

IDENTIFICATION AND CANCELLATION OF CAGE FREQUENCY IN A HARD DISC DRIVE

ABSTRACT OF THE DISCLOSURE

5 Written-in runout due to vibration of the cage of a spindle motor
of a disc drive is detected by identifying an initial cage frequency value
of the motor. A written-in magnitude of successive servo burst closures,
 $D(n_c)$, is read over a plurality of tracks, and a maximum servo burst
closure $D(n_{cp})$ is identified from the plurality of read servo bursts. A
10 magnitude of the cage frequency at a servo sector n_0 is calculated based
on a difference between the read magnitudes of the servo burst closures
at servo sectors n_c and n_{c+1} , and a phase of the cage frequency is
calculated based on the magnitude of the written-in cage frequency at
servo sector n_0 . The profile, in the form of cage frequency, maximum
15 servo burst closure magnitude, and initial phase, is stored in a memory
or table for each of a plurality of radial zones of tracks. The profile is
combined with a position error signal and applied to the controller in a
feed forward scheme to adjust the position of the head based on the
written-in runout.

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FIG. 14