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THE NEWALL ENGINEERING CO LTD

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CYLINDRICAL GRINDING MACHINES
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**UNIVERSAL
LAPPING
MACHINES**



MODEL 10U



MODEL 2F

products of

THE NEWALL ENGINEERING CO., LTD.
PETERBOROUGH



the ADVANTAGES of Lapping

The action of lapping produces surface finishes of an exceptionally high quality; it follows therefore that when a lapped member moves in contact with another surface, complete and uniform distribution of lubricant is achieved and friction is reduced to a minimum. In consequence, lapped working parts will retain their accuracy and surface quality for considerably longer periods than those produced by other methods.

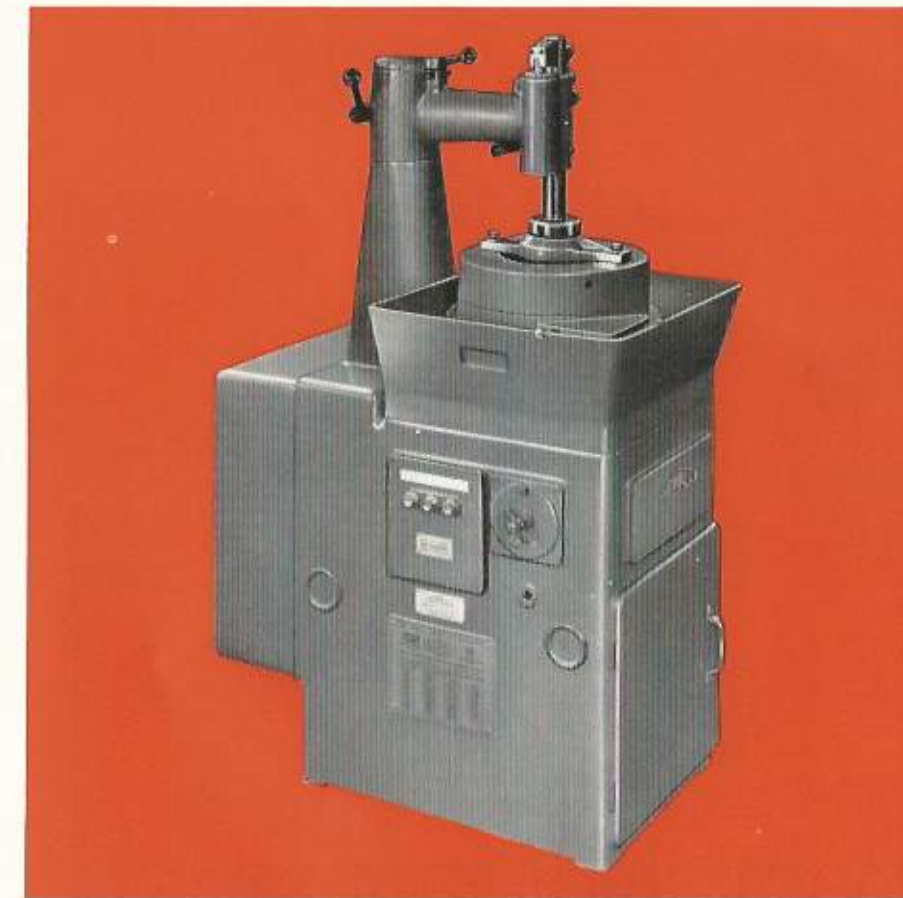
A distinct advantage of lapping components used in mass production is that, by virtue of the uniform close tolerances obtained, selective assembly is rarely necessary; accordingly production costs are materially reduced and inspection time is saved. With the availability of the very moderately priced, high precision machines described in this publication, lapping need no longer be an expensive detail of production as large batches of components can be finished simultaneously in far less time than is required for hand-finishing a single item.

Accuracy, uniformity and quality of finish unobtainable by any other mass production method are characteristics of mechanically lapped parts.

Similar mechanical features apply to each of the machines detailed in this publication. The lapping members are prepared from high grade, soft grey cast iron; the top member is stationary and the lower rotates at 60 r.p.m. in an anti-clockwise direction.

The workholder is mounted on a planetary drive mechanism which imparts an eccentric motion to ensure the work covers the entire lap face: even wear of the surface of the lapping member is thereby achieved. Rotational speed of the workholder is less than that of the lower lap; this design consideration results in stock being removed equally by each lap, in consequence both members wear evenly.

Drive to the lower lap and planetary gearing is by means of a ground steel worm and bronze worm wheel; the assembly is completely enclosed in an oil bath for purpose of lubrication and to prevent the intrusion of abrasive compound or dust.



MODEL 10U
A compact machine of contemporary design for production of small components.

Truing of the lapping members is quickly and precisely accomplished by applying a suitable mixture of abrasive and lubricant to the lower lap. This is rotated while the upper lap, released from its normal locked position, is brought into contact and given a swinging motion.

