

CZ1224 CZ1237

BENCH LATHE

OPERATING MANUAL

**CHIZHOU JOUSEHOLD MACHINE TOOL CO., LTD.
THE PEOPLE'S REPUBLIC OF CHINA**

ADDRESS: 8#, BLOCK A, CHIZHOU INDUSTRIAL ZONE, ANHUI
PROVINCE, P. R CHINA.

TEL: 0566-2612032 2612048 FAX: 0566-2612035

Thanks for you to have bought CZ300 CZ300/1 bench lathe, under right operating and maintenance, the lathe will give you a long and précised service. Before operating, please study the manual carefully. When working, please operate according to requirement and procedure described in the manual. Besides, please keep the manual in good condition so that you may look it up all the time.



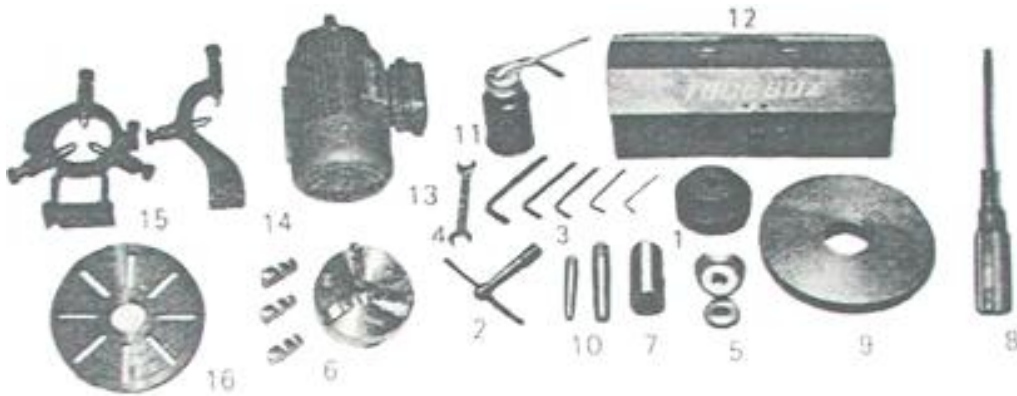
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1. SPECIFICATION

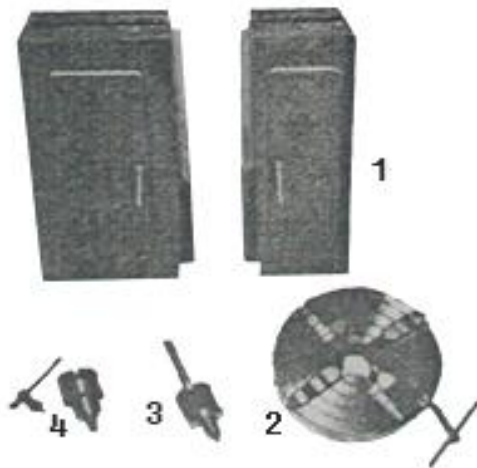
Specifications	CZ300	CZ300/1
(1) Swing over bed	305mm	305mm
(2) Swing over gap		480mm
(3) Swing over saddle	173mm	173mm
(4) Distance between centers	610mm	940mm
(5) Length of bed	1145mm	1473mm
(6) Width of bed	182mm	182mm
(7) Hole through spindle	36mm	36mm
(8) Tailstock barrel travel	92mm	92mm
(9) Cross slide travel	150mm	150mm
(10) Tool slide travel	89mm	89mm
(11) Saddle travel	520mm	850mm
(12) Taper of spindle hole	M.T.5	M.T.5
(13) Taper of center	M.T.3	M.T.3
(14) Range of spindle speed	12changes 50-1160rpm	12changes 50-1160rpm
(15) Diameter of lead screw	22mm	22mm
(16) Diameter of feed rod	19mm	19mm
(17) Thread of lead screw	8T.P.I(inch) 3mm(metric)	8T.P.I(inch) 3mm(metric)
(18) Thread can be cut	Metric 24 kinds 0.25-7.5mm	Inch 50 kinds 4-112T.P.I
(19) Motor power	1.1Kw	1.1Kw
(20) Net weight with/without stand	368Kg/308Kg	390Kg/330Kg
(21) Packing size without stand	1420×740×750mm	1780×740×750mm
(22) Packing size of stand	720×300×700mm	720×300×700mm
(23) Noise	<83dB	<83dB

2. STANDARD ACCESSORY



- | | | | |
|-----------------|---------------------|------------------|----------------------|
| 1) Motor pulley | 2) Tool post wrench | 3) Allen wrench | 4) Double end wrench |
| 5) Change gear | 6) 3-jaw chuck | 7) Center sleeve | 8) Screw driver |
| 9) Back plate | 10) Center | 11) Oil gun | 12) Tool box |
| 13) Motor | 14) Follow rest | 15) Steady rest | 16) Face plate |

3. OPTIONAL ACCESSORY



- 1) Stand
- 2) 4—jaw chuck
- 3) Rolling center
- 4) Drill chuck

4. ELECTRIC SYSTEM

Standard lathe is wired for 220V, 1 phase 50 cycles, other connection can be made as customers' requirements.

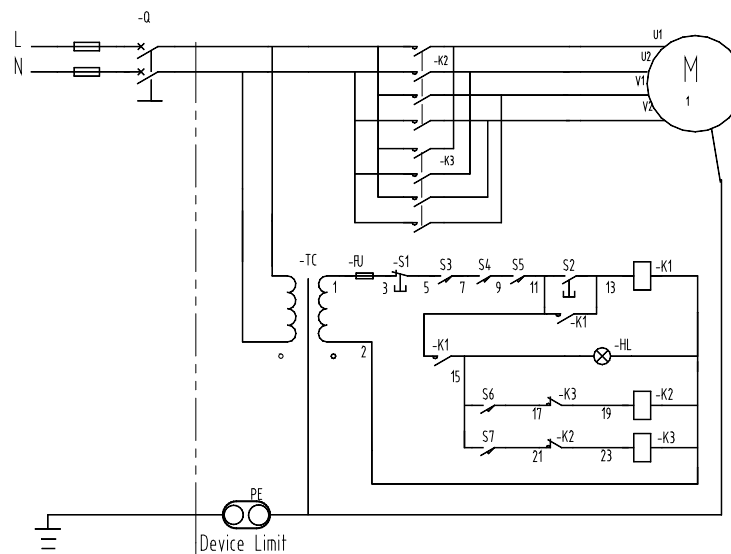
The electrical system in the lathe has been installed and adjusted in the factory. Generally, please don't open the electrical box. Before operating, wire the proper power source to lathe and connect the ground wire. Turn on the power and check turning direction of spindle, if wrong, first, turn off the motor and cut off the power source, then change the wires as the wiring chart.

