TOS
ČELÁKOVICE

GRINDING MACHINES

BUA, BUB, BUC, C 250, C 500

SUB

SLOVÁCKÉ STROJÍRNY, a.s., CZECH REPUBLIC

HIGH PRODUCTIVITY

Centre Grinding Machines

The high-performance grinding machines of BUA series (Practic and Profi versions), BUB series (Practic, Profi and Multi versions) and BUC series (Practic, Profi and Multi versions) are designed for precise grinding of several external cylindrical surfaces of different diameters, their adjacent faces and transition radii on work pieces. In another version, they are suitable for grinding of internal cylindrical and tapered surfaces, and surface grinding of their adjacent faces. In its basic version, the grinder can be used for plunge-cut grinding or longitudinal grinding, with a fixed or oscillating table, successive plunge cutting with subsequent traverse regrinding.

Face-surface grinding can be performed with the side of a grinding wheel, with the oscillation of a wheel head possible. Longitudinal grinding of tapers can be accomplished within the range of table swiveling, or by the application of linear interpolation; sharp tapers can be ground on the work pieces that are clamped in a chuck. Radii can be ground using a circular interpolation, and oblique plunge cuts using interpolation. A variety of methods is available for grinding wheel dressing. Work pieces can be ground being positioned between centres, in rests, overhung in a chuck or in collet, or on a magnetic clamping plate.

The machines are suitable for grinding in single-part or small-series production as well as in large-series production.

A grinding cycle can be controlled manually with the support of a control system, or automatically.

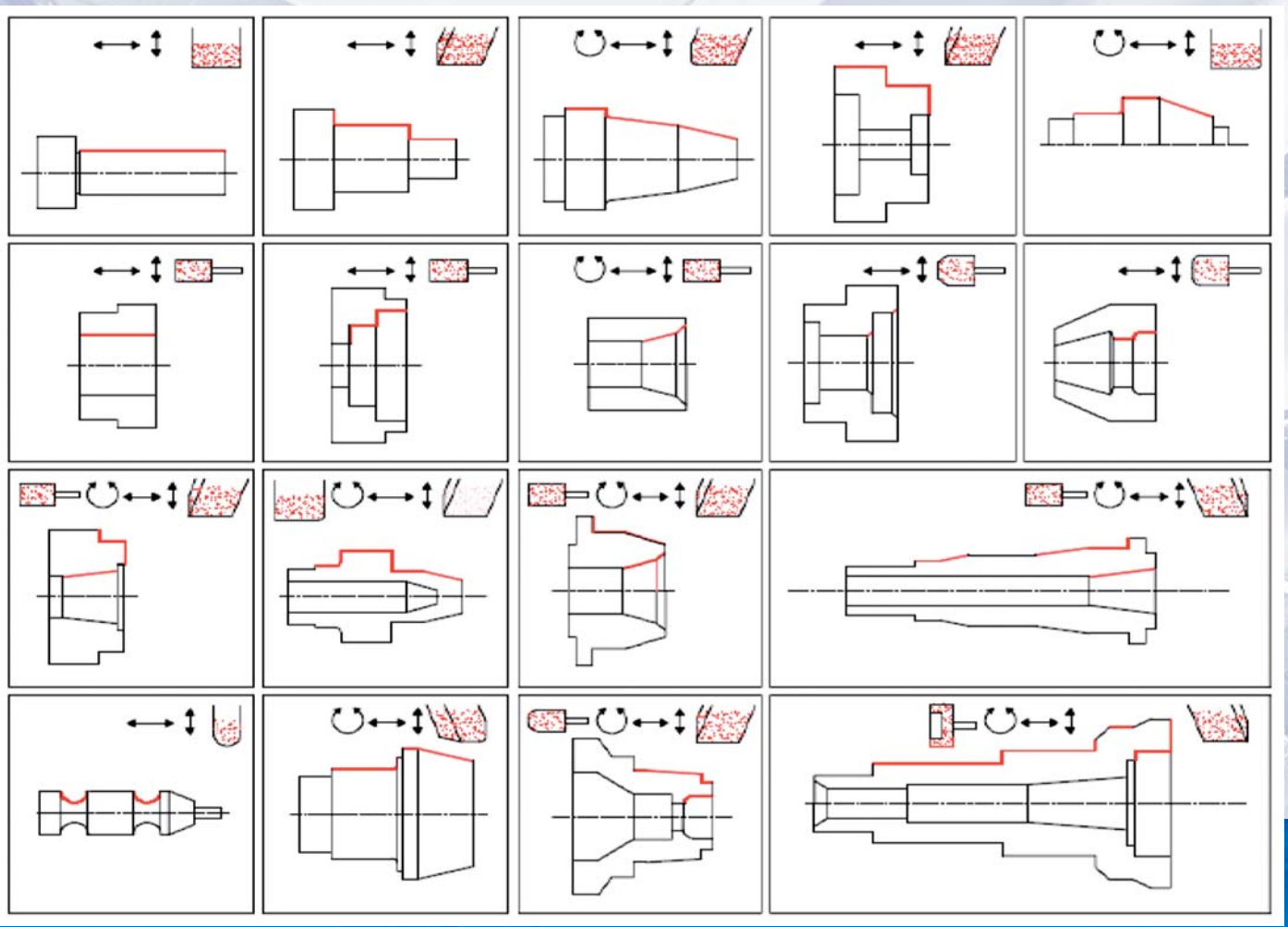
Thanks to the machine modular design, we can offer a wide variety of configurations in other versions.

