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MODEL: LC-15A
LC-30A

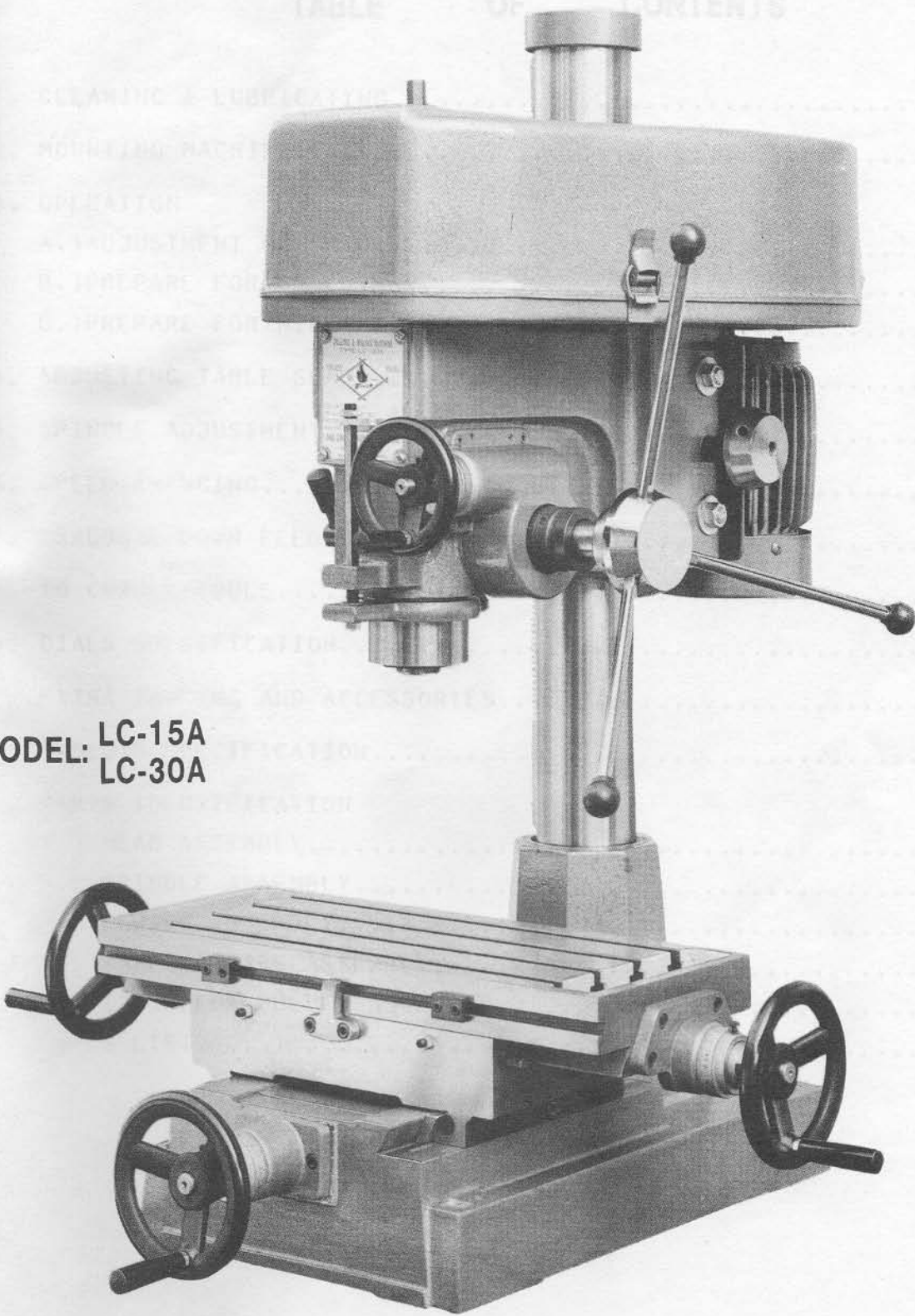


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FIG. 1
LUBRICATING POINTS

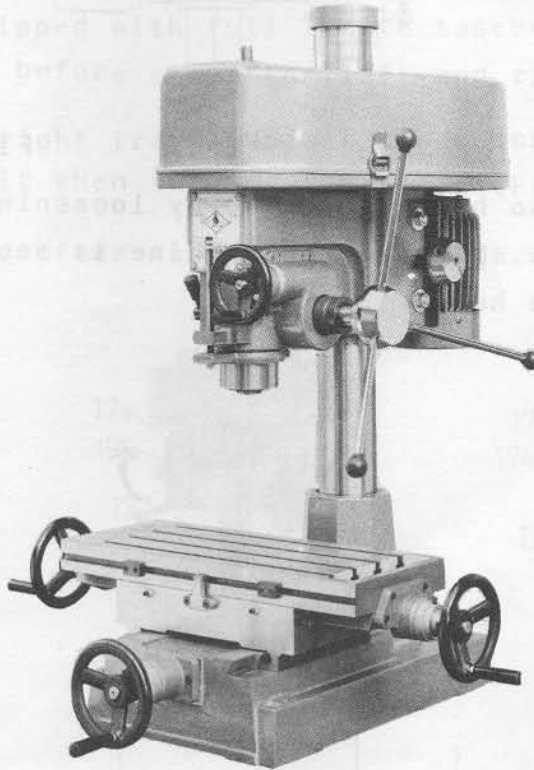
Mount the machine to a sturdy table-top base. It is advisable that the table you choose be well constructed to avoid any vibration during operation. Four holes are provided on the machine base (Part 15) for mounting. Before tightening bolts, take care for work table of the machine (Part 130) is level fore-and-aft and crosswise. Use shims if necessary.

Thank you for purchasing the Drilling/Milling machine. If properly cared for and operated, this machine can provide you with years of accurate service. Please read this manual carefully before using your machine.

