PALMGREN®

LATHE MACHINE

Read carefully and follow all safety rules and operating instructions before First use of this product

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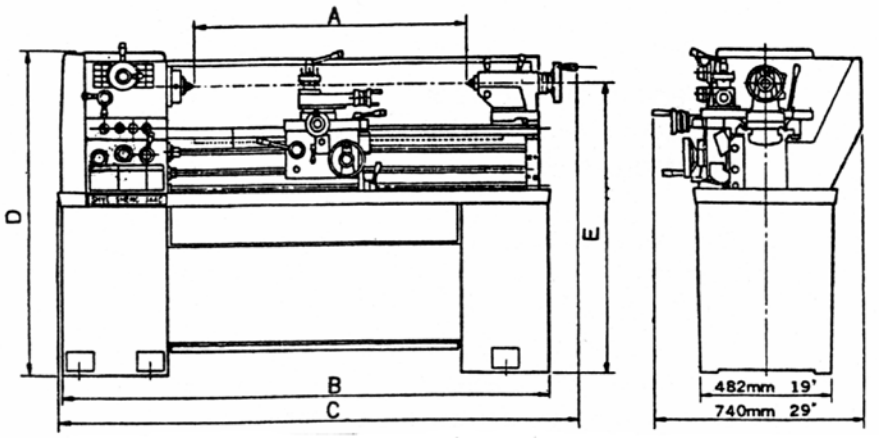
BRIEF SPECIFICATION

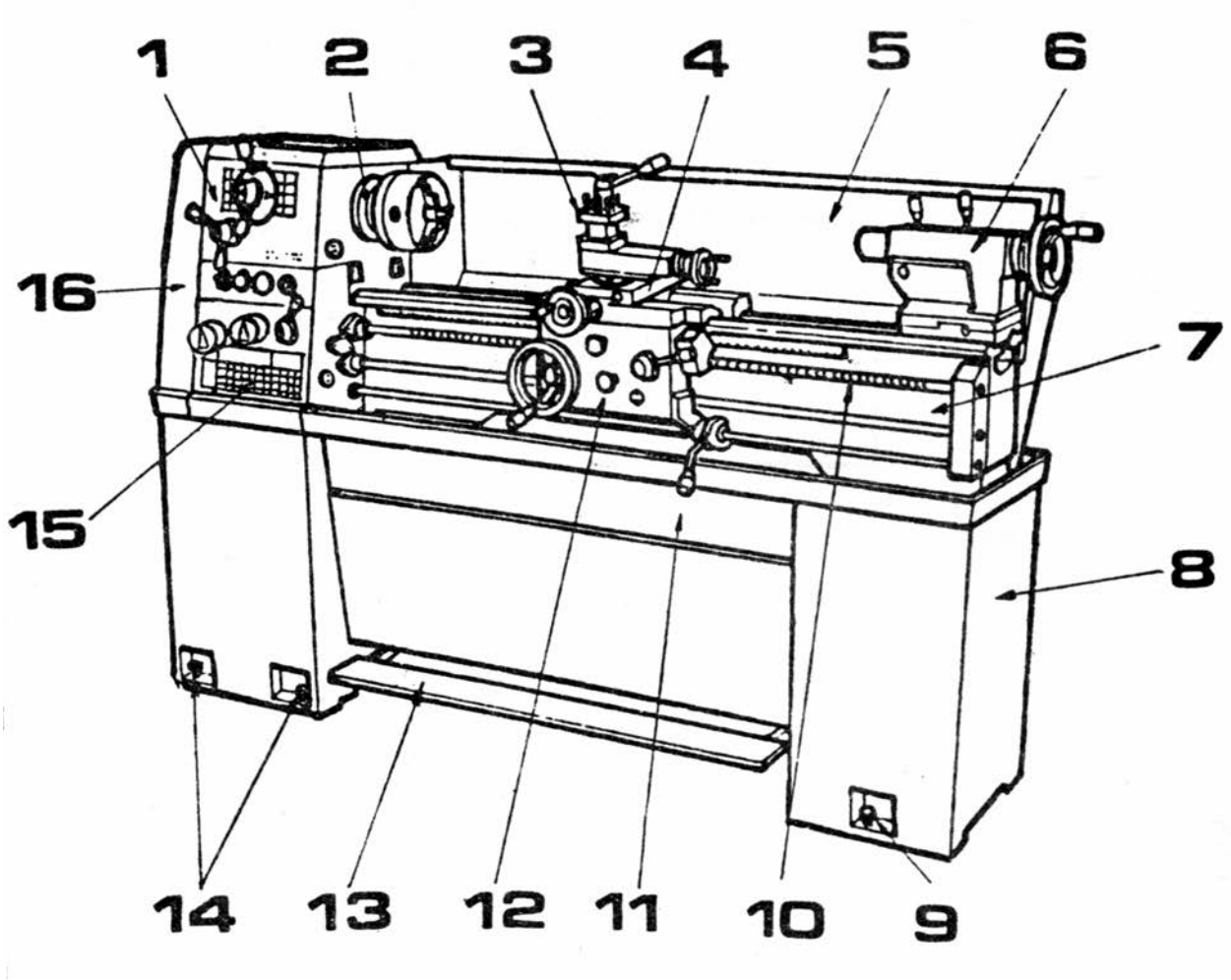


SIZE / MODEL	A	B	C	D	E
9684552	1000mm 40in	1800mm 71in	1920mm 75½in	1220mm 48in	1090mm 43in

SPECIFICATIONS

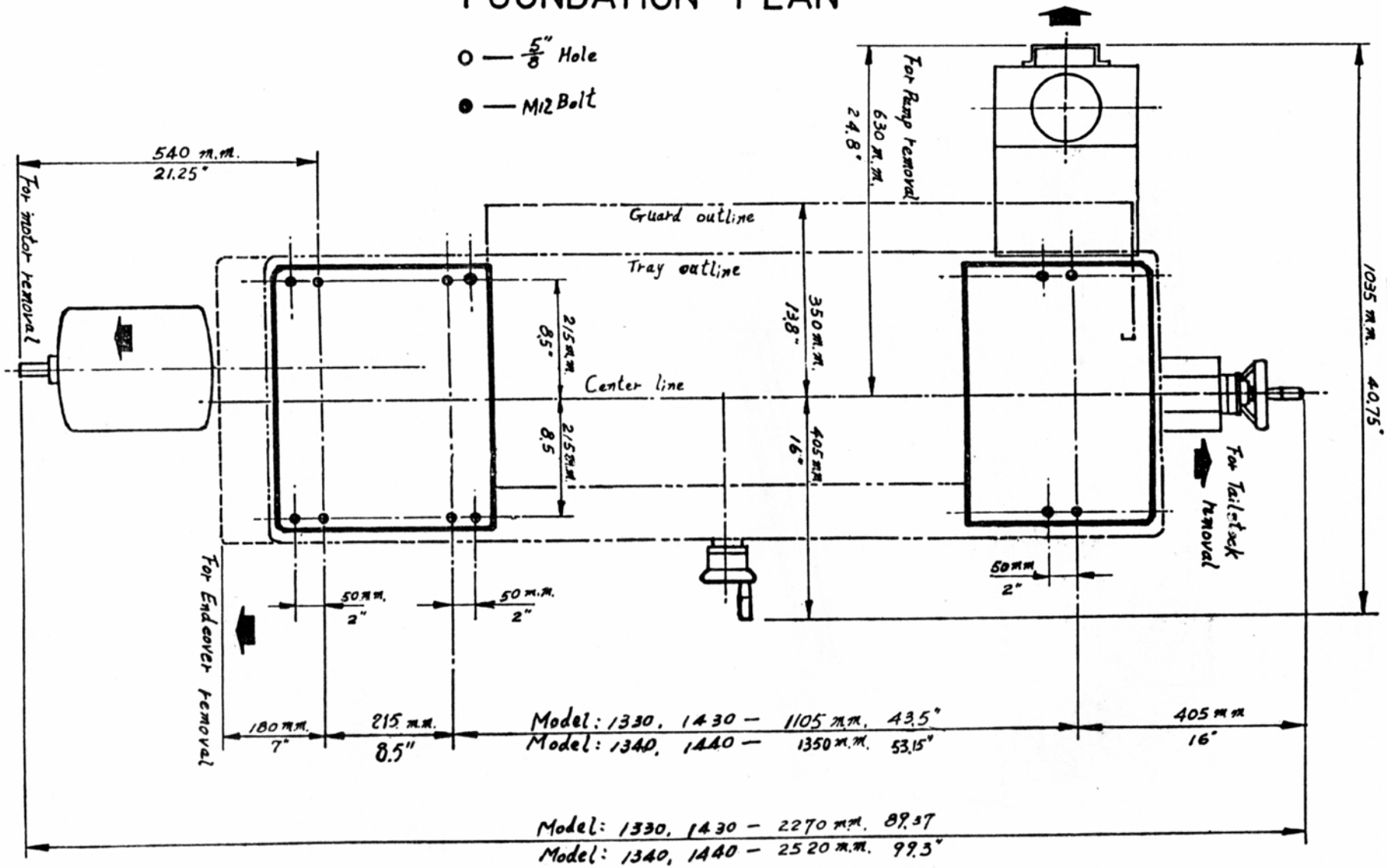
DESCRIPTION	INCH SYSTEM
MODEL	9684552
SWING OVER BED	14”
SWING OVER CROSS SLIDE	8.66″
DISTANCE BETWEEN CENTERS	40″
SWING OVER GAP	19.88″
WIDTH OF BED	8″
NUMBERED OF SPINDLE SPEEDS	8 or 16 (2 speed motor)
RANGE OF SPINDLE SPEEDS	90 or 45-1800 RPM
HOLE THROUGH SPINDLE	2″
SPINDLE NOSE	D1-4 Camlock
TAPER OF SPINDLE BORE	M.T. No.5
TAILSTOCK QUILL TAPER	M.T. No.3
TAILSTOCK QUILL TRAVEL	4-1/2″
CROSS SLIDE TRAVEL	6-1/2″
COMPOUND REST TRAVEL	3-1/2″
NUMBER OF METRIC THREADS	22
RANGE OF METRIC THREADS	0.45-7.5 MM
NUMBER OF INCH THREADS	40
RANGE OF INCH THREADS	4-112 TPI
LONGITUDINAL FEEDS	(40) 0.0012-0.0294in/rev
CROSS FEEDS	(40) 0.0003-0.0100in/rev
MACHINE NET WEIGHT	1650lb
GROSS WEIGHT	1936lb

GENERAL LAYOUT OF LATHE



1.Headstock
2.Spindle
3.Top slide
4.Saddle & cross-slide
5.Splash guard
6.Tailstock
7.Bed
8.Mounting feet
9. Tail-end plinth
10.Lead screw
11.Chip pan
12.Apron
13.Foot brake
14.Head-end plinth
15.Gear box
16.End cover

FOUNDATION PLAN



LIFTING

Use the sling-chain to sling lathe showed as in Fig 4 position the saddle and tailstock along the bed to obtain balance.

Important: DO NOT USE ALINGS AROUND BED AS LEADSCREW AND FEEDSHAFT MAY BE BENT.

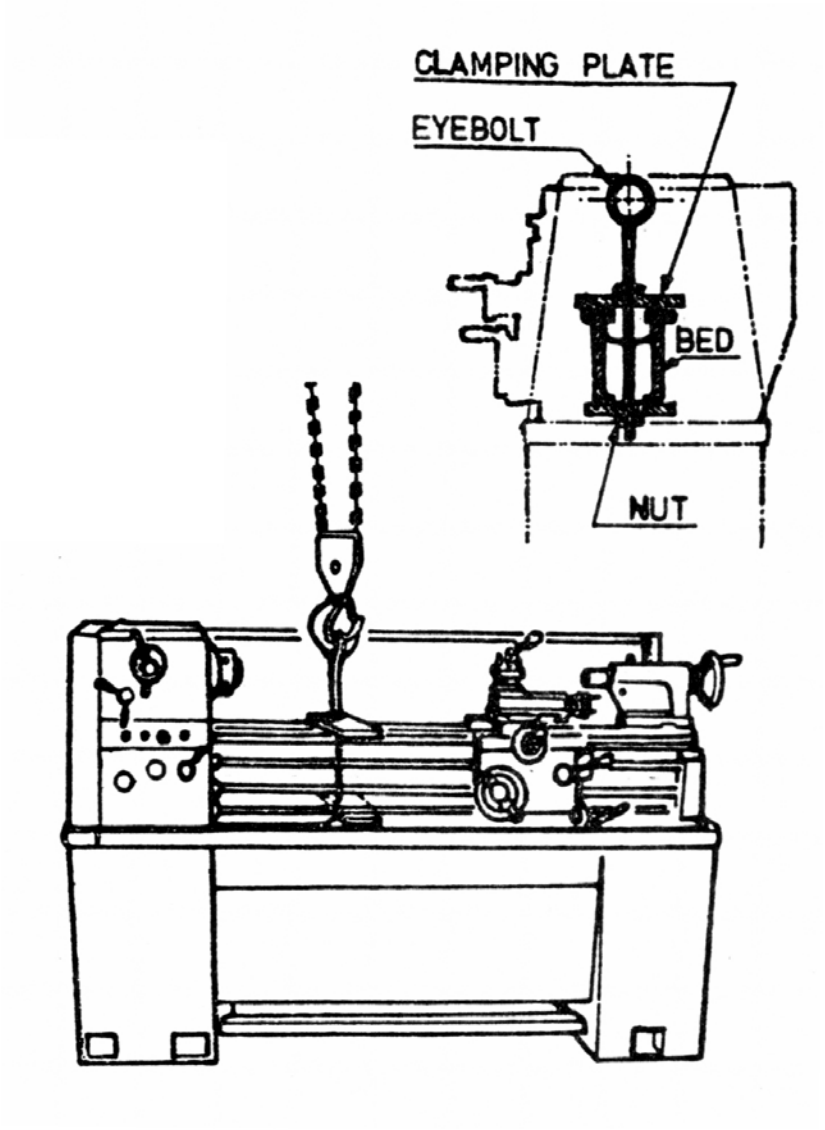


Fig.4

CLEANING

Before operating any controls, use white spirit or kerosene to remove the anticorrosion coating from all slideways and the endgear train.

Do not use cellulose solvents for cleaning as they will damage the paint finish.

Machined surfaces immediately after cleaning using machine oil or slide way lubricant; use heavy oil or grease on the end gear.

INSTALLING

Locate the machine on a solid foundation, allowing sufficient area all around for easy working and maintenance (see Foundation plan). The lathe may be used freestanding or bolted to the foundation.

Freestanding: Position lathe on foundation and adjust each of the six mounting feet to take equal share of the load. Then using an engineer's precision level on the bedways (Fig.2) adjusts the feet to level up machine. Periodically check bed level to ensure continued lathe accuracy.

Fixed installation: Position lathe over six bolts (1/2 in. or 12mm.dia.) set into the foundation to correspond with holes in the mounting feet; Accurately level the machine, then tighten hold-down bolts, Re-check bed level.

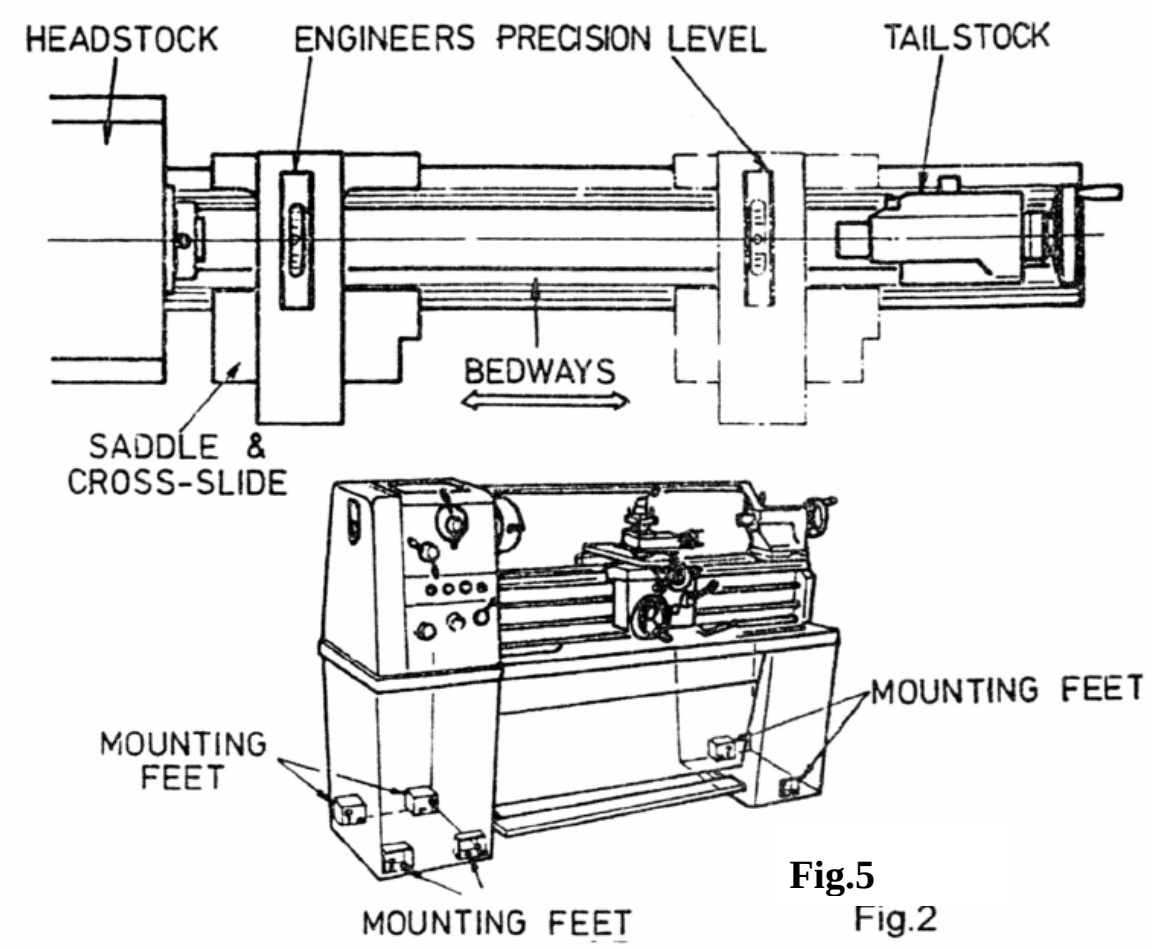


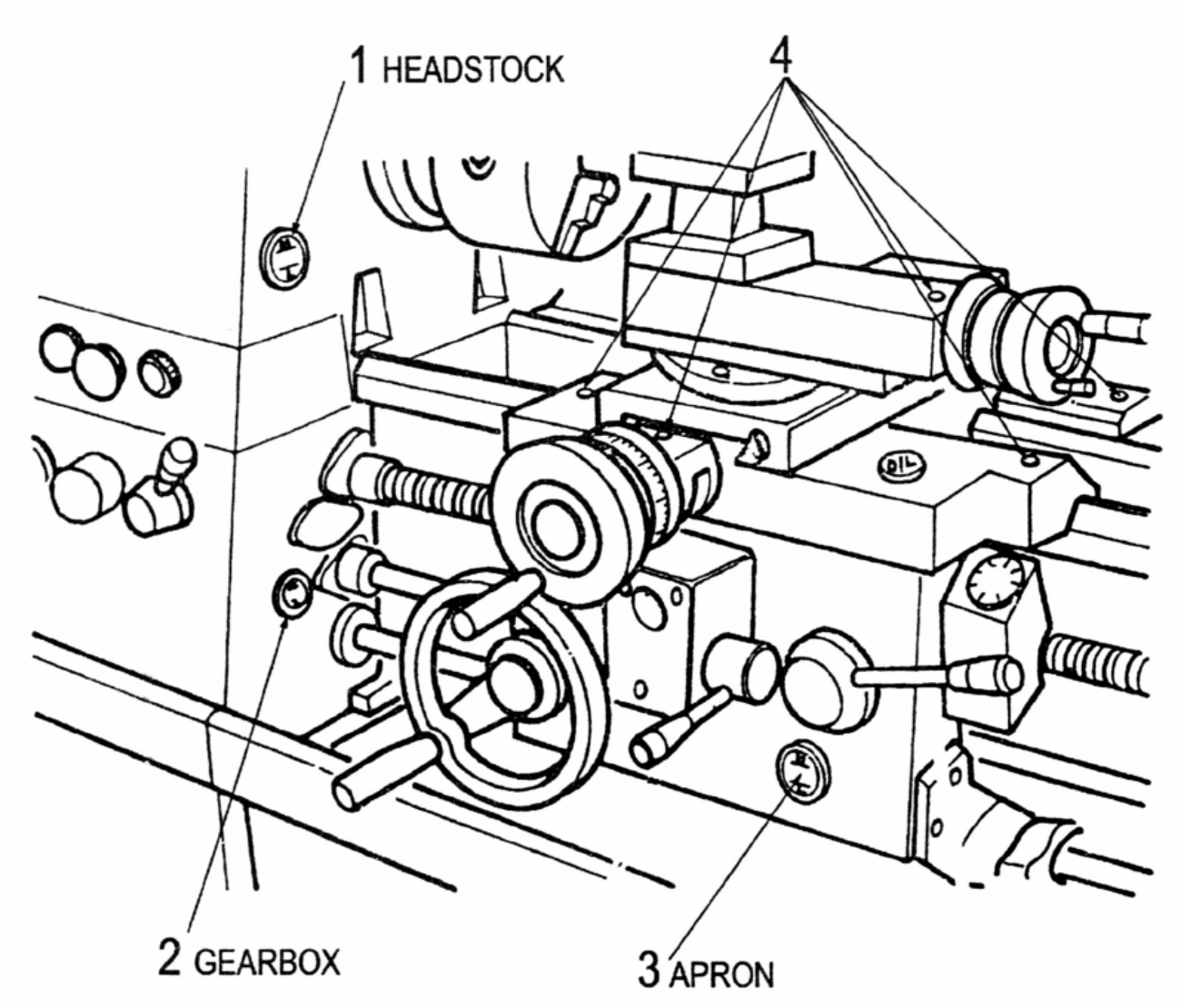
Fig.5

Fig.2

LUBRICATION CHECKS

Before operating the machine, make the following important checks:

1. The headstock is filled to lever marked on oil sight window with Shell Tellus oil 27.
2. The gearbox is filled to lever marked on oil sight window with Shell Tellus oil 27.
3. The carriage apron is filled to lever marked on oil sight window with Shell Tonna 33.
4. In addition, apply light machine oil or way lubricant to the points shown on lubrication diagram witch require daily oiling.



