hydraulic grinding/milling machine for cylinder heads & blocks

BERCO

STC 461 2000

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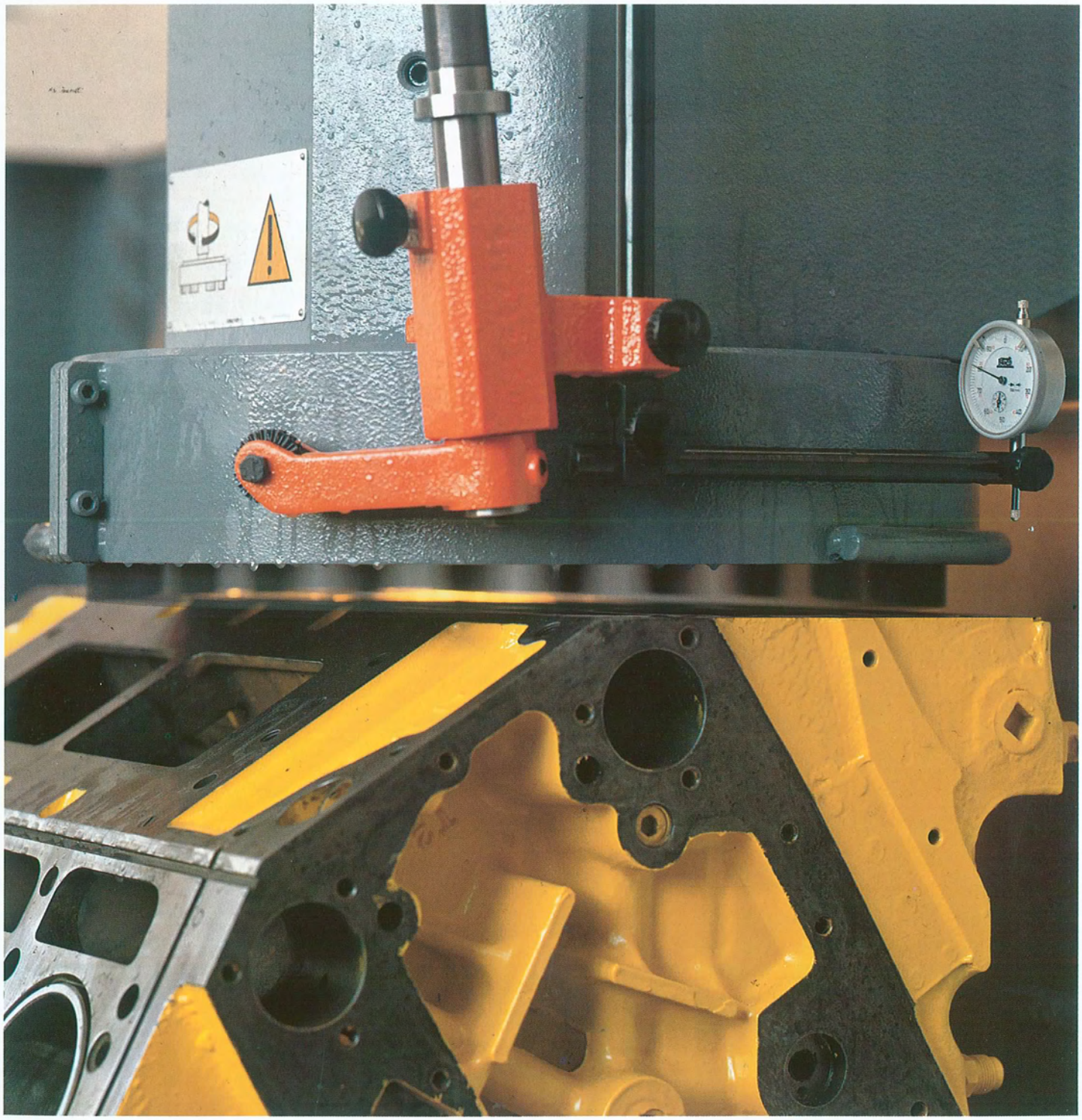

STC 461 2000

STC 461/2000 is BERCO new grinding/milling machine which stands out among similar machines because of the very advanced construction technology as well as for being extremely powerful, sturdy and accurate.

This grinding/milling machine is available in two versions called A and B.

