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THE FREQUENCY CHARACTERISTICS OF THE COAXIAL–LINEAR MOTOR WITH MAGNETIC SPRING

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Abstract

The analysis of drives of labour bodies of vibration machines and mechanisms for the building are made. The coaxial – linear motor with magnetic spring is proposed as a drive of this equipment. The construction of this motor is with possibility of change the natural oscillation frequency. The gain-frequency and phase-frequency characteristics of coaxial – linear motor with magnetic spring as an electromechanical vibration system are researched. The mathematical modelling and experimental research of electromechanical frequency characteristic of motor during the active mode of work of magnetic spring, during the no-load conditions and the mode of generator braking are researched. Based on these researches the conditions of work of coaxial – linear motor with magnetic spring with the maximal vibrational

amplitude are got. The expressions of dependences of resonance frequency, gain factor and inertial power of motor from current in the winding of magnetic spring are got. The construction of the test bench for the experimental research of frequency characteristics of the coaxial – linear motor with magnetic spring is presented. References 8, figures 5.

Key words: frequency characteristics, coaxial–linear motor, equivalent stiffness coefficient, magnetic spring.

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