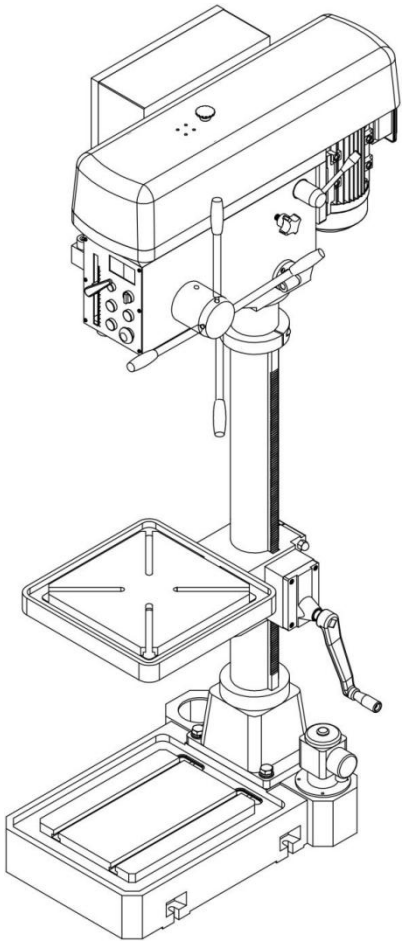
SAVE THIS MANUAL FOR FUTURE REFERENCE

ATTENTION: Read this manual carefully before using the machine

PILLAR TYPE VERTICAL DRILLING MACHINE
MODEL : MSB 32 Vario

INSTRUCTION MANUAL



MAX.DRILLING DIAMETER: 31.75mm
MAX.TAPPING DIAMETER: M24(cast iron)/M20(steel)

SERIAL NO.

SAFE RULES

1、Read and understand the Instruction Manual carefully. Learn its application and limitations as well as the specific potential hazards to this tool.

2、The power source must be consistent with the requirement of the motor (see motor nameplates).

3.、All prongs of the power plugs and outlets must be reliable, without laxity an-d bad touch apperance.

4、Don’t abuse wire and drag the power wire. Wire should leave hot, greasy sharp edge locations away.

5、When appears trouble, turn switch "OFF" and remove the plug from the power source outlet before maintaining or lubricating your drill press.

6、This machine must be grounded securely.

7、Keep guards in working order, and in proper adjustment and alignment.

8、Form a habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

9、Keep work area clean. Don't use power tools in damp or wet or weak light locations or expose them to rain.

10、With padlocks, master switches, by removing starter keys, or storing tools where children can't get them.

11、All visitors should be kept a safe distance from work area.

12、Don't force tools or attachment to do a job it was not designed for.

13、Don't wear loose clothing, gloves, necklaces or jewelry to get caught in moving parts. NONSLIP footwear is recommended. Wear protective hair covering to contain long hair. Roll long sleeves abovethe elbow.

14、Don't operate the machine after drinking and tiredness.

15、Keep proper footing and balance at all times.

16、Maintain the machine regularly, keep the tools sharp and add lubrication when cutting.

17、Make sure switch is in "OFF" position before plugging in.

18、Use the recommended accessories or unit to avoid hazards.

19、Don't store materials above or near the tool, in case of serious injury.

20、Before further use of tool, a guard or other part that is damaged should be carefully checked, so that it should be properly repaired or placed.

21、When cutting large diameter holes, keep speed slower.

CONTENTS

Thank you for purchasing the pillar type vertical drilling machine model:MSB 32 Vario In order to keep the machine in good working condition,please operate and maintain the machinecorrectly.Before operating the machine,please read this manual carefully.

1、SUMMARY

The drilling machine of this model is designed for drilling, reaming and boring on ferrous and boring on ferrous and non ferrous metals of holes below φ31.75mm in diameter. It is widely used in instrument industry, machine works and repair shops for singe piece or series production.

2、TECHNICAL PARAMETERS

Max. drilling diameter	φ31.75mm
Max.tapping diameter	M24(cast iron)/M20(steel)
Max.travel of spindle	150mm
Taper hole number of spindle	MT3
Range of spindle speeds	100—620、620—3300r/min
Distance between spindle axis and column guideway	265mm
Dimensions of working table surface ：	334mm×334mm
Dimensions of base surface：	310mm×380mm
Max.Distance of spindle nose to table surface:	820mm
Max.Distance of spindle nose to baseplate working surface:	1235mm
Swivel angle of table around column:	360°
Main motor power:	1.5kw
Packing dimension(L×W×H):	1040×640×2050mm
Net weight:	310kg

3、POINTS FOR ATTENTION

3.1 Before the machine being put into operation, the operator should read over this Instruction Manual thoroughly to acquaint himself with the construction of the machine, the functions of the controls and the systems of driving and lubrication.

3.2 Before starting the machine oil the lubricating point according to the given instructions on lubrication and inspect sleeve moves smoothly up down and the electric equipment is in proper condition.

3.3 To avoid any impairment to the machine, you had better use the drill bit within 20mm.

When making adjustment of the working table. Downwards or upwards first it loosen the clamping lever 7(Fig, Ⅰ) of the bracket, then have the table raised

or lowered on the desired position with the lifting hand lever and re clamp the bracket.

