



**Abraj Oil Services Company**

**EXPERTS IN OIL FIELD SERVICES**

## **Company Profile**

[www.Abrajoil.ly](http://www.Abrajoil.ly)

Commercial Register No.: 39273

## General Information

### **Abraj oil Services Company**

Main office :

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Dear Sirs,

It is our pleasure to introduce ABRAJ Oil Services Company to your esteemed Organization.

ABRAJ Oil Services was established in Zawia, Libya , June 2012 as a Privately held Libyan company.

The core values of our business are:

**HSE** , which is a pinnacle in our everyday priorities. The wellbeing of our employees, Contractors, third party personnel and the environment are the starting point for every activity we involve ourselves in.

**Services Quality** is our corporate obsession. The technology we deploy, our experience and management systems in place, are only effective if our clients are satisfied. Our service culture will always be adaptive to new technologies, and responsive to all the demands and needs of our client.

Our experience and our passion to succeed in every endeavor are the cornerstone of our corporate success.

Smart and successful technical alliances/partnerships enable us to provide our clients with a wide range of the latest technologies in a cost effective and competitive package.

Local knowledge and insight is instrumental to our productivity and efficiency.

Our conviction in the above values and their systematic implementation in all businesses and locations will make us worthy of our client's confidence and trust.

This is what we strive to achieve and more importantly maintain in our every activity.

**Abraj's mission is to be a leader in the fields it operates, this mission is achieved by;**

- \* Customer's satisfaction: High quality, precise and reliable product at competitive prices.
- \* Continuous growth: To establish strong business relationships within the market by maintaining and growing its referral networks to generate new and repeat sales.
- \* Continuous improvement: by improving operations efficiency, avoiding duplications, etc
- \* Business development strategies: Devise effective strategies to ensure that the company's offered products remain competitive, reliable and preferred choice of the customers & end users.



## Core Values

- \* Customer satisfaction: we honor our commitment and strive to meet customer expectations.
- \* Teamwork: We respect and trust each other, share knowledge and work cohesively to achieve company targets
- \* Excellence: We aim for high standards & continuously strive to improve quality of services
- \* Leadership: We encourage initiative and inspire others for achieving positive results
- \* Rewarding Environment: We respect the individual, invest in employee development and reward success.

## Management Profile :

Although ABRAJ Oilfield Services company is new and had just started , but we do have a vast experience in the field of the oil industry specially in Libya, knowing-how and professionalism coming from the group of technical experts who originally concurred and started ABRAJ Oil Services Company.

Starting from the pioneers who have over 25 years of experience in field operations, and Management skills in the oil industry, to our field staff who are seasoned professionals with ample experience and commitment. Every employee is a relevant stake holder in the company which empowers all our people and reinforces their commitment to safety and excellence.

## Our line of services is consisting of:

- 1) Drilling Services & tools rental
- 2) Casing Running Services
- 3) Fishing services.
- 4) Gyro Survey services
- 5) Coring and DST services
- 6) Production services and equipment.
- 7) Inspection and NDT services
- 8) Safety Services.
- 9) Training
- 10) Manpower services and consultation
- 11) ESP (Electrical Submersible Pump)
- 12) Importing tools and Equipment
- 13) Vessels and flow lines inspection and repairs
- 14) Technical Engineering Services. (TES)

## **Training.**

Abraj Oil services provides training courses in deferent fields in the oil industry:

- Production facilities
- drilling operation
- Horizontal drilling principles
- Horizontal drilling tools and technics
- Basic Reservoir engineering and optimization.
- Advanced reservoir engineering.
- QHSE
- Management
- Human Resources development

## **Manpower Services and consultation:**

We take pride to support our client's growth by providing expert manpower that matches their growth under a framework agreement.

