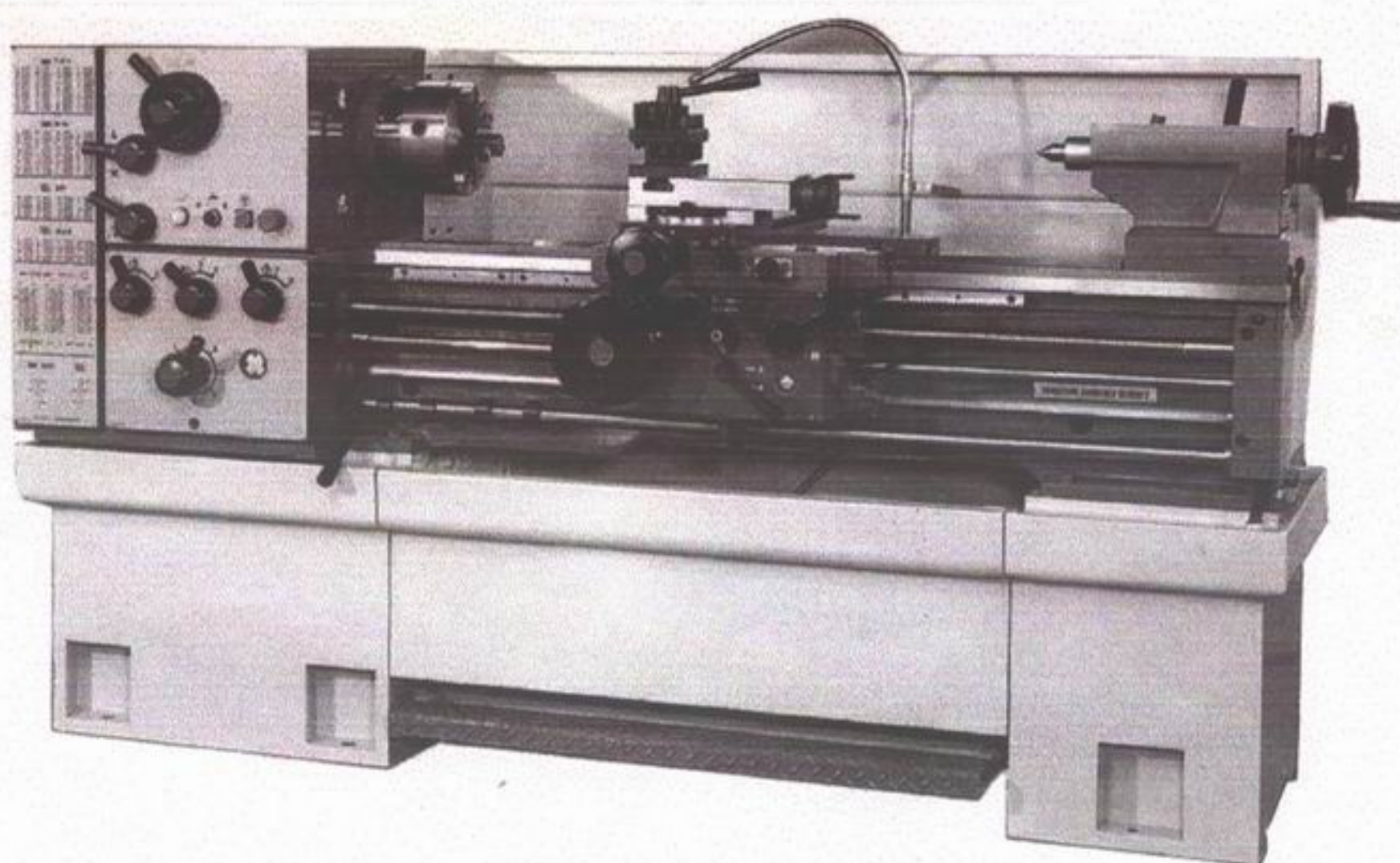


PRECISION CENTER LATHE

INSTRUCTION MANUAL

AND PARTS LIST



MODEL: 1540A(380x1000), 1560A(380x1500)

MODEL: 1740A(430x1000), 1760A(430x1500)

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SPECIFICATION AND ACCESSORIES

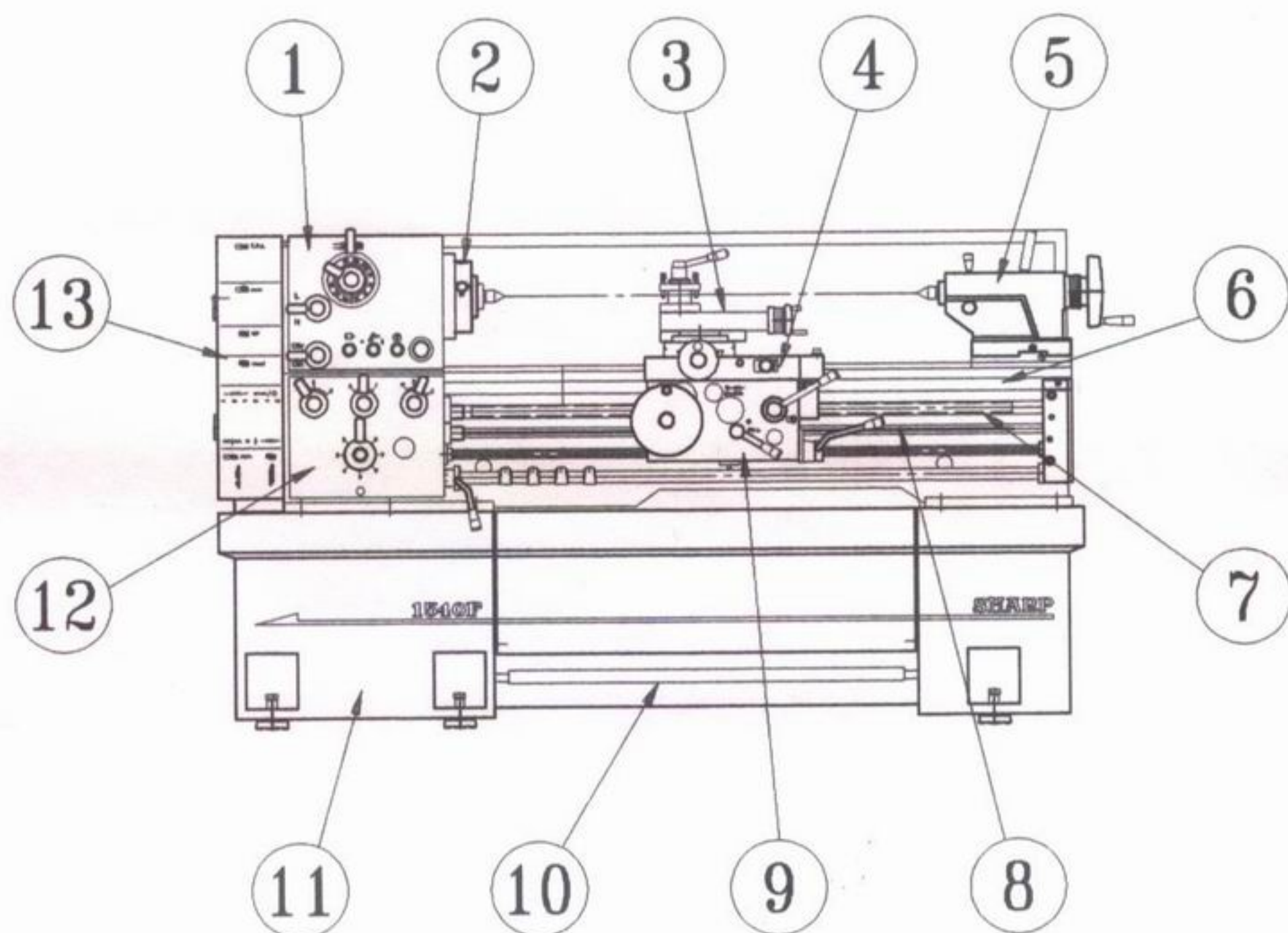
BRIEF SPECIFICATION

BRIEF SPECIFICATION				
MODEL	1540A/1540AV	1560A/1560AV	1740A/1740AV	1760A/1760AV
NOMINAL SIZE				
Swing over Bed	380mm 15in		434mm 17in	
Swing over Cross Slide	225mm 8-7/8in		277mm 10-7/8in	
Height of Center	191mm 7-1/2in		217mm 8-1/2in	
Distance Between Centers	1000mm 40in	1500mm 60in	1000mm 40in	1500mm 60in
BED				
Width of Bedways	300mm 12in		300mm 12in	
Swing over Gap	580mm 23in		630mm 25in	
Length of gap	250mm 10in		250mm 10in	
SPINDLE				
Spindle nose mounting	D1-6" CAMLOCK			
Spindle bore	58mm 2-1/4in			
Taper of spindle bore	M.T. No.#6			
Number of spindle speeds	12(Variable speed change : 3steps for AV type)			
Range of spindle speeds	20 - 2000 R.P.M. (Variable speed change:10-2000R.P.M. for AV type)			
CARRIAGE				
Total travel of cross slide	210mm.		8-1/4 in	
Total travel of top slide	130mm.		5-1/4 in	
Max. size cutting tool	25mm.x 25mm.		1in x 1in	
TAIL STOCK				
Total travel of tailstock barrel	125mm.		5 in	
Taper in tailstock barrel	M.T No. #4			
Diameter of barrel	Dia. 58mm.		Dia. 2-1/4 in	
THREADS				
Lead screw diameter & pitch	Dia. 32mm. pitch 6mm		Dia. 1-1/4" 4 T.P.I.	
Number of inch threads	48			
Range of inch threads	2 - 72 TPI			
Number of metric pitches	48			
Range of metric pitches	0.2 - 14 mm			
Number of Diametral pitches	24			
Range of Diametral pitches	8.-.60 D.P.			
Number of Module pitches	24			
Range of Module pitches	0.2 - 3.5 MOD.			
FEEDS				
Range of longitudinal feeds	0.04-1.00mm./rev.		0.0015-0.04in./rev.	
Range of cross feeds	0.02-0.50mm./rev.		0.0075-0.02in./rev.	
MOTOR				
Main spindle motor	3.75KW. 5 HP		Electrical Brake	
Coolant pump motor	0.09KW.		1/8 HP	
Machine net weight	1400 Kgs	1600 Kgs	1500 Kgs	1700 Kgs

We reserve the right to modify and improve our products.

SPECIFICATION AND ACCESSORIES

GENERAL LAYOUT OF LATHE



1.Headstock

2.Spindle

3.Topslide

4.Saddle and cross-slide

5.Tailstock

6.Bedway

7.Leadscrew

8. Feed-road

9. Apron

10.Footbrake

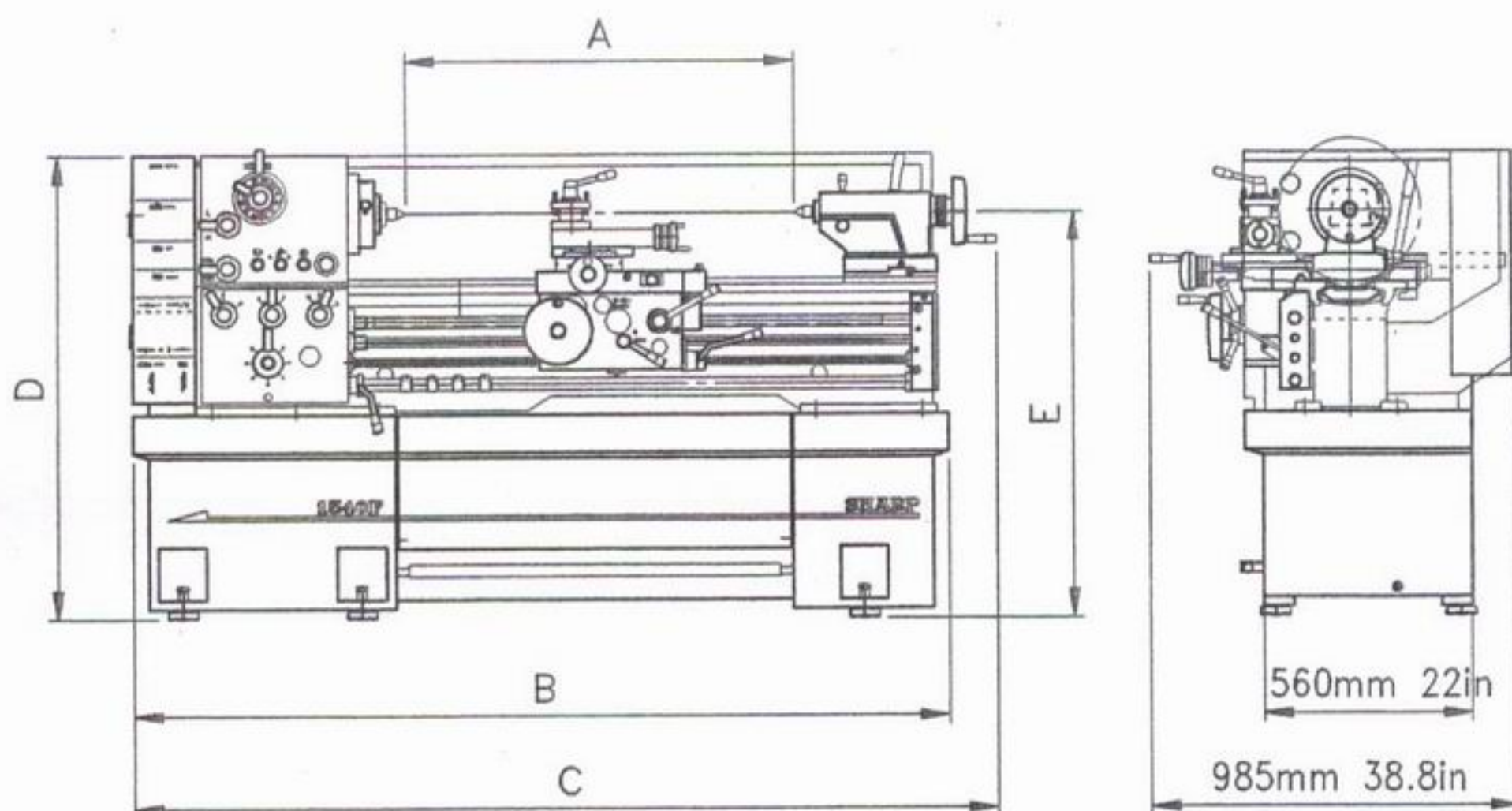
11.Stand

12.Gearbox

13.Endcover (gear train)

SPECIFICATION AND ACCESSORIES

MEASUREMENT



MODEL	A	B	C	D	E
1540	1000mm 40in	2170mm 85in	2300mm 90.5in	1240mm 48.8in	1080mm 42.5in
1560	1500mm 60in	2680mm 105.5in	2810mm 110.6in	1240mm 48.8in	1080mm 42.5in
1740	1000mm 40in	2170mm 85in	2300mm 90.5in	1265mm 49.8in	1105mm 43.5in
1760	1500mm 60in	2680mm 105.5in	2810mm 110.6in	1265mm 49.8in	1105mm 43.5in

SPECIFICATION AND ACCESSORIES

STANDARD ACCESSORIES:

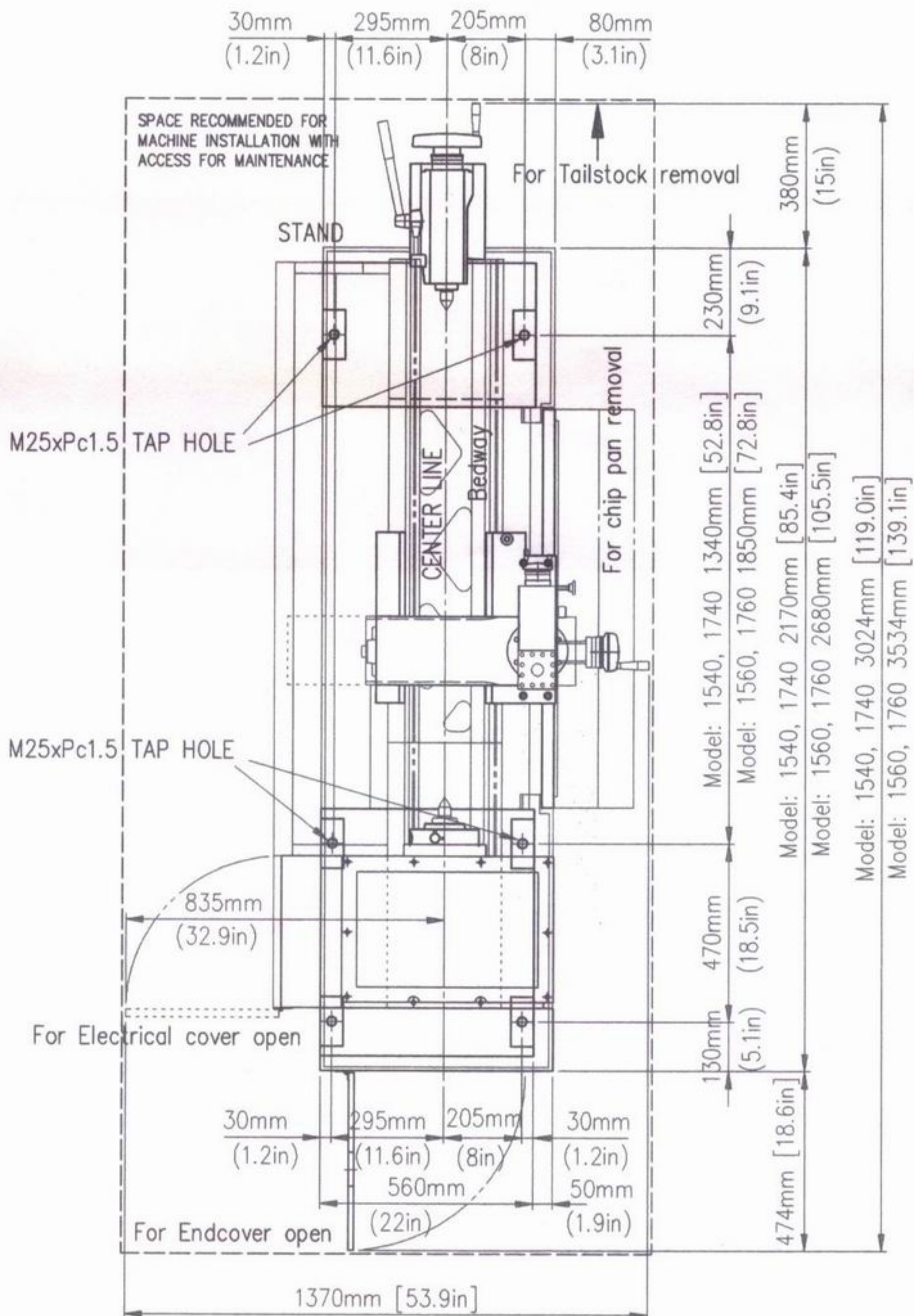
- * Back plate for chuck
- * Coolant system
- * 4-way toolpost
- * Threading dial indicator
- * 4-position auto carriage feed stop
- * Main motor 5HP 4P (7-1/2HP or 10HP is optional)
- * Tool box
- * Center sleeve
- * Two dead centers
- * Camlock spindle wrench
- * Oil gun (piston oiler)
- * Screw driver
- * Spanner (double-ended wrench)
- * Hexagonal wrench
- * Optional manual

OPTIONAL ACCESSORIES:

- * 3-jaw scroll chuck 9inch, 10inch, 12inch
- * 4-jaw independent chuck 12inch, 14inch, 16inch
- * Face plate 16inch, 20inch
- * Steady rest
- * Follow rest
- * Splash guard
- * Telescopic taper attachmet
- * Quick change toolpost
- * Chuck guard
- * Live center (MT. No. 5)
- * Drill chuck W/arbor
- * Work lamp (quartz halogen lamp)

SPECIFICATION AND ACCESSORIES

FOUNDATION PLAN



INSTALLATION

CLEANING

Before operation any controls, remove the anticorrosion coating from all slideways, and the endgear train, using white spirit or Kerosene.

DO NOT USE CELLULOSE SOLVENTS FOR CLEANING AS THEY WILL DAMAGE THE PAINT FINISH.

Oil all bright machined surfaces immediately after cleaning using machine oil or slideway lubricant, use heavy oil or grease on the endgear.

LIFTING

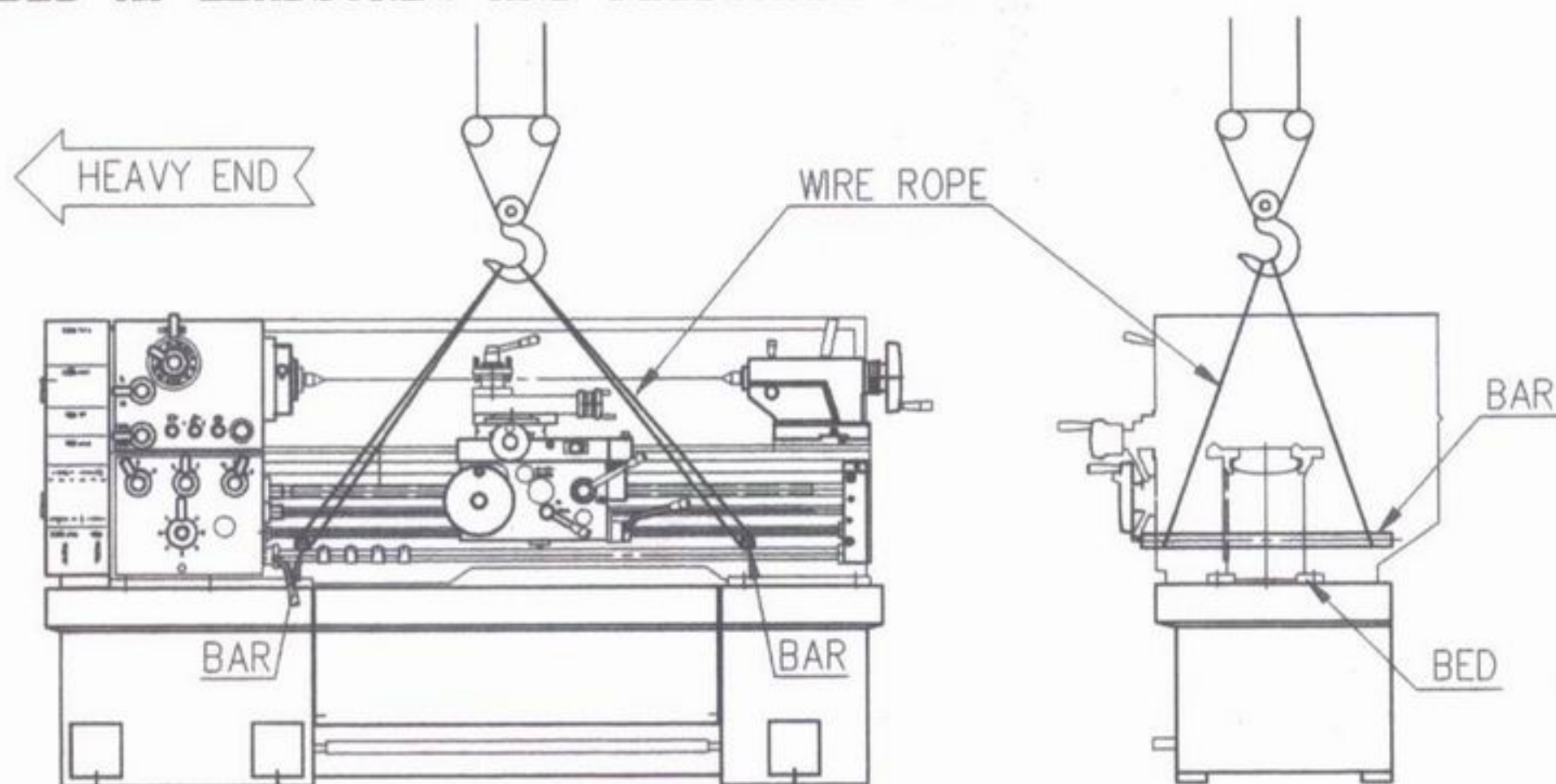
Move and lift the machine by using two 35mm(1-3/8") Diameter and 650mm(25") Long iron bar. Go through the hole of Bed and lift unpacking machine with a wire rope, which have enough capacity against gross weight of this machine.

