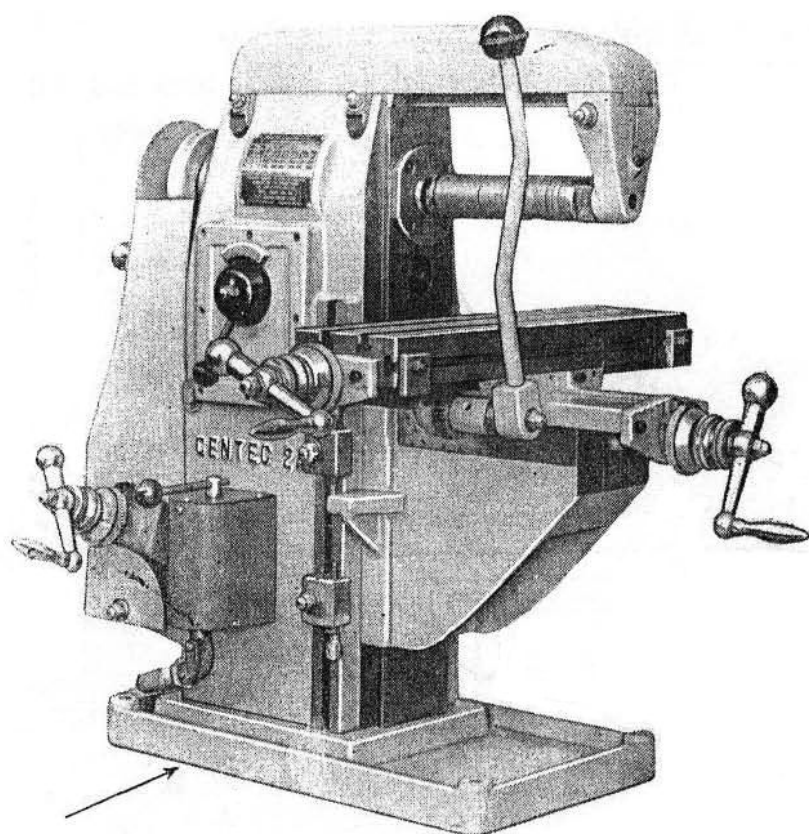


READ BEFORE INSTALLING



REMOVE 4 BOLTS
BENEATH BASE PLATE
TO MOUNT MACHINE
ON PEDESTAL

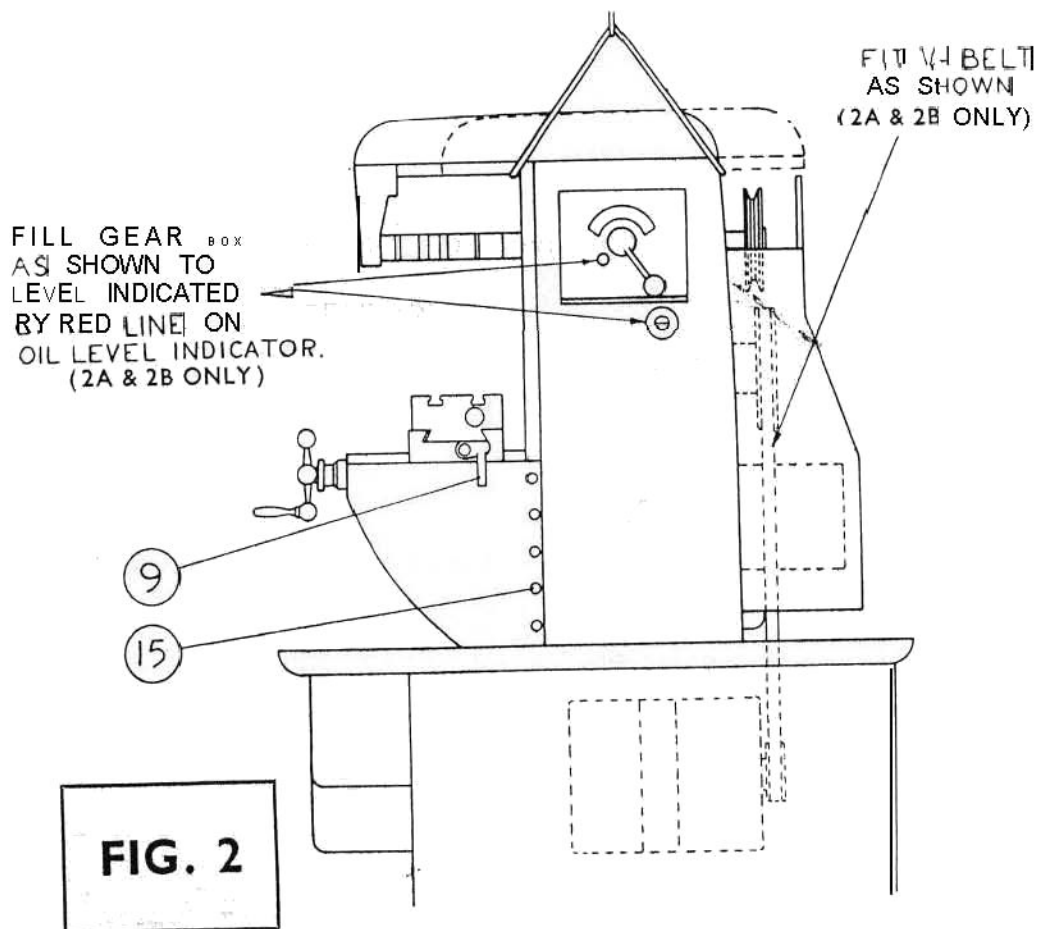
FIG. 1

WARNING : The CENTEC Milling Machine is a high precision machine tool and its accuracy can be easily impaired by careless handling during unpacking and installation unless the following instructions are adhered to. The machine must only be lifted by a rope slung underneath the overarm as shown in fig. 2.

FITTING MACHINE TO PEDESTAL

To remove base plate it is necessary to unscrew the 4 bolts from the underside. Clean off under face of machine and tray of Pedestal, and add gasket to make watertight. These remarks refer to the 2A Pedestal machine only. Fit machine on Pedestal using 4 socket screws provided.

