

KELLENBERGER 100

Cylindrical Grinding Systems



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 **HARDINGE**

KELLENBERGER 100

PERFECTION AT A GLANCE

Base

- FEM-optimised cast bed
- Optimised slideway on Z-axis
- Linear guide on X-axis

Modular wheelhead with high-precision B-axis

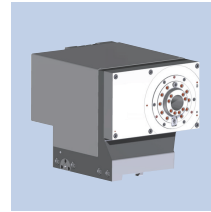
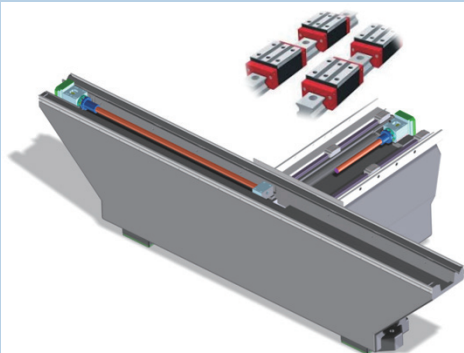
- 10 compact wheelhead versions for optimal machine design based on the parts to be processed
- Diagonal configuration and new collision-free universal design with 500mm grinding wheel diameter.
- Constant speed 80 mis with 0400 possible

Workhead and tailstock

- Standard design with 100 kg workpiece weight
- Strengthened version with 150 kg
- High torque for non-circular grinding
- Synchronous tailstock including automatic fine adjustment for production applications

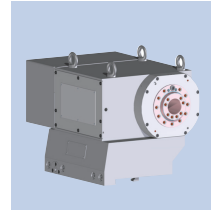
CNC control system with Fanuc 31i with 19" touchscreen

- Comprehensive user support with revamped intuitive touchscreen control
- Redesigned cycle programming
- Workpiece-based graphic programming
- Integrated automatic calculation technology



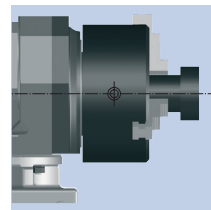
Workhead 100

- Infinite adjustable rotating speed 1-1000 rpm
- Morse taper MT5 / size 5 outer short taper
- Roundness < 0.4 μ m (Option < 0.0002mm)
- Micro adjustment $\pm 0.01^\circ$



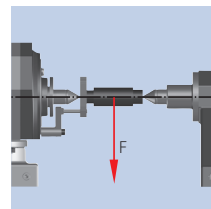
Workhead 150

- Infinite adjustable rotating speed 1-1000 rpm
- Morse taper MT5 / size 5 outer short taper
- Roundness < 0.4 μ m
- Micro adjustment $\pm 0.01^\circ$



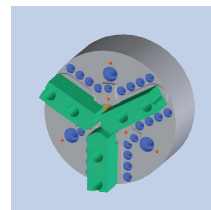
Load with chucked work

- Workhead 100 100 Nm
- Workhead 150 320 Nm



Load between centers

- Workhead 100 100 kg
- Workhead 150 150 kg



Power-actuated clamping device

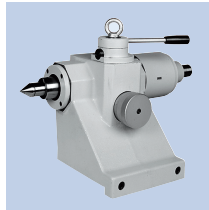
- Clamping force: 2000-9000N
- Hardinge 2J workholder



THE PERFECT UNIVERSAL CNC GRINDING MACHINE

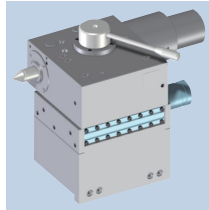
Tailstock 100

- Sleeve stroke 48 mm
- Micro adjustment $\pm 60 \mu\text{m}/0$
- MT 4 holding taper



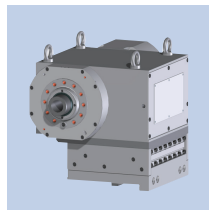
Tailstock 150

- Sleeve stroke 50 mm
- Micro adjustment $\pm 120 \mu\text{m}/0$
- MT 4 holding taper

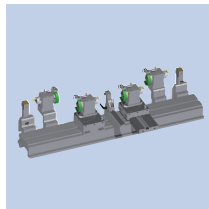


Synchronous tailstock

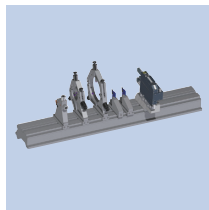
- Speed I - 1,000 rpm
- Roundness $< 0.4 \mu\text{m}$
- Optional automatic cylinder correction