Raising and lowering the machine should be careful. Do not touch the leadscrew, feedroad spindle or other handwheel.

Be careful not to bump the machinery against the floor.

In order to have the machinery properly balanced before hoisting, it is advisable to move Tailstock and Carriage to the extreme right-hand position; clamp both assemblies firmly in place so they will not accidentally slide to left when lifting.

IMPORTANT: DO NOT USE SLINGS AROUND OUTSIDE OF BED AS LEADSCREW AND FEEDSHAFT MAY BE BENT.



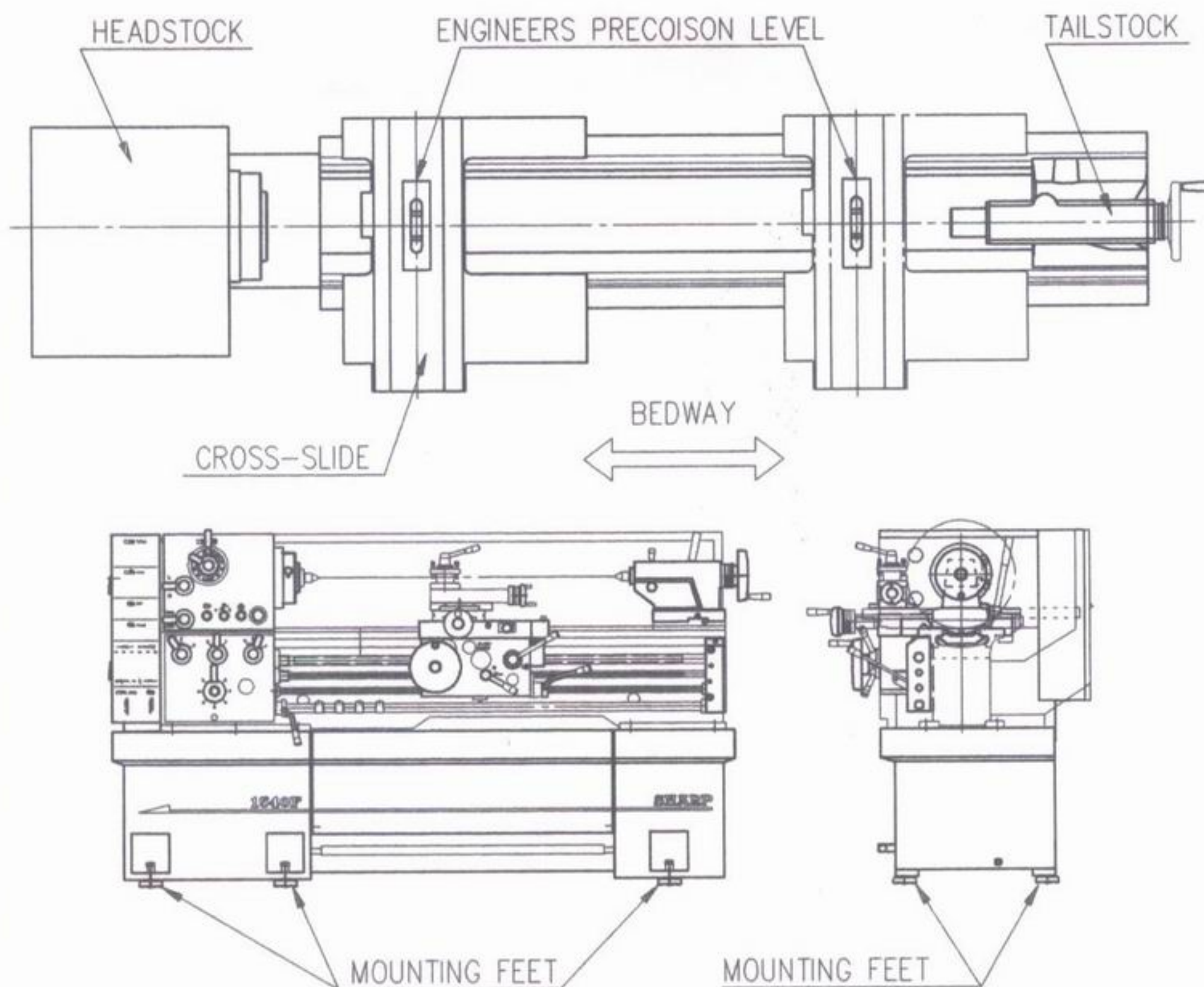
INSTALLATION

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.

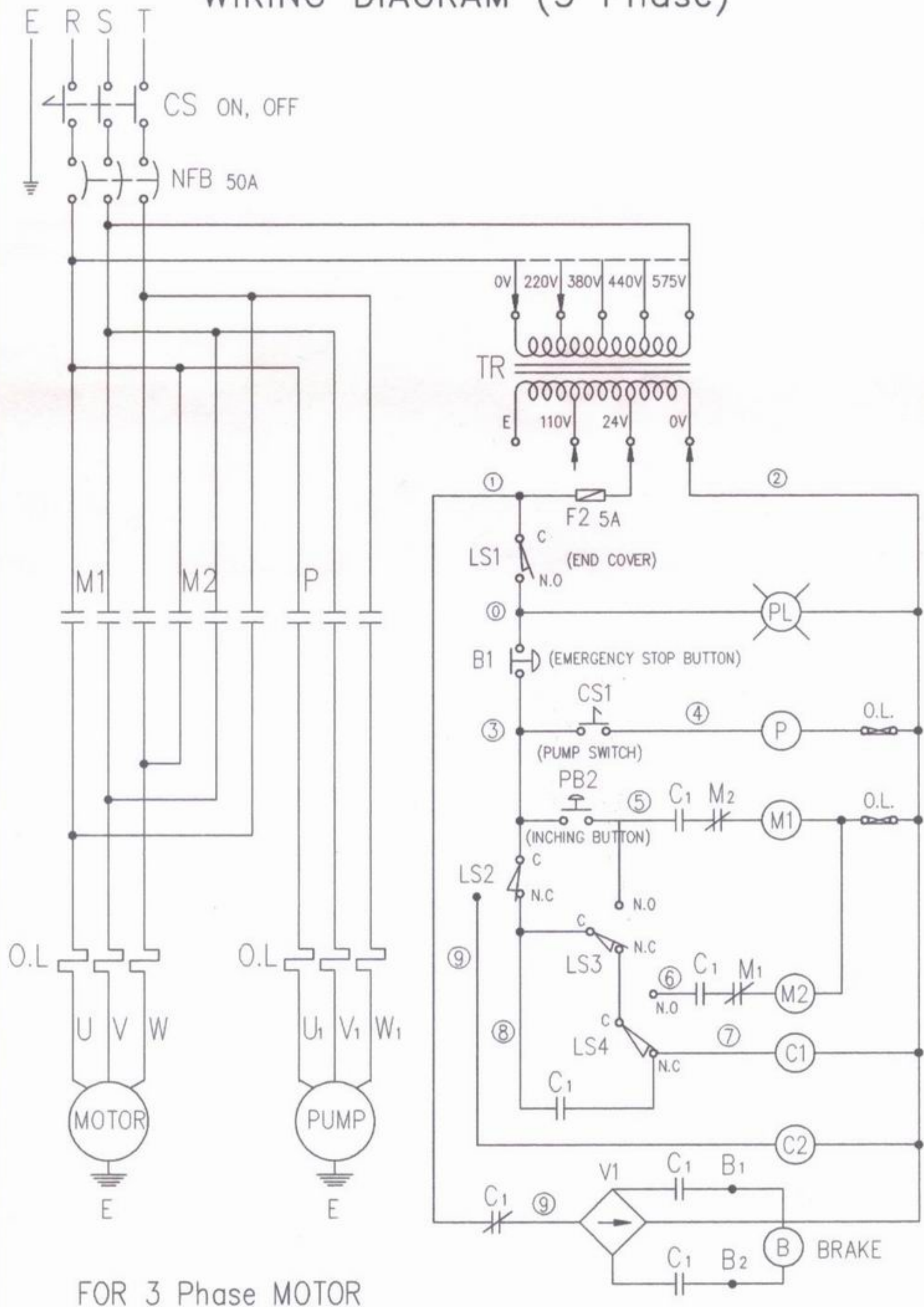
Free-standing: Position lathe on foundation and adjust each of the six mounting feet to take equal share of the load. Then using an engineers precision level on the bedways adjust the feet to level up machine. Periodically check bed level to ensure continued lathe accuracy.

Fixed installation: Position lathe over six bolts (20 mm. diam.) 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.



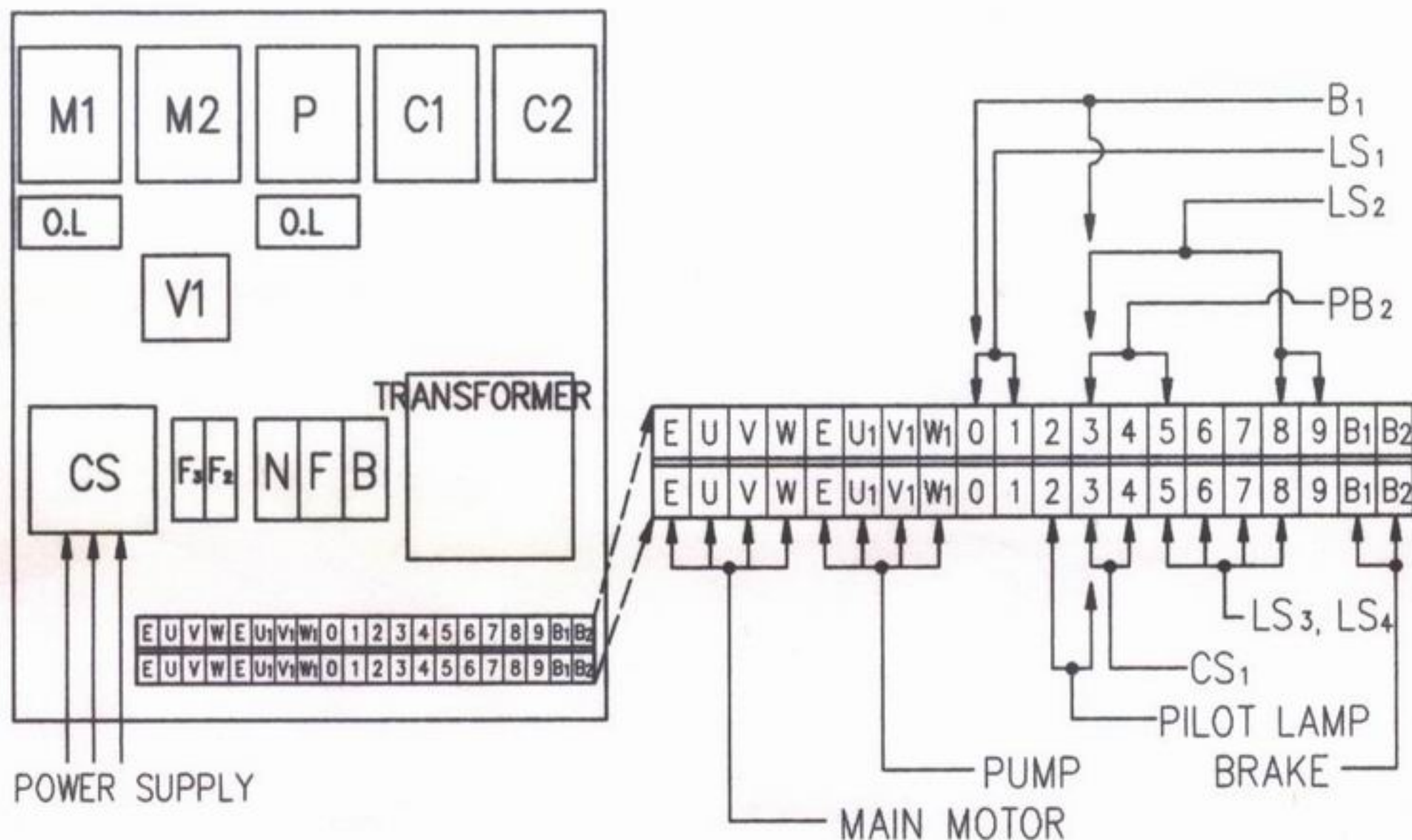
INSTALLATION

WIRING DIAGRAM (3 Phase)



INSTALLATION

ELECTRICAL BOX (3 Phase)



B: For spindle brake coil.

CS: Power switch.

CS1: Coolant pump motor selecting switch.

TR: Control circuit Transformer.

M1: For main motor Reverse AC magnetic contactor coil.

M2: For main motor Forward AC magnetic contactor coil.

P: For pump motor AC magnetic contactor coil.

C1: AC magnetic contactor for Brake.

C2: AC magnetic contactor for Brake supply.

O.L: Thermal overload relay.

NFB: Nu-Fuse Breaker.

F2: Fuse 5A.

PB1: Emergency stop mushroom button (REST).

PB2: Inching button.

LS1: Limist switch for End cover safety switch.

LS2: Limist switch for Foot brake.

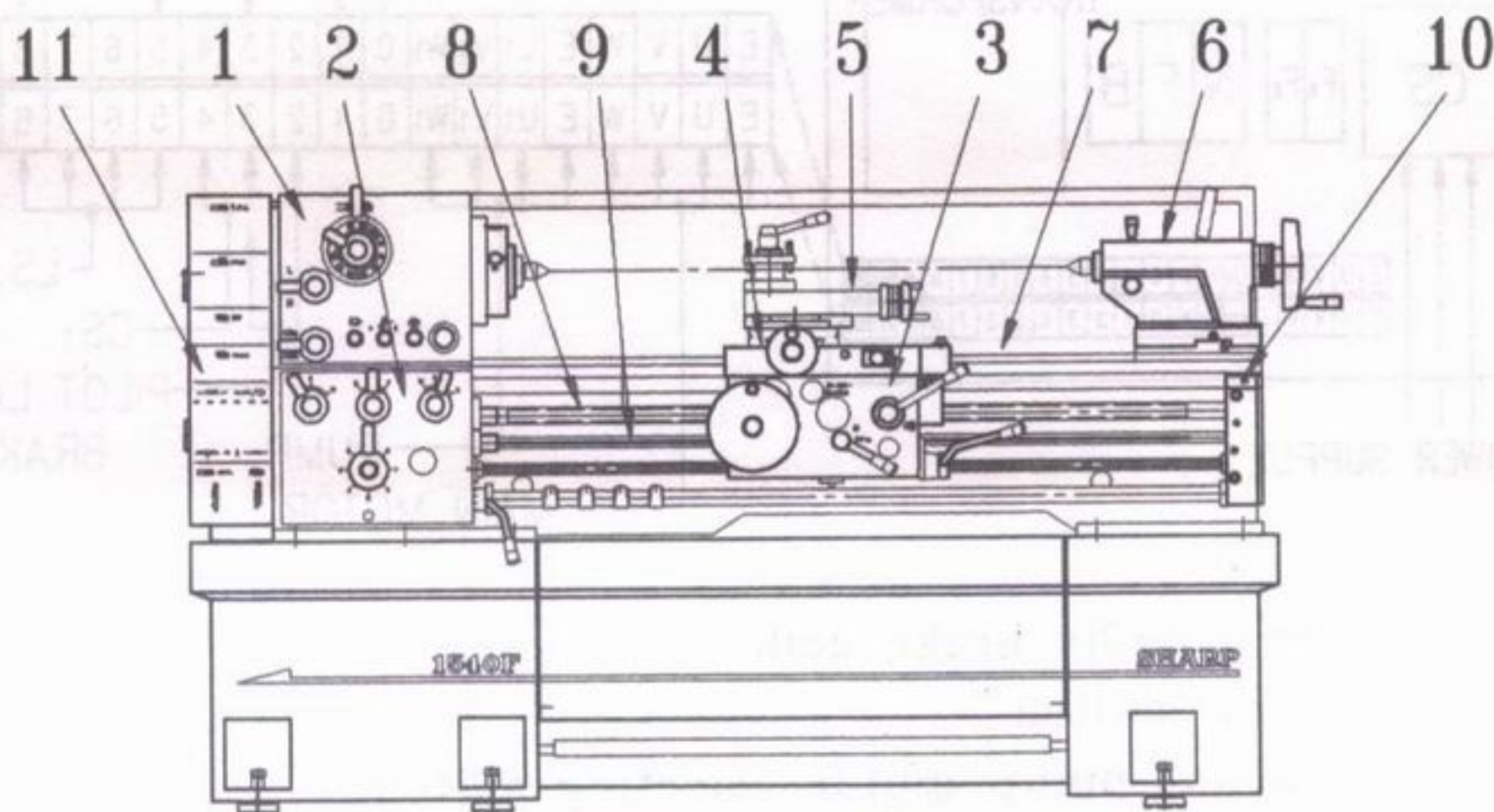
LS3: Limist switch for main motor Reverse.

LS4: Limist switch for main motor Forward.

INSTALLATION

LUBRICATION

It is most important to lubricate lathe before operating! The operator should be responsible for the proper lubrication of the lathe. The grade and quality of lubrication are given in the following OIL LUBRICATION CHART. The instructions on this chart are essential to the proper oiling of the internal of the lathe. Oil levels should be strictly observed, for it is of primary importance for proper operation and long life that the oil bath for the headstock feed gearbox and apron which always be completely filled. To keep the machine properly lubricated, follow the instructions given on the below chart.



No.	LUBRICATION POINT	VISCOSITY S.U.S. 100F	OIL RECOMMENDED	OIL EXCHANGE / OR REPLENISHMENT
1	Headstock	160	SHELL(TELLUS)25	Three time a year
2	Feed gearbox	320	SHELL(TONNA)33	Three time a year
3	Apron	320	SHELL(TONNA)33	Keep the oil up to the oil window
4	Cross slide screw	320	SHELL(TONNA)33	Once a day
5	Compound slide	320	SHELL(TONNA)33	Once a day
6	Tailstock	320	SHELL(TONNA)33	Once a day
7	Bedways	320	SHELL(TONNA)33	Once a day
8	Leadscrew	320	SHELL(TONNA)33	Once a day
9	Feed rod	320	SHELL(TONNA)33	Once a day
10	Bracket	320	SHELL(TONNA)33	Once a day
11	Change gears	320	SHELL(TONNA)33	Once a day

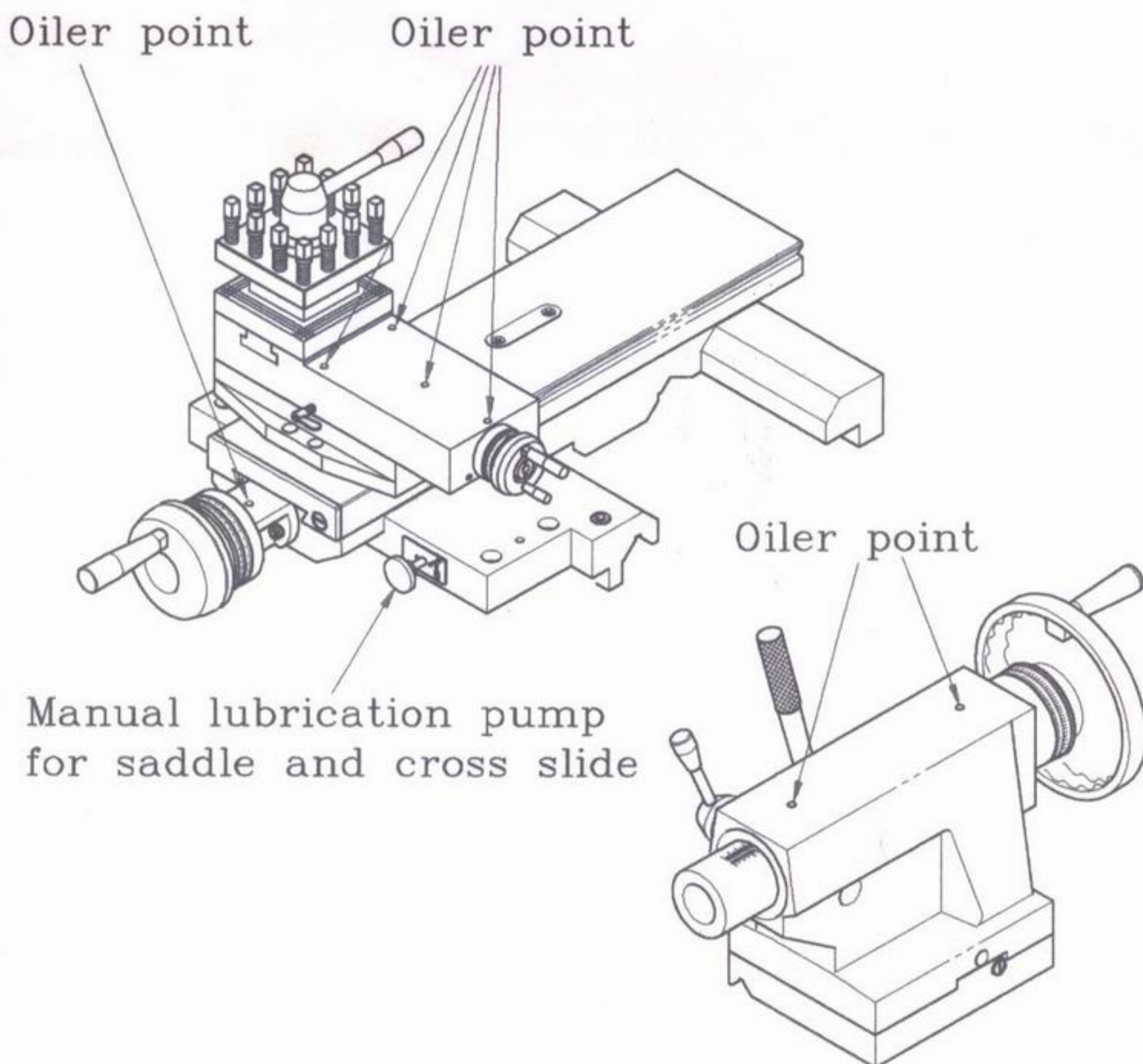
INSTALLATION

LUBRICATION (Part 2)

In addition to pump-fed lubrication, oiler points are provided for for the saddle, cross-slide, cross-slide nut and using a standard pump-type can with light machine oil or way lubricant.

On the tailstock, tail end of leadscrew oiler points are provide for daily attention from a standard oil can.

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



INSTALLATION

CHUCKS AND CHUCK MOUNTING

When mounting chucks or faceplate, first, ensure that spindle and chuck tapers are scrupulously clean and that all cams lock in the correct positions, see Fig. 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 slot lining up with the locking screw hole (see Fig).

