





# KRONOS L 660

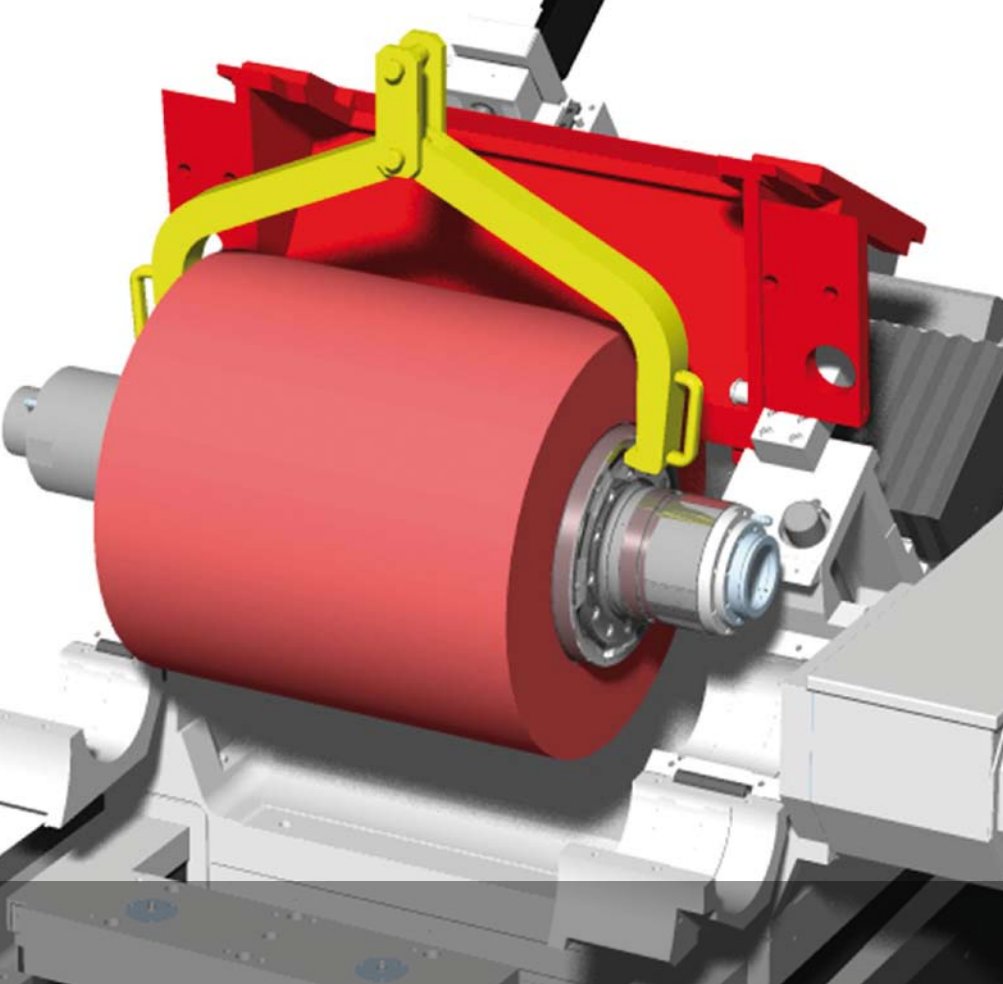
## big performance for big workpieces

The KRONOS L 660 is suited for processing large workpieces. Specially designed and equipped for high performance and high volume, this machine boasts a number of technical enhancements. It brings immediate cost-cutting benefits for the production user, e.g. a higher removal performance and even further reduction of auxiliary processing and changeover times.

The carriage systems for grinding and regulating spindles, arranged on the machine bed and pivoting carriage, and equipped with vibration-damped roller circulation guidance, are precise, clearance-free and low-friction. Within the design of the guiding system, much emphasis was placed on the effective seal of the guidances. The infeed of both carriages takes place by means of a servo drive via a clearance-free pre-clamped recirculating ball spindle. Standard built-in linear measuring systems control the exact positioning of the infeed axes.

The KRONOS L 660 is equipped with a fixed grinding gap, enabling simple automation or chaining without compensating axis. This is especially advantageous for handling of long and heavy parts. For plunge cut grinding and in particular for throughfeed grinding, dressing of the regulating wheel geometry takes place with special Mikrosa software without having to mechanically adjust the regulating wheel dresser. As a result, changeover and adjustment times are shortened, and regulating wheel geometry is exactly reproduced.





### Technical Data KRONOS L 660

#### Grinding area

Workpiece diameter	mm	5-250
Grindable workpiece length, max. for plunge cut grinding	mm	655

#### Grinding wheel

Diameter, maximum	mm	660
Width, maximum	mm	660
Bore	mm	304,8
Circumferential speed	m/s	63
Option CBN	m/s	90/120
Drive output	kW	60/100

#### Regulation wheel

Diameter, maximum	mm	400
Width, maximum	mm	660
Bore	mm	203,2
Speed range, infinite	min <sup>-1</sup>	5...300
Dressing speed	min <sup>-1</sup>	700
Drive output	kW	12

#### Dimensions

Set-up area required (incl. switch cabinet)	mm	6.850x3.300
max. height	mm	2.100

#### Machine weight

kg	18.500
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## Application damper piston rod Throughfeed grinding

Workpiece	Material	Hardness
Kolbenstange		C45
	HB 299-255	soft
	HRC >64	hard chromium plated
<b>Delivery dimensions</b>	Ø 22 x 419	mm
Stock removal	0,3 -0,02	mm
Straightness	30	µm
Roundness	20	µm

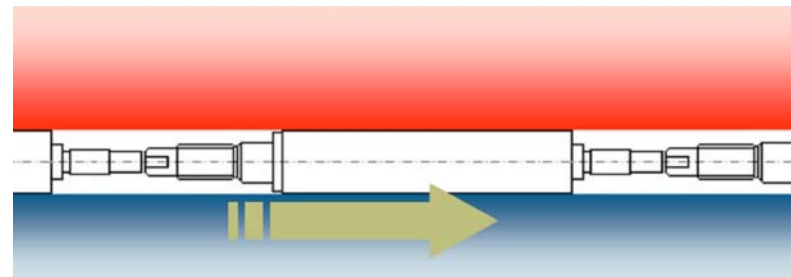
Accuracy	machining before..	..after heat treatment
Surface quality (Ra)	≤ 0,1	≤ 0,08 µm
Diameter tolerance Ø	≤ 10,0	≤ 8,0 µm
Roundness	≤ 8,0	≤ 5,0 µm
Straightness	≤ 25,0	≤ 25,0 µm
<b>Cycle time</b>		
Number of operations	2	1
Throughfeed speed	5m / min	1m / min



