

L A T H E S HU 410 X 1000 VAC

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METAL LATHE HU 410 x 1000 VAC

1. General safety rules for all machines

N.B.: Read the instructions carefully in order to avoid any problems.

As with all machinery there are certain hazards involved with operation and use of this machine. Using the machine with respect and caution will considerably lessen the possibility op personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may occur. Observe these rules insofar as they are applicable to this particular machine.

This machine was designed for certain applications only. We strongly recommend that this machine NOT be modified in any way and/or used for any application other than for which it was designed.

If you have any questions relative to its application DO NOT use the machine until you have contacted your dealer.

- 1. For your own safety read the instruction manual before operating the tool.
- 2. Keep all guards in place and in working order.
- 3. Ground all tools.
- 4. Remove adjusting keys and wrenches. Make a habit of checking the machine before turning it on.
- 5. Keep the work area clean. Cluttered areas and benches invite accidents.
- 6. Do not use in a dangerous environment, such as damp or wet locations or expose to rain. Always keep the work area well-lit.
- 7. Keep children and visitors away. They must be kept at a safe distance from the machine at all times.
- 8. Make sure that the work area is not accessible to unauthorised persons. Use padlocks, master switches, remove starter keys etc.
- 9. Never overload the machine. The capacity of the machine is at its largest when properly loaded.
- 10. Do not force the machine or attachment to do a job for which it was not designed.
- 11. Wear proper apparel. No loose clothing, gloves, neckties, rings, necklaces, bracelets or jewellery: they may get caught in moving parts. No slip footwear is recommended. Wear a hairnet to contain long hair.
- 12. Always wear safety glasses and work according to safety regulations. Use a face or dust mask if operation is dusty.
- 13. Always secure workpiece tightly using a vise or clamping device. This will keep both hands free to operate the machine.
- 14. Do not overreach. Keep your proper footing and balance at all times.
- 15. Maintain tools in top condition. Keep them sharp and clean. Read the instructions carefully and follow the instructions for cleaning, lubrication and tool replacement.
- 16. Lubricate the machine and fill all oil reservoirs before operation.
- 17. Disconnect tools before servicing and when changing accessories such as blades, bits, cutters etc.
- 18. Use only recommended accessories. Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.
- 19. Avoid accidental starting. Make sure the on/off switch is in the "OFF" position before plugging in the power cord.
- 20. Never stand on the machine or tools. Serious injury could occur if the machine is tipped or if the cutting tool is accidentally touched.
- 21. Check damaged parts. Replace or repair damaged parts immediately. Check machine for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation.
- 22. Direction of feed. Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
- 23. Never leave tool running unattended. Do not turn power off until it has come to a complete stop.
- 24. Alcohol, medication, drugs. Never us the machine while under the influence of alcohol, medication or drugs.
- 25. Make sure the tool is disconnected from the power supply, before servicing, repairing etc.
- 26. Keep the original packing for future transport or relocation of the machine.

2. Additional safety rules

Always keep in mind that:

- the machine must be switched off and disconnected from the power supply during maintenance and repairs,
- clamped workpieces may only be measured when the machine is switched off.
- Never lean over the machine, mind loose clothing, ties, jewellery etc. and wear a cap.
- Do not remove safety devices or guards. Never use the machine while a guard is open.
- Always use safety glasses for machining rough materials.
- Burrs and chips should only be removed using a sweeper or other aid, never with your bare hands!
- Never leave the machine running unattended.

3. CHARACTERISTICS AND APPLICATIONS

5. CHARACTERISTICS AND AFFEICATIONS	
Swing over bed	410 mm
Swing over cross slide	255 mm
Swing in gap	580 mm
Distance between centers	1000 mm
Center height	205 mm
Width of bed	250 mm
Speed range I	30-550 RPM
Speed range II	550-3000 RPM
Threadcutting (metrisch)	0.2-14 mm
Threadcutting (Whitworth)	2-72 TPI
Longitudinal feed range	0.05-1.7 mm/p.r.
Cross feed range	0.025-0.85 mm/p.r
Threadcutting (module)	0.3 – 3.5 MP
Threadcutting (pitch)	8 - 44 DP
Nonius longitudinal feed	0.2 mm 1-omw = 19.6 mm
Nonius cross feed	0.02 mm 1-omw = 5 mm
Nonius tool holder	0.02 mm 1-omw = 2.5 mm
Nonius tailstock	0.02 mm 1-omw = 2.5 mm
Diameter tailstock	50 mm
Taper tailstock	MT4
Taper of spindle internal-external	MT6, D1-6 Camlock
Hole through spindle	52 mm
Tailstock spindle travel	120 mm
Cross slide travel	210 mm
Top slide travel	140 mm
Main motor power	5.5 kW 400V 50Hz
Coolant pump	90W 400V 50Hz
Coolant pump capacity	20 ltr/min
Weight	1550 kg

4. Instructions for using this machine

Read the safety rules carefully and always observe them. Examine the applications of this machine and beware of possible risks.



Subject to change.

Always wear safety glasses!

5. Installation

5.1 Hoisting and moving the machine

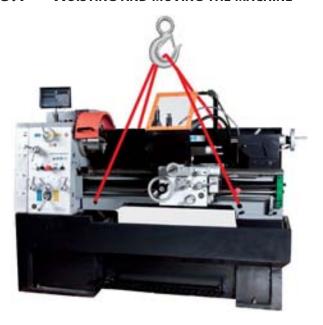


Figure 1

The lathe should be lifted with a hoisting machine. Avoid shocks when lifting the machine. Make sure that the tailstock, steadies, slides and other moving parts are clamped before you move the machine.

When using a hoisting installation, proceed as follows:

- insert solid steel bars into the special holes of the bed.
- attach hoisting cables or chains to each end of the bars.



Warning

Check if the hoisting capacity of the installation and cables is sufficient to safely hoist and move the machine.

Note

Protect the surface of the machine against damage by putting soft material between the cables and the machine surface.

5.2 FOUNDATION AND LEVEL ADJUSTMENT

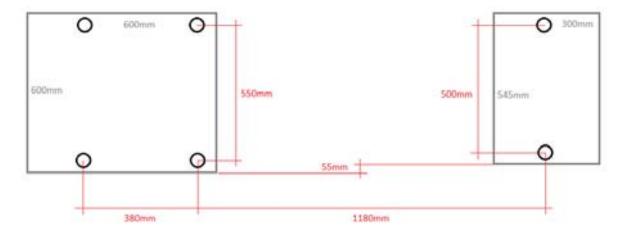


Figure 2

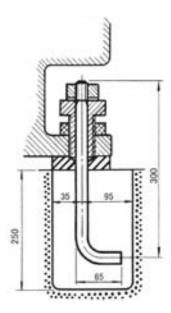


Figure 3

To ensure easy and precise operation of the lathe, it is absolutely necessary to place the lathe on a sturdy foundation and to level it. Leave enough space around the machine. It is possible to attach the lathe to the foundation.

WITHOUT ANCHORING

Place the lathe on the foundation. Adjust the 6 mounting holes in the stand to divide the weight of the machine evenly. Place a leveling instrument on the bed and adjust the machine.

WITH ANCHORING

Place the mounting holes in the stand of the lathe over the 6 bolts (ø 12 mm), which are placed in the foundation. Level the machine and tighten the bolts. Check again if the machine is level. Adjust, if necessary.

It is recommended to check every three months if the machine is still level, both in longitudinal as cross direction. If the machine is not attached to a foundation, you should check more often if it is still level.

6. Machine description

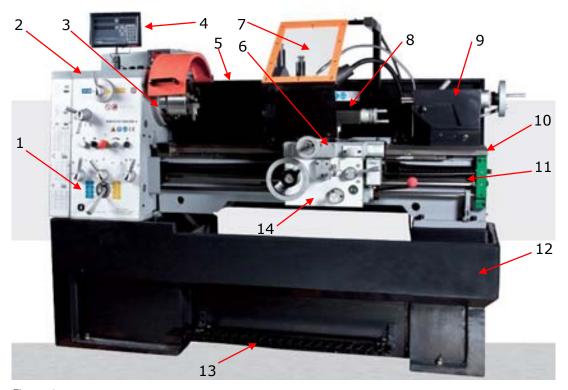


Figure 4

1	Gearbox	8	Tool support
2	Headstock	9	Tailstock
3	Spindle	10	Bed/guide ways
4	Digital readout	11	Transporter axis and lead screw
5	Splashscreen	12	Base
6	Cross slide	13	Foot pedal and brake
7	Protective cover tool holder	14	Apron

Before using the machine, it is your responsibility to read, understand and follow all of the safety instructions in this manual. A safety-minded, informed operator is the most important safety aspect of your machine. Accidents can be avoided.

6.1 SAFETY INSTRUCTIONS - LATHE

Wrong usage of the machine result in accidents.

Сниск

- Never use damaged chucks. Replace chucks immediately when damaged.
- Chuck must be balanced and well mounted.
- Use the right chuck for what you are doing.
- Check before operating the machine if there are no tools etc. on or near the chuck.
- Always remove the key from the chuck before you switch the machine on.

WORK PIECE

- Always secure the work piece firmly. Use clamps or a vise to hold the work.
- Do not work on work pieces with irregular shapes.
- Beware of chips. Remove loose chips always with a soft brush. Make sure that the machine is turned off and disconnected from the power source before you remove chips.
- Use the right speed and feed rate.

Tools

- Use only sharp tools. Blunt tools vibrate and make work more difficult.
- Use the right tools. Using unsuitable tools leads to accidents.
- Use the right speed and feed rate in combination with the tools used.
- Place and tighten the tools correctly.

MACHINE

- Never use the machine for any other purpose than that is was designed for.
- Never stand under a machine that is being hoisted.
- Switch the machine off, disconnect it from the power source and make sure that all moving parts have come to a complete stop before starting any inspection, adjustment or maintenance procedure.
- Always turn the machine off and wait till all moving parts have come to a complete stop before you change the speed rate.
- Never leave the machine running unattended. Always switch off the machine and disconnect it from the power source before you leave the workshop.
- Check regularly if all safety mechanisms and other parts of the machine are still working correctly.
- Close all guards before you switch the machine on.

CORRECT USAGE OF THE MACHINE

Correct usage of the machine means that:

- the machine is used for the purposes it was intended for and that it does not exceed its working capacity.
- qualified and capable people work on the machine.
- the safety instructions as described in this machine and as valid in your company are considered always.

7. FIRST USE

Before performing a trial run, remove the anti-corrosive coating. Use a soft cloth and kerosene to remove the coating from the various parts. Do not use metal tools (scrapers) or other tools that could damage the surface. Oil all blank parts after cleaning.

Fill the coolant tank with a non-aggresive coolant with the right mixture to avoid paint damage. Check if the handwheels and levers can be operated easily. Check after switching on the machine if the phases of the mains have been connected correctly.

The spindle should run on the lowest speed rate for at least 30 minutes and without load. After that, increase the speed rate slowly and check if the operating controls function well. Check during the trial run if the coolant system works.

7.1 Connecting to the power source



Caution!

Only a qualified electrician may connect the machine to the power source!

Check before you switch on the machine if the tension of the machine is the same as that of the power source. Use the wiring diagram to connect the machine to the power source. Please use a connection that is secured separately and that can be apart from other users and can also be closed. The machine should be grounded and protected by fuses.

Check after connecting the machine to the power source, if the motor of the coolant pump turns in the right direction (cw). If this is not the case, change 2 phases.

8. Using the machine

8.1 MACHINE CONTROLS

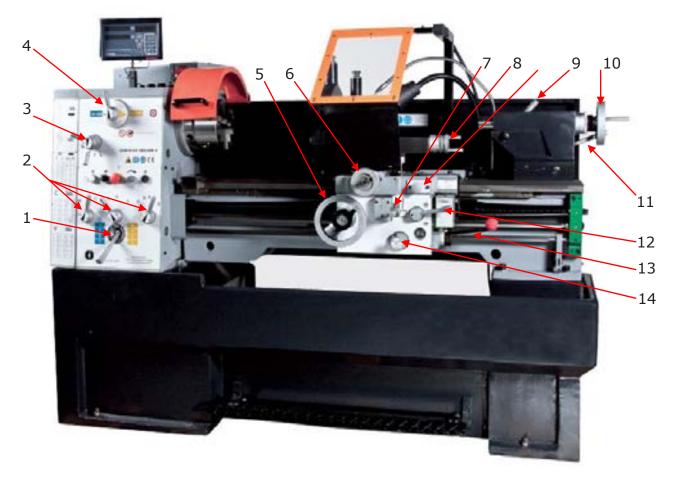
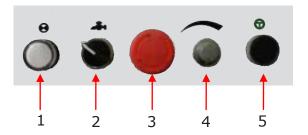


Figure 5

1	Feed handle 1-8	8	Handwheel tool support travel
2	Feed handle A-Z	9	Clamp handle tailstock spindle
3	Feed lever H/L and left/right	10	Handwheel tailstock travel
4	Spindle speed high/low	11	Tailstock/bed clamping handle
5	Handwheel longitudinal travel	12	Half nut lever
6	Handwheel cross travel	13	Spindle rotation lever
7	Feed lever longitudinal/cross	14	Feed coupling button



1	Indicator lamp
2	On/off switch coolant pump
3	Emergency switch
4	Spindle speed knob
5	Jog button

Figure 6

The main switch is located on the left side of the headstock. All other important control parts are located on the front of the headstock.

- 1. Indicator lamp. The Indicator burns when the main switch is in position "1".
- 2. On/Off switch cooling pump.
- 3. Emergency switch. Push the emergency switch in case of an emergency to shutdown the machine.
- 4. Speed knob (potentiometer). The speed can be adjusted by turning the knob. Turn the knob fully round to the left for a lower speed, turn it to the right to obtain a higher speed.
- 5. Jog button. Push the jog button to engage the spindle. The spindle will stop as soon as you release this button.

8.2 SELECTING SPINDLE SPEED

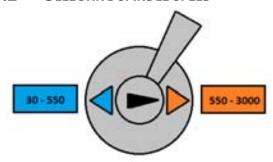


Figure 7

When the machine is active, push the lever on the headstock to the left to select a spindle speed of 30-550 RPM, push it to the right to obtain a spindle speed of 550-3000 RPM.



Caution!

Never adjust the speed rate when the motor is running

8.3 THREAD CUTTING DIAL

The thread cutting dial can be found on the right side of the apron. Change gears with different numbers of teeth are located on the shaft to enable different dimensions for metrical thread cutting. The settings of the thread cutting dial are changed depending on the set of change gears needed for the required tooth pitch.

Every line on the thread cutting dial represents a number which indicates when the half nut should be closed. Please check the table on the thread cutting dial to see which set of changes gears is needed for the different ranges for metrical thread cutting.

8.4 FEED AND THREADING TABLES

Feed and threading tables are available on the front side of the gear box. Please refer to these tables for the right combinations.

