



RADIAL DRILL
MODEL KMR-700DS
SERVIC MANUAL

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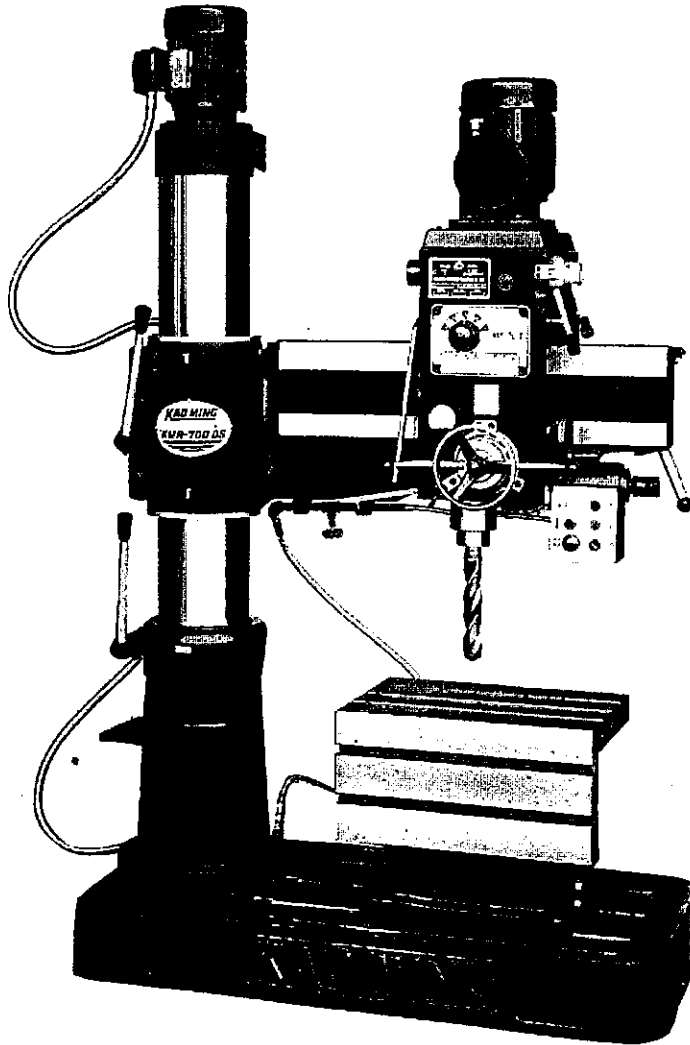
SPECIFICATIONS

		KMR-700DS	
DISTANCE FROM SPINDLE TO COLUMN SURFACE	MAX.	28"	710m/m
	MIN.	7 15/32"	190m/m
SPINDLE TRAVEL ON ARM		20 15/32"	520m/m
DISTANCE FROM SPINDLE NOSE TO BASE SURFACE	MAX.	41 15/16"	1065m/m
	MIN.	12 19/32"	320m/m
DISTANCE FROM SPINDLE NOSE TO BOX TABLE	MAX.	27 1/8"	687m/m
VERTICAL MOVEMENT	ARM	21 1/16"	535m/m
	SPINDLE	8 1/4"	210m/m
DIAMETER	COLUMN	7 7/8"	200m/m
	QUILL	2 11/16"	68m/m
	SPINDLE	2 11/16"	68m/m
MAXIMUM DRILLING CAPACITY	CAST IRON	2"	50m/m
	STEEL	1 1/2"	38m/m
MAXIMUM TAPPING CAPACITY	CAST IRON	7/8"	22m/m
	STEEL	5/8"	16m/m
SPINDLE	TAPER	MT #4	
	SPEEDS(6) 60HZ	88-1500 RPM	
	50HZ	75-1250 RPM	
FEED SPEEDS(3)		0.003-0.0052-0.009 (inch/rev)	
		0.07-0.13-0.22 (mm/rev)	
MOTOR	ARM ELEVATING	1HP	
	SPINDLE	2HP	
WORK AREA OF BASE		35 5/32"x24 13/16"	
		893m/mx630m/m	
HEIGHT	MAX.	85 9/32"	2166m/m
WEIGHT		2843 lbs	1290 kg

STANDARD EQUIPMENT
 COMPLETE ELECTRICS
 AMMETER
 POWER ELEVATION
 REVERSING CONTROLS

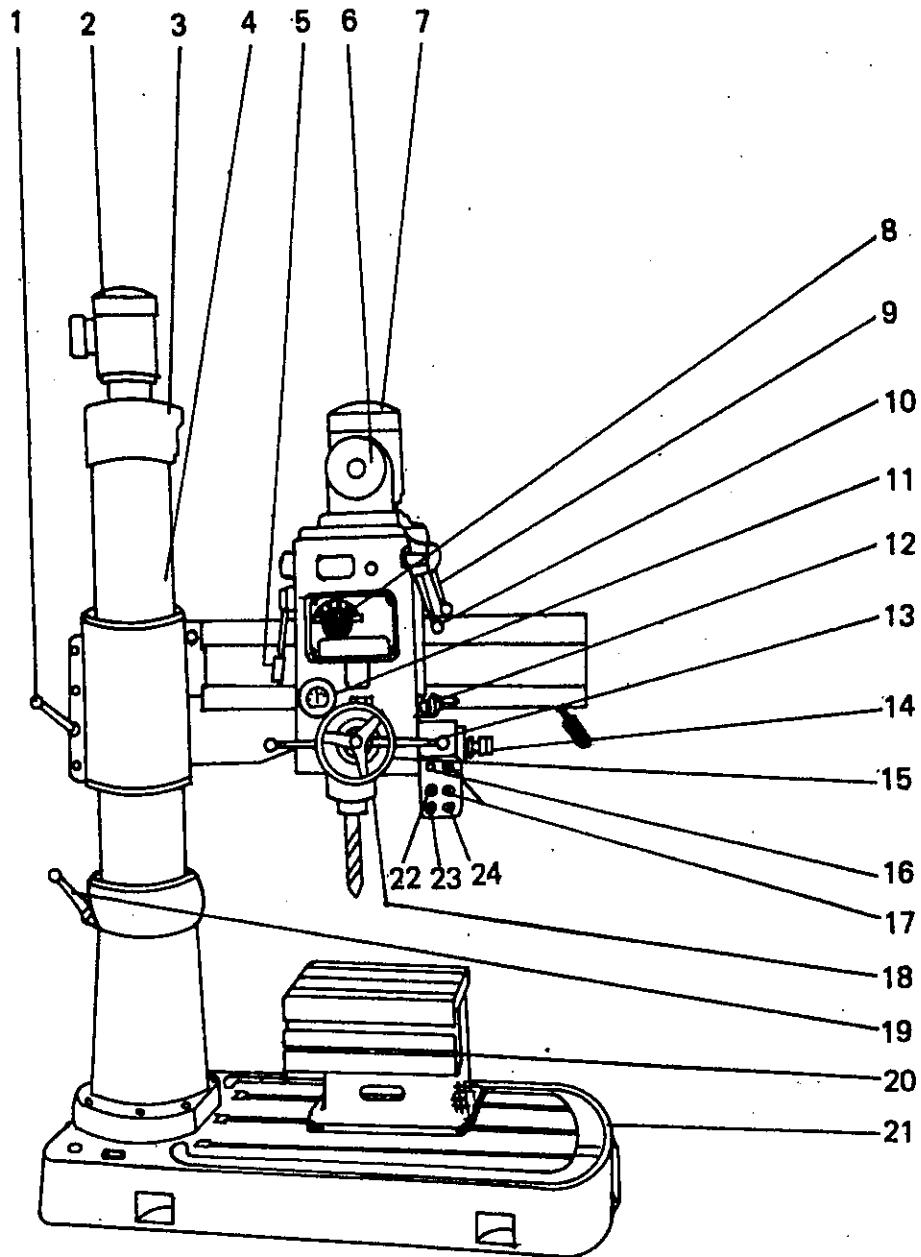
BOX TABLE 19 11/16" WIDE, 15 3/4" DEEP, 15 5/32" HIGH
 COOLANT SYSTEM

KMR 700DS



This manual applies only to the machine having the serial number shown; this is stamped on the nameplate and **MUST** be quoted in all communications.

Machine Serial Number



- | | |
|------------------------------------|----------------------------|
| 1. ARM CLAMPING LEVER | 13. FEED TRIP LEVER |
| 2. ELEVATING MOTOR | 14. SPINDLE SWITCH |
| 3. GEAR CASE | 15. HEAD MOVING HAND WHEEL |
| 4. COLUMN | 16. PILOT LAMP |
| 5. HEAD CLAMPING LEVER | 17. ARM ELEVATING SWITCH |
| 6. SPINDLE BALANCE SPRING CASE | 18. SPINDLE |
| 7. SPINDLE MOTOR | 19. COLUMN CLAMPING LEVER |
| 8. FEED CHANGE KNOB | 20. BOX TABLE |
| 9. TWO STAGE SPEED CHANGE LEVER | 21. BED |
| 10. THREE STAGE SPEED CHANGE LEVER | 22. MAIN VOLTAGE ON |
| 11. AMMETER | 23. EMERGENCY BUTTON |
| 12. FINE FEED GRIP HANDLE | 24. COOLANT PUMP SWITCH |

This machine is designed and manufactured so as to enable drilling, tapping, spot facing and boring at high precision and high efficiency.

TRANSPORTATION

Transport of machine is very easy, because it is designed well. But machine height is so high that you must be careful of the center of gravity when you fasten it with ropes as shown in Fig. 1.

Please insert padding between ropes and machine to prevent damage.