CAUTION:

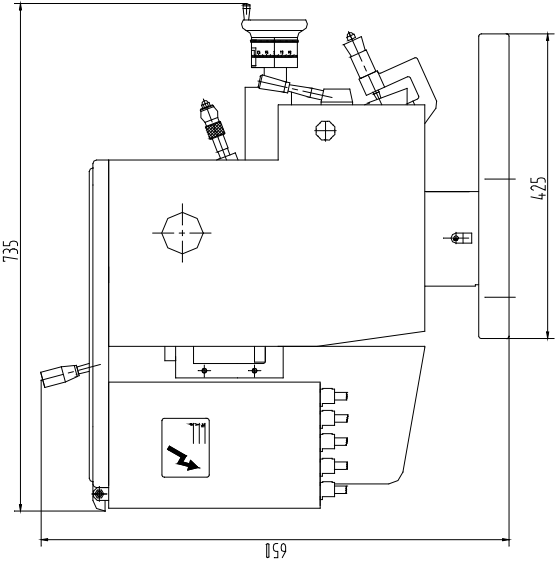
- 1) IF NEED TO CHANGE THE CONNECTION IN ELECTRICAL BOX, PLEASE

2) ELECTRICAL PRINCIPLE CHART ARE DESIGNED ACCORDING TO THE CONDITOION THAT ALL KINKS OF PROTECTION INSTALLATIONS (SUCH AS CHUCK MICROSWITCH, MAIN COVER MICROSWITCH, TOOLPOST PROTECTION MICROSWITCH, NO VOLTAGE PROTECTION) HAVE BEEN FITTED. PROTECTION INSTALLATIONS ARE OF SPECIAL REQUIREMENTS. IF YOU DON'T NEED OR REQUIRE. YOUR MACHINE SHOULD BE WITHOUT THEM, BUT ELECTRICAL WIRING CHANGE SEPARATELY.

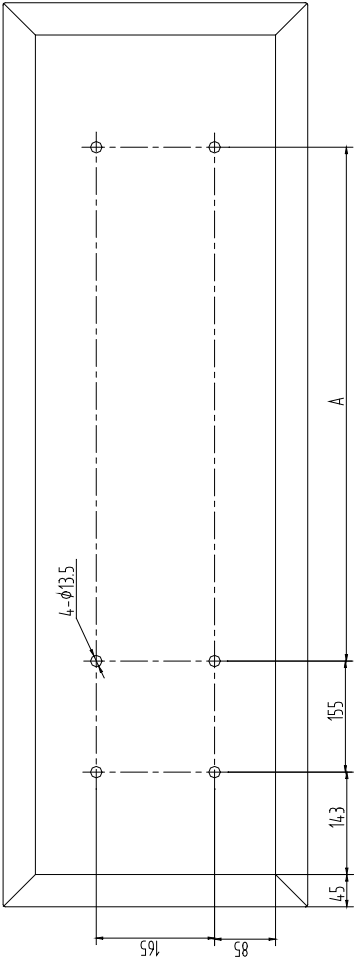
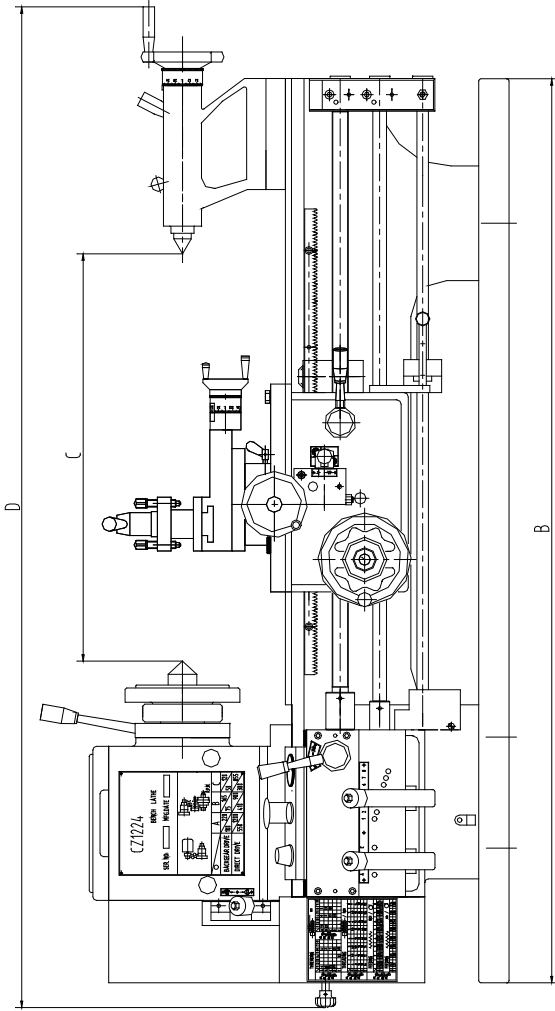
THREE PHASES 220V/380V/440V



5. GENERAL DIMENSIONS



	CZ300	CZ300/1
A	717mm	1055mm
B	1310mm	1600mm
C	610mm	940mm
D	1400mm	1683mm



6. OPENING PACKAGE

The machine is packed in hard wooden case. When opening case, you should be careful not to damage the surface of lathe. Look up the operating manual and check if accessories are full, if not, ask local seller for them.

7. INSTALLATION

CAUTION: THE MACHINE MUST FITTED FIRM AND STABLE. DON'T TURN DOWN OR MAKE ANY MOVEMENT WITHOUT EXPECTATION BECAUSE OF SHAKING, WIND POWER, LASHING OR OTHER EXPECTED OUTER POWER OR INTERNAL MOVEMENT FORCE (SUCH AS INERTIA FORCE, MOTOR POWER FORCE, ETC.)

7.1 FOUNDATION

The base for machines foundation must be solid and heavy enough to support the weight of machine and without noticeable deflection. The floor must be fairly level.

