

OPERATION MANUAL

MODEL: BT1440G

BE SUBJECT TO ALTERATION WITHOUT NOTICE

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1. GENERAL SAFETY RULES FOR POWER TOOLS

WARNING: Do not attempt to operate until you have read thoroughly and understand Completely all instructions,rules,ect. Contained in this manual.Failure to comply can resule in accidents involving fire,electric shock,or serious personal injury. Maintain owners manual and review frequently for continuing safe operation,and instructing possible third-part user.

Read all instructions

1.1 Know you power tool.

For your own safety, read the owner's manual carefully. Learn its and limitations as well as the specific potential hazards peculiar to this tool.

1.2 Guard against electrical shock by preventing body contact with grounded surfaces.

For example: Pipes, radiators, ranges refrigerator encloseures.

1.3 Keep guards in place and in working order.

1.4 Remove adjustment keys and wrenches.

From habit of checking to see that keys and adjusting wrenches are removed from tool before turning on tool.

1.5 Keep work area clean.

1.6 Don't use in dangerous environment.

Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well illuminated.

1.7 Keep children away.

All vistors should be kept a safe distance from work area.

1.8 Make workshop kid proof.

With padlocks. Master switch, or by removing starterkeys.

1.9 Don't force tool.

It will do the job better and be safe at the rate for which it was designed.

1.10 Use right tool.

Don't force tool or atyachment to do a job for which it was not designed.

1.11 Wear froper apparel.

No loose clothing, gloves, neckties, rings bracelets, or jewelry to get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

1.12 Always use safety glasses.

Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only

have impact-resistant lenses. They are not safety glasses.

1.13 Secure work.

Use clamps or a vise to hold work when practical. It's safer than using your hands and free both hands to operate tool.

1.14 Don't overreach,

Keep your proper footing and balance at all time.

1.15 Maintain tools in top condition.

Keep tools sharp and clear for best and safest performance. Follow instructions for lubricating and changing accessories.

1.16 Disconnect tools from power source.

Before servicing and when changing accessories such as blades, bit cutters or when mounting and remounting motor.

1.17 Avoid accidental starting.

Make sure switch is in "OFF" position before plugging in cord.

1.18 Use recommended accessories.

Consult the owner's manual for recommended accessories. Use of improper accessories may be hazardous.

1.19 Never stand on tool.

Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

1.20 Check damaged parts.

Before further use of the tool, a guard or other part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.

1.21 Direction of feed.

Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.

1.22 Never leave tool running unattended. Turn power off.

Don't leave tool until it comes to a complete stop.



The operation of any power tool can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields before using your lathe. We recommend wide vision safety mask or standard safety glasses.

2. SAFETY RULES FOR LATHE

NOTE: Safety is a combination of operator common sense and alertness at all times when lathe is being used. Study these safety rules and general safety rules before operating and retain for future use.

- 2.1 Wear eye protection.
- 2.2 Never attempt any operation or adjustment if procedure is not understood.
- 2.3 Keep fingers away from revolving parts and cutting tools while in operation.
- 2.4 Never force cutting action.
- 2.5 Never perform an abnormal or little used operation without study and use of adequate blocks, jigs stops, fixtures etc.
- 2.6 Use of shop manual such as “Machinery’s Handbook” or similar is recommended for cutting speeds, feeds and operation detail.
- 2.7 Do not remove drive cover while machine is in operation, make sure it is always closed.
- 2.8 Always remove chuck key, even when machine is not in operation.
- 2.9 Do not attempt to adjust or remove tools when I operation.
- 2.10 Always keep cutters sharp.
- 2.11 Never use in an explosive atmosphere or where a spark could ignite a fire.
- 2.12 Always use identical replacement parts when servicing.

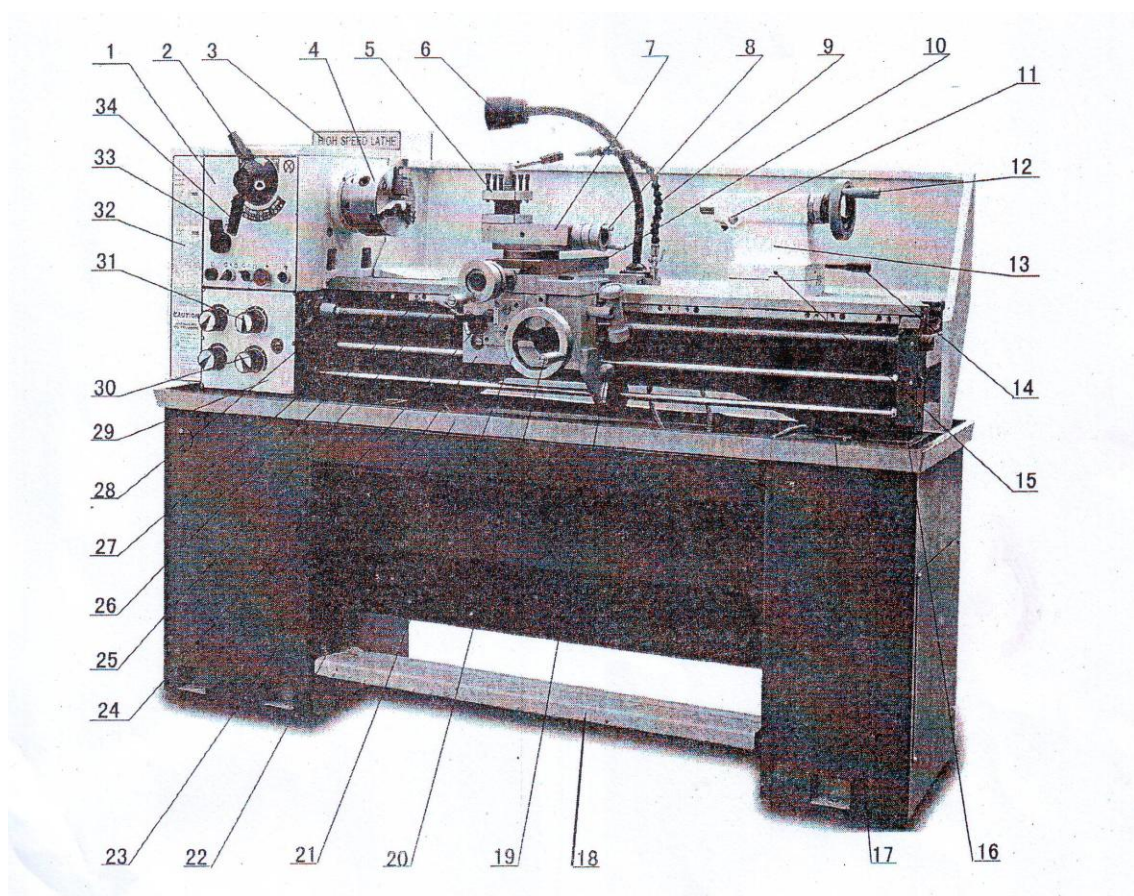
3. MACHINE SPECIFICATION

Lathe machines are especially suitable for machining, tool rooms and repairing workshops to machine shafts, spindle, sleeves, and disc workpiece of middle or small types. They can also be used to cut imperial, diametral and module thread, and with compact construction and reasonable composition, they can cut very well. They are easy and reliable to operate, convenient to repair, high in efficiency, and low noise.

Technical specification:

Model	C0636D
Max. swing over bed	360mm (Φ14")
Max. swing in gap	508mm (Φ20")
Max. swing over slide	230mm (Φ9")
Bed width	188mm (7.36")
Bed height	302mm (12.3")
Max. Length of workpiece	750mm (30"); 1000mm (40")
Spindle nose	D1-4
Spindle bore	Φ40mm (Φ1.5")/52mm(Φ2")
Spindle taper	MT-5
Spindle speed steps	8 steps
Spindle speed scope	70~2000rpm
Whitworth thread	3 ¹ / ₂ ~80TPI /36kinds
Metric thread	0.45~10mm /27kinds
Diametric thread	7~160DP /32kinds
Module thread	0.25~5M.P /20kinds
Longitudinal feed range	0.067~1.019mm/r (0.0026~0.040in/r)
Cross feed range	0.018~0.275mm/r (0.0009~0.0138in/r)
Cross slide travel	160mm (6.3")
Compound slide travel	68mm (2.7")
Tool section	16x16mm (5/8"x5/8")
Tailstock quill diameter	32mm (1.26")
Max. travel of tailstock quill	95mm (3.7")
Taper hole of tailstock	MT-3
Electric motor	2HP(1.5kW)
Net / gross weight	470/565kg;510kg / 610kg

4.MACHINE ASSEMBLY



1. Headstock	18. Foot brake
2. Speed selector	19. Spindle control lever
3. Electric control box	20. Longitudinal traverse handwheel
4. Three Jaw chuck	21. Longitudinal traverse lever
5. Tool post	22. Chip tray
6. Work Lamp	23. Apron
7. Compound rest	24. Feed Axis selector
8. Compound rest handwheel	25. Thread cutting engagement lever
9. Coolant	26. Rack
10. Cross Slide	27. Control rod
11. Tailstock quill clamping	28. Leadscrew
12. Tailstock quill traverse handwheel	29. Gearbox
13. Tailstock	30. Feedbox selector
14. Tailstock clamp lever	31. Feedbox selector
15. Tailstock set-over screw	32. Gearbox cover
16. Support body	33. Feed direction selector
17. Bed	34. Speed selector Lever

5.UNPACKING ,CLEANING AND INSTALLATION

UNPACKING

Unload the machine with a tackle, using clamping plates and eyebolts. Keep the machine in balance by moving the tailstock and the bed slide to the right. Avoid using sling chains as they could damage feed rod and leadscrew. Lift the lathe carefully and place it softly on the floor or workbench.

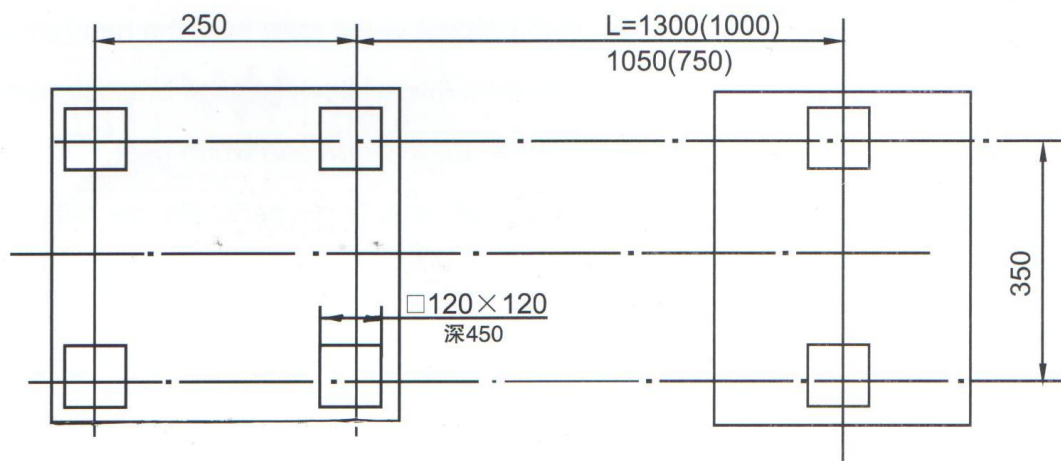
CLEANING

Before putting the machine into operation, using kerosene (paraffin) or white spirit to remove the anti-corrosive coating or grease from all slideways and gear train. Don't use lacquer thinner or other caustic solvents. Oil all bright machine surface immediately after cleaning. Use heavy oil or grease on the change gears.

INSTALLATION

Place the lathe on a solid foundation. A concrete floor is the best base for the machine(If necessary, use an underframe optional). Make sure there is sufficient area around the lathe for easy work and maintenance. Use a precision level on the bedways to make further adjustment for level condition, then tighten the foundation bolts evenly and finally recheck for level condition.

FOUNDATION DRAWING



6.LUBRICATION

Before putting the lathe into operation, make the following lubrication check.

6.1 HEADSTOCK

The bearings of the headstock turn in an oil bath. Ensure that the oil level reaches three quarters of the oil gauge glass.

For changing the oil, remove the end cover and the change gears with swing frame. Drain off the oil by removing the drain plug on the bottom of the headstock. To oil take off the headstock cover.

Check the oil level regularly. The first oil change should be made after 3 months, then change it once a year.

6.2 GEARBOX

Remove the end cover to expose the filling plug. Through it the SHELL TELLUS 32 is filled to the oil leveling the oil gauge glass regularly. The first oil change should be made after 3 months, then change it once a year.

6.3 APRON

The oil bath is filled with SHELL TELLUS 32 through the filling plug on the right side of the apron. Check the oil level in the oil gauge glass on the front regularly. The first oil change should be made after 3 months, then change it once a year.

For changing the oil, drain away all oil by taking off the drain plug on the bottom of the apron.

6.4 CHANGE GEARS


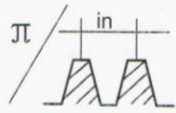

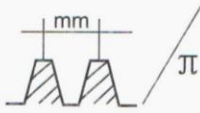
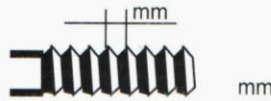

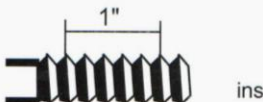

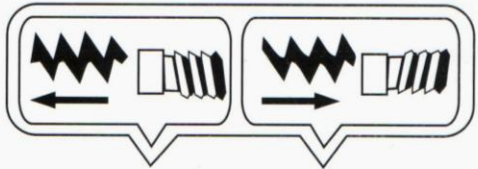

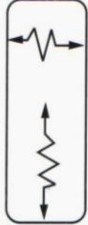
Lubricate the change gears with thick machine oil or grease once a month.

6.5 OTHER PARTS

There are other lubricating points on the input shaft bracket of the gear box, the handwheel on the apron, the longitudinal and cross slide, the thread dial indicator, the tailstock and the bracket, use the grease gun to put a few drops oil from time to time. Lubricate the apron worm and worm gear, half nut and leadscrew twice a month. Apply a light oil film to the bed way and all other bright parts, like the tailstock quill, feed rod etc. once a day.

7. TEST RUNNING

7.1 OPERATION: SYMBOLS FOR OPERATION

OPERATION: Symbols for operation			
	Electrical (danger)		Diametral pitch thread
	Coolant		Module pitch thread
	Metric thread		Half nut opened
	Imperial thread		Half nut closed
		Right-hand thread and Longitudinal feed toward the headstock side (Left figure)	
		Left-hand thread and Longitudinal feed toward the tailstock side (Right figure)	
	Feeding (Left figure) Threading (Right figure)		
	Longitudinal feed engaged (upward) Both longitudinal and cross feed disengaged (central) Cross feed engaged (downward)		

8.SPINDLE SPEED CONTROL

Identification before operation

Ensure that lubrication has been carried out as described before.

When the main spindle is rotating, the gear box and feed axis of the bedslide are put into operation. The forward/reverse switch(14) should be on neutral. The feed axis selector(18) and feed/thread selector handle(19) are in disengaged position. Under these circumstances, both the longitudinal traverse handwheel and cross traverse handle(17) can be operated by hand.

8.1 Main spindle rotation

The main spindle rotation is selected by the forward/reverse switch.

