



Crusader Deluxe Lathe Operation Manual

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Contents

1. GENERAL DESCRIPTION OF THE MACHINE

General Description
Basic Technical Data

2. DESCRIPTION OF THE MAIN UNITS

Gearbox
Quadrant
Feed Box
Carriage Group
Thread Indicator
Tail Stock
Rests

3. MACHINE INSTALLATION

Unpacking
Handling
Preparation
Mounting, Foundation and Levelling
Connection to the Electrical Supply
Putting into Operation

4. MACHINE SERVICE

Lubrication
Recommended Lubricants

5. MACHINE OPERATION

Putting into Operation
Cutting of Threads and Feeds
Fretted Parts

6. MECHANISMS ADJUSTMENT

7. SAFETY

8. MACHINE CARE AND MAINTENANCE

9. TRANSMISSION SYSTEM & PARTS

10. BEARING DISTRIBUTION

1. GENERAL DESCRIPTION OF THE MACHINE

1.1 General Data

Main Assemblies (see fig 1a)

- | | |
|-------------------------|-----------------------------|
| 1. Bed way | 13. Lead screw (with guard) |
| 2. Headstock | 14. Feed rod |
| 3. Feed box | 15. Switch rod |
| 4. Carriage box | 16. Tool holder |
| 5. Electrical box | 17. Quadrant |
| 6. Chuck protection box | 18. Oil tray |
| 7. Splash guard | 19. Steady rest |
| 8. Lower carriage | 20. Foot stand |
| 9. Top carriage | 21. Thread indicator |
| 10. Cooling | 22. Foot brake |
| 11. Working Light | 23. 3 jaw chuck |
| 12. Tailstock | |

Controls (see fig 1b)

1. Lever for starting, stopping and reversing the carriage feed movement while threading
2. Lever for spindle speed stages
3. Wrench for the tool holder
4. Flywheel for the shifting the tool holder slide
5. Handle for the tail spindle fixing
6. Handle for the tailstock fixing
7. Flywheel for the tail spindle shifting
8. Handle for the starting and stopping of the carriage longitudinal shifting while threading
9. Lever for starting the spindle in forward or reverse stroke and its stopping. When shifted in the forward direction, the spindle will turn counter-clockwise, and when shifted in the backward direction, the spindle will turn clockwise. When in the center position, the spindle will stop.
10. Lever starting and stopping the carriage in transverse and longitudinal shifting
11. Flywheel for manual shifting of the carriage in longitudinal direction
12. Flywheel for feeding the cross slide
13. Drum (handle) for selection of "feed" or "thread"
14. Button-emergency stop
15. Switch-coolant pump
16. Button-test bottom for the main electric motor
17. Signal lamp. It glows when the main electric motor is switched on

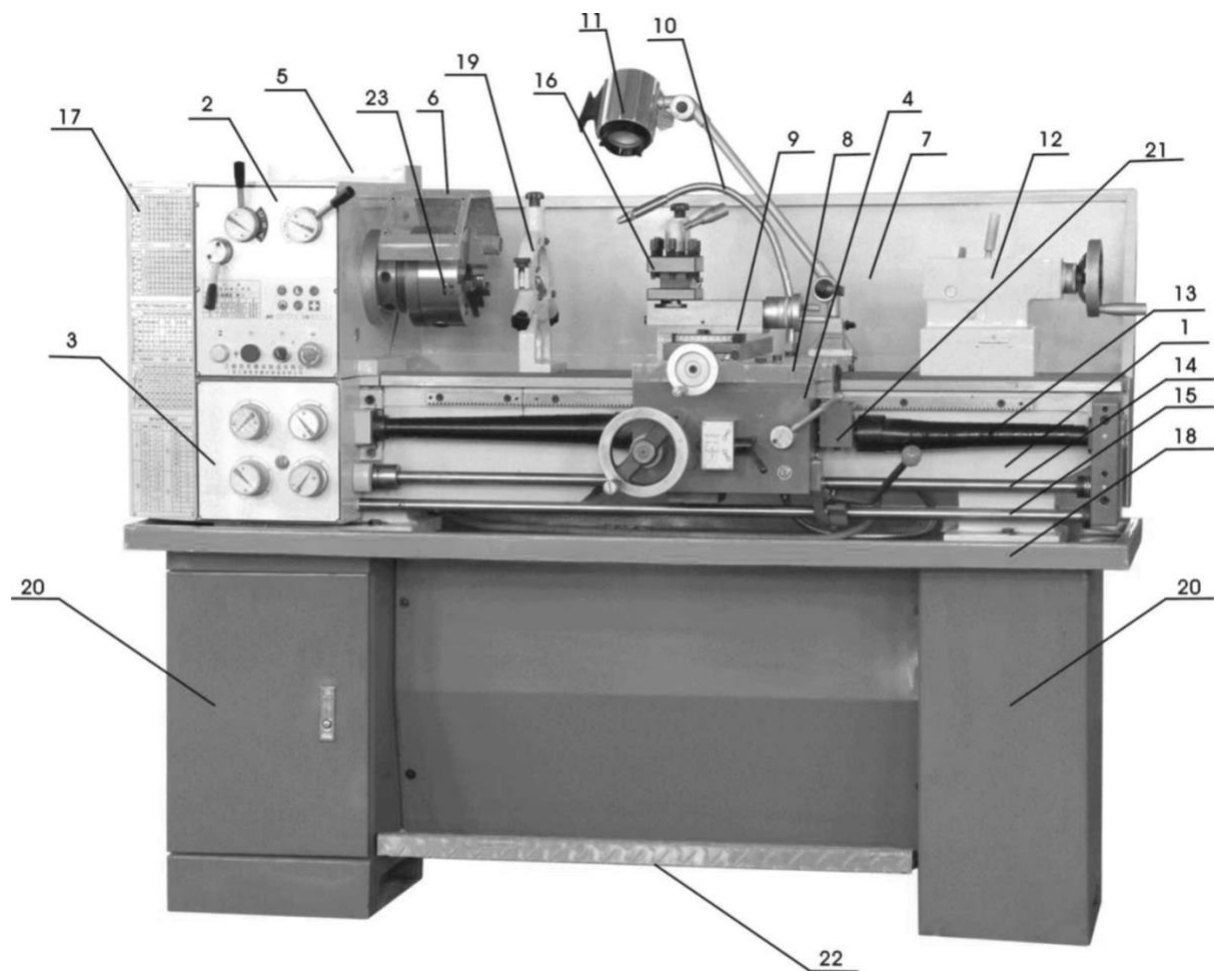


Fig.1a MAIN ASSEMBLIES

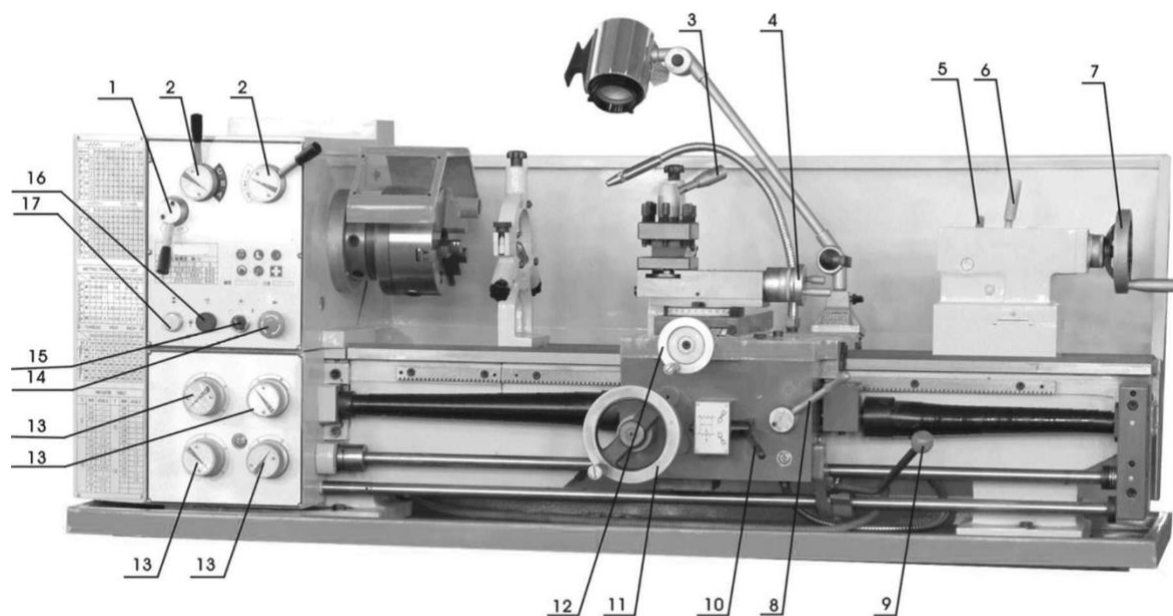


Fig.1b CONTROLS

1.2 Basic Technical Data

Crusader Deluxe Lathe	
Max swing over bed	300mm
Max swing over gap	430mm
Max swing over cross slide	180mm
Distance between centres	900mm
Spindle bore	38mm
Range of spindle speed	50-1200rpm
Spindle Taper	MT5
Tailstock Taper	MT3
Carriage Travel	600mm
Cross-slide Travel	160mm
Top-slide Travel	75mm
Tailstock Travel	100mm
Motor power	1.5kW (2hp)

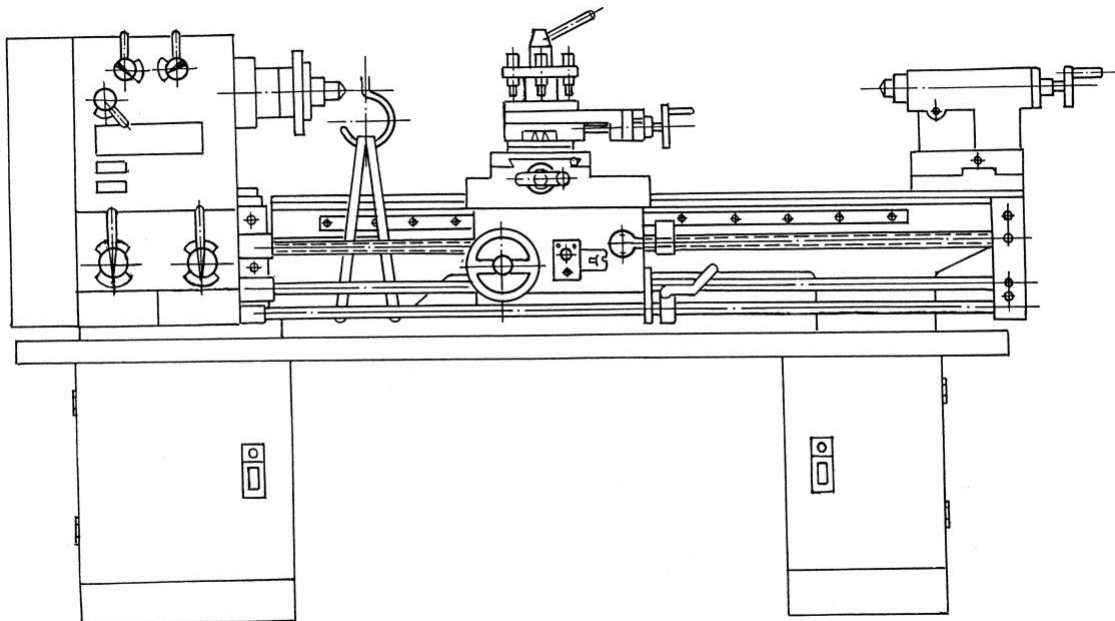


Fig.2 Position to hoist the lathe

2. DESCRIPTION OF THE MAIN UNITS

Gear Box

The gear box is mounted on the machine corp. The rotation motion to this gear box is transferred through v-belts and belt pulleys from an electric motor mounted on the guide way.

Quadrant

The quadrant is designed to transfer the motion from the gear box to the feed box through the change gears. It is mounted in the quadrant box. The latter is closed by a cover.

Feed Box

The feed box is fixed to the face side of the machine crop – just below the gear box. It includes all the mechanisms, by the help of which is affected the adjustment for selection of the feed or thread pitches.

Required adjustments for the different values of the feed or thread pitch are realized by the help of respective drums, located in the front part of the feed box.

Carriage Group and its Mechanisms

The carriage group is designed for fixing and driving the cutting tool. It includes five basic parts: carriage box, carriage board, lower slide, cross piece and upper (top) slide.

1. Carriage box

The carriage box is mounted on the carriage board. It contains the mechanisms that are used for driving the carriage longitudinal and cross feeds, as well as the mechanism for the engagement of the nut to the lead screw while threading and the mechanism for manual feed of the carriage.

2. Carriage Board

The carriage board is mounted on the crop guide ways. All the rest parts of the carriage group are fixed to this carriage board.

3. Lower Slide

The lower slide moves on the guide ways of the carriage board in a transverse direction. This movement may be affected automatically or manually.

4. Cross Piece

When short cones have to be turned by hand, the cross piece may be swiveled at 90° towards the lower slide in both directions and be fixed in the required position by the help of suitable bolts and nuts.

5. Upper (Top) Slide

The top slide on which the four position tool holder is mounted, can be shifted only by hand in the direction of the cross piece.

Thus you may obtain longitudinal, cross and combined feed for the cutting tool.

Thread Indicator

This device is mounted to the carriage box (disengaged to the driving screw) for getting into the thread pitch.

Tail Stock

The tail stock is clamped to the corp guide ways. It is designed for working piece clamping during machining between centers for drilling operations with manual feed of the tool.

Rests

In response to the special request of the client, the lathe may be packed additionally with a steady and a follow rest.

The two types are with sliding quills. The steady rest is fixed to the corp guide ways and the follow rest to the carriage board.

3. MACHINE INSTALLATION

Unpacking

After the machine has been unpacked, check carefully its general condition as well as the condition of all the accessories.

Handling

The unpacked machine shall be moved only by the help of a suitable crane. Before passing the ropes over the specified places, see fig 2, pull out the tail stock and carriage and fix them in the rear hand position so that when lifting the machine you will obtain the required balance. When moving the machine, never strike or hit it sharply as this may affect the machines accuracy irrespective of whether or not there is any visible defects.

Since the paint on some parts of the machine may be damaged during this process, place protective pads of fabric or other suitable material on the respective places.

Preparation

Before placing the machine in the predetermined position, clean it carefully from the protective oil. The machine surfaces should be cleaned with pure naphtha or benzine.

Do not use hard objects or any solvent that could damage the metal surfaces or the paint of the machine. Use dry cloths to dry any damp surfaces of the machine and coat with machine oil to help protect the clean surfaces. Remove the end gear cover and clean all components of the end gear assembly and coat all the gears with heavy non-slinging grease.

Mounting, Foundations and Levelling

To obtain accurate, durable and trouble-free operation of the machine, mount it only on a suitable foundation and level the machine carefully. The foundation is to be prepared in advance with concrete with a thickness from 200 to 300mm according to the soil type.

The unpacked machine is lifted by crane according to the specified method and after the anchor and leveling bolts are in place, lower the machine onto the foundation so that anchor bolts enter into the respective holes in the machine base. The guide way should be checked horizontally in the longitudinal and transverse direction towards the machine axis by the help of a spirit level with an accuracy of $\pm 0.02/1000\text{mm}$ and $\pm 0.04/1000\text{mm}$. After this initial levelling has been carried out, put cement putty into the space below the machine legs around the anchor bolts.

After the cement has set (3-4 days), tighten the nuts of the anchor bolts carefully and evenly. Check the machines level again and if necessary correct using the leveling bolts.

Connection to the Electrical Supply

Check that the data on the electrical panel scheme (voltage and frequency of the supply source) correspond to the power supply available.

The controlling level should remain in the middle and also press the power switch down to keep the machine switched off.

Make sure that the machine is properly grounded.

Putting into Operation

Before starting the machine, clean it once again and lubricate according to the diagram, see fig 3a, 3b and 3c.

Check the V-belt from the motor to the gear box and make sure that it is not too tight or too loose. If the belt is too tight, it could damage the bearings, if the belt is too loose, it will slip. Adjust must be adjusted to the correct tension.

Starting is effected in the following order:

Check manually the movements of all the components. It should be smooth. Check all the controls are operating correctly.

Fill the tank of the coolant system with the specified coolant (optional accessory order separately). Switch on the main electric motor.

After one hour check the oil levels in the tanks and, if necessary, add the oil quantity required.

After two shifts of operation, check the V-belts for excessive play.

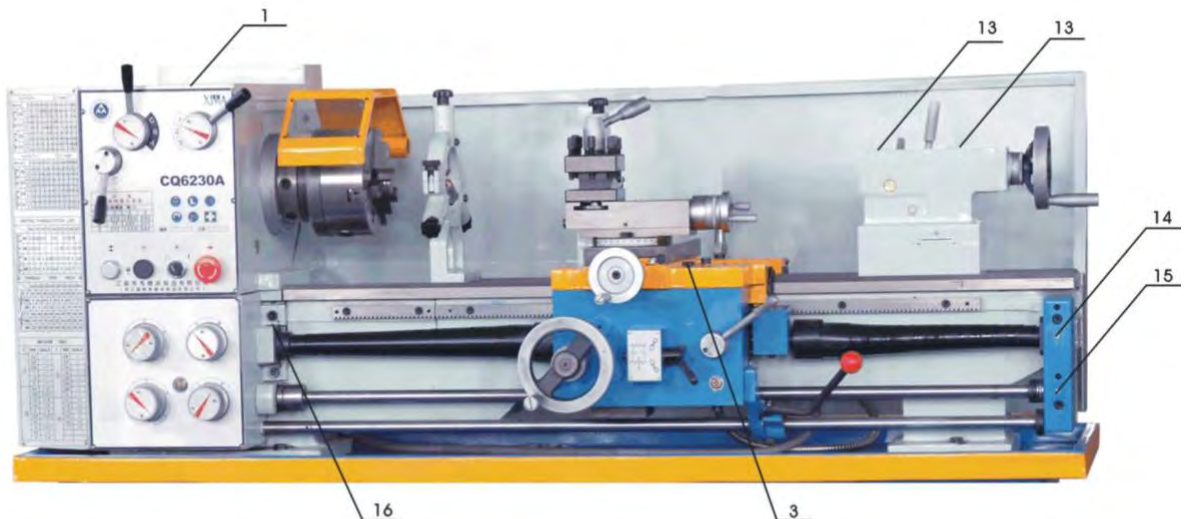


Fig.3a Lubrication System

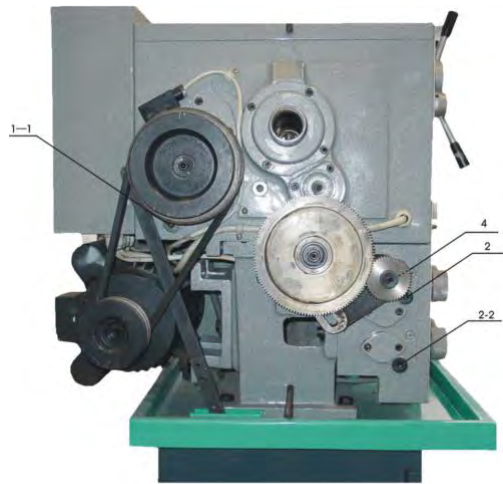


Fig.3b Lubrication System

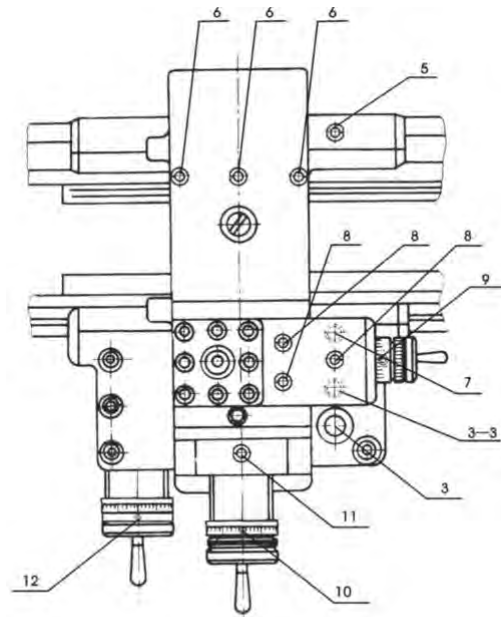


Fig.3c Lubrication System

4. MACHINE SERVICE

Lubricant

The trouble-free operation of the lathe depends on careful servicing, especially the regular lubrication of all machine operating parts with the recommended lubricants, see fig 3a, 3b and 3c.