YOUR TECHNOLOGY ON MACHINE TOS

BASIC MACHINE DESIGN

- control system SIEMENS Sinumerik 840D sl
- compact operator panel with membrane keyboard
- PLC SIEMENS Simatic S7 – 300
- user's software for the machine in the basic version
- remote diagnostics
- software-controlled swivelling of grinding unit (axis B - Multi version only)
- digital AC servomotors with digital drive converters (axes X, Z and C9)
- brushless ring torque motor with direct measuring in B-axis (Multi version only)
- wheel head in-feed (axis X) and table traverse (axis Z) by means of ball screws
- cast-iron bed (front and rear) connected with pins and bolts
- upper swivelling table (except BUC-C/6000)
- wheel head in-feed with closed-rolling guide way (VM bars)
- wheel head with roller-bearing spindle
- safety guard of grinding wheel
- work head manually swivelling and moveable with step-less speed variation of work piece
- tailstock manually moveable with hydraulically operating of tailstock barrel and cylindricity correction
- partial protection of working space with sliding doors and rear coolant splash guard
- switch electrical cabinet with cooling unit RITTAL
- automatic lubrication of guide ways and ball screws of wheel head and table
- tailstock-mounted wheel dresser with blade-type diamond tool
- standard equipment
- machine outfit

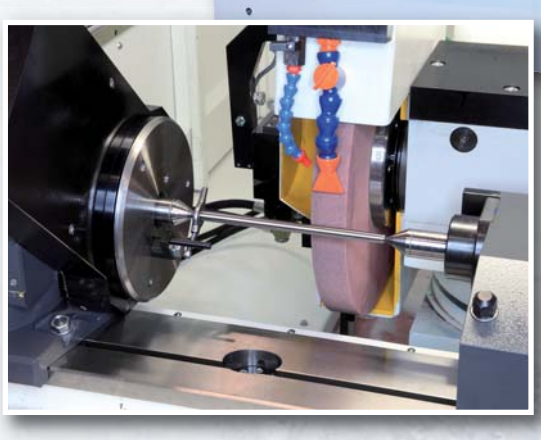
Machining Possibilities



HIGH PERFORMANCE

BUA 25 B
Practic, Profi

BUA



EASY OPERATION

Specification

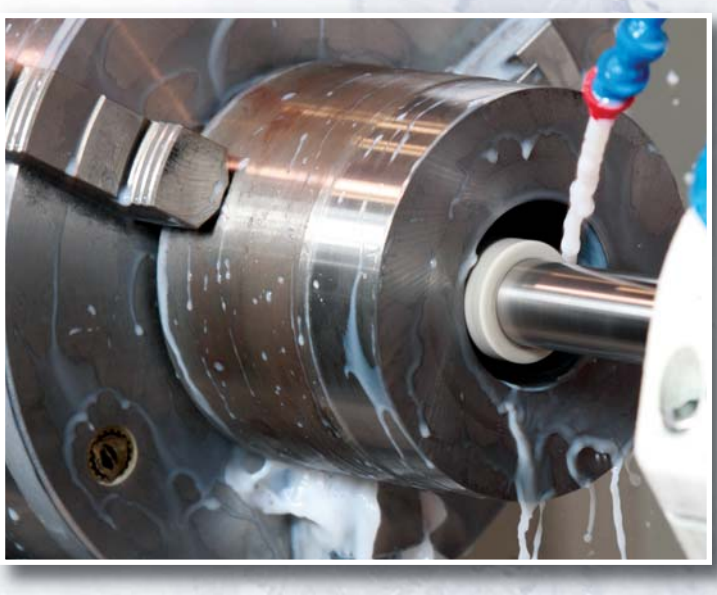
BUA 25 B		PRACTIC, PROFI
Swing diameter	mm	250, 315 *)
Distance between centres	mm	500, 750, 1,250
Maximum weight of work piece	kg	250
Live spindle grinding, including fixture	kg	50
Between dead centres	kg	X
Grinding wheel dimension	mm	400 x 40 x 127
Max. peripheral speed of grinding wheel	m/s	50
Work head spindle revolutions	rpm	20 – 800
Wheel head swiveling range (manual), (Practic, Profi)	°	+45 ÷ -15
Work head swiveling range (manual)	°	0 ÷ +90
Table swiveling with a centre distance of (mm): 500	°	+10°30' ÷ -6°
750	°	+9 ÷ -5°
1,250	°	+6°30' ÷ 3°30'
Electrical network – standard		3 x 400 v, 50Hz, TN-C-S
Wheel head motor power	kW	5,5 S6 – 60%
Total peak power demand of machine	kVA	18
Tolerance of work piece diameter		IT 4
Weight of machine with standard accessories with centre distance of (mm): 500	kg	3,650
750	kg	3,950
1,250	kg	4,250

