

INSTRUCTION MANUAL No.843

(12", 16" AND 20")

# SURFACE PLANNER

## RZ



## 12", 16" AND 20" SURFACE PLANERS, TYPE R. Z.

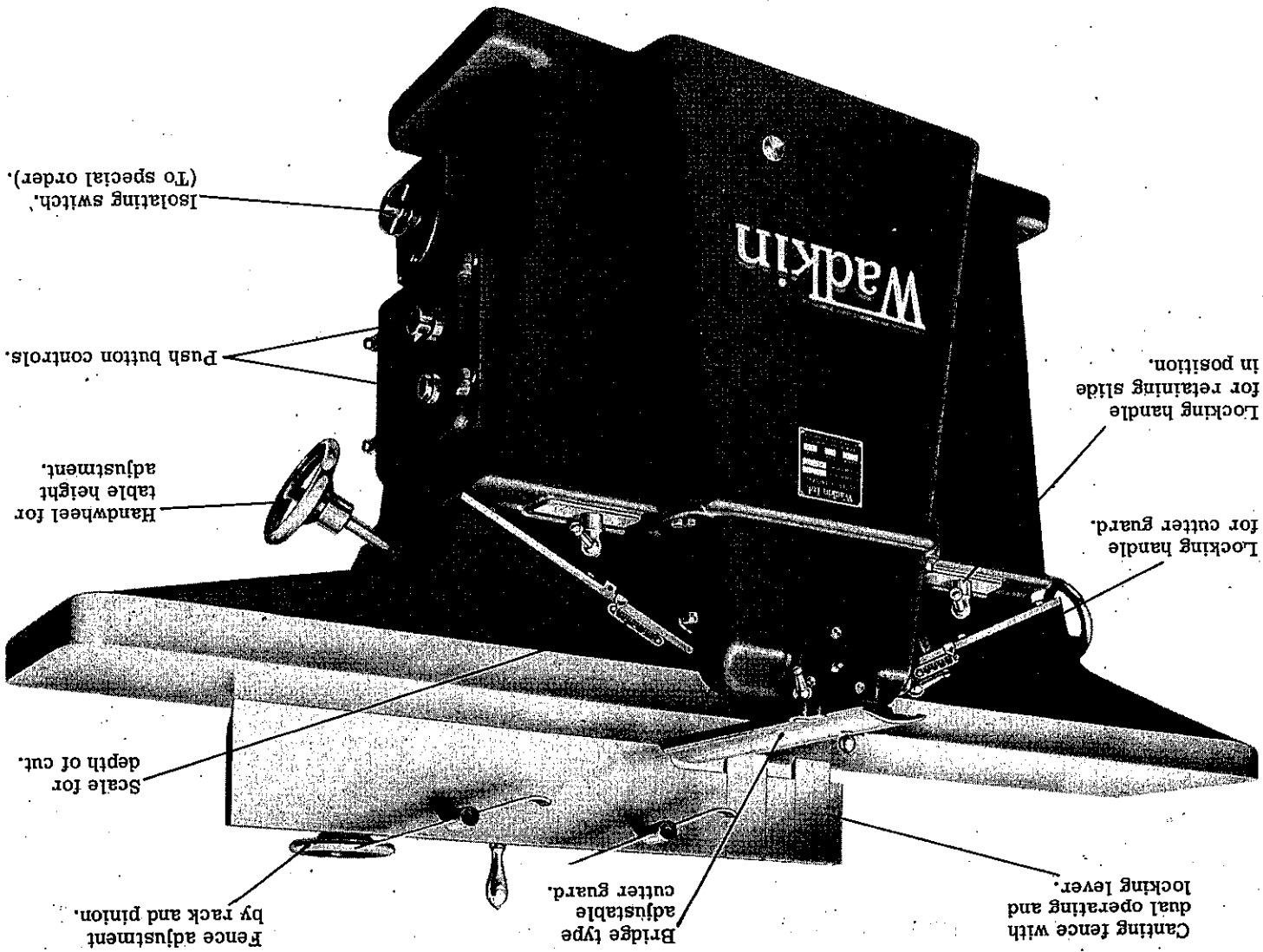
### PRINCIPAL DIMENSIONS AND CAPACITIES.

Model	12"	16"	20"
Surfacing capacity .. .. .	12"	16"	20"
Maximum depth of cut .. .. .	$\frac{12}{7}$ "	$\frac{16}{7}$ "	$\frac{20}{7}$ "
Maximum depth of rebate .. .. .	$\frac{8}{7}$ "	$\frac{8}{7}$ "	$\frac{8}{7}$ "
Fence cant up to 45° .. .. .	.. .. .	.. .. .	.. .. .
Size of fence plate .. .. .	6 $\frac{1}{2}$ " x 3'1"	6 $\frac{1}{2}$ " x 3'1"	6 $\frac{1}{2}$ " x 3'1"
Overall length of tables .. .. .	160 x 940mm	160 x 940mm	160 x 940mm
Height of table .. .. .	2'9"	2'9"	2'9"
Diameter of cutting circle .. .. .	5"	5"	5"
Speed of cutterblock on 50 cycles .. .. .	4,200 r. p. m.	4,200 r. p. m.	4,200 r. p. m.
Speed of cutterblock on 60 cycles .. .. .	4,800 r. p. m.	4,800 r. p. m.	4,800 r. p. m.
Speed of motor on 50 cycles .. .. .	3,000 r. p. m.	3,000 r. p. m.	3,000 r. p. m.
Speed of motor on 60 cycles .. .. .	3,600 r. p. m.	3,600 r. p. m.	3,600 r. p. m.
Horse power of motor .. .. .	3	4	5
Floor space .. .. .	6'0" x 3'0"	6'0" x 3'8"	8'0" x 4'4"
Net weight .. .. .	10 $\frac{1}{2}$ cwt. (1176lbs)	12 $\frac{1}{2}$ cwt. (1400lbs)	16 $\frac{1}{2}$ cwt. (1848lbs)
Shipping dimensions in cu. ft. .. .. .	53	60	83
	1.5 cu. m.	1.7 cu. m.	2.35 cu. m.

### DETAILS INCLUDED WITH THE MACHINE.

- Motor and control gear.
- Vee pulley and belts.
- Complete fence and pressure springs.
- Front and rear cutter guards.
- One pair of high speed steel planer knives.
- One set of spanners.
- Lubricating pump and tin of lubricant.

FIG. 1. GENERAL VIEW OF 12" SURFACE PLANNER, TYPE R, Z.



## INSTALLATION.

The machine is despatched from the Works with all bright surfaces greased to prevent rusting. This covering should be removed by applying a cloth damped in paraffin or turpentine.

## FOUNDATIONS.

Three  $\frac{8}{5}$ " (16 mm) diameter bolts or bolts with plates should be used to fix the machine to the floor, but these are not supplied by Wadkin Ltd. unless specially ordered. If the mill floor consists of 4" (100 mm) solid concrete no special foundation is necessary. The outlines in Figs. 2 and 3 give details of bolt positions and clearances required for the 12", 16" and 20" machines. Cut out 4" (100 mm) square holes in the concrete and with bolts in position run with liquid cement to fix. Alternatively rawl plugs may be used. In all cases the A good wood floor is satisfactory in which case coach screws may be used. In all cases the machine should be carefully levelled before final fixing and again after final fixing to ensure that no distortion has taken place.

## WIRING.

For cabling instructions see wiring diagram D. 579 on page 14 for motors on 50 cycles. When motor is on 60 cycles follow the wiring instructions in diagram D. 586 on page 15.