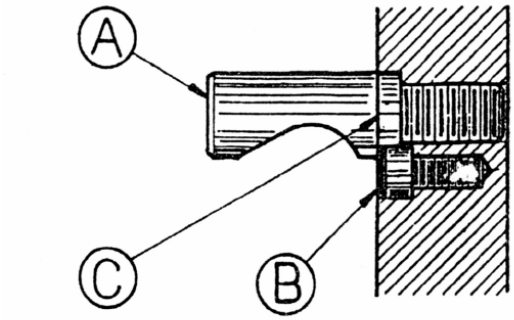
CHUCKS AND CHUCK MOUNTING

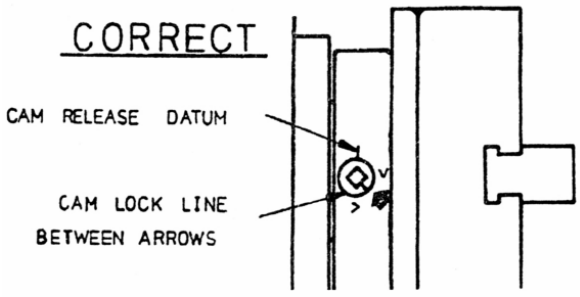
When fitting chucks or faceplates, first ensure that spindle and chuck tapers are scrupulously clean and that all cams lock in the correct positions; see Fig.7, it may be necessary to re-set the cam lock studs (A) when mounting a new chuck. To do this, remove the cap-head locking screws (B) and set each stud so that the scribed ring (C) is flush with the rear face of the chuck-with the slot lining up with the locking screw hole(See Fig.7)

Now mount the chuck or faceplate on the spindle nose and tighten the three cams in turn. When fully tightened, the cam lock line on each cam should be between the two V marks on the spindle nose. If any of the cams do not tighten fully within these limit marks, remove the chuck or faceplate and re-adjust the stud as indicated in the illustration. Fit and tighten the locking screw (B) at each stud before remounting the chuck for work.

This will assist subsequent remounting. Do not interchange chucks of face plates if lathe without checking up correct camlocking.

IMPORTANT: Take care note of speed limitations when using faceplate. 10 in. faceplates should not be run at speeds greater than 770 rev/min.





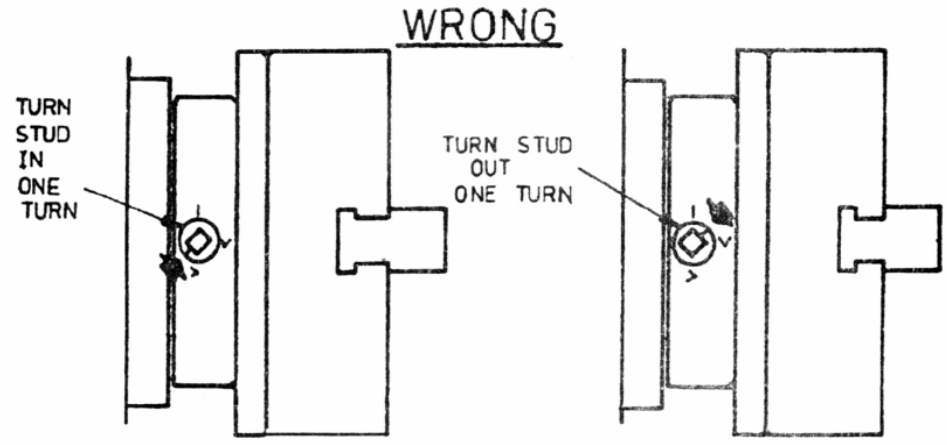
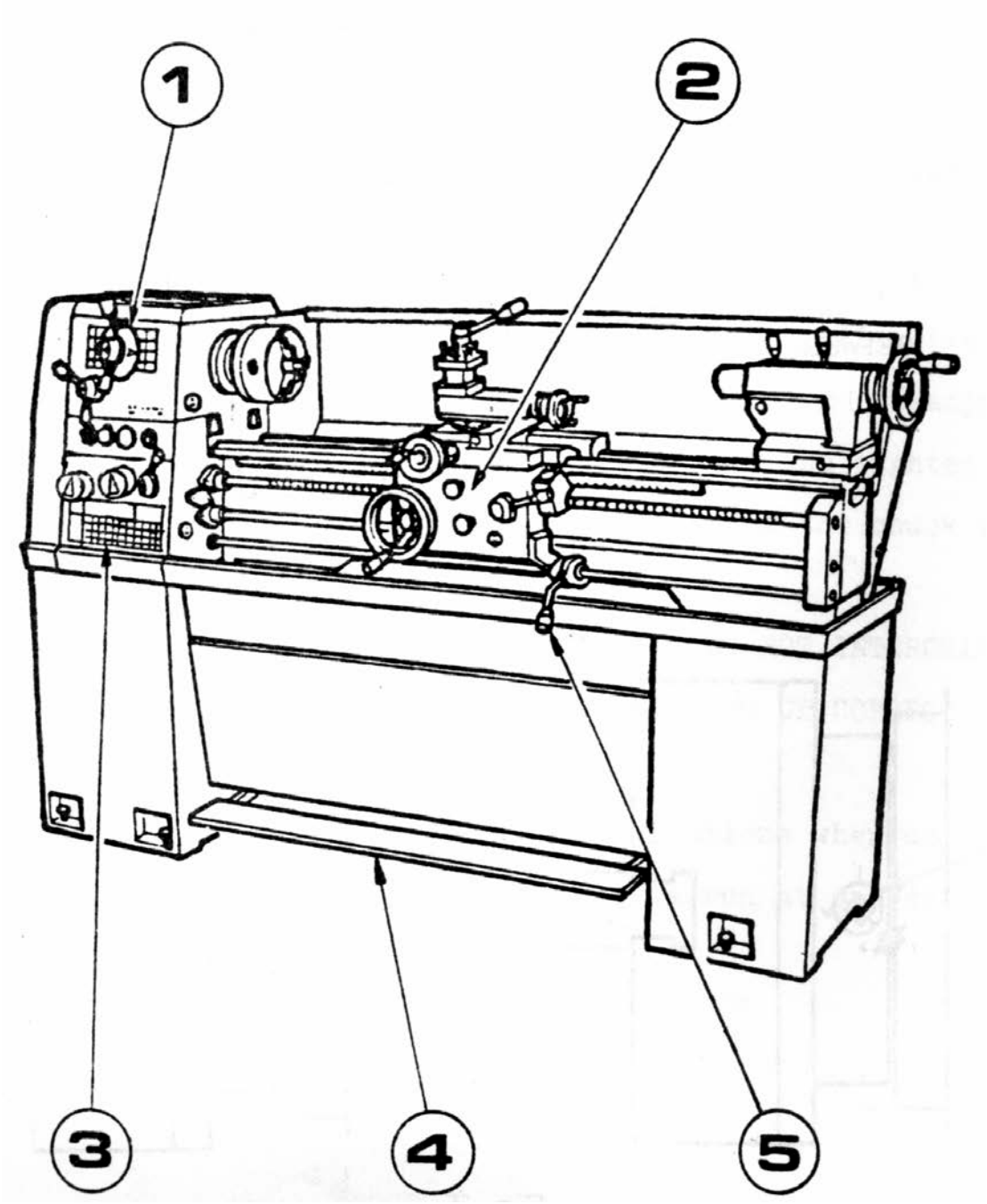


Fig.7

LATHE CONTROLS

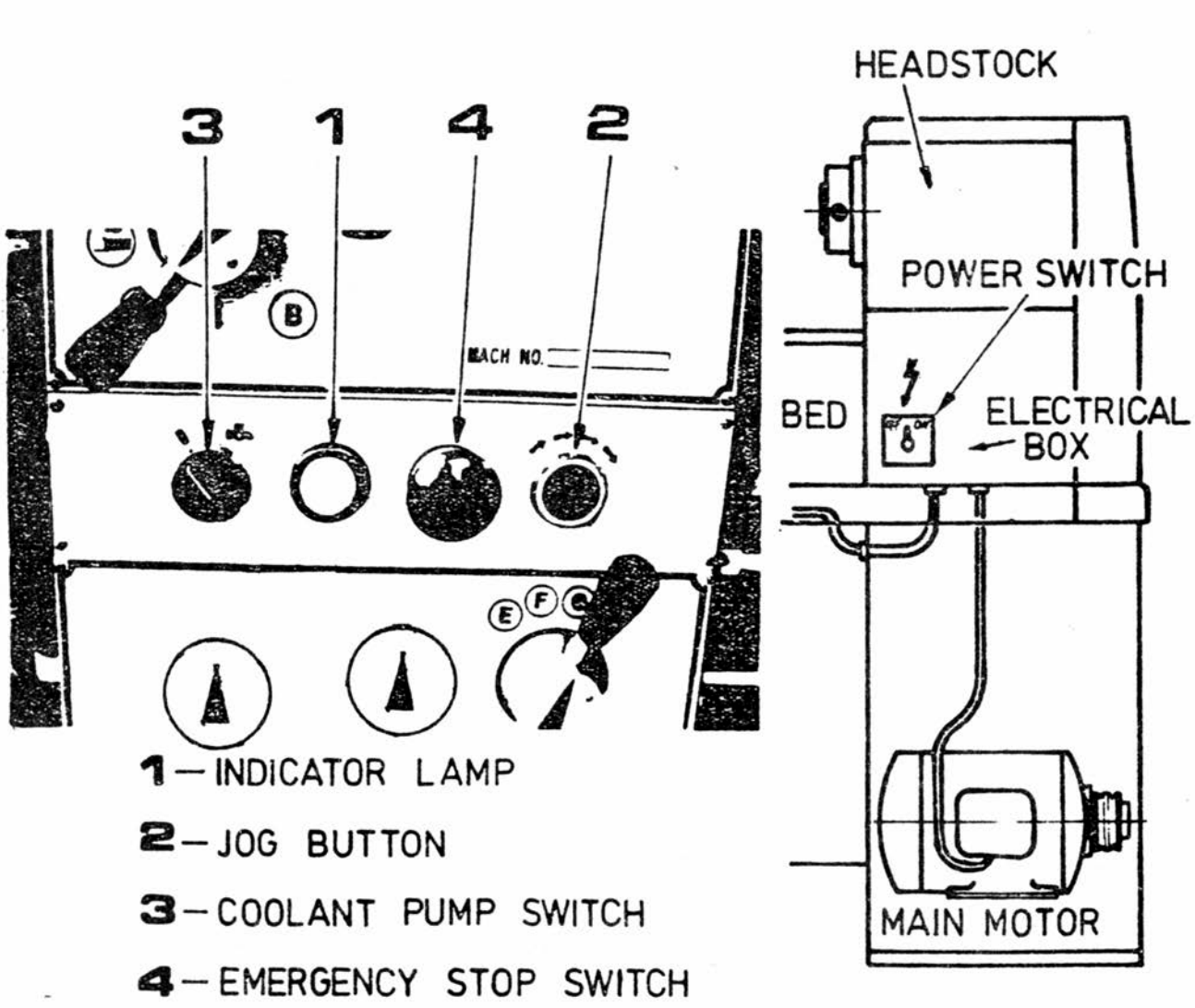


1. Spindle Speed Selector
2. Apron, surfacing or sliding feeds
3. Gearbox, threads and feeds
4. Footbrake
5. Main motor rotation (forward and revers)

ELECTRICAL CONTROLS

The power switches are fitted on the face of electrical box in back of the bed and below the headstock. Except the main switch, all electrical controls are fitted in the front of the headstock.

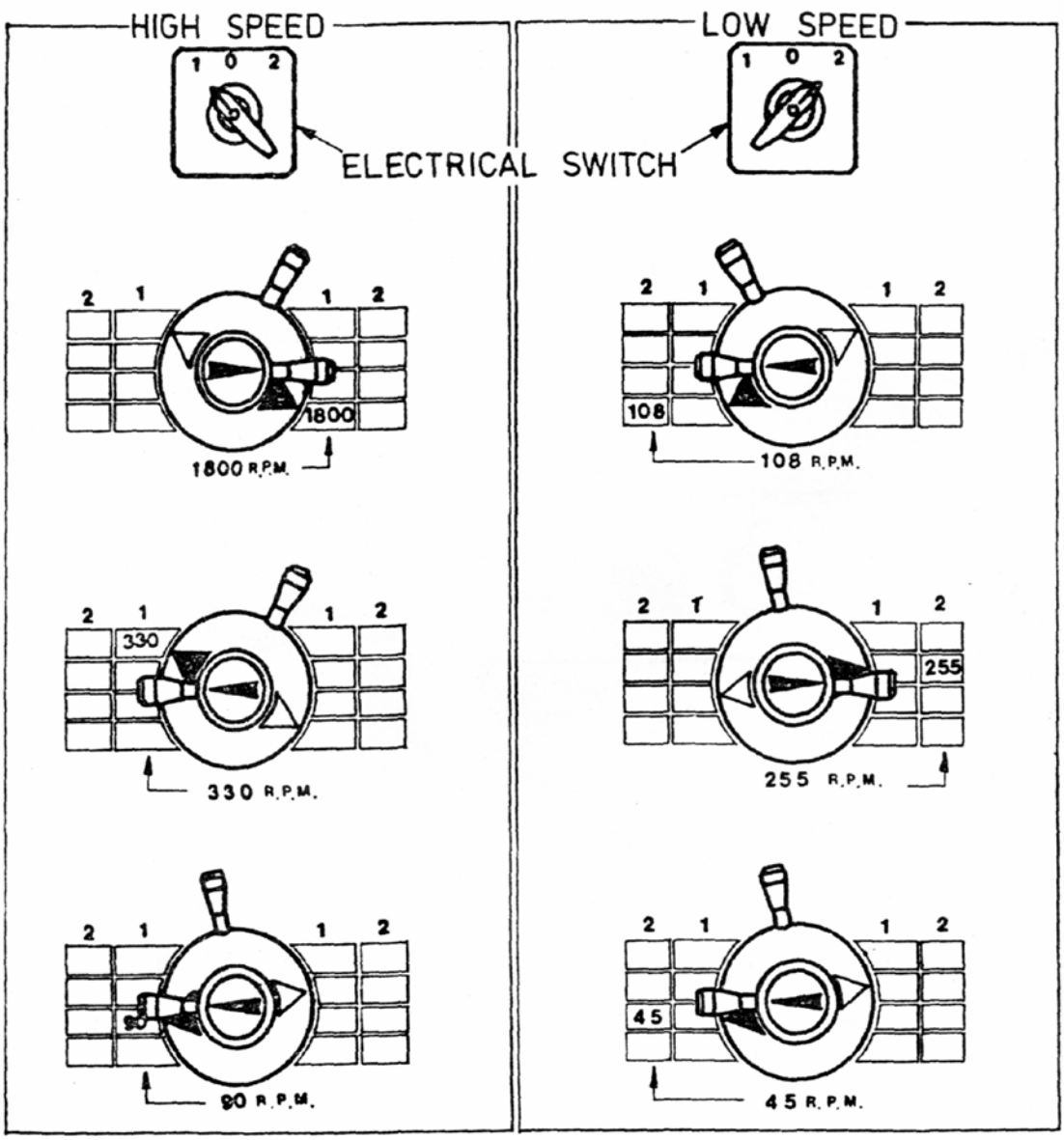
1. Move the power switch set at ON position then the indicator lamp glows.
2. Press the GREEN button. The main drive motor can be running with a moment. (While the main motorrotation lever is set in the neutral position.)
3. Coolant pump ON/OFF push button.
4. Press the RED button to stop the main motor and coolant pump.



SPEED CONTROLS (2 SPEED MOTOR)

Spindle speeds: Selected by the two lever controls and an electrical switch, on the headstock and stand. The sixteen available speeds are shown directly on the data plate. While the electrical switch set at (1) position, the small lever rotated left-hand side, it provides speeds from 1800～510r.p.m, and rotated to left-hand side, to provides speeds from 330～90r.p.m. Then move the large lever to the oppropriately coloured arrow aligned with the required speed on the data plate. While the electrical switch set at (2) position, it provides speeds from 900～255r.p.m.

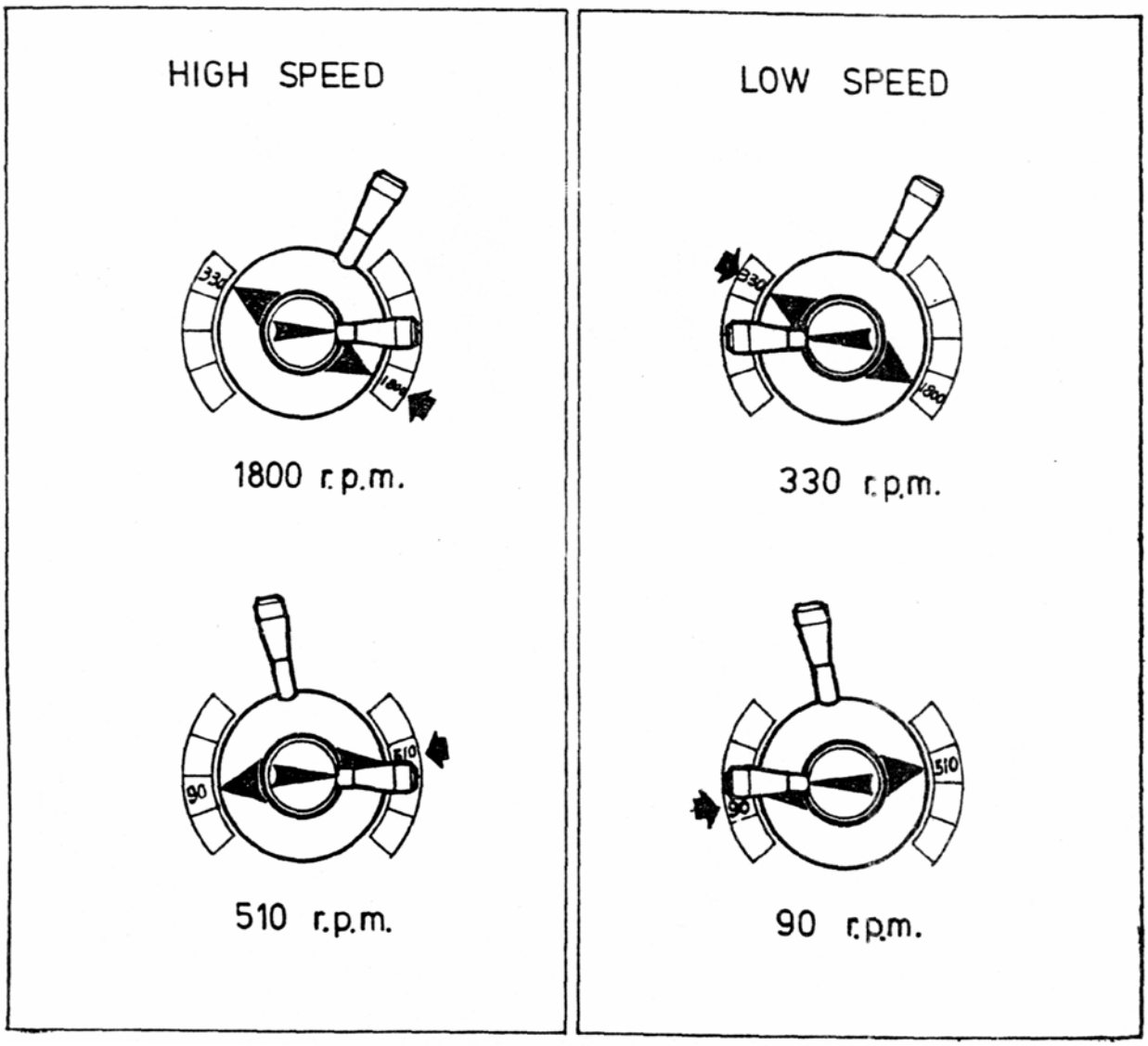
When the small lever set at upper or bottom position, the spindle is free for hand rotation.



SPEED CONTROLS

Spindle speeds: Selected by the two lever controls on the headstock. The eight available speeds are shown directly on the data plate. Rotate the small lever to right-hand slide, speeds can run from 1800～510 r.p.m and rotate to left-hand side, provided speeds can be from 330～90r.p.m. Then move the large lever until the oppropriately coloured arrow is aligned with the required speed on the data plate.

When the small lever set at upper or bottom position, the spindle is free for hand rotation.



THREADS AND FEEDS(Metric Gearbox)

All the threads and feeds directly available from the gear box are shown in the data plate fitted on the front of the gear-box. The setting of control levers is shown in bellow.

The B position of lever(Y) can provid a range of fine threads, the A position a coarse thread range. Do not select the range(A position) at spindle speeds higher than 770rev/min.

