

# BENCH MILL MACHINE

## Instruction manual



Please read this manual thoroughly and follow all directions carefully



-----SX2.7 / SX2.7D Series-----

# **IMPORTANT SAFETY INSTRUCTION**

***READ ALL INSTRUCTIONS AND WARNINGS BEFORE USING THIS TOOL***

## **Operator**

COMMON SENSE AND CAUTION ARE FACTORS WHICH CANNOT BE BUILT INTO ANY PRODUCT. THESE FACTORS MUST BE SUPPLIED BY THE OPERATOR. PLEASE REMEMBER:

1. When using electric tools, machines or equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury.
2. Keep work area clean. Cluttered areas invite injuries.
3. Consider work area conditions. Do not use machines or power tools in damp, wet, or poorly lit locations. Do not expose equipment to rain, keep work area well lit. Do not use tools in the presence of flammable gases or liquids.
4. Keep children away, all children should be kept away from the work area.
5. Guard against electric shock. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
6. Stay alert. Never operate if you are tired.
7. Do not operate the product if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes might be impaired.
8. Do not wear loose clothing or jewelry as they can be caught in moving parts.
9. Wear restrictive hair covering to contain long hair.
10. Use eye and ear protection. Always wear.
11. Keep proper footing and balance at all times.
12. Do not reach over or across running machines.

## **Before operations**

1. Be sure the switch is OFF when not in use and before plugging in.
2. Do not attempt to use inappropriate attachments in an attempt to exceed the tool's capacity. Approved accessories are available from the dealer or machine maker.
3. Check for damaged parts, before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function.
4. Check for alignment and binding of all moving parts, broken parts or mounting fixtures and any other condition that may affect proper operation. Any part that is damaged should be prop early repaired or replaced by a qualified technician.
5. Do not use the tool if any switch does not turn off and properly

## **Operation**

1. Never force the tool or attachment to do the work of a larger industrial tool. It is designed to do the job better and more safely at the rate for which it was intended.
2. Do not carry the tool by its power cord.
3. Always unplug the cord by the plug. Never yank the cord out of the wall.
4. Always turn off the machine before unplugging.

**IF THERE IS ANY QUESTION ABOUT A CONDITION BEING SAFE OR UNSAFE, DO NOT OPERATE THE TOOL!**

### **Grounding Instructions**

This machine has a three-prong plug, the third prong is the ground. Plug this cord only into a three-prong receptacle. Do not attempt to defeat the protection the ground wire provides by cutting off the round prong. Cutting off the ground will result in a safety hazard and void the warranty.

**DO NOT MODIFY THE PLUG IN ANY WAY. IF YOU HAVE ANY DOUBT, CALL A QUALIFIED ELECTRICIAN.**

### **Specification:**

Max. drilling capacity:	20 mm
Max. tapping capacity:	12 mm
End mill capacity	16 mm
Face mill capacity	50 mm
Throat	190 mm
Max. distance spindle to table	370 mm
Spindle taper	<b>Choice of MT#3 or R8</b>
Spindle speed	100-2000 rpm $\pm$ 10%
Table effective size	700x160 mm
T-slot size	12 mm
Table longitudinal travel (X)	400 mm
Cross travel (Y)	190 mm
Headstock travel (Z)	290 mm
Power	750 W
Overall dimension (L*W*H)	825*620*880 mm
Packing size (L*W*H)	960*760*1060 mm
Weight (Net/Gross)	111 / 145 Kg

### **Unpacking & Preparing for Use**

Before unpacking you must check the package carefully, to find whether it is damaged and any may have effect on the machine, please connect with the distributor in advance.

Unpacking carefully, check the species of standard accessories and the quantity to find whether it is as same as the packing list in the package.

## Product selection instructions:

The SX2.7 Bench mil drill have different models to choose for you, the standard model we call it name is SX2.7, you can add digital readout display the model name is SX2.7D ( **you can see have a display in front of the head-stock**).

The “D” means with “3 axis display”; use three axis magnetic grating ruler+Digital readout display.

**Model SX2.7 picture**



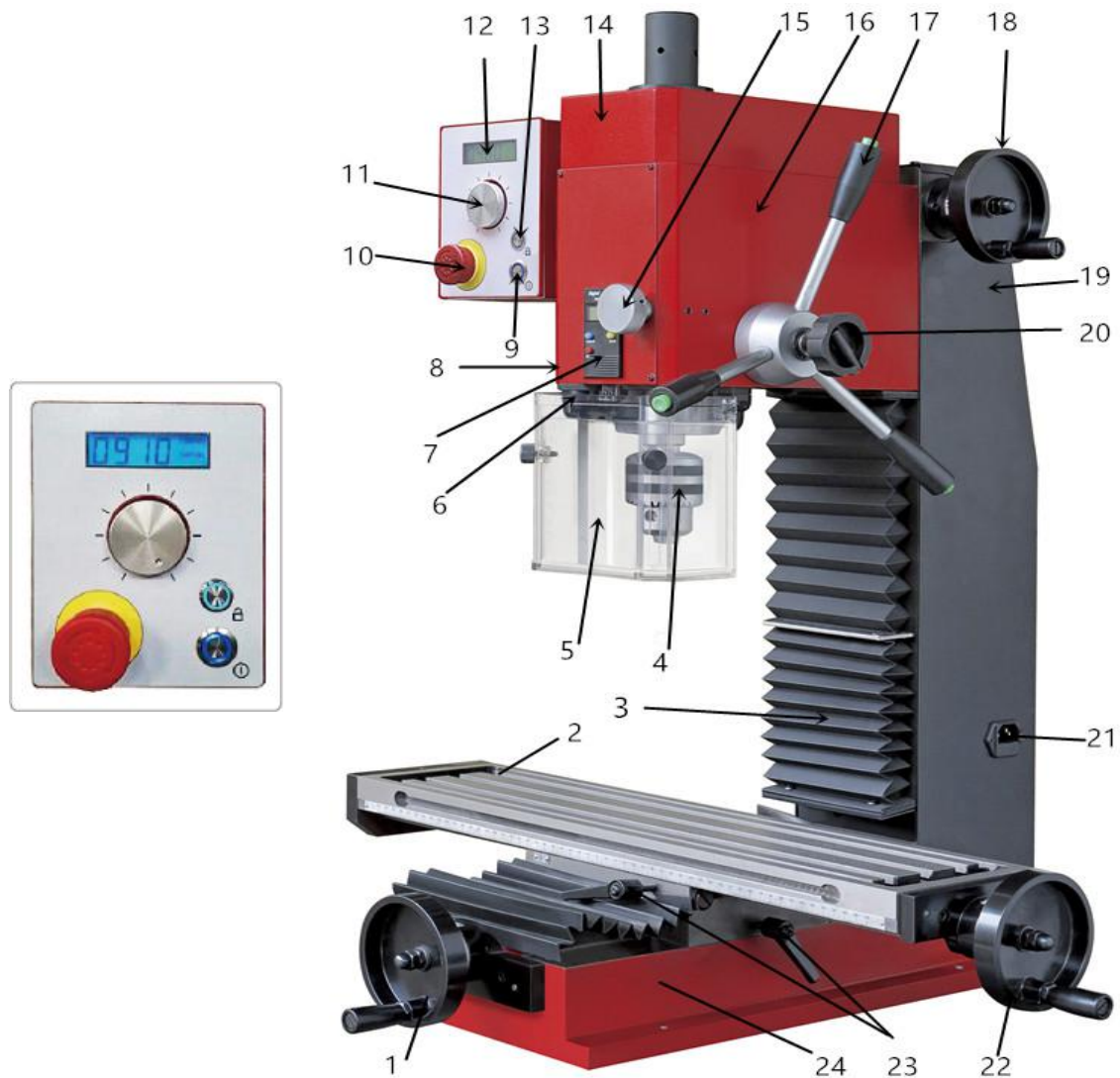
**Model SX2.7D picture**



## The main features and advantages of this product

- 1, The highest speed arrange 2000 rpm; variable spindle speed;
- 2, Spindle speed digital readout;
- 3, Tapping function;
- 4, Brush less DC motor;
- 5, Chuck guard with safety switch ( optional );
- 6, Feeding depth digital readout;
- 7, Fine feeding;
- 8, With two USB sockets, can supply power to Lamp or IPAD;
- 9, Large size worktable 700\*160mm;

## FEATURE / Model SX2.7



1	Y- axis handwheel	2	Work tabel
3	Column (with protect cover)	4	Drill chuck with arbor
5	Protective guard assembly	6	Micro switch assembly
7	Depth display (spindle travel)	8	Screw for lock the spindle sleeve
9	On/Off button	10	Emergency stop switch
11	Variable speed control knob	12	Spindle speed display
13	Tapping choose button	14	Spindle box cover
15	Fine feeding handle	16	Spindle box
17	Control handle with tapping button	18	Z-axis handwheel
19	Back cover (PC Board inside)	20	Fine feeding locking knob
21	Power socket with fuse box	22	X-axis handwheel
23	Locking handle assembly	24	Base

## Installation

### **CAUTION!**

**DO NOT ATTEMPT TO USE THE MACHINE UNTIL INSTALLTION IS CAMPLETED, AND ALL PRELIMINARY CHECKS HAVE BEEN MADE IN ACCORDANCE WITH THIS MANUAL.**

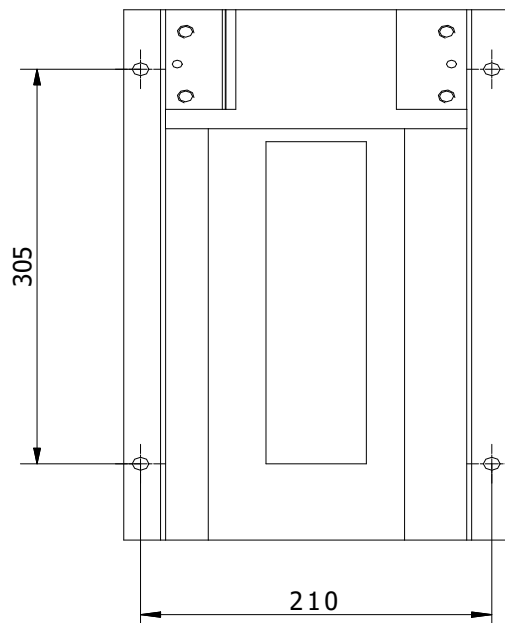
## **MOUNTING THE MACHINE**

The machine should be mounted on a strong, heavy workbench, of sufficient height so that you do not need to bend your back to perform normal operations.

