GLS SERIES

CNC Optical Precision Profile Grinder

AMADA

AMADA MACHINE TOOLS CO., LTD.

GLS 5P

Advanced profile realizes SHINING surface

Newly-developed high-precision and high-definition projector

- Newly-designed lighting is 15% brighter than our former model.

Newly-developed ultra high-speed and high-precision wheel heads

- High-precision and high-resolution optical scale integrated enable ultra-precise traveling.
- ±0.1℃controllable inverter-oilcontroller is equipped as standard.

New control device

- 10.4 inches large LCD realizes easy operation and various attached software supports high-precision processing.

Shortened set-up time

- Faster speed of each travel axis raises the process efficiency.
- Fast-traveling speed: 2000mm/min.
- Table vertical traveling speed: 300mm/min.
- Automatic workpiece set-up function

Bed design focused on gravity point

- Positions of jack bolts and ribs are optimized for newly-developed bed. Elimination of bending on the center assures high static accuracy.

Space-saving design

- Design based on structure analysis makes the machine space-saving.
- This machine is 25% smaller in area than our former model.

High-precision and high-speed spindle (TC-20)

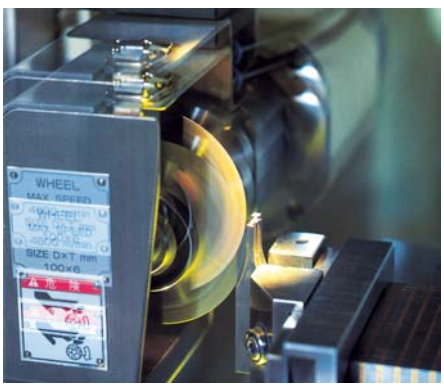
- Spindle is high-speed, high-precision and low heat generation.
- High-speed (20000min^{-1}.) spindle for molds performs further surface precision.

Newly-developed ultra high-speed and high-precision wheel heads

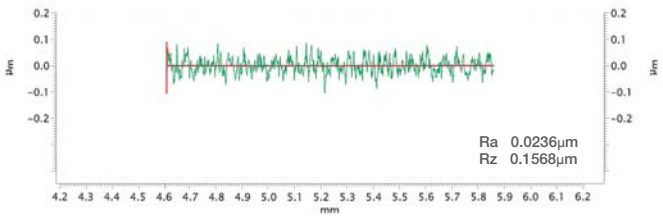
- Mirror surface finishing can be performed much speedier.

Sample

Examples of mirrored surface processing

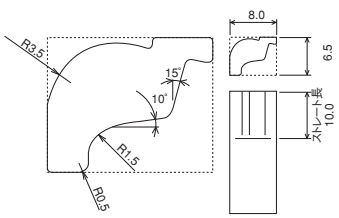


Wheel head design based on structure analysis



Taylor Hobson

SAMPLE PIECE



- MATERIAL : G5(CEMENTED)
- RECIPROCATION STROKE : 13 mm
- GRINDING TIME :
  〈FINISH〉 18 min
  〈GRINDING ACCURACY〉 ±0.001mm

GLS5T

A high-rigidity new profile grinder redesigned from the basic structure

Newly-developed long-stroke and high-reciprocal wheel head

- Enough lengthened vertical stroke can cover various workpieces.
  Stroke length : 155mm / High reciprocal grinding is available. : 400min^{-1}.
- Can cope with various kind of forming grinding with flexible combination of attachment.

High-precision and high-rigidity spindle (TS-6)

- We provide low-speed and high-power spindle. (6000min^{-1}.)
- TC-20 spindle(20000 min^{-1}.) can be attachable depending on the grinding item.

Newly-developed wheel head

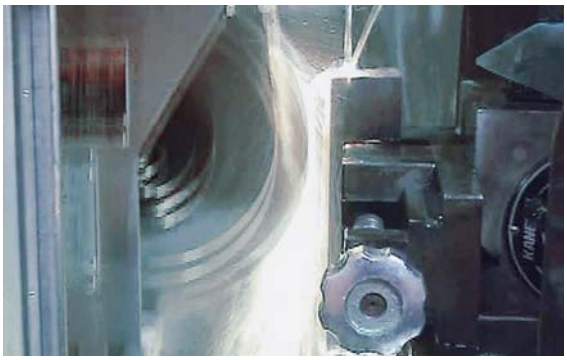
- 155mm long enough stroke can cover various workpieces.

