

LEADER MACHINERY SALES

Operation Manual

Parts Lists and Drawings

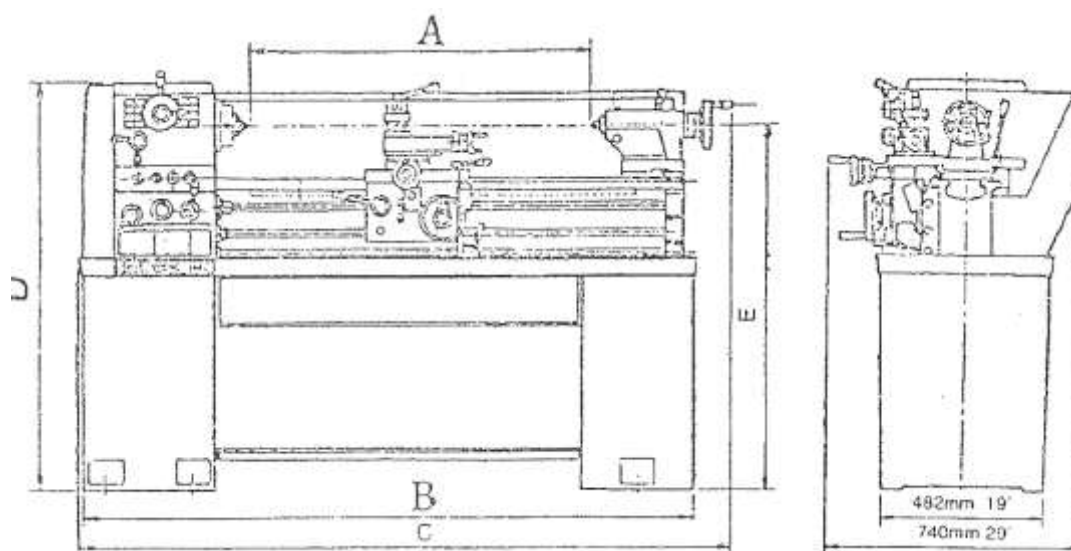


Model YCL-1340/1440
Model YCL-1440GH

Index

BRIEF SPECIFICATION	
GENERAL LAY OUT	
FOUNDATION PLAN	
INSTALLATION	
LIFTING	
CLEANING	
INSTALLATION	
LUBRICATION	
CHUCKS AND CHUCK MOUNTING	
OPERATION	
LATHE CONTROLS	
ELECTRICAL CONTROLS	
SPEED SONTROLS	
THREADS AND FEEDS	
THREADING DIAL INDICATOR.....	
APRON CONTROL	
CROSS-SLIDE AND TOP SLODE	
TAIL STOCK	
SERVICING AND MAINTENANCE	
LATHE ALIGNMENT.....	
END GER TRAIN	
DRIVING BELTS	
SLIDE WAYS MAINTENANCE	
CROSS-NUT	
LUBRICATION	
LUBRICATION DIAGRAM	
WIRING DIAGRAM.....	
PARTS LIST	
ASSEMBLY	

Brief Specification

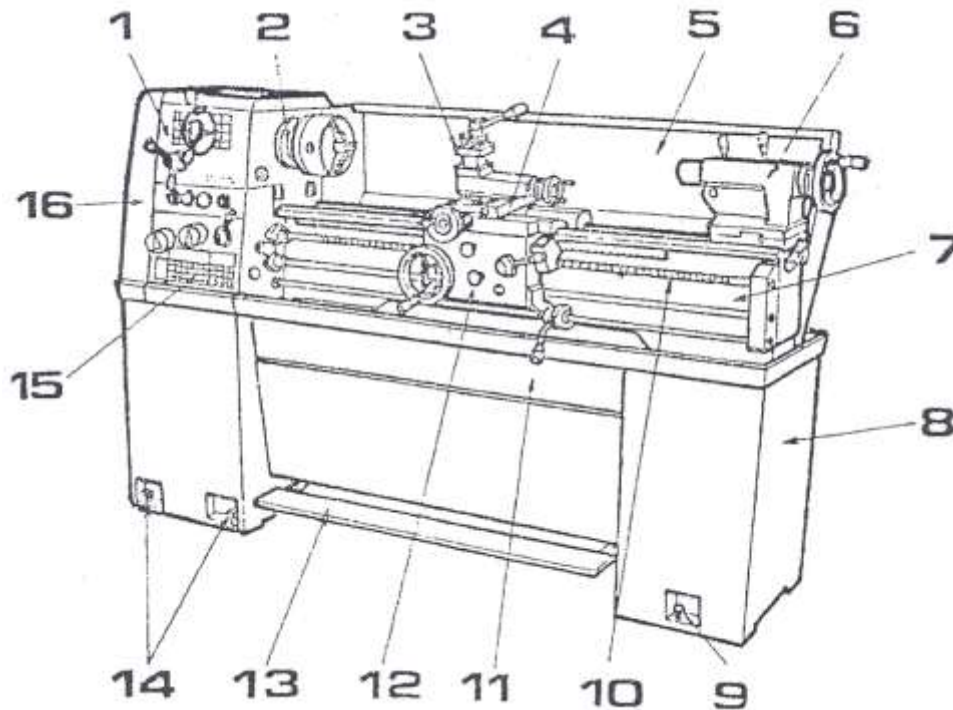


MODEL	A	B	C	D	E
1340	40"	71"	75 ½	46 ½	41 ½
1440	40"	71"	75 ½	47	41 ½

SPECIFICATIONS

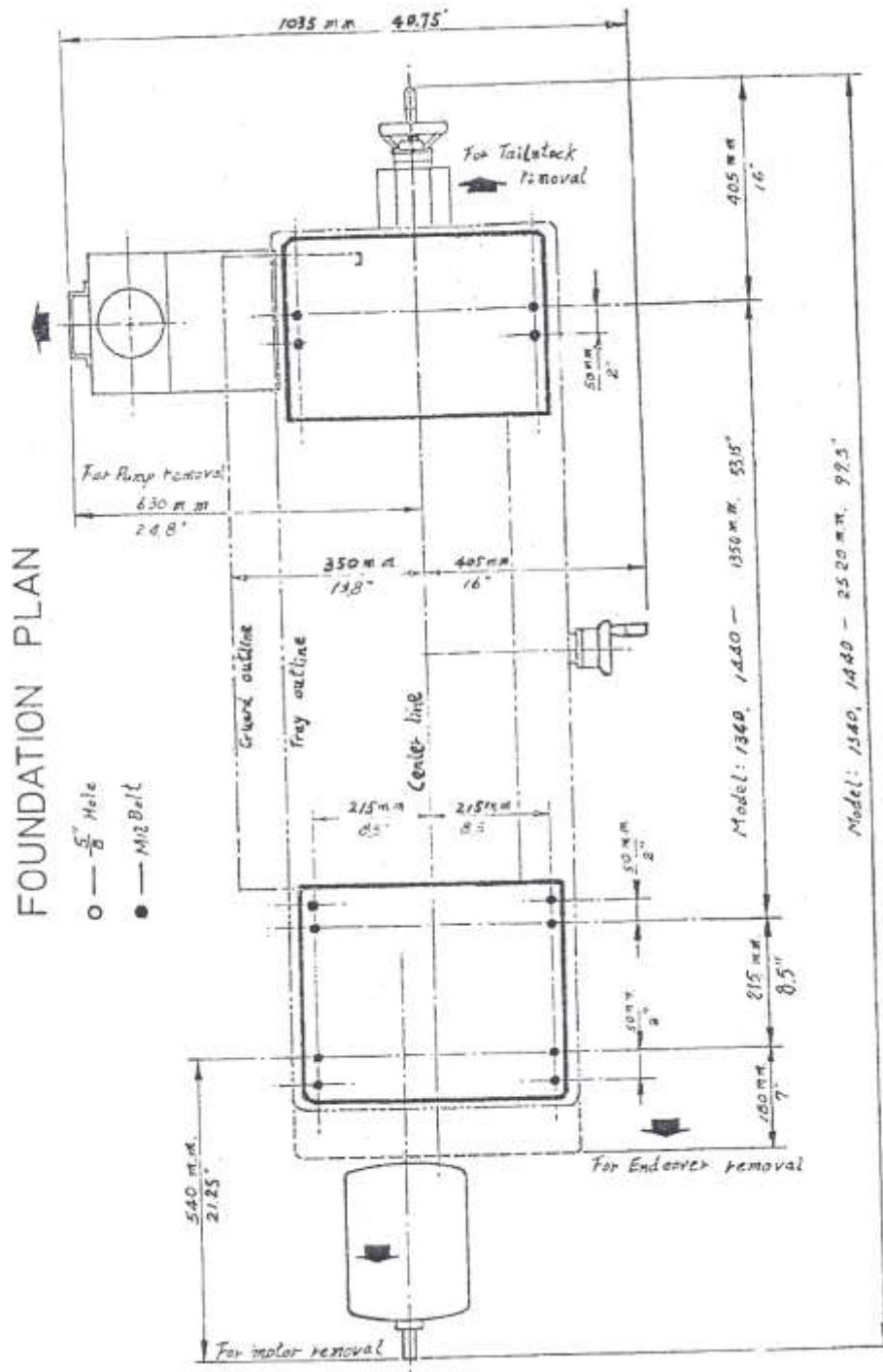
DESCRIPTION	INCH	
MODEL	1340	1440
SWING OVER BED	13"	14"
SWING OVER CROSSLIDE	7 5/8"	8 5/8"
DISTANCE BETWEEN CENTERS	40"	
SWING OVER GAP	19"	20"
WIDTH OF BED	8"	
NO. OF SPINDLE SPEEDS	8 STD (12 W OPT 2 SPEED MOTOR)	
SPEED RANGE	90 OR 45 -1800	
HOLE THROUGH SPINDE	1 ½"	
SPINDLE NOSE	D1-4 CAMLOCK	
TAPER OF SPINDEL NOSE	MT#5	
TAILSTOCK QUILL TAPER	MT#3	
TAILSTOCK QUILL TRAVEL	4 ½"	
CROSSLIDE TRAVEL	6 ½"	7"
COMPOUND TRAVEL	3 ½"	4"
NUMBER OF INCH THREADS	40 KINDS 2-112 TPI	
NUMBER OF METRIC THREAD	22 KINDS .45 -7.5mm	
LONGITUDINAL FEEDS	(40) 0.0012-0.0294 IPR	
CROSS FEEDS	(40) 0.0003-0.0100 IPR	
MACHINE WEIGHT	1,8010	1,936

