

Wadkin

HIGH SPEED ROUTING MACHINE, TYPE L. H. 1. VERTICAL MILLING MACHINE, TYPE L. H. 2.

MILLING AND RECESSING MACHINE, TYPE L. H. 3.

The three machines are identical with the exception of the cutterheads which are interchangeable.

PRINCIPAL DIMENSIONS AND CAPACITIES.

	L. H. 1.		L. H. 2. and L. H. 3.	
	English	Metric	English	Metric
Maximum rise and fall of head	12"	305mm	12"	305mm
Minimum distance standard table to spindle nose	3"	76mm	4"	102mm
Maximum distance standard table to spindle nose	15"	381mm	16"	406mm
Maximum diameter of face mill	5 $\frac{1}{4}$ "	133mm	12"	305mm
Centre line of spindle to main column	18"	457mm	18"	457mm
Spindle nose taper	20° COLLET TAPER		NO. 40 INTERNATIONAL	
Working surface of table	3'0" x 13"	914mm x 330mm	3'0" x 13"	914mm x 330mm
Height of table	2'11"	889mm	2'11"	889mm
Longitudinal traverse of table	2'6"	762mm	2'6"	762mm
Cross traverse of table	12"	305mm	12"	305mm
Height of machine	6'7"	2007mm	6'7"	2007mm
Overall floor space including table movements	7'6" x 6'0"	2286mm x 1829mm	7'6" x 6'0"	2286mm x 1829mm
Net weight in cwts.	36 (4032lbs)	1829 kilos	30 (3360lbs)	1524 kilos
Shipping dimensions in cubic feet	148	4.19 cu. metres	132	3.74 cu. metres

	L. H. 1.	L. H. 2.	L. H. 3.
Spindle speeds in r. p. m. on 50 cycles	6,000; 9,000; 12,000 and 18,000	625; 1,250; 2,000 and 4,000	1,000; 2,000; 3,000 and 6,000
Horse power of head on 50 cycles	4/6/8/12	6	6
Spindle speeds in r. p. m. on 60 cycles	5,400; 9,000; 10,800 and 18,000	625; 1,250; 2,000 and 4,000	1,000; 2,000; 3,000 and 6,000
Horse power of head on 60 cycles	3.6/6/7.2/12	6	6

DETAILS INCLUDED WITH ALL MACHINES

Router head and frequency changer (L. H. 1.)	Unit head (L. H. 2. and L. H. 3.)
Control gear	Collets, one each 9/16", 5/8" and 3/4" (L. H. 1.)
Hand operated table	Set of spanners
Lubricating pump and tin of lubricant	Perspex flap guards.
Graduated dials to head rise and fall, also to cross travel of table.	

OPTIONAL EQUIPMENT TO SPECIAL ORDER - AVAILABLE FOR ALL MACHINES.

	Inches per Minute	M/M per Minute
Power feed to table.		
Longitudinal power traverse speeds only (one range to choice)		
Low speed range	3, 4½, 7, 12, 20, 30.	76, 114, 178, 305, 508, 762.
Medium speed range	4½, 7, 12, 20, 30, 45.	114, 178, 305, 508, 762, 1,143.
High speed range	7½, 11, 17, 32, 50, 75.	190, 279, 432, 813, 1,270, 1,905.
Longitudinal and cross power speeds (one range to choice)		
Low speed range	2½, 5, 8, 12, 17, 24.	63, 127, 203, 305, 432, 610.
Medium speed range	5, 10, 16, 23, 34, 48.	127, 254, 406, 584, 864, 1,219.
High speed range	7, 15, 24, 35, 50, 72.	178, 381, 610, 889, 1,270, 1,829.

Set of splash guards.

Equipment for suds mist lubrication to the cutter.

Suds pump and equipment.

Capstan stop bar with six stops and dial gauge for downfeed of head.

Stop bar for longitudinal traverse of table, including dial gauge and slip carriers.

Capstan stop bar with six stops and dial gauge for cross traverse of table.

Precision six station stops, and dial gauge to both power longitudinal and cross traverse of table.

Electrical braking equipment including transformer and control gear.

Rotary table.

Dummy router table 2'6" (762mm) square x 3" (76mm) deep, incorporating two step guide pin arrangement and range of guide pins (L. H. 1.)

Extra large table 3'6" (1067mm) x 18" (457mm) - (L. H. 3.)

CUTTER EQUIPMENT

A complete range of cutter equipment is available for the three types of machine. Full details of equipment for the L. H. 1. machine are given in our Cutter Equipment Booklet No. 849. A further Booklet gives details for the L. H. 2. and L. H. 3. machines.

Vertical slide is common and accommodates three types of head:-
Router Head as shown. (L.H. 1.)
Milling Head. (L. H. 2.)
Milling, Boring and Recessing Head (L. H. 3.)

Handwheel with graduated dial for fine rise and fall. .025" per revolution. (Clockwise to move slide up).

Perspex Guard.

Telescopic Guards for cross slide.

Handwheel with graduated dial for cross traverse $\frac{1}{4}$ " per revolution.

Handwheel with graduated dial longitudinal traverse $\frac{1}{4}$ " per revolution.

Main frame for Machines No. 165 and future.

6 sided Capstan stop bar operating micrometer dial. (Optional extra).

Locking lever for downfeed movement.

Handwheel for rapid rise and fall. $\frac{1}{4}$ " per revolution. (Clockwise to move slide up).

Door for access to control gear cavity.

High/Low range speed selector switch and push button controls.

Power feed motor.

Electrical switch for controlling and reversing power traverse drive motor. (Optional extra).

NOTE: Free standing frequency changer supplied with L. H. 1. machine.

FIG. 1. GENERAL VIEW OF L. H. 1. MACHINE WITH POWER LONGITUDINAL AND CROSS TRAVERSE TO TABLE SUPPLIED TO SPECIAL ORDER. (CONTROLS SHOWN ARE COMMON TO L. H. 1, L. H. 2 AND L. H. 3. MACHINES).

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 for L. H. 2. and L. H. 3. machines. The details are the same for the L. H. 1. machine except that accommodation is required for a free standing frequency changer. 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. Jack screws are provided for accurate levelling of the machine.

WIRING.

For complete cabling instructions and wiring diagrams see pages 28 and 29 for L. H. 1. machines and pages 30 and 31 for L. H. 2. and L. H. 3. machines.

BEARING LIST

Makers' No.	Size			Quantity	Position on Machine
	Bore	Outside Diameter	Width		
SKF. 0. 9	1 $\frac{1}{8}$ "	1 $\frac{7}{8}$ "	$\frac{5}{8}$ "	2	} Raising screw.
SKF. 0. 12	1 $\frac{1}{2}$ "	2. 5/16"	23/32"	2	
INA. SC. 1616	1"	1 $\frac{1}{4}$ "	1"	2	} Shaft for balance weight pulley.
HOFF. N. 3243	30mm	62mm	16mm	1	} Cutter spindle L. H. 1. Machine.
HOFF. N. 6119	45mm	85mm	19mm	1 pair	
HOFF. R. 340. EP.	40mm	90mm	23mm	1	} Cutter spindle L. H. 2. Machine.
HOFF. LS. 16. ACDV. EP.	2 $\frac{1}{4}$ "	4 $\frac{1}{2}$ "	$\frac{7}{8}$ "	1	
SKF. 6209	45mm	85mm	19mm	2	} Cutter spindle L. H. 3. Machine.
SKF. 1208	40mm	80mm	18mm	1	
HOFF. 150. ACDV. EP.	50mm	90mm	20mm	2	} Motor spindle L. H. 2. and L. H. 3. Machines.
SKF. 6308	40mm	90mm	23mm	1	
SKF. 1209	45mm	85mm	19mm	1	} Worm for longitudinal power traverse on standard table.
SKF. RLS. 6.	$\frac{3}{4}$ "	1 $\frac{7}{8}$ "	9/16"	1	
R. & M. MJ. 20	20mm	52mm	15mm	4	} 2 - Input shaft. 2 - Intermediate shaft.
R. & M. MJ. 25	25mm	62mm	17mm	1	} Output shaft.
SKF. N. 205	25mm	52mm	15mm	1	
SKF. 0. 7	$\frac{7}{8}$ "	1 $\frac{5}{8}$ "	$\frac{5}{8}$ "	1	} Main drive shaft
SKF. 0. 8	1"	1 $\frac{3}{4}$ "	$\frac{5}{8}$ "	1	
SKF. 0. 13	1 $\frac{5}{8}$ "	2. 7/16"	23/32"	2	} Sleeve for nut Spiral gear for cross motion
SKF. 0. 16	2"	2. 15/16"	$\frac{3}{4}$ "	2	
R. & M. LJT. 25	25mm	52mm	15mm	1	} Wormshaft for gearbox
R. & M. LJT. 35	35mm	72mm	17mm	1	

Longitudinal
and cross
power traverse
table.



FIG. 3. VIEW OF ROUTER HEAD OF L. H. 1. MACHINE.

