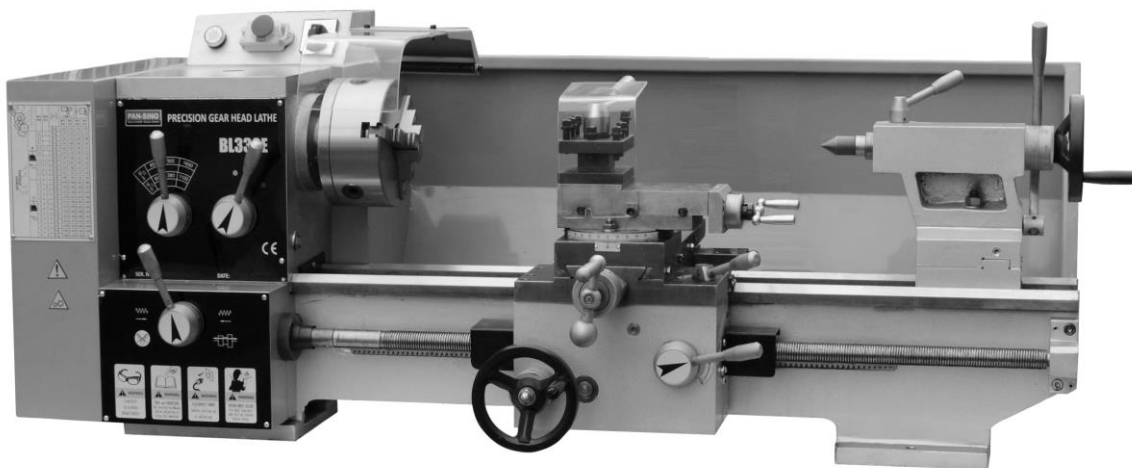




OWNER'S MANUAL



CX709 - 13''x 24'' METAL LATHE

GENERAL SAFETY INSTRUCTIONS

EXTREME CAUTION SHOULD BE USED IN OPERATION ALL POWER TOOLS. KNOW YOUR POWER TOOL, BE FAMILIAR WITH ITS OPERATION. READ THE OWNER'S MANUAL AND PRACTICE SAFE USAGE PROCEDURES AT ALL TIMES.

- ◆ **CONNECT** your machine **ONLY** to the matched and specified power source.
- ◆ **WEAR SAFETY GLASSES, RESPIRATORS, HEARING PROTECTION** and **SAFETY SHOES** when operating heavy machinery. **Always wear safety glasses.**
- ◆ **DO not** wear loose clothing or jewellery when operating machinery.
- ◆ **A Safe Environment is important.** Keep the area free of dust, dirt and other debris in the immediate vicinity of the machine.
- ◆ **BE ALERT!** Do Not Use prescription or other drugs that may affect your ability or judgments to safely use this machine.
- ◆ **DISCONNECT** the power source when changing tool bits and or any equipment.
- ◆ **NEVER** leave an operating tool unattended.
- ◆ **ALWAYS** keep blades, knives or bits sharp and properly aligned.
- ◆ **ALWAYS** keep all safety guards in place and ensure their proper function.
- ◆ **ALWAYS** make sure that any tools used for adjustments are removed before operating the machine.
- ◆ **ALWAYS** secure your work with the appropriate clamps or vises.
- ◆ **ALWAYS** keep bystanders safely away while operating machinery.
- ◆ **DO NOT** change speed while spindle is running.
- ◆ 3-JAW CHUCK OR 4-JAW CHUCK **MAX.SPEED** 2000r/min
- ◆ **THINK SAFELY. WORK SAFELY.** Never attempt a procedure if it does not feel safe or comfortable.

BL330E PRECISION GEAR HEAD LATHE

As part of the growing line of metalworking equipment, we are proud to offer the BL330E Metal Lathe. The name guarantees ANHUI PAN-SINO. By following the instructions and procedures laid out in this owner's manual, you will receive years of excellent service and satisfaction. The BL330E is a professional tool and like all power tools, proper care and safety procedures should be adhered to.

Specifications

Max. Swing over bed:	330mm
Max. Length of work piece:	600 mm
Max. Swing carriage:	220mm
Bed width:	160mm
Spindle Bore:	38mm
Spindle Taper:	MT 5#
Spindle Speeds:	12 Steps
Spindle Speeds Range:	65—1650RPM
Max Lateral Stroke over tool post:	160mm
Max Longitudinal stroke of tool post:	100mm
Metric Thread kinds:	17 Kinds
Metric Thread range:	0.5-4 mm
Inch Thread kinds:	24 Kinds
Inch Thread range:	8-40 TPI
Longitudinal-feed range:	0.1-1.396mm/r
Cross-feed range:	0.025-0.34mm/r
Tailstock Quill Diameter:	40mm
Travel of Tail-stock Quill:	70mm
Tail-stock Quill Taper:	MT 3#
Motor Power:	1.1kw
Net Weight:	240kg
Packing Size (Without Stand):	1470*770*580mm
Packing Size (With Stand):	1470*770*1350mm

Illustrated Features

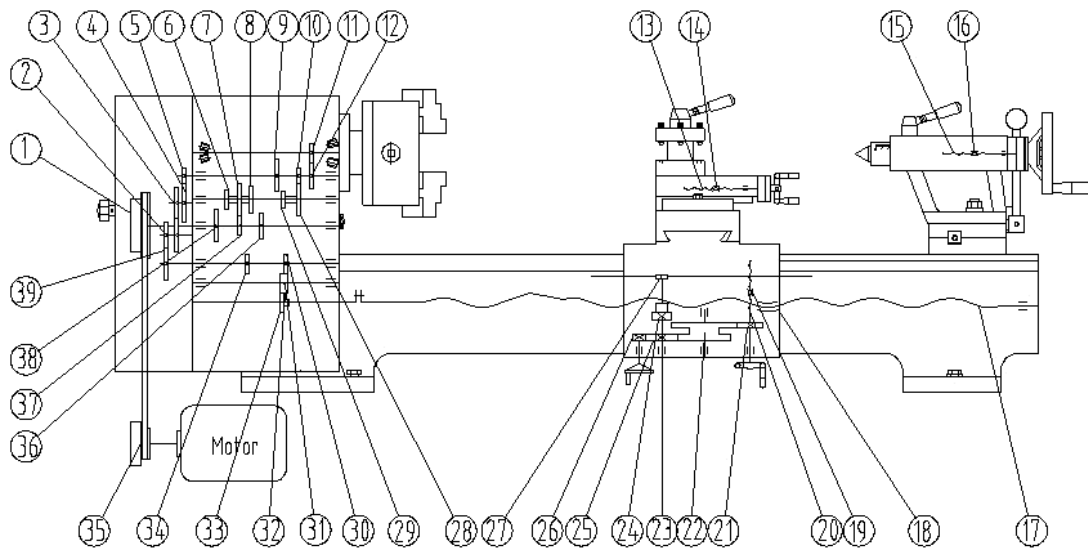


Fig 1. Driving system drawing.

- | | |
|---------------------------|------------------|
| 01. Input Pulley | 21. Gear |
| 02. Gear Change | 22. Gear |
| 03. Gear Change | 23. Gear |
| 04. Gear Change | 24. Worm Gear |
| 05. Gear Change | 25. Worm |
| 06. Gear | 26. Gear |
| 07. Gear | 27. Gear |
| 08. Gear | 28. Gear |
| 09. Gear | 29. Gear |
| 10. Gear | 30. Gear |
| 11. Spindle Gear | 31. Gear |
| 12. Gear | 32. Gear |
| 13. Tool Post Lead Screw | 33. Gear |
| 14. Tool Post Nut | 34. Gear |
| 15. Tail Stock Lead Screw | 35. Motor Pulley |
| 16. Tool Post Nut | 36. Gear |
| 17. Longitudinal Screw | 37. Gear |
| 18. Longitudinal Nut | 38. Gear |
| 19. Cross Nut | 39. Gear |
| 20. Cross Lead Screw | |

Lifting & Installation

It is recommended that this machine is lifted by the use of a crane or hoisting mechanism as it is very heavy.

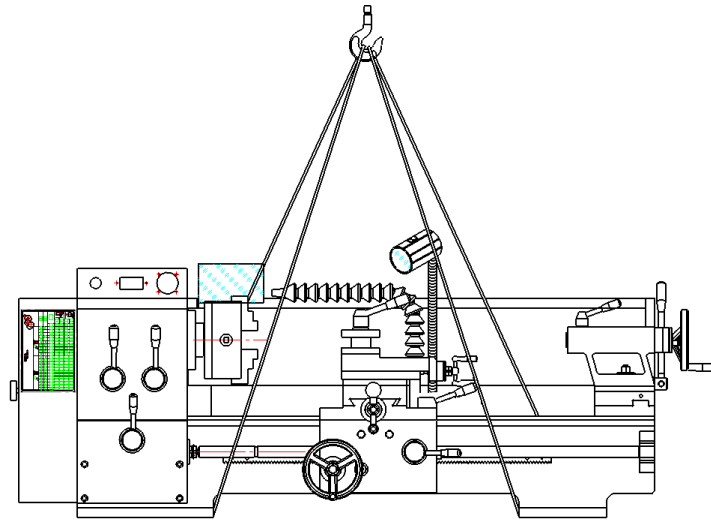


Fig 2. Lifting drawing.

Lifting & Installation

Please refer to figure 3 when installing this machine. As this lathe is for the most part pre-assembled at the factory, there is not a great deal of assembly for the end user. Line up the four bolt holes with the stand and carefully place the lathe on the stand.

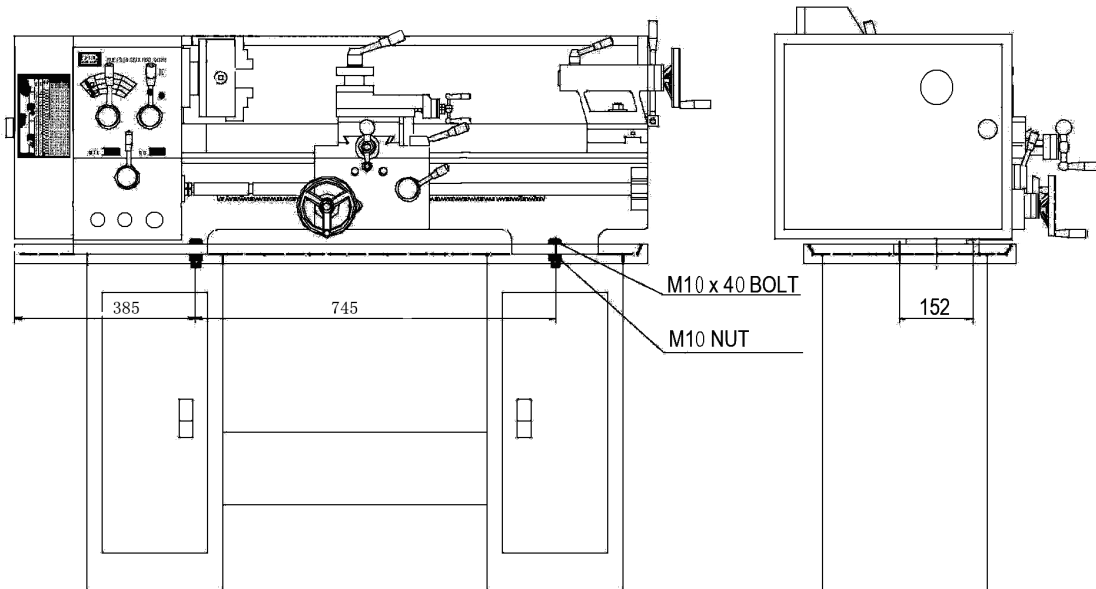


Fig 3. Installation drawing.