Ensure the location is adequately lit and that you will not be working in your own shadow.

We strongly recommend that the machine bolted firmly to strong workbench using the tapped holes used to secure the feet to the machine. This is to provide added stability and consequently, additional safety.

***To do this, first drill four M12 clearance holes in a worktop, at the dimensions shown in the diagram opposite, and with appropriate length M8 bolts, or screws, with flat washers. (not supply, you need prepare these by yourself).***



## **Application**

This small mill machine is both for milling or drilling and tapping, widely used in different places. Fine exterior, wide range of speed and easy to use.

Designed for industrial usage milling, drilling, tapping, reaming, steps and mill plane with metal and other material.

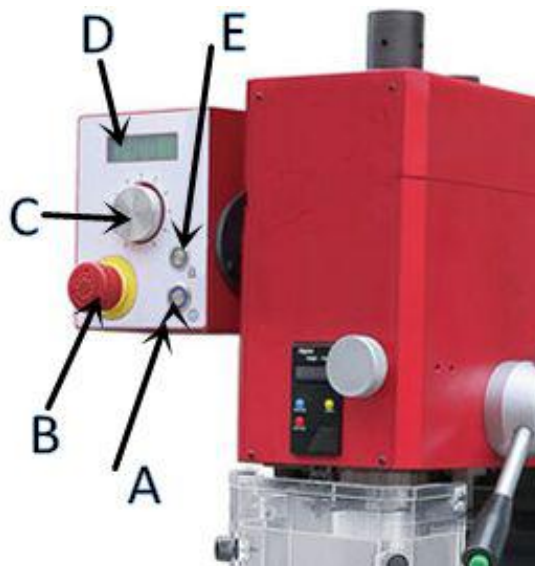
## Operation

1. Before starts to use this machine, operator should go through the instructions carefully so as to acquaint with the construction of the machines, the functions of the various controls and also the driving systems.

- (1) Insert the power line insert the socket right of the fuselage, then power on;



(2) Loosen the emergency stop switch (B), then the spindle speed display (D) bright and show "0000", press the start button (A) then clockwise rotation of the speed control button (C), can make the spindle speed raise to the highest position. Under these circumstances the mill only have forward direction. Under tapping circumstances have forward and reverse direction. Press the tapping function lock button (E), then is button will bright, then you can press a green button to choose the spindle run to forward or reverse. The green button total 3 pcs, they on the right of the spindle box in the lifting lever. You can see the word of forward or reverse on the right of the display (D), it easy to show the user the direction of the rotation of the spindle.



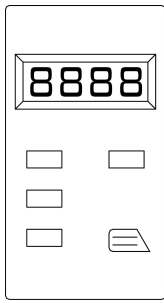
## Notice:

(1) In general, it is only in an emergency that a snap stop switch is needed to stop the spindle from turning. Do not often use the emergency stop switch (B) stop the machine, it is bad to the main PC Board.

(2) After using should turn the power switch to position '0' and press the emergency stop switch (B), then pull out the power plug from socket.

## Several characteristic functions

### 1. Spindle depth display



### 2. Chuck guard with safety switch



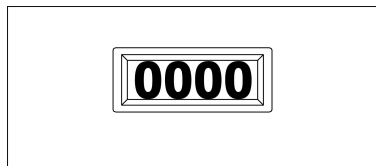
### 3. Spindle fine feeding (tighten the lock knob "A" then turn the fine feeding knob "B").



### 4. Two USB sockets, can supply power



### 5. Spindle speed readout



### 6. Tapping: the highest speed under 'Tapping mode' is 500rpm. Press the button end of the handle the first is "forward" when press again it change to "reverse". Notice it have three handle all can control so it is very easy to do.

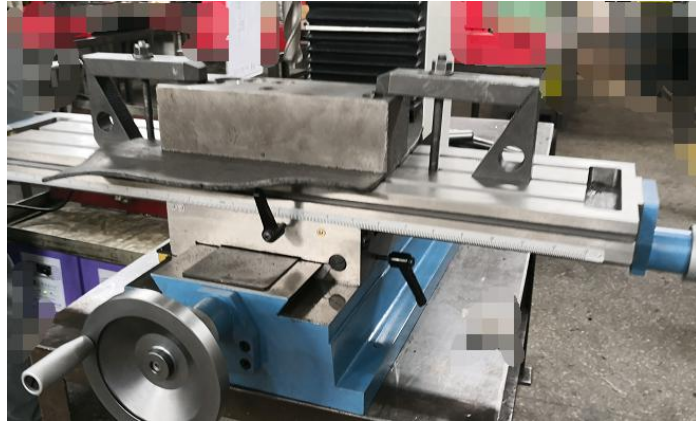
See the picture on the right position.



## Brief introduction of conventional mechanical operation (Picture for reference only)

1. The clamping tool and work piece must stop the machine first;
2. Clean the inner hole of the spindle and the conical surface of the tool rod, push the tool rod into the inner hole of the spindle, and put in the pull rod to hang the tool rod;
3. The parts to be processed are placed on the surface of the worktable. After pressing with the pressing plate or use vice clamped, the parts are moved to the desired position vertically and horizontally.

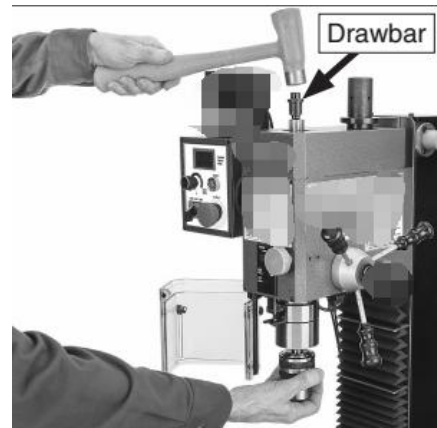




4. Loosen the column lock handle, shake the lift handle and move the spindle box down;
5. Start the machine, select a good rotation speed, turn counterclockwise to turn the lifting handle, and drilling or milling can be done at this time;
6. When milling parts, we must lock the spindle box and spindle, at the same time lock the longitudinal transverse plug iron according to the need, so as not to change the machining size;



7. When replacing the drill chuck or milling chuck, open the top shield loosely on the edge, loosen the screw thread of the pull rod 2-3 teeth, then use a hammer to knock the taper handle away from the main shaft, and finally loosen the handle with the hand to replace the rod.



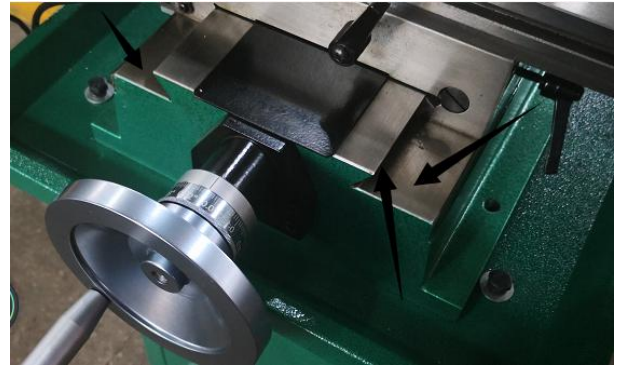
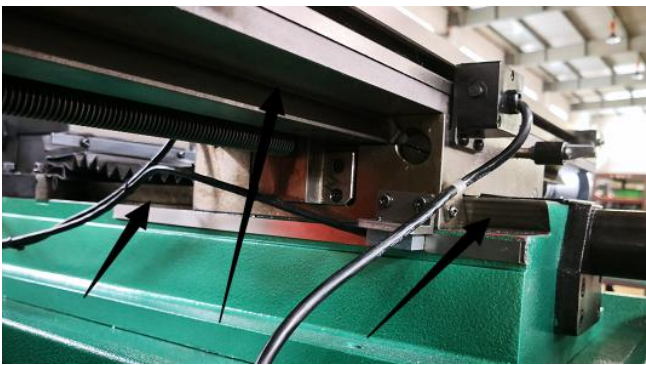
## After using

After the completion of the work, the power supply should be cut off, the machine tool and environment should be cleaned well, and mechanical oil should be added to the exposed surface of the machine to prevent the surface of the machine from rusting and affecting the use and beauty of the machine.

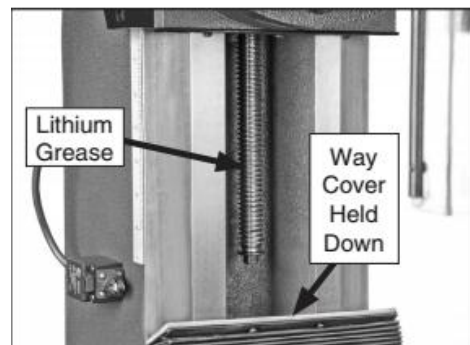
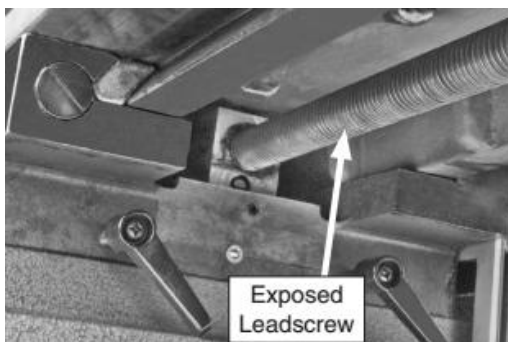
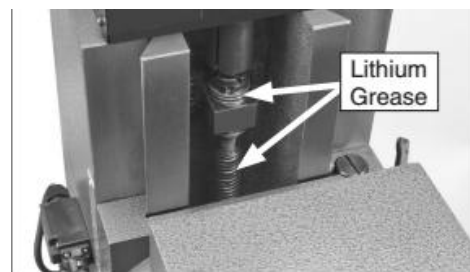
## Machine tool lubrication

In order to ensure the long service life of the machine and the effective operation of the machine tool, lubricating oil or lubricating oil is regularly added to each moving joint and joint.

