DESCRIPTION

Title of Invention: MOUNTING DEVICE AND METHOD FOR DETECTING DISPLACEMENT

Technical Field

[0001] The present invention relates to a mounting device and a method for detecting displacement of a bonding head provided to the mounting device.

Description of Related Art

[0002] For example, in mounting devices used during semiconductor chip manufacturing such as die bonders, it is needed to control the position of a bonding head that has adsorbed a semiconductor chip at a tip part thereof and accurately place the semiconductor chip on a die pad of a lead frame disposed on a stage. For this purpose, technologies for precisely measuring the position of the bonding head or the adsorbed semiconductor chip relative to the die pad have been proposed (for example, see Patent Document 1).

Related Art

Patent Documents

[0003] Patent Document 1: Japanese Patent Application Laid-Open No. 2014-036068

SUMMARY

Technical Problem

[0004] Even if the relative positional relationship immediately before placing a semiconductor chip on a lead frame can be accurately measured, the semiconductor chip is unable to be correctly placed at the target position on the lead frame unless the bonding head that adsorbs the semiconductor chip can be displaced with high precision. In particular, in the stage immediately before placing the semiconductor chip on the lead frame, in the case of directly driving and

[0037] The drive control part 172 transmits a drive signal to the first actuator 131 in step S105 to advance and retreat the bonding head 110. The displacement calculation part 171 acquires a first detection signal output by the first sensor head 161 reading the first scale 113a in step S106, and calculates the displacement amount in the axial direction from the first detection signal in step S107.

[0038] The displacement calculation part 171 determines in step S108 whether the calculated displacement amount has reached the determined advance/retreat target amount. In the case of determining that the advance/retreat target amount has not been reached, the process returns to step S105. In the case of determining that the advance/retreat target amount has been reached, the displacement calculation part 171 causes the drive control part 172 to stop transmission of the drive signal to the first actuator 131, and ends the process of placing the semiconductor chip 310 onto the mounting area 320 that serves as the placement target.

Reference Signs List

[0039] 100...flip chip bonder, 110...bonding head, 110a...cylindrical side surface, 112...scale block, 112a...outer surface, 113...scale film, 113a...first scale, 113b...second scale, 120...holder base, 121...holder actuator, 130...linear motion mechanism part, 131...first actuator, 140...rotation mechanism part, 141...second actuator, 150...holder block, 151...opening window, 160...sensor plate, 161...first sensor head, 162...second sensor head, 170...arithmetic processing part, 171...displacement calculation part, 172...drive control part, 220...stage, 310...semiconductor chip, 320...mounting area, 330...lead frame (substrate)