THREADS AVILABLE:

37 Metric threads 0.4 to 7mm pitch

28 Whitworth threads 4 to 56T.P.I

The endgear train should be arranged as in the diagrams shown on the data plate to suit threading requirements

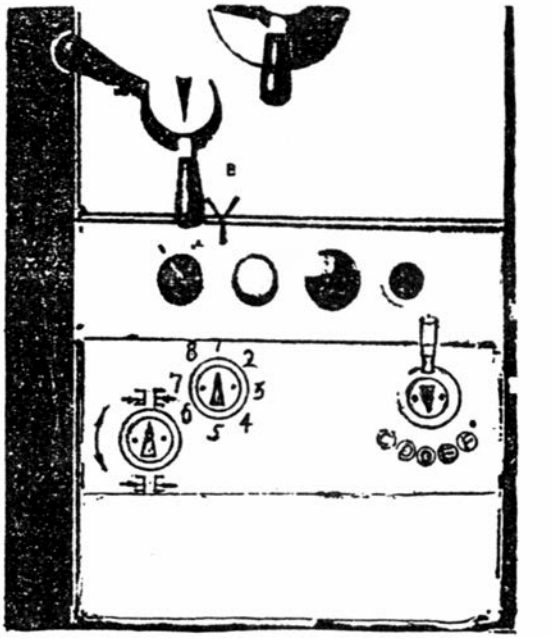


Fig.12

			1	2	3	4	6	7	8
127T 64T	C	A	4.0	4.5	5.0	5.5	6.0	6.5	7.0
		B	2.0	2.25	2.5	2.75	3.0	3.25	3.5
	E	A	1.0	1.125	1.25	1.375	1.5	1.625	1.75
		B	0.5		0.625		0.75		0.875
127T 64T	E	A	0.8	0.9	1.0	1.1	1.2	1.3	1.4
		B	0.4	0.45	0.5	0.55	0.6	0.65	0.7

		1	2	3	4	6	7	8
D	A	0.373	0.428	0.466	0.513	0.561	0.606	0.653
	B	0.186	0.214	0.233	0.256	0.280	0.303	0.327
F	A	0.109	0.122	0.135	0.149	0.163	0.177	0.190
	B	0.054	0.060	0.067	0.074	0.081	0.088	0.095
F	A	0.087	0.098	0.109	0.119	0.131	0.141	0.152
	B	0.043	0.049	0.054	0.059	0.065	0.071	0.076

		2	1	2	2	1	1	1
		40	40	32	32	30	30	30
		60	60	60	66	60	65	70
C	A	4	4½	5	5½	6	6½	7
	B	8	9	10	11	12	13	14
E	A	16	18	20	22	24	26	28
	B	32	36	40	44	48	52	56

FEEDS:

Longitudinal feeds per spindle revolution range from 0.043 to 0.653mm.

Cross feeds per spindle revolution range from 0.027 to 0.413mm.

THREADS AND FEEDS(Inch Gearbox)

All the threads and feeds directly available from the gear box are shown in the data plate fitted on the front of the gear-box. The setting of control levers is shown in Fig.13.

The B position of lever(Y) can provid a range of fine threads, the A position a coarse thread range. Do not select the range(A position) at spindle speeds higher than 770rev/min.

THREADS AVILABLE:

40 Whitworth threads 0.4 to 112 T.P.I

22 Metric threads 0.45 to 7.5mm pitch

The endgear train should be arranged as in the diagrams shown on the data plate to suit threading requirements

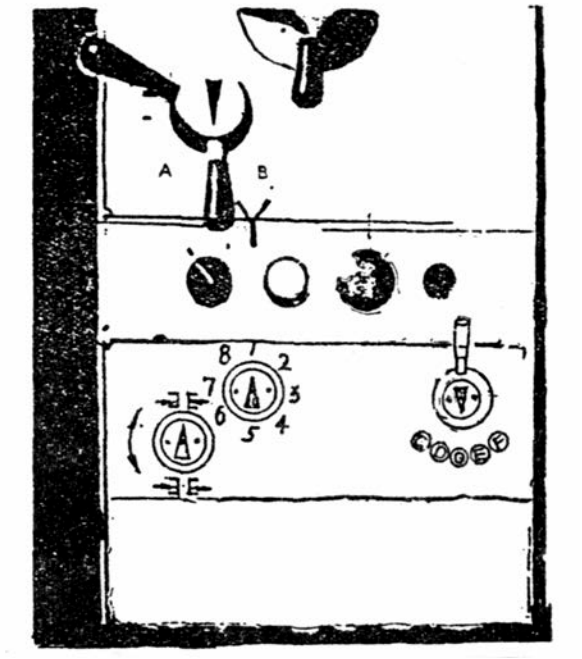


Fig.13

T.P.I / IN			1	2	3	4	5	6	7	8
127 50 50	A	C	4	4½	5	5½	5¾	6	6½	7
		D	.0294	.0261	.0235	.0214	.0205	.0196	.018	.0168
	A	C	8	9	10	11	11½	12	13	14
		D	.0147	.0131	.0117	.0107	.0102	.0098	.0090	.0084
127 30 60	B	C	16	18	20	22	23	24	26	28
		D	.0073	.0065	.0058	.0053	.0051	.0049	.0045	.0042
	A	E	32	36	40	44	46	48	52	56
		F	.0042	.0038	.0034	.0031	.0030	.0028	.0026	.0024
	B	E	64	72	80	88	92	96	104	112
		F	.0021	.0019	.0017	.0015	.0015	.0014	.0013	.0012

MM	127 120 50 40			127 120 50 50			127 120 45 60	
	1	3	6	3	1	2	3
AC	7.5	6.0	5.0	4.8	4.5	4.0	
BC	3.75	3.0	2.5	2.4	2.25	2.0	1.8
AE		1.5	1.25	1.2		1.0	0.9
BE		0.75		0.6		0.5	0.45

FEEDS:Longitudinal feeds per spindle revolution range from 0.0012 to 0.0294 in (0.0030 to 0.746mm)

Cross feeds per spindle revolution range from 0.0004 to 0.0108 in (0.010 to 0.271mm)

THREADING DIAL INDICATOR

A. Whitworth threads

Located on right-hand side of the apron on lathes having an English leadscrew. Engage the indicator pinion with the leadscrew and tighten the handnut to retain indicator in engagement.

To cut threads of an even number per inch, close the leadscrew nut as ANY line on the dial passes the datum mark. To cut threads of odd numbers per inch, close the leadscrew nut at any NUMBERED line.

Fractional threads of 1/2 or 1/4 T.P.I. may be cut by closing the nut at the SAME numbered line on each pass of the tool.

This dial cannot be used with an English leadscrew to cut metric threads, or fractional threads. For these the leadscrew nut must be kept closed and the machine reversed by use of the changeover switch, after each cutting pass and tool with drawl.

B. Metric threads

The thread dial used for cutting metric screw threads on lathes equipped with metric leadscrew. To provide for the various pitches of metric threads, several gears having different numbers of teeth are mounted on the lower end of the shaft. The vertical position of the thread dial indicator is changed as required so that the correct gear for the pitch of the thread to be cut will mesh with the leadscrew.

Each graduation on the dial is marked with a letter which indicates the points at which the halfnuts may be engaged for certain threads. A diagram is supplied with the thread dial to show which gear and which graduations must be used for each pitch of metric screw thread.

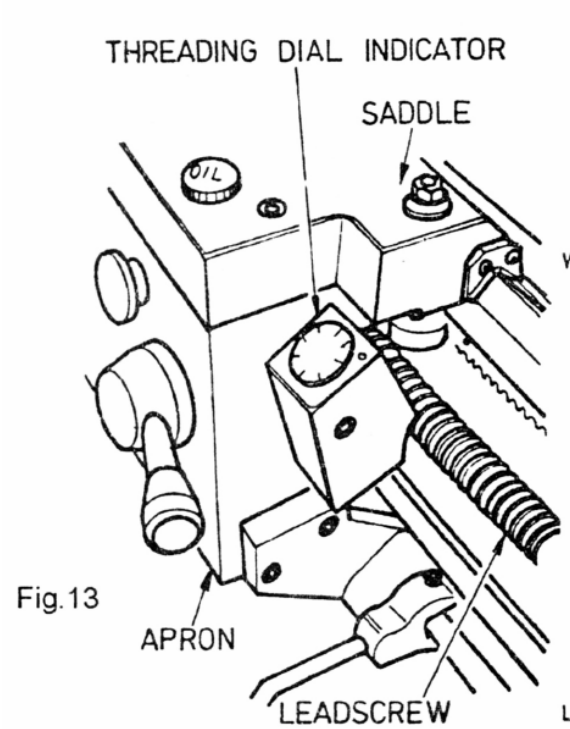
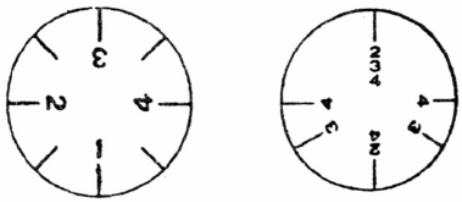


Fig.13



WHITWORTH THREAD DIAL

TPI	↓	TPI	↓	TPI	↓
4	1-8	12	1-8	38	1-8
4½	1-3 2-4	13	1-4	40	1-8
4¾	1	14	1-8	44	1-8
5	1-4	16	1-8	48	1-8
5½	1-3 2-4	18	1-8	52	1-8
6	1-8	19	1-4	56	1-8
6½	1-3 2-4	20	1-8	64	1-8
7	1-4	22	1-8	72	1-8
8	1-8	24	1-8	76	1-8
9	1-4	26	1-8	80	1-8
9½	1-3 2-4	28	1-8	88	1-8
10	1-8	32	1-8	96	1-8
11	1-4	36	1-8	100	1-8

LEADSCREW PITCH 8T.P.I.

METRIC THREAD DIAL

P.C.	T	↓	P.C.	T	↓
0.4	20	4	1.4	21	3
0.45	27	3	1.5	27	3
0.5	20	4	1.625	26	2
0.55	22	2	1.75	21	3
0.6	27	3	2.0	20	4
0.625	20	4	2.25	27	3
0.65	26	2	2.5	20	4
0.7	21	3	2.75	22	2
0.75	27	3	3.0	27	3
0.8	20	4	3.25	26	2
0.875	21	3	3.5	21	3
0.9	27	3	4.0	20	4
1.0	20	4	4.5	27	3
1.1	22	2	5.0	20	4
1.125	27	3	5.5	22	2
1.2	27	3	6.0	27	3
1.25	20	4	6.5	26	2
1.3	26	2	7.0	21	3
1.375	22	2			

LEAD SCREW PITCH 4MM

APRON CONTROLS (Knob type)

In addition to handwheel traverse, the carriage can be power-operated through controls on the front of the apron see Fig.15 knob (A) is pulled out for power feed engagement and pushed in for manual operation.

The push-pull knob (B) selects power surfacing (cross-feed) when pulled out, sliding feeds are selected when the knob is pushed right in.

Lever(C) is pressed downward to engage the leadscrew nut for screwcutting. To avoid undue wear. Release the nut except when screwcutting.

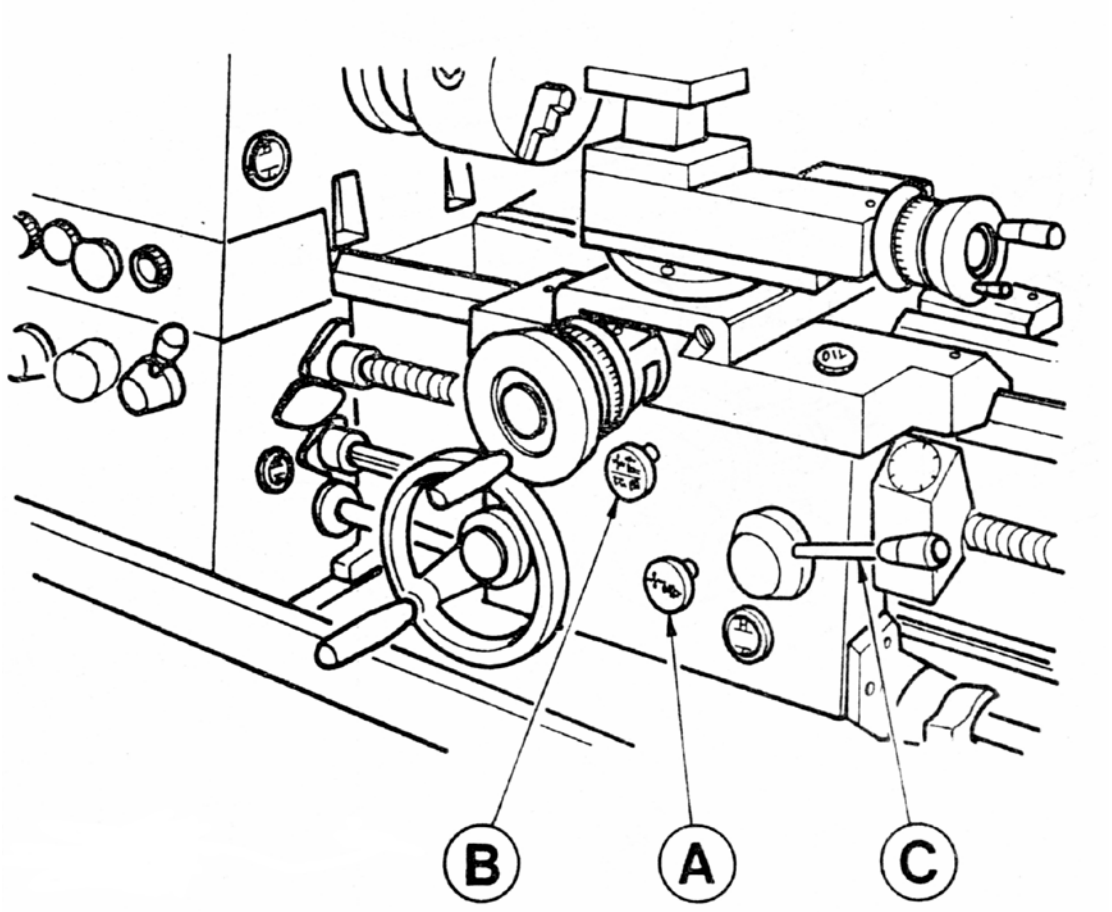


Fig.15

APRON CONTROLS (Lever type)

In addition to handwheel traverse, the carriage can be power-operated through controls on the front of the apron see Fig.16 knob (A). If move handle (A) upwards, carriage would do longitudinal-feed operation. If move handle (A) in middle position, it would do manul operation. If move handle(A) downwards, it would do cross-feed operation.

Lever(B) is pressed downwards to engage the leadscrew nut for screwcutting. To avoid undue wear. Release the nut except when screwcutting.

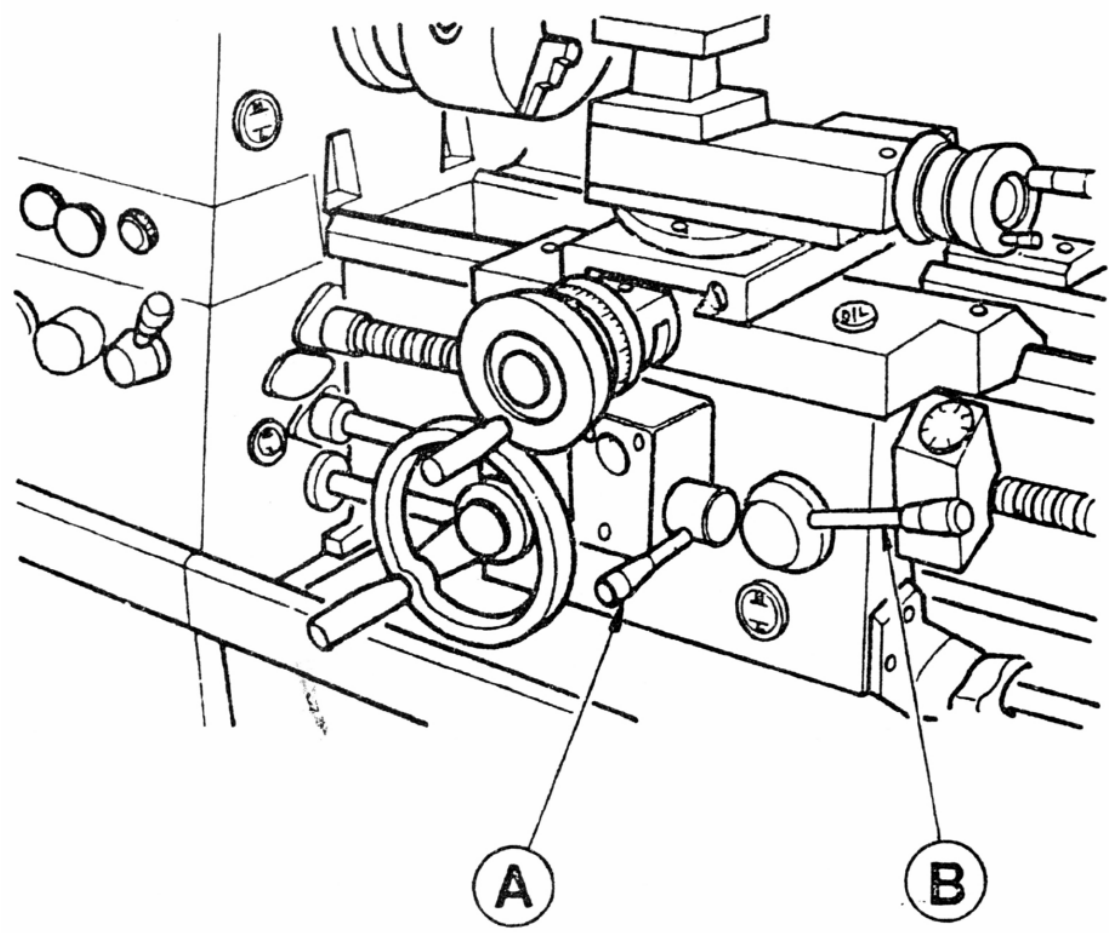


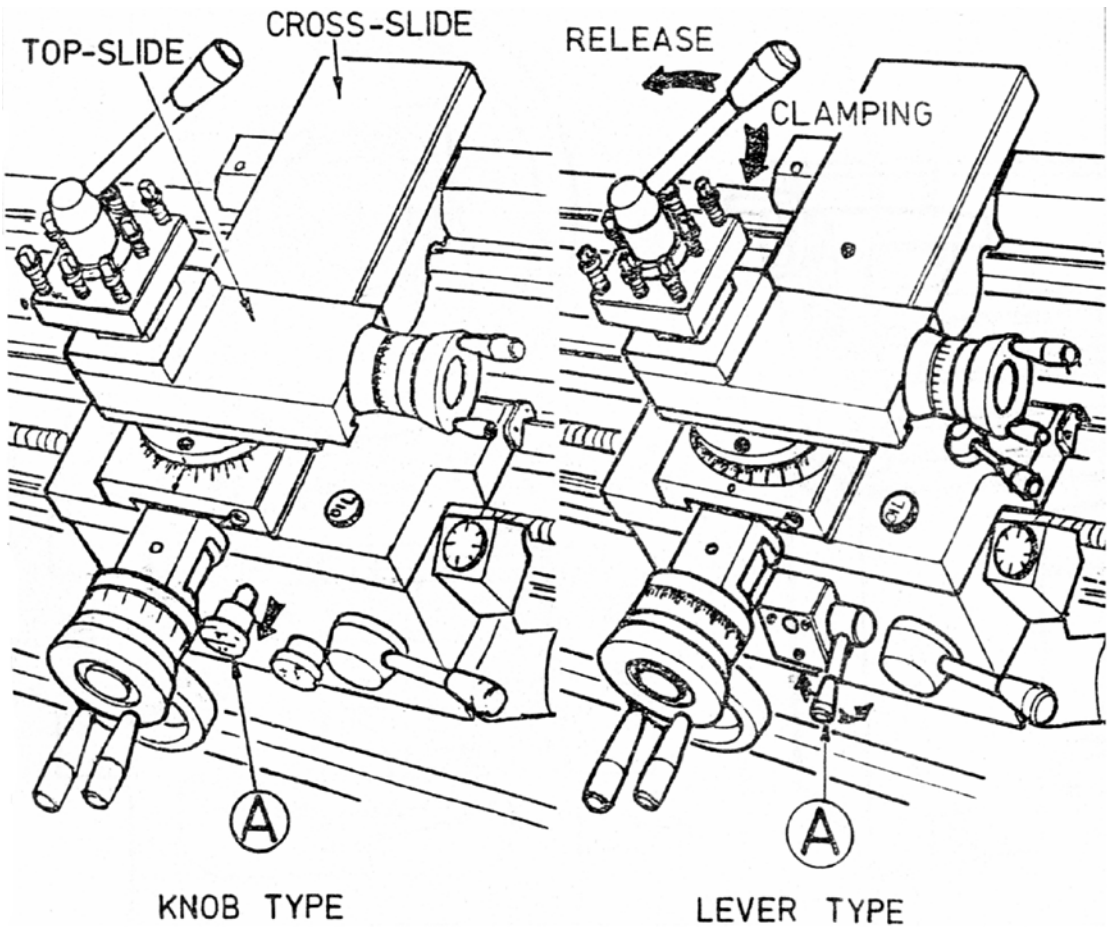
Fig.16

CROSS-SLIDE AND TOP-SLIDE

A solid topslide is fitted as standard to the cross-slide. Carried on a rotatable base, the cross-slide is marked 45-0-45 deg. For accurate indexing.

Handwheel dials are graduated in inch or metric divisions to suit the operating screw and nut fitted.

The cross-slide can be power operated by pulling out the hand knob (A), at one-third sliding feed per spindle revolution, or it can be hand-operated using the large-diameter dial graduated in either inch or metric division to suit the operating screw and nut fitted.



TAIL STOCK

Can be free movement along the bed by unlocking the clamp lever(A).

The tailstock barrel is locked by lever(B).

The tailstock can be set-over for production of shallow taper or for re-alignment. Release the clamping lever and adjust screws(S) at each slide of the base to move tailstock laterally across the base. An indication of the set-over is given by the datum mark(C) at the tailstock end face, as shown in Fig.18.Apply Clamp lever after adjustment of set-over.