The hand-operated lifting device may also be used in lifting of the spindle head. This requires us first to wind up the working table as far as it's sleeve 5(Fig, Ⅰ) just catches the safety ring 2(Fig, Ⅰ)of the spindle head, and then to loosen both the square head screw on the safety ring and the clamping lever 1 (Fig, Ⅰ)of the spindle head. After that, wind up again the crank 6(Fig.Ⅰ)so as to let the spindle head raised or lowered on the desired position (downslide is chiefly done by its own weight), and then fasten both the square head screw of the safety ring and the clamping lever 1 of the spindle head.

3.5 After a hole has been drilled to the required depth, release the hand lever to have the spindle sleeve, under the action of a coil spring, returned to its original position.

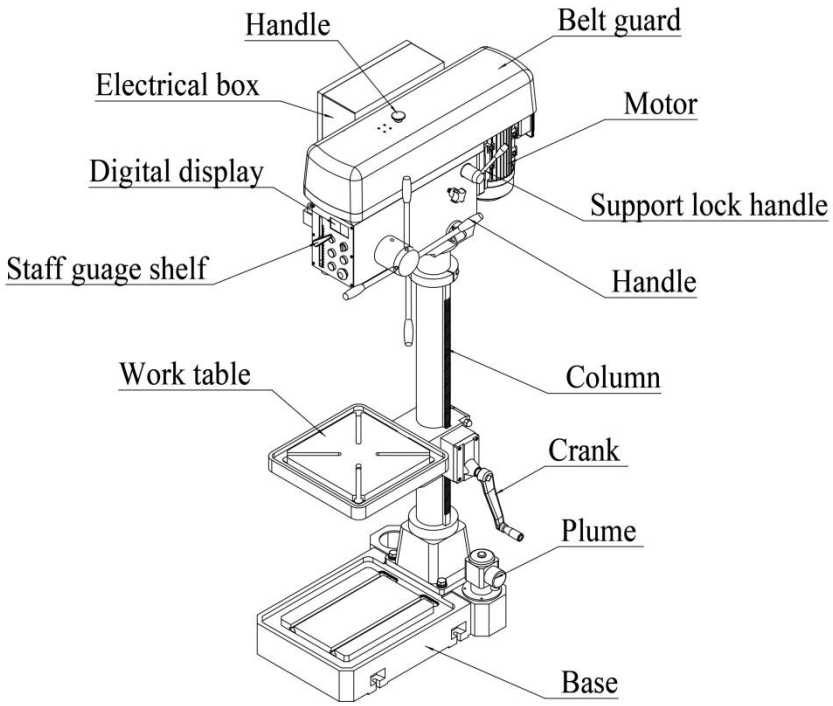
3.6 For the sake of operation convenience, a hand-operated lifting device is provided on the working table, which with the help of sleeve, may be also found useful in lifting of spindle head. And for the sake of series production, a graduated circle of drilling depth is furnished on the machine. When it is going to drill at fixed depth, just loosen(Fig, 1), turn the circle to the desired drilling depth and then retighten. In case fixed depth appears not necessary, loosen the nut4 and remove it to the right side.

4、DRIVING SYSTEM

The drive of the drill is very simple. It is by a motor which drives the pulley through V, belt, and the pulley, consequently, consequently, drives the spindle to revolve through splined sleeve. When a motor of 910r/min is applied, five spindle speeds of 100—620、620—3300r/min） could be obtained. The change of spindle speeds will be carried out by shifting the v-belt to the respective speed step on the cone pulley. In case of changing spindle speed, first turn found the knurled knod on the cover by 90°, the cover will lift up automatically; next loosen the screw(Fig, I), push the motor towards the column, making the belt loose, and then shift the belt to the required speed step on the cone pulley.

After that, pull out the motor until proper belt tension is obtained, retighten the screw 3 and press down the cover which is locked by turning the knob by 90° back.

EACHMAIN PARTS AND HANDLES DISTRIBUTED CHART



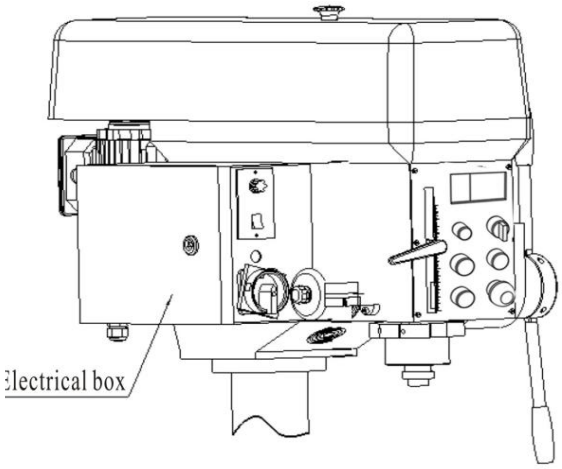
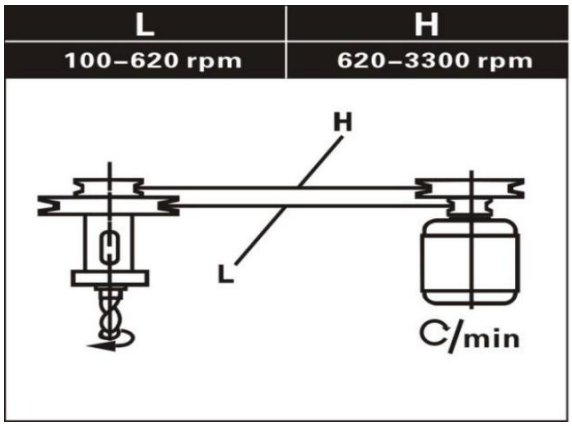


