

TECHNICAL DATASHEET  
CNC-Bevel Gear Cutting Machine

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Manufacturer	<b>KLINGELNBERG</b>
Type	<b>OERLIKON C42</b>
Control	<b>SINUMERIK 840 D</b>
Built	<b>2005</b>

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Oerlikon C42 - Picture: Klingelberg

The OERLIKON C42 is a spiral bevel gear cutting machine, designed for soft cutting of spiral bevel and hypoid gears. The machine processes workpieces up to size  $\varnothing$  425mm with normal modulus 1,5 - 8,5 mm in continuous process and workpieces with normal modulus 1,5 - 9 mm in single piece process.

It is designed for medium and large series production of spiral bevel gears and hypoid gears, and particularly meets the requirements of "commercial vehicle size".

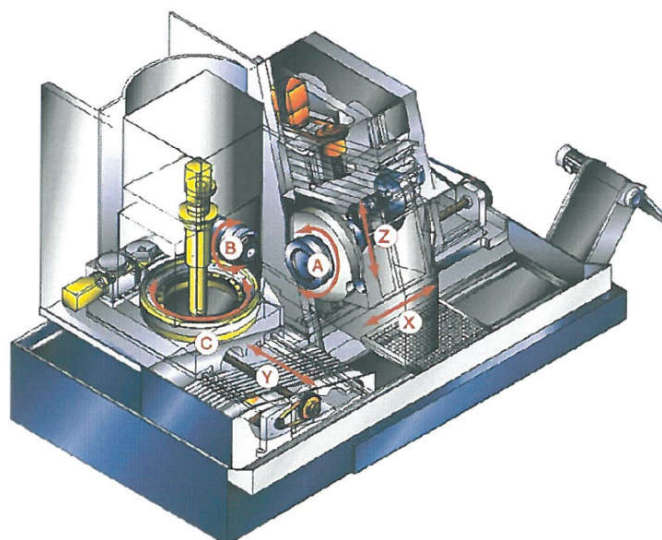
The CNC axes, which are very simple in design and generously dimensioned, ensure a high system rigidity of this machine and thus form the basis for the application of all gearing processes relevant in practice (continuous and single-part processes with the associated tool systems) according to Oerlikon and Gleason.

Workpiece data	Continuous process	Single-indexing process
Max. Workpiece diameter	425 mm	425 mm
Normal module range	1,5 – 8,5 mm	9 mm
Largest tooth width	65 mm	65 mm
Spiral angle	0 – 60 °	0 – 60 °
Number of teeth	6 – 180	6 – 180
Max. gear ratio Transmission ratio	1 : 10	1 : 10
Min. transmission ratio	1 : 1	1 : 1

Tool data	Continuous process	Single-indexing process
Cutter head radius	62 - 160 mm	5 - 12 “
Knife group numbers (Oerlikon)	5 - 19	

## Description of Axes



C42 – Axis designation

## Cutter head spindle (A-Axis)

Mounting diameter	Ø 58,34 mm
Gleason No. 14; 1:24	
Adapter: Oerlikon short taper 1:4	Ø 130 mm
Spindle speed	450 U/min
Gear ratio	15:1
Spindle speed (direct drive)	750 U/min
Gear ratio (direct drive)	1 : 1

### Workpiece spindle (B-Axis)

Mounting diameter:	Ø 225	mm
Oerlikon-outer cone 1:4		
inner cone no. 60	Ø 152,4	mm
Workpiece spindle passage	140	mm
Workpiece spindle speed	400	U/min

### Workpiece swivel axis (C-Axis; C = E + V)

	E-Axis	V-Axis
Swivel range	0 – 95 °	0 – 95 °
Travel	1.800 °/min	1.098 °/min
Max. Travel speed	8.000 mm/min	8.000 mm/min
Max. Motor speed	400 U/min	960 U/min
Gear ratio	80 : 1	1 : 1

### Milling depth axis (X-Axis)

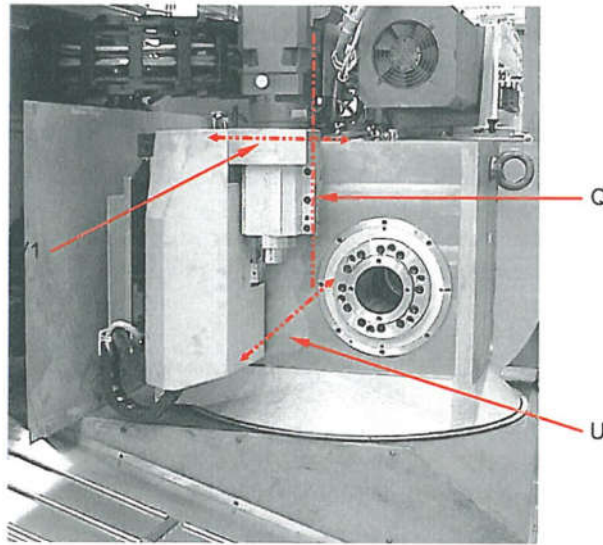
Travel	500	mm
Max. Travel speed	8.000	mm/min
Ratio	3 : 1	
Spindle pitch	10	mm