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.

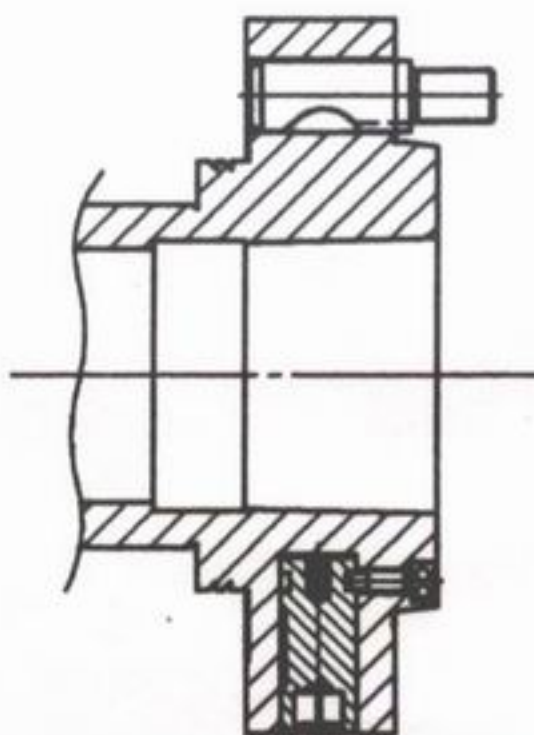
If any of the cams do not tighten fully within these limit marks, remove the chuck or faceplate and re-adjust the stud as indicated in the illustration. Fit and tighten the locking screw (B) at each stud before remounting the chuck for work.

This will assist subsequent remounting.

DO NOT INTERCHANGE CHUCKS OR FACEPLATES BETWEEN LATHES WITHOUT CHECKING FOR CORRECT CAM LOCKING BEFOREHAND.

IMPORTANT: Take careful note of speed limitation when using faceplate; 10 inch faceplates should not be run at speeds greater than 1000 rev/min. and 12" faceplate at not more than 770 rev/min.

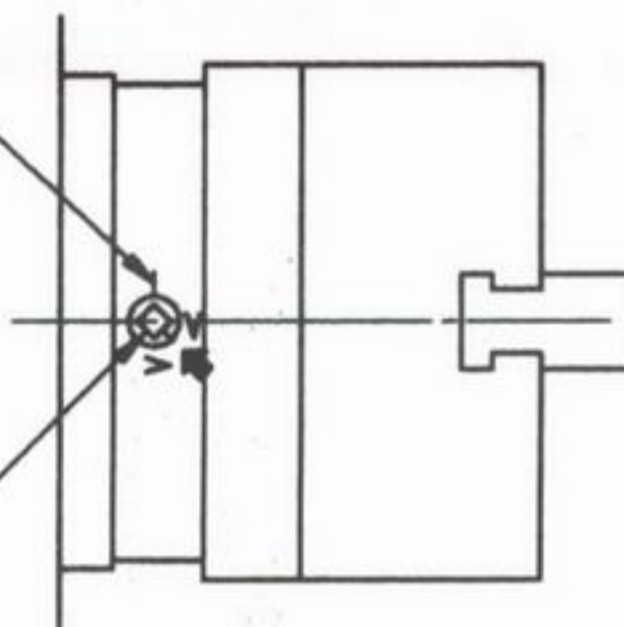
INSTALLATION



CORRECT

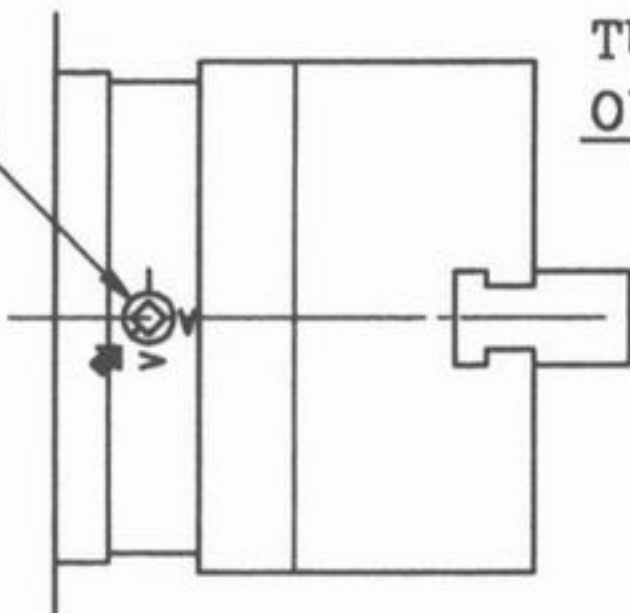
CAM RELEASE DATUM

CAM LOCK LINE
BETWEEN ARROWS

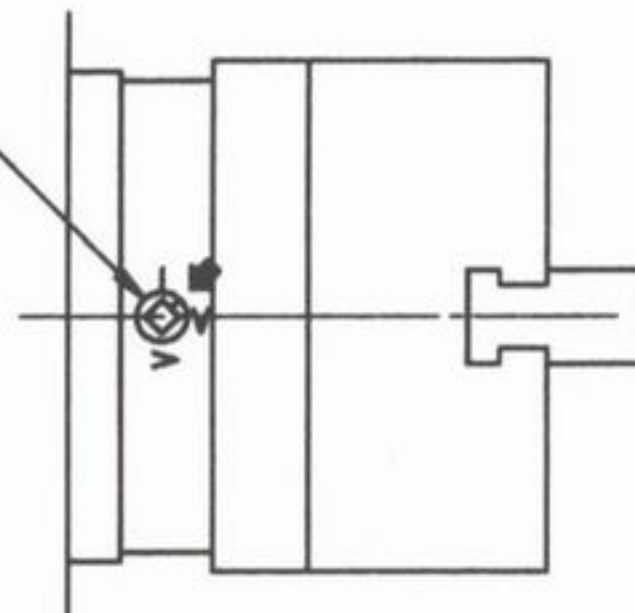


WRONG

TURN
STUD IN
ONE TURN



TURN STUD
OUT ONE TURN



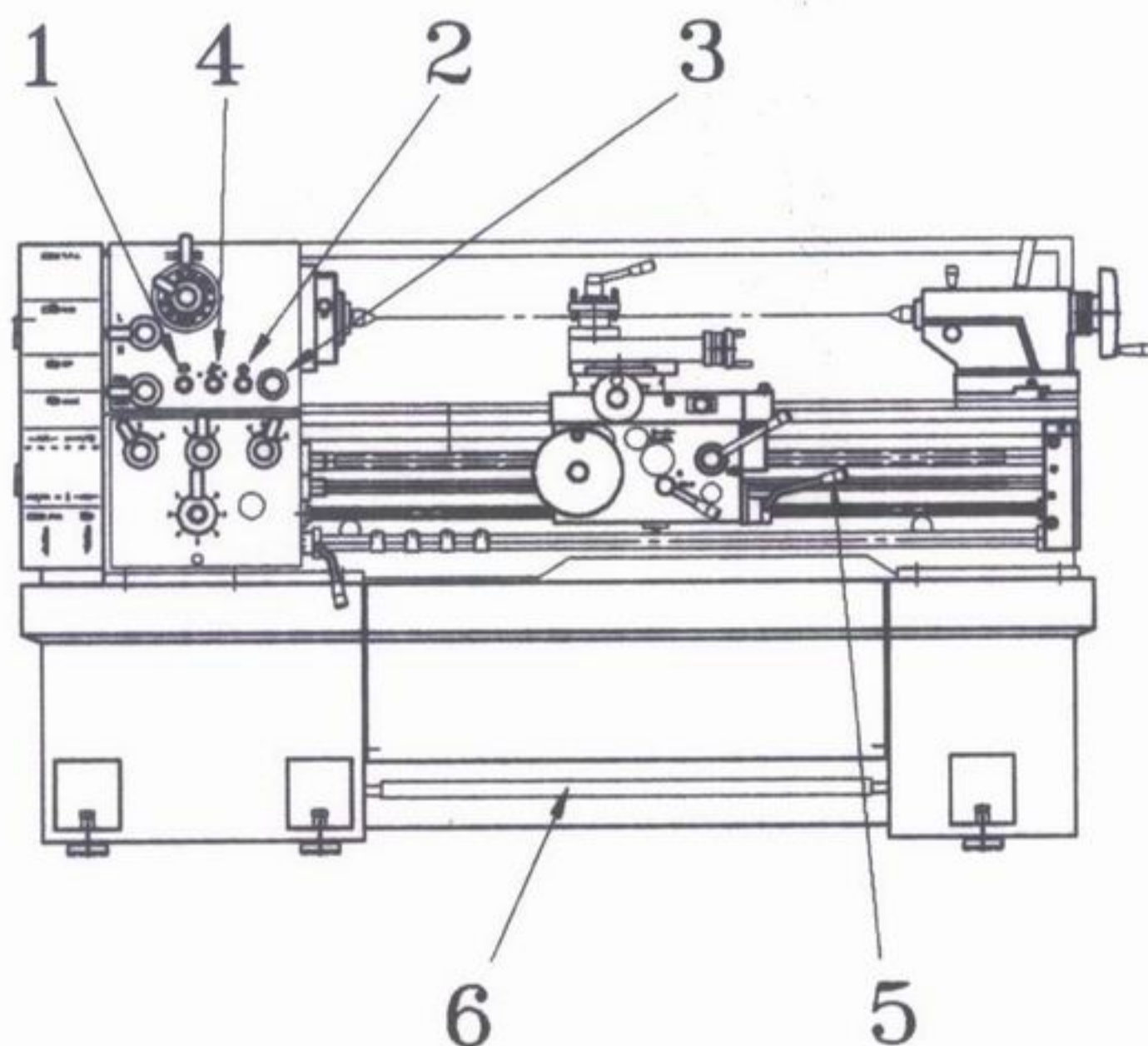
OPERATION

STARTING AND STOPPING

Before starting up machine, make sure if the proper lubrication to all running parts has been done as per lubrication chart, and switch on after ensuring the starting levers at feed gear box and apron which should be placed in the neutral position.

The power switch are fitted on the face of electrical box, in back of the bedway and below the headstock. Except the main power switch, All electrical controls are fitted into the front face of the headstock.

1. Pilot: Turn the power switch on, the pilot lamp (1) will be lighted.
2. Inching switch: Press the inching button (2) to move main spindle slightly, it will make main spindle speed selection very easy. (while the spindle rotation lever is set in the neutral position)
3. Emergency stop switch: Press the mushroom-head button switch (3) to stop the main motor and coolant pump.
4. Coolant pump ON/OFF switch. (4)
5. Main spindle rotation lever: The starting-up of main spindle is accomplished by the starting lever (5) at the right side of apron. safety locking device which prevents any abrupt accident from operators. Move this lever horizontally to disengage a safety pin, and move it up or down to get the reverse or forward spindle revolution. When this lever come back to the neutral position, the main spindle will be stopped.
6. Foot brake: The foot brake pedal (6) between plinths, while the foot brake pedal is pressed down, the main spindle will be stopped.



OPERATION

SELECTION OF SPINDLE SPEEDS

Select the appropriate spindle speed for working.

There are twelve steps in the range of spindles (20 - 2000 r.p.m) as show on speed chart, divided into three groups.

The change of main spindle speeds are accomplished by the dial level (1) and the lever (2).

Lever (1) selects twelve grades speeds correspond with lever (2), lever (2) selets HIGH - MIDDLE - LOW position.

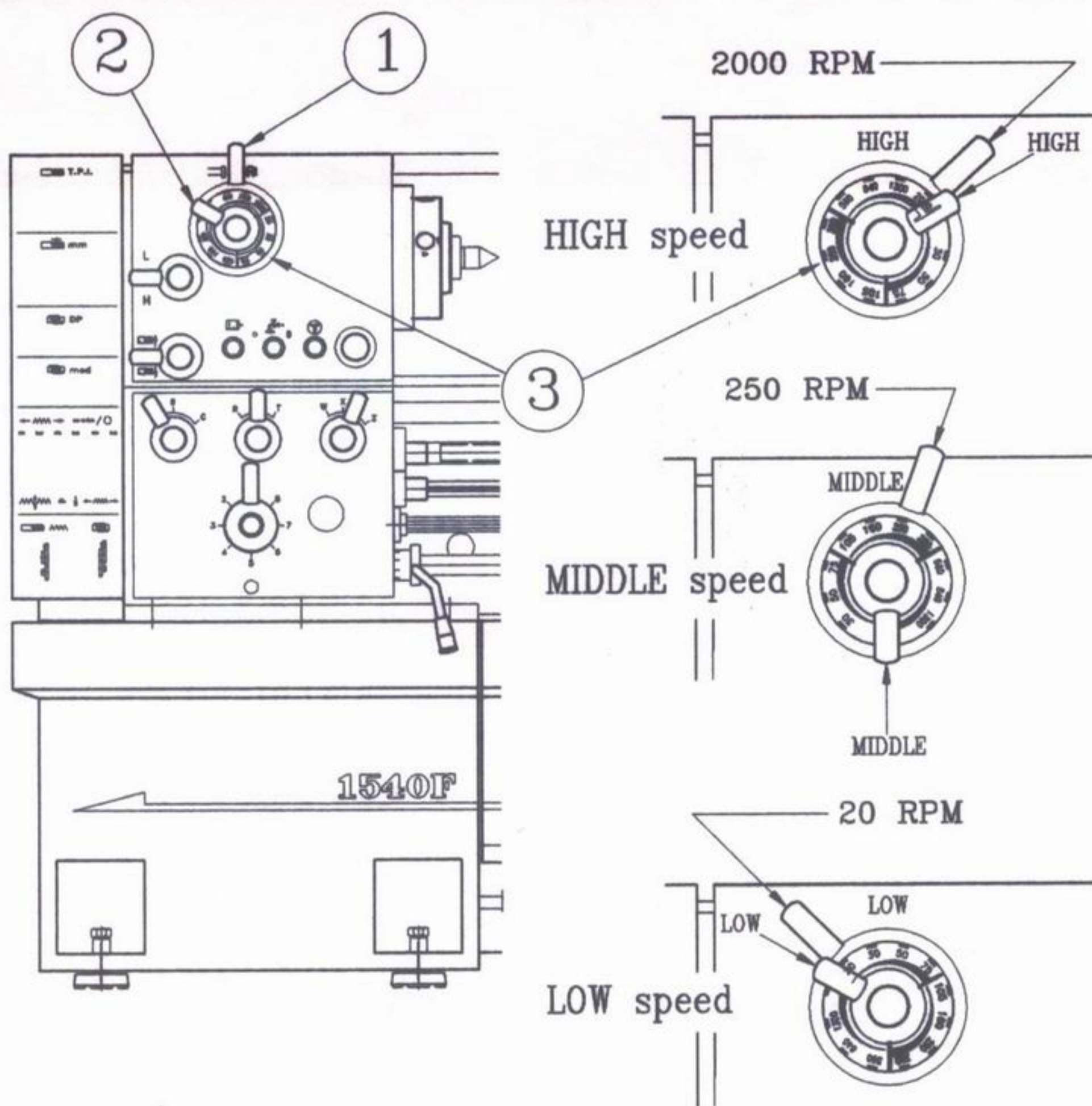
Red color position is the HIGH speeds range, 2000 - 560 r.p.m.

Green color position is the MIDDLE speeds range, 380 - 105 r.p.m.

Blue color position is the LOW speeds range, 75 - 20 r.p.m.

Spindle speeds dial (3) shows 12 steps, being divided into 20, 30, 50, 75, 105, 160, 250, 380, 560, 840, 1300, 2000 RPM.

In order to obtain the desired spindle speeds. place the lever at the proper position. Be sure do not shift the levers when the spindle is running.



OPERATION

THREADS AND FEEDS

All the threads and feeds directiry available from the gearbox are show on the data plate fitted on the front of the headstock, with the setting of control levers.

Threads and feeds direction can be changed by knob (1) on the headstock, which select Forward or Reverse revolution for Leadscrew and Feed shaft.

The lever (2) on the headstock, which select Fine threads and feeds (for position L); Coarse threads and feeds (for position H)

CAUTION

NOTE: Do not using Coarse threads and feeds (the lever "2" set on position "H") while the spindle speed over 500 r.p.m.

The dial (3) and knob and lever (4), (5), (6) on the gearbox which select all kinds thread and feed as the data plate.

For Feed cutting, the lever (6) should be set on "X" position.

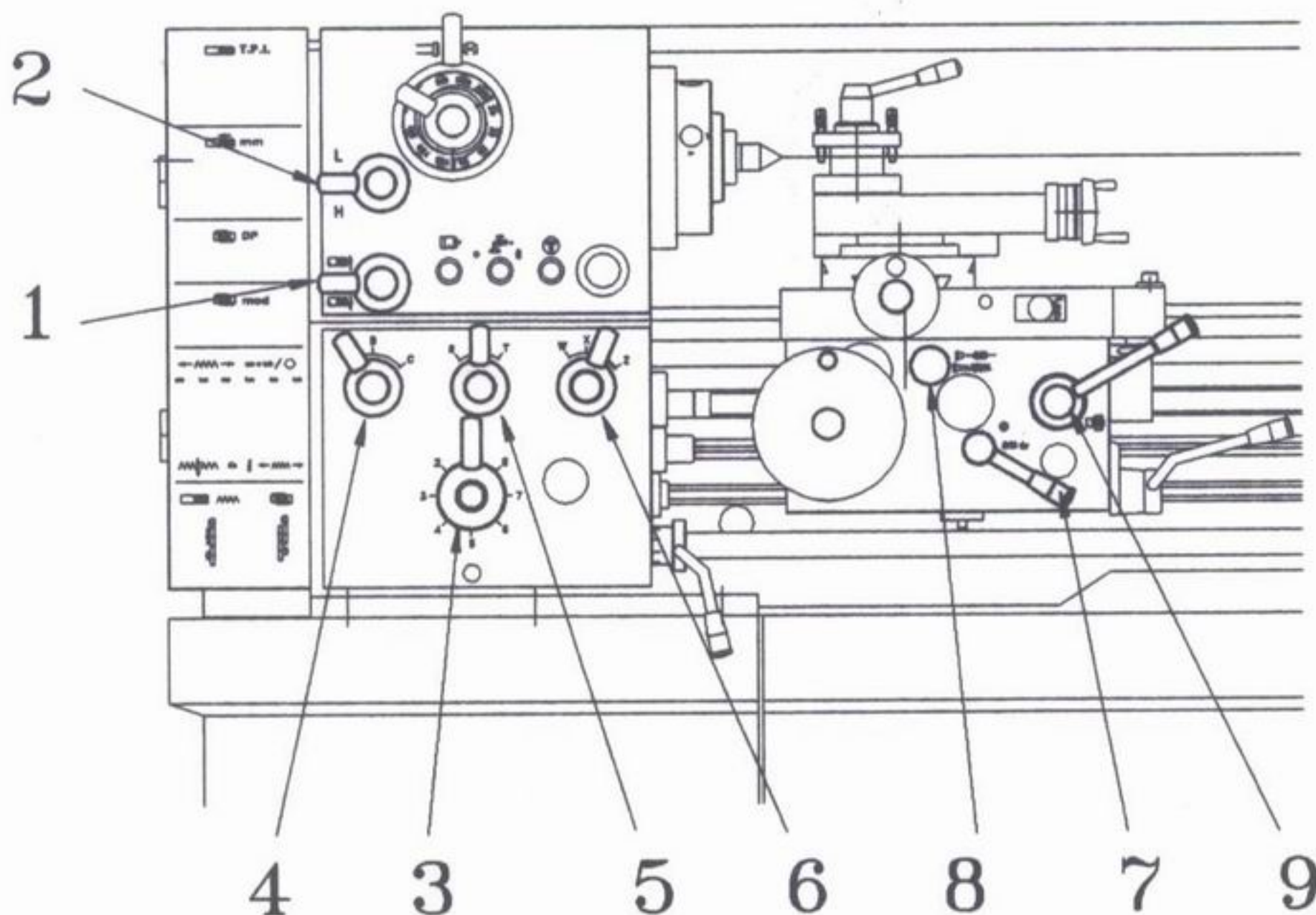
For TPI and DP threading (inch system), the lever (6) should be set on "Z" position.

For PITCH and M.P. threading (Metric system), the lever (6) should be set on "W" or "Y" position.

The lever (6) on the front of Apron, When pull up for Threads and feeds (engage thr worm gear) pull down for relase the worm gear and stop feeds and threads.

The Knob (8) pull for cross feeds; and push for longitudinal feed cutting.

The lever (9) on the front of Apron, When pull down Halfnut engagment for Thread cutting.



OPERATION

THREADS AND FEED DATA PLATE

Inch system Leadscrew pitch 4 T.P.I.

Metric system Leadscrew pitch 6 mm.

 T.P.I.


72	LCT26	27	LCSZ2	13	LBRZ7	5	HBSZ3
60	LCTZ3	26	LBSZ7	12	LBRZ6	4½	HBSZ2
56	LBTZ8	24	LBSZ6	11½	LBRZ5	4	HBSZ1
54	LCTZ2	23	LBSZ5	11	LBRZ4	3½	HCRZ3
48	LBTZ6	22	LBSZ4	10	LBRZ3	3½	HBRZ8
44	LBTZ4	20	LBSZ3	9	LBRZ2	3½	HBRZ7
40	LBTZ3	19	LBSZ2	8	LBRZ1	3	HBRZ6
36	LBTZ2	18	LBSZ2	7½	HCSZ3	2½	HBRZ5
33	LCSZ4	16	LBSZ1	7	HBSZ8	2½	HBRZ4
32	LBTZ1	15	LCRZ3	6½	HBSZ7	2½	HBRZ3
30	LCSZ3	14	LBRZ8	6	HBSZ6	2½	HBRZ2
28	LBSZ8	13½	LCRZ2	5½	HBSZ4	2	HBRZ1

 mm

.2	LARY1	.65	LASY7	1.6	HASY1	5	HASW3
.225	LARY2	.7	LASY8	1.75	LASW8	5.5	HASW4
.25	LARY3	.75	LARW6	1.8	HASY2	6	HASW6
.275	LARY4	.8	LATY1	2	LATW1	6.5	HASW7
.3	LARY6	.9	LATY2	2.25	LATW2	7	HASW8
.325	LARY7	1	LASW1	2.5	LATW3	8	HATW1
.35	LARY8	1.1	LATY4	2.75	LATW4	9	HATW2
.4	LASY1	1.2	LATY6	3	LATW6	10	HATW3
.45	LASY2	1.25	LASW3	3.25	LATW7	11	HATW4
.5	LASY3	1.3	LATY7	3.5	LATW8	12	HATW6
.55	LASY4	1.4	LATY8	4	HASW1	13	HATW7
.6	LASY6	1.5	LASW6	4.5	HASW2	14	HATW8

 DP

60	LCRZ3	32	LBRZ1	20	HBSZ3	13	HBRZ7
52	LBRZ7	30	HCSZ3	19	HASZ8	12	HBRZ6
48	LBRZ6	28	HBSZ8	18	HBSZ2	11	HBRZ4
44	LBRZ4	26	HBSZ7	16	HBSZ1	10	HBRZ3
40	LBRZ3	24	HBSZ6	15	HCRZ3	9	HBRZ2
36	LBRZ2	22	HBSZ4	14	HBRZ8	8	HBRZ1

 mod

.2	LATY1	.5	HASY3	.9	HATY2	2.25	HATW2
.25	LATY3	.55	HASY4	1	HASW1	2.5	HATW3
.3	LATY6	.6	HASY6	1.25	HASW3	2.75	HATW4
.35	LATY8	.7	HASY8	1.5	HASW6	3	HATW6
.4	HASY1	.75	LATW6	1.75	HASW8	3.25	HATW7
.45	HASY2	.8	HATY1	2	HATW1	3.5	HATW8

 mm or inch / 

mm	inch	mm	inch	mm	inch
.04 LARX1	.0015	.11 LASX4	.004	.35 HASX2	.014
.045 LARX2	.0017	.12 LASX6	.0046	.38 HBTX8	.015
.05 LARX3	.0019	.13 LASX7	.005	.4 HASX3	.016
.055 LARX4	.002	.14 LASX8	.0054	.43 HASX4	.017
.057 LARX5	.0022	.15 LATX1	.006	.45 HASX5	.018
.06 LARX6	.0023	.18 LATX2	.007	.5 HASX7	.02
.062 LCTX8	.0024	.2 LATX3	.008	.55 HASX8	.022
.065 LARX7	.0025	.23 LATX5	.0088	.6 HATX1	.025
.07 LARX8	.0027	.24 LATX6	.0092	.7 HATX2	.028
.08 LASX1	.003	.25 HCTX8	.0098	.8 HATX3	.03
.09 LASX2	.0034	.28 LATX8	.011	.9 HATX5	.035
.1 LASX3	.0038	.32 HASX1	.012	1 HATX7	.04

  $\frac{1}{2}$ 



4 T.P.I. LEADSCREW

OPERATION

CARRIAGE AND APRON

A solid topslide is fitted as standard to the cross-slide, carried on a rotatable base, the cross-slide is made 60-0-60degree for accurate indexing. Carriage moves along the bed by hand or by power feed and supports the cross slide, compound rest, toolpost and cutting tools. The cross slide handle (1) and toolpost slide handle (2) move the cross slide and toolpost slide in and out.

