



ON-LINE MANUAL

Definitions

10. Definitions and terms

Acceleration

The rate of change of velocity with time (Dv/Dt) usually along a specific axis, expressed in "g".

Amplitude

The magnitude of variation from a base value (normally zero). It is used for displacement, velocity or acceleration. Excursion is double the Amplitude (Peak to peak). The value is useful in the balancing procedure to reduce the vibration forces generated by rotation by adjusting a mass in the rotating element.

Critical Frequency

The particular resonant frequency at which a damage (or degrading in performance) to the installation occurs.

Cycle

The complete sequence of instantaneous values of a periodic event that occur during one period.

Damping

The dissipation of vibratory energy with motion or time. Critical damping is the value of damping that provides most rapid response to a step function without overshoot.

Forced Vibration

The vibration motion of a system is said to be forced if it is caused by some mechanical excitation.

Free Vibration

Occurs without forcing, as after a string is plucked.

Frequency

The reciprocal value of the period. The bestknown unit is Hertz (Hz), which represents cycles per second. When referring to vibrators, cycles per minute or revolutions per minute (r.p.m.) are common.

Impact

Impact is a single collision between masses at least one of which is in motion.

Impulse

The intergral force within a time window.

Intensity

The severity of a vibration or shock. Similar to amplitude but without specific connotation.

Isolation

Isolation is the reduction in severity of motion, usually attained by proper use of resilient support.

Jerk

Refers to the ratio of change of acceleration with time (Da/Dt).

Natural Frequency

The frequency of free vibration of a system.

Oscillation

The variation with time of a quantity, such as force, pressure, displacement or velocity. Usually some regularity such as sinusoidal or complex vibration is implied.

Peak

The extreme value of a varying quantity measured from the base or mean value.

Period

The period of a periodic vibration is the smallest interval of time in which the vibration repeats itself.

Response

The vibration motion, force or energy of a mechanical system that results from some mechanical input to that system.

Resonance

In a true Single-Degree-of-Freedom system resonance exists when any change of excitation frequency causes a decrease in its response. Therefore, resonance represents the maximum response of the sprung mass, if frequency is varied while input force is kept constant.

Transient Vibration

The temporarily sustained vibration of a mechanical system.

Vibrometer

A device to measure the frequency of a vibrating machine. Usually an extendable spring that can be adjusted to come in resonance at defined lengths.

FINDEVA AG

Loostrasse 2 • CH-8461 Oerlingen • Switzerland

Tel. +41 52/319 25 61 • Fax +41 52/319 28 77 • E-Mail: info@findeva.com