

**DRILLING&MILLING MACHINE**

**OPERATION MANUAL**

**SERIES**

# **CONTENT**

1. WARNING
2. USAGE
3. USE AND MAINTENANCE
4. MAIN PARAMETERS
5. THE SYSTEM OF TRANSMISSION AND CHANGED SPEED
6. THE LUBRICATION OF MACHINE AND ROLLING BEARING
7. ELECTRIC SYSTEM
8. TRANSPORT AND ATTENTION
9. SIMPLE MALFUNCTION&OBVIATION
10. PARTS DIVISION AND PARTS LIST
11. HEAD GERA (STEP-LESS) EXPLOSION DIAGRAM

## WARNING

1. Read and understand the entire instruction manual before operating the machine.
2. Always be sure to wear safe goggles and wear safety shoes during operation
3. Make certain the machine is properly grounded.
4. Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do NOT wear gloves.
5. Keep the floor around the machine clean and free of scrap material, oil and grease.
6. Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
7. Do NOT over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
8. Make all machine adjustments or maintenance with the machine unplugged from the power source.
9. Use the right tool. Do not force a tool or attachment to do a job which it was not designed for.
10. Make certain the motor switch is in the OFF position before connecting the machine to power supply.
11. Keep visitors a safe distance from the work area.

12. Never attempt any operation or adjustment if the procedure is not understood.
13. Keep fingers away from revolving parts and cutting tools while operating.
14. Do not attempt to adjust or remove tools during operation.
15. Always keep cutters sharp.
16. Keep away from the turning handwheel, especially high speed.
17. Must pour the machine oil into the gear box and the power feed (optional) rightly.
18. Failure to comply with all of these warnings may cause serious injury.

## 1. Attention

### 1.1 inspection and acceptance

Please check carefully when open the package and make sure no parts are missing.

### 1.2 safety

Please read the operation manual carefully before the installation and adjustment of the machine. When finish the installation, check all the details and trial run the machine idly before put it into operation.

### 1.3 caution

Keep in mind the safety measures for electrical and operating protection.

## 2. Work environment

2.1 the elevation of workshop has to be 2000rpm or less.

2.2 no conductive dust allowed.

2.3 no explosive factor allowed.

2.4 no corrosive gas or steam which may corrode metal or damage the insulation.

2.5 keep away from the source of impact or vibration.

## 3. Operation instruction

3.1.1 Before starting the machine, read carefully the operation manual and be fully acquainted with all the details.

3.1.2 The operator should be familiar with all the rules and points of attention of running and maintaining the machine.

3.1.3 Remove all the anti-rust coating or grease from the machine.

3.1.4 There's a reliable ground protection the ground wire must be connected properly before it in operation.

#### 4. Lubrication

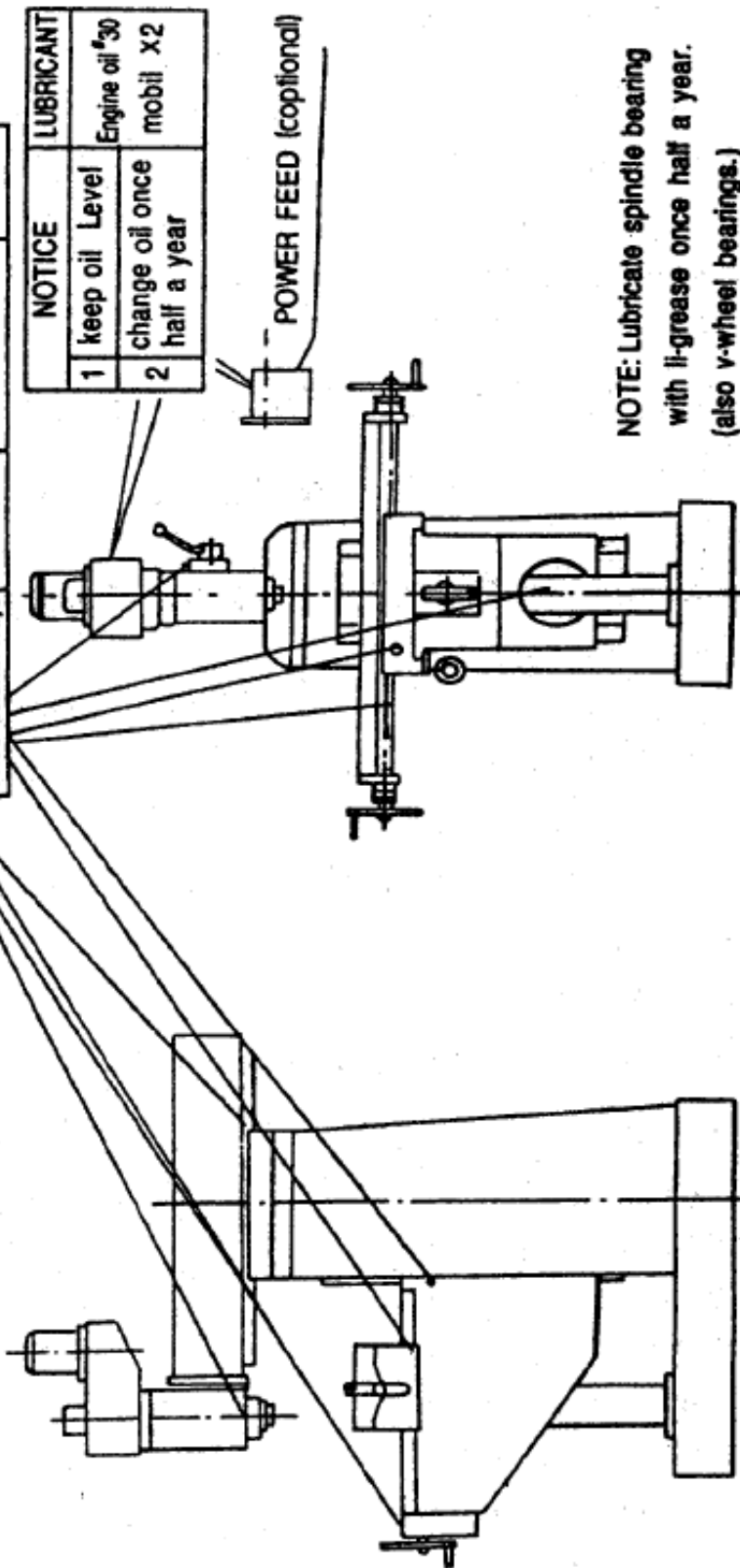
Lubricate the sliding and rotating part before trial run.

Pour No.40 machine oil into the gear box and the power feed (optional). Till indicating through the oil level indicators then do a overall check.

Keep oil level above the mark.

LUBRICATE	FREQUENCY	LUBRICANT	QTY
Spindle down feed	Forth Daily	Mobil X2 *sunoco waylube#80 (oil gun)	5-10drops (oil gun)
Lead screw			
Ram ways			
Saddle-knee ways			
Knee-column ways			

NOTICE		LUBRICANT
1	keep oil Level	Engine oil #30 mobil X2
2	change oil once half a year	



## LUBRICATION

## I USAGE

The machine is used for cutting metals and nonmetals. It's suitable to drill, mill and widely use in the field for instrument, machining, repairing for cutting a single part or a batch of parts.

## II USE AND MAINTENANCE

(Refer to chartg 1.)

1. The user must read the operation manual carefully, know structure and ability of every handle, the system of transmission and lubrication well.

2. Before operating, inspect the normal conditions of the column lock handle, the spindle sleeve and electric equipments. The ground line must be connect in the ground.

3. When the position of spindle box to the working table need to be adjusted, two clamping shaft ① locating on the right side of hoist--de-scend sliding must be lossed firstly, then turn the hoist--descend handle in front of machine, to hoist or descend the working table to the idea position, finally clamp the clamping shaft ①.

4. A micro--feeding institute is applied to the machine, before using, pls turn locking bolt ③ in right side to form the handle body with micro-feeding can be realized. The spindle can revolve for tapping, through the universal switch equipped on the left side of the head.

But if the power motor is single phase, such function can't be realized.

5. The handle body must be separated from micro-gear during drilling, when drilling finished, loosen the handle ⑤, the sleeve will reset automatically. The elastic force can be adjusted after losing the screw locating in the bottom of spindle box

and turning the spring to different position. The spindle sleeve clamping handle ⑥ should be clamped for milling. To obtain the best effect, pls choose the 3-blade vertical milling tool, the most, the working table must be hoisted to the nearest position to the spindle when the 2-blade milling tool is used.

6. The boring function can be realized after equipping relative accessories. It is better to apply to micro-feeding during milling and boring.

7. The spindle box can turn  $\pm 90^\circ$  in vertical plane for turning the spindle box, pls firstly loosen the three tightening nut connecting with spindle box, turn the spindle to the needed angle through turning micro-worm ⑧, finally pls tight the nut.

8. The cross-slide of spindle box can be realized through the ram moving for cross-sliding, pls firstly loosen the two clamping bolts ⑨ locating on the right side of the ram, turn the gear shaft ⑩, to move the ram and spindle box, and tight the two clamping bolts.

9. The spindle box can turn  $360^\circ$  around the column in the horizontal plane. To realize this, pls firstly loosen the 4 pcs of clamping nuts ⑪ under the ram, turn the ram to the suitable position, finally tight the 4 pcs of clamping nuts.

10. The spindle's turn and revolve can be realized by the switch located in the right side of hoist-descend sliding.

11. The horizontal milling can be realized by turn the vertical spindle box  $90^\circ$  . The spindle box must turn  $180^\circ$  when the tool shaft and jack applied for assistance.

12. If the machine doesn't work well or have irregular noise, pls immediately shut off machine.



No.	Ability	Model	HM-53GV
1	Max. drilling diameter		30
2	Max. Horizontal milling width		80
3	Max. end milling dia.		25
4	Spindle taper		ISO30
5	Spindle speed range	V	90-425/425-2000
6		H	60-1350
7	Distance between spindle and surface of column		200-700
8	Distance between vertical spindle and surface of table		100-480 60-400(optional)
9	Distance between horizontal spindle and surface of table		0-380 60-400(optional)
10	Vertical spindle travel		120
11	Table size (mm)		800X240(31 1/2"X97/16")
			1000X240(39"X97/16")
12	Table travel (mm)		350X230(13"X8")
			460X230(18"X8")
13	Motor		YD100L-8/4/0.85/1.5KW YL90L-4(1PH)1.5KW
14	Overall size (mm)		1120X1060X2035
	N.W.		970KG

## IV THE SYSTEM OF TRANSMISSION AND CHANGED SPEED

1. Vertical shaft: when changing speed, open the two side cover of upper spindle box, loosen the tightened bolt of motor, move handle on the rightside to loosen the belt, change belt to the position needed, remove motor and make belt fitted, tighten the tightened bolt and then work.