Fig.I

mm	Steel		Casst iron		Copper		Aluminum	
	0 r/min	W X mm/min	0 r/min	W X mm/min	0 r/min	W X mm/min	0 r/min	W X mm/min
Ø4	1990	84	2390	160	2500	149	3300	168
Ø6	1350	81	1590	154	2400	143	2700	162
Ø8	995	76	1195	144	2340	134	1900	152
Ø10	800	66	955	135	1910	126	1440	142
Ø12	665	61	795	125	1560	116	1120	132
Ø16	500	56	600	116	1195	108	795	122
Ø20	400	51	480	106	955	99	640	112
Ø25	320	48	380	97	765	90	530	102
Ø32	265	42	320	91	635	85	400	96



5、ELECTRIC SYSTEM (Fig, Ⅱ)

The electrical system is consisted of a motor, M1 a on-and-off switch QS and power cord wire. It is controlled to start or stop by switch. Loading is only one motor. The power supply must be in keeping with the motor (see motor plate) as appeared on the packing carton, the motor's specification is50Hz,AC,1400r/min circuit control is Fig Ⅱ.

It is necessary to connect motor cord with the head box before first use and what is more, the grounding wire (yellow & green) color must be lined in the earth screw near the box.

It is suggested to connect power wit plug & socket which carrier pins should be cut out first before earth pin did when pull out and it should turn out contrary when put in .

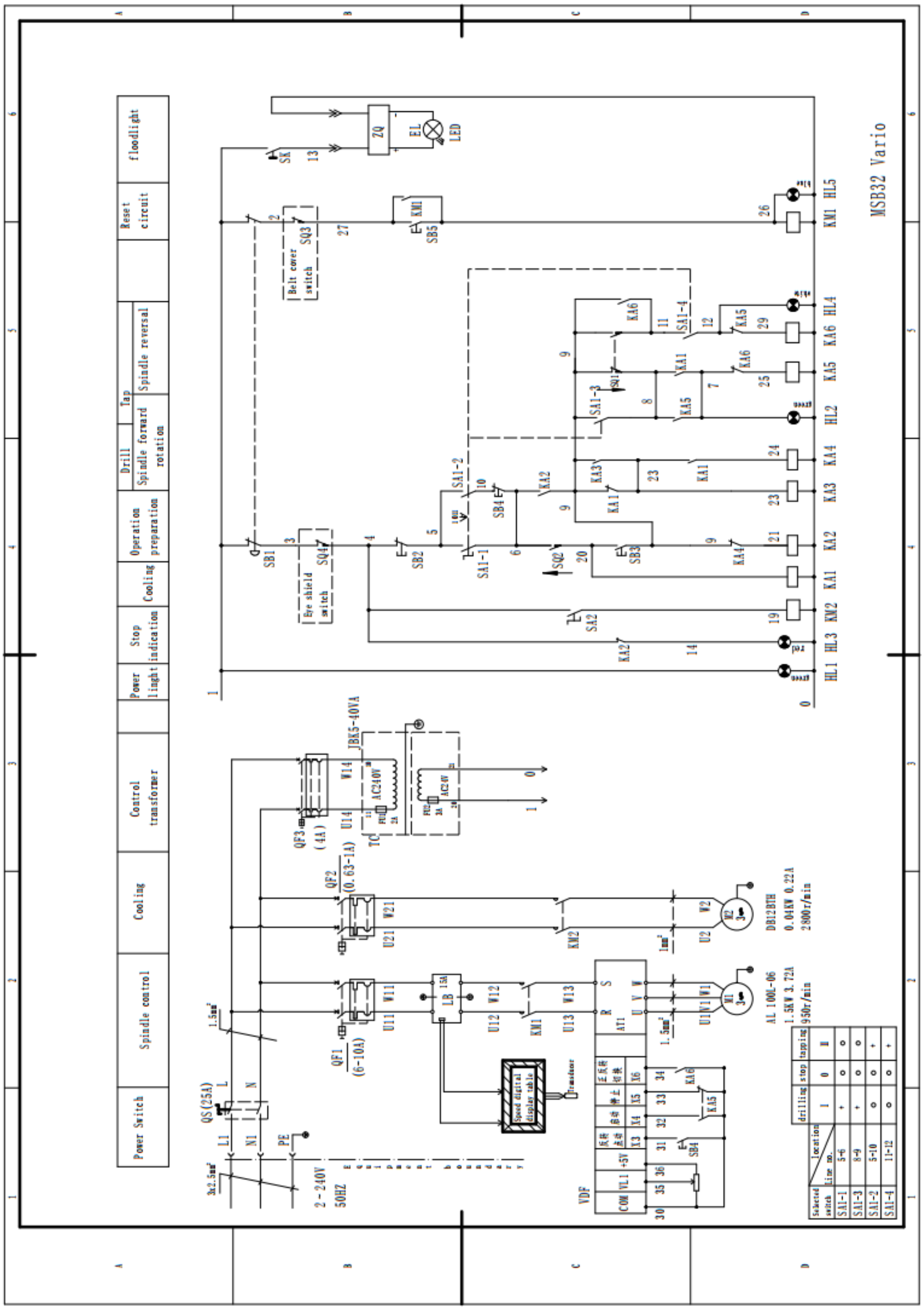
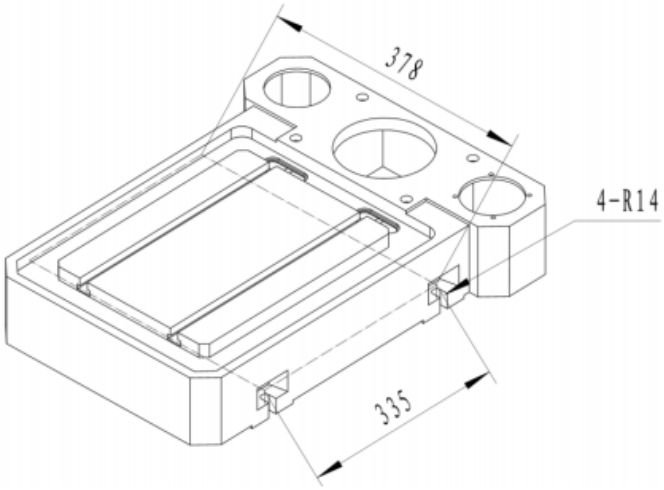