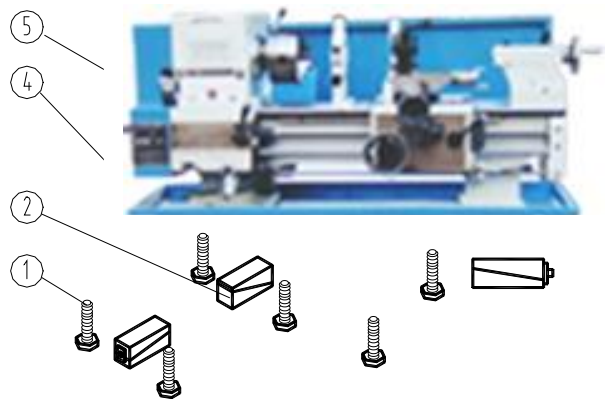
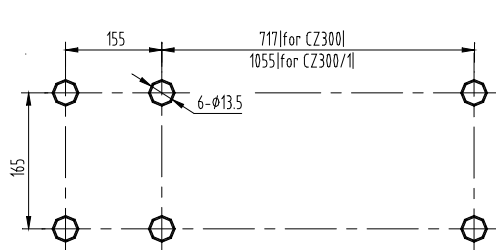
Concrete floor is the best foundation. It provides the rigid base and minimizes vibration from adjacent machines, the floor strength must be tested. The resting method: place a level on the floor and put the machine on installation position, if the bubble show appreciable deflection, the floor must be reinforced.

When determining the position of installation, leave a certain place in left, right, front and back of the machine in accordance with its overall dimension and installation dimension of the machine so that the operating and repairing is convenient.

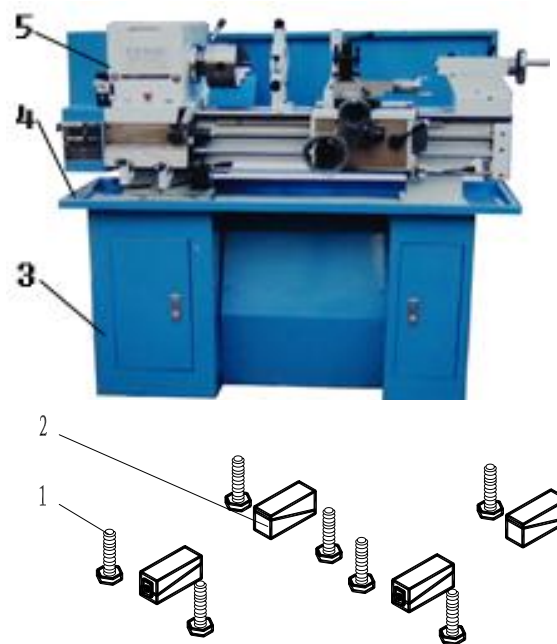
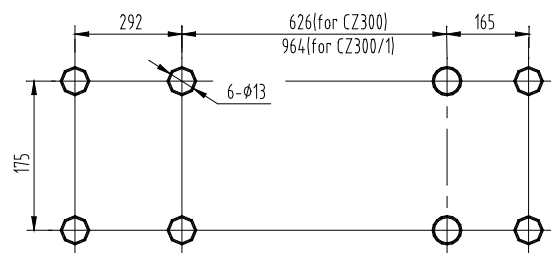
If you use our stand (optional accessory), please first, make mark and drill eight holes in the eight fitting hole position of base according to fitting dimension of the stand; secondly, cover eight foundation bolt in the base (note position precision when determining the fitting hole position). Put the stand on the base, connecting to the eight foundation bolt. Then place two adjustable iron spacer in each down face of front, back of two stand (in order to increase the touched space, please stagger the position of front and back adjustable iron spacer). Fix the connecting block of left, right of stand, fit the stand on the base. At last lift the lathe on the stand and connect and fix the lathe to the stand by using nut and bolt.

If fit the lathe directly on the base, firstly in accordance with fitting dimension, mark and drill hole in the base of six fitting hole position of lathe, cover six foundation bolt in the base, place two adjustable iron spacers on the base in front and back of spindle box position and place one adjustable iron spacer on the base in cross direction of tailstock position, then lift the lathe on the adjustable iron spacers.

1) Fitting without stand



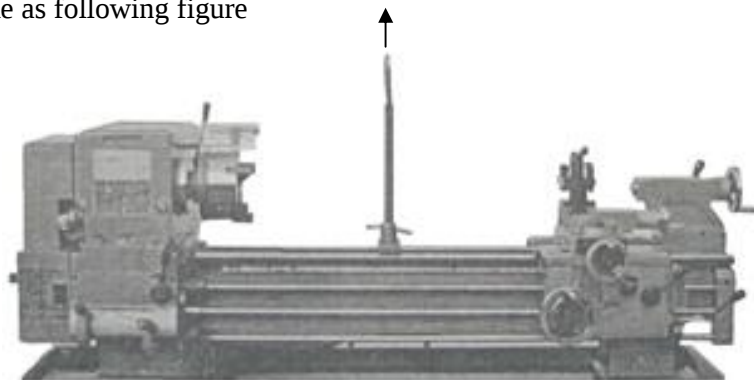
2) Fitting with stand



(1) Foundation bolt (2) Adjustable iron spacer (3) Stand (4) Chip pan (5) Lathe

7.2 LIFTING

Lifting the lathe as following figure



Put the mats in which the lifting tools connect before lifting the lathe, avoid damaging the

machine's surface.

The lathe net weight is 330kg, stand weight is 60kg. When lifting, must keep the machine in balance and avoid tilting.

The carriage, tailstock and other slide parts of the lathe are locked before leaving factory. Don't loosen these when lifting and should inspect to confirm whether they are locked or not in order to prevent the parts sliding to make danger. Carefully put the machine on the base or stand which have been fixed and fix the machine to the base or stand by bolt and nut.

7.3 CLEANING

Prior to shipment all machine and finished surfaces are coated to prevent rusting. Before moving the carriage or tailstock, use clean solvent to remove the rust preventive coating, use brush and solvent to clean the lead screw, rack, feed-rod, etc. Move the saddle, carriage and tailstock to cleaned direction about 300mm, clean the ways for any residue of rust preventive coating. Move the other way the same distance and repeat the process. Such care in the cleaning will ensure the removal of any foreign particles and prevent the way scoring.

Lubricate the ways when clean finished.

8. LEVELING

The lathe should be kept perfectly level at all times.

