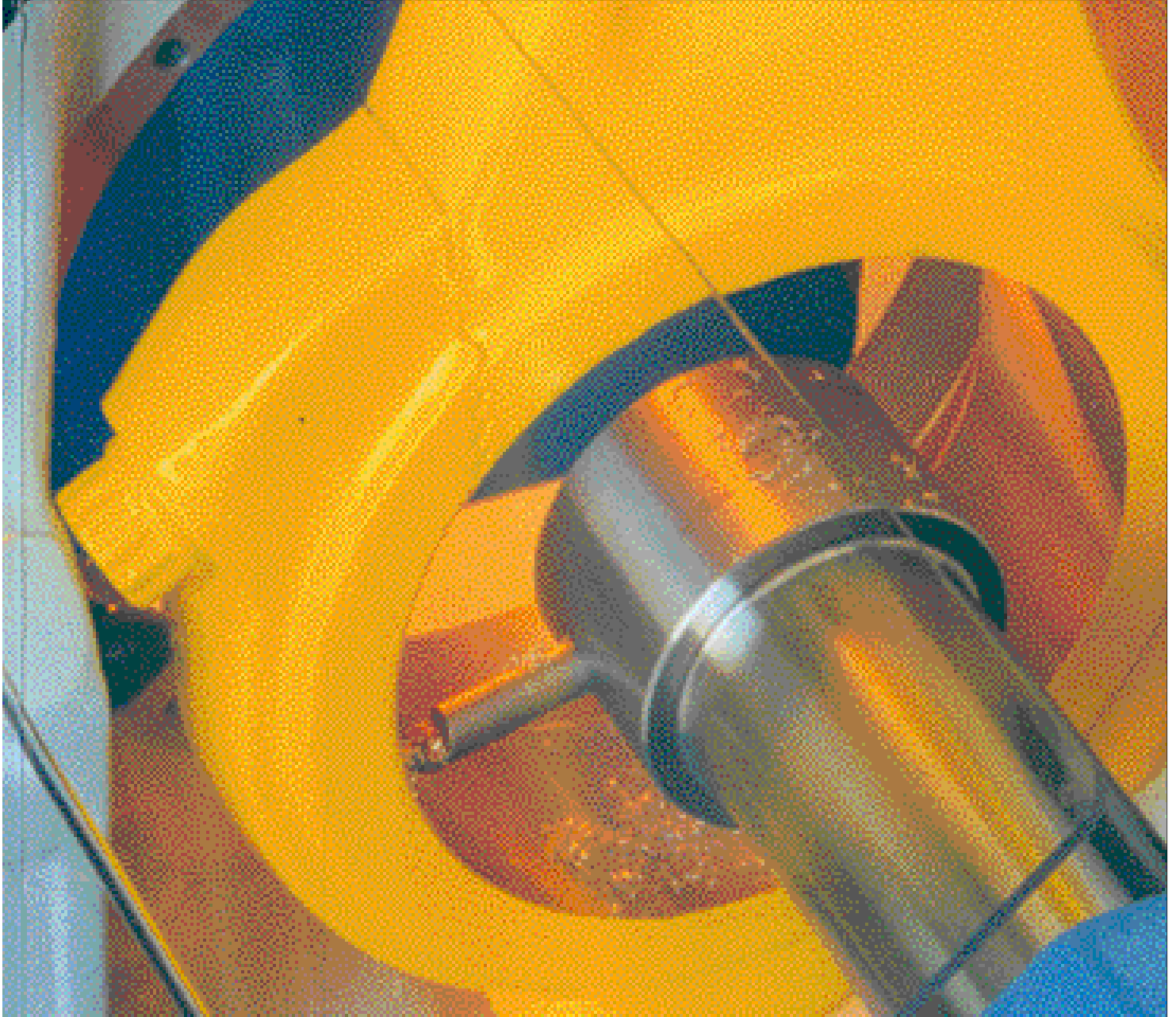


AB 651 VS



Con-rod boring machine

AB 651 VS

Con-rod boring machine

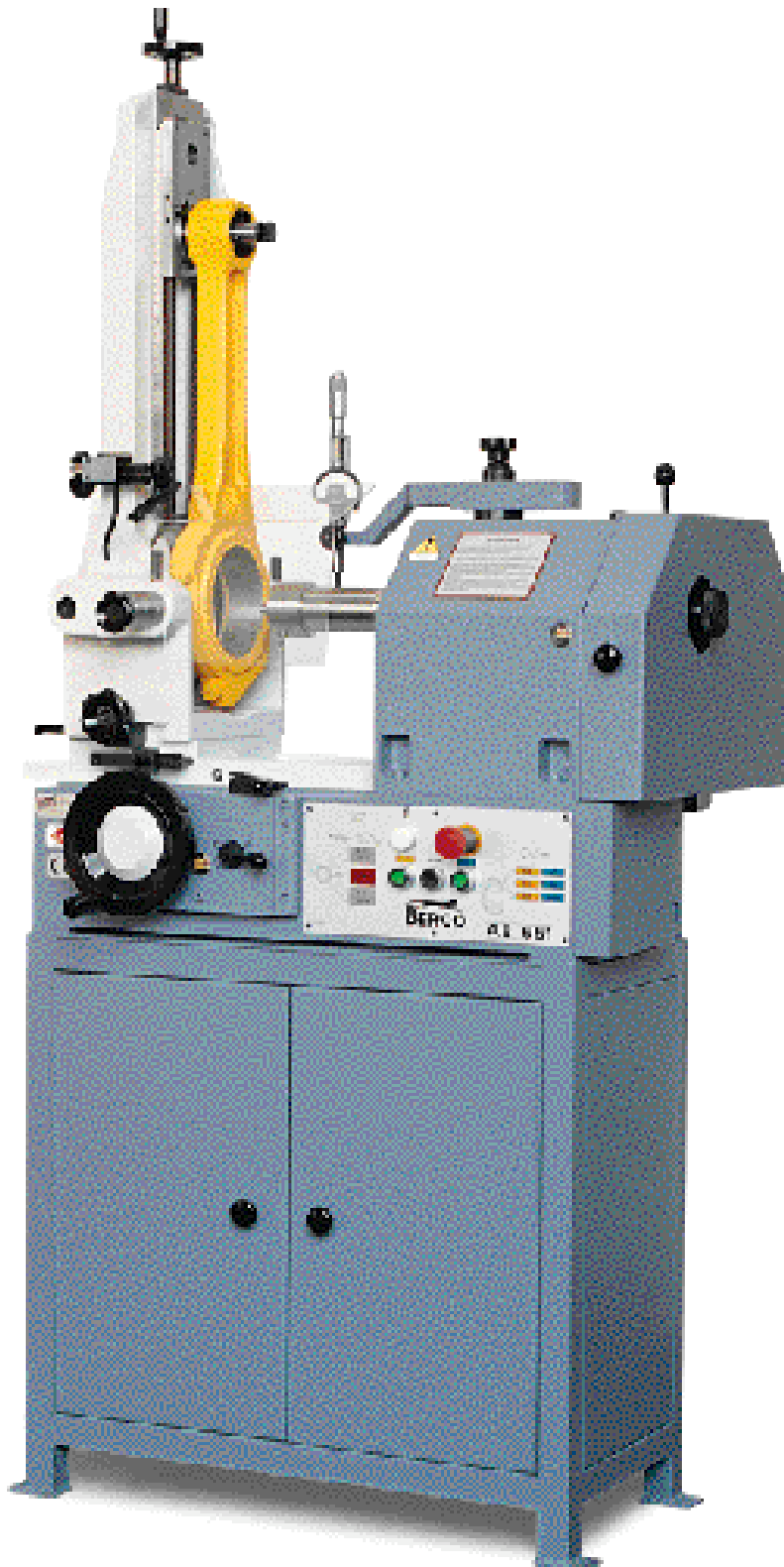


Fig. 1 - View of AB 651 connecting-rod boring machine setup for machining

Berco has developed the new AB 651 boring machine for rational, efficient reconditioning of internal combustion engine connecting rods, whether large or small size.