Power Switch
Spindle control
Cooling
Control transformer
Power linght
Stop indication
Cooling
Operation preparation
Drill
Spindle forward rotation
Tap
Spindle reversal
Reset circuit
floodlight
Belt cover switch
Eye shield switch
MSB32 Vario

Fig. Ⅱ

6、INSTALL AND ADJUST



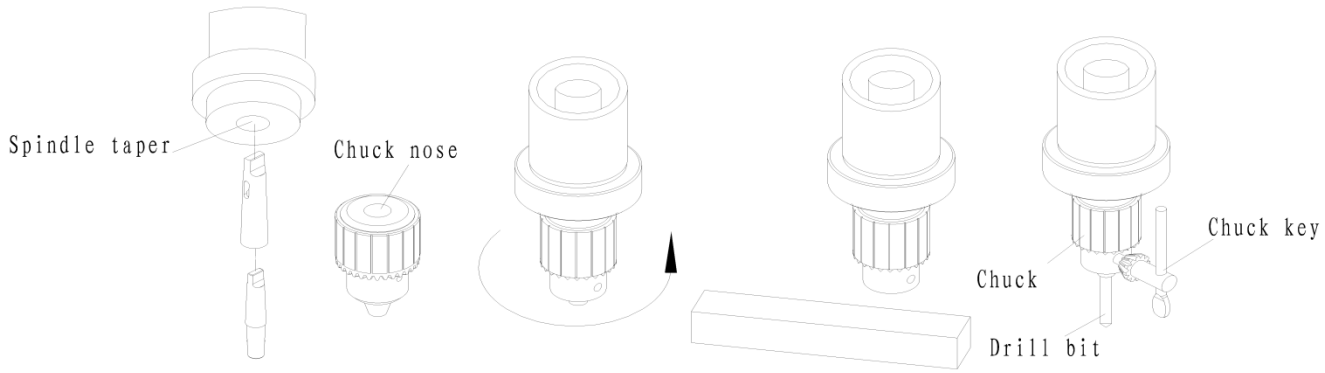
The machine had been ass cabled before left factory

Users could fix the machine on the bass or not do so.

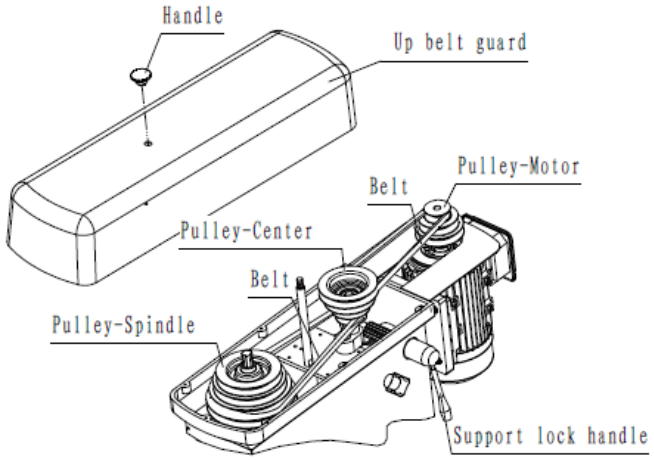
If you want to fix the machine,you can drill holes in the base according to the size of base table

Thentighten the drill press on the base by bolt.

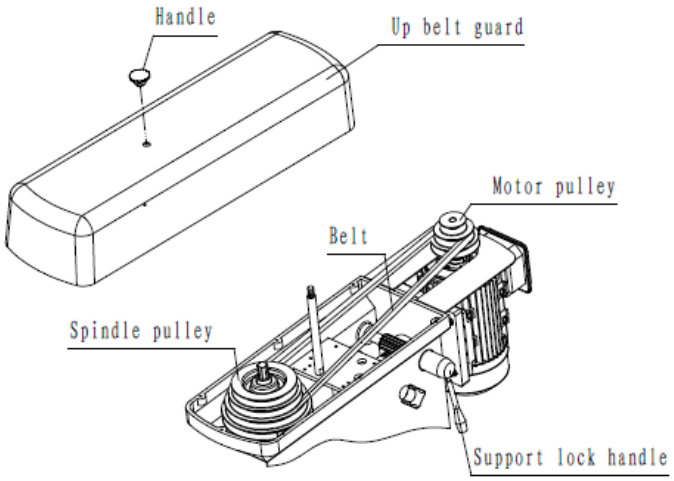
INSTALLING THE CHUCK:Please clean the tapered hole in the chuck and the spindle nose with a clean cloth. Push the chuck up on the spindle nose as far as it will go.Turn chuck sleeve clockwise and open jaws in chuck completely. Lightly tap the nose of the chuck with a piece of wood to insure proper seating of the chuck on the spindle.



