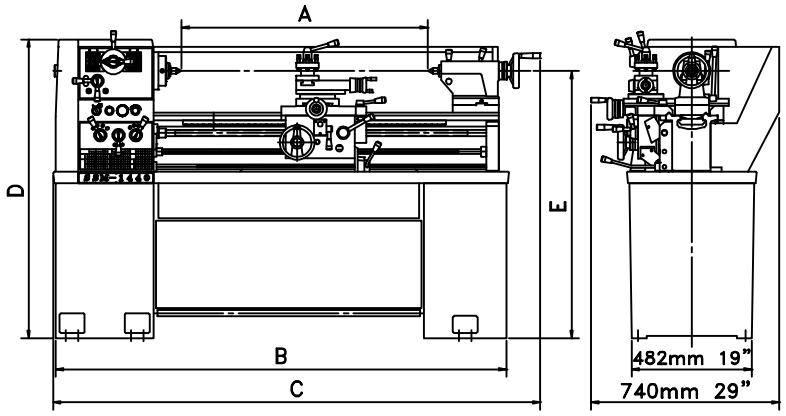
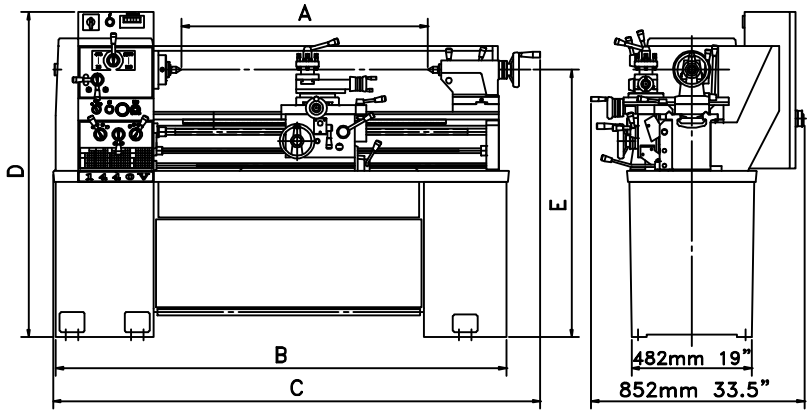
INDEX

DIMENSIONS



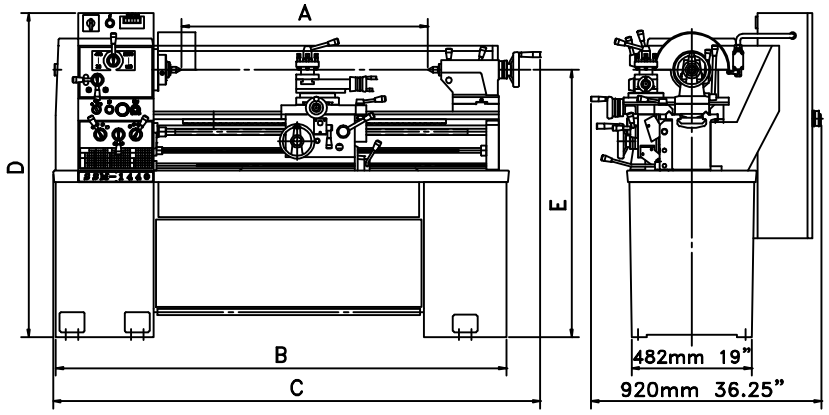
MODEL / SIZE	A	B	C	D	E
1330	750mm 30in	1550mm 61in	1660mm 65⅓in	1180mm 46½in	1054mm 41½in
1340	1000mm 40in	1800mm 71in	1920mm 75⅔in	1180mm 46½in	1054mm 41½in
1430	750mm 30in	1550mm 61in	1660mm 65⅓in	1194mm 47in	1067mm 42in
1440	1000mm 40in	1800mm 71in	1920mm 75⅔in	1194mm 47in	1067mm 42in

VARIABLE SPEED CHANGE



MODEL / SIZE	A	B	C	D	E
1330V	750mm 30in	1550mm 61in	1660mm 65⅓in	1298mm 51⅛in	1054mm 41½in
1340V	1000mm 40in	1800mm 71in	1920mm 75⅔in	1298mm 51⅛in	1054mm 41½in
1430V	750mm 30in	1550mm 61in	1660mm 65⅓in	1298mm 51⅛in	1067mm 42in
1440V	1000mm 40in	1800mm 71in	1920mm 75⅔in	1298mm 51⅛in	1067mm 42in

VARIABLE SPEED CHANGE WITH "CE" STANDARD



MODEL / SIZE	A	B	C	D	E
1330V	750mm 30in	1550mm 61in	1660mm 65⅓in	1295mm 51in	1054mm 41½in
1340V	1000mm 40in	1800mm 71in	1920mm 75⅔in	1295mm 51in	1054mm 41½in
1430V	750mm 30in	1550mm 61in	1660mm 65⅓in	1295mm 51in	1067mm 42in
1440V	1000mm 40in	1800mm 71in	1920mm 75⅔in	1295mm 51in	1067mm 42in

SPECIFICATION AND ACCESSORIES

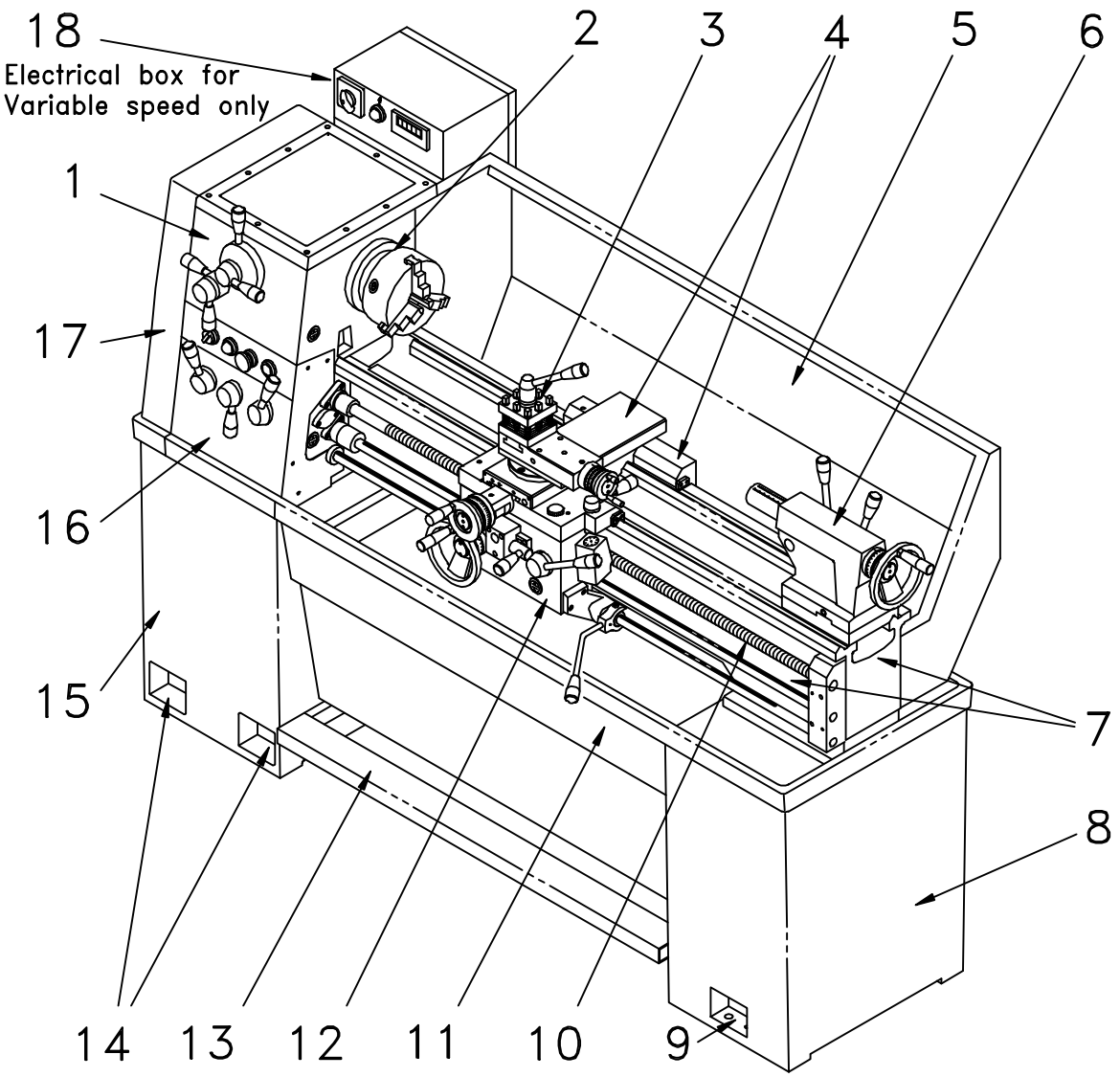
BRIEF SPECIFICATION

165mm
6mm/4TPI

MODEL	1330 1330 V	1340 1340 V	1430 1430 V	1440 1440 V
NOMINAL SIZE				
Swing over bed	330mm. 13"	330mm. 13"	356mm. 14"	356mm. 14"
Swing over cross slide	195mm. 7 5/8"	195mm. 7 5/8"	220mm. 8 5/8"	220mm. 8 5/8"
Height of center	165mm. 6 1/2"	165mm. 6 1/2"	178mm. 7"	178mm. 7"
Distance between centers	750mm. 30"	1000mm.40"	750mm. 30"	1000mm.40"
BED				
Width of bedways	206mm. 8 1/2"	206mm. 8 1/2"	206mm. 8 1/2"	206mm. 8 1/2"
Total length of bed	1430mm.56"	1680mm.66"	1430mm.56"	1680mm.66"
Gap type — Swing over gap	490mm. 19"	490mm. 19"	515mm. 20"	515mm. 20"
Gap type — Length of gap	240mm. 9 7/16"	240mm. 9 7/16"	240mm. 9 7/16"	240mm. 9 7/16"
Gap type — Width in front of face plate	146mm. 5 3/4"	146mm. 5 3/4"	146mm. 5 3/4"	146mm. 5 3/4"
SPINDLE				
Spindle nose mounting	D1-4 Camlock			
Spindle bore	38mm. 1-1/2"			
Taper of spindle bore	M.T. No.5			
Number of spindle speeds	8 (Standard)			
Range of spindle speeds	90-1800 R.P.M.			
Number of spindle speeds	16 (2 speeds Motor)			
Range of spindle speeds	45-1800 R.P.M.			
Number of spindle speeds	Variable speed change			
Range of spindle speeds	30-2200 R.P.M.			
TOOL SLIDE				
Total travel of cross slide	160mm. 6 1/4"	160mm. 6 1/4"	165mm. 6 1/2"	165mm. 6 1/2"
Total travel of top slide	90mm. 3 1/2"	90mm. 3 1/2"	100mm. 4"	100mm. 4"
Max. size cutting tool	16mm. 5/8"	16mm. 5/8"	22mm. 7/8"	22mm. 7/8"
TAILSTOCK				
Total travel of barrel	120mm. 4-3/4"			
Taper in barrel	M.T. No.3			
Diameter of barrel	Dia. 45mm. 1-3/4"			
THREADS				
Leadscrew diameter & pitch	Dia. 25mm. pitch 6mm.		Dia. 1" 4T.P.I.	
Number of Inch threads	28 (Metric Leadscrew)		48 (Inch Leadscrew)	
Range of Inch threads	2 - 28 T.P.I.		1 - 56 T.P.I.	
Number of Metric pitches	37 (Metric Leadscrew)		26 (Inch Leadscrew)	
Range of Metric pitches	0.5 - 7.0 mm.		0.45 - 7.5 mm.	
FEEDS				
Feed rod diameter	Dia. 19mm.		Dia. 3/4"	
Number of feed change	42 (Metric system)		40 (Inch system)	
Range of longitudinal feeds	0.053 - 0.402mm./rev.		0.0011 - 0.0543in./rev.	
Range of cross feeds	0.026 - 0.201mm./rev.		0.0005 - 0.0271in./rev.	
MOTOR				
Main spindle motor	2.2 KW. 3 HP.			
Coolant pump motor	0.175 KW. 1/8 HP.			
Machine net weight	650 Kgs.	700 Kgs.	700 Kgs.	750 Kgs.

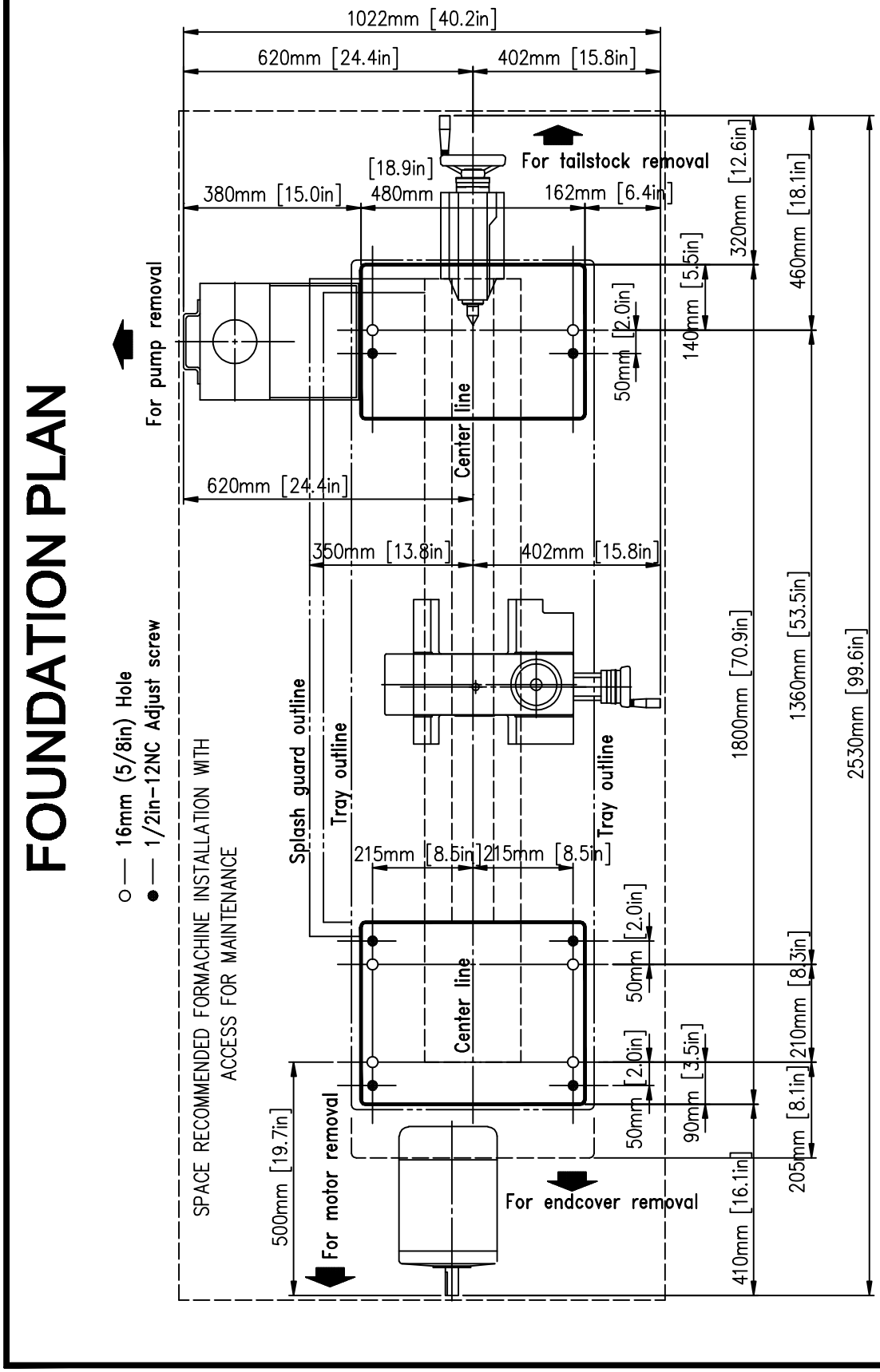
We reserve the right to modify and improve our products.

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.Mounting feet
16.Gear box
17.End cover
18.Electrical box

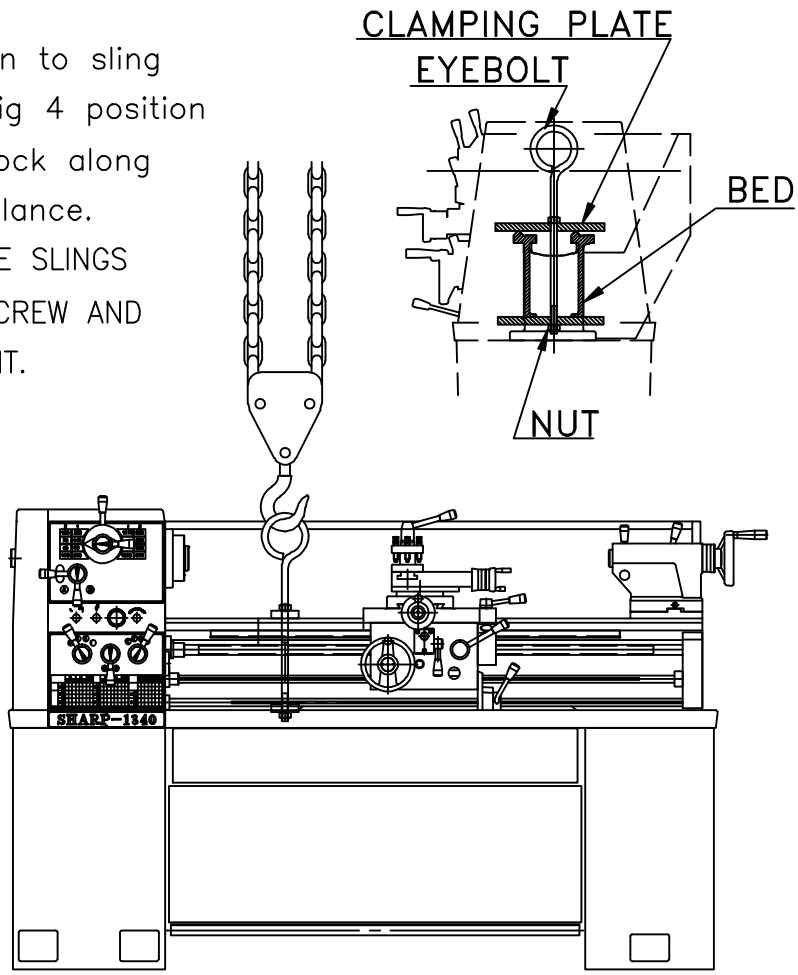
FOUNDATION PLAN



MODEL: 1340F, 1440F, 1440V

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.



CLEANING

Before operating and 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.

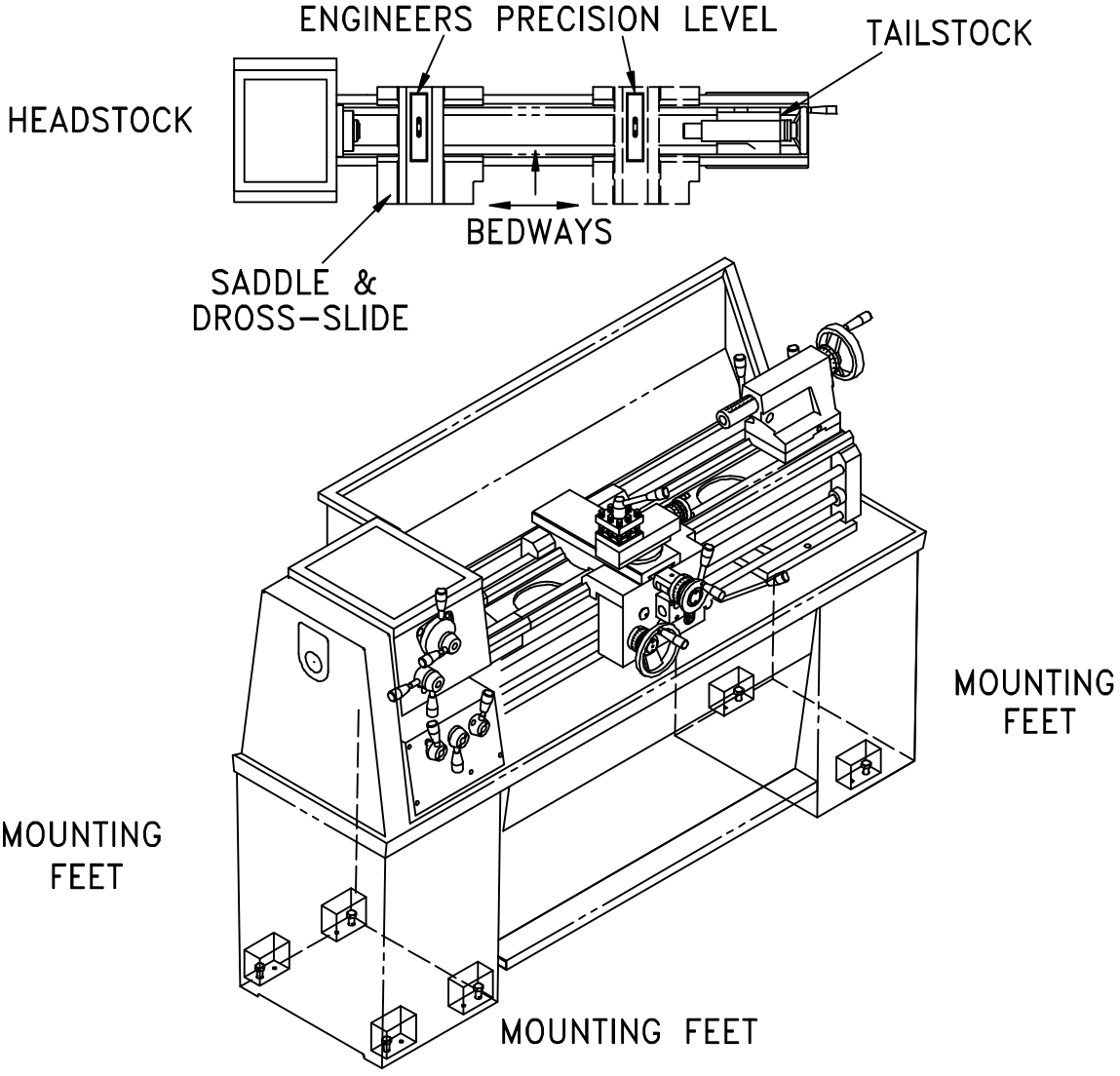
Machine surface becomes bright immediately after cleaning using machine oil or slideway lubricant. Use heavy oil or grease on the end gears.

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.

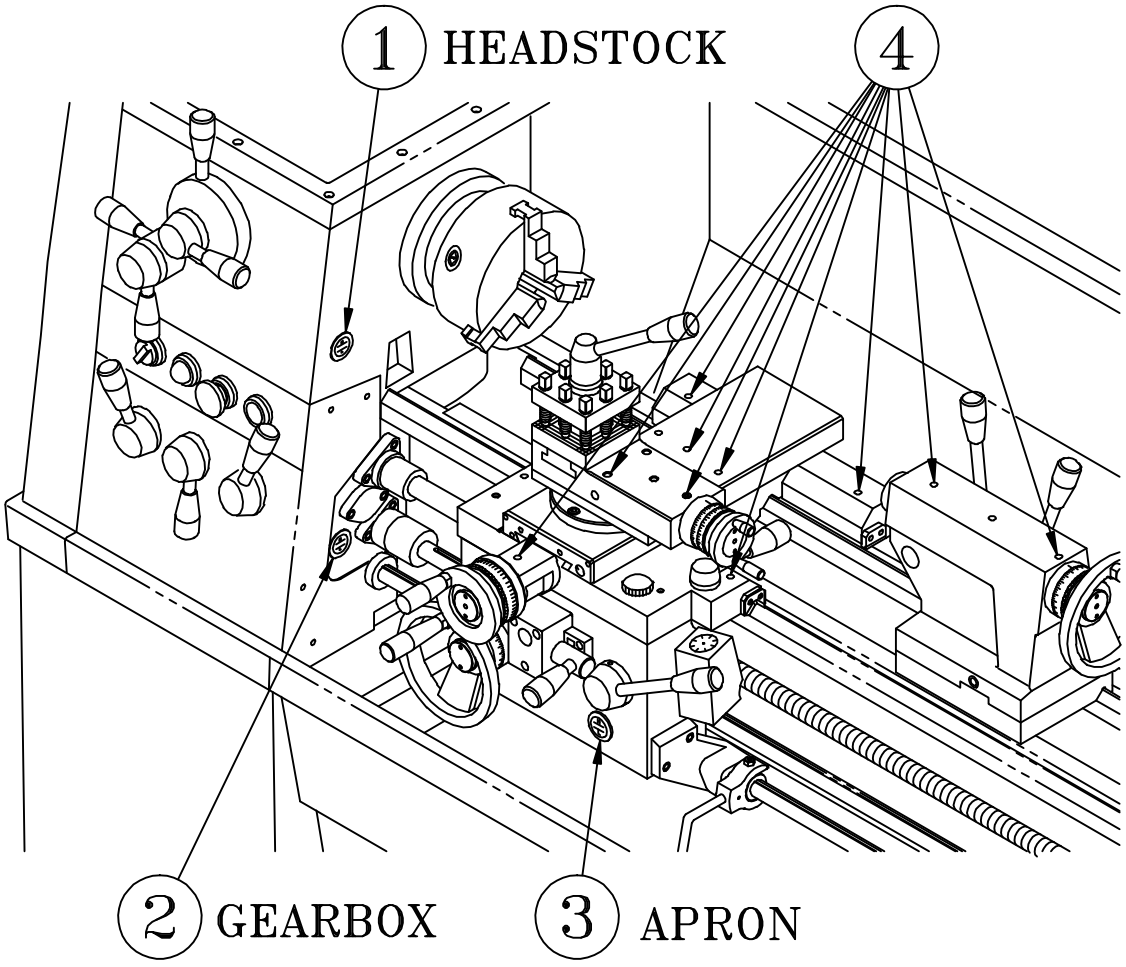
Fixed installation: Position lathe over six bolts (1/2 in. or 12 mm. diam.),set into the foundation to correspond with holes in the mounting feet. Accurately level the machine as in Fig 5, then tighten hold—down bolts and recheck bed level.



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

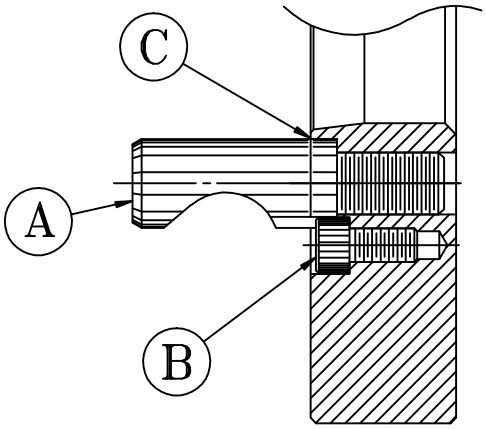
WARNING: GREY—IRON CHUCKS MUST NOT BE FITTED ON THIS HIGH—SPEED LATHE. USE ONLY DUCTILE IRON CHUCKS.

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).