SPINDLE LOCK

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

SPINDLE BRAKE

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

LUBRICATION

Two Points B.
Remove top cowl
for access
(See also Fig. 11)

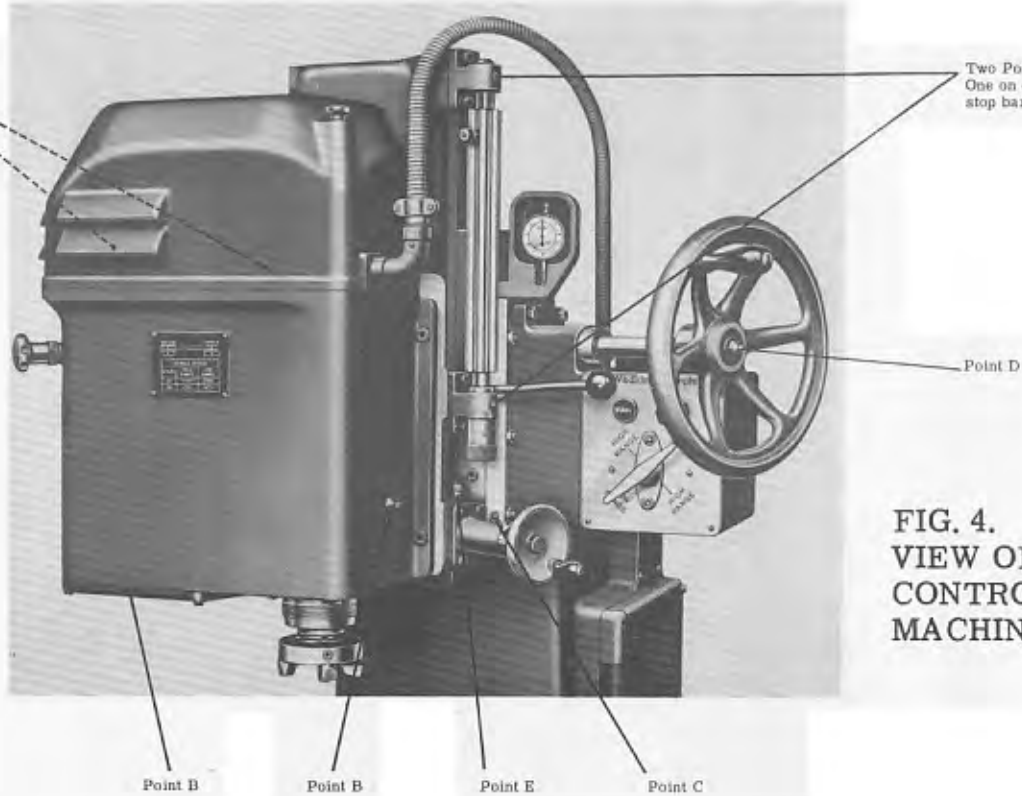


FIG. 4.
VIEW OF HEAD AND
CONTROLS OF L. H. 2.
MACHINE.

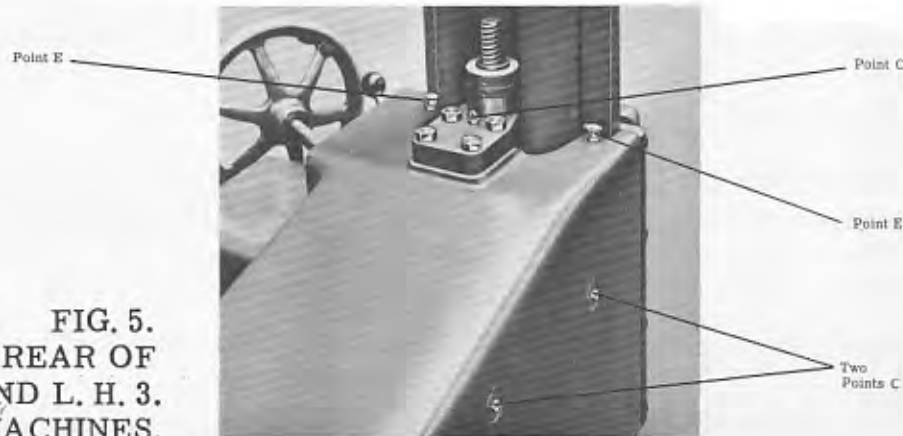


FIG. 5.
VIEW OF TOP REAR OF
L. H. 1, L. H. 2, AND L. H. 3.
MACHINES.

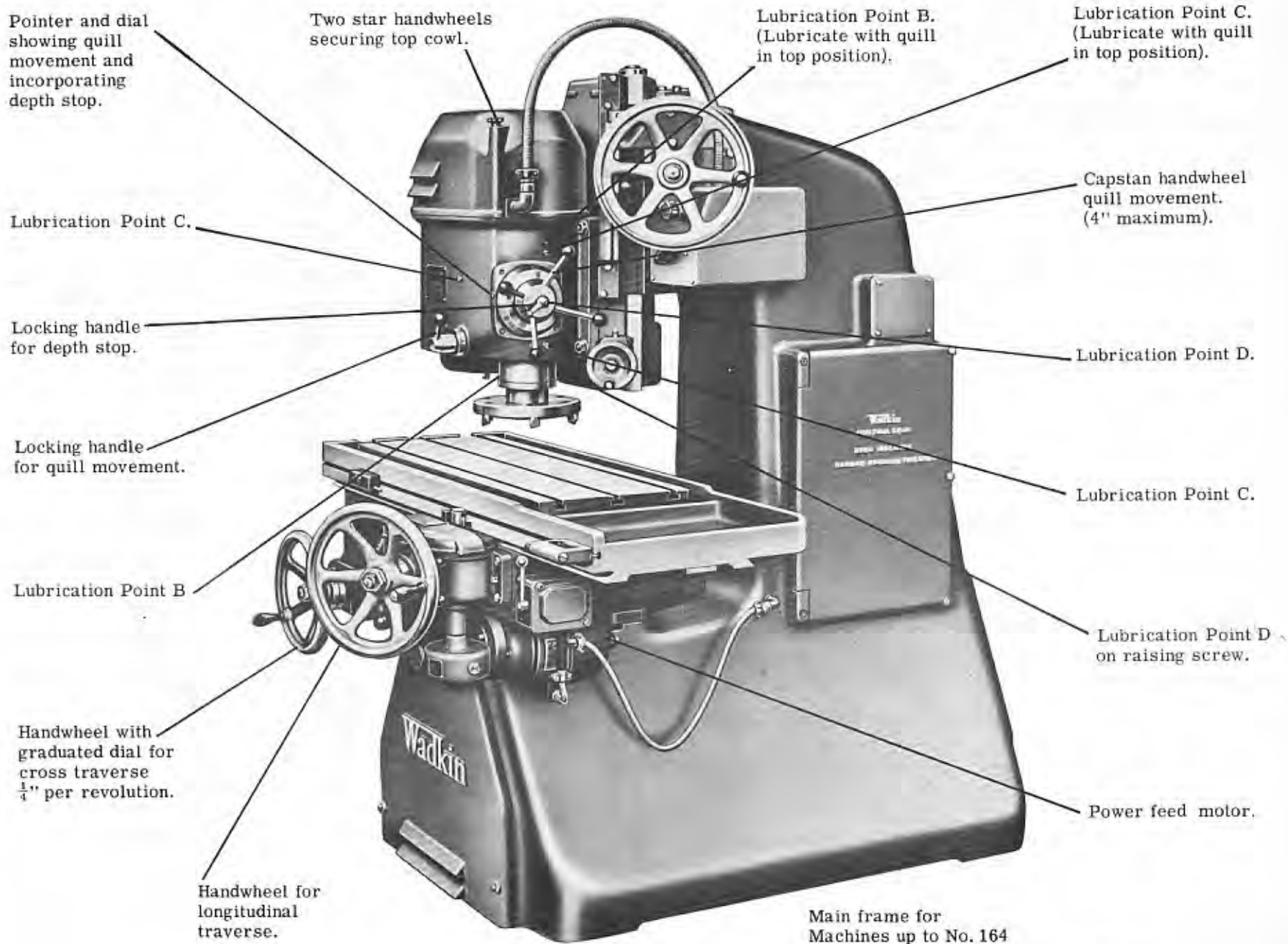


FIG. 6. GENERAL VIEW OF L. H. 3. MACHINE WITH STANDARD TABLE FITTED WITH LONGITUDINAL POWER TRAVERSE TO SPECIAL ORDER.

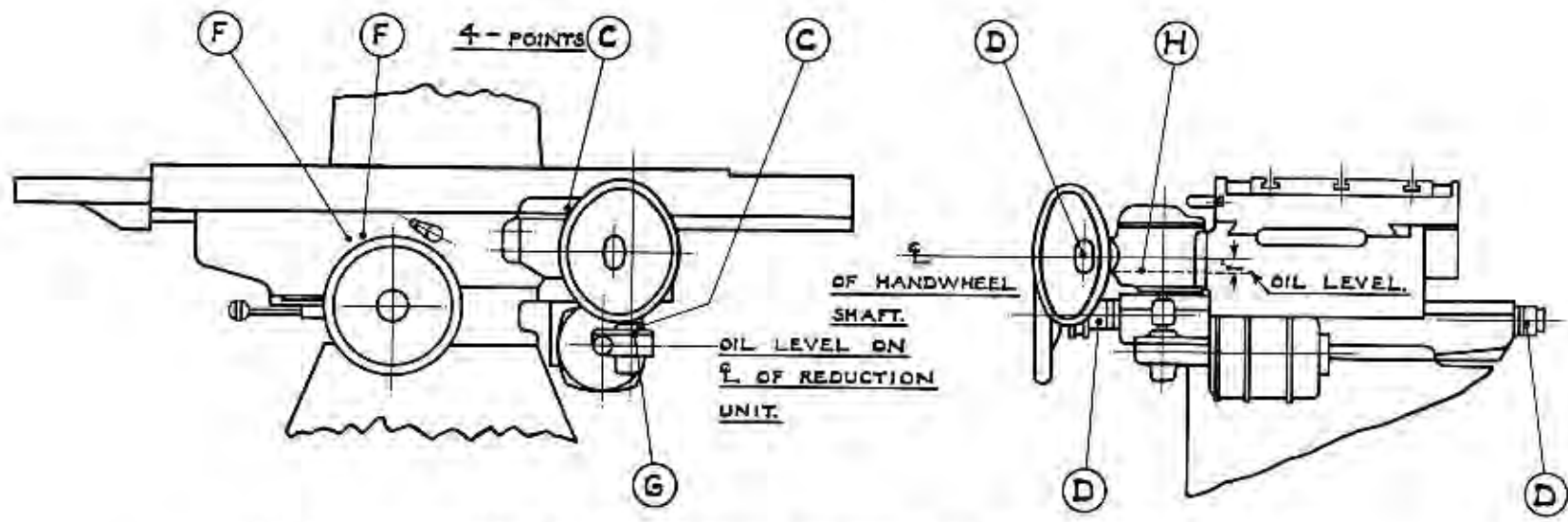


FIG. 7. STANDARD TABLE WITH LONGITUDINAL POWER TRAVERSE.