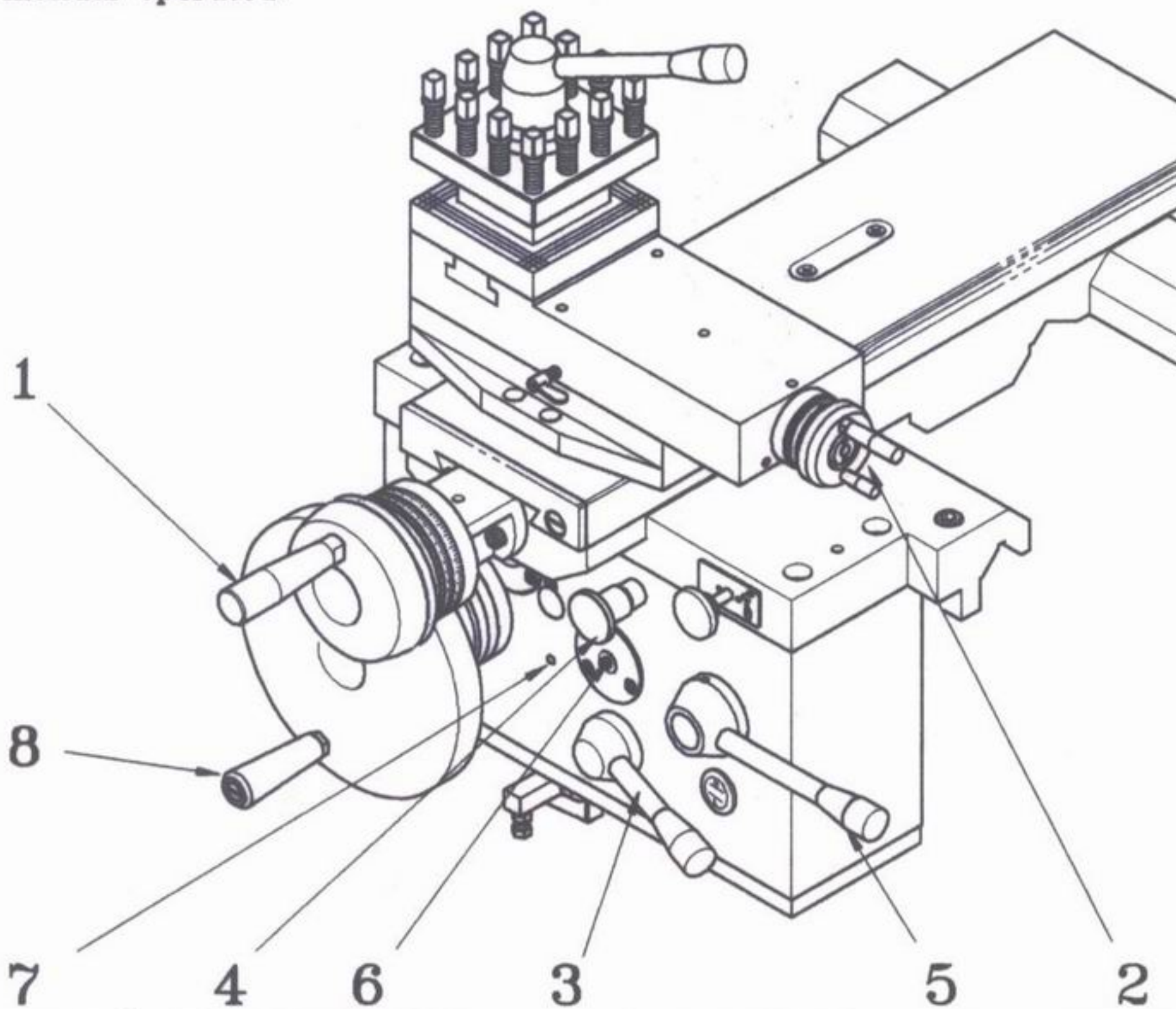
Handwheel dials are graduated in inch or metric division to suit the operating screw and nut fitted.

The apron, anchored to front of carriage, contains the power longitudinal and cross feed controls. The engaging and disengaging of longitudinal and cross feeds is accomplished by lever (3) (drop worm system). lever (4) determines the engaging for the power longitudinal and cross feed. pull it out is for cross feed, and push it in is for longitudinal feed, and there is a neutral position for manual or thread cutting.

The lever (5) is press downward to engage the leadscrew half-nut for thread-cutting.

The interlock device is equipped so that the longitudinal feed and the half-nut engaging can not work together. there are one safety device (auto stop) by means of slipping clutch which can be easily adjusted by screw (6 and 7).

The big handwheel (8) on the front of Apron can move longitudinal feed by manual operated.

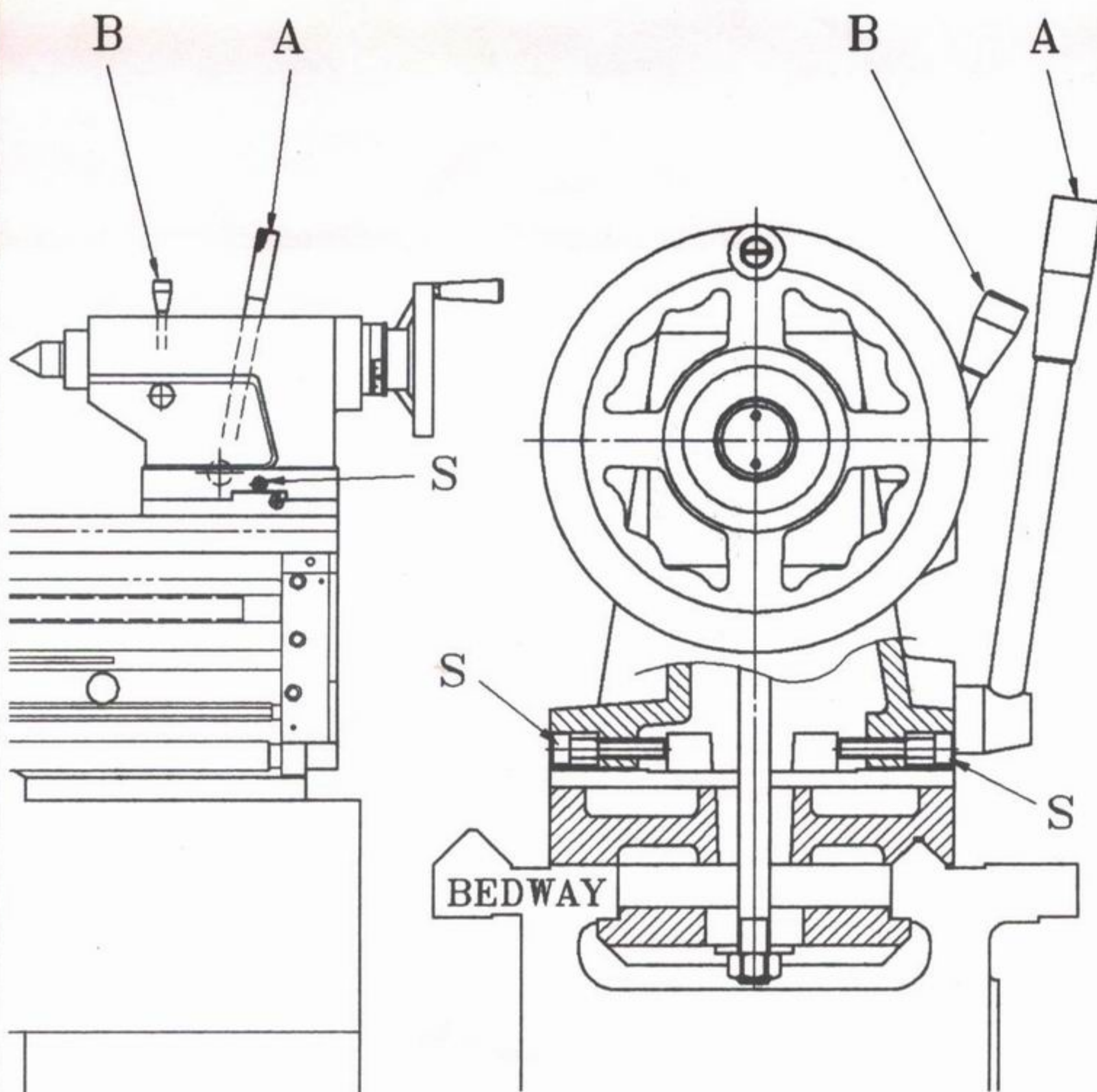


OPERATION

TAIL STOCK

Can be freed for 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 (A) and adjust screws (S) at each side of the base to move tailstock laterally across the base. Retightening and checking after adjustment of set over.

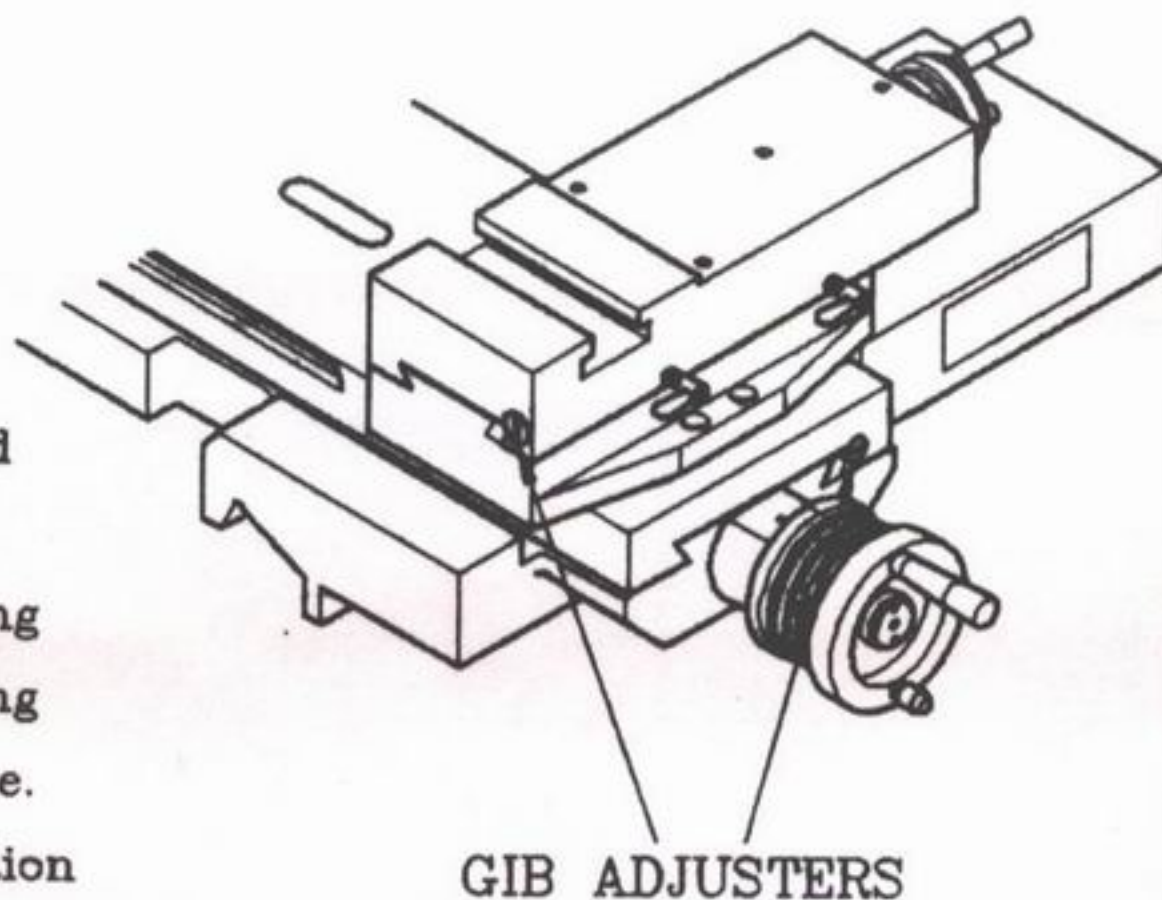


MAINTENANCE

SLIDE WAYS ATTENTION

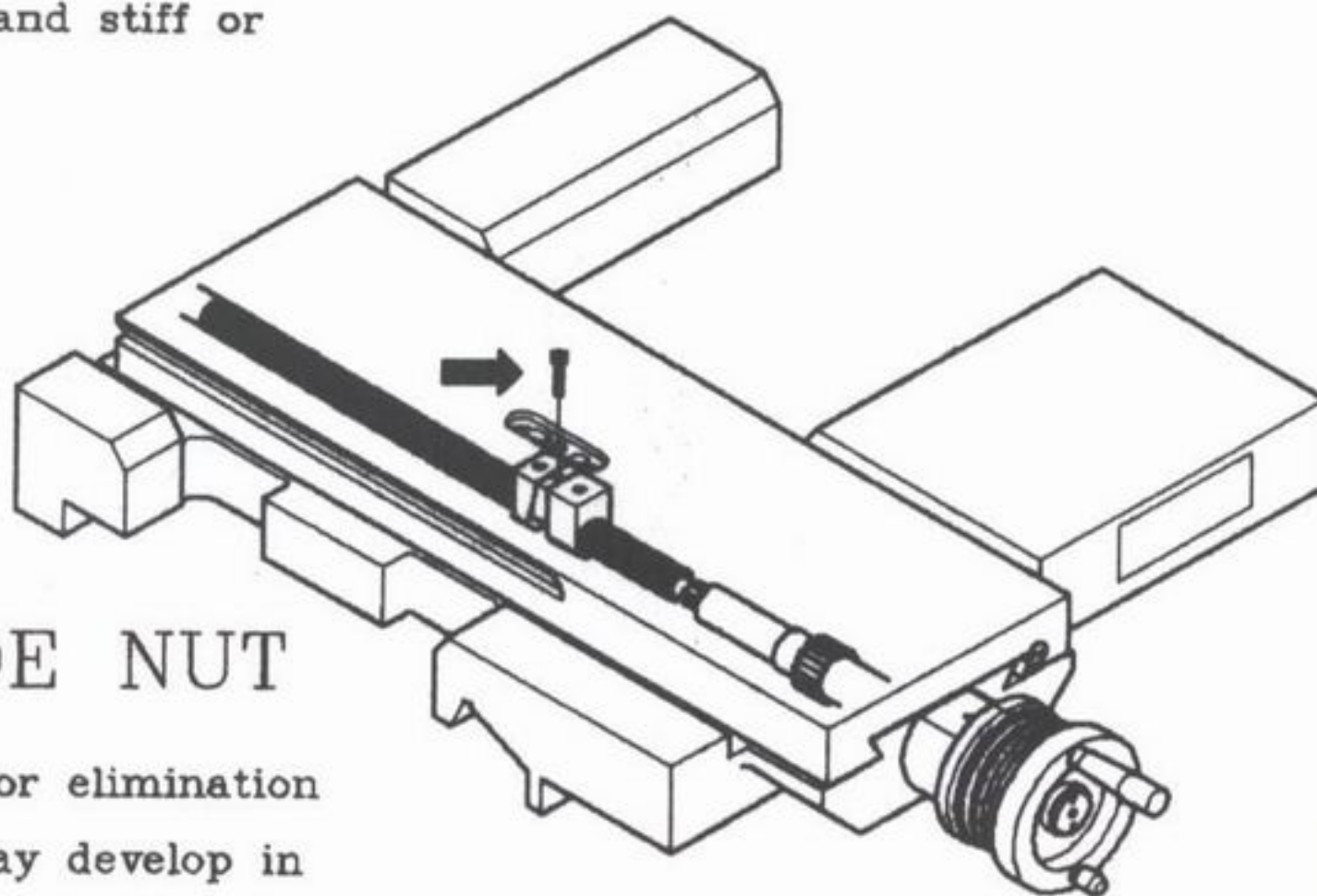
Tapered gib strips fitted to slideways of saddle cross-slide and top-slide (compound) so that any slackness which may develop can be rectified.

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, a little at a time. Check constantly for smooth action throughout full slide travel; avoid overadjustment which can result in increased wear-rate and stiff or jerky action.



CROSS-SLIDE NUT

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

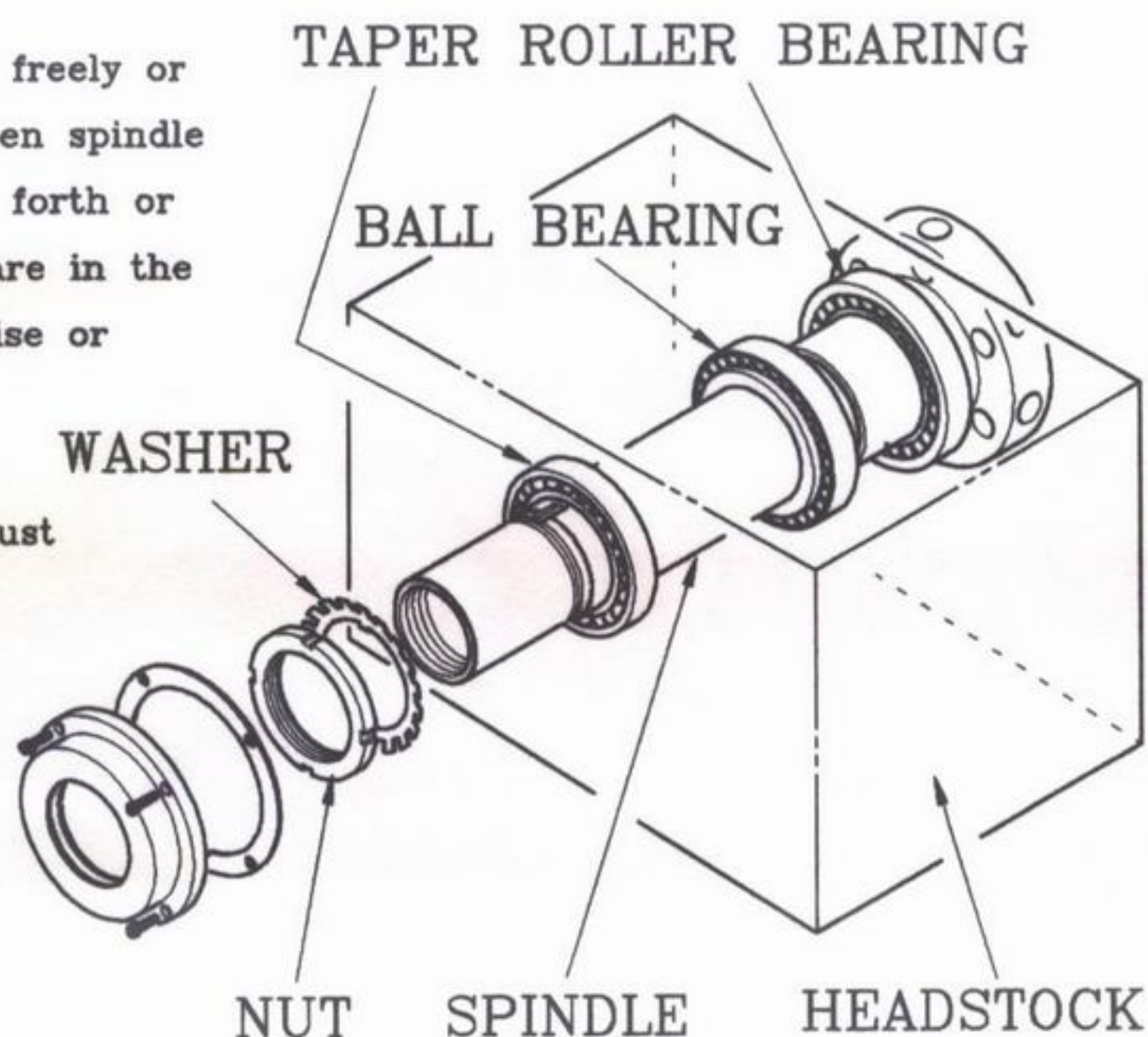


MAINTENANCE

SPINDLE BEARING ADJUSTMENT

If spindle swing too freely or play is noticable when spindle is pushed back and forth or when the bearings are in the case of bearings noise or chattering or over temperature.