8.2 Main spindle speed

The speed of the main spindle is selected by (high/low) speed selector(2) and 4 steps speed selector(3). For both high and low speed, there are 4 different positions. For correct speed, please refer to the speed chart. When selector(3) is on "HIGH", we can get the four speeds, according to the graph.

8.3 Never change the speed before the motor has stopped completely.

Adjusting the speed can be assisted by turning the main spindle by hand.

8.4 Running-in

Running-in should be done at the lowest possible spindle speed. Let the machine run at the lowest speed for about twenty minutes. Then check for irregularities. If everything seems in order, gradually increase the speed.

8.5 Operation

Use only high peripheral speed type chucks.

The maximum spindle speed for a chuck plate of 254mm diameter should not be more than 1255 rpm. When thread cutting or auto feeding are not in use, the feed/thread selector should be in neutral position so as to ensure disengagement of the leadscrew and the feed rod. To avoid unnecessary wear, the thread dial indicator should be out of mesh with the leadscrew.

9. THREAD AND FEED SELECTION

9.1 Thread and feed selection

All feed and threads are given on the feed thread tables, fitted on the front and inside of the gear box cover (32), by setting the four feed selector handles (30), (31) etc.

(A). Hand feed operation

The movement of carriage is made by the longitudinal traverse handwheel (21), cross sliding by the cross traverse handle, and compound rest by the compound rest traverse handle (8), the carriage is anchored by turning the carriage lock screw in clockwise direction.

(B). Replacement of change gears

Take off the end cover firstly, and then loosen both the hexagon nut of the clamping bolt and the clamping screw of the swing frame to exchange the transmission shaft gear with another gear. And the change of driven gear is made by loosen the 120T and 127T gear shaft clamping nut, it is necessary for suitable back lash to intermediate the gears in both cases.

For any special threads not covered by the thread table, our engineering department is available to specify the most convenient change gearing required.

(C). Automatic feed operation and change

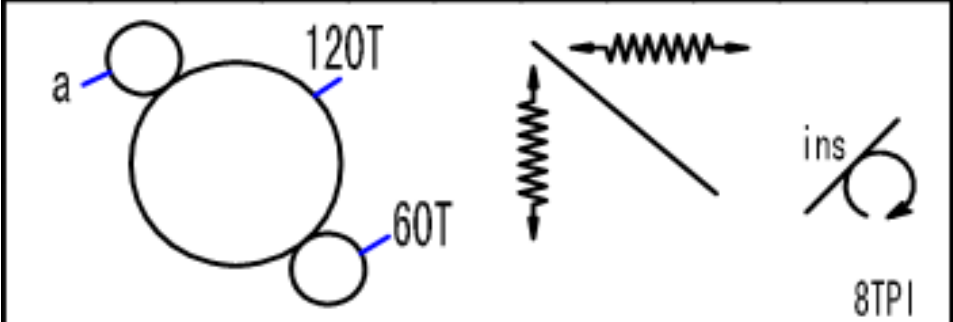
Ensure that 30T change gear at the transmission shaft and 60T at the driven shaft are set with 127T intermediate gear as shown on the feed and thread table. Then turn the feed direction selector (33) to left hand or right hand side according to the direction of feeding which you need and set the feed/thread selector (31) at "any" position, make sure the feed selector handle (2), (30) is engaged, thus the feed rod will rotate. When the feed axis selector (24) on the apron is pulled out and operated upward, we can obtain a longitudinal feed and cross feed can be obtained by pushing the selector in and operating it downward. (Make sure the thread cutting engagement lever ((25) at disengaged position before operating the feed axis selector.)

Feed direction can be changed by turning feed direction selector (It have 32 kinds of feed speeds each in longitudinal and cross feed can be obtained by means of the feed selector handles (31), (30) etc.

9.2 Feed and thread tables

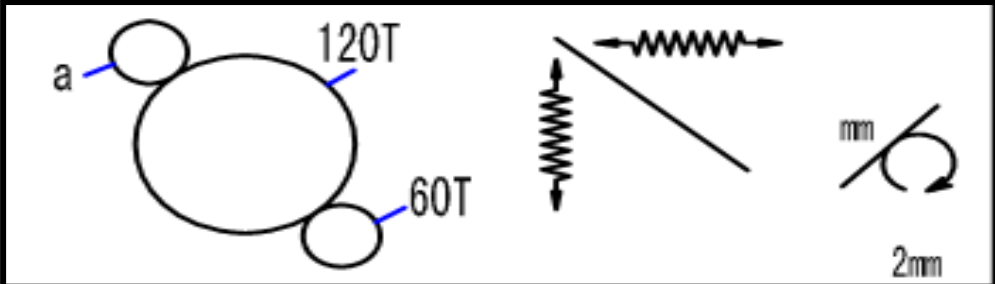
(A).Feed table

(a)Longitudinal and cross feed table for imperial lathe



a		60T				30T			
LEVER		T	S	R	U	T	S	R	U
A	D	.0548 .0187	.0512 .0175	.0411 .0140	.0328 .0112	.0274 .0094	.0256 .0087	.0205 .0070	.0164 .0056
B	D	.0274 .0094	.0256 .0087	.0205 .0070	.0164 .0056	.0137 .0047	.0128 .0044	.0102 .0035	.0082 .0028
A	C	.0137 .0047	.0128 .0044	.0102 .0035	.0082 .0028	.0069 .0024	.0064 .0022	.0051 .0017	.0041 .0014
B	C	.0069 .0024	.0064 .0022	.0051 .0017	.0041 .0014	.0034 .0012	.0031 .0011	.0025 .0009	.0020 .0007

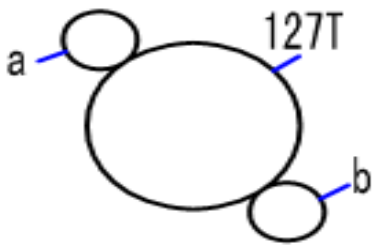
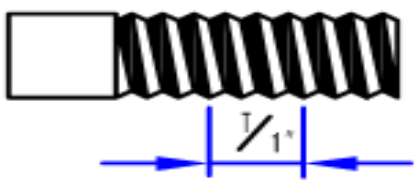
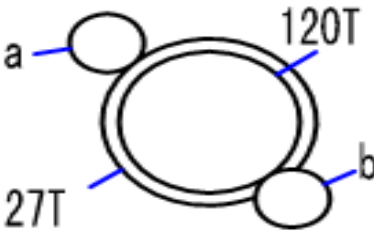

(b)Longitudinal and cross feed table for metric lathe



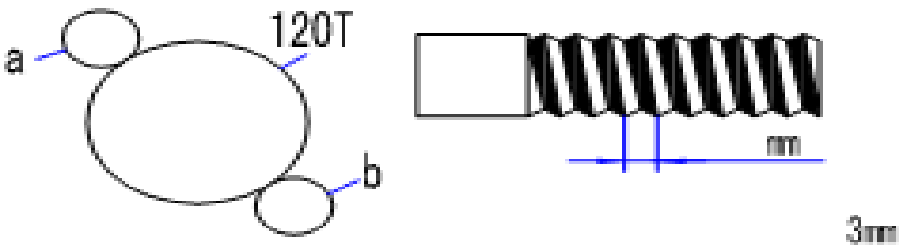
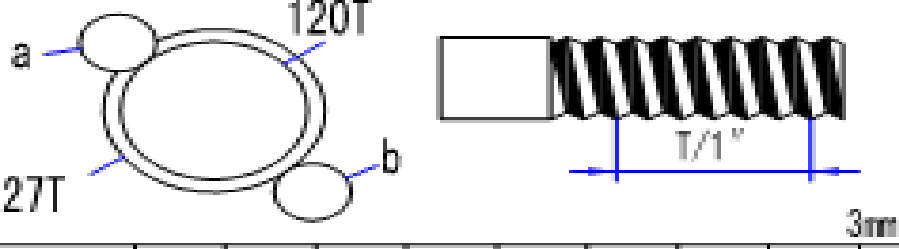
a		60T				30T			
LEVER		T	S	R	U	T	S	R	U
A	D	1.392 .380	1.300 .351	1.044 .282	.835 .226	.696 .188	.650 .175	.522 .141	.418 .113
B	D	.696 .188	.650 .176	.522 .141	.418 .113	.348 .094	.325 .088	.261 .070	.208 .066
A	C	.348 .094	.325 .088	.261 .070	.208 .056	.174 .047	.162 .044	.130 .035	.104 .028
B	C	.174 .047	.162 .044	.130 .035	.104 .028	.087 .024	.081 .022	.065 .017	.052 .014

(B).Thread tables

(a)Thread tables for imperial leadscrew

											
a		60	60	60	60	40	40	56	40	60	
b		60	54	57	60	44	46	54	52	63	
LEVER		4	1	1	1	1	1	2	1	3	
		U	U	U	U	U	U	U	U	U	
A	D	4	4 1/2		5	5 1/2		6	6 1/2	7	
B	D	8	9	9 1/2	10	11	11 1/2	12	13	14	
A	C	16	18	19	20	22	23	24	26	28	
B	C	32	36	38	40	44	46	48	52	56	
											
a		56	60	60	30	60	60	30	60	56	
b		60	60	60	60	60	60	60	60	63	
LEVER		4	1	3	4	1	3	1	3	3	
		R	R	S	T	U	R	T	U	U	
A	D	7.0	6.0		5		4.5	4.0			
B	D	3.5	3.0		2.5		2.25	2.0	1.8	1.6	
A	C	1.75	1.5	1.4	1.25	1.2		1.0	0.9	0.8	
B	C		0.75	0.7		0.6		0.5	0.45	0.4	

(b) Thread tables for Metric leadscrew

											
a		56	60	60	30	60	60	30	60	56	
b		60	60	60	60	60	60	60	60	63	
LEVER		4	1	3	4	1	3	1	3	3	
		R	R	S	T	U	R	T	U	U	
A	D	7.0	6.0		5		4.5	4.0			
B	D	3.5	3.0		2.5		2.25	2.0	1.8	1.6	
A	C	1.75	1.5	1.4	1.25	1.2		1.0	0.9	0.8	
B	C		0.75	0.7		0.6		0.5	0.45	0.4	
											
a		60	60	60	60	40	40	56	40	60	
b		60	54	57	60	44	46	54	52	63	
LEVER		4	1	1	1	1	1	2	1	3	
		U	U	U	U	U	U	U	U	U	
A	D	4	4 1/2		5	5 1/2		6	6 1/2	7	
B	D	8	9	9 1/2	10	11	11 1/2	12	13	14	
A	C	16	18	19	20	22	23	24	26	28	
B	C	32	36	38	40	44	46	48	52	56	

In order to obtain the desired thread, all correct change gears must be installed in strict accordance with the chart, failure to do so will give incorrect threads.

Rotate the leadscrew by operating the feed/thread selector to any position and be sure the feed selector handle is engaged. Operate downward the thread cutting engagement lever (25), and it will be engaged with the leadscrew to obtain the longitudinal travel of carriage, namely, the thread cutting feed. Make sure the feed axis selector is disengaged (at neutral position) before operating the thread cutting engagement lever (25) since there is an interlock mechanism between the auto feeding and thread cutting engagement.

Direction of thread cutting can be chosen by turning the feed directing selector (33) at the headstock. There are 31 Nos. of thread pitches each in Imperial, 26 Nos. of Metric pitches those which can be obtained by turning the feed selector handles .

(A).Thread dial indicator

The thread dial indicator is installed on the right hand side of the apron; the indicator is used for thread cutting to engage with the leadscrew.

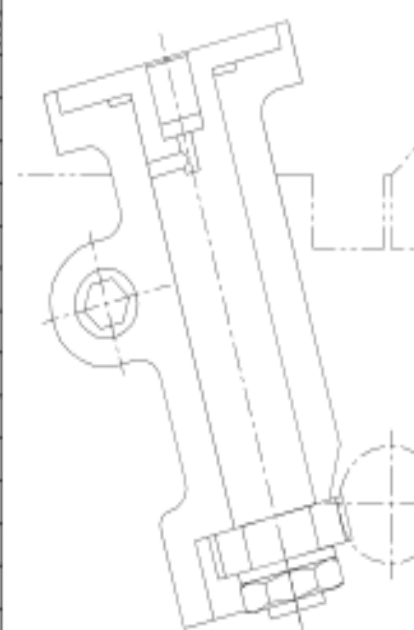
For minimum wear the thread dial indicator should be disengaged by swing the pinion out of mesh with the leadscrew when not in use.

Imperial threads on Imperial leadscrew machines or Metric threads on Metric leadscrew machine.

For these threads it is recommended that the thread dial indicator be used this allows the half nut of leadscrew to be engaged at the end of each thread cutting

pass, provided that they are re-engaged in accordance with the indicator table mounted on the left hand side of the apron.

INDICATOR TABLE					
T.P.I	SCALE	T.P.I	SCALE	T.P.I	SCALE
4	1-4	13	1	44	1-4
4 1/2	1	14	1.3	46	1.3
4		16	1-8	48	1-8
5	1	18	1.3	52	1-4
5 1/2	1	19	1	56	1-8
5	1.3	20	1-4	64	1-8
6 1/2	1	22	1.3	72	1-8
7	1	23	1	76	1-4
8	1-8	24	1-8	80	1-8
9	1	26	1.3	88	1-8
9 1/2	1	28	1-4	92	1-8
10	1.3	32	1.3	96	1-8
11	1	36	1-4	104	1-8
11 1/2	1	38	1.3	112	1-8
12	1-4	40	1-8		



(1) Imperial leadscrew machines (Imperial threads only)

The table shows:

T.P.I: threads per inch to be cut.

Scale: the dial numbers at which the half nut of leadscrew may be engaged.

(2) Metric leadscrew machines (Metric thread only)

The table shows:

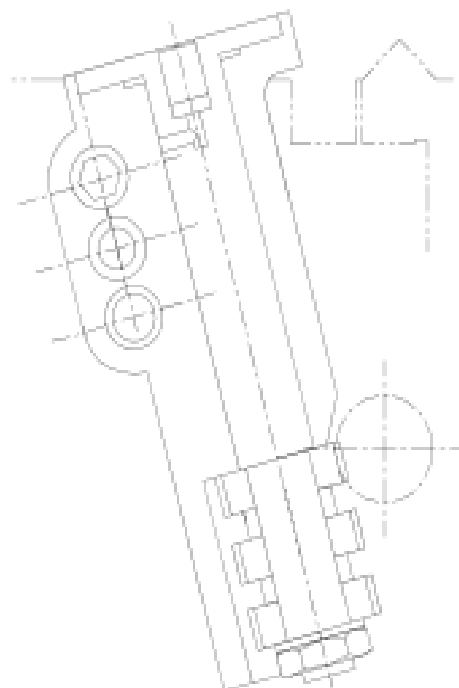
IN column 1: millimeter pitches to be cut.