1. CLEANING & LUBRICATING

Your machine has been coated with a heavy grease to protect it in shipping. This coating should be completely removed before operating the machine. Commercial degreaser, kerosene or similar solvent may be used to remove the grease from the machine, but avoid getting solvent on belts or other rubber parts.

After cleaning, coat all bright work with a light lubricating oil. Lubricate all points in Fig. 1 with medium consistency machine oil.



.FIG. 1

2. MOUNTING MACHINE

LUBRICATING POINTS

Mount the machine to a sturdy table or base. It is advisable that the table you choose be well constructed to avoid any vibration during operation. Four holes are provided on the machine base (Part#152) for mounting. Before tightening bolts make sure the work table of the machine(Part#150) is level lengthwise and crosswise. Use shims if necessary.

3. OPERATION

A. ADJUSTMENT OF HEAD

1. To raise and lower the head, loosen the two bolts (Part #104) shown in Fig. 2. Use side handle (Part #40) to raise and lower the head on its rack and pinion mechanism. When the desired height is reached, tighten the bolts to avoid vibration.

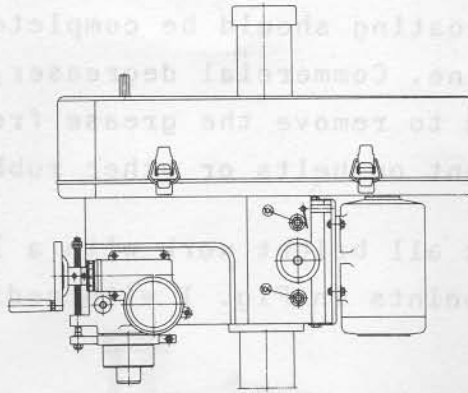
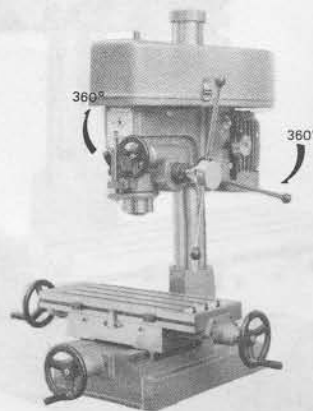


FIG. 2

2. Head may also be rotated 360° by loosening the same bolts mentioned above. Be sure the machine is securely mounted before rotating the head.



B. PREPARE LC-15A FOR DRILLING

FIG. 3

1. Release back the lock handle (Part #32), pulling the clutch (Part #16) out to the right side.
2. Adjust screw on the graduated depth stop bar (Part #43) to the desired drilling depth.
3. Turn power on, and operate using rapid downfeed handle (Part #14)

C. PREPARE LC-15A FOR MILLING

1. Adjust screw on the graduated depth stop bar (Part#43) to its highest position.
2. Engage fine downfeed handle (Part#73) by loosening lock nuts on side of handle and moving handle to its lowest position. Make sure the worm gear is securely engaged by jiggling rapid downfeed handle (Part#14) until you feel the gears mesh. Retighten lock nuts.
3. Adjust spindle to desired position using fine downfeed wheel (Part#73) and lock at desired height with spindle lock (Part#31).
4. Operate work table before and after, left and right by turning hand wheels (Part#158).

4. ADJUSTING TABLE SLACK

- A. Your machine is equipped with full length tapered gibs to adjust for excess slack in before and after, left and right table travel.
- B. To adjust left and right travel, adjust large screw (Part#166) until a slight drag is felt when turning the table (Fig. 4).
- C. To adjust before and after travel, adjust large screw (Part#166) as shown in Fig. 5

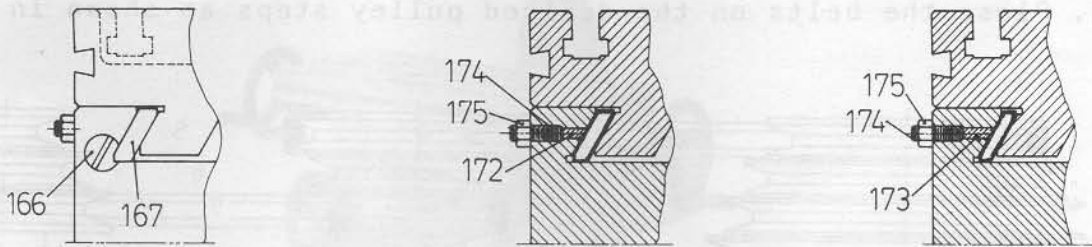


FIG. 4

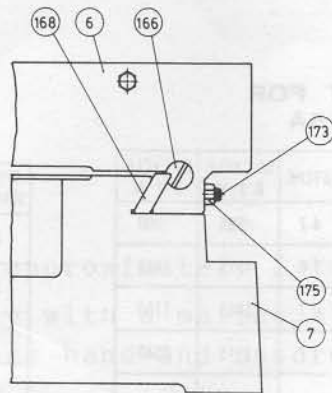


FIG. 5

5. If spindle is too tight or too loose, remove name plate and loosen or tighten the nut (Part #48) on spindle shaft as needed.

