Coventry Pro Lathe

Operation Manual

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Contents

1. General Safety Rules

Warning!
Do not attempt to operate this machine until you have thoroughly read and understood all of the instructions, rules and other information contained in this manual. Failure to comply can result in accidents involving fire, electric shock or serious personal injury. Maintain this manual and review frequently for the continued safe operation and for possible instructing third party operators.

1. Know your tool – For your own safety, read the manual carefully, learn the applications and limitations of the machine as well as the specific potential hazards for the machine in use.
2. Protect yourself against electric shock by preventing body contact with grounded parts, for example, pipes radiators etc.
3. Keep all guards in place and in working order.
4. Remove any adjustment tools, keys and wrenches, form a habit of checking that all items are removed from the machine before turning on.
5. Keep the work area clean.
6. Don't use in dangerous environments, don't use any power tools in damp or wet locations or expose them to rain. Keep the work area well lit.
7. Keep children away from the machine, all visitors must be kept a safe distance from the work area.
8. Make the workshop child proof, use padlocks on the master switches or remove the starter keys when the machine is not in use.
9. Do not force a tool to complete a job it was not designed to do.
10. Wear the correct clothing and safety items, do not wear loose clothing, gloves ties or jewellery that could be caught in the moving parts. Wear a safety hat or a hair net if you have long hair.
11. Always use safety glasses when operating machinery and use a dust mask if the cutting operation is dusty. Normal eyeglasses only have impact resistant lenses and are not safety glasses.
12. Secure the workpiece before starting the operation, use clamps or a vice where needed, it is safer than using your hands and frees both hands to operate the tool.
13. Do not over reach, keep a proper footing and keep your balance at all times.
14. Maintain tools and keep them in excellent condition, keep the cutting tools sharp and clean for the best performance. Follow the instructions for lubricating and changing accessories.
15. Disconnect the tool from the power supply before carrying out any service work or when changing cutting tools.
16. Avoid accidental starting by making sure that the switches are in the OFF position before plugging the machine in.
17. Only ever use the recommended accessories, improper use of accessories may be dangerous.
18. Never stand on a tool, you could cause serious injury if the tool is tipped or if the cutting tool is accidentally contacted.
19. Check the machine for any damaged parts, a guard or other part that is damaged should be checked to ensure that it will operate correctly and perform its intended function.

Check for alignment of all moving parts, binding of parts, broken parts, mounting and any other condition that may affect the machines operation. A guard or other part that is damaged should be properly repaired or replaced.

20. Feed a workpiece into a blade or cutter against the direction of rotation.
21. Never leave a machine running unattended, turn the power off and make sure that the machine has come to a complete stop before walking away.

2. Safety Rules for Lathes

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

1. Wear eye protection.
2. Never attempt any operation or adjustment if the procedure is not understood.
3. Keep fingers away from any rotating parts and cutting tools while in operation.
4. Never force a cutting action.
5. Never perform an abnormal or little used operation without study and the use of adequate blocks, jigs, stops and fixtures etc.
6. Use a shop manual such as the "Machinery's Handbook or similar to check the recommended cutting speeds, feeds and operation details.
7. Do not remove the drive cover while the machine is in operation. Make sure that it is always closed.
8. Always remove the chuck key, even when the machine is not in operation.
9. Do not attempt to adjust or remove the tools when the machine is in operation.
10. Always keep cutters sharp.
11. Never use this machine in an environment with explosive materials or where a spark could ignite a fire.
12. Always use identical replacement parts when servicing or repairing this machine.

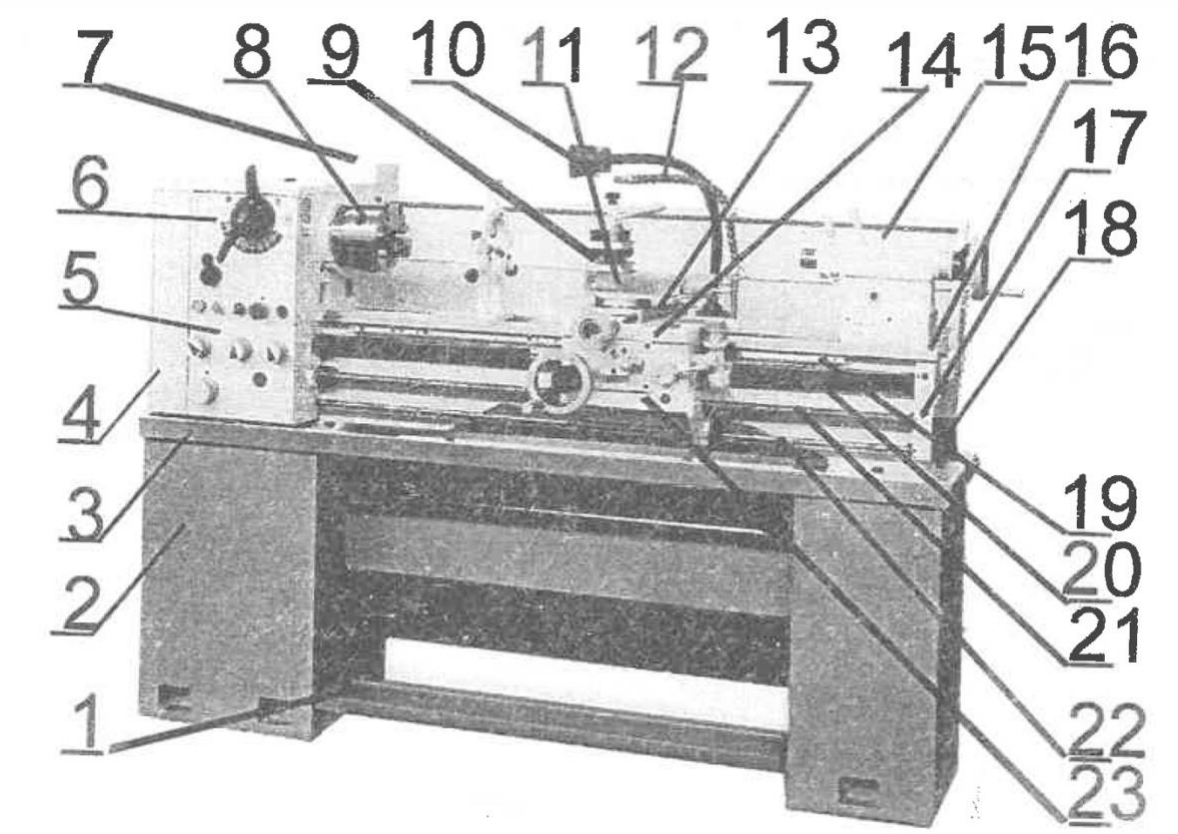
Warning!
Do allow familiarity (gained from frequent use of your lathe) to become commonplace. A careless fraction of a second can allow for sever injury.

3. Specification

This lathe is suitable for machining, tool rooms and repair workshops to machine shafts, spindles, sleeves and disc shaped workpieces of small and medium types. They can also be used to cut imperial and metric threads and have been built into a compact unit. This machine is easy and reliable to operate, convenient to repair, has high efficiency and low noise.

	500mm	**750mm**
Swing over the Bed	330mm	360mm
Swing over the Cross Slide	224mm	224mm
Swing over the Gap	500mm	500mm
Centre Height	178mm	178mm
Distance between Centres	500mm	750mm
Bed Width	186mm	186mm
Bed Height	294mm	294mm
Motor Output	1.5kW (2 hp)	1.5kW (2 hp)
Spindle Bore	38mm	38mm
Camlock System	D1-4	D1-4
Spindle Speed	70-2000rpm	70-2000rpm
Cross Slide Travel	180mm	180mm
Compound Slide Travel	95mm	95mm
Leadscrew Diameter	22mm	22mm
Feed Rod Diameter	19mm	19mm
Cutting Tool Max Section	16 x 16mm	16 x 16mm
Imperial Thread	$2^1/_4$ - 40TPI	2 ¼ - 40TPI
Metric Thread	0.45 - 10mm	0.45 -10mm
Longitudinal Travel	600mm	600mm
Cross Feed	0.018-0.238mm/r	0.018-0.238mm/r
Tailstock Quill Diameter and Taper	32mm, MT3	32mm, MT3
Net Weight	580kg	600kg

4. Machine Assembly



1. Foot Brake
2. Foot Stands
3. Chip Tray
4. End Cover
5. Feed Box
6. Headstock
7. Electrical Cabinet
8. Spindle with 3 Jaw Chuck
9. Toolpost
10. Worklamp
11. Compound Rest
12. Coolant Supply
13. Cross Slide
14. Saddle
15. Tailstock
16. Guideway
17. Bracket
18. Forward/reverse switch
19. Rack
20. Leadscrew and cover
21. Feed Rod
22. Switch Rod
23. Apron

5. Unpacking

Unload the machine using an overhead crane using straps with sufficient capacity and eye bolts. Make sure that the machine is in balance by moving the tailstock and the saddle to the right side of the machine before carefully lifting the machine and placing it on the floor.

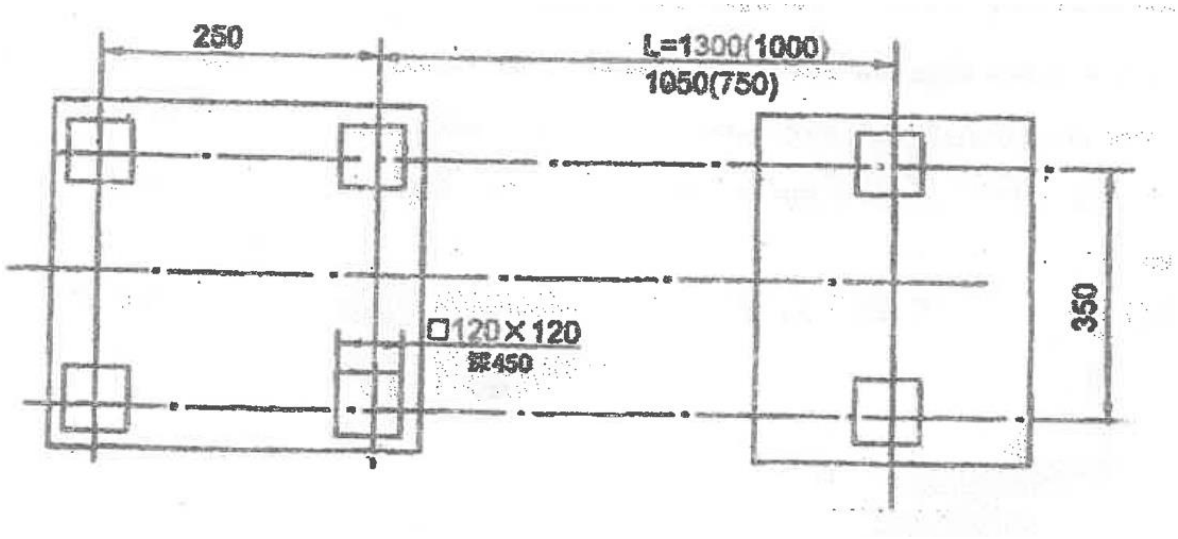
6. Cleaning

Before putting the machine into operation, it will need to be thoroughly cleaned of any anti-rust grease, use white spirit or kerosene to clean all of the bright metal surfaces, do not use lacquer thinner or any other caustic solvents which could damage the paint work. Once the machine is clean, apply a thin layer of machine oil to all of the bright work.

7. Installation

Place this machine onto a solid concrete floor, make sure that there is sufficient space around the machine to make the operation and maintenance processes as easy as possible. Use a precision level on the bedways to make sure that the machine is perfectly level then tighten the foundation bolts evenly before re-checking the level.

Foundation Drawing



8. Lubrication

Before putting the machine in to operation, please make sure that the following areas are correctly lubricated.

Headstock
The bearings of the headstock turn in an oil bath, make sure that the oil level reaches the three quarters mark in the oil sight glass.
When changing the oil, remove the end cover and the change gear swing frame, remove the drain plug on the bottom of the headstock. To refill the headstock, remove the headstock cover and pour oil into the headstock.
Check the oil level frequently and top the oil level up if needed. The first oil change should be made after 3 months and then annually.

Gearbox
Remove the end cover to reveal the filling plug, fill the gearbox with ISO32 oil to the mid-point level in the oil sight glass. Check the oil level frequently and top the oil level up if needed. The first oil change should be made after 3 months and then annually.

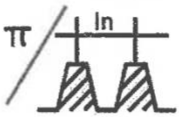
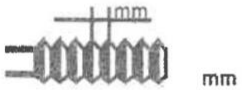
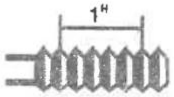
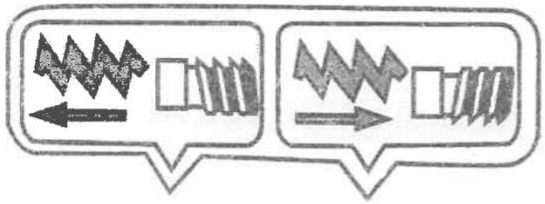
Apron
The oil bath is filled with ISO32 oil through the filling plug on the right hand side of the apron. Check the oil level frequently and top the oil level up if needed. The first oil change should be made after 3 months and then annually.

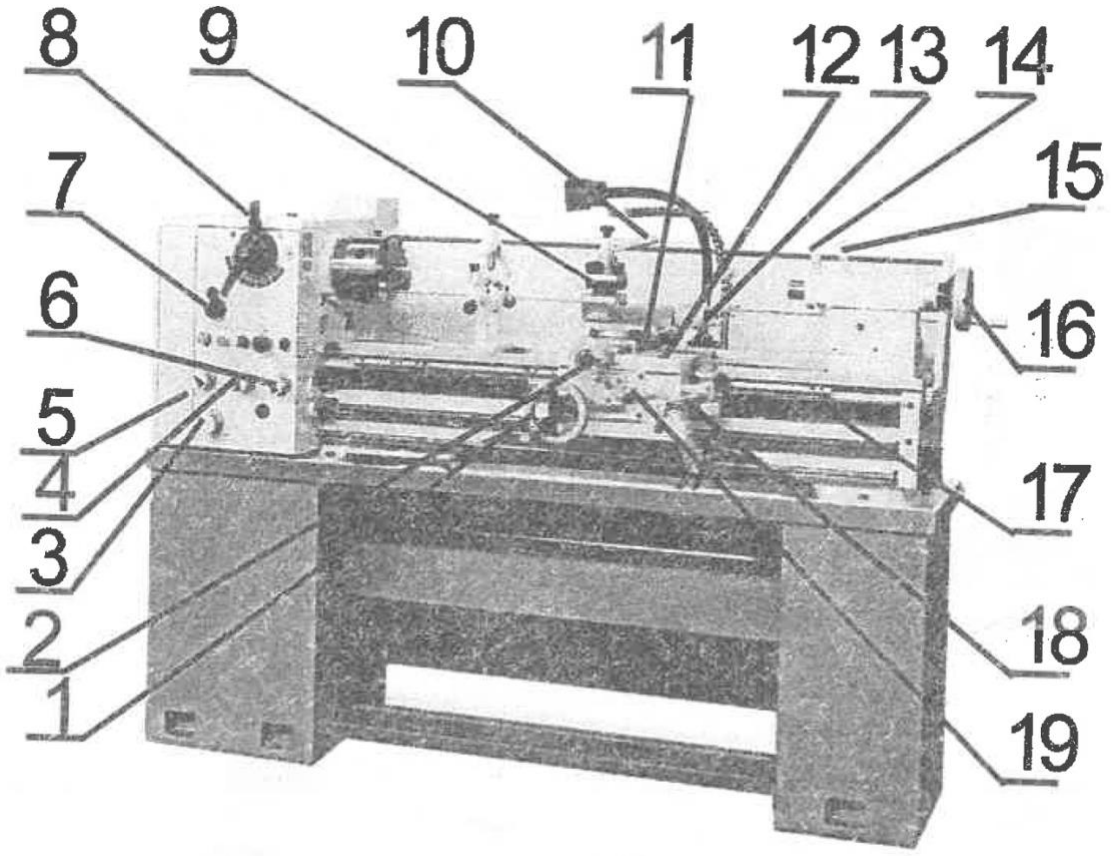
Change Gears
Lubricate the change gears with thick machine oil or grease once a month.

