HM MACHINERY

OPERATION MANUAL

FOR

LT360/1000 ELITE

CE

UK

EU Declaration of Conformity

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HM LT 360-1000 ELITE lathe is manufactured in accordance with the provisions of the European Parliament and Council Directive 2006/42 / EC of 17 May 2006

Also in accordance with:

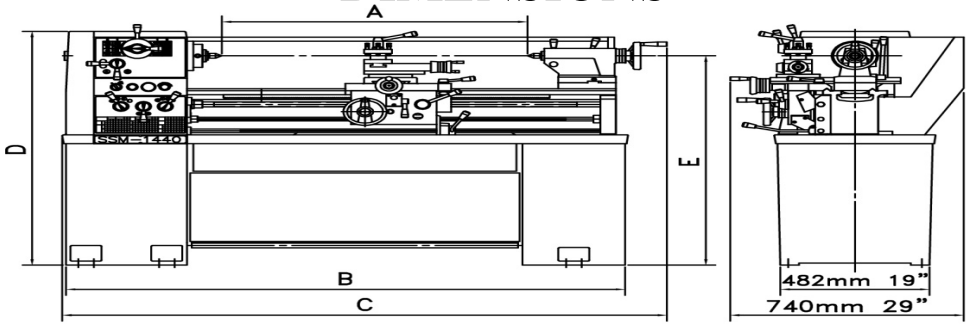
- Low Voltage
- EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE 2014/35 / EU of 26 February 2014

- EMC
- EUROPEAN PARLIAMENT AND COUNCIL DIRECTIVE 2014/30 / EU of 26 February 2014

DK 9460 Brovst
Claus Nielsen,
Producent

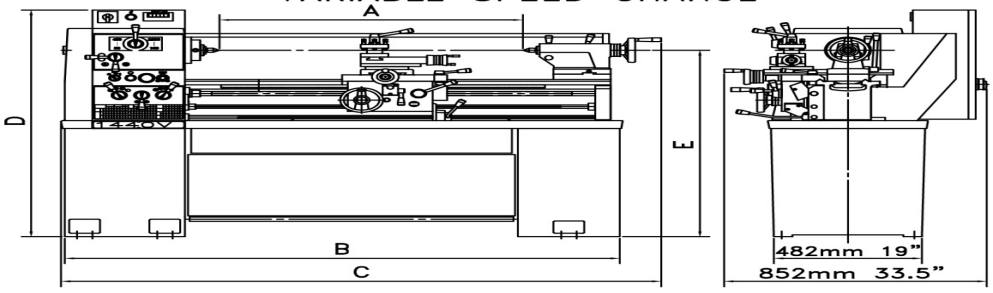
INDEX

DIMENSIONS



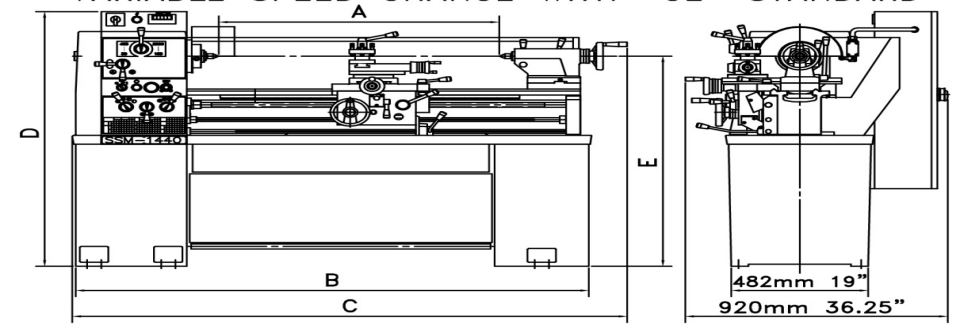
SIZE / MODEL	A	B	C	D	E
1330	750mm 30in	1550mm 61in	1650mm 65½in	1180mm 46½in	1054mm 41½in
1340	1000mm 40in	1800mm 71in	1920mm 75½in	1180mm 46½in	1054mm 41½in
1430	750mm 30in	1550mm 61in	1650mm 65½in	1194mm 47in	1057mm 42in
1440	1000mm 40in	1800mm 71in	1920mm 75½in	1194mm 47in	1057mm 42in

VARIABLE SPEED CHANGE



SIZE / MODEL	A	B	C	D	E
1330V	750mm 30in	1550mm 61in	1660mm 65½in	1298mm 51⅛in	1054mm 41½in
1340V	1000mm 40in	1800mm 71in	1920mm 75½in	1298mm 51⅛in	1054mm 41½in
1430V	750mm 30in	1550mm 61in	1660mm 65½in	1298mm 51⅛in	1067mm 42in
1440V	1000mm 40in	1800mm 71in	1920mm 75½in	1298mm 51⅛in	1067mm 42in

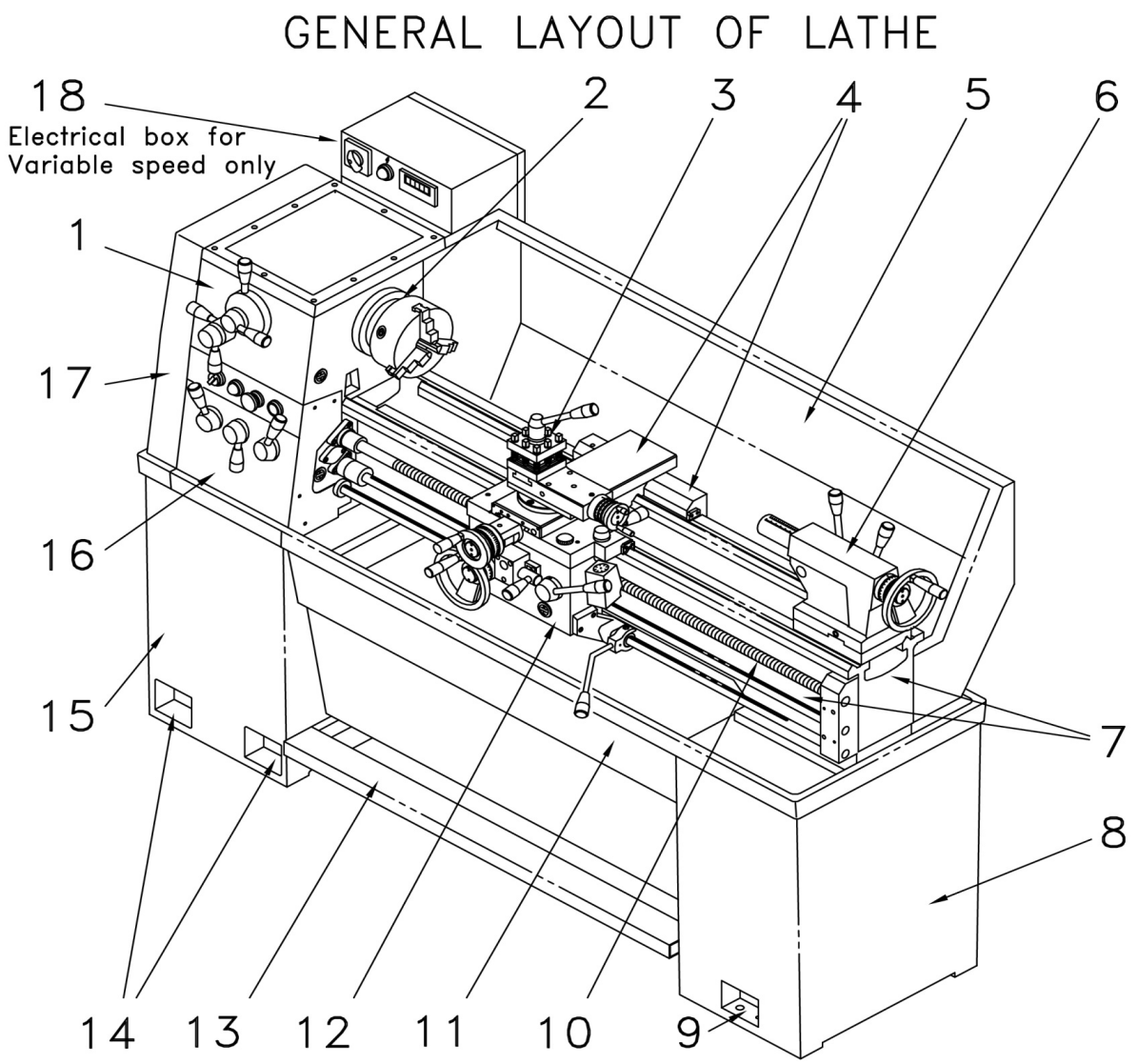
VARIABLE SPEED CHANGE WITH "CE" STANDARD



SIZE / MODEL	A	B	C	D	E
1330V	750mm 30in	1550mm 61in	1660mm 65½in	1295mm 51in	1054mm 41½in
1340V	1000mm 40in	1800mm 71in	1920mm 75½in	1295mm 51in	1054mm 41½in
1430V	750mm 30in	1550mm 61in	1650mm 65½in	1295mm 51in	1057mm 42in
1440V	1000mm 40in	1800mm 71in	1920mm 75½in	1295mm 51in	1057mm 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. 7⅝”	195mm. 7⅝”	220mm. 8⅝”	220mm. 8⅝”
Height of center		165mm. 6½”	165mm. 6½”	178mm. 7”	178mm. 7”
Distance between centers		750mm. 30”	1000mm. 40”	750mm. 30”	1000mm. 40”
BED					
Width of bedways		206mm. 8½”	206mm. 8½”	206mm. 8½”	206mm. 8½”
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”
	Length of gap	240mm. 9 7/16”	240mm. 9 7/16”	240mm. 9 7/16”	240mm. 9 7/16”
	Width in front of face plate	146mm. 5¾”	146mm. 5¾”	146mm. 5 3/4”	146mm. 5¾”
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		Variadble speed change			
Range of spindle speeds		30 – 2200 R.P.M			
TOOL SLIDE					
Total travel of cross slide		160mm. 6¼”	160mm. 6¼”	165mm. 6½”	165mm. 6½”
Total travel of top slide		90mm. 3½”	90mm. 3½”	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. 3HP.			
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.					



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

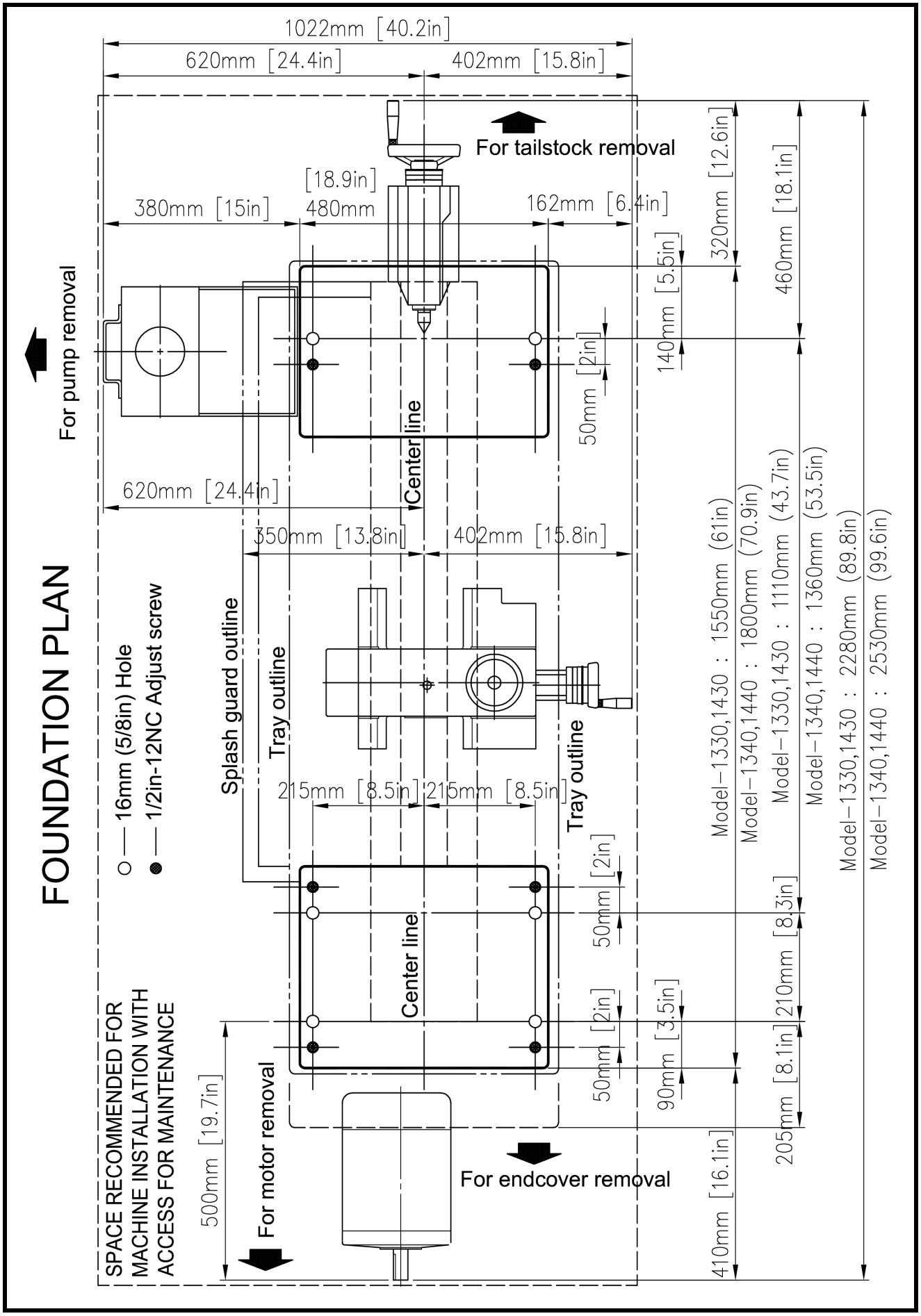
14.Head-end plinth

15.Mounting feet

16.Gear box

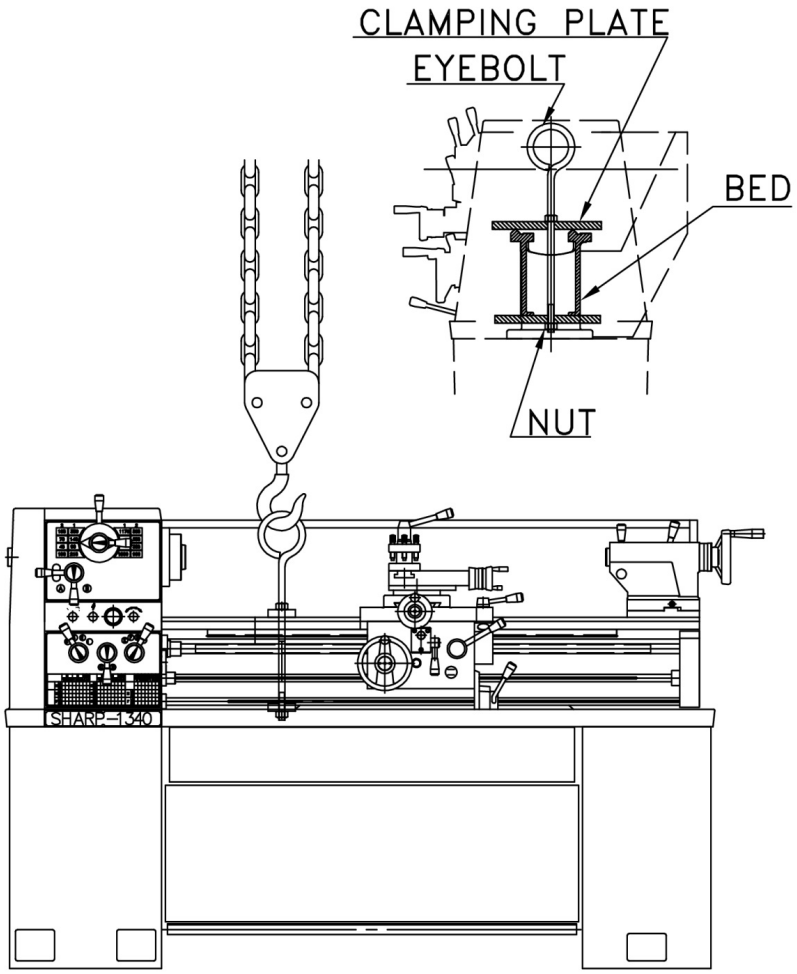
17.End cover

18.Electrical box


FOUNDATION PLAN
1022mm [40.2in]
620mm [24.4in]
402mm [15.8in]
For tailstock removal
For pump removal
380mm [15in]
[18.9in]
480mm
162mm [6.4in]
320mm [12.6in]
460mm [18.1in]
140mm [5.5in]
50mm [2in]
Center line
620mm [24.4in]
350mm [13.8in]
402mm [15.8in]
Splash guard outline
Tray outline
215mm [8.5in]
215mm [8.5in]
Tray outline
Model−1330,1430 : 1550mm (61in)
Model−1340,1440 : 1800mm (70.9in)
Model−1330,1430 : 1110mm (43.7in)
Model−1340,1440 : 1360mm (53.5in)
Model−1330,1430 : 2280mm (89.8in)
Model−1340,1440 : 2530mm (99.6in)
16mm (5/8in) Hole
1/2in-12NC Adjust screw
50mm [2in]
Center line
50mm [2in]
50mm [2in]
90mm [3.5in]
210mm [8.3in]
205mm [8.1in]
SPACE RECOMMENDED FOR
MACHINE INSTALLATION WITH
ACCESS FOR MAINTENANCE
500mm [19.7in]
For motor removal
For endcover removal
410mm [16.1in]

LIFTING

Use the siling – chain to sling the 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 operation any controls, use white spirit or kerosene to remove the anticorrosion coating from all slideways and the endgear train.

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

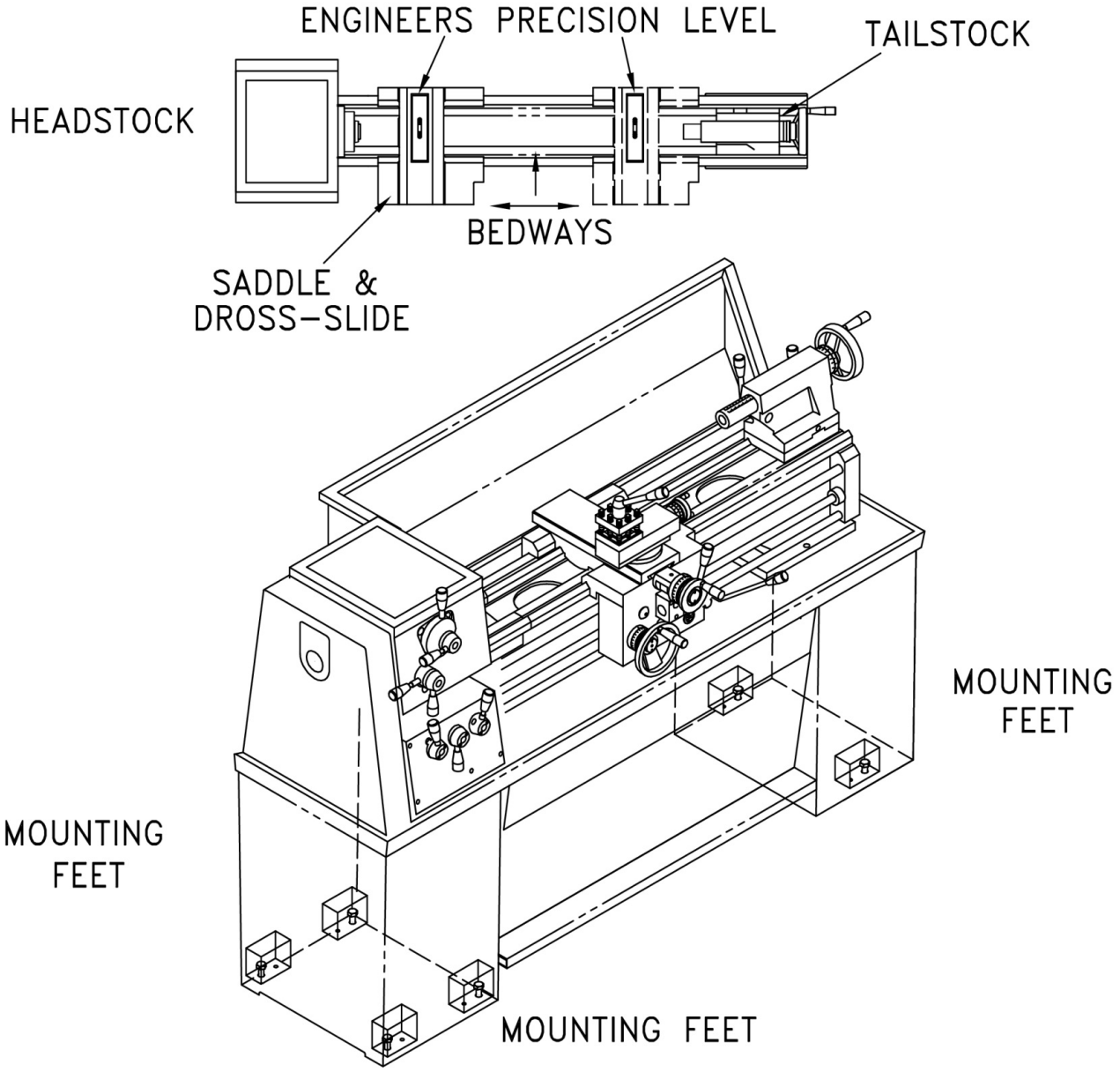
Machine surface becomes bright immediately after cleaning using machine oil or slideway lubricant. Use heavy oil or grease on the gears.

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 engineer's precision level on the bedways (as in Fig 5) adjust the feet to level up machine. Periodically check bed level to ensure continued lathe accuracy.

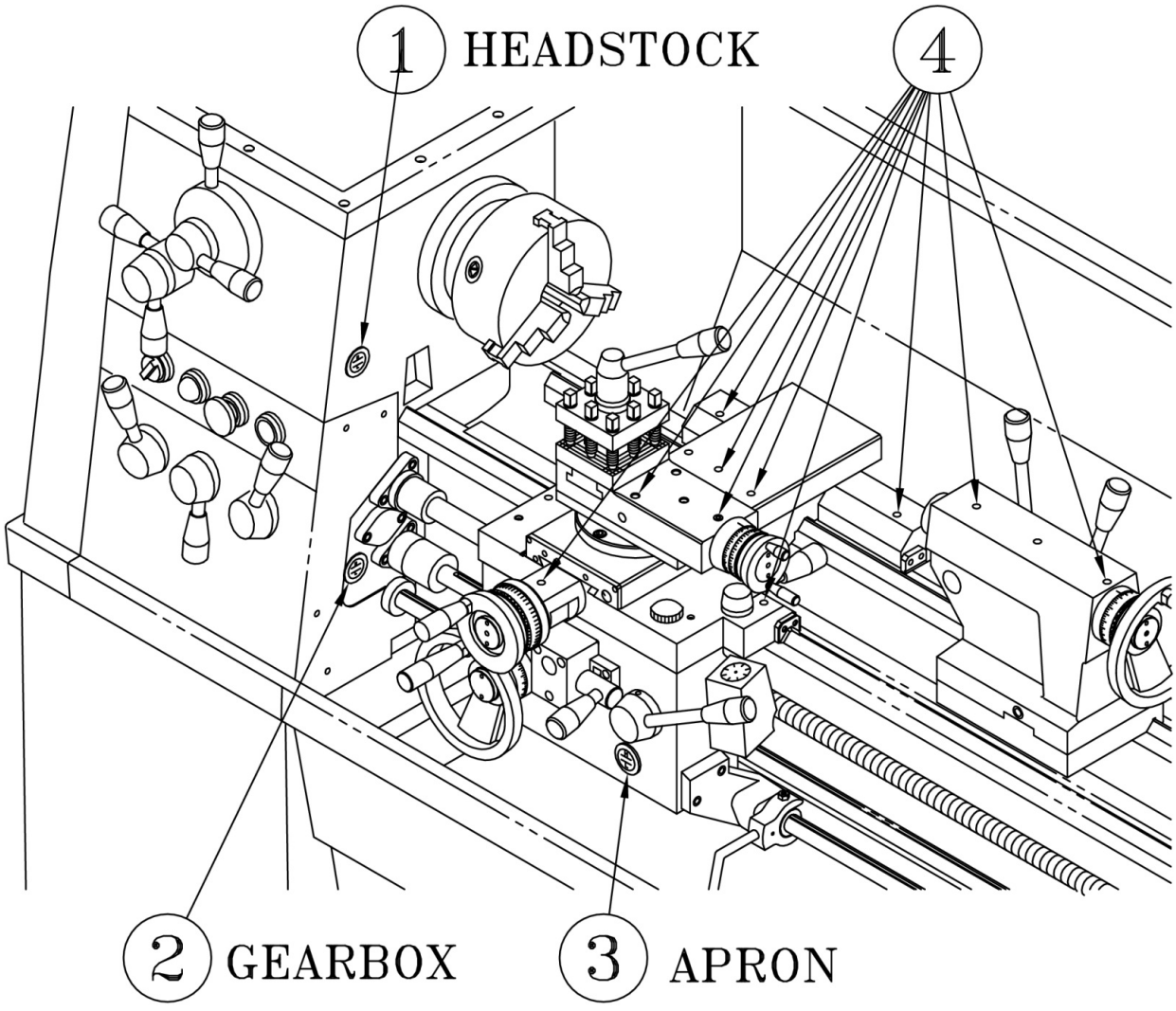
Fixed installation: Position lathe over six bolts ($\frac{1}{2}$ in . or 12mm . diam.), set into the foundation to correspond with holes in the mounting feet , Accurately level the machine as in Fig 5, then tighten hold-down bolts and recheck bed level.



LUBRICACTION 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 Tullus oil 27.
3. The carriage apron is filled to level marked on oil sight window Shell Tonna 33.
4. In addition, apply light machine oil or way lubricant to the points shown on lubrication diagram which require daily oiling .



CHUCKS AND CHUCK MOUNTING

WARNING: GREY-IRON CHUCKS MUST NOT BE FITTED ON THIS HIGH-SPEED LATHE.

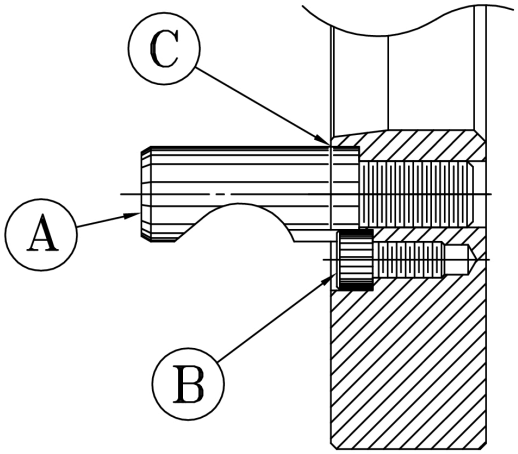
USE ONLY DUCTILE IRON CHUCKS.

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

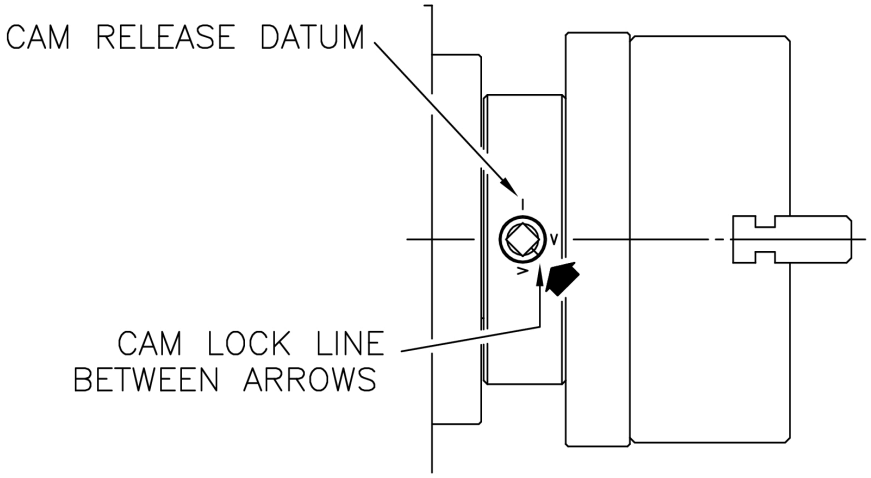
Now mount the chuck or faceplate on the spindle nose and tighten the three cams in turn . When fully tightened, the cam lock line on each cam should be between the two V on the spindle nose . If any of the cams do not tighten fully within these limit marks , rewove the chuck or faceplate and re-adjust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

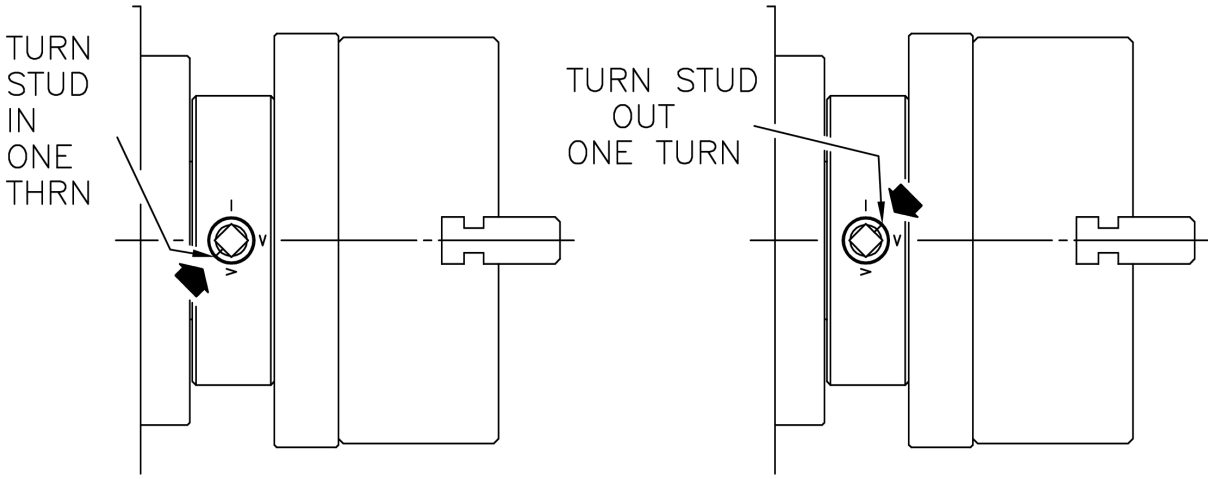
IMPORTANT: Take care note of speed limitations when using faceplate. 10 in. faceplates should not be run at speeds greater than 770 rev/min.



