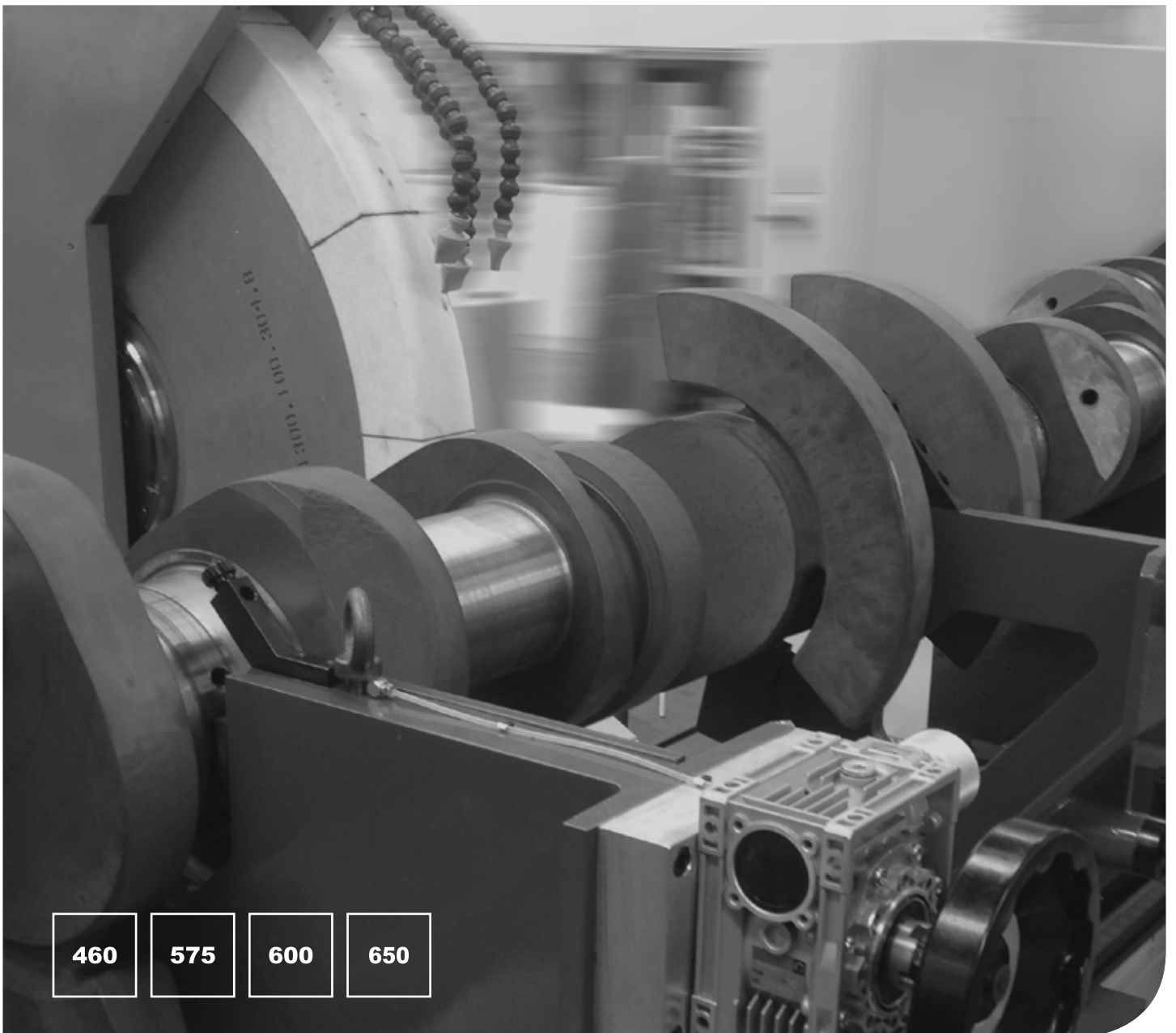




[www.azspa.it](http://www.azspa.it)

