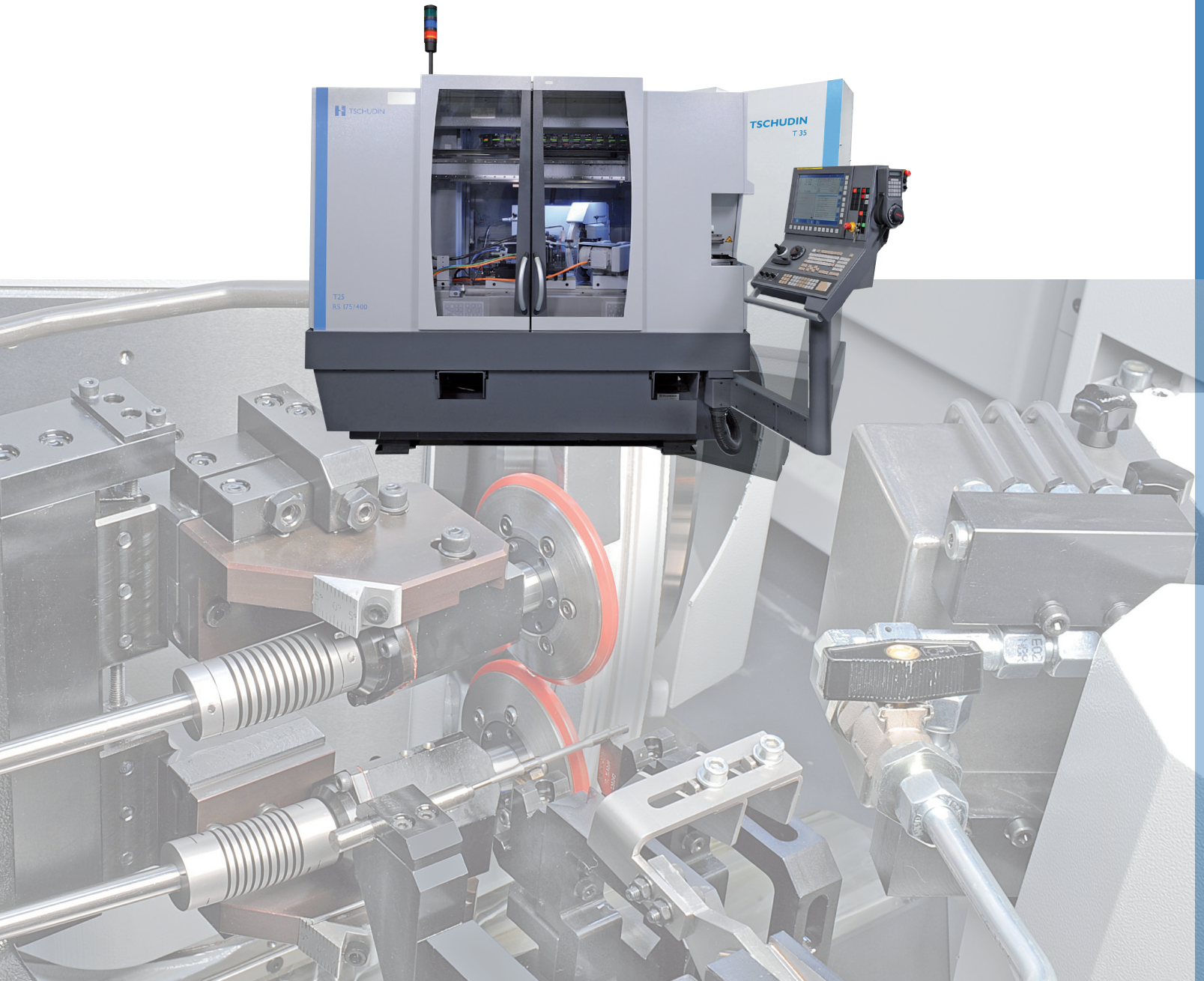


GRINDING



Tschudin T25

The efficient production grinding machine



kellenberger.com

 **KELLENBERGER**

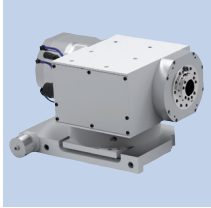
The efficient production grinding machine

2



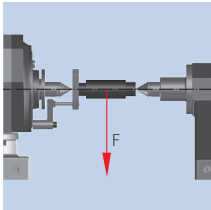
Workhead

- n 1-1000 min-1
- Fixed center / rotating spindle



Workhead with direct drive

- n 1-1000 min-1
- C-axis (option)

