

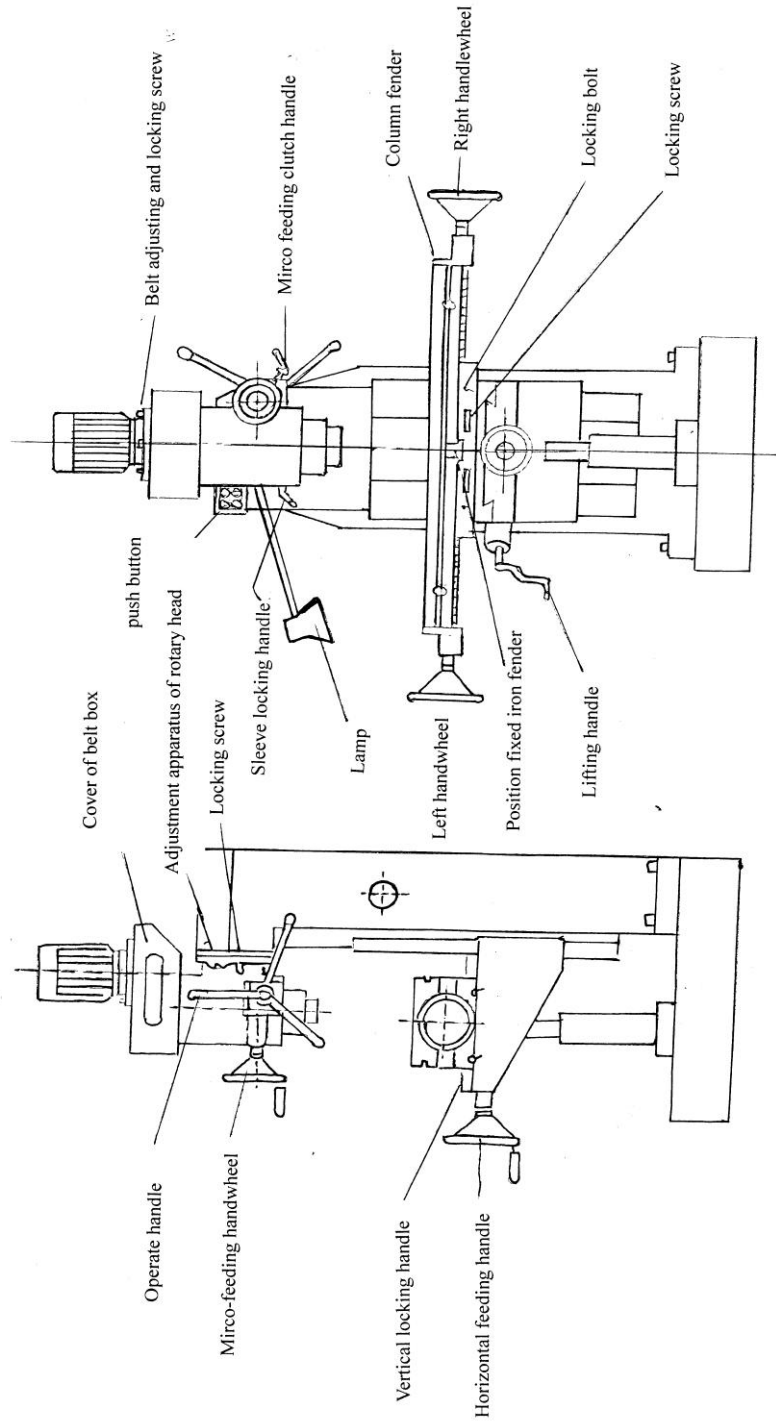
MODEL ZX1048P and ZX1048PD

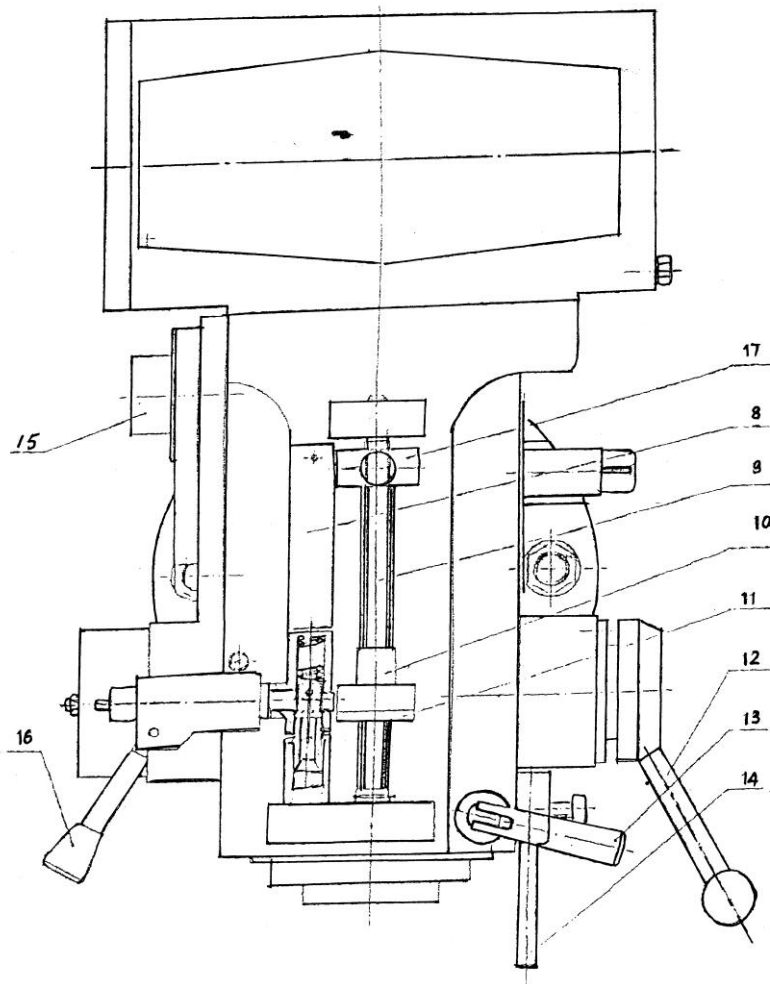
Milling and Drilling Machine with Rotary Head

# OPERATION INSTRUCTION

Number of machine \_\_\_\_\_

# THE OUTLOOK OF MACHINE





Z-CHART (1)

## **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 tile details and trial run the machine idyll 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 2000m 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 Before starting the machine, read carefully the operation manual and be fully acquainted with the details.

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

3.3 Remove all the anti-rust coating or grease from the machine. Fill the machine with lubricant. Run the machine from low to high speed and check if it is normal.

3.4 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.

## **I USAGE**

The machine is used for cutting metals. It's suitable to drill, mill and widely use in the field of

instrument, machining for cutting a single part or a batch of parts.

Model ZX5325 serials drilling and milling machine has the characteristic of strong rigidity and good stability.

## **II USE AND AINTENACE**

(Refer to chart 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 descend sliding must be lossed firstly, then turn the hoist-descend

handle in front of machine or descend the working table to the idea position, finally clamp the clamping shaft(1).

4. The Auto-Feeding and Manual-Feeding for it's spindle sleeve can be realized. For Auto-Feeding,pls engage the safety clutch by handle(16),then engage the Tri-union sliding gear with three gears by Handle(15). Three different Feeding(0.08,0.15,0.25mm/r)can be gained by the spindle sleeve.Spindle sleeve is also with step block (17)and scale(8), etc, for automatic stopping and size controlling properly.

The adjusting shaft(9) on Mill Head,Nut(10)stop-block(17)are for pro-setting the size. For this, posited the upper scale of the nut(10)the scale and tight the nut(11).

When auto-feeding, stop-Block(17) touch nut(10), they will press the clutch off,Feeding will be stopped.Safety is with over-load protection,to avoid damaging the parts.

Manual-Feeding can be realized by Handle(12) when Handle(16) is off.

#### **Notation:**

(1)Please tight the spindle sleeve by Handle(13) when spindle sleeve is free, pay attention that the force can't be too much..

(2)Auto-Feed is not allowed when the spindle speed is 1500 rpm, or spindle reverse.

(3)Bar(14)is for Fixing Gauge.

- 5.The cross-slide of spindle box can be realized through the ram moving, for cross sliding,Please firstly loosen, the two clamping bolts(5)locating on the right side of the ram,turn the gear shaft(6), to move the ram and spindle box and tight the two clamping bolts.
- 6.The spindle box can turn 180° **around the column in the** horizontal plane, to realize this,Please firstly loosen the 4 pieces of clamping nuts(7)under the ram,turn the to the suitable position,finally tight the 4 pieces of clamping nuts.

