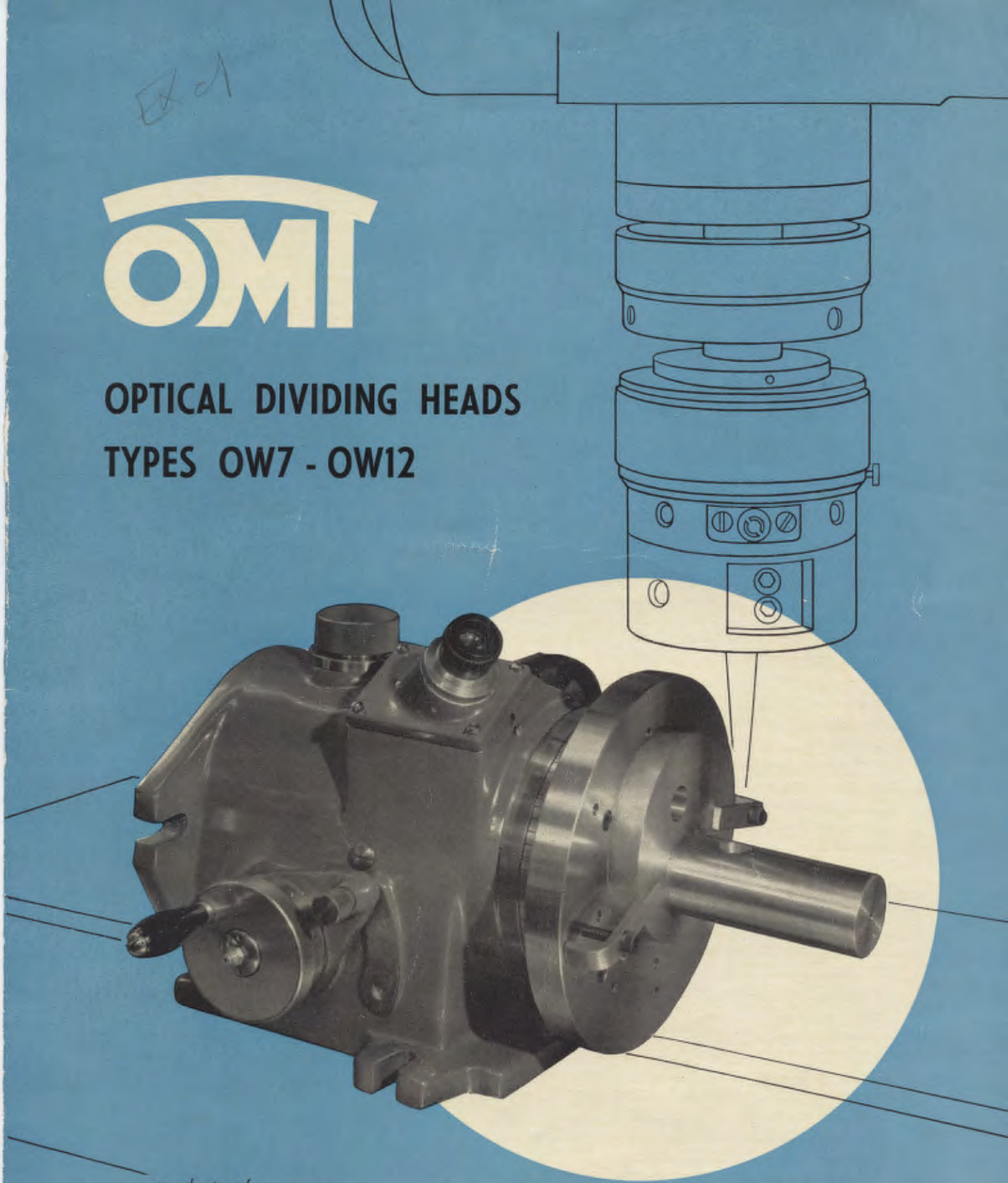
OMT

OPTICAL DIVIDING HEADS
TYPES OW7 - OW12



products of

OPTICAL MEASURING TOOLS LIMITED, MAIDENHEAD

ONE OF THE NEWALL GROUP

BROCHURE 54/57

OPTICAL DIVIDING HEADS

TYPES OW7 & OW12

FIG. 1

These precision-built optical dividing heads have been designed primarily for inspection and light machining purposes. The back face of each instrument is truly flat and square to the axis, so that the head may be used with the spindle in the horizontal or vertical plane. The eyepiece is easily accessible in either position. Type OW7 incorporates a scale observed through a fixed eyepiece and reading direct to one minute. Type OW12 is designed for employment where a greater degree of precision is required and embodies a scale reading direct to 2 seconds, viewed through a micrometer eyepiece.

For coarse adjustment, an external scale ring is provided close to the eyepiece. Rotation is effected by a handwheel through a worm and wormwheel, which can be disengaged for rapid positioning simply by the movement of a lever. A positive non-deflecting locking device is also incorporated and is operated by a knurled knob adjacent to the eyepiece. Illumination is by a 6-volt, 3-watt lighting unit which is fed from the mains through a small transformer.

Work can be held either in collets or between centres, and a face plate is provided.

Included in the equipment available with either head is a tailstock (OW 10) and a baseplate unit (OW 11) which is sufficiently large to accommodate clock stands, height gauges, etc. One edge of the latter is machined square to the surface and truly straight for alignment of the datum edges on the bases of both the head and tailstock. A fixture (OW 14) consisting of a triangular casting, on which is mounted a Box Ford indicator, is supplied for alignment purposes.

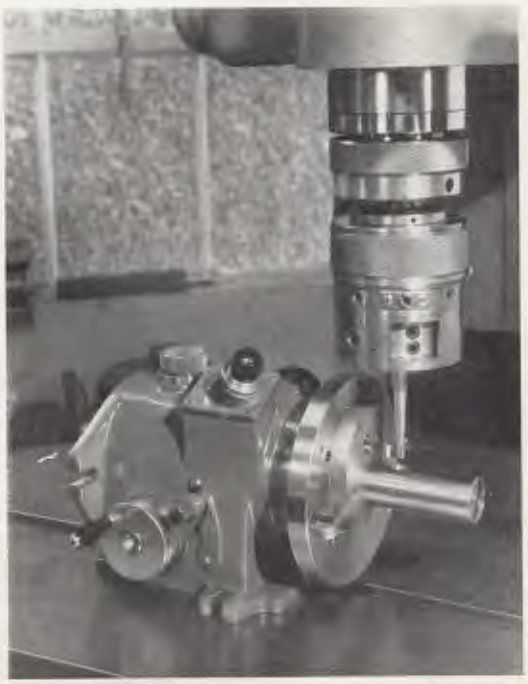


FIG. 2

SPECIFICATION	
Centre height	3¼″ (82 m/m)
Maximum distance between centres	14½″ (368 m/m)
Optical scale reading—Type OW7	Direct to 1 minute
Optical scale reading—Type OW12...	Direct to 2 seconds
SIZE OF HEAD	
Length	7½″ (190 m/m)
Width	6¾″ (170 m/m)
Height	7½″ (190 m/m)
SIZE OF BASEPLATE	
Length	30″ (760 m/m)
Width	15″ (380 m/m)
Height	6″ (150 m/m)

Figure 1 shows the Dividing Head OW12 with tailstock and baseplate in use for inspection purposes. Care has been taken in the design to ensure sufficient room on the base to manipulate clock stands, height gauges, etcetera.

Fig. 2 illustrates Type OW7 Dividing Head in use on a jig boring machine for accurately locating a hole through the stem of a component and square to the axis.

In Fig. 3, Type OW12 is employed with centres for boring a hole in the periphery of a component.

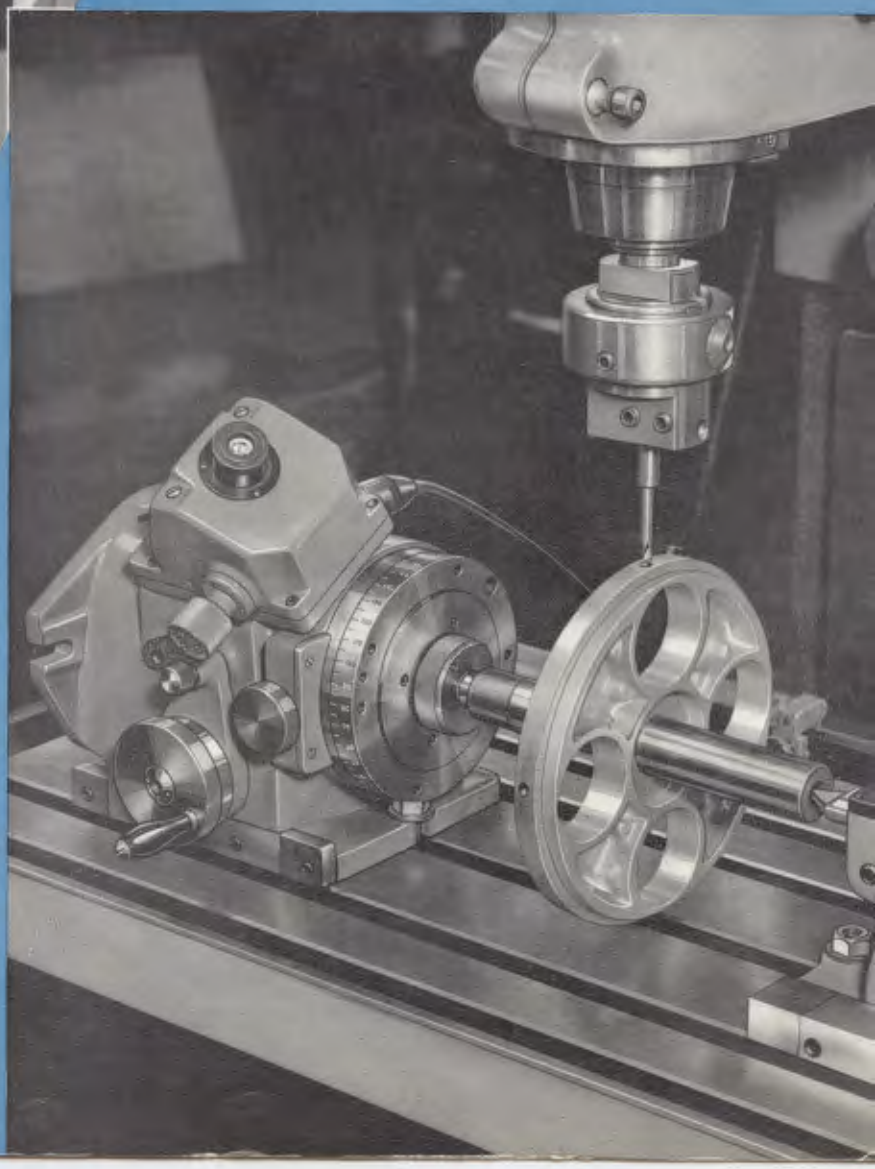


FIG. 3

OTHER NEWALL GROUP PRODUCTS

KG MACHINE TOOLS

- CYLINDRICAL GRINDING MACHINES
- INTERNAL GRINDING MACHINES
- AUTOMATIC INTERNAL GRINDING MACHINES
- UNIVERSAL GRINDING MACHINES
- MACHINE TOOL EQUIPMENT
- SPECIAL PURPOSE GRINDERS