Where lubricating oil is needed is mainly the dovetail surface in three directions of XYZ axis. (Position as indicated by arrow)



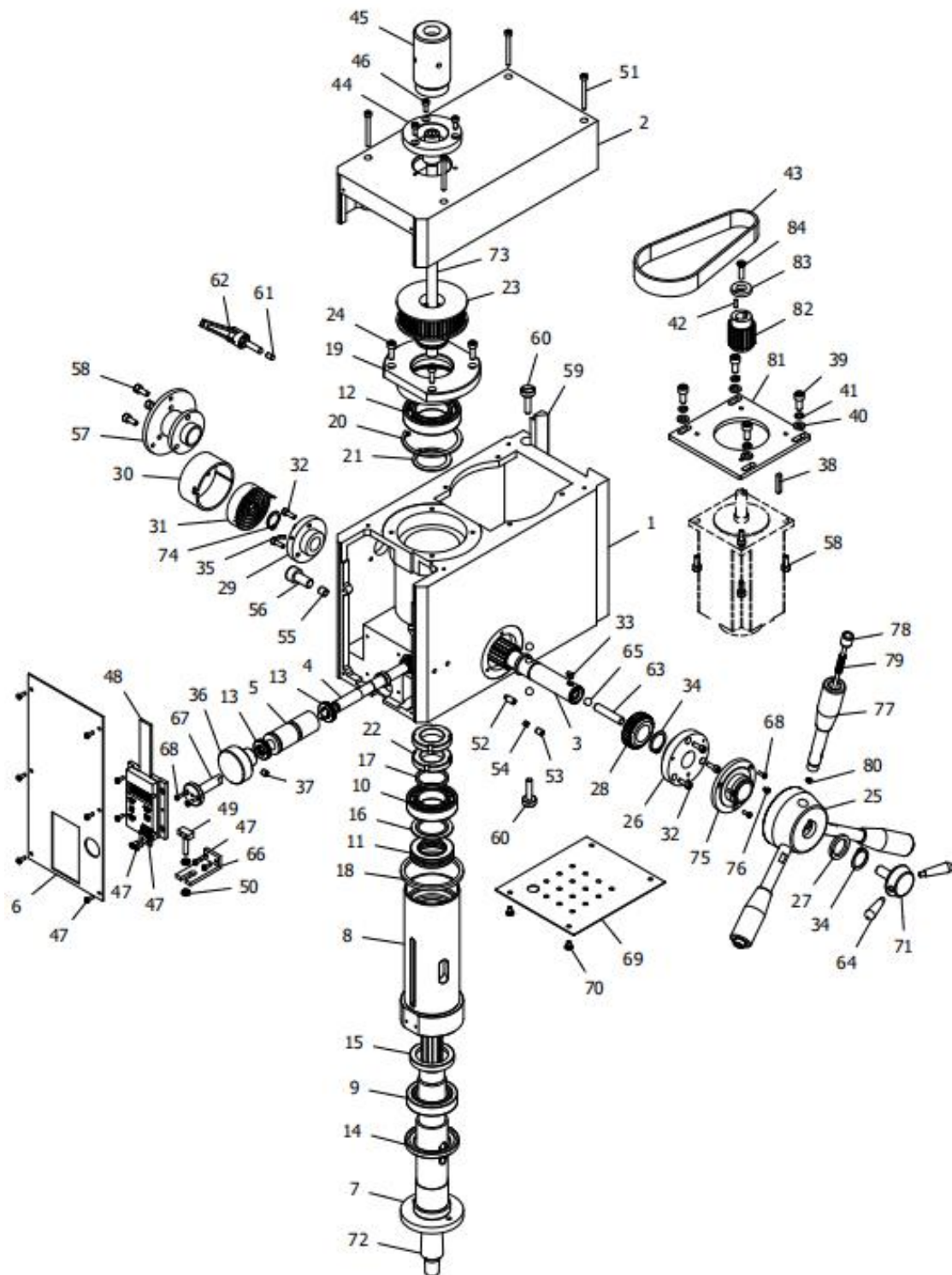
The main ones that need to be lubricated are XYZ's three axial thread rods and rod nuts.



## Common trouble problems and their Solutions

Symptom	Possible Cause	Possible Solution
Motor can not start	<ol style="list-style-type: none"> <li>1. The power supply is not on.</li> <li>2. Low voltage.</li> <li>3. Motor open circuit or loose connection.</li> <li>4. The external input socket is broken.</li> <li>5. May which switch is bad or connect line loosen;</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on the emergency stop button</li> <li>2. Check that the voltage of the power supply is correct.</li> <li>3. Check that all the connections of the motor are loosened or disconnected.</li> <li>4. Check and confirm the input socket is ok.</li> <li>5. Check switch and the connect lines is tighten.</li> </ol>
Fuse or circuit breaker disconnected	<ol style="list-style-type: none"> <li>1. Wire or plug short circuit</li> <li>2. Circuit board short circuit</li> <li>3. Power supply fuse or circuit breaker incorrect.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check wires and plugs for damaged or missing insulation and replace them with extension wires.</li> <li>2. Check the voltage of the power supply is correct</li> <li>3. Check that all connections of the motor are loose or welded or insulated, and replace the correct fuse or circuit breaker in time</li> </ol>
Motor overheating	<ol style="list-style-type: none"> <li>1. Motor overload</li> <li>2. Air circulation of motor is restricted</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the load of motor</li> <li>2. Clean the motor and ensure smooth circulation of air</li> </ol>
The hand wheel of a transverse or feed trawl is too loose	<ol style="list-style-type: none"> <li>1. The adjusting screw is not in place.</li> <li>2. Hand wheel loosened</li> <li>3. Wire rod assembly old or not in place</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the adjusting screw and lubricate the bed</li> <li>2. Tighten the hand wheel knob</li> <li>3. Tighten all loose knobs on the thread rod assembly.</li> </ol>
The machine makes constant noise	<ol style="list-style-type: none"> <li>1. The gear or bearing is out of order.</li> <li>2. The motor is out of order.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace damaged gear or bearing</li> <li>2. Replace motor</li> </ol>
During operation, the machine stops	<ol style="list-style-type: none"> <li>1. Drilling and milling too deep</li> <li>2. The wrong speed or feed speed was used in the drilling and milling operation.</li> <li>3. Milling cutter damage</li> <li>4. Motor damaged</li> <li>5. Gear damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce drilling depth</li> <li>2. Choose the right speed</li> <li>3. Replacement milling cutter</li> <li>4. Replacement motor</li> <li>5. Replacement gear</li> </ol>
Finish surface difference	<ol style="list-style-type: none"> <li>1. Speed or feed speed error</li> <li>2. Milling cutter broken or wrong selected</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the milling cutter by adjusting the correct speed or feed speed</li> <li>2. Change the cutter</li> </ol>
Difficult to move the end part on the guide rail	<ol style="list-style-type: none"> <li>1. Drying of guideway</li> <li>2. Z shaft hand wheel to tighten</li> <li>3. Over compacted with debris on guide rail</li> </ol>	<ol style="list-style-type: none"> <li>1. Lubricating oil</li> <li>2. Adjusting screw</li> <li>3. Cleaning guide</li> </ol>
T - type nut is difficult to fix	<ol style="list-style-type: none"> <li>1. T type nut defect or damaged</li> <li>2. T-groove on the wrong working table</li> </ol>	<ol style="list-style-type: none"> <li>1. Replacement of type T nut</li> <li>2. Replacement of table or well-used T slot</li> </ol>

# Parts drawing (I)



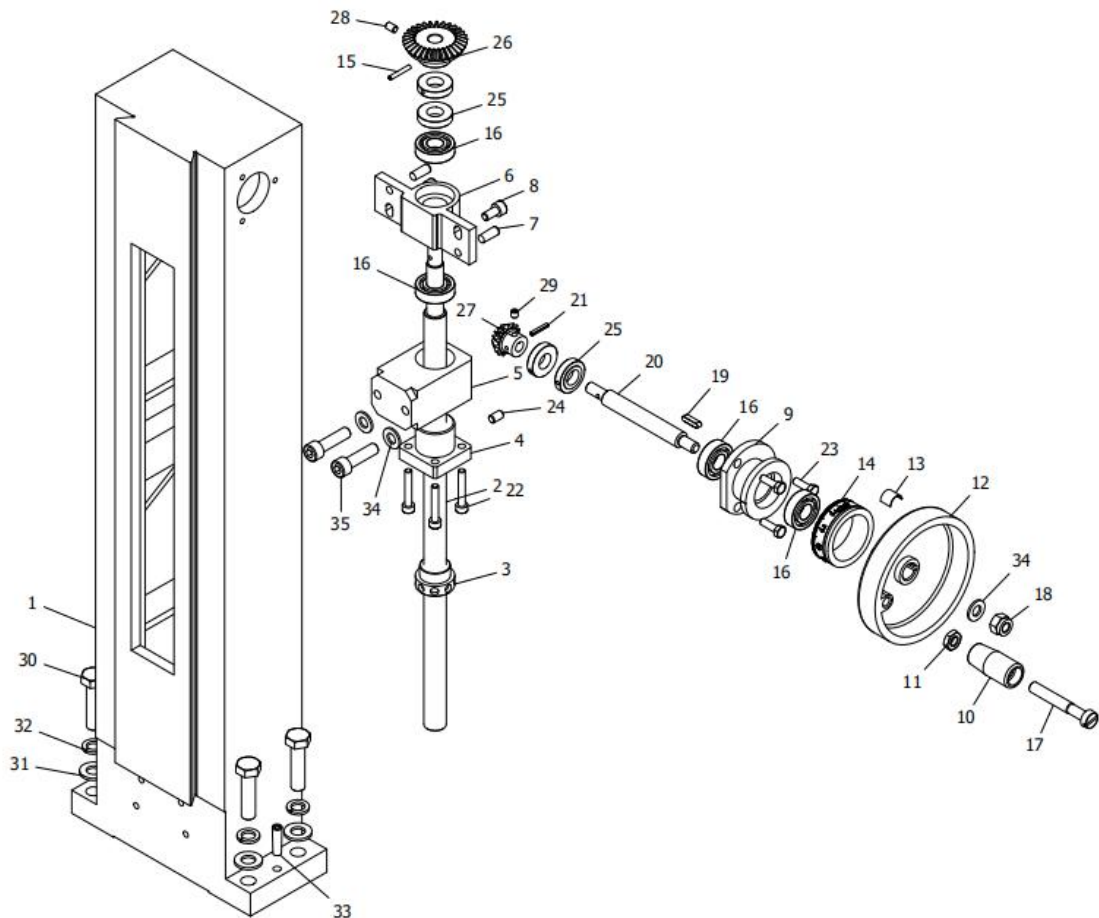
## Parts list (I)

