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(54) Title: METHOD OF MEASURING A REFERENCE POSITION OF A TOOL RELATIVE TO A WORKPIECE, AND MACHINE TOOL FOR CARRYING OUT SAID METHOD

(57) Abstract

A method of measuring a reference position of a tool (13, 135) which is fastened to a first holder (11, 133) of a machine tool (1, 131) relative to a workpiece (35, 145) which is to be manufactured by means of said tool (13, 135) and which is fastened to a second holder (33, 143) of the machine tool (1, 131). According to the invention, the tool (13, 135) provides a distinguishing mark (123, 159) on the workpiece (35, 145) in a predetermined reference position of the first holder (11, 133) relative to the second holder (33, 143). Subsequently, the distinguishing mark (123, 159) is detected by a sensor (109, 153), and the reference position of the tool (13, 133) relative to the workpiece (35, 145) is determined from a position of the first holder (11, 133) relative to the second holder (33, 143) in which the distinguishing mark (123, 159) is detected by the sensor (109, 153). During implementation of the method, the tool (13, 135) and the sensor (109, 153) are fastened in fixed, permanent positions relative to one another and relative to the first holder (11, 133). It is achieved thereby that the accuracy with which the reference position of the tool (13, 135) relative to the workpiece (35, 145) can be measured depends exclusively on the accuracy with which the first holder (11, 133) can be positioned relative to the second holder (33, 143), so that the accuracy with which the workpiece (35, 145) can be machined with the tool (13, 135) is not adversely affected by the accuracy with which the reference position of the tool (13, 135) relative to the workpiece (35, 145) is measurable. In a special embodiment of the machine tool (1, 131) according to the invention, the sensor (109, 153) is an optical sensor with a focusing error detector (119). In a further embodiment of a machine tool (1) according to the invention, the second holder (33) with the workpiece (35) is rotatable about a Z-axis, the first holder (11) with the tool (13) is displaceable parallel to an X-axis which is perpendicular to the Z-axis, and the distinguishing mark is a circular groove (123) in a surface (121) of the workpiece (35) which extends perpendicularly to the Z-axis.