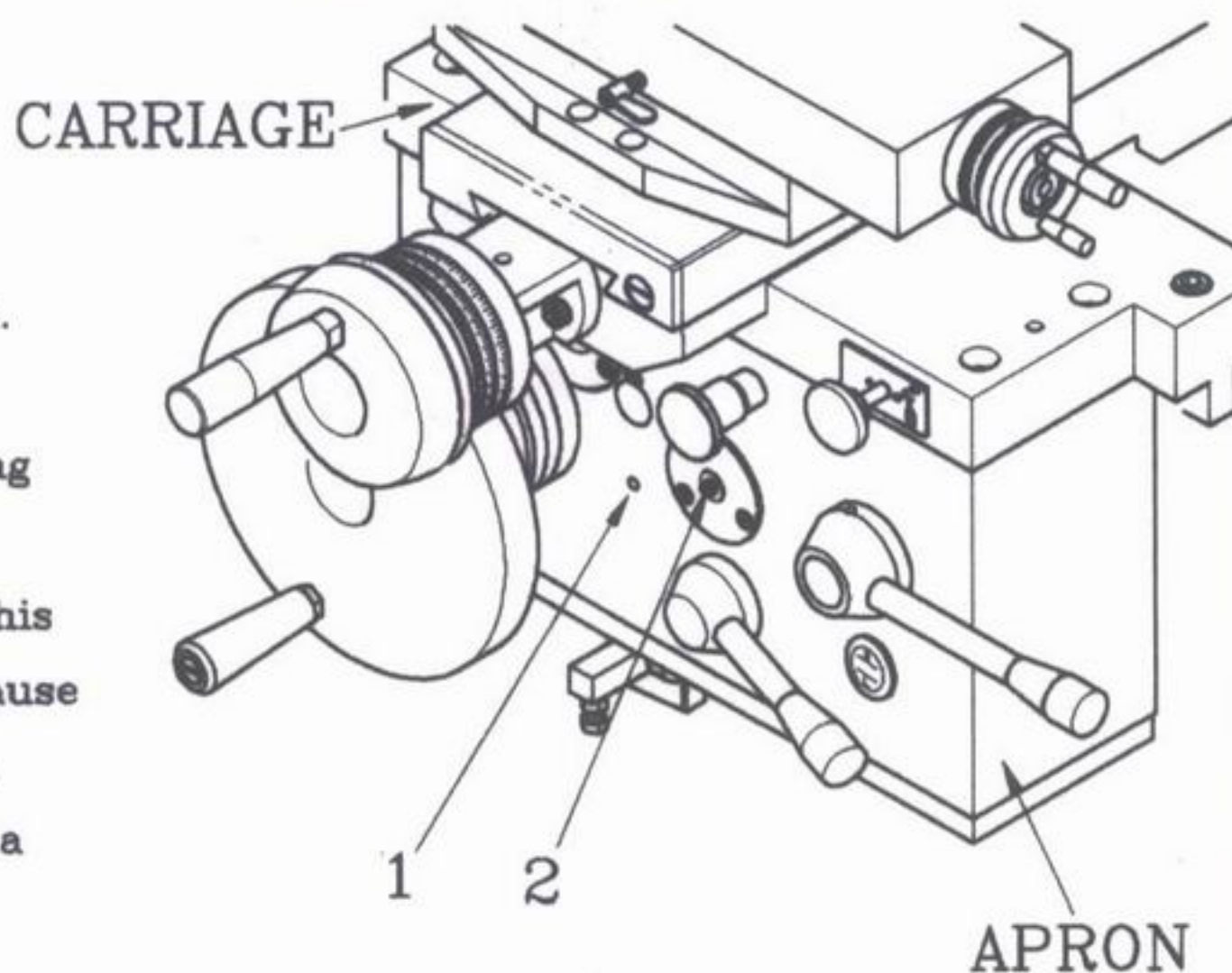
Properly practic adjust middle and front bearing or tightening the adjusting nuts in the headstock.



ADJUSTMENT OF OVERLOAD PROTECTION DEVICE

Apron has an overload protection device by means of slipping clutch. This adjustment can be accomplished by adjusting screw (1) and (2).

Be sure do not adjust this screw so frequently because slipping clutch dose not wear so much even for a long period of use.



MAINTENANCE

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.

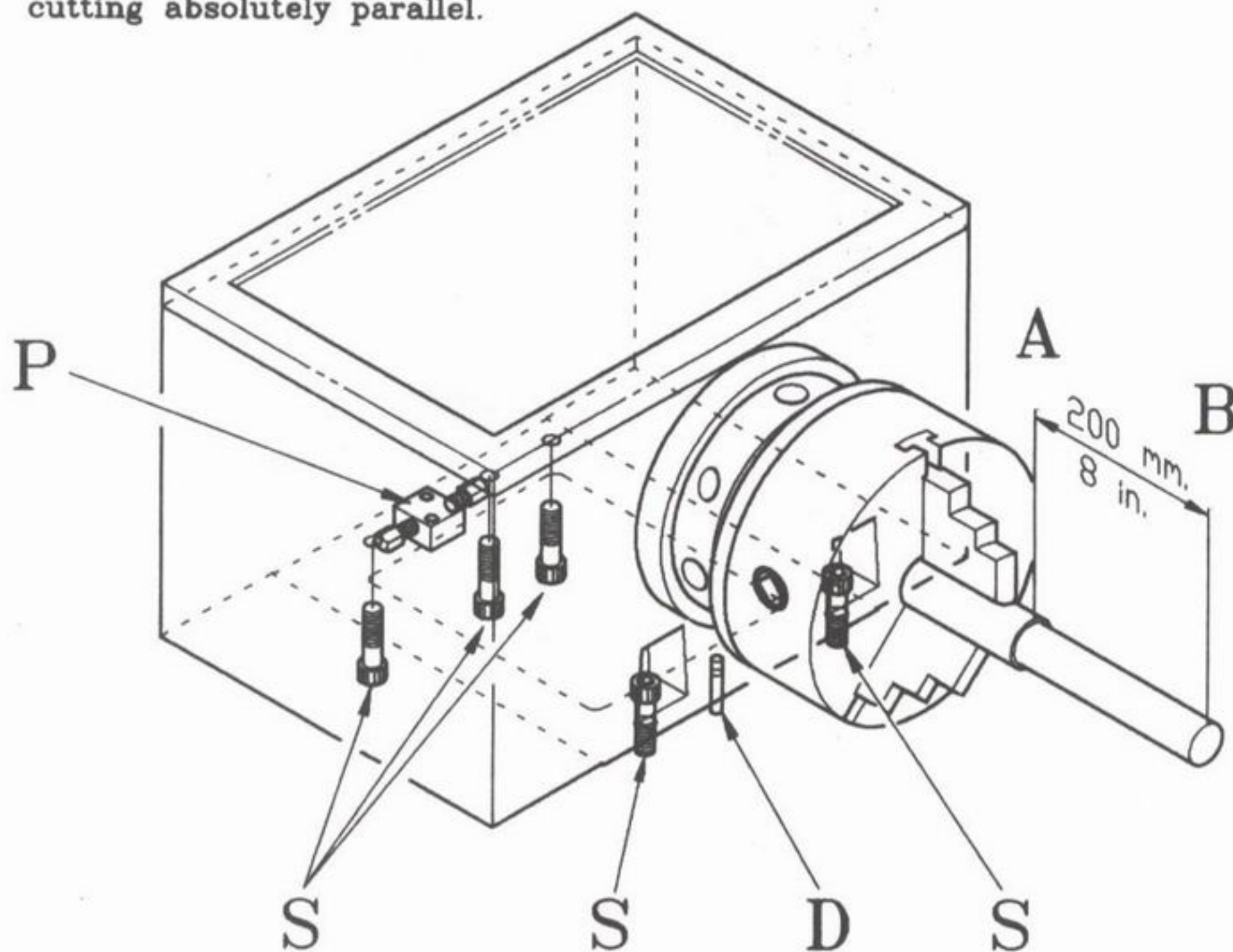
A. Headstock check

Take a light cut with a keen tool over a 8in. (200mm.) 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) should be the same.

To correct a difference in readings, slacken the five headstock hole-down screws (S) and adjust the set-over pad (P) beneath the headstock, to pivot the headstock about the dowel (D).

Tighten all screw

after adjustment and repeat the test-cut/micrometer-reading, sequence until micrometer readings are indentical, so machine now cutting absolutely parallel.



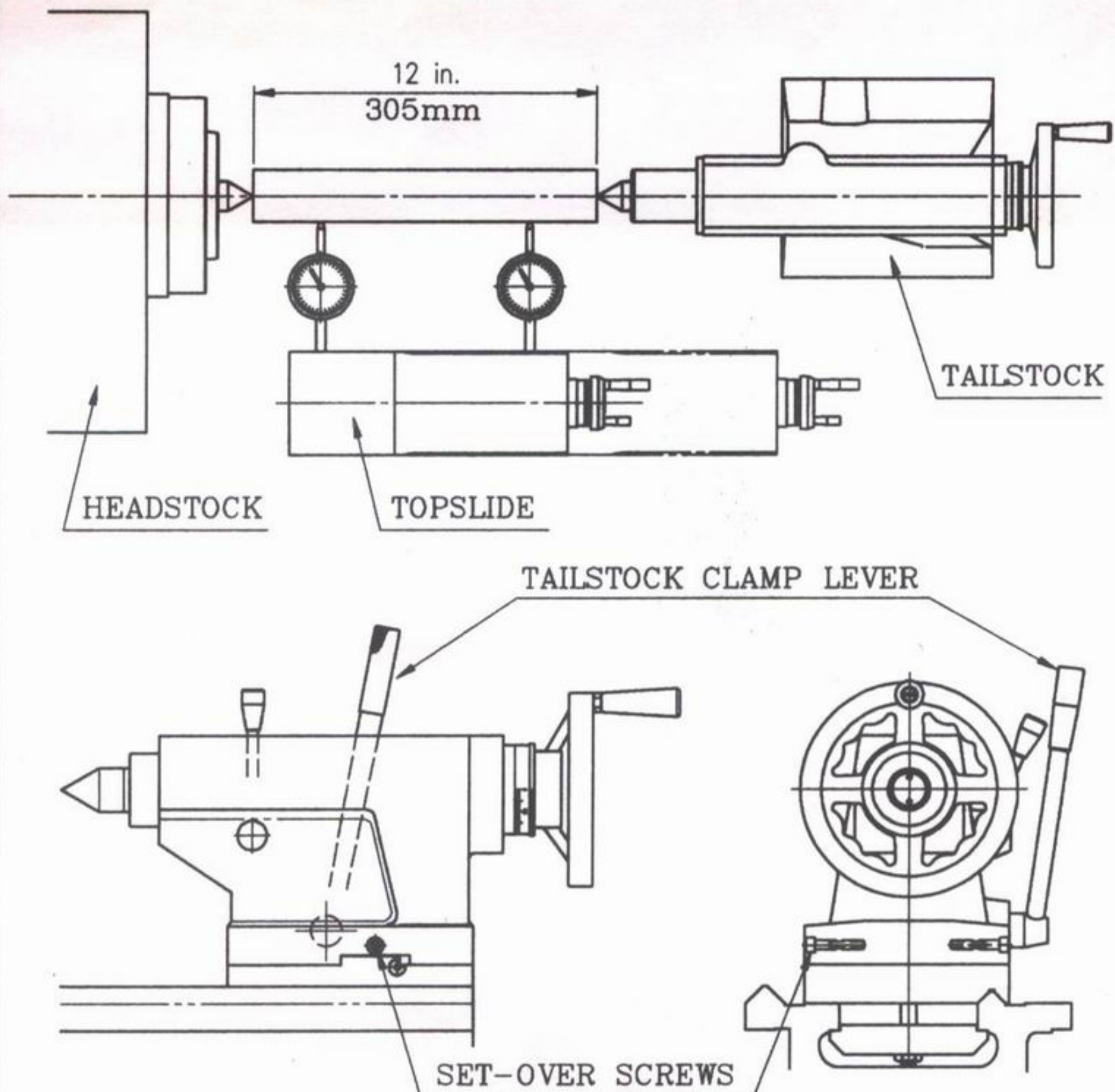
MAINTENANCE

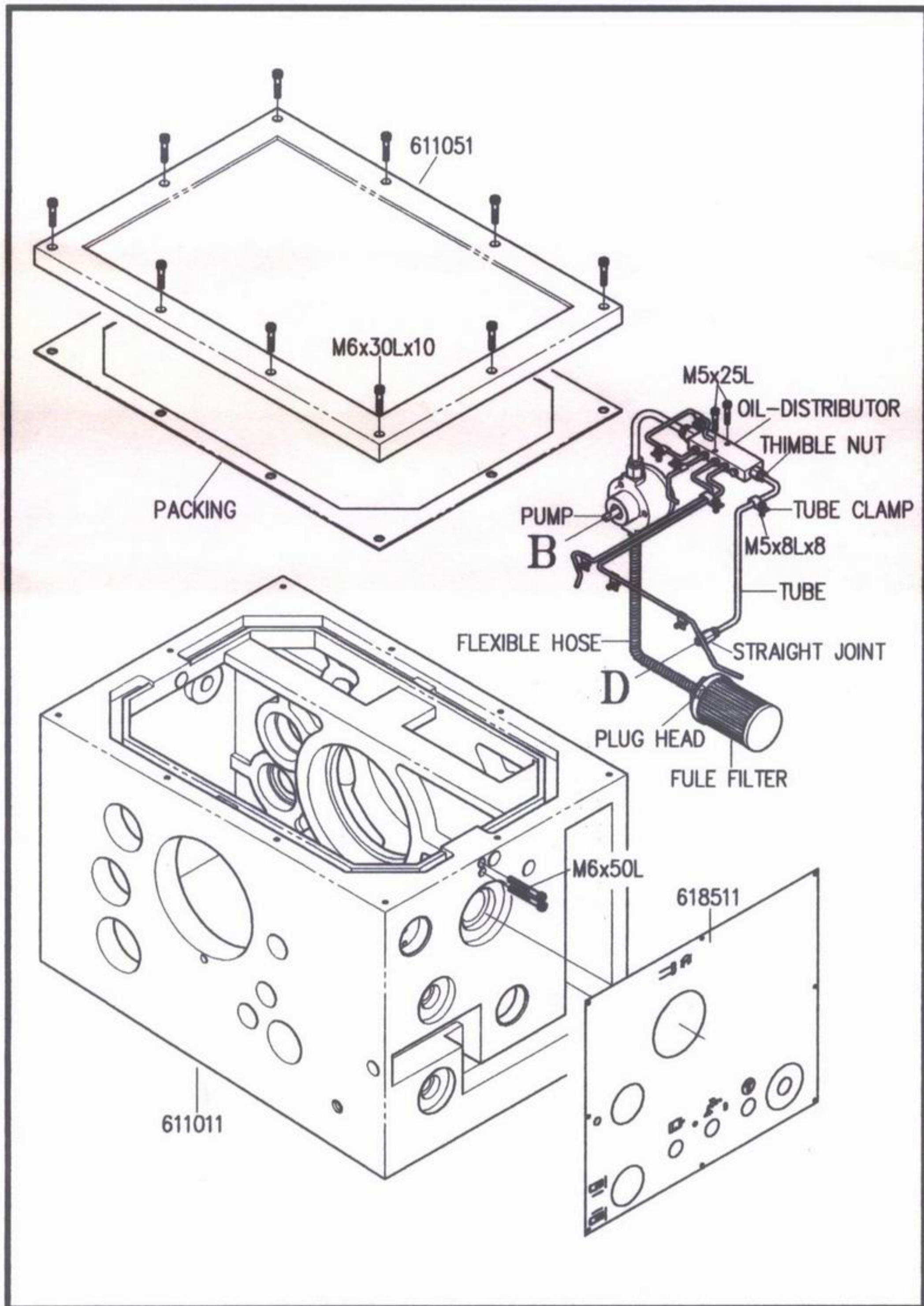
LATHE ALIGNMENT (Part 2)

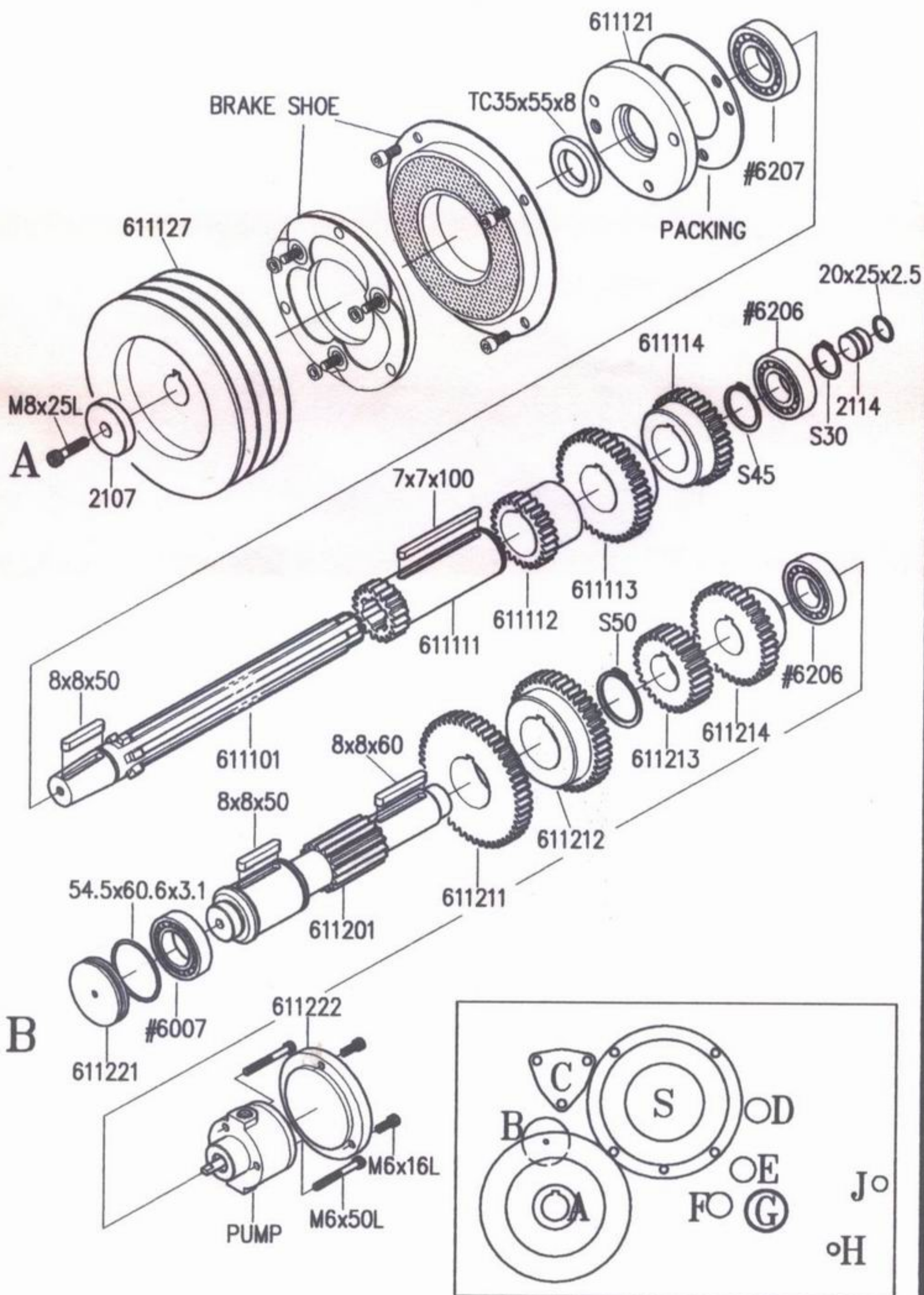
B. Tailstock check

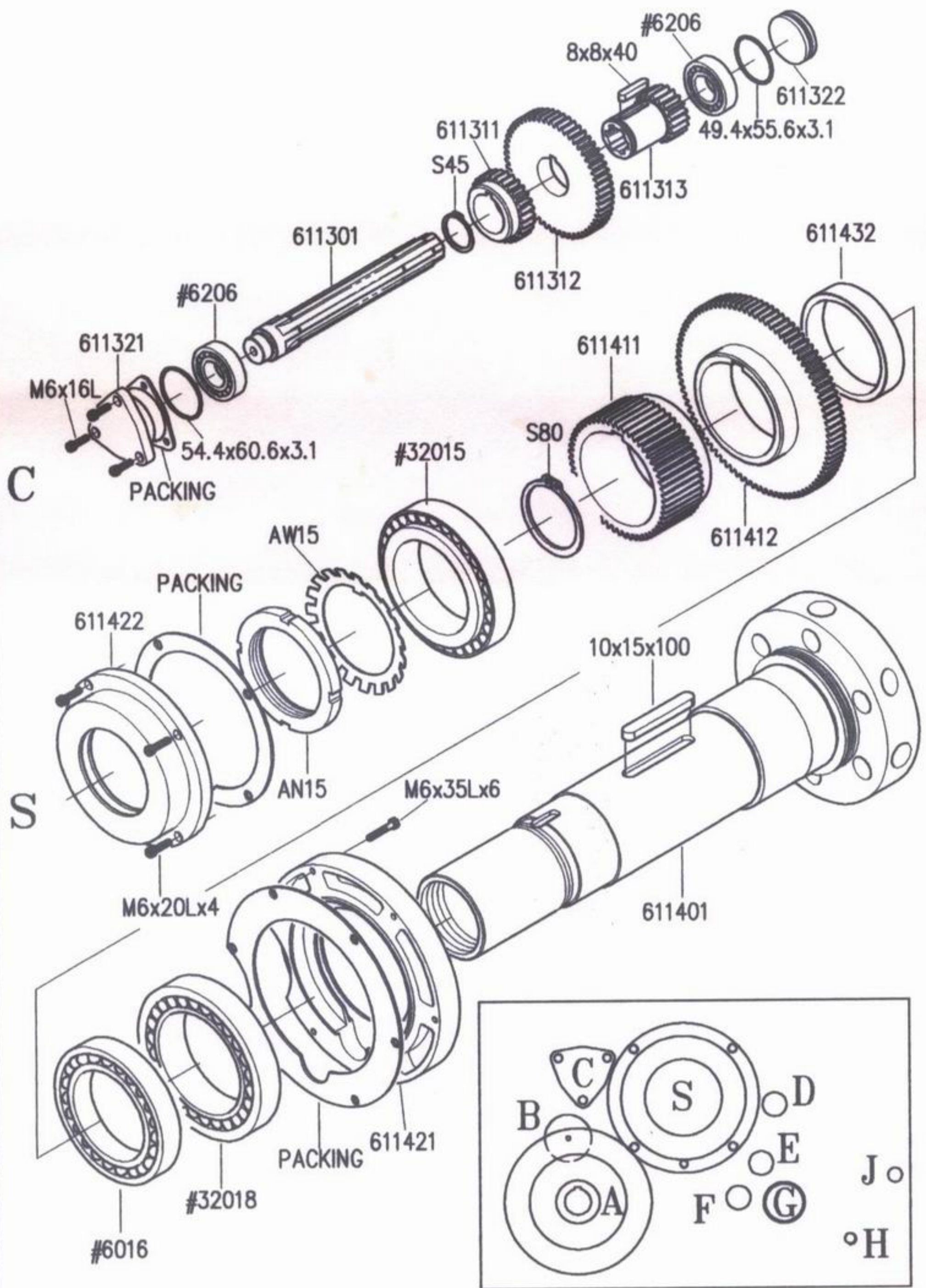
Using a 12in. (305mm.) ground steel bar fitted between headstock and tailstock centers, check the alignment by fitting a dial-test indicator to the topslide and traversing the center line of the bar.