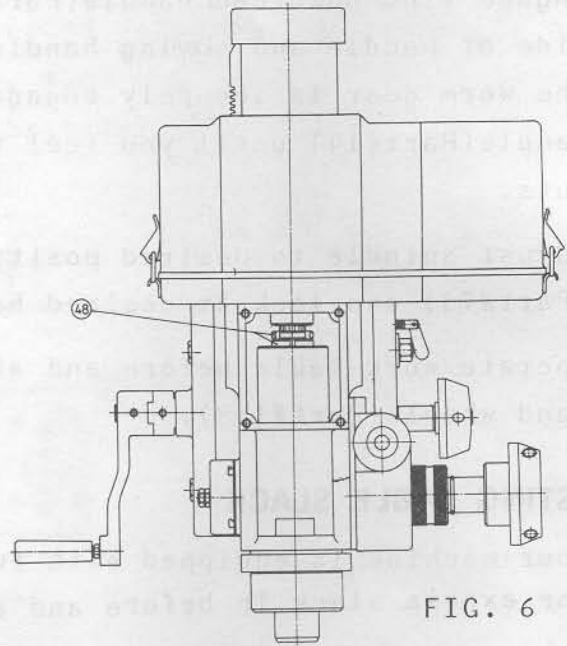
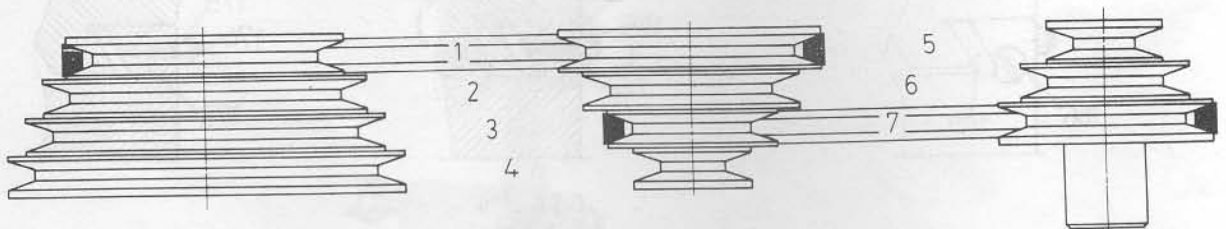


FIG. 6

6. SPEED CHANGING

- A. TURN POWER OFF
- B. Remove belt cover by releasing side latches
- C. Loosen motor mount bolts (Part #63)
- D. Push motor in to loosen belts (right side of motor mount is fixed, left side is tensioned).
- E. Place the belts on the desired pulley steps as shown in Fig. 7



**SPEEDS CHART FOR
MODEL: LC-15A**

SPEED SERIAL	STEPS	50 CYCLE R. P. M.	60 CYCLE R. P. M.	SPEED SERIAL	STEPS	50 CYCLE R. P. M.	60 CYCLE R. P. M.
1	4-5	175	210	6	4-7	585	700
2	3-5	290	350	7	1-6	1175	1410
3	4-6	320	385	8	2-7	1465	1760
4	2-5	450	540	9	1-7	2115	2540
5	3-6	535	640				

**SPEEDS CHART FOR
MODEL: LC-30A**

SPEED SERIAL	STEPS	50 CYCLE R. P. M.	60 CYCLE R. P. M.	SPEED SERIAL	STEPS	50 CYCLE R. P. M.	60 CYCLE R. P. M.
1	4-5	185	220	5	4-7, 3-6	550	660
2	3-5	290	350	6	1-6	1110	1330
3	4-6	340	410	7	2-7	1250	1500
4	2-5	415	500	8	1-7	1775	2130

7. GRADUATE DOWN FEED OPERATION

- A. To release back the handle (Part#32), moving handle (Part#14) forward a little bit, in the meantime, please push in the clutch (Part#16) to the left.
- B. Turn the hand wheel (Part#73) in the counterclockwise direction and then you will get the graduated down feed function. On the contrary, rotate the hand wheel (Part#73) in the clockwise direction, that is the action which draw back the tool.

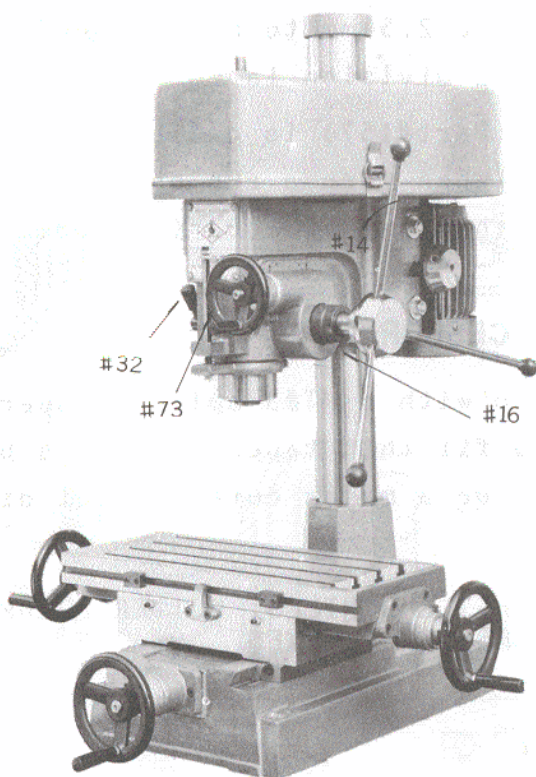


FIG. 7

8. TO CHANGE TOOLS

A.

Loosen the drawbar (Part#53) approximately 2 turns with wrench. Rap the top of the drawbar sharply with a mallet. After taper has been broken loose, hold chuck in one hand and unscrew drawbar with other hand.

B. TO INSTALL FACE MILL OR CHUCK ARBOR

Insert tool into spindle taper and thread the arbor to the drawbar by turning the drawbar. Tighten securely, but do not overtighten.

C. REMOVING TAPER DRILLS

Turn the rapid downfeed handle (Part#14) down until the oblong hole in the rack gear sleeve appears. Line up this hole with the hole in the spindle. Insert drill drift (Part#72) through holes and strike lightly with a mallet. This will force the taper drill out.

9. This machine offers 10 threads (Acme screw thread) per inch on lengthwise and crosswise screws and also the clutch (Part#157) is calibrated to 100 divisions. $1/10''$ or 2.54mm to be reached when turn a run on wheel, it means that each division is equal to 1 thousandths (0.0254mm). But MODEL:LC-15A CLUTCH (Part#157) is calibrated to 50 divisions. $1/10''$ or 2.54mm to be reached when turn a run on wheel, it means that each division is equal to 2 thousandths ($0.002''$) (0.0508mm).