LEVELING PROCEDURE:

A. Longitudinal leveling

After the bed-ways are dry after cleaning, back off the base screws, place a 6" precision machinist spirit level over working table along longitudinal direction (bed length direction) move the working table at the headstock end along bed length direction, make leveling by adjusting the adjustable iron spacer, obtain a reading. Then move the working table to the tailstock, adjust the screw of the adjustable iron spacer until the spirit level obtain the same reading as on the headstock end.



put the spirit level on the headstock end



put the spirit level on tailstock end

B. CROSS LEVELING

Put the spirit level on the working table along cross direction (bed width direction), move the working table to the headstock end along bed length direction, take a reading, then move the working table to the tailstock end, the reading at this end must be exactly the same as the other end. No twist is permissible. If the reading is not same, adjust the screw of the adjustable iron

spacer to get the same reading.



Put the spirit level on headstock end



put the spirit level on tailstock end

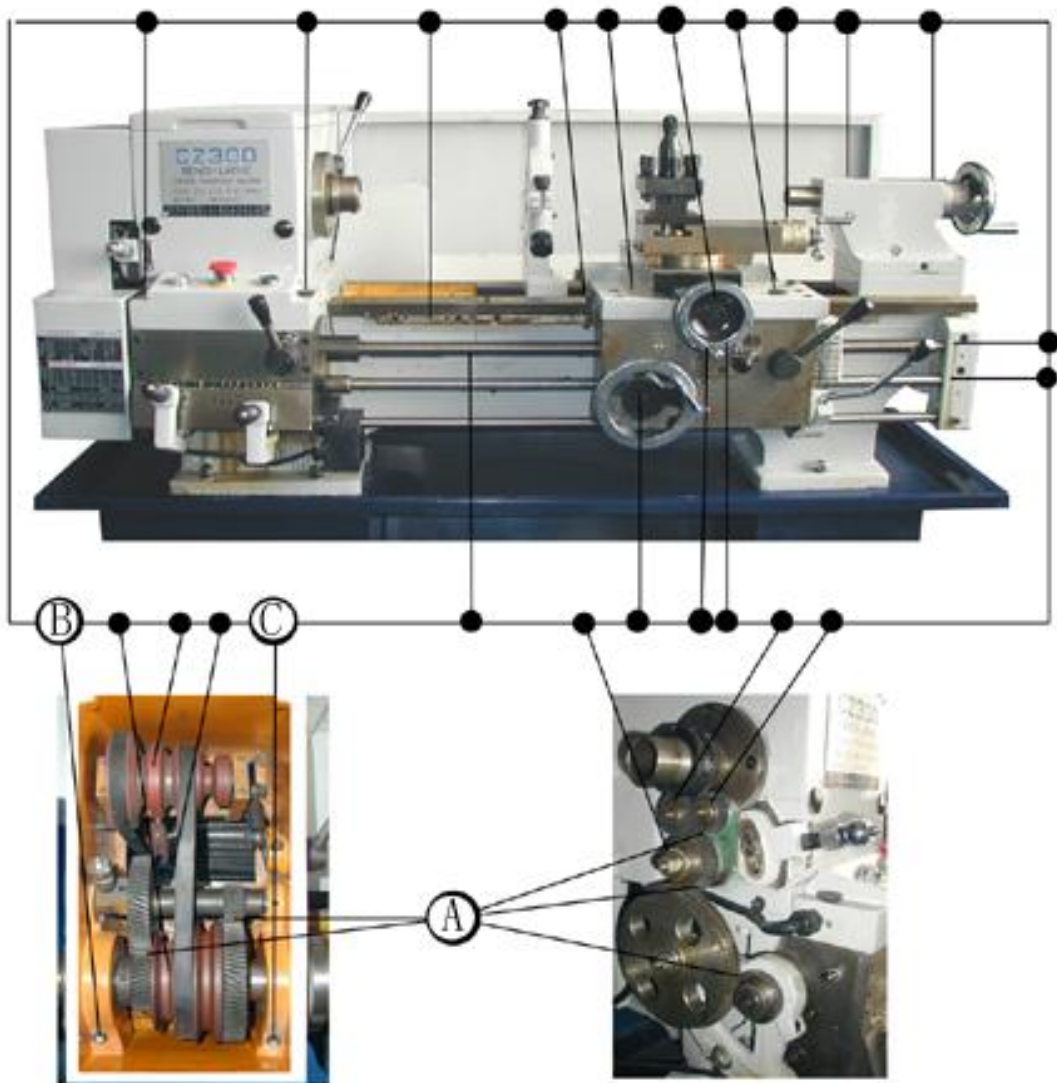
The adjustments at one end will affect the reading of the other, so the leveling procedure should repeat many times, making necessary adjustments using staff ruler and iron spacer. After the adjustments finished, turn down slightly the screw foundation bolt until they rest under slight tension. The tension should be such that it does not change the level reading. Recheck level after fixing the bolt, if necessary, make minor adjustment.

After the machine has been put to use for a period of time, check level to observe if the original condition exists, make adjustments properly as the above mentioned way if necessary. (make a erasable marker at one end of the spirit level to keep the same direction for every reading.)

CAUTION: THE LOW PRECISION SPIRIT LEVEL MUST NOT BE USED.

SCHEDULE OR PERIODIC LEVEL CHECK AS A PART OF YOUR MAINTENANCE SCHEDULE.

9. LUBRICATION CHART



A)—Often lubricate with fat

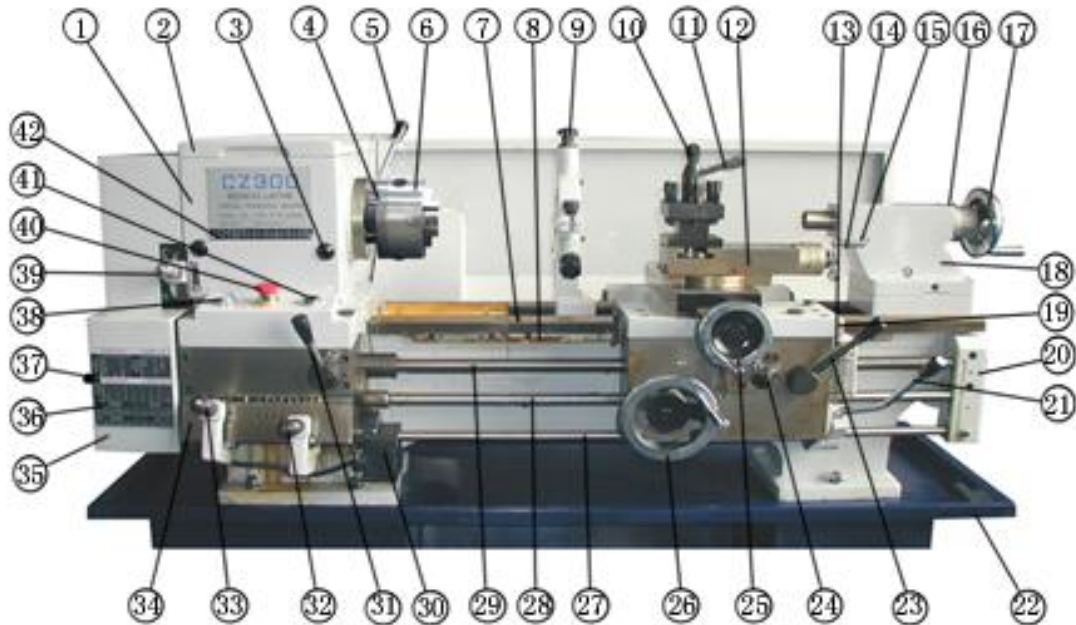
C)—Lubricate with oil as oiler indication