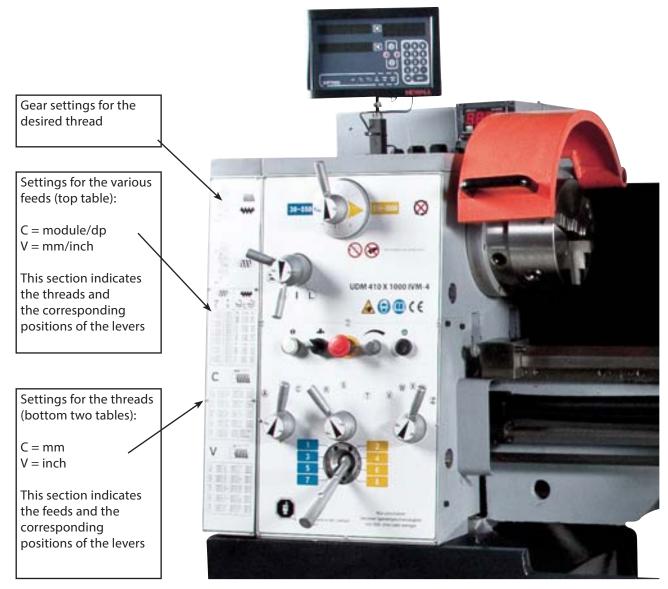


Figure 8

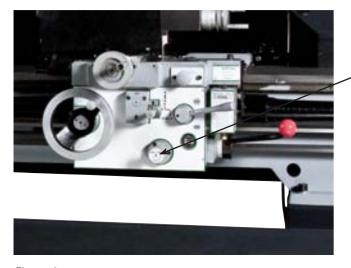


Figure 9

When this button is pushed in, the cross feed moves to the back (x-)

When this button is pulled out, the cross feed moves to the front (x+)

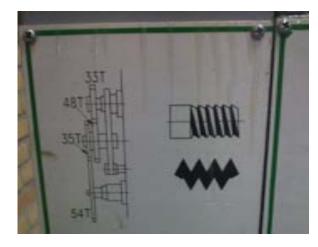
Setting of the gears for the desired thread:



Metric thread



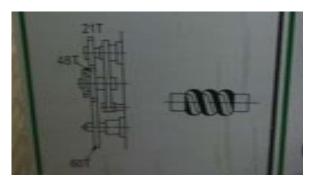
Inch thread



Gears for metric and inch thread



Modular thread



Gears for modular thread

Figure 10

The gears are set as follows:

Disconnect the lathe from the power source

- Open the cover at the left-hand side of the gear box
- Loosen the screw of the slider
- Completely remove the nuts on the gears
- Place the desired gears according to the table
- Make sure the gears are aligned properly
- Tighten the nuts
- Close the cover

Handle for feed direction:



Figure 11



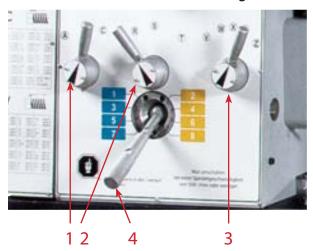
Feed in the direction of the tailstock



Feed in the direction of the chuck

H for high speed feed L for low speed feed I is neutral position

Handles for thread and feed setting:

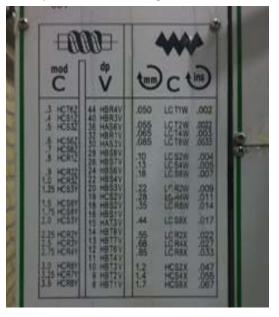


These 4 levers shift the gears that are connected to the thread feed axis, the longitudinal feed axis and the lead axis.

By setting them according to the thread and feed tables you can either use the longitudinal feed axis for regular turning or the thread axis for thread cutting.

Figure 12

Example of feed setting:



Gears in the position for metric threads

Feed of .050 mm:

- Put the lever for the feed direction in L-position
- Put lever 1 in position C
- Put lever 2 in position T
- Put lever 4 in position 1
- Put lever 3 in position W

Figure 13

Example of thread setting:

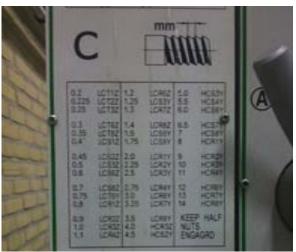


Figure 14

Thread of 0.2 mm per rotation:

- Put the lever for the feed direction in L-position
- Put lever 1 in position C
- Put lever 2 in position T
- Put lever 4 in position 1
- Put lever 3 in position Z

8.5 Mounting the chuck

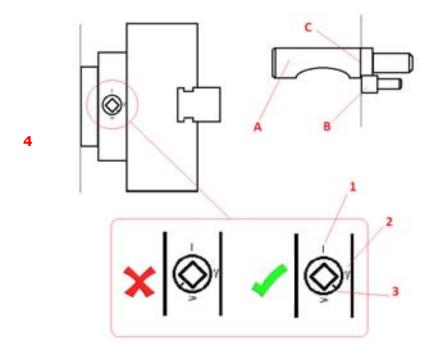


Figure 15

Proceed as follows to mount a chuck:

- Check before mounting the chuck that the spindle opening and chuck surface are clean.
- Cams should be in the right position (open).
- If necessary, re-adjust the cam bolts (A). Remove the lock screws (B) and adjust every bolt. Now the ring (C) can be centered with the rear of the chuck.
- Mount the chuck on the spindle and tighten the cams one by one.
- After tightening, check if the lines of the cams are on the same line as the opening of the lock screw.
- When this is not the case, remove the chuck and re-adjust the locking bolt (B).
- Install and turn the lock screw of every cam before the chuck is mounted again.
- The mark on every correct installed cam should reassamble the ones on the spindle.

Note

For correct locking conditions, each cam must be tightened with its index line between the two "V" marks on the nose.



warning:

Pay attention to the maximum speed for face plates. Plates of 10 inch may not be used with a speed higher than 770 RPM.

8.6 Manual operation

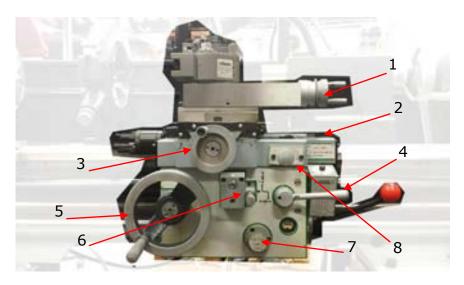


Figure 16

- Put the lever of the half-nut (4) in the highest position (the half-nut is disengaged).
- This makes it possible to move the handwheel of the apron (5), the cross slide (3) and the top slide (1). The displacement of handwheel 5 is 19.6 mm per rotation. The nonius on the handwheel of the cross slide (3) is spaced at 0.02 mm and the displacement is 2.5 mm per rotation.
- The longitudinal slide can be clamped to the bed with clamp 2, creating a stable base for surfacing.
- When there is a gap between the cross slide and the top slide, you can adjust this by adjusting the set screws at both sides of the dove tail guide. The set screws are located behind the bed wipers.
- The lathe is supplied with a four-way tool holder; multifix or other tool holders are optional.
- On the longitudinal slide you can see the lubrication pump (8). Use this pump every time before you start to work with the machine to lubricate the bed ways. Apart from that lubricate as needed.

8.7 AUTOMATIC OPERATION

- Set the turning direction using lever 3 (figure 5) on the headstock.
- Set the desired speed with levers 1 and 2 on the gear box (figure 5).
- Move the lever of the half-nut (4, figure 16) down to enable threading.
- Move the lever for longitudinal and cross feed (6, figure 16) down to enable cross feed.
- Move the lever for longitudinal and cross feed (6, figure 16) up to enable longitudinal feed.



The lathe does not have an automatic feed stop! Take this into consideration when turning! The levers for feeding and threading cannot be used at the same time.

9. ADJUSTING

After installation and starting up the procedure, it is recommended to check the adjustment of the lathe before you start work. Check regularly the adjustment and level of the lathe.

9.1 HEADSTOCK

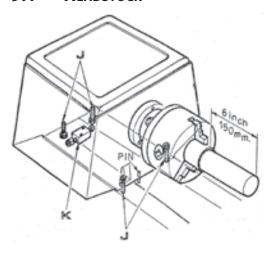
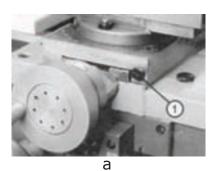


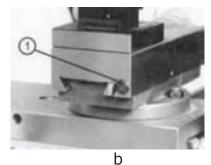
Figure 17

Place a round-steel bar with a length of 150 mm and a diameter of 50 mm in the chuck and turn a cutting tool around it. Use a micrometer to read the values on both ends of the round-steel. The values should be identical.

If this is not the case, remove the cover under the main switch. Loosen the 4 screws (J) of the tailstock a little and readjust block K. Tighten the screws again. Check the values again. Repeat the adjustment procedure until the values are identical.

9.2 SLIDEWAYS





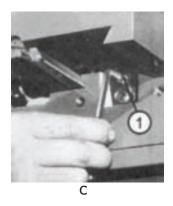


Figure 18

Tapered gibs are connected to the slideways of apron, cross slide and top slide. Use these gibs to adjust play. Check if the slideways are clean and lightly lubricated before re-adjusting.

APRON (A)

- 1. Remove the splash guard at the rear.
- 2. Loosen the nuts.
- 3. Turn the screws a little (cw).
- 4. Tighten the nuts.

CROSS SLIDE (B)

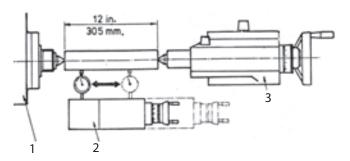
- 1. Loosen the screw on the rear.
- 2. Adjust, by turning the screw on the front clockwise.
- 3. Tighten the screw on the rear.

TOP SLIDE (C)

- 1. Loosen the screw on the rear.
- 2. Adjust, by turning the screw on the front clockwise.
- 3. Tighten the screw on the rear.

Check continuously if the slides can be moved easily and without play.

9.3 TAILSTOCK



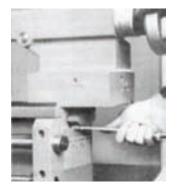


Figure 19 Figure 19A

1	Headstock
2	Compound rest
3	Tailstock

Place a turned or ground shaft with a length of 305 mm between the centers. Check the adjustment by attaching a measuring device to the compound rest. The tailstock is centered with the headstock. If this is not the case, loosen the clamp handle of the tailstock and adjust the two screws on both side of the ground plate.

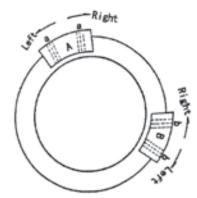
Caution!

The tailstock quill may be moved over a distance of 100 mm. A longer distance will lead to damage of threadshaft and / or half-nut.

DRIVE BELT TENSION

Regularly check the tension of the drive belt. Remove the change wheel cover. Push the belt to check the tension. The tension is correct when the belt can be pushed approx. 13 mm.

9.4 Spindle Leveling



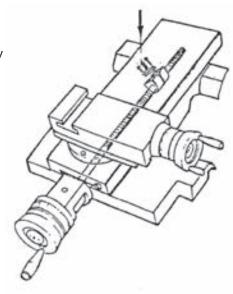
Set the spindle speed to 1330 RPM and turn the lathe on. Put your hand on the headstock to feel any vibrations. If the spindle is not level, it will chatter. Move the leveling blocks A and B to the left or right, till you feel just little vibrations. Change the spindle speed to 2000 or 900 RPM and check again for heavy vibrations. Adjust as described before.

Figure 20

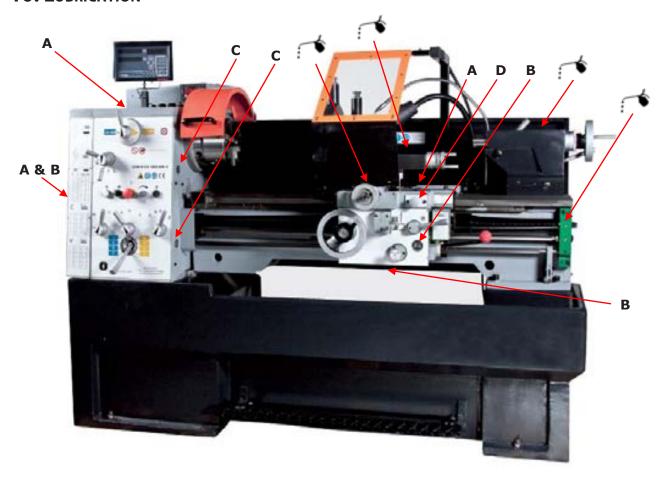
9.5 **N**UT OF CROSS SLIDE

The nut of the cross slide is used to reduce backlash in the nut. Reduce the play by adjusting the screw behind the nut. Check that the slide can move freely.

Figure 21



10. LUBRICATION



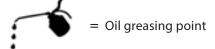


Figure 22

10.1 HEADSTOCK

The headstock has to be filled with Shell Tellus 46 or equivalent. Lubrication by means of an oil bath. Remove the change wheel cover to reach the fill opening (1). It can be necessary to remove the swing frame as well. Check if there are chips in the headstock, if there are, use a brush to remove them. Check the oil level regularly. Change the oil after the first 3 months, after that the oil should be changed once a year. Use the drain plug to let the oil drain off. The drain plug is located at the right of the change wheels and becomes visible after removing the change wheel cover.

10.2 GEAR BOX

Use Shell Tellus 46 or equivalent. Lubrication by means of an oil bath. To change the oil, remove the oil plug. To gain acces to the plug, remove the gear box cover. Change the oil after the first 3 months, after that the oil should be changed once a year.

10.3 Apron

Use Shell Tellus 46 or equivalent. There is an oil tank (1) in the apron. To change the oil, remove the oil plug. The plug can be found on top of the apron, on the right of the cross slide. Change the oil after the first 3 months, after that the oil should be changed once a year.

10.4 OTHER PARTS

The other parts have to be lubricated with grease. The change wheels have to be lubricated every month. Use an oil gun to lubricate the slides. Use an oil gun with a light machine oil or grease to lubricate the leadscrew. Use an oil can to lubricate the tailstock oilers. Lubricate them every day. Clean and lubricate the bedways, leadscrew and feed rod every shift. Use a shoft brush to clean.

11. ELECTRIC SYSTEM



Warning!

Connecting the machine to the mains and repairs of the electrical system may only be performed by a qualified electrician!

Always use the electrical diagram to connect the machine to the mains. Always use a connection that can be secured and sealed.