# CG

CRANKSHAFT GRINDING MACHINES



460

575

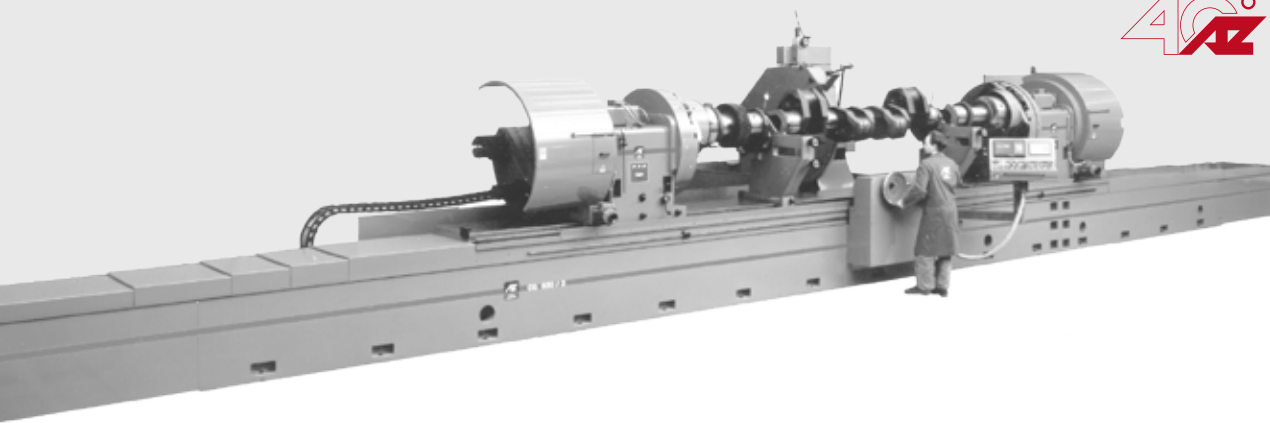
600

650

40 years of  
experience in  
Crankshaft Grinding  
Machines.

**The most complete range  
from 1.5 meters to 14  
meters crankshaft length**

AZ is the world leader in the production of crankshaft grinding machines for energy, marine, railways and automotive. A qualified team of engineers, with experience in the mechanical and mechatronics engineering, and demands of the different markets, has enabled AZ grow beyond the traditional production, hydraulic and CNC controlled grinding machines for large dimensions crankshafts. AZ has installations in more than 80 countries.



By careful design of  
this advanced  
machine, set-up,  
and operation has  
been made easier.

**FOUR INDEXING LOCATIONS ON THE  
HEAD STOCK WITH THE AIR OPERA-  
TED INDEX PINS MAKE IT FASTER TO  
DIAL IN THE CRANKSHAFT PROPERLY.**

Easily adjusted outboard counterweights never need to be supplemented by inboard weights. The CG's are built very heavy with widely spaced ways to assure positive alignment of the wheelhead to the table. Moreover, the controls are easier to use. Precision Incremental In-Feed Lever is much easier to use than a handwheel to achieve the precise desired journal size. The superior accuracy of this machine allows double plunge grinding precisely to the same size leaving no lap line. CG provides longer machine life, longer grinding wheel life and greater safety for the operator and machine.