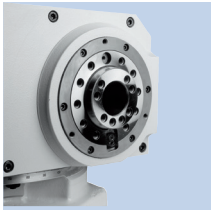


Load with chucked work

- 100 Nm

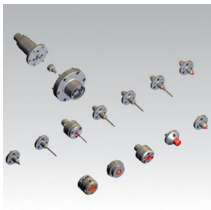
Load between centers

- 100 kg



Spindle nose

- Size 5 ISO 702-1
- Morse taper 5



Universal driving system

- Highest quality standard
- Quick change-over times



Perfection at a glance

CNC control system Fanuc 3 i i

- The latest generation control system with Windows embedded
- User guided ISO programming with expanded functionality
- Display of process data with various display variations for optimum monitoring of production
- KEL-REMOTE (option) for customer support by remote diagnosis

Table / slide

- Low-friction X-guide for the best infeed precision
- Low-wear Z-guide
- Circulation lubrication
- Glass measuring devices on X and Z axes
- High dynamics

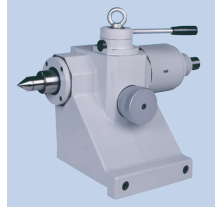
Wheelhead

- Various types of wheelhead
- Configurable for every customer application



Tailstock

- Morse taper 4
- Retraction of sleeve 48 mm



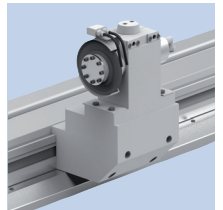
Micro-adjustment of tailstock

- Adjustment range +/- 60 µm
- Automatic micro-adjustment (option)



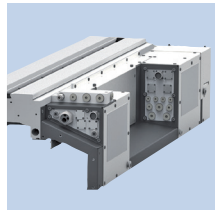
Dressing device interface

- Neutral dressing position
 - Rigid diamonds
- Rotating dressing discs and profile rolls



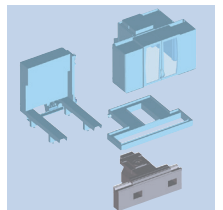
Peripheral connections for

- In-process control units
 - Steady-rests
 - Deburring systems
- Various coolant supply connections



Design

- Separation of base and infrastructure
- No external influences on machining processes
 - Three-point set-up



Efficient

- Production grinding machine to satisfy the strictest demands on **quality** and **cycle times**
- High unit volumes in smallest of space
- Process-oriented solutions, thanks to modular system
- Rigid machine concept with corresponding driving systems

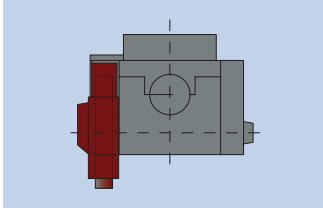
Costs

- Cost-optimized CNC production grinding machine
- Standardized and integrated automation solutions
- Energy efficient
- High availability



