POSITIVE DISPLACEMENT MUD MOTORS

Matching the right positive displacement mud motor (PDM) to the specific characteristics of your directional drilling project can achieve better rates of penetration, less power expenditure, less wear and fatigue on the drillstring, and less wear on topside rotating components.

Black Viper maintains a wide selection of mud motors for directional drilling. These PDMs use the hydraulic horsepower of the drilling fluid to turn the drill bit, optimizing the drilling of the borehole.

Black Viper engineers calculate the hydraulic power input to the motor and the mechanical power output of the motor, based on

BLACK VIPER ENERGY SERVICES

P.O. Box 2552 • 11220 WCR 127 • Midland, TX 79702 • Office: 432.561.8801
Fax: 432.561.8870 • International: 00 + 1 + 432.561.8801 • www.blackviperenergy.com

measurements of weight-on-bit (WOB), torque, bit rotational speed and pressure drop across the motor. Input and output values are plotted against one another to produce a torque curve, which indicates maximum achievable power output of the motor.

The WOB can then be adjusted for the given characteristics of the rock structures to be encountered in drilling. Optimum standpipe pressure, operating efficiency, and wear of the motor are also determined.

The hydraulic power required to drive the downhole PDM and drill bit is often less than the mechanical power required to drive the rotating drill string.

Matching the right PDM to the right drill bit is a critical step in the process. Our custom designed PDC bits are specifically designed for the directional drilling industry. They are extremely stable, durable and directional "friendly."

The PDM utilizes a bent housing between the motor section and the sealed bearing assembly. The mud lubricated bearing assembly contains anti-friction bearings. The rugged articulated driveshaft is sealed and lubricated for long service.

Black Viper has designed and is manufacturing our own line of mud lubricated high-performance mud motors. Included in this process is a larger, more robust bearing assembly that utilizes larger bearings in the bearing pack. We use high tech, Space Age metals in the bearing assembly, cryogenically treated to reduce wear and increase the life of the motor.

The reliability of the drilling motor combined with our custom drill bit designs and MWD systems present attractive alternatives to rotary drilling.

With over 100 years combined experience in directional and horizontal drilling technology, Black Viper can help achieve optimum results in minimum time.

BLACK VIPER ENERGY SERVICES

Midland, Texas

Black Viper Energy Services, LP
P.O. Box 2552
11220 WCR 127
Midland, TX 79702
Office: 432.561.8801
Fax: 432.561.8870
International: 00 + 1 + 432.561.8801
www.blackviperenergy.com

Viper Bit Services, LP
Taylor Cryogenics, LP
915 South Goode Street
Midland, TX 79702
Office: 432.617.5000
Fax: 432.617.5004
International: 00 + 1 + 432.617.5000

Oklahoma City, Oklahoma

District Office
32125 South Ann Arbor
Oklahoma City, OK 73179
Office: 405.681.8900
Fax: 405.681.8916
www.blackviperenergy.com

Casper, Wyoming

District Office
7340 Gray Cloud Road
P.O. Box 1638
Casper, WY 82602
Office: 307.234.0063
Fax: 307.473.3066
www.blackviperenergy.com