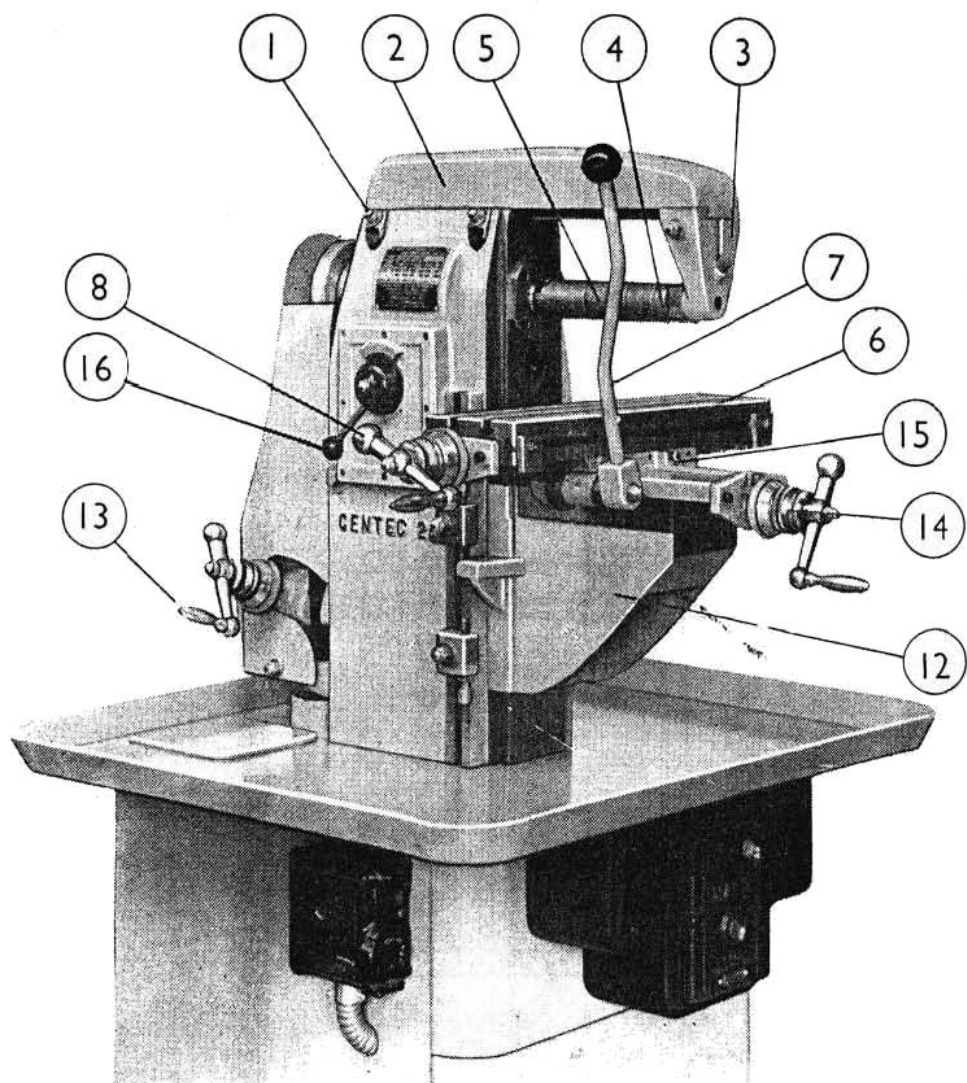
The V-belt should now be fitted to the bottom pulley, By unscrewing the back panel a check must be made that the belt is lying properly on the motor pulley, **Fig, 2** shows the machine fitted on Pedestal with a V-belt on the Pulley.



PREPARING THE MACHINE FOR USE

Reverse all ball handles and wash off rust preventative with paraffin. Lubricate all slides and fill gear box through the plug shown on **fig. 2** to the correct level indicated on the oil window, Quantity required is approximately 2 pints, The type of oil recommended is Shell Mex C.Y.2. Suds tank should be filled with 6 gals. of. suitable coolant.

WIRING. For pedestal machines it is only necessary to connect the mains to the isolator. For bench machines connection is made to the starter on the side of the machine. The machine must be adequately earthed.



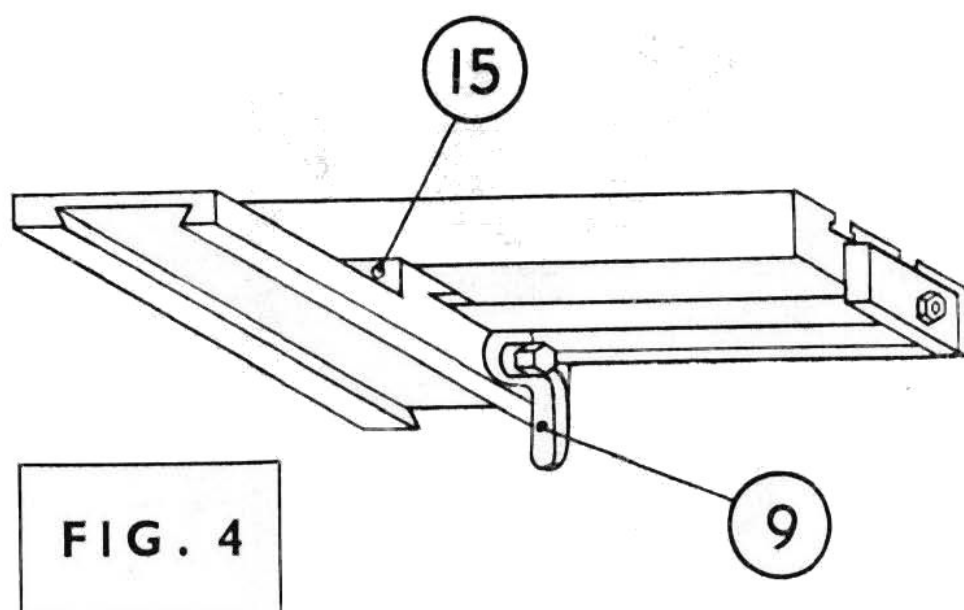
FIG, 3

OPERATING INSTRUCTIONS

Fitting Cutter to Horizontal~Spindle (See fig. 3)

Slacken arbor nut (4) holding the arbor with a spanner on the 2 flats provided near the top end, Now slacken off the 2 pressfinger nuts (1) and withdraw overarm (2) complete with arbor support (3). Remove arbor nut and any necessary spacing collars (5) and fit cutter according to the direction of rotation as required. Refit spacers and arbor nut and insert overarm and arbor support. Tighten up the pressfinger nuts and tighten up the arbor nut, **NOTE** : It is absolutely necessary to have the overarm and arbor support on the arbor when applying force to the arbor nut by means of a long spanner.

