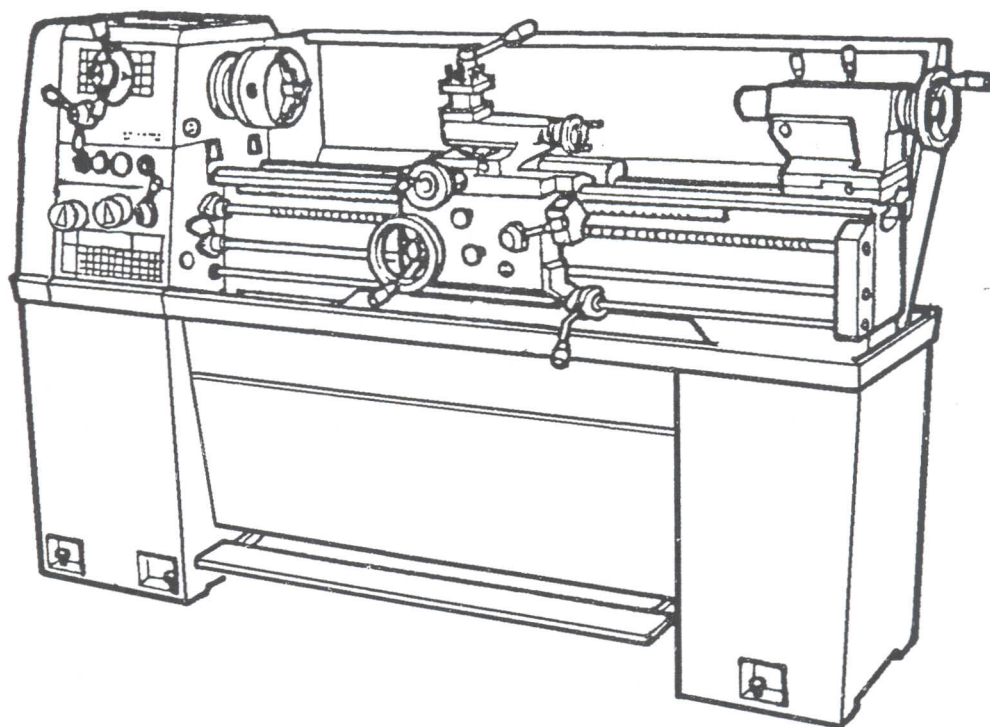


PRECISION CENTER LATHE

INSTRUCTION MANUAL AND PARTS LIST

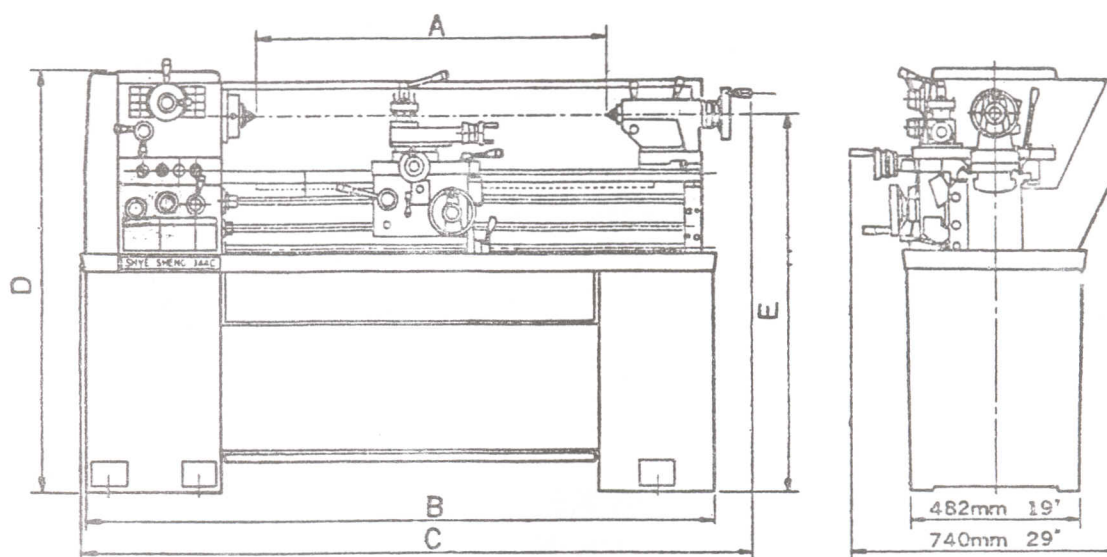


MODEL : 1330,1340,1430.1440

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BRIEF SPECIFICATION

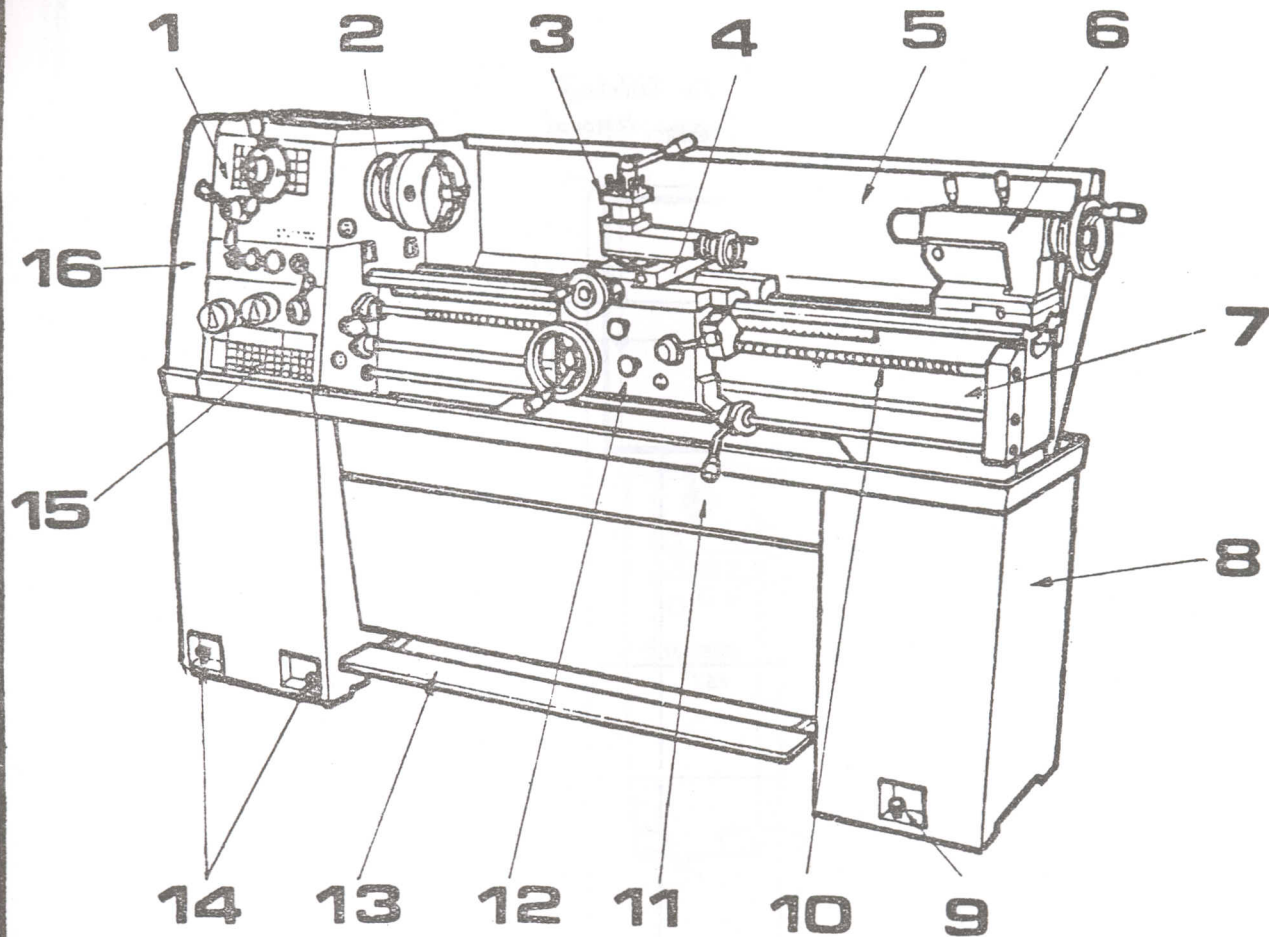


MODEL	SIZE	A	B	C	D	E
1340		1000mm 40in	1800mm 71in	1920mm 75½in	1180mm 46½in	1054mm 41½in
1330		750mm 30in	1550mm 61in	1660mm 65½in	1180mm 46½in	1054mm 41½in
1440		1000mm 40in	1800mm 71in	1920mm 75½in	1194mm 47in	1067mm 42in
1430		750mm 30in	1550mm 61in	1660mm 65½in	1194mm 47in	1067mm 42in

SPECIFICATIONS

DESCRIPTION	INCH SYSTEM				METRIC SYSTEM			
MODEL	1340	1330	1440	1430	1340	1330	1440	1430
SWING OVER BED	13"	13"	14"	14"	330	330	356	356
SWING OVER CROSS SLIDE	7-5/8"	7-5/8"	8-5/8"	8-5/8"	195	195	220	220
DISTANCE BETWEEN CENTERS	40"	30"	40"	30"	1000	750	1000	750
SWING OVER GAP	19"	19"	20"	20"	480	480	506	506
WIDTH OF BED	8-1/9"	8-1/9"	8-1/9"	8-1/9"	206	206	206	206
NUMBERED OF SPINDLE SPEEDS	8 or 16 (2 speed motor)				8 or 16 (2 speed motor)			
RANGE OF SPINDLE SPEEDS	90 or 45 – 1800 RPM				90 or 45 – 1800 RPM			
HOLE THROUGH SPINDLE	1-1/2"				38			
SPINDLE NOSE	D1-4 Camlock				D1-4 Camlock			
TAPER OF SPINDLE BORE	M.T. No. 5				M.T. No. 5			
TAILSTOCK QUILL TAPER	M.T. No. 3				M.T. No. 3			
TAILSTOCK QUILL TRAVEL	4-1/2"				115			
CROSS SLIDE TRAVEL	6-1/2"	6-1/2"	7"	7"	165	165	180	180
COMPOUND REST TRAVEL	3-1/2"	3-1/2"	4"	4"	90	90	100	100
NUMBER OF METRIC THREADS	22				37			
RANGE OF METRIC THREADS	0.45 – 7.5 MM				0.4 – 7.0 MM			
NUMBER OF INCH THREADS	40				28			
RANGE OF INCH THREADS	4 – 112 TPI				4 – 56 TPI			
LONGITUDINAL FEEDS	(40) 0.0012 – 0.0294 in/rev.				(42) 0.043 – 0.653 mm/rev			
CROSS FEEDS	(40) 0.0003 – 0.0100 in/rev.				(420) 0.027–0.413 mm/rev.			
MACHINE NET WEIGHT	1540 lb	1430 lb	1650 lb	1540 lb	700 kg	650 kg	750 kg	700 kg
GROSS WEIGHT	1810 lb	1700 lb	1936lb	1826 lb	820 kg	770 kg	880 kg	830 kg

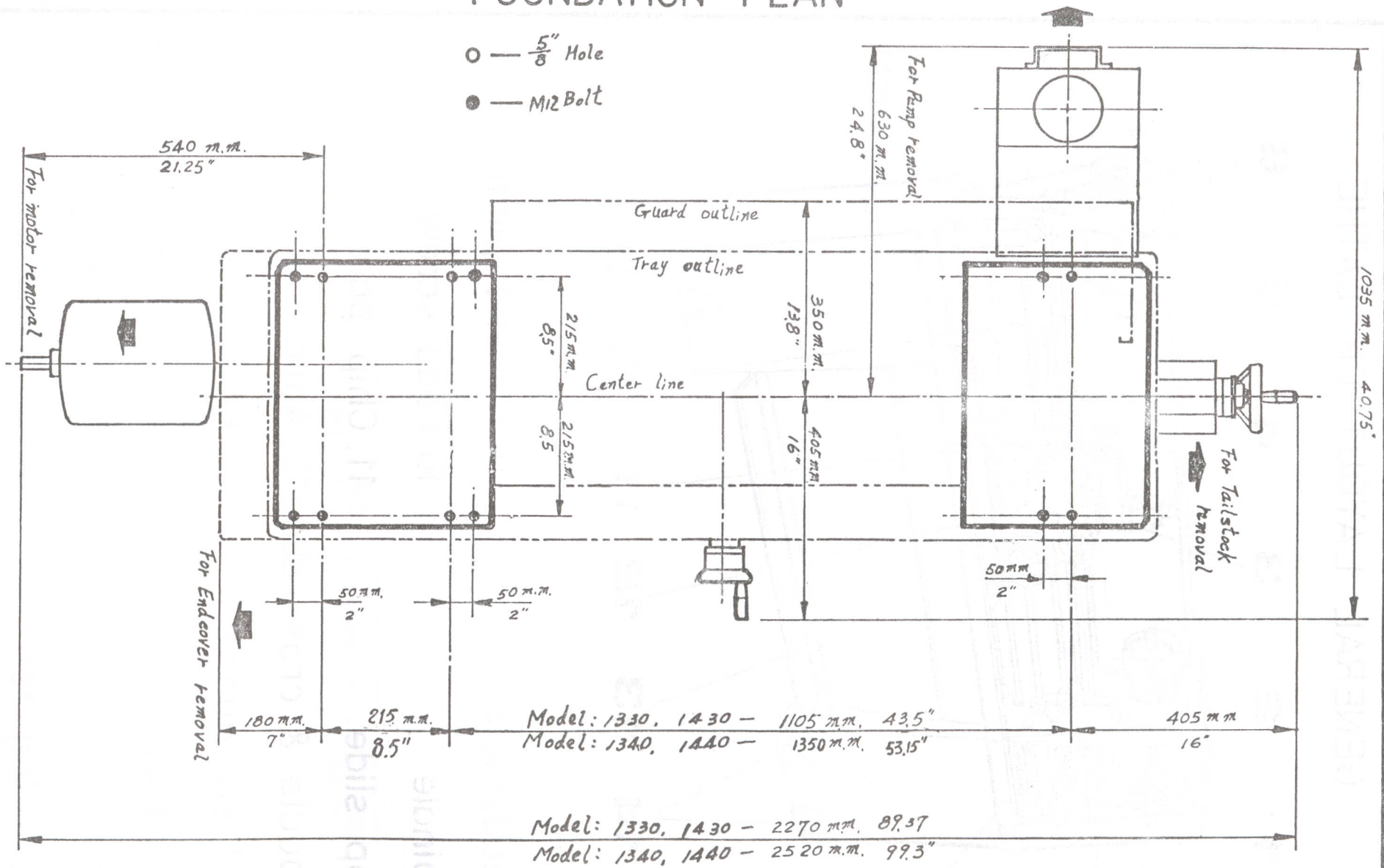
GENERAL LAYOUT OF LATHE



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

FOUNDATION PLAN

- — $\frac{5}{8}$ " Hole
- — M12 Bolt



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 SLINGS AROUND BED AS LEADSCREW AND FEEDSHAFT MAY BE BENT.

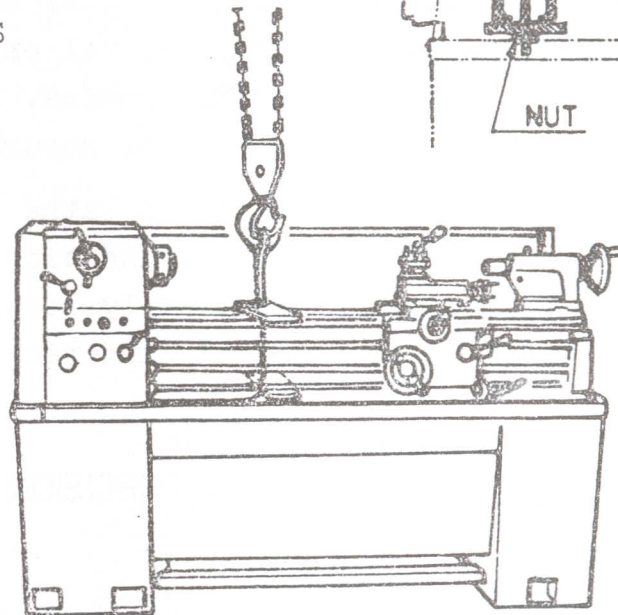
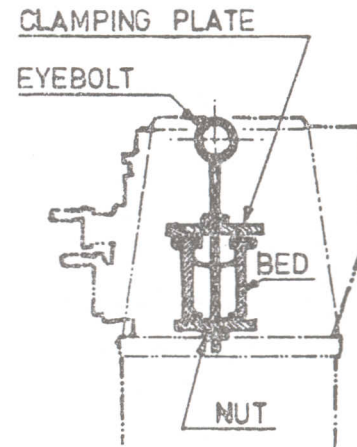


Fig. 4

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.

Machine surface becomes bright immediately after cleaning using machine oil or slideway lubricant. Use heavy oil or grease on the end gears.

INSTALLING

Located the machine on a solid foundation, allowing sufficient area all round for easy working and maintenance (see Foundation Plan). The lathe may be used free-standing or bolted to the foundation.

Free-standing: Position lathe on foundation and adjust each of the six mounting feet to take equal share of the load. Then using an engineers precision level on the bedways (as in Fig 5) adjust the feet to level up machine. Periodically check bed level to ensure continued lathe accuracy.

Fixed installation: Position lathe over six bolts ($\frac{1}{2}$ in. or 12 mm. diam.), set into the foundation to correspond with holes in the mounting feet. Accurately level the machine as in Fig 5, then tighten hold-down bolts and recheck bed level.