Version A is suitable for grinding/milling operations using a segmental wheel and a single-point tool while version B makes it possible to use an insert cutter alongside with the grinding wheel and the cutting tool.

Originally meant for reconditioning I.C. engines, STC 461/2000 can be successfully used for grinding/milling operations at an industrial level.

The table automatic alternating movement is hydraulically controlled: the control box is located externally to the machine in order to eliminate even the slightest construction fault due to excessive heat or to the pump unit vibrations.

All controls are located on the base front side: electric controls on the right and hydraulic controls on the left. A handwheel which controls the wheel head movements is located in the centre.

The grinding wheel head slides along the column guides and features three movement options: quick motorized, manual micrometric and automatic adjustable pulse movement.

The grinding wheel head also features a roll or diamond dresser as well as a surface straightness checking device.

STC 461/2000 comes with independent cooling system which is wheel-mounted for easy transport to the cleaning place.

A cooling system with built-in magnetic separator can alternatively be supplied.

The electric equipment is contained inside a box and includes remote control switches, overload cutouts and valves.

All controls are of the low-voltage type in compliance with the applicable safety standards.

A whole set of devices for quick and accurate workpiece positioning are available with the machine.

Cover: "V"-type cylinder block resurfacing with grinding wheel.

Top: In-line cylinder block resurfacing with machine fitted with special splash guards.

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- from grinding wheel to tool: 1'
- from tool to milling cutter: 3'

These are the tool changeover times required to pass from one machining method to another.

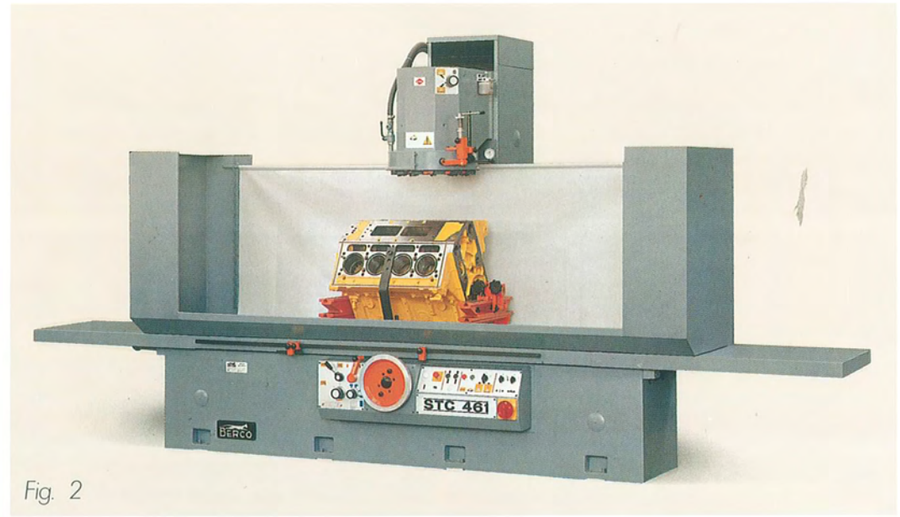


Fig. 2

Fig. 1 - Complete view of the machine with special sliding door splash guard.
Fig. 2 - Complete view of the standard machine version.

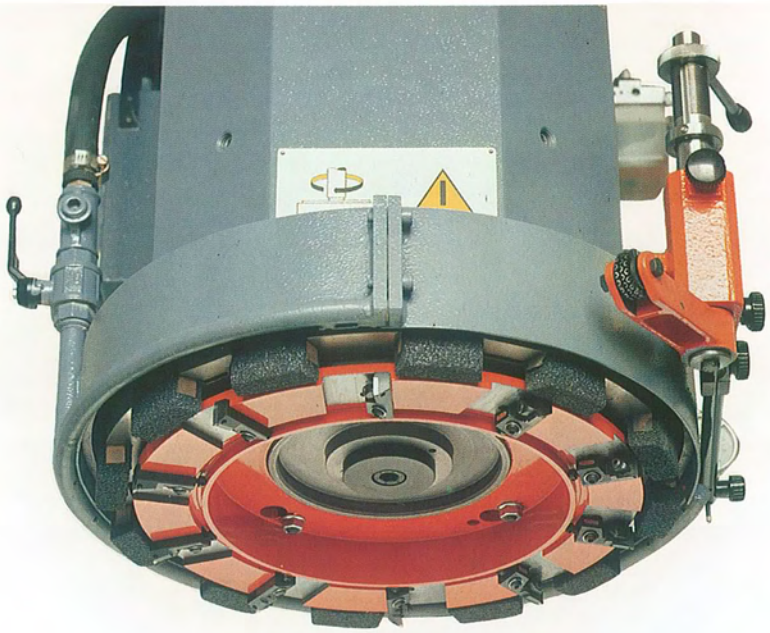


Fig. 11 - Wheel head with insert cutter.

