CRAFTEX
CRAFT EXCELLENCE

Model CT054

KNEE MILLING / DRILLING MACHINE w/ STAND

Thank you for using the CT054 milling & drilling machine. In order to make the machine provide you with years of accurate service. Please read this manual carefully before using.

1.Main use and scope of application

This machine has wide scope of application. It can mill plane and slope. drill hole and bore hole. It is suitable for mean or small spare's cutting, milling and maintain.

2. Technical data

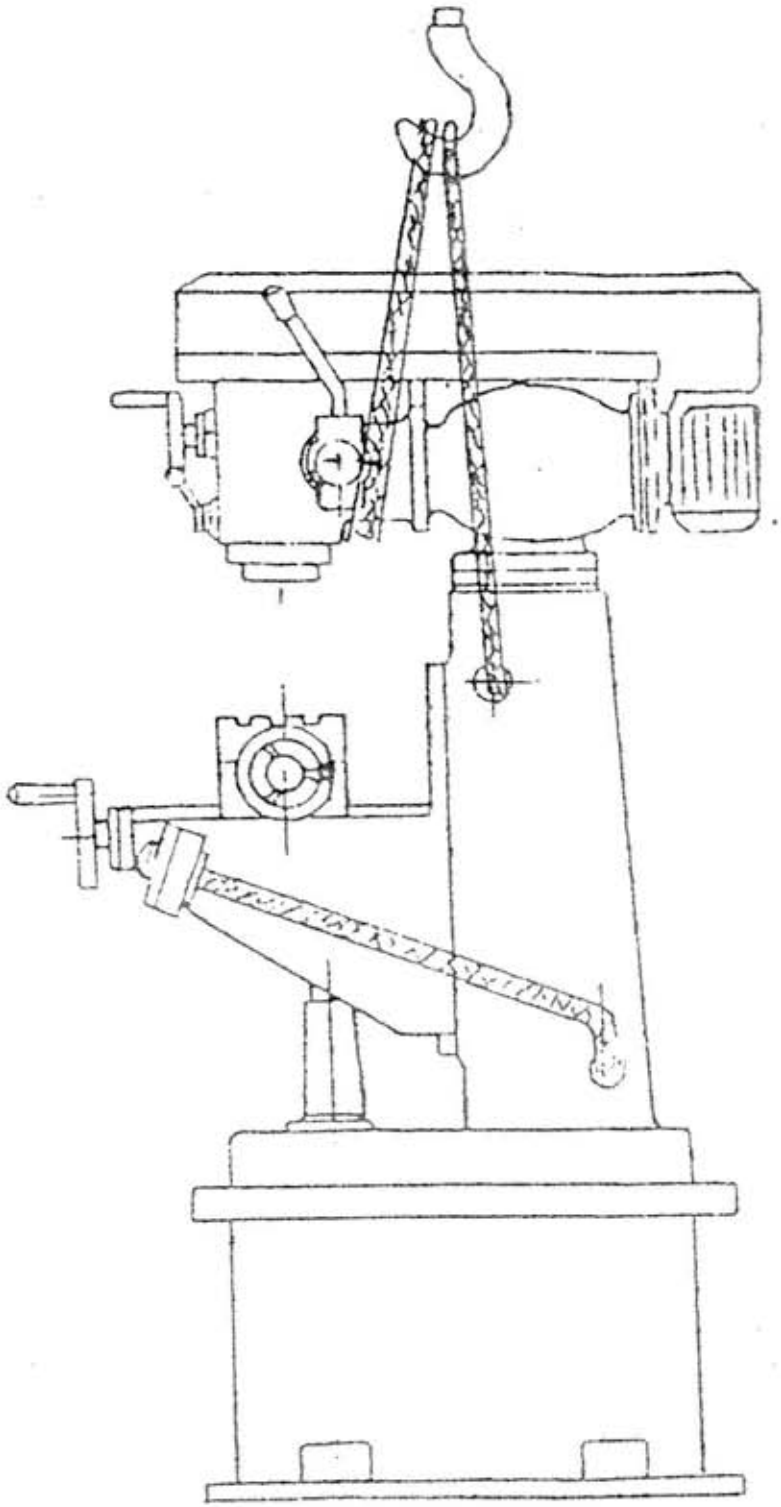
Model	CT054
Max. Drilling capacity (cast)	Φ25mm(1")
(steel)	Φ20mm(4/5")
Max.Diameter of face milling cutter	Φ80mm(3 1/6")
Max.Diameter of ending milling cutter	Φ20mm(1 1/10")
Max.Distance between spindle nose to table	Φ300mm(12")
Spindle taper	MT3(R8)
Max.spindle travel	65mm(2 3/5")
Spindle sleeve diameter	Φ14mm(6/11")
Range of spindle speed	200-2300rpm
Step of spindle speed	9steps
Rotation angle of head of end milling in vertical surface	±45°
Rotation angle of headstock in level surface	360°
Longitudinal travel of table	175mm(6 7/8")
Transverse travel of table	500mm(19 3/4")
Vertical travel of table	500mm(19 3/4")
T slot size	3×14mm(3/25"×6/11")
Table area	660×156mm(26 2/5"×6 1/4")
Motor power	750W
Motor voltage	220V/50HZ
Gross weight	420KG
Net weight	340KG
Packing size (not including frame)	1145×1055×1370mm
(including frame)	1145×1100×1920mm