B)—Lubricate with oil as oiler indication

●—Lubricate as every working time

CAUTION: THE LUBRICATION IS A IMPORTANCE WAY OF MACHINE MAINTENANCE. THE QUANTITY OF LUBRICATION OIL MUST BE MODER. ATE. IF THE LUBRICATION IS INSUFFICIENT, IT WILL AFECT THE PRECISION OF MACHINES AND SPEED THE MACHENE DAMAGE. IF THE LUBRECACTION IS TOO MUCH. IT WILL BE WASTEN AND MAKE THE WORKING SHOP UNCLEAR. IT IS SUITABLE FOR THE QUANTITY OF THE LUBRICATION OIL NOT TO OVERFLOW OR COME OFF.

10. OPERATING INSTRUCTION



- | | |
|--|-----------------------------------|
| 1. Headstock | 2. Headstock cover |
| 3. Oil guage | 4. Face plate |
| 5. Belt tension lever | 6. Chuck |
| 7. Bed | 8. Rack |
| 9. Steady rest | 10. Follow rest |
| 11. Tool post clamping lever | 12. Compound slide |
| 13. Threading dial | 14. Compound slide handwheel |
| 15. Sleeve clamping lever | 16. Tailstock clamping lever |
| 17. Tailstock handwheel | 18. Tailstock |
| 19. Saddle slide | 20. Three rod support seat |
| 21. Control lever | 22. Chip pan |
| 23. Half – nut lever | 24. Cross/longitudinal feed lever |
| 25. Cross slide handwheel | 26. Saddle handwheel |
| 27. Control rod | 28. Feed rod |
| 29. Lead screw | 30. Micro-switch box |
| 31. Feed rod and lead screw exchange lever | 32. Change gear lever |
| 33. Change gear lever | 34. Gear box |
| 35. End face cover | 36. Thread indication plate |
| 37. Cover locking lever | 38. Indication light |
| 39. Change direction lever | 40. Emergence push button |
| 41. Start button | 42. Name plate |

10.1 CAUTION

A: DO NOT OPERATE THE LATHE BEFORE YOU ARE THOROUGHLY UNDERSTAND ALL THE CONTROLS AND FUNCTION S. BEFORE CUTTING WORKING PIECE, YOU MAY MAKE A TRIAL RUNNING IN ORDER TO FAMILIARIZE YOUSELF WITH THE FUNCTION.

B: BEFORE OPERATING, CHECK OIL LEVELS AND LUBRECATION OF ALL SLIDING AND ROTATING PARTS. IF LUBRICATION IS NOT ENOUGH,SEE LUBRICATION CHART AND MAKE LUBRECATION.

C. THE LATHE HAS NO LIGHT EQUIPMENT, THE USER SHOULD PREPARE ENOUGH FINE LIGHT EQUIPMENT AND REMOVE THE SHADOW INTERRUPTION, AVOID LEADING DANGERS FOR THE POOR LIGHT DURING THE CUTTING PROCESS.

D. KEEP CLAMPING THE WORKING PIECE FIRMLY PREVENT IT TO FLY OFF. THE OUTSTANDING OF THE WORKING PIECE SHOULD NOT BE TOO LONG IN ORDER TO KEEP THE CUTTING PRECISION, THE RATE OF THE OUTSTANDING AND DIAMETER SHOULD BE NOT MORE THAN 4.

E. WHEN TAKING PLACE UNEXPECTED MATTER DURING TURNING, SHOULD PUSH THE EMERGENCY PUSH BUTTON OR TURN OFF THE POWER AT ONCE TO STOP RUNNING.

F. WHEN NEED TO ADJUST THE LATHE OR WORKPIECE OR MACHINE TOOL, PUSH THE PUSH BUTTON, MAKE THE MACHINE COMPLETELY STOP, THEN MAKE THE ADJUSTMENTS.

g. CUTTING AMOUNT SELECTION: WHEN CHOOSING THE CUT AMOUNT, YOU MUST CONSIDER THE LATHE, TOOL OR WORKPIECE RIGID, DON'T CUT OVERLOAD, PREVENT THE DANGER FROM BREAKING. IN GENERAL, CUTTING METAL MATERIAL AS FOLLOWING FIGURE (SLIGHTLY ENLARGE THE CUT AMOUNT WHEN CUTTING THE WOOD, PLASTIC, NONMETAL MATERIAL, AND SO ON).

WORKPIECE DIAMETER	CUT SPEED (RPM)	CUT DEPTH(mm)	FEED AMOUNT(mm/turn)
$\geq \Phi 150$	<160	<0.5	<0.1
$\geq \Phi 100-150$	<200	<0.5	<0.1
$\geq \Phi 50-100$	<400	<1	<0.15
$\geq \Phi 30-50$	<100	<1.5	<0.15
< $\Phi 30$	<1300	<1	<0.1

NOTE: WHEN THE RATE OF THE OUTSTANDING AND DIAMETER OF WORKING PIECE IS OVER 4, THE CUT DEPTH AND FEED AMOUNT SHOULD MAKE LESS.

H. WHEN WORKING IS OVER, TURN OFF THE POWER AND CLEAN THE LATHE.

I. WHEN DOING THE NO POWER JOB, SPECIAL AS MAINTENANCE OR REPAIR, CUT THE MACHINE FROM THE POWER AND KEEP SAFETY.

10.2 HEADSTOCK

Lift the cover can observe the headstock structure.

