Wadkin

HEAVY DUTY RADIAL ARM ROUTER, TYPE L.Y.R.

PRINCIPAL DIMENSIONS AND CAPACITIES.

	English	Metric
Maximum effective radius of stroke	5'9½"	1765mm
Minimum effective radius of stroke	2'9½"	851mm
Rise and fall of head on slide	12"	305mm
Stroke movement of head	4"	102mm
Horse power of spindle motor) On 50 cycles	12½/10	12½/10
Spindle speeds in r.p.m.) supply.	18,000 and 12,000	18,000 and 12,000
Horse power of spindle motor) On 60 cycles	15/9	15/9
Spindle speeds in r.p.m.) supply.	18,000 and 10,800	18,000 and 10,800
Net weight in cwts.	26½ (2968 lbs.)	1346 kilos
Shipping dimensions in cubic feet.	142	4.02 cu. metres

OPTIONAL EQUIPMENT TO SPECIAL ORDER.

Size of fixed table with packing strips	4'8" x 3'2"	1422mm x 965mm
Maximum height of table	2'11"	889mm
Minimum height of table	2'0"	610mm
Maximum distance from table to head guide bush	2'4"	711mm
Minimum distance from table to head guide bush	4"	102mm
Size of fixed table	7'0" x 3'0"	2134mm x 914mm
Height of table	2'11"	889mm
Maximum distance from table to head guide bush	17"	432mm
Minimum distance from table to head guide bush	1"	25mm
Size of base plate	6'0" x 3'6"	1828mm x 1067mm
Height of base plate	8"	203mm
Maximum distance from base plate to head guide bush	3'8"	1118mm
Minimum distance from base plate to head guide bush	2'4"	711mm

OPTIONAL EQUIPMENT TO SPECIAL ORDER (CONTINUED)

	English	Metric
Size of power rise and fall table	7'0" x 3'0"	2134mm x 914mm
Maximum height of table	2'11"	889mm
Minimum height of table	2'3"	635mm
Maximum distance from table to head guide bush ...	2'1"	686mm
Minimum distance from table to head guide bush ...	1"	25mm
Horse power of motor for rise and fall table	1	1

Dial gauge for indicating working depth and repeating depth.
Equipment for suds mist lubrication to the cutter.
Power lock to the Radial Arm.
Power lock to the Barrel.
Six sided capstan stop bar with six sets of stops.

DETAILS INCLUDED WITH THE MACHINE.

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

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

Maker's Number	Size			Number per Machine	Where used on machine.
	Bore	Outside Diameter	Width		
Wadkin bearing consisting of two steel races and Renold and Coventry Roller Chain 187106, 1.5" Pitch .750" Roller Diameter, 25 Rollers.	10.82"	12.68"	1.13/16"	1	Top bearing for barrel.
SKF. RLS. 32	4"	$7\frac{1}{4}$"	$1\frac{1}{4}$"	1	Bottom bearing for barrel.
FG. 409 Fischer Bearing.	$\frac{7}{8}$"	$3\frac{3}{8}$"	$1\frac{1}{8}$"	2	Semi-circular bearings for slide arm.
FG. 411 Fischer Bearing.	$\frac{7}{8}$"	3"	$1\frac{1}{8}$"	6	Plain bearings for slide arm.
SKF. 06 Thrust Bearing.	$\frac{3}{4}$"	$1\frac{1}{2}$"	$\frac{5}{8}$"	1	For head raising screw.

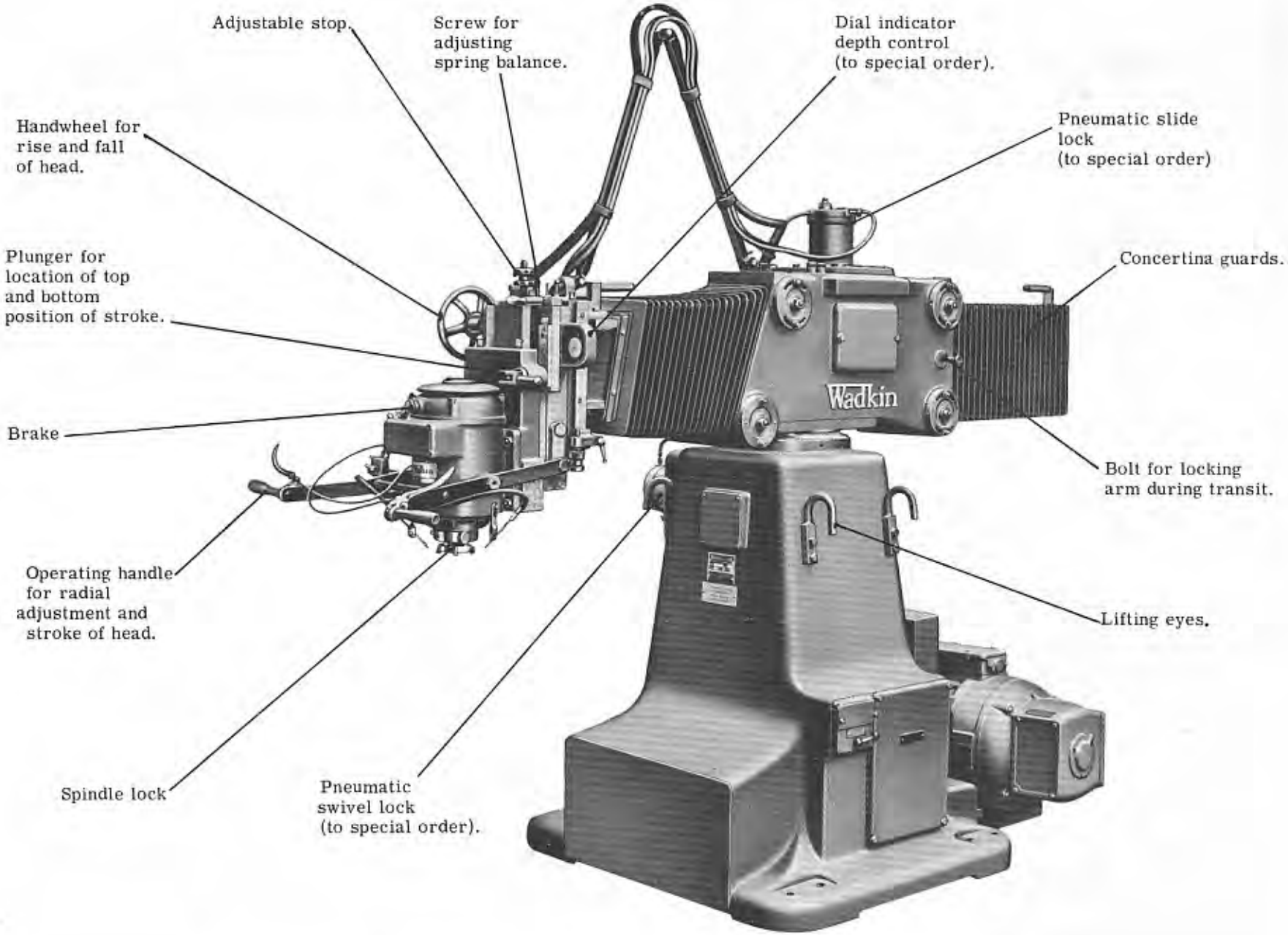
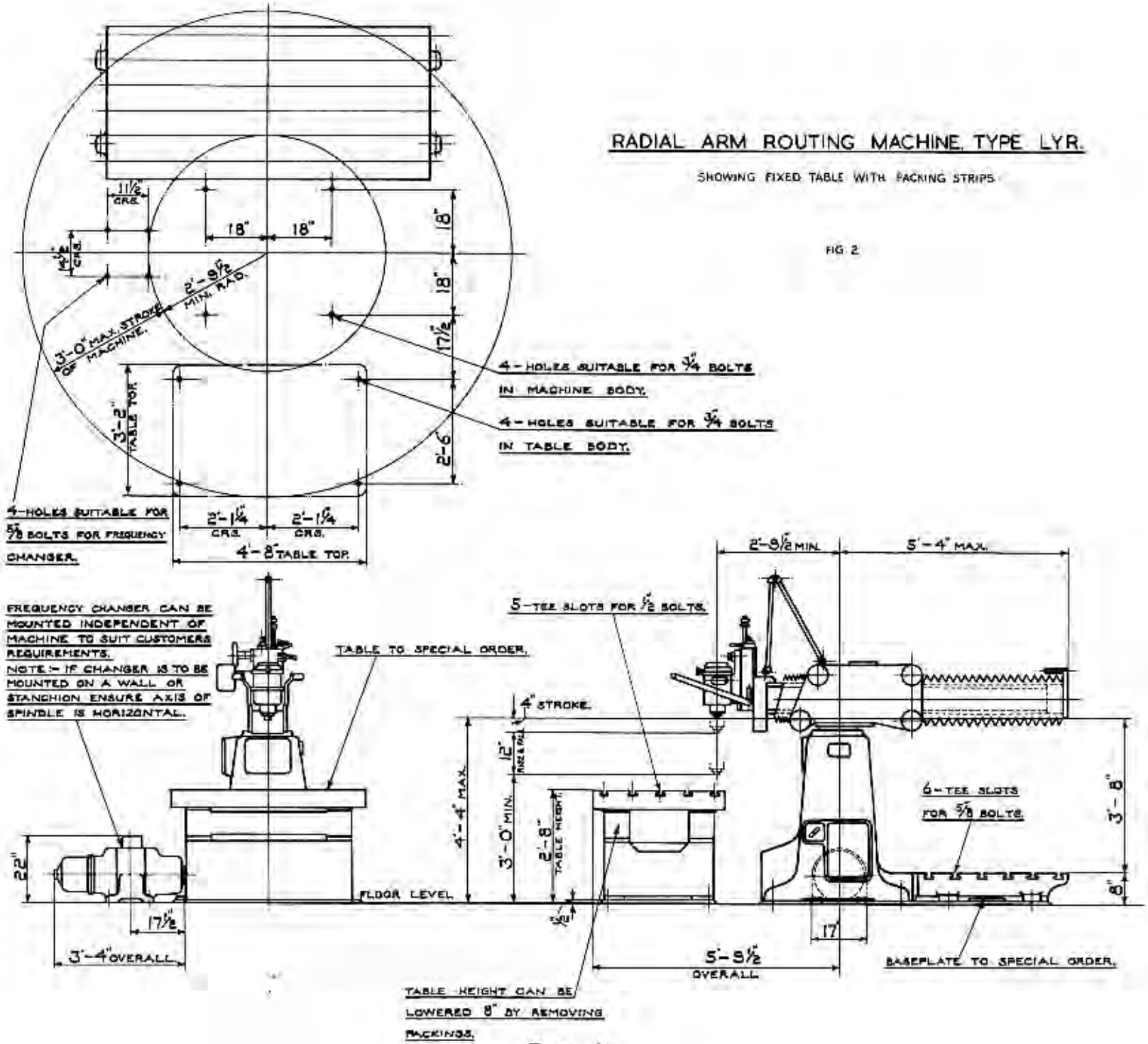


