MEASURING AND CONTROL DEVICES GRINDING MACHINE

ПРИСТОСУВАННЯ КОНТРОЛЮ ТА ВИМІРЮВАННЯ ШЛІФУВАЛЬНИХ ВЕРСТАТІВ

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One-contact snap gauges. These devices offer the advantage of measuring the workpiece diameter with regard to runouts in centers but they are rather difficult to be arranged for measurements. Therefore, these snap gauges have found limited application. *Two-contact snap gauges:* Their measuring rod or level is suspended from plane-parallel or cross-shaped springs which eliminates friction and wear of the guides. *Three-contact snap gauges:* Such devices can be easily displaced along the length of the workpiece. This is their merit. However, they need a complex (in construction) drive to automatically bring them to the measurement position. Automatic sizing devices with pneumatic and induction transducers are most popular. Pneumatic instruments offer high accuracy, allow remote measurements and are constructionally simple. They provide for proximity measurements, are readily automated and simple to operate. The shortcomings of the pneumatic gauges include low response, need for thoroughful purification of compressed air of moisture and mechanical impurities, small measurement ranges. Induction-type units feature a higher accuracy and wider measurement ranges, high reading stability and high response, allow remote measurements. The induction unit includes a transducer arranged in the measuring device and a readout/control device which feeds the transducer and converts its output signal into displacement of the pointer and control instructions. The most common measuring circuits of the induction-type in-process sizing devices are AC bridge circuits operating in the deflection mode. Such circuits include choke and transformer transducers. *Capacitance-type transducers* are based on electric capacitance measurement methods. The main element of capacitance transducers are capacitors one plate of which is fixed and the other is coupled with a tip. Capacitance-type units offer high accuracy and reliability, stability and sensitivity, low power consumption and are easy to adjust. When performing measurements before grinding, the workpieces are checked for detecting rejects fed from the preceding operation and sorted according to the allowance and grouping. Grinding machines are sometimes equipped with a digital readout which is a digital light display. Such devices visualize current displacements in one, two or three axes. The machines with digital display units improve machining accuracy, cut the production time owing to combining grinding and measurement cycles, allow convenient readings of all sizes at one area of the display, diminish operator's fatigue, have compact measuring devices.