General Layout of Lathe



- | | |
|-----------------------|---------------------|
| 1. HEADSTOCK | 9. FOUNDATION MOUNT |
| 2. SPINDLE | 10. LEAD SCREW |
| 3. TOP SLIDE | 11. CHIP PAN |
| 4. SADDLE & CROSSLIDE | 12. APRON |
| 5. SPLASH GUARD | 13. FOOT BRAKE |
| 6. TAILSTOCK | 14. HEAD-END PLINTH |
| 7. BED | 15. GEAR BOX |
| 8. MOUNTING FEET | 16. END COVER |

Foundation Plan

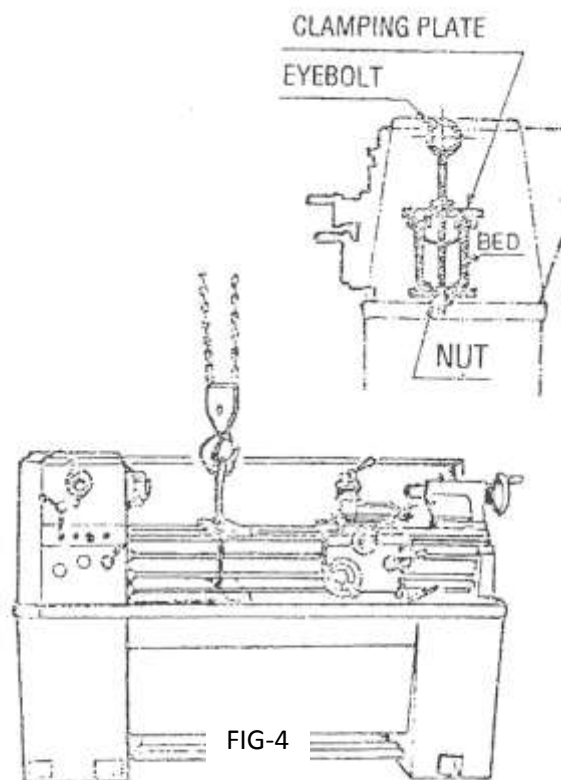


LIFTING:

Use a sling-chain as described in fig 4.
Position the saddle and tailstock along the bed to obtain proper balance.

1. DO NOT LIFT LATHE WITH TAILSOCK AND CROSSLIDE POSITIONED AT HEADSTOCK END
2. ALWAYS INSPECT SLING FOR WEAR BEFORE LIFTING
3. ALWAYS HAVE A HELPER TO SPOT THE LATHE

IMPORTANT: NEVER USE SLING AROUND BED AS THIS WILL RESULT IN DAMAGE TO LEADSCREW AND FEED SHAFT.



CLEANING

Before operating any controls, anticorrosion coating must be removed from all surfaces. Use WD-40 and a rag for removal; allow time for the wd-40 to dissolve the coating; oil exposed machined surfaces ways immediately.

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

The machine surfaces become bright immediately after cleaning; use machine oil or slideways lubricant. Use heavy oil or grease on the end gears

Installation

Installing:

Locate the machine on a solid foundation, allowing sufficient area for easy access during machining operations or maintenance (see foundation plan). The lathe may be used free-standing or bolted to the foundation.

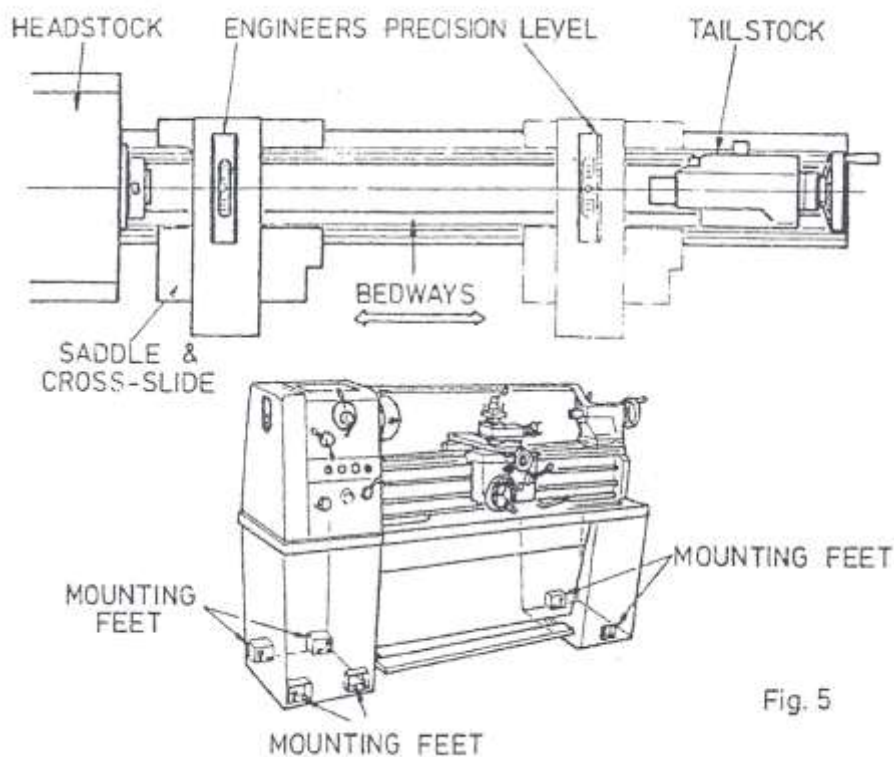
Free-standing:

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 level to ensure continued lathe accuracy. It is important to level the lathe failing to do so will decrease the accuracy of the lathe.

Fixed installation:

Position lathe over six bolts (1/2" or 12MM), set into the foundation to correspond with holes in the mounting feet. Accurately leveling the machine as in fig-5 then tighten hold-down bolts and recheck the bed level.

"Note: if lathe is located near heavy operating equipment it is recommended to use isolating dampening pad such as unisorb."



Lubrication Points and Inspections

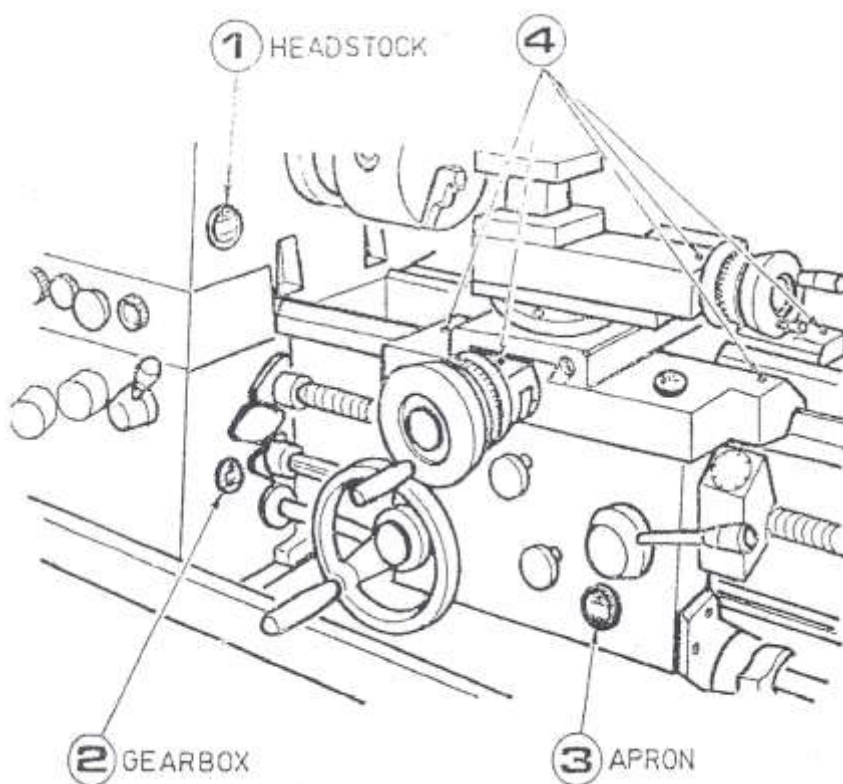
Lubrication:

Before operating the lathe, make the following important checks:

1. The headstock is filled to the proper level as indicated on the oil sight glass.
 - a. Use SHELL TELLUS 27
2. The gear box is filled to the proper level as indicated on the oil sight glass.
 - a. USE SHELL TELLUS 27
3. The carriage apron is filled to the proper levels as indicated on the oil sight glass
 - a. USE SHELL TTONNA 33