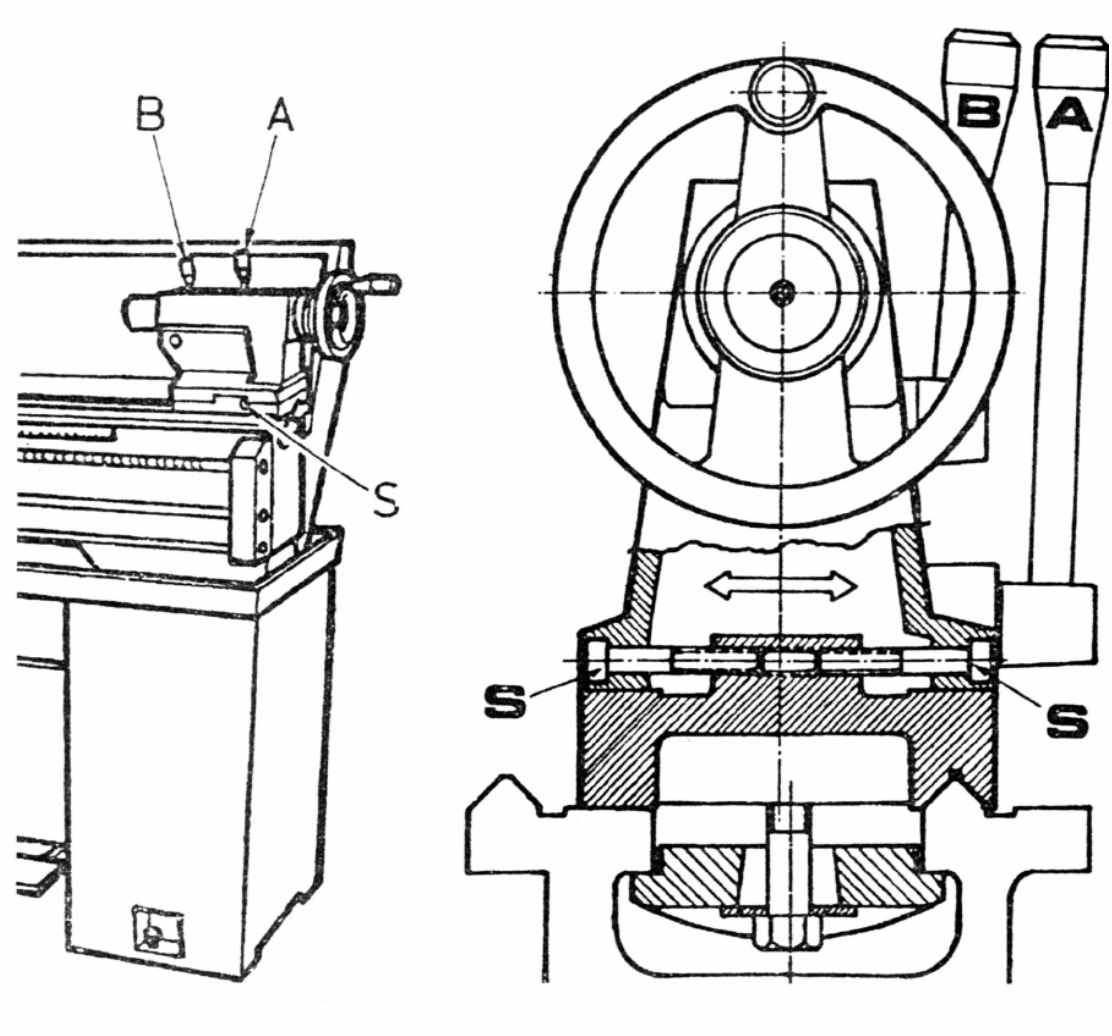


Fig.18

LATHE ALIGNMENT(part 1)

With the lathe install and running. We recommend a check on machine alignment before commencing work. Check leveling and machine alignment at regular periods to ensure continued lathe accuracy.

Headstock check: Take a light cut-with a keen tool over a 6 in. (150mm.) length of 2 in. dia. (50mm) steel bar gripped in the chuck but not supported at the free end. Micrometer reading at each end of the turned length (at A and B of Fig.19) should be the same.

To correct a difference in readings, slacken and release the four-headstock hold-down screws (J) shown in Fig.19 and adjust the set-over pad (K) beneath the headstock. Then tighten all screws, after adjustment, repeat the test-cut/micrometer-reading until micrometer readings are identical so that machine cutting will be absolutely parallel.

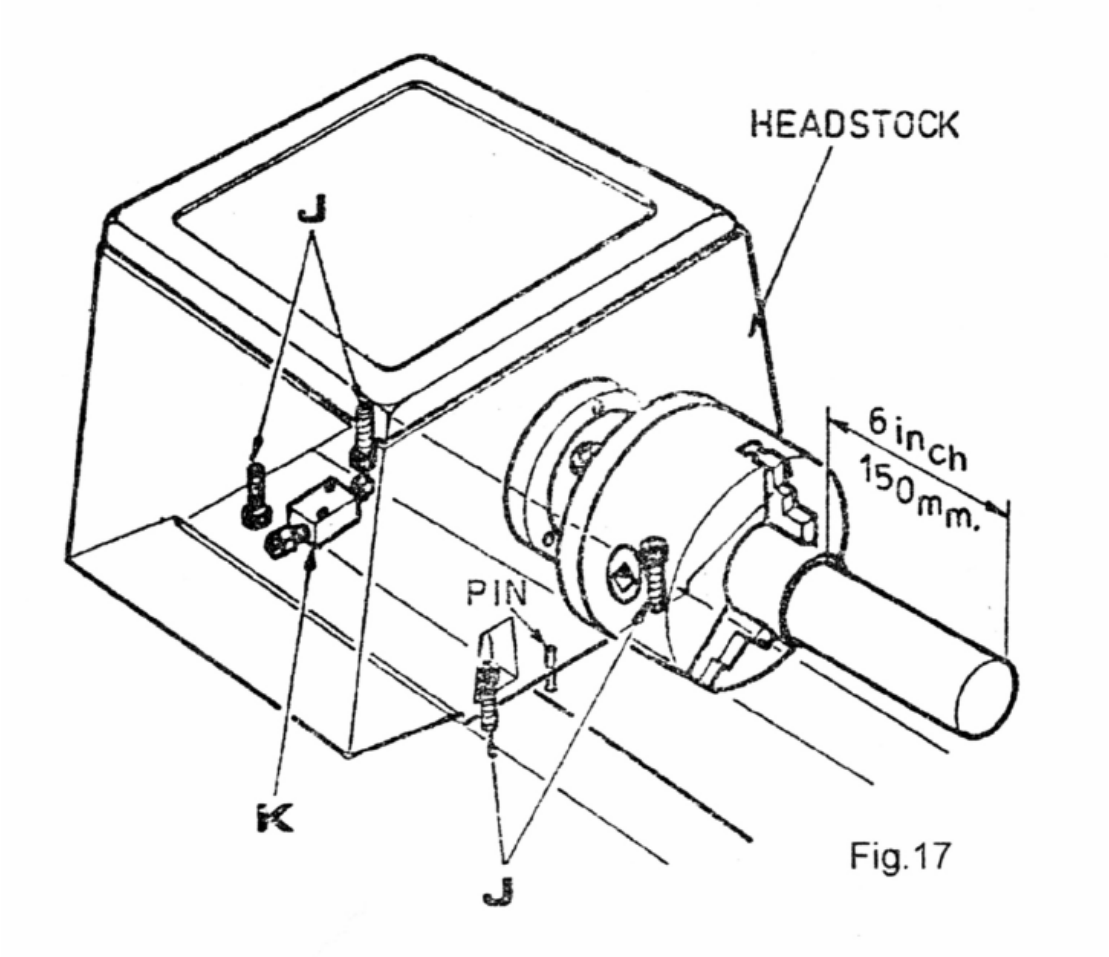
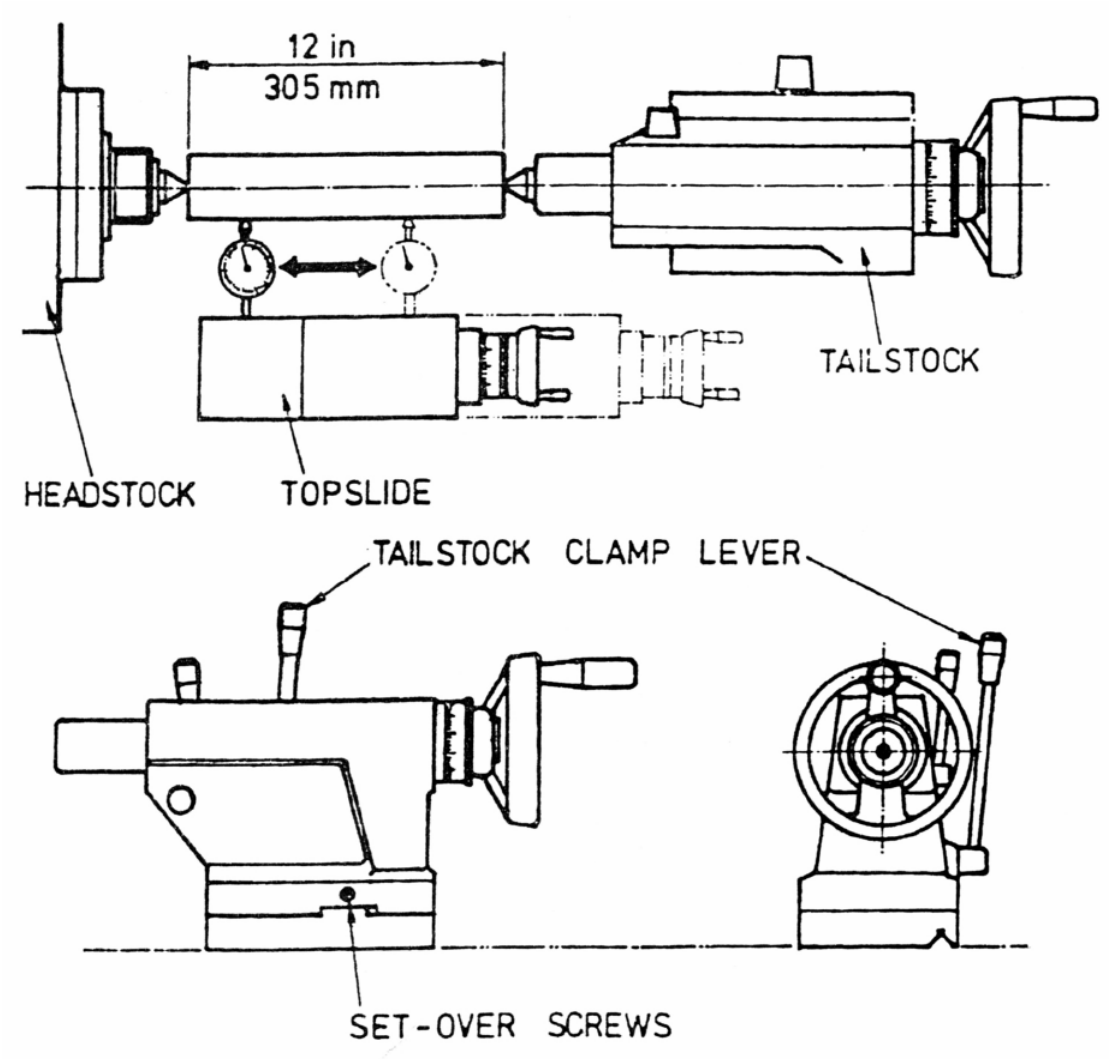


Fig.17

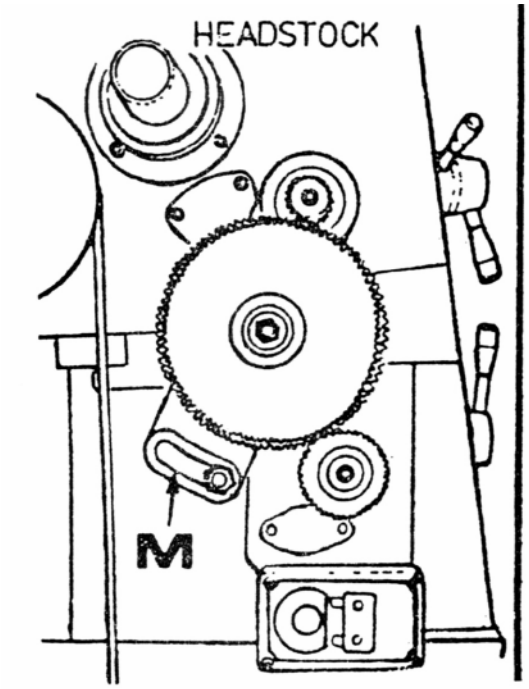
LATHE ALIGNMENT(part 2)

Tailstock check: Using a 12in. (305mm.) ground steel bar fitted between centers of headstock and tailstock. Check the alignment by fitting a dial-test indicator to the topslide and traversing the center line of the bar.

To correct error, release the tailstock clamp lever and adjust the two set-over screws provided. Continuously check and correct until the alignment is perfect.



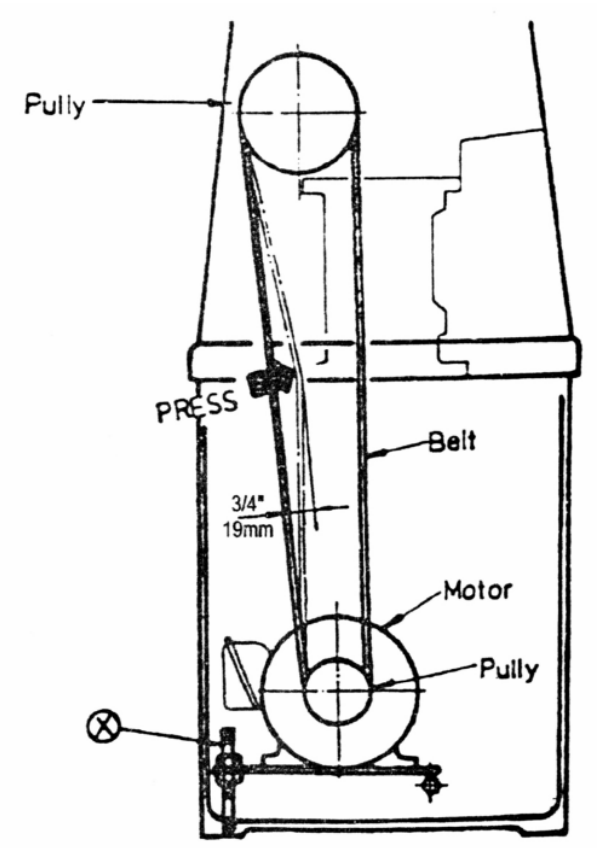
END GEAR TRAIN



Drive from headstock to gearbox is transmitted through a gear train enclosed by the headstock end-guard. Intermediate gear are carried on an adjustable swing frame(M).

Gear must be thoroughly cleaned before fitting and backlash maintained at .005in.(.127mm) Lubricate gear regularly with thick oil or grease.

DRIVING BELTS



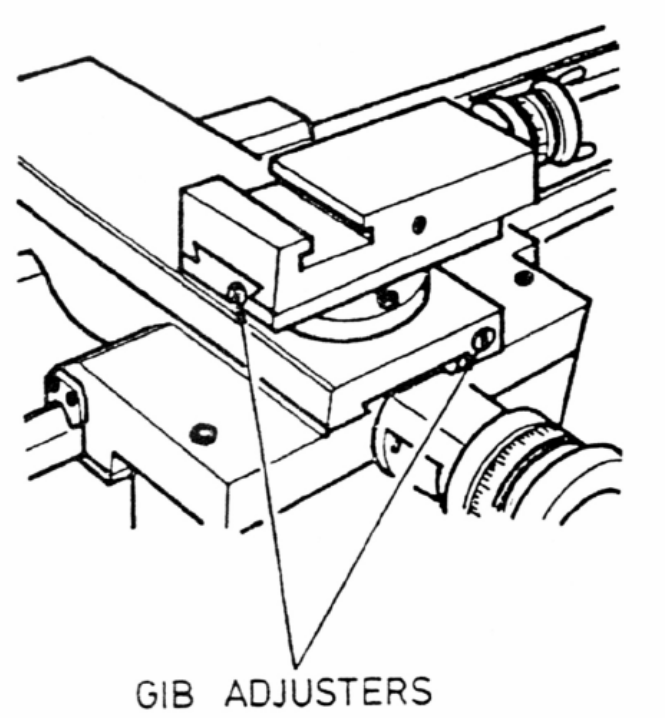
To alter belt tension, remove the cover plate in back of the headstock plinth and adjust the two screw(X) on the hinged motor platform. Ensure that the motor is correctly alighted with the lathe axis.

Light finger pressure at the point midway between motor and headstock pulleys should produce about 3/4in(19mm). Movement of each belt when under correct tension.

SLIDE WAYS ATTENTION

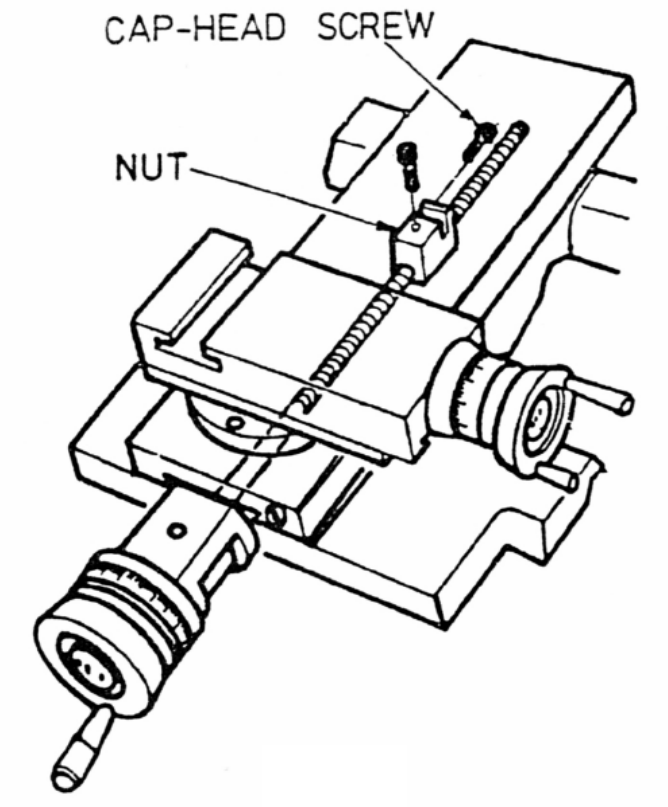
Tapered gib strips are fitted to slideways of saddle cross-slide and top (compound) slides so that any slackness, which may develop can be rectified.

Ensure that slideways are thoroughly cleaned and lubricated before attempting adjustment. Then reset the gib screw and tightening the front screw, a little at a time. Check constantly for smooth action throughout full slide travel; avoid over adjustment which can result in increased wear-rate are stiff or jerky action.



CROSS-SLIDE NUT

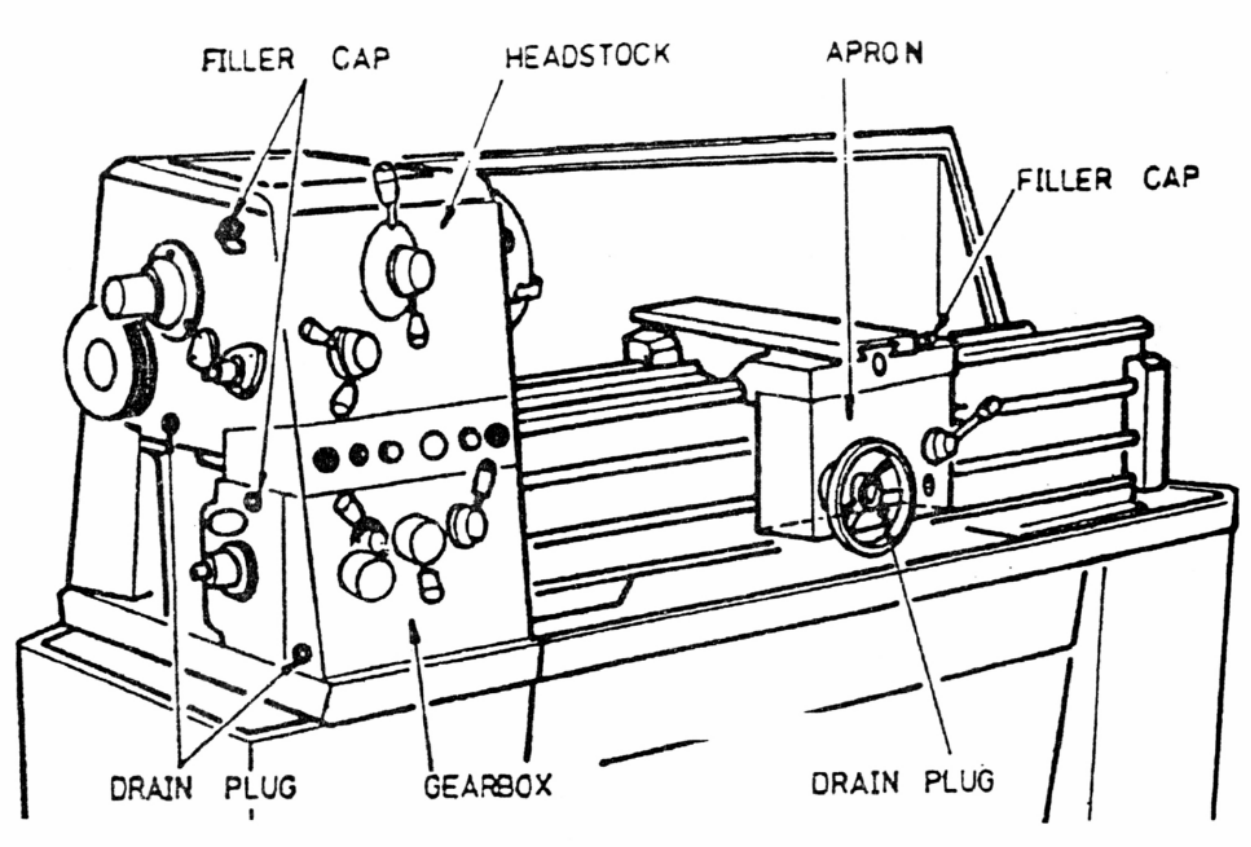
This is adjustable for elimination of slackness, which may develop in service. Reduce backlash by the cap-head screw rear of the nut. Before operating the cross-slide several times by hand to be sure of smooth operation throughout travel.



LUBRICATION(part1)

The headstock and gearbox are splash-lubricated from an internal reservoir of oil (Shell tellus 27). Check the oil level constantly to the mark on the oil sight window in the front end face of the head stock and gearbox. A weekly check is recommended. The oil need be changed by the end-guard. Drain from a drain plug in the bottom of the headstock and gearbox.