FEED MOVEMENTS. The table (6) is operated either by ball handle (8) which is attached to a lead screw running in a half-nut, or by the hand lever (7) which moves the table by means of a pinion working on a rack. To engage the hand lever, it is necessary to disengage the lead screw by means of disconnecting the half-nut (9) shown in fig. 4. This is held in position by a little locking nut which must be slackened to move the half-nut. The hand lever (7) can be operated when its serrated toothed clutch is engaged. To re-engage ball handle the half-nut No. 9 must be engaged with the lead screw. To do this it is necessary to turn the lead screw whilst engaging to ensure full mesh of the thread.



On the 2A the vertical movement of knee (12) is accomplished by ball handle (13) operated through the worm box on to a pinion moving on a rack. On the 2B it is accomplished by a vertical lead screw operated through gear box.

All slide movements can be limited by adjustable stops. They can also be locked in any position by suitable locking screws (15) shown on figs, 2, 3 and 4. All micrometer dials have readings in $\cdot 001''$ graduations (or $\cdot 025$ m/m graduations) and are adjustable to any desired initial setting by slackening off the knurled ring nut (14) and reclamping by same.

SPINDLE SPEED SELECTION

No. 2A & 2B Milling Machine

This machine has a gear box with 6 spindle speeds, 85, 195, 395, 595, 890 & 1400 RPM, These are selected by moving the 2 gear shift levers (16) provided one on each side of the machine. The speed movement can be selected from the speed plates attached to the machine.

WARNING ; The gear shift levers must not be operated while the machine is running.

The V-belts may need adjusting after a short running-in period due to initial stiffness.

The machine is now ready for operation,

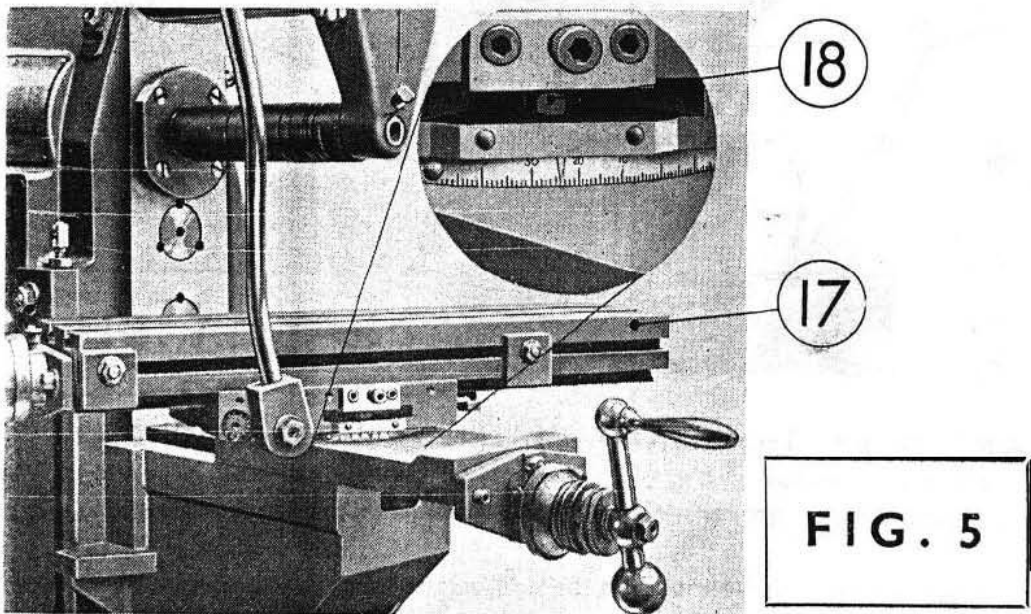
No. 2 Milling Machine

This machine has 6 spindle speeds from 200/ 1300 RPM which are selected by merely moving the V-belt from the countershaft to the machine in conjunction with the V-belt from the motor to the countershaft.

FITTING OF ACCESSORIES

Swivelling Table (17). If the machine is supplied with swivelling table shown on fig. 5, this can be unlocked by the 2 nuts (18) one at the back and one at the front of the table.

WARNING : It is important to utilise both nuts as otherwise an undue strain will be put on each during operation. The feed movements of the swivelling table are as already described for the standard table.



Change over to Vertical Milling. Holding the arbor with a spanner on the 2 flats provided, unscrew the 2 lock nuts on the back of the draw-bar and then slacken off the 2 pressfinger nuts previously described. Slide off the overarm and remove arbor by tapping on the draw-bar with a soft mallet. As the spindle is located in a morse taper it may be necessary to use a little force to remove this. Slide on Vertical Milling Attachment from the front of the machine into such a position that the V pulley (19) at the rear is vertically in line with the V pulley (20) at the rear of the body of the machine. Tighten up the pressfinger nuts and slip on the V-belt as shown in fig, 6, No, 26 is a bracket, with jockey pulley, which moves outwards to tension the belt as required.