Daily Oiling

4. In addition , apply light machine oil or way lubricant to the points shown on lubrication diagram, as required daily



Chuck Mounting

“WARNING: GREY-IRON CHUCK MUST NOT BE FITTED ON THIS HIGH-SPEED LATHE; USE ONLY DUCTILE IRON CHUCKS”

Installing chucks;

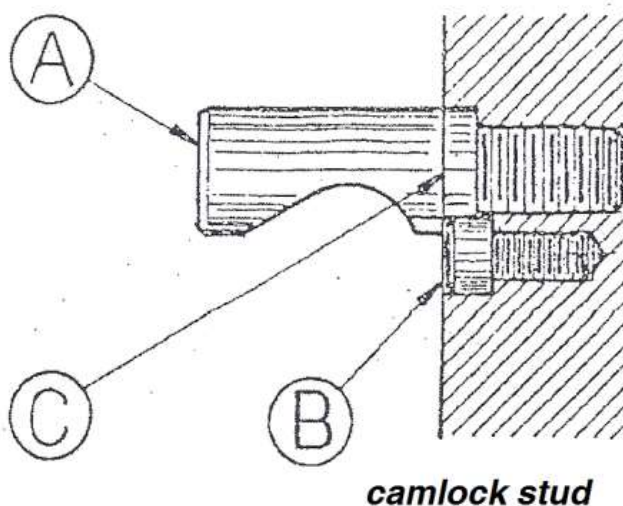
When fitting chucks or faceplate, first ensure that spindle and chuck tapers are free of all dirt or foreign materials; they are to be *scrupulously* clean, including the cam locks. Insure that cam lock are properly seated to the chuck

When mounting a new chuck with cam-locks pre-installed it may be necessary to re-set the cam lock studs on the chuck. This is done by removing the cap-head locking screw (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 the locking screw hole (fig-7)

Now mount the chuck or faceplate on the spindle nose, now is a good time to remember to place a protective covering on the bed of the lathe just in case you should drop the chuck. Now tighten the three cams in turn. Each one must be fully tightened. If any of the cams fail to tighten remove the chuck and readjust the cam stud for proper length. “Cam should rotate about half way between the marks on the spindle for proper seating”

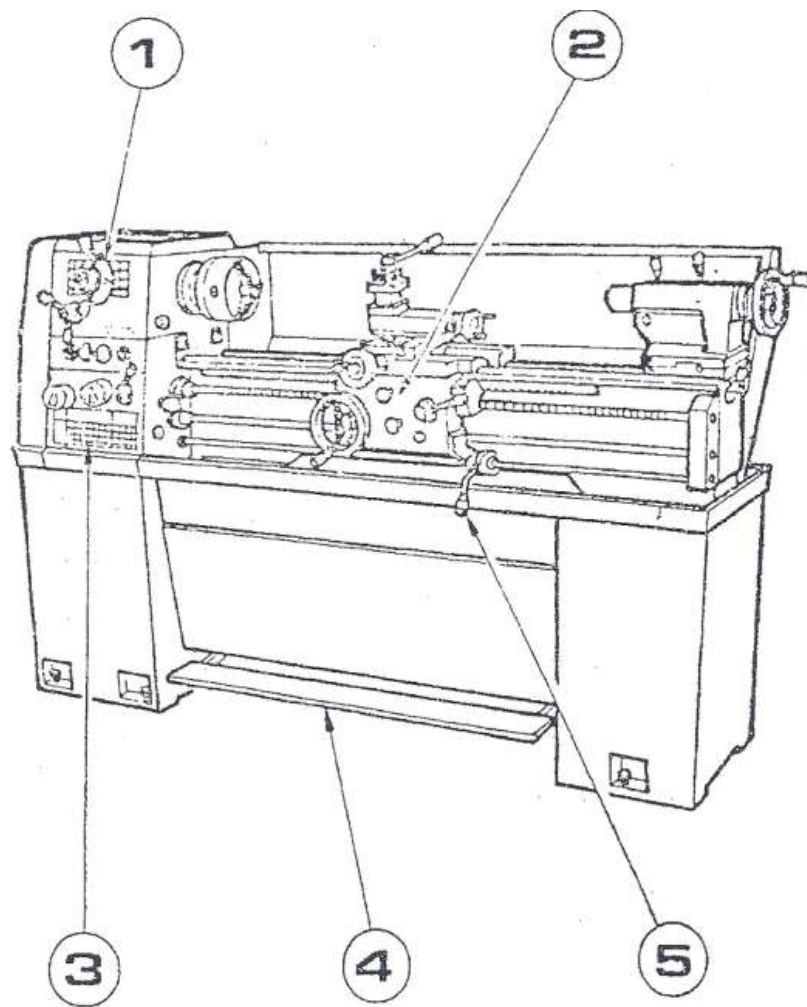
“CAUTION: NEVER INTERCHANGE A CHUCK OR FACEPLATE WITHOUT INSPECTING THE CAMS FOR PROPER CAM-LOCK SEATING TO SPINDLE;”

“Note: 10” face plate machining operations are restricted to spindle speeds no greater than 770 RPM,”



Lathe Controls

1. SPINDLE SPEED SELECTOR
2. APRON, SURFACING OR SLIDING FEEDS
3. GEARBOX, THREADS AND FEEDS
4. FOOT BRAKE
5. MAIN MOTOR ROTATION (*FORWARD AND REVERSE*)



Electrical Controls

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

1. Move the power switch (fig5) set at "ON" position then the indicator lamp "glows"
2. Press the green button to engage motor
3. Coolant pump ON/OFF to turn on coolant press
4. Press green button #4 for spindle jog
5. Press the **Red** button for emergency off; stopping main motor and coolant pump



1. Indicator lamp
2. Jog button
3. Coolant pump switch
4. Emergency Stop Switch

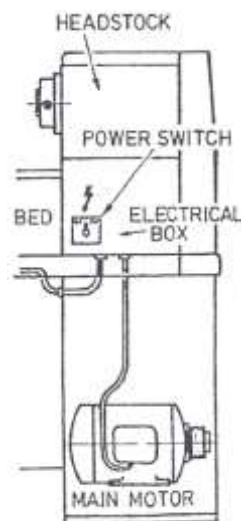


Fig 5

Speed Control

2 SPEED MOTOR:

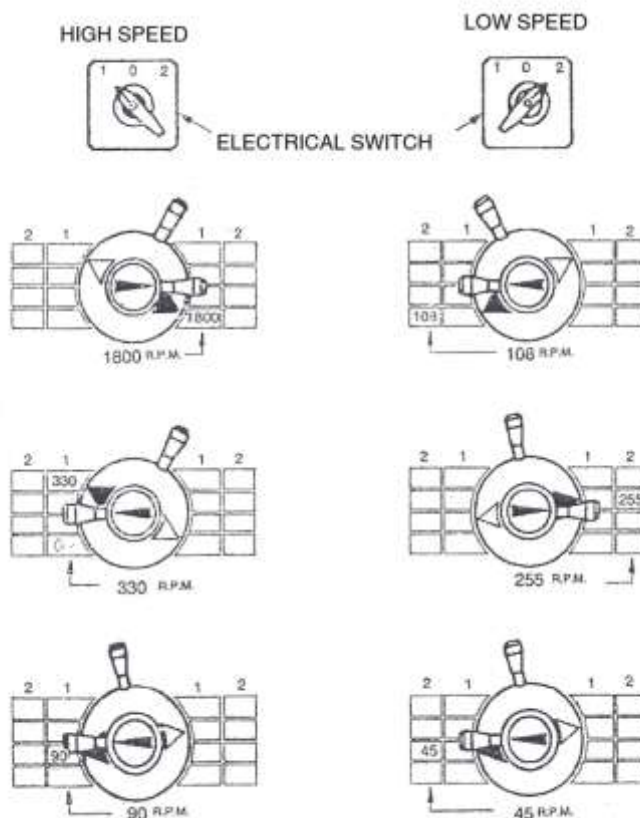
Spindle speeds are selected by the two (2) lever controls on the headstock and the hi/low electrical switch on the stand. The 16 speed are shown directly on the data plate.

High speed operation

1. Select the position (1) on the Hi/Lo electrical switch
2. The small lever rotated to the right hand side provides speed of 510 to 1,800 rpm
3. Rotate the lever to the left for spindle speed selections of 90 to 330
4. Then move the larger lever to the appropriate color aligned with the required speed on the data plate

Low speed operation

1. **Select the position (2) on the Hi/Lo electrical switch**
2. The small lever rotated to the right hand side provides speed of 255- to 900 rpm
3. Rotate the lever to the left for spindle speed selections of 45 to 165 rpm
4. Then move the larger lever to the appropriate color aligned with the required speed on the data plate



SINGLE SPEED MOTOR:

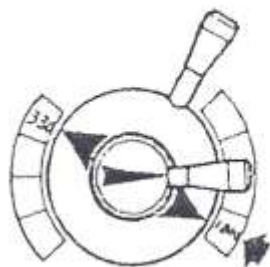
Spindle speeds are selected by the two (2) lever controls on the headstock. The eight (8) available speeds are shown directly on the data plate

High speed operation:

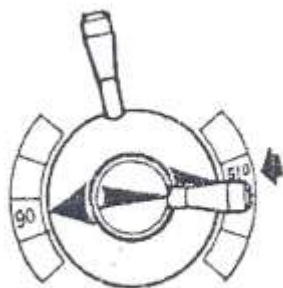
1. Rotate the small lever to the right hand side for spindle speed of 510-1,800
2. Rotate the small lever to the left hand side for spindle speeds of 90-330
3. Then move the larger lever to the appropriately colored arrow is aligned with the required speed on the data plate
4. When the small lever is set at the upper position or bottom position the spindle may be rotated for hand positioning

CAUTION: NEVER CHANGE SPEEDS WHILE IN MACHINING OPERATION OR WHILE SPINDLE IS UNDERPOWER THIS MAY RESULT IN DAMAGE TO THE GEAR TRAIN.