The headstock is lubricated by the splashing of oil. The oil may be poured into headstock after the removal of the cap (1) from the oil vent with the oil filler located in the headstock cover. The oil is drained by unscrewing the plug (1-1) to the oil draining tube. If the oil has be replaced, clean the headstock with pure naphtha carefully. When refilling with new, the level must be to the middle of the oil sight glass. The disk couplers and the main spindle front bearing are lubricated by an oil collecting groove. The feed box is lubricated through a hole (2) located on its left hand side. The oil quantity required must reach the middle of the sight glass. The oil is drained through the plug (2-2).

The change gear sleeve for the quadrant should be lubricated with grease once per day with a suitable oiler. The change gears should be lubricated with oil once per day.

The carriage box is lubricated through a common hole (3) where the oil is fed into a tank which is common for the whole box. Using suitable grooves, the oil is fed to the respective bearing as a portion of the oil drops on the bottom of the box from where the gears are oiled. The oil is drained from a plug (3-3).

The carriage as well as the slide guiding surfaces are lubricated by the help of suitable oilers (6) pressed into the carriage and cross slider (8). The electric motor bearing should be cleaned and greased once every six months. All the friction surfaces of the carriage, travelling stock and conic lineal should be oiled by the help of an oil holder or oiler according to the lubrication system.

Recommended Lubricants

Assembly	Lubricating point	Lubricating Method	Lubricant	Lubricating Interval
Headstock	Gears and bearing, Spindle front bearing, Spindle rear bearing, Belt pulley bearing	Oil bath - by splashing	Machine Oil	Oil replacement: 1st time - after 10 days of operation, 2nd time - after 20 days of operation, next time - once per each 60 days
Feed box	Gears, bearings and all the mechanisms	Oil bath - by splashing	Machine Oil	
Carriage	Gears, bearings and all the mechanisms	Oil bath - by splashing	Machine Oil	
Quadrant	Change gears, Quadrant idle axel	By Hand	Machine Oil, Grease "L"	Once per shift
Carriage slide	Corp bed ways, Slide bed ways	By Hand with help of oilers	Machine Oil	Once per shift
Cross carriage	Support of the screw in the slide. Cross screw for carriage	By Hand oil tank, located in the carriage	Machine Oil	Once per shift
Cross shaped carriage	Carriage bed ways. Cross shaped carriage bed ways, Screw of the cross shaped carriage, Tool holder	By Hand	Machine Oil	Once per shift
Tailstock	Screw support Quill	By Hand	Machine Oil	Once per shift
Console	Lead screw bearing, feed rod bearing, switch rod bearing	By Hand	Machine Oil	Once per shift

5. MACHINE OPERATION

Putting into Operation

After performing the previous instruction, the machine is ready for operation, the connection to the electric supply is effected by the help of the main interrupter. Turning on the control lamp shows that the machine is connected to the power supply.

All the speeds within the range 65-1810rpm at different position of the levers are shown on the nameplate.

When starting the machine, check that all the gears are engaged, this is obtained by placing the handles at their fixed positions.

The change-over of the gears shall be effected only under idling conditions.

The machine operating mode selection shall be realized from the speed indication nameplate. When trying the machine, put the speed change lever in low speed stage and keep the machine running for at least 20 minutes, then gradually change the speed of the spindle up to the fastest. Every stage running over 5 minutes.

Cutting of Threads and Feeds

The feed box receives its motion from shaft V of the gearbox through a set of change gears. If the handle (3), see fig 4, 5 and 6, is placed in its right hand position, the lathe is set for cutting of right hand thread. If the same handle is placed in its left hand position, the lathe is set for cutting of a left hand thread.

It is not required to place on the quadrant respective change gear set in order to prepare the lathe for the necessary feed.

The different values for the feeds and threads are obtained by the different setting of the quadrant and changing the position of drums/handle 4, 5, 6, 21 and handle 3.

All the quadrant setting and drums/handles different positions are shown on the nameplate for threads and feeds.

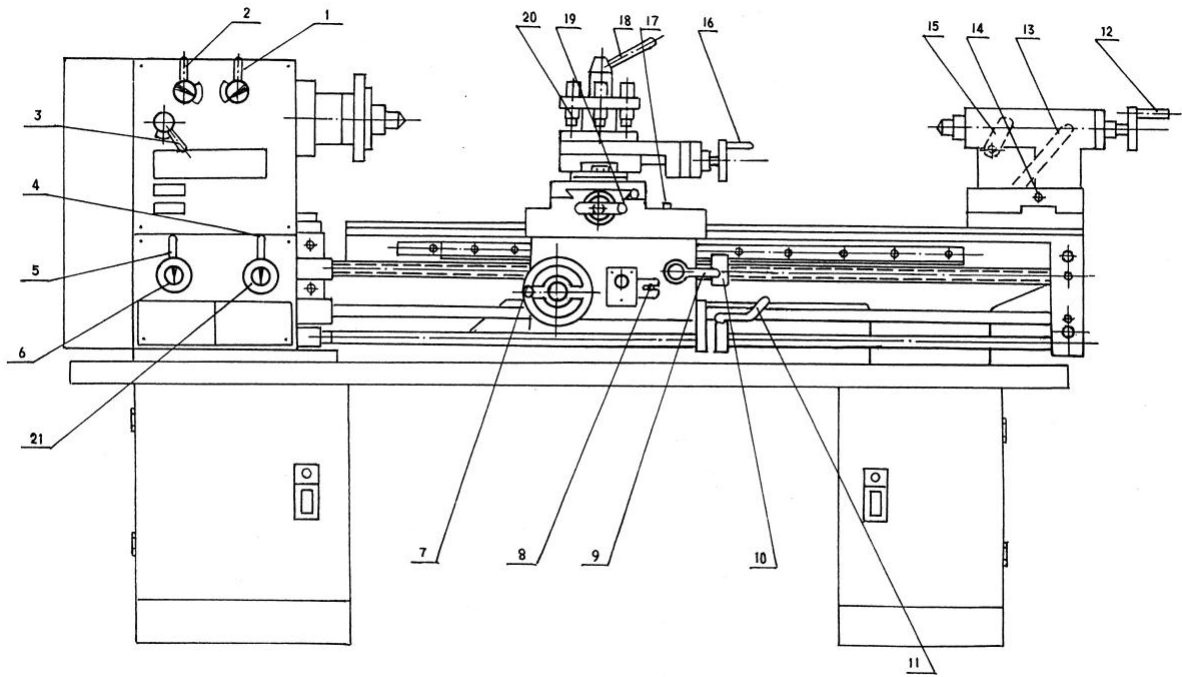


Fig.4 Operation levers I type Feedbox

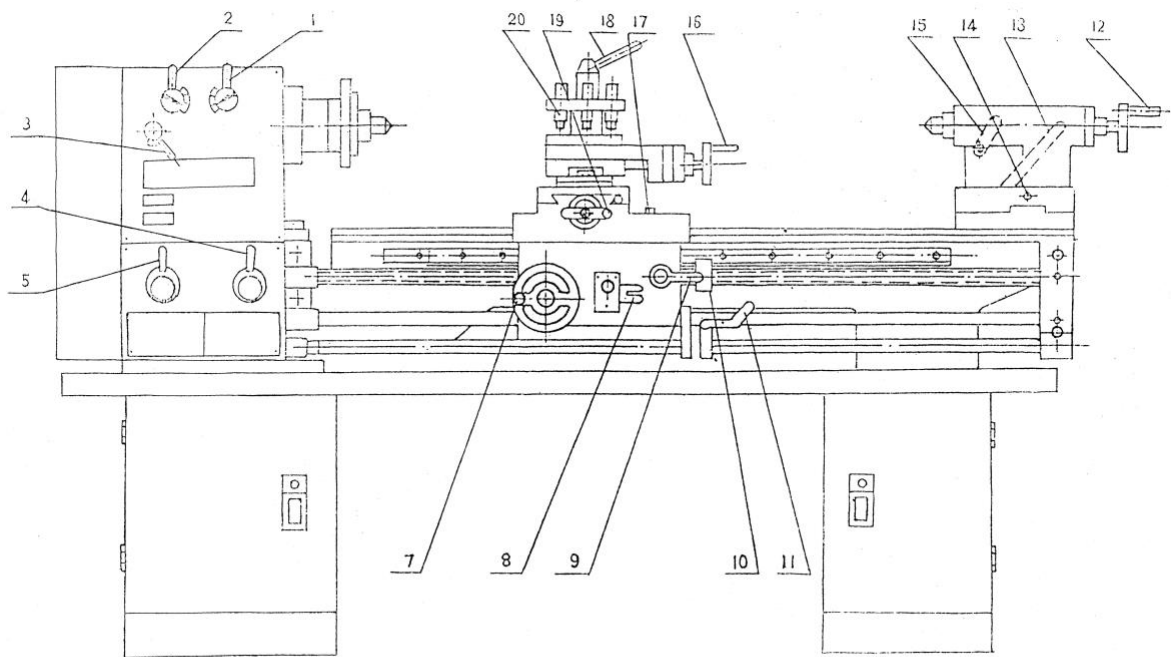


Fig. 5 Operation levers II type Feedbox

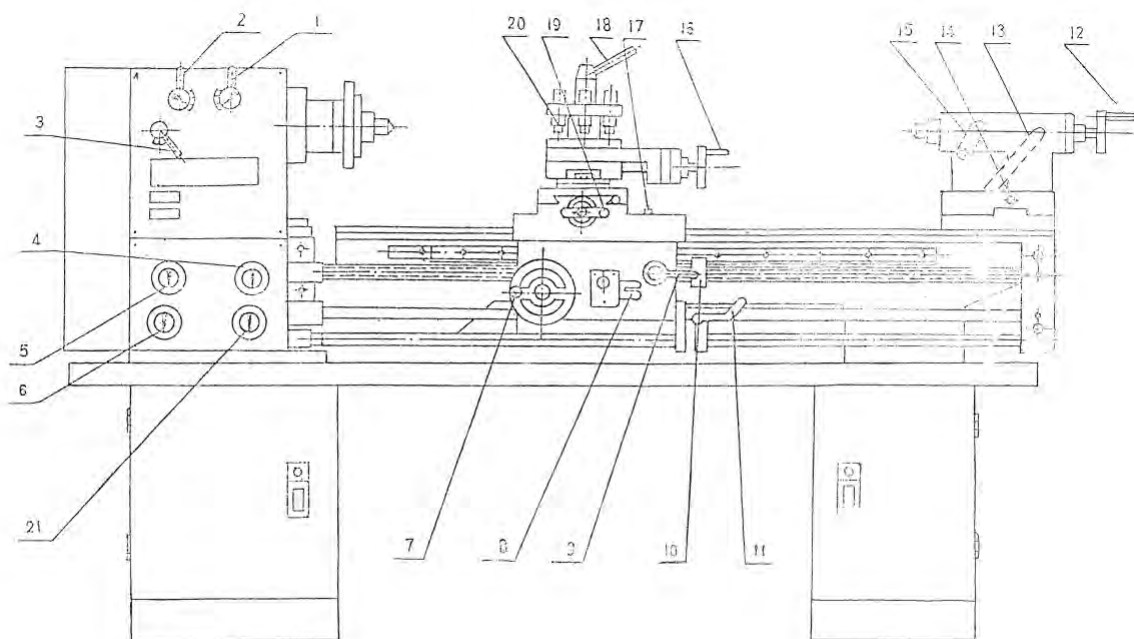


Fig. 6 Operation levers III type Feedbox

Adjust the nut gap on the carriage, see fig 7.
Rotate the nut (1) to the satisfied saddle motion and required travel.

Chuck and faceplate mounting, see fig 8.

The connection between the spindle and the chuck or faceplate is made by a D-Cam lock structure. When mounting, put the three pull pins of the chuck or faceplate into the three holes on the spindle face end, then turn the three cams with the aid of a square head wrench. When turning the cams clockwise, the chuck will be locked, when turning the cams counter-clockwise to a certain point, the chuck can be detached.

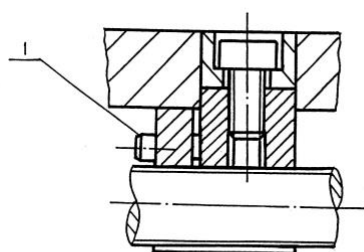


Fig. 7 Adjust the gap of horizontal feeding nut

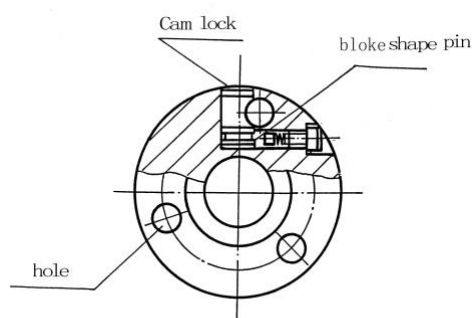


Fig. 8 Chuck or faceplate lock structure

Fretted Parts

No.	Name	Material	Mount	Note
1	Feeding Nut	ZQSn6-6-3	1	CQ6230-5104
2	Half Nut	ZQSn6-6-3	1	CQ6230-4003

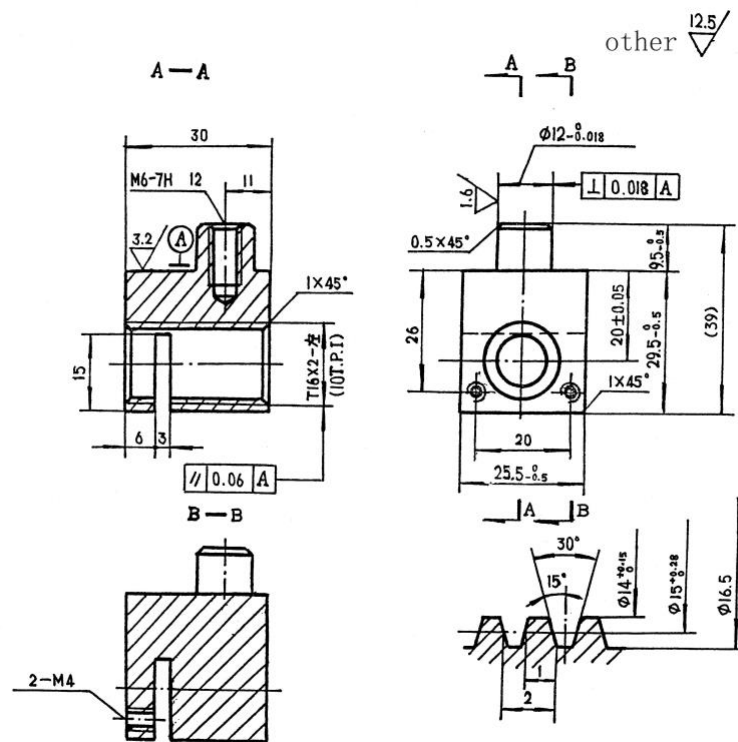


Fig.9 Feeding Nut Material

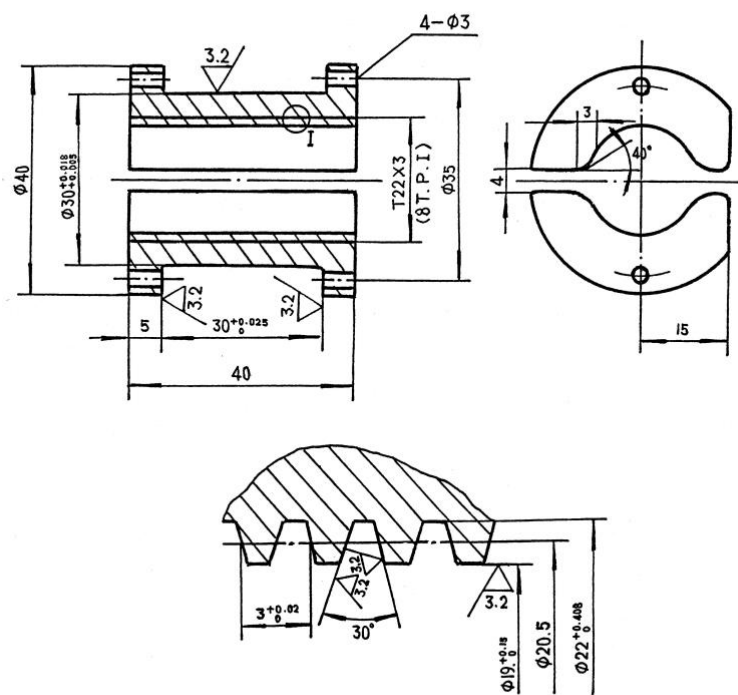


Fig.10 Half Nut Material

6. MECHANISMS ADJUSTMENT

After a period of time, some of the mechanisms will require readjustment because of the effect of wear and tear on the friction surfaces. The adjustment and setting of the different mechanisms shall be effected after each repair. It is recommended that these adjustments are performed by a qualified specialist.

7. Safety

All lathe operators must be constantly aware of the safety hazards that are associated with using the lathe and must know all the safety procedures to help avoid accidents and injuries.

Please follow the following safety precautions:

1. Remove loose clothing and jewelry, tie back long hair and roll sleeves up above the elbow. Do not operate whilst wearing gloves
2. Always stop the lathe before making adjustments.
3. Do not change the spindle speeds until the lathe has come to a complete stop.
4. Handle sharp cutters, centers and drills with care.
5. Remove chuck keys and wrenches before operating the machine.
6. Always wear protective eye protection.
7. Handle the chuck with care and protect the lathe guide ways with a block of wood before replacing or installing the chuck.
8. Make sure you know where the emergency stop button is before operating the machine.
9. Use pliers or a brush to remove chips and swarf, never use your hands.
10. Do not lean on the machine.
11. Never lay tools directly on the guide ways.
12. Keep tool overhang as short as possible.
13. Never attempt to measure work whilst the machine is running.
14. Never file lathe work unless the file has a handle.
15. Do **not** over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
16. Provide adequate light around the machine and keep the perimeter around the machine dry, clean and in good order. In addition, do not place anything near the machine; otherwise it becomes an obstacle during operation.
17. Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
18. Keep the floor around the machine clean and free of scrap material, oil and grease.
19. Always use identical replacement parts when servicing.