7. The spindle's turn and revolve can be realized by turn the switch locked in right side of hoist-descend sliding.
8. The spindle box that transmitted by the belt can be rotated  $\pm 45^\circ$  in vertical plane, when operating, Please loose the three retaining nut and pay attention these nuts need only pitch, then swivel screw lever by socket head screw (S16-18) to make the spindle box swivel to the place required.
9. If the machine don't work well or have irregular noise, Please immediately shut off machine.

### III Technical data

type	unit	ZX1048PD	ZX5325Z	ZX1048P
Max. drilling diameter	inch	2"	2"	2"
Max. milling diameter	inch	1"	1"	1"
Max. diameter-of grinding wheel	inch	4"	4"	4"
Spindle taper	inch	MT4/ISO30 /ISO40/R8	MT4/ISO30/ ISO40/R8	MT4/ISO30 /ISO40/R8
Spindle travel	inch	5"	5"	5"
Table size	inch	50" *10"	50" *10"	50" *10"
Vertical travel of table	inch	10" - 15"	10" - 15"	10" - 15"
Travel of table	inch	27" *15"	27" *15"	27" *15"
Rotary angle of table	inch	$\pm 45^\circ$	$\pm 45^\circ$	$\pm 45^\circ$
Rotary angle of head	inch	$\pm 90^\circ$	$\pm 90^\circ$	$\pm 90^\circ$
Range of speed	inch	8grade 276-2190	4grade 90-2000	9grade 270-2950
Motor	kw	0.85/1.5KW	2.2KW	1.5KW

**Note:** if you need the vertical travel of table achieve 380mm, a

200mm depth hole needed under the vertical lead-screw on the ground.

## **IV.Operation instruction**

### **1.preparation before start**

You'd better consult operation instruction before starting. Familiarize yourself with the structure of the machine and master the uses of each part and operating manual.

Before starting the machine, clean away rust inhibitor and dirty on the smooth, then smear it with lubricating oil, especially on guide, guide screw and other contact surfaces which have relative shift.

First of all, check the mains voltage see if it accord with provide data, check electrical equipment, earthed wire must be in a good condition; and the clamping structure is clamped well.

### **2. adjustment of main-axle speed**

The speed of main-axle is adjusted by the motor and two cone pulley. The speed has six grades, speed adjustment handle and combined switch control the speed of this machine. Choose your needed speed according to the instruction on the speed plate. see details on data plate of speed.

### **3. Adjustment of angle of inclination of main axle box**

If you need inclination of main-axle box, loose the four locking screws, which on left and right side of the main axle box. Keep the same resistance, (note: Not loose too much of the four screw) use spanner, rotate the adjustment apparatus of rotary of machine head, make the machine head inclination to such degree angle, then lock the screws.



#### **4. Adjustment if rotary of working table**

If you need rotary in aclination of working table in horizontal plane  
loose horizontal  
feeding handle, rotary the working table to such degree angle and then tight  
the rotary plate locking screw.

#### **5. Lifting and locking working table**

Loose lift locking bolt and lift locking screw-nail, the lift  
handle, put the working table in needed position and then lock them.

#### **6. Moving in length and breadth and locking of working table**

(1) vertical feeding by hand and locking:

Loose the two vertical locking screw-nail, lock the hand wheel (left hand  
wheel or right hand wheel) on each side of the working table, then you can  
get vertical shift, if you do not need shift, lock the screw nail.

(2) vertical power feeding:

We can equip a power feeding apparatus on the right side of the working  
table according to customer's requirement (Note: you must loose the vertical  
locking first). see details on operating manual of power feeding apparatus.

(3) Horizontal, shift and locking:

Loose the two horizontal feeding screw-nails on the left side of sliding  
block, rock horizontal feeding handle, but if you do not need horizontal  
shift, lock the screw-nails.

Eventually, loose the parts which need moving and lock the parts which don't  
need moving.

#### **7. Operating of main-axle**

(1) Fast feeding of main-axle

Loose sleeve locking handle and pull out the micro-feeding clutch handle,  
rotate the operating handle, then we can get fast feeding.

(2)Micro feeding of main axle:

Puch on the micro-feeding clutch handle,keep it engaged then rotate micro-feeding hand wheel.

(3)Position fixed of main axle:

If you want to fix position of main axle,loose the position fixed bolt,set the bolt on the needed position and tight it.If you don't need fix position,you must position,you must loose the fix position bolt.

## **8.Milling**

You can use upright or key slot milling cutter from  $\phi 4$  to  $\phi 6$ , when the diameter is more than  $\phi 20$ ,you can directly use M'Scone handle milling curter or key slot cutter. If the milling surface is large enough, you can install section milling cutter.

## **9.Drilling.**

This kind of machine is supplied with drill chuck, reduction sleeve and connecting bar,So as to drilling,reaming different holes.

## **10.Boring.**

This king of machine can bore different diameter holes.

## **11.Grinding.**

With grinding wheel, the machine can grind surface of all kinds of steel piece,cost iron and swallow-tailed guide.

## **V.Lubrication of machine.**

Rolling bearing and turbine are lubricant by grease, clean and change grease anally, surface with relative shift use lubricating oil, two times each shift.

#### **VI. Electrical equipment of machine:**

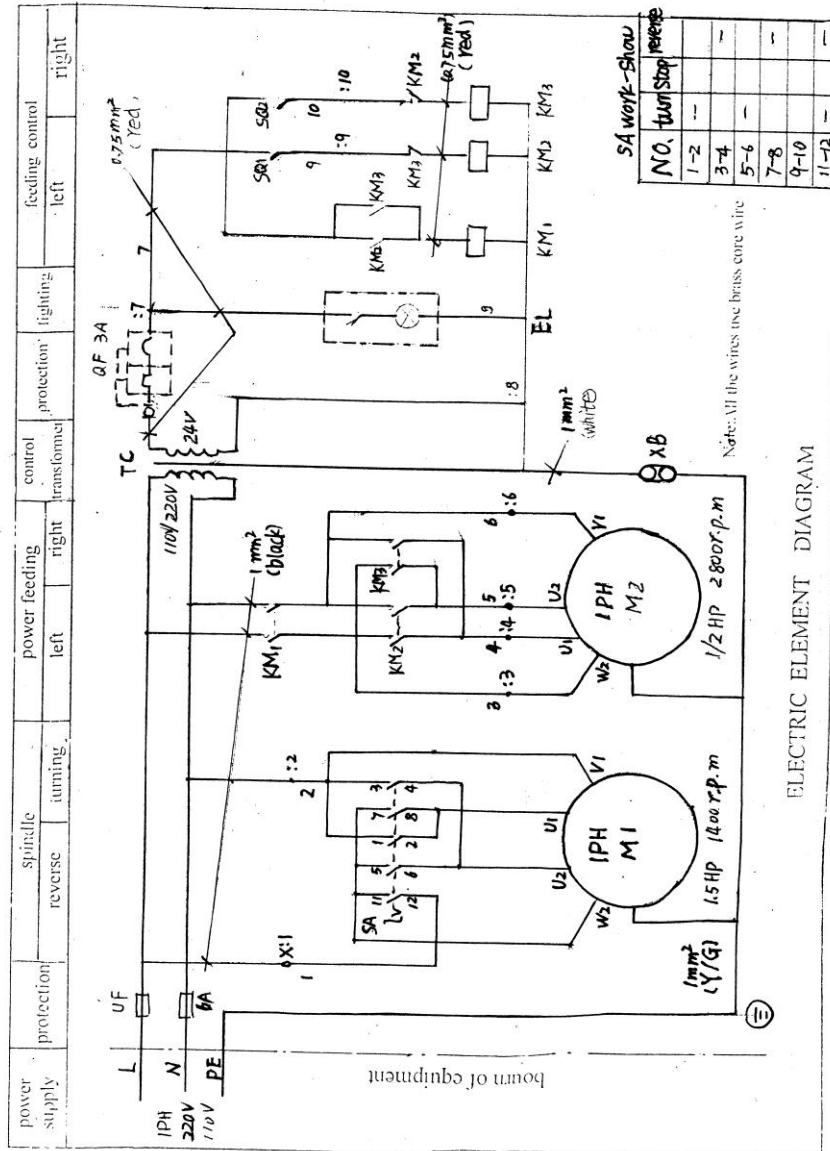
Electrical schematic diagram and the list of electrical are in following page.

