

# BT 6 BT 6 VS



**Line boring machines  
for cylinder heads and blocks**

# Line boring machines for cylinder heads and blocks

Drawing on their long experience and in-depth knowledge of the requirements of those operating in the sector of internal combustion engine reconditioning, Berco, the world leader in this section of the machine tools market, have designed and produced a boring machine which combines small size with high output. Overall this machine offers technical and operational features available in no other boring machine of this type, and represents a definite contribution to the most recent technology developments in engine reconditioning. Available in two versions, BT6 and BT6 VS, they are specially designed for reconditioning the camshaft seats in cylinder head blocks, both through and dead-end type. Furthermore, they also provide excellent results in the reconditioning of crankshaft seats in in-line or "V" cylinder blocks of

automobiles or light trucks. The BT6 VS version presents, in comparison to the BT6, the possibility of a continuous speed variation in order to optimize the spindle rotation in accordance with the type of work and type of insert (see Fig. 1). The main features of the BT6 and the BT6 VS boring machines are:

## **Tough construction**

Compact and rational, the machine's main structure consists of electrowelded steel elements which are heat-treated to guarantee not only rigidity but also the maintenance of the precision construction features over time.

## **Machining quality**

High level surface finishes can be obtained without difficulty since the drive systems for rotation and boring bar feed do not incorporate gears, drive screws or other possible sources of

vibration. The direct motor-spindle shaft drive system uses a high-flexibility belt, while spindle feed, adjustable on a continuous scale, is powered by a hydraulic-pneumatic system. Machining precision - Reliable and easily obtained thanks to the special measurement and control devices supplied as standard with the machine.

## **Easy to use**

The logical result of an exclusive machine designed for special processing with every detail planned to make the operator's task easier. The three bar-support arms are supplied ready aligned. The arms are fixed to the cross-bar by means of a pre-loaded cam device which guarantees rapid manoeuvring while at the same time ensuring that the alignment between the arms is maintained. The parallel supports, which can be moved longitudinally along two cross-bars, are fitted with grips for transverse and vertical shifts.

## **Hydraulic-pneumatic system**

Just one directional control valve controls boring bar feed. Even though they are controlled by the same lever, rapid feed and operating feed are fully independent.

## **Accessories**

The BT6 and BT6 VS boring machines are supplied complete with everything for their immediate use; a large number of useful optional accessories are also available to make the various processes even simpler and more economical.



Fig. 1

Fig. 1  
General view of the machine BT 6, VS version, in compliance with the "CE" standards, processing a V-type cylinder monoblock.



# Items available for the machine

## Standard Outfit

- 3 bar supports
- 1 set of boring equipment, for diameters from 24 to 85 mm ( $61/64$ " -  $3 11/32$ " ) - complete with chrome-plated bar length 800 mm ( $31 1/2$ " ) and tool fixing screws
- 1 toolholder ring, 50 mm ( $1 31/32$ " ) dia.
- 2 complete centering devices
- 1 measuring gauge for tool setting complete with micrometer and comparator with metric scale (inches on request)
- 2 set of horizontally and vertically adjustable parallel supports
- 5 brazed boring tools
- 1 set of service spanners
- 1 use and service manual

