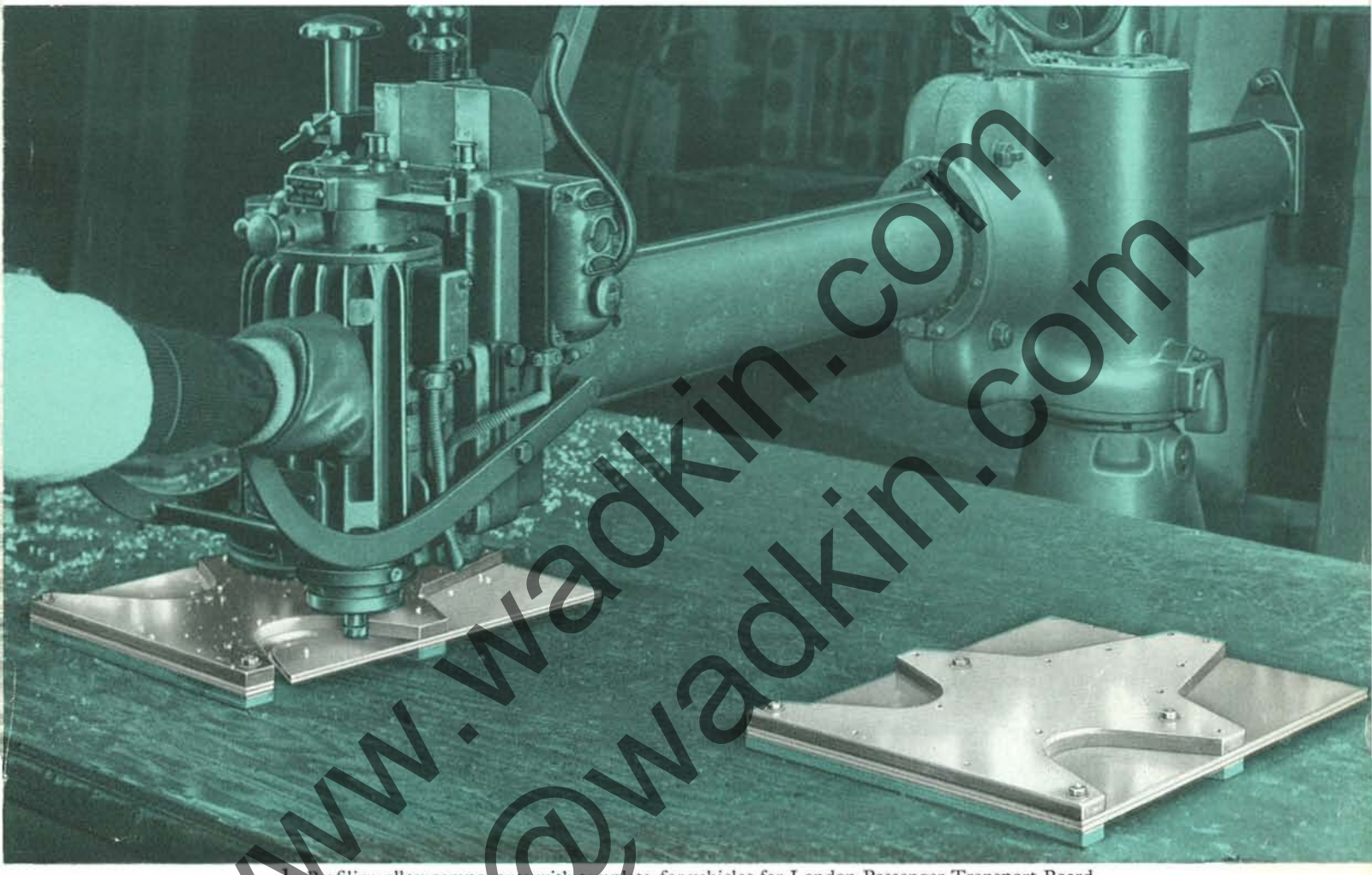
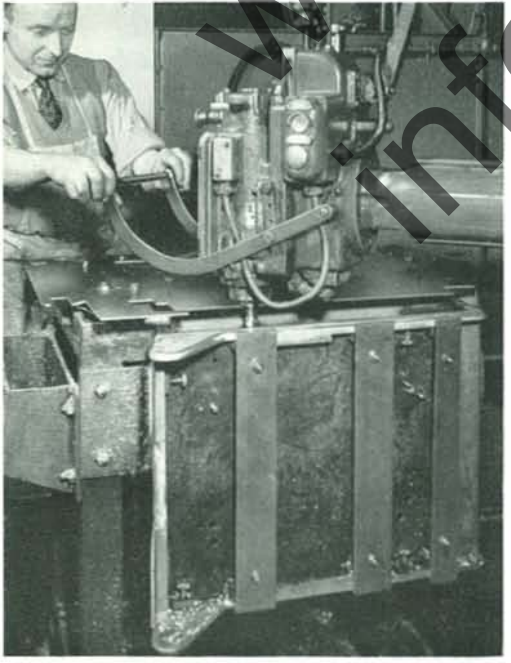
Leaflet No. 982/2