3. Mounting and lubricating

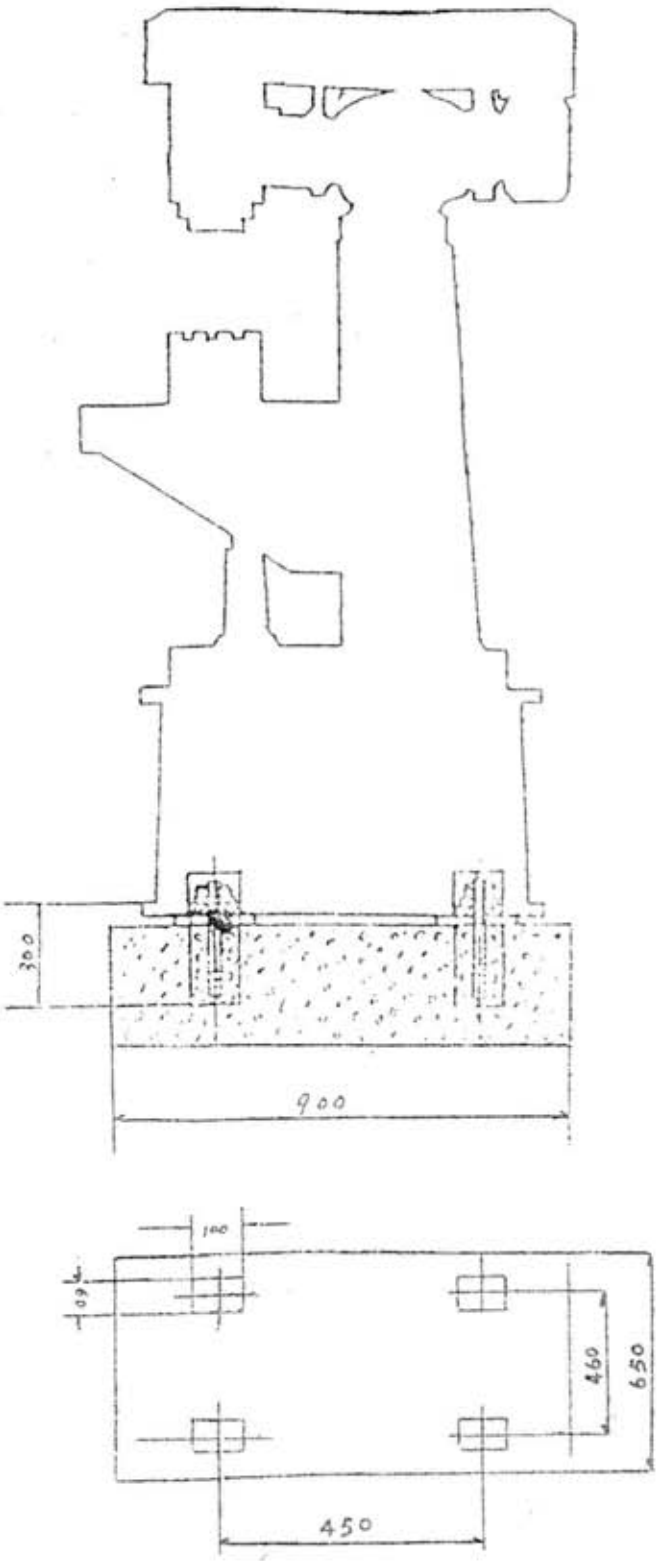
(1) When move the machine after it is opened,you should put the steel rope at the site that figure (2) shows. Let the steel rope not to touch the knobs and the machine direetly to avoid damaging paint when moving.

(2) Don't mount the machine at the sunshine place to avoid the deformity and loss of accuracy of machine.

(3) According the machine's foundation size (figure 3),pour concrete base on the solid ground. Use level gauge and bearer to adjust the table's transverse and longitudinal level. Allowable error 0.03/500mm.



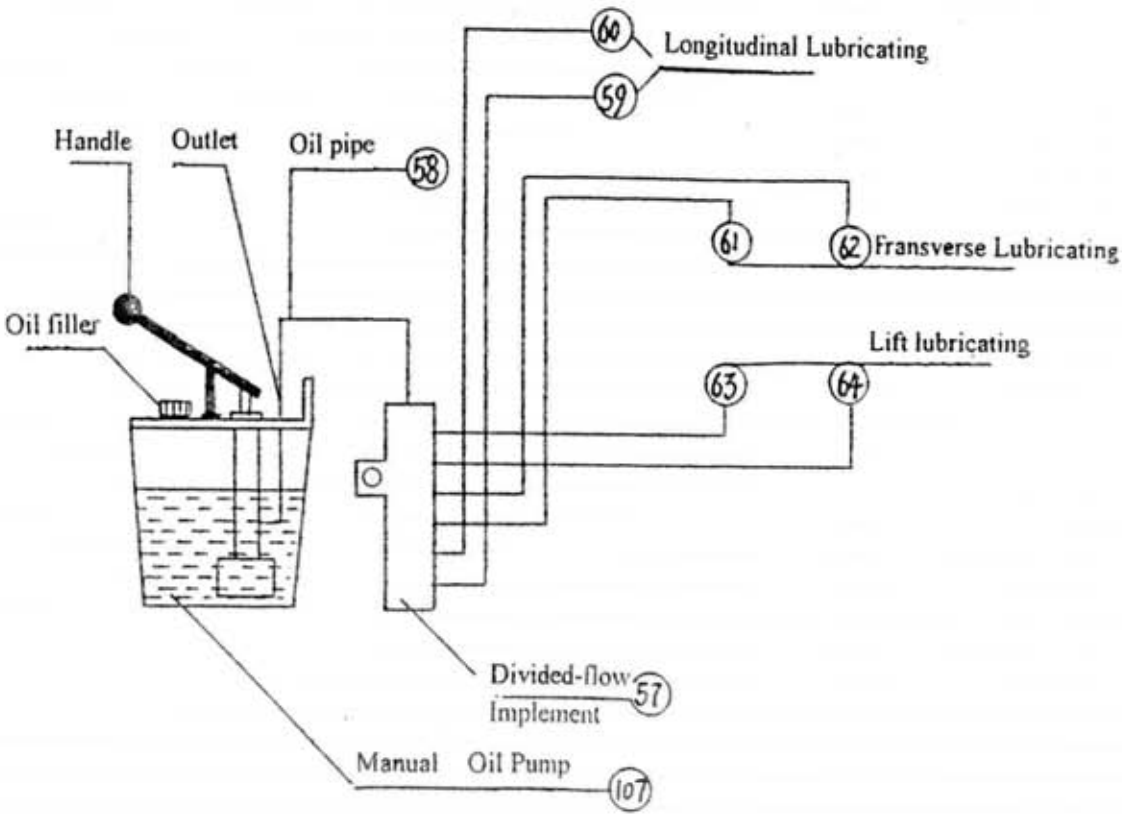
Hoisting Figure(Figure 2)



Installing Foundation Figure (Figure 3)

(4) The machine has been besmeared an antirust grease on the processing face before packing. The grease should be completely removed before operating the machine. Commercial degreaser, kerosene or similar solvent can be used to remove the grease from the machine. But don't get the solvent to touch belts or other rubber parts otherwise these rubber parts will be eroded.

(5) The manual lubricating pump is installed on the machine. Before using coat all track faces of movable table, middle carriage and lift base with a light lubricant. You'd better use clean 30# machine oil(Engler degree 3.8-4.6E50).Oil pipe as figure 4 shows.



Lubricating Position Figure (Figure 4)

Some notes when use manual lubricant pump:

(1) Can press the handle one time when using the manual lubricant pump pours the oil. After the handle resets, you can press again . That can avoid the pump being damaged.

(2) Clean the pump box timely, make the oil pipe unblocked.

(3) Check the oil pipe regularly. If there is broken phenomenon. repair or change it in time to avoid damage of the machine lubricating faces for not being well lubricating.

4. Structure and feature of machine's every part

(1) The head of end milling part

The head of end milling can rotate ±45° in vertical surface and 360° in level surface, so that the size of work piece can be bigger than work table. The spindle of head of end milling has high rotation speed, so it is very suitable for small cutters to cut. The spindle sleeve is feed by hand. There are lock handle, gauge plate, adjustable screw, clutch screw etc. device, that can correctly control the processing size and strengthen the stability of cut.

The spindle adopts high precision bearing, has low noise, high working precision and long life functions.

