

Wadkin

UNIVERSAL ARTICULATED ARM ROUTER TYPE L.C. 6.

PRINCIPAL DIMENSIONS AND CAPACITIES

Table size	24" x 24"	610 x 610 mm.
Tee slots on tilting table	Six $\frac{5}{8}$ " (16 mm.) B. S. S. at 6" (150 mm.) pitch	
Table cants	90° right to 90° left	
Table height maximum (from floor)	34"	865 mm.
Table height minimum (from floor)	26"	660 mm.
Table top to spindle nose maximum	16"	405 mm.
Table top to spindle nose minimum	$2\frac{1}{8}$ "	55 mm.
Stroke of vertical head slide (hydro-pneumatic)	$5\frac{5}{8}$ "	150 mm.
Base plate work surface	24" x 36"	610 x 915 mm.
Tee slots on base plate	Three $\frac{5}{8}$ " (16 mm.) B. S. S. at 6" (150 mm.) pitch	
Maximum base plate to spindle nose	36"	915 mm.
Minimum base plate to spindle nose	$30\frac{1}{8}$ "	765 mm.
Maximum radius of arm	47"	1195 mm.
Minimum radius of arm	17"	430 mm.
Router head speeds	18,000 12,000 9,000 6,000)	50 cycles
HP at above speeds	5 5 3 3)	
Router head speeds	18,000 10,800 9,000 5,400)	60 cycles
HP at above speeds	5 5 3 3)	
Overall height	82"	2080 mm.
Approximate net weight	3920 lbs	1780 kg.
Approximate gross weight	4700 lbs	2130 kg.
Approximate shipping dimensions	140 cu. ft.	4 cu. m.
Code Word	Lisic	

OPTIONAL EQUIPMENT TO SPECIAL ORDER

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Heavy duty 4 speed router head rated at the following speeds and outputs:-

on 50 cycles supply
12 HP at 18,000 rpm.
8 HP at 12,000 rpm.
6 HP at 9,000 rpm.
4 HP at 6,000 rpm.

on 60 cycles supply
12 HP at 18,000 rpm.
7.2 HP at 10,800 r.p.m.
6 HP at 9,000 rpm.
3.6 HP at 5,400 rpm.

36" x 24" Fixed table with Tee Slots for baseplate mounting with 4" packings to give working heights of 30" and 34". See Fig. 2 for full details.

Suds Mist Lubrication Equipment, comprising reservoir for holding the lubricant, air and lubricant mixing valve, shut off tap and 3 nozzle outlets, and brackets for fastening the equipment to the machine.

Triple Pole Isolating Switch.

A complete range of standard cutters and equipment are available for this machine and these are illustrated in booklet 849/1.

DETAILS INCLUDED WITH MACHINE

5/5/3/3 HP Router Head, Frequency Changer and Control Gear.
Pneumatic Lock to Secondary Arm.
2 Guide Bushes $\frac{1}{2}$ " x $\frac{3}{4}$ " and $\frac{5}{8}$ " x $\frac{7}{8}$ ".
Oil gun and Grease gun.
Standard Drawbolt.
Set of Spanners.
Air line lubricator and air filter unit.

