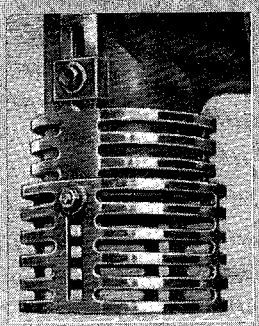
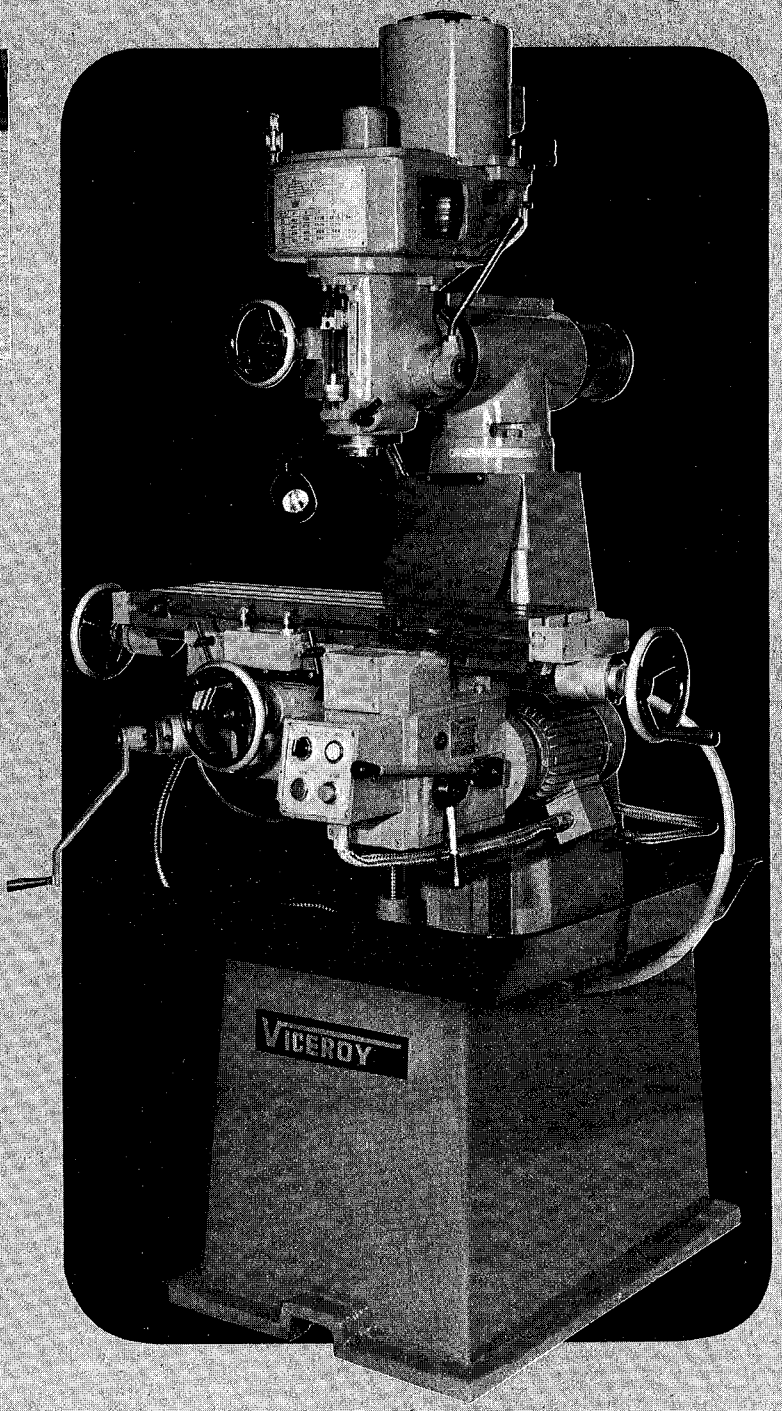
T.I.P

TURRET MILLING MACHINE



Spindle Guard



FEATURES

- Versatile, medium size turret mill.
- Heavy duty 1½ h.p. motor.
- Extra rigid, heavy duty cast base with tray.
- Complete with independent coolant system and halogen Lo-Vo light.
- Handwheels with folding handles.

STANDARD EQUIPMENT

Push-button No-volt overload electrics.
Safety Mechanical Table Traverse Power Trip.
Telescopic Vertical Cutter Guard.
Built in one shot lubrication system.

DENFORD

MACHINE TOOLS

T.1.P
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TURRET MILLING MACHINE
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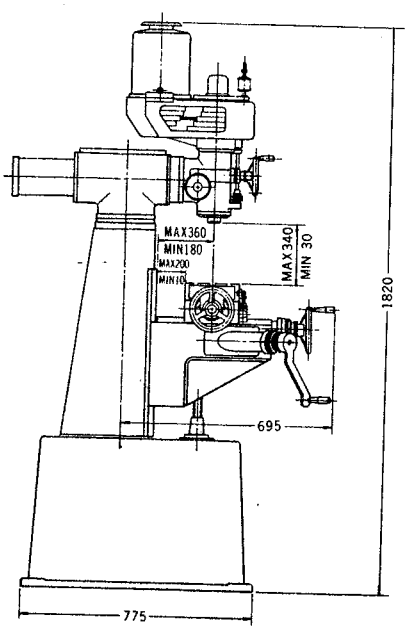
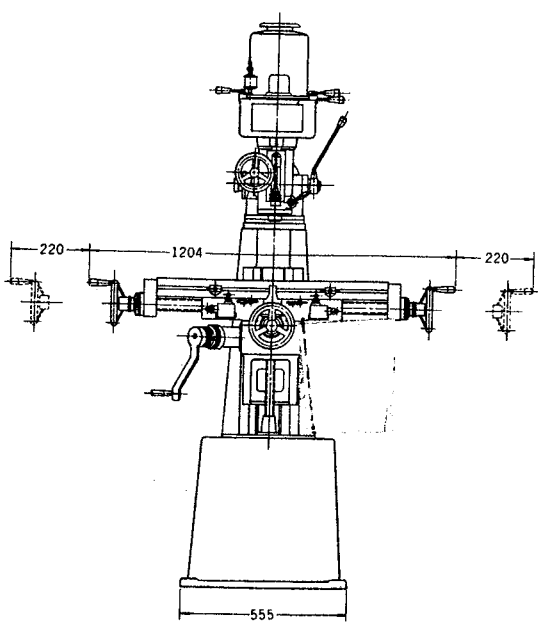
SPECIFICATIONS

