# MITIGATING VIBRATIONS & SLIP-STICK IN WELL INTERVENTION

**NeoTork** is a downhole tool that manages torque generated by the drill bit as well as mitigating axial and torsional vibrations, protecting critical downhole equipment.

The simple, unique design automatically controls downhole torque. When torque exceeds a preset limit, the tool contracts to reduce the drill bit depth of cut. The excess torque 'stored' in the system is slowly released as the drilling structure drills off.

## Application

Today, many well interventions are completed using coiled tubing which transmits energy downhole, via a fluid flow, to a drilling system. The fluid is pumped inside the coil and powers a PDM.

Even with surface-automated WOB systems, PDMs frequently stall particularly when milling through the different materials that make up plugs and completion equipment and which cause torque to peak and fluctuate. The same happens when reaming scale of different hardness and thickness.

**NeoTork** protects the mud motor from variances in torque and greatly reduces the risk of stalling. The conditions are therefore better for mud motors and downhole equipment, which experience less damage. Smoother drilling and milling, within optimum parameters means faster ROP and swifter project completion.

## Results

- Less downtime
- Faster ROP
- Longer bit life
- Limit number of stalls
- Reduced equipment damage
- Extend coil life

**Milling made easy !**

# Tool Description

NeoTork is made up of two sections, assembled as a sole body.

There is a boxed connection in the top section of the tool. A shaft in the lower section of the tool supports the pin connection. The tool is supplied to site ready to use.

## Top Assembly

Includes a barrel, with a stack of disc springs inside.

These springs are compressed during assembly. The springs push on an axis, forcing NeoTork to extend up to its full length. The number of springs depends on the preset threshold for WOB and torque.

The disc springs are packed in a calibrated quantity and also absorb the tool's axial movement.

***Top Assembly :***
*The disc springs are packed in a calibrated quantity and force the tool open. At both ends of the stack a low friction bearing ensures smooth rotation.*

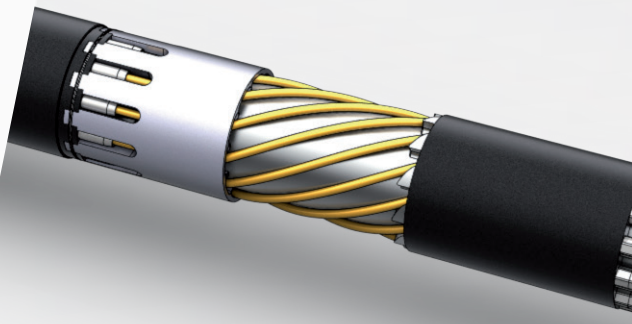
## Bottom Assembly

The bottom assembly manages the extension or contraction of the tool. The rotating body, which includes the bottom shaft, is attached by steel cables to the upper section. In the extended position, the cables are set at a pre-defined angle.

When torque levels on the bottom shaft exceed the resistance exerted by the disc springs, the shaft will rotate clockwise. This forces the cables to 'swivel' around the sleeve at an increasing angle, lifting the bottom shaft until torque returns to the set level.

As the bit drills off and torque decreases, the opposite action occurs, letting the tool naturally return to its full length.

Shoulders limit the maximum upward and downward amplitude of the shaft stroke. It is these shoulders, not the cables, that stop the extension or contraction of the tool.



***Bottom Assembly :***
*In the extended position, the cables are set at a pre-defined angle and are all bolted on with the exact same tension at both ends of the bottom section.*

| OUTER DIAMETER | 2-1/8 | 2-7/8 | 3-1/2 | 4-3/4 | 6-3/4 | 8-1/2 | 9-1/2 |
|---|---|---|---|---|---|---|---|
| Overall Length (ft) | 4.8 | 5.5 | 7.1 | 14.2 | 16 | 17.6 | 17.6 |
| Minimum ID (in) | 0.70 | 0.79 | 0.98 | 1.38 | 2.05 | 2.75 | 2.84 |
| Stroke | 1.46 | 2 | 2.50 | 3.25 | 4.33 | 4.33 | 4.33 |
| Ultimate Tensile Load (lbs) | 59,000 | 111,500 | 215,000 | 396,000 | 920,000 | 1,270,000 | 2,000,000 |
| Pulling Capacity (lbs) | 45,000 | 90,000 | 172,000 | 316,000 | 730,000 | 850,000 | 1,700,000 |
| Ultimate Torque (ft-lbs) | 882 | 2,100 | 3,100 | 16,000 | 45,000 | 65,000 | 80,000 |
| Maximum Torque (ft-lbs) | 700 | 1,475 | 2,200 | 12,500 | 33,700 | 50,000 | 64,000 |
| Operating Temperature (°F) | 425 | 425 | 425 | 425 | 425 | 425 | 425 |
| Connection | 1-1/2 AMMT | 2-3/8 PAC | 2-7/8 REG | NC 38 | NC 50 | 6-5/8 REG | 7-5/8 REG |





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