

Wadkin

OPERATING AND MAINTENANCE INSTRUCTIONS

30" Knife Grinder Type N.M.

INSTRUCTION BOOK No. 741

MODIFICATIONS ARE MADE TO THESE BOOKS FROM TIME TO TIME
AND IT IS IMPORTANT THEREFORE THAT ONLY THE BOOK SENT
WITH THE MACHINE SHOULD BE USED AS A WORKING MANUAL.

Wadkin

30" Knife Grinder Type N.M.

PRINCIPAL DIMENSIONS AND CAPACITIES

Maximum length of knife	-	-	-	-	-	30 $\frac{1}{2}$ "
Maximum knife section (Normal)	-	-	-	-	-	3 $\frac{3}{8}$ " x $\frac{3}{8}$ "
Maximum knife section (Slotted knives)	-	-	-	-	-	5 $\frac{1}{2}$ " x $\frac{3}{8}$ "
Maximum knife section	-	-	-	-	-	$\frac{3}{4}$ " x $\frac{1}{8}$ "
Bevel angle	-	-	-	-	-	0 to 45°
Hollow grinding	-	-	-	-	-	0 to 25° spindle cant
H.P. of wheel head motor	-	-	-	-	-	1 $\frac{1}{2}$
Wheel size	-	-	-	-	-	6 $\frac{1}{2}$ " dia.
Wheel speed	-	-	-	-	-	2,800 r.p.m.
Floor space	-	-	-	-	-	5' 2" x 22"

Details included with the machine :

Set of spanners.
Knife setting blocks.
Grease gun, No. 2.

One lb. tin of grease L.6.
6 $\frac{1}{2}$ " cup grinding wheel, No. UGW128.
Clamp plates : Clamp bolts, nuts and washers.

Wadkin Ltd., Green Lane Works, Leicester.

Telephone: 0116 276 9111

INSTALLATION

The machine is despatched from our works with all bright surfaces greased to prevent rusting. This must be removed by applying a cloth damped with paraffin.

FOUNDATIONS.

If mill floor consists of concrete no special foundation is necessary. $\frac{1}{2}$ " diameter rag bolts or plates and bolts should be used, (not supplied with machine). Cut 4" square holes in concrete and run with liquid cement to fix. Alternatively Rawlplugs may be used. A good wood floor is satisfactory and coachscrews may then be used. The machine should be carefully levelled before fixing and again after final fixing to ensure that no distortion has taken place.

WIRING

See pages 11 and 12 for details and wiring diagram.

GRINDING COOLANT

The tank should be filled with a coolant consisting of soluble oil and water. The recommended mixture is 1 pint of soluble oil, Wadkin grade L.10, to 50 pints of water. Add the oil to the water and thoroughly mix. The old coolant should be drained off the tank and replaced by fresh coolant every 2-4 weeks. A drain plug is provided to empty the tank. If it is desired to use other than Wadkin grade L.10 soluble oil, the following equivalents may be used :

Shell "Dromus D" or Vacuum Solvac Clear.

