

Wadkin

HEAVY DUTY ARTICULATED ARM ROUTER, TYPE L. C.

PRINCIPAL DIMENSIONS AND CAPACITIES.

	English	Metric
Minimum effective radius of arm	2'1"	635mm
Maximum effective radius of arm	6'0"	1829mm
Rise and fall of head in slide	12"	305mm
Stroke movement of head	4"	102mm
Horse power of motor	On 50)	12½/10
Spindle speeds in r. p. m.)	cycles	18,000 and 12,000
Horse power of motor	On 60)	15/9
Spindle speeds in r. p. m.)	cycles	18,000 and 10,800
Net weight, machine only, in cwt.	40 (4,480 lbs.)	2,032 kilograms
Shipping dimensions in cubic feet	222	6.29 cubic metres

OPTIONAL EQUIPMENT TO SPECIAL ORDER.

Size of power rise and fall table	7'0" x 3'0"	2134 x 914mm
Minimum height of table	2'3"	686 mm
Maximum height of table	2'11"	889 mm
Minimum distance from table to head guide bush	1"	25 mm
Maximum distance from table to head guide bush	2'1"	635 mm
Horse power of motor	1	1
Size of fixed table with packing strips	4'8" x 3'2"	1422mm x 965mm
Minimum height of table	2'0"	610 mm
Maximum height of table	2'8"	813 mm
Minimum distance from table to head guide bush	4"	102 mm
Maximum distance from table to head guide bush	2'4"	711 mm

OPTIONAL EQUIPMENT TO SPECIAL ORDER (CONTINUED)

English	Metric
Size of fixed table	7'0" x 3'0" 2134mm x 914mm
Height of table	2'11" 889 mm
Minimum distance from table to head guide bush	1" 25 mm
Maximum distance from table to head guide bush	17" 432 mm
Size of base plate	6'0" x 3'6" 1829mm x 1067mm
Height of base plate	8" 203 mm
Minimum distance from base plate to head guide bush	2'4" 711 mm
Maximum distance from base plate to head guide bush	3'8" 1118 mm
Equipment for suds mist lubrication to the cutter	
Power lock to secondary arm	
Six sided capstan stop bar with six sets of stops and dial gauge for indicating working depth and repeating depth.	

DETAILS INCLUDED WITH THE MACHINE

- Router head
- Frequency changer
- Control gear
- Set of spanners
- Grease gun
- Oil gun
- Two guide bushes $\frac{1}{2}$ " x $\frac{4}{5}$ " and $\frac{8}{5}$ " x $\frac{7}{8}$ "
- Three collets 9/16", $\frac{8}{5}$ " and $\frac{4}{3}$ " bore

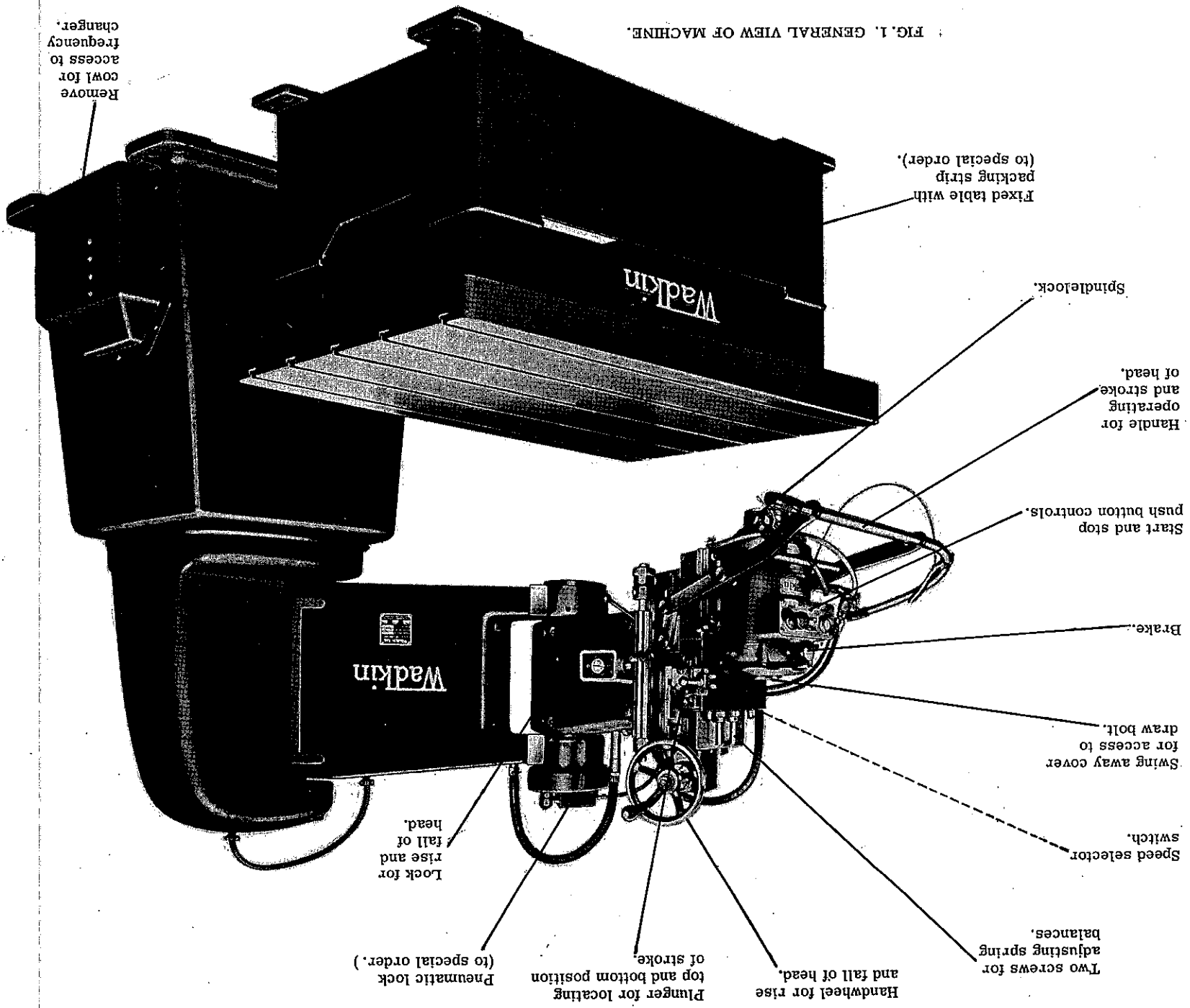
CUTTER EQUIPMENT

A complete range of cutter equipment is available for this machine. Full details are given in our Cutter Equipment Booklet No. 849.

BEARING LIST

Makers Number	Bore	Diameter	Width	Size	
				Outside	Number Per Machine
SKF. 08	1"	$1\frac{3}{4}$ "	$\frac{8}{5}$ "	1	For head raising screw
Thrust bearing Timken 560 - 552/A	$2\frac{5}{8}$ "	$4\frac{7}{8}$ "	$1\frac{1}{2}$ "	2	Intermediate fulcrum shaft
Taper bearing Timken 6460 - 6420	$2\frac{7}{8}$ "	$5\frac{7}{8}$ "	$2\frac{1}{2}$ "	2	Main fulcrum shaft

FIG. 1. GENERAL VIEW OF MACHINE.



Remove
cowl for
access to
frequency
changer.

Fixed table with
packing strip
(to special order).

Spindlelock.

Handle for
operating
and stroke
of head.

Start and stop
push button controls.

Brake.

Swing away cover
for access to
draw bolt.

Speed selector
switch.

Two screws for
adjusting spring
balances.

Handwheel for rise
and fall of head.

Plunger for locating
top and bottom position
of stroke.