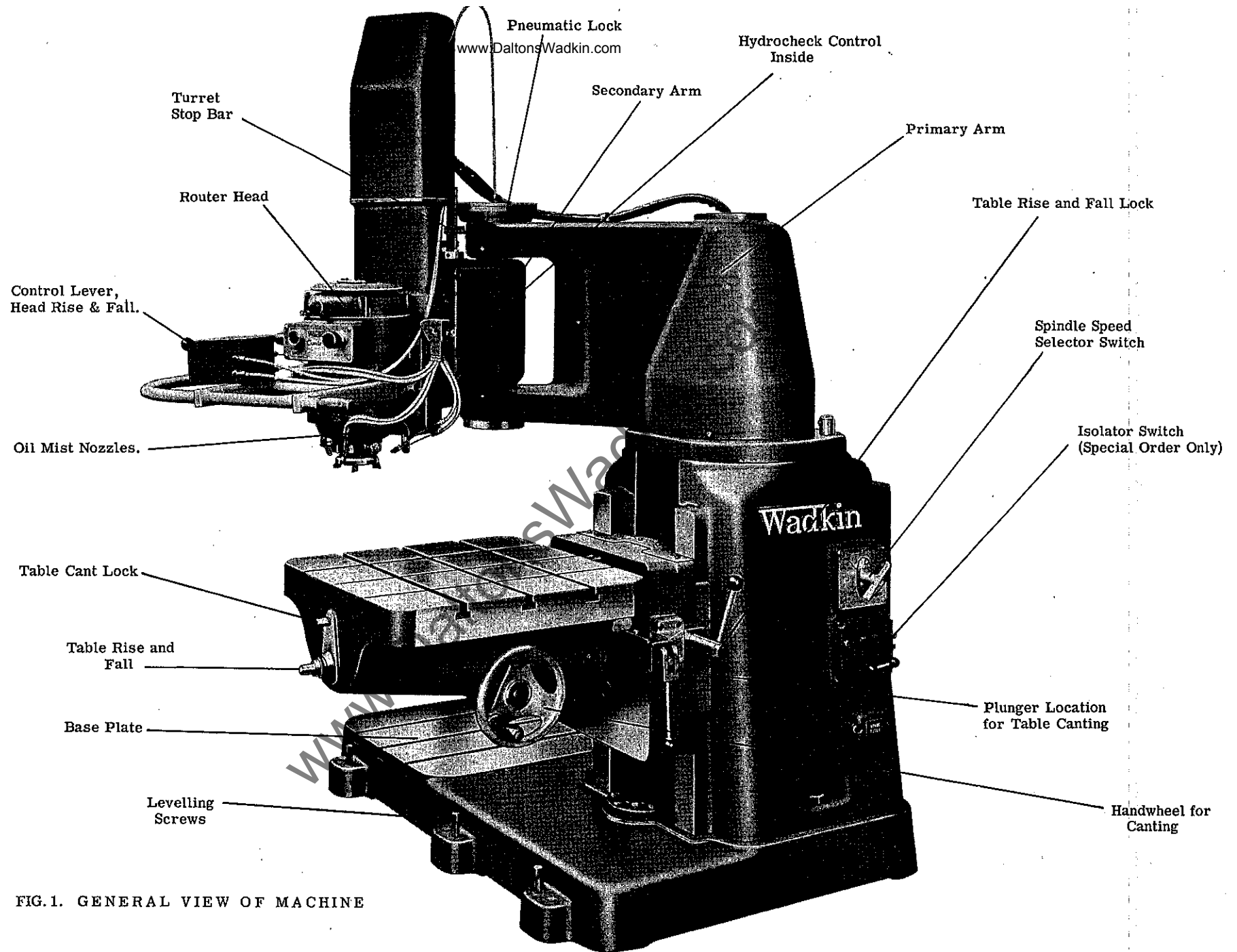


FIG.1. GENERAL VIEW OF MACHINE

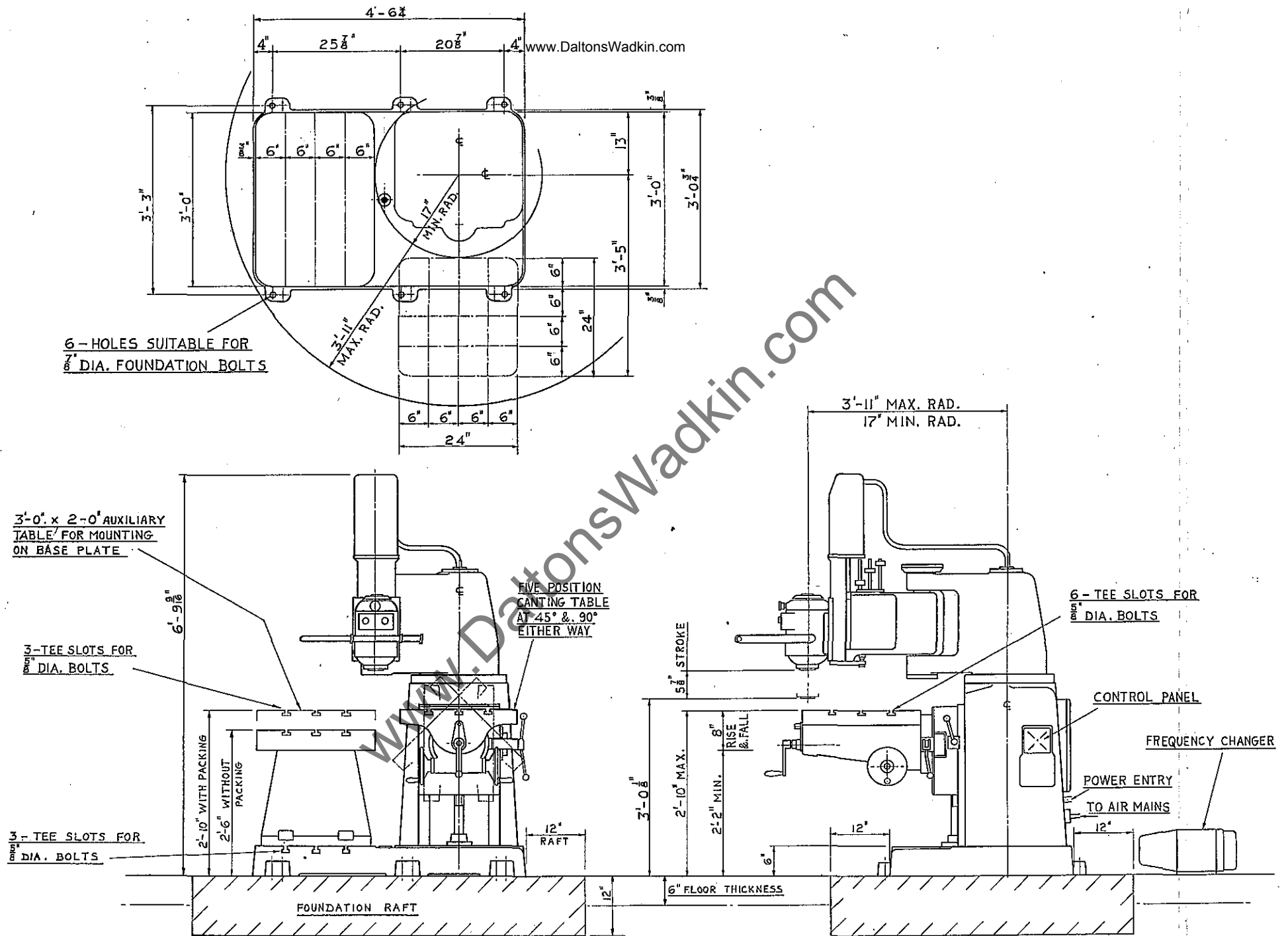


FIG. 2.

INSTALLATION

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

FOUNDATIONS

If the shop floor consists of not less than 6" of good concrete, then no additional foundation is necessary, otherwise a concrete foundation should be provided as detailed on Fig. 2.

6 - $\frac{7}{8}$ " diameter Rawl bolts may be used for bolting down the machine, or alternatively 6 Rag bolts may be used. If Rag bolts are used 4" square (102 mm) holes should be cut in the floor and liquid cement run in with the bolts in position. Note owing to installation practices varying from customer to customer, foundation bolts and levelling pieces are not supplied by Wadkin Ltd.

LEVELLING THE MACHINE

It is imperative that the procedure detailed on Fig. 5 be strictly adhered to if accurate performance of the machine is to be obtained.

After levelling has been carefully carried out in accordance with the instructions in Fig. 5. the machine should be bolted down, and the levelling checked again. If any deformation has taken place the jacking screws should be readjusted until satisfactory levelling is achieved.

Note, if the machine is installed in a plant where heavy machinery is used, it may be found that the surface finish obtainable from the router may be adversely affected.

It is not satisfactory to attempt to offset this by absorbent packings under the machine. The only satisfactory method of dealing with this problem is to isolate the router on a separate raft of concrete at least 12" thick and 12" larger all round than the machine base.

WIRING

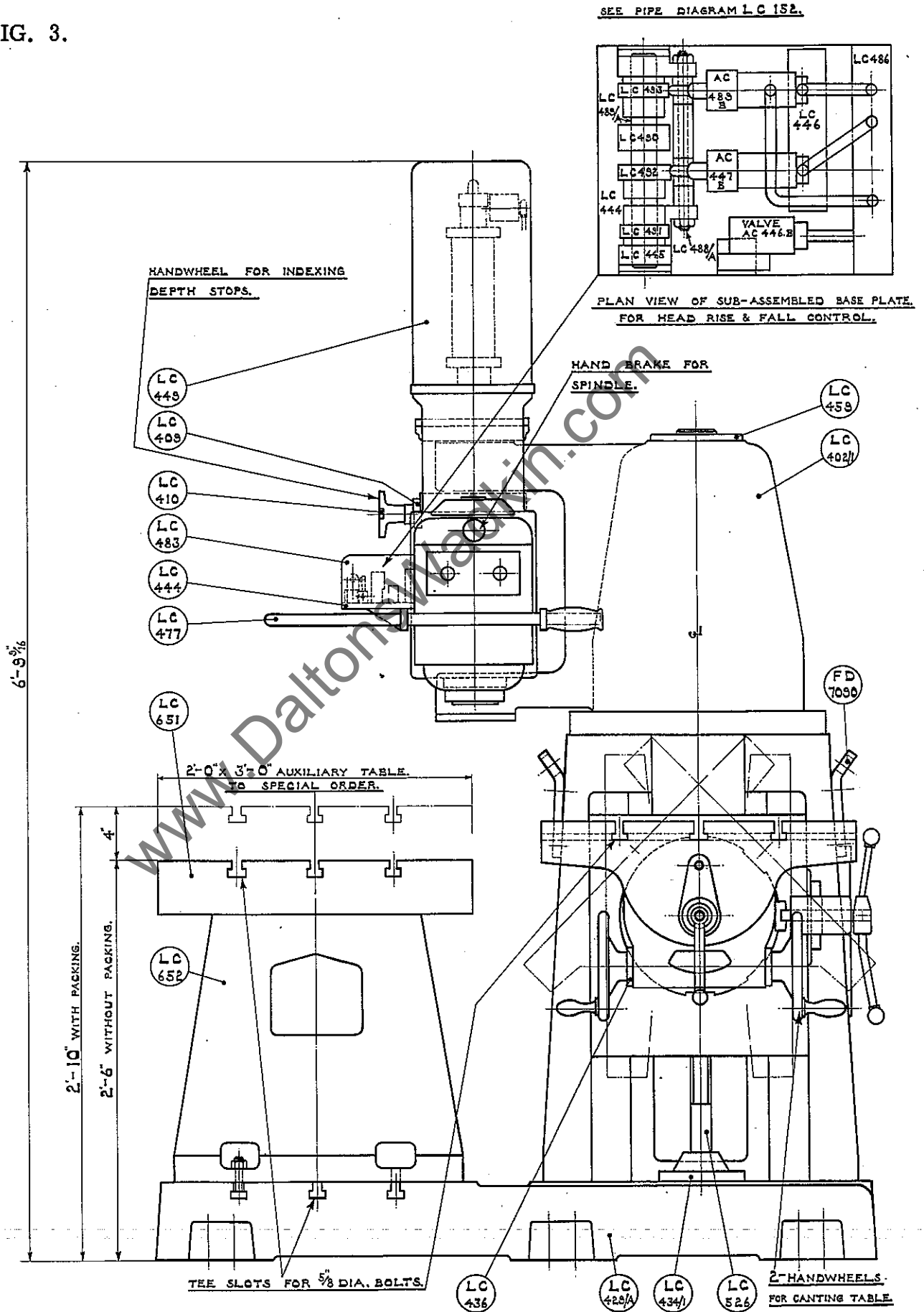
For cabling instructions refer to the wiring diagrams on pages 19 and 20.