The result of technical updating of a previous very popular model, the AB 651 boring machine is designed specifically for reconditioning con-rods, but thanks to its versatile conception it can also be used for re-boring other similar components and, if suitably equipped, for reconditioning finned single cylinder compressor or motorcycle cylinder blocks.

Supplied complete with all items necessary for immediate use, the AB 651 can be further adapted to meet special operating requirements using the vast range of optional accessories available.

The machine's technical and construction features can be summarised in a few basic points:

- **Structural elements**

In high strength cast iron, stabilized.

- **Slideways**

Incorporated in structure and generously sized, complete with tapered gibs to take up any clearance.

- **Table traverse**

Automatic and manual table traverse controls are located in

Fig. 2



Fig. 2
Control box

Fig. 3
Boring a con-rod with insert-type tool

Fig. 4
Con-rod set up with automatic centering mandrel and centering cone

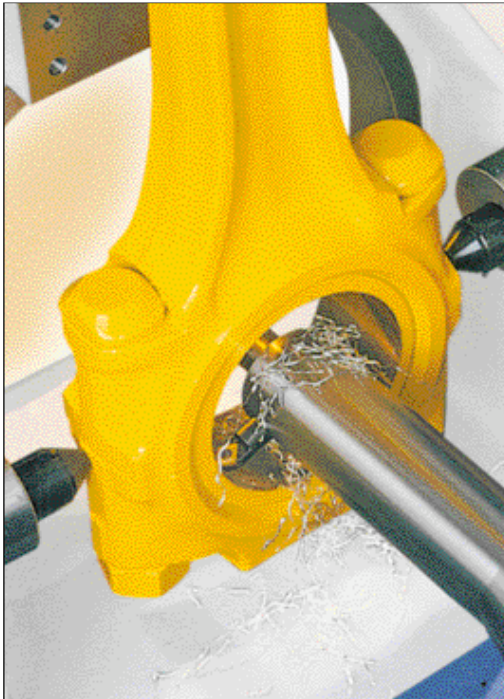


Fig. 3

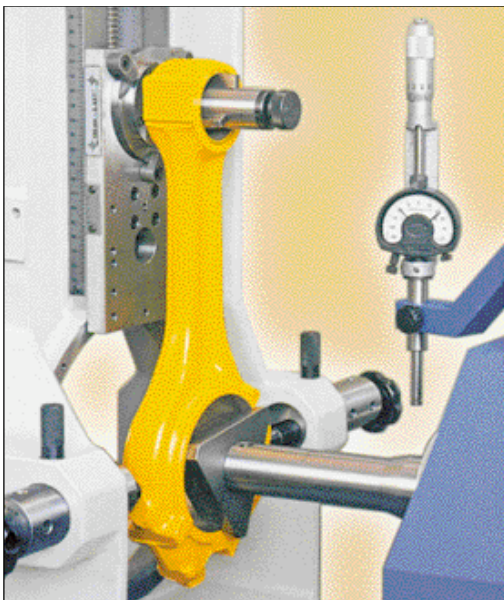


Fig. 4

a single box fixed to the machine base in an easy-access position. The reduction gear wheels and shafts are manufactured in specially selected materials and all operate in oil bath.

• **Connecting-rod setup**

Three systems are available:

- three-blade mandrel having strictly concentric expansion to ensure that the original distance and alignment between the centre-lines of the holes at the con-rod big and small ends are maintained (Fig. 4)

- V-square for con-rod setup, especially useful for small rods where the gudgeon pin is used for positioning (Fig. 5)

- optional universal setup plate for use when the side surface of the con-rod big end is used for positioning (Fig. 6)

• **Spindle shaft**

The spindle shaft is in heat hardened alloy steel and turns in oil bath on precision tapered roller bearings.

• **Machining quality**

Perfect geometry and high precision surface finish are guaranteed by the use of an advanced technology product.