The apron is lubricated from an internal reservoir of oil. The oil sight window is in the front of the apron. A filler cap is in the top of the saddle. Refill the reservoir to the level of the oil sight with Shell Tonna oil 33. The apron can be drained by unscrewing a hexheaded drain plug in the bottom.



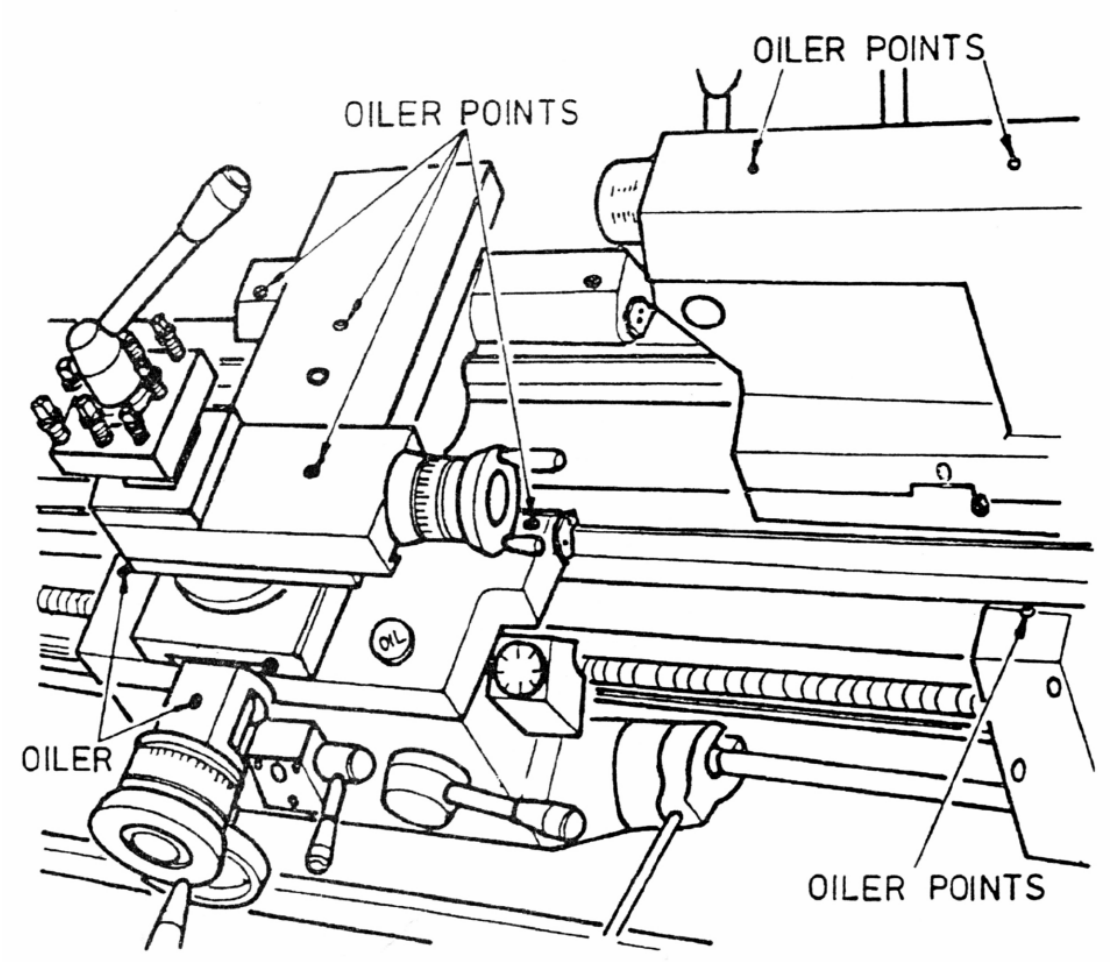
LUBRICATION(part2)

In addition, oil gun is provided for the saddle ,cross-slide, cross-slide nut and top-slide(compound slide) to oil. Leadscrew using a oil gun can be oiled with light machine oil or way lubricant.

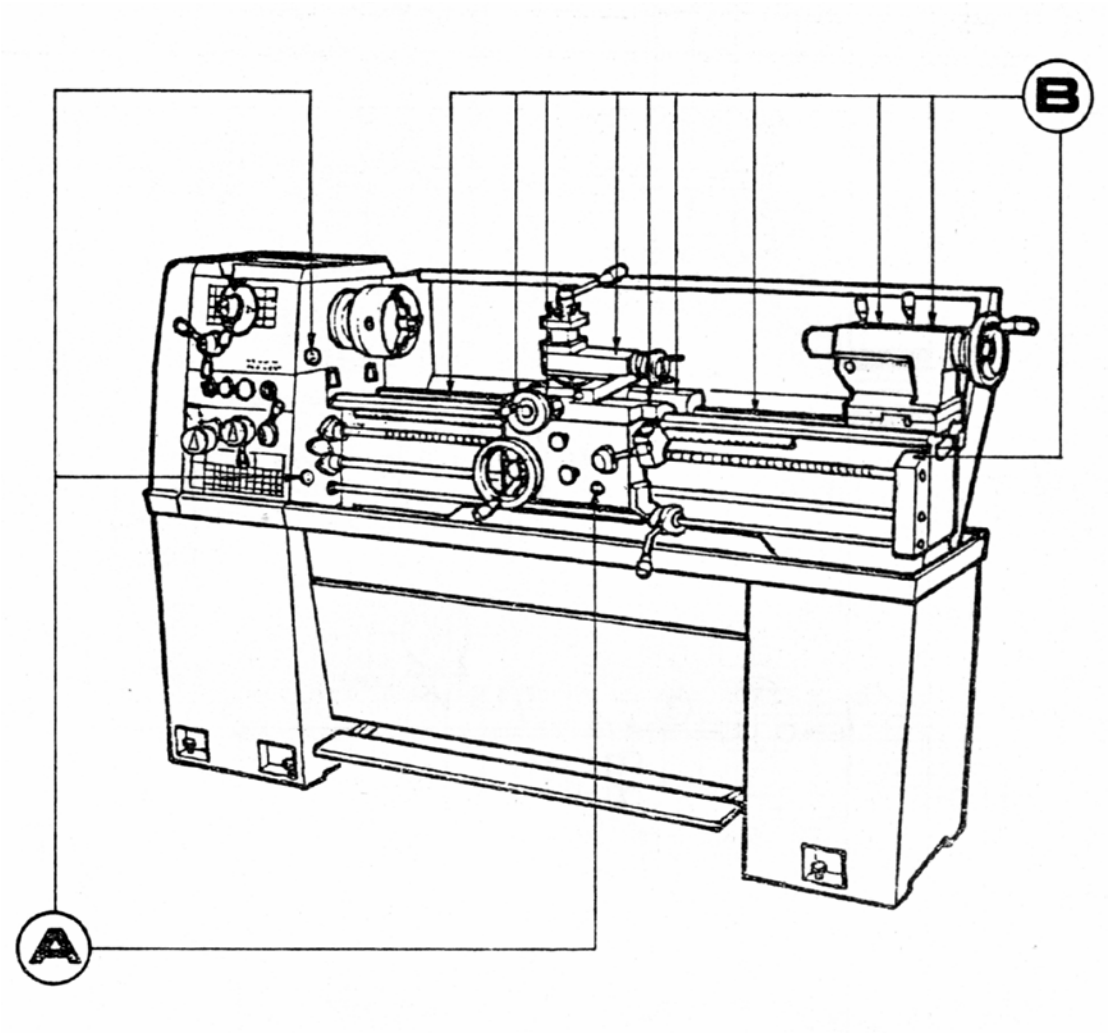
On the tail stock, oil points are provided for daily attention from a standard oil can.

It is recommended that all slideways, leadscrew and feed shaft are cleaned off(a bristle paint brush is useful for this) and lightly oiled after each period of work.

NOTE: Using incorrect grades of oil can cause damage.



LUBRICATION DIAGRAM



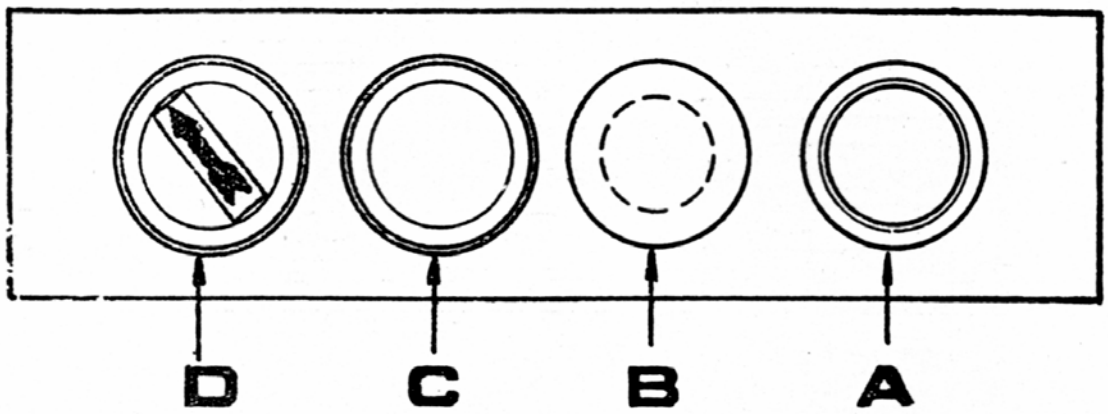
A.TOP-UP EVERY WEEK

B.OIL EVERY DAY

WIRING DIAGRAM(1/3)

WIRING DIAGRAM(2/3)

WIRING DIAGRAM(3/3)



ai: Power switch 3ϕ 3w 10A.

T : Control circuit Transformer 100VA.

M : Main Motor.

M1: Pump motor.

A : Push button switch(jogging switch)type SB 3051A.

B : Flate type push button type SB 3091B.

C : Pilot light type.SP 301,110V/15V, color:white.

D : Selecting switch. type ST 3021A.

e1: Fuse base 600V, 30A, type SR—833.

e2: Grass tube fuse 1A.

1c1: For main motor Reverse AC magnetic contactor coil AC 110V. type c—11G3A1B.

1c2: For main motor Forward AC magnetic contactor coil AC110V. type c—11G3A1B.

2c1: For pump motor AC magnetic contactor coil AC 110V. type c—11G3A1a.

1e1: Thermal overload relay for main motor. type RH—18M.

2e1: Thermal overload relay for pump motor. type RH—10E.

d: AC magnetic contactor coil AC 110V. type c—11G3A1a.

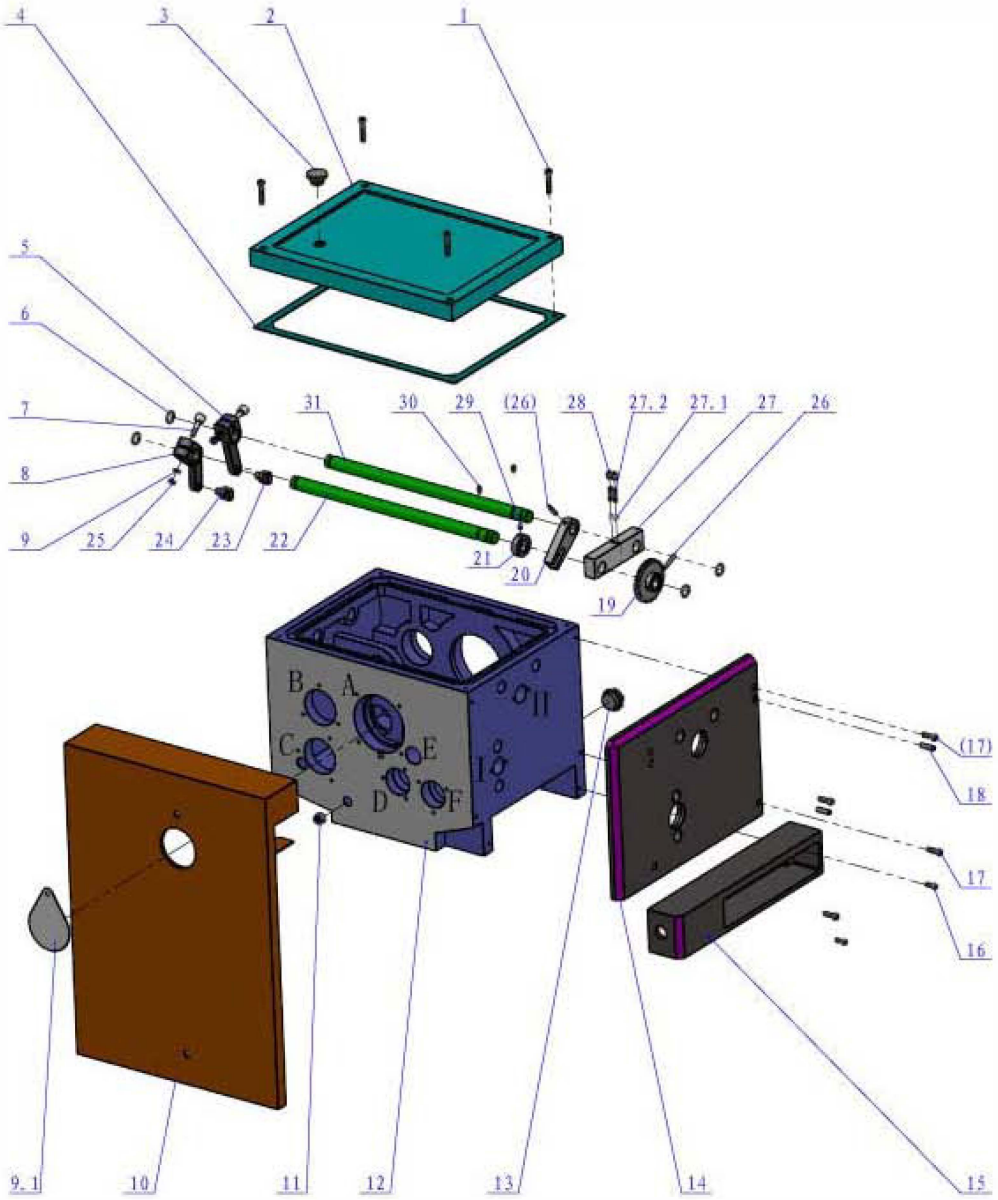
Ls1: Limit switch End cover safety switch type 15G 22—B.

Ls2: Limit switch Brake precision. type 15GD—B.

Ls3: Limit switch Reverse precision. type 15GD—B.

Ls4: Limit switch Forward precision. type 15GD—B.

Cs1: 2 Speed Motor switch.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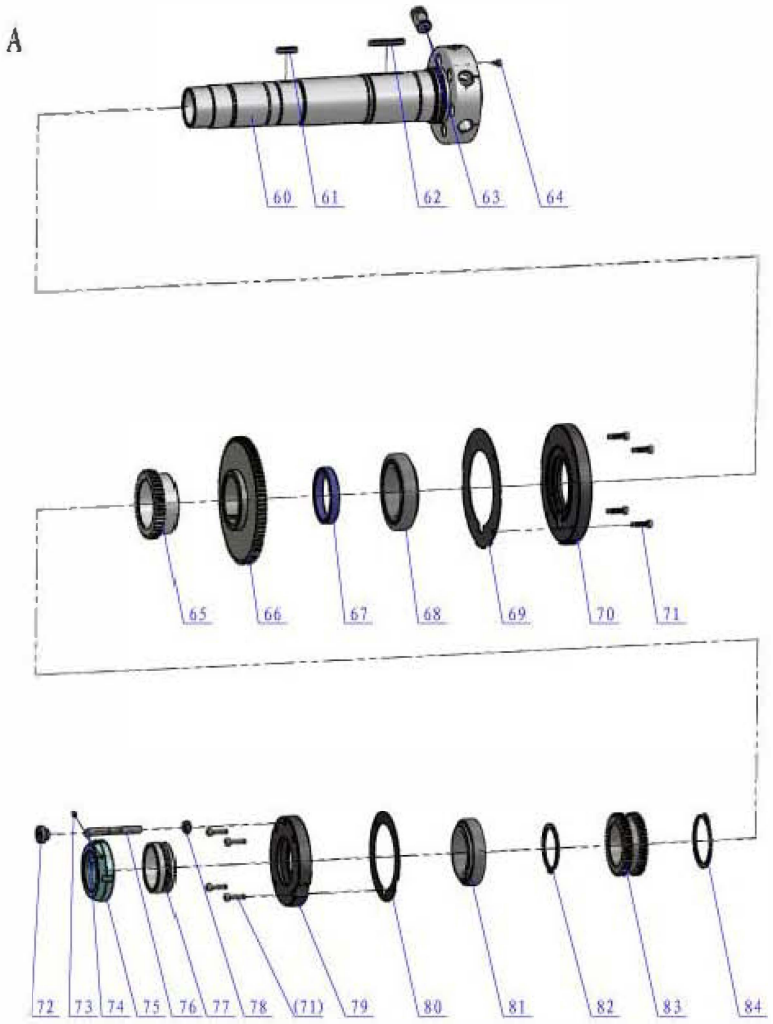
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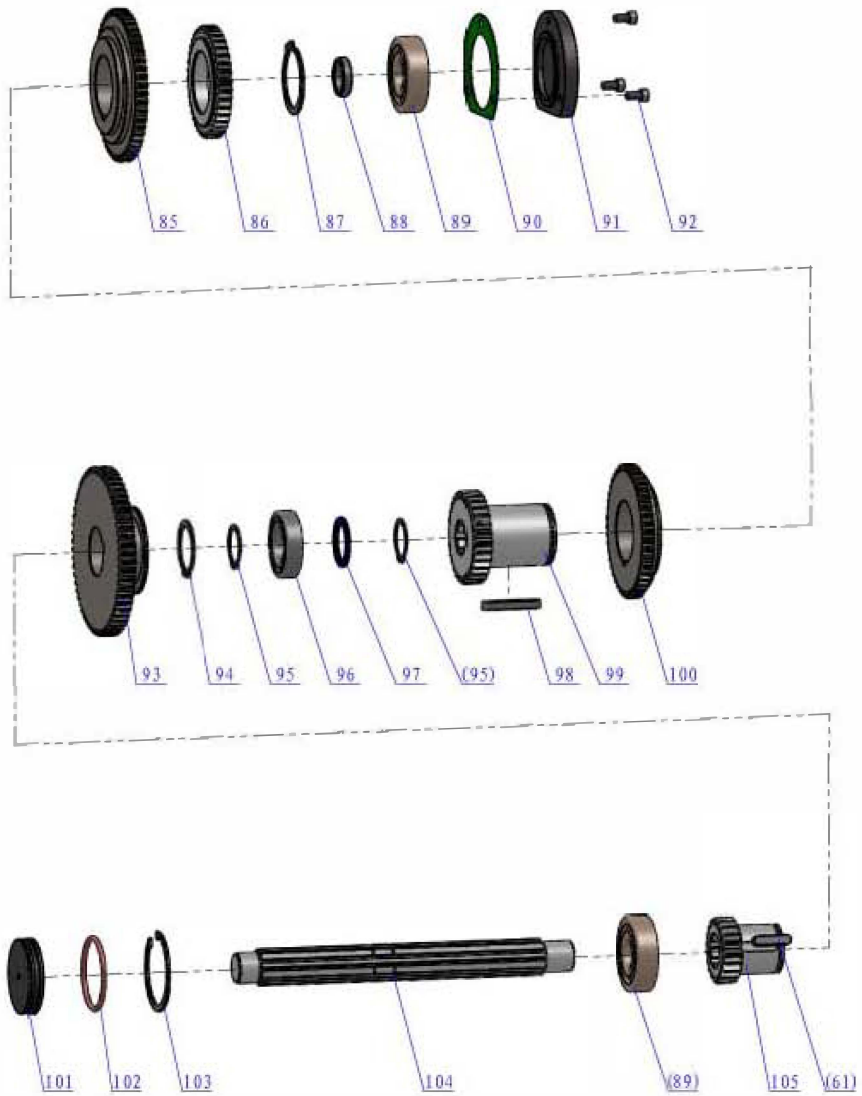
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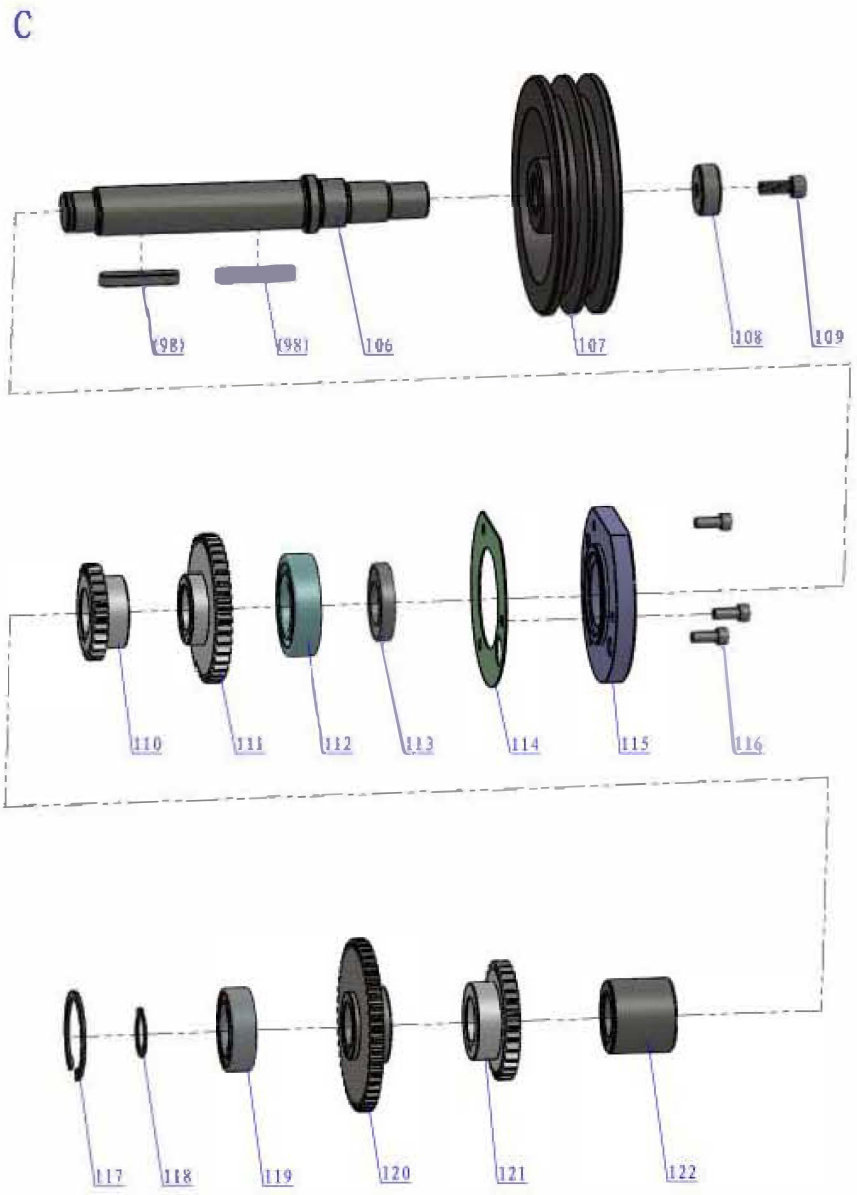
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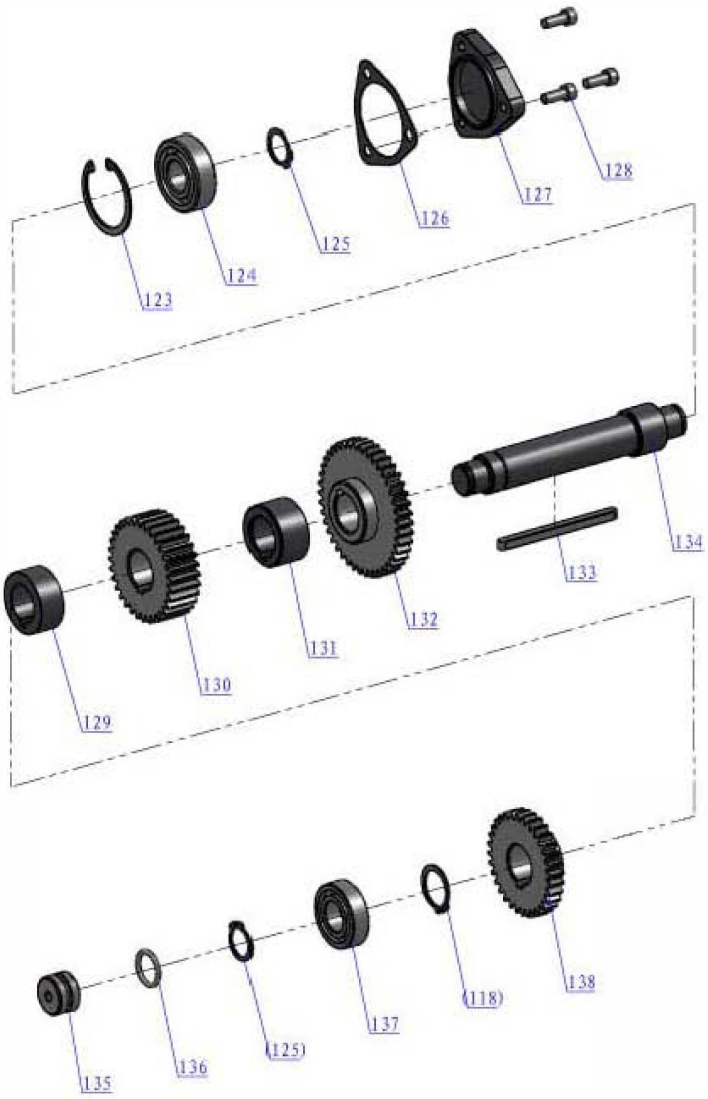
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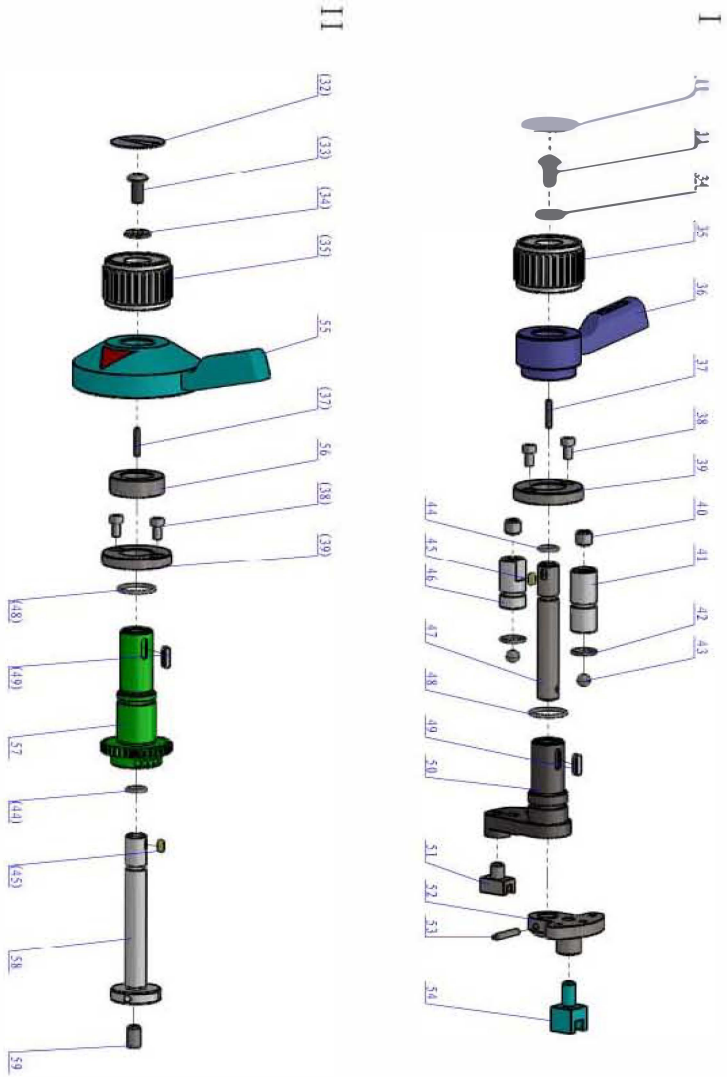
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Headstock Part List