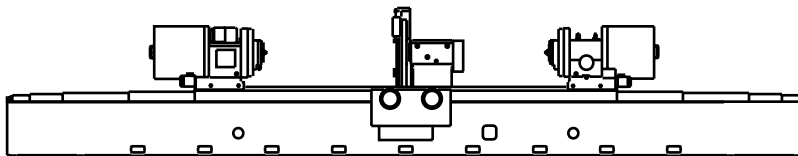
**M** MANUAL VERSION

**CNC** G CODE INTERPOLATION

**460** **575**

MOVING TABLE  
Distance between centers 4100 mm

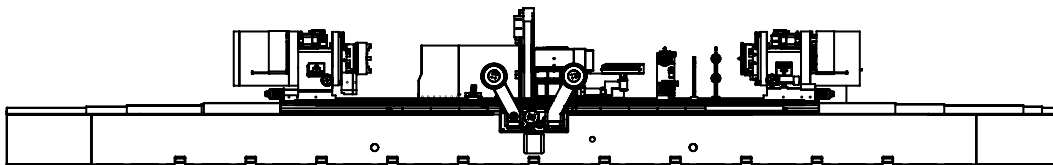
**M** **CNC**



**600**

MOVING TABLE  
Distance between centers 3000-5000 mm

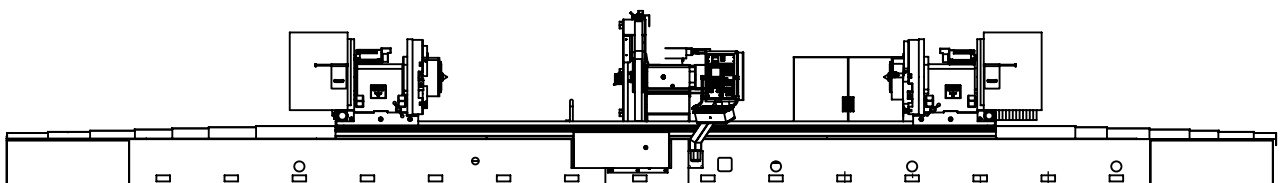
**M** **CNC**



**650**

MOVING TABLE  
Distance between centers 5400-6400 mm

**M** **CNC**



## Base and Table

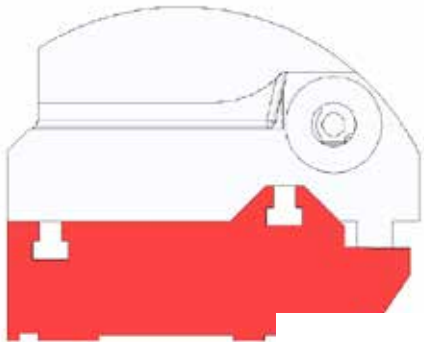
The **base** is made of high resistance **monolithic cast iron**, thermally stabilized, it has one flat and one “V” guide.

The **table** is a strong structure, thermally stabilized with scraped surface in order to secure the highest precision of linearity and flatness in the different positions of the workheads.

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 table movement with synchronous servomotor and rack without clearance

The basement and the table are coupled with V guides as per drawing.



## Workheads

**Workheads** are made of high resistance cast iron.

The **workheads-spindle** is mounted on two triads of bearings of very high precision. The bearings are pre-tensioned in order to obtain the highest rigidity also in presence of high load.

For **crankshaft-balancing**, the workheads can be provided with slide with proportionate counter-weights

Headstock and tailstock can be **synchronized** with Siemens motors and dedicated absolute Siemens angular encoder, control continuously by Siemens PLC syncro system. (Only for CG600 and CG650 models)



## Grinding Wheel Head

It moves on wide **prismatic guideways**.

The **grinding wheel spindle** rotates by means of a wheelhead spindle with high precision pre-loaded bearings. The transmission of the motion to the spindle takes place by high power V belt.

**X and Z axis movement** is made by hydraulic piston and it moves on wide prismatic guide ways.



## Set-up and Clamping system

The centring of the crankshaft is obtained by means of a special support equipped with three movements that allow solving precisely and easily any problem regarding the work-piece centring:

- One offset movement on guides
- One side movement by means of tapered gibs
- One rotary movement by means of endless screw

Zero setting and angular position is assured by pneumatically controlled locking pins. The clamping of the crankshaft can be done by precision **3 or 4 jaws-self-centering chucks**.



## Control System



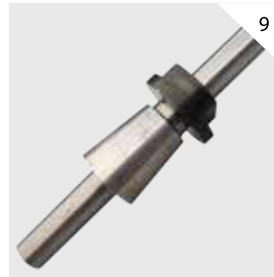
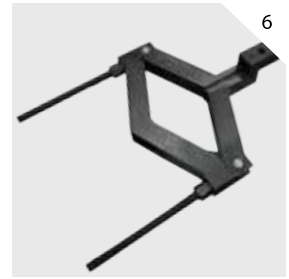
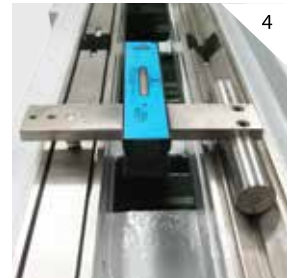
- **M** Manual version: we can have different kind of handwheels to facilitate the operator during the grinding operation.
- **CNC** version: G code interpolation