FIG. 1. GENERAL VIEW OF L. Y. R. MACHINE.

RADIAL ARM ROUTING MACHINE, TYPE LYR.

SHOWING FIXED TABLE WITH PACKING STRIPS

FIG. 2



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 gives details of bolt positions 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 baseplate when supplied to special order are despatched separately. Jack screws are provided to enable both the table and baseplate to be levelled to the machine.

CLINOMETER AND DIAL INDICATOR FOR LEVELLING MACHINE AND TABLE.

(See Figs. 3 and 4).

To ensure that the machine is set level a clinometer is used as shown in Fig. 3. It is necessary to remove the covers from surfaces 'A' and 'B' before using the clinometer. Rest the clinometer against surface 'A' and adjust the machine until it is level. Similarly adjust the machine by resting the clinometer against surface 'B'. Then check that the machine has not tilted by resting the clinometer against surface 'A'. The machine is now set square and the table can be levelled by using the clinometer.

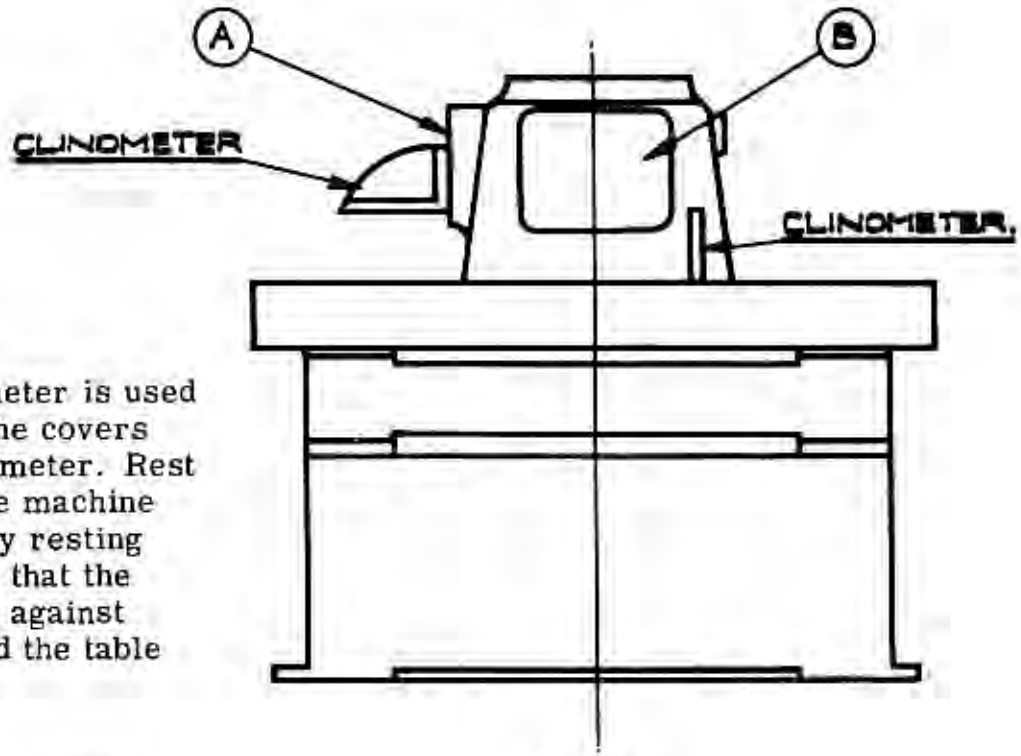


FIG. 3.

CLINOMETER AND DIAL INDICATOR FOR LEVELLING MACHINE AND TABLE
(Continued)

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

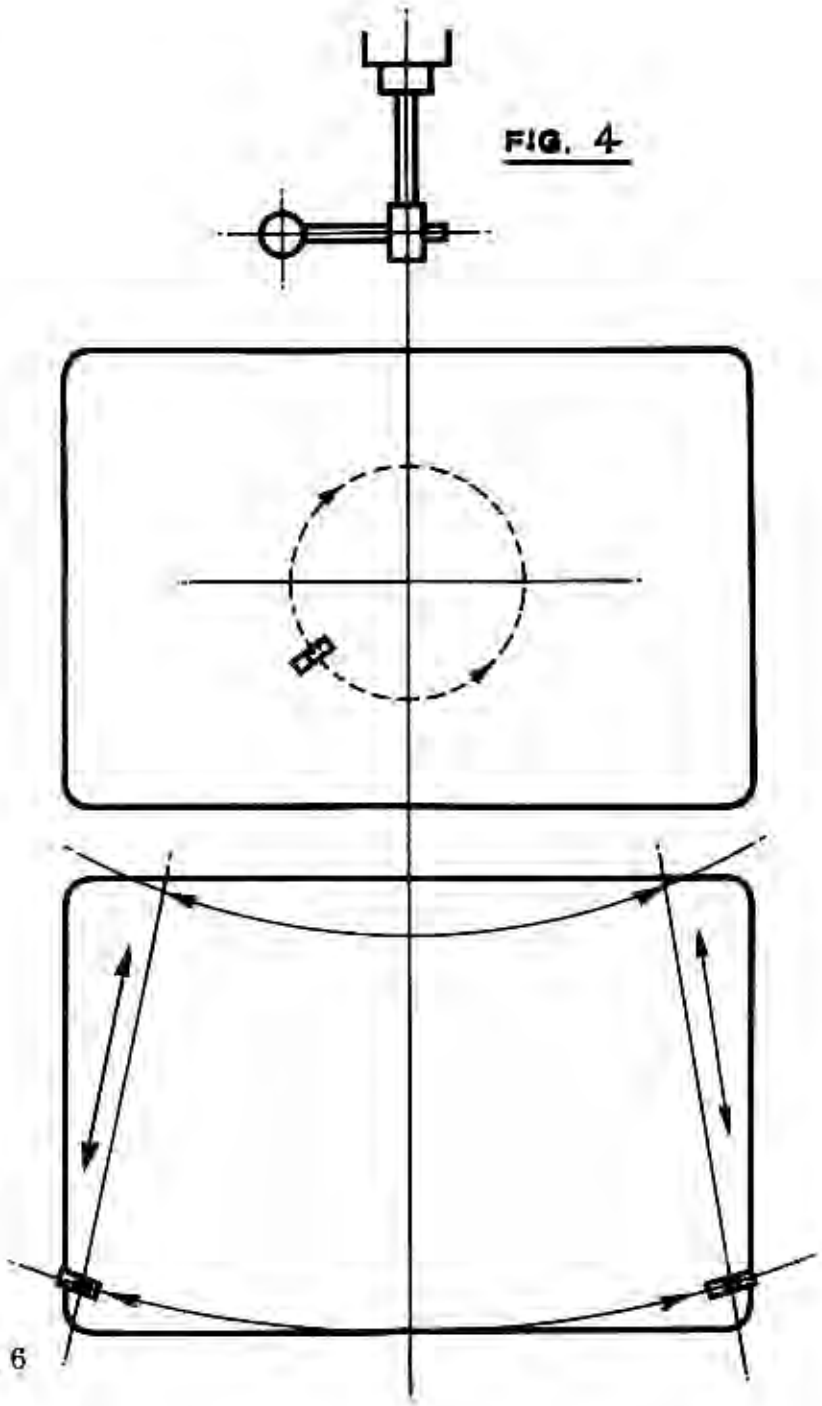
As the slide is set by Wadkin Ltd. before packing the table can be levelled by using a dial indicator as shown in Fig. 4. A rod is secured by the cutter spindle collet and at the bottom is pivotted a rod of radius 10" (254mm) on the end of which is a dial indicator. If the baseplate is supplied it should 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.