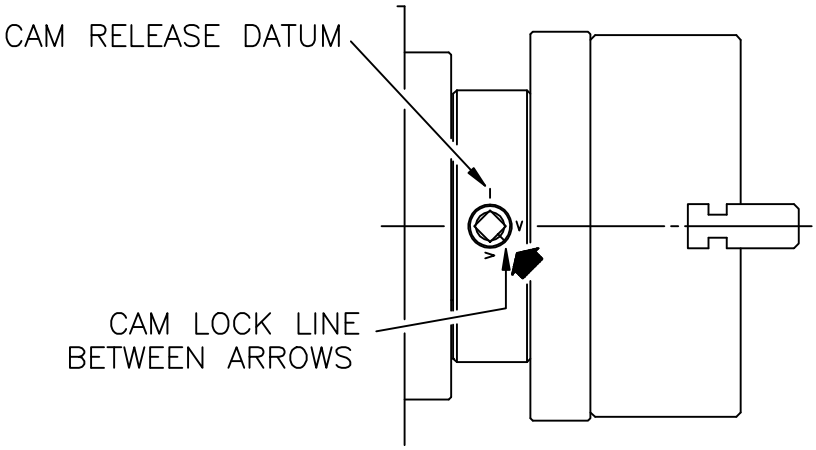
Now mount the chuck or faceplate on the spindle nose and tighen the three cams in turn. When fully tightened, the cam lock line on each cam should be between the two V on the spindle nose. If any of the cams do not tighten fully within these limit marks, remove the chuck or faceplate and re—adjust the 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.

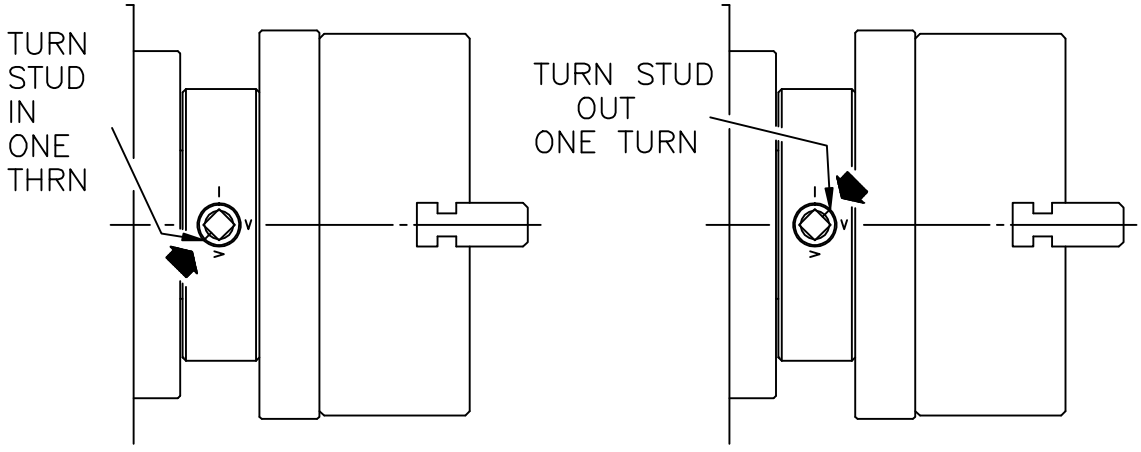
IMPORTANT: Take care note of speed limitations when using faceplate. 10 in. faceplates should not be run at speeds greater than 770 rev/min.



CORRECT

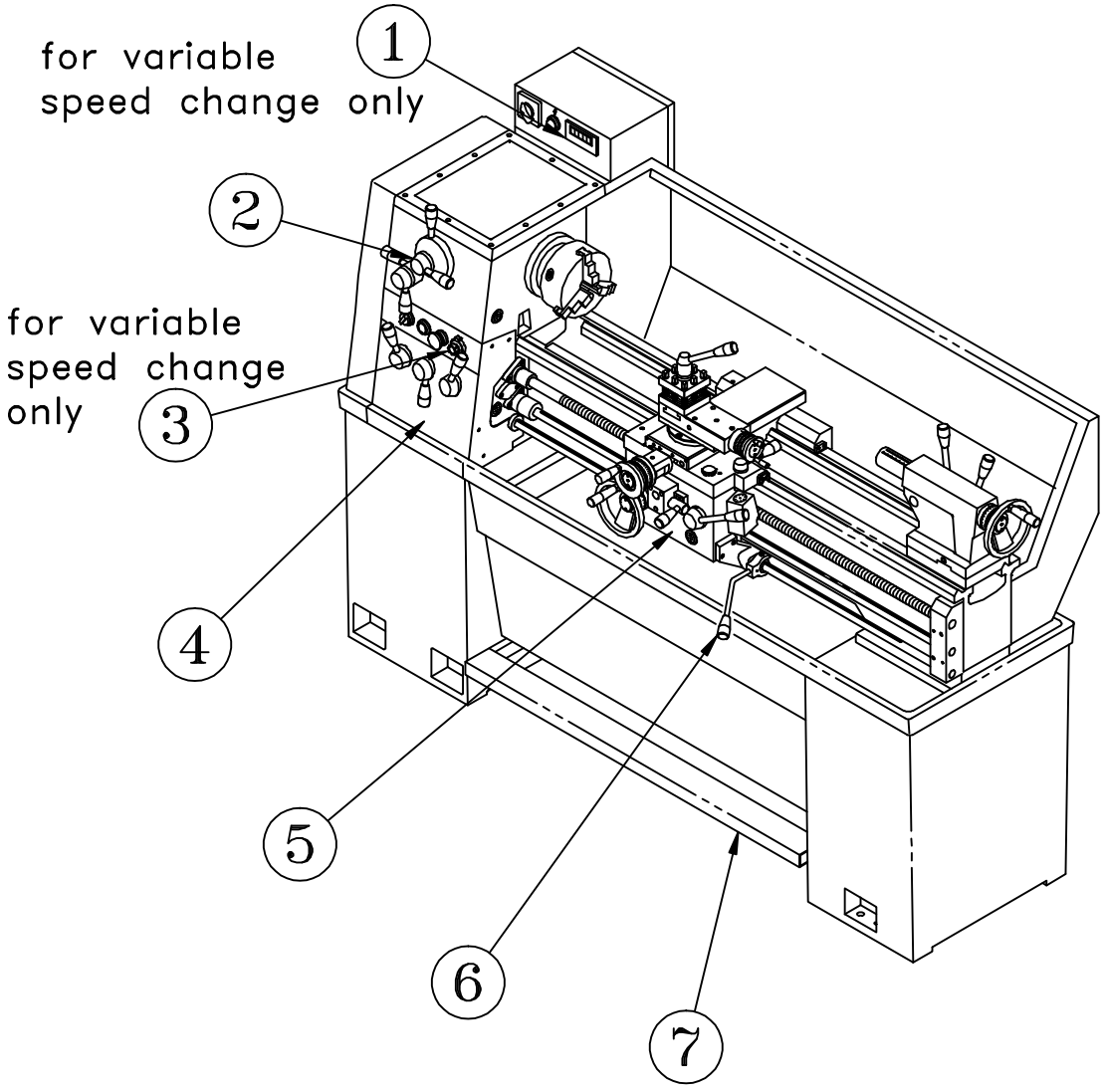


CORRECT



LATHE CONTROLS

1. Spindle speed digital readout. (for V-speed)
2. Spindle speed selector (HIGH or LOWER step).
3. Spindle speed adjusting knob. (for V-speed)
4. Gearbox, threads and feeds.
5. Apron, surfacing or sliding feeds.
6. Main motor rotation (forward and revers).
7. Footbrake.



ELECTRICAL CONTROLS

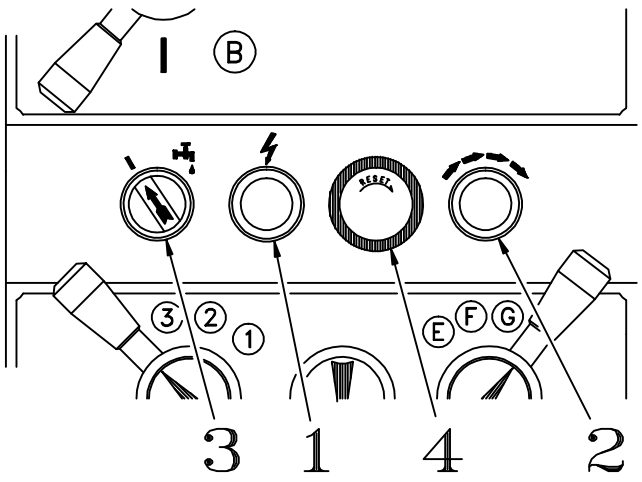
The power switches are fitted on the face of electrical in back of the headstock. Except the main switch, all electrical controls are fitted in the front of the headstock.

1.Move the power switch set at ON position then the indicator lamp glows.

2.Press the JOG botton. The main drive motor can be running with a moment. (While the motor roatation lever is set in the neutral position).

3.Coolant pump ON/OFF select switch.

4.Press the RED button to stop the main motor and coolant pump.

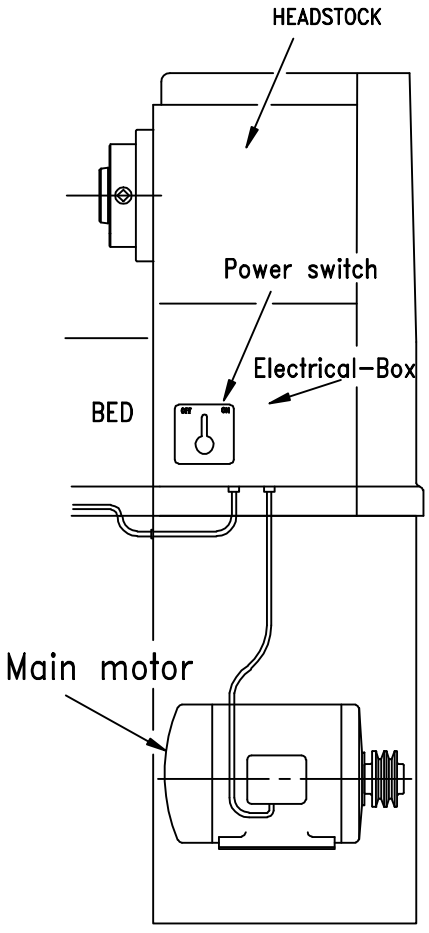


1- Indicator lamp

2- Jog button

3- Coolant pump switch

4- Emergency stop switch



ELECTRICAL CONTROLS (Variable speed change)

The Main power switch are fitted on the front of Electrical box behind the Lathe (Head–end) All electrical controls are fitted to the front face of the Headstock and the top of Electricals box on the top of Headstock.

(1),(2),POWER SWITCH BUTTON: when turn on the Main power switch (1) on the electrical cover; and (2) on the top of headstock, the pilot lamp (3) glows and the electricity is on.

(3) PILOT LAMP: When power is on, the pilot lamp glows.

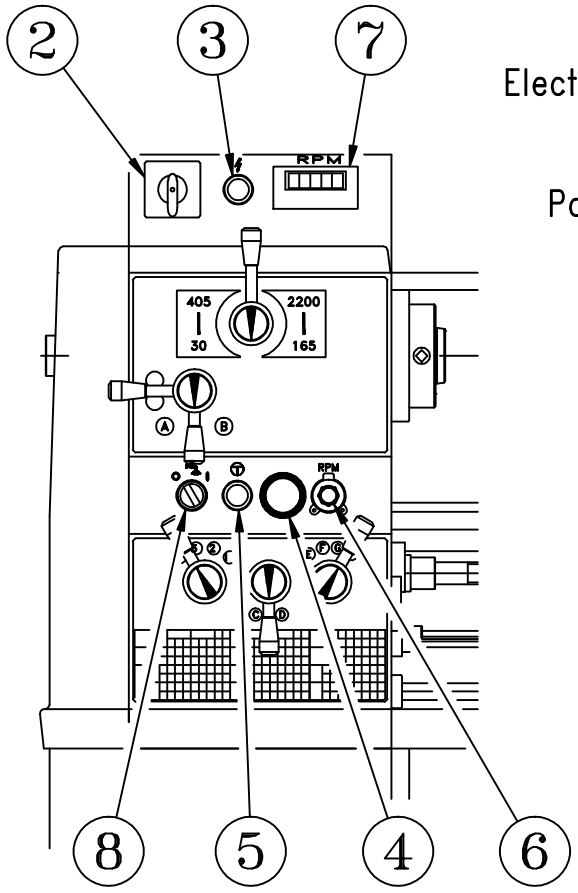
(4) EMERGENCY STOP SWITCH: press the RED mushroom–head button to stop electric power, to stop the main motor and coolant pump.

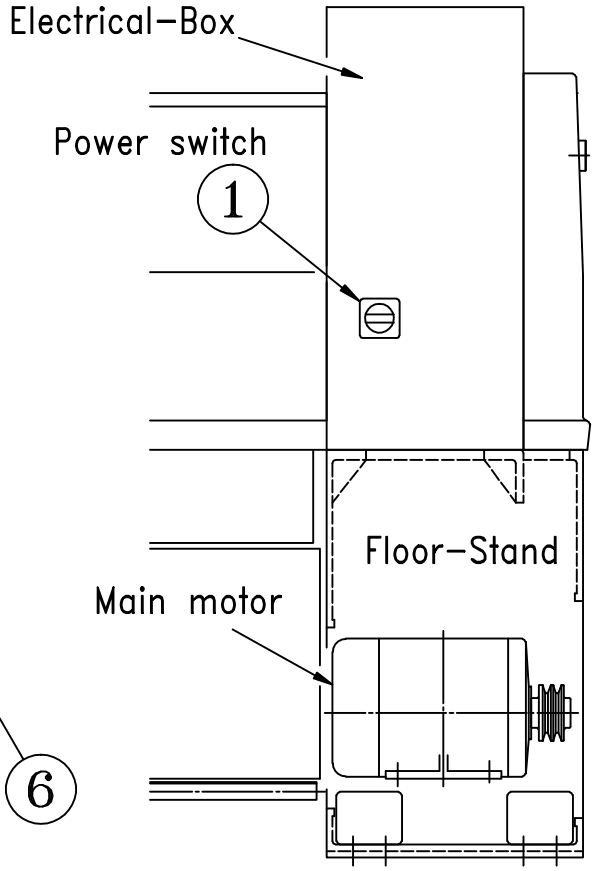
(5) INCHING: Press the GREEN button to move spindle slightly, it will make spindle speed selection very easy. (While the spindle rotation lever is set in the neutral position)

(6) VARIABLE SPEED SELECTORS: adjusting spindle speed.

(7) Spindle speed chart.

(8) Coolant pump ON/OFF swithch.

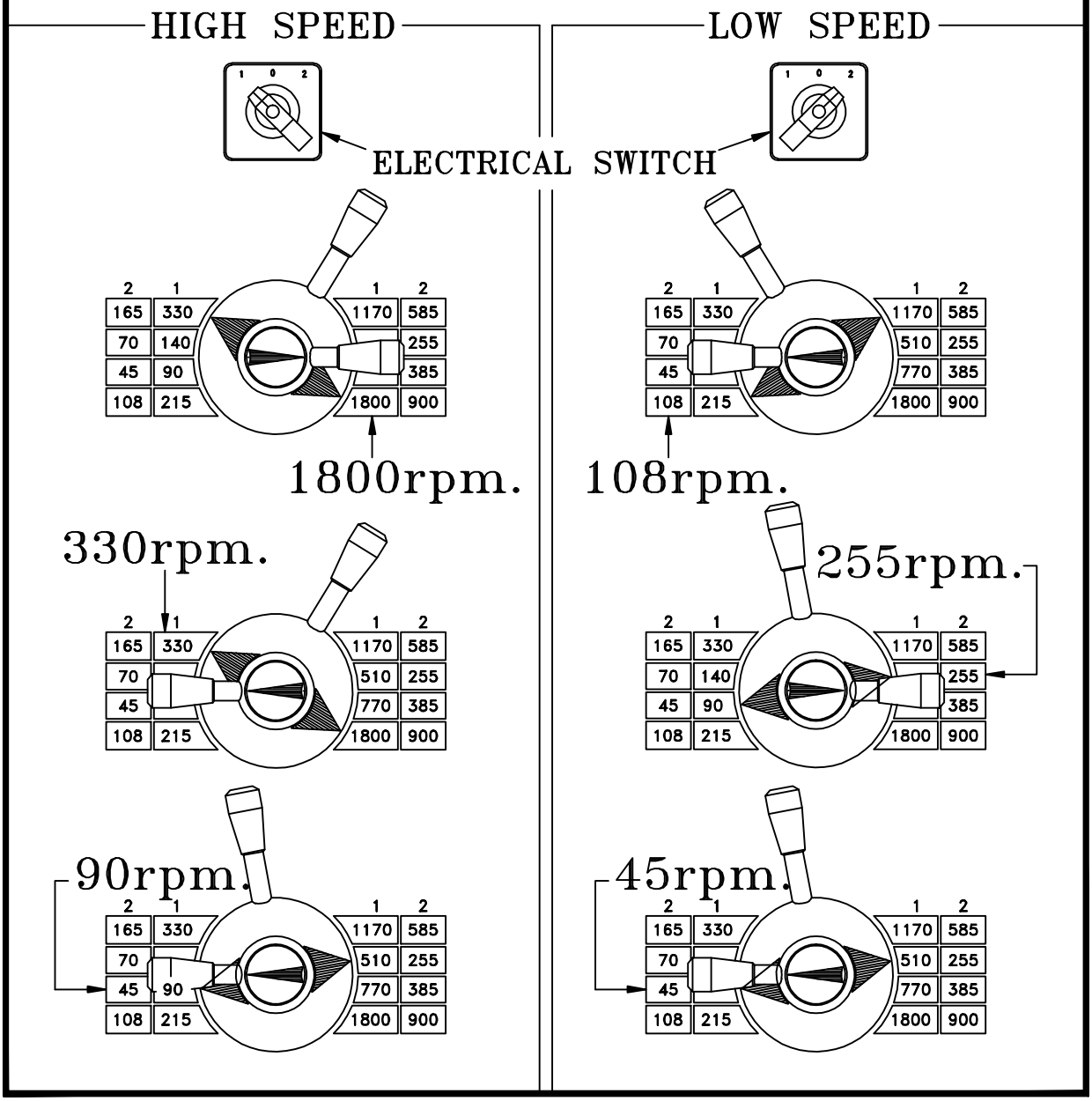




SPEED CONTROLS (2 SPEED MOTOR)

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 rotated 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.

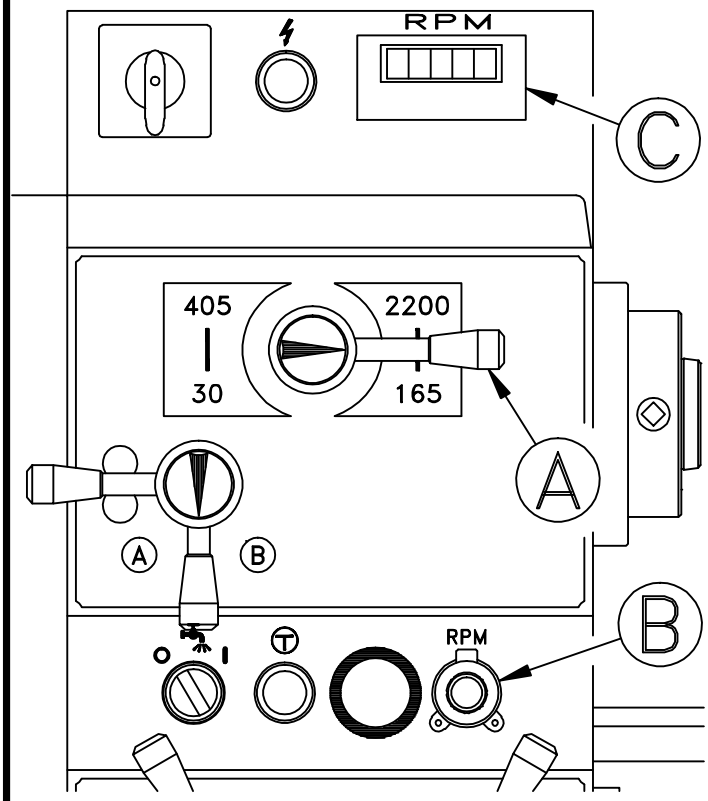
When the small lever set at upper or bottom position, the spindle is free for hand rotation.



OPERATION

SPINDLE SPEED SELECTORS (Variable speed)

HIGH SPEED (2200–165 RPM)

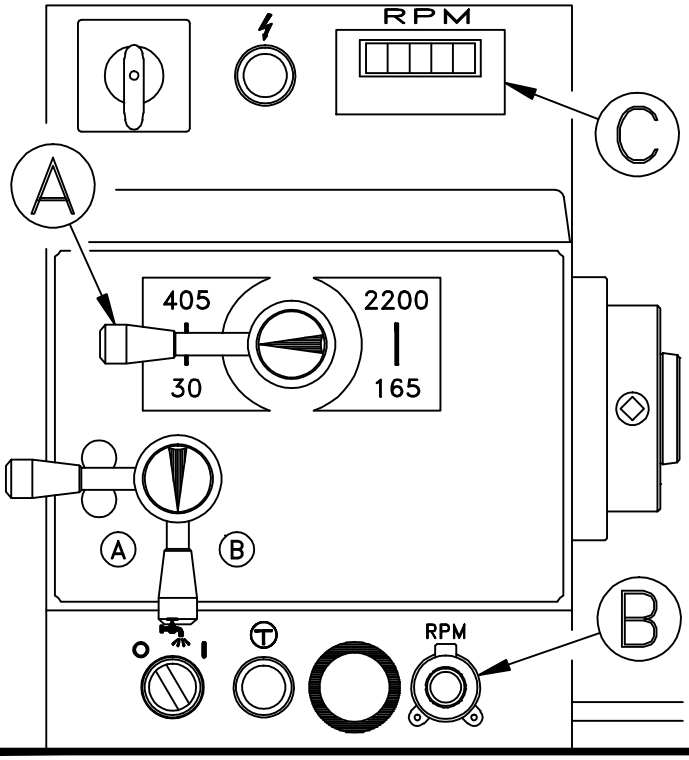


Main spindle can be variable controlled, from 2200 RPM to 30 RPM, divided into two groups, HIGH SPEED 2200–165 RPM, and LOWER SPEED 145–30 RPM.

Firstly, put the upper Handle (A) on the Headstock, to needed speed range.

(Note: DON'T CHANGE HANDLE'S POSITION WITH SPINDLE IN MOTION. SPINDLE MUST BE MOTIONLESS WHEN CHANGE HANDLE'S POSITION)

LOWER SPEED (405–30 RPM)



Then, adjust Variable Speed Selectors(B) to needed spindle speed.
Selectors(B) can change speed while spindle is rotating.

Spindle Speed Chart(C) equiped on the top of Headstock shows the RPM while spindle rotating.

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

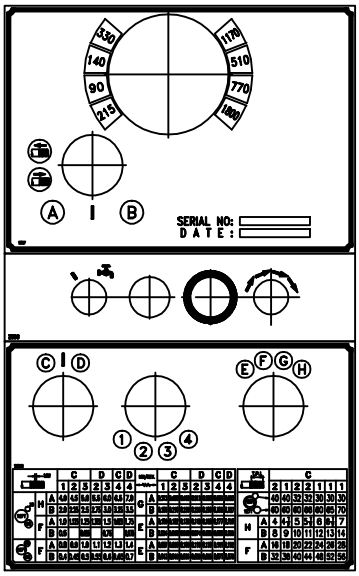
37 Metric threads 0.4 to 7.0 mm. pitch

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: longtudinal teeds per spindle revolution range from 0.043 to 0.653 mm

Cross feeds per spindle revolution range from 0.015 to 0.220 mm.



MM			C			D		C	D
			1	2	3	2	3	4	4
30 127T 60	H	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
	F	A	1.0	1.125	1.25	1.375	1.5	1.625	1.75
		B	0.5		0.625		0.75		0.875
24 127T 60	F	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

MM/REV.		C			D		C	D
		1	2	3	2	3	4	4
G	A	0.373	0.420	0.466	0.513	0.560	0.606	0.653
	B	0.186	0.210	0.233	0.256	0.280	0.303	0.327
E	A	0.109	0.122	0.136	0.149	0.163	0.177	0.190
	B	0.054	0.060	0.068	0.074	0.082	0.088	0.095
E	A	0.087	0.098	0.109	0.119	0.130	0.141	0.152
	B	0.043	0.049	0.054	0.059	0.065	0.071	0.076

T.P.I.		C						
		2	1	2	2	1	1	1
120T 127T		40	40	32	32	30	30	30
		60	60	60	66	60	65	70
H	A	4	4½	5	5½	6	6½	7
	B	8	9	10	11	12	13	14
F	A	16	18	20	22	24	26	28
	B	32	36	40	44	48	52	56

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

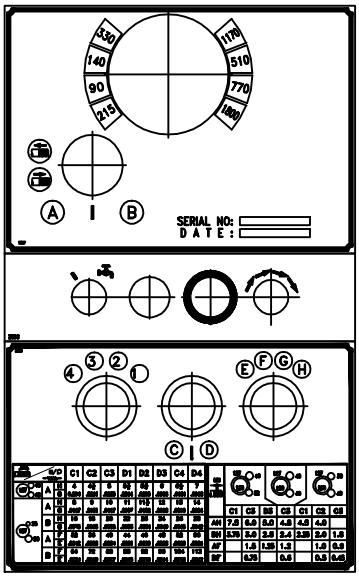
40 Whitworth threads 4.0 to 112 t.p.i.

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: longtudinal teeds 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.)



T.P.I. / IN/			C1	C2	C3	D1	D2	D3	C4	D4
127 40 40	A	H	4	4½	5	5½	5¾	6	6½	7
		G	0.294	.0261	.0235	.0214	.0205	.0196	.0181	.0168
127 25 50	A	H	8	9	10	11	11½	12	13	14
		G	.0147	.0131	.0117	.0107	.0102	.0098	.0090	.0084
	B	H	16	18	20	22	23	24	26	28
		G	.0073	.0065	.0058	.0053	.0051	.0049	.0045	.0042
	A	F	32	36	40	44	46	48	52	56
		E	.0042	.0038	.0034	.0031	.0030	.0028	.0026	.0024
	B	F	64	72	80	88	92	96	104	112
		E	.0021	.0019	.0017	.0015	.0015	.0014	.0013	.0012

MM	127 40 120 32			127 40 120 40			127 30 120 40	
	C1	C3	D3	C3	C1	C2	C3	
AH	7.5	6.0	5.0	4.8	4.5	4.0		
BH	3.75	3.0	2.5	2.4	2.25	2.0	1.8	
AF		1.5	1.25	1.2		1.0	0.9	
BF		0.75		0.6		0.5	0.45	

THREADING DIAL INDICATOR

A. Whitworth threads

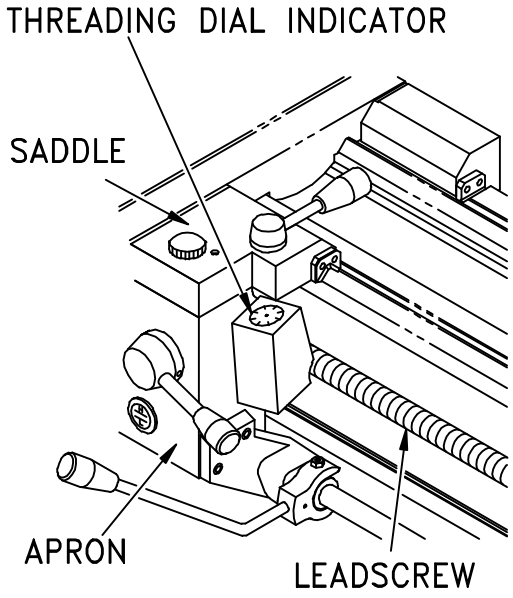
Located on right–hand side of the apron on lathes having an English leadscrew. Engage the indicator pinion with the leadscrew and tighten the handnut to retain indicator in engagement.
To cut threads of an even number per inch, close theleadscrew nut as ANY line on the dial passes the datum mark. To cut threads of odd numbers per inch, close the leadscrew nut at any NUMBERED line.