AIR SUPPLY

An air supply of 60/80 psi is required to operate the machine. The air supply connection should be $\frac{1}{2}$ " bore. Fill the air line lubricator with light machine oil before coupling the air supply.

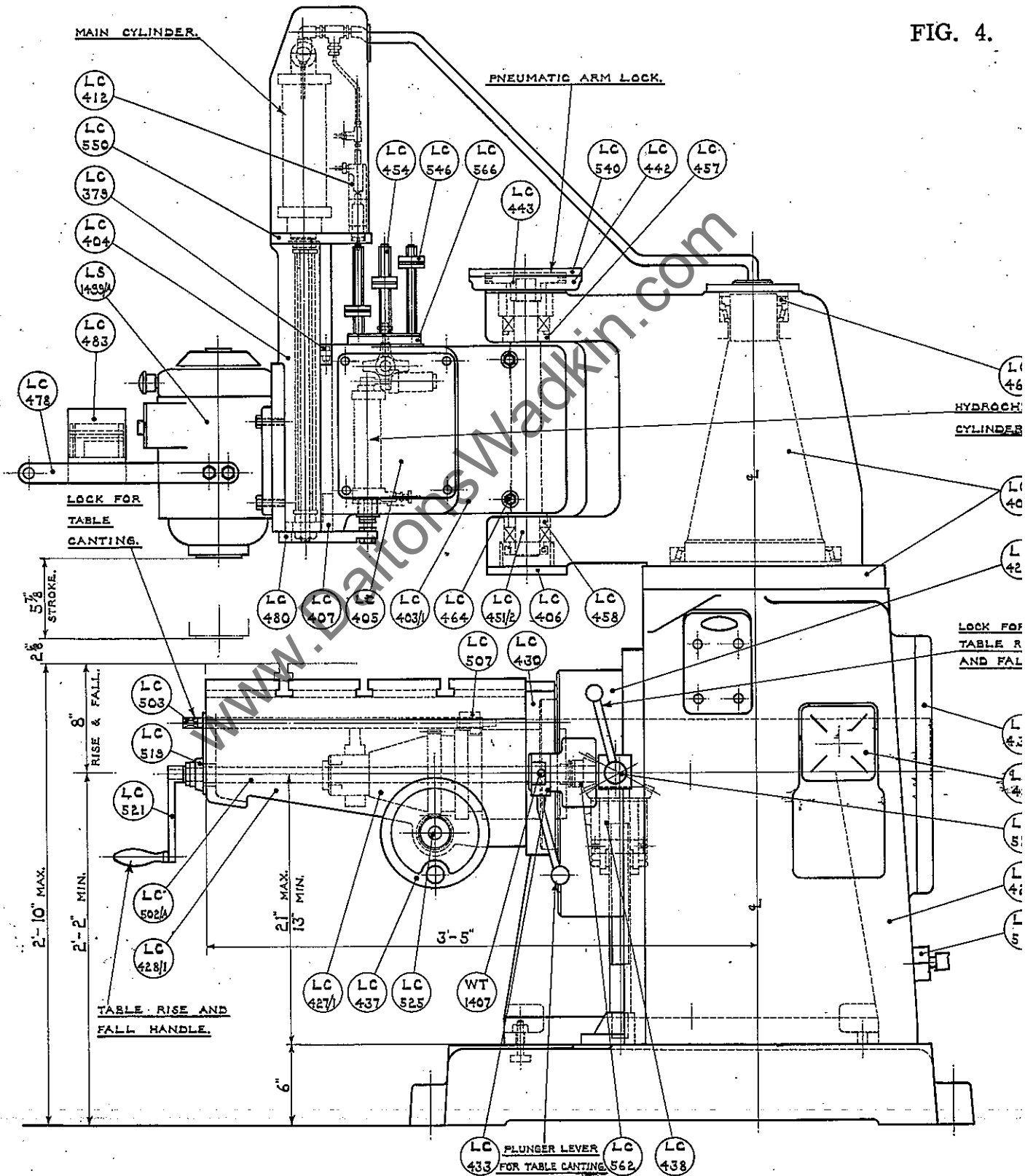
FRONT ELEVATION WITH PART NUMBERS

FIG. 3.



SIDE ELEVATION WITH PART NUMBERS

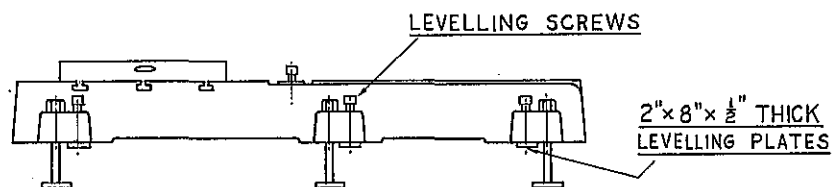
FIG. 4.



①

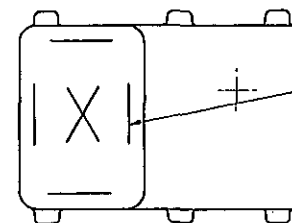
10" MASTER LEVEL ON BASE PLATE
SET TO MAX. ERROR OF 1 LINE OR .0005" IN 10"

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②

REPEAT THE CHECKS WITH LEVEL ON BASE PLATE
IN THE POSITIONS SHOWN BELOW

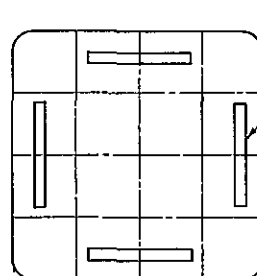


POSITIONS OF LEVEL

ALL READINGS SET TO 1 LINE
OR .0005" IN 10"

③

HAVING SET THE BASE PLATE TO THE LIMITS STATED
AT ① AND ② AND WITH THE PLUNGER LOCATION IN
ON THE CANTING MECHANISM CHECK THE RISE & FALL
TABLE AS BELOW



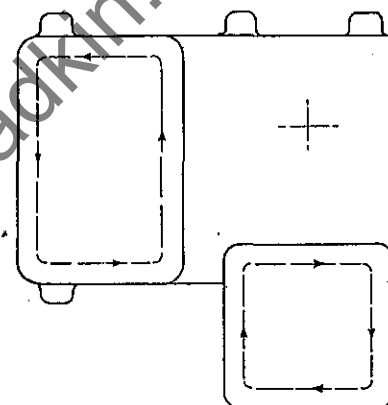
10" MASTER LEVEL POSITIONS

READINGS TO BE
2 LINES OR .001" IN 10"

IF BASE PLATE HAS BEEN CORRECTLY SET THESE
READINGS SHOULD BE OBTAINED WITHOUT DIFFICULTY

④

USING A DIAL GAUGE INDICATOR IN THE SPINDLE
CHECK THE TABLE TOP AND THE BASE PLATE AS DIAGRAM



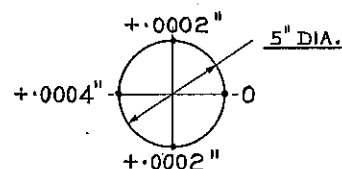
MAXIMUM ERROR READING
ON BASE PLATE = .003"

MAXIMUM ERROR READING
ON 24" TABLE = .002"

⑤

CUTTING TEST TO CHECK CORRECT PITCHING OF HEAD:

USING A CORRECTLY GROUND STANDARD FACE MILL, MACHINE A SOLID PIECE OF ALUMINIUM NOT LESS THAN 6" SQ. TAKING A FINE CUT.
FIT A DIAL GAUGE INDICATOR INTO THE SPINDLE AND CARRY OUT THE SWING ROUND — CHECK AS DIAGRAM BELOW



THESE READINGS WILL GIVE A SATISFACTORY BLENDING
OF THE CUT WHEN FACE MILLING.