WIRING.

For cabling instructions see wiring diagram D. 923 on page 20. Refer to diagram D. 909 on page 21 for wiring details of rise and fall table supplied to special order.

FIG. 4



FOUNDATION PLANS OF TABLES SUPPLIED TO SPECIAL ORDER.

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

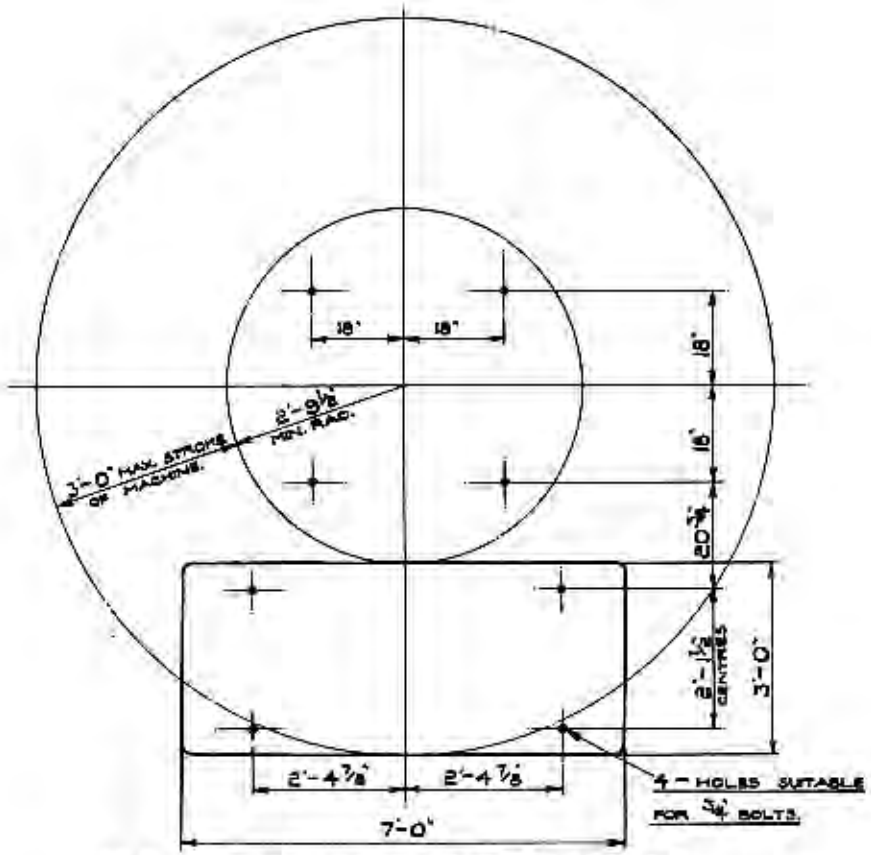


FIG. 5. PLAN OF BOLT POSITIONS FOR FIXED TABLE.

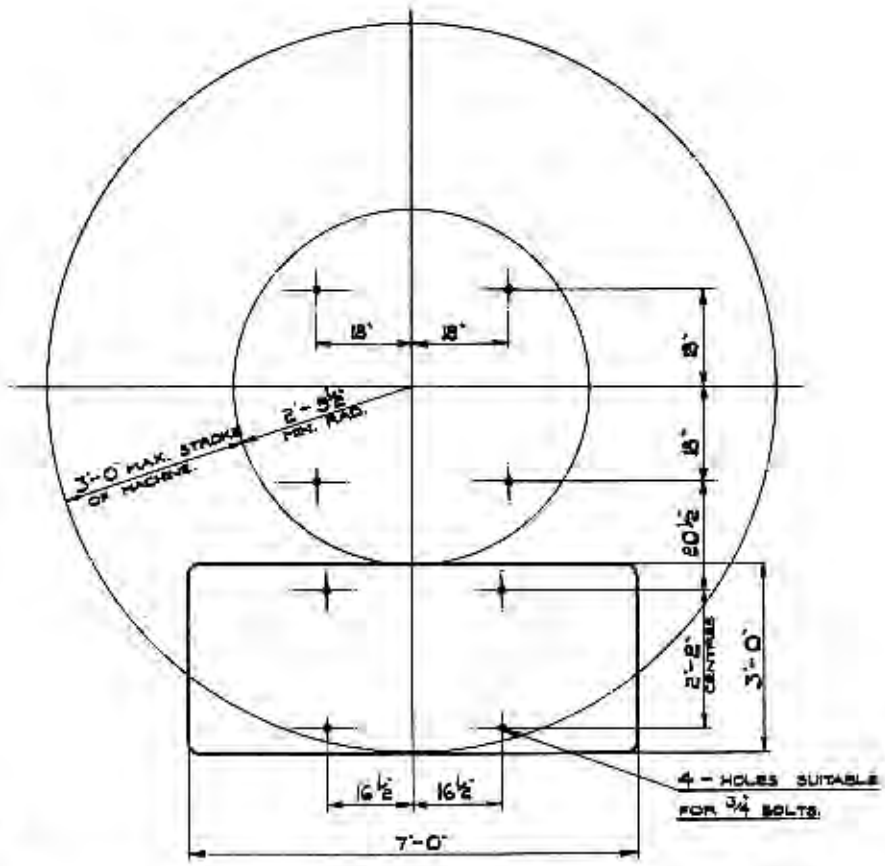


FIG. 6. PLAN OF BOLT POSITIONS FOR RISE AND FALL TABLE.

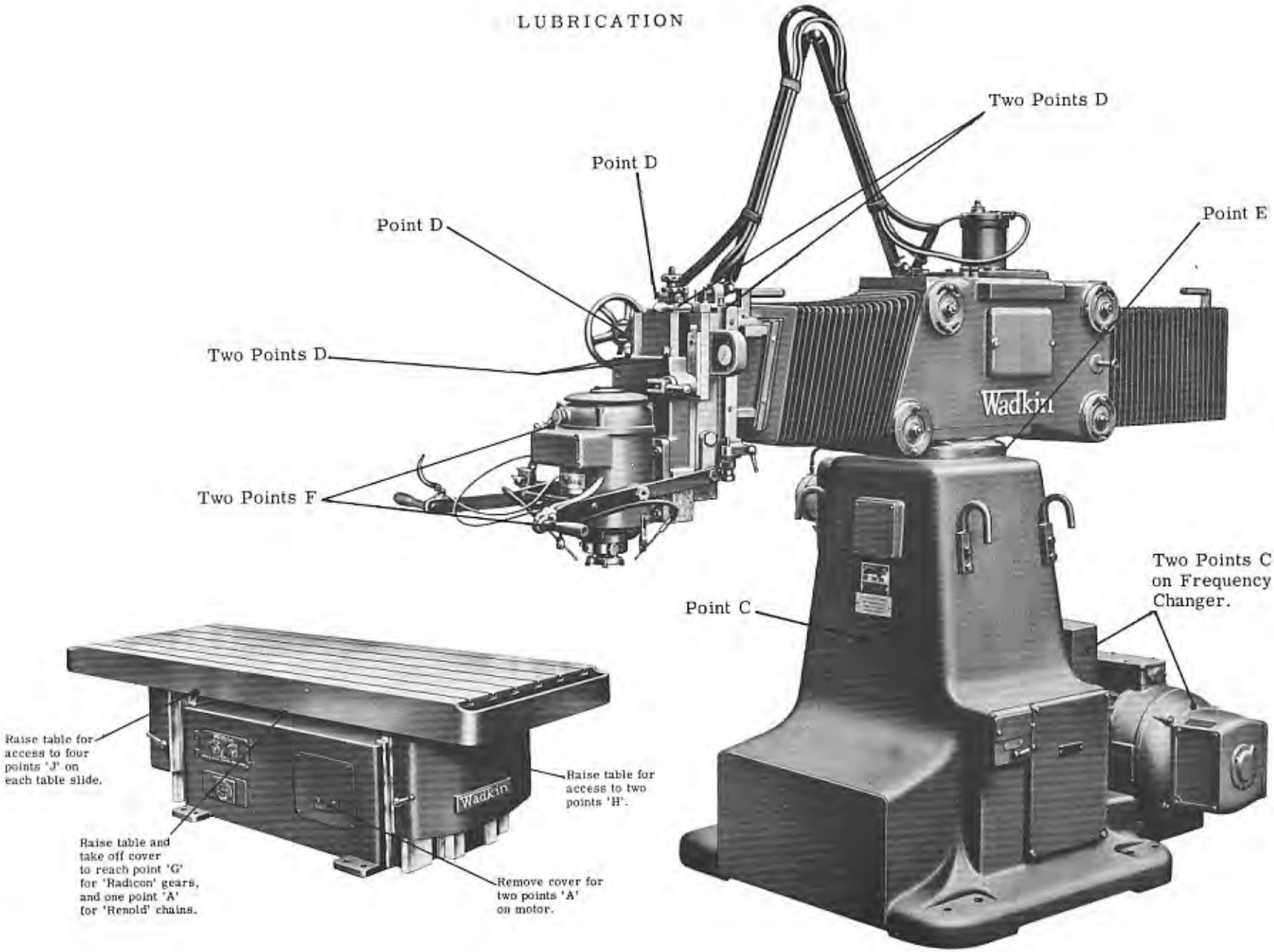


FIG. 7. GENERAL VIEW OF MACHINE AND POWER RISE AND FALL TABLE SHOWING LUBRICATION POINTS.