Sample

Tool grindings combining NC swiveling axis

- Edge sensor and 3-axis teaching function make grinding of blade edge with lead easily.

Coping with wet grinding



- Newly designed whole wet grinding cover can realize large bulk flow wet grinding system.
- Can grind hard workpieces reducing heat generation and grinding wheel wear.

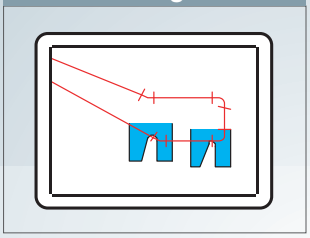
Various original software

For your various needs, the software is only for profile grinder, which is developed on basis of AMADA MACHINE TOOLS' long experience in automation and grinding know-how.The manual/CNC operation and combination of automatic programming with "WAPS-Win" enable us to perform sufficient grinding capability and to improve grinding efficiency.

Teaching-playback function

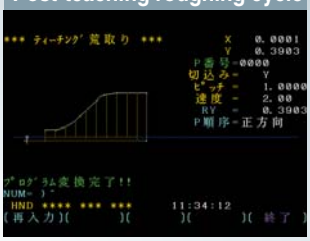
With reference to an enlarged work profile chart, a grinding program is created by a simplified input method. By bringing the wheel to the profile change points on the screen, the program is generated by pressing the software keys on the CRT. Anybody can perform input operation due to the elimination of complex coordinate calculation and CNC code programming.

Table teaching



In table teaching, teaching of outline of grinding wheel shape copied onto dummy workpiece can be performed along each change-point of shape on the chart. Without blurring outline of grinding stone shape, speedy table teaching can be performed.

Post-teaching roughing cycle

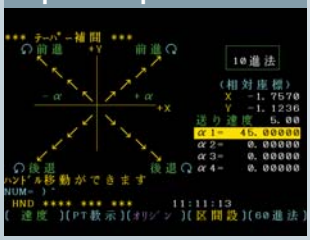


A rough grinding cycle is programmed by automatically computing the rough grinding contour coordinates from the looped wheel path defined by the teaching-playback function.
・Y-axis cycle (plunge cut pattern)
・X-axis cycle (traverse cut pattern)

Reciprocation stroke display

Actual measurement of Reciprocating inversion position and stroke is displayed. Straight length of scratched workpieces such as punch can be adjusted in high precision.
(GLS-5P only)

Taper interpolation

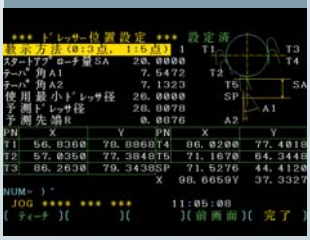


This function allows the wheel to move obliquely with only the X-axis handle or by the pushbutton operation for auto-feed.
Up to 8 angles can be registered through angle data input or by teaching the 2 points each on the target lines on an enlarged profile chart.
It is practical for angular forming of wheels or when manually grinding angularwork profiles.

Simple circular interpolation

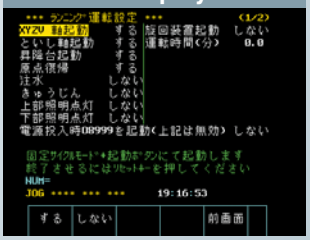
By the 3-point teaching method for arcs or through numeric arc data input, the target arc center, radius and cw/ccw direction are automatically computed with the graphics plotted on the LCD. Once the arc is so determined, the wheel can be moved along it with only the X-axis handle or by the pushbutton operation for auto-feed, allowing program-free

On board R-form dresser software



Dressing cycle can be set on the data input screen exclusive to the dresser.

Run time display



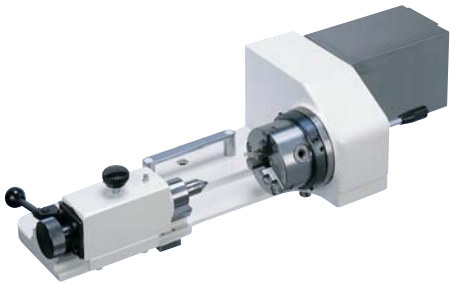
This function records and displays the automatic operation time by program.