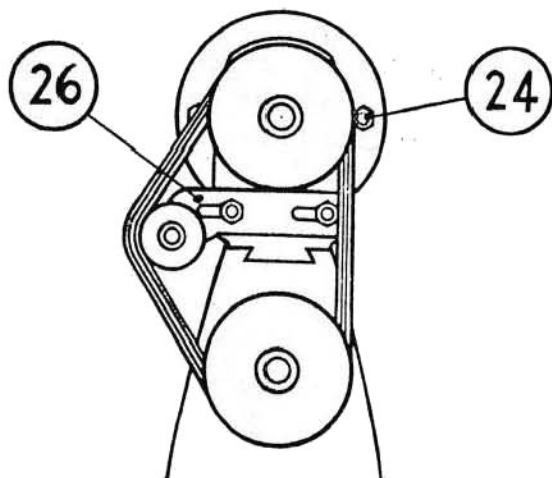


FIG. 6

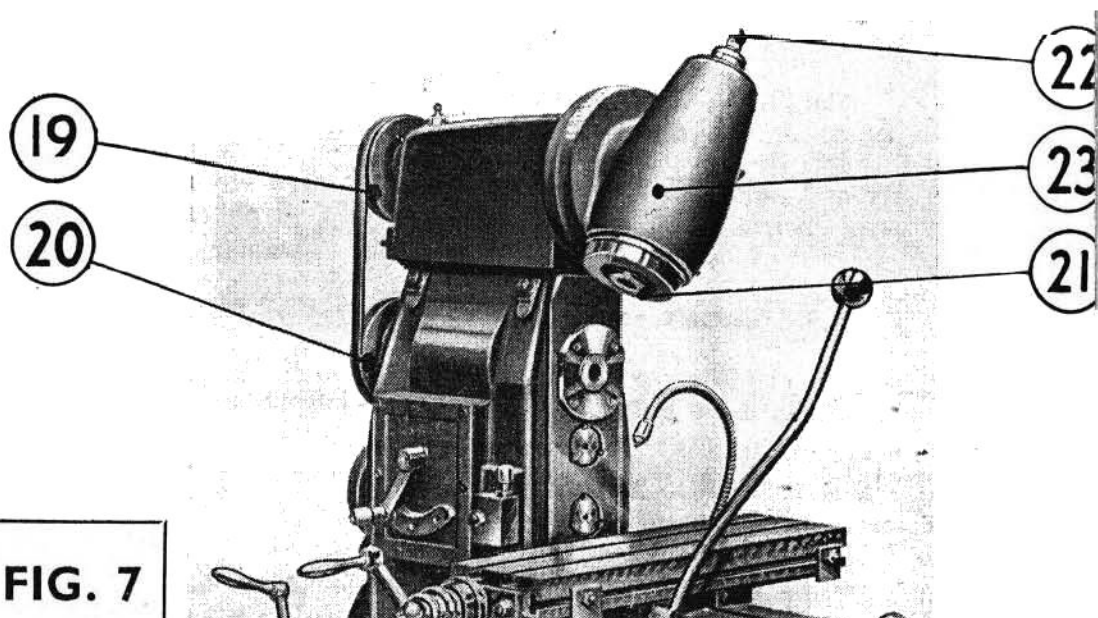


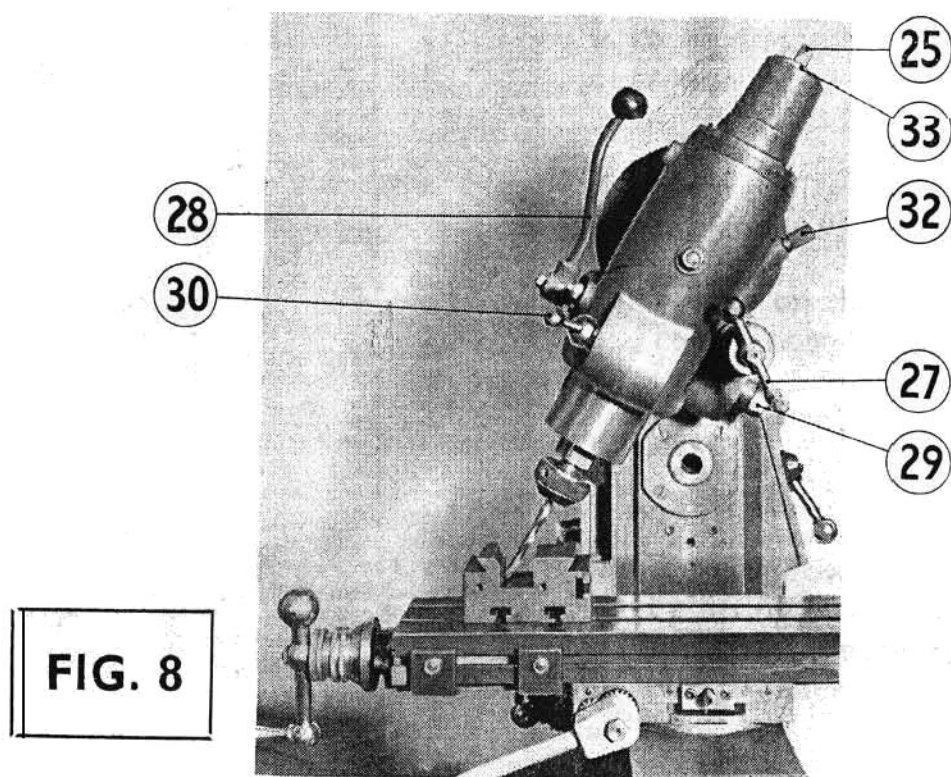
FIG. 7

STANDARD VERTICAL MILLING ATTACHMENT (Fig, 7) V.M.A.

Insert chuck or cutter into spindle (21) which locates on a No. 2 morse taper and screw draw-bar in from the top of the head in a clock-wise direction.

Tighten up the top of draw-bar so that draw-bar pulls cutter into

spindle and then tighten the lock nut on to the above, To swivel the V.M.A. (23) into any desired position, slacken off the 2 nuts (24—fig. 6). After setting, re-tighten. The spindle speeds obtained are the same as for the horizontal spindle.

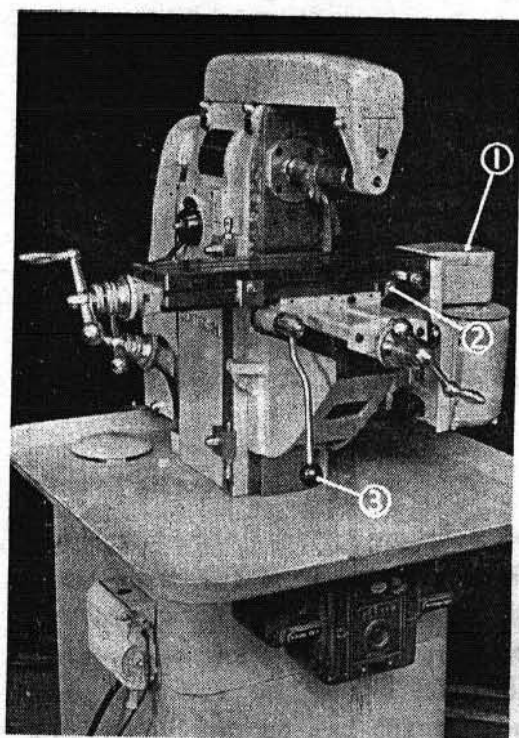


SLIDING SPINDLE VERTICAL MILLING AND DRILLING ATTACHMENT (Fig. 8) S/S V.M.A.]

Insert cutter or chuck into the spindle which has a No. 2 morse taper and tighten down the draw-bar (25) which pulls the cutter or chuck into the spindle.

To set the S/S V.M.A. into any desired position slacken off the 2 nuts (24) fig. 6.