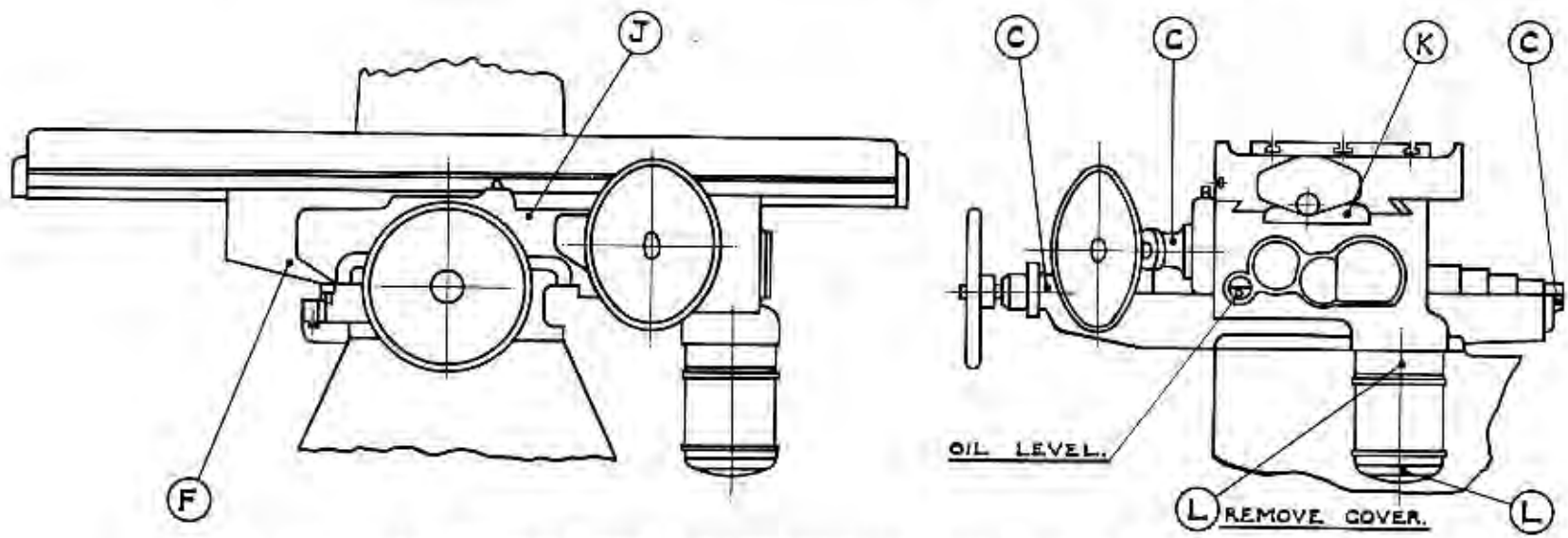


FIG. 8. SPECIAL TABLE WITH LONGITUDINAL AND CROSS POWER TRAVERSE.

LUBRICATION

<p>HEAD OF L. H. 1. MACHINE (See Fig. 3) Two points A.</p>	<p>STANDARD TABLE. Three points D. Two points F.</p> <p>Five points C. } Only when fitted with power One point G. } longitudinal traverse. One point H. }</p>
<p>HEAD OF L. H. 2. MACHINE (See Fig. 4) Four points B.</p>	
<p>HEAD OF L. H. 3. MACHINE (See Figs. 4 and 6). Five points B. Three points C.</p>	<p>SPECIAL TABLE WITH POWER LONGITUDINAL AND CROSS TRAVERSE.</p> <p>Three points C. One point F. One point J. One point K. Two points L.</p>
<p>FREQUENCY CHANGER FOR L. H. 1. MACHINE. Two points B.</p>	
<p>COMMON TO L. H. 1, L. H. 2 AND L. H. 3. MACHINES. Four points C. Two points D. Three points E.</p>	
<p>CAPSTAN STOP BARS (TO SPECIAL ORDER). Two points C for each stop bar; one on each bracket.</p>	

LUBRICATION (Continued)

Every week oil all moving parts not provided with direct oiling points, e.g. plunger for capstan bars, graduated dials, splines on cutter spindle (L.H. 3. machine only) etc. Also renew the thin film of oil on bright parts to prevent rusting. Use Wadkin oil Grade L. 4.

On L.H. 3. head only, every week remove cover at base of the head slide and oil worm and gear liberally with Wadkin oil Grade L. 2.

POINTS A Every working day give one depression of the oil gun using Wadkin oil Grade L. 1. If the machine has been idle for longer than 48 hours give three depressions before starting up.

POINTS B Give two or three depressions of the grease gun every three months using Wadkin grease Grade L. 6.
NOTE: On high speed spindles too much grease will cause the bearings to run hot.

POINTS C Every week give two depressions of the oil gun using Wadkin oil Grade L. 4.

POINTS D Give one or two depressions of the grease gun every month using Wadkin grease Grade L. 6.

POINTS E Fill to the top of the oil cup every week with Wadkin oil Grade L. 4.

POINTS F Every week give six depressions of the oil gun using Wadkin oil Grade L. 4.

POINT G Check the oil level in the sump weekly and make sure that the oil level reaches the centre line of the reduction unit. Top up if necessary through the oil plug with Wadkin oil Grade L. 2.

POINT H Inspect the oil level in the sump every week and make sure that the oil level is within at least 1" of the centre line of the handwheel shaft. Top up as necessary with Wadkin oil Grade L. 2.

POINT J Every week inspect the oil level and fill up to notch on the dipstick if necessary, using Wadkin oil Grade L. 2.

POINT K Check the oil level every week by observing the sight glass. If necessary remove oil plug and top up to the required level with Wadkin oil Grade L. 2.

LUBRICATION (Continued)

POINTS L Unscrew grease cups every three months. Fill with Wadkin grease Grade L. 6 and replace.

NOTE: If the oil gun has been filled with Wadkin spindle oil Grade L. 1 this may be used where Wadkin Machine oil Grade L. 4 is specified, provided that oiling is carried out at more frequent intervals than stated above. Inject a little less oil at a time to prevent flooding.

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 L. 1.	Shell Vitrea Oil 27	Mobil Oil D. T. E. (Light)	Regal Oil B (R. & O.)
Gear Oil Grade L. 2.	Shell Vitrea Oil 69	Mobil Oil D. T. E. /BB	Meropa Lubricant No. 2 Oil
Machine Oil Grade L. 4.	Shell Vitrea Oil 33	Mobil "Vactra" Oil (Heavy Medium)	Caltex Aleph Oil
Ball Bearing Grease Grade L. 6.	Shell Nerita Grease 3	Mobilux Grease No. 2.	Regal Starfak No. 2 Grease.

MACHINES WITH LONGITUDINAL POWER TRAVERSE ONLY.

On machines with the type of gearbox shown in Fig. 9, one of three ranges of six speeds may be fitted, viz :-

TRAVERSE SPEEDS (ONE OF THREE RANGES)				
FEED. INCHES PER MINUTE			NUMBER OF TEETH	
Low Range	Intermediate Range	High Range	L. H. Shaft	R. H. Shaft
3	4½	7½	57	18
4½	7	11	51	24
7	12	17	43	32
12	20	32	32	43
20	30	50	24	51
30	45	75	18	57

The six speeds are obtainable by the use of three pairs of pick off gears accessible by removing the cover as shown using the hexagonal key provided.

Each pick off gear of a pair may be used as driver or driven as required. Power movement is controlled by electrical switch (giving forward, off and reverse positions) and by clutch lever; the latter when disengaged allowing quick traverse to be performed by the handwheel. The trip stops may also be positioned where necessary to declutch the feed at the desired position.

LUBRICATION.

MAKE SURE NO CHIPS OR DUST FALLS INTO THE GEARBOX WHEN CHANGING GEARS AND KEEP THE PICK OFF GEARS CLEAN AND WELL GREASED TO PREVENT EXCESSIVE WEAR.