Pneumatic lock
(to special order.)

Lock for
rise and
fall of
head.

INSTALLATION

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

FOUNDATIONS.

Bolts $\frac{3}{4}$ " (19mm) diameter should be used to fix the machine to the floor but these are not supplied by Wadkin Ltd. unless specially ordered. If the floor consists of 6" (152mm) thick concrete no special foundation is necessary and rag bolts or plates and bolts may be used. The outline in Fig. 2 shows positions of bolts and clearances required. Cut 4" (102mm) square holes in the concrete and with bolts in position run in liquid cement to fix.

The machine should be carefully levelled before fixing and again after final fixing to ensure that no distortion has taken place. The table and base plate when supplied to special order are despatched separately. Jack screws are provided to enable both the table and base plate to be levelled to the machine.

CLINOMETER AND DIAL INDICATOR FOR LEVELLING MACHINE AND TABLE

To level the machine rest a clinometer on the levelling surface provided on the primary arm as shown in Fig. 3 and adjust the machine until it is level. Similarly adjust the machine by resting the clinometer against the surface when the arm has been swung through 90° to position 'B'. Then check that the machine has not tilted by bringing the arm back to position 'A' and resting the clinometer against the surface. When the arm is vertical in both positions 'A' and 'B', the machine is set square and the table can be levelled by using the clinometer.

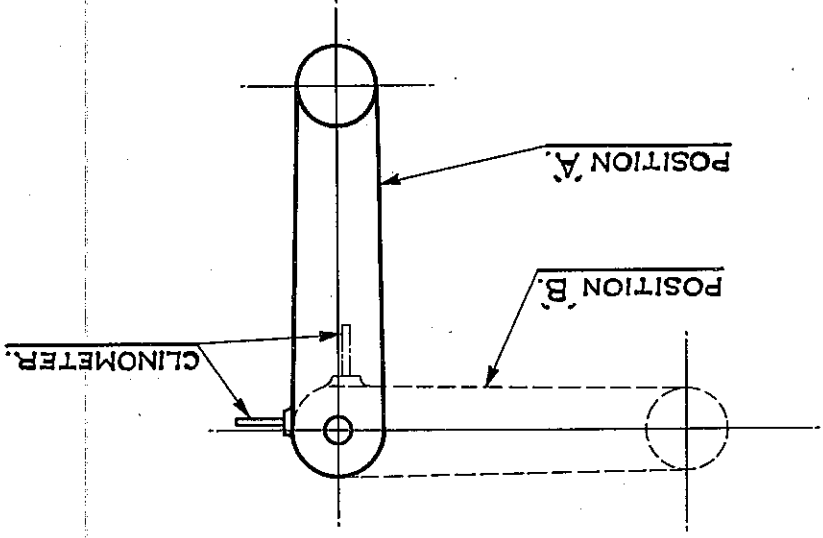
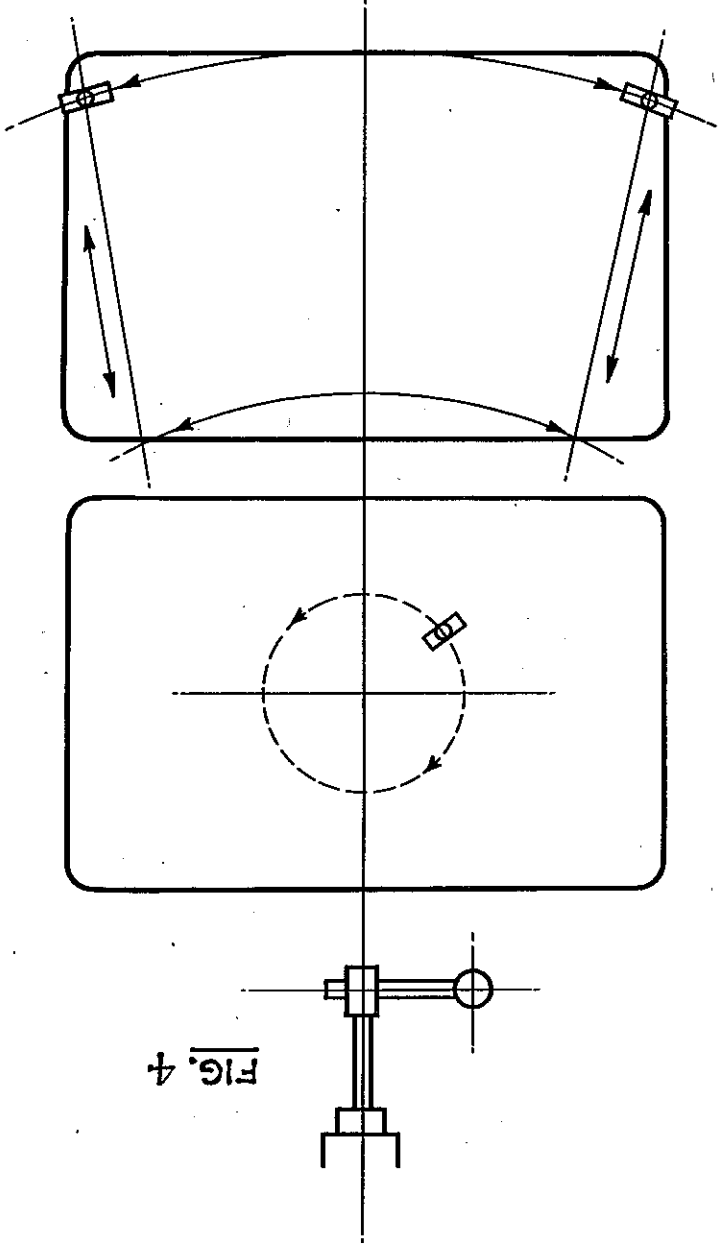


FIG.3

PLAN OF PRIMARY ARM ONLY

FIG. 4



NOTE: All adjustments to align the table once the machine is set level should be done by the jackscrews.

As the slide is set by Wadkin Ltd. before packing, the table can be levelled by using a dial indicator as shown in Fig. 4. A rod is secured by the cutter spindle collet and at the bottom is pivoted a rod of radius 10" (25mm) on the end of which is a dial indicator. If the base plate is supplied it should be fitted to the machine by the two bolts provided and carefully levelled. IMPORTANT. Please note that if it is required to move the machine it is essential that the baseplate be dis-assembled and moved separately.

NOTE: When the machine has been finally fixed the lifting eyes should be removed before putting the machine to use, otherwise full movement of the primary arm will be prevented.

WIRING.

For cabling instructions see wiring diagram D. 923 on page 19. Refer to diagram D. 909 on page 20 for wiring details of rise and fall table supplied to special order.

FOUNDATION PLANS OF TABLES SUPPLIED TO SPECIAL ORDER

The foundation plan for the power rise and fall table is shown in Fig. 2, Page 4. Details for the other two types of table offered, namely, the fixed table and fixed table with packing strips are given below at Figs. 5 and 6.