ELECTRIC CIRCUIT CONTROL(1/2)

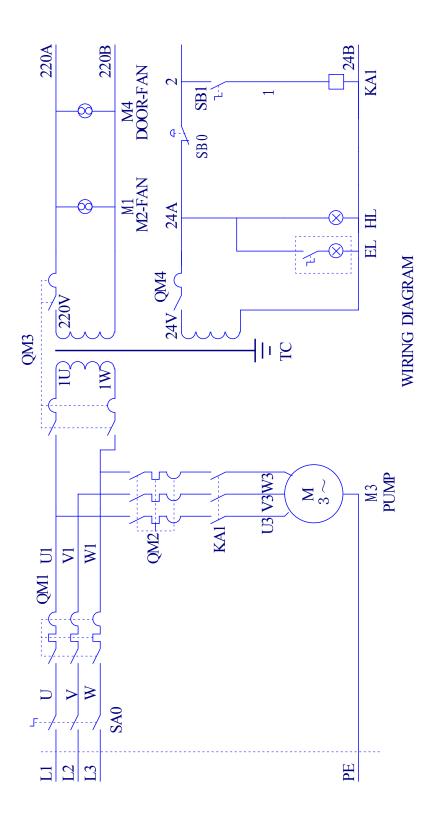


Figure 23

ELECTRIC CIRCUIT CONTROL(2/2)

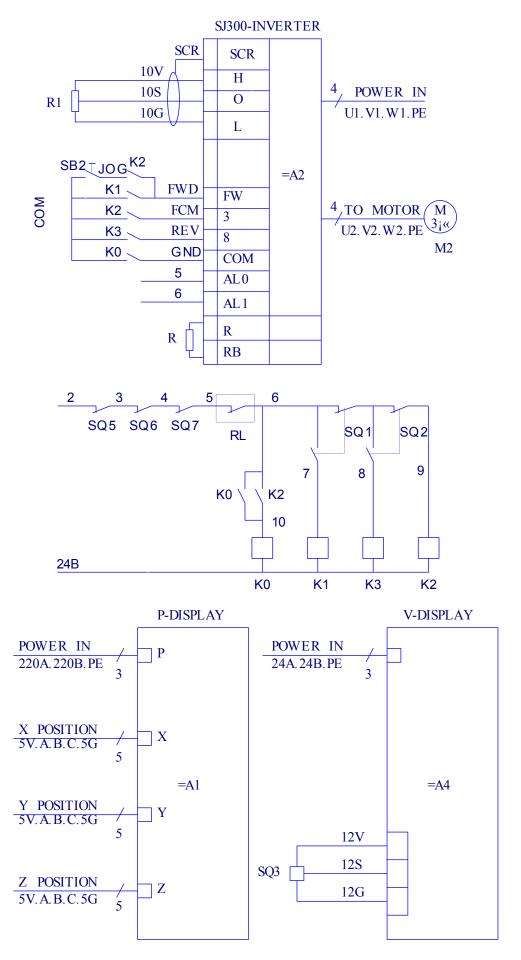
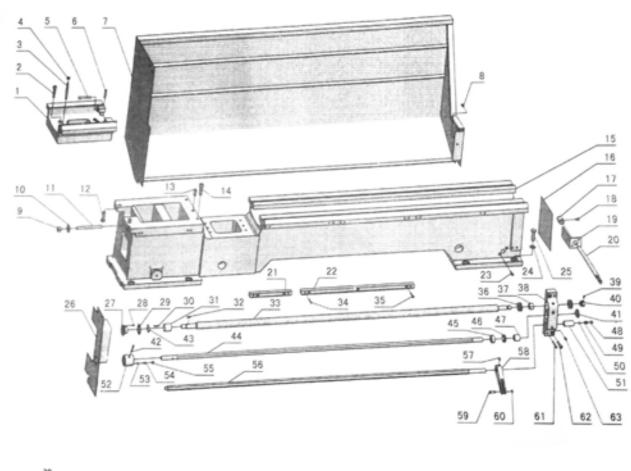


Figure 24

12. Part lists

12.1 BED AND BASE



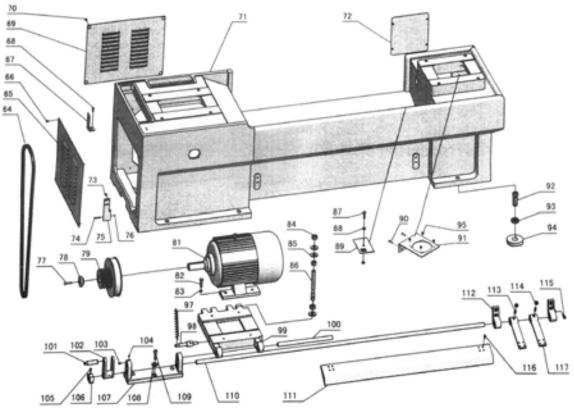


Figure 25

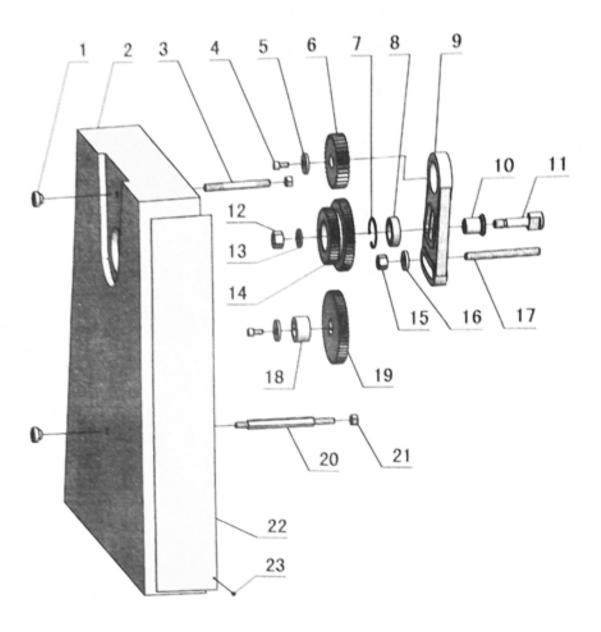
:NO _{by}	Part No.	Name	Specification
	CD6236-01-27	Gap Block	
2	GB70-85	Socket Head Cap Screw	M10×45
3	GB881-86	Taper Pin	*8×85
4	GB6170-86	Nut	M8
5	GB70-85	Socket Head Cap Screw	M8×50
6	GB118-86	Pin	8×40
7	CD6240-01-26a	Guard Assay	1000mm
7	CD6240-01-26N1a	Guard Assay	1500mm
8	GB70-85	Socket Head Cap Screw	M6×12
9	GB41-86	Nut	M12
10	CD6236-01-44	Washer	45
11	CD6236-01-43	Screw	
12	GB21-76	Bolt	M12×40
13	GB119-86	Pin	12×30
14	GB70-85	Socket Head Cap Screw	M12×40
15	CD6236-01-45	Bed	1000mm
15	CD6236-01-45N1	Bed	1500mm
16	CD6236-01-54	Cover	
17	CD6236-12-12	Block	
18	GB70-85	Socket Head Cap Screw	M6×10
19	CD6236-12-19	Hold	
20	CD6236-01-22	Rod	
21	CD6236-01-28	Rack(Left Hand)	
22	CD6236-01-34	Rock	
23	GB70-85	Socket Head Cap Screw	M6×20
24	GB97.1-86	Washer	12
25	GB5783-86	Bolt	M12×45
26	CD6240-01-25	Cover	
27	CD6236-01-30	Sleeve	
28	CD6236-01-31	Pin	
29	CD6236-01-32	Washer	
30	GB2089-80	Spring	1.8×2.5×55
31	CD6236-01-33	Cover	
32	GB1567-86	Key	5×16
33	CD6236-01-37G	Lcad Screw(Metric)	1000mm
33	CD6236-01-37	Lead Screw(Inch)	1000mm
33	CD6236-01-37GN1	Lead Screw(Metric)	1500mm
33	CD6236-01-37N1	Lead Screw(Inch)	1500mm
34	GB879-86	Spring Pin	6×30
35	GB70-85	Socket Head Cap Screw	M6×30

No.	Part No.	Name	Specification
36	GB301-84	Thrust Bearing	8203
37	CD6236-01-39	Sleeve	
38	CD6236-01-42	Bracket	
39	GB78-85	Set Screw	M6×8
40	CD6236-01-41	Nut	
41	CL6132-06-11	Plug	
42	GB117-86	Taper Pin	5×45
43	GB894.2-86	External circlip	28
44	CD6236-01-36	Feed Rod	1000mm
44	CD6236-01-36N1	Feed Rod	1500mm
45	CD6236-01-38	Sleeve	
46	GB301-84	Thrust Bearing	8103
47	CD6236-01-40	Sleeve	
48	GB77-85	Set Screw	M12×8
49	GB2089-80	Spring	1×9×20
50	GB308-84	Steel Ball	9.5
51	CD6236-01-55	Sleeve	
52	CD6236-01-29	Clutch	
53	GB308-84	Steal Ball	8
54	GB2089-80	Spring	1.2×6×46
55	GB77-85	Screw	M10×10
56	CD6236-01-35	Started Rod	1000mm
56	CD6236-01-35N1	Started Rod	1500mm
57	GB77-85	Screw	M8×8
58	CD6236-01-23	Lever	
59	CD6236-01-21	Pin	
60	GB896-86	Circlip	6
61	GB117-86	Taper Pin	6×50
62	GB70-85	Socket Head Cap Screw	M8×35
63	GB80-85	Screw	M8×14
64	GB1171-74	V13-1985/A1940	
65	RUN6246-106028	Cover	
66	GB818-85	Cross Screw	M6×10
67	RUN6246-108078	Limited Switch Seat	
68	GB70-85	Socket Head Cap Screw	M6×16
69	RUN6246-106028-1	Cover	
70	GB818-85	Cross Screw	M6×10
71	CD6236-01-01B	Stand	1000mm
71	CD6236-01-01BN1	Stand	1500mm
72	RUN6246-106033	Cover	

No.	Part No.	Name	Specification
73	GB818-85	Cross Screw	M6×10
74	GB818-85	Screw	M4×30
75	CD6236-01-59A	Limited Switch Seat	
76	GB6172-86	Nut	M4
77	GB70-85	Socket Head Cap Screw	M8×30
78	RUN6141-106049a	Washer	
79	CD6236V-01-05B1A	Belt Pulley	
81	YP-50-5.5-4	Motor	
82	GB30-76	Bolt	M10×40
83	GB93-86	Washer	10
84	GB41-76	Nut	M16
85	RUN6246-106079	Washer	
86	RUN6246-106046	Screw	
87	GB70-85	Socket Head Cap Screw	M8×30
88	GB6170-86	Nut	M8
89	RUN6246-106051	Screen	
90	GB70-85	Screw	M6×25
91	C6251A-01-17-5	Coolant Pump Seat	
92	RUN6246-106029	Bolt	
93	GB6173-86	Nut	M24×2
94	RUN6246-106069	Block-Leveling	
95	GB818-85	Screw	M6×10
97	Q81-3	Spring	3×16×115
98	RUN6246-106050	Shaft	
99	RUN6246-106034	Motor Seat	
100	RUN6246-106044	Shaft	
101	RUN6246-106039	Shaft	
102	CD6236-106040C	Arm Brake	
103	GB70-85	Socket Head Cap Screw	M5×8
104	GB80-85	Screw	M6×8
105	GB70-85	Socket Head Cap Screw	M6×12
106	RUN6246-106037	Cam	
107	RUN6246-106041	Bracket Motor Seat	
108	RUN6246-106097	Washer	
109	GB70-85	Screw	M10×40
110	CD6236-01-50	Shaft	1000mm
110	CD6236-01-50N1	Shaft	1500mm
111	CD6236-01-51	Pedal Brake	1000mm
111	CD6236-01-51N1	Pedal Brake	1500mm
112	RUN6246-106036	Bracket	

No.	Part No.	Name	Specification
113	GB79-85	Screw	M10×25
114	GB6170-86	Nut	M10
115	GB70-85	Screw	M8×20
116	GB70-85	Screw	M6×16
117	CD6236-01-52	Arm	

12.2 CHANGE GEARS



No.	Part No.	Name	Specification
1	CL6132-04-77	Nut	
2	CD6240-04-72	Cover	
3	GB900-88	Bolt	M10×85
4	GB70-85	Socket Head Cap Screw	M8×16
5	CD6236-05-02	Washer	
6	CD6240-04-53G1	Change Gear	Metric(33T)
6	CD6240-15-07G1	Change Gear	Metric(21T)
6	CD6240-04-53	Change Gear	Inch(24T)
7	GB893.1-86	Circlip	47
8	GB279-88	Roller Bearing	160105
9	CD6240-05-10	Swing France	
10	CD6236-05-06	Sleeve	
11	CD6236-05-05	Shaft	
12	GB6172-86	Nut	M14
13	GB97.1-84	Washer	14
14	CD6240-05-09G1	Change Gear	Metric(35/48T)
14	CD6240-05-09	Change Gear	Inch(44/56T)
15	GB41-86	Nut	M12
16	CD6236-01-44	Washer	45
17	CD6236-01-43	Screw	
18	CD6236-05-03	Sleeve	
19	CD6240-05-04G1	Change Gear	Metric(54T)
19	CD6240-15-08G1	Change Gear	Metric(60T)
19	CD6240-05-04	Change Gear	Inch(57T)
20	CD6236-01-24	Bolt	
21	GB54-76	Nut	M10
22	CD6236-04-71G	Plate	Metric
22	CD6236-04-71	Plate	Inch
23	GB818-85	Screw	M3×8

12.3 HEADSTOCK

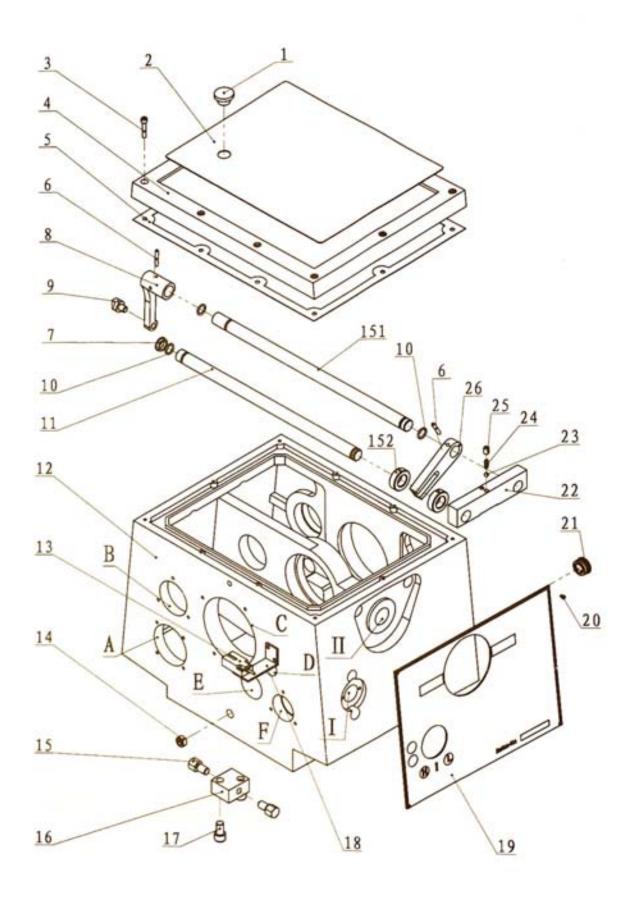
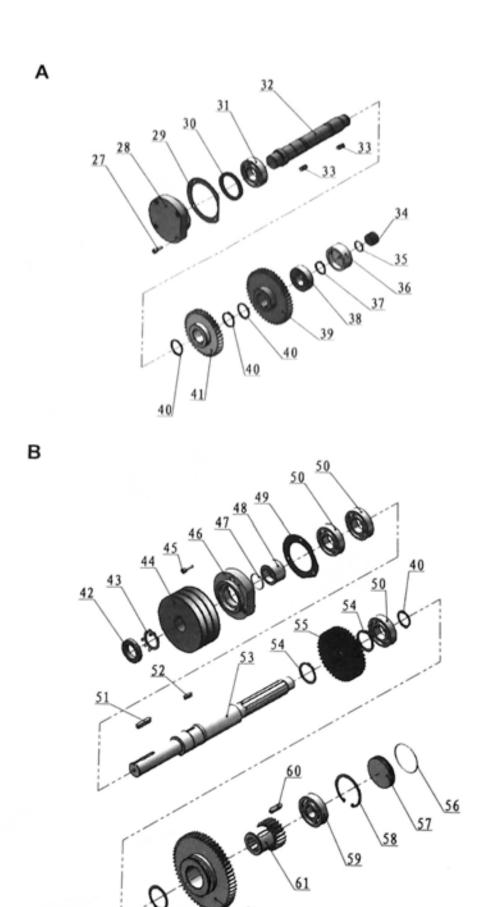