**STANDARD EQUIPMENT \***

*\*depends on the workpiece and customer request*

- Heads movement on air cushion
- Hydraulic system and coolant system
- Centralized automatic lubricant system
- Crankshaft centering fixture with dial indicator
- Crankshaft journal checking square
- Head offset measuring device with indicator
- Wheel face, side and radius dresser
- Template for levelling the machine
- Motor pulley for reduced grinding wheel
- Chuck with diameter on request
- Steady rests:
  - Heavy Steady rest*
  - Light steady rest (35kg)*
  - Steady rest for big diameter*
  - + other steady rests capacity on request*
- Driving dogs and driving plates for drivers
- Conic centers and blunt center for workhead
- Corundum grinding wheel
- Wheel balancing arbor and grinding wheel hub puller
- Service tools and operating manual*



1. Crankshaft centering fixture with dial indicator
2. Crankshaft journal checking square
3. Head offset measuring device with indicator
4. Template for levelling the machine
5. Motor pulley for reduced grinding wheel

6. Driving dogs
7. Driving plates for drivers
8. Conic centers and blunt center
9. Wheel balancing arbor
10. Grinding wheel hub puller



HEAVY STEADY REST



LIGHT STEADY REST

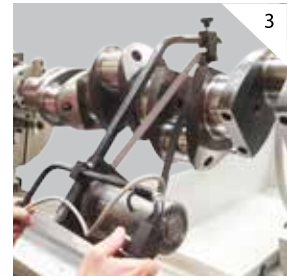


STEADY REST FOR BIG DIAMETERS

## OTHER EQUIPMENT\*

*\*depends on the workpiece and customer request*

- Motorized and synchronized rotation of both workheads
- Electronic variable speed of the heads
- Siemens CNC control system and Siemens drives
- PLC control system
- Diamond and taper rest 1,5 kt
- Pair of flanges
- Continuous journal sizing gauge with forks
- 2 axes digital readout (x e z)
- Magnetic coolant cleaner
- Paper roll coolant cleaner
- Combined paper roll and magnetic coolant cleaner
- Grinding wheel balancing stand for static balancing
- Portable belt superfinisher
- Wheel side tapering dresser
- Hydraulic wheel dresser
- CNC Wheel dresser
- Three self centering jaws chucks



WHEEL FACE, SIDE AND RADIUS DRESSER  
(STANDARD EQUIPMENT)

1. 2 axes digital readout (x e z)
2. Continuous journal sizing gauge with forks
3. Portable belt superfinisher
4. Flanges
5. Grinding wheel balancing stand for static balancing



WHEEL SIDE TAPERING DRESSER



HYDRAULIC DRESSER



CNC WHEEL DRESSER

		CG460 4100	CG575 4100	CG600 4000	CG600 5000	CG650 5400	CG650 6400
<b>WORKING CAPACITY*</b>							
Height of centres on table	mm	460	600	605	605	650	650
Max distance between centers	mm	4100	4100	4000	5000	5400	6400
Swing over table	mm	920	1200	1200	1200	1300	1300
Max head offset (stroke/2)	mm	220	220	250	250	350	350
Max diameter admitted on std steady rests	mm	250	250	250	250	250	250
Max workpiece diameter-new wheel	mm	450	450	450	450	450	450
Max weight admitted between centers	kg	1500	1500	3000	3000	3500	3500
Max weight admitted with steady rests	mm	2500	2500	5000	5000	7500	7500
<b>MACHINE SPECIFICATIONS*</b>							
<b>Z AXIS</b>							
Max table speed	mm/min	0-3000	0-3000	0-3000	0-3000	0-3000	0-3000
Table motor power	KW	-	-	-	-	3,5	3,5
<b>X AXIS</b>							
Fast grindhead feed	mm	210	210	210	210	-	-
Micrometric grindhead feed	mm	260	260	260	260	750	750
Hydraulic unit motor power	KW	3	3,6	3,6	3,6	-	-
<b>WHEELHEAD UNIT*</b>							
Diameter of grinding wheel	mm	1140	1140	1140	1140	1300	1300
Max grinding wheel thickness	mm	70	70	70	70	160	160
Min grinding wheel thickness	mm	25	25	25	25	25	25
Grinding wheel peripheral speed	m/s	33	33	33	33	33	33
Grinding wheel motor power	KW	11	11	11	11	9+9	9+9

\* Informations, pictures and specifications 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.



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