

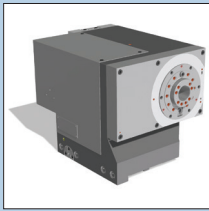
KELLENBERGER 10

STANDARD UNIVERSAL CYLINDRICAL GRINDING MACHINE



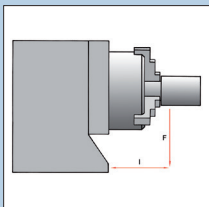
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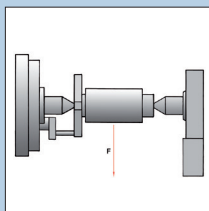
UNIVERSAL WORKHEAD

- Applications Live and Dead centers spindle
- Rotating speed 1-1000 rpm
- Roundness accuracy $< 0.4 \mu\text{m}$ (optional $< 0.2 \mu\text{m}$)
- Micro adjustment $\pm 0.01^\circ$
- Positioned spindle stop for thread grinding



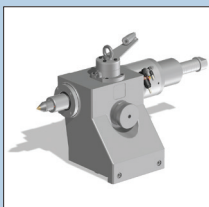
LOAD WITH CHUCKED WORK

- 100 Nm



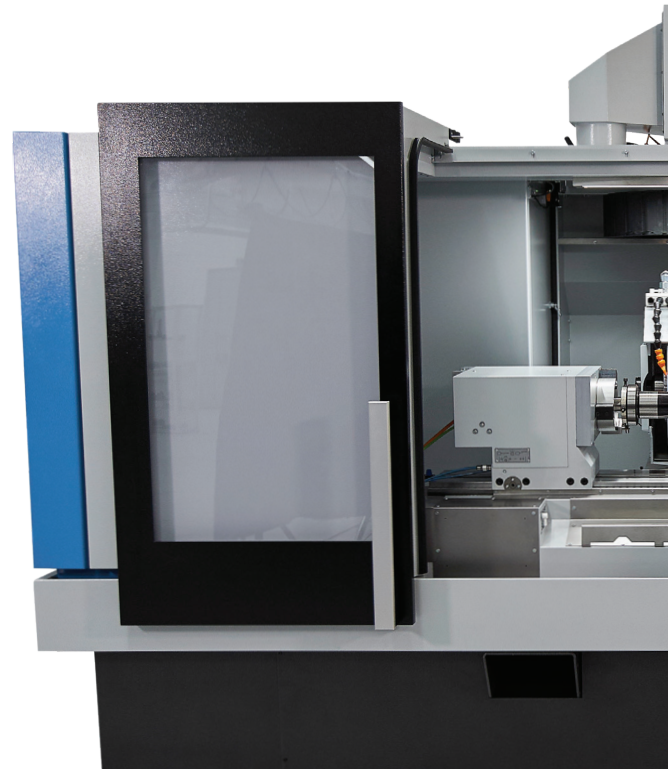
LOAD BETWEEN CENTERS

- 100 kg



TAILSTOCK 100

- Workpiece weight up to 100 kg
- Morse taper 4
- Retraction of sleeve 49 mm
- Micro-adjustment $\pm 60 \mu\text{m} / \varnothing$
- Pneumatic lifting



PERFECTION AT A GLANCE

- High process reliability
- Wide range of parts
- Easy setup
- No external influences on the machining process
- High productivity and flexibility
- Fast startup
- Short delivery period
- High availability and trustworthiness
- Reduced maintenance costs
- Excellent price-performance ratio

BASIS

- FEM-optimized cast bed for the highest quality and the longest durability
- Mechanical separation of machine and periphery for thermal stability and minimization of vibration influences

TABLE/SLIDE

- Linear guide on X-axis tested 1,000 times for low maintenance and high precision
- Low-wear slideway on Z-axis
- Glass scales with 50 nm resolution on X and Z axes
- High dynamic through speed up to 20 m/min in Z- and 10 m/min in X-axis