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 a depression of oil gun daily or 2 to 3 depressions if machine has been standing idle for longer than 48 hours using Wadkin Oil Grade L. 1.
G POINTS Every week top up to oil level with Wadkin Gear Oil Grade L. 2.
H POINTS Fill up to level of notch on dipstick every week 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.

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

THE HEAD SLIDES

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

The front slide carries the router head and has 4" (102mm) of vertical movement controlled by operating handles. A multiple depth stop control as shown in Fig. 9 is fitted on top of the slides. Thus on the 4" (102mm) stroke movement the head can be brought down to different predetermined depths. The dead stops mounted on the quadrant enable four different depths to be obtained without disturbing the adjustable stop. A plunger is fitted for locating the top and bottom positions of the 4" stroke movement.

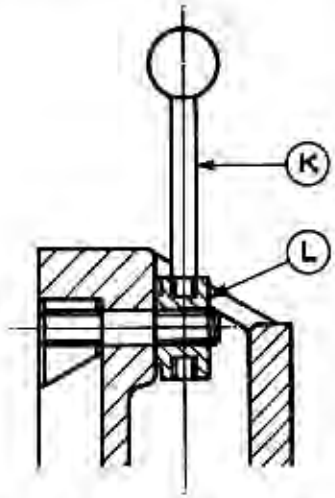


FIG. 8 LOCK FOR RISE AND FALL OF HEAD.

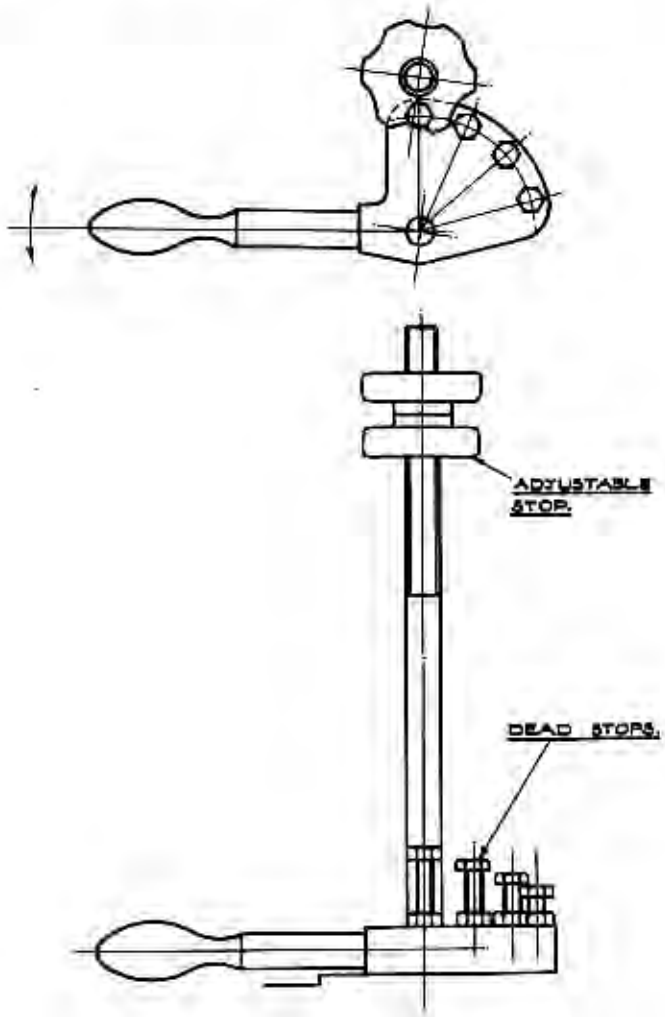


FIG. 9 HEAD STOP

Four nitralloy hardened rods are fitted to the radial arm, one of which is round to control the straight line action, and the remaining three flat. Concertina guards are incorporated to protect the rods and rollers from swarf.

ROLLER BOX (See Figs. 10 and 11).

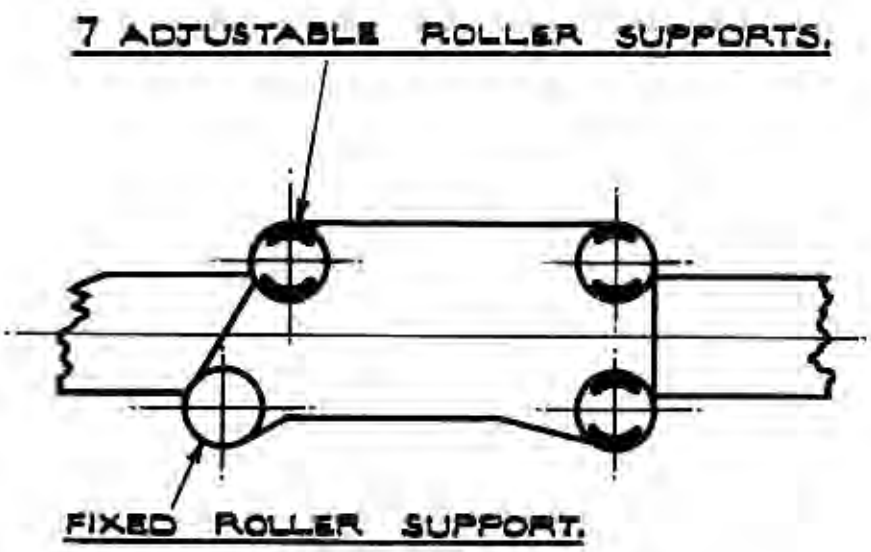


FIG. 10

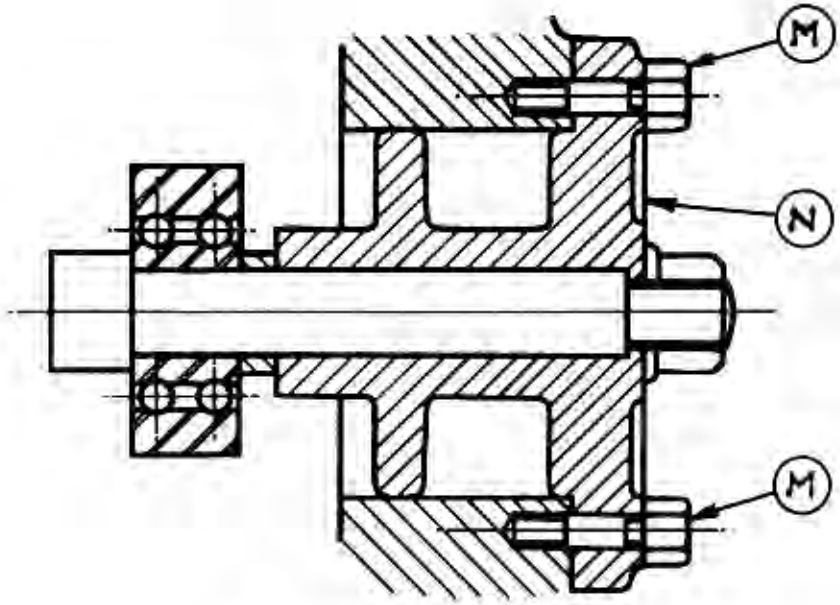


FIG. 11

The nitralloy rods on the radial arm run on two hardened and ground semi-circular profile ball bearing rollers and six similar flat rollers. Seven of the rollers are mounted eccentrically for adjusting the arm, either to align the head up with the table or to take up any wear.

To adjust the rollers, slacken nuts 'M', Fig. 11, and insert a tommy bar in the hole in the eccentric roller support 'N'; turn until the required position is reached then tighten nuts 'M'. The rollers are spaced far enough apart to give the necessary rigidity to the radial arm.

INSTRUCTIONS FOR DISMANTLING ROUTER HEAD.