CORRECT

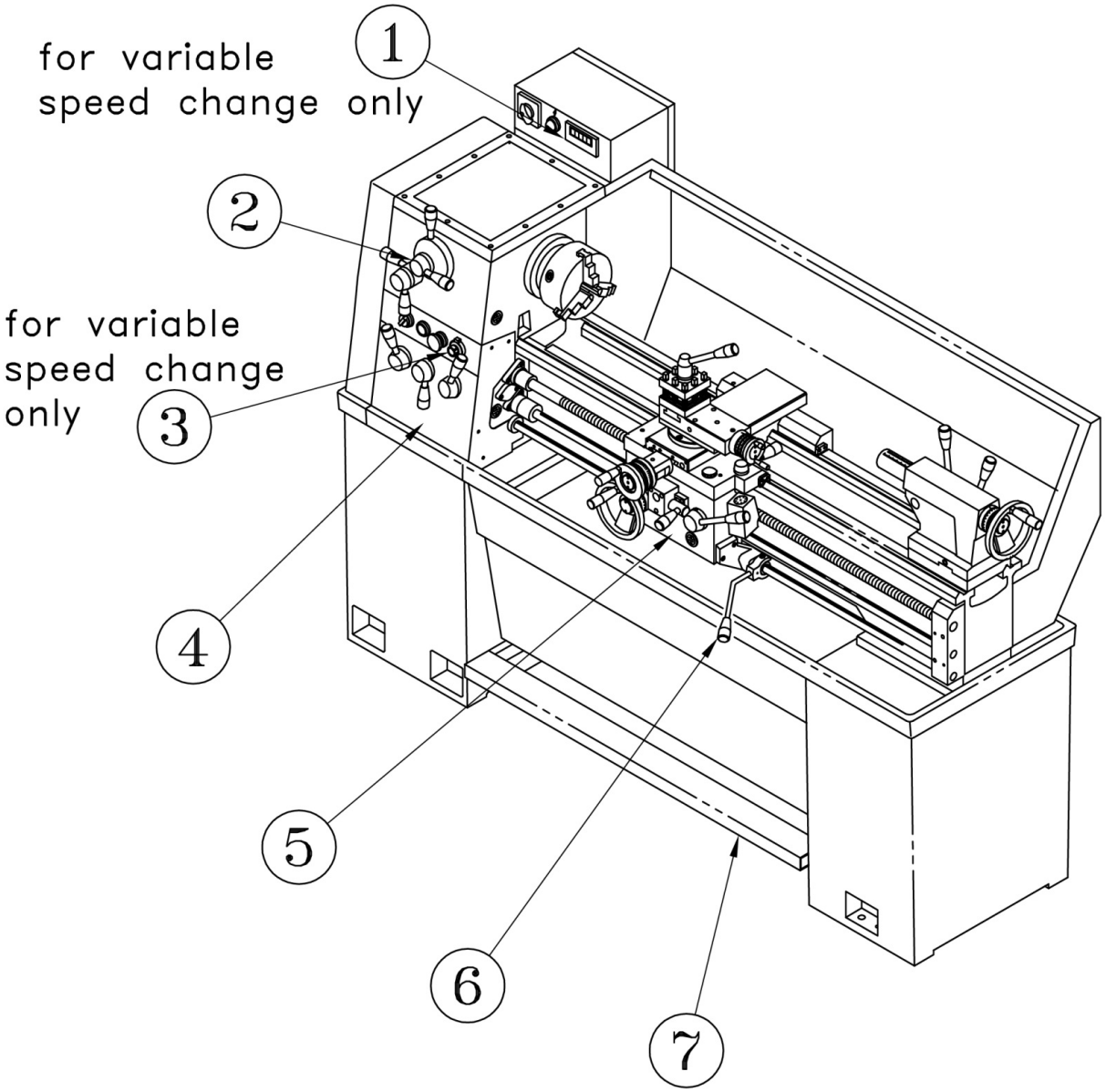


CORRECT



LATHE CONTROLS

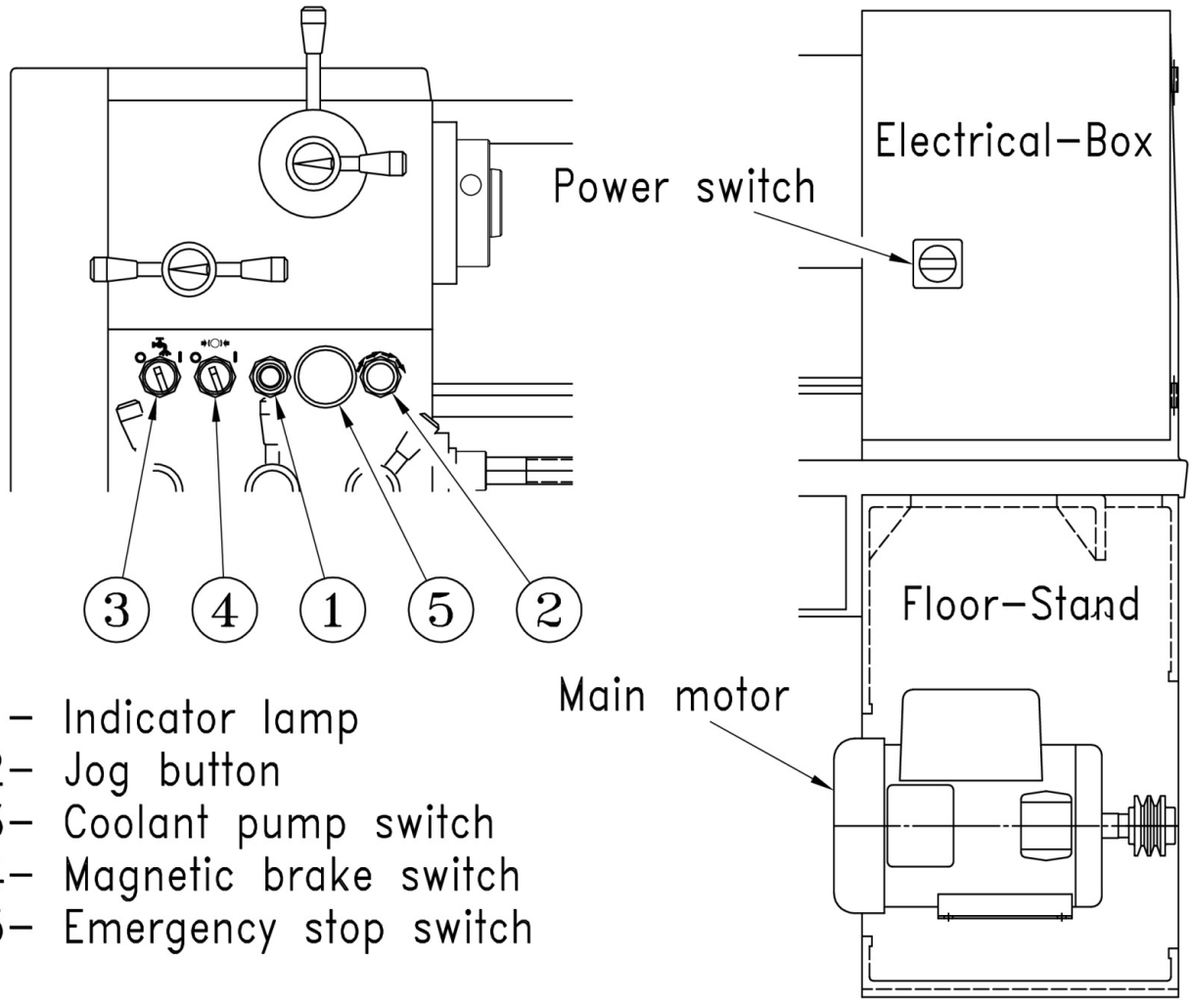
1. Spindle speed digital readout. (for V-speed)
2. Spindle speed selector. (HIGH or LOWER step)
3. Spindle speed adjusting knob. (for V-speed)
4. Gearbox, threads and feeds .
5. Apron surfacing or sliding feeds.
6. Main motor rotation (forward and revers).
7. Footbrake.



ELECTRICAL CONTROLS

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

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



ELECTRICAL CONTRALS (Variable speed change)

The Main power switches are fitted on the front of Electrical box behind the Lathe Head and 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.

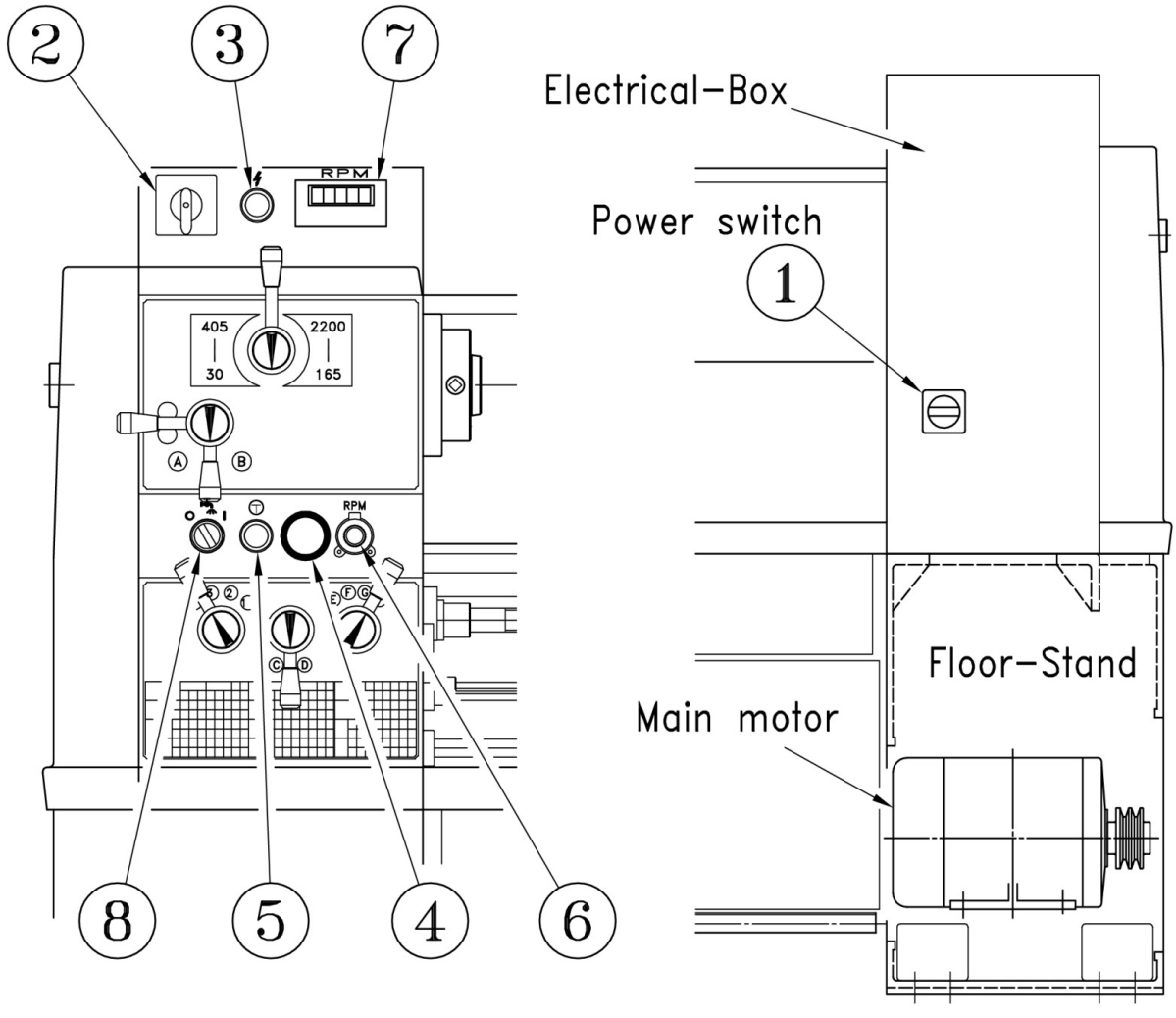
(4) EMERGENCY STOP SWITCH: press the RED mushroom – head button to stop electric power, to stop the main motor and coolant pump.

(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.

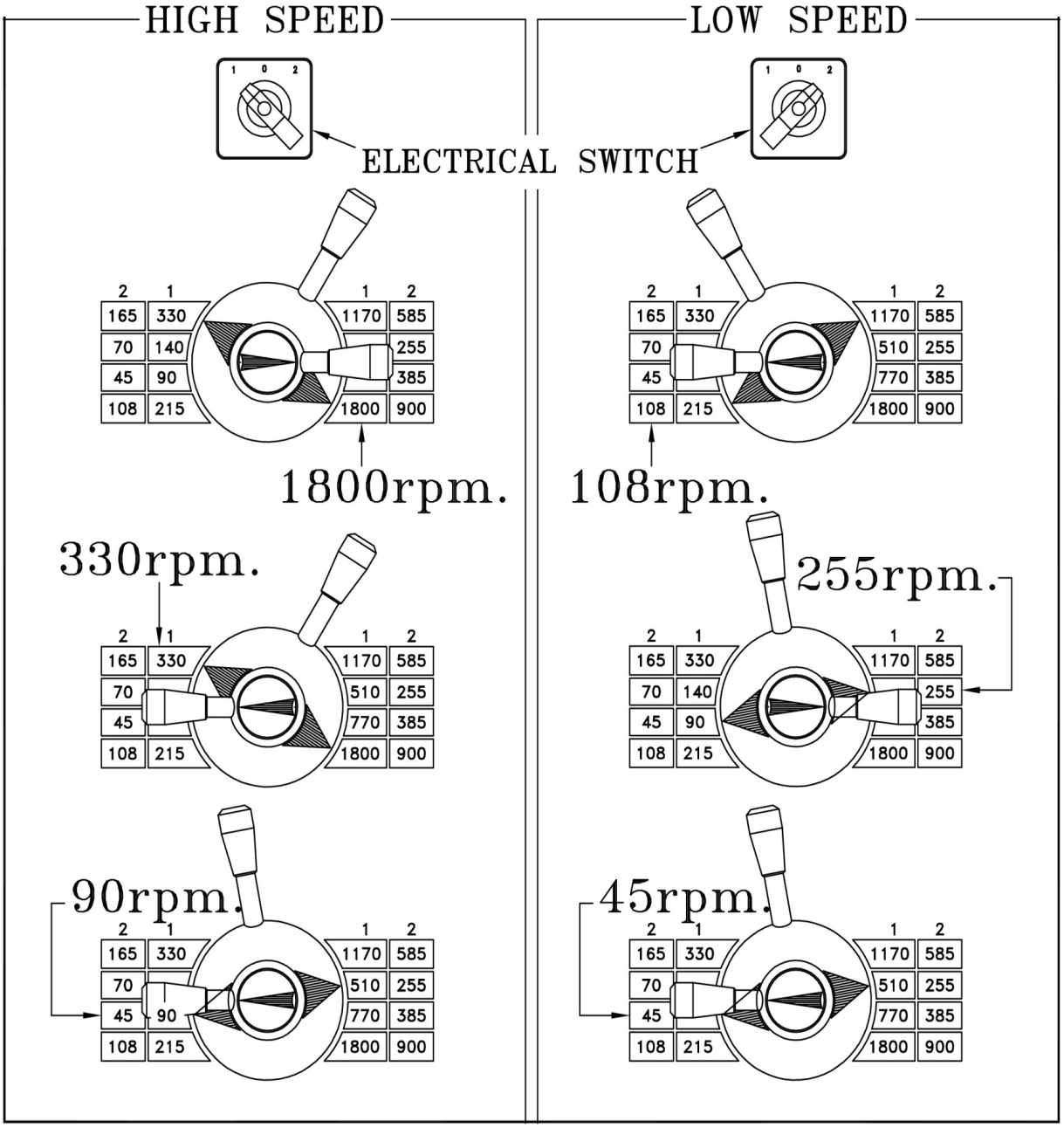
(8) Coolant pump ON/OFF switch.



SPEED CONTROLS (2 SPEED MOTOR)

Spindle speeds: Selected by the two lever controls and an electrical switch, on the headstock and stand. The sixteen available speeds are shown directly on the data plate. While the electrical switch set at (1) position, the small lever rotated right-hand side, it provides speeds from 1800-510 r.p.m., and rotated to left-hand side, at provides speeds from 330-90 r.p.m. Then move the large lever to the appropriately colored 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

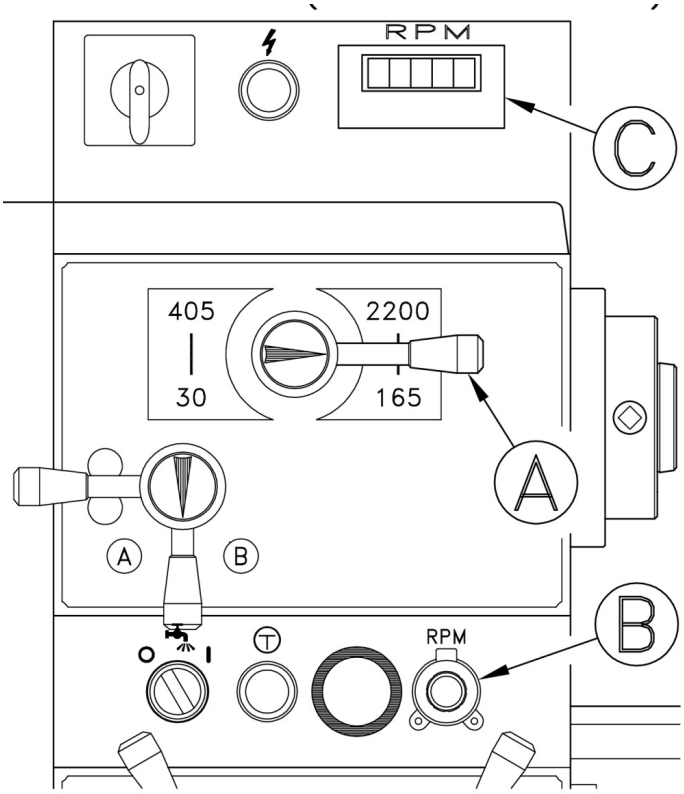
When the small lever set at upper or bottom position, the spindle is free for hand rotation.



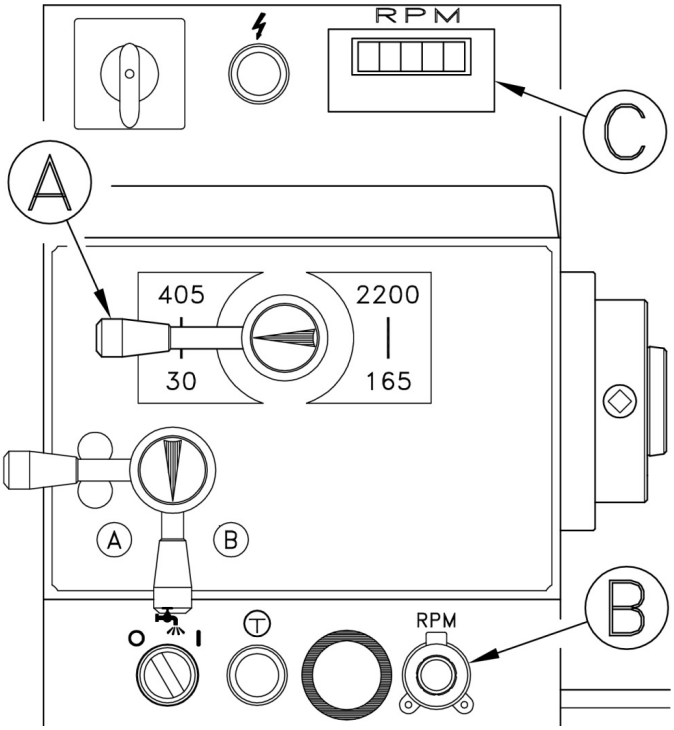
OPERATION

SPINDLE SPEED SELECTORS (Variable speed)

HIGH SPEED (2200-165 RPM)



LOWER SPEED (405–30 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)

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

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

THREADS AND FEEDS (Metric Gearbox Pitch 6mm)

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 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 AVAILAVLE

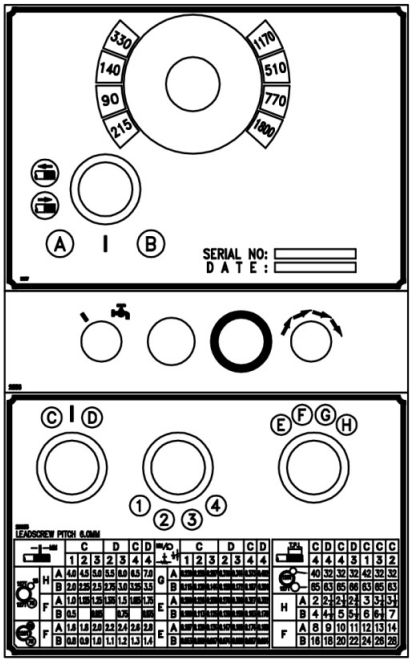
37 Metric threads 0.5 to 7.0 mm. pitch

28 Whitworth threads 2 to 28 t.p.i.

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

Feeds: longtudinal teeds per spindle revolution range from 0.053 to 0.402 mm

Cross feeds per spindle revolution range from 0.026 to 0.201 mm.



LEADSCREW PITCH 6.0MM

MM			C			D		C	D	MM/O		C			D		C	D
			1	2	3	2	3	4	4			1	2	3	2	3	4	4
127T 25 / 127T 75	H	A	4.0	4.5	5.0	5.5	6.0	6.5	7.0	G	A	0.230	0.258	0.287	0.316	0.344	0.373	0.402
		B	2.0	2.25	2.5	2.75	3.0	3.25	3.5		B	0.115	0.129	0.144	0.158	0.172	0.187	0.201
	F	A	1.0	1.125	1.25	1.375	1.5	1.625	1.75	E	A	0.200	0.226	0.250	0.276	0.300	0.327	0.352
		B	0.5		0.625		0.75		0.875		B	0.100	0.113	0.125	0.138	0.150	0.163	0.176
40 / 120T / 75	F	A	1.6	1.8	2.0	2.2	2.4	2.6	2.8	E	A	0.107	0.120	0.134	0.147	0.160	0.174	0.188
		B	0.8	0.9	1.0	1.1	1.2	1.3	1.4		B	0.053	0.060	0.067	0.074	0.080	0.087	0.094

T.P.I.		C	D	C	D	C	C	C
		4	4	4	3	1	3	2
120T / 127T		40	32	32	32	42	32	32
		65	63	65	66	63	65	63
H	A	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$
	B	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	$6\frac{1}{2}$	7
F	A	8	9	10	11	12	13	14
	B	16	18	20	22	24	26	28

THREADS AND FEEDS (Inch Gearbox 4TPI)

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.

HREADS AVAILAVLE

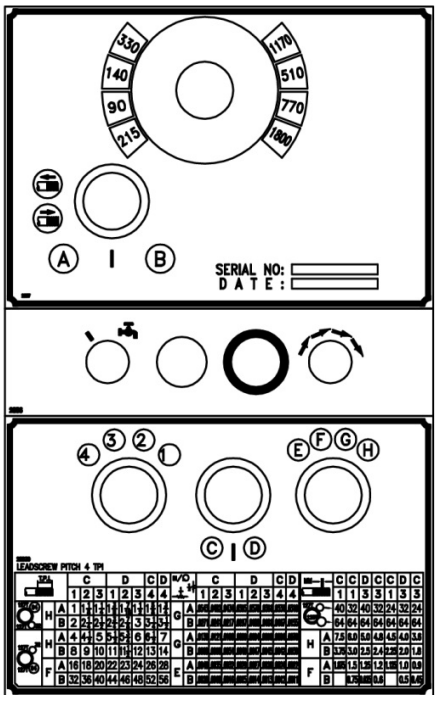
48 Whitworth threads 1.0 to 56 t.p.i.

26 Metric threads 0.45 to 7.5 mm. pitch

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

Feeds: longitudinal feeds per spindle revolution range from .0011 to .0543 in (0.0279 to 1.379 mm.)

Cross feeds per spindle revolution range from .0005 to .0271 in (0.012 to 0.688 mm.)



LEADSCREW PITCH 4 TPI

T.P.I.			C			D			C	D	IN/		C			D			C	D
			1	2	3	1	2	3	4	4			1	2	3	1	2	3	4	4
127T 64 / 127T 32	H	A	1	1 1/8	1 1/4	1 3/8	1 7/16	1 1/2	1 5/8	1 3/4	G	A	.0543	.0482	.0434	.0395	.0378	.0361	.0334	.0310
		B	2	2 1/4	2 1/2	2 3/4	2 7/8	3	3 1/4	3 1/2		B	.0271	.0241	.0217	.0197	.0188	.0181	.0167	.0155
127T 32 / 127T 64	H	A	4	4 1/2	5	5 1/2	5 3/4	6	6 1/2	7	G	A	.0136	.0121	.0108	.0099	.0094	.0090	.0084	.0078
		B	8	9	10	11	11 1/2	12	13	14		B	.0068	.0060	.0054	.0049	.0047	.0045	.0042	.0039
	F	A	16	18	20	22	23	24	26	28	E	A	.0040	.0035	.0032	.0029	.0027	.0026	.0024	.0022
		B	32	36	40	44	46	48	52	56		B	.0020	.0018	.0016	.0015	.0014	.0013	.0012	.0011

MM		C	C	D	C	C	D	C
		1	1	3	3	1	3	3
127T / 120T		40	32	40	32	24	32	24
		64	64	64	64	64	64	64
	H A	7.5	6.0	5.0	4.8	4.5	4.0	3.6
	H B	3.75	3.0	2.5	2.4	2.25	2.0	1.8
	F A	1.875	1.5	1.25	1.2	1.125	1.0	0.9
	F B		0.75	0.625	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 hand nut to retain indicator in engagement. To cut threads of an even number per inch, close the lead screw 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.

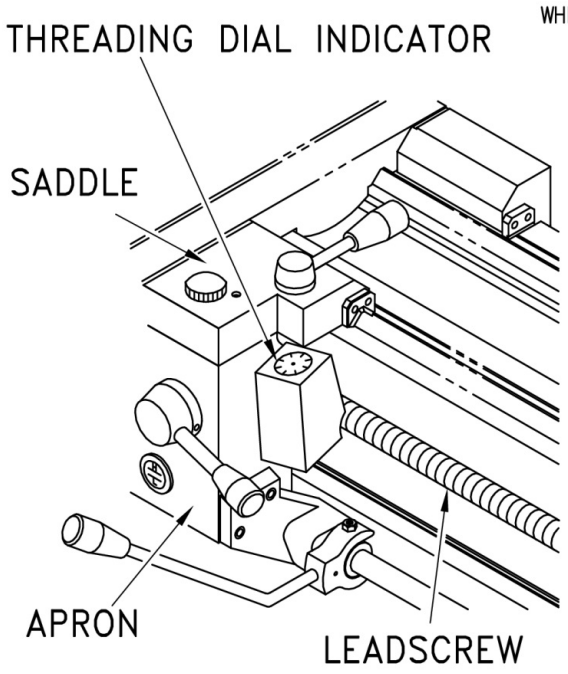
Fractional threads of 1/2 or 1/4 t.p.i. may be cut by closing the nut at the SAME numbered line on each pass of the tool.

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.

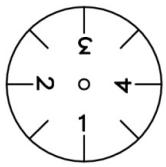
B. Metric threads

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 correct gear for the pitch of the thread to be cut will mesh with the leadscrew .

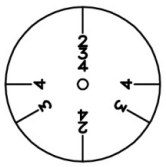
Each graduation on the dial is marked with a letter which indicates the points at which the half units may be engaged for certain threads. A diagram is supplied with the thread dial to show which gear and which graduations must be used for each pitch of metric screw thread.



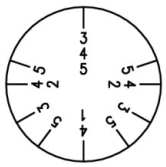
WHITWORTH THREAD DIAL
8 TPI; 4TPI



METRIC THREAD DIAL
LEADSCREW PITCH 4MM



METRIC THREAD DIAL
LEADSCREW PITCH 6MM



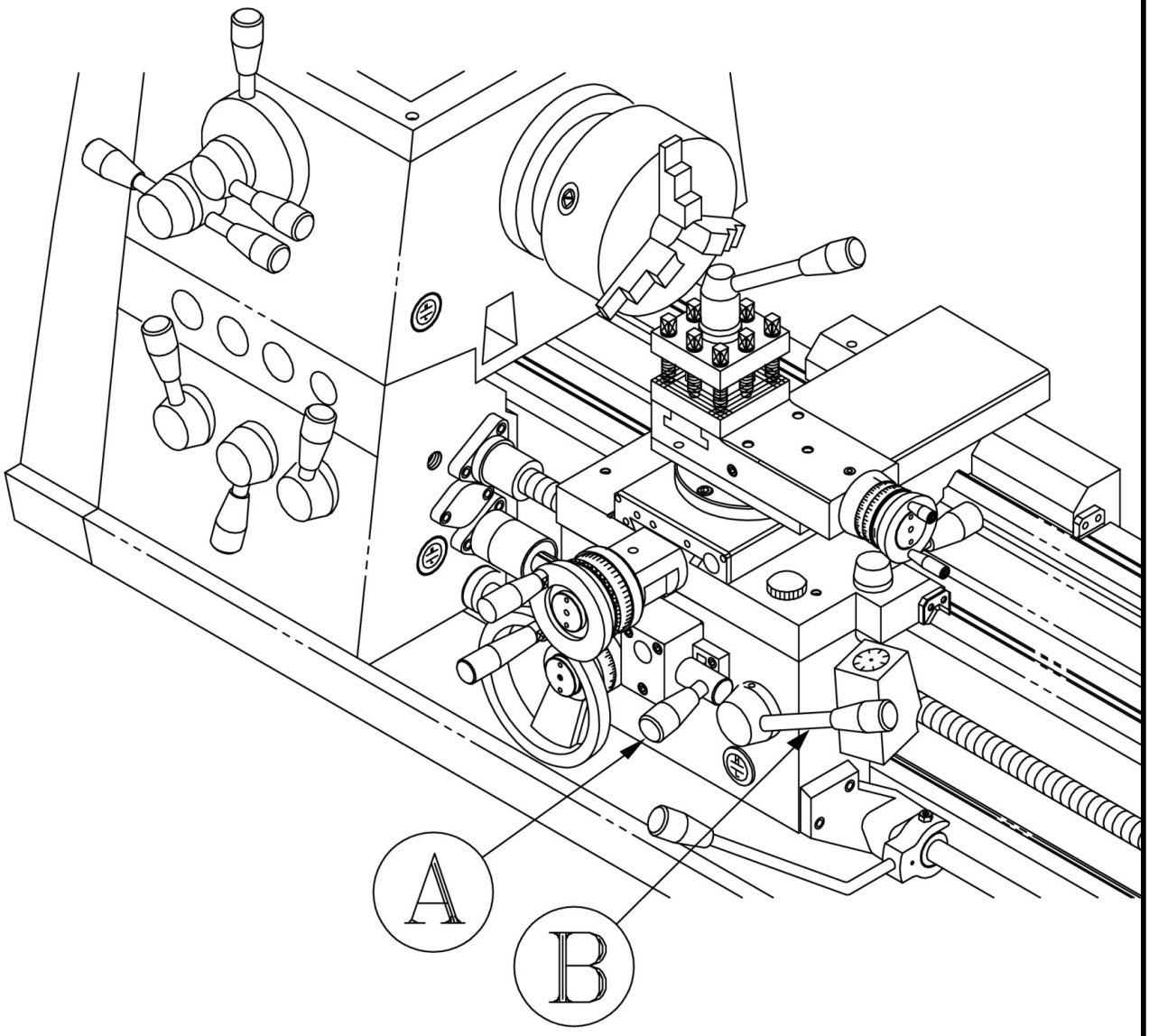
METRIC THREAD DIAL					
PC	T	↓	PC	T	↓
0.4	20	4	1.4	21	3
0.45	27	3	1.5	27	3
0.5	20	4	1.625	26	2
0.55	22	2	1.75	21	3
0.6	27	3	2.0	20	4
0.625	20	4	2.25	27	3
0.65	26	2	2.5	20	4
0.7	21	3	2.75	22	2
0.75	27	3	3.0	27	3
0.8	20	4	3.25	26	2
0.875	21	3	3.5	21	3
0.9	27	3	4.0	20	4
1.0	20	4	4.5	27	3
1.1	22	2	5.0	20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

METRIC THREAD DIAL					
P.C.	T	↓	P.C.	T	↓
0.4	16	4	2.0	16	4
0.45	15	5	2.25	15	5
0.5	16	4	2.4	16	4
0.6	16	4	2.5	15	3
0.7	14	2	2.8	14	2
0.75	16	4	3.0	16	4
0.8	16	4	3.2	16	2
0.9	15	5	3.5	14	2
1.0	16	4	3.6	15	5
1.2	16	4	4.0	16	4
1.25	15	3	4.5	15	5
1.4	14	2	4.8	16	4
1.5	16	4	5.0	15	3
1.6	16	4	5.6	14	1
1.75	14	2	6.0	16	4
1.8	15	5	7.0	14	2
LEADSCREW PITCH 6MM					

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 screw cutting. To avoid undue wear. Release the nut except when screw cutting.

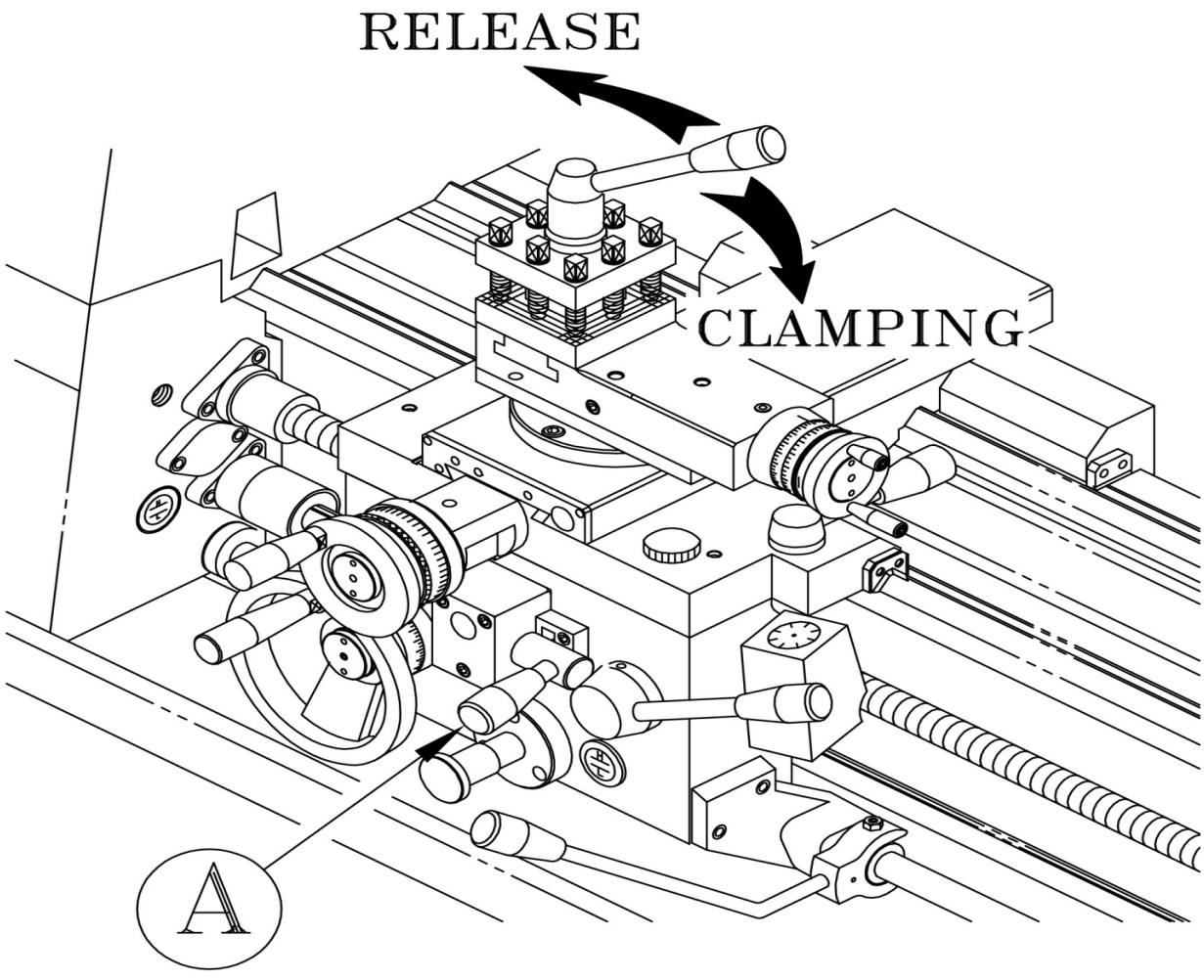


CROSS-SLIDE AND TOP-SLIDE

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

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

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



TAIL STOCK

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

The tailstock barrel is locked by lever (B).