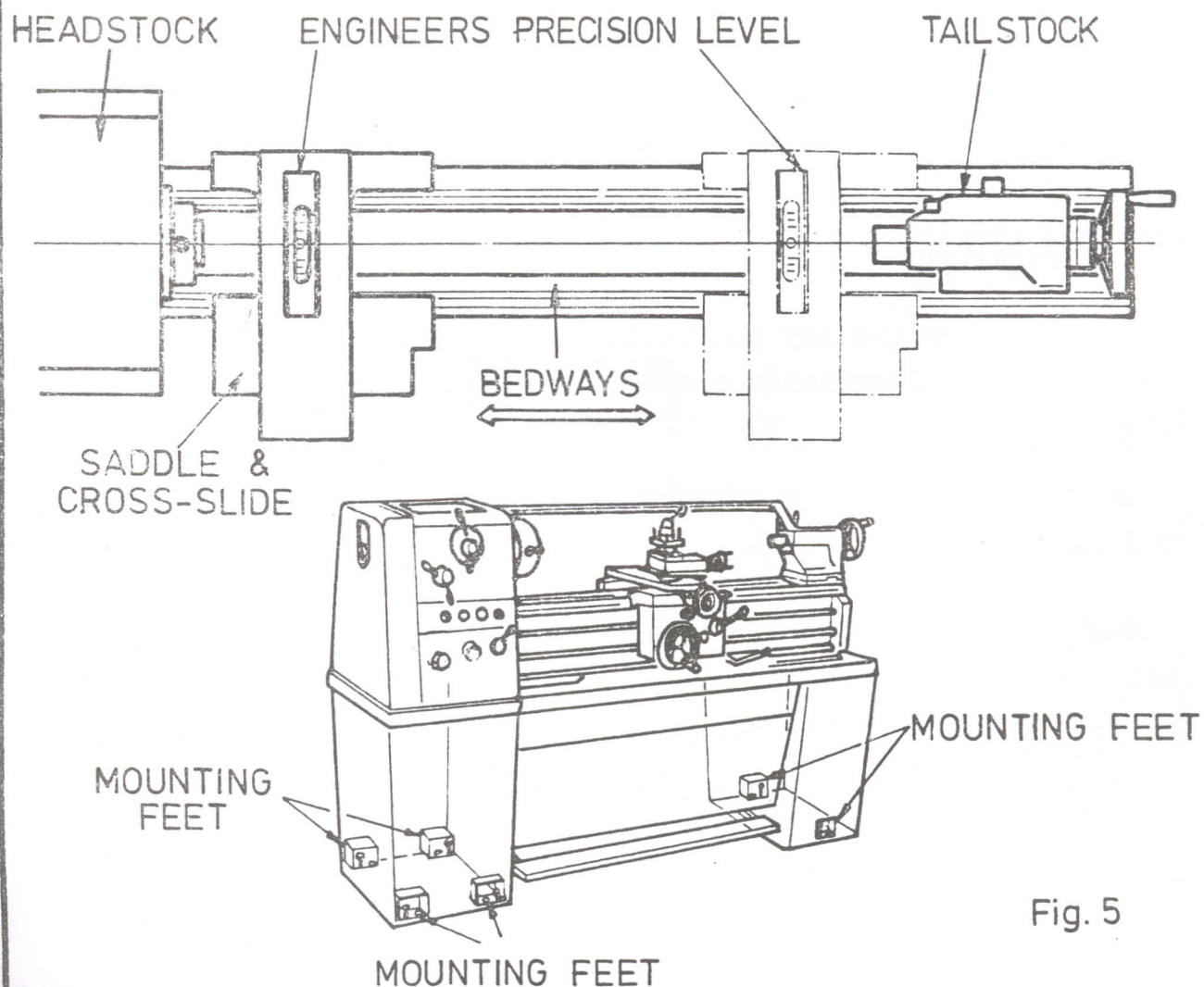
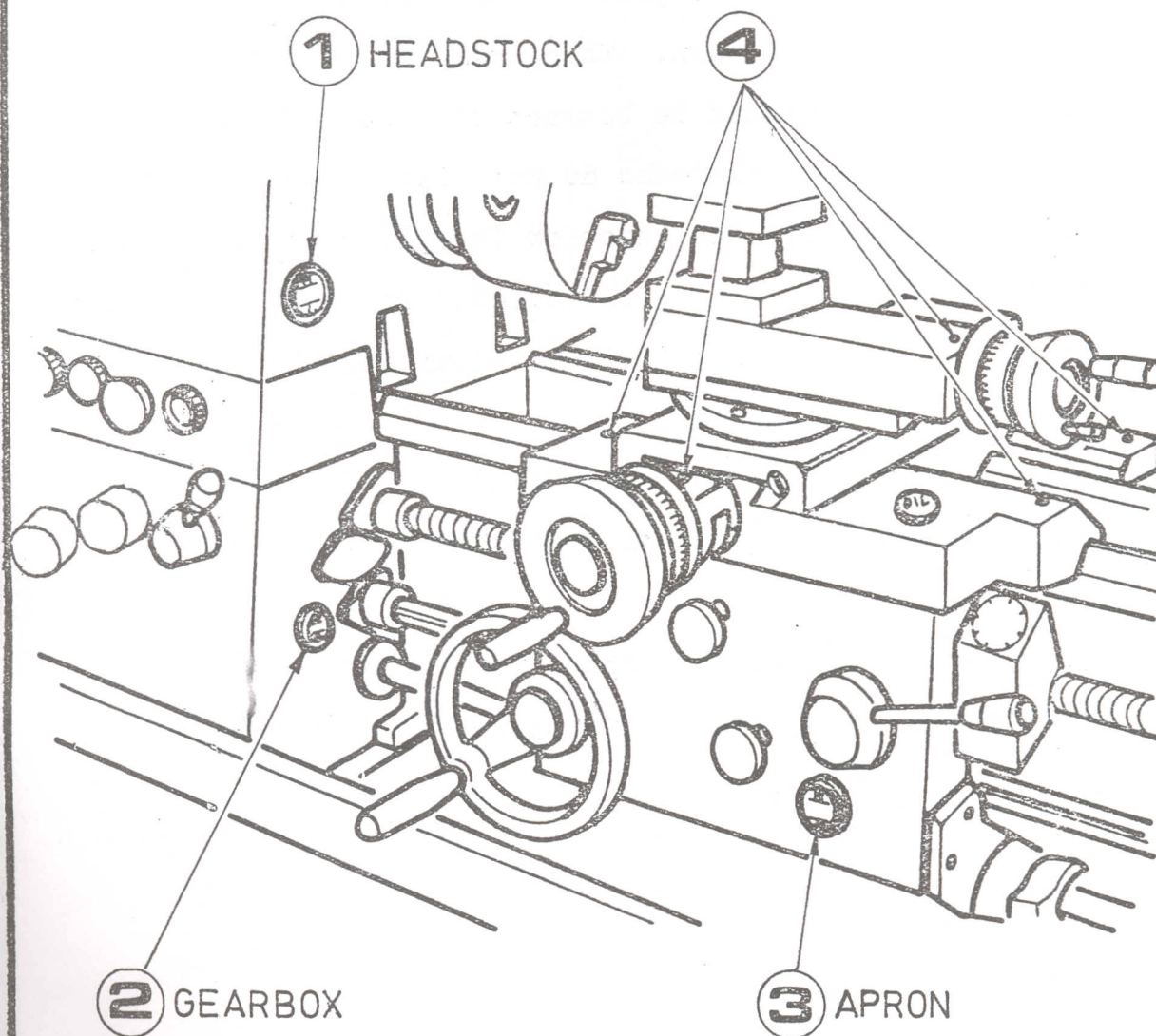


Fig. 5

LUBRICATION CHECKS

Before operating the machine, make the following important checks:

1. The headstock is filled to level marked on oil sight window with Shell Tellus Oil 27.
2. The gearbox is filled to level marked on oil sight window with Shell Tellus Oil 27.
3. The carriage apron is filled to level 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 which require daily oiling.



CHUCKS AND CHUCK MOUNTING

WARNING: GREY-IRON CHUCKS MUST NOT BE FITTED ON THIS

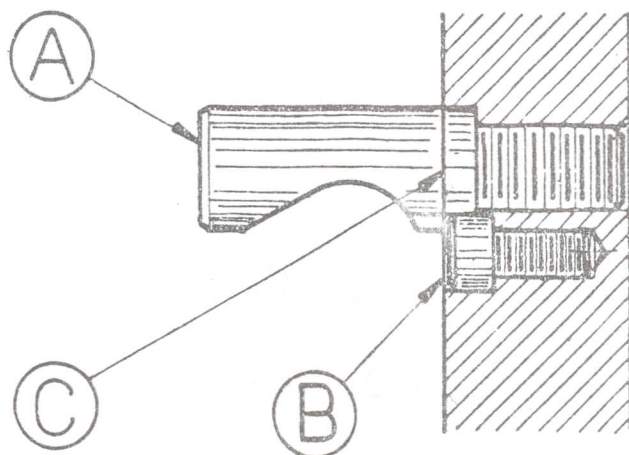
HIGH-SPEED LATHE. USE ONLY DUCTILE IRON CHUCKS.

When fitting chucks or faceplate, 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 when mounting a new chuck to re-set the camlock studs (A) 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 slit 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 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 OR FACE PLATES IF LATHE WITHOUT CHECKING UP CORRECT CAMLOCKING.

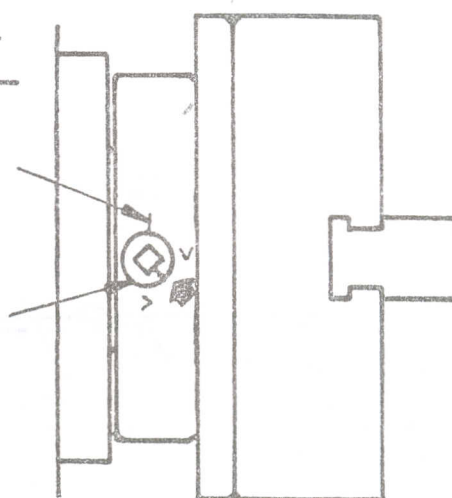
IMPORTANT: Take care note of speed limitations when using faceplate. 10 in. faceplates should not be run at speeds greater than 770 rev/min.



CORRECT

CAM RELEASE DATUM

CAM LOCK LINE
BETWEEN ARROWS



WRONG

TURN
STUD
IN
ONE
TURN

TURN STUD
OUT
ONE TURN

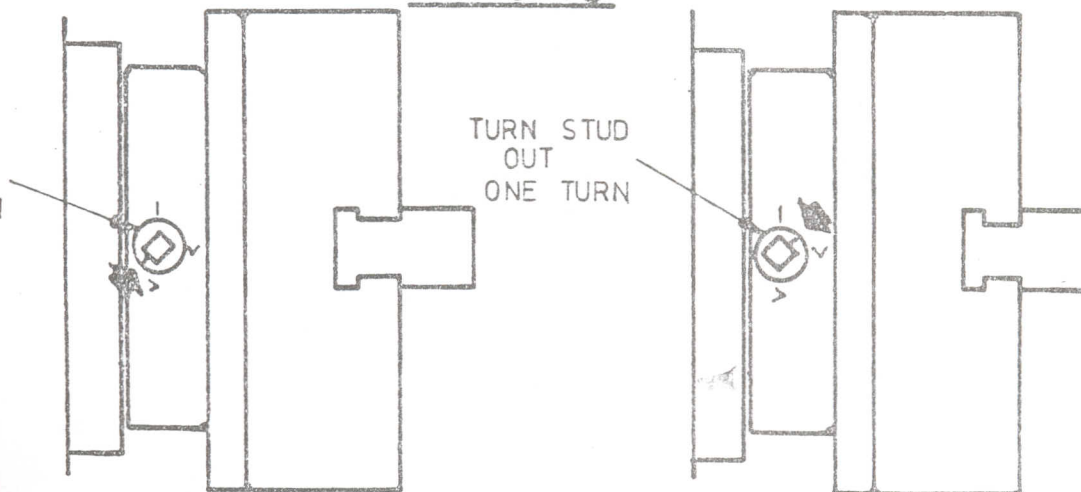
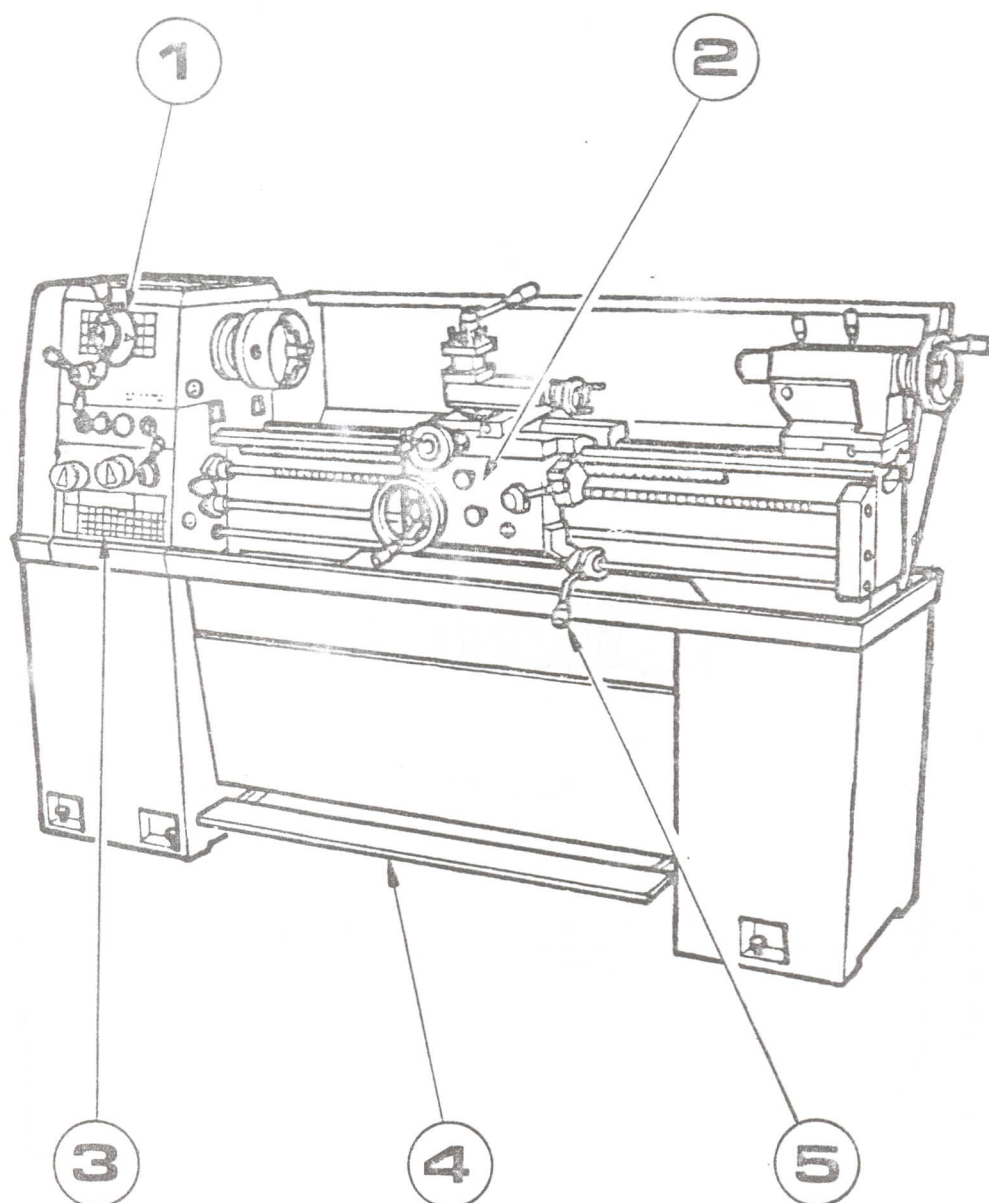


Fig. 7

LATHE CONTROLS

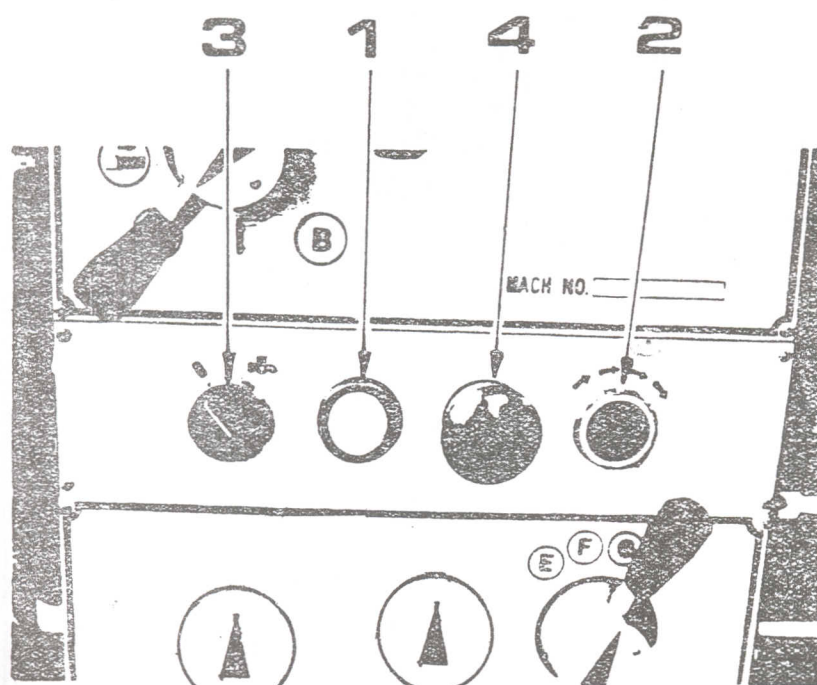
1. Spindle speed selector.
2. Apron, surfacing or sliding feeds.
3. Gearbox, threads and feeds.
4. Footbrake.
5. Main motor rotation (forward and revers).



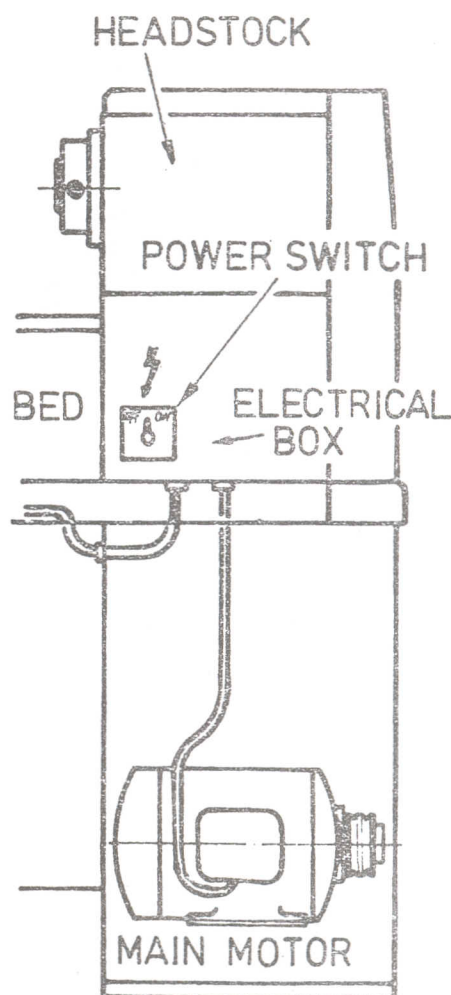
ELECTRICAL CONTROLS

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 motor rotation 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.



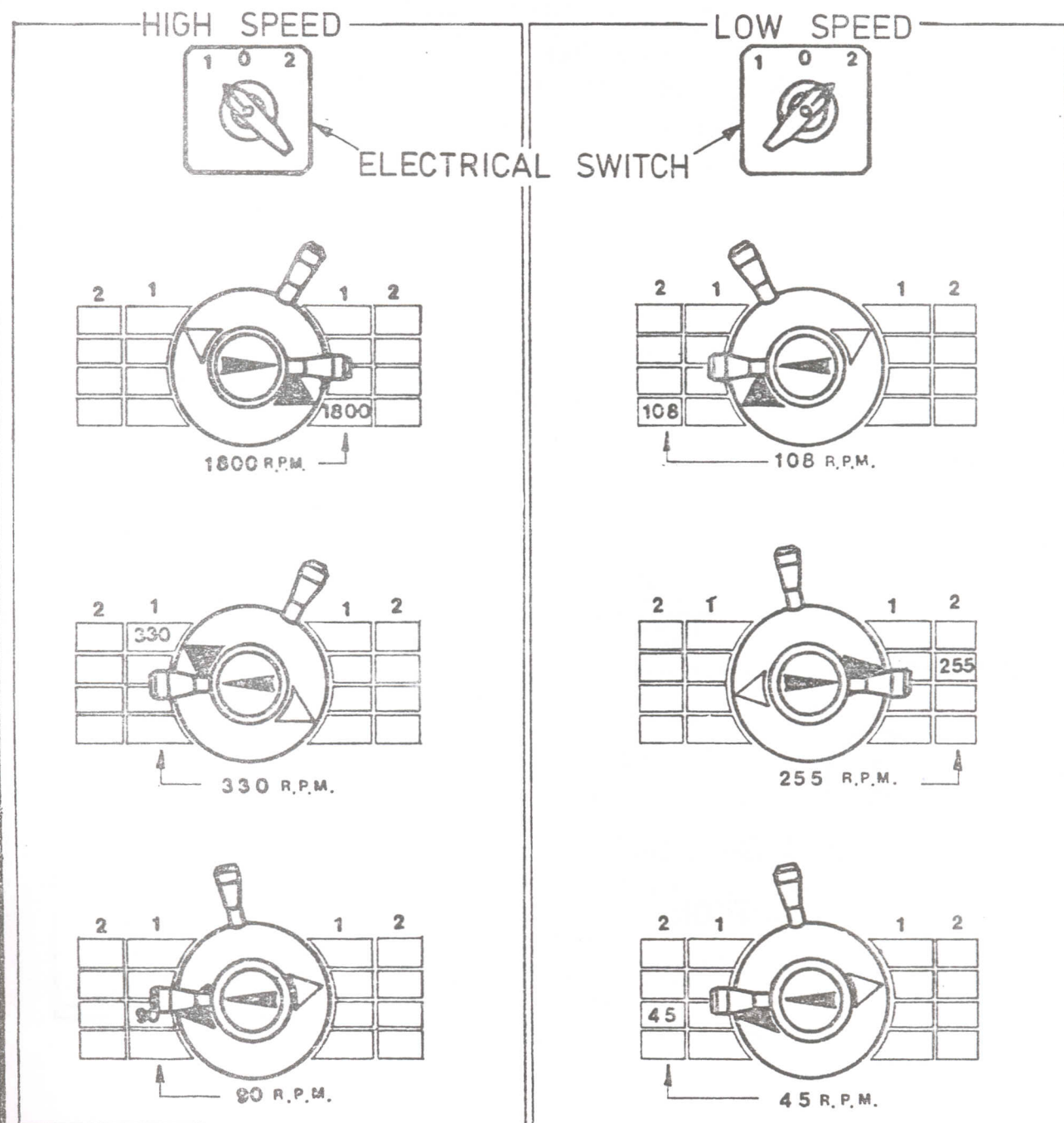
- 1—INDICATOR LAMP
- 2—JOG BUTTON
- 3—COOLANT PUMP SWITCH
- 4—EMERGENCY STOP SWITCH



SPEED CONTROLS (2 SPEED MOTOR)

Spindle speeds: Selected by the two lever controls and a 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 roated right-hand side, it provides speeds from 1800-510 r.p.m., and rotated to left-hand side, ot provides speeds from 330-90 r.p.m. Then move the large lever to the appropriately coloured arrow aligned with the required speed on the data plate. While the electrical switch set at (2) position, it provides speeds from 900-255 r.p.m. and 165-45 r.p.m.

