



OMICRON

CNC

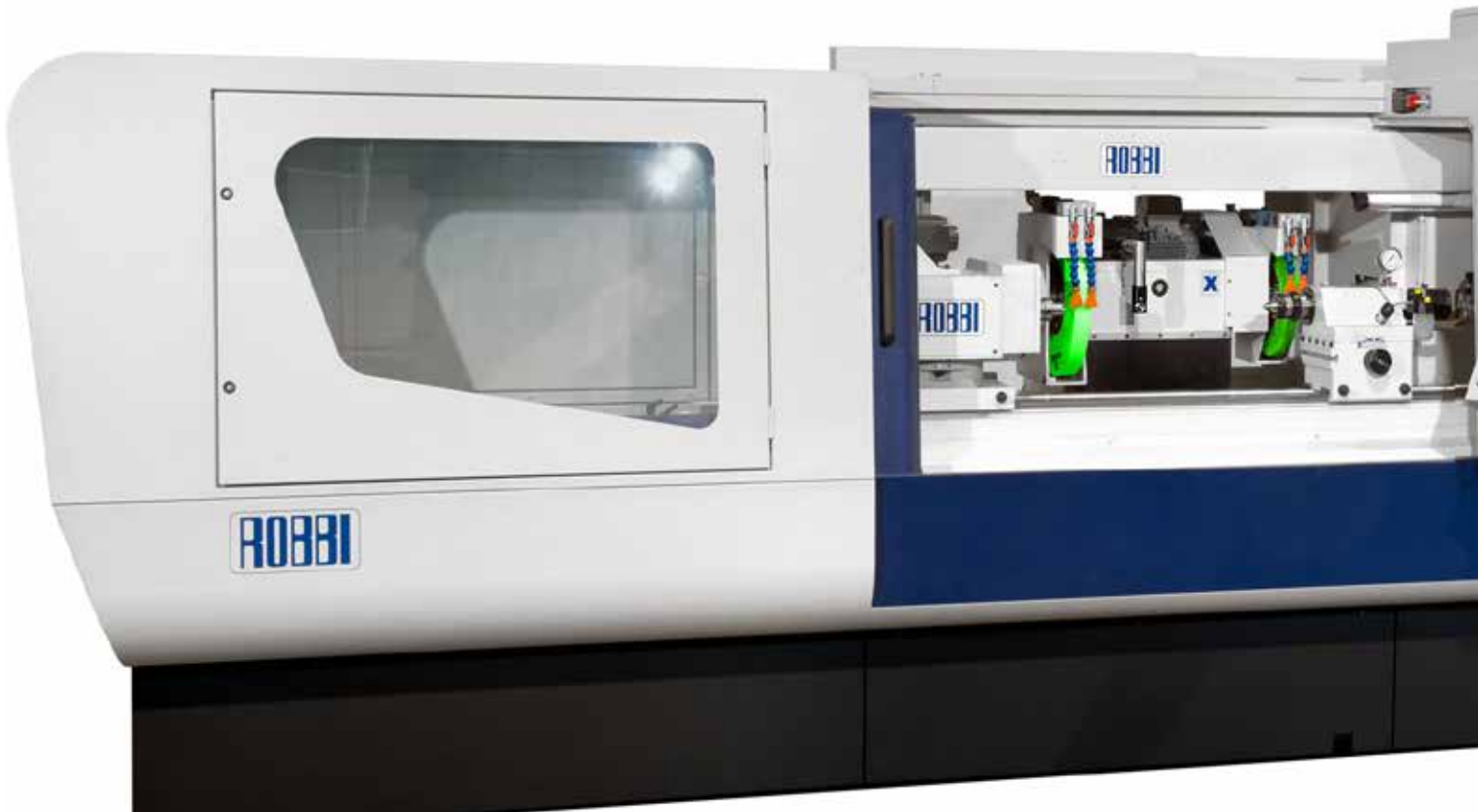
UNIVERSAL CYLINDRICAL GRINDING MACHINES



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OMICRON CNC



THE POWER OF THE CNC AND THE PROCESS SIMPLICITY

- The work cycle can be optimised in-process with geometrical and working parameters.
- The CNC grinding machines versions were developed in response to needs for medium-high production volumes.
- Equipped with the latest-generation of SIEMENS 840D sl control system.
- Machines can be equipped with automatic measurement devices to process complex components.
- The CNC allows the operator to profile the grind wheel specifically to create geometries for the type of job required.
- High precision crowning operations can be performed by equipping the machines with a third interpolated axis and a bespoke software for this processes.

EASY PROGRAMMING

The machine operator may create a program, even complex, without ISO programming knowledge.

GUIDED COMPILATION

The compilation of the parameters is guided by a series of messages and icons that explain step by step the meaning of the various parameters.

The programming of the working cycles is done by filling the same parametric working cycle.

Once the working cycle has been programmed, it is also possible to modify the execution sequence of the various cycles, simply and intuitively.

ERRORS CONTROL

To eliminate errors in the execution of a program, there is available a summary page to control the main geometric parameters of every single working cycles.

TOOL		
D_P		mm
TOE		mm
P_Z		mm
L_L		mm
S_SF		mm
S_FI		mm
R_R		mm
L_SG		mm
I_SF		mm
I_FI		mm
RPM		U.p.M.
A_L		mm/min
FMI		mm

ACCURATE GEOMETRIC RESULTS

In each cycle it is possible to correct eventual taper errors, interpolating the two axis X and Z. This permits, in a short time, to obtain very accurate geometric results.

EASY HUMAN INTERFACE



COMPLETE CLOSURE - A TYPE

STANDARD PROGRAMS SUPPLIED WITH THE MACHINE

	Od	ID
PASS	✓	✓
PLUNGE	✓	✓
FACING	✓	✓
MULTI PLUNGE	✓	
ANGULAR PLUNGE	✓	✓
TAPER	✓	✓

WHEEL DRESSING PROGRAMMING

It is possible to program all the automatic grinding wheel dressing cycle parameters.