INSTALLING THE V-BELT:First,you should loosen belt guard knob and open the belt guard. Then release belt tent ion screw,put the motor toward front of drill press to relieve spring tension on the belt.Choose speed for drilling operation operation and move belt to correct position for desired speed. Move the motor reward to apply tension to the belt and tighten belt tension screw.



Speed eight



Speed five

And suggested that the user should connect the machine the power supply. Correctly according to the control circuit, and fit delay-action fuse for short circuit protection.

All earth-terminals must be well earthed before operation.

7、 LUBRICATION (Fig, Ⅲ)

7.1The spindle pulley bearing 1, the spindle bearing 2、3 & 4, the bevel gear bearings 5 & 6, should be greased regularly and cleaned annually.

7.2 Lubrication friction parts are available in other oil spindle pulley spline housing injection.

7.3 After the end of the day, all should wipe the table, column surface, and then the oil.

BEARINGS:

Signals in FigIII	Location	Name	Size	Type	Qty	Remarks
1	Splined hub	Single row radial ball bearing	35×62×14	6007	2	
2			25×62×17	6305	2	
3	Spindle sleeve		22×50×14	62/22	1	
4		Single pass thrust ball bearing	35×52×12	51107	1	
5		Single row radial ball bearing	35×72×17	6207	1	
6	Worm	Single pass thrust ball bearing	25×42×10	51105	1	
7	Pillar/insurance cirle	Single pass thrust ball bearing	100×135×25	51120	1	