(2) The column part

The column and base adopt apart structure, fixed by blots. The rotation frame is set on the top of column and can rotate 360° in it's working level surface.

(3) The table part

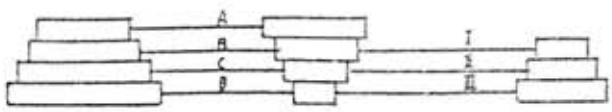
The table's longitudinal and transverse feed are all by hand. The longitudinal operation handles are set at two ends of table and the transverse operation handle is set at the front of lift table. The longitudinal travel block of table can be fixed when it moves to the position you need. The transverse travel block of middle carriage can be fixed when it moves to the position you need. That can increase the efficiency of repeat precision when batch producing.

(4) The lift table part

The lift table is located at the front of column, it matches with track of column. Use plug iron to adjust the fit gap of track. The lift movement can be realized by rotating long handle, then using spiral gear to drive the screw rod.

(5) The transmission part

The motor is installed on the fixed plate of belt wheel cover. Loose the handles beside motor. adjust the distance of belt wheel, change the triangle belt's position on the belt wheel that can change the speed. After changing the speed, tighten the handle.



SPINDLE R.P.M

	A	B	C	D
I	610		300	200
II	1330	1070		430
III	2300	1850	1120	

5. Every part's operation

(1) Before operation

a. Fill the lubricant.

b. Check the table, make sure the table is free from dust, oil and deposits.

c. Check the cutters whether they are correctly set and locked safely on the chuck, whether the work-piece is set firmly. Use clamp or vise to hold work-piece, make sure the work-piece doesn't rotate with cutter when it is rotating.

(2) Operation of every part.

① Adjusting the milling head part

a. In order to adapt the connection of every country's machine cutters and accessories, the machine's cutter frame screw arbor, spindle taper and dial have two kinds of calibration, the metric system and British system.

b. Stop the machine before change the spindle speed. Then open the safety cover, according the speed list to adjust. At same time adjust the triangle belt's grade change and tension.

c. Pre-adjust the working depth

The dial on the milling head, the adjusting screw arbor, screws and the bump block on the sleeve are used to pre-adjust the position of working depth. Use screws to adjust it to the dial you need before operation.

d. Clockwise rotate the clutch screw till it tight fix with plane connecting gear,that can realize micro feed. Note: Whether the stop switch is at off position before the motor runs. Whether the transmission safety cover is at close position.

e. The end milling head can rotate ±45° longitudinal vertical surface and 360° in level surface, can adjust it to the position you need through dial choice. When do precise work, should use measuring tools to adjust the milling head. After adjusting, homo-tighten the screws to avoid the screws being out of shape.

② The position of locating bump block

There are two pieces of adjustable blocks at the front side of table's T slot. According the working need to adjust them to increase the efficiency of resetting precision.

③ The adjustment of table,middle carriage and lift table plug iron

There is a long plug iron between the table and middle carriage. There is a adjustable nut at its right side. When adjust the plug iron's degree of tightness, one hand adjusts the nut, the other hand swings the table.till you fell there is light drag.(see figure 5)

④ The locking of table and lift table (see figure 5)

The table has locking handles on moving directions of three coordinates. When working, except moving work-piece, lock the handles to increase its stiffness. But the locking force should be not big to avoid being out of shape

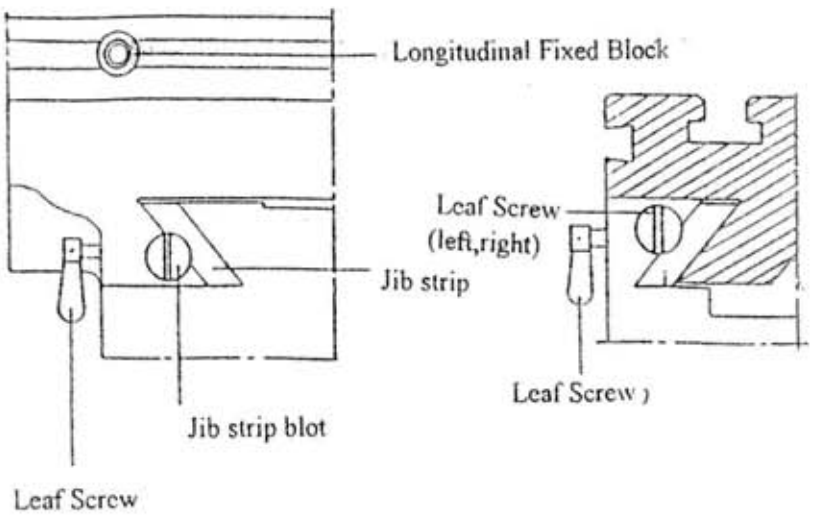


Figure5

⑤ The adjustment of balancing spring of spindle sleeve

a. Dismantle knurling clutch screws at left side of milling head. Get the clutch block,spring and clutch transmission gear out.

b. Loose the socket head cap screw of the handle base's front end at right side of milling head, get down the handle base. Get down the gear bearing's flange cover and three pieces of socket head cap screws .get out the flange cover with gear bearing. Then turn the torque spring and gear bearing to the position you need.put into the body of milling head and aim at the spindle sleeve rack's teeth.

tighten the socket head cap screws in the spindle flange.(see figure 6)

c. When assembling, accord with the contrary sequence of dismantling.