Devices and setup fixtures

Fig. 5

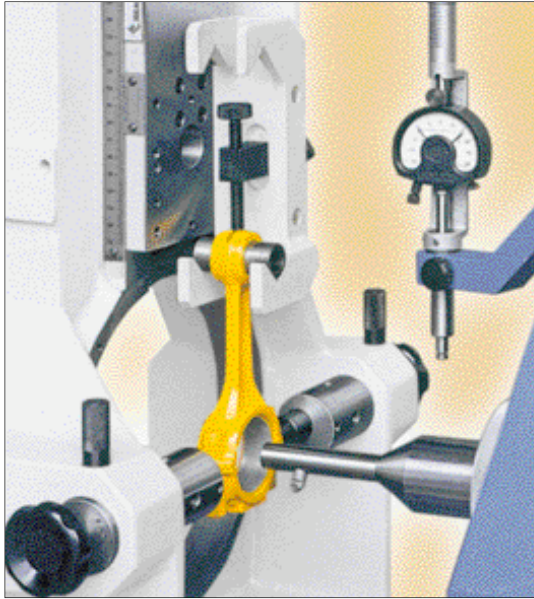


Fig. 6



Fig. 7

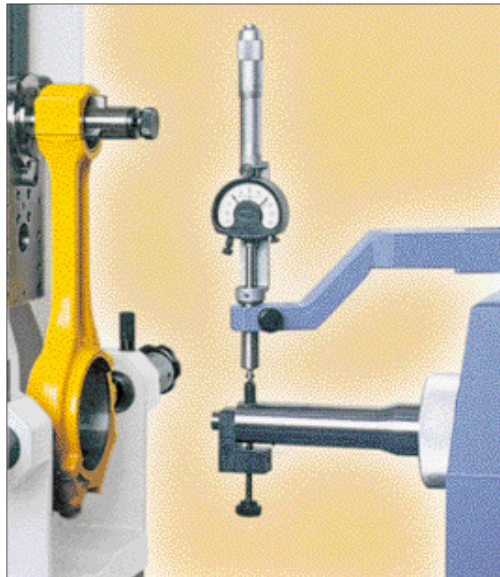
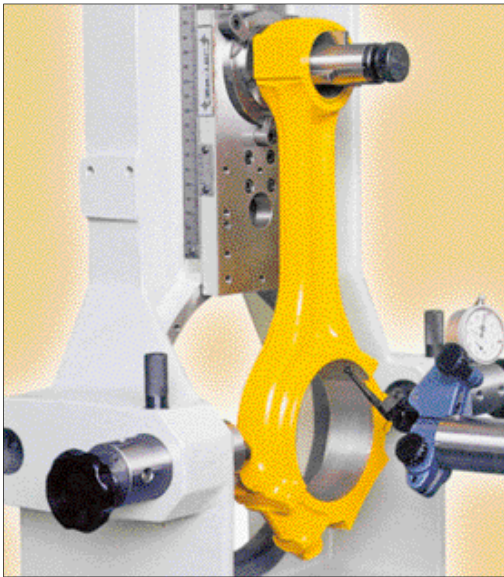