The dressing operation may be executed:

- outside the grinding cycle
- automatically inside the grinding cycle (beginning before finishing or end of cycle),
- automatically using a cycle counter,
- on demand, during the grinding cycle

SHOULDER GRINDING IN 3 MODES

In each cycle, it is possible to insert the shoulder grinding operation:

MANUALLY

The machine stops before the finishing operation, permitting the operator to execute the shoulder grinding operation with the electronic handwheel.

AUTOMATICALLY

The machine executes, before the finishing operation, the shoulder grinding operation, up to the programmed quote.

AUTOMATICALLY WITH GAP CONTROL

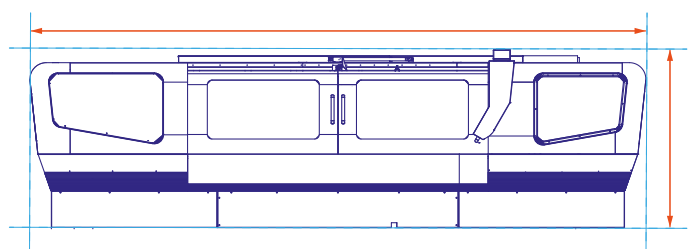
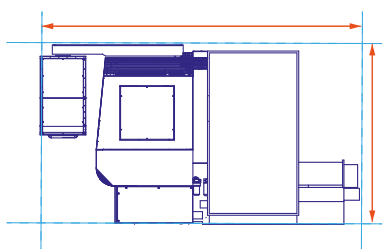
The machine executes, before the finishing operation, an automatic research of the shoulder to be ground by using the gap control. After the contact, the cycle automatically removes the quantity of programmed material. After the shoulder grinding operation it is possible, to execute a zero setting of the Z axis.

In this way it is possible to execute other shoulder grinding operations on the same workpiece with high precision and reduction in cycletime

OMICRON CNC 32^{XX}



COMPLETE CLOSURE - A TYPE





WORKING CAPACITY		3206	3210
Distance between centers	max.	600	1000mm
Grinding length	max.	600	1000mm
Height of centers over table		160	mm
Swing over table	max.	315	mm
Weight on centers	max.	120	kg
Cantilever weight ¹	max.	40	kg

TABLE (Z - AXIS)		3206	3210
Automatic table traverse	max.	680	1080mm
Swivel on either side		+9° -5°	+8° -4°
Automatic traverse min.		3	mm
Speed		1-5000	mm/min
Handwheel division		0,001 0,01 0,1	mm

WORKHEAD		
Rotation speed		0-600 rpm
Spindle hole diameter		26 mm
Internal center taper		4 MT
External center taper		5 ASA
Swivel		90°

TAIL STOCK		
Spindle stroke		50 mm
Spindle diameter		70 mm
Internal center taper		4 MT

WHEEL HEAD (X - AXIS)		
Swivel	max.	+/- 180°
Handwheel division		0,001 0,01 0,1 mm
Manual position travel		130 mm
Stroke	max	200 mm
Speed	max	0,2-3000 mm/min
Rotation speed (inverter)		600-1600 rpm

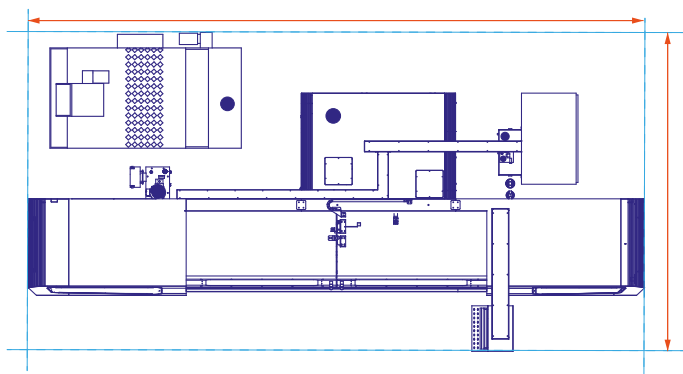
GRINDING WHEEL SPECIFICATIONS		
Diameter	max.	450 mm
Hole		∅ 127 mm
Width	min.	20 mm
	max.	50 mm

WORKING FEEDS		(mm)
Minimum programmable feed		0,001

INTERNAL GRINDING ATTACHMENT		
Hole diameter for spindle		80 mm
Electric motor		1,50 kW

MOTORS		
Wheelhead		4,00 kW
Workhead		0,75 kW
Wheelhead feed (X axis)		3,00 Nm
Table feed (Z axis)		6,00 Nm
Hydraulic power pack		0,75 kW
Coolant pump		0,18 kW

DIMENSIONS		3206	3210
Length		2900	3700mm
Width		1350	1350mm
Height		1750	1900mm
Net weight		3700	4900Kg



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WORKING CAPACITY		3606	3610	3615	3620
Distance between centers	max.	630	1030	1530	2030 mm
Grinding length	max.	630	1030	1530	2030 mm
Height of centers over table				180	230 ³ mm
Swing over table			max.	355	455 ³ mm
Weight on centers			max.	250	300 ³ kg
Cantilever weight ¹			max.	80	80 kg

TABLE (Z - AXIS)		3606	3610	3615	3620
Automatic table traverse	max.	780	1180	1680	2180 mm
Swivel on either side		+9°	+8°	+7°	+6°
		-5°	-4°	-3°	-2°
Automatic traverse	min.		4		mm
Speed			1-5000		mm/min
Handwheel division		0,001	0,01	0,1	mm

WORKHEAD		
Rotation speed		0-600 rpm
Spindle hole diameter		31 mm
Internal center taper		5 MT
External center taper		5 ASA
Swivel		90°

TAILSTOCK		
Spindle stroke		70 mm
Spindle diameter		70 mm
Internal center taper		5 MT

WHEEL HEAD (X - AXIS)		
Swivel	max.	+/- 180°
Handwheel division		0,001 0,01 0,1 mm
Manual position travel		200 mm
Stroke	max	380 mm
Speed	max	0,2-3000 mm/min
Rotation speed (inverter)		600-1600 rpm