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

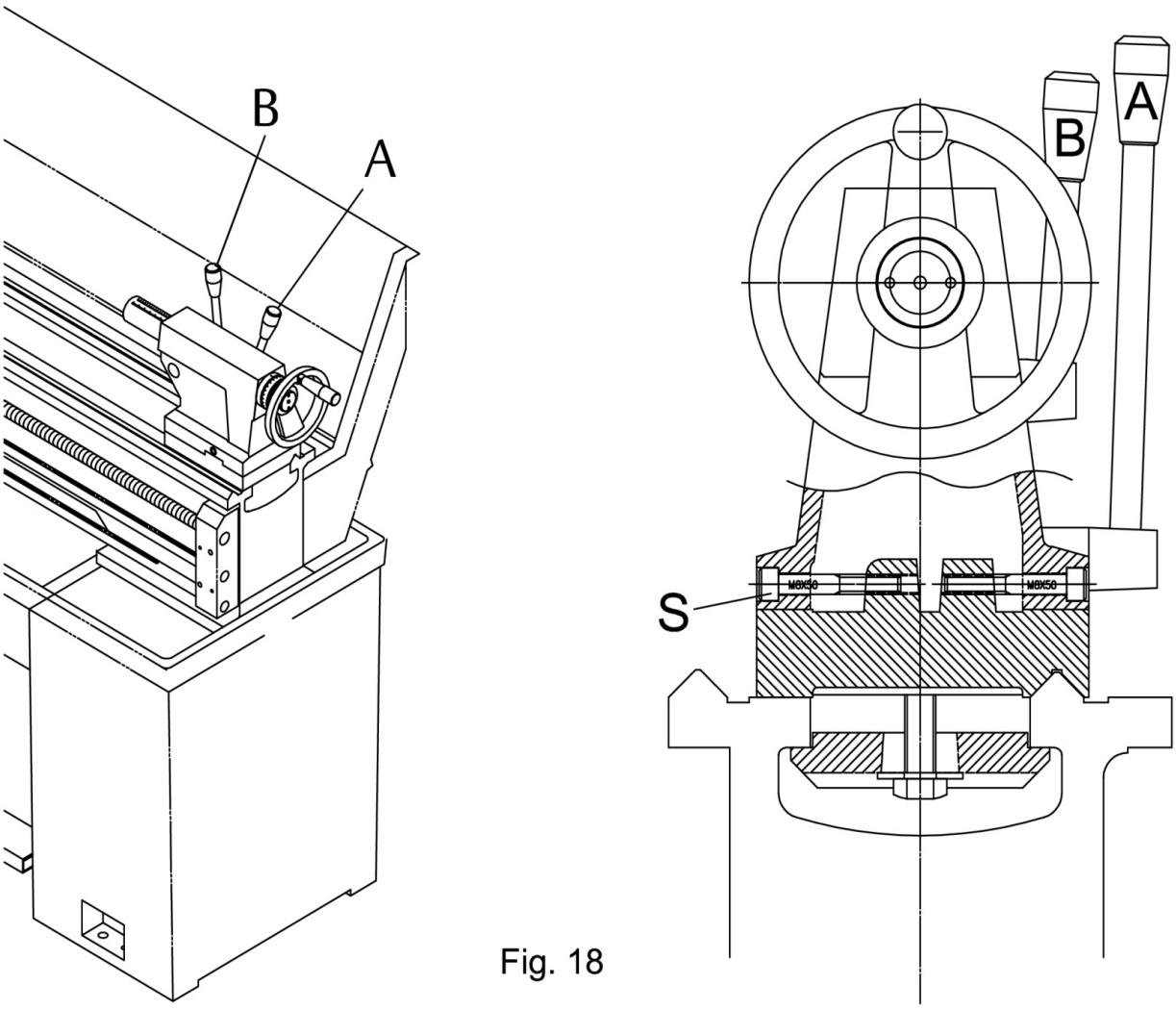


Fig. 18

LATHE ALIGNMENT (part 1)

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

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

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

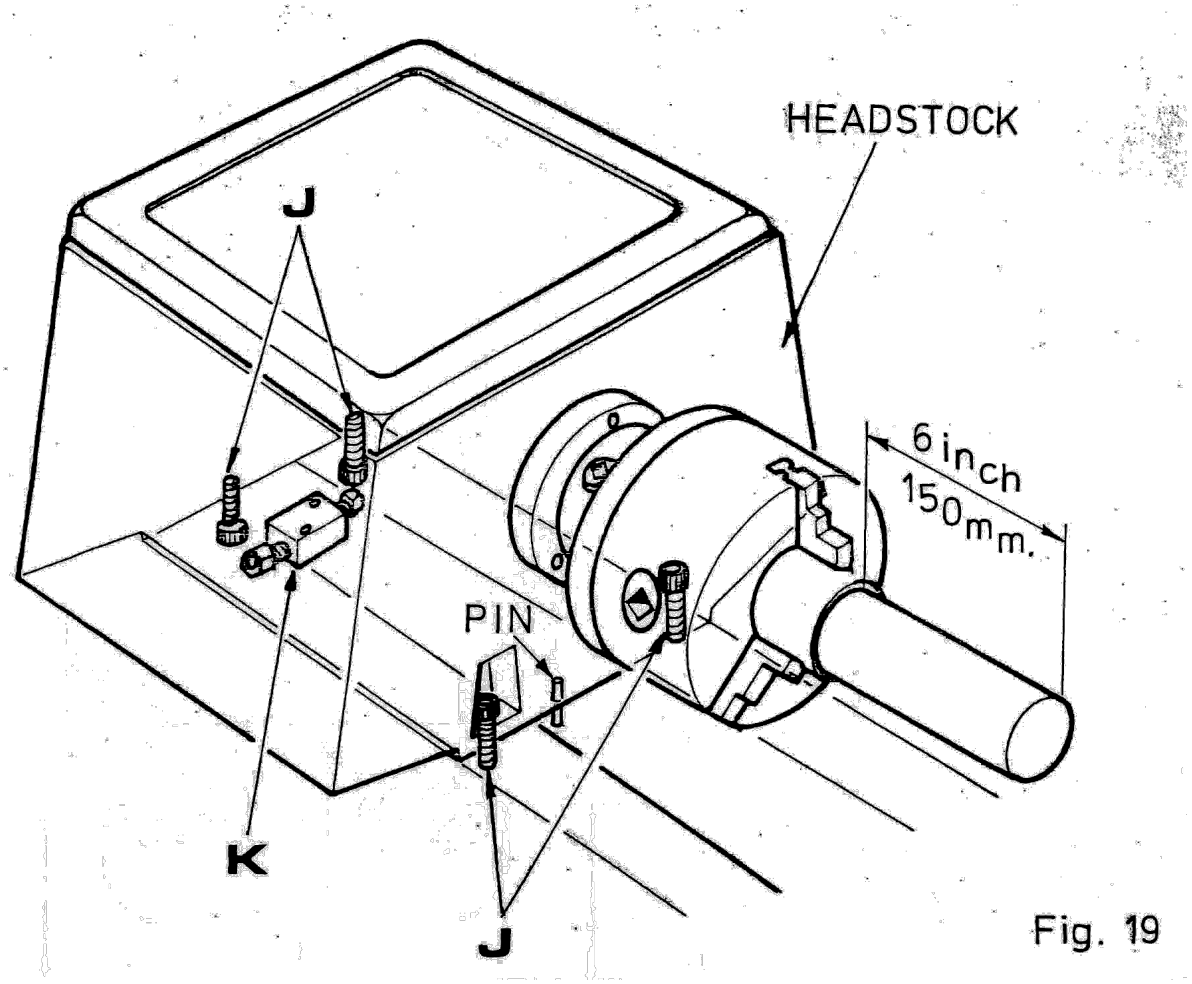
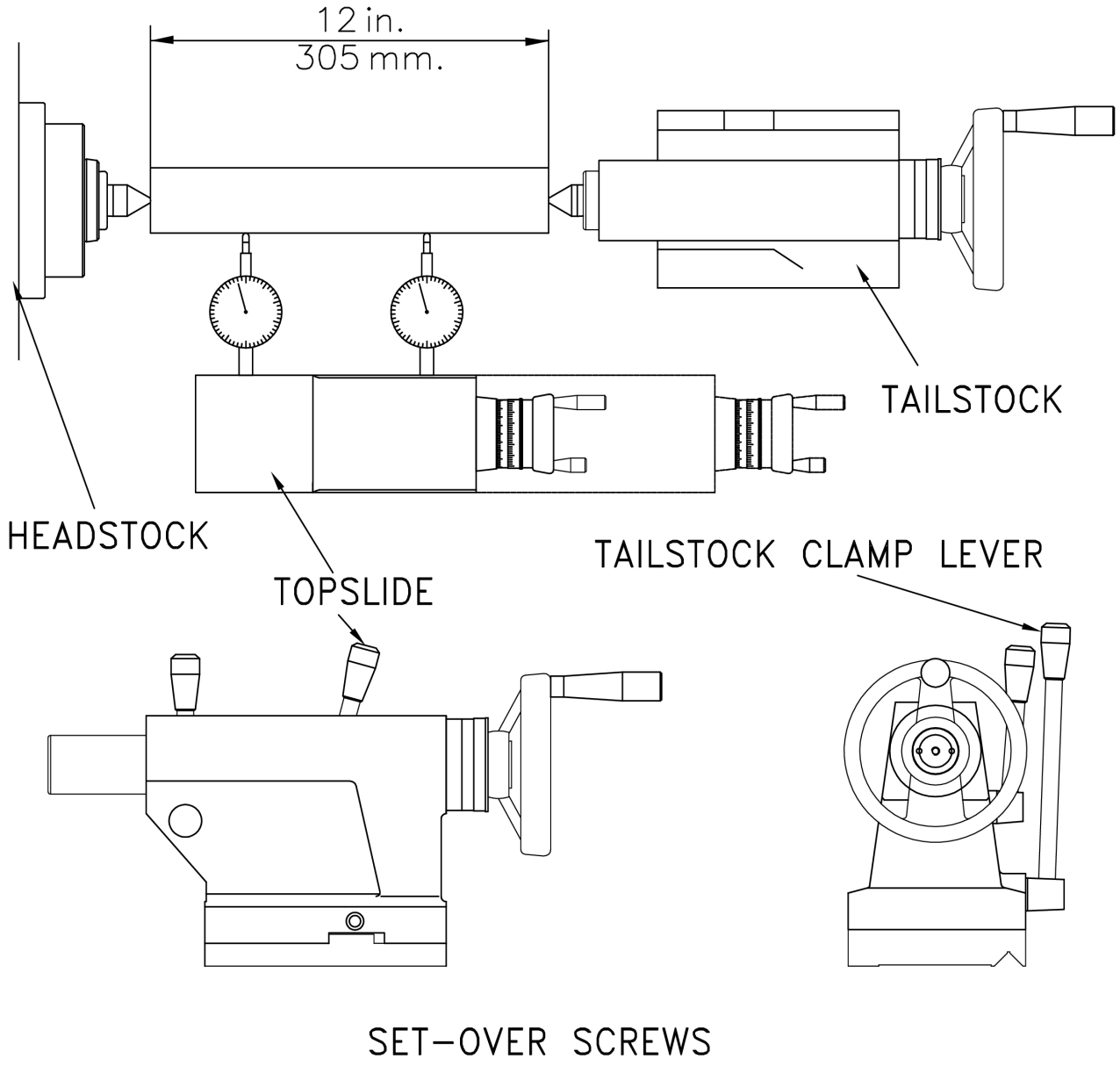


Fig. 19

LATHE ALIGNMENT (part 2)

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

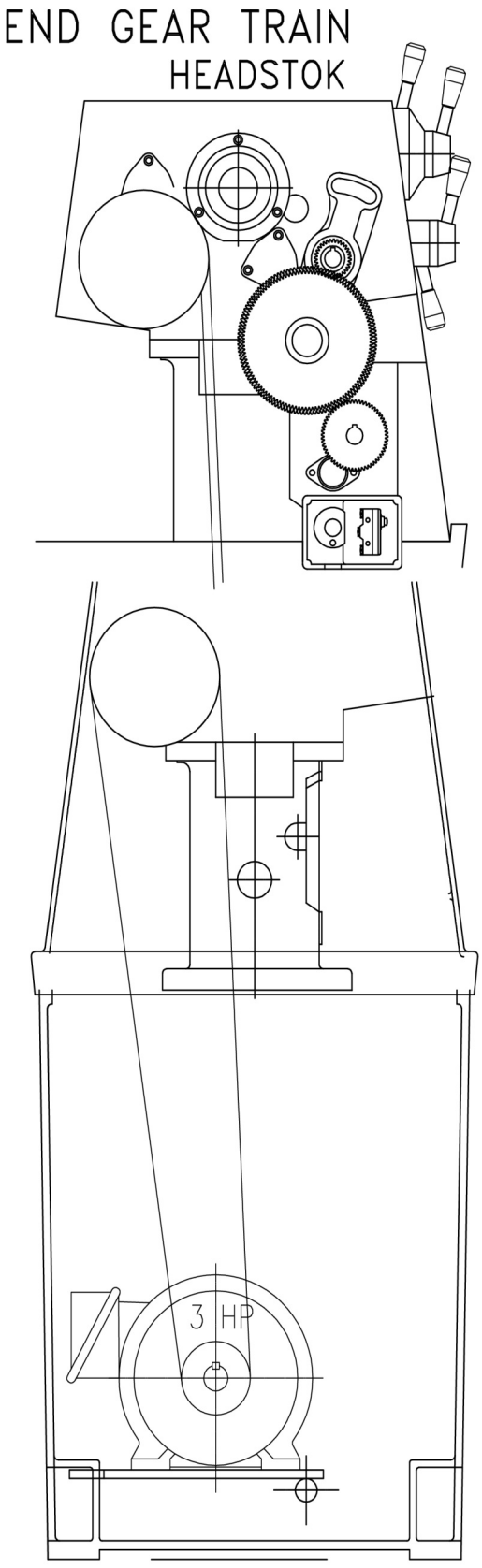
To correct error, release the tailstock clamp lever and adjust the two set-over screws provided. Continuously check and correct until the alignment is perfect.



END GEAR TRAIN

Drive from headstock to 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 .(.127 mm.) Lubricate gears regularly with thick oil or grease.



DRIVIGN BELTS

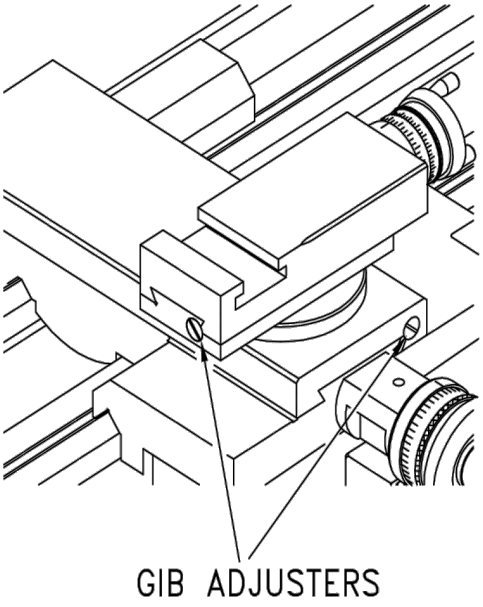
To alter belt tension, remove the cover plate in back of the headstock plinth and adjust the two screws (X) on the hinged motor platform. Ensure that the motor is correctly alighted with the lathe axis.

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

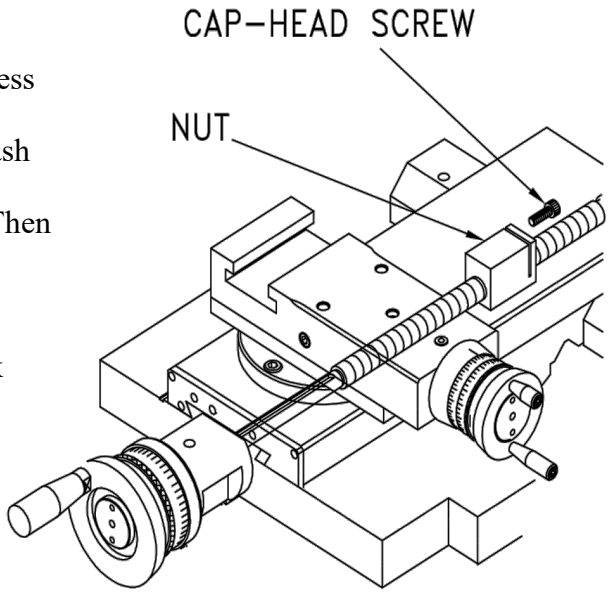
Tapered gib strips are fitted to slideways of saddle cross slide and top (compound) slides so that any slackness which may develop can be rectified.

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



CROSS-SLIDE NUT

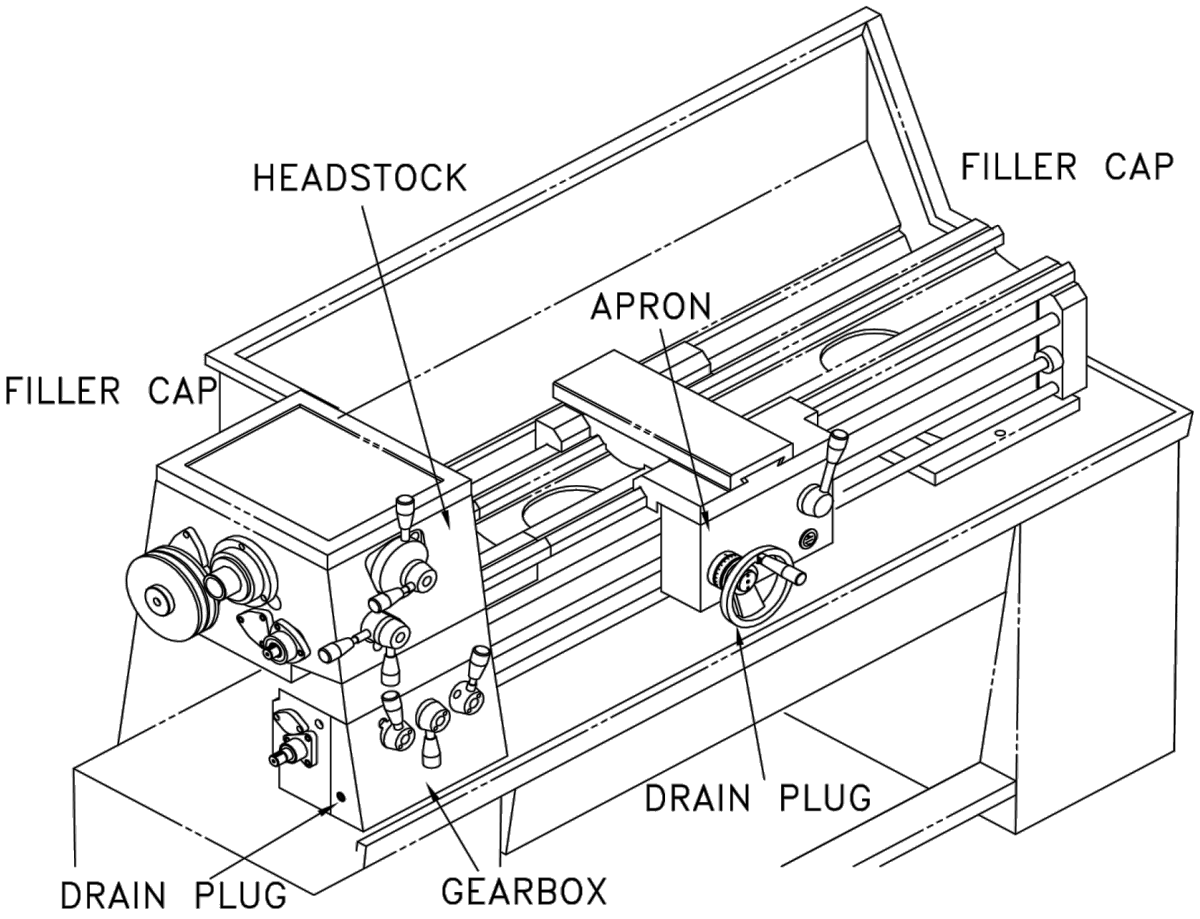
This is adjustable for elimination of slackness which may develop in service. Reduce backlash by the cap-head screw in the rear of the nut. Then make only small adjustment by the cap-head screw. Before operating the cross-slide, check several times by hand to be sure of smooth operation throughout travel.



LUBRICATOIN (part 1)

The headstock and gearbox are splash-lubricated from an internal reservoir of oil (Shell Tellus 27). Check the oil level constantly to the mark on the oil sight window in the front end face of the headstock and gearbox. A weekly check is recommended. The oil need be changed every year. Oil through a filler cap in the top of the headstock and gearbox is covered by the end-guard. Drain from a drain plug in the bottom of the headstock and gearbox.

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



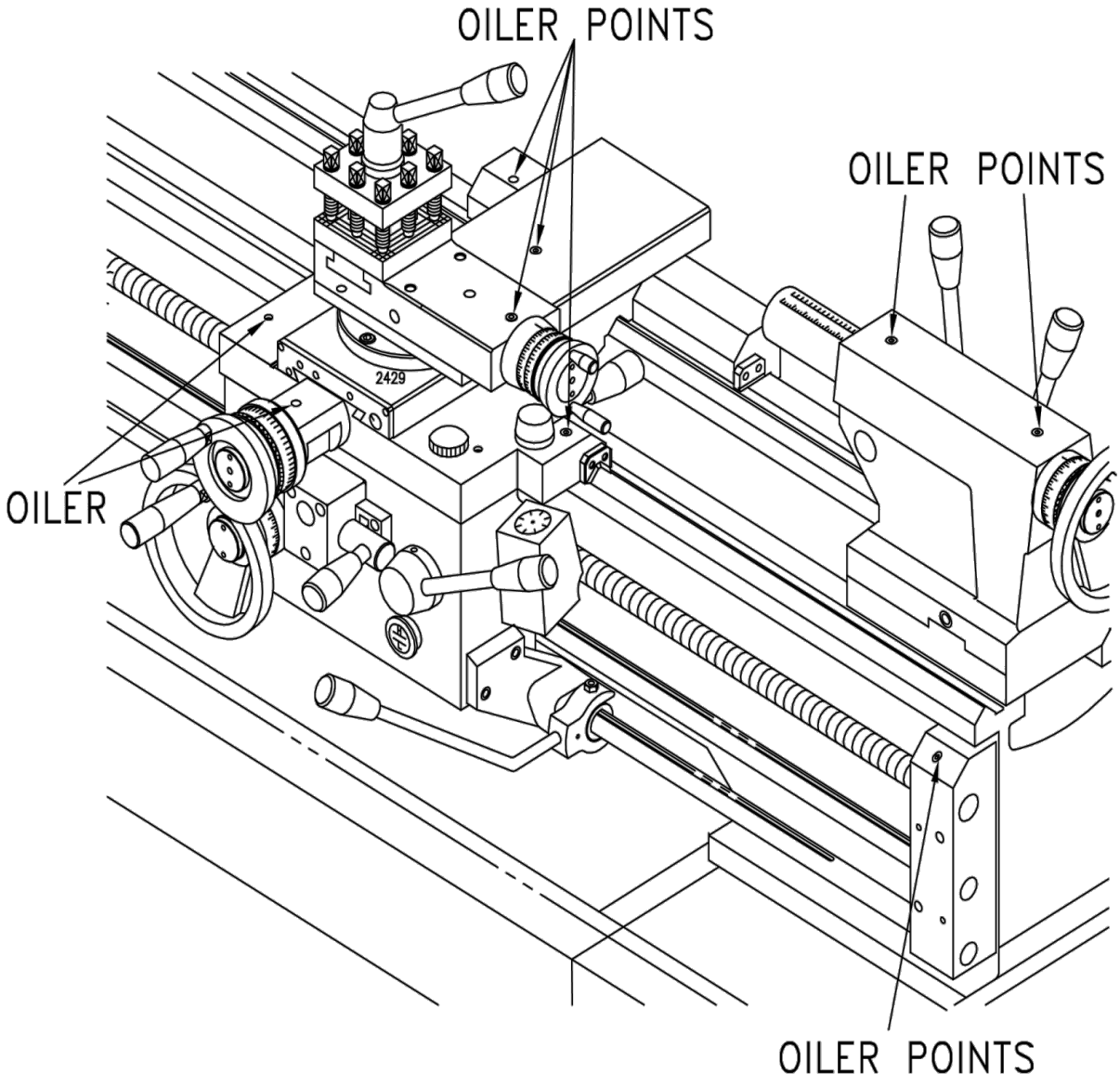
LUBRICATION (part 2)

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

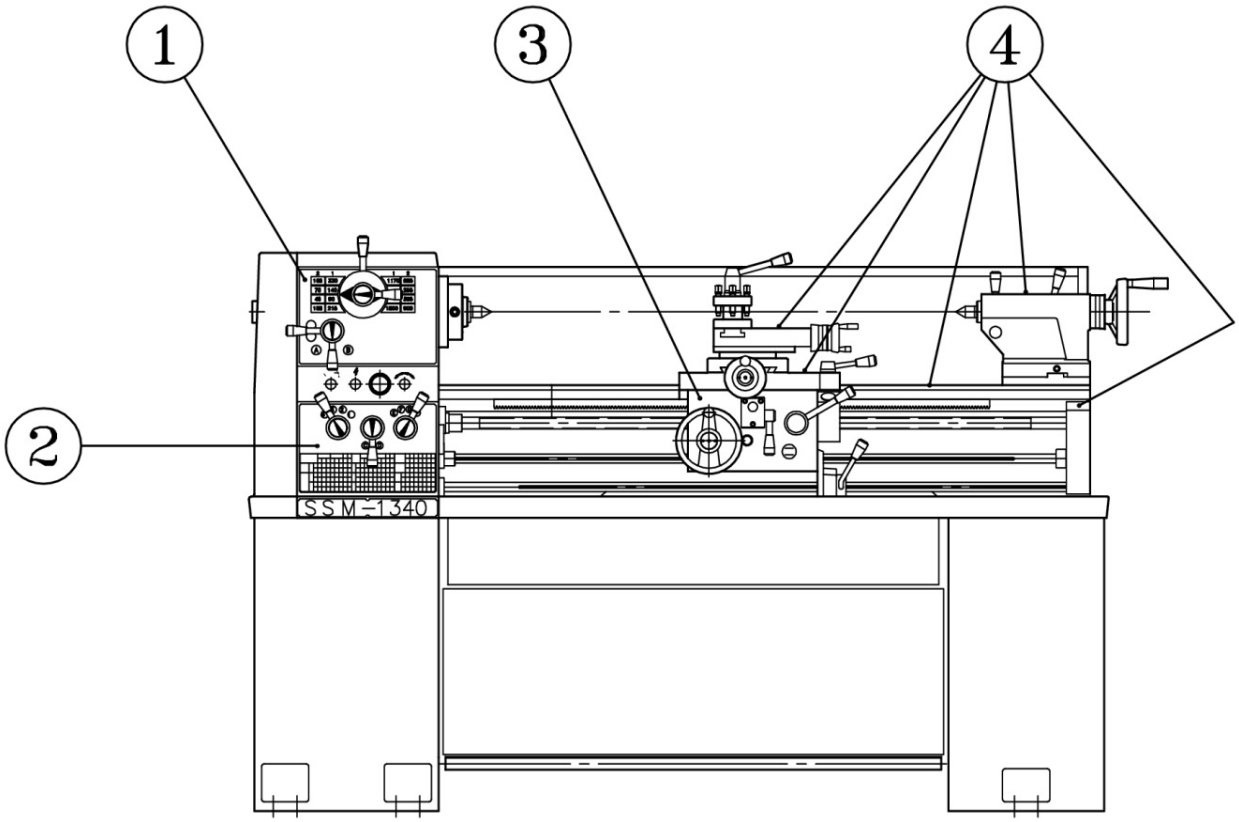
On the tailstock, oil points are provided for daily attention form a standard oil can,

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

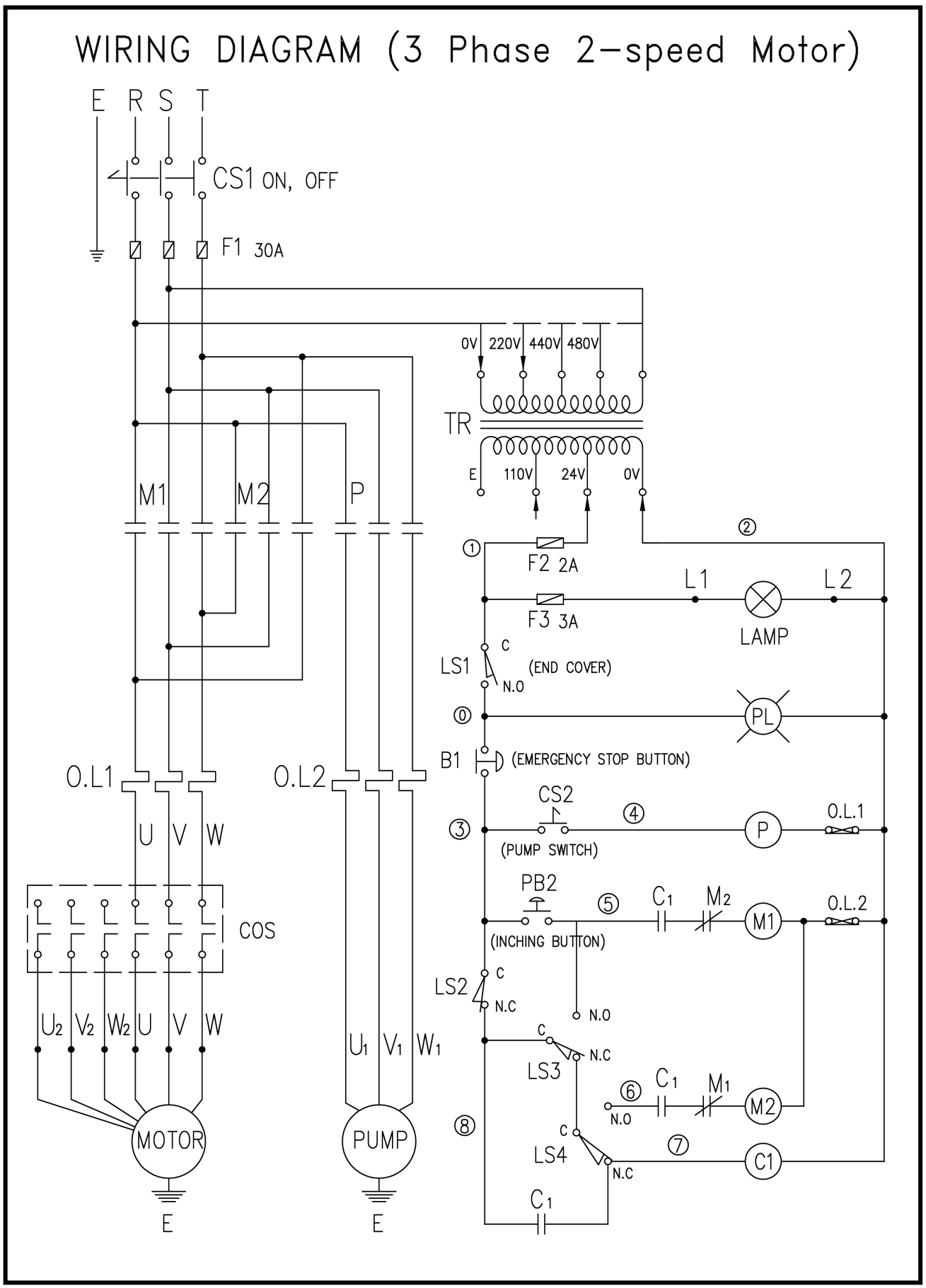
NOTE : Using incorrect grades of oil can cause damage .

