Instructions

Boring

"Wandess"

Cylinder Boring Bar

Whatton & Sons, Ltd
MERRIDALE STREET WEST
WOLVERHAMPTON

The "Wandess" Cylinder Boring Bar

GENERAL :

Introduction of the Wandess Cylinder Boring Bar marks a definite step forward in British Cylinder Boring Bar manufacture.

Developed and built by Whatton & Sons, Limited, Precision Engineers, Wolverhampton, this new Boring Bar comprises an almost unique combination of new ideas, with sound, well tried methods of manufacture.

It has been built after more than 2 years experimental and research work and its special features are as follows :–

OUTSTANDING FEATURES :

- **Simple Clamping Arrangement.**
- **Independent Screw Feed.**
- **Three point centring of Boring Head.**
- **Rigid Boring Head with quick release device for "Wimet" Tipped Boring Tool.**
- **Built in post for Cutter Lapping Jig and "Spedia" Diamond Impregnated Lapping Wheel.**
- **Detachable Direct Reading Micrometer.**

A continuous and satisfactory performance with the Wandess Cylinder Boring Bar can only be obtained when the operator is fully conversant with the machine. To this end we recommend that this booklet be given to the operator as a guide and a reference. This machine has been designed to finish to very fine limits any cylinder bore within its capacity and employs "Wimet" tungsten carbide tipped boring tools which give a finish that eliminates subsequent honing or lapping operations thus saving time and labour.

It is essential that the utmost cleanliness is observed in respect of the block to be bored and the equipment being used in order to obtain precision boring.

There are three models of this machine available. each having the some operating instructions, which are as follows :–

(l) First, thoroughly clean face of Block to be bored and then make sure that the base of Boring Bar is free from foreign matter and Is perfectly clean.

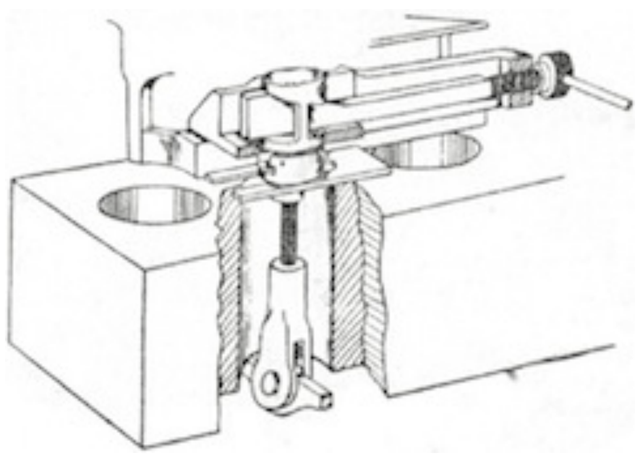
(2) Fit the clamp, bolted in Fork end of extension fork, across base of the cylinder adjacent to the cylinder to be bored. The ends of the clamp should fit across the width. NOT the length of the cylinder block (this ensures that they ends of the clamp do not overlap the cylinder to be bored).

Clamp should not, however. be in or on the edge of con rod slots.

The correct clamp to use is that which will overlap bottom of cylinder about 3/8" each side. Make sure the clamp does not rest on any burrs. Next place the extension Fork, complete with clamp, in cylinder and arrange adjusting pin to suit depth of cylinder. 'Place “U ” clip under the connection and across top of cylinder. Proceed to tighten the adjusting pin just sufficient to hold clamp against cylinder.

SPECIAL NOTE. Do not tighten too much, otherwise difficulty will be experienced in engaging Spigot in “T” slot of clamp connection“.

Fig. I. View showing clamping device in position.

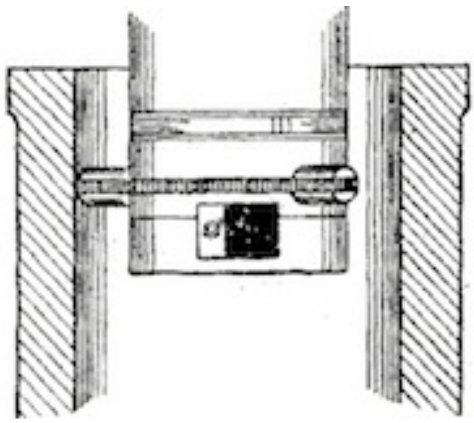


(3) For the first bore in any block select the cylinder showing the greatest amount of wear ; this will save time in taking another cut.

(4) Next place the boring bar on cylinder ready for centring. Extract the tool holder before lowing the Boring Head into cylinder. Select appropriate centring pins, making sure they are clean and dry, they must be free from dirt and must **not** be oiled. Fit centring pins and proceed to turn the knurled knob at the head of the Bar in a clockwise direction, this will expand the centring pins, one of which should be located in the deepest point of wear (this will enable the smallest oversize cut necessary to clean up the bore).