## **Technical Engineering Services (TES)**

Abraj oil Services can provide the following technical engineering services:

### **1- Reservoir analysis:**

- analysis of production performance
- well test analysis ( pressure transient analysis )
- hydrocarbon reserves and evaluation
- economic evaluation analysis

### **2- Reservoir characterization management**

- IOR
- EOR

### **3- Reservoir engineering consultant :**

- reservoir simulation studies
- conventional reservoir engineering studies

**4- Basic Function and Scope:**

Provide expert advice and assistance on well testing issues

**5- Tasks, Duties and Accountabilities:**

- Prepare and run well testing models using special and high tech. software's and tools.
- Create comprehensive data archiving programs
- Preparing reports for senior management developing active mentoring programs for junior engineers.

**6- Integrated Reservoir Simulation Study.**

Abraj Oil Services, aims to carry out onshore/offshore 3D reservoir studies and has continuing commitment to undertake interpretation of geological and well data and the construction of geo-models.

**Abraj Oil Services is capable to achieve these goals by following these key objectives:-**

- a. Review and assess all available data such as geophysical interpretations, geological reports and maps, including petro physical studies and well log analysis, production data, pressure data, deliverability tests,...etc.
- b. Build a 3D geological model using all the Geological, Geo-statistical, Petro physical methodologies for a correct modeling of the reservoir static features and to determine the Original Oil in Place.
- c. Derive the 3-D Reservoir simulation model by means of up scaling techniques and Reservoir Engineering methodologies to obtain dynamic characteristics.
- d. Validate this model by matching the historical performance and to predict future production performance and reserves under different future production and development strategies.
- e. Identify the optimum future exploitation strategy to improve gas and oil production rates and reserves. The optimum plan will include all technical details for future drilling, completion, and production strategy, in addition to an economic evaluation of the optimum plan.

The company always strives for operational excellence in the relevant area and as such will be a vital part to ensuring that this is met.



**Our team is able to:**

- Articulate evaluation results in a clear and concise manner.
- Capable of handling all geological and reservoir responsibilities associated with drilling.
- Creates well targets data with reservoir and drilling engineers, and hence, generates well trajectories.
- Updates grids/maps in light of the new drilling information obtained from active wells to help optimizing wells objectives
- Perform the wells evaluations while and post-drilling, such as final correlations, maps and grids for both structural stratigraphic, and fluid limits mapping.
- Perform development geology studies that help in planning and modifications of operation plans.





## DOWNHOLE TOOLS

Benefiting from its agreement with **WENZEL DOWNHOLE TOOLS** to be an authorized and trusted distributor in Libya, Abraj oil services Company has chosen to provide its various services using drilling tools and equipment from Wenzel Down hole tools, which is one of the most famous and premium international companies in the field of manufacturing and selling various drilling tools and equipment.



Wenzel Down hole Tools is the leading motor and drilling tools supplier , which world wide operation supporting the oilfield and construction industries.

WENZEL's reputation for quality is upheld through excellence in design and customer focus.

WENZEL is quickly responsive and receptive to clients' question and requests

WENZEL offers a variety of rugged tools, versatile to a wide range of drilling applications.

Product lines include : **motors, Jars , Shock tools , Accelerators , Agitators and Bumper subs**

- **WENZEL DOWNHOLE TOOLS**

## **Introduction**

Since their introduction in 1981, Wenzel Downhole Motors have established a reputation for performance, reliability and excellent service. Our motors provide superior performance and longer operating life, in today's extremely demanding drilling conditions.

We provide a versatile range of sizes and types of motors for performance, directional, horizontal, coiled tubing, work over, and utility applications. Wenzel Motors incorporate numerous exclusive technology improvements in its bearing assemblies, adjustable bent housings, and drive line designs.

## **Overview**

Wenzel positive displacement motors provide superior performance and longer operating life for today's drilling programs. Wenzel offers a versatile array of Downhole motors available for straight, directional, horizontal, workover, coil tubing, and utility applications. Wenzel motors utilize the industry's best technology in sealed bearing assemblies, adjustable bent housings, and drive lines. Wenzel motors will operate effectively with most drilling fluids in a wide range of fluid weights and viscosities including air, mist and foam. Some constraints can be imposed by the use of drilling fluids based on synthetics or low aniline mineral oils and when certain additives are being used. This can be discussed further by contacting your local Wenzel representative.