Dresser options



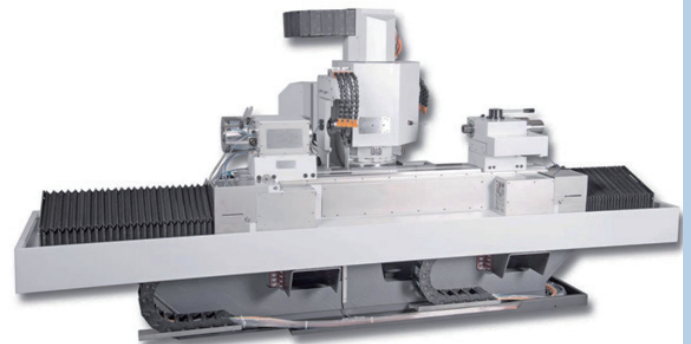
Steady-rest accessories



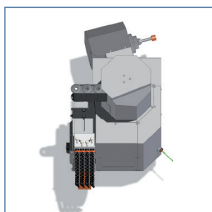
CUSTOMER BENEFITS

Global innovation of a new grinding wheelhead with choice of 10 wheel head versions

- optimised design of the machine
- Higher power of the grinding wheel
 - Increased productivity
- Redesigned Z-guideways
 - Greater profile accuracy
- C-axis with direct drive
 - Increased accuracy for non circular grinding
- Extended options available as standard
- High-quality Fanuc 31i control
- Integrated automatic technology calculation
- Intuitive touchscreen operation
- Extended range of functions
 - More grinding options
- Consistent operator guidance
 - Simple and convenient training



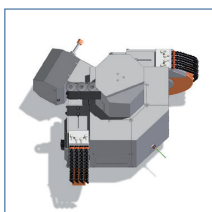
WHEELHEAD



UR 1-3

for external and internal grinding

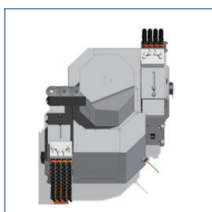
- Constant speed
- Infinite adjustable rotating speed



UR-RS 1-5-6

for external/internal and face grinding

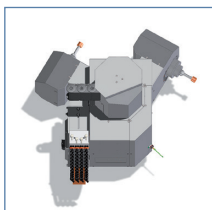
- Constant speed
- Infinite adjustable rotating speed



2R 1-4

for external grinding

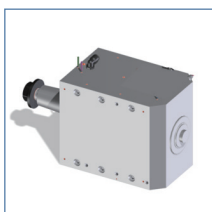
- Constant speed
- Infinite adjustable rotating speed



UR1-6-7

for external and internal grinding

- Constant speed
- Infinite adjustable rotating speed






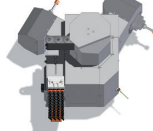
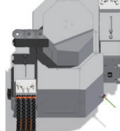

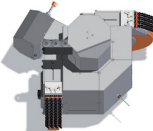


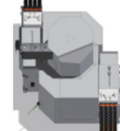
Motorised external grinding spindle

- Speed 800 - 3800 rpm
- Rated power 11,5 kW
- Oil-air lubrication



WHEELHEAD CONFIGURATION

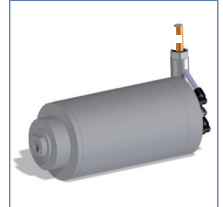
10 compact wheelhead options, all wheelheads as straight and/or angle approach

R1 	R-RS 1-5 	UR 1-3 	UR 1-6-7 	2R 1-4 
RS 2 	UR-RS 1-5-6 	URS 2-3 	URS 2-6-7 	2RS 2-5 

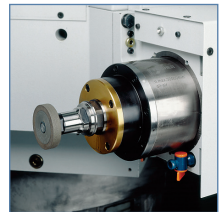
WORKHEAD, C-AXIS & TAILSTOCK



- Internal grinding spindle
Powerful, greased internal grinding spindle
- 4'000-40'000 rpm
 - 10' 000 - 60' 000 rpm



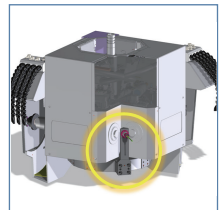
- Internal grinding spindle Oil-Air lubricated grinding spindle with speed range of
- 42'000 rpm
 - 60'000 rpm
 - 90'000 rpm