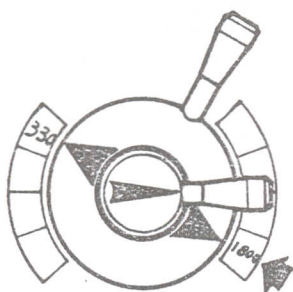
When the small lever set at upper or bottom position, the spindle is free for hand rotation.



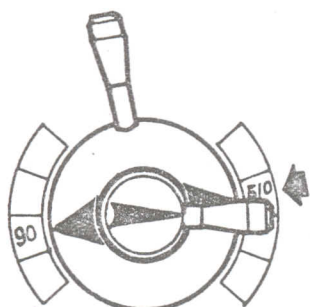
SPEED CONTROLS

Spindle speeds: Selected by the two lever controls on the head-stock. The eight available speeds are shown directly on the data plate. Rotate the small lever to right-hand side, speeds can run from 1800-510 r.p.m. and rotate to left-hand side, provided speeds can be from 330-90 r.p.m. Then move the large lever until the appropriately coloured arrow is aligned with the required speed on the date plate. When the small lever set at upper or bottom position the spindle is free for hand rotation.

HIGH SPEED

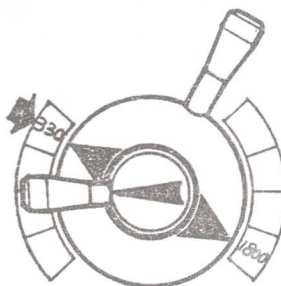


1800 r.p.m.

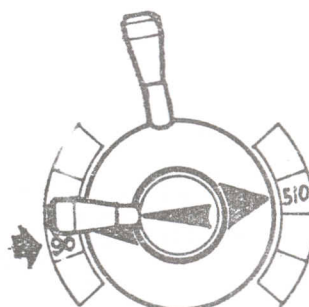


510 r.p.m.

LOW SPEED



330 r.p.m.



90 r.p.m.

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 provide a range of fine threads; the A position a coarse thread range. Do not select the range (A position) at spindle speeds higher than 770 rev min.

THREADS AVAILABLE

37 Metric threads 0.4 to 7.0 mm.pitch

28 Whitworth threads 4 to 56 t.p.i.

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

Feeds: longitudinal feeds per spindle revolution range from 0.043 to 0.653 mm.

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

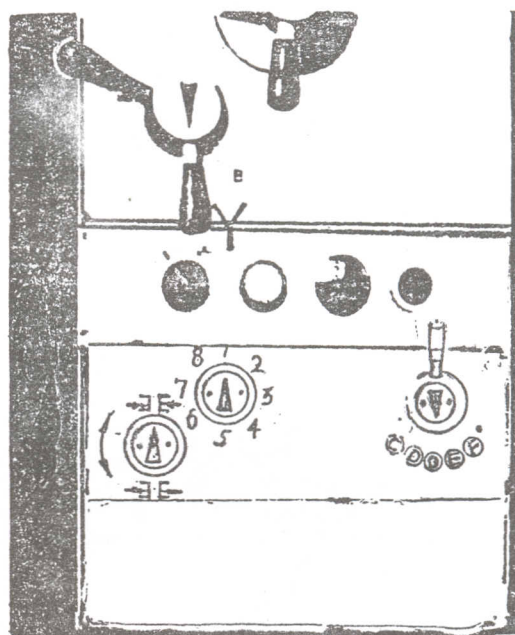







Fig.12

																														
		1	2	3	4	6	7	8			1	2	3	4	6	7	8			2	1	2	2	1	1	1				
	C	A	4.0	4.5	5.0	5.5	6.0	6.5	7.0	D	A	0.373	0.428	0.466	0.513	0.561	0.606	0.653												
		B	2.0	2.25	2.5	2.75	3.0	3.25	3.5		B	0.186	0.214	0.233	0.256	0.280	0.303	0.327			40	40	32	32	30	30	30			
	E	A	1.0	1.125	1.25	1.375	1.5	1.625	1.75	F	A	0.109	0.122	0.135	0.149	0.163	0.177	0.190												
		B	0.5		0.625		0.75		0.875		B	0.054	0.060	0.067	0.074	0.081	0.088	0.095			60	60	60	66	60	65	70			
	E	A	0.8	0.9	1.0	1.1	1.2	1.3	1.4	F	A	0.087	0.098	0.109	0.119	0.131	0.141	0.152												
		B	0.4	0.45	0.5	0.55	0.6	0.65	0.7		B	0.043	0.049	0.054	0.059	0.065	0.071	0.076												

THREADS AND FEEDS (Inch Gearbox)

All the threads and feeds directly available from the gear box are shown on 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 provide a range of fine threads; the A position a coarse thread range. Do not select the range (A position) at spindle speeds higher than 770 rev/min.

THREADS AVAILABLE

40 Whitworth threads 4.0 to 112 t.p.i.

22 Metric threads 0.45 to 7.5 mm. pitch

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

Feeds: longitudinal feeds per spindle revolution range from .0012 to .0294 in (0.0030 to 0.746 mm.)

cross feeds per spindle revolution range from .0004 to .0108 in. (0.010 to 0.271 mm.)

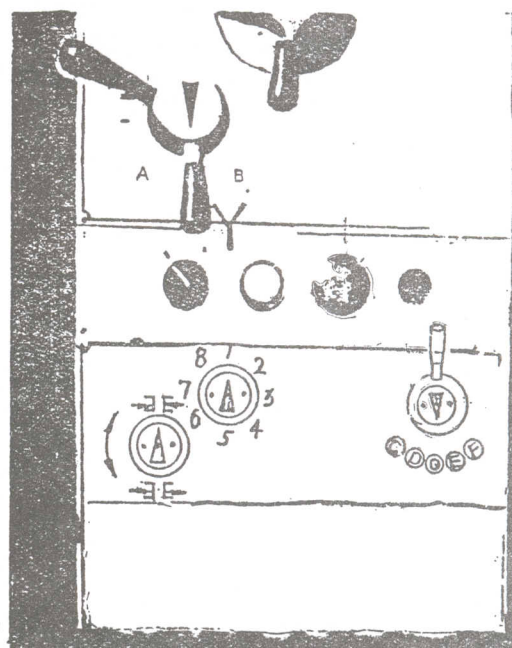


Fig.13

T.P.I.		INCH								MM		127 40 120 40 127 40 127 40						
		1	2	3	4	5	6	7	8			1	3	6	3	1	2	3
	A	C	4	4½	5	5½	5¾	6	6½	7								
		D	.0294	.0261	.0235	.0214	.0205	.0196	.0181	.0168								
	B	C	8	9	10	11	11½	12	13	14								
		D	.0147	.0131	.0117	.0107	.0102	.0098	.0090	.0084								
	A	E	16	18	20	22	23	24	26	28								
		F	.0073	.0065	.0058	.0053	.0051	.0049	.0045	.0042								
	B	E	32	36	40	44	46	48	52	56								
		F	.0042	.0038	.0034	.0031	.0030	.0028	.0026	.0024								
	A	E	64	72	80	88	92	96	104	112								
		F	.0021	.0019	.0017	.0015	.0015	.0014	.0013	.0012								
	B	E																
		F																

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 $\frac{1}{2}$ or $\frac{1}{4}$ t.p.i. may be cut by closing the nut at the SAME numbered line on each pass of the tool.

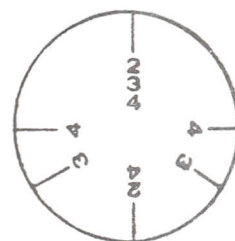
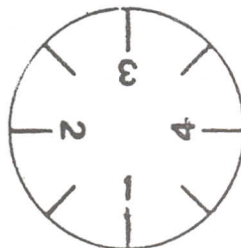
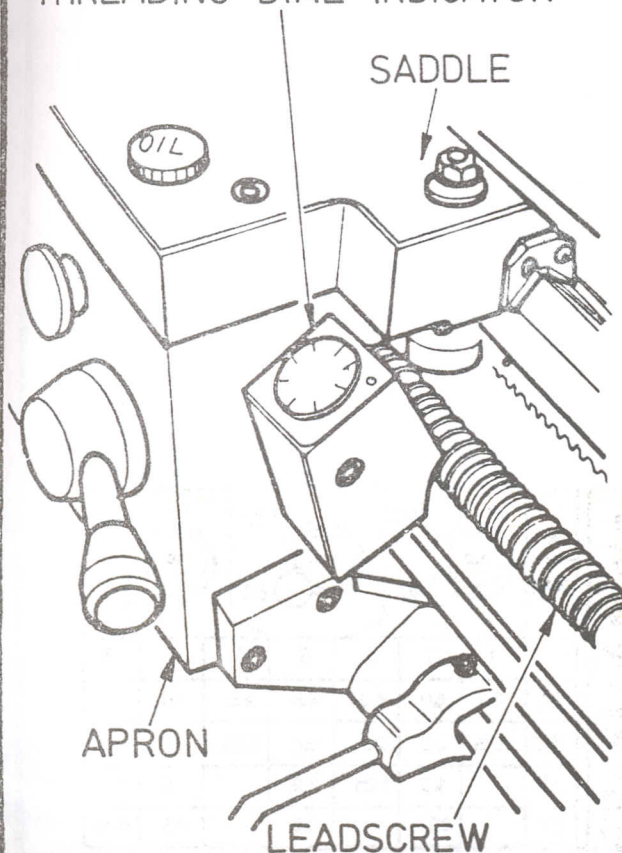
This dial cannot be used with an English leadscrew to cut metric threads, or fractional threads. For these the leadscrew nut must be kept closed and the machine reversed by use of the Change-over switch, after each cutting pass and tool with drawal.

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.

THREADING DIAL INDICATOR



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 8 T.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 4 MM

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 manual operation. If move handle (A) downwards, it would do cross-feed operation.

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

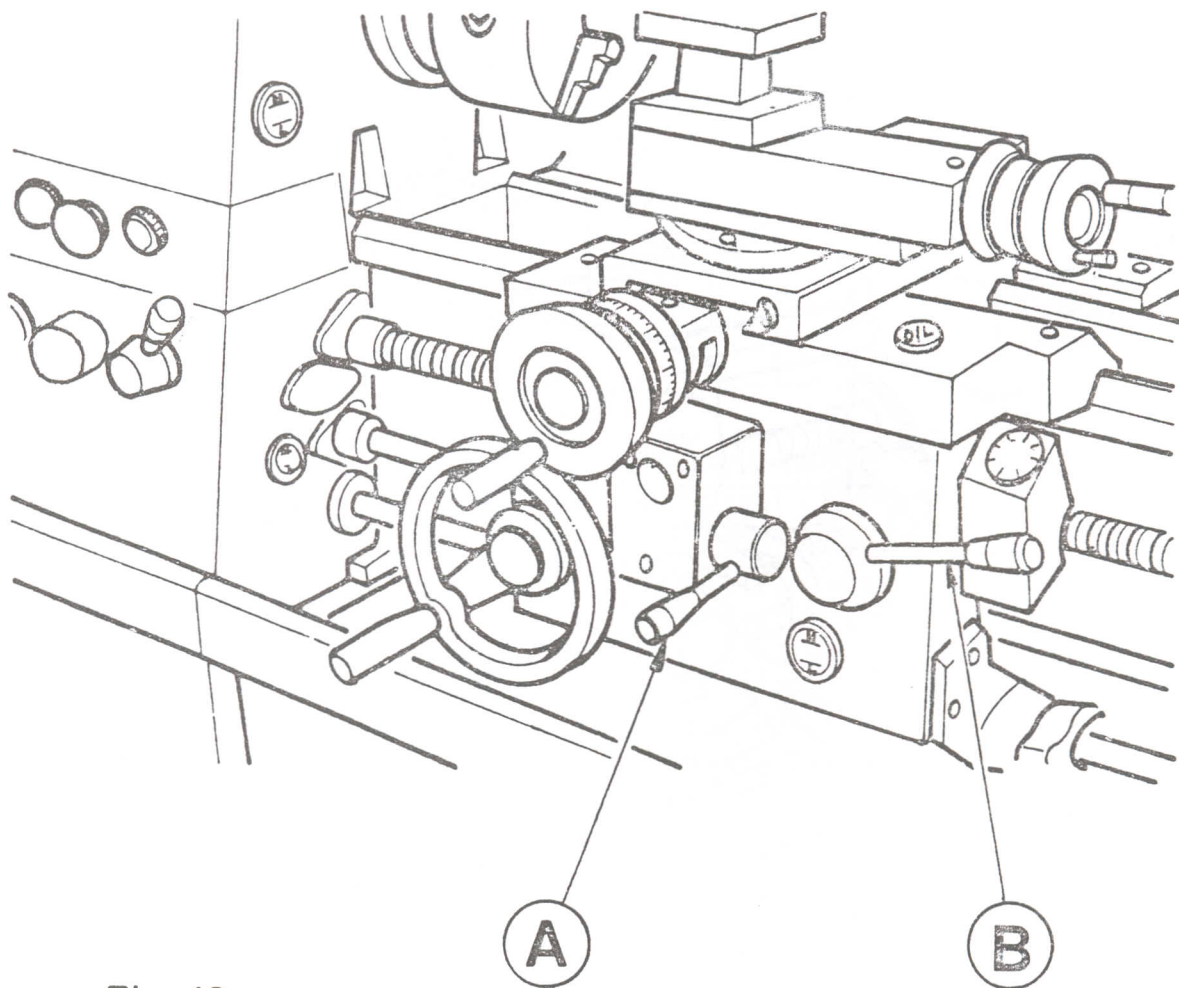


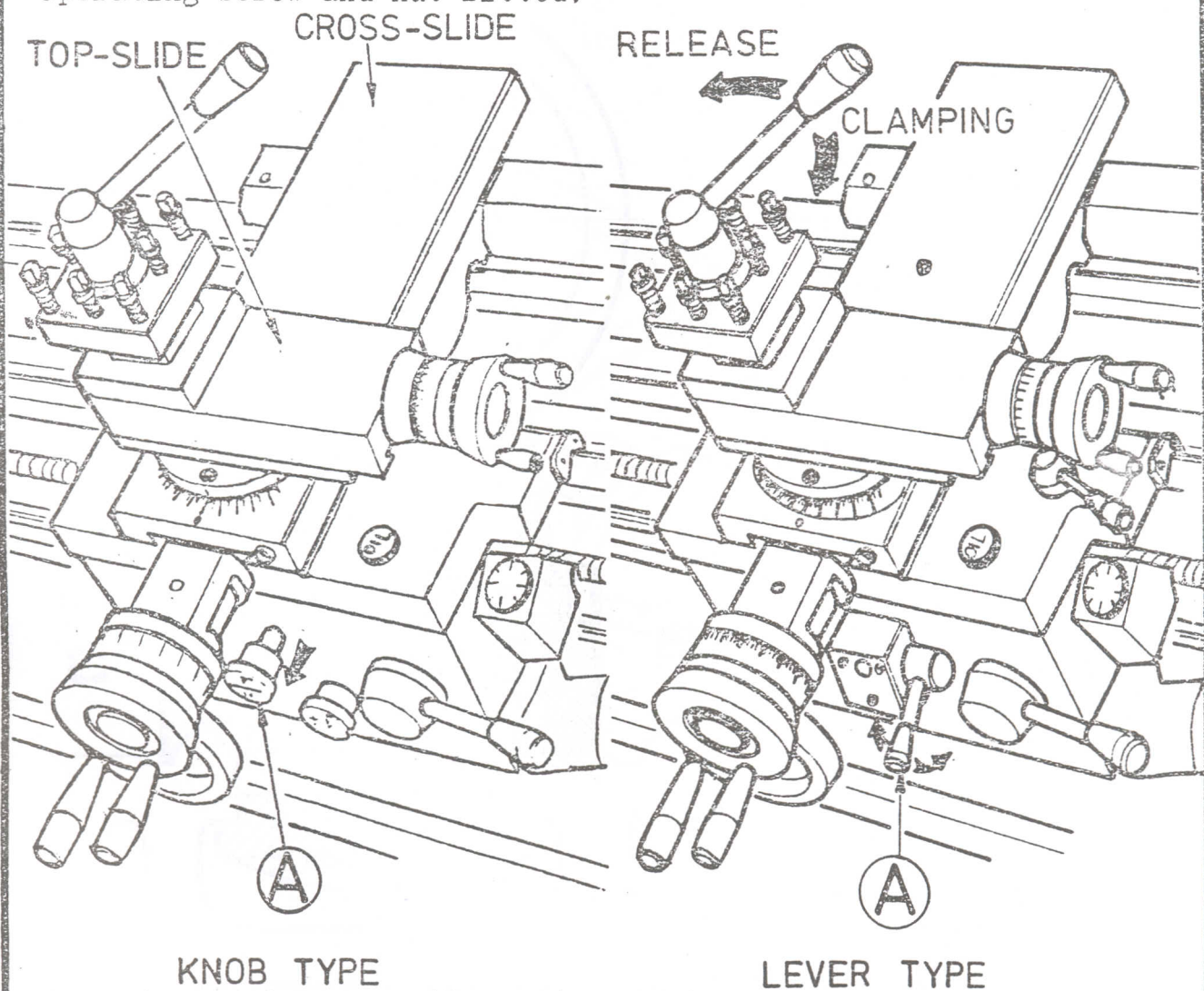
Fig. 16

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 tapers or for re-alignment. Release the clamping lever and adjust screws (S) at each side of the base to move tailstock laterally across the base. An indication of the setover 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.

