



# ***DRILLING MACHINE***

**MODEL:**                    **KST 16**  
                                 **KST 25**  
                                 **KSS 32**

## **OPERATION MANUAL**

	KST 16	16mm
Max. drilling capacity:	KST 25	25mm
	KSS 32	32mm



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## 1 Preface

Thank you for purchasing the bench drilling machine model: KST 16/KST 25/KSS 32. The machine is designed for drilling, reaming, and boring on ferrous and non-ferrous material. Its maximum drilling capacity is  $\varnothing 16\text{mm}$ ,  $\varnothing 25\text{mm}$ ,  $\varnothing 32\text{mm}$ . It is widely used in instrument industry, machine works, and repairing work for single or series production.

In order to keep the machine in good working condition, please operate and maintain the machines and tools used.



## 2 MAIN TECHNICAL PARAMETTERS

ITEM	KST 16	KST 25	KSS 32
Max. drilling capacity	16mm	25mm	32mm
Max. spindle stroke	100mm	93mm	130mm
Spindle tapered	MT.2	MT.3	MT.3
Spindle speeds (r/min)	290 400 520 860 1650 2000	160 230 370 520 790 910 1200 1400 1820	160 230 380 540 800 950 1200 1420 1880
Working area of table	S:280×310 R: $\varnothing$ 320	S:280×310 R: $\varnothing$ 320	S:340×380 R: $\varnothing$ 420
Working area of base	250×250	250×250	300×325
Diameter of column	$\varnothing$ 85	$\varnothing$ 85	$\varnothing$ 102
Max. distance between spindle nose to table	25~425	25~425	110~700
Max. distance between spindle nose to base	510~610	510~610	1045~1175
Distance spindle axis to column surface	180	180	230
Motor	750w	750W	1100W OR 1500W
Net weight	108kg	108kg	247kg
Overall dimensions ( L×W×H )	680×390×1050mm	680×390×1050 mm	840×458×1760 mm

### 3 MAIN STRUCTURE

The machine mainly includes the parts as shown in Fig. 1.