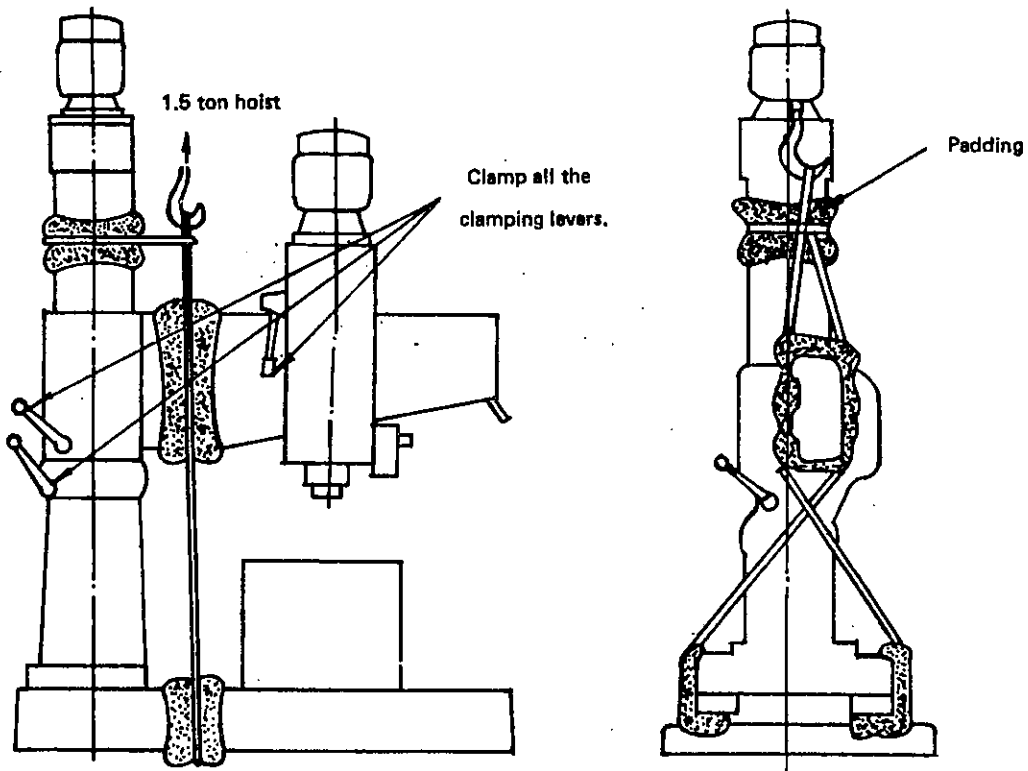


FIG. 1

ERECTION OF MACHINE

We recommend a standard concrete foundation as shown in Fig. 2. You can do drilling work directly on the floor if the concrete floor is finished parallel to the upper surface of base plate. Machine may be installed 12" higher than floor level, for extra versatility.

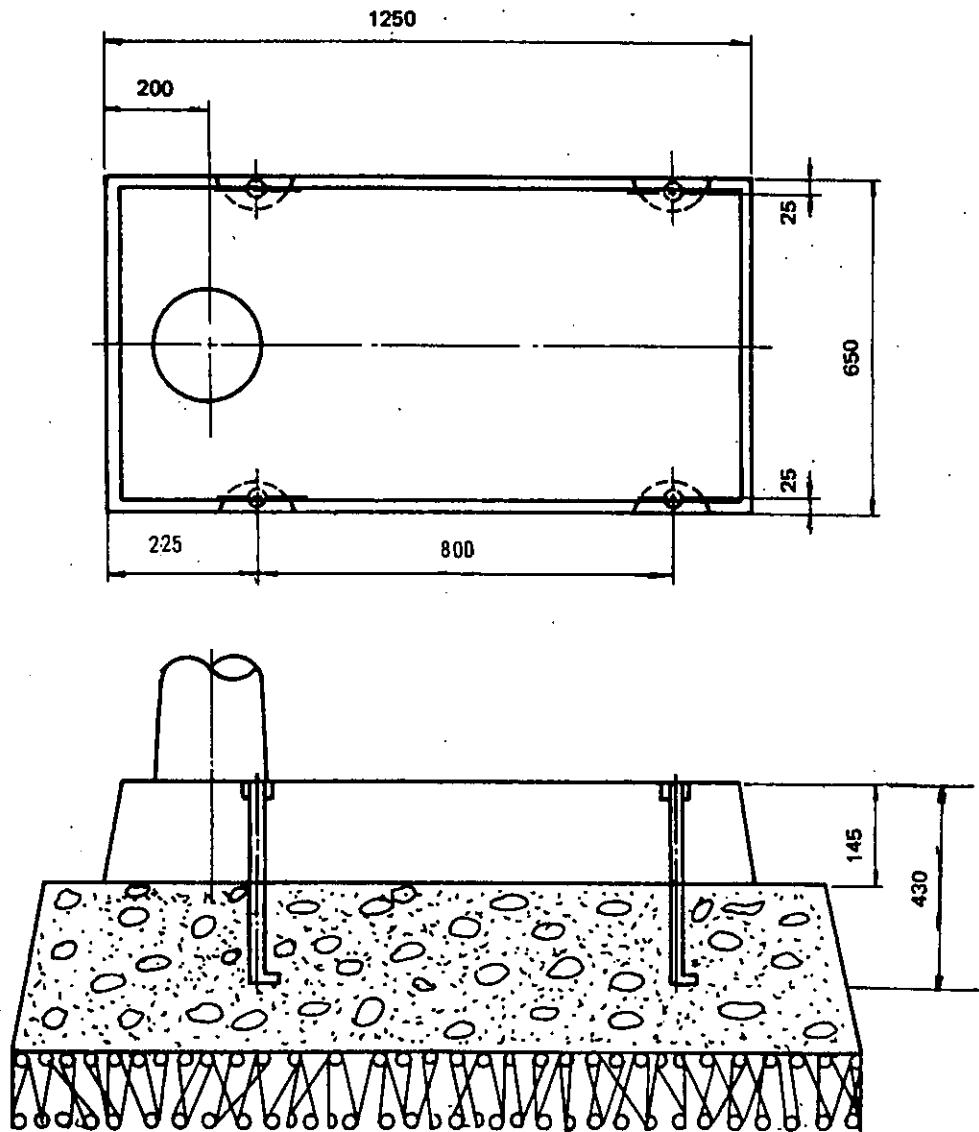


FIG. 2

ELECTRICAL

The standard machine is wired for 220 volts 3 phase 60 cycles.

For connection to 440 volts, check the wiring diagram for the changeover shown in the motor terminal cover.

For electrical connections, merely connect your supply lines to the leads provided on the machine. Before connecting, make sure the motor specification and the machine wiring correspond with power supply. Check for correct direction of rotation. Should this need correction, turn "OFF" the main power switch (Fig. 4) and interchange the leads according to the motor wiring diagram.

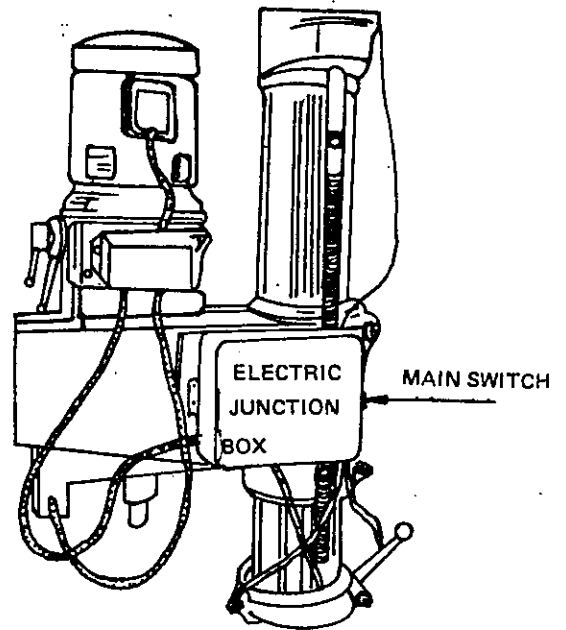


FIG. 3

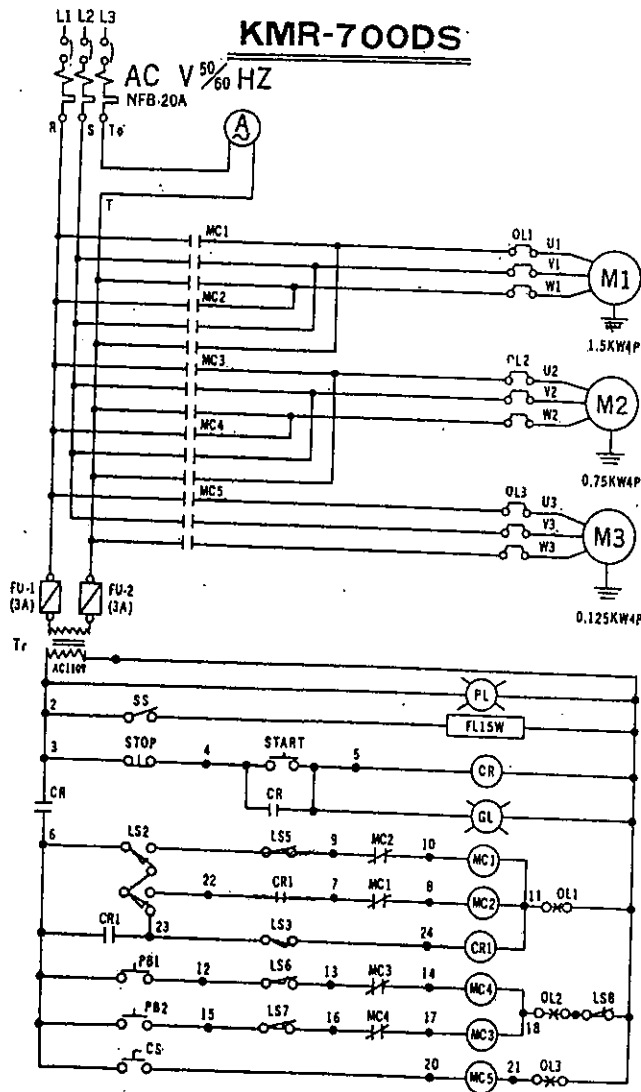


FIG. 4

LUBRICATION CHART

Be sure to check the oil level from the oil sight glass in the gear casing to see if it is within the limit before starting the machine. The recommended oil is SHELL TELLUS No. 33 or MOBIL D. T. K. HEAVY MEDIUM.