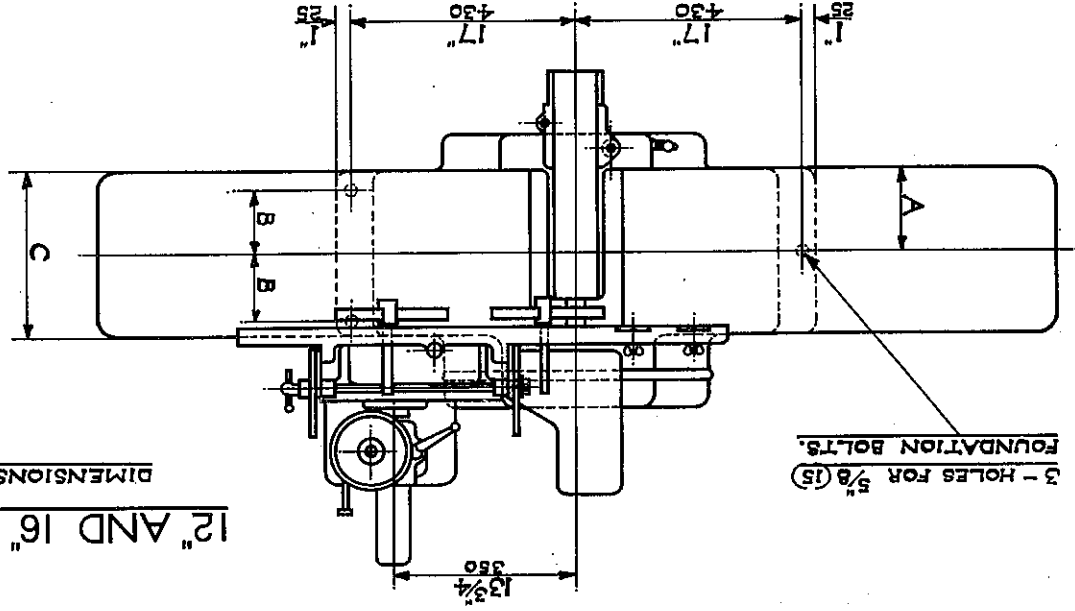
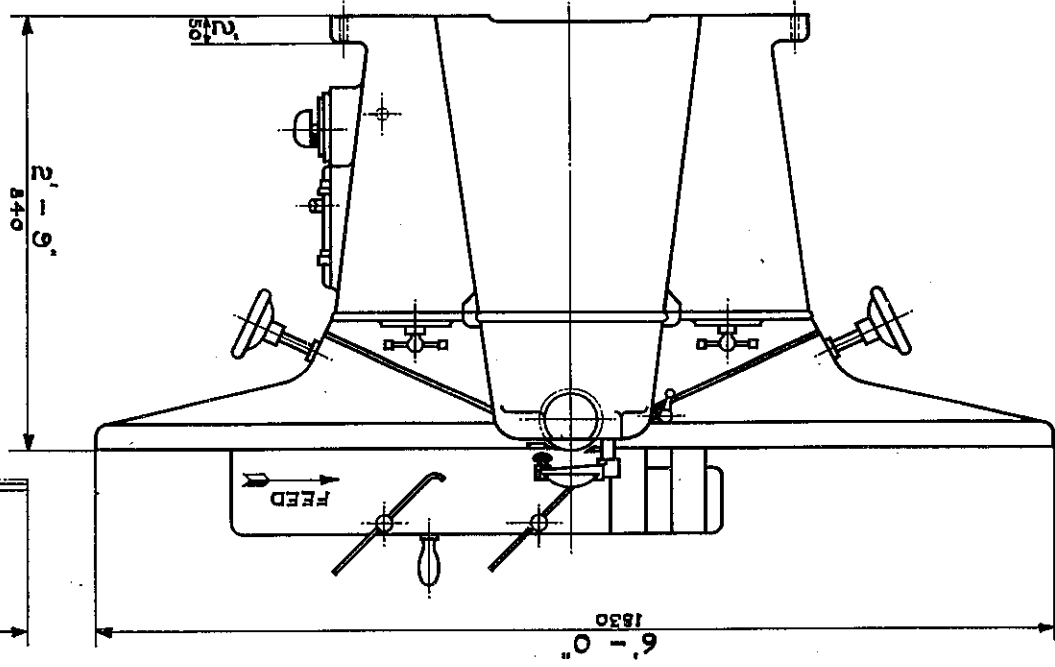
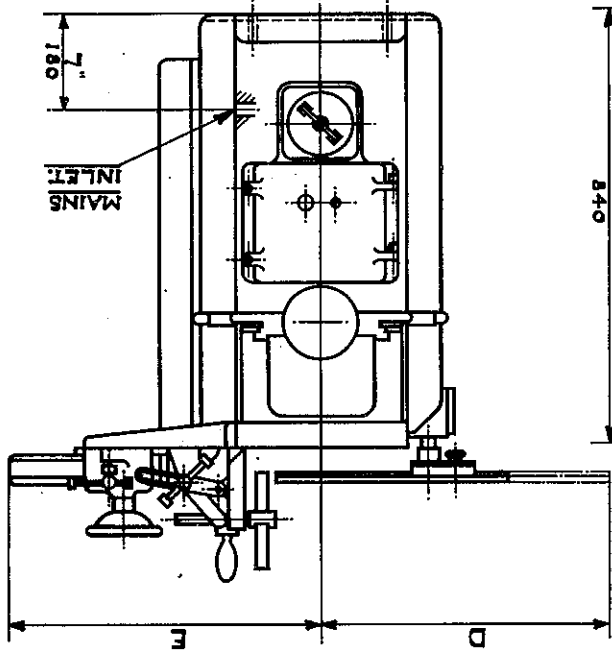
## BALL BEARINGS.

Two ball bearings SKF. 2306, Bore 30 mm, Outside diameter 72 mm, Width 27 mm, are fitted on the cutterblock of each size of machine.

# 12" AND 16" SURFACE PLANERS. TYPE RZ.

DIMENSIONS IN FEET, INCHES AND MILLIMETRES.

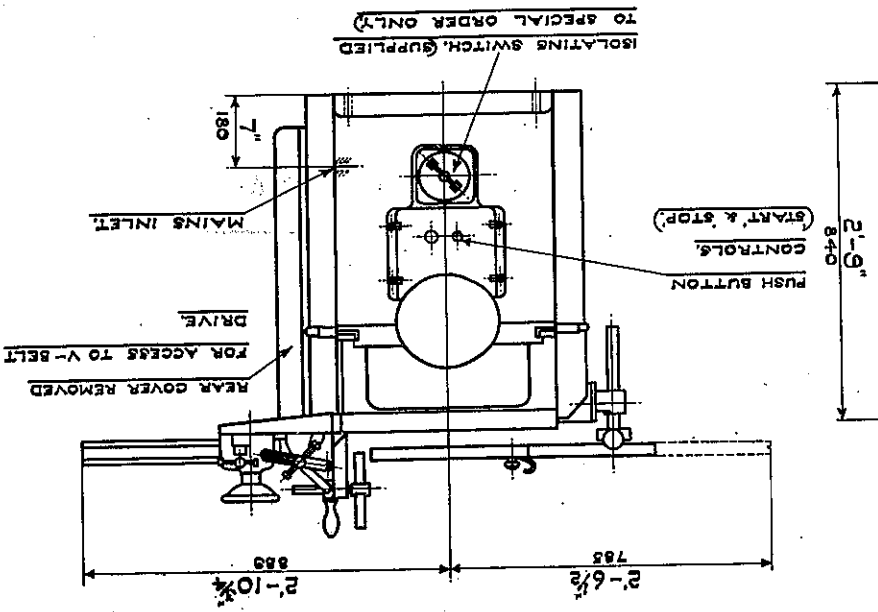
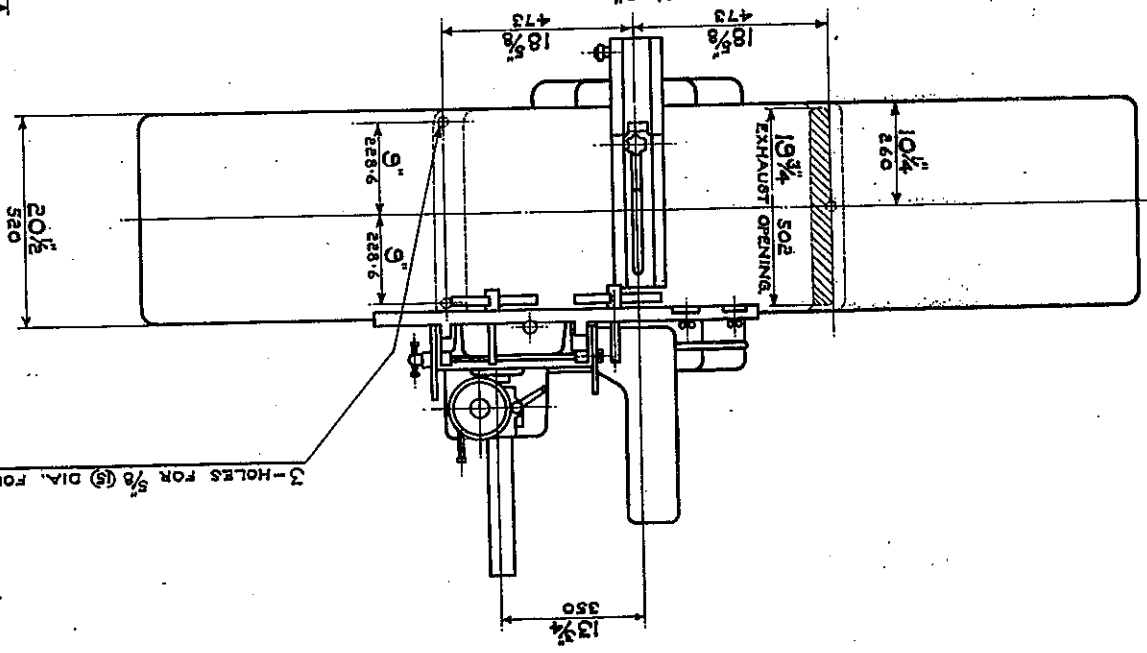
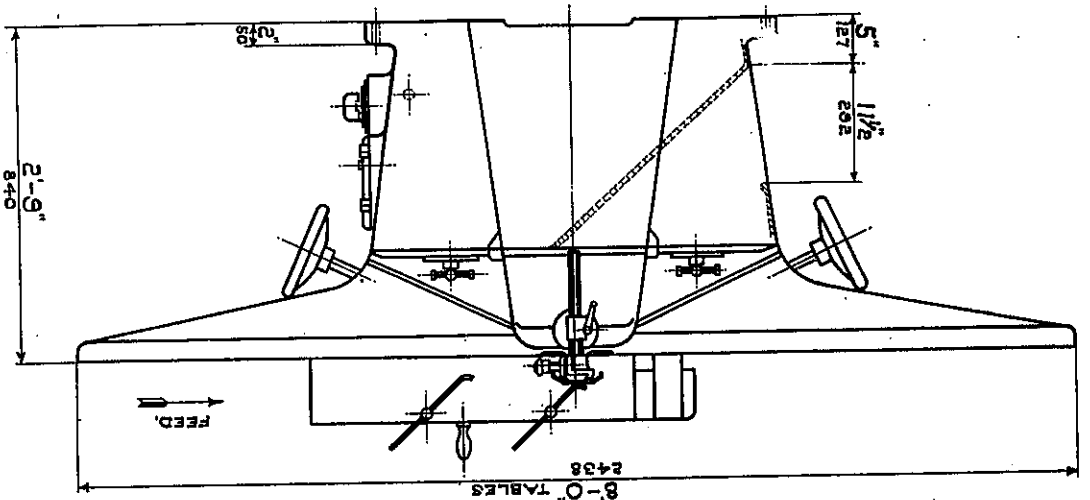
12" MACHINE		16" MACHINE	
A	6 1/4	160	MM
B	5"	125	MM
C	12 1/2	320	MM
D	2 1/2	545	MM
E	24"	610	MM
	2'-4"	810	MM