A00A31459 Diamond arm (without diamond).

C465904010 Diamond for segmental wheel dressing.

A00A02680 Insert holder, without insert.

U003101020 Insert for cast iron and aluminium.

A00A32560 Insert cutter, 406 mm (16") dia. complete with 10 inserts part number U003355020 for cast iron and aluminium (version "B" only).

A00A31650 Surface straightness checking device, without comparator.

A00.51319 Centesimal comparator with mm scaling.

A00.51320 Centesimal comparator with inch scaling.

V25A32002 Grinding wheel and cutter holding arm (Figs. 9 and 12), drawing. No. A00A32580, mounted on the machine.

A00A02609 Spirit level with prismatic base.

A00.61200C AES 500 static balancer for grinding segment plate (Fig. 15).

V08A22016 Magnetic coolant clarifier with tank in replacement of the standard tank (Fig. 14), for cooling system.

A00A32803 Parallel support, dimensions 80x560 mm (3 5/32" x 22"), two pieces required.

V05A32018 Rigid splash guard with sliding doors (Fig. 1), mounted on the machine.

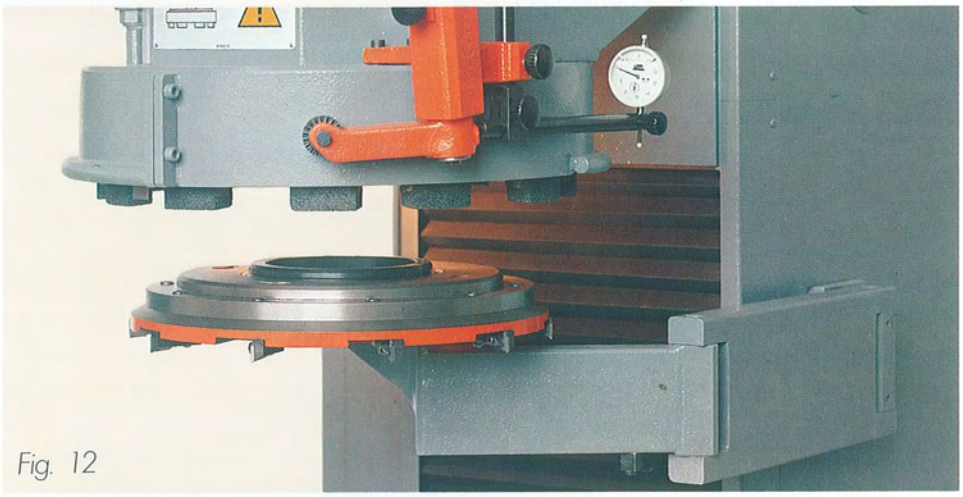


Fig. 12

Fig. 13