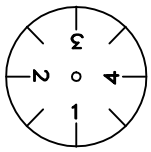
Fractional threads of 1/2 or 1/4 t.p.i. may be cut by closing the nut at the SAME numbered line on each pass of the tool.
This dial cannot be used with an English leadscrew to cut metric threads, or fractional threads. For these the leadscrew nut must be kept closed and the machine reversed by use of the 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 correst gear for the pitch of the thread to be cut will mesh with the leadscrew.

Each guaduation 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.

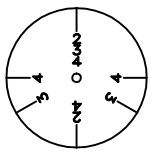




WHITWORTH THREAD DIAL

TPI	↓	TPI	↓	TPI	↓
4	1–8	12	1–8	38	1–8
4 1/2	1–3/24	13	1–4	40	1–8
4 3/4	1	14	1–8	44	1–8
5	1–4	16	1–8	48	1–8
5 1/2	1–3/24	18	1–8	52	1–8
6	1–8	19	1–8	56	1–8
6 1/2	1–3/24	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
9 1/2	1–3/24	28	1–8	88	1–8
10	1–8	32	1–8	96	1–8
11	1–4	36	1–8	104	1–8

LEADSCREW PITCH 8T.P.I.



METRIC THREAD DIAL

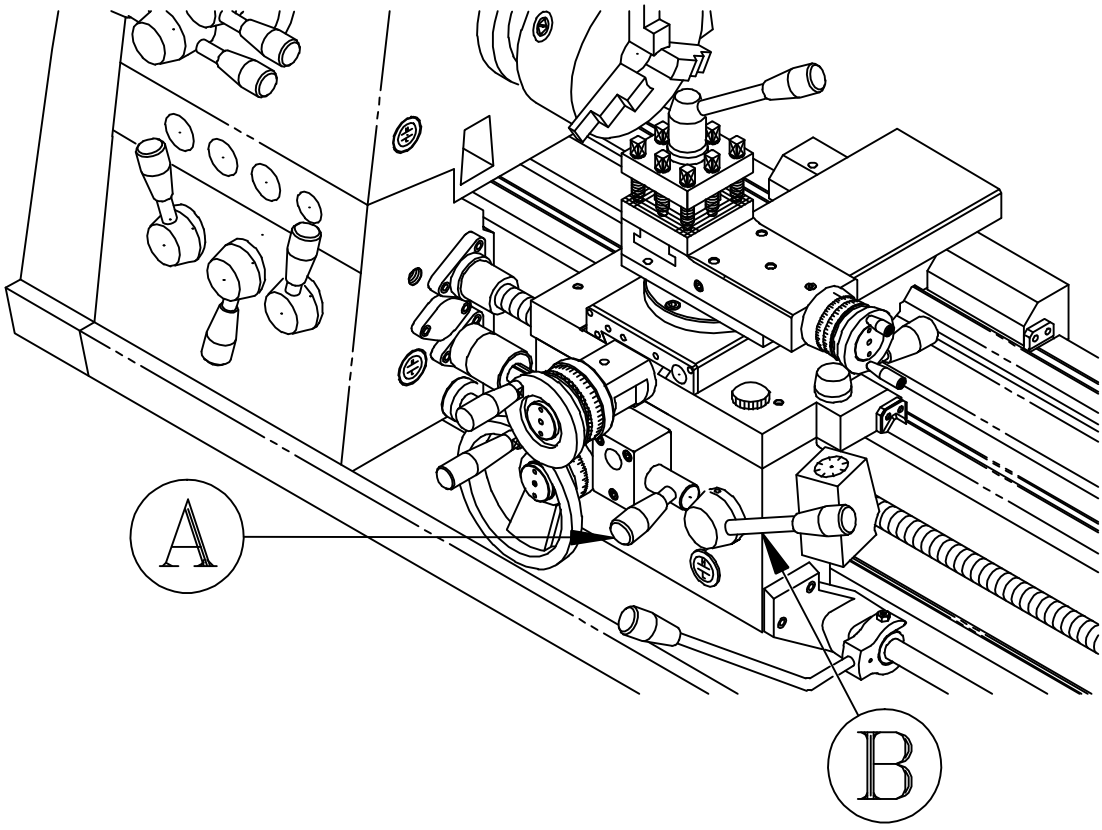
PC	T	↓	PC	T	↓
0.4	20	4	1.4	21	3
0.45	27	3	1.5	27	3
0.5	20	4	1.625	26	2
0.55	22	2	1.75	21	3
0.6	27	3	2.0	20	4
0.625	20	4	2.25	27	3
0.65	26	2	2.5	20	4
0.7	21	3	2.75	22	2
0.75	27	3	3.0	27	3
0.8	20	4	3.25	26	2
0.875	21	3	3.5	21	3
0.9	27	3	4.0	20	4
1.0	20	4	4.5	27	3
1.1	22	2	5.0	20	4
1.125	27	3	5.5	22	2
1.2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

LEADSCREW PITCH 4MM

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.

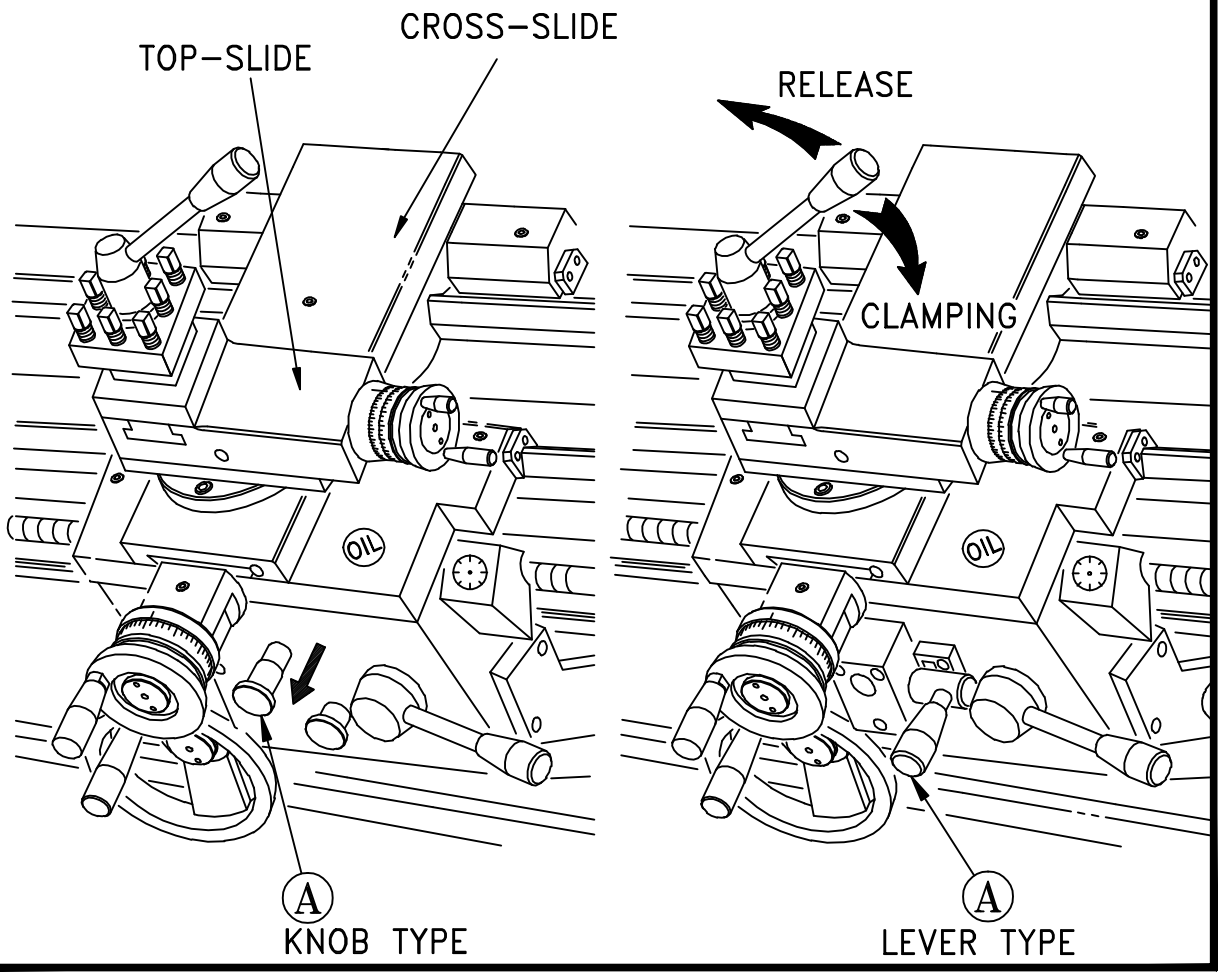
Lever (B) is pressed downward to engage the leadscrew nut for screwcutting. To avoid undue wear. Release the nut except when screwcutting.



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 90–0–90 deg. for accurate indexing. Handwheel dials are graduated in inch and metric divisions to suit the operating screw and fitted.

The cross–slide can be power operated, when the Lever (A) upwards or downwards. 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.

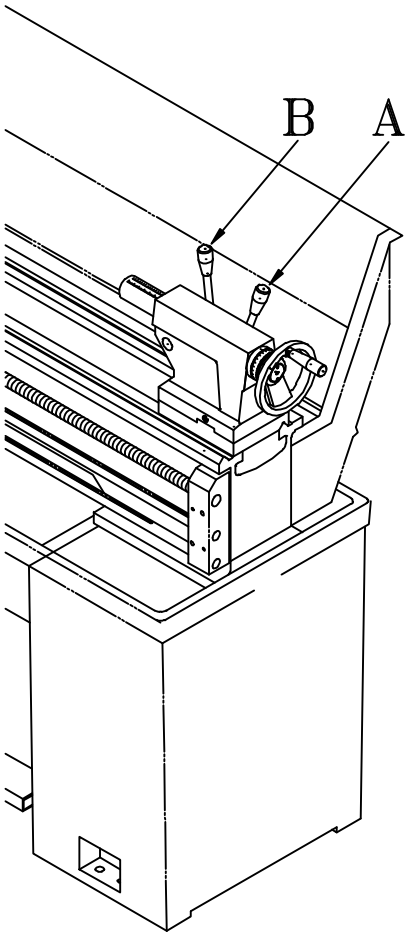


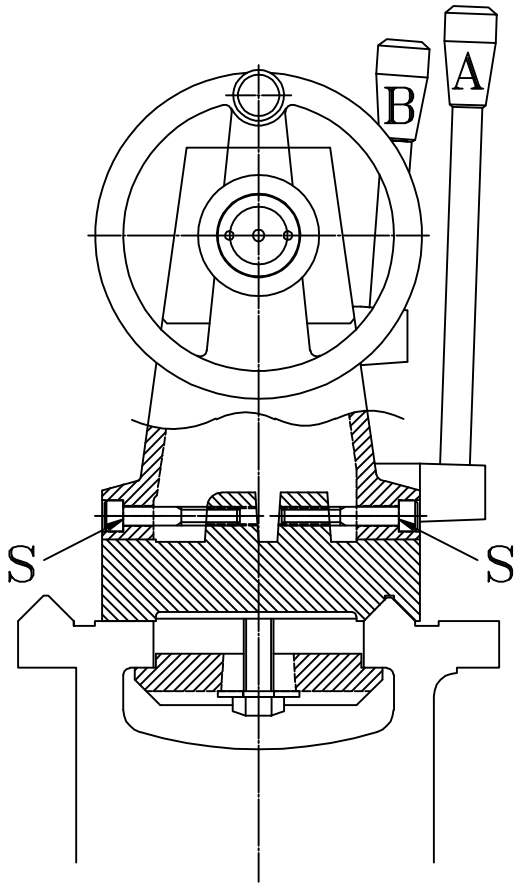
TAIL STOCK

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.





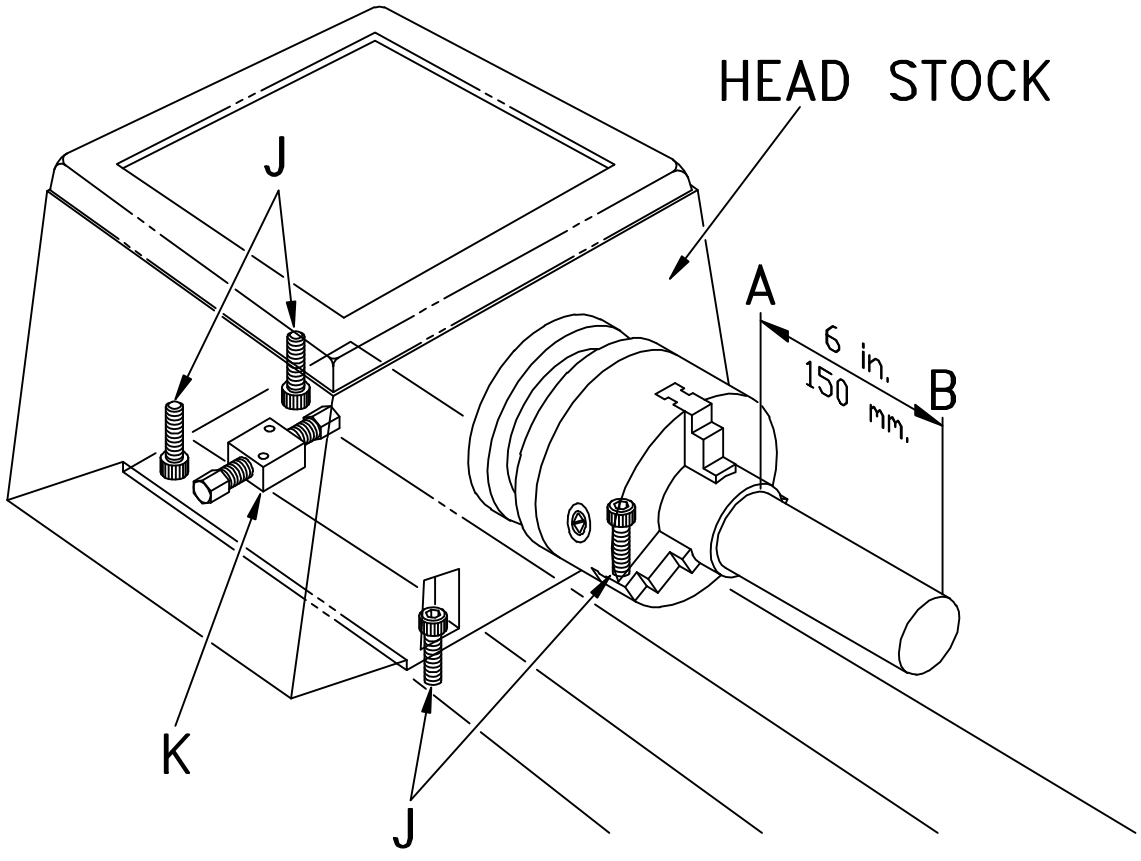
LATHE ALIGNMENT (Part.1)

With the lathe installed and running. We recommed 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 6 in (150mm.) length of 2 in. dia. (50mm.) steel bar gripped in the chuck but not supported at the feed end. Micrometer readings at each end of the turbed length (at A and B) should be the same.

To correct a difference in readings, slacken the four headstock hold-down screws (S) and adjust the set-over pad (P) beneath the headstovk, to pivot the headstock about the dowel (D). Tighten all screws, after adjustment and repeat the test-cut / micrometer-reading, sequence until micrometer readings are indentical, so machine now cutting absolutely parallel.

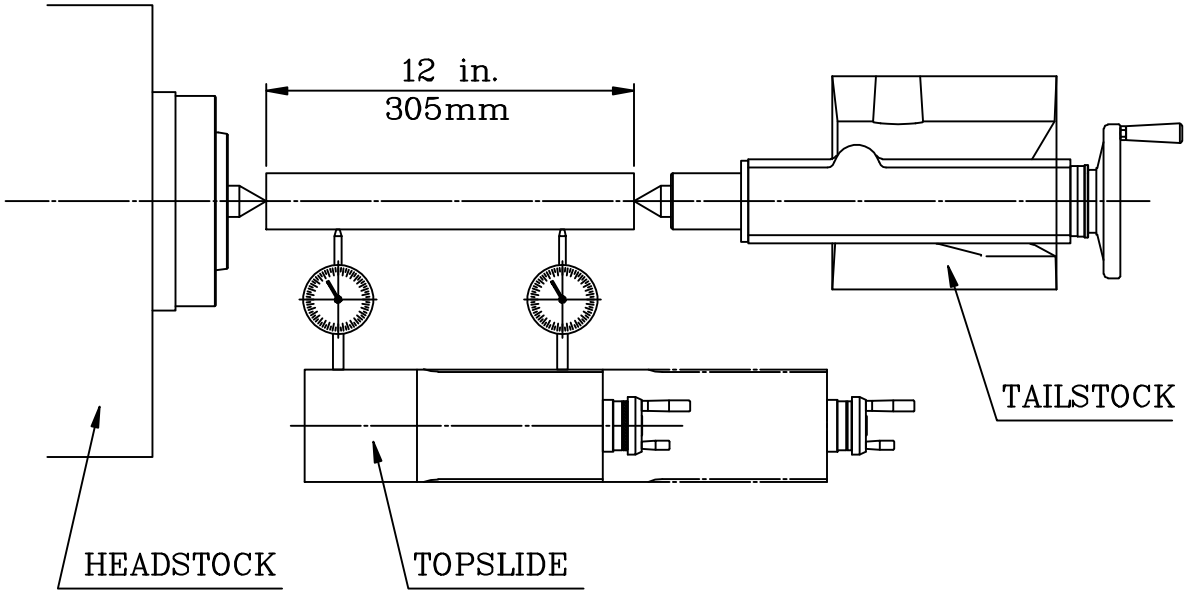


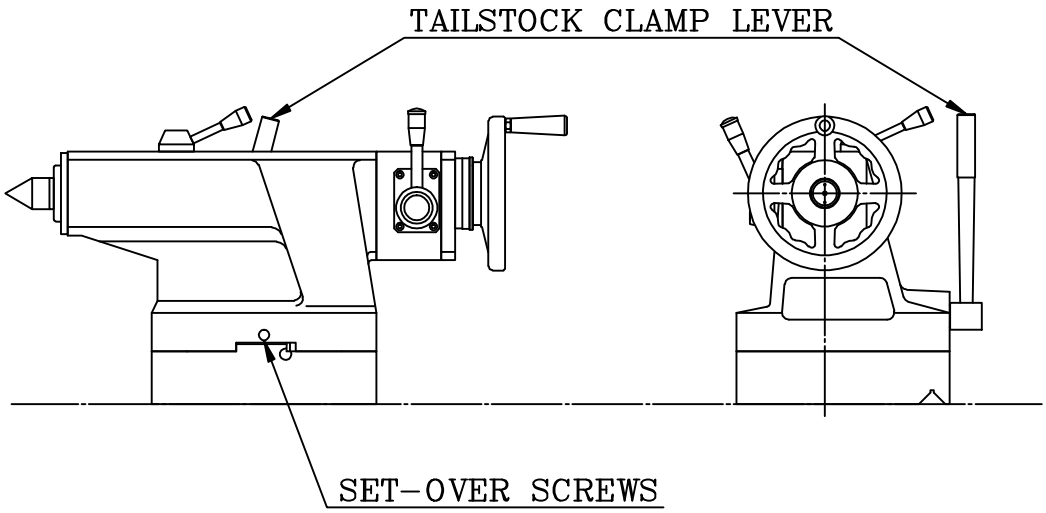
LATHE ALIGNMENT (Part 2)

B. Tailstock check

Using a 12in. (305mm.) ground steel bar fitted between headstock and tailstock centers, check the alignment by fitting a dail-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.





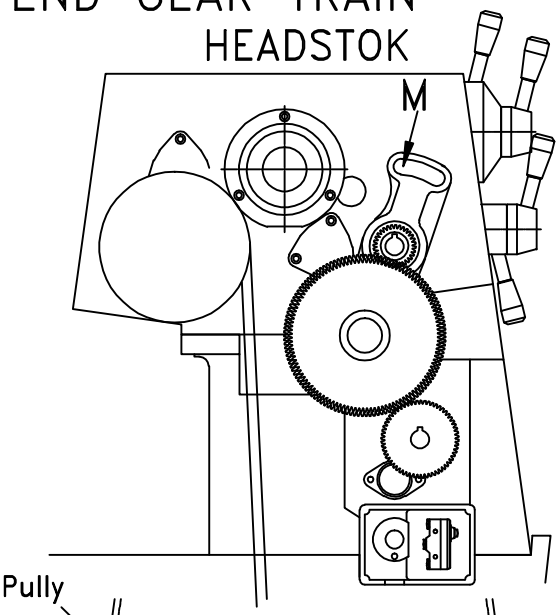
SERVICING AND MAINTENANCE

END GEAR TRAIN

Drive from headstock to gear–box is transmitted through a gear train enclosed by the head–stock end–guard. Intermediate gears are carried on an adjust–able swing frame (M).

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

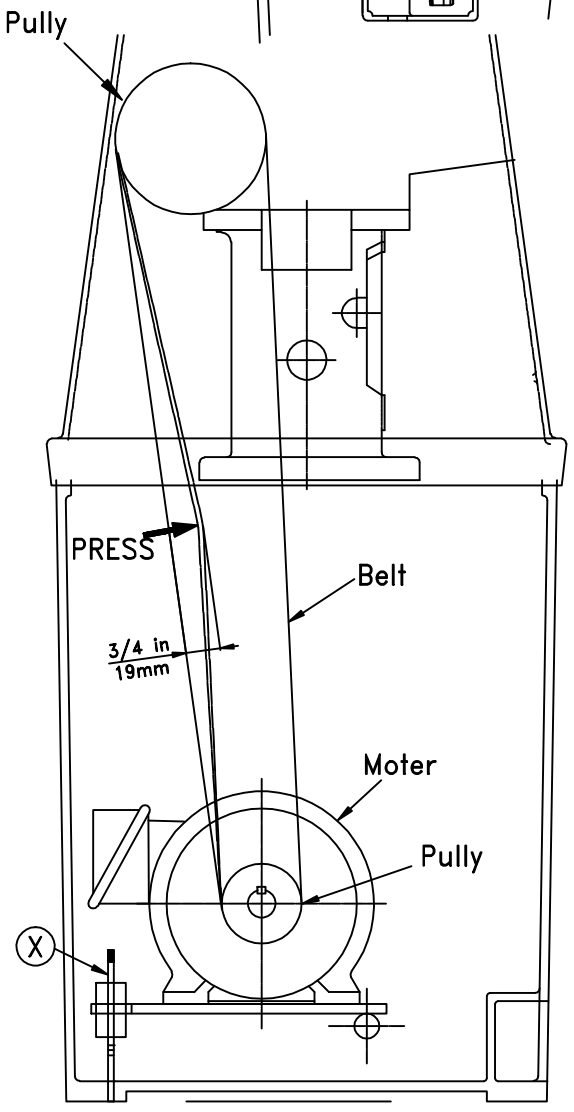
END GEAR TRAIN



DRIVING BELTS

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

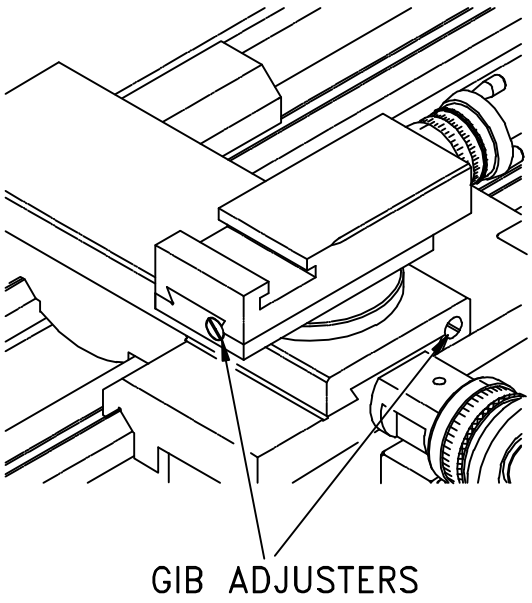
Light finger pressure at a point midway between motor and headstock pulleys should produce about 3/4 in. (19mm.) movement of each belt when under correct tension.



SLIDE WAYS ATTENTION

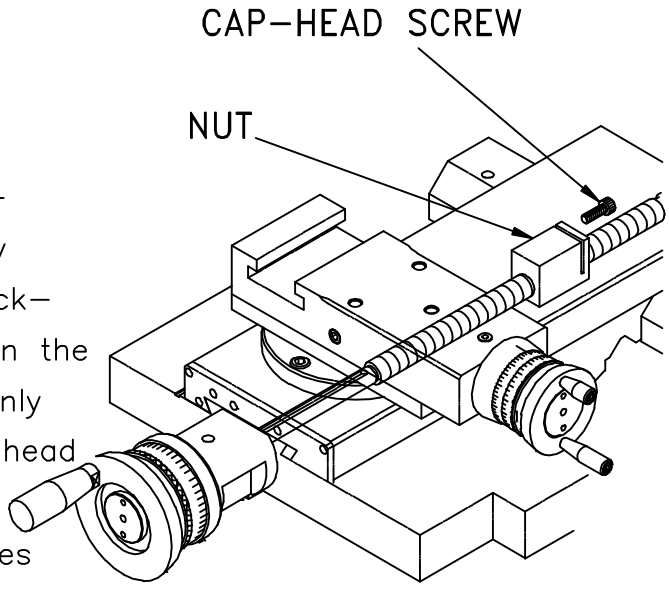
Tapered gib strips are fitted to slideways of saddle cross–slide and top (compound) slides so that any slackness which may develop can be rectified.

Ensure that slideways are thououghly cleaned and lubricated before attempting adjustment. Then reset the gibs by slacken–ing the rear gib screw and tigh–tening 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.