After installation, be sure to clean the antiseptic coat (used to preserve and protect during shipping) off the guide carriage, tail stock, change gear and pulley with a clean cloth and non-corrosive cleaner.

Lubrication Positions

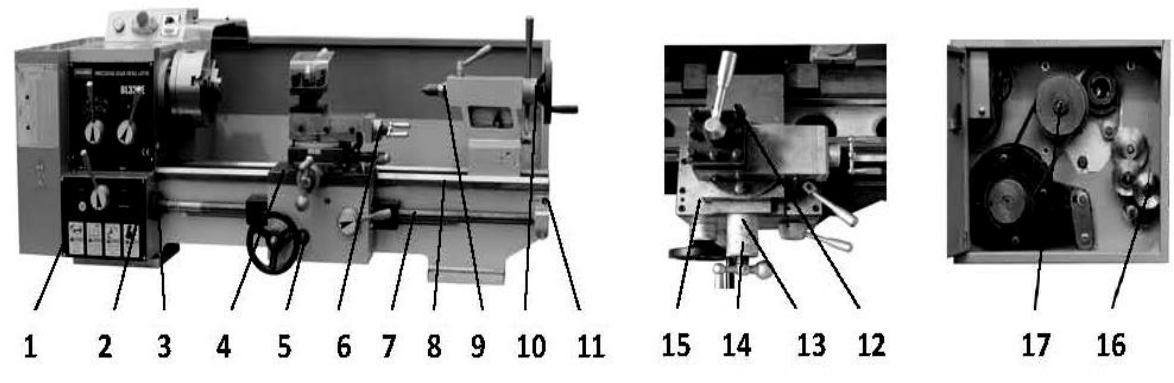


Fig 4. Lubrication positions drawing.

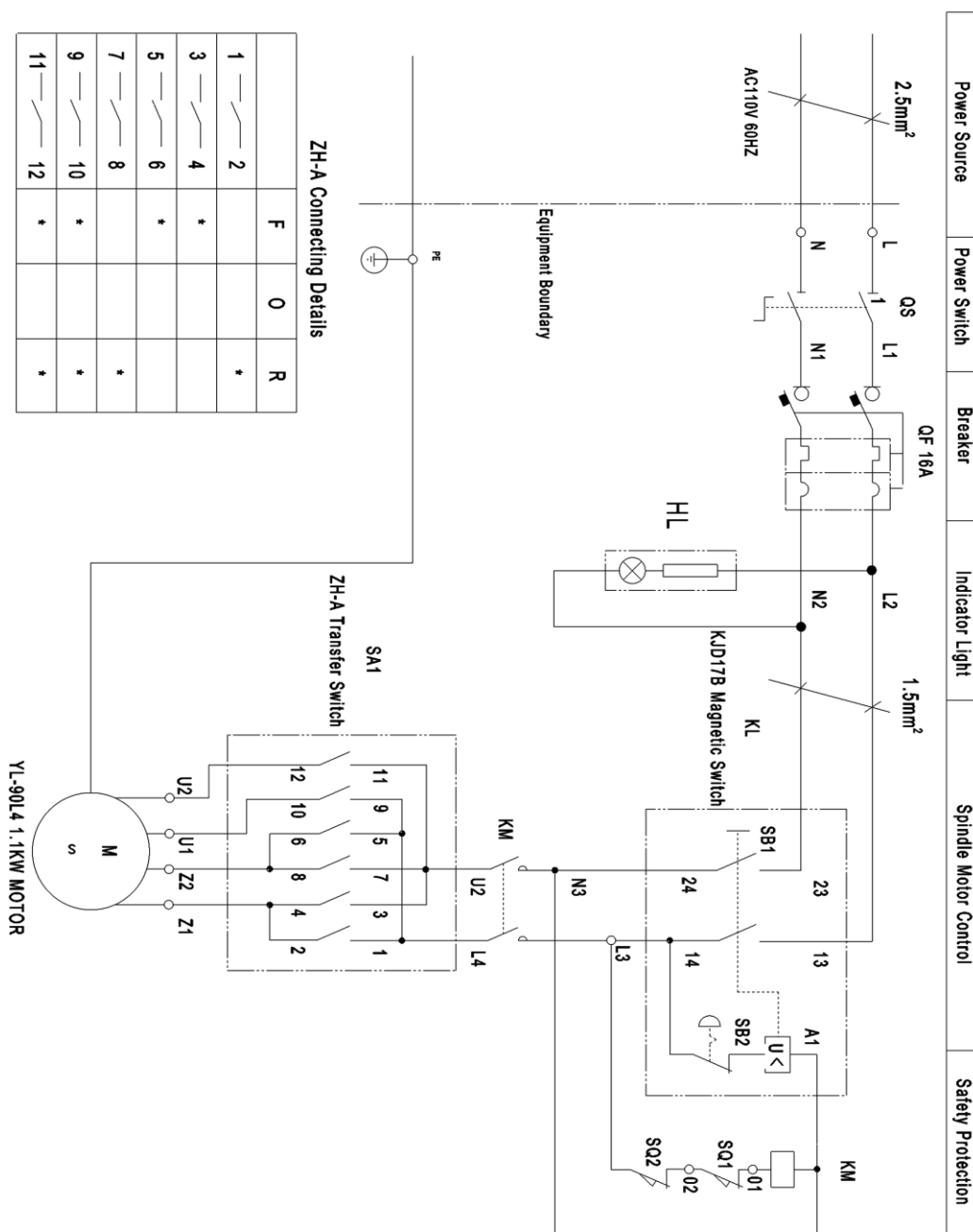
Refer to the Lubrication chart on the following page in order to properly lubricate and maintain your Lathe. Proper lubrication of any tools, especially Metal Lathes should not be ignored.

Lubrication Positions

No.	Lubrication Position	Located Part	Located	Lubrication Oil	Period
1	Gears. bush bearing	Left trestle	Gun	Machine oil	1S / Year
2	Spindle bearing	Lathe head	Greasing	Grease	1S / Year
3	Thrust bull bearing	Left trestle	Greasing	Grease	1S / Year
4	Slide way, lead screw, guide surface	Apron parts	Gun	Machine oil	2S / Day
5	Gears, racks	Apron parts	Greasing	Grease	1S / M
6	Tool post lead screw, guide surface	Tool carriage	Gun	Machine oil	2S / Day
7	Longitudinal lead screw	Lead screw	Gun	Machine oil	2S / Day
8	Lathe bed guide	Lathe bed	Gun	Machine oil	2S / Day
9	Tail stock sleeve	Tailstock	Gun	Machine oil	2S / Day
10	Tailstock lead screw bush bearing	Tailstock	Gun	Machine oil	2S / Day
11	Bearing pedestal	Lathe bed	Gun	Machine oil	2S / Day
12	Cross nut lead screw	Small carriage	Gun	Machine oil	2S / Day
13	Bearing bush	Small carriage	Gun	Machine oil	2S / Day
14	Thrust bearing	Lead screw pedestal	Greasing	Grease	6S / Year
15	Tailstock lead screw bush bearing	Tailstock	Gun	Machine oil	2S / Day
16	Change gear shaft	Compound box	Gun	Machine oil	2S / Day
17	Bearing	Input pulley	Greasing	Grease	1S / Day

- Notes:**
1. Recommend to fill 3# Ca grease 20# machine oil
 2. The parts lubricated by grease should be cleaned and the machine oil in feed box should be changed and renewed up to the center line of the oil indicator regularly.

Electrical System Drawing



BL330E Wiring Diagram

Grounding Instructions

In the event of a malfunction or breakdown, grounding provides the path of least resistance for electrical current and reduces the risk of electrical shock. This tool is equipped with an electrical cord that has an equipment grounding conductor and a grounding plug. The plug **MUST** be plugged into a matching outlet that has been properly installed and grounded in accordance with **ALL** local codes and ordinances.

DO NOT MODIFY THE PLUG PROVIDED. If the provided plug will not fit the electrical outlet, have the proper outlet installed by a qualified licensed electrician.

IMPROPER CONNECTION of the equipment grounding conductor can result in risk of electrical shock. The conductor wire with the green insulation (with or without yellow stripes) is the equipment-grounding conductor. If repair or replacement of the electrical cord or cord or plug is required, **DO not** connect the equipment grounding conductor to a live terminal.

If in doubt about these instructions consult a qualified, licensed electrician.