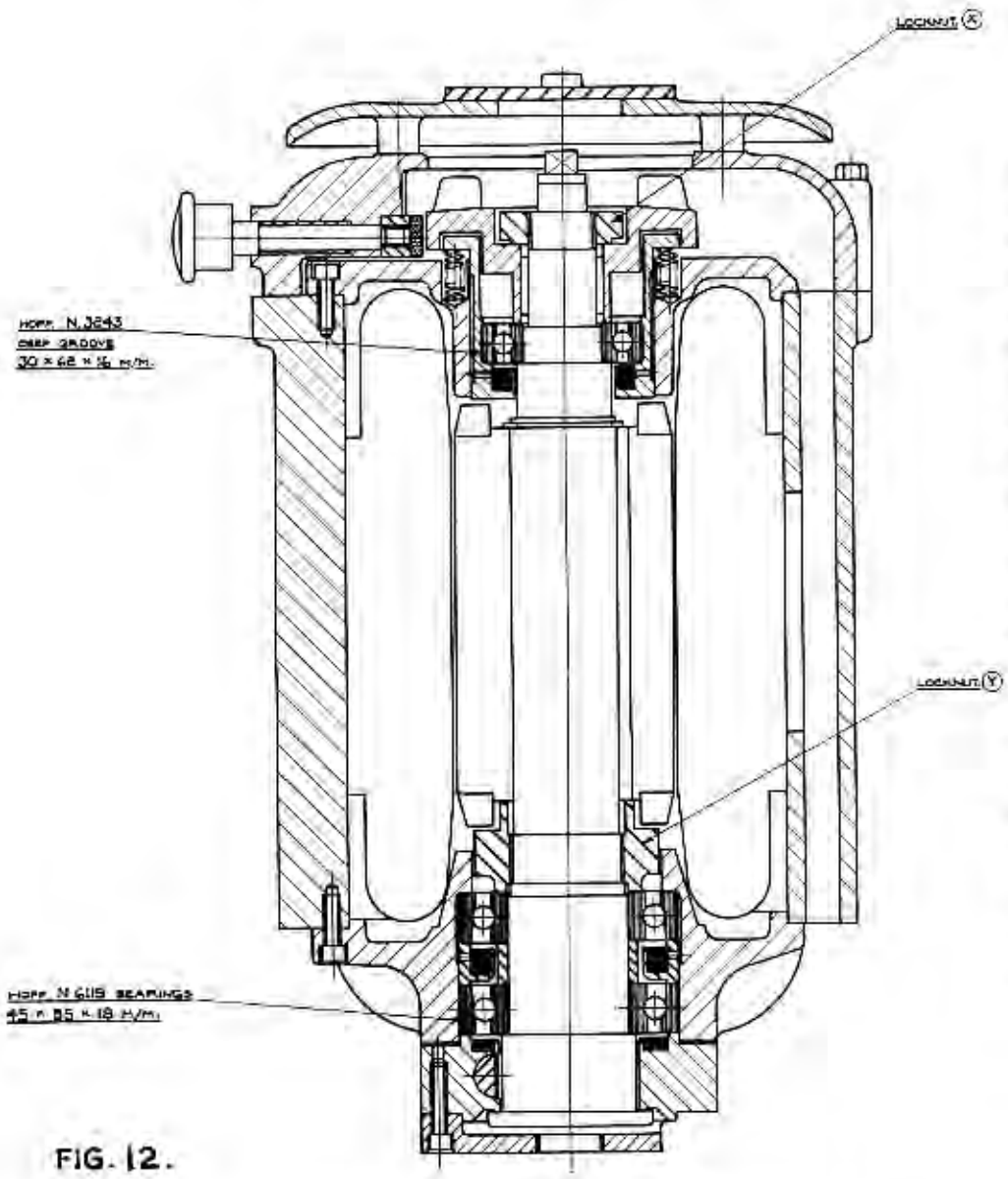


FIG. 12.

SECTION THROUGH CUTTER SPINDLE.

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. 12, 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 Spindle Oil, Grade L1, before re-assembly.
5. Allow no trace of grit or dirt in the bearing housing.

SPINDLE LOCK

The spindle lock should be used to stop the spindle rotating when changing cutters. To lock pull out knob P, Fig. 13. Ensure that the lock is released before starting the head.

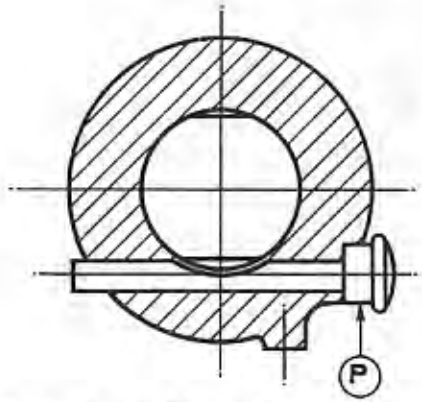


FIG. 13 SPINDLE LOCK.

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. 14 provides an accurate means of depth control. It enables the operator to bring the head back to any pre-determined vertical position to within .001" (.025mm) as indicated on the dial.
An alternative attachment which is supplied to special order consists of a capstan stop bar with six sets of vee shaped sprung stops for ease of passing the plunger of the dial indicator. With this attachment the operator can bring the head back to six different pre-determined vertical positions. These stops can also be arranged to work off a fixed stop.
All the above mentioned methods of depth control are for use when adjusting the secondary slide by handwheel.

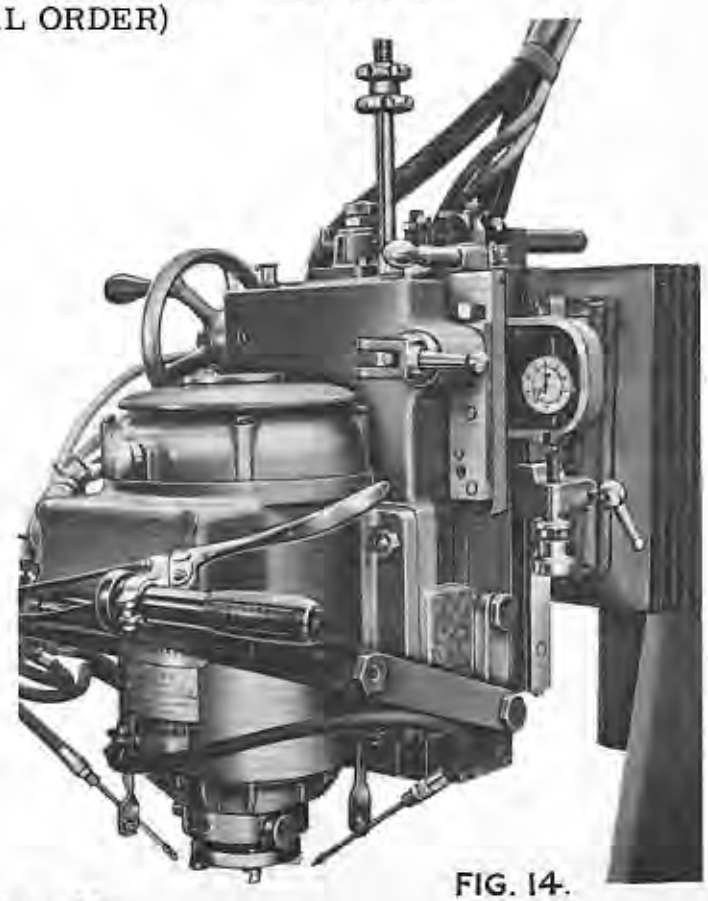


FIG. 14.