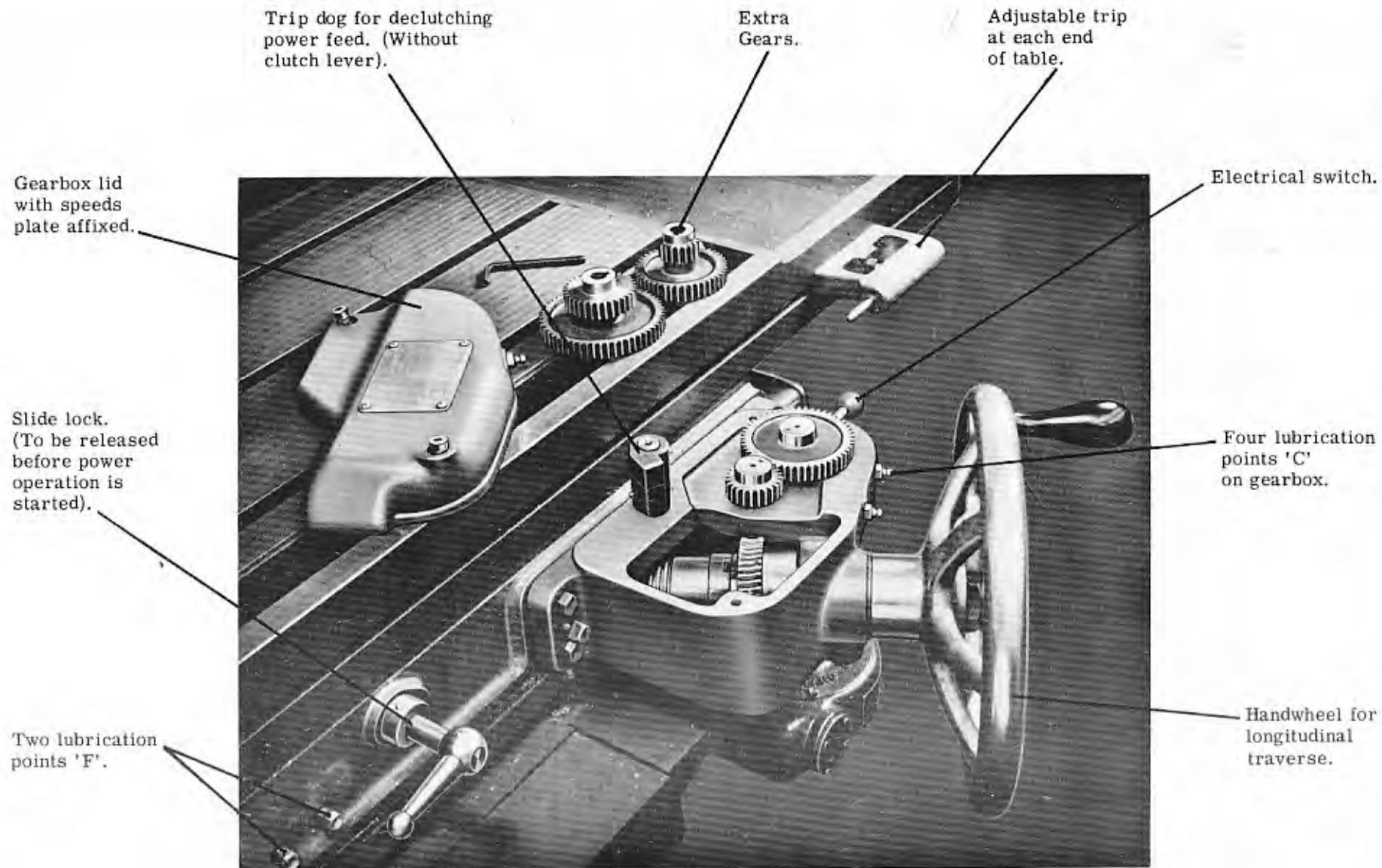


FIG. 9. GEARBOX WITH COVER REMOVED.

MACHINES WITH LONGITUDINAL AND CROSS POWER TRAVERSE.

On machines with the special table shown in Fig. 10, one of three ranges of six speeds may be fitted to choice, viz :-

TRAVERSE SPEEDS (ONE OF THREE RANGES)			
FEED. INCHES PER MINUTE			LEVER POSITIONS
Low Range	Intermediate Range	High Range	
2½	5	7	A1
5	10	15	A2
8	16	24	B1
12	23	35	C1
17	34	50	B2
24	48	72	C2

The power feeds are operated by a $\frac{1}{4}$ H. P. motor driving through a six speed gearbox and feed screws. Two gear levers are provided for selecting the required feed speed. Gears should be changed whilst the machine is slowing down or nearly stopped. Never change gear under load. A lever is fitted for selecting either longitudinal or cross power traverse. Power movement is controlled by electrical switch (giving forward, off and reverse positions) and by clutch lever; the latter when disengaged allowing quick traverse to be performed by either handwheel. The trip stops may also be positioned where necessary to declutch the feed at the desired position. A taper gib is fitted on the cross slide which should be adjusted to take up any wear.

Dial gauge and six station stops for longitudinal traverse. (To special order).

Trip dog for de-clutching power feed.

Dip stick lubrication point J.

Lever for selecting traverse speeds.

Adjustable trip.

Adjustable trip.

Slide lock (To be released before power operation is started).

Dial gauge and six station stops for cross traverse. (To special order).

Lever for selecting power longitudinal or cross traverse.

Clutch lever for de-clutching power feed.

Electrical switch.

Feed speeds plate.

Oil sight.

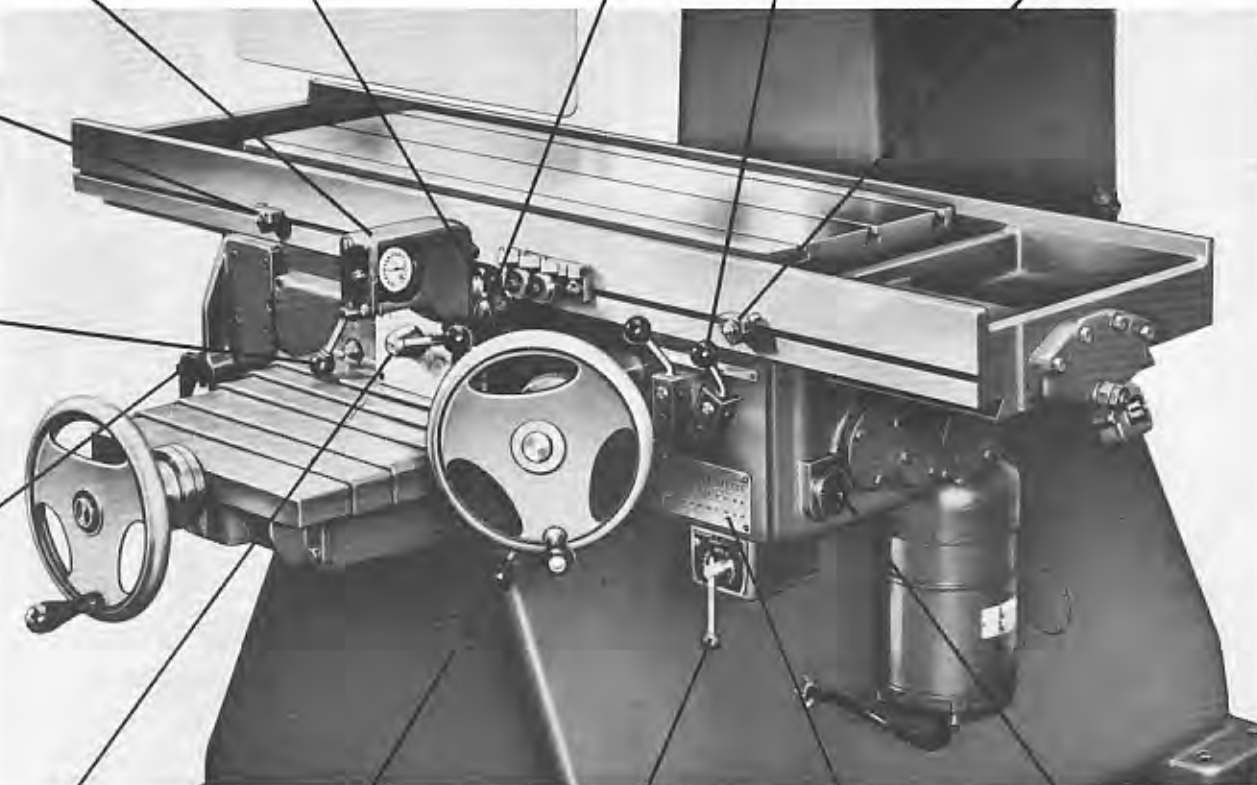


FIG. 10. VIEW OF TABLE WITH LONGITUDINAL AND CROSS POWER TRAVERSE.

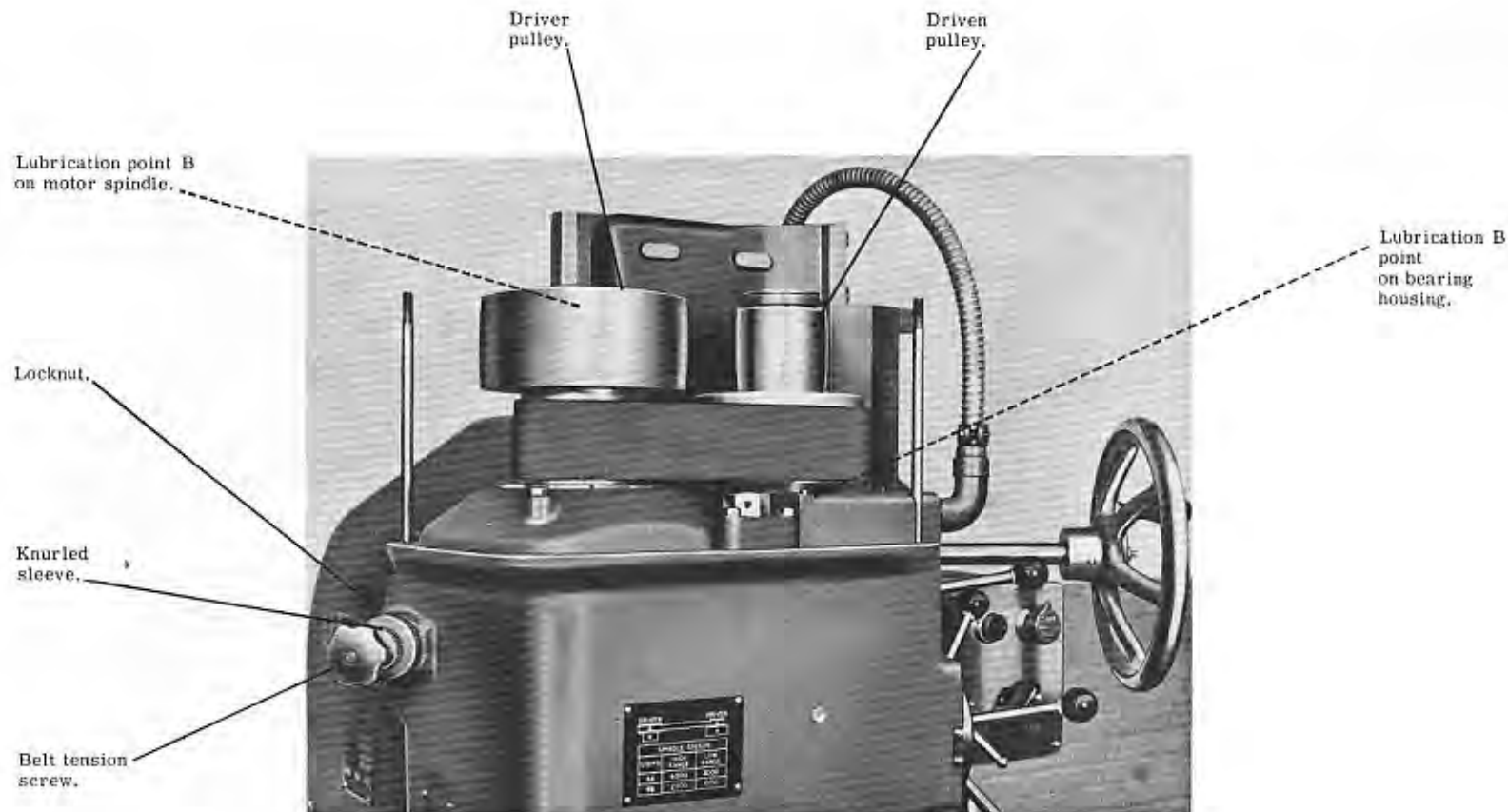


FIG. 11. VIEW OF HEAD ON L. H. 3. MACHINE WITH TOP COWL REMOVED.
(DRIVING ARRANGEMENT IS SIMILAR FOR L. H. 2. MACHINE)

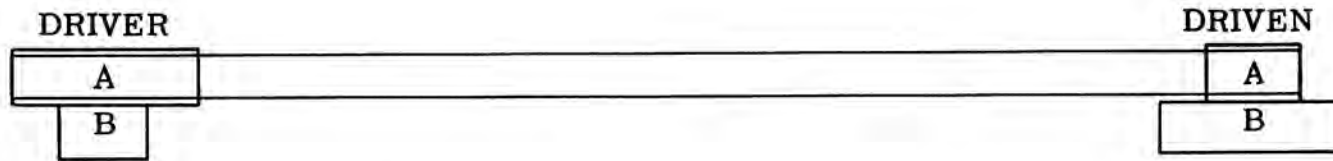
CHANGING THE SPEED AND RE-TENSIONING THE BELT (See Fig. 11).