Horizontal shaft: when changing speed, open the cover of the vertical column, first loale the nut lie between vertical column and the support of motor, then loosen nut that make belt loosed or tightened, adjust belt to the position required finally tighten the nut.

2. The gear machine power is transmitted through gear on the shaft of motor and moving gears to the gear of spindle, when change speed, first cut off power, then change the handle to the position (A of B, C or D) you want.

3. H/V drilling and milling machine power is transmitted from motor to spindle through V-belt and trichanged speed.

**NOTICE:** Stop motor before changing speed!

## V THE LUBRICATION OF MACHINE AND ROLLING BEARING

1. Each rolling bearing to lubricated with lubricating fat on time (prefer to chart-2).
2. Spindle, sleeve, column, table etc. Should be lubricated at the right moment.

## **VI ELECTRIC SYSTEM**

1. The electrical control system to be equipped in the left-side machine head, the control electrical system of horizontal spindle to be equipped under the right-front. Electrical circuit adopt the advanced international component to make up, which make the machine easy to operate and safe.

## **VII TRANSPORT AND ATTENTION**

1. While transporting machine, must be careful to carry and put down.
2. In one year, we make promise to provide aftersales service.
3. Before use the machine, the power feed the spindle's running and the coolant's running must be the same direction as the label. Otherwise two phase of power cord must be exchanged. (power feed and coolant optional accessories.)

## **VIII SIMPLE MALFUNCTION & OBVIATION**

1. If the motor does not turn, please inspect it is right to connect wire or check electrical source.
2. If the radial run out of spindle is big with noise and heat, please inspect wether spindle is too loose. Pls spindle the nut on the spindle assembly to the fittest.
3. When the machine wobble, pls check the motor mount and lever lock nut screw, machine head support on the spindle, if loosing, pls adjust and lock.
4. It is difficult for the spindle to rise, fall or not replacing, pls inspect wether there is scrap iron and other something in the connection between spindle sleeve and gear

shaft and fatigue of spindle. If finding them, pls clean them and apply oil and adjust spring to fittest.

5. If the knee table slide carriage does not rise steadily with noise, the table is steady, pls confirm wether wedge ship loose or not, and clean scrap iron, add oil adjust wedge ship to fittest.

6. If there is noise in gear box, pls stop machine immediately to conform the position your require, then check that the oil meet standard.

7. Prohibited maintaining the machine with electric.

## **NOTICE**

I: The spindle box that transmitted by the belt can be surivled at  $90^\circ$  (by gear  $\pm 45^\circ$  ). When operating, pls loosen the three retaining but and pay attention these nuts need only 1 pitch, then swivel screw lever by socket head screw wrench (s21-24) to make the spindle box swivel to the place required (clockwise turn the nut, the spindle box will cunter clockwise turn, or otherwise), while turning, pay attention to the following item:

i: while the spindle box turn from horizontal position clined position to vertical position pls help push the upper of spindle box and gently twitter it.

ii while the spindle box turn from verival position to horizontal position or clined position, pls push the upper of spindle box with hand and twitter it gently.

II: The rotary table (optional) can surivle at  $45^\circ$  when operate, first loose two screw

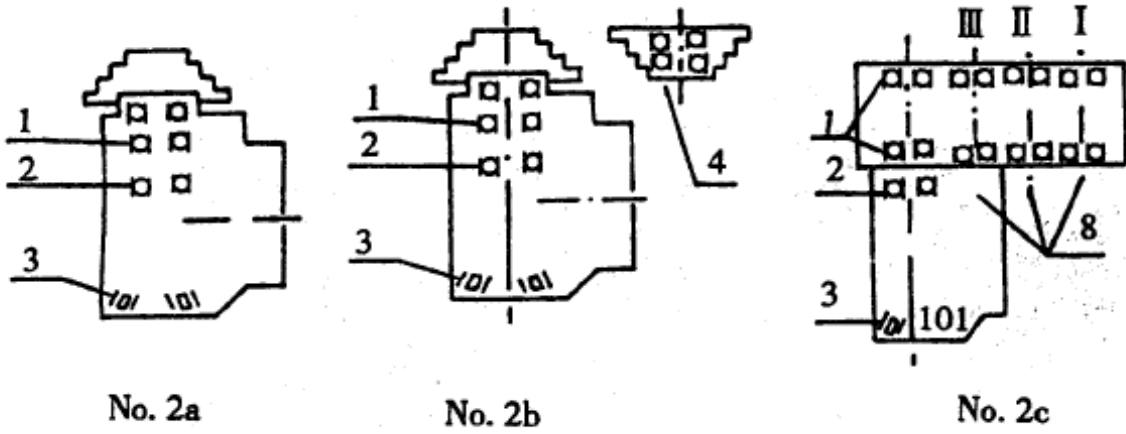
of back way cover and remove the way cover. Then loose the four nut, turn the table to the direction you want.

III: Adjust the perpendicular between spindle and table gauge magnetize on end face of spindle. Tracing pin turn  $360^\circ$  about dia  $\Phi 250-300\text{mm}$  on the surface of the table. This is perpendicular between spindle and table if measuring range is variable between 0 and 0.02mm.

## ROLLING BEARING

tem	Location point	Bearing	Model	Quantity	
1	Spindle&belt pulley	Single dustdefence Radial ball bearing	60/109/P6	2	2
2	Spindle sleeve	Single dustdefence Radial ball bearing	60/109/P6	1	1
3	Spindle sleeve	Single tapered Radial bearing	2007110/P6	1	1
4	Middle wheel	Single dustdefence Radial ball bearing	60103		2 2
5	spindle	Single tapered Roller bearing	2007110/P6		1
6	spindle	Single tapered Roller bearing	7308E/P6		1
7	Wheel shaft	Single dustdefence Radial ball bearing	60105		2
8	I. II. III	Single dustdefence Radial ball bearing	60204/P6		6