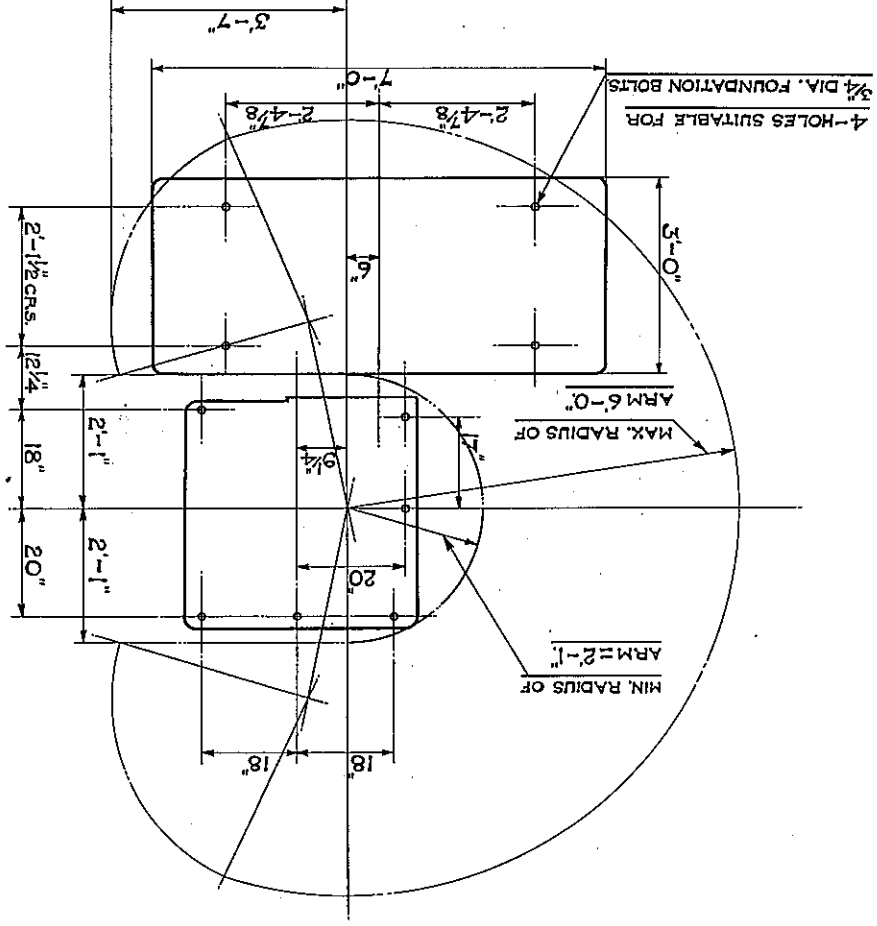


FIG. 5. PLAN OF BOLT POSITIONS FOR FIXED TABLE.

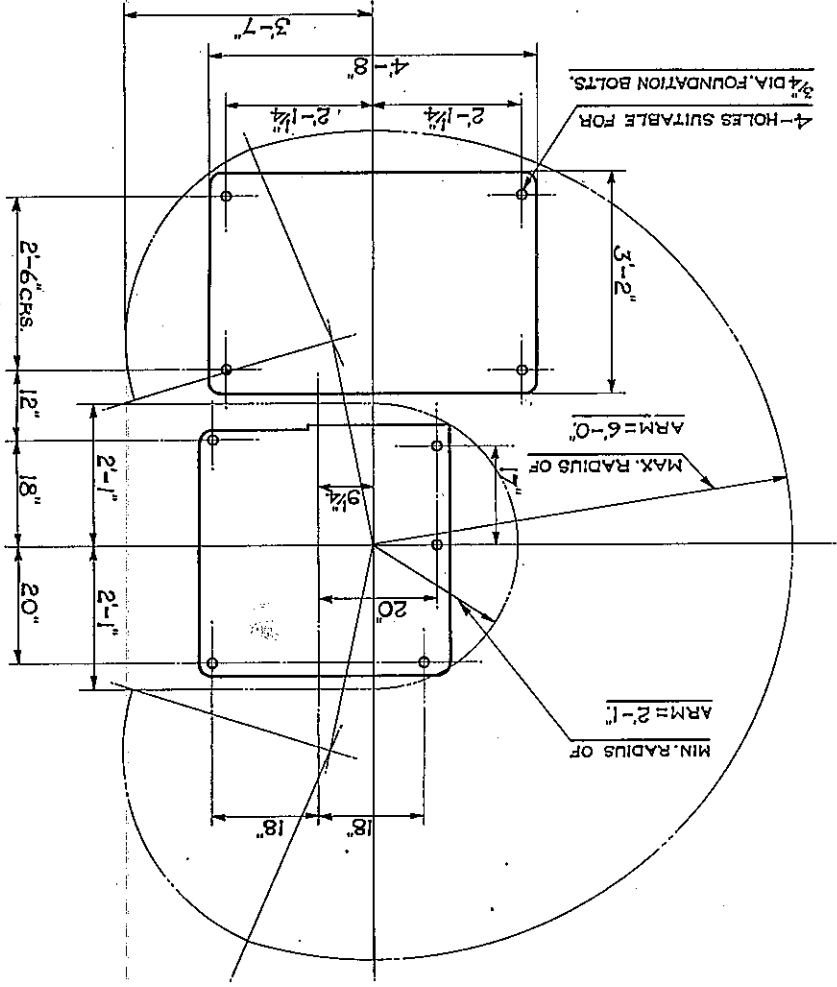


FIG. 6. PLAN OF BOLT POSITIONS FOR FIXED TABLE WITH PACKING STRIPS.

LUBRICATION (See Fig. 7)

- C POINTS Give 4 depressions of grease gun every 3 months using Wadkin Grease Grade L. 6.
- D POINTS Fill oiler up daily using Wadkin Oil Grade L. 4.
- E POINTS Give 1 depression of oil gun daily using Wadkin Oil Grade L. 4.
- F POINTS (Router head spindle bearings). Give 1 depression of oil gun daily or 2 to 3 depressions if the machine has been standing idle for longer than 48 hours using Wadkin Oil Grade L. 1.
- G POINTS Inspect every month and top up to oil level with Wadkin Gear Oil Grade L. 2.
- H POINTS Inspect once a month and fill up to level of notch on dip stick with Wadkin Gear Oil Grade L. 2.
- J POINTS Oil weekly with Wadkin Oil Grade L. 4.

WADKIN RANGE OF OIL AND GREASE LUBRICANTS WITH EQUIVALENTS.

Equivalent Lubricants	Wadkin	Shell Mex and B. P. Ltd.	Mobil Oil Co. Ltd.	Caltex Lubricants
	Grade	Shell Vitrea Oil 27	Mobil Oil D. T. E. (Light)	Regal Oil B (R. & O.)
Spindle Oil	Grade L1	Shell Vitrea Oil 69	Mobil Oil D. T. E. / BB	Meropa Lubricant No. 2 Oil
Gear Oil	Grade L2	Shell Vitrea Oil 33	Mobil "Vactra" Oil (Heavy Medium)	Caltex Aleph Oil
Machine Oil	Grade L4	Shell Nerita Grease 3	Mobil Grease B. R. B. No. 1.	Regal Startak No. 2 Grease
Ball Bearing	Grade L6			

THE ARTICULATED ARM

The articulated arm consists of a primary arm and a secondary arm. The primary arm is mounted in a yoke on taper roller bearings and the secondary arm has a similar mounting on the primary arm. A compound back slide attached to the secondary arm carries the router head.

THE HEAD SLIDES

The head slides provide vertical movement for the router head. A female vee slide is bolted direct on the articulated arm into which fits the second slide giving a 12" (305mm) rise and fall motion by means of a handwheel. This slide can be locked in any position with the lock shown in Fig. 8. To adjust this lock release locknut 'K', then unscrew lever 'L' and fit in next tapped hole in nut 'M'. Finally lock nut.

The front slide carries the router head and has 4" (102mm) of vertical movement controlled by operating handles. A spring loaded plunger is fitted to the front slide which engages into the second slide at the top and bottom of the 4" (102mm) movement. This enables the head to be withdrawn and re-engaged in exactly the same position without disturbing the micrometer setting of the secondary slide.

To take up any wear in the head slides release locknuts 'N', Fig. 9, and adjust slides by screws 'P'. Lock up nuts 'N' on completion.