The headstock is equipped with 2 belts (1) (2), the tension of the belts has been adjusted. It is advisable to check the tension before starting the machine. The belts should depress about 1/2 inch by normal finger pressure. Too tight belts will damage the bearings, too loose belts will lead belts to slide and speed the belt wear and tear. If necessary, adjust the tension of belts. See the following figure, the link mechanism is provided for adjusting the tension of belts. If the belt

is loosen bolt (3) and turn out the screw rod (4) until the desired tension is set, then tighten the hexagon bolt (3) in position.

The spindle and bearing are lubricated by the oil from two oil r eservoirs (5) which located at each side of the headstock.

CAUTION: WHENEVER, THE SUFFICIENT OIL IN OIL RESERVOIRS MUST BE MAINTAINED, IF NOT, PLEASE ADD OIL ACCORDING TO OIL GAUGE.



1—V—belt

2—V—belt

3—Bolt

4—Rod

5—Oil reservoirs

10.3 SPINDLE SPEED

There is gear and pulley system in the headstock. Main spindle can obtain 12 kinds of speeds by changing the position of belts or gears. In general condition, light load and small diameter of work-piece is suitable for high speed. The heavy load and big diameter of work-piece for low speed.

CAUTION: DON'T CHANGE SPEED WHEN THE SPINDLE IS RUNNING.

When change the spindle speed.

Please proceed as follows:

- 1) Move the control lever to middle position, turn off the motor, make the spindle stop running.
- 2) Raise the headstock cover and pull the belt tension lever (1) to the loose position.
- 3) Move the belt (2) (3) to the desired position as the speed chart.
- 4) Push the belt tension lever back to the tightened position.



When using the back gears for low speed and heavy cutting, please proceed as follows in order to obtain the low speeds from 50 to 220 rpm.

a) Moving the control lever to middle state, turning off the motor, the spindle stop running.

b) Pull out the lock pin “A” from the gear “B” make a half turn to set it in the “out” position as show right picture.

c) Pull the lever (4) and turn back to engage the gears. If difficulty, slightly running the spindle by hand and make the gears easy to engage.

1. Belt tension lever 2. V-belt 3. V-belt
4. Lever 5. Gear B 6. Pin A

10.4 MAIN SPINDLE ROTATION

Starting, stopping, forward and reverse of spindle can be mad merely by the control lever (1) , when using the control rod, firstly, pull the lever to headstock direction, then pull it up or down.



Control rod on the up

Control rod on the middle

Control rod on the down

See the above picture, moving the control lever down the spindle will be forward rotation, control lever up the spindle will be reverse rotation. Control lever middle the spindle will stop. If the motor is one phase and need to change the direction of the spindle. Firstly, please move the control lever from one side to middle, a little stop till the motor stop then move up or down, if move control lever from one side directly to another side, the direction of the spindle don't change.

10.5 GEAR BOX

Quick—change gear system design the rate of the spindle to lead screw and feed rod when it is used to cutting thread, external turning and facing. Quick —change gear box is controlled by two handles. Handle (1) exists A.B.C.D.E. five positions. Handle (2) has 1. 2. 3. 4. 5. 6. 7. 8. eight positions.

Handle (3) exists left. Middle and right three positions. Handle to right, lead screw running and the machine is used to external turning, internal turning and facing. Handle to middle, it is parking.

This machine can be used to cut metric and inch threads when putting the handle (1), handle (2) to the proper position. Please change the gear A. B. C. D. when it is necessary.



- 1) Gear changing handle 2) Gear changing handle
3) Feed rod and lead screw changing handle



- A) Gear B) Gear
C) Gear D) Gear

Half nut must keep to engaged to lead screw all time when the thread is being cut. When the cutting is finished every time, firstly, please make the tool back and reverse the motor, then make the tool to the original start—cutting position and begin the next process, and working many times at the same until the thread is finished.

CAUTION: CAN NOT CHANGE THE HANDLE (1) (2) (3) WHEN THE MACHINE IS RUNNING.

A. THREAD AND FEED TABLE FOR IMPERIAL LEAD SCREW

THREADING  8TPI										THREADING  8TPI									
40T		1	2	3	4	5	6	7	8	40T		1	2	3	4	5	6	7	8
127T	A	6			4.8		4			127T	A	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	8
120T	B	3			2.4		2			120T	B	8	9	9 $\frac{1}{2}$	10	11	12	13	7
40T	C	1.5			1.2		1			40T	C	16	18	19	20	22	24	26	14
	D	0.75			0.6		0.5				D	32	36	38	40	44	48	52	28
	E				0.3		0.25				E	64	72	76	80	88	96	104	112
40T	A	7.5			6		5			32T	A	5 $\frac{3}{4}$							
127T	B	3.75			3		2.5			127T	B	11 $\frac{1}{2}$							
120T	C				1.5		1.25			120T	C	23							
32T	D				0.75					46T	D	46							
	E										E	92							
30T	A	4.5	4				3			32T	A	3 $\frac{3}{4}$							
127T	B	2.25	2		1.8		1.5			127T	B	7 $\frac{1}{2}$							
120T	C		1		0.9		0.75			120T	C	15							
40T	D		0.5		0.45					30T	D	30							
	E		0.25								E	60							
FEEDING  INCHES /  8TPI										FEEDING  mm /  8TPI									
40T		1	2	3	4	5	6	7	8										
127T	D	0.0165	0.0146	0.0138	0.0131	0.0120	0.0110	0.0101	0.0094										
120T	E	0.0082	0.0073	0.0069	0.0065	0.0060	0.0055	0.0050	0.0047										
40T		1	2	3	4	5	6	7	8										
	D	0.42	0.37	0.35	0.33	0.30	0.28	0.26	0.24										
	E	0.21	0.19	0.18	0.17	0.15	0.14	0.13	0.12										