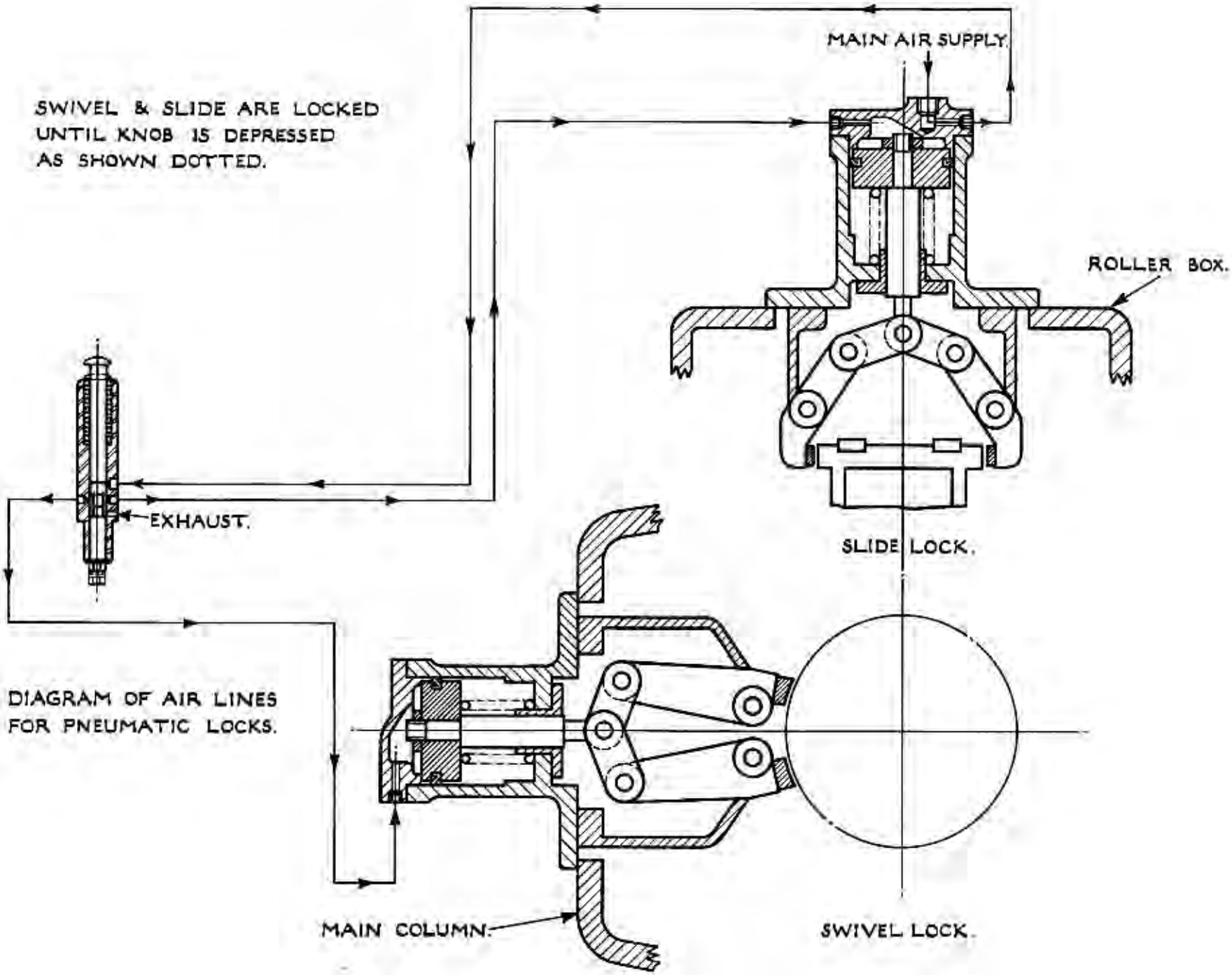

SWIVEL & SLIDE ARE LOCKED
UNTIL KNOB IS DEPRESSED
AS SHOWN DOTTED.
MAIN AIR SUPPLY.
ROLLER BOX.
EXHAUST.
SLIDE LOCK.
DIAGRAM OF AIR LINES
FOR PNEUMATIC LOCKS.
MAIN COLUMN.
SWIVEL LOCK.

FIG. 15.

PNEUMATIC SLIDE LOCK AND PNEUMATIC SWIVEL LOCK. (TO SPECIAL ORDER ONLY).

The pneumatic slide lock and pneumatic swivel lock are used to prevent movement of the arm when routing. The pneumatic cylinder for the slide lock is fitted on top of roller box whilst the pneumatic cylinder for the swivel lock is fitted on the side of the main column. A $\frac{1}{2}$" (13mm) gas hole is provided in the pneumatic slide lock cylinder for the customer to fit his own air inlet. Air pressure of 80lbs. (square inch 5. 62 kilograms/square centimeter is required).

Both locks are operated simultaneously by releasing the pressure valve controlling flow of air to the slide locking arm and the swivel locking arm as shown in the diagram at Fig. 15. The pressure valve is operated by Bowden cable and a lever mounted on the operating handles. If desired a second exhaust valve with Bowden cable and a lever can be fitted permitting the locks to be operated independently. The locks can also be supplied separately.

An example of the usefulness of the slide lock is when pocketing operations are carried out on an airframe component. With the lock applied it is possible to remove metal in the centre of the pocket, where a guide plate cannot be used, by making radial sweeps with the head.

TABLES
(TO SPECIAL ORDER)

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. 16 to 19. Capacities for each table are as follows :-

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" 20"	1" 4"
Fixed without Packing Strips.		2'0"	2'4"	12"
Power Rise and Fall.	7'0" x 3'0"	2'11" 2'3"	17" 2'1"	1" 9"

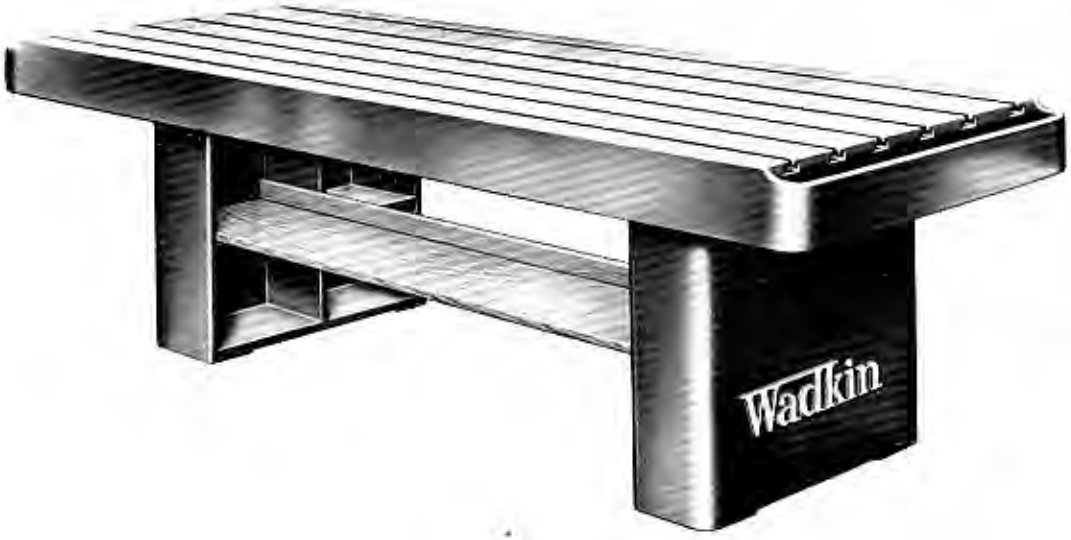


FIG. 16. FIXED TABLE.

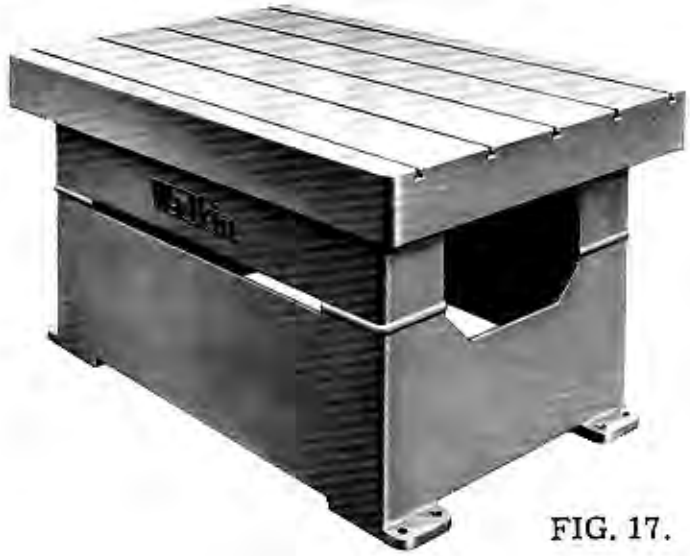


FIG. 17.

FIXED TABLE WITH PACKING STRIPS.

ADJUSTMENT OF FIXED TABLE WITH PACKING STRIPS.

To lower the table proceed as follows :-

1. Unscrew the four hexagon head screws 'Q', Fig. 18.
2. Lift the table top 'R' clear with a crane.
3. Unscrew the four hexagon head screws 'S'.
4. Remove the two packings 'T'.
5. Lower the table top 'R' onto the table body 'U' and secure by screwing the four screws 'S' back in position.
6. Reverse the above procedure when it is required to raise the table.

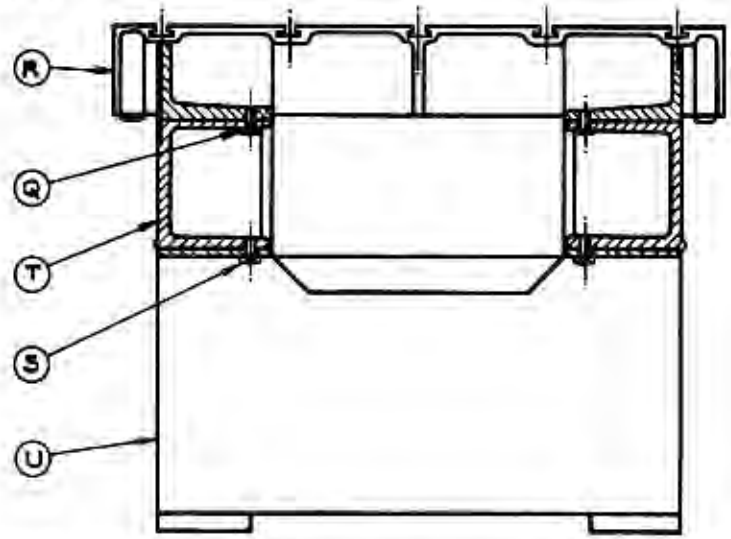


FIG. 18. SECTION THROUGH FIXED TABLE WITH PACKING STRIPS.