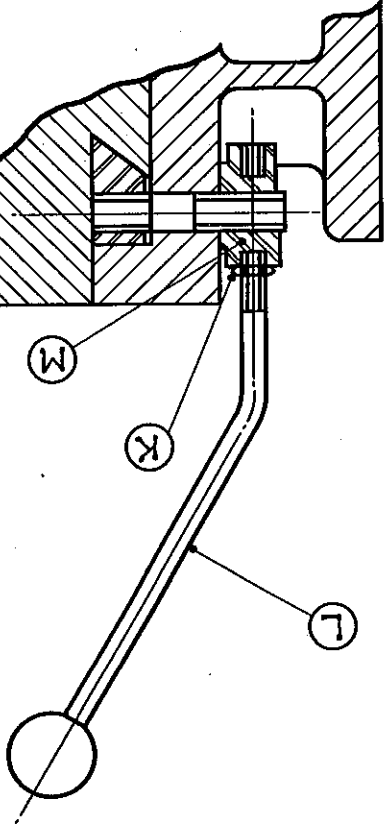


FIG 8 RISE AND FALL LOCK.

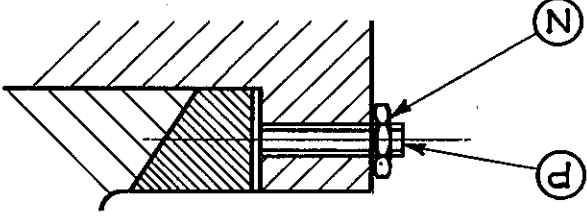


FIG.9

- In the event of breakdown or for periodic overhaul, the head should be returned to Wadkin Ltd, where a special department maintains a quick service for renewal of bearings etc.
- If the customer prefers to overhaul the head himself, the dismantling should be obvious to a skilled engineer from the section at Fig. 10 but note the following points:-
1. The bearings in this head are all of special high speed type and should be obtained from Wadkin Ltd.
 2. Locknuts 'X' and 'Y' have left hand threads.
 3. Locknut 'X' has a small countersunk locking screw which must be loosened before attempting to unscrew the locknut.
 4. The three felt pads must be soaked with Wadkin High Speed Spindle Oil, Grade L1, before re-assembly.
 5. Allow no trace of grit or dirt in the bearing housing.

SECTION THROUGH CUTTER SPINDLE

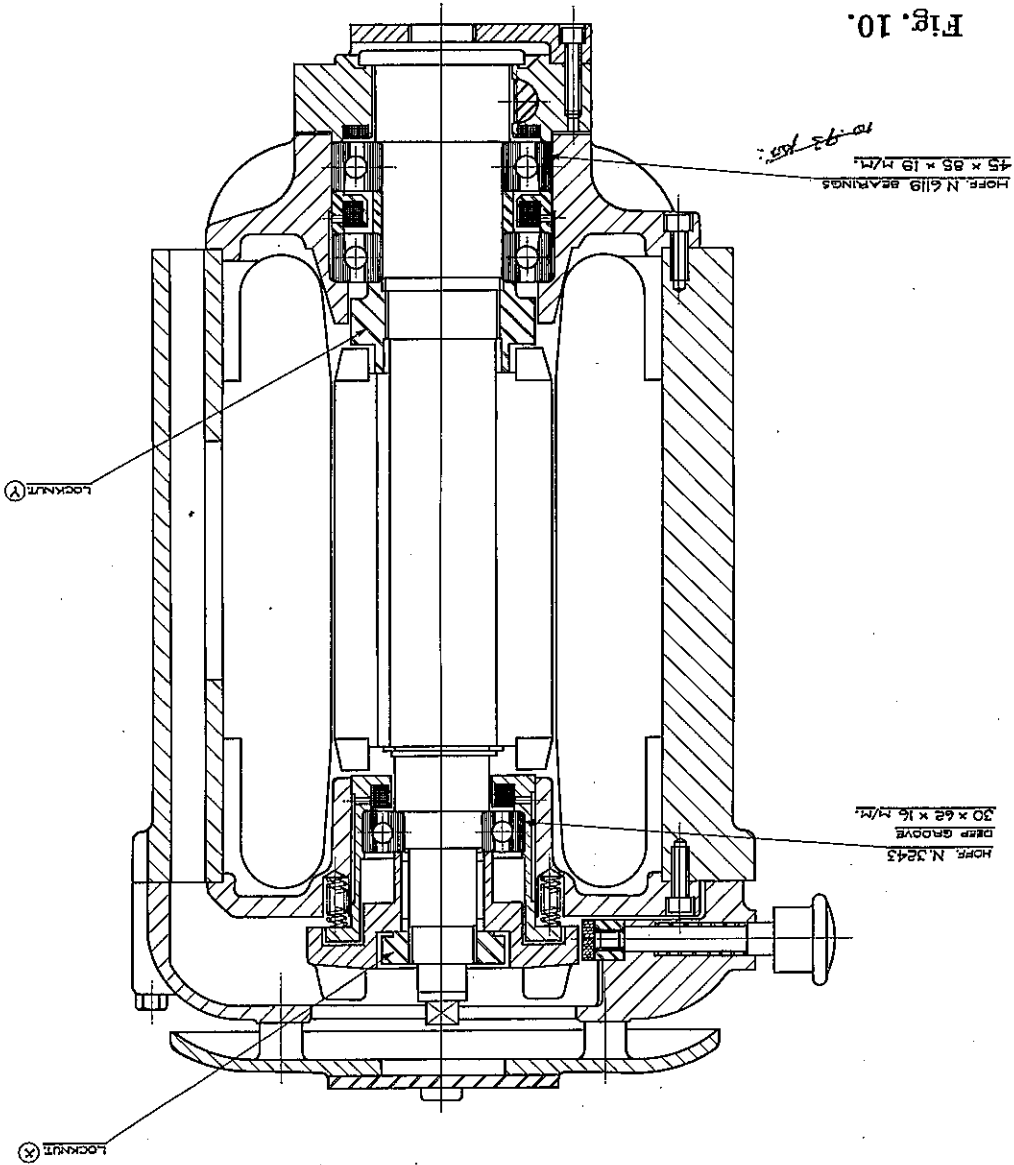


Fig. 10.

SPINDLE LOCK

The spindle lock should be used to stop the spindle rotating when changing cutters. To lock pull out knob 'Q', Fig. 11. Ensure that the lock is released before starting the head.

BRAKE

The hand brake should be applied GENTLY, ONLY after the stop button has been pressed.

DIAL INDICATOR DEPTH CONTROL

(TO SPECIAL ORDER)

The attachment shown in Fig. 12 provides an accurate means of depth control. It consists of a capstan stop bar with six sets of stops and a dial gauge. With this attachment the operator can bring the head back to six different predetermined vertical positions to within .001" (.025mm) as indicated on the dial. This method of depth control is for use when adjusting the secondary slide by handwheel.

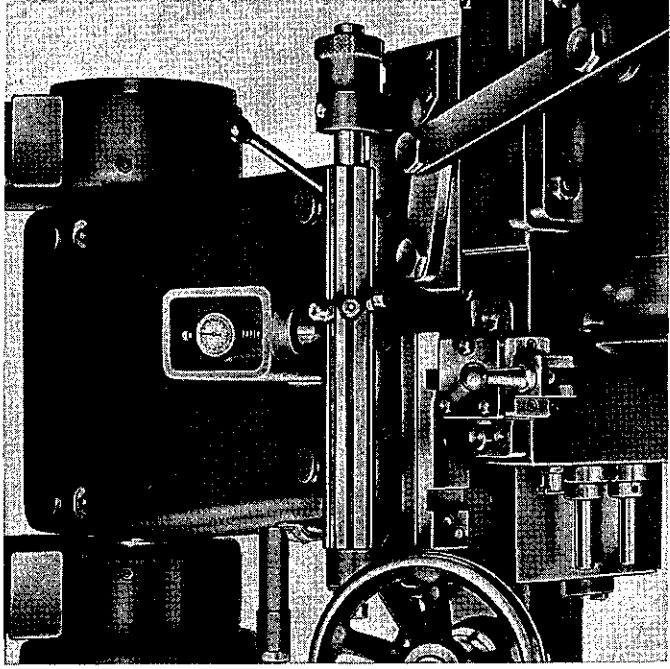


FIG. 12.