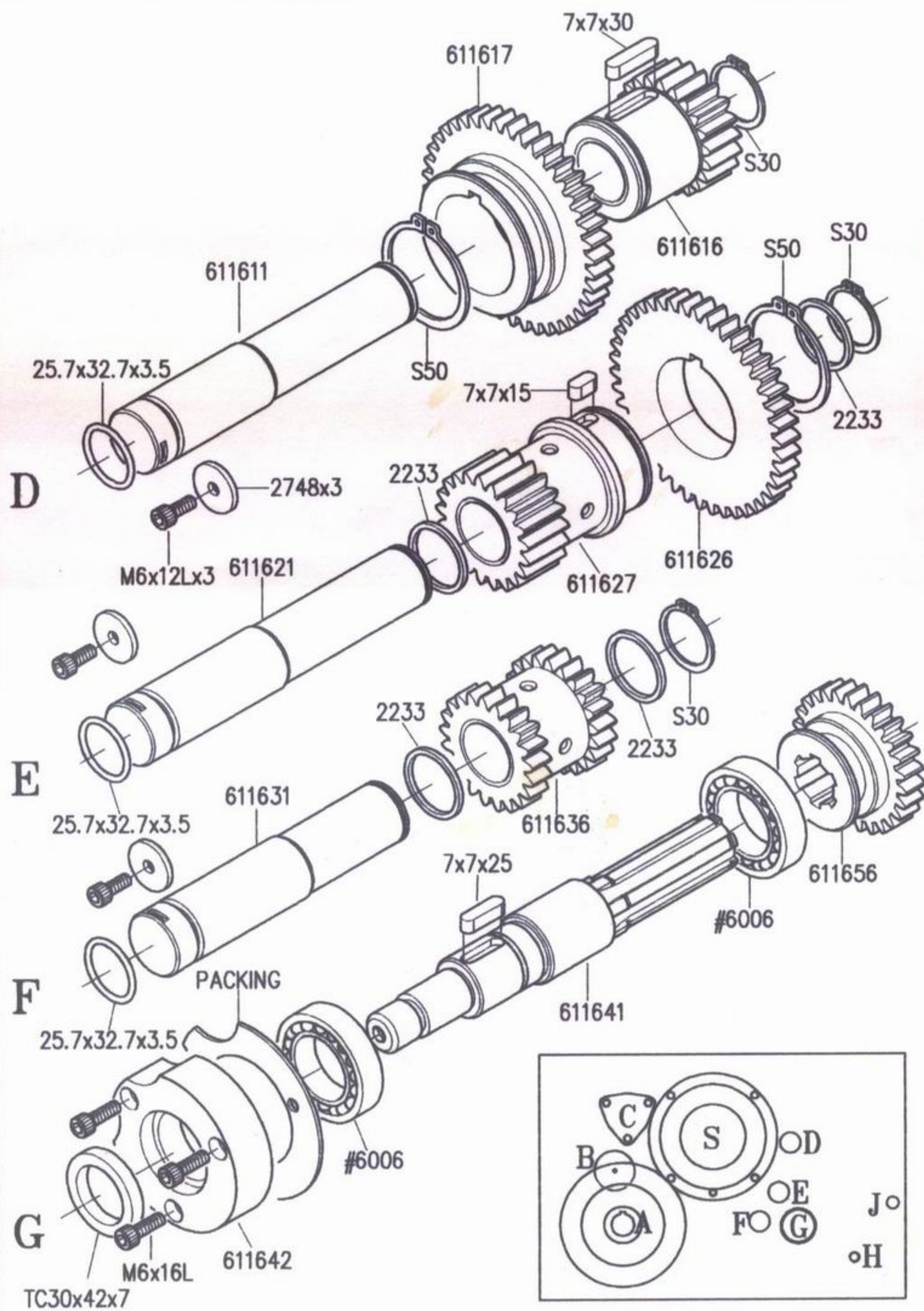
To correct error release the tailstock clamp lever and adjust the two set-over screws provided continue with checking and correction until the alignment is perfect.

