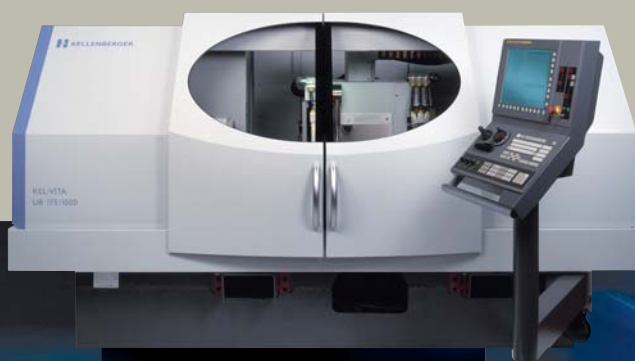


GRINDING



# KEL-VITA

The Perfect Universal  
CNC Grinding Machine



[www.kellenberger.net](http://www.kellenberger.net)

 **KELLENBERGER**

# KEL-VITA — The Perfect Universal CNC Grinding Machine

2



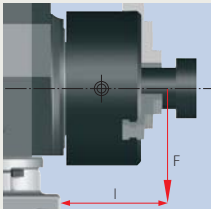
## Workhead

- n 1-1000 min-1



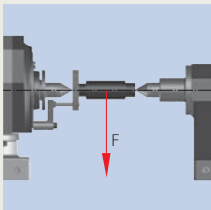
## C-axis light

for lightweight, unround components and threads



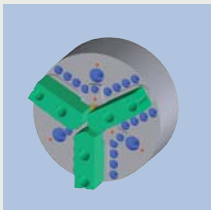
## Load with chucked work

- 100 Nm



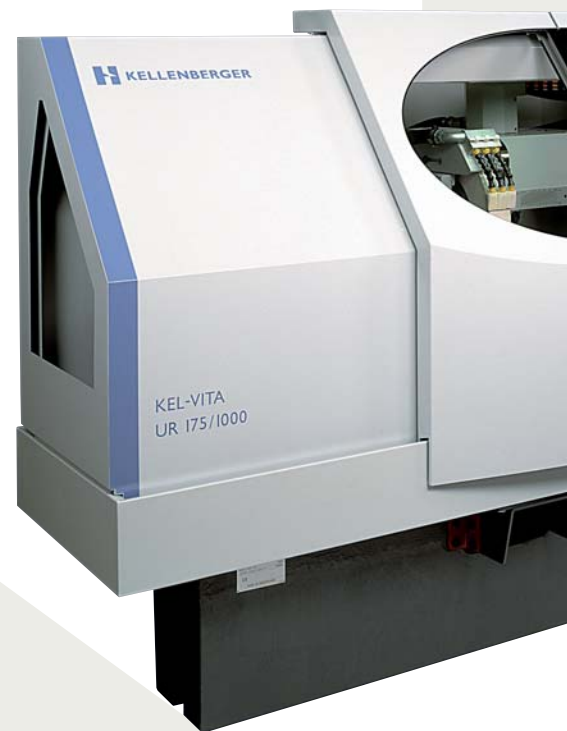
## Load between centres

- 100 kg



## Power-actuated clamping device

- Clamping force 5'000–20'000 N
- Power-actuated chuck  
3 KCHP 160



## Perfection at a glance



### CNC control system GE Fanuc 310is

- The latest generation control system with Windows CE
- Graphic programming with DXF import
- User guided ISO programming with expanded functionality
- Tool administration for a maximum of 99 grinding wheels
- Display of process data with various display variations
- USB, flash card and network connections

### Wheelhead

- 8 different wheelhead variations for every application
- Required power 10 kW
- Grinding wheel diameter up to 500 mm
- Peripheral speed of the grinding wheel up to 63 m/s
- HF internal grinding spindle up to 8 kW

### Table / slide

- Low-friction X-guide for the best infeed precision



- Low-wear Z-guide with circulation lubrication
- Glass measuring devices on X and Z axes
- High dynamics with rapid traverse speeds of 20 m/min. on the Z axis and 10 m/min. on the X axis

### Ergonomics

- Good visibility of the grinding process thanks to a generous viewing window
- Advanced optical and ergonomic design
- Clearly arranged, central interfaces on lower table for all table assemblies