HIGH SPEED

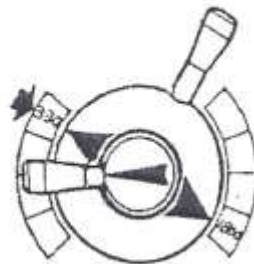


1800 RPM

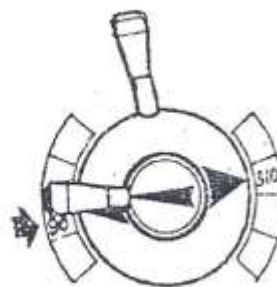


510 RPM

LOW SPEED



330 RPM



90 RPM

Threads and Feeds

Inch Gearbox

All the thread and feeds that are directly available from the gear box are listed on the data plate attached to the front of the gearbox. Fig-g 13 displays the setting of the controls levers.

The "B" position of Lever "Y" selects a fine range of threads; the "A" position a coarse thread range. Do not select the range (A position) at spindle speeds higher than 770 rpm.

Do not select the "A" coarse thread range at spindle speeds greater than 770 rpm

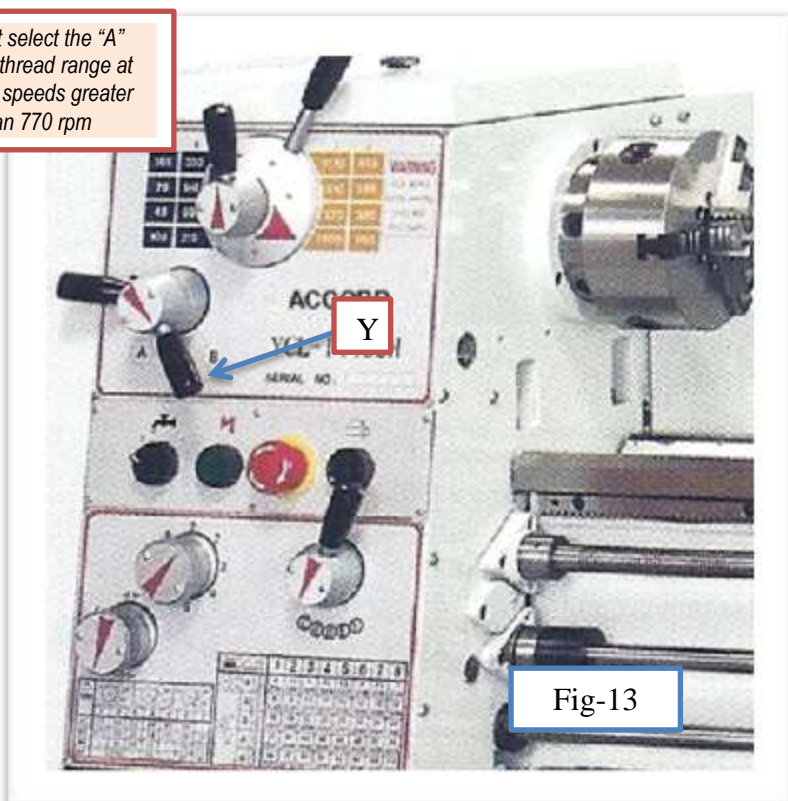


Fig-13

THREADS AVAILABLE

40 WHITWORTH - 4.0 TO 112 tpi
22 METRIC 0.45 – 7.5MM

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

Feeds:

Longitudinal feeds per spindle revolution range form:
.0012" - .0294" 0.0030 - .746 mm.

Cross feeds peer spindle revolution range from:
.0004" - .0108 / 0.010 – 0.271 mm.

1 2 3 4 6 7 8									1 2 3 4 6 7 8									2 1 2 2 1 1 1								
C	A	4.0	4.5	5.0	5.5	6.0	6.5	7.0	D	A	0.373	0.420	0.468	0.513	0.561	0.605	0.653	E	A	4	4.5	5	5.5	6	6.5	7
	B	2.0	2.25	2.5	2.75	3.0	3.25	3.5		B	0.168	0.214	0.233	0.256	0.280	0.305	0.327		B	8	9	10	11	12	13	14
E	A	1.0	1.125	1.25	1.375	1.5	1.625	1.75	F	A	0.162	0.182	0.195	0.213	0.233	0.253	0.272	C	A	16	18	20	22	24	26	28
	B	0.5	0.5625	0.625	0.6875	0.75	0.8125	0.875		B	0.074	0.085	0.097	0.107	0.119	0.131	0.141		B	32	36	40	44	48	52	56
E	A	0.8	0.9	1.0	1.1	1.2	1.3	1.4	F	A	0.087	0.098	0.108	0.119	0.131	0.141	0.152	E	A	16	18	20	22	24	26	28
	B	0.4	0.45	0.5	0.55	0.6	0.65	0.7		B	0.043	0.049	0.054	0.059	0.065	0.071	0.076		B	32	36	40	44	48	52	56

Thread Dial Indicator

WHITWORTH THREADING

The threading dial is located on the right-hand side of the apron with a lathe having an English leadscrew. To engage the dial indicator place the pinion gear against the leadscrew and tighten the handnut to retain indicator engagement.

Odd and Even threads

Cutting even number of threads per inch close the half-nuts any time line on the dial passes the datum mark. To cut thread of odd number per inch, close the leadscrew nut at any numbered line.

Fractional threads

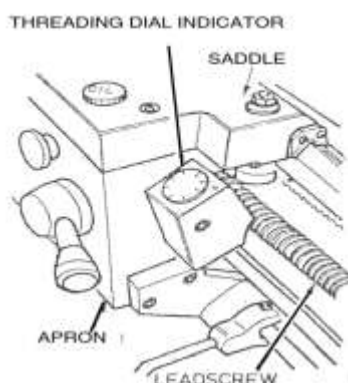
Thread of $\frac{1}{2}$ or $\frac{1}{4}$ TIP may be cut by closing the leadscrew nut as the SAME numbered line on each pass of the tool.

Important Note: When cutting metric thread you may not open the half-nuts to rapid back and pick up the thread again. The half-nut must remain closed at all time when cutting metric threads with an English lead screw. You must dial out, reverse feed, and dial in.

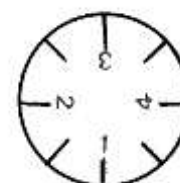
Metric threading with metric leadscrew

To provide for the various pitches of metric threads, several change gears having different number of teeth are mounted on the lower end of the input gearbox 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-nuts 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 ½	½ ¾	13	1-4	40	1-8
4 ¾	1	14	1-8	44	1-8
5	1-5	15	1-8	48	1-8
5 ½	½ ¾	18	1-8	52	1-8
6	1-8	19	1-4	56	1-8
6 ½	½ ¾	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 ½	½ ¾	28	1-8	88	1-8
10	1-8	32	1-8	96	1-8
11	1-4	36	1-8	100	1-8



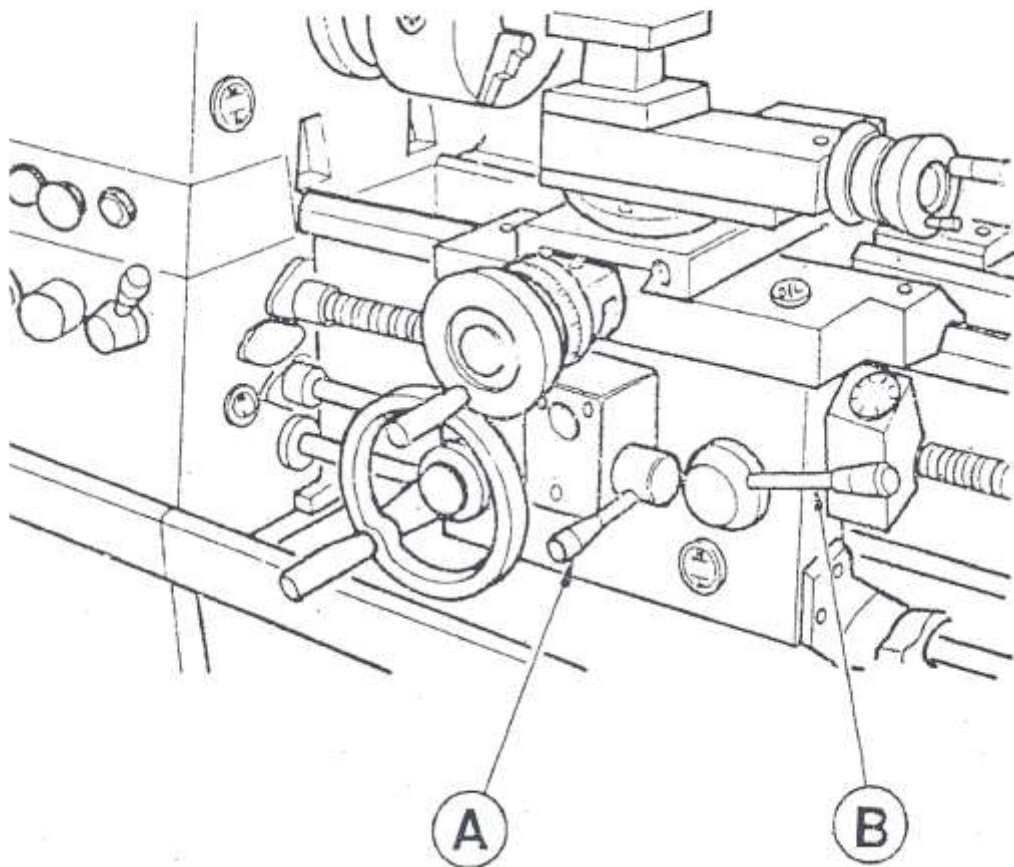
THREADING DIAL

Apron Control

Apron Feed Control

In addition to the longitudinal and cross hand wheel traverse, the carriage can be power-operated through controls located on the front of the apron, see Fig 16 knob (A). If moving the handle (A) upward, the carriage will move in a longitudinal –feed direction. When the handle (A) is positioned in the middle position it will provide for a manual operation. Moving handle (A) upward will provide a cross-feed operation.