8. MACHINE CARE AND MAINTENANCE

Lathes are a highly accurate machine tool designed to operate around the clock is properly operated and maintained. Lathes must be lubricated and checked for adjustment before operation. Improper lubrication or loose nuts and bolts can cause excessive wear and dangerous operating conditions.

1. The lathe ways are precision ground surfaces and must not be used as a table for other tools and should be kept clean of grit and dirt.
2. The lead screw and gears should be checked frequently for any metal chips that could be lodged in the gearing mechanisms.
3. Check the lathe prior to operation for any missing parts or broken shear pins. Refer to the manual before attempting to lift the lathe.
4. Newly installed machines should be properly leveled before operation to prevent vibration or wobble.
5. When the lathe is transported out of a normal shop environment, it should be protected from dust, excessive heat and very cold conditions.
6. Change the lubricant frequently if working in dusty conditions.
7. In hot working areas, use care to avoid overheating the motor or damaging any seals.
8. Operate the lathe at slower speeds than normal when working in cold environment.
9. Lubricate all slide ways lightly before using the machine daily. The change gears and lead screws must be lightly lubricated with lithium base grease.
10. During the operation, the chips which fall on to the sliding surface should be cleared in a timely fashion, an inspection should be made often to prevent chips falling between the machine tool saddle and the lathe bed guide way. Asphalt felt should be cleaned a certain interval.
11. After the operation every day, eliminate all the chips and clean the different parts of the machine and apply machine tool oil to prevent rusting.
12. In order to maintain the machine accuracy, take care of the center, the surface of the machine tool for the chuck and the guide way and avoid mechanical damage and wear due to improper operation.
13. If damage is found, maintenance must be carried out immediately.

ATTENTION: Before performing any inspection, repair or maintenance operation, switch off the main power supply to the machine and make an additional check to ensure that the machine is not under voltage.

Oil, grease and cleaning are pollutants and must not be disposed of through the drains or in normal refuse. Dispose of these agents in accordance with current legal requirements on the environment. Cleaning rags impregnated with oil, grease and cleaning agents are easily inflammable. Collect cleaning rags or cleaning wool in a suitable closed vessel and dispose of them in an environmentally sound way – DO NOT put them with normal refuse.

9. Transmission System & Parts

Parts	Parts No.	Kinds	No. of teeth on thread	Modulus of pitch	Pressure angle	Material	Notes
Headstock	1	Gear	42	M2	20°	45	2013
	2	Gear	23	M2	20°	45	2018
	3	Gear	47	M2	20°	45	2019
	4	Gear	36	M2	20°	45	2021
	5	Gear	55	M2	20°	45	2020
	6	Gear	31	M2	20°	45	2022
	7	Gear	45	M2	20°	45	2016
	8	Gear	58	M2	20°	45	2015
	9	Gear	21	M2	20°	45	2017
	10	Gear	45	M2	20°	45	2008
	11	Gear	59	M2	20°	45	2029
	12	Gear	46	M2	20°	45	2030
	13	Gear	83	M2	20°	45	2031
	14	Paired Gear	45	M2	20°	45	2026
			40	M2	20°	45	
	15	Gear	40	M2	20°	45	2032
			45	M2	20°	45	
Feed Box	16	Gear	24	M2.25	20°	45	3029B
	17	Gear	16	M2.25	20°	45	3031B
	18	Gear	18	M2.25	20°	45	3032B
	19	Triplicated Gear	18	M2.25	20°	45	3005B
			18	M2.25	20°	45	
			18	M2.25	20°	45	
	20	Gear	20	M2.25	20°	45	3003B
	21	Gear	28	M2.25	20°	45	3002B
	22	Gear	27	M2.25	20°	45	3027C
	23	Gear	21	M2.25	20°	45	3025C
	24	Gear	21	M2.25	20°	45	3018C
	25	Paired Gear	18	M2.25	20°	45	3026C
			30	M2.25	20°	45	
	26	Gear	22	M2.25	20°	45	3007C
	27	Paired Gear	15	M2.25	20°	45	3006C
			22	M2.25	20°	45	
	28	Gear	23	M2.25	20°	45	3009B
	29	Gear	17	M2.25	20°	45	3016C
	30	Gear	15	M2.25	20°	45	3014C
Apron	31	Gear	11	M2.25	20°	45	4028
	32	Rack		M2.25	29° or 30°	45	
	33	Lead Screw	Single Thread	8TPI or 3mm		45	

	34	Half nut	Single Thread	MS2	20°	ZQSn6-6-3	
	35	Worm	Single Thread	MS2	20°	45	
	36	Worm Gear	24	M2	20°	ZQSn6-6-3	4017
	37	Gear	15	M2	20°	45	4030
	38	Gear	50	M2	20°	ZQSn6-6-3	4029
	39	Gear	25	M2	20°	45	4014
	40	Nut	Single Thread	10TPL or 2mm		ZQSn6-6-3	Left Hand Thread
	41	Screw	Single Thread	10TPL or 2mm		45	
	42	Gear	14	M2	20°	45	4019
	43	Gear	51	M2	20°	45	4013
	44	Gear	43	M2	20°	45	5127
	45	Gear	25	M2	20°	45	4010
	46	Gear	48	M2	20°	45	4012
	47	Screw	Single Thread	10TPL or 2mm		45	
	48	Nut	Single Thread	10TPL or 2mm		ZQSn6-6-3	
Tailstock	49	Rod Screw	Single Thread	10TPL or 2mm		45	Left Hand Thread
	50	Nut	Single Thread	10TPL or 2mm		ZQSn6-6-3	Left Hand Thread
Change Gear		Gear	22	M1.25	20°		3076C
		Gear	24	M1.25	20°	45	2002C
		Gear	26	M1.25	20°	45	3075C
		Gear	44	M1.25	20°	45	3077C
		Gear	48	M1.25	20°	45	3039C
		Gear	52	M1.25	20°	45	3039C
		Paired Gear	127 (120)	M1.25	20°	45	3078C

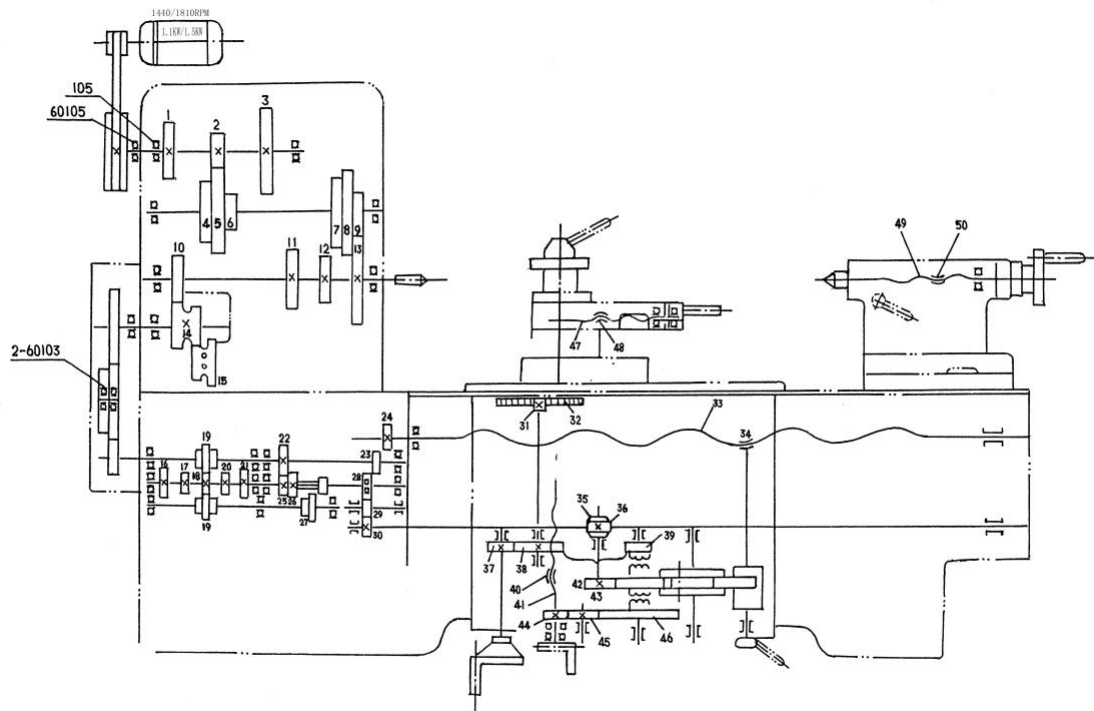


Fig.11 Transmission system

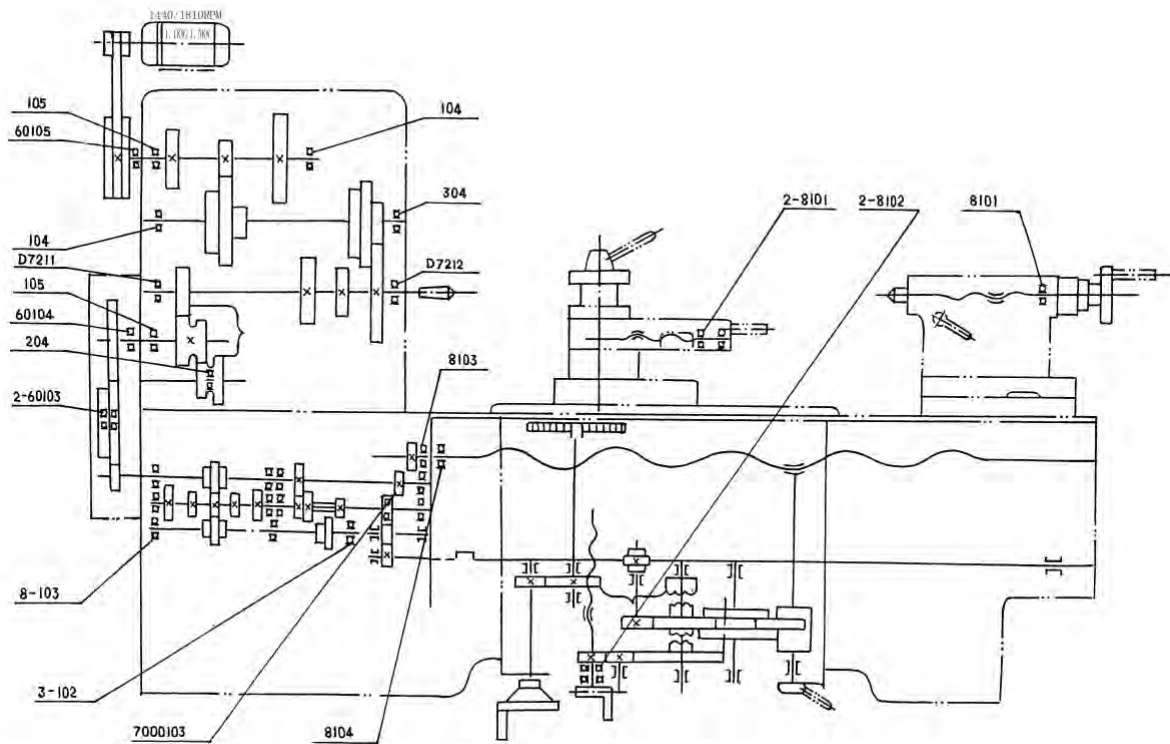


Fig.12 Bearings Distribution

BEARING DISTRIBUTION

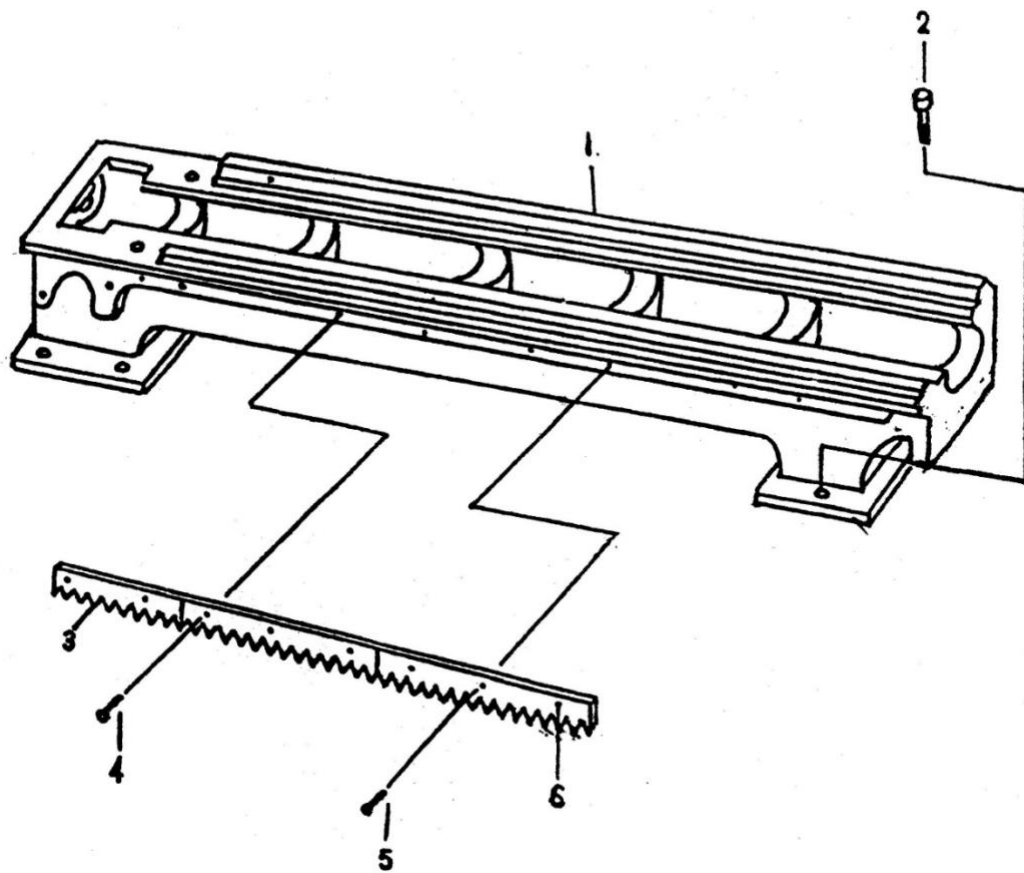
60104	Ball Bearing Single Row	20x42x12	1	Headstock
60105	Single Row Ball Bearing with Shield	25x47x12	1	
304	Single Row Ball Bearing with Shield	20x52x15	1	
104	Single Row Ball Bearing	20x42x12	2	
105	Single Row Ball Bearing	25x17x12	2	
204	Single Row Ball Bearing	20x47x14	1	
D7211	Single Row Taper Roller bearing	55x100x22	1	
D7212	Single row taper roller bearing	60x110x22	1	
102	Single Row Ball Bearing	15x32x9	3	Feed Box
103	Single Row Ball Bearing	17x35x10	8	
7000103	Single Row Ball Bearing	17x35x8	1	
8103	Single Row Pillow Block Bearing	17x32x8	1	
8104	Single Row Pillow Block Bearing	20x35x10	1	
8101	Single Row Pillow Block Bearing	12x26x9	2	Carriage
8102	Single Row Pillow Block Bearing	15x28x9	2	
8101	Single Row Pillow Block Bearing	12x26x8	1	Tail Stock
60103	Single Row Ball Bearing	17x35x10	2	Change Gear

PARTS DRAWING & PARTS LIST

CONTENTS

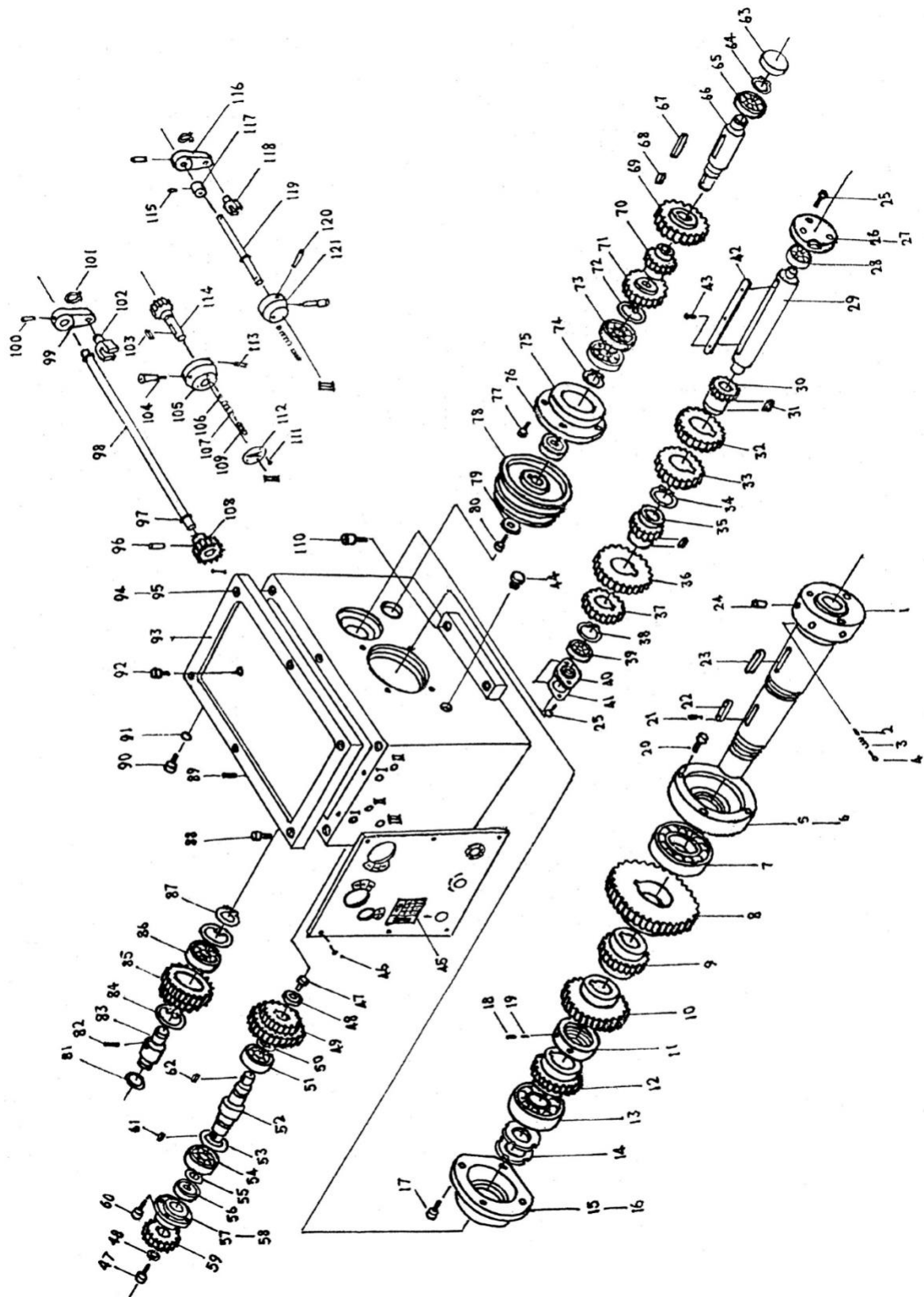
1. Bed Assembly
2. Head Stock
3. Gear Box
4. Gear Box I
5. Gear Box II
6. Gear Box III
7. Apron
8. Compound Rest
9. Saddle
10. Tail Stock
11. Change Gear
12. Control Switch Assembly
13. Bed And Drive Assembly
14. Special Accessories
15. Steady Rest
16. Follow Rest
17. Position Device
18. Protecting Cover
19. Guard