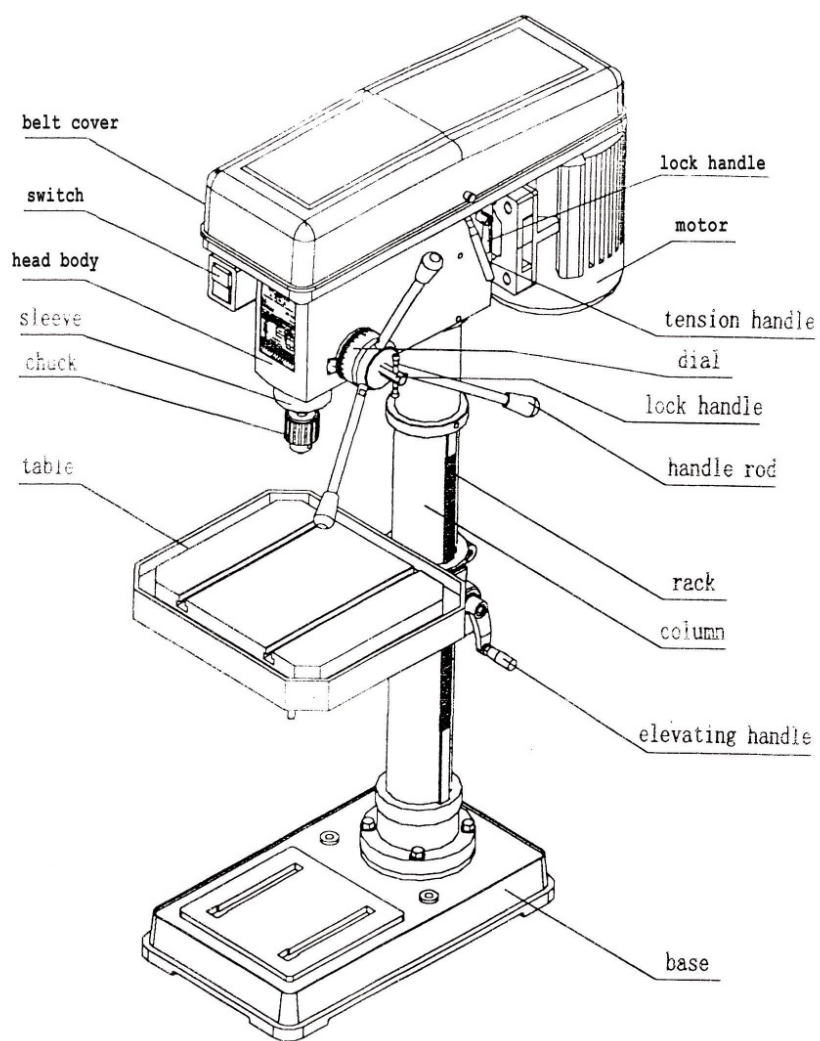


Fig.1

## 4 WORKING PRINCIPLE

### 4.1 TRANSMISSION SYSTEM :

The main driving system is the motor which drives the middle pulley, spindle pulley by V-belt, the spindle pulley drives the spindle rotate by spline. The spindle has a nine gear speed by adjusting the V-belt position around the pulley.

### 4.2 ELECTRIC SYSTEM :

The electric system of the machine consists of a motor, a switch, and some wire. The running and stopping of the machine is controlled by the switch.

The power supply must meet the requirement of the motor (see the nameplate

of the motor ).The electric circuit as following:

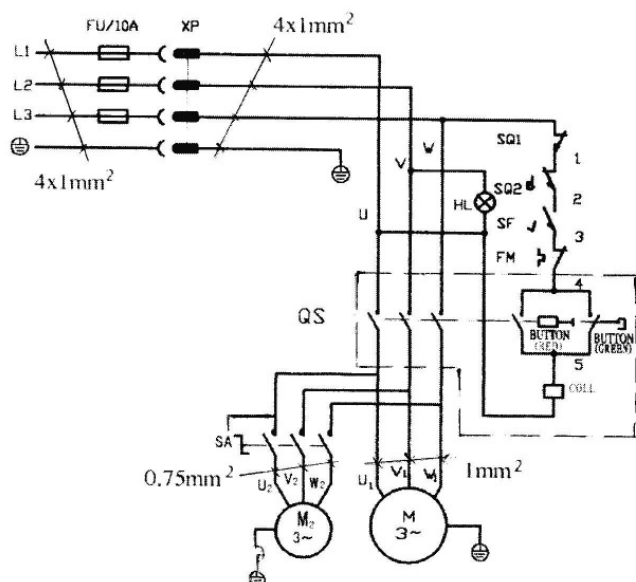


Fig. 2

three-phase control circuit

Please let the electrician who has achieved operation card check the machine by manual before the machine is operated for the first time.

It should connect to power with a plug socket (carrier pins should be cut out first before the earth pin) When you pull it out, it should turn out contrary when put in. We suggest that the user should connect the machine to the power

supply correctly, according to the control circuit, and fit delay-action for short circuit protection.

## 5 ADJUSTMENT AND OPERATION

### 5.1 Install and uninstall the chuck :

Clean the spindle, drill chuck interior cone surface, and cone shaft connecting rod surface. The one shaft connecting rod with plane end plugs into the spindle hole , the other end with the drill chuck. Use the hammer to hit the drill chuck below side , so that the chuck is firmly on ( figure 3 ) .

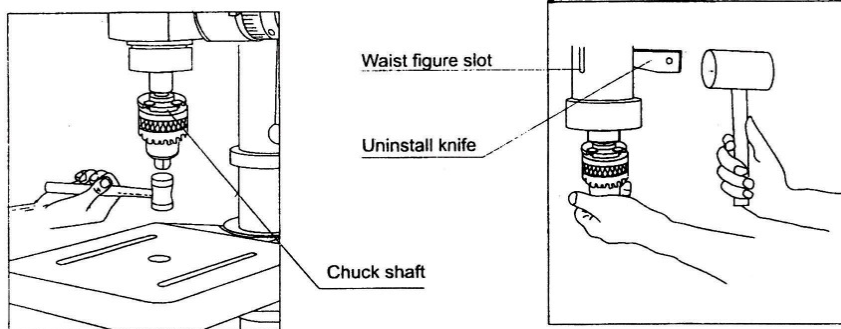


Figure 3

Figure 4

Uninstall the drill chuck , you can rotate down the spindle and sleeve. Plug the uninstall wedge into the waist figure slot through the sleeve side and uninstall the connecting rod and drill chuck ( figure 4 ) . You must not knock the drill chuck , to avoid affecting machine precision.

