SEEK ACTUATOR FOR OPTICAL RECORDING

ABSTRACT OF THE DISCLOSURE

An assembly for controlling the position of a lens in an optical data storage and retrieval drive includes a carriage that suspends a lens holder using a plurality of flexures. A lens is mounted in the lens holder such that the center of mass of the suspended lens holder lies on the optical axis of the lens, and also coincides with the center of mass of the lens. The lens holder is capable of relative motion with respect to the carriage with at least one degree of freedom. The center of mass of the carriage lies within 0.1 mm of the optical axis, proximate the center of mass of the lens holder. Suspensory forces acting on the lens holder are symmetric about the optical axis. A coarse magnetic drive moves the carriage in a tracking direction, and exerts forces on the carriage that are balanced and symmetric about the optical axis, so that moments about the center of mass of the carriage are effectively absent. Inertial forces acting on the carriage, and forces reactive to the magnetic drive forces are also balanced and symmetric with respect to the optical axis, and produce insubstantial moments about the center of mass of the carriage. There is a fine tracking and a focusing drive for the lens holder. Both of these drives produce balanced and symmetric forces about the optical axis, such that moments about the optical axis are absent. Inertial forces and reactive forces acting on the suspended lens holder are also symmetric about the optical axis. As a result the objective lens moves along its optical axis, and in its tracking direction without change in attitude, and its focal point can be precisely controlled with respect to the surface of a storage medium being read or written.

FIGURE 23