B. THREAD AND FEED TABLE FOR METRIC LEAD SCREW

THREADING  3mm										THREADING  3mm									
40T		1	2	3	4	5	6	7	8	40T		1	2	3	4	5	6	7	8
127T	A	6			4.8		4			127T	A	4	4 $\frac{1}{2}$	4 $\frac{3}{4}$	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$	8
120T	B	3			2.4		2			120T	B	8	9	9 $\frac{1}{2}$	10	11	12	13	7
40T	C	1.5			1.2		1			40T	C	16	18	19	20	22	24	26	14
	D	0.75			0.6		0.5				D	32	36	38	40	44	48	52	28
	E				0.3		0.25				E	64	72	76	80	88	96	104	112
40T	A	7.5			6		5			32T	A	5 $\frac{3}{4}$							
127T	B	3.75			3		2.5			127T	B	11 $\frac{1}{2}$							
120T	C				1.5		1.25			120T	C	23							
32T	D				0.75					46T	D	46							
	E										E	92							
30T	A	4.5	4				3			32T	A	3 $\frac{3}{4}$							
127T	B	2.25	2		1.8		1.5			127T	B	7 $\frac{1}{2}$							
120T	C		1		0.9		0.75			120T	C	15							
40T	D		0.5		0.45					30T	D	30							
	E		0.25								E	60							
FEEDING  INCHES /  3mm										FEEDING  mm /  3mm									
40T		1	2	3	4	5	6	7	8	40T		1	2	3	4	5	6	7	8
127T	D	0.0165	0.0146	0.0138	0.0131	0.0120	0.0110	0.0101	0.0094	127T	D	0.42	0.37	0.35	0.33	0.30	0.28	0.26	0.24
120T	E	0.0082	0.0073	0.0069	0.0065	0.0060	0.0055	0.0050	0.0047	120T	E	0.21	0.19	0.18	0.17	0.15	0.14	0.13	0.12
40T																			

10.6 CARRIAGE

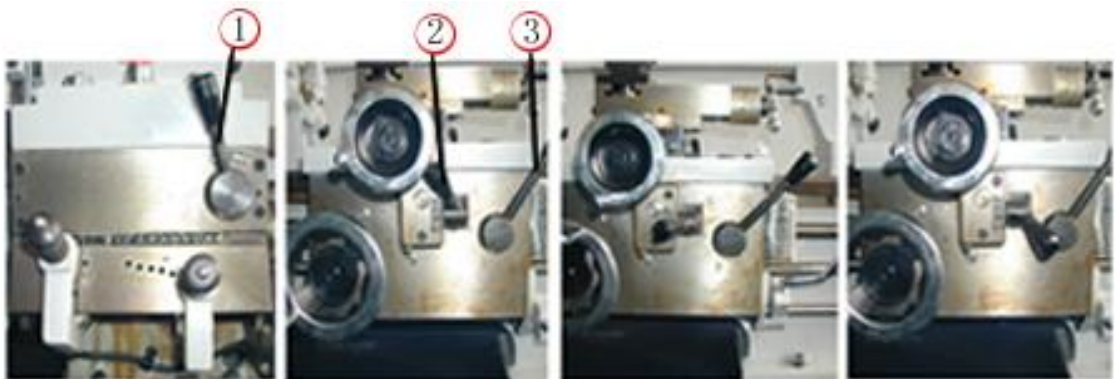
The function of the carriage is to firmly support the tool post and carry it moving in longitudinal and cross direction.

10.6.1 POWER FEED

When external turning and facing, please turn the lever (1) on the gear box to left and make the feed rod rotation.

Need to power feed in longitudinal direction, up—engage the cross/longitudinal feed lever (2) .

Need to power feed in cross direction, down – engage the cross/longitudinal feed lever (2).



(1) Feed rod/lead screw changing (2) Cross/longitudinal Feed changing (3) Half nut lever

While the cross /longitudinal feed lever is in the feed position, the half nut lever (3) can not

be engaged, the built – in safety interlock mechanism will prevent simultaneous engagement of (2) and (3).

For threading, put the lever (1) on the gear box to the right and the lead screw rotating, then make the cross/longitudinal feed lever (2) on the middle and engage the half nut (3), the result is the lead screw rotating and to make the carriage moving to the right and left.

CAUTION: DO NOT FORCE THE HALF NUT LEVER WHILE ENGAGING WITH THE LEAD SCREW

When power feed, the direction of spindle rotating, carriage moving and cross – slide moving have been designed by mechanism, for example, when the spindle clockwise rotating, the carriage move to left, conversely to right.

3-star gear system can change the carriage travel direction too, when the spindle clockwise rotating and the lever (2) on up position, it make the carriage move left, the lever (2) on down position, carriage move right. The lever (2) on middle, the carriage stop moving.



(1) 3-star gear

(2) Changing direction lever

10.6.2 THREADING DIAL

When the pitch proportion of lead screw and work-piece thread is not integer times and need to open the half – nut while cutting, it is necessary to use the thread dial to control tools and prevent the mixed screw.

The threading dial is located on the right or left side of the apron.

It performs the important function of indicating the proper time to engage the half nut lever so that the tool will enter the same groove of the thread on each successive cut. The dial is marked with lines numbered 1. 2. 3. 4. and in between are lines with no number. These are half lines and are called unnumbered lines. The dial when engaged with the lead screw will cause the rotation of the dial, A single line is marked on the housing of the threading dial (fixed line).

The instruction plate riveted on the threading dial shows the selection and sequence of matching the revolving lines with the fixed line.

For thread cutting, engage the half – nuts at the appropriate numbers shown on the scale column of the threading dial plate, 1 - 4 on the scale means the half – nuts can be engaged on any of the numbered lines 1- 2 –3 –4 . For each successive cuts only numbered lines must be used. 1-3/2 – 4 on the scale means the half – nut can be engaged on 1 and 3 or 2 and 4 for successive cuts, For example, when you engage the half – nut on the numbered line “1” for the first cut, after that for successive cuts, the half – nut just be engaged on the numbered line “1” or “3” , If you engage the half – nut on the numbered line “2” for the first cut. After that for successive

cuts, the half – nut just be engaged on the numbered line “2” or “4”. 1- 8 means the half – nuts can be engaged on any line, numbered or unnumbered.

If half – nut engage with the lead screw all time while cutting the thread, no need to use threading dial, In this case, after finished each successive cut, firstly, back the tool and reverse the motor, then move the tool to the last start – cutting position and make the next successive cut.



(1) Threading dial

10.7 FOUR POSITIONS TOOL POST

Main function of tool post is to fix tool, If necessary, tool post may fix more than one tool (at most 4), Tool thickness must be less than tool groove, When installing tool again , should confirm tool head direction to work-piece revolving center line, permitting to use iron spacer to adjust, after adjusting correctly, please fix the tool. If need to turn the tool post, turn the tool post locking handle counter clockwise to loosen the locking handle and turn the tool post to the position you needed and then turn the tool post lock handle clockwise to make tool post lock.



- (1) Compound slide (up)
- (2) Cross slide (up)
- (3) Screw
- (4) Tool post clamping lever
- (5) Compound slide (down)
- (6) Handle wheel

10.8 COMPOUND SLIDE

Using the compound slide can cut taper, When cutting taper, please loosen the screw on the saddle, round the compound slide, let the graduated line towards the graduation number on the saddle. Then fix the screw, round the driving hand wheel, the tool post move the tool, now there is a angle between the traveling line and turning line of spindle, thus you can turn taper.