3 - HOLES FOR 5/8 (15) FOUNDATION BOLTS.

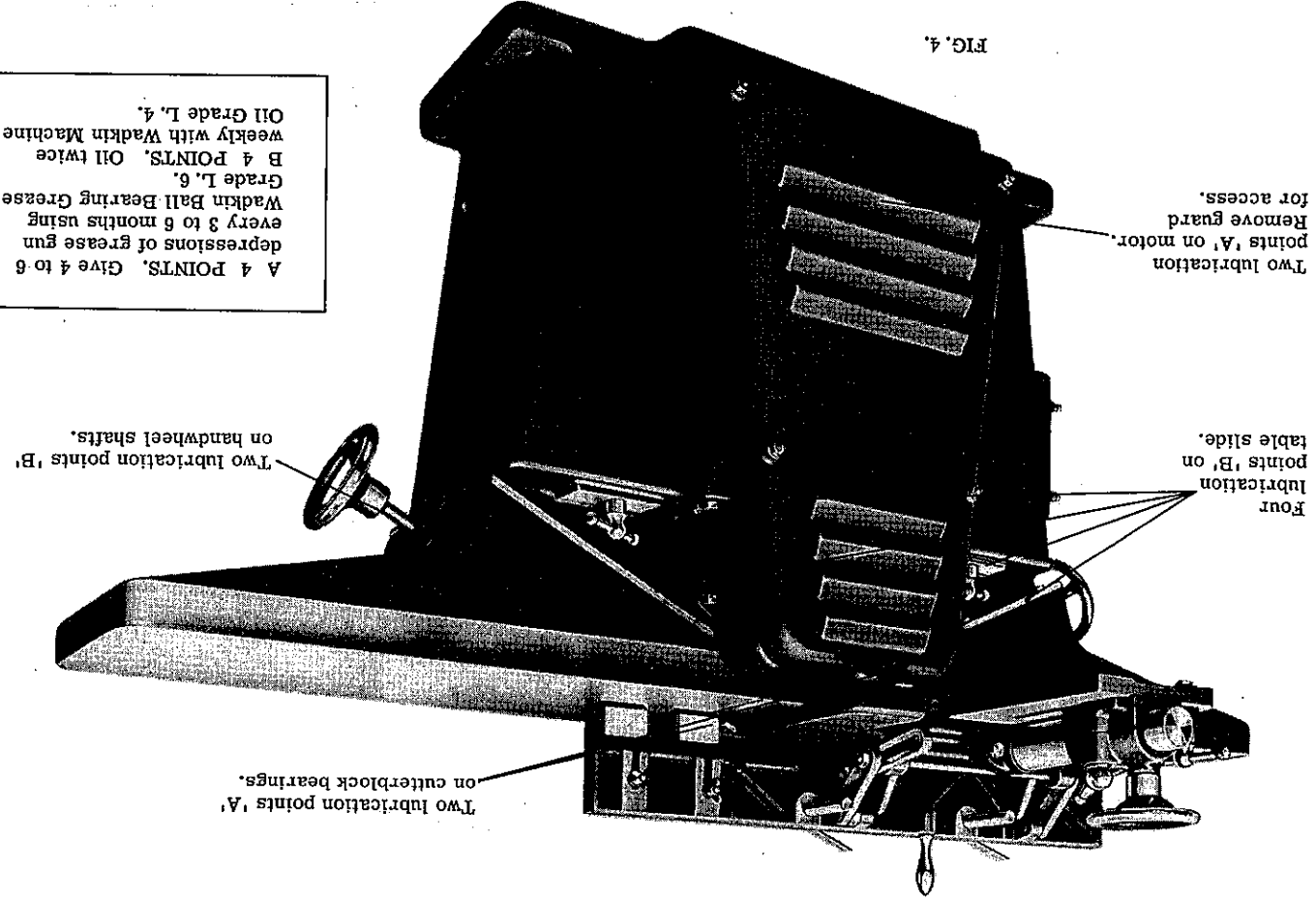
DIMENSIONS IN FEET, INCHES & M/M.

### 20" SURFACE PLANER, TYPE RZ.



3-HOLES FOR 5/8" (9) DIA. FOUNDATION BOLTS.

LUBRICATION.



A 4 POINTS. Give 4 to 6 depressions of grease gun every 3 to 6 months using Wadkin Ball Bearing Grease Grade L. 6.  
 B 4 POINTS. Oil twice weekly with Wadkin Machine Oil Grade L. 4.

Two lubrication points 'B' on handwheel shafts.

Two lubrication points 'A' on cutterblock bearings.

Four lubrication points 'B' on table slide.

Two lubrication points 'A' on motor. Remove guard for access.

FIG. 4.

WADKIN RANGE OF OIL AND GREASE LUBRICANTS WITH EQUIVALENTS.

Wadkin Grade		Shell Mex and B. P. Ltd.	Mobil Oil Co. Ltd.	Caltex Lubricants.
Machine Oil	Shell Vitrea	Oil 33	Mobil Vactra Oil (Heavy Medium)	Caltex Aleph Oil.
Ball bearing Grease Grade L. 6.	Shell Nerita Grease 3.	Mobil Grease	B. R. B. No. 1.	Regal Startak No. 2 Grease.

EQUIVALENT LUBRICANTS.

# THE CUTTERS

## PLAIN CUTTERS FOR STANDARD WEDGE TYPE BLOCK.

Machine	Part No.	Size
12" RZ	VP. 20	$12\frac{3}{4}" \times 1\frac{1}{2}" \times \frac{3}{8}"$
16" RZ	VP. 21	$16\frac{3}{4}" \times 1\frac{1}{2}" \times \frac{3}{8}"$
20" RZ	VP. 24	$20\frac{3}{4}" \times 1\frac{1}{2}" \times \frac{3}{8}"$

## SLOTTED CUTTERS FOR PLATE TYPE BLOCK (TO SPECIAL ORDER ONLY)

Machine	Part No.	Size
12" RZ	VP. 3	$12\frac{3}{4}" \times 1.9/16" \times \frac{3}{8}"$
16" RZ	VP. 4	$16\frac{3}{4}" \times 1.9/16" \times \frac{3}{8}"$
20" RZ	VP. 56	$20\frac{3}{4}" \times 1.9/16" \times \frac{3}{8}"$

Cutters to sizes as given in the tables opposite are supplied in balanced pairs. They should be kept in balanced pairs by ensuring that the cutters have equal dimensions after grinding and that the cutting edge of each cutter is parallel to the back edge.