No.	drawing No.	description	Q'ty
I-1	LXN3A02B01	Spindle box	1
I-2	LXN3A02B02	Spindle box cover	1
I-3	LXN3A02B03	Gear shaft	1
I-4	LXN3A02B04	Worm shaft	1
I-5	LXN3A02B05	Worm eccentric sleeve	1
I-6	LXN3A02B07A	Panel (standard)	1
	LXN3A02B07	Panel use for DRO	
	LXN3A02B0700	Panel use for Mobile	
I-7	LX3C0212	MT3 Spindle	1
	LX3C02A01	R8 Spindle	
I-8	LX3C0213	MT3 Spindle sleeve	1
	LX3C02A02	R8 Spindle sleeve	
I-9	GB/T 297-94 - 32907	Cone roller bearing 32907	1
I-10	GB 278-89 - 80106	Deep groove ball bearing 80106	1
I-11	GB 301-84 - 8106	Thrust ball bearing 8106	1
I-12	GB 278-89 - 80107	Deep groove ball bearing 80107	1
I-13	7_70 - 12 x 22 x 5	Thrust ball bearing 12*22*5	2
I-14	LX3C0219	Spindle below oil seal ring I	1
I-15	LX3C0216	Spindle sleeve below oil seal ring II	1
I-16	LX3C0210	Up washer II	1
I-17	LX3C0209	Up washer	1
I-18	LXN3A0226	Sleeve limit washer	1
I-19	LXN3A02B08	Bearing seat	1
I-20	GB 893.1 - 62	Check ring 62	1
I-21	GB 894.1 - 35	Check ring 35	1
I-22	GB 810-88 - M27x1.5	Slotted round nut M27*1.5	2
I-23	LX3C0206	Spindle timing pulley	1
I-24	GB 70-85 - M5 x 16	Screw M5*16	4
I-25	LXN3B0202	Handle seat	1
I-26	LXN3B0204	Shaft gear right support flange	1
I-27	LXN3A0222	Adjust washer	1
I-28	LXN3A0210	Bevel gear	1
I-29	LX3C0252	Shaft gear left support flange	1
I-30	LX3C0253	Clock spring cover	1
I-31	LXN20243	Clock spring	1
I-32	GB 70-85 - M4 x 12	Screw M4*12	6

I-33	GB1096-79 4x8	Flat key 4*8	1
I-34	GB 894.1 - 20	Check ring 20	2
I-35	GB 879-86 - 3 x 8	Spring pin 3*8	1
I-36	LXN3A0218	Fine feed handwheel	1
I-37	GB 77-85 - M6 x 6	Screw M6*6	1
I-38	GB1096-79 4x25	Flat key 4*25	1
I-39	GB 70-85 - M6 x 14	Screw M6*14	4
I-40	GB 97.1-85 - 6	Washer 6	4
I-41	GB 93-87 - M6	Spring washer 6	4
I-42	GB 119-86 - A 3 x 10	Spring pin 3*10	1
I-43	HTD-5M 385 (77 齿)	Timing belt 385 (Z77)	1
I-44	X3C0220	Spindle up dust guard I	1
I-45	X3C0265	Spindle up dust guard II	1
I-46	GB 70-85 - M4 x 10	Screw M4*10	3
I-47	GB 818-85 - M3 x 8	Screw M3*8	14
I-48	GD300-165	Display assembly GD300-165	1
I-49	LX3C0217	Square screw	1
I-50	GB 6172-86 - M5	Nut M5	2
I-51	GB 70-85 - M4 x 40	Screw M4*40	4
I-52	GB 79-85 - M6 x 14	Screw M6*14	1
I-53	GB 77-85 - M6 x 8	Screw M6*8	1
I-54	LXN3A0216	Eccentric sleeve locking block	1
I-55	LXN3A0208	Spindle sleeve lock shaft	1
I-56	GB 70-85 - M10 x 20	Screw M10*20	1
I-57	LXN3A0211	Connect support	1
I-58	GB 70-85 - M5 x 12	Screw M5*12	7
I-59	LXN3A0202	Bevel wedge	1
I-60	LXN3A0223	Wedge screw	2
I-61	LXN3A0217	Tighten the top rod	1
I-62	LX20218B00	Small handle assembly	1
I-63	LXN3A02B06	Lock shaft	1
I-64	LX3.50208	Small handle	2
I-65	GB308-89 - 8	Ball 8	3
I-66	LX3.50209	Display assembly support	1
I-67	LX3.50217	Shuttle	1
I-68	GB 819-85 - M3x10	Screw M3*10	5
I-69	LXN3B0209	Base plate	1
I-70	GB 818-85 - M4 x 6	Screw M4*6	2
I-71	LX3.50207	Lock top shaft	1

I-72	LX20206	B16 taper shank	1
	LX302A04	JT6 taper shank	
I-73	LX3C021100	Lifting bolt assembly	1
I-74	GB 894.1 - 16	Check ring 16	1
I-75	LSX2.30201	Conductive ring assembly	1
I-76	GB 818-85 - M3 x 4	Screw M3*4	1
I-77	LXN3B020700	Control handle assembly	3
I-78	LXN3B020800	F/R control pole assembly	3
I-79	GB2089-80 0.8x6x25	Compress spring 0.8*6*25	3
I-80	GB 896-86 3	Spring washer 3	3
I-81	LXN3B0203	Motor support plate	1
I-82	LXN3B0201	Motor timing pulley	1
I-83	LXN3B0205	Washer	1
I-84	GB 819-85 - M5x20	Screw M5*20	1
I-85*	LX3C02A03	Key use for R8 spindle	1