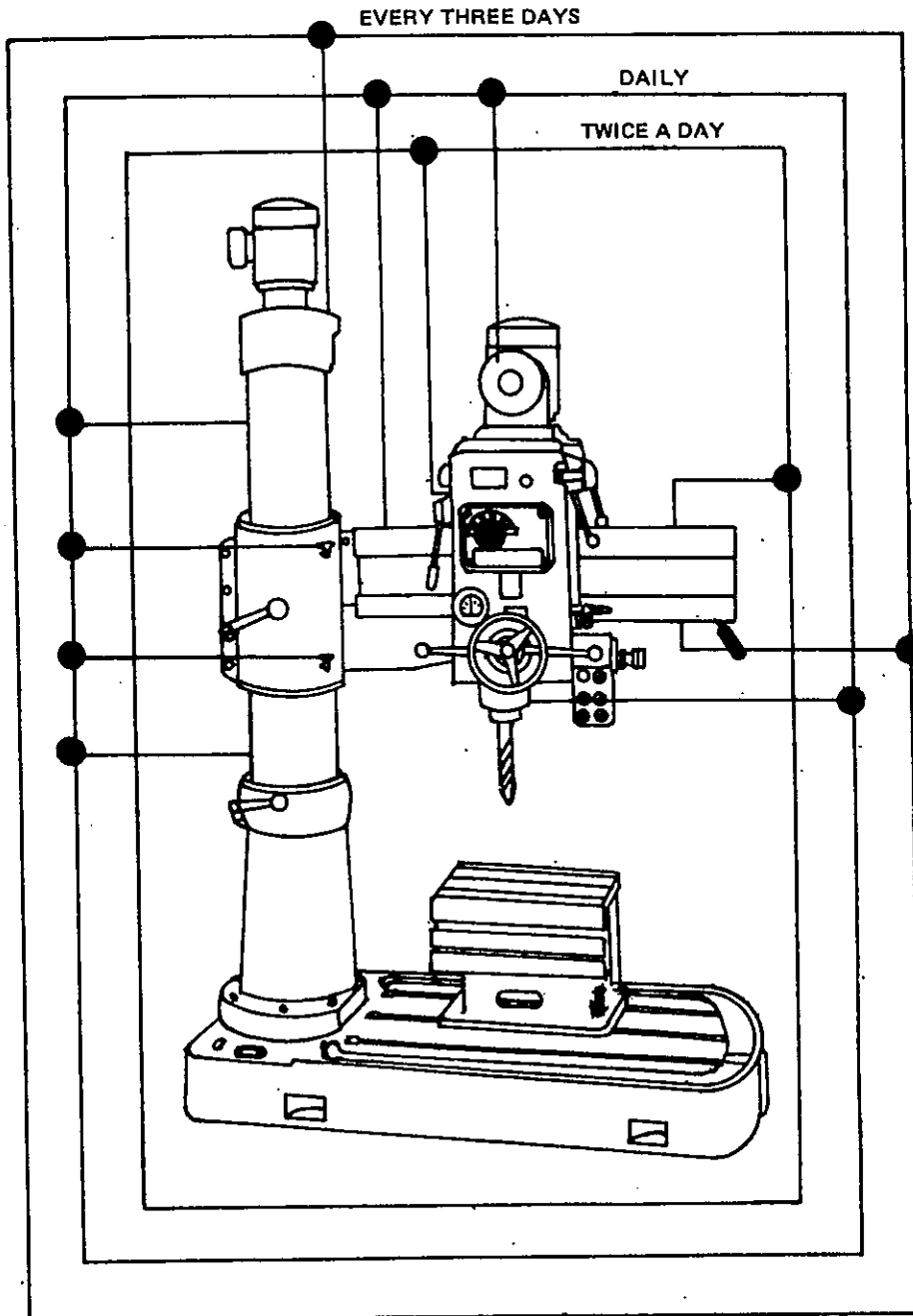


FIG. 5

OPERATING INSTRUCTIONS

Do not operate the machine until you are thoroughly familiar with all the controls and their functions.

OPERATIONS

Before starting the machine please observe the following points.

(1) CLEANING AND ADJUSTING

Wipe off the dust or grease on machined surfaces.

(2) LUBRICATION

a) Pour recommended lubrication oil or same grade oil into upper gear casing to the height of center of oil sight glass (in oil hole of casing top) and Fig. 5 shows hand lubrication points.

(3) INSPECTION

Please inspect and observe the following:

a) Check of any relaxation of screw or nut during transportation.

Especially observe any relaxation of each adjusting bolt of wedge fixed to column.

b) Confirm the direction of spindle revolution.

The spindle should revolve clock-wise when turning spindle switch to the right as shown in Fig. 6.

Arm is elevated by pushing upper arm elevating switch.

Down by pushing lower arm elevating switch.

c) The ammeter should be under 2.5 amperes when spindle switch is switched into forward position or reverse and it must not rise over 4 amperes when working.

The movement of ammeter should not be excessive when starting. Fig. 7

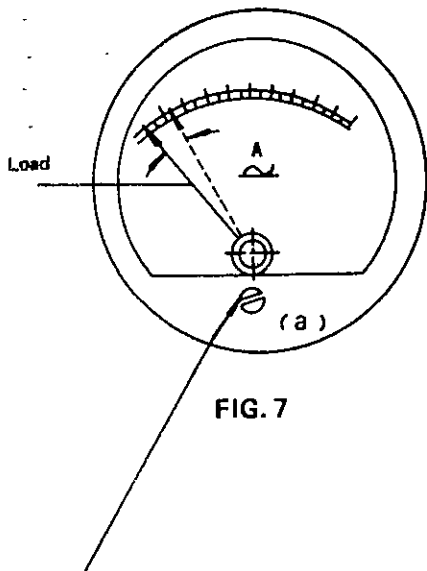


FIG. 7

The Error-of zero point can be adjusted and corrected by set screw (a)

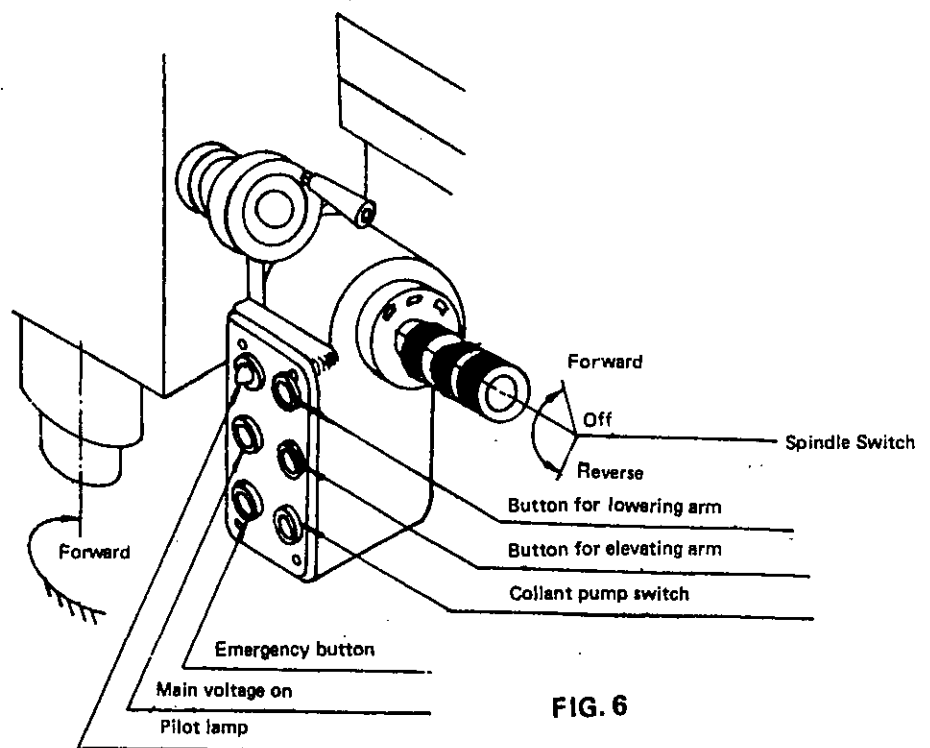


FIG. 6

OPERATIONS

A. SPINDLE HEAD

The machine is constructed by gears which provide 6 spindle speeds from 88-1500 rpm.

The speed change lever "A" has 2 positions, while lever "B" has 3 positions as shown in Fig. 8

When changing the spindle speed, move the two lever to the desired position according to the speed change chart in the front of the spindle head.

CAUTION: "Do not change gears when the spindle is running."