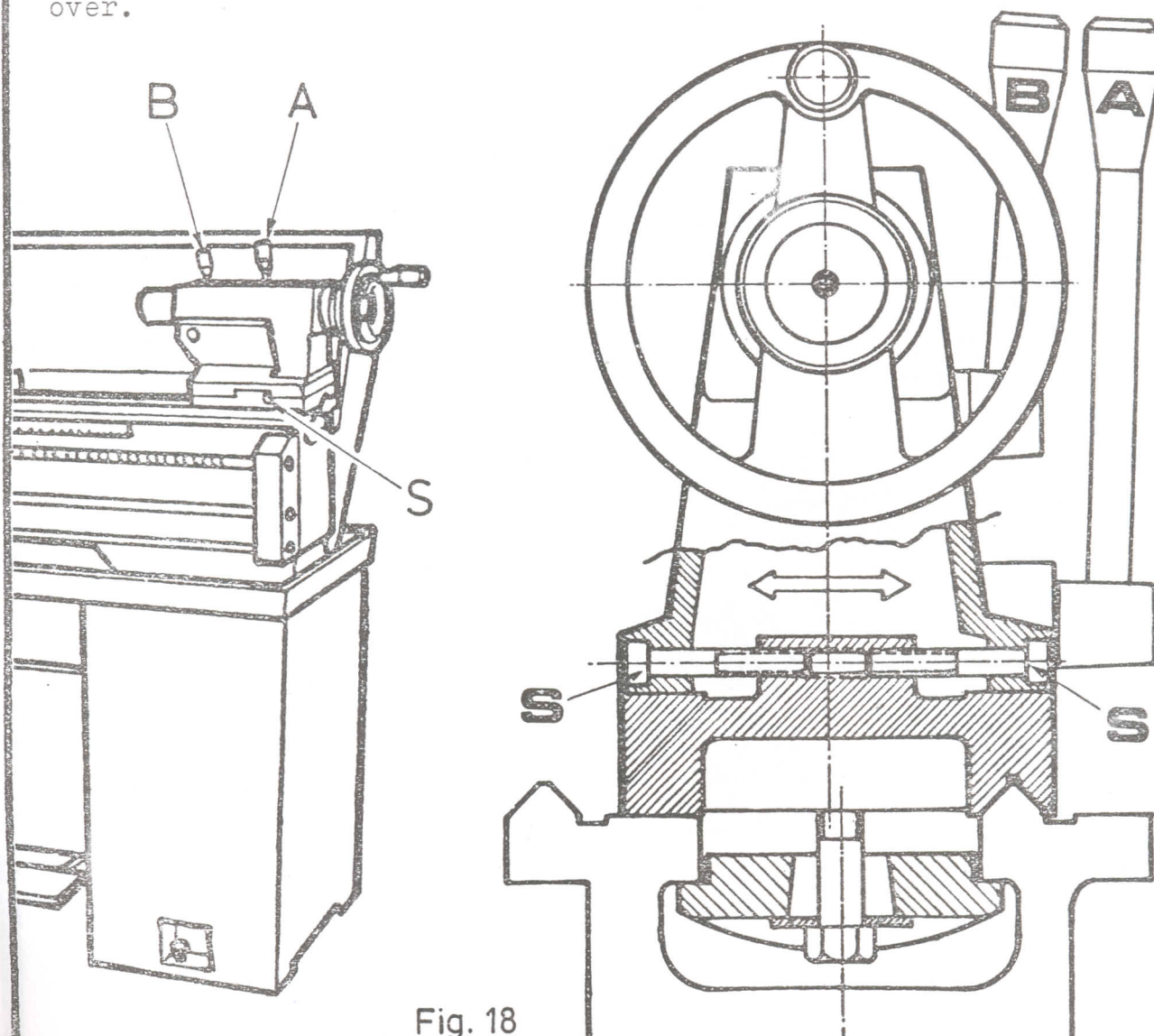


Fig. 18

LATHE ALIGNMENT (part 1)

With the lathe installed and running, we recommend a check on machine alignment before commencing work. Check levelling 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 readings 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 18 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.

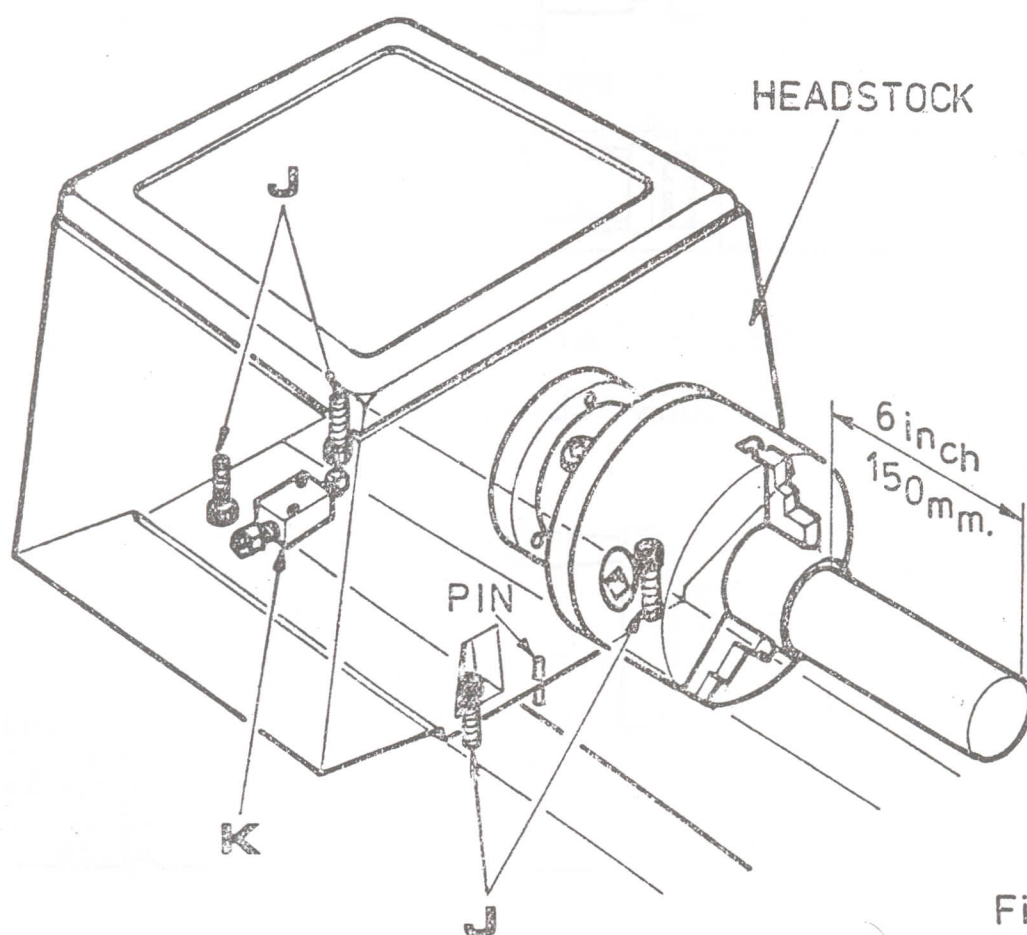
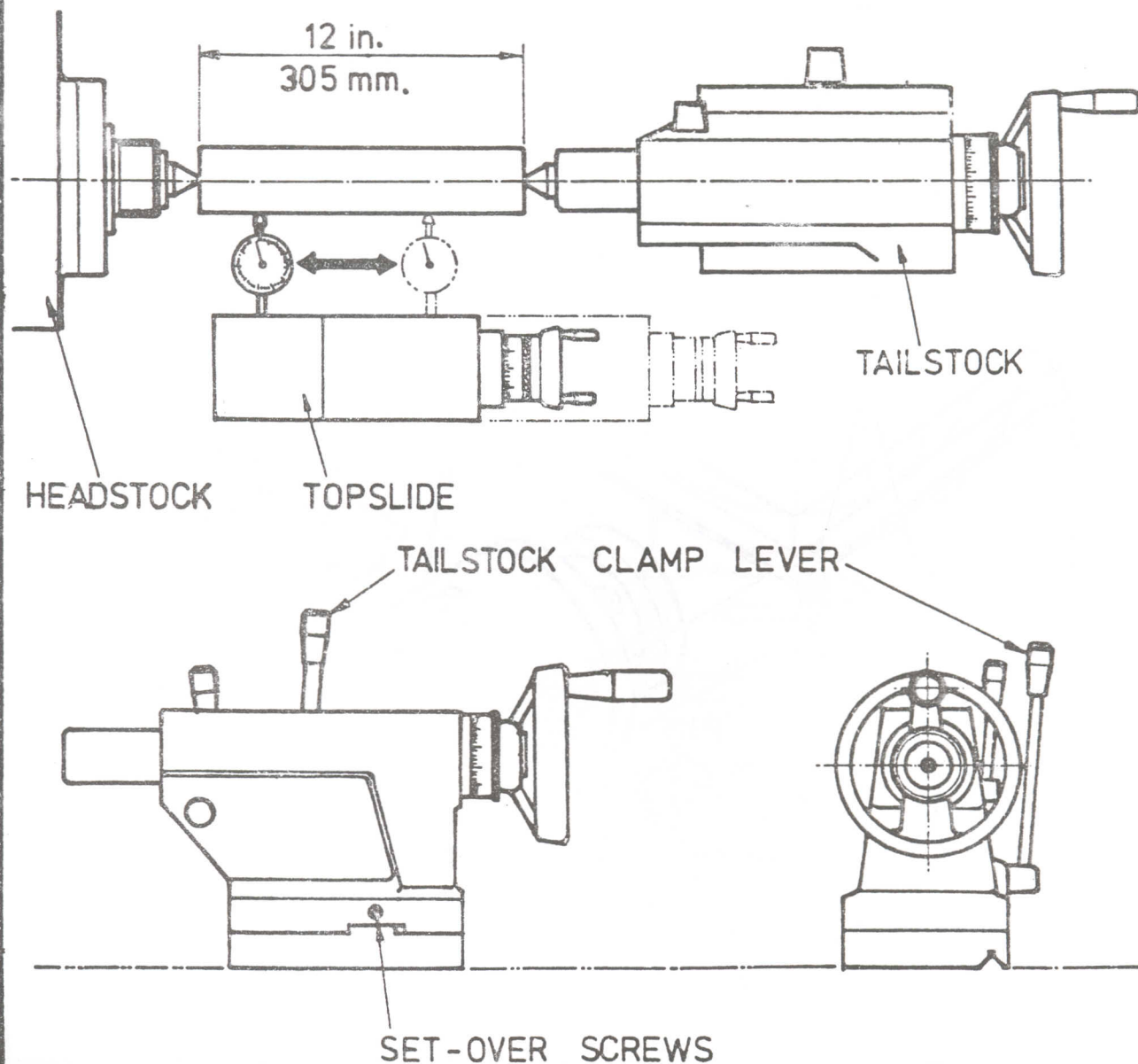


Fig. 19

LATHE ALIGNMENT (part 2)

Tailstock check: Using a 12 in. (305 mm.) 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.

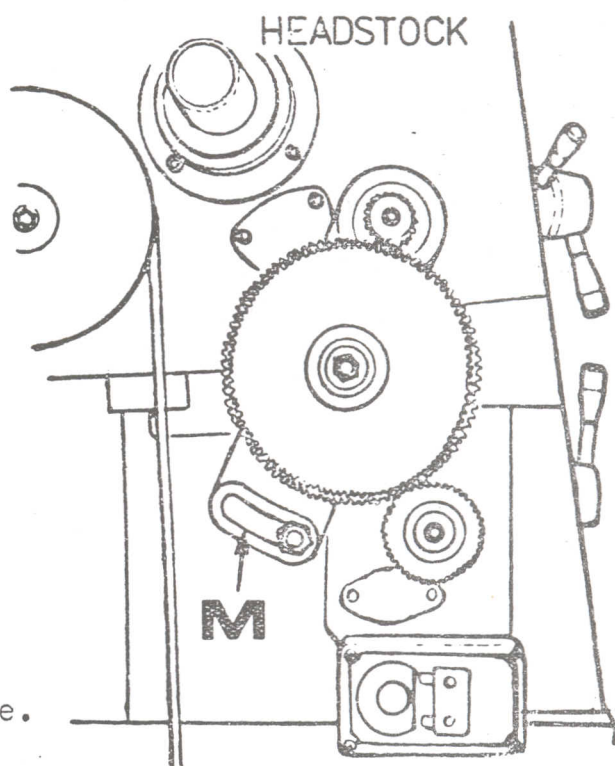
To correct error, release the tailstock clamp lever and adjust the two set-over screws provided. Continuously check and correct until the alignment is perfect.



END GEAR TRAIN

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

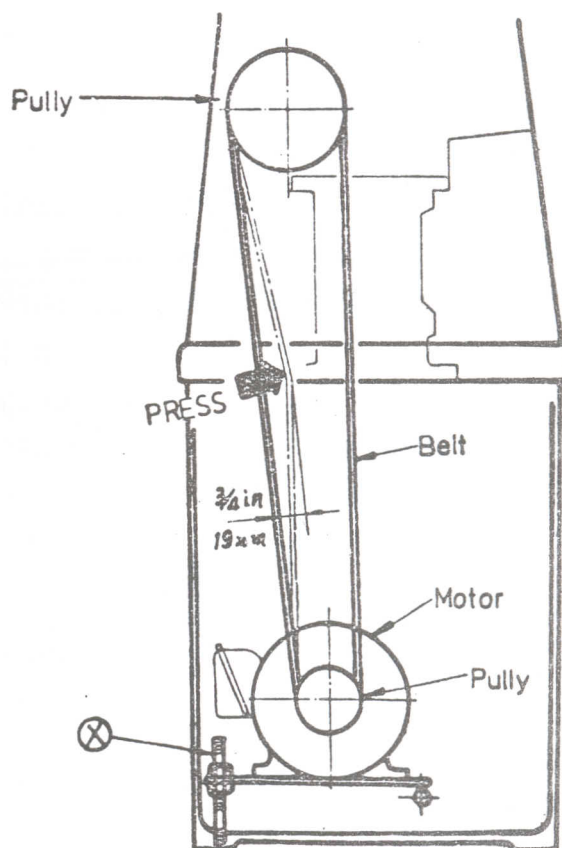
Gears must be thoroughly cleaned before fitting and backlash maintained at .005in. (.127 mm.) Lubricate gears regularly with thick oil or grease.



DRIVING BELTS

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

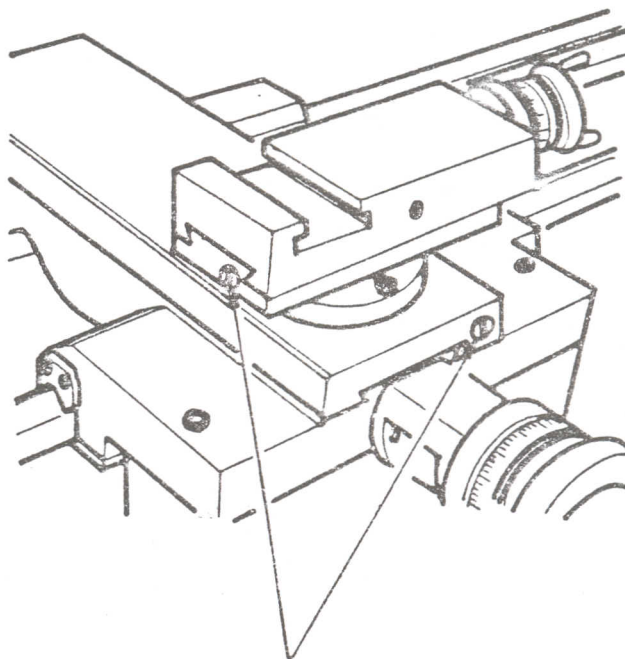
Light finger pressure at a point midway between motor and headstock pulleys should produce about 3/4 in. (19mm.) movement of each belt when under correct tension.



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.

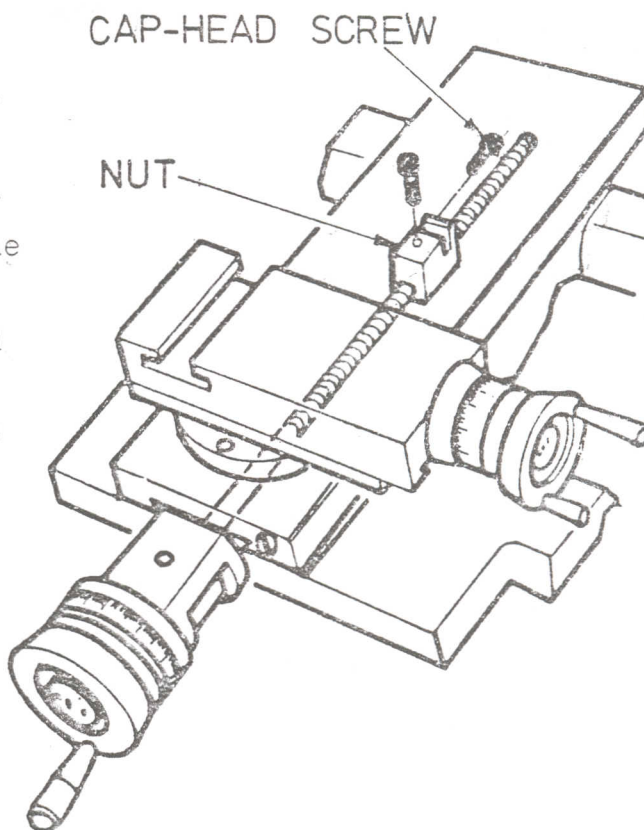
Ensure that slideways are thoroughly cleaned and lubricated before attempting adjustment. Then reset the gibs by slackening the rear gib screw and tightening the front screw. Check constantly for smooth action throughout full slide travel. Avoid over-adjustment which can result in increased wear-rate and stiff or jerky action.



GIB ADJUSTERS

CROSS-SLIDE NUT

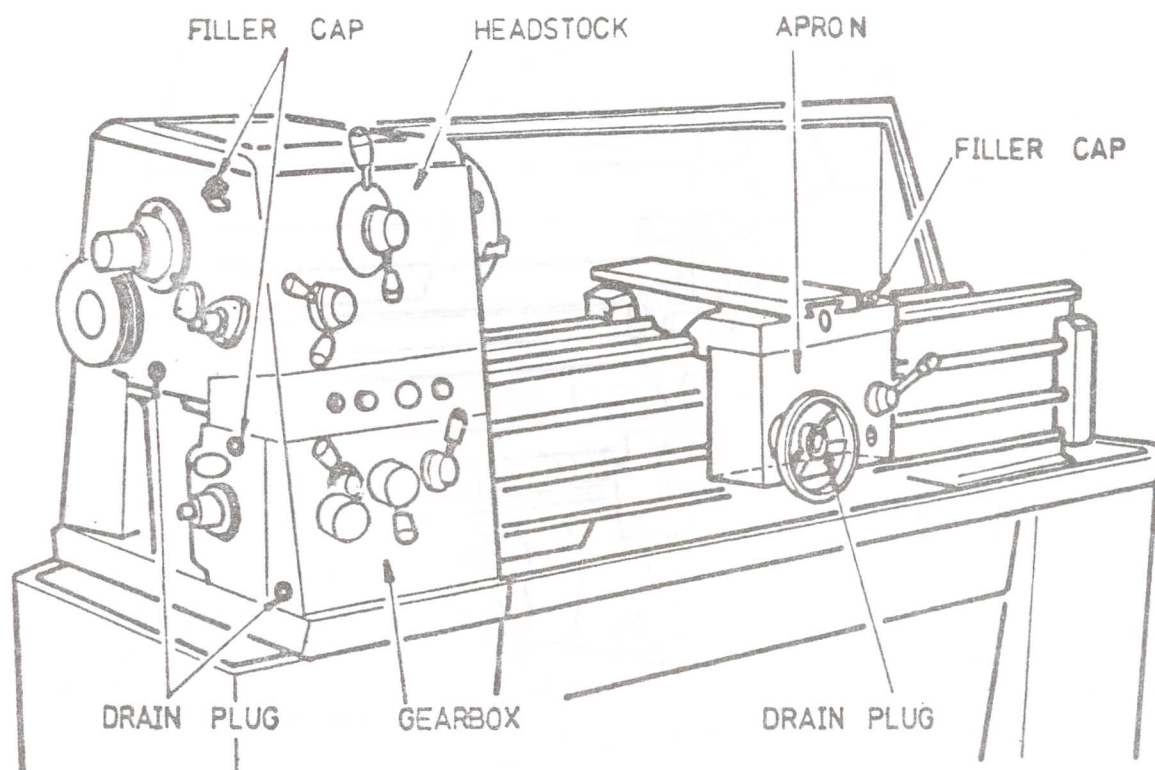
This is adjustable for elimination of slackness which may develop in service. Reduce backlash by the cap-head screw in the rear of the nut. Then make only small adjustment by the cap-head screw. Before operating the cross-slide, check several times by hand to be sure of smooth operation throughout travel.