CROSS–SLIDE NUT

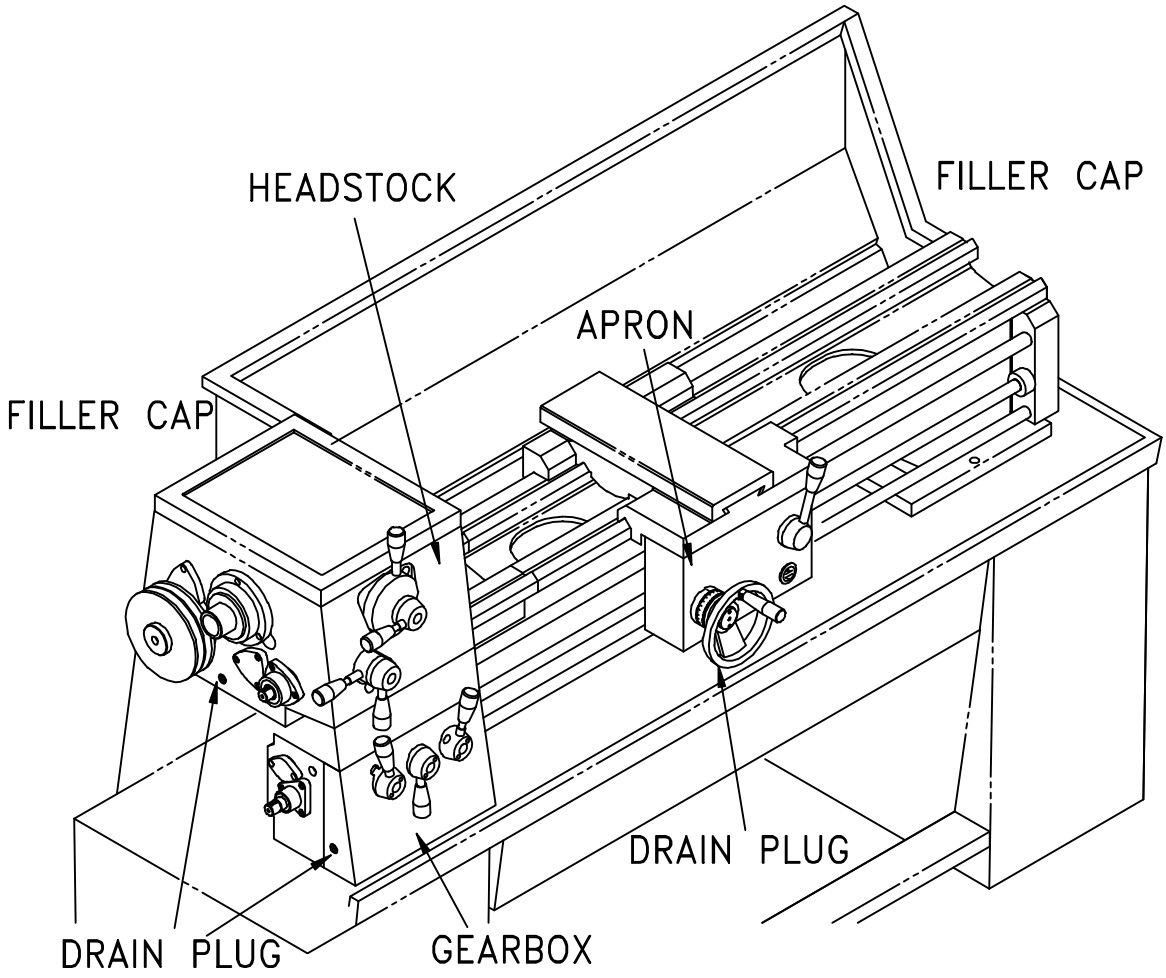
This is adjustable for elimi–nation of slackness which may develop in service. Reduce back–lash by the cap–head screw in the rear of the nut. Then make only small adjustment by the cap–head screw. Before operating the cross–slide, check several times by hand to be sure of smooth operation throughout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



SERVICING AND MAINTENANCE

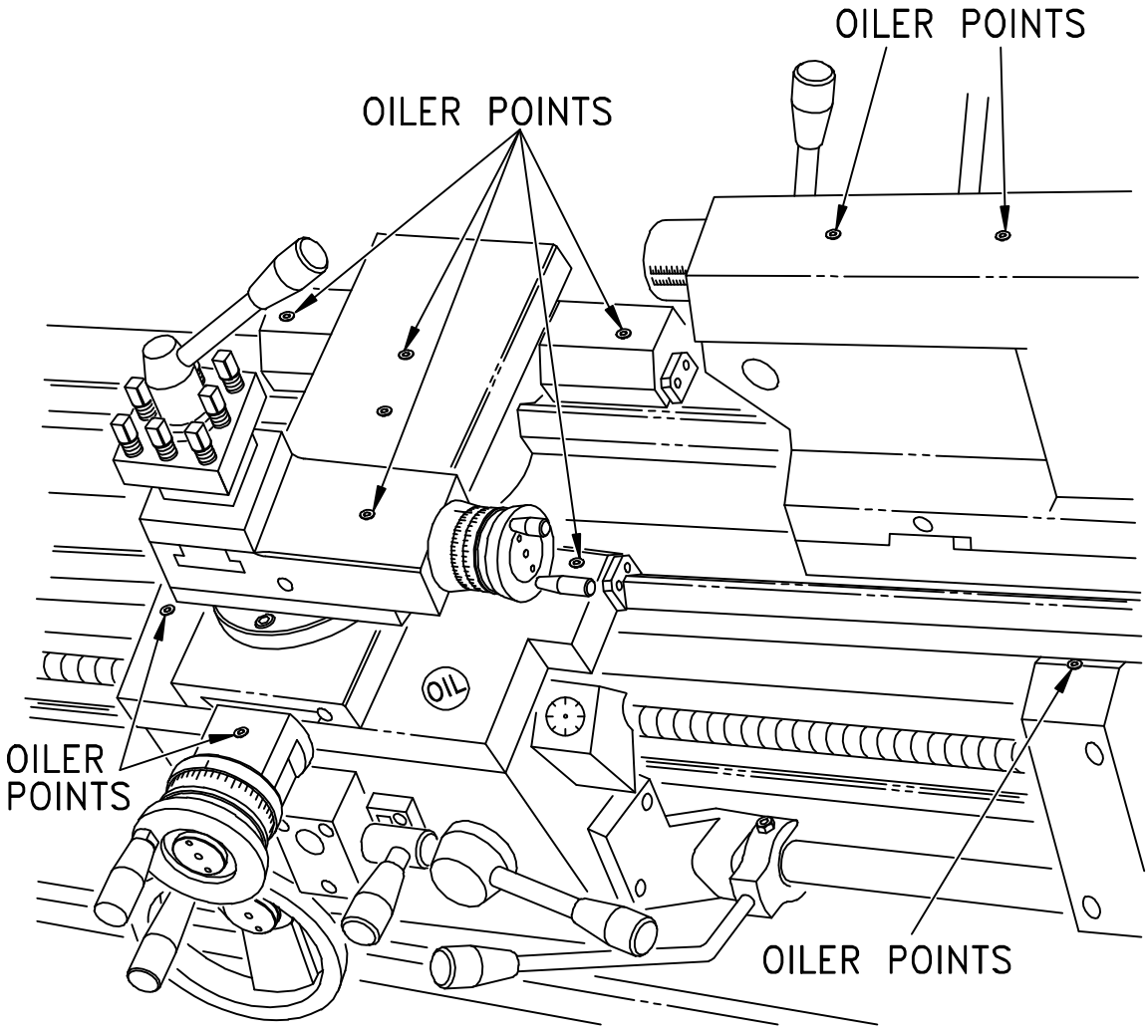
LUBRICATION (Part.2)

In addition, oil gun is provided to oil the oiler points on the saddle, cross-slide, cross-slide nut and top-slide with light machine oil or way lubricant, see Fig.

Oiler points, on the top of tailstock and on the bracket for leadscrew & feed road, must to be poured into oil every day by using oil gun.

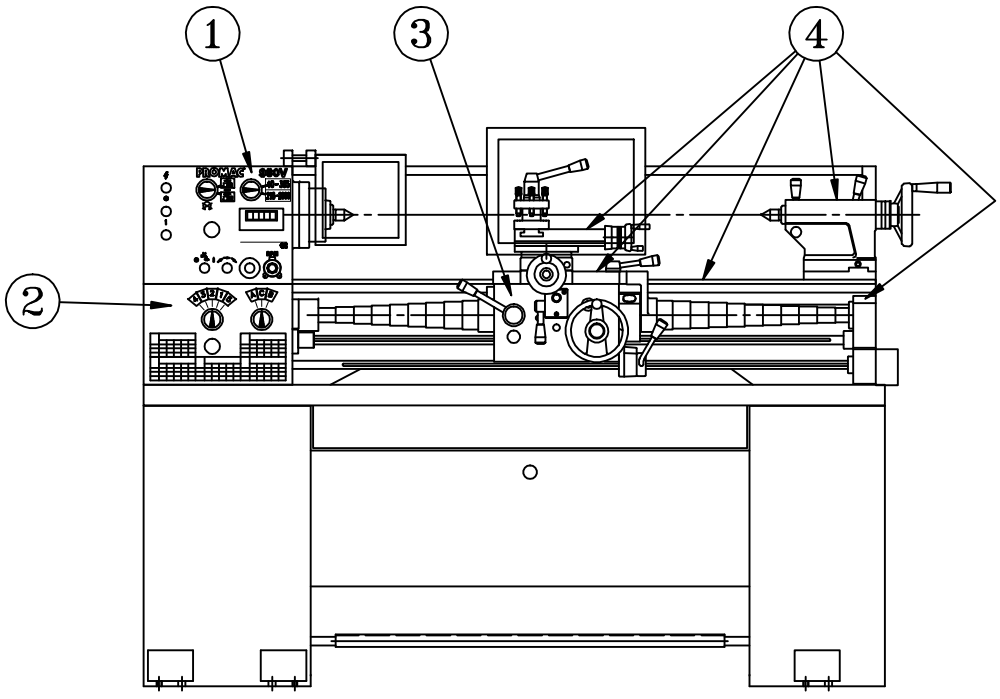
It is recommended that all slideways, leadscrew and feed shaft are cleaned off (a bristle paint brush is useful for this) and lightly oiled after each period of work.

NOTE: Using incorrect grade of oil can cause damage.



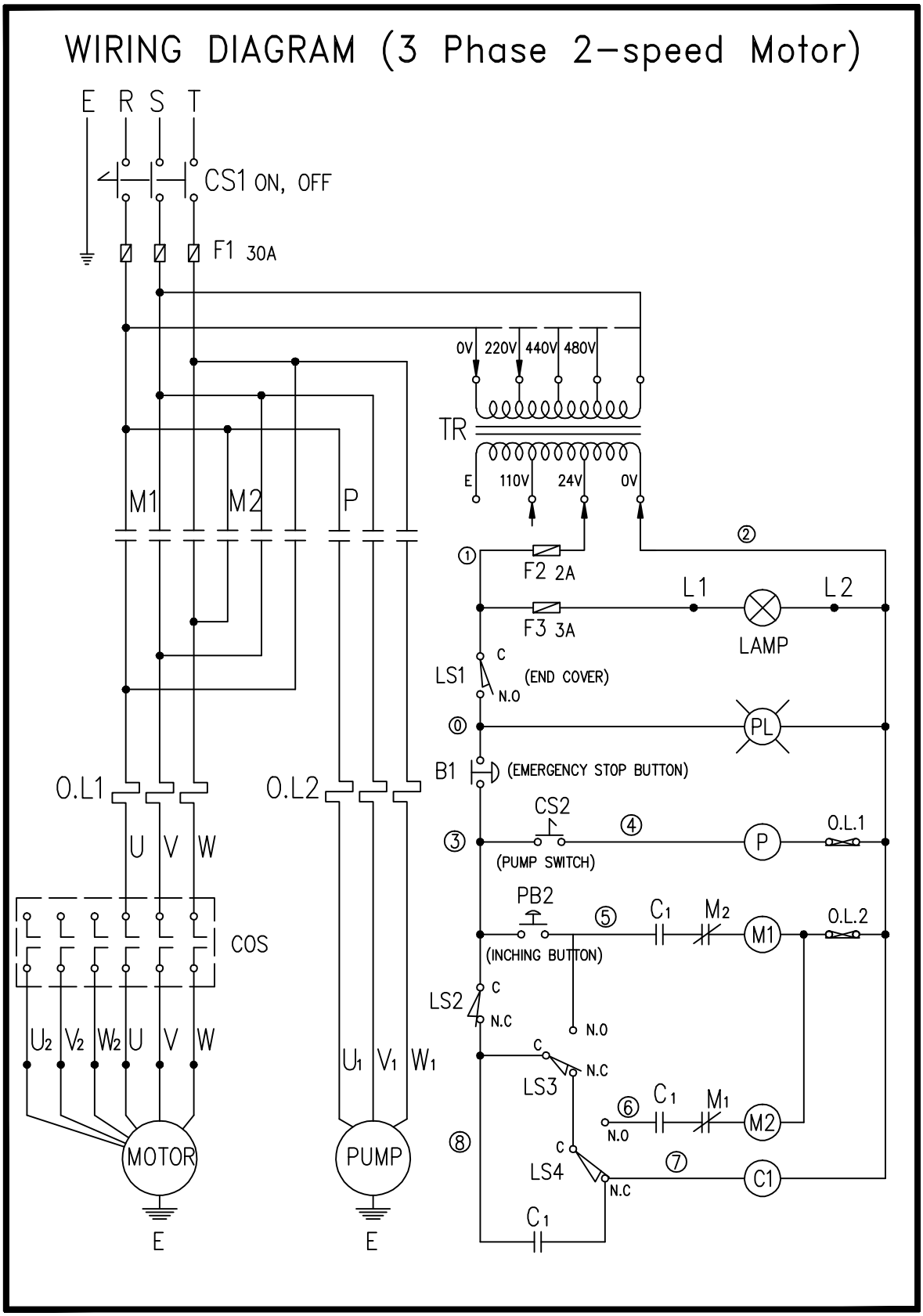
SERVICING AND MAINTENANCE

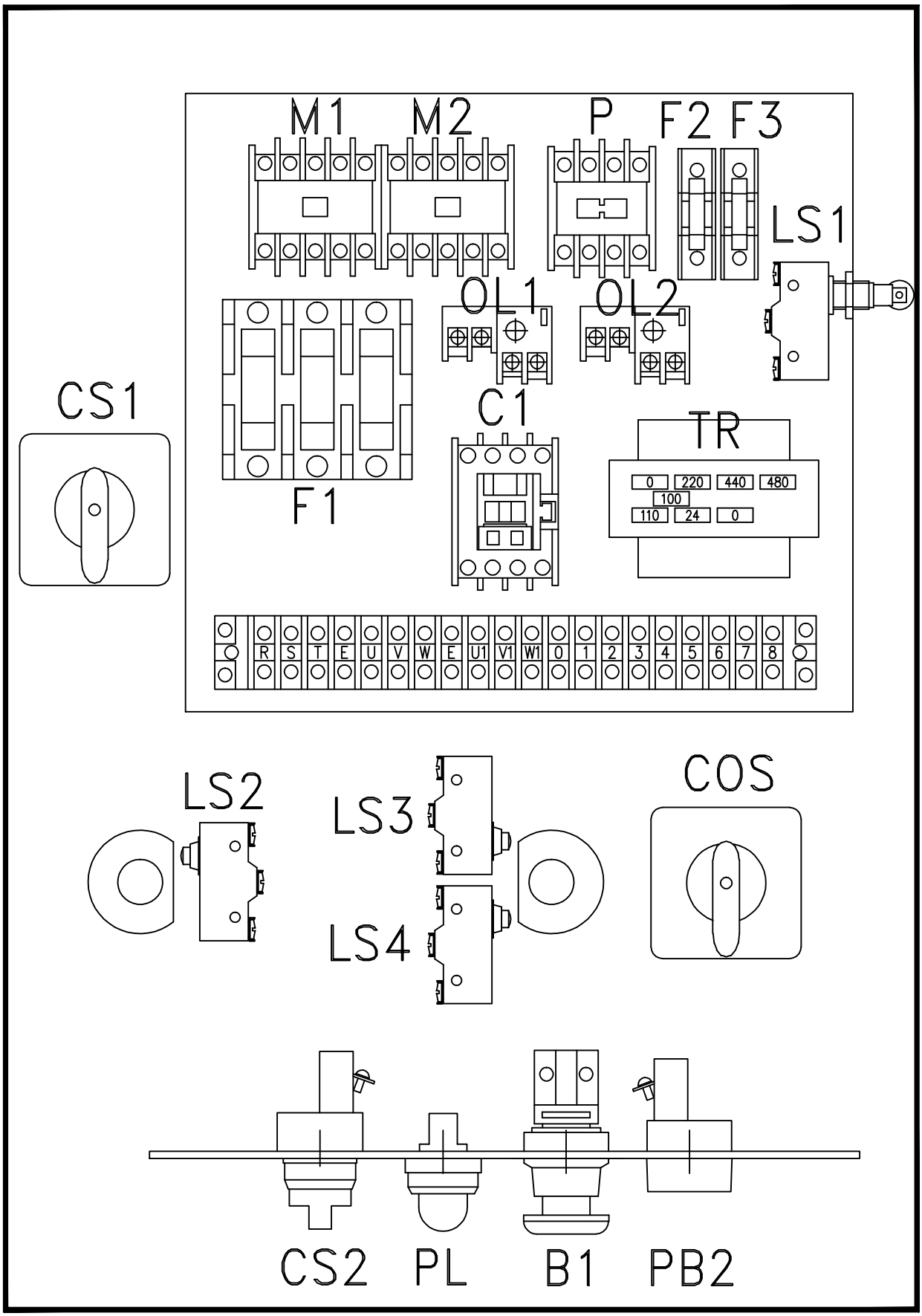
Part to be lubricated		① HEADSTOCK	② GEARBOX	③ APRON	④ SLIDE & TAILSTOCK
Recommendable lubricant		SHELL; TELLUS OIL 27	SHELL; TELLUS OIL 27	SHELL; TELLUS OIL 33	SHELL; TELLUS OIL 33 ~ 41
Filling method		OIL JUG	OIL JUG	OIL JUG	OIL GUN
Initial charge quantity		4.5 liter	1.5 liter	0.9 liter	
Make up	Interval	3 Month	3 Month	1 Month	1 Day
	Quantity	0.5 liter	0.5 liter	0.2 liter	A little
Exchange	Interval	1 Year	1 Year	1 Year	
	Quantity	4.5 liter	1.5 liter	0.9 liter	

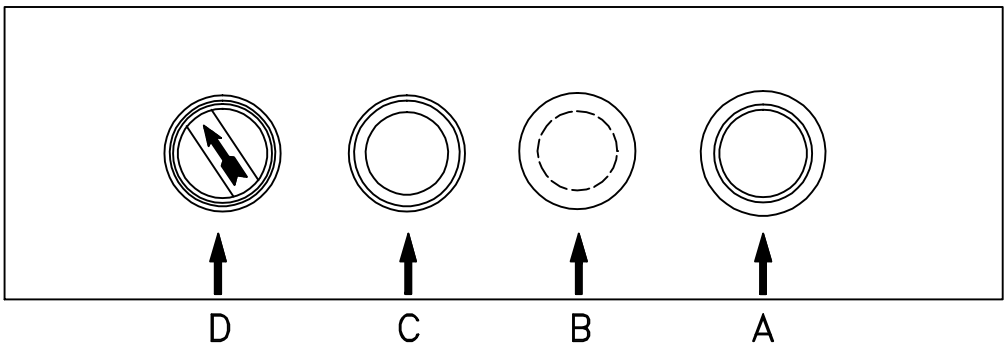


OPERATION

WIRING DIAGRAM (3 Phase 2-speed Motor)




M1
M2
P
F2
F3
LS1
OL1
OL2
CS1
C1
TR
F1
0
220
440
480
100
110
24
0
R
S
T
E
U
V
W
E
U1
V1
W1
0
1
2
3
4
5
6
7
8
LS2
LS3
COS
LS4
CS2
PL
B1
PB2



al : Power switch 3ø 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.

el : 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 AC 110V. 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 magntic 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.

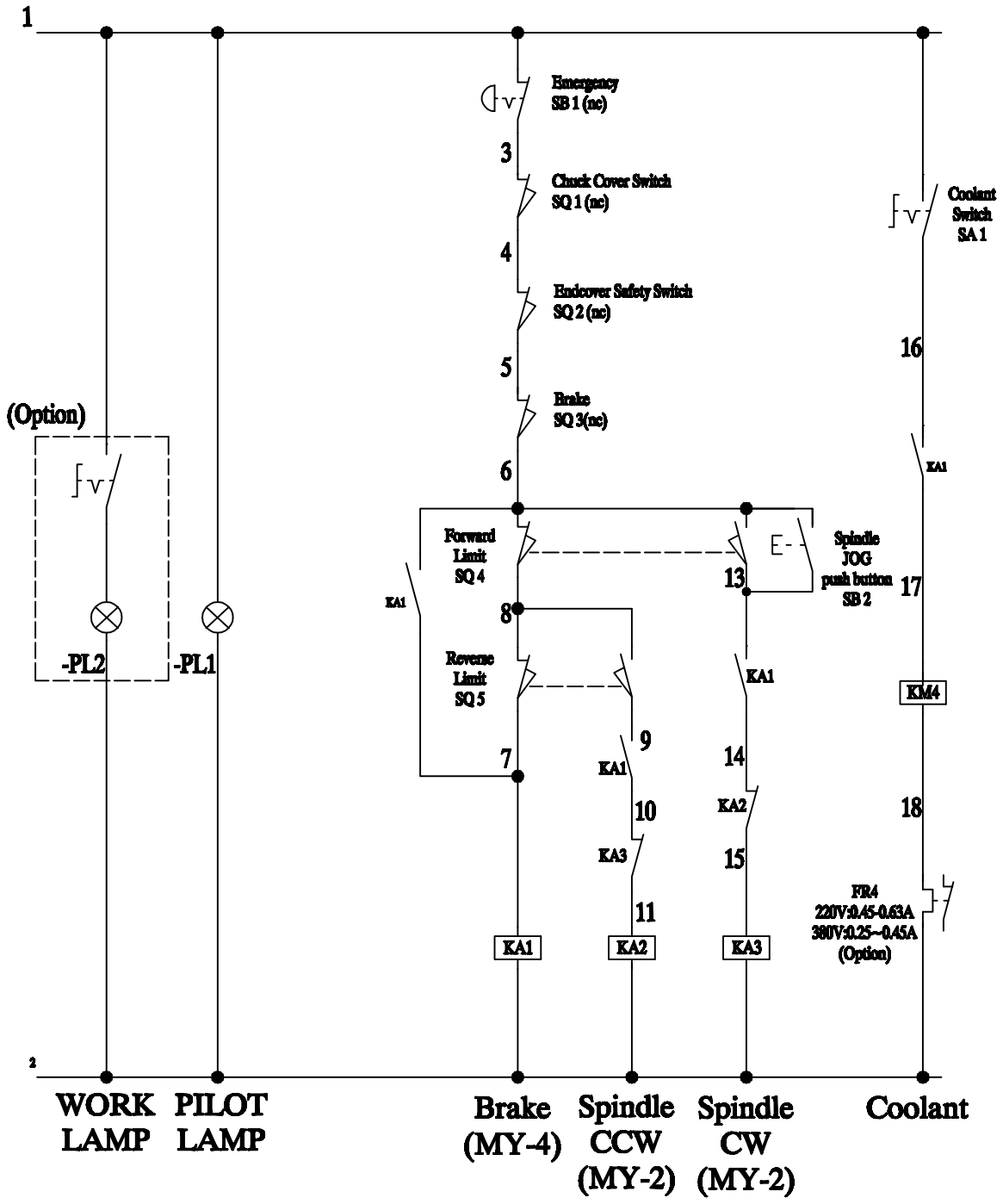
Ls4: Limit switch Forward precision. type 15GD–B.

Cs1: 2 Speed Motor switch.