Other Parts
There are other lubricating points on the input shaft bracket of the gearbox, the handwheel on the apron, the longitudinal and cross slides, the thread dial indicator, the tailstock and the bracket. Use an oil gun to apply a few drops to each area at the start of each shift. Lubricate the apron worm and the worm gear, half nut and the leadscrew twice a month. Apply a light film of oil to the bed way and all other bright parts such as the tailstock quill and the feed rod daily.

9. Operation

Symbols for Operation

	Electrical (Danger)		Diametral Pitch Thread
	Coolant		Module Pitch Thread
	Metric Thread		
	Imperial Thread		
	Right-hand thread and Longitudinal feed toward the headstock side (Left Figure)		
	Left-hand thread and longitudinal feed toward the tailstock side (Right figure)		
	Feed (Left Figure) Thread (Right Figure)		
	Longitudinal Feed engaged (upward) Both Longitudinal and cross feed disengaged (central) Cross feed engaged (Downward)		



1. Longitudinal travel handwheel
2. Cross travel handwheel
3. Feed selector handle
4. Feed selector handle
5. Feed selector handle
6. Feed/thread selector handle
7. Feed direction selector
8. Speed selector (2 pieces)
9. Compound rest lock
10. Tool post clamping lever
11. Cross slide lock
12. Saddle lock
13. Compound rest handwheel
14. Tailstock quill clamp handle
15. Tailstock lock
16. Tailstock handle
17. Forward/Reverse switch lever
18. Thread cutting engagement lever
19. Feed axis selector

10. Spindle Speed Control

Ensure that the lubrication has been carried out as previously described.

When the main spindle is rotating, the gearbox and the feed axis can be put into operation. The forward/reverse lever should be placed in neutral and the feed axis selector and feed/thread indicators should be disengaged. Under these circumstances, both the longitudinal and cross feed handwheels can be used to move the saddle.

Main Spindle Rotation
The spindle rotation direction can be selected by the spindle start lever on the side of the apron.

Main Spindle Speed
The speed of the main spindle is selected by using the (High/Low) speed selector and the 4 step speed selector. This gives a total of 8 speed steps available on this machine. For the correct speed, please refer to the speed chart.

Never attempt to change the spindle speed until the machine has come to a complete stop!
By rotating the chuck by hand, the spindle speeds can be more easily changed.

Running In
Running in of the machine should be carried out at the lowest possible speed, allow the machine to run at this speed for approximately 20 minutes. Check for any abnormal noises and if there are any noises stop the machine and investigate. If everything is normal, gradually increase the spindle speed.

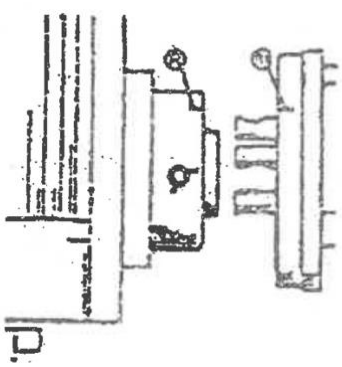
Operation
Only ever use high peripheral speed rated chucks with this machine.

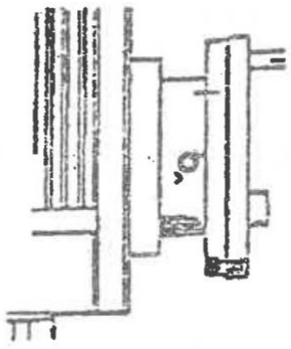
The maximum spindle speed for a chuck exceeding 254mm should not exceed 1255rpm. When the thread cutting or auto-feed functions are not in use, the feed/thread selector should be in the neutral position so that the leadscrew and the feed rods are disengaged.

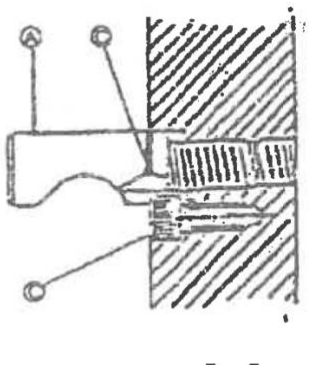
To avoid any unnecessary wear, the thread dial indicator should be out of mesh with the leadscrew.

Spindle Nose Camlock System
When mounting the chuck, faceplate or any other attachment, ensure that the location faces on both the spindle and the attachment are fully cleaned, in addition, all of the cams should be in the disengaged position.

Mount the chuck onto the spindle nose and lock each cam by turning it clockwise using the provided key. Mark the position on the chuck with a reference line for subsequent mountings.







Note:
For the correct locking condition, each cam must be tightened with the index line between the two "V" marks on the nose.
Do not interchange chucks or other attachments without first check each cam for the correct locking position.
To adjust the camlock studs, remove the lock screw B and turn the stud one full turn in or out as required. Refit and re-tighten the screw B. A datum ring on the camlock stud has been machined into the stud as a guide to the setting for the camlock studs.

11. Thread and Feed Selection

All threads and feeds are indicated on the table fitted to the top and front of the gearbox and are selected by using the feed selector handles on the feed box.

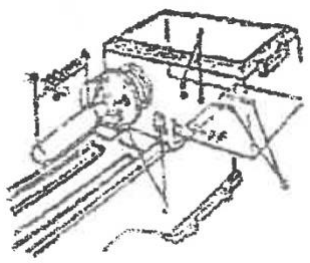
Manual Operation
The carriage is moved by using the handwheel located on the apron, the cross slide is moved by using the handwheel on the saddle and the compound rest is moved by turning the small handwheel. The slides can all be anchored by turning the lock bolts on the top of the slide.

Automatic Feed Operation
Engage the feed/thread lever to the feed icon and use the feed selector levers to engage the feed speeds to start the feed rod. If the feed lever on the apron is then used, pushing the lever upwards will engage the cross feed, downwards engages the longitudinal feed.

Thread Cutting Operation
The direction of thread cutting is controlled by the feed direction lever and the cutting rate selected by the feed handles, move the feed/thread lever to the thread cutting icon to engage the leadscrew. Operate the thread cutting engagement lever (push down) to engage the half nut with the leadscrew.

12. Lathe Alignment

When the lathe is installed and is ready for use, it is recommended to check the machines alignment before putting it into operation.
Alignment and levelling should be checked regularly to ensure the continued accuracy of the machine.
Check the machine as per the following procedure:
Take a steel bar with a diameter of 50mm and a length of approximately 200mm and lock it in the chuck without using a centre. Take a cut along approx. 150mm and measure the difference between A and B. In order to correct a possible difference, loosen the screw (j) clamping the headstock to the bed and adjust the position of the headstock using the set screws and repeat this procedure until the measurements are the same.

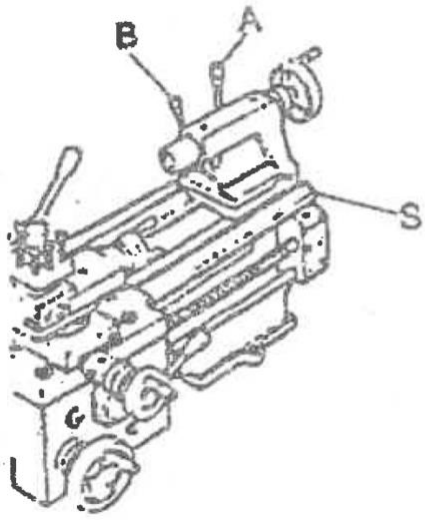


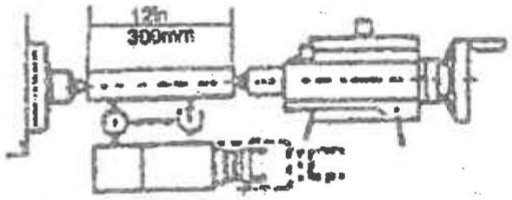
Cross Slide and Compound Rest

The graduations on the handwheel is in millimetres. The dovetails have been fitted with gibs to allow for adjustments to be made. Make sure that the dovetails are clean and are greased thoroughly before any adjustments.
To adjust the gib strips, first loosen the rear set screw and then turn the front screw until the slide moves smoothly without backlash, before tightening the rear set screw. Provision has been made for the elimination of the backlash in the cross-slide nut. Remove the dust plate mounting on the rear face of the carriage groove. Turn the cross slide handwheel to move the cross-feed nut until it reached the end edge of the feed leadscrew and then turn the socket screw clockwise as required. A 45° turn of the socket screw eliminates approx. 0.125mm of backlash. Keep checking the cross slide until the backlash moves smoothly.

Tailstock

The tailstock can be moved freely on the bed and clamped at any position by using the locking lever A, the tailstock quill can also be moved forwards and backwards and locked in position using lever B. For precise adjustment, the tailstock can be adjusted in the cross direction by turning the socket screw clockwise or counter clockwise as required. Release the clamping lever A and adjust the setscrews on either side of the tailstock body.
Place a steel bar that is approx. 300mm in length between the centres and measure with a dial gauge mounted on the saddle to see if the distances on both ends are the same.



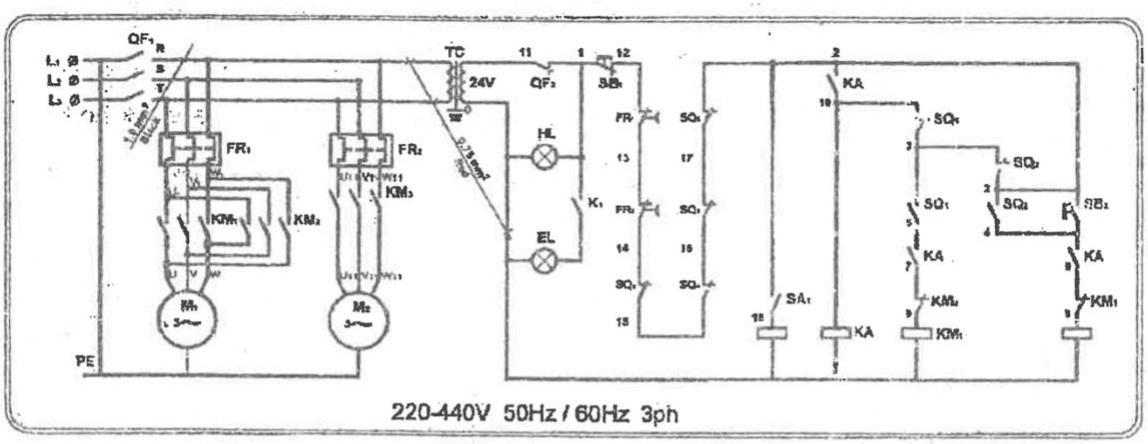


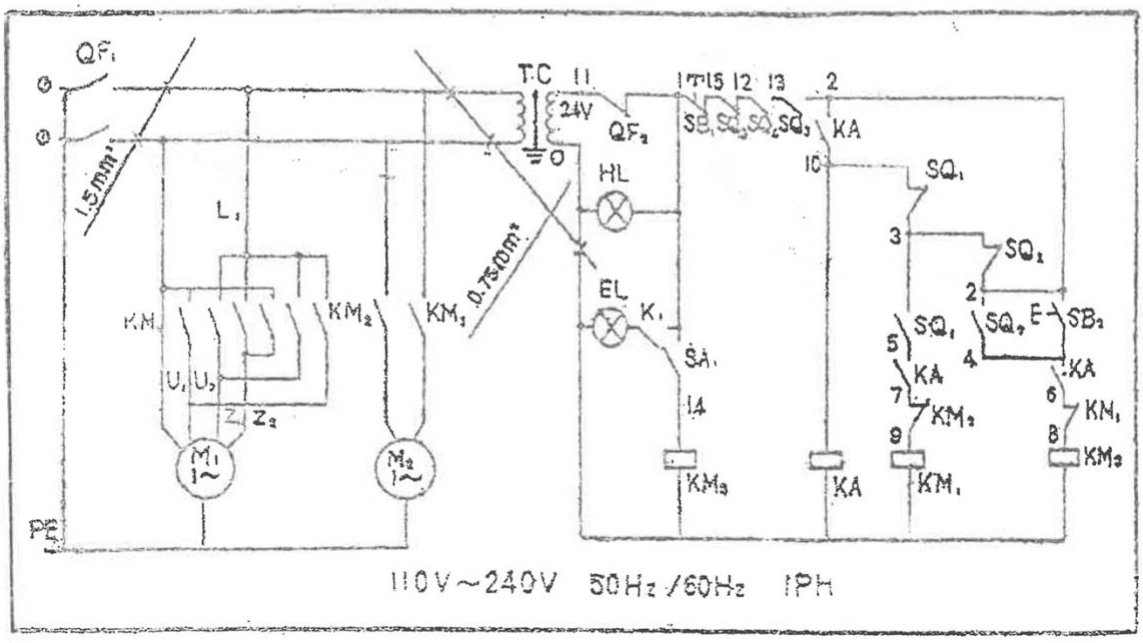
13. Electrical System

Connect the power to the electrical system, make sure that the voltages and frequency available on site match the power requirements of the machine.

Connect the power cable to the main power switch and make sure that the machine is correctly grounded.

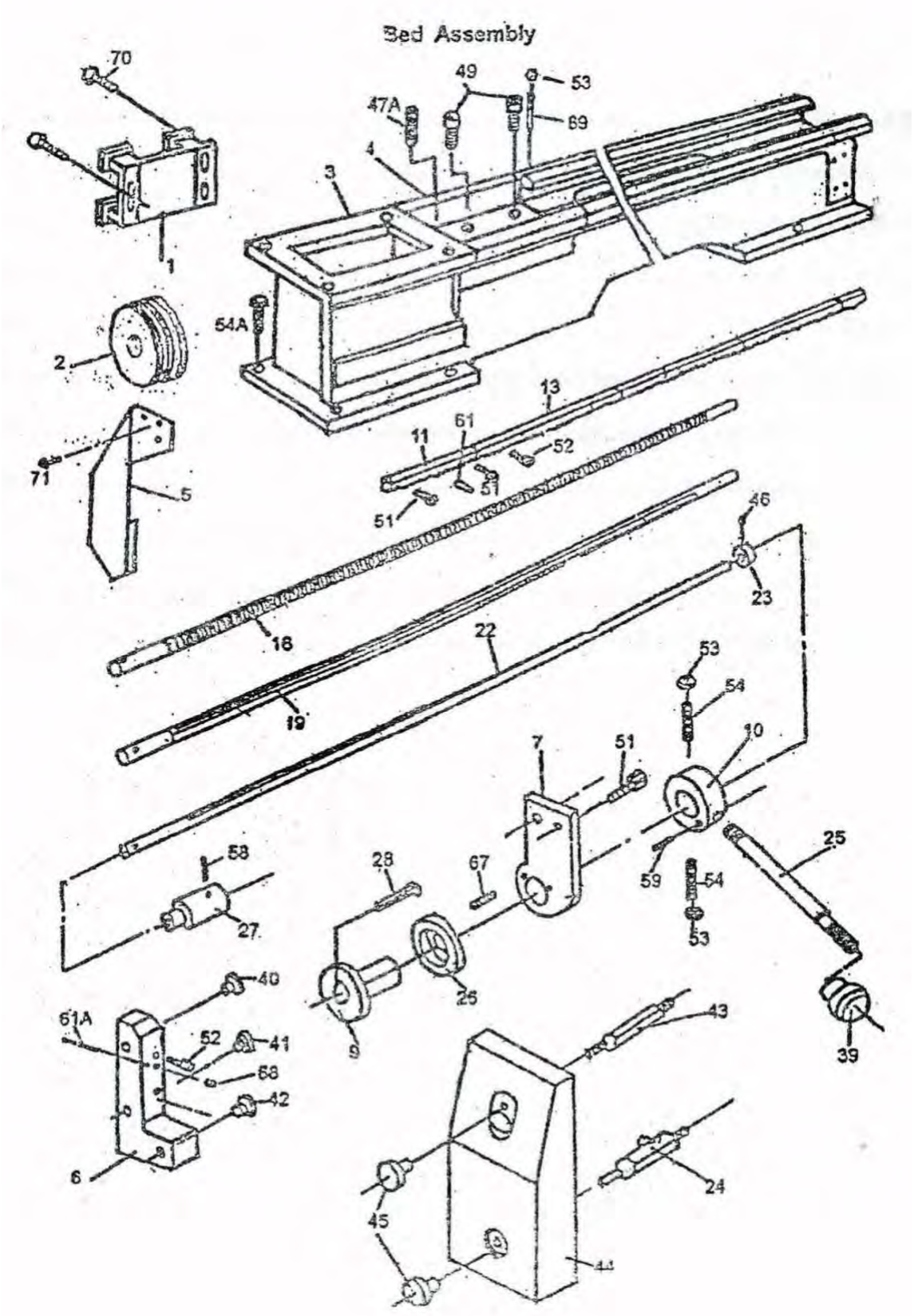
When viewed from the pulley side, the main motor must run in a clockwise direction (the spindle must run in a counter-clockwise direction). If you have a 3 phase machine, two of the phases can be changed if the spindle runs clockwise. Make sure that the power has been disconnected at the main power supply before changing the phases.