# Rolling bearing position

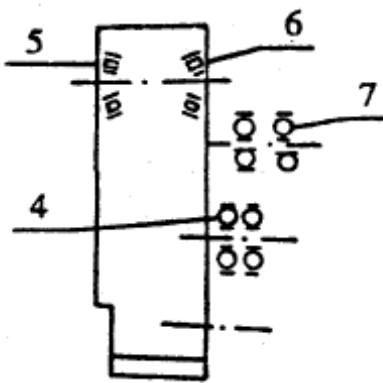


No. 2a

No. 2b

No. 2c

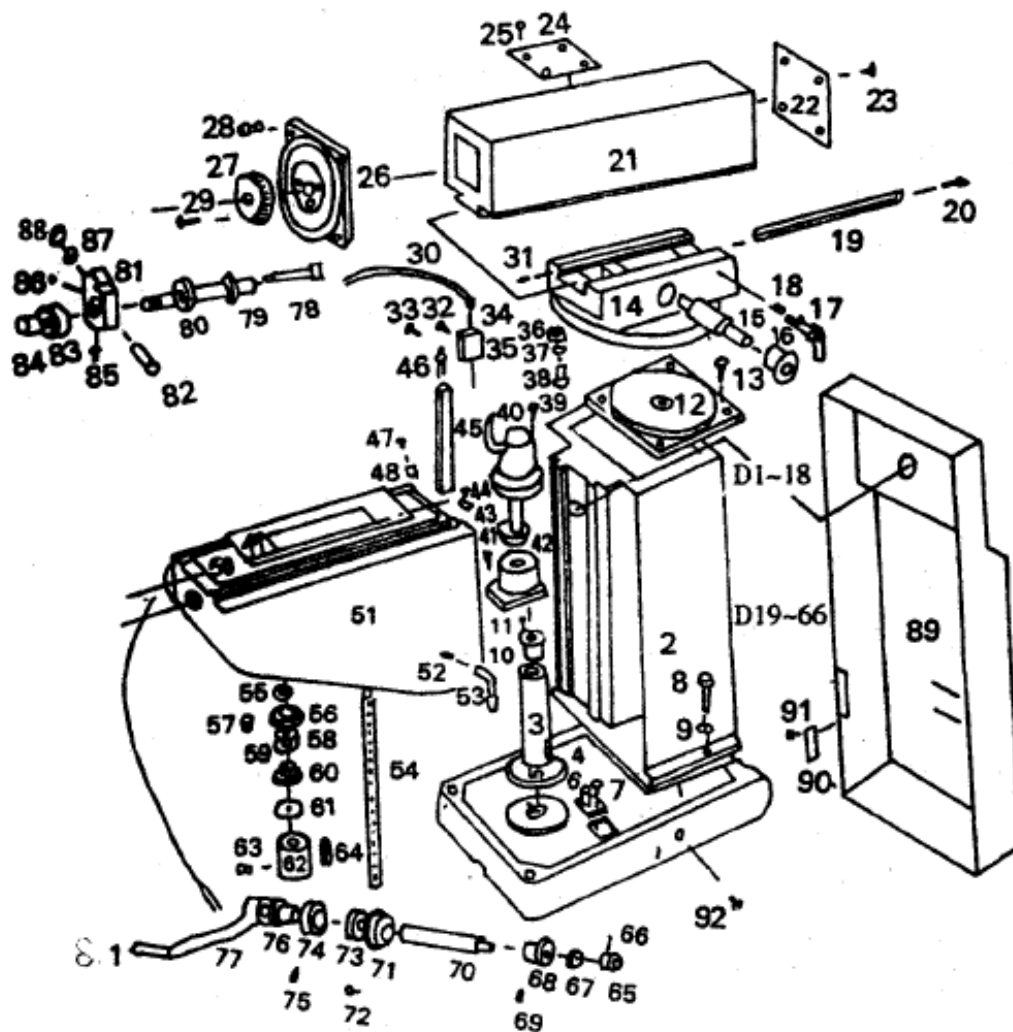
Chart 2



No. 2d

# PARTS DIVISION AND PARTS LIST

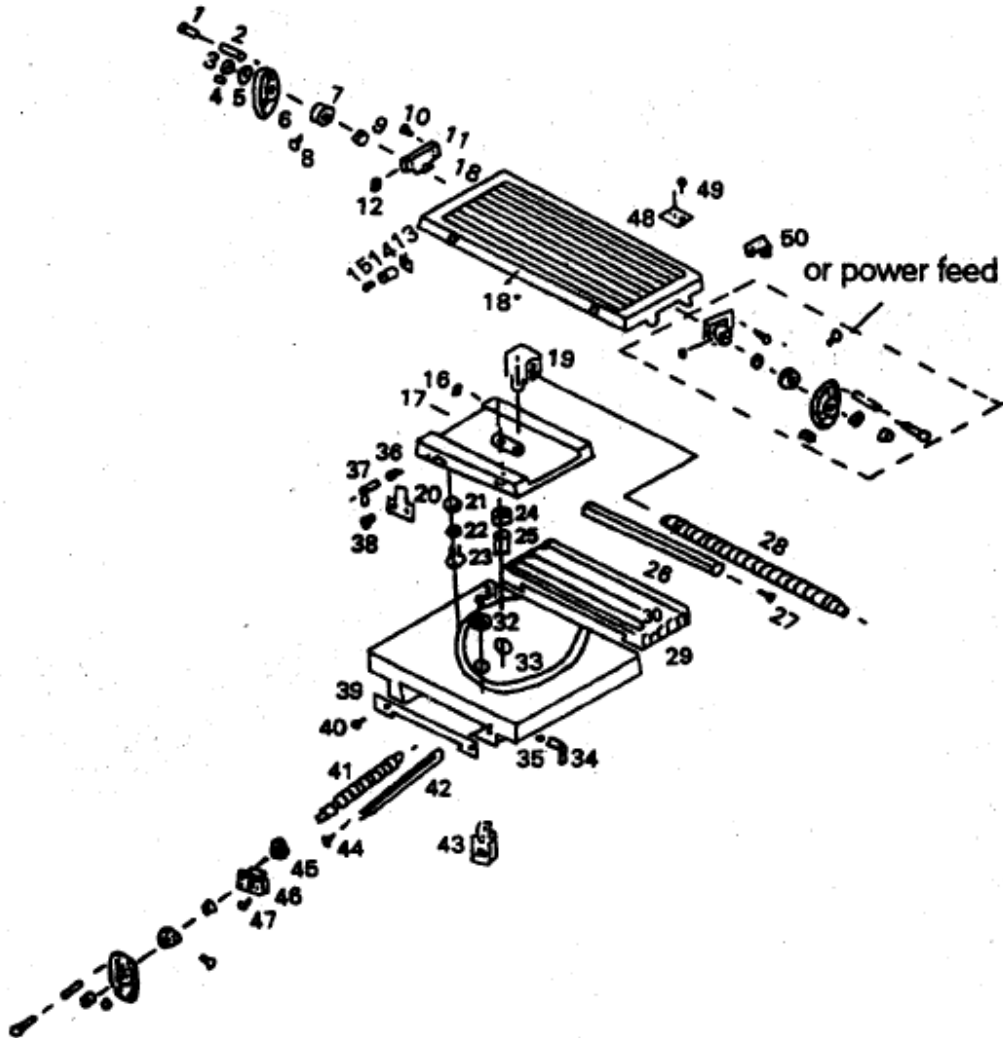
## A: COLUMN PART



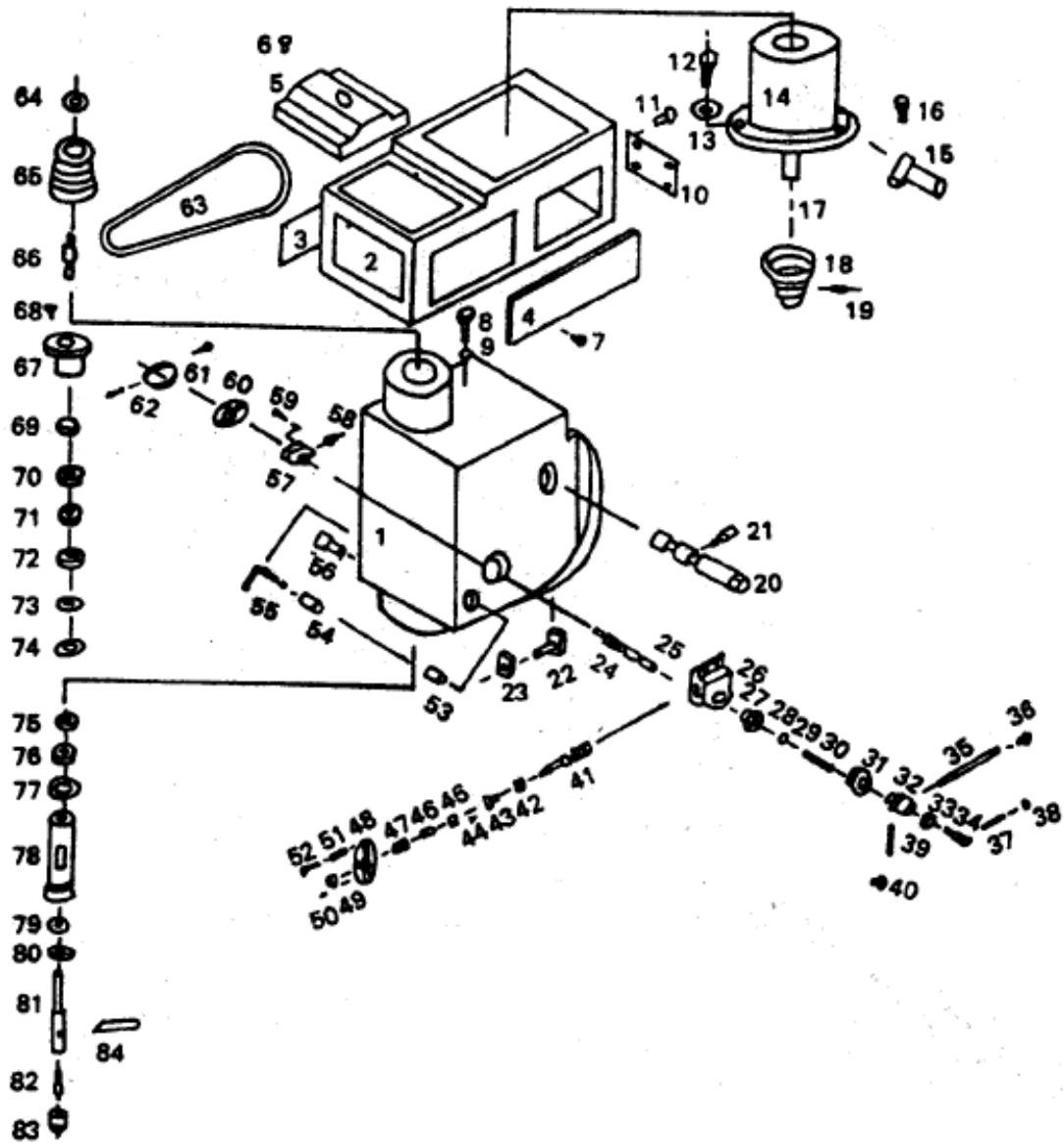
( optional accessory : coating system )



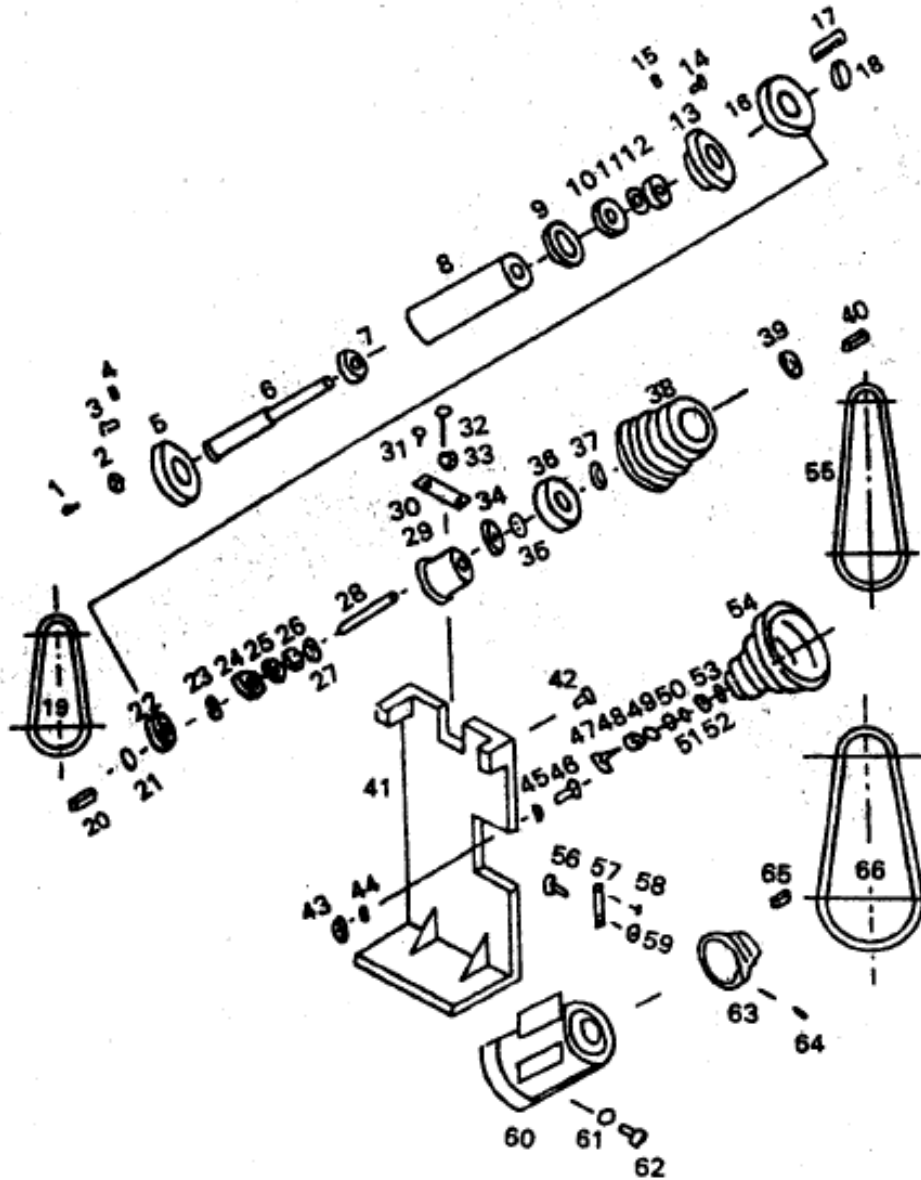
## B: Rotary table ( optional )