CIRCUIT DIAGRAM

P 1

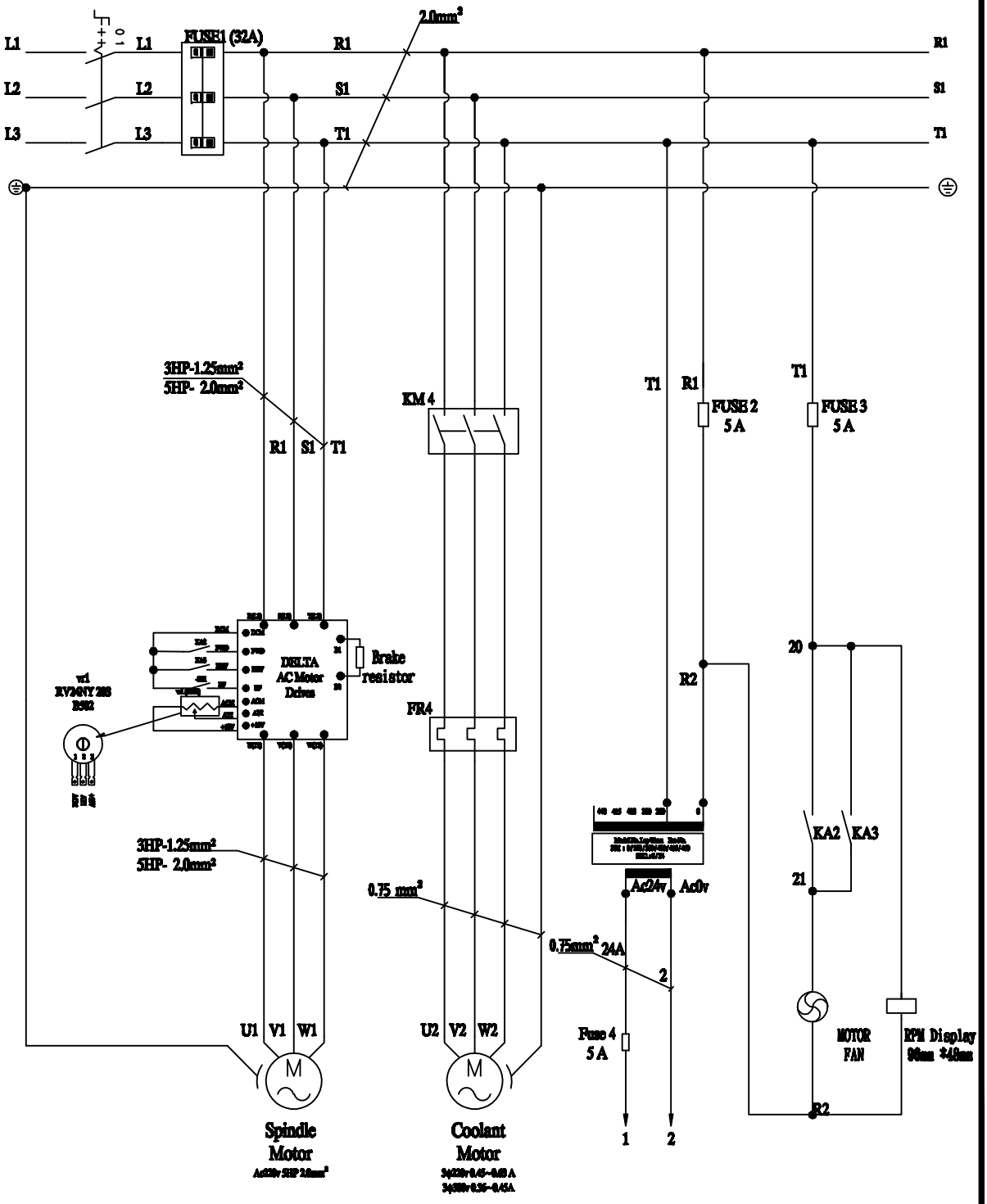
FOR Variable Speed Change



CIRCUIT DIAGRAM

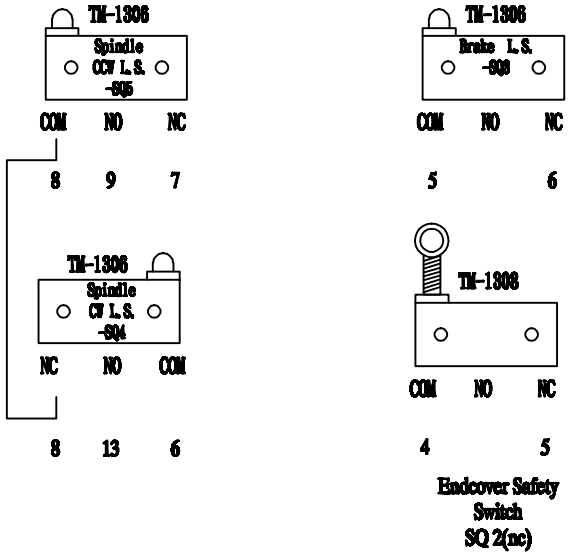
P 2

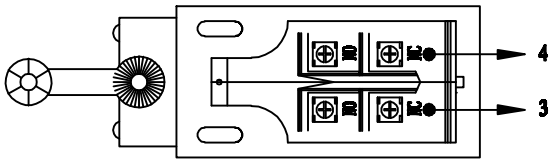
FOR Variable Speed Change



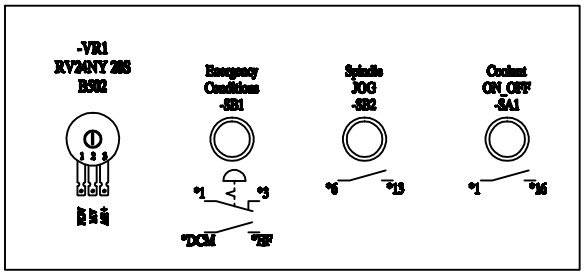
CIRCUIT DIAGRAM

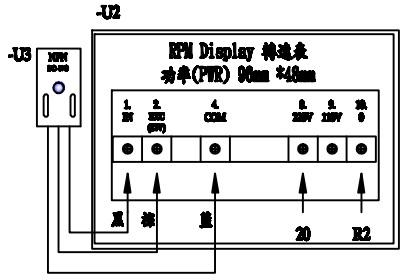
FOR Variable Speed Change

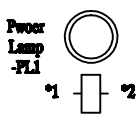




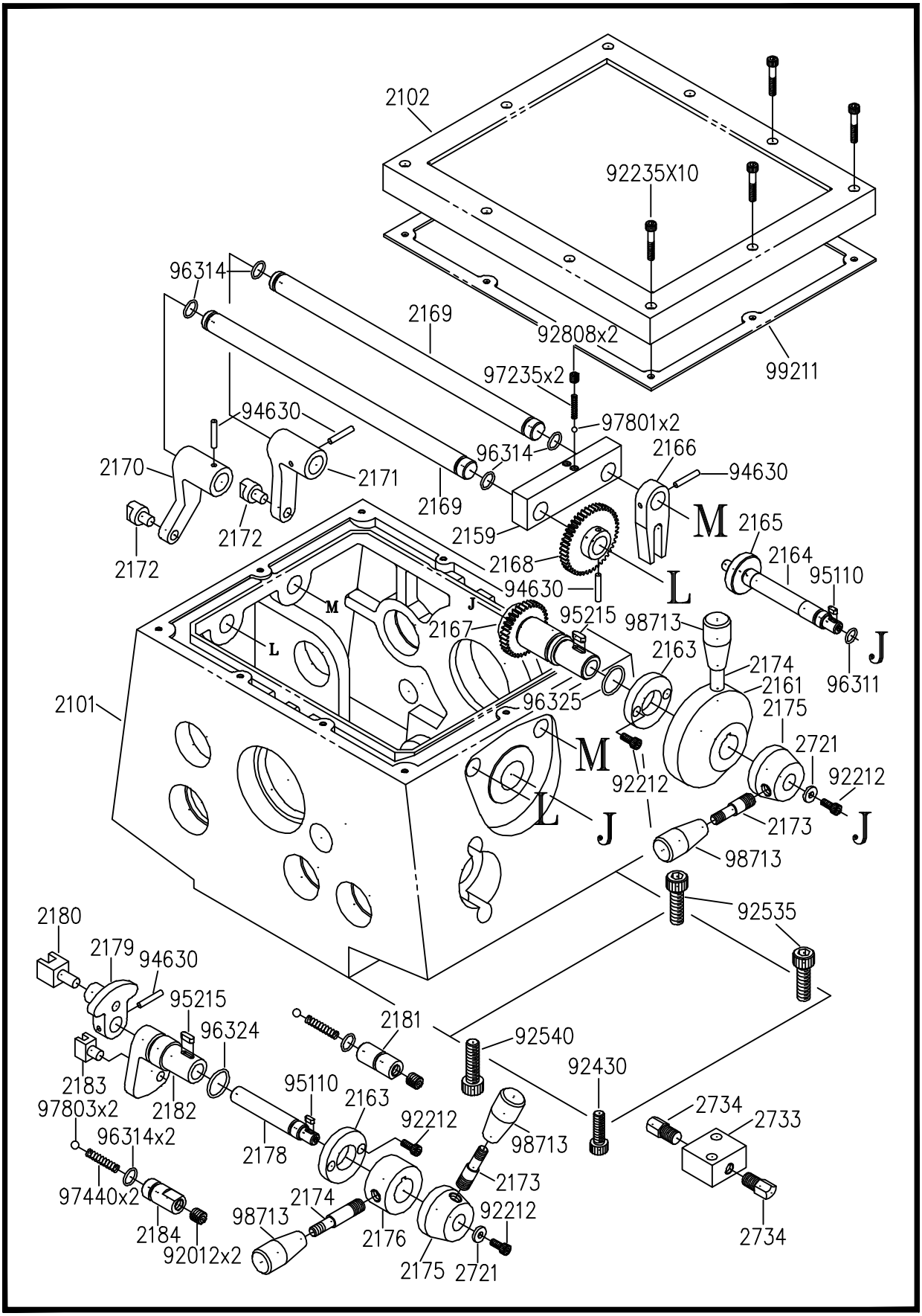
TZ-0204 Chuck Cover Switch
SQ 1 (nc)



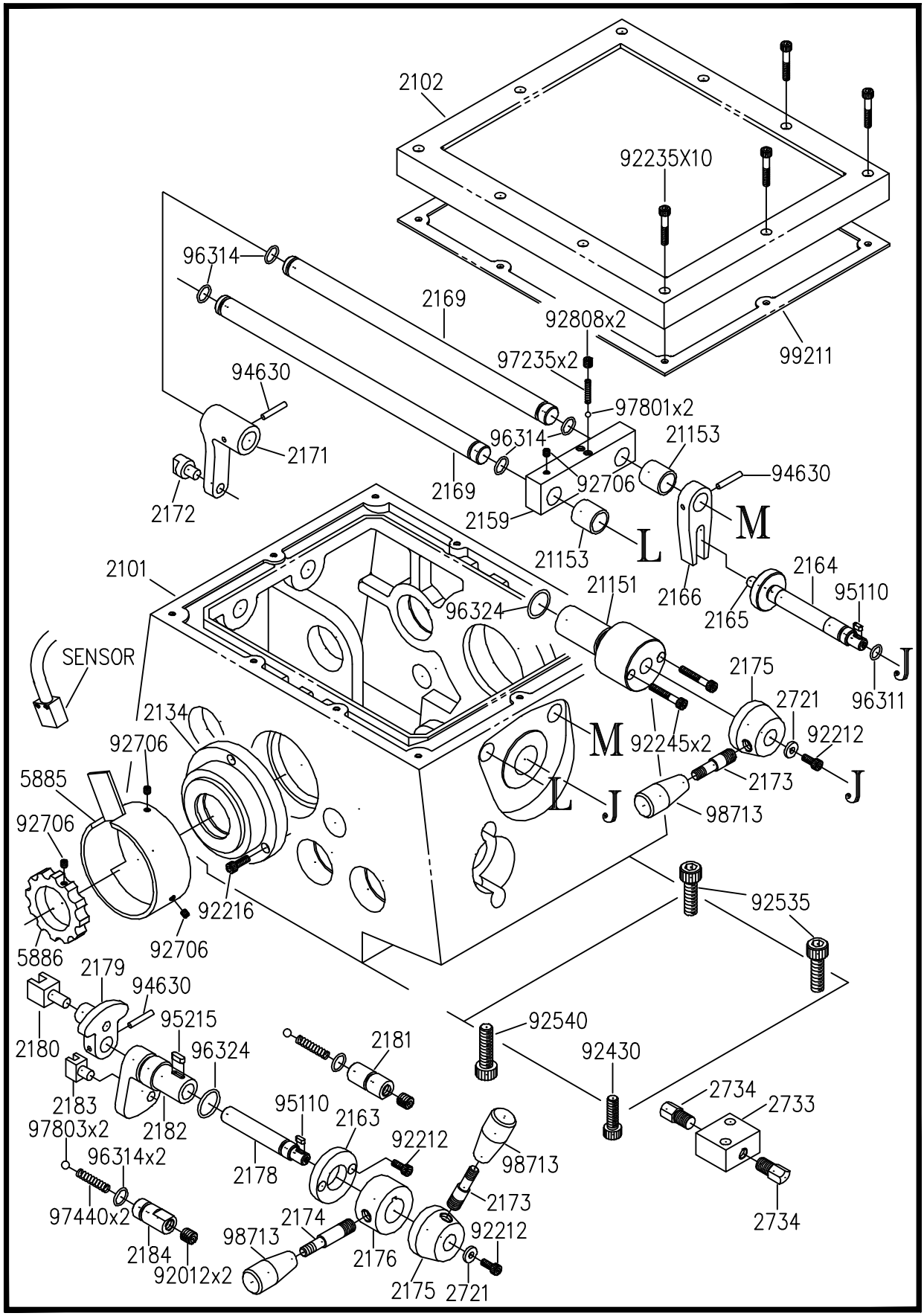




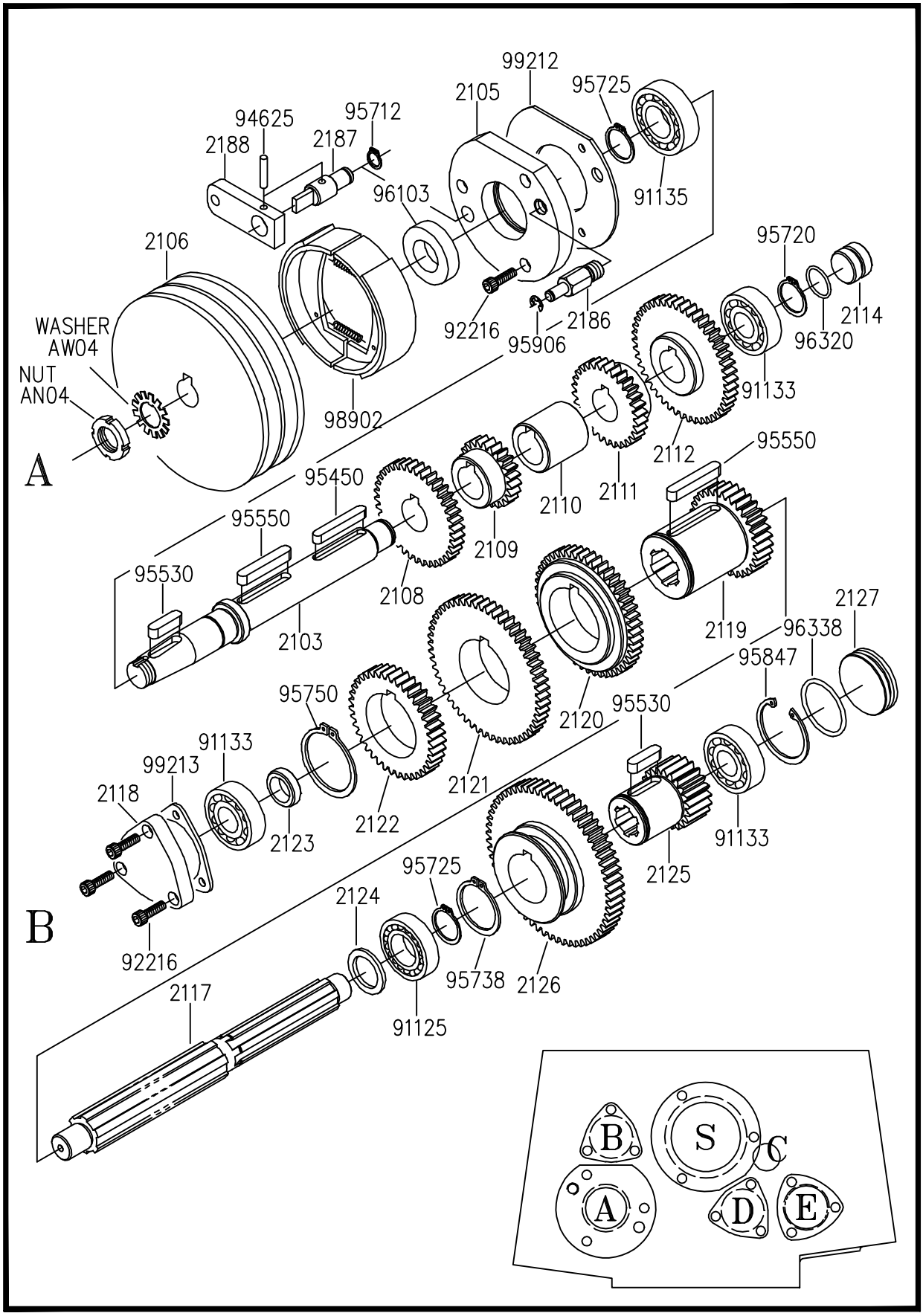
HEADSTOCK


2102
92235X10
96314
2169
92808x2
99211
97235x2
97801x2
94630
2170
2171
96314
2166
94630
2169
2172
2172
2159
M
2165
2168
L
2164
95110
94630
95215
98713
J
2167
2163
2174
2161
96311
2101
96325
2175
M
2721
92212
92212
L
J
2173
J
98713
92535
2180
2179
94630
95215
96324
2181
92540
92430
2183
2182
95110
2163
97803x2
96314x2
2178
92212
98713
2734
2733
2173
97440x2
2174
98713
92212
2184
92012x2
2176
2175
2721
2734

HEADSTOCK for Variable speed change



HEADSTOCK


99212
2105
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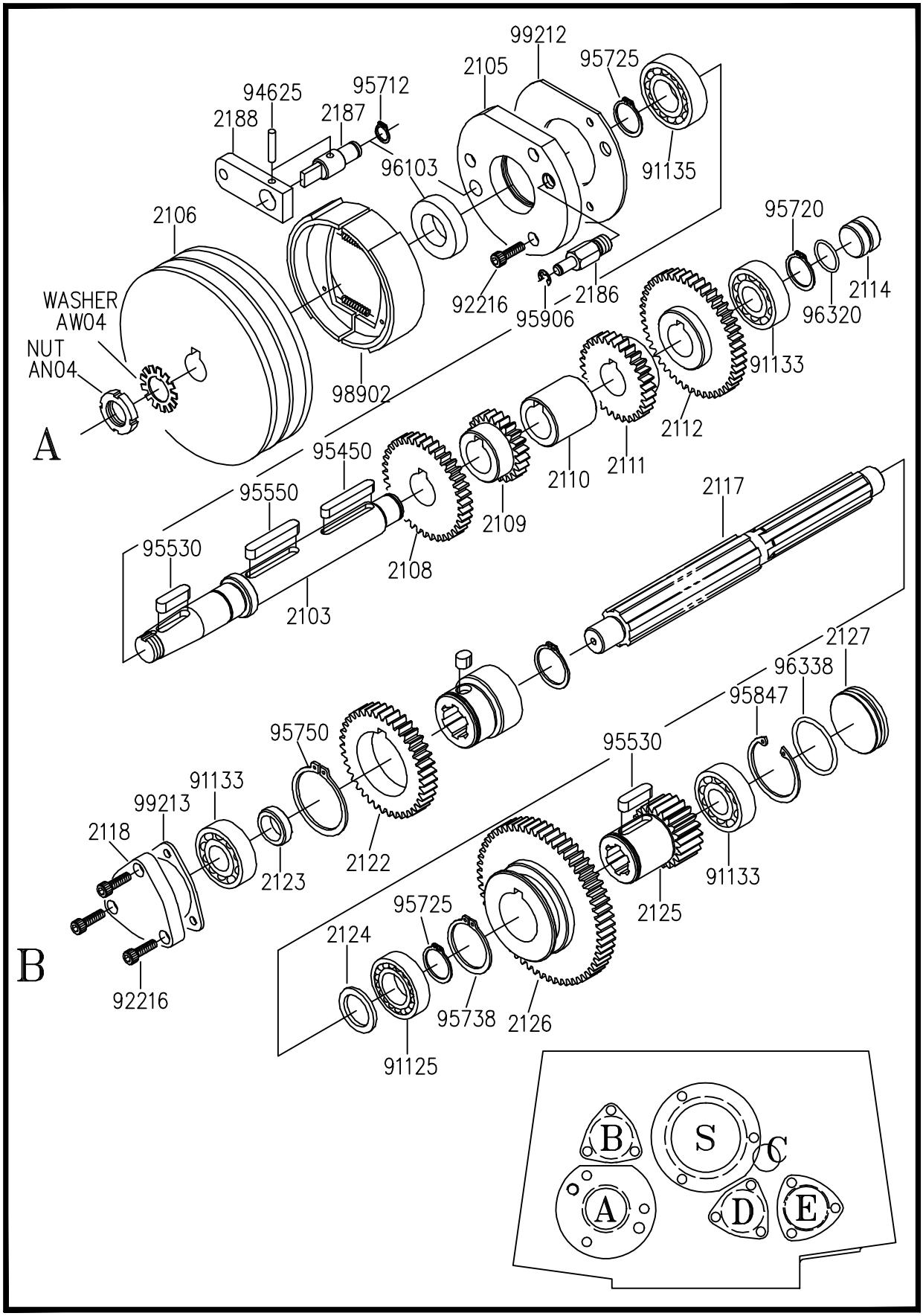
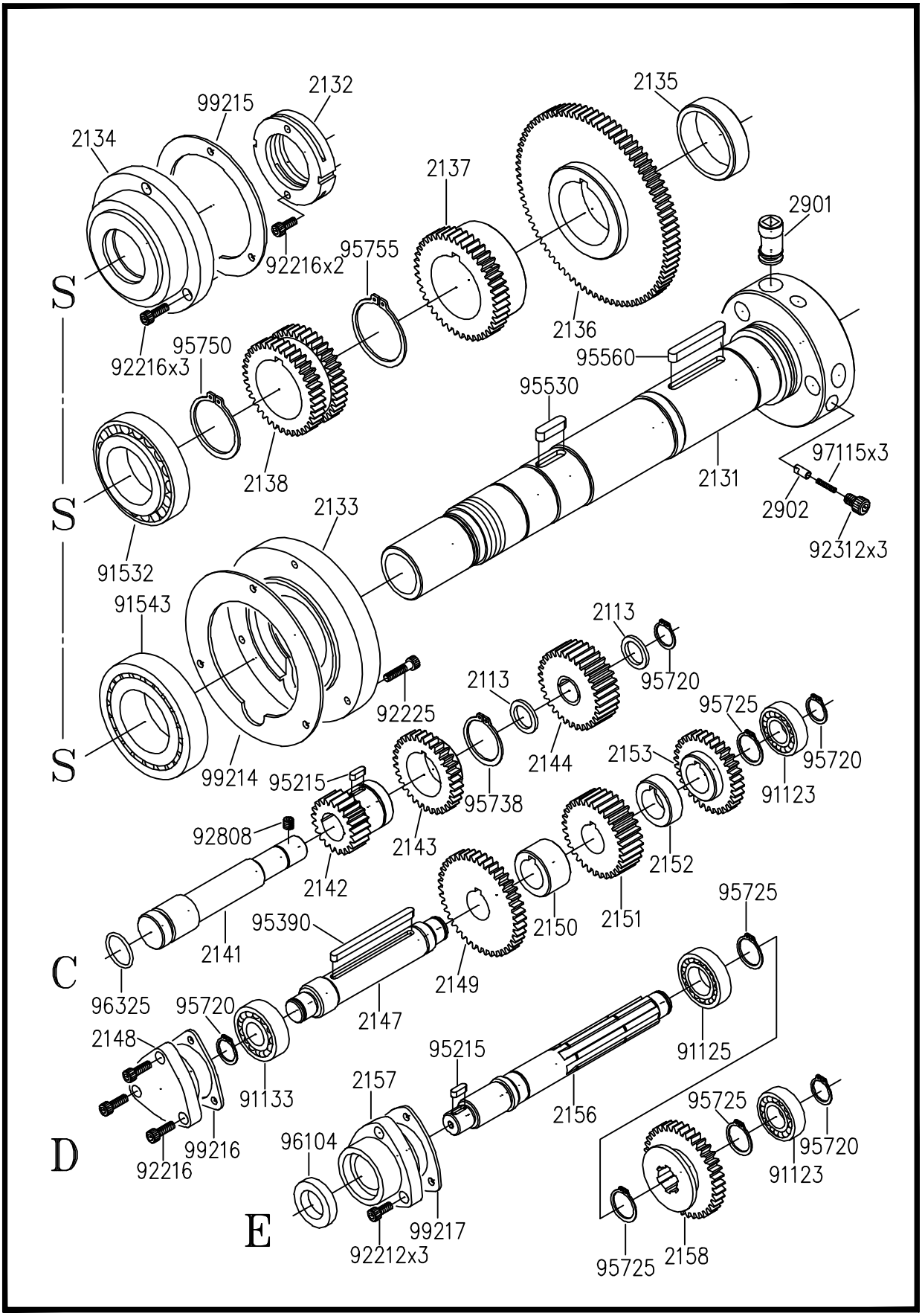
94625
95712
2188
2187
96103
91135
2106
95720
2114
96320
WASHER
AW04
NUT
AN04
92216
95906
2186
98902
91133
2112
A
95550
95450
2110
2111
95550
2109
95530
2108
2119
96338
2127
2103
95847
95750
2120
95530
2121
91133
99213
2118
2122
2123
91133
2125
95725
2124
B
92216
95738
2126
2117
91125
B
S
C
A
D
E

HEADSTOCK for Variable speed change

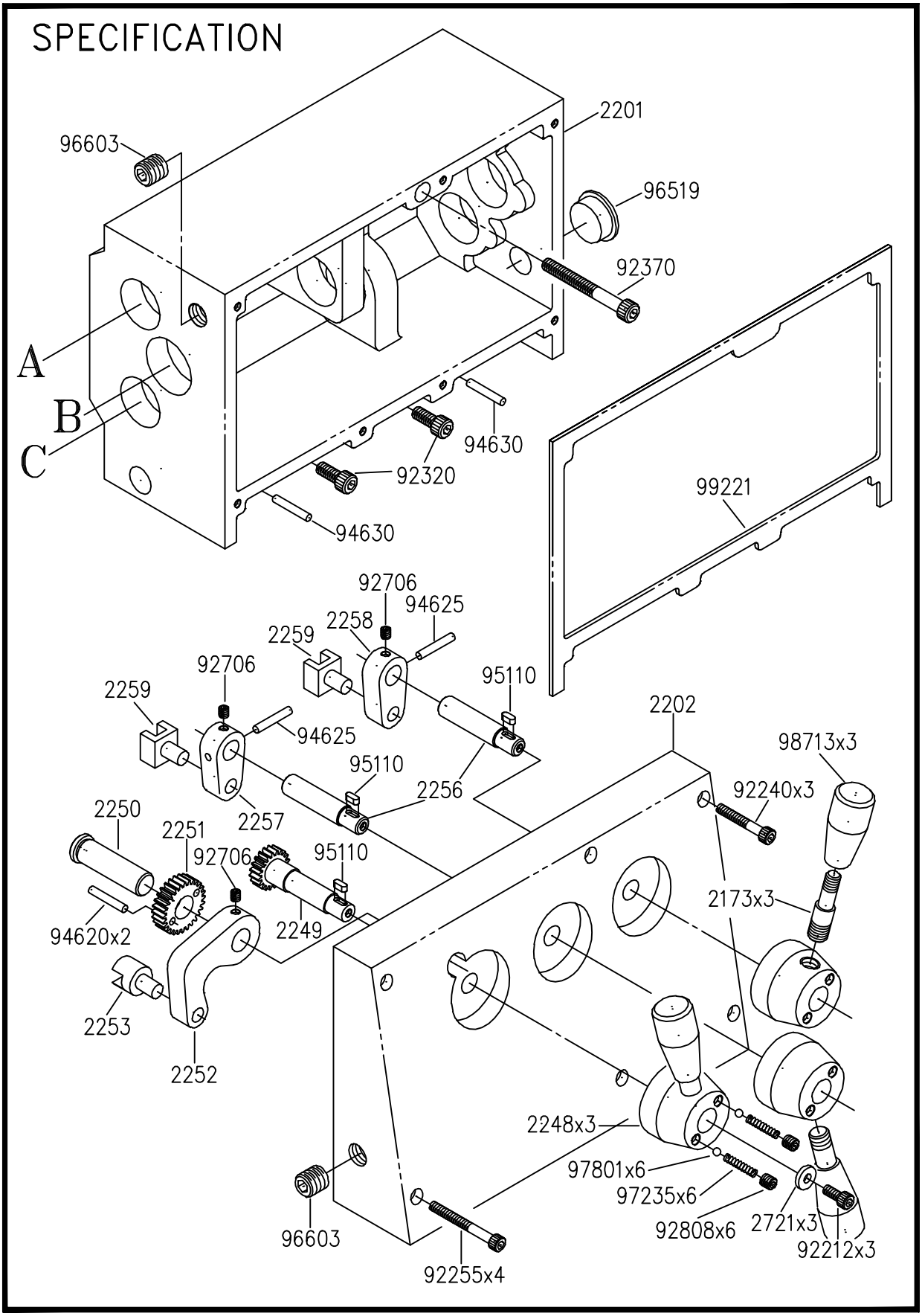


HEADSTOCK

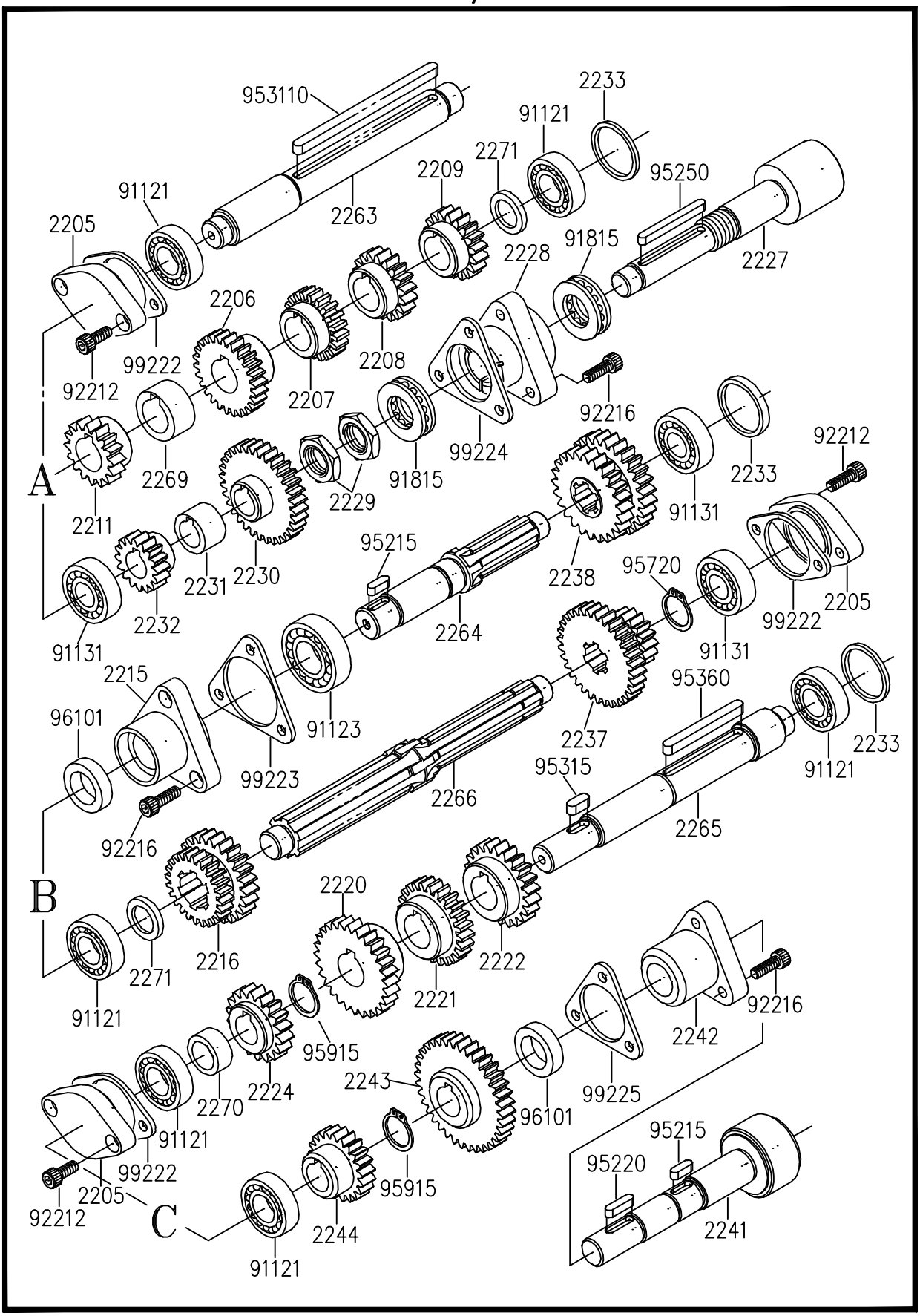

2132
99215
2134
2135
2137
2901
95755
92216x2
2136
95750
92216x3
95560
95530
2138
2131
97115x3
2902
92312x3
2133
91532
91543
2113
95720
92225
2113
95725
2144
2153
95720
99214
95215
95738
91123
92808
2143
2152
2142
2150
2151
95725
95390
2141
2149
96325
95720
2147
2148
91125
95215
91133
2157
2156
95725
96104
99216
92216
95720
91123
99217
92212x3
95725
2158
S
S
S
C
D
E