B. CLAMPING

1. **ARM CLAMPING LEVER:** Always loosen this lever before pushing the arm elevating switch to raise or lower the arm on column.
2. **COLUMN CLAMPING LEVER:** This should be loosened when moving the arm around the column is attempted.
3. **HEAD CLAMPING LEVER:** Spindle head is clamped by turning this lever "UP", and should be loosened when moving the spindle head to the right or left.

It is a good practice to clamp all these three levers before starting the drilling operation.

C. FEED

1. FINE FEED

Set the feed change knob at position "N" and use the grip handle (Fig. 9)

2. POWER FEED

This machine is equipped with three steps of the power feed rate, simply set the feed change knob to the position 1, 2 or 3 which ever corresponds to the rate desired, and pull the feed trip lever "OUT" which will engaged the clutch and start the power feed.

You can also preset the depth desired according to the following procedules.

- a. Loosen the clamping lever. (Fig. 10)
 - b. Turn the depth ring counter clock-wise until the desired number on the depth ring is set right acrossed to the revolution starting point.
 - c. Turn the "Feed starting Ring" counter clock-wise until the index on the ring is right across the "O" mark on the depth ring.
 - d. Fasten the clamping lever.
- The clutch will be automatically disengaged when the preset depth is reached.

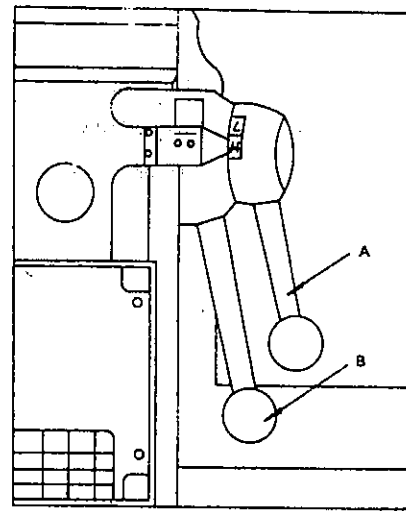


FIG. 8

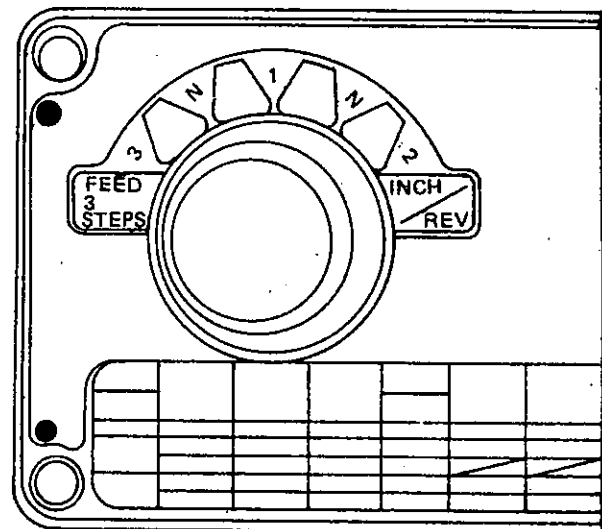


FIG. 9

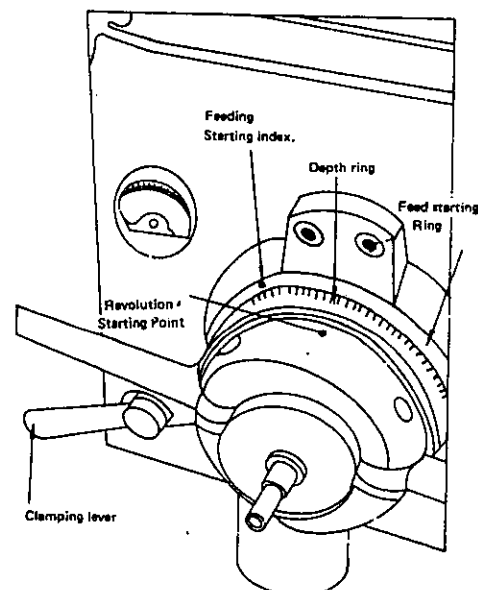


FIG. 10

ADJUSTMENT

A. SPINDLE HEAD TRAVERSE

Traverse spindle head to the right and left by turning the head moving hand wheel. Spindle head is inclined to the right or left by turning roller shaft 3 the upper wedge (Fig. 11). You can also adjust the proper sliding by turning eccentric bush of bearing roller. (Fig. 12)

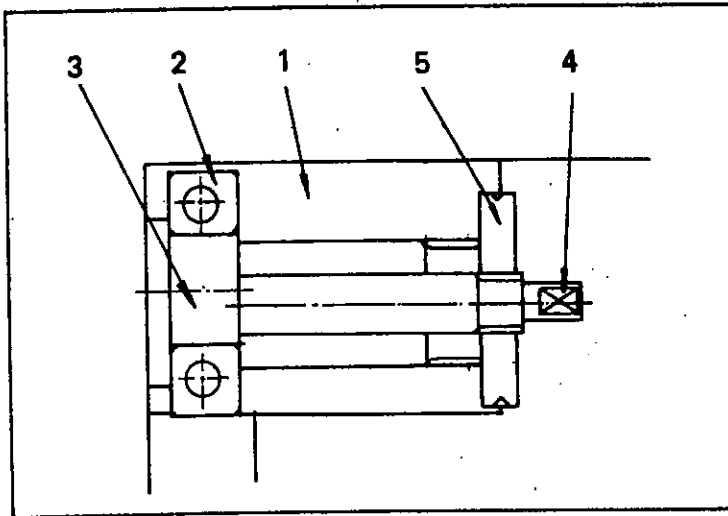


FIG. 11

- 1) Upper wedge
- 2) Upper wedge roller
- 3) Eccentric roller shaft
- 4) Adjustment of head roller shaft
- 5) Adjusting nut

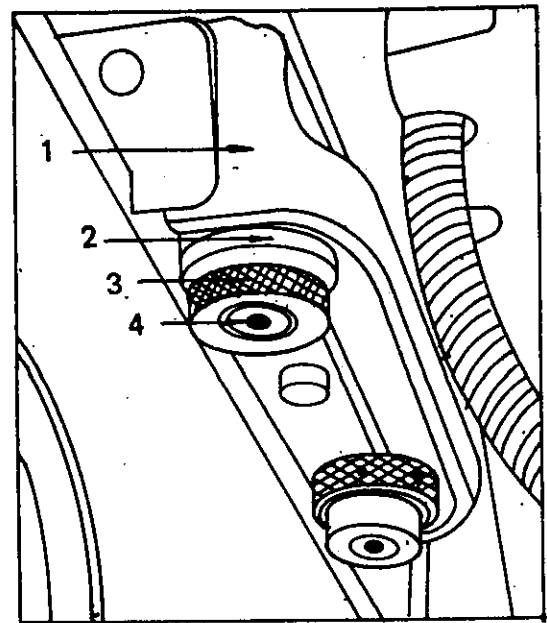


FIG. 12

- 1) Rear wedge
- 2) Rear wedge roller
- 3) Eccentric bush of bearing roller
- 4) Set bolt of roller bushing

B. SPINDLE TENSION

To add tension to roller chain, loosen set screw of spring case, turn spring clock-wise and reset screw.