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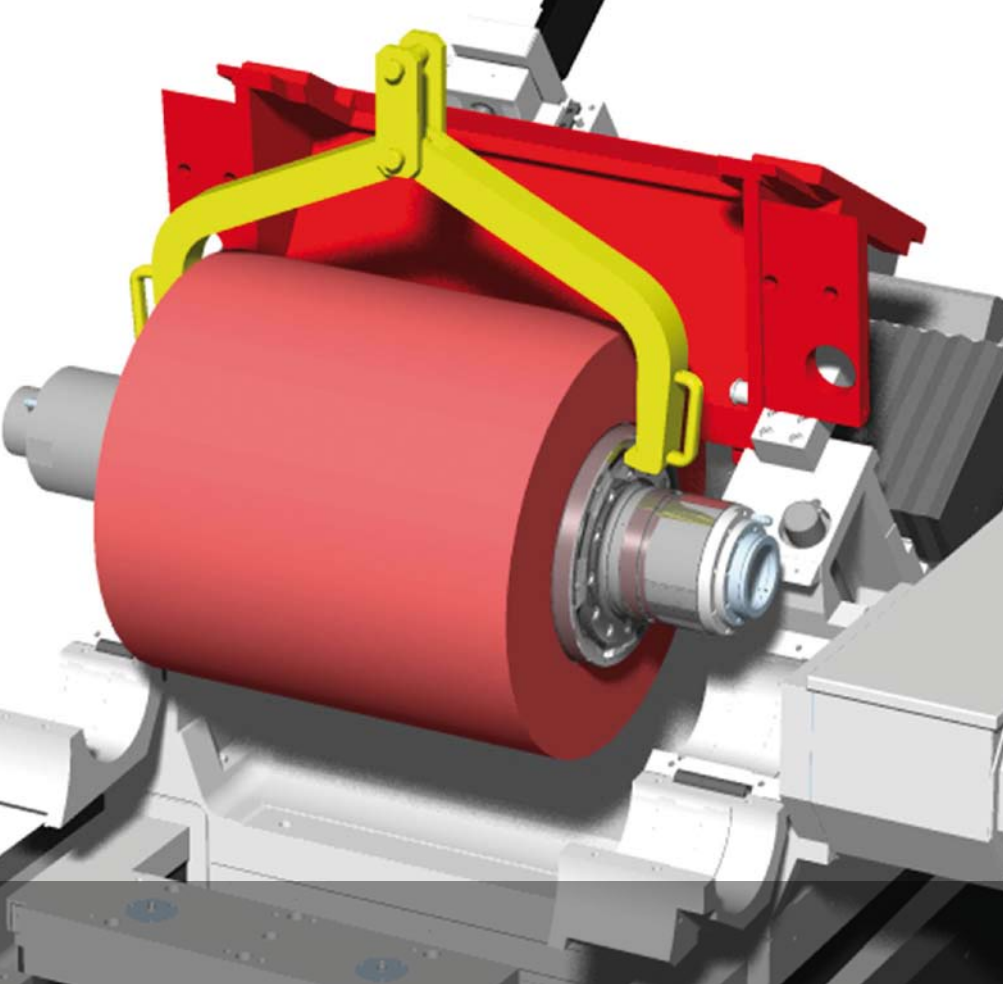
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#### Grinding wheel

Diameter, maximum	mm	660
Width, maximum	mm	660
Bore	mm	304,8
Circumferential speed	m/s	63
Option CBN	m/s	90/120
Drive output	kW	60/100

#### Regulation wheel

Diameter, maximum	mm	400
Width, maximum	mm	660
Bore	mm	203,2
Speed range, infinite	min <sup>-1</sup>	5...300
Dressing speed	min <sup>-1</sup>	700
Drive output	kW	12

#### Dimensions

Set-up area required (incl. switch cabinet)	mm	6850x3300
max. height	mm	2100

#### Machine weight

kg	18500
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## Application shifter shaft double production

<b>Workpiece</b>	Material	Hardness
Shaft	15C3	soft
<b>Dimensions</b>	Ø 20 x 280	mm
Stock removal Ø	0,15...0,20	mm
Run out	> 0,02	mm



#### Accuracy

Surface quality (Rz)	≤ 2,5	µm
Diameter tolerance (Cmk ≤ 1,67)	≤ 9,0	µm
Roundness	≤ 1,5	µm
Cylindricity	≤ 3,0	µm

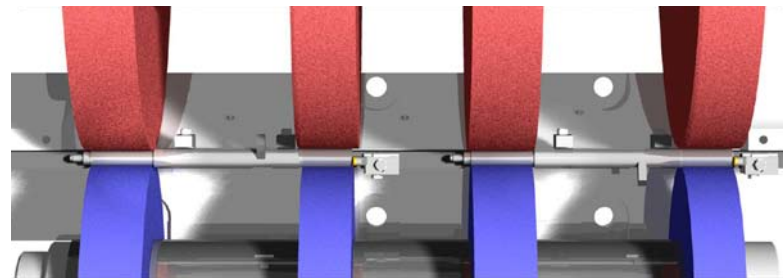
#### Cycle time

Grinding time for two parts	7,00	sec
Cycle time	4,00	sec
output per hour - 100% capacity	600	units

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## ideal for the precision machining of small workpieces

The basis of this machine is the thermally stable and vibration-damping mineral cast machine bed. The cross-slide systems for the grinding wheel and control wheel offer not only tremendous flexibility in grinding, they also give the KRONOS S125 the full functionality of a conventional centerless type grinding machine with 7 CNC axes.

The KRONOS S125 is provided with a hybrid grinding spindle bearing for speeds up to 120 m/s.

