Parts that contain numerous advanced technologies of only millimeters in size.

DSA suspension for HDD (DAIKAKU)

Press | Welding | Special inline measurement | Production in cleanroom | Assembly

The parts are springs supporting magnetic heads in hard disk drives, and a height of 10 nanometers *1 or less from the high-speed rotating disk is constantly maintained. Furthermore, the magnetic heads can be moved to a target data track at high speeds among data tracks that are tightly arranged with gaps of 0.1 micrometer *2 or less. In order to make high-speed magnetic head positioning more precise and improve the recording density of hard disk drives, minute actuators that contain piezoelectric elements have been built-in.

Furthermore, to realize this level of functionality, large amounts of technology and know-how, including patented technology, have been applied. This includes die machining technology that can bend or draw thin plates with a thicknesses of dozens of 10 microns in size, highly precise adhesive application and chip bonding technologies for mounting piezoelectric elements in complex shapes, as well as production line technology that enables automated high-speed operation across all processes.

*1: 1 nanometer = 1/1,000,000 millimeters For example, if the suspension were an airplane, it would be as if flying at a height of 0.6 millimeters above the ground at full speed.

*2: 1 micrometer (micron) = 1/1,000 millimeters In this case, the level of precision required is equivalent to hitting a ball to a target of 0.17 millimeters in diameter in the back wall hit in center field from the home plate at Tokyo Dome.

Product features

- Contains built-in minute actuators for improving the recording density of hard disk drives
- Bending, drawing, and cutting of micrometer thin plates is possible by using highly precise dies
- Highly fine welding technology that uses a high output laser oscillator
- Realizes highly precise adhesive application and chip bonding for easily breakable piezoelectric elements
- High-speed automated inspection by using sensors and cameras, etc., and feedback to the production line
- Production in Class 1000 cleanrooms

Product applications

Magnetic head supporting springs for hard disk drives used in high capacity storage systems

Fine Precision, Nano Solution
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