28T, 30T, 32T: The number of teeth in “pitch-off gear” arranged to mesh with the leadscrew (this being selected from the stack, stored on the bottom of the dial spindle)

Dial graduation:

The dial numbers at which the half nut may be engaged under No. of teeth of pick-off gear.

mm	INDICATOR TABLE METRIC		
	DIAL GRADUATION		
	28T	30T	32T
0.40		1,3,5,7,9,11	
0.45		17	
0.50		1,3,5,7,9,11	
0.60		1,3,5,7,9,11	
0.70	1,4,7,10		
0.75		1,3,5,7,9,11	
1.00		1,3,5,7,9,11	
1.25		1,3,5,7,9,11	
1.50		1,3,5,7,9,11	
1.75	1,4,7,10		
2.00			1,4,7,10
2.25		1	
2.50		1,3,5,7,9,11	
2.80	1,7		
3.00		1,3,5,7,9,11	
3.50	1,4,7,10		
4.00			1,4,7,10
4.50		17	
5.00		1,3,5,7,9,11	
5.60	1		
6.00			1,4,7,10
7.00	1,4,7,10		



(3) Imperial threads on Metric leadscrew machines or Metric threads on Imperial lead screw machines

For these threads the half nut is kept engaged throughout the cutting of any one thread. This involves reversing the whole drive by means of the spindle control lever (19) at each end of the thread cutting pass whilst at the same time relieving or increasing the cut as required. (Threads ‘A’ may also be by this method)

10.MATINTENANCES AND SERVICE

10.1 LATHE ALIGNMENT

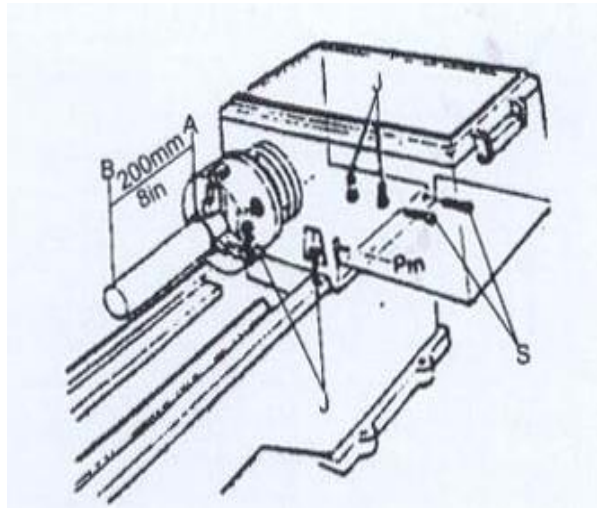
When the lathes is installed and ready for use, it is recommended to check the machine alignment before commencing work.

Alignment and leveling should be checked regularly to insure continued accuracy.

Adopt this procedure as follow:

Take a steel bar with a diameter of appr. 50mm and a length of appr. 200mm. Span it in the chuck without using the center. Then cut off a chip over a length of 150mm and measure the difference at A and B.

In order to correct a possible difference, loosen the screw (j) clamping the headstock on the bed. Adjust the headstock with setscrew(s). Repeat the above procedure until all measuring is correct. The lathe will be cutting correctly.



10.2 CROSS SLIDE AND COMPOUND REST

The graduation on the handwheel is in millimeter. The dovetail can be adjusted play with gib-strips. Make sure the dovetail are thoroughly clean.

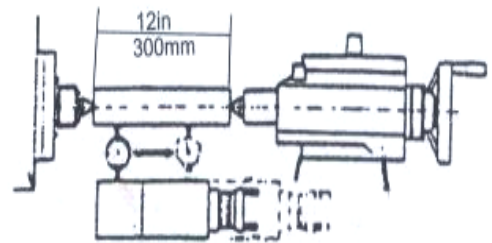
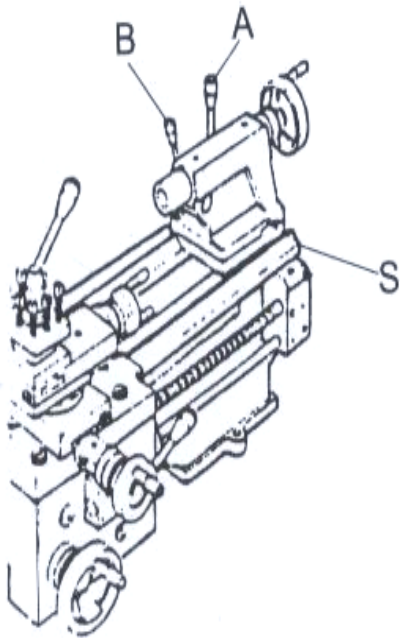
Grease before adjusting them. The adjustment procedure is as follows:

First loosen the rear set screw. Turn the front one until the slide moves smoothly without backlash. Then tighten the rear set screw. Provision is made for the elimination of backlash in the cross slide nut. Take off the dust plate mounting on the rear face of the carriage groove. Turn the cross traverse handwheel to move the cross feed nut until it get to the end of the feed leadscrew. Turn the socket screw clockwise as required. A 45 degree turning of the socket screw eliminates appr. 0.125mm backlash. Check from time to time until the cross slide moves smoothly.

10.3TAILSTOCK

The tailstock can be moved freely on the bed and fastened at any position by locking lever A. The tailstock quill can be fastened with lever B. For precise adjusting adjustment the tailstock can be adjusted crosswise. Slacken lever A and adjust the tailstock with set screw(s) on both sides of the tailstock body.

Place a ground steel bar with a length of appr. 300mm between the centers and measure with the measuring device mounted on the support, whether the distance on both sides of the bar is the same.

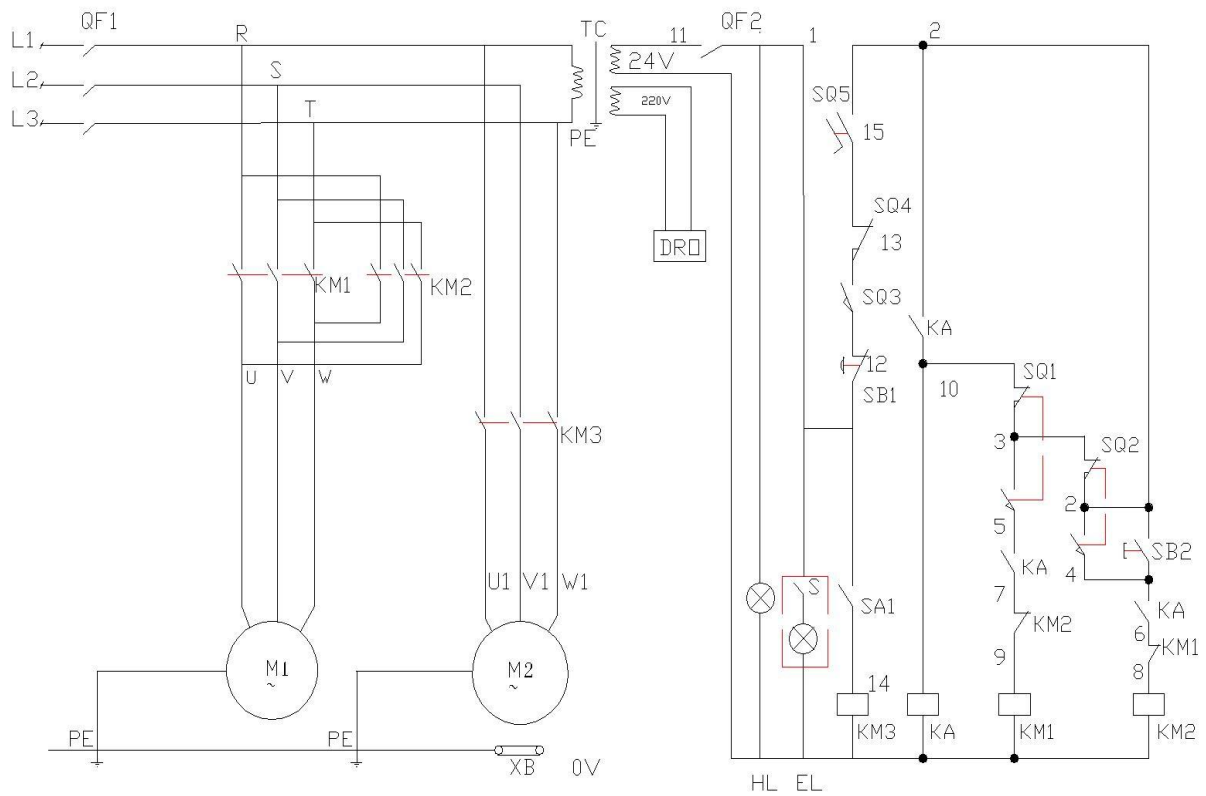


11.ELECTRIC CIRCUIT CONTROL

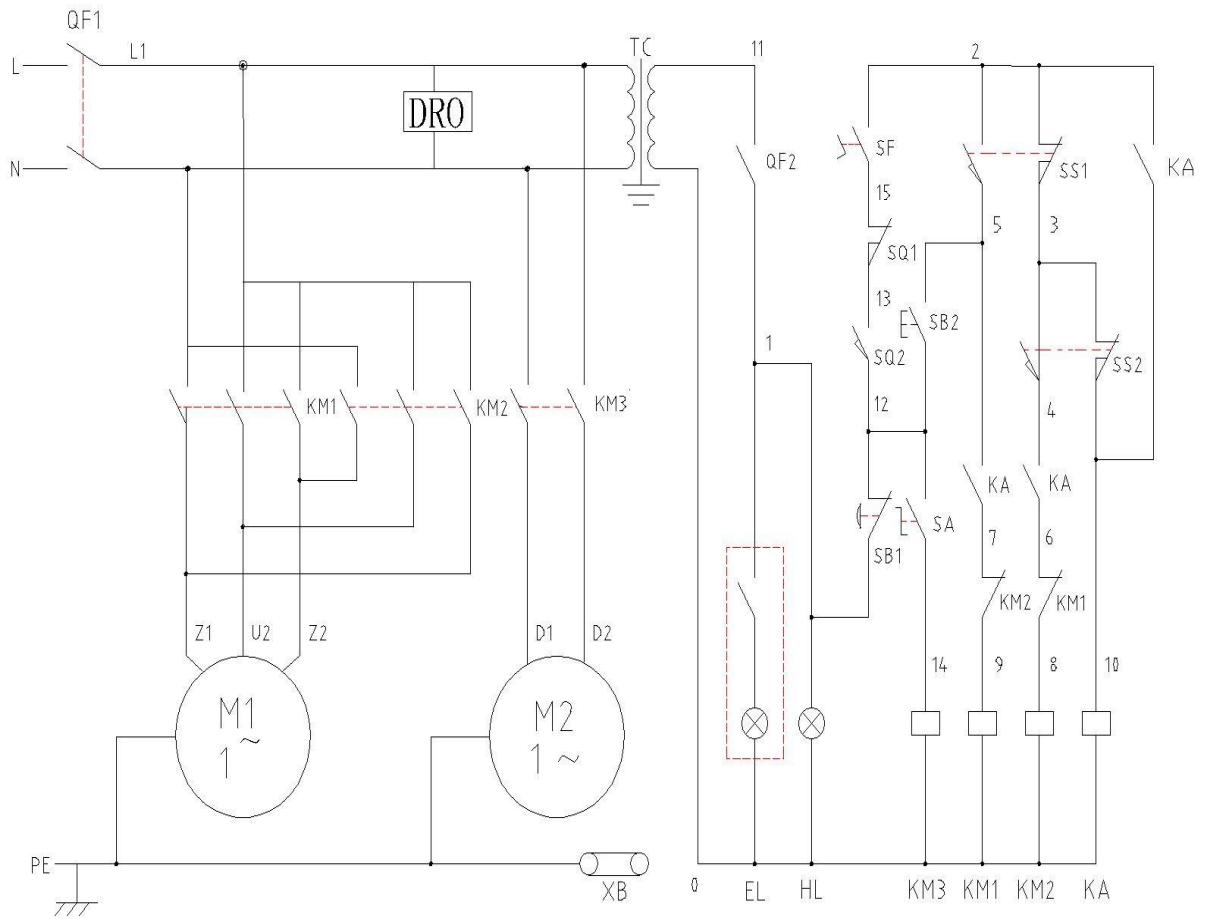
Connect power cable to the junction box. Make sure that the voltage and frequency used are consistent with those indicated on the machine name plate.

Make the machine grounded.

Viewed from pulley side, the main motor must run clockwise (that is, viewed from tailstock side, the spindle must run counterclockwise). If not, just exchange two power lines of the three.