## Parts drawing (2)

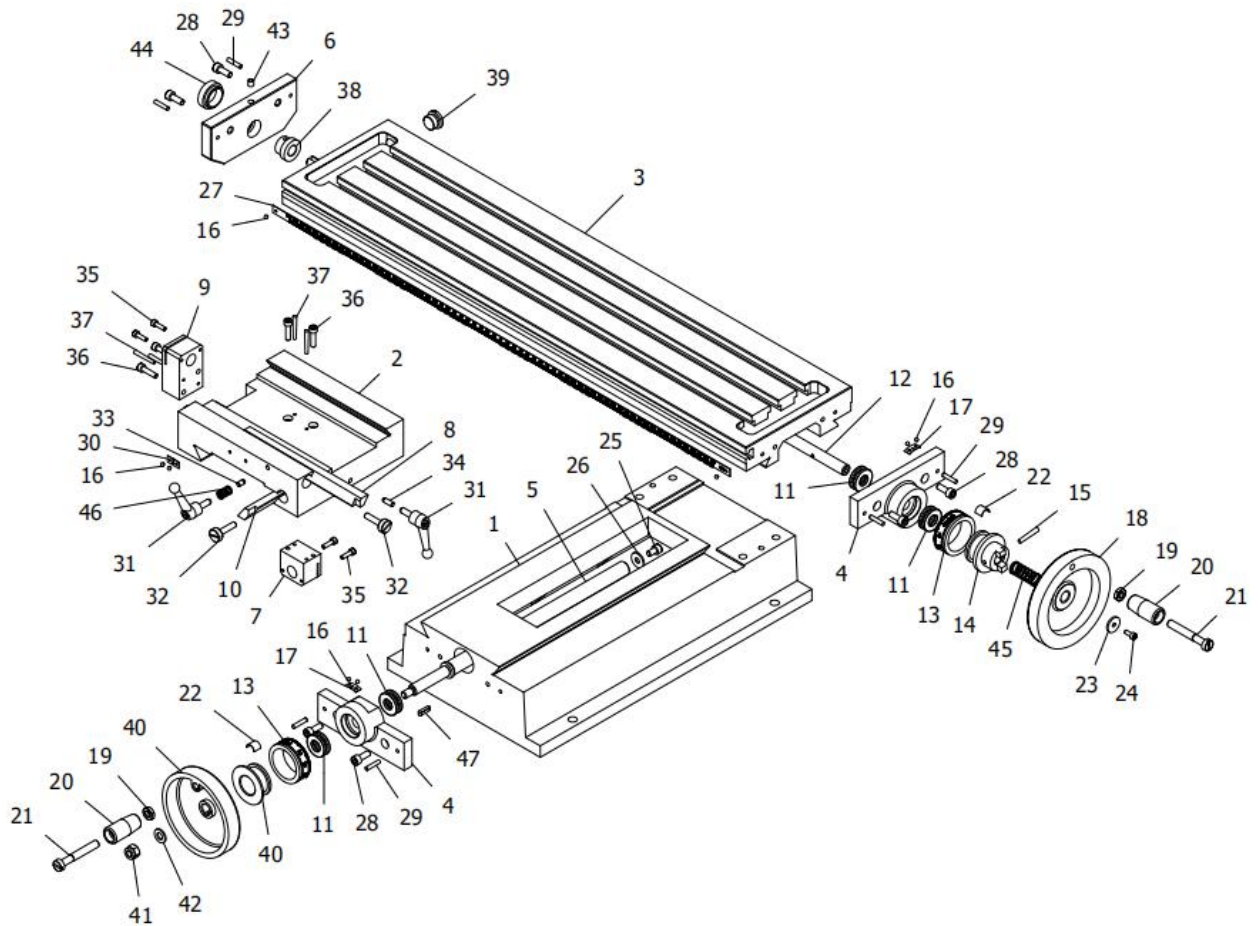


## Parts list (2)

No.	Drawing No.	Description	Q'ty
.2-1	LXN3A0901	Column	1
.2-2	LXN3A0903A	Metric rise and down leadscrew	1
	LXN3A0903B	Inch rise and down leadscrew	
.2-3	LXN3A0908A	Metric rise and down locking nut	1
	LXN3A0908B	Inch rise and down locking nut	
.2-4	LXN3A0907A	Metric rise and down leadscrew nut	1
	LXN3A0907B	Inch rise and down leadscrew nut	
.2-5	LXN3A0904	Column nut support	1
.2-6	LXN3A0911	Leadscrew support	1
.2-7	GB 118-86 - 6 x 16	Taper pin 6*16	2
.2-8	GB 70-85 - M6 x 12	Screw M6*12	2
.2-9	LXN3A0910	Rise and down support seat	1
.2-10	L'C2A0307	Handle	1
.2-11	GB 6172-86 M8	Hex nut M8	1
.2-12	LX3111800	Handle wheel	1
.2-13	LX31145	Spring piece	1
.2-14	LXN3A0909A	Metric rise and down scale dial	1
	LXN3A0909B	Inch rise and down scale dial	
.2-15	GB 879-86 - 3 x 20	Spring round pin 3*20	1
.2-16	GB/T 276-94 - 6001	Deep groove ball bearing 6001	4
.2-17	GB 65-85x55	Screws 8*55	1
.2-18	GB 889-86 M8	Hex locking nut M8	1
.2-19	GB1096-79 4x16	Parallet key 4*16	1
.2-20	LXN3A0902	Rise and down shaft	1
.2-21	GB 879-86 - 3 x 16	Spring round pin 3*16	1
.2-22	GB 70-85 - M5 x 30	Screw M5*20	4
.2-23	GB 5781-86 - M5x16	Bolt M5*16	3
.2-24	GB 77-85 - M6 x 10	Screw M6*10	1
.2-25	LXN3A0912	Locking nut	4
.2-26	LXN3A0914	Big bevel gear wheel	1
.2-27	LXN3A0913	Small bevel gear wheel	1
.2-28	GB 78-85 - M5 x 8	Screw M5*8	1
.2-29	GB 78-85 - M5 x 5	Screw M5*5	1
.2-30	GB 5780-86 - M10x40	Bolt M10*40	4
.2-31	GB 97.1-85 - 10	Washer 10	4
.2-32	GB 859-87 - 10	Spring washer 10	4
.2-33	GB 118-86 - 6 x 24	Taper pin 6*24	2
.2-34	GB 97.1-85 - 8	Washer 8	1
.2-35	GB 70-85 - M8 x 30	Screw M8*30	2



## Parts drawing (3)



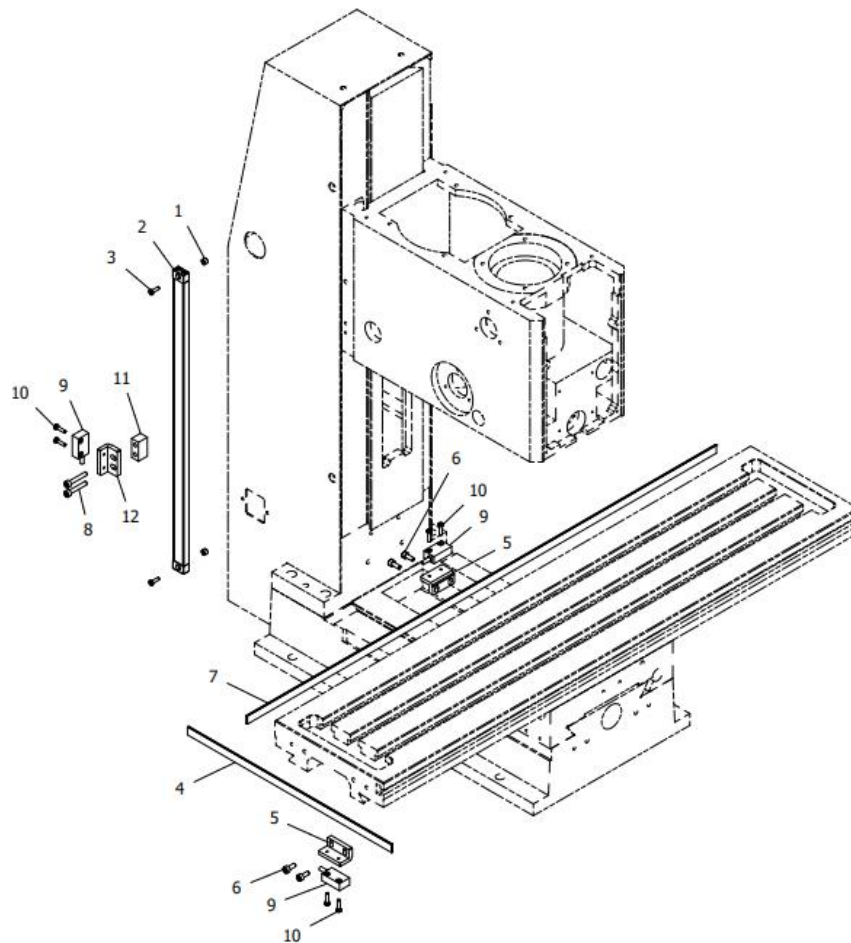
## Parts list (3)

No.	Drawing No.	Description	Q'ty
.3-1	LXN3A1101B	Base	1
.3-2	LXN3A11A03A	Saddle	1
.3-3	LXN3A11A02B	Work table	1
.3-4	LXN3A1108	leadscrew bearing seat	2
.3-5	LXN3A11A04	Metric cross leadscrew	1
	LXN3A11A04A	Inch cross leadscrew	
.3-6	LXN3A1106	Left end cover	1
.3-7	LXN3A1107A	Metric cross leadscrew nut	1
	LXN3A1107B	Inch cross leadscrew nut	
.3-8	LXN3A1111	Longitudinal bevel wedge	1
.3-9	LXN3A1113A	Metric longitudinal leadscrew nut	1
	LXN3A1113B	Inch longitudinal leadscrew nut	
.3-10	LXN3A11A05	Cross bevel wedge	1
.3-11	GB 301-84 - 8101	Thrust ball bearing 8101	4

.3-12	LXN3A11A01	Metric longitudinal leadscrew	1
	LXN3A11A01A	Inch longitudinal leadscrew	
.3-13	LXN3A1112A	Metric dial ring	2
	LXN3A1112B	Inch dial ring	
.3-14	LX31142	Leadscrew clutch	1
.3-15	GB 117-86 - A 4 x 28	Round taper pin 4*28	1
.3-16	GB827-86 2x4	Sign rive 2*4	8
.3-17	LX21118	Indicator	2
.3-18	LX3C1105	Longitudinal leadscrew handwheel	1
.3-19	GB 6172-86 M8	Nut M8	2
.3-20	LC2A0307	Handle	2
.3-21	GB65-85 M8x55	Screw M8*55	2
.3-22	LX31145	Spring piece	2
.3-23	LGT20017	Washer	1
.3-24	GB 70-85 - M4 x 10	Screw M4*10	1
.3-25	GB 70-85 - M6 x 10	Screw M6*10	1
.3-26	GB 96-85 - 6	Washer	1
.3-27	LXN3A11A06	Scale ruler	1
	LXN3A11A06A	Inch scale ruler	
.3-28	GB 70-85 - M6 x 16	Screw M6*16	6
.3-29	GB 119-86 - A 4 x 20	Round pin 4*20	6
.3-30	LC5C0315	0 position label	1
.3-31	LX2021800	Small handle assembly	2
.3-32	LXN3A0223	Wedge screw	4
.3-33	LXN3A0217	Lock top bar	1
.3-34	LXN3A1109	Longitudinal wedge lock top bar	1
.3-35	GB 70-85 - M4 x 14	Screw M4*14	4
.3-36	GB 70-85 - M5 x 20	Screw M5*20	4
.3-37	GB 117-86 - A 3 x 30	Round taper pin 3*30	4
.3-38	LX31131	Left sleeve	1
.3-39	LX31144	End cap	1
.3-40	LX3111800	Handwheel assembly	1
.3-41	GB 889-86 M8	Lock nut M8	1
.3-42	GB 97.1-85 - 8	Washer	1
.3-43	JBT7940.4-95 6	Cylinder oil cup 6	1
.3-44	LX31136	End cap of left support	1
.3-45	LXN3A11A07	Compress spring	1
.3-46	GB2089-80 1x9.2x14	Compress spring 1*9.2*14	1
.3-47	GB1096-79 4x16	Flat key 4*16	1

## Parts drawing (3A)

**Notice:** this drawing is follow the SX2.7D Mill. The “D” means with “3 axis display”; use MG10V three axis magnetic grating ruler+Digital readout display.

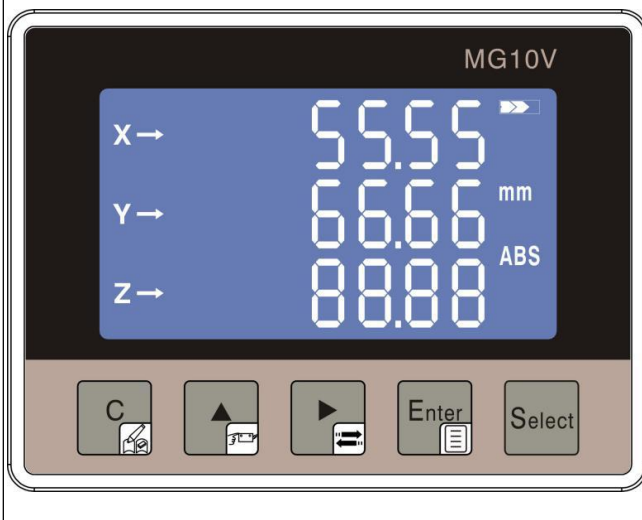


## Parts list (3A)

No.	Drawing No.	Description	Q'ty
.3A-1	LX2.31004	Washer	2
.3A-2	LX21001A00	X axis magnetic ruler assembly	1
.3A-3	GB 818-85 - M3 x 10	Screw M3*10	2
.3A-4	LX3.51001	X axis magnetic ruler	1
.3A-5	LXN3A10B01	Reader support	2
.3A-6	GB 70-85 - M4 x 10	Screw M4*10	4
.3A-7	LXN3A10A01	X axis magnetic ruler	1
.3A-8	GB 70-85 - M4 x 25	Screw M4*25	2
.3A-9	MG10V	DRO with readers assembly	3
.3A-10	GB 818-85 - M3 x 12	Screw M3*12	6
.3A-11	LX21005	Reader block	1
.3A-12	LXN3A10B02	Z axis reader block	1

# Magnetic Grid Digital Display MG10V User Manual

## (This is the optional function, only on “D” type had)



### New features description

- Icon mode defines common function shortcuts (modify current value, repair&redirection, sensor adaptive mode)
- Fully aluminum alloy shell structure design, Ultra strong anti-interference ability.
- Pluggable docking power supply, communication, sensor (air plug optional) connection.
- High-end smart LCD VI reverse color display
- Four-point self-expansion damping type convenient installation method.
- One table three display (S, Y, Z), three-axis measurement display.