CYLINDRICAL GRINDING MACHINE



CONTROLLER CNC FANUC 0i

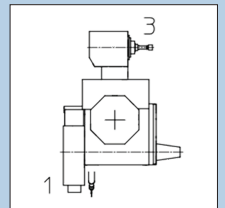
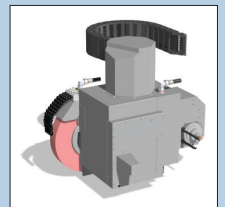
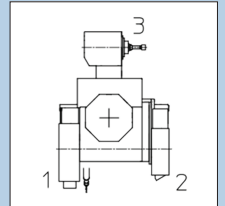
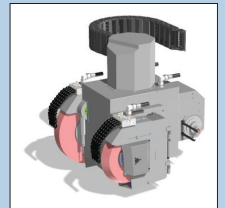
- 19" LCD color monitor with touch-screen function
- BLUE Solution teach-programming with OBJECT Guide for guided and simple program creation on workpiece
- IPC operating system Windows 10 IoT
- Hand-held panel with axis and speed selector switches

ERGONOMICS

- Visually and ergonomically advanced design
- Good overview of the grinding process
- Centrally arranged and easily accessible Interfaces for table superstructures
- Swiveling control panel for optimized operating comfort
- Intelligent accessibility for cost-effective maintenance and service

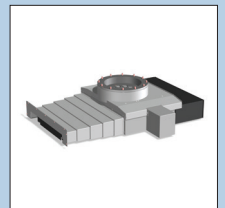
UR WHEELHEAD

- A grinding head for external cylindrical, internal cylindrical and face grinding
- Internal grinding with variable circumferential speed
- Automatic 1° indexing of a swivel device
- Thermal stability due to optimized spindle bearings and water-cooled motor
- Drive power of 7.5 kW
- Max. wheel diameter of $\varnothing 500 \times 80 \times 203$ mm

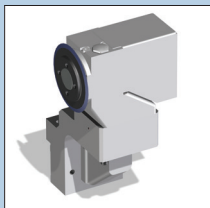


SWIVEL DEVICE

- Automatic indexing 1°

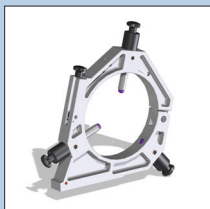


OPTIONAL CONFIGURATIONS



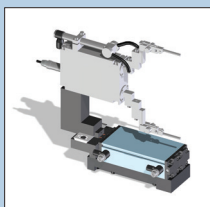
DRESSING DEVICE

- Static diamonds
- Rotating



STEADY REST

- Support for long workpieces



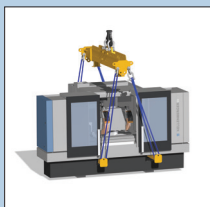
MEASUREMENT CONTROL

- In-process gage system



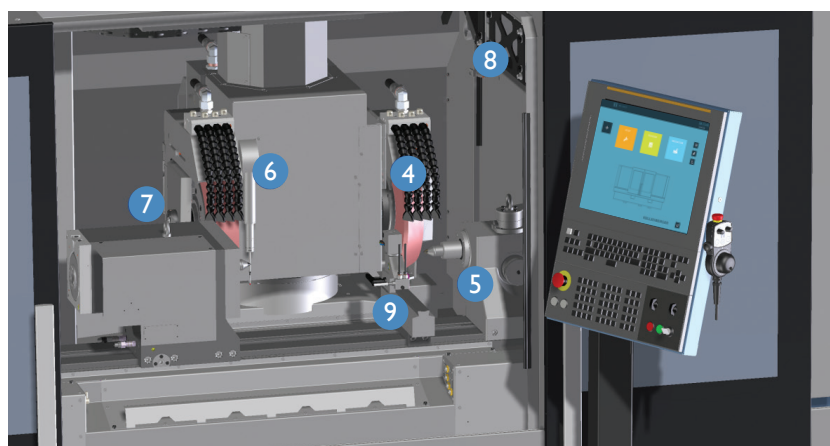
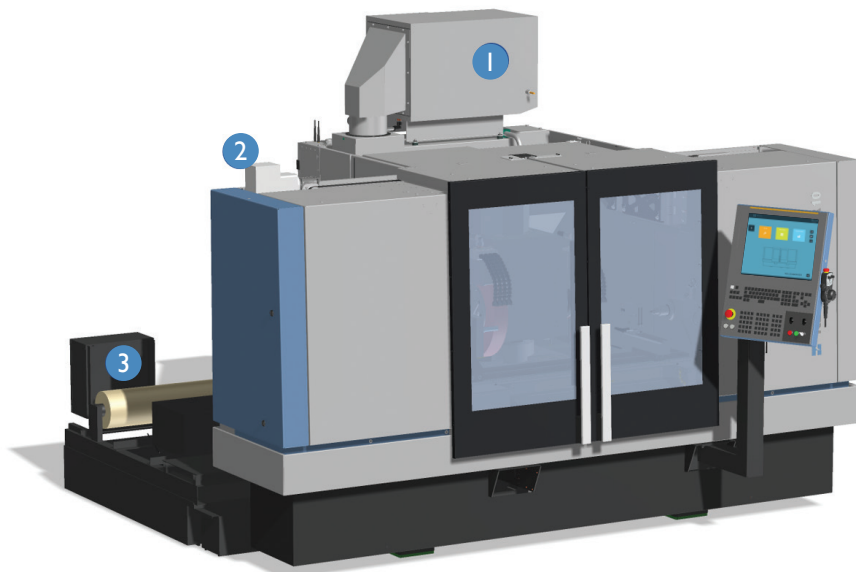
INTEGRATED LIFTING SYSTEM

