
Correction of tools position to ensure manufacturing quality of precision surfaces of the parts on multi-purpose CNC machines

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Manufacture of basic parts of modern machinery and instruments of precision mechanics often causes difficulties especially for small-scale production. This is due to their complex configuration, and the presence of surfaces with precision of, for example, the diametric dimension corresponding to IT5, IT6. Qualitative production of such surfaces is achieved on modern multi-purpose CNC machines, but only by using non-trivial technological solutions and techniques. Thanks to the proposed method of correction of tool position we improve the manufacturing quality of precision surfaces of the parts by edge cutting processing on multi-purpose CNC machines in small-scale production. The technique envisages execution of the work passes of finishing (final processing) with constant cutting depth and correction of the tool position by measurement results of the withstanding size. Application of this methodology provides accurate diametrical sizes of the surfaces of details made of structural steel, magnetically soft materials, titanium and aluminum-magnesium alloys corresponding to IT5, IT6. Formalized methodology automates determination of the necessary correction.

Keywords: part, precision surface, accuracy, CNC machine, instrument, position, correction, quality.

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