No.	PartNo.	Name	Specification	Qty.
1	GBT70.1	Socket Head Cap Screw	M6×35	4
2	CL6240-04-73	Headstock Cover		1
3	CL6132-04-06	Oil Plug		1
4	CL6240-04-73-1	Sealed Cover		1
5	C6140-04-36a	Rocker Lever		1
6	GBT3452.1	O-Ring	15×2.65	4
7	C6140-04-36a-1	Lock Screw		2
8	C6140-04-33a	Rocker Lever		1
9	GBT97.1-6	Spacer	6	2
11	G38	Oil Plug	Z3/8"	1
12	CL6240-04-01	Headstock		1
13	GB1160.1	Oil Leveler	A12	1
14	CL6240-04-01-1a	Front Frame		1
15	CL6240-04-01-2	Front Frame		1
16	GBT70.1	Socket Head Cap Screw	M5×16	2
17	GBT70.1	Socket Head Cap Screw	M6×20	4
18	GBT118	Spring Pin	6×26	2
19	CL6132-04-87	Gear		1
20	CL6132-04-96	Fork		1
21	CL6132-04-99	Spacer Ring		1
22	CL6240-04-02	Shaft		1
23	C6140-04-37	Plate		1
24	C6140-04-32	Plate		1
25	GBT6170	Nut	M6	2
26	GBT879.1	Spring Pin	5×30	2
27	CL6240-04-89	Spring Seat		1
28	GBT77	Socket Head Cap Screw	M8×12	2
29	GBT78	Screw	M6×8	1
30	GBT79	Socket Head Cap Screw	M5×12	2
31	CL6240-04-74	Shaft		1
32	CL6240-04-91-1	Sign		2
33	RUN6246-101088	Screw		2
34	C0636-05-85	Spacer		2
35	CL6240-04-91	Handle		2
36	CL6240-04-61	Handle		1
37	GBT80	Socket Head Set Screw	M4×25	2
38	GBT70.1	Socket Head Cap Screw	M6×12	4

Headstock Part List

No.	PartNo.	Name	Specification	Qty.
39	CL6132-04-68	Cover		2
40	GBT77	Socket Head Cap Screw	M12 × 12	2
41	CL6240-04-63	Ball Seat		1
42	GBT3452.1	O-Ring	15 × 2.65	2
43	GBT308-10	Steel Ball	10	4
44	GBT3452.1	O-Ring	11.2 × 2.65	2
45	GB1096-79	Key	4 × 10	2
46	CL6240-04-69	Ball Seat		1
47	CL6240-04-67	Shaft		1
48	GBT3452.1	O-Ring	25 × 2.65	2
49	GBT1096	Flat Key	5 × 18	2
50	CL6240-04-70	Fork		1
51	CL6132-04-71	Plate		1
52	CL6240-04-72	Fork		1
53	GBT879.1	Spring Pin	5 × 30	1
54	CL6132-04-73	Plate		1
55	CL6240-04-98	Handle		1
56	CL6240-04-68	Spacer Ring		1
57	CL6240-04-88	Spline Shaft		1
58	CL6240-04-93	Shaft		1
59	CL6132-04-94	Pin		1
60	CL6240-04-31	Shaft		1
61	GB1096	Flat Key	8 × 32	2
62	GBT1096	Flat Key	8 × 45	1
63	CL6240-04-31-1	Cam		1
64	CL6240-04-31-2	Screw		1
65	C6140-04-09	Gear		1
66	C6140-04-08	Gear		1
67	CL6240-04-10	Spacer Ring		1
68	GB278	Ball Bearing	32015	1
69	CL6240-04-29-1	Front End Cover Seal		1
70	CL6240-04-29	Front End Cover		1
72	GBT77	Socket Head Cap Screw	M6 × 8	3
73	C6140-04-53-1	Brass		1
74	C6140-04-53	Lock Nut		1
76	C6140-04-49	Oil Bowl		1
78	GBT70.1	Socket Head Cap Screw	M6 × 25	8

Headstock Part List

No.	PartNo.	Name	Specification	Qty.
79	CL6240-04-48	Back End Cover		1
80	CL6240-04-48-1	Sealed Mat		1
81	GB278	Ball Bearing	32013	1
82	GBT894.1-65	Circlip	65	1
83	CL6240-04-57	Gear		1
84	GBT894.1-75	Circlip	75	1
85	C6140-04-17	Gear		1
86	C6140-04-22	Gear		1
87	GBT894.1-52	Criclip	52	1
88	C6140-04-46	Spacer Sleeve		1
89	GBT276	Ball Bearing	6305-2Z	2
90	C6140-04-24-1	Sealed Mat		1
91	C6140-04-24	Bearing Cover		1
92	GBT70.1	Socket Head Cap Screw	M6×12	3
93	C6140-04-20	Gear		1
94	GBT894.1	Circlip	40	1
95	GBT894.1	Circlip	30	2
96	GBT276	Ball Bearing	6006	1
97	C6140-04-44	Spacer Ring		1
98	GB1096	Flat Key	8×50	3
99	C6140-04-19	Gear		1
100	C6140-04-18	Gear		1
101	C6140-04-47	Plug		1
102	GBT3452.1	O-Ring	55×3.55	1
103	GBT893.1	Circlip	62	1
104	C6140-04-12	Shaft		1
105	C6140-04-21	Gear		1
106	CL6240-04-11	Input Shaft		1
107	CL6132-04-11	Pulley		1
108	CL6132-04-12	Spacer		1
109	GBT70.1	Socket Head Cap Screw	M8×20	1
110	C6140-04-14	Gear		1
111	C6140-04-13	Gear		1
112	GBT276	Ball Bearing	6206-2Z	1
113	TC25×47×8	Skeleton Oil Seal	TC25×47×8	1
114	CL6240-04-23-1	Bearing Seat Seal		1
115	CL6240-04-23	Bearing Cover		1

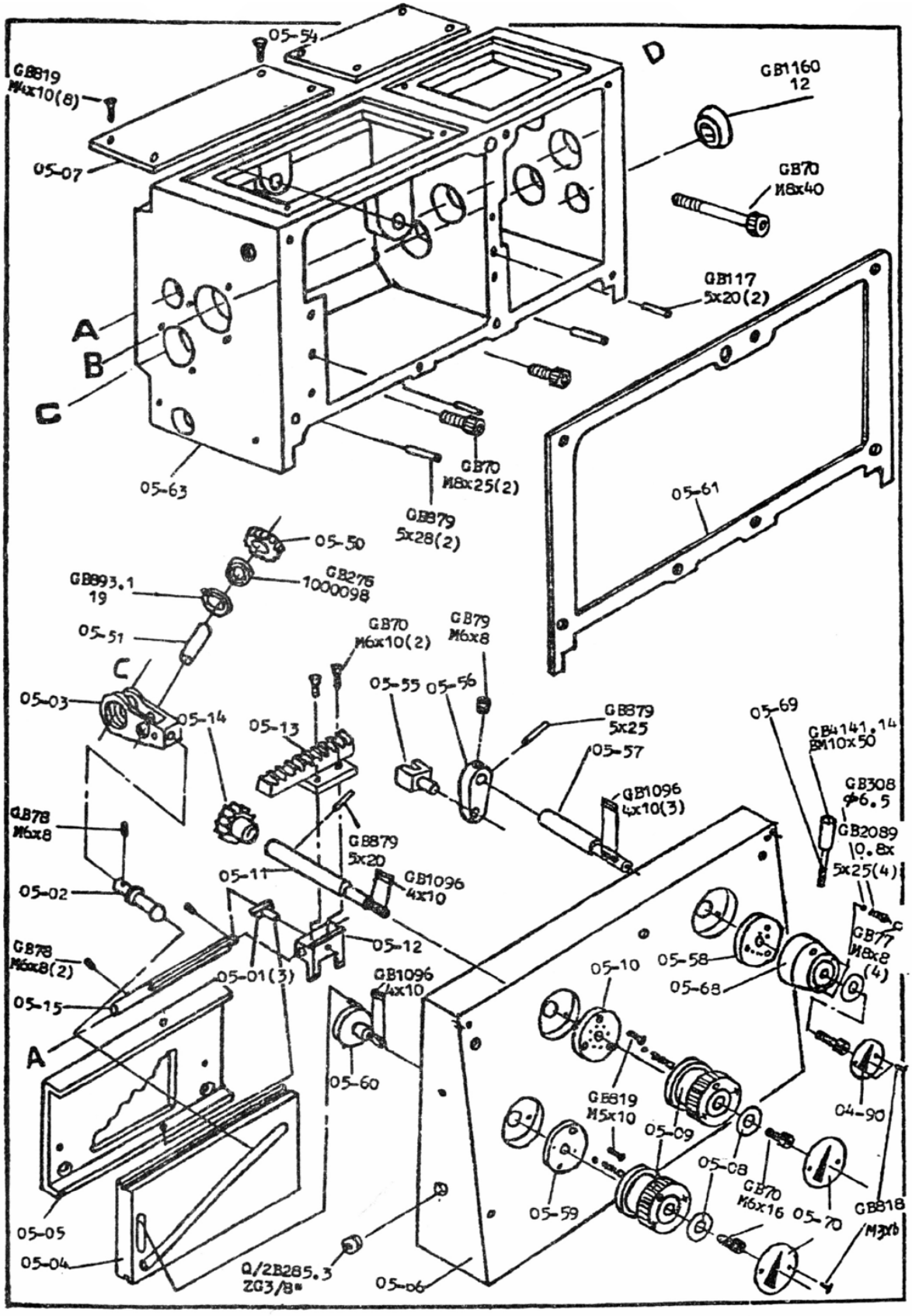
Headstock Part List

No.	PartNo.	Name	Specification	Qty.
116	GBT70.1	Socket Head Cap Screw	M6×16	3
117	GBT893.1-52	Circlip	52	1
118	GBT894.1-25	Circlip	25	4
119	GB278-80205	Ball Bearing	80205	1
120	C6140-04-16	Gear		1
121	C6140-04-15	Gear		1
122	C6140-04-45	Spacer Ring		1
123	GBT893.1-47	Circlip	47	2
124	GBT276-6204	Ball Bearing	6204	1
125	GBT894.1-20	Circlip	20	3
126	CL6132-04-52	Sealed Mat		1
127	CL6132-04-53	Cover Dress		1
128	GBT70.1	Socket Head Cap Screw	M6×16	3
129	CL6132-04-39	Sheath		1
130	CL6132-04-44	Gear		1
131	CL6132-04-45	Sheath		1
132	CL6132-04-46	Gear		1
133	GBT1096-6×90	Flat Key	6×90	1
134	CL6132-04-47	Shaft		1
135	CL6132-04-40	Plug		1
136	GB-T3452.1	O-Ring	19×2.65	1
137	GBT276-6004	Ball Bearing	6004	1
138	CL6132-04-41	Gear		1
139	CL6132-04-55-2	Bush		2
140	GBT1096-5×16	Flat Key	5×16	1
141	CL6132-04-55-1	Gear		1
142	GBT3452.1	O-Ring	23.6×2.65	1
143	CL6132-04-37	Shaft		1
144	CL6132-04-35-1	Gear		1
145	CL6132-04-35-2	Bush		1
146	CL6132-04-36	Spacer Ring		1
147	GBT894.1-38	Circlip	38	1
148	CL6132-04-54	Gear		1
149	GBT70.1	Socket Head Cap Screw	M5×16	1
150	CL6132-04-51	Spacer Ring		1
151	CL6132-04-50	Gear		1
152	GBT1096-5×14	Flat Key	5×14	1

Headstock Part List

No.	PartNo.	Name	Specification	Qty.
153	CL6132-04-42	Shaft		1
154	GBT70.1	Socket Head Cap Screw	M6 × 20	3
155	CL6132-04-49	Cover		1
156	CL6132-04-48	Sealed Mat		1
157	TC25 × 40 × 7	Skeleton Oil Seal	TC20 × 40 × 7	1
158	GBT276-6005	Ball Bearing	6005	1
159	CL6132-04-43	Gear		1
160	GBT276-6004	Ball Bearing	6004	1