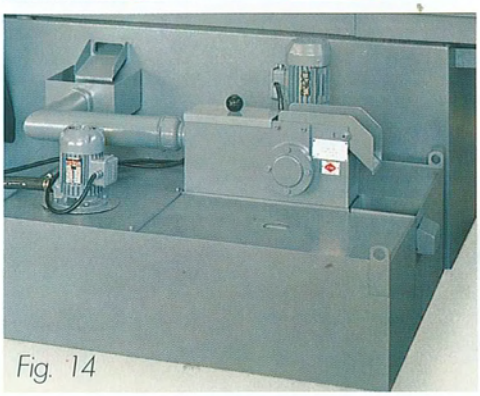


Fig. 14

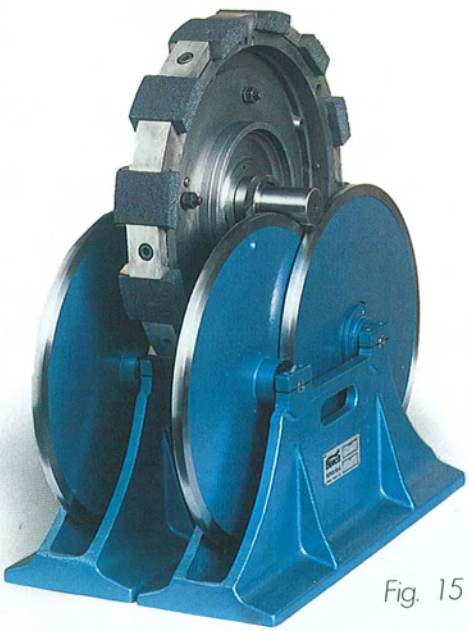


Fig. 15

Fig. 12 - Holding arm with insert cutter.

Fig. 13 - Workpiece holding table with permanent magnets.

Fig. 14 - Magnetic separator, complete with sludge and coolant tank.

Fig. 15 - AES 500 device for segmental wheel balancing.

items available for the machine

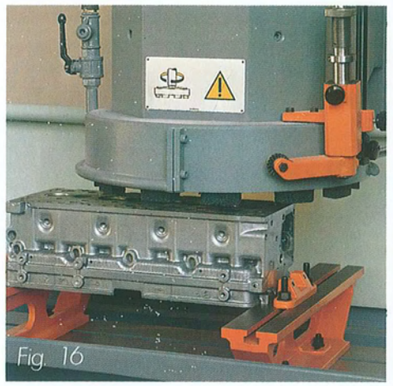


Fig. 16

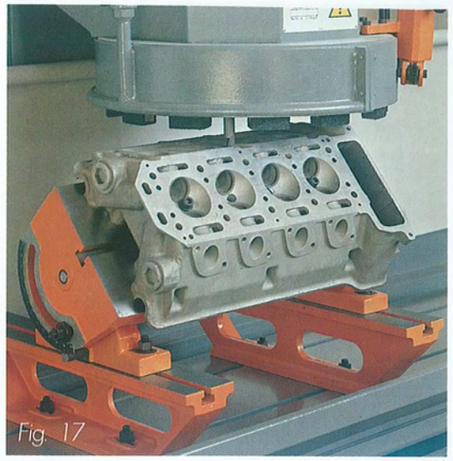


Fig. 17

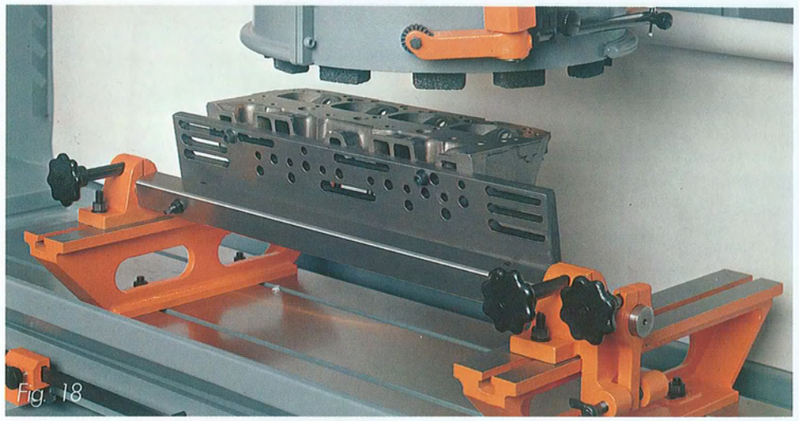


Fig. 18

setup fixtures

A00.32470 FIAT 128 cylinder head set-up fixture.

A01.32433 Adjustable setup fixture for clamping V-type cylinder heads and blocks (Figs. 18 and 19).

A00.41731A Universal cylinder head setup square (Fig. 17).

A00.41745 Special setup fixture for FIAT 124 coupé, FIAT 125 and FIAT 132 cylinder heads.

A00A02600 Parallel support for cylinder heads complete with plate and lock-screws (2 pieces required).

A00A02655 FIAT 127 - 1050 and FIAT 127 diesel cylinder head setup fixture.

A00A02660 VW Golf cylinder head setup fixture.

A00A02668 FIAT RITMO diesel head setup fixture.