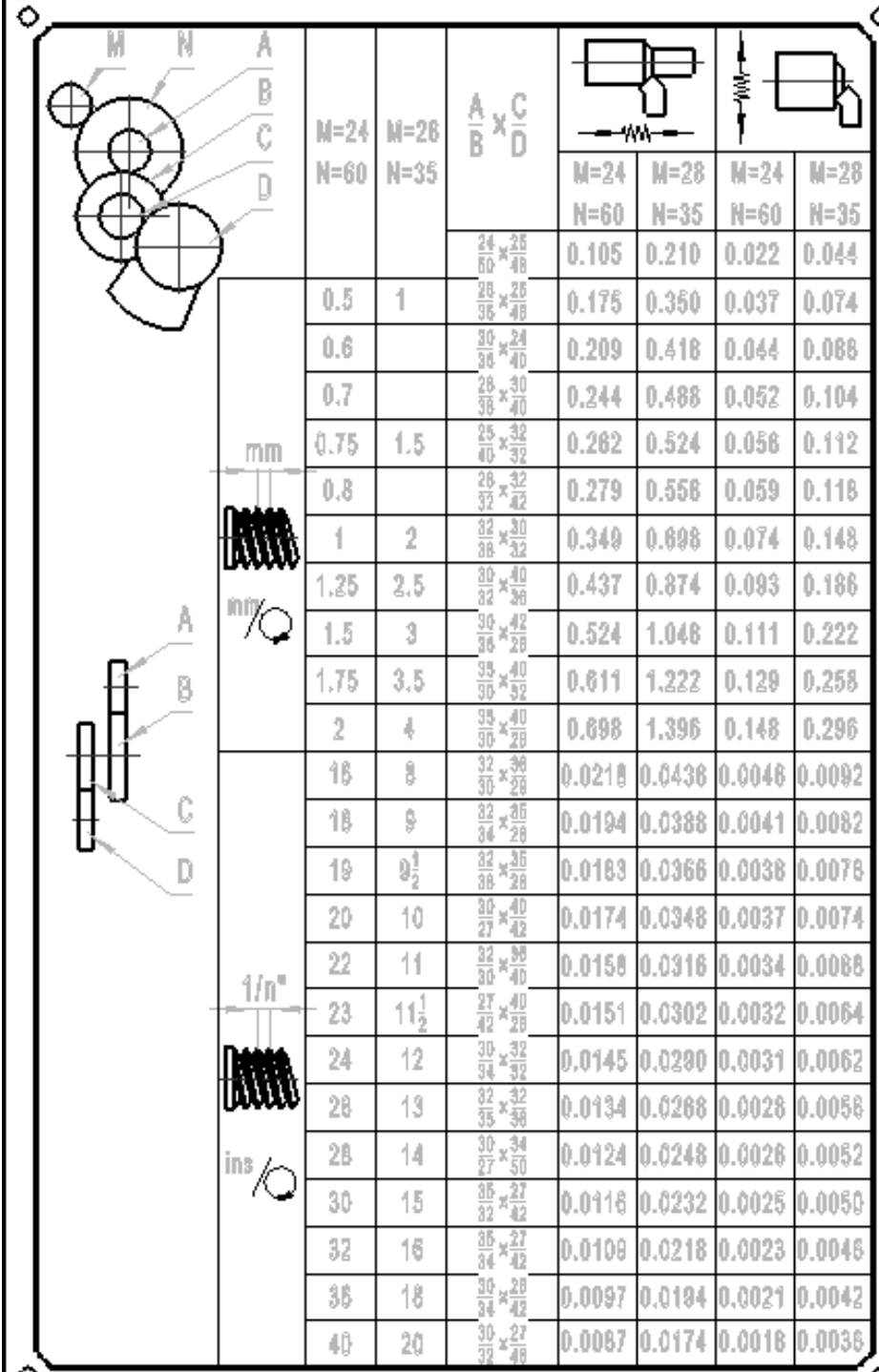
USE ONLY A THREE-WIRE EXTENSION CORD with a 3-prong grounding plug.

Threading Chart

Cutting threads can be performed by the manual use of the change gears and handle (refer to Operating Controls)

Threading Chart

Please see the following diagram for reference to cutting threads



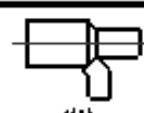
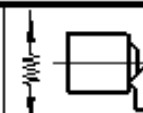
	M=24 N=60	M=28 N=35	$\frac{A}{B} \times \frac{C}{D}$				
				M=24 N=60	M=28 N=35	M=24 N=60	M=28 N=35
			$\frac{24}{60} \times \frac{28}{48}$	0.105	0.210	0.022	0.044
	0.5	1	$\frac{28}{36} \times \frac{28}{48}$	0.175	0.350	0.037	0.074
	0.6		$\frac{30}{36} \times \frac{24}{40}$	0.209	0.418	0.044	0.088
	0.7		$\frac{28}{36} \times \frac{30}{40}$	0.244	0.488	0.052	0.104
	0.75	1.5	$\frac{25}{40} \times \frac{32}{32}$	0.262	0.524	0.056	0.112
	0.8		$\frac{28}{32} \times \frac{32}{42}$	0.279	0.558	0.059	0.118
	1	2	$\frac{32}{36} \times \frac{30}{32}$	0.340	0.680	0.074	0.148
	1.25	2.5	$\frac{30}{32} \times \frac{40}{36}$	0.437	0.874	0.093	0.186
	1.5	3	$\frac{30}{36} \times \frac{42}{28}$	0.524	1.048	0.111	0.222
	1.75	3.5	$\frac{35}{30} \times \frac{40}{32}$	0.611	1.222	0.129	0.258
	2	4	$\frac{35}{30} \times \frac{40}{28}$	0.698	1.396	0.148	0.296
	16	8	$\frac{32}{30} \times \frac{36}{28}$	0.0218	0.0436	0.0046	0.0092
	18	9	$\frac{32}{34} \times \frac{36}{28}$	0.0194	0.0388	0.0041	0.0082
	19	9½	$\frac{32}{36} \times \frac{36}{28}$	0.0183	0.0366	0.0038	0.0076
	20	10	$\frac{30}{27} \times \frac{40}{42}$	0.0174	0.0348	0.0037	0.0074
	22	11	$\frac{32}{30} \times \frac{36}{40}$	0.0158	0.0316	0.0034	0.0068
	23	11½	$\frac{27}{42} \times \frac{40}{28}$	0.0151	0.0302	0.0032	0.0064
	24	12	$\frac{30}{34} \times \frac{32}{32}$	0.0145	0.0290	0.0031	0.0062
	26	13	$\frac{32}{35} \times \frac{32}{36}$	0.0134	0.0268	0.0028	0.0056
	28	14	$\frac{30}{27} \times \frac{34}{50}$	0.0124	0.0248	0.0026	0.0052
	30	15	$\frac{35}{32} \times \frac{27}{42}$	0.0116	0.0232	0.0025	0.0050
	32	16	$\frac{35}{34} \times \frac{27}{42}$	0.0109	0.0218	0.0023	0.0046
	36	18	$\frac{30}{34} \times \frac{30}{42}$	0.0097	0.0194	0.0021	0.0042
	40	20	$\frac{30}{32} \times \frac{27}{48}$	0.0087	0.0174	0.0018	0.0036

Fig. 7 Threading Chart

Operating Controls

SUMMARY:

REFER TO THE DIAGRAM BELOW FOR THE BL330E operation controls.

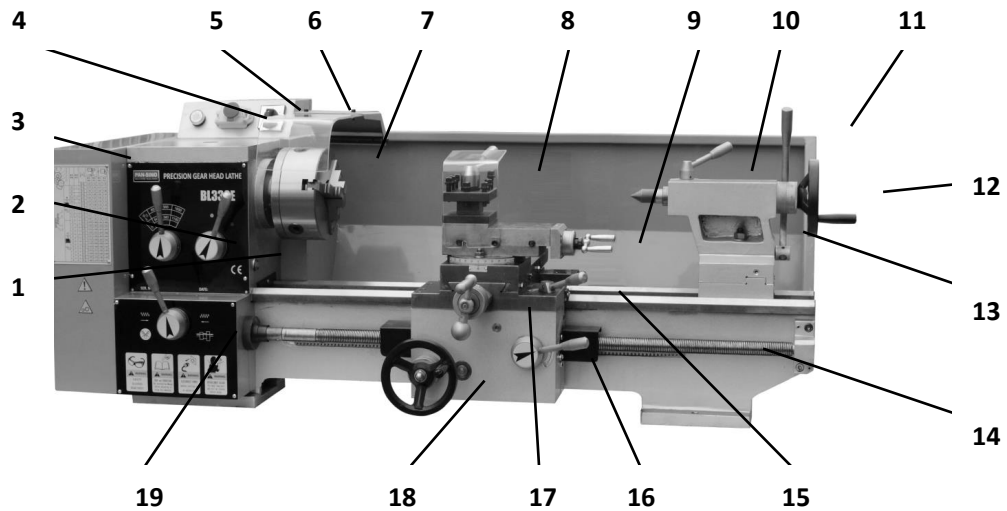


Fig 8. Operation Parts Fig.

1. Handler of Spindle Speed Change A
2. Handler of Spindle Speed Change B
3. Change Gear Box
4. Power Indicator
5. Emergency Stop Switch
6. Forward-Stop-Reverse Switch
7. Self-centering 3 Jaw Chuck
8. Handler of 4-way Tool Post
9. Tool Post Feeding Handler
10. Handle Lock for tailstock center
11. Lever to lock Tailstock
12. Tailstock hand-wheel
13. Tailstock Offset Screw
14. Main Lead-screw
15. Longitudinal-cross feed handle
16. Handler of Auto-Feed (Half Nut)
17. Carriage Cross Feed hand wheel
18. Apron feed hand-wheel
19. Handle of forward/reverse for lead screw

Details:

Replacement of Chuck

The head spindle holding fixture is cylindrical. Loose three set Screw/nut (A. Fig. 9) on the flange to remove the chuck
Replace new chuck and fix it by the same set screws and nuts.

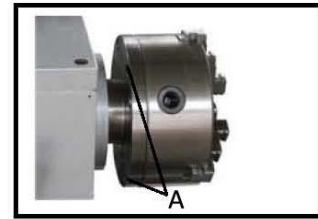


Fig.9

Replacement of Chuck Jaw

The jaws are in two types – the internal jaws and the external Jaws(Fig. 10). Please pay notice that the number of jaws fit with the number inside the chucks groove. Do not mix them together
When you are going to mount them, please mount them in Ascending order, and when taking them out, take them out in descending order (3-2-1) one by one. After finished this procedure, rotate the jaws to the smallest diameter and make sure there fit is right.

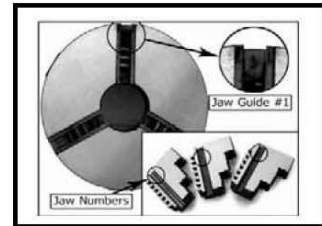


Fig. 10

Tool Set-up

Set correction and clamp the cutting tool into the tool-post.
The tool must be clamped firmly. When turning, the tool has a tendency to bend under the cutting force generated during the chip formation(Fig. 11). For best results, tool overhang should be kept to a minimum of 3/8" or less.

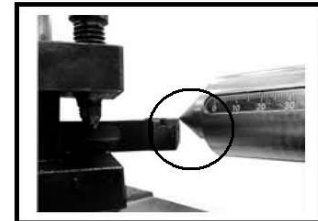


Fig. 11

Manual Turning

Handwheel of Apron travel(A), cross travel(B) and top slide(C) can be operated for longitudinal or cross feeding (Fig. 12)

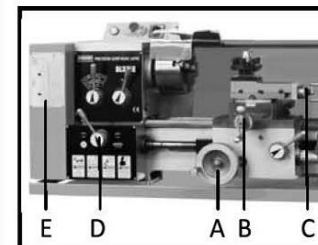


Fig. 12

Longitudinal Turing with Auto-feeding

1. Set the selector knob (D. Fig. 12) to select the feed Direction and the feed speed
2. Use the table (E. Fig. 12)on the lathe for selecting the feed speed or the thread. Adjust the change gear if the required feed or thread cannot be obtained with the installed gear set

Change High/low Speed

Set the belt in inside groove of pulley (Fig. 13A) is running at high speed.

Likewise, remove the belt from inside groove (Fig. 13A) to outside groove (Fig. 13B) is to be run with low speed, which should be removed by manual or tools.