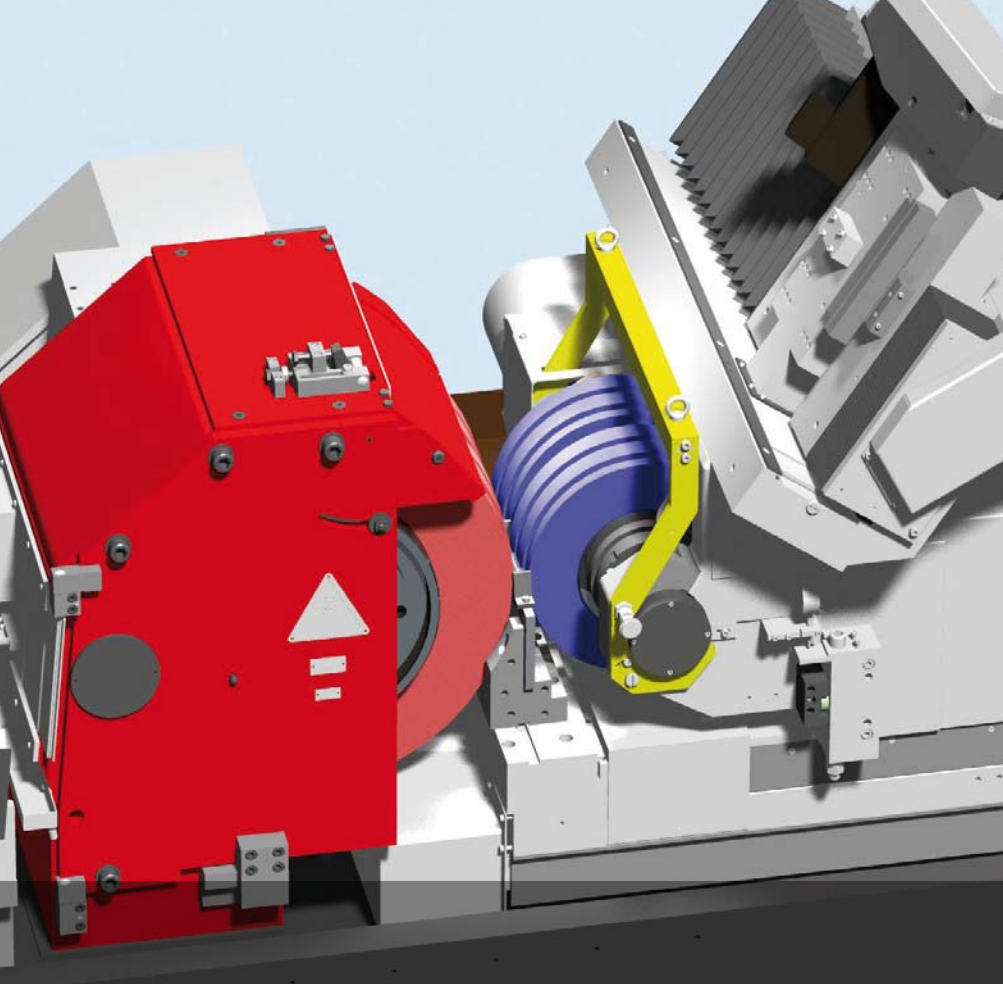
This can be used in conjunction with CBN high-speed technology to reduce cycle time and thus greatly increase cost-effectiveness. As is usual with Mikrosa, the KRONOS S125 was optimised during its development with respect to stability and vibration behaviour and, after construction, was subject to modal analysis. This allows high productivity manufacture of workpieces to the highest quality.

Efficiency also has a lot to do with user-friendly control. Mikrosa grinding machines are equipped with Siemens state-of-the-art digital control and drive technology: the Sinumerik 840D control and Simodrive drive technology.

These digital drives offer high accuracy and fast feed speeds. Operation, set up, changeover, truing up and programming for demanding grinding projects are easy to learn.

A special user interface was designed by Mikrosa on the Siemens user interface and supplemented with an easily understood symbol image technology. Thus even simpler programming is possible with this.





## Technical Data KRONOS M 250

### Grinding area

Workpiece diameter	mm	1.5 - 100
Grindable workpiece length, max. for plunge cut grinding	mm	245

### Grinding wheel

Diameter, maximum	mm	610
Width, maximum	mm	250
Bore	mm	304.8
Circumferential speed	m/s	63
Option CBN	m/s	120
Drive output	kW	22

### Regulation wheel

Diameter, maximum	mm	350
Width, maximum	mm	250
Bore	mm	127/152
Speed range, infinite	min <sup>-1</sup>	5-600
Dressing speed	min <sup>-1</sup>	600
Drive output	kW	5,7

### Dimensions

Set-up area required (incl. switch cabinet)	mm	5.450x3.050
max. height	mm	2.000

### Machine weight

kg	10.500
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# Application shaft double production

### Workpiece

Material	25MoCr4E
Hardness	58+4HRC

### Dimensions

Stock removal	Ø 16 x 95 mm 0,4 mm
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### Accuracy

Diameter tolerance	≤ 9,0 µm
Roundness	≤ 3,0 µm
Cylindricity	≤ 5,0 µm
Surface (Rz)	≤ 1,6 µm

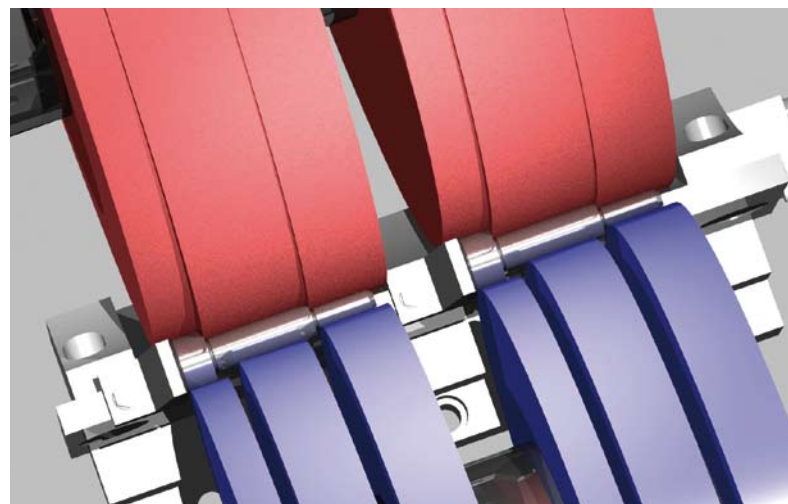
### Cycle time

Two workpieces at the same time (double production)	
Grinding time (2 shafts)	19,5 sec
Cycle time (2 shafts)	24,0 sec

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# KRONOS M 250

## modular & flexibel

The modular construction of the KRONOS M 250 / KRONOS M 400 with 6 (optionally 7) CNC axes enables optimum adaptation to the grinding project. The basis of the KRONOS M consists of a Granitan® machine bed with high temperature stability and excellent damping qualities. The grinder can be outfitted with either an overhung bearing grinding spindle (KRONOS M 250) or a portal-bearing grinding spindle (KRONOS M 400), depending on the grinding project.