### 5.2 Install drill

Little drill clamped with drill chuck should place drill chuck positive. Model KST 25 machine; the spindle interior cone hole is Morse 2 and MT.2 cone shaft drill can connect on spindle directly. Model KSS 32 machine; the spindle interior cone hole is MT.3 and MT.3 cone shaft drill can connect on spindle directly. Mt.2 should add tapered sleeve ( in accessory box ) . Then connect the spindle.

### 5.3 Tighten the workpiece

To avoid affecting the quality of the work piece and clamp, move the drill so that it is too strong to catch the workpiece , then injure the worker and clamp , the work piece. The clamp should be placed on the table , two long slots can be used for the bolt to firm the work piece.

When the workpiece is bigger or higher , you can rotate behind the column ,and clamp it tight , then fix the workpiece on the base.

1. elevating , rotating, and clamping the table.

The machine has a square table or circle table for your choice ,loosen the lock screw , the table can rotate the column 360°. Switch the elevation handle and the table will move up and down. If you need to equip the circle table , loosen the lock screw; the circle table will rotate the axle 360°. Adjust the table to the suitable position and then clamp the lock screw. For elevating the machine's performance, the body is fixed on the column. It is not up and down or rotating.

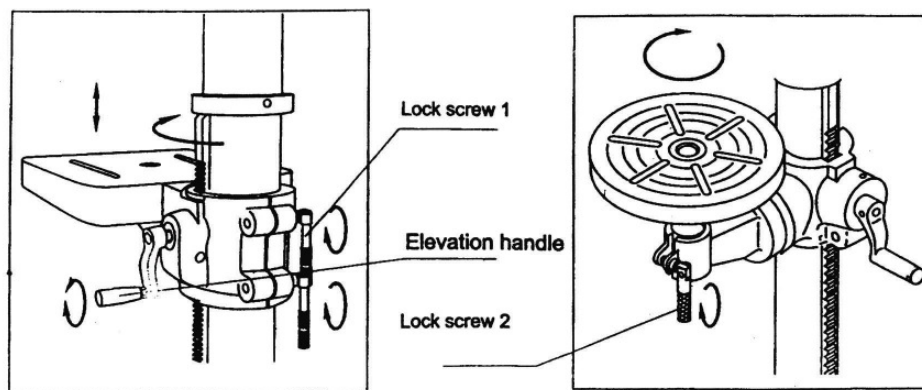


Figure 5



## 5.4 Change the spindle speed

As figure 6 , change the spindle speed according to the change belt 1, belt 2, the position on the spindle pulley , middle pulley , and motor pulley. To change speed; shut off the power and open the upper cover. Then loosen the two lock screws ( each side on body ) and 2 bolt on the against board. Switch the tension hand , loosen the belt according to the plane sign , put the belt to the right position , push the tension handle to tension direction , make the belt tension fit , switch the bolt lock screw to tighten , adjust bolt to make its head against the body back and then tighten the nut on the bolt.

After adjusting , shut the cover and operate the machine.