Wiring Diagram for 3 phases

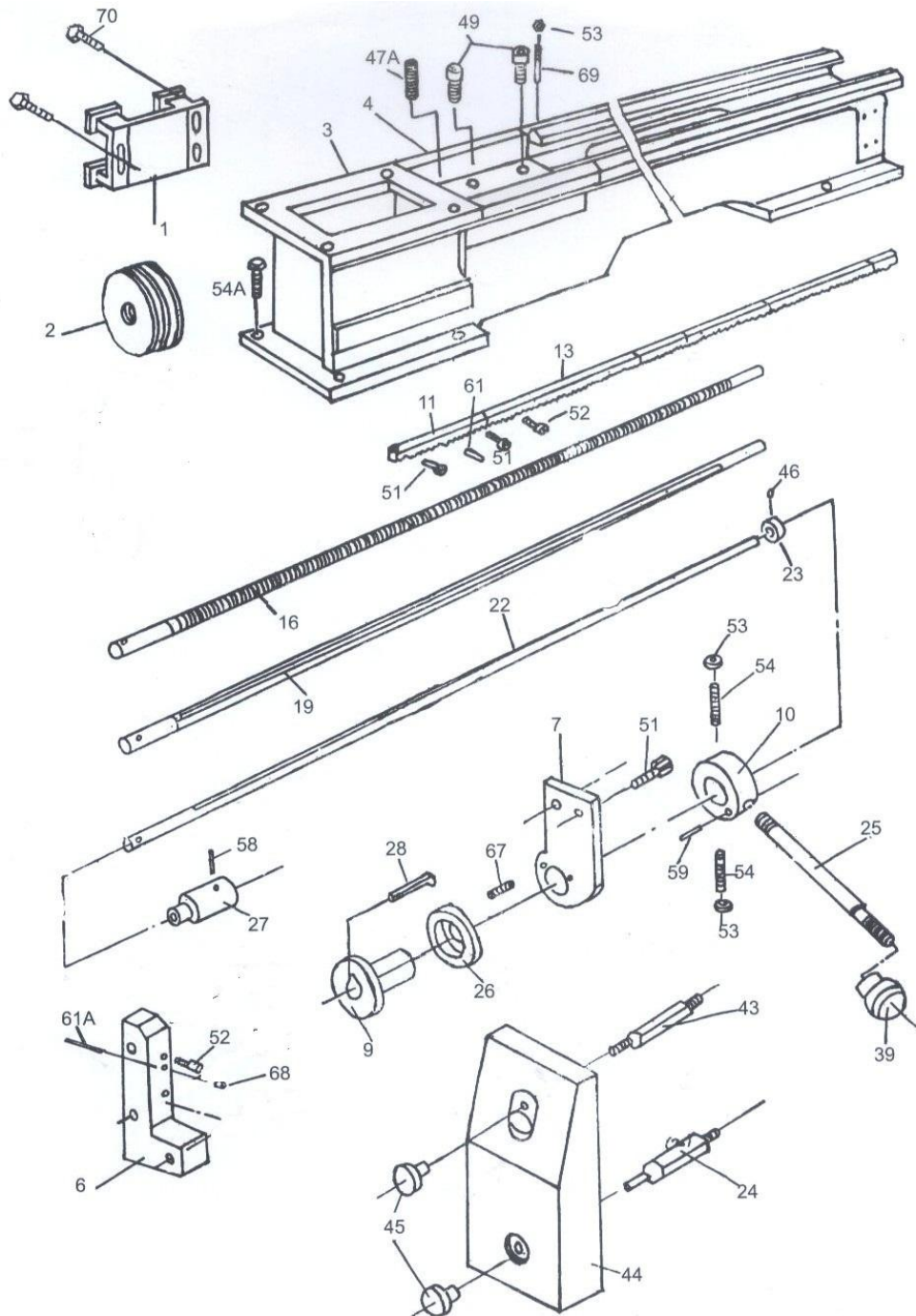


Wiring Diagram for 1 phase

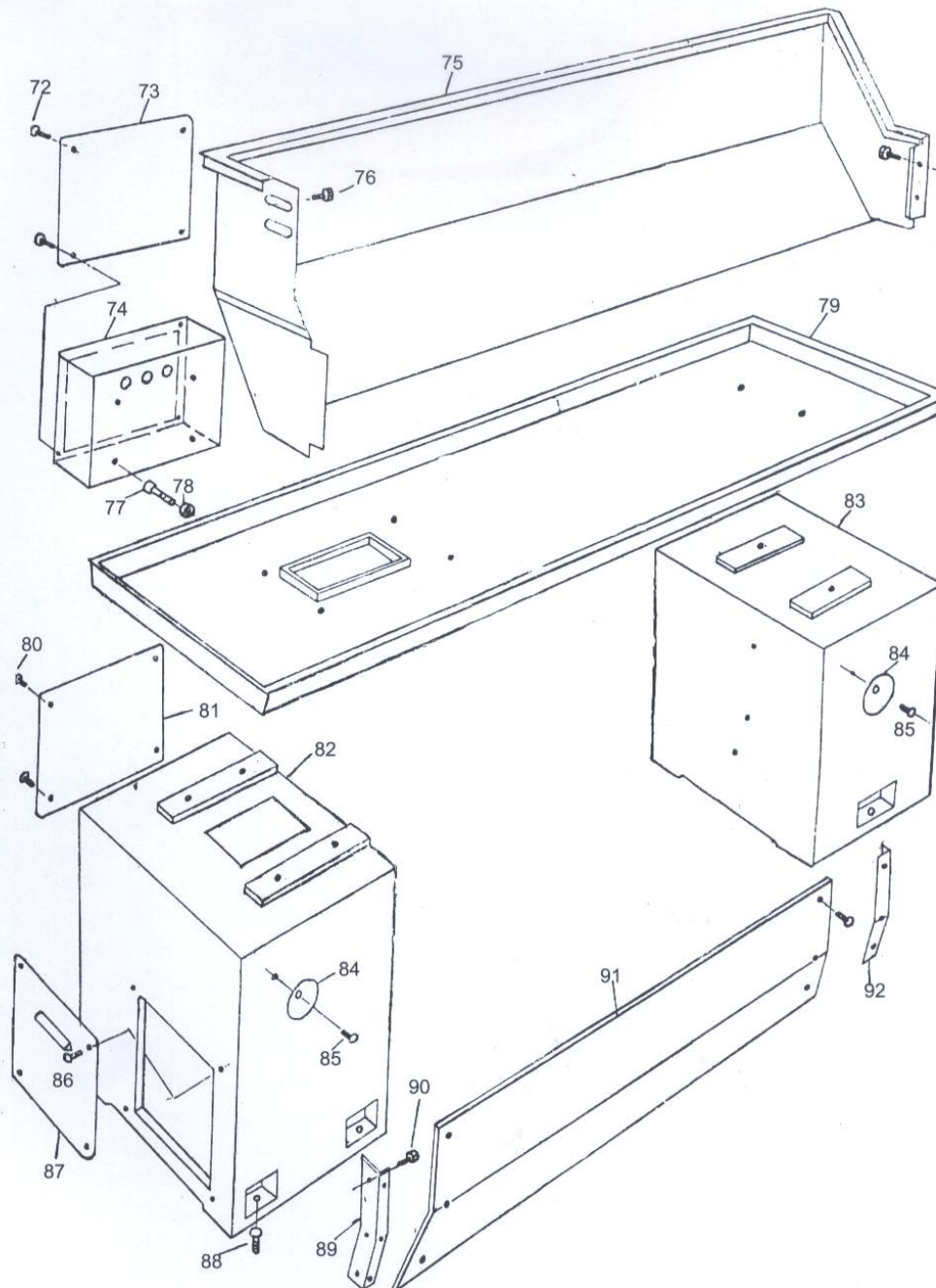
PARTS DRAWING&PARTS LIST

BE SUBJECT TO ALTERATION WITHOUT NOTICE

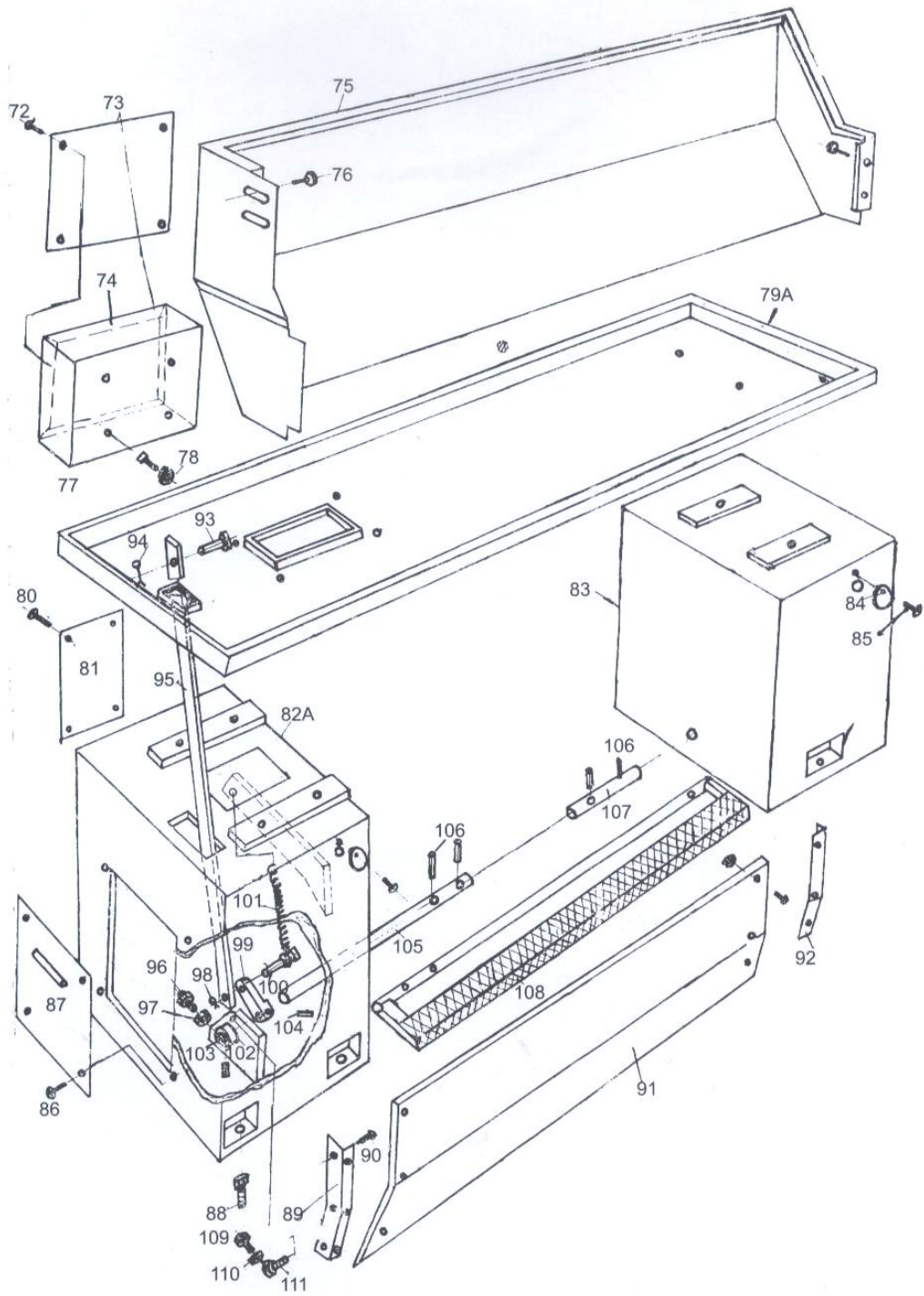
BED ASSEMBLY (1)



BED ASSEMBLY (2)



BED ASSEMBLY (3)

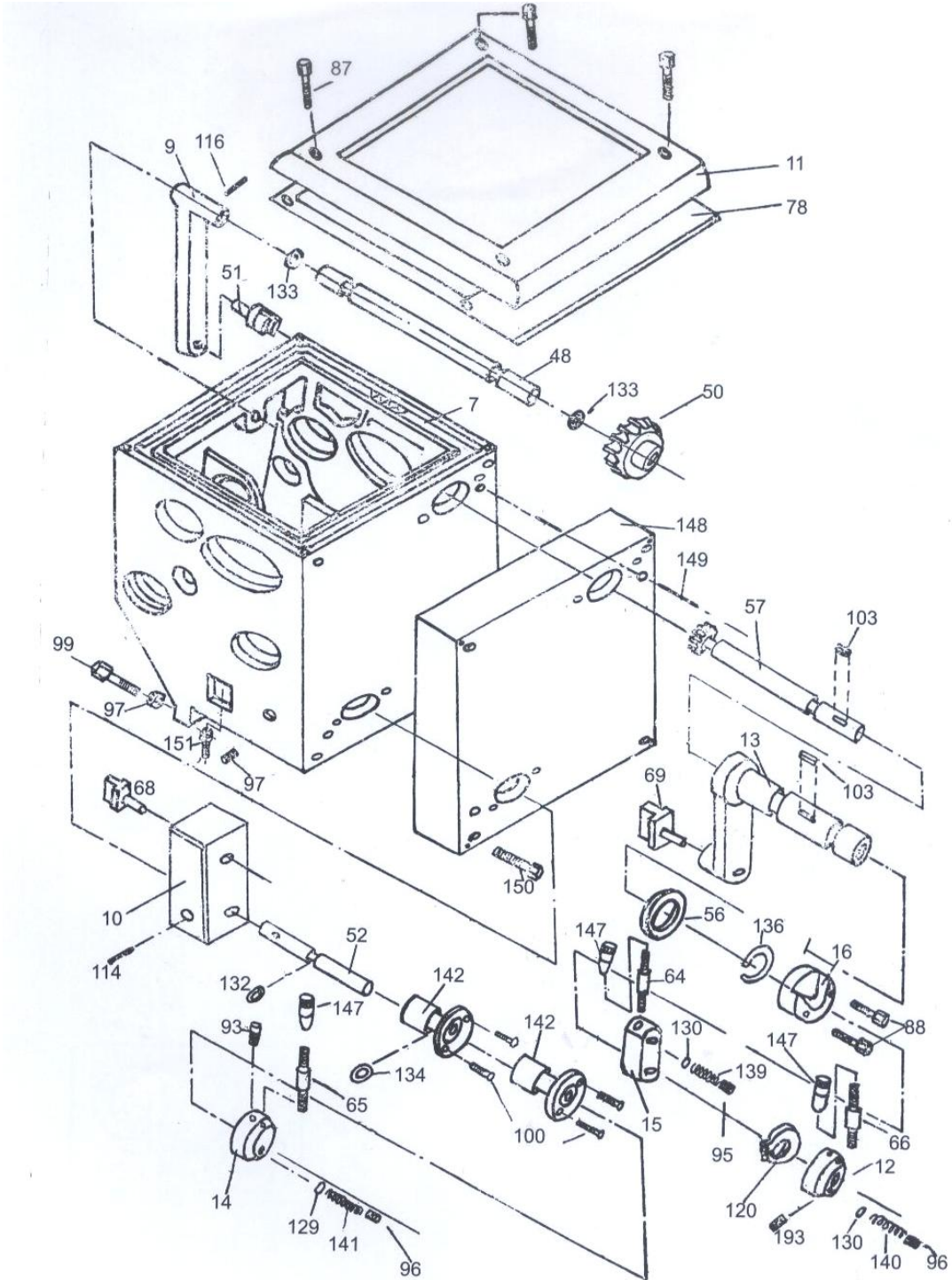


BED ASSEMBLY PARTS LIST

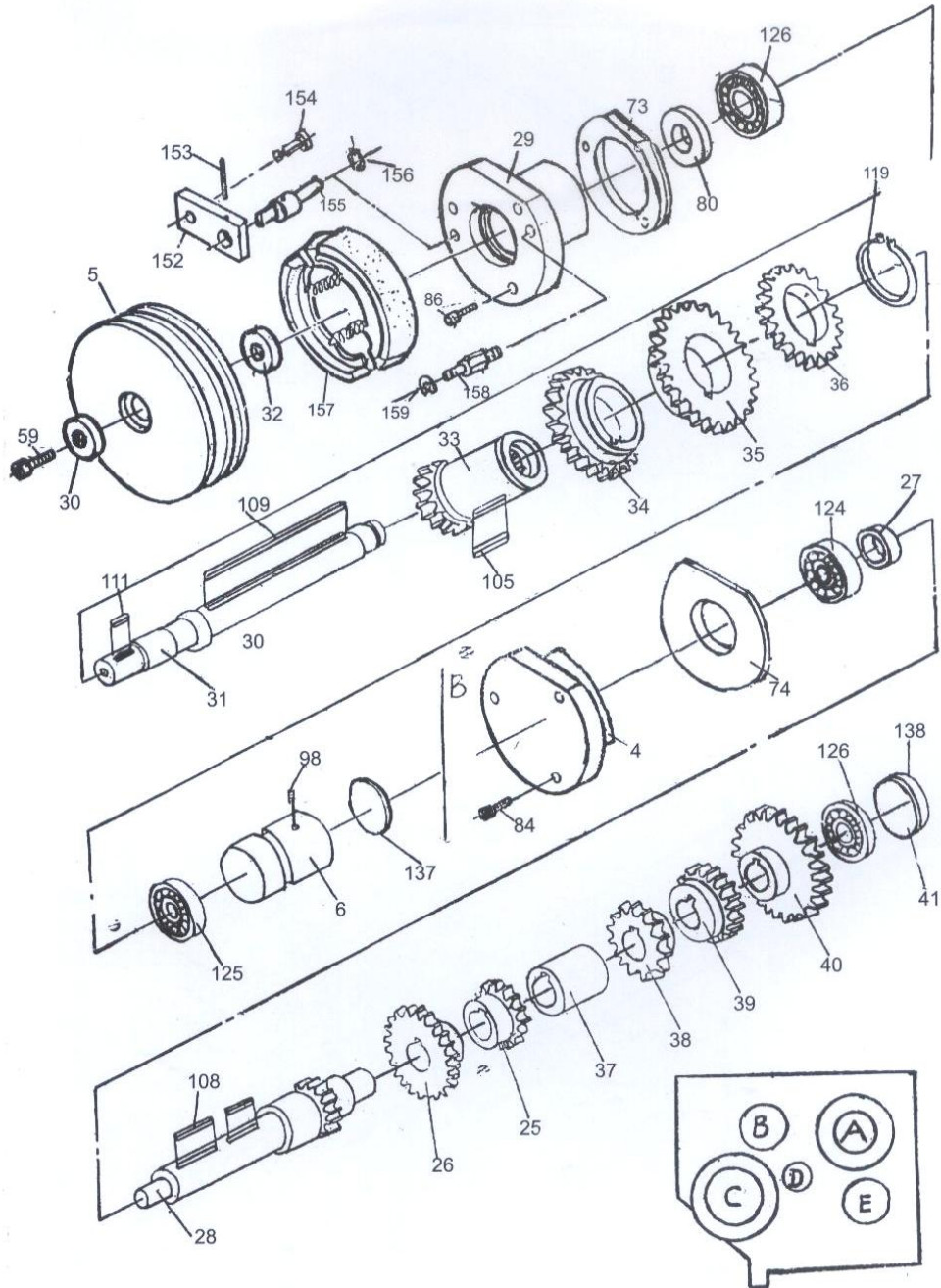
NO.	PART NO.	NAME	SPECIFICATIO N	REMARKS
1	C0636D-1037	Motor base		
2	C0636D-1027	Pulley		
3	C0636D-1001			
4	C0636D-1002			
6	C0636D-1003	Bracket		
7	C0636D-1011	Bracket		
9	C0636D-1015	Collar		
10	C6241-1026	Handle		
11	C0636D-1005	Rack		
13	C0636D-1004	Rack		
16	C0636D-1006	Leadscrew		
19	C0636D-1007	Feed rod		
22	C0636D-1008-1	Shaft		
23	C0636D-1022	Collar		
24	C0636D-1115	Shaft		
25	CD6241-01.026	Handle		
26	C6241-1028	Brake ring		
27	C0636D-1008-2	Collar		
28	01213	Key		
	01214-3	Oil pan		No shown
43	C0636D-1114	Screw		
44	C0636D-1116	Cover		
45	CD6241-02.008	Lock out		
46	TS-1522021	Screw	M5X8	
47A	TS-1523051	Screw	M6X16	
49	TS-1505061	Screw	M10X40	
51	TS-1503051	Screw	M6X20	
52	TS-1540061	Screw	M8X55	
53	TS-1540061	Nut	M8	
54	GHB1340-54B	Screw	M8x28	
54A	TS-1492061	Bolt	M12X60	
58	GHB1340-58B	Pin	3x25	
59	GHB1340-59B	Pin	6x25	
61	GHB1340-61B	Pin	6X28	
61A	GHB1340-61AB	Pin	6x55	
67	GHB1340-67B	Spring	1x7.5x25	
68	GHB1340-68B	Oil ball	8	
69	GHB1340-69B	Pin	8x60	
70	GHB1340A-70B	Bolt	M10X35	
72	GHB1340A-72B	Screw	M5X6	