Wadkin

Radial Arm Routing & Drilling Machines

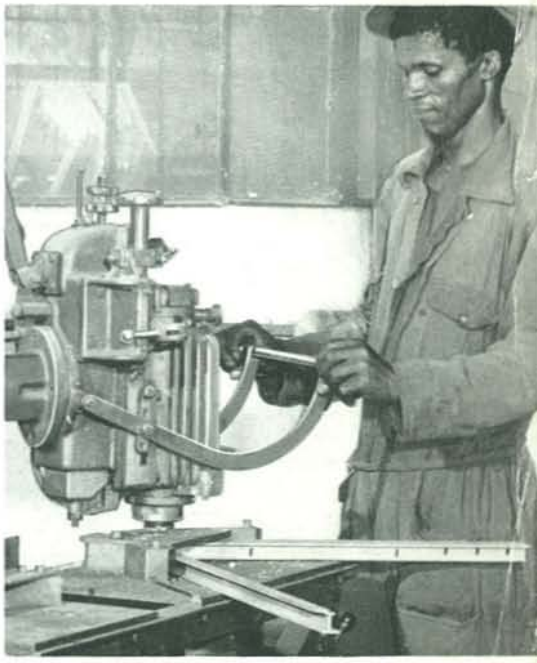


1 Profiling alloy components with template, for vehicles for London Passenger Transport Board.



2 Profiling non-ferrous casting, using special positioning fixture.

3 Circular aperture cutting, using adjustable rotating guide.



4 Removing flash from non-ferrous window frames

Wadkin

Wadkin Radial Arm Router Type LE

This machine has been designed to fulfil two main functions.

1. To enable large sheets of Duralumin to be cut faster and more conveniently.
2. To eliminate wastage of expensive material by grouping jigs or patterns in such a manner that they will cut out of a large sheet economically.

Any aluminium alloy such as Duralumin, Alclad, etc., can be machined, also sheet brass.

The principle of operation is based on a movable high speed router head, being worked round the jigs secured to the face of the sheets. Several sheets of material can be stacked together and cut at one operation.

The design of the arm mounting ensures absolute rigidity with a free effortless movement, which, combined with cutter speeds of 18,000 and 24,000 r.p.m., and using Wadkin specially designed cutters, gives a smooth, clean edge on the job requiring no finishing operation.

Cover photographs by courtesy of:

1. Park Royal Vehicles Ltd., London N.W.10
2 & 3. Marconi's Wireless Telegraph Co. Ltd., Chelmsford
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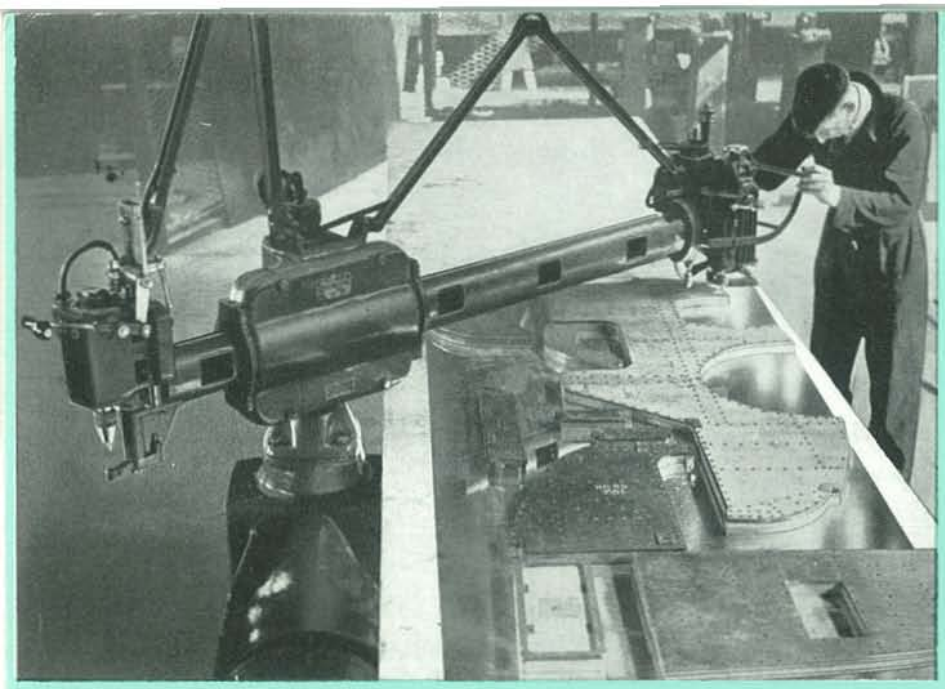
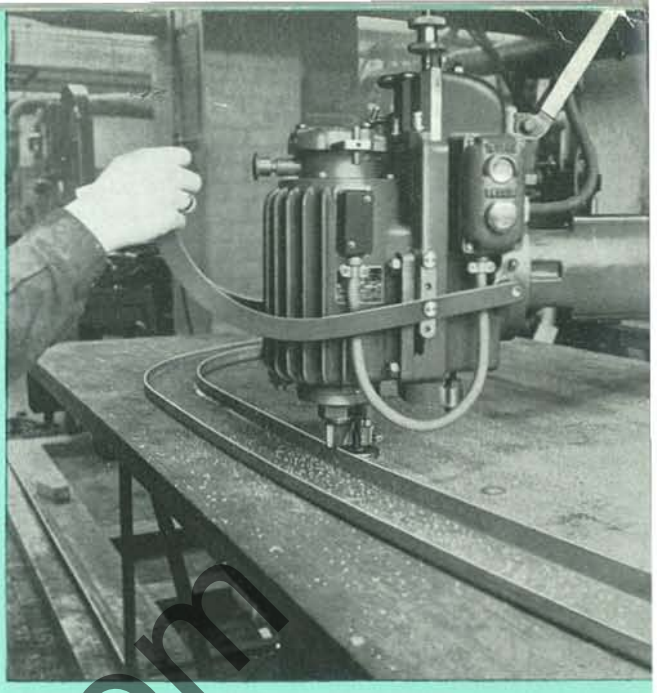


Routing components from a large sheet of material in the Brough works of the Blackburn and General Aircraft Ltd.
The machine is a combined Router and Drill, Type LEG, and all machines are prepared to receive the second head when required.



Although the Radial Arm Router is essentially a cutting out machine for flat sheets, several other applications have been developed. Photograph above shows a Dural panel being milled to depth after pressing. An attachment is used for this operation which can be fitted to the machine in three or four minutes.

Construction

The Router Head

The router head is driven by a built-in squirrel cage motor, operating from a high frequency supply, obtained from a frequency changer housed inside the base of the machine body. It has constant speed characteristics and there is no falling off in speed under load. The head is designed on powerful lines. In addition to maintaining its normal output continuously it can operate under very heavy conditions of overload. The motor is capable of outputs up to 8.5 h.p.