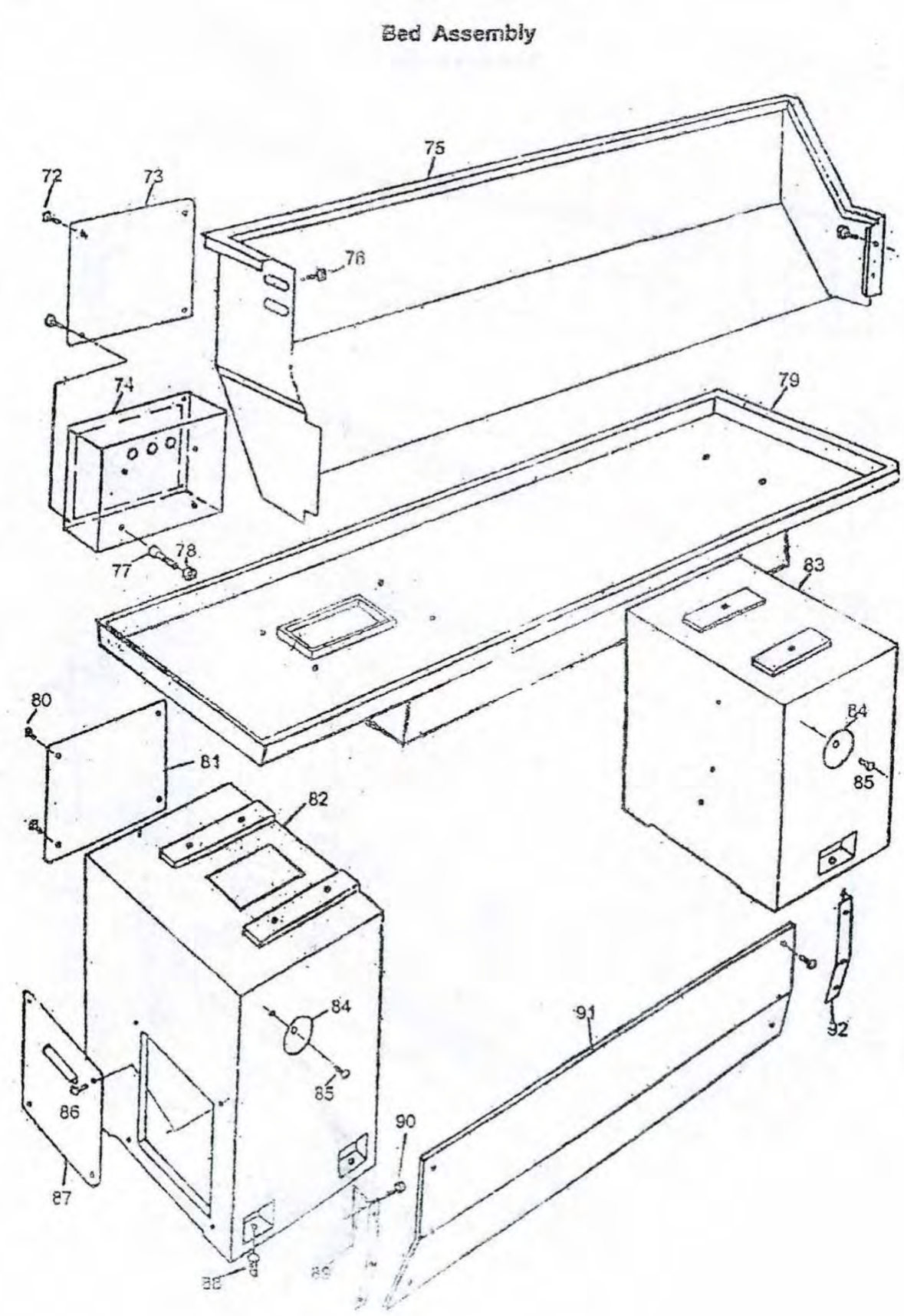


Code Name	Description	Model
M1	Main Motor	Y90S-4 1.5kW
M2	Coolant Pump Motor	AB-12 40W
KM1	AC Contactor	3 TB41
KM2	AC Contactor	3 TB41
KM3	AC Contactor	3 TB41
KA1	Relay	3 TH80
EL	Machine Lamp	JC11-1
SB1	Button	LA38/20913
SB2	Button	LA38-11/209
SA1	Button	LAY3-11X/2
HL	Indicator Light	AD11/21-8GZ
SQ1	Limit Switch	LXW5-11G2/L
SQ2	Limit Switch	LXW5-11G2/L
SQ3	Limit Switch	LXW5-11G2/L
SQ4	Limit Switch	LXW5-M/L
SQ5	Limit Switch	LXW5-M/L
SQ6	Limit Switch	LXW5-M/L
TC	Transformer	JBK5-63VA-TH
QF1	Mains Switch	JCH13
QF2	Breakpoint Switch	DZ47-60 C2
FR1	Relay	3UA59
FR2	Relay	3UA59

