

## FINITE ELEMENT ANALYSIS OF MODULAR FIXTURES STRUCTURE STIFFNESS ON AXIAL DIRECTION

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**Rezumat.** *Lucrarea prezintă un studiu privind aplicarea analizei cu elemente finite în cercetarea rigidității structurilor de dispozitive modulare formate din placă de bază și module cu rol de corp de dispozitive sau de reazem, rezultând structuri de dimensiuni apropiate dar forme diferite, cercetările fiind bazate pe rezultate experimentale. Deformațiile evidențiate indică posibilitatea de deformație axială neuniformă sub acțiunea unei sarcini uniforme, caz care poate determina apariția abaterilor unghiulare și liniare de orientare-poziționare și de prelucrare.*

**Abstract.** *The paper presents a study of modular structure rigidity formed of base plates and locator/ body fixtures modules, resulting structures with similar dimensions but with different modules using finite element analysis, based on a series of experimental results, in order to correlate the results. The highlighted deformation indicates the possibility of axial irregular deformation under axial uniform deformation may lead to orientation and position deviations of the workpiece during clamping and machining (angular and linear displacement of the measurement base).*

**Keywords:** Fixture, modular fixture, module, FEA.

### 1. Introduction

Modular fixtures are characterized by the fact that all the elements are coming into their structure normalized, standardized. By non-permanent assembly, various fixtures can be built for clamping the most varied workpiece, in various machining conditions [1, 2]. From the entire complex of factors that characterize the machining deviations a special role have the deviations that are caused by the deformations of the technological system [3, 4]. Among the deformations of the technological system a significant proportion is attributed to the modular or regular fixtures.

In general, static and dynamic rigidity of technological system and modular fixture, in particular, are influenced by the number, arrangement and static

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