Bed Assembly



No.	Name	Qty	Note
1	Lathe Bed	1	10047
2	Screw	6	M12x40
3	Rack Gear	1	1009
4	Screw	6	M6x15
5	Pin	6	5x20
6	Rack Gear	2	1011

Headstock

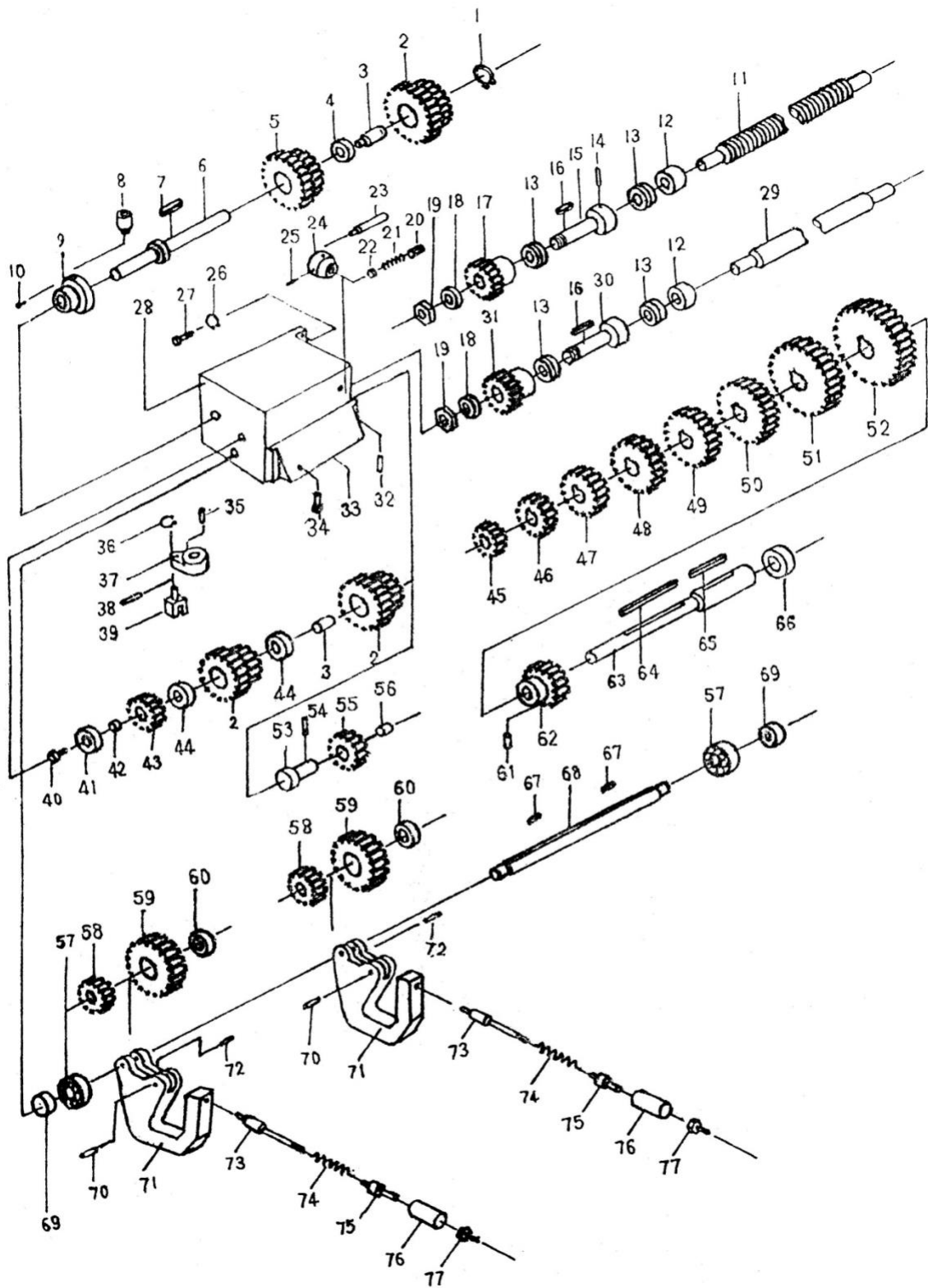


No.	Name	Qty	Note
1	Spindle	1	2034
2	Lock Pin	3	2035
3	Spring	3	0.6x4x22
4	Screw	3	M8x16
5	Cover	1	2038
6	Ooil Seal	1	2006
7	Bearing	1	D7212
8	Gear	1	2031
9	Gear	1	2030
10	Gear	1	2029
11	Nut	1	2024
12	Gear	1	2008
13	Bearing	1	D7212
14	Nut	2	2007
15	Cover	1	2005A
16	Oil Seal	1	2023
17	Screw	4	M8x16
18	Screw	2	M8x8
19	Collar	2	2025
20	Screw	4	M8x16
21	Screw	2	M3x8
22	Key	1	8x45
23	Key	1	8x80
24	Shaft	3	2037
25	Screw	5	M8x16
26	Cover	1	2040
27	Oil Seal	1	2028
28	Bearing	1	
29	Shaft	1	2039
30	Gear	1	2017
31	Key	2	5x18
32	Gear	1	2015
33	Gear	1	2016
34	Circlip	1	
35	Gear	1	2022
36	Gear	1	2020
37	Gear	1	2021
38	Circlip	1	
39	Bearing	1	6104
40	Cover	1	2009
41	Oil Seal	1	2009A
42	Key	1	8x108
43	Screw	2	M3x8
44	Oil Seal	1	
45	Fascia	1	2055
46	Screw	6	M3x8

47	Screw	2	M6x12
48	Washer	2	2003
49	Gear	2	2026
50	Circlip	1	25
51	Bearing	1	
52	Shaft	1	2027a
53	Circlip	1	42
54	Bearing	1	
55	Circlip	1	20
56	Oil Seal	1	D20x40x10
57	Cover	1	2004A
58	Oil Seal	2	2066
59	Gear	1	2002B
60	Screw	3	M6x115
61	Key	1	C5x8
62	Key	1	C5x20
63	Cover	1	2063
64	Circlip	1	
65	Bearing	1	
66	Shaft	1	2010B
67	Key	1	5x80
68	Key	1	C5x24
69	Gear	1	2019
70	Gear	1	2018
71	Gear	1	2013
72	Circlip	1	47
73	Bearing	2	
74	Circlip	1	
75	Cover	1	2012B
76	Oil Seal	1	D25x40x10
77	Screw	4	M6x20
78	Pulley	1	2014
79	Washer	1	2011
80	Screw	1	M8x20
81	Oil Seal	1	
82	Screw	1	M6x8
83	Shaft	1	2001
84	Circlip	2	47
85	Gear	1	2032
86	Bearing	1	
87	Circlip	1	
88	Screw	6	M6x30
89	Screw	2	M6x20
90	Screw	1	M16x1.5
91	Oil Seal	1	16x2.4
92	Screw	1	M16x1.5
93	Cover	1	2044

94	Oil Seal	1	2062
95	Headstock	1	2033
96	Pin	2	4x24
97	Oil Seal	7	16x2.4
98	Shaft	2	2046
99	Shaft Arm	2	2042
100	Pin	3	4x24
101	Circlip	3	
102	Shifter	2	2041
103	Key	2	5x16
104	Handle	3	2058
105	Boss	2	2059
106	Ball	4	
107	Spring	4	1x6x20
108	Gear	2	2047
109	Screw	4	M8x8
110	Screw	2	M12x25
111	Screw	4	M3x6
112	Fascia	2	2060
113	Screw	2	M6x20
114	Gear	2	2061
115	Screw	1	M6x8
116	Shift Arm	1	2054A
117	Collar	1	2079
118	Shifter	1	2048
119	Shaft	1	2052
120	Pin	1	5x40
121	Boss	1	2051

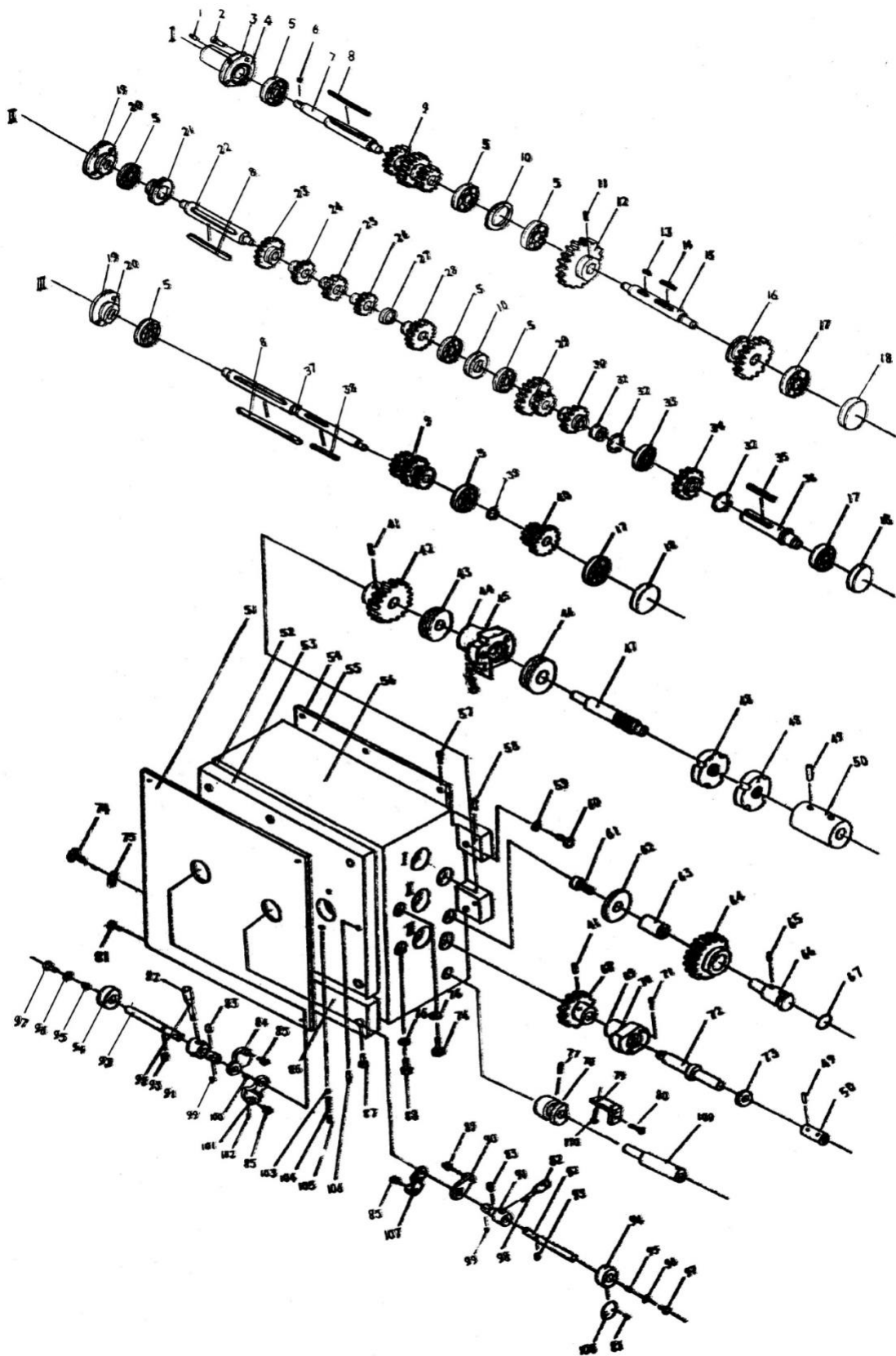
Gearbox



No.	Name	Qty	Note
1	Oil Cup	1	
2	Circlip	1	
3	Gear	3	3015
4	Bushing	3	3016
5	Washer	1	3024
6	Gear	1	3023
7	Shaft	1	3022
8	Key	1	5x10
9	Cover	1	3031
10	Screw	3	M6x16
11	Guide Screw	1	1005
12	Sheath	2	3084
13	Bearing	4	8103
14	Pin	2	5x35
15	Shaft	1	3028
16	Key	2	5x14
17	Gear	1	3026
18	Nut	4	M12
19	Washer	4	3025
20	Lever	1	6056
21	Boss	1	2057
22	Pin	1	5x40
23	Gearbox	1	3001
24	Screw	3	M8x8
25	Spring	2	1x4.5x7
26	Sted Ball	2	
27	Screw	2	M10x30
28	Spring Washer	2	
29	Feed Rod	1	1006
30	Shaft	1	3047
31	Gear	1	3004
32	Plate	1	3029
33	Screw	4	M6x16
34	Shaft	1	3039
35	Circlip	1	
36	Shifter Arm	1	3040
37	Pin	1	5x30
38	Shifter Arm	1	3041
39	Bushing	1	3019
40	Screw	1	M6x12
41	Washer	1	3021
42	Gear	2	3018
43	Washer	2	3017
44	Gear	1	3012
45	Gear	1	3011
46	Gear	1	3010

47	Gear	1	3009
48	Gear	1	3008
49	Gear	1	3007
50	Gear	1	3006
51	Gear	1	3005
52	Gear	2	3044
53	Pin	4	6x25
54	Gear	2	3045
55	Bushing	1	3046
56	Bushing	2	
57	Gear	1	3013
58	Gear	2	3049
59	Bushing	1	3050
60	Shifter Lever	1	3052
61	Pin	1	
62	Gear	1	3027
63	Shaft	1	3020
64	Key	1	5x75
65	Key	1	3042
66	Top	1	3043
67	Key	2	3014
68	Shaft	1	3003
69	Pin	2	5x18
70	Top	2	3002
71	Screw	2	M6x5
72	Shaft	2	3051
73	Shaft	2	3054
74	Spring	2	1x8x47
75	Sleeve	2	2053
76	Housing	2	3055
77	Nut	2	M6

Gearbox I

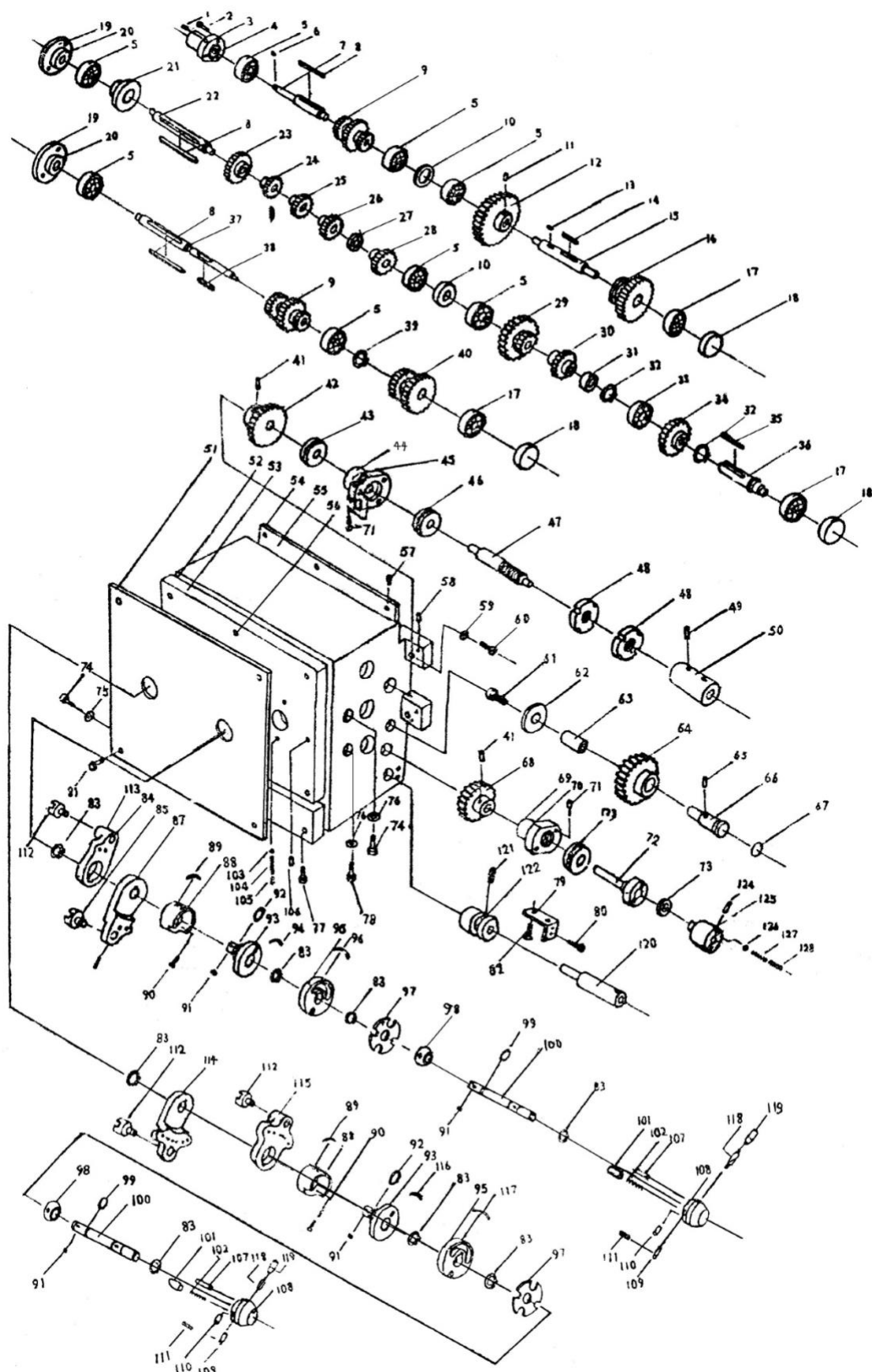


No.	Name	Qty	Note
1	Oil Cup	1	
2	Screw	7	M6x12
3	Cover	1	3034B
4	Oil Seal	1	3035C
5	Bearing	8	
6	Key	1	5x13
7	Shaft	1	3041B
8	Key	3	6x90
9	Gear	2	3005B
10	Washer	2	3066B
11	Screw	1	M6x8
12	Gear	1	3027C
13	Key	1	6x15
14	Key	1	6x35
15	Shaft	1	3027C
16	Gear	1	3025C
17	Bearing	3	
18	Cover	3	3017B
19	Cover	2	3044B
20	Oil Seal	2	3046B
21	Washer	1	3045B
22	Shaft	1	3033B
23	Gear	1	3029B
24	Gear	1	3031B
25	Gear	1	3032B
26	Gear	1	3003B
27	Washer	1	3030B
28	Gear	1	3002B
29	Gear	1	3026C
30	Gear	1	3007C
31	Washer	1	3008C
32	Circlip	2	
33	Bearing	1	
34	Gear	1	3009B
35	Key	1	C5x40
36	Shaft	1	3019C
37	Shaft	1	3004B
38	Key	1	5x35
39	Circlip	1	
40	Gear	1	3006C
41	Pin	2	5x25
42	Gear	1	3018C
43	Bearing	1	8103
44	Cover	1	3084D
45	Oil Seal	1	3068D

