

# INDUCTION HARDENING OF BEARING PARTS

United Induction Heating Machine Limited

We are experienced in Induction Heating, induction heating machine, Induction Heating equipment. They are widely used in induction heating service, induction heat treatment, induction brazing, induction hardening, induction welding, induction forging, induction quenching, induction soldering, induction melting and induction surface treatment applications  
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**INDUCTION HARDENING OF BEARING PARTS** It is known that induction heating is effective in flow-line mass production that precludes resetting of equipment, or in individual production where the application of ordinary heating methods is difficult.

Induction hardening of rolling elements, of cold-pressed rings with 60-80-mm diameter, and of races of large bearings with up to 2-m diameter therefore found widespread application at the plant GPZ I.

Hardening of Rolling Elements of Steel ShKh15. Hardening after induction heating is applied to balls with 12-50-mm diameter and conical rollers with 15-22-mm diameter, made of steel ShKh15.

The rolling elements are heated prior to quenching in an induction installation whose power is supplied by a frequency converter VPCh-100/8000.

The installation consists of a loading mechanism, a vertical or horizontal inductor, a slit sprayer, rotating roller, lifting devices for feeding components to the inductor, and a tempering furnace.

The balls are loaded into a hopper from which they are lifted by a vertical elevator, and then they are fed into a vertical multiturn inductor 1 m long. In installations intended

for the hardening of conical rollers the inductor is arranged horizontally.

A denser arrangement of the coils in the first half of the inductor ensures accelerated heating with gradually decreasing heating rate in the second half of the inductor. The components,

heated to 920-940°C, are fed onto horizontal rotating rollers where during their motion they are cooled by water from the slit sprayer (water temperature 15-25°C, flow rate

13-15 m<sup>3</sup>/h). The temperature prior to quenching is set by the specified voltage of the inductor

(260-350 V), and it is additionally checked with an optical pyrometer.

The heating and cooling times of balls and rollers are presented in Table I.

It is envisaged that after the components have been fed to the inductor, heating will be

automatically switched off, with subsequent scrapping of components when the

installation

is switched on.

From the hardening installations the components travel to the drum-type screw furnace

for tempering. The tempering temperature is 150-165°C, tempering time 2-2.5 h, cooling after

tempering in air, the capacity of the installation is 180-250 kg/h. Hardness of the balls

after hardening and tempering is HRC e 63-67, of rollers HRC e 62-66. The microstructure is

cryptocrystalline or finely crystalline martensite. induction hardening bearing



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