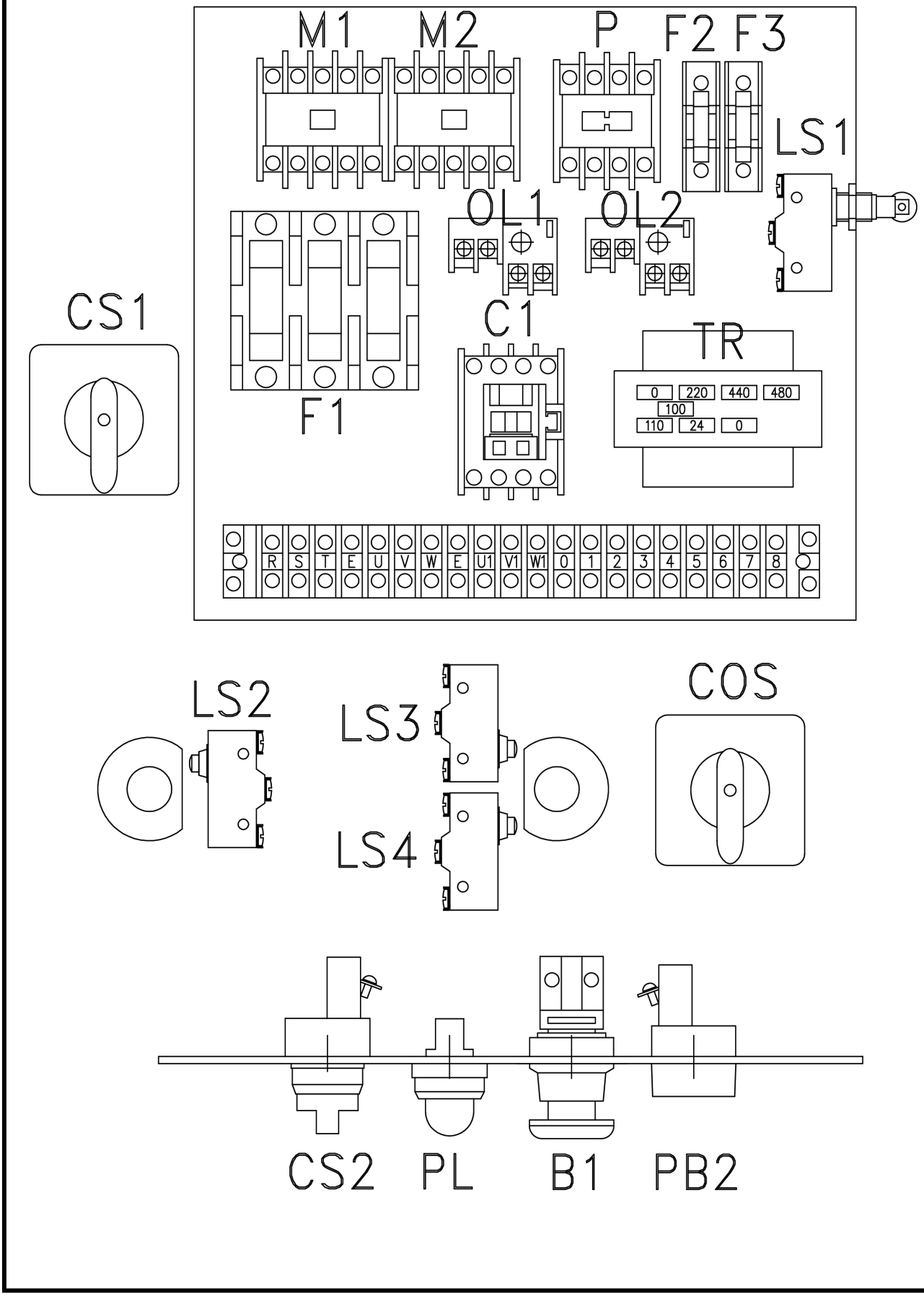


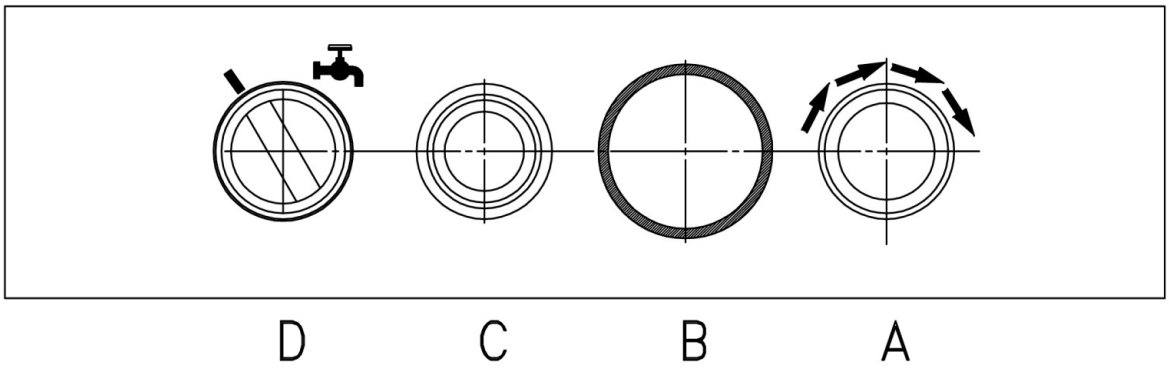
LUBRICATION DIAGRAM					
Part to be lubricated		① HEADSTOCK	② GEARBOX	③ APRON	④ SKUDE &TAILSTOCK
Recommendable lubricant		SHELL: TELLUS OIL 27	SHELL: TELLUS OIL 27	SHELL: TELLUS OIL 33	SHELL: TELLUS OIL 33~41
Filling method		OIL JUG	OIL JUG	OIL JUG	OIL JUG
Initial charge quantity		10 liter	1.5 liter	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)
E R S T
CS1 ON, OFF
F1 30A
0V 220V 440V 480V
TR
E 110V 24V 0V
M1 M2 P
F2 2A
F3 3A
L1 L2
LAMP
LS1 C N.O (END COVER)
PL
B1 (EMERGENCY STOP BUTTON)
O.L1 O.L2
U V W
CS2
(PUMP SWITCH)
O.L.1
PB2
C1 M2
M1
O.L.2
(INCHING BUTTON)
LS2 C N.C N.O
LS3 C N.C
C1 M1
M2
LS4 C N.C
C1
C1
COS
U2 V2 W2 U V W
U1 V1 W1
MOTOR
PUMP
E
E


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
LS4
COS
CS2
PL
B1
PB2

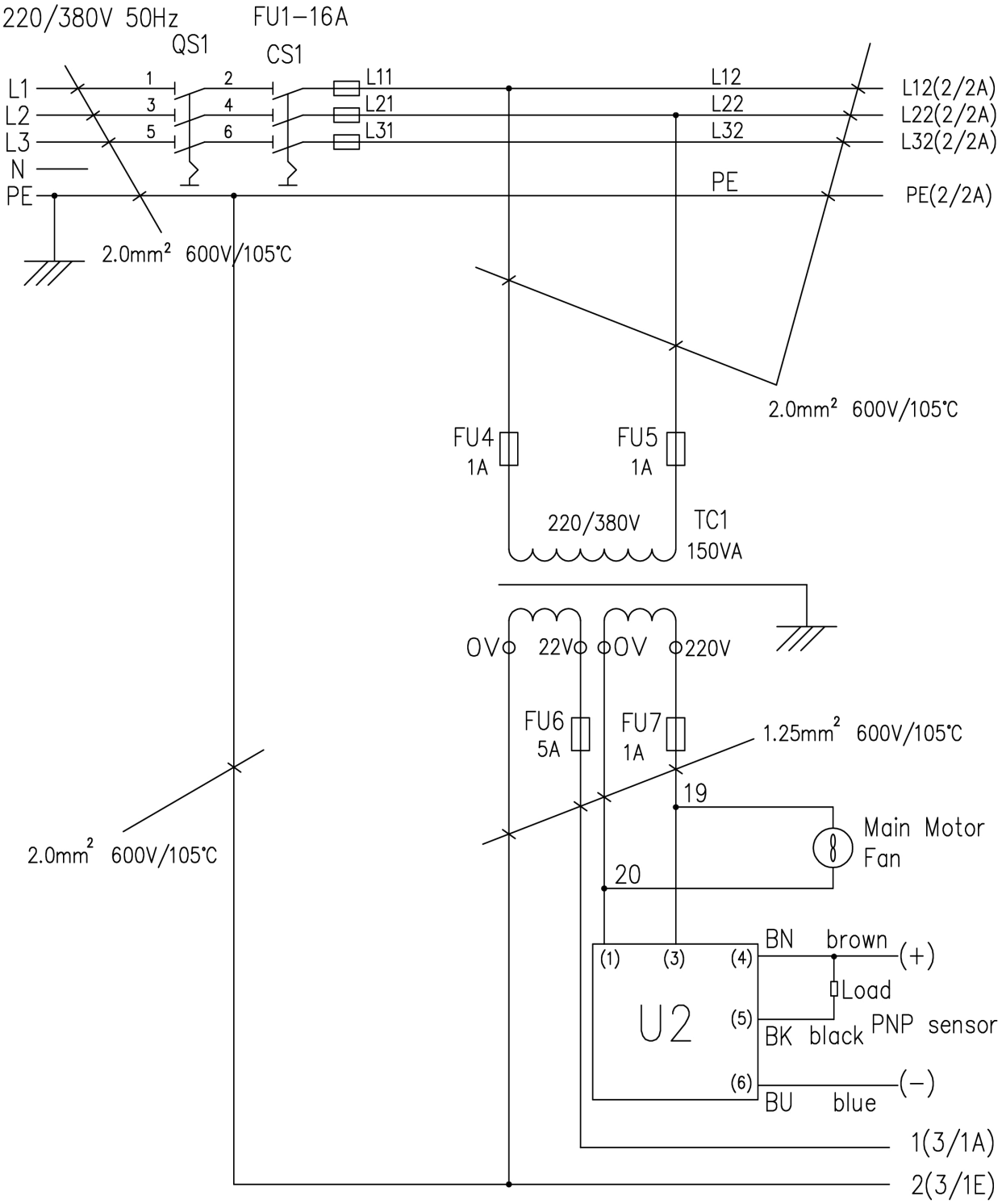


al： Power switch 3 ø 3w 10A
T： Control circuit Transformer 100VA.
M： Main Motor.
M1： Pump Motor.
A： Push button switch (jogging switch) type SB 3051A
B： Flate type push button type SB 3091B.
C： Pilot light type. SP 301, 110V/15V, color: white.
D： Selecting switch. type ST 302 1A
e1： Fuse base 600V, 30A type SR-833.
e2： Grass tube fuse 1A.
1c1： For main motor Reverse AC magnetic contactor coil AC 110V. type C-11G3A1B.
1c2： For main motor Forward AC magnetic contactor coil 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 magnetic contactor coil AC 110V. type C-11G3A1a.
Ls1： Limit switch End cover safety switch type 15G 22-B.
Ls2： Limit switch Brake precision. type 15GD -B.
Ls3： Limit switch Reverse precision. type 15GD -B.
Ls4： Limit switch Forward precision. type 15GD -B.
Cs1： 2 Speed Motor switch.