46	Bearing	1	8104
47	Shaft	1	3021C
48	Nut	2	M20x1.5
49	Pin	1	5x25
50	Bushing	1	3020D
51	Fascia	1	3060D
52	Oil Seal	1	3071D
53	Cover	1	3059B
54	Cover	1	3042C
55	Oil Seal	1	3070C
56	Gearbox	1	3001C
57	Screw	6	M6x12
58	Pin	2	5x25
59	Spring Washer	2	
60	Screw	2	10x30
61	Screw	1	M6x12
62	Washer	1	6x32x5
63	Bushing	1	3024C
64	Gear	1	3016C
65	Screw	1	M6x16
66	Shaft	1	3015X
67	Oil Seal	1	22x2.65
68	Gear	1	3014C
69	Cover	1	3022F
70	Oil Seal	1	3086D
71	Screw	5	M6x25
72	Shaft	1	3013E
73	Oil Seal	1	25x40x10
74	Screw	2	M16x1.5
75	Washer	2	
76	Oil Seal	2	16x2.4
77	Screw	1	M6x10
78	Position Piece	1	3012E
79	Support	1	7003C
80	Screw	2	M4x20
81	Screw	8	M8x16
82	Knob	2	M8x40
83	Oil Seal	2	25x2.65
84	Shifter Arm	1	3053B
85	Shifter	3	3049B
86	Cover	1	3061B
87	Screw	8	M8x16
88	Oil Window	1	
89	Shifter	1	3062B
90	Shifter Arm	1	3063B
91	Boss	2	3057C

92	Shaft	2	3056C
93	Oil Seal	2	16x2.4
94	Handwheel	2	3054C
95	Key	2	5x8
96	Washer	2	
97	Screw	2	M6x10
98	Lever	2	3051C
99	Key	2	5x8
100	Pin	2	
101	Shifter Arm	1	3058C
102	Screw	1	M3x6
103	Ball	4	Ø15
104	Spring	4	1x5x14
105	Screw	4	M8x5
106	Pin	4	M5x25
107	Shifter Arm	2	3065C
108	Sign Board	2	2060
109	Shaft	1	3011D
110	Screw	2	M4x40

Gearbox II

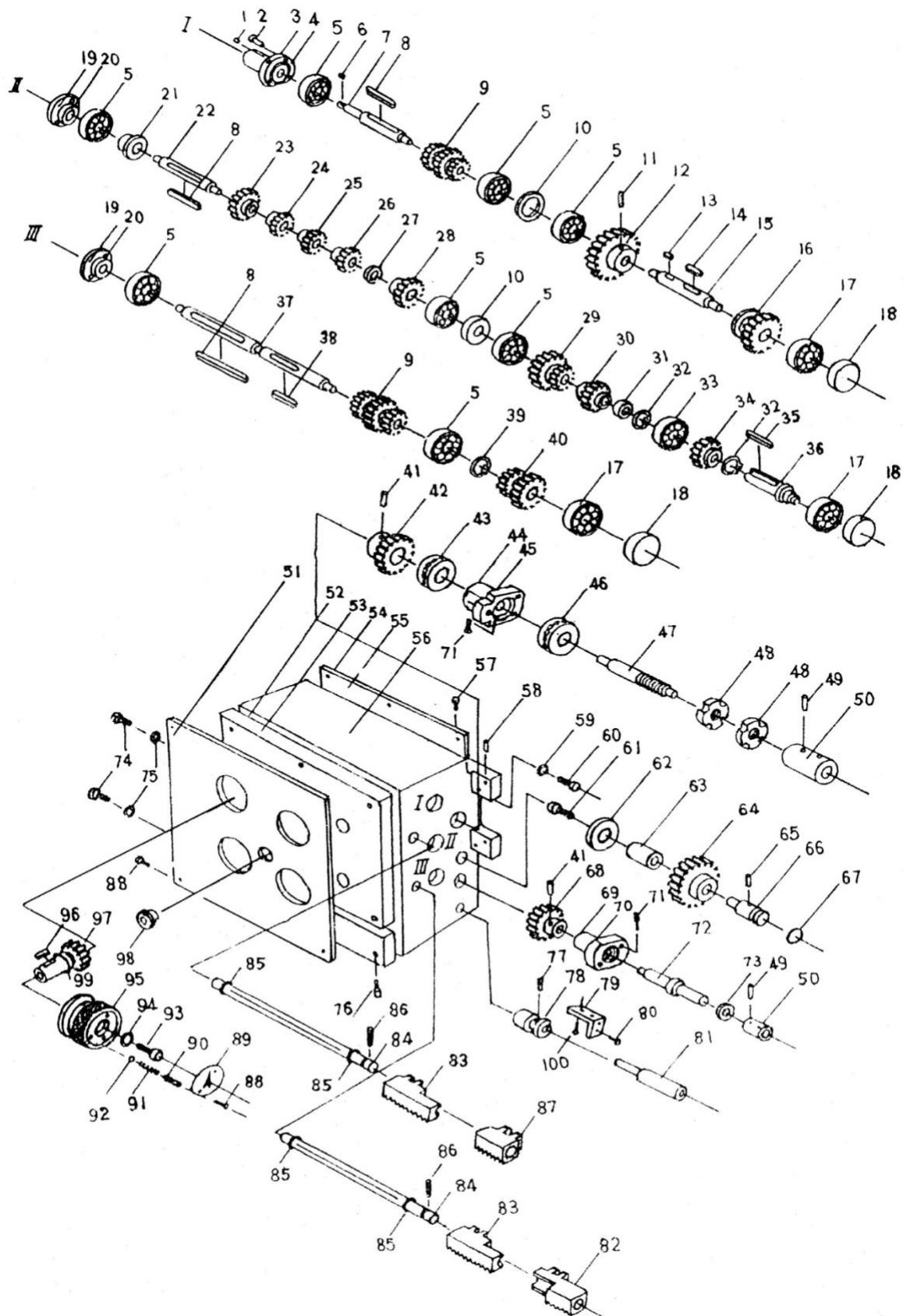


No.	Name	Qty	Note
1	Oil Cup	1	
2	Screw	7	M6x12
3	Cover	1	3034B
4	Oil Seal	1	3035C
5	Bearing	8	
6	Key	1	5x13
7	Shaft	1	3041B
8	Key	3	6x90
9	Gear	2	3005B
10	Washer	2	3066B
11	Screw	1	M6x8
12	Gear	1	3027C
13	Key	1	6x15
14	Key	1	6x35
15	Shaft	1	3067B
16	Gear	1	3025C
17	Bearing	3	
18	Cover	3	3017B
19	Cover	2	3044B
20	Oil Seal	2	3046B
21	Washer	1	3045B
22	Shaft	1	3033B
23	Gear	1	3029B
24	Gear	1	3031B
25	Gear	1	3032B
26	Gear	1	3003B
27	Washer	1	3030B
28	Gear	1	3002B
29	Gear	1	3026C
30	Gear	1	3007C
31	Washer	1	3008C
32	Circlip	2	
33	Bearing	1	
34	Gear	1	3009B
35	Key	1	C5x40
36	Shaft	1	3019C
37	Shaft	1	3004B
38	Key	1	5x35
39	Circlip	1	
40	Gear	1	3006C
41	Pin	2	5x25
42	Gear	1	3018C
43	Bearing	1	8103
44	Cover	1	3084D
45	Oil Seal	1	3068D

46	Bearing	1	8104
47	Shaft	1	3021C
48	Nut	2	M20x1.5
49	Pin	1	5x25
50	Bushing	1	3020E
51	Fascia	1	3060B
52	Oil Seal	1	3071D
53	Cover	1	3059D
54	Cover	1	3042C
55	Oil Seal	1	3070C
56	Gearbox	1	3001D
57	Screw	6	M6x12
58	Pin	2	5x25
59	Spring Washer	2	
60	Screw	2	M10x30
61	Screw	1	M6x10
62	Washer	1	6x32x5
63	Bushing	1	3024C
64	Gear	1	3016C
65	Screw	1	M6x16
66	Shaft	1	3015C
67	Oil Seal	1	22x2.65
68	Gear	1	3014C
69	Cover	1	3022F
70	Oil Seal	1	3086D
71	Screw	5	M6x25
72	Shaft	1	3013D
73	Oil Seal	1	
74	Screw	2	M16x1.5
75	Washer	1	
76	Oil Seal	1	16x2.4
77	Screw	1	3012C
78	Oil Window	1	
79	Bracket	1	3011D
80	Screw	1	
81	Screw	4	M22x24
82	Screw	2	M4x10
83	Circlip	8	
84	Shifter Arm	1	3063D
85	Shifter	1	3049B
86	Cover	1	3061B
87	Shifter Arm	1	3065D
88	Jacket	2	3050D
89	Transparent Scale	4	3080D
90	Screw	6	M4x10
91	Key	4	5x6

92	Oil Seal	2	21.5x1.8
93	Turn Plate	2	3057D
94	Tag	1	3071D
95	Channel Plate	2	3054D
96	Tag	1	3074D
97	Pad	2	3048D
98	Bulb	2	3052D
99	Oil Seal	2	8.5x1.8
100	Shaft	2	3056D
101	Pin	2	3079D
102	Spring	2	
103	Ball	4	
104	Spring	4	1x5x14
105	Screw	4	M8x5
106	Pin	2	M5x25
107	Pin	2	5x25
108	Hand Lever	2	3055D
109	Pin	4	A6x20
110	Pin	2	A5x15
111	Screw	4	M4x6
112	Shifter	3	3062B
113	Spring	2	1x5x14
114	Shifter Arm	1	3058D
115	Shifter Arm	1	3053D
116	Tag	1	3064D
117	Tag	1	3069D
118	Handle	2	2058
119	Knob	2	M8x40
120	Switch Rod	1	3011D
121	Screw	1	M6x10
122	Position Block	1	3012E
123	Bearing	1	8103
124	Pin	1	5x40
125	Connection Part	1	3020D
126	Ball	2	Ø6
127	Spring	2	1x5x20
128	Screw	2	M8x8

Gearbox III

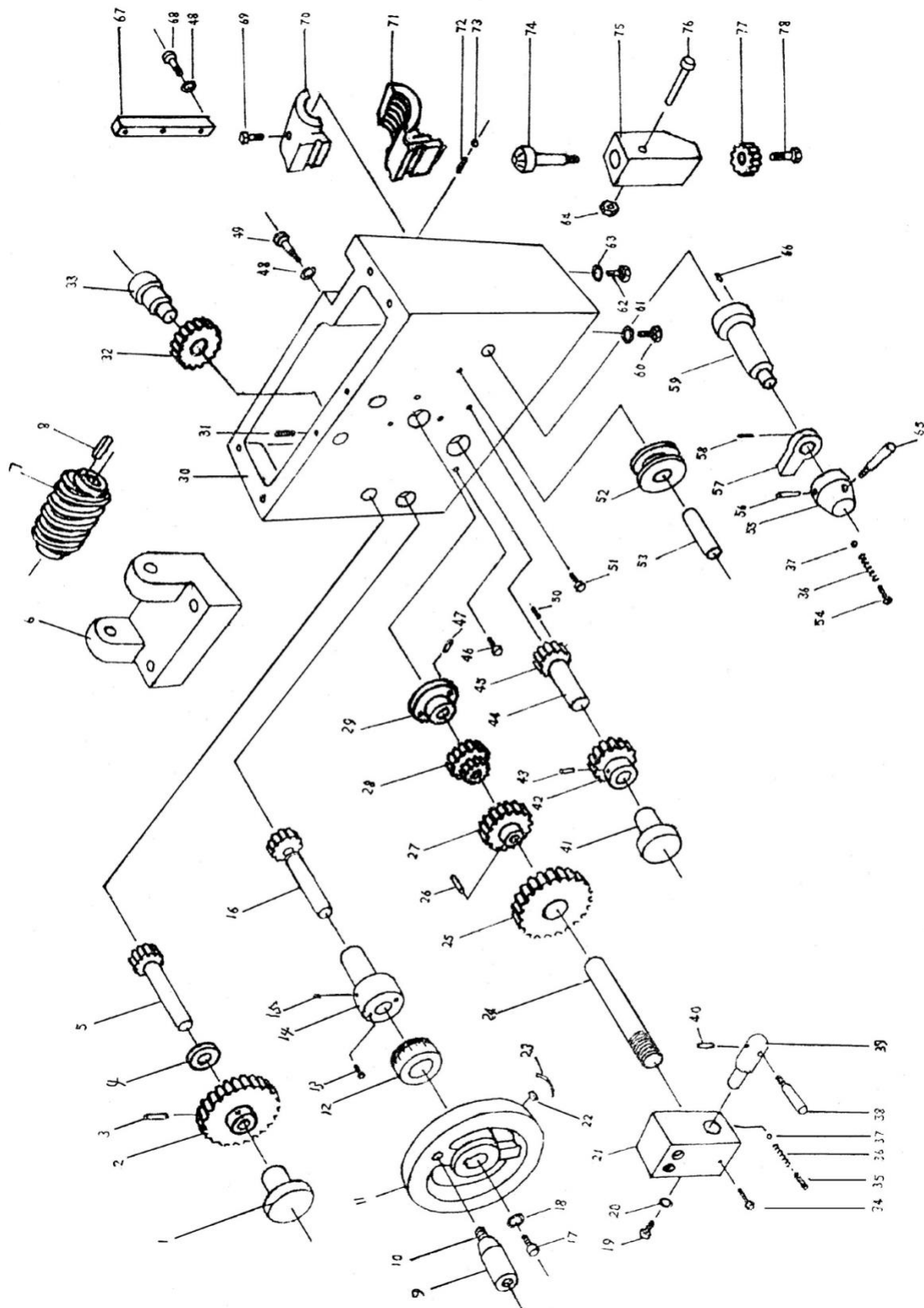


No.	Name	Qty	Note
1	Oil Cup	1	
2	Screw	7	M6x12
3	Cover	1	3034B
4	Oil Seal	1	3035C
5	Bearing	8	
6	Key	1	5x13
7	Shaft	1	3041B
8	Key	3	6x90
9	Gear	2	3005B
10	Washer	2	3066B
11	Screw	1	M6x8
12	Gear	1	3027C
13	Key	1	6x15
14	Key	1	6x35
15	Shaft	1	3067B
16	Gear	1	3025C
17	Bearing	3	89102
18	Cover	3	3017B
19	Cover	2	3044B
20	Oil Seal	2	3046B
21	Washer	1	3045B
22	Shaft	1	3033B
23	Gear	1	3029B
24	Gear	1	3031B
25	Gear	1	3032B
26	Gear	1	3003B
27	Washer	1	3030B
28	Gear	1	3002B
29	Gear	1	3026C
30	Gear	1	3007C
31	Washer	1	3008C
32	Circlip	2	
33	Bearing	1	89103
34	Gear	1	3009B
35	Key	1	C5x40
36	Shaft	1	3019C
37	Shaft	1	3004B
38	Key	1	5x35
39	Circlip	1	
40	Gear	1	3006C
41	Pin	2	5x25
42	Gear	1	3018C
43	Bearing	1	8103
44	Cover	1	3084D
45	Oil Seal	1	3068D
46	Bearing	1	8104

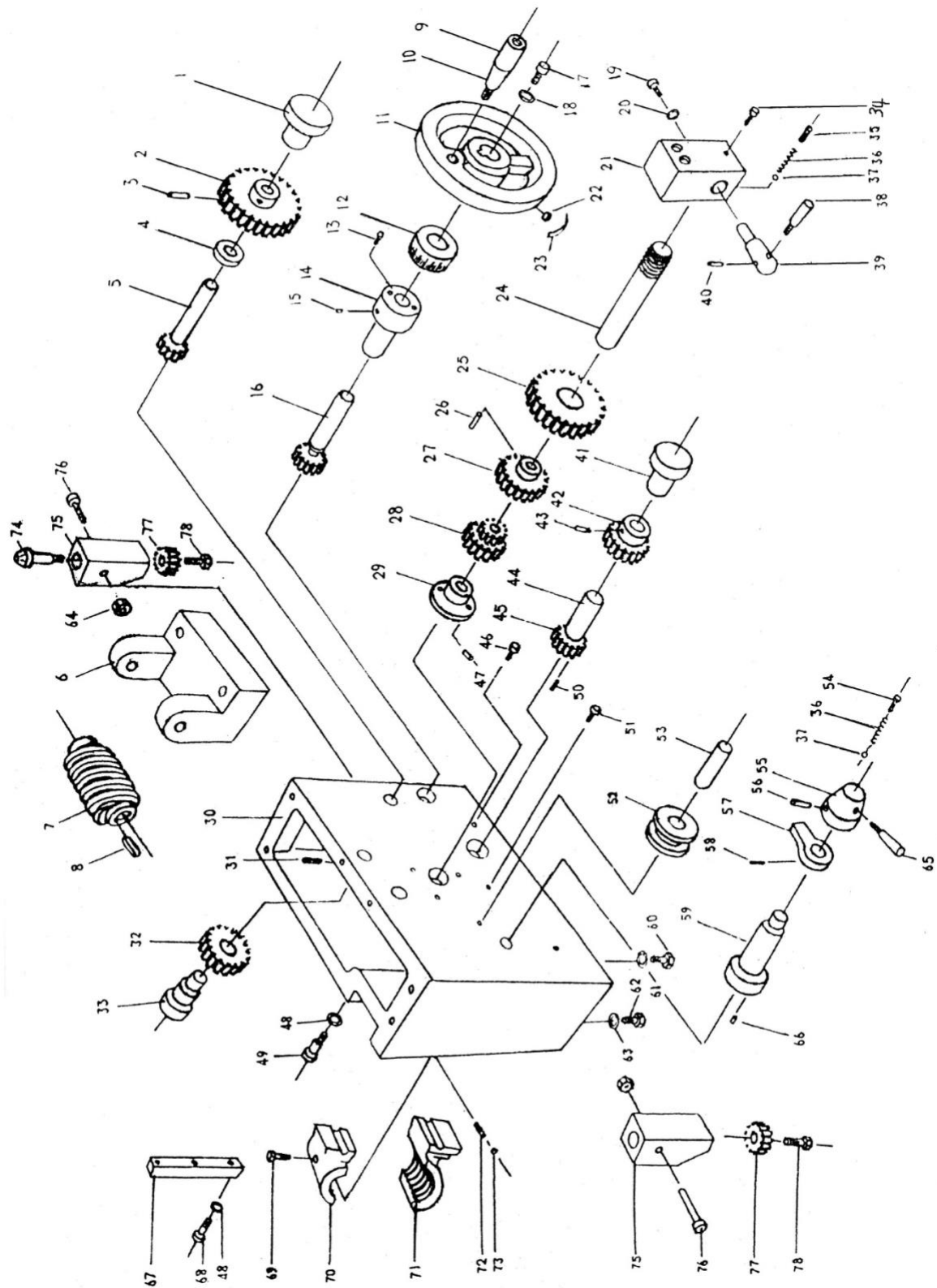
47	Shaft	1	3021C
48	Nut	2	M20x1.5
49	Pin	1	5x25
50	Bushing	1	3020E
51	Fascia	1	3060B
52	Oil Seal	1	3071D
53	Cover	1	3059D
54	Cover	1	3042C
55	Oil Seal	1	3070C
56	Gearbox	1	3001D
57	Screw	6	M6x12
58	Pin	2	5x25
59	Spring Washer	2	
60	Screw	2	M10x30
61	Screw	1	M6x10
62	Washer	1	6x32x5
63	Bushing	1	3024C
64	Gear	1	3016C
65	Screw	1	M6x16
66	Shaft	1	3015C
67	Oil Seal	1	22x2.65
68	Gear	1	3014C
69	Cover	1	3022F
70	Oil Seal	1	3086D
71	Screw	5	M6x25
72	Shaft	1	3013E
73	Oil Seal	1	18x30x10
74	Screw	2	M16x1.5
75	Washer	2	
76	Screw	8	M8x15
77	Screw	1	7003B
78	Position Piece	1	3012D
79	Support	1	7003B
80	Screw	2	M4x20
81	Shaft	1	3011D
82	Gear Rack	1	3050C
83	Gear Rack	2	3049C
84	Shaft	2	3089A
85	Oil Seal	4	12x1.8
86	Screw	2	M4x6
87	Gear Rack	1	3062C
88	Screw	12	M3x6
89	Sign Board	4	2060
90	Screw	4	M8x6
91	Spring Washer	4	1x5x25
92	Steel ball	4	Ø5
93	Screw	4	M6x10