NEWALL

- JIG BORING MACHINES (in 4 sizes)
- CYLINDRICAL GRINDING MACHINES
- SPECIAL JET BLADE GRINDERS
- THREAD GRINDING MACHINES
- LAPPING MACHINES
- CAMSHAFT GRINDING MACHINES
- CRANKPIN GRINDING MACHINES
- ANGULAR HEAD GRINDING MACHINES
- FINE BORING MACHINES

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- OPTICAL COMPARATORS
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- LENSES
  PRISMS
  OPTICAL FLATS, ETC.
- DIVIDING HEADS
- UNIVERSAL TOOL HEADS
- MEASURING INSTRUMENTS
- MOTION PICTURE CAMERAS

OMT **OPTICAL DIVIDING HEADS OW7 & OW12**

PRODUCTS OF

OPTICAL MEASURING TOOLS LIMITED, OLDFIELD ROAD, MAIDENHEAD, ENGLAND

SALES ORGANISATION

NEWALL GROUP SALES LIMITED

PETERBOROUGH
TELEPHONE: PETERBOROUGH 3227
TELEGRAMS: 'PRECISION' PETERBOROUGH

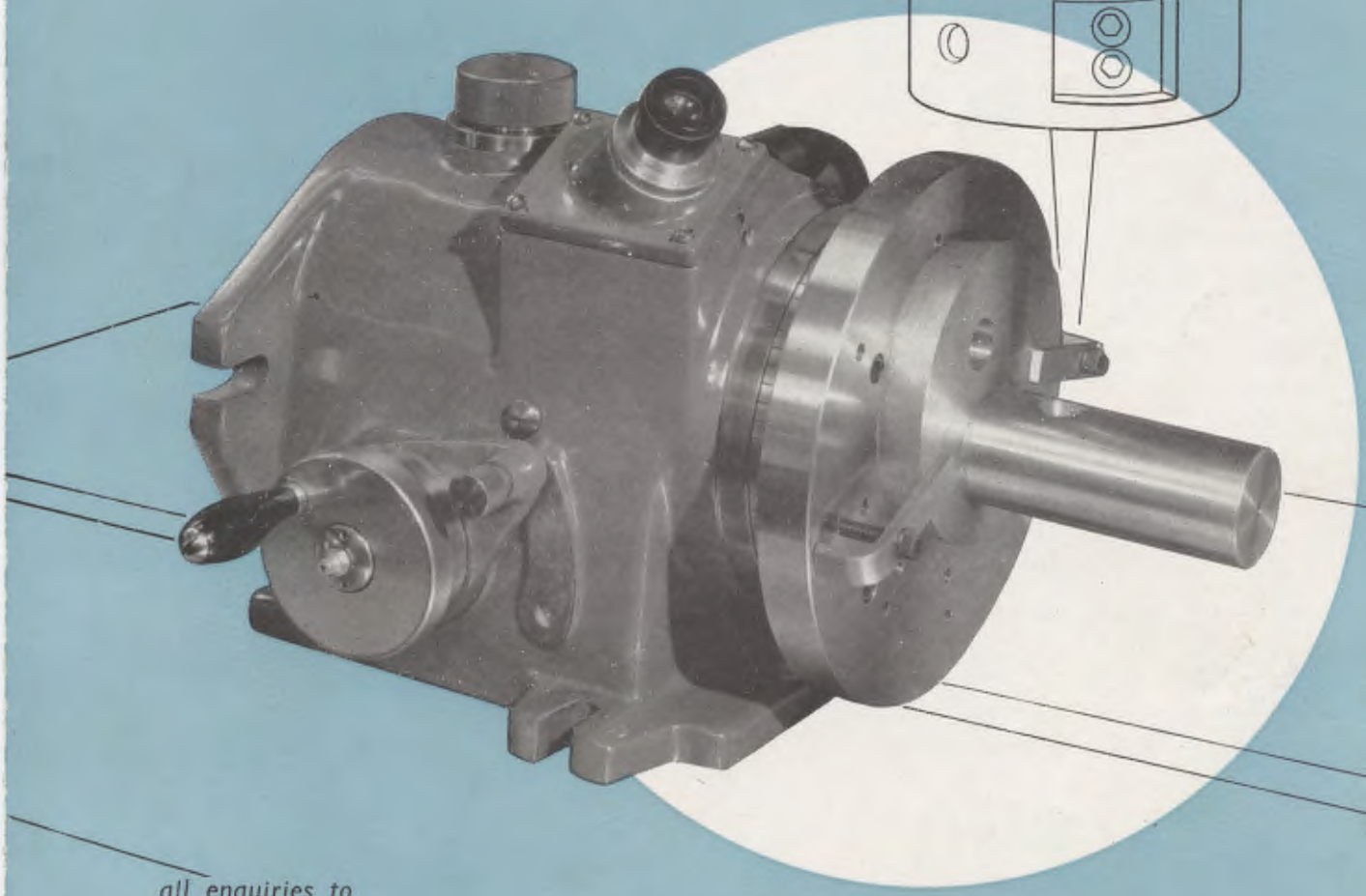
MAIDENHEAD
TELEPHONE: MAIDENHEAD 3704
TELEGRAMS: 'OPTOOL' MAIDENHEAD

BROCHURE 54/57

PRINTED IN ENGLAND

OMT

OPTICAL DIVIDING HEAD OW7



all enquiries to

NEWALL GROUP SALES LIMITED, PETERBOROUGH

BROCHURE 54/55

OPTICAL DIVIDING HEAD OW7

The O.M.T. Optical Dividing Head has been designed primarily for inspection and light machining purposes. The back face of this instrument is truly flat and square to the axis so that the head may be used with the spindle in the horizontal or vertical plane. The eyepiece is easily accessible in either position and the optical scale reads direct to one minute. For coarse adjustment an external scale ring is provided close to the eyepiece. Rotation is effected by a handwheel through a worm and wormwheel which can be disengaged for rapid positioning simply by the movement of a lever. A positive non-deflecting locking device is also incorporated and is operated by a knurled knob adjacent to the eyepiece. Illumination is by a 12 volt, 3 watt lighting unit which is fed from the mains through a small transformer.

Work can be held either in collets or between centres and a face plate can also be provided.

Included in the equipment is a tailstock and a baseplate which is sufficiently large to accommodate clock stands, height gauges, etcetera.