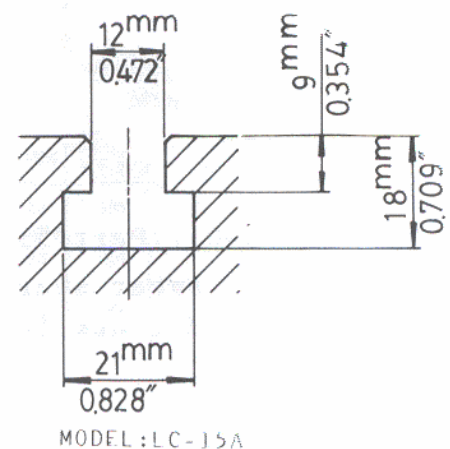
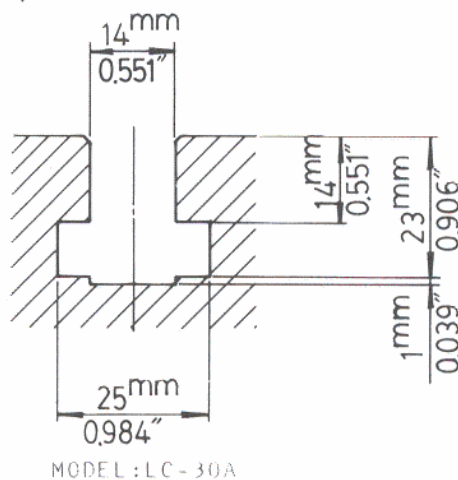
10. EXTRA TOOLING AND ACCESSORIES

This machine is equipped with a MT#3 spindle taper, a variety of tooling is available to fit this taper (examples below). Contact your local distributors or a major cutting tool distributor to obtain any of these accessories.

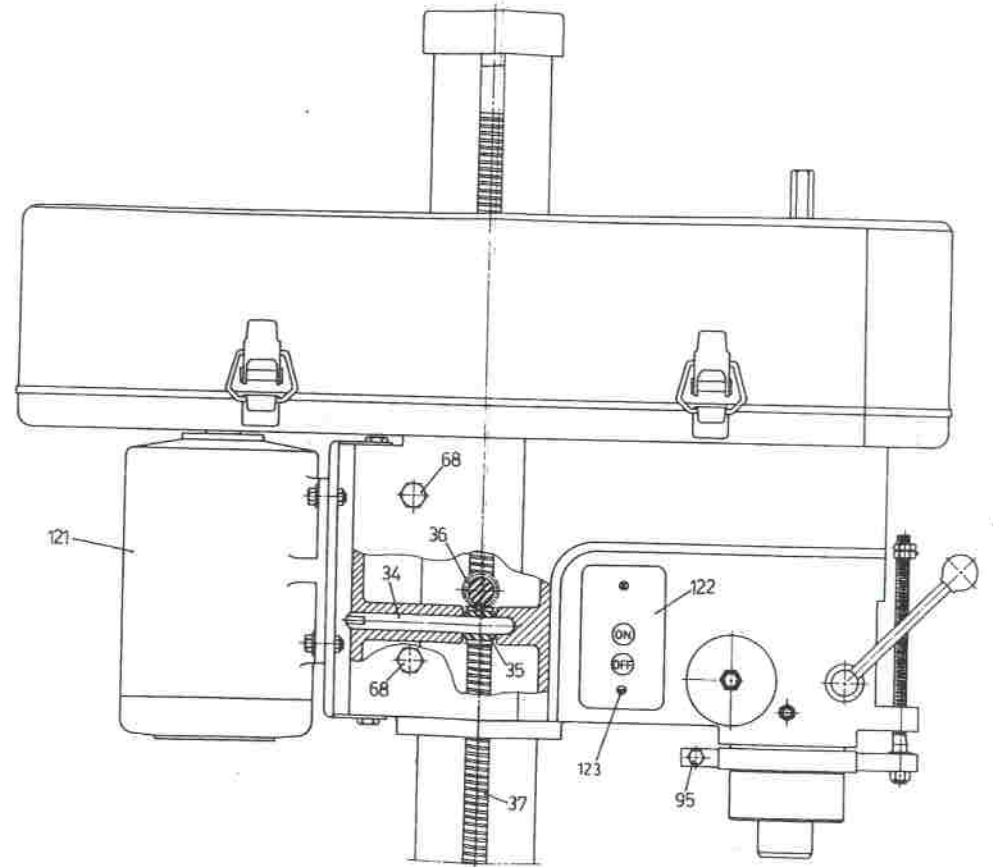
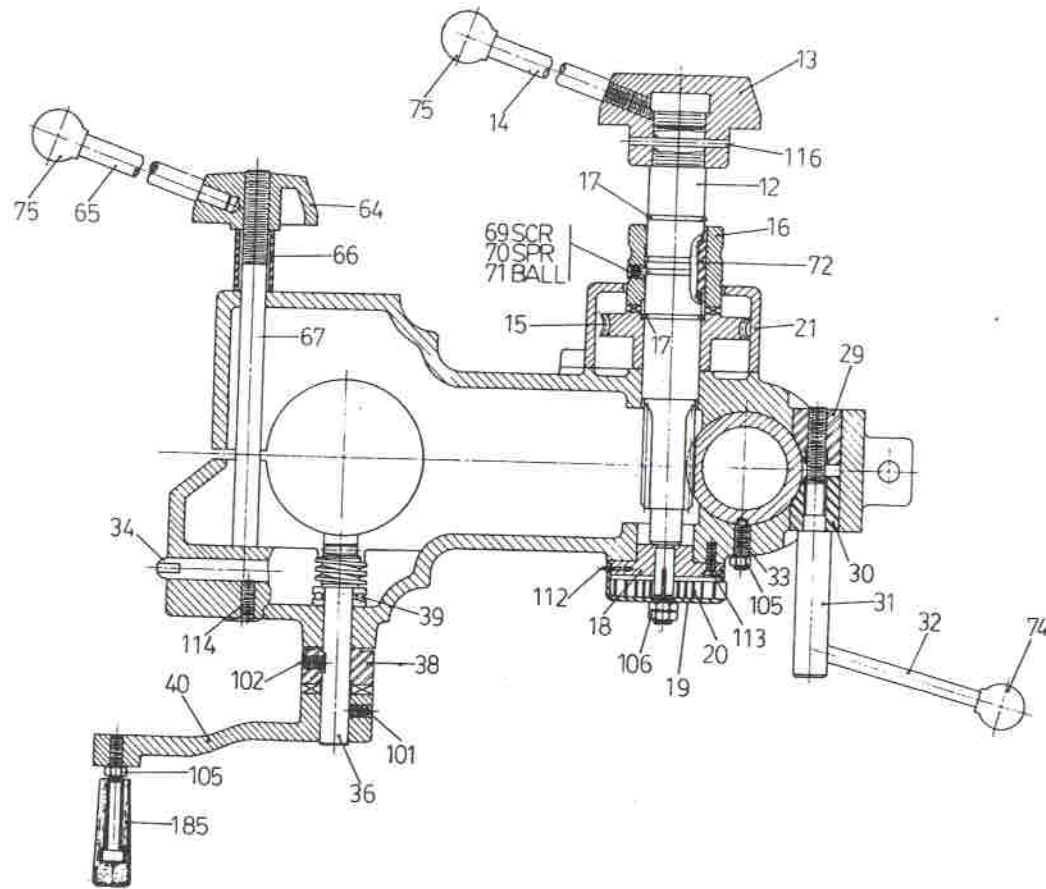
TAPER DRILLS, REAMERS, END MILLS, CUTTER ARBOR, TAPS, COLLETS, FACE CUTTER, ADAPTERS AND SLEEVES