NO.	PART NO.	NAME	SPECIFICATIO N	REMARKS
73	C0636D-1117	Cover		
74	C0636D-1118	Electric box		
75	C0636D-1029	Splash guard		
76	GHB1340A-76B	Screw	M6x10	
77	GHB1340A-77B	Screw	M6X20	
78	GHB1340A-78B	Nut	M6	
79A	C0636D-1046	Oil plate		
80	GHB1340A-80B	Screw	M6X10	
81	C0636D-1119	Cover		
82	C0636D-1120	Stand		
83	C0636D-1121	Stand		
86	GHB1340A-86B	Screw	M6x10	
87	C0636D-1122	Cover		
88	GHB1340A-88B	Screw	M12X50	
89	C0636D-1039	Bracket		
90	GHB1340A-90B	Screw	M12X50	
92	C0636D-1040	Bracket		
93	C0636D-1109	Break shaft		
94	GHB1340A-94B	Pin	2x12	
95	C0636D-1108	Rod		
99	C0636D-1110	Pedal		
100	C0636D-1107	Connect shaft		
101	22704	Spring		
102	GB884-86	Switch		
103	GHB1340A-103B	Screw	M8X8	
104	GHB1340A-104B	Pin	5x40	
105	C0636D-1049	Shaft-longer		
106	GHB1340A-106B	Pin	5x30	
107	CQ6230-1049	Drive shaft		
108	C0636D-1050	Pedal		
109	GHB1340A-109B	Screw	M10X60	
110	GHB1340A-110B	Nut	M10	
111	22702	Support		

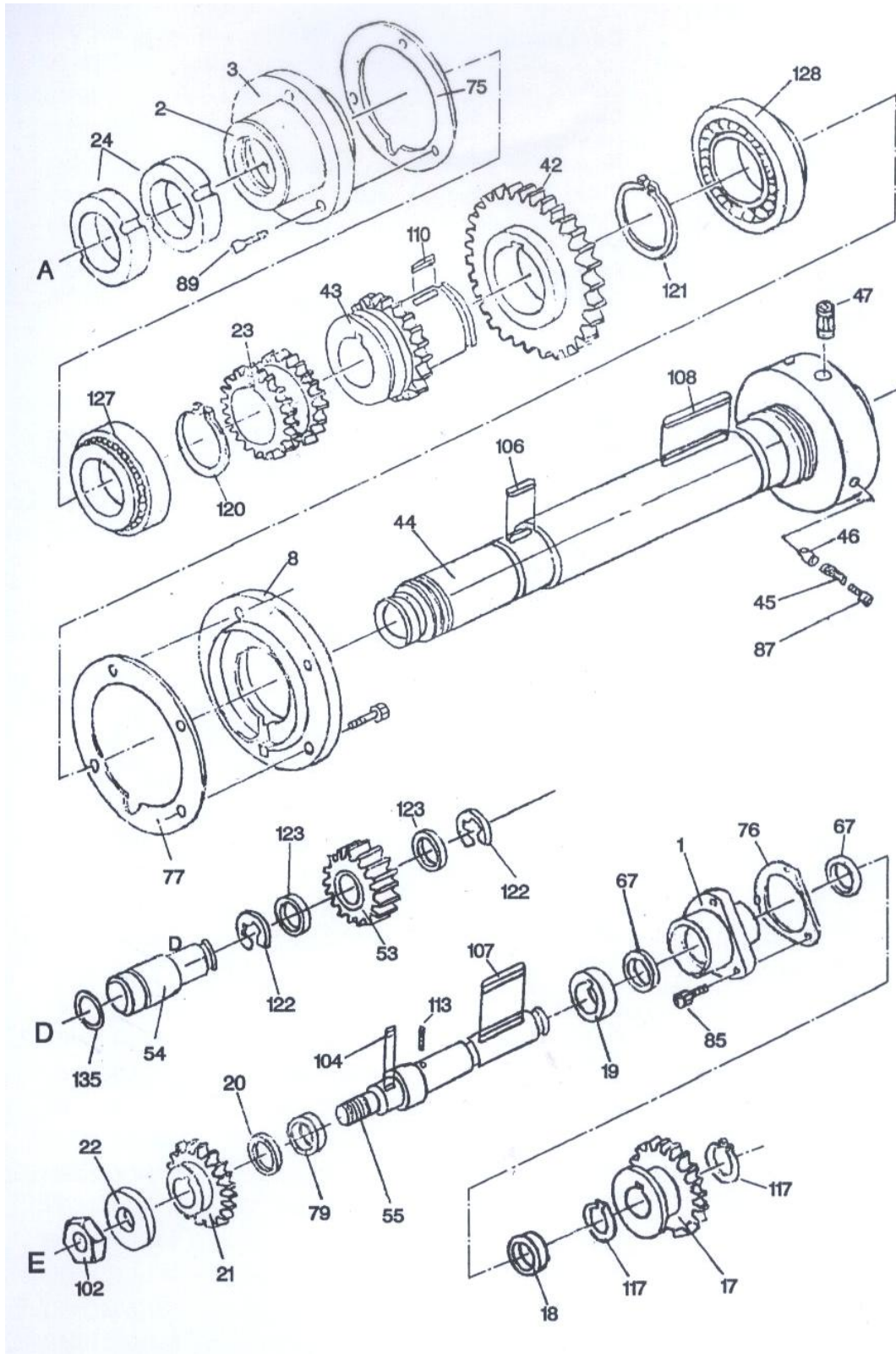
HEADSTOCK ASSEMBLY (1)



HEADSTOCK ASSEMBLY (2)



HEADSTOCK ASSEMBLY (3)



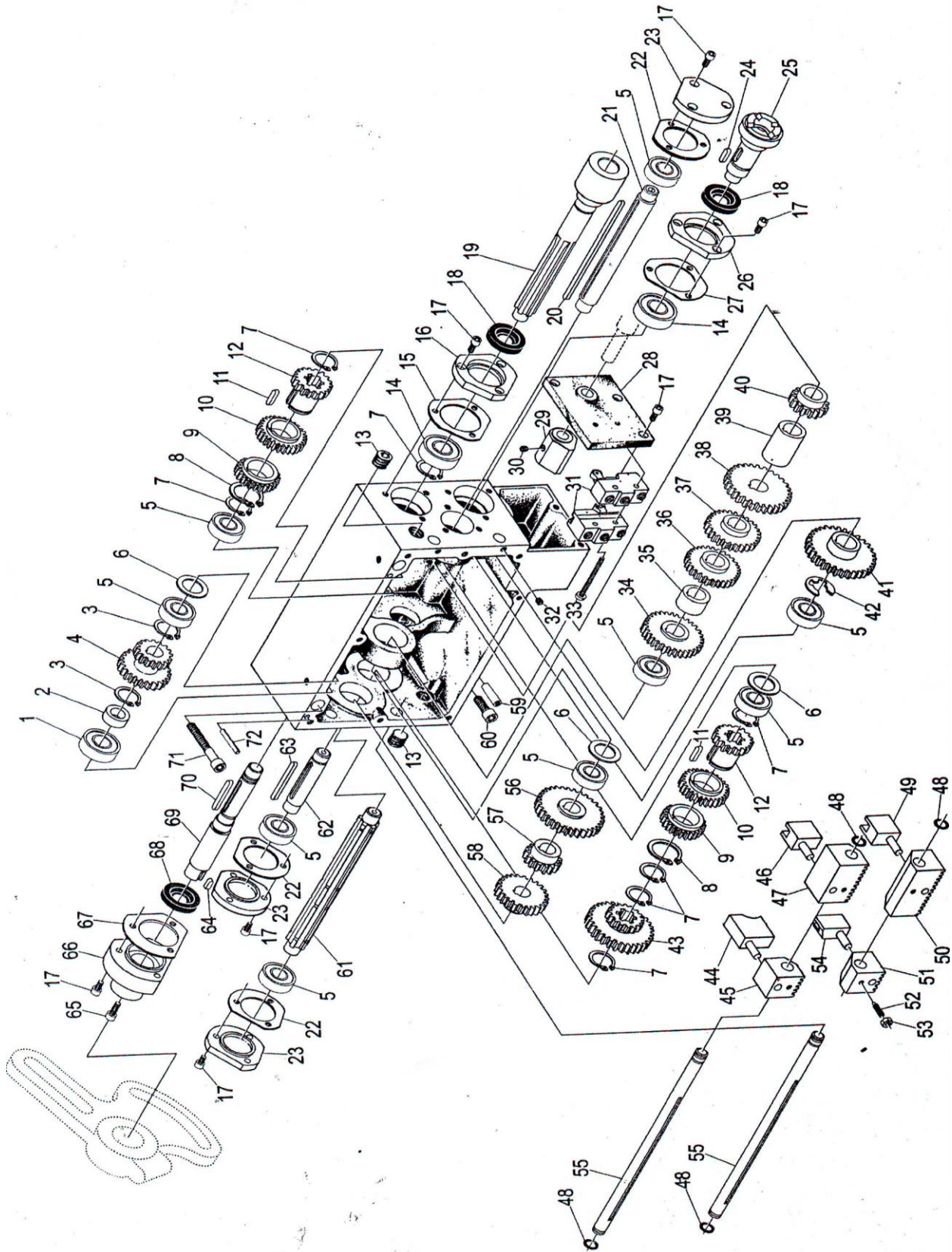
HEADSTOCK ASSEMBLY PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	C0636D-2021	Collar		
2	C0636D-2044	Collar		
3	C0636D-2045	Cover		
4	C0636D-2017	Cover		
5	C0636D-2014	Pulley		
6	C0636D-2011	Plug		
7	C0636D-2001	Casting		
8	C0636D-2047	Front cover		
9	C0636D-2041	Shift lever		
10	C0636D-2028	Shaft housing		
11	C0636D-2050	Cover		
12	C0636D-2037	Handle body		
13	C0636D-2034	Shaft collar		
14	C0636D-2032	Handle body		
15	C0636D-2036	Handle block		
16	C0636D-2039	Hub		
17	04201	Gear	37T	
18	C0632A-2026	Washer		
20	C0636D-2026	Washer		
21	C0636D-8013	Gear	40T	
22	C0636D-2026	Washer		
23	04207	Gear	37T	
24	C0636D-2060	Lock nut		
25	04209	Gear	43T	
26	04210	Gear	51T	
27	C0636D-2015	Washer		
28	04212	Gear shaft	16T	
29	C0636D-2012	Cover		
30	GB95	Washer		
31	C0636D-2010	Shaft		
33	04217	Gear	21T	
34	04218	Gear	29T	
35	04219	Gear	46T	
36	04220	Gear	38T	
37	C0636D-2016	Collar		
38	04222	Gear	26T	
39	04223	Gear	34T	
40	04224	Gear	53T	
41	C0636D-2018	Plug		
42	04226	Gear	74T	

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
43	04227	Gear	37T	
44	C0636D-2049	Spindle		
48	C0636D-2043	Shaft		
50	C0636D-2042	Gear	51T	
51	C0636D-2040	Collar		
52	C0636D-2031	Shaft		
53	04237	Gear	30T	
54	C0636D-2019	Shaft		
55	C0636D-2020	Shaft		
56	C0636D-2034-1	Washer		
57	C0636D-2035	Shaft	17T	
59	04243Z	Screw		
64	C0636D-2062	Handle		
65	C0636D-2061	Handle		
66	C0636D-2061	Handle		
67	GB/T18324-2001	Collar		
68	C0636D-2027	Shift fork		
69	C0636D-2033	Shift fork		
73	C0636D-2013	Gasket		
74	C0632A-2004	Grasket		
75	C0632A-2046	Grasket		
76	C0632A-2022	Grasket		
77	C0632A-2048	Grasket		
78	C0636D-2002	Grasket		
79	GB13871	Oil seal	22X35X7	
80	04508	Oil seal		
84	TS1501041	Screw	M4X12	
85	TS1502041	Screw	M5X16	
86	TS1503031	Screw	M6X16	
87	TS1504041	Screw	M8X20	
88	TS1523051	Screw	M6X20	
89	TS1523061	Screw	M6X25	
93	TS1523041	Screw	M6x12	
95	TS1524011	Screw	M8x8	
96	TS1524021	Screw	M8x10	
97	TS1524031	Screw	M8x12	
98	TS1524041	Screw	M8x16	
99	GHB1340-99	Screw	M8x40	
100	GHB1340-100	Screw	M4x8	
102	TS-1540081	Nut	M12	
103	GHB1340-103	Key	5X15	
104	GHB1340-104	Key	5X18	