## 1- Down hole Motors

Our WENZEL motors are available in various sizes from 4 ¾" to 9 5/8" diameters for various hole sizes. The motors come with Rig floor adjustable bent housing, which range from 0-3 degree.

The adjustment is required to achieve the required doglegs as per the well plans. If the well vertical, the bent housing is secured at zero setting to drill vertically.

The stator is available for both conventional (< 210 degree C) and high temperature (< 150 degree C) applications. They are designated for both oil and water based mud systems.

Motors are Down-hole Dynamic Drilling tool utilizes drilling mud.

Mud stream from the outlet of mud pump flows through a dump valve into the motor. This stream produces loss at both inlet and outlet of the pump to push the rotor into rotating and to transmit torque and speed onto the bit.



## Performance Drilling

In the straight-hole applications, motors function as a performance-drilling tool to increase the penetration rate (ROP) and reduce casing wear by minimizing string rotation.

There are different applications of these motors in terms of speed and torque resistant, this difference can be identified by knowing the number of lobes of the drilling motor, more lobes means less speed and higher torque resistance, and vice versa.

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### Millennium Mud Lubricated Drilling Motors

The Wenzel Downhole Tools Millennium Mud Lubricated Motor is designed with patented technology for reliability in aggressive, higher temperature wells. Using the latest developments in high torque – high speed power sections, it provides users with an effective tool for delivering superior performance.

The Millennium Drilling Motors continue to offer the highest level of quality to customers through superior designs, materials, and manufacturing processes.

#### Features and Benefits

- ▶ Industry proven thrust and radial bearing technology, custom designed for mud lubricated drilling motor applications.
- ▶ Bearing Assembly design is straight forward and compact, making for easier service.
- ▶ Equipped with 0 - 3° Adjustable Bend Assembly.
- ▶ Option for shorter bit-to-bend Fixed Bend Assembly.
- ▶ Features the Maxi-Torque Driveline for use with high torque power sections.
- ▶ Pin down mandrel & straight housing options available for achieving high downhole RPM with Rotary Steerable Systems (RSS).
- ▶ Inhouse manufactured components adhere to Wenzel's high standard of premium materials and quality production.
- ▶ Patented designs.

## **1- Drilling Jars**

### **6 ½" & 8" Drilling Jars**

#### **General**

The drilling jar connecting with drill tool and working with drill string is a down-hole stuck freeing tool in drilling operation. When drill tool is happened to be stuck in down hole, the stuck drill tool can be released by in time starting the drilling jar to provide continuous up jarring or down jarring. It is a desire tool for directional well, complicated well and deep well.

The drilling up jar , and drilling down jar can be used mutually or operated separated. The up jarring section takes use of hydraulic mechanism, the jarring force can be adjusted according to up elevating load but cannot exceed the max. load for tool load rated. The down jarring section takes use of mechanical friction mechanism, the jarring force is well pre-adjusted by adjusting device before put into down-hole. No readjustment can be allowed after jar is put into down-hole.

#### **The working principle for drilling (up) jar**

The up drilling action is obtained by cone body, by-pass body, sealing body and oil seal of sealing body. When jarring is required, lower steadily drill string, move down the mandrel of up jar, cone-shaped piston from sealing body, the hydraulic oil between cone body and floater in the cylinder flows into pressure chamber through by-pass body. When mandrel shoulder touches against the end-face of wiper body, the tool is closed. Continuous elevate drill string, the passage between sealing body and lower end of cone body is closed. On two oil discharge grooves can allow a few of oil flowing in, the other oil flowing are blocked at upper part of cone body so that oil pressure is rising and drill string above mandrel gradually stretch to store energy. Because the oil flow limitedly through the oil metering groove on the cone, the drill string extends. When cone body moves up to unload groove, the high pressure oil in pressure chamber in short time release energy. The drill string stretched suddenly shrinks so that top face of extension mandrel strikes against shoulder of splin with extreme high speed and provides a violent up jarring impact against the drill string connected at lower part of external barrel. Steadily elevating the drill tool by several times can force tool to produce continuous up jarring.


