Megaton™ Shock Tool

DESCRIPTION

The Megaton™ Shock Tool is a vibration reducing sub designed to extend bit life and protect downhole equipment. The Megaton™ Shock Tool incorporates both proven and new technology for superior performance. Designed with a steel disc spring column and a unique hydraulic dampening system, the Megaton™ Shock Tool can substantially reduce axial vibrations and allow maximum bit performance. During normal drilling operations, the tool will run in a partially compressed position, enabling axial compensation to ensure bit remains on bottom.

FEATURES

- High strength steel
- Double shoulder body connections for increased torsional strength
- Belleville spring column
- Hydraulic dampening system
- Hydrostatically balanced
- Stabilized involute spline drive section

BENEFITS

- Reduced bit bounce
- Extended bit life and performance
- Reduced shock loads transferred through drill string
- Can be used in high torque operations
- Can be used in high temperature wells with optional seal kit installed.

OPERATION

The Megaton™ Shock Tool must be installed in the drill string with the mandrel end up. Prior to make up, a suitable thread compound should be applied to the end connections.

Protect the mandrel sealing surface from possible damage during handling or storage. Never apply tongs, slips, chains or slings to this area. Rig tongs should be applied directly adjacent to the top and bottom connections to avoid breaking or torqueing the tool body connections. All body connections are torqued to specification at the service center. Avoid breaking these connections at the rig.

The Megaton™ Shock Tool incorporates a balancing piston which equalizes pressure inside the tool with the pressure inside the drill string. Because of this, the pressure drop across the bit will tend to extend the tool. The amount of extension will depend on a balance between weight on bit and pump open force.

The Megaton™ Shock Tool does not use any temperature sensitive elastomers for shock absorption and may be used up to 450˚ F with optional high temperature seal kit installed. Standard seal kit is rated to 350˚ F.

PLACEMENT

The performance of the Megaton™ Shock Tool is optimum when positioned near bit to minimize the oscillating mass. If a packed hole assembly is to be run, the Shock Tool should be placed further up the string, although this will reduce the effectiveness of the tool due to the greater oscillating mass.

PUMP OPEN FORCE

If circulation is maintained, the pressure drop across the bit creates a force tending to extend the Shock Tool. The pump open force is calculated by multiplying the pressure drop across the bit by the pump open area.

INSPECTION

On each round trip the Shock Tool should be visually inspected for any indication of damage, excessive wear or leakage.

MAINTENANCE AND STORAGE

New tools are shipped painted and threaded ends are treated with iron-phosphate and coated with rust preventative coating. Heavy duty thread protectors are installed to eliminate mechanical damage.

When the Shock Tool is to be laid down, flush all drilling fluid from the bore, wash external surfaces of the tool, and apply thread compound and protectors to the end connections.

SPECIFICATIONS

Shock Tool Series	47	62	66	81
Tool OD (Nominal)	4.75”	6.25”	6.625”	8.125”
Tool OD (New)	4.89”	6.36”	6.73”	8.26”
Bore ID	2.25”	2.56”	2.75”	3.25”
Tensile Yield (lbs)	508,080	792,150	894,560	1,399,820
Torsional Yield (ft lbs)	32,200	77,510	86,400	162,200
Pump Open Area (sq. in.)	7.43	13.51	14.96	23.6
Max temperature °F/°C (standard)	350/176	350/176	350/176	350/176
Max temperature °F/°C (high)	450/232	450/232	450/232	450/232
Max Drilling Hrs Up to 350° F	350	350	350	350
Max Drilling Hrs Up to 450° F	200	200	200	200
Length approx. (ft / m)	16 (4.9)	17 (5.2)	16 (4.9)	16 (4.9)
Weight approx. (lbs / kg)	660 (300)	1,100 (500)	1,320 (600)	2,200 (1000)