

# **OMICRON**

**SEMI AUTOMATIC** 

**UNIVERSAL CYLINDRICAL GRINDING MACHINES** 



Robbi Group srl Via dell'Industria 7 37040 Veronella - VR Italia 39 0442 47700 39 0442 47966 robbi@robbigroup.com https://rettificatrici-robbi.com



# **OMICRON T6: HALBAUTOMATISCHE**

### **AUTOMATED AND ECONOMIC GRINDERS**



### **AUTOMATIC AND MANUAL OPERATIONS GRINDERS**

- Excellent versatility and high quality standards
- Extremely fast and precise also when processing complex components
- Easy preset of working diameter
- Single or small batch production workpieces, with the ability to function both in manual or automaticmode
- Automatic compensation of diameter after dressing
- In-process measuring gauge and gap control system (on request)

### STANDARD OPERATOR PANEL



### SIMPLE HUMAN-MACHINE INTERFACE

- Wheelhead and table position visualized on operator panel
- Possibility to program up to 12 different diameters, on the same grinding cycle
- Possibility to update the operator panel, with the correction of each diameter
- Semi automatic grinding cycle, with stop of the grinding wheel feed once the programmed diameter has been reached
- Automatic grinding wheel dressing cycle with compensation of all the grinding dimensions

X Movement of wheel head V V Antomatic Notes of table V V Selection of the electronic handwheel division

# WORKING CYCLES WITH EASY PROGRAMMING

	OD	ID
PASS	٧	٧
PLUNGE	٧	٧
FACING	٧	
MULTI DIAMETER	٧	٧

- · stock removal rough and finish
- dwell table inversion
- sparkout time
- sparkout pass

#### **PASS GRINDING CYCLES**

Automatic increments - rough and finish

#### **PLUNGE GRINDING CYCLES**

Automatic feeds - rough and finish

Touch screen operator panel SIEMENS TP700 for easy programming of grinding cycles

# OPERATOR PANEL (Optional)



### PARAMETRIC SCREENS





# **OMICRON R T6**



**COMPLETE CLOSURE - TYPE B** 

REMOTE HANDWHEEL (Optional)



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

TABLE (Z - AXIS)		600	1000
Automatic table traverse	max.	680	1080 mm
Control on either side		+9°	+8°
Swivel on either side		-5°	-4°
Automatic traverse min.			3 mm
Speed		1-5	000 mm/min
Handwheel division	0.001	0.01	0.1 mm

W	0	D I	ſΗ	E/	۸г
VV	U	V.	<b>VIII</b>	E/	٩L

Rotation speed	0-600 rpm
Spindle hole diameter	26 mm
Internal center taper	4 MT
External center taper <sup>3</sup>	5 ASA
Swivel	90°

### TAIL STOCK

Spindle stroke	25	50 <sup>3</sup>	mm
Spindle diameter	43	70³	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		250 mm
Stroke	max	480 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

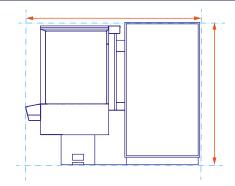
**INTERNAL GRINDING ATTACHMENT** 

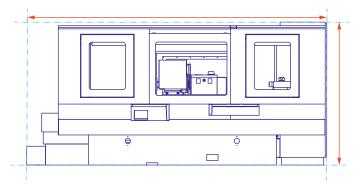
Hole diameter for spindle	80 mm
Electric motor	1,50 kW

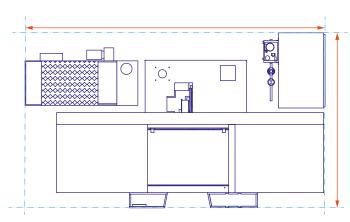
Motors

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 <sup>3</sup>	0,75 kW
Coolant pump	0,18 kW

DIMENSIONS	<b>600</b> 1	1000
Length		3550 mm
Width		L350 mm
Height		L900 mm
Net weight	2800 3	3500 Kg