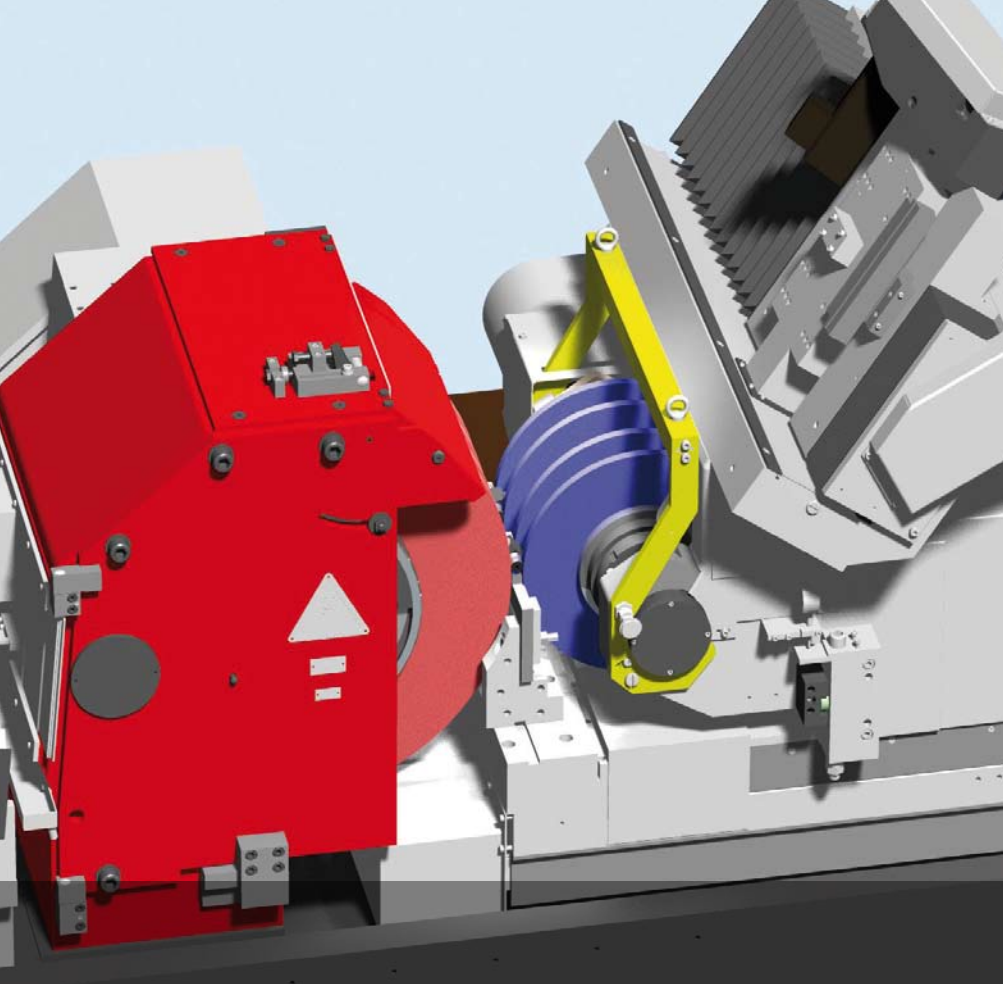
The high-precision grinding spindles with roller bearing reach normal grinding wheel circumferential speeds of 63 m/s. Grinding spindles with hybrid ceramic spindle bearings can reach grinding wheel circumferential speeds of 120 m/s and reduce the cycle time in connection with CBN high speed technology, resulting in considerably higher profitability.

For the highest grinding quality, optional grinding spindles with hydrodynamic bearings can be used, which run very quietly and have a very long life expectancy.

- High system rigidity due to regulating spindle with bearings on both side and rigid carriage system
- Grinding spindle with maintenance-free hybrid ceramic spindle bearings for a maximum speed of 120 m/s
- Grinding spindle with hydrodynamic bearings for quiet operation, highest grinding quality and long life
- The axes may be adjusted in increments of 0.1  $\mu\text{m}$ .







## Technical Data KRONOS M 250

### Grinding area

Workpiece diameter	mm	1.5 - 100
Grindable workpiece length, max. for plunge cut grinding	mm	245

### Grinding wheel

Diameter, maximum	mm	610
Width, maximum	mm	250
Bore	mm	304.8
Circumferential speed	m/s	63
Option CBN	m/s	120
Drive output	kW	22

### Regulation wheel

Diameter, maximum	mm	350
Width, maximum	mm	250
Bore	mm	127/152
Speed range, infinite	min <sup>-1</sup>	5-600
Dressing speed	min <sup>-1</sup>	600
Drive output	kW	5,7

### Dimensions

Set-up area required (incl. switch cabinet)	mm	5.450 x 3.050
max. height	mm	2.000

### Machine weight

kg	10.500
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# Application Cross Pin double production

## Workpiece

Material	20MnCr5
Hardness	HRC62

## Dimensions

Stock removal	Ø 15.6 x 74 mm
	0.25 mm



## Accuracy

Diameter tolerance	≤ 6,0 µm
Roundness	≤ 1,2 µm
Cylindricity	≤ 1,5 µm
Surface (Rz)	≤ 3,0 µm

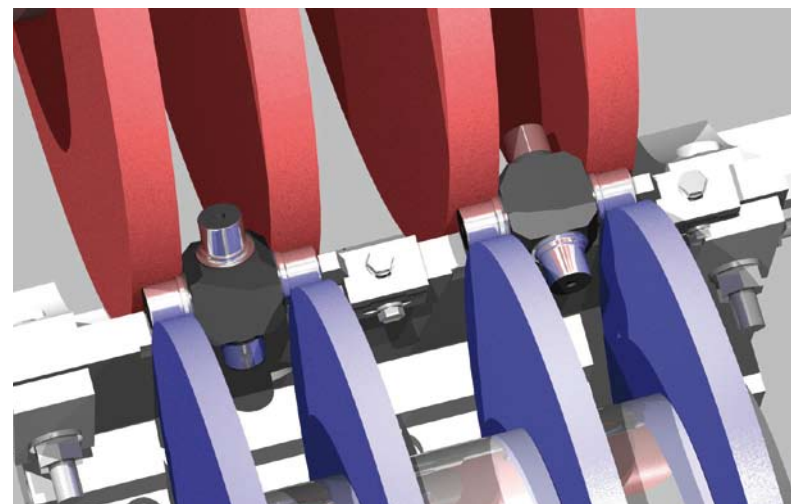
## Cycle time

Grinding time per cross pin pair	14 sec
Cycle time per cross pin pair	20 sec
Cycle time for 2 finish ground cross pins	40 sec