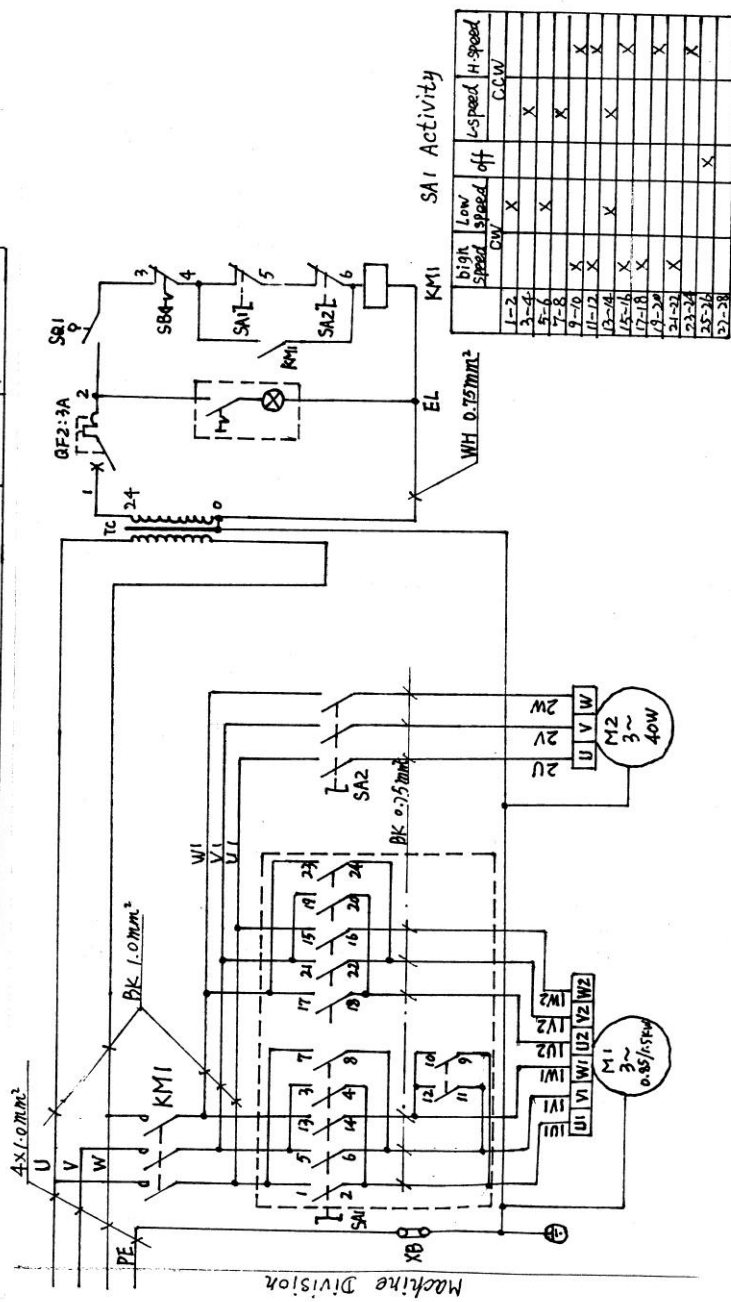
1. Earthed wire must be in a good condition.
2. This machine use single phase motor, turning and reverse speed is controlled by combined switch. see details in electrical schematic diagram.
3. If you use power feeding apparatus, you must supply with A.C voltage 110V/50Hz, transformed by 150VA control transformer pay more attention to this point.

**ZX1048P    PACKING LIST**

Number of machine: \_\_\_\_\_

No	name	specification	Q'ty	remarks
1	<b>Drill chuck</b>	<b>Φ1~Φ13</b>	1	
2	<b>Connecting bar with clamping apparatus</b>	IS040 or MT4 IS030 or R8	1	
3	<b>Boring bar</b>	IS040 or MT4 IS030 or R8	1	
4	<b>Pull rod</b>		1	
5	<b>Six edges spanner</b>	S6 S8	1	
6	<b>Double -head spanner</b>	19~17 24	1	
7	<b>Reduction sleeve</b>		1	
8	<b>Machine vice</b>	160	1	
9	<b>Milling chuck</b>	IS040 or MT4 IS030 or R8	1	
10	<b>Power feed</b>			<b>Special apparatus</b>
11	<b>Operation instruction</b>		1	
12	<b>Packing list</b>		1	