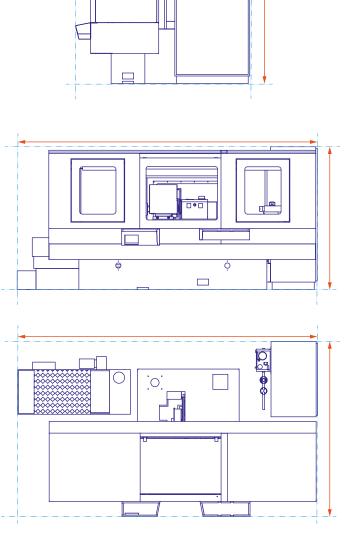




# **OMICRON E T6**



### **ESSENTIAL REPAIR - C TYPE**



WORKING CAPACITY		600	1000	1500	2000
Distance between centers	max.	630	1030	1530	2030 mm
Grinding length	max.	630	1030	1530	2030 mm
Height of centers over tabl	e			180	230 <sup>3</sup> mm
Swing over table			max	. 355	455 <sup>3</sup> mm
Weight on centers			max	. 250	300³ kg
Cantilever weight <sup>1</sup>			max	. 80	80 kg

TABLE (Z - AXIS)		600	1000	1500	2000
Automatic table traverse	max.	780	1180	1680	2180 mm
Swivel on either side		+9°	+8°	+7°	+6°
		-5°	-4°	-3°	-2°
Automatic traverse	min.				3 mm
Speed				1-500	00 mm/min
Handwheel division		0.0	01 0	.01 0	.1 mm

#### **WORKHEAD**

Rotation speed	0-600 rpm
Spindle hole diameter	31 mm
Internal center taper	5 MT
External center taper <sup>3</sup>	5 ASA
Swivel	90°

### **TAIL STOCK**

Spindle stroke	35	70 <sup>3</sup> mm
Spindle diameter	48	70 <sup>3</sup> mm
Internal center taper	4	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	0 mm/min
Rotation speed (inverter)	600-1600	rpm

### **GRINDING WHEEL SPECIFICATIONS**

Diameter		500³	
Hole		127	mm
Width	min.	20	mm
wiath	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	600	1000	1500	2000	
Wheelhead		5,50 - 1	7,50³	kW	
Workhead		1,50 - 2	kW		
Wheelhead feed (X axis)	•	3,0	0	Nm	1
Table feed (Z axis)	•	11,0	00	Nm	)
Hydraulic power pack <sup>3</sup>		0,7	5	kW	
Coolant pump		0,1	8	kW	

DIMENSIONS	600	1000	1500	2000	
Length	2900	3700	5200	6600	mm
Width	1500	1500	1500	1500	mm
Height		2100			
Net weight		4700			



# LATERAL REMOTE HANDWHEEL (Optional)





# **OMICRON P T6**



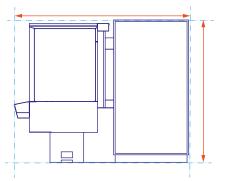
**ESSENTIAL REPAIR - C TYPE** 

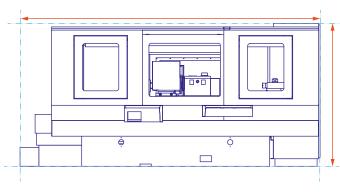


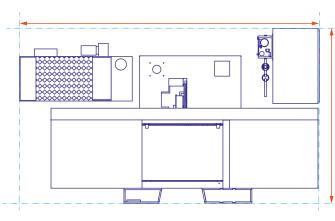
ESSENTIAL REPAIR - C Type (rear view)











WORKING CAPACITY		1000	1500	2000	300	0
Distance between centers	max	1150	1750	2250	315	0 mm
Grinding length	max	1000	1600	2100	300	0 mm
Height of centers over table				300	350	³ mm_
Swing over table			max.	595	695	³ mm
Weight on centers			max.	120	00	kg
Cantilever weight <sup>1</sup>			max.	12	0.	kg

TABLE (Z - AXIS)		1000	1500	2000	3000	
Automatic table traverse	max.	1150	1650	2150	3050 r	nm
Swivel on either side		+8°	+7°	+6°	+5°	
		-4°	-3°	-2°	-1°	
Automatic traverse		min.			3 mm	
Speed				1-500	0 mm/ı	min
Handwheel division		0,00	1 0,0	01 0,	1 mm	