*) other machine execution

LONG LIFETIME

BUB 40, 50 B
Practic, Profi, Multi

BUB



FAST AND PRECIOUS GRINDING

Specification

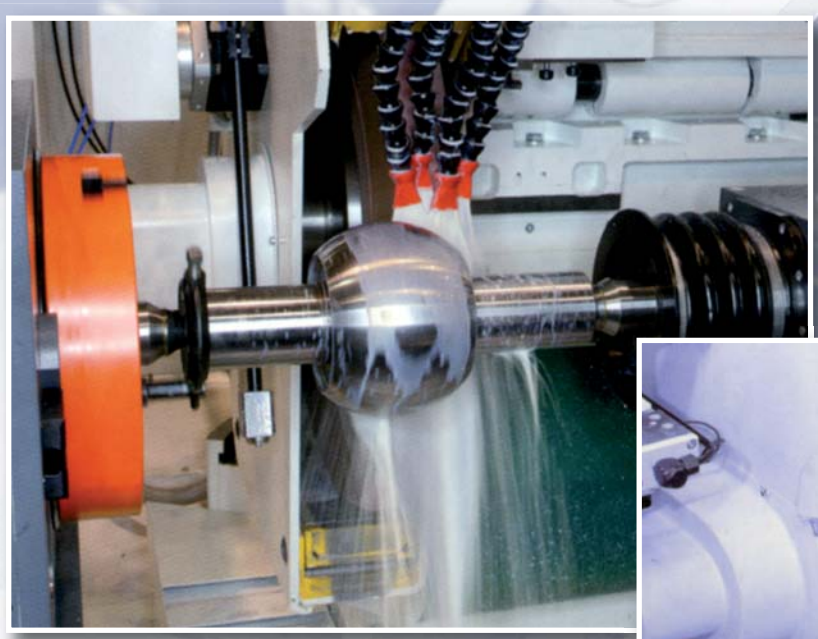
BUB 40 (50) B		PRACTIC, PROFI	MULTI
Swing diameter	mm	400, 500	500
Max. distance between centres	mm	1,000, 1,500, 2,000, 3,000	1,000, 1,500, 2,000, 3,000
Max. work piece weight between dead centres	kg	500	500
Live spindle grinding including fixture	kg	100 (250)*	100
Between dead centres and supported by steady rests	kg	700	700
Grinding wheel dimensions – standard	mm	500 x 80 x 203	500 x 80 x 203
Max. peripheral speed of grinding wheel	m/s	50	50
Work piece revolutions	rpm	6–170, 30-900	6–170, 30-900
Wheel head swiveling range (manual), (Practic, Profi)	°	-15 ÷ +45	
Programming wheel head swiveling range (Multi)	°		-195 ÷ +30
Work head swiveling range (manual)	°	0 ÷ +90	0 ÷ +90
Table swiveling with a centre distance of (mm):			
1,000	°	+ 8°30' ÷ -4°30'	+ 8°30' ÷ -4°30'
1,500	°	+7 ÷ -4°	+7 ÷ -4°
2,000	°	+6°-3'	+6°-3'
3,000	°	+4°30' ÷ -2°	+4°30' ÷ -2°
Power supply – standard		3 x 400 v, 50Hz, TN-C-S	3 x 400 v, 50Hz, TN-C-S
Wheel head motor power	kW	11	11
Total peak power demand of machine	kVA	51	51
Tolerance of work piece diameter		IT 4	IT 4
Machine weights with standard equipment (mm)			
BUB		BUB 40B / BUB 50B	MULTI
1,000	kg	6,750 / 7,000	8,000
1,500	kg	7,250 / 7,500	8,500
2,000	kg	7,750 / 8,000	9,000
3,000	kg	8,650 / 8,900	10,400

*) other machine execution, speicial accesories

WORK-PIECE EXCELLENCE

BUC 63 C, 85 C Practic

BUC

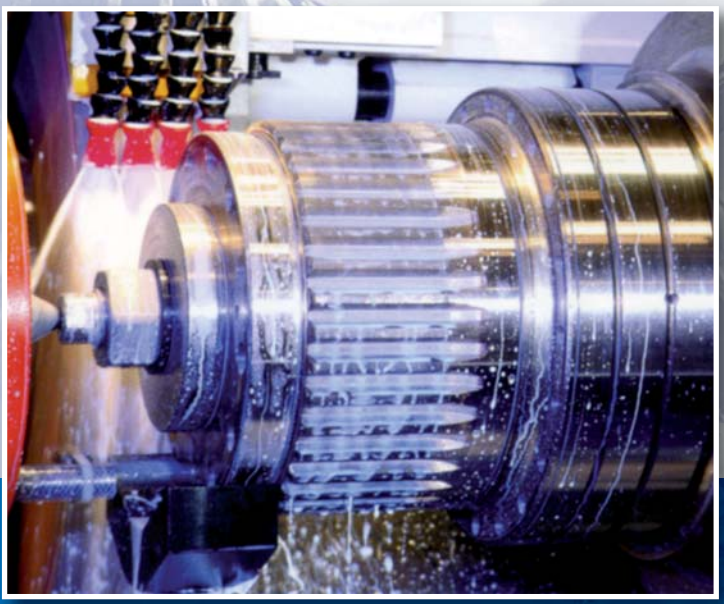


EASY OPERATION

Specification

BUC 63 (85) C PRACTIC, PROFI, MULTI		PRACTIC, PROFI		MULTI	
Swing diameter	mm	630, 850		630, 850	
Max. distance between centres	mm	2,000, 3,000, 4,000 5,000, 6,000		2,000, 3,000, 4,000 5,000, 6,000	
Max. work piece weight between dead centers	kg	3,000		3,000	
live spindle grinding including fixture	kg	300		300	
between dead centres and supported by steady rests	kg	4,000		4,000	
Grinding wheel dimensions – standard	mm	750 x 100 x 305		750 x 100 x 305	
Max. peripheral speed of grinding wheel	m/s	50		50	
Work piece revolutions	rpm	4 – 38, 24 – 230		4 – 38, 24 – 230	
Wheel head swiveling range (manual), (Practic, Profi)	°	+30 ÷ -10			
Programming wheel head swiveling range (Multi)	°			-225 ÷ +45	
Work head swiveling range (manual)	°	0 ÷ +90		0 ÷ +90	
Table swiveling with a centre distance of (mm):					
2,000	°	+ 6°30' ÷ -5°		+ 6°30' ÷ -5°	
3,000	°	± 5°		± 5°	
4,000	°	± 4°		± 4°	
5,000	°	± 3°		± 3°	
6,000	°	0°		0°	
Electrical network – standard		3 x 400 V, 50Hz, TN-C-S		3 x 400 V, 50Hz, TN-C-S	
Wheel head motor power	kW	19 S6 – 60%		19 S6 – 60%	
Total peak power demand of machine	kVA	65 (85)*		65 (85)*	
Tolerance of work piece diameter		IT 4		IT 4	
Machine weights with standard equipment (mm)		BUC 63	BUC 85	BUC 63	BUC 85
2,000	kg	12,540	12,840	15,350	15,650
3,000	kg	14,250	14,530	17,600	17,900
4,000	kg	15,960	16,260	19,600	19,900
5,000	kg	17, 670	17,930	21,950	22,250
6,000	kg	19,380	19,690	24,200	24,500

