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For the sake of fatigue tests of dynamically loaded parts of e.g. X-ray apparatus, a material model is needed whose dynamic characteristics are the same order of magnitude as those of man in a lying posture.
In consequence of the absence of adequate data from literature on this specific load-situation by man, experiments are necessary. For this purpose a testing apparatus was developed.
The principle of the measuring is based on vibrational excitation of a horizontal, rigid plane on which the subjects of experiment are in a lying posture. The forces needed to give this plane an acceleration, are measured, after which the transfer of the acceleration-signal to the force-signal by means of a FFT Analyzer of Time/Data, is determined as a function of the frequency; from this the dynamic characteristics of the excitated system(i.e. supporting surface and subject of experiment) can be derived.
The tests can be limited to excitation in a range of 0 to 15 Hz.
By excitation the displacements have a random-character which are controlled and realized by a hydraulic system.