- User-friendly and swivelling operator panel

### Costs

- Cost-optimised CNC – universal – grinding machine
- Economical C axis for light workpieces
- High utilisation of floor space

### Automation

- Standard solutions with mid-range autonomy
- Integrated loading cell with quick changeover times
- Flexible system thanks to robotic solution



- Tailstock**
  - morse taper 4
  - retraction of sleeve 48 mm



- Micro-adjustment of tailstock**
  - adjustment range +/- 60 µm



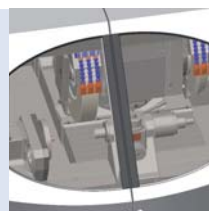
- High frequency dressing device**
  - for rotating dressing tools



- Equipment**
  - Arobotech-steady-rest

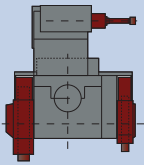


- Automatic sliding doors**
  - Relief of Operator
  - Faster workpiece change time



# KEL-VITA — Wheelheads

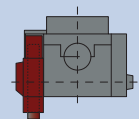
4



## UR-wheelhead

for external, internal and face grinding

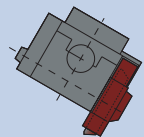
- v-constant for external grinding
- infinitely variable drive for external grinding



## R-wheelhead

for external cylindrical grinding

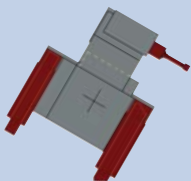
- v-constant



## RS-wheelhead

for Angular infeed grinding

- grinding lengths 400 / 800 mm
- v-constant



## URS-wheelhead

for Angular infeed grinding, internal and face grinding

- grinding lengths 400 / 800 mm



## Spindle bearings

- high accuracy spindle bearings pre-stressed



Ring sensor at the workhead

## Internal grinding

The noise is picked up with a ring sensor at the workhead and evaluated using a separate channel. Internal grinding is made more productive and process-reliable using the visual presentation of the signals.

Bore holes and also internal shoulders can be automatically sensed in an easy way using interplay with the Travelstick. The set-up time is shortened significantly as a result.

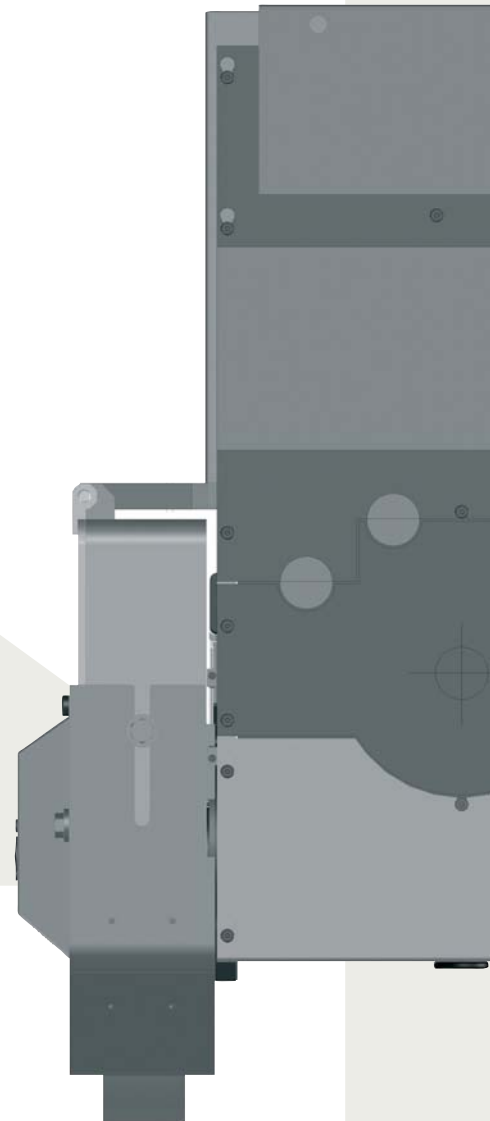
## UR/URS-Wheelhead

- Wheelhead for external and internal cylindrical, and for face grinding
- Internal grinding with variable peripheral wheel speed
- Thermal stability, thanks to optimized spindle bearings and a water-cooled motor
- Motor output 10 kW