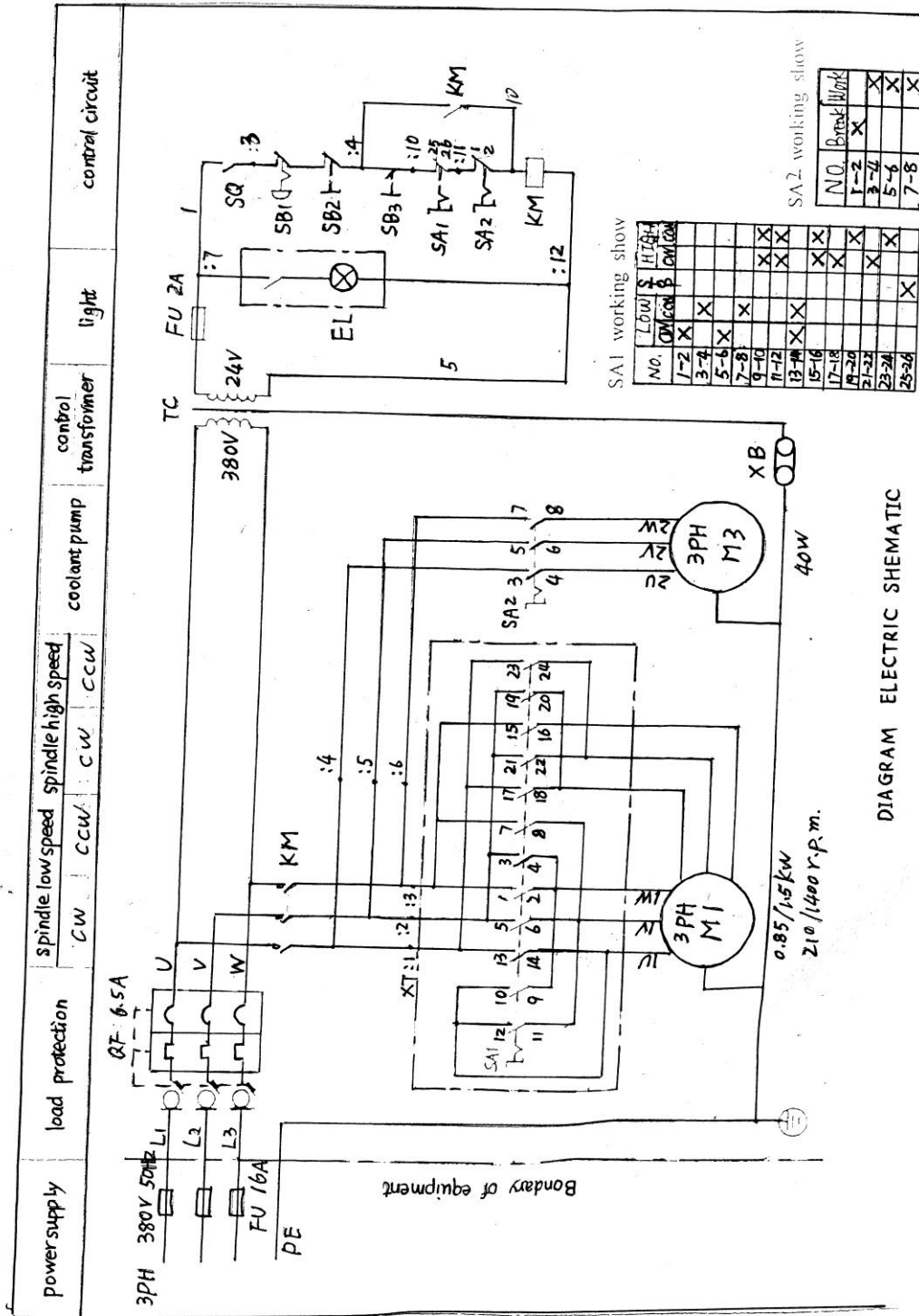


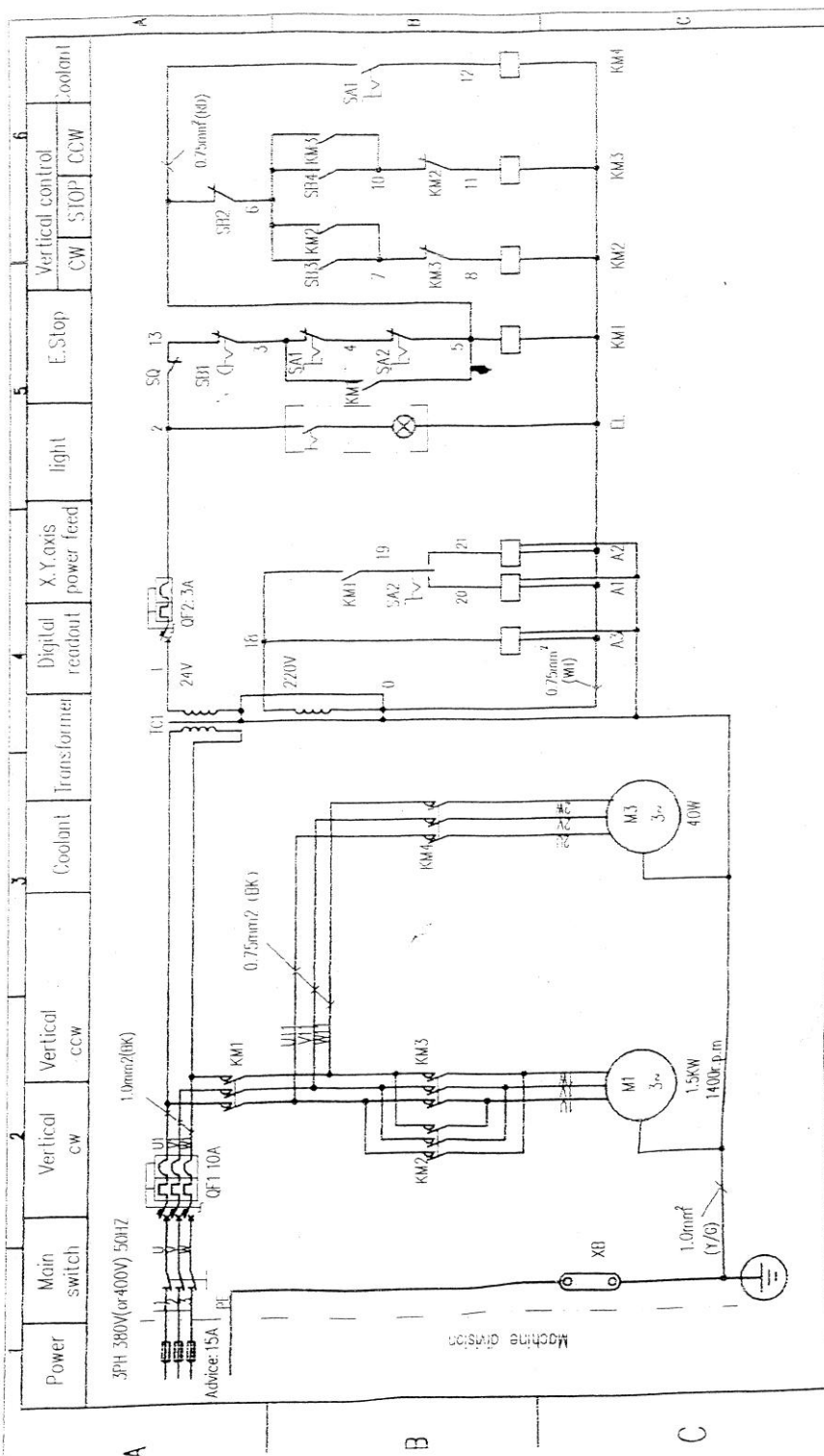
DIAGRAM ELECTRIC SCHEMATIC

SA1 working show

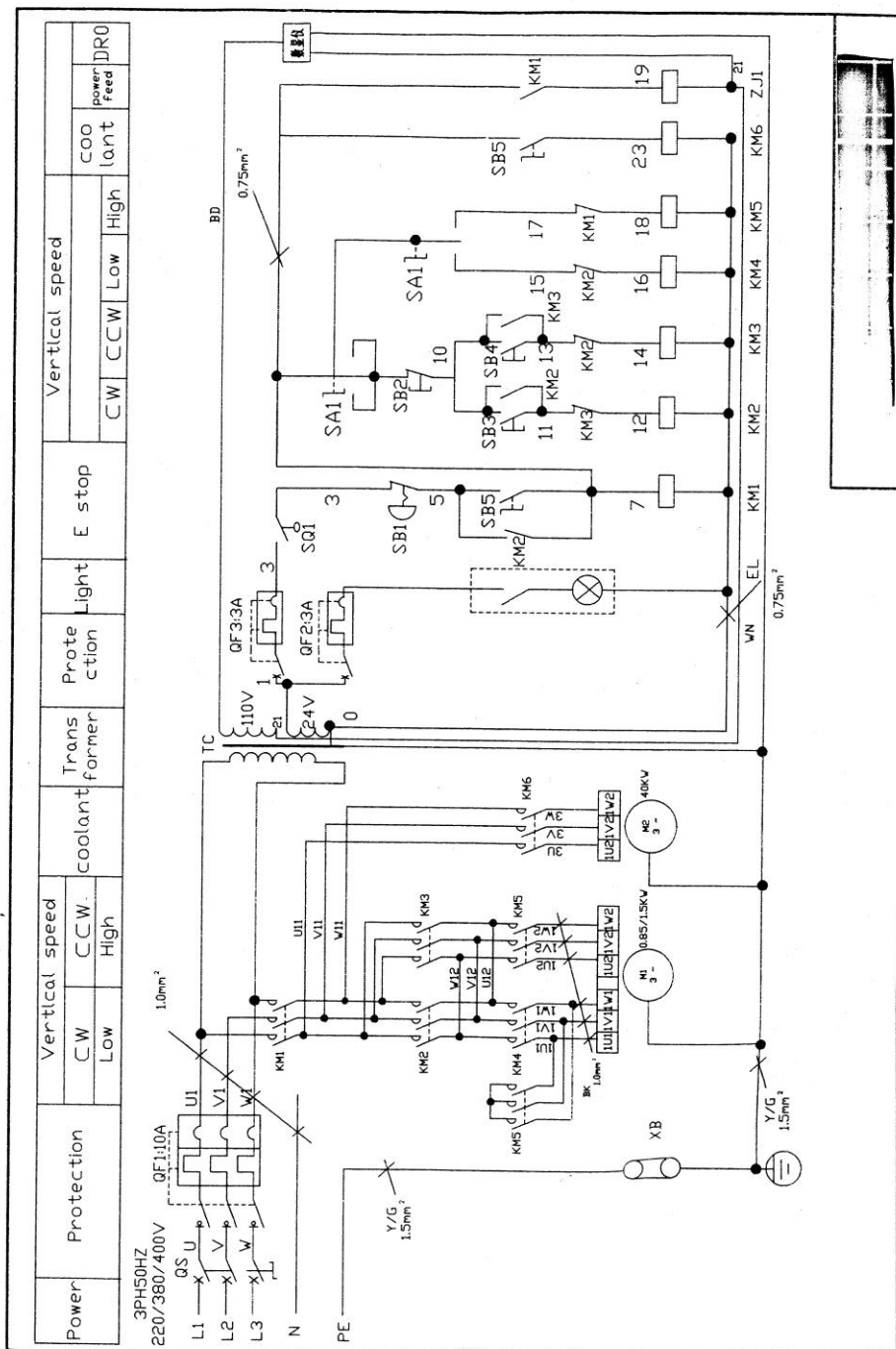
No.	Low	High
1-2	X	
3-4	X	
5-6	X	
7-8	X	
9-10	X	
11-12	X	
13-14	X	
15-16	X	
17-18	X	
19-20	X	
21-22	X	
23-24	X	
25-26	X	