Lever (B) is pressed downward to engage the leadscrew half-nuts for threading operation. To avoid undue wear release the nut except when screw cutting:



Cross-Slide and Compound

Compound and Cross-Slide

A compound top slide rest is fitted to the cross-slide and is marked 45° -0- 45° for quick and accurate indexing of tool angles. The hand wheel dials are graduated in inch/metric division to suite operating screw and nut.

The cross-slide has two types to engage the cross-slide Knob type and lever type
Both examples are listed below. The cross slide may be engaged either by pulling out knob (A) or Pulling lever (A) to an upright position. This will allow a one-third sliding feed per spindle revolution. When in neutral position the cross-slide may be hand operated.



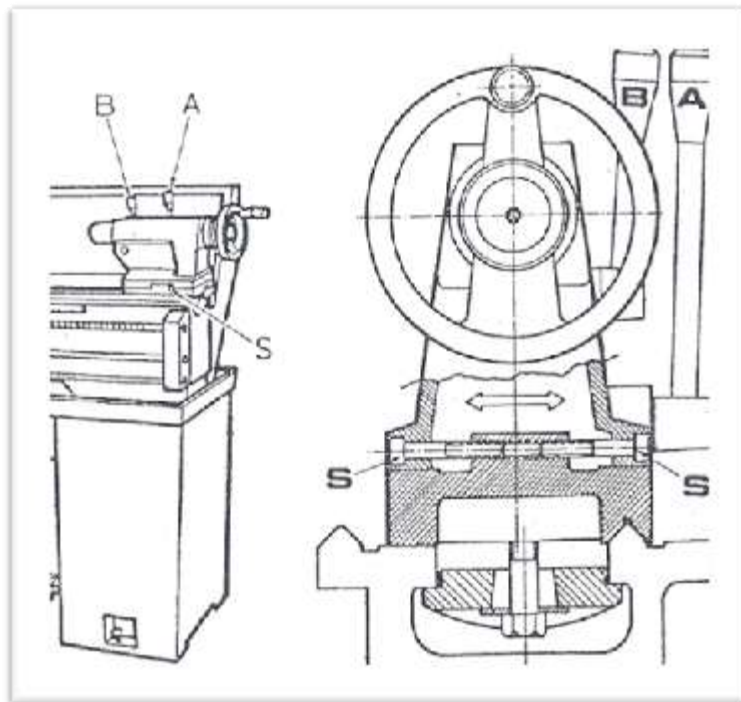
A

Tailstock

The tailstock moves freely by unlocking the lever clamp (A) and sliding the tailstock into position. The tailstock quill is released by lever (b) this allows the quill to be dialed in with used of the tailstock hand wheel.

Tail stock set over:

The tailstock can be set –over for production of shallow tapers by releasing the clamping lever and adjusting screws (s) these are located on each side of the tailstock base. The tailstock can then be adjusted laterally across the base. A datum make is located at the tailstock end face to indicate the degree of set-over.



Lathe Alignment

Part 1

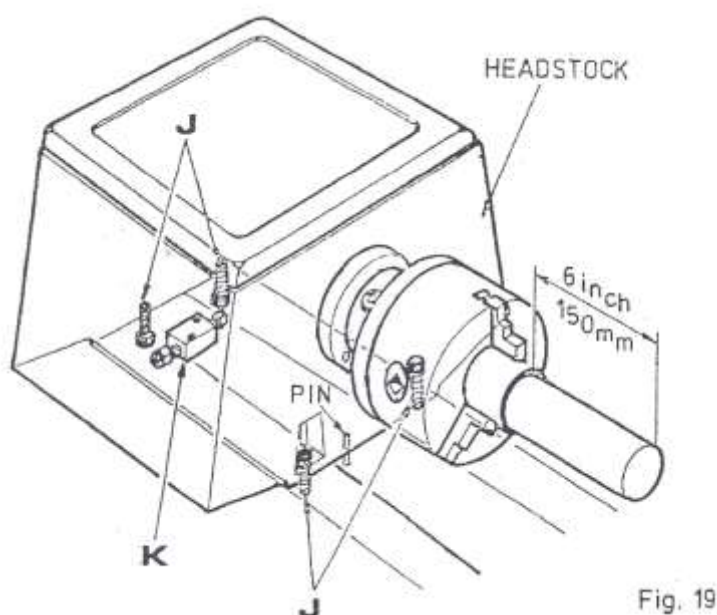
Headstock Alignment:

After the lathe has been installed, cleaned and power supplied, we recommend to inspect the machine alignments before commencing work. Begin with rechecking the level of the lathe to allow for any settling that has occurred. An un-level lathe is the number one reason for loss of accuracy. This is recommended to be performed at regular intervals; or after any subtle changes to the foundation such as an earthquake.

Headstock Parallel Alignment

Place a 2" diameter x 8" long piece of mild steel round stock into the 3 jaw chuck that has been indicated in for trueness. The bar is not to be supported. With a new tool set at the recommended angle and with the proper spindle rpm and feed setting take a light test cut. Take a micrometer reading of the beginning and the end cut they should both be the same diameter.

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 par (K) beneath the headstock. Then tighten all screws. After adjustment repeat the test-cut/micrometer reading until micrometer readings are identical to perfect the machines parallel accuracy.

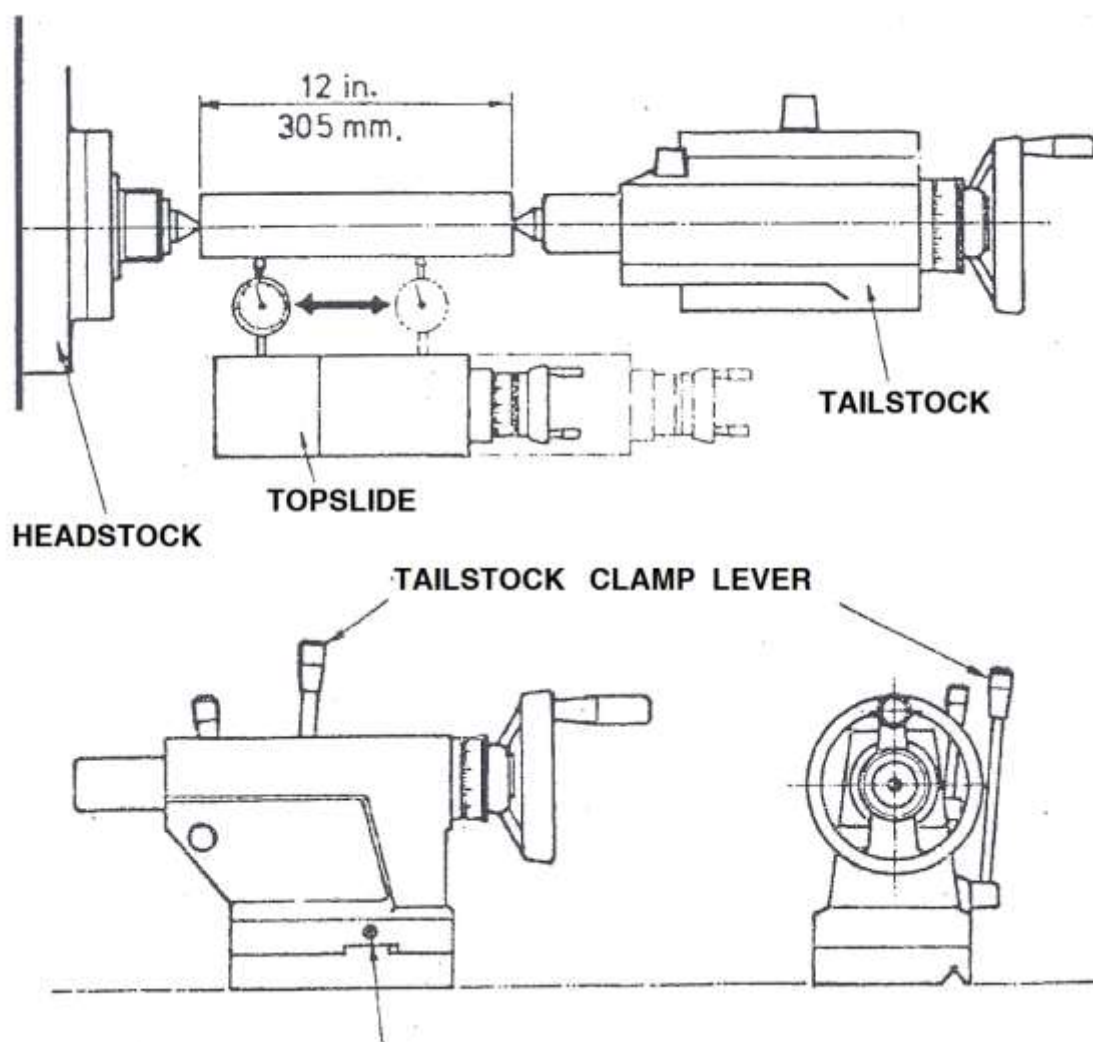


PART 2

Tailstock Alignment

Using a 12" precision ground steel test bar fitted between center of the headstock and the tailstock check the alignment as follows: Secure a dial indicator to the top slide and traversing the center line of the bar.