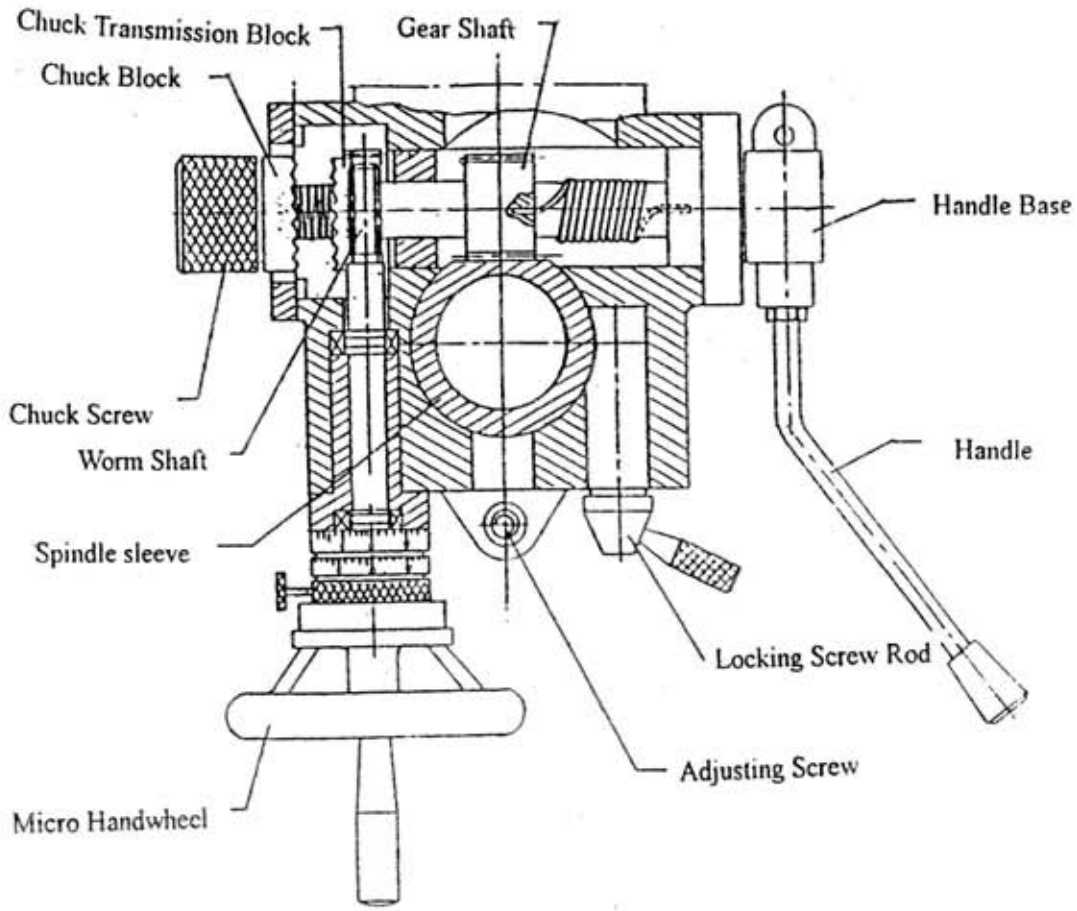


Figure 6

⑧ Dismantling the spindle sleeve

a. Lock the spindle sleeve's locking block.

b. Get down the spacing screw rod and located block at the front of milling head.

c. Get down the gear bearing according the sequence of getting down the adjusting balance spring.

d. Loose the spindle sleeve's locking block, get down the gear bearing.

e. After get down the locking screws from the spindle. lightly tap the upper end of spindle that the spindle can get down.

f. When assembling. accord with the contrary sequence of dismantling.

⑦ Getting down the table and longitudinal screw rod

At first get down the hand wheel and dial ring at two sides of the table, then get down the screw rod base that can push the table out. Get out the screw rod screws. When assembling, accord with the contrary sequence of dismantling.

⑧ Getting down the middle carriage

After getting down the table and screw rod, get down the transverse screw rod and dial ring, then get down the screw rod base, rotate out the screw rod. Get down the screw rod connecting nut and screws,then push out the middle carriage.

⑨ Changing cutter

a. Get down the mill or drill chuck mandrel. Use spanner to loose the mandrel blot on the top of spindle, rotate about two to three rounds. Hit the top of mandrel blot using wood beetle. The cutter taper is loose for being hit, one hand holds the chuck mandrel, the other hand turns down the mandrel blot.

b. Installing the face milling cutter or cutter mandrel

Insert the cutter and cutter mandrel into the spindle taper hole. Tighten the mandrel blots, but not too tight.

(3) After operation

a. Turn off power

b. Get down the cutter.

c. Clean the machine and coat it with lubricant.

d. Cover the machine with cloth to keep the dust out.

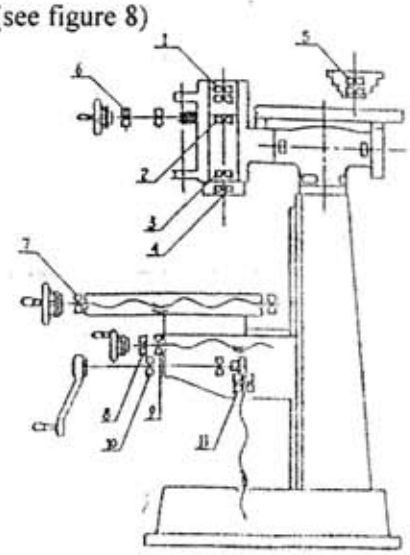
6. Electric system(see figure 7)

Electric data: ① Rated voltage: 220V/110V, 380V

② Rated frequency: 50HZ/60HZ, 50HZ

③ Rated power: 750W

7.Rolling bearing(see figure 8)



Bearing Position(Figure 8)