Ν				

Rotation speed	0-300 rpm
Spindle hole diameter	44 mm
Internal center taper	6 MT
External center taper <sup>3</sup>	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
wiatii		120 mm

### WORKING FEEDS (mm) Minimum programmable feed 0,001

### **INTERNAL GRINDING ATTACHMENT**

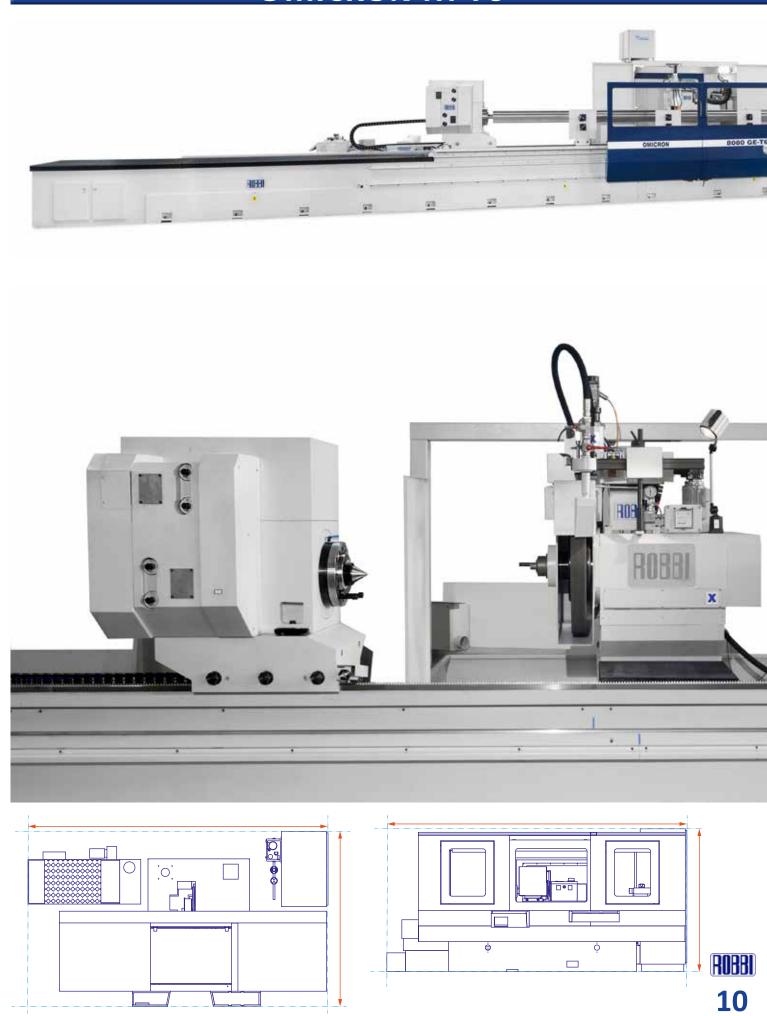
Hole diameter for spindle	100	120 <sup>3</sup> mm
Electric motor	2,20	4,00 <sup>3</sup> kW

### Motors

Wheelhead	11,00 15,00³kW
Workhead	4,0 5,5³kW
Wheelhead feed (X axis)	6,00 Nm
Table feed (Z axis)	11,00 Nm
Hydraulic power pack	0,75kW
Coolant pump	0,18kW

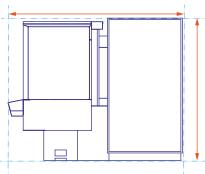
DIMENSIONS	1000	1500	2000	3000
Length	5200	5700	6850	9000 mm
Width	1950	1950	1950	1950 mm
Height	2100	2100	2100	2100 mm
Net weight	6800	8100	9300	11000 Kg

# OMICRON M T6









WORKING CAPACITY	3000	4000	5000	6000	8000
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 <sup>3</sup>	500 <sup>3</sup> mm
Swing over table		max.	795	895 <sup>3</sup>	995 <sup>3</sup> mm
Weight on centers		max.		4000	kg
Cantilever weight <sup>1</sup>		max.		180	kg