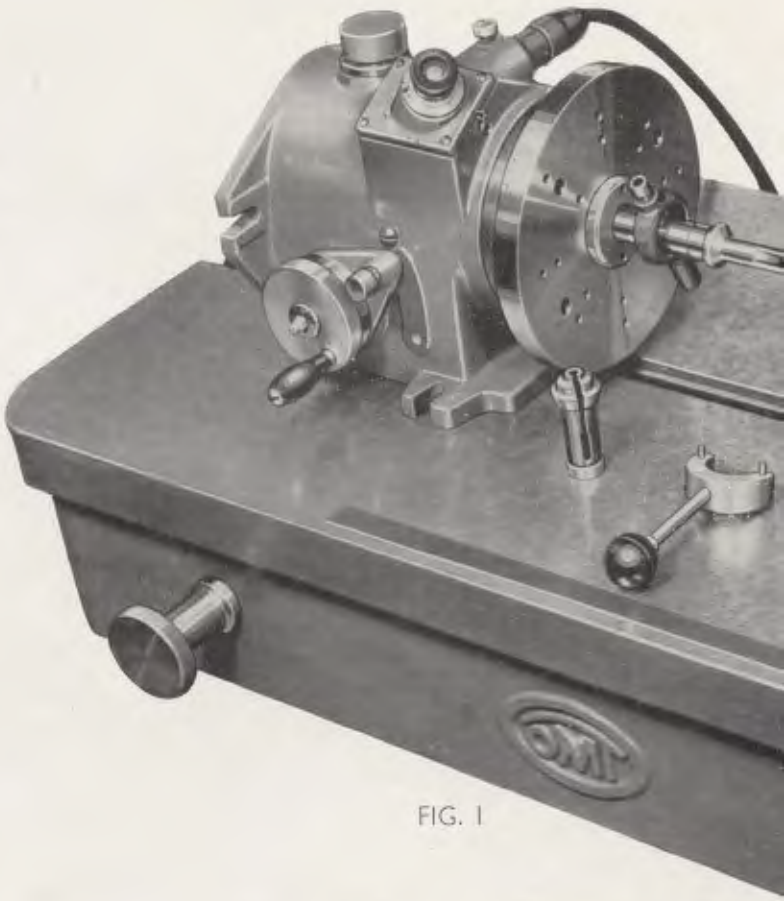


FIG. 1

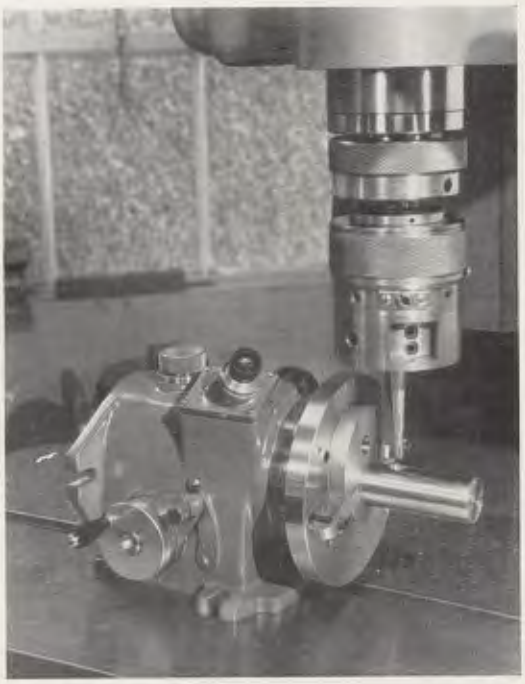
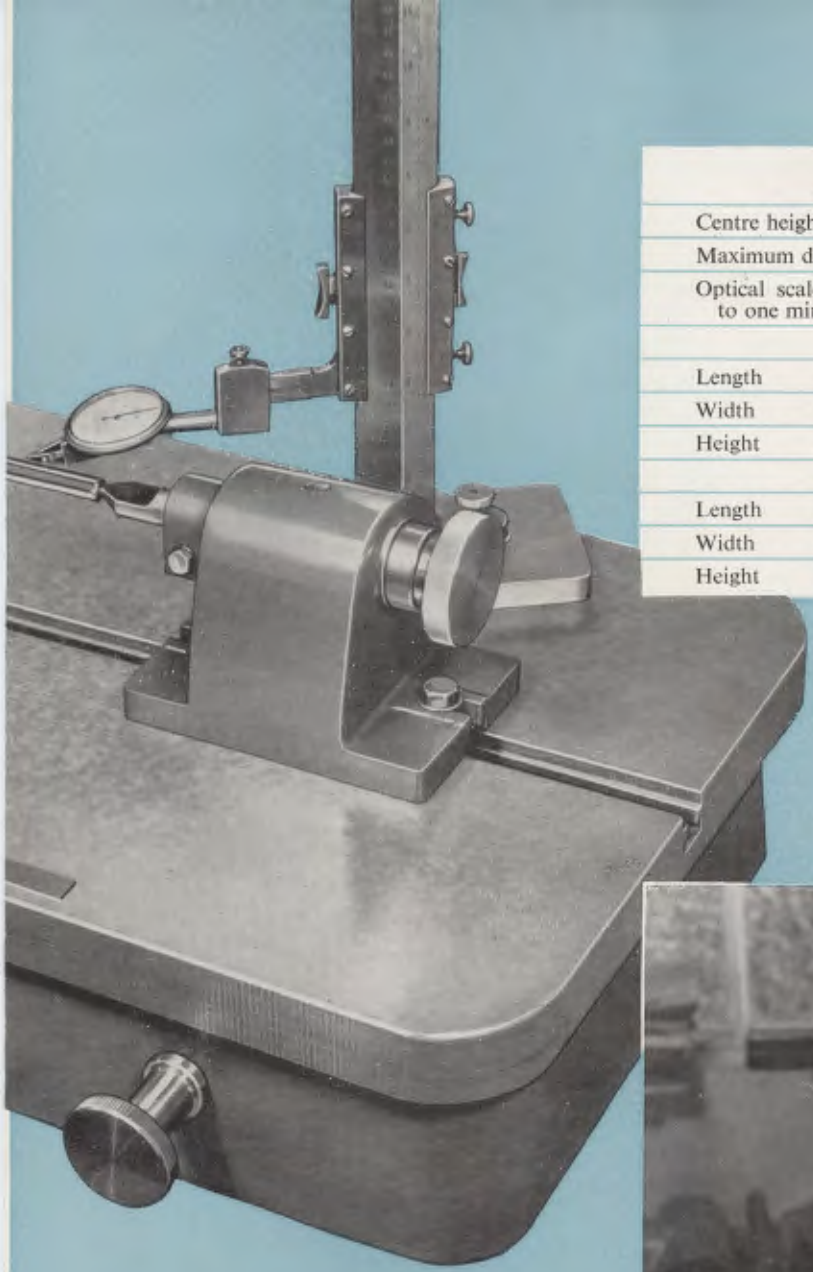


FIG. 2



SPECIFICATION	
Centre height	$3\frac{1}{4}''$
Maximum distance between centres	$14\frac{1}{2}''$
Optical scale reading, by fixed eyepiece, direct to one minute.	
SIZE OF HEAD	
Length	$7\frac{1}{2}''$ (190 m/m)
Width	$6\frac{3}{4}''$ (170 m/m)
Height	$7\frac{1}{2}''$ (190 m/m)
SIZE OF BASEPLATE	
Length	30″ (760 m/m)
Width	15″ (380 m/m)
Height	6″ (150 m/m)

Figure 1 shows the Dividing Head with tailstock and baseplate in use for inspection purposes. Care has been taken in the design to ensure sufficient room on the base to manipulate clock stands, height gauges, etcetera.

Figures 2 and 3 illustrate the O.M.T. Optical Dividing Head in use on a Jig Boring Machine. In Fig. 2 a hole has been bored through the stem of the component square to the axis. Fig. 3 shows how, by tilting the Head through 90° and clamping it on the back surface, the second hole can be bored at right angles to, but angularly displaced from, the first.

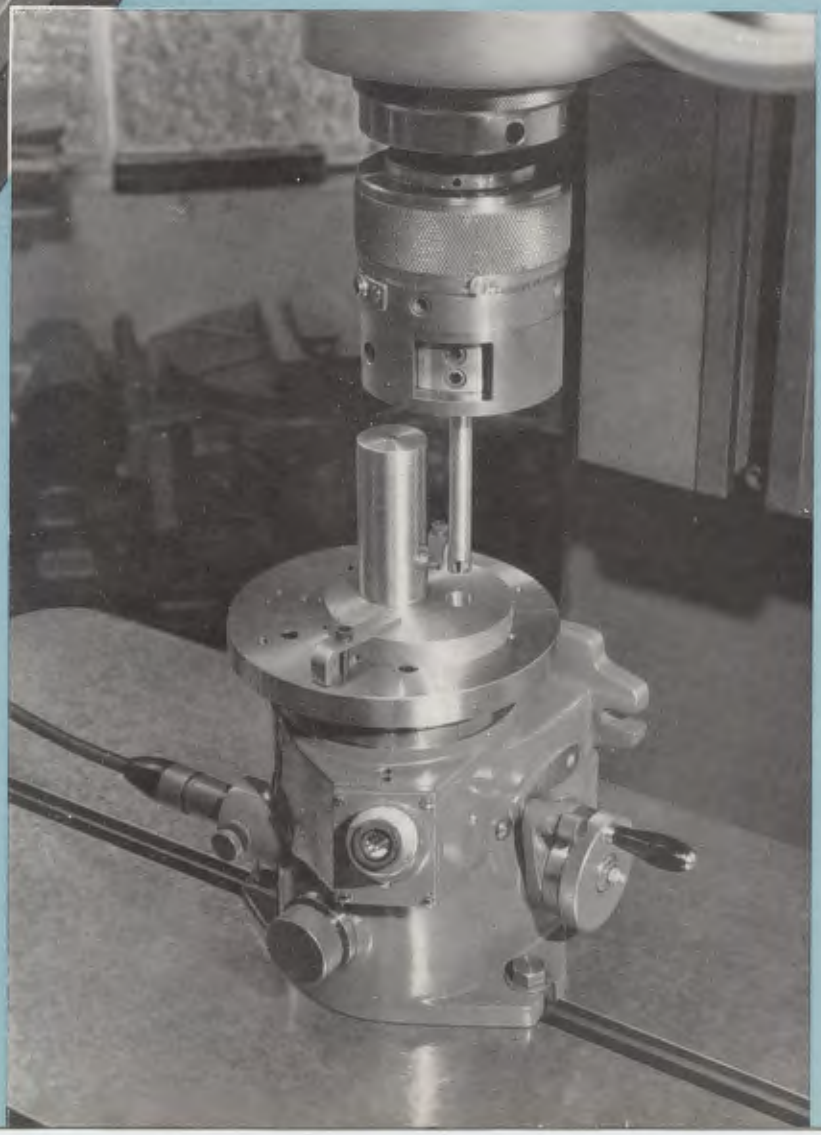


FIG. 3

OTHER NEWALL GROUP PRODUCTS

KG MACHINE TOOLS

CYLINDRICAL GRINDERS

INTERNAL GRINDERS

UNIVERSAL GRINDERS

MACHINE TOOL EQUIPMENT

SPECIAL PURPOSE GRINDERS

NEWALL

JIG BORING MACHINES (in 3 sizes)

CYLINDRICAL GRINDING MACHINES

SPECIAL JET BLADE GRINDERS

THREAD GRINDING MACHINES

LAPPING MACHINES

CAMSHAFT GRINDING MACHINES

CRANKPIN GRINDING MACHINES

ANGULAR HEAD GRINDING MACHINES

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OPTICAL TABLES

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DIVIDING HEADS

UNIVERSAL TOOL HEADS

MEASURING INSTRUMENTS

MOTION PICTURE CAMERAS

OMT **OPTICAL DIVIDING HEAD OW7**

a product of
OPTICAL MEASURING TOOLS LIMITED, OLDFIELD ROAD, MAIDENHEAD, BERKS, ENGLAND
TELEPHONE: MAIDENHEAD 3704/5/6 *TELEGRAMS: "OPTOOL," MAIDENHEAD*