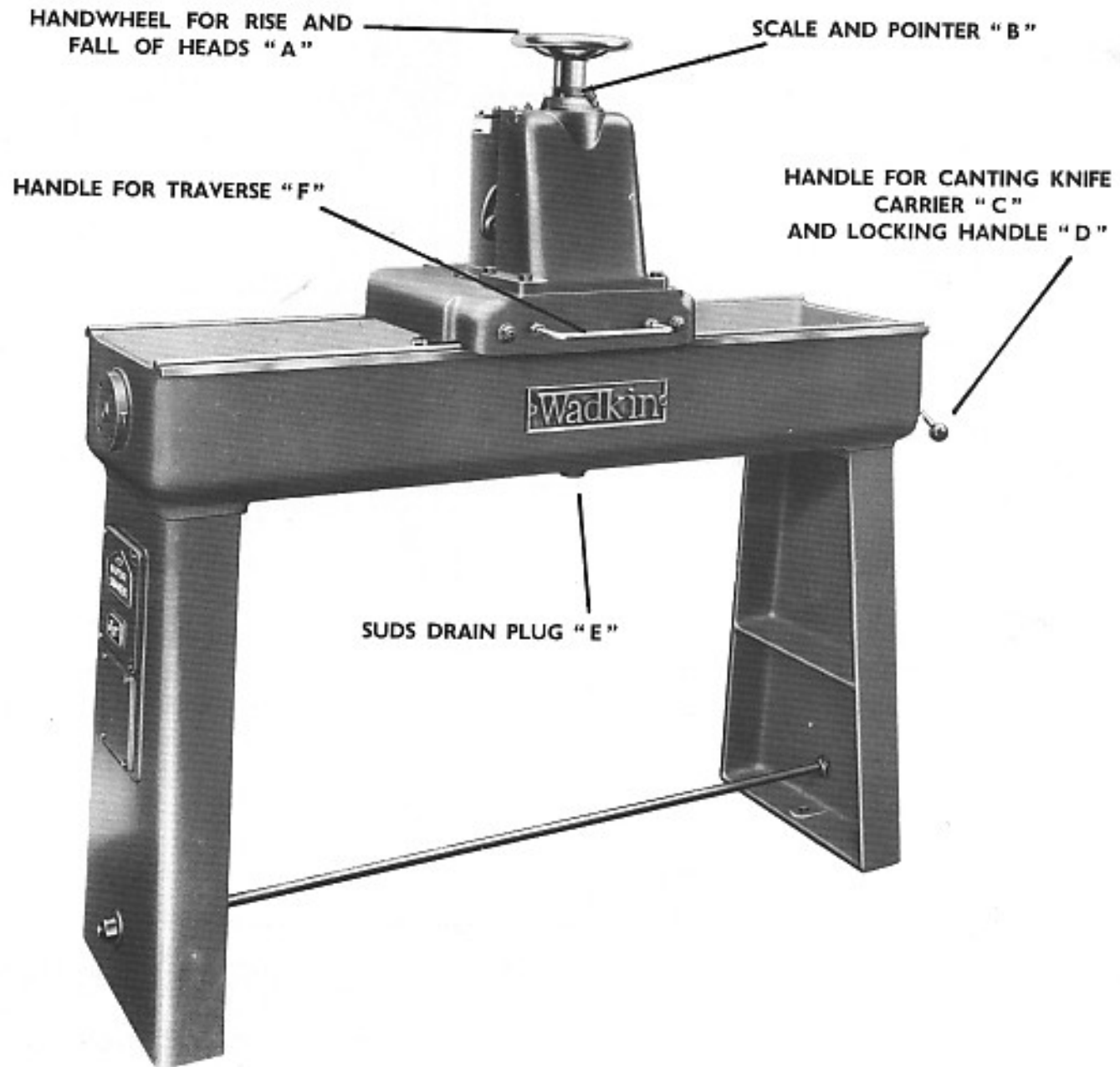


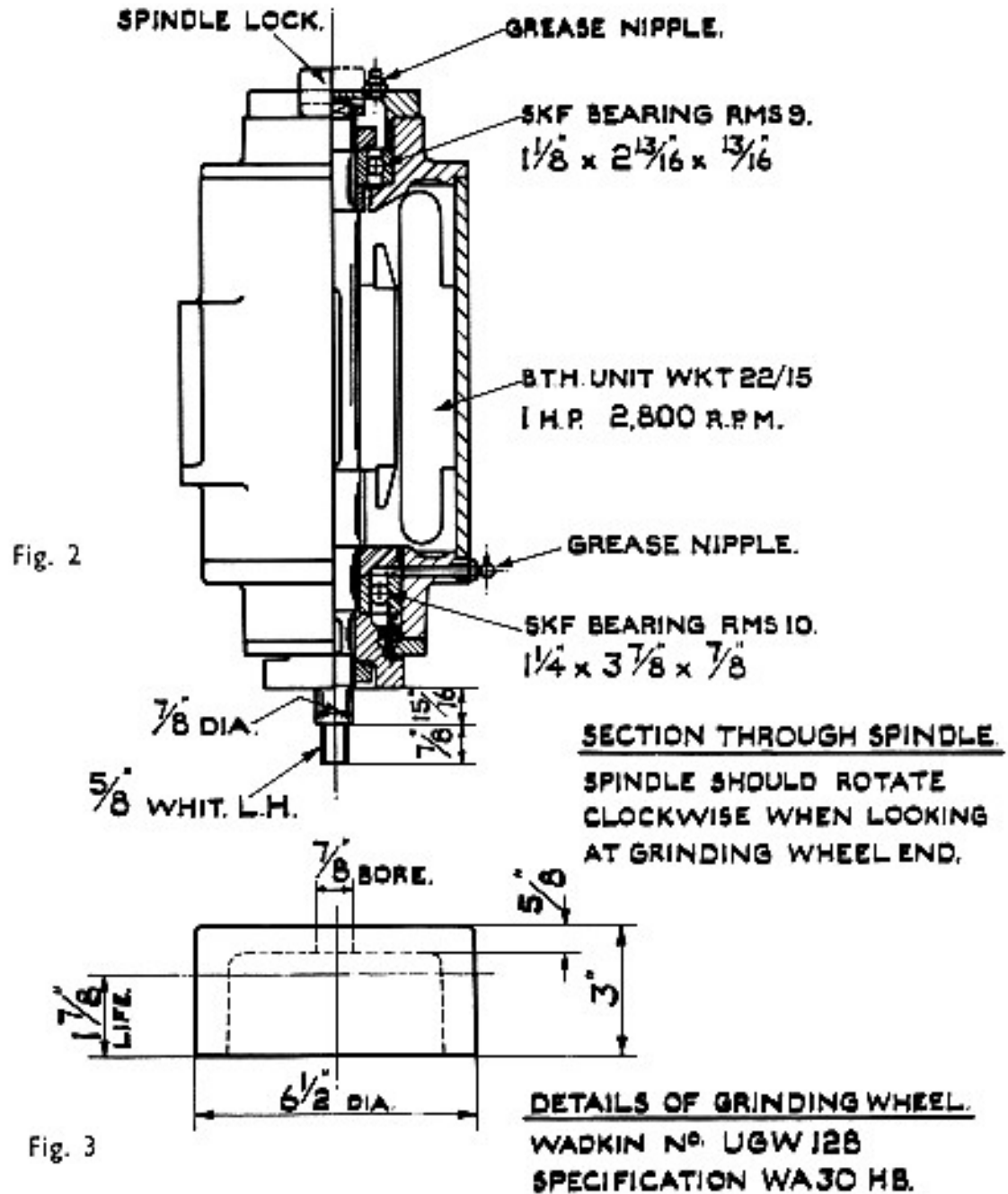
Fig. 1

THE WHEEL HEAD

An arrangement of the wheel head spindle is shown in Fig. 2. The wheel head is mounted on a trunnion to enable the spindle to be canted for hollow grinding. To remove the grinding wheel the spindle must be canted into the horizontal position by removing the two hexagon head screws which lock the spindle at the required angle. A spindle lock is fitted to hold the spindle while the nut is being removed. See Fig. 2.