Keep the cutters sharp when in position in the block by using a fine grade oil stone dipped in paraffin. Allow the stone to rest lightly and flat on the bevel and pass over the cutter with a rotating action a few times. Give about two strokes on the full length of each knife on the face side to remove all burrs from the cutting edge. Do not allow a heel greater than  $1/32"$  wide on the bevel before taking out and re-grinding on the grinding machine. Take care to grind off the same amount from each cutter taking light cuts with the grinding wheel. Keep the wheel free from glaze by using an emery wheel dresser occasionally.

For general work knife angles for soft and hard woods are recommended as in Figs. 5 and 6. Where a very fine finish is required on dry soft and hard woods a slight front bevel is given as in Figs. 7 and 8. For wet or green timber the cutting bevel may be increased by 5 degrees, but the front bevel should not be given.

Fig. 6 for hard wood.

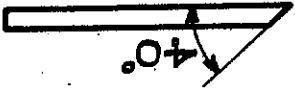


Fig. 5 for soft wood.



Fig. 7 for dry soft wood.

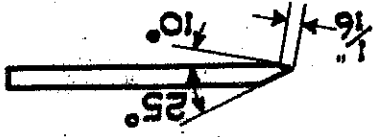


Fig. 8 for dry hard wood.

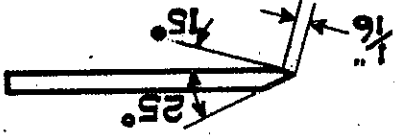
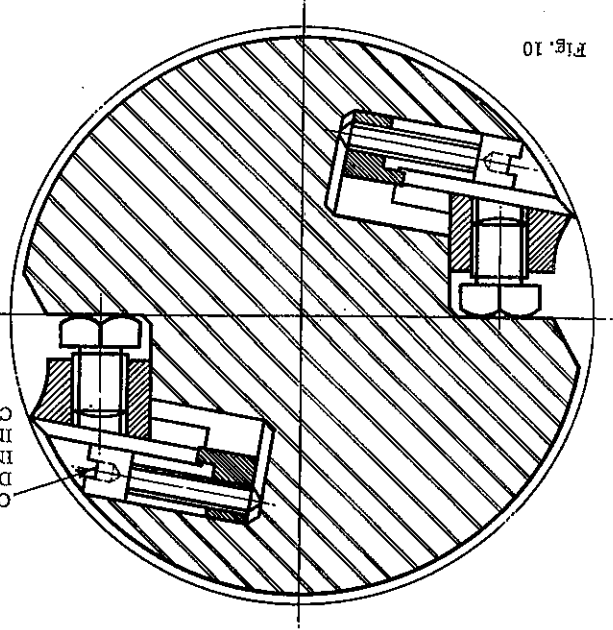
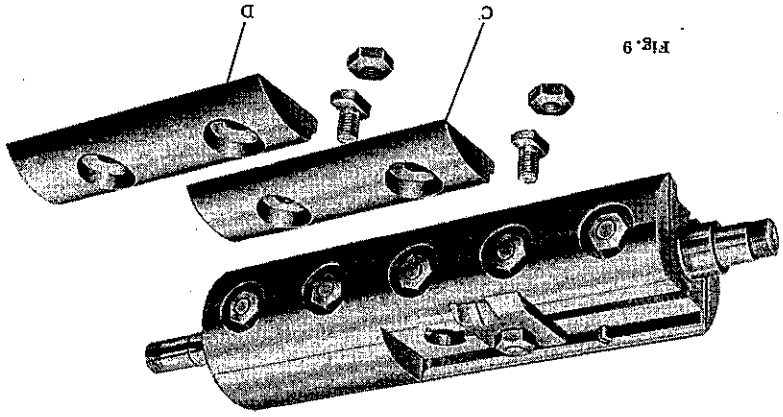


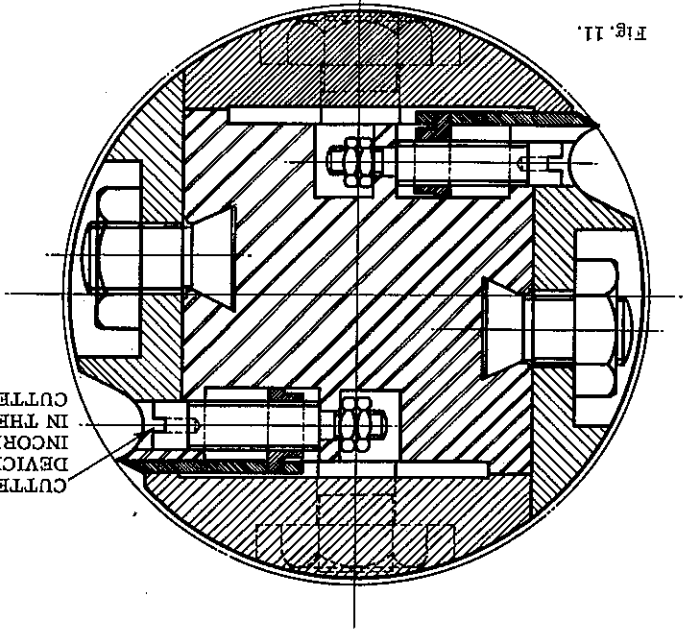
Fig. 6 for hard wood.

THE CUTTERBLOCK.

There are two types of cutterblock offered, namely, the wedge type and the plate type. The wedge type block is standard to all R. Z. machines, whilst the plate type block which is arranged to take moulding irons is only supplied to special order. A section through each type of block is shown in Figs. 10 and 11. The plate type block is provided with two dovetail slots as Fig. 9. To fix moulding irons take off making up pieces 'C' and 'D' and use dovetail bolts in the slots. For standard range of square and shaped cutters available see Section C of our Tools and Accessories Catalogue No. 745. Cutters to suit customers own shapes can be supplied to special order. When necessary Tungsten Carbide Tipped cutters can be manufactured.



WEDGE TYPE CUTTERBLOCK.



CUTTERBLOCK ARRANGED TO TAKE Moulding CUTTERS IN ADDITION TO THE STANDARD PLANING KNIVES. (TO SPECIAL ORDER ONLY)

## CUTTER ADJUSTMENT

As will be seen from Figs. 10 and 11 two screws giving fine adjustment for accurately setting the knives are incorporated in the cutterblock. It is important that each knife is set parallel with the back surfacing table otherwise accurate planing of the timber is impossible. Each knife must project  $1/16''$  (1.5mm) from the body of the block.

To undertake knife setting proceed as follows:-

1. Remove the cutter guard.
2. Swing the fence clear of the tables or push back as far as possible.
3. Withdraw horizontally the front table.
4. Place a long straight edge on the back table allowing it to project over the cutterblock as Fig. 12 and with the table  $1/16''$  (1.5mm) above the body of the block.

Adjust the knife with special key inserted in the head of the screw as Fig. 12 until the knife lightly makes contact with the straight edge. This is done by a partial turn of the block during the adjusting process. It is advisable to move the straight edge to two or three positions along the block to ensure the knife is set parallel. Proceed with the remainder of the knives in a similar manner.

If the Wadkin PRECISION cutter setter is used, proceed as at 1, 2 and 3, but in place of the straight edge as 4 place the setter on the back table, shown in Fig. 13 and set each knife as outlined. The knife must lightly contact the spring controlled pad and the knife adjusted until the pointer registers at 0 or zero on the scale. Each knife in the block must register the same, that is 0 or zero.