Although capable of producing work to a very high order of accuracy and with superior surface finish, both models are simple in function, easy to operate, and require little attention for maintenance purposes.



MODEL 2F

A medium capacity unit designed to accommodate batches of workpieces up to 3" thick x 8" square or 3" in diameter x 8" long.

SEMI-AUTOMATIC MODEL 2F

FIELD OF APPLICATION

Among many industries where the process of mechanical lapping may be employed advantageously can be mentioned:—

Automotive Industry—For production of piston rings, gudgeon pins, steering knuckle pins, valve tappets, tappet rollers and pins, together with a wide variety of rotating components.

Ball and Roller Bearing Industry—For the ends and diameter of rollers (whether parallel or tapered) also for the edges of ball races and thrust bearings.

Small Tool Industry—In the production of cylindrical gauges, faces of gauging blocks, slips, etc. For diameters of tool-maker's buttons, reference pieces for comparators, micrometers, amplifiers and other fine measuring instruments.

Pump Industry—For gear shafts, gear faces, cover plates and many component parts of high pressure and pneumatic pumps.

Printing Industry — For faces of composing machine matrices, surfaces of moulds, etc.

Machine Tool Industry—In the production of thrust washers, spindle shafts, gear faces and a variety of precision parts.

Domestic Appliance Industry — For a wide range of rotating or sliding components used in electric, gas or air equipment, washing machines, refrigerators, etc.

SPECIFICATIONS	MODEL 2F		MODEL 10U	
	ENGLISH	METRIC	ENGLISH	METRIC
Capacity—Flat Work	3" thick x 8" square	76 x 203 mm.	1½" thick x 3" square	38 x 76 mm.
Capacity—Cylindrical Work	3" dia. x 8" long	76 x 203 mm.	1½" dia. x 3" long	38 x 76 mm.
Capacity for Cylindrical Work Using Oversize Laps	3" dia. x 9" long	76 x 229 mm.	1½" dia. x 4" long	38 x 102 mm.
Standard Cast Iron Laps	25½" O.D. x 11½" I.D.	648 x 297 mm.	14" O.D. x 8" I.D.	356 x 203 mm.
Special Oversize Cast Iron Laps	28" O.D. x 11½" I.D.	711 x 297 mm.	16" O.D. x 8" I.D.	406 x 203 mm.
Max. Dia. of Workholder using Maximum Dia. Throw	29½"	749 mm.	17½"	444 mm.
Total Throw of Workholder	2½" (Flat Work)	63 mm.	1½"	38 mm.
Speed of Lower Lap (Anti-Clockwise)	60 r.p.m.	60 r.p.m.	60 r.p.m.	60 r.p.m.
Horse Power of Motor	3	3	1	1
Speed of Motor	1440 r.p.m.	1440 r.p.m.	1400 r.p.m.	1400 r.p.m.
Nett Weight	2,660 lbs.	1,206 kg.	725 lbs.	329 kg.

Semi-Automatic Model 2F.

The illustration opposite depicts a model 2F machine equipped with a pneumatically operated mechanism for raising and lowering the upper lap. Compressed air, obtained from the normal factory supply line, is filtered to remove moisture and passed over an oil receptacle in order to generate oil mist which is fed to a cylinder mounted on the upper lap support arm. Depression of a foot operated control at the front of the machine causes pressure to be introduced or released from the cylinder thereby raising or lowering the lapping member as required.

As a safety precaution, a non-return valve is fitted in the system to prevent the upper lap falling should a failure in the pressure supply occur.

Incorporated in the electrical system is a process timing device provided to accurately control stock removal by setting a time cycle.



Detail of the geared workholder designed for the above machine in order to ensure full and constant rotation of the workholder.



FIG. 1



FIG. 2

WORKHOLDERS

Newall lapping machine will accommodate a wide variety of workholders which are designed specifically to suit components. The fixtures are usually of metal but, according to requirements, they may also be fabricated from other materials such as plywood or plastics.

The examples illustrated on this page are:—

Fig. 1. A 'spider' type workholder designed for use when lapping hollow cylindrical pieces such as piston pins.

Fig. 2. A simple plate type holder for production of discs, piston rings, and similar flat components.

The three lower illustrations depict a station type workholder designed for the particular application of lapping the upper face of a valve seat without touching the lower face. The fixture is designed to take eight components, each in a container mounted on a ball face to permit free rotation; coil springs are provided to maintain requisite pressure of the valve seat face against the lapping member.

The Newall organisation has accumulated a wealth of experience in the field of mechanical lapping and offers a comprehensive advisory service on all matters relating to the process.



Illustrated on the facing page is a selection of components produced on NEWALL lapping machines.