GearBox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GB819 M4x10(8)
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GB70 M8x40
GB117 5x20(2)
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GB879 5x28(2)
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GB879 5x25
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GB308 φ6.5
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GB1096 4x10(3)
GB78 M6x8
GB879 5x20
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GB78 M6x8(2)
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GB1096 4x10
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05-68
GB77 M8x8 (4)
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GB819 M5x10
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GB70 M6x16
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GB818 M3x6
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Q/ZB285.3 ZG3/8"
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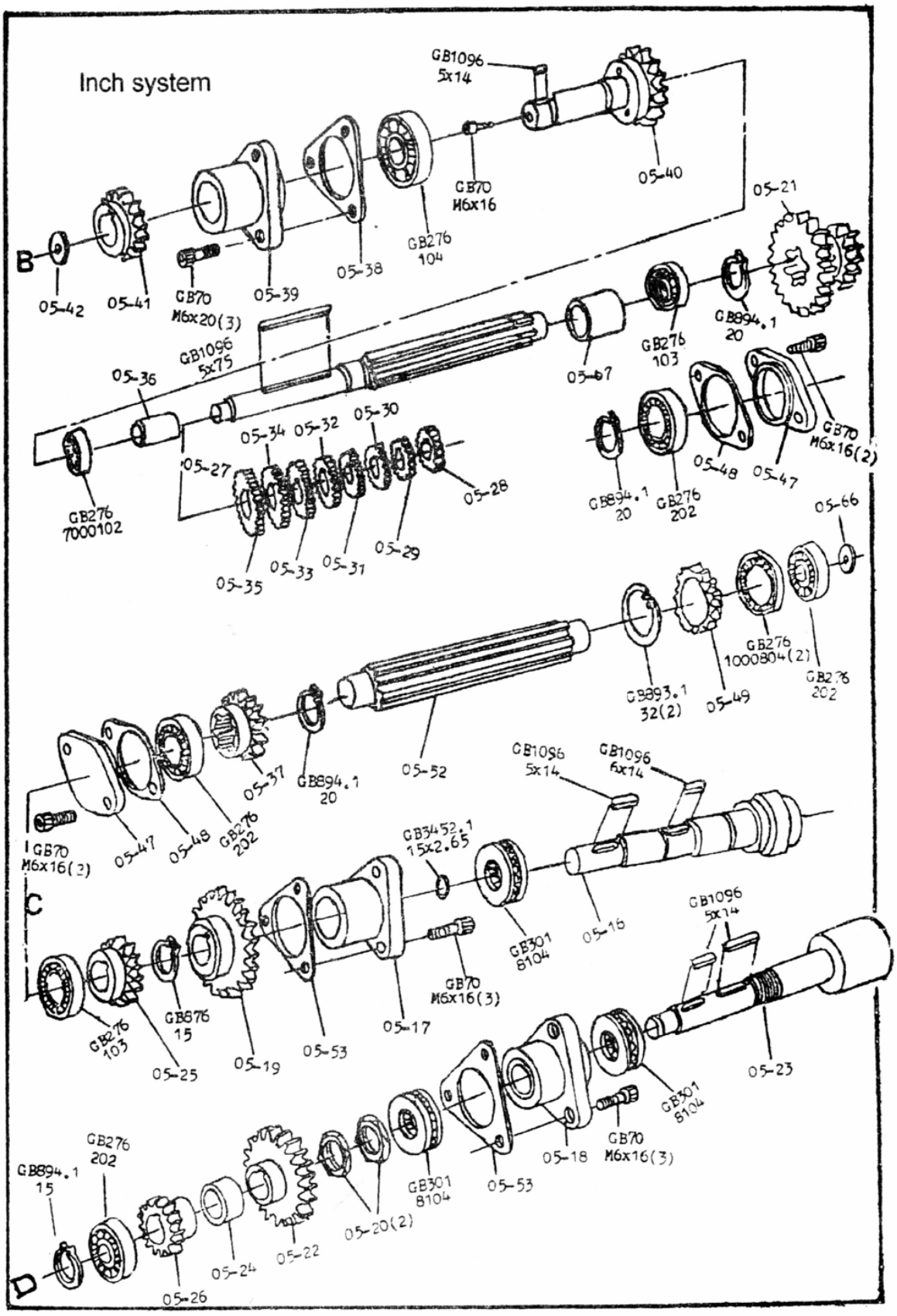
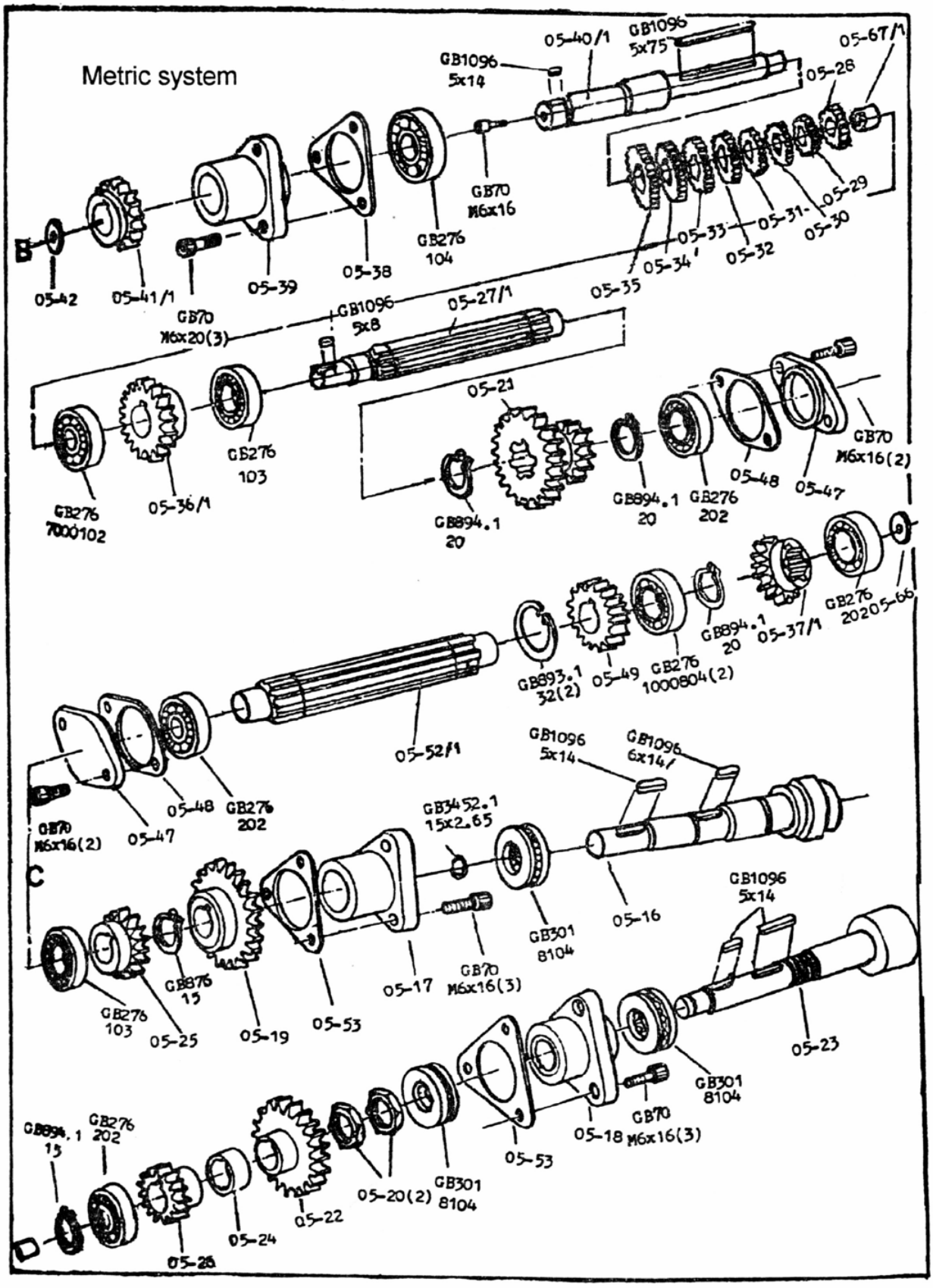
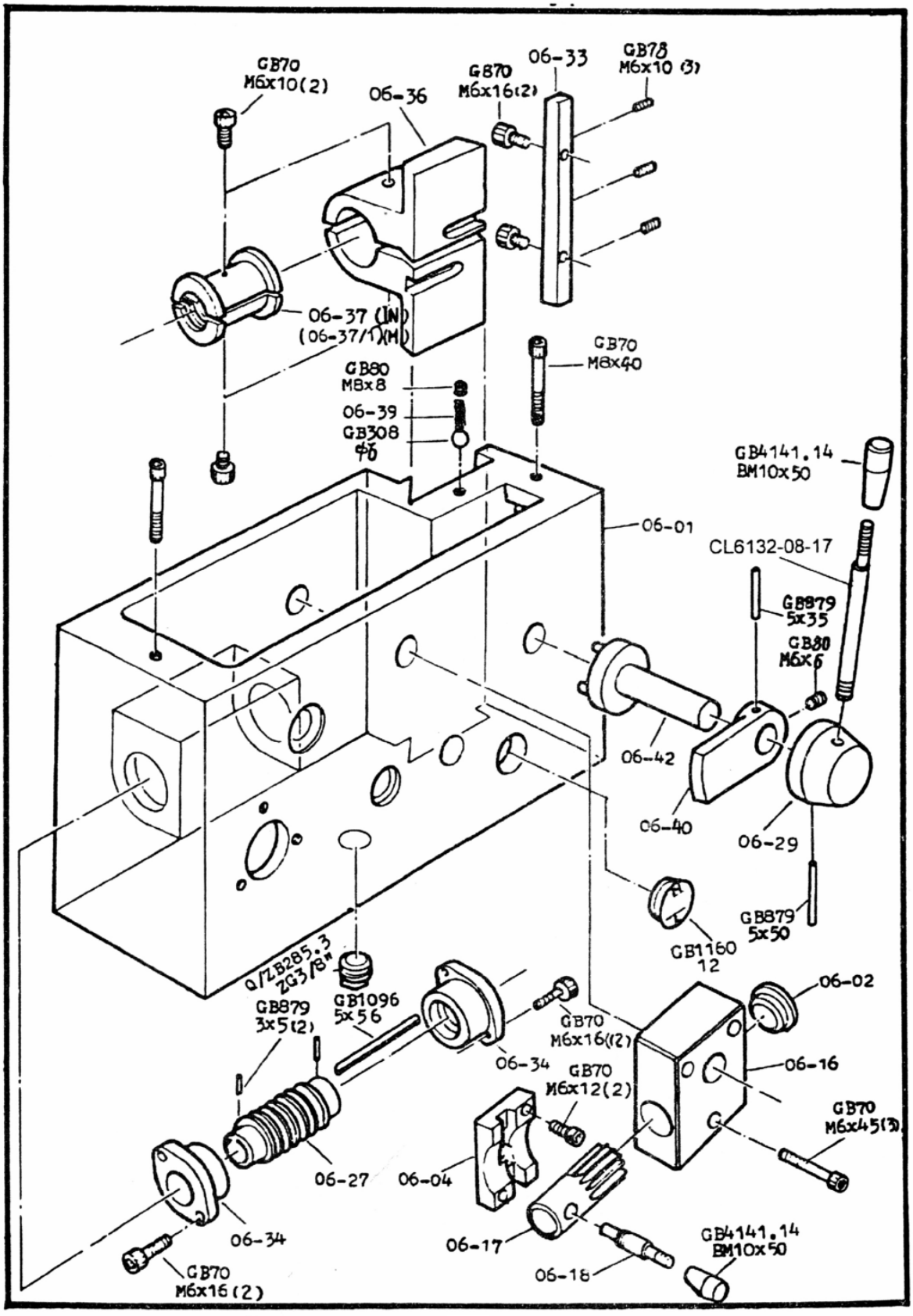
GearBox Inch system



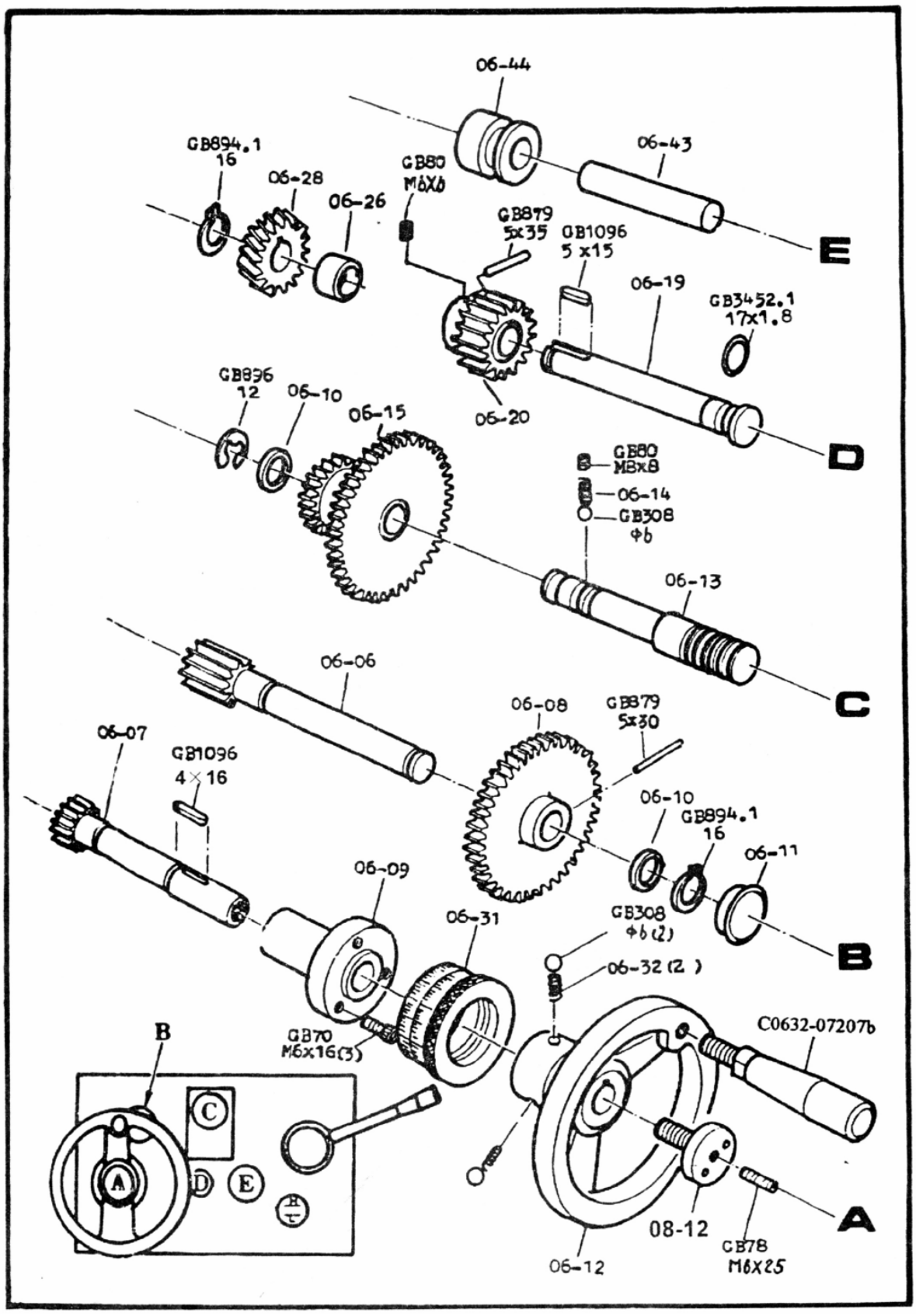
GearBox Metric system



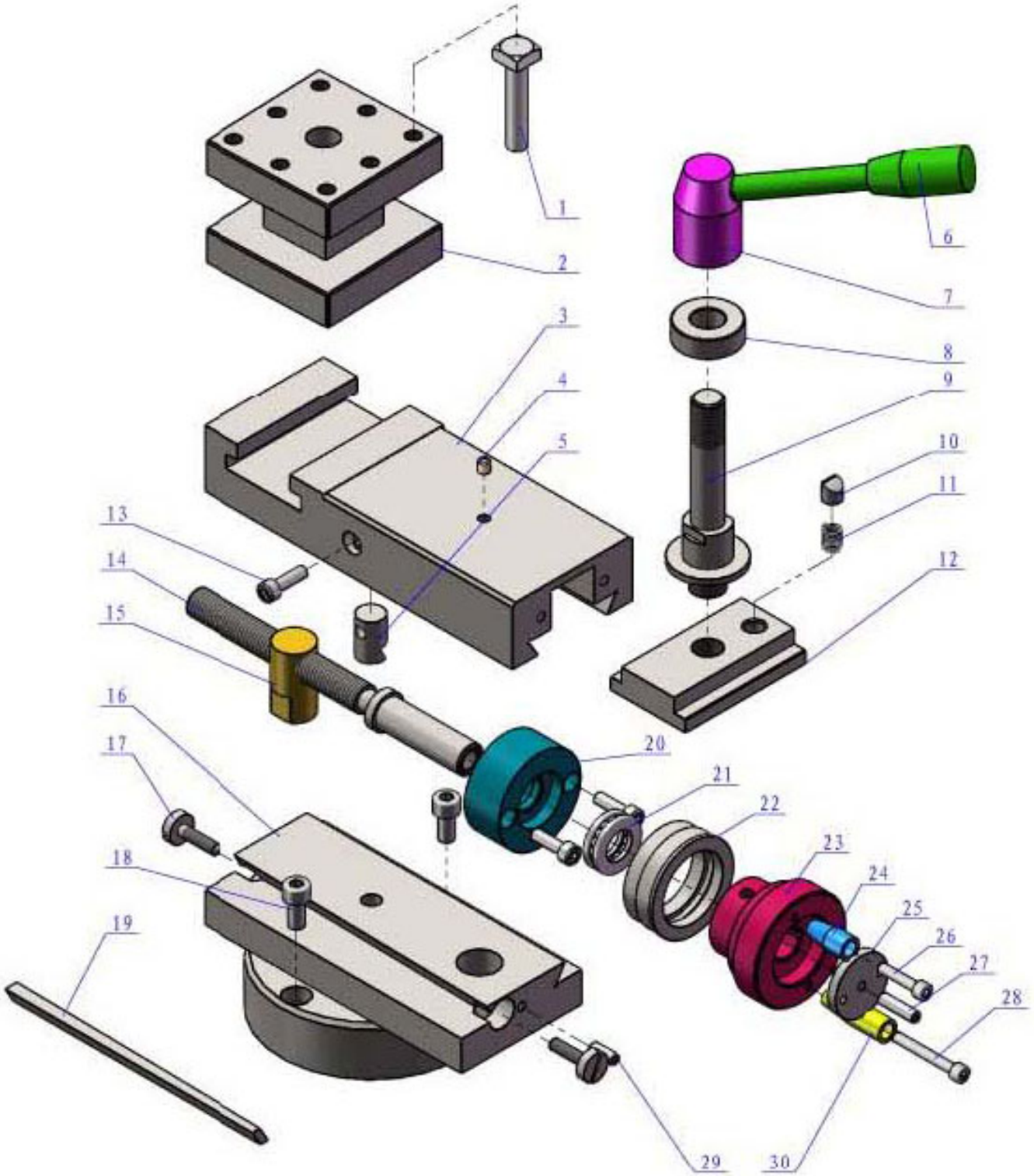
APRON **Left Hand, Lever type**



APRON **Left Hand, Lever type**



Saddle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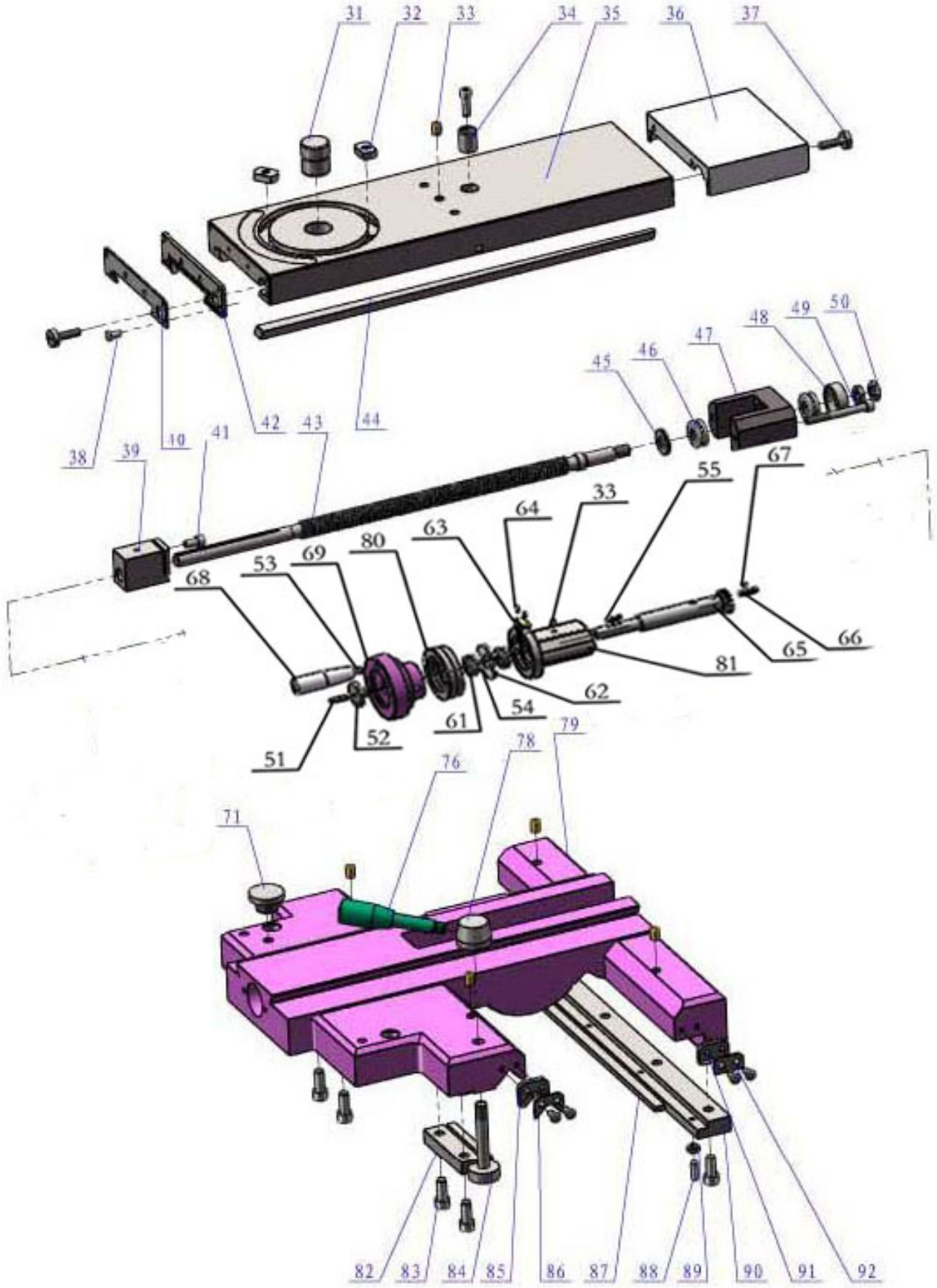
Saddle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Saddle & Cross-Slide Part List

No.	PartNo.	Name	Specification	Qty.
1	GB83	Screw	M10 × 50	8
2	CL6132-07-32	Four Way Tool Post		1
3	CL6132-07-4 9	Compound Rest		1
4	GB1155	Oil Bowl	6	3
5	CL6132-07-09	Plate		1
6	CL6132-07-36b	Clamping Handle		1
7	C0632-07206	Clamping Handle		1
8	CL6132-07-33	Washer		1
9	CL6132-07-34	Tool Post Shaft		1
10	CL6132-07-29	Round Pin		1
11	GB2080-80	Spring	1 × 8 × 11	1
12	CL6132-07-37	Swivel Table		1
13	GBT70.1	Socket Head Cap Screw	M6 × 20	4
14	CL6132-07-40	Screw-Compound Rest		1
15	CL6132-07-39	Nut		1
16	CL6240-07-11	Swivel Table		1
17	CL6132-08-18	Screw		2
18	GBT70.1	Socket Head Cap Screw	M8 × 16	2
19	CL6132-07-10	Gib		1
20	CL6132-07-41	Seat Compound Rest Screw		1
21	GB301-1995	Bearing	51103	1

Saddle & Cross-Slide Part List

No.	PartNo.	Name	Specification	Qty.
22	CL6132-07-42	Dial-Compound Rest		1
23	CL6132-07-48	Hand Wheel		1
24	CL6132-07-44	Sleeve		1
25	CL6132-08-12	Plug Screw		1
26	GBT70.1	Socket Head Cap Screw	M5×25	1
27	GBT79	Socket Head Cap Screw	M6×25	1
28	GBT70.1	Socket Head Cap Screw	M5×40	1
29	GBT79	Socket Head Cap Screw	M6×16	1
30	CL6132-07-43	Sleeve		1
31	CL6132-07-08	Shaft		1
32	CL6132-07-07	Nut		2
33	GB1155	Oil Bowl	8	7
34	CL6132-07-05	Sleeve		1
35	CL6240-07-01	Cover-Cross Sliding		1
36	CL6240-07-01-01	Plate		1
37	CL6132-08-18	Screw		2
38	GBT818	Pan Head Screw	M5×10	16
39	CL6132-07-22	Nut		1
40	CL6132-07-13	Case- Wiper		1
41	GBT70.1	Socket Head Cap Screw	M6×12	1
42	CL6132-07-12	Wiper		1

