7606 SO. RAMISH STREET, BELL GARDENS, CALIF. 90201 · SP 3-0237

VERTICAL MILLING MACHINE

MODEL 1/2V

SERVICE MANUAL

READ THIS MANUAL CAREFULLY

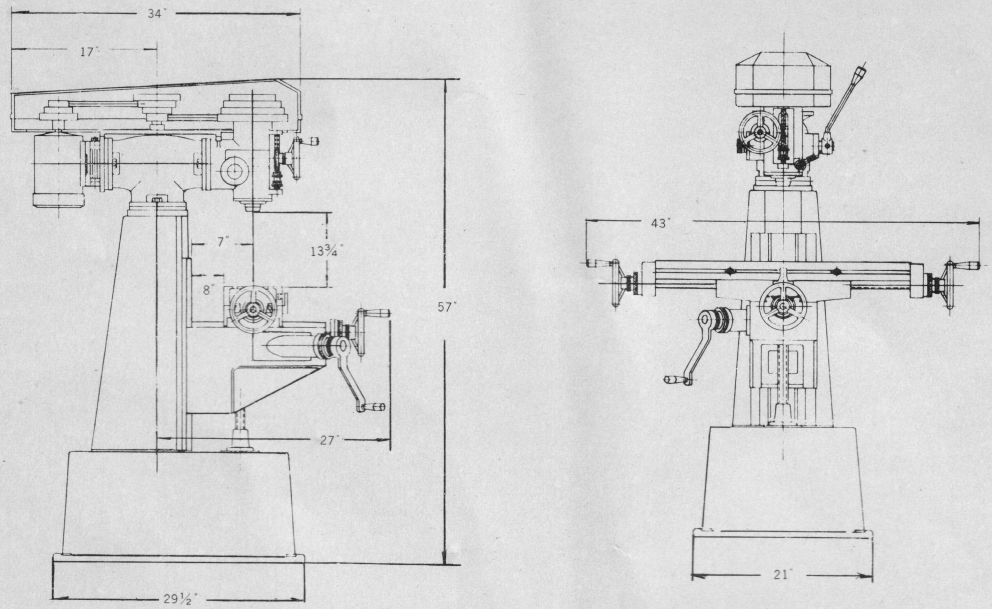
It is essential to give the Serial Number of your machine in any order of repair parts to assure prompt and accurate service.

Order repair parts by part numbers, description and machine serial number.

VERTICAL MILLING MACHINE

	1/2 V
Table working surface	7" ×30"
Longitudinal travel	22"
Cross travel	7-½"
Vertical travel	13-¾"
Spindle travel	3-⅛"
Distance spindle to table	13-¾"
Distance spindle to column	7"
T-Slot, top of table (3)	9/16"
T-Slot, front of table	⅜"
Spindle speeds (9 steps)	215-3440RPM
Spindle nose	R8
Motor	1 H.P.
Net weight (approx.)	964 LBS.
Dimensions of packing case	43" ×47" ×61"

REFERENCE DIMENSIONS:



FEATURES:

1. Select Model ½V is a compact vertical milling machine. It is easy to set up. The controls are designed for operator convenience with dual table hand wheels.
2. It is very practical for technical schools, small parts production, toolrooms, R&D work, maintenance shops and even hobby use.
3. The machine is idealy suited for many operations, including: conventional milling, compound angle milling, engraving, drilling and jig boring.
4. All "ways" are hand scraped for perfect bearing and alignment. The table is ground for perfect squareness.
5. Castings are high strength material. They are aged for several months, before normalizing and tempering, to minimize deformation.
6. Anti friction bearings are procured from famous manufacturers such as SKF, FAG, NSK, etc... completely interchangeable world wide.

——NOTICE——

1. Remove protective crating and skids carefully, in the event of damage in transit, contact our representative and the transportation company making delivery.
2. The machine is carefully inspected and tested in operation by Q.C. personnel before it leaves our factory. If any defects are found on delivery write us directly.
3. Read the catalogue and become familiar with the parts locations on the drawings as it will be easier to understand this operator's manual.

I INSTALLATION:

To set the machine on a solid concrete foundation, it's advisable to apply a little grout to touch up any unevenness in the concrete in order to get a solid foundation at all points.

When setting machine on a floor that has any surface irregularities, shims should be used to correct this condition to the greatest extent possible.