Fig. 13A

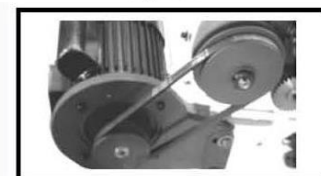


Fig. 13B

Straight Turning

In the straight turning operation, the tool feeds parallel to the axis of rotation of the workpiece. The feed can be either manual by turning the handwheel on the lathe saddle or the top slide, or by activating the automatic feed. The cross feed for the depth of cut is achieved using the cross slide. (Fig. 14)

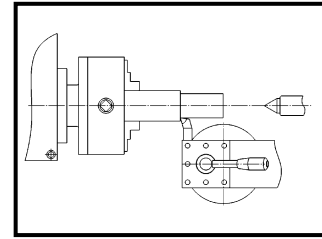


Fig. 14

Facing and Recesses

In the facing operation, the tool feeds perpendicular to the axis of rotation of the workpiece. The feed is made manually with the cross slide handwheel. The cross feed for cut depth is made with the top slide or lathe saddle. (Fig. 15)

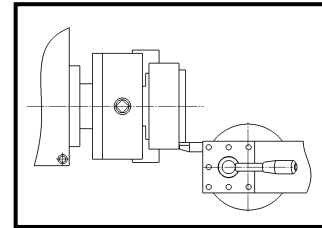


Fig. 15

Turning Between Centers

For turning between centers, it is necessary to remove the chuck from the spindle. Fit the MT 5 center into the spindle nose and the tailstock. Mount the workpiece fitted with the driver dog between the centers. The driver is driven by a catch or face plate.

Note: Always use a small amount grease on the tailstock center to prevent center tip on overheating. (Fig. 16)

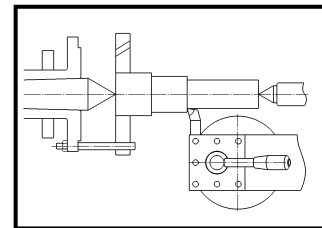


Fig. 16

Taper Turning Using Tailstock Off-set

Work to a side angle it can be turned by off-setting the tailstock, the angle depends on the length of the workpiece.

Loosen the nut (A. Fig. 17), handle (C) and two screws (D) then adjust the screw (A) to deflect the quill center line off-track from spindle center line, for getting the desired taper, please refer to the value in scale plate (E).

Taper direction adjustment:

To get the forward-off-track (operator side), be lose the nut (A) in front and tighten the nut (A) in back to move the body of tailstock forward to the desired value against scale plate, and then tighten the nut (A) in front. For backward-off-track, as same procedures as above mentioned. Must be clamped the screw (E) after taper turned, and the tailstock should be returned to its original position according to the zero position on scale of tailstock.

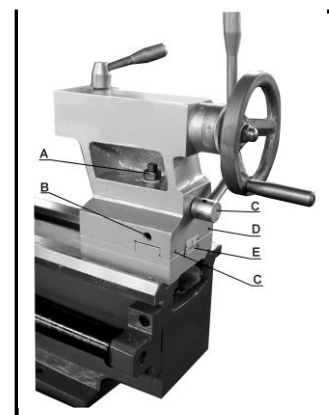


Fig. 17

Taper Turning by Setting top Slide

By angle the top slide, tapers may be turned manually with the Top slide (Fig. 18).

Rotate the top slide to the required angle. A graduated scale permits accurate adjustment of the top slide. The cross feed is performed with the cross slide. This method can only be used for short tapers.

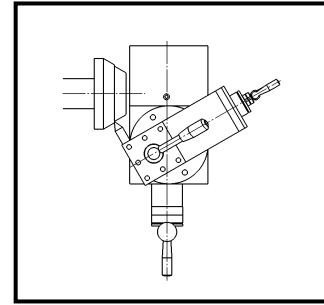


Fig. 18

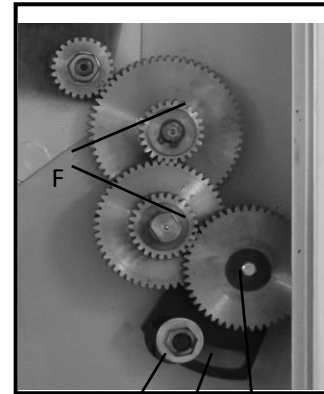
Threads Cutting

Set the machine up to the desired thread pitch (according to the Thread chart Fig. 7). Start the machine and engage the half nut. When the tool reaches the part, it will cut the initial threading pass. When the tool reaches the end of cut, stop the machine by turning the motor off and at the same time back the tool out of the part so that it clears the thread. Do not disengage the half nut lever. Reverse the motor direction to allow the cutting tool to traverse back to the starting point. Repeat these steps until you have obtained the desired results.

M	N	A	B	C	D
M-24	M-25	M-24	M-25	M-24	M-25
N-40	N-45	N-40	N-45	N-40	N-45
0.5	1	0.175	0.250	0.375	0.500
0.6		0.185	0.260	0.385	0.510
0.7		0.195	0.270	0.395	0.520
0.8		0.205	0.280	0.405	0.530
0.9		0.215	0.290	0.415	0.540
1.0		0.225	0.300	0.425	0.550
1.25	2.5	0.280	0.400	0.500	0.625
1.5	3	0.340	0.480	0.600	0.750
1.75	3.5	0.380	0.540	0.680	0.850
2	4	0.430	0.620	0.780	0.975
2.5	5	0.530	0.770	0.950	1.188
3	6	0.630	0.920	1.120	1.406
4	8	0.810	1.220	1.480	1.875
5	10	1.000	1.570	1.940	2.438
6	12	1.180	1.870	2.300	2.875
8	16	1.570	2.500	3.120	3.938
10	20	1.960	3.130	3.940	4.938
12	24	2.350	3.760	4.760	5.938
15	30	2.940	4.650	5.870	7.375
20	40	3.930	6.130	7.740	9.750
25	50	4.920	7.610	9.610	12.125
30	60	5.910	9.090	11.480	14.500
40	80	7.880	12.150	15.310	19.375
50	100	9.850	15.210	19.140	24.250

Change Gear Replacement

1. Disconnected the machine from the power source.
2. Unscrew the two fastening screw and remove the protective cover.
3. Loosen the locking screw (C. Fig. 19) on the quadrant.
4. Swing the quadrant (D. Fig. 19) to the right.
5. Unscrew the bolt (E. Fig. 19) from the leadscrew or the square bolts (F. Fig. 19) from the quadrant bolts in order to remove the change gears from the front.
6. Install the gear couples according to the thread and feed table (Fig. 19) and screw the gears onto the quadrant again.
7. Swing the quadrant to the left until the gear has engaged again.
8. Readjust gear backlash by inserting a normal sheet of paper as an adjusting or distance aid between the gears.
9. Immobilize the quadrant with the locking screw.
10. Install the protective cover of the headstock and reconnected the machine to the power supply.



C D E
Fig.19

Adjustment

After a period time, wear in some of the moving components may need to be adjusted.

Compound Rest Adjustment

Loosen the two screws (A. Fig. 20), after you have obtained The angle you want, do not forget to tighten them again.

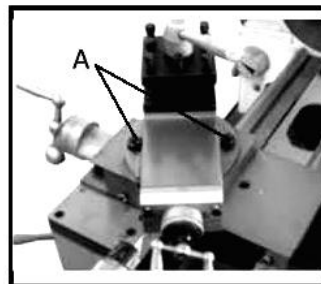


Fig. 20

Belt Adjustment

Loosen the two nuts and screws (A. Fig. 21) to remove the Plate of mounting motor and position.

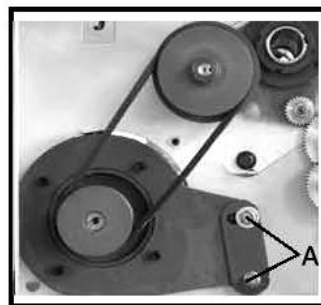


Fig. 21

Main Spindle Bearing Adjustment

The main spindle bearings are adjusted at the factory. If end play becomes evident after considerable use, the bearings may be adjusted. Loosen two hex socket cap screws (A, Fig. 22) in the slotted nut on the back of spindle. Tighten slotted nut until all end play is taken up. The spindle should still revolve freely. Tighten two hex socket cap screws

Caution: excessive tightening or preloading will damage the bearings

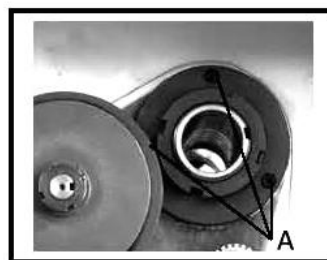


Fig. 22

Cross Slide Adjustment

The cross slide is fitted with a gib strip (A, Fig. 23) and can be Adjusted with screw (B, Fig. 23) fitted with lock nuts (C, Fig. 23) Loosen the lock nuts and tighten the set screws until slide moves freely without play. Tighten lock nuts to retain adjustment.

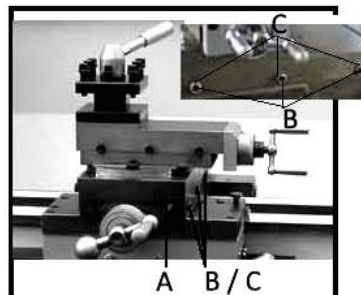


Fig. 23

Top Slide Adjustment

The top slide is fitted with a gib strip (A, Fig. 24) and can be adjusted with screw (B, Fig. 24) fitted with lock nuts (C, Fig. 24). Loosen the lock nuts and tighten the set screws until slide moves freely without play. Tighten lock nuts to retain adjustment.