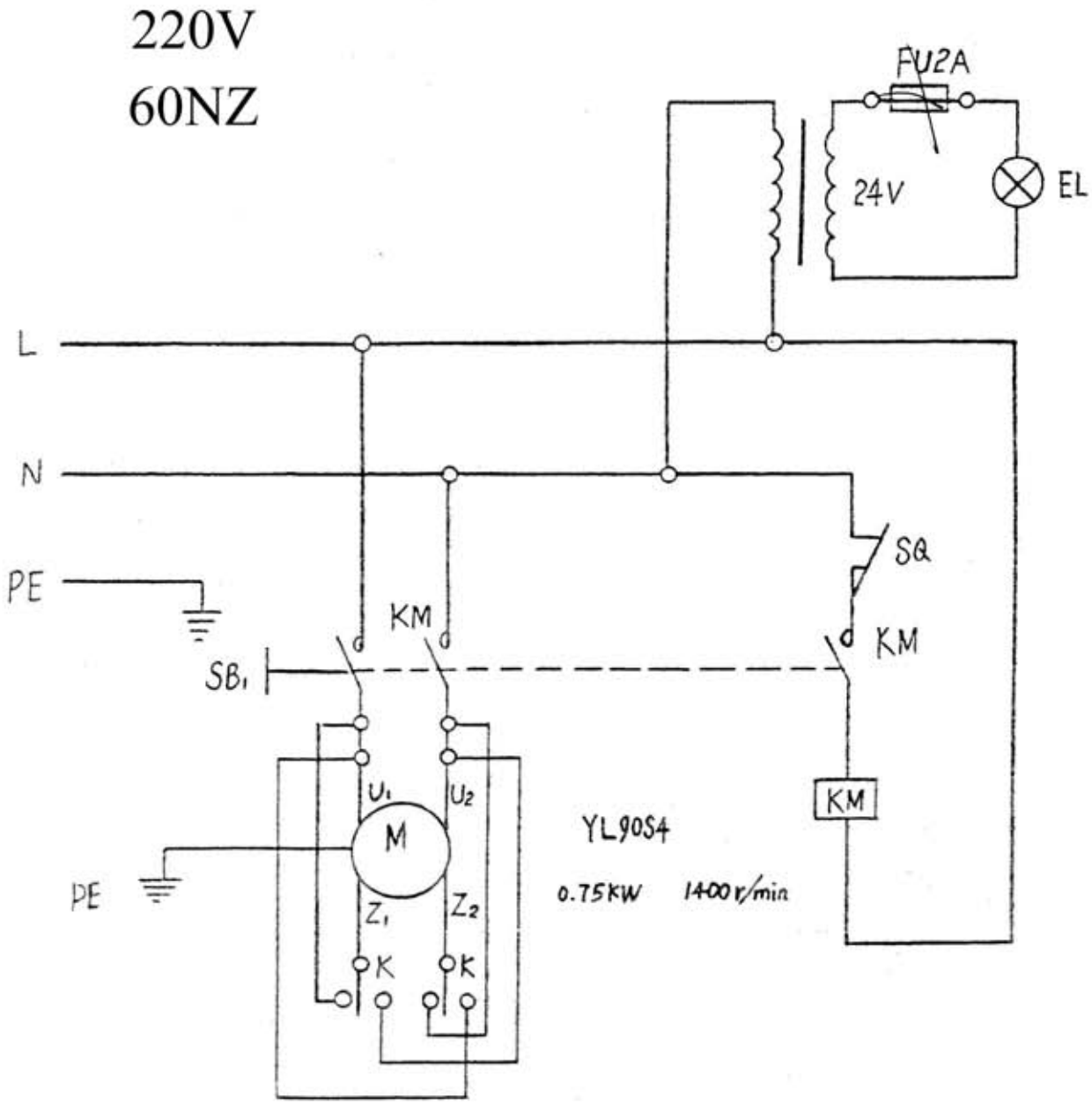

220V
60NZ
FU2A
24V
EL
L
N
PE
KM
SB1
SQ
KM
U1
U2
M
Z1
Z2
K
K
KM
PE
YL90S4
0.75KW
1400r/min

Figure 8

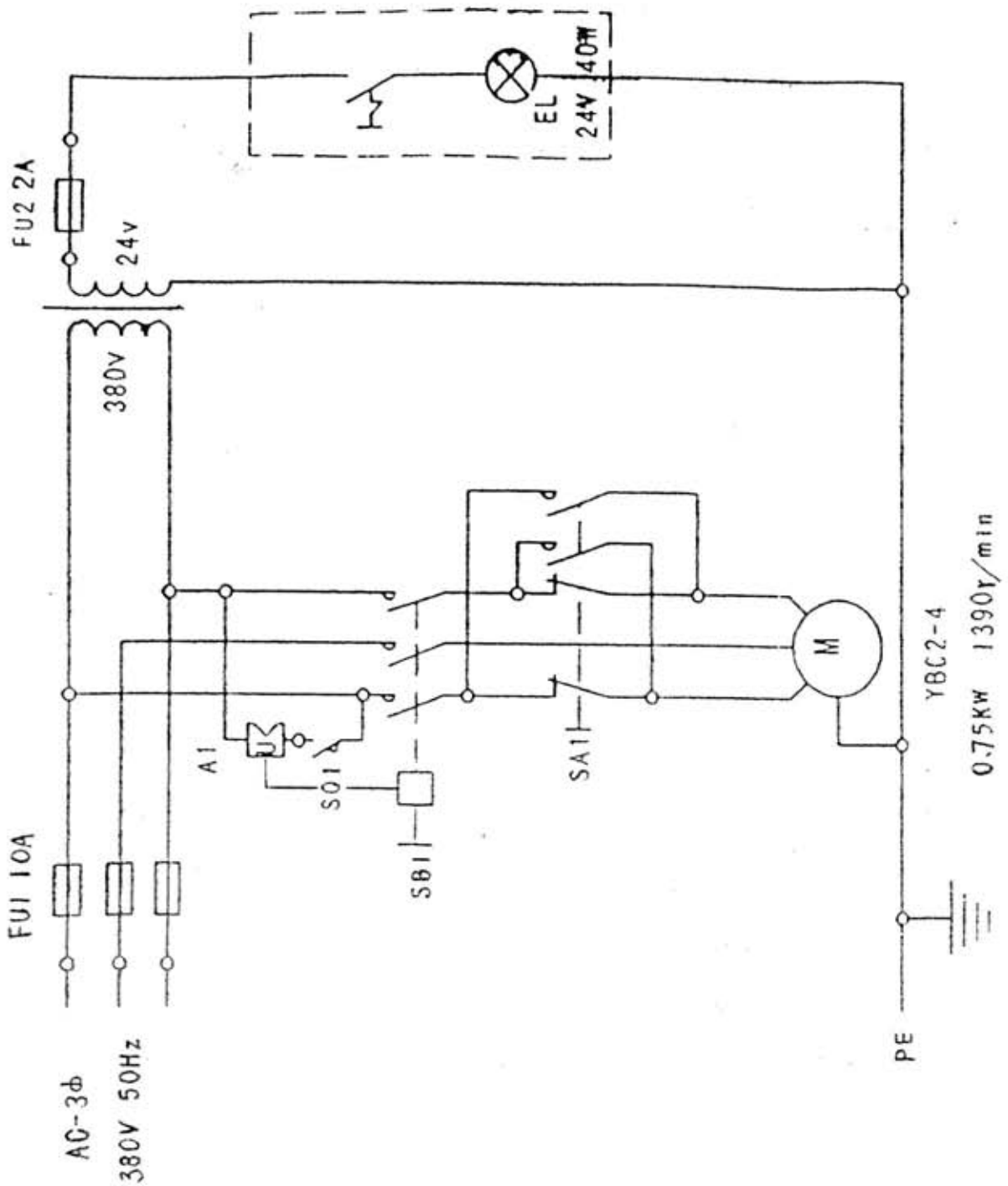

FU2 2A
24v
EL
24V 40W
380v
A1
SQ1
SB1
SA1
M
YBC2-4
0.75KW 1390r/min
FU1 10A
AC-3φ
380V 50Hz
PE

Figure 8

NO	Installing position	Bearing name	Mode	Standard No.	Precision grade	Quantity
1	Spline shaft sleeve	Single-row radical ball bearing	6009Z	GB276-84	G	2
2	Spindle sleeve	Single-row taper roller bearing	D6206	GB276-84	D	1
3	Spindle sleeve	Single-row taper roller bearing	D6007	GB276-84	D	1
4	Spindle sleeve	Angle touched radical pushing force ball bearing	7207C	GB297-84	D	1
5	Middle wheel	Single-row radial ball bearing	60034	GB276-84	G	2
6	Worm shaft	Single direction pushing force ball bearing	8102	GB301-89	G	2
7	Longitudinal bearing base	Single-row radical ball bearing	6004Z	GB276-84	G	2
8	Cross bearing base	Single direction pushing force ball bearing	8104	GB301-89	G	1
9	Cross bearing base	Single-row radical ball bearing	6004	GB276-84	G	1
10	Lift transmission base	Single-row radical ball bearing	60034	GB276-84	G	2
11	Lift screw rod	Angle touched radical pushing force ball bearing	7204	GB297-84	D	1

8. Accessory

Drill chuck	1-13mm		1pc
Spanner	17-19		1pc
Socket head cap spanner	4, 5, 6, 8	each type	1pc
Wedge			1pc

9. Maintenance

(1) Daily maintenance

a. Fill the lubricant before starting the machine everyday.

b.If the temperature of the spindle is too high or there is strange noise, stop the machine and check it at once for keeping the machine at accurate performance.

c. Keep the work area clean. Turn off power, release the vise, cutters and work-piece from the table. Get rid off the chip and dust from machine. Follow instruction to lubricant or coat antirust oil after finished the work.