### Specifications / Performance

Electrical performance		Mechanical behavior	
System accuracy	$\pm (0.03+0.01*L)$ L Unit: m	Maximum appearance size	96*72*46.5mm
Repeatability	Max.±0.01mm	Hole Size	91.5*65.5mm ±1
Resolution	0.01、0.05、0.1、1	Read head line length	Default 1M (Line length can be customized)
Display range	-999999~999999	Read head gap	Standard 1~2mm
Current consumption	Max.400uA (LED not lit)	Moving speed	Max.5m/s
Built-in battery	One 2nd battery (excessive standby)	Matching magnetic ruler	TR50 /5mm+5mm
External power supply	DC (12v~24v)		
Operating temperature	-20℃ ~ 70℃		

### Key Description



Long press (4s): modify key / modify current value  
Function status short press: clear or exit the current interface / relative mode clear key



Long press (4s): sensor adaptive calibration mode  
Function status short press: modify the current display parameters, normal short press: relative / absolute mode switching



Long press (4s): change the sensor increment direction  
Function status short press: **switch key** // parameter shift



Long press (4s): enter the menu  
Short press: modify **confirmation button**





Short press: X, Y, Z, **select button**

**Tips:** Please pay attention to the small icons on the buttons and understand the meaning of the icons, which will make the operation of the digital display faster and easier.

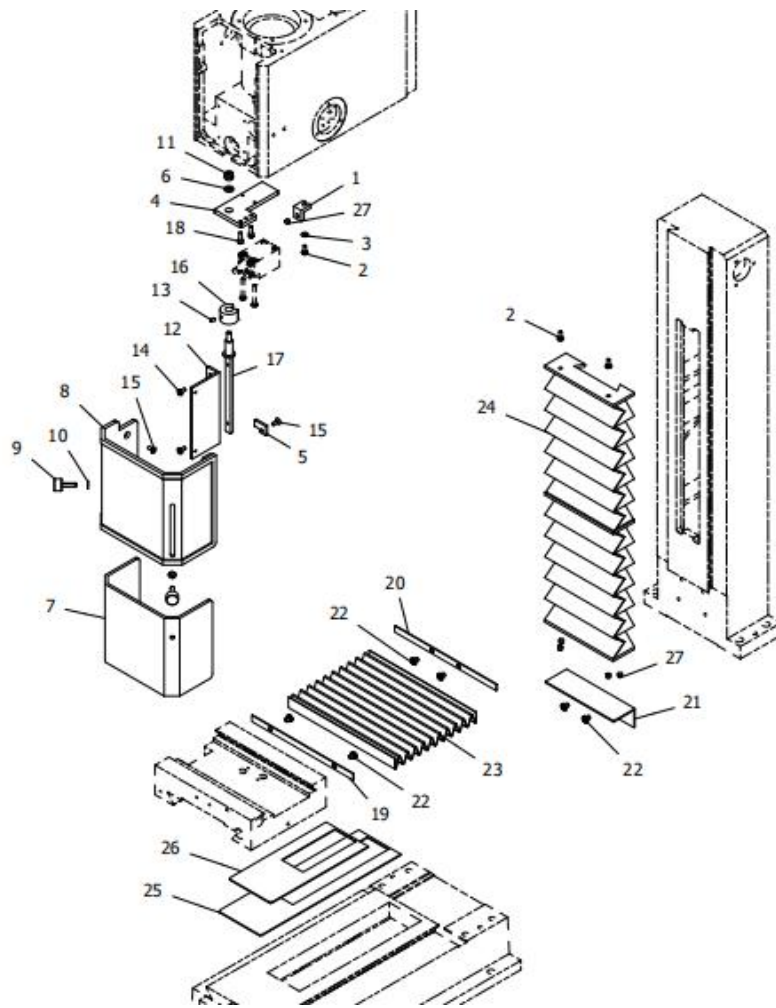
### Display Description

Error message	Information description
E01	Parameter input error
E06	Sensor failure: 1: sensor damage; 2: sensor cable is damaged;
E07	Magnetic stripe detection failed: 1: no magnetic strip; 2: magnetic strip is damaged; 3: reading head is too far away from the magnetic strip
E08	Battery is too low, it is recommended to replace the battery immediately
E09	The read head is too close to the tape
E10	The read head is too far from the tape
E12	No battery, no battery installed in the digital display
E20	The measured value is out of the display range

### Parameter Description

Numbering	Function description	Parameter	Default s	Parameter description	Remarks
P01, P31, P61	Measurement unit switching	Length / Angle	0	0: Length mode 1: Angle mode	After modification, press "Enter" to confirm
P02, P32, P62	Current value setting or (via shortcut)	-999999~999999	0	Save the input value as the current value	Enter the password before modification: 1234 After modification, press "Enter" to confirm
P03, P33, P63	Measuring direction or (via shortcut)	0~1	1	0 or 1 represents two directions	Change the direction of the sensor and also change the direction of measurement
P04, P34, P64	Length resolution	0,1,2,3,4	4	0: INCH 1: 1 2: 0.1 3: 0.05 4:0.01	After modification, press "Enter" to confirm
P06, P36, P66	Scale factor	0.00001~2.99999	1	Display value = measure true value * scale factor	After modification, press "Enter" to confirm
P08, P38, P68	Concentric diameter	0.01~9999.99	500.00	The diameter of the disc to which the magnetic strip is attached	Diameter needs to add magnetic strip thickness 1.5mm*2mm=3MM
P09, P39, P69	Angle resolution	0.01 degree 0.01 points 0.05 points 0.1 points 1 degree	0.01degree	Sufficient under angle mode	After modification, press "Enter" to confirm
P10, P30, P60	Absolute/Relative mode	0: unlock 1: lock	0	By releasing the  key	Shortpress  key to change mode
P28, P58, P88	Reset	None	None	Restore default factory settings	Enter password before recovery: 1234
P07, P37, P67	Adaptive calibration (or via shortcuts)	GO	GO	GO: Enter the state, slowly move (can be moved repeatedly) sensor, move 150MM in about 10 seconds, automatically jump to the current value state after learning success	If the calibration is not successful, please adjust the distance between the sensor and the magnetic stripe. It is recommended to be 1~2MM. Repeat the operation again

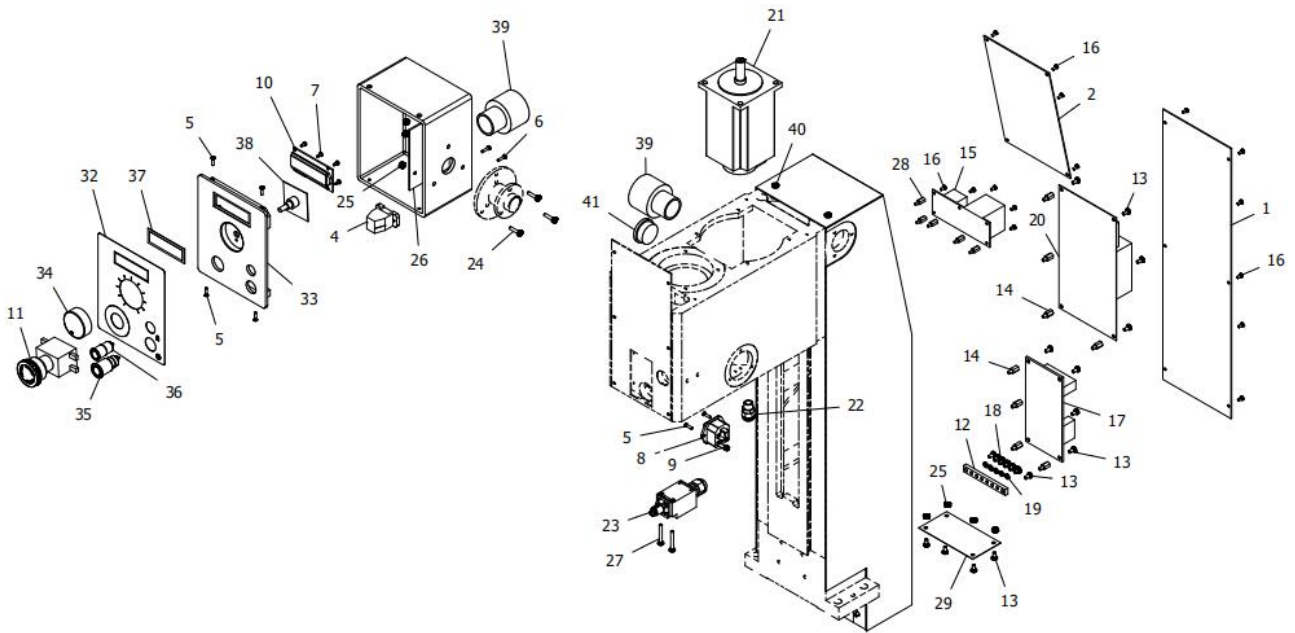
## Parts drawing (4)



## Parts list (4)

No.	Drawing No.	Description	Q'ty	No.	Drawing No.	Description	Q'ty
.4-1	LX12304	Block	1	.4-15	GB 819-85 - M4x10	Screw M4*10	3
.4-2	GB 818-85 - M4 x 10	Screw M4*10	3	.4-16	LX3C23C05	Spacer bush	1
.4-3	GB 97.1-85 - 4	Washer 4	1	.4-17	LX3C23C02	Rotate shaft	1
.4-4	LXN3A23A01	Support plate	1	.4-18	GB 70-85 - M4 x 12	Screw M4*12	2
.4-5	LXN3A23A02	Back plate	1	.4-19	LX20002	Strip	1
.4-6	GB 97.1-85 - 6	Washer 6	1	.4-20	LX20004	Strip	1
.4-7	LX3C23C0401	Inner protect guard	1	.4-21	LXN3A2303	Block	1
.4-8	LX3C23C03	Outside protect guard	1	.4-22	GB 818-85 - M5 x 6	Screw M5*6	6
.4-9	GB 835-88 - M5x20	Knurled screw M5*20	2	.4-23	LX20003	Dust guard	1
.4-10	GB 97.1-85 - 5	Washer 5	2	.4-24	LXN3A2302	Guideway protect cover	1
.4-11	GB 889-86 - M6	Lock nut	1	.4-25	LXN3A2305	Finder block I	1
.4-12	LX3.52311	Support	1	.4-26	LXN3A2304	Finder block II	1
.4-13	GB 78-85 - M4 x 6	Screw M4*6	1	.4-27	YE023003	Φ6 magnetic steel	5
.4-14	GB 818-85 - M4 x 8	Screw M4*8	2				