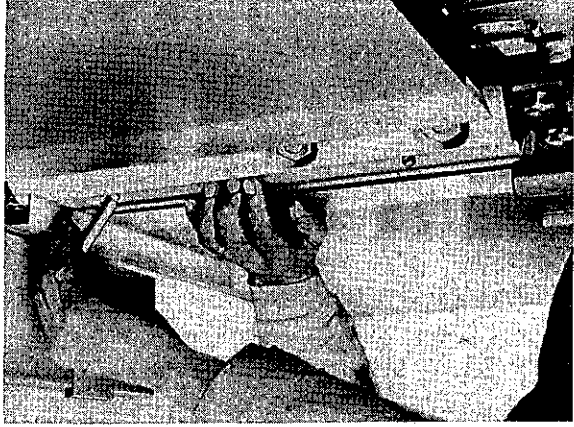


FIG. 12

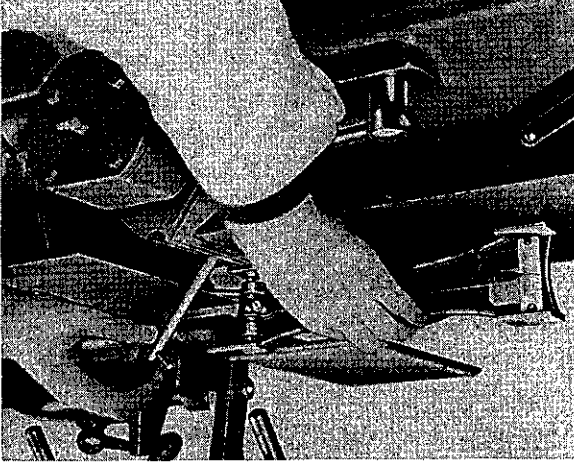
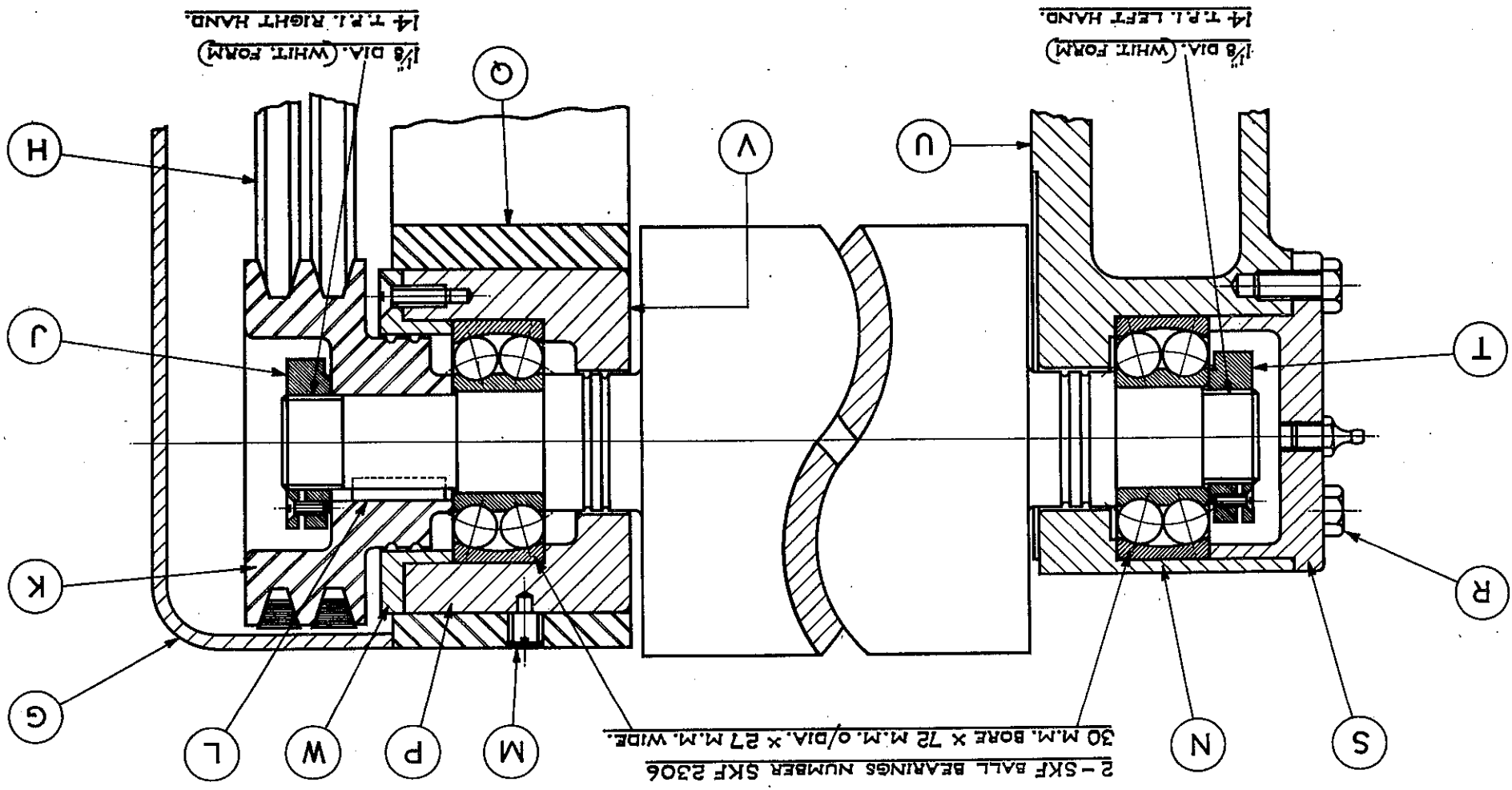


FIG. 13

SECTION THROUGH CUTTERBLOCK.



## CUTTERBLOCK ASSEMBLY

To remove cutterblock from the machine (for renewing bearings, etc.), proceed as follows :-

1. Isolate the machine.
2. Open out tables to afford easy handling of the cutterblock and remove cutters from block.
3. Take off vee belt guard (G) and remove vee belts (H) from pulley (K).
4. Release countersunk screw and unscrew locknut (J).
5. Remove pulley (K) and key (L).
6. Release pipscrew (M).
7. Unscrew two bolts and two dowels securing front housing (N) to the main frame and slide out cutterblock complete with housing (N) and sleeve (P) on to a bench, leaving rear housing (Q) still in position.
8. Remove three hexagon head screws (R) and take off end cap (S).
9. Release countersunk screw and unscrew locknut (T).
10. Using a piece of wood or soft metal knock off front housing away from shaft in direction of arrow (U).
11. The bearing can now be taken out of front housing (N).
12. Knock off sleeve (P) in direction of arrow (V).
13. Unscrew three countersunk screws and take off end cap (W).
14. Remove bearing from sleeve (P).

To re-assemble, reverse the above procedure, packing the bearing housings with Wadkin ball bearing grease Grade L. 6, ensuring that no dirt or grit enters the housings or bearings.

OPERATION HINTS.

To obtain the best surface finish always check the direction of the grain, which should run with the cutter as in Fig. 15.

To obtain a perfectly flat surface, especially with warped stock, always put maximum pressure on the back table at 'E' Fig. 16, and as little as possible on the front table at 'F'.

Greater pressure will be required on bad grained timber, otherwise chattering will take place resulting in a coarse finish near each knot.

When planing four sides of timber square, turn the timber anti-clockwise after each cut, so that there will always be a machined side toward the fence. The fence locates accurately at 90° on machined pads and no adjustment is necessary to maintain this accuracy.

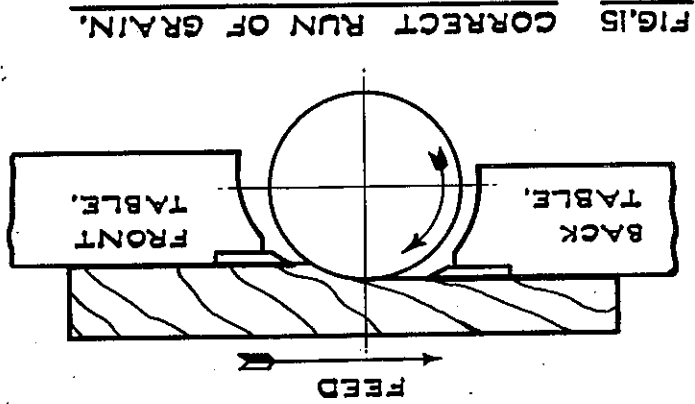


FIG. 15 CORRECT RUN OF GRAIN.

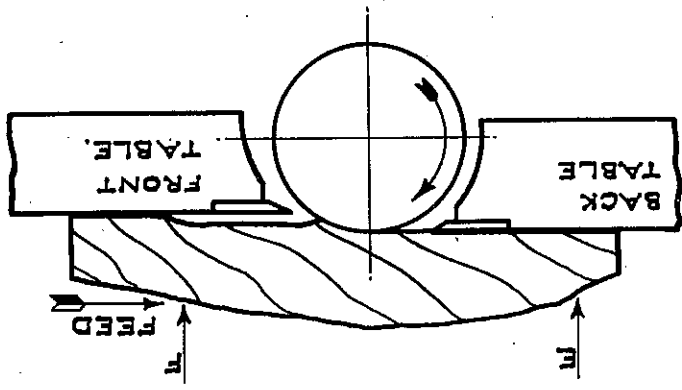


FIG. 16 FEEDING WARPED TIMBER.

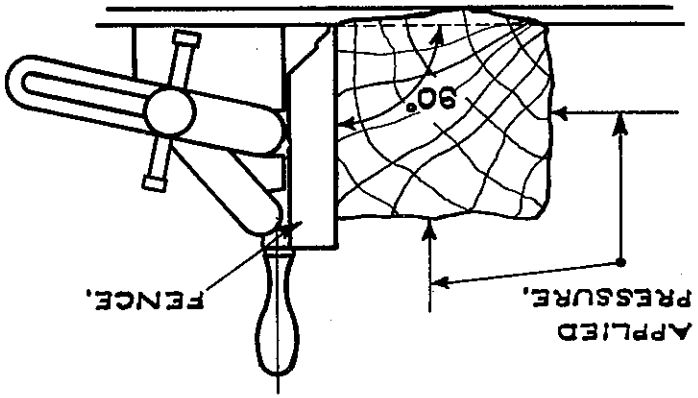


FIG. 17 WORKING WITH FENCE.