Fig. 8



Fig. 9

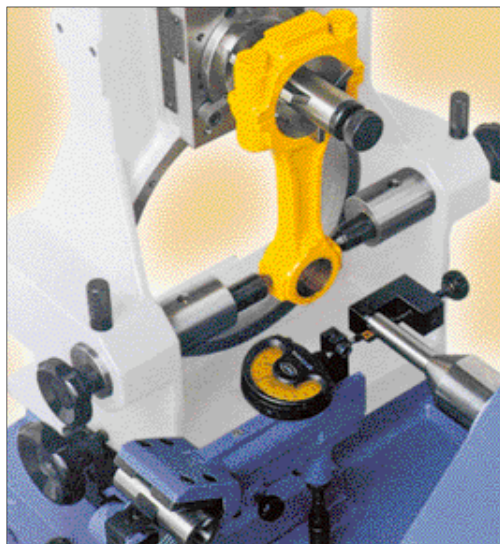


Fig. 10

Fig. 5

Con-rod setup with "V" square

Fig. 6

Con-rod setup with universal plate

Fig. 7

Centering with dial device

Fig. 8

Tool setting device

Fig. 9

Con-rod facing device

Fig. 10

Direct tool measuring device

Fig. 11

Electric box

Fig. 12

Finned cylinder setup fixture

Fig. 13

Tool grinding attachment

Standard outfit

Extra outfit

Fig.11

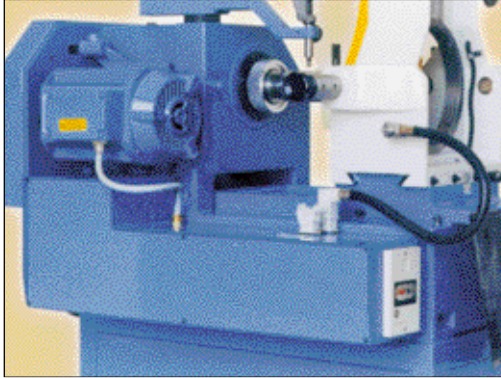


Fig.12

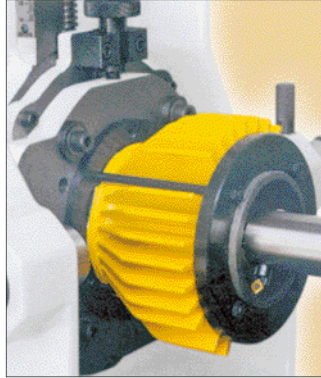


Fig.13



STANDARD OUTFIT

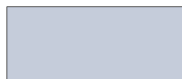
- 1 Boring spindle 17 ÷ 37 mm (43/64" - 129/64") dia. capacity complete with two brazed tools;
- 1 Boring spindle 37 ÷ 95 mm (129/64" - 347/64") dia. capacity complete with two brazed tools;
- 1 Boring spindle 75 ÷ 110 mm (261/64" - 421/64") dia. capacity complete with one brazed tool;
- 1 Tool adjuster device;
- 1 Tool setting device, with micrometer and dial in millimetres or inches;
- 1 Centering fixture, with dial in millimetres or inches;
- 1 Support for small engine con-rods;
- 5 Centering cones 17 ÷ 126 mm (43/64" - 461/64") dia. capacity;
- 1 Expanding mandrel 17 ÷ 31 mm (43/64" - 17/32") dia. capacity, complete with blades and retaining springs;
- 1 Expanding mandrel 31 ÷ 63 mm (17/32" - 231/64") dia. capacity, complete with blades and retaining springs;
- 1 Expanding mandrel (A00A28800) 63 ÷ 110 mm (231/64" - 421/64") dia. capacity, complete with blades and retaining springs;
- 1 Oil gun and 5 service spanners.

EXTRA OUTFIT

- **A00A28350** Sheet metal cabinet to support machine and for accessory storage;
- **A00A28725** Boring spindle 13 ÷ 18 mm (33/64" - 45/64") dia. capacity complete with brazed tools;
- **A00A28737** Toolholder ring assembly 110 ÷ 150 mm (421/64" - 529/32") dia. capacity fitted to assembly A00A28735;
- **A00A28850** Con-rod clamping fixture;
- **A00.46848** Tool kit with spindle and accessories for facing;
- **A00A28775** Direct reading size fixture, complete with metric dial gauge (Fig. 10);
- **A00.46801** Con-rod positioning and clamping plate assembly (Fig. 6);
- **A00A28655** Centering cone mm 125 ÷ 152 (4.59/64" - 5.63/64") dia. capacity;
- **P01.21963** Blade mm 113 ÷ 125 mm (4.29/64" - 4.59/64") dia. capacity for mandrel A00A28800 (set of three pieces);
- **P00.46870** Blade 123 ÷ 138 mm (4.27/32" - 5.7/16") dia. capacity for mandrel A00A28800 (set of three pieces);