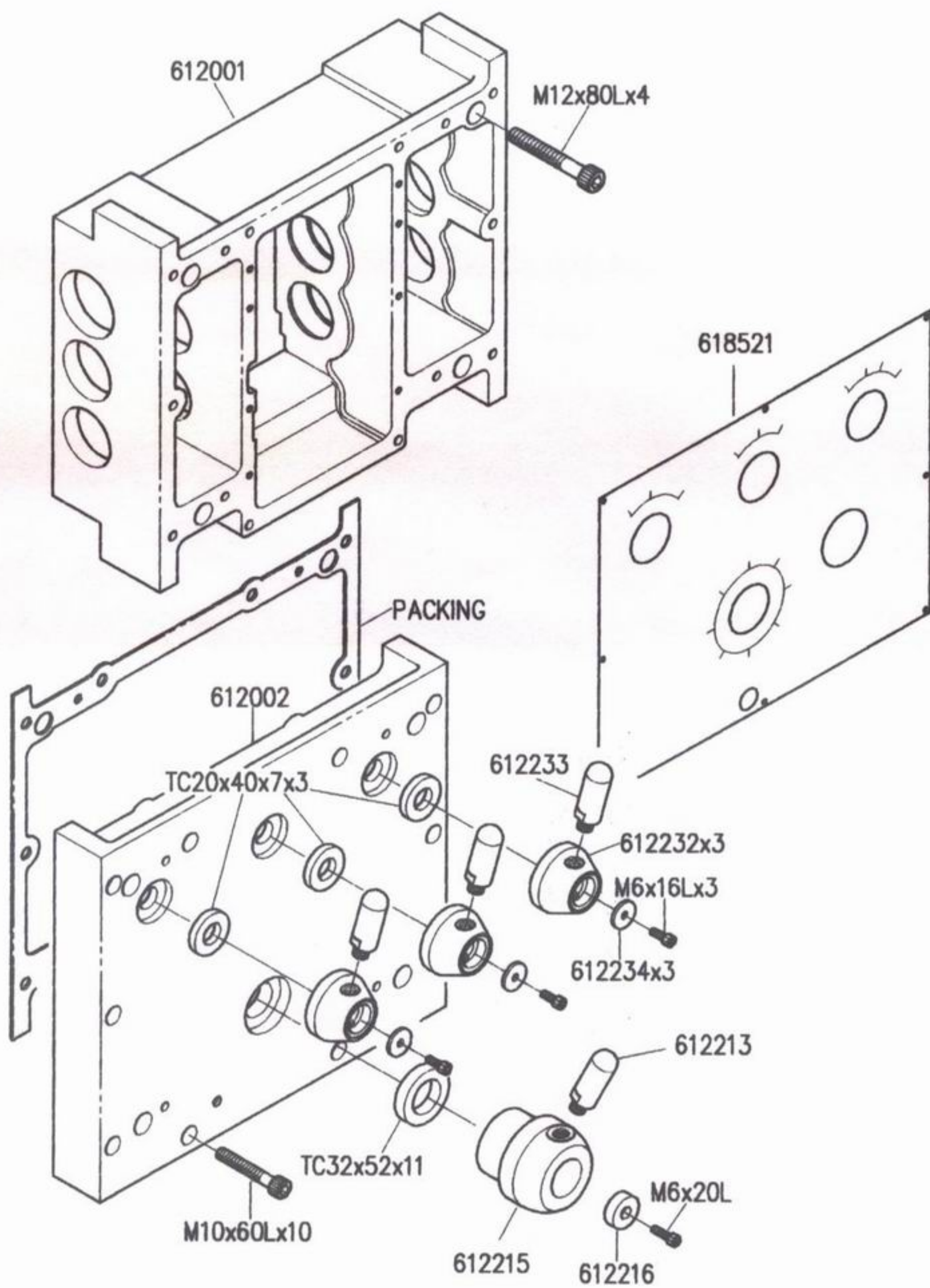


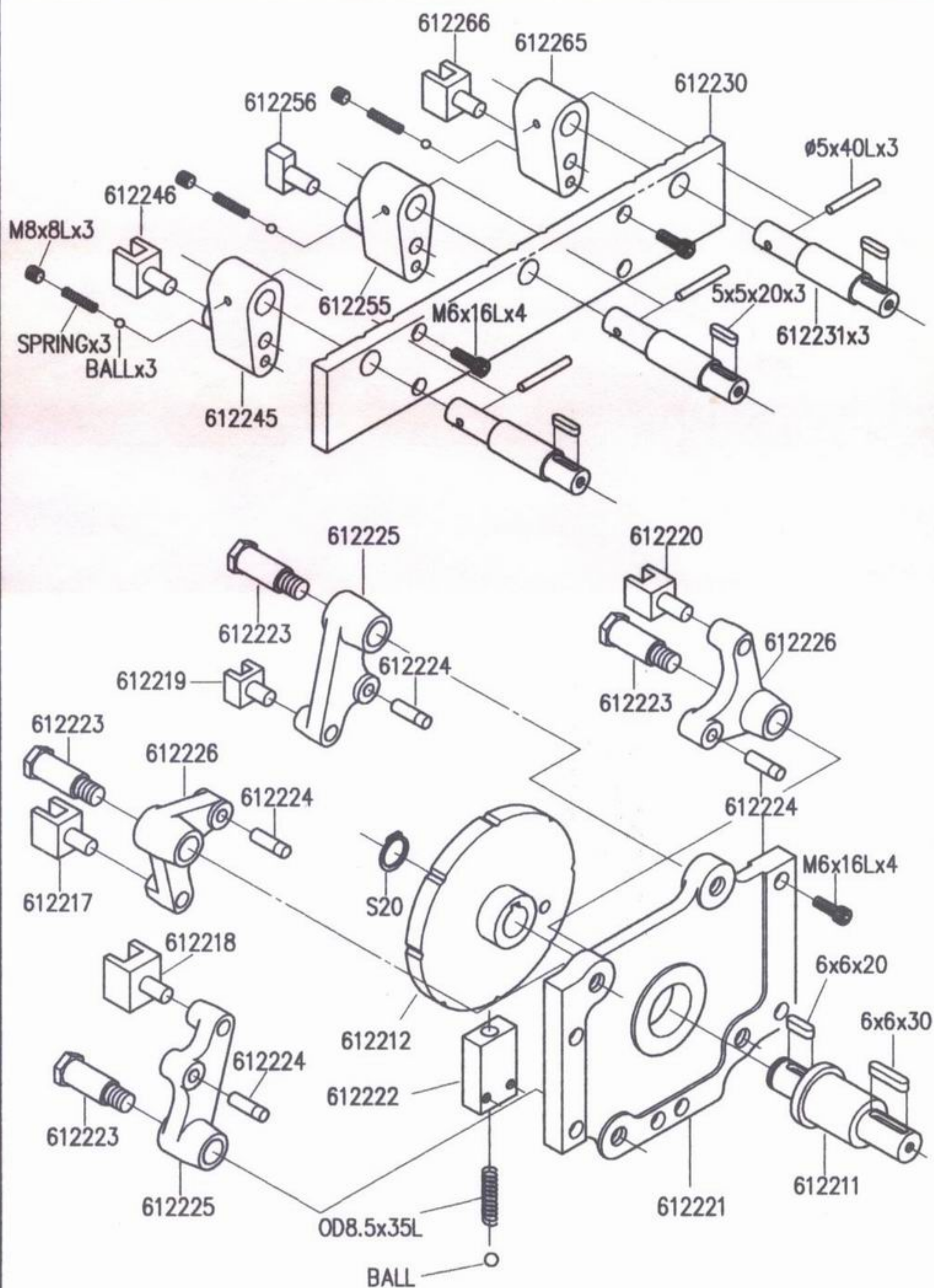


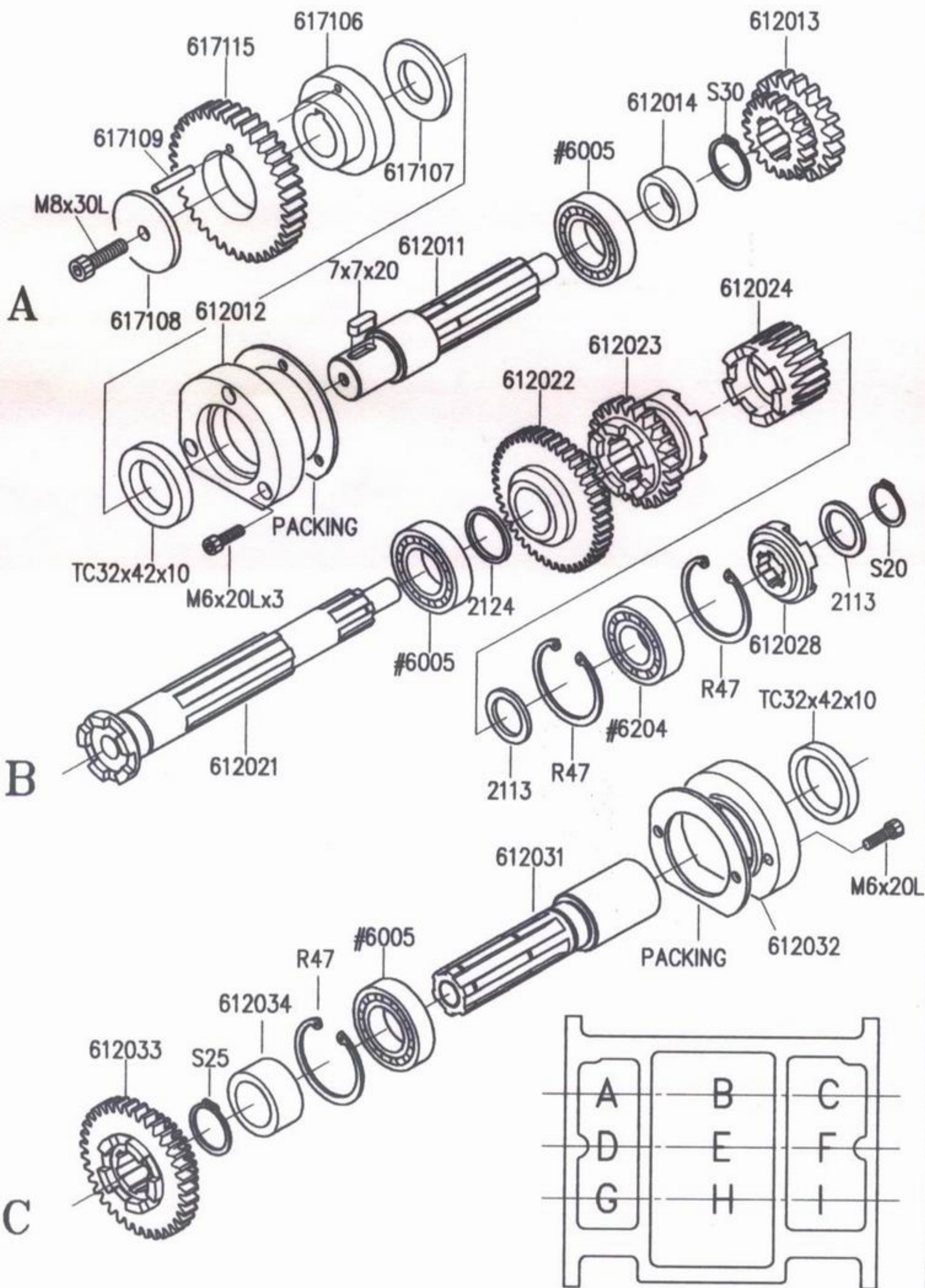


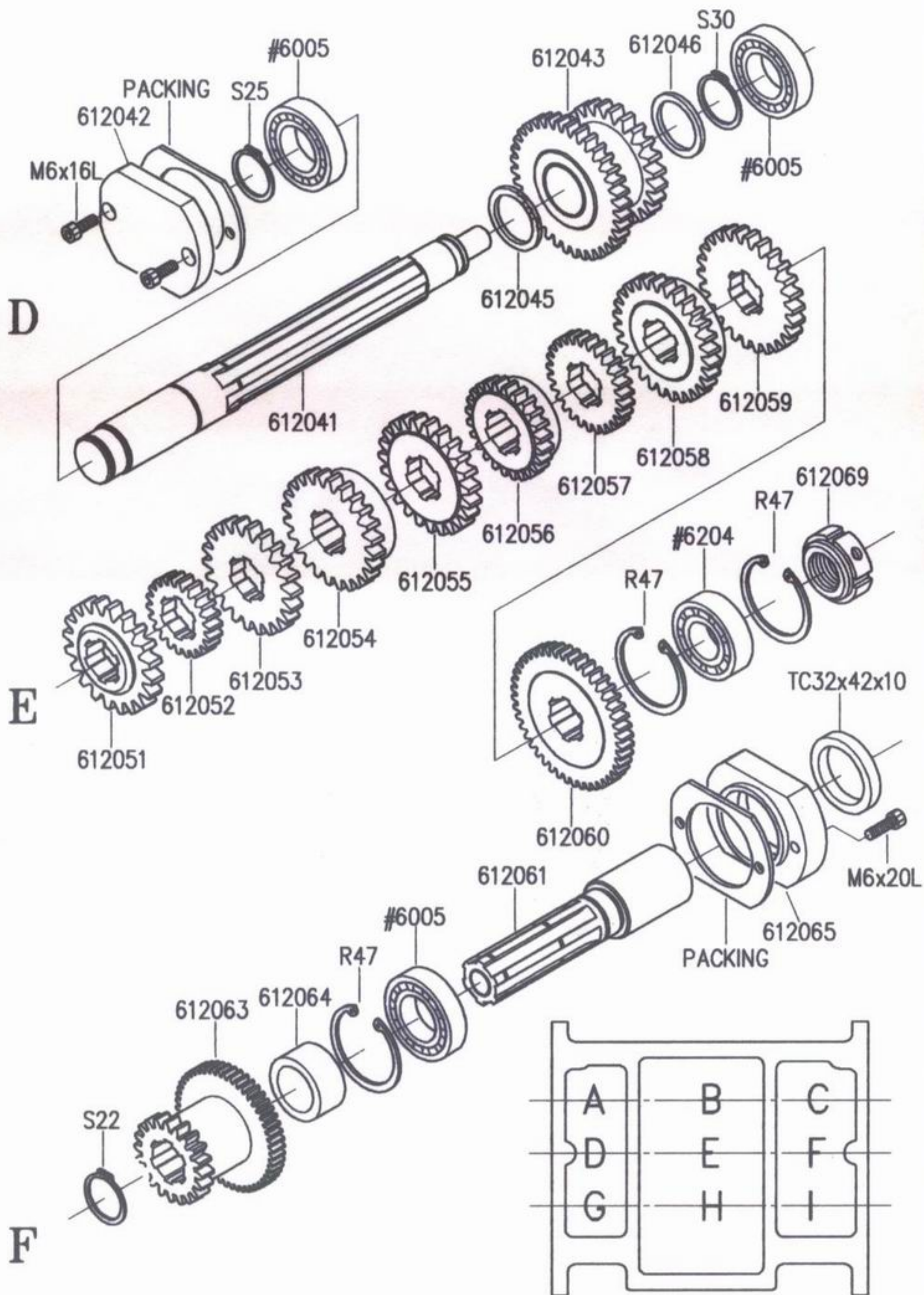


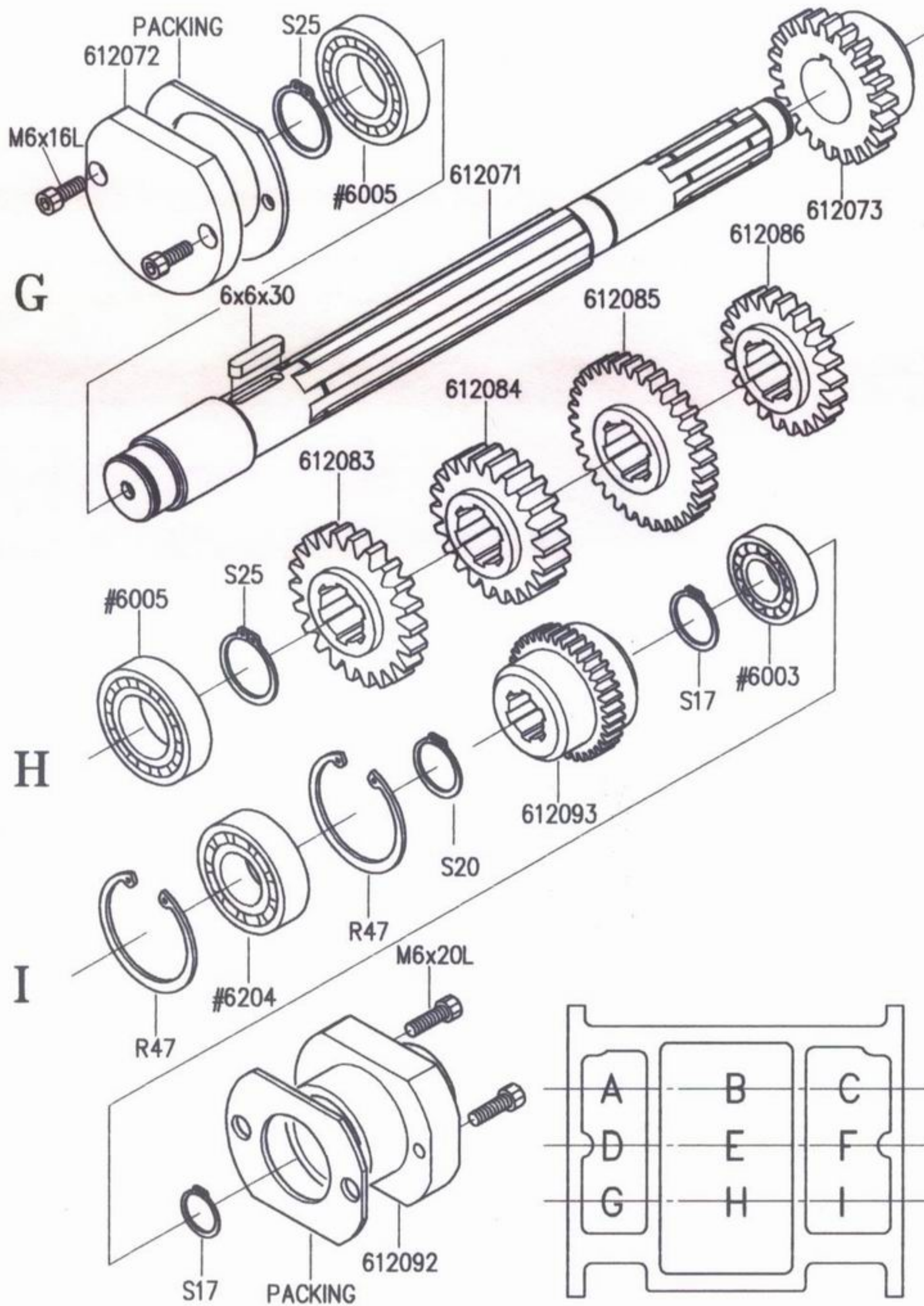


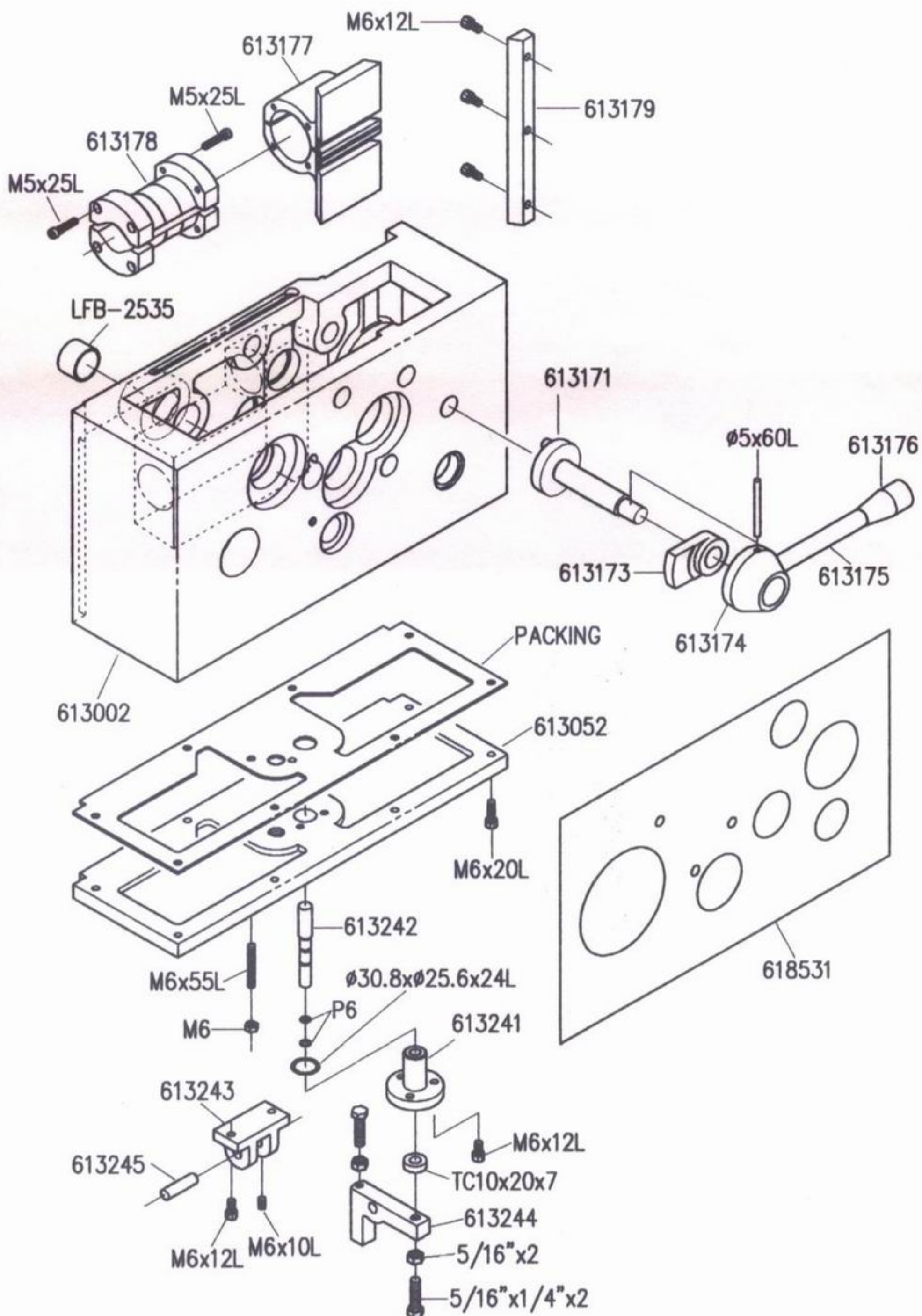


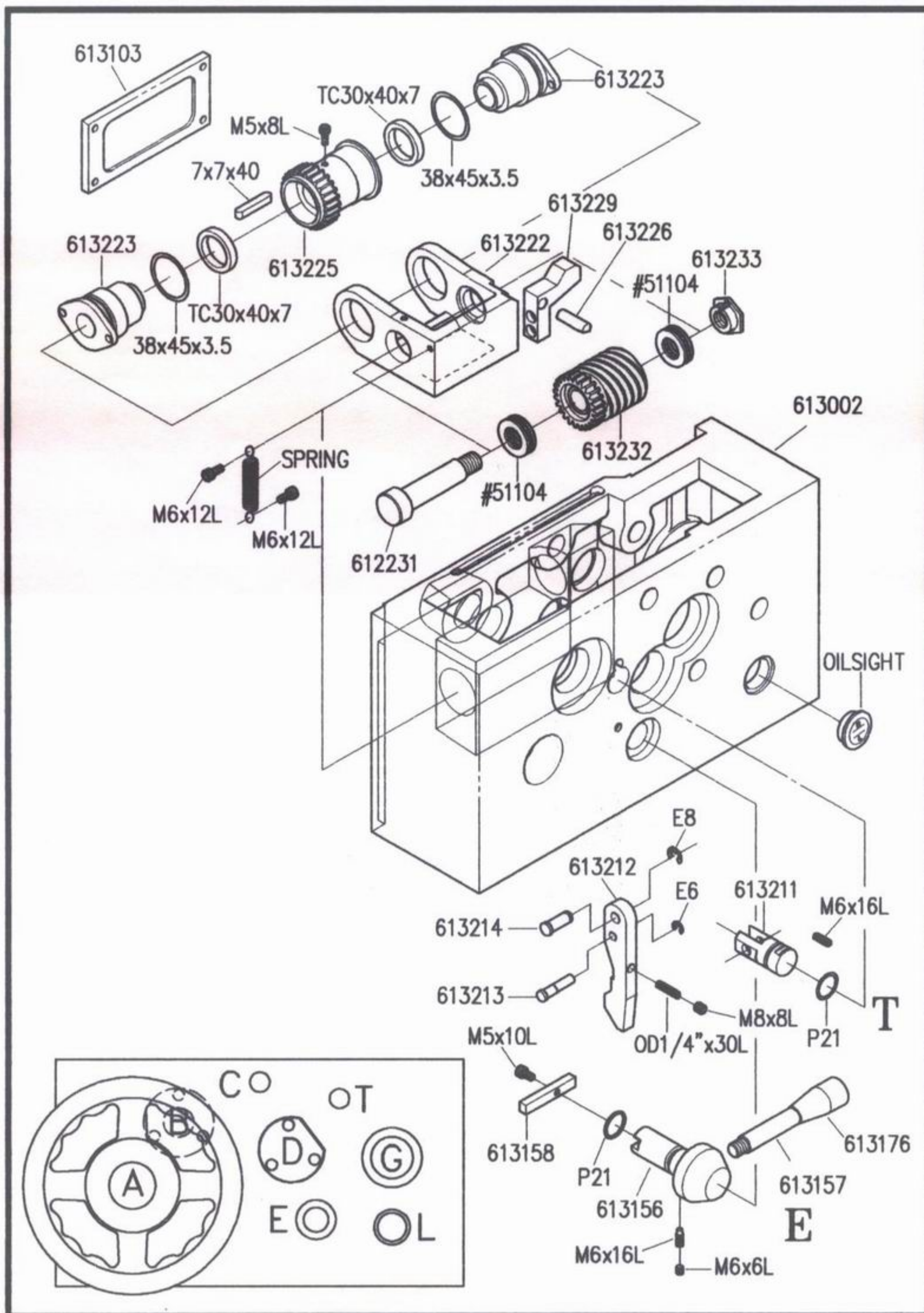


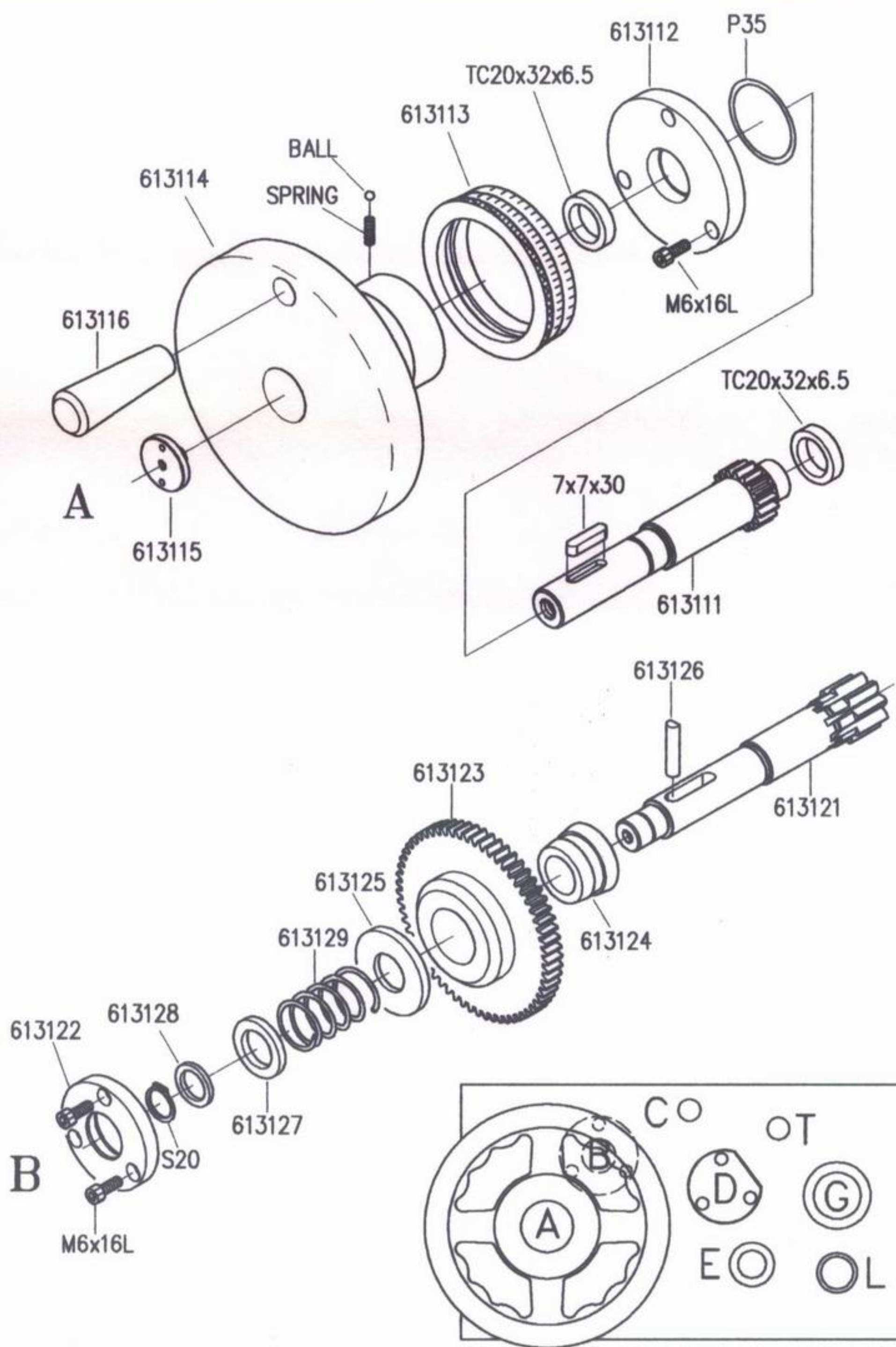


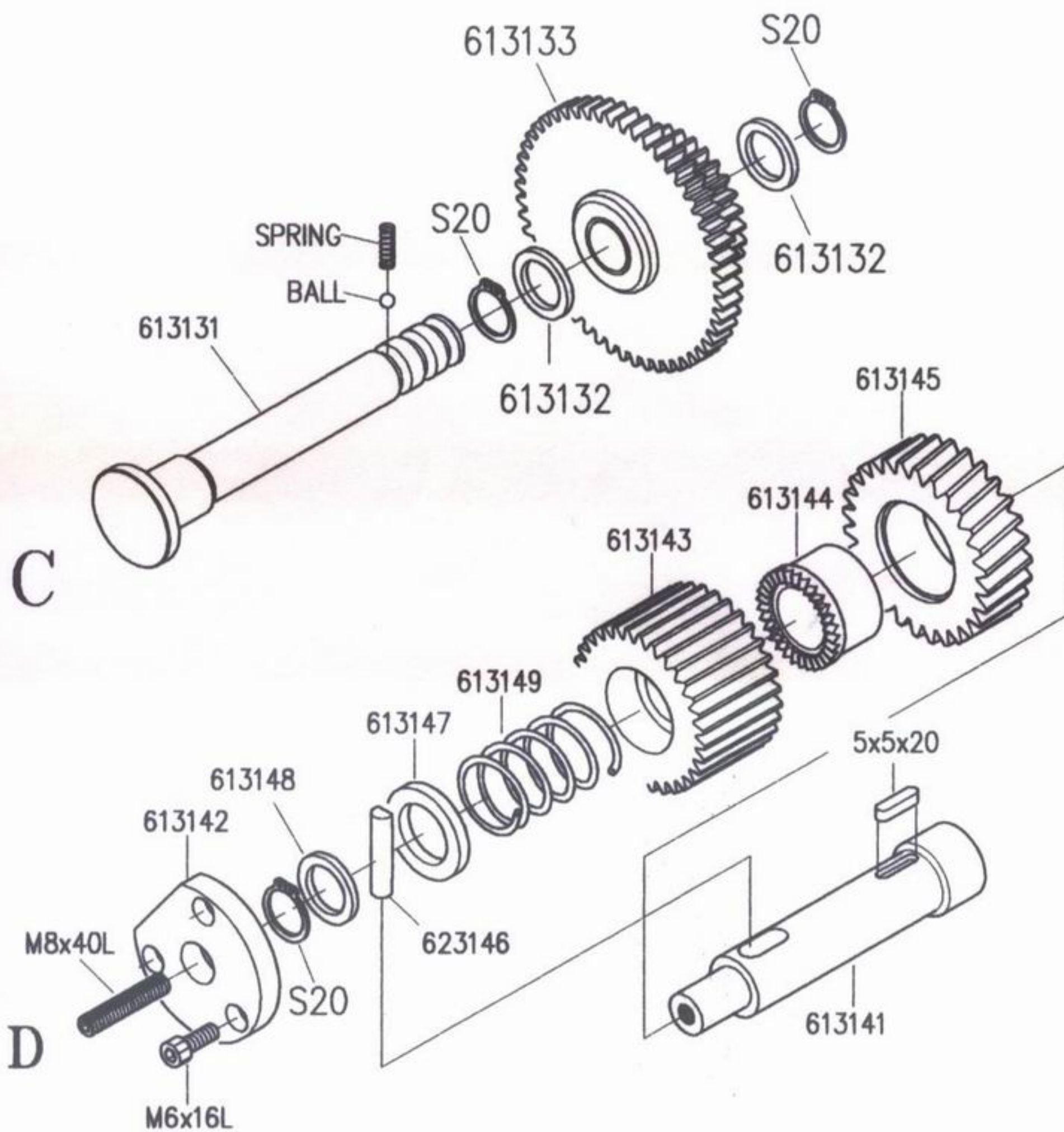




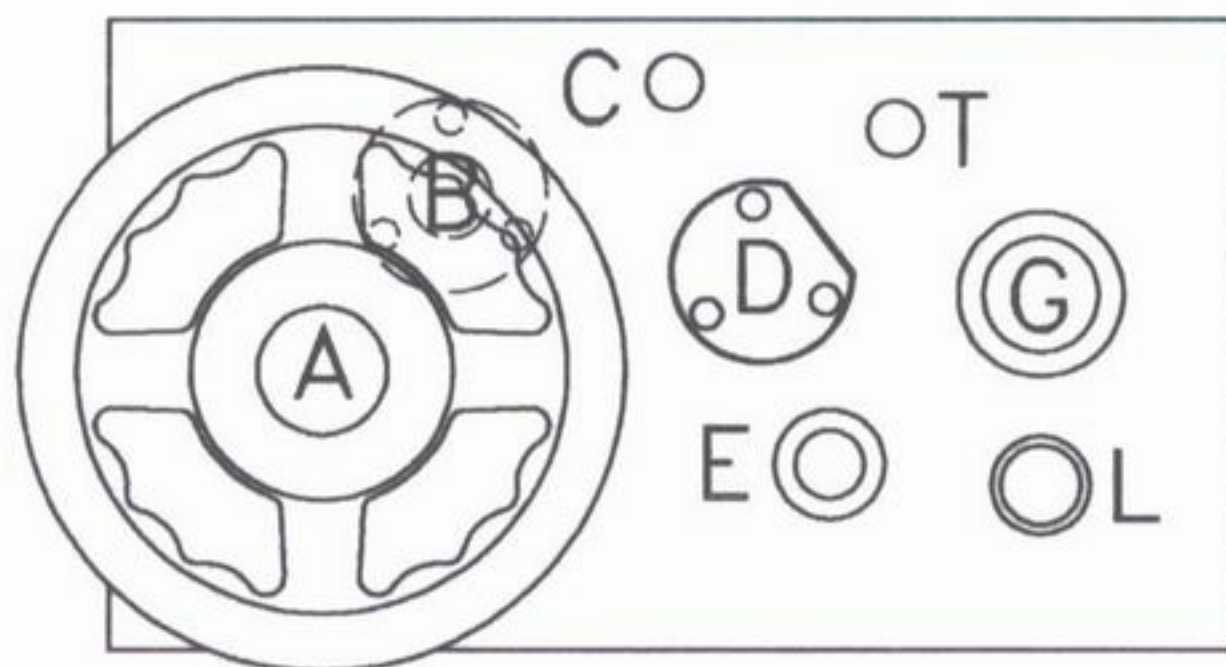


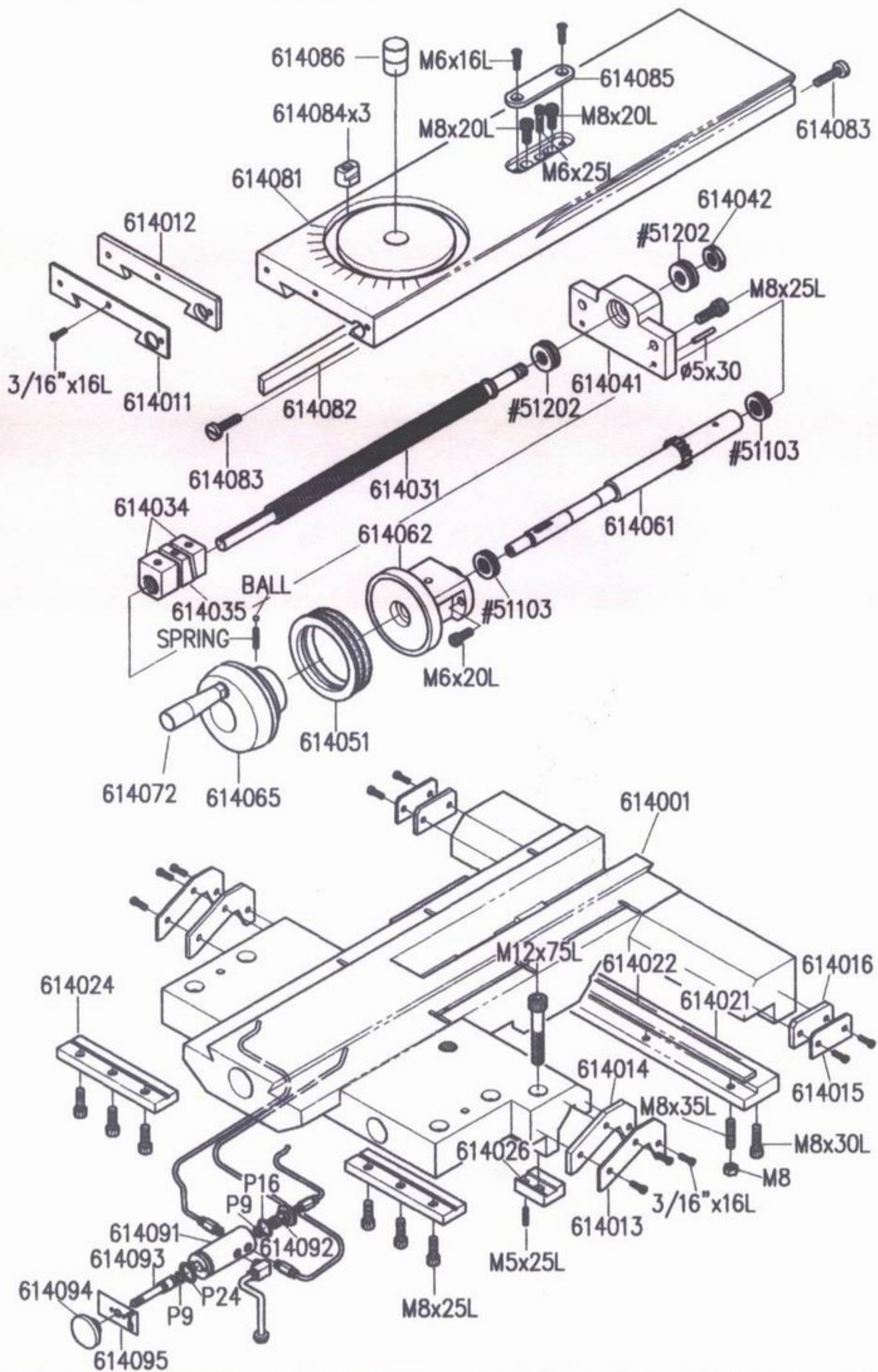


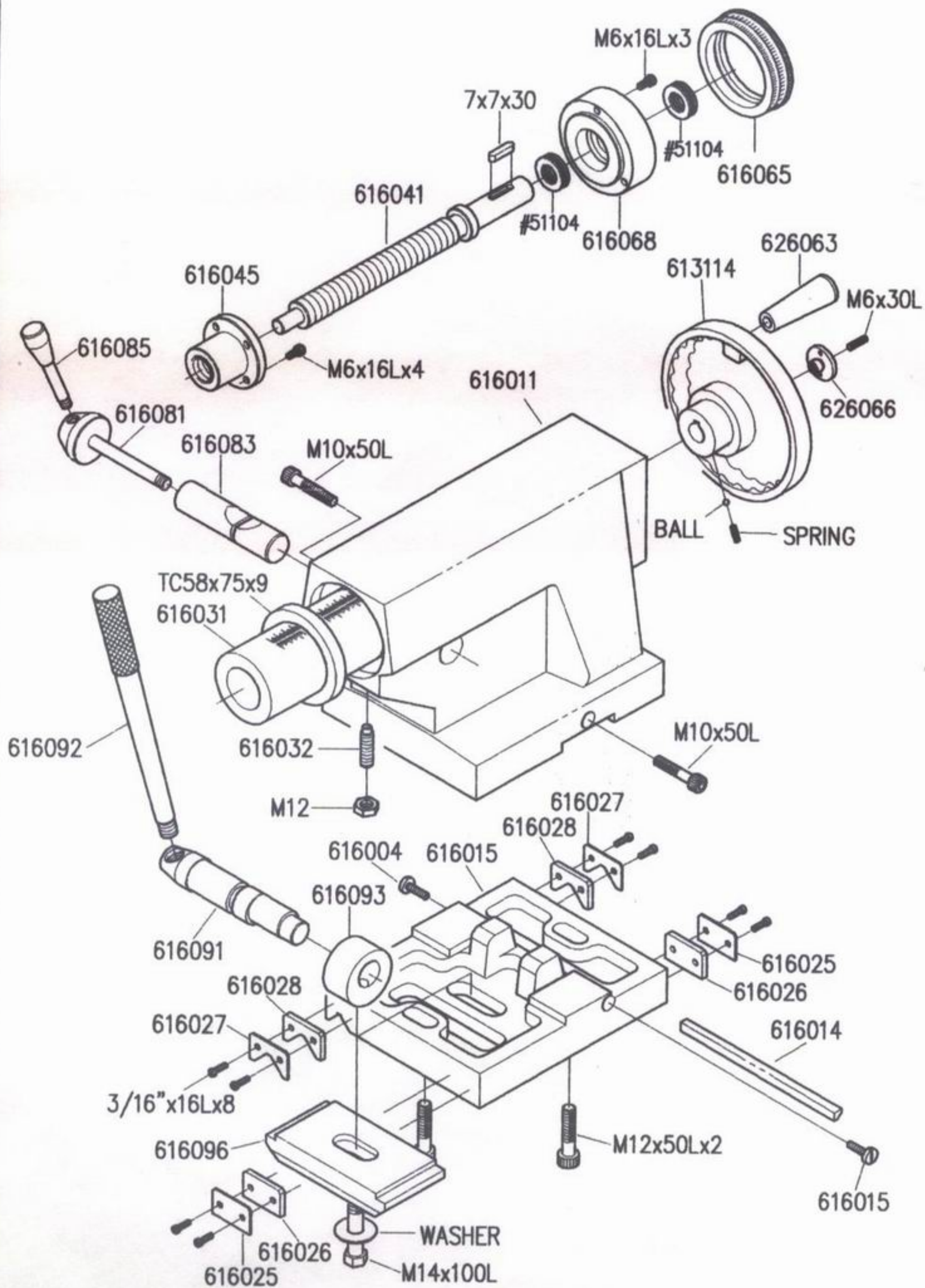




D







PART LIST

Part No.	Description	Quantity	Part No.	Description	Quantity
611011	Main Casting	1	611617	Gear 2.5M 42T	1
611051	Cover	1	611621	Shaft	1
611102	Shaft	1	611626	Gear 2.5M 42T	1
611111	Gear 2.5M 19T	1	611627	Gear 2.5M 21T	1
611112	Gear 2.5M 25T	1	611631	Shaft	1
611113	Gear 2.5M 40T	1	611636	Gear 2.5M 21T	1
611114	Gear 2.5M 35T	1	2233	Collar	2
611121	Cover	1	611641	Shaft	1
611122	Stud	1	611642	Cover	1
611123	Shaft	1	611656	Gear 2.5M 20T	1
611124	Lever	1	611811	Gear shaft 2M 13T	1
611125	Pulley	1	611812	Gear shaft 2M 17T	1
611126	Washer	1	611813	Washer	1
611127	Pulley (Electrical brake	1	611814	Range selector	1
611128	Collar	3	611815	Speed chart	1
611201	Gear shaft 2.5M 35T	1	611816	Handle	1
611211	Gear 2.5M 49T	1	611817	Washer	1
611212	Gear 2.5M 43T	1	611818	Lever	1
611213	Gear 2.5M 29T	1	611819	Lever	3
611214	Gear 2.5M 36T	1	611825	Detent plate	1
611221	Cover	1	611826	Detent ring	1
611222	Cover	1	611831	Shaft	2
611301	Shaft	1	611832	Shift lever	1
611311	Gear 2.5M 28T	1	611834	Shift fork	1
611312	Gear 2.5M 55T	1	611835	Gear 2M 59T	2
611313	Gear 2.5M 20T	1	611842	Shift lever	1
611321	Cover	1	611844	Shift fork	1
611322	Cover	1	611845	Gear 2M 59T	1
611401	Main Spindle	1	611861	Shaft	2
611411	Gear 2.5M 40T	1	611863	Shift lever	2
611412	Gear 2.5M 75T	1	611864	Shift fork	2
611421	Cover	1	611865	Washer	2
611422	Cover	1	611866	Handle	2
611432	Collar	1	611867	Washer	2
611611	Shaft	1	611868	Plug	11
611616	Gear 2.5M 21T	1			

