



159159



G00002

DESCRIPTION

DESCRIPTION OF THE INVENTION

An actuator is use to position the read/write head on different tracks on the surface of the platter in the hard disk drive. Conventional actuator assembly is usually made up extruded and machined E-block with bonded coil (refer to Fig. 1), over molded coil or stacked up stamp arms with coil over molding assembly.

The E-block is usually extruded to it near shape and then machined to the require dimension. Machining the arms of the E-block usually require very long cycle time and high investment cost on CNC machine. This lead to increase in cycle time and cost of the actuator.

In the stamp arm actuator, the arms are stacked and hold together using over molding. The cost of over mold actuator is generally higher due to higher cost of the plastic material and the VCM pins.

A simplified means of stamping the arms and attached to a sleeve to form the E-block will reduce the cycle time and cost.

DETAIL DESCRIPTION OF INVENTION

1) The E-block consists of a sleeve (1) which also act as the spacer for the 2 stamped arms (2) as shown in fig 2.

2) The arms (2) stamped out as shown in fig 3 can be aluminum or other material. Arm (2) comprises of a center hole (3) and also a tear drop hole (4) for balancing. The hole (5) is the swage hole for mounting the suspension whereby the read/write head is mounted.

3) The sleeve (1) is first extruded to it near shape and then machined to the required profile as shown in fig 4. The sleeve consists of a circular protrusion (2) whereby the center hole of the stamp arms sits. A center bore hole (3) is machine on the sleeve (1) to cater for pivot attachment, which can be by screw, adhesive or by other suitable means. The tail end of the sleeve (4) is shaped to the coil profile for adhesive bonding or can be shaped for coil over molding.

4) Various attachment options of the stamped arms (2) to the sleeve (1) as shown in fig. 5 can be done through the followings: -

- a) Adhesive bonding
- b) Screw fastening
- c) Shrink fitting
- d) Brazing

In order to ensure coaxial alignment of the swage hole (3). Fixturing and locating the arm (1) and sleeve (2) during attachment is very critical.

5) The coil (4) is attached to the end of the sleeve as shown in fig 5 by means of adhesive (5) bonding, however the profile at the end can be modified for coil attachment by over molding.

CLAIMS

Claimed is :-

- 1) The arm attachment E-block actuator, which includes an arm sub-assembly, comprising: -
Actuator arm with a center hole at the end which receive and attached to the center protrusion of a sleeve, which also act as the spacer to space out the arms.
- 2) The arm attachment E-block actuator of claim 1, wherein the arms are attached to the sleeve by at least one of the following means.
- 3) The arm attachment E-block actuator of claim 2, wherein the arms are attached to the sleeve by adhesive bonding.
- 4) The arm attachment E-block actuator of claim 2, wherein the arms are attached to the sleeve by screw fastening.
- 5) The arm attachment E-block actuator of claim 2, wherein the arms are attached to the sleeve by shrink fitting.
- 6) The arm attachment E-block actuator of claim 2, wherein the arms are attached to the sleeve by brazing.
- 7) The arm attachment E-block actuator of claim 1, wherein the sleeve are extruded and machine.
- 8) The arm attachment E-block actuator of claim 6, wherein the sleeve have a counterbore hole for receiving the pivot bearing.
- 9) The arm attachment E-block actuator of claim 6, wherein the tail of the sleeve is shaped for coil bonding attachment or coil over molding attachment.
- 10) The arm attachment E-block actuator of claim 1, wherein the actuator arms is a stamping.
- 11) The arm attachment E-block actuator of claim 1, wherein the actuator arms has a swage hole for the attachment of the read/write head.
- 12) The arm attachment E-block actuator of claim 1, wherein the actuator arms has a tear-drop hole for balancing.