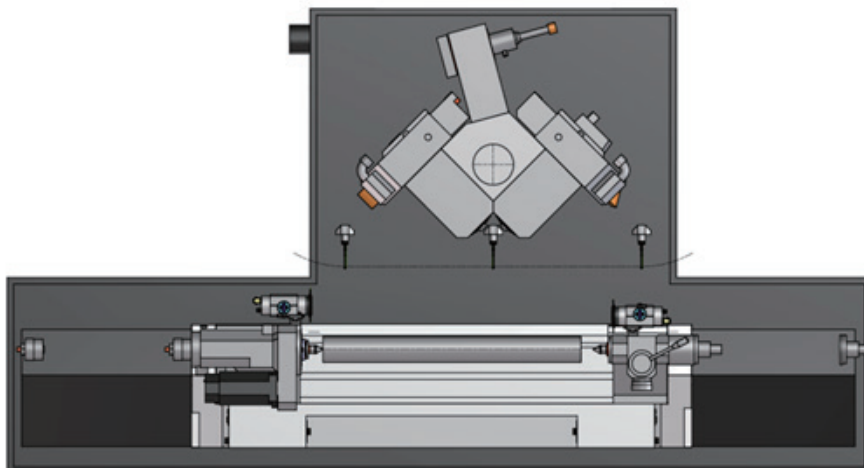
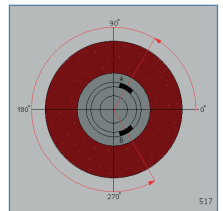
- B-axis with direct drive
- Integrated absolute measuring system, resolution 0,00002°
 - Maintenance-free and low-friction guide, distortion-free clamping



- KEL-POS
Fix mounted probe
- Tip always on centre line, collision-free
 - No swing-in mechanism, no wear



- KEL -BALANCE
Semi-automatic or automatic balancing of the grinding wheels



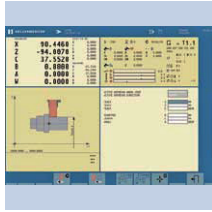
KEL-SET

The conversion time is reduced thanks to the application of KEL-SET, After changing the work-piece, it only has to be calibrated with a grinding wheel,

In addition tapers and faces can be machined rationally in the ISO model/program, The location precision will be defined of the high precision B-axis with a solution of 0.00002°

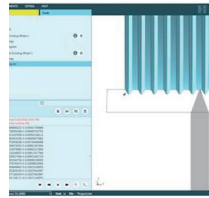
CONTROL SYSTEM

FANUC 31i



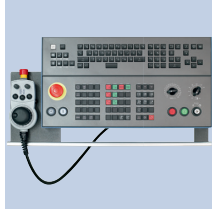
Monitor

- 19" TFT Multitouch
- expanded process data display



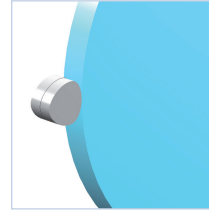
KEL -SOFT thread module

- SW package for the preparation of contour-grinding or profile-dressing programs
- DXF-import, threads, cleaning cycles



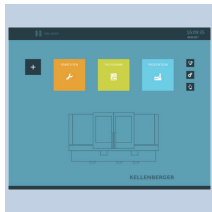
Keypad

- Handwheel with confirmation key
- mobile handpanel as an option



KEL -SOFT non-circular module

- 3D software for creating non-circular grinding programs
- Algorithms for error detection and correction
- Function for contour and grinding analysis
- Animation of non-circular motion



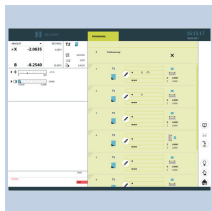
EASYWORK Home Screen

- One surface for all activities
- EASY-Touch applications
 - Set-up
 - Programming
 - Production
 - Diagnose
- No ISO programming skills required



Movomatic

- Control unit ESZ 400
- Maximum 4 digital measuring heads
- Display and operation on ancillary panel



EASYWORK

Programming

- Overview
- Edit Processing
- Edit - Geometry
- Edit Technology



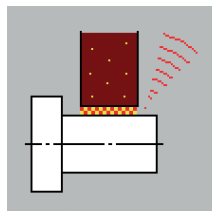
Marposs

- Control unit P7 ME
- Max, 4 analogue measuring heads
- Display and operation on ancillary panel