GRINDING WHEEL SPECIFICATIONS		
Diameter		450-500 ³ mm
Hole		127 mm
Width	min.	20 mm
	max.	80 mm

WORKING FEEDS		(mm)
Minimum programmable feed		0,001

INTERNAL GRINDING ATTACHMENT		
Hole diameter for spindle		100 mm
Electric motor		1,50 kW

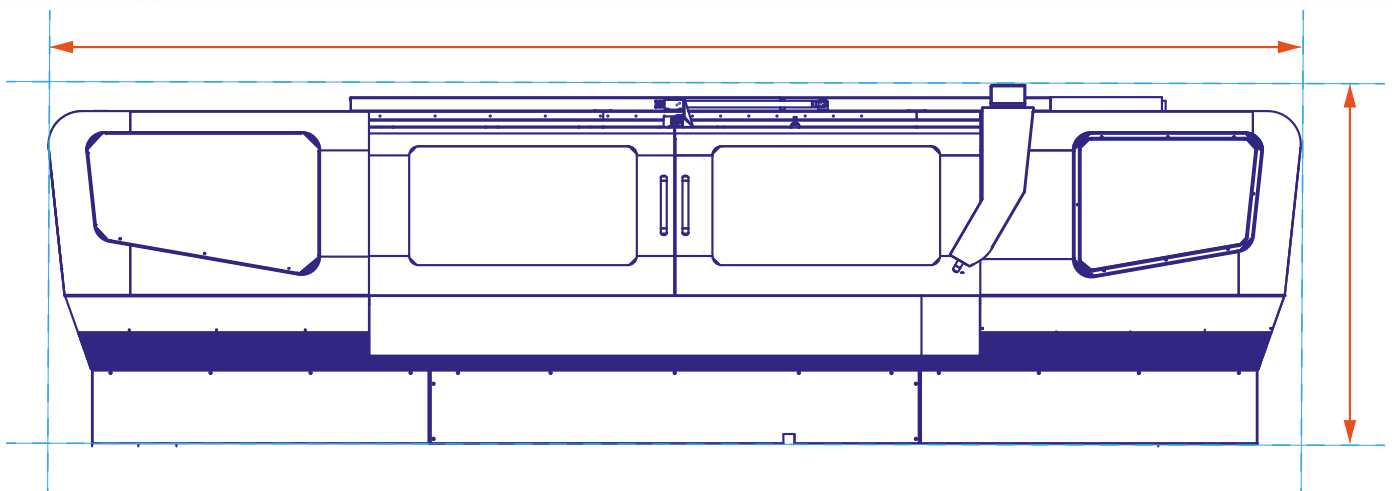
MOTORS		3606	3610	3615	3620
Wheelhead		5,50	7,50 ³		kW
Workhead		1,50	2,20 ³		kW
Wheelhead feed (X axis)		3,00			Nm
Table feed (Z axis)		11,00			Nm
Hydraulic power pack ³		0,75			kW
Coolant pump		0,18			kW

DIMENSIONS		3606	3610	3615	3620
Length		2900	3700	5200	6600 mm
Width		1500	1500	1500	1500 mm
Height		2100	2100	2100	2100 mm
Net weight		3800	4700	6200	7700 Kg

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COMPLETE CLOSURE - A TYPE





WORKING CAPACITY		6010	6015	6020	6030
Distance between centers	max.	1150	1750	2250	3150 mm
Grinding length	max.	1000	1600	2100	3000 mm
Height of centers over table				300	350 ³ mm
Swing over table			max.	595	695 ³ mm
Weight on centers			max.	1200	kg
Cantilever weight ¹			max.	120	kg

TABLE (Z - AXIS)		6010	6015	6020	6030
Automatic table traverse	max.	1150	1650	2150	3050 mm
Swivel on either side		+8°	+7°	+6°	+5°
		-4°	-3°	-2°	-1°
Automatic traverse min.			3		mm
Speed			1-5000		mm/min
Handwheel division		0,001	0,01	0,1	mm

WORKHEAD		
Rotation speed		0-350 rpm
Spindle hole diameter		44 mm
Internal center taper		6 MT
External center taper		8 ASA
Swivel		90°

TAIL STOCK		
Spindle stroke		70 mm
Spindle diameter		80 mm
Internal center taper		5 MT

WHEEL HEAD (X - AXIS)		
Swivel	max.	+/- 180°
Handwheel division		0,001 0,01 0,1 mm
Manual position travel		250 mm
Stroke	max	480 mm
Speed	max	0,2-3000 mm/min
Rotation speed (inverter)		600-1250 rpm

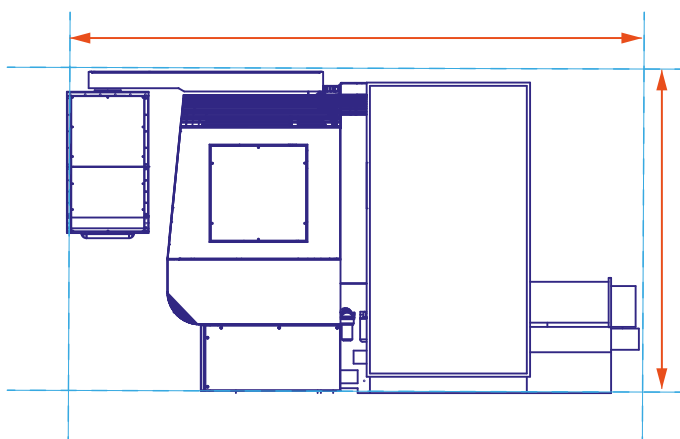
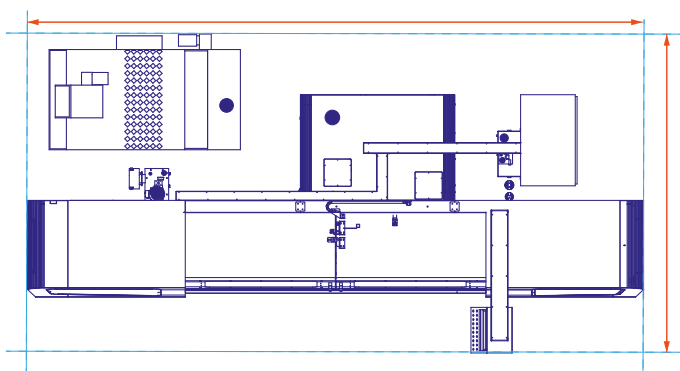
GRINDING WHEEL SPECIFICATIONS		
Diameter	max.	610 mm
Hole		230 mm
Width	min.	50 mm
	max.	120 mm