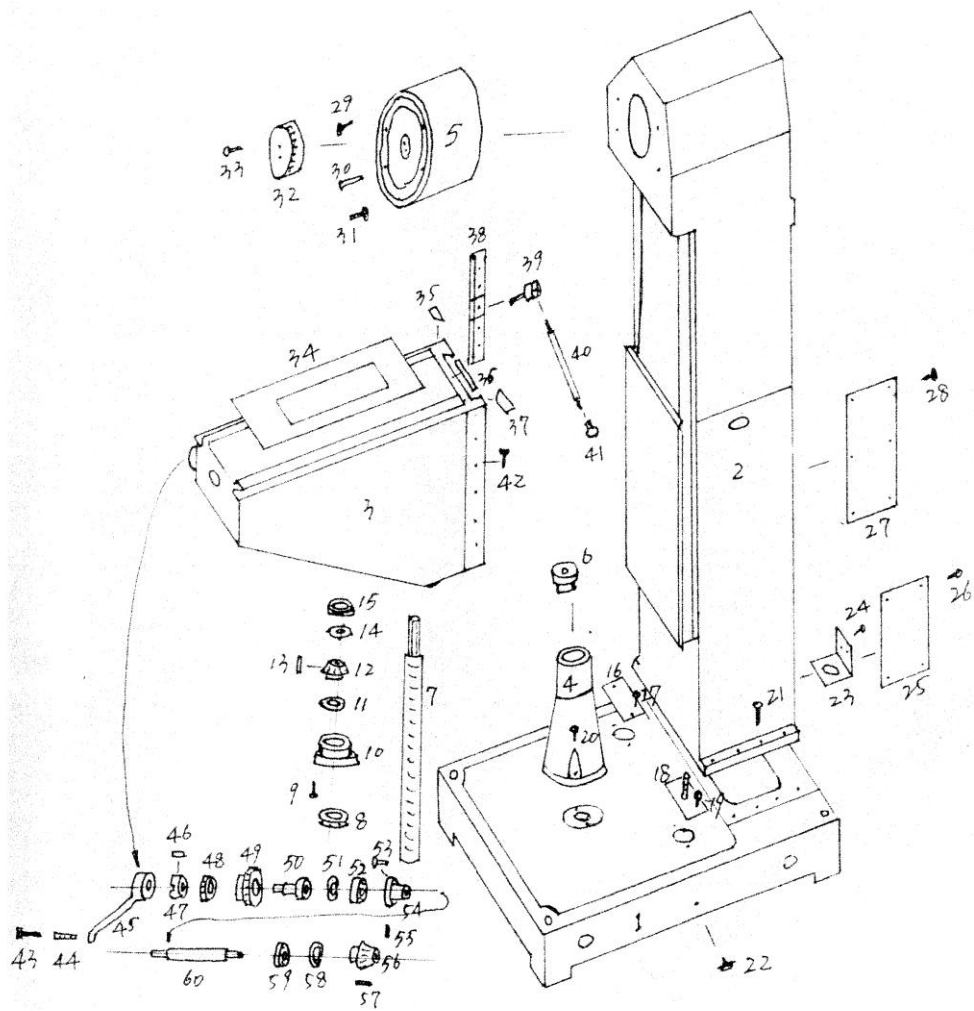
SA2 working show

No.	Low	High
1-2	X	
3-4	X	
5-6	X	
7-8	X	





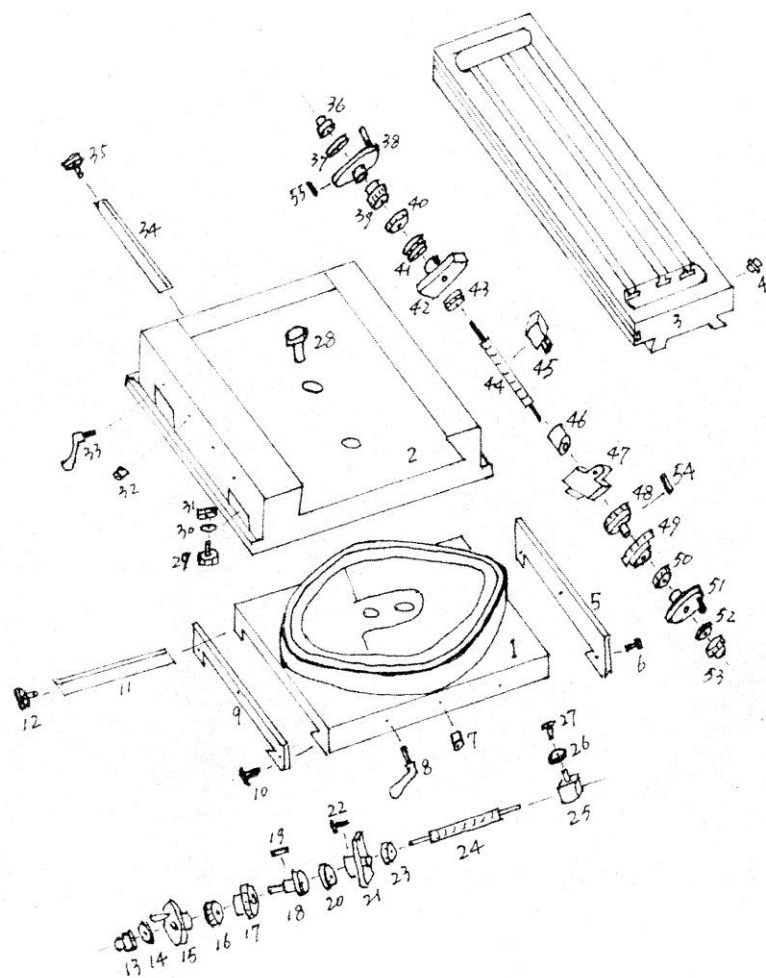




A. Boday

# A. Boday

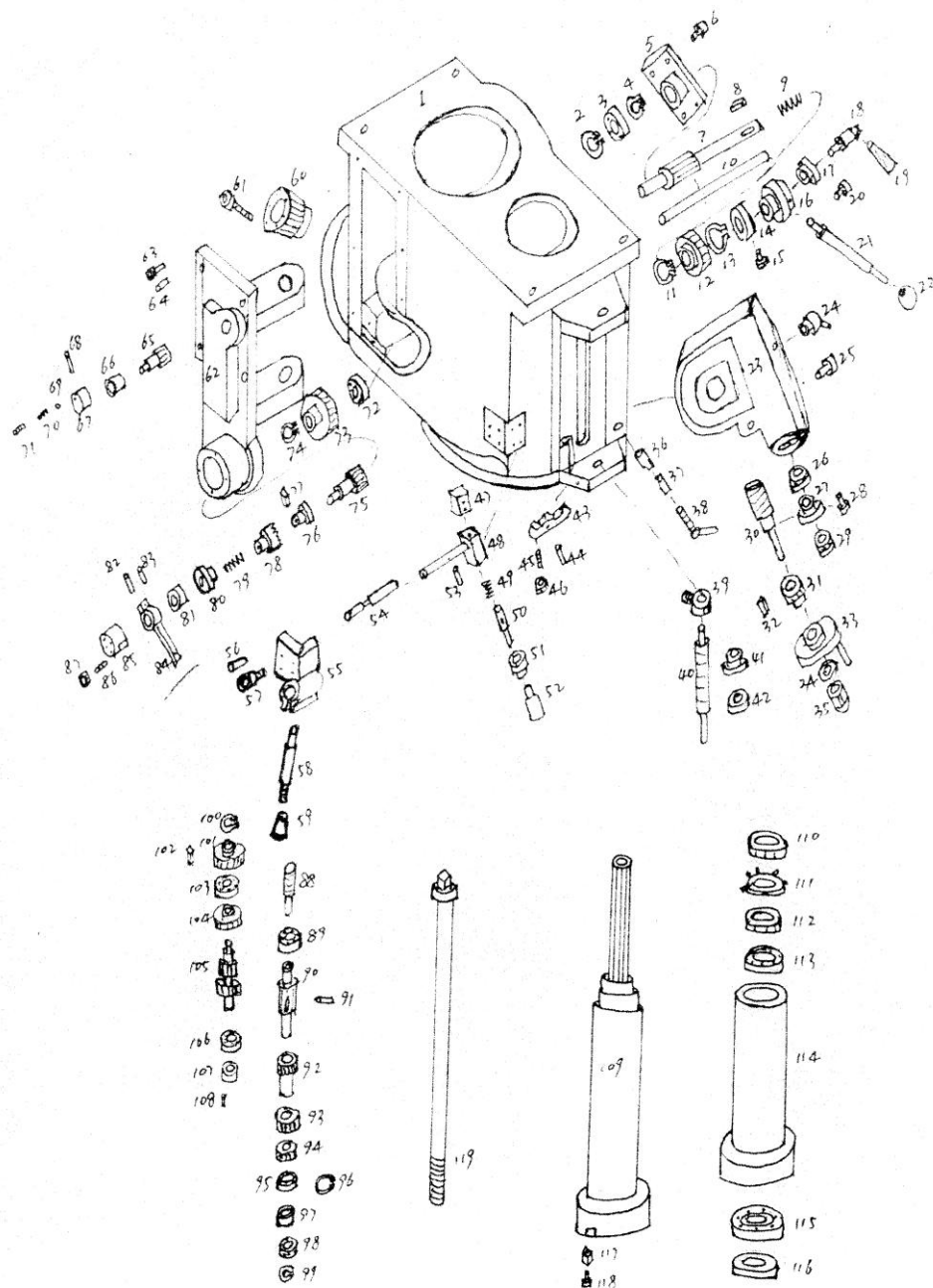
NO.	NAME	Q'TY		NO.	NAME	Q'TY
A1	Base	1		36	Dust cover (long)	1
2	Column	1		37	Dust cover (right)	1
3	Knee	1		38	Wedge	1
4	Support (test)	1		39	Lock screw	1
5	Rotary base	1		40	Press bar	2
6	Nut	3		41	Handle ball	1
7	Lead screw	2		42	Bolt	1
8	Bearing	2		43	Handle bar	1
9	Bolt	1		44	Handle collar	1
10	Support collar	3		45	Handle	1
11	Washer	1		46	Key	1
12	Taper gear	2		47	Tow-tooth gear	1
13	Key	1		48	Nut	1
14	Anti-back Washer	1		49	Scale ring	1
15	Nut	1		50	Collar	1
16	Cover	1		51	Hole-chip	1
17	Screw	1		52	Bearing	1
18	Water tube base	1		53	Screw	1
19	Screw	1		54	Collar	1
20	Bolt	1		55	Pin	1
21	Bolt	1		56	Taper gear	
22	Pin-screw	4		57	Key	
23	Coolant pump base	1		58	Shaft	
24	Screw	1		59	Bearing	
25	Cover	1		60	Shaft	
26	Screw	1				
27	Cover	1				
28	Screw	1				
29	Screw	4				
30	Pin	4				
31	T-bolt	4				
32	Worm-gear	2				
33	Screw	2				
34	Up-down dust seat	1				
35	Dust cover (left)	2				