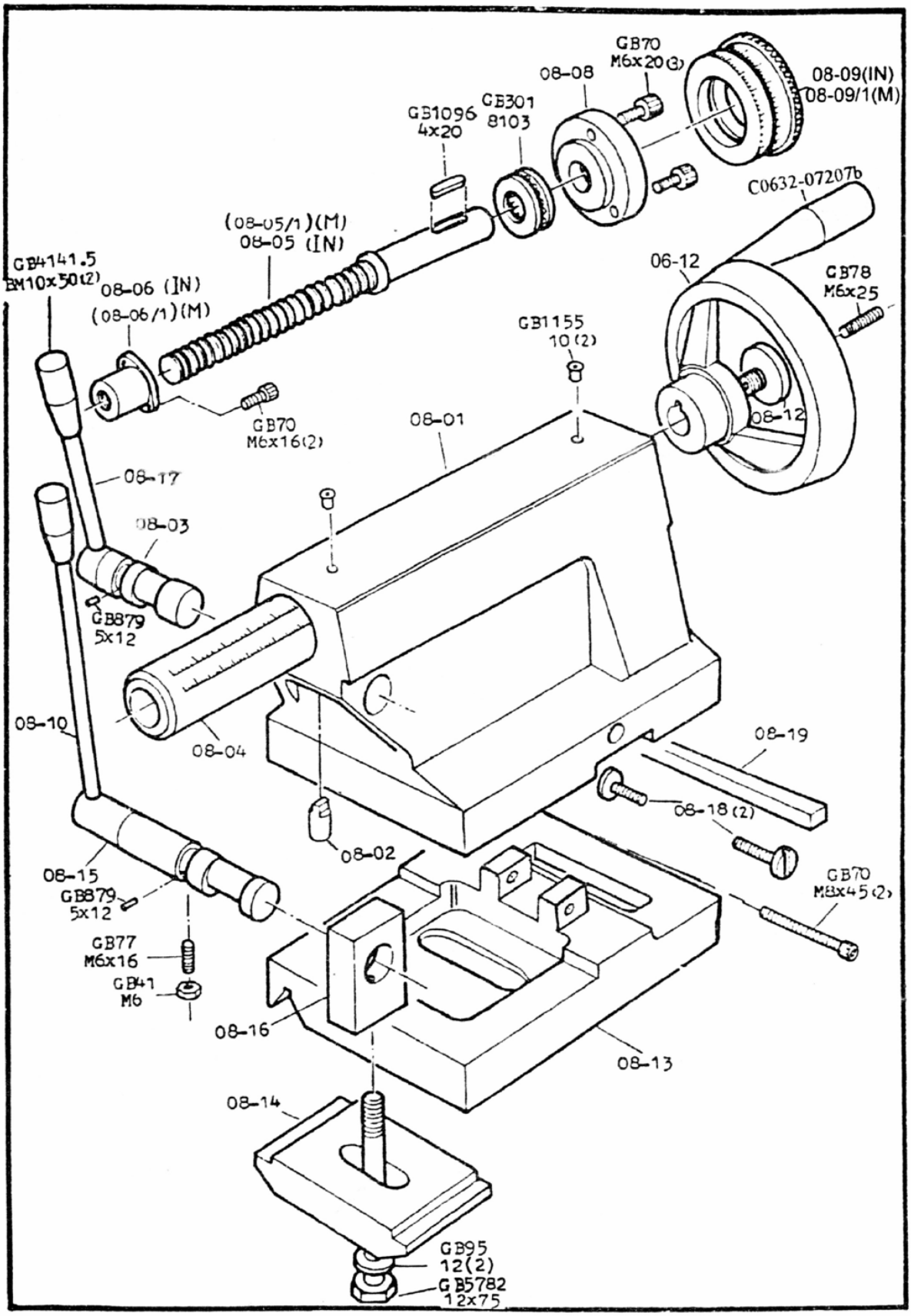
Saddle & Cross-Slide Part List

No.	PartNo.	Name	Specification	Qty.
43	CL6240-07-06	Cross Feed Screw		1
44	CL6132-07-38	Gib		1
45	CL6132-07-25	Spacer		1
46	GB301-1995	Bearing	51101	2
47	CL6240-07-03	Plate		1
48	CL6132-07-02	Bearing Cover		1
49	GBT70.1	Socket Head Cap Screw	M6 × 60	2
50	GBT6170	Nut	M10	2
51	GB78	Screw	M6 × 25	1
52	CL6132-08-12	Clamping Screw		1
53	C0632-07207b-1	Screw		1
54	GB818-85	Screw	M5 × 10	2
55	GB1096-86	Key	4 × 20	1
56				
57				
58				
59				
60				
61	GB301-1995	Thrust Bearing	51102	2
62	CL6132-07-18	Washer		1
63	CL6132-08-07A	Sign		1

No.	PartNo.	Name	Specification	Qty.
64	GB827-85	Button Head Rivet	2×8	2
65	CL6240-07-20	Gear Shaft		1
66	CL6132-07-21	Key		1
67	GB819	Phillips Screw		1
68	C0632-07207b-2	Handle Spacer		1
69	CL6132-07-16	Wheel		1
70				
71				
72				
73				
74				
75				
76				
77				
78				
79				
80	CL6132-07-17	Cross Feed Dial		1
81	CL6232-07-19	Bracket		1
82	CL6132-07-27	Gib		2
83	GBT70.1	Socket Head Cap Screw	M8×20	8
84	CL6132-07-47	Lock Screw		1

No.	PartNo.	Name	Specification	Qty.
85	CL6132-07-51	Wiper		2
86	CL6132-07-50	Case-Wiper		2
87	CL6132-07-23	Gib		1
88	GBT79	Socket Head Cap Screw	M6 × 20	4
89	GBT6170	Nut	M6	4
90	CL6132-07-24	Holder Gib		1
91	CL6132-07-31	Wiper		2
92	CL6132-07-30	Case-Wiper		2

TAIL STOCK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8103
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(08-05/1)(M)
08-05 (IN)
GB4141.5
BM10x50(2)
08-06 (IN)
(08-06/1)(M)
06-12
GB78
M6x25
GB1155
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GB70
M6x16(2)
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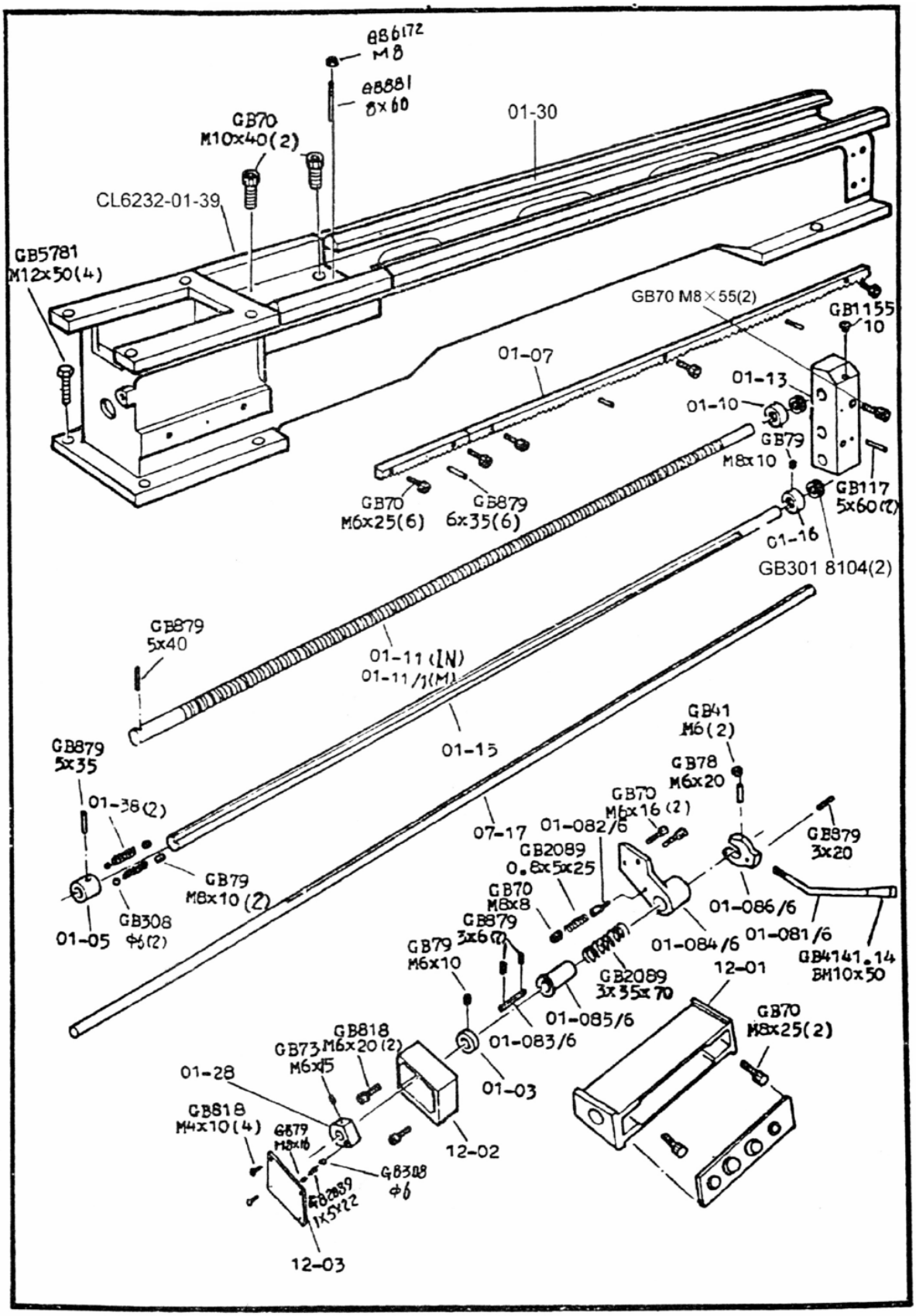
BED & SHAFTS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GB70 M10x40(2)
01-30
CL6232-01-39
GB5781 M12x50(4)
GB70 M8×55(2)
GB1155 10
01-07
01-13
01-10
GB79 M8x10
GB70 M6x25(6)
GB879 6x35(6)
GB117 5x60(2)
01-16
GB301 8104(2)
GB879 5x40
01-11(IN)
01-11/1(M)
01-15
GB879 5x35
01-38(2)
GB79 M8x10(2)
GB308 φ6(2)
01-05
GB41 M6(2)
GB78 M6x20
GB70 M6x16(2)
07-17
01-082/6
GB2089 0.8x5x25
GB879 3x20
GB70 M8x8
GB879 3x6
01-086/6
01-081/6
01-084/6
GB4141.14 BM10x50
GB79 M6x10
GB2089 3x35x70
12-01
01-085/6
GB70 M8x25(2)
GB818 GB73 M6x20(2) M6x15
01-083/6
01-03
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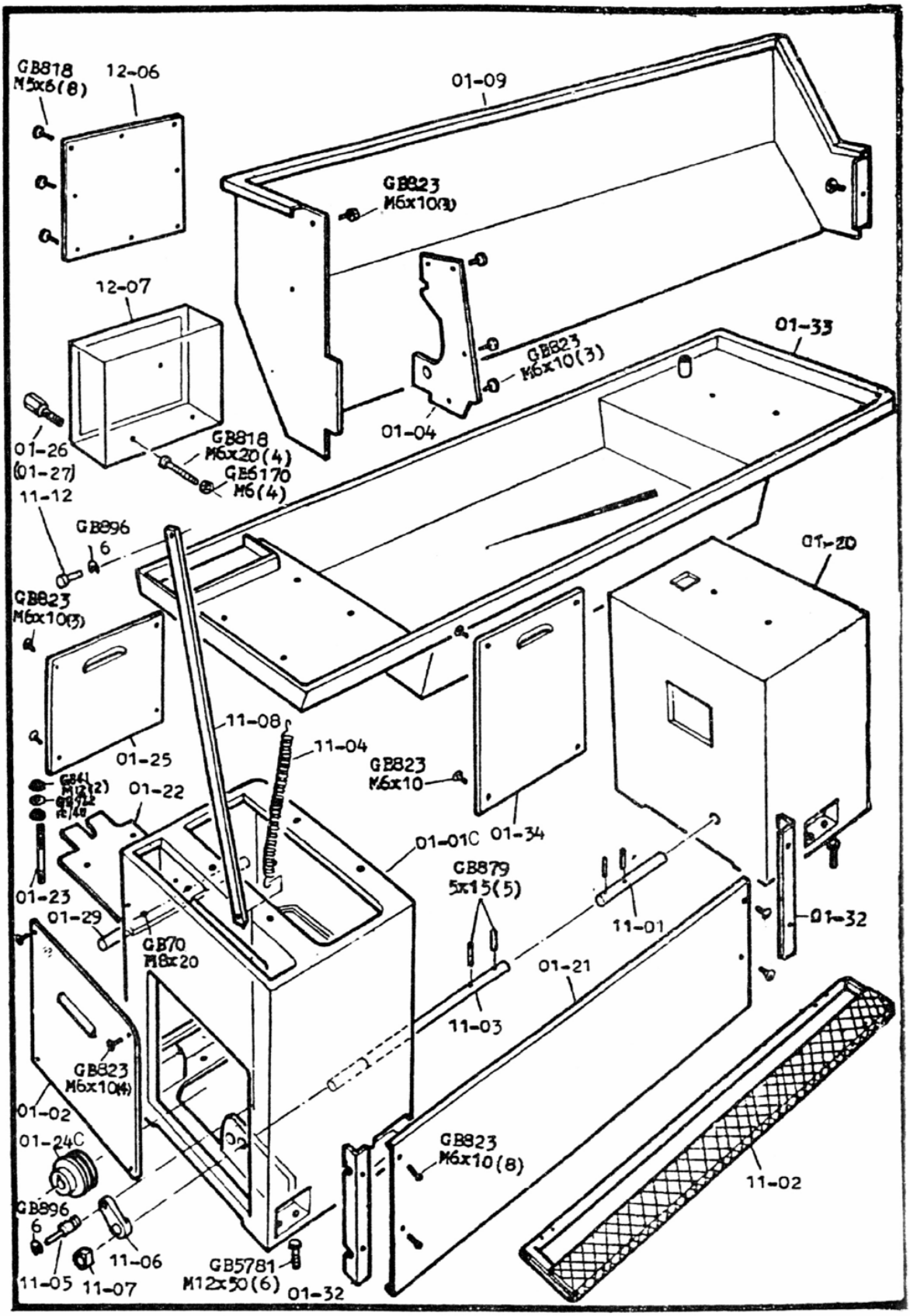
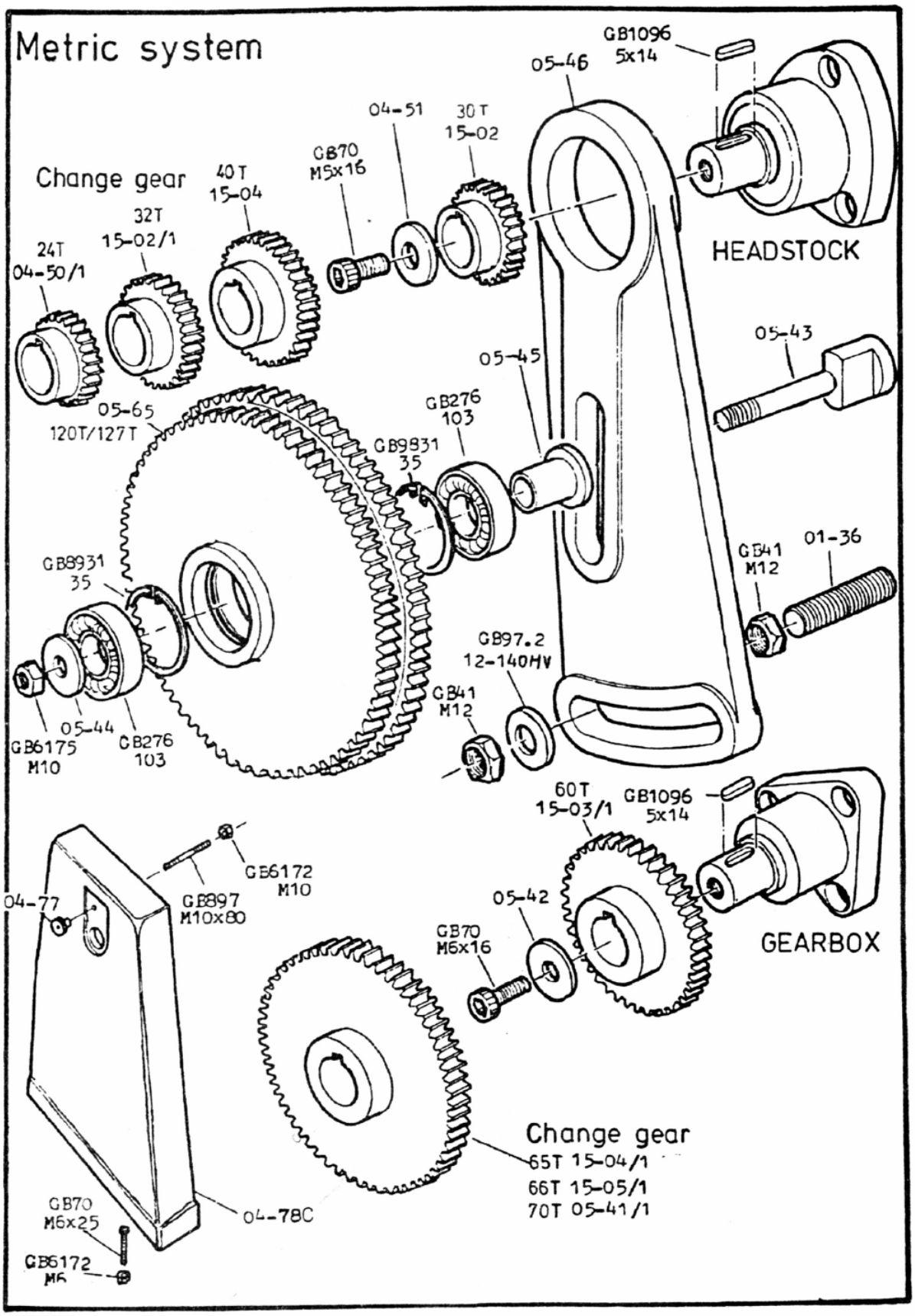
GB879 M8x16
GB308 φ6
GB2089 1X5x22
12-02
12-03

CABINET & PANELS



SWING FRAME, END GEARS & COVER



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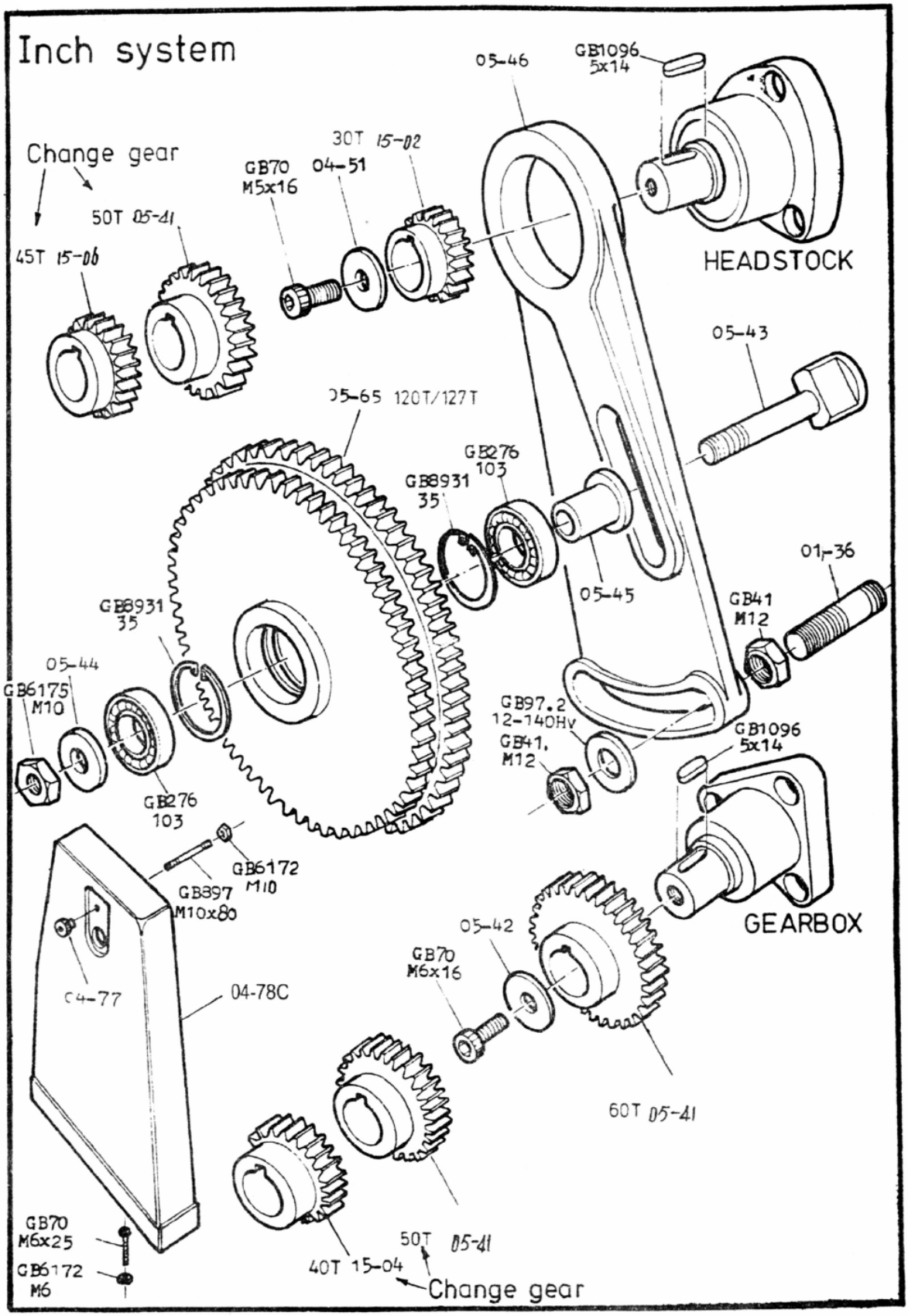

THREADING DIALS