LUBRICATION (part 1)

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 headstock and gearbox. A weekly check is recommended. The oil need be changed every year. Oil through a filler cap in the top of the headstock and gearbox is covered 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 oilsight with Shell Tonna oil 33. The apron can be drained by unscrewing a hexheaded drain plug in the bottom.



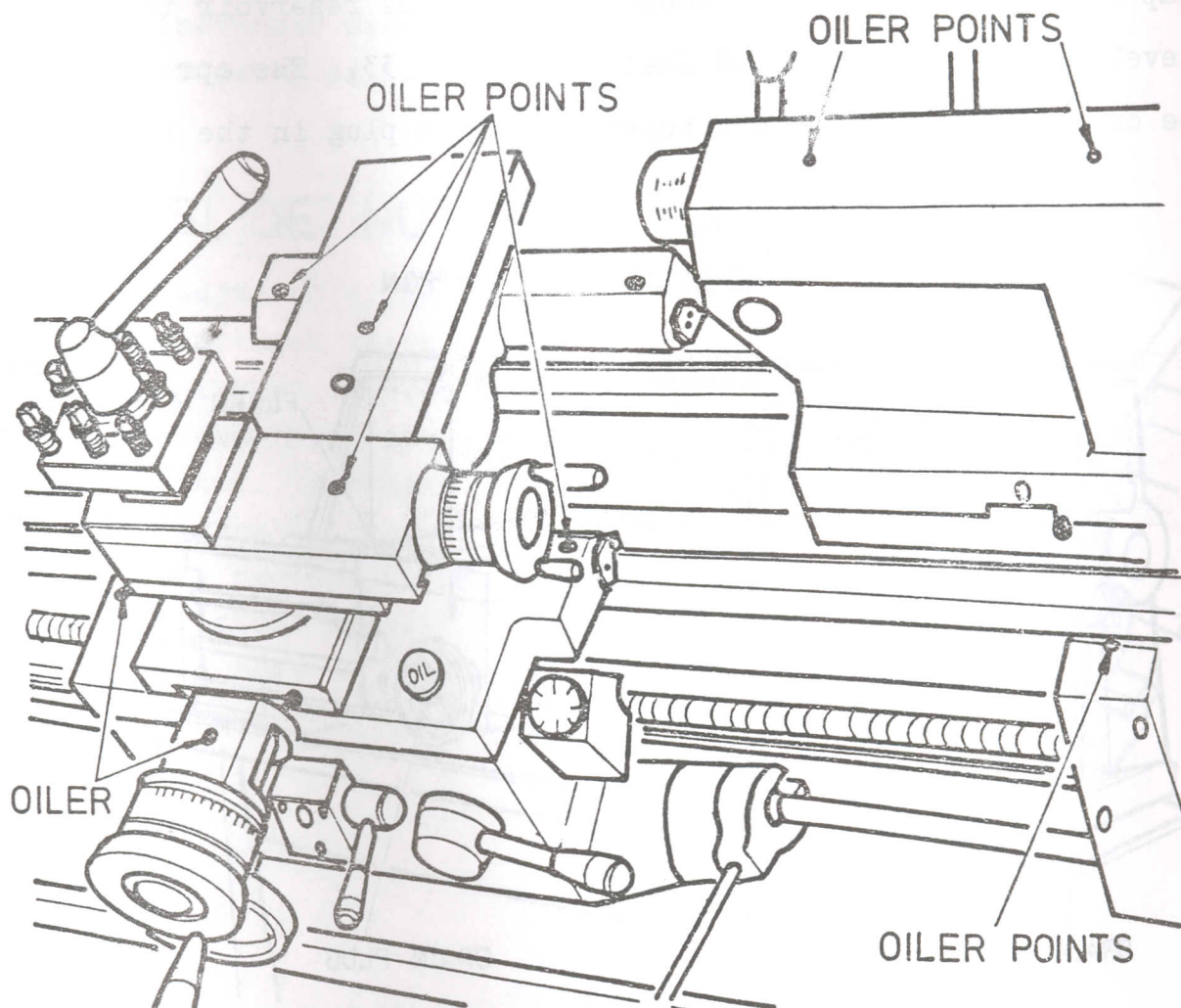
LUBRICATION (part 2)

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

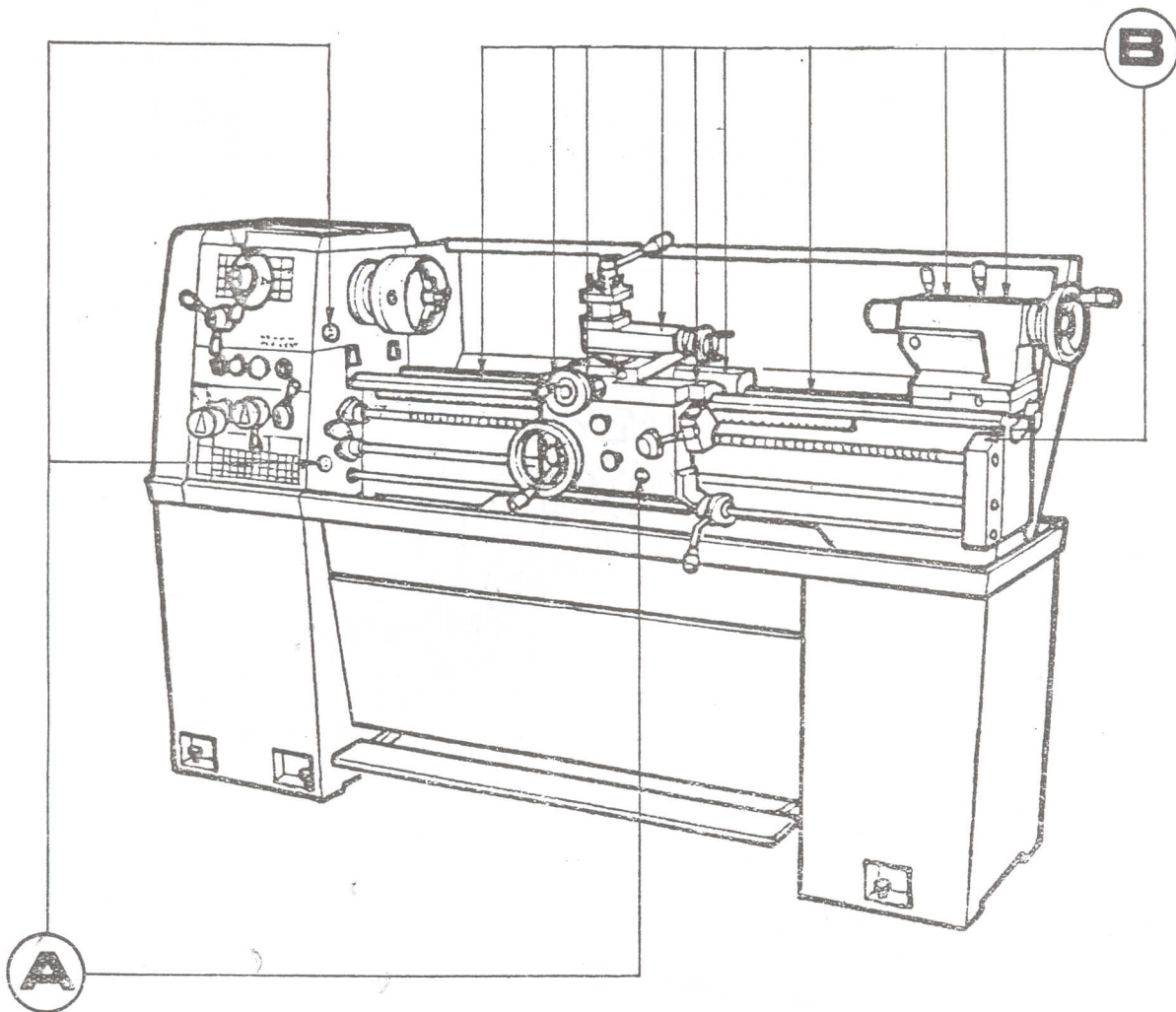
On the tailstock, oil points are provided for daily attention from a standard oil can.

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.



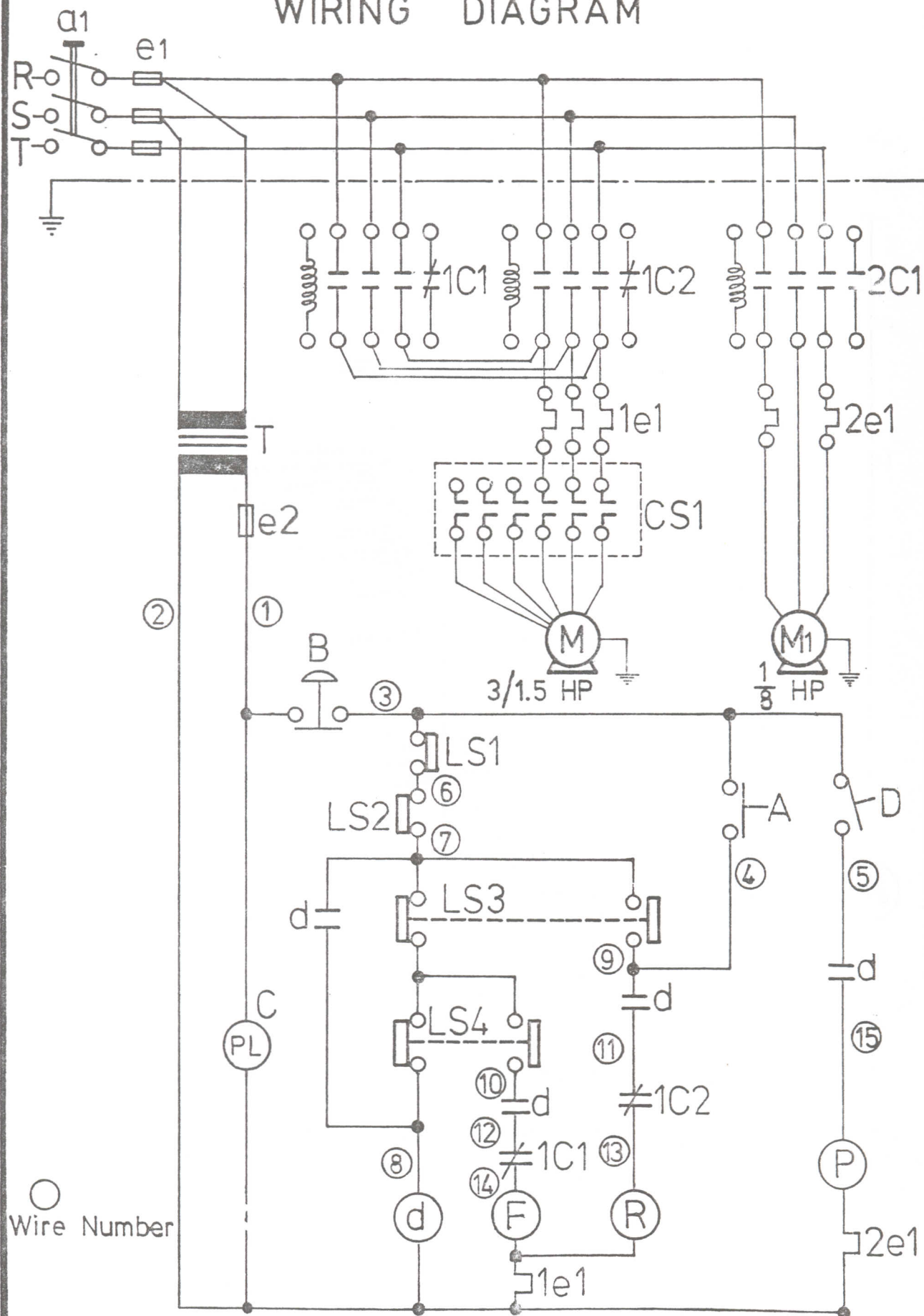
LUBRICATION DIAGRAM

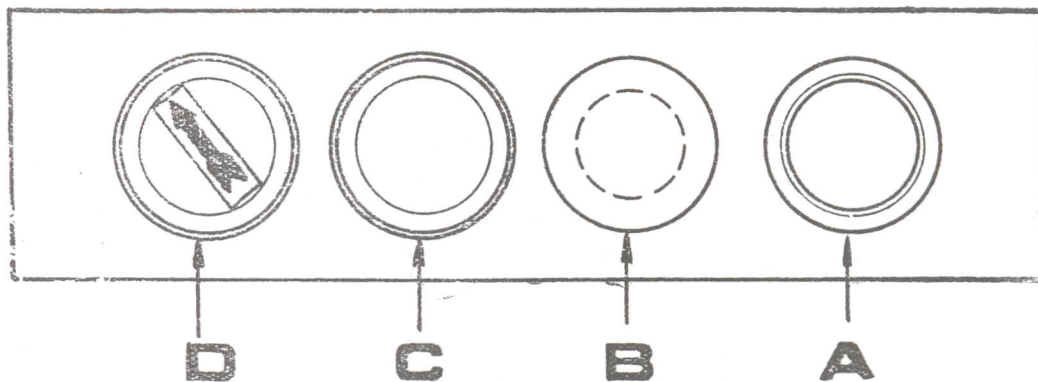


A — TOP-UP EVERY WEEK

B — OIL EVERY DAY

WIRING DIAGRAM





ai: Power switch 3 ϕ 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.

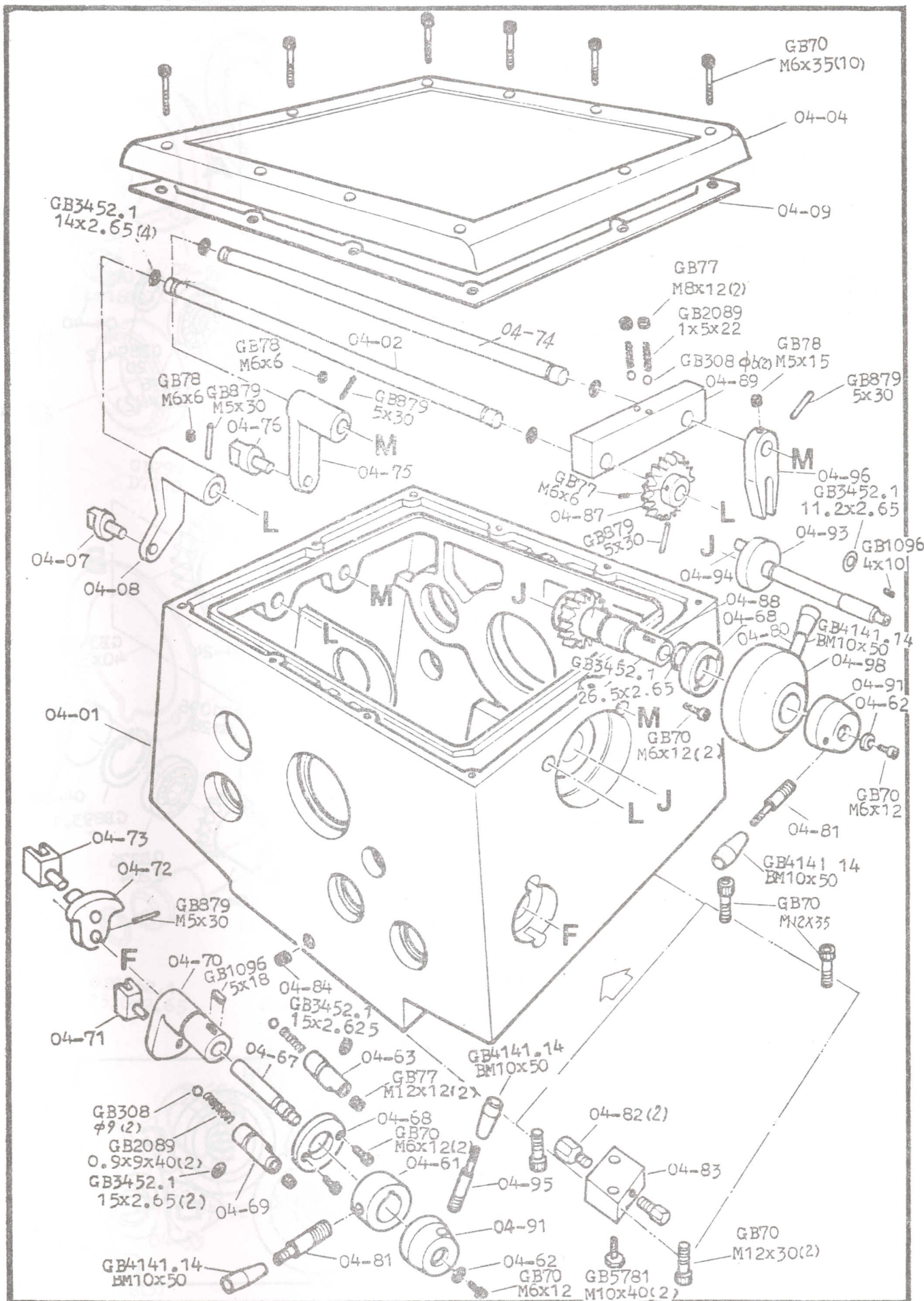
Ls2: Limit switch Brake precision. type 15GD—B.

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

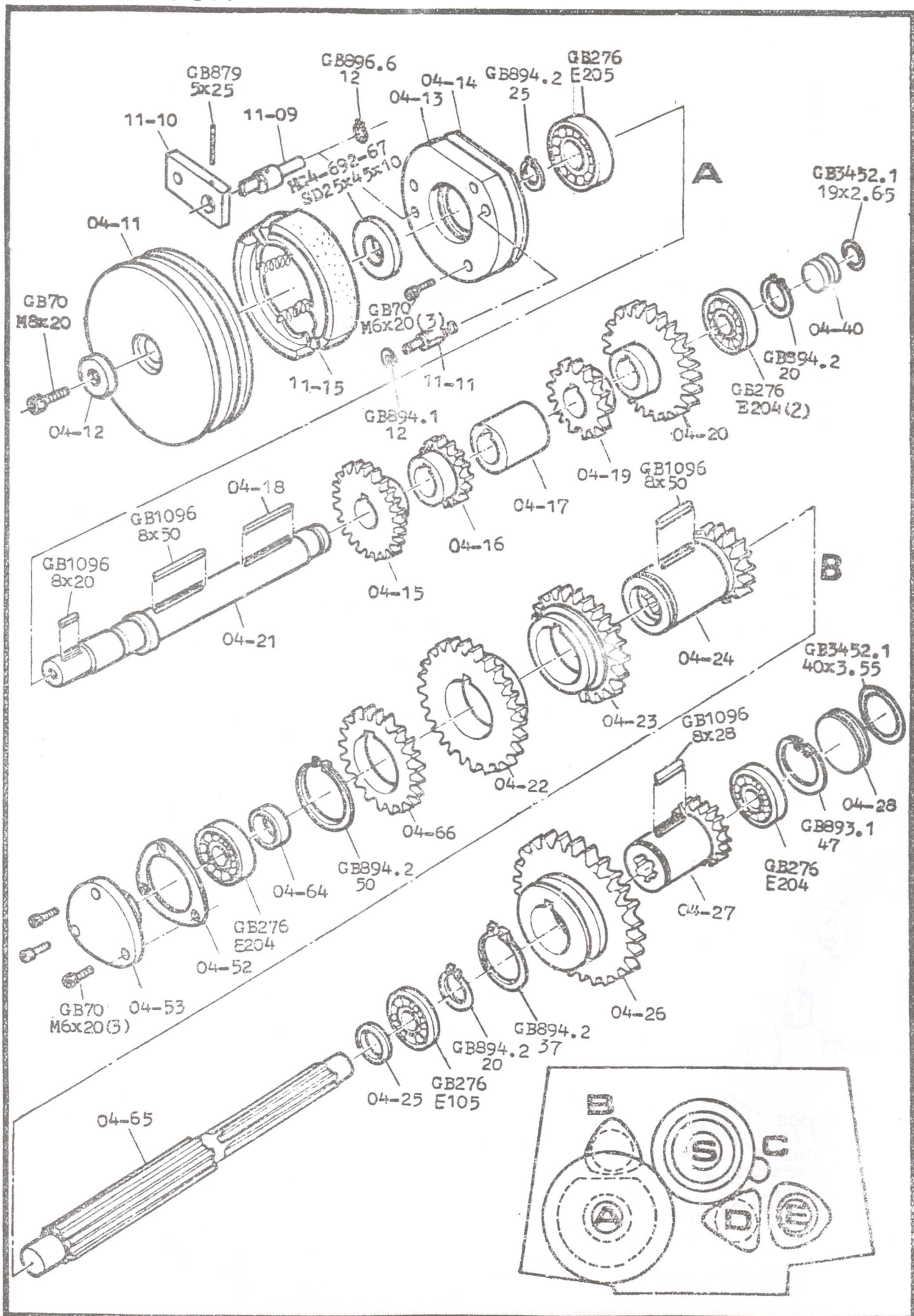
Ls4: Limit switch Forward precision. type 15GD—B.

