



THE NATURE OF MEASURING EQUIPMENT AND TECHNICAL MEASUREMENT USED IN THEIR APPLICATION AND PRODUCTION IN THE EDUCATIONAL PROCESS

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Annotation

*The essence of the use of measuring equipment in education
and the classification of measuring instruments.*

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Modern information technologies create good opportunities for creating new teaching tools and methods. One of the most important and most difficult tasks in solving problems here is the development of computer laboratory workshops and their application to educational institutions. Controlling and measuring equipment plays the most important role in ensuring the quality and competitiveness of products in almost all industries.

Contributing to the development of our country should be our highest goal. Today, we face many, very complex problems that need to be solved. From these, progressive achievements should be quickly and widely applied to development and use in the national economy and education. Not only quantity requirements, but also quality requirements are imposed on the control during the measurement process in production.

This includes characteristics such as its (measurement) accuracy, reliability, cost, and effectiveness. All these quality descriptions are based on metrological assurance. Metrological support can be described as follows: "designation and implementation of technical tools, procedures and rules, standards, scientific and organizational bases necessary to ensure the unity of all measurements and achieve the required accuracy."

Based on the above description, it can be said that metrological supply is assigned the following tasks:

- organization, provision and implementation of serviceability of measuring instruments;
- development and implementation of normative documents on carrying out measurements, processing and recommending its results;
- examination of documents;
- state tests of measuring instruments;
- metrological certification of measuring tools and methods, etc.;

In addition, the main goals of metrological supply are to increase the quality of products, the efficiency of production and its automation, to ensure the interchangeability of details and aggregates, to ensure the

reliability of accounting of material assets and energy resources, to protect the environment and to maintain health. Therefore, the level of metrological support directly affects the quality of the product. In order to further increase the efficiency of this effect, special importance is given to metrological control works and issues of metrological support in the preparation of production. This will create a suitable basis for the deeper formation of market relations in our republic and the increase of export possibilities of manufactured products.

A set of modern digital universal tools has been developed for controlling the geometric parameters of specific parts (inductive plugs for controlling diameters, thickness indicators, depth gauges, height gauges) based on various measuring systems.

As an example, we can cite the nutrometer (hole gauge) measuring device from such measuring devices.

A hole gauge is a high-precision measuring tool designed for measuring the dimensions of holes and hatches, as well as the internal surfaces of various parts. This measuring tool is used when it is difficult to measure with a ruler or measuring tape or when it is not possible to get the results of the required accuracy. When measuring the diameter, the bore gauge works on the principle of the radius gauge, but unlike it, it is able to measure the diameter in hard-to-reach places. This tool provides high accuracy of readings - with an error of ± 0.006 mm, it is considered to be within 0.01 mm.

Currently, there is no uniform classification of bore gauges either in regulatory documents or in technical literature. At the same time, according to their specific characteristics, devices can be conditionally divided according to types, for example: design features, type of contact with the measuring surface, type of reading device, etc. However, the most common division depends on the measuring method used by the internal measuring device: absolute or relative measuring types.

Micrometric measuring instruments are usually used for absolute measurement. Internal gauges of this type (the second popular name are calipers) are similar in design to a micrometer and are used in certain ranges - from 50 to 75 mm, from 75 to 175 mm, etc., using extension cables from 1520 to 4000 mm allows you to make measurements. Indicator hole measurements are used for relative method measurements with a hole diameter of 6 mm. Often they are equipped with a dial indicator, which is directly combined with a measuring device.

This hole gauge allows you to measure holes with a diameter of 6 mm and more. The scale of this measuring tool is 0.01 mm, and the reading error in this case is 0.15 to 0.025 mm. The indicator bore gauge is structurally two The indicator has two measurements:

- large scale, its graduation is 0.01 mm, the full turn of the axis is 1 millimeter;
- a small scale showing the number of revolutions of the big axis, i.e. the number of millimeters.

Due to the universal measuring technique and simplicity of design, the scope of application of bore measuring instruments is mechanical production, mechanical engineering, repair of machines and equipment, as well as other measurements where accurate measurement of internal dimensions is required. covers plab jobs.

Before using the above micrometric bore gauge, the ambient temperature should be checked by zeroing the bore gauge using an adjustment gauge at 15-25°C.

Technical conditions of micrometer holes are regulated by GOST 10-88. Indicator micrometers are regulated by GOST 868-82.

In conclusion, it should be said that today, in the process of manufacturing competitive products, the need for modern measuring instruments is increasing, and the demands placed on them by themselves.

We would like to emphasize that the training of qualified personnel who know how to use these measurement tools is one of the important tasks ahead of us.

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