POWER RISE AND FALL TABLE (See Fig. 19).

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. 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.

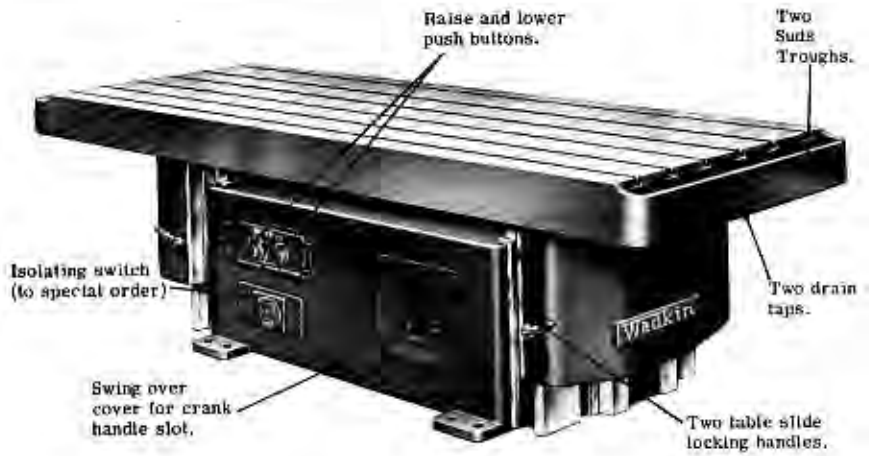


FIG. 19. POWER RISE AND FALL TABLE.

BASE PLATE (TO SPECIAL ORDER)

Fig. 20 shows the base plate which should be used when machining castings too deep to accommodate on the tables offered.

FIG. 20.

SUDS MIST EQUIPMENT (TO SPECIAL ORDER)

The equipment shown in Fig. 21 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 ordinary suds pump and fittings. A shop air line giving approximately 80lbs/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 pressurised 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 pressurised suds for jet delivery through either one or three nozzles.

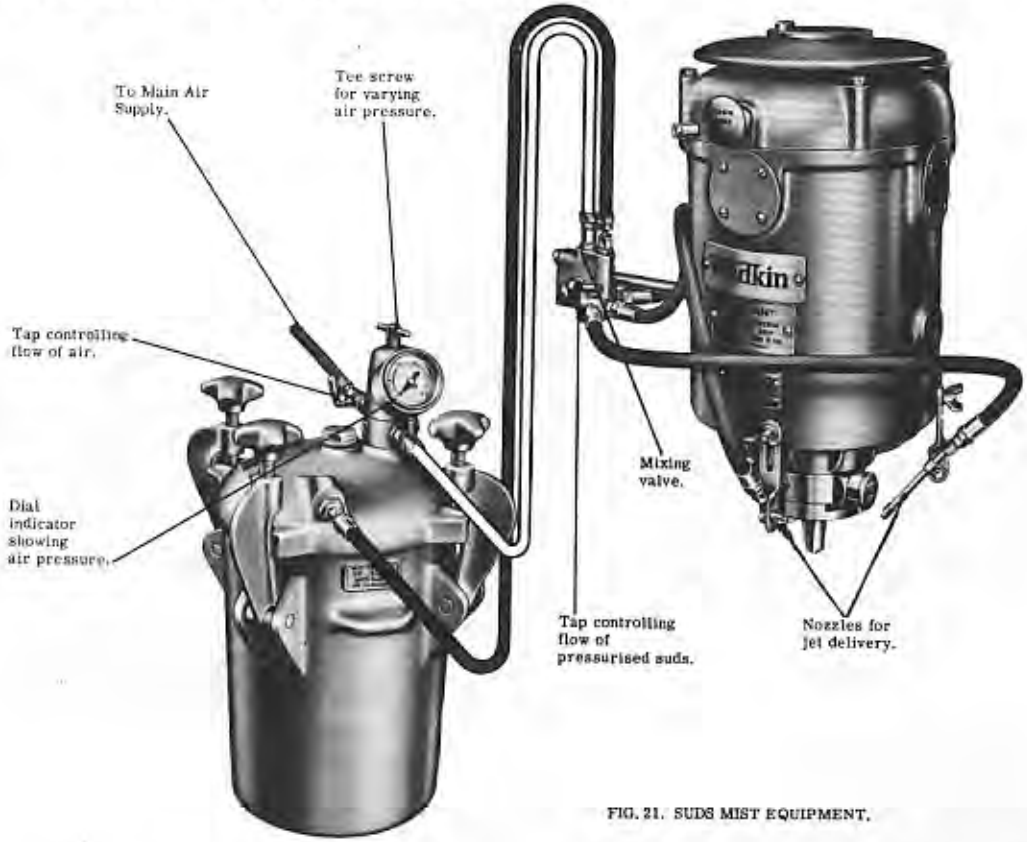


FIG. 21. SUDS MIST EQUIPMENT.

FIG. 21.

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. Remake the following connections :-

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

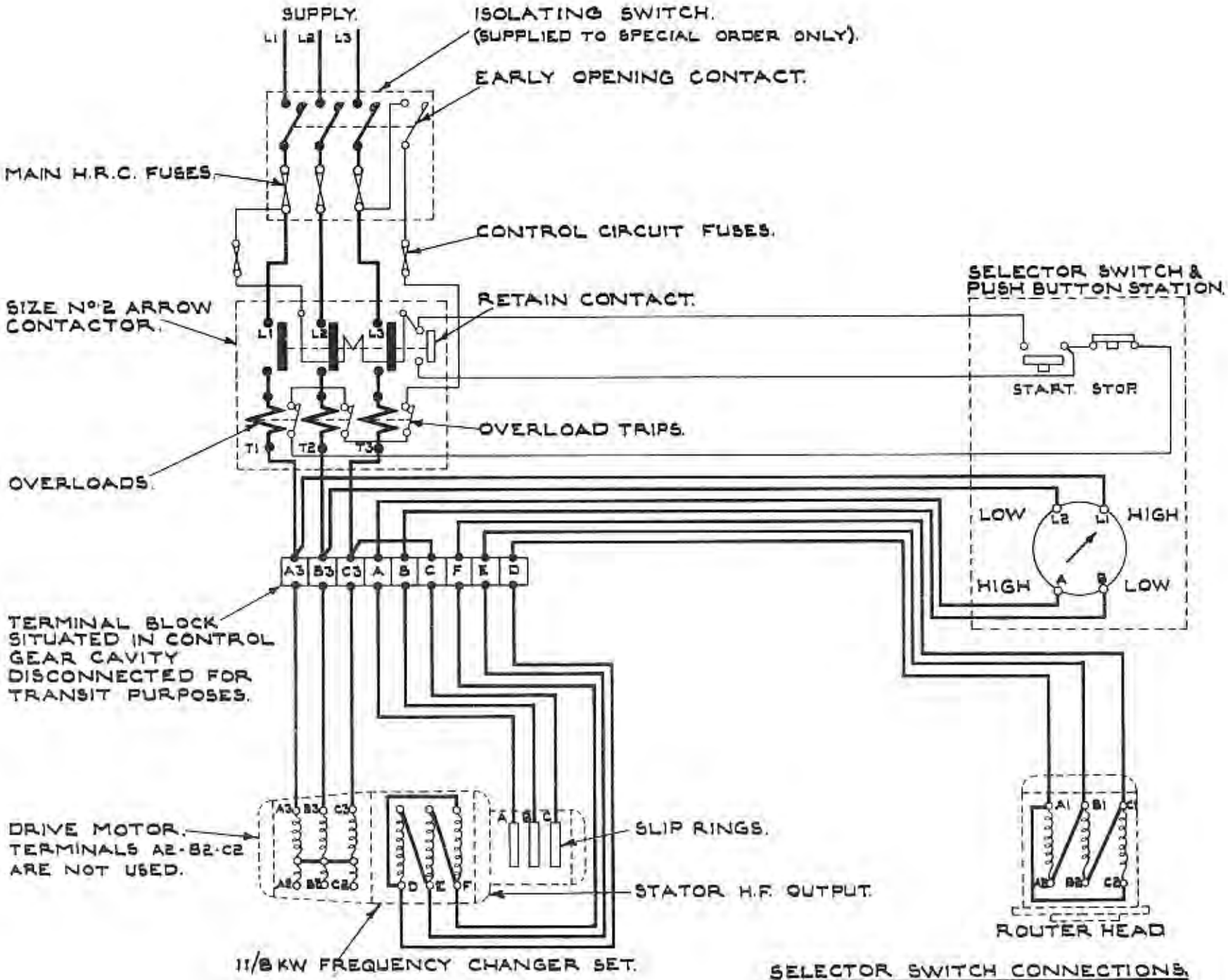
Ensure that the direction of rotation is correct before putting the machine into operation, to reverse rotation interchange L1 and L3 at isolating switch.