- Ergonomic lifting system for table assemblies and grinding wheels



TRANSPORT

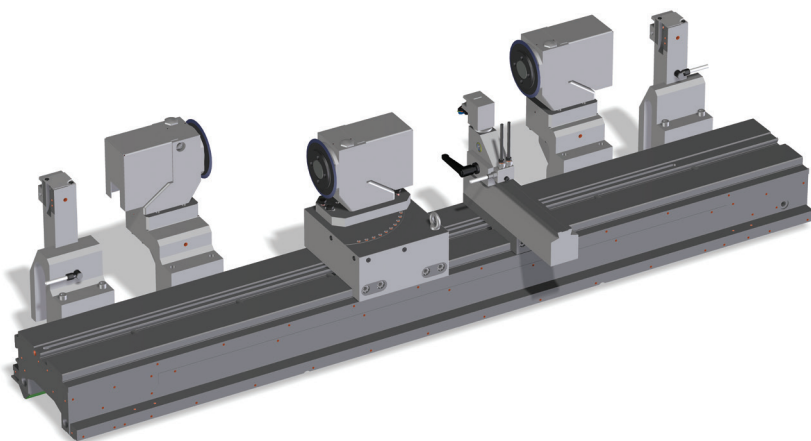
- Hooked machine
- Fast and easy initial setup



- 1 Mist-extraction unit
- 2 Automatic sliding doors
- 3 Coolant-based filter system
- 4 External grinding wheel T2
- 5 Tailstock
- 6 Active flagging device
- 7 Gap control and balancing sensors
- 8 Integrated lifting system
- 9 Wide range of table superstructures
 - Dressing devices
 - Steady rest
 - In-process measurement

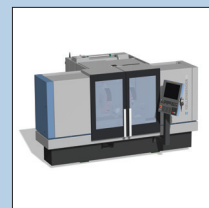
VARIOUS DRESSING OPTIONS

Fixed dressing unit on table superstructures in the standard accessories with fixed and rotating dressing devices.



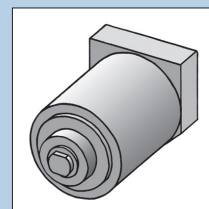
AUTOMATIC SLIDING DOORS

- Relief for the operator
- Faster workpiece changover times



INTERNAL GRINDING ATTACHMENT

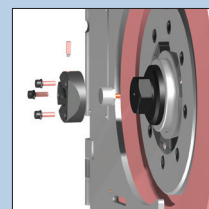
- Grease-lubricated HF internal grinding spindle 6'000 - 40'000 min-1 10'000 - 60'000 min-1