Cs1: 2 Speed Motor switch.

HEADSTOCK



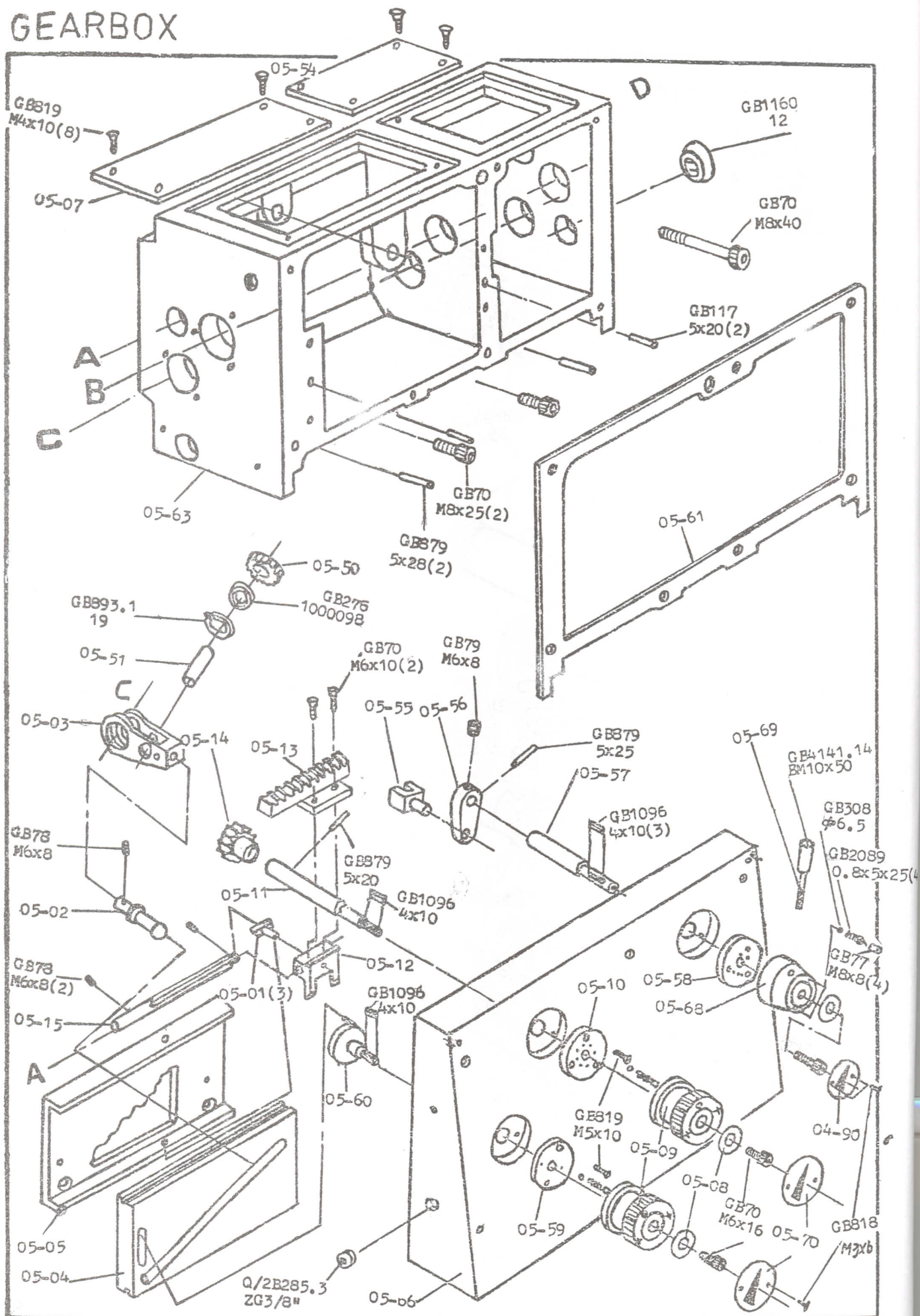
HEADSTOCK



This diagram illustrates the exploded view of a mechanical assembly, showing the relationship between various components. The parts are labeled with their respective part numbers and standards:

- 04-58**: Flange component.
- 04-60**: Washer or spacer.
- GB70 M5x14(2)**: Bolt.
- 04-59**: Gear component.
- GB70 M6x16(3)**: Bolt.
- 04-33**: Flange component.
- GB297 D7511**: Gear component.
- 04-85(3)**: Bolt.
- 04-32**: Gear component.
- 04-34**: Gear component.
- GB1096 8x56**: Shaft component.
- GB894.2 55**: Gear component.
- 04-31**: Main shaft component.
- 04-86(3)**: Bolt.
- GB2089 0.6x4x22(3)**: Pin component.
- GB70 M8x16(3)**: Bolt.
- 04-29**: Flange component.
- GB70 M6x25(3)**: Bolt.
- GB1096 5x16**: Shaft component.
- 04-30**: Flange component.
- GB78 M5x16**: Bolt.
- 04-37**: Flange component.
- GB3452.1 23.6x2.65**: Washer or spacer.
- 04-54**: Gear component.
- 04-55**: Gear component.
- GB1096 6x90**: Shaft component.
- 04-47**: Flange component.
- 04-46**: Gear component.
- 04-45**: Gear component.
- 04-44**: Gear component.
- 04-43**: Gear component.
- 04-42**: Gear component.
- 04-41**: Gear component.
- 04-40**: Gear component.
- 04-39**: Gear component.
- 04-38**: Gear component.
- 04-36**: Gear component.
- 04-35**: Gear component.
- 04-34**: Gear component.
- 04-33**: Gear component.
- 04-32**: Gear component.
- 04-31**: Main shaft component.
- 04-30**: Flange component.
- 04-29**: Flange component.
- 04-28**: Flange component.
- 04-27**: Flange component.
- 04-26**: Flange component.
- 04-25**: Flange component.
- 04-24**: Flange component.
- 04-23**: Flange component.
- 04-22**: Flange component.
- 04-21**: Flange component.
- 04-20**: Flange component.
- 04-19**: Flange component.
- 04-18**: Flange component.
- 04-17**: Flange component.
- 04-16**: Flange component.
- 04-15**: Flange component.
- 04-14**: Flange component.
- 04-13**: Flange component.
- 04-12**: Flange component.
- 04-11**: Flange component.
- 04-10**: Flange component.
- 04-09**: Flange component.
- 04-08**: Flange component.
- 04-07**: Flange component.
- 04-06**: Flange component.
- 04-05**: Flange component.
- 04-04**: Flange component.
- 04-03**: Flange component.
- 04-02**: Flange component.
- 04-01**: Flange component.

GEARBOX

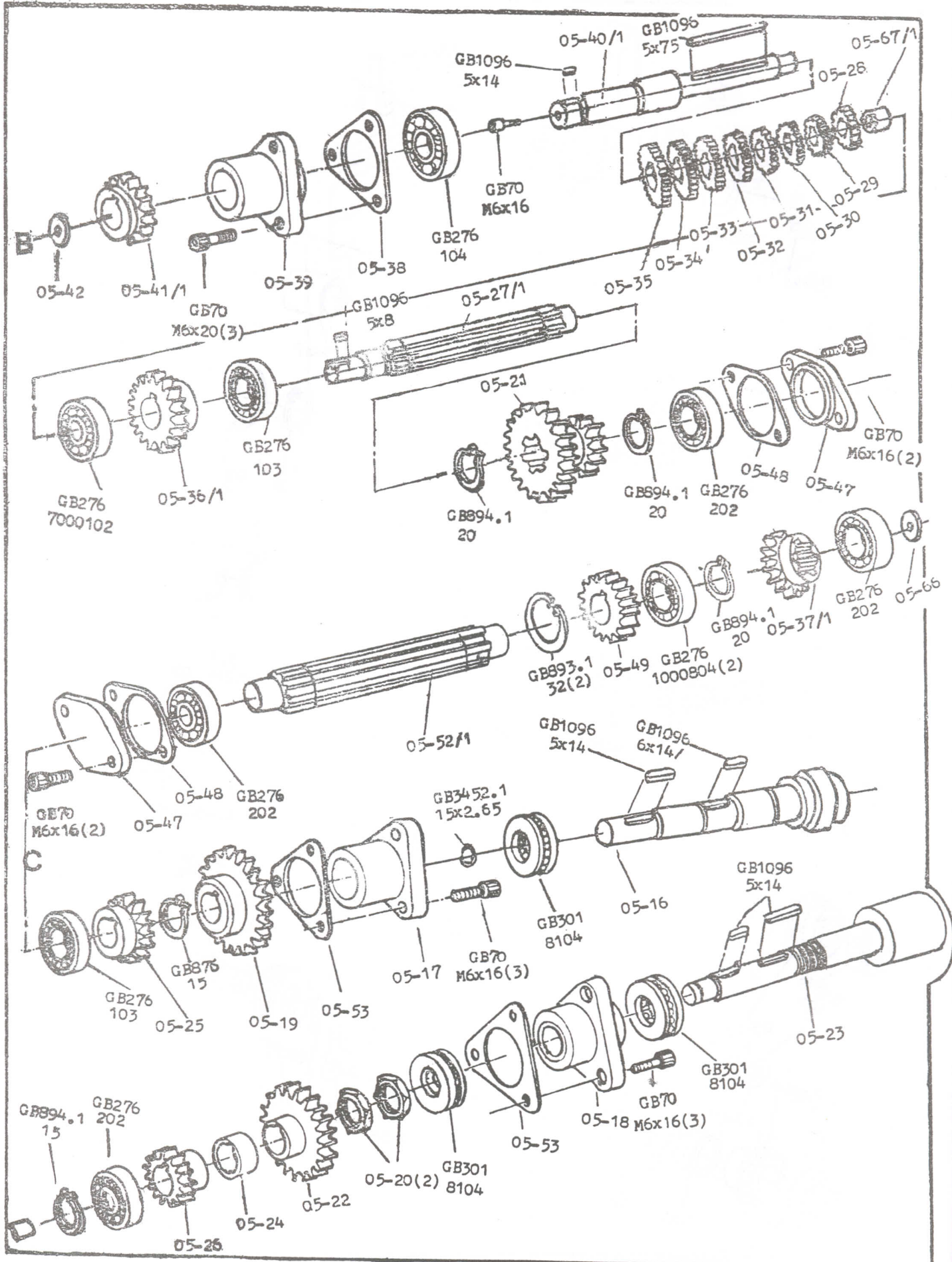


This diagram illustrates the exploded view of a mechanical assembly, showing the relationship between various components. The parts are labeled with their respective part numbers and standards:

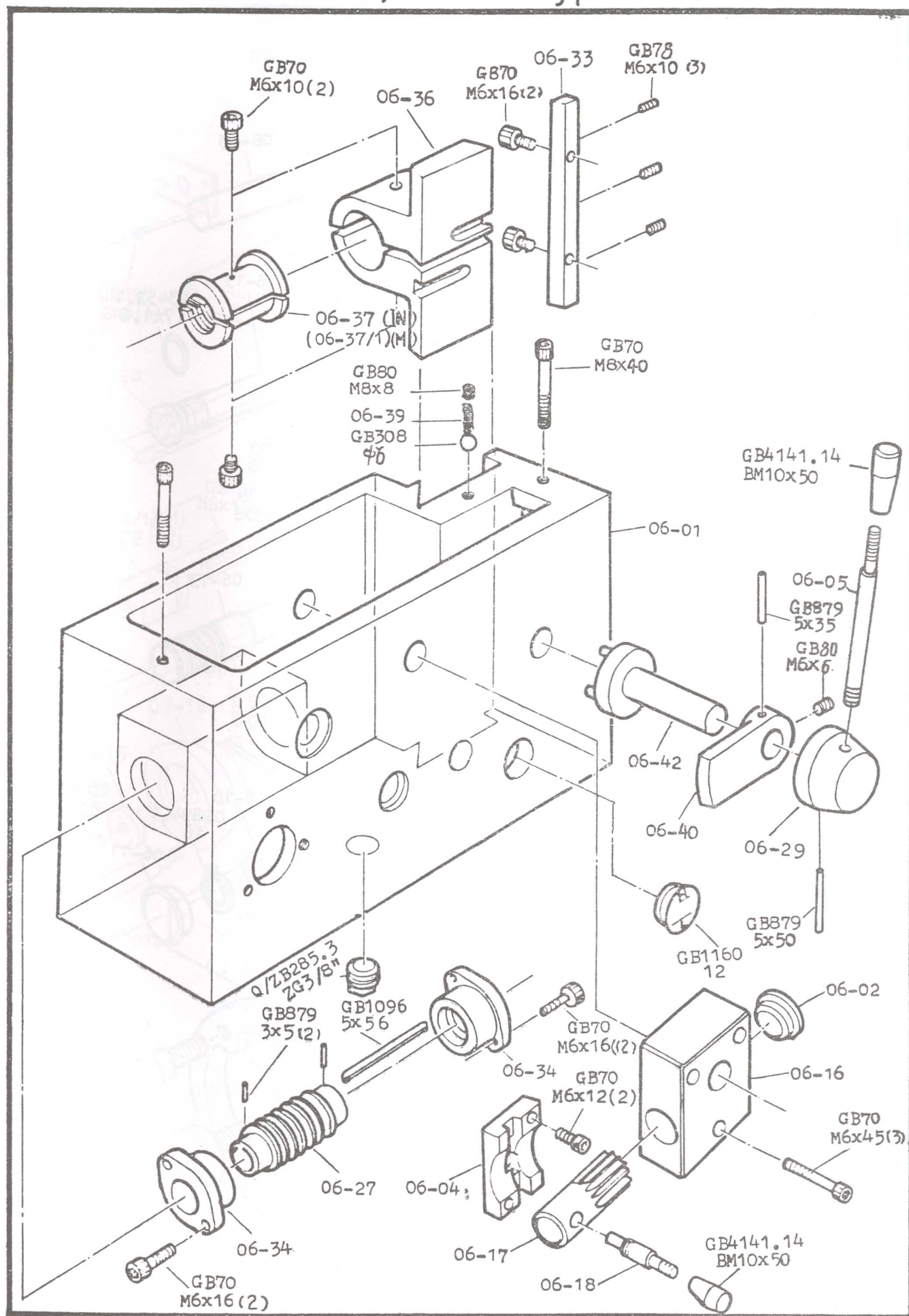
- 05-42**, **05-41**, **05-36**, **05-38**, **05-39**, **05-34**, **05-32**, **05-30**, **05-27**, **05-35**, **05-33**, **05-31**, **05-29**, **05-28**, **05-25**, **05-19**, **05-17**, **05-20(2)**, **05-24**, **05-26**
- GB1096 5x14**, **GB1096 5x75**, **GB1096 6x14**, **GB1096 5x14**
- GB70 M6x16**, **GB70 M6x20(3)**, **GB70 M6x16(2)**, **GB70 M6x16(3)**
- GB276 104**, **GB276 103**, **GB276 7000102**, **GB276 1000804(2)**, **GB276 202**, **GB276 103**, **GB276 202**, **GB276 15**, **GB276 202**
- GB894.1 20**, **GB894.1 32(2)**, **GB894.1 15**
- 05-40**, **05-21**, **05-67**, **05-48**, **05-47**, **05-49**, **05-52**, **05-16**, **05-23**
- GB301 8104**, **GB3452.1 15x2.65**

The diagram shows the assembly sequence from left to right, with components being added to the main shaft assembly. The main shaft assembly consists of a central shaft with various gears and bearings. The components are shown in their relative positions, indicating how they fit together.