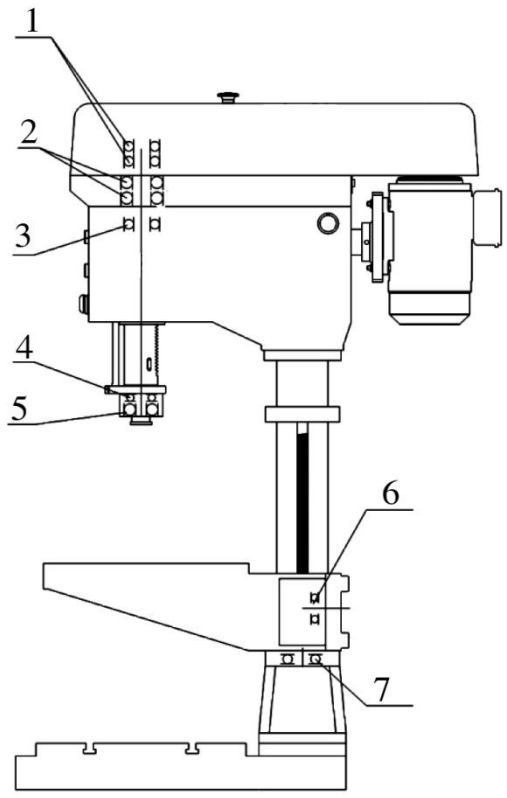


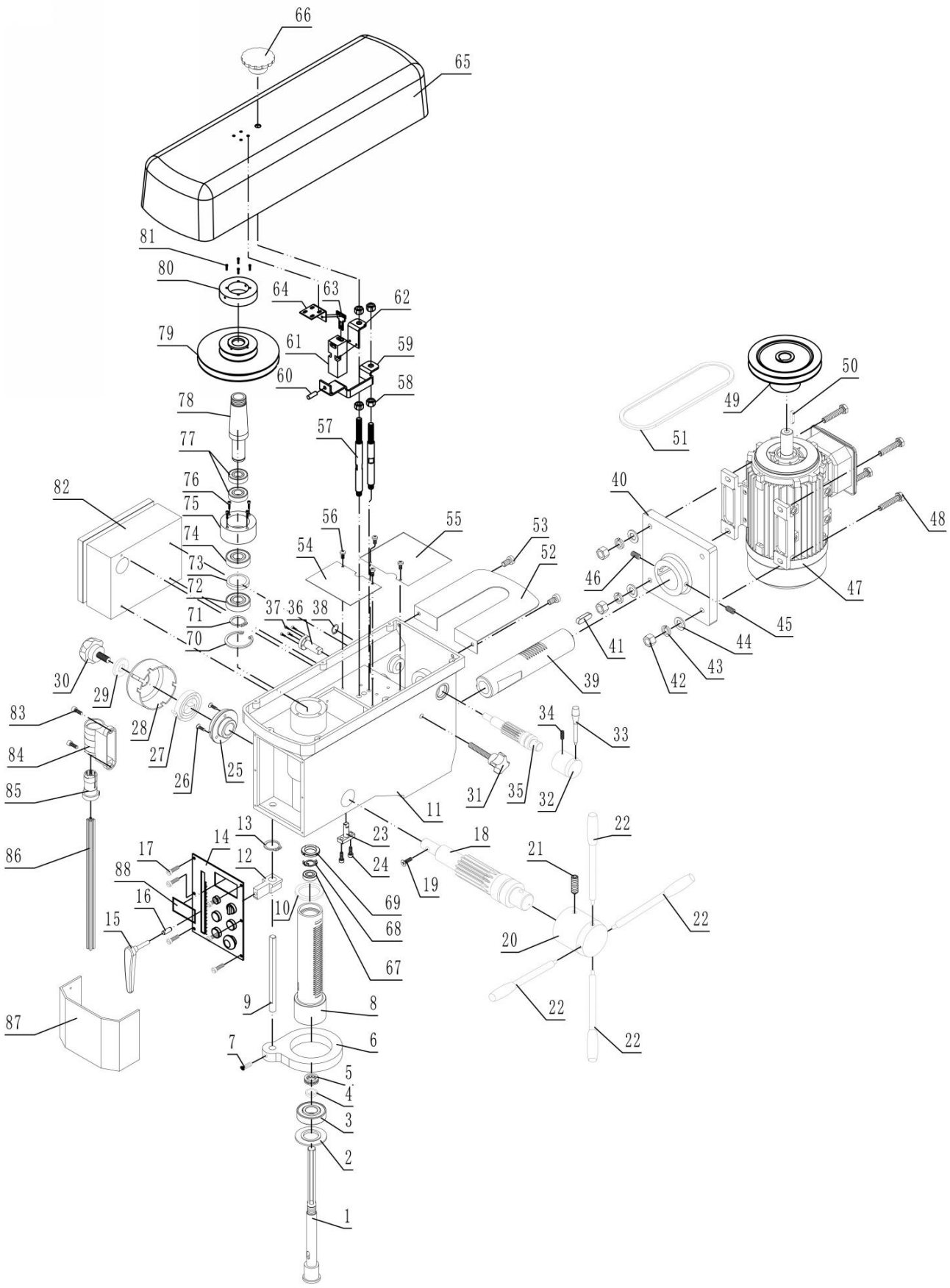
Fig. III

8、TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
Noisy Operation	1、Incorrection belt tension 2、Loose spline pulley 3、Loose motor pulley	1、Adjust belt tension 2、Tighten spline nut 3、Tighten setscrew in pulley
Drill Burns	1、Incorrect speed 2、Chips not coming out of hole 3、Dull drill 4、Feeding too slow 5、Not lubricated	1、Change speed 2、Retract drill freque-ntly to clear chips 3、Resharpen drill 4、Feed fast enough to cut 5、Lubricate drill
Workpiece torn loose from hand	Not supported or clamped properly	Support workpiece or clamp it
Drill binds In workpiece	1、Workpiece pinching drill or excessive feed pressure 2、Improper belt tension	1、Support workpiece or clamp it 2、Adjust tension
Excessive drill runout or wobble	1、Bent drill 2、Worn spindle bearings 3、Drill or chuck not properly installed	1、Use a straight drill 2、Replace bearings 3、Install drill or chuck properly
Spindle returns unstable	Spring has improper tention	Adjust spring tension
Chuck falls off	Dirty,grease,or oil on the tapered inside surface of chuck or on the spindle tapered surface	Using a household detergent-clean the tapered surface of the chuck and spindle to re-move all dirt,grease and oil
Pulley sliped	Belt without tension	Tighten the belt