(2) Weekly maintenance

a. Clean and coat the cross. longitudinal leading screw with oil.

b. Check the sliding surface and rotating piece whether they are lack of lubricant. If the lubricant is not plentiful,please fill.

(3). Monthly maintenance

a. Precisely adjust the sliding gap at both cross and longitudinal feed directions

b. Lubricate bearing, worm gear and worm shaft to avoid wear.

(4) Yearly maintenance

a. Adjust the table to the horizontal position for maintaining the accuracy.

b. Check the electric cord, plugs and switches at least one time every year to avoid loosening or wearing.

10. SAFETY RULES

(1) Read instruction manual before operating the machine. Learn the machine's application and limitations as will as the specific hazards for it. Operate the machine according the rule strictly.

(2) Ground the machine. If tool is equipped with three-prong plug. it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a two-prong receptacle, the adapter lug must be attached to ground. Don't remove the third prong.

(3) Do not get the machine to run at high speed.

(4) Do not force machine or attachment to do a job for which it is not designed.

(5) Keep cutters sharp and machine clean. Follow instructions to lubricate and change accessories.

(6) The feed direction should be against the cutters' rotating direction.

(7) Make sure the machine is disconnected from power supply while the motor is being mounted, connected or disconnected.

(8) Power should be turned off when maintaining machine and changing cutters.

(9) Use clamp or vise to hold work piece when working. Don't mounting the work-piece when the machine is running.

(10)Keep work area clean. Cluttered areas and benches invite accidents. Keep work area well lighted.

(11)Do not use the machine in damp or wet locations or expose it in rains.

(12)Don't leave until turn off power and the machine stops completely.

(13)Prohibit children go into work area.

(14)Wear proper apparel, non-slip foot. cap and eye protection. Refer to ANSIZ87.1 standard, use face or dust mask if cutting operation is dusty.

(15)Don't stand for long time to operate. Keep proper footing and balance at all time.

(16)Do not operate the machine while the operator is under the influence of drug. alcohol or any medication.

(17)While changing the rotation speed by adjusting the belt, please be careful with your hands.

11. TROUBLE SHOOTING HINTS

Trouble	Probable cause	Remedy
Excessive vibration	1. Motor out of balance	1. Balance or replace motor
	2. Bad motor	2. Replace motor
Motor stop	1. Over feeding	1. Reduce feed rate
	2. Dull cutter	2. Sharpen the cutter
	3. Motor can't build up to running speed	3. Replace or repair motor. Check fuses of three legs on three phase motor and replace them if necessary.
	4. Bad motor	4. Replace motor
Having noise when be operated	1. Improper adjustment of the spindle sleeve	1. Adjust the spindle sleeve
	2. the spindle noise	2. Lubricate the spindle
	3. Motor noise	3.Check the motor bearing or motor fan's cover
	4. Excessive vibration	4. Check and remedy if excessive vibration
Drill chuck or cutter are too hot,work piece burns	1. Excessive speed	1. Reduce speed
	2. Chips not be cleaned	2. Get rid off chips
	3. Dull cutter	3. Change cutter or sharpen cutter
	4. Feed rate too slow	4. Increase the feed rate
	5. Rotation direction of drill is incorrect	5.Change the motor's rotating direction
	6. Use incorrect cutting oil or coolant(on steel)	6. Use correct cutting oil
Drill leads off	1. No drill spot	1. Using drift punches points
	2. Drill cutting lips off center	2. Regrind drill
	3. The spindle sleeve head is loose	3. Tighten the spindle sleeve
	4. Bearing is loose or damaged	4.Check bearing and reset or change it.
Drilling too deep and the drill swings when it goes out	1. Drill is bent	1. Replace the drill
	2. Bearing	2. Replace of reset the bearing
	3. Drill is not seated properly in chuck	3. Reset the chuck
Work piece or clamp is loosen or rotation	1. Fail to clamp work piece or the clamp installed on table is not firm	1.Clamp work piece again or fix the clamp on the table

CT054 Components List

No.	Name	Quantity
01-1	Head cover	1
01-2	Rotation speed mark	1
01-3	Hinge	2
01-4	Armtie	2
01-5	Buffer hammer	1
01-6	Motor belt wheel	1
01-7	Motor base	1
01-8	Spring	1
01-9	Pin cover	1
01-10	Pin	1
01-11	Locking nut	1
01-12	Triangle belt A762	1
01-13	Triangle belt A889	1
01-14	Click shaft	1
01-15	Holding base	1
01-16	Middle belt wheel holding frame	1
01-17	Middle belt wheel holding shaft	1
01-18	Middle belt wheel shaft	1
01-19	Middle belt wheel	1
01-20	Spindle belt wheel	1
01-21	Head cover base	1
01-22	Cutter rod blot	1
01-23	Holding base	1
01-24 02-71	T type blot M10x42	1
01-25	Motor	1
01-26	Handle base	1
01-27	Handle cover	1
01-28	Handle rod	1
01-29	Scale screw	2
01-30	Scale blot	1
01-31	Scale indicating block	1
01-32	Scale indicating mark	1
01-33	Locking block B	1
01-34	Locking block A	1
01-35	Locking blot	1
01-36	Locking handle	1
01-37	Shaft holding cover	1
01-38	Centre arm twisting spring	1
01-39	Gear shaft	1
01-40	Through cover	1
01-41	Chuck svrew	1
01-42	Chuck block	1
01-43	Chuck spring	1
01-44	Chuck transmission block	1
01-45	Handle blot	1
01-46	Handle cover	1
01-47	Small hand wheel	1
01-48	Vertical dial	1
01-49 02-88	Locking nut II	4
01-50	Buffer	1
01-51	Bearing cover	1
01-52	Socket disk head nut M5x12	12
01-53	Worm rod shaft	1
01-54	Spindle	1
01-55	Spindle sleeve	1
01-56	Washer	1
01-57	Locking screw M30x11.5	1
01-58	Buffer washer	1
01-59	Protective rotating cover	1
01-60	Locking nut I	1