TABLE (Z - AXIS)	300	00	4000	<b>5000</b>	6000	8000	
Automatic table traverse	max 320	00	4200	5200	6200	8200 r	nm
Control on aither aids	+	5°	+4°	+3°	+2°	+0°	
Swivel on either side	-	1°	-1°	-1°	-1°	-0°	
Automatic traverse	min					3 mm	
Speed					1-500	0 mm/	min
Handwheel division			0,001	0,0	)1 0,	1 mm	

WORKHEAD	
Rotation speed	0-150 rpm
Spindle hole diameter	44 mm
Internal center taper	6 MT -8 METRICO <sup>3</sup>
External conter tanor <sup>3</sup>	0 1 0 1

Swivel	90°
TAIL STOCK	
Spindle stroke	80 mm

5	Spindle stroke	80 mm
9	Spindle diameter	120 mm
Ī	nternal center taper	6 MT

WHEEL HEAD (X - AXIS)		
Swivel	max.	+/- 180°
Handwheel division	0,001 0,01	L 0,1 mm
Manual position travel		250 mm
Stroke	max	480 mm
Speed	max 0,2-300	00 mm/min
Rotation speed (inverter)	600-1250	rpm

<b>GRINDING WHEEL SPECIFICATIONS</b>	
Diameter	760-1200 mm
Hole	305 mm
Width	min. 50 mm
wiath	max. 120 mm

WORKING FEEDS	(mm)
Minimum programmable feed	0,001

INTERNAL GRINDING ATTACHMENT		
Hole diameter for spindle	100 120 <sup>3</sup> mn	n
Electric motor	2,20 4,00 <sup>3</sup> kW	1

MOTORS	
Wheelhead	15,00 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	3000	4000	5000	6000	8000	
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

### 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.

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	٧
BLE	Incremental linear encoder to disp	lay the position	0
₹	Micrometric device with dial gauge	e for taper control	٧
	Machines with distance between c more precise with teh an air cushio	enters of more than 4000 mm, the swivelling is facilitated and on system	٧
~	External diamond dresser on the ta	ailstock	٧
	High frequency diamond roll (dress	sing wheels in CBN or PCD)	0
ORESSE	Internal diamond dressing device p	positioned on the table	٧
	Internal wheel dresser support, tilt	ing hydraulic	0
_	TRICAL PLANT CABINET internal temperature of the cabinet	is controlled by an air-conditioning unit.	0
HYDF	RAULIC CYLINDER DRIVE	tailstock	0
RE-C	IRCULATING BALL SCREW NUTS: GREAS	E LUBRICATED	٧
F ⊢	Automatic opening and closing cod	plant flow	٧
OLA LAN	Large capacity tank for the coolant	complete with electro pump	٧
8 -	Coolant plant with combined magr	netic+paper roll cleaner.	0
FIXE	STEEL SHEETS INSTALLED ON THE BED	Sides	٧
COM	PLETE CLOSURE		$\cap$

# **STANDARD EQUIPMENT**

Coolant equ	ipment c	omplete with pump, electrical equipment, tank, pipes and nozzle	V
		Magnetic and paper roll	0
Coolant Filte	ers	Paper roll	0
		Magnetic	0
	One		٧
Grinding	Flange	е	٧
wheel	Balan	cing arbor	٧
	Extractor		
2 hard meta	l tipped o	centres	٧
Set of levelling screws and plates		0	
		ble guide protection	٧
		e spanners	٧
Set of	hexag	onal spanners	٧
Oil for lubrication		wheel spindle 5 kg	٧
		guide 5 kg	0
Instruction manual			√

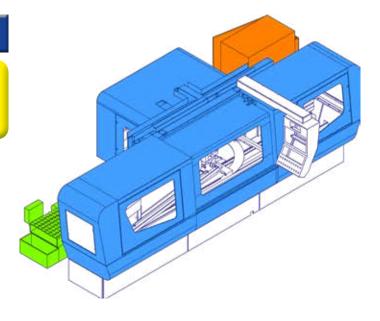
# **EQUIPMENT**

Axis digital readout		X wheel head	0
		Z table	0
Wheel head and	l table automati	ic electronic feeds controlled by brushless motors	٧
Re-circulating ba	all screw	X wheel head	٧
with preloaded i		Z table	٧
Table manual sw	vivelling system	for taper grinding with dial gauge	٧
Wheel head		slides by means of a recirculating ball screw with double preloaded ar motion guide with roller cage.	٧
Hydraulic unit for tailstock control		rol	0
Pneumatic unit			٧
Centralized lubrication			٧