CIRCUIT DIAGRAM

P1

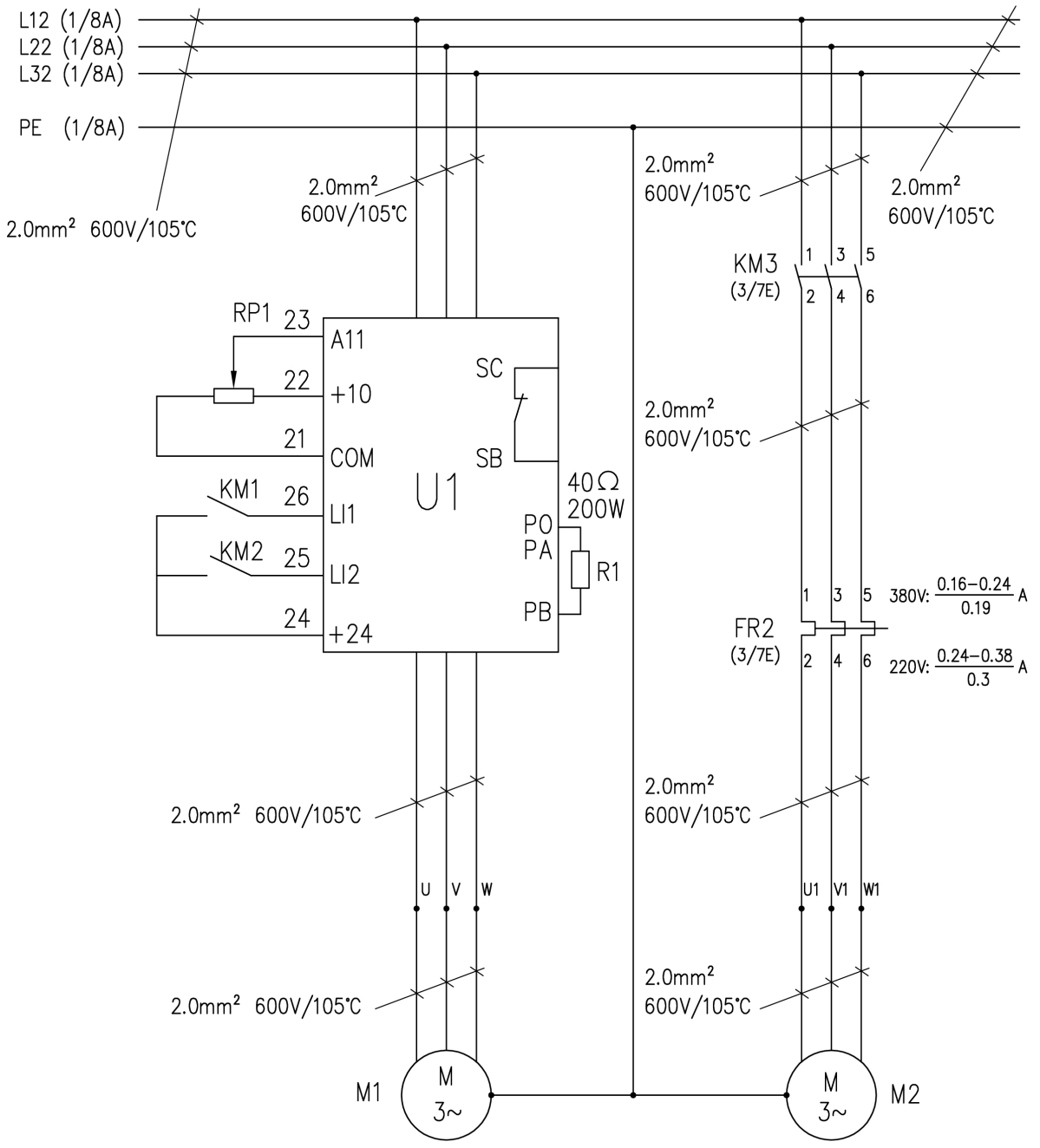
For Variable Speed Change



CIRCUIT DIAGRAM

P2

For Variable Speed Change



Spindle Motor

2.2kW

380V: 5Amp 220V: 8.5Amp

Coolant Pump

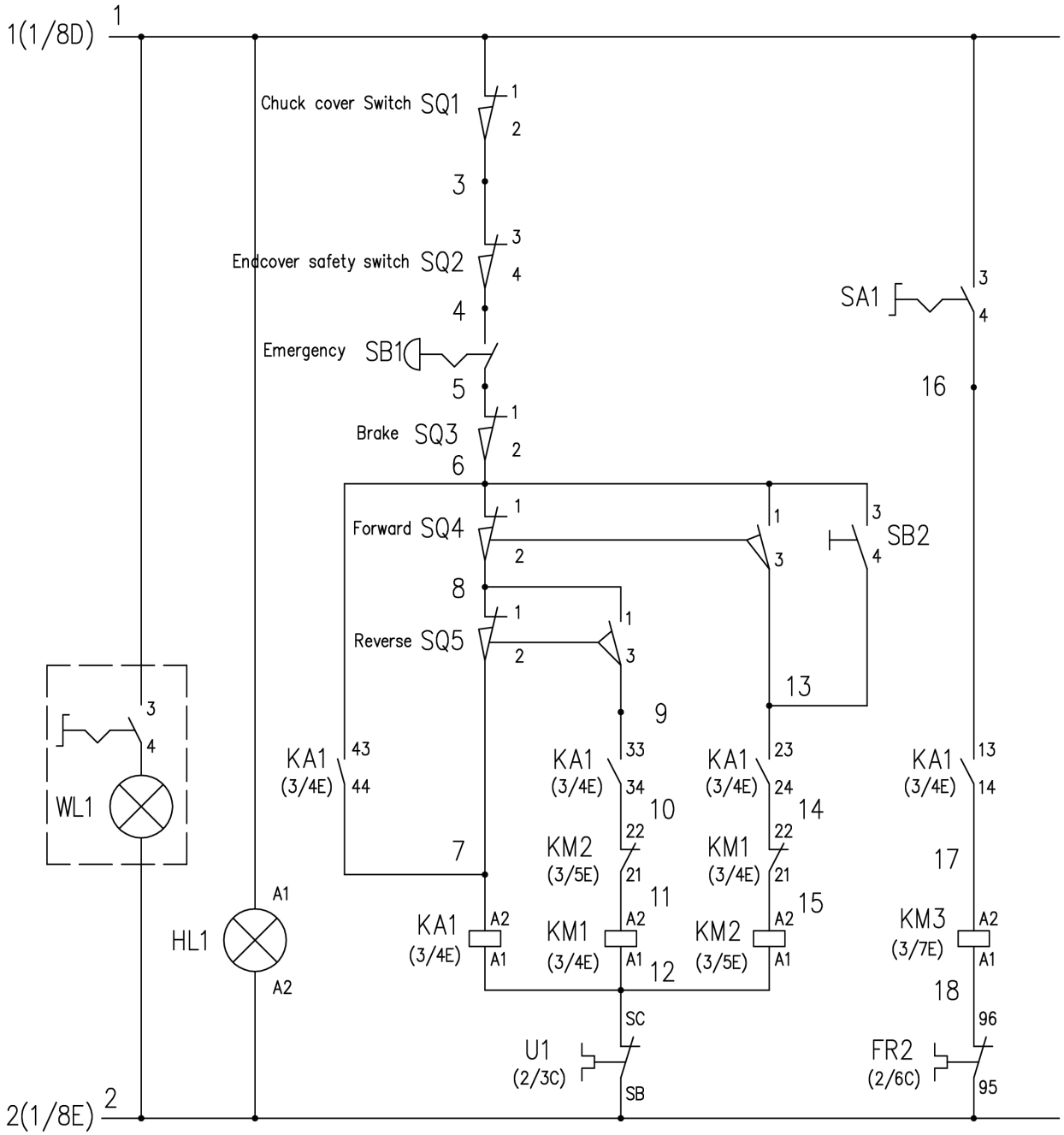
0.1kW

380V: 0.19Amp 220V: 0.3Amp

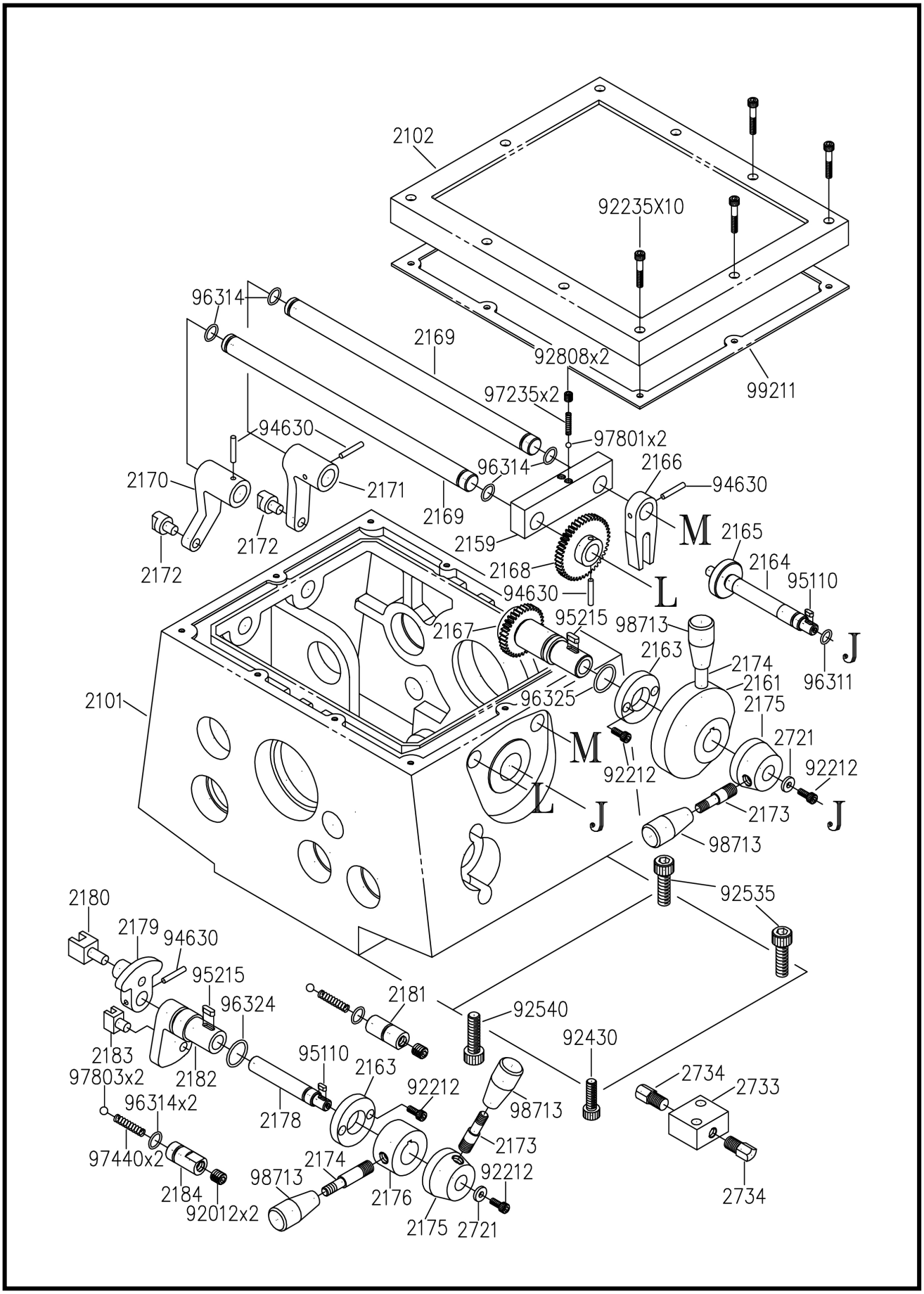
CIRCUIT DIAGRAM

P3

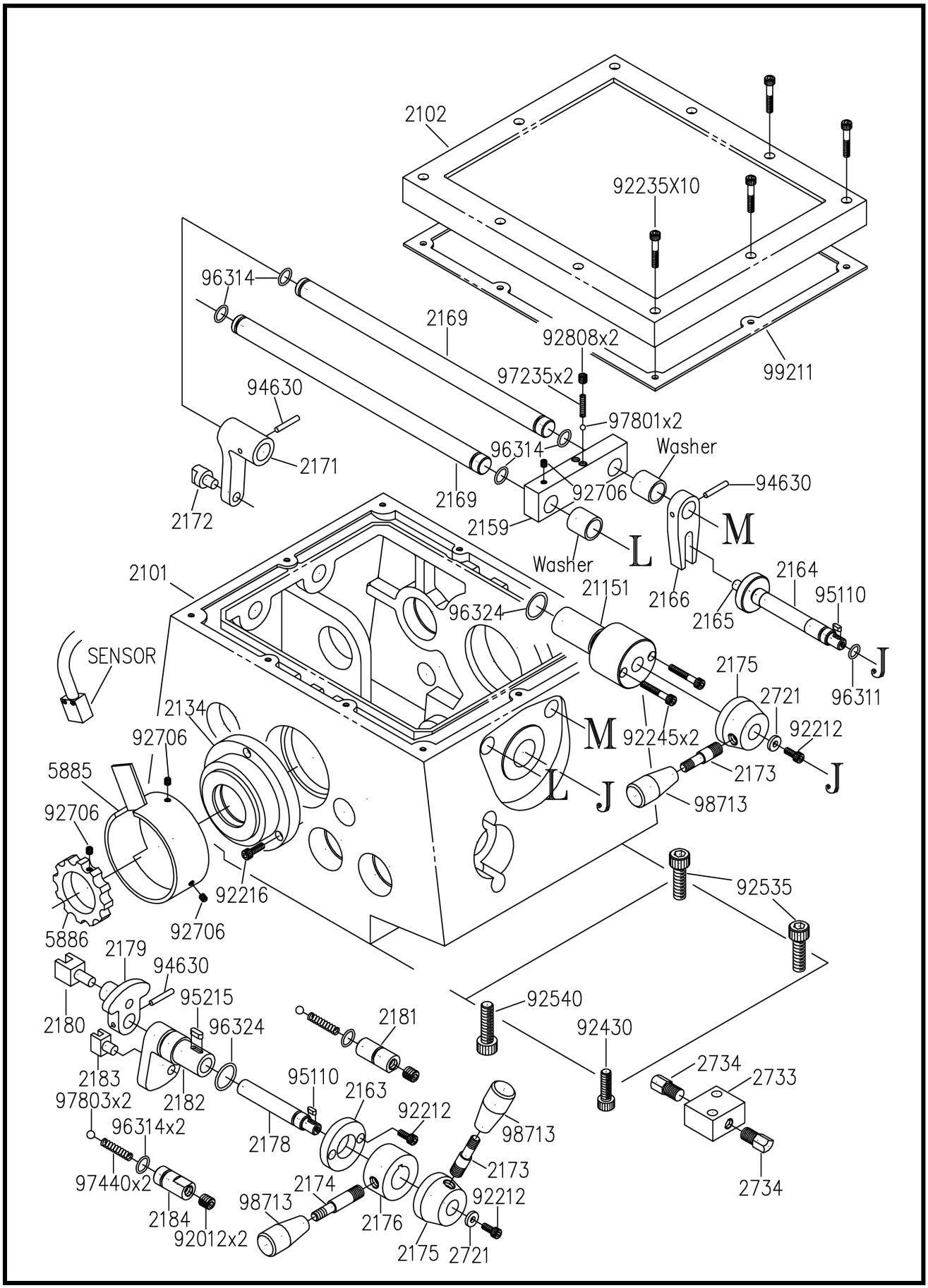
For Variable Speed Change



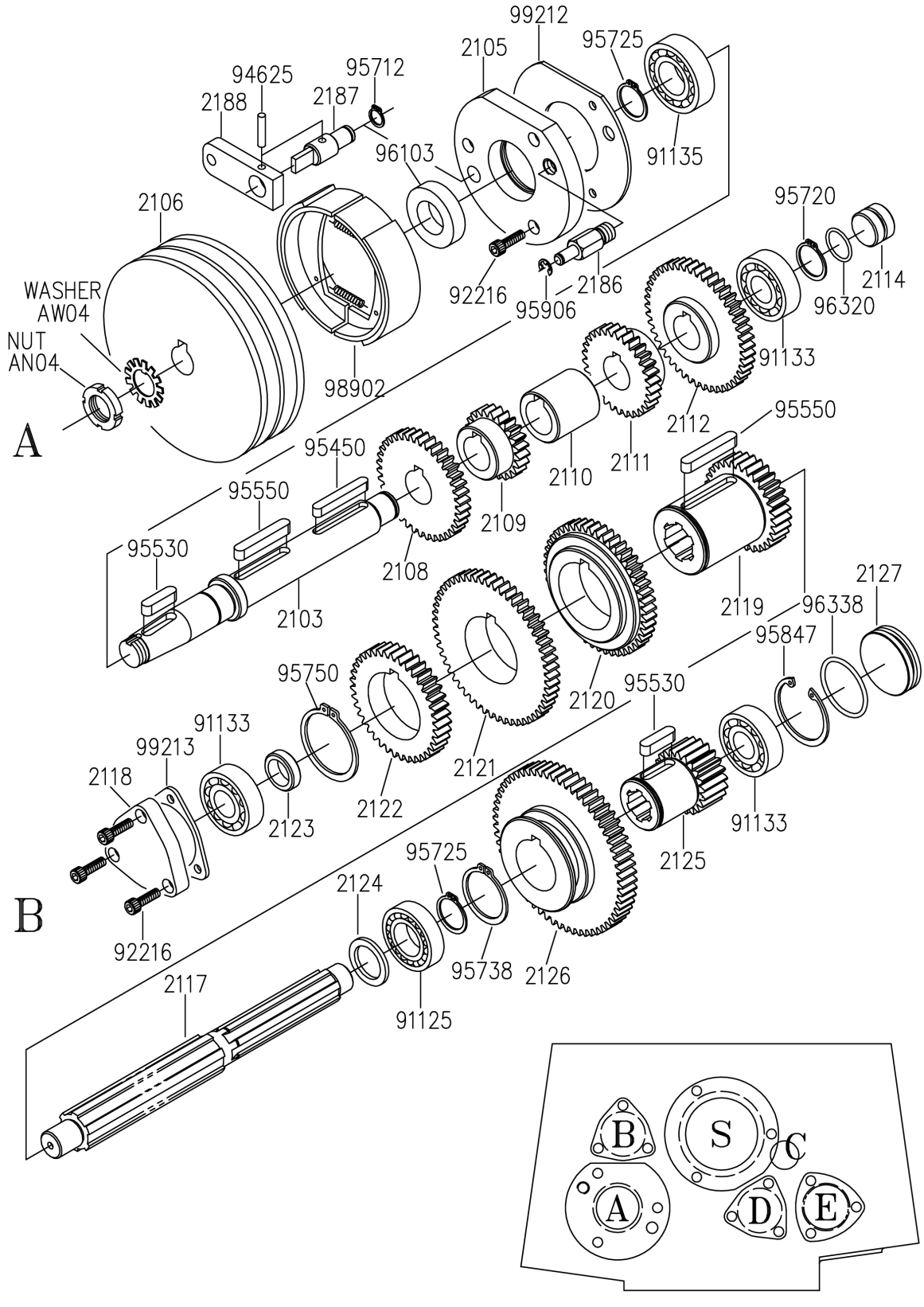
HEADSTOCK


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

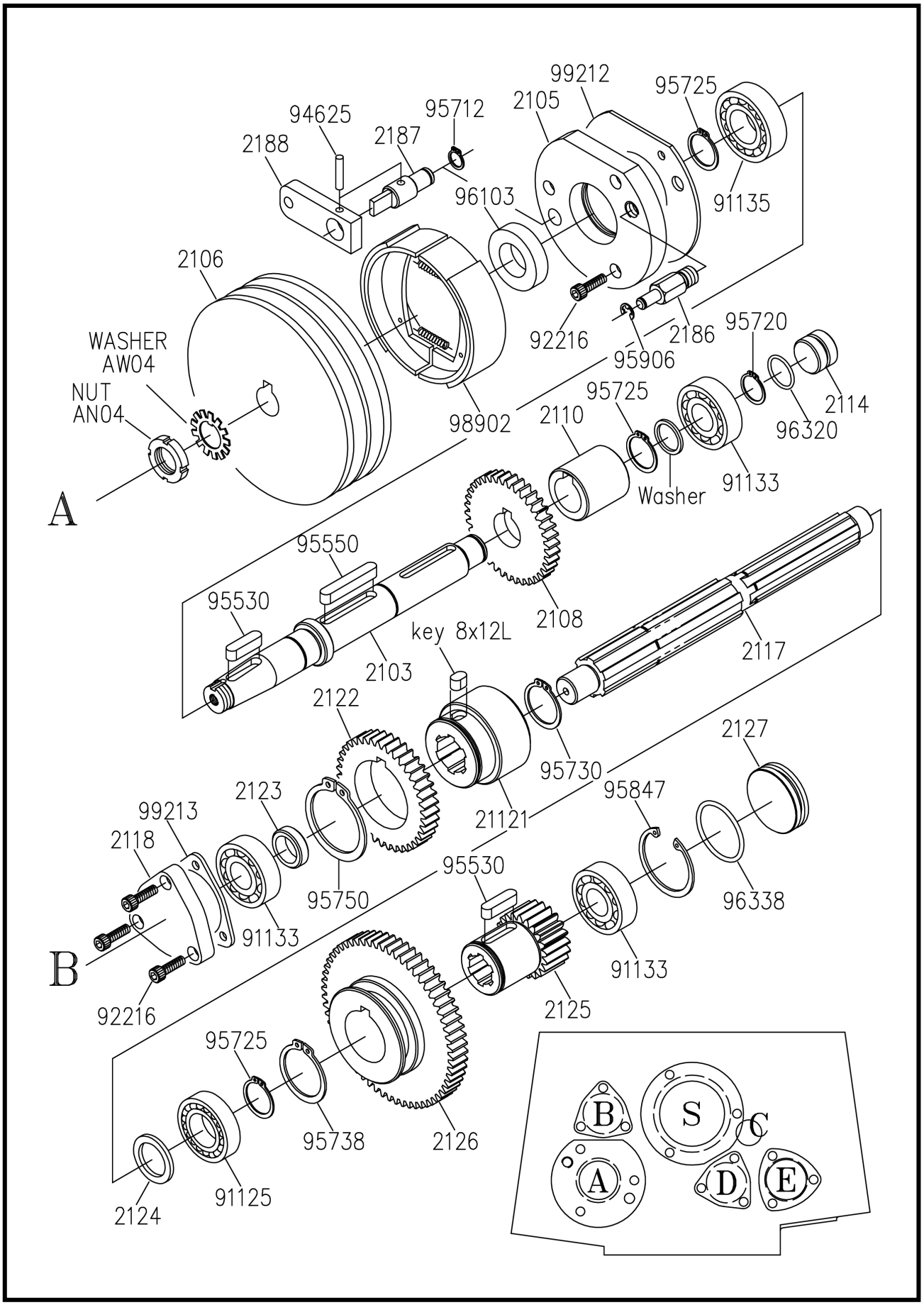
HEADSTOCK for Variable speed change



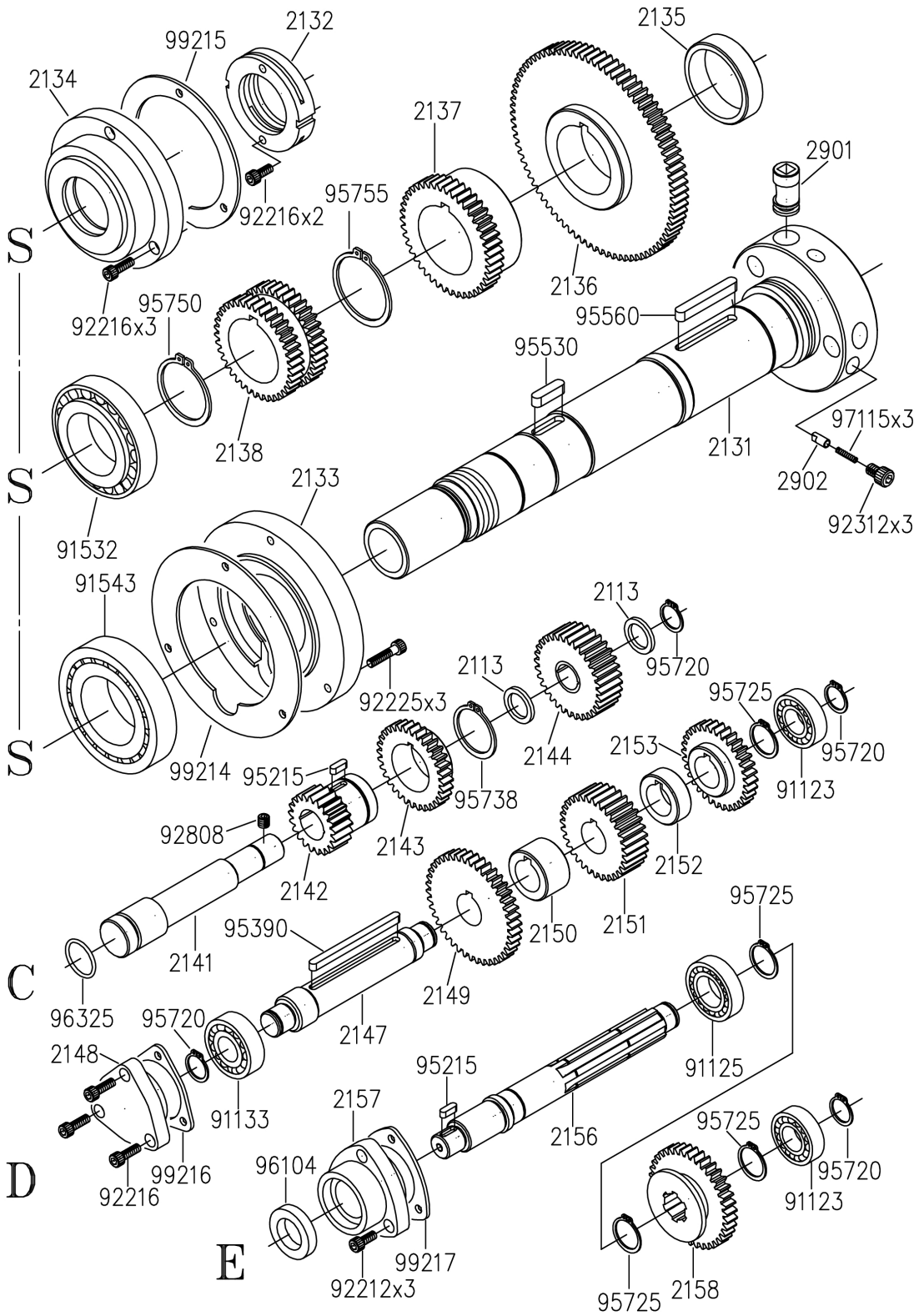
HEADSTOCK


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

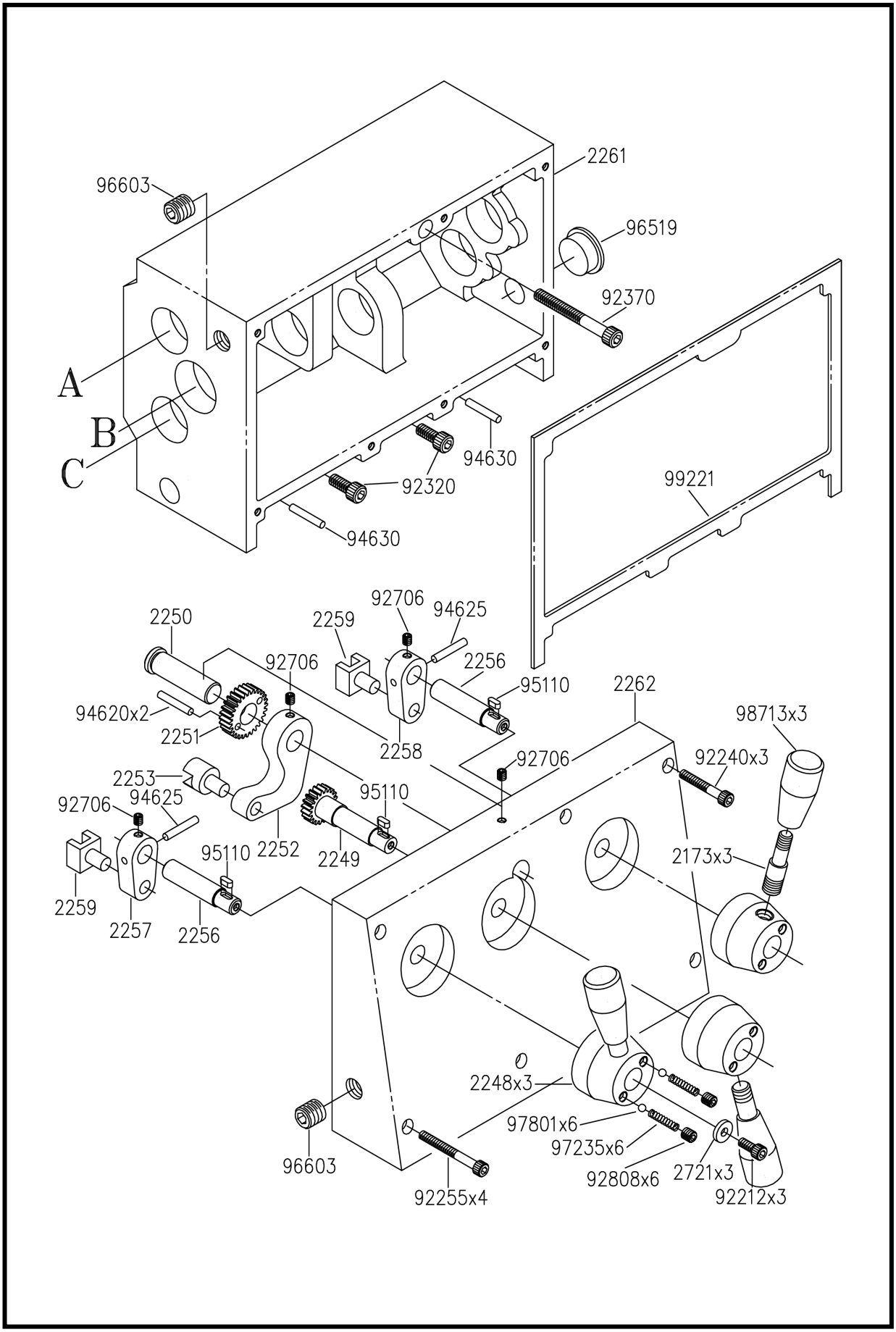
HEADSTOCK for Variable speed change



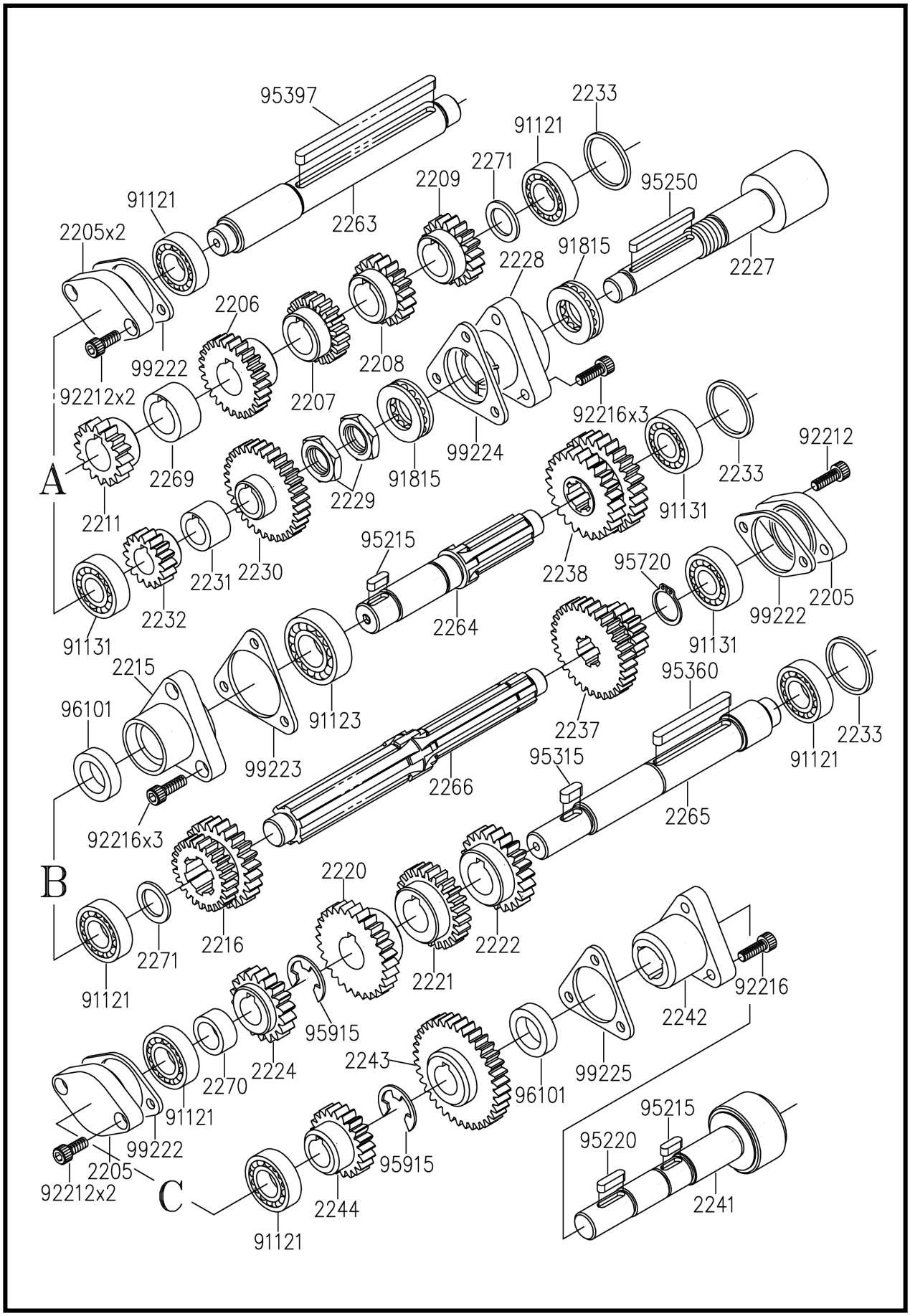
HEADSTOCK


2132
99215
2134
2135
2137
2901
95755
92216x2
2136
95560
95750
92216x3
95530
2138
2131
97115x3
2902
92312x3
2133
91532
91543
2113
95720
92225x3
2113
95725
2144
2153
95720
99214
95215
95738
91123
92808
2143
2142
2152
95725
2141
95390
2150
2151
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