Other setup fixtures available on request.

accessories

C150710020 Magnetic table, dimensions 500 × 250 mm (20" × 10").

C150710000 Magnetic table, dimensions 610 × 250 mm (24" × 10").

C150710010 Magnetic table, dimensions 800 × 300 mm (31 ½" × 12").

C150700000 Magnetic table, dimensions 1200 × 400 mm (47" × 16").

A00.46843B Tool grinder with soldered tip (without diamond wheel part number A00.67506 and grinding jig part number A00A02647).

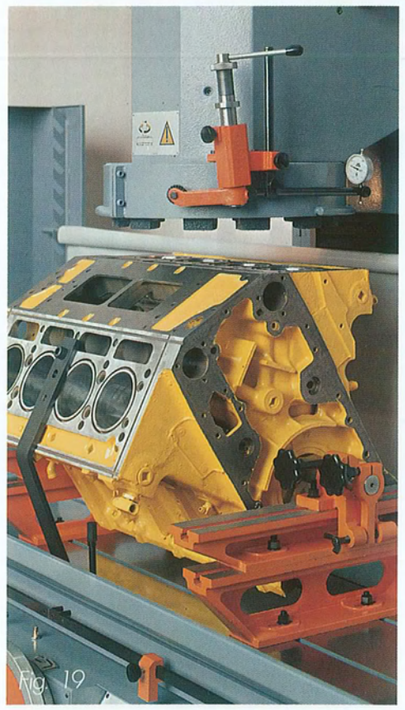


Fig. 19

All setup fixtures and accessories are supplied as extra outfit.

Fig. 16 - Parallel head setup fixture.

Fig. 17 - Head suitable for manifold resurfacing and clamped on a universal square.

Fig. 18 - Slanting setup fixture for "V" - type cylinder heads.

Fig. 19 - Universal setup fixture for "V" - type engine blocks.

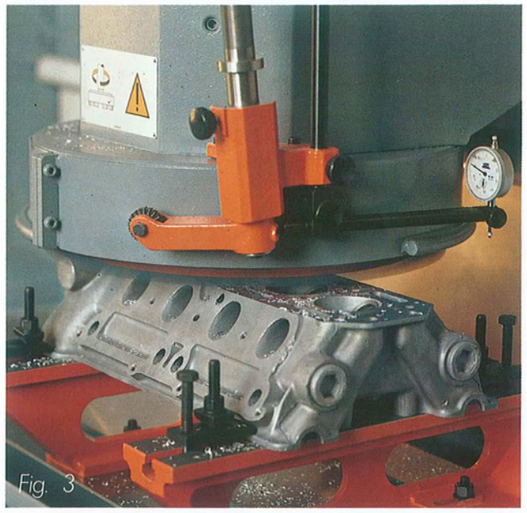


Fig. 3

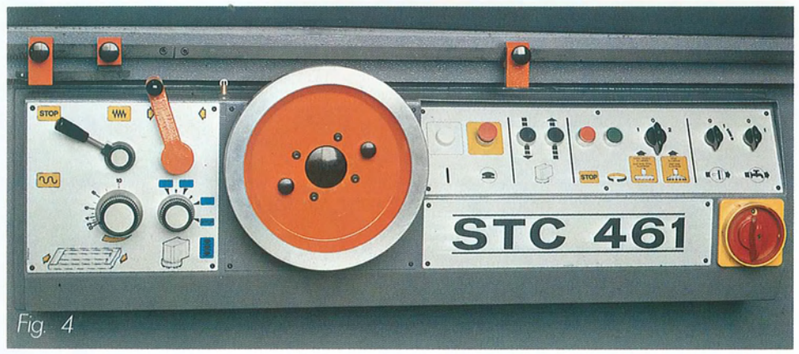


Fig. 4

Fig. 3 - Aluminium head resurfacing by means of an insert cutter.

Fig. 4 - STC 461/2000 main control panel.

Fig. 5 - Engine block resurfacing by means of a segmental wheel.

STC 461/2000 features the following characteristics:

Wheel head assembly - Wheel shaft rotation is controlled by a direct electric motor.
Standard device to automatically control head feed at each table return traverse, with adjusting knob for the preset value. Possibility of adjusting the grinding wheel or milling cutter clearance angle.
Highly precise and accurate head movements along the column guides. This is ensured by perfect counterweight balancing, wide sliding guides and simple yet stable clearance setting through a taper gib.