OPERATING INSTRUCTIONS.
To start machine close isolating switch. To start head motor select speed required and press start button. To stop head motor press stop button. To lock off head motor press and turn stop button, which must be released before a start can be made.

OVERLOAD.
Should the machine stop due to overload, wait for a short time to allow heaters to cool, then start in the usual manner.

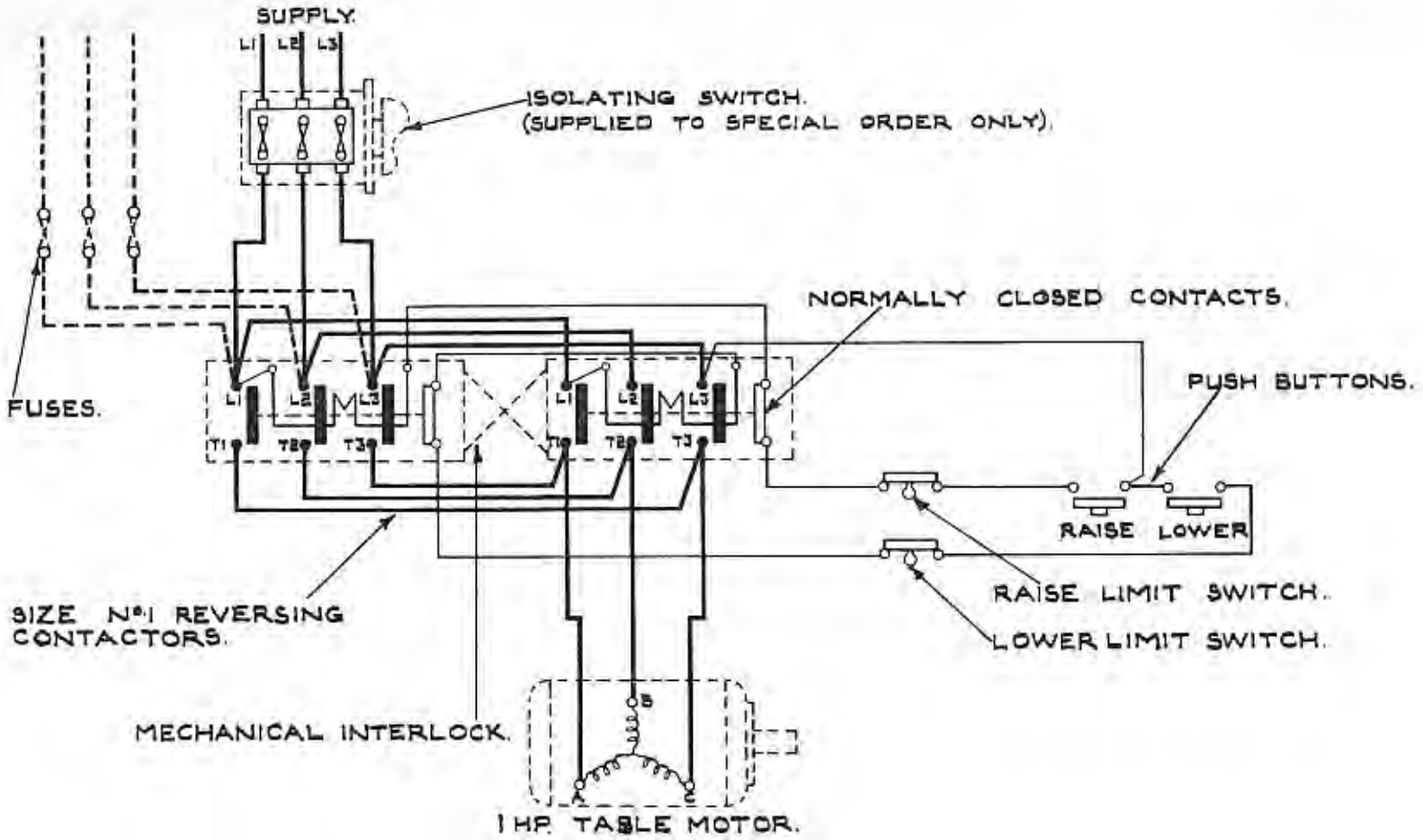
GENERAL.
Check earth connection from time to time.

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.



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

D.923.



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 L1-L2-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 L1 AND L3 AT ISOLATING SWITCH.

OPERATING INSTRUCTIONS.

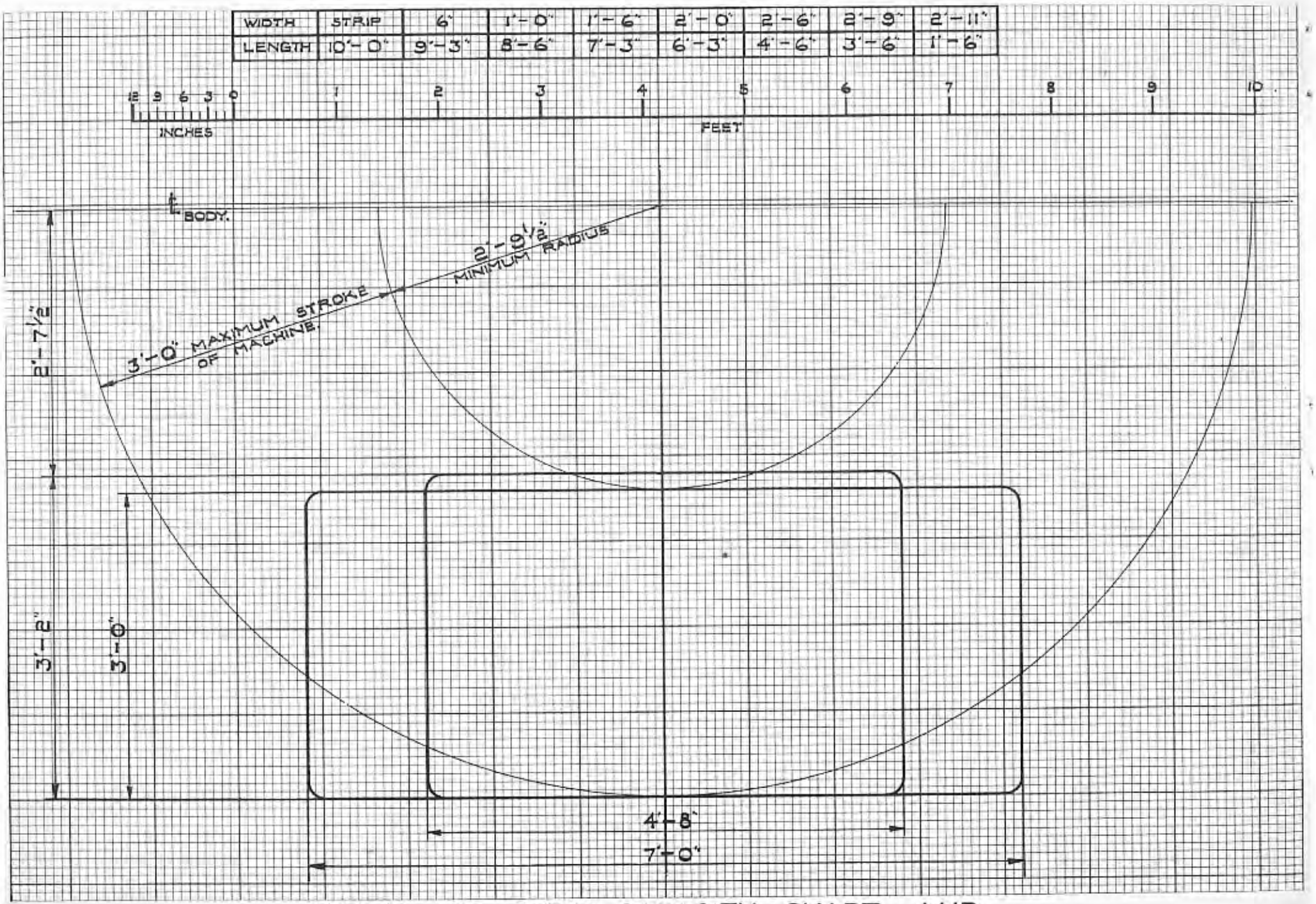
TO OPERATE THE TABLE: CLOSE ISOLATING SWITCH AND HOLD 'RAISE' OR 'LOWER' BUTTON DEPRESSED AS REQUIRED. TO STOP THE TABLE: RELEASE THE BUTTON.

NOTE:

FUSES SHOWN DOTTED ARE FITTED WHEN THE TABLE IS SUPPLIED WITH A MACHINE.

D.909

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



BLOCK AND STRIP CAPACITY CHART - LYR.