Abstract of the Disclosure

A non-invasive servo-write system for use in a data recording disk drive. The system measures actuator position and generates a reference clock using semiconductor lasers. Internal position references are provided by reflective diffraction gratings affixed to the actuator arm and the spindle hub. Wavefront reconstruction optics correct for aberrations in the gratings. Optical sensors detect differential changes in the diffraction patterns created by the gratings, eliminating sensitivity to frequency drift. Decode electronics convert optical sensor data into an actuator position measurement. Control electronics drive the voice coil motor within the disk drive, which positions the write transducer to record servo information provided in a servo pattern generator. Transparent windows in the head-disk-assembly cover allow the servo-writer to write drives which are completely assembled and sealed.

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