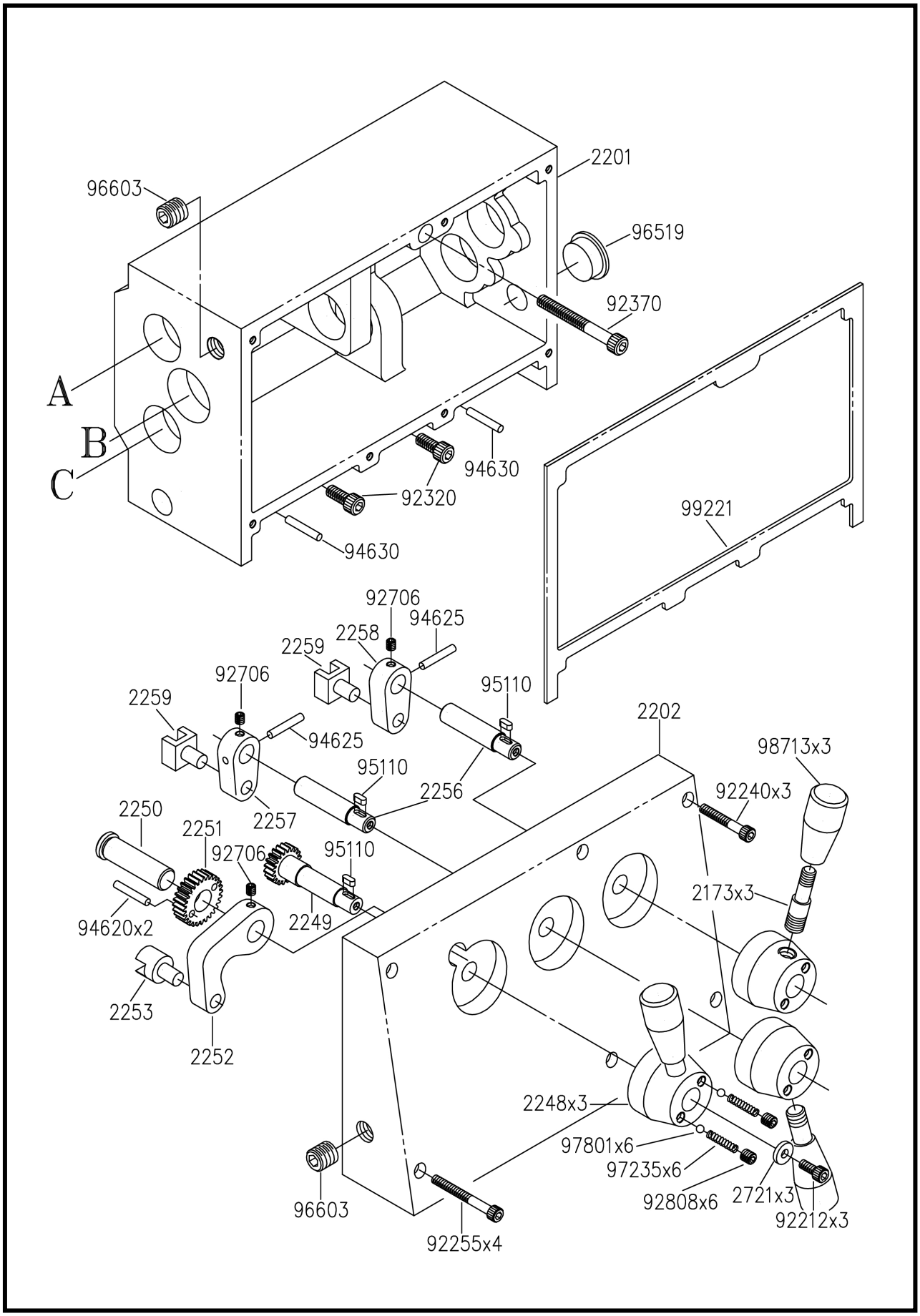
GEARBOX Metric system



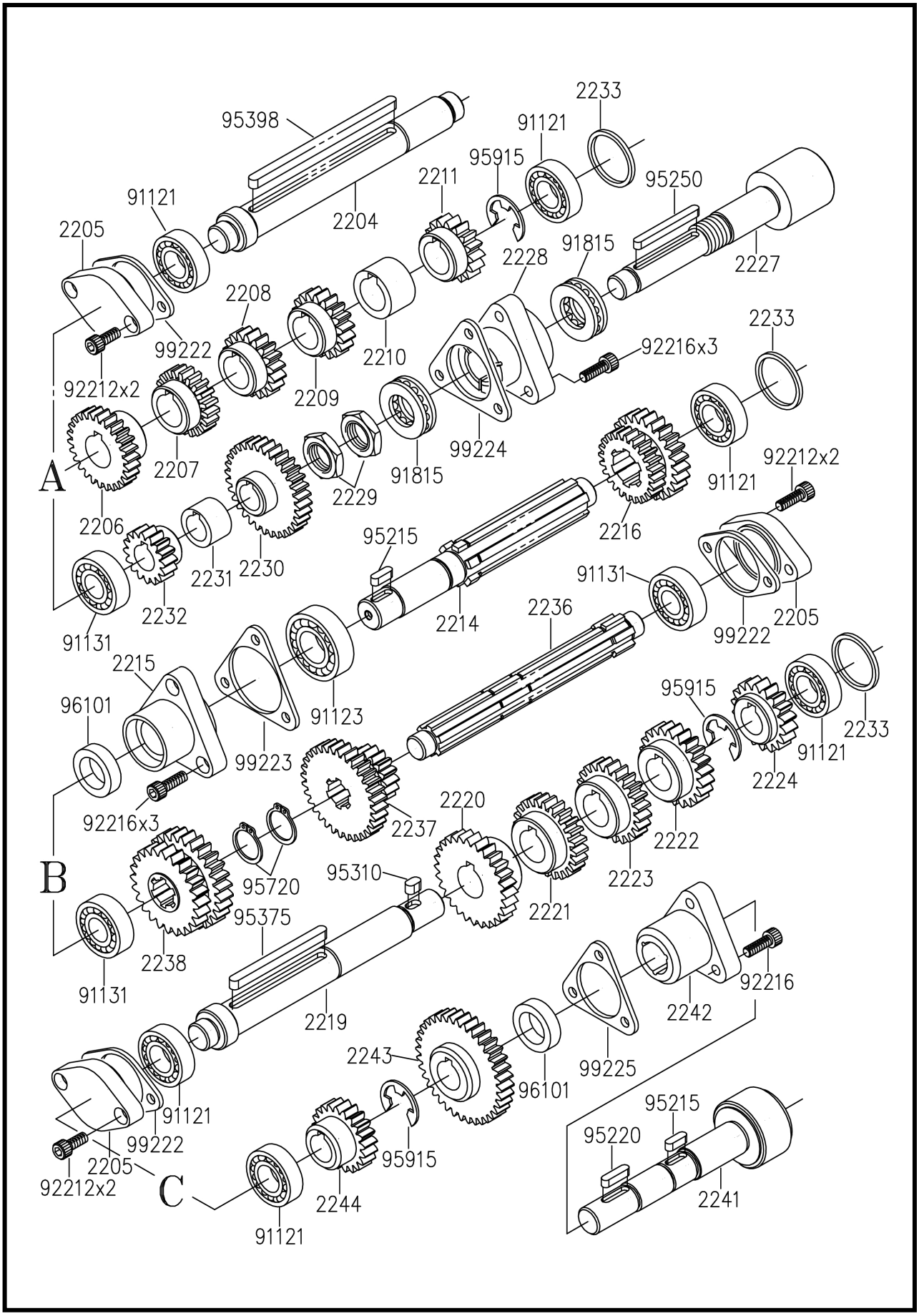
GEARBOX Metric system



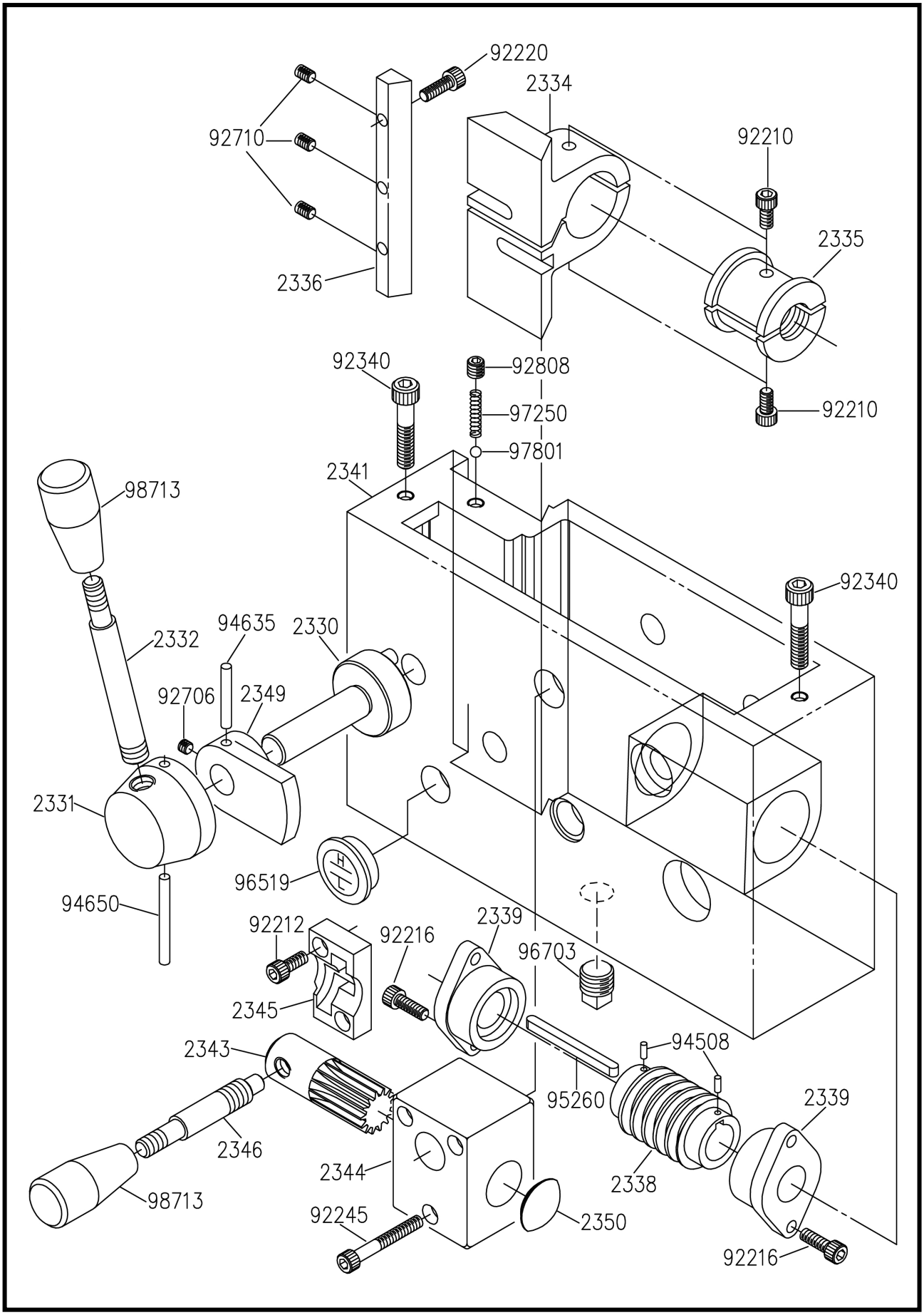
GEARBOX Inch system



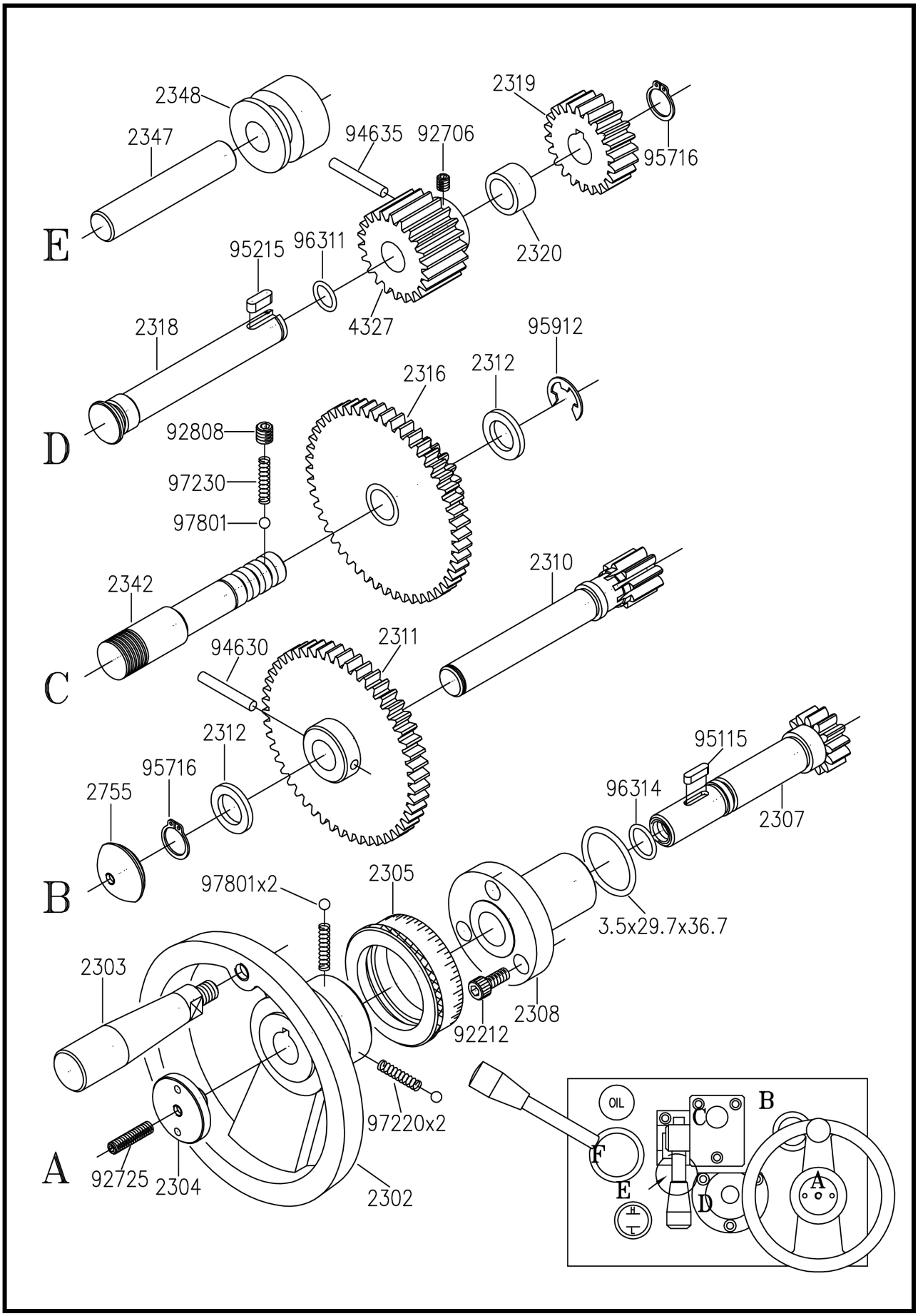
GEARBOX Inch system



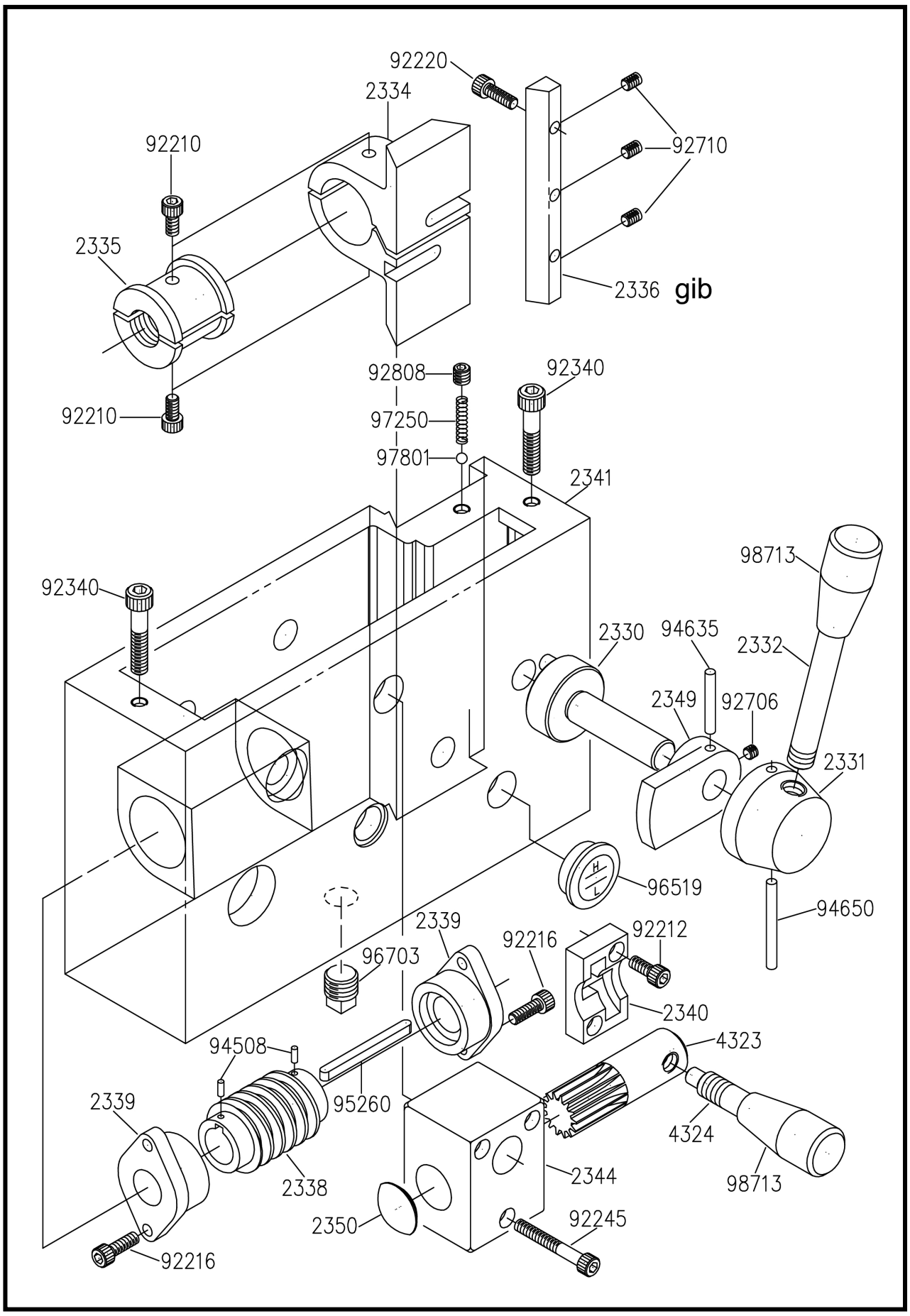
APRON Right hand, Lever type



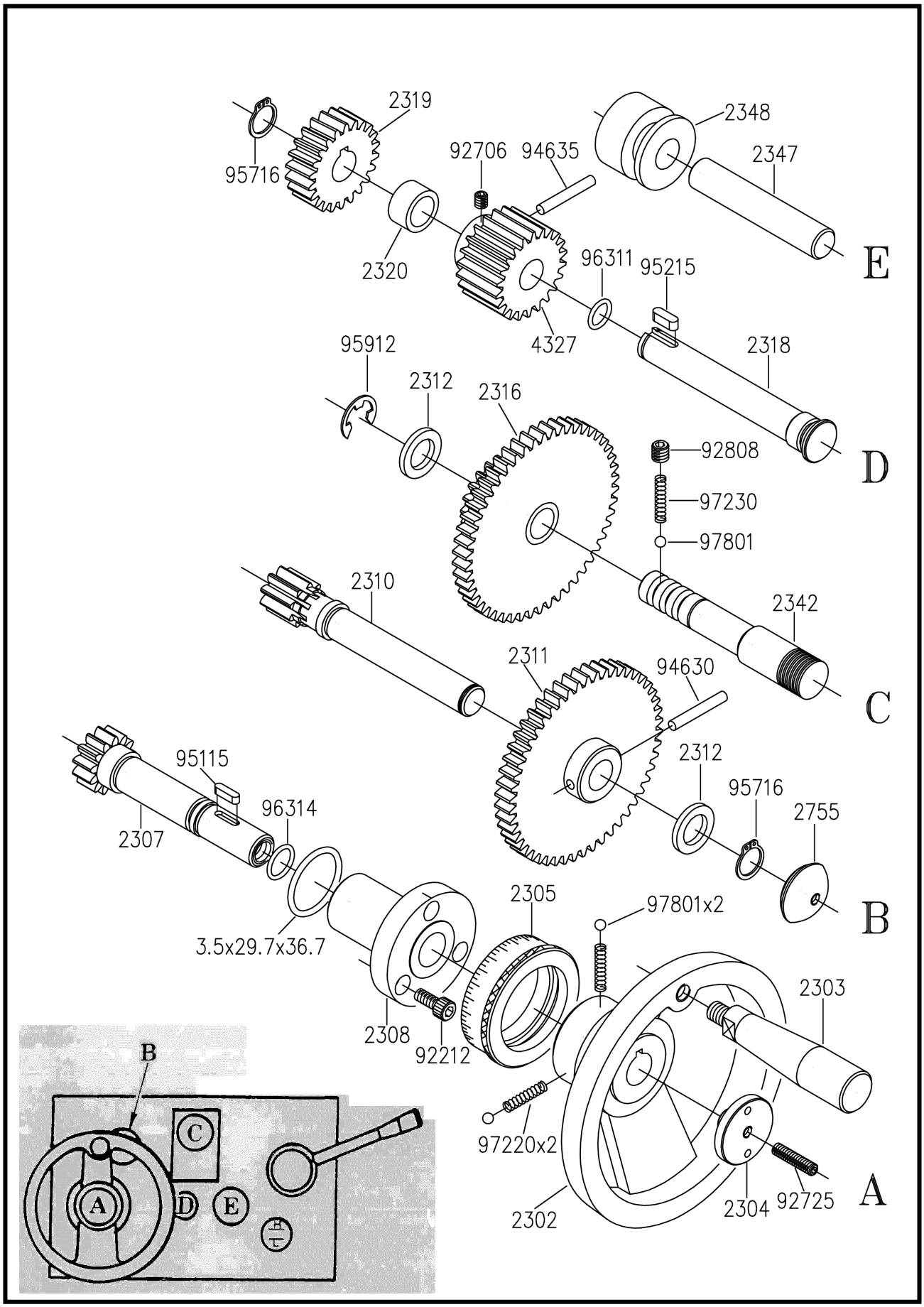
APRON Right hand, Lever type



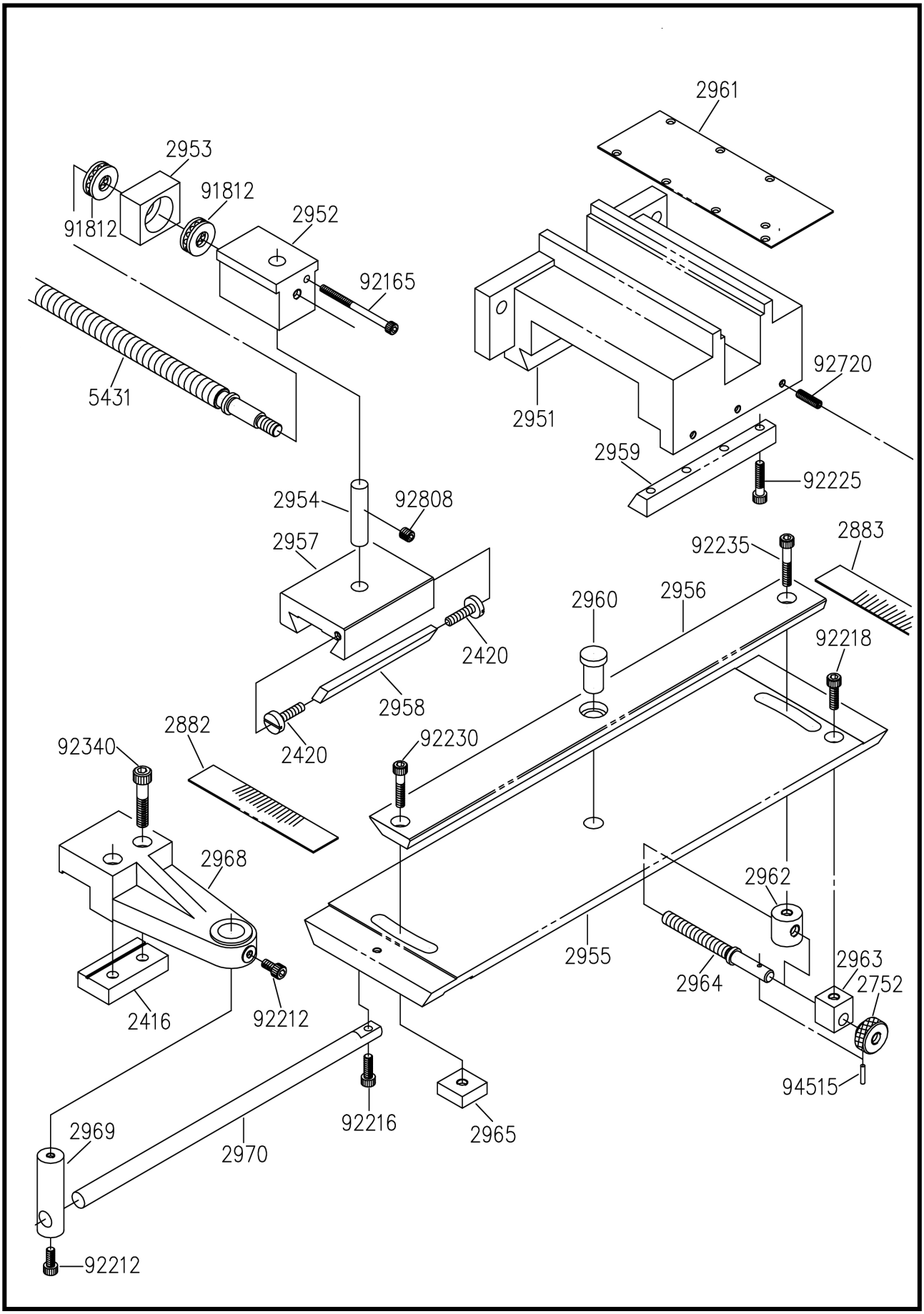
APRON Left hand, Lever type



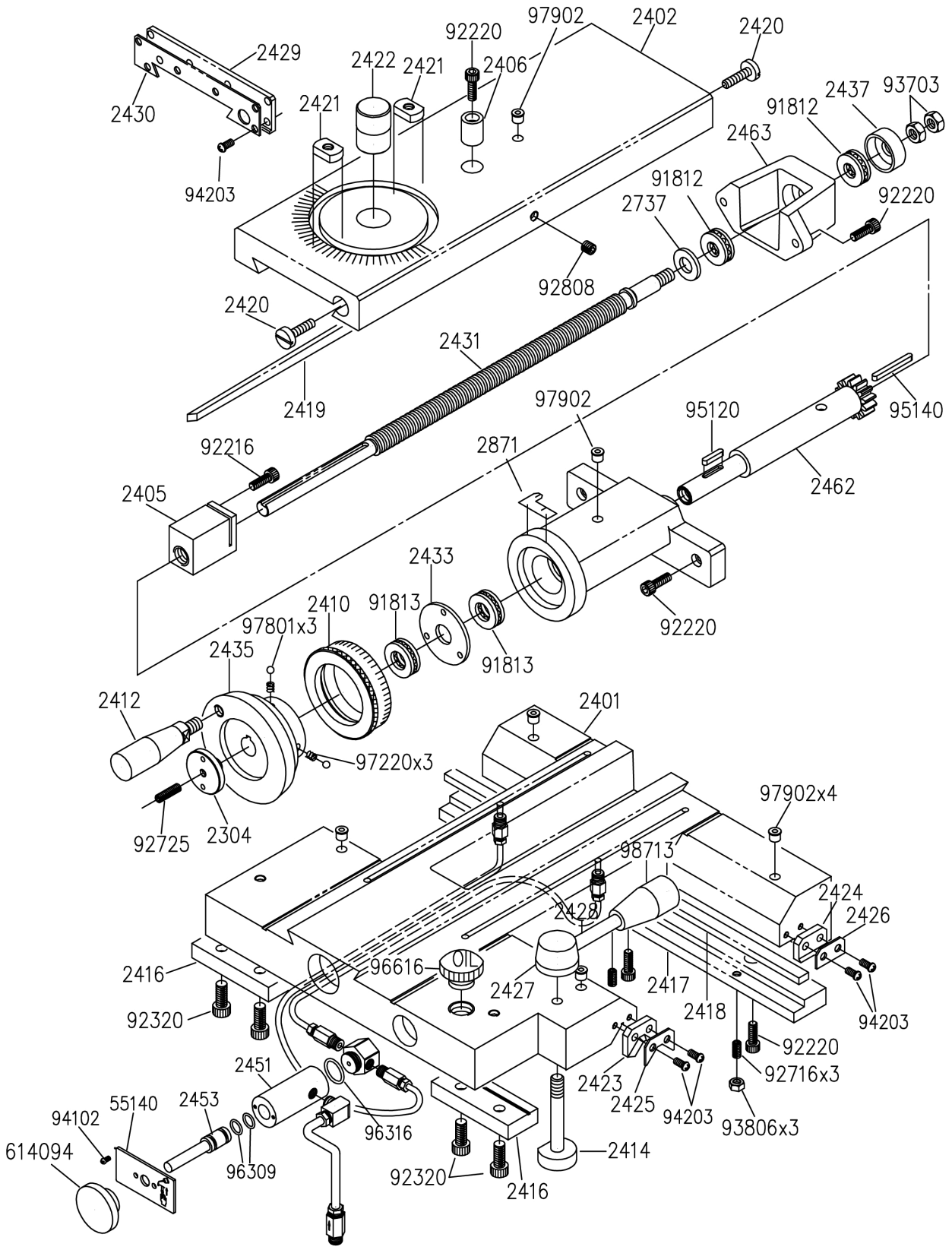
APRON Left hand, Lever type



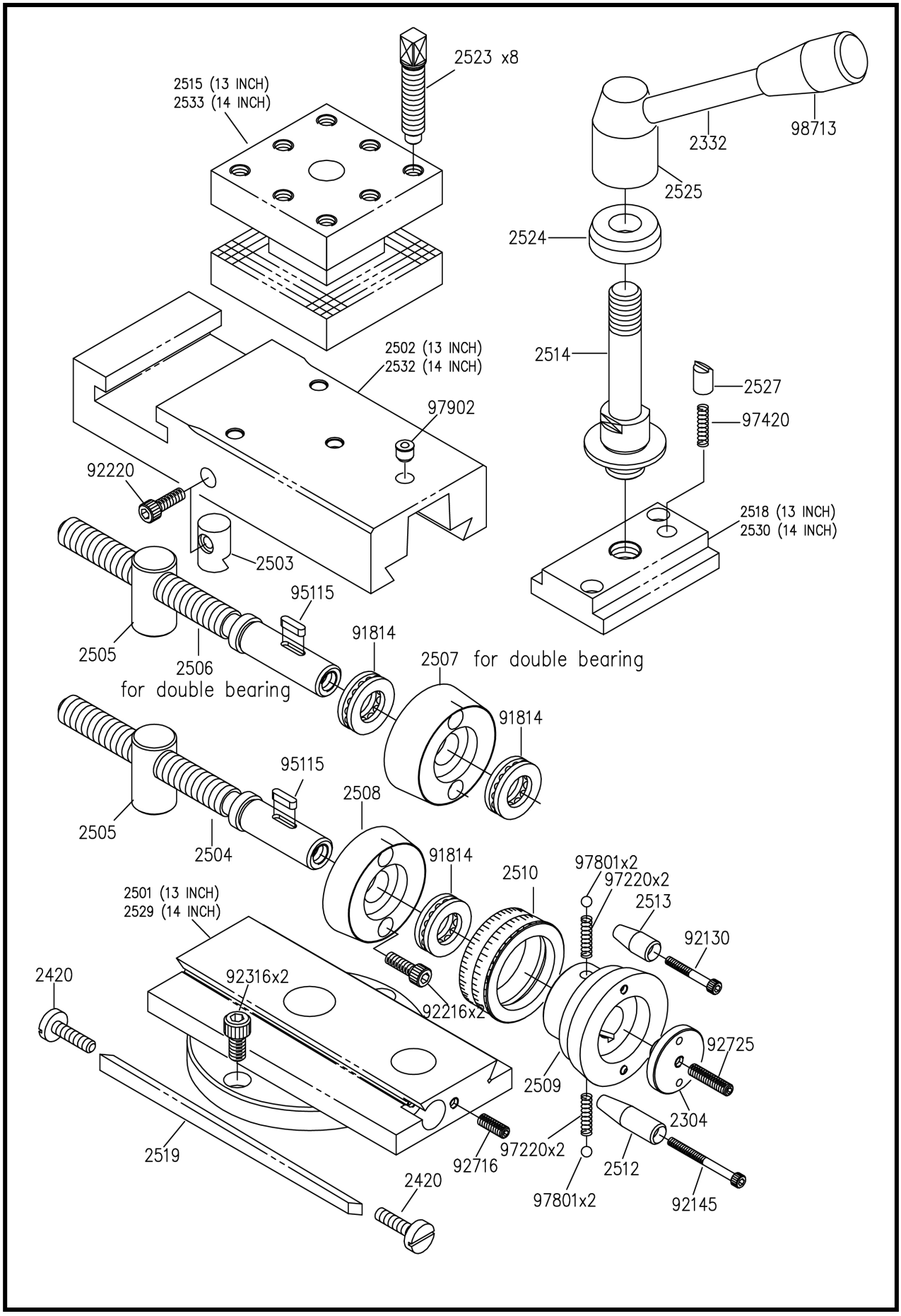
TAPER ATTACHMENT



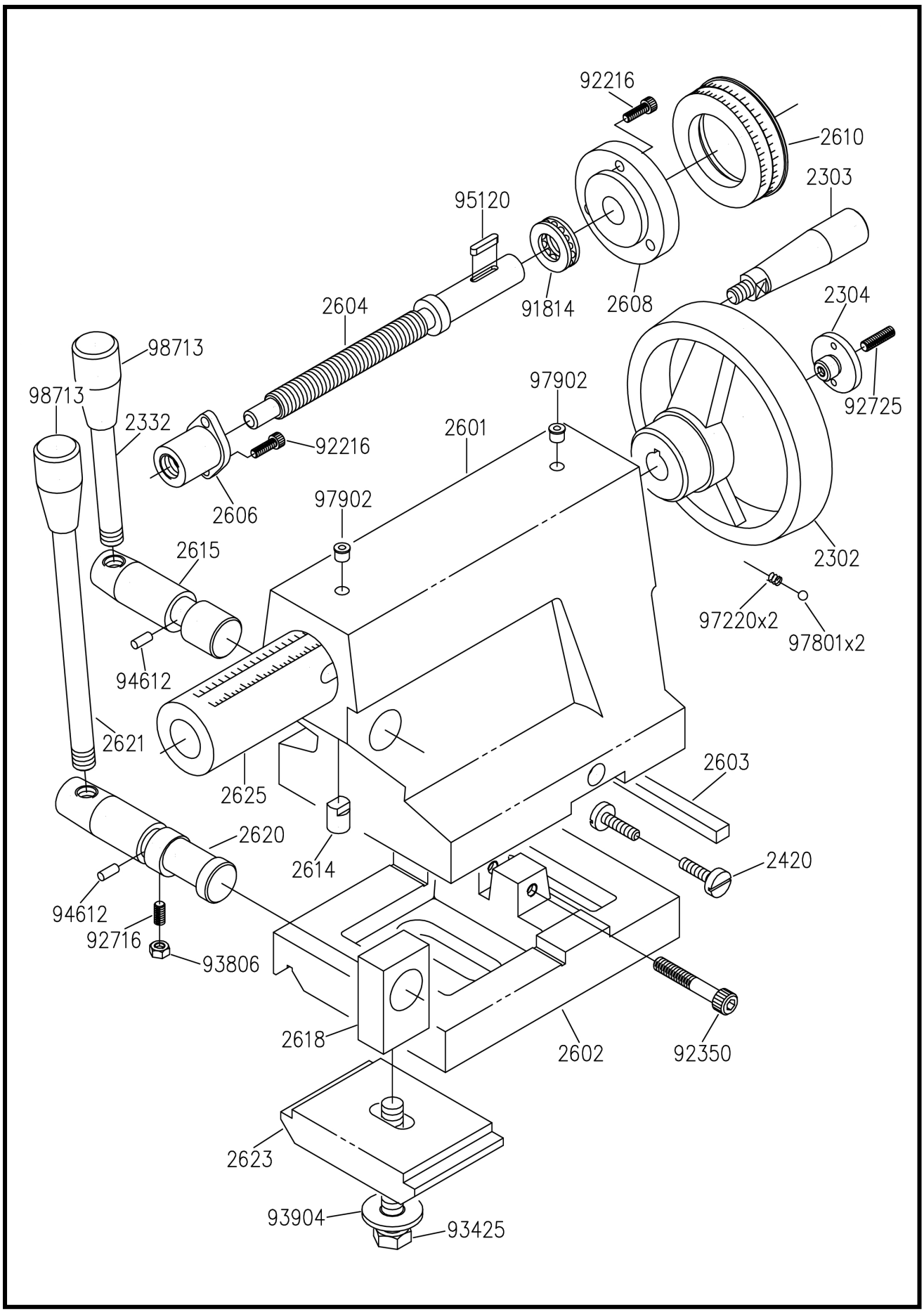
SADDLE & CROSS-SLIDE Telescopic type



TOP SLIDE, TOOL POST



TAILSTOCK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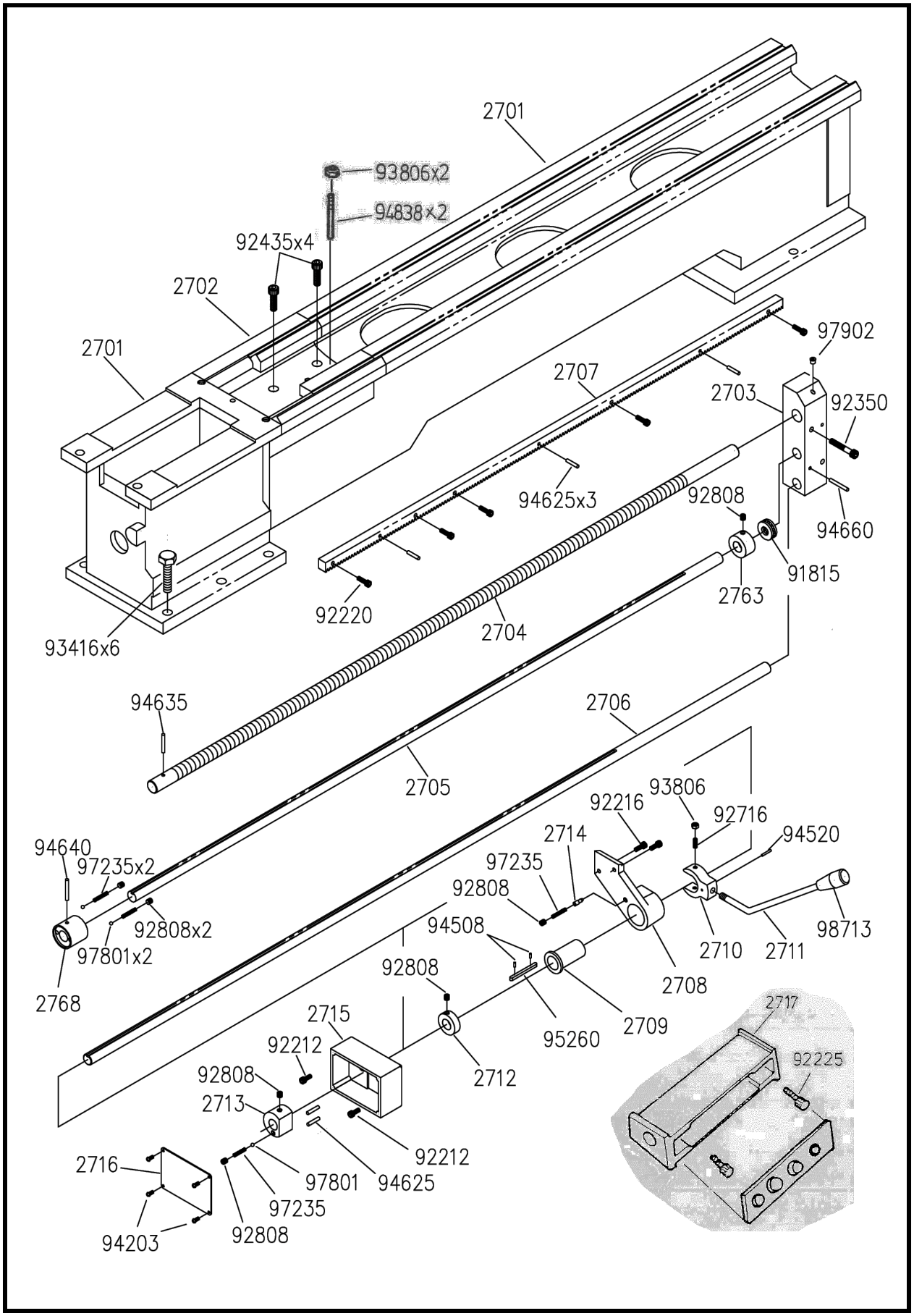
91814
2608
2604
2304
98713
98713
2332
97902
92725
2601
92216
2606
97902
2615
2302
97220x2
97801x2
94612
2621
2625
2603
2620
2614
2420
94612
92716
93806
2618
2602
92350
2623
93904
93425

BED & SHAFTS


2701
93806x2
94838x2
92435x4
2702
2701
97902
2707
2703
92350
94625x3
92808
94660
91815
2763
92220
2704
93416x6
94635
2706
2705
93806
92216
92716
94520
2714
97235
92808
94640
97235x2
92808x2
97801x2
2768
94508
98713
2710
2711
2708
92808
2709
95260
2715
92212
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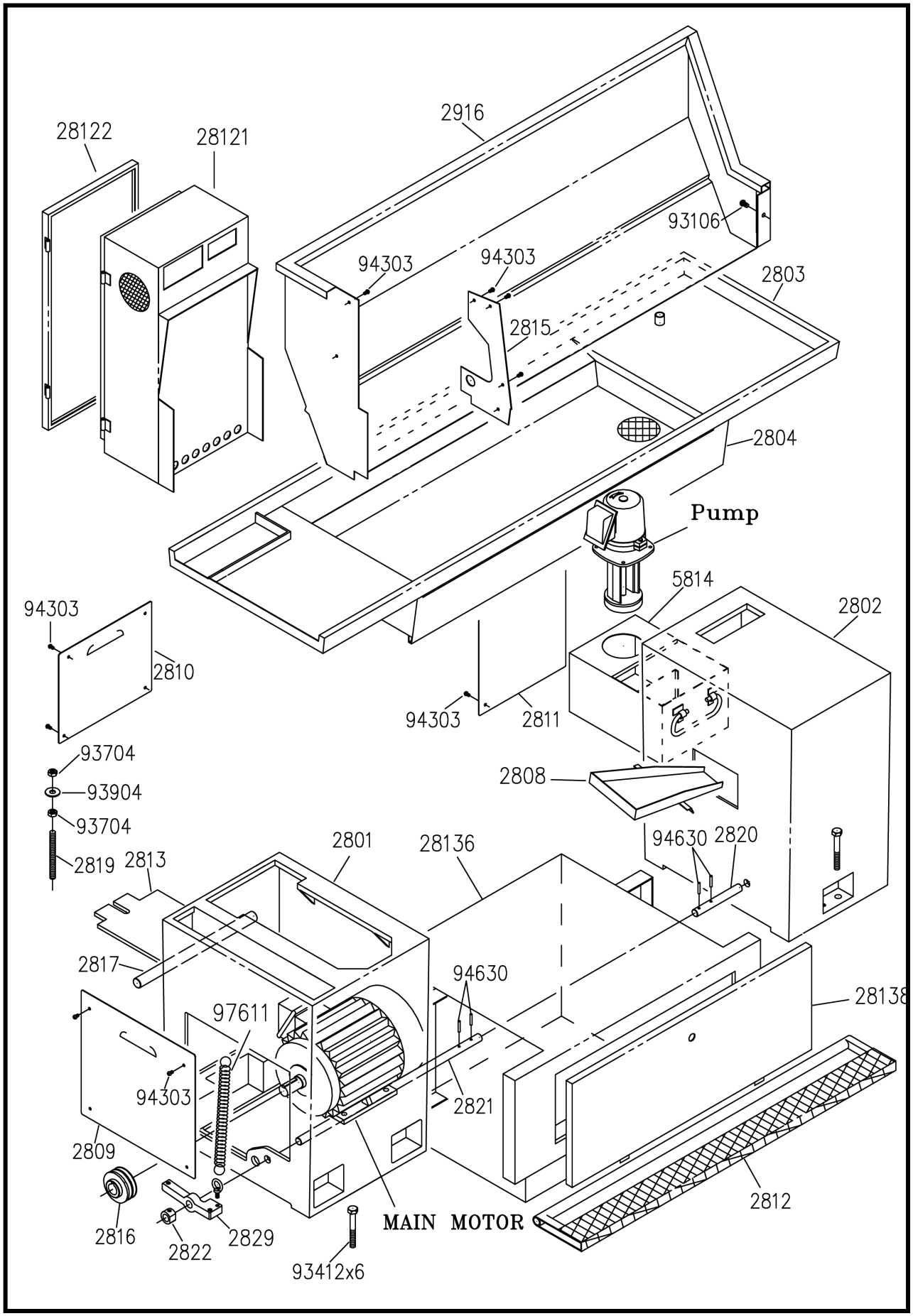
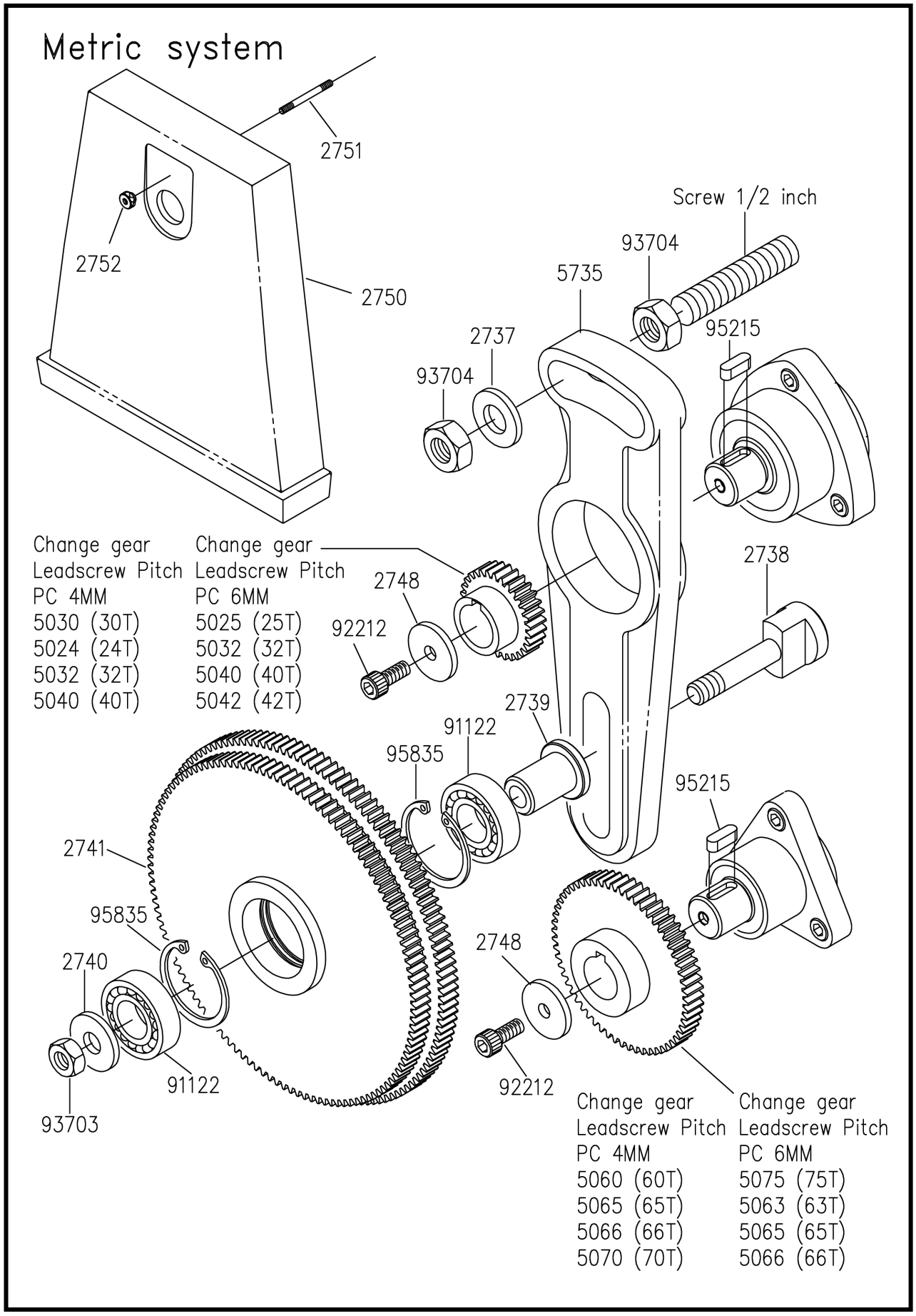
2717
92225