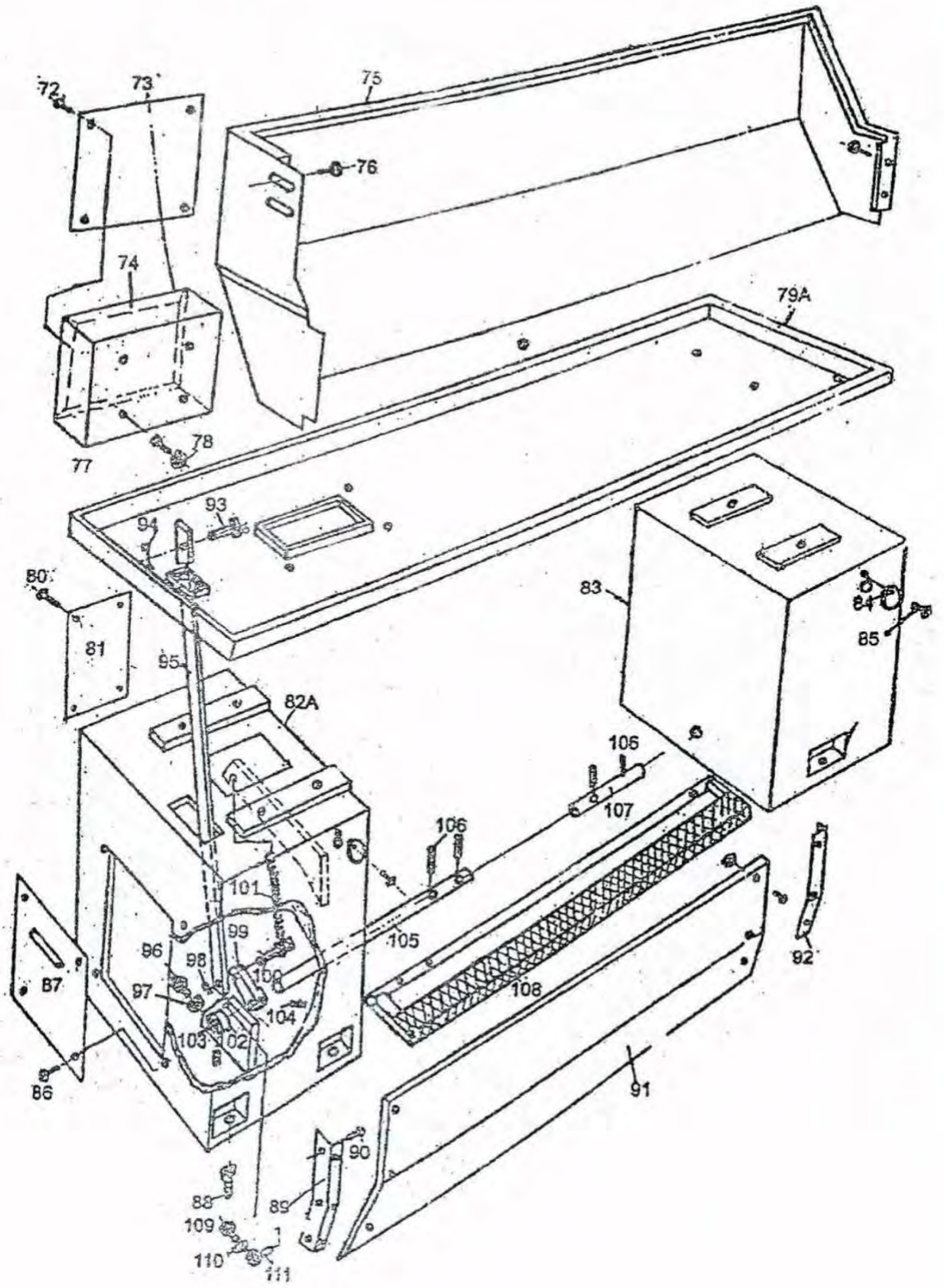
Parts List and Diagrams



Bed Assembly



Bed Assembly

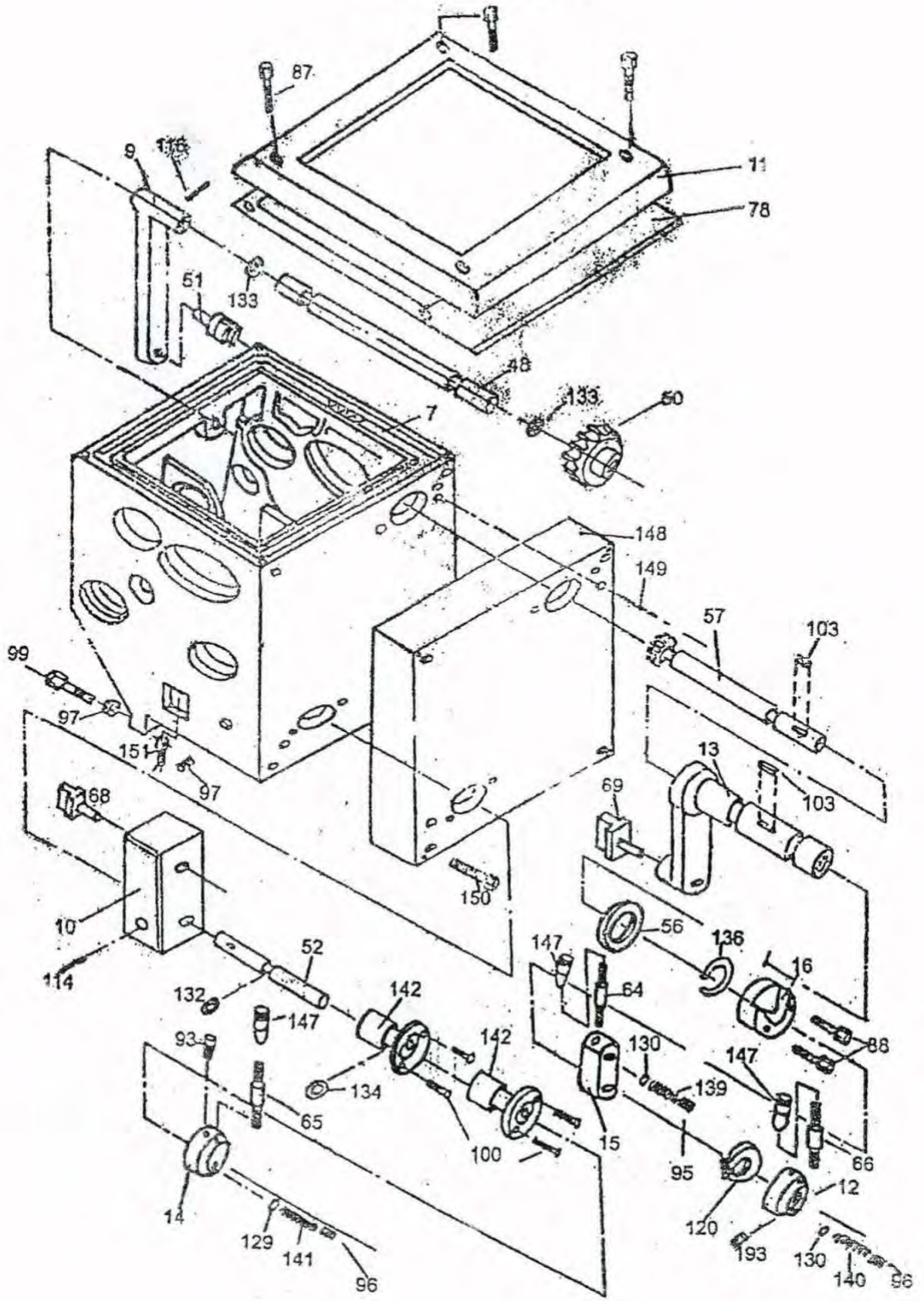


Bed Assembly

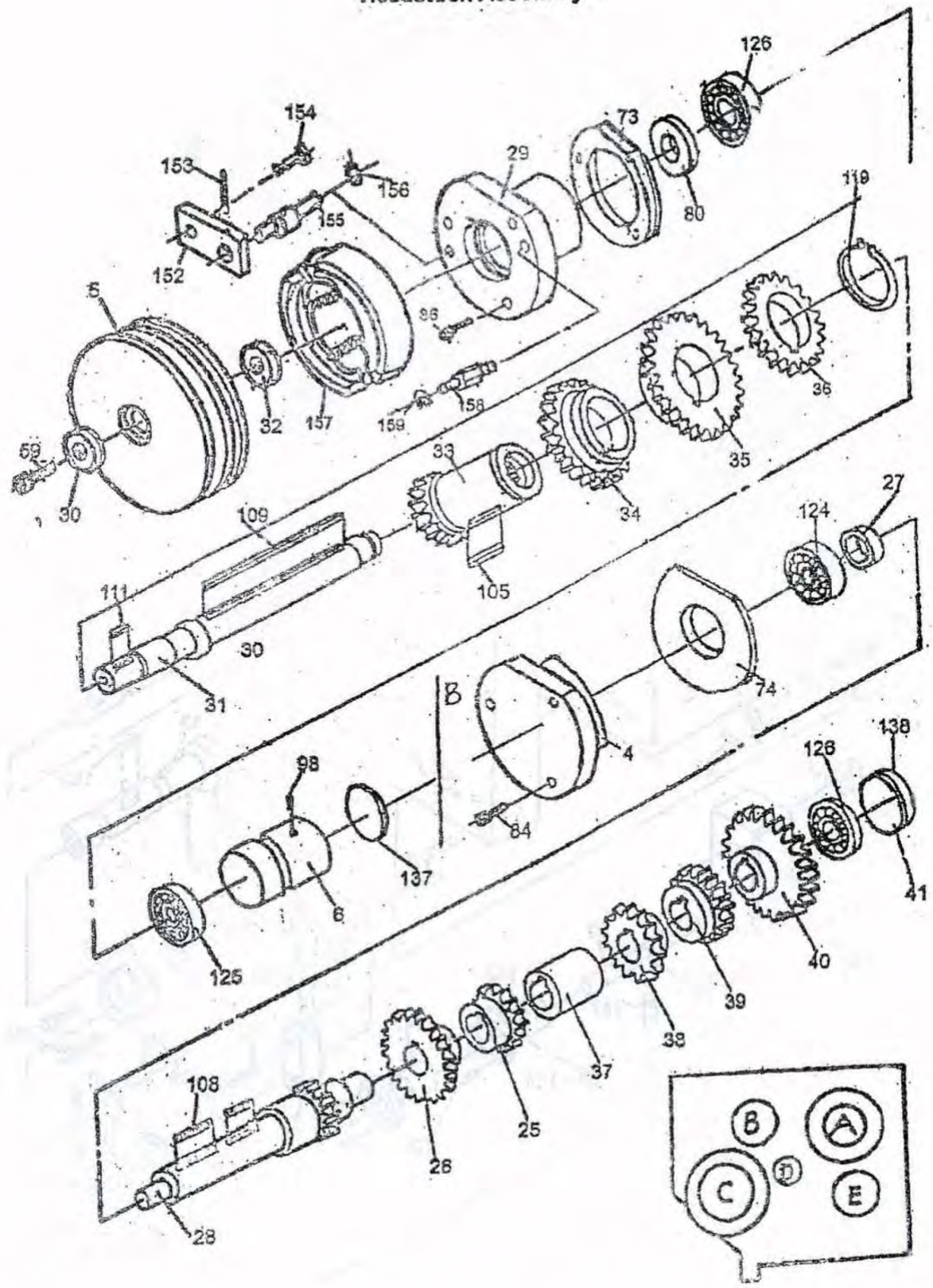
Index No.	Part No.	Description	Size	Qty
1	01110	Motor Base		1
2	01106	Pulley		1
3	01101	Bed		1
4	01102	Gap		1
5	01215	End Cover		1
6	01104	Bracket		1
7	01105	Bracket		1
9	01201	Collar		1
10	01202	Handle		1
11	01203	Rack		1
13	01204-2	Rack		1
16	01205-3	Lead Screw		1
19	01206-3	Feed Rod		1
22	01207-3	Shaft		1
23	01208	Collar		1
24	01209	Shaft		1
25	01210	Handle		1
26	01211	Brake Ring		1
27	01212	Collar		1
28	01213	Key		1
	01214-3	Oil Pan (not shown)		1
39	01501	Knob		1
40	01502	Plug		1
41	01503	Plug		1
42	01504	Plug		1
43	04244	Screw		2
44	04510	Cover		1
45	04247	Lock Nut		2
46	TS-1522021	Set Screw	M5X8	1
47A	TS-1523051	Set Screw	M6X16	1
49	TS-1505061	Hex Socket Cap Screw	M10X40	4
51	TS-1503051	Hex Socket Cap Screw	M6X20	3
52	TS-1540061	Hex Socket Cap Screw	M8X55	2
53	TS-1540061	Hex Nut	M8	4
54	GHB1340-54B	Screw	M8X28	2
54A	TS-1492061	Hex Cap Bolt	M12X60	6
58	GHB1340-58B	Pin	3X25	1
59	GHB1340-59B	Pin	8n6X25	1
61	GHB1340-61B	Pin	6X28	1
61A	GHB1340-61AB	Pin	6X36	1
67	GHB1340-67B	Spring	1.6X6X25	1

68	GHB1340-68B	Oil Ball	8	2
69	GHB1340-69B	Pin	8X60	2
70	GHB1340A-70B	Hex Cap Bolt	M10X35	3
71	GHB1340A-71B	Screw	M6X8	2
72	GHB1340A-72B	Screw	M5X6	4
73	18702	Cover		1
74	18701	Electrical Box		1
75	12701	Splash Guard		1
76	GHB1340A-76B	Screw	M6X10	4
77	GHB1340A-77B	Screw	M6X20	4
78	GHB1340A-78B	Nut	M6	4
79	12702	Oil Plate		1
79A	12702A	Oil Plate		1
80	GHB1340A-80B	Screw	M6X10	4
81	01720/11	Cover		1
82	01707	Left Bed Stand		1
82A	01707A	Right Bed Stand		1
83	01708	Bed Stand		1
84	01708A	Cover		2
85	GHB1340A-85B	Screw	M6X10	2
86	GHB1340A-86B	Screw	M6X10	4
87	01720/9	Cover		1
88	GHB1340A-88B	Screw	M12X50	6
89	01722	Bracket		1
90	GHB1340A-90B	Screw	M6X10	6
91	01724	Plate		1
92	01723	Bracket		1
93	22709G	Break Shaft		1
94	GHB1340A-94B	Split Pin	2x12	1
95	22705	Brake Pull Rod		1
96	22713	Cap-Shape Screw		1
97	GHB1340A-97B	Nut	M6	1
98	GHB1340A-98B	Split Pin	2X12	1
99	22101G	Pedal Arm		1
100	22703	Connecting Shaft		1
101	22704	Draw Spring		1
102	22705G	Switch Block		1
103	GHB1340A-103B	Screw	M8X8	1
104	GHB1340A-104B	Pin	5X40	1
105	22704	Drving Shaft-Longer		1
106	GHB1340A-106B	Spring Pin	5X30	3
107	22707G	Drving Shaft		1
108	22712G	Pedal		1
109	GHB1340A-109B	Screw	M10X60	1
110	GHB1340A-110B	Nut	M10	1
111	22702	Bult Rod Support		1