The Router Spindle

The spindle is nickel chrome, mounted in high speed precision ball bearings. A patented system of oil mist lubrication to the spindle bearings ensures long bearing life. The cutters are secured by a collet drawn up by a draw bolt passing through the centre of the spindle. A lock is fitted on the cutter spindle, also a quick acting brake.

Head Movements

The head has a vertical movement of 4″ on wide vee shaped slideways. The movement is actuated by handle and a spring plunger is provided for holding the head in the required top and bottom positions. The plunger has a fine screw vertical adjustment to locate the cutter at the correct height relative to the jig. An adjustable depth stop is also provided on the head for use when cutting small panel lightening holes, where positive plunger location is not necessary.

Guide Bushes

A stationary hardened guide bush for working round the profile of the jigs is carried immediately below the spindle nose.

The Radial Arm

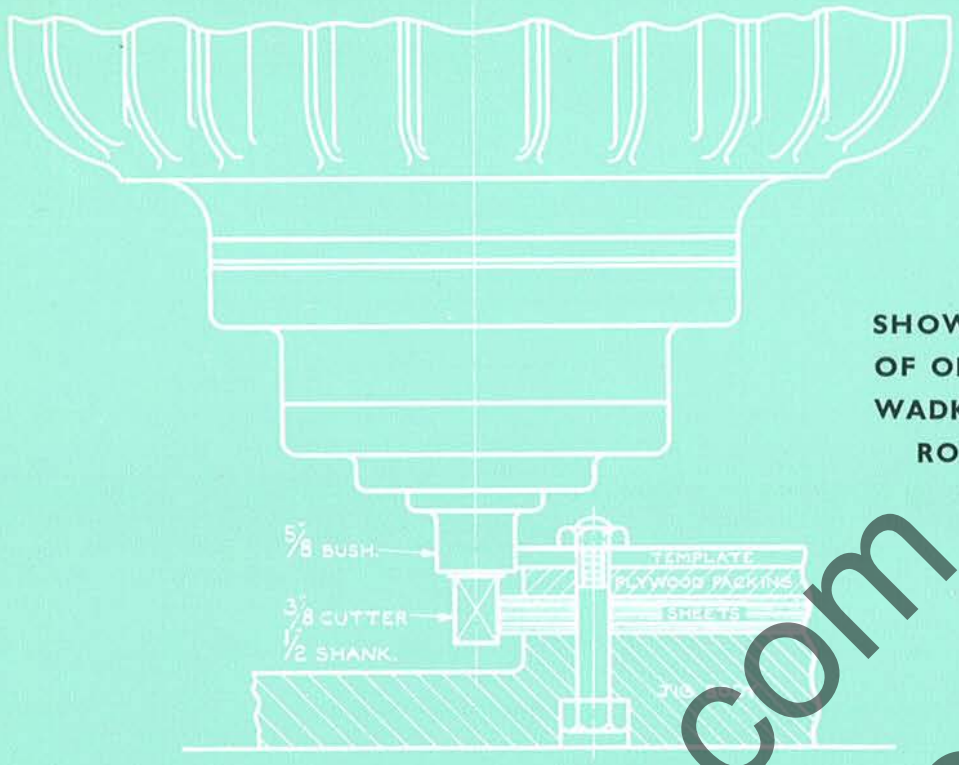
The radial arm is an aluminium casting for lightness and rigidity. It carries two hardened steel rods along its entire length which form the slides. The arm moves on four ball bearing rollers, three of which are adjustable, mounted in the swivelling main frame.

The Swivel Frame

The swivel frame is mounted on a vertical pillar on ball bearings to obtain an effortless swinging movement. The frame swivels through 350 degrees so that the router head can be used over tables at both the front and the rear of the machine. It also allows of a drill head being mounted on the opposite end of the arm to form a combined Router and Drill as shown in the illustration above.

Push Button Control

Push button control is built into the Router head, and a hinged conduit carries the cabling to the built-in contactor gear in the main frame. Frequency changer is housed inside the main frame.