IMPORTANT. Before using a new wheel it must be carefully examined to make sure it has not been damaged in transit.

Spindle should rotate clockwise when looking at the grinding wheel end.



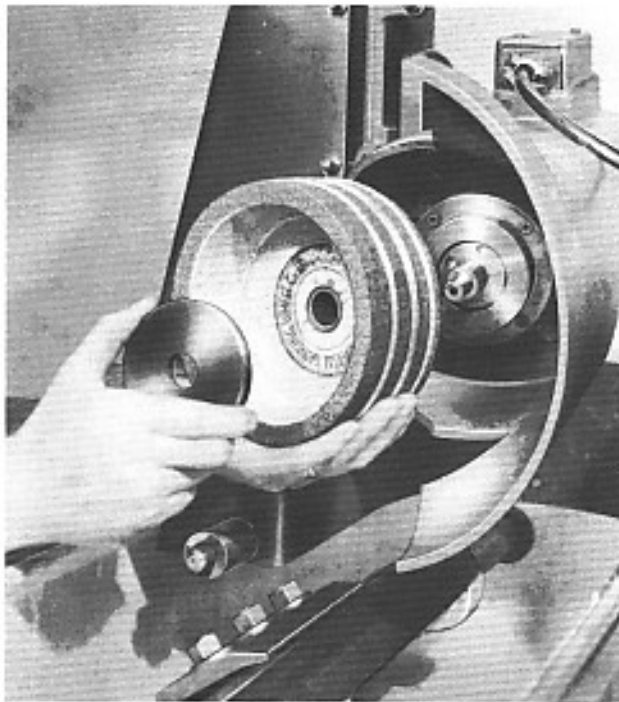


Fig. 4

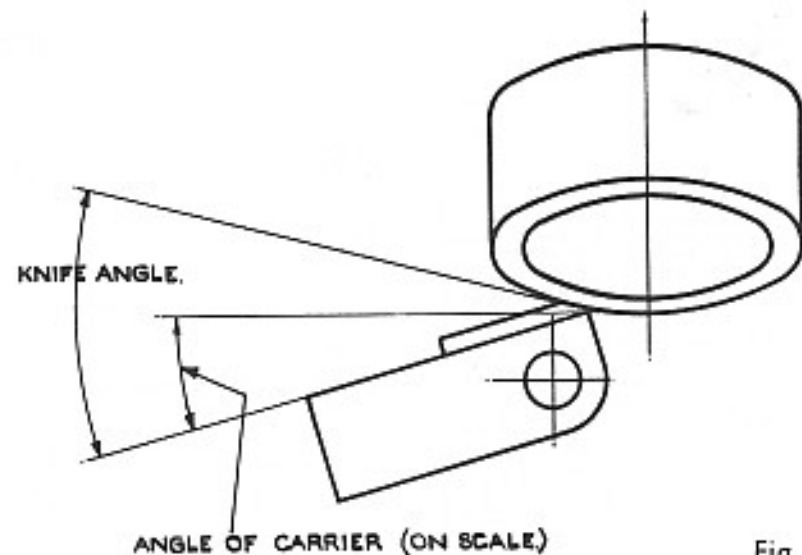


Fig. 5

THE WHEEL HEAD DOWN FEED

The grinding wheel is set by handwheel "A," see Fig. 1. To indicate the amount of feed, scale and pointer "B" (see Fig. 1) are provided. The scale reads from zero to 0.072" in 0.001" divisions, and the pointer can be returned to zero from any position on the scale without moving the handwheel.