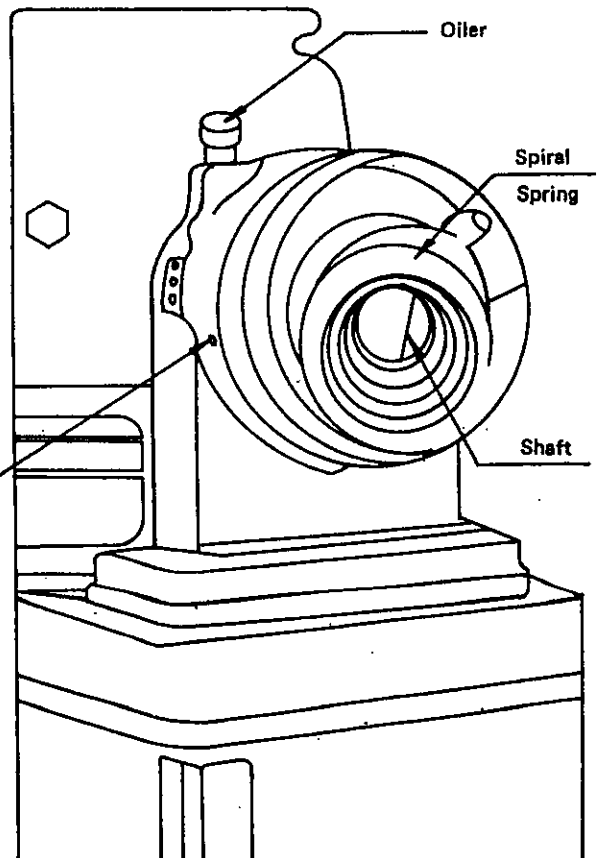
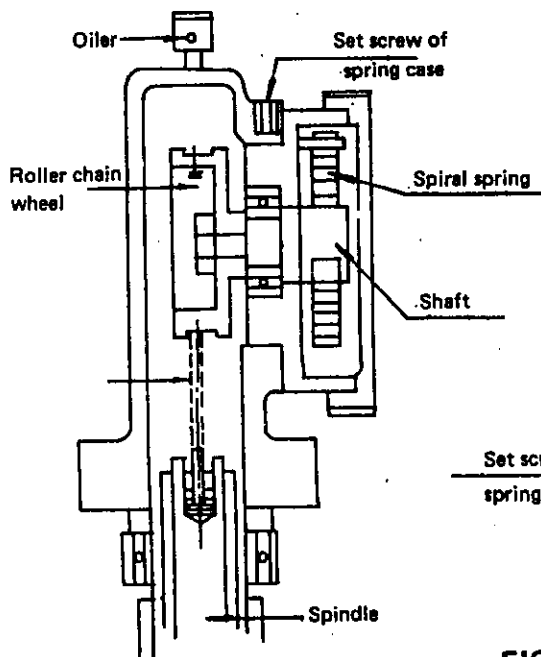
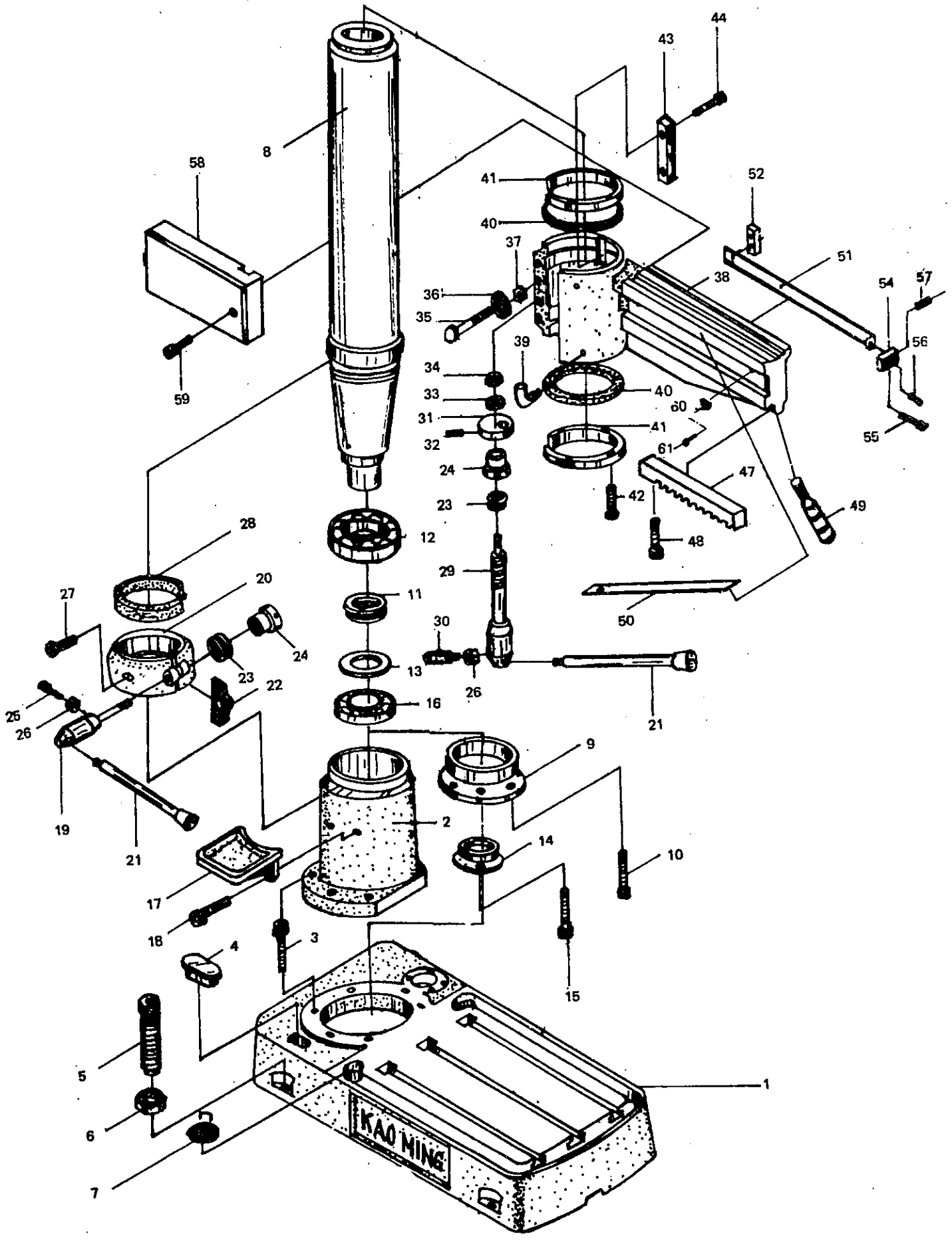


FIG. 13

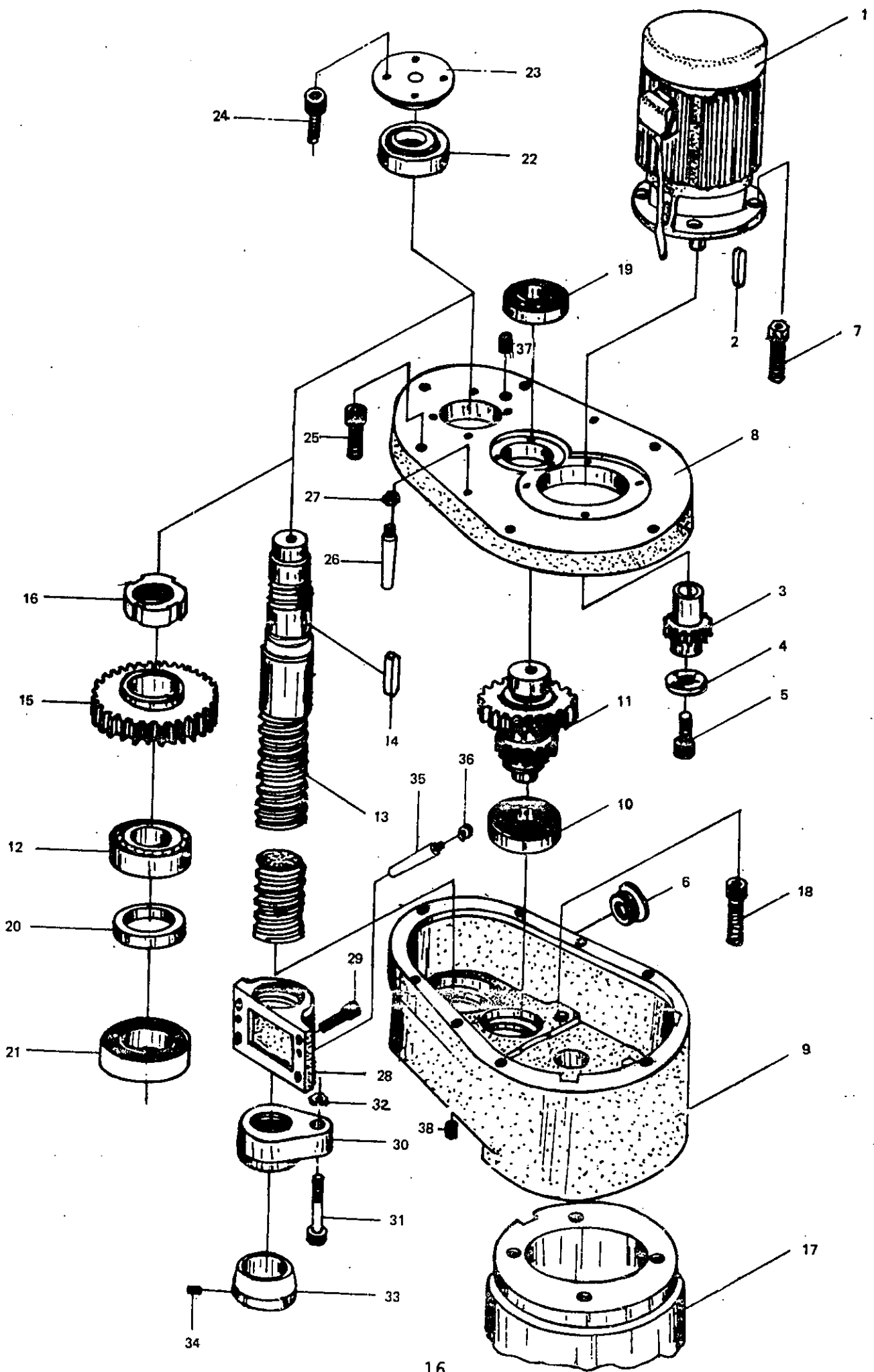
PARTS LIST



<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>NO. 1 Remark</u>
1.	7137	Base	1	
2.	7131	Column support collar	1	
3.	101016060610	Bolt	6	M16x60L
4.	7219	Tank cover	1	
5.	7223	Bolt	4	
6.	7223-1	Nut	4	
7.	30110	Filter	2	
8.	7136	Column	1	
9.	7127	Bearing cover	1	
10.	101010025610	Bolt	6	M10x25L
11.	13051118	Thrust bearing	1	51118
12.	30306028550	Ball bearing	1	6028
13.	7125	Collar	1	
14.	7126	Bearing cover	1	
15.	101010030610	Bolt	2	M10x30L
16.	303162186550	Ball bearing	1	6218
17.	7169	Tool stand	1	
18.	101006020610	Bolt	2	M6x20L
19.	7091	Clamping bolt	1	
20.	7129	Clamping ring	1	
21.	7092	Clamping lever	2	
22.	1737129	Gasket	1	
23.	13051104	Thrust bearing	2	51104
24.	7091-1	Sleeve nut	2	
25.	101008025610	Bolt	1	M8x25L
26.	7242	Collar	2	
27.	101008016610	Set screw	1	M8x16L
28.	7127242	Oil scraper ring	1	
29.	7090	Clamping bolt	1	
30.	101008025610	Bolt	1	M8x25L