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### Hydraulic Mechanical Drilling Jars

The Wenzel Downhole Tools Hydraulic Mechanical Drilling Jar (HMJ) is a double acting jar designed to deliver a hydraulic delay when jarring in the up direction, and a mechanical release when jarring in the down direction. The HMJ incorporates the latch mechanism to keep the jar locked in the neutral position eliminating unexpected jarring during operation and handling.

The Enhanced series jar (EHMJ) offers higher latch settings and a smaller pump open area to carry heavier string weight below the jar.

The Ultimate series jar (UHMJ) provides the highest overpull capacity on the market. Using proprietary technology, the maximum allowable overpull force is dramatically increased within the design. The UHMJ easily converts to the HMJ design.

#### Features and Benefits

- ▶ Ultimate series jars (UHMJ) provide the highest overpull capacity available on the market and can be easily converted from the HMJ.
- ▶ While Drilling, the HMJ, EHMJ & UHMJ are operated in the latched position eliminating unexpected jarring and movement between jar components, increasing service life.
- ▶ Hydraulically activated in the up direction with impact force controlled by operator. For controlled impact force, metering device (Visco Jet) ensures consistent delay times over a full range of operating temperatures.
- ▶ Operates via simple up and down motion, unaffected by right or left hand torque.
- ▶ Spline drive and latch mechanism are enclosed in a single oil chamber without ports to the annulus. Such ports on other jars may restrict jar stroke, impact, and seal integrity.
- ▶ Can be run in tension or in compression within the preset latch setting.
- ▶ Standard seals effective to 250°F (120°C). Jar can be dressed with seals effective to 450°F (230°C) for hot hole environments.
- ▶ External sealing surfaces are tungsten carbide-coated to enhance wear and corrosion resistance.

#### Operation

##### Jarring Up

- Jarring up achieved by applying sufficient overpull to overcome latch setting, initiating hydraulic delay sequence. During time delay overpull at surface is adjusted to vary impact force. See table for max pull load during delay.
- After impact, apply down force sufficient to close jar and re-engage latch. Repeat jarring cycle as required.

##### Jarring Down

- Jarring down achieved by applying sufficient downward force to overcome latch setting and pump open force. Mechanical latch will release, jarring downward.
- After impact, pick up work string to re-engage mechanical latch. Repeat jarring cycle as required.



## 2- SHOCK TOOL

### 6 1/2" & 8" Shock Subs

#### General

The SY type two ways shock absorbers are used to simultaneously slow down or eliminate the vertically or horizontally shock room drill string. It can reduce the damage due to shocking to drill bit, drilling tool and surface drilling tool so as to enhance drilling speed and reduce drilling cost.

#### Main structure

The bumper is mainly made of a compressible liquid spring, piston change-over unit and annular space damping device . The vertical vibration and shock load of drilling tool take into effect on the liquid spring by liquid piston. By left -hand big spiral driving device, the torque is passed from piston external spline to inner spline of spline outer barrel and passed through hydro- cylinder joint ,hydro-cylinder, lower sub to bit. Internal shaft: mandrel---tailpipe.

Outer barrel: centralizing sub -mandrel body ---spline outer barrel ---hydro-cylinder sub hydro-cylinder--- bottom sub.

There is a big spiral change-over device between inner shaft and outer barrel.

#### Working principle

The torsion of bottom hole will be changed with changes in bit structure, formation and bit weight. When the drilling speed reach up to a certain value torque and resonance will be happened to drill string .During rotation drilling , the lower part of drilling tool simultaneously bear axially pressure and torque. When bit weight exceeds the limit value, the drilling tool will produce a transverse bending (it means lose steadiness) and torque also can make the

drilling tool to lose steadiness to be turned into a twist shape. Two positions are very typical:

1.The lower bit is suddenly frozen and then torque bumping will be produced unless the cut down rotary energy.