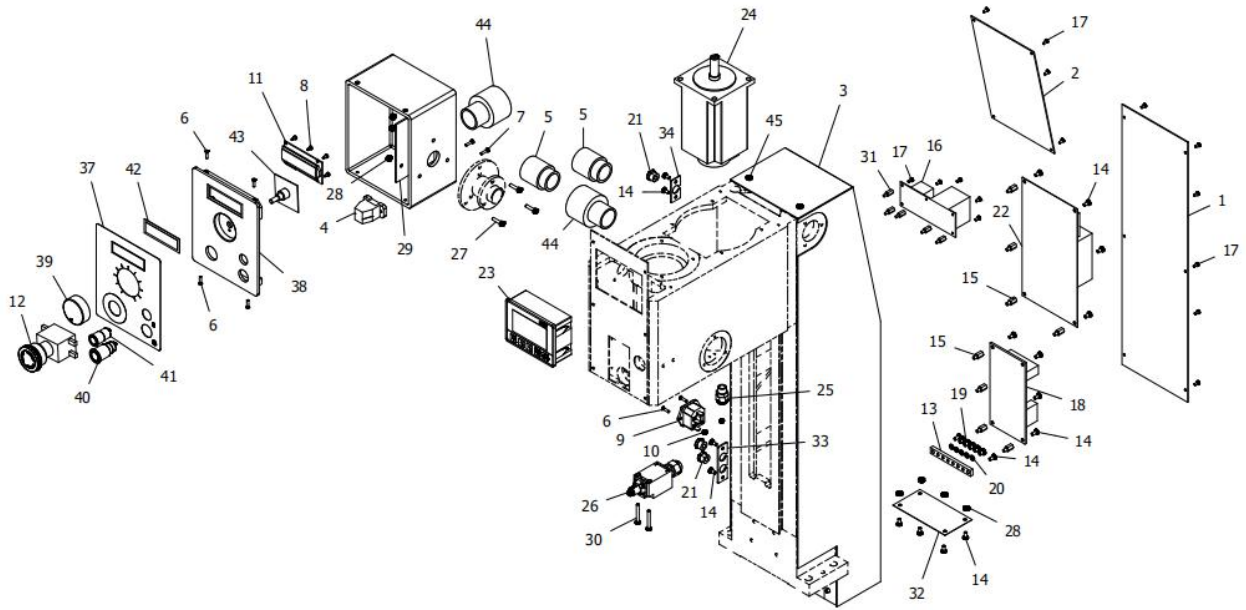
## Parts drawing (5) ----Standard Electrical type



## Parts list (5)

No.	Drawing No.	Description	Q'ty	No.	Drawing No.	Description	Q'ty
.5-1	LXN3A1804	Lower cover	1	.5-21	W80-750A /230V	W80-750A Brushless motor	1
.5-2	LXN3A1805	Upper cover plate	1	.5-22	M12	M12 draw lock	1
.5-3	LXN3A18D0200	Rear hood assembly	1	.5-23	QKS7	QKS7 Safety limit switch	1
.5-4	USB	USB socket assembly	1	.5-24	GB 5783-86 - M4 x 16	Bolt M4*16	3
.5-5	GB 819-85 - M3x12	Screw M3*12	6	.5-25	GB 6170-86 - M4	Nut M4	7
.5-6	GB 818-85 - M3 x 12	Screw M3*12	2	.5-26	LX351803	Electrical box linings	1
.5-7	GB 845-85 - ST2.9 x 6.5	Screw ST2.9*6.5	4	.5-27	GB 818-85 - M4 x 30	Screw M4*30	2
.5-8	DB-14F	DB-14F fuse holder	1	.5-28	HTS-310	HTS-310 Lsolation pillar	5
.5-9	GB 6170-86 - M3	Nut M3	2	.5-29	LX3C1806	Lower dust screen	1
.5-10	Y-2	Y-2 Liquid crystal board	1	.5-30	LX3C23C01	Shoe plate	1
.5-11	HY57B	HY57B Emergency stop switch	1	.5-31	LX351801	Electric Box	1
.5-12	LX3C1802	Grounding row	1	.5-32	LSX352511	Switch sign	1
.5-13	GB 818-85 - M4 x 8	Screw M4*8	14	.5-33	LSX351801	Electric box cover	1
.5-14	HTS-410	HTS-410 Lsolation pillar	8	.5-34	GX-2	GX-2 Knob	1
.5-15	ZD-2	DC power supply board 230V	1	.5-35	J19-271B	J19-E-271B Start-stop button	1
	ZD-2	DC power supply board 110V		.5-36	J16-E-271B	J16-E-271B Tapping button	1
.5-16	GB 818-85 - M3 x 6	Screw M3*6	15	.5-37	LSX351802	Back plate	1
.5-17*	XMT-2305L	Filter (only use for 230V)	1	.5-38	X-4D	X-4D Knob panel	1
.5-18	GB 818-85 - M5 x 6	Screw M45*6	5	.5-39	WQG-M32B/AD34.5	Fast hose connector	2
.5-19	GB 93-87 - M5	Spring washer 5	5	.5-40	GB/T 818 M5 x 8	Screw M5*8	4
.5-20	Z750-1A	Z750-1A/230V PC Board	1	.5-41	DPK-M30B	Nylon Stuffing Cover	1
	Z750-1A	Z750-1A /110V PC Board					