NO. 1

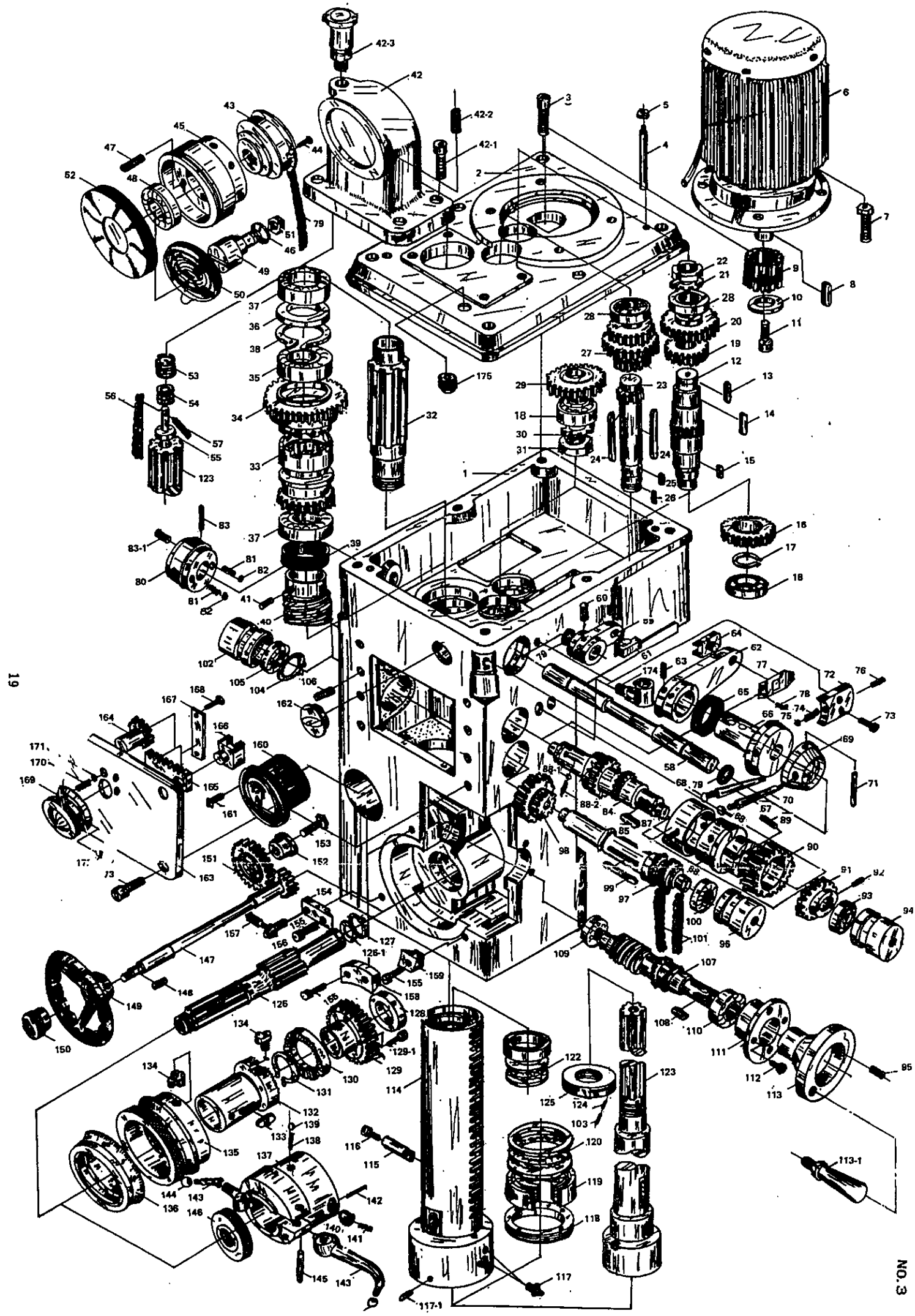
<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
31.	7241	Eccentric ring	1	
32.	1014061066100	Set screw	1	S6x6L
33.	1051101111111	Spring washer	1	φ3/8"
34.	103010605111	Nut	1	φ3/8
35.	7121	Bolt	3	
36.	7202	Plain washer	3	
37.	103013605111	Nut	3	φ1/2"-13
38.	7138	Arm	1	
39.	1160127	Oil filling cup	1	φ1/2
40.	1727138	Oil scraper ring	2	
41.	7128	Steel ring	2	
42.	101006012610	Bolt	8	M6x12L
43.	7190	Key	1	
44.	101006020610	Bolt	2	M6x20L
47.	7105	Arm rack	1	
48.	101008016610	Bolt	2	M8x16L
49.	7074	Handle	1	
50.	7195	Steel belt	1	
51.	7194	Steel belt	1	
52.	7166	Fixed block	2	
53.	101005012610	Bolt	4	M5x12L
54.	7164	Adjustable block	2	
55.	101006020610	Bolt	4	M6x20L
56.	101408166100	Set screw	2	S8x16L
57.	101406126100	Set screw	2	S6x12L
58.	7123	Junction box cover	1	
59.	101006025610	Bolt	1	M6x25L
60.	7138-2	Rubber stop	3	
61.	101008025610	Bolt	3	M8x25L



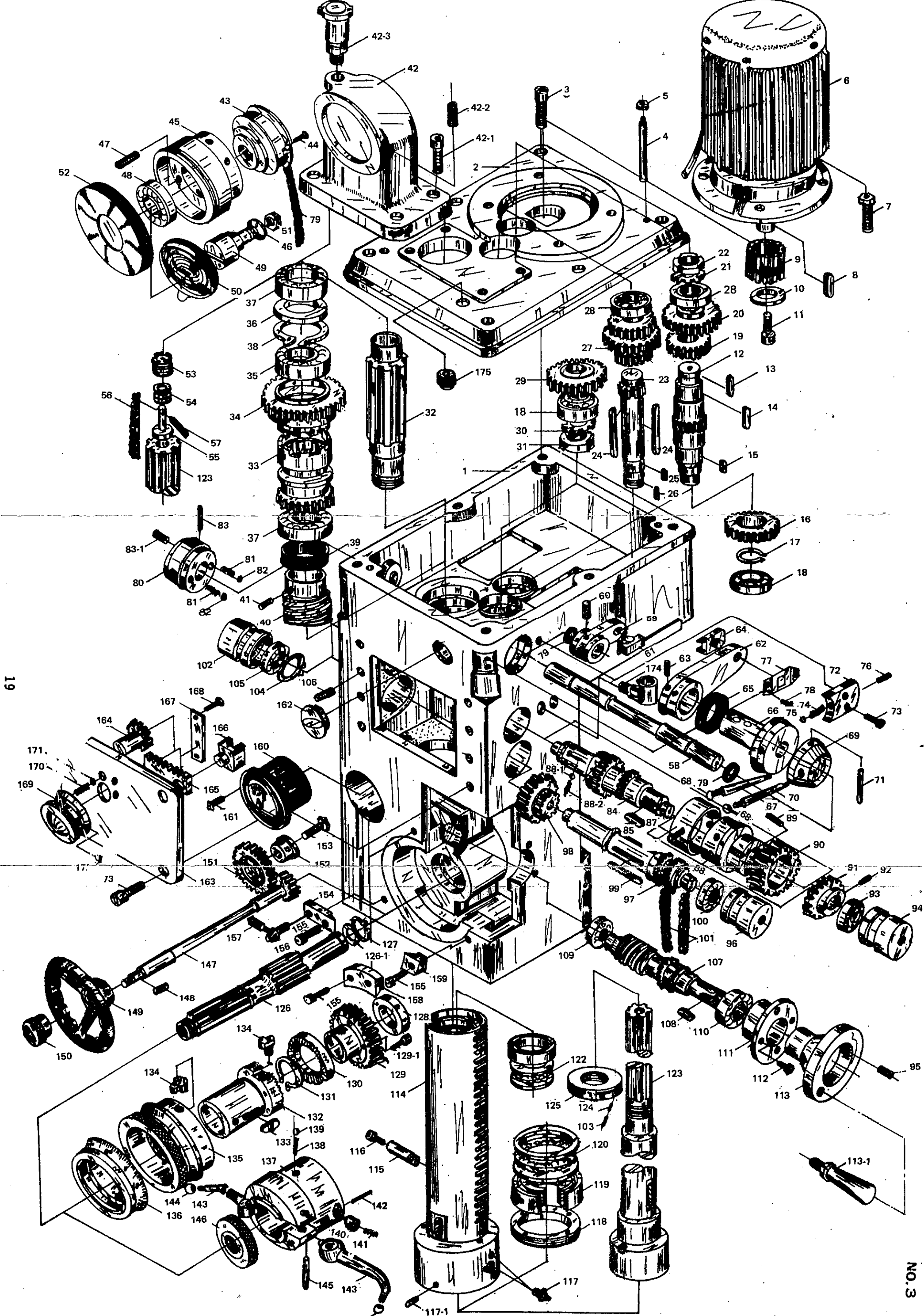
<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>NO.2</u> <u>Remark</u>
1.	713103216005	Elevating motor	1	1HP
2.	109205050303	Key	1	5x30L
3.	7001	Elevating motor gear	1	
4.	7011	Plain washer	1	
5.	101006016610	Bolt	1	M6x16L
6.	1052912	Oil level window	1	∅29
7.	101010025610	Bolt	4	M10x25L
8.	7134	Elevating gear box cover	1	
9.	7133	Elevating gear box	1	
10.	303162033550	Bearing	1	6203Z
11.	7003	Gear	1	
12.	13130206	Bearing	1	30206
13.	7102	Elevating lead screw	1	
14.	109207070143	Key	1	7x14L
15.	7004	Gear	1	
16.	7103	Nut	1	
17.	7136	Column	1	
18.	101010045610	Bolt	4	M10x45L
19.	303162034550	Thrust bearing	1	6203ZZ
20.	7102-2	Plain washer	1	
21.	311803004508	Oil seal	3	30x45x8
22.	13130204	Bearing	1	30204
23.	7005-1	Bearing cover	1	
24.	101006020610	Screw	4	M6x20L
25.	101006050610	Bolt	6	M6x50L
26.	1040440	Taper pin	2	#4x40L
27.	103006605111	Nut	2	∅1/4
28.	7104	Arm elevating nut	1	
29.	101008020610	Bolt	4	M8x20L
30.	7199	Safety nut	1	