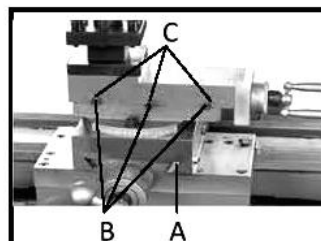


Fig. 24

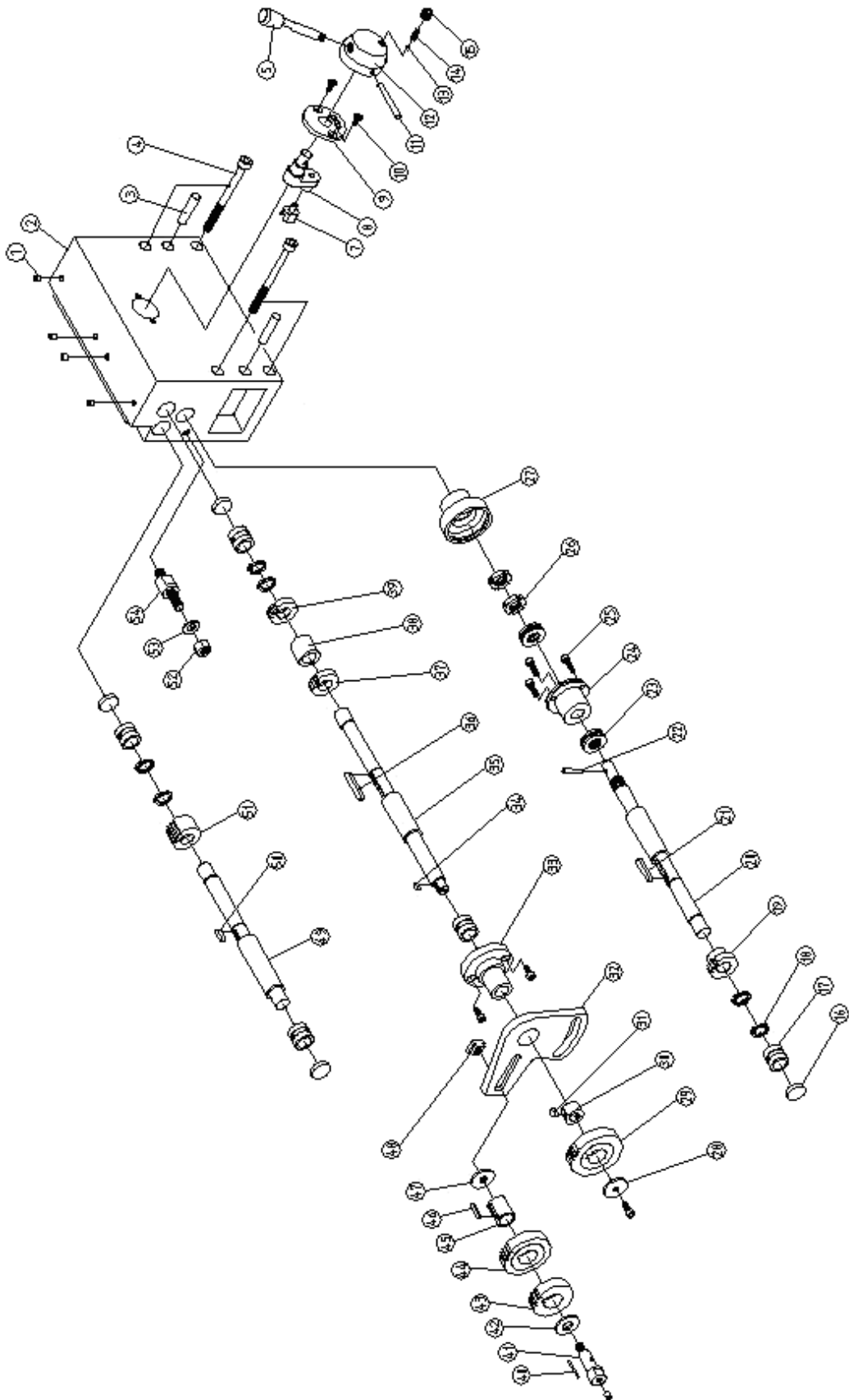
Parts Listing- Headstock

NO.	Parts No.	Description
1	V700 GB/T1171-1986	V-belt type 700
2	M16*1.5 GB/T812-1988	Spanner nut
3	16 GB/T858-1988	Lock washer for circular nut
4	BL330-02013	Spindle pulley
5	6206/P6 GB/T276-1994	Taper roller bearing
6	M5*16 GB/T77-1985	Hexagon socket head screw
7	BL330-02015	Pulley seat
8	FB016030 GB/T13871-1992	Felt cover
9	M6*8 GB/T818-1985	Crossrecessed pan head screws
10	6 GB/T97.1-1985	Plain washers
11	BL330-02011	Lathe head
15	M16*1.5 JB/ZQ4450-86	Oil drain plug
16	6 GB/T7940.4-1995	Oil cup
17	11 GB/T894.1-1986	C-Clip
18	BL330-08021	Cover
19	BL330-08019	Change Gear 24T
20	BL330-08016	Sleeve spacer
21	A5*35 GB/T1096-1994	Plain parallel key
22	BL330-08018	Sleeve
23	BL330-08015	Gear 35T
24	BL330-08017	Shaft
25	M4*12 GB/T71-1985	Screw
26	BL330-02039a	Left Block
27	BL330-02043	Handle lever
28	BL330-02052	Chock
29	M12*40 GB/T5783-1986	Screw
30	M8*10 GB/T77-1985	Set screws with cone point
31	0.8*5*20 GB/T2089	Spring
32	6 GB/T308-1989	Steel ball
33	BL330-02042	Handle seat
34	5*50 GB/T117-1986	Taper pins
35	M5*12 GB/T819-1985	Screw
36	BL330-02040	Localing sleeve

37	BL330-02041	Washer
38	11.2*2.65 GB/T3452.1-1992	O-seal ring
39	BL330-02039b	Right Block
40	A10 JB/T9741.2	Oil Sight
41	BL330-02036a	Sleeve
42	12 GB/T894.1-1986	C-Clip
43	BL330-02038a	Left shifting fork
44	BL330-02037	Shifting fork shaft
45	BL330-02038b	Right shifting fork
46	BL330-02036b	Sleeve
47	M10 GB/T41-1986	Nut
48	10 GB/T97.1-1985	Plain washers
49	BL330-02029	Gear 24T
50	FB016030 GB/T13871-1992	Felt cover
51	BL330-02030	Sleeve
52	6203/P6 GB/T276-1994	Taper roller bearing
53	A4*10 GB/T1096-1994	Plain parallel key
54	BL330-02031	Output shaft
55	A5*60 GB/T1096-1994	Plain parallel key
56	BL330-02032	Gear 68T
57	BL330-02033	Gear 33T
58	BL330-02034	Gear 99T
59	BL330-02035	Sleeve spacer
60	BL330-02021	Sleeve
61	BL330-02022	Sleeve spacer
62	A5*22 GB/T1096-1994	Plain parallel key
63	BL330-02024	Gear 48T
64	BL330-02025	Gear 70T
65	BL330-02026	Gear 60T
66	42 GB/T894.1-1986	C-Clip
67	22 GB/T894.1-1986	C-Clip
68	BL330-02023	Middle shaft
69	6*4*10 GB/T1566-1990	Thin flat key
70	BL330-02027	Gear 22T
71	BL330-02028	Gear 57T

72	28 GB/T894.1-1986	C-Clip
73	M50*1.5 GB/T812-1988	Spanner nut
74	50 GB/T858-1988	Lock washer for circular nut
75	M5*16 GB/T77-1985	Hexagon socket head screw
76	BL330-02045	Sleeve
77	BL330-02046	Pressurize washer
78	BL330-02044	Sleeve spacer
79	32010/P6X GB/T276-1994	Taper roller bearing
80	55 GB/T894.1-1986	C-Clip
81	BL330-02048	Gear 56T
82	32012/P5 GB/T276-1994	Taper roller bearing
83	BL330-02049	Pressurize washer
84	BL330-02050	Main shaft bearing oil seal
85	BL330-02047	Lathe spindle
86	A8*15 GB/T1096-1994	Plain parallel key
87	BL330-02016	Sleeve spacer
88	BL330-02017	Gear 42T
89	BL330-02019	Gear 20T
90	BL330-02018	Sleeve spacer
91	BL330-02020	Gear 30T
92	A5*10 GB/T1096-1994	Plain parallel key
93	A5*70 GB/T1096-1994	Plain parallel key
94	BL330-02012	Single shaft
95	M8*30 GB/T77-1985	Hexagon socket head screw
96	BL330-02053	Oil port plug
97	BL330-02051	Transmission cover

Parts Diagram- Trestle

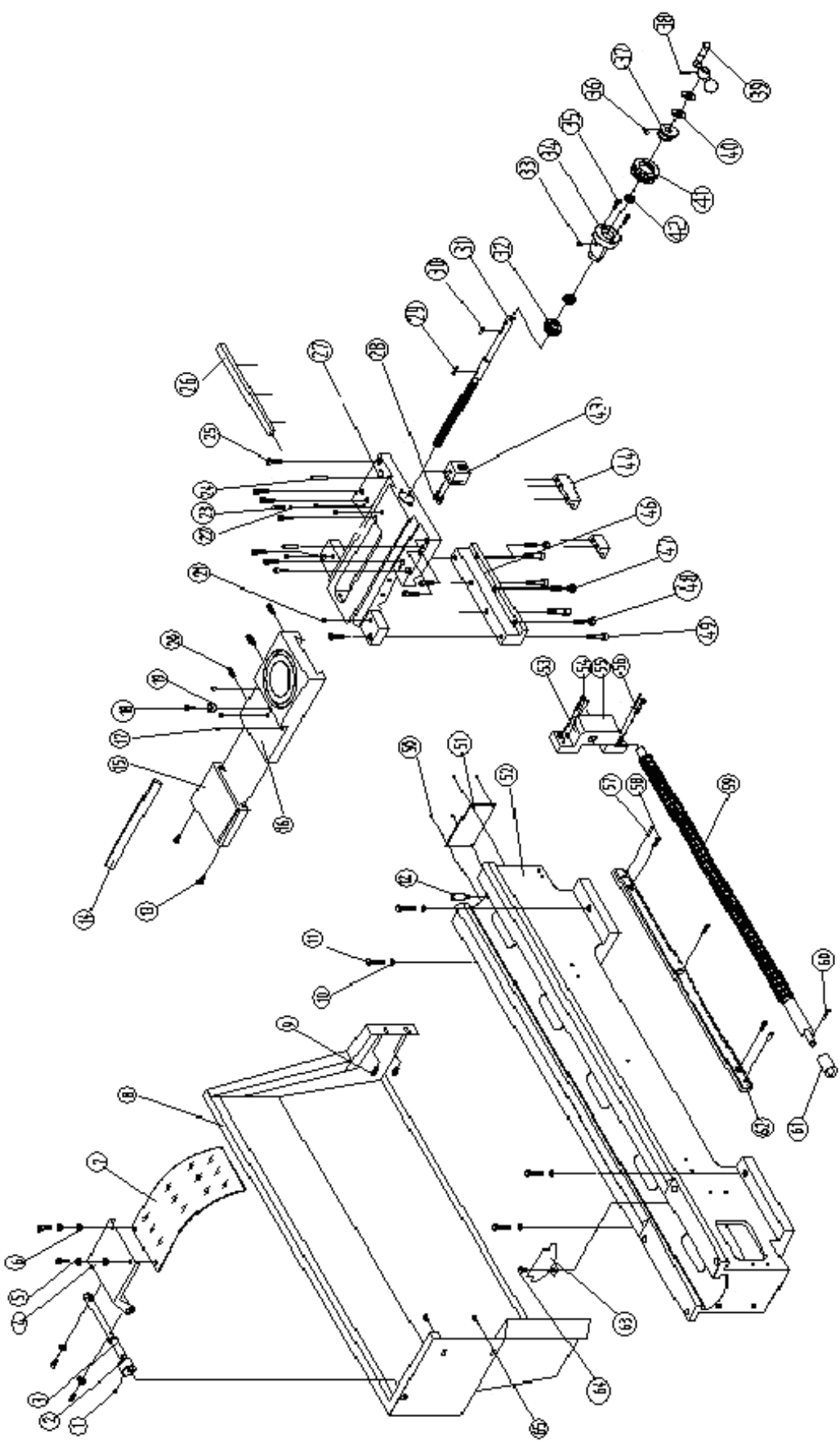


Parts Listing- Trestle

NO.	Parts No.	Description
1	8 GB/T7940.4-1995	Oil cup
2	BL330-07015	Apron body
3	8*30 GB/T118-1986	Taper pins
4	M8*100 GB/T70-1985	Hexagon socket head screw
5	BL330-02043	Handle lever
7	BL330-07013	Right shifting fork
8	BL330-07012	Shaft
9	BL330-07011	Base
10	M5*12 GB/T819-1985	Screw
11	5*50 GB/T117-1986	Taper pins
12	BL330-02042	Handle seat
13	6 GB/T308-1989	Steel ball
14	0.8*5*16 GB/T2089-1985	Spring
15	M8*10 GB/T77-1985	Screw
16	BL330-07024	Cover
17	BL330-07023	Sleeve
18	16 GB/T894.1-1986	C-Clip
19	BL330-07021	Gear 20T
20	BL330-07018	Shaft
21	5*30 GB/T1096-1994	Key
22	5*25 GB/T117-1986	Taper pins
23	51102 GB/T301-1995	Taper roller bearing
24	BL330-07025	Base
25	M5*16 GB/T70-1985	Hexagon socket head screw
26	M14*1.5 GB/T810-1988	Spanner nut
27	BL330-01015	Sleeve
28	BL330-07027	Sleeve
29	BL330-08019	Change Gear 48T
30	BL330-08024	Sleeve spacer
31	5*10 GB/T1096-1994	Key
32	BL330-08025	Change gear plate
33	BL330-07014	Sleeve