PART LIST

Part No.	Description	Quantity	Part No.	Description	Quantity
612001	Gearbox casting	1	612061	Shaft	1
612002	Cover	1	612062	Cover	1
612011	Shaft	1	612063	Gear 2M18T/20P45T	1
612012	Cover	1	612064	Collar	1
612013	Gear 12P19T/10P19T	1	612069	Nut	1
612014	Collar	1	612071	Shaft	1
617106	Collar	1	612072	Cover	1
617108	Washer	1	612073	Gear 10P 22T	1
617109	Pin	1	612083	Gear 10P 22T	1
612021	Shaft	1	612084	Gear 11P 22T	1
612022	Gear 12P 32T	1	612085	Gear 14P 33T	1
612023	Gear 11P 23T	1	612086	Gear 12P 22T	1
612024	Gear 12P 16T	1	612092	Cover	1
612026	Collar	1	612093	Gear 20P 36T	1
612028	Clutch	1	612211	Shaft	1
612029	Collar	2	612212	Cam	1
612031	Shaft	1	612213	Lever	1
612032	Cover	1	612214	Knob	1
612033	Gear 2M35T/20P35T	1	612215	Handle	1
612034	Collar	1	612216	Washer	1
612041	Shaft	1	612217	Shift fork	1
612042	Cover	1	612218	Shift fork	1
612043	Gear 12P30T/10P20T	1	612219	Shift fork	1
612045	Washer	1	612220	Shift fork	1
612046	Washer	1	612221	Keep assy	1
612051	Gear 10P 22T	1	612222	Detent plate	1
612052	Gear 12P 16T	1	612223	Bolt	4
612053	Gear 10P 20T	1	612224	Pin	4
612054	Gear 11P 24T	1	612225	Shift lever	2
612055	Gear 11P 23T	1	612226	Shift lever	2
612056	Gear 14P 27T	1	612230	Detent plate	1
612057	Gear 14P 24T	1	612231	Shaft	3
612058	Gear 12P 28T	1	612232	Handle	3
612059	Gear 12P 26T	1	612233	Lever	3
612060	Gear 12P 32T	1	612234	Washer	3

PART LIST

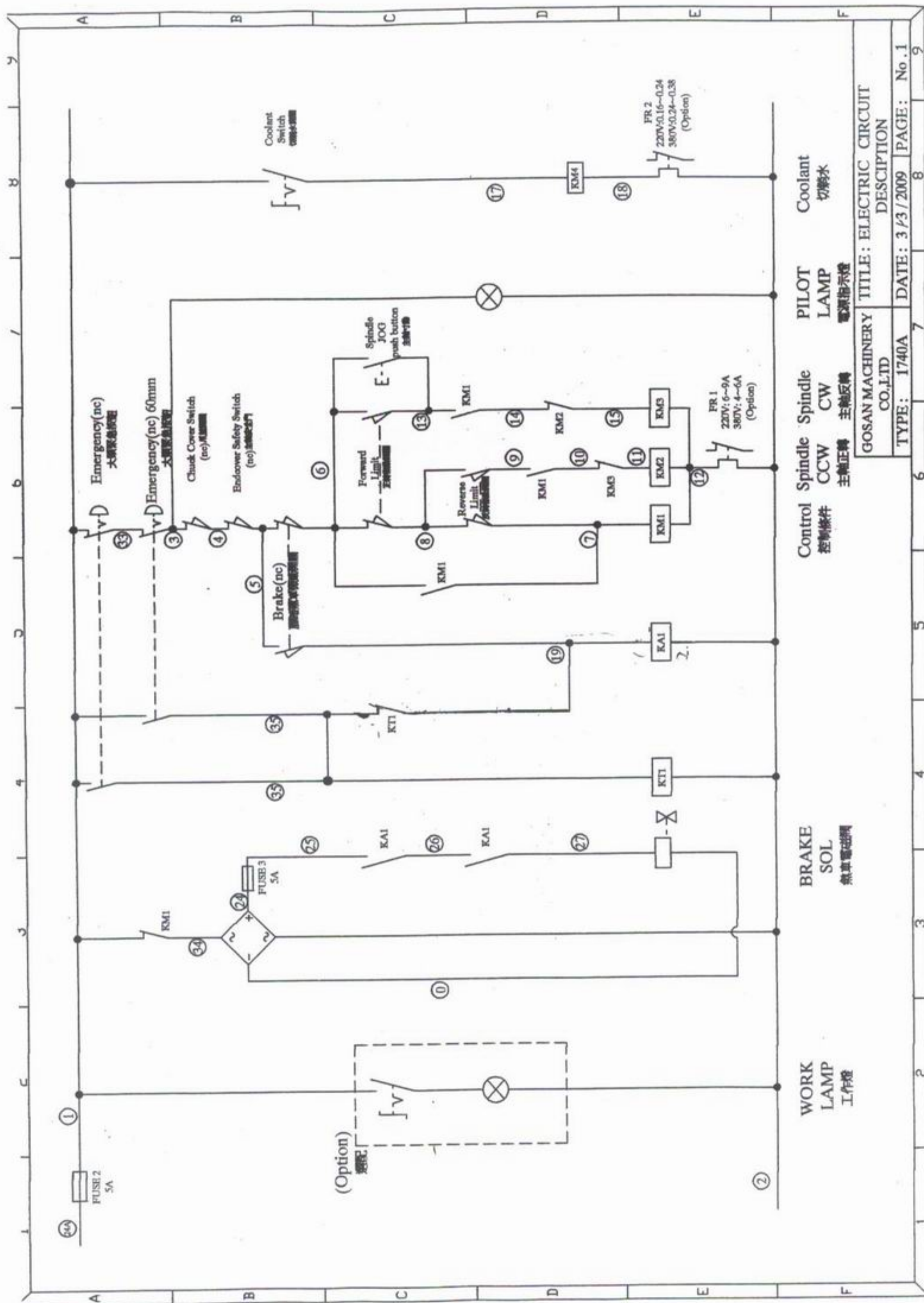
Part No.	Description	Quantity	Part No.	Description	Quantity
612245	Shift lever	1	613145	Worm gear 2.5M 18T	1
612246	Shift fork	1	613146	Pin	1
612255	Shift lever	1	613147	Washer	1
612256	Shift fork	1	613148	Washer	1
612265	Shift lever	1	613149	Spring	1
612266	Shift fork	1	613150	Cover	1
			613155	Handle	1
			613157	Lever	1
			613158	Latch	1
Part No.	Description	Quantity	613171	Cam shaft	1
613001	Casting right-hand Apron	1	613173	Latch	1
613002	Casting left-hand Apron	1	613174	Handle	1
613051	Bottom plate right-hand	1	613175	Lever	1
613052	Bottom plate left-hand	1	613176	Knob	1
613103	Cover	1	613177	Halfnut bracket	1
613111	Gear shaft 2M 13T	1	613178	Halfnut	1
613112	Cover	1	613179	Gib	1
613113	Index ring	1	613211	Shaft	1
613114	Handwheel	1	613212	Latch	1
613115	Plug	1	613213	Pin	1
613116	Handle	1	613214	Pin	1
613121	Gear shaft 2.5M 9T	1	613221	Casying right-hand	1
613122	Cover	2	613222	Casying left-hand	1
613123	Gear 2M 61T	1	613223	Pinion bush assy.	2
613124	Collar	1	613225	Gear 2M 24T	1
613125	Washer	1	613226	Pin	1
613126	Pin	1	613229	Latch	1
613127	Washer	1	613231	Shaft	1
613128	Washer	1	613232	Worm gear 2M 21T	1
613129	Spring	1	613233	Nut	1
613130	Cover	2	613241	Cover	1
613131	Shaft	1	613242	Shaft	1
613132	Washer	1	613243	Bracket	1
613133	Gear 2M35T/2M16T	1	613244	Knock off lever	1
613141	Shaft	1	613245	Pin	1
613142	Cover	1			
613143	Gear 2M 25T	1			
613144	Clutch	1			

PART LIST

Part No.	Description	Quantity
614001	Saddle casting	1
614011	Plate	1
614012	Wiper	1
614013	Plate	2
614014	Wiper	2
614015	Plate	2
614016	Wiper	2
614021	Front strip	1
614023	Back strip	1
614024	Gib	2
614026	Clips	1
614031	Screw Metric	1
614032	Nut Metric	1
614033	Screw Inch	1
614034	Nut Inch	1
614035	Space	1
614041	Bracket	1
614042	Nut	2
614045	Shaft	1
614046	Gear 2M15T/2M21T	1
614047	Shaft	1
614048	Gear 2M 20T	1
614051	Index ring	1
614061	Gear shaft 2M 14T	1
614062	Keep assy.	1
614065	Handwheel	1
614072	Handle	1
614081	Cross-slide cover	1
614082	Gib	1
614083	Screw	2
614084	Nut	4
614085	Cover	1
614086	Pivot	1
614091	Pump	1
614092	Cover	1

Part No.	Description	Quantity
614093	Piston shaft	1
614094	Knob	1
614095	Plate	1
614096	Cock	1
614097	Handle	1

Part No.	Description	Quantity
616001	Tailstock casting	1
616004	Screw	2
616005	Gib	1
616015	Base for 15" Lathe	1
616016	Base for 16" Lathe	1
616017	Base for 17" Lathe	1
616025	Plate	2
616026	Wiper	2
616027	Plate	2
616028	Wiper	2
616031	Barrel	1
616032	Set screw	1
616041	Screw	1
616045	Nut	1
616061	Handwheel	1
616062	Plug	1
616063	Handle	1
616065	Index ring	1
616068	Keep	1
616081	Screw	1
616083	Pad	1
616085	Lever	1
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616092	Lever	1
616093	Pivot block	1
616096	Clamp plate	1



GOSAN MACHINERY CO., LTD

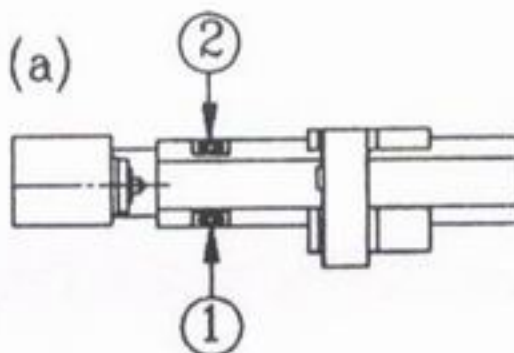
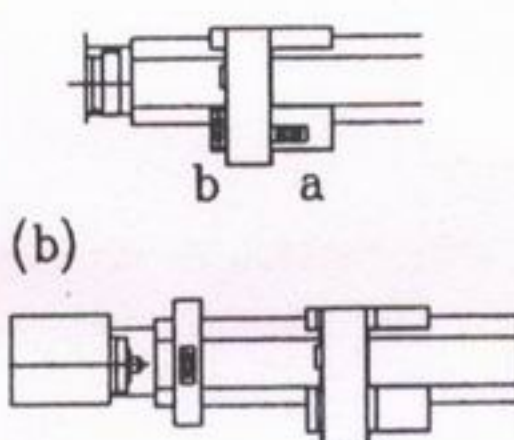
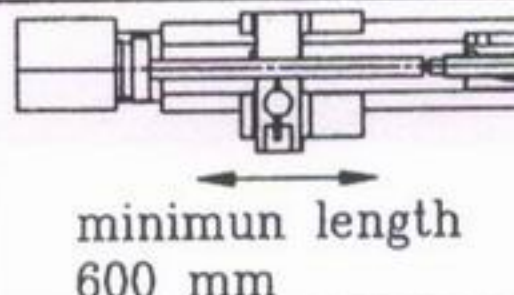
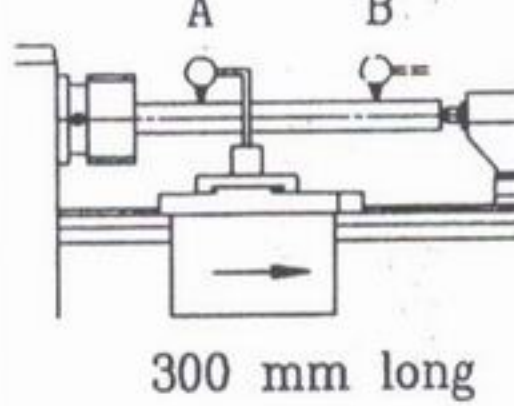
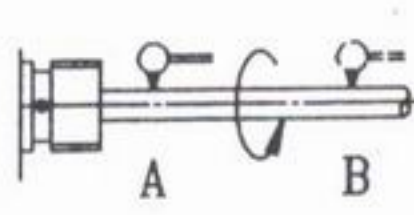
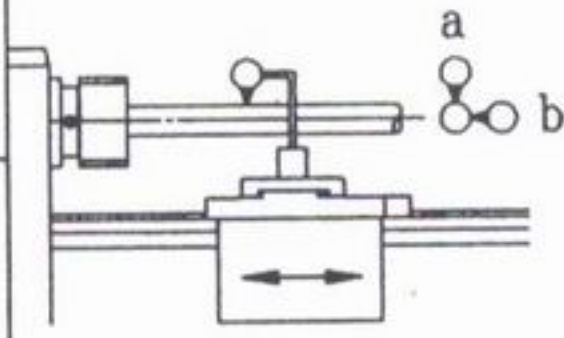
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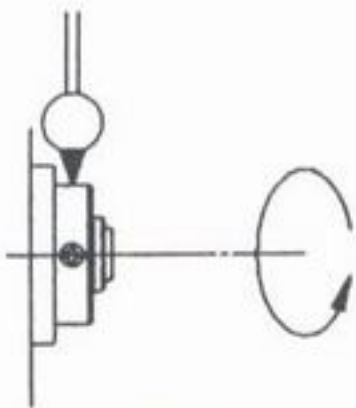
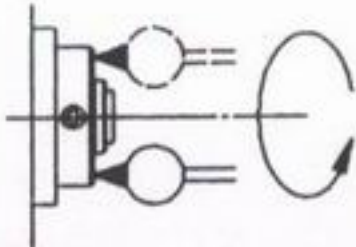
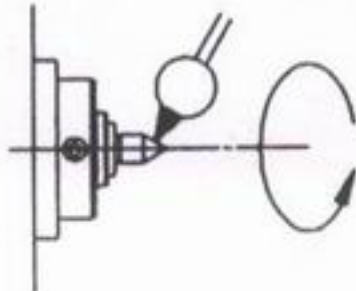
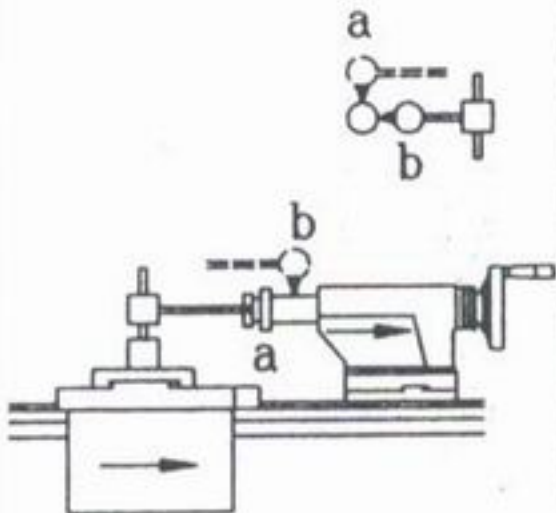
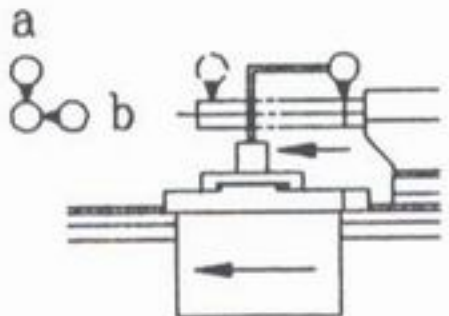
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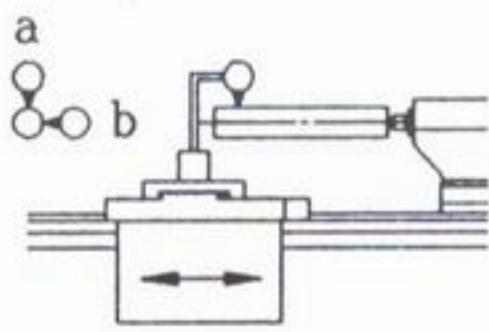
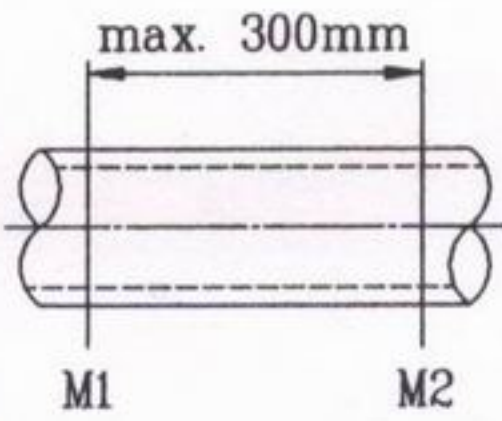
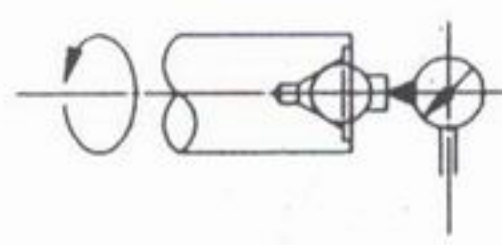
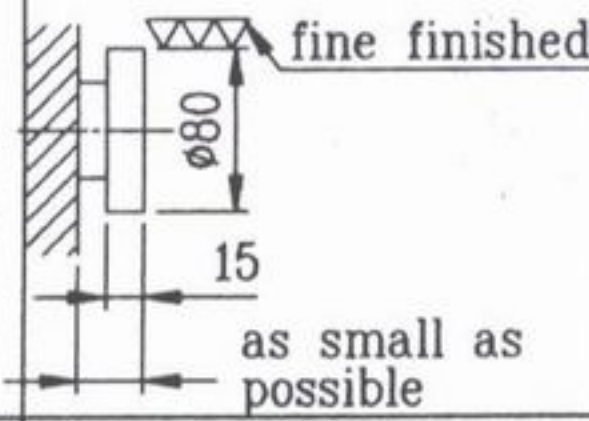
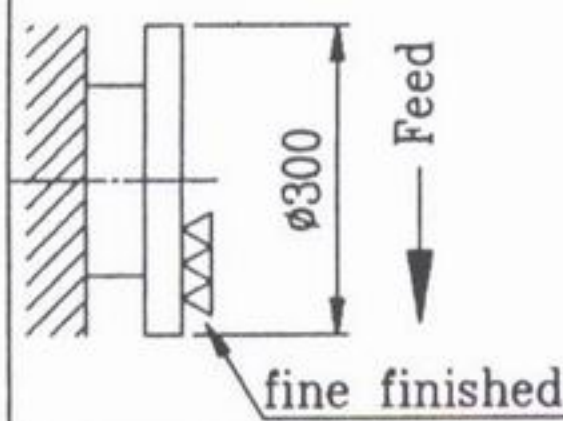
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TITLE: ELECTRIC CIRCUIT DESCRIPTION

STATIC ACCURACY TEST

TYPE:			MACHINE SERIAL NO.		
NO.	SUBJECT OF MEASUREMENT		ILLUSTRATION	PERMISSIBLE ERROR	MEASURED ERROR
1.	Levelling of machine	(a) in longitudinal direction	(a) 	(1) Front bedway 0.04	
				(2) Rear bedway +0.01 mm/m -0.02 mm/m	
		(b) in transverse direction	(b) 	±0.02 mm/m	
2.	Traverse of carriage straight in horizontal plane		 minimun length 600 mm	0.02 mm over length of test mandrel	
3.	Axis of centres parallel with bed in vertical plane		 300 mm long	0.02 mm	
4.	Taper of spindle runs true			Position A : 0.01 mm	
				Position B : 0.02 mm	
5.	Spindle parallel with traverse of carriage	(a) in vertical plane		(a) 0.02/ 300 mm	
		(b) in horizontal plane		(b) 0.02/ 300 mm	

6.	Centring register of spindle runs true		0.01 mm	
7.	Spindle for axial float and true running of face of spindle flange		0.015 mm	
8.	Centre runs true		0.015 mm	
9.	Traverse of carriage parallel with tailstock guideways		(a) 0.03/ 1000 mm	
	(b) in horizontal plane		(b) 0.02/ 1000 mm	
10.	Tailstock spindle parallel with carriage guides (carriage traverse)		(a) 0.01 mm	
	(b) in horizontal plane		(b) 0.01 mm	

11.	Taper in tailstock spindle parallel with carriage traverse	(a) in vertical plane		(a) 0.03/300 mm	
		(b) in horizontal plane		(b) 0.03/300 mm	
12.	Pitch accuracy of lead-screw		0.03/300 mm		
13.	Leadscrew for axial float		0.01mm in either direction		
14.	Working accuracy of lathe on cylindrical turning		0.01mm		
15.	Working accuracy of lathe on surfacing work		0.02mm		
CHIEF ENGINEER :			INSPECTING ENGINEER :		