IF THESE READINGS ARE NOT READILY OBTAINED RE-CHECK THE LEVELLING PROCEDURE TO SEE IF ANY SETTING DOWN HAS
TAKEN PLACE.

IMPORTANT: ALL READINGS MUST BE TAKEN WITH THE TABLE LOCKED AND THE HEAD SLIDE AIR SUPPLY ON.

For lubricating the cutter on high speed routing or milling work we particularly recommend this equipment which ensures wet cutting without any of the disadvantages usually associated

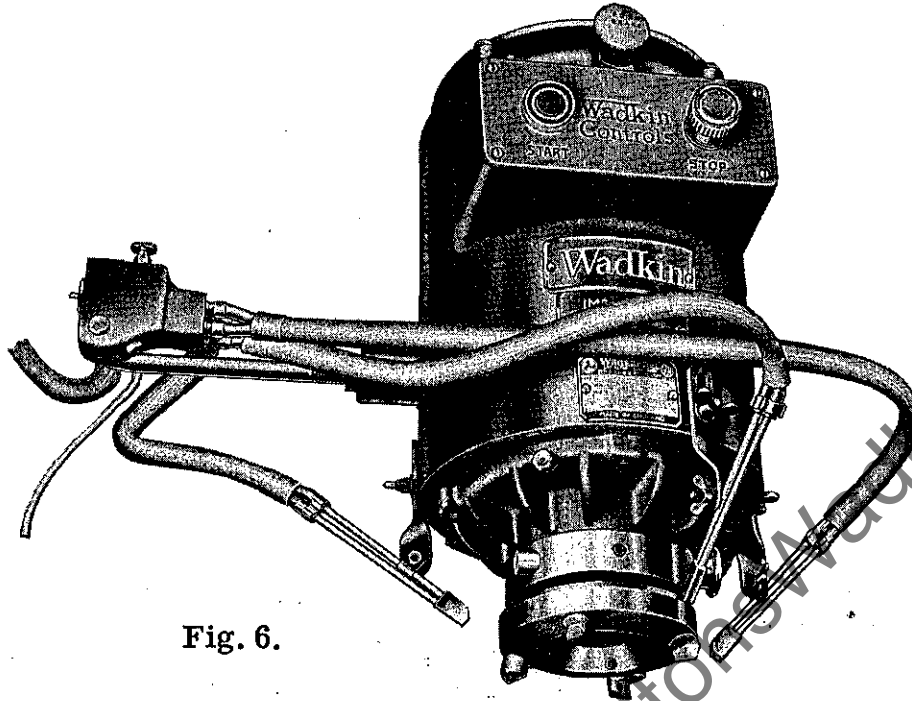


Fig. 6.

with ordinary suds pumps and fittings. The suds mist equipment consists of a two-gallon suds tank, piping, air line, mixing valve to vary the proportion of pressurised suds to air, on and off control and a nozzle which can be either single jet or alternatively, a two-or three-jet delivery. A shop air line giving approximately 80 lb./sq. inch is necessary for operating this equipment.

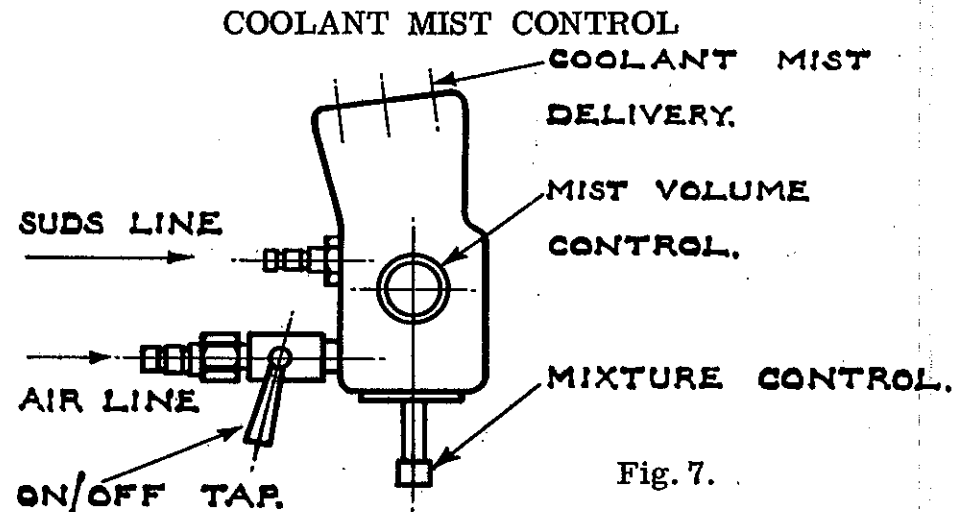
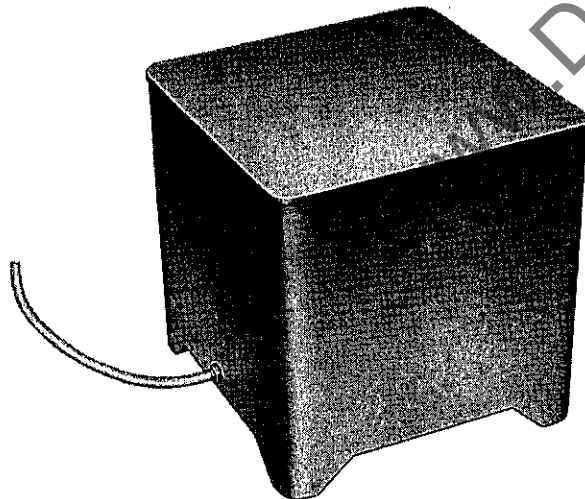
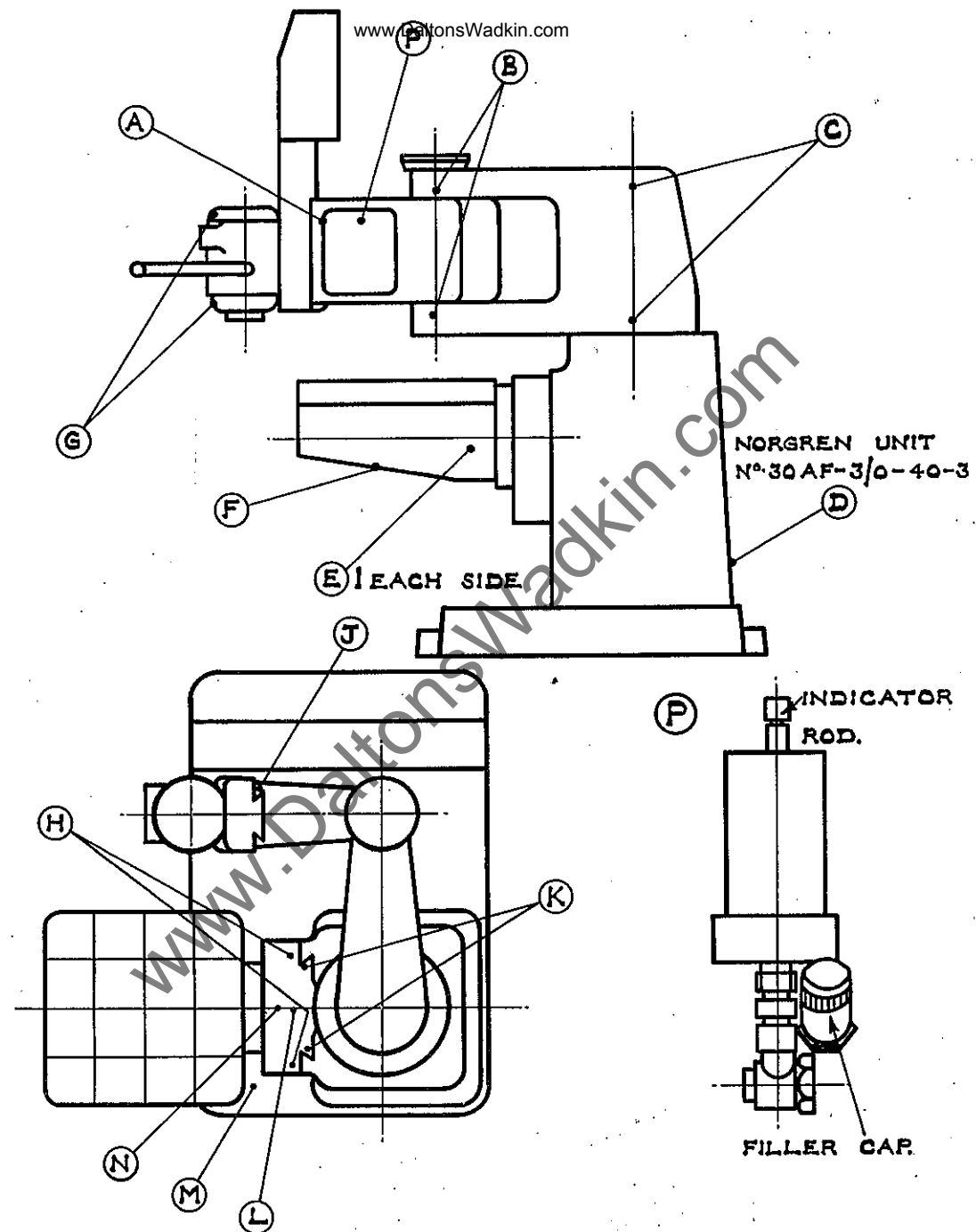


