



RU

UNIVERSAL GRINDING MACHINES FOR SMALL DIAMETERS FROM 1000 to 2500

RUG

UNIVERSAL GRINDING MACHINES FOR BIG DIAMETERS FROM 2500 to 5000 mm

MAIN FEATURES

AZ Universal grinding machines range has been designed to fulfil the requirements of a wide range of applications that combine external, internal, face and taper grinding of components such as: transmission shafts, electric motor shaft, gas and wind turbine shafts, railway shafts, machine tools shafts, landing gear components, etc.

BASEMENT AND STRUCTURE

Basement is made of high resistance cast iron, thermally stabilized. It has double large flat and "V" guide, dedicated for table and grinding carriage movements. Strong structure with scraped surface in order to secure the highest precision of linearity and flatness in the different positions of the table. Table is studied by AZ with special guideways that permit rigidity and very high longitudinal precision. The guideways are covered with special anti-friction plastic material in order to:

- reduce the disengaging friction
- reduce the coefficient of general friction
- reduce the rubbing wear

The table movement on Z axis is made by pre-loaded ballscrew with double nuts and position is controlled with linear encoders with precision and repeatability of 0,003 mm.

			RU1000	RU1500	RU2000	RUG3000	RUG4000	RUG5000
CAPACITY*	Height centers	[mm]	400	400	400	450	450	550
	Swing over table	[mm]	780	780	780	880	880	1080
	Max. length of external grinding	[mm]	1000	1500	2000	3000	4000	5000
	Max diameter of grinding wheel	[mm]	660	660	660	710	915	915
	Max diameter to be grind with new wheel	[mm]	500	500	500	800	800	800
	Width of grinding wheel	[mm]	18÷50	18÷50	22÷80	30÷120	30÷120	30÷120
	Maximum weight between centers	[kg]	80	150	300	3000	4000	5000
	Min. distance between centers	[mm]	30	30	30	80	80	80
	Max. distance between centers	[mm]	1060	1550	2050	3050	4050	5050
TECHNICAL SPECIFICATION*	Grinding wheel spindle power	[kW]	11	11	11	24.2	24.2	24.2
	Grinding wheel spindle torque	[Nm]	66	66	66	96	96	96
	Maximum angular speed	[rpm]	6000	6000	6000	6000	6000	6000
	Drive X and Z axis	[type]	Ball screw system	Ball screw system	Ball screw system	Ball screw system	Ball screw system	Ball screw system
	Positioning accuracy X-axis	[mm]	±0,0005	±0,0005	±0,0005	±0,0005	±0,0005	±0,0005
	Positioning accuracy Z-axis	[mm]	±0,0005	±0,0005	±0,0005	±0,0005	±0,0005	±0,0005
	Range di velocità asse X	[mm/min]	0÷10000	0÷10000	0÷10000	0÷10000	0÷10000	0÷10000
	Range di velocità asse Z	[mm/min]	0÷10000	0÷10000	0÷10000	0÷10000	0÷10000	0÷10000
	Headstock spindle power	[kW]	4.7	4.7	4.7	4.7	4.7	4.7
	Maximum angular speed headstock	[rpm]	1000	1000	1000	500	500	500
	Coupling cone	MORSE	5	5	5	6	6	6
	Tailstock quill diameter	[mm]	80	80	100	160	160	220
	Tailstock quill travel length	[mm]	70	70	70	100	100	100
Dressing spindle power	[kW]	1.6	1.6	1.6	1.6	1.6	1.6	
Maximum dressing speed	[rpm]	12000	12000	12000	12000	12000	12000	

*Based on specific customer requirements. The different application possibilities of our machines depend on the technical equipment specifically requested by our customers and workpiece drawing.

