

Vibration Consultants Ltd.



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On the 2nd of March 2005, we visited 7/192 Victoria Street West in Auckland, to measure vibration of three vibration training platforms.

Method

Initially vibration was measured in three axes using an Instanteel EM III seismometer. But at the higher frequencies and range, vibration velocity in the vertical axis exceeded the full scale limit of this seismometer.

Consequently a full sets of vertical measurements were made using a Rion VA-10 vibration analyser.

Checks measurements were also made towards the outer ends of the platform to confirm reasonably consistent levels across the platform.

Comments

Vibra Gym S/N 13530 and 13535 were very similar with the exception that 13530 amplitude was lower at maximum frequency and amplitude (4mm, 50Hz).

Power plate S/N PP04013915, showed significantly lower amplitude and particularly frequency, with actual frequencies of 38.68 Hz (set to 2 mm, 50 Hz) and 38.23 Hz (set to 4 mm, 50 Hz), an error of 22.8% and 23.6% respectively. Actual acceleration amplitudes were 13 g and 24 g, an error of -35% and -41% respectively.

Theoretical levels have been calculated assuming the displacement ranges 2 mm and 4mm are "0 to peak" and using the formula;

$$\text{Acceleration} = \frac{(2\pi \times \text{Frequency})^2 \times \text{Displacement}}{9.807 \times 1000} \quad \frac{(\text{Hz})^2 (\text{mm})}{(\text{m/s}^2 / \text{g}) (\text{mm} / \text{m})}$$

Conclusion

Both of the Vibra Gym units tested had frequency errors that were within the range -1% to -3.2%.

Where the Power Plate unit had frequency errors ranging between -7 and -23%.

And were well down in vibration amplitude when set to "50 Hz".

Yours sincerely

Darryl Ovens,
Technician.

Our Ref: VibraTrain020305

Included;

Vibration results graph.