Working table surface	180×760
Longitudinal travel	440
Cross travel	190
Spindle travel	80
Distance spindle to table	340
Distance spindle to column	180
Movement of ram	180
Vertical head tilting angle (R&L)	90°
Ram swivelling angle	360°
Spindle speed (10 speeds)	60% 190~3200 R.P.M. 50% 160~2670 R.P.M.
Spindle nose	M.T. #3 or R-8
Speed of longitudinal feed (6 speeds)	60% 17~307 mm/min 50% 14~256 mm/min
Rapid longitudinal feed	60% 1620 mm/min 50% 1330 mm/min
Motor (vertical spindle)	3Ø 4P 1HP 8P½HP
Motor (for auto feed)	3Ø ¼HP
Net weight (approx)	550 kg
Dimensions of packing case	42"×43"×66"

DIMENSION DRAWING





FEATURES

1. The model —T I P— milling machine is a newly developed product, it was designed to suit the needs of technical training schools, research departments, production shops, and manufacturers of tools and dies.
2. The machine is idealy suited for conventional milling, dies, drilling and jig boring.
3. The castings are fine grained cast iron with high tensile strength and closely controlled metalurgical content. After natural ageing, the castings are annealed and furnace tempered to minimize subsequent deformation.
4. All bearing surfaces are machined on modern numerically controlled machines to ensure that uniformity and interchangeability. Then, the ways are hand scraped to provide accurate alignments and optimize lubrication effectiveness.
5. The Acme leadscrews are precision machined on a thread mill. The radial and axial critical pitch tolerances are controlled to minimize backlash.
6. The masive round ram can be infinitely adjusted to the most practical position for the work to be accomplished. The key assures consistent vertical alignment. For angular milling, the head may be swiveled and firmly secured in place by three bolts.
7. The vertical head is designed so that vibration free, quiet performance is assured. The design facilitates uniform transfer of heat. A spindle brake can be supplied as optional equipment.
8. Automatic table feed (optional) provides ten wide range power feeds and rapid traverse by finger-tip control at the feed/rapid traverse control lever. The two limit switches can be set at desired locations to automatically interrupt feed at either end of the table travel.

PREPARATION

1. Remove the protective crating and skids carefully. In the event of damage in transient, notify the carrier promptly and inform your dealer.
2. This machine has been subjected to the DENFORD Tri-phase quality control system. Tolerance and operational tests are conducted under work simulating conditions. If any defects or irregularities are discovered, please notify your dealer.
3. Please read the catalog and manual carefully to become familar with the function of this machine. The operator should be thoroughly familar with all functions before the machine is placed into operation.

INSTALLATION

1. Set the machine on a solid concrete foundation. It is advisable to apply some "grout" to eliminate any irregularities in the concrete. This will ensure a solid foundation at all points. If the foundation is not stable, a concrete slab should be poured to accommodate the machine.

INITIAL LUBRICATION

1. Thoroughly clean the machine with a solvent which is safe to handle and which will not affect the machines painted surfaces. Lubricate always with SAE10 and gears with SAE30 lubricant. Be certain that the machine is thoroughly lubricated before starting.

LEVELING

1. Thoroughly clean the table surface. Using a precision machinist level alternately in the longitudinal and transverse positions, level the machine by use of leveling screws. If the machine is not perfectly level in both directions, it is possible that tolerances will be affected and machine movements may not be free. The machine should be periodically checked for level to ensure long life.

ELECTRICAL SOURCE

1. The control panel and illuminating lamp are located on the left side of the column. Check the motor specifications to be sure that the electrical source is proper. The spindle switch is located on the left side of the motor.

FEED STOPS

1. The longitudinal and cross feed can be set for any travel distance required by adjusting and setting the stops located on the front of the table and on the right side of knee.

ADJUSTMENT OF GIB

1. The table is provided with a full length, hand scraped, tapered gib on the front side of the saddle. There is an adjusting screw at each end. To adjust the gib, tighten the two screws until a slight drag is felt when moving the machine by hand. If the table is not tight enough, loosen the adjusting screw on the small end of the gib and tighten the other end. If the feel is too tight, reverse the procedure.

ADJUSTMENT OF SADDLE AND KNEE GIBS

1. To properly adjust the feel of the cross movement and the vertical movement, follow the same procedure as described above.

TABLE, SADDLE AND KNEE CLAMPS

1. When milling with longitudinal feed, it is advisable to clamp the knee and saddle rigidly to permit heavy cuts with a minimum of vibration. The saddle clamp is located on the left side of the machine. The knee clamp is located at the left of the knee. Leave this clamp locked at all times unless the knee is being moved.