Speeds Charts are shown on opposite page.

Remove the top cowl exposing the pulleys. Loosen the belt by turning the belt tension screw anti-clockwise. The belt is now free to be moved onto the next step for changing the speed. Finally screw the belt tension screw solid.

If the belt is not correctly tensioned either allowing slip to occur or imposing too great a load on the bearings loosen the locknut. Then adjust the knurled sleeve in, to decrease, or out, to increase, the tension as required.

All belts are marked with two lines approximately 6" (150mm) apart before tensioning, which dimension is increased by $\frac{1}{8}$ " (3mm) when correctly tensioned.



L. H. 2. HEAD

SPINDLE SPEEDS (R. P. M.)		
Steps	High Range	Low Range
AA	4,000	2,500
BB	1,250	625

L. H. 3. HEAD

SPINDLE SPEEDS (R. P. M.)		
Steps	High Range	Low Range
AA	6,000	3,000
BB	2,000	1,000

GENERAL INSTRUCTIONS

VERTICAL HEAD SLIDE MOVEMENT (ALL MACHINES).

A 12" (305mm) movement is provided by means of the two handwheels.

The large handwheel, $\frac{1}{4}$ " (6.35mm) movement per revolution, is used for bringing the cutter into the proximity of the work; the small handwheel then being used for fine adjustment at the rate of .025" (.635mm) per revolution.

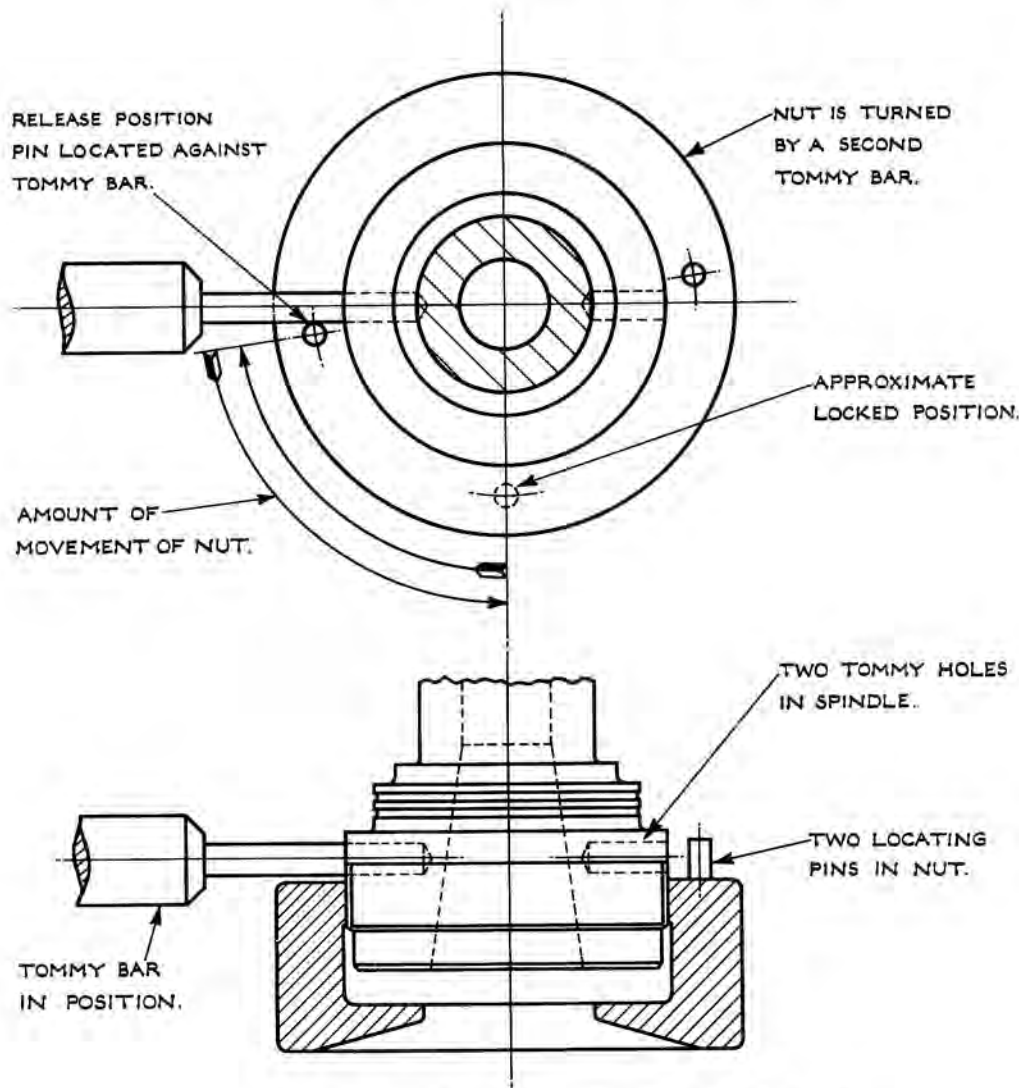
4" (102mm) QUILL MOVEMENT ON L. H. 3. MACHINE ONLY (See Fig. 6)

This is provided for quick drilling, boring or recessing operations and is fitted with a graduated dial incorporating a depth stop. Note that this dial registers the distance to travel before reaching the stop, i. e. the zero mark is reached at the bottom of the stroke.

Set the dial to the required depth re-locking it with the handle provided. The stop will then operate at that depth.

The quill can be locked in any position by use of the lock on the front of the head.

QUICK RELEASE NUT ON THE SPINDLE NOSE (See Fig. 12).



A quick release nut for fitting on the spindle nose is available as an optional extra for Type L. H. 2. and L. H. 3. machines. The tommy bar supplied with the machine is fitted into one of the tommy holes in the spindle and the nut is turned until one of the two pins touches the tommy bar. In this position the tongues of the nut are exactly in line with the slots in the cutter flange which allows the cutter either to be released or engaged as required. To secure the cutter the nut is turned through 90° thus bringing the tongues of the nut over the flange of the cutter and locking it.

NOTE. It is recommended that if additional cutters are required supplies should be obtained from Wadkin Ltd., as cutters from elsewhere would require machining before use with the quick release nut.

FIG.12. QUICK RELEASE NUT ON SPINDLE NOSE
FOR USE ON TYPE LH2 & LH3 MACHINES.

INSTRUCTIONS FOR DISMANTLING ROUTER HEAD, FOR L.H. 1. MACHINE.