94	Washer	4	
95	Handwheel	4	3054F
96	Key	4	5x8
97	Gear	4	3088
98	Oil Window	1	A12
99	Oil Seal	4	16x2.4

Apron – Left



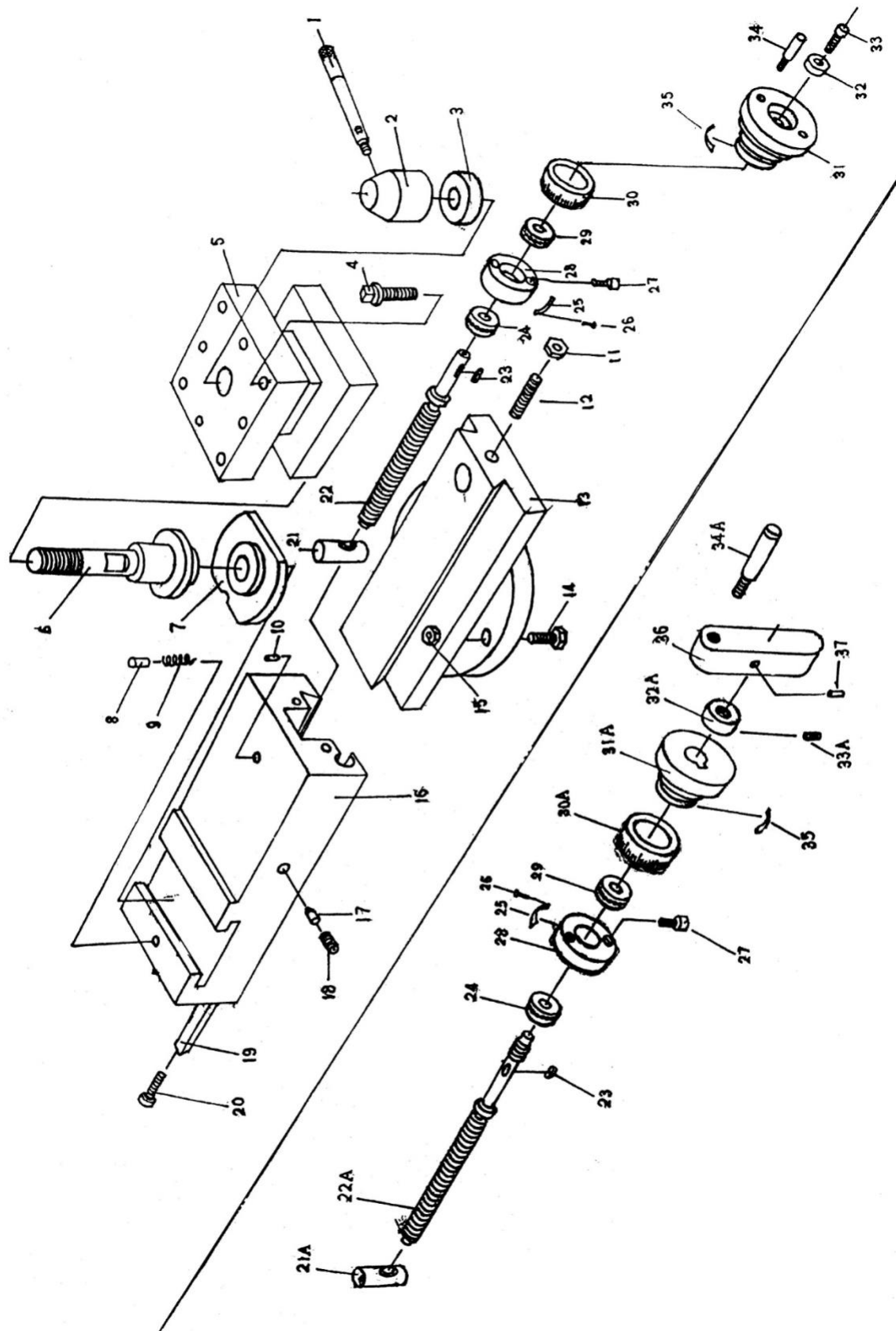
Apron – Right



No.	Name	Qty	Note
1	Bushing	1	4026
2	Gear	1	4029
3	Pin	1	5x30
4	Space	1	4027
5	Gear Shaft	1	4028
6	Warm Am	1	4008
7	Worm	1	4009
8	Flat Key	1	B5x36
9	Handle	1	4032
10	Lever	1	4033
11	Handwheel	1	4034
12	Index Ring	1	4036
13	Screw	1	M6x20
14	Bracket	2	4031
15	Oil Cup	1	
16	Gear Shaft	4	4030
17	Screw	1	M6x12
18	Washer	1	4035
19	Screw	4	M6x10
20	Washer	1	4038
21	Boss	1	4039
22	Key	1	5x16
23	Leaf Spring	1	4037
24	Shaft	1	4015
25	Gear	1	4012
26	Pin	1	5x33
27	Gear	1	4013
28	Gear	1	4014
29	Bushing	1	4016
30	Apron Case	1	4001
31	Screw	1	M6x6
32	Gear	1	4010
33	Shaft	1	4011
34	Screw	3	M6x45
35	Screw	1	M8x8
36	Spring	2	1x45x6
37	Ball	2	
38	Lever	1	4041
39	Gear Shaft	1	4042
40	Pin	1	5x25
41	Bushing	1	4020
42	Gear	1	4019
43	Pin	1	5x25
44	Shaft	1	4018

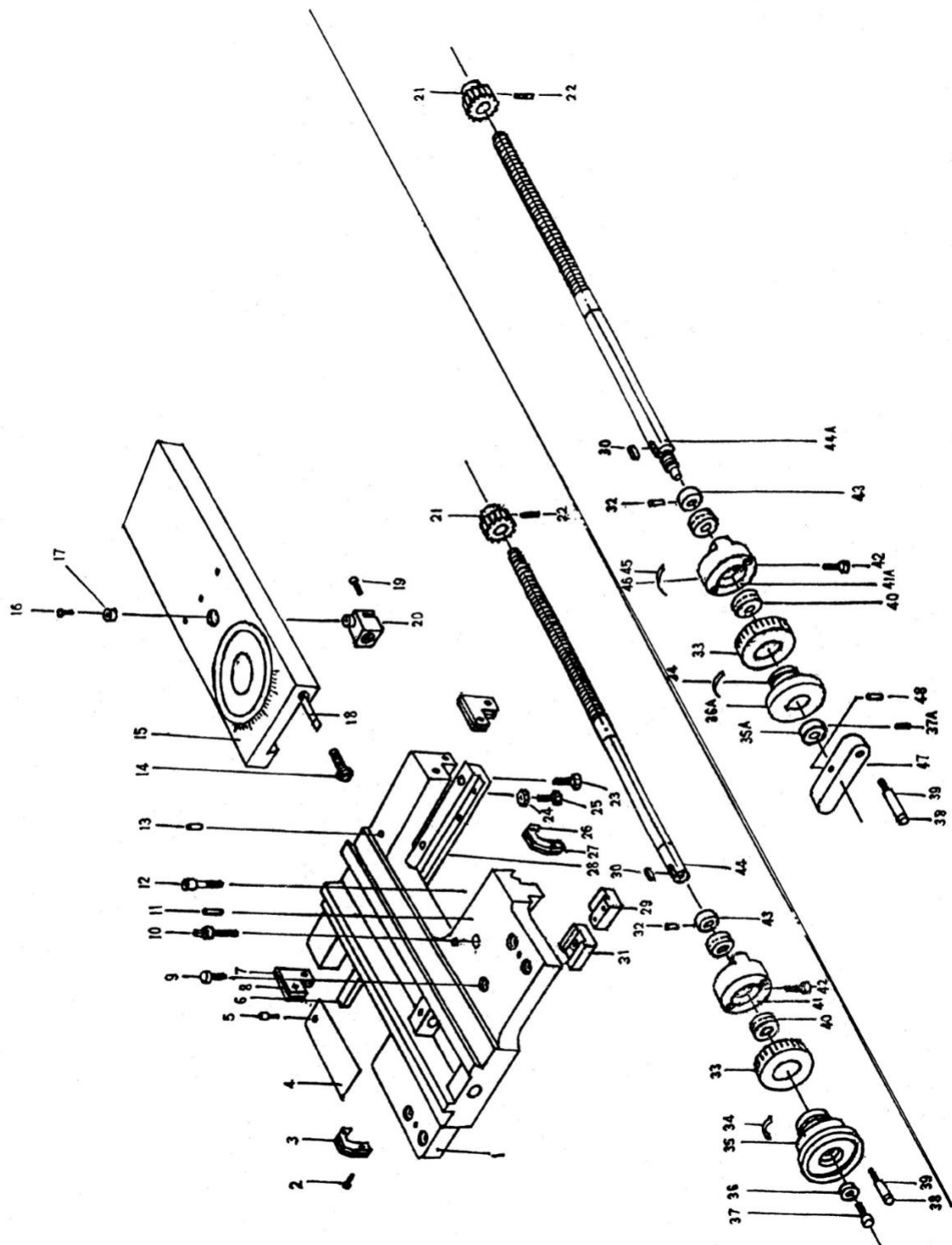
45	Worm Gear	1	4017
46	Oil Window	1	A12
47	Screw	2	M5x33
48	Washer	3	Ø6
49	Screw	1	M6x10
50	Screw	1	M6x6
51	Limit Block	1	4043
52	Safety Shifter	2	4025
53	Shaft	1	4024
54	Screw	1	M8x8
55	Boss	1	4045
56	Pin	1	5x40
57	Cam	1	4021
58	Screw	1	M5x12
59	Shaft	1	4023
60	Screw	1	M8x30
61	Washer	2	Ø8
62	Screw	2	M10x1x20
63	Washer	1	Ø10
64	Lever	1	4007
65	Lever	1	4044
66	Pin	2	5x10
67	Gib	1	3022
68	Half Nut House	2	M6x25
69	Screw	2	M5x35
70	Half Nut	1	4002
71	Screw	1	4003A1
72	Screw	2	M6x15
73	Nut	2	M6
74	Thread Dial	1	4006
75	Housing	1	4005
76	Screw	1	M6x65
77	Gear	1	4044
78	Screw	1	M6x15

Compound Rest



No.	Name	Qty	Note
1	Handle	1	5010
2	Boss	1	5009
3	Collar	1	5008
4	Scfrew	8	M10x45
5	Toolpost	1	5005
6	Shaft	1	5006
7	Nut	1	5003
8	Pin	1	5004
9	Spring	1	1.2x4.8x8
10	Oil Cup	1	
11	Nut	1	M6
12	Screw	1	M6x16
13	Compound	1	5001
14	Screw	2	5107
15	Nut	2	M10x45
16	Compound	1	5002
17	Pin	1	5024
18	Screw	1	M6x8
19	Gib	1	5023
20	Screw	2	5021
21	Nut	1	5012A1
22	Guide Screw	1	5011A3
23	Key	1	4x8
24	Bearing	1	8101
25	Scale	1	5026A2
26	Rivet	2	2x4
27	Screw	2	M6x25
28	Bracket	1	5013
29	Bearing	1	8101
30	Index Ring	1	5014A3
31	Handwheel	1	5016A
32	Washer	1	5028
33	Screw	1	M6x12
34	Lever	2	5031
35	Leaf Spring	1	4037
21A	Nut	1	5012
22A	Guide Screw	1	5011
30A	Index Ring	1	5014
31A	Washer	1	5016
32A	Nut	1	5025
33A	Screw	1	M6x8
34A	Lever	1	M8x63
36	Bracket	1	5120
37	Pin	1	3x16

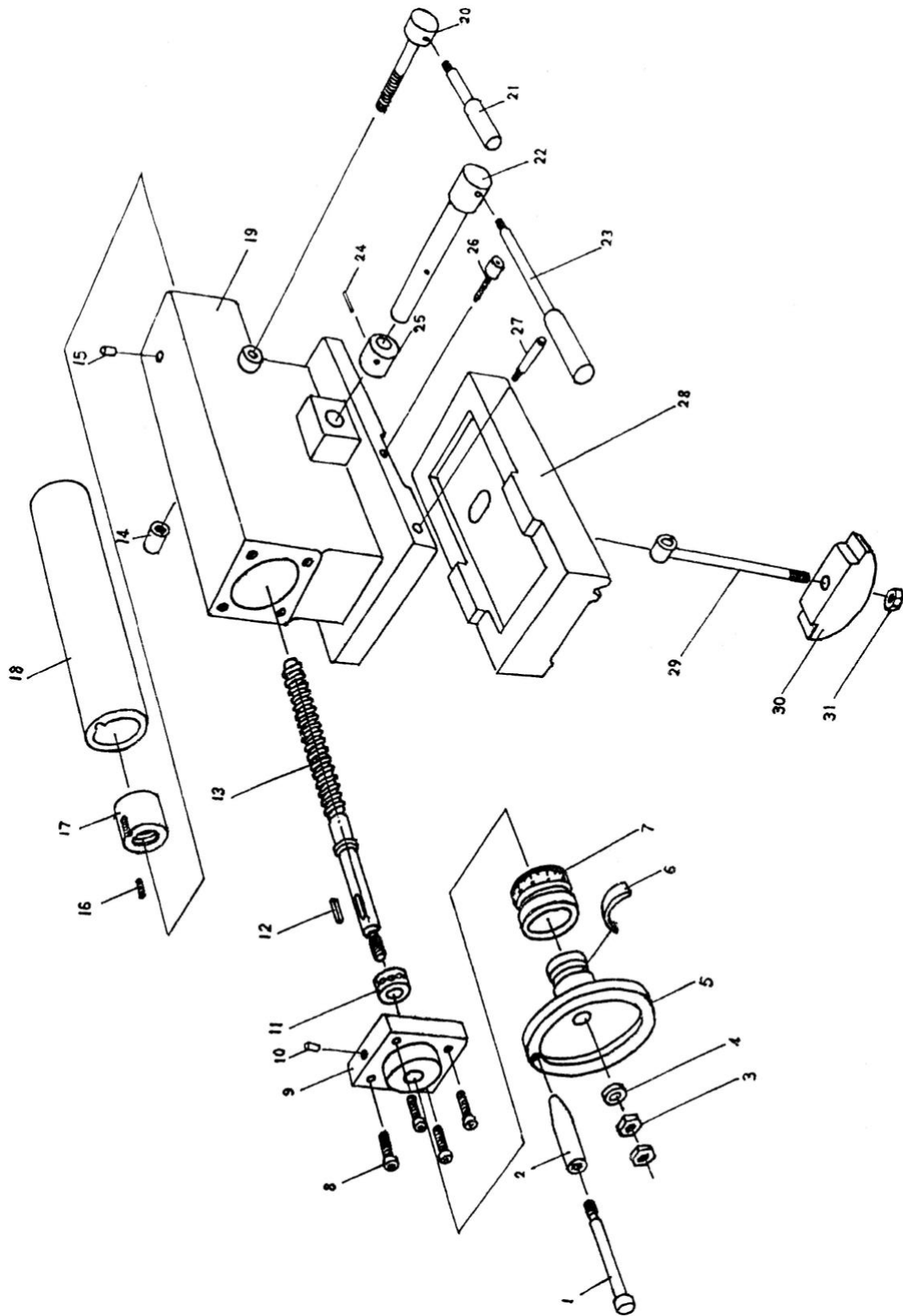
Saddle



No.	Name	Qty	Note
1	Saddle	1	5101
2	Screw	8	M5x132
3	Wiper	1	5108
4	Cover	1	5106
5	Screw	1	M3x8
6	Press Plate	2	5130
7	Press Plate	2	5110
8	Wiper	2	5109
9	Screw	1	5113
10	Screw	1	5128
11	Pin	2	6x45
12	Screw	4	M10x30
13	Oil Cup	5	
14	Screw	2	5115
15	Toolpost	1	5102
16	Screw	1	M6x12
17	Bushing	1	5105
18	Gib	1	5114
19	Screw	2	M4x12
20	Nut	1	5104A2
21	Gear	1	5127
22	Screw	1	M6x8
23	Screw	7	M8x25
24	Nut	4	M8
25	Screw	4	M8x25
26	Press Plate	2	5112
27	Wiper	1	5111
28	Press Plate	1	5131
29	Press Plate	2	5116
30	Key	1	5x20
31	Press Plate	1	5129
32	Pin	1	3x20
33	Index ring	1	5124A3
34	Leaf Spring	1	4037
35	Handwheel	1	5122A
36	Washer	1	5028
37	Screw	1	M6x16
38	Handwheel	1	4033
39	Lever	1	4032
40	Bearing	1	8102
41	Bracket	1	5125A
42	Screw	2	M8x30
43	Washer	1	5126
44	Guide Screw	1	5103A3
35A	collar	1	5122
36A	Nut	1	5121