B table

B. table

NO.	NAME	Q'TY		NO.	NAME	Q'TY
B1	Saddle	1		36	Nut	1
2	Rotary base	1		37	Washer	1
3	Work table	1		38	Hand wheel	1
4	Water tube connection	1		39	Scale ring	1
5	Dust cover	1		40	Nut	2
6	Screw	3		41	Bearing	1
7	Oil cup	2		42	Left support plate	1
8	Handle	2		43	Bearing	1
9	Cover	1		44	Lead screw	1
10	Screw	3		45	Lead screw nut	1
11	Wedge	1		46	Collar	1
12	Adjust screw	2		47	Power feed	1
13	Cap-shaped nut	1		48	Copper gear	1
14	Washer	1		49	Scale ring	1
15	Hand wheel	1		50	Nut	1
16	Nut	1		51	Hand wheel	1
17	Scale ring	1		52	Washer	1
18	Collar	1		53	Cap-shaped nut	1
19	Key	1		54	Key	1
20	Bearing	1		55	key	1
21	Support plate	1				
22	Screw	4				
23	Bearing	1				
24	Lead screw	1				
25	Lead screw nut	1				
26	Washer	1				
27	Screw	1				
28	<b>Center shaft</b>	1				
29	T-screw	4				
30	Washer	4				
31	Nut	4				
32	Oil cup	2				
33	Handle	2				
34	Bevel iron	1				
35	Adjust screw	2				



C. Z Head

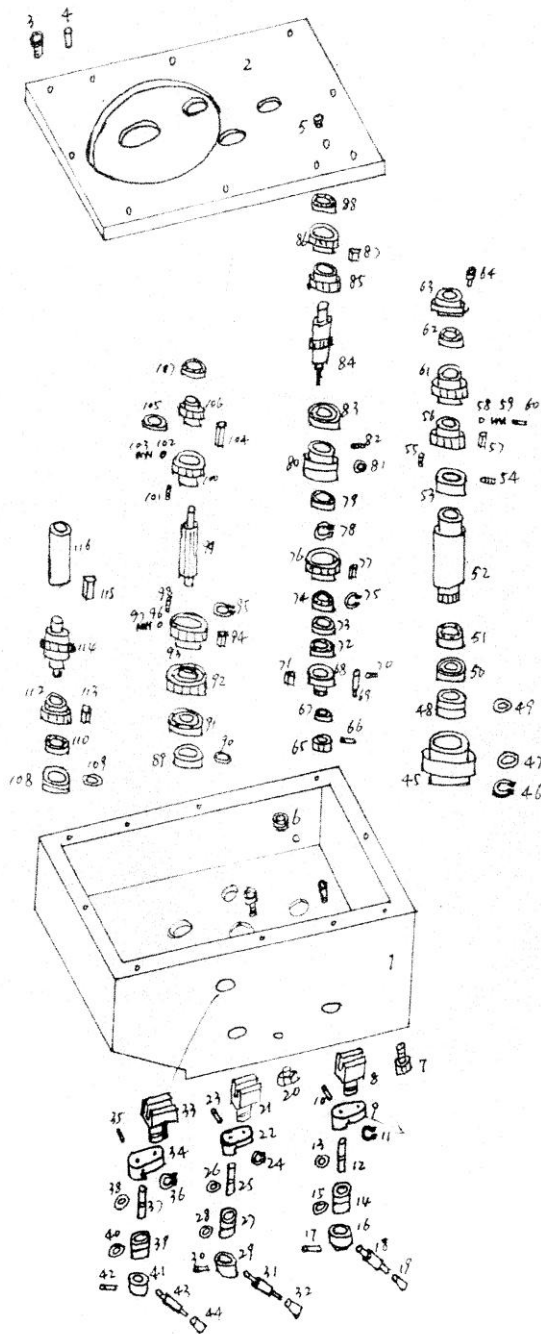
## C Z-Head

NO.	NAME	Q'TY		NO.	NAME	Q'TY
C1	Gear box	1		41	Sleeve	1
2	Crescent ring	1		42	Nut	1
3	Bearing	1		43	Block	1
4	Crescent ring	1		44	Pin	1
5	Bracket base	1		45	Screw	1
6	Screw	4		46	Nut	1
7	Gear shaft	1		47	Limited block	1
8	Key	1		48	Sleeve	1
9	Spring	1		49	Spring	1
10	Guide plate	1		50	Bar	1
11	Crescent ring	1		51	Sleeve	1
12	Bevel gear	1		52	Shaft	1
13	Crescent ring	1		53	Pin	1
14	Crescent ring	1		54	Shaft	1
15	Screw	1		55	Fixed base	1
16	Handle base	1		56	Pin	2
17	Plunger	1		57	Screw	2
18	Lock screw	1		58	Handle	1
19	Handle	1		59	Handle ball	1
20	Screw	3		60	Worm gear	1
21	Operation handle	3		61	Screw	6
22	Handle ball	3		62	Bracket	1
23	Worm gear box	1		63	Screw	5
24	Oil cup	1		64	Pin	2
25	Screw	3		65	Gear shaft	1
26	Bearing	1		66	Sleeve	1
27	Plunger	1		67	Pin	1
28	Screw	3		68	Handle	1
29	Bearing	1		69	Steel ball	1
30	Worm shaft	1		70	Spring	1
31	Scale ring	1		71	Screw	1
32	Key	1		72	Bearing	1
33	Handle wheel	1		73	Worm gear	1
34	Washer	1		74	Crescent ring	1
35	Nut	1		75	Worm shaft	1
36	Lock block	1		76	Sleeve	1
37	Lock block	1		77	Key	1
38	Lock handle	1		78	Joint gear	1
39	Limited block	1		79	Spring	1
40	Limited bar	1		80	Sleeve	1