WORKING FEEDS		(mm)
Minimum programmable feed		0,001

INTERNAL GRINDING ATTACHMENT		
Hole diameter for spindle		100 120 ³ mm
Electric motor		2,20 4,00 ³ kW

MOTORS		
Wheelhead		15,00kW
Workhead		3,60kW
Wheelhead feed (X axis)		6,00 Nm
Table feed (Z axis)		11,00 Nm
Hydraulic power pack		0,75kW
Coolant pump		0,18kW

DIMENSIONS		6010	6015	6020	6030
Length		5200	5700	6850	9000 mm
Width		1950	1950	1950	1950 mm
Height		2100	2100	2100	2100 mm
Net weight		6800	8100	9300	11000 Kg



¹150 mm from workhead spindle nose

²Without Inverter

³Option

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WORKING CAPACITY	8030	8040	8050	8060	8080
Distance between centers max	3000	4000	5000	6000	8000 mm
Grinding length max	3000	4000	5000	6000	8000 mm
Height of centers over table			400	450 ³	500 ³ mm
Swing over table		max. 795	895 ³	995 ³	mm
Weight on centers		max.	4000		kg
Cantilever weight ¹		max.	180		kg

TABLE (Z - AXIS)	8030	8040	8050	8060	8080
Automatic table traverse max	3200	4200	5200	6200	8200 mm
Swivel on either side	+5°	+4°	+3°	+2°	+0°
	-1°	-1°	-1°	-1°	-0°
Automatic traverse min.			4		mm
Speed			1-5000		mm/min
Handwheel division		0,001	0,01	0,1	mm

WORKHEAD	
Rotation speed	0-150 rpm
Spindle hole diameter	44 mm
Internal center taper	6 MT
External center taper	8 ASA
Swivel	90°

TAIL STOCK	
Spindle stroke	80 mm
Spindle diameter	120 mm
Internal center taper	6 MT

WHEEL HEAD (X - AXIS)	
Swivel	max. +/- 180°
Handwheel division	0,001 0,01 0,1 mm
Manual position travel	250 mm
Stroke	max 480 mm
Speed	max 0,2-3000 mm/min
Rotation speed (inverter)	600-1250 rpm

GRINDING WHEEL SPECIFICATIONS	
Diameter	760-1200 mm
Hole	305 mm
Width	min. 50 mm max. 120 mm

WORKING FEEDS	(mm)
Minimum programmable feed	0,001

INTERNAL GRINDING ATTACHMENT	
Hole diameter for spindle	100 100 ³ mm
Electric motor	2,20 4,00 ³ kW

MOTORS	
Wheelhead	15,00 18,00 ³ kW
Workhead	7,50 kW
Wheelhead feed (X axis)	6,00 Nm
Table feed (Z axis)	36,00 Nm
Hydraulic power pack	1,50 kW
Coolant pump	0,18 kW

DIMENSIONS	8030	8040	8050	8060	8080
Length	9860	12260	14000	16500	18500 mm
Width	2400	2400	2400	2400	2400 mm
Height	2650	2650	2650	2650	2650 mm
Net weight	23000	25000	27500	30000	35000 kg

¹150 mm from workhead spindle nose

²Without Inverter

³Option

TECHNICAL SPECIFICATIONS



- BASE**
Structure in normalised and stabilised cast iron with large ground guides.
On all the lower part of the perimeter are situated the recesses for machine levelling.
- TABLE**
The table is manufactured in two parts, both are in normalised and stabilised cast iron.
Lubrication is assured by a constant oil flow distributed over the complete length of the table.
The upper part of the table is swivelable in the two directions making it suitable for grinding tapered workpieces.
- EQUIPMENT AND ELECTRICAL PLANT**
The cabinet houses all the electrical / electronic components, PCL control, axis motor controllers etc.
- LUBRICATION PLANT**
The lubrication power pack, is separate from the machine and supplies continuous oil to the wheelhead and table guides.
The recovered and filtered table oil is returned to the power pack.
- HYDRAULIC PLANT**
The hydraulic power pack, is separate from the machine and activates the hydraulic cylinder of the tailstock.
- PNEUMATIC PLANT**
This distributes the air to the air cushion on the workhead, tailstock, table and wheelhead top-slide as required during the set up and manual movement of the major parts.
- PROTECTIONS**
For the protection of the operator all movable parts are covered with CE compliant guards.
Belts and moving parts are covered.
The front protections are sheet sliding doors with polycarbonate shields, as standard.
There are two fix steel sheets positioned on the sides of the bed.
There is also a movable shield in sheet metal, controlled by a pneumatic cylinder, protects the operator, when the grinding wheel is in rotation and the front sliding doors are open.
A built in interlock safety device, does not permit the automatic cycle to start if the front sliding doors are open