Fig. 7.



LUBRICATION RECOMMENDATIONS

- A POINTS Give 1 shot daily with oil gun using Wadkin oil Grade L4.
- B POINTS Give 2 shots every 3 months with grease gun using Wadkin Grease Grade L6.
- C POINTS Give 2 shots every 3 months with grease gun using Wadkin Grease Grade L6.
- D POINTS Check Norgren Unit every week. To top up Oil-Fog Lubricator remove filler plug and pour in Wadkin Oil Grade L1. To blow out moisture and sediment in air filter open drain cock whilst air is on. Wash filter every 3 months in paraffin or petrol.
- E POINTS Give 1 shot weekly with oil gun using Wadkin Oil Grade L2.
- F POINTS Give 1 shot weekly with oil gun using Wadkin Oil Grade L4.
- G POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L1.
- H POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L4.
- J POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L4.
- K POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L4.
- L POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L4.
- M POINTS Give 1 shot monthly with oil gun using Wadkin Oil Grade L4.
- N POINTS Give 1 shot daily with oil gun using Wadkin Oil Grade L4.
- P POINTS With head at bottom of stroke check indicator rod. If two grooves are visible there is too much oil in the unit, if no groove is visible there is insufficient oil. Charge the unit with oil by removing the chromed cap and applying W. B. Dicks S.E. 4. Hyd. Fluid, Shell Tellus 27 or Mobiloil D.T.E. light oil with an oil gun. Ensure no air is present in oil gun before use.

Wadkin Grade	Equivalent Lubricants		
	Shell Mex & B.P. Ltd.	Mobil Oil Co. Ltd.	Caltex Lubricants
High Speed 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.	Mobilux Grease No. 2.	Regal Starfak No. 2 Grease
Ball Bearing Grease Grade L8	Shell Alvania Grease 3.		

The router head is a precision unit and if regularly lubricated will give reliable service over a long period. It is essential to lubricate using the correct grade of oil as recommended on page 11. The drawbolt key supplied should be used to secure cutters in the spindle nose, and on no account should any extension pipe be applied to this spanner as over tightening will cause fatigue failure of the drawbolt.

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. 9. 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.

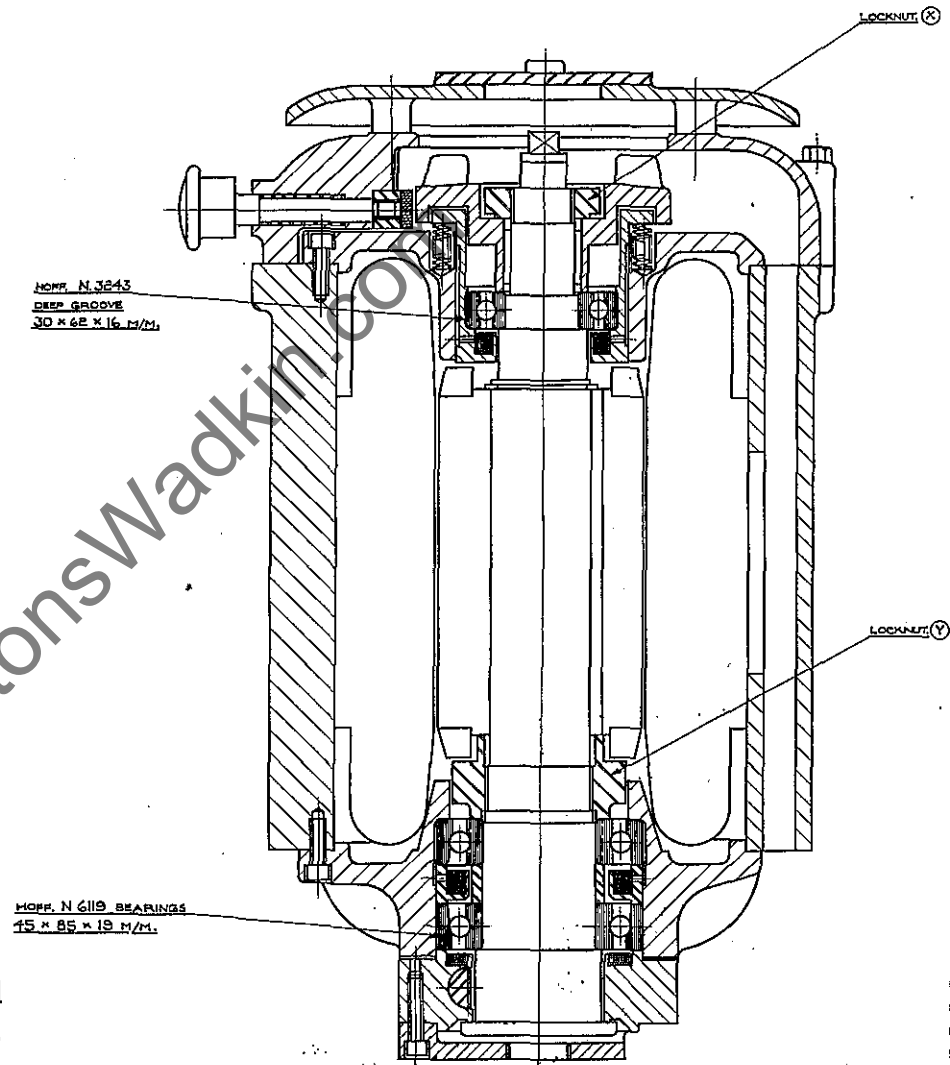


FIG. 9.

