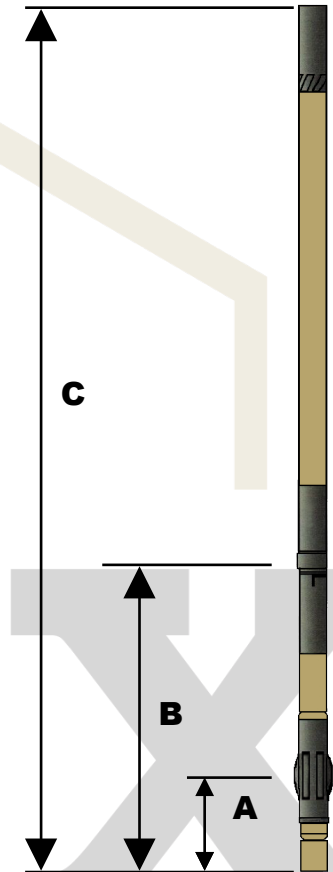




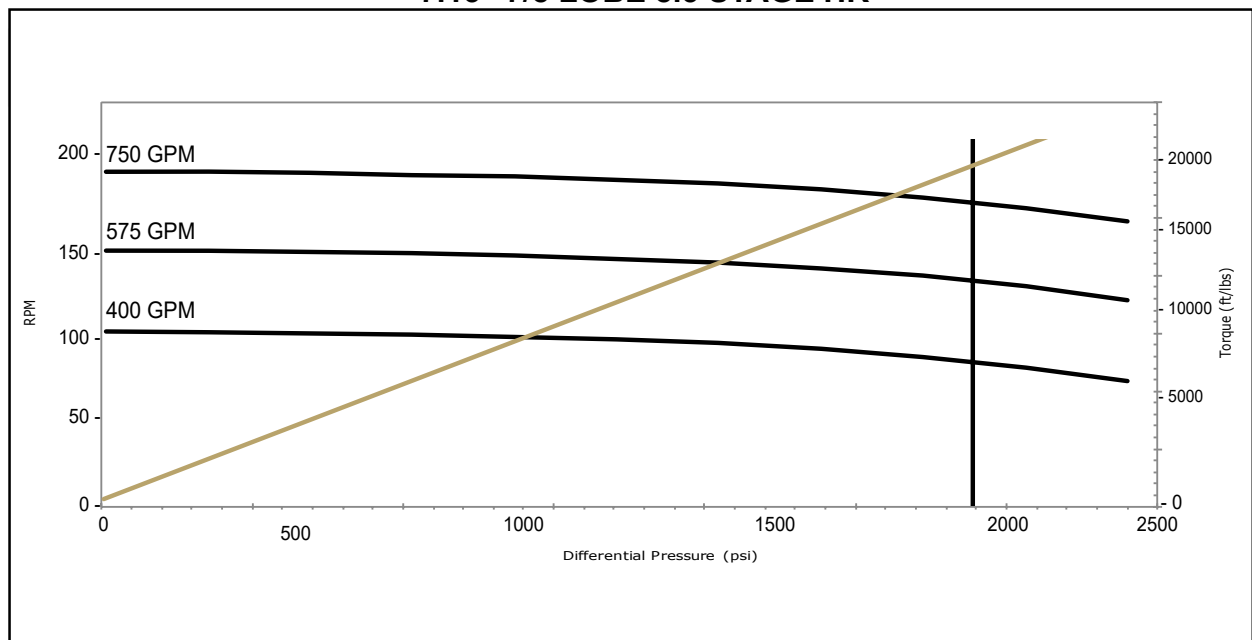
# 7.13" RAM 7/8 8.5 JAW CLUTCH

| 7.13" 7/8 8.5 Stage HR         |                      |
|--------------------------------|----------------------|
| Motor OD                       | 7.13 inch            |
| Lobe Configuration             | 7 - 8 Lobe 8.5 Stage |
| Bit Size Range                 | 8 1/2 - 9 7/8 inches |
| Bit Box Connection             | 4 1/2 REGULAR        |
| A = Bit to Stabilizer (Center) | 22.68 inches         |
| B = Bit to Bend - Fixed        | 54.88 inches         |
| B = Bit to Bend - Adjustable   | N/A                  |
| C = Overall (with Top Sub)     | 426.13 inches        |
| Adjustable Makeup Torque       | N/A                  |
| Weight                         | 3,400 lbs            |
| Max WOB - w/Flow               | 124,000 lbs          |
| Optimum WOB - w/Flow           | 67,000 lbs           |
| Max WOB - w/o Flow             | 300,000 lbs          |
| Max Bit Pull - w/Damage        | 400,000 lbs          |

| Rev. Per Gallon | Flow Rate Range | Bit Speed Range | Torque Output | Max Diff Pressure |
|-----------------|-----------------|-----------------|---------------|-------------------|
| RPG             | GPM             | RPM             | Ft. Lbs       | PSI               |
| 0.26            | 400 - 750       | 100 - 200       | 19,540        | 2,000             |



7.13" 7/8 LOBE 8.5 STAGE HR





| <b>7.13" 7/8 8.5 STAGE HR</b>                                 |                                      |               |               |               |                                    |               |               |               |
|---------------------------------------------------------------|--------------------------------------|---------------|---------------|---------------|------------------------------------|---------------|---------------|---------------|
| <b>CALCULATED BUILD UP RATES - DEGREES / 100ft. * (FIXED)</b> |                                      |               |               |               |                                    |               |               |               |
| <b>Angle (Deg)</b>                                            | <b>Hole Size (in) - Slick Sleeve</b> |               |               |               | <b>Hole Size (in) - Stabilized</b> |               |               |               |
|                                                               | <b>7 7/8"</b>                        | <b>8 1/2"</b> | <b>8 3/4"</b> | <b>9 7/8"</b> | <b>7 7/8"</b>                      | <b>8 1/2"</b> | <b>8 3/4"</b> | <b>9 7/8"</b> |
