

ABSTRACT

To provide a magnetic bearing device and a vacuum pump capable of measuring with high sensitivity a natural vibration mode of a rotating body in a floating system using a magnetic bearing. In step 1, the operation in a second operation mode is started. In step 3, the gain of the controller is increased more than the gain obtained in a first operation mode. In step 5, the natural frequency is measured in this state. The natural vibration to be measured is a bending mode of the rotating body, a natural vibration mode of the rotor blades, a vibration mode associated with the stator, and a rigid body mode of the rotating body. The natural vibration may be computed by a central processing unit (CPU) of a control device or may be computed externally. After the natural frequency is measured in step 5, in step 7 the gain of the controller is returned to the gain obtained in the first operation mode. In step 9, the operation in the second operation mode is ended. In this manner, the natural vibration mode can be detected with high sensitivity.

Figure 4