## ELECTRICAL INSTALLATION INSTRUCTIONS

The cabling between the motor and the control gear has been carried out by Wadkin Ltd., and it is only necessary to bring the line leads to the machine for it to be put into service. This should be done as follows :

1. Fit triple pole isolating switch near the machine unless it has been supplied to special order by Wadkin Ltd., when it will be fitted and connected to the machine.
2. Connect the line lead to the appropriate terminals. See diagram of connections. The cables should be taken to the machine in conduit and secured to the control gear by locknuts.
3. Connect solidly to earth.
4. Close isolating switch and press start button. If motor does not rotate in the right direction, interchange any two incoming line leads.

### FAILURE TO START

1. Electric supply is not available at the machine.
2. Fuses have blown or have not been fitted.
3. Isolating switch has not been closed.
4. Lock-off or stop button has not been released.

### STOPPAGE DURING OPERATION AND FAILURE TO RESTART

1. Fuses have blown.
2. Overloads have tripped. They will reset automatically after a short time and the motor can be restarted in the usual manner.

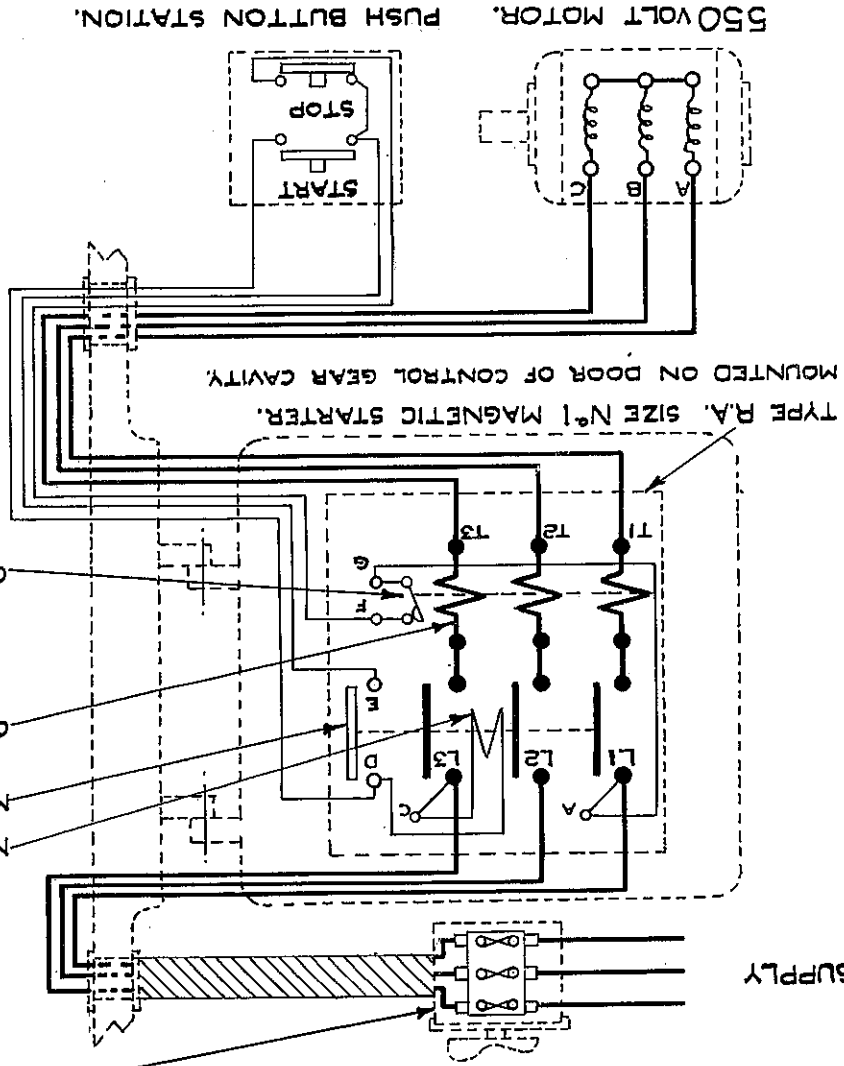
### ADJUSTMENTS

For a finer overload setting, set the load indicator to a lower value and vice-versa for a less fine setting.

### GENERAL

Check the earth connection from time to time. Users are recommended to display in an appropriate position in the maintenance department a Wadkin Electrical Maintenance Instruction Card, No. 356, which is issued gratis on application.

SUPPLY



DUAL VOLTAGE MOTOR CONNECTIONS.		WHEN DUAL VOLTAGE MOTORS ARE SUPPLIED WITH 6 LEADS THE CONNECTIONS SHOWN BELOW ARE NECESSARY.		WHEN DUAL VOLTAGE MOTORS ARE SUPPLIED WITH 9 LEADS THE CONNECTIONS SHOWN BELOW ARE NECESSARY.	
PARALLEL/STAR - 220 VOLTS.		STAR - 340/440 VOLTS.		PARALLEL/STAR - 220 VOLTS.	
DELTA - 200/250 VOLTS.		STAR - 340/440 VOLTS.		PARALLEL/STAR - 220 VOLTS.	
TO T1-T2-T3		TO T1-T2-T3		TO T1-T2-T3	
AT STARTER.		AT STARTER.		AT STARTER.	
SERIES/STAR		PARALLEL/STAR		SERIES/STAR	
A1 A2 A3 A4		A1 A2 A3 A4		A1 A2 A3 A4	
B1 B2 B3 B4		B1 B2 B3 B4		B1 B2 B3 B4	
C1 C2 C3 C4		C1 C2 C3 C4		C1 C2 C3 C4	
TO T1-T2-T3		TO T1-T2-T3		TO T1-T2-T3	
AT STARTER.		AT STARTER.		AT STARTER.	
STAR		STAR		STAR	
A1 A2 A3		A1 A2 A3		A1 A2 A3	
B1 B2 B3		B1 B2 B3		B1 B2 B3	
C1 C2 C3		C1 C2 C3		C1 C2 C3	
TO T1-T2-T3		TO T1-T2-T3		TO T1-T2-T3	
AT STARTER.		AT STARTER.		AT STARTER.	
DELTA		DELTA		DELTA	
A1 A2 A3		A1 A2 A3		A1 A2 A3	
B1 B2 B3		B1 B2 B3		B1 B2 B3	
C1 C2 C3		C1 C2 C3		C1 C2 C3	
TO T1-T2-T3		TO T1-T2-T3		TO T1-T2-T3	
AT STARTER.		AT STARTER.		AT STARTER.	

INSTALLATION INSTRUCTIONS.

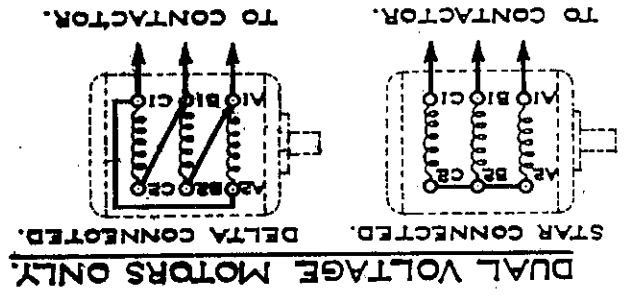
FIT MAIN DISCONNECT SWITCH NEAR MACHINE SO THAT THE ELECTRICAL GEAR MAY READILY BE ISOLATED FOR INSPECTION PURPOSES. BRING SUPPLY CABLES TO DISCONNECT SWITCH AND TO L1-L2-L3 AT MAGNETIC STARTER THROUGH CONDUIT WHICH SHOULD BE SCREWED INTO THE MACHINE FRAME AND SECURED BY MEANS OF LOCKNUTS. ENSURE THAT THE DIRECTION OF ROTATION OF THE MOTOR IS CORRECT BEFORE PUTTING THE MACHINE INTO SERVICE. TO REVERSE ROTATION INTERCHANGE L1 AND L3 AT MAGNETIC STARTER.

OPERATING INSTRUCTIONS.