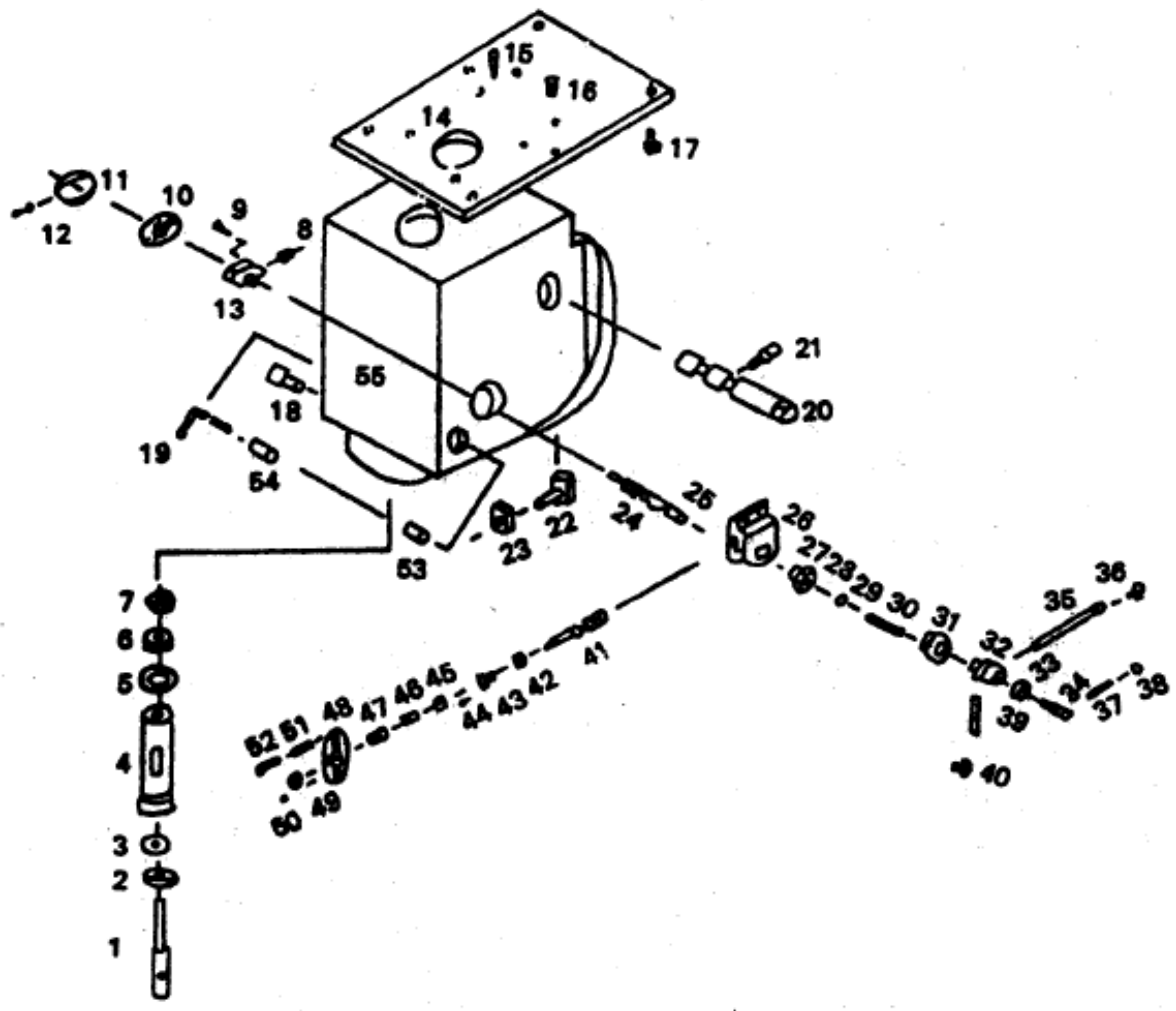
# C: HEAD PART



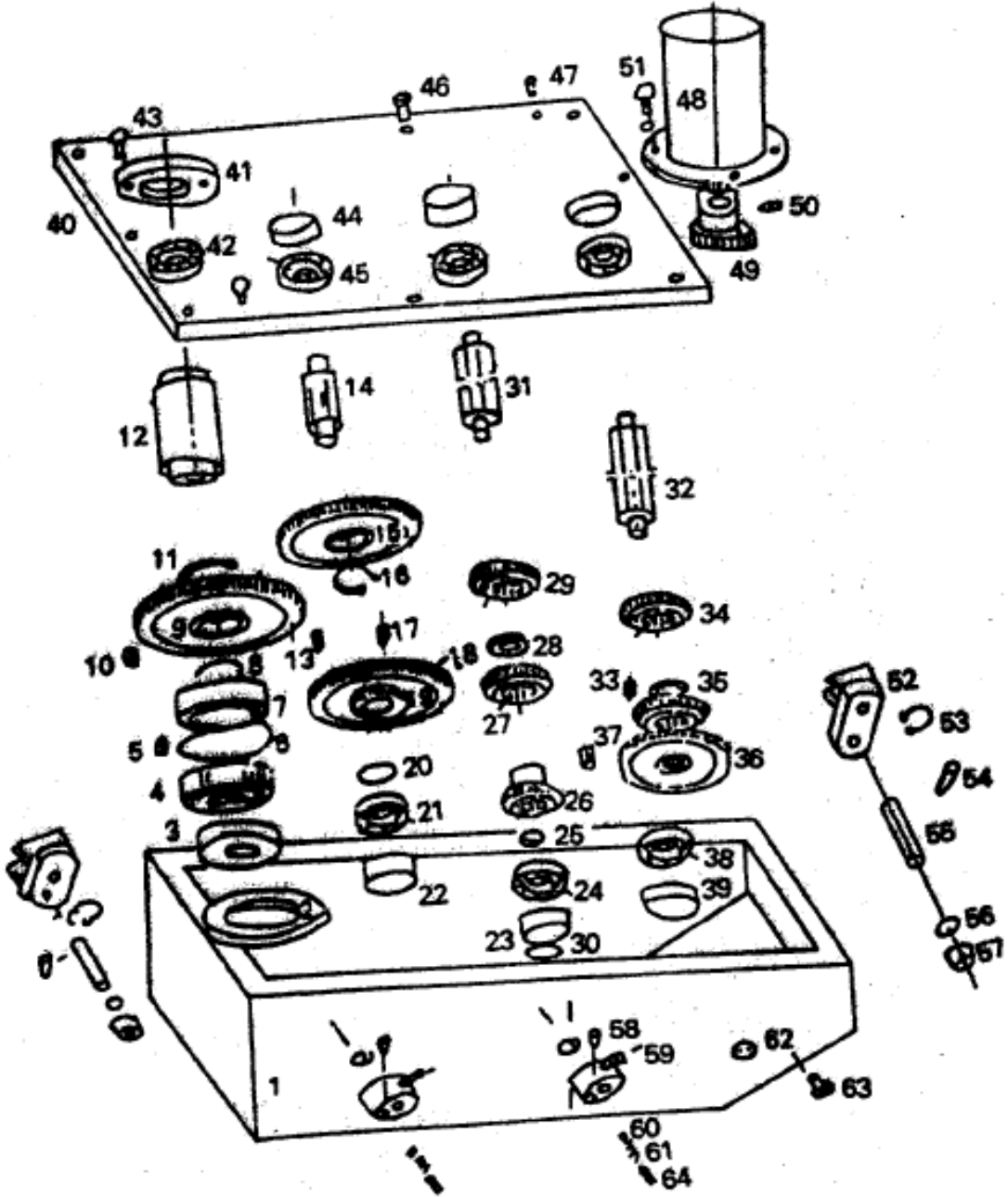
# D: HORIZONTAL SPINDLE PART



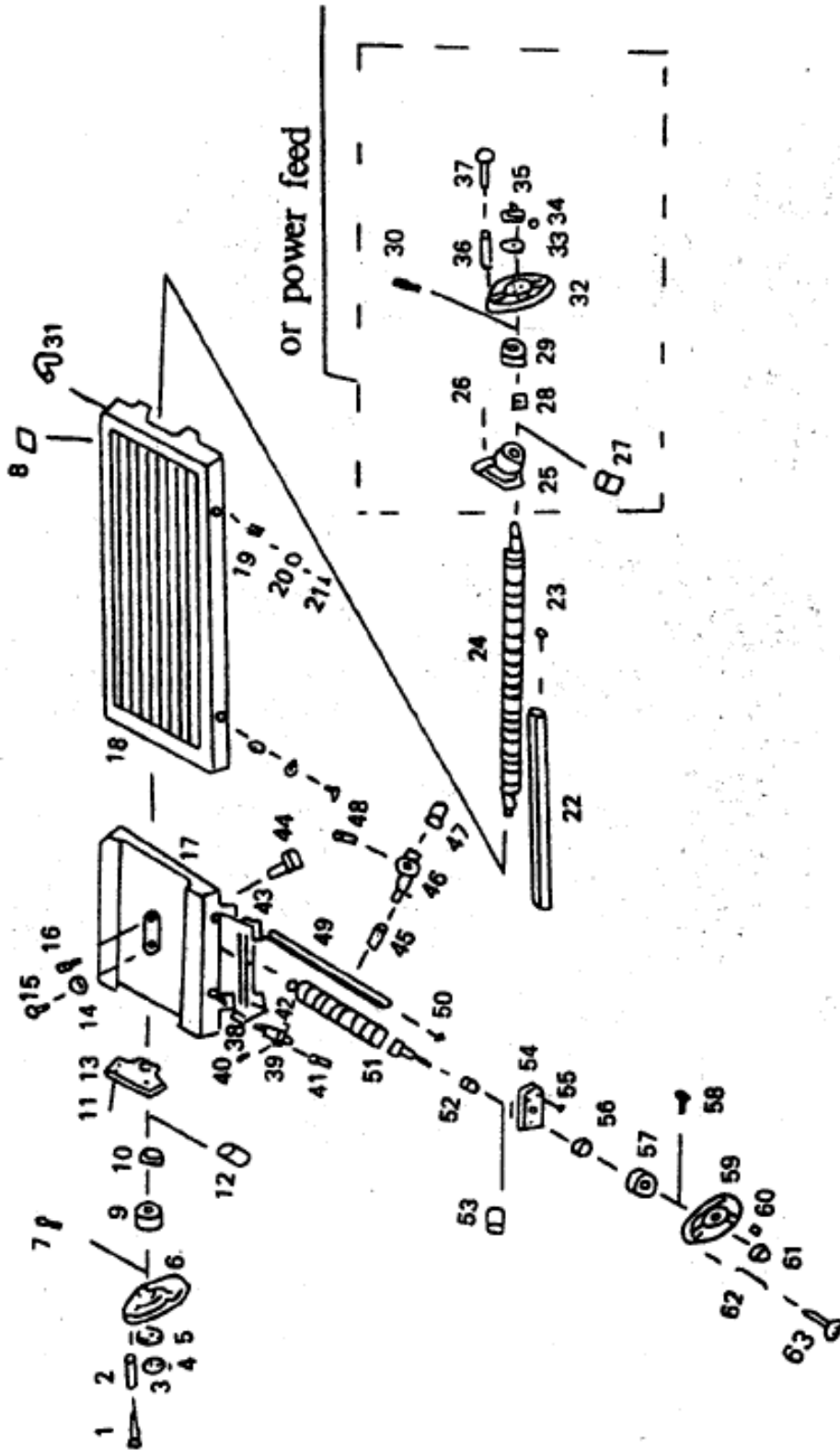
# E: Gear box



# F: Gear head



# G: Table



NUMBER	NAME	QUANTITY
A1	BASE	1
2	COLUMN	1
3	ELEVATING SCREW HOUSING	1
4	SCREW	4
5	WASHER	4
6	CONNECT TUBE	1
7	SCREW	2
8	BOLT	6
9	WASHER	6
10	COLLAR	1
11	SCREW	4
12	HOLD SUPPORT	1
13	SCREW	6
14	AROUND BRACKET	1
15	FEED SHAFT	1
16	COLLAR	1
17	CLAMP BOLT	2
18	CLAMP BLOCK	2
19	BEVEL IRON	1
20	SCREW	1
21	OVERARM	1
22	COVER	1
23	SCREW	4
24	COVER	1
25	SCREW	4
26	HOLD BRACKET	1
27	GEAR	1
28	SCREW	4
29	BOLT	2
30	NOZZLE	1

31	OIL CUP	2
NUMBER	NAME	QUANTITY
32	SCREW	2
33	BOLT	1
34	CONNECT TUBE	1
35	HOLD BRACKET	1
36	NUT	4
37	WASHER	4
38	T BOLT	4
39	BOLT	4
40	ELECTRIC PUMP	1
41	BOLT	4
42	SUPPORT	1
43	DUST COVER	1
44	SCREW	2
45	BEVEL IRON	1
46	ADJUST SCREW	1
47	SCREW	2
48	WIPER PLATE	1
49	WIPER PLATE	1
50	WIPER PLATE	2
51	KNEE	1
52	CLAMP BLOCK	2
53	CLAMP BOLT	2
54	HOIST DESCEND LEAD SCREW	1
55	CIRCULAR NUT	2
56	CONICAL GEAR	1
57	KEY	1
58	BALL BEARING	1
59	ADJUST WASHER	1
60	COLLAR	1
61	BALL BEARING	1
62	NUT	1



NUMBER	NAME	QUANTITY
63	SCREW	1
64	KEY	1
65	CONECAL GEAR	1
66	PIN	1
67	WASHER	1
68	COLLAR	1
69	SCREW	1
70	SHAFT	1
71	COLLAR	1
72	SCREW	4
73	BALL BEARING	1
74	SCALE RING	1
75	SCREW	1
76	COLLAR	1
77	HANDLE	1
78	LIFT BAR	1
79	TOOLHOLDER	2
80	CUTTER BAR COLLAR	10
81	SUPPORT	1
82	BOLT	1
83	COLLAR	1
84	NUT	1
85	SCREW	1
86	OIL CUP	1
87	WASHER	1
88	NUT	1
89	BEHIND COVER	1
90	HINGE	2
91	SCREW	16
92	SCREW	1

NUMBER	NAME	QUANTITY
B1	HANDLE	3
2	HANDLE COLLAR	3
3	NUT	3
4	KEY	3
5	WASHER	3
6	HAND WHEEL	3
7	SCALE RING	3
8	SCREW	3
9	BEARING	3
10	SCREW	10
11	SUPPORT	2
12	OIL CUP	3
13	SCREW BRACKET	2
14	DOG	2
15	SCREW	2
16	OIL CUP	2
17	ROTARY BRACKET	1
18	TABLE	1
19	NUT	1
20	LIMIT ASSEMBLY	1
21	NUT	1
22	WASHER	4
23	T-BOLT	4
24	SHAFT MOUNT	1
25	SHAFT	1
26	LONG BEVEL IRON	1
27	ADJUST SCREW	1
28	LONGITUD INALLEAD SCREW	1
29	WAY COVER	

NUMBER	NAME	QUANTITY
30	SCREW	2
31	SCREW	1
32	WASHER	1
33	SADDLE	1
34	SCREW	2
35	CLAMP BLOCK	2
36	CLAMP BLOCK	2
37	SCREW	2
38	SCREW	2
39	WIPER PLATE	1
40	SCREW	1
41	CROSSWISE LEAD SCREW	1
42	SHORT BEVEL IRON	1
43	NUT	1
44	ADJUST SCREW	1
45	BEARING	2
46	SUPPORT	1