34	4*12 GB/T1096-1994	Key
35	BL330-07016	Shaft
36	5*35 GB/T1096-1994	Key
37	BL330-07019a	Gear 20T
38	BL330-07020	Sleeve spacer
39	BL330-07019b	Gear 20T
40	Φ2.5*24	Shaft
41	BL330-08020	Shaft
42	BL330-08021	Sleeve
43	BL330-08019	Gear 25T
44	BL330-08019	Gear 50T
45	BL330-08022	Sleeve
46	5*20 GB/T1096-1994	Key
47	8 GB/T96-2002	Plain washers
48	BL330-08023	T Nut
49	BL330-07017	Shaft
50	5*15GB/T1096-1994	Key
51	BL330-07022	Gear
52	M10 GB/T41-1986	Nut
53	10 GB/T97.1-1985	Plain washers
54	BL330-08026	Screw

Parts Diagram- Bed

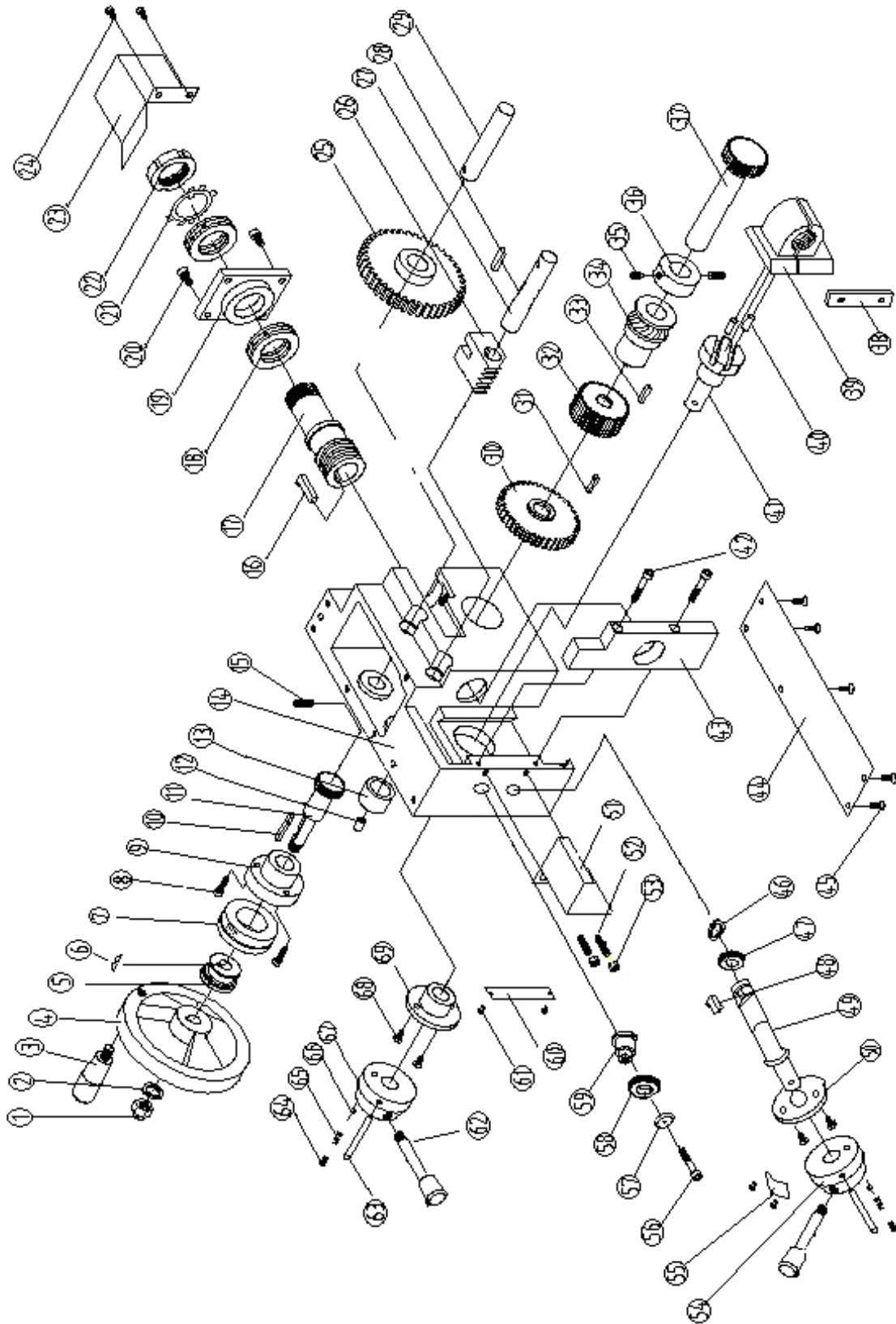


Parts Listing- Bed

NO.	Parts No.	Description
1	M5*12 GB/T77-1985	Hexagon socket head screw
	BL330-09014	Cam sleeve
3	BL330-09015	Switch bar
4	BL330-09016	Connecting plate
5	5 GB/T96-1985	Plain washers
6	M5 GB/T41-1986	Nut
7	BL330-09017	Shield
8	BL330-01017	Shield
9	M6*10 GB/T77-1985	Hexagon socket head screw
10	12 GB/T96-1985	Plain washers
11	M12*45 GB/T5783-2000	Hexagon head screw
12	M8*35 GB/T77-1985	Hexagon socket head screw
13	M5*8 GB/T77-1985	Hexagon socket head screw
14	BL330-05015	Chock
15	BL330-05026	Shield
16	BL330-05011-1	Middle carriage
17	6 GB/T7940.4-1995	Oil cup
18	M6*12 GB/T77-1985	Hexagon socket head screw
19	BL330-05011-2	Washer
20	M6*25 GB1779-1985	Set screws with cone point
21	6 GB/T7940.4-1995	Oil cup
22	6 GB/T97.1-1985	Plain washers
23	M6*40 GB5782-1986	Hexagon head bolts
24	6*40 GB/T118-1986	Taper pins
25	M6*35 GB/T77-1985	Hexagon socket head screw
26	BL330-05013	Chock
27	BL330-05012	Carriage
28	M5*12 GB/T77-1985	Hexagon socket head screw
29	4*12 GB/T1096-1994	Plain parallel key
30	4*12 GB/T1096-1994	Plain parallel key
31	BL330-05023	Cross feed screw rod
32	BL330-05021	Gear 20T

33	6 GB/T7940.4-1995	Oil cup
34	BL330-05017	Cross feed screw seat
35	M5*55 GB/T77-1985	Hexagon socket head screw
36	BL330-03021	Spring lamination
37	BL330-03022	Dial sleeve
38	4*25 GB/T117-1986	Taper pins
39	BL330-05024	Handles with sleeve
40	M12*1.25 GB/T812-1988	Spanner nut
41	BL330-05016	Dial
42	51101 GB/T301-1995	Rolling bearing
43	BL330-05018	Cross nut
44	BL330-05020	Chain up block
46	BL330-05014	Behind board
47	M6 GB/T41-1985	Hexagon nuts
48	M6*30 GB1779-1985	Set screws with cone point
49	M8*40 GB/T77-1985	Hexagon socket head screw
50	2.5*5 GB/T96-1986	Rivet
51	BL330-01018	Table
52	BL330-01011	Bed
53	6 GB/T7940.4-1995	Oil cup
54	M8*25 GB/T77-1985	Hexagon socket head screw
55	BL330-01014	Right pedestal
56	6*30 GB/T118-1986	Taper pins
57	6*20 GB/T879.1-2000	Taper pins
58	M8*15 GB/T77-1985	Hexagon socket head screw
59	BL330-01012	Longitudinal feed screw
60	5*25 GB/T117-1986	Taper pins
61	BL330-01016	Washer
62	BL330-01013	Racks
63	BL330-02056	Shield
64	M5*8 GB/T818-1985	Screw
65	M6*8 GB/T77-1985	Hexagon socket head screw