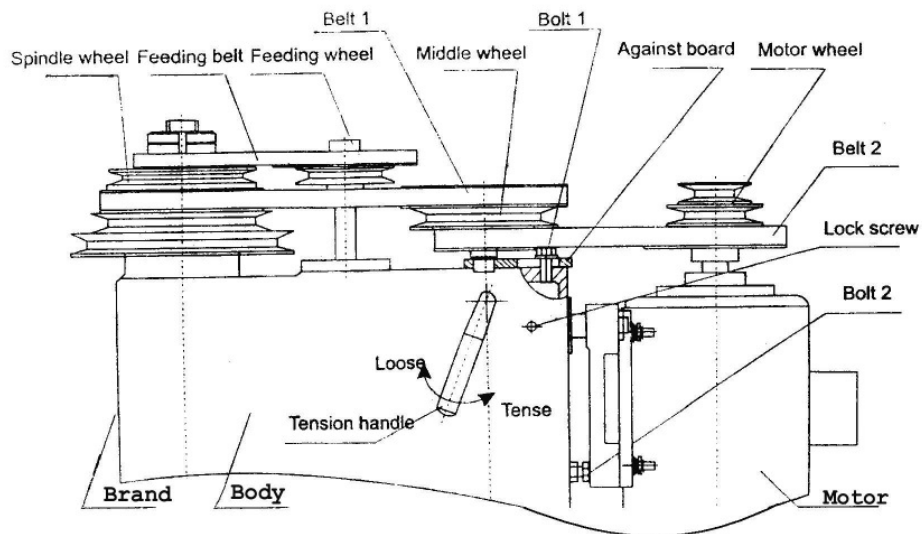


Fig 6

## 5.5 The fixed depth of drilling.

It's easy to control the depth in gross production precisely; the machine is equipped with a fixed depth device.

Before using the fixed drilling , you must adjust the fixed depth device under the conditions that the spindle is stopped. The way is :

- ( 1 ) Rotate the handle to make the spindle go down to the drill or each of the



work piece surface.

- (2) Rotate the dial to align the zero scale with depth drilling amount.
- (3) Adjust the dial to the correct position, wrench the locker and tighten clockwise.



## 6 LUBRICATION

Clean the work table and surface of stand column, and then smear with machine oil every day. After one year, you should uninstall the machine, clean and maintenance to prove the machine functions correctly and achieves perfect precision.

1. After a period of use, if you find the bearing is noisy, it means the bearing is worn and needs to be changed. The model and amount see table 2.

Location	Name of bearing			Quality
	KST 16	KST 25	KSS 32	
spline	60206	6206-Z	6009-Z	2
spindle sleeve	60104	6004-Z	6006-Z	1
spindle sleeve	8105	51106	51107	1
spindle sleeve	60205	6206-Z	6207-Z	1
Middle pulley	80103	6003-2Z	6203-2Z	2

The bearing of table 2 needs to be lubricated with grease and cleaned at least once a year.

Add the lubricate grease into the surface where spindle spline and spline contacts everyday.

