
Working accuracy enhancement for machine tools with digital programming control

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The article is concerned with the problems of working error appearance on metal-cutting machine tools with digital programming control. First, we demonstrate the calculated and experimental data about a working accuracy, examine the causes of typical errors in assemblies, gears and devices of the metal-cutting machine tools with digital programming control and analyze their influence on the working accuracy. Then, we look at the accuracy measurement production methods of the blanks machined with digital programming control. These methods are used in mechanical assembly. Moreover, we discuss the working accuracy requirements depending on the accuracy requirements for the operation of the products using these blanks. Next, we present data about the ratio of the resultant error ultimate constituents in point-to-point and contour-cutting work. We also give careful consideration to the problems of forming of technological reliability as the feature which allows preserving the initial equipment precision and the working accuracy during the time. In addition, the article touches upon the possibilities of working accuracy improvement at the expense of control program correction and elementary errors partial compensation use. Finally, we provide data about existed working accuracy enhancement methods used by domestic and foreign machine tool companies.

Keywords: cutting machine tool with digital programming control, working accuracy, control program correction, working errors compensation.

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