| <b>0.25</b>                                                   | 2.4                                  | 1.8           | 1.4           |               | 1.1                                | 1.3           | 1.4           | 2.0           |
| <b>0.50</b>                                                   | 3.6                                  | 3.0           | 2.6           |               | 2.4                                | 2.8           | 2.9           | 3.3           |
| <b>0.75</b>                                                   | 4.7                                  | 4.1           | 3.9           | 2.6           | 3.9                                | 4.1           | 4.2           | 4.7           |
| <b>1.00</b>                                                   | 5.9                                  | 5.3           | 5.1           | 3.9           | 5.3                                | 5.5           | 5.6           | 6.1           |
| <b>1.25</b>                                                   | 7.2                                  | 6.5           | 6.2           | 5.1           | 6.6                                | 6.8           | 6.9           | 7.5           |
| <b>1.50</b>                                                   | 8.4                                  | 7.7           | 7.4           | 6.3           | 8.0                                | 8.3           | 8.4           | 8.8           |
| <b>1.75</b>                                                   | 9.5                                  | 8.8           | 8.6           | 7.4           | 9.4                                | 9.7           | 9.8           | 10.2          |
| <b>2.00</b>                                                   | 10.8                                 | 10.0          | 9.8           | 8.6           | 10.8                               | 11.0          | 11.1          | 11.6          |
| <b>2.25</b>                                                   | 12.0                                 | 11.2          | 10.9          | 9.8           | 12.1                               | 12.4          | 12.5          | 13.0          |
| <b>2.50</b>                                                   | 13.0                                 | 12.4          | 12.1          | 11.0          | 13.5                               | 13.8          | 13.9          | 14.3          |
| <b>2.75</b>                                                   | 14.3                                 | 13.5          | 13.3          | 12.1          | 14.9                               | 15.2          | 15.3          | 15.7          |

DRILLING SOLUTIONS

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