EASYWORK Production

- Overview
- Correction table
- Re-grinding
- Diagnose

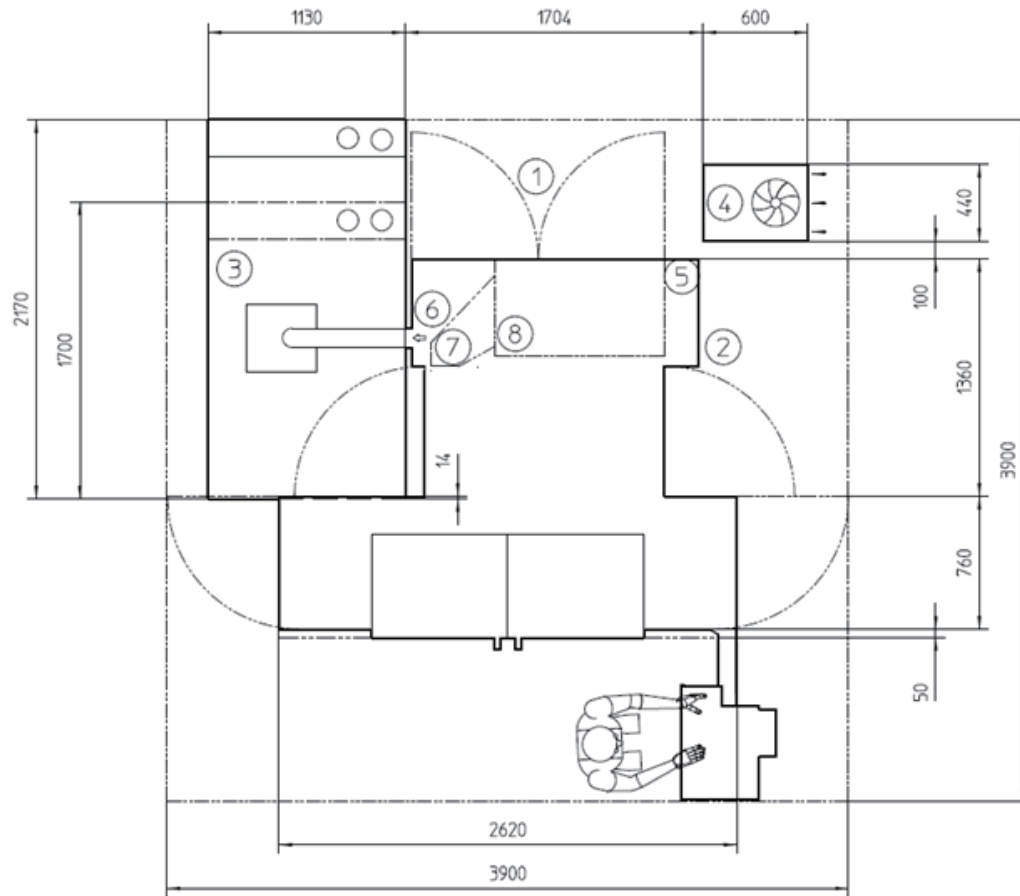


KEL-TOUCH

- GAP control with up to 3 sensors
- Operation and display integrated in the control system