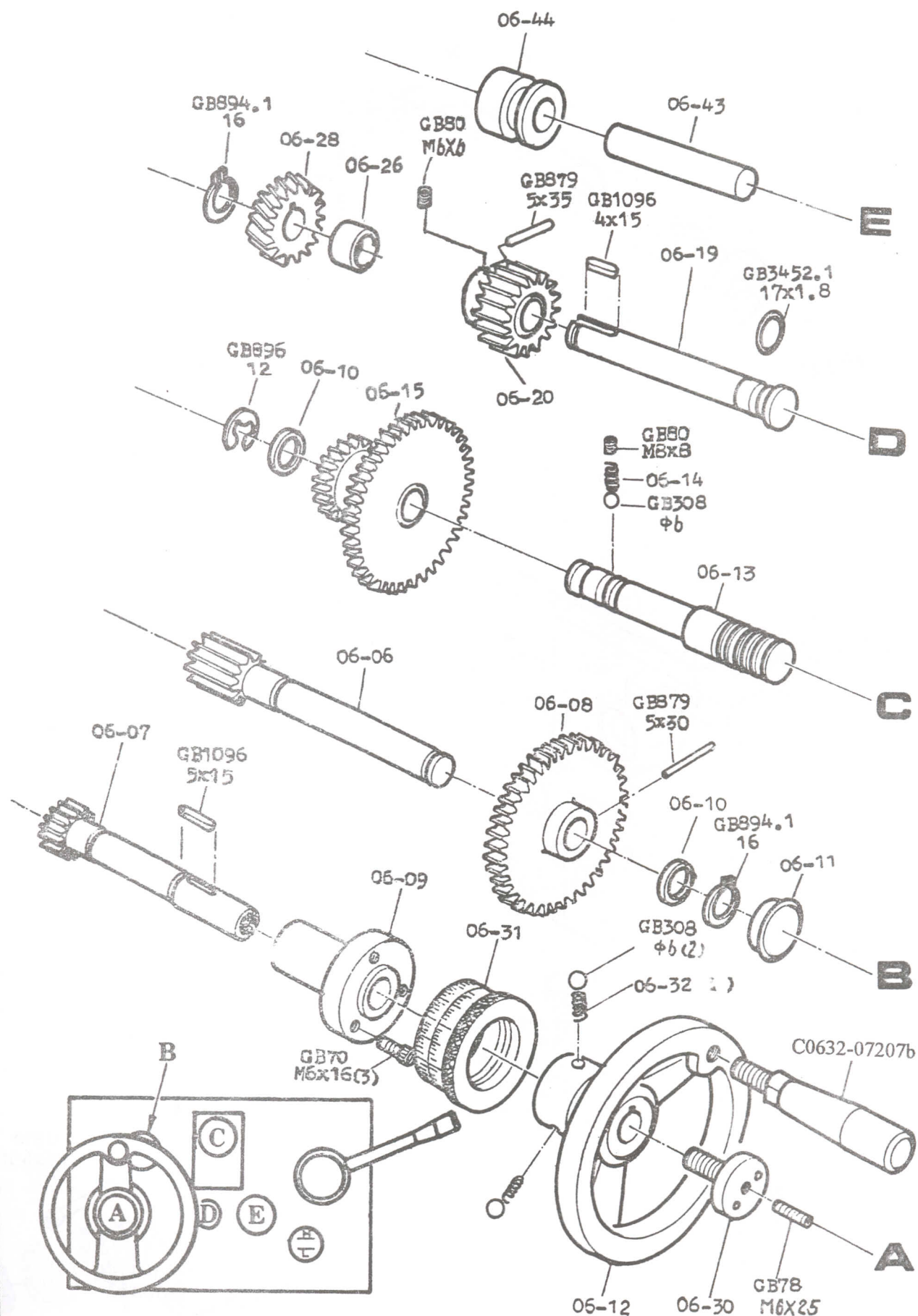
GEARBOX Metrit system



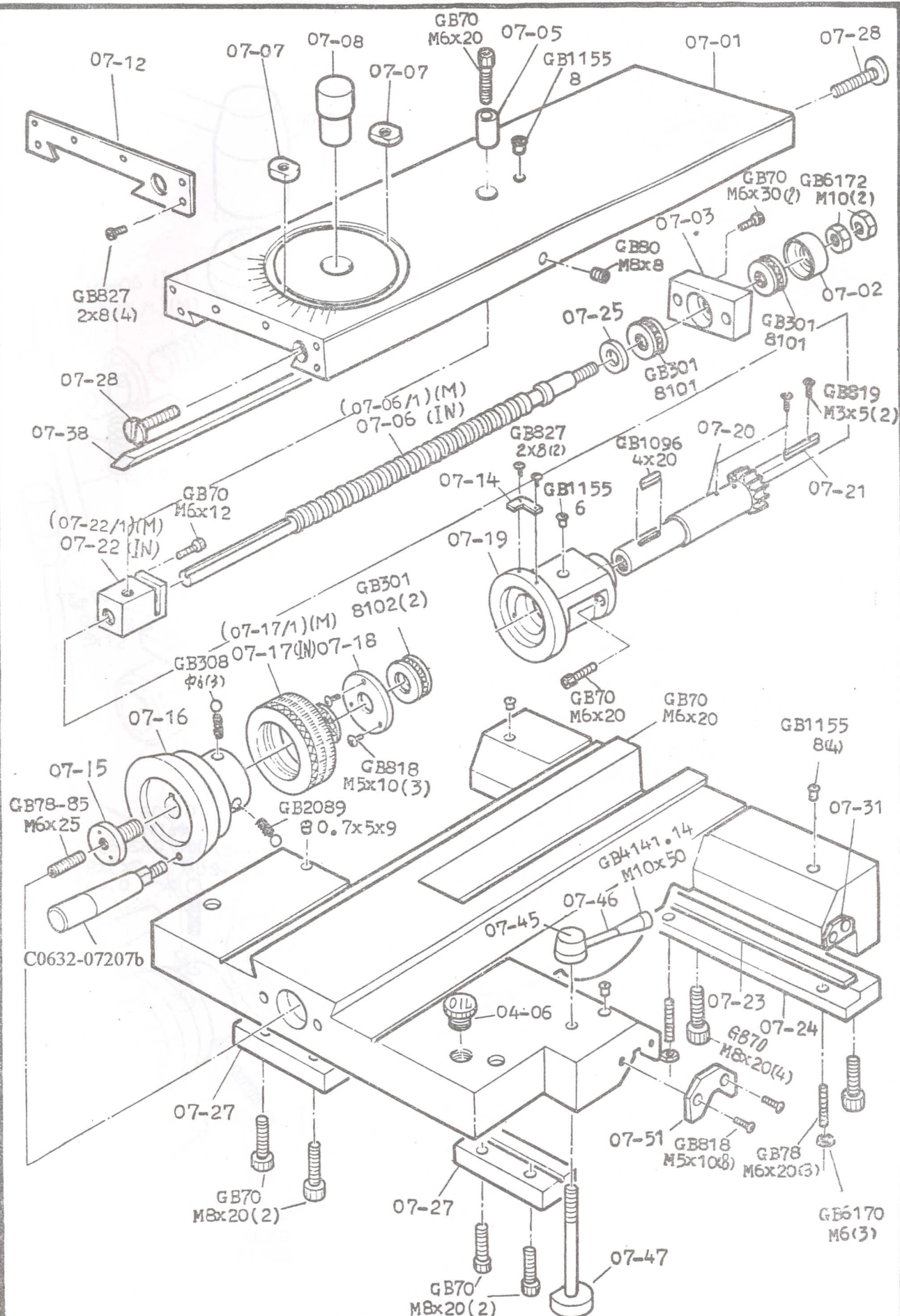
APRON Left hand, Lever type



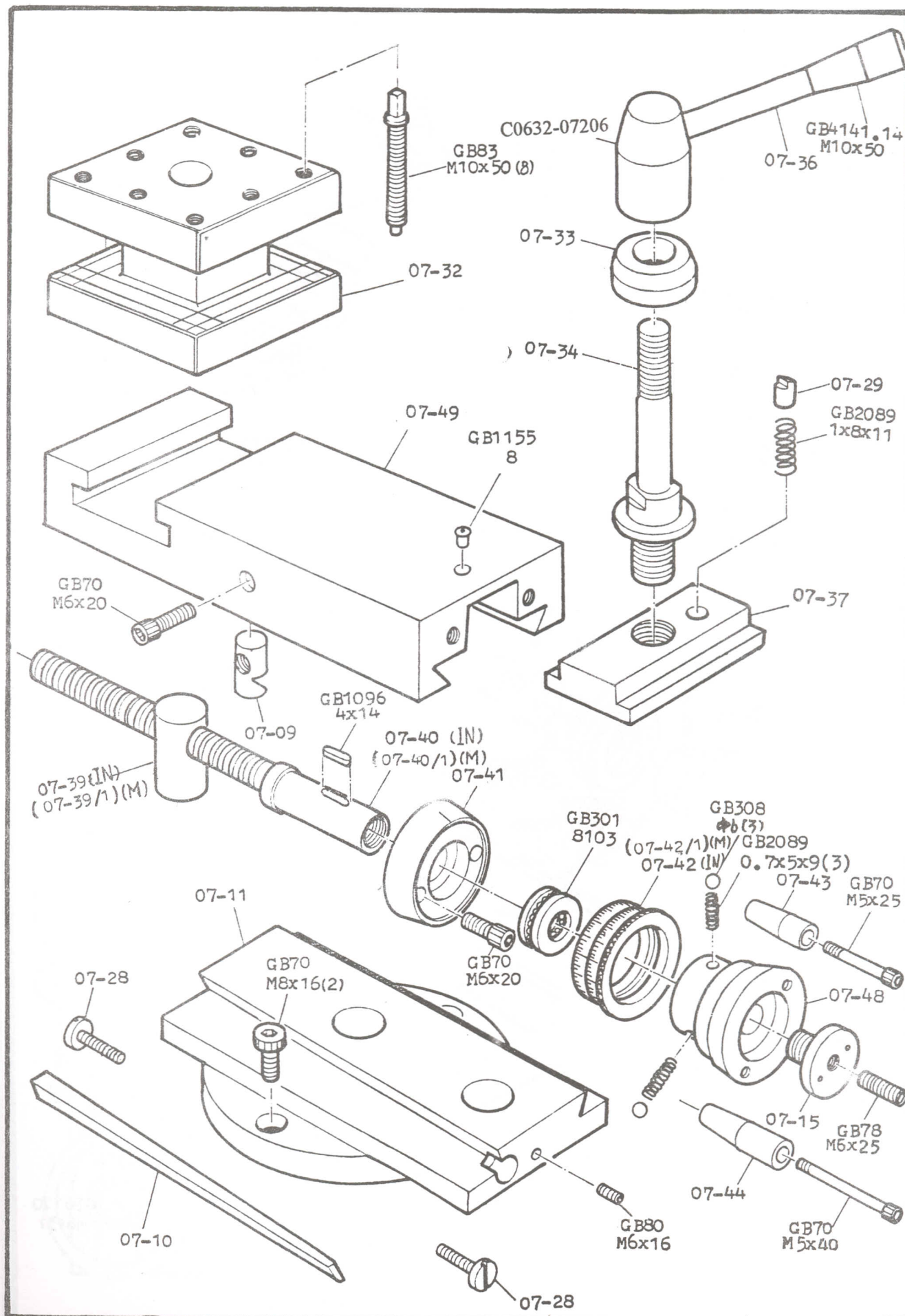
APRON Left hand, Lever type



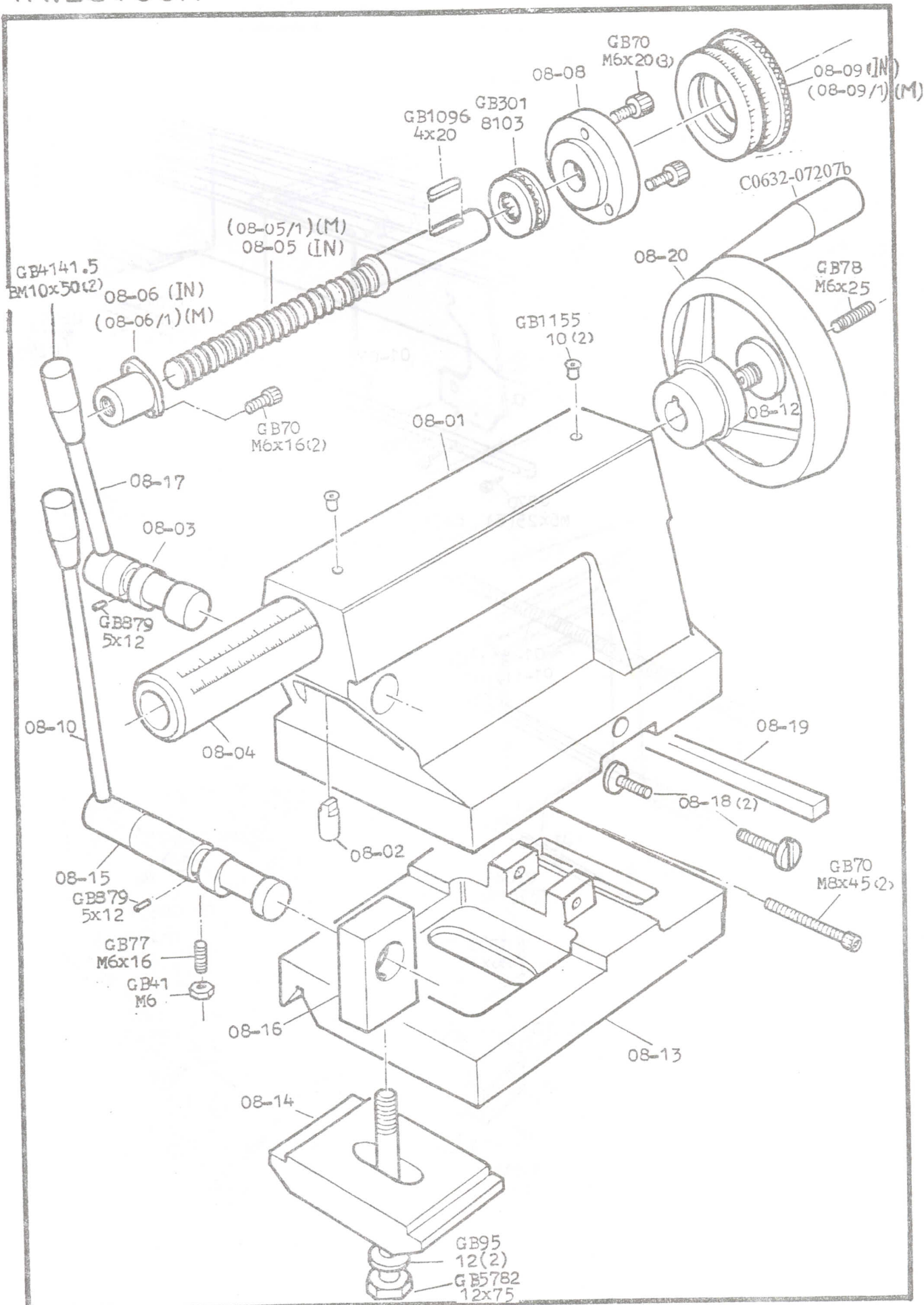
SADDLE & CROSS-SLIDE Telescopic type



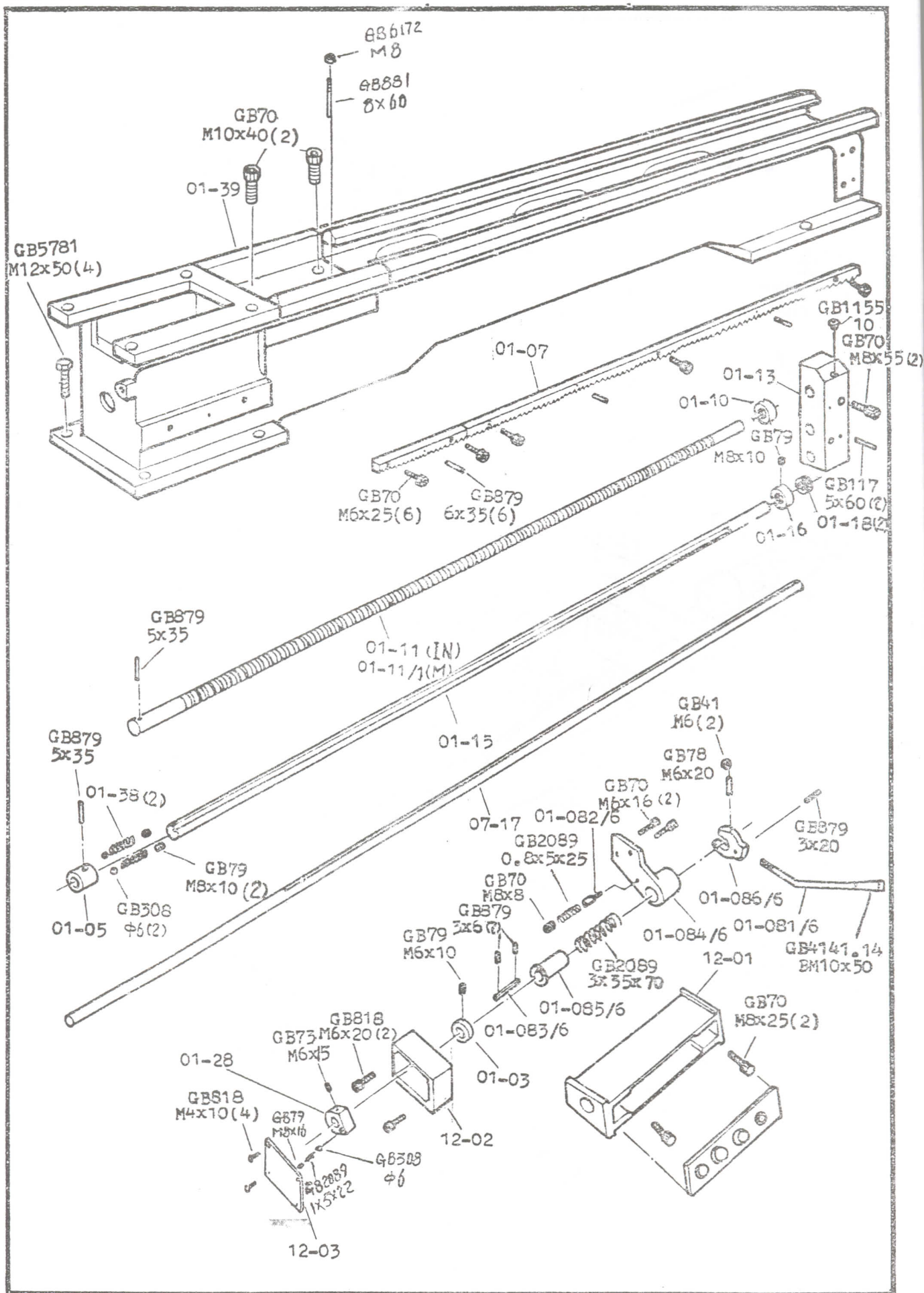
TOP SLIDE, TOOL POST



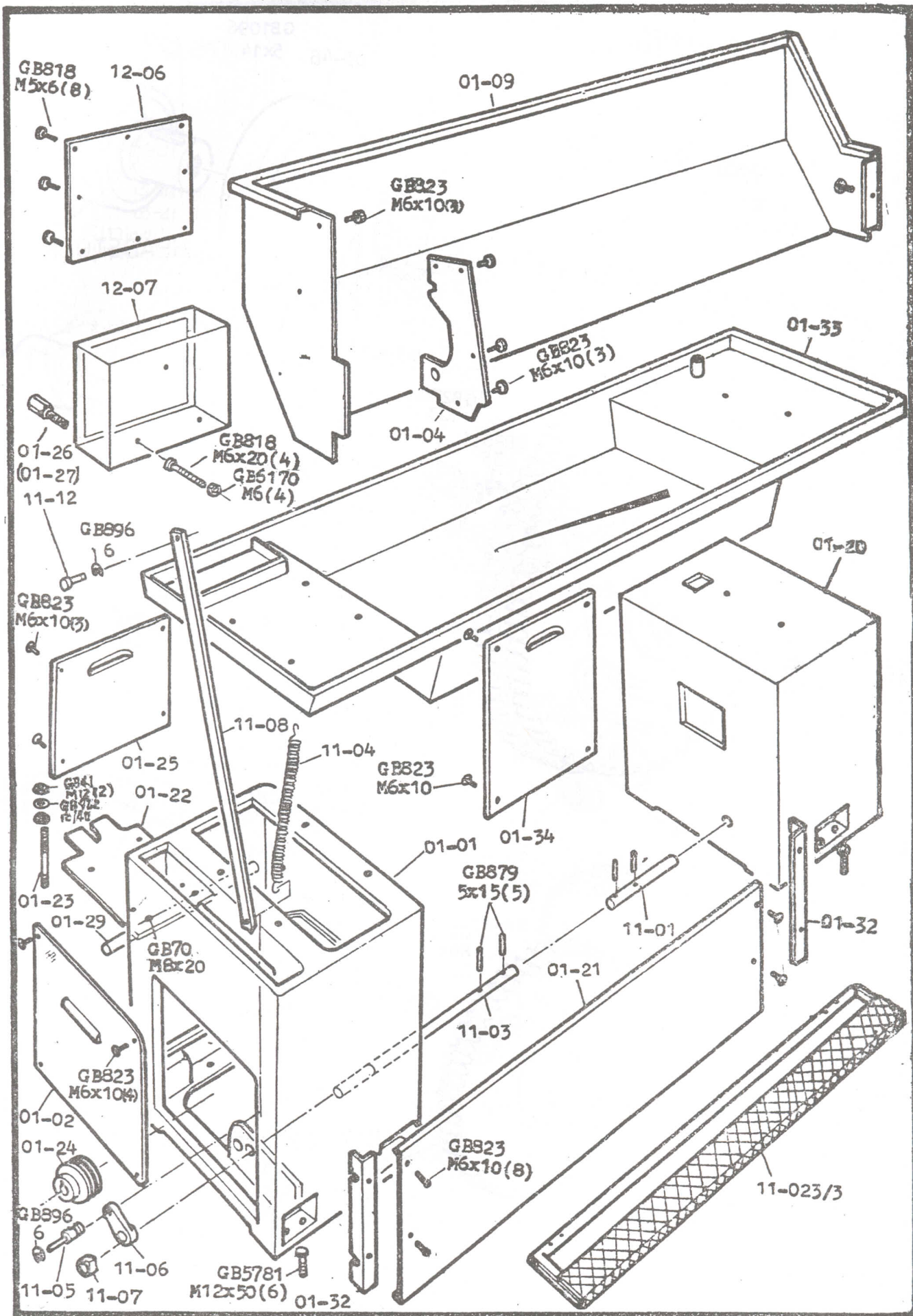
TAILSTOCK



BED & SHAFTS

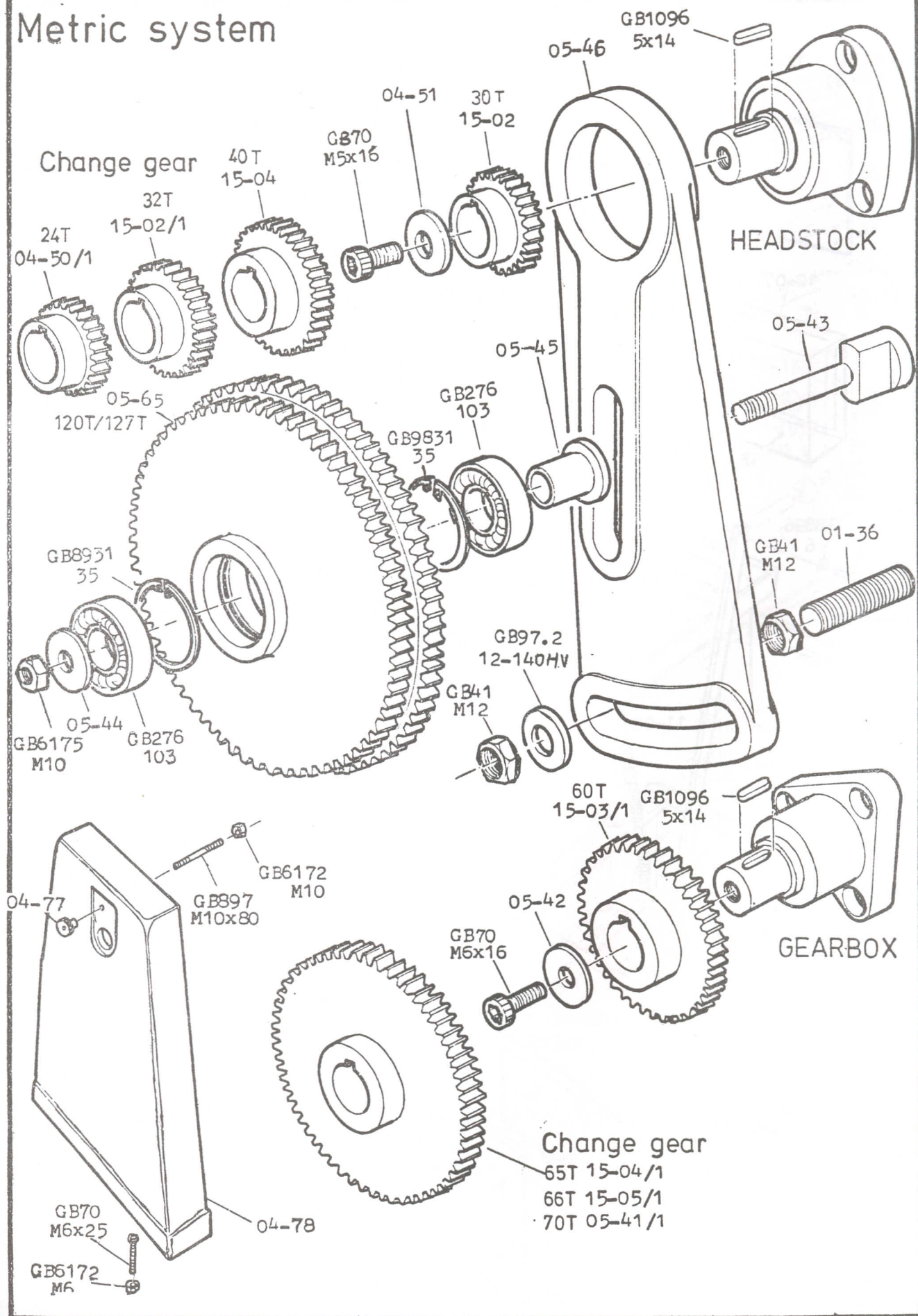


CABINET & PANELS



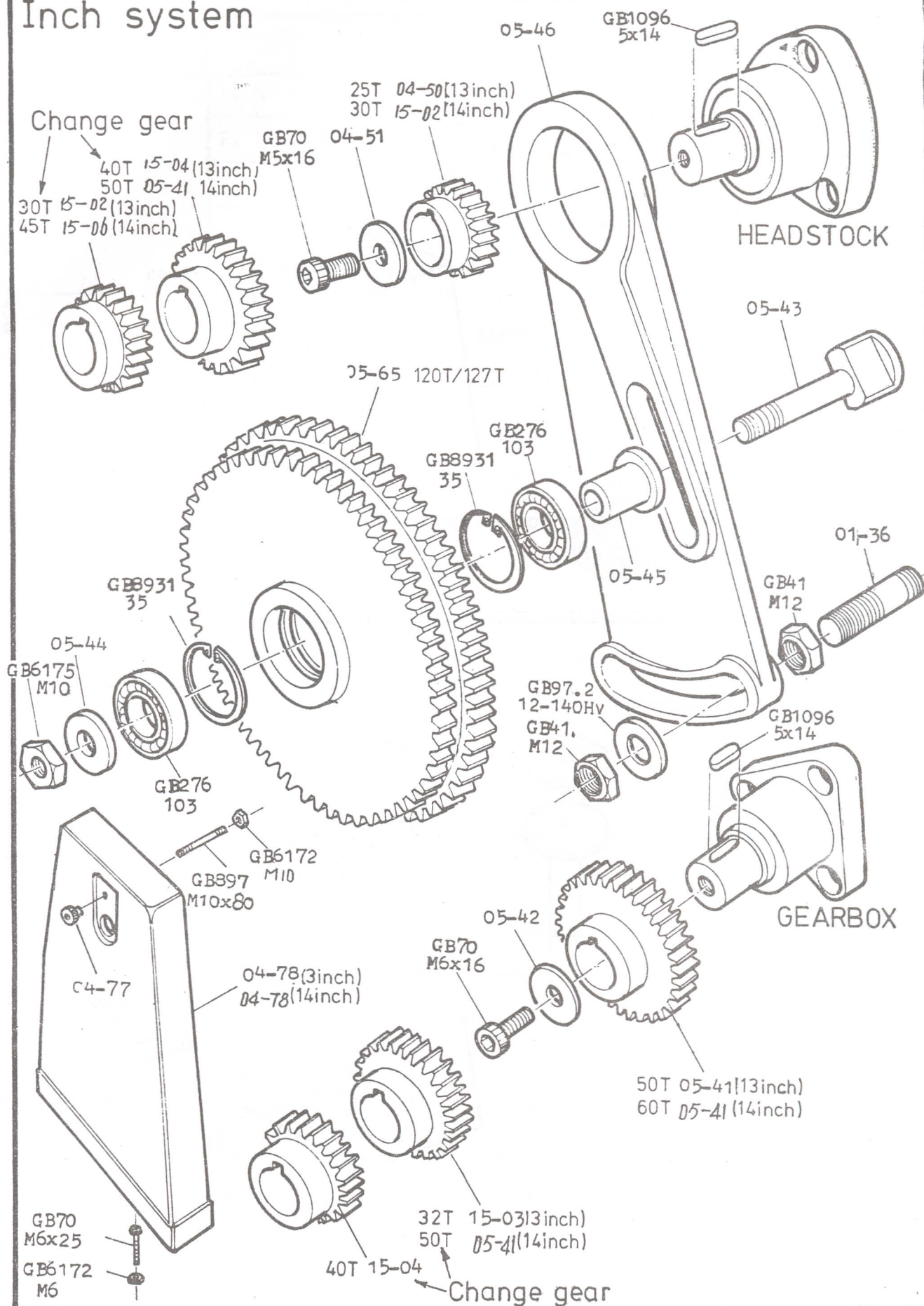
SWING FRAME, END GEARS & COVER

Metric system



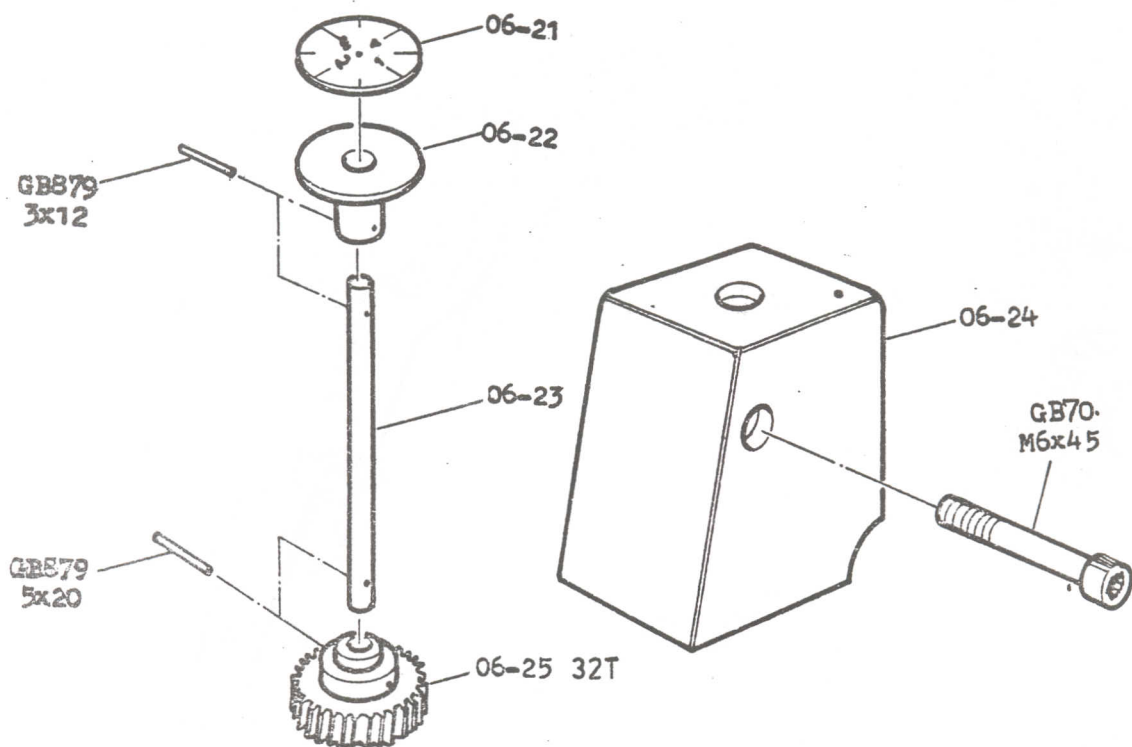
SWING FRAME, END GEARS & COVER

Inch system

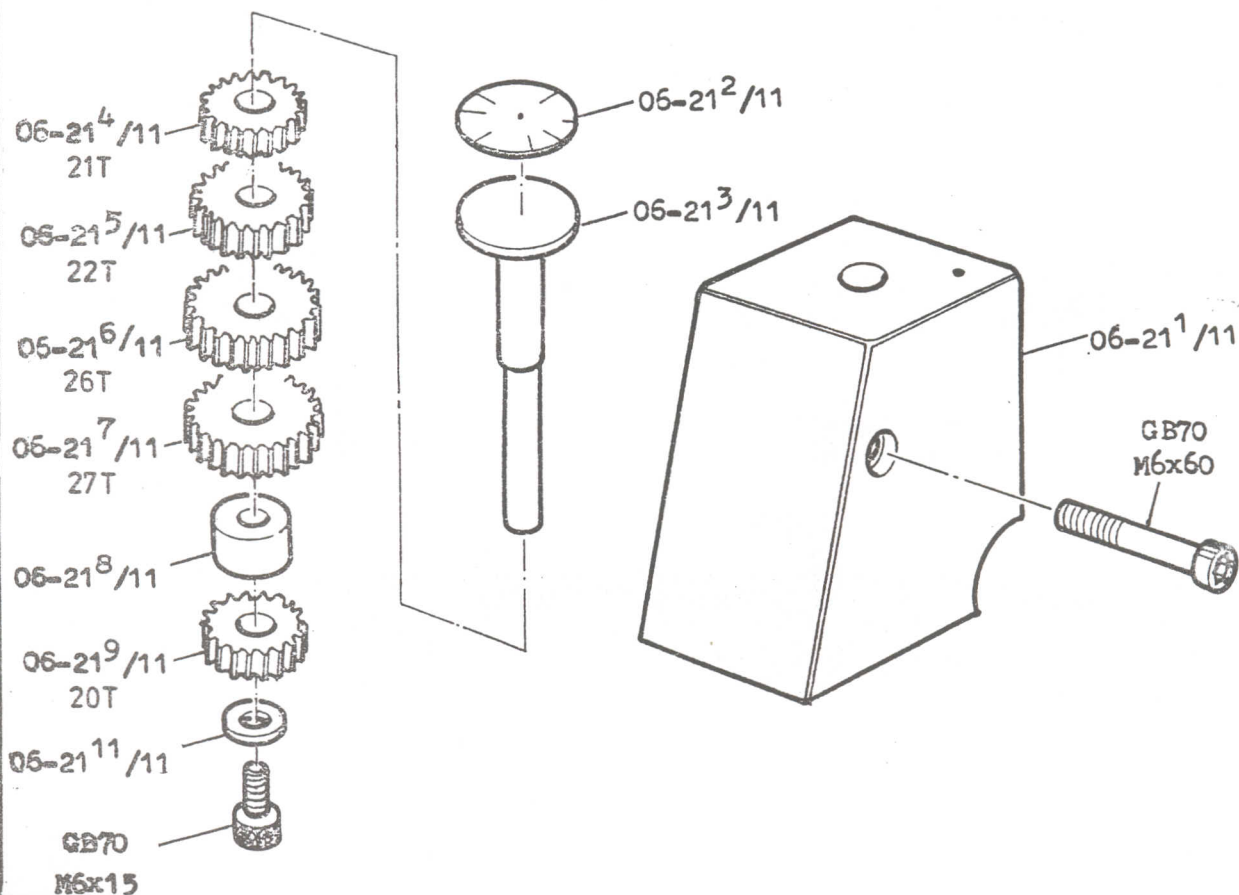


THREADING DIALS

INCH



MM



APPEARANCE INSPECTION SHEET

Machine Type :

Machine No:

Area	Inspection Item	Result		
		Good	fair	bad
Sand Casting	1. No sand hole.			
	2. No crack and discontinuity.			
	3. No deformation.			
	4. No sharp conner and edge.			
	5. Sands removed.			
Finished Surface	1. Flatness.			
	2. Smoothness.			
	3. No tool mark.			
	4. Chamfer.			
Connecting Surface	1. No gap.			
	2. No step.			
Fasteners	1. Bolts and screws.			
	2. Nuts.			
	3. Pins.			
	4. Keys.			
Assemblys	1. Gear mating.			
	2. Pulleys and belts.			
	3. Handles and levers.			
	4. Gages and indicators.			
	5. Switches.			
	6. Grommets.			
Painting	1. Smoothness.			
	2. Brightness.			
	3. No cracks.			
plating & Black finish	1. Smoothness.			
	2. Evenness.			
	3. No Peel-off.			

chief engineer:

— 46 —


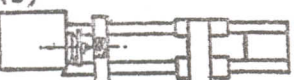
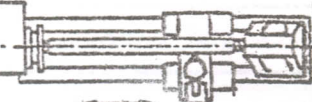
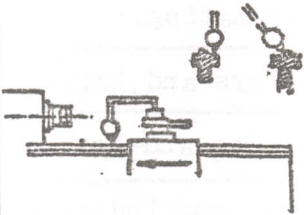


inspecting engineer:

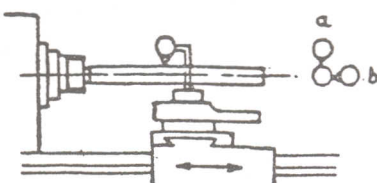
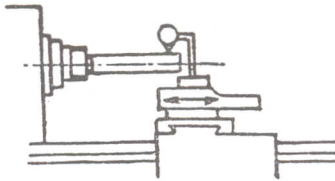
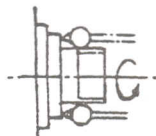
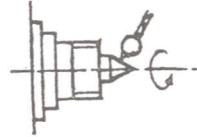
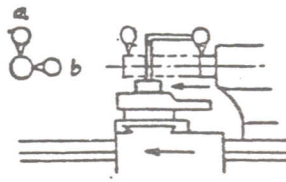
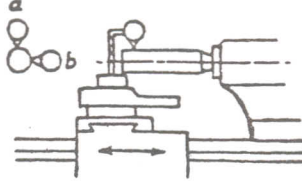
STATIC ACCURACY TEST

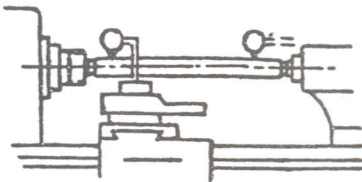
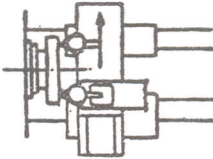