11. T-SLOTS SPECIFICATION

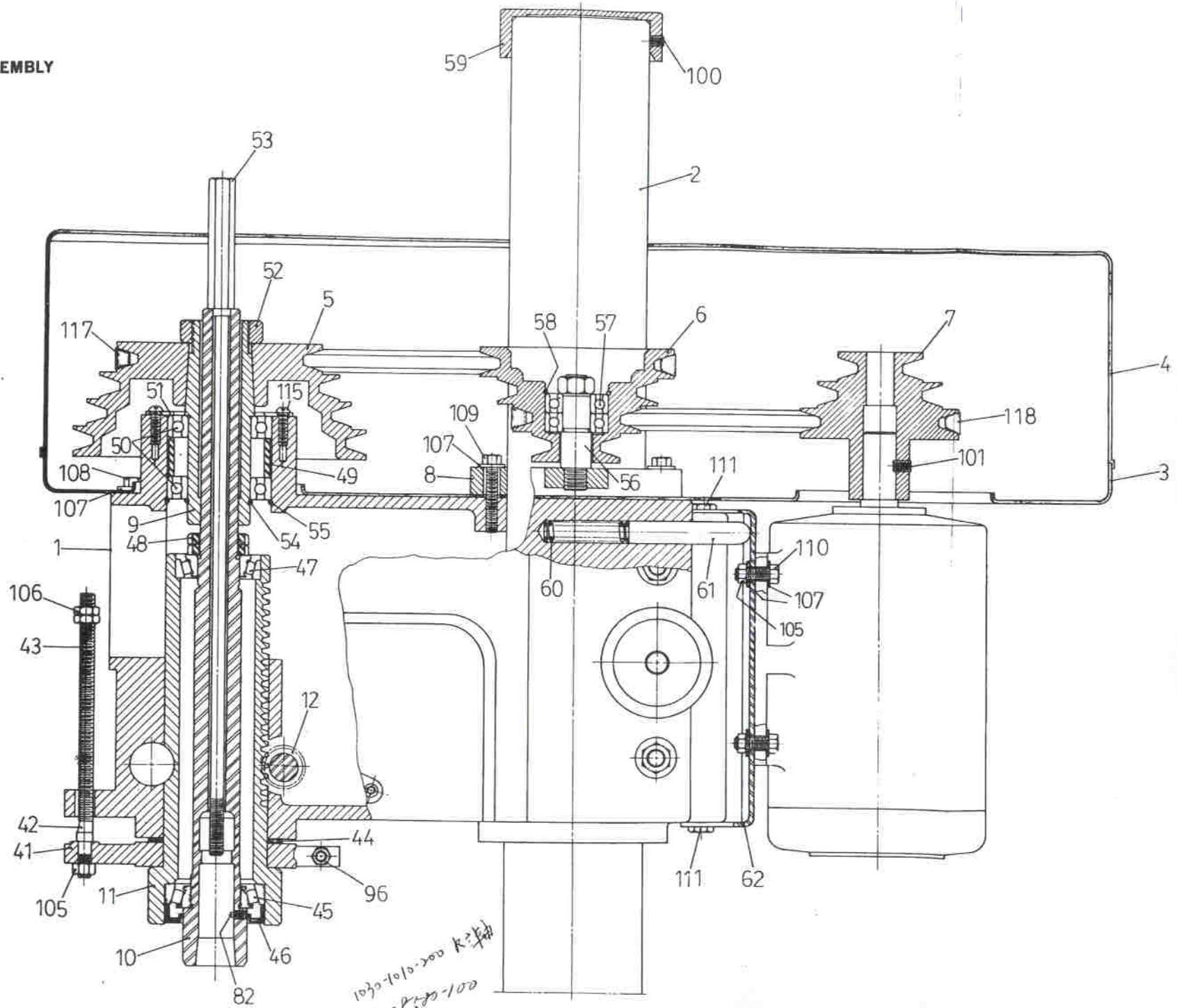
Specification for T-slots on working table as follow:



HEAD ASSEMBLY



SPINDLE ASSEMBLY



1030-1010-200 R-2/F
1030-1010-100

CLUTCH ASSEMBLY

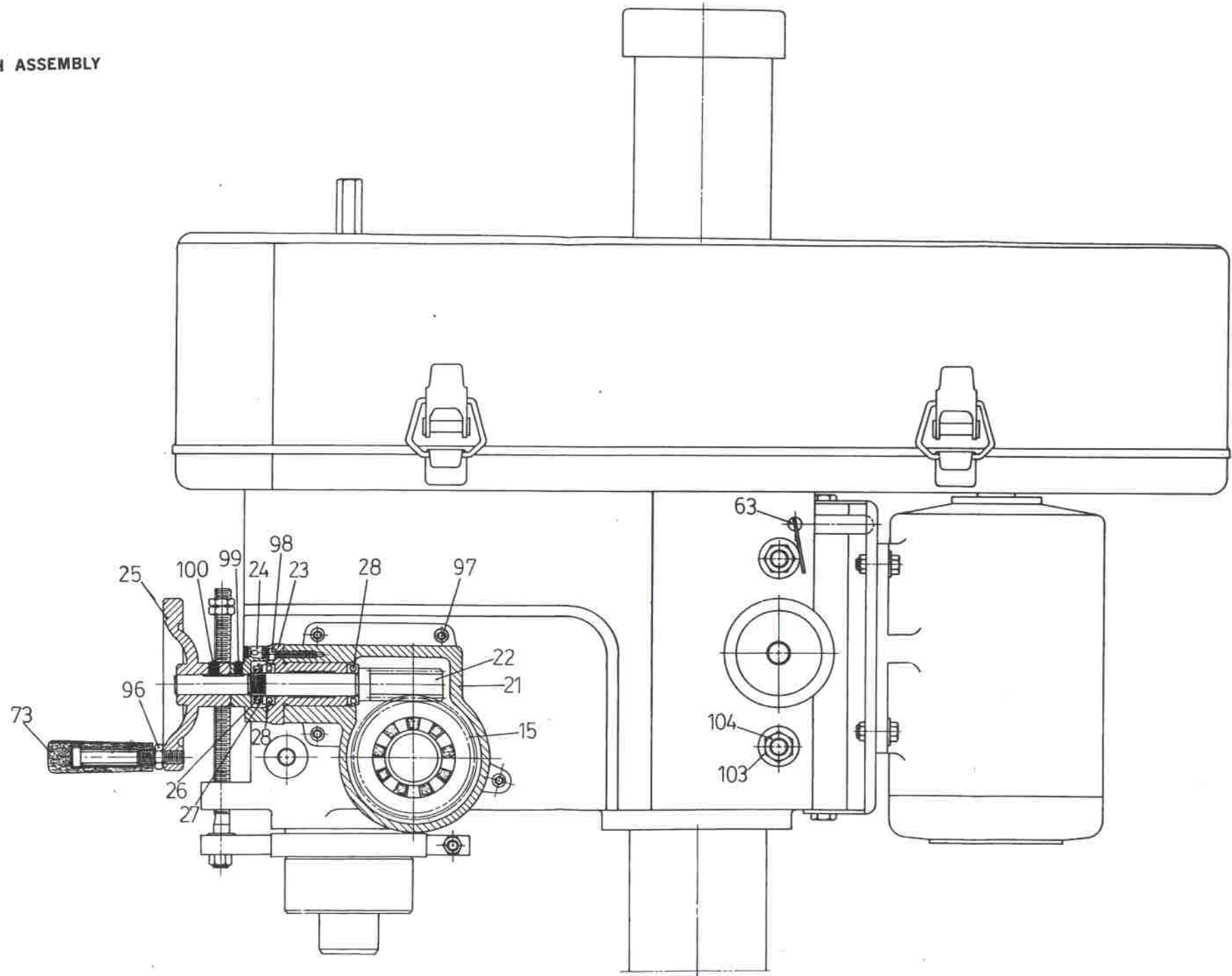
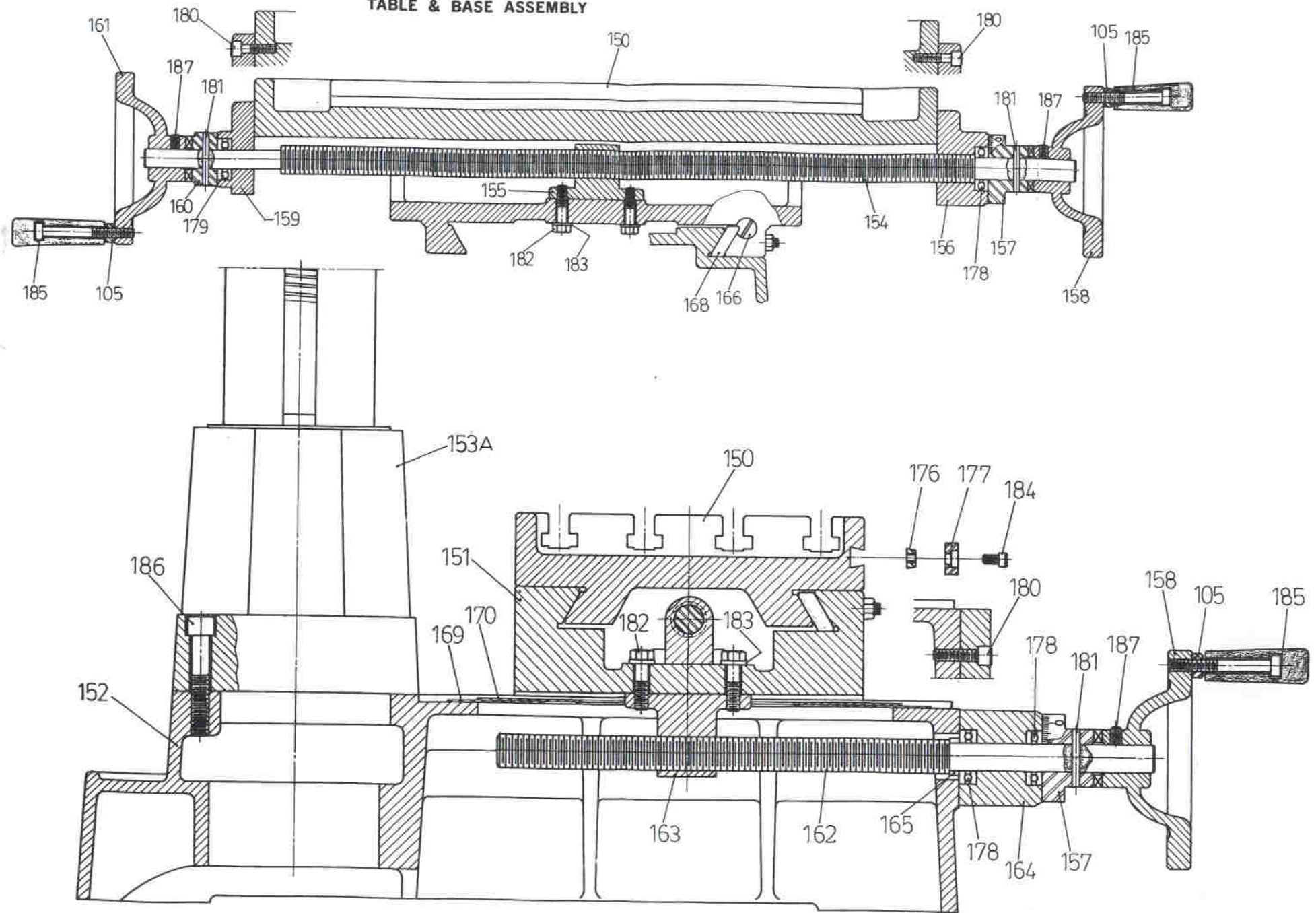
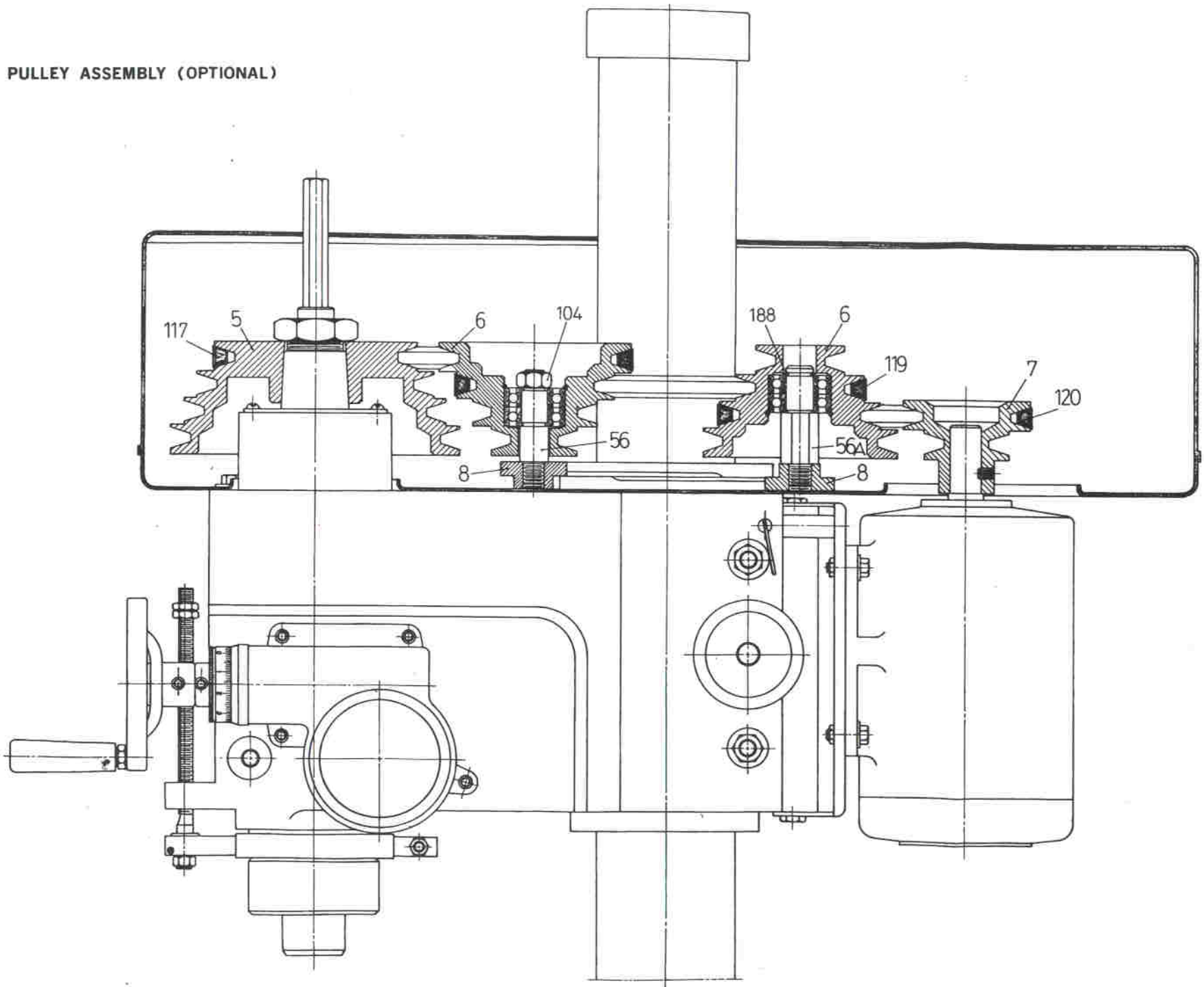