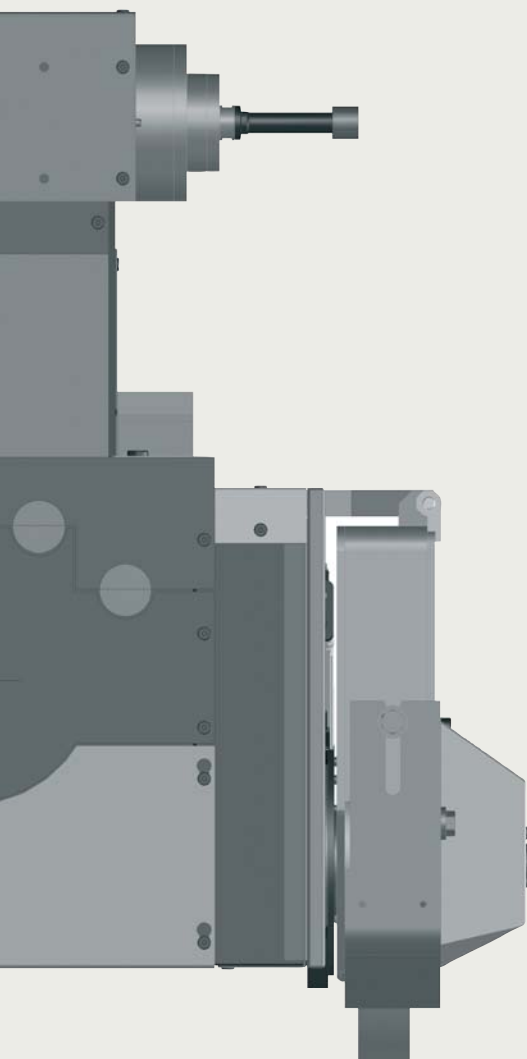
- Grinding wheel dimensions  $\varnothing 400 \times 63 \times 127$  mm or  $\varnothing 500 \times 80 \times 203$  mm

## RS/R-Wheelhead

- Wheelhead for external cylindrical- or angular infeed grinding
- Thermal stability, thanks to optimized spindle bearings and a water-cooled motor
- Motor output 10 kW
- Grinding wheel dimensions  $\varnothing 500 \times 80 \times 203$  mm

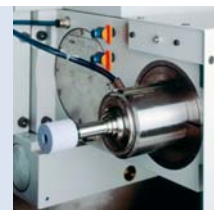


# Internal Grinding / Swivelling System / Accessories



## Internal grinding attachment

- Belt-driven internal grinding spindle
  - 828 = max. 28'000 min<sup>-1</sup>
  - 842 = max. 42'000 min<sup>-1</sup>
  - 860 = max. 60'000 min<sup>-1</sup>



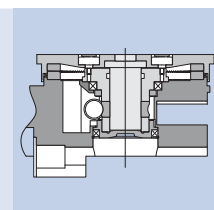
## Internal grinding attachment

- Internal grinding spindle
  - 1230 = max. 30'000 min<sup>-1</sup>
  - 1260 = max. 60'000 min<sup>-1</sup>
    - Frequency converter



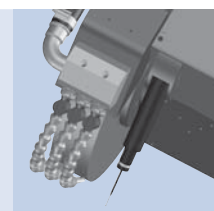
## Indexing

- manual indexing 2.5°
- automatic indexing 1°



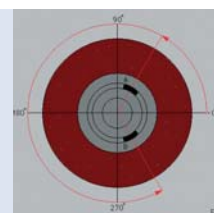
## Active flagging device KEL-POS

- determines component position in Z-axis
  - mounted on wheelhead



## KEL-BALANCE

- semi-automatic balancing for 1 or 2 wheels
- automatic balancing for 1 wheel



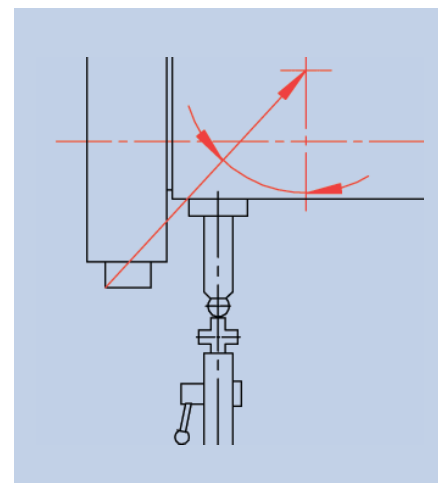
## Indexing axis

The Hirth coupling with indexing ensures excellent positioning and repetition accuracy. Depending on the application, swivel devices for manual or automatic positioning of the wheelhead can be supplied.