To correct alignment error, release the tailstock clamp lever and adjust the 2 set-over screws provided. Continuously check and correct until alignment is perfect.

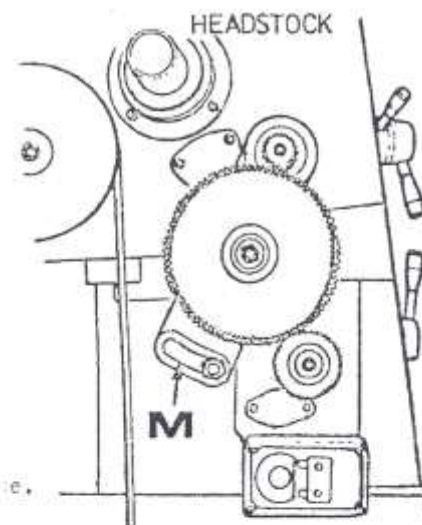


Drive Train

End Gear Train

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

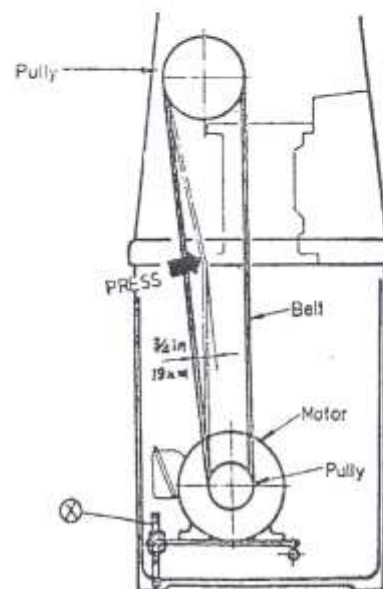
Gears must be thoroughly cleaned before setting backlash. Backlash is required at .005". Lubricate gears regularly with thick gear oil or grease



Drive Belt

To change belt tension, remove headstock end cover guard. In back of the plinth and adjust the (2) two screws (x) on the hinged motor plate. Always check that the motor is in correct alignment to ensure belt life.

Apply light finger pressure to the belt midway between the motor and headstock pulley. A comfortable $\frac{3}{4}$ " inch of movement allows for correct belt tension



Slide Ways

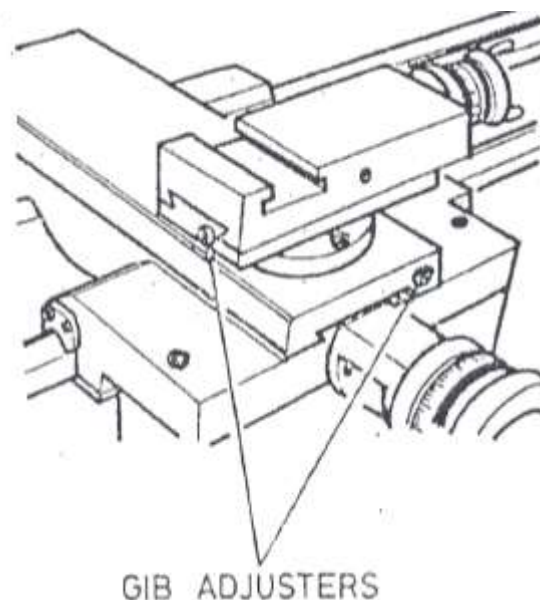
Gibs

Tapered gibs strips are fitted to slide ways of saddle cross-slide and compound top-slide as well.

For adjusting any slack that may be present after wear. (*The more you oil the less wear*). Adjust gibs always have a clean surface free from chips or plastic that may containment the work area.

To ensure proper adjustment the gibs need to be freshly oiled to ensure they slide without friction. Then reset the gibs by slackening the rear gib screw and then tightening the front screw. Check constantly for smooth operation of slide.

Note: AVOID OVER TIGHTENING THIS WILL RESULT IN PREMATURE WEAR AND CREATE STIFF MOVEMENTS

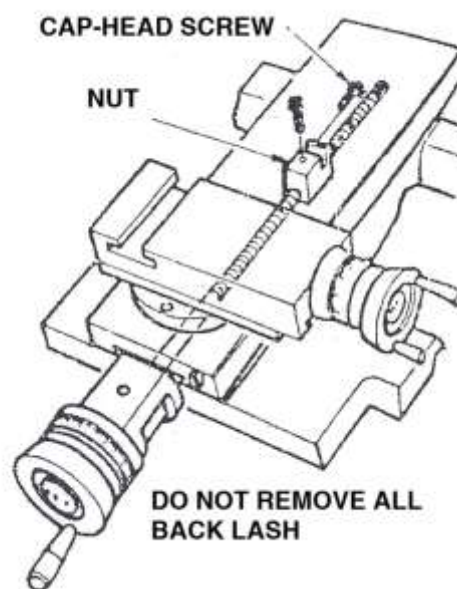


Cross-Slide Nut

The cross-slide nut is adjustable to remove excessive backlash that may result from wear.

Reduce the backlash by adjusting the cap-head screw in the rear of the nut. Make only small adjustments to the cap head screw. Before operating the cross-slide, check several times by hand to be sure of a smooth operation through entire travel of cross-slide

Note: AVOID OVER TIGHTENING THIS WILL RESULT IN PREMATURE WEAR AND CREATE STIFF MOVEMENTS



Lubrication

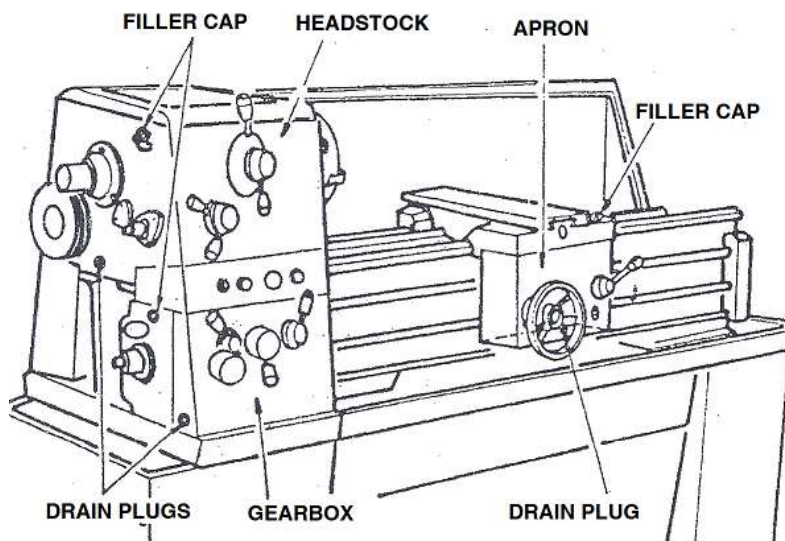
Part 1

The headstock and gearbox are splash-lubricated from an internal reservoir of oil (SHELL TELLUS 27). Check the oil level on a regular basis ensuring that the marks on the oil sight glasses are at the proper level. These are located at the front end of the headstock and on the front of the gearbox. Change the oil once a year (needed or not) it good for the machine life. Add oil through the filler cap at the end of the headstock and gearbox as required. The drain plugs are located at the end of the headstock gear train. When changing oil please properly dispose of oil by **recycling**.



Apron

The apron is lubricated from an internal reservoir of oil. The oil sight glass is located on the front of the apron. A filler cap is on the top of the saddle. Refill the reservoir to the proper level indicated by the sight glass. Use Shell Tonna Oil 33. The apron can be drained by removing the drain from the bottom of the apron.



Lubrication

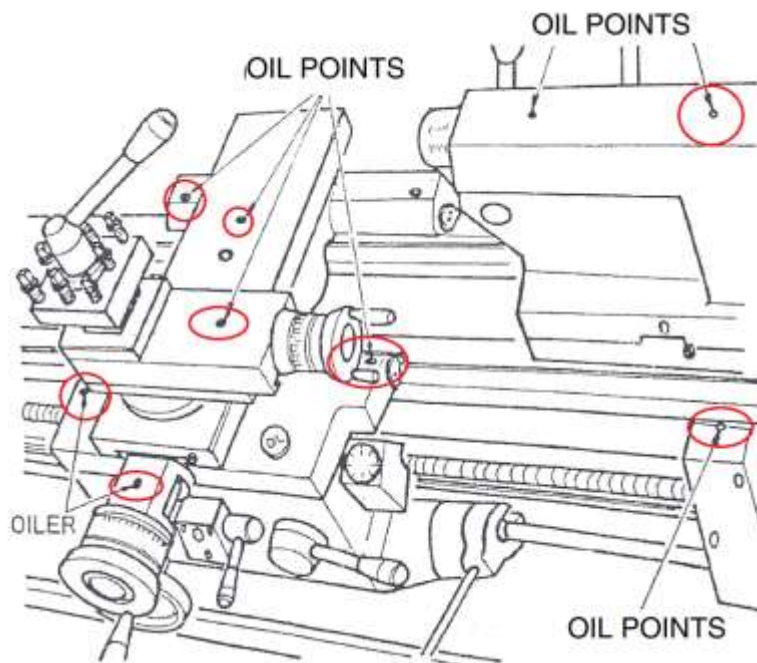
PART 2

Saddle, Cross-slide and Tailstock

To oil other point on the lathe requires the use of an oil gun, which is provided for in the tool kit if not a standard oil gun will do.