# C Z-Head

NO.	NAME	Q'TY		NO.	NAME	Q'TY
C81	Sleeve	1				
82	Pin	1				
83	Pin	1				
84	Guide bar	1				
85	Cover	1				
86	Screw	1				
87	Nut	1				
88	Teeth shaft	1				
89	Bearing	1				
90	Spindle shaft	1				
91	Pin shaft	1				
92	Gear sleeve	1				
93	Gear	1				
94	Gear	1				
95	Bearing	1				
96	Crescent ring	1				
97	Sleeve	1				
98	Bearing	2				
99	Crescent ring	1				
100	Crescent ring	1				
101	Gear	1				
102	Key	1				
103	Bearing	1				
104	Gear	1				
105	Gear shaft	1				
106	Bearing	1				
107	Cover	1				
108	Screw	1				
109	Spindle	1				
110	Nut	1				
111	Cam ring	1				
112	Nut	1				
113	Bearing	1				
114	Spindle sleeve	1				
115	Bearing	1				
116	Sealed ring	1				
117	Key	2				
118	Screw	2				
119	Draw bar	1				
120						





D. Z-head box

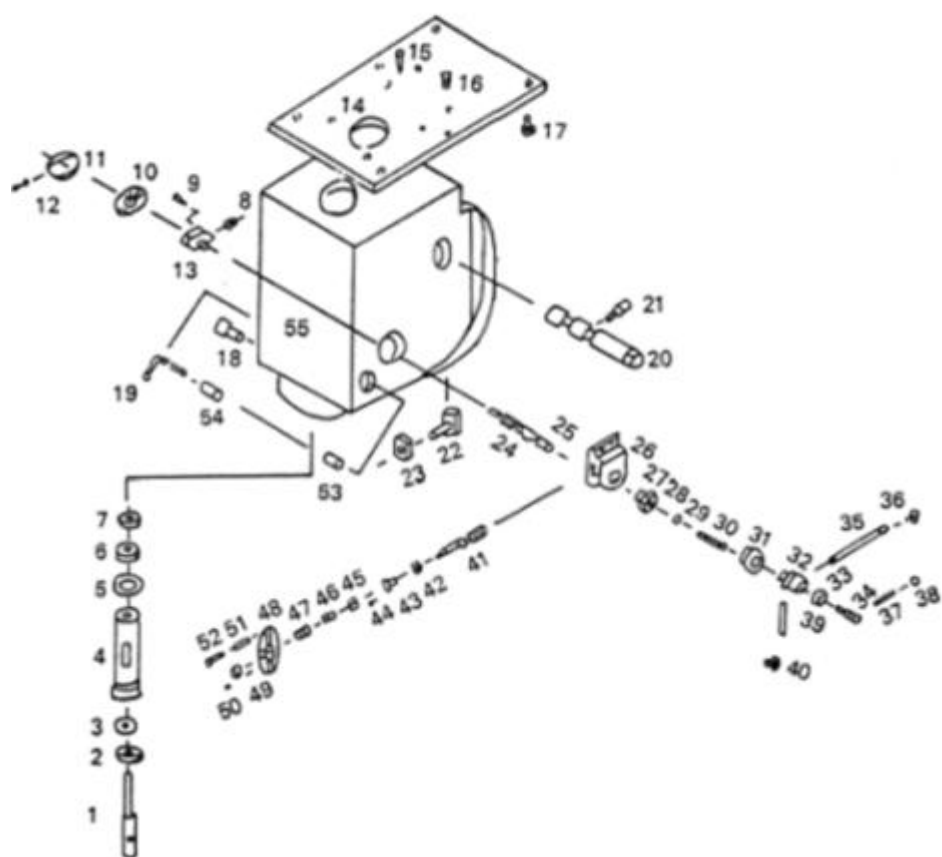
## D    Z-Head box

NO.	NAME	Q'TY		NO.	NAME	Q'TY
D1	Housing	1		41	Handle	1
2	Cover	1		42	Pin	1
3	Screw	8		43	Handle	1
4	Pin	2		44	Handle-ball	1
5	Oil plunger	1		45	Sleeve	2
6	Oil plunger	1		46	Crescent ring	1
7	Screw	4		47	Sealed ring	1
8	Lift fork	1		48	Oil -seal base	1
9	Link block	1		49	Sealed ring	1
10	Pin	1		50	Oil seal	1
11	Crescent ring	1		51	Bearing	1
12	Shaft	1		52	Spindle sleeve	1
13	Sealed ring	1		53	Sleeve	1
14	Sleeve	1		54	Screw	1
15	Sealed ring	1		55	Screw	1
16	Handle	1		56	Gear	1
17	Pin	1		57	Key	1
18	Handle	1		58	Steel ball	1
19	Handle-ball	1		59	Spring	1
20	Oil position	1		60	Screw	1
21	Lift fork	1		61	Gear	1
22	Link block	1		62	Bearing	1
23	Pin	1		63	Cover	1
24	Crescent ring	1		64	Screw	3
25	Shaft	1		65	Nut	1
26	Sealed ring	1		66	Pin	1
27	Sleeve	1		67	Washer	1
28	Sealed ring	1		68	Gear	1
29	Handle	1		69	Bolt	1
30	Pin	1		70	Screw	1
31	Handle	1		71	Key	1
32	Handle-ball	1		72	Bearing	1
33	Lift fork	1		73	Sleeve	1
34	Link block	1		74	Bearing	1
35	Pin	1		75	Crescent ring	1
36	Crescent ring	1		76	Gear	1
37	Shaft	1		77	Key	1
38	Sealed ring	1		78	Crescent ring	1
39	Sleeve	1		79	Bearing	1
40	Sealed ring	1		80	Bearing base	1

# D Z-Head box

NO.	NAME	Q'TY		NO.	NAME	Q'TY
D81	Sealed ring	1				
82	Screw	1				
83	Oil seal	1				
84	Gear shaft	1				
85	Gear	1				
86	Gear	1				
87	Key	1				
88	Bearing	1				
89	Plunger	1				
90	Sealed ring	1				
91	Bearing	1				
92	Gear	1				
93	Gear	1				
94	Key	1				
95	Crescent ring	1				
96	Steel ball	2				
97	Spring	2				
98	Screw	2				
99	Spindle shaft	1				
100	Gear	1				
101	Screw	2				
102	Steel ball	2				
103	Spring	2				
104	Key	1				
105	Washer	1				
106	Gear	1				
107	Bearing	1				
108	Plunger	1				
109	Sealed ring	1				
110	Bearing	1				
112	Gear	1				
113	Key	1				
114	Gear shaft	1				
115	Key	1				
116	Link sleeve	1				
117						
118						
119						
120						