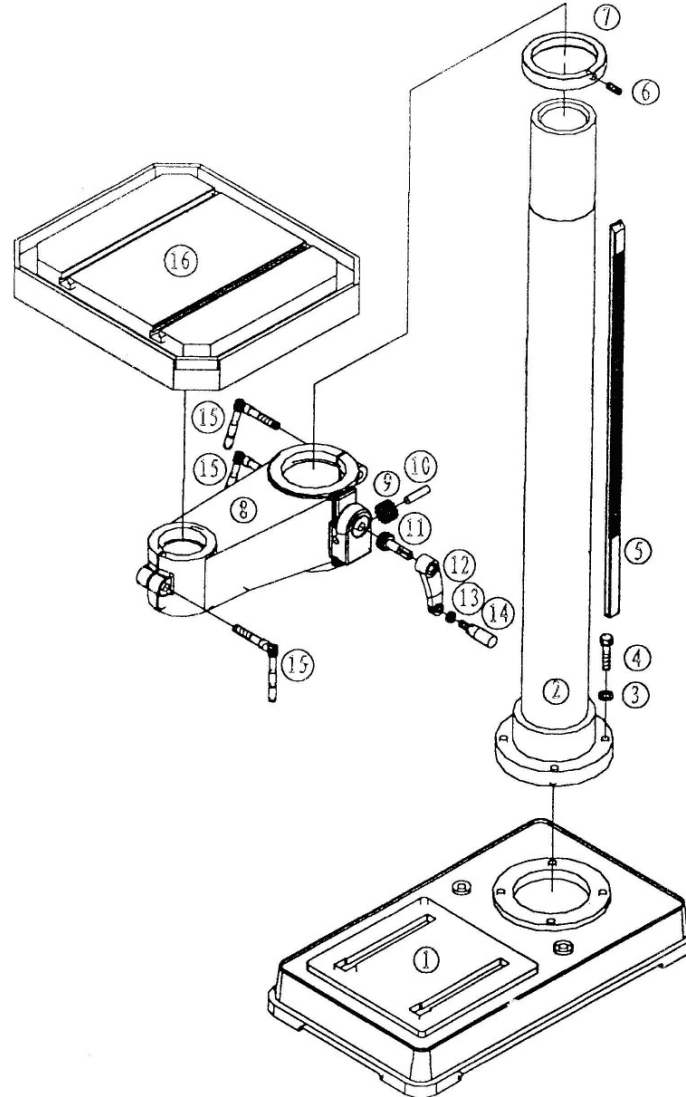


## 7 TROUBLE SHOOTING

Trouble	Probable cause	Remedy
Motor not run	<ol style="list-style-type: none"> <li>1. wire broken</li> <li>2. bad plug</li> <li>3. motor wire or electric box wire is abnormal</li> <li>4. the fuse was melt</li> <li>5. power switch is bad</li> </ol>	<ol style="list-style-type: none"> <li>1. change wire</li> <li>2. change plugs</li> <li>3. fasten screw</li> <li>4. change the fuse</li> <li>5. change power switch</li> </ol>
The motor is shaking	<ol style="list-style-type: none"> <li>1. the locker screw on motor is worn</li> <li>2. the locker screw of tension rod is loosen</li> <li>3. the V-belt is too tighten</li> <li>4. the adjust bolt no against the body</li> <li>5. the tighten nut is loosen</li> </ol>	<ol style="list-style-type: none"> <li>1. wrench the screw tighten</li> <li>2. wrench the screw tighten</li> <li>3. adjust the tension of V-belt</li> <li>4. adjust the bolt to just position</li> <li>5. wrench the nut tighten</li> </ol>
There is noisy when the spindle rotate	<ol style="list-style-type: none"> <li>1. the bearing is abnormal or worn</li> <li>2. the V-belt is too fasten</li> <li>3. the spline is worn</li> <li>4. lubrication is abnormal or dirty</li> <li>5. the locker screw is loosen</li> </ol>	<ol style="list-style-type: none"> <li>1. change the bearing</li> <li>2. adjust the tension if V-belt</li> <li>3. change the spindle</li> <li>4. add the oil or wash it</li> <li>5. unistall it and tighten it</li> </ol>
Spindle is not smooth when up and down	<ol style="list-style-type: none"> <li>1. surface is not smooth</li> <li>2. turbination spring is break</li> </ol>	<ol style="list-style-type: none"> <li>1. Finishing it with file</li> <li>2. change the spring</li> </ol>
Drill shaking	<ol style="list-style-type: none"> <li>1. three hands of drill chuck are worn</li> <li>2. three hands do not clamp evenly</li> <li>3. inner cone surface damaged</li> <li>4. tapered bar cone damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. change drill chuck</li> <li>2. reinstall drill</li> <li>3. change spindle</li> <li>4. change tapered bar</li> </ol>
Word depth is not correct	<ol style="list-style-type: none"> <li>1. dial locker is loosen</li> <li>2. dial locker screw is distorted</li> <li>3. gear wheel or sleeve gear is worn</li> </ol>	<ol style="list-style-type: none"> <li>1. fasten the locker</li> <li>2. change it or repair it</li> <li>3. change it</li> </ol>

