

Intelligent machine for dimensional control and marking “power transfer unit” for the auto subassemblies in large- scale series production

Mihai Hacman, Dan Nineacă; Badea Sorin Ionut, Alexandru Buga

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Abstract

The intelligent machine is designated to measure the dimensions $c=144,2$ mm, $dce=92,1$ mm, $k=17,1$ mm and $dcs=112$ mm and to mark automat of these heights with the other data of identification (type of piece, series, date etc). Mechatronic intelligent measurement determines and verifies the real dimensions in view to fit the conic assembly (the selection of the space-rings dimensions that will be mounted in the hearings back for obtaining the correct conic group). The machine is equipped with two immaterial barriers against breaking in the work area. The intelligent machine is structured on three stations: two for control and one for automatic marking and validations: - control station no.1: measures the “c” and “dce” dimensions for the principal axis fitting; - control station no.2: measures the “k” and “des” dimensions for the secondary axis fitting; - marking - validation station no.3: it marks automatically with three micro-percussion marking systems for the all-three pieces; it reads the inscriptions and validates the data consistency. The intelligent measuring is fitted with photo-electric incremental transducers by micron precision and digitized on an Industrial process control computer. The machine is provided with an auto-correct system for measuring dimensions according to the temperature variations. It's also provided with two complex masters for calibrating the two control stations. The all work-process of the machine is driven and monitored by a programmable automaton with a specialized controller; there is a continuous communication (man-machine) with final decision and feed-back.

Keywords: intelligent machines, power transfer unit marking, mechatronic measurements, automotive industry, dimensional control

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