Figure 27



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Figure 28

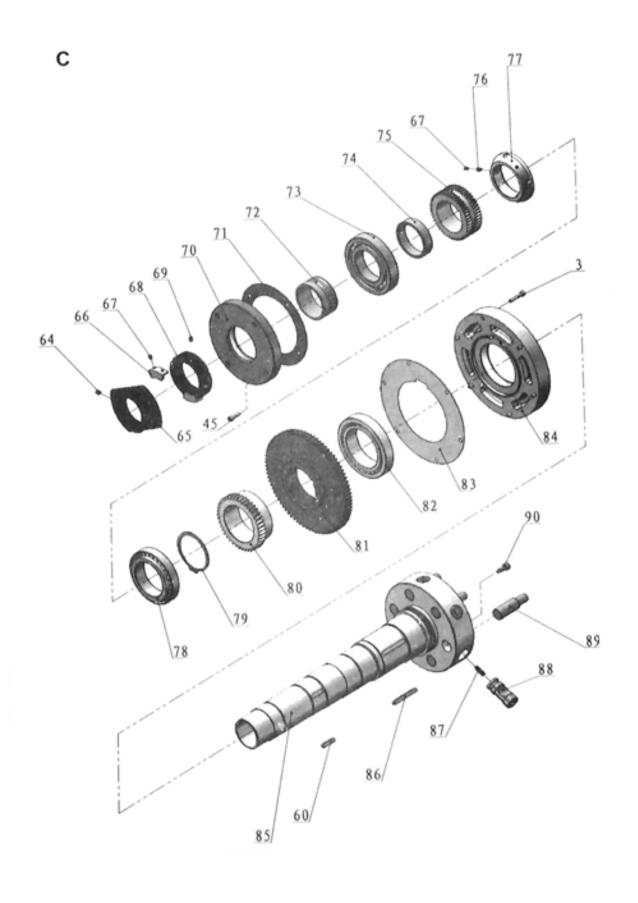
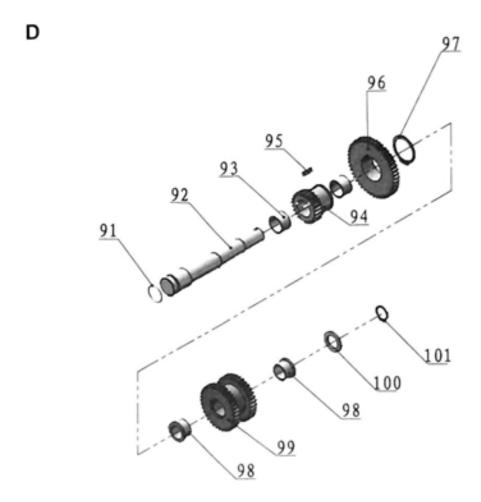


Figure 29



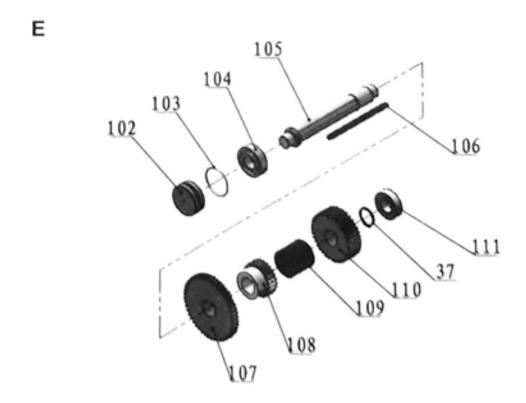
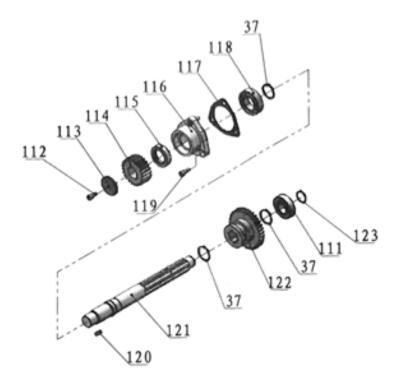


Figure 30







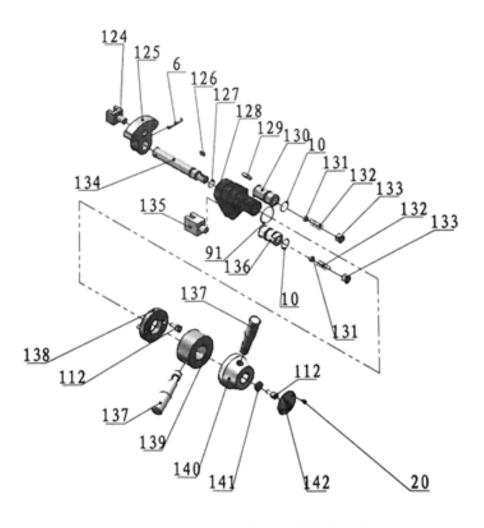


Figure 31

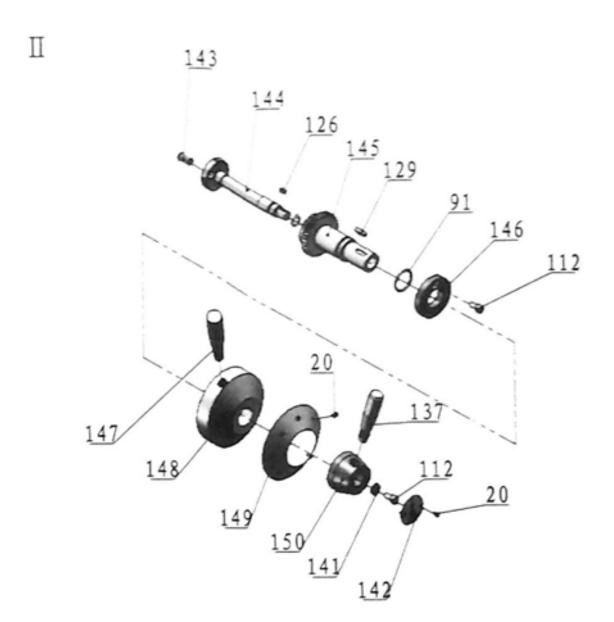


Figure 32

No.	Part No.	Name	Specification
1	CL6132-04-06	Plug-Oil Inlet	
2	CD6236-04-19	Cover Dress	
3	GB70-85	Socket Head Cap Screw	M6×30
4	CD6240-04-15	Headstock Cover	
5	CD6240-04-14	Packing	
6	GB879-85	Spring Pin	5×30
7	CL6132-04-03	Plug	
8	CD6236-04-74	Bracket	
9	CL6132-04-76	Fork	
10	GB3452.1-82	O-Ring	14×2.65
11	CD6236-04-20	Shaft	
12	CD6240-04-16	Headstock	
13		Switch	
14	Q/ZB285.3	Oil Plug	ZG 3/8"
15	CL6132-04-82	Adjust Screw	
16	CL6132-04-83	Limited Bracket	
17	GB70-85	Screw	M12×20
18	CD6236-04-83B	Bracket	
19	CD6236-04-13	Plate	
20	GB818-85	Screw	M3×15
21	GB1160.1-86	Oil Sight	16
22	CD6236-04-18	Bracket	
23	GB308-84	Steel Ball	6.5
24	GB2089-80	Spring	1×5×22
25	GB77-85	Screw	M8×12
26	CD6236-04-76	Bracket	
27	GB70-85	Socket Head Cap Screw	M6×30
28	CD6236-101010C	Cover	
29	RUN6246-101010-1	Packing	
30	CD6236-101010C-1	Spacer	
31	GB276-94	Ball Bearing	E206
32	CD6236-04-01C	Shaft	
33	GB1096-79	Key	8×18
34	CL6132-04-40	Plug	
35	GB/T3452.1	O-Ring	19×2.65
36	CD6236-04-08	Plug	
37	GB894.1-86	External Circlip	25
38	GB278-89	Ball Bearing	80205
39	CD6236-04-07	Gear	Mn=2.5 Z=33
40	GB894.1-86	External Circlip	30

No.	Part No.	Name	Specification
41	CD6236-04-03	Gear	Mn=2.5 Z=38
42	GB812-88	Nut	M30×1.5
43	GB858-88	Toothed Lock Washer	30
44	CD6236-04-02C	Belt Pulley	
45	GB70-85	Socket Head Cap Screw	M6×20
46	CD6240-101010C	Bearing Cover	
47	GB1235-76	O-Ring	36×3.5
48	CD6240-101009C	Sleeve	
49	CD6236-04-67	Packing	
50	GB/T276	Ball Bearing	6206-2Z
51	GB1096-79	Key	8×37
52	GB1096-79	Key	6×20
53	CD6236-04-09C	Shaft	
54	GB894.1-86	External Circlip	40
55	CD6236-04-63C	Gear	
56	GB1235-76	O-Ring	56×3.5
57	CD6236-04-12	Cover	
58	GB893.1-86	External Circlip	62
59	GB278-89	Ball Bearing	80305
60	GB1096-79	Key	8×30
61	CD6236-04-11	Gear	Mn=2.5 Z=21
62	CD6236-04-10	Gear	Mn=2.5 Z=60
63	GB894.1-86	External Circlip	45
64	GB80-85	Screw	M8×8
65	CD6240-04-82D	Speed Plate	
66	CD6236-04-62	Balance Piece	
67	GB77-85	Fix Screw	M6×8
68	CD6236-04-61	Set Nut	
69	GB77-85	Fix Screw	M6×10
70	CD6236-04-58	Cover	
71	CD6236-04-59	Packing	
72	CD6236-04-60	Cycle Oil Ring	
73	GB276-89	Ball Bearing	E213
74	CD6236-04-57	Sleeve	
75	CD6236-04-56	Gear	Mn=2 Z=48
76	CD6236-04-34	Fix Black	
77	CD6236-04-33	Set Nut	
78	GB297-84	Taper Roller	D2007114E
79	GB894.1-86	External Circlip	75
80	CD6236-04-35	Gear	Mn=2.5 Z=43

No.	Part No.	Name	Specification
81	CD6236-04-36	Gear	Mn=2.5 Z=82
82	GB297-84	Taper Roller	D2007116E
83	CD6236-04-38	Packing	
84	CD6236-04-37	Cover	
85	CD6236-04-39	Spindle	D1-6
86	GB1096-79	Key	8×60
87	RUN6246-101082-1	Spring	
88	RUN6246-101081	Cam Lock	
89	RUN6246-101082	Cam Lock Stud	
90	RUN6246-101087	Screw	
91	GB1235-76	O-Ring	28×3.1
92	CD6236-04-40	Shaft	
93	CD6236-04-43-2	Bush	
94	CD6236-04-43-1	Gear	Mn=2 Z=24
95	GB1096-79	Key	5×20
96	CD6236-04-44	Gear	Mn=2 Z=48
97	GB894.1-86	External Circlip	42
98	CD6236-04-42-2	Bush	
99	CD6236-04-42	Gear	Mn=2 Z=36
100	CD6236-04-41	Spacer	
101	GB894.1-86	External Circlip	22
102	CD6236-04-55	Cover	
103	GB1235-76	O-Ring	46×3.5
104	GB278-89	Ball Bearing	80204
105	CD6236-04-45	Shaft	
106	GB1096-79	Key	8×115
107	CD6236-04-49	Gear	Mn=2 Z=48
108	CD6236-04-48	Gear	Mn=2 Z=24
109	CD6236-04-47	Sleeve	
110	CD6236-04-46	Gear	Mn=2 Z=26
111	GB278-89	Ball Bearing	80104
112	GB70-85	Socket Head Cap Screw	M6×12
113	CD6236-04-54	Spacer	
114	CD6240-04-53G1	Change Gear	Metric(33T)
114	CD6240-04-53	Change Gear	Inch(24T)
115	HG4-692-67	Oil Seal	SD25×40×10
116	CD6236-04-52	Cover	
117	CL6132-04-48	Packing	
118	GB278-89	Ball Bearing	80105
119	GB70-85	Socket Head Cap Screw	M6×14

No.	Part No.	Name	Specification
120	GB1096-79	Key	6×14
121	CD6236-04-50	Shaft	
122	CD6236-04-51	Gear	Mn=2 Z=36
123	GB894.1-86	External Circlip	20
124	CD6236-04-32	Fork	
125	CD6236-04-30	Lever	
126	GB1096-79	Key	4×10
127	GB/T3452.1	O-Ring	10×2.65
128	CD6236-04-24	Lever	
129	GB1096-79	Key	5×18
130	CD6236-04-31	Bracket	
131	GB308-84	Steel Ball	Ф 10
132	GB2089-80	Spring	0.9×9×40
133	GB77-85	Fix Screw	M12×10
134	CD6236-04-29	Shaft	
135	CD6236-04-23	Fork	
136	CD6236-04-25	Bracket	
137	CD6236-05-63A	Lever	
138	CD6236-04-26	Cover	
139	CD6236-04-27	Lever Head	
140	CD6236-04-28	Lever Head	
141	CL6132-04-62	External Circlip	
142	CL6132-04-90	Plate	
143	CL6132-04-94	Pin	
144	CD6236-04-75	Lever Shaft	
145	CD6236-04-77	Gear Shaft	Mn=1.5 Z=37
146	CL6132-04-68	Cover	
147	CD6236-04-78	Lever	
148	CD6236-04-98	Lever Bracket	
149	CL6132-04-92	Plate	
150	CL6132-04-91	Lever Bracket	
151	CD6236-04-20b	Shaft	
152	CL6132-04-99	Sleeve	