TABLE & BASE ASSEMBLY



12 SPEEDS PULLEY ASSEMBLY (OPTIONAL)



PARTS LIST
DRILLING & MILLING MACHINE

<u>PARTS NO.</u>	<u>DESCRIPTION</u>
1	HEAD BODY
2	COLUMN
3	BELT COVER(BOTTOM)
4	BELT COVER(TOP)
5	SPINDLE PULLEY
6	CENTER PULLEY
7	MOTOR PULLEY
8	BRACKET FOR CENTER PULLEY
9	SPINDLE TAPER SLEEVE
10	SPINDLE SHAFT MT#3
10A	SPINDLE SHAFT R-8
10B	SPINDLE SHAFT NT#30
11	RACK GEAR SLEEVE MT#3
11A	RACK GEAR SLEEVE R-8
11B	RACK GEAR SLEEVE NT#30
12	PINION SHAFT
13	HANDLE BODY
14	HANDLE
15	WORM GEAR FOR PINION SHAFT
16	CLUTCH FOR WORM GEAR
17	SNAP RING
18	PINION SHAFT COVER
19	SPRING COVER
20	HELICAL SPRING
21	WORM SHAFT COVER
22	WORM SHAFT
23	WORM SLEEVE
24	DIAL
25	HAND WHEEL
26	NUT FOR WORM
27	WASHER
28	THRUST BEARING #51103
29	STOP PIECE FOR RACK GEAR SLEEVE
30	STOP PIECE FOR RACK GEAR SLEEVE

PARTS LIST

<u>PARTS NO.</u>	<u>DESCRIPTION SPECIFICATIO</u>
31	LOCK HANDLE SHAFT
32	LOCK HANDLE
33	STOP SCREW FOR RACK GEAR SLEEVE
34	GEAR SHAFT FOR MACHINE HEAD
35	GEAR
36	WORM(HEAD)
37	RACK
38	CLUTCH(HEAD)
39	THRUST BEARING #2903
40	HANDLE
41	Depth Stop Bar
42	SCALE
43	SCALE FRAME
44	RUBBER RING
45	ROLLER BEARING #30207
46	OIL SEAL
47	ROLLER BEARING #30206
48	SPINDLE NUT
49	BEARING SPACER
50	BALL BEARING #6009
51	BEARING COVER
52	NUT
53	DRAWBAR #MT3
53A	DRAWBAR R-8
53B	DRAWBAR NT30
54	SNAP RING
55	SNAP RING
56	PULLEY SHAFT
57	BALL BEARING #6204
58	SNAP RING
59	COLUMN CAP
60	ADJUSTING SPRING
61	ADJUSTING BAR
62	MOTOR FRAME

PARTS LIST

PARTS NO.	DESCRIPTION
63	BOLTS
64	HANDLE BODY
65	HANDLE
66	SLEEVE FOR HANDLE BODY
67	TAPER BOLT SET(HEAD)
68	TAPER BOLT SET(HEAD)
69	SCREW
70	SPRING
71	STEEL BALL
72	DRILL DRIFT
73	HAND WHEEL KNOB
74	KNOB
75	KNOB
76	CHUCK ARBOR MT#3
77	CHUCK ARBOR R-8
76B	CHUCK ARBOR NT#30
78	CUTTER ARBOR MT#3
78A	CUTTER ARBOR NT#30
79	CUTTER ARBOR R-8
80	DOG STOP
81	SCREW
82	STOP SCREW
95	BOLT
96	NUT
97	BOLT
98	BOLT
99	SET SCREW
100	SET SCREW
101	SET SCREW
102	SET SCREW
103	FLAT WASHER
104	NUT
105	NUT
106	NUT
107	FLAT WASHER
108	BOLT

PARTS LIST

PARTS NO.	DESCRIPTION
109	BOLT
110	BOLT
111	BOLT
112	SPRING PIN
113	SCREW
114	SET SCREW
115	SCREW
116	SPRING PIN
117	BELT B-34
118	BELT B-41
119	BELT B-28
120	BELT B-29
121	MOTOR
122	SWITCH
123	SET SCREW FOR SWITCH
124	NAME PLATE
125	SCREW FOR NAME PLATE
126	MILLING CUTTER
127	CUTTER WASHER
128	LOCK SCREW FOR CUTTER
150	WORK TABLE
151	TABLE BASE
152	MACHINE BASE
153	COLUMN FLANGE
154	LEAD SCREW
155	NUT FOR LEAD SCREW
156	LEAD SCREW BRACKET
157	CLUTCH WITH DIAL
158	HAND WHEEL
159	LEAD SCREW BRACKET
160	CLUTCH
161	HAND WHEEL
162	LEAD SCREW
163	NUT FOR LEAD SCREW
164	LEAD SCREW BRACKET
165	SLEEVE FOR LEAD SCREW

PARTS LIST

<u>PARTS NO.</u>	<u>DESCRIPTION</u>
166	ADJUSTING SCREW
167	ADJUSTING GIB(TOP)
168	ADJUSTING GIB(BOTTOM)
169	DUST PIECE (BOTTOM)
170	DUST PIECE(TOP)
171	DOG
172	GIB STOPER
173	GIB STOPER
174	SCREW
175	NUT
176	DOG'S PIECE
177	DOG'S PIECE
178	THRUST BEARING #2904
179	THRUST BEARING #2903
180	BOLT
181	SPRING PIN
182	BOLT
183	FLAT WASHER
184	BOLT
185	HAND WHEEL
186	BOLT
187	SCREW-SET
188	SNAP RING
189	COLUMN SLEEVE
190	BOLT