II PRE-LUBRICATION:

Thoroughly clean the machine with gasoline or kerosene, then lubricate all the slide ways with S.A.E. #10 and gears with S.A.E. #30 lubricant. Be sure the machine is lubricated properly before starting.

III LEVELLING MACHINES:

Set machines by levelling the work table lengthwise and crosswise with a precision levelling instrument (refer to the test readings in the attached test records).

IV INSPECTION:

Inspect the machine with the attached original testing records for reference.

V SWITCH BOX:

Switch box is located on the left side of the column, on-off only.

VI ADJUSTMENT OF TABLE FEED TRAVEL:

Table longitudinal and cross feed can be set for any travel distance by adjusting stop set screws that are located in front of table and at the right side of knee.

VII ADJUSTMENT OF TABLE GIB:

The table is provided with a full length tapered gib in the saddle with an adjusting screw on each end. To take up gib tighten the two screws until a slight drag is felt when moving the table by hand If the table is not tight enough, loosen the adjusting screw on small end, and tighten up adjusting screw on big end. If feel is too tight, reverse the adjusting procedures.

VIII ADJUSTMENT OF SADDLE AND KNEE GIBS:

To tighten gibs the same method as described above is used.

IX CLAMPING TABLE, SADDLE AND KNEE:

When milling with longitudinal table feed only, it is advisable to clamp the knee with the column and the saddle with the knee to add rigidity to these

members and provide for heavier cuts with a minimum of vibration. The saddle locking lever is located on the left side of saddle to the operator, apply clamping pressure properly, as this will hold saddle sufficiently rigid.

The table clamping levers are located in front of saddle and should always be clamped when longitudinal movement is not required.

The knee clamping lever is at the left side of knee, leave clamped at all times unless the knee is in operation.

X REMOVING TABLE:

Remove the table as follows : hand wheel, dial holder, bearing bracket, turn the lead screw all the way, so that it can be removed. Complete all the steps then the table can be disassembled easily.

XI REMOVING SADDLE:

Remove as follows: hand wheel, dial holder, bearing bracket, turn the leadscrew all the way, loosen set screw on the middle of saddle, take off the lead screw nut, and draw saddle gib out . The saddle can then be removed.

XII MOUNTING MOTOR AND SHIFTING BELTS FOR SPEEDS:

Motor is mounted on a plate hinged to the pulley housing. Release the belt set unit by turning the handle at the side of motor, then shift belts to proper speed as desired, then tighten the belt set unit. A speed change chart is attached inside the pulley cover.

XIII QUILL LOCK AND VERTICAL FEED:

The handle at the right lower corner of the head is the quill lock. When vertical feed is not in use, set the handle to lock the quill and make the head more stable.

Open the pulley cover to locate a vertical oil cup in front of pulley. Open the cup and drip oil in a couple times a day. This will lubricate all the vertical spindle system from top to bottom.

The micrometer depth stop is graduated in inches. By utilizing these simple graduations, it is possible to work very accurately to different depths. A lock nut under the micrometer nut assures that the micrometer nut is secured properly.

XIV QUILL CLUTCH OF VERTICAL MILLING HEAD:

The vertical feed ($\frac{1}{2}$V) is controlled by a hand wheel at the front of the head and a handle at the right hand of the head. When hand wheel is in use tighten the clutch lock nut by hand, or loosen it for handle operation. Use hand wheel for fine feeds, handle for fast feeds.

XV VERTICAL HEAD AND TEE ADAPTER:

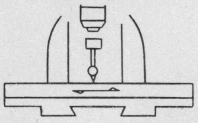
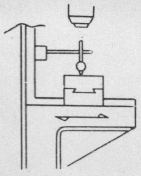
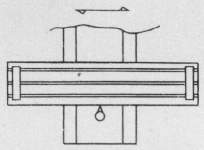
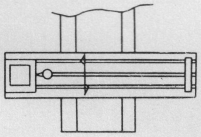
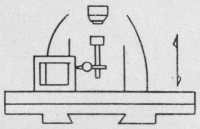
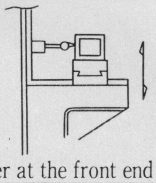
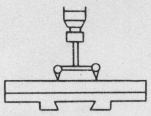
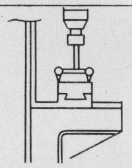
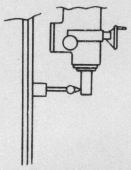
Vertical milling head can be tilted 90° on each side by loosening the four locking bolts on tee adapter.