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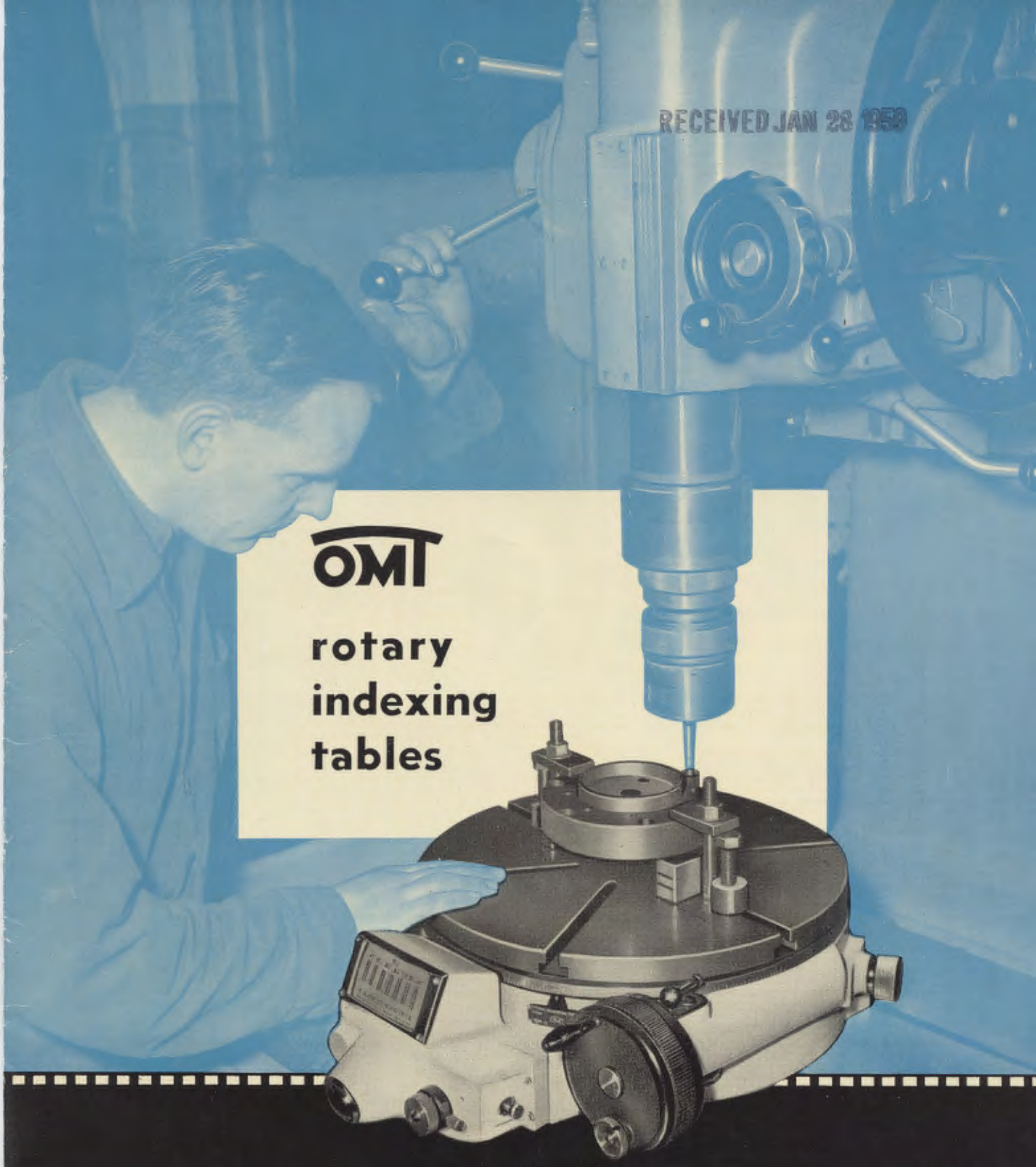


OMT

rotary indexing tables

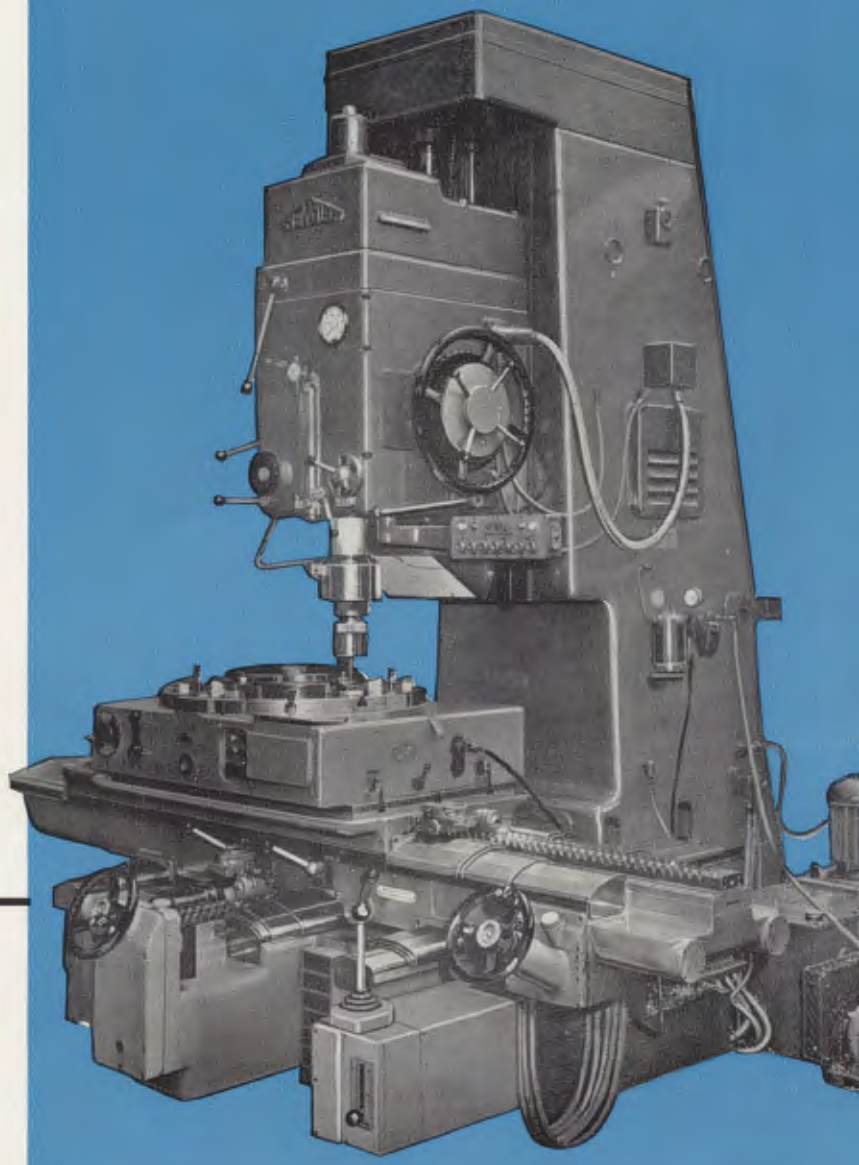
OPTICAL MEASURING TOOLS LTD · MAIDENHEAD · BERKS

ONE OF THE NEWALL GROUP

GEORGE SCHERR CO., INC.
200 Lafayette St. New York 12, N. Y.

OMT

The extremely high order of accuracy observed in the manufacture of the optical rotary tables described in this publication is also maintained in the production of Newall precision jig borers, for use with which they are recommended when rotary indexing is required.



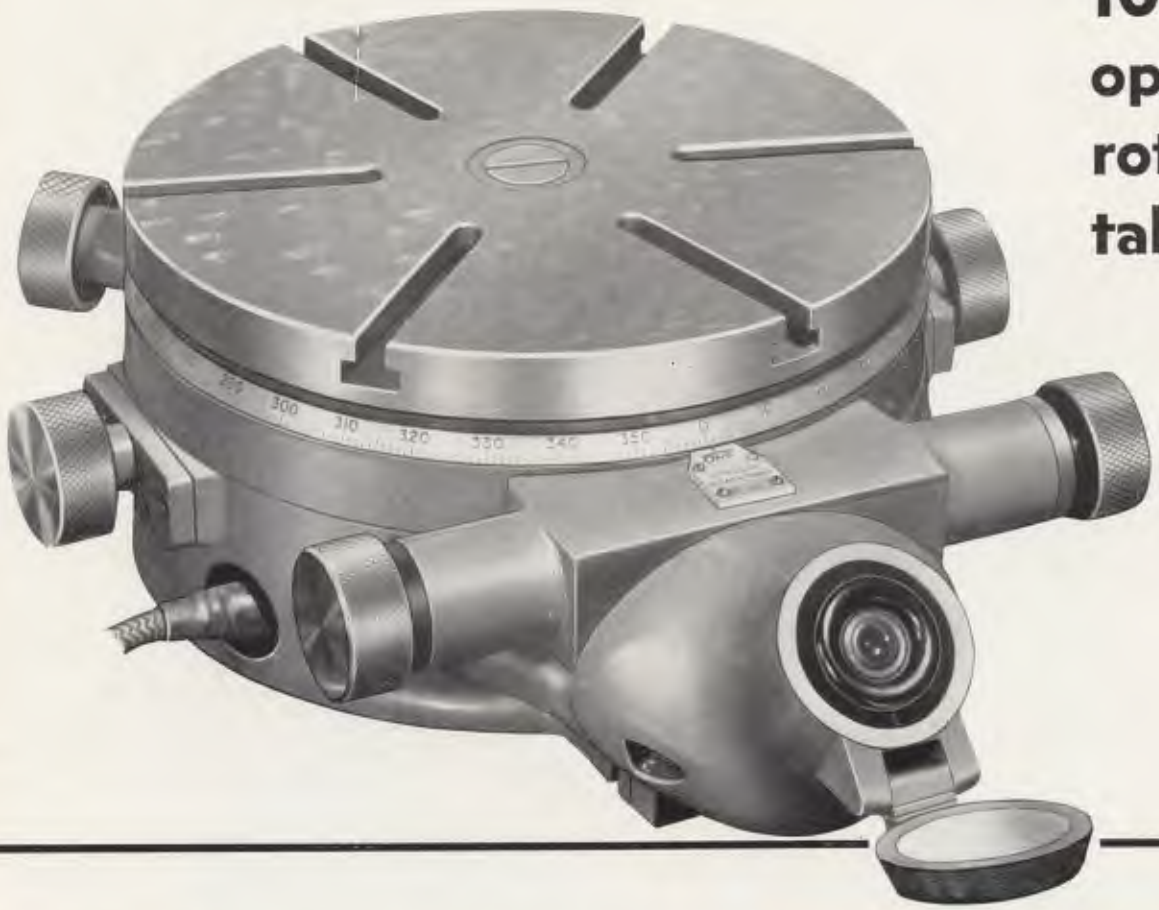
All O.M.T. instruments are manufactured in accordance with specifications agreed to by the National Physical Laboratory and a certificate is given to this effect. Subject to customers' requirements any instrument will be submitted to the National Physical Laboratory for certification at additional cost.