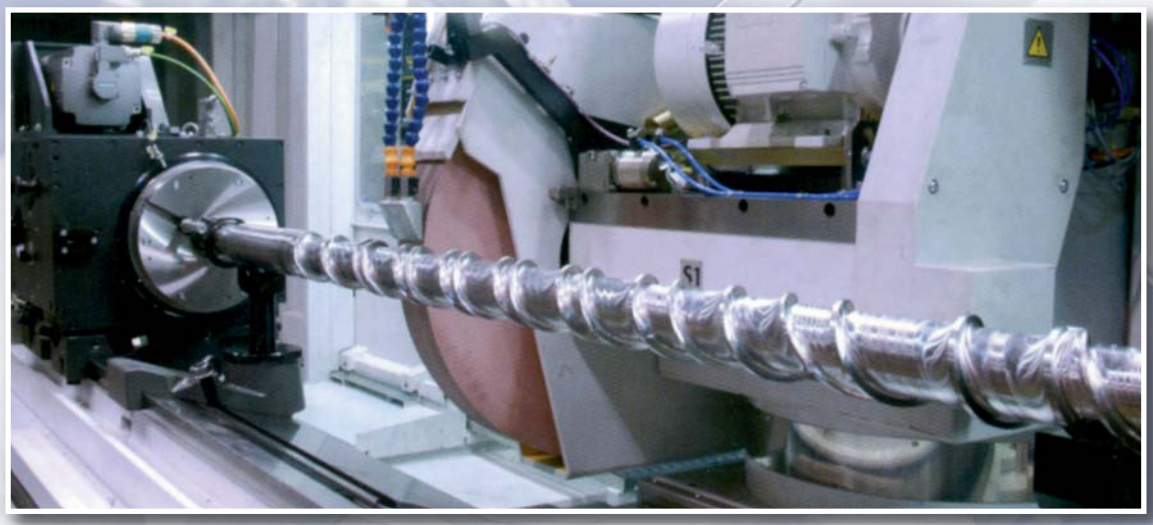
**) other machine execution, special accessories*