OPERATION

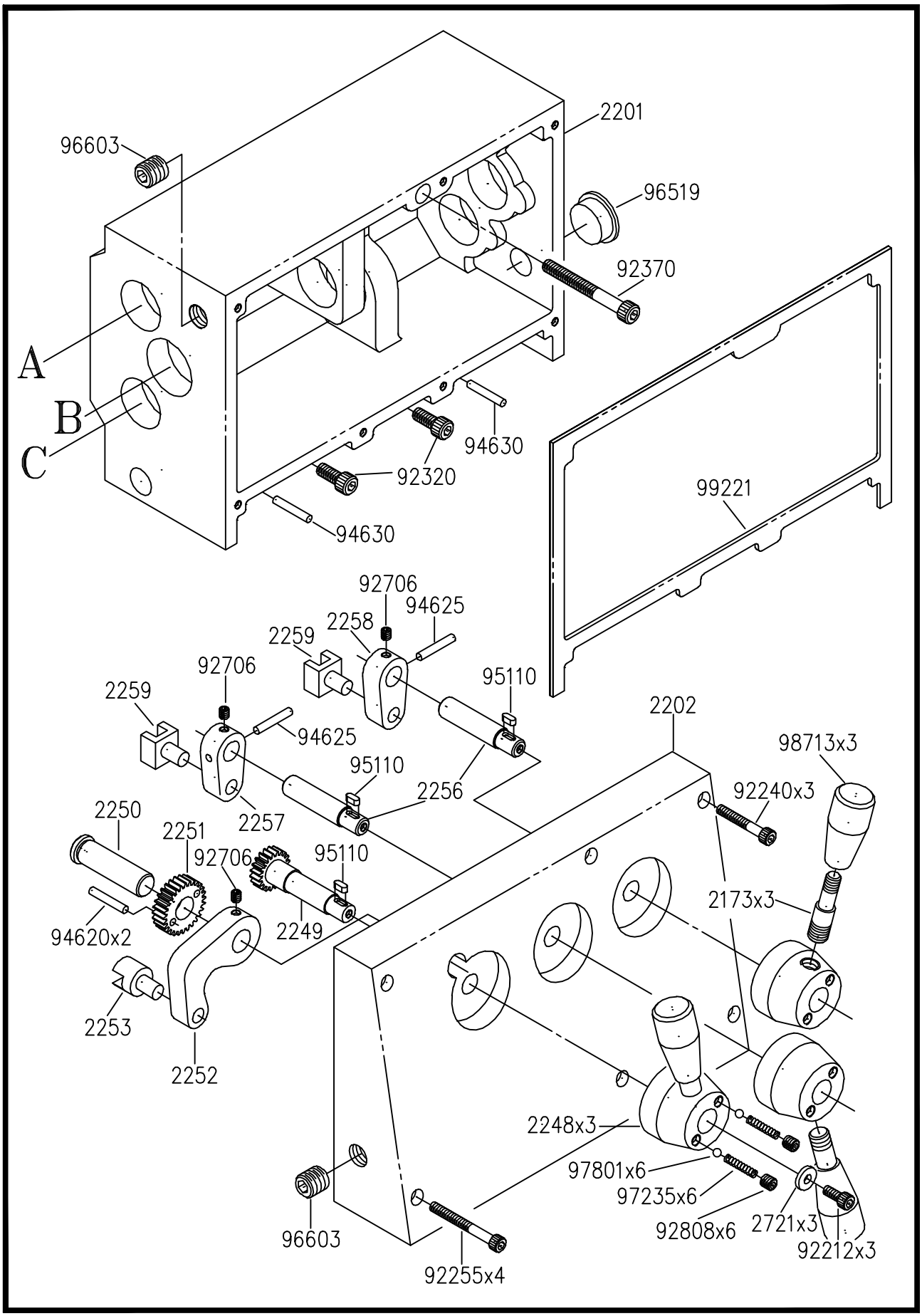
SPECIFICATION



GEARBOX Metric system

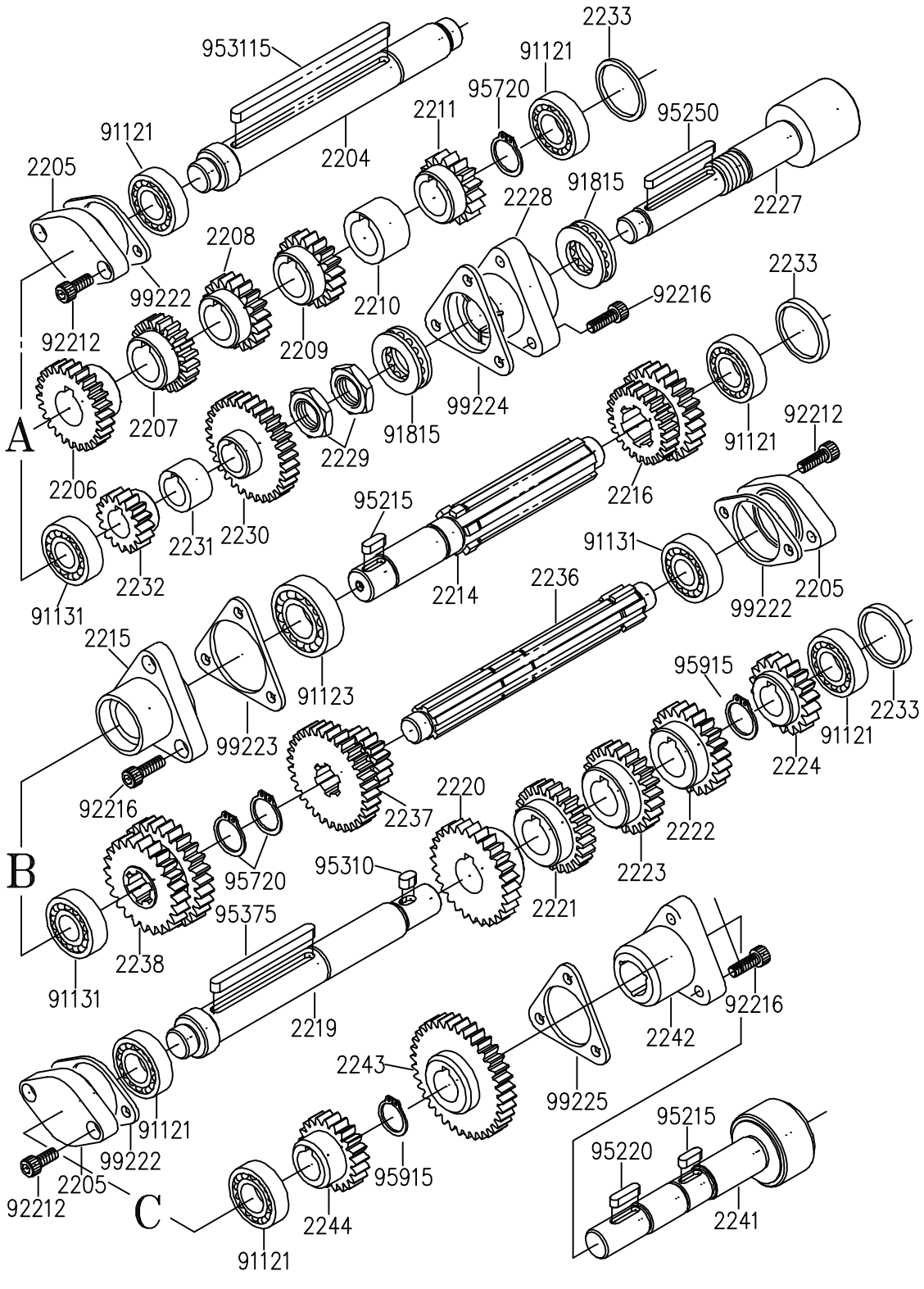


GEARBOX Inch system

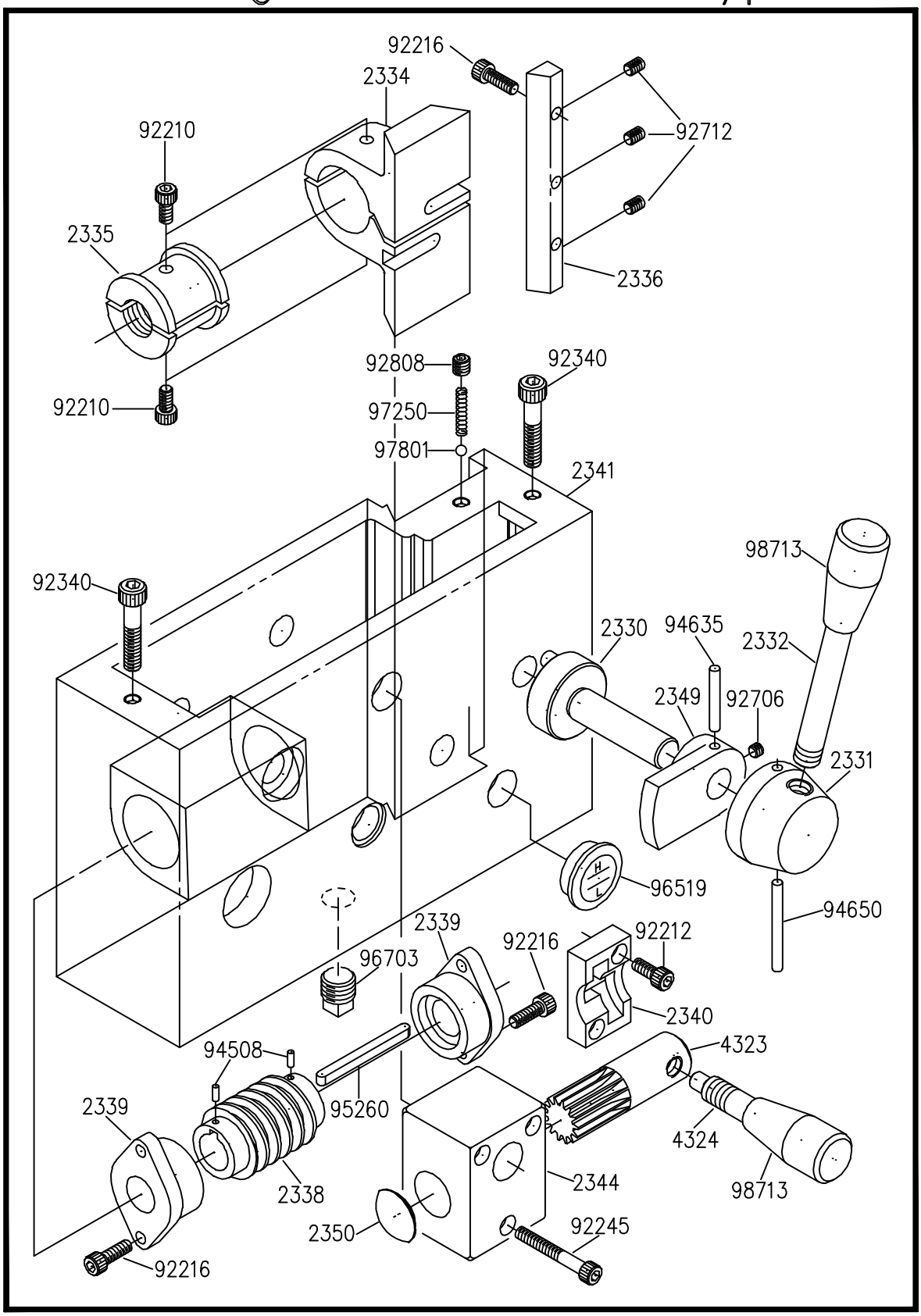


OPERATION

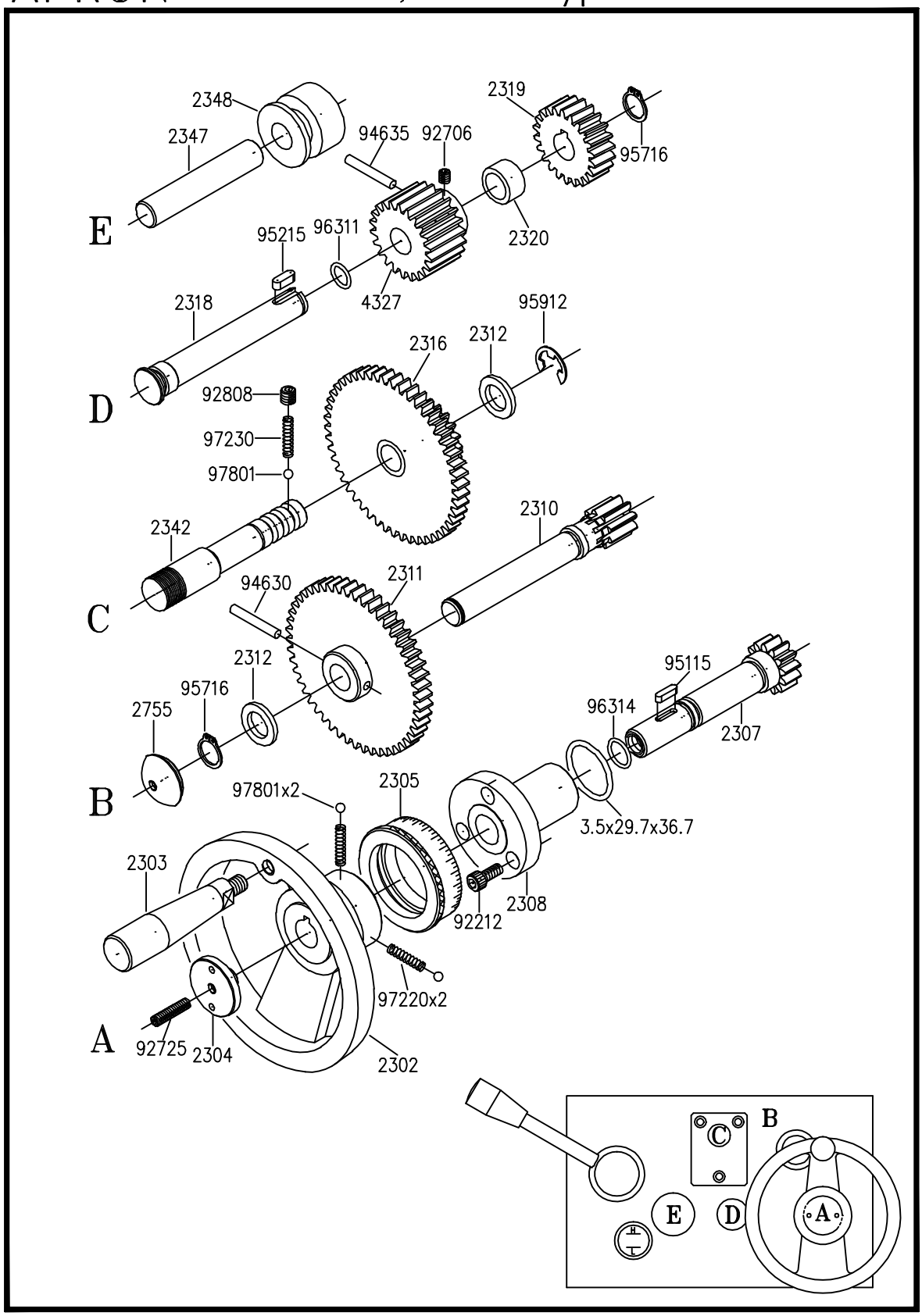
SPECIFICATION



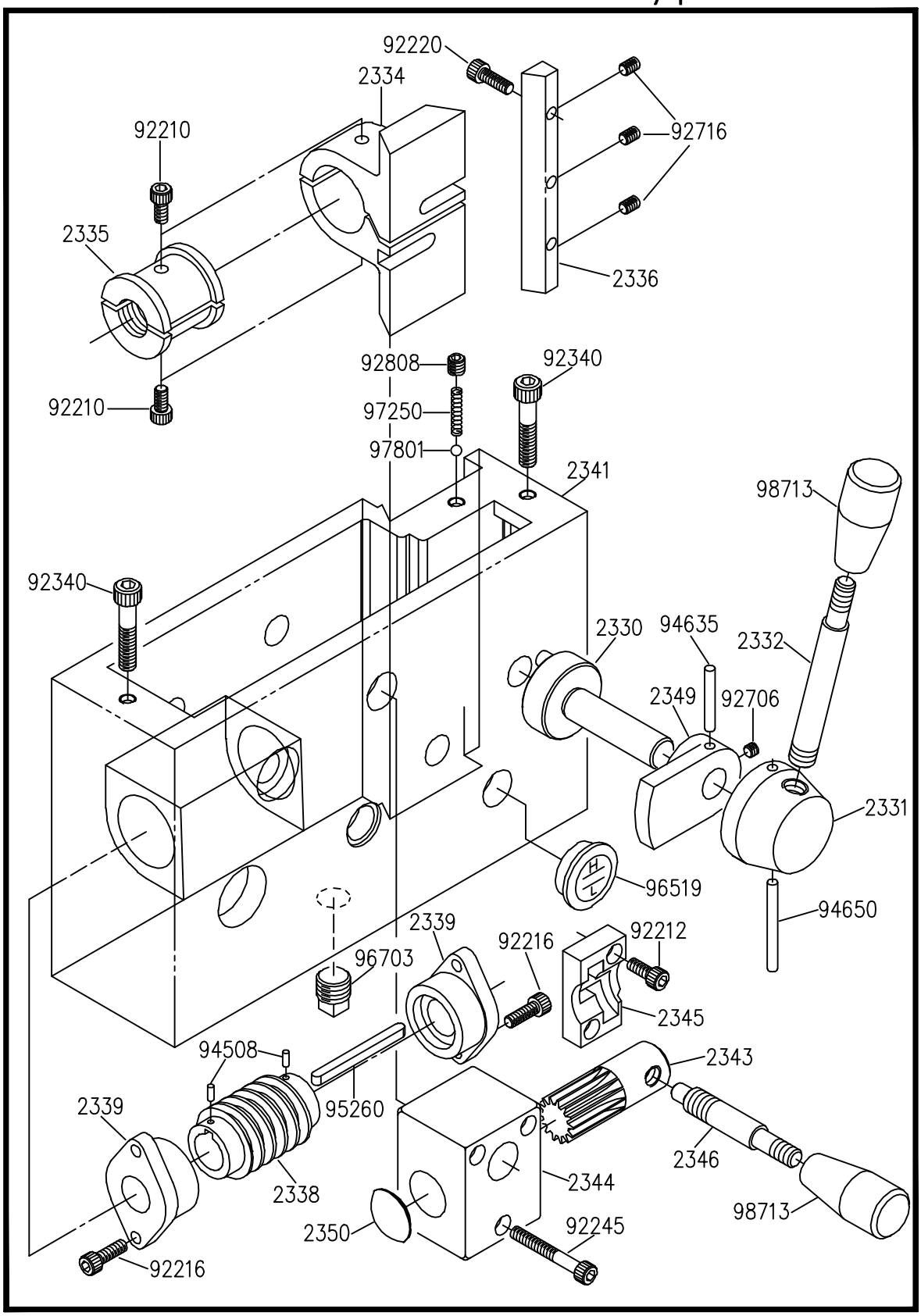
APRON Right hand, hever type



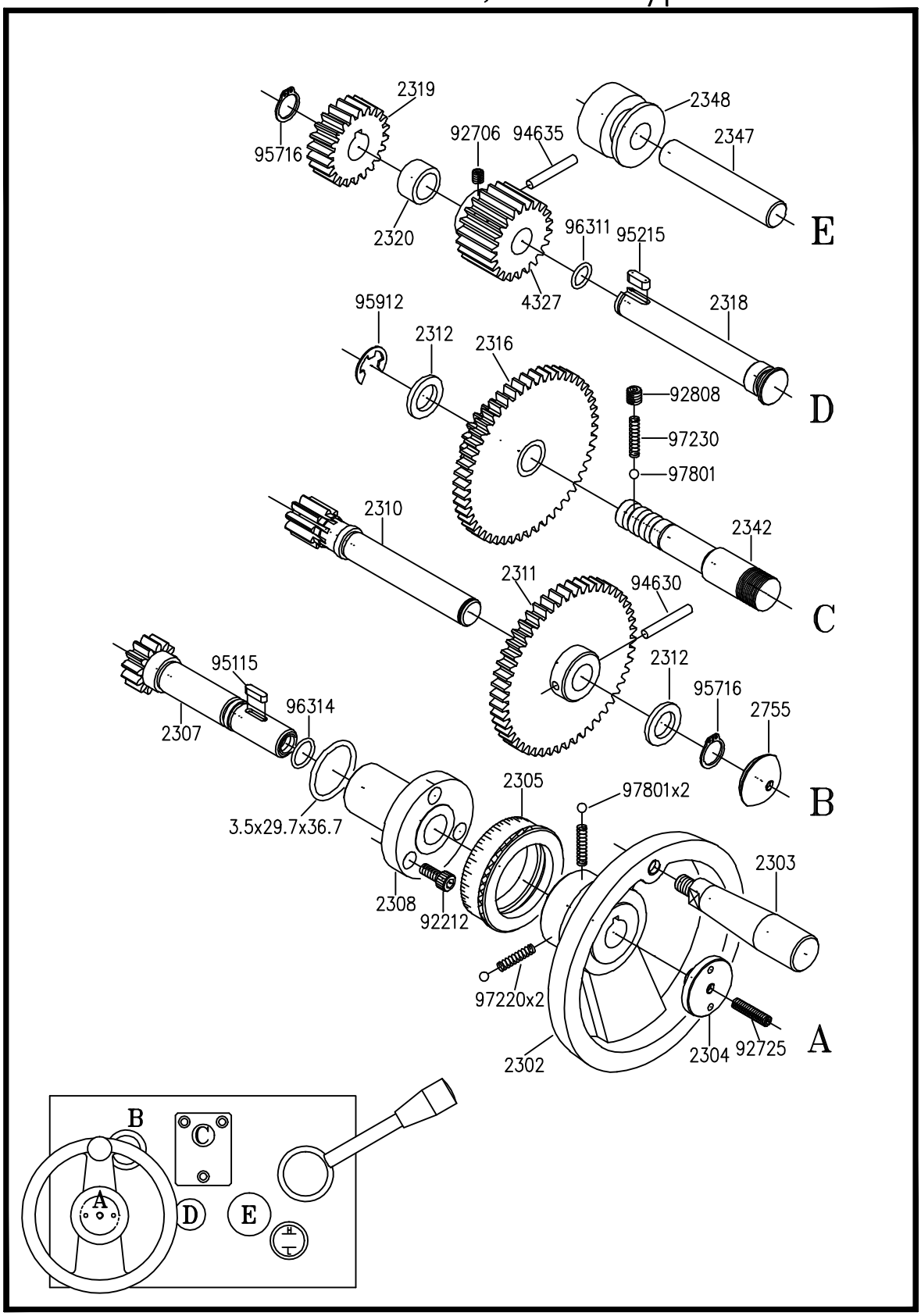
APRON Left hand, Lever type



APRON Left hand,Lever type

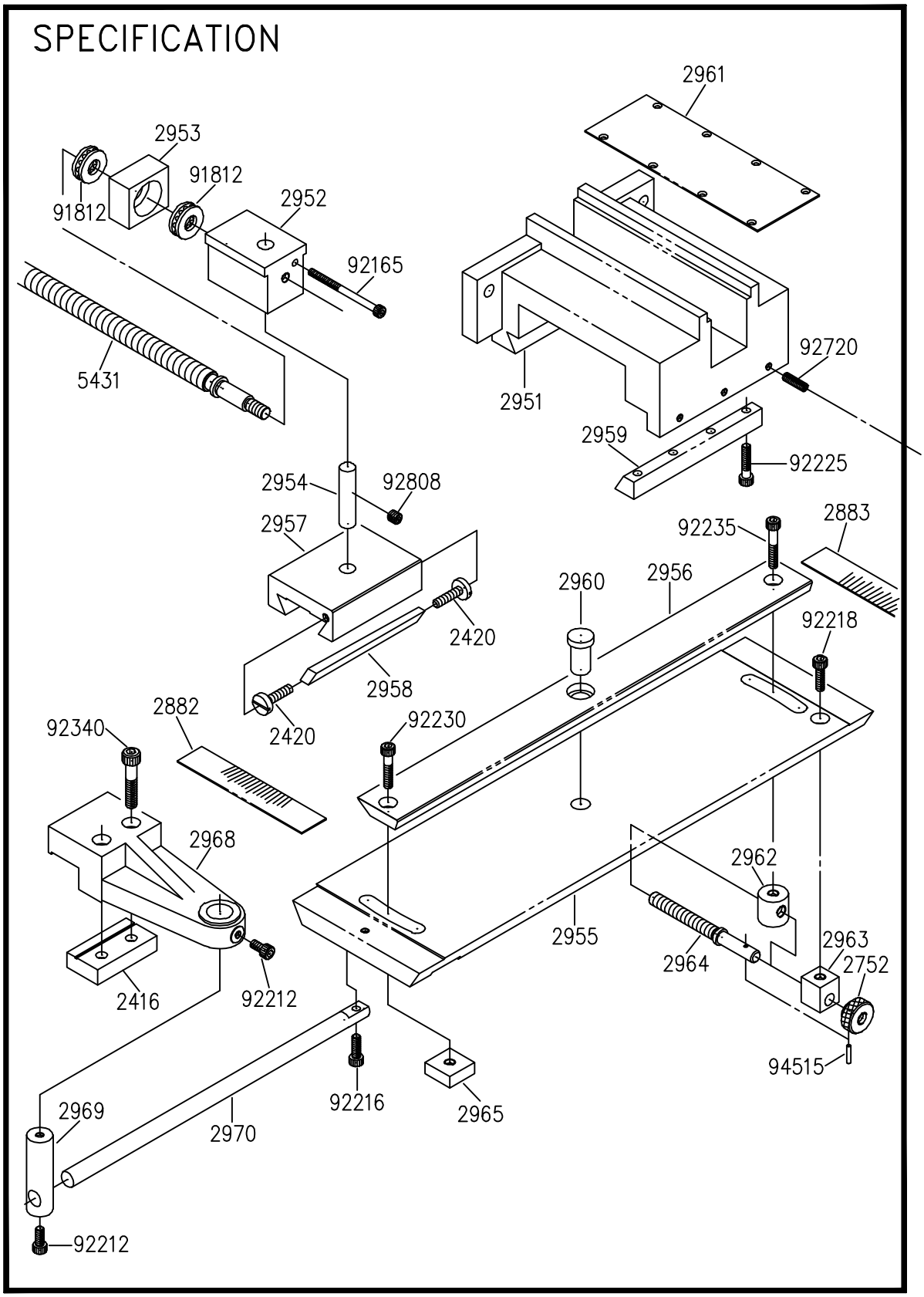


APRON Left hand, Lever type

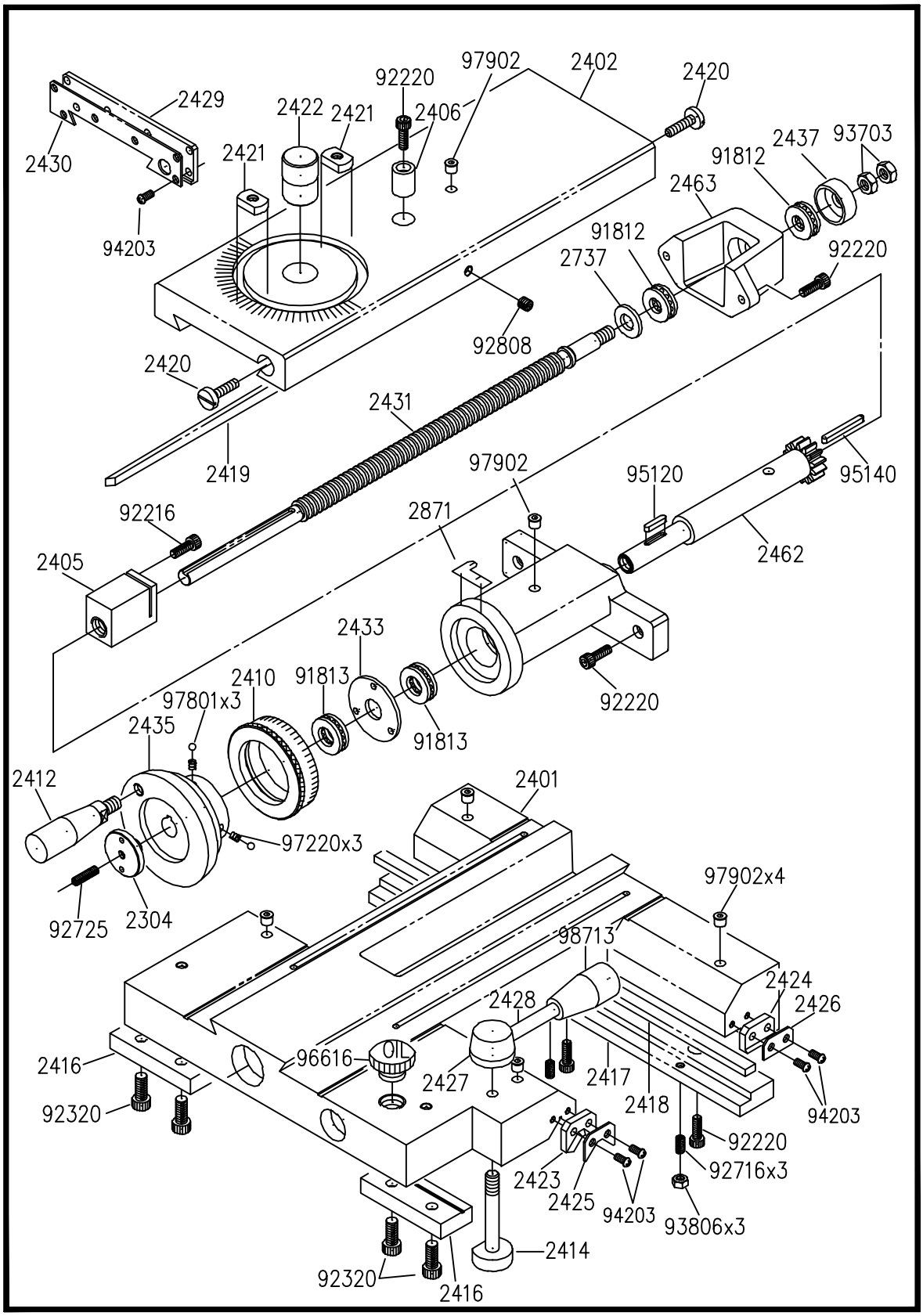


OPERATION

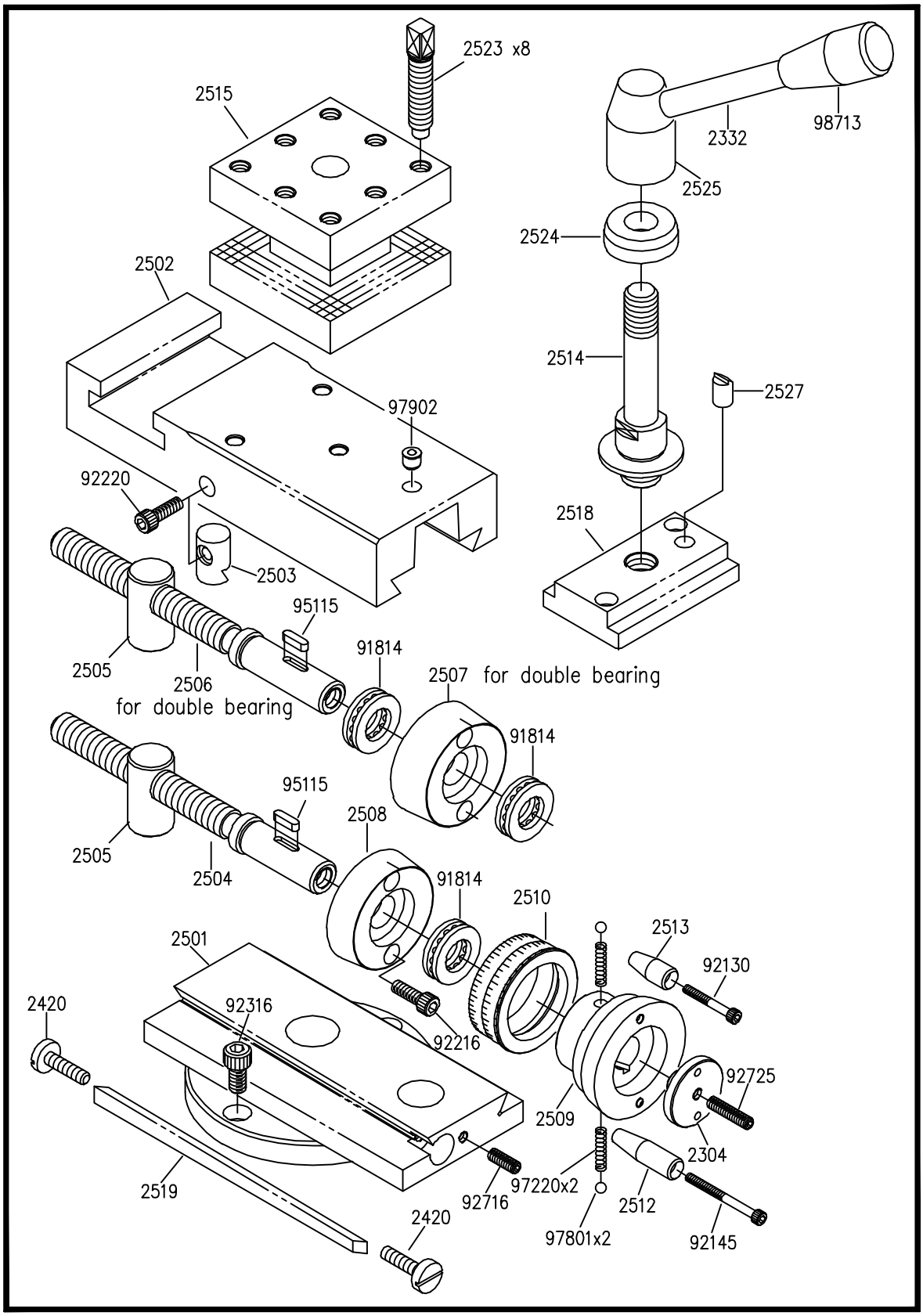