Loosen two set bolts on the adapter, the vertical milling head can then be swivelled 120°; tighten the set bolts after swiveling.

The motor and milling head must tilt together for the motor and head are suspended on the same pulley housing.

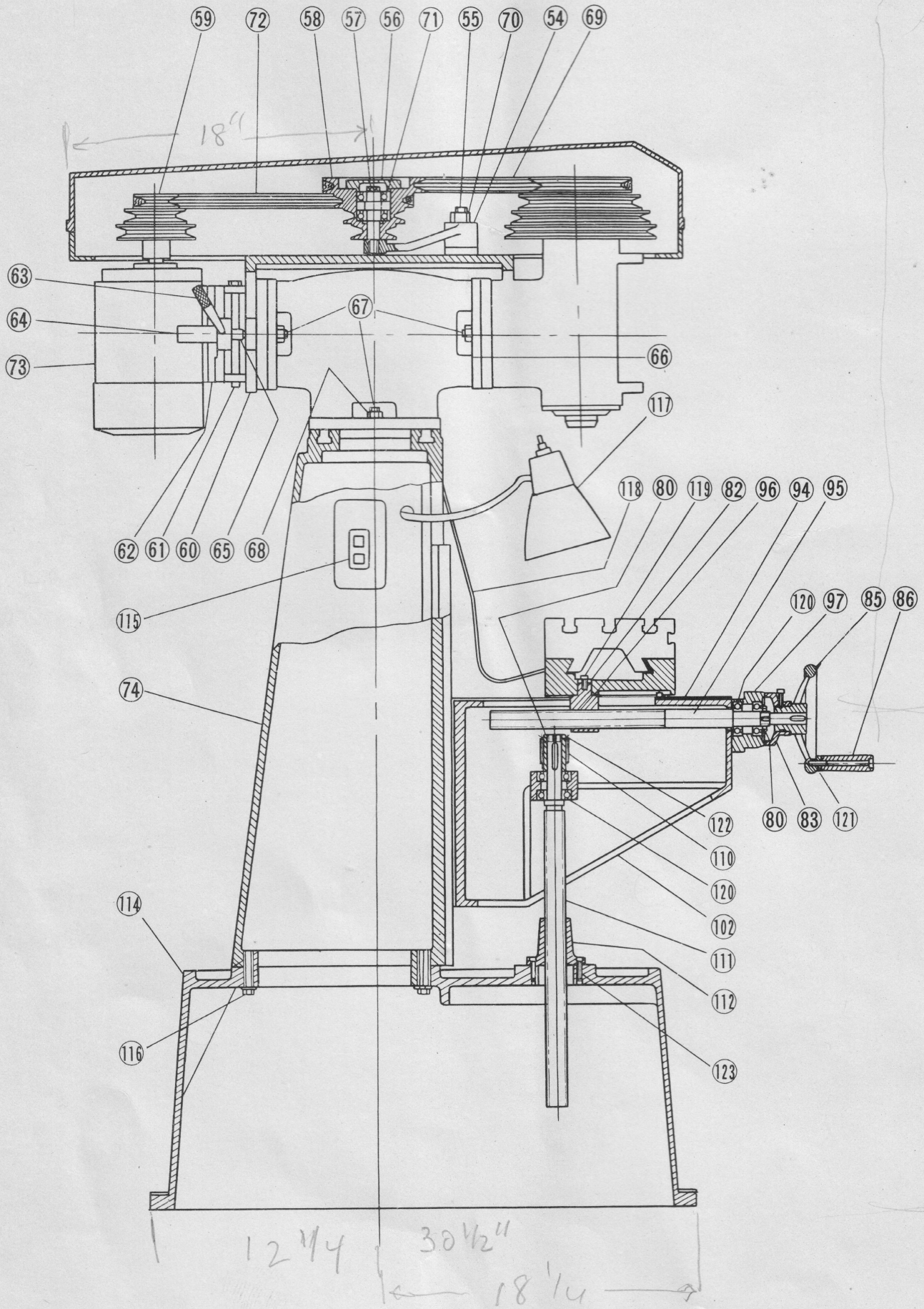
FINAL INSPECTION RECORD

MODEL: 1/2 V
MFG. NO. 64620
DATE: 1977. 4

No.	Inspection Items		Illustrations	Tolerances	Measurements
1.	Straightness of upper surface of table			0.03 (0.0012″)	0.020
2.	Parallelism of table surface in cross movement			0.02 (0.0008″)	0.015
3.	Parallelism of table in longitudinal movement	In table longitudinal travel distance		0.03 (0.0012″)	0.020
4.	Perpendicularity of table longitudinal and cross movement			0.02 (0.0008″)	0.020
5.	Squareness of movement of main spindle head to upper surface of table	Right and left direction		0.02 (0.0008″)	0.010
		Forward and backward direction	 No. lower at the front end of table	0.02 (0.0008″)	0.015
6.	Squareness of upper surface of table to center line of main spindle	Right and left direction		0.02 (0.0008″)	0.005
		Forward and backward direction	 No lower at the front end of table	0.02 (0.0008″)	0.015
7.	Spindle taper hole run-out			0.02 (0.0008″)	0.020