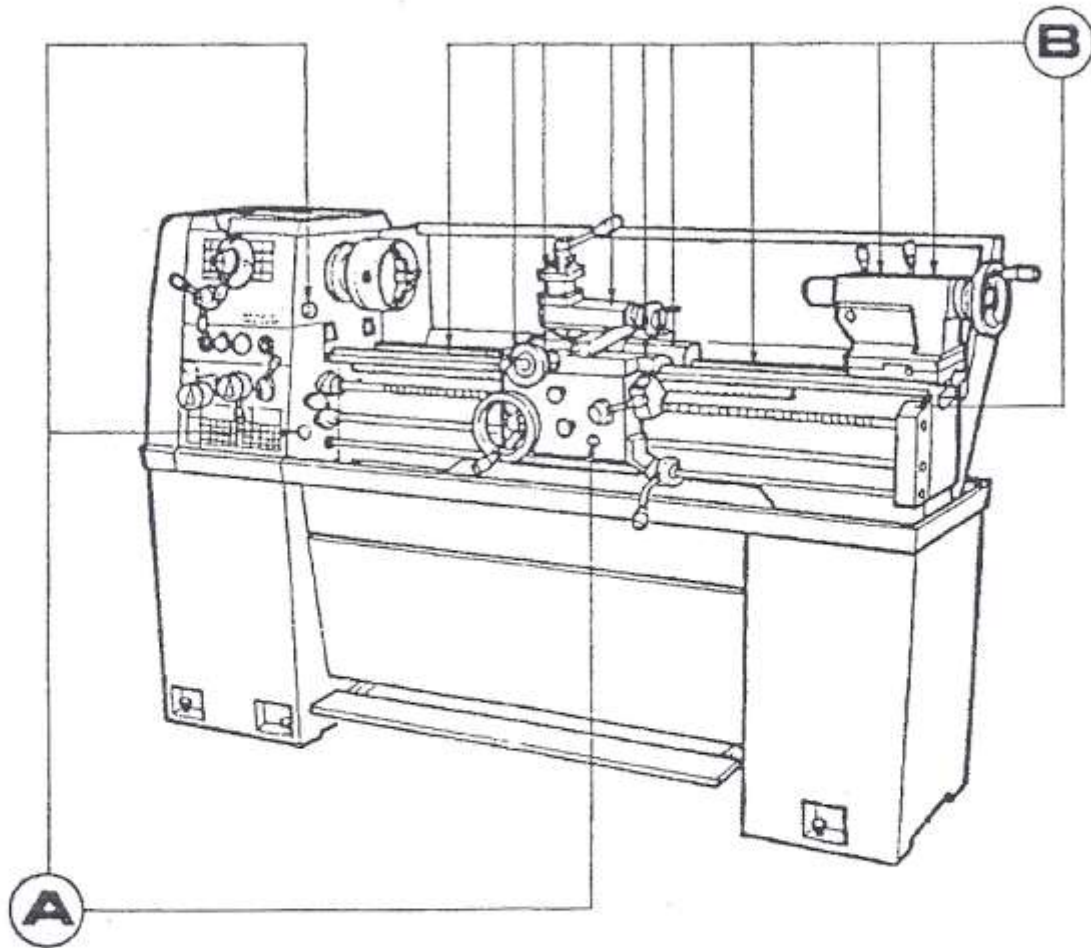
Locate the 6 points on your lathe 2 ea. on the tailstock to lubricate the quill; 1ea on the compound top slide to lubricate the nut. Front and back of the saddle wings to reach the far ends of the v- ways. And the cross-slide for the cross feed nut. And the end of leadscrew at tailstock end of machine.

"Note using the wrong grade of lubrication oils can result in damage to the machine"