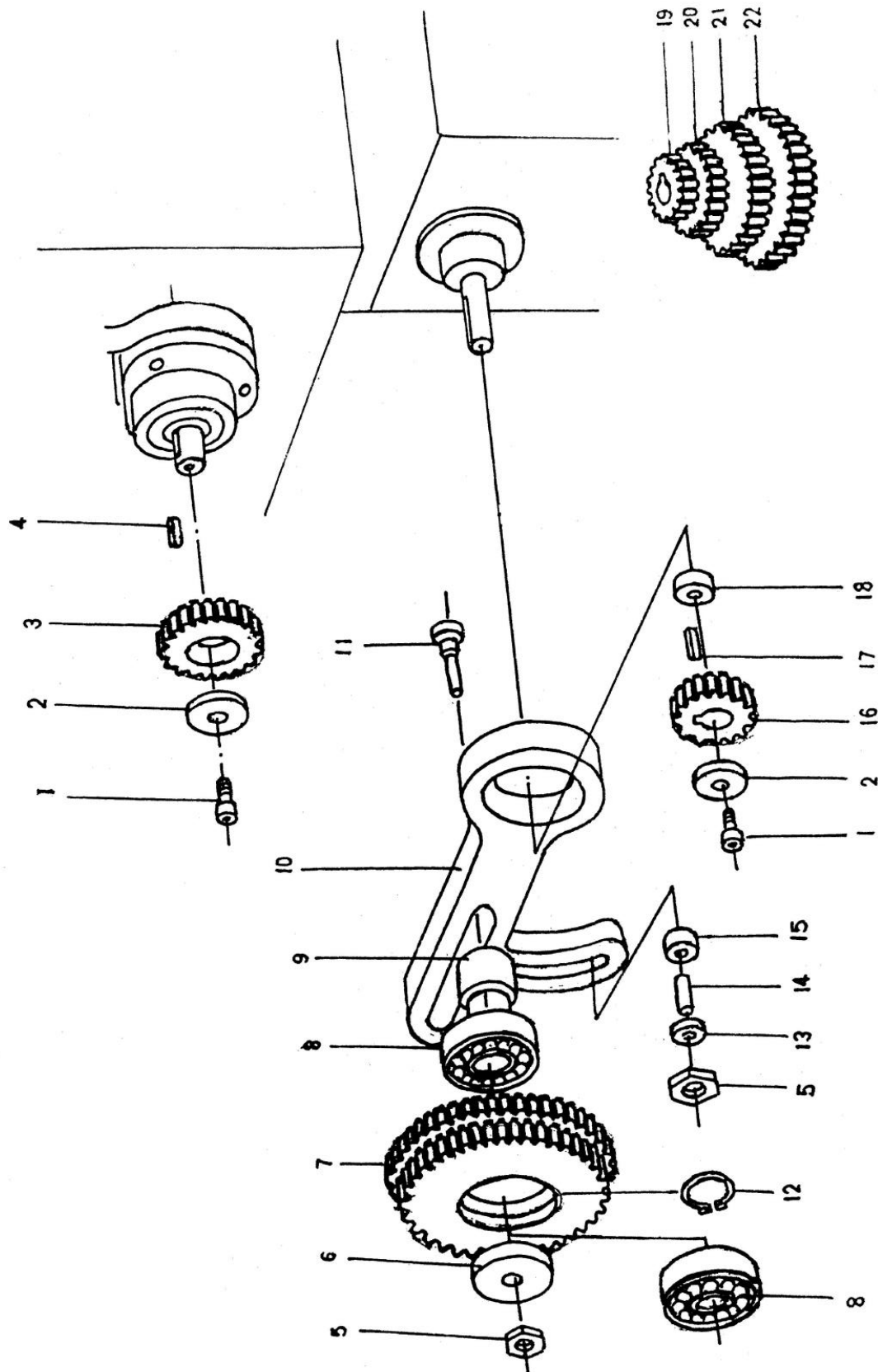
37A	Screw	1	M6x6
41A	Bracket	1	5125A
44A	Guide Screw	1	5103A2
45	Rivet	2	2x4
46	Scale	1	5133A2
47	Bracket	1	5120
48	Pin	1	4x20

Tailstock



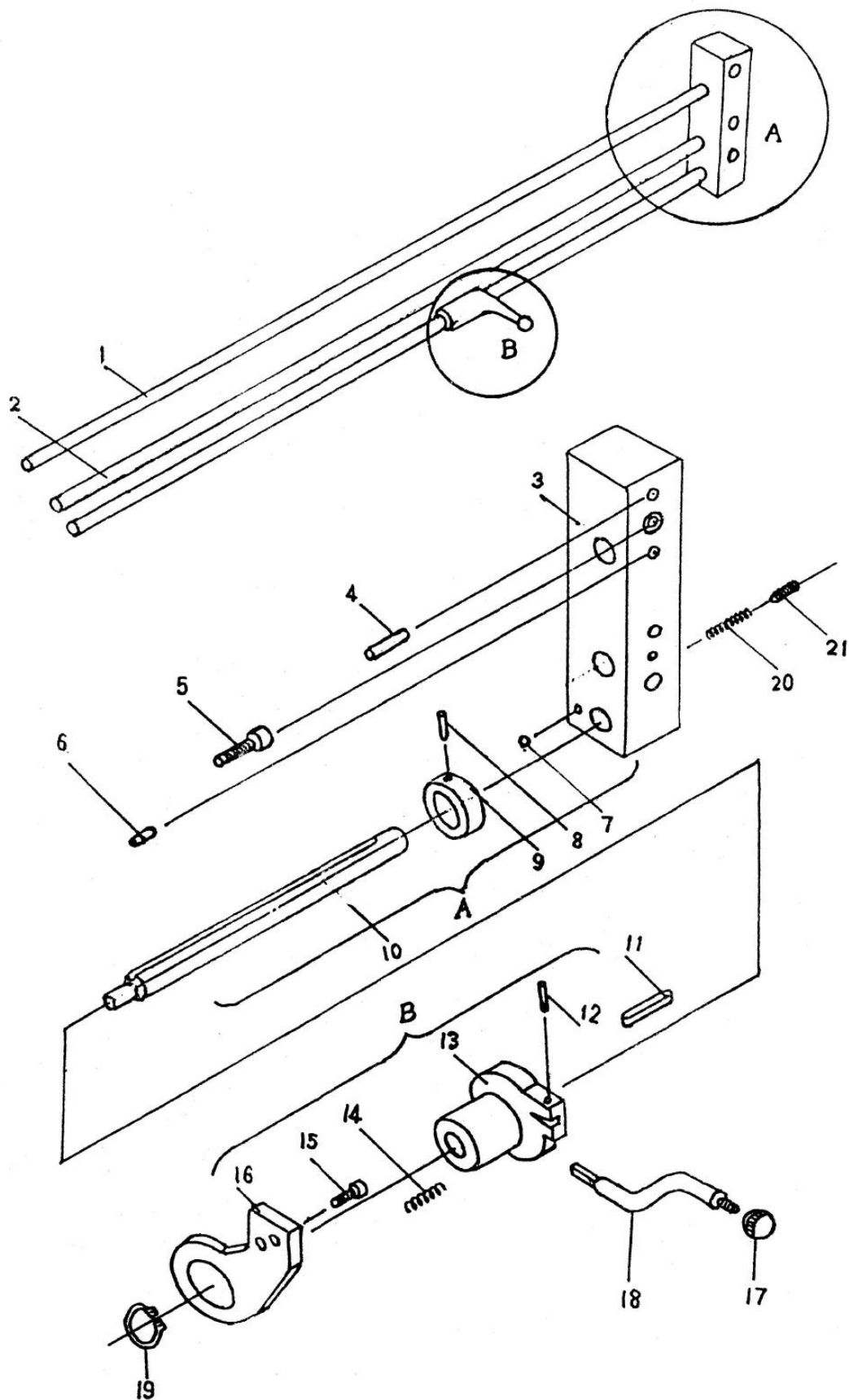
No.	Name	Qty	Note
1	Handle	1	4033
2	Lever	1	4032
3	Nut	2	M10
4	Washer	1	A10
5	Handwheel	1	6005
6	Leaf Spring	1	4037
7	Index Ring	2	6010
8	Screw	4	M6x16
9	Bearing	1	6011
10	Oil Cup	1	
11	Bearing	1	
12	Key	1	4x15
13	Guide Screw	1	6006
14	Lock Nut	1	6023
15	Oil Cup	1	
16	Screw	2	M6x8
17	Nut	1	6012
18	Quill	1	6013
19	Tailstock	1	6001
20	Lock screw	1	6022
21	Handle	1	6021
22	Shaft	1	6017
23	Handle	1	6004
24	Pin	1	5x30
25	Collar	1	6018
26	Screw	1	M10x5
27	Screw	1	6003
28	Base	1	6002
29	Shaft	1	6019
30	Base Shoe Black	1	6020
31	Nut	1	M12

Change Gear



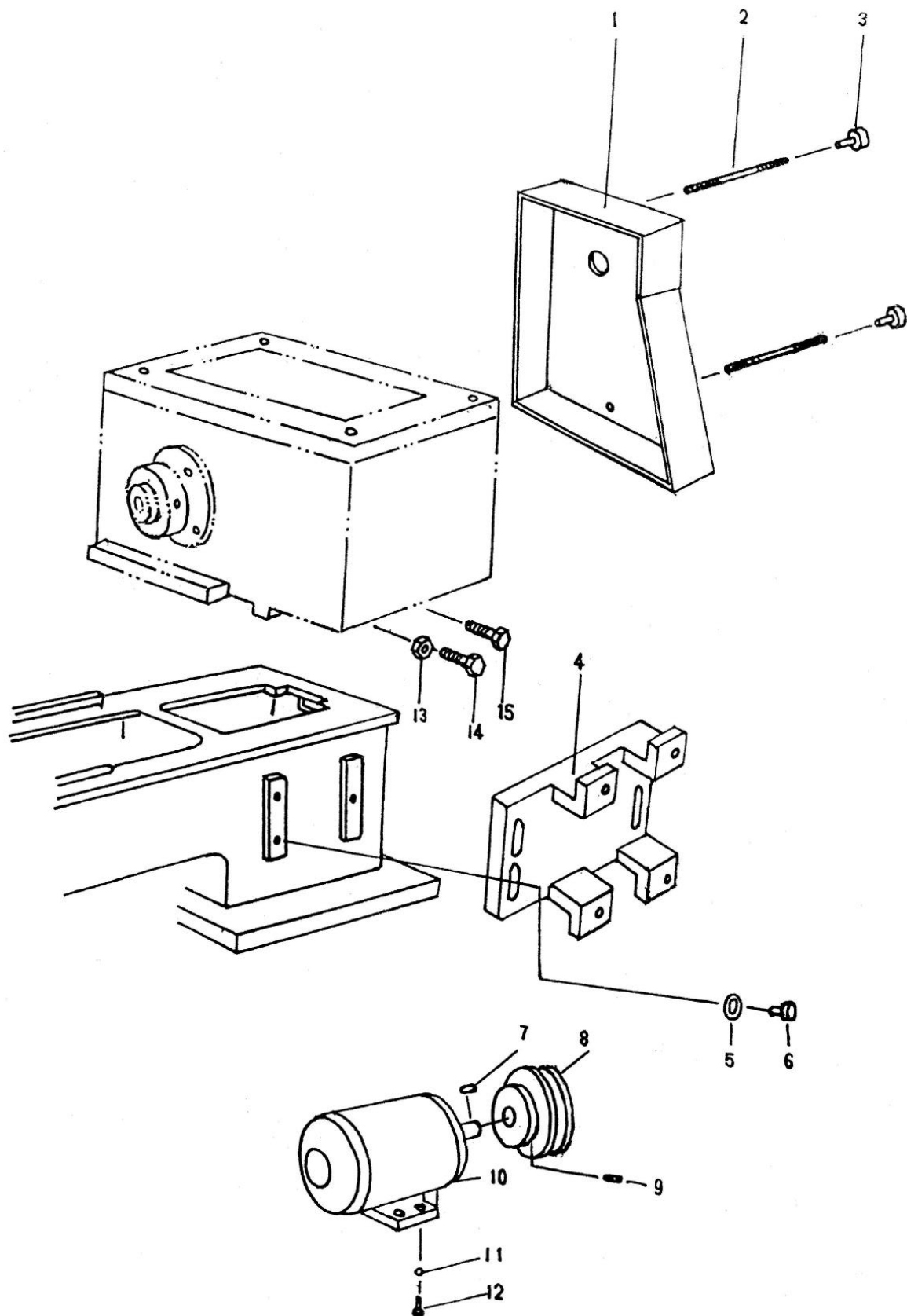
No.	Name	Qty	Note
1	Screw	2	M6x12
2	Washer	2	2003
3	Gear	1	2002C
4	Key	1	C5x8
5	Nut	2	M10
6	Washer	1	3035
7	Gear	1	3038C
8	Bearing	1	
9	Collar	1	3033
10	Quadrant	1	3043B
11	Screw	1	3034
12	Circlip	1	
13	Washer	1	
14	Screw	1	M10x45
15	Washer	1	3037A
16	Gear	2	3039C
17	Key	1	5x18
18	Washer	1	3034B
19	Change gear	1	3076C
20	Change gear	1	3075C
21	Change Gear	1	3077C
22	Change Gear	1	3078C

Control Switch Assembly



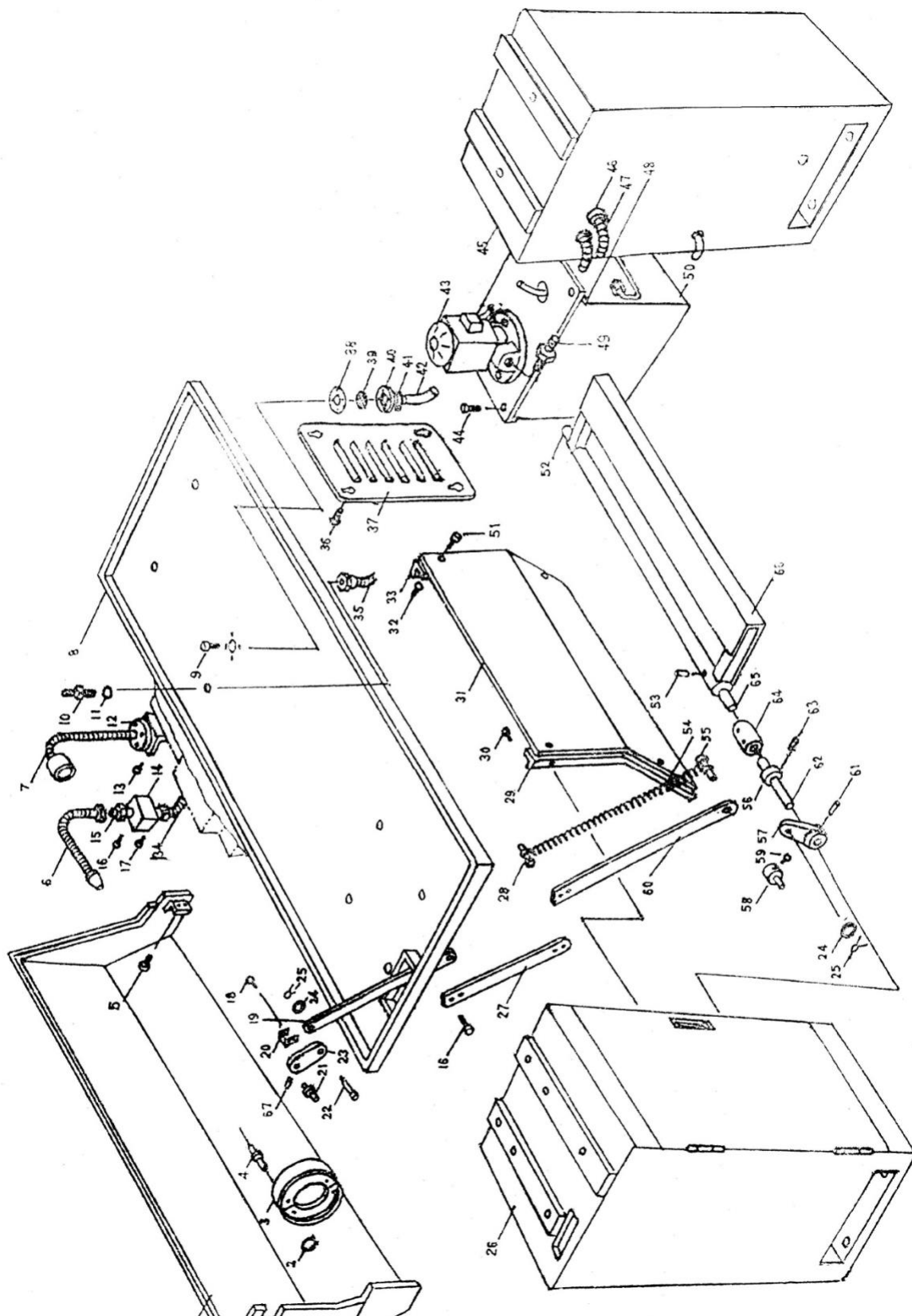
No.	Name	Qty	Note
1	Guide Screw	1	1005B
2	Rod	1	1006B
3	Bracket	1	1012
4	Pin	2	6x65
5	Screw	2	M8x60
6	Oil Cup	2	
7	Ball	1	
8	Pin	1	4x20
9	Bushing	1	1035B
10	Feed Rod	1	1010
11	Key	1	
12	Pin	1	4x20
13	Bracket	1	1014B
14	Spring	1	1.2x8.1
15	Screw	2	M6x15
16	Bracket	1	1015B
17	Handle Ball	1	M10x32
18	Handle Ball	1	1016
19	Circlip	1	
20	Spring	1	1x5x30
21	Screw	1	M8x10

Bed and Drive Assembly



No.	Name	Qty	Note
1	Cover	1	1021
2	Screw	2	1002
3	Nut	2	1001
4	Trestle	1	1024
5	Washer	3	1013
6	Screw	3	
7	Key	1	8x40
8	Pulley	1	1003A5
9	Screw	1	M6x8
10	Motor	1	
11	Spacer	4	Ø8
12	Screw	4	
13	Nut	2	M6
14	Screw	2	M8x45
15	Screw	2	M8x30

Special Accessories



Brake Part

No.	Name	Qty	Note
2	Open Circlip	1	
3	Brake Block	1	
4	Shaft	1	1040
16	Screw	2	M6x12
18	Screw	1	M4x10
19	Draw Rod	1	1043
20	Bracket	1	1053
21	Pivot	1	1042
22	Pin	1	8x20
23	Shifter	1	1041
24	Washer	2	
25	Open Clip	2	2.5x16
27	Draw Rod	1	1044
28	Screw	1	M10x30
52	Shaft	1	1051
53	Spring Pin	1	5x25
54	Spring	1	1048
55	Shaft	1	1047
56	Circlip	1	20
57	Shifter	1	1045
58	Shaft	1	1052
59	Screw	1	M6x30
60	Draw Rod	1	1054
61	Spring Pin	1	5x40
62	Shaft	1	1049-1
63	Screw	1	M6x12
64	Connecting Sleeve	1	1049-3
65	Shaft	1	1049-2
66	Paddle	1	1050
67	Spring Pin	1	4x25

Base part

No.	Name	Qty	Note
1	Chip Guard	1	1023
5	Screw	4	M6x16
8	Oil Pan	1	1022
26	Left Cabinet	1	8400
29	Left Bracket	1	8602
30	Screw	4	M6x16
31	Back Plate	1	8601
32	Nut	4	M6x16
33	Right Bracket	1	8603
45	Right Cabinet	1	8500
51	Screw	4	M6x16