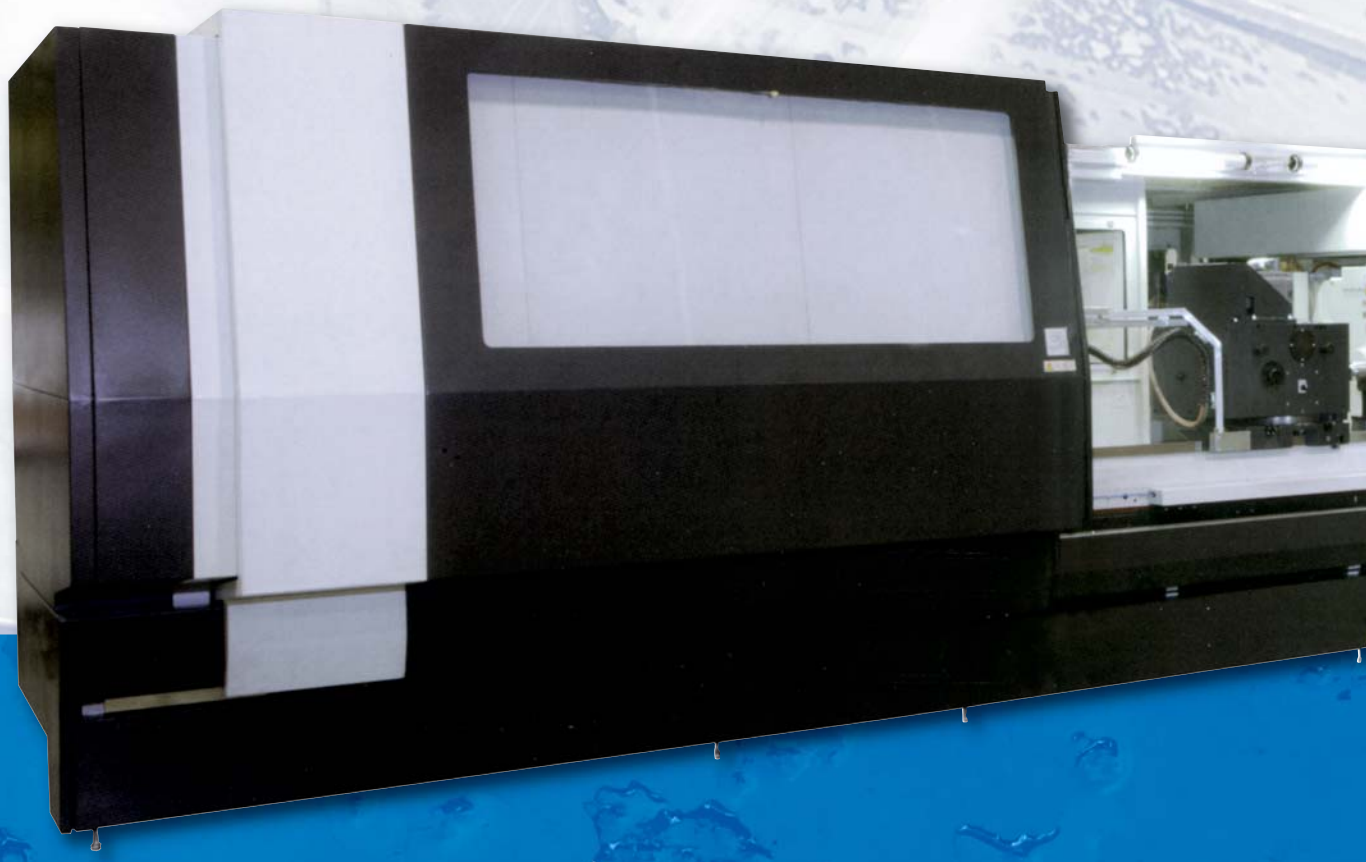


NUMBER ONE IN ITS CLASS

BUC 63 C, 85 C Profi

BUC





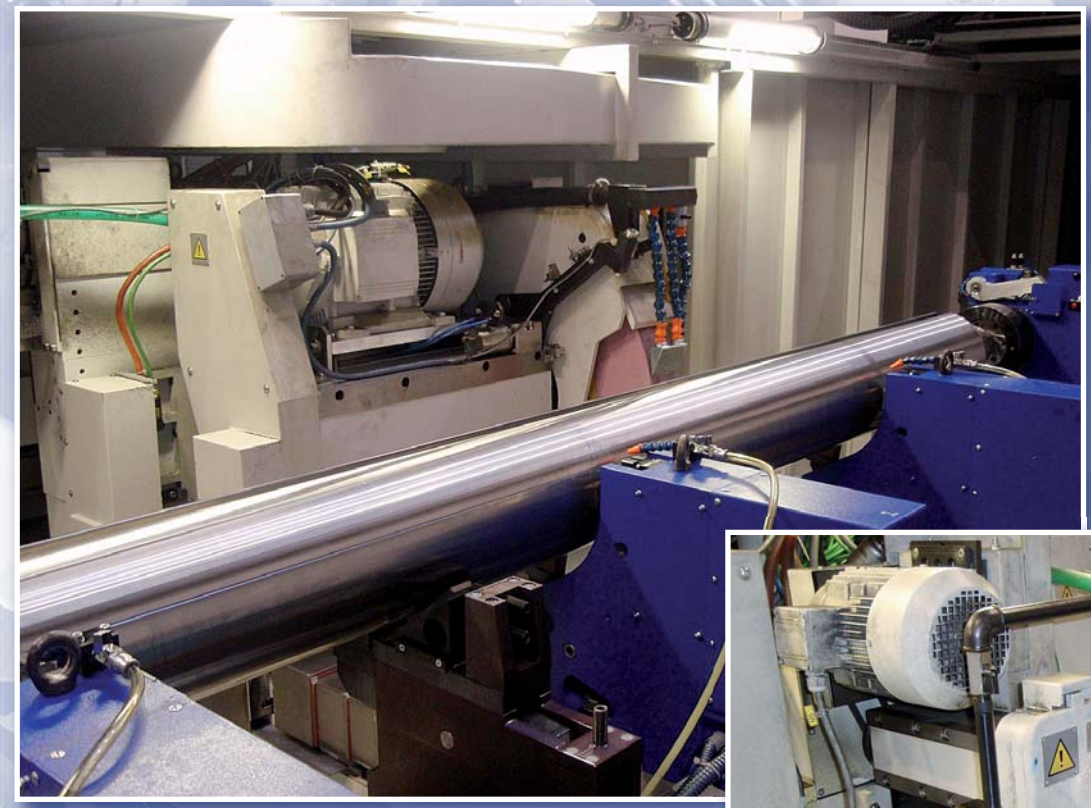
ISO PROGRAMMING

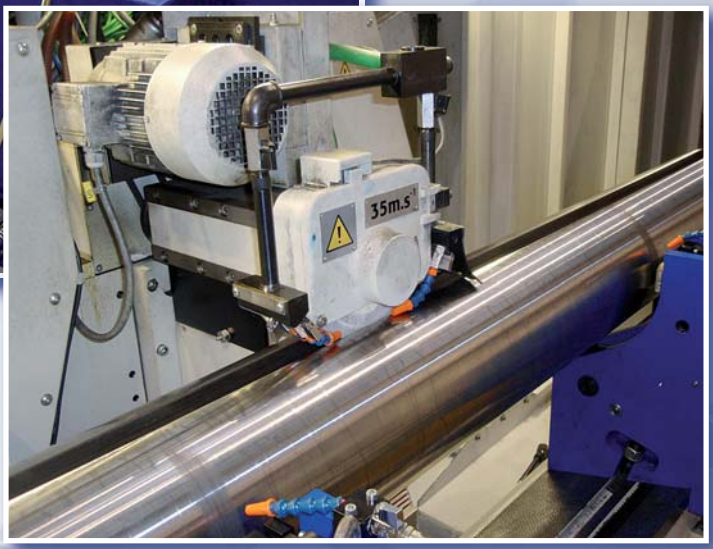
SPECIAL TECHNOLOGY

BUC 63 C, 85 C Multi

BUC

LONG LIFETIME




35m.s


BUC 63 C CNC
TOS

HIGH PRODUCTIVITY

Centerless Grinding Machines

C 250 and C 500 CNC models of grinding machines belong to product line C of fully numerically controlled centreless grinders. Their construction and high rigidity predetermine them for the accurate and high-performance grinding of external cylindrical surfaces in series and mass production, allowing for both plunge-cut (shape) and through-feed grinding. With the machine modular modifications, the number of controlled axes can be selected as needed for the particular type of work pieces to be ground, to the satisfaction of customer's requirements.

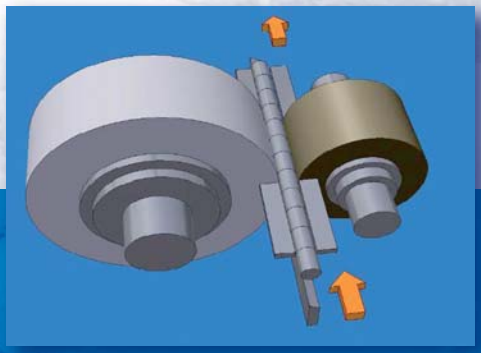
User software which comes with the machine as a standard is so designed to meet the needs of a machine's operator and technologist as much as possible. The software has a variety of support functions available (such as archiving of grinding processes, graphical diagnostics of the grinder or logical help), which, together with quick fault diagnostics and direct selection of spare parts and subcontractor's contacts from a control system screen facilitates the grinder operating and makes it easier.

The grinder connection to a customer's internal data network is of advantage, making possible the processing of grinding operation data and results, inclusive of statistical analyses of the machine operation accuracy. Complete backup of grinding operation setups and parameters considerably quickens the machine resetting to another type of work pieces.

For their operational flexibility, excellent performance, high accuracy and small space they require to be incorporated, the C 250 CNC and C 500 CNC centreless grinding machines become an indispensable part of production lines in bearings, automotive engines and components, aircraft and aircraft components, textile, and printing machines manufacturing.

Thanks to the machine modular design, we can offer a wide variety of configurations in other versions.