Revised and issued by Q C Department

Q C Superintendent	Q C Inspector
C. H. Tzeng	Y. L. Day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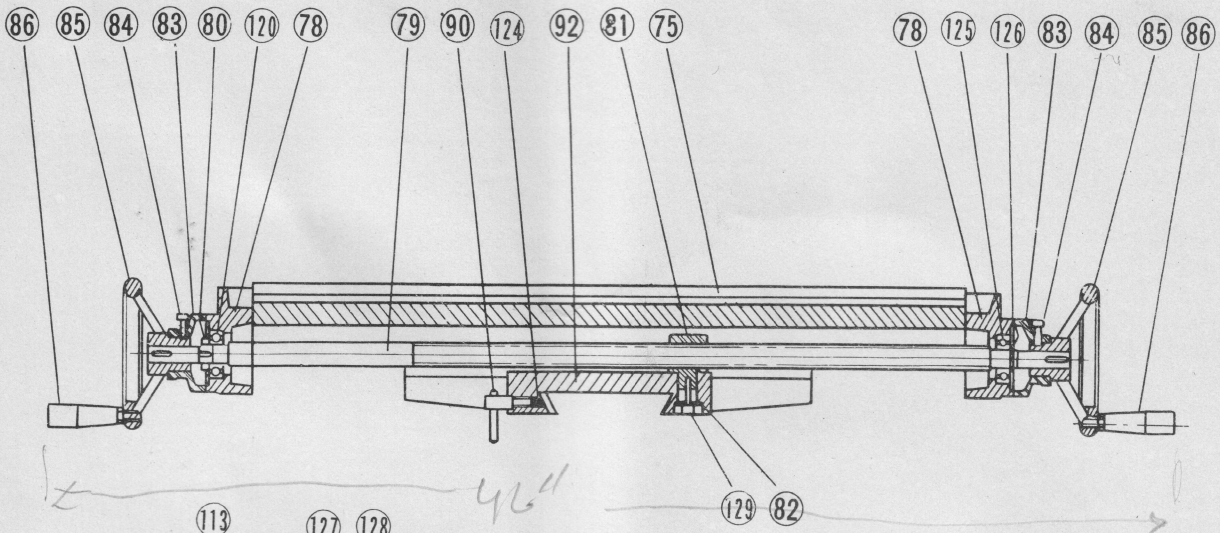