Electric control system - Pushbuttons and switches are located on the main control panel. They are all very well visible, rationally arranged and marked by very clear simbols.

Resurfacing assembly - Possibility of working both with segmental wheel and multi-edged insert cutter.
Inserts can be rotated or replaced without further adjustments by simply loosening and locking one screw on each tip seat.

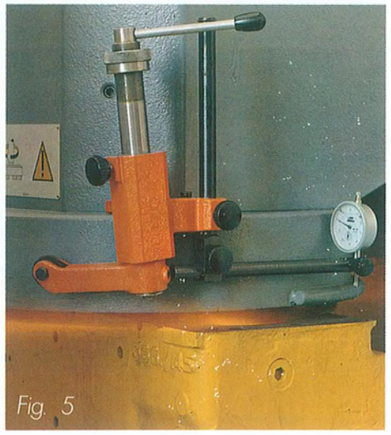


Fig. 5

Hydraulic control system - Independent table working speed and quick traverse speed. The table quick traverse does not imply any change in the preset working speed.

Protections - Practical fixed and adjustable splash guards ensuring optimal working conditions. No special prearrangement involving machine dead times is required.

Speed reducer - The cutting speed has been specially designed to make full use of the available inserts. Speed changes are controlled by an independent electric motor and by a highly flexible belt reduction unit.

items available for the machine

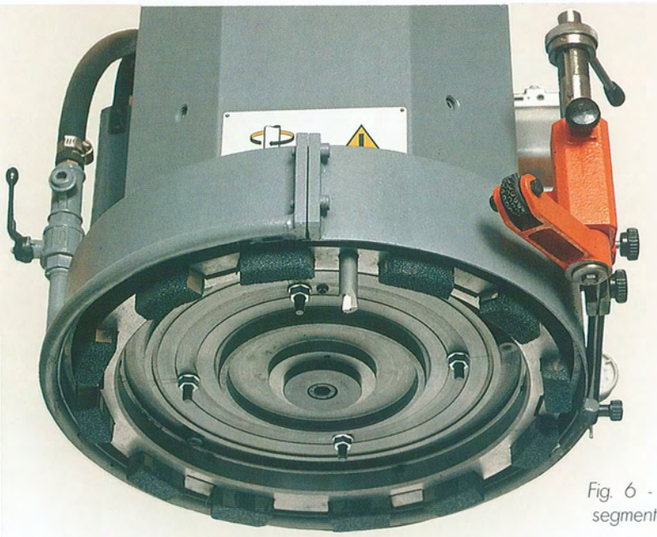


Fig. 6 - Wheel head with segmental wheel and tool.

Fig. 7

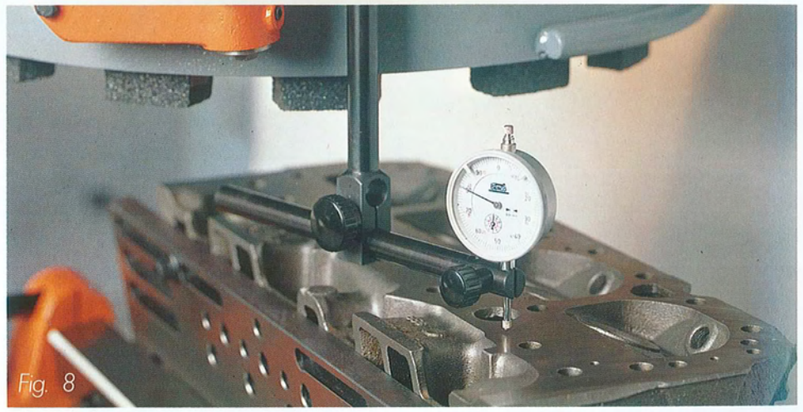


Fig. 8

Fig. 9

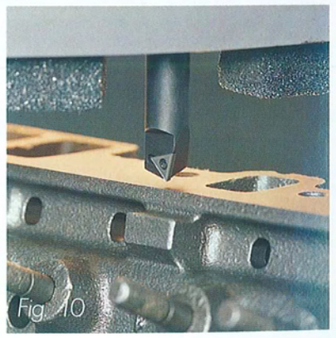


Fig. 10

standard outfit

Set of splash guards.