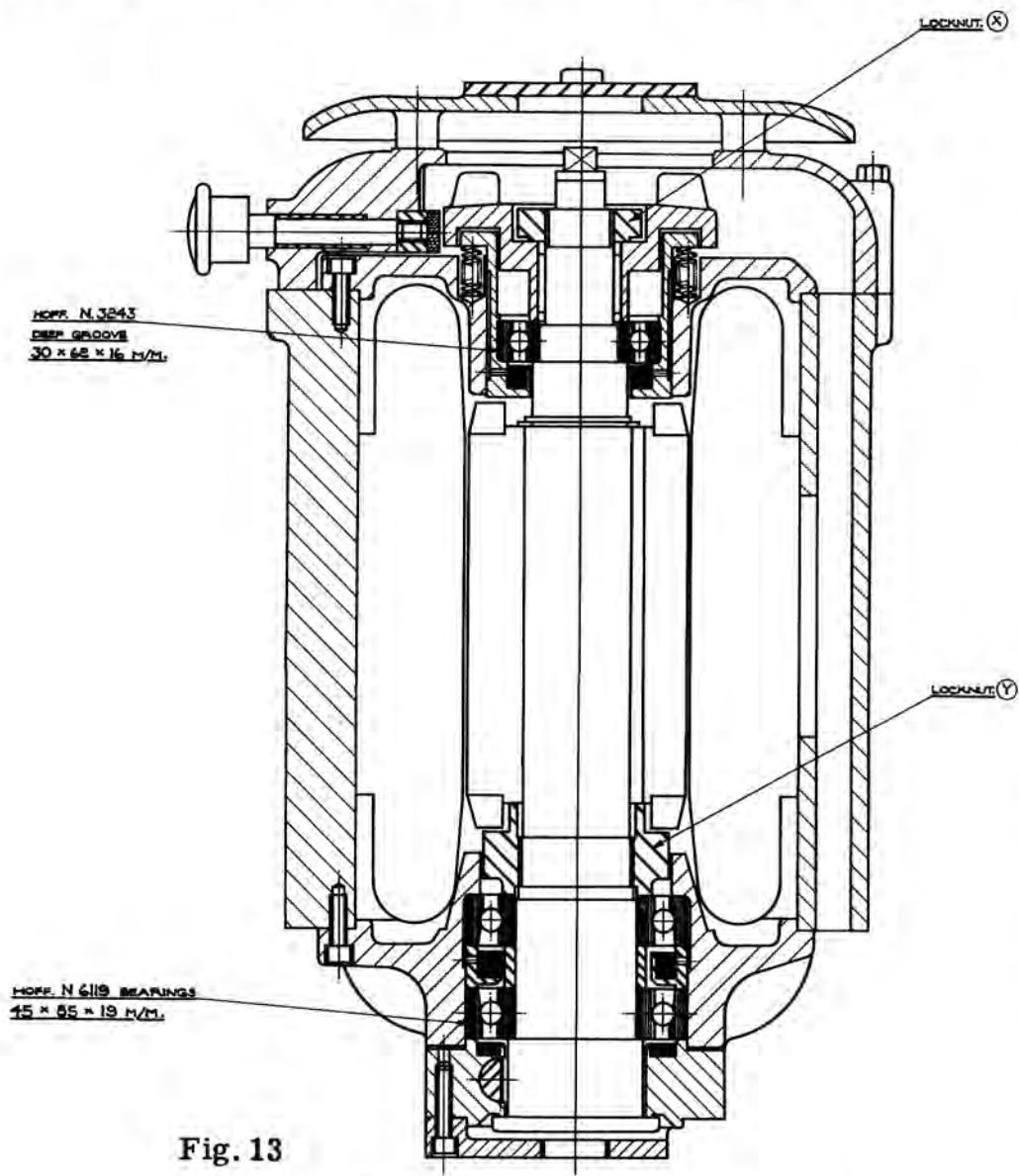
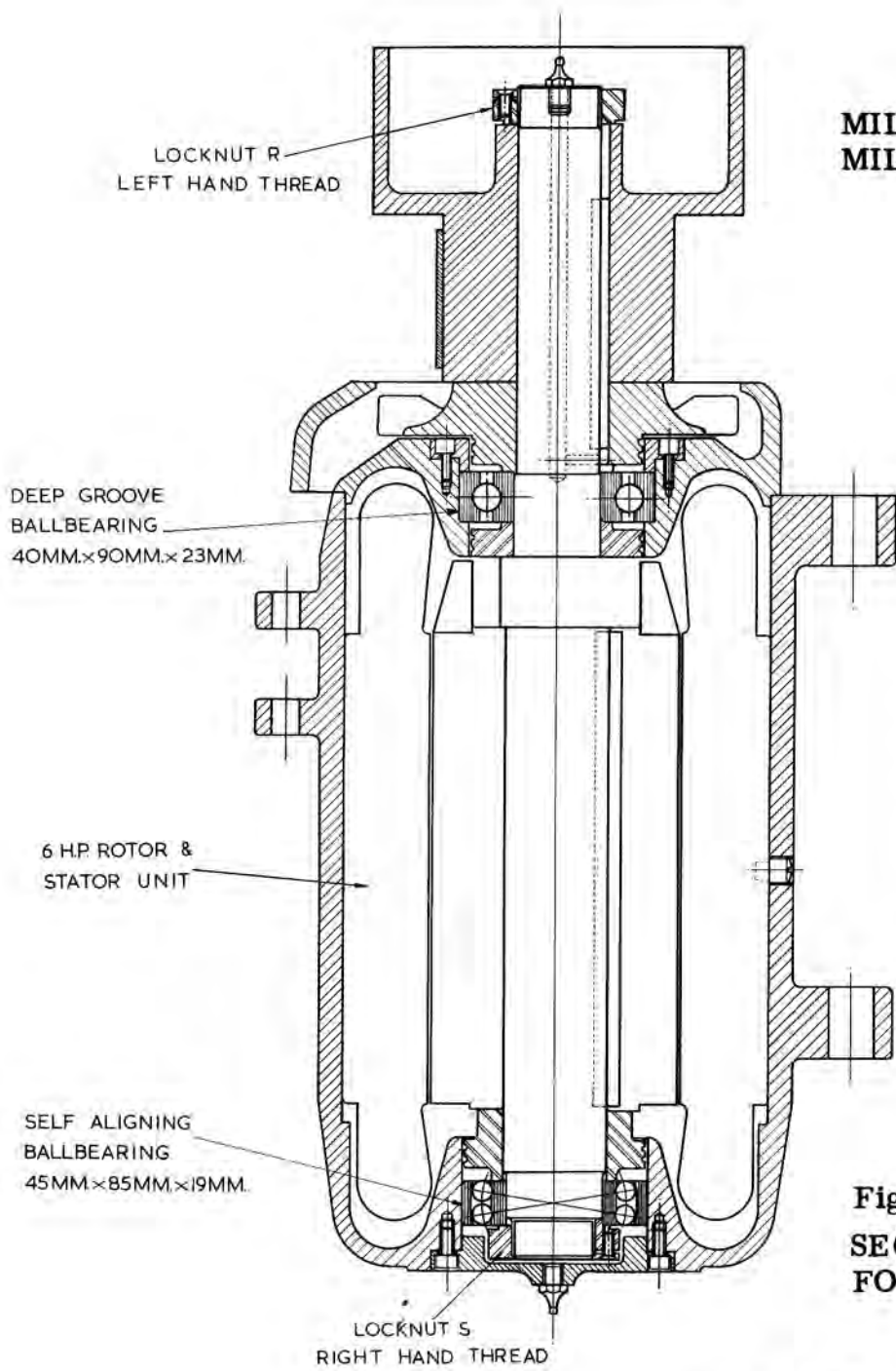


Fig. 13

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. 13, 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 counter-sunk 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.



**MILLING HEAD FOR L. H. 2. MACHINE AND
MILLING, BORING AND RECESSING HEAD
FOR L. H. 3. MACHINE.**

REMOVAL OF MOTOR SPINDLE

(for renewal of bearings etc.)

The stator frame may be left in the main housing during removal of the motor spindle.

1. Remove the bottom end cap.
2. Unscrew the 3 - 5/16" hexagon head screws holding the top bearing housing and air deflector.
3. The spindle is then free to be forced upwards complete with top and bottom bearing assemblies.
4. Complete dismantling can be carried out on the work bench.

Before unscrewing locknuts 'R' and 'S' release the small countersunk locking screw. Note that locknut 'R' has a left hand thread.

**Fig. 14
SECTION ACROSS MOTOR SPINDLE
FOR L. H. 2. AND L. H. 3. MACHINES.**

MILLING HEAD FOR L. H. 2. MACHINE.

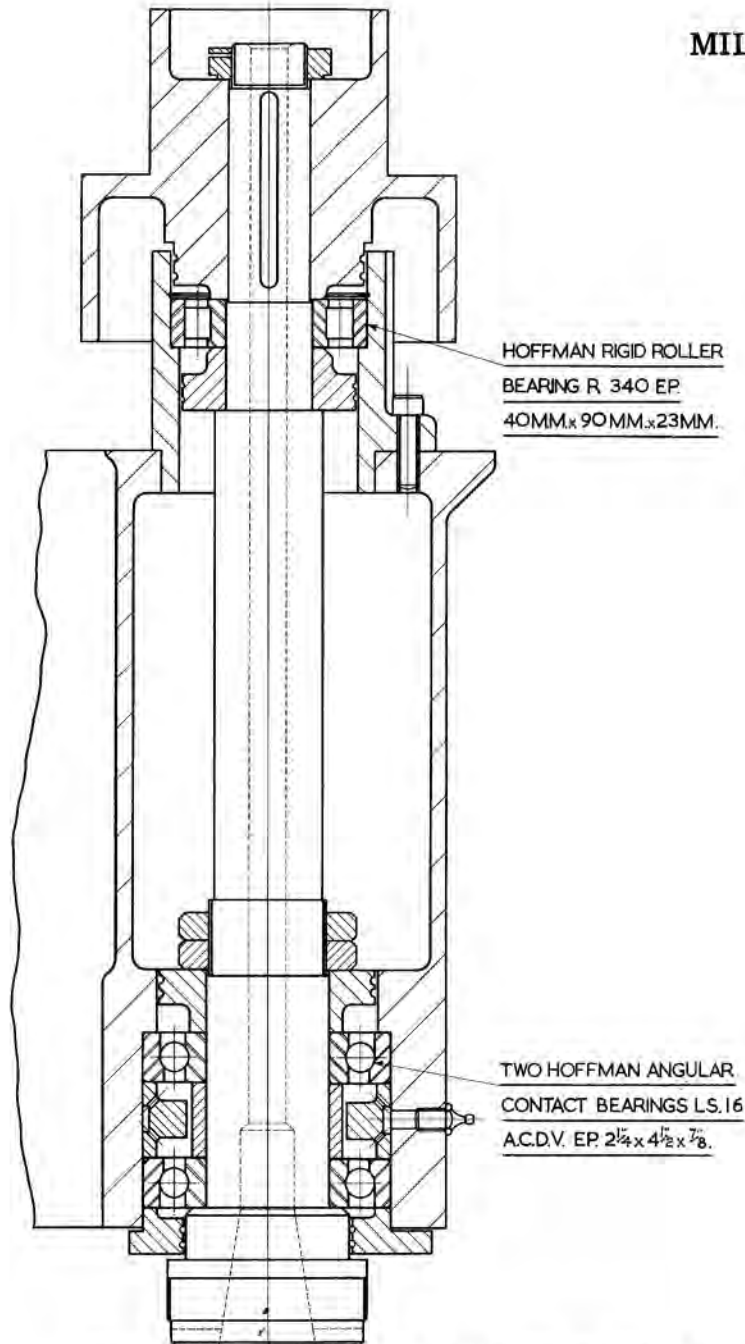


FIG. 15 SECTION THROUGH CUTTER SPINDLE FOR L.H. 2. MACHINE.

CUTTER SPINDLE

This is shown in section in Fig. 15.
TO DISMANTLE.