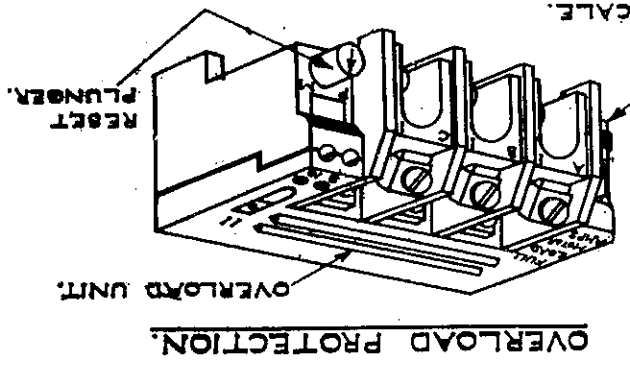
TO START MACHINE; CLOSE MAIN DISCONNECT SWITCH AND PRESS 'START' BUTTON. TO STOP MACHINE; PRESS 'STOP' BUTTON. TO LOCK OFF MACHINE; PRESS AND TURN 'STOP' BUTTON; THIS MUST BE RELEASED BEFORE A START CAN BE MADE.

OVERLOAD.

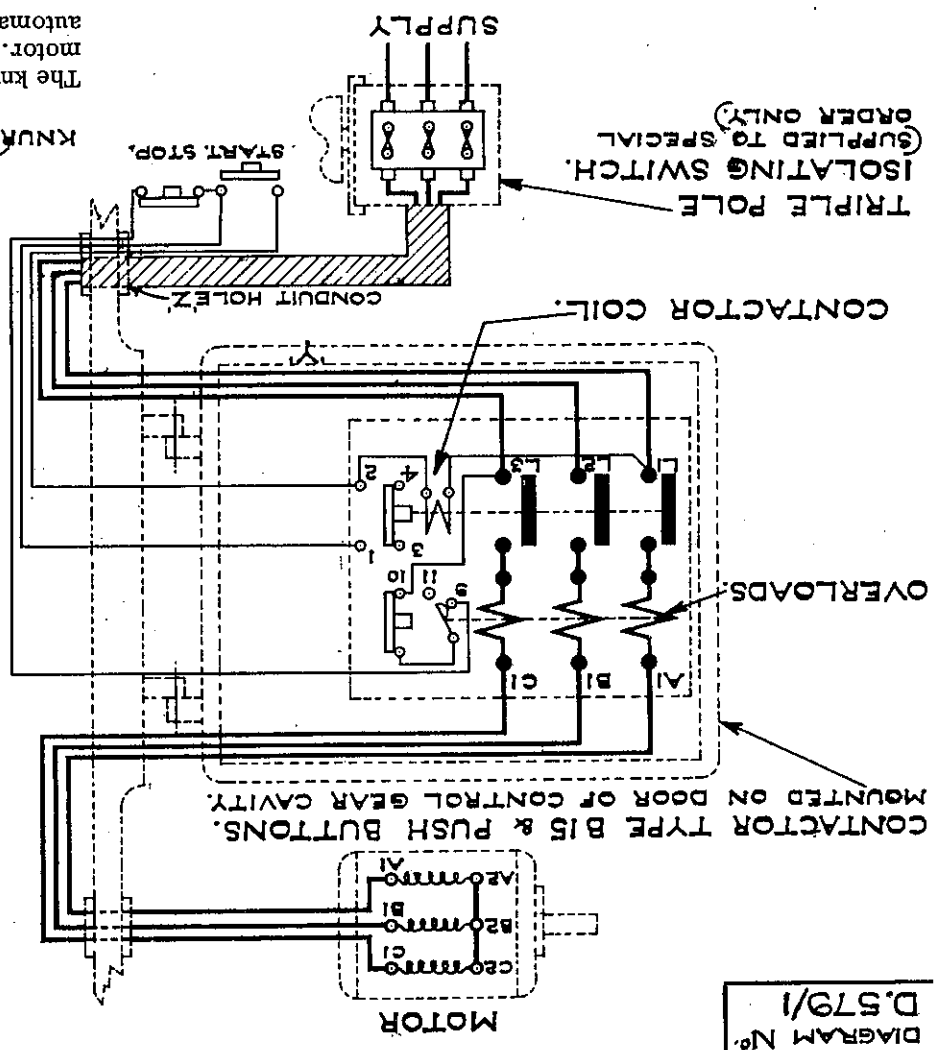
SHOULD THE MACHINE STOP DUE TO OVERLOAD, THE OVERLOAD TRIP SWITCH SHOULD BE RESET BY DEPRESSING THE PLUNGER ON THE OVERLOAD ASSEMBLY, THEN START IN THE USUAL MANNER.



When dual voltage motors are employed the following connections are made:-  
 200/250 volt circuits, motor delta connected.  
 340/440 volt circuits, motor star connected. The necessary connections are made either in the control gear cavity or at the motor terminal block.



The knurled scale should be set at the full load current of the motor. The arrow on the reset plunger should point to 'M' for automatic reset and 'P' for hand reset.



INSTALLATION INSTRUCTIONS.

Fit triple pole isolating switch near machine, unless supplied by Wadkin Ltd. to special order, so that the electrical gear may readily be isolated for inspection purposes. Bring supply cables to isolating switch and to L1 - L2 - L3 at contactor through conduit which should be screwed into the machine and secured by means of locknuts. Leave sufficient slack in the cables at 'Z' for the conduit carrying the cables to the contactor. Ensure that the machine is adequately 'earthed' and that the direction of rotation of the motor allow the door to open freely. Ensure that the machine is adequately 'earthed' and that the direction of rotation of the motor is correct before putting machine into service. To reverse rotation interchange L1 and L3.

OPERATING INSTRUCTIONS.

To start machine, close isolating switch and press 'start' button. To stop machine press 'stop' button. To lock off machine, press and turn stop button. This must be released before a start can be made.

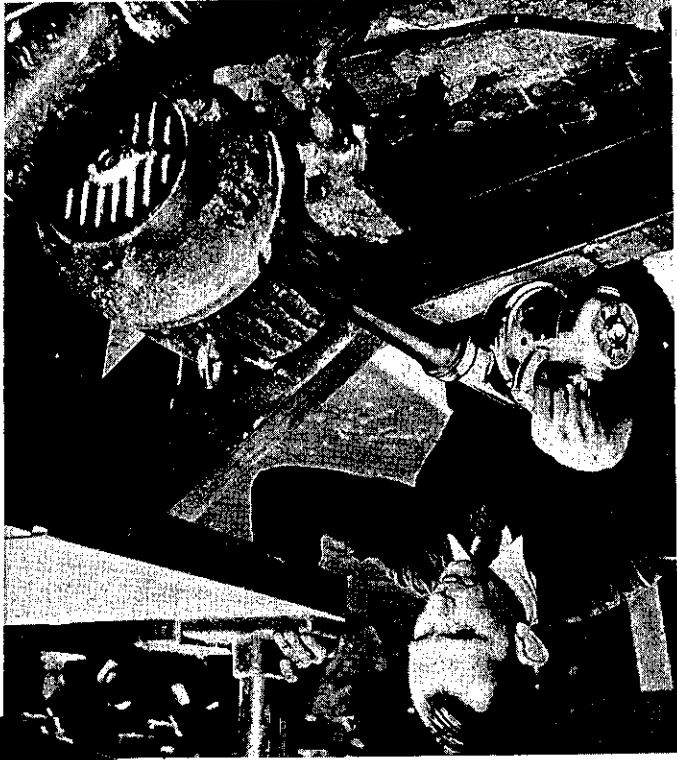
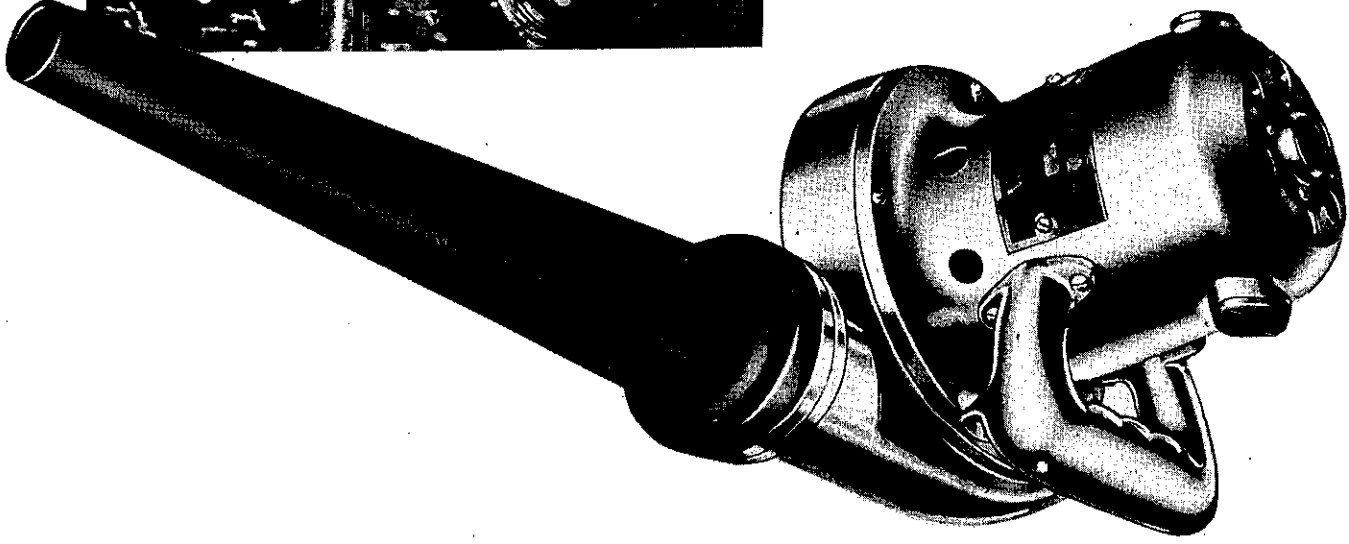
NOTE:- Cabling shown thus to be carried out by customer unless isolating switch has been fitted by Wadkin Ltd.