Complete system with electric pump and coolant tank.

Grinding segment plate, 460 mm (18⅛") dia. and 12 cast iron grinding segments (part number U820520000).

Soldered tip tool for aluminum alloy head resurfacing (part number U202266022).

Puller for grinding segment plate (part number A00A32808).

Dummy shaft for wheel balancing (part number A00A32805).

Grinding wheel dresser (complete with washers part number C465800000).

2 parallel supports size 135 × 560 mm (5⁹⁄₁₆" × 22").

2 slanting blocks to fit to parallel supports for head fixing (fig. 16).

Set of screw, nuts, clamps and keys.

Use and servicing manual.

Painted with standard grey colour RAL 7031. Extra charge for other colours available upon request.

extra outfit

U820520000 Abrasive segment for cast iron resurfacing.

U820022010 Abrasive segment for steel resurfacing.

U820522010 Abrasive segment for aluminium resurfacing.

U820122000 Abrasive segment for aluminium cylinder heads with steel pre-combustion chamber resurfacing.

Fig. 7 - Roll device for segmental wheel dressing.

Fig. 8 - Device for surface alignment and straightness check.

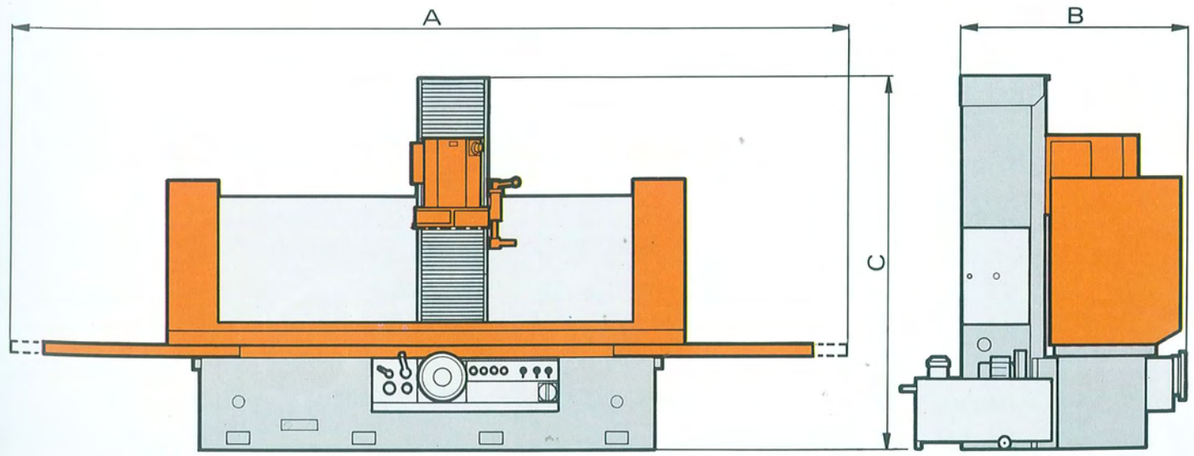
Fig. 9 - Holding arm with segmental wheel.

Fig. 10 - Aluminium head resurfacing with insert-type tool.

technical data

working capacity			
Max. automatic table traverse	mm	2000	78¾"
Head vertical traverse	mm	1000	39⅜"
Max. grinding width	mm	450	17¾"
Max. grinding length (surface width 350 mm; 13¾")	mm	1900	75"
Max. resurfacing length with cutter (surface width 300 mm; 11¾") - For "B" version only	mm	1920	75¾"
geometric features			
Table useful surface	mm	1880 × 406	74" × 16"
Min./max. distance between table and grinding wheel	mm	0 – 1000	0 – 39⅜"
Min./max. distance between table and milling cutter ("B" version only)	mm	0 – 980	0 – 38½"
Distance from column to table C/L	mm	420	16½"
Segmental wheel dia.	mm	460	18½"
Multi-edged insert milling cutter dia. ("B" version only)	mm	406	16"
speeds and feeds			
Grinding spindle rotating speed	r.p.m.	960	
Milling spindle rotating speed ("B" version only)	r.p.m.	100	
Head quick feed speed, per minute	mm	~ 750	~ 29⁹⁄₃₂"
Min./max. table feed speed (steplessly variable), per minute	mm	~100–3500	~4"–138"
Table quick feed speed, per minute	mm	~ 5500	~ 216"
Head automatic feed at each table return traverse	mm	0.01 – 0.05	.0004"–.002"
ratings			
Grinding spindle shaft motor	kW	7.5	10 HP
Cutting spindle shaft motor ("B" version only)	kW	1.1	1.5 HP
Head quick feed motor	kW	0.55	0.75 HP
Hydraulic system motor	kW	0.74	1 HP
Electric coolant pump motor	kW	0.09	0.12 HP
dimensions and weights			
Length (A)	mm	6830	269"
Width (B)	mm	1400	55"
Height (C)	mm	2350	92½"
Approx. weight, unpacked	kg	2820	6218 lb
Approx. weight, ocean packed	kg	3450	7590 lb