The vertical movement of the spindle is accomplished either by hand lever (28) or the micrometer hand wheel (27). To operate by micrometer ball handle tighten the small lever (29) in a clockwise direction and if desired, handle (28) can be prevented from moving by slackening off the little nut which holds it on the taper. To operate the spindle by the handle (28) unscrew clutch nut (29) and fix handle in any desired position by locking with the little nut on to the taper, The spindle can be locked in any desired position by tightening the handle (30). Before operation the head should be filled with lubricating oil through the dip stick hole (32). When doing this the quill should be in top position. The draw-bar does not come away from the head in normal use but it can be removed by unscrewing the lock nut (33) in an anti-clockwise direction, Spindle speeds are the same as for the horizontal.



The following procedure is to be adopted for the operation of this equipment:-

- (a) Depress lever No. 2 on Figure 9.
- (6) Switch on the Power Feed Motor by pressing the Starter button situated on the right-hand side of the pedestal.
- (c) Engage Power Feed by lifting lever No. 2 to its maximum extent so that the catch holds it in position.
- (d) The cut-out stop found in the front tee-slot of the table should be set to disengage lever No. 2 at any position required. Note that it is essential to have this stop attached to the machine as there is no emergency cut-out.
- (e) To return the table rapidly after the Power Feed is disengaged, it is only necessary to lift the Lever No. 3 into the Vertical position and then it should be turned in an anti-clockwise direction, pulling it slightly towards the operator to engage the clutch provided.
- (f) To operate the table lead screw by ball handle disengage the power feed clutch by means of the small knobbed lever protruding from the power feed gear box.
Check that lever No. 2 is in up position.

To Change the Rate of Feed

Remove cover No. 1 at the right-hand end of the table. Two pick-off gears will be found to be in engagement and two spare ones will be found in the left-hand pocket. By running every one of these gears on each of the two shafts, four feeds are obtained,

It is necessary to introduce a small amount of oil into this feed box from time to time, but the level should never exceed the height of the small lip found at the side of the box when the cover mentioned above has been removed. Only light oil should be used.

CEN TEC 2A and 2B

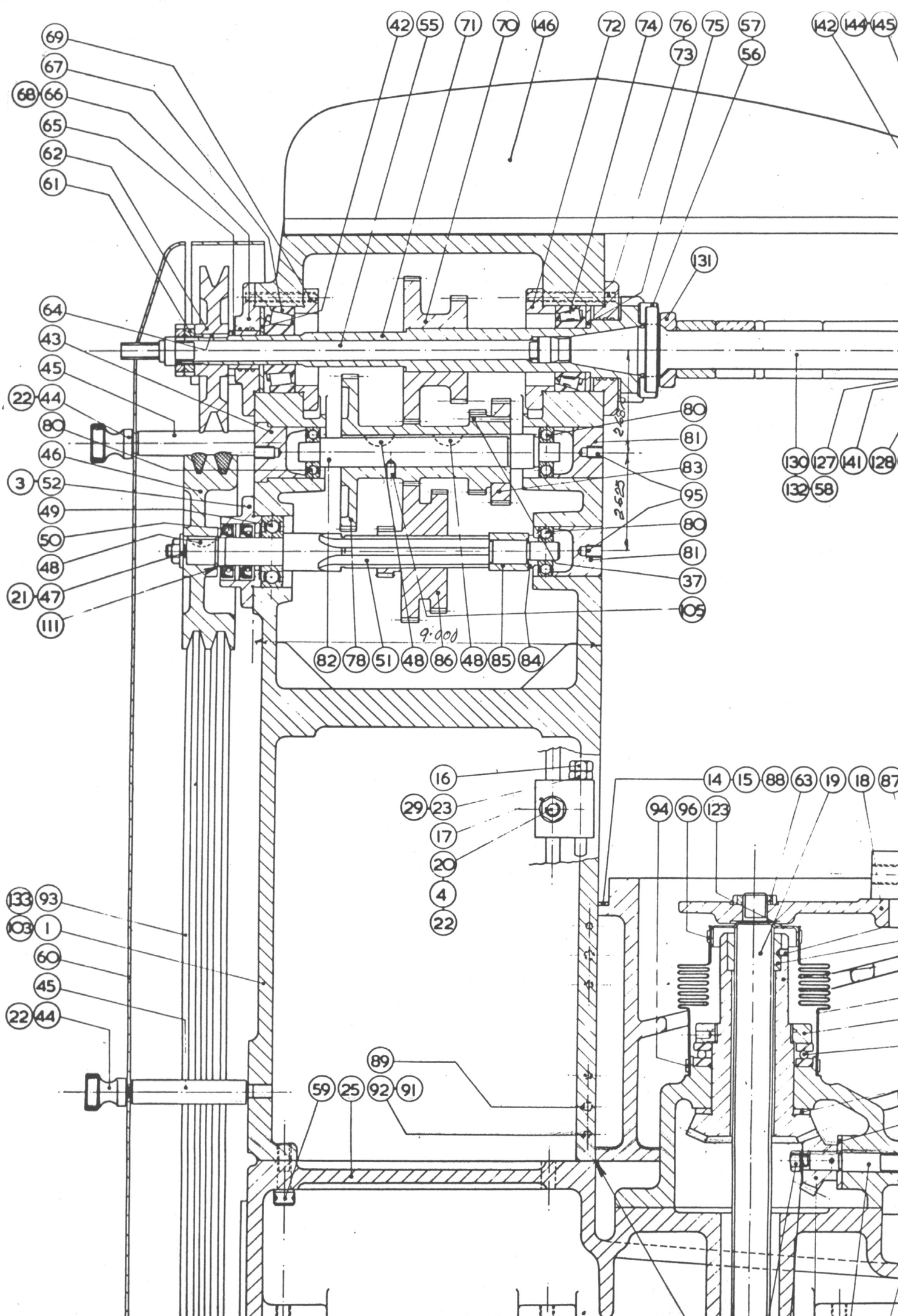
1 - 2 3/4" Set Spanner	1—3/16" x 1/4" Set Spanner
1—5/16" Set Spanner	1—3/32" A/F Allen Key
1—5/32" A/F Allen Key	1—1/4" A/F Allen Key
1—3/16" A/F Allen Key	2-1" A/F Spanner
2—Cee Spanner.	