12.4 GEAR BOX

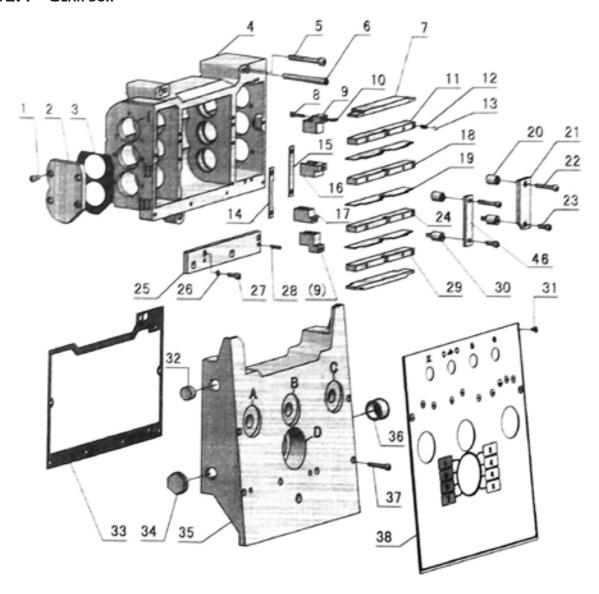
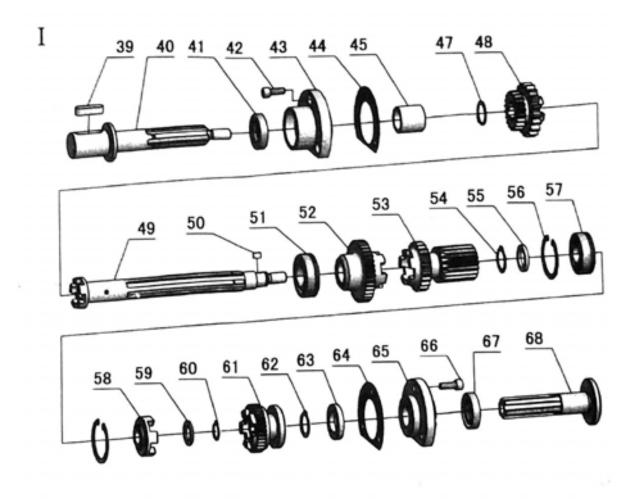
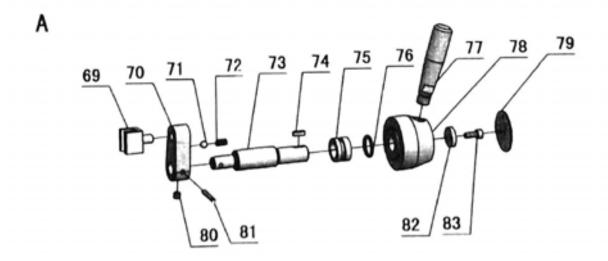


Figure 33





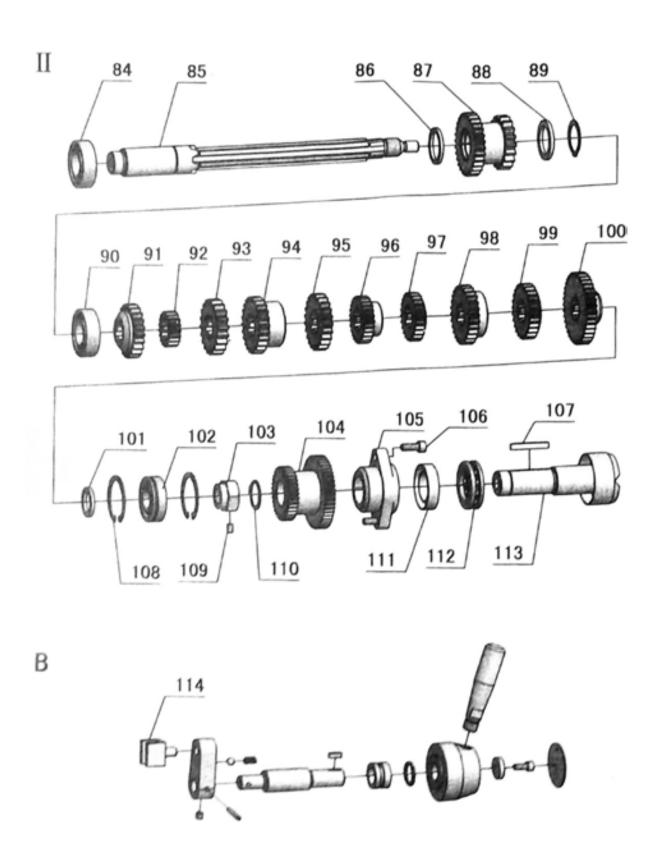


Figure 35

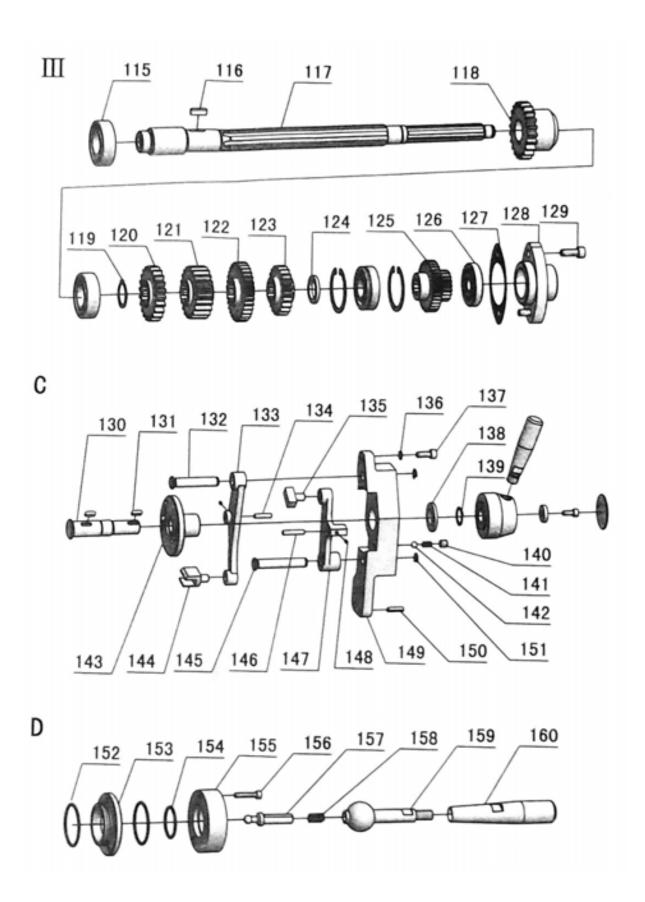


Figure 36

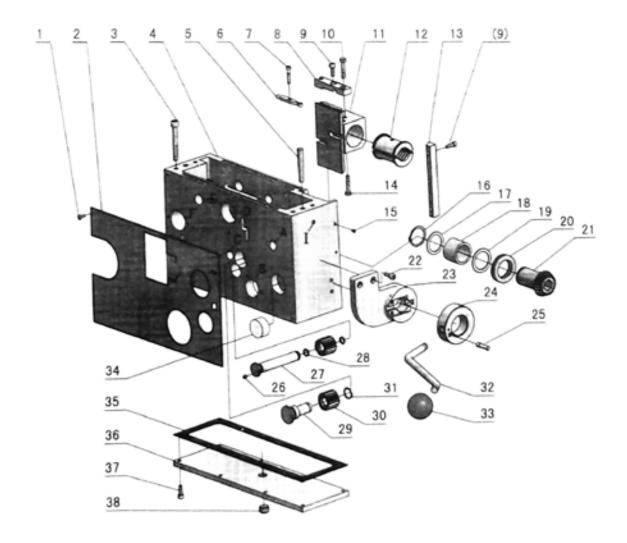
No.	Part No.	Name	Specification
1	GB70-85	Socket Head Cap Screw	M6×16
2	CD6236-05-91	Cover	
3	CD6236-05-65	Packing	
4	CD6236-05-42	Gear Box Casting	
5	GB70-85	Socket Head Cap Screw	M8×60
6	GB118-86	Taper Pin	A8×90
7	CD6236-05-58	Top Plate	
8	GB70-85	Socket Head Cap Screw	M5×20
9	CD6236-05-96	Fork	
10	GB879-86	Spring Pin	3×16
11	CD6236-05-56	Fork	
12	GB2089-80	Spring	0.8×5×17
13	GB308-84	Steel Ball	6
14	CD6236-05-92	Plate	
15	CD6236-05-97	Plate	
16	CD6236-05-95	Fork	
17	CD6236-05-94	Fork	
18	CD6236-05-55	Fork	
19	CD6236-05-57	Drive Plate	
20	CD6236-05-59	Sleeve	
21	CD6236-05-51	Set Screw	M6×5
22	GB70-85	Socket Head Cap Screw	M6×35
23	GB70-85	Socket Head Cap Screw	M6×16
24	CD6236-05-54	Fork	
25	CD6236-05-89	Selector Bar	
26	GB93-87	Spring Washer	6
27	GB70-85	Socket Head Cap Screw	M6×16
28	GB879-86	Spring Pin	5×18
29	CD6236-05-53	Fork	
30	CD6236-05-52	Screw	
31	GB819-85	Cross Screw	M5×8
32	GB3289.2-82	Oil Inlet Pip	ZG1/2"
33	CD6236-05-87	Packing	
34	GB3289.31-82	Plug	ZG1/2"
35	CD6236-05-48	Cover	
36	GB1160.1-89	Oil Sight Glass	20
37	GB70-85	Socket Head Cap Screw	M6×35
38	CD6236-05-62	Plate	
39	GB1096-79	Key	8×28
40	CD6236-05-01	Shaft	

No.	Part No.	Name	Specification
41	HG4-692-67	Oil Seal	PD20×35×10
42	GB70-85	Socket Head Cap Screw	M6×16
43	CD6236-05-11	Bracket	
44	CD6236-05-64	Packing	
45	GB290-64	Roller Bearing	943/20
46	CD6236-05-93	plate steel	
47	GB894.1-86	Circlip	20
48	CD6236-05-13	Gear	Mn=2.25Z=39Mn=1
49	CD6236-05-14	Shaft	
50	GB1096-79	Key	5×8
51	GB276-84	Ball Bearing	7000104
52	CD6236-05-15	Gear	Mn=1.5 Z=38
53	CD6236-05-22	Gear	Mn=2. Z=23
54	GB894.1-86	Circlip	20
55	CD6236-05-27	Washer	
56	GB893.1-86	Circlip	40
57	GB276-82	Ball Bearing	203
58	CD6236-05-28	Clutch	
59	CD6236-05-76	Washer	
60	GB894.1-86	Circlip	14
61	CD6236-05-29	Clutch Gear	
62	GB894.1-86	Circlip	20
63	CD6236-05-31	Washer	
64	CD6236-05-32	Packing	
65	CD6236-05-33	Cover	
66	GB70-85	Socket Head Cap Screw	M6×16
67	HG4-692-67	Oil Seal	PD20×35×10
68	CD6236-05-30	Shaft	
69	CD6236-05-40	Fork	
70	CD6236-05-88	Lever	
71	GB308-84	Steel Ball	φ 6.5
72	GB2089-80	Spring	0.8×5×17
73	CD6236-05-90	Shaft	
74	GB1096-79	Key	4×12
75	CD6236-05-101	Sleeve	
76	GB3452.1-82	O-Ring	16×2.65
77	CD6236-05-63A	Lever	
78	CD6236-05-63	Lever	
79	CL6132-04-90	Plate	
80	GB77-85	Screw	M6×6

No.	Part No.	Name	Specification
81	GB879-86	Spring Pin	4×25
82	CD6236-05-100	Washer	
83	GB70-85	Socket Head Cap Screw	M5×12
84	GB276-84	Ball Bearing	7000104
85	CD6236-05-67	Shaft	
86	CD6236-05-66	Washer	
87	CD6236-05-68	Gear	Mn=1.75Z=30
88	CD6236-05-69	Washer	
89	GB894.1-86	Circlip	25
90	GB276-84	Ball Bearing	7000104
91	CD6236-05-16	Gear	Mn=2 Z=22
92	CD6236-05-17	Gear	Mn=1.5 Z=19
93	CD6236-05-18	Gear	Mn=2, Z=20
94	CD6236-05-19	Gear	Mn=2 Z=24
95	CD6236-05-20	Gear	Mn=2 Z=23
96	CD6236-05-21	Gear	Mn=1.5 Z=27
97	CD6236-05-23	Gear	Mn=1.5 Z=24
98	CD6236-05-24	Gear	Mn=1.75 Z=28
99	CD6236-05-25	Gear	Mn=1.75 Z=26
100	CD6236-05-26	Gear	Mn=1.5 Z=38
101	CD6236-05-27	Washer	
102	GB276-82	Ball Bearing	203
103	CD6236-05-77	Nut	
104	CD6236-05-79	Gear	Mn=1.5 Z=33
105	CD6236-05-81	Bracket	
106	GB70-85	Socket Head Cap Screw	M6×16
107	GB1096-79	Key	5×35
108	GB893.1-86	Circlip	40
109	GB77-85	Screw	M5×8
110	GB894.1-86	Circlip	22
111	HG4-692-67	Oil Seal	PD25×40×10
112	GB301-84	Thrust Bearing	8105
113	CD6236-05-78	Shaft	30
114	CD6236-05-41	Fork	
115	GB276-84	Ball Bearing	7000104
116	GB1096-79	Key	5×16
117	CD6236-05-71	Shaft	
118	CD6236-05-70	Gear	Mn=2.25 Z=22
119	GB894.1-86	Circlip	20
120	CD6236-05-72	Gear	Mn=2 Z=22

No.	Part No.	Name	Specification
121	CD6236-05-73	Gear	Mn=2 Z=22
122	CD6236-05-74	Gear	Mn=1.5 Z=33
123	CD6236-05-75	Gear	Mn=1.75 Z=22
124	CD6236-05-27	Washer	
125	CD6236-05-80	Gear	Mn=1.25Z=36
126	GB276-86	Roller Bearing	101
127	CD6236-05-99	Packing	
128	CD6236-05-82	Bracket	
129	GB70-85	Socket Head Cap Screw	M6×16
130	CD6236-05-35	Lever	
131	GB1096-79	Key	4×12
132	CD6236-05-38A	Shaft	
133	CD6236-05-84	Lever	
134	GB119-86	Straight Pin	A5×21
135	CD6236-05-39	Fork	
136	GB93-87	Spring Washer	6
137	GB70-85	Socket Head Cap Screw	M6×16
138	CD6236-05-83	Washer	
139	GB894.1-86	Circlip	17
140	GB77-85	Screw	M8×8
141	GB2089-80	Spring	0.8×5×17
142	GB308-84	Steel Ball	Ф 6.5
143	CD6236-05-36	Cam	
144	CD6236-05-86	Fork	
145	CD6236-05-38	Shaft	
146	GB119-86	Straight Pin	A5×24
147	CD6236-05-85	Lever	
148	GB879-86	Spring Pin	3×14
149	CD6236-05-37	Bracket	
150	GB879-86	Spring Pin	5×18
151	GB896-86	Circlip	8
152	GB3452.1-82	O-Ring	38.7×2.65
153	CD6236-05-50	Bracket	
154	GB3452,1-82	O-Ring	30×2.65
155	CD6236-05-49	Cover	
156	GB70-85	Socket Head Cap Screw	M5×25
157	CD6236-05-46	Selector	
158	GB2089-80	Spring	1×8×32
159	CD6236-05-44/01	Lever	
160	CD6236-05-44/02	Lever	