1. Unscrew the top locknut (left hand thread) after loosening the countersunk screw.
2. Remove pulley.
3. Take out driving key.
4. Remove screws from bottom end cap.
5. The spindle can now be withdrawn downwards from the machine complete with the bottom bearing assembly.
6. Remove top grease retainer and then unscrew the locknuts holding the bottom bearings (left hand thread).
7. Remove bottom grease retainer, bearings and spacing collars.
8. Remove circlip and take top bearings out of housing.

NOTE.

Before refitting the spindle into its housing adjust the locknuts to allow .001" to .015" (.025 to .038mm) play in the angular contact bearings. If this figure is reduced the bearings will become hot if run at maximum speed and may quickly fail.

MILLING, BORING AND RECESSING HEAD FOR L. H. 3. MACHINE.

CUTTER SPINDLE

This is shown in section in Fig. 16 complete with splined driving sleeve which runs in a separate bearing housing.

TO DISMANTLE THE SPINDLE.

1. Wind the main head slide down to bring the spindle nose near the table.
 2. Unscrew the two ball locking handles and remove the capstan handwheel and the graduated dial from the side of the head.
 3. Refit the capstan handwheel on its shaft without the depth stop dial.
 4. With the capstan handwheel wind the spindle barrel down to a block of wood arranged on the table.
 5. Keep the spindle touching the wooden block whilst raising the main head slide until the spindle barrel is free of the gear mechanism; then continue winding until it can be withdrawn from the machine.
 6. Remove locknut 'T'. (Left hand thread) after loosening the countersunk screw.
- Note that to release locknut 'T' a special pin spanner is necessary, which can be made from tubing as shown in Fig. 17.

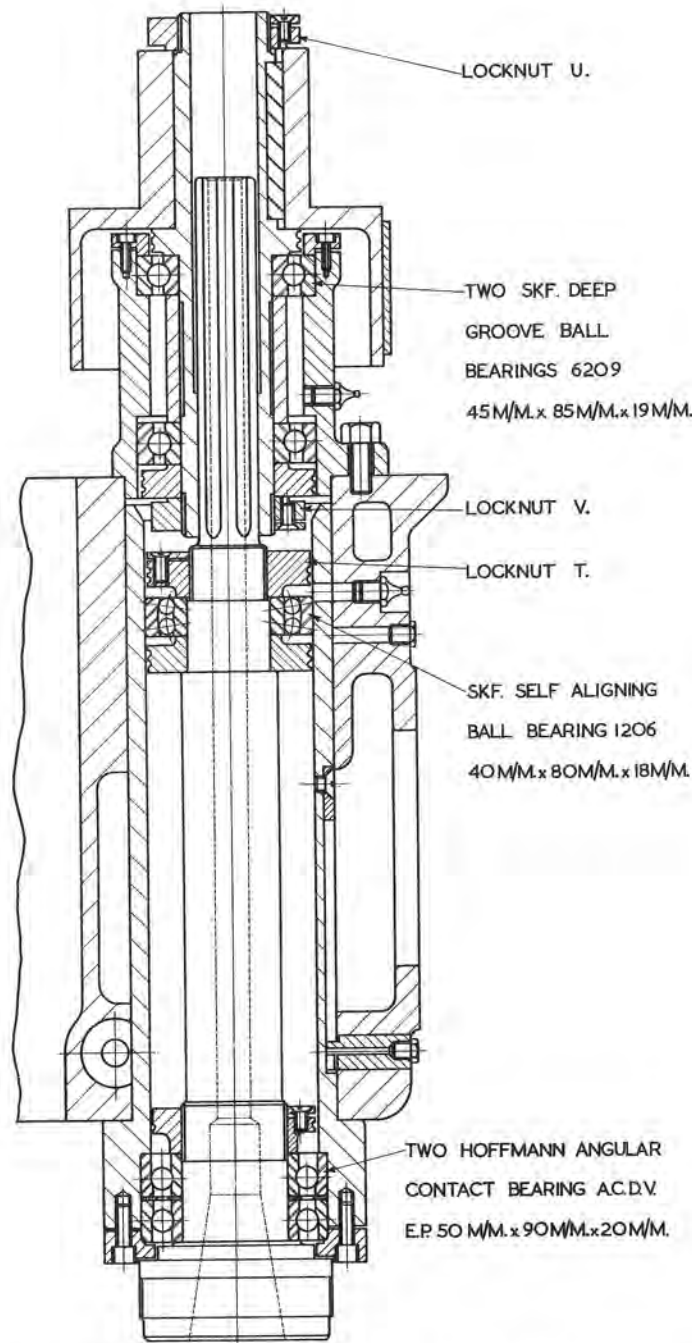


FIG.16 SECTION THROUGH CUTTER SPINDLE FOR L.H.3. MACHINE.

MILLING, BORING AND RECESSING HEAD FOR L. H. 3. MACHINE.

CUTTER SPINDLE

TO DISMANTLE THE SPINDLE (Continued)

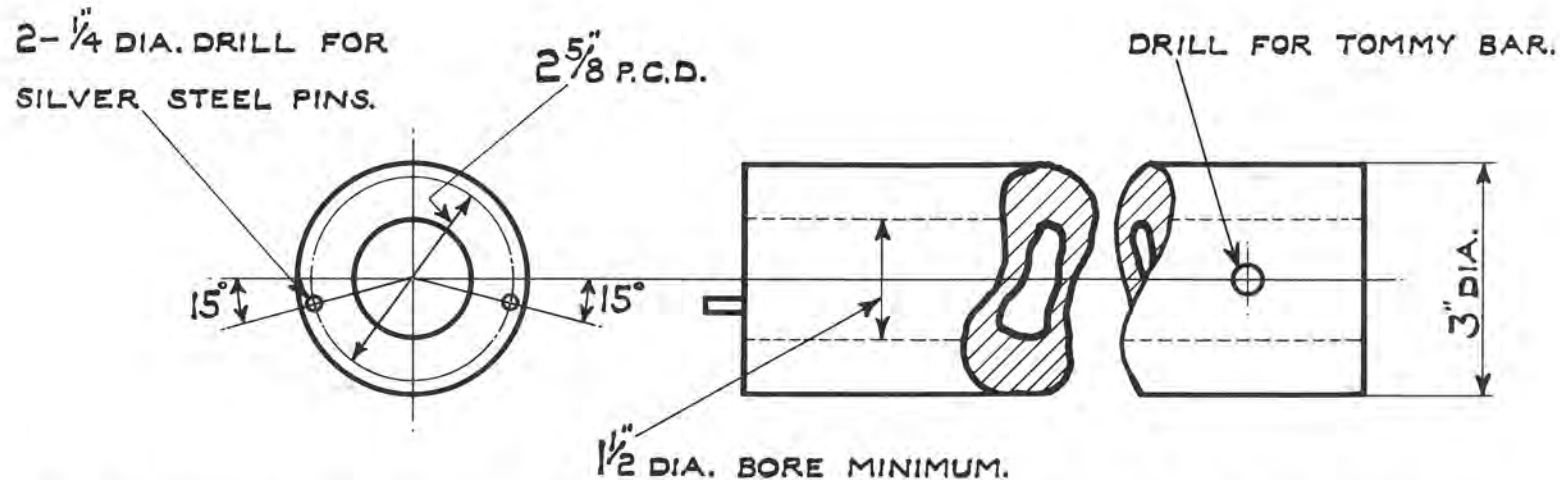


Fig. 17. SPECIAL SPANNER FOR CUTTER SPINDLE LOCKNUT ON L. H. 3. MACHINE.

7. Remove the four screws from the bottom end cap.
 8. The spindle can now be withdrawn from the barrel complete with the bottom bearing assembly.
- NOTE.

When re-assembled wind up the spring with $3\frac{1}{2}$ complete turns of the capstan before re-fitting the spindle barrel. (The number of turns may be modified to give an increase or decrease in tension.)

TO DISMANTLE THE SPLINED DRIVING SLEEVE.

First remove the unit from the machine by unscrewing the three hexagon head screws. Then continue dismantling as follows:-

1. Unscrew locknut 'U' (left hand thread) after loosening the countersunk screw.
2. Take off pulley.
3. Unscrew locknut 'V' (right hand thread) after loosening the countersunk screw.
4. Remove end cap and sleeve.
5. Remove ball bearings.

SUDS MIST EQUIPMENT (TO SPECIAL ORDER)

The equipment shown in Fig. 18 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 centimetre) is necessary for operating this

