

Active Vibration Damper Sub

APS's Active Vibration Damper (AVD™) sub* is a standalone downhole tool which adapts to changing weight-on-bit (WOB) conditions in real time to minimize drillstring vibration. By minimizing drillstring vibration, ROP, bit life and downhole component life are maximized.

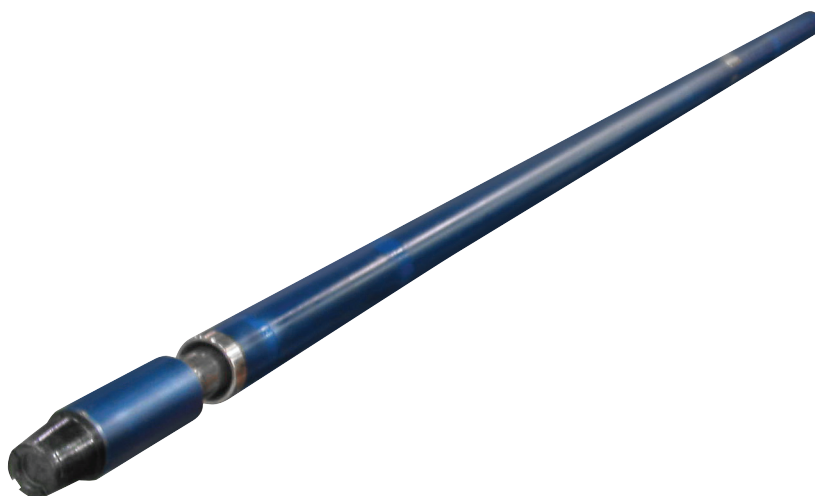
The AVD is structurally similar to a shock sub with the addition of a damper section which has programmable stiffness. The AVD's damper chamber is filled with a magnetorheological (MR) fluid which has magnetically-programmable viscosity. An integrated sensor measures displacement several times per second and changes the damping factor over a 7:1 range based on current drilling conditions.

By keeping the tool string's damping in the range appropriate for the drilling conditions vibration is reduced significantly, keeping the bit in contact with the formation and increasing ROP.

On the rig, the AVD is a self-contained unit which can be treated as a piece of 'dumb iron' with no calibration or other rig maintenance required.

AVD incorporates an axial vibration sensor with 8 MB of memory. Vibration data is acquired at a rate of 1,000 samples per second, averaged and stored every 4 seconds. In addition to the maximum and average data the tool stores up to four "snapshots" of axial sensor data. 40-second sets of 1,000 sample/s raw readings are recorded.

* U.S. Patents #6,257,356 B1; #7,219,752; and #7,377,339



Active Vibration Damper Sub

Product Specifications

Mechanical	
Tool Size	6.75 in. (172 mm) O.D. 2.0 in. (51 mm) I.D.
API Connection	NC-50
Length	25 ft (7.62 m) shoulder-to-shoulder
Weight (approx.)	3,500 lb (1,590 kg)
Environmental	
Pressure	20 kpsi (137.9 MPa)
Operating Temperature	-4° to 347°F (-20° to 175°C)
Tensile Yield Load	208,000 lb
Dogleg Severity	6.3 deg/100 ft
Performance	
Power	Built-in turbine/alternator
Spring Rate	15,000 lb/in. (2,680 kg/cm) 35,000 lb/in. (6,250 kg/cm)
Maximum Static WOB	45,000 lb (20,400 kg) 90,000 lb (40,800 kg)
Maximum Instantaneous WOB	120,000 lb (54,400 kg) 120,000 lb (54,400 kg)
Measured WOB Accuracy	± 1% of full scale
Measured WOB Resolution	25 lb (11.3 kg)
Maximum Torque	50,000 ft-lb (67,800 N-m)
Maximum Shock Sensed	1,000 g
Shock Resolution	0.25 g
Damping	1,000 - 6,000 lb-sec/in.
Dynamic Stiffness	15,000 - 150,000 lb/in.



www.aps-tech.com

Rev. 090804-vA
Specifications subject to change without notice.
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