

The invention relates to the field of magnetic surface treatment of articles in engineering, specifically to methods and devices for magnetic-abrasive grinding by ferroabrasive powders of flat surfaces with providing surface roughness $R_z = 0,1-0,2 \mu\text{m}$ with minimal cost of consumables on the example of valve seats of a compressor for household refrigerators. A device for magnetic abrasive treatment comprises a permanent magnet coil, a rotation coil drive, a means for supply into the processing area of selected dose of magnetic-abrasive powder with simultaneous collection and removal from it of waste, a device for securing the workpiece. The coil is designed as a disk carrier of ferroabrasive powder rotating in horizontal plane. On the disk carrier the permanent magnets with induction on the surface equal to 0.4 tesla are secured. As a drive a drilling machine is used, on which a disc with a diameter of 340 mm is mounted, which provides a linear speed of rotation at the area of treatment, within 15-73 m/s. The original placement of the magnets on the edge of disk contributes to uniform removal of metal from the workpiece surface and mixing ferroabrasive powder in the grinding area. Location of the part subject to grinding at selected distance from a bottom of bowl-shaped non-magnetic tank, and the selection of linear velocity in the range of 15-73 m/s ensure retention of ferroabrasive powder in the grinding area and simultaneous removal of processing waste. Optimally selected conditions give at maximum metal removal rate a minimum roughness of surface to be ground. Using the device at ferroabrasive grinding valve seats of compressor the required roughness $R_z = 0,1-0,2 \mu\text{m}$ is reached on the plane with dimensions of 40x37 mm with a minimum time of grinding one surface of part - 5 seconds with a single dose mass of ferroabrasive powder - 4.8 g, with particle size of 200-250 mm containing 10 vol. % of 5-7 microns abrasive particles.