SERVICING

Lubrication, All parts provided with oilers should be lubricated with Shell C.Y.2 or near equivalent. Grease nipples should be lubricated with Shell R.B.1 or near equivalent. Oiling should be done once a day and greasing should be done at 2/3 monthly intervals. The gear box oil in the 2A and 2B Milling Machine should be completely drained and changed once every 6 months through the drain plug provided on the side of the machine. It should be refilled with Shell C.Y.2

ADJUSTMENTS FOR WEAR

All slides on the machine can be adjusted for wear by tightening up the appropriate Allen screws pressing on to the gib strips, The main spindle runs in Timken tapered roller bearings and adjustment for wear can be taken up by pulling up the lock nuts on the back of the main spindle,



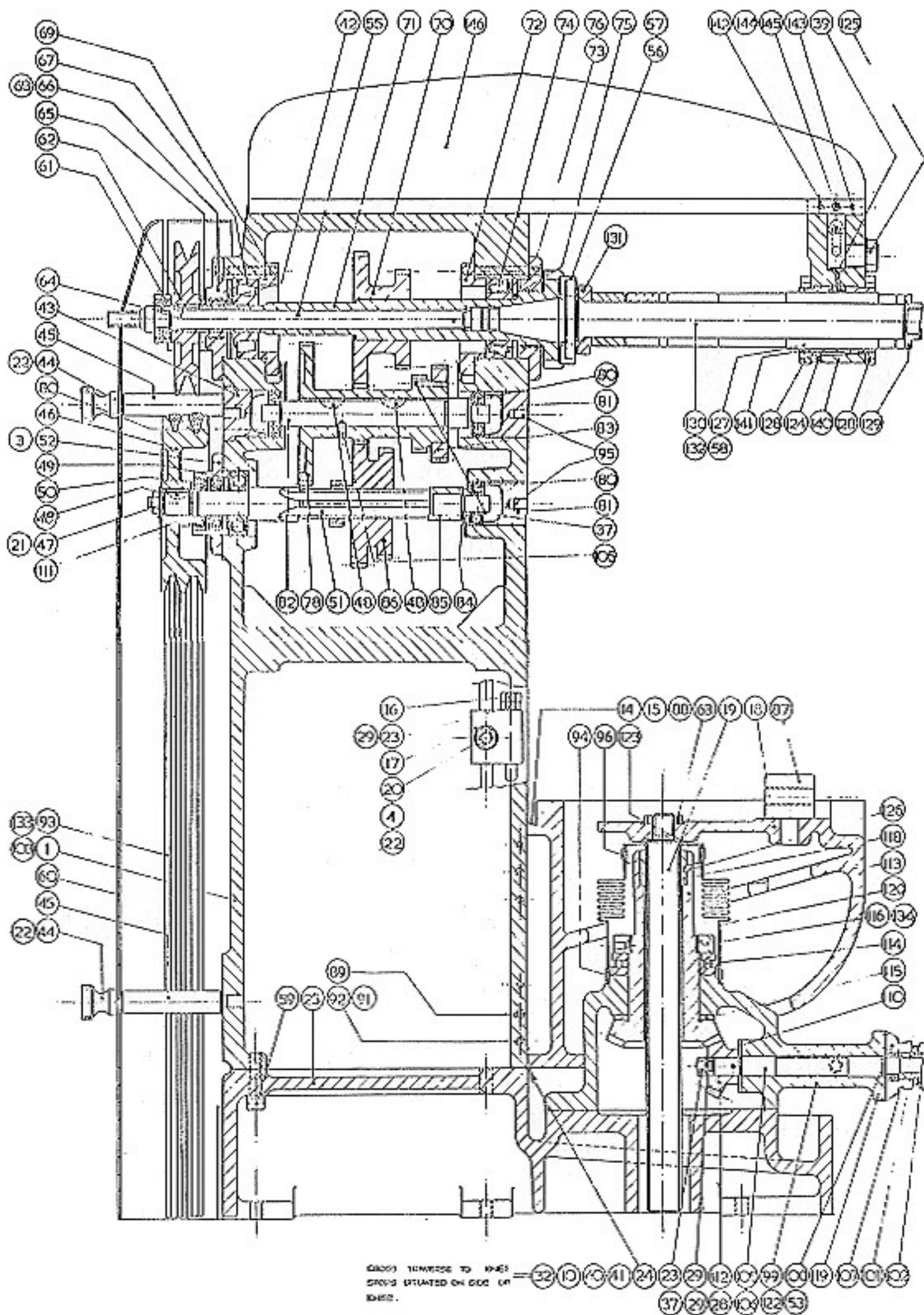
MARK 11 AUTOMILL MAIN BODY ASSEMBLY

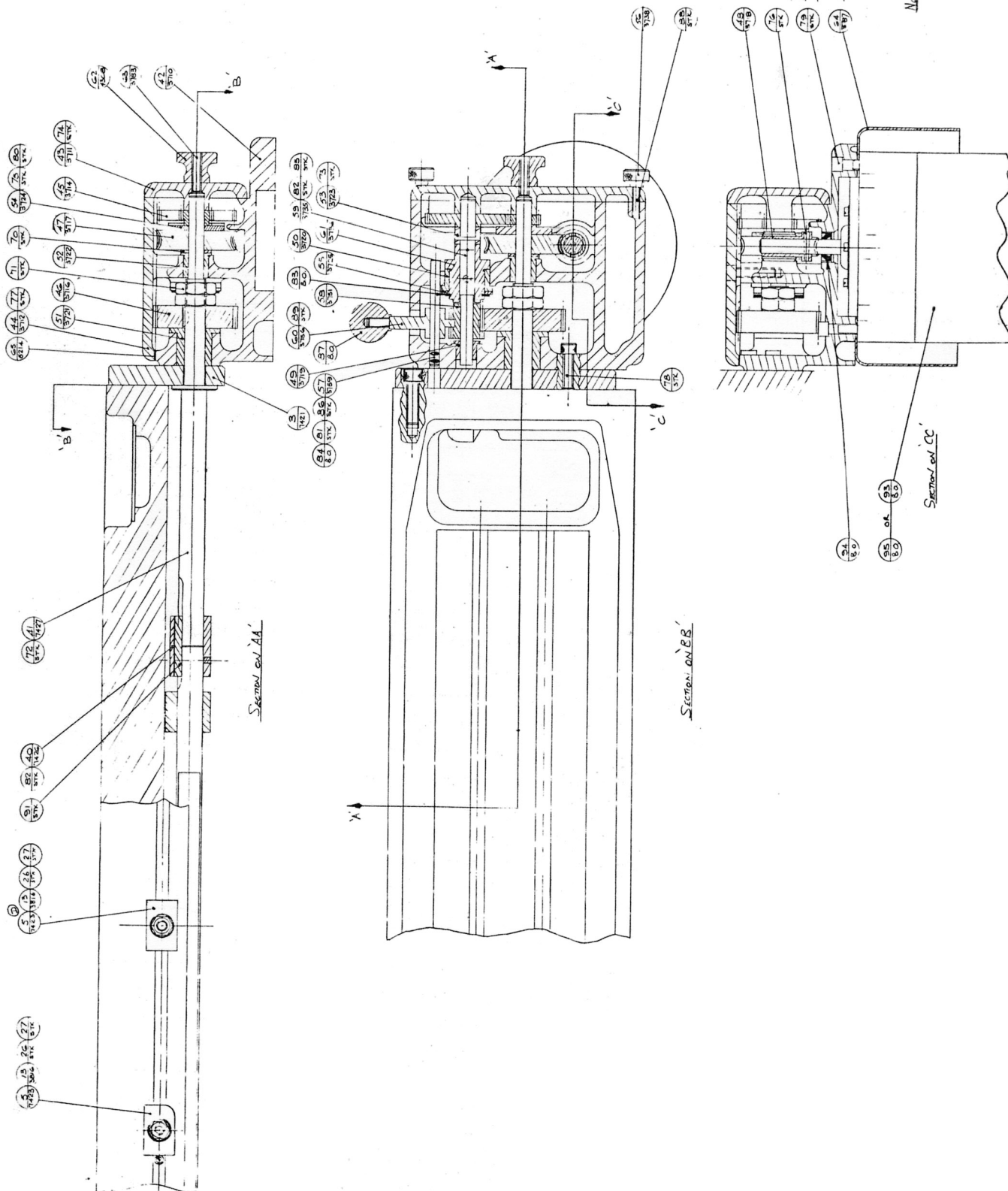
(Same as 2A & 2B)