**... blow away harmful dust,  
chips and dirt with a  
Wadkin Electric Blower**

No motor can run at its maximum efficiency with its ventilating duct or control gear covered with dust and dirt. Sooner or later the resultant overheating will cause serious trouble. Similarly, accumulations of chips and dust, in the mechanical parts of the machine can interfere with its efficiency. A few minutes a week for blowing down all Woodworking Machinery will be amply repaid in better and easier running, in increased life, and freedom from breakdown.

Blowers can be supplied for single phase A.C. or Direct Current for any voltage up to 250.

Please state voltage when ordering.



GRINDING AND JOINTING ATTACHMENT.

The Cutterblock.

The cutterblock fitted when the above unit is required, is wedge type, carrying four knives without shear cut.

Motorised Cutter Setting, Grinding and Jointing Unit.

In order to ensure that all the knives in the cutterblock are not only cutting, but actually leaving a cuttermark, it is essential that they all run in one common circle at the cutting edge. This is achieved by the use of a combined motorised grinding and jointing attachment (See Fig. 18) which is attached to the outfeed table of the machine, being located either side of the table by two screwed plungers. When not in use the whole unit is detached from the machine leaving infeed and outfeed tables clear for surfacing.

Setting.

With the fence set in its rearmost position and the grinding unit located on the outfeed table of the machine, insert the setting gauge supplied between the hardened steel roller 'J' (See Fig. 19) and the cutterblock body and adjust the vertical slide screw 'K' so that the roller 'J' lightly traps the gauge against the cutterblock body. This gives the correct setting diameter of 5.1/16" (128.5 mm). The cutters are inserted and lightly held by the wedge and in turn are then brought outwards from the cutterblock by means of the cutterblock key inserted in pockets 'L' and adjusted until the cutter comes lightly into contact with the underside of the roller 'J', just sufficient to rotate the roller slightly when the block is turned. The knife should be set by the roller at both ends

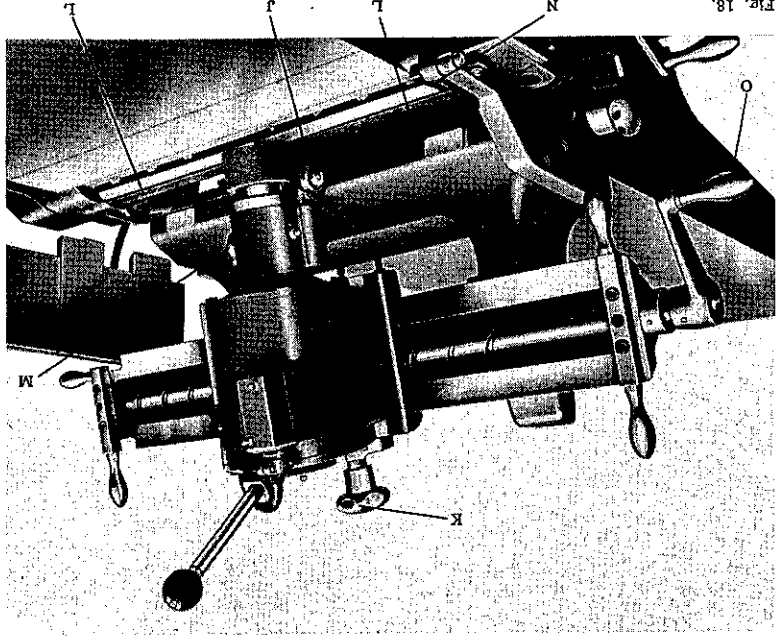


Fig. 18.

and in the mid position. After setting, all the cutter locking screws should be securely tightened.

Jointing.

To joint the knives, loosen the wing nut and lower the jointing stone below the setting roller and then tighten up securely. Lower the jointing stone holder down by means of the small handwheel 'M' until the jointing stone is below the grinding wheel and securely locked. Make certain that the index finger 'N' is latched back securely out of position. Start up the cutterblock and very slowly and evenly, traverse the unit by means of the handle 'O'. The vertical slide

screw 'K' should be carefully adjusted until the stone touches the knives and gives off a very light spark. This operation is carried on very lightly until all the knives have just touched. A slight flat or heel will be produced thus ensuring that all the knives will cut equally. The jointing operation may be performed two or three times before re-grinding, but never allow a heel greater than 1/32" (.8 mm) wide on the bevel.

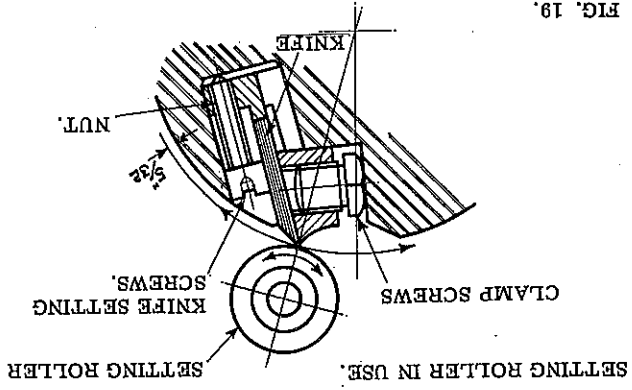


FIG. 19.

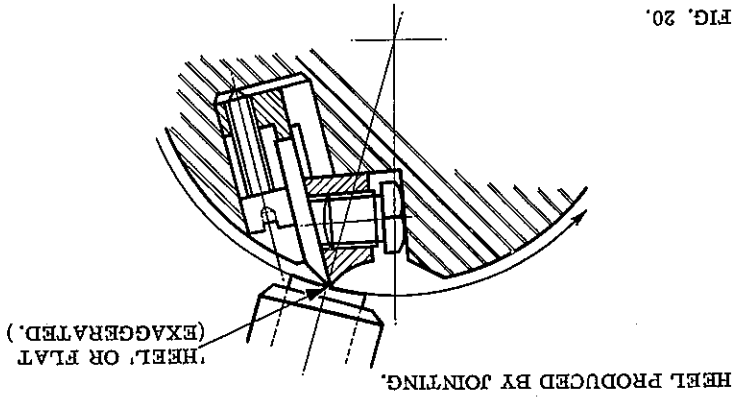


FIG. 20.

**Grinding.** Place the attachment on the machine with the jointing stone holder in its uppermost position. Release the index finger 'N' from its latched position and allow it to lie on the cutterblock body. Rotate the cutterblock slowly by hand, using the crank handle, till the index finger rests against the leading edge of the knife. Start the grinder spindle and adjust the vertical slide screw 'K' to bring the grinding wheel on to the back bevel of the knife. Traverse the grinding wheel across the knife two or three times and finish with the stone clear of the cutter at the rear end of the cutterblock. The cutterblock is then rotated to the next knife and located by the indexing finger. Grind all four knives at one setting and if necessary, lower the grinding wheel and repeat the operation. A light pressure should be kept on the crank handle whilst grinding to keep the knife against the index finger. It is possible to re-grind several times before it is necessary to re-set the knives.

The outfeed table should be lowered to allow for the reduced cutting circle after each jointing or grinding operation. For detail of grinding wheel see Fig. 21.

**IMPORTANT.**

Make certain that the indexing finger is latched back securely out of position if the cutterblock is started whilst the grinding unit is in position.

Detail of grinding wheel,  
3,000 r.p.m. Wadkin ref. RZ.260.  
Grade RN 6050 V.

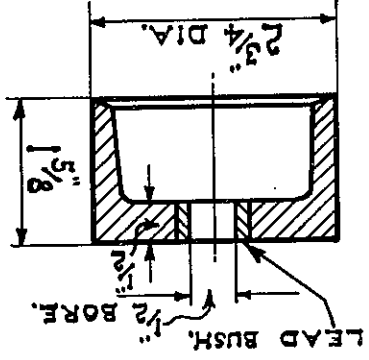


FIG. 21.

CARBORUNDUM CUP WHEEL.



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