Parts Diagram- Apron

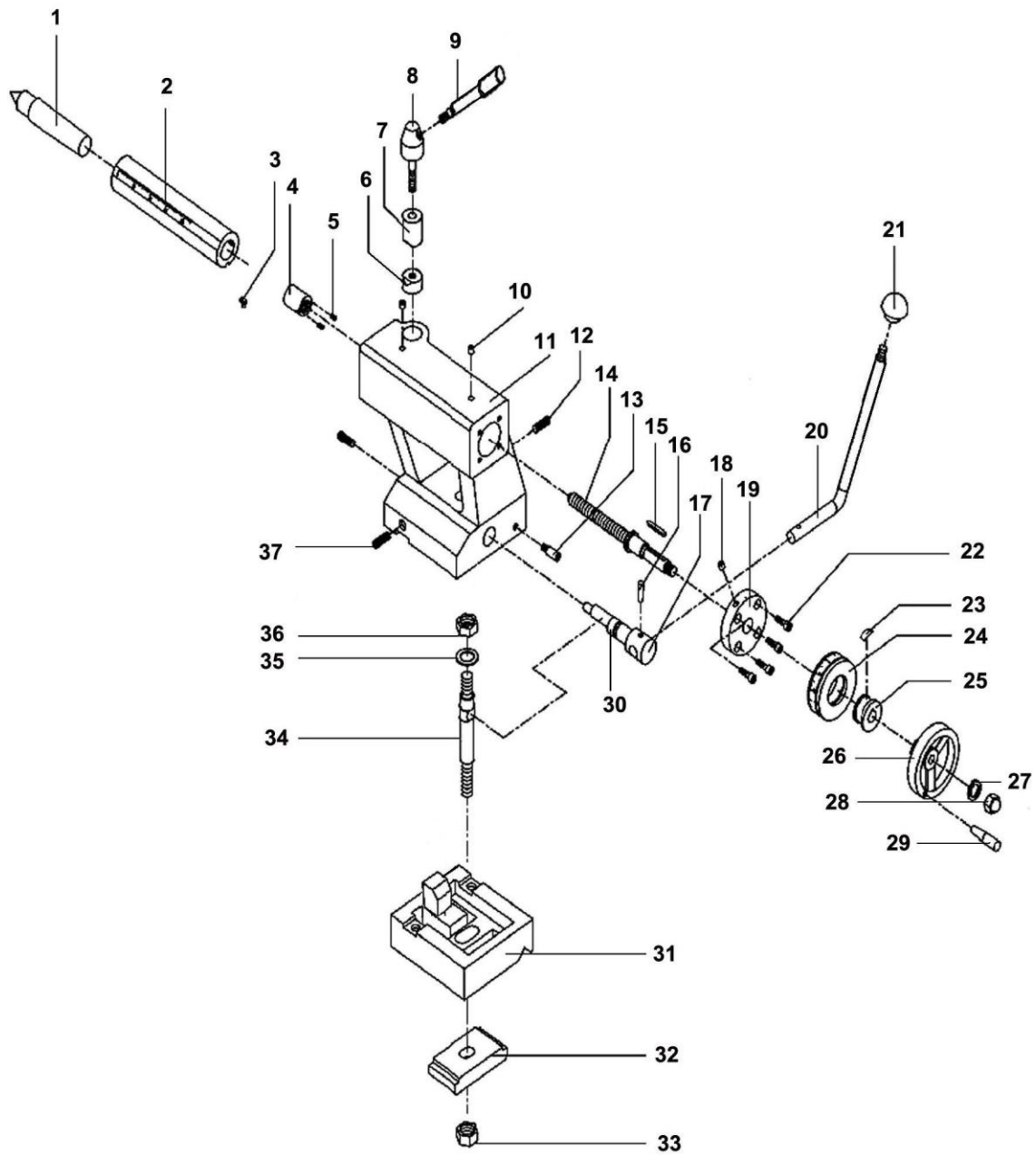


Parts Listing- Apron

NO.	Parts No.	Description
1	M10 GB923-1988	Domed cap nuts
2	10 GB/T923-1976	Spring washer
3	JB/T7270.4-1994	Sleeve
4	B12*125 JB/T7273.3-1994	Hand wheel
5	BL330-03022	Sleeve
6	BL330-03021	Spring lamination
7	BL330-06030	Dial
8	M4*16 GB70-85	Hexagon socket head screw
9	BL330-06029	Flange sleeve
10	4*30 GB/T1096-1994	Pin
11	BL330-06028	Gear shaft
12	8 GB/T7940.4-1995	Oil cup
13	BL330-06027	Sleeve
14	BL330-06011	Apron body
15	M6*10 GB/T78-1985	Screws
16	BL330-06016	Key
17	BL330-06015	Worm shaft
18	51106 GB/T301-1995	Thrust ball bearing
19	BL330-06014	Worm shaft
20	M5*20 GB/T70-1985	Hexagon socket head screw
21	30 GB/T858-1988	Lock washer
22	M30*1.5 GB/T810-1988	Round nut
23	BL330-06041	Safe shield
24	M5*8 GB/T70-1985	Hexagon socket head screw
25	BL330-06032	Gear 36T / 56T
26	BL330-06033	Shifting fork
27	BL330-06031b	Shifting fork shaft
28	5*25 GB/T1096-1979	Pin
29	BL330-06031a	Slippage shaft
30	BL330-06026	Gear 60T
31	6*12 GB/T1096-1994	Pin
32	BL330-06025	Gear 40T
33	6*14 GB/T1096-1994	Pin
34	BL330-06024	Worm gear
35	M6*8 GB/T79-1985	Screws
36	BL330-06023	Sleeve

37	BL330-06022	Gear shaft
38	BL330-04-015	Chock
39	BL330-04-014	Screw nut
40	6*12 GB/T119-1986	Column pins
41	BL330-04-016	Shaft
42	M5*35 GB/T70-1985	Hexagon socket head screw
43	BL330-04-033	Apron body right cover
44	BL330-04-013	Cover
45	M4*8 GB	Screw
46	12 GB/T894.1-1986	C-Clip
47	BL330-06038	Gear 30T
48	4*12 GB/T1096-1994	Pin
49	BL330-06037	Axis
50	BL330-06039	Sleeve
51	BL330-06042	Safe shield
52	M5*30 GB/T78-1985	Screw
53	M5 GB/T41-1985	Hexagon nuts
54	BL330-06034	Handle seat
55	BL330-06035	Table
56	M5*16 GB/T70-1985	Hexagon socket head screw
57	6 GB/T923-1976	Spring washer
58	BL330-06038	Middle gear
59	BL330-06036	Shaft
60	TT220-06029	Table
61	2.5*5 GB/T96-1986	Rivet
62	BL330-02043	Handle lever
63	5*50 GB/T117-1986	Taper pins
64	M8*10 GB/T77-1985	Screw
65	0.8*5*16 GB/T2089-1985	Spring
66	6 GB/T308-1989	Steel ball
67	BL330-02042	Handle seat
68	M4*12 GB/T68-1985	Screw
69	BL330-06021	Sleeve

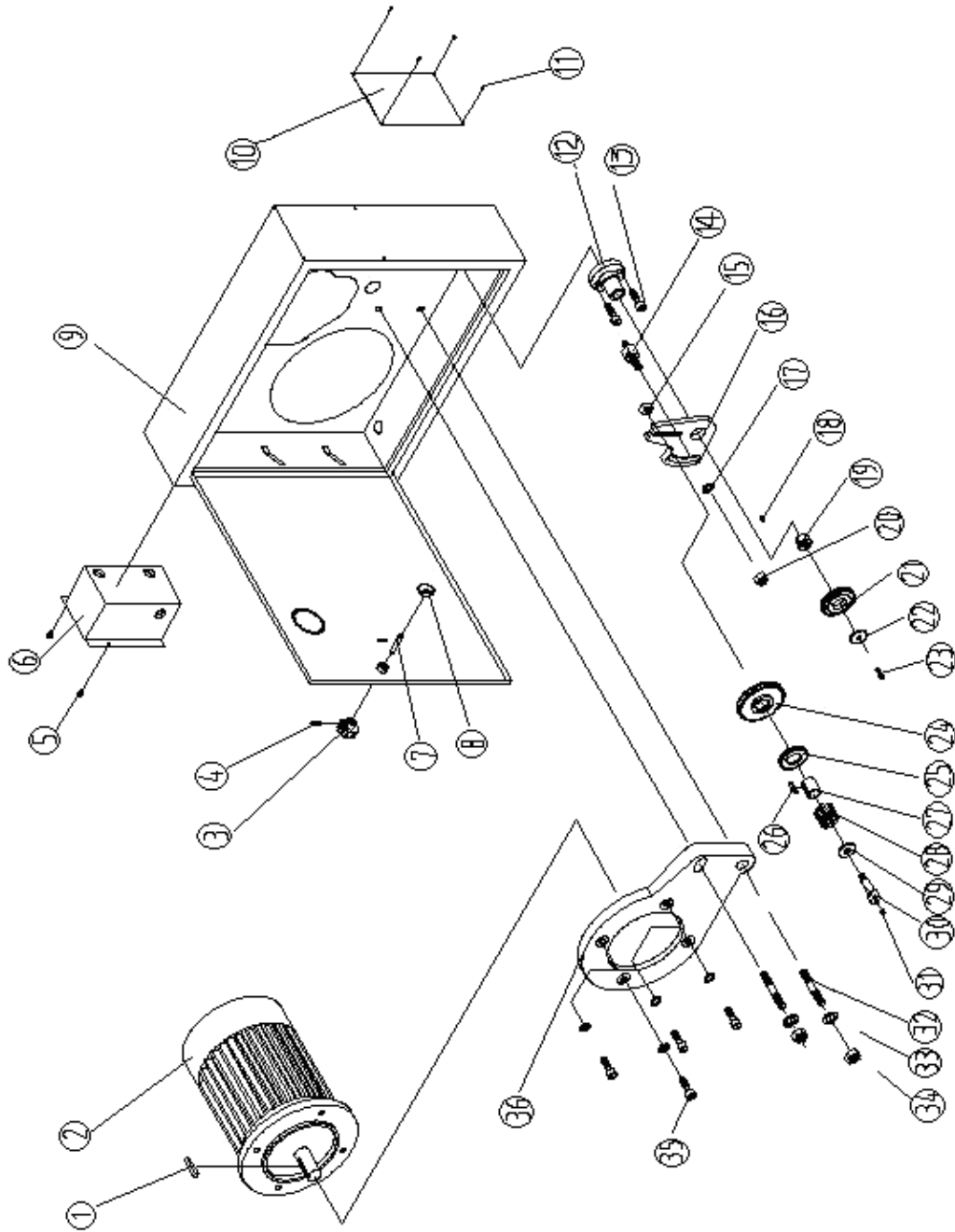
Parts Diagram-Tailstock



Parts Listing- Tailstock

NO.	Parts No.	Description
1	MT3#	Rolling center
2	BL330-03012	Tailstock center sleeve
3	BL330-03013	T-Key
4	BL330-03019	Tailstock Nuts
5	M4*10 GB/T78-1985	Set screws with cone point
6	BL330-03029	Locking nuts
7	BL330-03029	Locking Sleeve
8	BL330-03030	Handle seat
9	BL330-02043	Handle lever
10	6 GB/T7940.4-1995	Oil cup
11	BL330-03011	Tailstock
12	M10*35 GB/T77-1985	Set screws with cone point
13	BL330-03031	Pin
14	BL330-03018	Tailstock screw stem
15	4*30 GB/T1096-1994	Plain parallel key
16	5*25 GB/T117-1986	Taper pins
17	BL330-03014	Shaft
18	6 GB/T7940.4-1995	Oil cup
19	BL330-03020	Sleeve
20	BL330-03027	Handle lever
21	BL330-03028	Handle ball
22	M5*16 GB/T70-1985	Hexagon socket head screw
23	BL330-03021	Spring lamination
24	BL330-03023	Dial
25	BL330-03022	Sleeve
26	BL330-03024	Hand wheel
27	10 GB/T97.1-1985	Plain washers
28	M10 GB/T923-1976	Domed cap nuts
29	BL330-03025	Handles with sleeve
30	M6*8 GB1779-1985	Set screws with cone point
31	BL330-03016	Tailstock carriage
32	BL330-03017	Chock
33	M12 GB/T41-1985	Hexagon thin nuts
34	BL330-03015	Pull pole set
35	12 GB/T97.1-1985	Plain washers
36	M12 GB/T41-1985	Hexagon nuts
37	M6*12 GB/T77-1985	Set screws with cone point