Motor rating is referred to 50 Hz frequency. Measurements, weights and executions are not binding on manufacturers and can be changed without previous notice.



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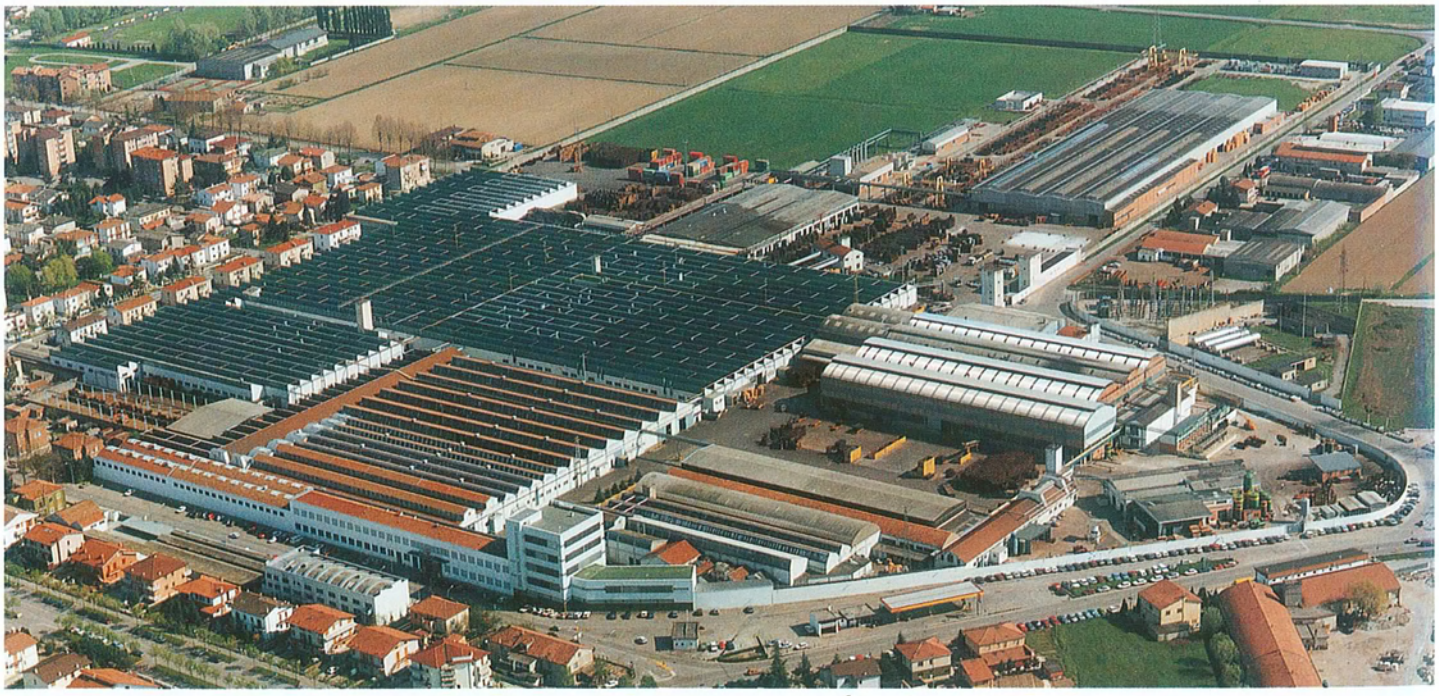

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