ONE OF THE NEWALL GROUP

OPTICAL MEASURING TOOLS LTD

MAIDENHEAD · BERKS

10″ optical rotary table



For use on jig borers, horizontal borers, grinding machines, vertical and universal millers for numerous inspection functions—wherever highly accurate rotary indexing is required. O.M.T. Rotary Tables are simple to use, easy to read and rigidly built, maintaining high accuracy over long periods. Built as scientific instruments, they are also fine sturdy units capable of carrying heavy loads.

A feature of each model is the table spindle which has a taper bore for receiving a plug with cylindrical head when centring the table to a machine tool spindle or to an inspection jig; a screw cap protects the base when the setting plug is removed.

Smallest in the series, the 10″ model is eminently suitable for employment when machining small and medium size components. Operation is extremely simple, the platen being rapidly turned to the required angle and indexed by a slow motion thimble. An accurately engraved and illuminated glass scale on the rotating member is viewed through a microscope shewing divisions of 30 seconds of arc and scale readings can be read by estimation to 6 seconds of arc.

Work surfaces are hand scraped to less than .0002″ of parallelism with the base surface for all positions in the full revolution and the table spindle, rotating in a plain bearing, is supported by a large diameter anti-friction thrust bearing. Rigid locking of table to the base without distortion is ensured by two internal clamps.

specification:

Diameter of work table	10″	254 mm.
Overall Height	5″	127 mm.
Overall Size	15½″ × 13″	387 × 330 mm.
Scale Readings (direct)	30 secs. of arc.	
Scale Readings (by estimation)	6 secs. of arc.	
Width of 30 secs. division of scale	1/16″	1.58 mm.
Magnification of Microscope	90 x	
Net weight	80 lbs.	36.25 kgms.

Alternative models can be supplied with scale readings direct to 1 second of arc.

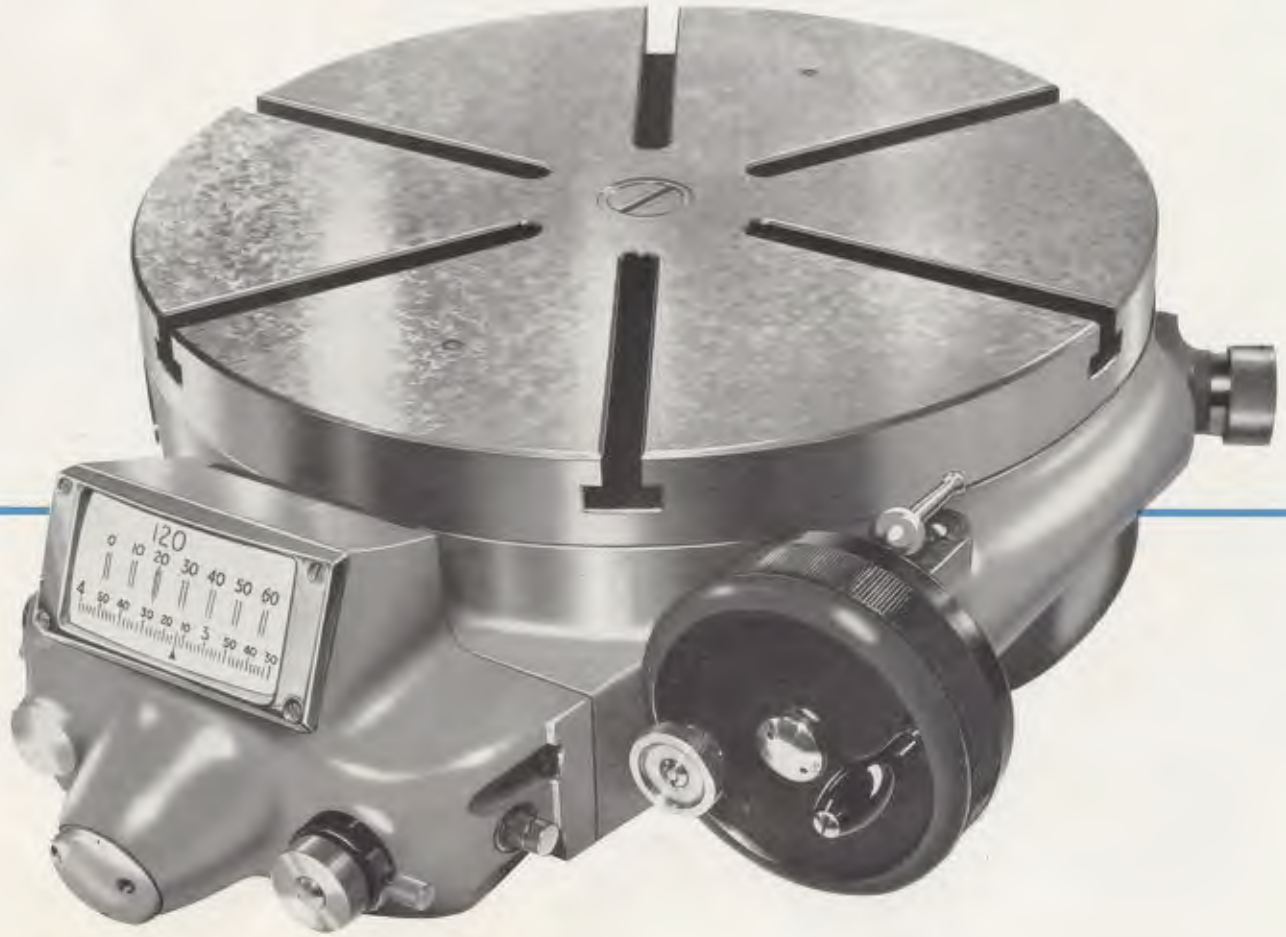
16" projection type rotary table

All O.M.T. instruments are manufactured in accordance with specifications agreed to by the National Physical Laboratory and a certificate is given to this effect. Subject to customers' requirements any instrument will be submitted to the National Physical Laboratory for certification at additional cost.

With their brightly illuminated projection screens the O.M.T. Projection Type Rotary Tables present an entirely unique approach to circular indexing. The ultra-modern design not only increases the accuracy with which these tables can be used but entirely obviates the tendency towards operators' eyestrain and fatigue that occurs after prolonged observation of scales through a microscope eyepiece. An additional advantage of this type of table lies in the fact that it is practicable to exceed the dimensional capacity of the platen without obscuring the scale.

A number of refinements have been added which make these tables superior to any others of similar function. The Meehanite body castings have been strengthened and re-designed bearings have been incorporated to provide an exceptionally sturdy unit.

A very important feature of the 16" diameter tables is the 2-speed worm and wheel hand drive, which makes it possible to carry out a variety of light-milling operations to a degree of accuracy which it has hitherto been extremely difficult to obtain. This drive can be disengaged for rapid positioning. In common with our other tables, the setting accuracy is unaffected by any wear which may occur in the mechanical drive due to the fact that the optical system is quite independent.



Two models of the 16" Projection Table are available, one incorporating an optical micrometer and reading direct to 1 second of arc, and the other with a vernier type screen reading direct to 10 seconds of arc. The basic principle of each model is similar in that a circular glass scale is mounted beneath the work table and as the scale rotates with the platen the graduations are projected on to the screen.

On the Vernier Screen model, the screen consists of a grid, as shown on the lower illustration, and the reading is taken at the intersection with the degree line; thus the reading in the illustration is 160° 27′ 0″.

However, with the Optical Micrometer model there are also projected on to the screen two graticule images (minutes and seconds scales) thus giving readings direct to 1 second of arc. In the illustration of this type of scale at the top of the page the reading is therefore, 120° 23′ 14″. The optical micrometer is operated by knurled knobs adjacent to the screen and in addition to fine setting the minute scale can thereby be set to the nearest 10 minute mark, this feature being particularly useful when it is impracticable to commence at absolute zero. A unique feature of this model is that it is possible to preset the scale so far as seconds and unit minutes are concerned, so that one operation can be proceeding whilst the scale is being set for the next. After the scale has been set, all that is necessary in order to move to the next position is to rotate the table by means of the handwheel until the degree line is positioned within the appropriate double line on the minute scale.

It will be appreciated that this exclusive feature can effect considerable economy in production time. Illumination of both of the 16" models is provided by a special 11V. 12W. lighting unit.

A certificate of accuracy may be provided if required together with a schedule of limits to within which inspection has been carried out. These limits have been agreed upon by Optical Measuring Tools Ltd., and the National Physical Laboratory.