Plunge cut grinding



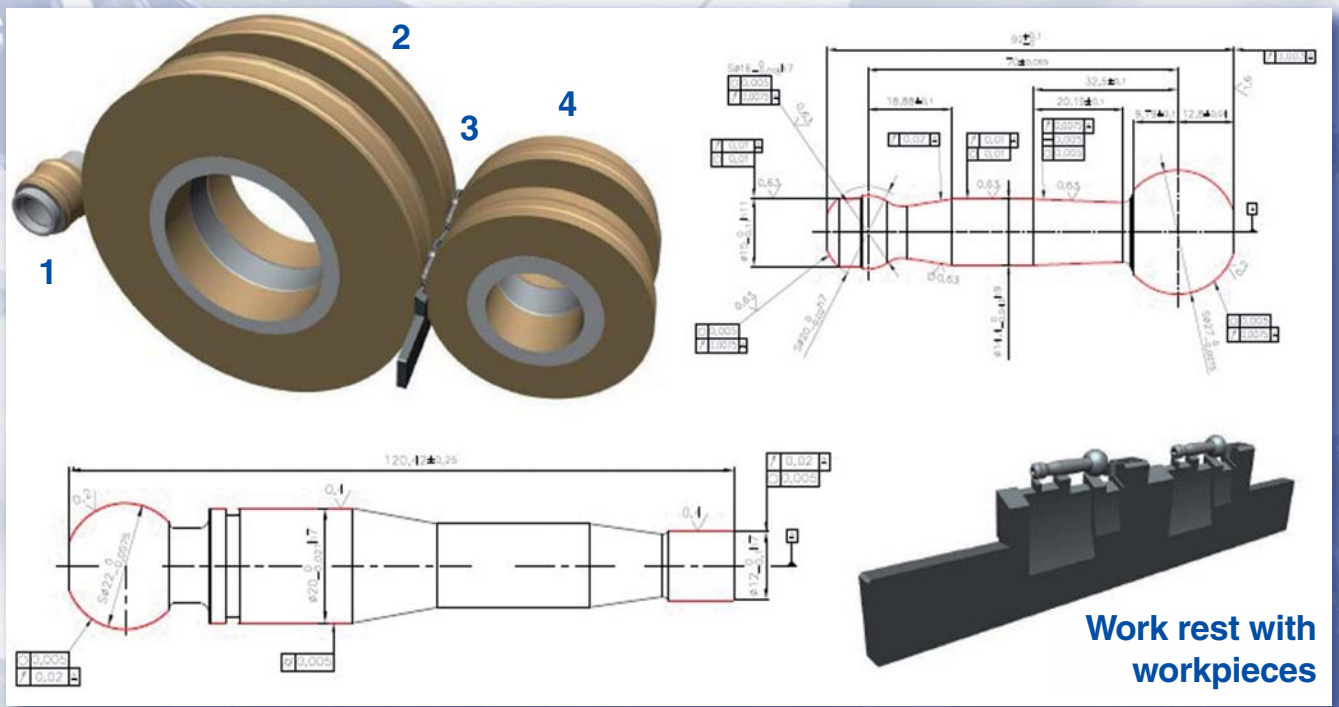
Through-feed grinding

EXECUTION OF STANDARD GRINDER

- control system SIEMENS Sinumerik 840D sl
- front operating panel with TFT graphic colour flat monitor
- rear operating panel with control elements for operator (for through feed grinding only)
- PLC Simatic S7 – 300
- long-distance diagnostic application over modem (HW + SW)
- digital AC servomotors of feeds with digital drive converters SIEMENS Sinamics S120
- machine bed incl. accessories
- grinding wheel head with double-sided spindle mounting in antifriction bearings
- grinding wheel head in-feed (axis X1) by means of ball screw
- semiautomatic balancing system of grinding wheel
- CNC dresser of grinding wheel with cross support (without tracer template)
- complete regulating wheel head with double-sided spindle mounting in antifriction bearings
- stepless speed variation of regulating wheel
- dresser of regulating wheel with cross support C 250 CNC with tracer template
- work rest support with manual vertical adjustment and manual stabilization
- full machine protection with two-piece hand sliding side doors and internal fluorescent lighting
- automatic central lubrication with independent lubricating circuit
- machine adaptation for connection to central or local coolant supply
- machine adaptation for connection of central or local mist exhaustion from working space

Configuration of C 250

1. roller type wheel dresser 2. grinding wheel 3. work rest 4. regulating wheel



Work rest with workpieces

YOUR TECHNOLOGY ON MACHINE TOS

NUMBER ONE IN ITS CLASS

C 250

C 250 CNC controlled axes – basic execution

Axis	**X1**	In-feed of regulating wheel head with rest support
Axis	**U1**	Cross-feed of the grinding wheel dresser in position coupling
Axis	**W1**	Longitudinal feed of the grinding wheel dresser in position coupling
Axis	**W2**	Longitudinal feed of the regulating wheel dresser in position coupling
Axis	**C2**	Stepless controlled speed of the regulating wheel speed coupling