10.9 TAILSTOCK

The tailstock slides along the bed-ways freely and can be locked in any position by the clamp lever. There is an end pin to stop the tailstock sliding down. Rot ating the tailstock hand wheel can slide the quill. The quill can be locked by the quill lock lever. Before leaving the factory, it will be sure that it is the same line between the tailstock center and spindle center. For

cutting small tapers, you must loosen the clamp lever “4” in advance and adjust the set over screw “1”, It make the deviation between spindle center and tailstock center and then lock the clamp lever “4”, You can start the work.



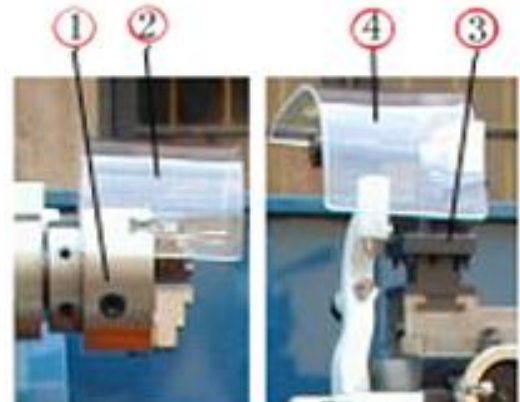
(1) Screw (2) Tailstock (3) Quill lock lever(4) Tailstock clamp lever

After finishing proceeding, you should make the tailstock set back. In the same way, when doing the external turning by using the tailstock center and get a taper work-piece, please using the same way as above mentioned to adjust the two set over screw (1) and back the tailstock correctly to eliminate the taper.

When correcting, use a precise cylinder to connect the two centers of spindle and tailstock, then place a meter on the worktable and make its center head contact to the cylinder side center line, when move the worktable to end of headstock, take a reading from meter, then move enter to tailstock end, take another reading. The reading at one must be exactly the same as the other end, otherwise use the same way as above mentioned to make adjustments to get the same reading at both ends.

11. PROTECTION INSTRUMENTS

The lathe can be equipped with several safety protection instruments as according to customer's requirements. It locate on dangerous area, protect your body not to be hurt and make you safety. These instruments include chuck cover with micro switch system, tool-post cover with micro switch system, headstock cover with micro switch system, etc. For example, if the chuck cover is being turned over, the machine stop running immediately. The machine can be run only when every cover is put down and every micro switch is turned on.



(1)Chuck (2) Chuck cover (3) Tool post (4) Tool post cover

CAUTION: BE CAREFUL TO USE THE SAFETY PROTECTION INSTRUMENTS, IF NOT WORKING, REPAIR IT IMMEDIATELY.

12. CHECK PROBLEMS AND REPAIRING

CAUTION: BEFORE CHECKING, PLEASE TURN OFF THE ELECTRICAL POWER.

12.1 Turn on the electrical, the spindle doesn't rotate.

A) The voltage is not right and the main switch turned off —— please adjust the input voltage turn on the main switch.

B) The fuse in electric box has blown —— please change a new one.

C) Electric connector is loosening —— please check and fix it again.

12.2 The motor is too heat or not powerful.

- A) Overloading or working time too long —— please reduce it.
- B) The voltage is too low —— adjust to correct voltage.
- C) Poor quality of motor —— please change a new one.
- D) The fuse or wire contacting is not good (easily make the motor short circuit) —— please turn off the electrical and change a new fuse.
- E) The belt is too tight —— please loosen it and adjust it to correct.

12.3 The temperature of spindle bearing is too high.

- A) Having not enough lubrication oil —— please fill the oil according to oil gauge.
- B) The bearing assembly is too tight —— normally, rotate the spindle by hand easily, otherwise, adjust the spindle back nut.
- C) High speed turning for long time —— slightly reduce the cutting amount.

12.4 Shortage of motive force when the spindle is rotating .

- A) The belt is too loose or worn and torn —— please adjust the belt tension to correct or change.
- B) The motor is burnt —— please change a new one.
- C) The fuse has blown —— please change a new one.

12.5 Making small taper when external turning

- A) It is not on the same line between the spindle center and the tailstock center —— please adjust the tailstock according to the operation manual.
- B) The moving line of carriage does not parallel to the spindle center —— please loosen the lock screw of headstock and adjust the spindle center to required and locked.

12.6 During proceeding, the surface of work -piece is very rough.

- A) The space of the spindle bearing is too big —— adjust it to correct or change a new one.
- B) The space between the saddle and the gib is too big —— adjust them to correct.
- C) The tool is not sharp —— please sharpen it.
- D) The work-piece does not lock it tightly —— please lock it tightly.
- E) The precision of spindle bearing is too bad to wear —— please change a new one.

12.7Feeling to touch the electric when contact surface.

- A) The cable is damaged or worn —— change a new cable.
- B) Link to earth not finished —— make it fixed to earth.
- C) The cable terminal loosening or un-fixed —— fix again.

13. MAINTENANCE

Please always keep the machine in good condition and good precision. It is advisable maintenance is better than repair.

13.1 Daily maintenance

- A) Before using everyday, please pour the oil and lubricate all the moving parts.
- B) If the spindle temperature is too high or machine too noisy, please stop the machine and check it in order to keep its precision.
- C) When your lathe are in trouble, please stop to repair it. If you don't do it well, please ask for the help from the local supplier or repairman.
- D) It is not allowable to work the lathe overloadly .
- E) Before leaving the workshop, please clean the working area, loosen the belt -tight handle,

unload the working piece, turn off the power, be careful to clean the iron chippings and shavings and dust pour into the lubricating oil and antirusting oil.

13.2 Weekly maintenance

A) Clean and protect the lead screw and feed rod.

B) Look at all the sliding and turning surface and find if lack of lubricating, please pouring into the oil if the lubricating is not sufficient.

13.3 Monthly maintenance

A) Adjust all the gib space of the saddle.

B) Lubricate the worm gear, half nut and bearing in order to prevent wearing.

13.4 Yearly maintenance

A) Level the machine in order to keep the accuracy.

B) Check the cable, terminal switch and other electrical components (not less one time per year) in order to prevent loosening, please exchange if necessary.

C) Check the accuracy of machine as the accuracy checking chart, please adjust if necessary.