When the centring pins make contact with the Cylinder wall the bar will be held rigid ; make certain there is no strain on the quill. If the cylinder is not square with top of block the centring should be done halfway down the cylinder. **Do not** exert force when turning knurled knob otherwise the quill will be strained.

Fig. 2. View showing three point centring operation



(5) Now proceed to clamp the bar in position by placing the clamp holder in the base of Boring Bar and engage spigot in "T" slot in the clamp connection. Now tighten knurled clamp nut at the end of the knurled bar, using tommy bar provided ; this will pull the clamp up and lock the bar rigidly in position. **Do not** exert excessive pressure on the tommy bar as this will tend to distort the cylinder.

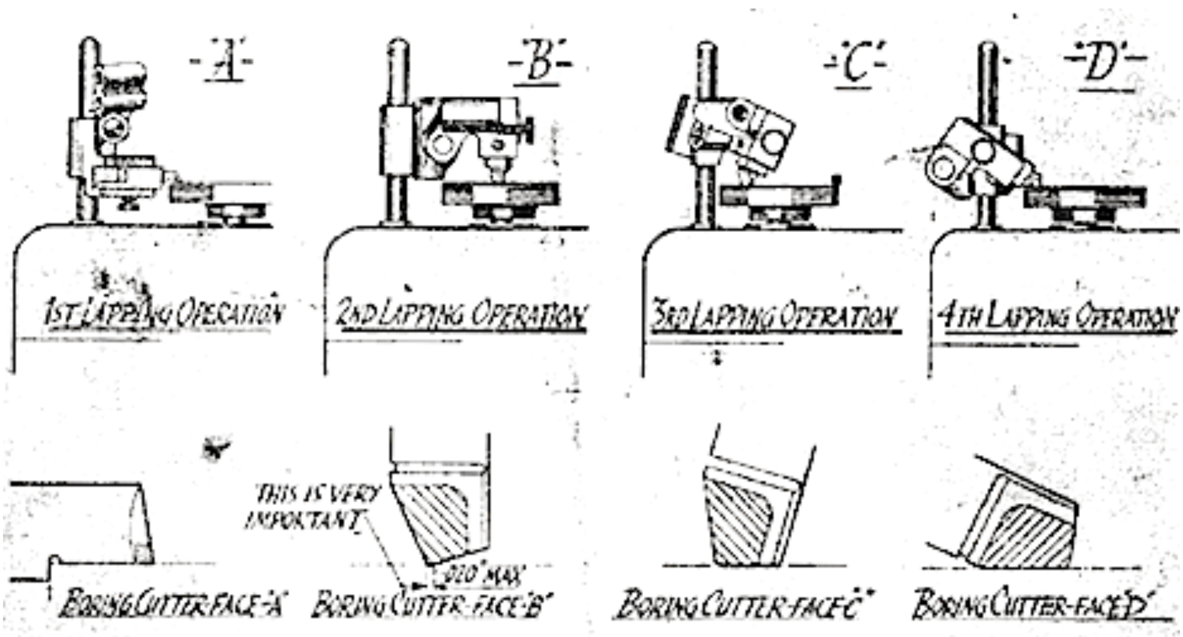
(6) Now contract the Centring Pins by turning the knurled knob anti-clockwise.

(7) Lift Boring head out of cylinder.

(8) Make certain the "Wimet" Carbide Tool is correctly lapped–this is the great secret of smooth, accurate finish. Should the tool require lapping the following procedure should be adopted :–

(1) Clamp tool in lapping jig.

(2) Proceed to lap four faces of tool by locating jig in sequence of four positions shown in sketch.



(9) **Correct use of "Spedia" Diamond Impregnated Lapping Wheel**

During the lapping operation it is essential that only a light pressure approxi–matey 5-lbs should be used. This is due to the high lapping qualities of the "Spedia" Diamond Impregnated Wheel. The wheel should be lubricated with a thin oil, such as "3 in 1", during the lapping operation and therefore it is essential that the felt pad fixed in the wheel guard is saturated with oil. The tool should not be retained in one position during the lapping operation but should be moved to and fro across the wheel—this procedure ensures even wear of the wheel.

Should the wheel after prolonged use become indented it should be dressed with the aid of a Carborundum stick, applied to the face of the wheel whilst the wheel is running. Should the indentation in the wheel be such that dressing with the Carborundum stick is not sufficient to true the wheel the following procedure should be undertaken :–

Remove the wheel from the spindle and rub by hand in a circular motion on a sheet of glass covered with 100 grit Carborundum previously mixed with water to a very thin paste.

(10) Before inserting the tool holder into the Boring Head be sure that the slot in the head and the tool holder are perfectly clean. The hole in the tool holder for extracking purposes should be facing down. Push the tool holder in slot and the spring loaded steel ball will snap into the groove located at the rear end of tool holder, there is no necessity to drive it in.