TECHNICAL SPECIFICATIONS

	Automatic table longitudinal movement re-circulating ball screw with preloaded nut	√
TABLE	Incremental linear encoder to display the position	O
	Micrometric device with dial gauge for taper control	√
	Machines with distance between centers of more than 4000 mm, the swivelling is facilitated and more precise with teh an air cushion system	√
	External diamond dresser on the tailstock	√
DRESSER	Grinding wheel dressing with radius on the edges and interpolation between X and Z	√
	External wheel dresser support mounted on headstock	O
	High frequency diamond roll (dressing wheels in CBN or PCD)	O
	Internal diamond dressing device positioned on the table	√
	Internal wheel dresser support, tilting hydraulic	O
ELECTRICAL PLANT CABINET		
	The internal temperature of the cabinet is controlled by an air-conditioning unit.	√
TAILSTOCK HYDRAULIC CYLINDER DRIVE		√
RE-CIRCULATING BALL SCREW NUTS: GREASE LUBRICATED		√
COOLANT PLANT	Automatic opening and closing coolant flow	√
	Large capacity tank for the coolant complete with electro pump	√
	Coolant plant with combined magnetic+paper roll cleaner.	√
FIXED STEEL SHEETS INSTALLED ON THE BED SIDES		√
COMPLETE CLOSURE		O

STANDARD EQUIPMENT

Coolant equipment complete with pump, electrical equipment, tank, pipes and nozzle	✓
Coolant Filters	✓
	Magnetic and paper roll
	One
Grinding wheel	✓
	Flange
	Balancing arbor
	Extractor
2 hard metal tipped centres	✓
Set of levelling screws and plates	○
2 cloth bellows for table guide protection	✓
Set of	✓
	service spanners
	hexagonal spanners
Oil for lubrication	✓
	wheel spindle 5 kg
	guide 5 kg
Instruction manual	✓

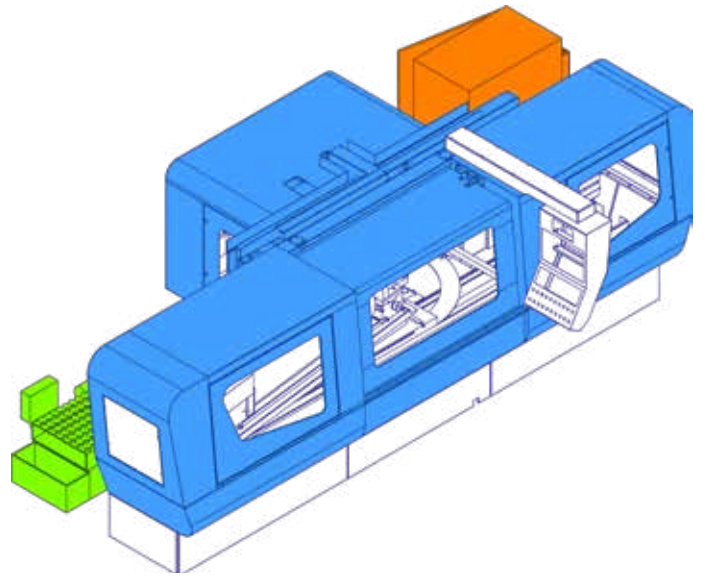
EQUIPMENT

Axis digital readout	X wheel head	✓
	Z table	○
Wheel head and table automatic electronic feeds controlled by brushless motors		✓
Re-circulating ball screw	X wheel head	✓
with preloaded nut	Z table	✓
Table manual swivelling system for taper grinding with dial gauge		✓
Wheel head	Wheelhead slides by means of a recirculating ball screw with double preloaded nut, on linear motion guide with roller cage.	✓
Hydraulic unit for tailstock control		✓
Pneumatic unit		✓
Centralized lubrication		✓