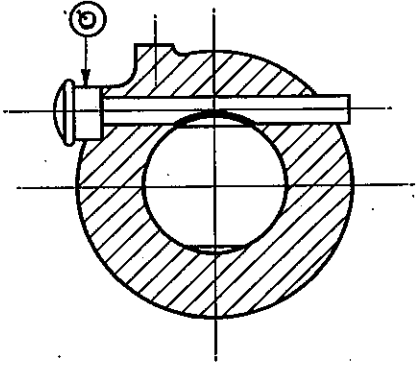


FIG. 11. SPINDLE LOCK.

FIG. 13. FIXED TABLE.

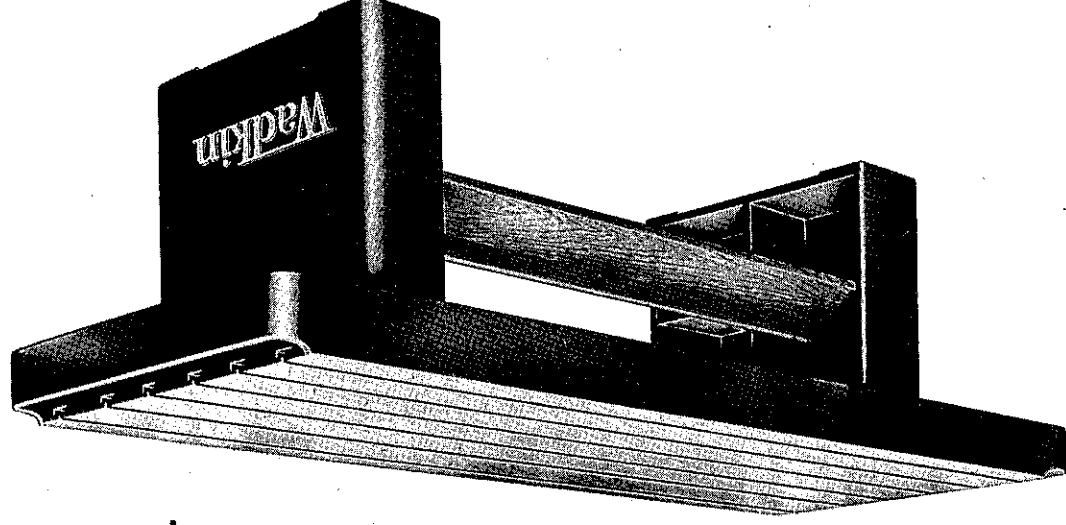
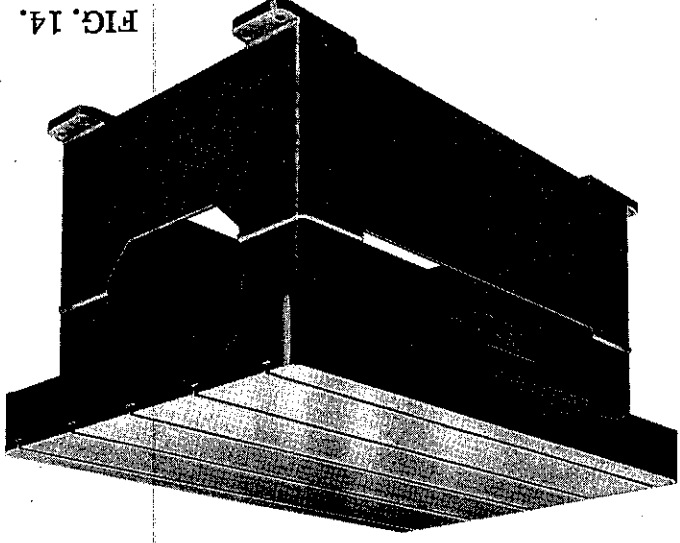


FIG. 14. FIXED TABLE WITH PACKING STRIPS.



Type of Table	Size	Height from floor	Distance from table to head guide bush	
			Maximum	Minimum
Fixed	7'0" x 3'0"	2'11"	17"	1"
Fixed with packing strips	4'8" x 3'2"	2'11" or 2'8"	17"	1" 4"
Fixed without packing strips			2'4"	12"
Power rise and fall	7'0" x 3'0"	2'11"	17"	1" 9"

The three types of table offered, namely, a fixed table, a fixed table with packing strips and a power rise and fall table are illustrated in Figs. 13 to 16. Capacities for each table are as follows :-

TABLES
(TO SPECIAL ORDER)

ADJUSTMENT OF FIXED TABLE

WITH PACKING STRIPS.

To lower the table proceed as follows :-

1. Unscrew the four hexagon head screws 'R',

Fig. 15.

2. Lift the table top 'S' clear with a crane.

3. Unscrew the four hexagon head screws 'T',

4. Remove the two packings 'U',

5. Lower the table top 'S' onto the table body

- 'V' and secure by screwing the four screws

- 'T' back in position.

6. Reverse the above procedure when it is re-

quired to raise the table.

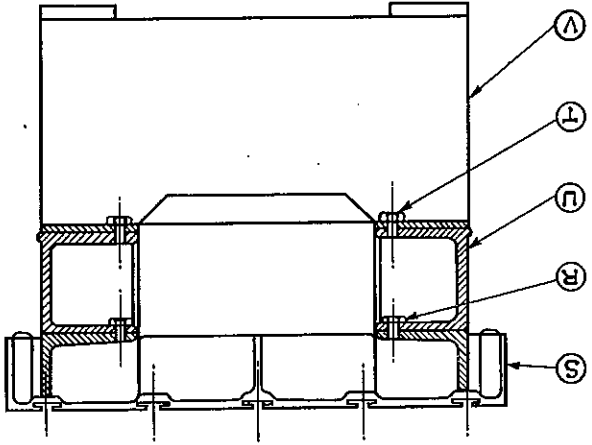


FIG. 15 SECTION THROUGH FIXED TABLE WITH PACKING STRIPS.

POWER RISE AND FALL TABLE (See Fig. 16).

Rise and fall movement is obtained by operating the push buttons. If required the table height can be set by hand. A swing over cover at the front of the table protects a slot through which a crank handle can be inserted and fitted on the end of the motor spindle extension. Manual operation is shown in Fig. 17. The two table slide locking handles should be released whilst raising or lowering the table, but make sure the slides are locked before routing is started. Troughs are provided at both ends of the table to collect coolant fluid which should be drained off by opening the taps fitted.

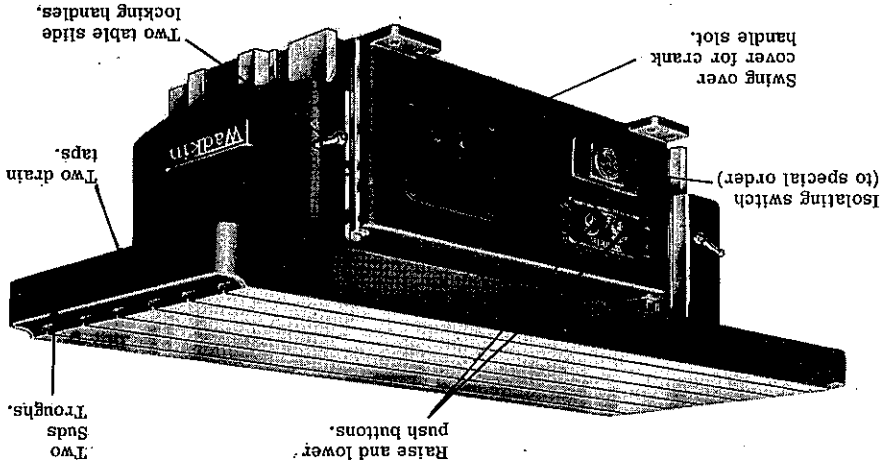


FIG. 16. POWER RISE AND FALL TABLE.