## Extra outfit

- **V21A26002**: facing attachment for aluminium, from 24 to 56 mm ( $61/64$ " -  $2 13/64$ " ) dia. capacity. Complete with: L.H. and R.H. insert-holders A00A26870 - A00A26872, screws and spanner, less inserts. Available only with the machine;
- **U010101050**: insert for facing with A00A26925 (10 pieces per box);
- **A00A26852**: short bar, length 300 mm ( $11 13/16$ " ) with extension and tool fixing screws;
- **A00A26704**: toolholder 57,4 mm ( $2 17/64$ " ) dia., capacity mm 58 - 95 mm ( $2 9/32$ " -  $3 47/64$ " );
- **A00A26866**: set of bar fixing clamps for tool setting;
- **A00A26550**: centering device for dead-end cylinder heads blocks, less comparator;
- **A00.51438**: comparator for metric system measurements, 40 mm dia.;
- **A00.51439**: comparator for measurement in inches,  $1 37/64$ " dia.;
- **A00A26600**: central bar support complete with arm and clamps;
- **A00A26854**: long bar assembly, 1030 mm ( $40 5/8$ " ) complete with tool fixing screws;
- **A00A26856**: insert-holder length 15 mm ( $19/32$ " ) with screw and spanner;
- **A00A26858**: insert-holder length 17 mm ( $43/64$ " ) with screw and spanner;
- **A00A26860**: insert-holder length 22 mm ( $65/64$ " ) with screw and spanner;
- **A00A26862**: insert-holder length 27 mm ( $1 1/16$ " ) with screw and spanner;
- **A00A26864**: insert-holder length 31 mm ( $1 7/32$ " ) with screw and spanner;
- **U010354000**: insert for boring cast iron and aluminium (10 pieces per box);
- **U900202380**: insert fixing screws (10 pieces per box);
- **U900990000** locking spanner;
- **A00A26868**: pair of centering cones for diameters from 26 to 77 mm ( $1 1/32$ " -  $3 1/32$ " ) (2 pieces needed);
- **A00A26874**: Centering cone dia. 65 a 100 mm ( $2 9/16$ " -  $3 15/16$ " ) (2 pieces needed);
- **A00A26625**: bar alignment control device, excluding comparators;
- **A00A26750**: fixture assembly for V-30° and V-45° cylinder blocks;
- **A00.46843D**: tool-sharpener with three-phase electric motor;
- **A00.46858**: tool-sharpener

support assembly;

- **A00.67506**: diamond grinding wheel;
- **V91A26002**: safety guards according to "CE" standards;
- **A00A26889**: boring kit, 18 mm dia. bar boring range mm 19 - 45 ( $.750$ " -  $1.770$ " );
- **A00A26918**: narrow support assembly.

## Fig. 2

Centering a dead-end cylinder head block using the special optional device.

## Fig. 3

Centering a through shaft cylinder head block using the device supplied as standard.

## Fig. 4

Optional device for measuring flexure and deviations in boring bar.

## Fig. 5

Boring a cylinder block: the tool is fitting to the standard ring.

## Fig. 6

Preliminary centering device using special cones available as optionals.

## Fig. 7

Boring a cylinder block using the optional central bar support.

## Fig. 8

Boring a dead-end cylinder head block using two supports and short boring bar, available upon request.

## Fig. 9

Tool setting device with bar fitted to the support clamp, available upon request.

## Fig. 2



## Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



# Technical data

## Working capacity

Boring range: min. and max dia.	mm	24 - 85	95" - 3,35"
Max. spindle traverse	mm	100	3,94"

## Geometric features

Min and max. distance from parallel supports	mm	45	1,60"
Min. cylinder head or block length admitted	mm	295	11,80"
Max. cylinder head or block length admitted	mm	810	31,90"

## Speeds

Spindle rotation	r.p.m.	215 - 355 - 445 - 520 - 730 - 1070	
Spindle rotation, continuous variation	r.p.m.	(215 - 1300*)	
Rapid and operating feed, per minute	mm	0 - 1000	0 - 39,37"

## Motor rating

Bar rotation drive	kW	0,37 / 0,20 (1,1*)	0,5 / 0,27 (1,5*) HP
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## Dimensions and weights

Lenght A	mm	1780	70"
Width B	mm	800	31,50"
Height C	mm	1385	54,53"
Approx. weight, unpacked	kg	375 (410*)	826 (903*) lb
Approx. weight, ocean packed	kg	475 (510*)	1046 (1123*) lb

Berco reserve the right to make any modifications and variations which they may consider necessary at any time. Motor rating is referred to 50 Hz frequency.

\*Data in pharentesis are relevant to the VS version.

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