THE KNIFE CARRIER

The knife carrier is canted by the handle "C," Fig. 1. The carrier cants from 0° to 45° and a graduated scale and pointer are fitted for setting to the required angle.

HOLLOW GRINDING (Instruction Plate).

It will be seen from Fig. 5 (showing grinding wheel canted for hollow grinding) that the angle at which the knife carrier must be set when hollow grinding is NOT the same as the knife angle. An instruction plate (as illustrated at Fig. 6) is provided, giving angles at which carrier must be set for various angles of head cant and knife angles required, e.g., if a knife angle of 30° is required when head is canted at say 25°, the angle at which the carrier must be set is (from table) 16°.

KNIFE GRINDING

HOLLOW GRINDING					
SET ANGLE ON KNIFE CARRIER SCALE TO ANGLE GIVEN IN TABLE, FOR APPROPRIATE HEAD CANT AND KNIFE ANGLE REQUIRED					
REQUIRED KNIFE ANGLE	HEAD CANT.				
	5°	10°	15°	20°	25°
15	11	8	5	4	2
20	16	13	10	9	7
25	21	18	15	13	11
30	26	23	20	18	16
35	31	28	25	22	20
40	36	33	30	26	24
45	41	38	35	31	28

Fig. 6

SETTING. A set of blocks is provided for setting knives, Fig. 9. These blocks set to the back edge of the knives, ensuring that after grinding all knives are parallel. In order to set up a number of small knives, a steel strip should be used in front of the blocks, see Fig. 9. All knives should be flat before bolting to knife carrier; if this is not so and knife is of heavy cross section, the carrier may be damaged.

STRAIGHT GRINDING, i.e., with grinding spindle vertical. When knife is bolted down and carrier set to required angle the head should be started with the wheel well clear of the knife and while the carriage is being traversed over the knife, the wheel should be fed down until it is just touching the knife. The pointer should then be set at zero and the required amount ground off the knife as indicated by the pointer on the scale.

Recommended maximum down feed should not exceed 0.00075" per return stroke. The total amount to be ground off the knife is governed by: 1. Ground face being totally cleaned up. 2. Balance of knife.

HOLLOW GRINDING. The head should be canted over to give the required amount of hollow grind. The knife is then bolted down and carrier set to angle given in instruction plate (see previous note on Page 5).

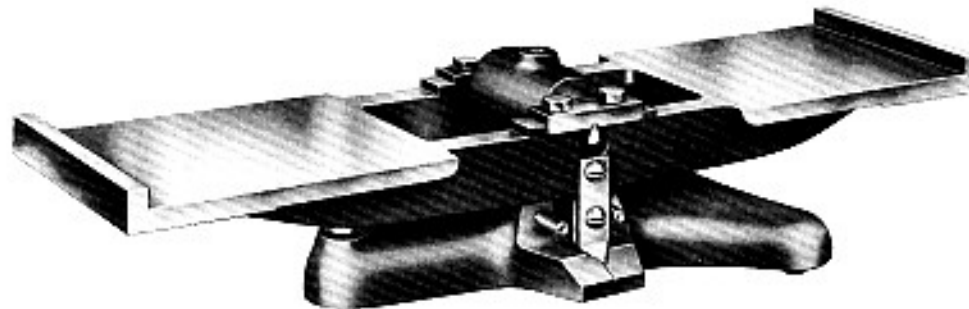


Fig. 7

GENERAL POINTS ABOUT GRINDING

BALANCING

Each pair of knives from one block should be in perfect balance. Knives under $15\frac{1}{4}$ " in length should be ground in pairs to ensure balance. The Wadkin cutter balance, Type K.S., which has been specially produced for balancing planer knives, etc., is illustrated at Fig. 7.

FINISH

To obtain a good finish the grinding wheel should be traversed over the knife until the cut is completely finished.

WHEEL DRESSING

The grinding wheels supplied by Wadkin have been chosen as the result of long experience on knife grinders; due to the free cutting action and ability to retain cutting edge throughout the life of the wheel, dressing is not necessary. And it is recommended that only the wheels supplied by Wadkin are used.

