

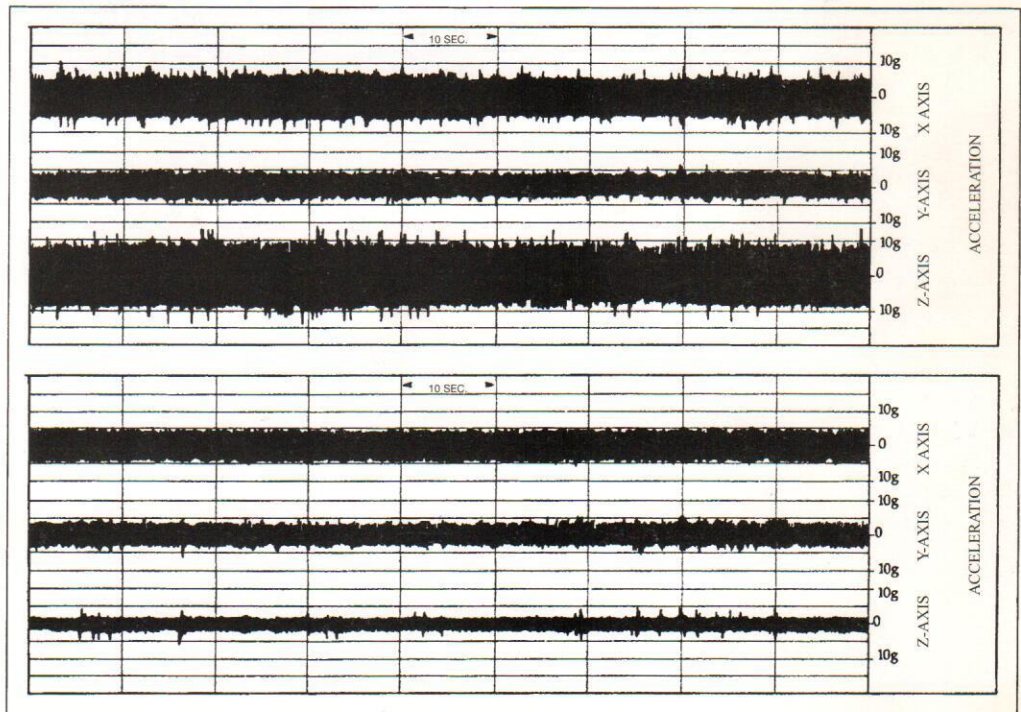
SMOOTHDRIVE™ SPECIFICATIONS

<u>Model Size</u>	<u>Load Range (Pull Down)</u>	<u>Clearance Diameter</u>	<u>Shoulder to Shoulder Length</u>	<u>Assembly Weight</u>
28	Up to 150,000 lbs.	34"	36"	2300 lbs.
22	Up to 90,000 lbs.	27"	30"	1275 lbs.
18	Up to 75,000 lbs.	22"	28"	835 lbs.
14	Up to 60,000 lbs.	20"	28"	650 lbs.

Field Study: Blasthole drilling with and without SMOOTHDRILL™. A field study was conducted by an independent geotechnical and materials engineering company using an accelerometer to evaluate SMOOTHDRILL™ effectiveness in increasing drilling rates and reducing drill maintenance and downtime. The actual charts from a blasthole drill equipped with a SMOOTHDRILL™ and one with a standard coupling show the difference SMOOTHDRILL™ can make.

Blasthole A – without SMOOTHDRILL™

While drilling at approximately 90 rpm, average downpressure was 1500 psi (50 x 1500 + 10,000 = 85,000 lbs. total downpressure). Drilling rate was 0.80 ft./min. X Axis average acceleration was 9 g's; peak acceleration was 12 g's. Y Axis average was 5 g's; peak was 9 g's. Z Axis average was 12 g's; peak was 22 g's.



Blasthole B – with SMOOTHDRILL™

Again the drill rod averaged approximately 90 rpm with an average downpressure of 1500 psi and a drilling rate of 0.80 ft./min. But the average acceleration of the X Axis was just 5.5 g's; peak acceleration was 9 g's. Y Axis average acceleration was 4.5 g's; peak was 11 g's. Z Axis average was 2.5 g's; peak was 11 g's.

Comparing the average accelerations between the two blast holes, SMOOTHDRILL™ reduced acceleration in the X Axis by 39%, in the Y Axis by 10% and in the Z Axis by 79%. Further information from this study is available upon request.

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