CT054 Components List

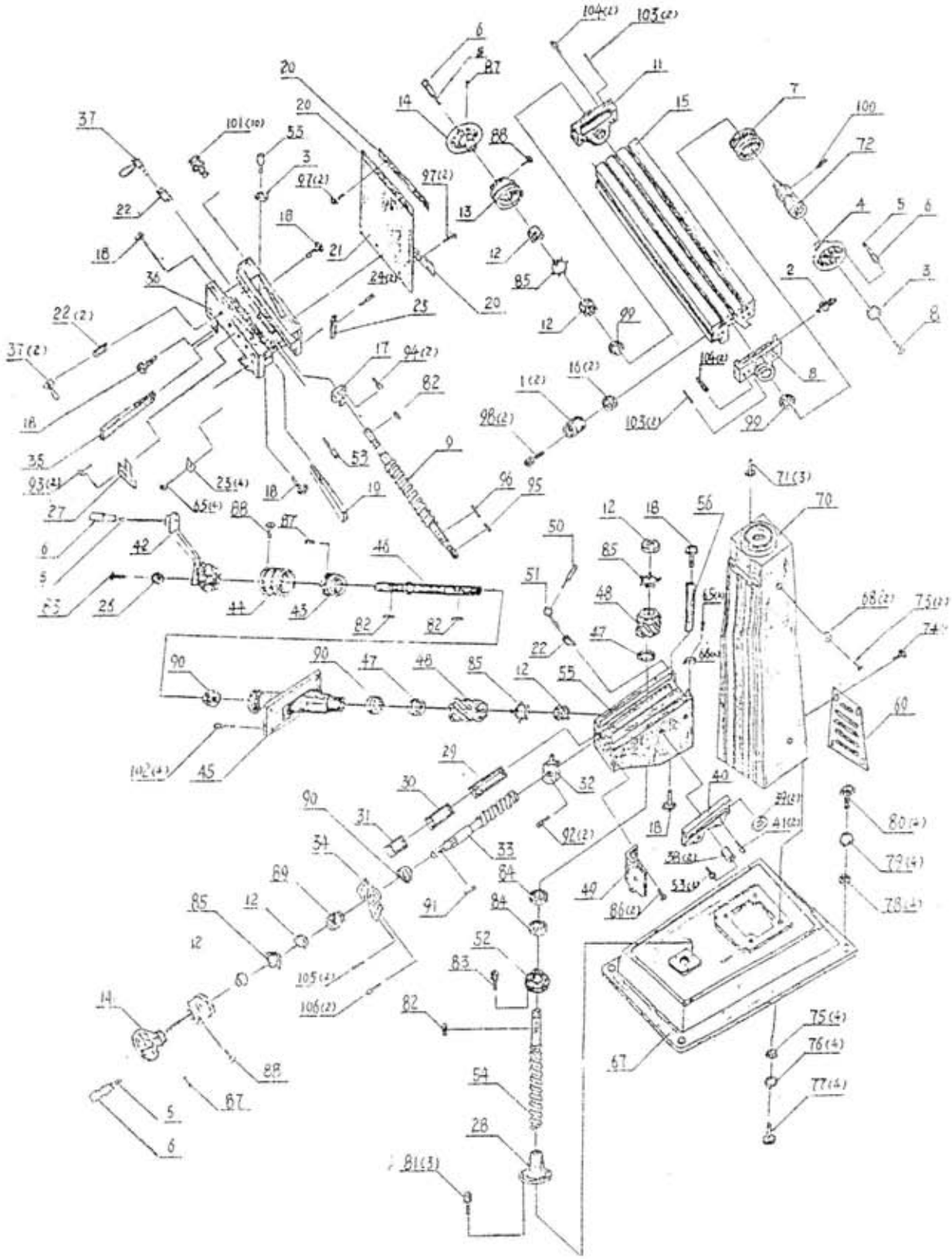
No.	Name	Quantity
01-61	Protective cover	1
01-62	Bearing under cover	1
01-63	Bearing upper cover	1
01-64	Box	1
01-65	Scale	1
01-67	Spline shaft sleeve	1
01-68	Head frame	1
01-69	Bearing cover	1
01-70	Socket disk head nut M4x15	1
01-71	Socket disk head nut M4x10	2
01-72	Flat head rivet Φ5x6	1
01-73	Flat spacer Φ12	1
01-74	Hex head screw M12	1
01-75	Single-row radial ball bearing 6003	2
01-76	Spring baffle ring for hole Φ35	1
01-77	Hex head blot	1
01-78	Hex head screw M5	1
01-79	Round socket head cap nut M6x50	2
01-80	Round socket head cap nut M6x35	2
01-81	Flat spacer Φ4	2
01-82	Socket disk head nut M4x10	2
01-83	Stop spacer Φ45	1
01-84	Locking screw M45x1.5	1
01-85	Round socket head cap nut M6x16	3
01-86	Flat key 8x7x20	1
01-87	Spring baffle ring for hole Φ75	1
01-88	Spring baffle ring for shaft Φ45	1
01-89	Single-row radial ball bearing 6009	2
01-90	Cap type screw M10	7
01-91	Flat spacer Φ8	4
01-92	Hex head blot M20	4
01-93	Flat key 6x6x25	1
01-94	Socket head cylinder end tightening nut M6x12	1
01-95 01-106	Socket head nut M5x6	6
01-96	Flat key 4x4x20	1
01-97	Single direction pushing force ball bearing	2
01-98 01-111	Socket head nut M5x20	6
01-99	Locking screw M14x1.5	2
01-100	Sock head cylinder end tighting nut M6x15	1
01-101	Stop washer Φ30	1
01-102	Single row radial ball bearing D6206	1
01-103	Single row radial ball bearing D6207	1
01-104	Angle touched radical pushing force ball bearing 7027C	1
01-105	Flat key 5x5x16	1
01-107	Socket disk head nut M4x7	3
01-108	Socket head nut M5x12	2
01-109	Flat key 6x6x16	1
01-110	Pouring oil cup	1
01-112	Socket head nut M8x20	1
01-113	Hex head screw M10	1
01-114	Spring washer for shaft Φ19	1
01-115	Knob	1

