |
| 2.00   | 10.8                          | 10.7   | 10.1   | 9.1    | 12.1                        | 12.1   | 12.5   | 13.3   |
| 2.25   | 12.2                          | 12.1   | 11.5   | 10.4   | 13.6                        | 13.7   | 14.1   | 14.8   |
| 2.50   | 13.6                          | 13.5   | 12.9   | 11.8   | 15.1                        | 15.2   | 15.6   | 16.3   |
| 2.75   | 15.0                          | 14.9   | 14.3   | 13.2   | 16.6                        | 16.7   | 17.1   | 17.8   |
| 3.00   | 16.4                          | 16.2   | 15.6   | 14.6   | 18.1                        | 18.2   | 18.6   | 19.4   |

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