## Parts drawing (5A) ----With “Display kit” Electrical type

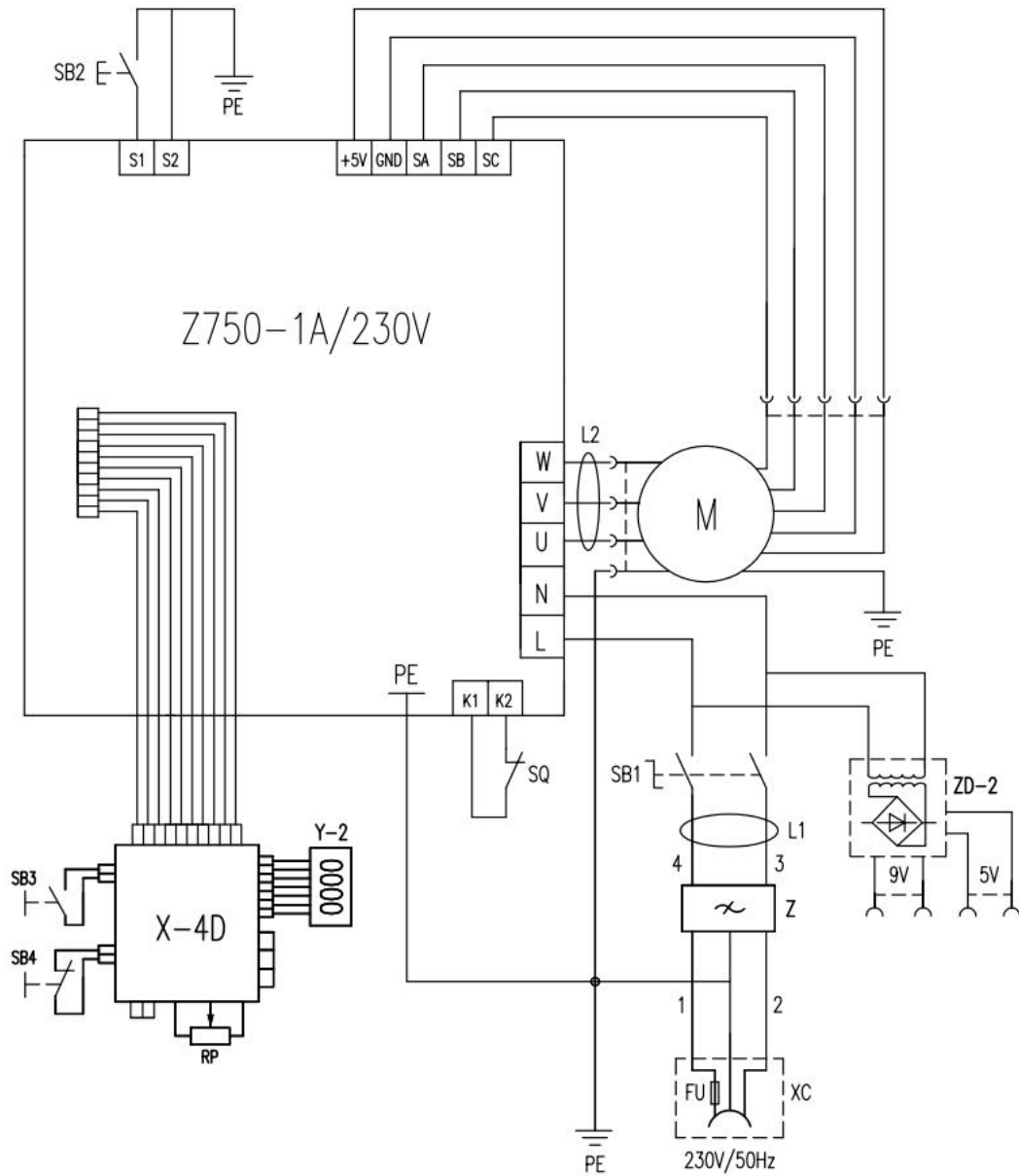


## Parts list (5A)

No.	Drawing No.	Description	Q'ty	No.	Drawing No.	Description	Q'ty
.5A-1	LXN3A1804	Lower cover	1	.5A-23	MG10V	MG10V Display	1
.5A-2	LXN3A1805	Upper cover plate	1	.5A-24	W80-750A	W80-750A Brushless motor	1
.5A-3	LXN3A180300	Rear hood assembly	1	.5A-25	M12	M12 draw lock	1
.5A-4	USB	USB socket assembly	1	.5A-26	QKS7	QKS7 Safety limit switch	1
.5A-5	WQG1-M30B/AD28.5	Fast hose connector	2	.5A-27	GB 5783-86 - M4 x 16	Bolt M4*16	3
.5A-6	GB 819-85 - M3x12	Screw M3*12	6	.5A-28	GB 6170-86 - M4	Nut M4	11
.5A-7	GB 818-85 - M3 x 12	Screw M3*12	2	.5A-29	X3.51803	Electrical box linings	1
.5A-8	GB 845-85 - ST2.9 x 6.5	Screw ST2.9*6.5	4	.5A-30	GB 818-85 - M4 x 30	Screw M4*30	2
.5A-9	DB-14F	DB-14F fuse holder	1	.5A-31	HTS-310	HTS-310 Lsolation pillar	5
.5A-10	GB 6170-86 - M3	Nut M3	2	.5A-32	LX3C1806	Lower dust screen	1
.5A-11	Y-2	Y-2 Liquid crystal board	1	.5A-33	LX351813A	Wire clip holder	1
.5A-12	HY57B	Emergency stop switch	1	.5A-34	LXN3A18B02	Wire clip holder	1
.5A-13	LX3C1802	Ground row	1	.5A-35	LX3C23C01	Shop plate	1
.5A-14	GB 818-85 - M4 x 8	Screw M4*8	18	.5A-36	LX351801	Electric box	1
.5A-15	HTS-410	HTS-410 Lsolation pillar	8	.5A-37	LSX352511	Switch sign	1
.5A-16	ZD-2/230V	Power supply board	1	.5A-38	LSX351801	Electric box cover	1
	ZD-2/110V	Power supply board		.5A-39	GX-2	GX-2 Knob	1
.5A-17	GB 818-85 - M3 x 6	Screw M3*6	15	.5A-40	J19-271B	J19-E-271B Start-stop button	1
.5A-18	XMT-2305L	Filter (only for 230V)	1	.5A-41	J16-E-271B	J16-E-271B Tapping button	1
.5A-19	GB 818-85 - M5 x 6	Screw M5*6	5	.5A-42	LSX351802	Back plate	1
.5A-20	GB 93-87 - M5	Spring washer 5	5	.5A-43	X-4D	X-4D Knob panel	1
.5A-21	6W2	Wire buckle	3	.5A-44	WQG-M32B/AD34.5	Fast hose connector	2
.5A-22	Z750-1A/230V	ZD750-1A/230V PC Board	1	.5A-45	GB/T 818 M5 x 8	Screw M5*8	4
	Z750-1A/110V	ZD750-1A/110V PC Board					

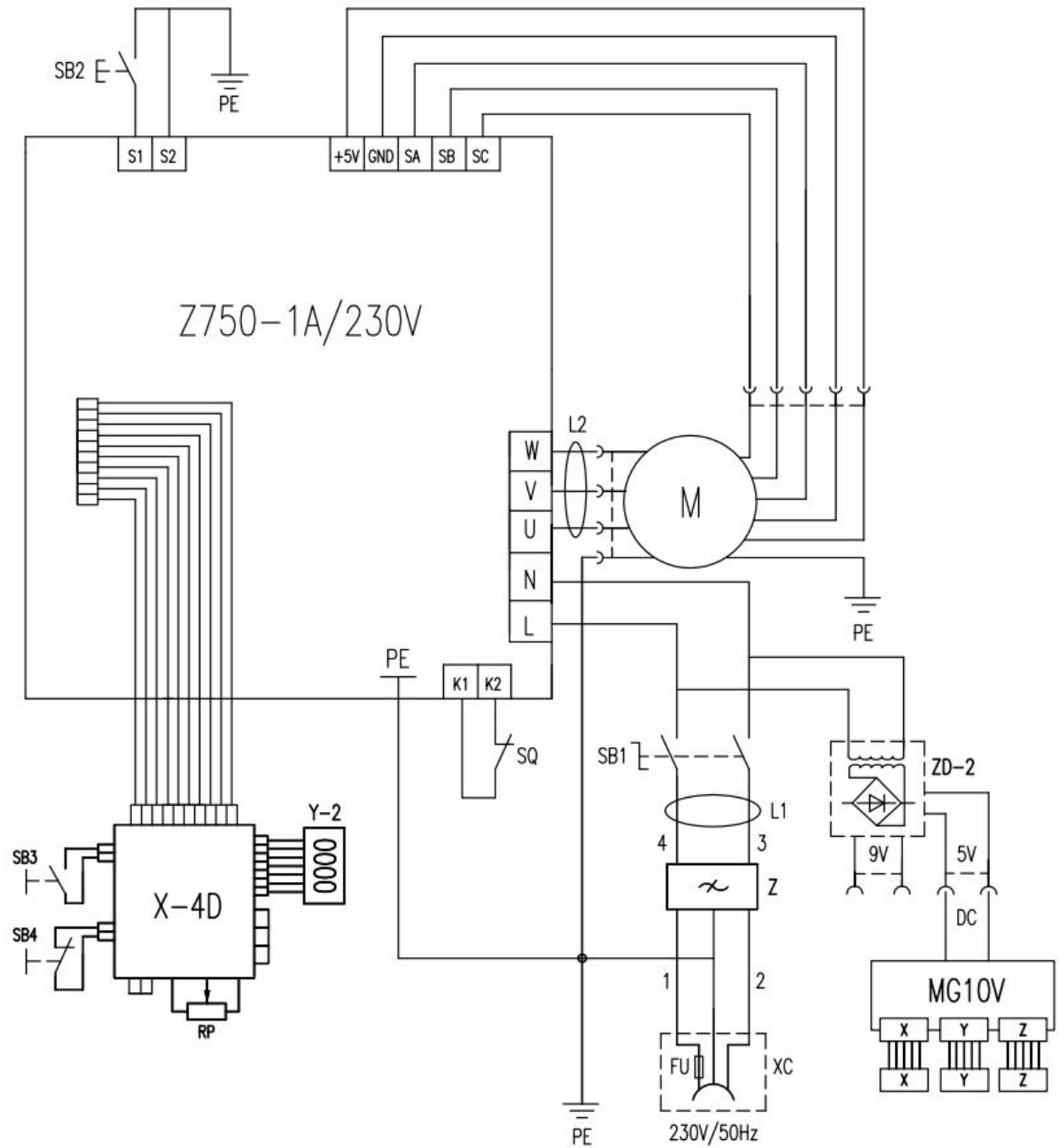


## SX2.7 MILL Electrical wiring diagram



Z750-1A/230V: PC Board	M1: Brushless motor	ZD-2: DC power supply plate	FU: Fuse (8A/230V, 15A/110V)
X-4D: Knob panel	SB2: Tapping button	Z: Filter (only use on 230V)	XC: Socket with fuse
SB1: Emergency stop switch	Y-2: Liquid crystal board	SQ: Micro switch	SB3: Start/stop button
L1: Magnet ring /only on 230V	L2: Magnet ring		SB4: Tapping button

## SX2.7D MILL Electrical wiring diagram



Z750-1A/230V: PC Board	M1: Brushless motor	ZD-2: DC power supply plate	FU: Fuse (8A/230V, 15A/110V)
X-4D: Knob panel	SB2: Tapping button	Z: Filter (only use on 230V)	XC: Socket with fuse
SB1: Emergency stop switch	Y-2: Liquid crystal board	SQ: Micro switch	SB3: Start/stop button
L1: Magnet ring (only on 230V)	L2: Magnet ring	MG10V: Display	SB4: Tapping button

## Packing List

No.	Name	Description	Q'ty	Remarks
1	Bench Mill	type: X2.7 or SX2.7	1 set	
2	Fuse	110V/20A or 230V/10A	1 pce.	
3	Manual	manual	1 pce.	
4	Double end wrench	S1*S2: 8*10、14*17、17*19	each 1	
5	L hex wrench	S: 3、4、5、6、8	each 1	
6	U wrench assembly	X3C004	1 pce.	
7	Oil cup		1 pce.	
8	T nut	X22001	2 pcs.	
9	L hex wrench assembly	X3C2003	1 件	
<b>Below parts usually fixed on the machine (According to choice of MT3 or R8)</b>				
10*	B16 drill chuck	J2113/ 1-13mm / B16	1 pce.	MT3 type
11*	MT3 taper shank	X20206	1 pce.	
12*	locking bolt assembly	X3C021100(X3C021101)	1 pce.	
13*	slanting wedge	X3C2002	1 pce.	
14*	JT6 drill chuck	3-16mm / JT6	1 pce.	R8 type
15*	R8 taper shank	X302A04(A)	1 pce.	
16*	locking bolt assembly	X3C021101B (7/16")	1 pce.	

## Optional Accessories

A range of accessories is available from your dealers which extends the versatility of your machine. There are as follows:



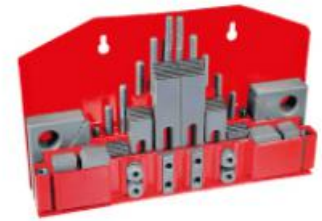
**Quick vice**

Width 100mm  
S/N:10036



**Mill chuck set**

Chuck dia. 4,6,8,10,12,14,16mm  
S/N:10037



**Clamping kit**

42 pcs.  
S/N:10047



**Power feeder**



**Indexable carbide end mill**

MT#3  $\varnothing$ 30mm  
S/N:10046



**2 Flute HSS end mill**

$\varnothing$ 4mm S/N:10038  
 $\varnothing$ 6mm S/N:10039  
 $\varnothing$ 8mm S/N:10040  
 $\varnothing$ 10mm S/N:10041  
 $\varnothing$ 12mm S/N:10042  
 $\varnothing$ 14mm S/N:10043  
 $\varnothing$ 16mm S/N:10044  
 $\varnothing$ 4-16mm set S/N:10045



**MT#3 collet**

$\varnothing$ 4mm S/N:10119  
 $\varnothing$ 6mm S/N:10120  
 $\varnothing$ 8mm S/N:10121  
 $\varnothing$ 10mm S/N:10122  
 $\varnothing$ 12mm S/N:10123  
 $\varnothing$ 14mm S/N:10124  
 $\varnothing$ 16mm S/N:10125  
 $\varnothing$ 4-16mm set S/N:10126



**Rotary table**  
size 100mm

S/N:10094

**Optional accessory**  
for S/N:10094, S/N:10094A

**3-jaw chuck**  
(Self-centered)



$\varnothing$ 80 mm  
S/N:10190

**Dividing plate**



S/N: 10094-1



S/N:10094A

**4-jaw chuck**  
(Independent)



$\varnothing$ 80 mm  
S/N:10010

**Tailstock**



S/N: 10094-2



**Stand**

S/N:10240A

----- The end-----