47	SCREW	4
48	OIL COVER	1
49	SCREW	2
50	CONNECT TUBE	1

NUMBER	NAME	QUANTITY
C1	SPINDLE BOX	1
2	MOTOR BASE	1
3	LEFT COVER	1
4	RIGHT COVER	1
5	PULLEY COVER	1
6	SCREW	4
7	SCREW	4
8	BOLT	6
9	WASHER	6
10	COVER	1
11	SCREW	4
12	BOLT	2
13	WASHER	1
14	MOTOR	1
15	HANDLE	1
16	BOLT	2
17	KEY	1
18	MOTOR PULLEY	1
19	HEADLESS SEAT SCREW	1
20	WORM GEAR	1
21	PIN	1
22	T BOLT	3
23	NUT	1
24	FEED SHAFT	1
25	KEY	1
26	WORM BOX	1
27	SCREW	3
28	BEVEL GEAR	1
29	RATAINING RING	1
30	SPRING	1
31	SCALE RING	1

NUMBER	NAME	QUANTITY
32	HANDLE BRACKET	1
33	COVER	1
34	BOLT	1
35	HANDLE BAR	3
36	KNOB	3
37	HANDLE	1
38	HANDLE COLLAR	1
39	SCALE	1
40	RIVET	2
41	WORM GEAR	1
42	BALL BEARING	1
43	SMALL COVER	1
44	SCREW	3
45	BALL BEARING	1
46	COLLAR	1
47	SCALE RING	1
48	HANDLE WHEEL	1
49	HANDLE COLLAR	1
50	HANDLE	1
51	NUT	1
52	KEY	1
53	CLAMP BLOCK	1
54	CLAMP BLOCK	1
55	CLAMP HANDLE	1
56	SCREW	1
57	SPRING SEAT	1
58	SCREW	1
59	SCREW	1
60	SPRING PLATE	1
61	SPRING CAP	1
62	SCREW	2

NUMBER	NAME	QUANTITY
63	V BELT	1
64	NUT	1
65	SPINDLE PULLEY	1
66	SPRING SLEEVE	1
67	COLLAR	1
68	SCREW	3
69	RETAINING RING	3
70	BALL BEARING	1
71	COLLAR	1
72	BALL BEARING	1
73	RETAINING RING	1
74	RETAINING RING	1
75	PULLEY NUT	1
76	WASHER	1
77	BALL BEARING	1
78	SLEEVE	1
79	BALL BEARING	1
80	DUST COVER	1
81	SPINDLE	1
82	SPINDLE BAR	1
83	DRILL CHUCK	1
84	WEDGE SHIFTER	1

NUMBER	NAME	QUANTITY
D1	SCREW	4
2	KEY	2
3	SCREW	4
4	OIL CUP	1
5	COVER	1
6	SPINDLE	1
7	BALL BEARING	1
8	COLLAR	1
9	BALL BEARING	1
10	WASHER	1
11	WASHER	1
12	NUT	1
13	COVER	1
14	SCREW	4
15	OIL CUP	1
16	SPINDLE PULLEY	2
17	KEY	1
18	RETAINING RING	1
19	V BELT	2
20	KEY	1
21	RETAINING RING	1
22	WHEEL	1
23	BALL BEARING	1
24	BALL REARING	1
25	BALL BRARING	1
26	COLLAR	1
27	BALL BEARING	1
28	SMALL SHAFT	1
29	COLLAR	1
30	SUPPORT	1
31	SCREW	2

NUMBER	NAME	QUANTITY
32	BOLT	1
33	NUT	1
34	RETAINING RING	1
35	RETAINING RING	1
36	NUT	2
37	RETAINING RING	1
38	PULLEY	1
39	RETAINING RING	1
40	KEY	1
41	MOTOR BASE	1
42	SCREW	6
43	NUT	1
44	WASHER	1
45	WASHER	1
46	SMALL SHAFT	1
47	CONNECT	1
48	RETAINING RING	1
49	BALL BEARING	1
50	COLLAR	1
51	BALL BEARING	1
52	RETAINING RING	1
53	RETAINING RING	1
54	PULLEY	1
55	V BELT	1
56	ADJUST SCREW	1
57	SUPPORT	1
58	SCREW	1
59	NUT	1
60	MOTOR	1
61	WASHER	4
62	BOLT	4





