Abstract

RECORDING/REPRODUCING DEVICE EMPLOYING DEVICE HOUSING AND PRINTED CIRCUIT BOARD AND ELECTRONICS AS STRUCTURAL AND FUNCTIONAL PART OF MEDIA DRIVE MOTOR

A disk drive in which the disk spindle motor for a rotatable recording/reproducing media has a printed circuit stator winding (9b1) on a printed circuit board (9b3) within the disk drive housing (1) fitted between axially spaced circular flanges (9a4, 9a5) of a bobbin-shaped motor rotor (9a). Alternately poled, equally circumferential spaced, axial magnetic fields between the axially spaced circular flanges link radially disposed printed circuit winding sections (9b11). Electronic elements (15d-17) on the printed circuit board (9b3) are linked internally of the housing with the magnetic head (5b1) and the actuator motor winding (5e1) which powers the actuator (5) for moving the magnetic head (5b1) to different radial locations on the rotatable media (7a). Bi-polar energization of the stator winding (9b1) of the disk spindle motor (3) is under the control of a commutating circuit (9b4) controlled by a Hall sensor (9b18) linked by the axial permanent magnet fields. Motor speed control is achieved by controlling the voltage level of the commutating circuit (9b4) or by controlling the duty cycle of the voltage coupled to the stator winding (9b1). The disk drive design integrates the printed circuit assembly (9b3) with the disk spindle motor (3) and the electronics (15d-17) of the printed circuit assembly (9b3) within the disk drive housing (1) which reduces the disk drive profile and eliminates elaborate feed through connections with an external printed circuit assembly. The use of an axial gap disk spindle motor (3), integrated with a disk drive base (1), and provided with a printed circuit winding (9b1), reduces the disk spindle motor profile and brings the printed circuit assembly (9b3) inside the disk drive housing, eliminating the additional increment of the profile normally consumed by the printed circuit assembly. These cumulative reductions in structural profile reduce the overall profile of the memory disk structure in the disk drive, increasing the mechanical volumetric efficiency of the disk drive.

(Fig. 1)

This Sheet Has Been Replaced