- Inexpensive and compact

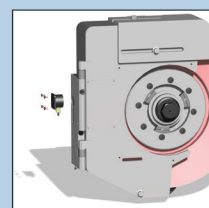
GAP CONTROL

- Optimized process time



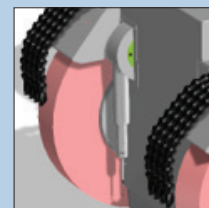
SEMI-AUTOMATIC BALANCING

- Faster setup
- Monitoring of the balance quality



ACTIVE FLAGGING DEVICE

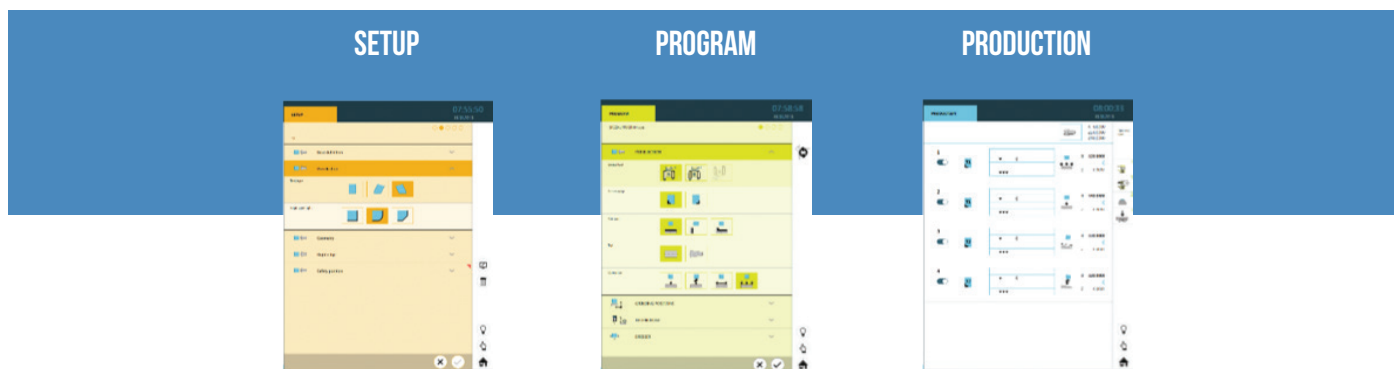
- Active measurement in external machining
- Calibration of a workpiece position in Z-position
- Mounted on the grinding head



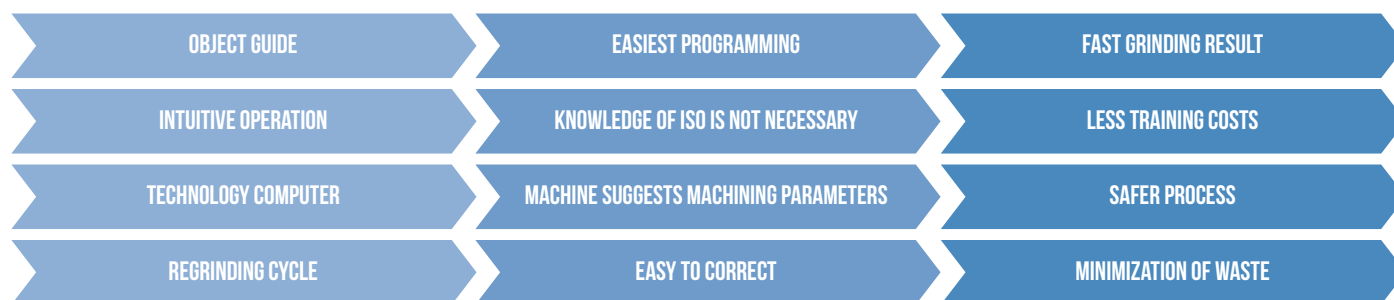
FANUC CONTROL SYSTEM 0i WITH KELLENBERGER HMI

The BLUE Solution user interface from KELLENBERGER has the central focus on simple and intuitive operation. All interactions are carried out by gestures on the 19" touch display. The latest generation of a reliable FANUC 0i control runs in the background.

BLUE SOLUTION



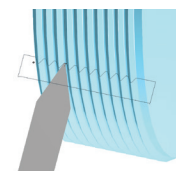
The user interface was developed explicitly for grinding by our specialists in cooperation with customers. BLUE Solution supports users regardless of their level of experience in all important steps from setup to production.