### Workpiece positioning axis (Y-Axis)

Travel	1.050	mm
Max. Travel speed	8.000	mm/min
Ratio	3 : 1	
Spindle pitch	10	mm

### Tool positioning axis (Z-Axis)

Travel	+ / - 200	mm
Max. Travel speed	8.000	mm/min
Ratio	3 : 1	
Spindle pitch	10	mm



**C-42 – axis designation deburring unit**

### Deburring cutter spindle (Q-Axis)

Mounting diameter: Komet ABS 63	Ø 63/40 mm	
Spindle speed	0 – 630 U/min	stepless
Ratio	3 : 1	

### Deburring positioning axis (U-Axis)

Travel	120 - 260 mm
Max. Travel speed	600 mm/min
Ratio	4,3 : 1
Spindle pitch	5 mm

### Deburring infeed axis (V1-Axis)

Travel	120 - 260 mm
Max. Travel speed	6.000 mm/min
Ratio	1 : 1
Spindle pitch	5 mm

### Software package

- 25 - Arcon® generating process
- 26 - Arcon® forming process
- 33 - Gleason Single Part generating process
- 34 - Gleason Single Part forming Process
- 1006 - Tester corrections
- 1007 - Tooth thickness correction

### Supported workpiece types:

- Wheel
- Pinion

### Coolant (for wet cutting)

Tan capacity	400 l
Pump capacity	250 l/min

### Connection data

Total connected load approx.	60 kVA
Operating voltage	3 x 400 V
Operating frequency	50 Hz
Control voltage	24 V DC
Fuse protection	100 A
Compressed air connection	6 - 10 bar

### Dimensions, Weight

Footprint L x W x H approx..	ca. 5,45 x 2,5 x 2,5 m
Machine weight ca.	16.000 kg without accessories

### Concept and design

- CNC machine with 6 axes for gear cutting of ring gears and pinions in one or more setups
- Operator guidance in dialog via Windows
- Programmable loading position
- Easy ergonomic loading
- Especially suitable for medium and large series production of spiral bevel gears and hypoid gears for the automotive and commercial vehicle industry
- Operates on both the continuous part process and the single part process, so is suitable for all common Oerlikon and Gleason processes
- Allows the use of all Oerlikon and common Gleason cutterhead types
- Good accessibility of the cutter head
- Short setup and changeover time
- Allows infinitely variable cutting speed and feeds with selectable duty cycles
- Provides all requirements for subsequent grinding on spiral bevel gear grinding machines
- Machine software for a gear cutting process
- Electrical equipment standard Klingelberg for 3x 400V, 50Hz, control voltage 24V DC
- switch cabinet cooler
- working spindle with cone 58,2 mm (cone no. 14) with adapter for Oerlikon cutter heads
- Full space protection
- Automatic sliding door
- Coolant unit complete incl. magnetic chip conveyor system
- Hydraulic unit free standing
- Clamping stroke monitoring

### Equipment and Accessories

- CNC control Siemens 840 D, storage of geometry and setting data for approx. 250 workpieces
- Electrical equipment standard Klingelberg for 3x 400V, 50Hz, control voltage 24V DC
- Cooler for electrical cabinet
- working spindle with cone 58,2 mm (cone no. 14) with adapter for Oerlikon cutter heads
- Full space protection
- Automatic sliding door
- Coolant unit complete, with magnetic chip conveyor system
- Hydraulic unit free standing
- Clamping stroke monitoring
- Deburring unit for rotating cutter
- Deburring unit with fixed contour chisel
- Secondary deburring unit self-sufficient
- Planar system monitoring workpiece
- Planar system monitoring workpiece - Cleaning system
- Chip blowing device
- Workpiece free blowing device
- Brake for B-Axis
- Cooling lubricant system
- Loading door
- Maintenance door on the left side of the machine
- Safety door operated by electric motor
- Second measuring system B-Axis
- Clamping system monitored by analog sensor
- dust extraction
- program hours approx. 40.000h, spindle hours approx. 28.000h