MORE INFORMATIONS ABOUT AZ MACHINES

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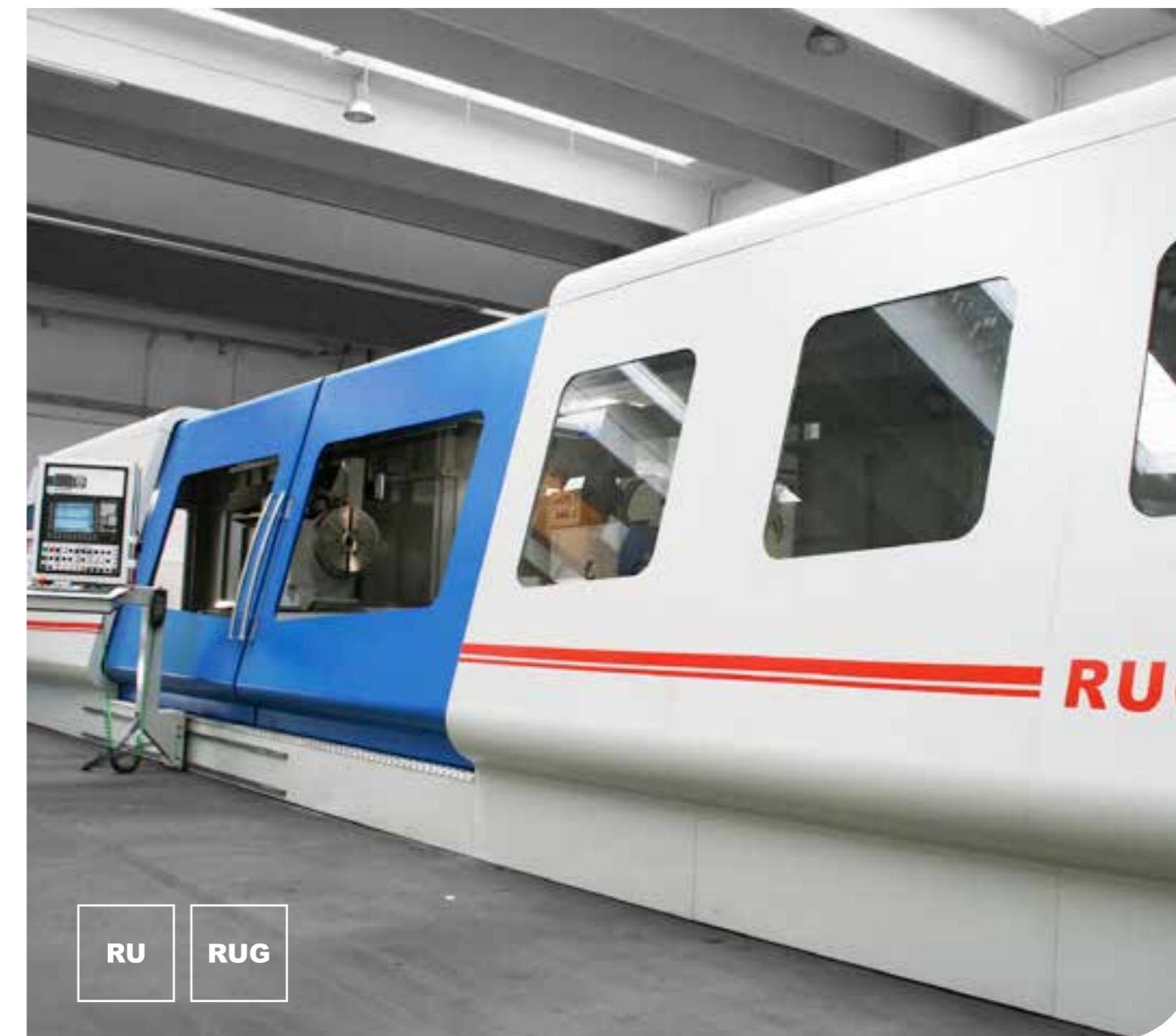
The informations and pictures of this brochure are based on specific customer requirements. The different application possibilities of our machines depend on the technical equipment specifically requested by our customers and workpiece drawing. We reserve the right to further develop our machines technically and make name, design, technical specifications, equipment etc. modifications.

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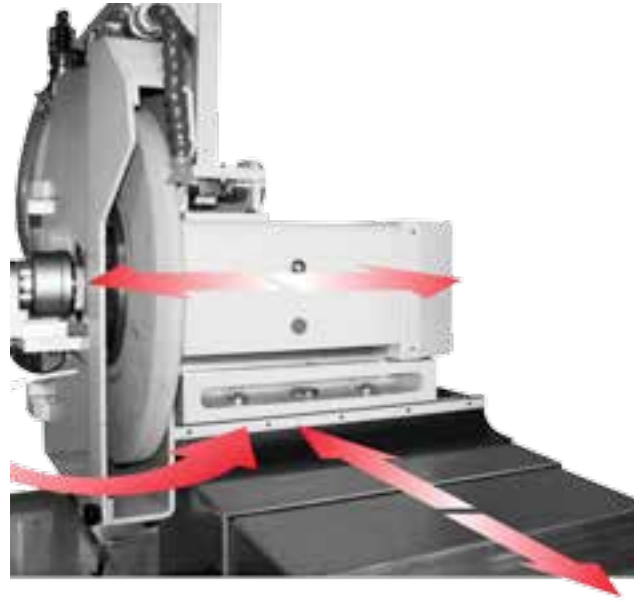
RU