WIRE ON GRINDING WHEEL

Each wheel is bound with two or three groups of 3 strands of wire, see Fig. 8, to guard against bursting at high speed, and therefore the wire must be left in place while grinding. It is important that each group of wires is removed only when the wheel has worn down to within $\frac{1}{8}$ " of the wire.

WHEEL BALANCE

Part of the outside diameter of a grinding wheel may be found to be painted. This is lead paint and is the makers' method of balancing the wheel.

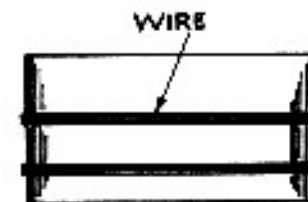
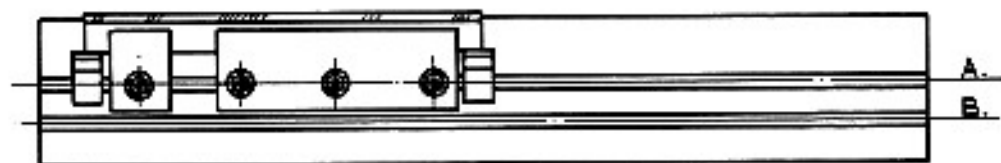


Fig. 8

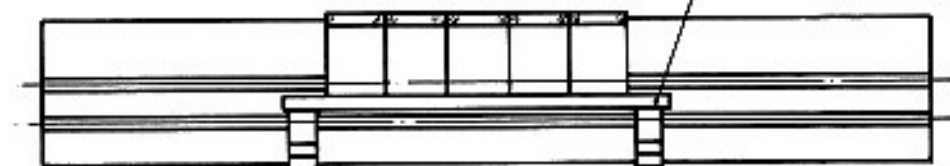


PLAN VIEW OF KNIFE CARRIER SHOWING NORMAL METHOD OF SETTING KNIVES.

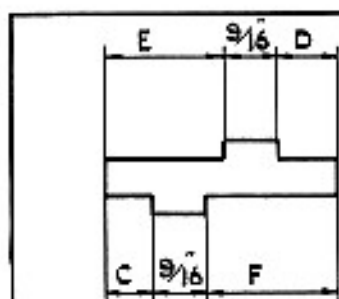
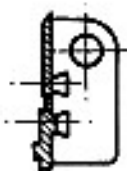


USING SETTING BLOCKS IN SLOT A, KNIVES CAN BE SET UP VARYING IN $\frac{1}{8}$ THS. FROM $\frac{3}{4}$ TO $2\frac{1}{8}$ WIDE; USING SETTING BLOCKS IN SLOT B, KNIVES CAN BE SET UP VARYING IN $\frac{1}{8}$ THS. FROM $2\frac{1}{4}$ TO $3\frac{5}{8}$ WIDE. I.E. $3\frac{5}{8}$ IS MAX. KNIFE WHICH CAN BE SET WITH BLOCKS SUPPLIED.

PARALLEL STEEL STRIP.

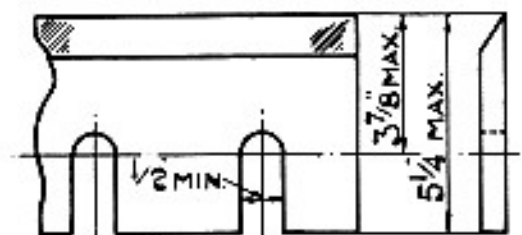


PLAN VIEW OF KNIFE CARRIER SHOWING METHOD OF SETTING A NUMBER OF SMALL KNIVES.



DIMENSION	C	D	E	F
1 ST BLOCK	0	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{1}{8}$ "
2 ND BLOCK	$\frac{1}{4}$ "	$\frac{3}{8}$ "	1"	$\frac{1}{8}$ "
3 RD BLOCK	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{1}{8}$ "