DESIGNED FOR USE WITH JIG BORING MACHINES, PRECISION MILLING MACHINES, IN THE TOOLROOM, OR WHEREVER HIGHLY ACCURATE ROTARY INDEXING IS REQUIRED.

specification

Angular measurement:

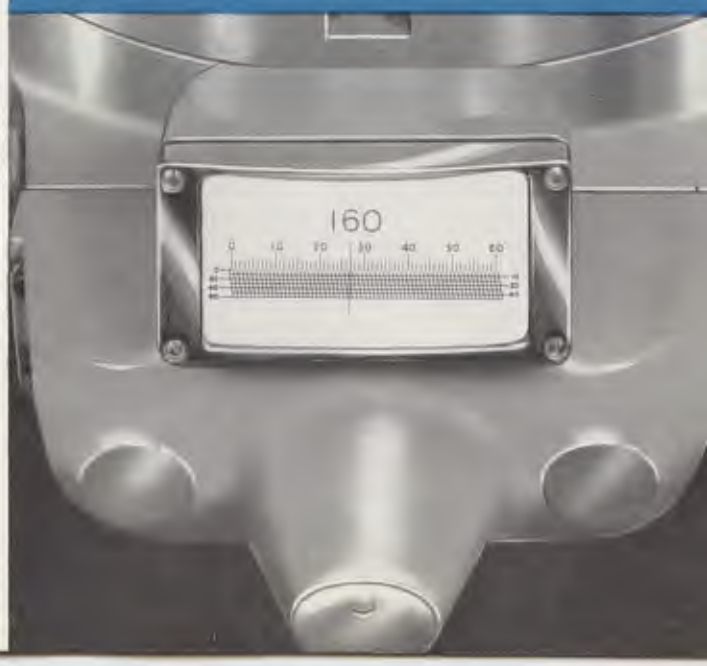
Optical Micrometer model—direct to 1 second of arc.

Vernier Screen model—direct to 10 seconds of arc.

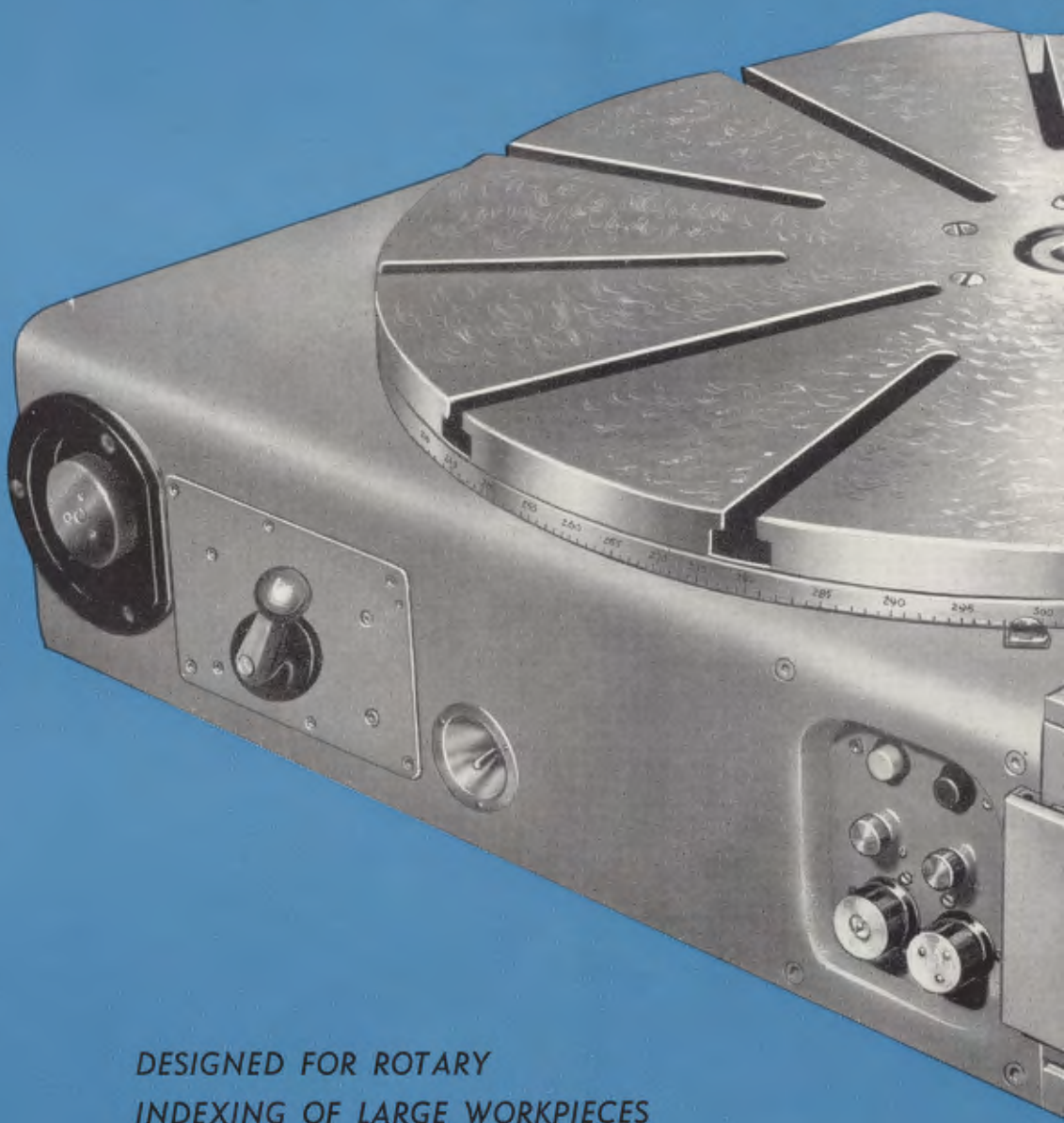
Platen diameter: 16" (406 m.m.)

Overall dimensions: 22" × 20½" × 5⅜" (559 × 520 × 150 m.m.)

Nett weight: 235 lbs. (106 kgms.)

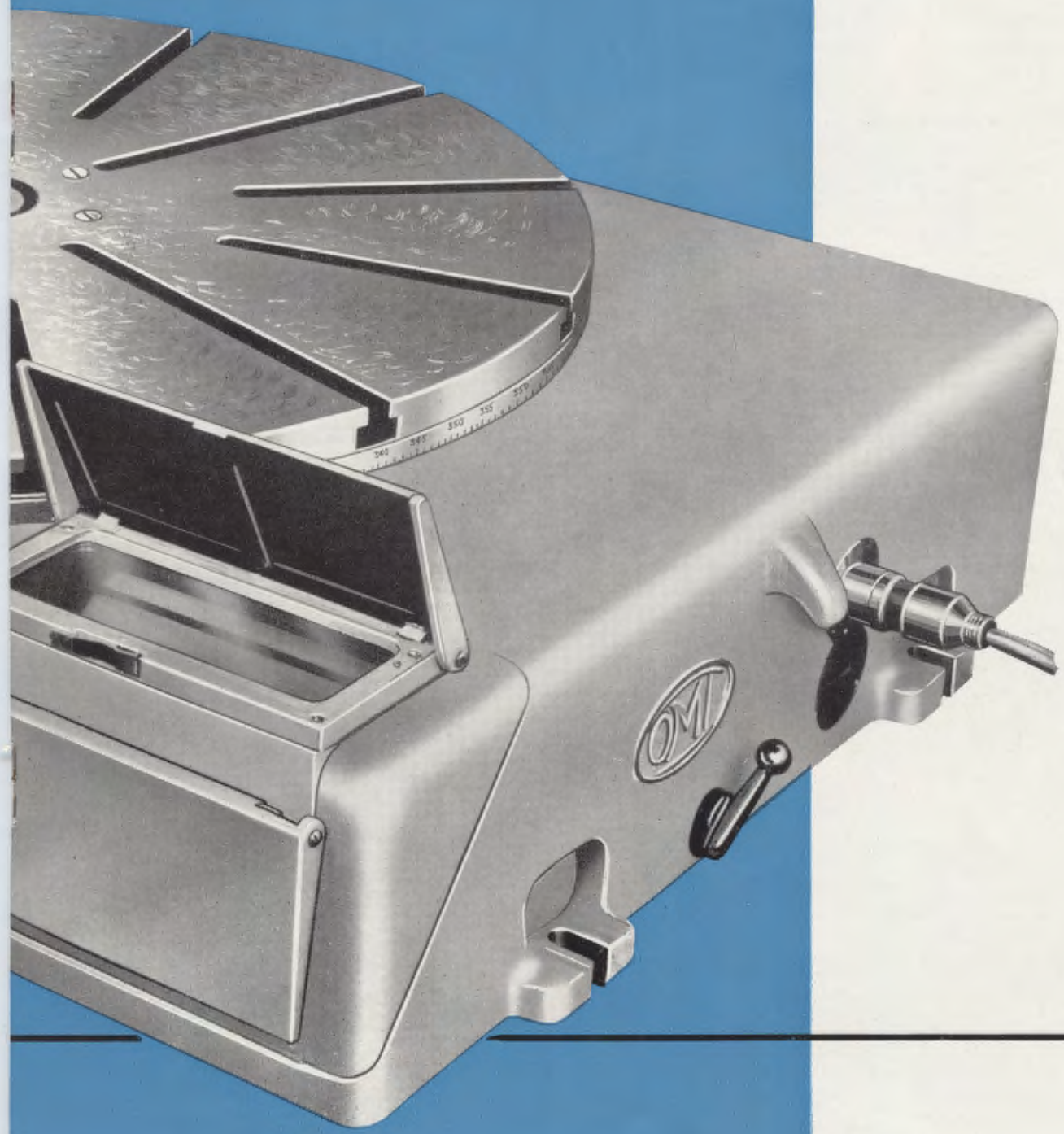


OMT 30" projection typ



DESIGNED FOR ROTARY
INDEXING OF LARGE WORKPIECES
UP TO 1200 LBS IN WEIGHT, AND
READING DIRECT TO ONE SECOND OF ARC

rotary table



general description

A recent addition to the O.M.T. range of rotary tables, the 30" diameter model embodies the principal optical features of its smaller counterpart, the well known 16" Projection Table, but has, of course, a far greater capacity for both size and weight.