REMOVING TABLE

1. The table may be prepared for removal by: removing handwheel, dial holder, bearing bracket and then turning the leadscrew to its extremity so that the table can be removed. This will permit easily disassembling the table from the machine.

REMOVING SADDLE

1. Remove handwheel, dial holder, bearing bracket. Then, loosen set screw on the middle of the saddle. Remove hexagon socket screws from gear box (on machines with power feed). Take off gear box, fixed pin, upper cover and withdraw saddle gib. The saddle can then be removed.

CHANGING SPINDLE SPEEDS

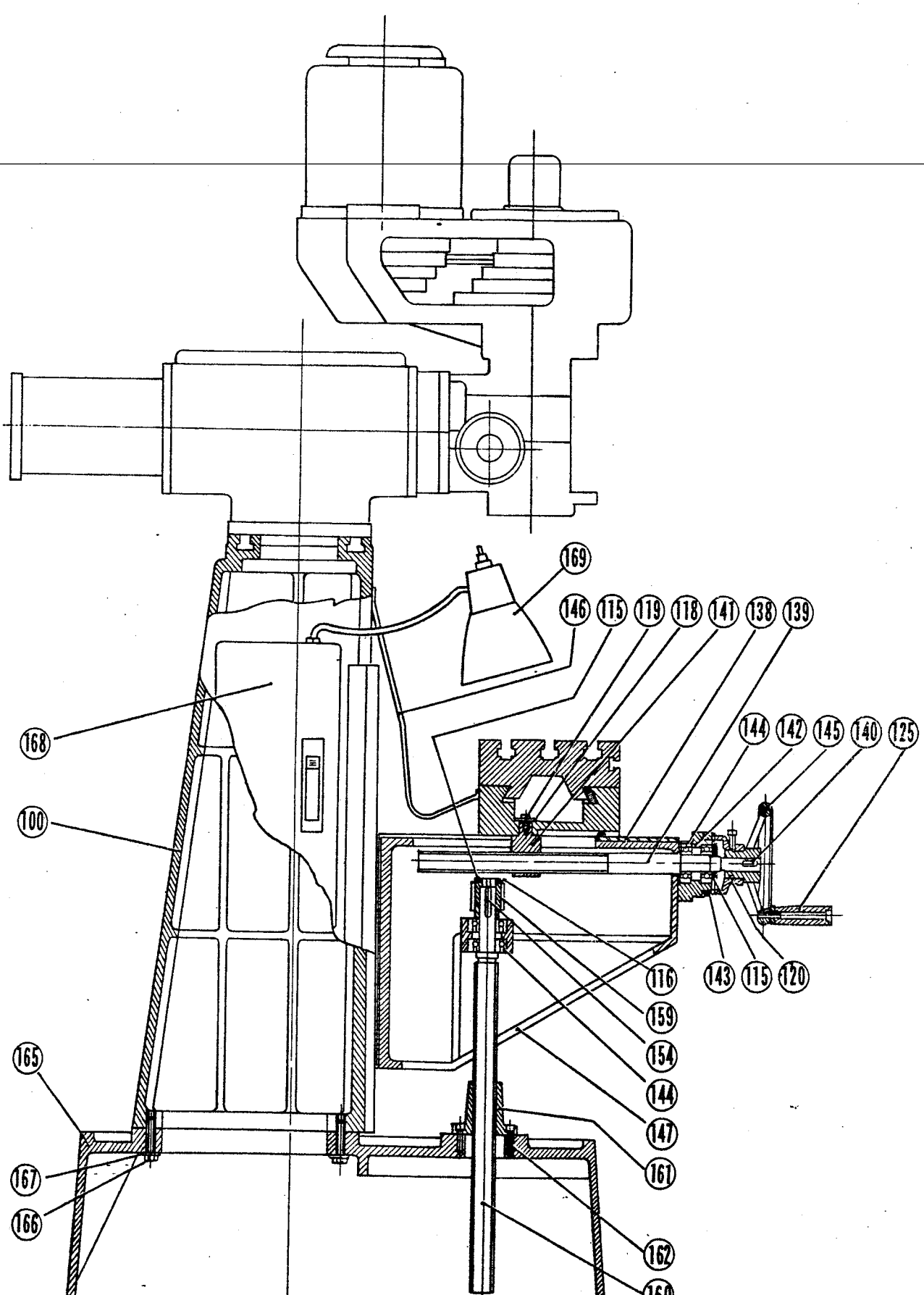
1. Loosen the two locking bolts on the sides of the motor. Pull back the tension lever.
2. Move the belt to the desired groove.
3. Set belt tension and lock the two locking bolts.

REMOVING MOTOR

1. proceed to loosen belt according to above instructions.
2. Take off the motor and one of the pulleys.
3. Loosen the 8 hexagon socket screws in the upper cover of the belt housing. Lock uniformly the 3 small hexagon socket screws and take off belt housing cover.
4. Loosen the 4 hexagon socket screws and take off aluminum cover.