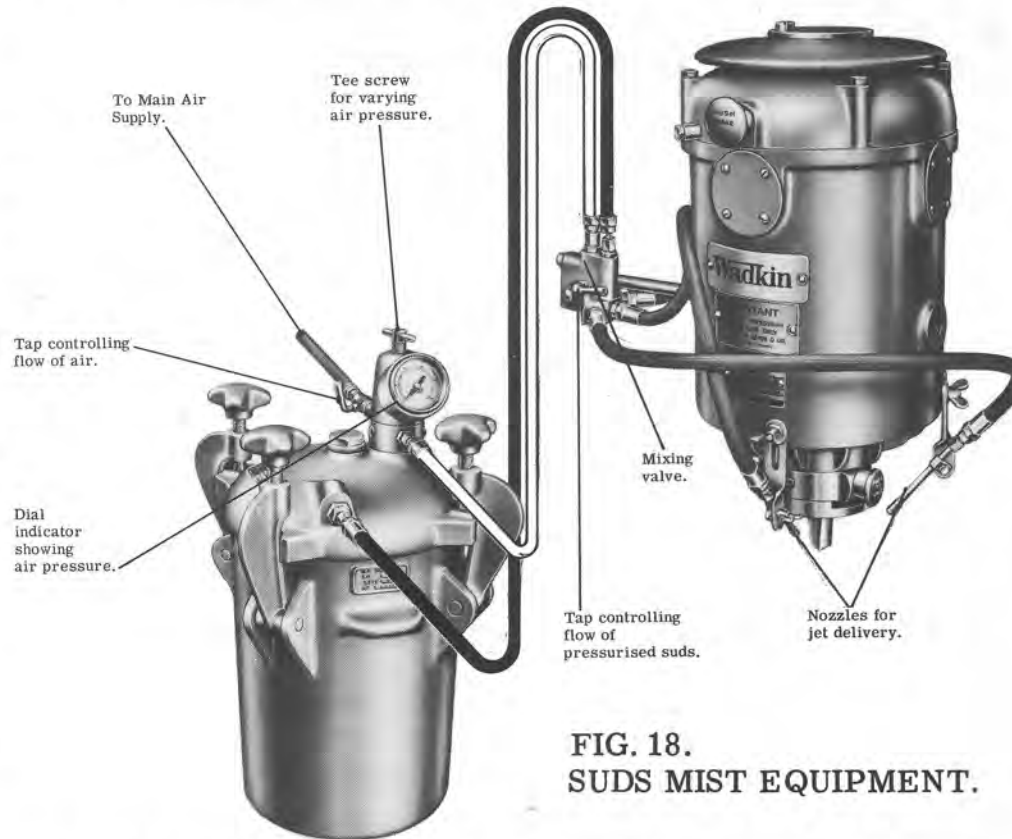
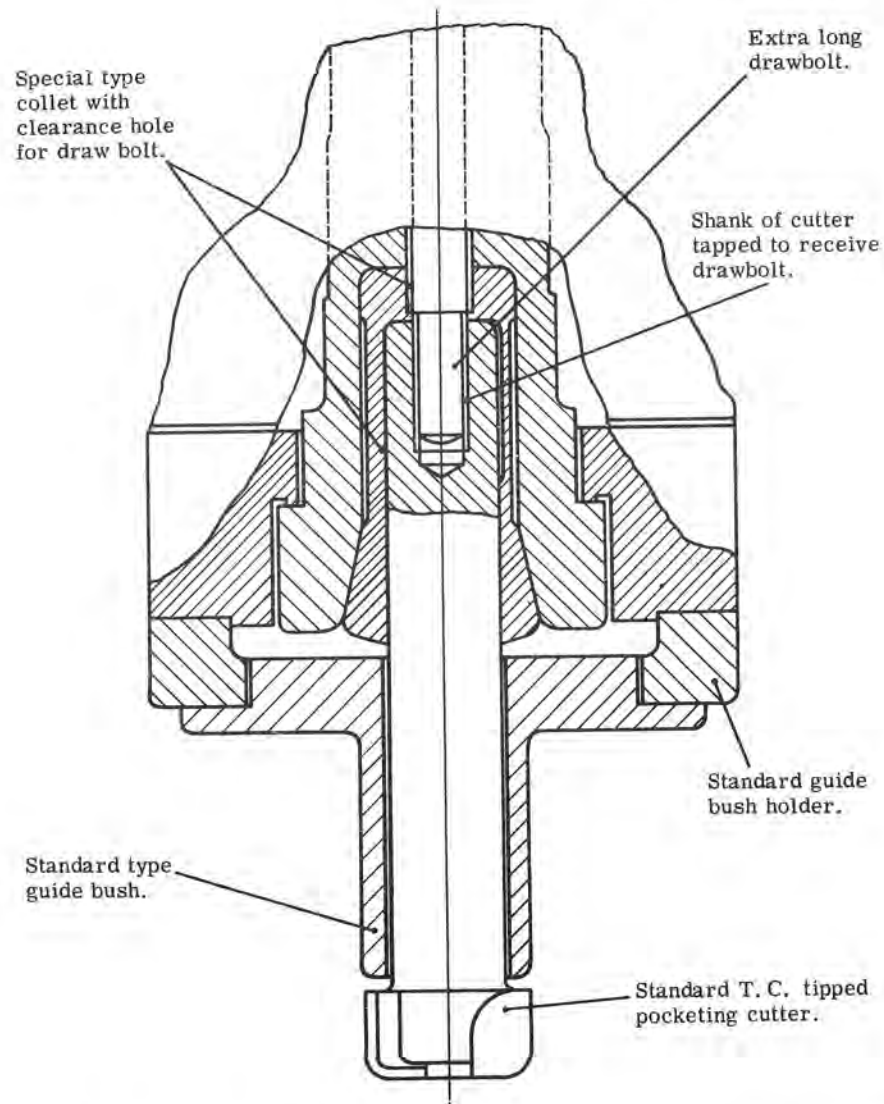


FIG. 18.
SUDS MIST EQUIPMENT.

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. At working pressure this should be 40lbs/square inch (2.81 kilograms/square centimetre). A tap is fitted on the mixing valve to regulate flow of pressurised suds for jet delivery through either one or three nozzles.

ALTERNATIVE METHOD OF SECURING CUTTERS WITH A PARALLEL SHANK
ON L. H. 1. ROUTER HEAD.



When carrying out particularly accurate work we recommend the method of securing the cutter as shown in Fig. 19. This method can be adapted to suit all cutters having a parallel shank of $\frac{5}{8}$ " (16mm) to $\frac{7}{8}$ " (22mm) diameter.

A collet with a clearance hole and a drawbolt $\frac{3}{4}$ " (19mm) longer than standard are used. By means of the drawbolt which engages in the threads in the cutter shank the cutter is drawn up to a dead face within the collet.

This has three advantages :-

1. Ensures greater cutter rigidity.
2. Guarantees that the cutter re-positions itself accurately after removal from the collet and
3. Obviates any tendency to cutter "creep".

FIG. 19. BOTTOM OF ROUTER HEAD SECTIONED WITH CUTTER IN POSITION.

ELECTRICAL INSTALLATION INSTRUCTIONS FOR L. H. 1. MACHINE.

DIAGRAM NO. D. 1020.

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 isolating switch and to L1-L2-L3 at contactor 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 contactor 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 service, to reverse rotation interchange L1 and L3 at isolating switch.

OPERATING INSTRUCTIONS.

To start machine close isolating switch, turn speed selector switch to the 'LOW' position and press '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 'stop' button. To lock off machine, press and half turn 'stop' button, this must be released before a start can be made.

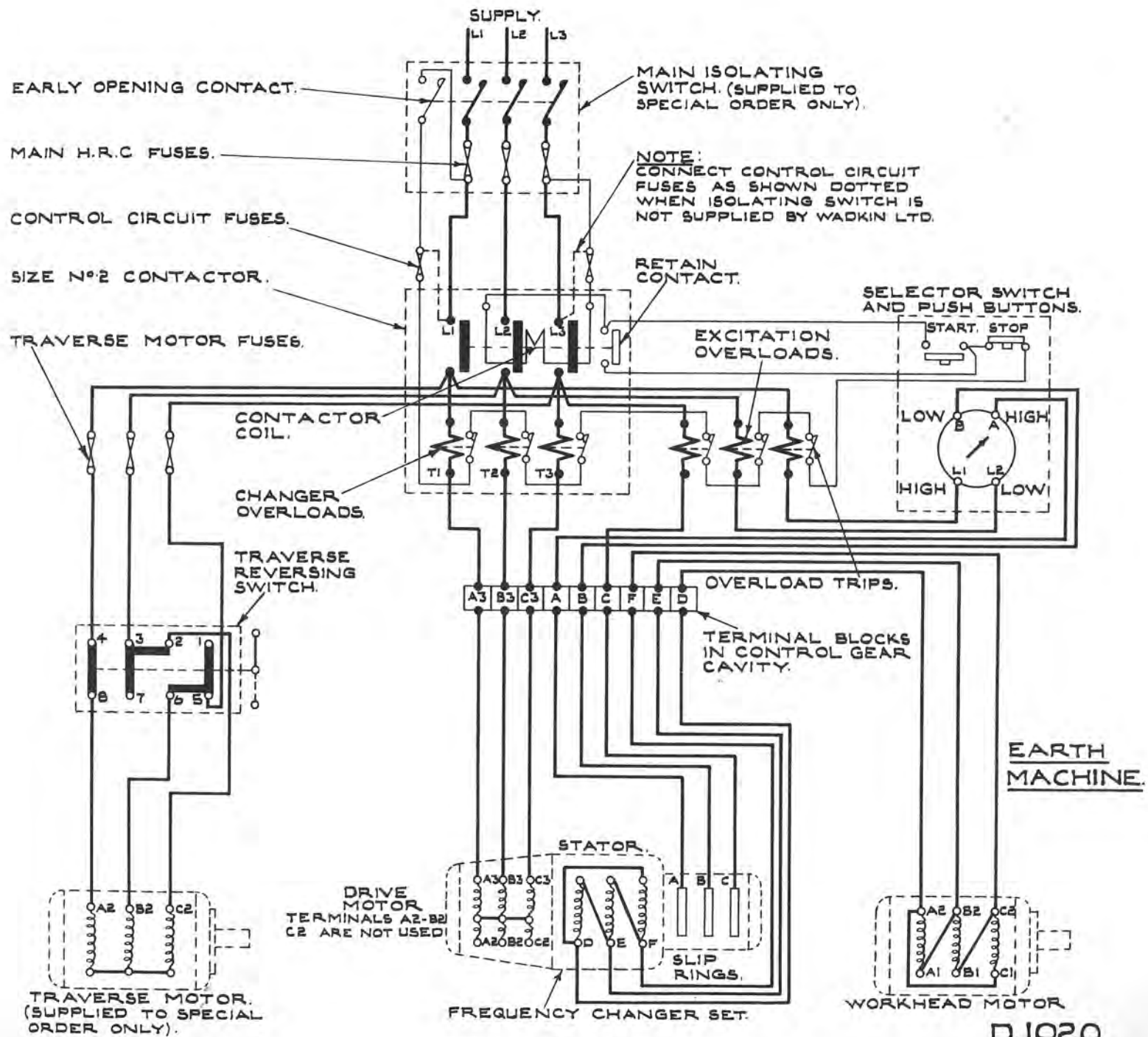
OVERLOAD.

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 assembly 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.



ELECTRICAL INSTALLATION INSTRUCTIONS FOR L. H. 2. AND L. H. 3. MACHINES.

DIAGRAM NO. D. 1019.

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 isolating switch and to L1-L2-L3 at contactor through conduit which should be screwed into the machine 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 start machine close isolating switch, turn speed selector switch to the speed required and press 'start' button. To stop machine press 'stop' button. To lock off machine press and half 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.

GENERAL.

Check EARTH connection from time to time.

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