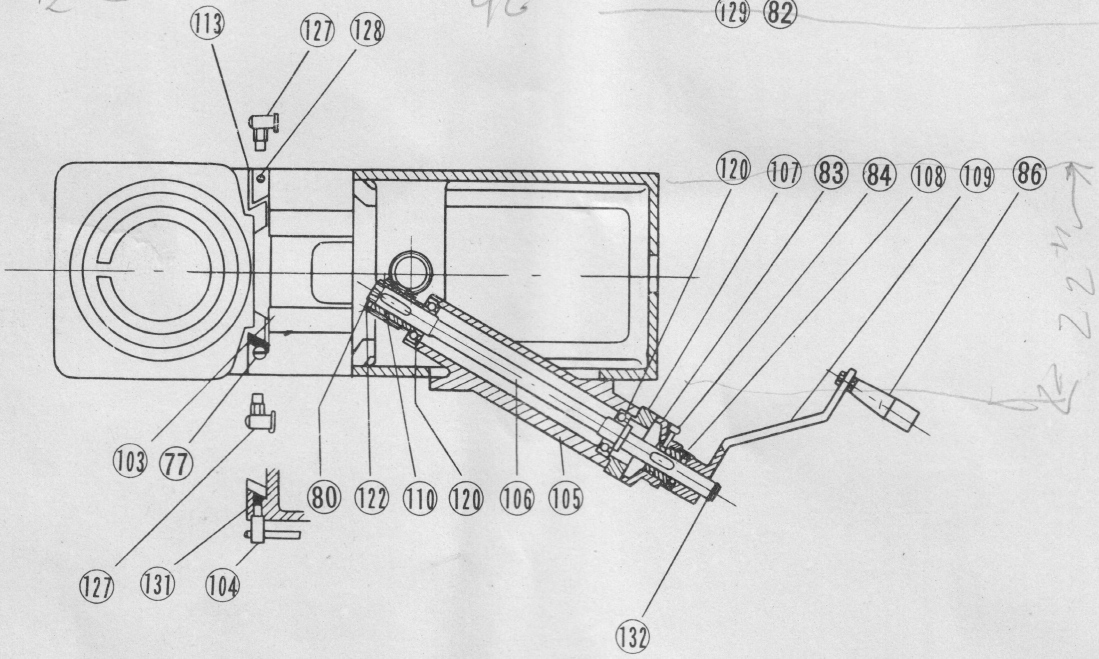
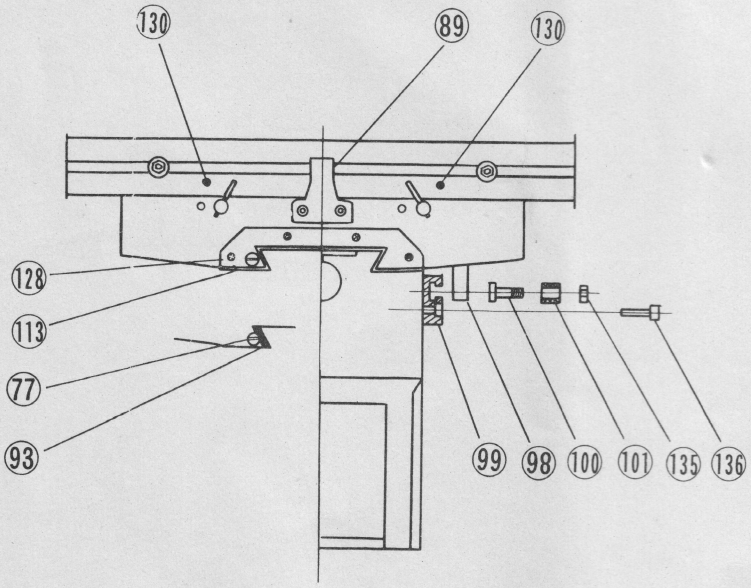
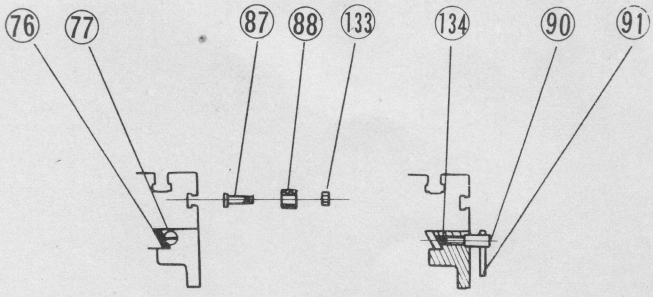
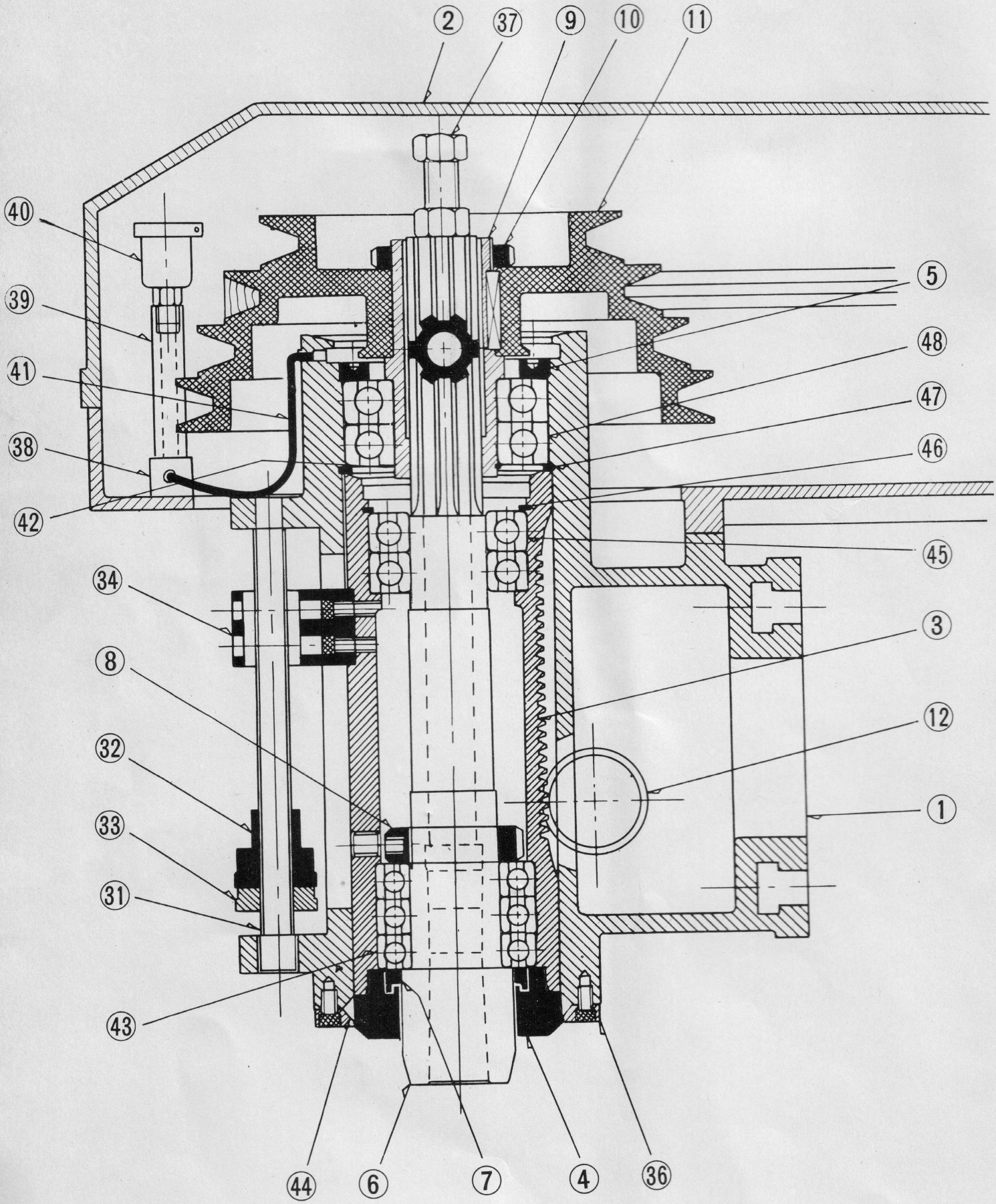
PART LOCATION DRAWING