(11) To extract the tool holder from Boring Head place the extractor hook in the hole at the base of the tool holder and a slight jerk will release it. Do not let the tool holder fall to the floor as this may damage the "Wimet" tip.

(12) **Adjustment of Cutter.** After deciding the boring size required, e.g. 2.5" plus 30 thous., proceed to set the cutter. It is important that the cutter is set on the outward movement, i.e. whilst the cutter is moving out to meet the micrometer, the micrometer is set from dead centre of Boring Head, the micrometer should just contact the point of the cutter accurately and the Boring Head will bore top the exact micrometer reading.

(13) After carefully checking the micrometer calculations and ensuring that the cutter is set correctly disengage micrometer and lower the quill so that the cutter tip is within 1/8" of cylinder. Switch on the motor and engage the 0.003" feed (except where large sleeving cuts are being taken when the 0.0015" should be used).

(14) It is advisable after boring to a depth of half an inch to check bore size with an internal micrometer, this is particularly important when taking a maximum sleeving cut of 0.125". To do this, put traverse in neutral position and then switch off Bar and withdraw.

(15) **Withdraw Boring Head**. After cylinder has been bored, put machine into neutral, cutter position should be facing towards front of machine, release clamp and move bar slightly to take cutter away from the face of cylinder. This is most important.

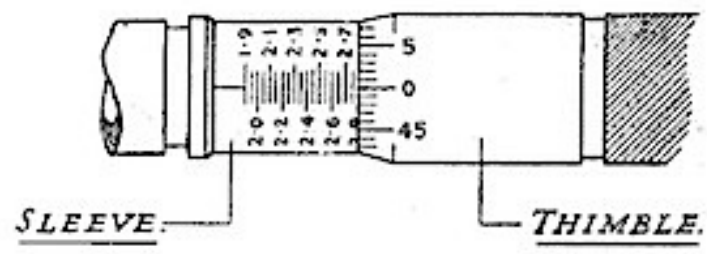
Re-tighten clamp and proceed to withdraw quill by manual turning of the handle.

Micrometer Reading

The Micrometer is used for setting the boring cutter to the correct diameter to be bored.

Reading the figures on the sleeve which starts at 1.9". This is 1.900" diameter and the next short line on sleeve represents .050", which gives a diameter of 1.950". The next line reads 2.0", the next represents 2.050" diameter and so on to 3.9" diameter.

Each line on the thimble is one thousandth of an inch. Sketch below shows Micrometer to read 2.800" did. bore.



When setting the cutter use only very light pressure on Micrometer. Too much pressure will chip cutter point and scratch spindle of Micrometer. After cutter is set to the required diameter, turn back the Micrometer spindle from cutter point, otherwise the point of cutter will score the face of Micrometer spindle when removing from Boring Bar.

Before inserting tool-holder in Boring Head be sure the slot in head and the tool-holder are perfectly clean. The hole in the tool-holder for extracting purposes should be facing down.

Push the tool-holder into the slot and spring loaded steel ball inside head will snap into Vee slot at rear of tool-holder. There is no need to drive it in.

To extract tool-holder from Boring Head, place extractor hook in the hole in bottom of tool-holder. A slight jerk will release it. Do not let the holder fall to the floor, hold it with the other hand while extracting.

Setting Boring Tool to Micrometer

To set boring tool to required diameter, first set Micrometer to 0.002" to 0.003" under size required, then place anvil of Micrometer in centre hole at the bottom of Boring Head, at the same time engaging the two spring loaded balls in the two slots in Boring Head.

Now turn Micrometer to the left until the two balls drop into the two sockets. These will hold the Micrometer firmly.

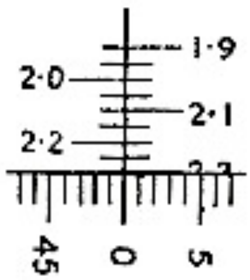
Now using the Tool adjuster work tool-holder out until Boring Tool comes into contact with Micrometer Spindle.

Then bring Micrometer and Boring Tool out to size. Use only very light pressure on Micrometer Thimble. If tool is adjusted out, over diameter required then turn back adjusting screw a couple of turns. This takes up any play on thread. Now adjust Boring Tool out to required diameter.

The Micrometer should be used for feel, not the tool adjuster.

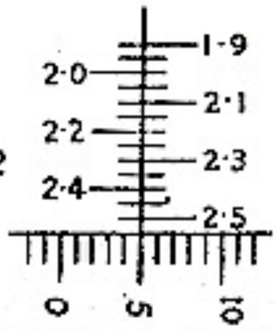
Do not follow Boring Tool back with the Micrometer for required diameter. Figures 1 and 2 below shows Micrometer set for two different diameter readings.

FIG.1



MICROMETER SET TO READ 2·300" DIAMETER.

FIG.2



MICROMETER SET TO READ 2·555" DIAMETER.