FIG. 17. MANUAL OPERATION.

BASE PLATE (TO SPECIAL ORDER)

Fig. 18 shows the base plate which should be used when machining castings too deep to accommodate on the tables offered.

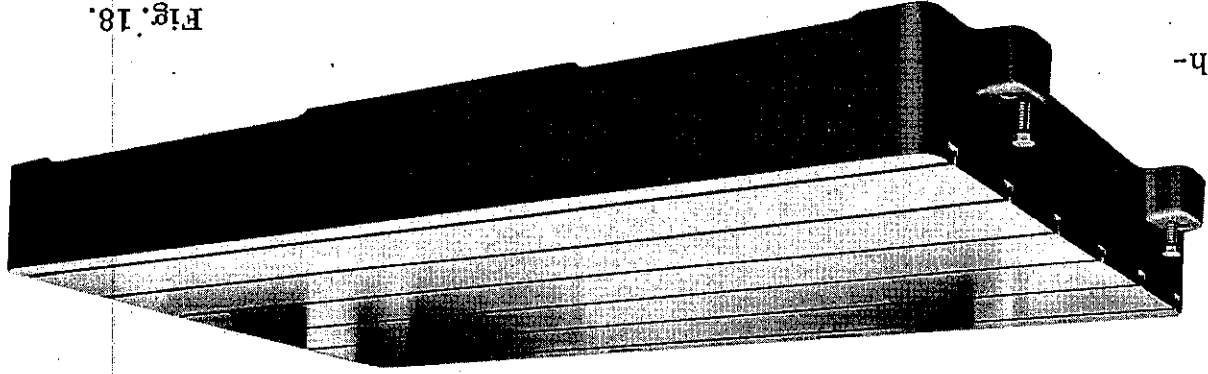
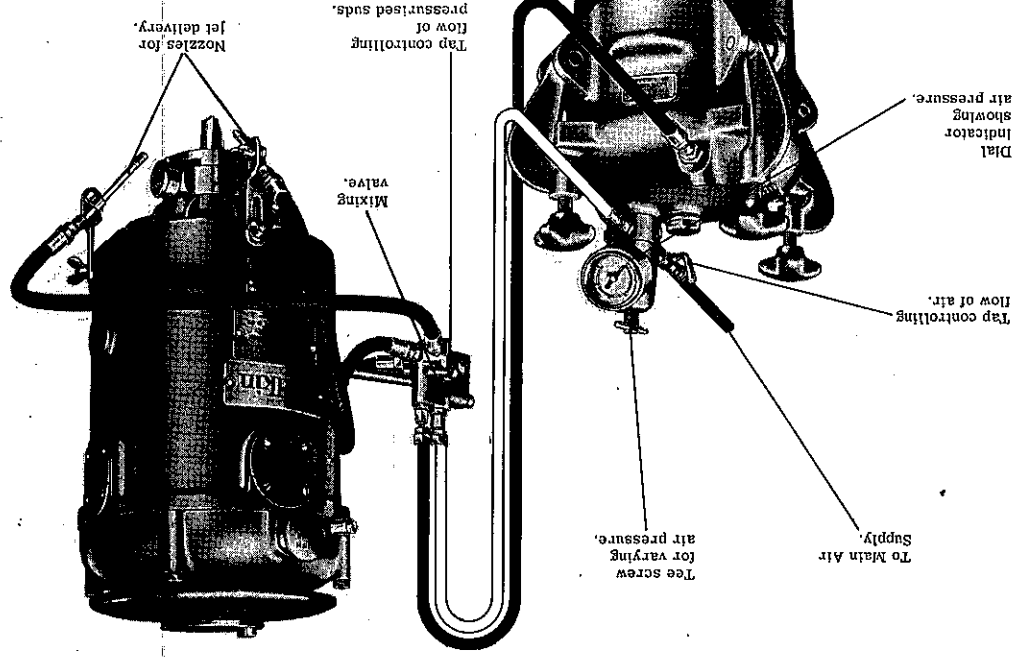


Fig. 18.

SUDS MIST EQUIPMENT (TO SPECIAL ORDER)