Item	Part No.	Description
1	6898	MAIN BODY
2	3760	COVER
3		CAP Screw (2BA x 1/2")
4		DOME Nut (CHROME) (3/8" BSF)
5		BALL 1 3/64" DIA. STEEL
6	4386	SPRING
7		SET Screw (1/4" BSF x 1/4")
8		
9		DOME Nut (CHROME) (1/4" BSF)
10		Washer M.S. (1/4")
11	3758	SPINDLE
12	3757	GEAR SHAFT ROD
13		BALL KNOB (BLACK) EBONITE (1" DIA. 1/4" BSF)
14	5294	SLIDE WIPER FOR KNEE
15	5295	SLIDE WIPER FELT
16		SET BOLT (5/16" BSF x 2 1/2")
17	770	TABLE KNEE STOP
18	5221	TABLE KNEE
19	5236	VERTICAL LEADSCREW
20	771	TENON BOLT
21		Nut (3/8" BSF)
22		Washer (3/8")
23		Nut (5/16" BSF)
24	5279	KNEE GIB
25	5226	BASE PLATE
26	779	PRESS FINGER
27		STUD (5/16" BSF x 2" long)
28		DOME Nut (CHROME) 5/16" BSF
29		Washer (5/16")
30	3764	GEAR SHIFT FORK
31	3763	COVER
32		Nut (1/4" BSF)
33	3765	LEVER
34	3754	HUB
35		
36		
37		TAPER PIN No. 1 x 1 1/2" long
38		OIL WINDOW B.W. 825 G.E. ADAMS
39		WICK
40	712	C/T STOP
41	713	TENON BOLT
42	784	FLINGER
43	3791	COVER
44	3892	LOCKING HANDLE
45	3887	STUD
46	5250	PULLEY
47	3770	SPECIAL Washer
48		WOODRUFF KEY K.S. STD. No. 9

49		BALL BEARING S.K.F. No. R.L.S. 6
50		OIL SEAL WESTERN 'G' 15007540
51	3782	SPLINED SHAFT
52	3780	OUTSIDE COVER
53		KEY K.S. WOODRUFF No. 5
54		
55	6962	DRAWBAR
56	4439	KEY SPINDLE FLANGE
57		CAP HD. Screw (2BA x $\frac{5}{8}$ " long)
58		KEY ($\frac{1}{4}$ " x $\frac{1}{4}$ " x $4\frac{1}{2}$ " LG KEY STEEL)
59		CAP Screw ($\frac{3}{8}$ " BSF x 1)
60	6899	VEE BELT GUARD (G)
61	791	LOCK Nut
62	811	PULLEY
63	3803	Locknut
64		RECTANGULAR KEY K.S. ($\frac{1}{8}$ " x $\frac{1}{8}$ " x $1\frac{1}{16}$ " long)
65	790	DISTANCE BUSH
66	789	OUTSIDE COVER
67		TAPER ROLLED BEARING TIMKEN 1985/1930 P3
68		C/SK Screw ($\frac{1}{4}$ " BSF x 2" long)
69	3761	INSIDE COVER
70	3785	SLIDING SPUR GEAR
71	6893	MAIN SPINDLE
72	3762	INSIDE COVER
73		C/SK Screw ($\frac{1}{4}$ " BSF x $2\frac{1}{4}$ " LG)
74		TAPER ROLLER BEARING TIMKEN 1985/1930 P3
75	787	FLINGER
76	786	OUTSIDE COVER
77		CAP Screw (2BA x $\frac{1}{4}$ " long)
78	3789	FIXED SPUR GEAR
79	3930	SPEED PLATE
80		BALL BEARING SKF No. R.L.S.4
81	3894	INSIDE COVER
82	3786	SHAFT
83	3788	SPUR GEAR
84	3790	DISTANCE RING
85	3792	DISTANCE BUSH
86	3793	SLIDING SPUR GEAR
87	3820	TRAVERSE Nut
88		C/SK Screw (4BA x $\frac{1}{2}$ ")
89		CAP HD. Screw ($\frac{1}{4}$ " BSF x $1\frac{1}{2}$ ")
90		LUBRICATION LABEL BRASS
91		Nut (2BA)
92		GRUB Screw (2BA x $1\frac{1}{2}$ ")
93		VEE BELT STD. A70
94		JUBILEE CLIP SIZE 4
95		SET Screw ($\frac{1}{4}$ " BSF x $\frac{1}{2}$ ")
96		JUBILEE CLIP SIZE 3
97		PLUG BRASS STD. ($\frac{1}{4}$ " BSF (HEX. HD.))
98		DRIVE Screw NETTLEFOLD TYPE 'U' No. 2 x $\frac{3}{16}$ "
99	5224	VERTICAL LEADSCREW CASTING
100	5242	MICROMETER DIAL
101	3867	RING
102	3868	Nut
103	6970	NAME PLATE