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
105	GHB1340-105	Key	5X50	
106	GHB1340-106	Key	6X40	
107	GHB1340-107	Key	6X55	
108	GHB1340-108	Key	6X120	
110	GHB1340-110	Key	8X18	
111	GHB1340-111	Key	5X20	
113	GHB1340-113	Pin	3X10	
114	GHB1340-114	Pin	4X18	
116	GHB1340-116	Pin	5X32	
117	GHB1340-117	Clip	20	
119	GHB1340-119	Clip	35	
120	GHB1340-120	Clip	50	
121	GHB1340-121	Clip	72	
122	GHB1340-122	Clip	42	
123	GHB1340-123	Bearing	700104E	
124	GHB1340-124	Bearing	240E	
125	GHB1340-125	Bearing	203	
126	GHB1340-126	Bearing	204D	
127	GHB1340-127	Bearing	7210E	
128	GHB1340-128	Bearing	7212D	
129	GHB1340-129	Steel ball	5	
130	GHB1340-130	Steel ball	6	
133	GHB1340-133	O-Ring	2.4X14	
134	GHB1340-134	O-Ring	2.4X20	
135	GHB1340-135	O-Ring	2.4X25	
136	GHB1340-136	O-Ring	3.1X30	
138	GHB1340-138	O-Ring	3.1X47	
139	GHB1340-139	Spring	1X6X7	
140	GHB1340-140	Spring	1X6X25	
141	GHB1340-141	Spring	0.9X4.4X19	
142	C0636D-2030	Shif hub		
147	GHB1340-147	Lever		
148	C0636D-2001-1	Frame		
149	GHB1340-149	Pin	6X60	
150	GHB1340-150	Screw	M6X50	
151	GHB1340-151	Screw	M10X35	

GEARBOX ASSEMBLY (1)

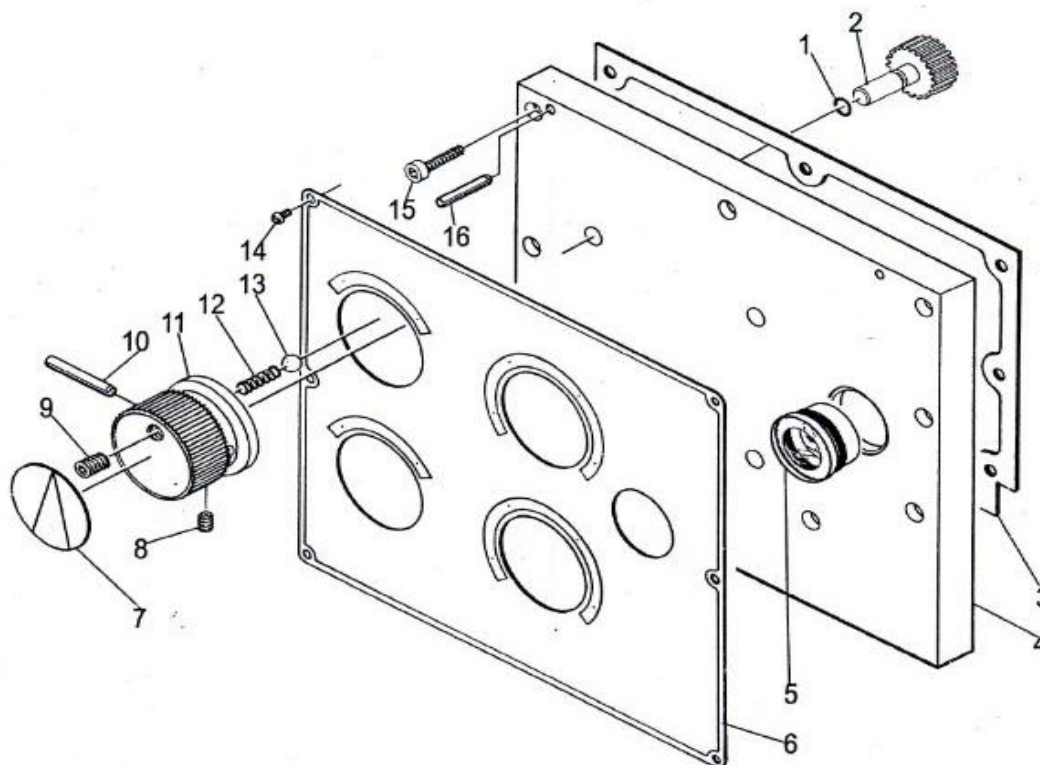


GEARBOX PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	GB/T276-94	Bearing	6203-2RS	
2	C0636D-3021	Collar		
3	GB894.2-86	Ring	16	
4	C0636D-3022	Gear		
5	GB894.2-86	Bearing	6202-2RS	
6	C0636D-3023	Spacer		
7	GB894.2-86	Ring	20	
8	GB894.2-86	Ring	28	
9	C0636D-3005-1	Gear		
10	C0636D-3005-2	Gear		
11	GB1096-79	Key	C4X22	
12	C0636D-3005-3	Gear		
13	Q/ZB285-3	Oil plug	ZG3/8"	
14	GB/T276-86	Bearing	6004-2RS	
15	C0636D-3032-1	Spacer		
16	C0636D-3032	Cover		
17	GB70-85	Screw	M5X12	
18	HG4-692-67	Oil seal	25X40X7	
19	C0636D-3024	Shaft		
20	GB1096-79	Key	C4X145	
21	C0636D-3019	Shaft		
22	C0636D-3034-1	Spacer		
23	C0636D-3034	Cover		
24	GB1096-79	Key	5X18	
25	C0636D-3006	Shaft		
26	C0636D-3033	Cover		
27	C636D-3033-1	Spacer		
28	C0636D-3045	Cover		
29	C0636D-1034	Arm		
30	GB80-85	Screw	M6X8	
31	LXW5-11G2	Switch		
32	GB79-85	Screw	M5X6	
33	GB67-85	Screw	M4X45	
34	C0636D-3012	Gear		
35	C0636D-3013	Spacer		
36	C0636D-3014	Gear		
37	C0636D-3015	Gear		
38	C0636D-3016	Gear		
39	C0636D-3017	Sleeve		
40	C0636D-3018	Gear		

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
41	C0636D-3007	Gear		
42	GB896-86	Ring	15	
43	C0636D-3004	Gear		
44	C0636D-3036	Shifting fork		
45	C0636D-3027	Rack		
46	C0636D-3037	Fork		
47	C0636D-3026	Rack		
48	GB1235-76	O-Ring		
49	C0636D-3037	Fork		
50	C0636D-3029	Rack		
51	C0636D-3030	Rack		
52	GB79-85	Screw	M4X16	
53	GB6170-86	Nut	M4	
54	C0636D-3039	Fork		
55	C0636D-3025	Shaft		
56	C0636D-3011	Gear		
57	C0636D-3010	Gear		
58	C0636D-3009	Gear		
59	GB117-86	Thread	8X26	
60	GB70-85	Screw	M8X25	
61	C0636D-3003	Shaft		
62	C0636D-3008	Shaft		
63	GB1096-79	Double Key	4X55	
64	GB1096-79	Single Key	5X18	
65	GB70-85	Screw	M6X16	
66	C0636D-3035	Bracket		
67	C0636D-3035-1	Spacer		
68		Bearing		
69	C0636D-3020	Shaft		
70	GB1096-79	Double key	5X5X45	
71	GB70-85	Screw	M8X65	
72	GB879-86	Pin	4X30	

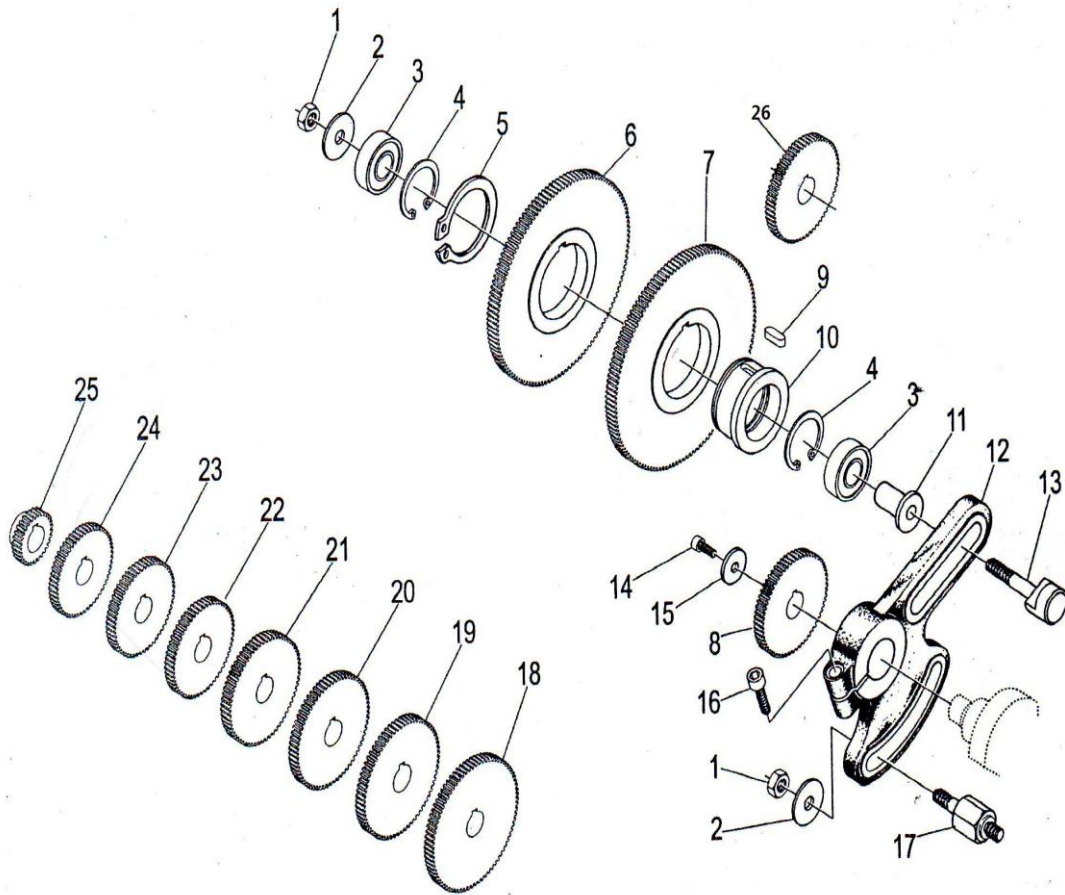
GEARBOX ASSEMBLY (2)



GEARBOX PARTS LIST (2)

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	GB1235-76	O-Ring	7X1.9	
2	C0636D-3028	Shaft		
3	C0636D-3002-1	Gasket		
4	C0636D-3002	Cover		
5	GB1160.1-89	Glass	A12	
6	C0636D-3057	Plate		
7	C0636D-3042	Plate		
8	GB80-85	Screw	M6X8	
9	GB77-85	Screw	M6X10	
10	GB879-86	Pin	5X40	
11	C0636D-3043	Knob		
12	GB2089-80	Sping	1X5X20	
13	GB308-89	Stell ball	6	
14	GB818-85	Screw	M4X8	
15	GB70-85	Screw	M5X25	
16	GB879-86	Spring pin	5X40	

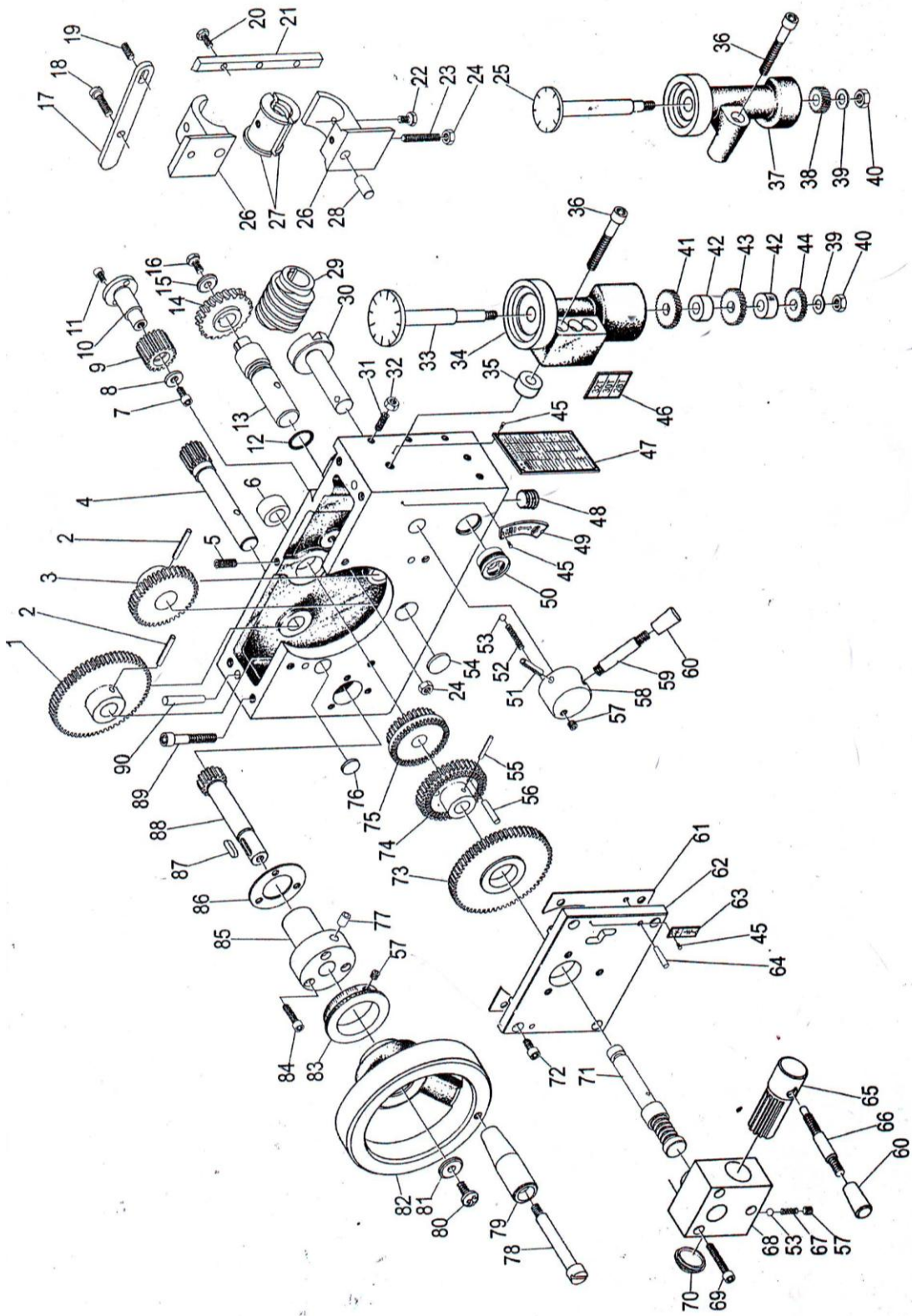
CHANGE GEAR ASSEMBLY



CHANGE GEAR PARTS LIST

NO.	PART NO.	NAME	SPECIFICATIO N	REMARKS
1	GB6170-86	Nut	M10	
2	GB97-86	Sleeve	10	
3	GB278-89	Bearing	80203	
4	GB893.1-87	Ring	40	
5	GB894.1-86	Ring	55	
6	CQ6230-3038C-1	Gear	M1.25X120T	
7	CQ6230-3038C-2	Gear	M1.25X127T	
8	CQ6230-8020	Gear	M1.25X60T	
9	GB1096-79	Key	6X18	
10	CQ6230-3038C-3	Bearing		
11	C0636D-8003	Sleeve		
12	C0636D-8001	Frame		
13	C0636D-8002	Bolt		
14	GB70-85	Screw	M6X15	
15	GB97-86	Sleeve	6	
16	GB70-85	Screw	M8X30	
17	33-3029	Bolt		
18	C0636D-8021	Change gear	M1.25X63	
19	C0636D-8019	Change gear	M1.25X57	
20	C0636D-8018	Change gear	M1.25X56	
21	C0636D-8017	Change gear	M1.25X54	
22	C0636D-8016	Change gear	M1.25X52	
23	C0636D-8015	Change gear	M1.25X46	
24	C0636D-8014	Change gear	M1.25X40	
25	C0636D-8012	Change gear	M1.25X44	
26	C0636D-8013	Change gear	M1.25X30	