NO.2

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
31.	101006050610	Bolt	1	M6x50L
32.	103006605000	Nut	1	
33.	7189	Safety stop	2	M6
34.	101406066100	Set screw	2	S6x6L
35.	1040440	Taper pin	2	4x40L
36.	103006605000	Nut	2	M6
37.	419100132000	Oil drain plug	1	PT φ 1/2
38.	1364081	Oil inlet plug	1	PT φ 1/3



19



19

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
1.	7130	Gear box	1	
2.	7135	Gear box cover	1	
3.	101008060610	Bolt	6	M8x60L
6.	713104216005	Motor	1	2HP
7.	101010025610	Bolt	4	M10x25L
8.	109205050453	Key	1	5x45L
9.	7051	Gear	1	
10.	7011	Plain washer	1	
11.	101006016610	Bolt	1	M6x16L
12.	7036	Gear shaft	1	
13.	109207070123	Key	1	7x12L
14.	109207070203	Key	1	7x20L
15.	109204040133	Key	1	4x13L
16.	7038	Gear	1	
17.	113002400000	Retaining ring	1	S24
18.	303060046550	Ball bearing	2	6004
19.	7037	Gear	1	
20.	7039	Gear	1	
21.	310020000000	Lock washer	1	∅20
22.	7033	Lock nut	1	
23.	7031	Gear shaft	1	
24.	109205050853	Key	2	5x85L
25.	109206060113	Key	2	6x11L
26.	109204040133	Key	1	4x12.5L
27.	7032	Gear	1	
28.	303060046550	Ball bearing	2	6004Z
29.	7035	Gear	1	
30.	310020000000	Lock washer	1	∅20
31.	7033	Lock nut	1	
32.	7027	Spline shaft	1	

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
33.	7028	Clutch lower gear	1	
34.	7029	Clutch upper gear	1	
35.	303060076550	Ball bearing	1	6007
36.	7159	Collar	1	
37.	303066076550	Ball bearing	2	6007Z
38.	113006400000	Retaining ring	1	S62
39.	311804205808	Oil seal	1	42x58x8
40.	7026	Collar	1	
41.	101406066100	Set screw	1	S6x6L
42.	7067	Counterbalance mechanism housing	1	
42-1.	101008020610	Bolt	4	M8x20L
42-2.	101408166100	Set screw	1	S8x16L
42-3.	1364081	Oil filling cup	1	PT ϕ 1/8
43.	7069	Sprocket	1	
44.	101203066040	Screw	2	M3x6L
45.	7068	Spring container	1	
46.	105113111111	Washer	1	ϕ 1/2
47.	101406256100	Set screw	1	S6x25L
48.	303062046550	Bearing	1	6204Z
49.	7071	Sprocket shaft	1	
50.	7157	Disc spring	1	
51.	103013605111	Nut	1	ϕ 1/2"-13
52.	7070	Housing cover	1	
53.	7203	Screw	1	
54.	17409017	Thrust bearing	2	E9-17
55.	7072	Adapter	1	
56.	B107513007000	Chain	1	1/2x26
57.	101405066100	Set screw	1	S5x6L
58.	7040	Speed change shaft	1	

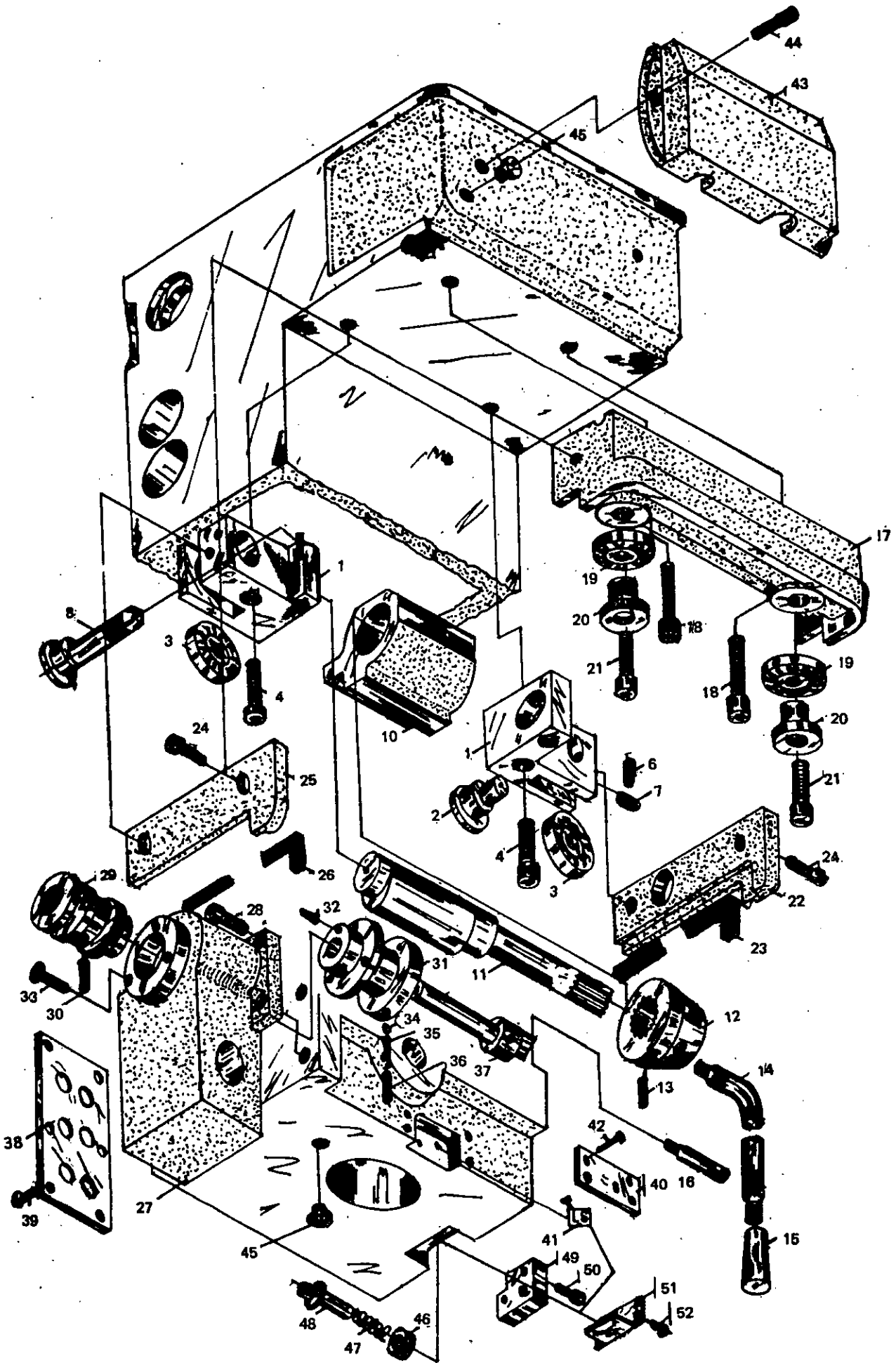
<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>NO.3</u> <u>Remark</u>
59.	7046	Speed change rocker arm	1	
60.	101408106100	Set screw	2	S8x10L
61.	7048	Gear shifter	1	
62.	7045	Speed change rocker arm	1	
63.	101408106100	Set screw	2	S8x10L
64.	7047	Gear shifter	1	
65.	311803004508	Oil seal	1	30x45x8
66.	7041	Three step speed change lever adapter	1	
67.	7049	Three step speed change lever	1	
68.	1170950	Plastic knob	2	ø3/8
69.	7044	Two step speed change lever adapter	1	
70.	7050	Two step speed change lever	1	
71.	1045050	Pin	1	5x50L
72.	7042	Step speed change set block	1	
73.	101006016610	Screw	2	M6x16L
74.	7187-1	Spring	1	
75.	1030794	Steel ball	1	ø5/16
76.	101410166100	Set screw	2	S10x16L
77.	7113	Indicator	1	
78.	101205066040	Screw	2	M5x6L
79.	B107513007000	chain	2	1/2"×26
80.	7043	Shaft end cover	1	
81.	7244	Spring	2	ø8x26L
82.	101408106100	Steel ball	2	S8x10L
83.	107305050	Pin	1	ø5x50L
83-1.	101405146100	Set screw	1	M8x10L
84.	7020	Upper feed gear shaft	1	ø5/16
85.	109205050143	Key	1	5x14L
87.	101406066100	Screw	1	S6x6L

