



RICHELIN
GRUPPE

Induction Hardening Machine UMK-400



**for small Components in medium
and large Batches Production**

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Specialities:

In addition to our product range we have developed a machine that considers especially customers processing small parts of medium to great series. Special attention was concentrated on universal use as well as on simple retrofitting. Proven standard components were developed in order to meet the requirements of this problem definition. Greater series of small parts like screws, pins or bolts require the shortest possible cycle times for

economical reasons. Profitable unit costs can only be realized when the heating time e.g. using tunnel or multi-coiled inductors is exploited, quenching and recooling phases are placed in a subsequent cycle and the machine reaches its position fast and exactly in the revolving table axis as well as the inductor lining. With the induction hardening machine type **UMk-400** all conditions have been fulfilled to carry out automatic loading and unloading.

Technical data:

Basic type of equipment		Optional accessories
Machine body	Solid welded structural steel work, dimensions approx. 2000 x 1750 mm table height: approx. 1050 mm	
Vertical lift	Y-axis 400 mm travel, quick motion: max. 15000 mm/min	
Inductor lining	X-axis 200 mm travel, quick motion: max. 15000 mm/min	
Inductor cross adjustment	Collateral manually adjustable: +/- 15 mm by means of electric motor and electronic ruler with indication in the machine control system. Setting accuracy: 0.1 mm	
Operative range	Max. work piece diameter: 720 mm	
Indexing table	Revolving table with 90° pitch, max. 4 boards per table, accuracy: +/- 0.1 mm (absolute size), indexing time: approx. 0.6 s, table diameter: 560 mm	<ul style="list-style-type: none"> - NC-controlled table - pitch alternatively 72°, max. 5 boards per table - pitch alternatively 24°, for single board (15 parts per table) - tables for special applications
Moving station (boards) for rotating work pieces	Boards interchangeable, with interlocking central drive and gear coupling, standard version with single board, rotating speed: 50-400 min ⁻¹ Pitch distance: 40 mm for dual board	<ul style="list-style-type: none"> - boards with 1, 2 or 4 work piece location fixtures - pitch distance optional 40-120 mm at the dual board - drive for work piece rotation adjustable by frequency regulator: 20 mV outlet on the control display
Work piece locating fixture	Fixture dimension: diameter = 20 ^{H7} mm, depth = 30 mm, hole for quench water outlet	
Quenching water	Connections for external supply, flow rate adjustable	<ul style="list-style-type: none"> - Additional second connection bypass operation - Drop nozzle for inductor cooling (external)
Machine control	CNC control system for 3 axis and all other functions via Siemens 840 Di, with high precision by means of short cycle times	
Electrical equipment	Input mains supply for the machine and machine control	<ul style="list-style-type: none"> - Energy monitoring with limiting values presettable - HF converter (igbt) 20, 25, 50 or 75 kW (150-350 kHz) - MF converter 20, 30, 50 or 70 kW (10 kHz)

Subject to technological changes or modifications

Certified according to DIN EN ISO 9001:2000 and VDA 6.4

Additional accessories:

Quench flow control	Flow measuring for each quenching operation with indication on display and limiting value monitoring
Indirect rotation control for work pieces	Monitoring of work piece rotation by control of the gear belt
Pressure increase pump for inductor cooling	Centrifugal pump to increase the pressure of cooling water from 6 bar to 12 bar
Temperature monitoring of the inductor cooling water	Temperature indication and limit value monitoring for the outlet of inductor cooling water
Quench water tank	Tank for quenching water (approx. 120 l) and recirculating pump to the supply system

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