12.5 **A**PRON



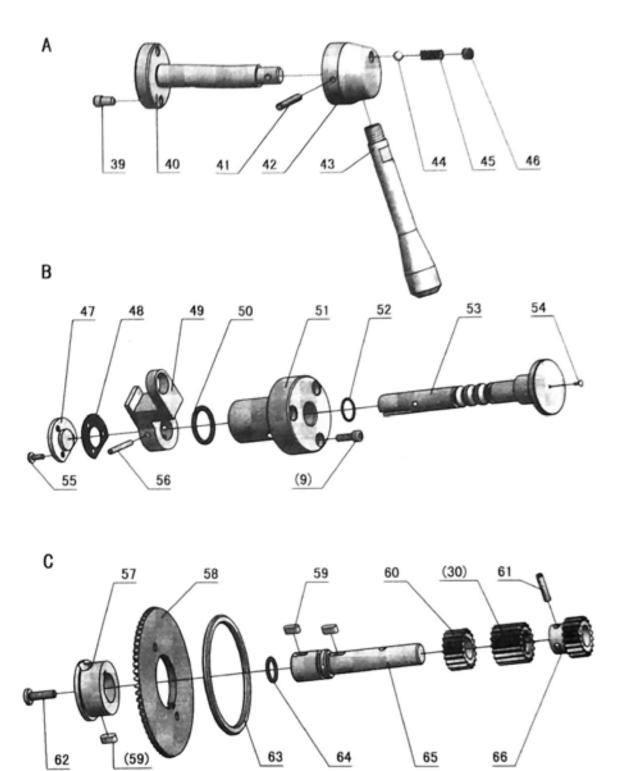
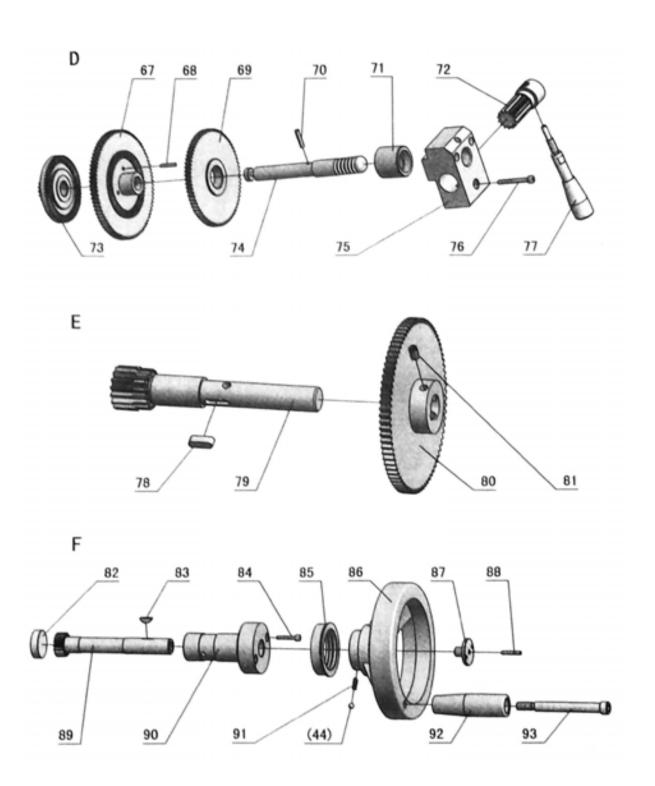


Figure 38



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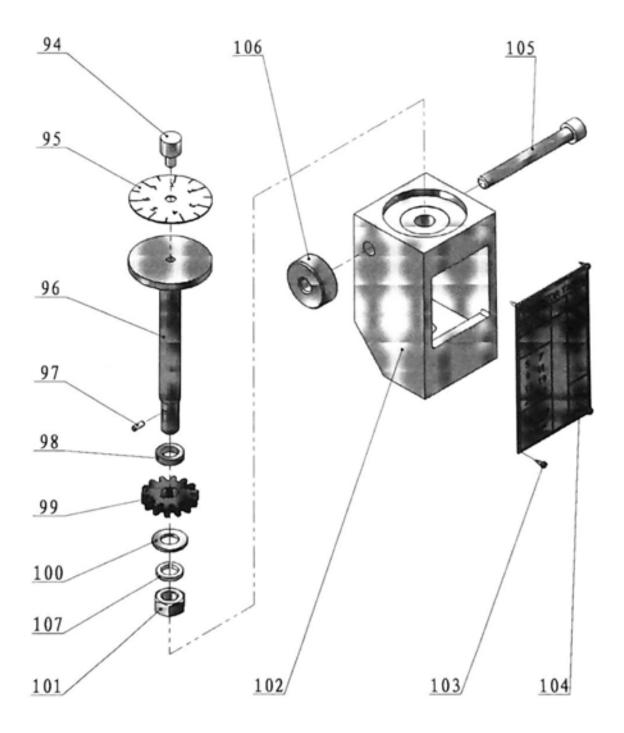


Figure 40

No.	Part No.	Name	Specification
1	GB818-85	Screw	M4×10
2	CD6236-06-03	Name Plate	Left Hand
2	CD6236-06-03/1	Name Plate	Right Hand
3	GB70-85	Socket Head Cap Screw	M8×60
4	CD6236-06-01	Apron Casting	Left Hand
4	CD6236-06R-01	Apron Casting	Right Hand
5	GB117-86	Pin	B8×60
6	CD6236-06-31	Lever	
7	GB70-85	Socket Head Cap Screw	M5×25
8	CD6236-06-39	Stopper	
9	GB70-85	Socket Head Cap Screw	M5×16
10	GB5782-86	Bolt	M6×12
11	CD6236-06-38	Half Bracket	Left Hand
11	CD6236-06R-38	Half Bracket	Right Hand
12	CD6236-06-52G	Half Nut(Metric)	6mm
12	CD6236-06-52	Half Nut(Inch)	4TPI
13	CD6236-06-30	Gib	
14	GB5782-86	Bolt	M6×10
15	GB79-85	Socket Head Set Screw	M5×6
16	GB894.1-86	Clip	30
17	CD6236-06-28-1	Washer	
18	GB290-82	Needle Bearing	7943/30
19	C6246B-101059	Washer	
20	GB301-84	Thrust Bearing	8106
21	CD6236-06-29	Gear-Drive Level	Mn=1.75 Z=23
22	GB70-85	Socket Head Cap Screw	M6×16
23	CD6236-06-33 6/8a	Switch Brackek	
24	RUN6246-106053	Bracket	
25	RUN6246-106055	Pin	
26	GB77-85	Socket Head Sct Screw	M6×6
27	CD6236-06-44	Shaft	
28	GB3452.1-82	O-Ring	11.2×2.65
29	CD6236-06-19	Shaft	
30	CD6236-06-50	Gear	Mn=1.5 Z=18
31	GB894.1-86	External Circle	16
32	CD6236-06-33 2/8a	Spindle Control Lever	
33	Z16-1	Lever Bush	
34	GB1160-86	Sight Glass	B20
35	CD6236-06-49	Packing	
36	CD6236-06-48	Bottom Plate	

No.	Part No.	Name	Specification
37	GB70-85	Socket Head Cap Screw	M5×16
38	Q/ZB285.3	Oil Plug	R 3/8"
39	CD6236-06-37	Pin	
40	CD6236-06-25	Shaft	
41	GB879-86	Spring Pin	5×42
42	CD6236-06-26	Lever Head	
43	CD6236-06-27	Handle	
44	GB308-84	Steel Ball	φ6.5
45	GB896-86	Clip	8
46	GB77-85	Socket Head Cap Screw	M8×6
47	CD6236-06-43	Cover	
48	CD6236-06-42	Packing	
49	CD6236-06-41	Fork	
50	GB3452.1-82	O-Ring	25.8×3.55
51	CD6236-06-22	Sleeve	
52	GB3452.1-82	O-Ring	16×1.8
53	CD6236-06-21	Shaft	
54	GB827-86	Rivet	2×6
55	GB818-85	Screw	M4×10
56	GB879-86	Spring Pin	4×30
57	CD6236-06-18-02	Input Bush	
58	CD6236-06-45	Gear-Drive Bevel	Mn=1.75 Z=64
59	GB1096-79	Key	5×12
60	CD6236-06-47	Gear	Mn=1.5 Z=18
61	GB879-86	Spring Pin	5×22
62	GB818-85	Screw	M6×20
63	CD6236-06-46	Washer	
64	GB3452.1-82	O-Ring	11.2×2.65
65	CD6236-06-18-01	Shaft	
66	CD6236-06-17	Gear	Mn=1.5 Z=18
67	CD6236-06-11	Gear	Mn=1.5Z=80
68	GB119-86	Pin	D4×20
69	CD6236-06-12	Gear	Mn=1.5Z=72
70	GB879-86	Spring Pin	5×22
71	CD6236-06-15	Sleeve	
72	CD6236-06-40	Gear Shaft(Left Hand)	Mn=1.5 Z=14
72	CD6236-06R-40	Gear Shaft(Right Hand)	Mn=1.5 Z=14
73	CD6236-06-34	Gear	Mn=1.5Z=18
74	CD6236-06-13	Shaft	
75	CD6236-06-14	Lever Head	

No.	Part No.	Name	Specification
76	GB70-85	Socket Head Cap Screw	M5×40
77	CD6236-06-16	Lever(Left Hand)	
77	CD6236-06R-16-1	Lever(Right Hand)	
77	CD6236-06R-16-2	Screw(Right Hand)	
78	GB1096-79	Key	6×18
79	CD6236-06-10	Shaft	Mn=1.75 Z=16
80	CD6236-06-09	Gear	Mn=1.5 Z=81
81	GB78-85	Screw	M6×10
82	CD6236-06-23	Plug	
83	GB1099-79	Wood ruff Key	5×6.5×16
84	GB70-85	Socket Head Cap Screw	M5×25
85	CD6236-06-08G	Dial(Metric)	
85	CD6236-06-08	Dial(Inch)	
86	CD6236-06-07	Hand Wheel	
87	CD6236-08-16	Screw Plug	
88	GB79-85	Set Screw	M5×25
89	CD6236-06-02	Shaft	
90	CD6236-06-04G	Sleeve(Metric)	
90	CD6236-06-04	Sleeve(Inch)	
91	GB2089-80	Spring	
92	CD6236-06-05	Handle	
93	CD6236-06-06	Bolt	
94	CD6236-06-32 1/9	Screw	
95	CD6236-06-32-3G	Plate(Metric)	
95	CD6236-06-32 2/9	Plate(Inch)	
96	CD6236-06-32-1G	Shaft(Metric)	
96	CD6236-06-32 3/9	Shaft(Inch)	
97	GB879-86	Spring Pin(Metric)	3×8
97	GB77-85	Screw(Inch)	M5×6
98	CD6236-06-32-2G	Washer(Metric)	
98	CD6236-06-32 6/9	Washer(Inch)	
99	CD6236-06-32 2/5G	Worm Gear(Metric)	Mn=2 Z=14
99	CD6236-06-32 7/9	Worm Gear(Inch)	Mn=2 Z=16
99	CD6236-06-32 1/5G	Worm Gear(Metric)	Mn=2 Z=11
99	CD6236-06-32 3/5G	Worm Gear(Metric)	Mn=2 Z=15
99	CD6236-06-32 4/5G	Worm Gear(Metric)	Mn=2 Z=13
100	GB97.1-85	Washer(Metric)	10
101	GB6170-86	Nut(Metric)	M10
101	GB6170-86	Nut(Inch)	M8
102	CD6236-06-32G	Worm Unit(Metric)	

No.	Part No.	Name	Specification
102	CD6236-06-32 8/9	Worm Unit(Inch)	
103	GB827-86	Rivet	2×5
104	CD6236-06-32 5/5G	Plate(Metric)	
104	CD6236-06-32 5/9	Plate(Inch)	
105	GB70-85	Screw(Metric)	M8×70
105	CD6236-06-32 9/9	Worm(Inch)	
105	CD6236-06-32 4/9	Nut(Inch)	
106	RUN6246-104024	Spacer Ring	
107	GB93-87	Spring Washer(Metric)	10
107	GB93-87	Spring Washer(Inch)	8

12.6 Cross and Top slide

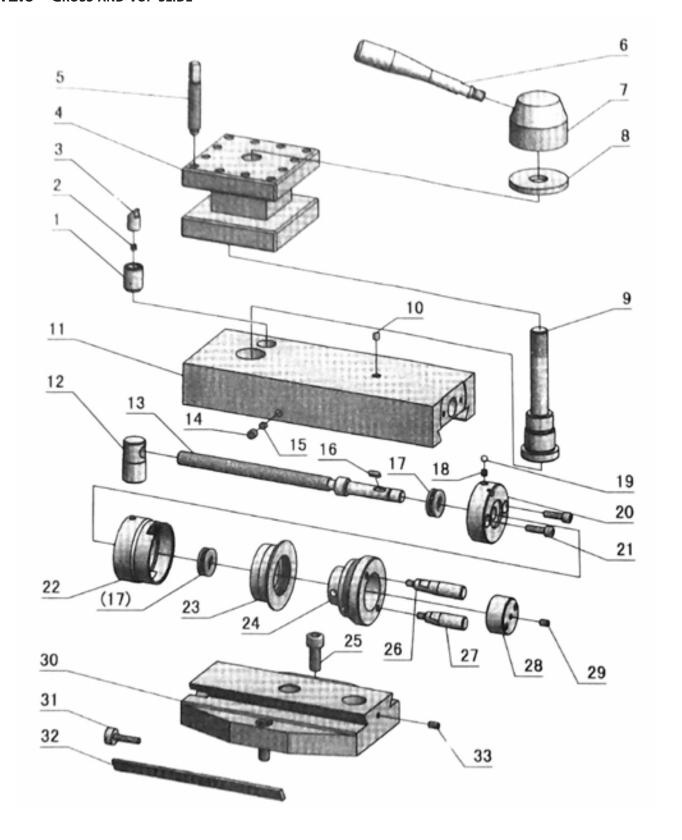


Figure 41

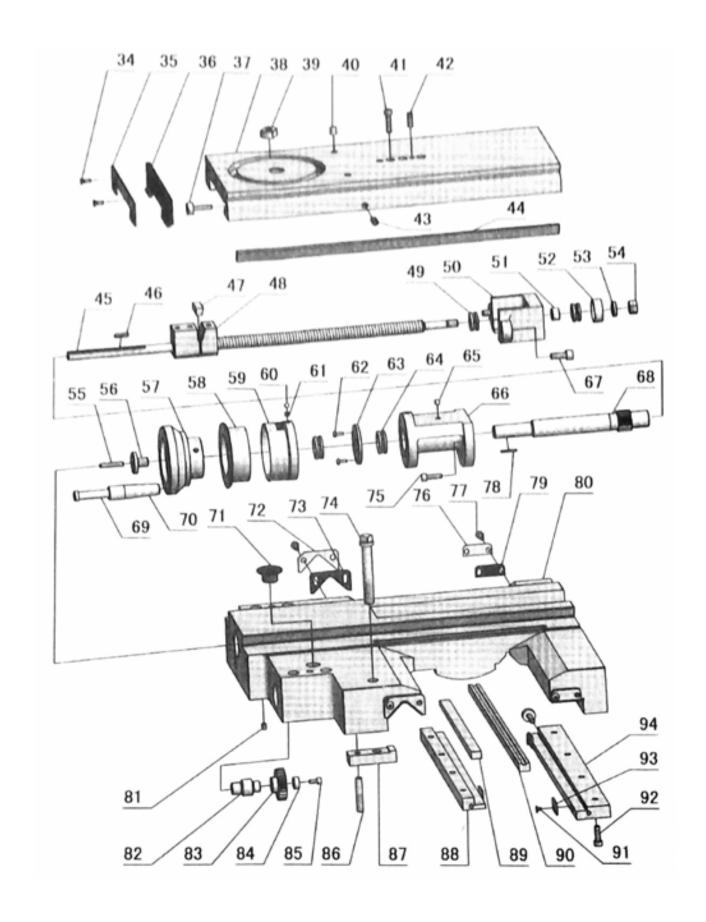


Figure 42

No.	Part No.	Name	Specification
1	CD6236-07-49A	Bush(S-Post)	
1	CD6236-07-49	Block-Tee(T-Post)	
2	GB2089-80	Spring	0.5×5×18
3	CD6236-07-50	Pin	
4	CD6236-07-21	Tool Post	
5	GB98-83	Screw	M10×50
6	CD6236-07-29	Clamp Handle	
7	CD6236-07-19	Clamping Handle	
8	CD6236-07-20	Washer	
9	CD6236-07-18A	Tool Post Shaft(S-Post)	
9	CD6236-07-18	Tool Post Shaft(T-Post)	
10	GB1155-79	Ball Cup	6
11	CD6240-07-25A	Compound Rest(S-Post)	
11	CD6240-07-25	Compound Rest(T-Post)	
12	CD6240-07-17G	Nut(Metric)	
12	CD6240-07-17	Nut(Inch)	
13	CD6236-07-07G	Feed Screw(Metric)	
13	CD6236-07-07	Feed Screw(Inch)	
14	GB77-85	Screw	M8×8
15	CD6236-07-46	Bottom	
16	GB1096-79	Key	4×12
17	GB301-84	Thrust Bearing	8101
18	GB2089-80	Spring	0.5×5×18
19	GB308-77	Steel Ball	6
20	CD6236-07-13	Seat	
21	GB70-85	Screw	M6×20
22	CD6236-07-12G	Steel Ball(Metric)	
22	CD6236-07-12	Steel Ball(Inch)	
23	CD6236-07-11G	Dial-Compound Rest	Metric
23	CD6236-07-11	Dial-Compound Rest	Inch
24	CD6236-07-10	Handle	
25	GB70-85	Screw	M10×25
26	CD6236-07-05	Handle	
27	CD6236-07-06	Handle	
28	CD6236-07-08	Screw Plug	
29	GB77-85	Screw	M6×8
30	CD6240-07-26	Swivel Table	
31	CD6236-07-48	Screw	
32	CD6236-07-47	Gib	
33	GB77-85	Screw	M6×10