Ample options for specific applications

Circular grinding attachment

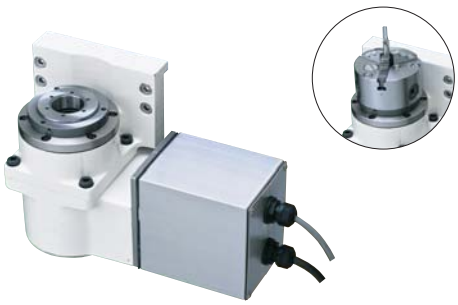
Used for grinding of circular form cutters and other cylindrical parts with the most complex radial forms.
- Swing : ϕ200mm
- Between centers : 200mm
- Dead / live center adaptable

Small circular grinding attachment



Used for grinding of circular form cutters and other cylindrical parts with the most complex radial forms.
- Swing :ϕ100mm
- Between centers : 100mm

Automatic work swivel unit (ϕ32)

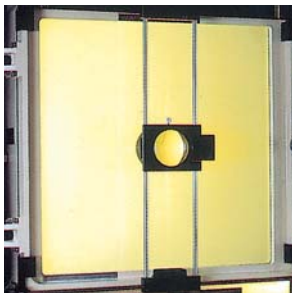


Used to index a workpiece at an arbitrary angle or to rotate it continuously.
With only one set-up, the work contour can be machined all round.

On board R-form dresser MRD-180

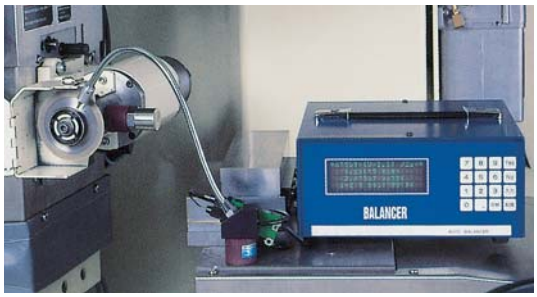
A table-mount dresser for the wheel edge R dressing.
Its R form dressing cycle is set on the data input screen.

Screen roupe (PAT.)



Used to verify the work profile by partially magnifying its enlarged image and chart for comparison. As it fits into the screen frame, both handles can be operated at the same time. 2.2x and 4x loupes are available.

Auto balancer



A measuring instrument to adjust the balance of a wheel with the spindle as an integral unit.
(Perfect balancing improves the ground surface roughness.)

■Machine Specification

	Item		Unit	GLS-5T	GLS-5P
Table	Working surface (L x W)		mm	400×250	
	Travel	Traverse feed	mm	300	
		Cross feed	mm	150	
		Minimum input increment	mm	0.0001	
		Position detection system	—	Semi-closed loop	
Wheel Head	Reciprocating slide stroke		mm	0～155	0～80
	Reciprocation speed		min.$^{-1}$	30～400※	30～600※
	Travel	Traverse feed	mm	200	
		Cross feed	mm	150	
		Minimum input increment	mm	0.0001	
		Position detection system	—	Full-closed loop	
	Relief angle	Radial direction of wheel	°	－2～＋20	－1～＋2
		Axial direction of wheel	°	±15	±3
	Swivel slide swiveling angle		°	±15	
Projector	Screen size (W x H)		mm	540×420	
	Magnification		—	20×、50×	
Wheel spindle	Size (O.D x Width x Bore)		mm	ϕ120～180×3～10×ϕ31.75	ϕ65～100×4～6×ϕ22.23
	Wheel spindle speed		min.$^{-1}$	1000～6000（TS-6）	2000～20000（TC-20）
	Motor capacity		kW-P	1.5 － 4	
Floor space (Width x Depth)			mm	1760×1750	
Machine weight			kg	4500	
Power capacity			kVA	18	
CNC controller	CNC unit model			FANUC	
	Display			10.4inches	
	Manual handle			2 : X,Y (Z , V)	
	Pitch error modification			Standard	
	Number of axis			4 axis (simultaneous 2 axis)	

※Reciprocation process speed is changed by the time of reciprocation process.

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