2. Reversing operation in force.

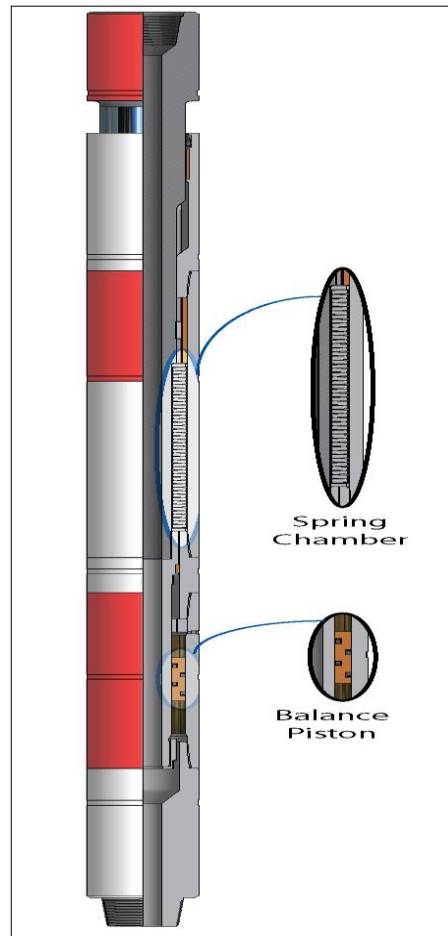
The vertically damping unit is made of mandrel, piston assembly, annular space damping unit and liquid spring of working chamber. Working mechanism: To absorb or release the vibration energy of bit and drill string by means of compressible liquid producing spring deformation in working chamber under the function of pressure.

The mandrel moves axially relative to outer barrel when liquid spring is in compression or expansion. Meanwhile, the non-compressible liquid in damping chamber flows through damping space and produces a large number of friction heat so that some vibration and bumping energy are used up. The vertical bumping unit thus can absorb or reduce the drilling tools' energy in vertical vibration and bumping.

The piston change-over unit is composed of spline outer barrel which is connected with piston by rectangular spline pair and the piston inner hole which is connected with mandrel by ladder shaped spiral pair. Such a group unit can turn the torque vibration and impact load into vertical component of force in working chamber in a twinkling of an eye so that a constant torque is maintained on.

#### FUNCTION :

- DEFLECTION REDUCES IMPACT
- PROTECTS BIT FROM DAMAGE
- IMPROVES BIT LIFE
- FEWER BIT TRIPS
- ISOLATE VIBRATION FROM BHA
- REDUCE DRILL STEM FATIGUE FAILURES
- ALLOWS OPTIMUM BIT SPEED
- IMPROVE ROP



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### Shock Tool

The Wenzel Downhole Shock Tool effectively reduces impact loading on the bit to extend bit life and reduce bit trips. By isolating axial bit vibrations from the drill string, the Shock Tool will reduce lateral and torsional drill string vibrations, and related fatigue damage or failure of the rotary connections. The Shock Tool allows optimum bit speed to be used under rough drilling conditions, increasing the rate of penetration.

#### Features and Benefits

- ▶ Isolates bit induced vibrations from the drill string.
- ▶ Fully oil-sealed and lubricated for extended service life.
- ▶ Does not use temperature-sensitive elastomers for shock absorption, therefore is suitable for use in temperatures to 250°F (120°C), with optional seals available for temperatures up to 320°F (160°C).
- ▶ Reliable Belleville disc springs provide optimum load/deflection characteristics to maintain consistent contact between bit and formation, effectively reducing impact loading to extend bit life.
- ▶ Pressure balanced to eliminate the effect of downhole hydrostatic pressure.
- ▶ Low friction torsional drive permits free vertical movement.
- ▶ Well-stabilized, with internal three-point lateral support to minimize deflection.
- ▶ Reduces wear and tear on rig and equipment, and fatigue failures on drill collars and drill pipe.
- ▶ Automatically compensates for pump open force.