SHOWS THE PRINCIPLE OF OPERATION OF THE WADKIN RADIAL ARM ROUTER, TYPE LE

Wherever possible we recommend this method of working. Template is set $\frac{1}{8}$" back from component size.

Radial Arm Router LE Construction (*Contd.*)

Work Table

Work table consists of a stout wood top on cast iron standards securely cross braced. It is movable on grooved rollers and floor rails. Standard tables are 8′ 0″ × 4′ 0″ or 12′ 0″ × 4′ 0″, but larger table can be supplied.

The Router Cutters

The Router cutters can be supplied in any size, but usually $\frac{1}{8}$", $\frac{3}{8}$" and $\frac{1}{4}$". Where the radius of the profile permits, we recommend the $\frac{3}{8}$" cutter for finishing at one operation. For profiles having an $\frac{1}{8}$" internal radius, the cut is taken with the $\frac{1}{4}$" cutter. Two distinct types of cutter are supplied in each size, one suitable for Alclad and aluminium and the other for Duralumin and brass.

Cutter Maintenance

To ensure efficient routing it is essential that all cutters are maintained by machine sharpening. Wadkin supply a machine specially designed for this purpose, full details of which are in Wadkin Leaflet No. 821.

Dimensions and Capacities

Horse power of motor:	
Continuous rating	4 h.p.
Intermittent rating	8½ h.p.
Speed of Router head ...	18,000 and 24,000 r.p.m.
Rise and fall of Router head ...	4″ 100 mm.
Maximum radius of cutter spindle	5′ 5″ 1650 mm.
Minimum radius of cutter spindle	1′ 7″ 480 mm.
Maximum size of sheet worked, any length × 4′ 0″	1220 mm.
Standard table sizes ...	12′ 0″ × 4′ 0″ or 8′ 0″ × 4′ 0″ 3660 × 1220 or 2440 × 1220 mm.

	Without table.	With 8′ table. 2440 mm.	With 12′ table. 3660 mm.
Net weight	1490 lb. 670 kg.	2050 lb. 930 kg.	2325 lb. 1055 kg.
Gross weight	1880 lb. 850 kg.	2660 lb. 1180 kg.	3000 lb. 1360 kg.
Shipping dimensions ...	60 cu. ft. 1·7 cu.m.	88 cu. ft. 2·5 cu. m.	93 cu. ft. 2·6 cu.m.

NOTE: Above weights and shipping dimensions do not include wood table top.

Details included with the machine:

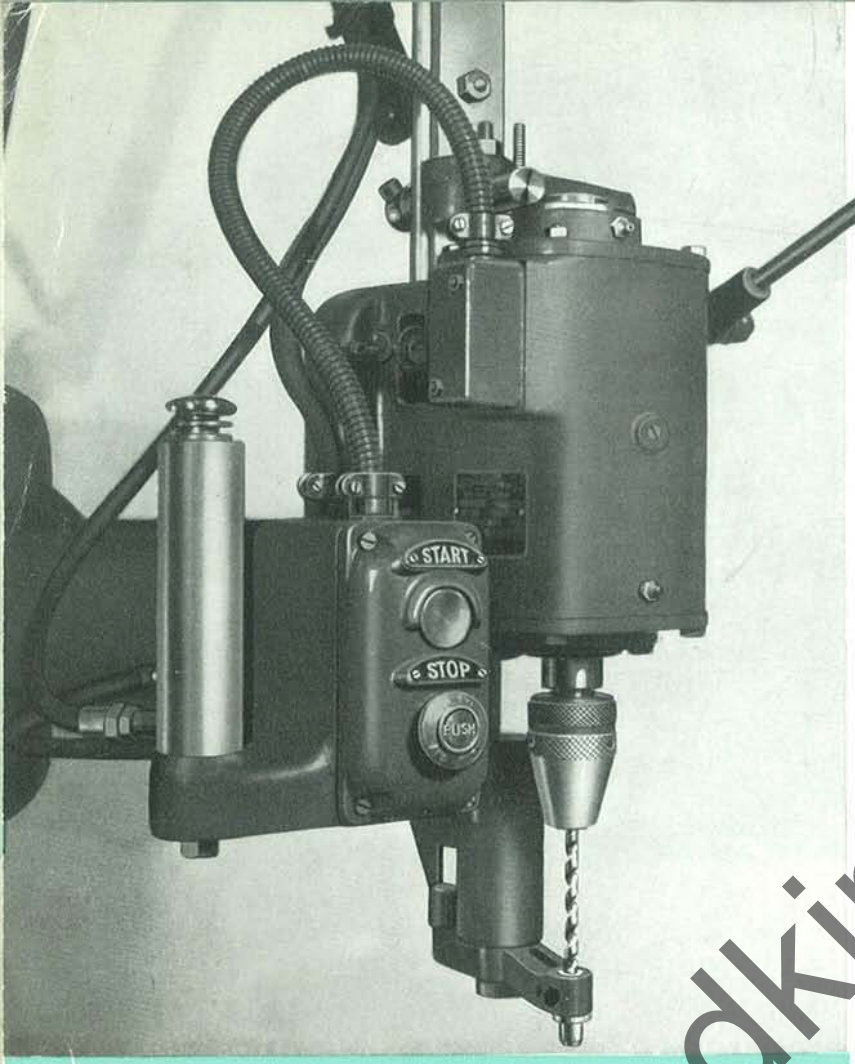
Motor, control gear and frequency changer.
½" (12·7 mm.) and ⅝" (15·87 mm.) guide bushes.
⅜" (9·52 mm.) and ½" (12·7 mm.) collets.
One set of spanners.
Lubricating pump and can of grease lubricant.
Oil gun and can of high speed oil.