QUILL LOCK AND QUILL FEED

1. The handle at the right lower corner of the head is the quill lock. When the vertical feed is not being used, clamp the quill lock so that maximum rigidity is assured.
2. The vertical oil cup is located in the upper side of the belt housing. Oil should be applied 2 or 3 times each day to maintain the spindle lubrication.
3. The graduated micrometer depth stop facilitates working to accurate depths. The lock nut under the micrometer nut locks the micrometer nut securely in position.
4. The feed lever on the right side of the machine provides sensitive feed for milling or drilling. To engage the fine worm feed, turn the knurled clutch nut by hand (clockwise) until the fine feed handwheel is engaged. This will permit very fine feeding for boring operations or for heavy drilling. To disengage the worm feed, turn the clutch lock nut counterclockwise.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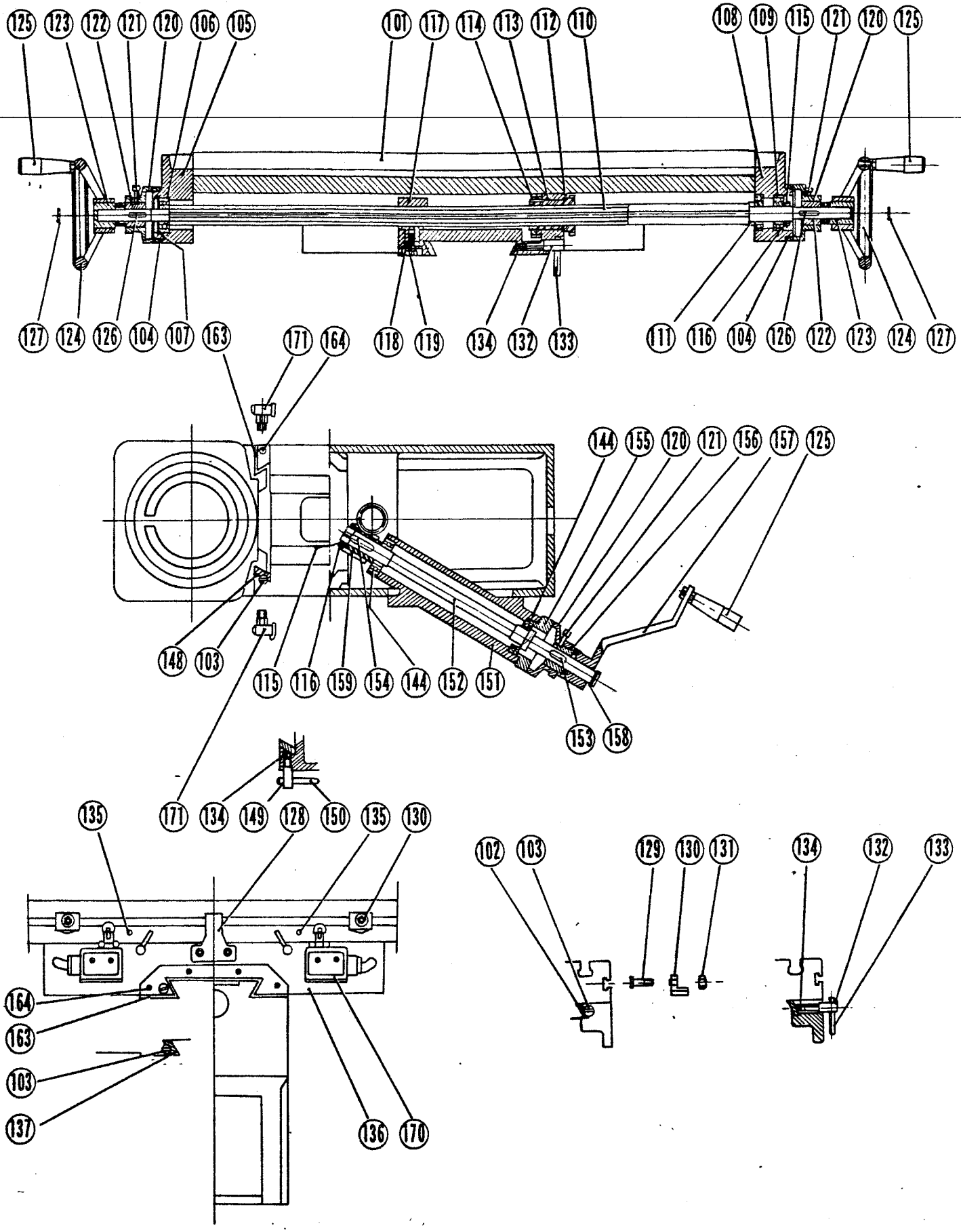
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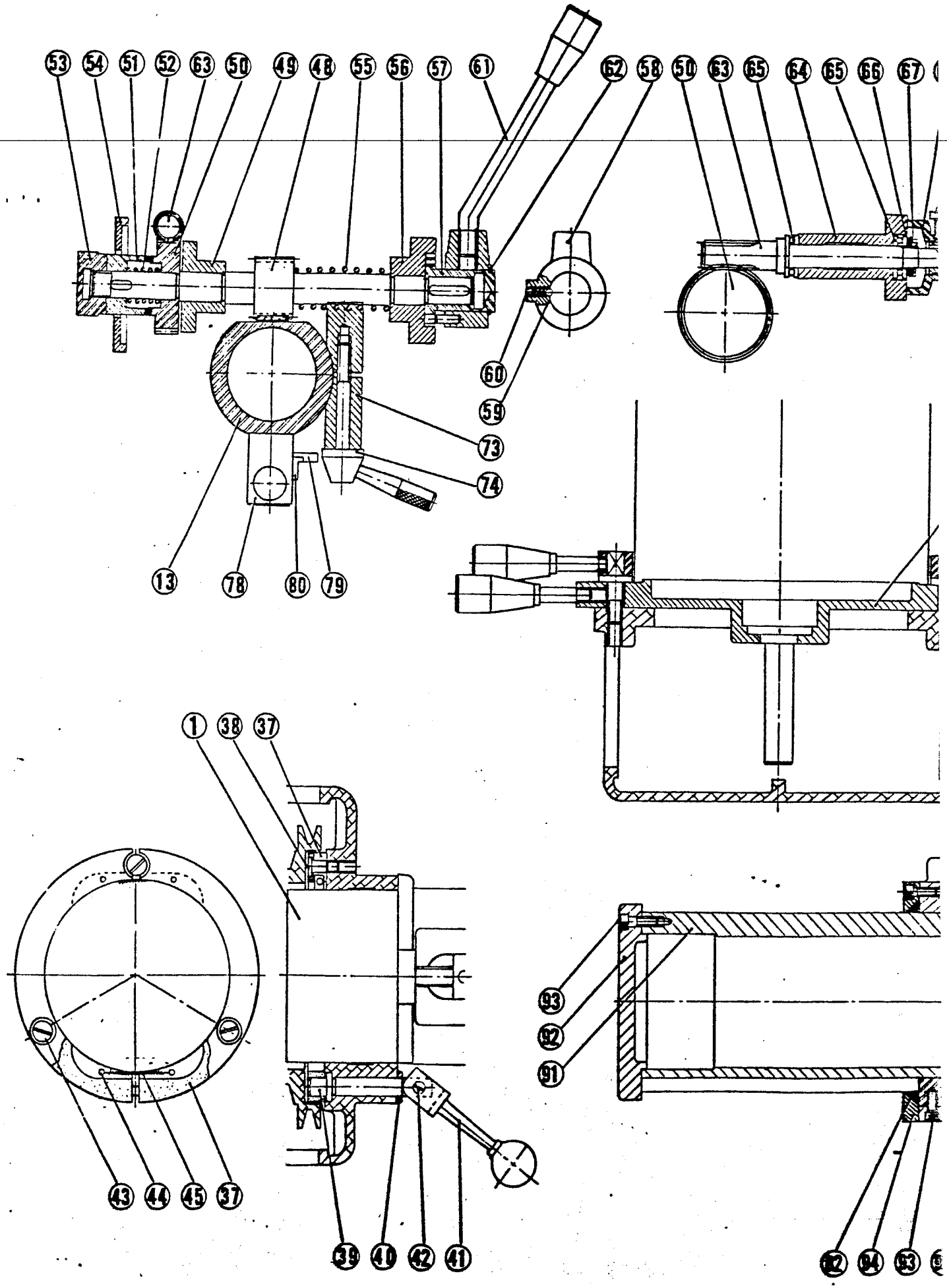
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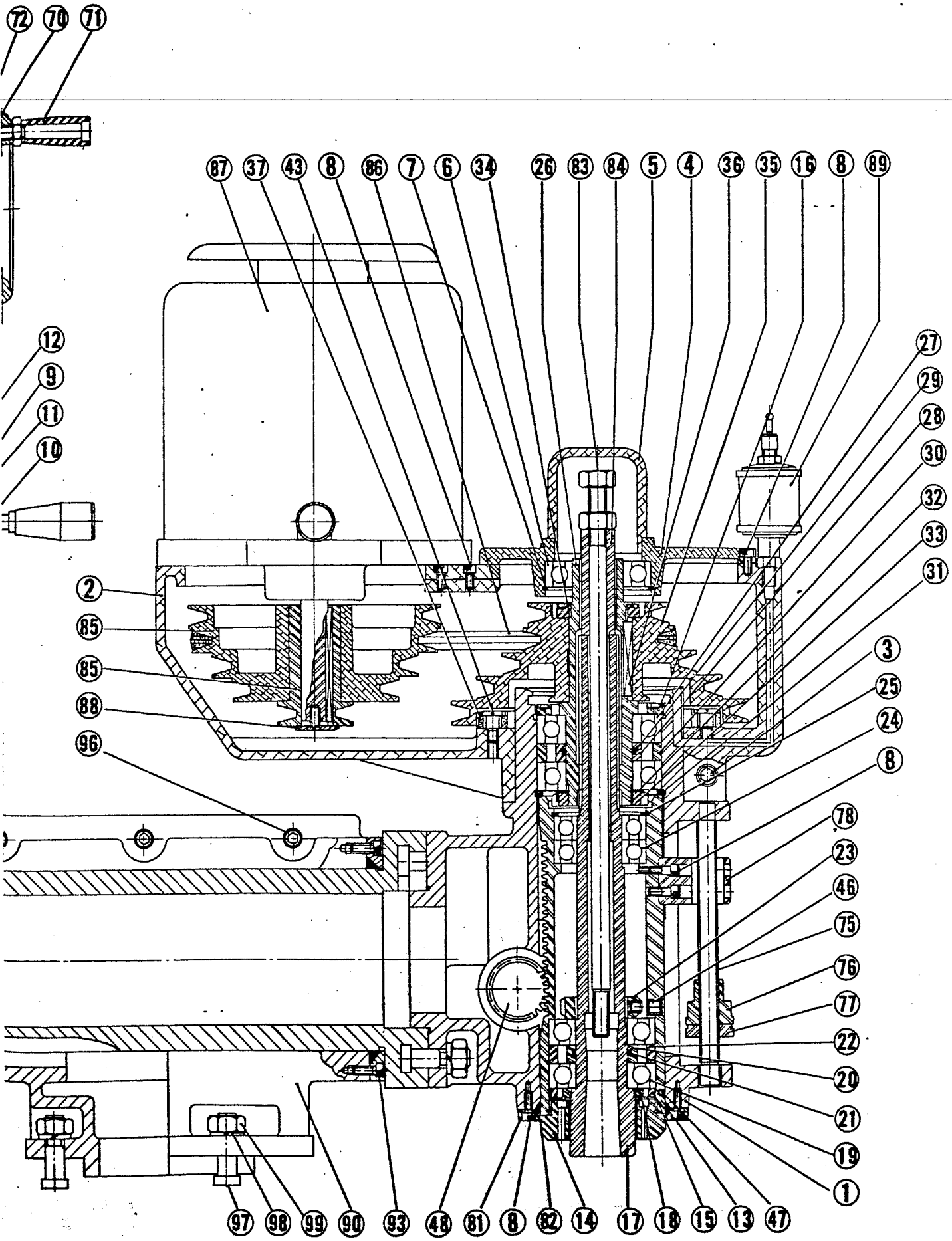
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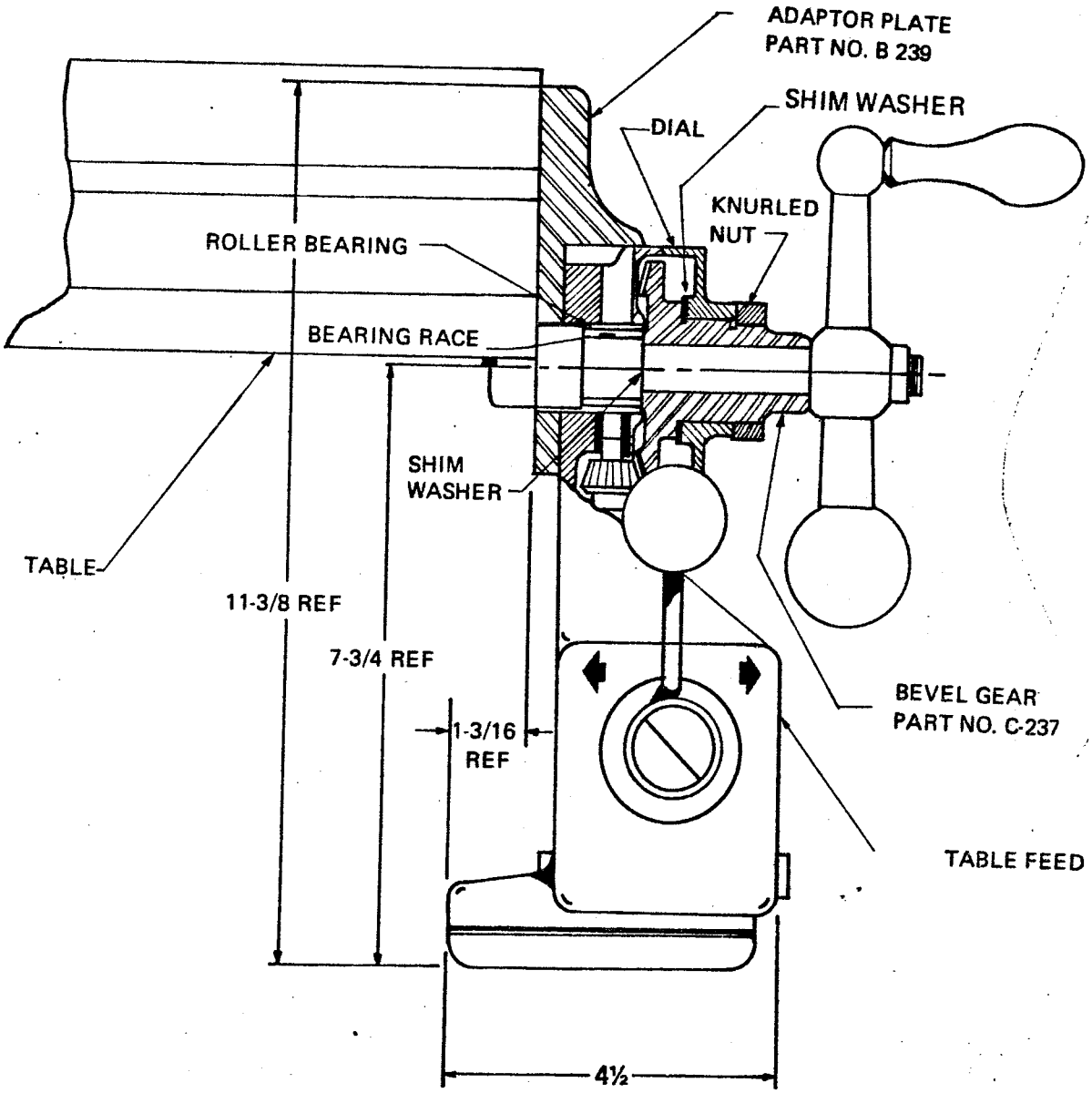
GENERAL DIMENSION DRAWING OF POWER FEED