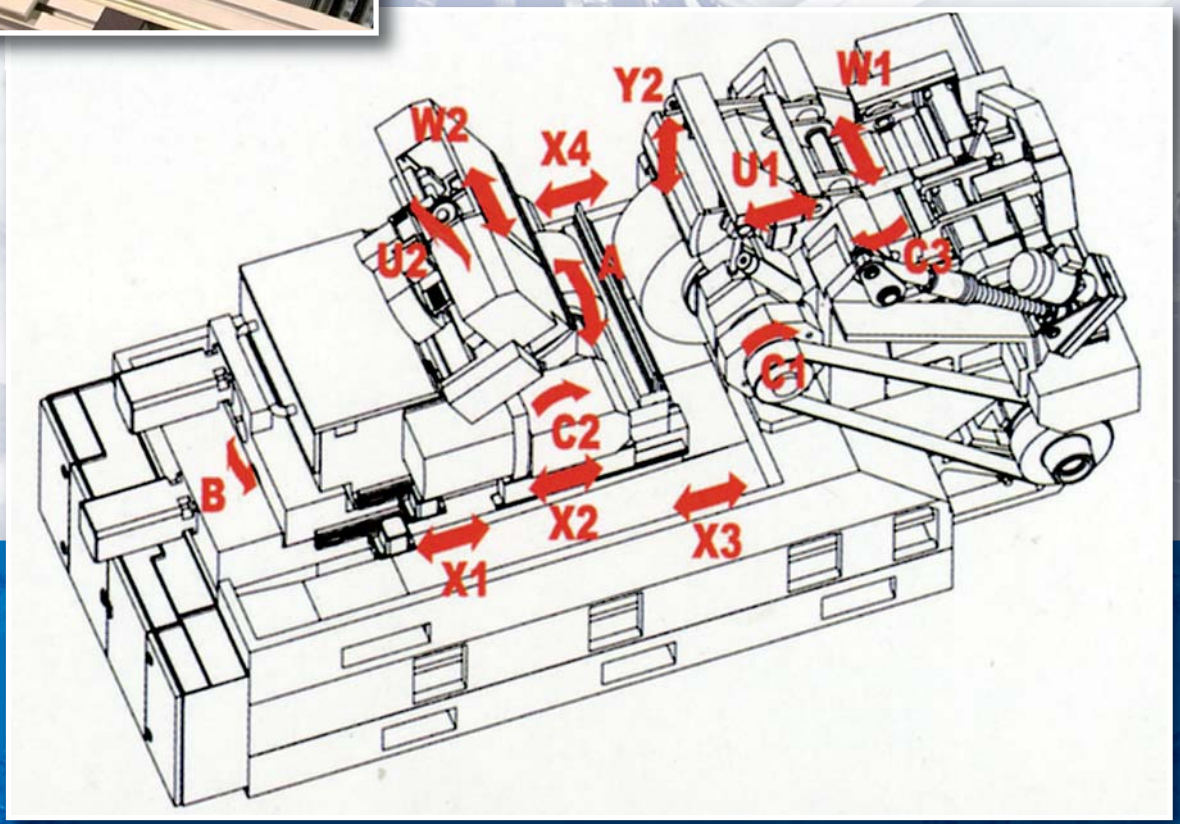
AUTOMATIC MANIPULATION

Specification

C 250 CNC, C 500 CNC		C 250 CNC	C 500 CNC
Min. grinding diameter of work piece	mm	0.8	3
Max. grinding diameter of work piece for through – feed grinding	mm	100	220
Max. grinding diameter of the work piece for plunge – cut grinding	mm	100	200
Max. length of the work piece without special feeding for through grinding	mm	300	500
Max. length of the work piece with special feeding for through-feed grinding	mm	4,000	6,000
Max. length of the work piece with special feeding for plunge-cut grinding	mm	245	480
Grinding wheel dimension (standard)	mm	650 x 250 x 304.8	650 x 500 x 304.8
Regulation wheel dimension (standard)	mm	355 x 250 x 152.4	380 x 600 x 203.2
Max. circumference velocity of the grinding wheel	m/s	63	63
Stepless regulated of regulating wheel speed	rpm	5 – 914	5 – 800
Grinding wheel drive power	kW	22	55
Total peak power demand of machine	kVA	50	95
Total machine weight	kg	13,650	19,200

C 250 controlled axes – other execution

Axis **A** Regulating wheel tilting
Axis **B** Regulating wheel swivelling
Axis **C1** Grinding wheel rotation
Axis **C3** Truing roller drive
Axis **C4** Inlet feeder drive
Axis **C5** Outlet conveyor drive
Axis **U2** Transverse feed of the regulating wheel dresser
Axis **W2** Longitudinal feed of the regulating wheel dresser
Axis **X2** In-feed of the upper regulating wheel plate
Axis **X3** Positioned unit of input conveyer
Axis **X4** Positioned unit of output conveyer
Axis **Y2** Height setting of protective cover of grinding wheel guard