APRON ASSEMBLY



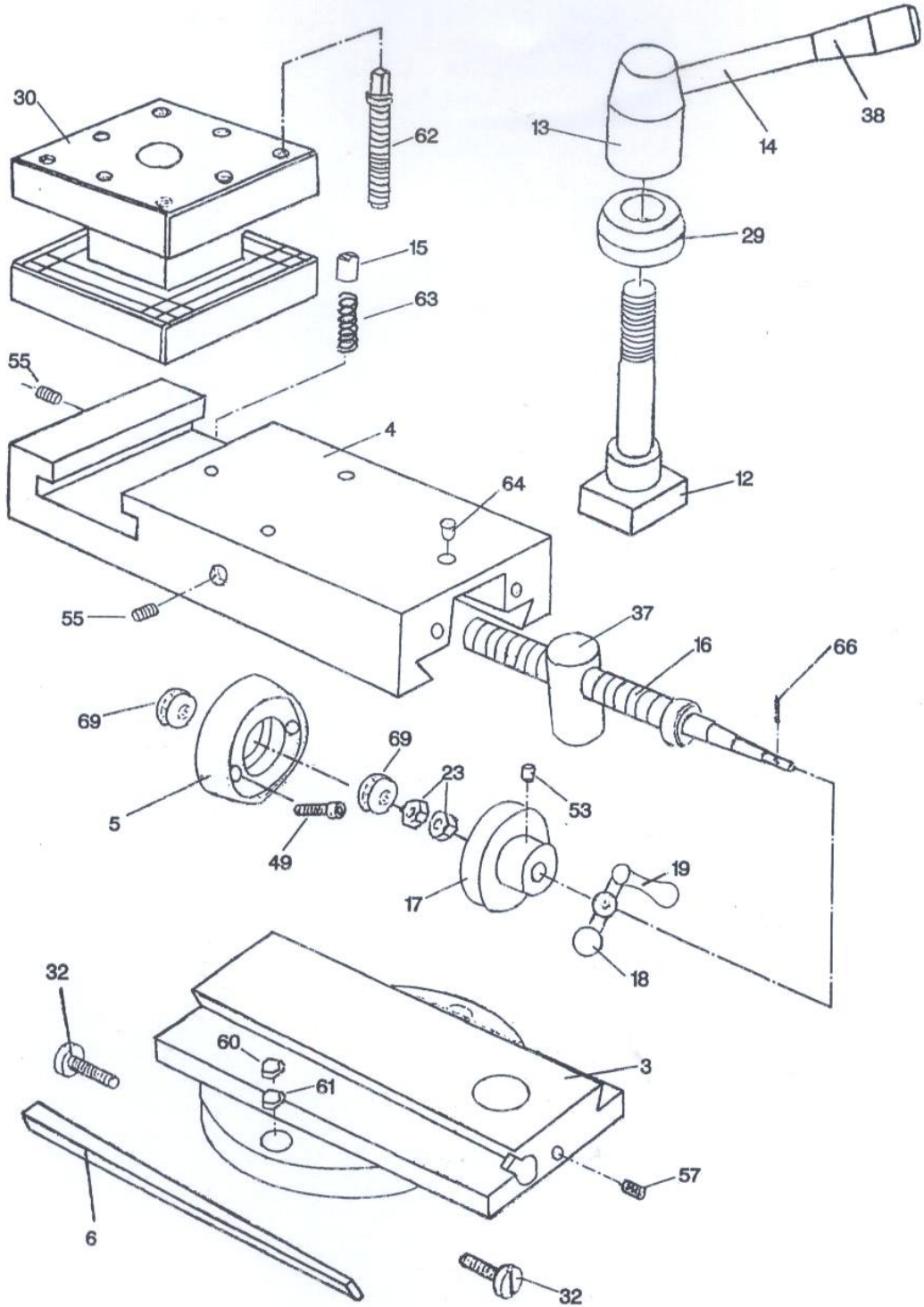
APRON PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	C0636D-06213	Gear	M1.5X60T	
2	GB879-86	Pin	5X30	
3	C0636D-06224	Gear	M1.5X18T	
4	C0636D-06214	Shaft	M1.5X11T	
5	GB79-85	Screw	M6X16	
6	C0636D-4007	Sleeve		
7	GB70-85	Screw	M6x12	
8	GB97-2000	Washer	6	
9	C0636D-06231	Gear		
10	C0636D-4014	Shaft		
11	GB70-85	Screw	M5X12	
12	GB1255-76	O-Ring		
13	C0636D-4017	Shaft		
14	C0636D-4016	Gear		
15	GB97-2000	Washer	6	
16	GB5783-86	Screw	M6X12	
17	C0636D-0428Z	Interlock		
18	GB6170-86	Screw	M6X20	
19	GB77-85	Screw	M6X12	
20	GB5783-86	Screw	M6X20	
21	C0636D-4020	Gib		
22	GB5783-86	Screw	M6X10	
23	GB77-85	Screw	M6X35	
24	GB6170-85	Nut	M6	
26	C0636D-4024Z	Half nut base		
27	C0636D-4025	Half nut		
28	GB119-86	Pin	8X16	
29	C0636D-4026	Worm		
30	C0636D-4023	Cam shaft		
31	GB80-85	Screw	M5X16	
32	GB41-86	Nut	M5	
33	33-4040A	Dial indicator		For metric
34	33-4039A	Dial body		For metric
35	32-06206	Washer		
36	GB70-85	Screw	M8X50	
37	33-4039B	Dial body		For imperial
38	33-4045A	Helical Gear		
39	GB95-85	Washer	8	
40	GB41-86	Nut	M8X50	

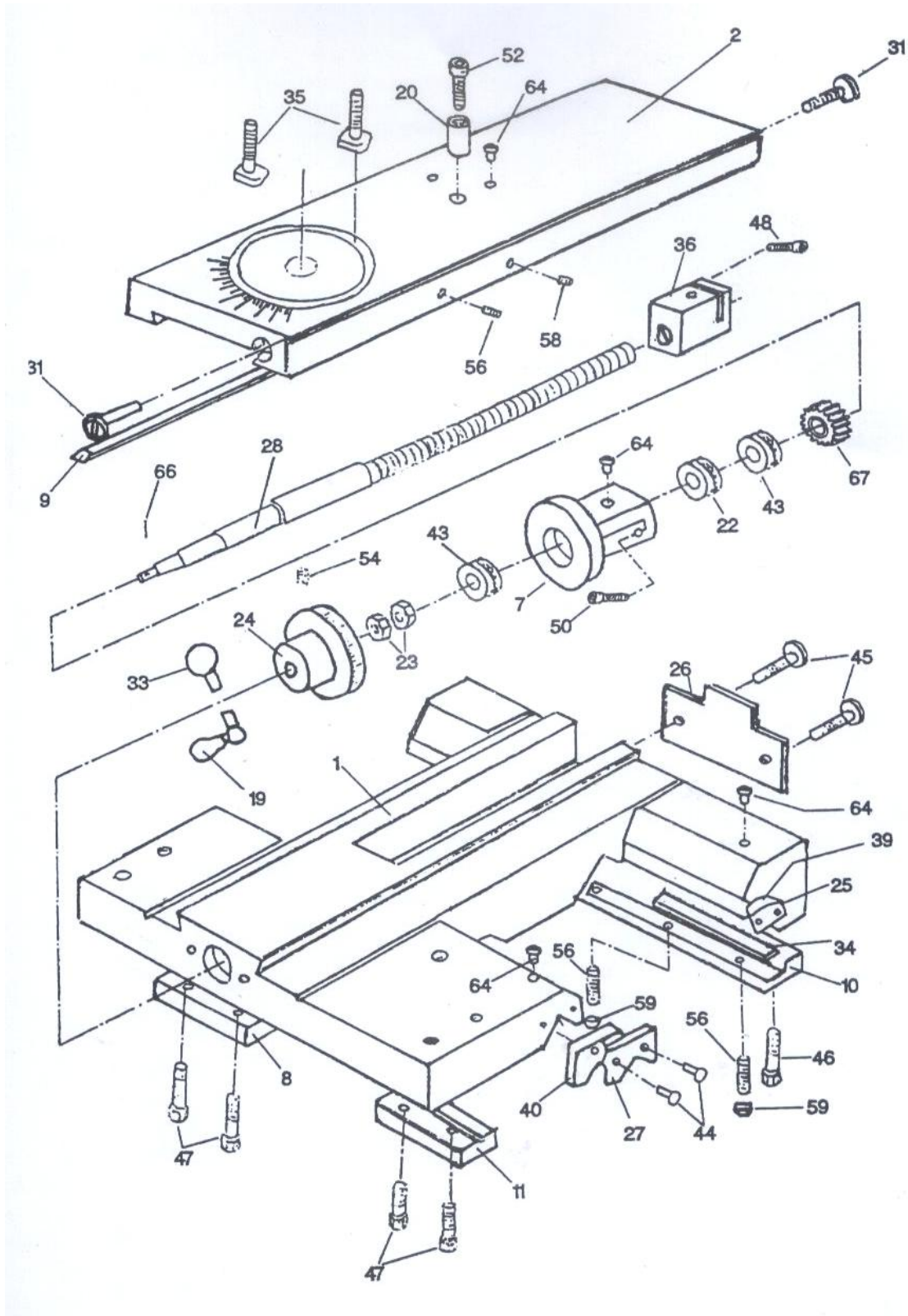
NO.	PART NO.	NAME	SPECIFICATION	REMARKS
41	33-4043	Gear		
42	32-06237	Spacer		
43	33-4042	Gear		
44	33-4041	Gear		
45	GB827-86	River	2X5	
46	33-4048	Gear chart		
47	33-4046	Indicator table		
48	Q/ZG285.3	Drain plug	1/8"	
49	33-4050	Indicator plate		
50	GB1160-89	Glass	A20	
51	GB879-86	Pin	5X35	
52	GB2089-80	Spring		
53	GB308-77	Steel Ball		
54	C0636D-4018	Plug		
55	GB879-86	Pin	3X25	
56	GB119-85	Pin	5X25	
57	GB77-85	Screw	M6X6	
58	C0636D-4022	Handle		
59	C0636D-4021	Lever		
60	GB1342-73	Knob	M8X40	
61	C0636D-4010Z-1	Spacer		
62	C0636D-4010Z	Front cover		
63	33-4047	Indicator plate		
64	GB117-86	Pin	5X20	
65	C0636D-4012	Cam shaft		
66	C0636D-4013	Change lever		
67	GB2089-80	Sping		
68	C0636D-4011Z	Bracket		
69	GB70-85	Screw	M6X35	
70	C0636D-4019	Plug		
71	C0636D-4008	Shaft		
72	GB70-85	Screw	M6X16	
73	06220	Gear		
74	06219-1	Gear		
75	06218	Gear		
77	GB1155-79	Ball cap		
78	CQ6230-4033	Bolt		
79	CQ6230-4032	Handle		
80	GB818-85	Screw	M6X15	
81	GB5287-2002	Washer	6	
82	C0636D-4004	Handlewheel		

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
83	C0636D-4003	Dial		
84	GB70-85	Screw	M5X25	
85	C0636D-4002	Bracket		
86	C0636D-4002-1	Spacer		
87	GB1096-79	Double key	5X5X20	
88	06212	Gear shaft		
89	GB70-85	Screw	M8X30	
90	GB117-85	Pin	8X40	

CROSS SLIDE & COMPAUND (1)



CROSS SLIDE & COMPOUND (2)