UNIVERSAL GRINDING MACHINES
GRINDING MACHINES FOR EXTERNAL AND INTERNAL DIAMETERS



RU

RUG



WHEELHEAD UNIT

Strong structure, thermally stabilized, with scraped surface in order to secure the highest precision of linearity and flatness in the different positions of the grinding wheelhead. The movement of the grinding wheel is made by **pre-loaded ballscrew** with double nuts and position is controlled with **linear encoders** with precision and repeatability of **0,003 mm**. The grinding head can be equipped with **B-axis system** to allow the use of **second external or internal grinding spindle**. The head rotate on position -20° and 220° automatically (control by angular encoder). The locking of rotation is made by hydraulic clamping. This solution permit different type of **grinding operation, O.D. and I.D.**



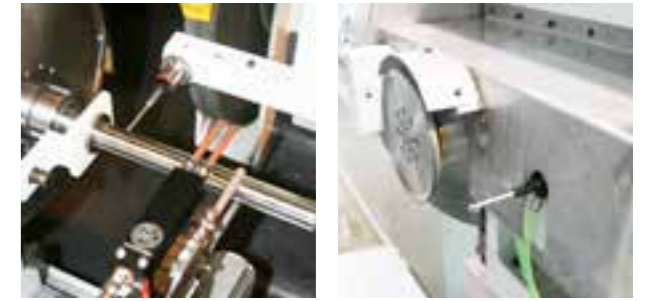
HEADSTOCK

The headstock can move by motor and manually on the table by air cushion and gear and rack. Headstock rotation is made by servomotors. The headstock can be equipped with **3 auto centering jaws chuck** or **4 independent jaws chucks**.



TAILSTOCK

The tailstock is made of high resistant cast iron stabilized. The tailstock can move by motor and manually on the table by air cushion and gear and rack. Pressure on quill is control by load cell and hydraulic system. The tailstock has a system to permit the **cylindrical manual correction (1)**.



O.D. & I.D. IN PROCESS MEASUREMENT SYSTEM

The measuring of **I.D. and O.D.** grinding can be made through a device (2) complete with **structure to positioning along the table**. The positioning along the table is manual.

O.D. IN PROCESS MEASUREMENT SYSTEM

Machine can be equipped with absolute gauge for in process measuring of diameter (4). The instrument is equipped with **complete carriage**, with 2 axes for position in-work and off-work, fully controlled by CNC.

TOUCH PROBE

The wheel measuring and workpiece position is made by a **touch probe device (3)**, with specific arm for **automatic in work positioning**.



DRESSING SYSTEM

The machine can be equipped with the **CNC wheel dresser** interfaced with the CNC control system. The dressing of the grinding wheel is done by a **diamond roll**, and **3 point diamond dresser** for the corundum grinding wheel. The **dressing program** includes dressing compensation. Complete automatic dressing procedure for every type of wheel will be prepared, tested and supplied. The dressing unit is pressurized. The dressing unit is equipped with a **GAP sensor**, to avoid collisions and fully **automate the dressing process**.



TABLE SWIVELLING

The table is realized in two cast iron parts. The lower part is lubricated by means of a constant oil flow distributed over the complete length. The upper part, is swivelable in the two directions, suitable for **grinding tapered workpieces**. It includes a **micrometric device** with centesimal dial gauge for taper **accuracy control**. Air system between the two part ensure the fast and precise table swivel movement.

STEADY REST FOR O.D. AND I.D.



THE GRINDING WHEELS FOR O.D.

Depending on the application, **corundum, CBN or diamond wheels** can be used. The CBN grinding wheel allow the grinding of both ends of work piece on the same clamping. The peripheral rotation speed (S2) is constantly **controlled by CNC**. Grinding wheel has **automatic balancing device** included. Coolant nozzle are studied for an efficient cooling. The water flux is controlled by fluxometer.



B-AXIS WHEELHEAD FOR O.D. GRINDING



B-AXIS WHEELHEAD FOR O.D. AND I.D. GRINDING

EXTERNAL SPINDLE

The spindle is designed to work without any need of lubrication change for several years, under full employment. Rotation by means of pulley with adequate V belt. Wheel hub accomodation direct on large grinding spindle taper. The rotational speed is directed **control by CNC** with servomotor.

CNC CONTROL SYSTEM

AZ use Siemens Sinumerik 840D is a Digital CNC System for Complex Tasks. A special parametrical program developed for **orbital and special shape**, like camshaft, permit programming and monitoring of all grinding work. The version of CNC Siemens Sinumerik 840D provided is updated to the latest available.