Lubrication Diagram

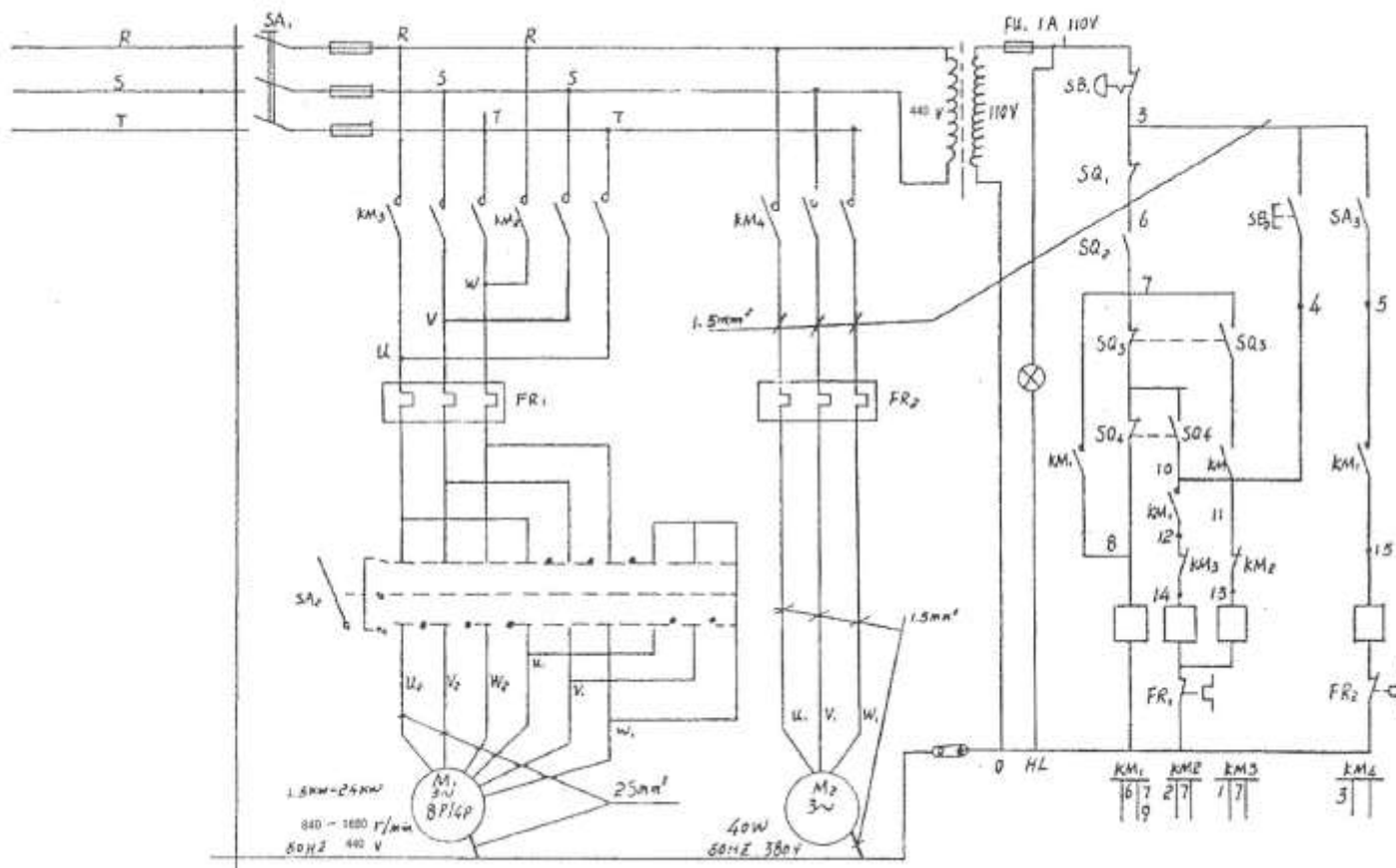
LUBRICATION DIAGRAM



A — TOP -OFF EVERY WEEK

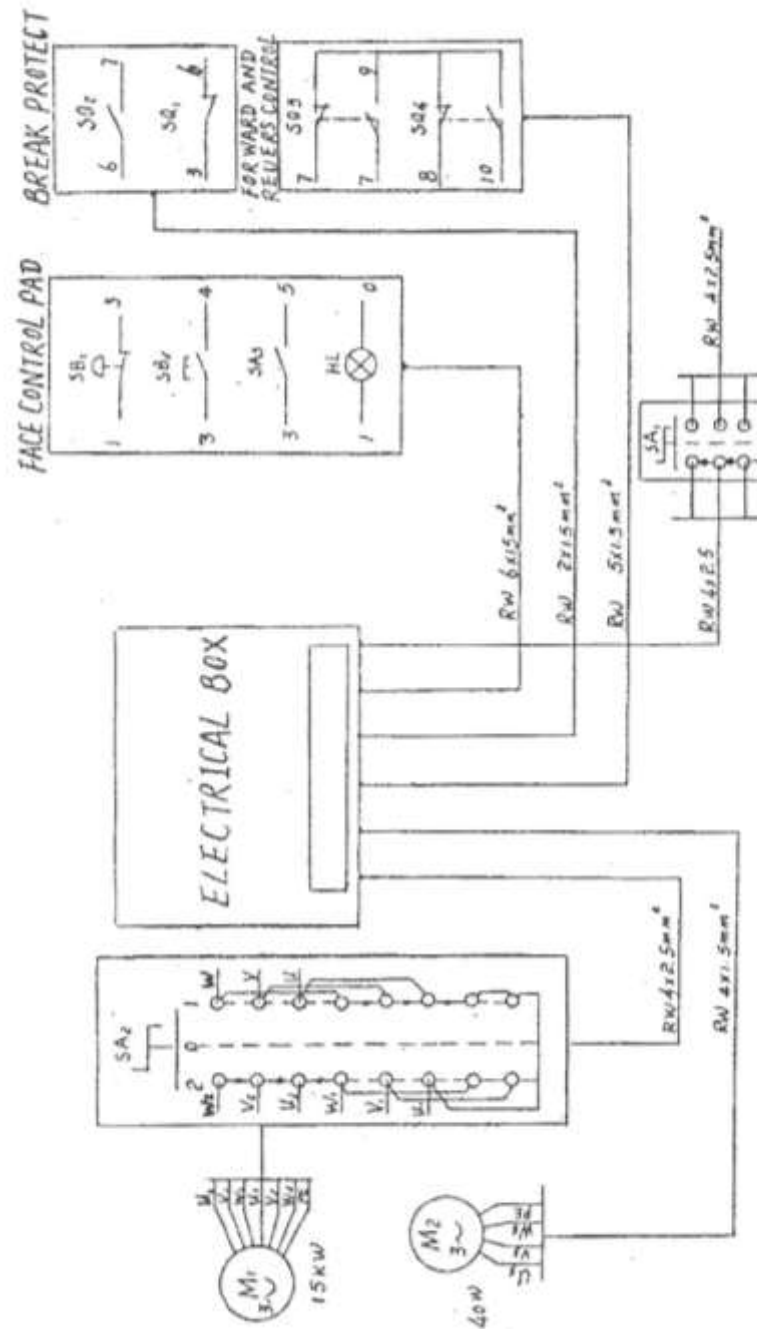
B — OIL EVERY DAY

ELECTRICAL – WIRING

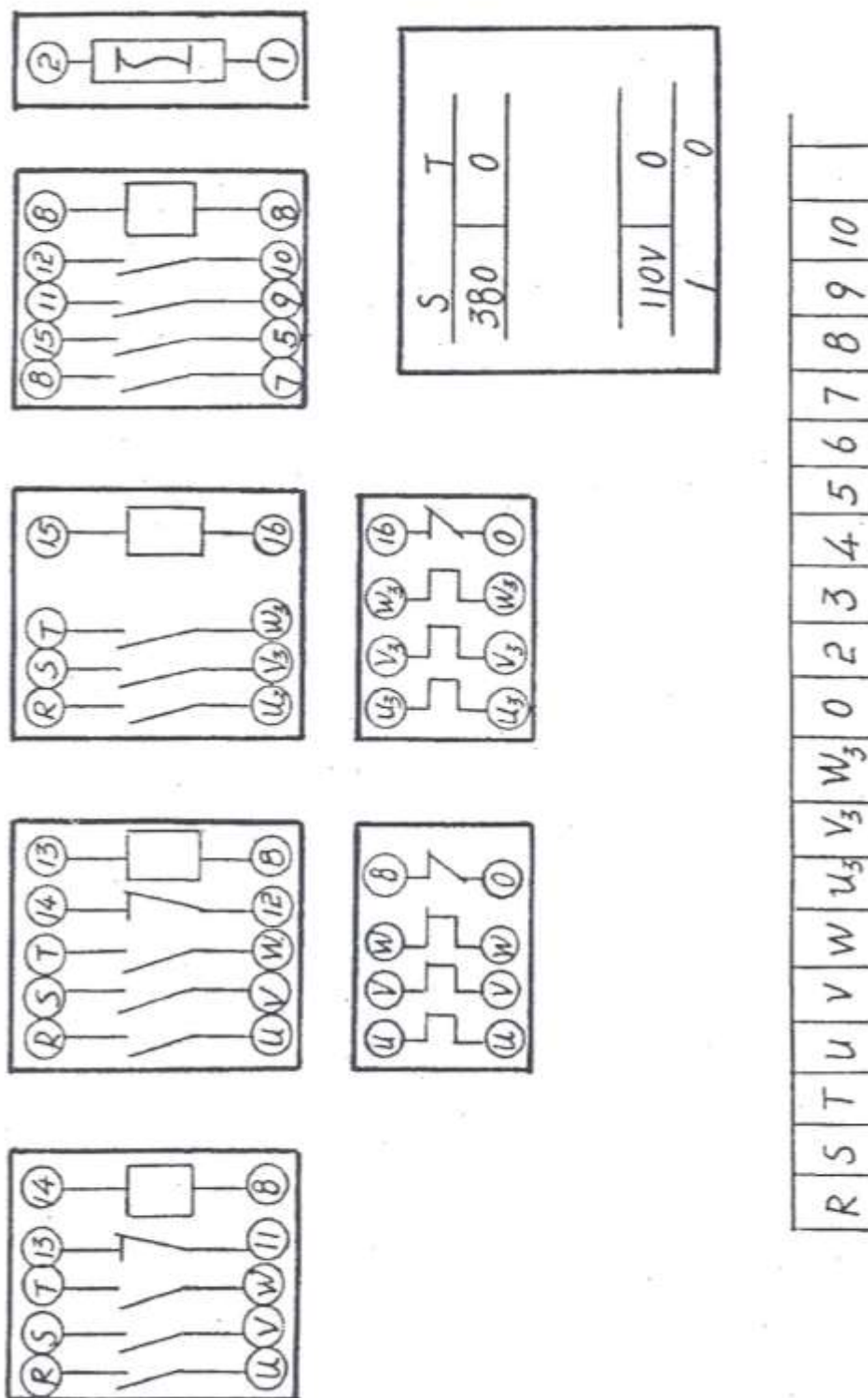


1	2	3	4	5	6	7	8	9
FORWARD	REVERES	PUMP	TRANSFORMER	LIGHT	BREAKER	FRW/REV	JOG	PUMP

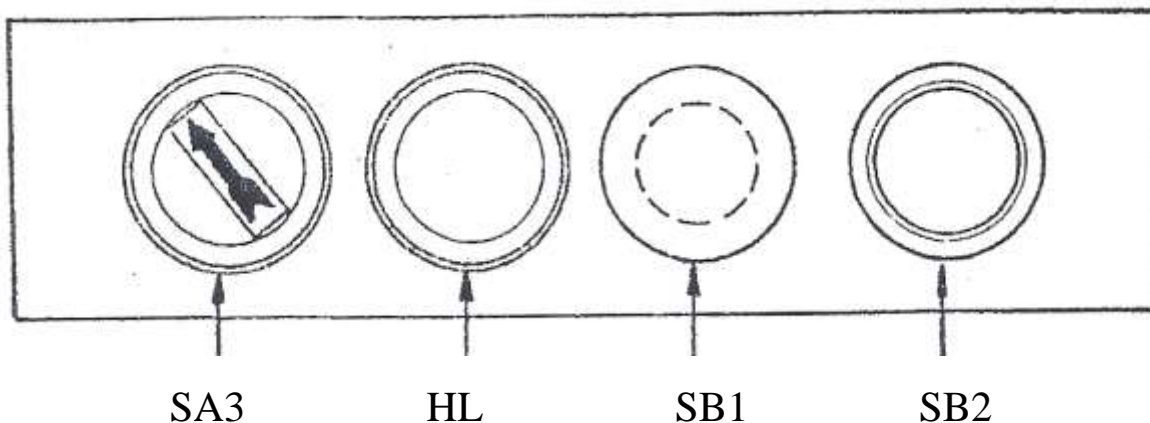
Electrical Box



Electrical –Contacts



Electrical –Control Panel



- SA1 Power switch 3 ph 3 w 10a
- T Control Circuit transformer 100VA
- M1 Main Motor
- M2 Pump Motor
- SB2 Push Button Switch (Jobbing Switch) type SB 3015A.
- SB1 Flat type push button type SB-3091B.
- HL Pilot light type SP-301, 110v/15v, color white
- SA3 Selecting switch type ST 3021 A
- FU1 Fuse base 600V, 30Amp, Type SR-833
- FU2 Grass tube fuse 1Amp
- KM4 For main motor Reverse AC magnetic contactor coil AC 110V type c-11G3A1B.
- KM3 For main motor Forward AC magnetic contactor coil AC 110V type c-11G3A1B
- KM2 For pump motor AC magnetic contactor coil AC110V type C-11G3A1B
- FR1 Thermal overload relay for main motor, type RH-18M
- FR2 Thermal overload relay for pump motor type RH-18M
- KM1 AC magnetic contactor coil AC 110V, type 15g 22-B
- SQ1 Limit switch End cover safety switch type 15g 22-B
- SQ2 Limit switch Brake precision type 15GD-B
- SQ3 Limit switch Reverse precision type 15GD-B
- SQ4 Limit switch Forward precision type 15GD-B
- SA2 2 Speed motor switch