## E:GEAR BOX

NUMBER	NAME	QUANTITY
E1	SPINDLE	1
2	DUST COVER	1
3	BEARING	1
4	SLEEVE	1
5	BEARING	1
6	WASHER	1
7	NUT	1
8	SCREW	1
9	SCREW	1
10	SPRING PLATE	1
11	SPRING CAP	1
12	SCREW	1
13	SPRING SEAT	1
14	BASE	1
15	PIN	2
16	SCREW	6
17	SCREW	6
18	BOLT	1
19	CLAMP HANDLE	1
20	WORM GEAR	1
21	PIN	1
22	T-BOLT	3
23	NUT	3
24	FEED SHAFT	1
25	KEY	1
26	WORM BOX	1
27	SCREW	3
28	BEVEL GEAR	1
29	CRESCENT RING	1
30	SPRING	1

NUMBER	NAME	QUANTITY
31	SCALE RING	1
32	HANDLE BARCKET	1
33	COVER	1
34	BOLT	1
35	HANDLE BAR	3
36	KNOB	3
37	HANDLE	1
38	HANDLE COLLAR	1
39	SCALE	1
40	RIVET	2
41	WORM GEAR	1
42	BEARING	1
43	SMALL COVER	1
44	SCREW	3
45	BEARING	1
46	COLLAR	1
47	SCALE RING	1
48	HANDLE WHEEL	1
49	HANDLE	1
50	HANDLE	1
51	NUT	1
52	KEY	1
53	CLAMP BLOCK	1
54	CLAMP HANDLE	1
55	BOX	1

# GEAR HEAD

NUMBER	NAME	QUANTITY
F1	BOX	1
2	COLLAR	1
3	OIL SEAL	1
4	BALL BEARING	1
5	SCREW	1
6	O-RING	1
7	COLLAR	1
8	RETAINING RING	1
9	GEAR	1
10	KEY	1
11	RETAINING RING	1
12	SHAFT	1
13	KEY	1
14	DRIVING SHAFT	1
15	GEAR	1
16	RETAINING RING	1
17	SCREW	1
18	GEAR	1
19	GEAR	1
20	O-RING	2
21	BALL BEARING	1
22	COLLAR	1
23	COLLAR	1
24	BALL BEARING	1
25	RETAINING RING	1
26	GEAR	1
27	GEAR	1
28	COLLAR	1
29	GEAR	1
30	O-RING	1

NUMBER	NAME	QUANTITY
31	DRIVING SHAFT	1
32	DRIVING SHAFT	1
33	SCREW	1
34	GEAR	1
35	GEAR	1
36	GEAR	1
37	KEY	1
38	BEARING	1
39	COLLAR	1
40	BOX COVER	1
41	COLLAR	1
42	BEARING	1
43	SCREW	4
44	COLLAR	3
45	BEARING	3
46	SCREW	6
47	PIN	2
48	MOTOR	1
49	GEAR	1
50	SCREW	1
51	BOLT	4
52	LIFT FORK	2
53	CRESCENT RING	2
54	PIN	2
55	SHAFT	2
56	O-RING	2
57	COLLAR	2
58	PIN	2
59	HANDLE	2
60	BALL	2
61	SPRING	1
62	OIL POSITION	1
63	BOLT	1
64	SCREW	2

NUMBER	NAME	QUANTITY
G1	HANDLE	1
2	HANDLE COLLAR	1
3	NUT	1
4	KEY	1
5	WASHER	1
6	HAND WHEEL	1
7	SCREW	1
8	OIL COVER	1
9	SCALE RING	1
10	BALL BEARING	1
11	SCREW	1
12	OIL CUP	1
13	SUPPORT	1
14	WASHER	1
15	SCREW	1
16	NUT	1
17	SADDLE	1
18	TABLE	1
19	SCREW BARCKET	2
20	DOG	2
21	SCREW	2
22	LONG BEVEL IRON	1
23	ADJUST SCREW	1
24	BALL SCREW	1
25	SUPPORT	1
26	SCREW	4
27	OIL CUP	1
28	BALL BEARING	1
29	SCALE RING	1

NUMBER	NAME	QUANTITY
30	SCREW	1
31	CONNECT TUBE	1
32	HAND WHEEL	1
33	WASHER	1
34	KEY	1
35	NUT	1
36	HANDLE COLLAR	1
37	HANDLE	2
38	CLAMP BLOCK	2
39	PIN	2
40	SCREW	2
41	HAND BOARD	2
42	SCREW	3
43	WIPER PLATE	2
44	NUT	1
45	CLAMP BLOCK	2
46	SCREW	2
47	HANDBOARD	2
48	PIN	2
49	BEVEL IRON	1
50	ADJUST SCREW	1
51	BALL SCREW	1
52	BALL BEARING	1
53	OIL CUP	1
54	SUPPORT	1
55	SCREW	1
56	BALL BEARING	1
57	SCALE RING	1
58	SCREW	

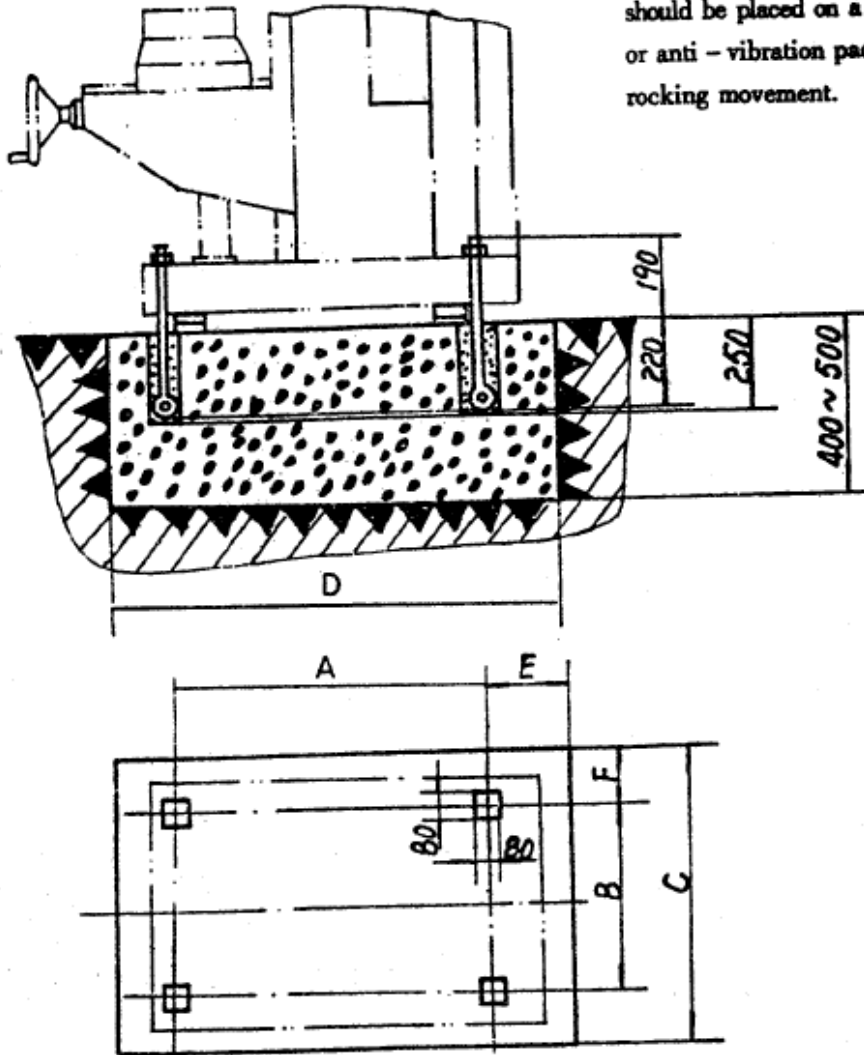




# Installation

## FOUNDATION PLAN

Ideally this machine should be bolted to a concrete foundation, The machine should be placed on a solid level floor. or anti - vibration pads to prevent any rocking movement.



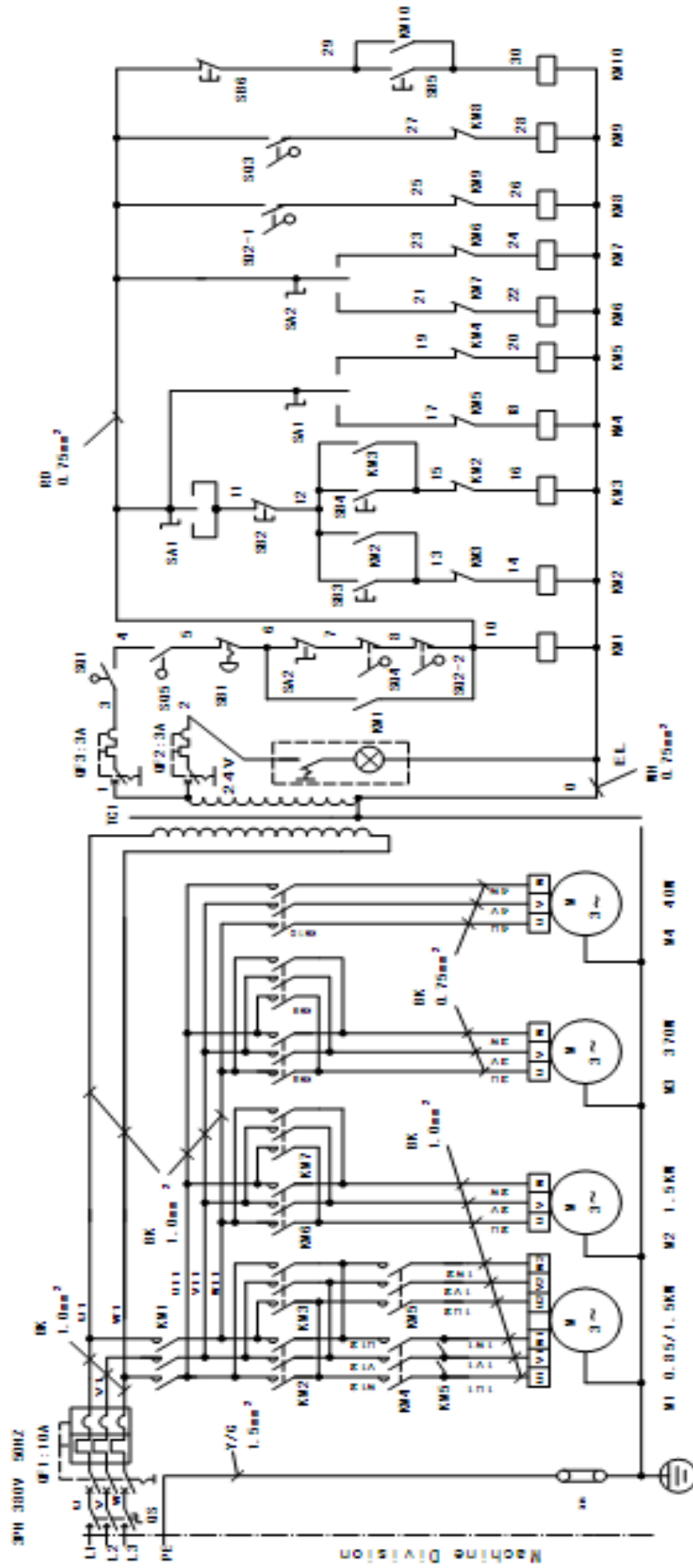
MODEL	A	B	C	D	E	F
	678	445	745	1110	220	150
	845	466	760	1285	220	150