SECTION THROUGH CUTTER SPINDLE.

SPINDLE LOCK

The spindle lock should be used to stop the spindle rotating when changing cutters. To lock pull out knob 'Q', Fig. 10.

Ensure that the lock is released before starting the head.

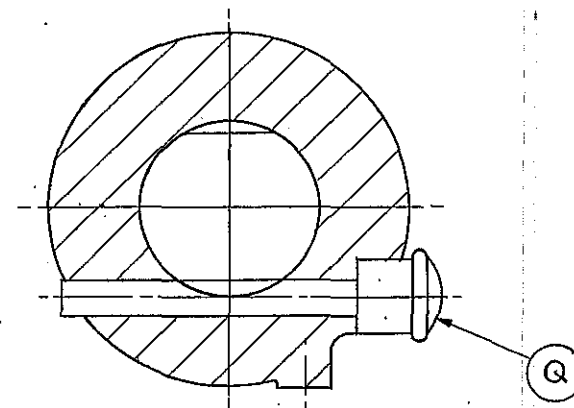


FIG. 10 SPINDLE LOCK

BRAKE

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

PNEUMATIC ARM LOCK

A powerful pneumatic lock is provided as standard equipment on the outer arm and is operated from a push button on the control arm. Fig. 11. shows a section through the arm lock.

Normally no attention will be necessary, but access to the assembly for replacing a diaphragm rubber or brake lining is readily obtained by removing the top cylinder head.

The pneumatic connections are shown on Fig. 11.

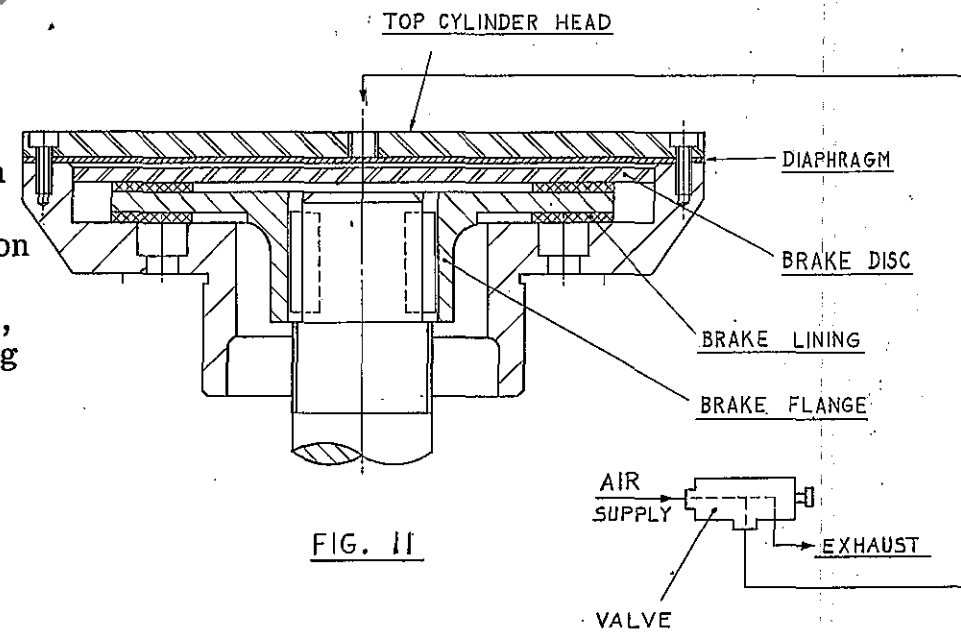
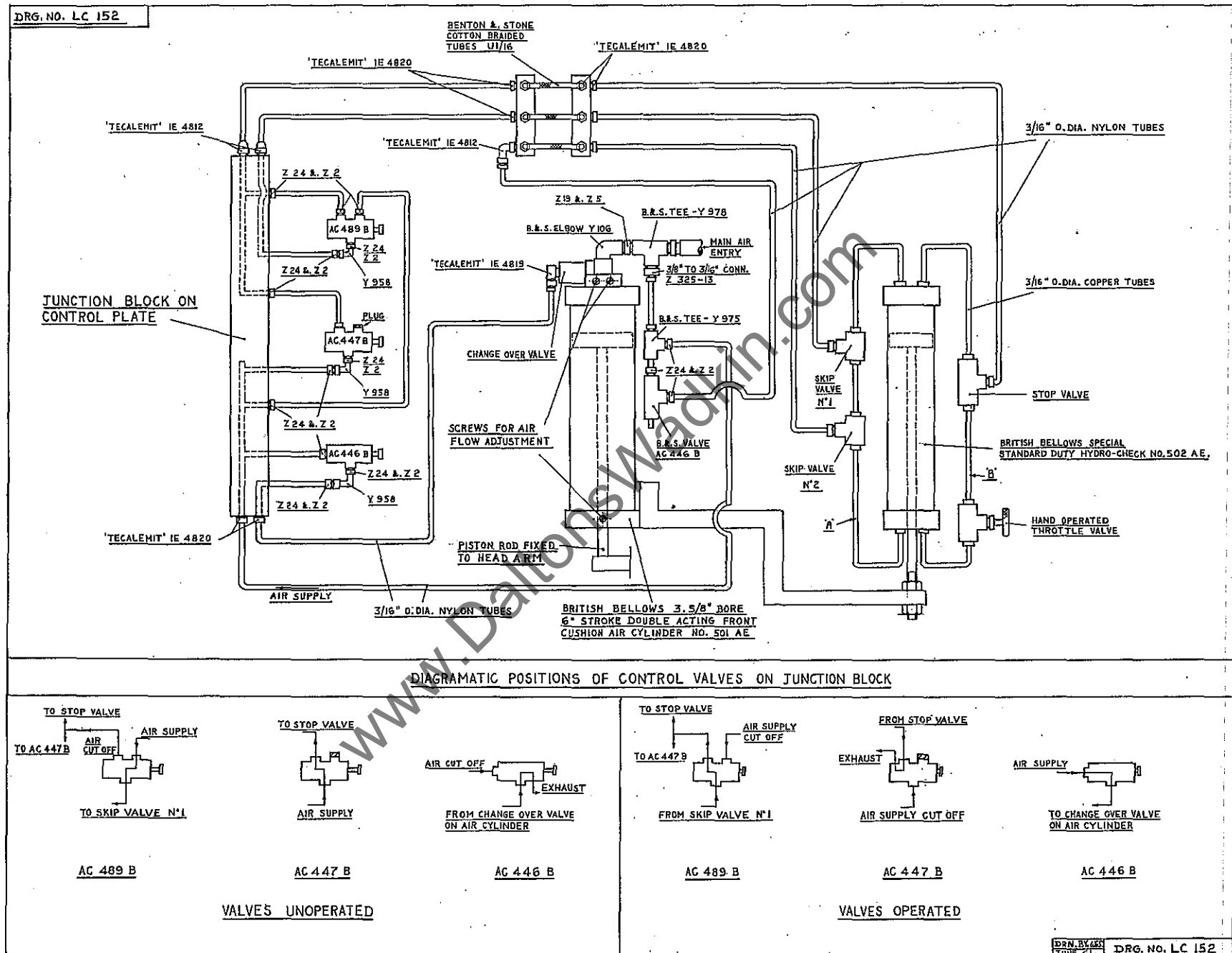


FIG. 11

FIG. 12.

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THE HEADSLIDE AND HYDROCHECK UNIT. (Refer to arrangement drawings Figs. 3 & 4).

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The rise and fall of the headslide is power operated by compressed air and a hydraulic check unit housed in the outer arm (see arrangement drawing Fig. 4). The movement is controlled from a 4 position single lever which operates 3 air valves in sequence to give neutral, fast traverse, slow approach on to stop, and a fast retraction.