NO. 3

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
88.	7024-2	Worm gear sleeve	1	
89.	101406166100	Set screw	1	S6x16L
90.	7024-1	Worm gear	1	
91.	7021	Gear	1	
92.	101406066100	Set screw	1	S6x6L
93.	303060026550	Bearing	1	6002Z
94.	7013-3	Bushing	1	
95.	101008016610	Set screw	1	8x16L
96.	7013-1	Bushing	2	
97.	7016	Lower feed gear shaft	1	
98.	7017	Gear	1	
99.	109205050643	Key	1	5x64L
100.	303060026550	Bearing	1	6002Z
101.	B107509827000	Chain	2	
102.	7013-2	Bushing	2	
103.	101406126100	Set screw	3	S6x12L
104.	113002400000	Retaining ring	2	S24
105.	303060026550	Bearing	2	6002Z
106.	101408166100	Set screw	4	S8x16L
107.	7010	Sprocket	1	
108.	109206206100	Key	1	6x20L
109.	303060026550	Bearing	1	6002Z
110.	303060046550	Bearing	1	6004
111.	7012	Bearing cover	1	
112.	101006016610	Screw	4	M6x16L
113.	7106	Manual feed handwheel	1	
113-1.	11707938	Handwheel	1	ø5/16
114.	7097	Quill	1	
115.	7099	Quill key	1	
116.	101008012610	Screw	1	M8x12L

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
117.	1163175	Grease inlet	1	PT1/8
117-1.	101405066100	Set screw	1	S5x6L
118.	7098	Ring	1	
119.	15569110	Taper bearing	2	6911Z
120.	13051110	Thrust bearing	1	51110
122.	1637006	Bearing	1	7006A
123.	7100	Spindle	1	
124.	107005008610	Pin	3	ø5x8L
125.	7101	Lock nut	1	
126.	7006	Gear shaft	1	
126-1.	7160	Plain washer	1	
127.	113003000000	Retaining ring	1	S30
128.	7008	Bushing	1	
129.	7007	Worm gear	1	
129-1.	101405126100	Set screw	4	S5x12L
130.	7009	Clutch	1	
131.	1130030000	Retaining ring	1	S30
132.	7057	Clutch	1	
133.	109212040363	Key	1	12x4x36L
134.	7060	Auto feed release cam	2	
135.	7058	Dial seat	1	
136.	7059	Dial	1	
137.	7062	Clutch housing	1	
138.	7243	Spring	1	
139.	1030794	Steel ball	1	ø5/16"
140.	7061	Pin	1	
141.	7244-1	Spring	1	
142.	13802	Cotter pin	1	ø2
143.	7063	Clutch lever	2	
144.	1200793	Plastic knob	2	

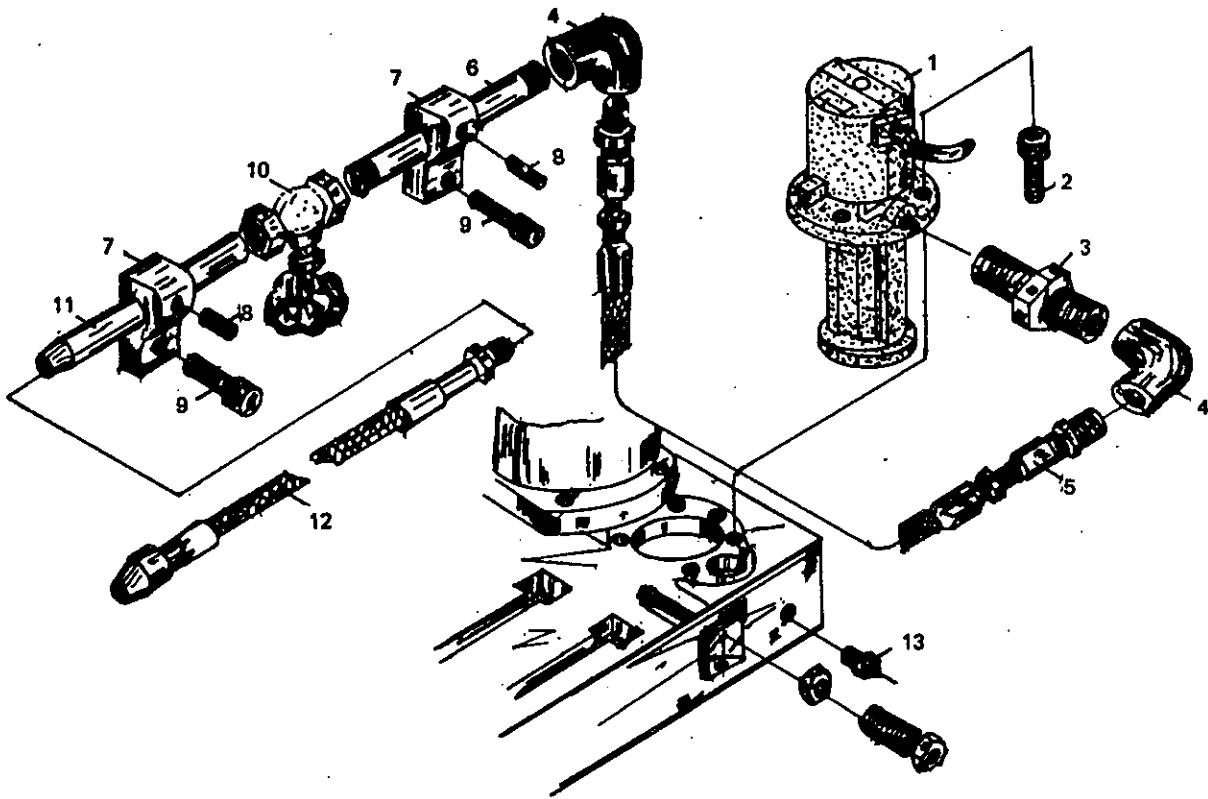
<u>Ref NO.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
145.	107005050610	Pin	2	∅5x50L
146.	7064	Nut	1	
147.	7088	Pinion shaft	1	
148.	109205050153	Key	1	5x15L
149.	7065	Handwheel	1	
150.	7066	Handwheel lock nut	1	
151.	7086	Gear	1	
152.	7087	Eccentric bushing	1	
153.	101110025604	Screw	1	M10x25L
154.	7107	Auto feed set plate	1	
155.	101008016610	Screw	4	M8x16L
156.	7111	Set screw	1	
157.	7110	Lever	1	
158.	7109	Indicator	1	
159.	7108	Dial set plate	1	
160.	1120700	Ammeter	1	
161.	101406106100	Screw	3	S6x10L
162.	1053029	Oil level window	1	∅29
163.	7052	Gear box front cover	1	
164.	7054	Feed speed change gear	1	
165.	7055	Feed speed change rack	1	
166.	7056	Copper block	1	
167.	7081	Rack guard plate	1	
168.	101205106040	Screw	2	M5x10L
169.	7053	Feed speed selector	1	
170.	4263	Spring	1	∅8x25L
171.	1030794	Steel ball	1	∅5/16"
172.	101408166100	Set screw	1	S8x16L
173.	101408166100	Screw	4	S8x16L
174.	1364041	Oil filling cup	3	
175.	1163175	Oil inlet plug	1	



NO. 4

<u>Ref NO.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
1.	7139	Bearing roller bracket	2	
2.	7141	Adjustable cam	1	
3.	303162044550	Bearing	2	6204ZZ
4.	101010050610	Bolt	4	M10x50L
6.	101406106100	Set screw	1	S6x10L
7.	101408166100	Set screw	2	S8x16L
8.	7142	Adjustable cam	1	
10.	7147	Cam shaft sleeve	1	
11.	7148	Clamping cam shaft	1	
12.	7085	Lever adapter	1	
13.	101408166100	Set screw	1	S8x16L
14.	7149	Clamping lever	1	
15.	1170950	Plastic handle	1	3/8"
16.	7161	Lever limiting rod	1	
17.	7075	Rear roller seat	1	
18.	101010035610	Srew	2	M10x35L
19.	303060044550	Bearing	2	6004ZZ
20.	7077	Adjustable bushing	2	
21.	101010030610	Bolt	2	M10x30L
22.	7078	Aluminum plate (left)	1	
23.	16725183	Wiper	1	25x138L
24.	101006012610	Screw	4	M6x12L
25.	7079	Aluminum plate (right)	1	
26.	16725183	Wiper	1	25x138L
27.	7116	Switch box	1	
28.	101406206100	Screw	4	M6x20L
29.	7115	Switch handle	1	
30.	101408166100	Set screw	1	S8x16L
31.	7118	Switch seat	1	
32.	107004007610	Pin	1	φ4x7L

<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
33.	101006016610	Screw	3	M6x16L
34.	1030635	Steel ball	1	1/4"
35.	7118-1	Spring	1	∅6x25L
36.	101406106100	Set screw	1	S6x10L
37.	7114	Switch shaft	1	
38.	7117	Bakelite plate	1	
39.	101204106040	Screw	6	M4x10L
40.	7082	Limit switch cover	1	
41.	1710700	Limit switch	2	
42.	101005106100	Screw	4	M5x10L
43.	7124	Electric wiring cover	1	
44.	101006012610	Screw	2	M6x12L
45.	1010120	Oil drain plug	2	
46.	7187	Screw	1	
47.	7244	Spring	1	
48.	7186	Thrust collar	1	
49.	7185	Plate	1	
50.	101205126040	Screw	1	M5x12L
51.	7188	Cover	1	
52.	101205066040	Screw	4	M5x6L



<u>Ref No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Remark</u>
1.	1770700	Coolant pump	1	
2.	101006016610	Screw	4	M6x16L
3.	418409003100	Brass fitting	1	PT ϕ 3/8
4.	419069030200	Elbow	2	PT ϕ 3/8
5.	430330035300	Hose	1	
6.	7151	Tube	1	
7.	7154	Tube bracket	2	
8.	101406066100	Set screw	2	S6x6L
9.	101006020610	Screw	2	M6x20L
10.	1750952	Brass ball valve	1	PT ϕ 3/8
11.	7153	Tube	1	
12.	430330035300	Hose	1	
13.	419100602000	Water drain plug	1	3/4"