- 1 Use and servicing manual;
- **P00.46871** Blade 138 ÷ 153 mm (5.7/16" - 6.1/16") dia. capacity for mandrel A00A28800 (set of three pieces);
- **A00.50584** Retaining spring for blades A01.21963 and A00.46870;
- **A00.50587** Retaining spring for blade A00.46871;
- **A001.21986** Expanding mandrel 12~14 mm (0.472"-0.551"), dia. capacity complete with blades and retaining spring;
- **A02.21901** Expanding mandrel 14 ÷ 17,5 mm (0.551"-0.688") dia. capacity complete with blades and retaining springs;
- **A00.46843C** Tool grinding attachment with three-phase electric motor;
- **A00.46858** Tool grinding jig assembly;
- **A00.67506** Diamond grinding wheel;
- **U900202380** Insert fixing screw for insert toolholders A00A28727 and A00A28747 and inserts U010354000;
- **U900202060** Insert fixing screw for insert toolholders A00.46900, A00.46902, A00.46904 and A00.46906 and inserts U010101060, U010101070;
- **U900990000** Torx-wrench.

Machine Tooling



For steel and cast iron



For cast iron



For steel

Brazed tools for boring steel

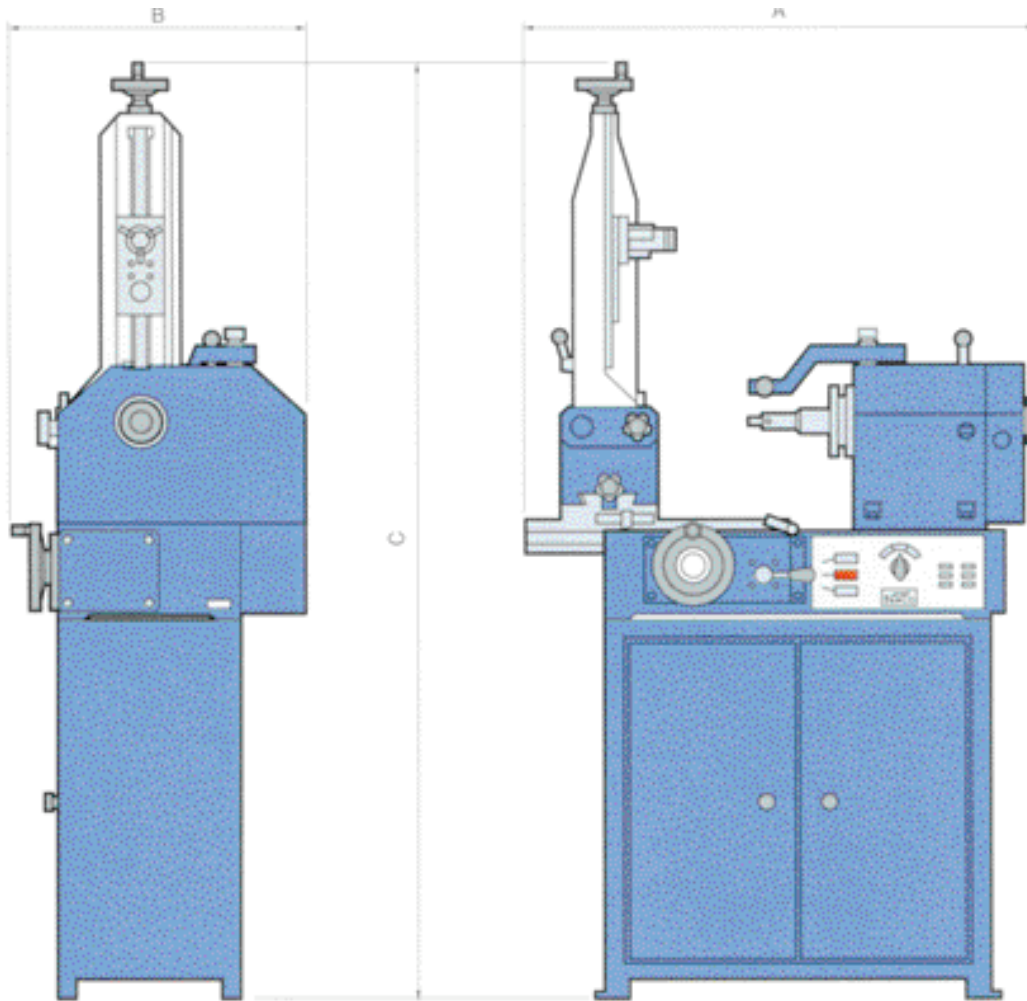
Tool	Lenght mm	Spindle	Toolholder ring	Boring Capacity Ø mm
U202265021	15 ($73/32$ "	A00A28729	-	17÷23 ($45/64$ " ÷ $29/32$ "
U202265031	21 ($53/64$ "	A00A28729	-	22÷37 ($55/64$ " ÷ $1.29/64$ "
U202265071	35 ($1.3/8$ "	A00A28731	-	37÷55 ($1.29/64$ " ÷ $2.11/64$ "
U202265091	54 ($2.1/8$ "	A00A28731	-	55÷95 ($2.11/64$ " ÷ $3.47/64$ "
		A00A28735	-	75÷110 ($2.61/64$ " ÷ $4.21/64$ "
		A00A28735	A00A28737	110÷150 ($4.21/64$ " ÷ $5.29/32$ "