The headslide is automatically locked when it is actually on the stop, since air pressure is maintained on the main air cylinder, and when the head is in any mid position, not actually on a final stop, the air pressure in the main cylinder holds the slide in a locked position against a column of oil. This feature enables a stop to be set for the final depth, but intermediate roughing cuts can be made by inching the headslide down until the final stop is reached. The speed of the slow approach of the slide is normally set before the machine leaves the works to approximately 6"/min. and will normally not require adjustment. If however it is required to alter this speed this may be done by removing the cover plate and adjusting the control knob on the hydrocheck unit. (See Fig. 12). Screwing the knob clockwise to slow down the feed and anticlockwise to increase it. Instructions for re-charging the hydrocheck supply cylinder are given on page 11.

EXPLANATION OF PNEUMATIC CIRCUIT DIAGRAM - FIG. 12.

1. **NEUTRAL** - When the control lever is in neutral, all three valves AC489B, AC447B and AC446B are in the unoperated position, bringing the stop valve and skip valve No. 1 into circuit so hydraulically locking the headslide.
2. **UP FAST** - With the control lever in this position valve AC446B is operated, which in turn actuates the change over valve on the cylinder directing the main air supply from the bottom of the cylinder to the top and so traversing the headslide assembly upwards in fast traverse. Note :- (the piston is fixed and the cylinder moves, also that the skip valves are uni-directional and are only effective in the downward movement and unrestricted on the upward).
3. **DOWN SLOW** - When the control lever is in this position valve AC446B is unoperated therefore the change over valve on the cylinder directs the main air supply to the bottom of the cylinder. Valve AC447B is operated which exhausts the stop valve enabling oil in the hydrocheck to flow at a restricted rate determined by setting the hand operated throttle valve. Valve AC489B is unoperated therefore skip valve No. 1 is in line 'A'.

4. **DOWN FAST** - In this position of the control lever valves AC489B and AC447B are operated which take skip valve No. 1 out of circuit allowing oil to by-pass the throttle valve in line 'B' by traversing through line 'A' unrestricted to give fast down feed. The fast down feed continues to a point $\frac{3}{8}$ " from the turret stop when pilot valve AC446B (mounted on headslide) is operated bringing skip valve No. 2 into line 'A'. Oil then has to flow through line 'B' at the restricted rate on slow down feed on to the final stop.

To control the speed of the fast traverses for both up and down movement of headslide assembly, two adjusting screws are provided and are located in the top end cap of the main cylinder.

A further adjusting screw is provided in the bottom end cap of the main cylinder to adjust the cushioning at the end of the upward movement of the headslide assembly.

Important - It is essential that the air lubricator and filter unit be inspected once a week and the oil bowl topped up with light machine oil if necessary. At the same time the filter bowl should be taken off and water or particles removed.

The headslide is retained by a taper gib, which is correctly adjusted at the works and will not require adjustment for a long time. If adjustment is necessary at some time, this can be achieved by slackening off the lock nut LC379 and resetting the gib. See Fig. 4.

THE ARTICULATED ARMS

The pivot bearings are of the taper roller type and are correctly set at the works. Other than lubrication every 3 months no maintenance or adjustment is necessary.

THE TABLE

The table has 8" of vertical rise and fall and is elevated by a hardened ball screw unit, which is grease packed for life. A clamp lock for the vertical slide is provided on the right hand side of the machine.

The table cants through 180° and is located in the vertical and horizontal positions by a precision plunger assembly. To cant the table unlock the canting lock shaft and withdraw the plunger (Fig. 1). Cant the table to the required angle (graduated scale provided) and relock. **IMPORTANT** - WHEN RE-ENGAGING THE PLUNGER bring the table to the approximate position

and RELEASE THE PLUNGER. GENTLY MOVE THE TABLE BY HAND until the plunger goes fully home under its own spring pressure only. ON NO ACCOUNT SHOULD THE PLUNGER BE HAMMERED HOME, and always make sure that no swarf is present in the location slots before engaging plunger.

The plunger assembly with care will locate the table within .002" over 24" and it is recommended that the table be set with a dial gauge as described on Page 8 if greater accuracy than this is required.

BEARING LIST			
Manufacturers' Reference	Type	Quantity	Where Used
Timken 29880 - 29820	Taper Roller	1	Trunnion for primary arm (bottom)
Timken AW3500B-AW3500A	Taper Roller	1	Trunnion for primary arm (top)
Timken 49175 - 49368	Taper Roller	2	Pivot for secondary arm
Skefco. 07	Thrust Bearing	2	Handwheel shaft for table cant
Skefco. 023	Thrust Bearing	1	Table rise and fall nut housing
Ina NKX 30	Needle and thrust with inner race	1	Bevel gear for table rise and fall
Hoffmann N3243	High speed ball bearing	1	Router head spindle (top)
Hoffmann N6119	High speed angular contact bearings	1 pair	Router head spindle (bottom)

ELECTRICAL INSTALLATION INSTRUCTIONS

Fit a triple pole isolating switch near the machine, unless supplied by Wadkin to special order, so that the machine can 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 locknuts. Reconnect the frequency changer to the terminal blocks in the control gear cavity as follows.

5 HP Machine

1. Drive motor at terminals A1-B1-C1
2. Slip rings at terminals A-B-C
3. Stator at terminals D-E-F

Heavy Duty Machine

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 the isolating switch.

OPERATING INSTRUCTIONS

To start the machine close the isolating switch, turn the speed selector switch to the speed required and press the "Start Button". To stop the machine press the "Stop Button". To lock off the machine press and half turn the "Stop Button", this must be released before the machine can be re-started. Note:- If the speed selector switch is operated whilst the machine is running the head motor and frequency changer will automatically stop.