ENCLOSER

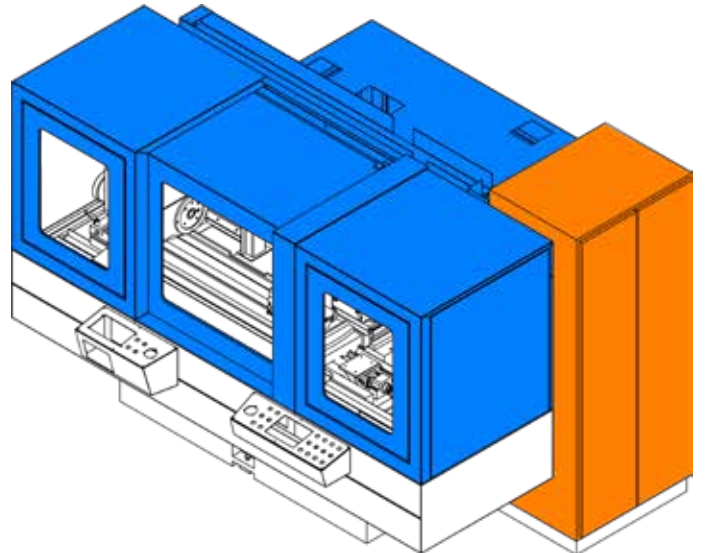
TYPE A - ROUNDED

- COMPLETE ENCLOSER
- ELEGANT
- BALANCED STYLE



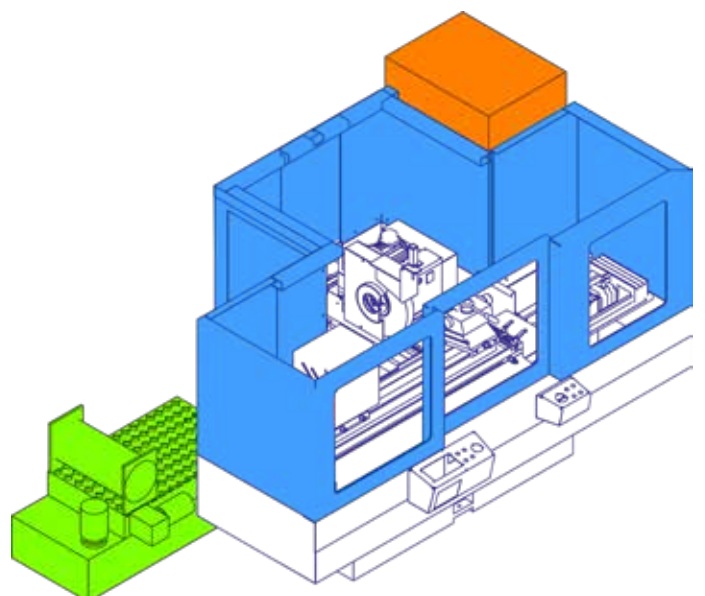
TYPE B - SQUARE

- COMPLETE ENCLOSER
- FUNCTIONAL
- ESSENTIAL



TIPO C - STANDARD

- OPEN TOP
- FUNCTIONAL



WHEELHEAD

POSITIONING PRECISION

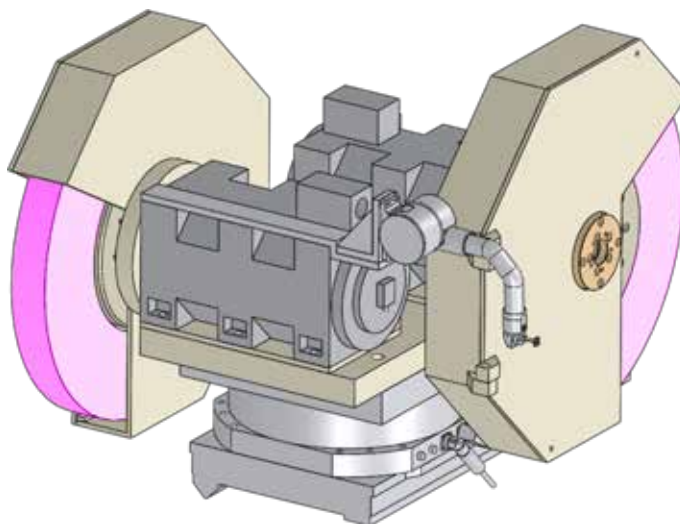
The structure is composed of two carriages in normalised cast iron.
The upper carriage where the hydrodynamic spindle is located, has a manual stroke positioning to optimise the use of the grinding wheel.
An air flow facilitates the positioning.
The lower carriage slides by means of a recirculating ball screw with double preloaded nut, on linear motion guide with roller cage.
The greasing of the guides is timed.
The brushless motor which moves the screw, may be controlled (on request) with a closed loop by the incremental linear encoder, which guarantees a positioning precision on the complete stroke of 0,0001 mm



WHEELHEAD ROTATION 180°

The wheelhead rotates manually 180°.
On request, the wheelhead rotation of 180° may be executed :

- manually
- manually with DRO
- index swivel of 2.5°, with Hirth coupling :
 - manual
 - automatic with brushless motor
- in continue with TORQUE motor



WHEELHEAD CONFIGURATION

Wheelhead can be equipped with a second external grinding wheel, mounted on the right side of the same spindle.

WHEELHEAD CUSTOMIZATION

To respond to more complex processing, the machine can be realized according to customer's requirements such as, for example, grinding wheels mounted on two spindles

WHEELHEAD SPINDLE

Hydrodynamic type, rotates on anti-friction metal bushes, guaranteeing high finish degree.
Rotation by means of an AC motor.
Transmission by means of pulleys and Poly-V belt.
The speed is regulated by inverter

CUSTOMIZATION

On request electrospindle of different power can be assembled



WORKHEAD



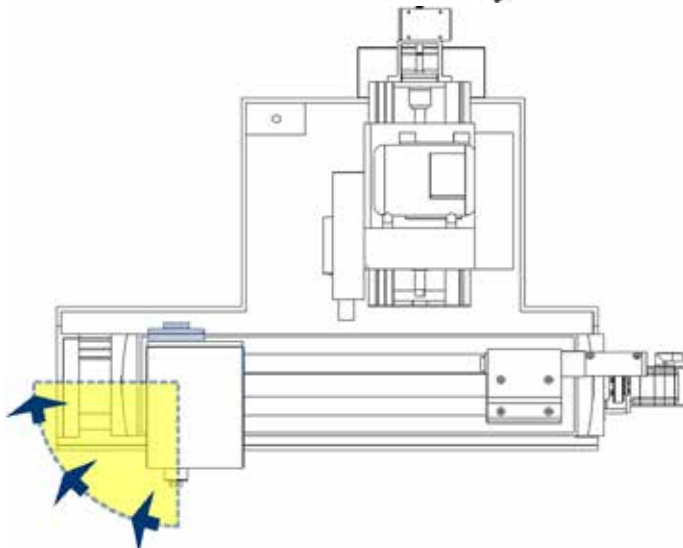
DEAD AND LIVE SPINDLE POSITIONING FACILITATED BY AN AIR FLOW

The structure is normalised, stabilised and well ribbed cast iron, supports the workpiece weight and the force generated by the grinding operation. Equipped with dead and live spindle.

The spindle rotates:

- on high precision ball bearings, guaranteeing restricted tolerance and maximum rigidity in the working;
- by means of a AC motor and the rpm adjustments are programmable on the operator panel;
- may be intermittently manual or automatic.

The workhead positioning on the table is facilitated by an air flow.



WORKHEADS ROTATION 180°

Workhead rotates 90 degrees and the rotation can be:

- manual
- manually with DRO*
- Automatically with Indexing 1° Hirth coupling *
- Manually with Indexing 1° Hirth coupling *

*On request



SPINDLE ROTATION
ON HIGH PRECISION BALL BEARINGS,
GUARANTEEING RESTRICTED TOLERANCE
AND MAXIMUM RIGIDITY

TAILSTOCK

Machine models PT6 and MT6, are supplied standard with Hydraulic opening / closure and micrometric correction of the cylindricity

Machine models RT6 and ET6 are available in three different versions:

- manual opening (standard);
- hydraulic opening (on request);
- hydraulic opening / closure and micrometric correction of the cylindricity (on request).