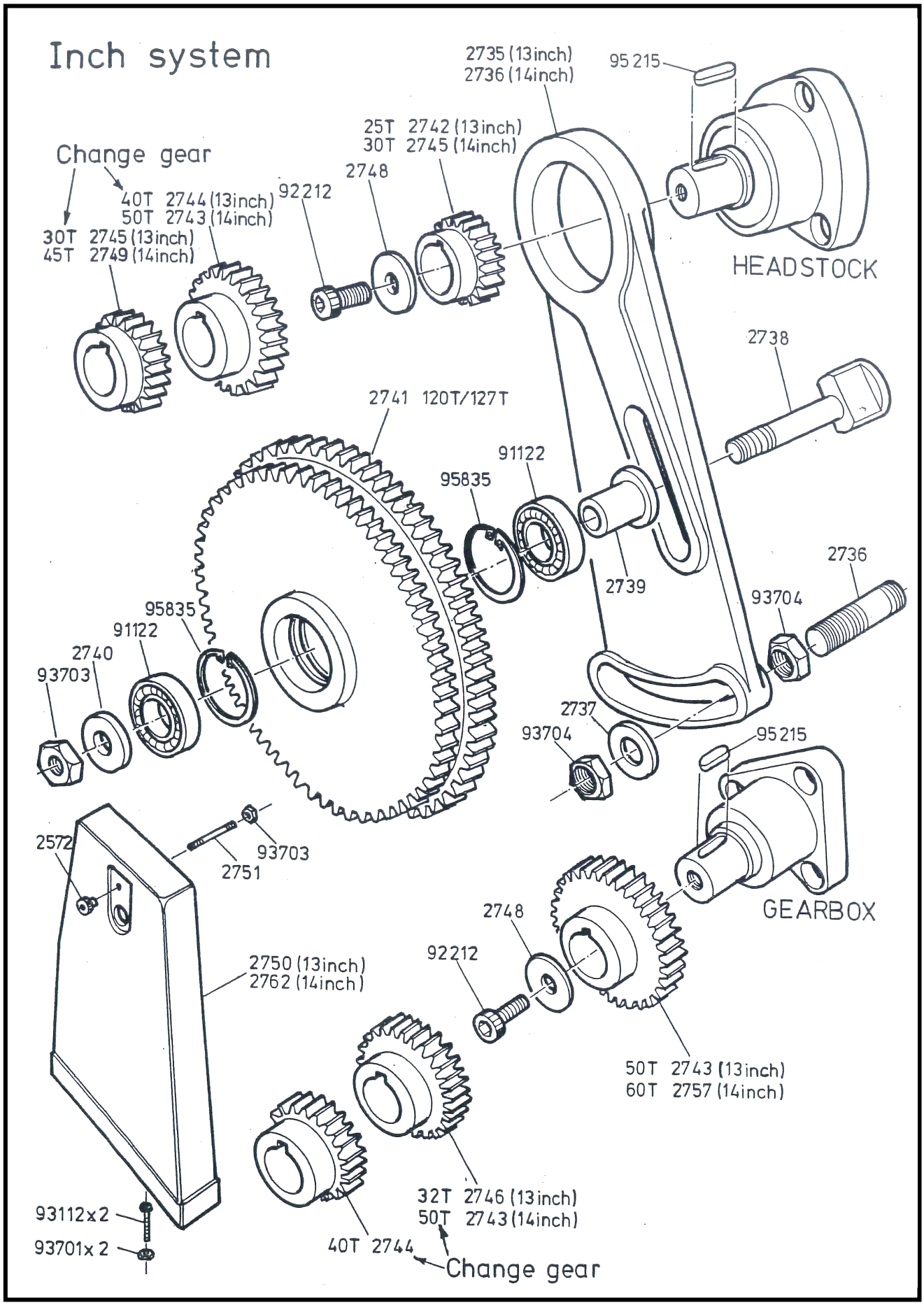
CABINET & PANELS



SWING FRAME, END GEARS & COVER

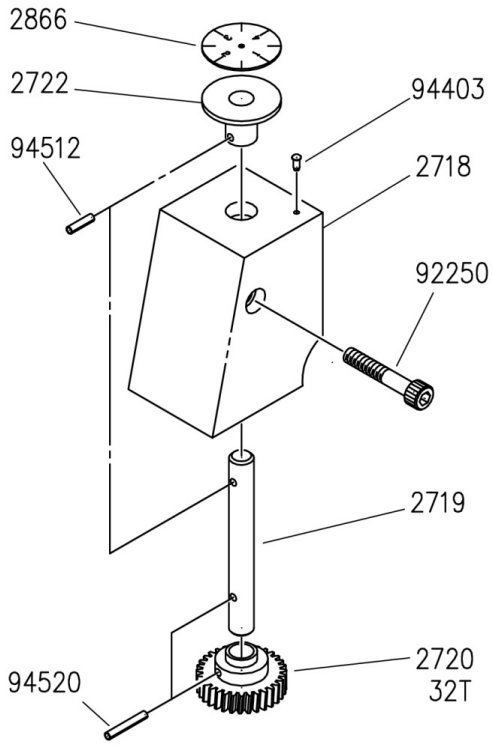


SWING FRAME, END GEARS & COVER

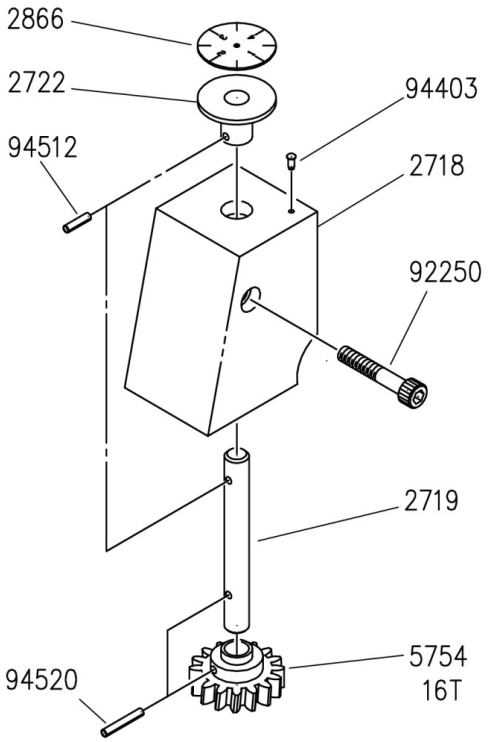


THREADING DIALS

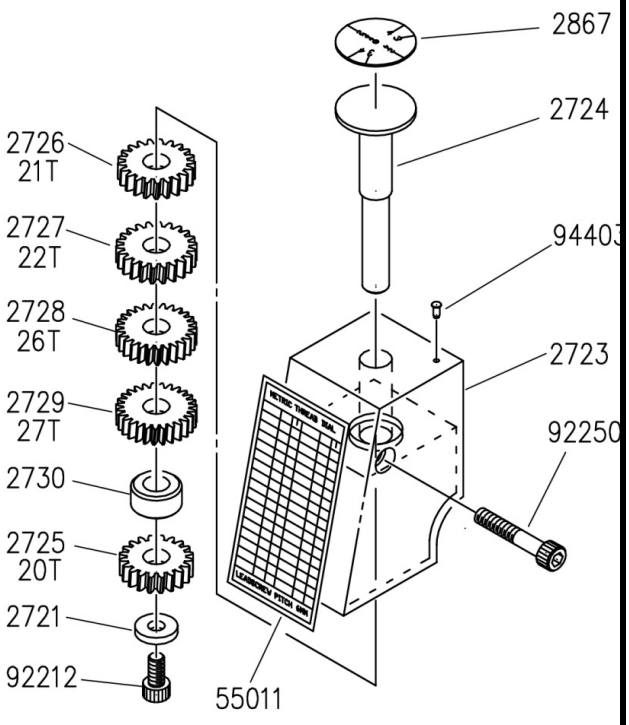
LEADSCREW PITCH 8TPI



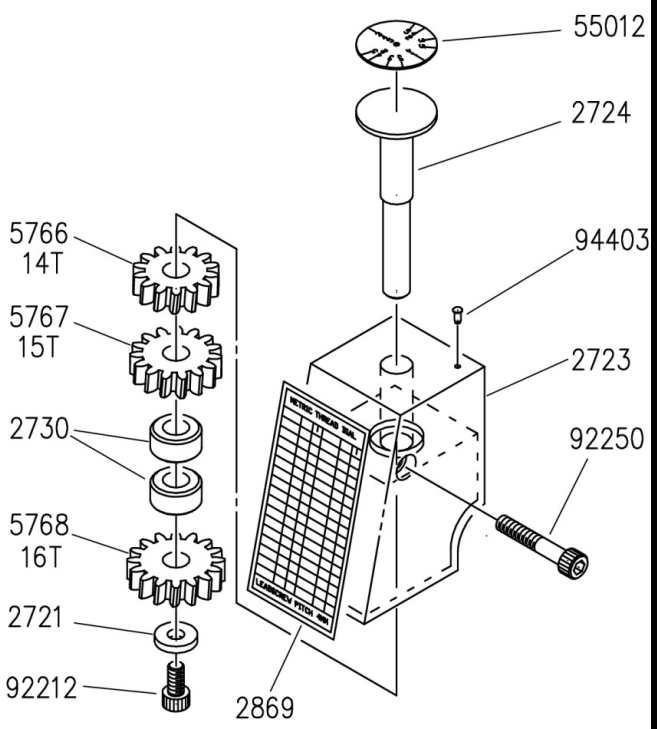
LEADSCREW PITCH 4TPI



LEADSCREW PITCH 4MM



LEADSCREW PITCH 6MM



PART NUMBER – NAME REFERENCE

Part No.	Description	Quantity	Part No.	Description	Quantity
2101	Main casting	1	2148	Cover	1
2102	Cover	1	2149	Gear 2M 42T	1
2104	Shaft	1	2150	Collar	1
2105	Cover	1	2151	Gear 2M 32T	1
2106	Pulley	1	2152	Collar	1
2107	Washer	1	2153	Gear 2M 32T	1
2108	Gear 2M 38T	1	2156	Shaft	1
2109	Gear 2M 23T	1	2157	Cover	1
2110	Collar	1	2158	Gear 2M 38T	1
2111	Gear 2M 30T	1	2159	Bracket	1
2112	Gear 2M 46T	1	2161	Rang selector	1
2113	Collar	2	2162	Rang selector	1
2114	Bore plug	3	2163	Collar	2
2117	Shaft	1	2164	Shaft	1
2118	Cover	1	2165	Pin	1
2119	Gear 2M 31T	1	2166	Lever	1
2120	Gear 2M 47T	1	2167	Gear 1.5M 35T	1
2121	Gear 2M 54T	1	2168	Gear 1.5M 45T	1
2122	Gear 2M 39T	1	2169	Shaft	2
2123	Collar	1	2170	Shift lever	1
2124	Collar	1	2171	Shift lever	1
2125	Gear 2M 21T	1	2172	Shift fork	2
2126	Gear 2M 60T	1	2173	Lever	4
2127	Bore plug	1	2174	Lever	3
2131	Spindle	1	2175	Handle	5
2132	Nut	1	2176	Collar	1
2133	Cover	1	2177	Handle	2
2134	Cover	1	2178	Shaft	1
2135	Collar	1	2179	Shift lever	1
2136	Gear 2M 82T	1	2180	Shift fork	1
2137	Gear 2M 43T	1	2181	Collar	1
2138	Gear 2M 38T	1	2182	Shift lever	1
2141	Shaft	1	2183	Shift fork	1
2142	Gear 2M 21T	1	2184	Collar	1
2143	Gear 2M 32T	1	2186	Stud	1
2144	Gear 2M 32T	1	2187	Stud	1
2147	Shaft	1	2188	Lever	1

Part No.	Description	Quantity	Part No.	Description	Quantity
2201	Casting (INCH)	1	2239	Shaft	1
2201	Front cover	1	2240	Shaft	1
2204	Shaft	1	2241	Shaft	1
2205	Cover	3	2242	Fl . brg.	1
2206	Gear 1.75M 26T	1	2243	Gear 1.75M 36T	1
2207	Gear 2M 20T	1	2244	Gear 1.75M 21T	1
2208	Gear 2M 18T	1	2245	Nut	1
2209	Gear 2M 16T	1	2248	Handle	3
2210	Collar	1	2249	Gear 1.25M 20T	1
2211	Gear 2M 16T	1	2250	Shaft	1
2214	Shaft	1	2251	Gear 1.25M 28T	1
2215	Cover	1	2252	Lever	1
2216	Gear 1.75M 24T 2M 24T	1	2253	Fork	
2219	Shaft	1	2255	Handle	3
2220	Gear 1.75M 28T	1	2256	Shaft	2
2221	Gear 2M 24T	1	2257	Lever	1
2222	Gear 2M 22T	1	2258	Lever	1
2223	Gear 2M 23T	1	2259	Fork	2
2224	Gear 2M 18T	1	2261	Casting(METRIC)	1
2226	Shear pin	1	2263	Shaft	1
2227	Shaft	1	2264	Shaft	1
2228	Cover	1	2265	Shaft	1
2229	Nut	2	2266	Shaft	1
2230	Gear 1.75M 32T	1	2269	Collar	1
2231	Collar	1	2270	Collar	1
2232	Gear 1.75M 16T	1	2271	Washer	1
2233	Collar	1			
2236	Shaft	1			
2237	Gear 1.75M 32T 1.75M 16T	1			
2238	Gear 2M 24T 2M 27T	1			

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

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 scews	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	
2502	Top slide	
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	Bolt	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	1
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	
2608	Keep	
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

Part No.	Description	Quantity	Part No.	Description	Quantity
2626	Keep	1	2733	Set-over pad	1
			2734	Screws	2
2701	Bed	1	2735	Swing Frame	1
2702	Gap piece	1	2736	Swing Frame	1
2703	Bracket	1	2737	Washer	1
2704	Leadscrew	1	2738	Shaft	1
2705	Feed shaft	1	2739	Shaft collar	1
2706	Third-rod shaft	1	2740	Washer	1
2707	Rack	1	2741	Gear 1.25M 120T	1
2708	Bracket	1		1.25M 127T	1
2709	Sleeve	1	2742	Gear 1.25M 25T	1
2710	Fork	1	2743	Gear 1.25M 50T	1
2711	Handle	1	2744	Gear 1.25M 40T	2
2712	Collar	1	2745	Gear 1.25M 30T	1
2713	Collar	1	2746	Gear 1.25M 32T	1
2714	Pin	1	2748	Washer	2
2715	Box	1	2749	Gear 1.25M 45T	1
2716	Perspex cover	1	2750	End cover	1
2717	Box	1	2751	Stud	1
2718	Guard	1	2752	Nut	1
2719	Shaft	1	2753	Stopper	1
2720	Gear 1M 32T	1	2754	Plug (Headstock)	2
2721	Washer	6	2755	Plug (Apron)	1
2722	Collar	1	2756	Gear 1.25M 24T	1
2723	Guard	1	2757	Gear 1.25M 60T	1
2724	Shaft	1	2758	Gear 1.25M 65T	1
2725	Gear 1.25M 20T	1	2759	Gear 1.25M 66T	1
2726	Gear 1.25M 21T	1	2760	Gear 1.25M 70T	1
2727	Gear 1.25M 22T	1	2761	Box	1
2728	Gear 1.25M 26T	1	2762	End cover	1
2729	Gear 1.25M 27T	1	2763	Bearing cover	1
2730	Collar	1	2764	Sliping clutch	1
2732	Dog	1	2765	Bush	1
			2766	Collar	1
			2767	Collar	1
			2768	Clutch	1
			2769	Collar	1

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	1
2829	Bolt	2
2830	Cover	1
2901	Cam	3
2902	Pin	3
2903	Stud	3
2904	Camlock wrench	1
2915	Center sleeve	1

91121	Bearing No.6003
91122	Bearing No.6003Z
91123	Bearing No.6004
91125	Bearing No.6005
91131	Bearing No.6202
91133	Bearing No.6204
91135	Bearing No.6205
91532	Bearing No.30210
91543	Bearing No.32211
91544	Bearing No.32212
91812	Thrust No.51101
91813	Thrust No.51102
91814	Thrust No.51103
91815	Thrust No.51104
91816	Thrust No.51105
91823	Thrust No.51202
91824	Thrust No.51203
91841	Thrust No.2901
91842	Thrust No.2902
91843	Thrust No.2903
91844	Thrust No.2904

92116	Socket head cap screw M5×16mm
92130	Socket head cap screw M5×30mm
92145	Socket head cap screw M5×45mm

92210	Socket head cap screw M6×10mm
92212	Socket head cap screw M6×12mm
92216	Socket head cap screw M6×x16mm
92220	Socket head cap screw M6×20mm
92225	Socket head cap screw M6×25mm
92230	Socket head cap screw M6×30mm
92235	Socket head cap screw M6×35mm
92240	Socket head cap screw M6×40mm
92245	Socket head cap screw M6×45mm
92250	Socket head cap screw M6×50mm
92255	Socket head cap screw M6×55mm

92312	Socket head cap screw M8×12mm
92316	Socket head cap screw M8×16mm
92320	Socket head cap screw M8×20mm
92330	Socket head cap screw M8×30mm
92335	Socket head cap screw M8×35mm
92340	Socket head cap screw M8×40mm
92345	Socket head cap screw M8×45mm
92350	Socket head cap screw M8×50mm
92370	Socket head cap screw M8×70mm

92425	Socket head cap screw M10×25mm
92430	Socket head cap screw M10×30mm
92435	Socket head cap screw M10×35mm
92440	Socket head cap screw M10×40mm
92445	Socket head cap screw M10×45mm
92525	Socket head cap screw M12×25mm
92535	Socket head cap screw M12×35mm
92540	Socket head cap screw M12×40mm

92706	Set screw M6×6mm
92708	Set screw M6×8mm
92710	Set screw M6×10mm
92712	Set screw M6×12mm
92716	Set screw M6×16mm
92720	Set screw M6×20mm
92725	Set screw M6×25mm

92808	Set screw M8×8mm
92814	Set screw M8×14mm
92012	Set screw M1×12mm

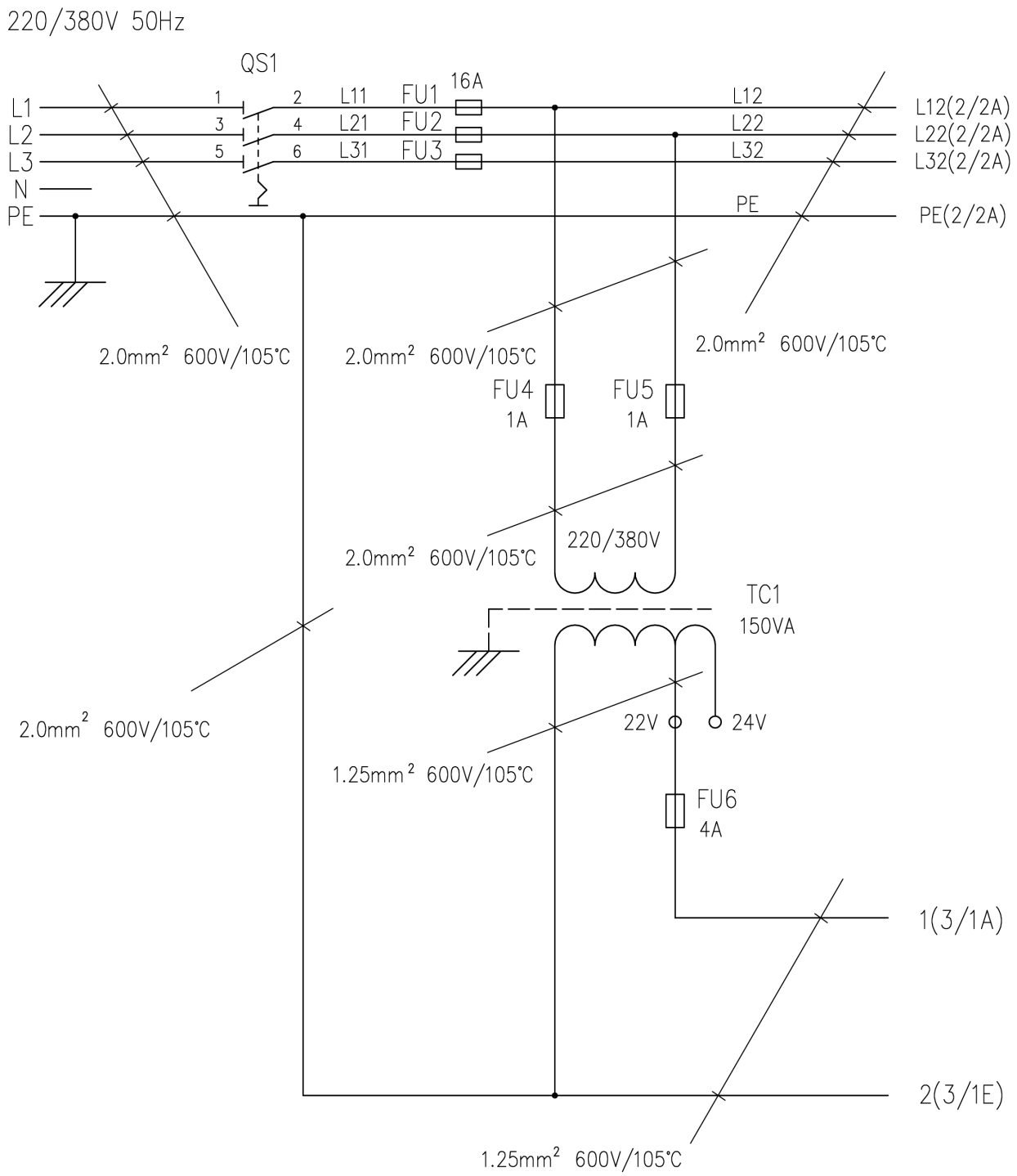
93112	Cap screw 1/4×1-1/4 in
93314	Cap screw 3/8×1-1/2 in
93320	Cap screw 3/8×2 in
93324	Cap screw 3/8×2-1/2 in
93330	Cap screw 3/8×3 in
93406	Cap screw 1/2×3/4 in
93412	Cap screw 1/2×1-1/4 in
93414	Cap screw 1/2×1-1/2 in
93416	Cap screw 1/2×1-3/4 in
93420	Cap screw 1/2×2 in
93424	Cap screw 1/2×2-1/2 in
93430	Cap screw 1/2×3 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 1/8×1/4 in
94103	Screw 1/8×3/8 in
94202	Screw 3/16×1/4 in
94203	Screw 3/16×3/8 in
94303	Screw 1/4×3/8 in
94308	Screw 5/32×3/16 in
94403	Nial 2mm
94409	Screw 1/4×1mm
94508	Pin 3×8 mm
94512	Pin 3×12mm
94520	Pin 3×20mm
94524	Pin 3×24mm
94612	Pin 5×12mm
94616	Pin 5×16mm
94620	Pin 5×20mm
94625	Pin 5×25mm
94630	Pin 5×30mm
94634	Pin 5×34mm
94635	Pin 5×35mm
94636	Pin 5×36mm
94640	Pin 5×40mm
94645	Pin 5×45mm
94650	Pin 5×50mm
94660	Pin 5×60mm
94830	Taper pin 4×30mm
94838	Taper pin 4×38mm

95110	Key 4×10mm
95115	Key 4×15mm
95120	Key 4×20mm
95140	Key 4×40mm
95210	Key 5×10mm
95212	Key 5×12mm
95215	Key 5×15mm
95220	Key 5×20mm
95225	Key 5×25mm
95230	Key 5×30mm
95235	Key 5×35mm
95240	Key 5×40mm
95244	Key 5×44mm
95245	Key 5×45mm
95250	Key 5×50mm
92260	Key 5×60mm
95270	Key 5×70mm
95310	Key 6×10mm
95315	Key 6×15mm
95325	Key 6×25mm
95375	Key 6×75mm
95390	Key 6×90mm
95397	Key 6×110mm
95398	Key 6×115mm

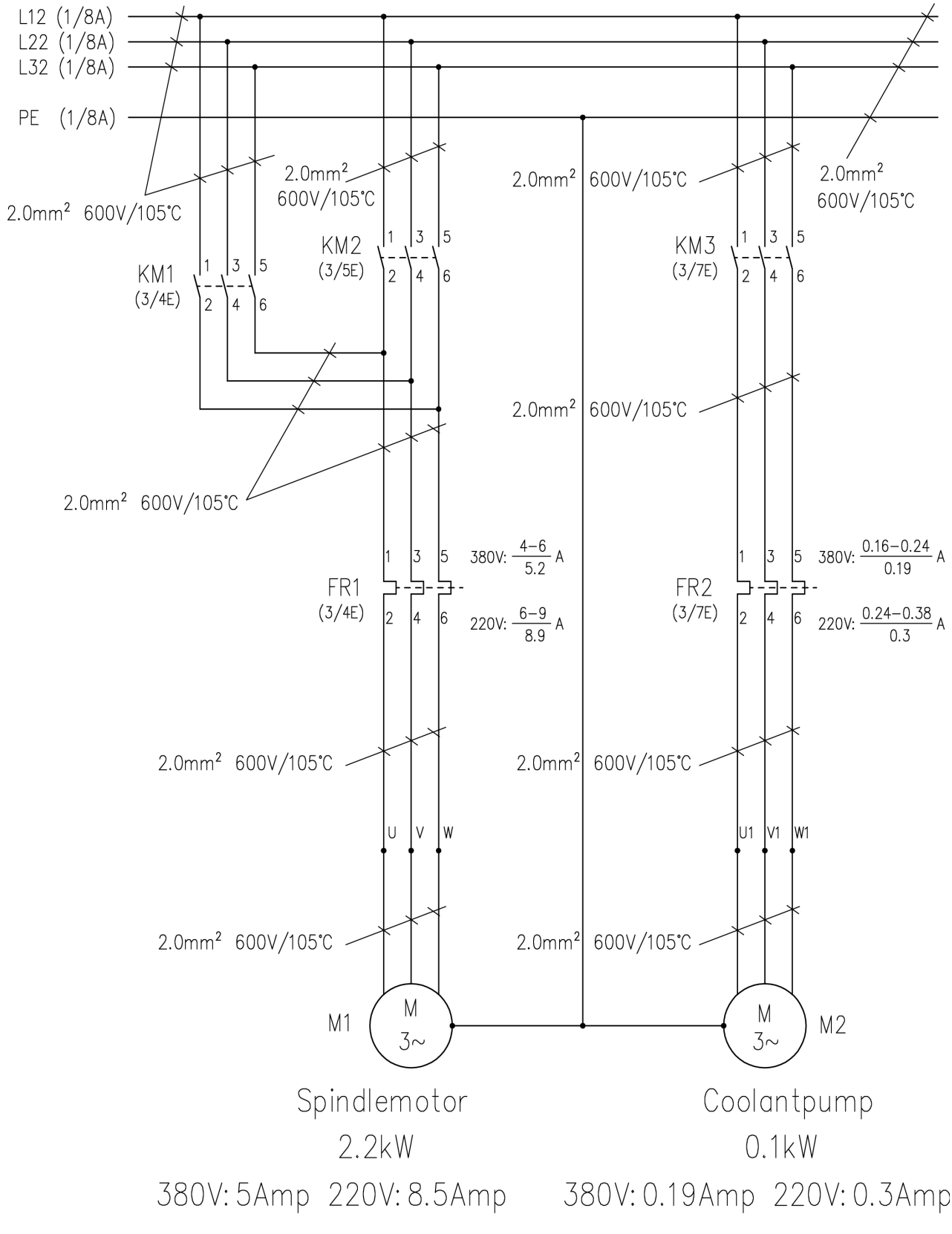
95420	Key 7×20mm
95440	Key 7×40mm
95450	Key 7×50mm
95460	Key 7×60mm
95520	Key 8×20mm
95530	Key 8×30mm
95540	Key 8×40mm
95550	Key 8×50mm
95560	Key 8×60mm
95570	Key 8×70mm
95712	Circlip S-12mm
95715	Circlip S-15mm
95716	Circlip S-16mm
95718	Circlip S-18mm
95720	Circlip S-20mm
95725	Circlip S-25mm
95730	Circlip S-30mm
95738	Circlip S-38mm
95740	Circlip S-40mm
95750	Circlip S-50mm
95755	Circlip S-55mm
95835	Circlip R-35mm
95847	Circlip R-47mm
95906	Circlip E-6mm
95912	Circlip E-12mm
95915	Circlip E-15mm
95919	Circlip E-19mm
96103	Oil seal TC 25×45×11mm
96104	Oil seal TC 25×40×8mm
96308	O-ring 8×12×2mm
96311	O-ring 11×16×2.5mm
96314	O-ring 14×19×2.5mm
96320	O-ring 20×25×2.5mm
96324	O-ring 24×30×3.0mm
96325	O-ring 25×31×3.0mm
96334	O-ring 34×40×3.0mm
96338	O-ring 38×45×3.5mm
96343	O-ring 43×51×4.0mm
96344	O-ring 44×50×3.0mm
96358	O-ring 58×64×3.0mm
96519	Oil sight 3/4 in. (19mm.)
96528	Oil sight 1-1/8 in.(28mm.)
96603	Plug 3/8 G.P.
96616	Plug 3/4 in.(P.V.C)
96703	Plug 3/8 G.P.
96704	Plug 1/2 G.P.
96803	Elbow 3/8 G.P.
97115	Spring 3/16 in. × 15mm
97208	Spring 1/4 in. × 8mm
97210	Spring 1/4 in. × 10mm
97220	Spring 1/4 in. × 20mm
97225	Spring 1/4 in. × 25mm
97230	Spring 1/4 in. × 30mm
97235	Spring 1/4 in. × 35mm
97250	Spring 1/4 in. × 50mm
97420	Spring 3/8 in. × 20mm
97430	Spring 3/8 in. × 30mm
97435	Spring 3/8 in. × 35mm
97440	Spring 3/8 in. × 40mm
97460	Spring 3/8 in. × 60mm

97611	**Spring**
97621	**Spring**
97801	**Ball steel 1/4 in. dia**
97803	**Ball steel 3/8 in. dia**
97901	**Oil 1/4 in**
97902	**Oil 5/16 in**
98175	**Belts Vee A-75 in**
98713	**Handle 3/8 in.(black)**
98723	**Handle 3/8 in.(red)**
98902	**Brake shose assy.**
99211	**Gasket**
99212	**Gasket**
99213	**Gasket**
99214	**Gasket**
99215	**Gasket**
99216	**Gasket**
99217	**Gasket**
99221	**Gasket**
99222	**Gasket**
99223	**Gasket**
99224	**Gasket**
99225	**Gasket**

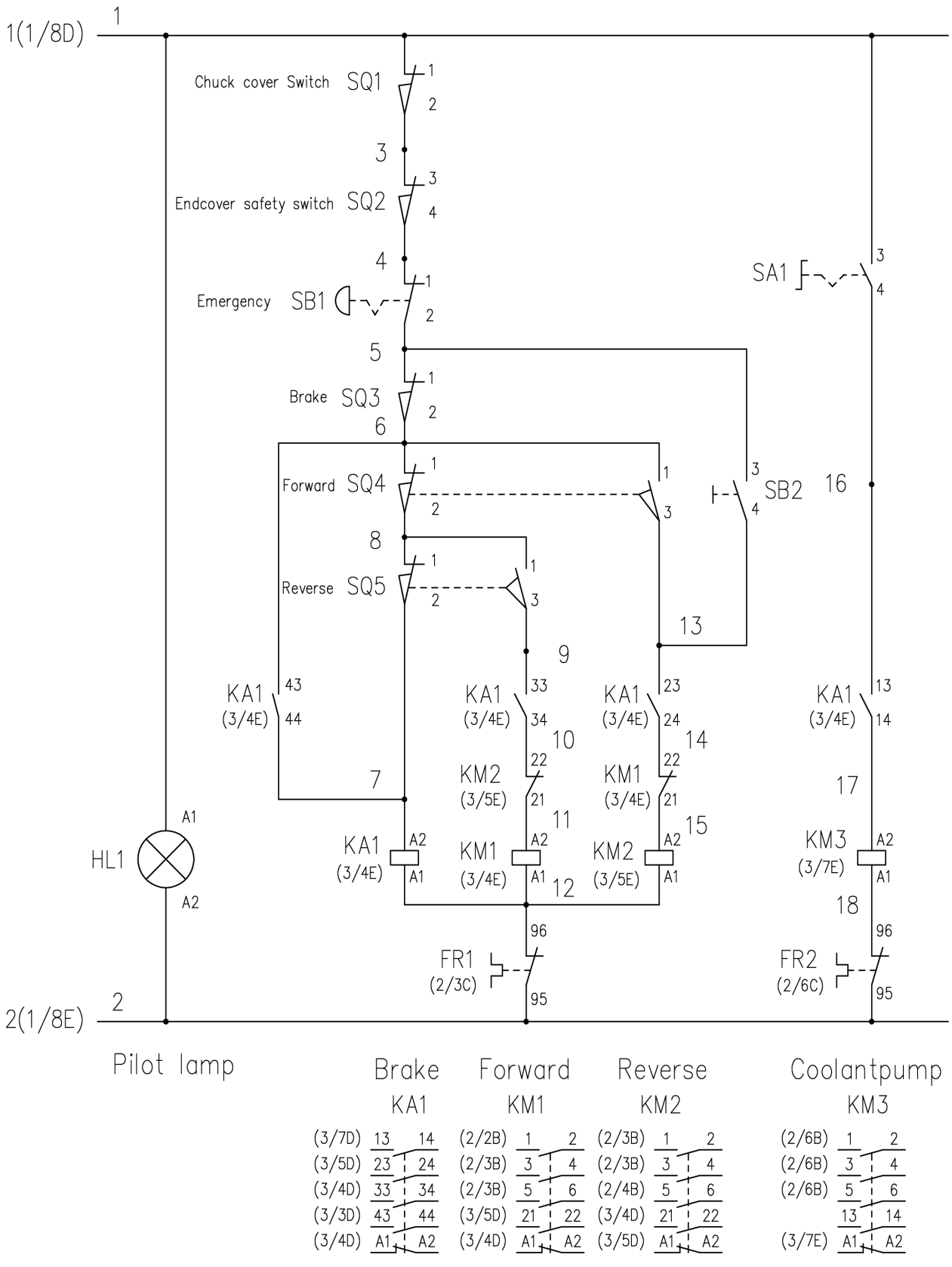
CIRCUIT DIAGRAM



CIRCUIT DIAGRAM



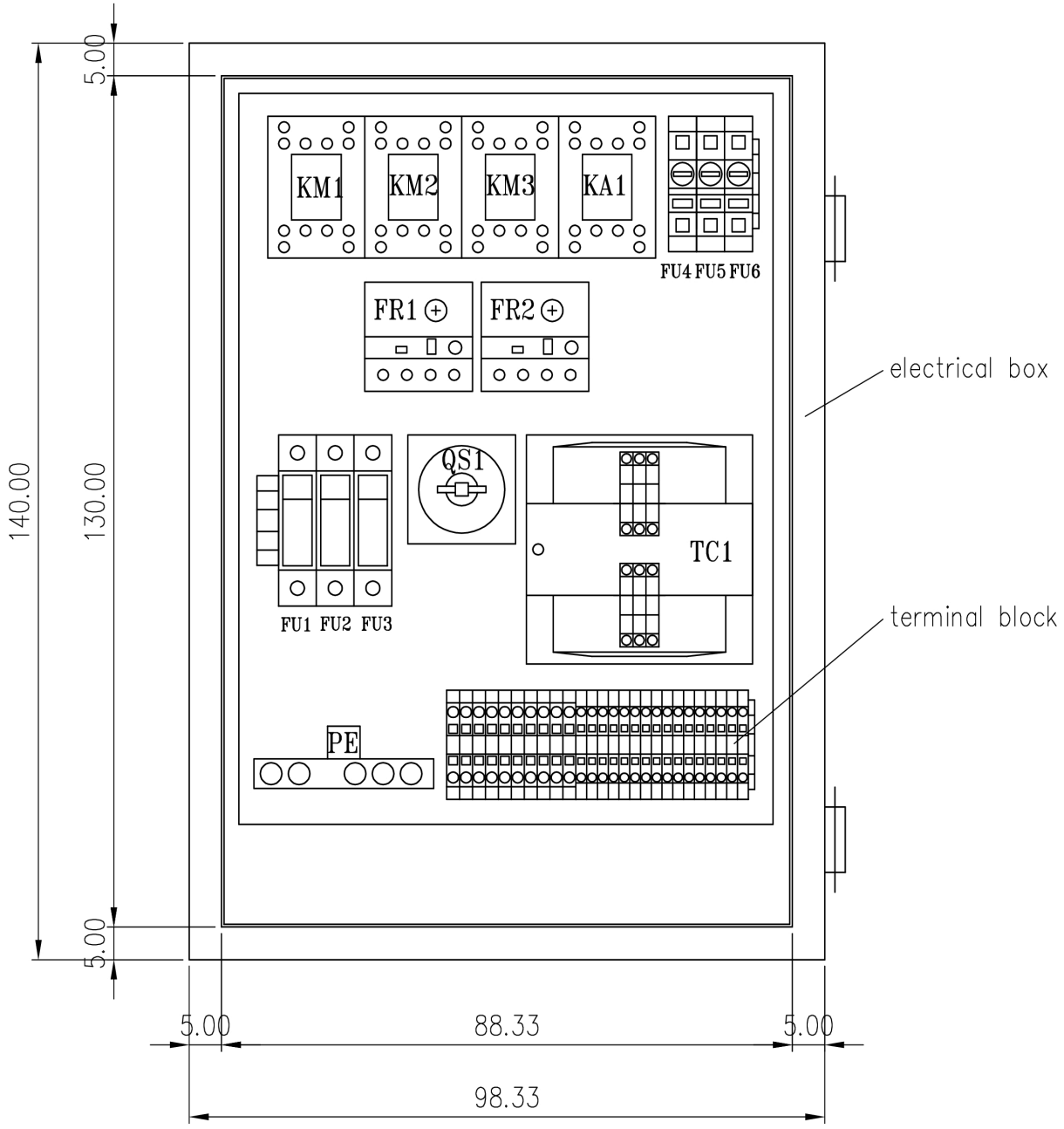
CIRCUIT DIAGRAM



(Manufacturer)SHYE SHENG	SCHEDULE OF ELECTRICAL EQUIPMENT	Page 4
Order		
Precision Center Lathe Type SSM 1330,1340,1430,1440	See also list	Drawn 30/11/94 YEH Checked 30/11/94 KAO