BLACK CAM SOLUTION

With the additional BLACK CAM Solution software, NC programs for grinding and dressing of profiles and threads can be generated, simulated and analyzed.

The CAD-CAM software supports the structured creation, processing and management of all documents belonging to a workpiece.



INDUSTRY 4.0

The Security Interface ensures communication according to the highest IT security standard between the machine and the production network.

The optional Remote Diagnostic module simplifies efficient diagnosis in case of service and thus reduces downtimes.

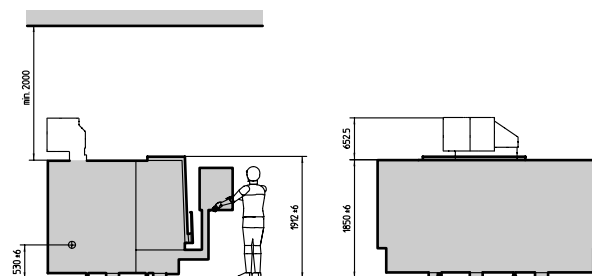
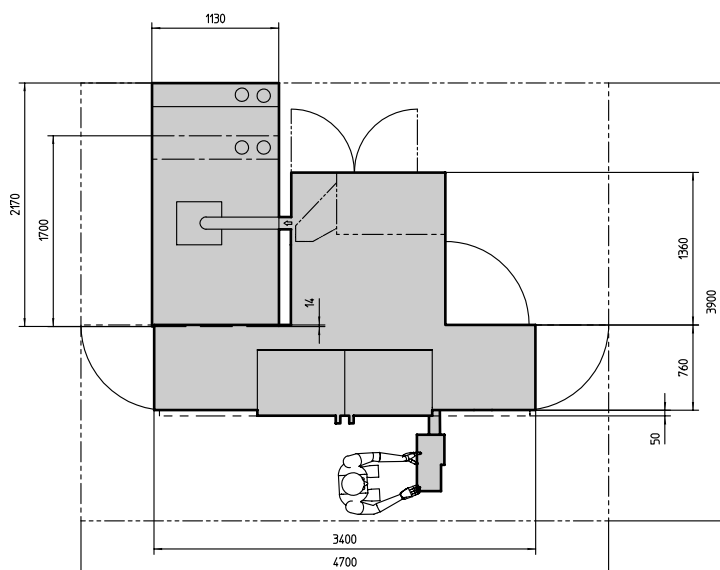
The machine is prepared for Industry 4.0. With the ComGateway, which has a standard OPC-UA server, extensive information on process and machine status can be exchanged.