# COMPONENTS LIST

Item	Code	Name	Model or specification	Quantity	Note
1	M1	Three-phase induction motor (vertical)	YD100L-8/4 3PH 380V 50HZ 0.85/1.5KW V1 710/1400r.p.m	1	
2	M2	Three-phase induction motor (horizontal)	Y90L-4 3PH 380V 50HZ 1.5KW B3 1400r.p.m	1	
3	M3	Three-phase induction motor (power feed)	YS6322 3PH 380V 50HZ 370W B5 2800r.p.m	1	
4	M4	Three-phase coolant pump	AB-12 3PH 380V 50HZ 40W	1	
5	QF1	Circuit breaker	DZ47-63(3P 10A)	1	
6	QF2 QF3	Circuit breaker	DZ47-63(1P 3A)	2	
7	KM1-KM10	Ac contactor	CJX1-9/22(AC24V 50HZ)	10	
8	TC	Transformer	JBK5-160 160VA 0-380V I: 0-380V O:0-24V	1	
9	SA1	knob	LAY7-40X/3108	1	
10	SA2	knob	LAY7-22X/3106	1	
11	SB1	E.stop button	LAY7-01ZS/red	1	
12	SB2-SB6	button	LAY7-10BN/GREEN	2	
			LAY7-10BN/WHITE	1	
			LAY7-01BN/RED	2	
13	SQ1	Micro switch	LXW6-11DL	1	
14	SQ2-SQ5	Micro switch	LXW16-10/21C	4	
15	EL	lamp	JC-38(50W AC:24V)	1	Optional accessory

# CIRCUIT DIAGRAM

POWER Switch	Vertical		Horizontal		Transformer	Light	E-stop Protection	Vertical				Horizontal	X-power feed	Coolant
	Low	High	Low	High				CW	CCW	CW	CCW			
	CW	CCW	CW	CCW										



**DRILLING&MILLING MACHINE**

**QUALITY CERTIFICATE**

## Accuracy Test List

No.	Test item	Tolerance	Rem
1	Flatness A. Horizontal B. Cross	0.04/1000 0.04/1000	
2	Work flatness	0.04/200	
3	Run out of spindle bore A. End spindle face B. 300mm to spindle face	0.02 0.04	
4	Kick of spindle	0.02	
5	The perpendicular between spindle and table A. Longitudinal B. Cross	0.10/200 0.10/200	
6	The perpendicular between vertical movement of spindle and table A. Longitudinal B. Cross	0.10/100 0.10/100	
7	The parallelism between the work flatness and table A. Longitudinal B. Cross	0.05/200 0.05/200	
8	The straightness of basis "T"	0.03/200	
9	The parallelism between basis "T" and table	0.15/200	
10	The perpendicular between longitudinal move of table and cross move of table	0.10/200	
11	Straightness of vertical movement of knee A Longitudinal B Cross	0.05/200	
12	The perpendicular between bedway and vertical guideway A Longitudinal B Cross	0.10/200 0.10/200	
13	The parallelism between table and ram moving	0.10/200	
14	The parallelism between table and rotating plate rotate left 30° 0° right 30°	0.10/200	
15	The parallelism between spindle and worktable	0.10/200	
16	The parallelism between cross move of work table and spindle A Longitudinal B Cross	0.10/200 0.10/200	
17	The parallelism between the guideway of ram and spindle A Longitudinal B Cross	0.10/200 0.10/200	
18	Coaxialism between the hole of surporthilt and axis of spindle A Longitudinal B Cross	0.10 0.10	

## PACKING LIST(ISO30 or R8 or ISO40)

ITEM	NAME	MODEL	QUANTITY	
1	Drilling&milling machine		1	1
2	Drill chuck	16	1	1
3	Milling chuck		1	1
4	Reduction sleeve		1 set	1 set
5	Wrench	S21-24	1	1
6	Inner-hexagonal spanner	5	1	1
7	Camlock		1	2
8	Wedge shifter		1	1
9	Spindle arbor		1	1
10	Horizontal milling bilt			2
11	Operation manual		1	1
12	Certificate of inspection		1	1
13	Packing list		1	1

## PACKING LIST(M.T.4)

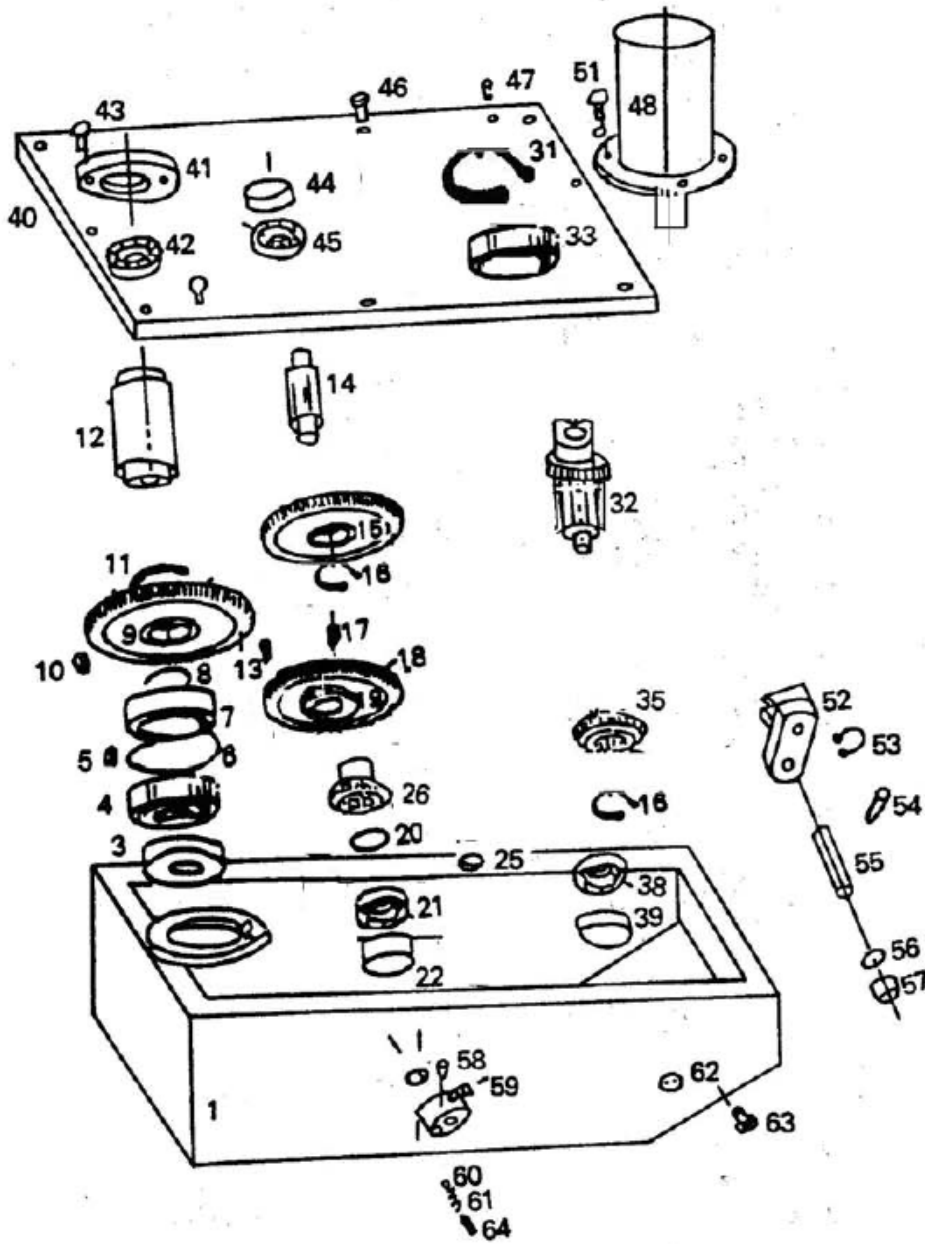
ITEM	NAME	MODEL	QUANTITY	
1	Drilling&milling machine		1	1
2	Drill chuck	16	1	1
3	Milling chuck		1	1
4	Reduction sleeve		2	2
5	Wrench	S21-24	1	1
6	Inner-hexagonal spanner	5	1	1
7	Camlock		1	2
8	Wedge shifter		1	1
9	Spindle arbor		1	1
10	Boring bar		1	
11	Horizontal milling bilt			2
12	Operation manual		1	1
13	Certificate of inspection		1	1
14	Packing list		1	1