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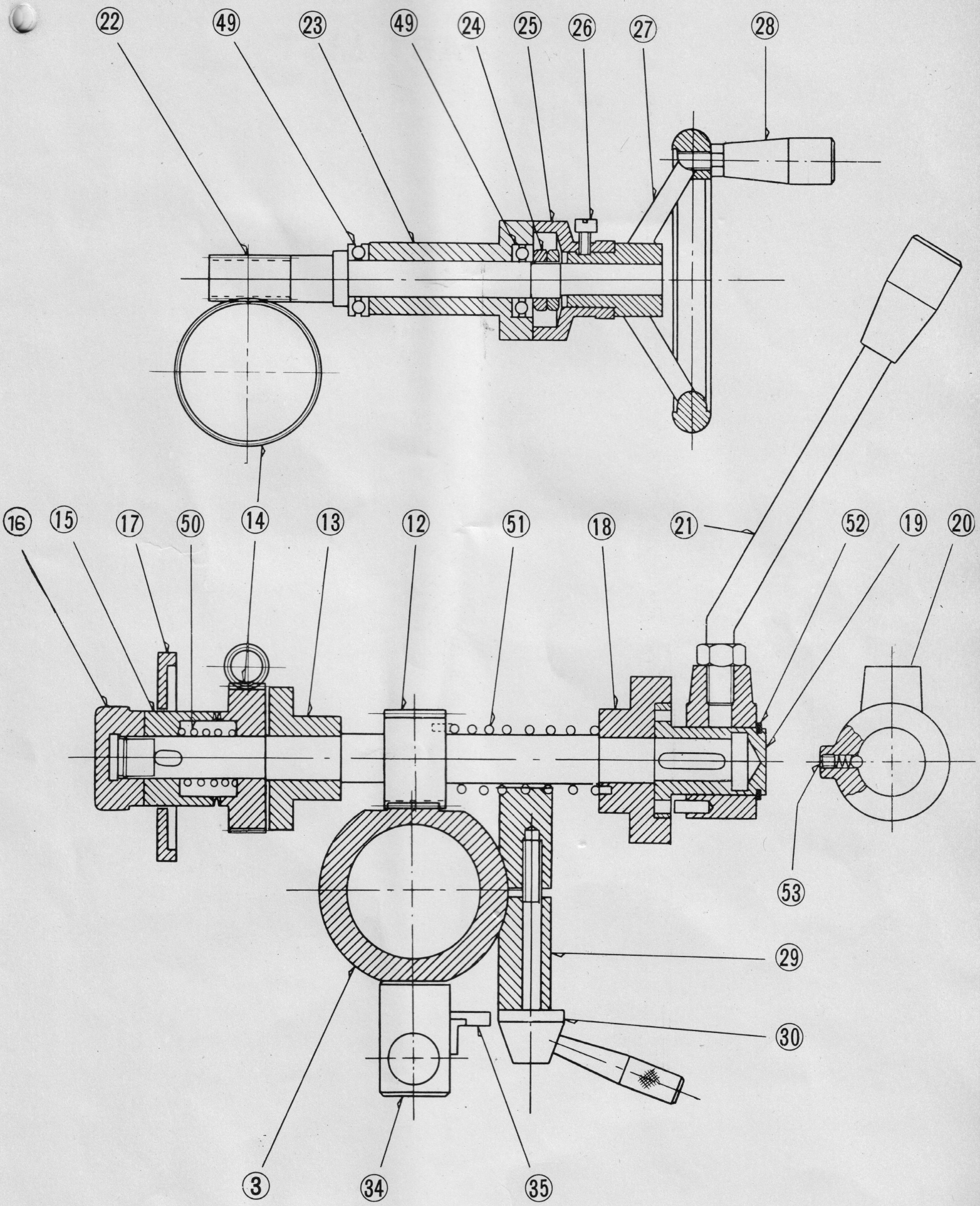
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PART LIST