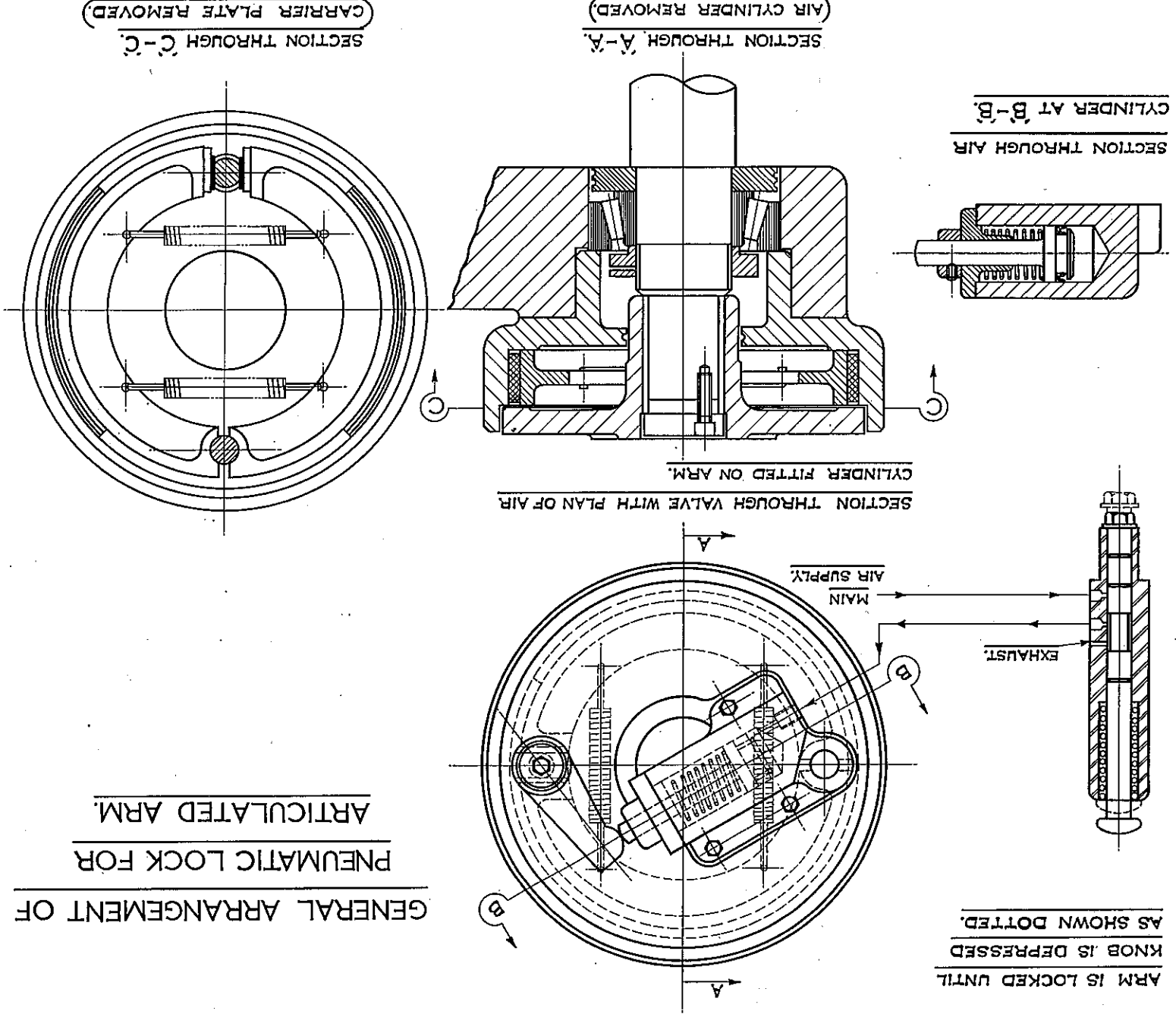


The equipment shown in Fig. 19 is recommended for lubricating the cutter on high speed routing or milling work. It ensures wet cutting without any of the disadvantages usually associated with suds pump and fittings. A shop air line giving approximately 80 lbs./square inch (5.62 kilograms/square centimeter) is necessary for operating this equipment. Flow of air is controlled by a tap fitted to the inlet on top of the pressurized suds container. The air pressure entering the container is the same as the air pressure to the mixing valve. To vary the air pressure, wind the tee screw in or out until the required pressure is shown by the dial indicator. A tap is fitted on the mixing valve to regulate flow of pressurized suds for jet delivery through either one or three nozzles.

FIG. 19.

SUDS MIST EQUIPMENT.

GENERAL ARRANGEMENT OF
PNEUMATIC LOCK FOR
ARTICULATED ARM.



ARM IS LOCKED UNTIL
KNOB IS DEPRESSED
AS SHOWN DOTTED.

PNEUMATIC LOCK FOR ARTICULATED ARM

(TO SPECIAL ORDER)

The pneumatic lock is used to lock the primary and secondary arms together, thus preventing independent movement. The pressure cylinder is fitted on top of the primary arm. A $\frac{2}{1}$ " (13mm) gas hole is provided in the pressure cylinder for the customer to fit his own air inlet. Air pressure of 80 lbs./square inch (5.62 kilograms/square centimeter) is necessary for operating the lock.

Full details of the lock are given in Fig. 20. A brake lever, secured to the operating handles, and Bowden cable are used to operate the pressure valve controlling flow of air to the lock. The brake shoes are pivoted so that when under pressure they are forced outwards bringing the linings firmly in contact with the brake drum. Springs are fitted to bring the shoes back to their original position when pressure is released.

Being able to lock the arms together is particularly useful when carrying out pocketing operations on airframe components. With the lock applied radial sweeps can be made with the head to remove metal in the centre of the pocket where a guide plate cannot be used.

ELECTRICAL INSTALLATION INSTRUCTIONS.

Fit a 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 line supply cables to the isolating switch through conduit which should be screwed into the machine and secured by means of locknuts. Connect the frequency changer to the terminal blocks in the conductor cavity as follows :-

1. Drive motor at terminals A3 - B3 - C3.
2. Slip rings at terminals A - B - C.
3. Stator at terminals D - E - F.

Ensure that the direction of rotation is correct before putting the machine into operation, to reverse rotation interchange L1 and L3 at isolating switch.

OPERATING INSTRUCTIONS.

To start machine close isolating switch, turn speed selector switch handle to the 'LOW' position and press the "start" button, if the high speed is required turn speed selector switch to the 'HIGH' position after full speed has been reached in the 'LOW' position.
NOTE:- Always start the machine in low speed.
To stop machine press the stop button. To lock off machine, press and half turn the stop button, this must be released before a start can be made.

OVERLOAD.

Should the machine stop due to overload, wait for a short time to allow the heater coils to cool then start in the usual manner. The overloads are set at these Works at 'AUTO' for automatic reset after tripping, if set at 'HAND' the plunger on the overload assemblies must be depressed to reset.

GENERAL.

Check earth connection from time to time.

Users are recommended to display in an appropriate position in the maintenance department Wadkin Electrical Maintenance Instruction Card No. 356 which is issued gratis on application.

D. 952

11/8 KW FREQUENCY CHANGER SET.

ROUTER HEAD.

H.F. FROM STATOR.

DRIVE MOTOR
TERMINALS ARE
APR NOT USED.

PUSH
BUTTON

STATOR

TERMINAL BLOCK
SITUATED IN CONTROL
GEAR CAVITY
DISCONNECTED FOR
TRANSMIT PURPOSES.

OVERLOAD SHOWN
DOTTED FITTED ON
50 CYCLE MACHINES ONLY

DRIVE MOTOR
OVERLOADS.

FOR 220 VOLTS.
CONTACTOR
ARROW SIZE No. 3

FOR 440 VOLTS.
CONTACTOR
ARROW SIZE No. 2

EARLY OPENING
CONTACT.

ISOLATING SWITCH
(SUPPLIED TO SPECIAL
ORDER ONLY).

SUPPLY

MAIN H.R.C. FUSES.
CONNECT AS SHOWN DOTTED FOR 220VOLTS.
CONTROL CIRCUIT FUSES.

CONTACTOR COIL.

PUSH BUTTONS.

RETAIN
CONTACT

START STOP

OVERLOAD TRIPS.

EXCITATION
OVERLOADS.

