

ABSTRACT**PIEZOELECTRIC DEVICES, ESPECIALLY FOR DUAL STAGE SERVO
SYSTEMS OF HIGH DENSITY HARD DISK DRIVES**

A piezoelectric device includes an integral body (1) of piezoelectric material which is longer and wider than it is thick and, in contact with this body, respective pairs of electrodes (2a, 2b; 3a, 3b). The electrodes of each pair are opposed in the thickness direction, and the pairs are spaced in a direction transverse to the thickness direction, whereby the body deflects along the transverse direction when a voltage is applied to the electrode pairs.

In one broad application, a piezoelectric actuator is formed by a stack of piezoelectric devices (6,7) bonded together to increase stiffness in the thickness direction. The devices are electrically connected and polarised so that the piezoelectric devices generate a synchronised bending motion.

In a particular application, a dual stage head positioning servo system for a hard disk drive has one or more disks (D1) and a respective head slider (S1) for each of the disks supported by a respective compound suspension (S2). Primary (A1) and secondary (A2) actuators are provided for course and fine position control respectively of the head sliders relative to their corresponding disk surfaces. The or each secondary actuator includes a piezoelectric device or actuator of the disclosed kind.

(Figure 1)