S/N	P/N	PART NAME
1	AIH-1	Vertical milling head.
2	AIH-2	Belt housing cover
3	AIH-3	Quill.
4	AIH-4	Spindle bearing lock nut.
5	AIH-5	Lock nut.
6	AIH-6	Vertical spindle.
7	AIH-7	Spindle oil seal.
8	AIH-8	Bearing adjusting nut.
9	AIH-9	Spindle sleeve.
10	AIH-10	Pulley locking nut.
11	AIH-11	Spindle pulley.
12	AIH-12	Quill pinion shaft.
13	AIH-13	Pinion shaft seat.
14	AIH-14	Clutch worm gear.
15	AIH-15	Clutch.
16	AIH-16	Clutch adjusting nut.
17	AIH-17	Clutch cover.
18	AIH-18	Pinion shaft seat.
19	AIH-19	Pinion shaft sleeve.
20	AIH-20	Hand bar holder seat.
21	AIH-21	Handle bar.
22	AIH-22	Worm shaft.
23	AIH-23	Worm shaft sleeve.
24	AIH-24	Thrust locking nut.
25	AIH-25	Dial.
26	AIH-25a	Dial positioning screw.
27	AIH-26	Hand wheel.
28	AIH-27	Handle.
29	AIH-28	Quill locking block.
30	AIH-29	Quill locking bolt.
31	AIH-30	Quill stop micro screw.
32	AIH-30a	Micrometer nut.
33	AIH-30	Quill micro stop nut.
34	AIH-31	Quill stopper.
35	AIH-32	Micrometer scale.
36	AIH-33	Felt ring.
37	AIH-34	Draw bar.
38	AIH-35	Oil tube connector.
39	AIH-35a	Oil tube connector.
40	STD.	Oiling cup.
41	STD.	Oil tube.
42	S-40	Snap ring.
43	6007	Bearing.
44	STD.	Felt.
45	6206	Bearing.
46	R-62	Snap ring.
47	R-80	Snap ring.
48	6208	Bearing.
49	51102	Thrust bearing.
50	STD.	Spring.
51	STD.	Spring.
52	S-28	Snap ring.
53	STD.	Bolt.
54	AIH-36	Swivel arm.
55	AIH-37	Swivel stud.
56	AIH-38	Pulley shaft cover.
57	AIH-39	Pulley pivot stud.
58	AIH-40	Vee belt pulley.
59	AIH-41	Motor pulley.
60	AIH-42	Motor mount.
61	AIH-43	Motor suspending pivot.
62	AIH-44	Motor mounting.
63	AIH-45	Motor set unit handle.
64	AIH-46	Belt set unit.
65	AIH-46a	Belt set unit.
66	AIH-47	Vertical head adapter.
67	AIH-48	Adapter set bolt.
68	1/2"	Nut.
69	B-40	Vee belt.
70	5/8"	Nut.