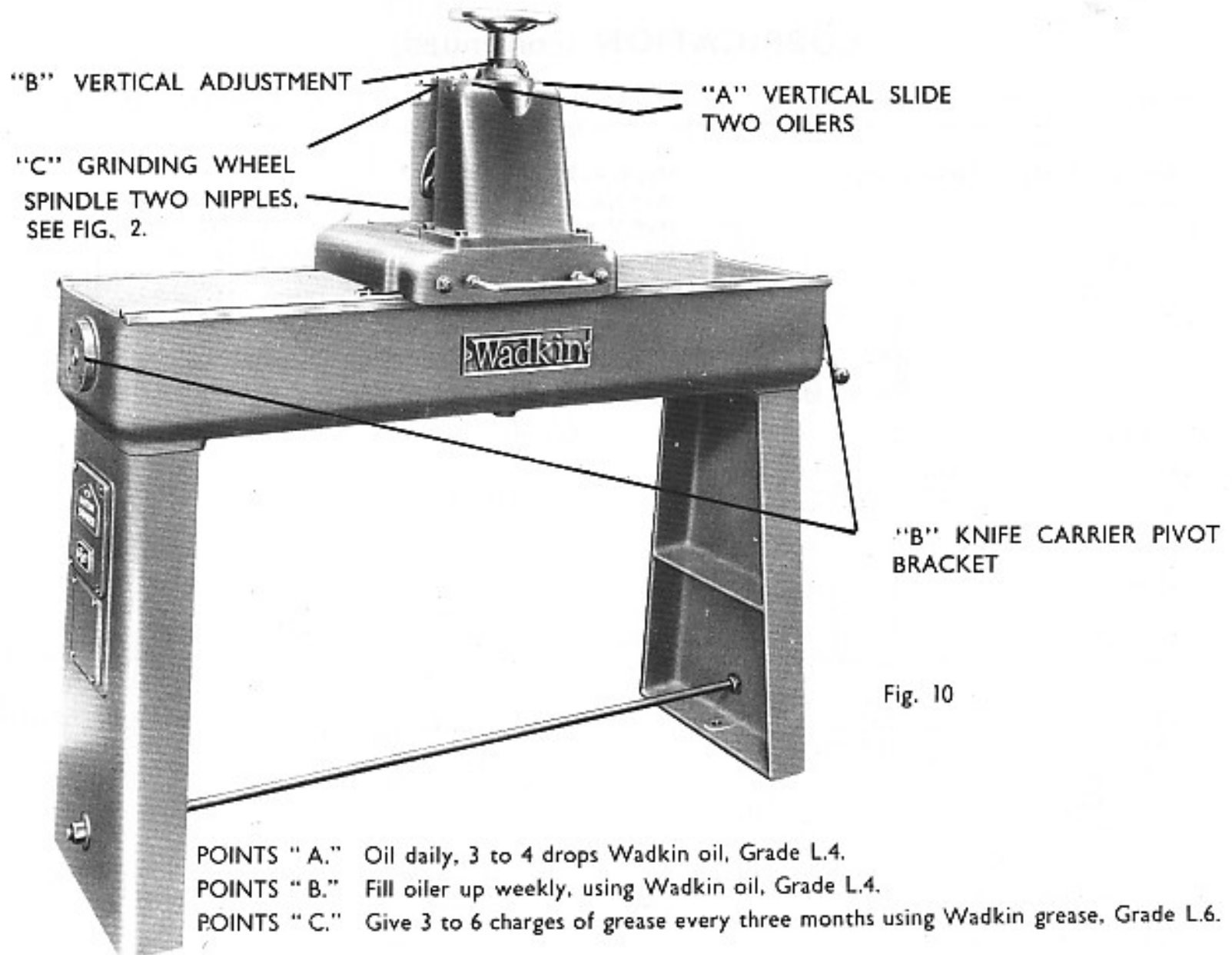
2 OFF EACH OF THE ABOVE
3 SIZES OF SETTING
BLOCKS ARE SUPPLIED
WITH MACHINE.



SLOTTED KNIVES UP TO A MAX.^m OF $5\frac{1}{4}$ " WIDE CAN BE GROUND, IF DIMENSION TO SLOT DOES NOT EXCEED $3\frac{7}{8}$ "

Fig. 9

LUBRICATION CHART



LUBRICATION (continued)

As will be seen from the lubricating instructions, Wadkin oils and greases are recommended, but if it is desired to use lubricants other than Wadkin the following equivalents are listed below :