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## modular & flexibel

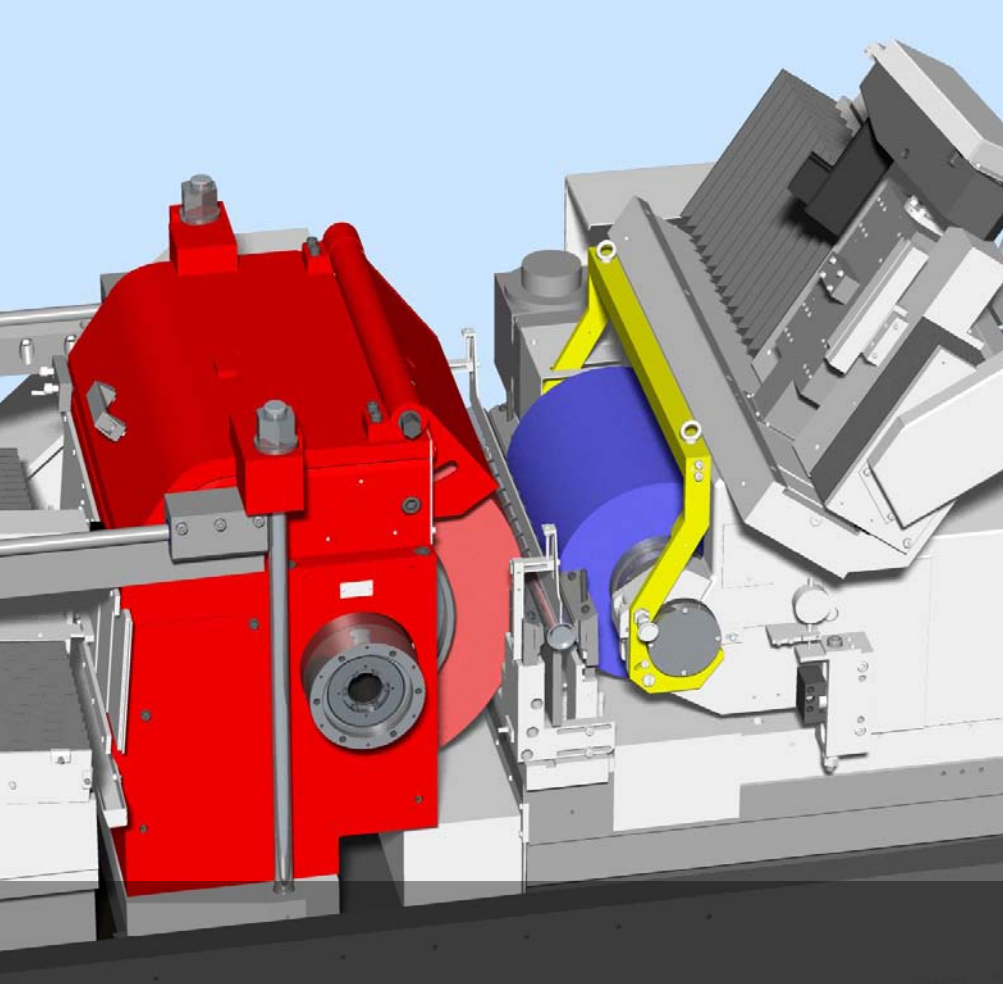
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- High system rigidity due to regulating spindle with bearings on both side and rigid carriage system
- Grinding spindle with maintenance-free hybrid ceramic spindle bearings for a maximum speed of 120 m/s
- Grinding spindle with hydrodynamic bearings for quiet operation, highest grinding quality and long life
- The axes may be adjusted in increments of 0.1  $\mu\text{m}$ .





## Technical Data KRONOS M 400

### Grinding area

Workpiece diameter	mm	1,5 - 100
Grindable workpiece length, max. for plunge cut grinding	mm	395

### Grinding wheel

Diameter, maximum	mm	610
Width, maximum	mm	400
Bore	mm	304,8
Circumferential speed	m/s	63
Option CBN	m/s	120
Drive output	kW	37/60

### Regulation wheel

Diameter, maximum	mm	350
Width, maximum	mm	400
Bore	mm	127/152
Speed range, infinite	min <sup>-1</sup>	5-450
Dressing speed	min <sup>-1</sup>	450
Drive output	kW	5,7

### Dimensions

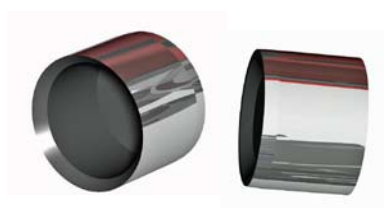
Set-up area required (incl. switch cabinet)	mm	5.450x3.050
max. height	mm	2.000

### Machine weight

kg	11.000
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# Application bearing cup Throughfeed grinding

<b>Workpiece</b>	Material	Hardness
Bearing cup	16MnCr5	
<b>Dimensions</b>	Ø 48 x 36 mm	
Stock removal	0,40 mm	



### Accuracy

Surface (Rz)	≤ 2,5	µm
Diameter tolerance Ø	≤ 16,0	µm
Roundness	≤ 4,0	µm
Straightness	≤ 4,0	µm
Parallelism	≤ 5,0	µm