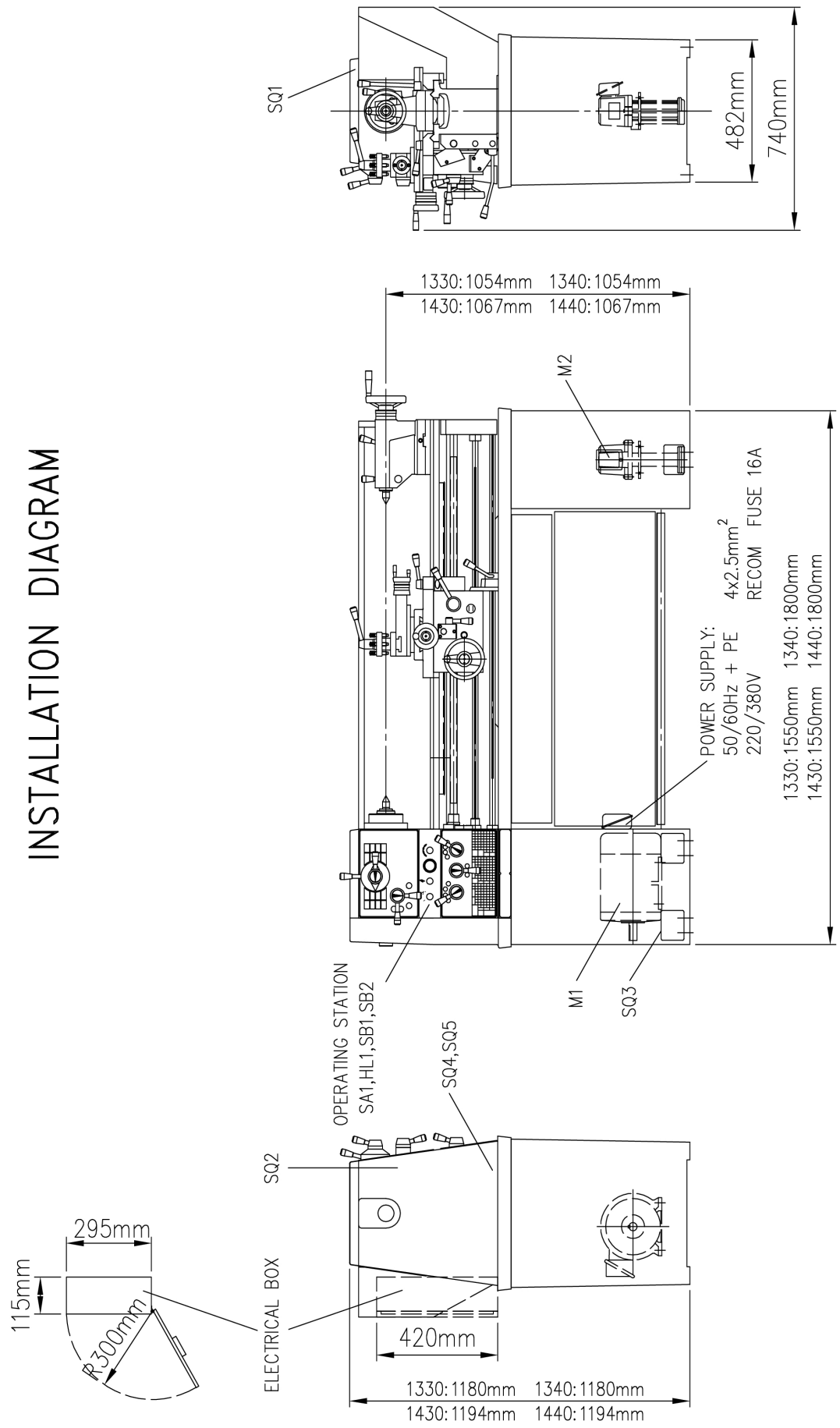
Item designation	Circuit	Description and function	Technical data	Quantity	Supplier	Suppliers reference	Remarks
KM1	2.3	Magnetic contactor for main motor reverse	Ue=380V~ coil 50Hz 22V~ 60Hz 24V~ AC3Ith=ACI=25A Ui 660V~ 3<<a>>+1<<b>>	1	TAIAN	CN-16	VDE 0660 IEC 947-4-1 BS 5424
KM2	2.3	Magnetic contactor for main motor forward		1	TAIAN	CN-16	VDE 0660 IEC 947-4-1 BS 5424
KM3	2.3	Magnetic contactor for coolantpump	Ue=380V~ Ui 660V~ coil 50Hz 22V~ 4<<a>> 60Hz 24V~ AC3Ith=ACI=25A	1	TAIAN	CN-11	VDE 0660 IEC 947-4-1 BS 5424
KA1	3	Magnetic contactor for brake	Ue=22V Ith=6A 4<<a>>	1	TAIAN	RAN-4	VDE 0660 IEC 947-4-1 BS 5424
FU1 FU2 FU3	1	Fuse boxs	10m/m×38m/m 100KA 500V aM16A	1	LEGRAND	133-10	IEC 269-2
FU4	1	Fuse box	20mm 250V 1A	1	WAGO	282-122	VDE 0660 IEC 947
FU5	1	Fuse box	20mm 250V 1A	1	WAGO	282-122	VDE 0660 IEC 947
FU6	1	Fuse box	20mm 250V 4A	1	WAGO	282-122	VDE 0660 IEC 947
FR1	2.3	Thermal overload relay for main motor	380V: $\frac{4-6}{5.2}$A 220V: $\frac{6-9}{8.9}$A	1	TAIAN	RHN-18	VDE 0660 IEC 947-4-1 BS 4941
FR2	2.3	Thermal overload relay for coolantpump	380V: $\frac{0.16-0.24}{0.19}$A 220V: $\frac{0.24-0.38}{0.3}$A	1	TAIAN	RHN-18	VDE 0660 IEC 947-4-1 BS 4941
QS1	1	Main power switch	Ui 380V~ Ith 20A	1	KLOCKNER MOELLER	TO-2-1/V/SVB	VDE 0660 IEC 947 BN 60947
HL1	3	Pilot light	22Ø VCH24V 2W	1	TELEMECANIQUE	XB2-BV63	VDE 0660 IEC 947-5-1 EN 60947-5-1
TC1	1	Control circuit Transformer	Prim 220V/380V Sec. 22V,24V,150VA	1	TAIAN	TA-300	
SA1	3	Selecting switch	22Ø 600V 10A	1	TELEMECANIQUE	XB2-BD21	VDE 0660 IEC 947-5-1 EN 60947-5-1
SB1	3	Off hand switch Emergency	22Ø 600V 10A	1	TELEMECANIQUE	XB2-BS542	VDE 0660 IEC 947-5-1 EN 60947-5-1
SB2	3	Push button switch (jogging switch)	22Ø 600V 10A	1	TELEMECANIQUE	XB2-BA21	VDE 0660 IEC 947-5-1 EN 60947-5-1
SQ1	3	Chuck guard switch	500V 6KV 10A	1	TELEMECANIQUE	XCK-P102	VDE 0660 IEC 947-5-1 EN 60947-5-1
SQ2	3	Limit switch Endcover safety switch	500V 6KV 10A	1	KLOCKNER MOELLER	ATO-11-1-I	VDE 0660 IEC 947 BN 60947
SQ3	3	Limt switch for brake	250V 15A	1	OMRON	Z15GD-B	
SQ4	3	Limit switch for main motor forward	250V 15A	1	OMRON	Z15GD-B	
SQ5	3	Limit switch for main motor reverse	250V 15A	1	OMRON	Z15GD-B	
M1	2	Squirrel-cage motors Foot-mounted	50Hz,220/380V 1400 rev/min class E insulation 100L type ASEC,2.2kw	1	SEING	ASEC	
M2	2	Collantpump	50/60Hz,220/380V 2850/3400 rew/min type MT,0.1kw	1	MING YIH	MT	

LOCATION DIAGRAM

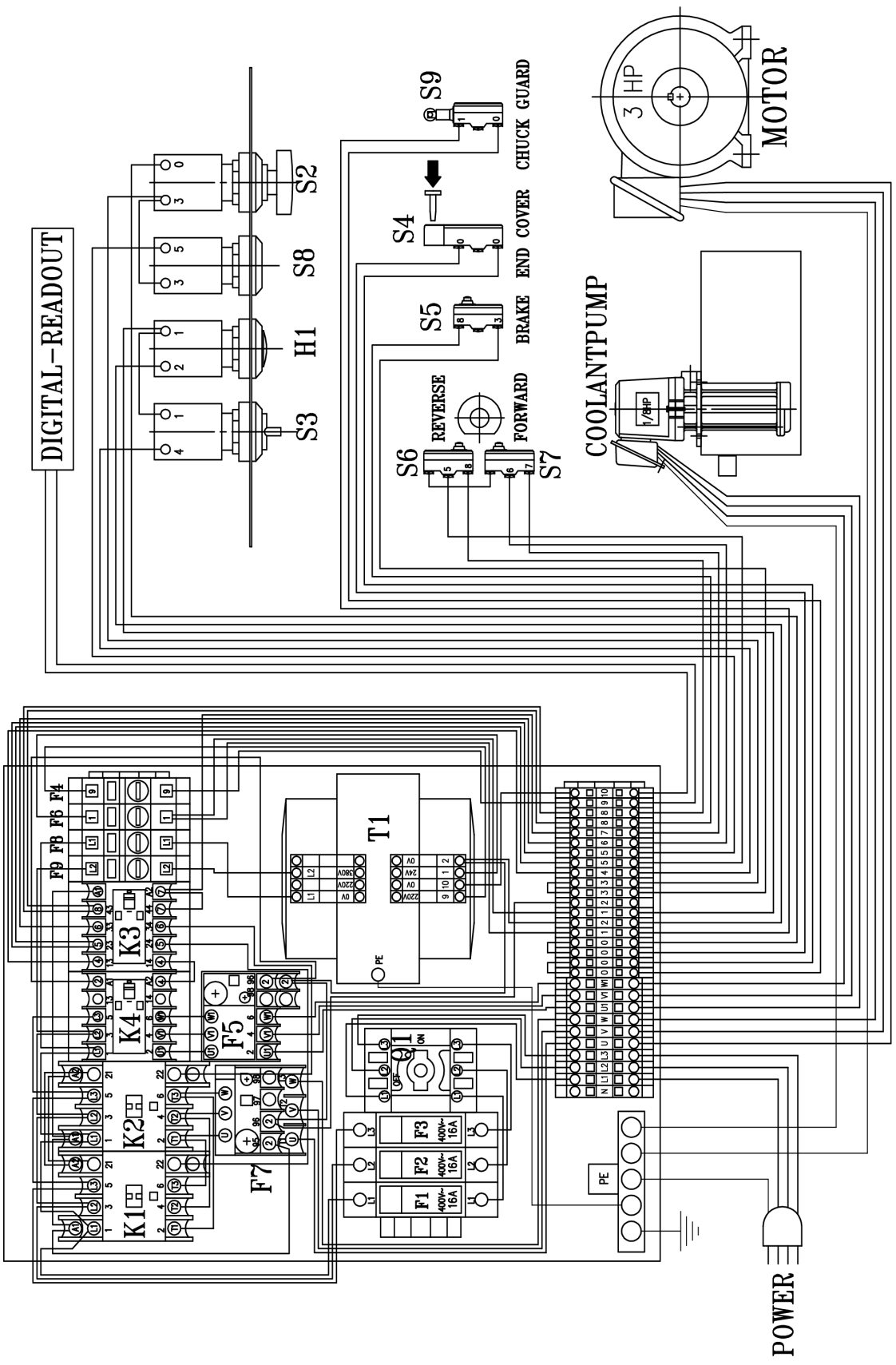


All dimensions given in millimetres

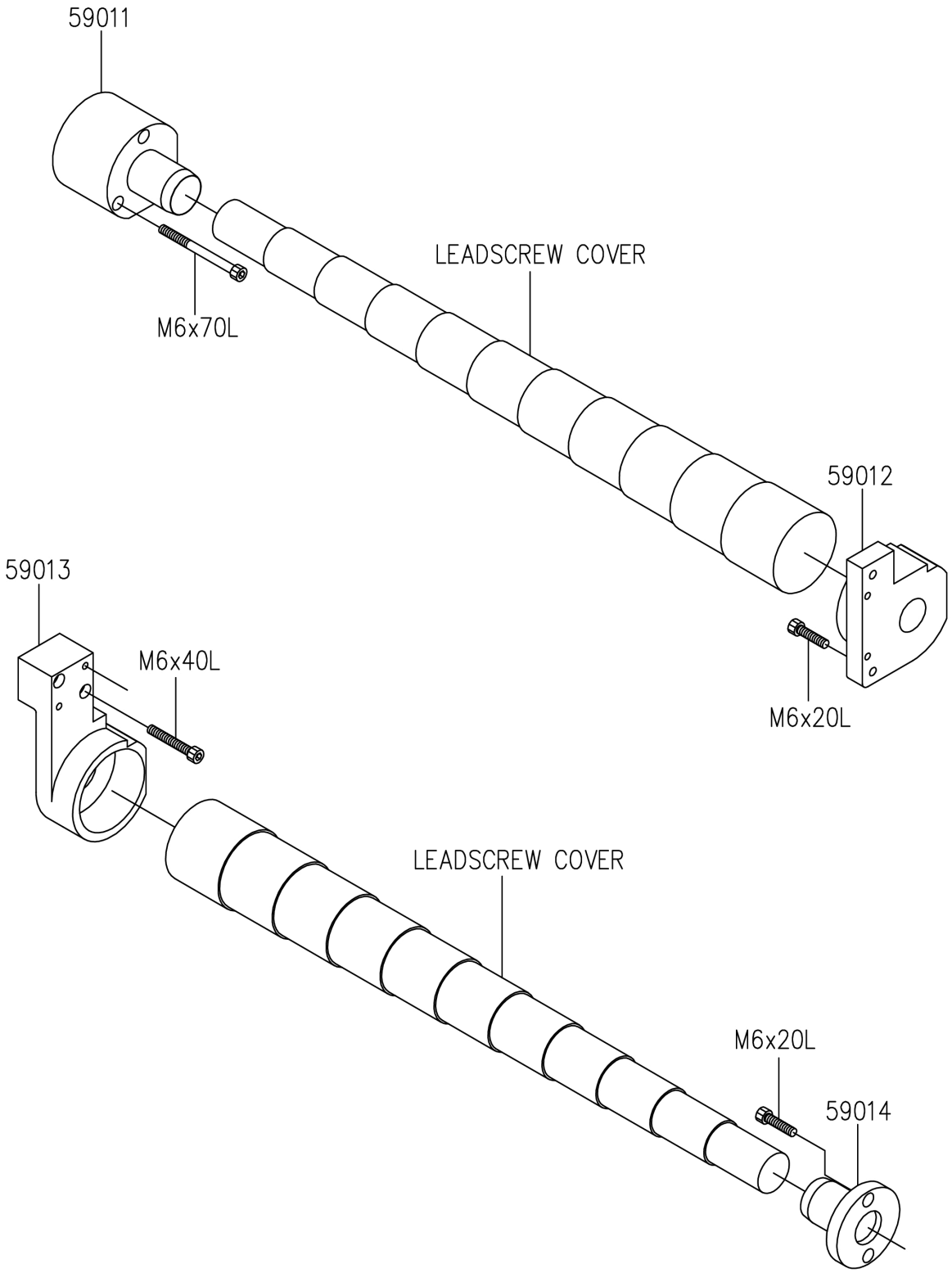
INSTALLATION DIAGRAM



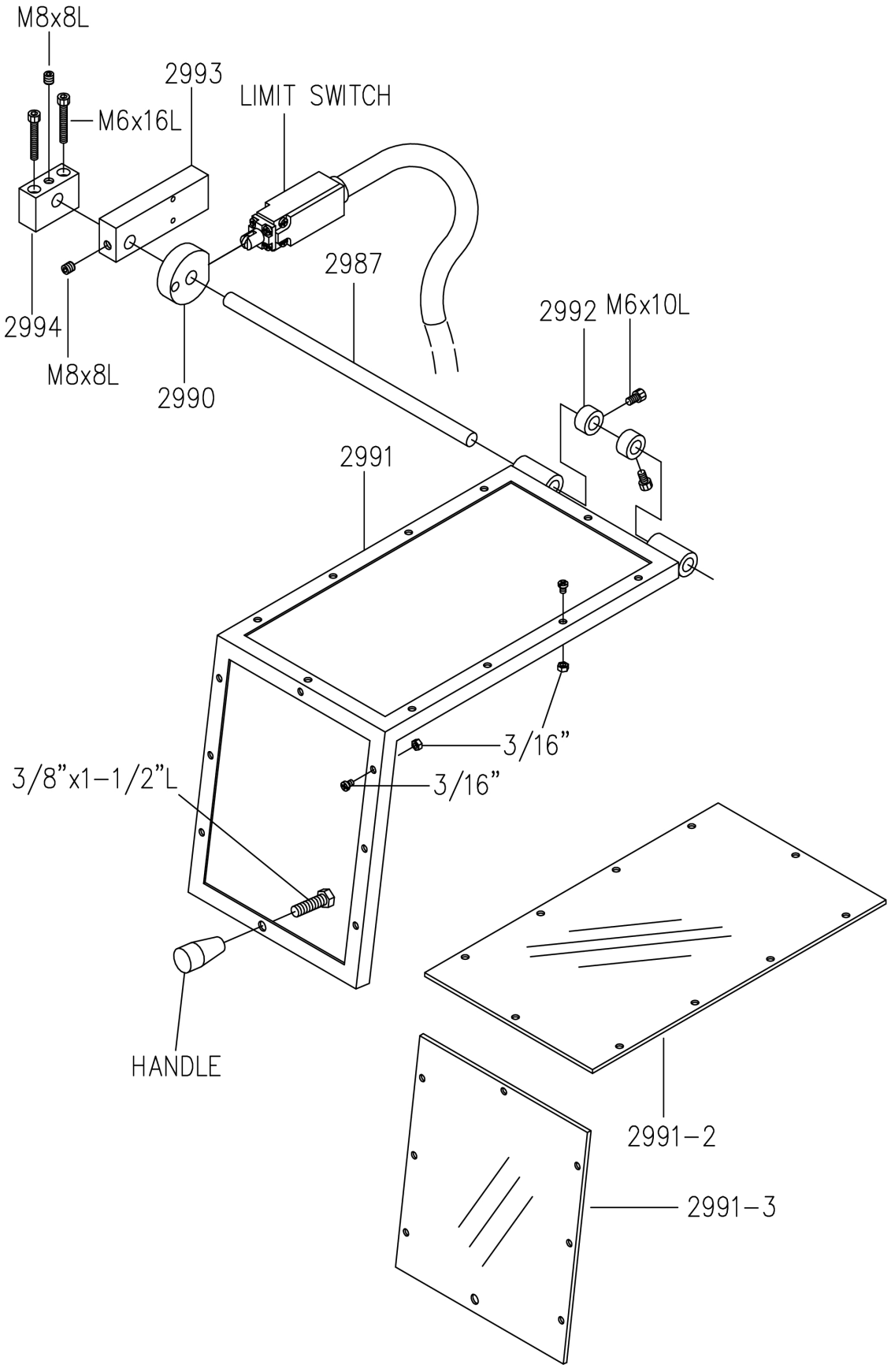
INSTALLATION DIAGRAM



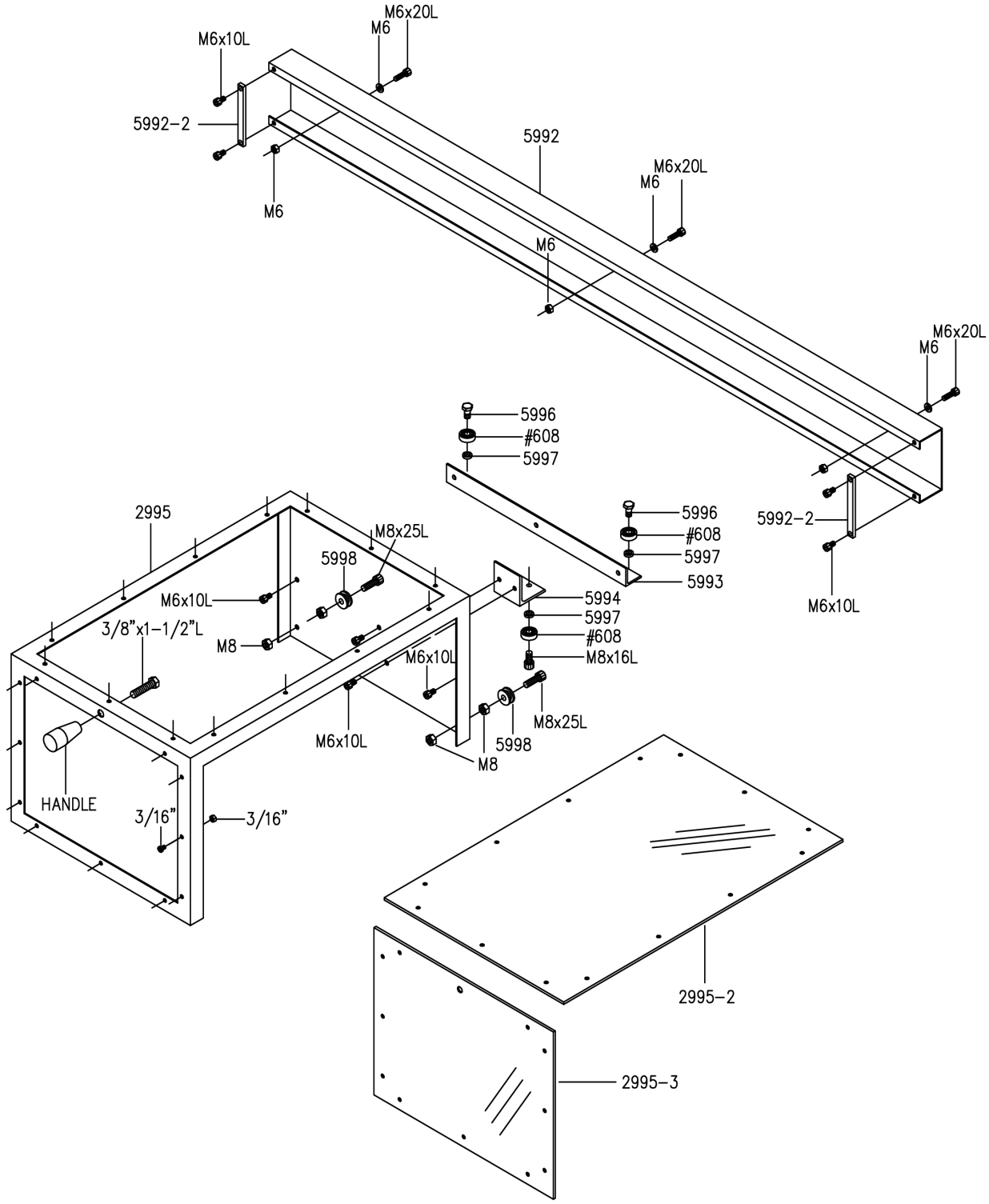
Leadscrew cover



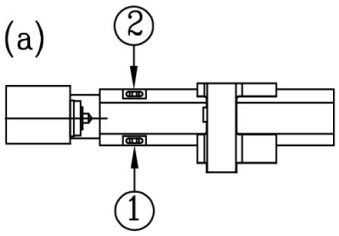
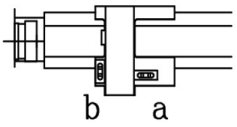
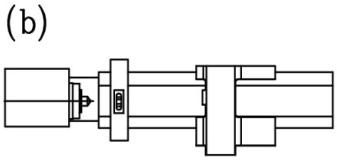
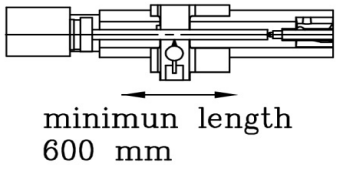
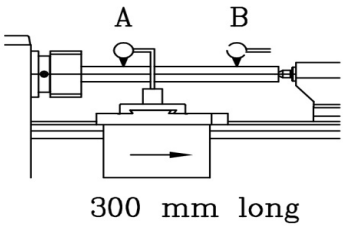
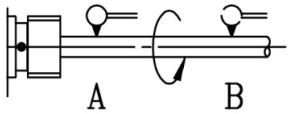
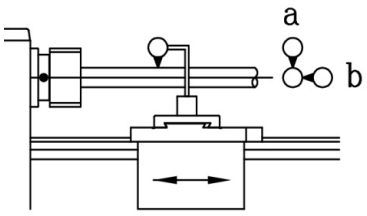
Chuck guard

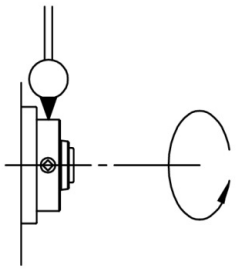
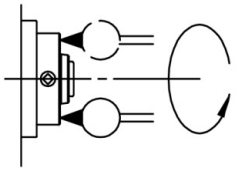
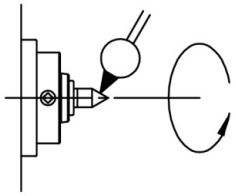
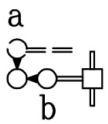
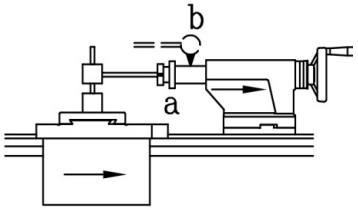
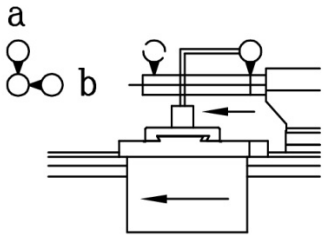

M8x8L
2993
LIMIT SWITCH
M6x16L
2987
2992
M6x10L
2994
M8x8L
2990
2991
3/16"
3/8"x1-1/2"L
3/16"
HANDLE
2991-2
2991-3

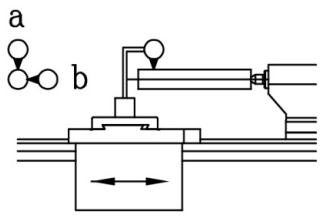
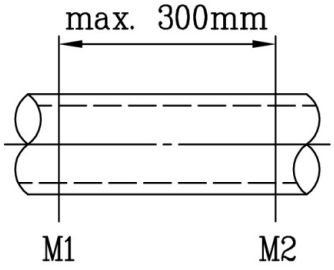
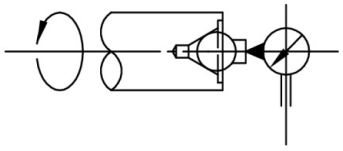
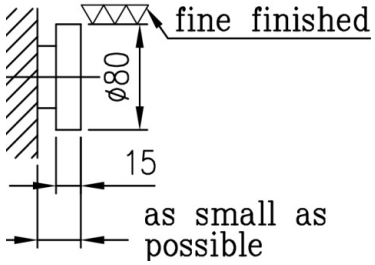
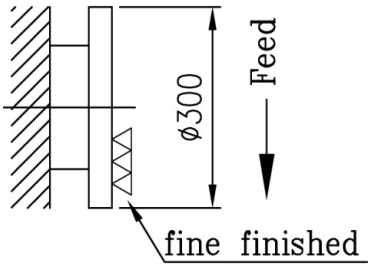
Toolpost guard



STATIC ACCURACY TEST

TYPE:			MACHINE SERIAL NO.		
NO.	SUBJECT OF MEASUREMENT		ILLUSTRATION	PERMISSIBLE ERROR	MEASURED ERROR
1.	Leveling of machine	(a) in longitudinal direction		(1) Front bedway 0.04	
		(b) in transverse direction	 	(2) Rear bedway +0.01 mm/m -0.02 mm/m	
				±0.02 mm/m	
2.	Traverse of carriage straight in horizontal plane			0.02 mm over length of test mandrel	
3.	Axis of centres parallel with bed in vertical plane			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	

NO.	SUBJECT OF MEASUREMENT		ILLUSTRATION	PERMISSIBLE ERROR	MEASURED ERROR
6.	Centring register of spindle runs true			0.01 mm	
7.	Spindle for axial float and true running of face of spindle flange			0.015mm	
8.	Centre runs true			0.15 mm	
9.	Traverse of carriage parallel with tailstock guideways	(a) in vertical plane		(a) 0.03/ 1000 mm	
		(b) in horizontal plane		(c) 0.02/ 1000 mm	
10.	Tailstock spindle parallel with carriage guides (carriage traverse)	(a) in vertical plane		(a) 0.01 mm	
		(b) in horizontal plane		(b) 0.01mm	

NO.	SUBJECT OF MEASUREMENT		ILLUSTRATION	PERMISSIBLE ERROR	MEASURED ERROR
11.	Taper in tailstock spindle parallel with carriage traverse	(a) in vertical plane		(a) 0.03/ 300 mm	
		(b) in horizontal plane		(c) 0.03/ 300 mm	
12.	Pitch accuracy of lead-screw			0.03/ 300mm	
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：		

WARRANTY

If within 1 year of purchase this machine supplied by HM Machinery A/S becomes defective due to faulty materials or workmanship we guarantee to repair or replace the machine or defective part or parts free of charge provided that:

1. The product is returned complete to one of our Service Branches or Official Service Agents.
2. The product has not been misused or carelessly handled and in particular has not been used in a manner contrary to the operating instructions.
3. Repairs have not been made or attempted by other than our own Service Staff or the staff of our Official Service Agents.
4. Documentary proof of purchase date is produced when the goods are handed in or sent for repair.
5. Wear parts are not covered by the warranty