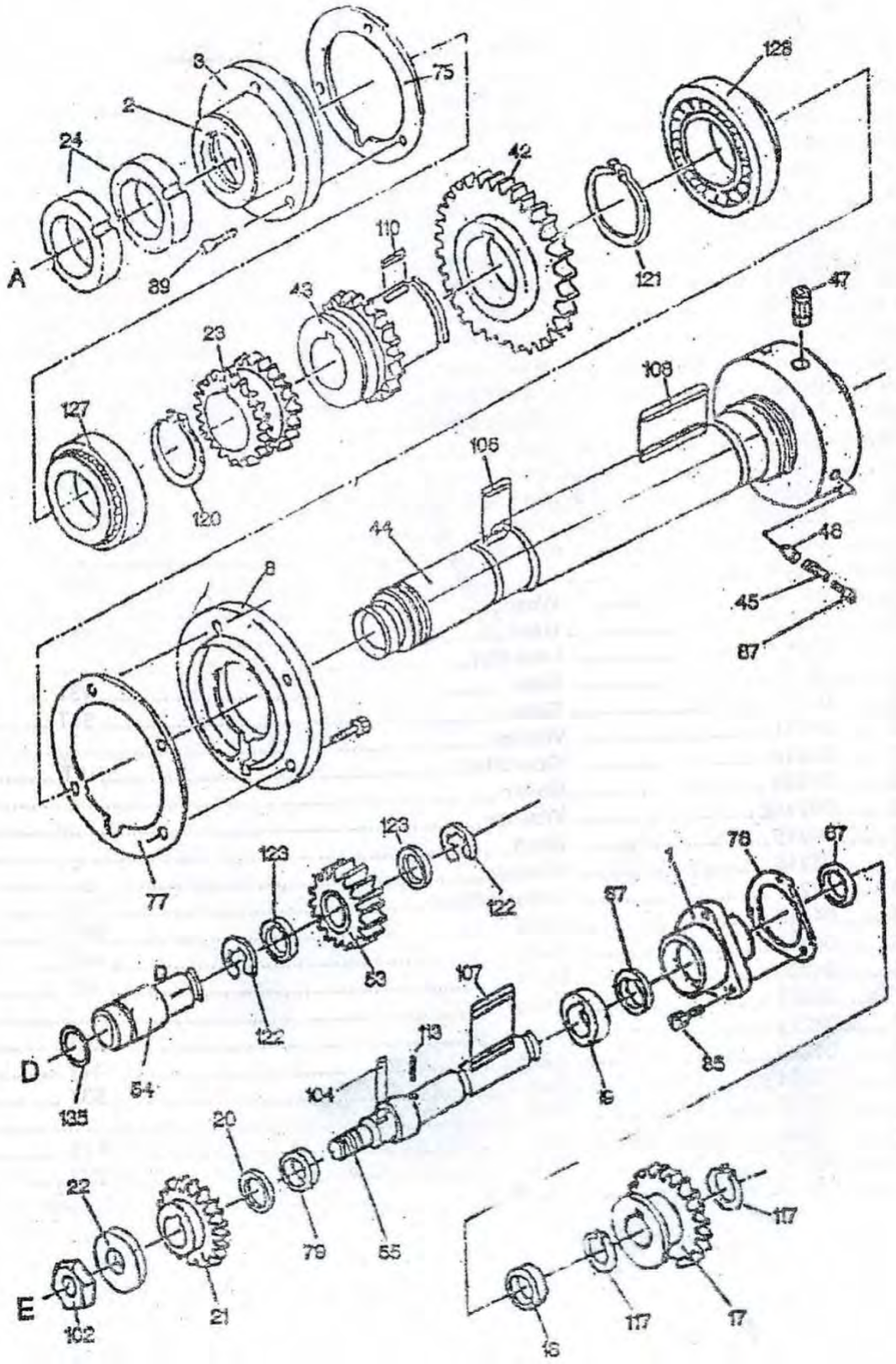
Headstock Assembly



Headstock Assembly



Headstock Assembly



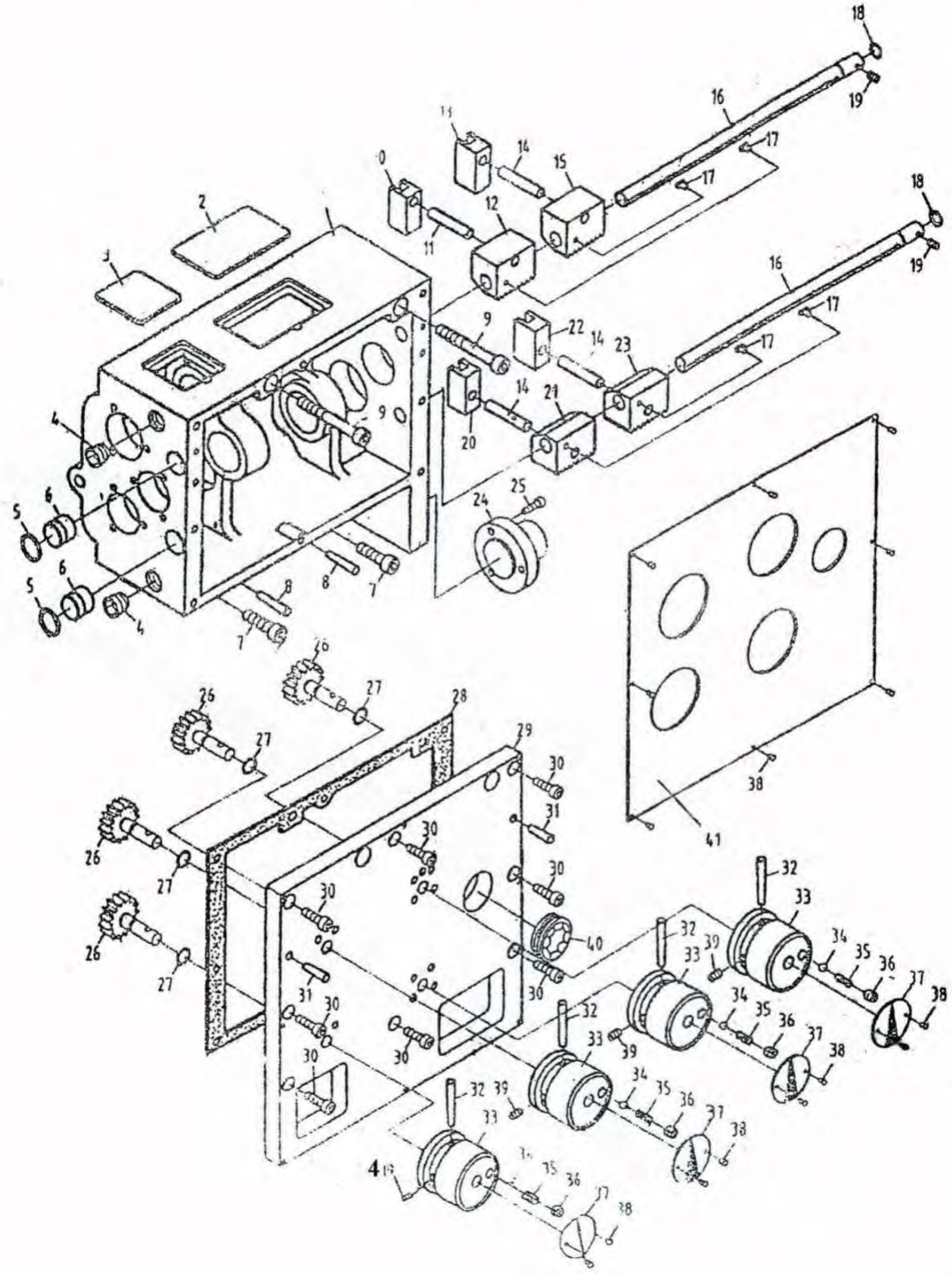
Headstock Assembly

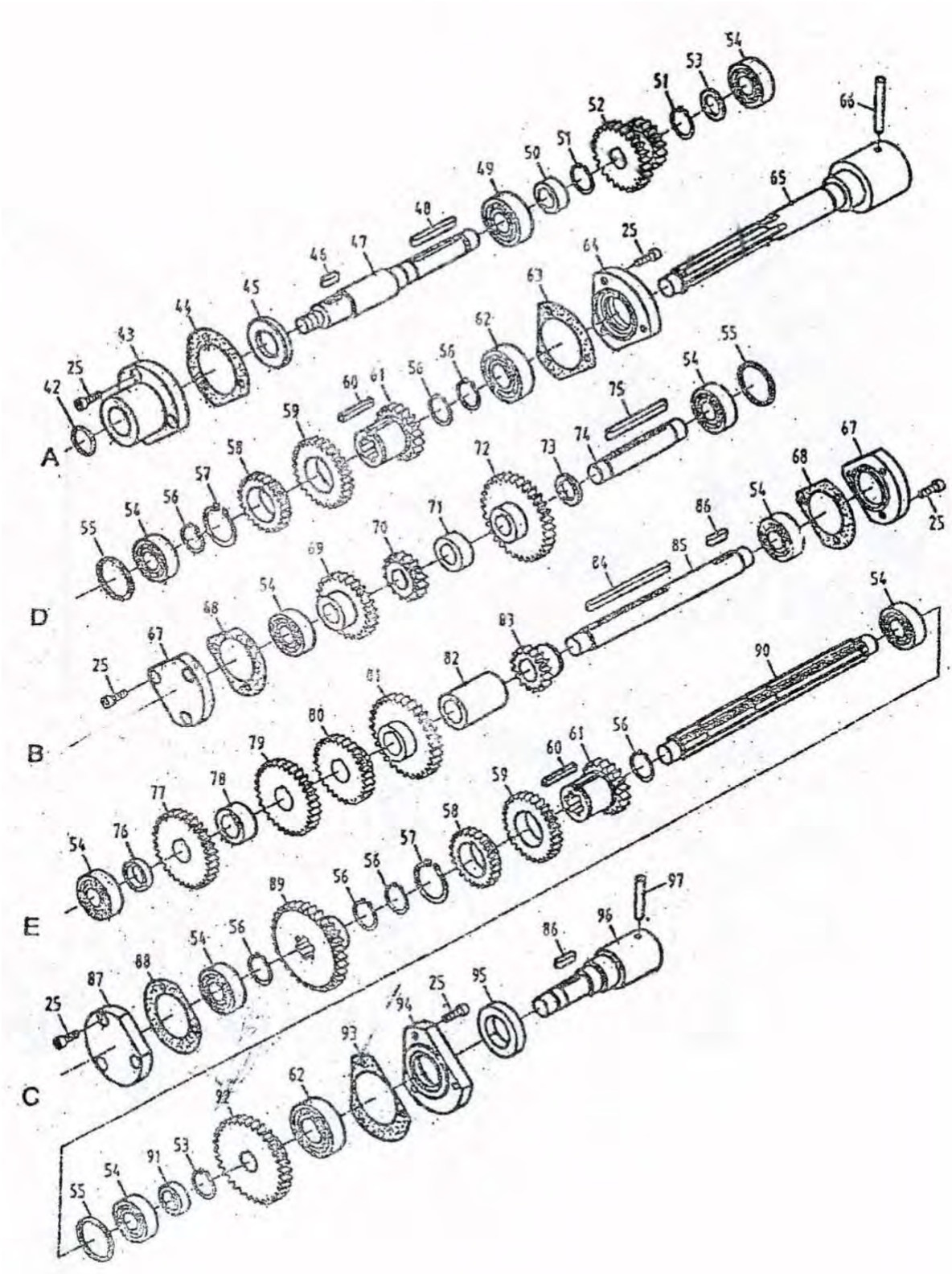
Index No.	Part No.	Description	Size	Qty.
1	04101	Collar		1
2	04102	Collar		2
3	04103	Rear Cover		3
4	04104Z	Rear Cover		4
5	04105	Pulley		1
6	04106	Plug		1
7	04107Z	Main Casting		1
8	04108Z	Front Cover		1
9	04109	Shift Lever		1
10	04111	Shaft Housing		1
11	04112	Cover		1
12	04117	Handle Body		1
13	04121	Shaft Collar		1
14	04120	Handle Body		1
15	04119	Handle Block		1
16	04118	Hub		1
17	04201	Gear	37T	1
18	04202Z	Washer		2
19	04203Z	Washer		1
20	04204	Washer		1
21	04205	Gear	40T	1
22	04206	Washer		1
23	04207	Gear	37T	1
24	04208	Lock Nut		2
25	04209	Gear	43T	1
26	04210	Gear	51T	1
27	04211	Washer		1
28	04212	Gear Shaft	16T	1
29	04213	Cover		1
30	04214Z	Washer		1
31	04215	Shaft		1
32	04216	Washer		1
33	04217	Collar w/Gear	21T	1
34	04218	Gear	29T	1
35	04219	Gear	46T	1
36	04220	Gear	38T	1
37	04221	Collar		1
38	04222	Gear	26T	1
39	04223	Gear	34T	1
40	04224	Gear	53T	1
41	04225	Plug		1
42	04226	Gear	74T	1
43	04227	Gear	37T	1
44	04228Z	Spindle		1

45	04229	Spring		3
46	04230	Pin		3
47	04231	Cam		3
48	04232	Shaft		1
50	04234	Gear	51T	1
51	04235	Collar		1
52	04250	Shaft		1
53	04237	Gear	30T	1
54	04238	Shaft		1
55	04239	Shaft		1
56	04240	Washer		1
57	04241	Gear Shaft	17T	1
59	04243 Z	Screw		2
64	04248	Handle		2
65	04248-1	Handle		1
66	04249	Handle		1
67	04401	Collar		2
68	04402	Shift Fork		1
69	04403	Shift Fork		1
73	04501	Gasket		1
74	04502	Gasket		1
75	04503	Gasket		1
76	04504	Gasket		1
77	04505	Gasket		1
78	04506	Gasket		1
79	04507	Oil Seal		1
80	04508	Oil Seal		1
	04511	Oil Sight Glass (not shown)		1
84	TS-1501041	Hex Socket Cap Screw	M4×12	3
85	TS-1502041	Hex Socket Cap Screw	M5×16	3
86	TS-1503031	Hex Socket Cap Screw	M6×16	3
87	TS-1504041	Hex Socket Cap Screw	M8×20	4
88	TS-1523051	Hex Socket Cap Screw	M6×20	4
89	TS-1523061	Hex Socket Cap Screw	M6×25	10
93	TS-1523041	Set Screw	M6×12	2
95	TS-1524011	Set Screw	M8×8	1
96	TS-1524021	Set Screw	M8×10	2
97	TS-1524031	Set Screw	M8×12	2
98	TS-1524041	Set Screw	M8×16	1
99	GHB1340-99	Screw	M8×40	2
100	GHB1340-100	Screw	M4×8	4
102	TS-1540081	Hex Nut	M12	1
103	GHB1340-103	Key	5×15	2
104	GHB1340-104	Key	5×18	1
105	GHB1340-105	Key	5×50	1
106	GHB1340-106	Key	6×40	1

107	GHB1340-107	Key	8×55	2
108	GHB1340-108	Key	6×120	1
109	GHB1340-109	Key	6×120	1
110	GHB1340-110	Key	8×18	1
111	GHB1340-111	Key	5×20	1
113	GHB1340-113	Pin	3×10	1
114	GHB1340-114	Pin	4×18	1
116	GHB1340-116	Pin	5×32	1
117	GHB1340- 117	C-Clip	20	3
119	GHB1340-119	C-Clip	35	1
120	GHB1340-120	C-Clip	50	2
121	GHB1340-121	C-Clip	72	1
122	GHB1340-122	C-Clip	42	2
123	GHB1340-123	Bearing	700104E	2
124	GHB1340-124	Bearing	240E	1
125	GHB1340-125	Bearing	203	2
126	GHB1340-126	Bearing	204D	2
127	GHB1340-127	Bearing	7210E	1
128	GHB1340-128	Bearing	7212D	1
129	GHB1340-129	Steel Ball	5	1
130	GHB1340-130	Steel Ball	6	2
133	GHB1340-133	O-Ring	2.4×14	2
134	GHB1340-134	O-Ring	2.4×20	1
135	GHB1340-135	O-Ring	2.4×25	1
136	GHB1340-136	O-Ring	3.1×30	1
137	GHB1340-137	O-Ring	3.1×40	1
138	GHB1340-138	O-Ring	3.1×47	1
139	GHB1340-139	Spring	1×6×7	1
140	GHB1340-140	Spring	1×6×25	1
141	GHB1340-141	Spring	0.9×4.4×19	4
142	04235A	Shift Hub		2
	GHB1340-143	Brass Pipe(not shown)	8×1×30	2
147	GHB1340-147	Lever	Sleeve	3
	VB-A32	V-Belt (not shown)		2
148	04125	Frame		1
149	GHB1340-149	Pin	6×60	2
150	GHB1340-150	Screw	M6×50	4
151	GHB1340-151	Hex Socket Cap Screw	M10×35	2
152	22708G	Connecting Board		1
153	GHB1340A-153	Pin	5 X25	1
154	22709G	Shaft		1
155	22701	Break Shaft		1
156	GHB1340A-156	Circlip	12	1
157	GHB1340A-157	Break Shoet		1
158	22701G	Positioning Axle		1
159	GHB1340A-159	Circlip	8	1

Gearbox Assembly

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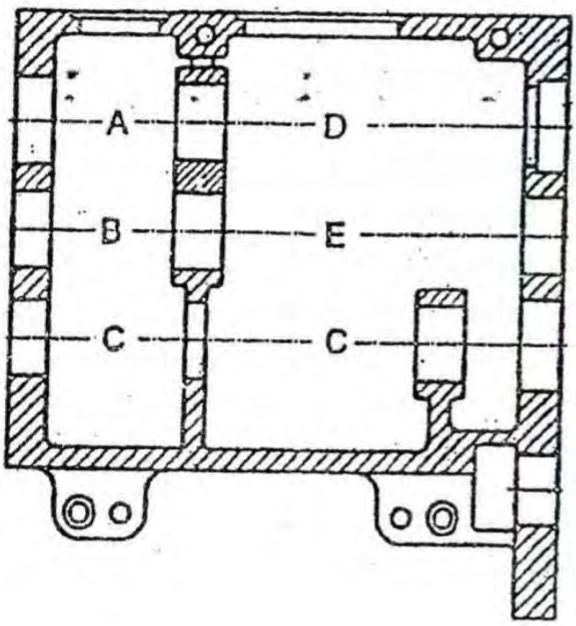
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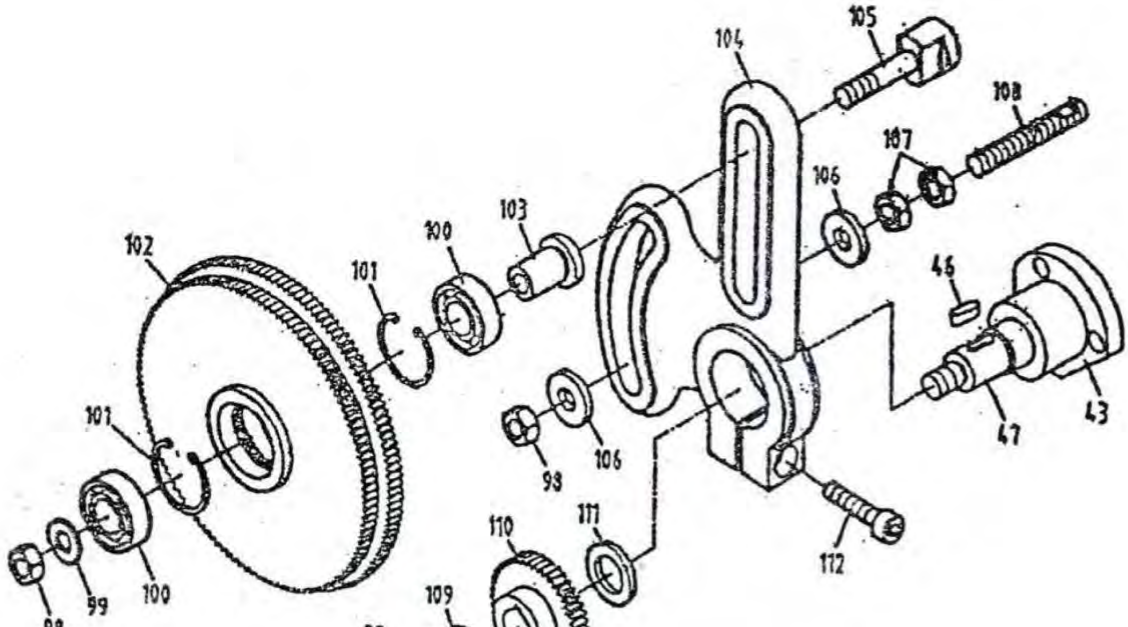
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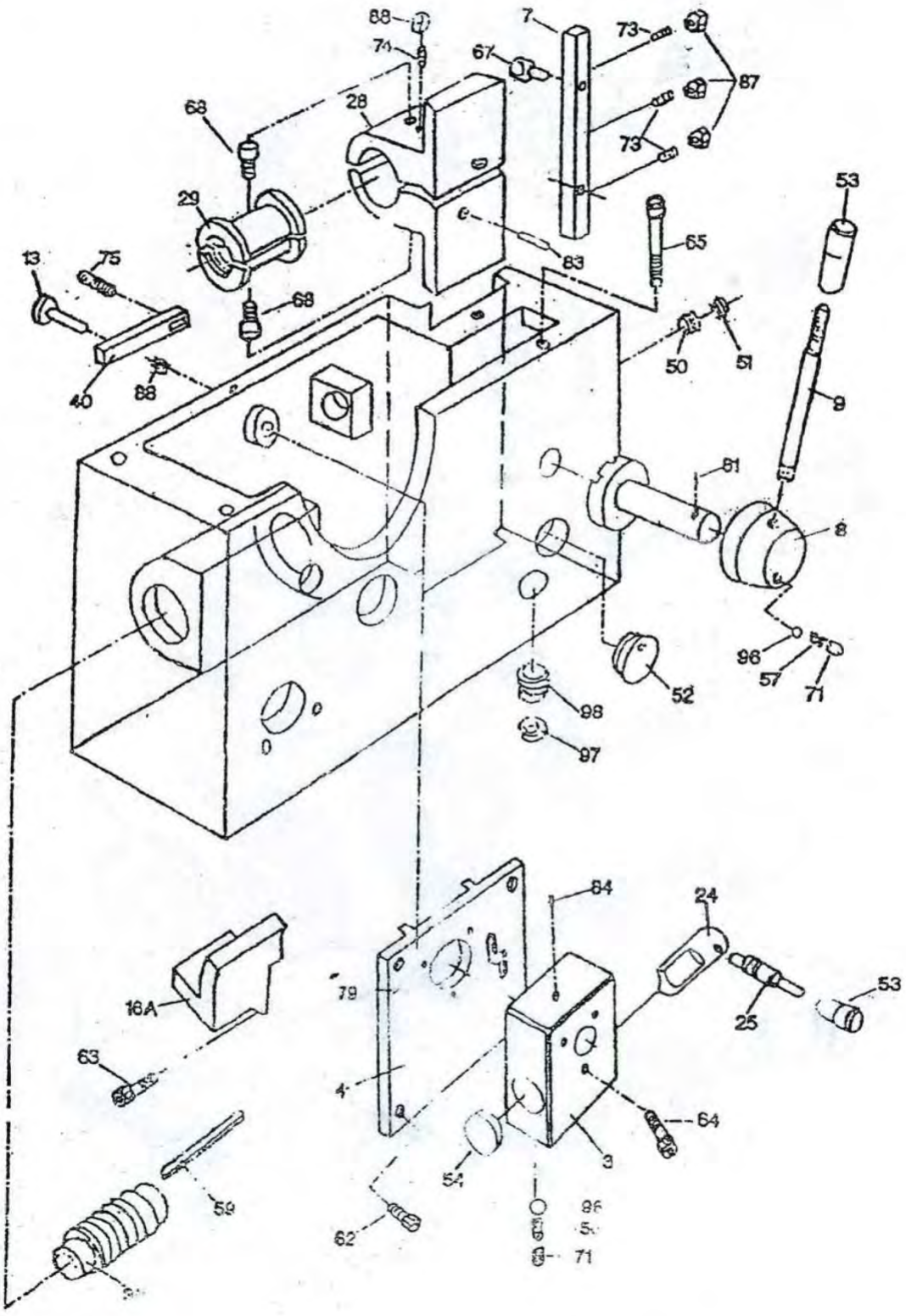
Gearbox Assembly