# **ENCLOSER**

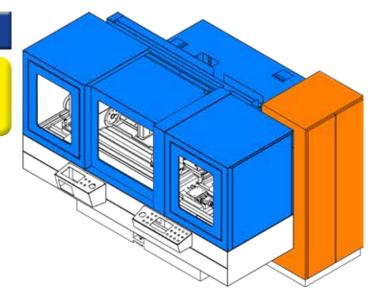
# **TYPE A - ROUNDED**

- COMPLETE ENCLOSER
- ELEGANT
- BALANCED STYLE



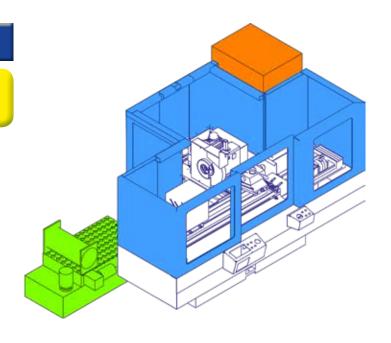
# TYPE B - SQUARE

- 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 machinescan 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 iby 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 in 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



# **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**

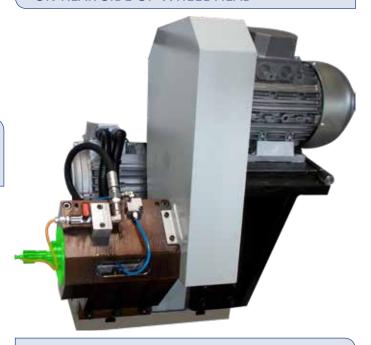
The machine (on request) may be equipped with Internal Grinding Attachment, which may be mounted in two versions:

- 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



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).

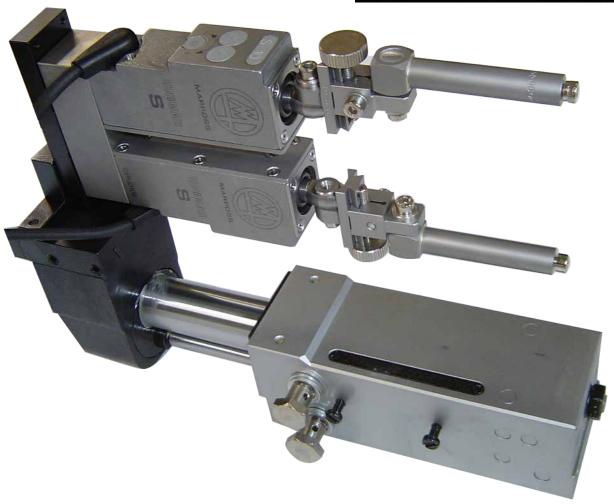
### IN PROCESS MEASURING SYSTEM

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:**

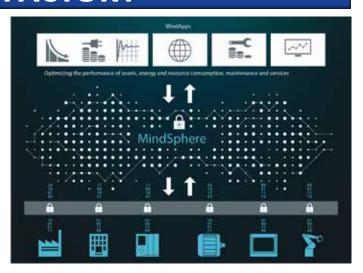
**ACCELERATION** 

**TEMPERATURE** 

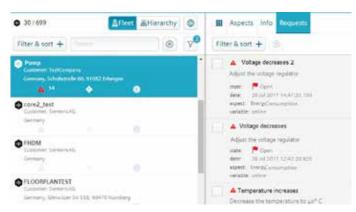
**SPEED** 

**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 complexed 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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Robbi Group srl Via dell'Industria 7 37040 Veronella - VR Italia 39 0442 47700 39 0442 47966 robbi@robbigroup.com https://rettificatrici-robbi.com

