VIBRATION DAMPING EFFICIENCY FOR A WRIST VIBRATION ABSORBER

Prepared for:

Tenex Corporation

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SPORTS DYNAMICS LABORATORY

I have enclosed our results of your Tenex vibration absorber. The results look quite good. Our laboratory setup consisted of a metal bar about the length of an arm rigidly mounted in a vice. We attached near to the vice a piezoelectric accelerometer and struck the bar at the free end with a laboratory pendulum from which the initial height can be accurately set. We then considered three cases:

1. the beam by itself,
2. the beam with the shock absorber mounted to it, and
3. the beam with a "dead" weight attached to it of the same weight as the Tenex device.

The absorber was attached to the beam near to the free end (3.5" from the point of contact).

The results indicate that the Tenex absorber gives a 50% reduction in the peak acceleration amplitude when compared with the beam by itself and that the addition of the "deadweight" does not altar the results from the empty beam. I have enclosed some experimental data for your inspection.

DESCRIPTION OF TESTS FOR TENEX VIBRATION ABSORBER

Our laboratory setup consisted of a metal bar about the length of an arm rigidly mounted in a vice. We attached near to the vice a piezoelectric accelerometer and struck the bar at the free end with a laboratory pendulum. The metal rod that was connected to the our metal ball to form a pendulum was lifted to an initial height that made the rod and ball parallel to the floor. This initial height was accurately set for each test trial for the three cases we considered (fig B)

- the beam by itself,
- the beam with the Tenex absorber mounted to it, and
- the beam with a "dead" weight attached to it of the same weight as the Tenex device.

The Tenex absorber was attached to the beam near to the free end (3.5" from the point of contact). The "dead" weight, when tested, was also attached 3.5" from the point of contact.

Each time the ball struck the bar at the free end, the vibration effect was mapped on an oscilloscope. The results we obtained resulted from oscilloscope settings of 1 volt per division and 50 seconds per division. Our comparisons are based on the size of the amplitude with each strike of the pendulum to the bar.

It turned out that there was a marked difference in the results for the three cases performed. The amplitude of the test with the watch attached was 45% less than the amplitude of the test with the weight attached. (fig A)

The amplitude of the test with the watch was also 49% less than the amplitude of the test with no weight attached. This said, as expected, that just attaching any normal weight will cause a minor improvement in vibration damping. These results also say that your Tenex vibration device damps vibrations beyond comparison to anything we've ever seen. Vibration damping is practically 50% better with your device!

Fig A

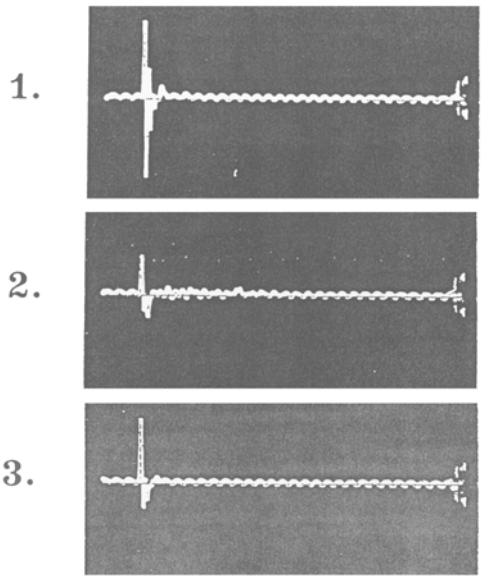
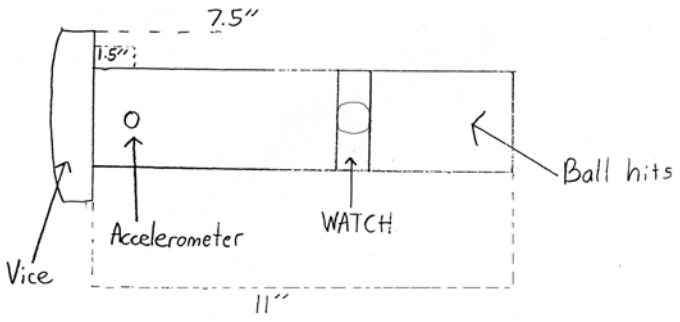


Fig B



Sincerely,

November 4, 1989

J. Karl Hedrick, Ph.D.
President, Sports Dynamics Laboratory