Index No.	Part No.	Description	Size	Qty
1	C0632B-05101	Casting		1
2	C0632B-05705	Cover		1
3	C0632B-05708	Cover		1
4	C0632B-G04	Drain oil screw	Z 3/8"	2
5	C0632B-G05	"O" ring	17x1.8	2
6	C0632B-05113	Sliding block		2
7	C0632B-G07	Hex socket cap screw	M8x65	2
8	C0632B-G08	Taper pin	6x30	2
9	C0632B-G09	Hex socket cap screw		2
10	C0632B-05305	Crank		1
11	C0632B-G11	Pin	8n6x30	2
12	C0632B-05114	Rack		1
13	C0632B-05306	Crank		1
14	C0632B-G14	Pin	8n6x30	2
15	C0632B-05115	Rack		1
16	C0632B-05734	Shaft		2
17	C0632B-05735	Key		4
18	C0632B-G18	"O" ring	8.75x1.8	2
19	C0632B-G19	Clamping screw	M5x8	2
20	C0632B-G20	Crank		1
21	C0632B-05110	Rack		1
22	C0632B-05303	Crank		1
23	C0632B-05111	Rack		1
24	C0632B-05108	Control rod support		1
25	C0632B-G25	Hex socket cap screw	M5x16	21
26	C0632B-05733	Gear		4
27	C0632B-G27	"O" ring	P7xW1.9	4
28	C0632B-05506	Gasket		1
29	C0632B-05112	Feed box cover		1
30	C0632B-G30	Hex socket cap screw	M6x25	8
31	C0632B-G31	Taper pin	5x25	2
32	C0632B-G32	Pin	5x40	4
33	C0632B-05109	Lever support		4
34	C0632B-G34	Steel ball	6	4
35	C0632B-G35	Spring	1x5x20	4
36	C0632B-G36	Clamping screw	M8x16	4
37	C0632B-05302	Label		4
38	C0632B-G38	Cross screw	M3x4	16
39	C0632B-G39	Clamping screw	M6x8	4
40	C0632B-G40	Oil sight glass	A20	1

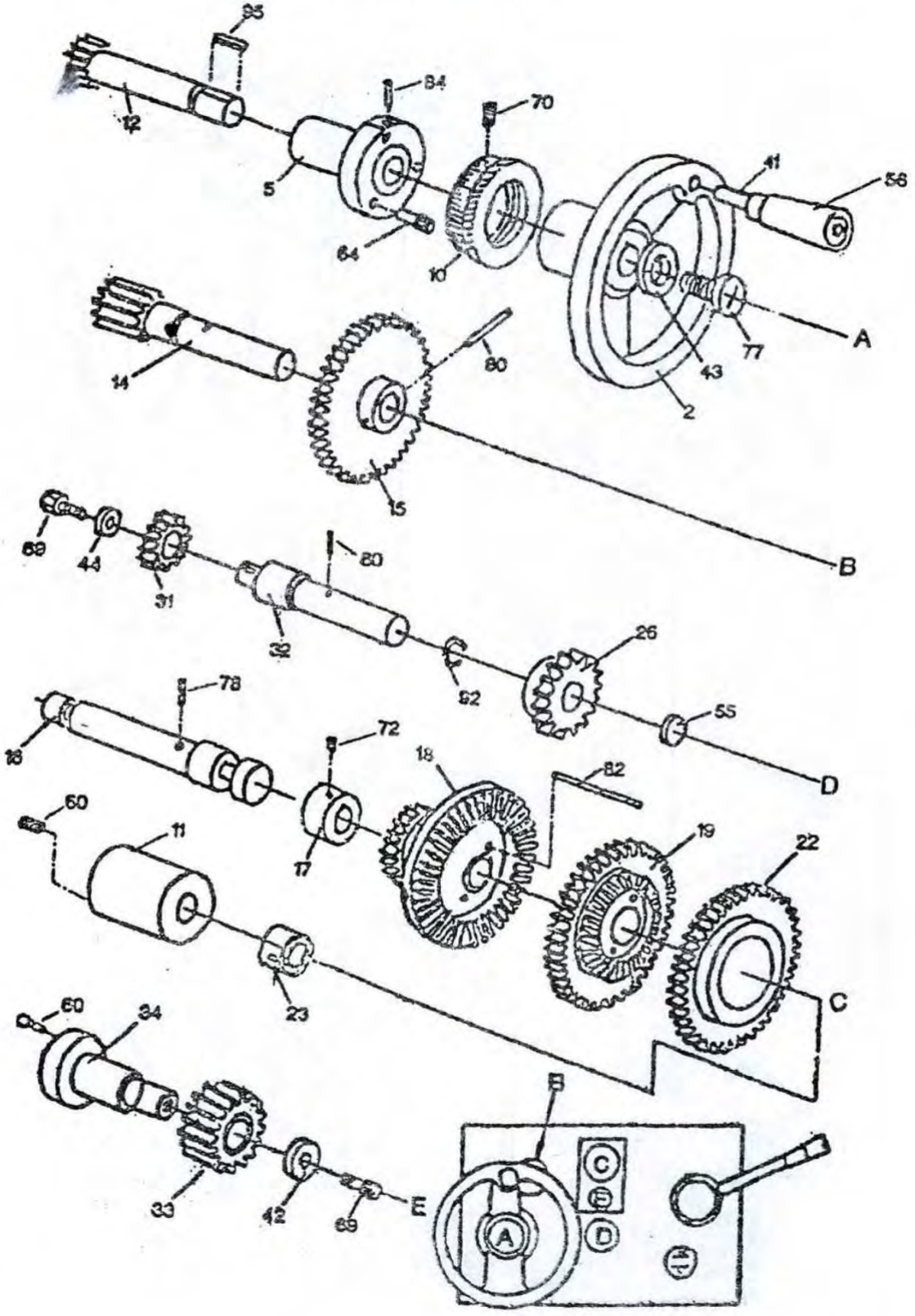
41	C 332B-05304	Label		1
42	332B-G42	Clip	26X2.4	1
43	C0632B-05103	Bearing cover		1
44	C0632B-05501	Gasket		1
45	C0632B-05711	Washer		1
46	C0632B-G46	Key	5x46	1
47	C0632B-05710	VII axle		1
48	C0632B-G48	Key	5x48	1
49	C0632B-G49	Bearing	17x40x12	1
50	C0632B-05102	Bushing		1
51	C0632B-G51	Circlip		7
52	C0632B-05709	Gear		1
53	C0632B-05707	Washer		1
54	C0632B-G54	Bearing	20x42x12	10
55	C0632B-05706	Washer		3
56	C0632B-G56	Circlip	20	7
57	C0632B-G57	Circlip	28	2
58	C0632B-05704	Gear		2
59	C0632B-05703	Gear		2
60	C0632B-G60	Key	4x22	2
61	C0632B-05702	Gear		2
62	C0632B-G62	Bearing	20x42x12	1
63	C0632B-05505	Gasket		1
64	C0632B-05108	Bearing cover		1
65	C0632B-05701	XI axle		1
66	C0632B-G66	Pin	5x45	1
67	C0632B-05104	Bearing cover		2
68	C0632B-05502	Gasket		2
69	C0632B-05714	Gear		1
70	C0632B-05713	Gear		1
71	C0632B-05716	Bushing		1
72	C0632B-05718	Gear		1
73	C0632B-05719	Bushing		1
74	C0632B-05715	VIII axle		1
75	C0632B-G75	Key	4x55	1
76	C0632B-05721	Bushing		1
77	C0632B-05722	Gear		1
78	C0632B-05723	Bushing		1
79	C0632B-05724	Gear		1
80	C0632B-05725	Gear		1
81	C0632B-05726	Gear		1
82	C0632B-05727	Bushing		1
83	C0632B-05732	Gear		1
84	C0632B-G84	Key	4x80	1

85	C0632B-05731	X axle		1
86	C0632B-G86	Key	4x18	2
87	C0632B-05105	Bearing cover		1
88	C0632B-05503	Gasket		1
89	C0632B-05717	Gear		1
90	C0632B-05720	IX axle		1
91	C0632B-05728	Bushing		1
92	C0632B-05729	Gear		1
93	C0632B-05504	Gasket		1
94	C0632B-05107	Bearing cover		1
95	C0632B-G95	Ring	25x40x7	1
96	C0632B-05730	XII axle		1
97	C0632B-G97	Pin	5x35	1
98	C0632B-G98	Screw	M12	3
99	GH1440A-05737	Washer		1
100	C0632B-G100	Bearing	17x35x10	2
101	C0632B-G101	Circlip	35	2
102	GH1440A-05736	Gear		1
103	GH1440A-05738	Sleeve		1
104	C0632A-05119	Gear cover		1
105	GH1440A-05739	Bolt		1
106	C0632B-G106	Washer		2
107	C0632B-G107	Screw	M10	2
108	C0632-01718	Bolt		1
109	C0632B-05712	Washer		1
110	C0632B-G107	Gear		1
111	C0632B-05711	Washer		1
112	C0632B-G112	Hex socket cap screw	M8x25	1