INTERNAL GRINDING

The machine (on request) may be equipped with Internal Grinding Attachment, which may be mounted in two versions:

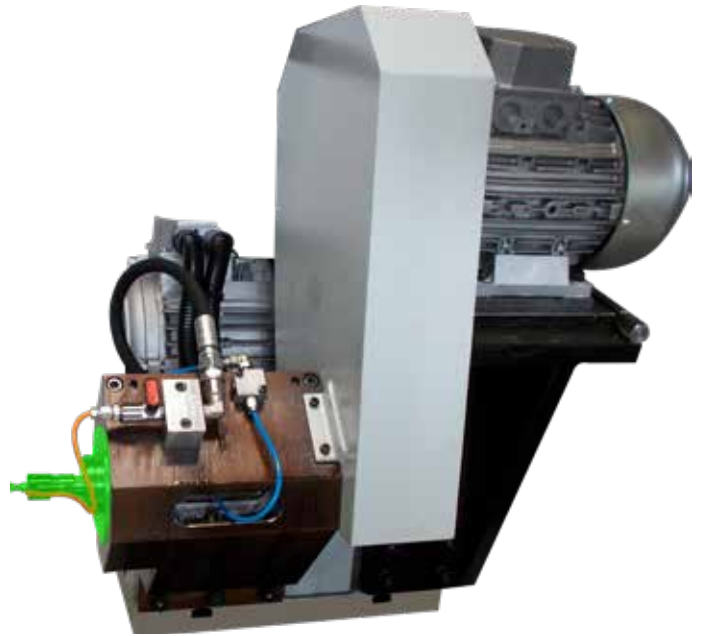
- drop down over wheel head
- on rear side of wheel head.

Robbi Group offers a large range of internal grinding spindles that can be :

- belt driven spindles up to 42,000 RPM
- electric spindles up to 120,000 RPM

LARGE RANGE OF
QUILLS AND ATTACHMENTS
ARE AVAILABLE

INTERNAL GRINDING SPINDLE
MOUNTED
ON REAR SIDE OF WHEEL HEAD



INTERNAL GRINDING SPINDLE
MOUNTED
DROP DOWN OVER WHEEL HEAD



WHEEL DRESSING

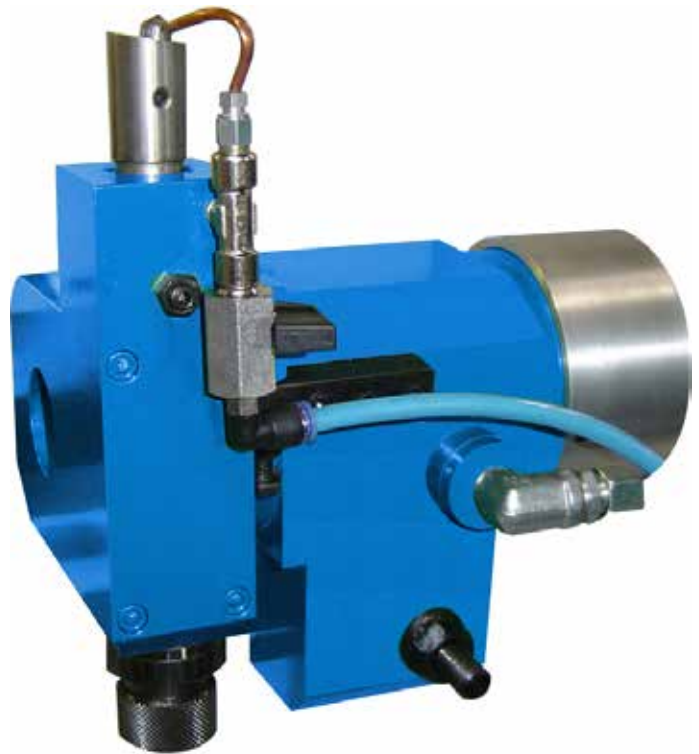
CUSTOMIZABLE ACCORDING TO THE PROCESS REQUIRED

A well dressed grinding wheel is crucial to obtain a high-performance and high-quality grinding process. The wheel dresser for external grinding wheels can be mounted on the:

- table
- tailstock

The wheel dresser support can be:

- fixed
- tilting hydraulic



DRESSING FIXED TOOLS OR HIGH FREQUENCY DIAMOND ROLLS

The machine can use for dressing:

- fixed tools
- or high frequency diamond rolls, particularly useful for internal grinding wheels



PROCESS CONTROL

GRINDING WHEEL BALANCING

Continuously monitors the condition of the machine in real time and compensates any unbalance of the grinding wheel .

Grinding Wheel Balancing :

- improves the mechanical stability
- improves the surface quality, avoiding risks of facets , circularity defects errors and roughness
- allows to increase the peripheral speed of the grinding wheel
- increases the productivity
- reduces stress on the spindle bearings

CONTACT CONTROL

The instant in which the grinding wheel comes into contact with the workpiece, is important to:

- reduce the cycle time
- minimise the 'gap' time, maximising the axis feeds

The analysis of the contact between grinding wheel-dresser, consents to obtain a perfect profile optimising the scrap.



DETECTS SUB-MICRON CONTACTS ("GAP")

MONITORS CONSTANTLY THE WORK

PREVENTS COLLISION ("ANTI-CRASH")