S/N	P/N	DESCRIPTION
1	A2H-1	Vertical milling head
2	A2H-2	Belt housing
3	3/8"x32 ℓ	Screw
4	A2H-3	Bearing seat
5	A2H-4	Draw bar cover
6	6207ZZ	Bearing
7	H-72	Snap ring
8	M5x15 ℓ	Screw
9	A2H-5	Motor set screw
10	A2H-6	Handle
11	A2H-7	Square socket
12	A2H-8	Motor mounting
13	A2H-9	Quill
14	A2H-10	Locking nut
15	A2H-11	Spindle bearing locking nut
16	A2H-12	Bearing locking nut
17	A2H-13	Vertical spindle
18	A2H-14	Spindle oil seal
19	7207CA	Bearing
20	A2H-15	Collar
21	G-35	O ring
22	A2H-16	Collar
23	A2H-17	Bearing adjusting nut
24	6206	Bearing
25	H-62	Snap ring
26	A2H-18	Spindle transmission sleeve
27	6209	Bearing
28	A2H-19	Collar
29	G-45	O ring
30	A2H-20	Collar
31	H-85	Snap ring
32	STD	Washer for bearing
33	A2H-21	Nut for bearing
34	A2H-22	Pulley locking nut
35	A2H-23	Spindle pulley
36	7x7x49	Key
37	A2H-24	Brake block
38	A2H-25	Locking screw
39	A2H-26	Brake lock stud
40	A2H-27	Washer