PART LIST

S/N	P/N	PART NAME
71	6204	Bearing.
72	B-33	Vee belt.
73	1HP4 POLE	Motor.
74	AIC-1	Column.
75	AIT-1	Table.
76	AIT-2	Table gib.
77	AIT-3	Adjusting screw.
78	AIT-4	Longitudinal bearing bracket.
79	AIT-5	Longitudinal lead screw.
80	AIT-6	Lock nut.
81	AIT-7	Longitudinal feed nut.
82	AIT-8	Washer.
83	AIT-9	Dial.
84	AIT-9a	Dial positioning screw.
85	AIT-10	Hand wheel.
86	AIT-11	Handle bar.
87	AIT-12	Long. travel adjusting screw.
88	AIT-12a	Adjusting screw sleeve.
89	AIT-13	Table stopper.
90	AIT-14	Table locking screw.
91	AIT-15	Handle bar.
92	AIS-1	Saddle.
93	AIS-2	Saddle gib.
94	AIS-3	Chip guard.
95	AIS-4	Cross lead screw.
96	AIS-5	Cross feed nut.
97	AIS-6	Cross feed bearing bracket.
98	AIS-7	Stop block.
99	AIS-8	Stop block fixture.
100	AIS-9	Cross travel adjusting screw.
101	AIS-9a	Adjusting screw sleeve.
102	AIK-1	Knee.
103	AIK-2	Knee gib.
104	AIK-3	Table locking screw.
105	AIK-5	Gear shaft sleeve.

S/N	P/N	PART NAME
106	AIK-	Gear shaft.
107	AIK-7	Elevating sub dial
108	AIK-8	Elevating handle clutch.
109	AIK-9	Handle arm.
110	AIK-10	Elevating gear.
111	AIK-11	Elevating lead screw.
112	AIK-12	Elevating lead screw set nut.
113	AIK-13	Chip guard.
114	AIB-1	Base.
115	STD.	Switch.
116	3/8"×2"	Bolt.
117	STD.	Light.
118	STD.	Rubber sheet.
119	STD.	Bolt.
120	6204	Bearing.
121	3/8"	Nut.
122	STD.	Spring lock washer.
123	1/4"×3/4"	Bolt.
124	1/4"DIA.	Copper block.
125	6303	Bearing.
126	S-17	Snap ring.
127	STD.	Oil cup.
128	STD.	Bolt.
129	STD.	Bolt.
130	STD.	Grease nipple.
131	3/8"DIA.	Copper block.
132	S-18	Snap ring.
133	STD.	Nut.
134	STD.	Copper block.
135	STD.	Nut.
136	STD.	Bolt.

CAUTION:
Find the serial number from the drawing, then use it to obtain the part number from this list.