

FLY HEIGHT SERVO CONTROL OF READ/WRITE HEAD SUSPENSION

ABSTRACT

The fly height of read/write heads in multiple disk drives is dynamically adjusted to optimum fly height by a servo loop. The fly height is sensed in real time with a harmonic ratio fly height detector and compared to an optimum or reference fly height. The suspension system of each head is adjusted in accordance with the departure of the fly height of that head from the optimum fly height. The adjustment of the suspension system is accomplished by bonding a piezoelectric film to the flexible suspension arm carrying each head. The fly height is corrected for both radial and circumferential error as the head changes radial and circumferential position relative to the disk surface. The reference fly height, to which each head is moved by the servo loop, may be selectively changed in the fly height servo operation. This can be done to lift the heads away from the disk surface during track seek mode or disk drive sleep mode. The reference fly height can also be changed to lower the heads towards the disk surface during error recovery mode.

FIG. 1