IN PROCESS MEASURING SYSTEM

WORKPIECE SETTING

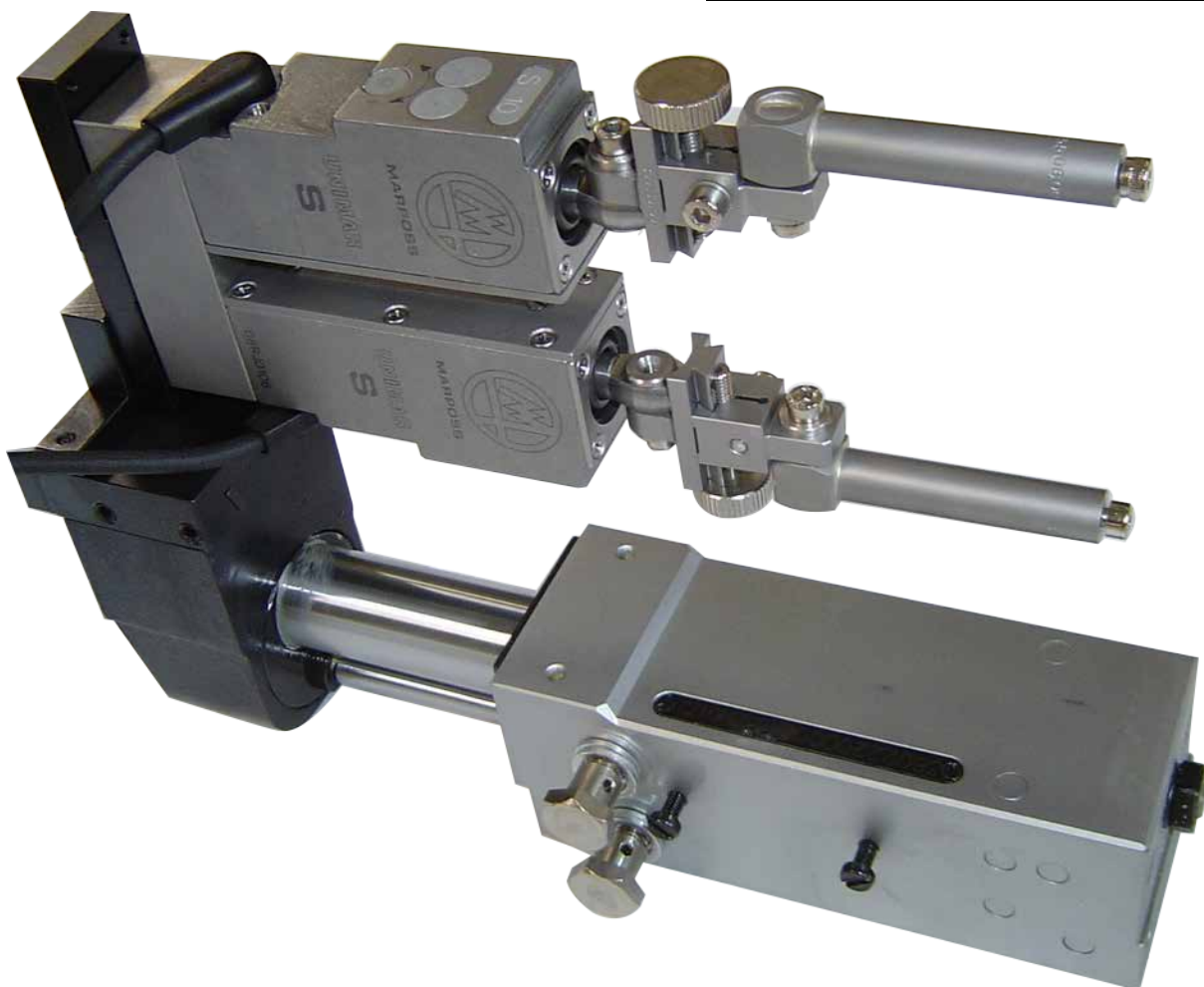
The use of a flagging device combined to the PLC control records the position of the workpiece in Z axis (table).

IN PROCESS MEASURING SYSTEM

The use of measuring systems during the working, permits to grind components with high restricted tolerance.

The available methods are :

- Absolute measurement of diameters, with large ranges
- Measurement of small and large ranges, with reference master
- Control of continuous and interrupted surfaces (regular and irregular)
- Analysis of roundness and shape
- Measurement of the diameters: external, internal, thickness, scrap, taper, shoulder, etc.
- Automatic compensation of the in-process correction.



DIGITAL FACTORY

OMICRON CNC
GRINDING MACHINES
ARE EQUIPPED WITH (Optional)
MINDSPHERE
SIEMENS

MORE PRODUCTIVITY

MORE QUALITY

DIGITALIZATION OF PRODUCTION PROCESS

The CNC machines can be integrated with software and with appropriate sensors to:

- digitize the production process
- analyze the working parameters
- verify the machine status

The CNC machines may be further customized (on request) to meet customer's production process requirements

ANALYSIS OF:

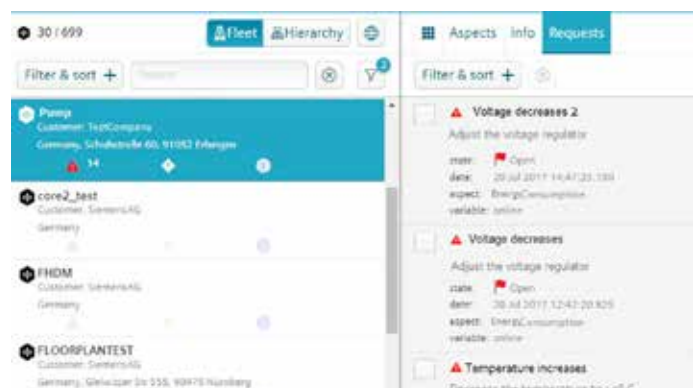
ACCELERATION

TEMPERATURE

SPEED

VIBRATIONS

- to monitor continuously the working conditions
- to be checked and serviced worldwide, safely
- to perform part programs from an external memory



AT YOUR SERVICE SINCE 1936



Robbi has operated in the machine tool market since 1936 and specialise in the manufacture of machines tailored to meet the more demanding needs of the customer's complex and more specialised demands.

Whilst maintaining competitive prices, Robbi have ensured their machines have stability and precision.



Robbi grinding machines, use the best technology and the most robust and reliable components available on the market in their build programme.

Robbi have a commitment to assist and help, proactively, its customers to ensure they maximise the efficiency of the machine.



Robbi, in fact, offers various service solutions, including the:

- *development of manufacturing processes;*
- *replacement parts spare part programme,*
- *making parts available for older models,*
- *tailored operational training programs*
- *and maintenance training to maximise the features of grinding machines and maintain the Robbi Grinders longevity.*



Understanding the needs of our customers we are offer the best solutions and services that increase their return on productivity thus improving our customers return on his investment.

Ideas that may improve our business are always appreciated from customers.

If there's anything we can do to improve your experience with Robbi, please let us know.

Robbi have a commitment to ensure all customers are completely satisfied.

Choose Robbi precision for increased productivity and a faster return on your investment.

Call us today, we've have a solution for your grinding application.



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