Wheelheads and accessories

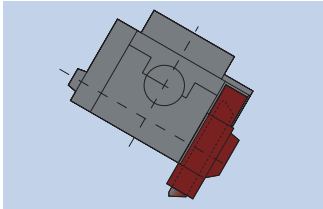
4



R-wheelhead

for external cylindrical grinding

- V-constant



RS-wheelhead

for angular infeed grinding

- V-constant

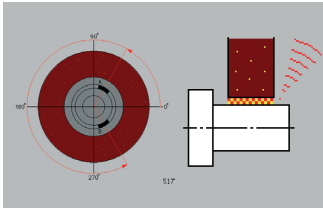


Water-cooled precision-balanced drive motors

- Use of spindle bearings

Hydrodynamic multi-surface spindle bearings

- High-accuracy spindle bearings, pre-stressed

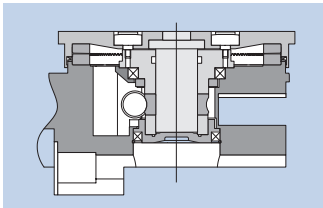


KEL-BALANCE

- Semi or fully automatic balancing

KEL-TOUCH

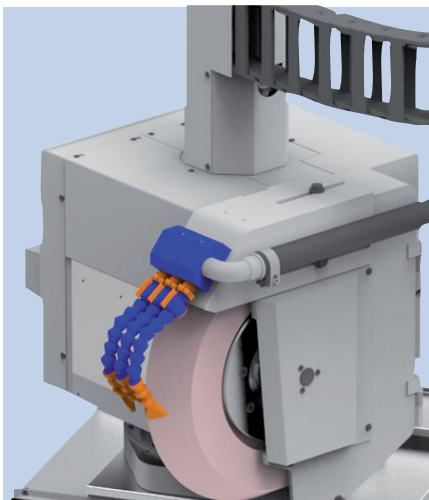
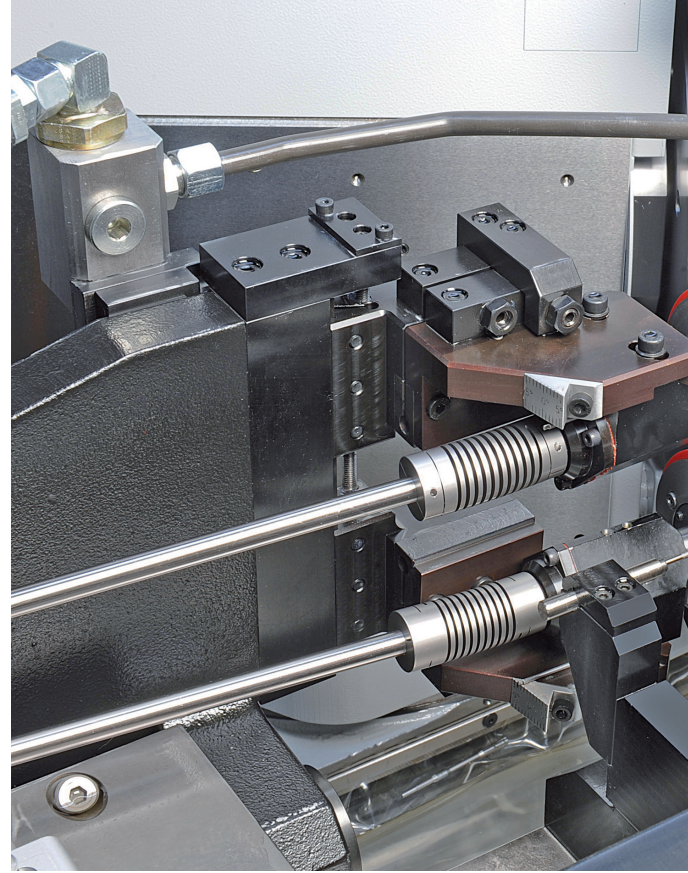
- Process optimization and monitoring



Indexing (option)

for quick retooling

- Manual indexing 2.5°
- Automatic indexing 1°



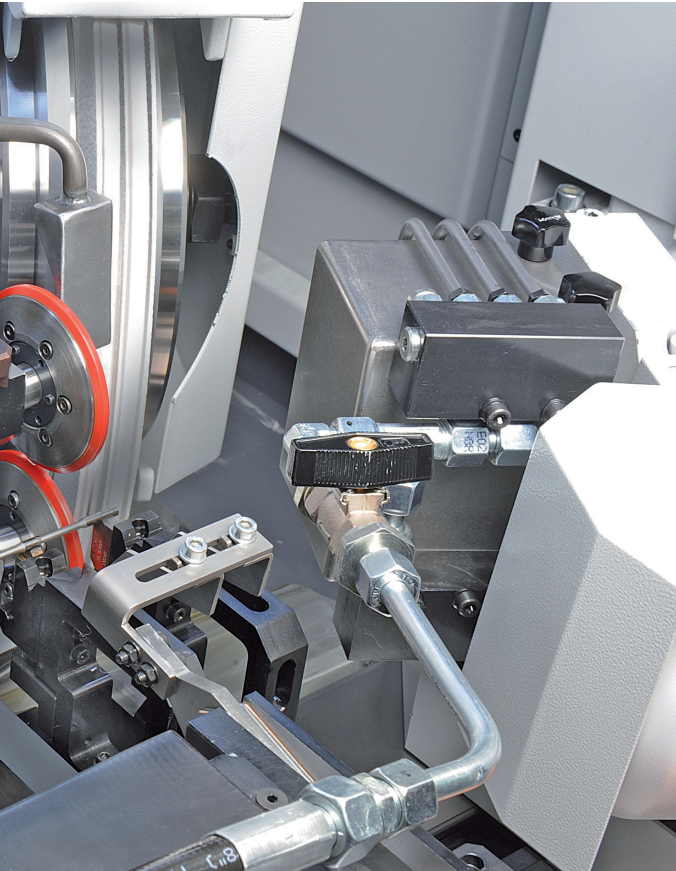
RS/R-wheelhead

- The wheelhead for external cylindrical and angular infeed grinding
- Thermal stability thanks to optimized spindle bearings and water-cooled motor
- Motor output 10 kW
- Grinding wheel dimensions $\varnothing 500 \times 80 \times 203$ mm
- Peripheral grinding wheel speed 45m/s
- Optional 63 m/s
- Fixed angle
 - R 0°
 - RS -30°