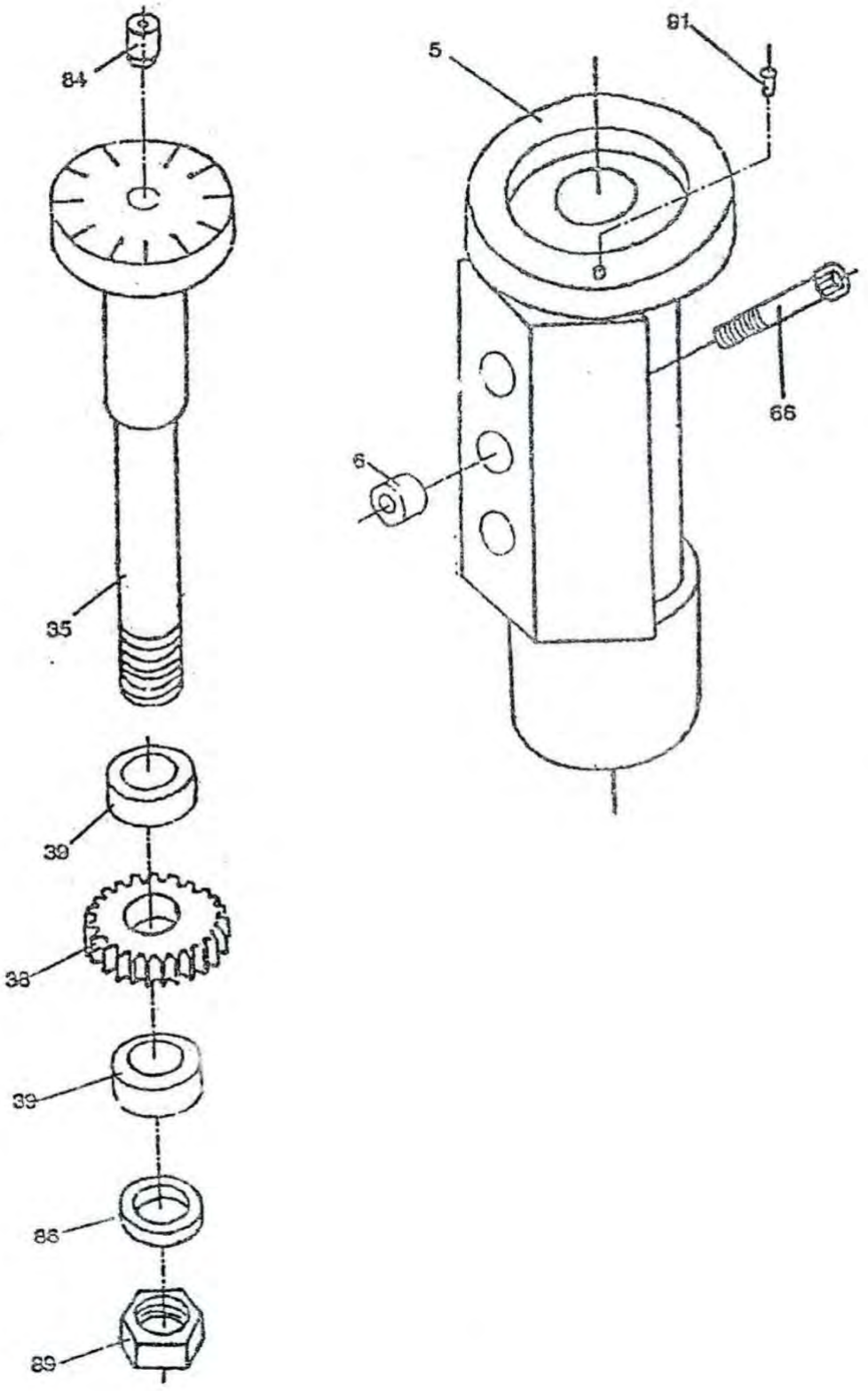
Apron Assembly



Apron Assembly



Apron Assembly

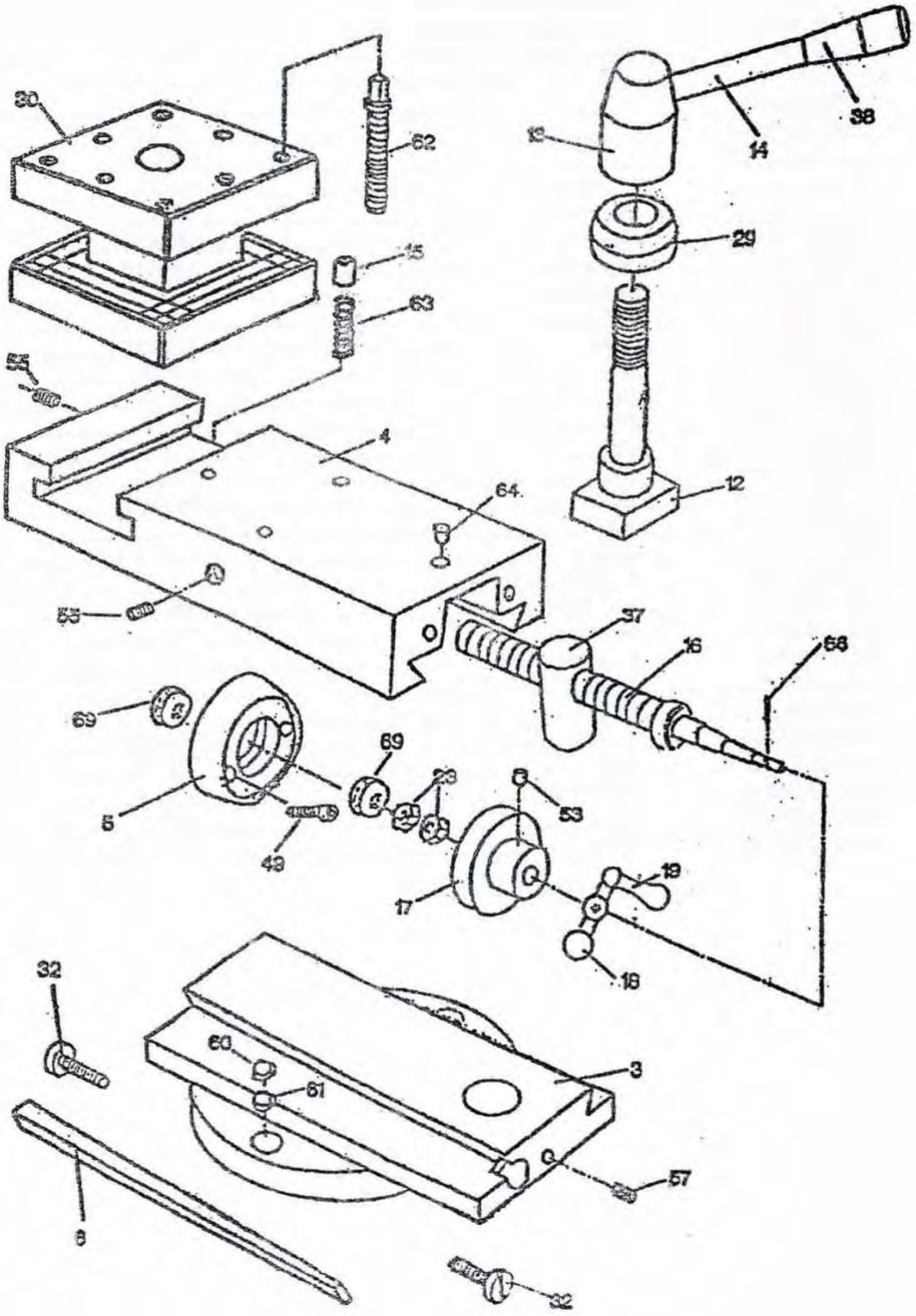


Apron Assembly

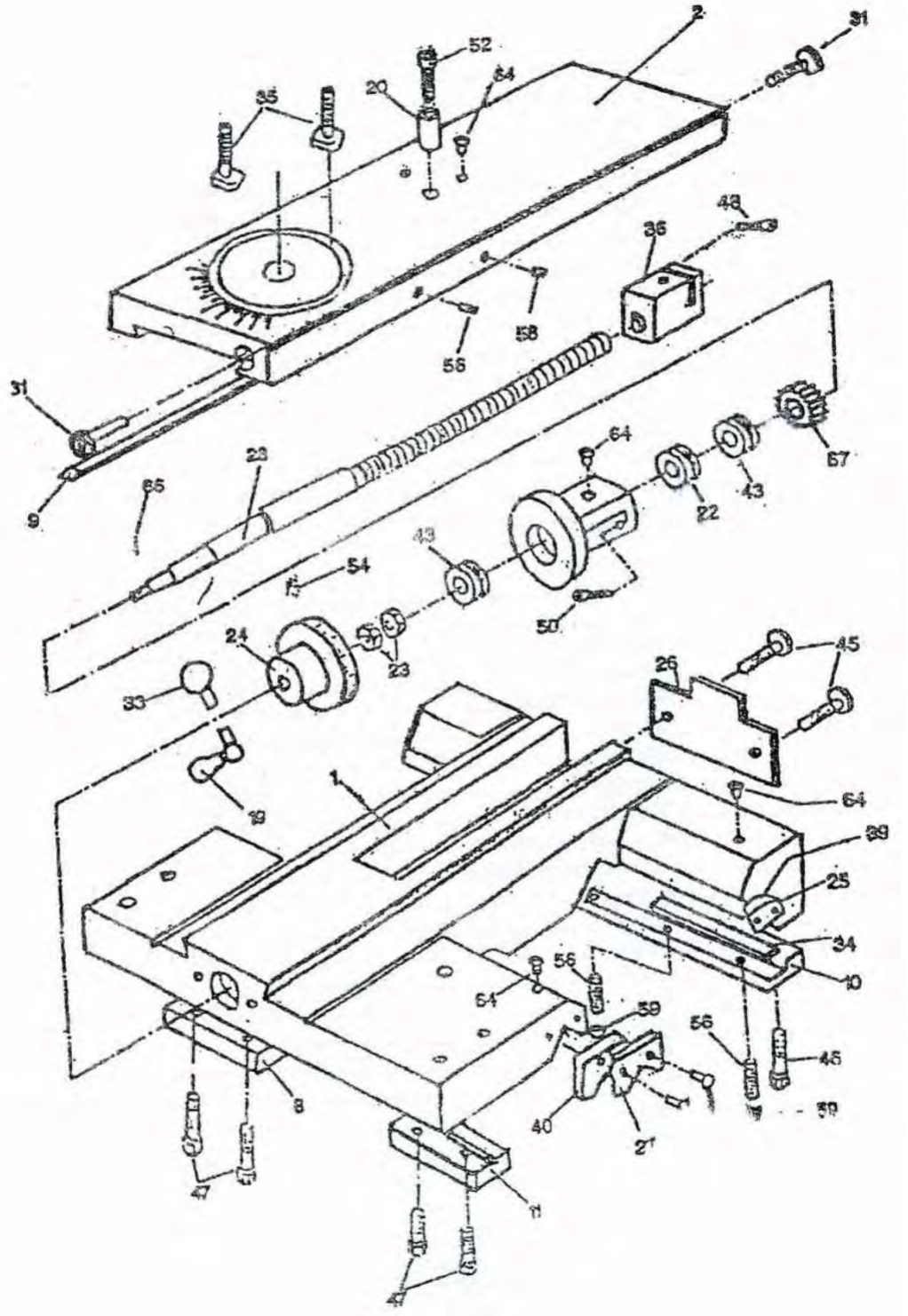
Index No.	Part No.	Description	Size	Qty.
1	06101	Casting		1
2	06102	Handwheel		2
3	06103	Box		1
4	06104	Cover		1
5	06105	Threading Dial Body		1
5A	06105A	Hub		1
6	06206	Washer		1
7	06107	Gib		1
8	06208	Handle		1
9	06209	Handle		1
10	06510	Index Ring		1
11	06111	Cover		1
12	06212	Shaft		1
13	06213	Gear Pin	60T	1
14	06214	Gear Shaft	18T	1
15	06215	Gear		1
16	06216	Shaft		1
16A	06415	Bracket		1
17	06417	Cover		1
18	06218	Gear	30T	1
19	06219	Gear	46T	1
22	06220	Gear	63T	1
23	06421	Shift Fork		1
24	06222	Shift Lever		1
25	06223	Shift Handle		1
26	06224	Gear	40T	1
28	06126	Bracket		1
29	06427	Half Nut		1
30	06228	Worm		1
31	06429	Gear	22T	1
32	06230	Shaft		1
33	06231	Gear	18T	1
34	06232	Shaft		1
35	06233	Threading Dial Shaft		1
38	06236	Gear	32T/30T/28T	1
39	06237	Washer		2
40	06238	Bar		1
41	06239	Screw		1
42	06240	Washer		1
43	06241	Washer		1
44	06242	Washer		1
50	06548	Oil Sight Collar		1
51	06459	Oil Sight Collar		1
52	06551	Oil Sight		1
53	06553	Knob		2
54	06554	Plug"A"		1
55	06555	Plug"B"		1
56	06556	Handle		1

57	06257	Spring		1
58	06258	Spring		1
59	06260	Key		1
60	TS-1502031	Hex Socket Cap Screw	M5X12	2
62	TS-1503031	Hex Socket Cap Screw	M6X12	4
63	TS-1503041	Hex Socket Cap Screw	M6X16	1
64	TS-1503061	Hex Socket Cap Screw	M6×25	3
65	TS-1504061	Hex Socket Cap Screw	M8×30	4
66	TS-1504101	Hex Socket Cap Screw	M8×50	1
67	GHB1340-A67	Screw	M5X16	3
68	GHB1340-A68	Screw	M6×12	2
69	GHB1340-A69	Screw	M6×10	2
70	TS-1522011	Set Screw	M5×6	1
71	TS-1523011	Set Screw	M6×6	3
72	TS-1523031	Set Screw	M6×10	1
73	TS-1522051	Set Screw	M5×16	3
74	GHB1340-A74	Set Screw	M6×35	1
75	TS-1523031	Set Screw	M6×10	1
77	GHB1340-A77	Screw	M6×12	1
78	GHB1340-A78	Pin	3×25	1
79	GHB1340-A79	Pin	5×20	2
80	GHB1340-A80	Pin	5×30	2
81	GHB1340-A81	Pin	5×32	1
82	GHB1340-A82	Pin	5×25	1
83	GHB1340-A83	Pin	8h6×12	2
84	GHB1340-A84	Oiler	8	3
85	GHB1340-A85	Washer	8×1.6×2.5	1
86	GHB1340-A86	Lock Washer		1
87	TS-1540031	Hex Nut	M5	3
88	TS-1540041	Hex Nut	M6	2
89	TS-1540061	Hex Nut	M8	1
90	GHB1340-A90	Rivet	2×5	8
91	GHB1340-A91	Rivet	3×8	1
92	GHB1340-A92	O-Ring	20×2.4	1
95	GHB1340-A95	Key	A5×18	1
96	GHB1340-A96	Steel Ball		2
97	GHB1340-A97	Washer	10	1
98	GHB1340-A98	Plug	M10×1	1

Top Slide, Tool Post,Sadle,and Cross Slide



Top Slide, Tool Post,Saddle,and Cross Slide

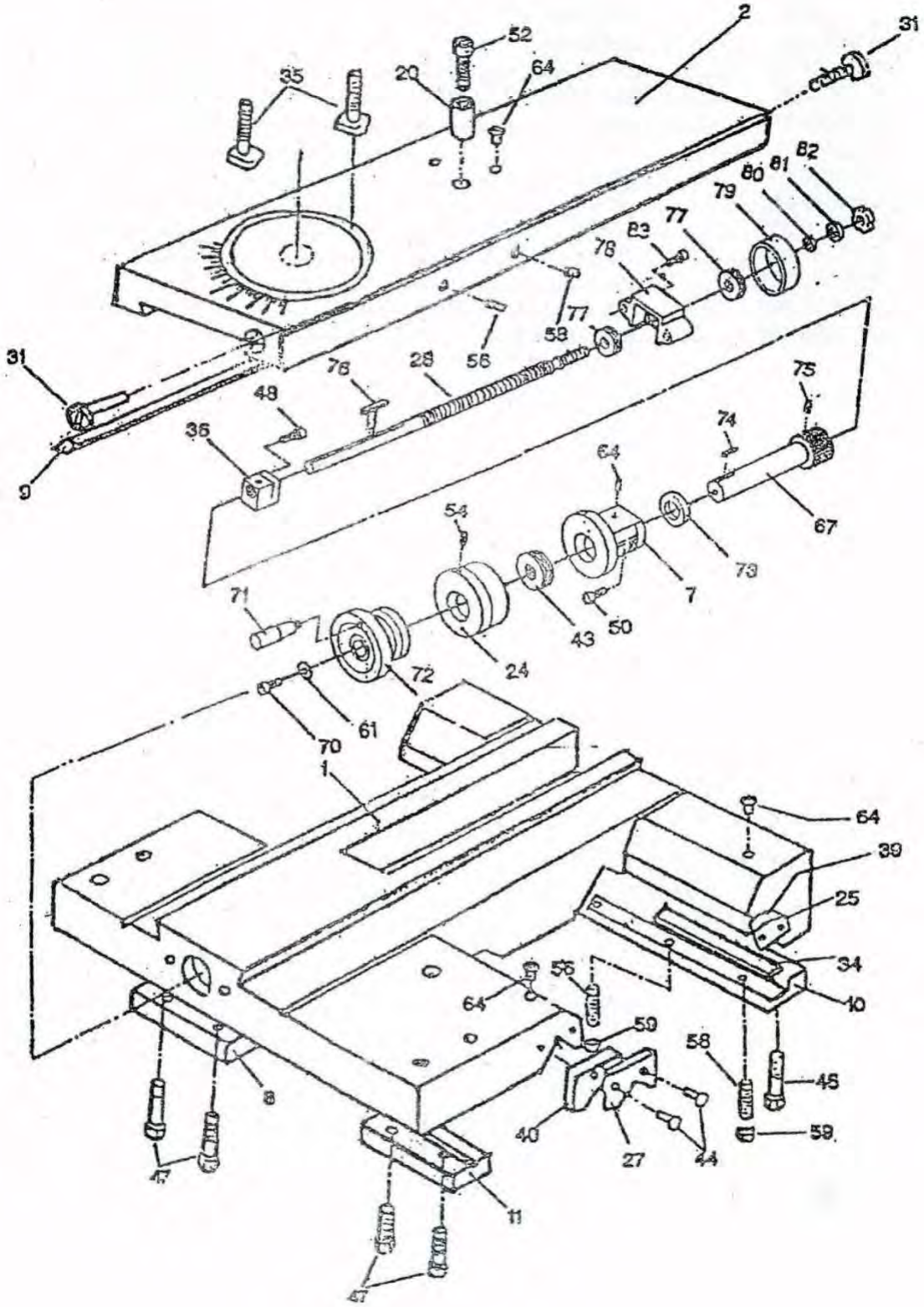


Top Slide, Tool Post, Saddle, and Cross Slide

Index No.	Part No.	Description	Size	Qty.
1	07101	Saddle		1
2	07102	Cross Slide		1
3	07103	Swivel Slide		1
4	07104	Top Slide		1
5	07111	Collar		1
6	07117	Gib		1
7	07120	Hub		1
8	07123	Strip		1
9	07131	Gib		1
10	07132	Strip		1
11	07141	Front Strip		1
12	07205	Screw		1
13	07206	Handle Base		1
14	07207	Handle Shaft		1
15	07209	Stop		1
16	07210	Screw		1
17	07212	Index Ring		1
18	07213	Lever		1
19	07214	Lever		2
20	07216	Collar		1
22	07219	Washer		1
23	07221	Nut		4
24	07221	Index Ring		1
25	07224	Plate		2
26	07225	Plate w/ Wiper		1
27	07227	Plate		2
28	07228	Screw		1
29	07233	Washer		1
30	07234	Post Base		1
31	07236	Gib Adjusting Screw		2
32	07237	Gib Adjusting Screw		2
33	07238	Lever		1
34	07239	Gib Strip		2
35	07240	T-Bolt		1
36	07415	Block		1
37	07430	Nut		1
38	07508	Knob		1
39	07526	Wiper		2
40	07528	Wiper		1
42	GHB1340-42T	Bearing	8101	2
43	GHB0340-43T	Bearing	8102	2
44	GHB1340-44T	Screw	M4×12	2
45	GHB1340-45T	Screw	M8×12	2
46	GHB1340-46T	Screw	M8×20	1
47	GHB1340-47T	Screw	M8×20	4
48	TS-1503041	Hex Socket Cap Screw	M6×16	1
49	TS-1503051	Hex Socket Cap Screw	M6×20	2
50	TS-1503061	Hex Socket Cap Screw	M6×25	2

52	TS-1504031	Hex Socket Cap Screw	M8×16	2
53	TS-1523011	Set Screw	M6×6	1
54	TS-1523021	Set Screw	M6×8	1
55	TS-1523031	Set Screw	M6×10	3
56	TS-1523051	Set Screw	M6×16	5
57	TS-1524011	Set Screw	M8×8	1
58	TS-1524021	Set Screw	M8×10	1
59	TS-1540041	Hex Nut	M6	4
60	TS-1540061	Hex Nut	M8	2
61	GHB1340-61T	Washer	8	2
62	GHB1340-62T	Screw	M10×40	8
63	GHB1340-63T	Spring	0.6×4×18	1
64	GHB1340-64T	Oil Ball	8	6
66	GHB1340-66T	Pin	3×16	2
67	GHB1340-67T	Pin	3×20	1
69	GHB1340-69T	Ball Bearing		2