# 11. HEAD GERA (STEP-LESS) EXPLOSION DIAGRAM



# F: Gear head

STEP - LESS

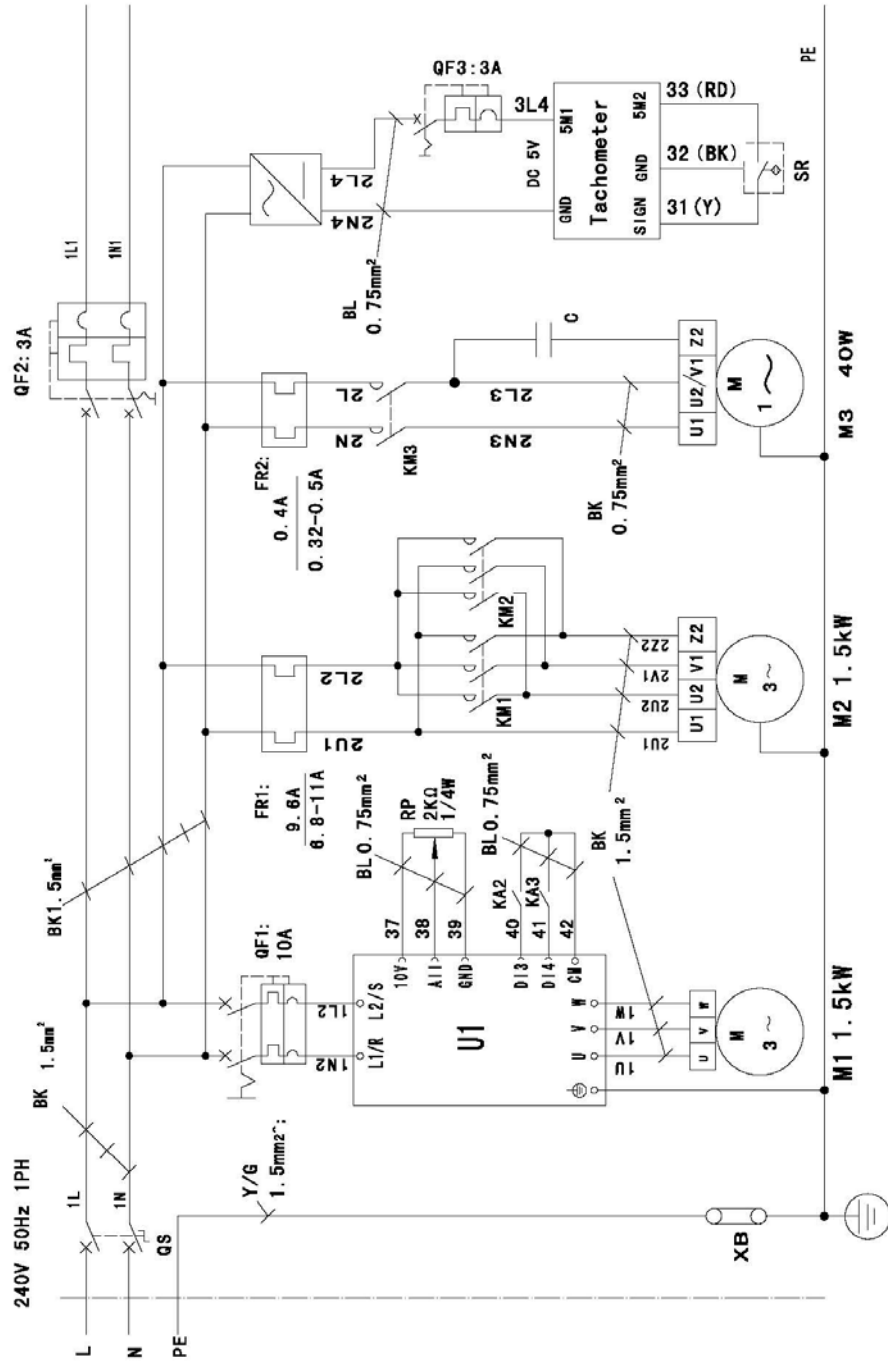


## GEAR HEAD (STEP-LESS)

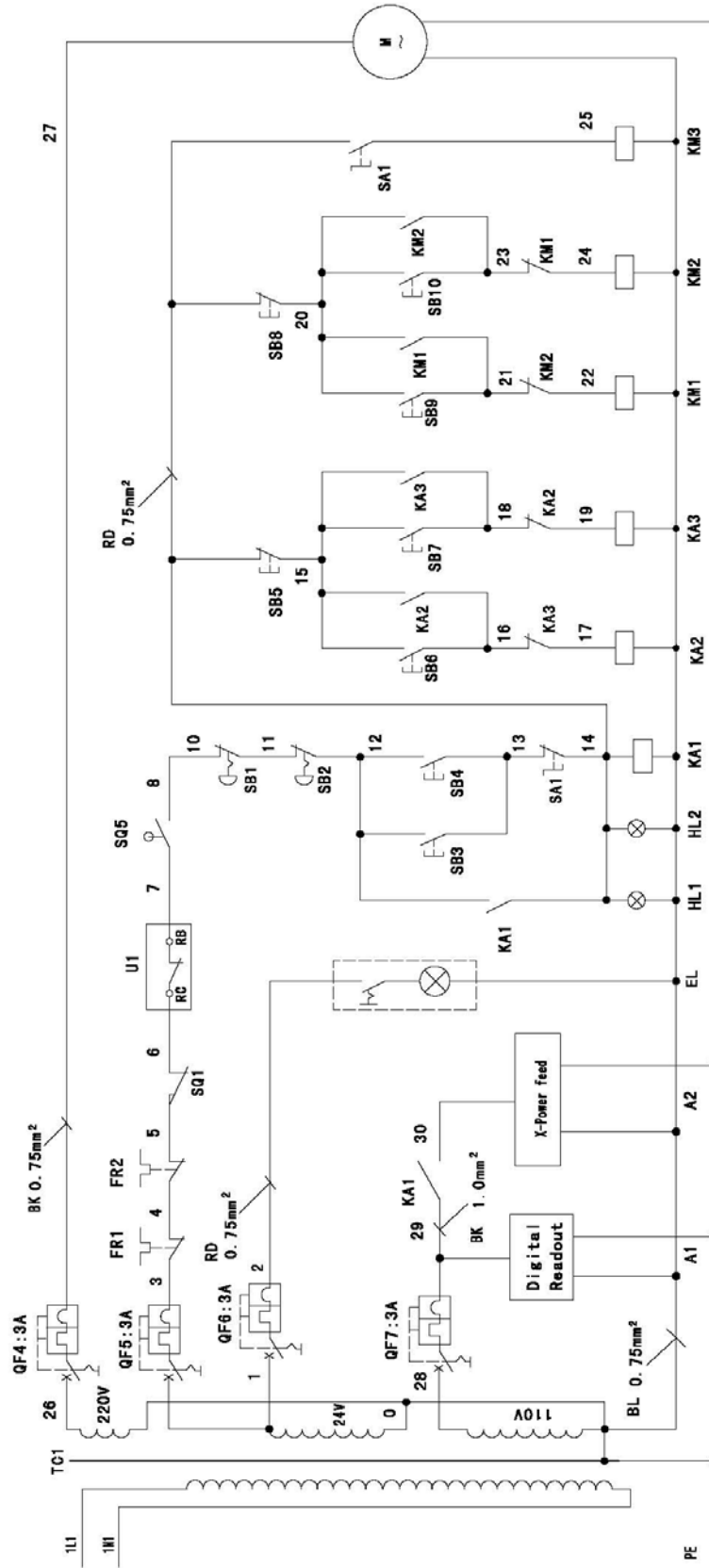
NUMBER	NAME	QUANTITY
F1	BOX	1
2	COLLAR	1
3	OIL SEAL	1
4	BALL BEARING	1
5	SCREW	1
6	O-RING	1
7	COLLAR	1
8	RETAINING RING	1
9	GEAR	1
10	KEY	1
11	RETAINING RING	1
12	SHAFT	1
13	KEY	1
14	DRIVING SHAFT	1
15	GEAR	1
16	RETAINING RING	2
17	SCREW	1
18	GEAR	1
19	GEAR	1
20	O-RING	2
21	BALL BEARING	1
22	COLLAR	1
25	RETAINING RING	1
26	GEAR	1
29	GEAR	1

NUMBER	NAME	QUANTITY
31	RETAINING RING	1
32	DRIVING SHAFT	1
33	BEARING	1
35	GEAR	1
38	BEARING	1
39	COLLAR	1
40	BOX COVER	1
41	COLLAR	1
42	BEARING	1
43	SCREW	4
44	COLLAR	3
45	BEARING	3
46	SCREW	6
47	PIN	2
48	MOTOR	1
49	GEAR	1
51	BOLT	4
52	LIFT FORK	1
53	CRESCENT RING	1
54	PIN	2
55	SHAFT	1
56	O-RING	1
57	COLLAR	1
58	PIN	1
59	HANDLE	1
60	BALL	1
61	SPRING	1
62	OIL POSITION	1
63	BOLT	1
64	SCREW	1

Power switch	Vertical speed		Horizontal		Coolant	Tachometer
	CW	CCW				



Transformer	Protection	Lamp	E. stop Protection	Vertical control	Horizontal control	Coolant	Inverter motor fan
				CW	CCW	CW	CCW



Legend	Name	Model	Qty.
M1	Inverter motor	YPNC90L-33.3-4 220V 33.3Hz 3PH 1.5kW V1	1
M2	motor	YL90L-4 240V 50HZ 1PH 1.5KW B3	1
M3	Coolant pump	YDB-12TH 240V 50HZ 1PH 40W	1
A2	X-Power feed	AS235 (110V 50Hz 1PH)	1
TC1	Transformer	JBK5-300 300VA I: 240V 0: 24V (100VA)、110V (150VA)、220V (50VA)	1
KM1-KM3	AC contactor	CJX1-9/22 (AC 24V 50HZ)	3
KA1	Relay	HH52P (AC24V 50HZ)	1
KA2 KA3	Relay	HH54P (AC24V 50HZ)	2
QS	Switch	JCH-13 20/31	1
QF1	Circuit breaker	DZ47-63 2P 10A	1
QF2	Circuit breaker	DZ47-63 2P 3A	1
QF3-QF7	Circuit breaker	DZ47-63 1P 3A	5
FR1	Overload relay	JR16B-20/3D (IE: 6.8-11A)	1
FR2	Overload relay	JR16B-20/3D (IE: 0.32-0.5A)	1
SA1	Knob	LAY7-11X/2101	1
SB1 SB2	E. stop switch	LAY3-01ZS/red	2
SB2-SB10	Push button	LAY7-10DS/green (AC 24V)	2
	Push button	LAY7-10BN/green	2
	Push button	LAY7-10BN/white	2
	Push button	LAY7-01BN/red	2
SQ1	Limit switch	QKS-8	1
EL	Lamp	JC38C (AC24V)	1