Indexing (option)

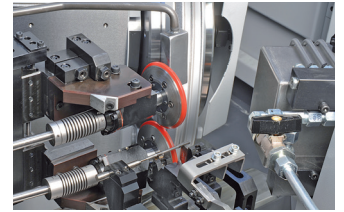
The Hirth coupling with indexing ensures excellent positioning and repetition accuracy.

- Retooling of various part families
- More flexibility for production machines
- Flexible angles
 - R 0° to 30°
 - RS 0° to -30°



Prismatic holder grinding

- Grinding of rotation-symmetric components in PCD prisms
 - Driven by 2 plastic rollers



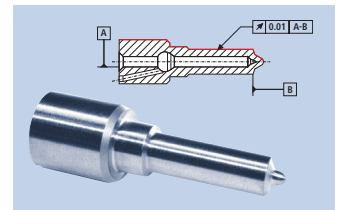
Match grinding

- Producing a defined amount of play by matching two bodies
 - Diameter and length



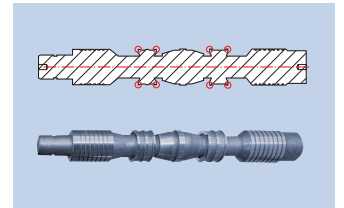
Nozzle body grinding

- Grinding of the exterior contour of a nozzle body in one single setup operation



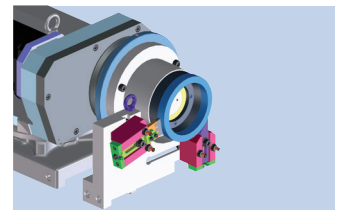
Control valve grinding

- Highly accurate, sharp-edged and burr-free guide edges



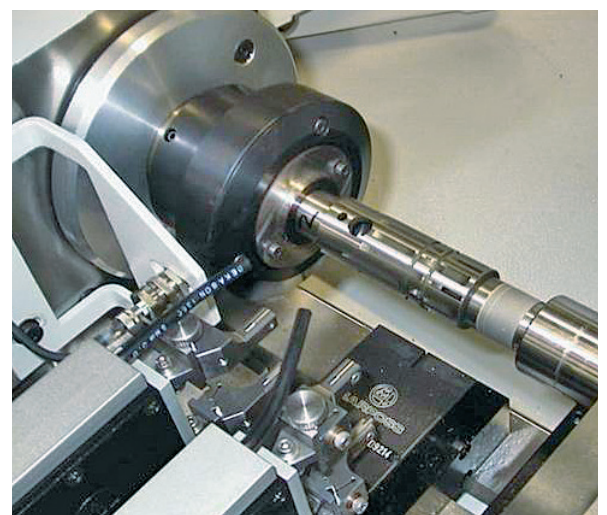
Shoe grinding

- Production of ring-shaped mass-produced parts
 - Self-centering system



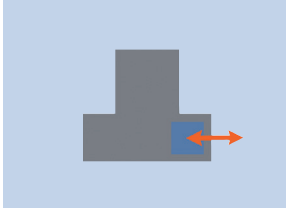
In the area of machine systems Kellenberger offers

- More than 50 years experience in production grinding
- A very high level of expertise in production grinding
- Support for optimum design of the grinding part during the development phase
- Innovative solutions for new processing challenges
- Willingness to take on new process developments
- Intensive counseling and support during the proposal phase
- Good relations with competent suppliers



Handling

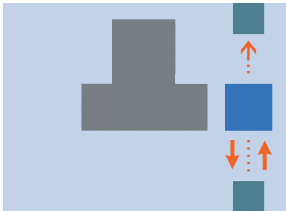
6



KEL-PORTAL

Keyhole solution

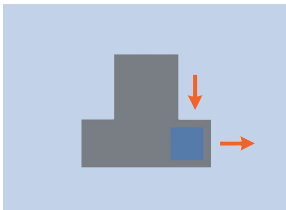
- V-grippers, H-grippers
- V-block
- Drawer (option)