No.	Part No.	Name	Specification
34	GB819-85	Screw	M5×12
35	CD6236-07-44	Wiper Cover	
36	CD6236-07-45	Wiper	
37	CD6236-07-48	Screw	
38	CD6240-07-27	Cover-Cross Sliding	
39	CD6236-07-64	T-Bracket	
40	GB1155-79	Ball Cup	8
41	GB70-85	Screw	M6×25
42	GB77-85	Screw	M6×20
43	GB77-85	Screw	M8×16
44	CD6240-07-23	Gib	
45	CD6236-07-55G	Feed Screw(Metric)	
45	CD6236-07-55	Feed Screw(Inch)	
46	CD6240-07-63a-2	Key	4×18
47	CD6236-07-52	Bracket	
48	CD6236-07-51Ga	Nut(Metric)	
48	CD6236-07-51a	Nut(Inch)	
49	GB301-84	Thrust Bearing	8100
50	CD6236-07-22	Bracket	
51	CD6236-07-14	Spacer	
52	CD6236-07-30	Bearing Cover	
53	CD6236-07-09	Bracket	
54	GB6175-86	Clamping Nut	M10
55	GB77-85	Screw	M6×35
56	CD6236-07-37	Clamping Screw	
57	CD6236-07-38	Wheel;	
58	CD6236-07-41G	Dial-Feed(Metric)	
58	CD6236-07-41	Dial-Feed(Inch)	
59	CD6236-07-42G	Handle Spacer(Metric)	
59	CD6236-07-42	Handle Spacer(Inch)	
60	GB308-77	Steel Ball	6
61	GB2089-80	Spring	0.5×5×18
62	GB818-85	Screw	M4×10
63	CD6236-07-43	Washer	
64	GB301-84	Thrust Bearing	8103
65	GB1155-79	Ball Cup	6
66	CD6236-07-36	Bracket	
67	GB77-85	Screw	M8×20
68	CD6240-07-63a	Gear Shaft	Mn=1.5 Z=16
69	CD6236-07-40	Screw	

No.	Part No.	Name	Specification
70	CD6236-07-39	Handle Spacer	
71	CD6236-07-15	Plug	
72	CD6236-07-34	Wiper Cover	
73	CD6236-07-33	Wiper	
74	CD6236-07-04	Clamp Screw	
75	GB70-85	Screw	M6×20
76	CD6236-07-32	Wiper Cover	
77	GB818-85	Screw	M5×16
78	GB1096-86	Key	3×3×20
79	CD6236-07-31	Wiper	
80	CD6240-07-28	Carriage	
81	GB77-85	Screw	M6×8
82	CD6240-07-61	Shaft	
83	CD6236-07-60	Gear	Mn=1.5 Z=25
84	CD6236-07-59	Washer	
85	GB70-85	Screw	M5×10
86	CD6236-07-03	Support Screw	
87	CD6236-07-02	Clamp Block	
88	CD6236-07-16	Gib	
89	CD6236-07-58	Gib	
90	CD6236-07-57	Gib	
91	GB68-85	Screw	M4×6
92	GB70-85	Screw	M6×20
93	CD6236-07-16-1	Baffle	
94	CD6236-07-56	Gib	

12.7 LUBRICATION PUMP BED WAYS

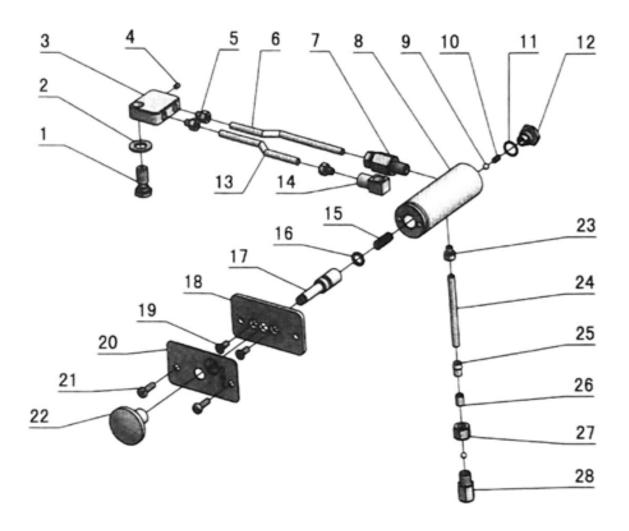


Figure 43

No.	Part No.	Name	Specification
1	CD6236-07-01 13/13	Proper Screw	
2	GB97.1-85	Washer	10
3	CD6236-07-01 10/13	Distributor	
4	GB77-85	Screw	M4×5
5	15326C	Tie-in	
6		Lubrication Tube	Ф5
7	2143SC	Tie-in	φ 5/Z1/8
8	CD6236-07-01 6/13a	Pump	
9	GB308-77	Ball	5
10	GB2089-80	Spring	0.5×4×15
11	GB3452.1-82	O-Ring	11.2×1.8
12	CD6236-07-01 5/13	Plug	
13		Lubrication Tube	Φ5
14	CD6236-07-01 7/13	Joint	
15	CD6236-07-01 8/13a	Spring	
16	GB3452,1-82	O-Ring	8×2.65
17	CD6236-07-01 2/13a	Piston	
18	CD6236-07-01 4/13	Plate	
19	GB819-85	Screw	M5×12
20	CD6236-07-01 3/13a	Name Plate	
21	GB67-85	Screw	M5×15
22	RUN6241-103067	Knob	
23	22587T	Tie-in	ф 6/Z1/8
24		Lubrication Tube	φ6×150
25	RUN6246-103071	Tie-in	
26	RUN6246-103072	Nut	
27	B1061C	Double Taper Sheath	4
28	RUN6246-103073	Valve	

12.8 TAIL STOCK

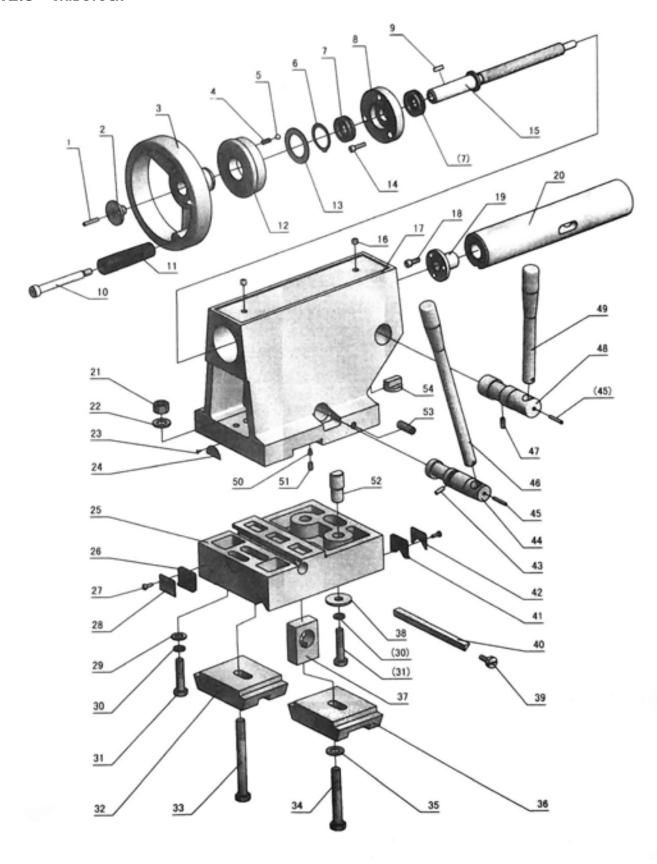
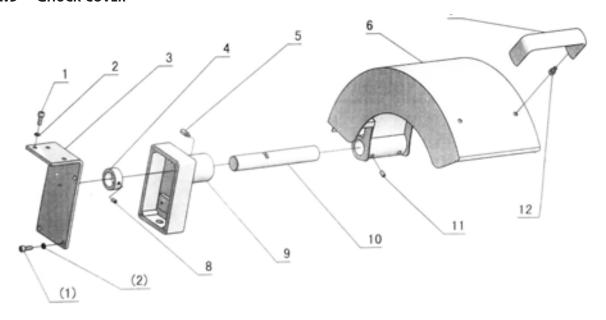


Figure 44

No.	Part No.	Name	Specification
1	GB78-85	Key	5×25
2	CD6236-08-16	Screw Plug	
3	CD6236-08-17	Hand Wheel	
4	GB2089-80	Spring	0.6×5×16
5	GB308-84	Steel Ball	ф 6.5
6	GB894.1-86	Retaining Ring	32
7	GB301-84	Thrust Bearing	8104
8	CD6236-08-13G	Bracket(Metric)	
8	CD6236-08-13	Bracket(Inch)	
9	GB1096-79	Key	5×16
10	CD6236-08-18	Bolt	
11	CD6236-08-19	Handle	
12	CD6236-08-14G	Dial(Metric)	
12	CD6236-08-14	Dial(Inch)	
13	CD6236-08-15	Retaining Ring	
14	GB70-85	Screw	M5×25
15	CD6236-08-11G	Feed Screw(Metric)	
15	CD6236-08-11	Feed Screw(Inch)	
16	GB1155-79	Oil Cup	8
17	CD6236-08-01	Tailstock	
18	GB70-85	Screw	M6×16
19	CD6236-08-12G	Feed Nut(Metric)	
19	CD6236-08-12	Feed Nut(Inch)	
20	CD6236-08-10	Quill	
21	GB55-76	Hexagon Thick Nut	M12
22	GB97-85	Washer	12
23	GB827-85	Button Head Rivet	2×8
24	CD6236-08-26	Set-Over Indication Chart	
25	CD6240-08-05	Tail Stock Base	
26	CD6236-08-25	Bedway Wiper	
27	GB818-85	Cross Screw	M4×10
28	CD6236-08-27	Bedway Wiper Plate	
29	GB97.1-86	Washer	10
30	GB93-85	Spring Washer	10
31	GB5780-86	Bolt	M10×45
32	CD6236-08-29	Clamping Block	
33	GB5780-86	Bolt	M12×110
34	GB5780-86	Bolt	M12×80
35	GB95-86	Washer	12
36	CD6236-08-06	Clamping Block	

No.	Part No.	Name	Specification
37	CD6236-08-20	Adjusting Block	
38	CD6236-08-30	Washer	
39	CD6236-08-04	Screw	
40	CD6236-08-03	Gib	
41	CD6236-08-02	Bedway Wiper	
42	CD6236-08-28	Bedway Wiper Plate	
43	GB879-86	Spring Pin	5×15
44	CD6236-08-21	socket wrench	
45	GB879-86	Spring Pin	4×25
46	CD6236-08-22	Clamping Lever	
47	GB77-85	Socket Head Set Screw	M6×15
48	CD6236-08-23	Clamping Shaft	
49	CD6236-08-24	Clamping Lever	
50	GB79-85	Socket Head Set Screw	M6×10
51	GB77-85	Socket Head Set Screw	M6×10
52	CD6236-08-07	Shaft	
53	GB77-85	Socket Head Set Screw	M10×35
54	CD6236-08-09	Key	

12.9 CHUCK COVER



No.	Part No.	Name	Specification
1	GB70-85	Screw	M6×12
2	GB93-86	Washer	6
3	CD6236-04F-02	Support Bracket	
4	C0632-F06-05	Sleeve	
5	GB75-85	Screw	M8X20
6	CD6236-04FA-01	Cover	
7	HY8315.4 A=114	handle	
8	GB78-85	Screw	M6×10
9	RIN6236-101101	Cover Bracket	
10	CD6236-04FA-04	Shaft	
11	GB78-85	Screw	M8×10
12	GB70-85	Screw	M6×10

12.10 Travelling STEADY

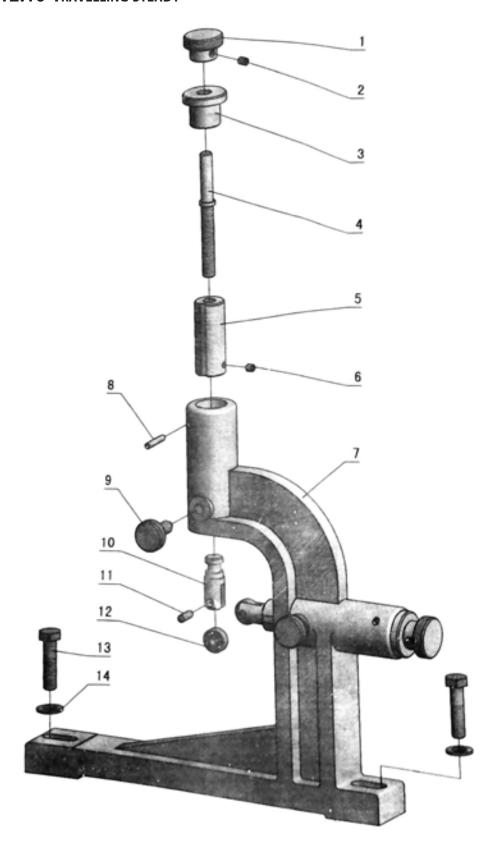


Figure 46

No.	Part No.	Name	Specification
1	RUN6246-110019	Rotate Handle	
2	GB78-85	Screw	M6×8
3	RUN6246-110004	Bush	
4	CD6236-10-11	Screw Shaft	
5	CD6236-10-10	Sleeve	
6	GB77-85	Screw	M6×6
7	CD6240-10-09	Follow Rest	
8	GB879-86	Spring Pin	5×26
9	RUN6246-110018	Limited Screw	
10	CD6236-10-08	Support Shaft	
11	GB119-86	Pin	6×16
12	GB278-88	Bearing	80026
13	GB5782-86	Bolt	M10×40
14	GB97.1-86	Washer	6×16