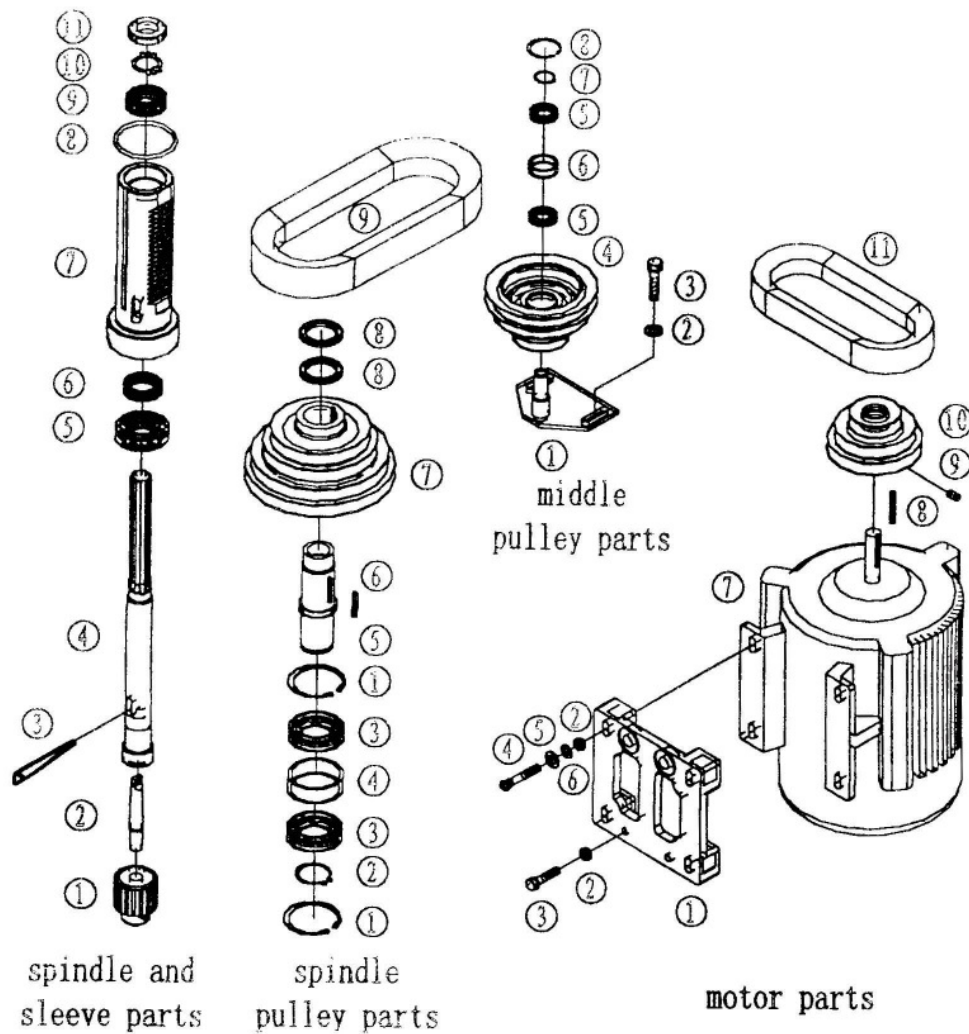
## 8 Part list

### TABLE AND BASE PARTS



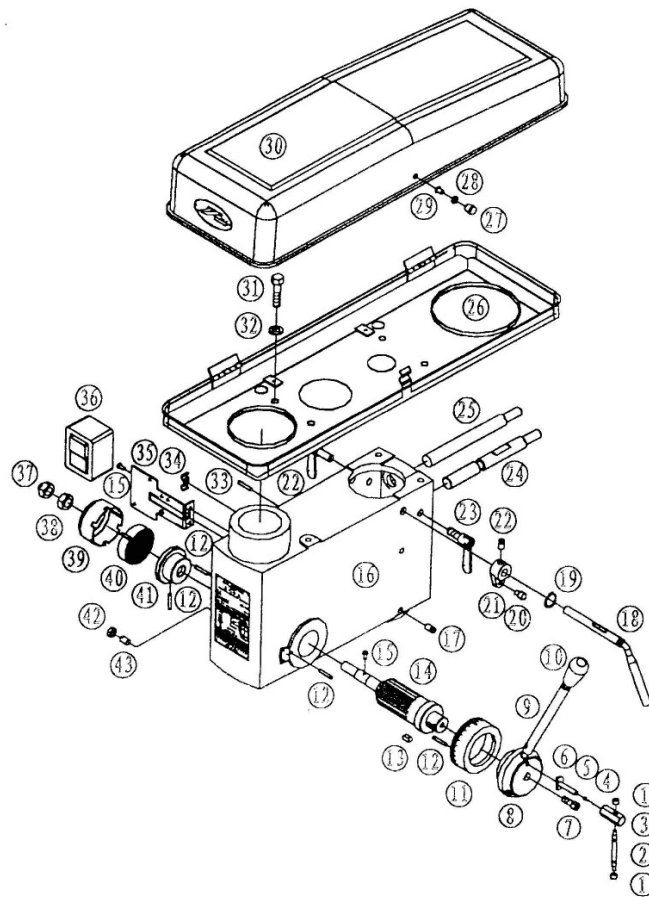
### BASE AND TABLE PARTS

1	base	7	retating ring	13	nut
2	column	8	shift table	14	roll handle
3	washer	9	bevel gear	15	lock handle
4	bolt	10	pin	16	table
5	rack	11	screw bolt		
6	screw	12	elevating handle		