S/N	P/N	DESCRIPTION
41	A2H-28	Brake bar
42	A2H-29	Set shaft
43	A2H-30	Locking screw
44	STD	Spring pin
45	STD	Spring
46	M10x10 ℓ	Set screw
47	M4x4 ℓ	Set screw
48	A2H-31	Quill pinion shaft
49	A2H-32	Pinion shaft seat
50	A2H-33	Clutch worm gear
51	A2H-34	Clutch
52	STD	Spring
53	A2H-35	Clutch adjusting nut
54	A2H-36	Clutch cover
55	STD	Spring
56	A2H-37	Pinion shaft seat
57	A2H-38	Pinion shaft sleeve
58	A2H-39	Hand bar holder seat
59	⌀5	Steel ball
60	M6x6	Set screw
61	A2H-40	Hand bar
62	E-19	Snap ring
63	A2H-41	Fine feed worm shaft
64	A2H-42	Worm shaft sleeve
65	51102	Thrust bearing
66	AW 02	Washer for bearing
67	A2H-43	Thrust locking nut
68	A2H-44	Dial
69	A2H-45	Dial positioning screw
70	A2H-46	Hand wheel
71	A2H-47	Hand bar sleeve
72	5x5x22	Key
73	A2H-48	Quill locking block
74	A2H-49	Quill locking bolt
75	A2H-50	Quill stop micro screw
76	A2H-51	Micro meter nut
77	A2H-52	Quill micro stop nut
78	A2H-53	Quill stopper
79	A2H-54	Micro meter scale
80	A2H-55	Micro meter pointer

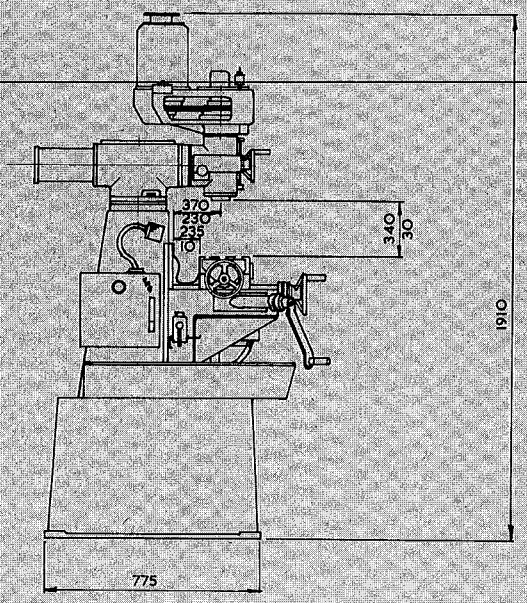
S/N	P/N	DESCRIPTION
81	A2H-56	Felt ring
82	STD	Felt
83	A2H-57	Draw bar
84	A2H-58	Draw bar sleeve
85	A2H-59	Motor pulley
86	A-31	Vee belt
87	0.35KW 8P 0.70KW 4P	Motor
88	A2H-60	Washer
89	STD	Oiling cup
90	A2H-61	Vertical head adapter
91	A2H-62	Ram
92	A2H-63	Tail cover
93	M6x15	Screw
94	A2H-64	Felt ring
95	19x19x50	Key
96	5/16"x32	Screw
97	A2H-65	Adapter set bolt
98	STD	Spring washer
99	STD	Nut
100	A2C-1	Column
101	A2T-1	Table
102	A2T-2	Table gib
103	A2T-3	Gib adjusting screw
104	A2T-4	Dial support ring
105	A2T-5	Longitudinal bearing bracket
106	6303	Bearing
107	H-47	Snap ring
108	A2T-6	Longitudinal bearing bracket
109	7204	Bearing
110	A2T-7	Longitudinal lead screw
111	A2T-8	Longitudinal feed screw bushing
112	A2T-9	Longitudinal auto feed gear
113	A2T-10	Gear setting cap
114	A2T-11	Transmission gear locking nut
115	A2T-12	Locking nut
116	AW-04	Washer for bearing
117	A2T-13	Longitudinal feed nut
118	A2T-14	Washer
119	1/4"x3/4	Screw
120	A2T-15	Dial