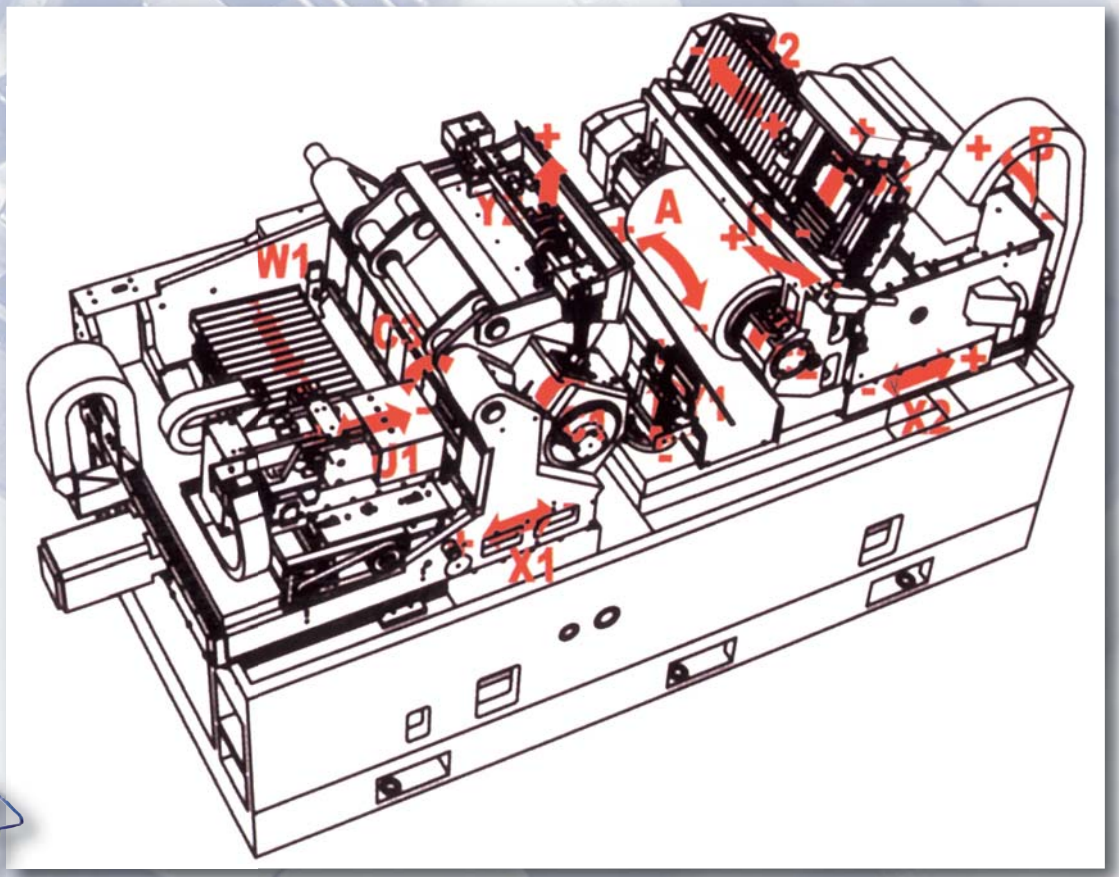
HIGH OUTPUT

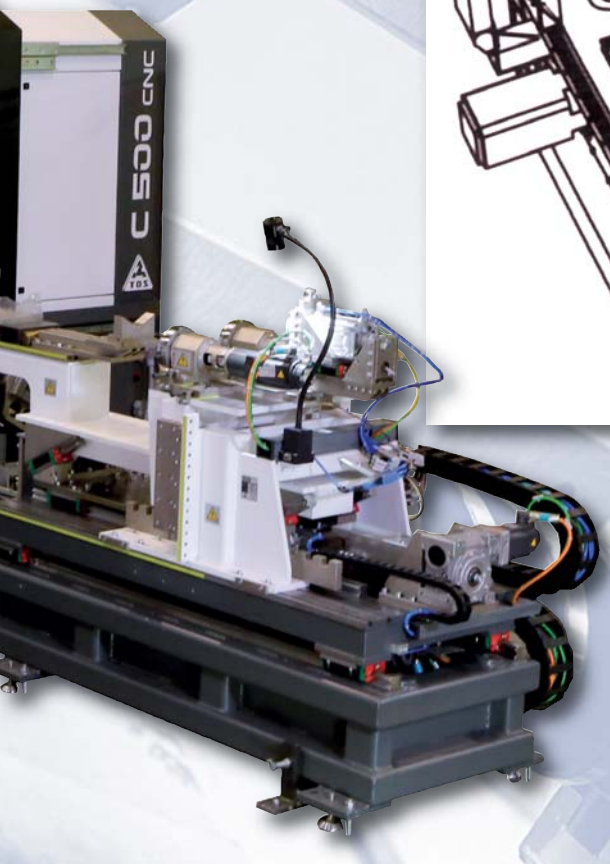
C 500

C 500 CNC controlled axes – basic execution

Axis	**X1**	In-feed of grinding wheel in position coupling
Axis	**X2**	In-feed of regulating wheel in position coupling
Axis	**U1**	Cross-feed of grinding wheel dresser in position coupling
Axis	**U2**	Cross-feed of the regulating wheel dresser in position coupling
Axis	**W1**	Longitudinal feed of the grinding wheel dresser in position coupling
Axis	**W2**	Longitudinal feed of the regulating wheel dresser in position coupling
Axis	**C2**	Stepless controlled speed of the regulating wheel speed coupling

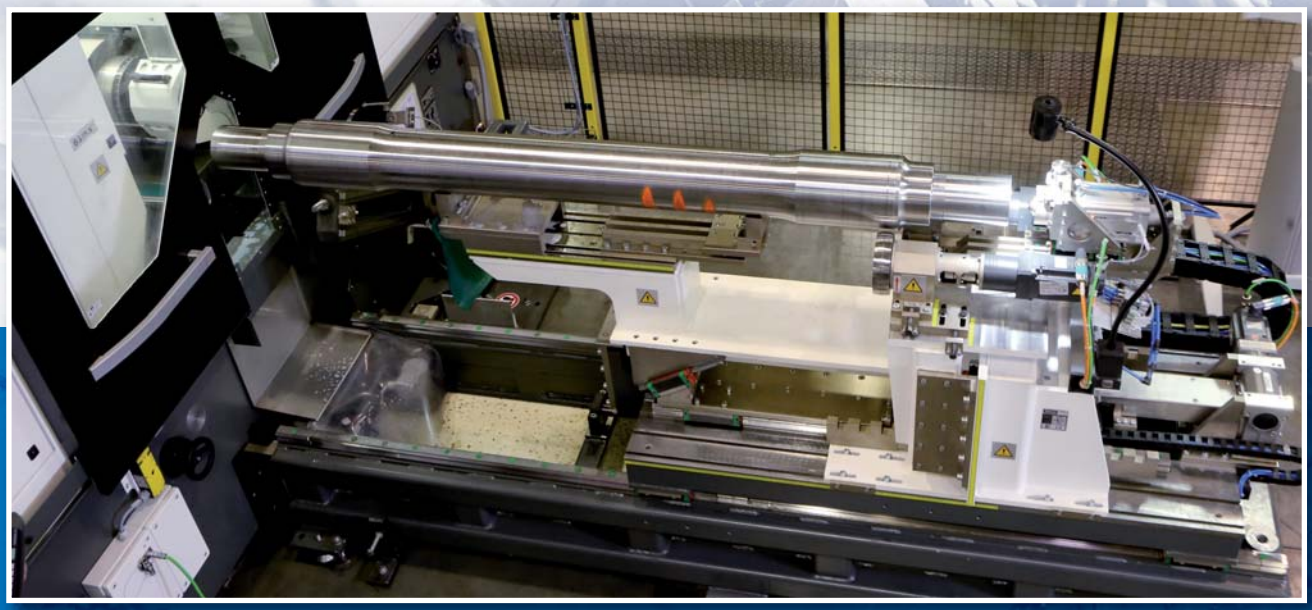
HIGH PERFORMANCE





C 500 CNC controlled axes – other execution

Axis	**A**	Regulating wheel tilting
Axis	**B**	Regulating wheel swivelling
Axis	**C1**	Grinding wheel turning
Axis	**C3**	Dressing diamond roller drive
Axis	**C4**	Input conveyor drive
Axis	**C5**	Output conveyor drive
Axis	**Y2**	Height setting of protective cover of grinding wheel guard



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