

Abstract of the Disclosure

In plural screw holes, by detecting screw hole positions by making use of circular form of the objects, screws are tightened efficiently and at high speed. Circular screw hole objects are taken by image pickup means 1 to obtain a contrast image, the contrast image is scanned by scanning means 3 by a contour scanning window comprising a contour scanning circle equal to the circular contour on the contrast image and plural concentration correlation lines orthogonal to the contour scanning circle for measuring the image concentration inside and outside the contour scanning circle, the absolute value of the difference of the measured concentration value of the inside concentration correlation line composed of a specific number of inside concentration measuring points and the measured concentration value of the outside concentration correlation line composed of a specific number of outside concentration measuring points in each concentration correlation line by means of position calculating means 4, the position of the contour scanning window where the number of concentration correlation lines of which absolute value is greater than the threshold is maximum is detected as the position of the object, the deviation of upper and lower holes is calculated by the deviation calculating means 5, and the screws are tightened sequentially from the one of the smallest deviation of upper and lower holes, thereby correcting the deviation of other holes. Moreover, by detecting the position as the above method by paying attention to two points of the plural holes, the

rotation angle of the object of tightening is determined by the rotation angle calculating means 6, and from this rotation angle, the deviation of other holes is calculated by the hole position correction calculating means 7.