SPECIFICATION



SADDLE & CROSS-SLIDE

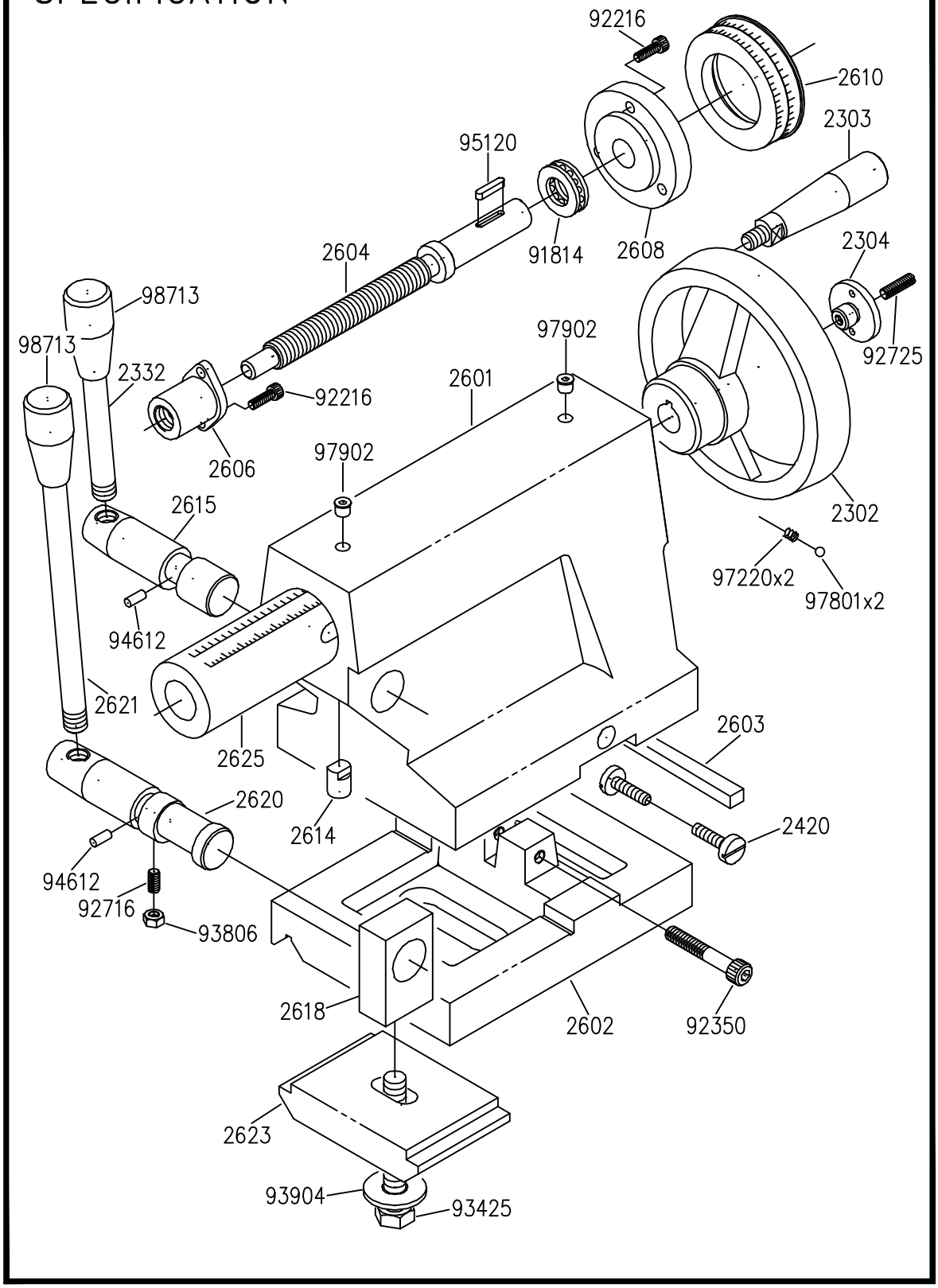


TOP SLIDE TOOL POST

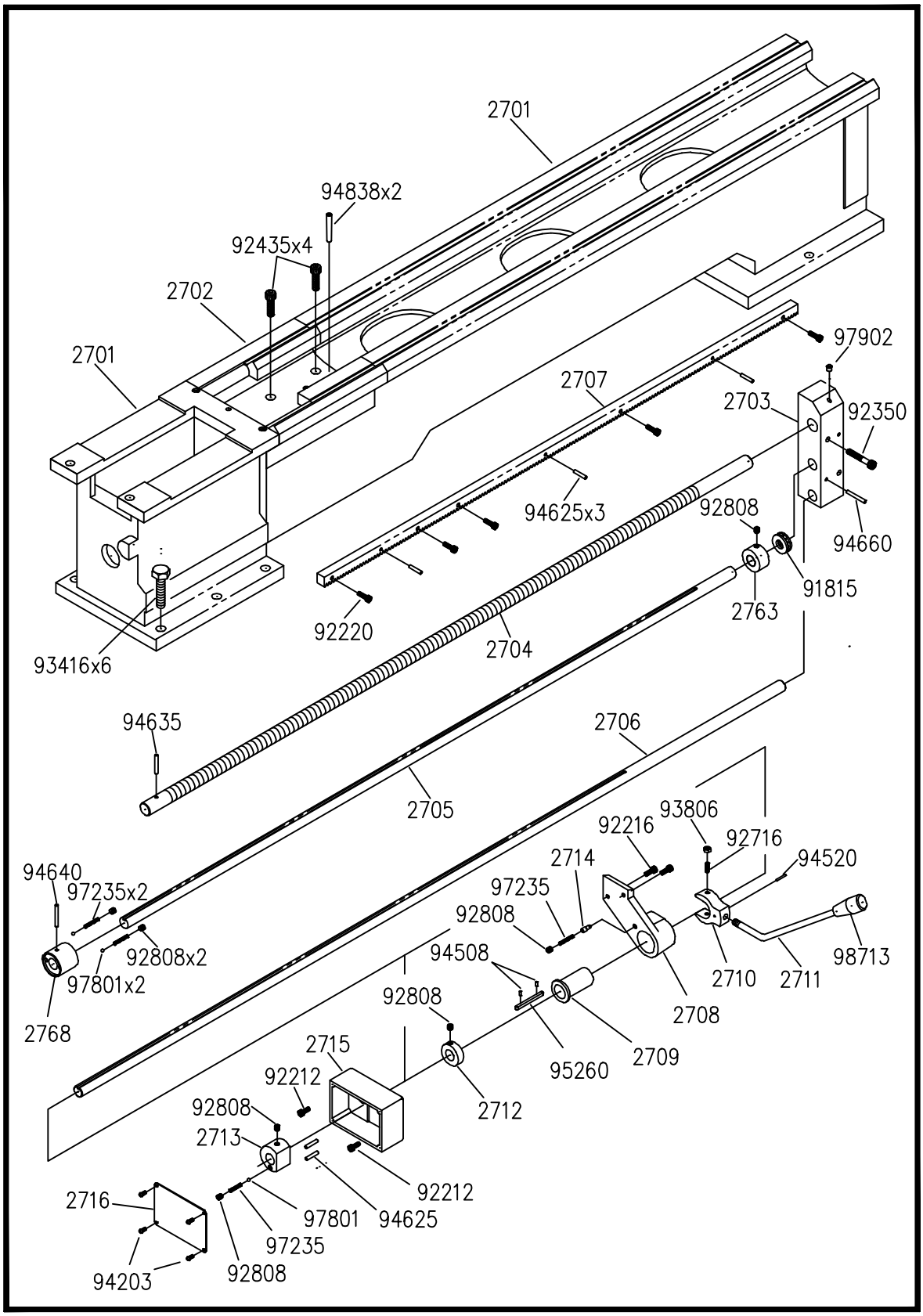


OPERATION

SPECIFICATION



BED & SHAFTS


2701
94838x2
92435x4
2702
2701
97902
2707
2703
92350
94625x3
92808
94660
91815
2763
92220
2704
93416x6
94635
2706
2705
93806
92216
92716
94520
2714
94640
97235x2
97235
92808
92808x2
94508
98713
97801x2
2710
2711
2768
2708
92808
2715
2709
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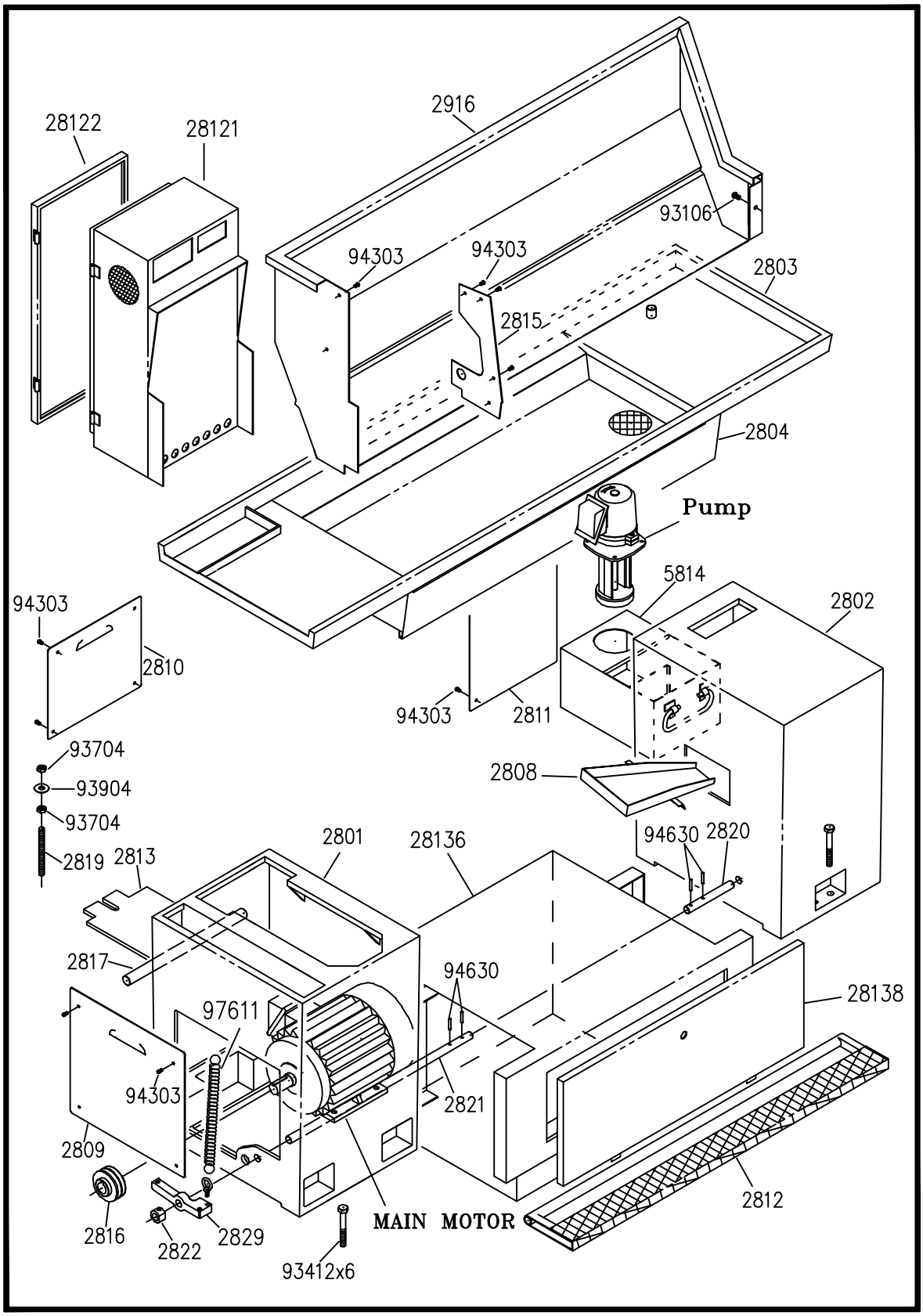
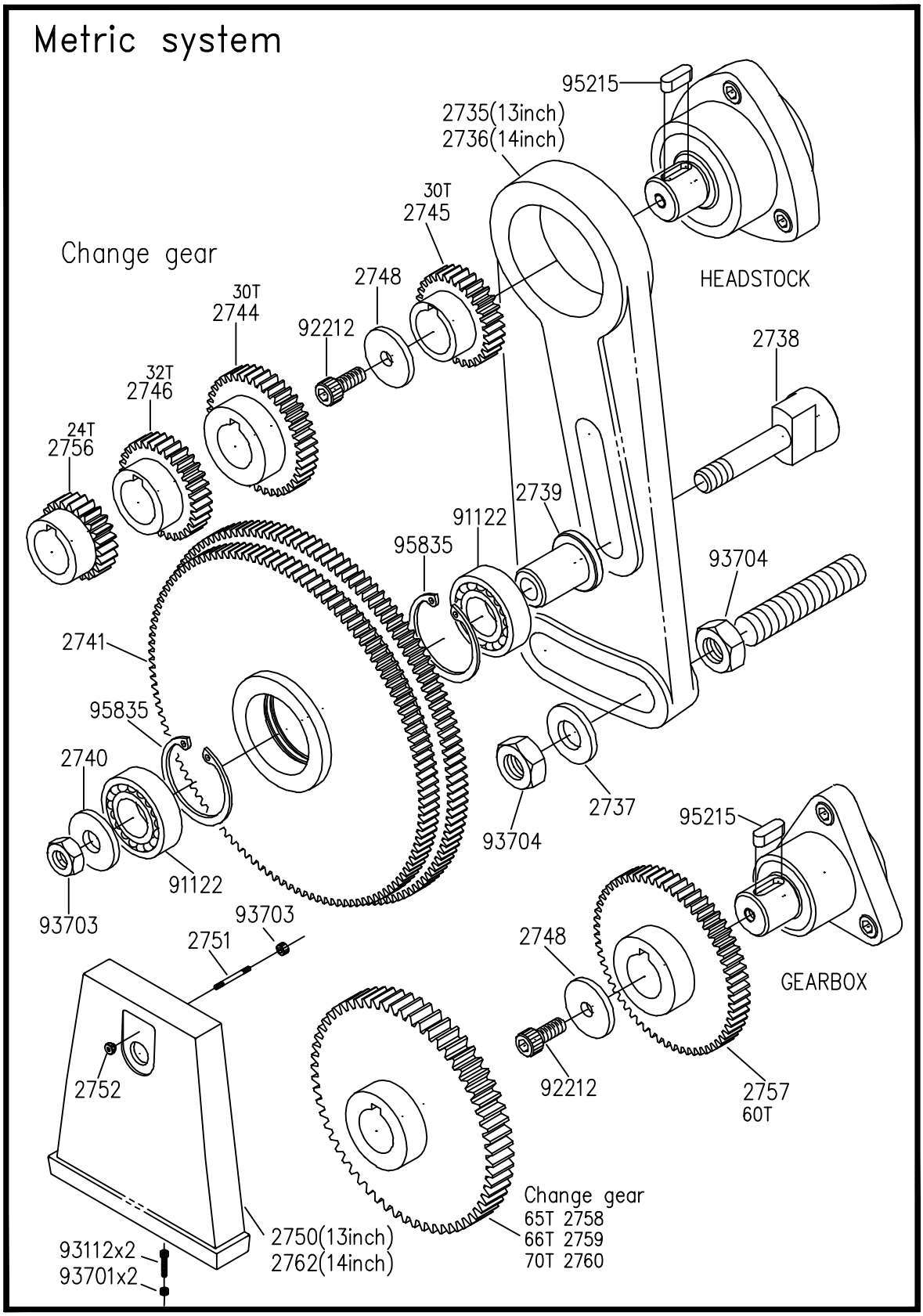
2716
97801
94625
97235
92808
94203