104		
105		SET Screw ($\frac{1}{4}$ " BSF x $\frac{3}{8}$ ")
106	3750	HANDLE
107	3869	BUSH
108	5241	BEYEL PINION SHAFT
109		SET Screw (GAS) ($\frac{1}{4}$ " BSP x $\frac{1}{2}$ ")
110	5240	PINION SPACER
111		CIRCLIP (EXT.) $\frac{11}{16}$ " DIA. NOMINAL
112	5235	PINION BEVEL
113	5234	BEVEL GEAR
114		THRUST RACE SKF 51111
115	5238	TOP BEVEL SPACER
116	5237	Locknut
117	5259	SPACER
118	5243	VERTICAL Nut
119	3870	Locknut
120	4143	COLLAPSIBLE COVER
121		WOODRUFF KEY K.S. STD. No. 2
122		GREASE NIPPLES ($\frac{1}{8}$ " BSP)
123	5262	BELLOWS RETAINER
124		C/SK Screw (4BA x $\frac{1}{4}$ " long)
125		OIL WINDOW G.E. ADAMS B.W. 656
126		PIN SS ($\frac{3}{32}$ " DIA. x $\frac{1}{4}$ " long)
127	6964	LINER
128	4327	Locknut
129	757	ARBOR Nut
130	6960	ARBOR
131		END COLLAR (REF 6959/11)
132		SPACERS (REF 6959)
133	6859	OIL LABEL
134		C/SK Screw (2BA x $\frac{3}{8}$ " long)
135		
136		
137		
138		
139		
140	6961	ARBOR SUPPORT
141	4329	SPLIT BUSH
142		FLIP FLAP OILER PORTER No. 3
143		DOWEL ($\frac{1}{8}$ " DIA. x 1" long)
144		GRUB Screw ($\frac{1}{4}$ " BSF x 1" long)
145	5253	GIB STRIP
146	5227	OVERARM
147		
148		
149		





Note:-

FOR HANDED TALA SEE CD7470
FOR UNKNOWN ASSY SEE CD7400
FOR VERNIER FITMENTS SEE S&D 100/1

Illus. No.	Part No.	DESCRIPTION
1	6801	Table
2	7420	Table bridge
3	7421	Bridge plate
4	7422	Lead screw
5	7423	Table stop (2 off)
6	7424	Leadscrew bearing
7	7425	Rack
8	3750)	Handle
	3753)	
9	3779	Nut
10	3778	Ring
11	3777	Micro-dial
12	6869	Bush
13	3816	Tee bolt (2 off)
16		Thrust bearing (2 off)
17		Housing washer
18		Shaft washer
19		Woodruff key No.5 (2 off)
20		Springwell oil cup
21		3/8" washer
22		Locknut 3/8" B.S.F
23		Dome nut 3/8" B.S.F
24		Socket head cap screw $\frac{1}{4}$ " B.S.F x $1\frac{1}{2}$ " long (2off)
25		Dowels $\frac{1}{4}$ " x $1\frac{3}{4}$ " long (2 off)
26		Nut $\frac{1}{4}$ " B.S.F (3 off)
27		$\frac{1}{4}$ " washer (2 off)
28		Socket head cap screw $\frac{1}{4}$ " BSF x 1" long (3 off)
29		Socket head cap screw 5/16" BSF x 1" long (2 off)
30		Dowel $\frac{1}{4}$ " x 1" long (2 off)
31		Plastic shim
32		Plastic shim
33		Socket head cap screw $\frac{1}{4}$ " BSF x 5/8" long (3 off)
34		Dowel $\frac{1}{4}$ " x 7/8" (2 off)
37		Thrust bearing
38	6807	Filter
40	7426	Transmission bush
41	7427	Transmission shaft
42	3710	Feed gear box
43	3711	Pick off cover
44	3712	Top cover
45	3714	Pick off gears (1 set)
46	3716	Leadscrew gear
47	3717	Wormwheel
48	3718	Feedworm
49	3719	Leadscrew pinion bush
50	3720	Transmission bush
51	3721	Leadscrew gear bush
52	3722	Worm gear bush
53	3723	Transmission dog
54	3724	Disc Dog
55	3725	Transmission washer
56	3738	Knurled nut

Illus. No.	Part No.	DESCRIPTION
57	3759	Lever spindle
58	3751	Shift gear
59	3735	Spindle
60	3756	Gear shift lever
61	3736	Transmission dog
62	4308	Locking handle
63	3783	Stud $\frac{1}{4}$ " BSF x 1" long
64	3787	Suds guard (only ph motors only)
65	5214	Gasket
70		5/8" washer
71		Locknut $\frac{1}{2}$ " BSF (2 off)
72		Woodruff key No. 5
73		Dowel 1/16" x 5/8" long
74		Dowel 1/8" x 3/8" long (2 off)
75		Dowel 1/8" x 5/8" long (2 off)
76		Dowel 3/32" x 3/4" long
77		Socket head cap screw $\frac{1}{4}$ " BSF x $\frac{1}{2}$ " long
78		Socket head cap screws $\frac{1}{4}$ " BSF x 1"
79		Socket head cap screw $\frac{1}{4}$ " BSF x 3/4" long (4 off)
80		C/SK socket screw 2 BA x 5/8" (2 off)
81		Set screw $\frac{1}{4}$ " BSF x 3/16" long
82		Set screw 2 BA x 3/16" long (3 off)
83		7/8" circlip (external)
84		Spring
85		Dowel 3/32" x 5/8" long
86		Hard St. ball
87		Black ball
88		Stud 2 BA x $1\frac{1}{4}$ " long (2 off)
89		Set screw 4 BA x $\frac{1}{4}$ " long
91		Key 3/16" sq. x $1\frac{1}{2}$ " long
93		Motor - 1 ph. 1/8 hp
94		Oil seal (for 3 ph motor)
95		Motor - 3 ph, 1/8 hp

SPARE PARTS

The parts comprising the underslide assembly and the fitting of these parts is shown in the attached drawings. The following spare parts list for the underslide unit is cross referenced with these drawings and gives the part number and description of the component parts.

It is essential when ordering spare parts that you quote the serial number of the machine, which can be found on the plate fitted to the left hand side of the column, above the gear change lever.