KEL-PORTAL

Fixed cycle feed

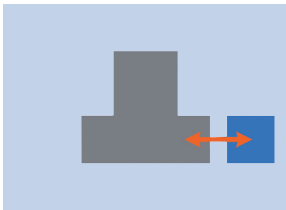
- V-grippers, H-grippers
- SPC/NIO
- Pallet solution (option)



KEL-PORTAL

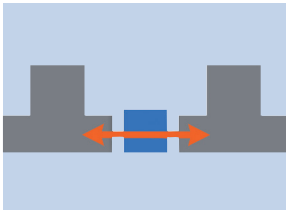
Prismatic holder grinding

- Double gripper
- Plate conveyor
- SPC/NIO



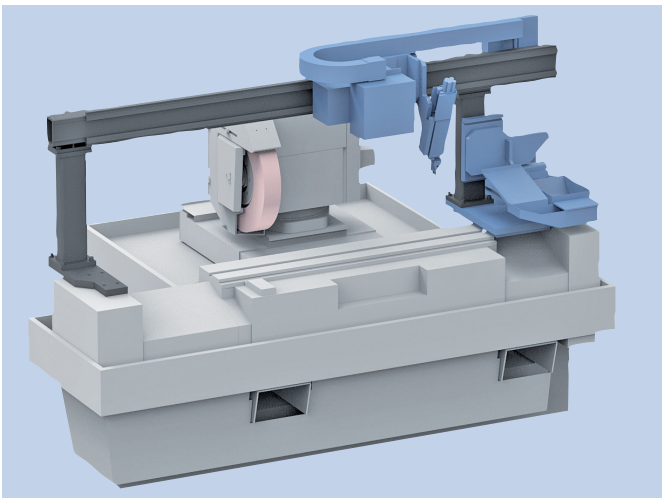
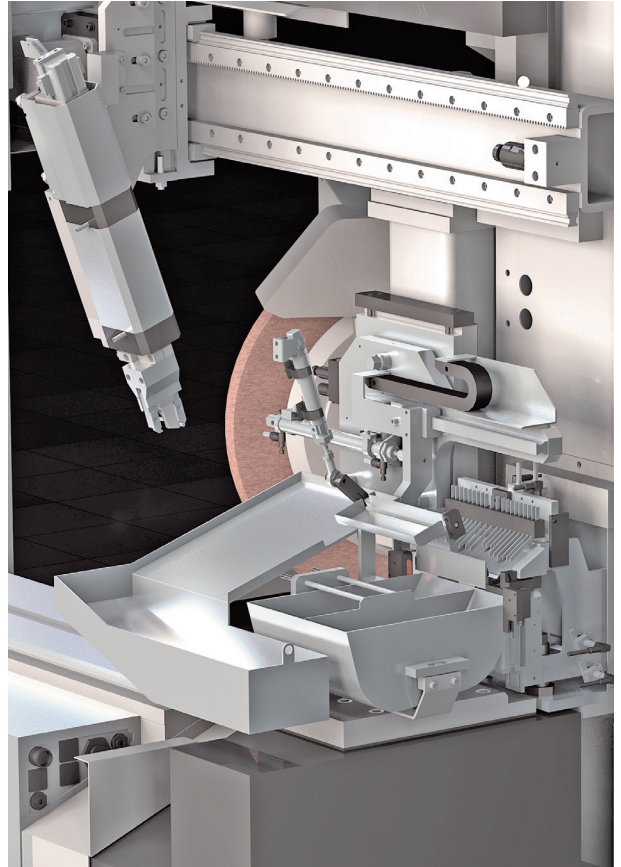
Autonomous handling

- Customer-specific automation
- Standardized loader interface



Process chains

- Multiple processes with central handling system
- Standardized loader interface



Handling

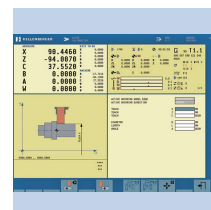
Diverse handling variations with different options available

- Handling is integrated in the machine design in a modular and space-saving way
- Greatest possible autonomy
- Stiff support integrated in the machine concept
- Very quick change-over times
- Shortest part change time >1.5 Sec. (application-dependent)



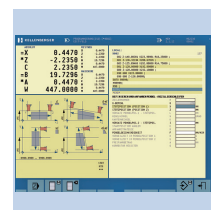
Monitor

- 15" TFT
- Softkeys
- Expanded display of process data



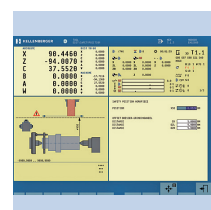
KEL-PROG

- Operator-controlled ISO programming
- Cycle selection via softkeys
- Form editor