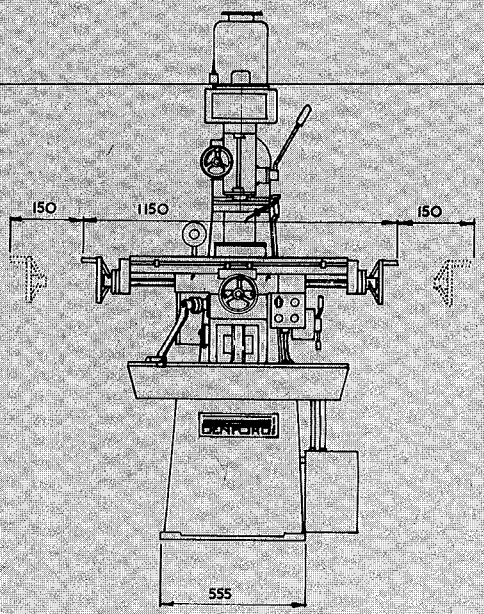
S/N	P/N	DESCRIPTION
121	A2T-16	Dial positioning screw
122	A2T-17	Hand wheel clutch
123	A2T-18	Hand wheel clutch
124	A2T-19	Hand wheel
125	A2T-20	Hand bar sleeve & bolt
126	5x5x27	Key
127	S-16	Snap ring
128	A2T-21	Stopper
129	A2T-22	Longitudinal travel adjusting screw
130	A2T-23	Longitudinal stop block
131	STD	Nut
132	A2T-24	Table locking screw
133	A2T-25	Handle bar
134	5/16"	Copper block
135	STD	Grease nipple
136	A2S-1	Saddle
137	A2S-2	Saddle gib
138	A2S-3	Chip guard
139	A2S-4	Cross lead screw
140	5x5x22	Key
141	A2S-5	Cross feed nut
142	A2S-6	Cross feed bearing bracket
143	A2S-7	Dial support ring
144	6204	Bearing
145	A2S-8	Hand wheel
146	A2S-9	Chip guard
147	A2K-1	Knee
148	A2K-2	Knee gib
149	A2K-3	Knee locking screw
150	A2K-4	Handle bar
151	A2K-5	Gear shaft sleeve
152	A2K-6	Gear shaft
153	6x6x28	Key
154	5x5x40	Key
155	A2K-7	Elevating sub-dial
156	A2K-8	Elevating handle clutch
157	A2K-9	Handle arm
158	S-18	Snap ring
159	A2K-10	Elevating gear

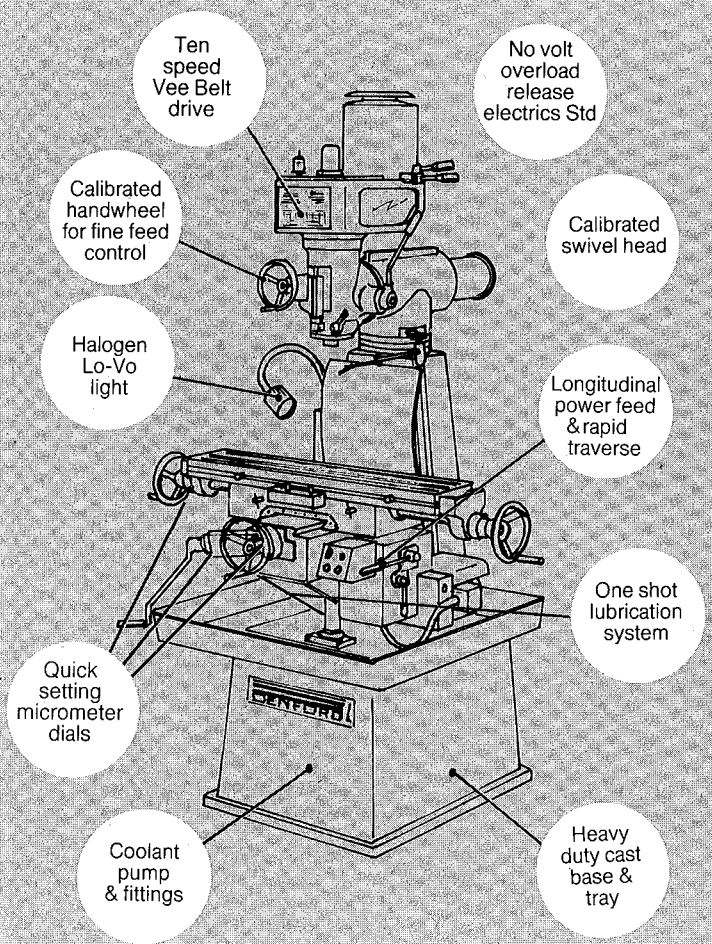
S/N	P/N	DESCRIPTION
160	A2K-11	Elevating lead screw
161	A2K-12	Elevating lead screw set nut
162	1/4"x1"	Screw
163	A2K-13	Chip guard
164	3/16"x3/4"	Screw
165	A2B-1	Base
166	7/16"x1 1/2"	Screw
167	STD	Spring washer
168	STD	Switch
169	STD	Illumination
170	STD	Limit switch
171	STD	Oil cup

Please find the serial number from drawings.
The part number and description will
help with identification.

TURRET MILLING MACHINE







SPECIFICATIONS		
Working table surface	7″ x 28″	180 x 700 mm
Longitudinal travel	16½″	420 mm
Cross travel	7½″	190 mm
Spindle travel	3½″	90 mm
Distance spindle to table	13½″	340 mm
Distance spindle to column	9″	230 mm
Movement of ram	5½″	140 mm
Vertical head tilting angle (R & L)	90°	
Ram swivelling angle	360°	
Spindle speed (10 speeds)	183-2840 RPM	
Spindle taper	R8	
Speed of longitudinal feed (3 speeds)	40-110 mm/min.	
Rapid longitudinal feed	1330 mm/min.	
Motor (vertical spindle)	1 HP	
Motor (longitudinal feed)	½ HP	
Coolant pump	⅛ HP	
Net weight (approx.)	1320 lbs/600 Kg	
Case size	68″ x 42″ x 44″	

DENFORD MACHINE TOOLS

DENFORD MACHINE TOOLS LIMITED
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