spindle and sleeve parts		motor parts		spindle pulley parts		middle pulley parts	
1	chuck	1	motor base	1	retating ring 75	1	middle pulley base
2	tapered bar	2	nut	2	retating ring 45	2	washer
3	wedge	3	bolt	3	bearing	3	bolt
4	spindle	4	bolt	4	bearing spacer	4	middle pulley
5	bearing	5	washer	5	spline	5	bearing
6	bearing	6	spring washer	6	key	6	separating circle
7	sleeve	7	motor	7	spindle pulley	7	retating ring 17
8	O ring	8	key	8	nut	8	retating ring 40
9	bearing	9	screw	9	V-belt		
10	washer	10	motor pulley				
11	nut	11	V-belt				

### head body parts



### HEAD BODY PARTS

1	lock	16	head body	31	bolt
2	locker handle	17	screw	32	washer
3	locker body	18	tension handle	33	pin
4	spring	19	rotating ring	34	wire board
5	steel ball	20	curve shaft melt	35	switch base
6	lock screw	21	curve shaft	36	switch
7	screw	22	screw	37	nut
8	handle body	23	lock handle	38	spring cap
9	handle rod	24	fix bolt 1	39	worm shaft
10	handle ball	25	fix bolt 2	40	spring
11	dial	26	down V-belt cover	41	pinion shaft base
12	pin	27	cover handle	42	nut
13	key	28	washer	43	screw
14	pinion shaft	29	screw		
15	screw	30	up V-belt cover		

**9 Packing list****PACKING LIST****KST 16**

Wooden Dimension(L×W×H) 79×46×114cm  
 Cross Weight/ Net Weight 118kg/108kg

**KST 25**

Wooden Dimension(L×W×H) 79×46×114cm  
 Cross Weight/ Net Weight 118kg/108kg

**KSS 32**

Wooden Dimension(L×W×H) 95×46×186cm  
 Cross Weight/ Net Weight 205kg/190kg

No	NAME	SPECIFICATION			QTY.
		KST 16	KST 25	KSS 32	
1	Drilling Machine	KST 16	KST 25	KSS 32	1
2	Drill chuck	φ16mm			1set
3	V-belt	A-889 A-686	A-600 A-813	B940 B686	1pcs
4	wedge				1pcs
5	Elevating handle				1pcs
6	Adapted sleeve	-----	MT.3-MT.2		1pcs
7	Tapered bar	MT.2-B18			1pcs
8	Operation manual				1
9	Test certificate				1
10	Packing list				1



**10 Spare Parts order****Spare Parts**Order ☐Inquiry ☐

Tel.: 04321 - 609 - 0  
Fax: 04321 - 689 - 00

Dear Customer,

please fill in these letter and send it together with a copy of the spare part list and the marked part by fax to above mentioned fax no.

You would assist us gratefully in this matter.

Spare-Parts-Order-No. \_\_\_\_\_

(for KNUTH only)

Yours sincerely,  
KNUTH GmbH + Co. Werkzeugmaschinen KG

KNUTH - Customer-No. \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Your personally name \_\_\_\_\_

Phone-No. \_\_\_\_\_ Fax-No. \_\_\_\_\_

Machine name \_\_\_\_\_

Machine No. \_\_\_\_\_ Year of construction \_\_\_\_\_

**In guarantee please declare:**

Invoice-No. \_\_\_\_\_ Date of deliver \_\_\_\_\_

**Beyond the guarantee, we have to charge the parts and consignment**

Spare Parts No.	Name	Quantity
1.		
2.		
3.		

Date \_\_\_\_\_ Signature \_\_\_\_\_