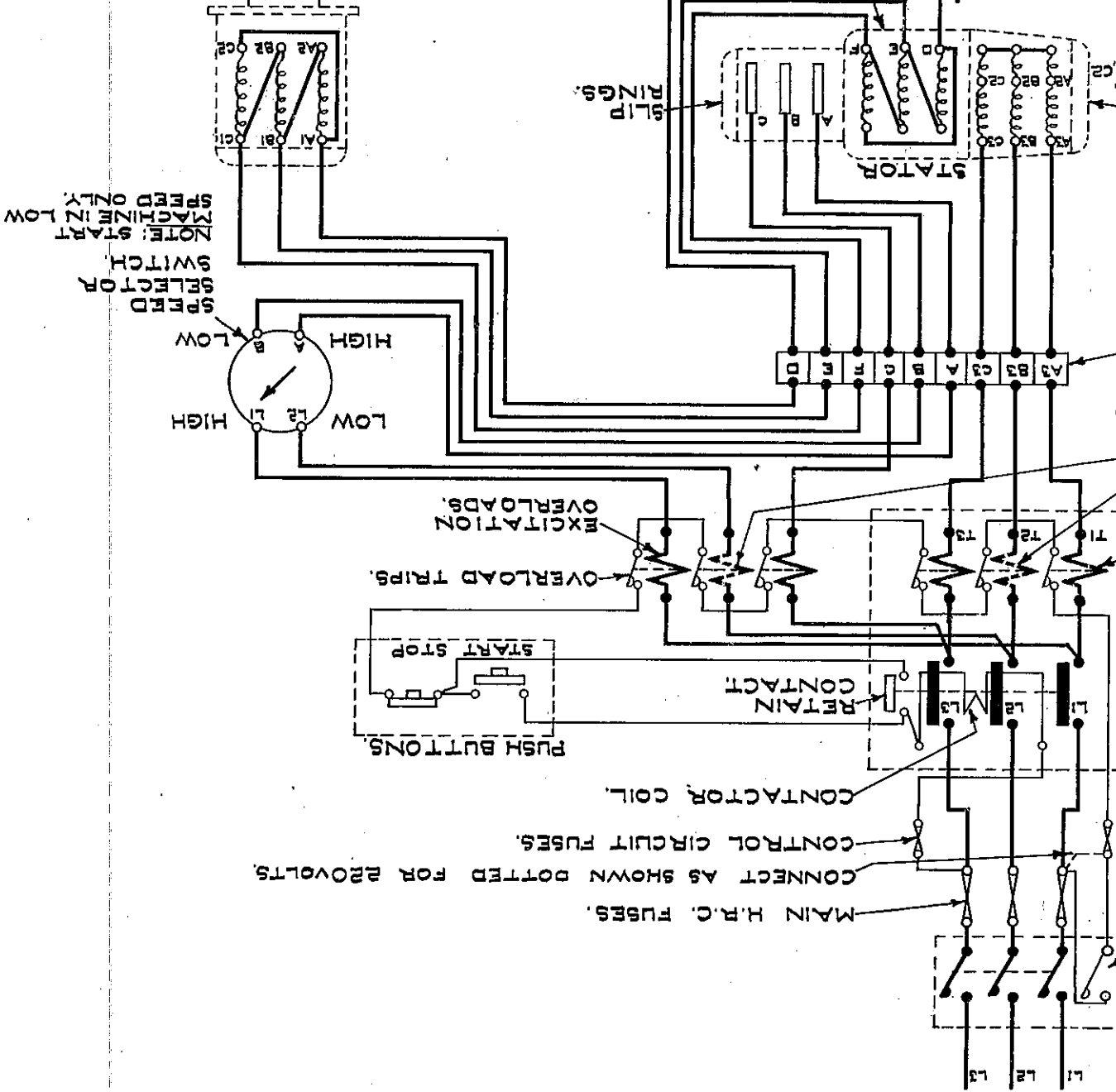
LOW HIGH
L2 L1
HIGH LOW

SPEED
SELECTOR
SWITCH

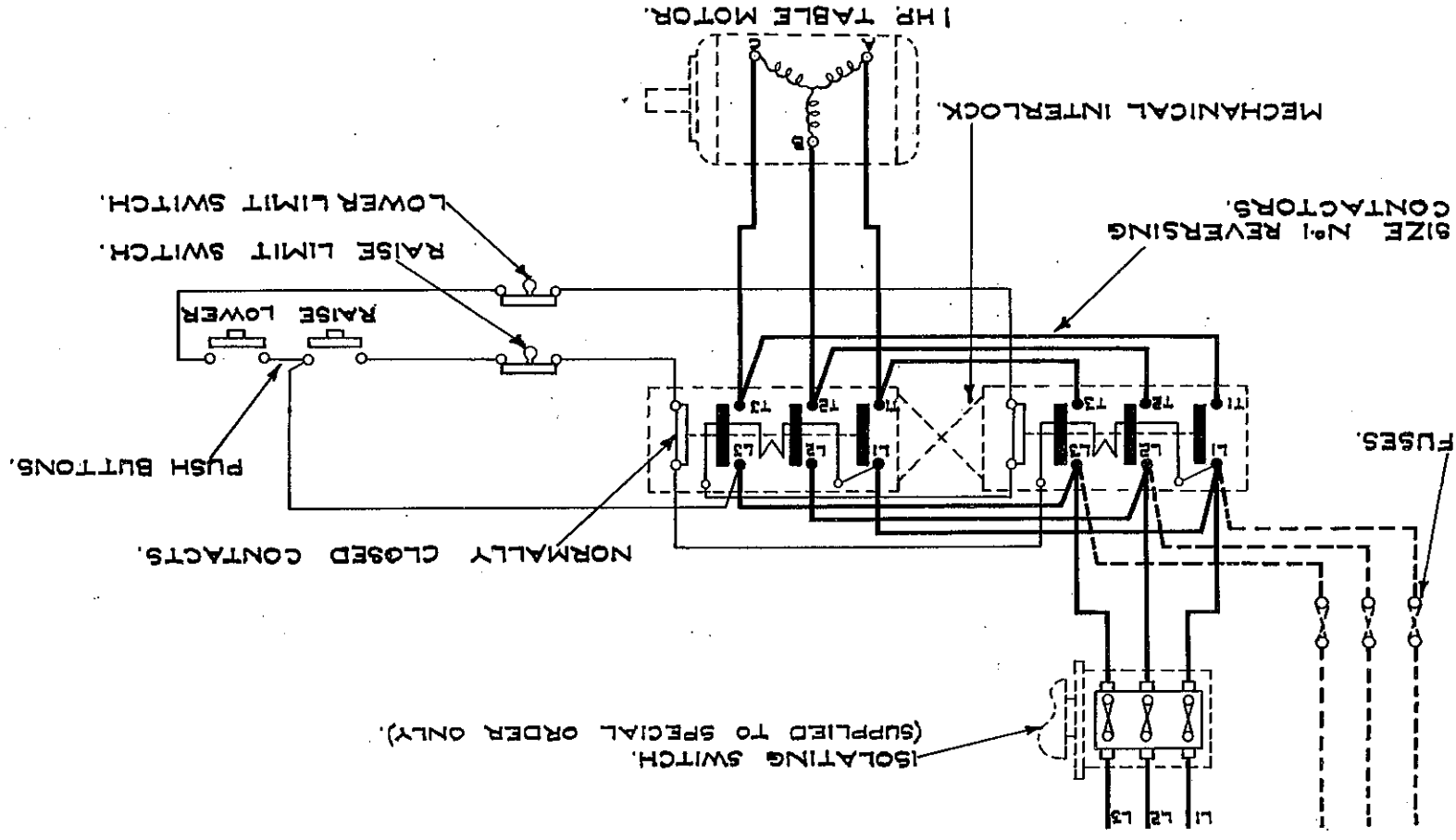
NOTE: START
MACHINE ONLY
SPEED ONLY LOW

ROUTER HEAD.

SELECTOR SWITCH CONNECTIONS.
HIGH CONNECTS L1 TO B, L2 TO A.
LOW CONNECTS L1 TO A, L2 TO B.



INSTALLATION INSTRUCTIONS
 FIT ISOLATING SWITCH NEAR MACHINE SO THAT THE ELECTRICAL GEAR MAY READILY BE ISOLATED FOR INSPECTION PURPOSES. BRING SUPPLY CABLES TO ISOLATING SWITCH AND TO LI-L3 AT CONTACTOR THROUGH CONDUIT WHICH SHOULD BE SCREWED INTO THE MACHINE FRAME AND SECURED BY MEANS OF LOCKNUTS. ENSURE THAT THE DIRECTION OF ROTATION IS CORRECT BEFORE PUTTING THE MACHINE INTO SERVICE. TO REVERSE ROTATION INTERCHANGE LI AND L3 AT ISOLATING SWITCH.
OPERATING INSTRUCTIONS
 TO OPERATE THE TABLE: CLOSE ISOLATING SWITCH AND HOLD 'RAISE' OR 'LOWER' BUTTON DEPRESSED AS REQUIRED. TO STOP THE TABLE: RELEASE THE BUTTON.
 NOTE:
 FUSES SHOWN DOTTED ARE FITTED WHEN THE TABLE IS SUPPLIED WITH A MACHINE.



BLOCK AND STRIP CAPACITY CHART-LC

LENGTH	WIDTH	STRIP	WIDTH
11'-0"	6"	10'-9"	1'-0"
10'-9"	6"	10'-3"	1'-0"
10'-3"	1'-6"	9'-6"	1'-6"
9'-6"	1'-6"	8'-9"	2'-0"
8'-9"	2'-0"	8'-3"	2'-0"
7'-9"	2'-6"	7'-9"	2'-6"
6'-9"	3'-0"	6'-9"	3'-0"
4'-3"	3'-6"	4'-3"	4'-3"
2'-0"	3'-10"	2'-0"	3'-10"

NOTE: IF THE BASEPLATE IS NOT REQUIRED THE TABLE CAN BE FIXED AT RIGHT ANGLES TO THAT SHOWN AND THE FOLLOWING CAPACITIES ARE OBTAINABLE.