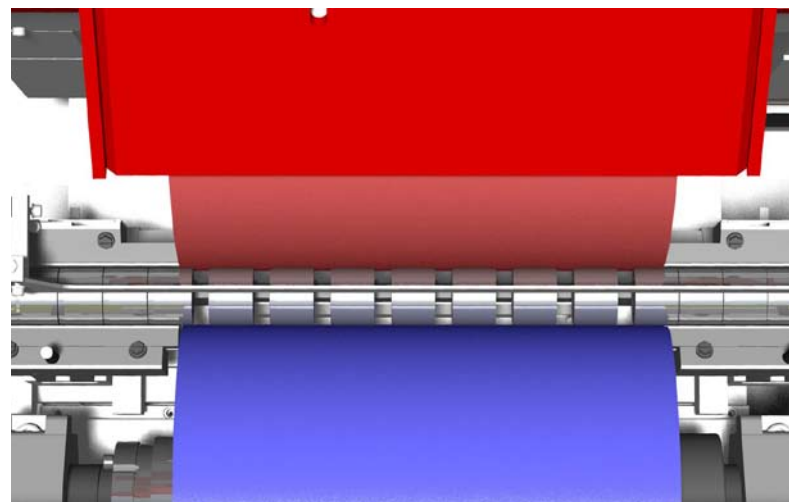
### Cycle time

Number of operations	1
Throughfeed speed	0,8 m/min

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# KRONOS M 400

## modular & flexibel

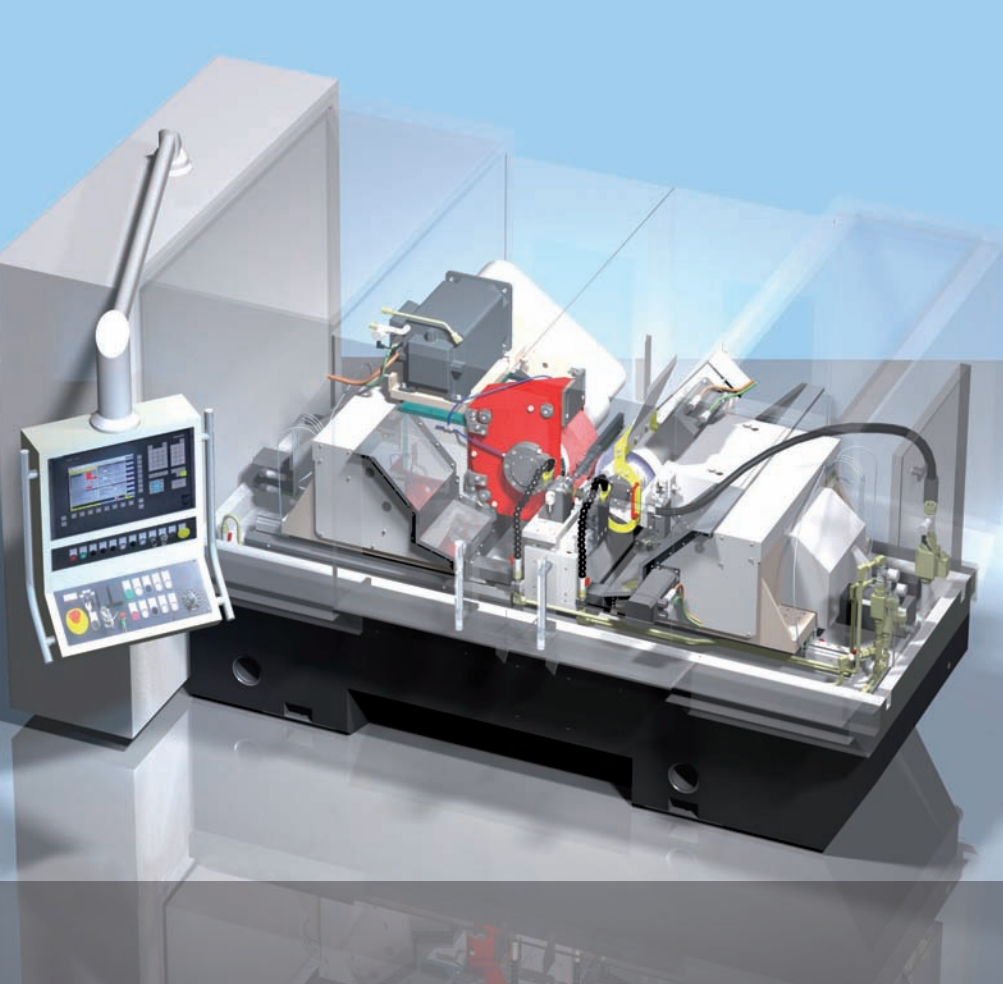
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- The axes may be adjusted in increments of 0.1  $\mu\text{m}$ .





## Technical Data

### Grinding area

Workpiece diameter	mm	0,5 - 30
Grindable workpiece length, max. for plunge cut grinding	mm	120

### Grinding wheel

Diameter, maximum	mm	400
Width, maximum	mm	125
Bore	mm	203,3
Circumferential speed	m/s	63
Option CBN	m/s	120
Drive output	kW	11/15

### Regulation wheel

Diameter, maximum	mm	250
Width, maximum	mm	125
Bore	mm	127
Speed range, infinite	min <sup>-1</sup>	5-500
Dressing speed	min <sup>-1</sup>	1000
Drive output	kW	5

### Dimensions

Set-up area required (incl. switch cabinet)	mm	5800x3400
max. height	mm	2100

### Machine weight

kg	6700
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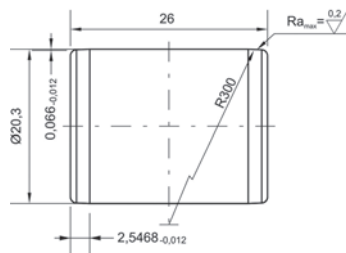
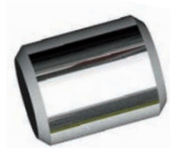
# Application cylinder roll

## Rough part

Material	100Cr6
Hardness	62 ±2 HRC

## Dimensions

Stock removal Ø 1. operation	Ø 20,3 × 26 mm	0,25 mm
Stock removal Ø 2. operation		0,05 mm



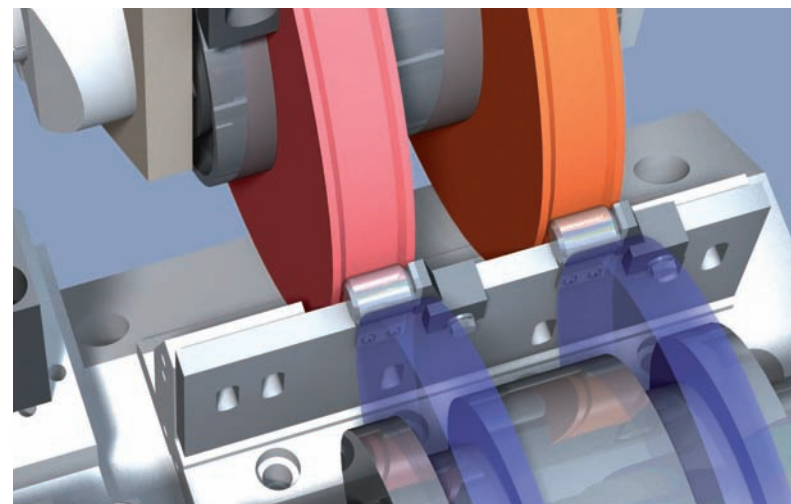
## Accuracy

	intension	achived
Diameter tolerance	±1,5 μm	±1,00 μm
Roundness	<0,5 μm	<0,40 μm
Cylindricity	<1,0 μm	<0,70 μm
Surface quality (Ra)	<0,2 μm	<0,12 μm

## Capacity

Grinding time	18,0 s
Cycle time (without dressing)	21,0 s

Operation 1 and operation 2 are grinded parallel (at the same time)



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# KRONOS S 125

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The KRONOS S125 is provided with a hybrid grinding spindle bearing for speeds up to 120 m/s.