- Manual swivelling of the wheelhead, 2.5° indexing
- Automatic swivelling of the wheelhead, 1° indexing

## 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 KEL-ISO model/program. The Hirth coupling defines the location precision with a pitch of 1°.



Grinding wheel measurement system

# GEFanuc Control System 310is

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## Monitor

- 15" TFT
- Softkeys
- Expanded process data display



## Keypad

- Handwheel with confirmation key
- Travel stick
- Mobile handpanel as an option



## KEL-PROG

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



## KEL-GRAPH

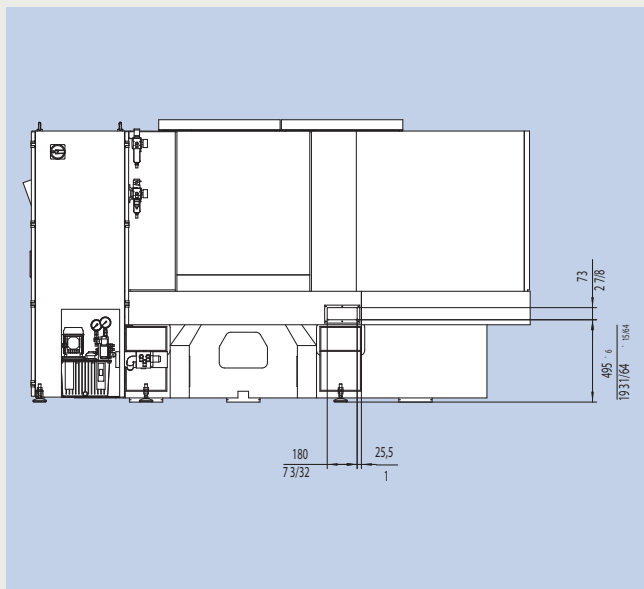
- Graphic programming
- Cylinders, radii, facets, tapers and contours
- DXF import via KEL-ASSIST



## KEL-TOOL

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

## Coolant outlet



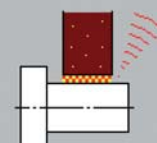
## Technical data

|  |                |  |             |
|--|----------------|--|-------------|
| Machine type                             |                | 600                                    | 1000        |
| <b>Main specifications</b>               |                |  |             |
| Distance between centres                 | mm             | 800                                    | 1000        |
| Grinding length                          | RS // URS      | mm                                     | 400         |
|  | R // UR        | mm                                     | 600         |
| Centre height                            | mm             | 175                                    |             |
| Weight of workpiece between centres      | kg             | 100                                    |             |
| Load on chucked work                     | Nm             | 100                                    |             |
| Mains voltage required                   |                | 3 x 400 V / 50 Hz // 3 x 460 V / 60 Hz |             |
| Power consumption depending on equipment | A              | 35 – 80                                |             |
| Space required / length x width          | mm             | 2400 x 2000                            | 3000 x 2000 |
| <b>Table / slide: Z-axis</b>             |                |  |             |
| Travel                                   | mm             | 750                                    | 1150        |
| Rapid travers speed                      | m/min          | 20                                     |             |
| Resolution                               | um             | 0.1                                    |             |
| Swiveling range of upper table           | degree         | 9                                      |             |
| <b>Wheelslide: X-axis</b>                |                |  |             |
| Travel                                   | mm             | 350                                    |             |
| Rapid travers speed                      | m/min          | 10                                     |             |
| Resolution                               | um             | 0.1                                    |             |
| <b>Swivel devices</b>                    |                |  |             |
| Autom. indexing                          | Hirth coupling | degree                                 | 1           |
| Man. indexing                            | Hirth coupling | degree                                 | 2,5         |
| Swiveling range of upper table           | degree         | + 90 – 190                             |             |
| <b>Wheelhead general</b>                 |                |  |             |
| Drive motor water-cooled                 | kW             | 10                                     |             |
| Peripheral grinding wheel speed          | m/s            | 35 / 45                                |             |
| <b>Wheelhead R // UR</b>                 |                |  |             |
| Grinding wheel dimension lefthand side   | mm             | 400 // 500                             |             |
| Options                                  | mm             | different dimensions                   |             |
| Grinding wheel dimension righthand side  | mm             | 300 // 400                             |             |
| Options                                  | mm             | different dimensions                   |             |