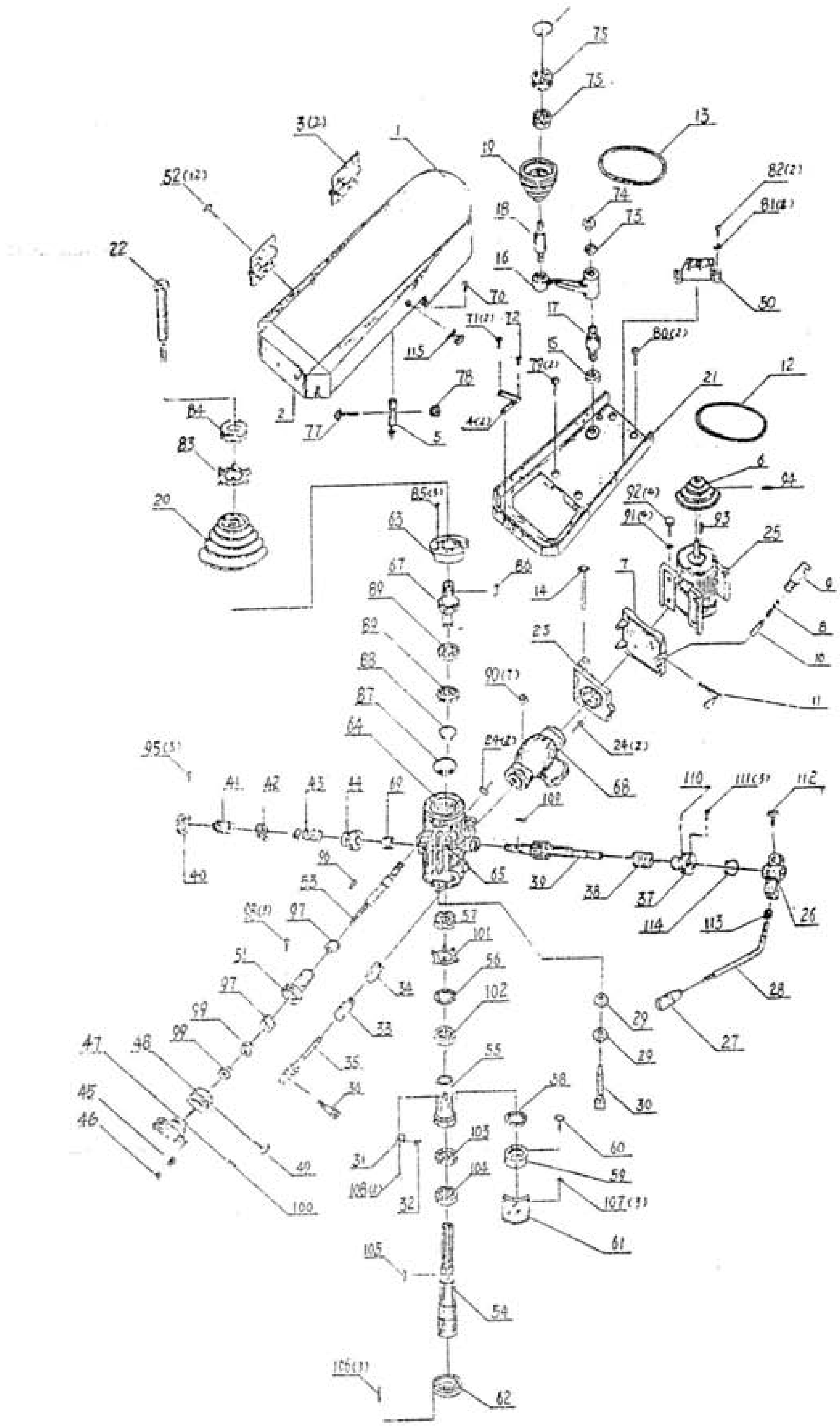
CT054 Components List

No.	Name	Quantity	No.	Name	Quantity
02-1	Longitudinal fined block	2	02-31	Protective expanded plate	1
02-2	Oil pipe connector	1	02-32	Cross upper rod screw	1
02-3	Baffle ring	2	02-33	Cross upper rod	1
02-4	Middle hand wheel(ringt)	1	02-34	Cross bearing base	1
02-5	Handle screw rod	4	02-35	Cross bearing Jib strip	1
02-6	Handle cover	4	02-36	Middle carriage	1
02-7	Right dial disk	1	02-37	Locking screw rod	3
02-8	Right bearing base	1	02-38	Cross fixed complement	2
02-9	Longitadinal upper rod	1	02-39	Cross fixed screw	2
02-11	Left bearing base	1	02-40	Cross fixed base	1
02-12	Locking screw M20x1.5	6	02-41	Socket head nut M6x25	2
02-13	Left dial disk	1	02-42	Lift handle	1
02-14	Big hand wheel	2	02-43	Lift chuck	1
02-15	Table	1	02-44	Lift dial disk	1
02-16	Fixed screw	2	02-45	Lift transmission base	1
02-17	Longitudinal upper rod screw	1	02-46	Lift transmission shaft	1
02-18	Adjustable nut	6	02-47	Adjusting plate	2
02-19	Longitudinal jib strip	1	02-48	Transmission gear	2
02-20	Protective clip plate	3	02-49	Switch holding frame	1
02-21	Protective cover	1	02-50	Lift locking spanner	1
02-22	Locking oblique pin	3	02-51	Lift locking screw rod	1
02-23	Cross scraper(right left 2pcs)	4	02-52	Lift bearing end cap	1
02-24	Socket head nut M5x16	2	02-53	Socket head nut	4
02-25	Cross fixed square strip	1	02-54	Lift upper rod	1
02-26	Big baffle ring	1	02-55	Lift base	1
02-27	Longitudinal fixed holding frame	1	02-56	Lift jib strip	1
02-28	Lift upper rod screw	1	02-57	Divided flowcomplement	1
02-29	Protective expanded plate	1	02-58	Pumping oil pipe	1
02-30	Protective expanded plate	1	02-59	Longitudinal oil pipe	1

CT054 Components List

No.	Name	Quantity
02-60	Longitudinal oil pipe	1
02-61	Cross left oil pipe	1
02-62	Cross right oil pipe	1
02-63	Rising left oil pipe	1
02-64	Rising right oil pipe	1
02-65	Socket disk head nut	6
02-66	Lift scraper(left right 1pc)	2
02-67	Base	1
02-68	Hoisting mark	2
02-69	Shutter	1
02-70	Column	1
02-72	Sleeve	1
02-73 02-74	Socket disk head nut M5x12	2
02-83 02-86	Socket disk head nut M6x20	7
02-75	Flat spacer Φ14	4
02-76	Spring washer Φ14	4
02-77	Hex head blot M14x55	4
02-78	Flat spacer Φ12	4
02-79	Spring washer Φ12	4
02-80	Hex head blot M12x45	4
02-81	Cylinder socket head nut M8x25	3
02-82	Flat key 6x6x20	4
02-84	Angle touched radical pushing force ball bearing	2
02-85	Stop spacer Φ20	4
02-87	Socket head eylinder end tightening nut	3
02-89	Single direction pushing force ball bearing 8104	1
02-90	Single rowradical ball bearing 6004	3
02-91	Flat key 6x6x18	1
02-92	Cylinder socket head nut M5X25	2
02-93	Cylinder socket head nut M6x12	2
02-94	Cylinder socket head nut M5x20	2
02-95	Flat key 6x6x15	1
02-96	Flat key 3x4x24	1
02-97	Cylinder socket head nut M6x16	4
02-98	Cylinder socket head nut M8x30	2
02-99	Single row radical ball bearing 60042	2
02-100	Socket head cylinder end tighteming nut M5x15	1
02-101	Pipe connector	10
02-102	Cylinder socket head nut M6x25	4
02-103	Tapper pin with screw Φ8x60	4
02-104	Cylinder socket head nut M6x25	4
02-105	Tapper pin with screw Φ8x25	2
02-106	Cylinder socket head nut M8x20	2
02-107	L-8 Manual lubricant pump	1
02-108	JL50D-1 Table lamp	1
02-109	Holding frame	1





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