9、Head pares diagram

HEAD PARTS DIAGRA

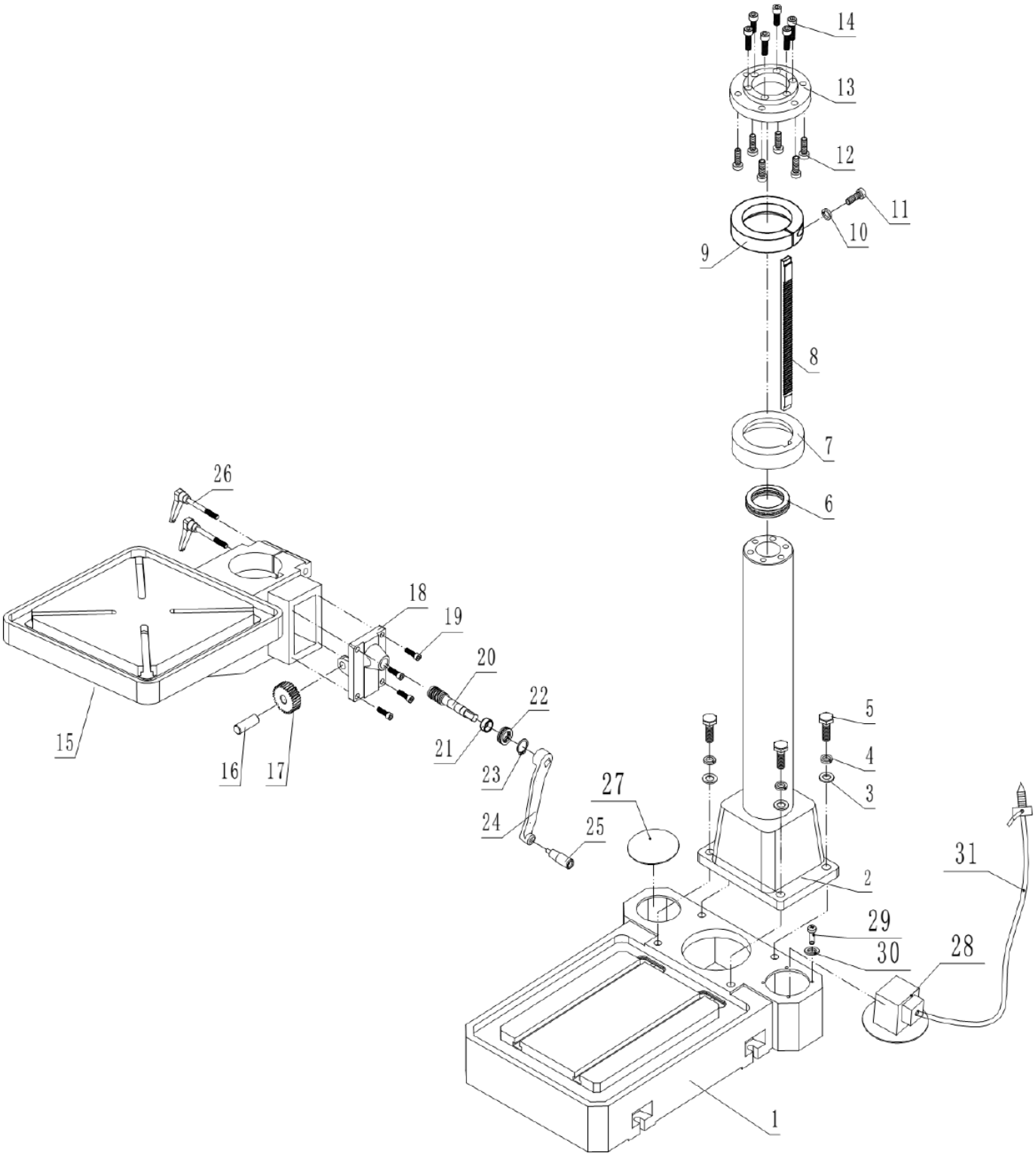


HEAD PARTS LIST:

No	Name	Numb	No	Name	Numb
1	Spindle	1	2	Cover	1
3	Bearing 6207	1	4	Washer	1
5	Bearing 51107	1	6	Bvel lock	1
7	Screw M6x16	1	8	Sleeve	1
9	Lock	1	10	Mat	1
11	Head	1	12	stroke dog	1
13	Ring	1	14	Nameplate	1
15	Screw	1	16	Pin	1
17	Screw	6	18	Pinion shaft	1
19	Screw	1	20	Handle seat	1
21	Screw	2	22	Handle	4
23	Pin	1	24	Screw	2
25	Sleeve	1	26	Screw	3
27	Spring	1	28	Spring cap	1
29	Washer	1	30	Handle	1
31	Handle	1	32	Handle seat	1
33	Handle	1	34	Screw	1
35	Pinion shaft	1	36	Key	1
37	Screw	4	38	Ring	1
39	Motor pin	1	40	motor seat	1
41	Key	1	42	Nut	4
43	Washer	4	44	Washer	4
45	Screw	1	46	Screw	1
47	Motor	1	48	Bolt	4
49	pulley-motor	1	50	Key	1
51	Belt	1	52	bottom belt guard	1
53	Screw	2	54	Cover plate	1
55	Cover plate	1	56	Screw	4
57	Fixed plate	2	58	Screw	4

No	Name	Number	No	Name	Number
59	mounting plate	1	60	Screw	4
61	Switch	1	62	Plate	1
63	Piece	1	64	Plate	1
65	belt guard	1	66	Handle	1
67	Bearing	1	68	Washer	1
69	Nut	1	70	washer	1
71	Washer	1	72	Bearing	1
73	Washer	1	74	Bearing	1
75	Bearing seat	1	76	Screw	4
77	Bearing	1	78	Insert-Pulley	1
79	Spindle pulley	1	80	Ring	1
81	Screw	4	82	Electric box	1
83	Screw	2	84	Switch seat	1
85	sleeve	1	86	sleeve	1
87	Safety guard	1	88	Digital display	1

BASE＆COLUMN PARTS DIAGRAM



BASE＆COLUMN PARTS LIST：

No	Name	Numb	No	Name	Numb
1	Base	1	2	Column	1
3	Ring	4	4	Washe	4
5	Nut	4	6	Bearing	1
7	Safety loop	1	8	Rack	1
9	Secure ring	1	10	Washer	1
11	Screw	1	12	Screw	6
13	Collar stop	1	14	Screw	6
15	Gear	1	16	Pin	1
17	Gear	1	18	table support	1
19	Screw	4	20	Worm	1
21	Circle	1	22	Bearing	1
23	Ring	1	24	Crank	1
25	Handle	1	26	Handle	2
27	Cover plate	2	28	Plume	1
29	Screw	4	30	Washer	4
31	Water pipe	1			

PILLAR TYPE VERTICAL DRILLING MACHINE

MODEL：MSB 32 Vario

Certificate of Inspection

MAX.DRILLINGCAPACITY ： 31.75mm

SERIAL NO:

The machine had been tested according to the specified standard JB/T 5245.2-2006and technical requirements， and found satisfactory for dispatch。

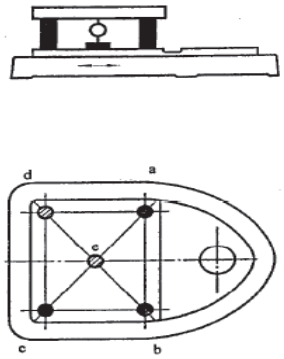
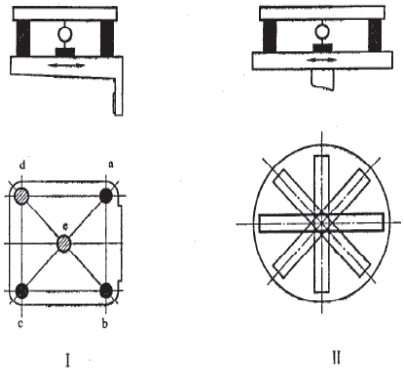
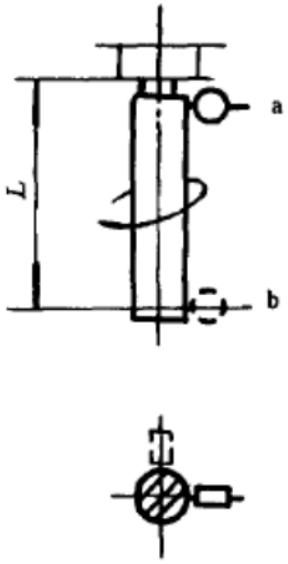
Director：

