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**OTHER PRODUCTS  
MANUFACTURED BY  
THE NEWALL GROUP  
OF COMPANIES**

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CYLINDRICAL GRINDING MACHINES, INTERNAL GRINDING MACHINES, UNIVERSAL GRINDING MACHINES, ANGLE HEAD GRINDING MACHINES, ANGLE APPROACH GRINDING MACHINES, MACHINE TOOL EQUIPMENT, SPECIAL PURPOSE GRINDING MACHINES, MULTI-WHEEL GRINDING MACHINES, UNIT-BUILT GRINDING MACHINES, CAMSHAFT GRINDING MACHINES, CRANKSHAFT GRINDING MACHINES, JIG BORING AND MILLING MACHINES — CONVENTIONAL AND NUMERICALLY CONTROLLED, JIG GRINDING MACHINES, SPARK EROSION MACHINES, NUMERICALLY CONTROLLED MULTI-SPINDLE MACHINING CENTRES, HYDRAULIC UNITS FOR MACHINE TOOLS, TOOLMAKERS' MICROSCOPES, OPTICAL COMPARATORS, WORKSHOP PROJECTORS, PROJECTION PANTOMETERS, ROUNDNESS MEASURING MACHINES, OPTICAL DIVIDING HEADS, ROTARY INDEXING TABLES, ELECTRO-PNEUMATIC AIR GAUGING EQUIPMENT, ELECTRONIC GAUGING EQUIPMENT.

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**Sales Organisation**

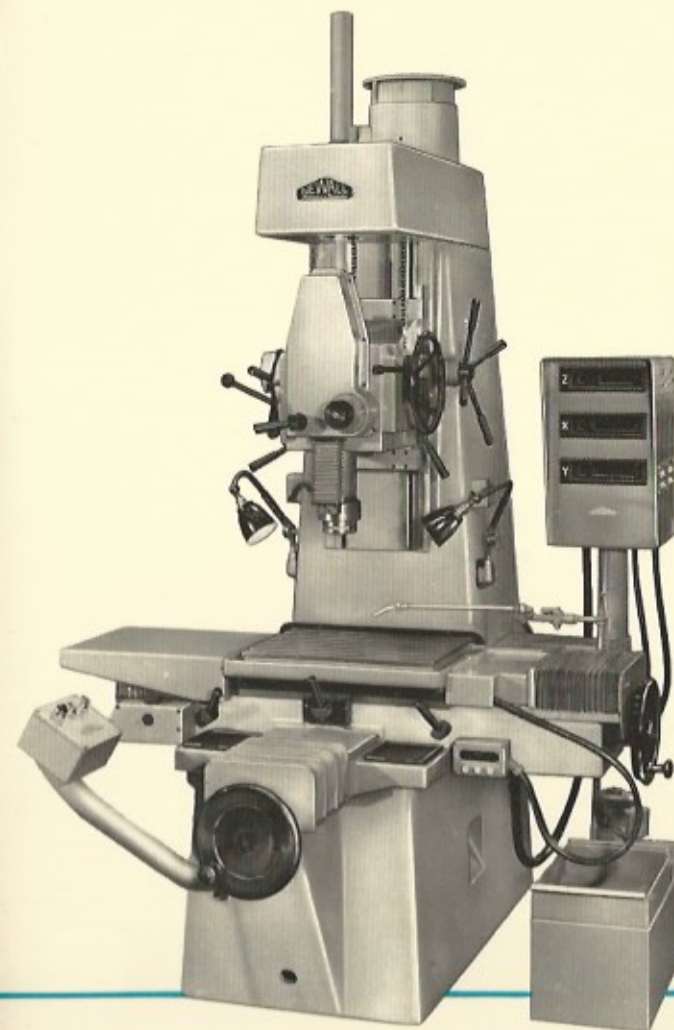
**NEWALL GROUP SALES LIMITED**  
Oundle Road Peterborough  
Telephone: Peterborough 3562, 66185  
and 67116  
Telegrams: 'Precision' Peterborough  
Telex 32136

**NEWALL**

# Newall

**Precision  
jig boring  
and  
milling  
machines**

with  
digital  
read-out  
measuring  
systems



# What features have contributed most toward Newall being established as the world's leading manufacturer of jig boring and milling machines?

1

Each machine is constructed throughout of the highest quality materials and each jig borer is built to comply with an exhaustive series of test sheets to ensure that machines are held to strict limits through all processes of manufacture and assembly.

2

Simplicity and speed of operation, combined with sustained accuracy, has resulted in Newall jig borers being equally suited for precision toolroom work or for batch production under normal working conditions.