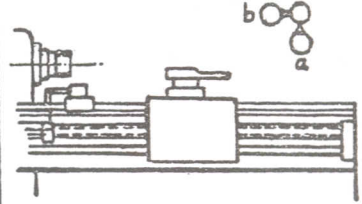
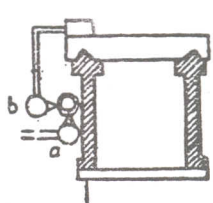
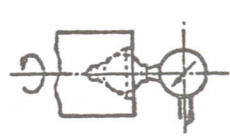

Machine Type :

Machine No:

Unit: mm

NO.	Inspection Item		Diagram of measuring method	Tolerance.	Inspection record
1.	Straightness of bed slide-ways.	a. Longitudinal direction (in vertical plane)	(a) 	0.02 protruding	0.015
		b. Transverse direction (in vertical plane)	(b) 	0.04/m	0.025
		c. Longitudinal direction (in horizontal plane)		0.01	0.006
2.	Parallelism of bed slideways			0.02	0.014
3.	Spindle nose runout			0.01	0.007
4.	Spindle taper hole runout			At fixed end of test bar : 0.01 At point of 300mm : 0.02	0.006 0.015

5.	Parallelism of centre line of main spindle to longitudinal motion of carriage	a. In vertical plane		0.01/300	0.06
		b. In horizontal plane		0.01/300	0.08
6.	Parallelism of centre line of main spindle to longitudinal motion of tool rest. (in vertical plane)		0.01/150	0.07	
7.	Runout of flange end face of spindle		0.015	0.012	
8.	Centre runout		0.015	0.01	
9.	Parallelism of longitudinal motion of carriage to centre line of tailstock.	a. In vertical plane		0.02/1500	0.04
		b. In horizontal plane		0.01/1500	0.06
10.	Parallelism of longitudinal motion of carriage to centre line of tailstock spindle hole.	a. In vertical plane.		0.02/300	0.05
		b. In horizontal plane		0.02/300	0.06

11.	Difference in centre height between headstock and tailstock.			0.02	0.015
12.	Squareness of motion of cross slide with centre line of main spindle.			0.02/300	0.016
13.	Parallelism centre line of lead screw end bearing to carriage slideways.	In vertical plane		0.10	0.06
		In horizontal plane		0.10	0.05
14.	Deviation in alignment of centre line of lead screw end bearing with centre line of half nut.	In vertical plane		0.15	0.10
		In horizontal plane		0.15	0.11
15.	Axial slip of lead screw.			0.01	0.006
16.	Accuracy of outside turning.	Roundness		0.01	0.008
		Cylindricity		0.02/300	0.007
17.	Accuracy of face turning.			0.02/300	0.015

chief engineer: C.M.X-49- inspecting engineer: L.A.S