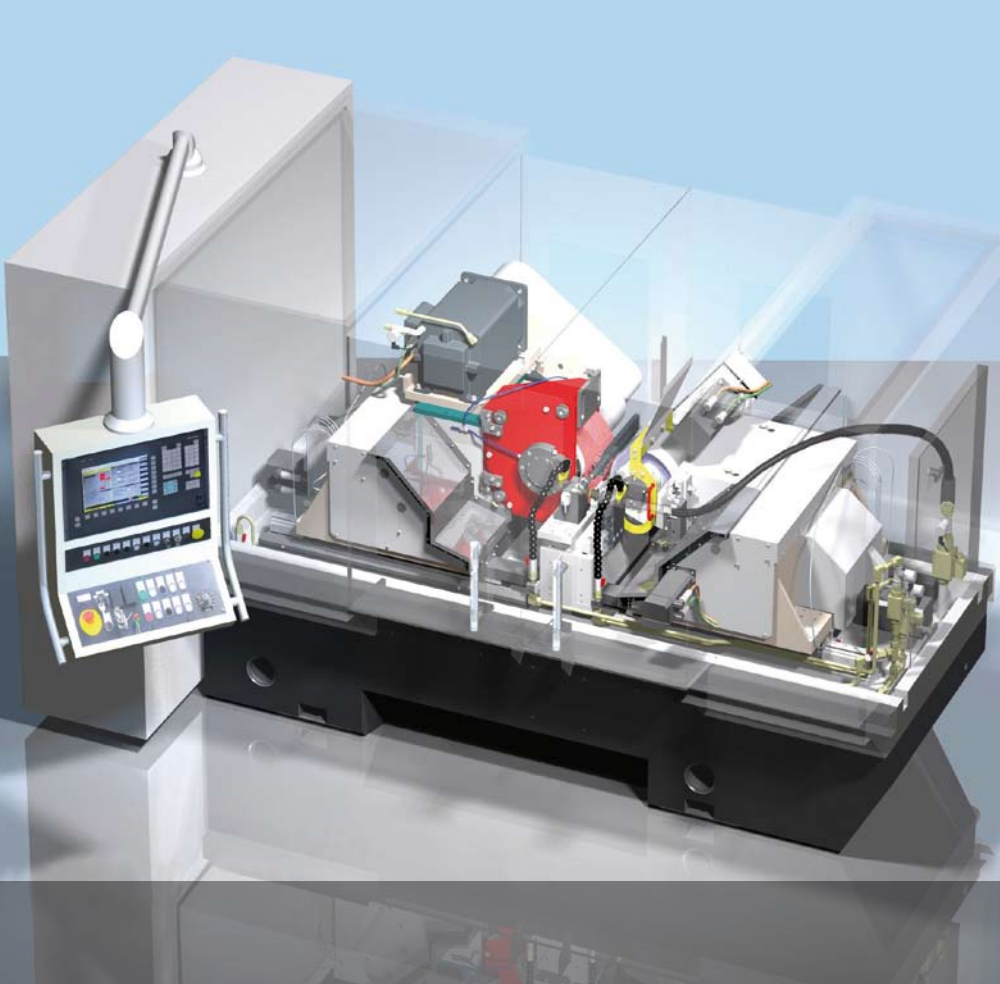
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## Technical Data KRONOS S 125

### Grinding area

Workpiece diameter	mm	0,5 - 30
Grindable workpiece length, max. for plunge cut grinding	mm	120

### Grinding wheel

Diameter, maximum	mm	400
Width, maximum	mm	125
Bore	mm	203,2
Circumferential speed	m/s	63
Option CBN	m/s	120
Drive output	kW	11/15

### Regulation wheel

Diameter, maximum	mm	250
Width, maximum	mm	125
Bore	mm	127
Speed range, infinite	min <sup>-1</sup>	5-500
Dressing speed	min <sup>-1</sup>	1000
Drive output	kW	5

### Dimensions

Set-up area required (incl. switch cabinet)	mm	5800x3400
max. height	mm	2100

### Machine weight

kg	6700
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# Application dental tool double production

### Workpiece

Needle Material X3CrNiN17-8

### Dimensions

Stock removal Ø Ø 1,2 x 41 mm  
max. 1,1 mm

### Accuracy

Surface quality (Rz)	intension	achived
< 6,0	< 4,0	µm
Diameter tolerance Ø	± 25,0	± 12,5
		µm

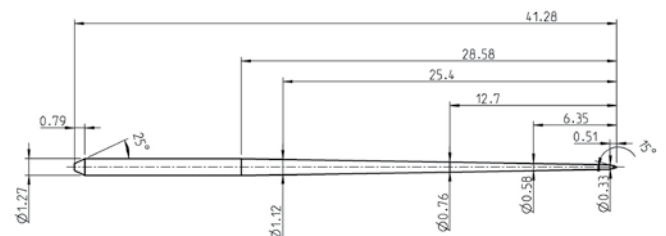
### Cycle time

Number of operations	1
2 pieces are ground parallel (at the same time)	
Grinding time	4,50 sec
Cycle time	4,00 sec
Cycle time per part	4,25 sec