Insert toolholders and inserts for steel and cast iron

Insert toolholder	Lenght mm	Spindle	Toolholder ring	Boring Capacity Ø mm
A00A28727 U010354000	16,5 ($21/32$ "	A00A28729	-	17÷23 ($45/64$ " ÷ $29/32$ "
A00A28747 U010354000	22 ($55/64$ "	A00A28729	-	23÷37 ($29/32$ " ÷ $1.29/64$ "
A00.46900 U010101060	37 ($1.29/64$ "	A00A28731	-	37÷55 ($1.29/64$ " ÷ $2.11/64$ "
A00.46902 U010101060	37 ($1.29/64$ "	A00A28731	-	37÷55 ($1.29/64$ " ÷ $2.11/64$ "
A00.46904 U010101060	54 ($2.1/8$ "	A00A28731	-	55÷95 ($2.11/64$ " ÷ $3.47/64$ "
		A00A28735	-	75÷110 ($2.61/64$ " ÷ $4.21/64$ "
		A00A28735	A00A28737	110÷150 ($4.21/64$ " ÷ $5.29/32$ "
A00.46906 U010101070	54 ($2.1/8$ "	A00A28731	-	55÷95 ($2.11/64$ " ÷ $3.47/64$ "
		A00A28735	-	75÷110 ($2.61/64$ " ÷ $4.21/64$ "
		A00A28735	A00A28737	110÷150 ($4.21/64$ " ÷ $5.29/32$ "

N.B. - All insert toolholders are complete with screw and spanner, without insert.
Inserts are supplied only in the minimum quantity of 10 pieces

Technical Data



working capacity

Min. and max. borind dia.	mm	13 - 150 ($^{35}/_{64}$ " - $5.29/_{32}$ "
Table travel, max.	mm	360 ($14.1/_{8}$ "
Min. and max. con-rod center distance	mm	55 - 650 ($2.11/_{64}$ " - $25.10/_{32}$ "

geometric features

Height spindle C/L to table	mm	215 ($8.15/_{32}$ "
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speeds

Spindle rotation speed	rpm	200 ÷ 1090
Spindle work feed, per revolution	mm	6 - 12 (00236" - 00473")
Fast table feed, per turn of the spindle	mm	31 ($1.7/_{32}$ "

motor rating

Spindle rotation and feeds	kW	1,5 (2 CV)
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dimensions and weights

Lenght (A)	mm	980 ($38.37/_{64}$ "
Width (B)	mm	660 ($25.63/_{64}$ "
Height, w.out cabinet	mm	1150 ($45.17/_{64}$ "
Height, with cabinet	mm	1850 ($72.53/_{64}$ "
Approx. weight with standard outfit without cabinet	kg (lb)	280 (617)
Approx. weight with standard outfit and cabinet	kg (lb)	319 (703)
Approx. weight with standard and cabinet, ocean packed	kg (lb)	417 (918)

Measurements, weights and execution are not binding on the manufacturers. Motor rating is referred to 50 Hz frequency.

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