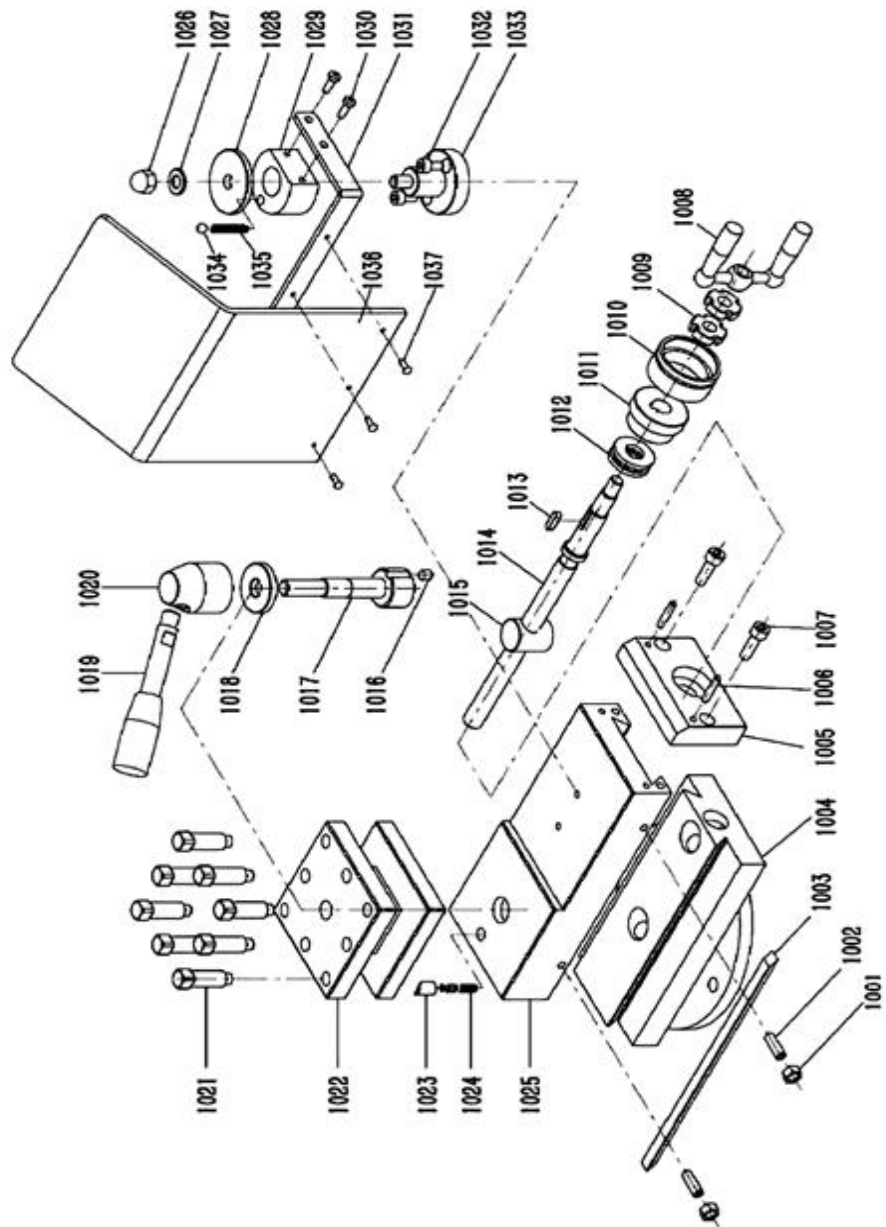
Parts Diagram-Change Gear Box



Parts Listing- Change Gear Box

NO.	Parts No.	Description
1	A8*30 GB/T1096-1994	Plain parallel key
2	Y90-L4 B5 1.1KW	Motor 1.1kw
3	8*32 JB/T7274.4-1994	Start-grip knob
4	3*14 GB/T879-1986	Taper pins
5	M5*8 GB/T819-1985	Screw
6	BL330-09013	Safe box
7	BL250B-08037	Shaft
8	BL250B-08049	Door-knob
9	BL330-08013	Compound box
10	BL330-08027	Thread table
11	2.5*5 GB/T827-1986	Rivet
12	BL330-07014	Sleeve
13	M5*16 GB/T70-85	Hexagon socket head screw
14	BL330-08026	Screw
15	BL330-08023	T-nut
16	BL330-08025	Change gear plate
17	10 GB/T97.1-1985	Plain washers
18	5*10 GB/T1096-1994	Plain parallel key
19	BL330-08024	Sleeve
20	M10 GB/T41-1985	Hexagon thin nuts
21	BL330-08019	Gear 48T
22	BL330-08021	Sleeve
23	M5*10 GB/T70-1985	Hexagon socket head screw
24	BL330-08019	Change Gear 25T
25	BL330-08019	Change Gear 50T
26	5*20 GB/T1096-1994	Plain parallel key
27	BL330-08022	Sleeve
28	∅ 2.5*24	Roller
29	BL330-08021	Sleeve
30	BL330-08020	Shaft
31	6 GB/T7940.4-1995	Oil cup
32	M10*52 GB/T898-1988	Screw
33	10 GB/T97.1-1985	Plain washers
34	M10 GB/T41-1985	Hexagon nuts
35	M8*35 GB/T70-1985	Hexagon socket head screw
36	BL330-08011	Motor mount plate

Parts Diagram- Compound



Parts List- Compound

NO	Part Number	Description
1	GB/T6170-2000	Hexagon nuts
2	GB/T71-85	Set screws with cone point
3	4022	Chock
4	4012	Swivel Slid
5	4016	Leadscrew Flange
6	GB/T119-2000	Round Pin
7	GB/T70.1-2000	Hexagon socket head screw
8	JB/T270.10-1994	Handles with sleeve
9	GB/T810-1998	Small Round Nut
10	4018	Scale
11	4019	Shaft Sleeve
12	GB/T301-1995	Bearing
13	GB/T1096-2003	Parallel Pin
14	4014	Leadscrew
15	4017	Leadscrew Nut
16	GB/T71-85	Set screws with cone point
17	4015	Shaft
18	4024	Adjustable Washer
19	4021	Handle Lever
20	4020	Handle Seat
21	GB/T85-88	Set Screw with round cone
22	4013	Square Tool-Post
23	4023	Positioning Pin
24	GB/T2089-2009	Spring
25	4011	Small Carriage
26	GB/T923-88	Cap Nut
27	GB/T97.2-1985	Washer
28	4035	Pressure Cover
29	4034	Sleeve
30	GB/T823-88	Round Cross Screw
31	4032	Bracket
32	GB/T70.1-2000	Hexagon socket head screw
33	4033	Mount
34	GB/T308-2002	Ball
35	GB/T2089-2009	Spring
36	4031	PMME Protection Cover
37	GB/T867-1986	Rivet

PREVENTIVE MAINTENANCE

DAILY INSPECTION

In principle the daily. Inspection lathe is carried out on basis of each shift. The inspection work according to the following item 1-1

1-1 Check before starting the motor.

- 1) Clean-up of machine: Dust, chips and other articles should be removed from sliding surface of machine to make the rotating or sliding parts performing easy and smoothly. All other static parts be often also cleaned to avoid the corrosion.
- 2) Greasing and oiling: Regular oiling should be done every day(see lubrication plan sheet) to keep the machine properly lubricated.
- 3) Check the sensitivity & reliability of all manual control levers: To try the speed change rate function of headstock feeds and apron in gear box and inspect their starting, stopping and forward & reverse action whether they are sensitive and reliable or not.

1-2 Check after starting the motor.

- 1) To check electrical control system:
To put button and examine the sensitiveness of starting, stopping and pilot lamp strictly.
- 2) The sensitivity and reliability of mechanical control device:
Control levers for forward and reverse main spindle, automatic feeds and threads change should be sensitive and reliable. Automatic control devices for longitudinal and cross feed, gear change threads change, carriage, and spindle direction change should be accurate also.
- 3) Coolant system:
Check the quantity of coolant oil and start the oil pump for inspecting its function and leakage.
- 4) Lubricating system:
Examine all lubricating system carefully and ensure all flowing line without obstacles.

1-3 Caution during operation:

- 1) Temperature of bearings:
Touch the main bearing by hand and feel the temperature is normally or not.
- 2) Temperature of motor:
To feel the temperature of motor bearing at the case of full load.
- 3) Noise and vibration:
If you find the noise and vibration of the machine are abnormal or irregular. Stop the machine immediately for inspection and adjustment.
- 4) Safety affairs:
 - a. Must stop operation when you leave the machine.
 - b. When changing main spindle speed or feeding speed stop running first.
 - c. All tools and products are strictly not allowed to be left on sliding surface of bed.

1-4 Check after operation:

- 1) Cleaning and collection of all tools:

All tools should be kept clean first then put back to original position (tool cabinet)

2) Proper position of tailstock, carriage, & tool holder:

Tailstock, carriage, & tool holder should be placed to proper position.

3) Clean-up of machine:

All of the oily matters, chips etc, on the machine should be removed completely and put a thin lubricating oil on the sliding surface of machine to prevent the corrosion.

1. WEEKLY INSPECTION:

1) Lubricating system:

Clean-up the whole lubricating system and replenish with fresh lubricating oil.

2) Cooling system:

Clean-up the whole cooling system and replenish with new cooling oil.

3) Transmission system:

Check the damage of rubber V-belt and readjust the tensile strength of V-belt.

2. Trouble Shooting

Problem	Possible Cause	Remedy
Too chatters	Gibs too loose on table. Unused feeds not locked Tool not on center. Improper tool shape.Tool dull	Readjust gibs. Lock all axes but one moving Center tool Reshape, sharpen, replace tool
Depth of cut is not consistent	Quill moving Setup wrong	Lock quill Make sure setup is parallel to table
Hole is off center or bit wanders	Bit dull. Bit not mounted correctly Chuck loose in spindle. Bearing loosen or worm. Cutting too fast.	Use sharp bits Remount tool Remount chuck on spindle Tighten or replace bearings Reduce down speed
Bit turns erratically or stops	Bit fed into work too fast	Reduce down feed rate
Chuck is difficult to tighten or loosen	Chuck sticking. Debris in chuck	Apply lubricant Clean chuck inside
Turn on machine and nothing happen	Machine unplugged. Loose electrical connections	Plug in machine Tighten wiring connections

3. Standard Accessories

No.	Name	Quantity
1	Φ160mm Self-center 3 jaw chuck	1set
2	Dead center MT 3#	1set
3	Inner hexagonal wrench	4mm 1pc
4		5mm 1pc
5		6mm 1pc
6		8mm 1pc
7	Head wrench	8-10mm 1pc
8		12-14mm 1pc
9		17-19mm 1pc
10	Wrench for tool post	1pc
11	Change gears	13pcs
12	Oil gun	1pc
13	Screw driver	1pc

4. Special Accessories

No.	Name	Quantity
1	Φ160mm 4-jaw chuck	1set
2	Face Plate	1set
3	Threading Chasing Dial	1set
4	Follow Rest + Steady Rest	1set
5	Two Cabinet Machine Stand + Oil Tray	1set

Machine Serial Number: _____