12.11 FIXED STEADY

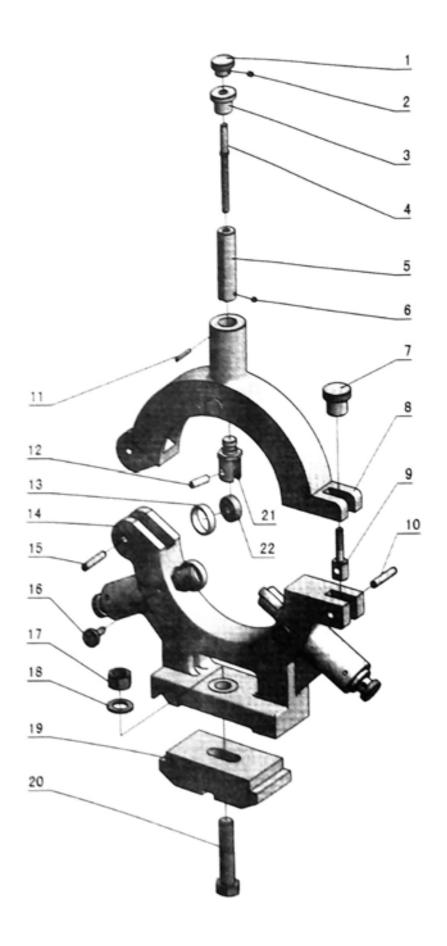
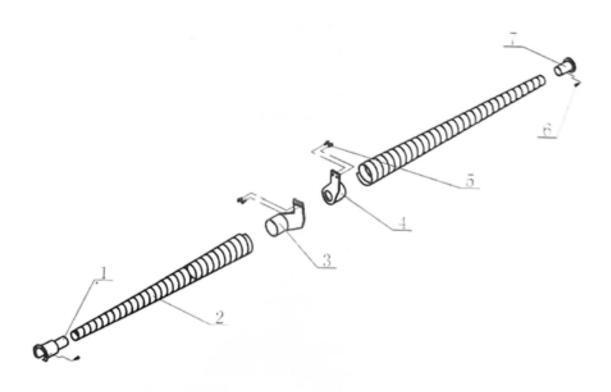


Figure 47

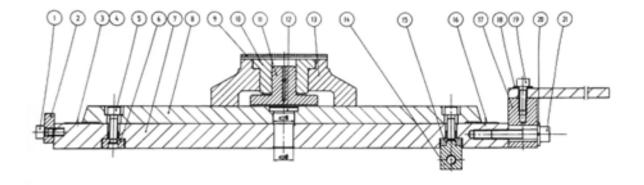
No.	Part No.	Name	Specification
1	RUN6246-110019	Rotate Handle	
2	GB78-85	Screw	M6×8
3	RUN6246-110004	Bush	
4	CD6236-10-05	Screw Shaft	
5	CD6236-10-04	Sleeve	
6	GB77-85	Screw	M6×6
7	RUN6246-110014	Handle	
8	CD6236-10-02	Upside of Steady Rest	
9	CD6236-110013	Clamping Screw	
10	GB119-86	Pin	10×50
11	GB879-86	Spring Pin	5×32
12	GB119-86	Pin	6×20
13	CD6236-10-07	Guard Bush	
14	CD6240-10-01	Downside of Steady Rest	
15	GB119-86	Pin	10×50
16	RUN6246-110018	Limited Screw	
17	GB6170-86	Nut	M16
18	GB97.1-86	Washer	16
19	CD6236-10-03	Clamping Bracket	
20	GB5780-86	Bolt	M16×80
21	CD6236-10-06	Support Shaft	
22	GB278-88	Bearing	80026

12.12 LEAD SCREW PROTECTION



No.	Part No.	Name	Specification
1	CD6236-01F-02	Connect Sleeve	
2	CD6236-01F-01	Protect Sleeve	1000
2	CD6236N1-01F-01	Protect Sleeve	1500
3	CD6236-01F-03	Connect Sleeve	1000
3	CD6236N1-01F-03	Connect Sleeve	1500
4	CD6236-01F-04	Connect Sleeve	1000
4	CD6236N1-01F-04	Connect Sleeve	1500
5	GB70-85	Screw	M5×14
6	GB70-85	Screw	M4×10
7	CD6236-01F-05	Connect Sleeve	

12.13 COPYING DEVICE



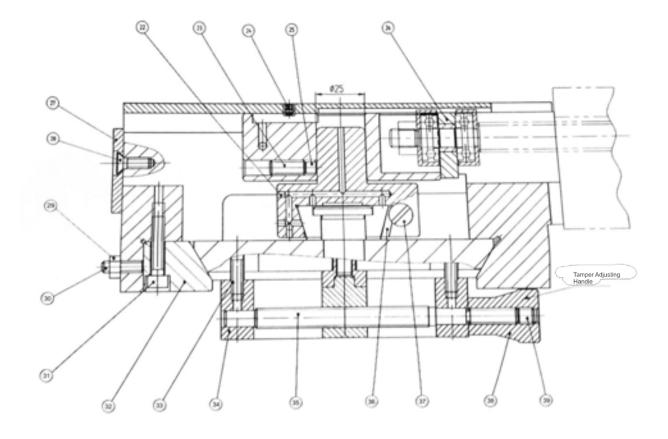
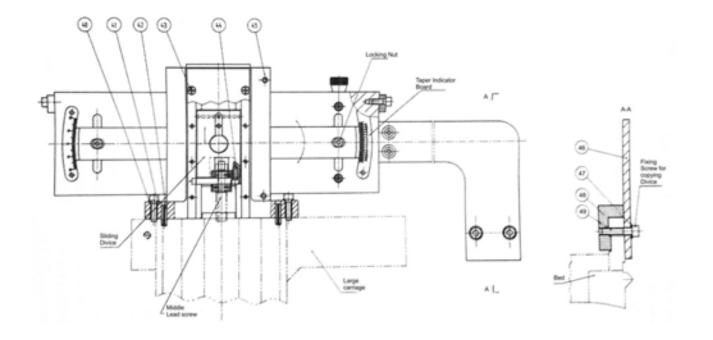


Figure 49



No.	Part No.	Name	Specification
1	GB70-85	Socket Cap Screw	M8×20
2	CD6236-15-02 3/30	Stopper	
3	GB827-86	Nails for Sign Board	2×6
4	CD6236-15-02 9/30	Sign Board	
5	GB70-85	Socket Cap Screw	M8×25
6	CD6236-15-02 10/30	T-Shaped Nut	
7	CD6236-15-02 11/30	Profiling Seat	
8	CD6236-15-02 12/30	Profiling Plate	
9	CD6236-15-02 13/30	Press Plate Cover	
10	CD6236-15-02 14/30	Slide Block	
11	CD6236-15-02 15/30	Pivot	
12	CD6236-15-02 16/30	Position Axle	
13	CD6236-15-02 17/30	Main Support	
14	CD6236-15-02 20/30	Adjustment Nut	
15	CD6236-15-02 18/30	Mobile Block	
16	CD6236-15-02 21/30	Sign Board	
17	CD6236-15-02 6/30	Connection Block	
18	GB97.2-85	Flat Washer	d=8
19	GB70-85	Socket Cap Screw	M8×25
20	GB93-86	Spring Washer	17
21	GB70-86	Socket Cap Screw	M10×50
22	CD6236-15-02 26/30	Block Pin	
23	GB77-85	Socket Flat Set Screw	M8×18
24	GB1155-79	Press-Fit Oil Cup	D=6
25	CD6236-15-02 27/30	Copper Washer	
26	CD6236-15-02 1/30	End Block Set	
27	CD6236-15-02 2/30	Stopper	
28	GB819-85	Cross Recess Sunk Screw	M6×16
29	GB6170-86	Nut	M6 zinc-plated
30	GB77-85	Socket Flat Set Screw	$M6\times20$
31	GB70-85	Socket Cap Screw	$M6 \times 30$
32	CD6236-15-02 24/30	Wedge	
33	GB70-85	Socket Cap Screw	$M6 \times 20$
34	CD6236-15-02 25/30	Adjustment Supporter	
35	CD6236-15-02 19/30	Adjustment Screw	
36	CD6236-15-02 28/30	Inlaid Strip	
37	CD6236-15-02 8/30	Press Screw	
38	CD6236-15-02 7/30	Handle	
39	GB77-85	Socket Flat Set Screw	$M8 \times 8$
40	GB97.2-85	Flat Washer	d=8 M6 zinc-plated

No.	Part No.	Name	Specification
41	GB70-85	Socket Cap Screw	M8×35
42	GB879-86	Spring Cylindrical Pin	8×35
43	GB819-85	Cross Recess Sunk Screw	$M6 \times 16$
44	GB70-85	Socket Cap Screw	$M6 \times 20$
45	GB1155-79	Press-Fit Oil Cup	D=8
46	CD6236-15-02 4/30	Pull Rod	
47	GB97.2-85	Flat Washer	d=10
48	CD6236-15-02 5/30	Pressed Block	
49	GB70-85	Socket Cap Screw	M10×50

13. TROUBLESHOOTING

Problem	Possible cause	Possible solution
1. Overheating of headstock	a. Wrong oil level	a. Check oil level and fill / drain oil off
bearing	b. Wrong oil	b. Use the correct oil
	c. Oil is dirty	c. Change the oil
	d. Dirt blocks oil lubrication main bearing	d. Remove dirt
	e. Bearing blocked by dirt	e. Clean the bearing and change oil
	f. Bearing worn	f. Replace bearing
	g. Bearing in wrong position	g. Remove bearing and mount it again
	h. Bend or broken spindle	h. Replace spindle
	i. End pressure too high, adjustment wrong	i. Adjust end pressure
2. Oil leak gear box and/or	a. Plug doesn't close well	a. Replace plug
headstock	b. Cracks in gear box	b. Replace gear box
	c. Oil leak in headstock	c. Tighten cover screw/replace gas
3. Too much noise or too	a. Bearing worn	a. Replace bearing
many vibrations	b. Gear worn	b. Replace gear
	c. Bent shaft	c. Replace shaft
	d. Lock bolts loose	d. Tighten lock bolts firmly
	e. Machine loose on foundation	e. Install the machine correctly on the
	er macrime roose on roundation	foundation.
4. Rattling	a. Work piece incorrectly clamped	a. Clamp the work piece tightly
	b. Thrust/main bearing of main spindle too loose	b. Adjust bearings and main spindle
	c. No contact between headstock and	c. Tighten headstock bolt(s)
	bedway, mounting bolt(s) headstock loose	
	d. Play between slide and bedway	d. Adjust rear clamp of slide
	e. Play between cross slide and top slide	e. Adjust the key
	f. Wrong cutting angle	f. Replace cutter
	g. Side of cutting tool worn	g. Replace cutter
	h. Tool shaft / holder not firm	h. Use the right cutting tool
	i. Tool not fixed in tool holder	i. Clamp/check if tool is fixed correctly
	j. Work piece or chuck not balanced	j. Balance or reduce spindle speed rate
	k. Cutting tool in wrong position	k. Remount cutting tool
5. Long work piece bends	a. Feed rate too high	a. Use lower feed rate
	b. Work piece too thin or too long	b. Use the steadies and adjust the tool
6. Work not accurate	a. Not accurate enough	a. Check if the right speed / feed rate and tool are used for the work piece
7. Shifting fork difficult to hold	a. Set spring to weak or broken	a. Adjust the set screw or replace the spring
8. Chuck and spindle not centered	a. Wrong cam position	a. Place cam in right position
9. Threadcutting difficult	a. Play of leadscrew in longitudinal direction	a. Adjust the pressure nut of the leadscrew
	b. Play between slide and cross lide or between cross slide and top slide	b. Place the gib of the slide in the right position
	c. Worn thread or nut in cross slide or top slide	c. Adjust or replace
	d. Large play in handwheel	d. Re-adjust handwheel sleeve
10. Tailstock not stable on the bed	a. Movement clamp handle too far or too short	a. Re-adjust nut of clamp block

14. DEACTIVATION

If the machine is to be out of use for a long period, it is advisable to proceed as follows:

- 1. Disconnect the machine from the power source.
- 2. Clean the coolant tank.
- 3. Clean the machine and lubricte/grease it.
- 4. Cover the machine if necessary.

15. DISMANTLING

(due to deterioration and / or obsolescence)

GENERAL RULES

If the machine is to be permanently demolished and / or scrapped, divide the material to be disposed of according to type and composition, as follows:

- 1. Cast iron or ferrous materials, composed of metal alone, are secondary raw materials, so they may be taken to an iron foundry for re-smelting after having removed the contents (classified in point 3).
- 2. Electrical components including the cable and electronic material (magnetic cards, etc) fall within the category of material classified as being assimilated to urban waste according to the laws of your local state, or federal government, so they may be set aside for collection by the public waste disposal service.
- 3. Old minerals and synthetic an / or mixed oils, emulsified oils and greases are considered hazardous or special refuse, so they must be collected, transported and disposed of at a special waste disposal service.

Attention

The standards and legislation concerning refuse are subject to change. The user must keep informed of the regulations at the time of disposal as they may differ from those described above.

16. Spare parts

When ordering spare parts, always supply us with following data:

- machine type
- serial number
- year it was build
- name, number and code of the part (refer to the spare parts drawings and lists)
- · the quantity needed

In case the spare part can not be well identified on the drawing / in the list, to avoid delivery of the wrong part, it is recommended to:

- a) send us the original part
- b) send a digital picture

Our products are frequently updated and improved. Minor changes may not yet be incorporated in this manual. Always state the year of build, type and serial number of the machine in correspondence.

Manufacturer and importer assume no responsibility for defects which result from not reading the manual carefully or wrong use of the machine. No rights can be derived from this manual.

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Internet: www.huvema.nl

CE DECLARATION OF CONFORMITY

(in accordance with supplement II A of the Machinery Directive)

Industrie & Handelsonderneming Huberts bv, Kennedylaan 14, 5466 AA Veghel, the Netherlands, in the capacity of importer, is to be held responsible for declaring that the Huvema machine:

Lathe HU 410 x 1000 VAC

meets the requirements of the:

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC

The following norms (or parts thereof) have been applied:

NEN-EN-ISO 12100:2010, NEN-EN-IEC 60204-1:2006/C11:2010, NEN-EN-IEC 61000-6-1:2007, NEN-EN-IEC 61000-6-3:2007/A1:2011/C11:2012, NEN-EN-ISO 23125:2010/A1:2012

Veghel, the Netherlands, September 2014

L. Verberkt

Managing director