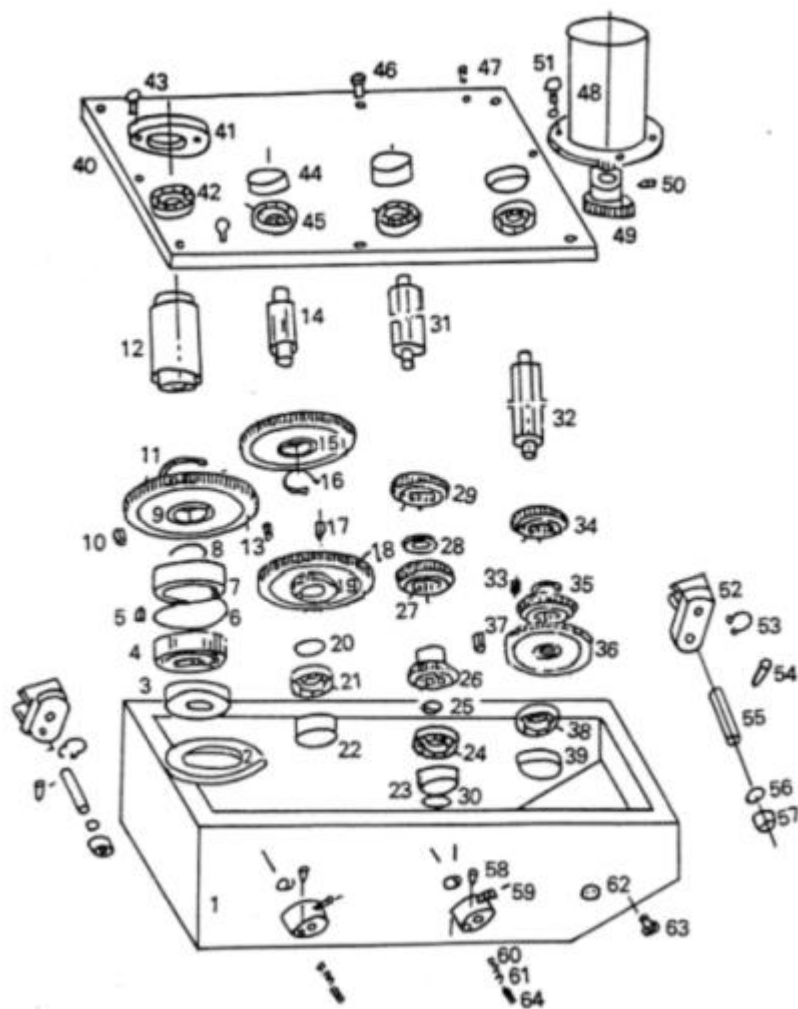
E: Gear box



## E:GEAR BOX

NO.	NAME	QUTY	NO	NAME	QUTY
E1	SPINDLE	1	E31	SCALE RING	1
2	DUST COVER	1	32	HANDLE BRACKET	1
3	BEARING	1	33	COVER	1
4	SLEEVE	1	34	BOLT	1
5	BEARING	1	35	HANDLE BAR	3
6	WASHER	1	36	KNOB	3
7	NUT	1	37	HANDLE	1
8	SCREW	1	38	HANDLE COLLAR	1
9	SCREW	1	39	SCALE	1
10	SPING PLATE	1	40	RIVET	2
11	SPRING CAP	1	41	WORM GEAR	1
12	SCREW	1	42	BEARING	1
13	SPRING SEAT	1	43	SMALL COVER	1
14	BASE	1	44	SCREW	3
15	PIN	2	45	BEARING	1
16	SCREW	6	46	COLLAR	1
17	SCREW	6	47	SCALE RING	1
18	BOLT	1	48	HANDLE WHEEL	1
19	CLAMP HANDLE	1	49	HANDLE	1
20	WORM GEAR	1	50	HANDLE	1
21	SCREW	1	51	NUT	1
22	T-BOLT	3	52	KEY	1
23	NUT	3	53	CLAMP BLOCK	1
24	FEED SHAFT	1	54	CLAMP HANDLE	1
25	KEY	1	55	BOX	1
26	WORM BOX	1			
27	SCREW	3			
28	BEVEL GEAR	1			
29	CRESCENT RING	1			
30	SPRING	1			

# F: Gear head



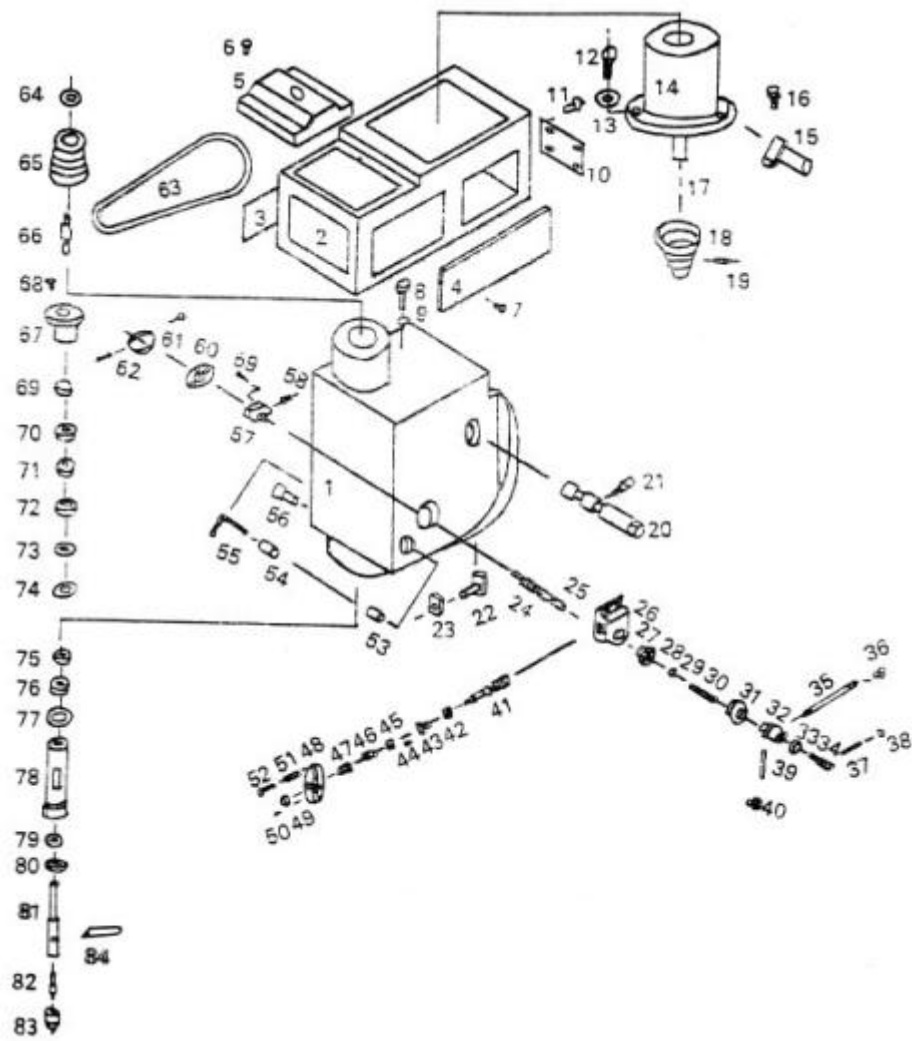
## F:GEAR HEAD

NO.	NAME	QUTY	NO	NAME	QUTY
F1	BOX	1	31	DRIVING SHAFT	1
2	COLLAR	1	32	DRIVING SHAFT	1
3	OIL SEAL	1	33	SCREW	1
4	BALL BEARING	1	34	GEAR	1
5	SCREW	1	35	GEAR	1
6	O-RING	1	36	GEAR	1
7	COLLAR	1	37	KEY	1
8	RETANING RING	1	38	BEARING	1
9	GEAR	1	39	COLLAR	1
10	KEY	1	40	BOX COVER	1
11	RETAINING RING	1	41	COLLAR	1
12	SHAFT	1	42	BEARING	1
13	KEY	1	43	SCREW	4
14	DRIVING SHAFT	1	44	COLLAR	3
15	GEAR	1	45	BEARING	3
16	RETANING RING	1	46	SCREW	6
17	SCREW	1	47	PIN	2
18	GEAR	1	48	MOTOR	1
19	GEAR	1	49	GEAR	1
20	O-RING	2	50	SCREW	1
21	BALL BEARING	1	51	BOLT	4
22	COLLAR	1	52	LIFTFORK	2
23	COLLAR	1	53	CRESCENT RING	2
24	BALL BEARING	1	54	PIN	2
25	RETAINNG RING	1	55	SHAFT	2
26	GEAR	1	56	O-TING	2
27	GEAR	1	57	COLLAR	2
28	COLLAR	1	58	PIN	2
29	GEAR	1	59	HANDLE	2
30	O-RING	1	60	SCREW	2

[illegible]



## G BELT HEAD PART



## G BELT HEAD PART

NUMBERP	NAME	QUASTITY
G 1	SPINDLE BOX	1
2	MOTOR BASE	1
3	LEFT COVER	1
4	WRIGHT 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	3
24	FEED SHAFT	1
25	KEY	1
26	WORM BOX	1
27	SCREW	3
28	BEVEL GEAR	1
29	RETAINING RING	1
30	SPRING	1
31	SCALE RING	1

## G BELT HEAD PART

NUMBERP	NAME	QUASTITY
G32	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

## G BELT HEAD PART

NUMBERP	NAME	QUASTITY
G 63	V BELT	1
64	NUT	1
65	SPINDLE PULLEY	1
66	SPRING SLEEVE	1
67	COLLAR	1
68	SCREW	3
69	RETAINING RING	1
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	BUST COVER	1
81	SPINDLE	1
82	SPINDLE BAR	1
83	DRILL CHUCK	1
84	WEDGE SHIFTER	1

DRILLING & MILLING MACHING

# QUALITY CERTIFICATE

ACCURACY TESTING LIST

1	Flatness	a. horizontal	0.04/1000	
		b. cross	0.04/1000	
2	Worktable flatness		0.04/200	
3	Run out of spindle bore	a. end spindle face	0.02	
		b. 100mm to spindle face	0.05	
4.	The perpendicular between spindle and table	a. longitudinal	0.10/100	
		b. cross	0.10/100	
5	The perpendicular between sleeve vertical moving and table cross moving		0.12/100	
6	The parallelism between work flatness and table moving	a. horizontal	0.05/100	
		b. cross	0.05/100	
7	The perpendicular between column guidway and table	a. horizontal	0.05/300	
		b. cross	0.05/300	
8	The parallelism between basis “T” and table		0.05/300	
			0.20/200	