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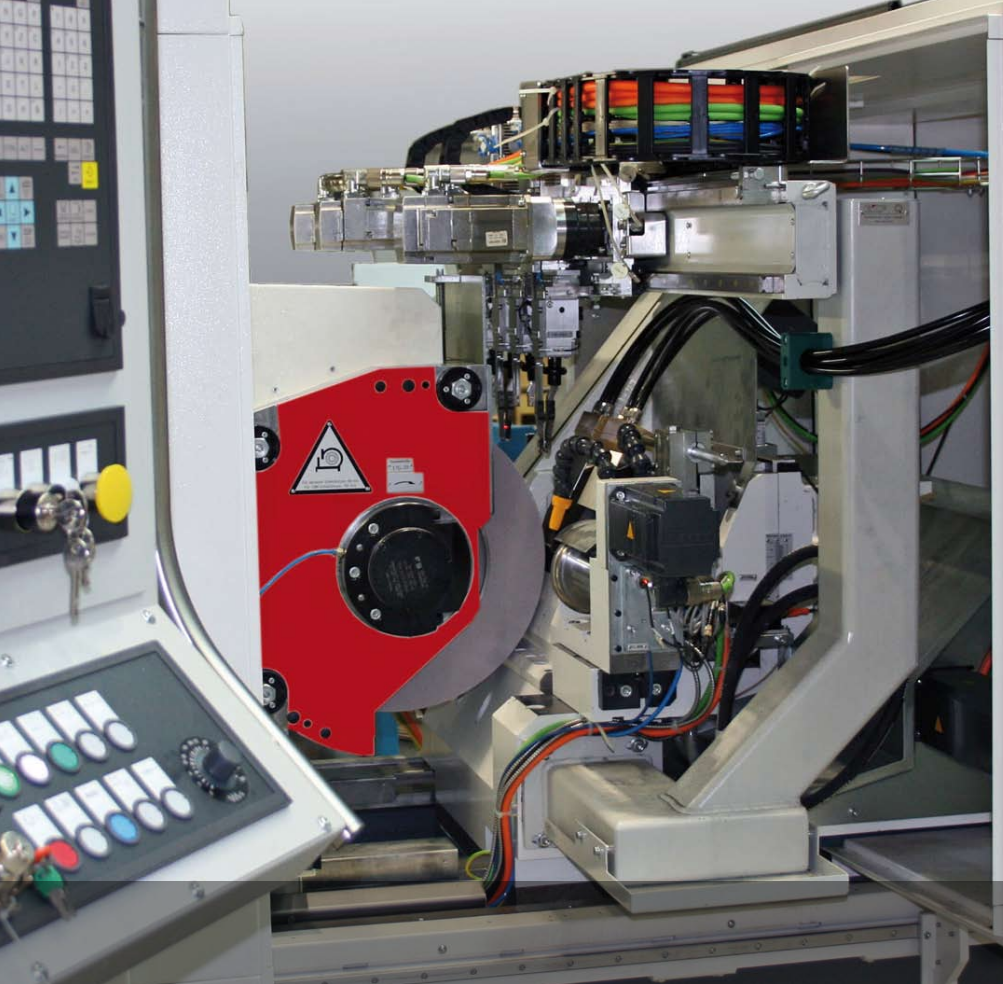
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## Technical Data KRONOS S 250

### Grinding area

Workpiece diameter	mm	1,5 - 35
Grindable workpiece length, max. for plunge cut grinding	mm	245

### Grinding wheel

Diameter, maximum	mm	450
Width, maximum	mm	250
Bore	mm	203,2
Circumferential speed	m/s	80
Option CBN	m/s	120/150
Drive output	kW	15

### Regulation wheel

Diameter, maximum	mm	250
Width, maximum	mm	250
Bore	mm	127
Speed range, infinite	min <sup>-1</sup>	5-500
Dressing speed	min <sup>-1</sup>	1000
Drive output	kW	5,0

### Dimensions

Set-up area required (incl. switch cabinet)	mm	5.700 x 4.000
max. height	mm	2.100

<b>Machine weight</b>	kg	8.000
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# Application control piston 6° angled infeed grinding

<b>Workpiece</b>	Material	Hardness
Control piston	C45	soft

<b>Dimensions</b>	Ø 16 (35) x 205	mm
Stock removal OD	0,20	mm
Stock removal face	0,08	mm

<b>Accuracy</b>		
Roundness OD	≤1,10	µm
Roundness cone	≤1,20	µm
Surface (Ra)	≤0,12	µm
Diameter tolerance Ø	≤2,00	µm

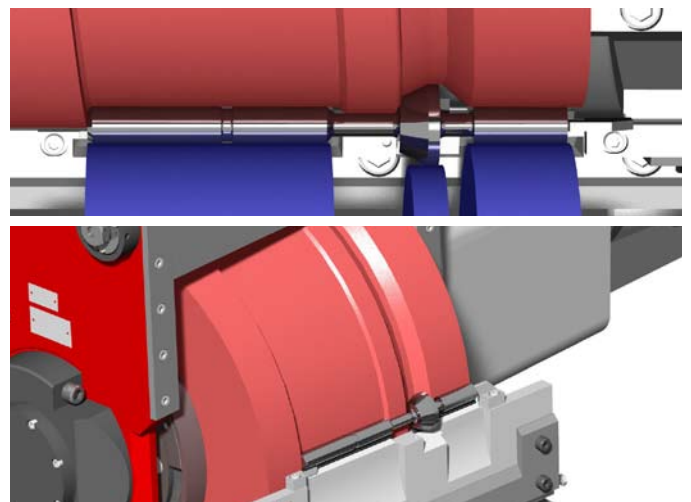
<b>Cycle time</b>		
Grinding time	18,0	sec
Cycle time	21,0	sec

Grinding of OD and face in a single operation

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# KRONOS S 250

## Precision for small workpieces

The centerless grinding machine KRONOS S 250 is designed for infeed and throughfeed grinding of workpieces in the diameter range of 1.5 to 35 mm and an infeed width of up to 245 mm. The utilisation of high-performance grinding wheel spindles and maintenance-free hybrid roller bearings allows to use CBN grinding wheels with a peripheral speed up to 150 m/s.

Offset of workpieces in the grinding gap and of grinding wheels as well as the slogan of multiple production are only some of the terms characterizing this concept. This machine also enables well-directed grinding of diameter and front face in only one operation by using a 6° angled spindle unit. Oscillating grinding with a distance of  $\pm 50$  mm is a further possibility for center-less machining of extremely hard materials.

Another highlight of this machine is the special dressing system for the grinding and regulating wheels by means of 4 CNC axes in the centre on the workpiece level. For the grinding wheel dressing, there are optionally stationary or rotating dressers available, which can quickly be changed.

The stationary grinding gap allows to use low-cost automation equipment, which does not require any follow-up axis. An integrated handling system with an interface for external transport and palletizing devices can be offered as standard.

The full-size housing of the machine complies with the strictest environmental requirements, so that various coolant types, such as emulsions and grinding oil, can be used.