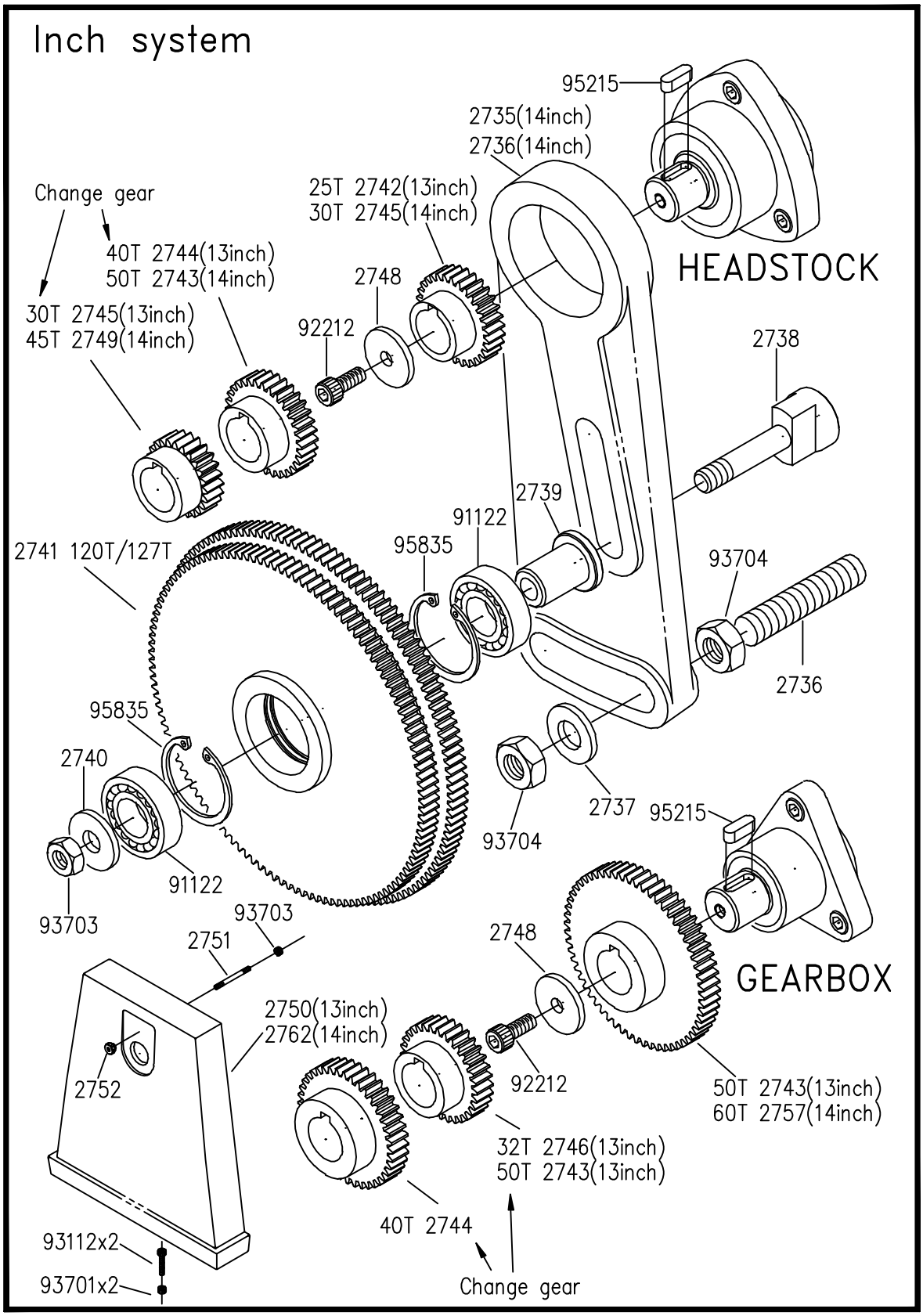
CABINET & PANELS



SWING FRAME, END GEARS & COVER

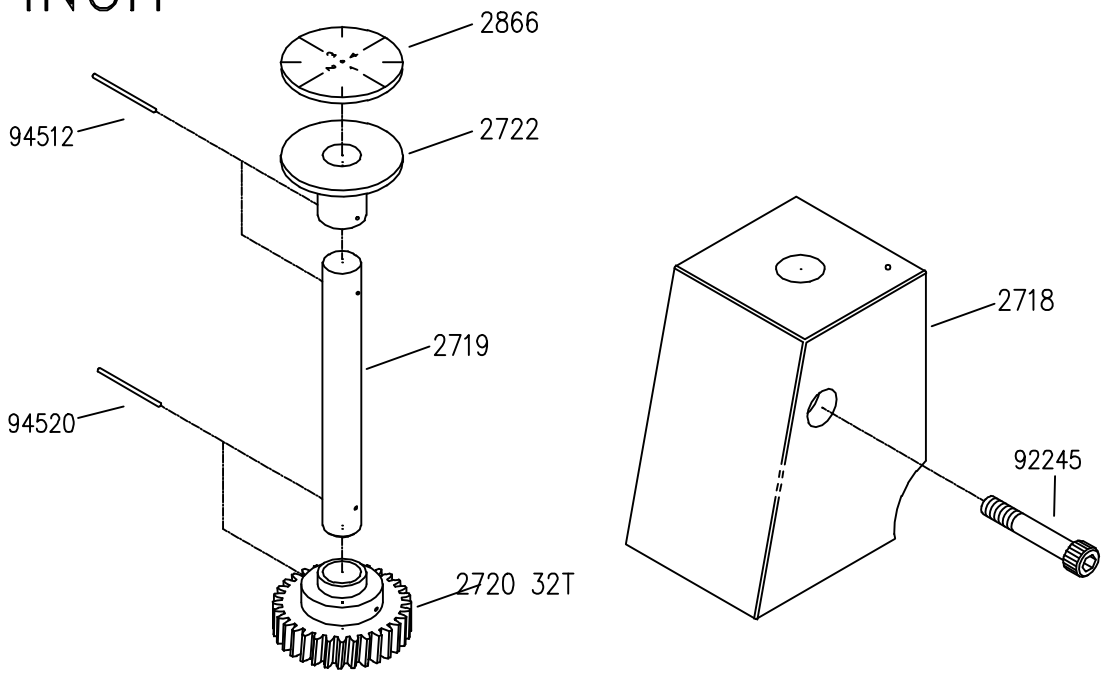


SWING FRAME, END GEAR & COVER

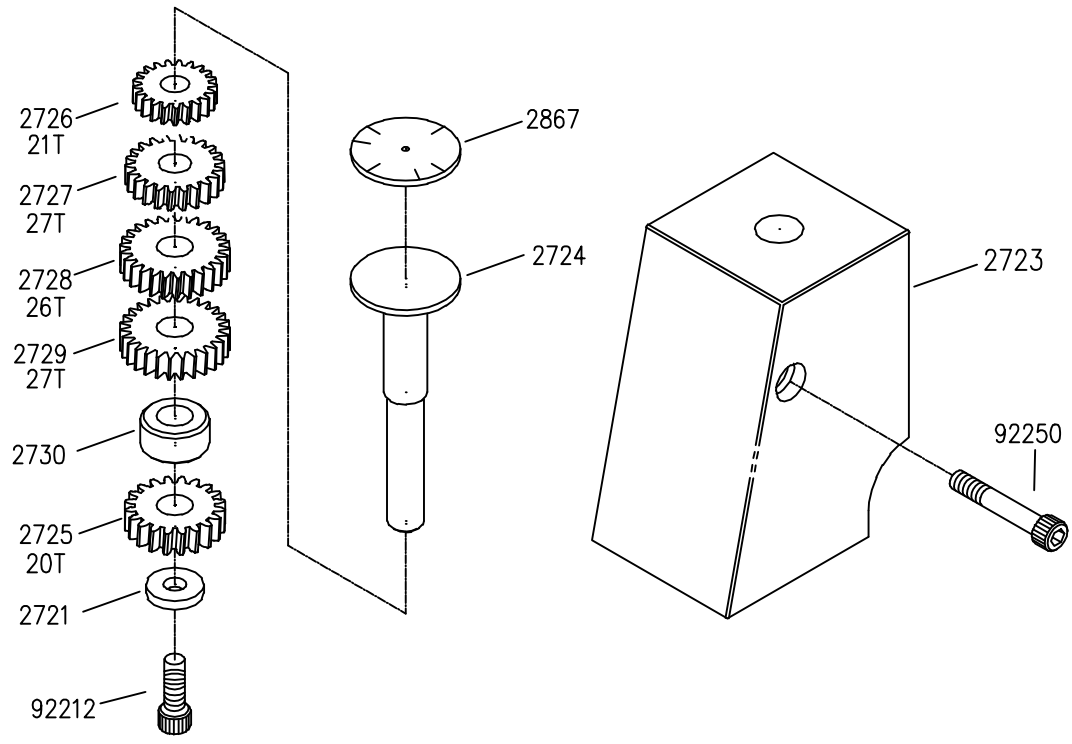


THREADING DIALS

INCH



MM



PARTS LIST

Part No.	Description	Quantity
2101	Main casting	1
2102	Cover	1
2104	Shaft	1
2105	Cover	1
2106	Pulley	1
2107	Washer	1
2108	Gear 2M 38T	1
2109	Gear 2M 23T	1
2110	Collar	1
2111	Gear 2M 30T	1
2112	Gear 2M 21T	2
2113	Collar	3
2114	Bore plug	1
2117	Shaft	1
2118	Collar	1
2119	Gear 2M 31T	1
2120	Gear 2M 47T	1
2121	Gear 2M 54T	1
2122	Gear 2M 39T	1
2123	Collar	1
2124	Collar	1
2125	Gear 2M 21T	1
2126	Gear 2M 60T	1
2127	Bore plug	1
2131	Spindle	1
2132	Nut	1
2133	Cover	1
2134	Cover	1
2135	Collar	1
2136	Gear 2M 82T	1
2137	Gear 2M 43T	1
2138	Gear 2M 38T	1
2141	Shaft	1
2142	Gear 2M 21T	1
2143	Gear 2M 32T	1
2144	Gear 2M 32T	1
2147	Shaft	1
2148	Cover	1
2149	Gear 2M 42T	1
2150	Collar	1
2151	Gear 2M 32T	1
2152	Collar	1
2153	Gear 2M 32T	1
2156	Shaft	1
2157	Cover	1
2158	Gear 2M 38T	1
2159	Breaket	1
2161	Rang selector	1
2162	Rang selector	1
2163	Collar	2
2164	Shaft	1
2165	Pin	1
2166	Lever	1
2167	Gear 1.5M 35T	1
2168	Gear 1.5M 45T	1
2169	Shaft	2
2170	Shift lever	1
2171	Shift lever	1
2172	Shift fork	2
2173	Lever	4
2174	Lever	3
2175	Handle	5
2176	Coller	1
2177	Handle	2
2178	Shaft	1
2179	Shift lever	1
2180	Shift fork	1
2181	Collar	1
2182	Shift lever	1
2183	Shift fork	1
2184	Coller	1
2186	Stud	1
2187	Stud	1
2188	Lever	1

PARTS LIST

Part No.	Description	Quantity
2201	Casting(INCH)	1
2202	Front cover	1
2204	Shaft	1
2205	Cover	3
2206	Gear 1.75M 26T	1
2207	Gear 2M 20T	1
2208	Gear 2M 18T	1
2209	Gear 2M 16T	1
2210	Collar	1
2211	Gear 2M 16T	1
2214	Shaft	1
2215	Cover	1
2216	Gear1.75M24T/2M 24T	1
2219	Shaft	1
2220	Gear 1.75M 28T	1
2221	Gear 2M 24T	1
2223	Gear 2M 22T	1
2224	Gear 2M 23T	1
2226	Gear 2M 18T	1
2227	Shear pin	1
2228	Cover	1
2229	Nut	2
2230	Gear 1.75M 32T	1
2231	Cover	1
2232	Gear 1.75M 34T	1
2233	Collar	1
2236	Shaft	1
2237	Gear 1.75M 34T Gear 1.75M 16T	1
2238	Gear 2M 24T/2M 24T	1
2239	Shaft	1
2240	Shaft	1
2241	Shaft	1
2242	Fl. brg.	1
2243	Gear 1.75M 36T	1
2244	Gear 1.75M 21T	1
2245	Nut	1
2248	Handle	3
2249	Gear 1.25M 20T	1
2250	Shaft	1
2251	Gear 1.25M 28T	1
2252	Lever	1
2253	Fork	1
2255	Handle	3
2256	Shaft	2
2257	Lever	1
2258	Lever	1
2259	Fork	2
2261	Casting(METRIC)	1
2262	Front cover	1
2263	Shaft	1
2264	Shaft	1
2265	Shaft	1
2266	Shaft	1
2269	Collar	1
2270	Collar	1
2271	Washer	1

PARTS LIST

Part No.	Description	Quantity
2301	Casting	1
2302	Handwheel	2
2303	Handle	2
2304	Plug	4
2305	Index ring	1
2307	Shaft 2M 13T	1
2308	Keep assy.	1
2310	Rack pinion 2M 9T	1
2311	Gear 2M 50T	1
2312	Collar	4
2313	Plug	1
2315	Shaft	1
2316	Gear 2M 50T/20T	1
2318	Shaft	1
2319	Gear 2M 22T	1
2320	Coller	1
2321	Gear 2M 22T	1
2322	Gear 2M 22T	1
2325	Shaft	1
2326	Gear 2M 22T	1
2327	Collar	1
2330	Shaft	1
2331	Handle	1
2332	Handle	3
2333	Lever	1
2334	Breaket	1
2335	Half nut	1
2336	Gib	1
2338	Worm	1
2339	Cover	2
2341	Casting	1
2342	Shaft	1
2343	Gear shaft	1
2344	Keep assy	2
2345	Cam	1
2346	Lever	1
2347	Shaft	1
2348	Collar	1
2349	Lever	1
2350	Plug	1
2351	Sliding plate	1

PARTS LIST

Part No.	Description	Quantity
2401	Saddle casting	1
2402	Cross-slide	1
2404	Screw	1
2405	Nut	1
2406	Collar	1
2407	Gear 2M 14T	1
2408	Keep assy.	1
2409	Handwheel	1
2410	Index ring	1
2412	Handle	1
2413	Collar	1
2414	Screw	1
2415	Washer	1
2416	Strip	2
2417	Strip	1
2418	Gib	1
2419	Gib	1
2420	Gib screws	6
2421	Nut	2
2422	Pirot	1
2423	Wiper	2
2424	Wiper	2
2427	Handle	1
2428	Handle	1
2429	Wiper	1
2431	Screw	1
2432	Gear 2M 14T	1
2433	Washer	1
2434	Keep assy.	1
2435	Handwheel	1
2436	Keep assy.	1
2437	Bearing cover	1
2501	Swiver slide	1
2502	Top Slide	1
2503	Pad	1
2504	Screw	1
2505	Nut	1
2508	Keep assy.	1
2509	Handwheel	1
2510	Index ring	1
2512	Handle	1
2513	Handle	1
2514	Bolt	1
2515	Toolpost	1
2516	Blot	1
2517	Nut	1
2518	Nut	1
2519	Gib	1
2523	Screw	8
2524	Washer	1
2525	handle	1
2527	Pad	1
2529	Swiver Slide	1
2530	Nut	2
2531	Swiver Slide	1
2532	Top slide	1
2533	Toolpost	1
2534	Nut	1
2601	Casting	1
2602	Base	1
2603	Gib	1
2604	Screw	1
2605	Barrel	1
2606	Nut	1
2608	Keep	1
2610	Index ring	1
2614	Pad	1
2615	Shaft	1
2618	Pirot block	1
2620	Shaft	1
2621	Handle	1
2622	Pins	2
2623	Clamp plate	1
2624	Screw	1
2625	Nut	1

PARTS LIST

Part No.	Description	Quantity
2626	Keep	1
2701	Bed	1
2702	Gap piece	1
2703	Bracket	1
2704	Leadscrew	1
2705	Feed shaft	1
2706	Third-rod shaft	1
2707	Rack	1
2708	Bracket	1
2709	Sleeve	1
2710	Fork	1
2711	Handle	1
2712	Collar	1
2713	Collar	1
2714	Pin	1
2715	Box	1
2716	Perspex cover	1
2717	Box	1
2718	Guard	1
2719	Shaft	1
2720	Gear 1M 32T	1
2721	Washer	6
2722	Collar	1
2723	Guard	1
2724	Shaft	1
2725	Gear 1.25M 20T	1
2726	Gear 1.25M 21T	1
2727	Gear 1.25M 22T	1
2728	Gear 1.25M 26T	1
2729	Gear 1.25M 27T	1
2730	Collar	1
2732	Dog	1

Part No.	Description	Quantity
2733	Set-over pad	1
2734	Screws	1
2735	Swing Frame	1
2736	Swing Frame	1
2737	Washer	1
2738	Shaft	1
2739	Shaft collar	1
2740	Washer	1
2741	Gear 1.25M 120T Gear 1.25M 127T	1
2742	Gear 1.25M 25T	1
2743	Gear 1.25M 50T	2
2744	Gear 1.25M 40T	1
2745	Gear 1.25M 30T	1
2746	Gear 1.25M 32T	1
2748	Washer	6
2749	Gear 1.25M 45T	2
2750	End Cover	1
2751	Stud	2
2752	Nut	2
2753	Stopper	1
2754	Plug (Handstock)	1
2755	Plug (Apron)	1
2756	Gear 1.25M 24T	1
2757	Gear 1.25M 60T	1
2758	Gear 1.25M 65T	1
2759	Gear 1.25M 66T	1
2760	Gear 1.25M 70T	1
2761	Box	1
2762	End cover	1
2763	Bearing cover	1
2764	Sliping clutch	1
2765	Bush	1
2766	Collar	1
2767	Collar	1
2768	Clutch	1
2769	Collar	1

PARTS LIST

Part No.	Description	Quantity
2801	Plinth (Stand)	1
2802	Plinth (Stand)	1
2803	Tray	1
2804	Chip Tray	1
2805	Front plate	1
2806	Box	1
2807	Plate	1
2808	Tray	1
2809	Cover	1
2810	Cover	1
2811	Cover	1
2812	Pedal	1
2813	Platform	1
2814	Bracket	1
2815	Guard	1
2816	Pully	1
2817	Shaft	1
2819	Screw	1
2820	Shaft	1
2821	Shaft	1
2822	Collar	1
2823	Lever	1
2824	Guard	1
2825	Bar	1
2826	Fulcrum	1
2827	Fulcrum	1
2828	Bolt	2
2829	Bolt	1
2930	Cover	3
2901	Cam	3
2902	Pin	3
2903	Stud	3
2904	Camlock wrench	1
2915	Centor sleeve	1

PARTS LIST

91121	Bearing No.6003	92312	Socket head cap screw M8x12mm.
91122	Bearing No.6003Z	92316	" " M8x16mm.
91123	Bearing No.6004	92320	" " M8x20mm.
91125	Bearing No.6005	92330	" " M8x30mm.
91131	Bearing No.6202	92335	" " M8x35mm.
91133	Bearing No.6204	92340	" " M8x40mm.
91135	Bearing No.6205	92345	" " M8x45mm.
91532	Bearing No.30210	92350	" " M8x50mm.
91543	Bearing No.32211	92370	" " M8x70mm.
91544	Bearing No.32212		
91812	Thrust No.51101		
91813	Thrust No.51102		
91814	Thrust No.51103	92435	Socket head cap screw M10x25mm.
91815	Thrust No.51104	92430	" " M10x30mm.
91816	Thrust No.51105	92435	" " M10x35mm.
91823	Thrust No.51202	92440	" " M10x40mm.
91824	Thrust No.51203	92445	" " M10x45mm.
91841	Thrust No.2901	92525	" " M12x25mm.
91842	Thrust No.2902	92535	" " M12x35mm.
91843	Thrust No.2903	92540	" " M12x40mm.
91844	Thrust No.2904		

92706	Set screw	M6x6mm.
92708	" "	M6x8mm.
92710	" "	M6x10mm.
92712	" "	M6x12mm.
92716	" "	M6x16mm.
92720	" "	M6x20mm.
92725	" "	M6x25mm.
92808	Set screw	M8x8mm.
92814	Set screw	M8x14mm.
92012	Set screw	M12x12mm.

92116	Socket head cap screw	M5x16mm.
92130	" "	M5x30mm.
92145	" "	M5x45mm.

92210	Socket head cap screw	M6x10mm.
92212	" "	M6x12mm.
92216	" "	M6x16mm.
92220	" "	M6x20mm.
92225	" "	M6x25mm.
92230	" "	M6x30mm.
92235	" "	M6x35mm.
92240	" "	M6x40mm.
92245	" "	M6x45mm.
92250	" "	M6x50mm.
92255	" "	M6x55mm.

PARTS LIST

93112 Cap screw 1/41-1/4 in.
93314 Cap screw 3/8x1-1/2 in.
93320 " " 3/8x2 in.
93324 " " 3/8x2-1/2 in.
93330 " " 3/8x3 in.
93406 " " 1/2x3/4 in.
93412 " " 1/2x1-1/4 in.
93414 " " 1/2x1-1/2 in.
93416 " " 1/2x1-3/4 in.
93420 " " 1/2x2 in.
93424 " " 1/2x2-1/2 in.
93430 " " 1/2x3 in.

93701 Nut 1/4 in.
93703 Nut 3/8 in.
93704 Nut 1/2 in.
93806 Nut 6mm.

93903 Washer 3/8 in.
93904 Washer 1/2 in.
93906 Washer 3/4 in.

94102 Screw 1/8x1/4 in.
94103 Screw 1/8x3/8 in.

94202 Screw 3/16x1/4 in.
94203 " 3/16x3/8 in.
94303 " 1/4x3/8 in.
94308 " 5/32x3/16 in.
94403 Nail 2mm.
94409 Screw 1/4x1mm.
94508 Pin 3x8mm.
94512 " 3x12mm.
94520 " 3x20mm.
94524 " 3x24mm.

94612 Pin 5x12mm.
94616 " 5x16mm.
94620 " 5x20mm.

94625 Pin 5x25mm.
94630 " 5x30mm.
94634 " 5x34mm.
94635 " 5x35mm.
94636 " 5x36mm.
94640 " 5x40mm.
94645 " 5x45mm.
94650 " 5x50mm.
94660 " 5x60mm.

94830 Taper pin 4x30mm.
94838 " 4x38mm.

95110 Key 4x10mm.
95115 " 4x15mm.
95120 " 4x20mm.
95140 " 4x40mm.

95210 Key 5x10mm.
95212 " 5x12mm.
95215 " 5x15mm.
95220 " 5x20mm.
95225 " 5x25mm.
95230 " 5x30mm.
95235 " 5x35mm.
95240 " 5x40mm.
95244 " 5x44mm.
95245 " 5x45mm.
95250 " 5x50mm.
95260 " 5x60mm.
95270 " 5x70mm.

95310 Key 6x10mm.
95315 " 6x15mm.
95325 " 6x25mm.
95397 " 6x110mm.
95398 " 6x115mm.

PARTS LIST

95375	Key	6x75mm.
95390	"	6x90mm.
95420	Key	7x20mm.
95440	"	7x40mm.
95450	"	7x50mm.
95460	"	7x60mm.
95520	Key	8x20mm.
95530	"	8x30mm.
95540	"	8x40mm.
95550	"	8x50mm.
95560	"	8x60mm.
95570	"	8x70mm.

95712	Circlip	S-12mm.
95715	"	S-15mm.
95716	"	S-16mm.
95718	"	S-18mm.
95720	"	S-20mm.
95725	"	S-25mm.
95730	"	S-30mm.
95738	"	S-38mm.
95740	"	S-40mm.
95750	"	S-50mm.
95755	"	S-55mm.
95835	Circlip	R-35mm.
95847	"	R-47mm.
95906	Circlip	E-6mm.
95912	"	E-12mm.
95915	"	E-15mm.
95919	"	E-19mm.

96103	Oil seal TC 25x45x11mm.
96104	Oil seal TC 25x40x8mm.

96308	O-ring	8x12x2mm.
96311	"	11x16x2.5mm.
96314	"	14x19x2.5mm.
96320	"	20x25x2.5mm.
96324	"	24x30x3.0mm.
96325	"	25x31x3.0mm.
96334	"	34x40x3.0mm.
96338	"	38x45x3.5mm.
96343	"	43x51x4.0mm.
96344	"	44x50x3.0mm.
96358	"	58x64x3.0mm.

96519	Oil sight	3/4in (19mm.)
96528	" "	1-1/8in.(28mm.)

96603	Plug	3/8 G.P.
96616	"	3/4 in. (P.V.C.)
96703	"	3/8 G.P.
96704	"	1/2 G.P.
96803	Elbow	3/8 G.P.
97115	Spring	3/16in. x 15mm.
97208	Spring	1/4in.x8mm.
97210	"	1/4in.x10mm.
97220	"	1/4in.x20mm.
97225	"	1/4in.x25mm.
97230	"	1/4in.x30mm.
97235	"	1/4in.x35mm.
97250	"	1/4in.x50mm.
97420	Spring	3/8in.x20mm.
97430	"	3/8in.x30mm.
97435	"	3/8in.x35mm.
97440	"	3/8in.x40mm.
97460	"	3/8in.x60mm.

PARTS LIST

97611 Spring
97621 "

97801 Ball steel 1/4in. dia.
97803 " " 3/8in. dia.

97902 Oil 5/16in.

98175 Belts Vee A-75in.

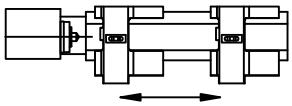
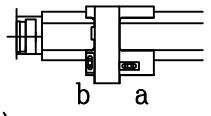
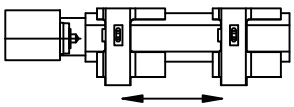
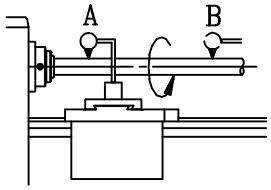
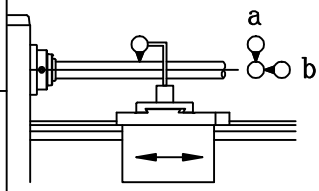
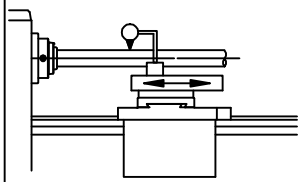
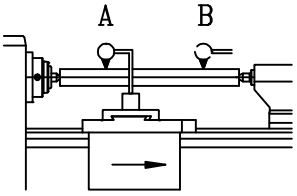
98713 Headle 3/8 in. (Black)

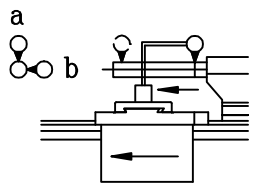
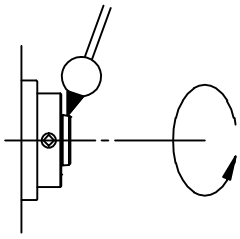
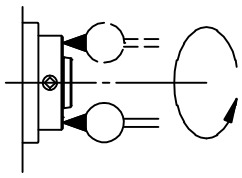
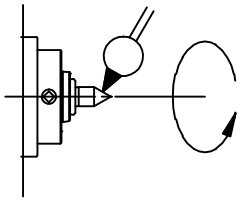
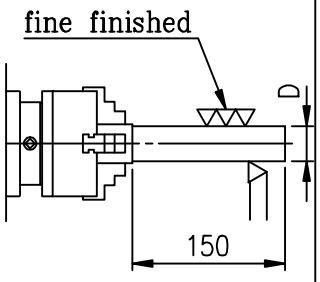
98902 Brake shose assy.

99211 Gasket
99212 "
99213 "
99214 "
99215 "
99216 "
99217 "
99221 "
99222 "
99223 "
99224 "
99225 "

STATIC ACCURACY TEST

CNS

TYPE:			MACHINE SERIAL NO.		
NO.	SUBJECT OF MEASUREMENT		ILLUSTRATION	PERMISSIBLE ERROR	MEASURED ERROR
1.	Levelling of machine	(a) in longitu-dinal direction	(a) 	±0.04 mm/m (convex)	
		(b) in transverse direction	 b a (b) 	±0.04 mm/m	
2.	Taper of spindle runs true		300 mm long A B 	Position A : 0.01 mm	
				Position B : 0.02 mm	
3.	Spindle parallel with traverse of carriage	(a) in vertical plane	 a b	(a) 0.02/ 300 mm	
		(b) in horizontal plane		(b) 0.02/ 300 mm	
4.	Upper Slide (Parallelism of the Slide Longitudinal Movement to the Spindle Axis)			0.01/150 mm	
5.	Axis of centres parallel with bed in vertical plane		A B 	0.02/ 300 mm	

6.	Tailstock spindle parallel with carriage guides (carriage traverse)	(a) in vertical plane		(a) 0.02/ 150 mm	
		(b) in horizontal plane		(b) 0.01/ 150 mm	
7.	Centring register of spindle runs true			0.01 mm	
8.	Spindle for axial float and ture running of face of spindle flange			0.015 mm	
9.	Centre runs true			0.015 mm	
10.	Working accuracy of lathe on cylindrical turning			0.015mm (cylindricity) (D=25mm ~50mm)	

CHIEF ENGINEER :	INSPECTING ENGINEER :