The table is so designed, with an extremely rigid base casting and special bearings, that it is capable of carrying loads up to 1,200 lbs. without accuracy being affected. In addition to this, by virtue of innovations in design the initial setting accuracy of the table is unaffected by any wear which may occur in the mechanical drive.

The platen is power rotated at 4 r.p.m. by a $\frac{1}{4}$ h.p. electric motor through a worm and worm-wheel and is push-button controlled. An approximate setting is obtained from a graduated scale on the periphery of the platen whilst in motion, and from the approximate, the precise setting is arrived at by use of the fine setting knob and the optical micrometer. This is read direct to 1 second of arc, from the screen unit.

The screen unit actually consists of two projection screens, mounted one above the other, and is situated at the front right hand corner of the table. The upper screen is inclined at an angle of 55° for normal viewing and the other at 20° for use when the platen is overloaded to an extent whereby the normal screen is obliterated. The scale is transmitted from one screen to the other simply by the movement of a small lever which is conveniently placed on the side of the table.

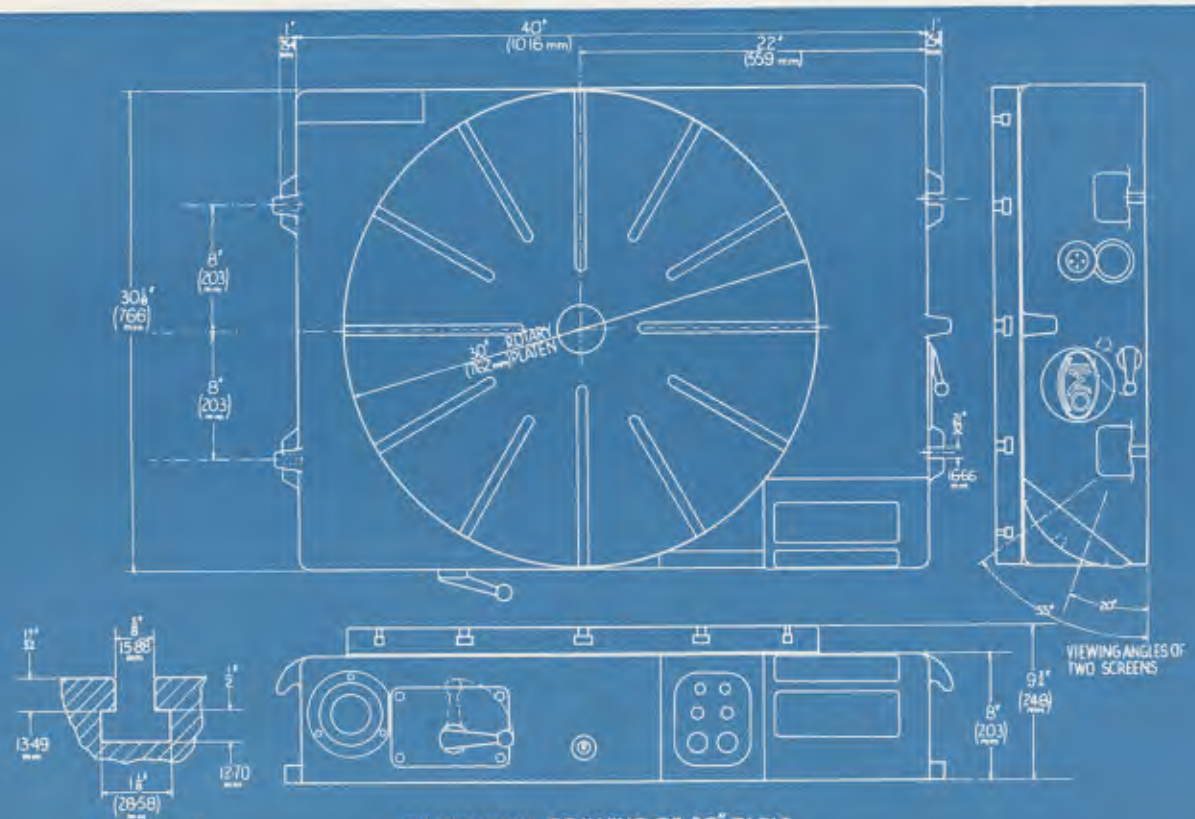
The fine adjustment optical micrometer is operated by knurled knobs which are situated, with the push button controls, in a panel adjacent to the screen unit.

An efficient clamping device is incorporated and positive clamping is effected by the movement of a lever which is also conveniently situated on the front of the table.

The 12V. 18W. lighting unit is fed, through a built-in transformer, from the 400/440 Volt, 50 cycle, 3 phase electrical supply. This equipment can be varied to suit customers' requirements.

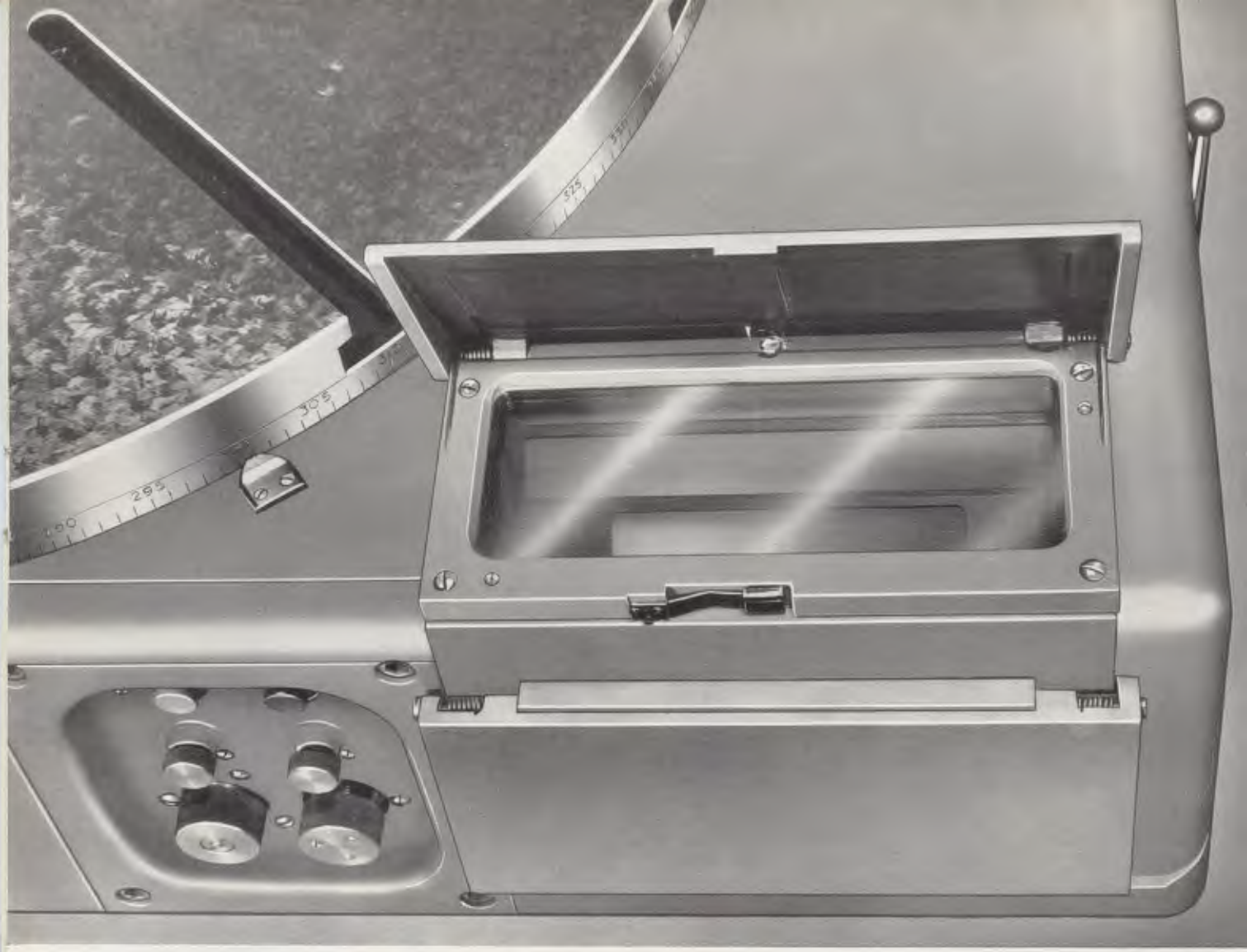
This table, like the smaller models, is extremely simple to use and achieves highly accurate results.

In keeping with the progressive policy of Optical Measuring Tools Ltd., it is possible that design or specification modifications may occur after publication of this brochure.



PLATEN 'T' SLOT

DIMENSIONAL DRAWING OF 30" TABLE



specification

Scale reading: direct to 1 second of arc.

Platen diameter: 30" (762 m.m.)

Number of T-slots: 12.

Width of T-slots: $\frac{5}{8}$" (15.9 m.m.)

Rotational power: $\frac{1}{4}$ h.p. electric motor, 440V. 3 phase 50 cycle supply.

Rotational speed: 4 r.p.m.

Permissible load on table: 1,200 lbs. (544 kgms.)

Overall size of table: 40" × 32" × 9¾" (1020 × 810 × 250 m.m.)

Approximate weight: 1,344 lbs. (610 kgms.)