## Control System / KEL-ISO / Accessories

**KEL-TOUCH**

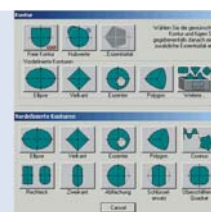
- GAP control with up to 3 sensors
- Operation and display integrated in the control system

**KEL-ASSIST**

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

**KEL-POLY**

- SW package for the preparation of unround-grinding programmes
- Correction of deviations in heights of centres

**Movomatic**

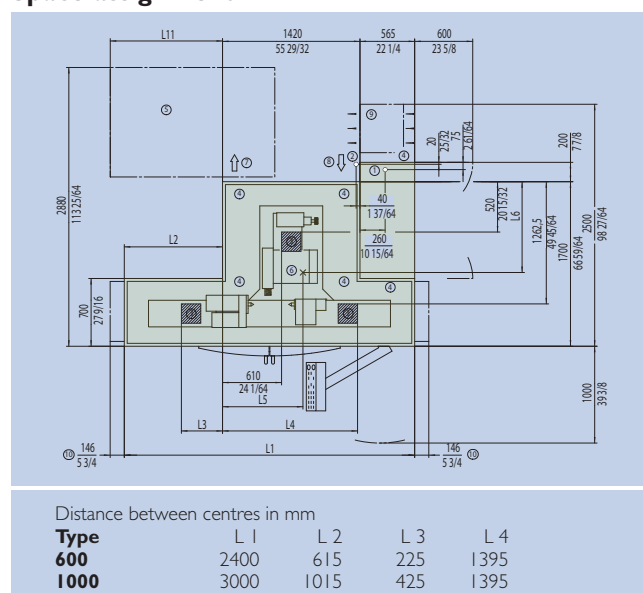
- Control unit ESZ 400
- Maximum 4 digital measuring heads
- Display and operation on ancillary panel

**Marposs**

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



|   |        |                              |
|---|--------|------------------------------|
| <b>Wheelhead RS // URS</b>                      |        |                              |
| Grinding wheel dimension righthand side         | mm     | 400 // 500                   |
| Options   | mm     | different dimensions         |
| Grinding wheel dimension lefthand side          | mm     | 400                          |
| Options   | mm     | different dimensions         |
| <b>Internal grinding attachment</b>             |        |                              |
| Bore for spindle                                | mm     | 80 / 120                     |
| Rotational spindle speed, motor infinitely var. | min-1  | 6000 - 21 000                |
| Motor output                                    | kW     | 3                            |
| HF-spindles Option                              | kW     | 5.2 / 8                      |
| <b>Workhead</b>                                 |        |                              |
| Rotational spindle speed                        | min-1  | 1 - 1000                     |
| Driving torque spindle                          | Nm     | 24                           |
| Spindle nose / internal taper                   |        | MT 5 // DIN 55026 #5 / ASA 5 |
| Swiveling range                                 | degree | - 10 + 100                   |
| <b>Tailstock</b>                                |        |                              |
| Internal taper                                  |        | MT 4                         |
| Retraction of sleeve                            | mm     | 48                           |
| Micro-adjustment optional                       | um     | + / - 60                     |
| <b>CNC control system</b>                       |        |                              |
| GE Fanuc  |        | 310 is-A                     |
| <b>Measuring systems</b>                        |        |                              |
| Gap Control                                     |        | KEL-TOUCH                    |
| Active longitudinal positioning                 |        | Movomatic // Marposs         |
| Passive longitudinal positioning                |        | Movomatic // Marposs         |
| In-process gauging                              |        | Movomatic // Marposs         |
| Balancing                                       |        | KEL-BALANCE                  |

**Space-assignment**

# Competence and a world-wide partnership



First-class sales and service organization for all the major international markets with local well-trained staff. KELLENBERGER guarantees expert advice and support for evaluation, purchase, installation and services of our high-quality grinding systems.

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