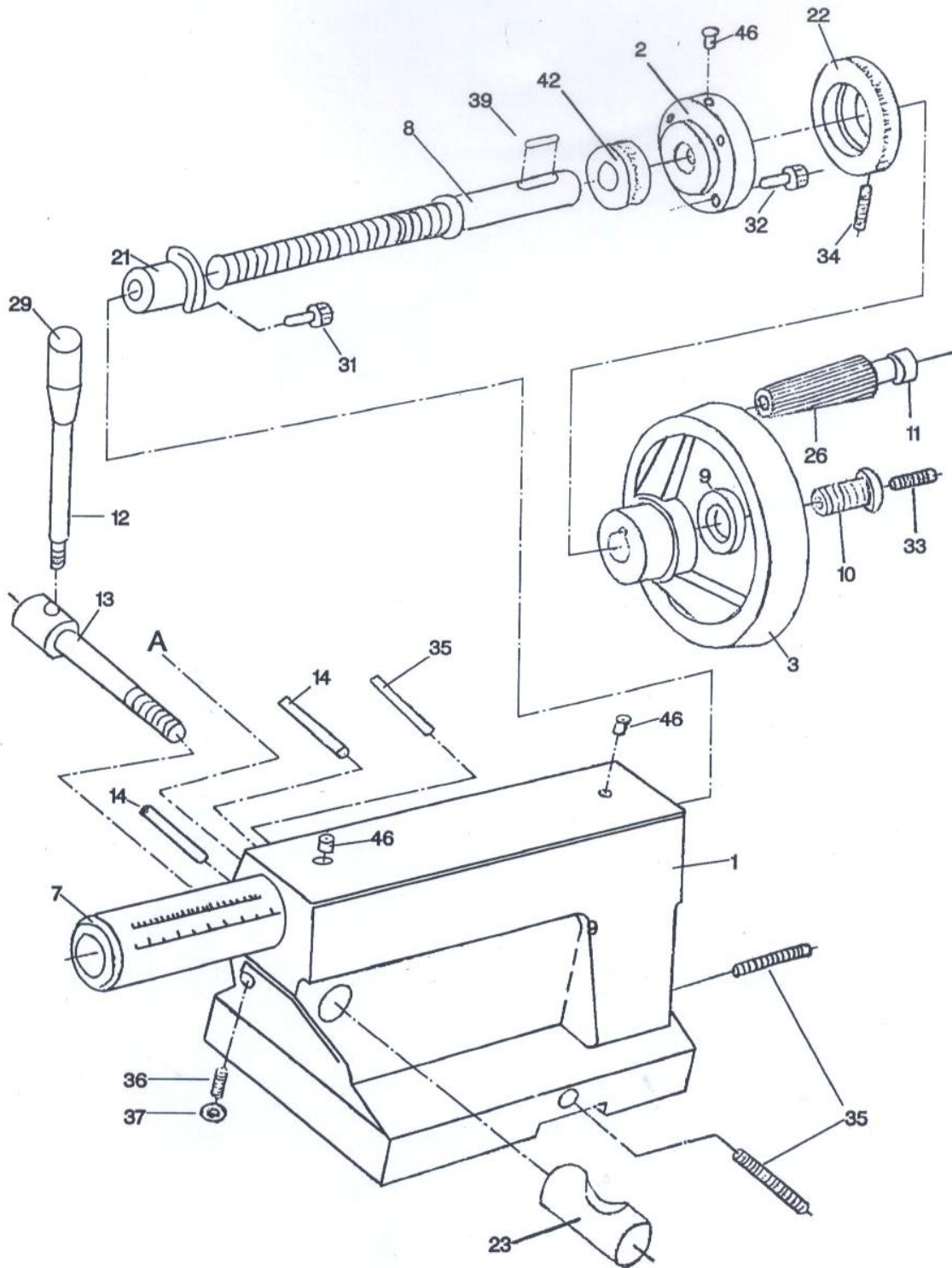


CROSS SLIDE&COMPAOUND PARTS LIST

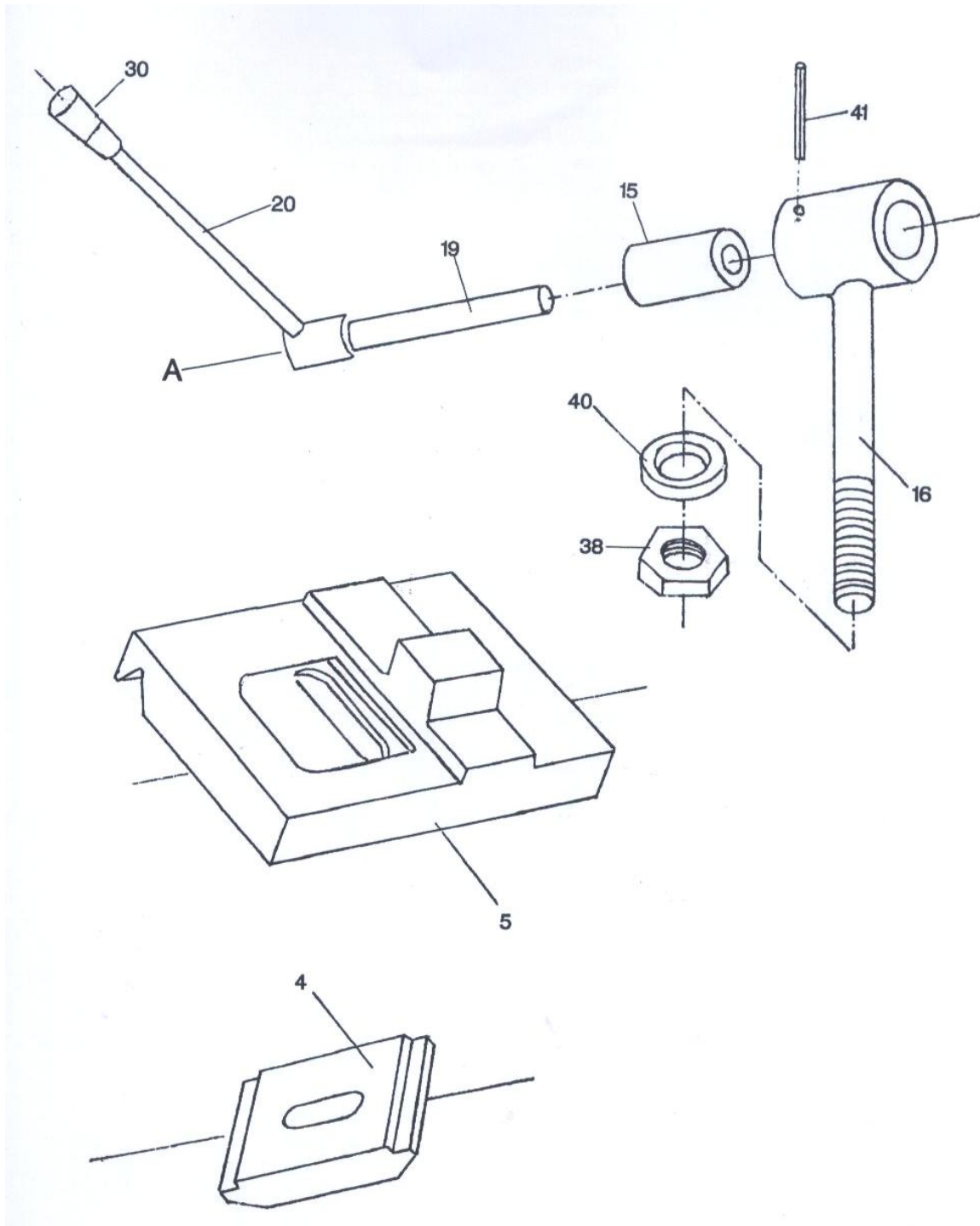
NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	C0636D-5108	Slide		
2	C0636D-5106	Slide Axis		
3	GB70-85	Screw	M6x16	
4	C0636D-5107	Bushing		
5	GB1155-79	Oil cup		
6	C0636D-5102	Cross slide		
7	C0636D-5103	Bolt		
8	C0636D-5118	Gib		
9	GB879-86	Pin	3X16	
10	C0636D-5104	Lead Screw		
11	GB77-85	Screw	6x26	
12	GB77-85	Screw	M8x10	
13	C0636D-5105	Nut		
14	GB78-85	Screw	M6X16	
15	GB78-85	Screw	M6X25	
16	C0636D-5111	Screw		
17	C0636D-5126	Handwheel		
18	GB308-84	Bell Steel	6	
19				
20	GB301-84	Bearing	8102	
21	C0636D-5128	Gear		
22	C0636D-5123	Lever		
23	GB2089-80	Spring	0.7x5x9	
24	C0636D-5101	Casting		
25				
26	C0636D-5127	Keep assr		
27	GB70-85	Screw	M6X25	
28				
29				
30	GB5783-86	Screw	M8X20	
31	C0636D-5112	Strip		
32	C0636D-5113	Front strip		
33	C0636D-5115	wiper		
34	C0636D-5117	plate		
35	GB823-76	Screw	M4X12	
36	GB6170-86	Nut	M6	
37	GB5783-86	Screw	M8X25	
38	C0636D-5114	Strip		
39	C0636D-5125	strip		
40	C0636D-5120	plate		

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
41	C0636D-5119	Wiper		
42	GB83-86	Screw	M10X50	
43	C0636D-5009	Collar	BM16X32	
44	C0636D-5007	Bolt		
45	GB4141.14-76	Collar	M10X50	
46	C0636D-5005	Toolpost		
47	C0636D-5008	Washer		
48	C0636D-5006	Shaft		
49	C0636D-5002	Gib		
50	C0636D-5004	Wiper		
51	GB2089-80	Spring	1x8x11	
52	C0636D-5003	Plate		
53				
54	GB1096-79	Key	4x14	
55	C0636D-5011	Leadscrew		
56	C0636D-5013	Bracket		
57	GB301-84	Bearing		
58	C0636D-5014	Ring		
59	C0636D-5023	Collar		
60	C0636D-5022	Screw		
61	C0636D-5015	Handwheel		
62	C0636D-5018	Screw		
63	C0636D-5001	Swivel slide		
64	GB70-85	Gib	M8X16	
65	C0636D-5017	Screw		
66	GB80-85	Collar		
67	C0636D-5021	Screw		
68	C0636D-5020	Screw		

TAILSTOCK ASSEMBLY (1)



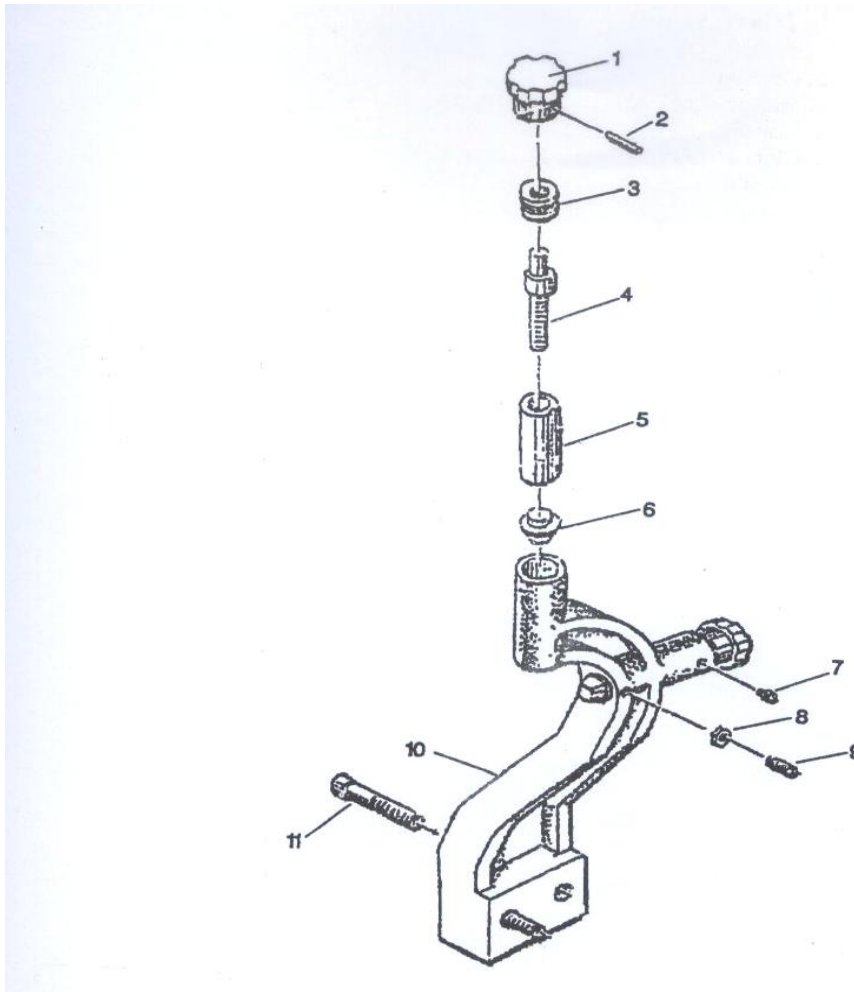
TAILSTOCK ASSEMBLY (2)



TAILSTOCK ASSEMBLY PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	08101	Casting		
2	08102	Flange cover		
3	08103	Handle wheel		
4	08104	Clamp plate		
5	08105	Base		
6	08201	Live center	MT3	
7	08202	Quill		
8	08203	Screw		
9	08204	Washer		
10	08205	Screw		
11	08206	Screw		
12	08207	Screw		
13	08208	Shaft		
14	08209	Screw		
15	08211	Collar		
16	0812	Screw		
19	08213	Shaft		
20	08214	Lever		
21	08401	Nut		
22	08402	Index ring		
23	08403	Pivot block		
26	08501	Handle		
29	GHB1340-29TS	Knob	M8X40	
30	GHB1340-30TS	Knob	M10X50	
31	TS-1501031	Screw	M4X10	
32	TS-1503041	Screw	M6X16	
33	TS-1522061	Screw	M5X20	
34	TS-1523031	Screw	M6X10	
35	GHB1340-35TS	Screw	M10X45	
36	GHB1340-35TS	Screw	M8X35	
37	TS-1540061	Nut	M8	
38	TS-1540081	Nut	M12	
39	GHB1340-39TS	Key	4X15	
40	GHB1340-40TS	Washer	B12	
41	GHB1340-41TS	Pin	5X24	
42	GHB1340-42TS	Bearing	8102	
46	GHB1340-43TS	Oil ball	8	

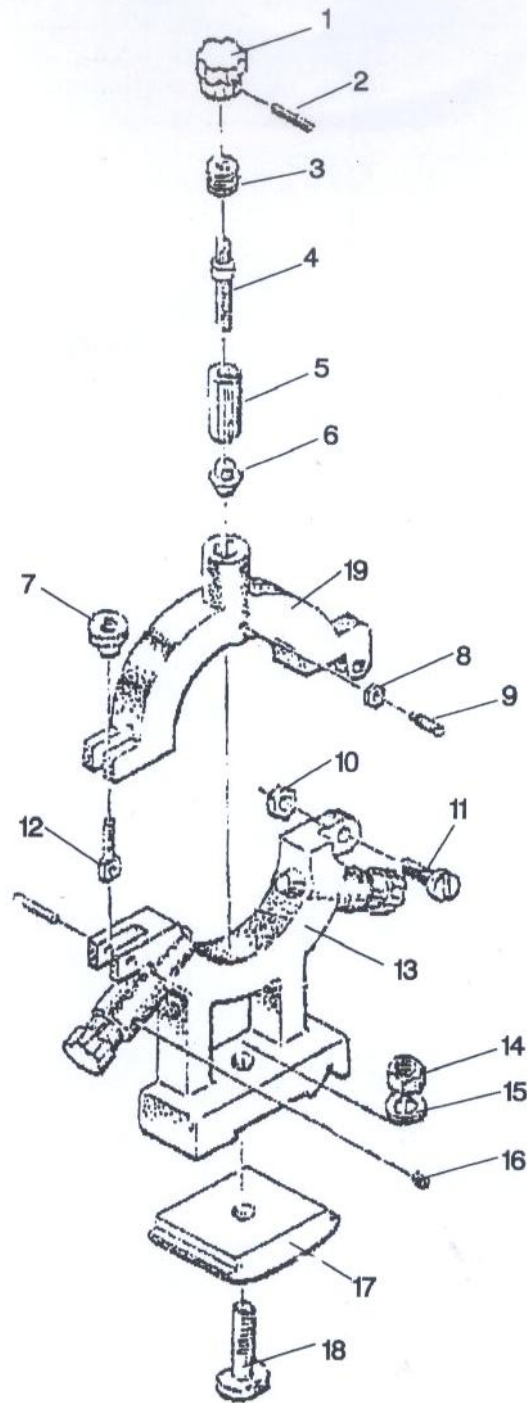
FOLLOW REST



FOLLOW REST PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	C0632A-8207	Knob		
2	GHB-1340-2FR	Pin	3X18	
3	CQ6240-8207	Bushing		
4	C0636D-8306	Screw		
5	C0636D-8308	Sleeve		
6	CQ6240-8208	Brass Finger		
7	TS-152301	Screw	M6X6	
8	TS-1540041	Nut	M6	
9	TS-152306	Screw	M6X20	
10	C0636D-8301	Base casting		
11	TS-150409	Screw	M8X45	

STEADY REST



STEADY REST PARTS LIST

NO.	PART NO.	NAME	SPECIFICATION	REMARKS
1	CQ6240-8205	Knob		
2	GHB-1340-2FR	Pin	3X18	
3	CQ6240-8207	Bushing		
4	CQ6240-8206	Screw		
5	CQ6240-8208	Sleeve		
6	CQ6240-8209	Brass Finger		
7	CQ6240-8204	Knob		
8	TS-1540041	Nut	M6	
9	TS-152306	Screw	M6X20	
10	TS-1540041	Nut	M6	
11	GB1340-11SR	Screw	M6x25	
12	CQ6240-8203	Bolt		
13	C0636D-8201	Base casting		
14	TS-1540081	Nut	M12	
15	TS-155008	Washer	M12	
16	TS-152301	Screw	M6x6	
17	C0636D-8212	Pad		
18	GB37-2000	Screw	M12X80	
19	CQ6240-8202	Top casting		