3

All models are of an open-sided design, thereby admitting work-pieces in excess of table capacity and the production of a wider range of components than is possible with bridge-type machines of similar size.

4

In the interest of centralised controls and reduced operator fatigue, controls are centrally situated and accessible from the fore-front of machines.

5

Even with the smallest model of a wide range of machines, many of which have numerical control, milling is an actuality.

6

There is a wide choice of co-ordinate setting systems available, including the Newall roller measuring system, an O.M.T. optical measuring system, Vernier drum and precision screw measuring system and . . .

## Newall ENGLISH/METRIC DIGITAL READOUT SETTING SYSTEM

The digital readout system provides for a digital display of the actual co-ordinate displacement of the worktable from the zero position and also incorporates full zero shift facilities. Digital readings are in increments of 0.0001" (0.001 mm.) and settings to less than 0.00005" (0.0005 mm.) may be obtained by reference to a fiducial indicator. Changeover from Metric to Imperial settings is by turning a small switch situated at the rear of the cabinet. The system is arranged to give an additive count in either direction from the zero position; the direction of count being indicated by a  $\pm$  symbol.

The measuring system utilises diffraction gratings manufactured by the wholly owned Newall subsidiary company Optical Measuring Tools Limited. The gratings are fitted to a fixed member of a given axis in close proximity to a reading head mounted on the moving member. The interaction between the master scales and the index grating contained in the reading head will produce Moire fringes. These are then counted by the counting mechanism of the control system which displays the amount moved relative to the zero position. The system employs check facilities to continuously monitor its various functions and any discrepancy is immediately indicated by a warning light.

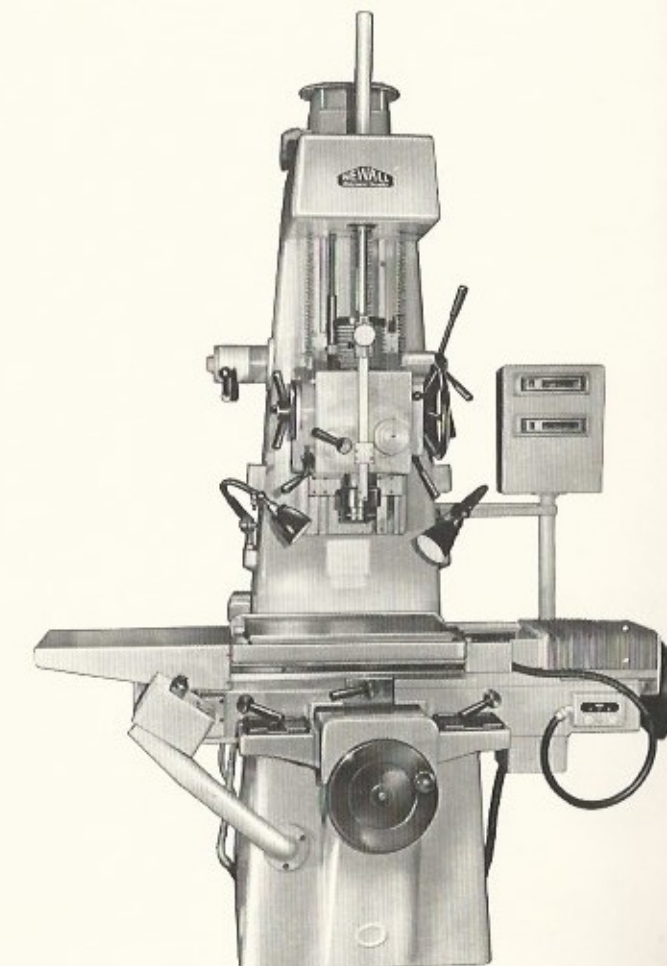
## DIRECT READOUT

The display units are housed in a cabinet, as illustrated, mounted on the machine column. A simultaneous display of the dimensions in each axis is provided in clear illuminated numerals which can be read instantly and accurately by the operator. There are no lines or markings to read other than the numerals and this eliminates the possibility of misrepresentation of readings and contributes to greater precision.

## SELECTIVE DATUM SETTING

The zero shift facility provides a means of setting the digital counters to zero at any desired point. Datum can be established at any location on the workpiece and therefore addition and subtraction calculations from working drawings do not have to be carried out by the operator.

The advantages of this particular setting system are the quick setting features by virtue of the in-line digital display of the worktable position, the automatic reversal of direction of positive dimensions and the fact that the digital display portrays a direct reading of worktable displacement from selected zero.



DIGITAL DISPLAY SYSTEMS