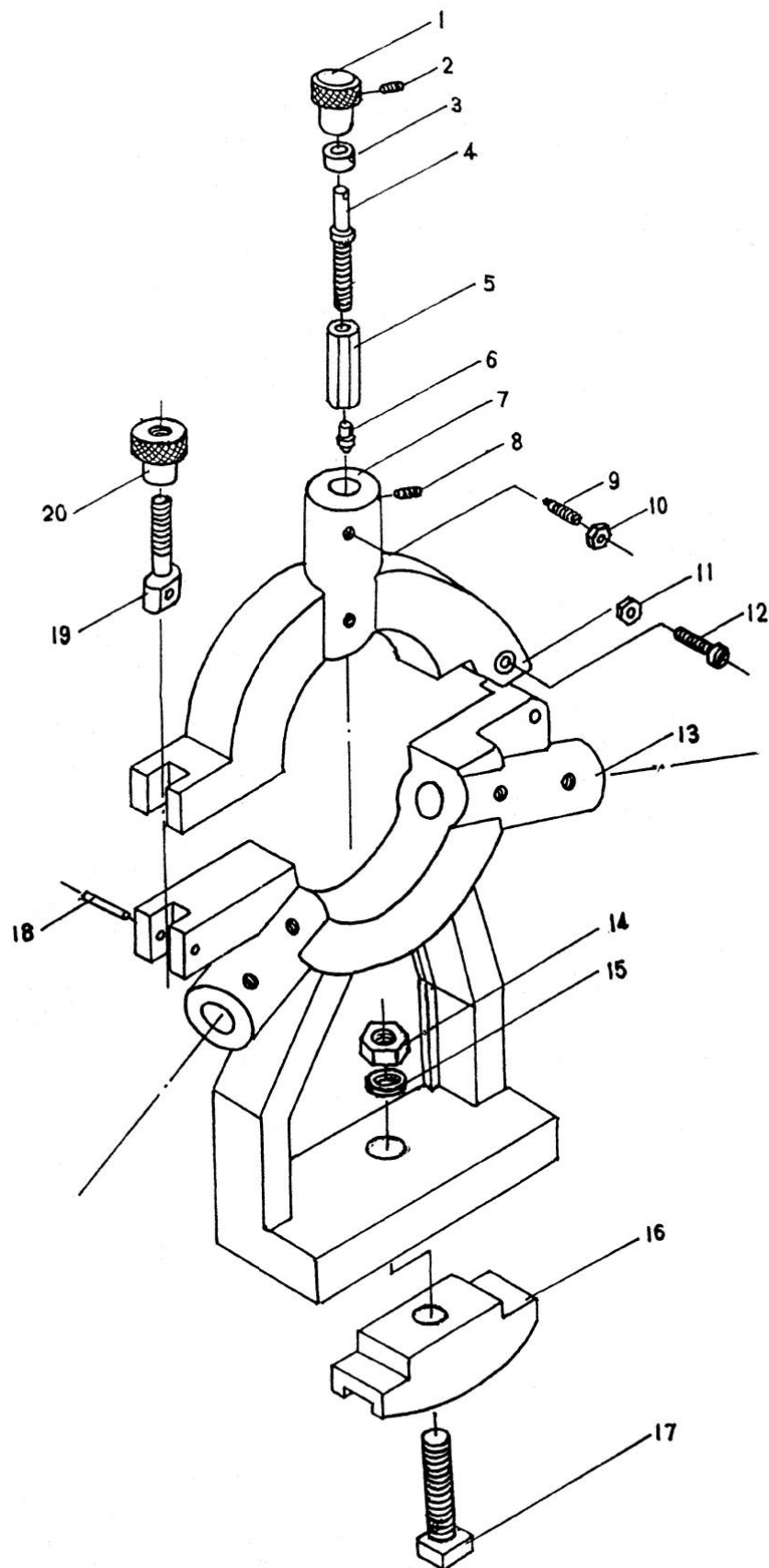
Cooling Part

No.	Name	Qty	Note
6	Coolant Pipe	1	
9	Screw	4	M5x12
10	Pipe Connecting	1	9206
11	Washer	1	9207
14	Bracket	1	9208
15	Shaft	1	X6121-06011A
17	Screw	2	M8x35
34	Coolant Pipe	1	
35	Coolant Pipe	1	
36	Screw	4	M6x12
37	Cover	1	9201A
38	Papet Lining	1	9205
39	Filter	1	9203
40	Pipe	1	9204
41	Hoopng	1	
42	Pin	1	16x1000
43	Coolant Pump	1	
44	Screw	4	M5x10
46	Pipe	1	M16x15
47	Metal Pipe	1	8x1800
48	Cover	1	9210
49	Pipe	1	9206
50	Coolant Box	1	9209

Lighting Part

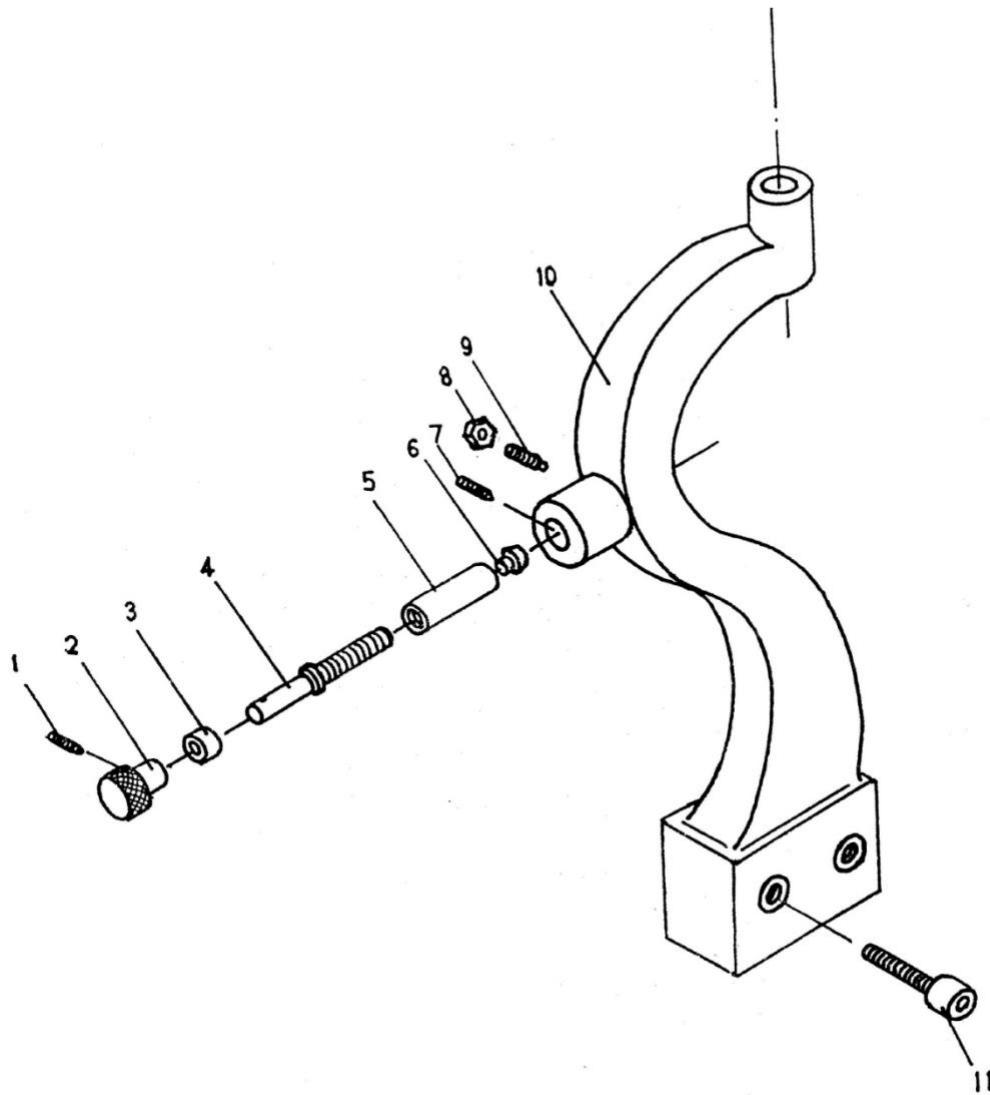
No.	Name	Qty	Note
7	Work Lamp	1	
12	Bracket	1	7015
13	Screw	2	M5x12

Steady Rest



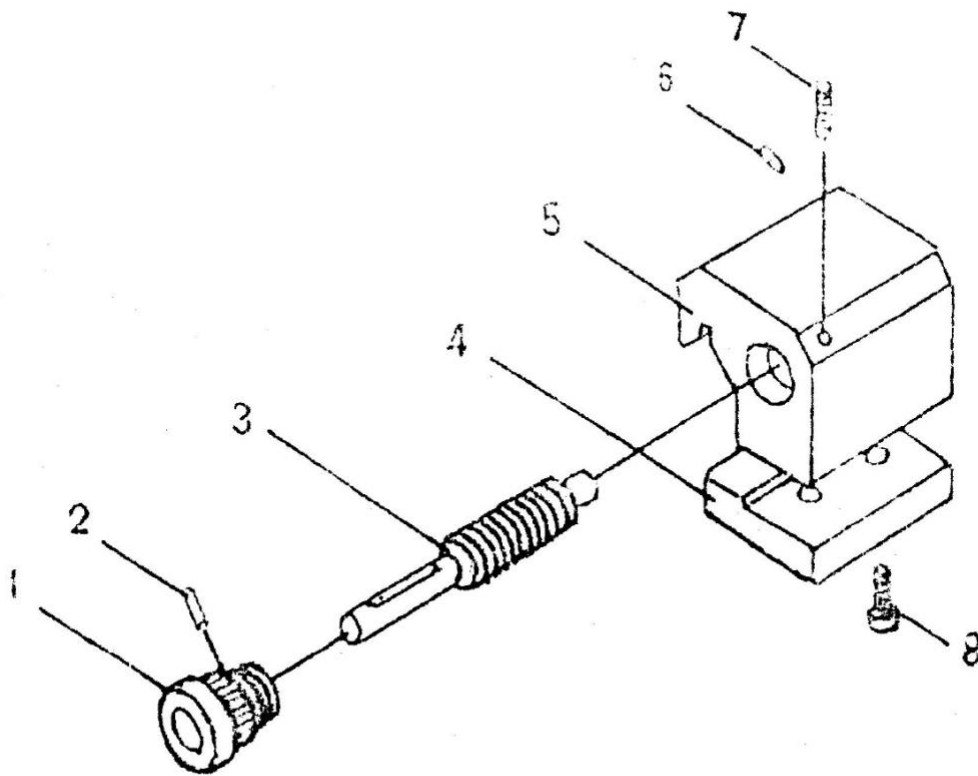
No.	Name	Qty	Note
1	Knob	3	8205
2	Screw	3	M6x8
3	Collar	3	8207
4	Pressing Lever	3	8206
5	Pressing Collar	3	8208
6	Pressing Base	3	8209
7	Upper Body	1	8202
8	Screw	3	M6x10
9	Screw	3	M6x16
10	Hex Screw Nut	3	M6
11	Hex Screw Nut	1	M6
12	Screw	1	M6x25
13	Base Body	1	8201
14	Hex Screw Nut	1	M12
15	Washer	1	12
16	Pressing Plate	1	6020
17	Square Ad Bolt	1	M12x60
18	Spring Pin	1	4x25
19	Locking Lever	1	8203
20	Locking Screw Nut	1	8204

Follow Rest



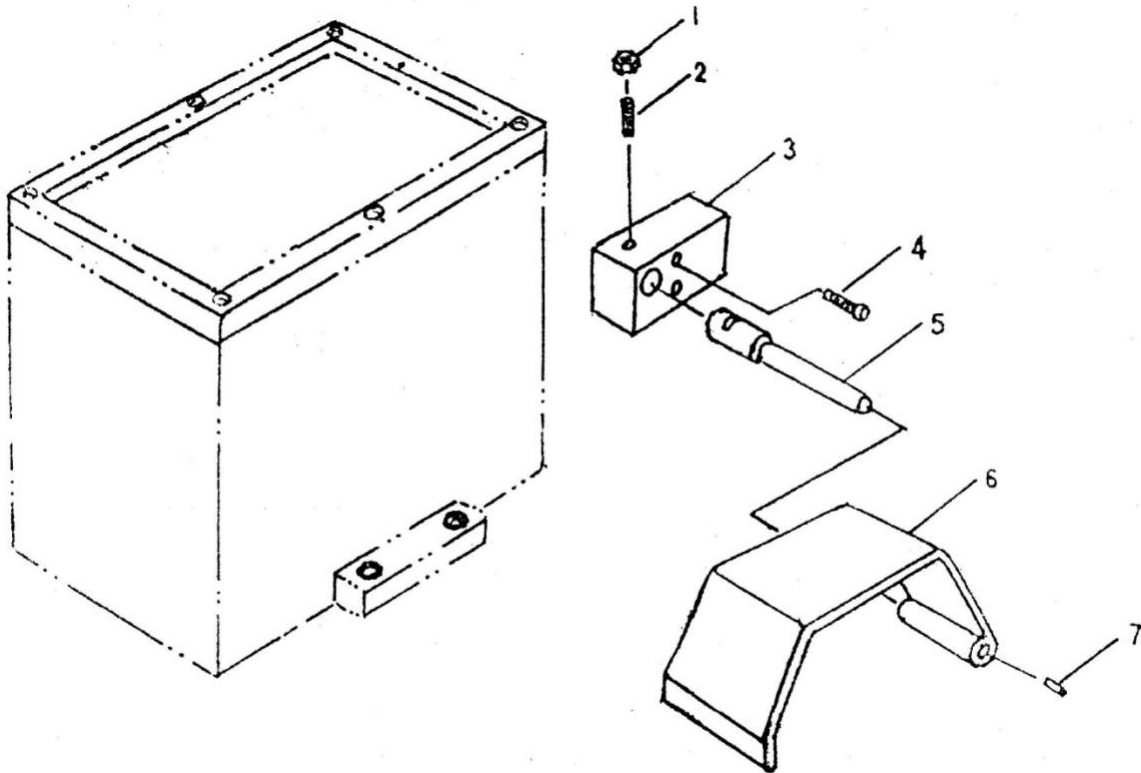
No.	Name	Qty	Note
1	Screw	2	M6x6
2	Knob	2	8205
3	Collar	2	8207
4	Pressing Lever	2	8206
5	Pressing Collar	2	8208
6	Pressing Base	2	8209
7	Screw	2	M6x10
8	Hex Screw Nut	2	M6
9	Screw	2	M6x16
10	Body	1	8201
11	Bolt	2	M8x40

Position Device



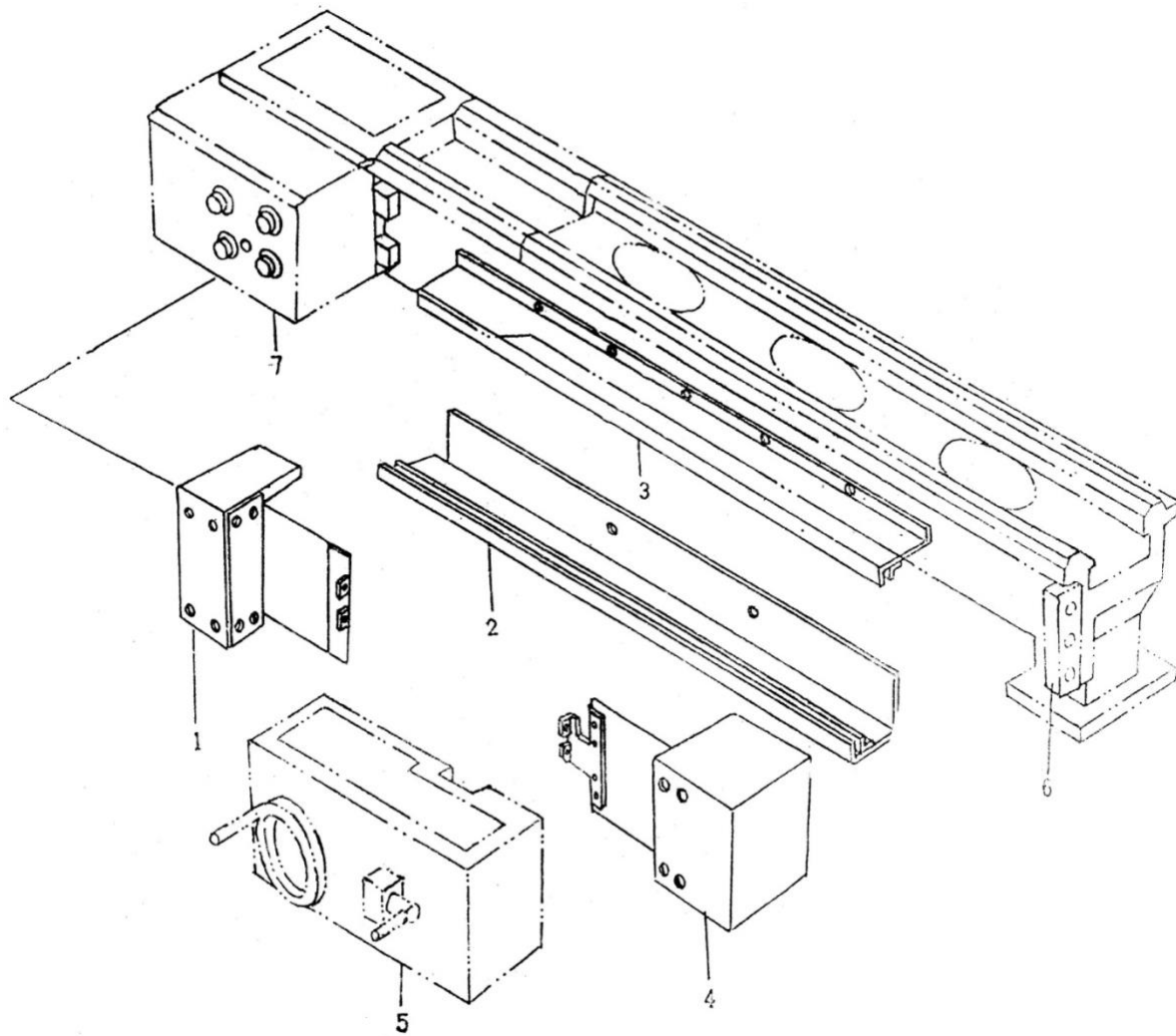
No.	Name	Qty	Note
1	Knob	1	8705
2	Pin	1	M3x6
3	Guide Screw	1	8706
4	Pressing Plate	1	8704
5	Body	1	8703
6	Indicator	1	8707
7	Screw	1	M6x10
8	Screw	2	M6x12

Protecting Cover



No.	Name	Qty	Note
1	Nut	1	M6
2	Screw	1	M6x16
3	Switch Box	1	8901
4	Screw	2	M6x45
5	Shaft	1	8902
6	Protecting Cover	1	8903
7	Pin	1	M4x12

Guard



No.	Name	Qty	Note
1	Left Box	1	1120
2	Down Board	1	1118
3	Up Board	1	1117
4	Right box	1	1110
5	Apron	1	4000
6	Bracket	1	1012
7	Gearbox	1	3000