FLOOR PLAN & SPECIFICATIONS

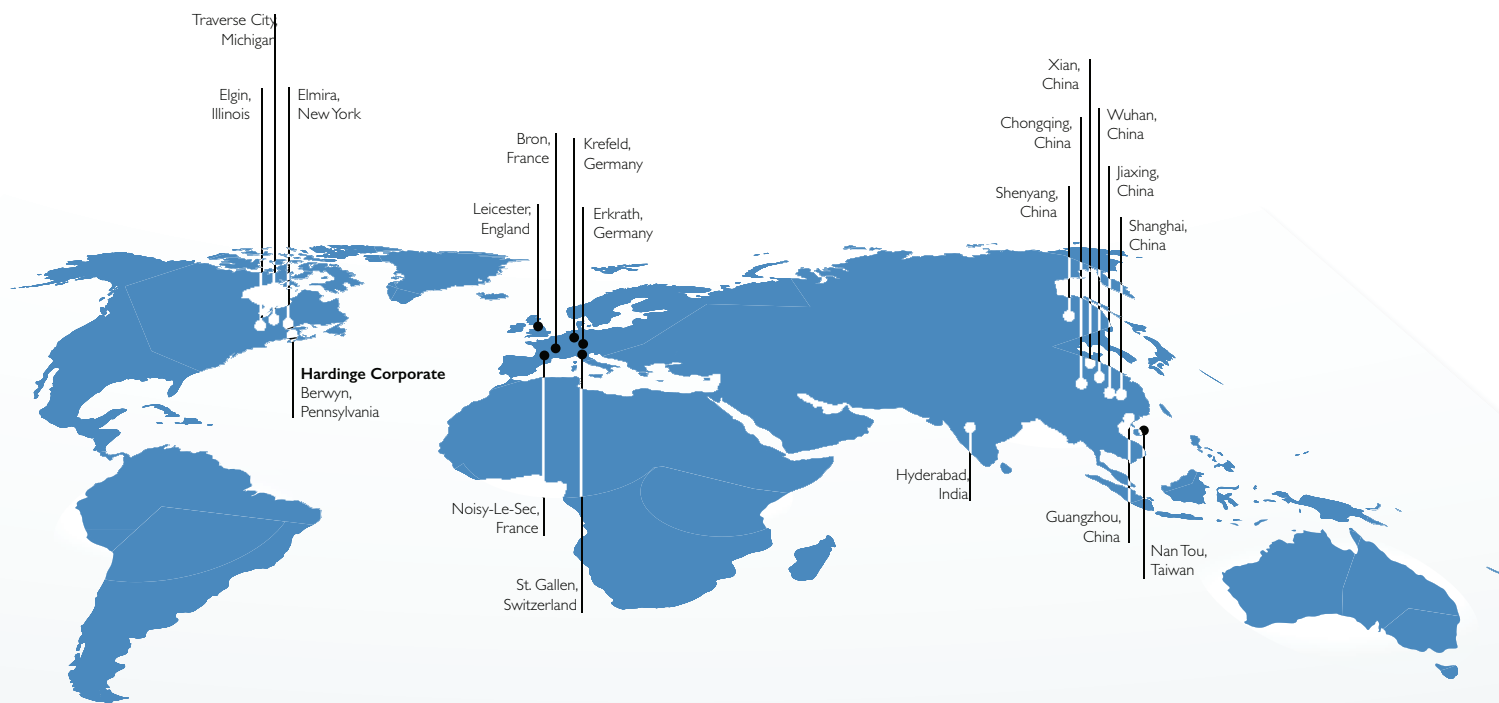


TOP VIEW

Main specifications		metric
Distance between centres	mm	600 / 1000
Centre height	mm	200
Weight of workpiece between centres	kg	100 / 200
Load on chucked work	Nm	100 / 320
Mains voltage required		3 x 380V/50 Hz // 3 x 460V/60Hz
Power consumption depending on equipment	A	35-63
Space required / length x width	mm	3000 x 3600/3400 x 3600
Longitudinal slide: Z-axis		
Travel	mm	750 / 1150
Rapid traverse speed	m/min	20
Resolution	µm	0.1
Wheelslide: X-axis		
Travel	mm	365
Rapid traverse speed	m/min	10
Resolution	µm	0.1
B-axis		
Resolution	°	0.00002°
Autom. indexing Hirth coupling	°	1°
Swiveling range	°	max. 270
Wheelhead general		
Oil-air lubrication spindle	kW	11.5
Wheel constant speed	m/s	50 / 63 (option)
Max. wheel diameter	mm	500
Internal grinding attachment		
Bore for spindles up to	mm	150
Greased internal grinding spindle max. speed	rpm	40'000 / 60'000
Oil-Air lubricated grinding spindle max. speed	rpm	42'000 / 60'000 / 90'000
Option HF-spindle converter output	kW	15~30

Workhead 100 / 150		
Rotational spindle speed	rpm	1000
Load with chucked work	Nm	100 / 320
Spindle nose / internal taper		MT5/ISO702-1, size 5
Tailstock 100 / 150		
Holding taper		MT4
Sleeve stroke	mm	48 / 50
Option micro-adjustment range	µm	±60/± 120
CNC control system		
Fanuc		Fanuc 31i
Measuring systems		
Gap Control		KEL-TOUCH
Active longitudinal positioning		Movomatic / Marposs
Passive longitudinal positioning		Movomatic / Marposs
In-process gauging		Movomatic / Marposs
Balancing		KEL-BALANCE
Machine accuracy ISO/GB standard (Option VDI3441)		
Repeatability position error X/Z	mm	<0.002
Position error X/Z	mm	<0.004
Roundness with chucked work	µm	<0.4

All specifications and designs are subject to alterations without notice



HARDINGE COMPANIES WORLDWIDE

Hardinge is a leading international provider of advanced metal-cutting solutions. We provide a full spectrum of highly reliable CNC turning, milling, and grinding machines as well as technologically advanced workholding accessories.

The diverse products we offer enable us to support a variety of market applications in industries including aerospace, agricultural, automotive, construction, consumer products, defense, energy, medical, technology, transportation and more.

We've developed a strong global presence with manufacturing operations in North America, Europe, and Asia. Hardinge applies its engineering and applications expertise to provide your company with the right machine tool solution and support every time.

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