WADKIN GRADE AND TYPE

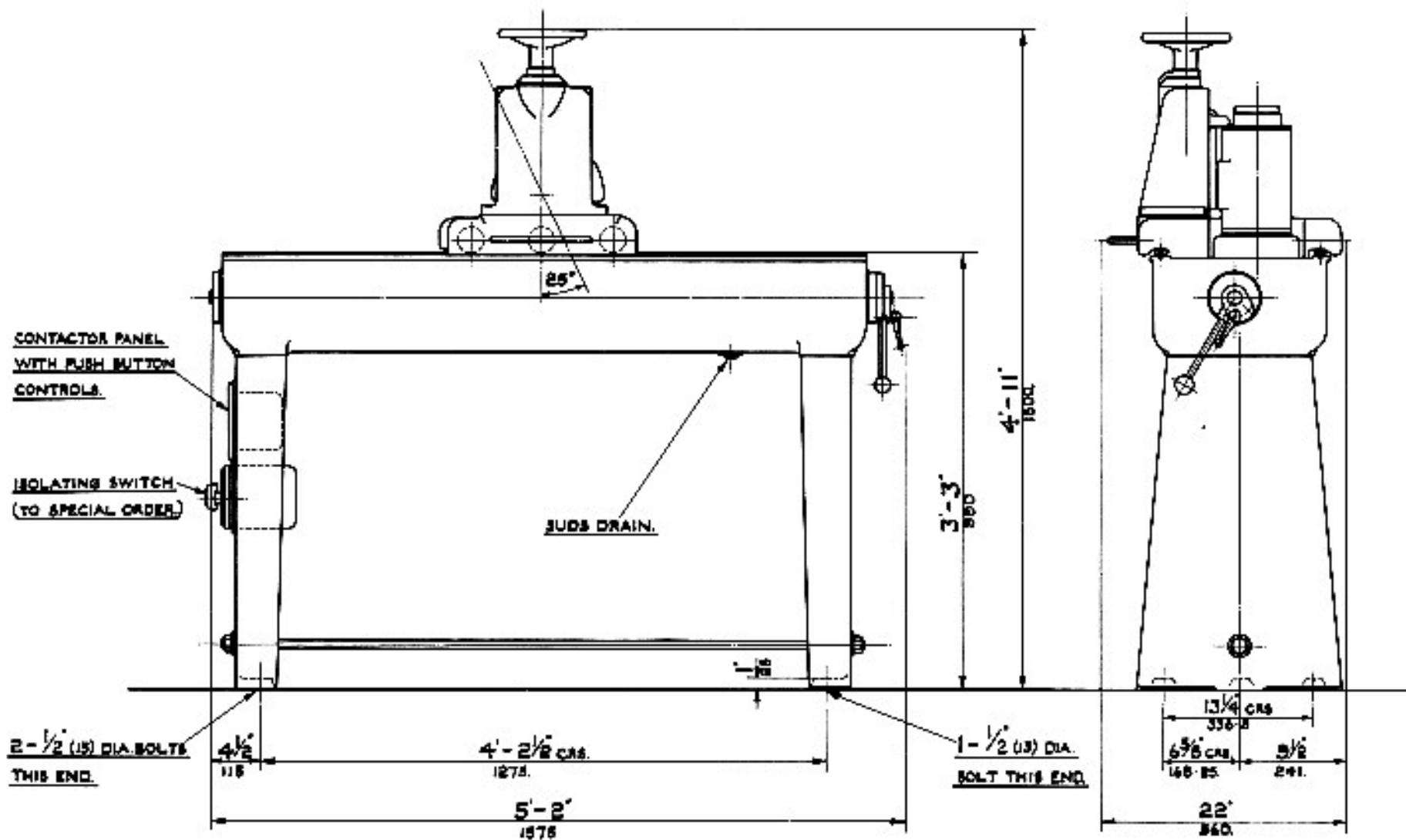
Grease Grade L.6.
Machine oil Grade L.4.
Heavy gear oil Grade L.2.

EQUIVALENTS

Shell Nerita Grease 3 or Vacuum Gargoyle Grease BRB 3.
Shell Vitrea Oil 33 or Vacuum Vactra Oil (Heavy Medium).
Shell Vitrea Oil 69 or Vacuum Gargoyle DTE, BB.