KEL-TOOL

- Tool administration
- Local and global dressing devices
- Standard wheel definition with multiple reference points



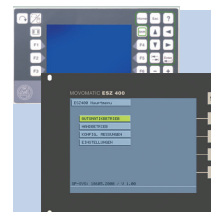
Keypad

- Handwheel with confirmation key
 - Travel stick
 - Mobile handpanel as option,
- USB, flash card, Network connection



Movomatic / Marposh

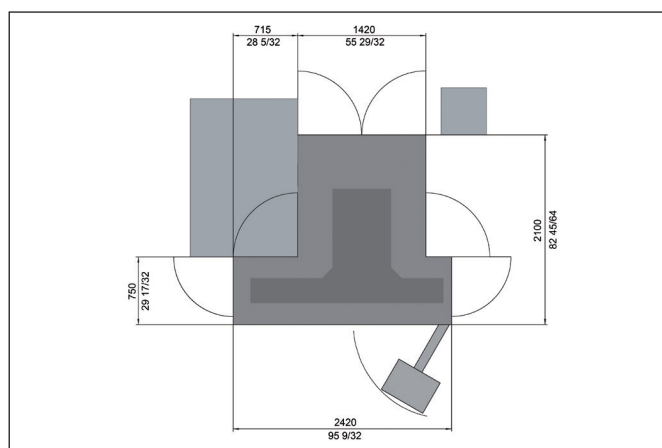
- Control unit ESZ 400 / P7 ME
 - In-process
 - Pre-process
 - Post-process



Technical data

Distance between centers	mm	400/600
Z-axis travel	mm	500/750
Rapid traverse speed	m/min	20
Resolution	µm	0.1
X-axis travel	mm	365
Rapid traverse speed	m/min	10
Resolution	µm	0.1
Grinding wheel	mm	500x80 (100)
Rotational speed		
Roller bearings	m/s	45 (63)
Drive motor	kW	10
Space required, machine		ca. 5 m ²

Space assignment



Competence and a world-wide partnership



Over the years the Hardinge Group has constantly evolved its range of products and areas of activity. As globally active and diversified company, the Hardinge Group has production sites in North America, Europe and Asia.

In addition to the development and construction of turning machines and work-holding fixtures, with Bridgeport the Hardinge Group also has a manufacturer of machining centers.

The Hardinge Group is a major global provider of customer-specific solutions for grinding applications. The Hardinge Grinding Group encompasses all activities in the areas of cylindrical, surface and jig grinding, and includes the well known brands of Kellenberger, Hauser, Tschudin, Jones & Shipman, Usach and Voumard. The Hardinge Grinding Group has a global network of partners with trained staff in sales, service and application engineering. This guarantees competent advice and support for evaluation, purchase, and use of the grinding systems.

L. Kellenberger & Co. AG

Heiligkreuzstrasse 28
9008 St.Gallen / Switzerland
Phone +41 (0) 71 242 91 11
Fax +41 (0) 71 242 92 22
www.kellenberger.com
info@kellenberger.net

L. Kellenberger & Co. AG

Längfeldweg 107
2500 Biel-Bienne 8 / Switzerland
Phone +41 (0) 32 344 11 52
Fax +41 (0) 32 344 13 93
www.kellenberger.com

Sales and Service in China:

Hardinge Machine (Shanghai) Co., Ltd

No.1388 Kangqiao RD (East),
Shanghai, China 201319
Phone +86 21 3810 8686
Fax +86 21 3810 8681
Service:
Phone +86 21 3810 8689
Sales:
Phone +86 21 3810 8686
EXT 8403
www.hardinge.com.cn

Sales and Service in Great Britain and The Republic of Ireland:

Jones & Shipman Hardinge Ltd

Murrayfield Road
Braunstone Frith Industrial Estate
Leicester LE3 1UW/England
Phone +44 (0) 11 62 013 000
www.jonesshipman.com
info@jonesshipman.com

Sales and Service in USA and Canada:

Hardinge Inc.

One Hardinge Drive
Elmira, New York 14902-1507 USA
Phone +1 (607) 734 2281
Fax +1 (607) 735 0570
www.hardinge.com
info@hardinge.com

Usach Technologies Inc.

1524 Davis Road
Elgin, IL 60123 USA
Phone +1 (847) 888 0148
Fax +1 (847) 888 0144
www.usach.com
info@usach.com

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