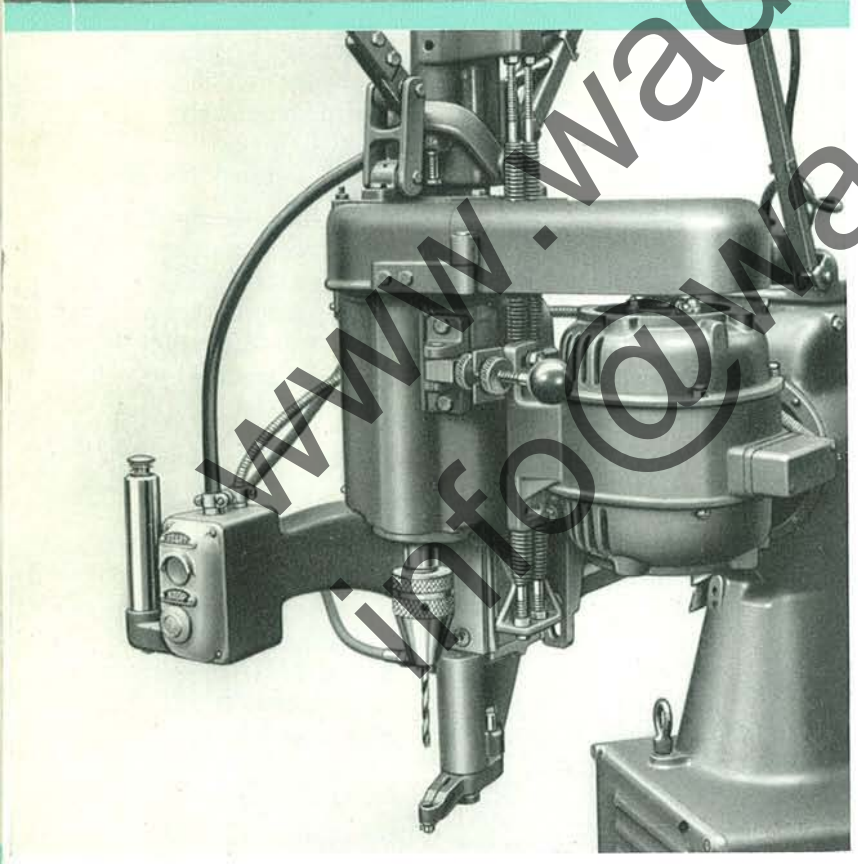
Wadkin

Wadkin Radial Arm Drill Type LG

This machine has been designed primarily for working in conjunction with the Radial Arm Router. It is suitable for all drilling up to $\frac{3}{8}$" diameter, and provides an ideal means of reproducing the nesting or tooling holes required in large aluminium alloy sheets, sheet brass, etc., preparatory to routing. The machine is designed on similar lines to the router and consists essentially of a swivelling main frame, carrying a radial arm on the end of which is mounted a drill head. All arm and head movements are on ball bearings for light easy working. The drilling action is smooth, rigid and effortless, and the entire machine provides rigidity, accuracy and the speed of operation, which make it eminently suitable for the production needs of aircraft shops. A special feature of the machine is the pneumatic clamp provided on the drill head for pressing the jig and alloy sheets firmly together to prevent swarf entering between the sheets whilst drilling. The clamp is designed to carry guide bushes which enables inexpensive unbushed jigs to be used with the machine.

Note : This machine is available for working from alternating electric current supply only.





Radial Arm Drill LG

THE DRILL HEAD, illustrated top left, embodies a squirrel cage motor rated at ½ h.p. and running at 3,000 r.p.m. It is fitted with self-centring chuck of 0″ to ⅜″ capacity. The head has a vertical stroke of 2″ on steel rods working in four ball bearing rollers. The movement is spring counter-balanced for speedy operation.
A vertical adjustment of 3″ is also provided to set the drill relative to the face of the jig.
If required, a two-speed drill head with 4″ stroke, as illustrated bottom left, can be supplied. The following speed combinations are available: 400 and 800 r.p.m. from ½ h.p. motor, or any two speeds of the following range using 1 h.p. motor. 600/1200 r.p.m., 600/2800 r.p.m., 750/1500 r.p.m., 1000/2000 r.p.m. and 1500/3000 r.p.m. Other combinations can be offered to meet specific needs.

A PNEUMATIC CLAMP is fitted to the drill head to press the jig and the sheets firmly together whilst drilling. It is arranged to carry two interchangeable types of clamp shoe. One type is designed to carry guide bushes up to ⅜″ bore for use with unbushed jigs. The other is a plain shoe for use with bushed jigs. The clamp is operated by piston valve mounted on the top of the operating handle of the machine, and designed for use with compressed air up to 100 lb. per square inch pressure.

THE RADIAL ARM is an aluminium casting which moves through the swivelling main frame on two circular steel tracks, and four ball bearing rollers. Three of the rollers are adjustable. Swivelling frame can be turned through 350 degrees.

CONTROL is by push buttons mounted on the drill head, and a hinged conduit carries the cabling to the built-in contactor gear in the main frame.

THE WORK TABLE consists of a well-seasoned stout wood top on cast iron standards, securely cross braced. It is movable on grooved rollers and floor rails.

Dimensions and Capacities:

Horse power of head			½ h.p.
Speed of motor			3,000 r.p.m.
Chuck capacity		0″ to ⅜″	0 to 9·52 mm.
Maximum radius of head		5′ 5″	1650 mm.
Standard table sizes		12′ 0″ × 4′ 0″ or 8′ 0″ × 4′ 0″	
		3660 × 1220 or 2440 × 1220 mm.	
	Without table.	With 8′ table. 2440 mm.	With 12′ table. 3660 mm.
Net weight	1000 lb.	1650 lb.	1900 lb.
	460 kg.	740 kg.	865 kg.
Gross weight	1230 lb.	2010 lb.	2410 lb.
	560 kg.	915 kg.	1090 kg.
Shipping dimensions	50½ cu. ft.	79 cu. ft.	84 cu. ft.
	1·4 cu. m.	2·2 cu. m.	2·3 cu. m.

NOTE: Above weights and shipping dimensions do not include wood table top.

Details included with the machine:
Motor and control gear. Self-centring chuck.
Two ¼″ (6·35 mm.) guide bushes. One set of spanners.
Lubricating pump and tin of grease lubricant.

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