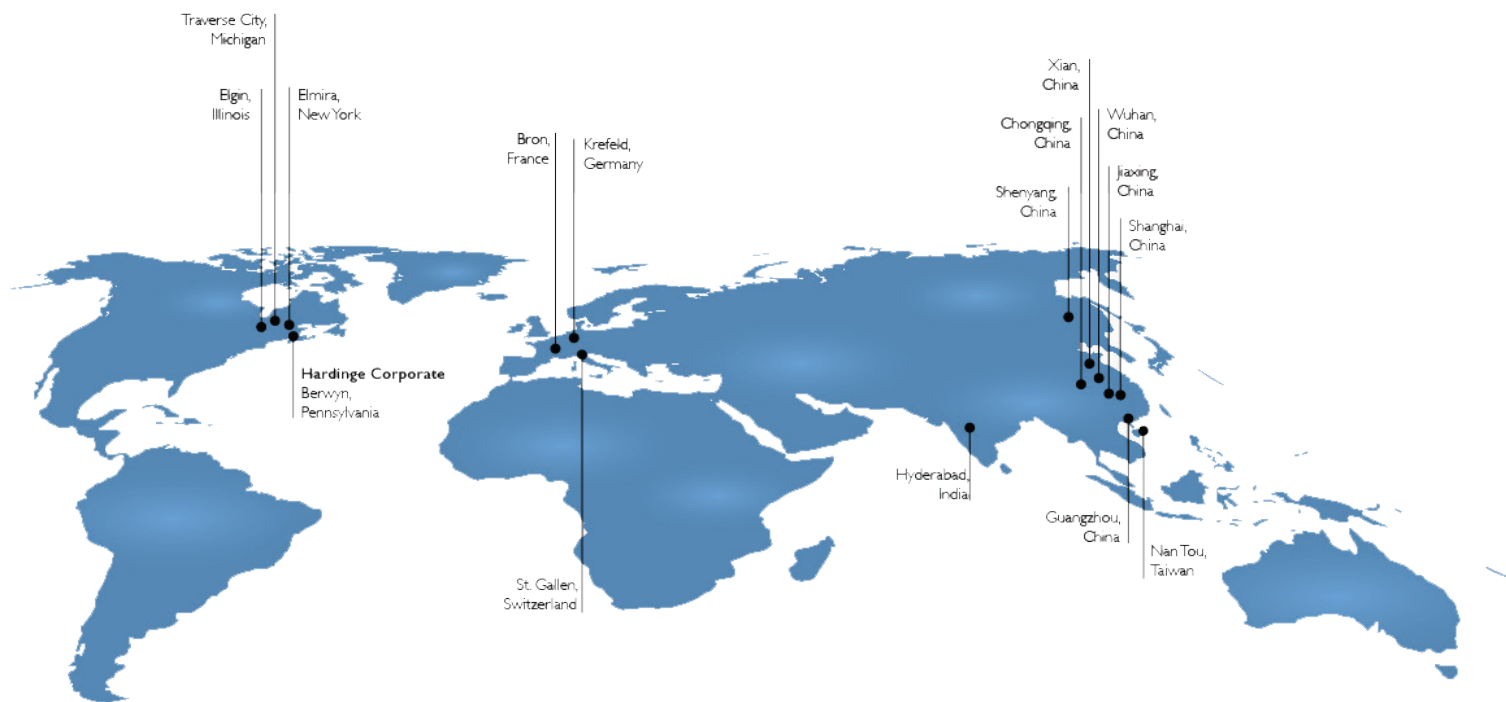


| | | |
|--|--------|-----------------------|
| Characteristics | | |
| Distance between centers | mm | 1.000 |
| Center height | mm | 200 |
| Weight of workpiece between centers | kg | up to 100 |
| Load on chucked work | Nm | up to 100 |
| Mains voltage required | V | 400 / 460 |
| Power consumption depending on equipment | A | up to 40 |
| Space required (length x width) | m | 2.7 x 2.2 / 3.5 x 2.2 |
| Total weight | kg | 4.000 |
| Table/Slide Z-axis | | |
| Travel | mm | 1.150 |
| Rapid traverse speed | m/min | up to 20 |
| Resolution | mm | 0.00001 |
| Wheelslide X-axis | | |
| Travel | mm | 365 |
| Rapid traverse speed | m/min | up to 10 |
| Resolution | mm | 0.00001 |
| Swivel devices | | |
| Swiveling range | degree | 240 |
| automatic indexing of resolution | degree | 1 |
| Wheelhead | | |
| Water-cooled drive motor | kW | 7.5 |
| Performance peripheral speed | m/s | up to 50 |
| Grinding wheel dimensions | mm | up to Ø500x80 |
| Internal grinding device | | |
| Bore for spindles up to | mm | 150 |
| Power, HF spindles | kW | up to 7.5 |
| Rotation speed | rpm | up to 60.000 |
| Workhead | | |
| Rotation spindle speed | rpm | 1 - 1.000 |
| Interface | | ISO 702-1, Size 5/MT5 |
| Roundness accuracy in chucked work | µm | 0.4 (optional 0.2) |
| Tailstock | | |
| Internal taper | | MT4 |
| Retraction of sleeve | mm | 49 |
| Micro-adjustment | µm / Ø | ± 60 |

All specifications and designs are subject to alterations without notice

SETUP PLAN





HARDINGE WORLDWIDE

Hardinge is a leading international provider of highly advanced machine tools and system solutions. We offer a comprehensive range of reliable CNC truing, milling and grinding machines as well as technologically advanced workpiece clamping systems.

Our advanced products are used in a variety of industries, including aerospace, agriculture, automotive, construction, energy, medical, transportation and more. We are a company with a strong global presence with manufacturing facilities in Europe, North America and Asia.

Hardinge uses its entire development and application know-how to always be able to offer your company the optimal machine tool solution and perfect service.

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