4 outstanding features

READINGS DIRECT TO DEGREES MINUTES AND ONE SECOND OF ARC ON BRILLIANTLY ILLUMINATED SCREEN

NO EYE-STRAIN OR FATIGUE EVEN AFTER PROLONGED USE

SCALE CAN BE PRE-SET—AN IMPORTANT FEATURE OF THIS TABLE

DUAL SCREEN ENABLES WORK LARGER THAN PLATEN DIA. TO BE ACCOMMODATED

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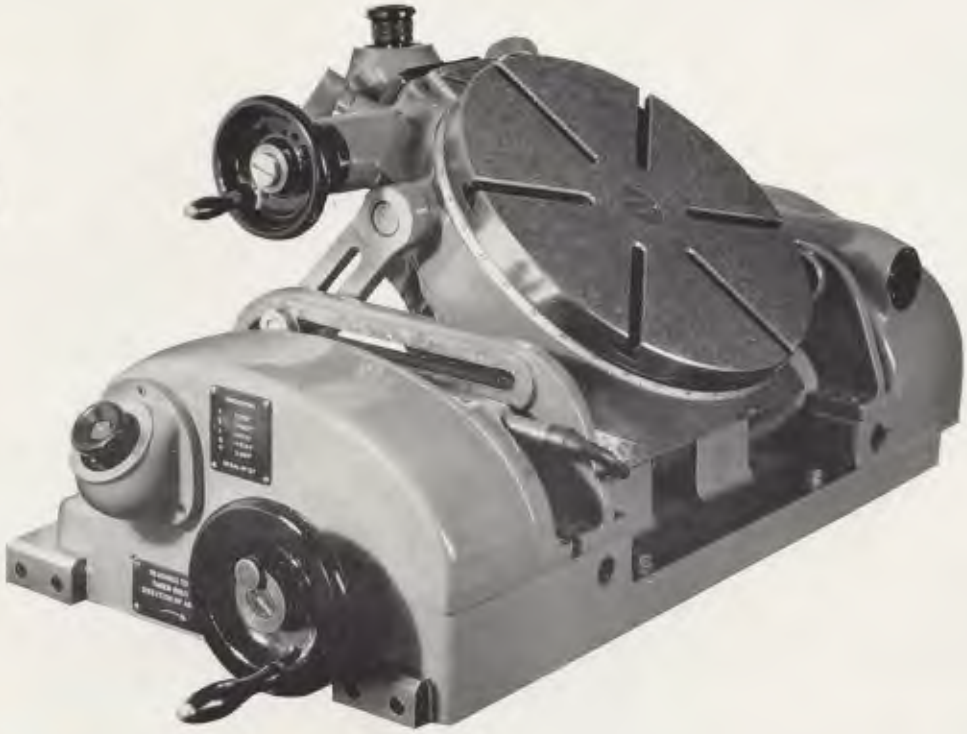
12" model



OMT optical rotary and inclinable tables

Precision built to the same high standards as those observed in the production of O.M.T. plain tables, the 12" and 16" rotary and inclinable models are designed to facilitate toolroom machining operations or inspection of workpieces featuring compound angles.

The maximum angle of inclination for each model is 90° and the angular movement of the rotary and inclinable motions is read from accurately engraved glass scales through microscopes which permit readings direct to 30 seconds of arc and to 6 seconds of arc by estimation.

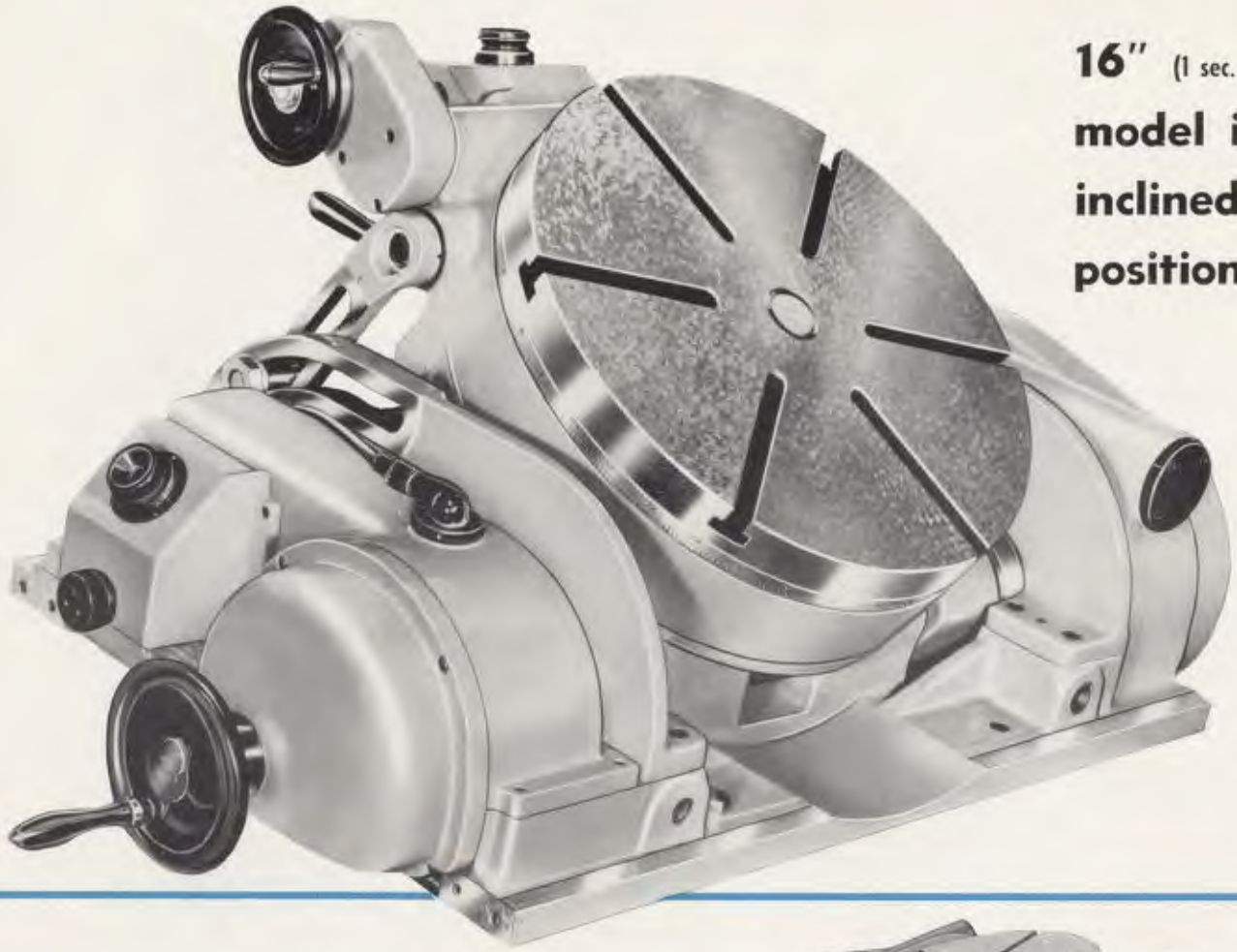
An invaluable feature of the optical system is that the microscope for the rotational movement is mounted in a swivelling body. This provides the operator with alternative reading positions thereby obviating any difficulty in reading the scale when the platen is inclined and the eyepiece adjacent to a machine spindle.

Both rotary and inclinable motions are controlled by worm drive to prevent slip when unlocked. Locks inside the inclinable base hold the worktable rigidly and without distortion, while support bars maintain the angle of inclination when locked.

As it is essential to keep the table perfectly flat at all times particularly during transport, a specially designed, scraped cast-iron base can be supplied for this purpose and is returnable if desired after delivery of the table.

An alternative base, scraped both sides to within 0.0002" of parallelism is supplied as extra equipment for use where additional height is required.

On both models detachable datum blocks are provided for the location of the table square with the axis of inclination.



16″ (1 sec. scales) **model in inclined position**

For employment where indexing to exceptionally close tolerances is essential, alternative models are available with scales reading direct to 1 second of arc for both inclinable and rotary movements. These models also incorporate a twin eyepiece unit to facilitate reading of the rotary scale at any position throughout the axis of inclination.

16″ model in horizontal position

specification:

	12″ MODEL	16″ MODEL
Diameter of Worktable	12″ (305 mm.)	16″ (406 mm.)
Overall Height—Horizontal Position	8″ (203 mm.)	9¼″ (235 mm.)
Overall Height—Vertical Position	18″ (457 mm.)	21″ (533 mm.)
Overall Size	32″ × 19″ (816 × 483 mm.)	40″ × 22″ (1016 × 561 mm.)
Circular Movement of Table	0°–360°	0°–360°
Inclinable Movement of Table	0°– 90°	0°– 90°
Scale Readings, Direct to	30 secs. or 1 sec. of Arc.	30 secs. or 1 sec. of Arc.
Nett Weight	400 lbs. (192 Kgs.)	615 lbs. (280 Kgs.)

OTHER NEWALL GROUP PRODUCTS

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- INTERNAL GRINDING MACHINES
- AUTOMATIC INTERNAL GRINDING MACHINES
- UNIVERSAL GRINDING MACHINES
- MACHINE TOOL EQUIPMENT
- SPECIAL PURPOSE GRINDERS

NEWALL

- JIG BORING MACHINES (in 4 sizes)
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OMT

- ROTARY INDEXING TABLES
- OPTICAL COMPARATORS
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  OPTICAL FLATS, ETC.
- DIVIDING HEADS
- UNIVERSAL TOOL HEADS
- MEASURING MACHINES
- MOTION PICTURE CAMERAS

OMT **rotary indexing tables**

products of
OPTICAL MEASURING TOOLS LIMITED, OLDFIELD ROAD, MAIDENHEAD, BERKSHIRE, ENGLAND
TELEPHONE: MAIDENHEAD 3704/5/6 *TELEGRAMS: "OPTOOL," MAIDENHEAD*

please address all enquiries to
NEWALL GROUP SALES LIMITED, PETERBOROUGH
TELEPHONE: PETERBOROUGH 3227/8/9 *TELEGRAMS: "PRECISION," PETERBOROUGH*

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