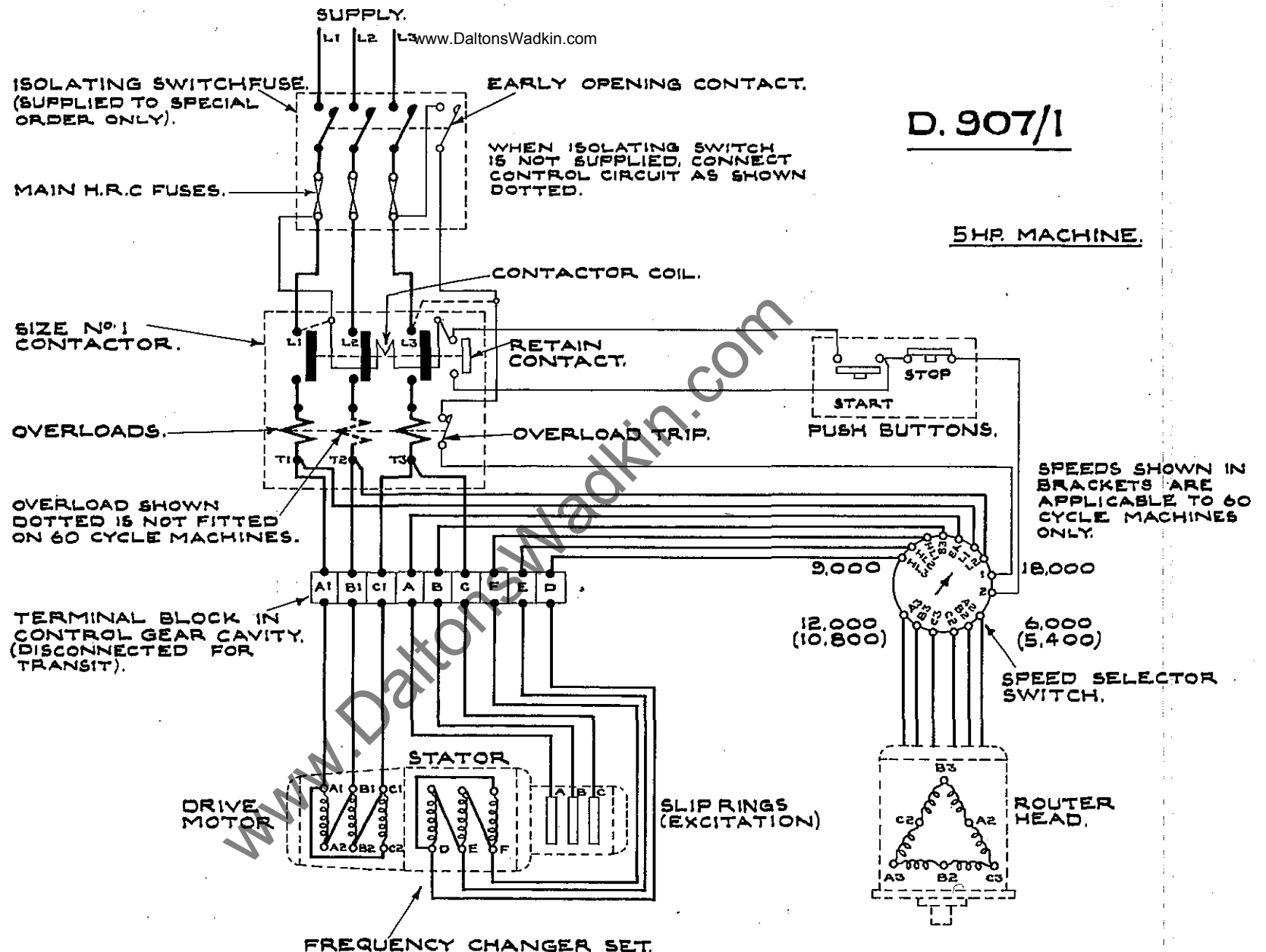
OVERLOAD 5 HP

On the machine if an overload occurs wait for a short time to allow the heaters to cool, press the plunger on the overload assembly and start in the usual manner. On the Heavy Duty machine the overloads are set at the works for automatic reset after tripping and after allowing a short time for the heaters to cool the machine can be started in the usual manner. If however the overloads are altered to hand reset then the plunger on each overload assembly must be pressed before the machine can be re-started.

GENERAL

Check the 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.



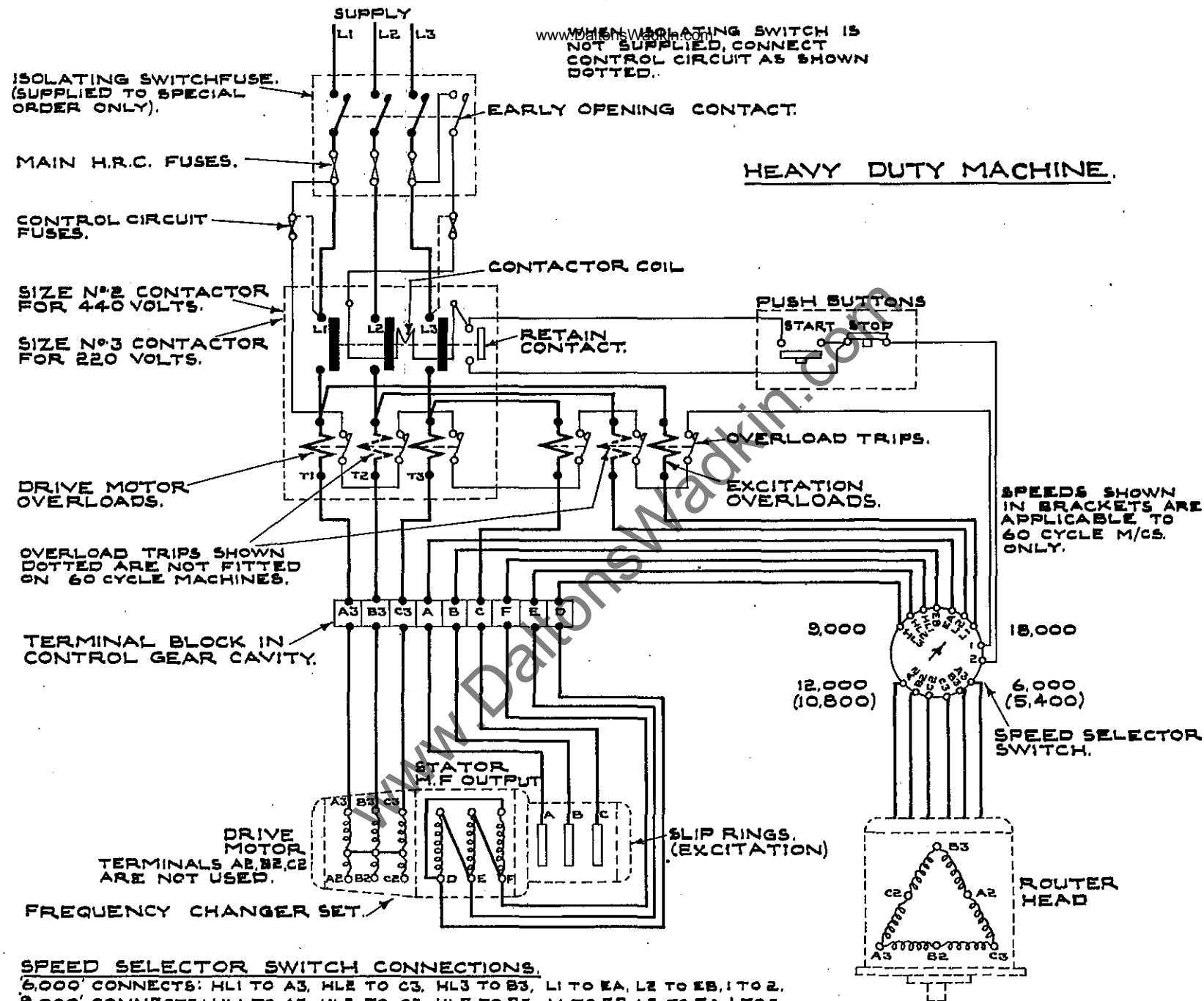
SPEED SELECTOR SWITCH CONNECTIONS.

'6,000' CONNECTS: HL1 TO A3, HL2 TO C3, HL3 TO B3, L1 TO EA, L2 TO EB, 1 TO 2.

'9,000' CONNECTS: HL1 TO A3, HL2 TO C3, HL3 TO B3, L1 TO EB, L2 TO EA, 1 TO 2.

'12,000' CONNECTS: HL1 TO A2, HL2 TO B2, HL3 TO C2, L1 TO EA, L2 TO EB, A3 TO B3, B3 TO C3, 1 TO 2.

'18,000' CONNECTS: HL1 TO A2, HL2 TO B2, HL3 TO C2, L1 TO EB, L2 TO EA, A3 TO B3, B3 TO C3, 1 TO 2.



SPEED SELECTOR SWITCH CONNECTIONS.

6,000' CONNECTS: HL1 TO A3, HL2 TO C3, HL3 TO B3, L1 TO EA, L2 TO EB, I TO 2.
 9,000' CONNECTS: HL1 TO A3, HL2 TO C3, HL3 TO B3, L1 TO EB, L2 TO EA, I TO 2.
 12,000' CONNECTS: HL1 TO A2, HL2 TO B2, HL3 TO C2, L1 TO EA, L2 TO EB, A3 TO B3 TO C3, I TO 2.
 18,000' CONNECTS: HL1 TO A2, HL2 TO B2, HL3 TO C2, L1 TO EB, L2 TO EA, A3 TO B3 TO C3, I TO 2.

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