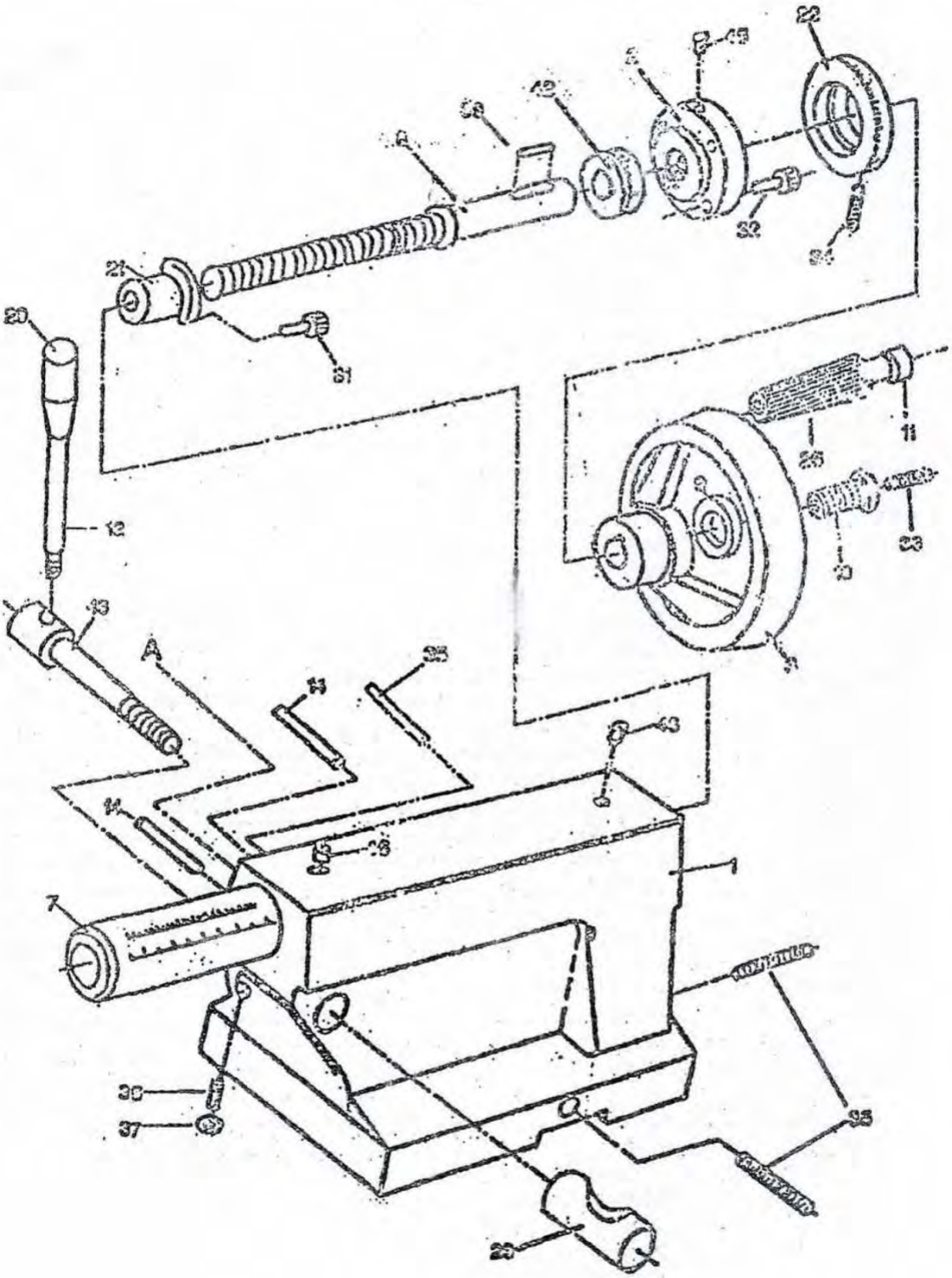
Saddle and Cross Slide Assembly(Telescoping Lead Screw)



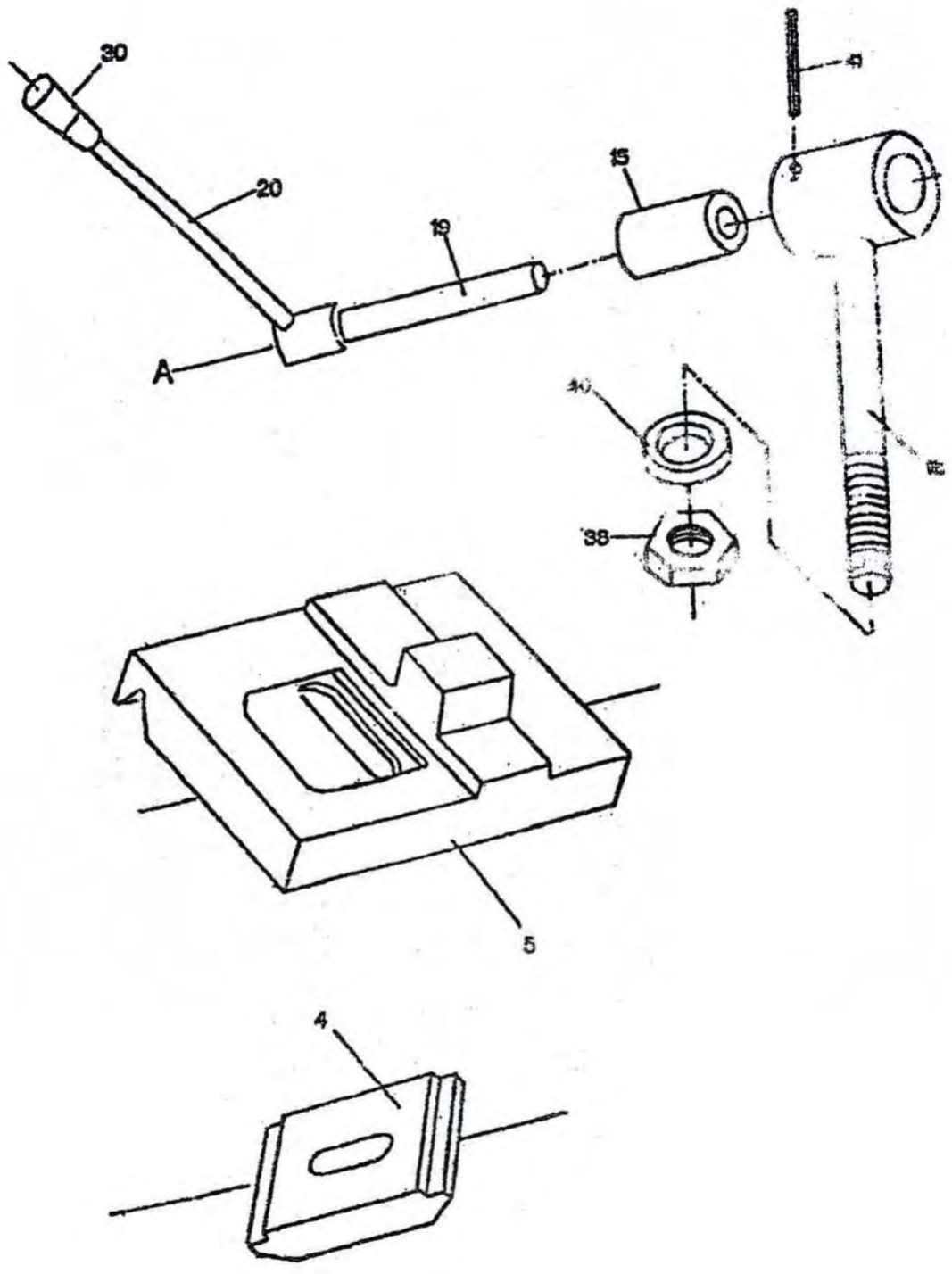
Saddle and Cross Slide Assembly(Telescoping Lead Screw)

Index No.	Part No.	Description	Size	Qty.
1.	07101	Saddle		1
2.	07102	Cross Slide		1
7.	07120N	Hub		1
8.	07123	Strip		1
9.	07131	Gib		1
10.	07132	Strip		1
11.	07141	Front Strip		1
12.	07205	Screw		1
20.	07216	Collar		1
24.	07222N	Index Ring		1
25.	07224	Plate		1
27.	07227	Plate		1
28.	07229N	Screw		2
31.	07236	Gib Adjsting Screw		1
34.	07239	Gib Strip		1
35.	07240	T-Bolt		1
36.	07415	Block		1
39.	07526	Wiper		1
40.	07528	Wiper		1
43.	GHB1340-43T	Bearing	8102	1
44.	GHB1340-44T	Screw	M4×12	1
46.	GHB1340-46T	Screw	M8×20	1
47.	GHB1340-47T	Screw	M8×20	1
48.	TS-1503041	Hex Socket Cap Screw	M6×16	3
50.	TS-1503061	Hex Socket Cap Screw	M6×25	4
52.	TS-1504031	Hex Socket Cap Screw	M8×16	1
54.	TS-1523021	Set Screw	M6×8	1
56.	TS-1523051	Set Screw	M6×16	5
58.	TS-1524021	Set Screw	M8×10	1
59.	TS-1540041	Hex Nut	M6	1
61.	07529	Washer		1
64.	GHB1340-64T	Oil Ball	8	6
67.	07530	Gear Shaft		1
70.	GHB1340-70T	Hex Socket Cap Screw	M8×16	1
71.	07531	Lever		1
72.	07532	Compound Handle		1
73.	07533	Spacer		1
74.	GHB1340-74T	Key	4×4×20	1
75.	GHB1340-75T	Screw	M3×6	1
76.	GHB1340-76T	Key	5×5×30	1
77.	GHB1340-77T	Thrust Bearing	51101	2
78.	07538	Bearing Housing		1
79.	07539	Bearing Dust Cover		1
80.	07540	Washer		1
81.	07541	Star Washer		1
82.	07542	Locking Nut		1
83.	GHB1340-83T	Hex Socket Cap Screw	M8×25	2

Tailstock Assembly



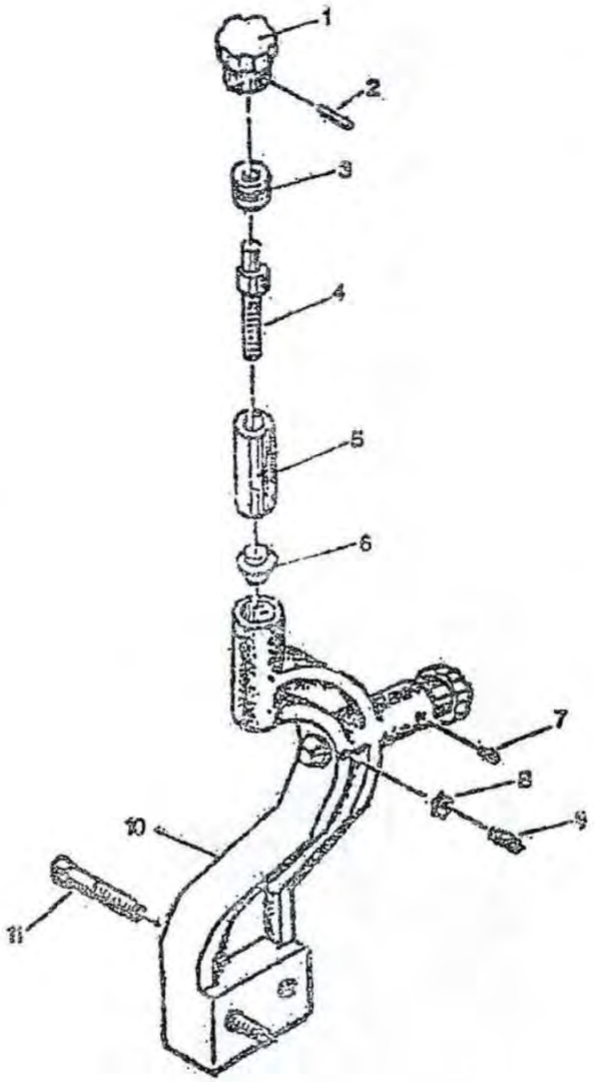
Tailstock Assembly



Tailstock Assembly

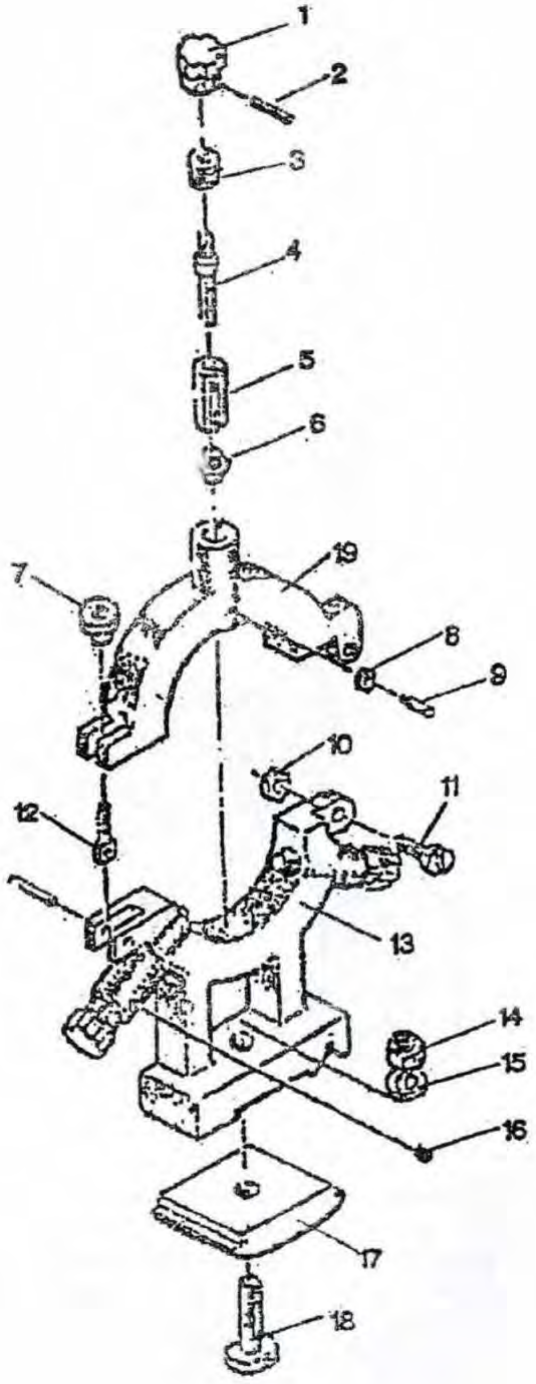
Index No.	Part No.	Description	Size	Qty.
1	08101	Casting		1
2	08102	Flange Cover		1
3	08103	Hanwheel		1
4	08104	Clamp Plate		1
5	08105	Base		1
	08201	Live Center	MT-3	1
7	08202	Quill		1
8	08203	Screw		1
9	08204	Washer		1
10	08205	Screw		1
11	08206	Screw		1
12	08207	Screw		1
13	08208	Shaft		1
14	08209	Screw		2
15	08211	Collar		1
16	0812	Screw		1
19	08213	Shaft		1
20	08214	Lever		1
21	08401	Nut		1
22	08402	Index Ring		1
23	08403	Pivot Block		1
26	08501	Handle		1
29	GHB1340-29TS	Knob	M8×40	1
30	GHB1340-30TS	Knob	M10×50	1
31	TS-1501031	Hex Socket Cap Screw	M4×10	3
32	TS-1503041	Hex Socket Cap Screw	M6×16	4
33	TS-1522061	Set Screw	M5×20	1
34	TS-1523031	Set Screw	M6×10	1
35	GHB1340-35TS	Set Screw	M10×45	3
36	GHB1340-35TS	Screw	M8×35	1
37	TS-1540061	Hex Nut	M8	1
38	TS-1540081	Hex Nut	M12	1
39	GHB1340-39TS	Key	4×15	1
40	GHB1340-40TS	Washer	B12	1
41	GHB1340-41TS	Pin	5×24	1
42	GHB1340-42TS	Bearing	8102	1
46	GHB1340-43TS	Oil Ball	8	3

Follow Rest



1	GHB1340-1FR	Knob		2
2	GHB-1340-2FR	Pin	3×18	2
3	10208	Bushing		2
4	10204	Screw		2
5	10201	Sleeve		2
6	10401	Brass Finger		2
7	TS-152301	Set Screw	M6×6	2
8	TS-1540041	Nut	M6	2
9	TS-152306	Set Screw	M6×20	2
10	10104	Base Casting		1
11	TS-150409	Hex Socket Cap Screw	M8×45	2

Steady Rest



Steady Rest

Index No.	Part No.	Description	Size	Qty.
1	GHB1340-1FR	Knob		3
2	GHB-1340-2FR	Pin	3×18	3
3	10203	Bushing		3
4	10204	Screw		3
5	10201	Sleeve		3
6	10401	Brass Finger		3
7	10205	Lock Knob		1
8	TS-1540041	Nut	M6	3
9	TS-152306	Set Screw	M6×20	3
10	TS-1540041	Nut	M6	1
11	GHB1340-11SR	Bolt	M6×30	1
12	10206	Pivot Bolt		1
13	10102	Base Casting		1
14	TS-1540081	Nut	M12	1
15	TS-155008	Flat Washer	M12	1
16	TS-152301	Set Screw	M6×6	3
17	10103	Clamp Pad		1
18	GH1340-18SR	Clamp Screw		1
19	10101	Top Casting		1