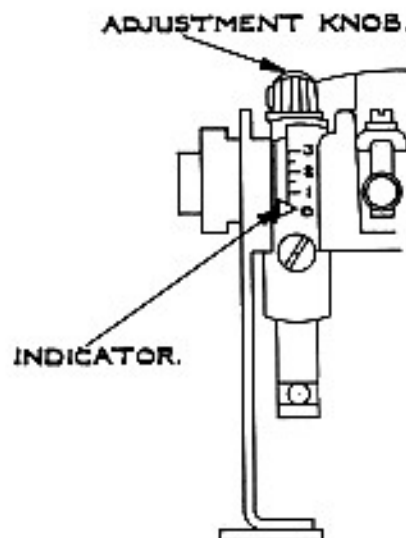
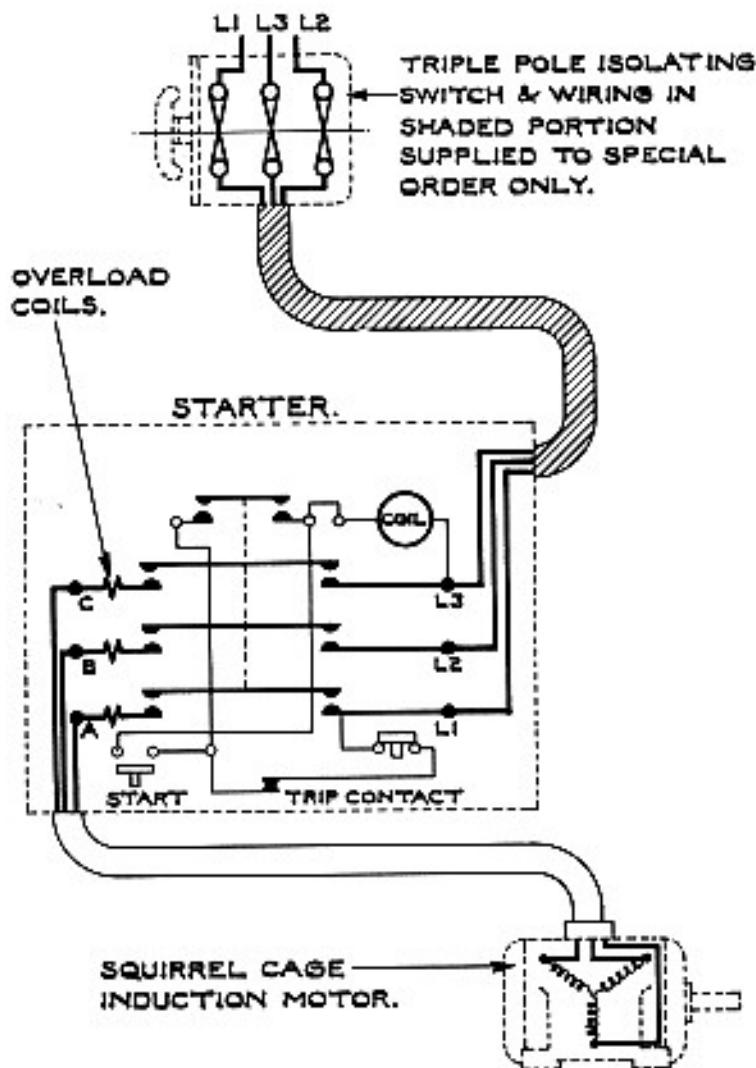
BALL BEARING LIST

Position on Machine	Makers' No.	Quantity	Bore dia.	Outside dia.	Thickness
Bottom end grinding spindle	S.K.F. R.M.S. 10	1	1 $\frac{1}{4}$ "	3 $\frac{1}{8}$ "	$\frac{7}{8}$ "
Top end grinding spindle	S.K.F. R.M.S. 9	1	1 $\frac{1}{4}$ "	2 $\frac{1}{8}$ "	$\frac{11}{16}$ "
Raising screw	S.K.F. O.6	1	$\frac{3}{4}$ "	1 $\frac{1}{2}$ "	$\frac{5}{8}$ "
Carriage rollers	Fischer F.G. 933	3			



30" KNIFE GRINDER. TYPE NM.


DIMENSIONS IN FEET, INCHES & M/M.



TO SET OVERLOAD TRIPS.

MOVE INDICATOR TO FULL LOAD CURRENT OF MOTOR. TRIPS WILL THEN OPERATE AT APPROXIMATELY 20% TO 30% OVERLOAD AFTER ATTAINING FULL LOAD TEMPERATURE.

INSTALLATION INSTRUCTIONS.

FIT TRIPLE POLE ISOLATING SWITCH NEAR MACHINE UNLESS SUPPLIED BY WADKIN LTD. TO SPECIAL ORDER SO THAT THE ELECTRICAL GEAR MAY READILY BE ISOLATED FOR INSPECTION PURPOSES. BRING LINE CABLES TO ISOLATING SWITCH AND TO L1 - L2 - L3 AT CONTACTOR WHICH SHOULD BE SCREWED INTO THE MACHINE AND SECURED BY MEANS OF LOCKNUTS. CABLING SHOWN THUS  TO BE CARRIED OUT BY CUSTOMER UNLESS ISOLATING SWITCH HAS BEEN FITTED BY WADKIN LTD.

OPERATING INSTRUCTIONS.

TO START, CLOSE ISOLATING SWITCH AND PRESS GREEN BUTTON MARKED "ON". TO STOP PRESS RED BUTTON MARKED "STOP"

EARTH MACHINE.

OVERLOAD.

FOR A FINER SETTING OF OVERLOAD, SET LOAD INDICATOR TO A LOWER VALUE AND VICE VERSA FOR A LESS FINE SETTING. LOAD INDICATOR SHOULD ONLY BE MOVED A SMALL AMOUNT AT A TIME. SHOULD THE MOTOR STOP DUE TO OVERLOAD WAIT FOR A SHORT TIME TO ALLOW THE RELAYS TO COOL AND THEN START IN THE USUAL MANNER.

ROTATION.

ENSURE THAT DIRECTION OF ROTATION IS CORRECT BEFORE PUTTING MACHINE INTO SERVICE. TO REVERSE ROTATION INTERCHANGE LEADS L1 & L2

WADKIN LTD.
LEICESTER.

DIAGRAM OF CONNECTIONS.

D. 165/3.