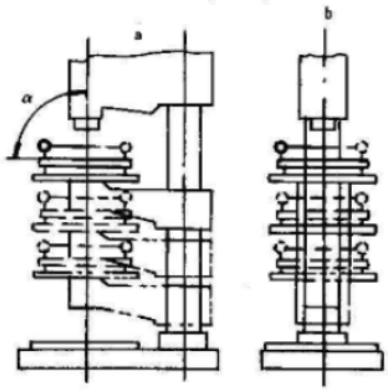
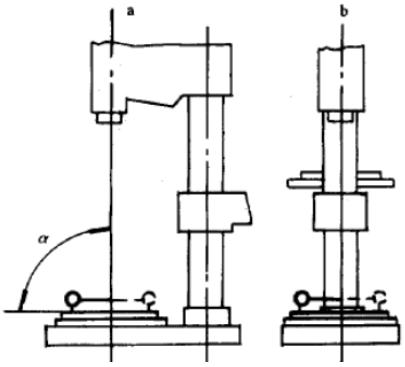
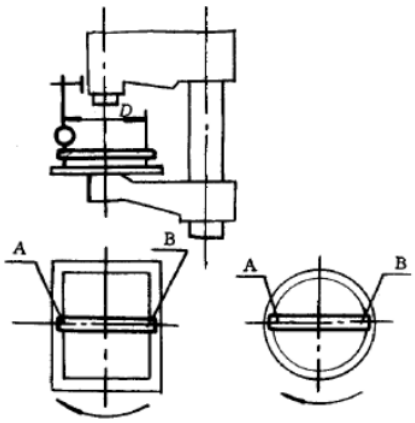
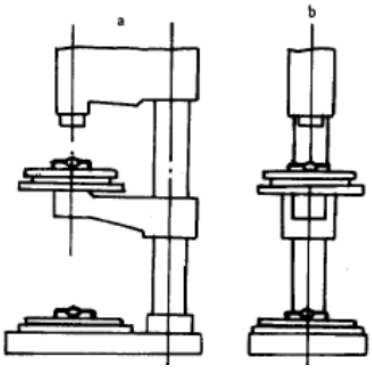
Chief of Inspection Department：

Date：

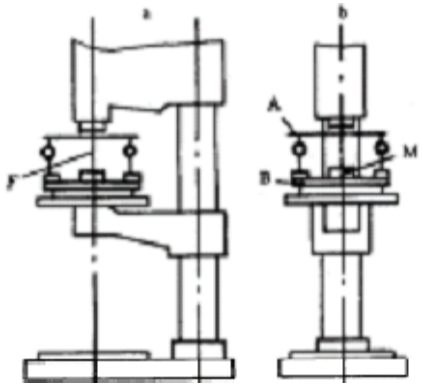
Attached ： Test Chart

Precision Inspection Record List

NO.	Inspection Name	Inspection Fig	Precision mm	
			Allowed Error	Practical
G1	Plane degree of base working face		At 300measuring unite：0.04 plane or concave	
G2	Plane degree of table working face		At 300measuring unite：0.04 plane or concave	
G3	Outside the spindle taper hole axis adial runout		1）L=100 a.0.015 b.0.020 2）L=200 a.0.020 b.0.035 3）L=300 a.0.020 b.0.040	

No.	Inspection Name	Inspection Fig	Precision mm	
			Allowed Error	Allowed Error
G4	Spindle vertical axisof the degree of the worksurface: a .In the horizontal plane b. In the vertical plane		a)0.10/300 [a] (α ≤90°) b)0.10/300 [a]	
G5	Spindlevertical axis relative degree of the base table a. In the horizontal plane b. In the vertical plane		a)0.10/300 [a] (α ≤90°) b)0.10/300 [a]	
G6	End face runout of the worktable		D=300 0.04	
G7	Machine adjusting a .In the horizontal plane b. In the vertical plane		a and b 0.04/1000	

Precision Inspection Record ListPrecision ： mm

P1	Axis under the action of the axial force, the vertical spindle axis on the degree of change in the work surface a. in the horizontal plane b. in the vertical plane	 A——Directly on the spindle on the end of a special inspection: B — — Chassis dynamometer release（should have sufficient stiffness and area in order to avoid the deformation table）; M — — Dynamometer (should be calibrated single) F — — Direct the spindle axial load applied	aor b 2/1000 F=7kN	

Pillar Type Vertical Drilling Machine MSB 32 Vario

Packing List

Max. Drilling capacity： 31.75mm

Serial No :

MSB 32 Vario	PACKING LIST	Page2of 2

Serial No：

Packing dimension：（L×W×H）900mm×590mm×1890mm

G.W.：350kg

N.W.：310kg

No.	Name	Model	Quantity	Remark
1	Machine	MSB 32 Vario	1PC	
2	Belt	B-1448Li	1PC	in the machine
3	Crank	SB6532-05	1PC	
4	Drill chuck	5-20mm/JT3	1PC	
5	Arbor	MT3/JT3	1PC	
6	Taper sleeve	MT3/MT2	1PC	
7	Drift	Z4120-F03	1PC	
8	Instruction Manual / Certificate of Inspection /Packing list		1PC	Bound

Inspector: Date: