CLAUSING
COLCHESTER

PHASE 1

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DIVISION OF ATLAS PRESS COMPANY

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THIS IS YOUR REFERENCE MANUAL

Colchester(8000 Series) 13" Lathe
Serial No. 66840 to 67632

KALAMAZOO, MIC[illegible] 49001

13"

13in. x 24in. and 13in. x 36in. HEAVY DUTY

GEARED HEAD PRECISION LATHES

INSTRUCTION & PARTS MANUAL

CLAUSING DIVISION : ATLAS PRESS COMPANY : KALAMAZOO : MICH : U S A

Manufactured by

CLAUSING SERVICE CENTER

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SERVICE & PARTS MANUAL

MODEL NO.

SERIAL NO. 3/67013

Phone 219-533-0371 Fax 219-533-0403

August 1969

THIS MANUAL

applies to the Clausing-Colchester 13in × 24in and 13in × 36in heavy duty, geared-head precision lathes.

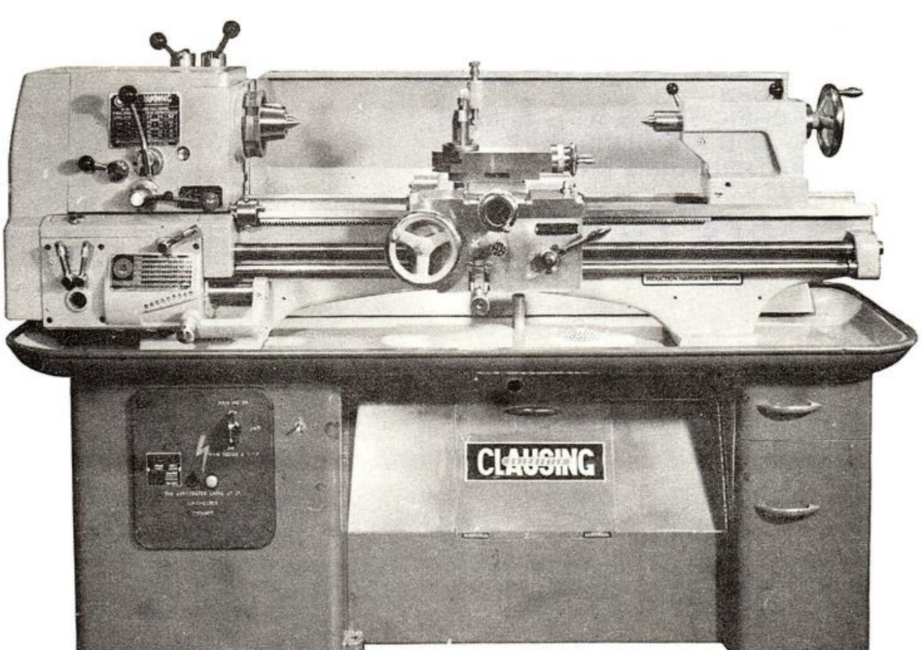
A full understanding of the contents will help you obtain the best results from the machine and achieve the standards of accuracy available.

Our Technical Service Department is always at your disposal to discuss any problems concerning the application of Clausing-Colchester lathes and their planned accessories or attachments. The aim is to ensure maximum satisfaction with your lathe.

The machine serial number is stamped at the tailstock end of the bed and MUST be quoted in all communications regarding your lathe.

Due to the Company policy of continuous improvement, designs may be modified or changed at any time without notice and this manual applies only to the machine with which it is issued.

THE SERIAL NUMBER OF YOUR MACHINE IS ....



INDEX

BRIEF SPECIFICATION

This specification applies to all four standard models of the Clausing-Colchester 13 in Swing lathes as follows:

6524 . 13 in × 24 in Straight bed lathes
6525 . 13 in × 36 in Straight bed lathes
6526 . 13 in × 24 in Gap bed lathes
6527 . 13 in × 36 in Gap bed lathes

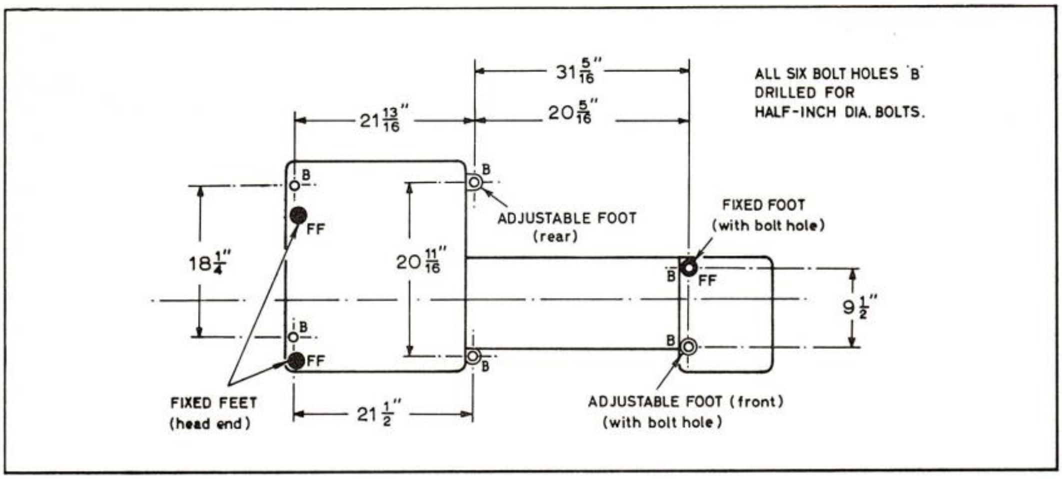
CAPACITIES	
Height of centres	$6\frac{1}{2}$ in
Swing	
Over bed	13 in
Over cross slide	8 in
Distance between centres	24/36 ins
Diameter of faceplate	12 in
Gap-bed Models	
Turning diameter in gap	18 in
Width in front of faceplate	$4\frac{3}{8}$ in
Capacity of travelling steady rest	2 in
Overall length	$61/77\frac{1}{2}$ in
Overall width	30/33 in
Weight (approx)	1372/1512 lb
HEADSTOCK	
Spindle bore (Max. bar diameter)	$1\frac{1}{2}$ in
Spindle nose	A.S.A long taper LO
Taper in spindle nose bush	No. 3 Morse
Spindle speeds (two-speed motor)	16
Range of spindle speeds (two-speed motor)	40—1800 r.p.m.
CARRIAGE	
Total travel of cross slide	$6\frac{3}{4}$ in
Total travel of top slide	$3\frac{5}{8}$ in
Height from top of top slide to centre line of spindle	$1\frac{7}{8}$ in
Max. tool shank size (pillar type tool post)	$\frac{9}{16} \times 1\frac{1}{8}$ in
THREADS AND FEEDS	
Pitch of leadscrew	6 t.p.i.
Number of threads	45
Range	4—120 t.p.i.
Number of feeds	45
Range per rev. of spindle	
Longitudinal	0·0025—0·068 in
Cross	0·0006—0·017 in
TAILSTOCK	
Spindle travel (No. 3 M.T. centre fitted)	$5\frac{1}{2}$ in
Spindle travel (Standard tang drill fitted)	$3\frac{3}{4}$ in
Taper in spindle	No. 3 Morse
DRIVE	
Two-speed motor	$3/1\frac{1}{2}$ hp 60 c/s 1800/900 r.p.m.

STANDARD EQUIPMENT SUPPLIED WITH THE MACHINE

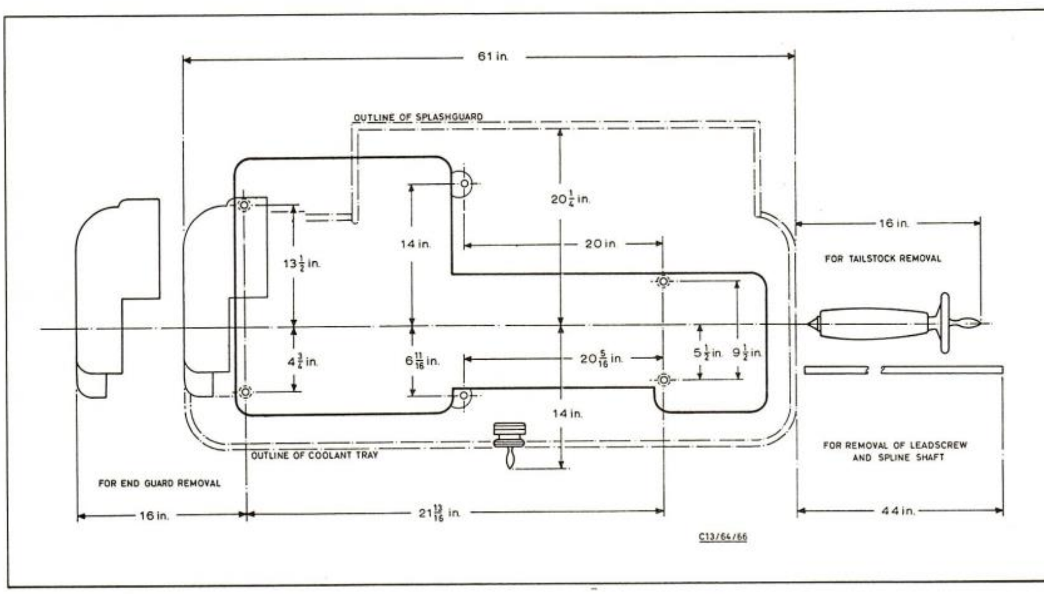
- Full length splash guard
- Two No. 3 Morse taper centres
- One centre bush
- Wrenchs etc.
- One 12″ dia. faceplate
- One 6″ dia. slotted driving plate
- Travelling steady rest

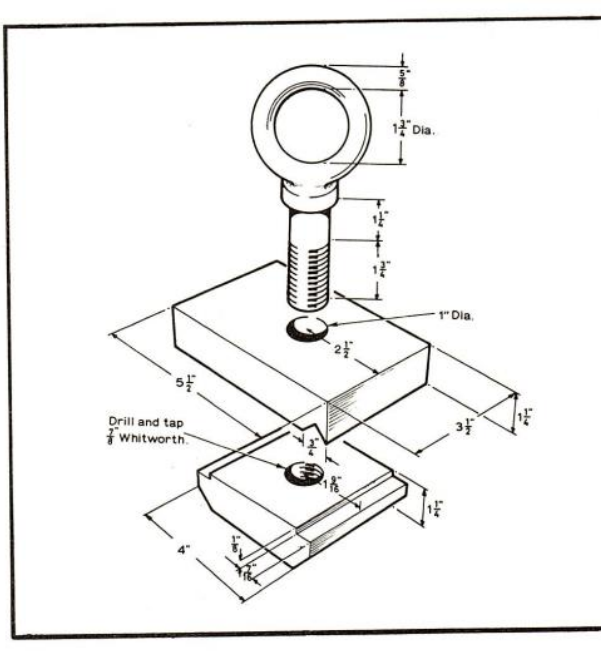
For details of additional equipment available, see Section ACCESSORIES

INSTALLATION PLAN



FOUNDATION PLAN





LIFTING PLATE & BOLT

INSTALLATION

INTRODUCTION

Clausing-Colchester lathes are the result of half a century of concentration in manufacture of this type of machine tool. Whilst essentially precision tools intended for producing accurate workpieces, the design of robust construction and simplified controls makes these machines suitable for tooling in production work

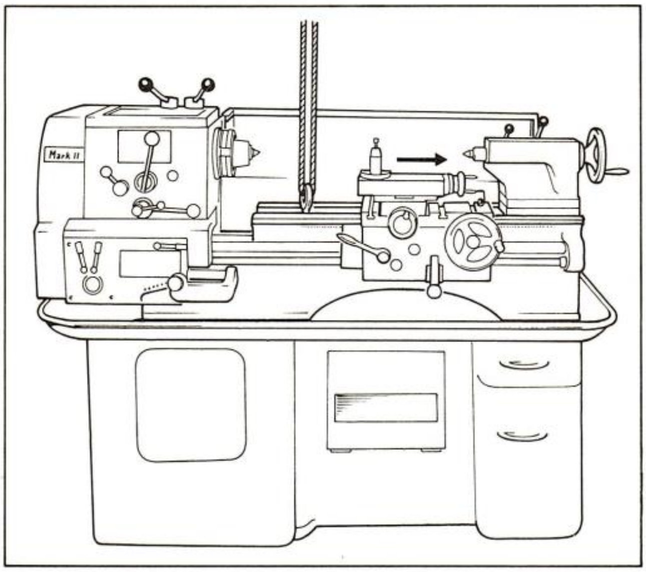
All castings are naturally aged for at least six months to avoid possible distortion. Jigs and special-purpose machines are used extensively in our manufacturing operations to ensure interchangeability of components. Care is taken in all processes of all departments to ensure your satisfaction with the machine.

The headstock is an all-geared arrangement, totally enclosed within an oilbath and giving sixteen spindle speeds. The main spindle is precision finished from a heat-treated high tensile steel forging and is carried at the front end on Gamet high precision double row taper roller bearings of exceptional accuracy which are specially manufactured to our requirements. The rear end of the spindle is carried in a single-row taper roller bearing of similar design. All headstock spindles and shafts are carried in needle roller anti-friction bearings.

LIFTING

The complete machine weighs approximately 1,550 lb and proper equipment must, therefore, be made available for handling this weight. All lifting and repositioning should be carried out with great care. It is recommended that a lifting bolt with clamp plates to the dimensions shown on the sketch should be used. Wind the saddle and slides towards the tail end of the lathe and fit the clamp plate securely at the point of balance of the machine.

Do not sling the machine from any other points. In case of difficulty, consult your local Clausing-Colchester agent.



LIFTING THE LATHE

CLEANING

Each lathe is delivered having all bright machined surfaces covered with a heavy protective coating. Before attempting to operate the machine remove all traces of the preservative using white spirit or kerosene.

DO NOT USE CELLULOSE SOLVENTS FOR CLEANING—THESE WILL DAMAGE THE PAINT FINISH.

When cleaning, pay particular attention to the slides and spindle nose. It is essential that the end guard be removed and the gear train carefully cleaned before operating the lathe.

All cleaned parts should then be dried using fluff-free cloth and the bright surfaces given a light coating of Shell Tellus 33 oil.

WORKING AREA

When deciding upon the position for the lathe, remember that sufficient room must be allowed not only for ease of operation but to permit the end guard to be opened, for access to the motor compartment at the rear of the cabinet base and for the servicing operations recommended.

A foundation plan is included which gives the main installation dimensions and also the recommended minimum space required for efficient operation of the machine under all conditions of working.

INSTALLING

In order to achieve the full standards of accuracy built in to your Clausing-Colchester lathe, it is essential that the machine be installed upon a solid concrete base which must be as level and free from vibration as possible. For most applications the machine will then perform perfectly satisfactorily whilst free-standing. When operating at high speed on out-of-balance work, however, it may become necessary to bolt the machine to the concrete foundation. Instructions for installation of the machine under both sets of conditions are given below.

Careful attention to siting and foundation will greatly add to the accuracy of the work produced and to the life of the machine. If the lathe must be installed above ground floor level, it is essential for best results to provide a concrete floor and to position the machine headstock as close as possible to a supporting wall or pillar. Wooden floors are not recommended because changes in atmospheric conditions which affect the floor will adversely affect the alignment of the machine. When wooden floor siting is unavoidable, a section of the floor should be taken up and a concrete base built up to the floor level.

It is not recommended that the machine is placed on felt or rubber mats no matter what type of foundation is provided.

THE MACHINE SHOULD NOT BE GROUTED IN.

FREE STANDING MACHINES

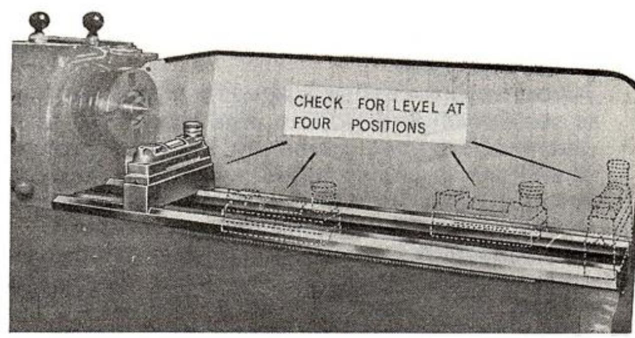
1. Position the lathe level upon the three fixed feet (shown in the installation plan).
2. Screw down the adjustable feet to each take its share of the load without losing ground contact at any other foot. Lock the adjustable feet.
3. Run the lathe. Any evident vibration will be due to incorrect setting of the adjustable feet; and this can be eliminated by slight alteration of the setting whilst the machine is running. Re-lock the adjustable feet.
4. For all normal operating requirements, the mounting as described will give all the support necessary.
5. It is essential that the machine is correctly levelled before using it in production and each time an adjustment is made to the foundation bolts or mounting feet. A precision engineers' level should be used and readings taken across headstock and tailstock ends and then in two positions on both front and rear bed shears in a longitudinal direction. Careful attention to levelling will greatly add to the accuracy of work produced and to efficient life of the machine. If the foundation is not accurate and level it may be necessary to adjust the levelling screws provided at the base of the cabinet.

BOLTING DOWN

1. Position the lathe level upon the three fixed feet (shown in the installation plan as FF).
2. Screw down the adjustable feet to each to take its share of the load without losing ground contact with any other foot. Lock the adjustable feet.
3. Insert $\frac{1}{2}$ in diameter foundation bolts through the bolt positions provided and into cleanly drilled holes in the concrete foundation. When inserted, they should be firmly secured within the foundation before attempting to tighten the holding-down nuts.
4. Secure the holding-down bolts firmly but avoid overtightening. Bolt tension should be just sufficient to retain the machine in position without disturbing the cross-wind alignment.
5. Run the machine. Any evident vibration will be due to incorrect setting of the adjustable feet which can be remedied by slackening the mounting bolts and altering the adjustment a little at a time. Care and attention given to obtain the correct setting at this stage will be well repaid. Re-lock the adjustable feet before tightening the mounting bolts.
6. It is essential that the machine is correctly levelled before using it in production and each time an adjustment is made to the foundation bolts or mounting feet. A precision engineers' level should be used and readings taken across headstock and tailstock ends and then in two positions on both front and rear bed shears in a longitudinal direction. Careful attention to levelling will greatly add to the accuracy of work produced and to efficient life of the machine. If the foundation is not accurate and level it may be necessary to adjust the levelling screws provided at the base of the cabinet.

ALIGNMENT CHECKS

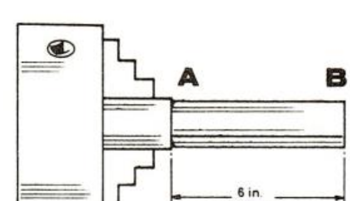
When the machine is installed initially, or after subsequent re-positioning, it is advisable to carefully check the alignment of the headstock and tailstock. All machines are accurately aligned before despatch from the Works, but transit shocks may render a further checking necessary or of benefit.

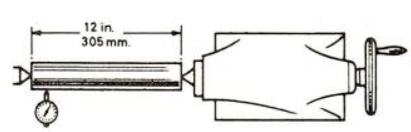


HEADSTOCK ALIGNMENT

Grip a length of mild steel bar in the chuck and using keen tools take a light cut over the outside diameter for about 6 in of its length. Do not use the tailstock centre as a steady during this test.
Micrometer readings at the two ends of the turned ends of the turned diameter (at A and B in the sketch) should be precisely the same. If the readings differ, the headstock should be re-aligned as follows:—

1. Slacken the four socket-head headstock retaining screws until only finger tight. This will allow the headstock to pivot about the locating dowel.
2. Accurate adjustment for re-alignment can be made using the 'set-over' pad which is built into the underside of the headstock and rests between the bedway.
3. After alignment, tighten the locknut on each adjusting screw of the set-over pad and securely tighten headstock retaining screws.





TAILSTOCK ALIGNMENT

Place a prepared 12 in ground steel bar between centres, as shown in the sketch. Then to the top slide fix a dial indicator with its anvil running along the horizontal centre-line of the test bar. By traversing the saddle along the bed, an accurate check on alignment can be made.
Any alignment errors may be rectified by adjustment to the two set-over screws provided one at each side of the tailstock base.

INSTRUCTIONS and PARTS

CLAUSING COLCHESTER

DIVISION, ATLAS PRESS CO.
KALAMAZOO, MICHIGAN

INSTALLING ELECTRIC CONTROL PANEL ASSEMBLY

ON

13" CLAUSING-COLCHESTER LATHES

FROM SERIAL NO. TO

April 1964 FILE NO. 13"-CC ELEC-4

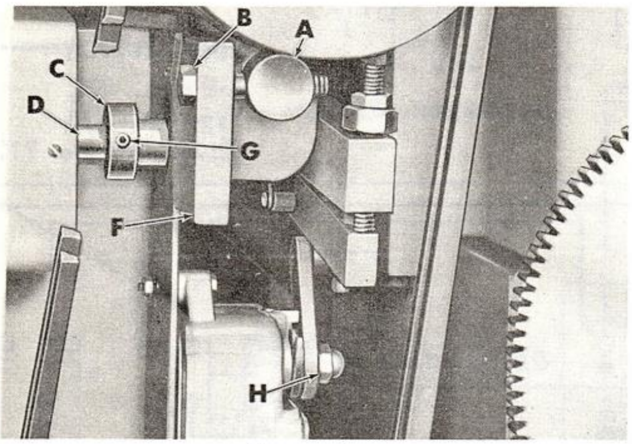


Figure 1

1. Before installing switch panel assembly turn the reversing switch shaft (D, fig. 1) clockwise as far as it will go, and then back two "clicks" – the switch is now in the off position.

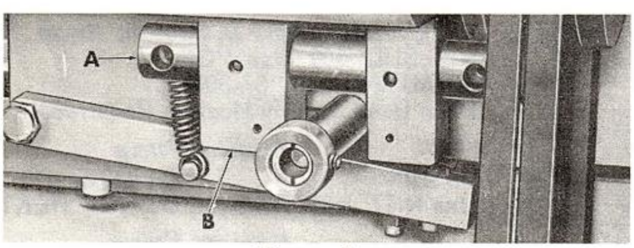


Figure 2

2. Slide switch panel mounting bar (A, fig. 2) in holes in back of headstock (B).

3. Slide drum switch shaft (D, fig. 1) with switch panel into coupling (C), then align mounting bar (A) with holes in mounting plate (F) and secure in place with two 3/8-16 x 2" screws (B). DO NOT TIGHTEN SECURELY.

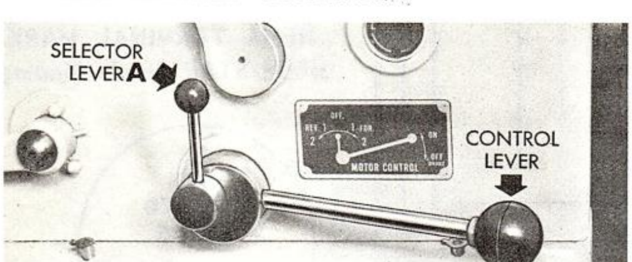


Figure 3

4. Make sure selector lever (A, fig. 3) rotates freely. If binding condition occurs, loosen mounting screws (B, fig. 1) and realign, then tighten screws securely.

5. Hold the small reversing selector lever at the front of the lathe head stock in a vertical position and securely tighten set screw (G) in coupling collar (C) to clamp reversing switch shaft.

   IMPORTANT: Be sure set screw (G) is at 90° to slots in coupling.

6. Connect the six numbered wires in the conduit from the reversing switch to the corresponding numbered motor leads. Use small screws and nuts, and tape connections.

7. Bring the main electric line into the magnetic starter through a knock out opening in the top of the box and connect the wires to the correct terminals as shown in the wiring diagram inside the switch cover.

8. Make sure red control lever is in "down" or "off" position.

9. Select the speed and direction of spindle rotation desired with the spindle selector lever.

10. Move the red control lever up to start the lathe and motor. To stop the lathe, push the lever down--continue to push the control lever down to operate the brake and quickly stop the spindle.

11. Before changing motor speed or direction of rotation, the control lever must be returned to the "off" position.

    NOTE: The limit switch incorporates a safety feature to protect the machine and operator. In the event of an electrical power failure, the lathe cannot be accidentally restarted and will not restart by itself. It is necessary for the operator to return the control lever to the "off" position, and then move the lever to the "on" position to start the lathe.

12. If spindle rotation does not correspond to selector switch notation, interchange any two line leads. If the motor does not start when the control lever is in the "up" or "on" position, or stop in the "down" position, adjust the travel of the limit switch arm on the switch lever by loosening the adjusting nut (H, fig. 1). If the brake lever at the rear of the headstock jams on the threaded end of the brake link, adjust set screw in the bracket on the switch panel to limit travel of the switch lever.

WIRING TO POWER SUPPLY

APPLIES TO CLAUSING-COLCHESTER 13" LATHES FROM SERIAL NO. TO ______

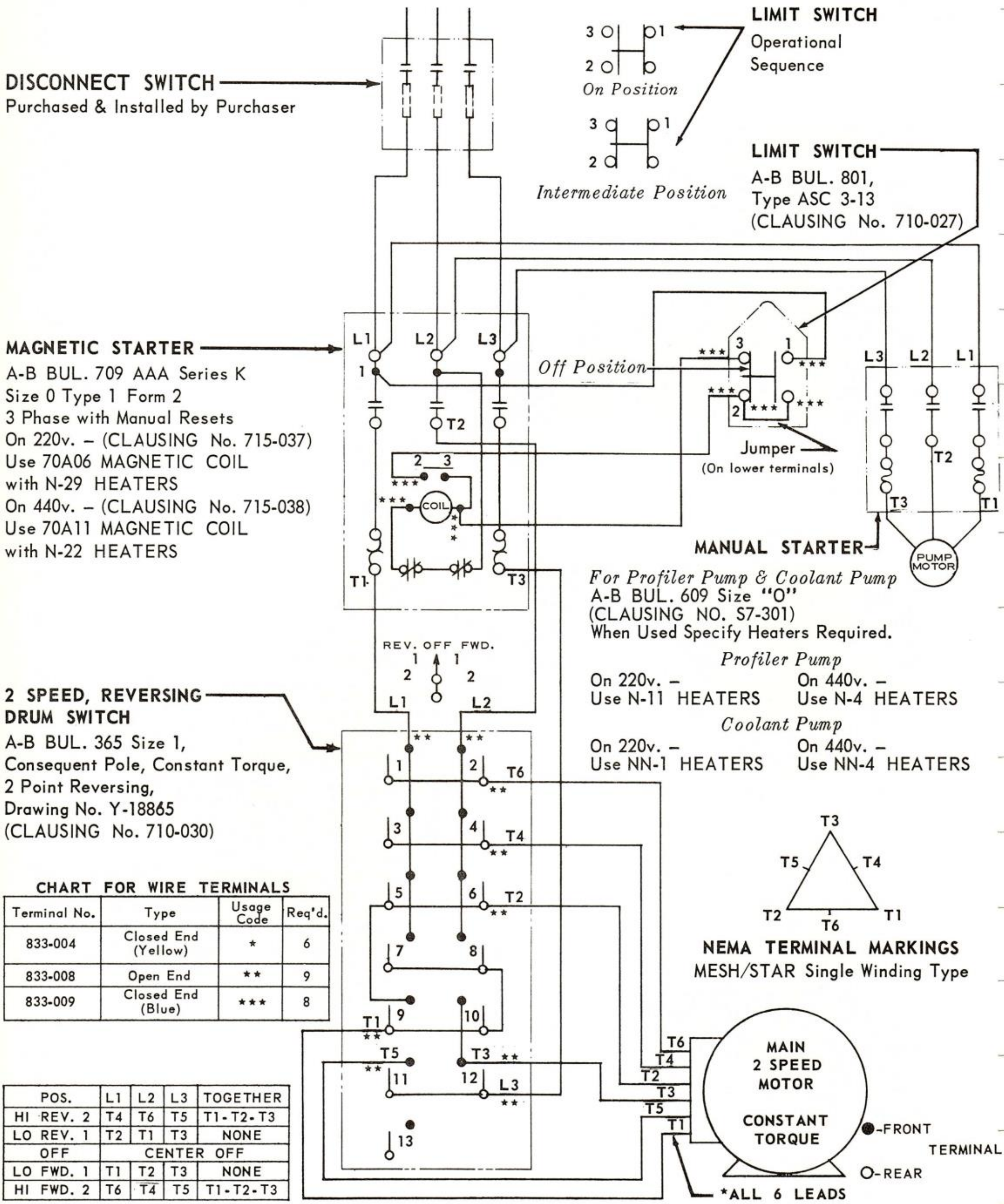


CHART FOR WIRE TERMINALS

Terminal No.	Type	Usage Code	Req'd.
833-004	Closed End (Yellow)	*	6
833-008	Open End	**	9
833-009	Closed End (Blue)	***	8

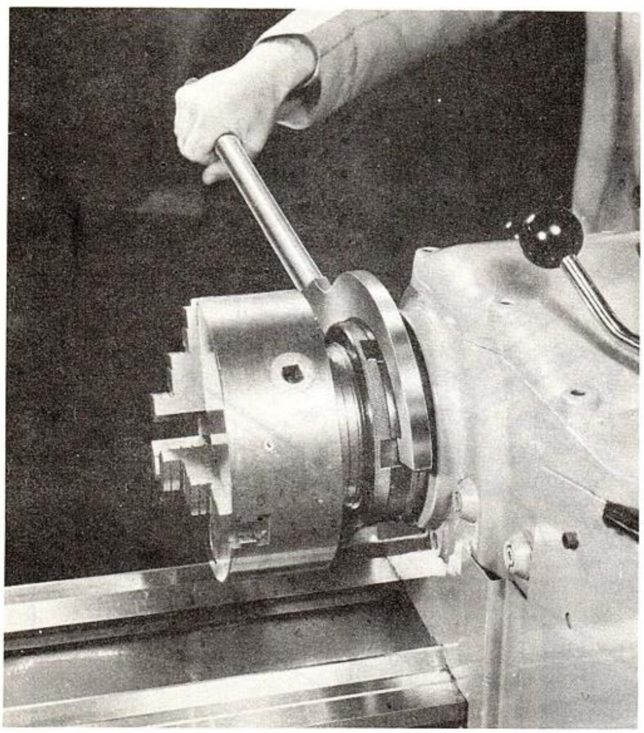
POS.	L1	L2	L3	TOGETHER
HI REV. 2	T4	T6	T5	T1-T2-T3
LO REV. 1	T2	T1	T3	NONE
OFF	CENTER OFF			
LO FWD. 1	T1	T2	T3	NONE
HI FWD. 2	T6	T4	T5	T1-T2-T3

CHUCK MOUNTING

The A.S.A. long-taper key drive spindle nose (to LO standard) is incorporated on this machine and has been selected in order to overcome the danger of chuck or faceplate detachment when the spindle is stopped or reversed rapidly.

Before fitting a chuck to the spindle nose, ensure that the centre and centre bush have been removed. Care should be taken to make sure that the taper and the key of the spindle nose, together with the internal tapered bore of the chuck, are scrupulously clean. Any dirt, swarf or burrs on these surfaces will upset the accuracy of the machine, may prevent the correct locking of the chuck on the spindle nose and can cause irremediable damage to the mating surfaces.

The spindle nose drawnut engages with the thread on the back of the chuck; and when the drawnut has been screwed up by hand, without trouble, the special spanner wrench supplied with the machine should be used to tighten the drawnut fully. It is advisable to give the stock of the Spanner wrench one or two sharp blows with a mallet to ensure that the drawnut is quite tight. Do not, however, fit extension handles over the spanner wrench for tightening purposes.



NOTE:

Should the chuck remain fitted for any length of time, the locking procedure should be repeated frequently. This is important when the machine is engaged on work which involves intermittent or heavy cutting.

If the chuck is fitted with the spindle nose still warm from operating, it is essential that the drawnut is re-tightened before starting the machine again from a cold condition.

Releasing the drawnut will free the chuck or faceplate from the taper. Care must be taken whenever this is done, however, to ensure that the chuck does not slide off the spindle nose to damage the bed or saddle. It is advisable to obtain assistance each time the chuck is to be removed.

To avoid the possibility of moving the machine from its levelled position, final locking of the chuck or faceplate should be made with the spanner wrench horizontal.

LUBRICATION

Accuracy of the work produced and long, efficient service from your lathe depend to a large extent upon the care and correct attention given to lubrication.

Periodic attention

Before the new machine is put into service all oiling points should be properly lubricated, as indicated on the Lubrication Chart which shows the attention recommended daily, weekly and monthly. It cannot be stressed too highly that all the oiling points marked with a black dot (bedway, leadscrew and spline shaft) should be carefully cleaned and lubricated every working day in order to obtain efficient operation of the lathe.

Before starting work each day run the machine at high speed for a few minutes in order to thoroughly distribute lubricant throughout the gearing. This procedure is also advised when a period of work at slow speeds is anticipated.

Lubricants

When the machine is despatched from the Works the headstock and gearbox are filled to the correct levels with the approved lubricant, as follows:—

Headstock — Shell Tellus Oil 27
Gearbox — Shell Tellus Oil 33

Tellus oils may generally be obtained from Shell Oil Companies and agents throughout the world, but when difficulty is experienced in obtaining these recommended grades the following physical characteristics should be quoted in lubricant orders;

	Tellus Oil 27	Tellus Oil 33
Specific Gravity at 60°F	0·870	0·876
Flash Point closed	390°F	410°F
Pour Point	—20°F	—20°F
Viscosity Redwood No. 1—		
70°F	310 secs	750 secs
140°F	68 secs	112 secs
200°F	41 secs	52 secs

THE USE OF INCORRECT GRADES OF OIL IN THE HEADSTOCK AND GEARBOX IS LIABLE TO CAUSE OVERHEATING AND RESULT IN POSSIBLE DAMAGE.

Oil levels

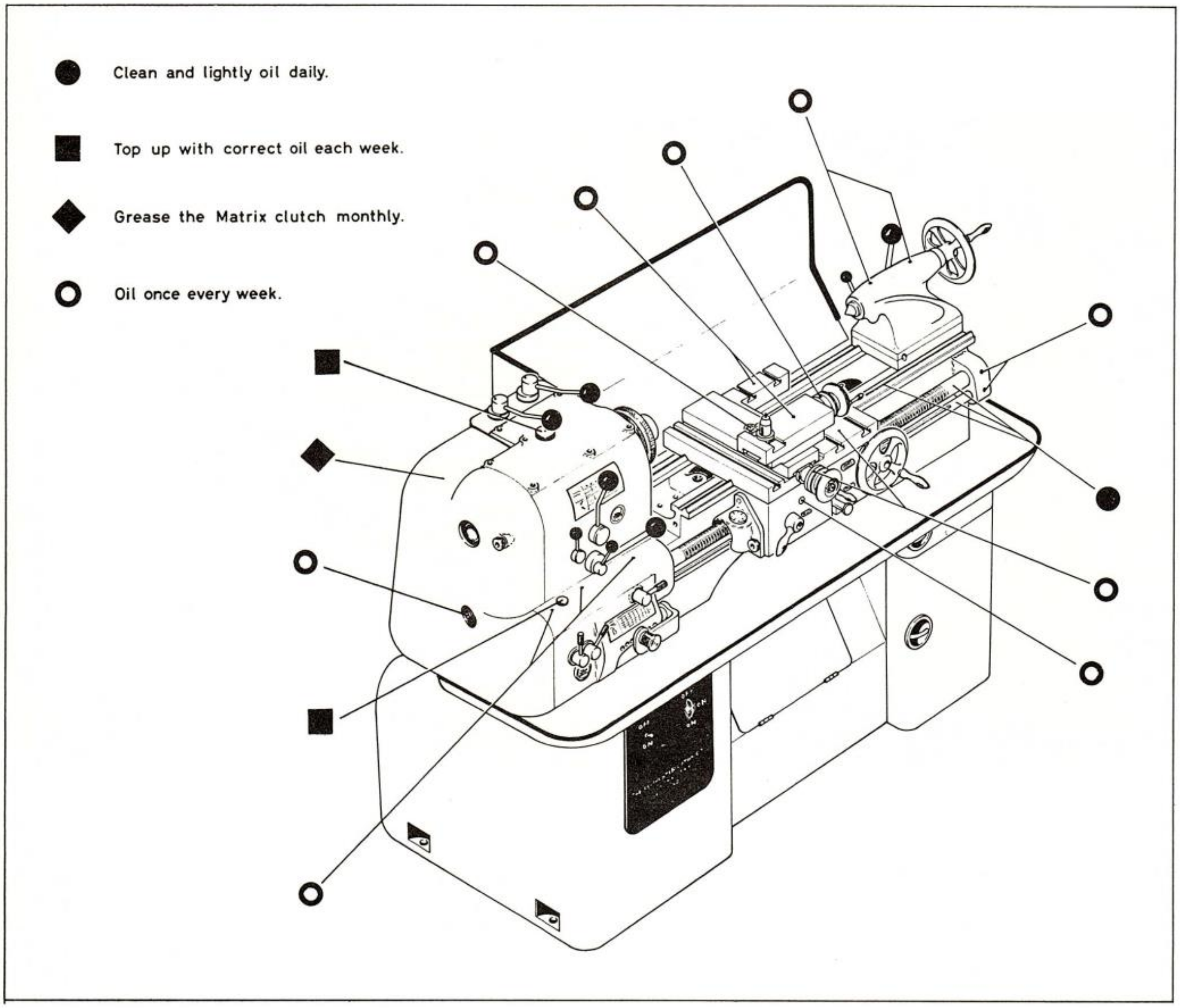
Oil levels in the headstock and gearbox should be checked every week. When checking the levels at the sight-glass, always stop the machine and allow a period of time for the oil to settle so that a true reading can be obtained. When this procedure is not followed there is a risk of overfilling which may result in the generation of excessive heat and cause oil loss through pressure leakage.

After an initial period of service of between 150 and 200 hours of running, both the headstock and gearbox of your new lathe should be drained, flushed with clean flushing oil and then refilled to the correct level with the recommended lubricant. Thereafter, repeat the draining and oil-change procedure every three months or 500 hours of operation—whichever is the shorter period.

Saddle and Slides

A one-shot lubrication system is fitted in the saddle. Before commencing work each day, depress the lubricator button to send a full supply of oil through the oil channels along the slideways.
An oil level sight glass is provided in the front face of the saddle. At least once every week check the oil reservoir and replenish as necessary with Shell Tellus Oil 33.

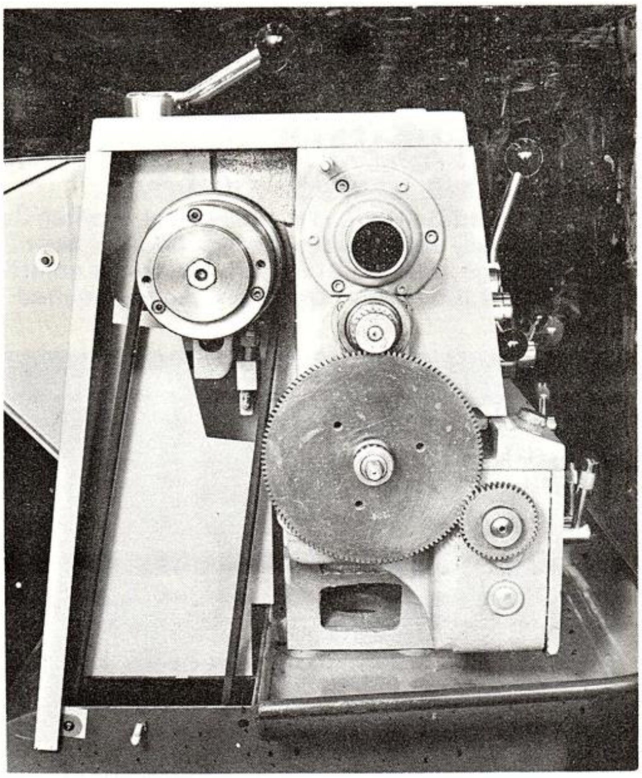
LUBRICATION CHART



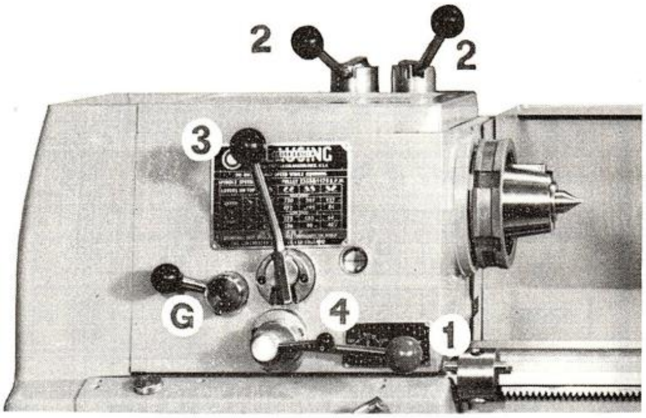
DRIVE

The headstock gear train is driven from a two speed electric motor through standard double vee belts and pulley drives.
When correctly tensioned, belt can be deflected $\frac{3}{4}$ in. when pressed at a point midlength between the motor and headstock pulleys.
After an initial period of service (between 150 and 200 hours of operation) it may become necessary to re-adjust the tension of the driving belt to eliminate slap, vibration or slip due to belt stretch. Tension adjustment can be made any time by screwing down the two bolts retaining the front of the motor platform. Access to these two bolts is gained from the back of the motor compartment at the headstock end of the machine after removal of the louvred cover panel.
The drive is completely enclosed in an end guard to avoid the possibility of motor failure due to chips or coolant splashing. Removal of the end guard for motor or drive attention will automatically isolate the electric power supply.

DRIVE END GEARS



STARTING



Rotation of the main spindle is controlled from the front of the headstock by means of the starting lever (1). Pull the starting lever upward. This action will start the motor through an air brake starter; the starting lever will remain in this position until it is moved downward to stop spindle rotation.
The starting mechanism incorporates a no-volt release. In the event of an electrical supply failure, the machine can only be restarted by first moving the control lever to the OFF position and then starting in the normal manner. Correct operation of the no-volt release should be checked from time to time, as described in Section ELECTRICAL WIRING.

STOPPING

To stop the spindle, return the starting lever to the original or OFF position. On direct start machines, downward pressure on the starting lever operates a two-shoe Ferodo lined brake inside the driving pulley which causes the spindle to stop instantly. This brake cannot be fitted on lathes having the Matrix clutch.

REVERSE

On machines supplied for operation on 3-phase A.C. supply (only) rotation of the main spindle is readily reversed by means of the finger-tip reversing switch (4) which is inset in the starting lever. Because of the use of the American long taper spindle nose there is no possibility of the chuck or faceplate running off when the spindle is rapidly reversed or stopped; providing, of course, that these have been correctly fitted.

HEADSTOCK SPEED SELECTION

Speed selection is by means of two levers on the top of the headstock (2) and one lever on the front (3). Each lever has two positions, providing eight spindle speeds as shown on the data plate; but this range is increased to sixteen speeds by the use of a two-speed motor. The two-speed control switch for the motor is incorporated into the headstock controls.
Lever positions and a chart of the speeds are shown in the illustration.

The small lever (G) is used in conjunction with gearbox controls for reversing the direction of feed.
THE SPINDLE AND HEADSTOCK GEARING MUST ALWAYS BE STOPPED BEFORE MOVING ANY OF THE CHANGE LEVERS.

CLAUSING COLCHESTER
ATLAS PRESS CO. KALAMAZOO. MICH. U.S.A.

DO NOT CHANGE SPEED WHILE RUNNING

SPINDLE SPEEDS PULLEY 2355 & 1175 R.P.M.

LEVERS ON TOP					
		HIGH SPEED			
LEVER AT FRONT		1800	750	307	127
		1140	472	195	81
		LOW SPEED			
		900	375	153	64
		570	236	98	40

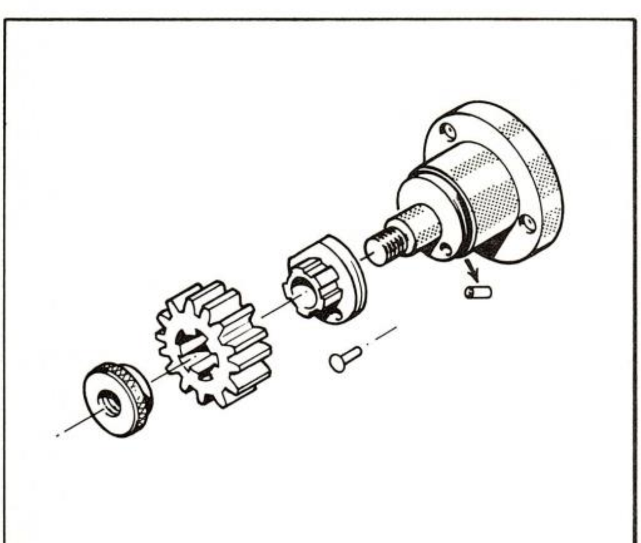
USE SHELL TELLUS OIL 27
OBTAINABLE FROM SHELL OIL COMPANIES THROUGHOUT THE WORLD

THE COLCHESTER LATHE CO LTD ENGLAND

SWING FRAME

The drive from headstock to gearbox is transmitted through the train of gears on the end of the headstock, enclosed by the end cover.

The gears are fitted to a swing frame assembly which is readily adjustable to accommodate the full range of change gears available for each particular machine (see also Section GEARBOX). At each of the gear spindles a knurled handnut is fitted to enable gear wheels to be rapidly interchanged when required. Be sure to tighten the handnuts after fitting each gear wheel.



A shear pin safety device is fitted as a measure to protect against overload when screwcutting . A shear pin can be replaced easily by removing the top gear in the train, then the splined sleeve which carries the gear. The broken portion of pin may then be tapped out of the sleeve, from the side opposite to the splines. To remove the other broken portion, the shaft should be rotated until the pin hole is opposite the slot in the housing and swing frame then the broken pin may be knocked straight through and will drop out through the slot. A new pin can then be inserted and the top gear and sleeve re-assembled. When the end guard is opened the electric supply is automatically isolated by a micro-switch in the headstock.

NOTE:—The leadscrew should never be allowed to revolve except when screwcutting; it should be cleaned and lightly oiled each time before use.

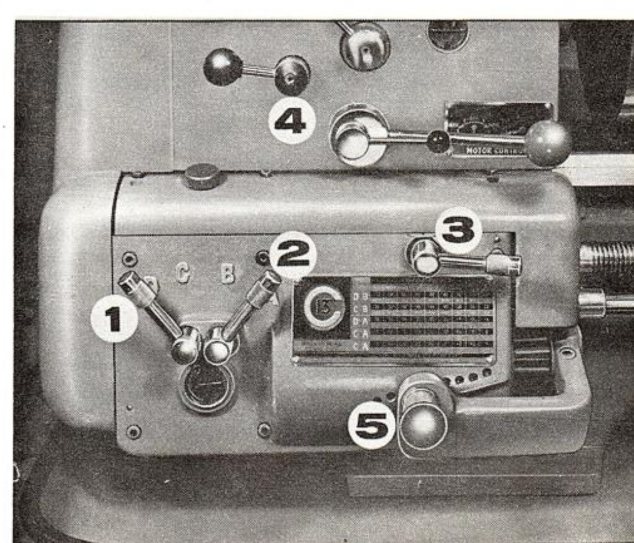
GEARBOX

The standard gearbox covers a range of 45 feeds and threads (including $11\frac{1}{2}$ and 23 t.p.i.) but does not provide metric threads. The full range of feeds and threads available are shown in the reproduction of the machine data plates.

Control of the gearbox is by means of four levers (1, 2, 3 and 4 in the illustration) and the tumbler shaft (5). The tumbler shaft is provided with a spring-loaded plunger which engages with holes in the front of the gearbox cover to provide positive positioning and locking. The two selector levers (1) and (2) at the left-hand end of the gearbox each have two positions (A or B) and (C or D) and by manipulating these two levers in conjunction with the tumbler arm a range of 36 feeds and threads can be obtained. The remaining 9 feeds and threads of the total 45 are obtainable by substituting a 42T change gear for the 21T gear on the top driver position and re-meshing the train. This 42T change gear is supplied stowed alongside the 35T change gear on the gearbox driving shaft.

SPINDLE AND HEADSTOCK GEARING MUST BE STOPPED BEFORE ANY OF THE LEVERS CONTROLLING THE GEARBOX ARE MOVED.

A third lever (3) disengages the leadscrew when this is not actually required for screwcutting. A lever (4) situated high on the front of the headstock controls direction of the feeds, reversing them as required.



THREAD CUTTING

1. Threads available from the gearbox

The screwcutting dial on the apron has four numbered divisions and four sub-divisions marked on its surface, clearly visible from the operating position. The housing carrying this dial is located to the side of the apron and is retained in position by a knurled handscrew. When not required for use it may be swung out of contact with the leadscrew, since it is only employed when screwcutting is actually carried out.

To cut an even number of threads per inch (e.g. 12 t.p.i., 14 t.p.i.) the leadnut may be engaged at any division on the dial. For cutting an odd number of threads per inch (e.g. 13 t.p.i.) the leadnut must be engaged only on the numbered divisions. For fractional threads (e.g. $4\frac{3}{4}$ t.p.i.) the leadnut must only be engaged at the division marked 1 on the dial.

When engaging the leadnut, care should be taken to ensure that the appropriate dial division coincides exactly with the fixed point on each pass.

The settings of gear box levers for the threads available from each gearbox are shown on the machine data plates which are reproduced in Section GEARBOX.

2. Threads not available from the gearbox

To cut special and multi-start threads which are not immediately available from the gearbox, it is necessary to use special change gears which are obtainable as extra equipment. For calculating the number of teeth in the required gears the following formula should be used:

$$\text{Thread to be cut} = \frac{3 \times X \times Y}{10 \times T} = \frac{\text{Driver gear}}{\text{Driven gear}}$$

Where X = hole in feed box (see sketch below)

Y = 1 with selector levers on A C
2 with selector levers on A D
4 with selector levers on B C
8 with selector levers on B D

and T = Number of threads per inch to be cut

Values for X are as follows:—

0	0	0	0	0	0	0	0	0
28	26	24	23	22	20	19	18	16

Example

It is required to cut 27 t.p.i.

The values of X and Y may be chosen from any of the relevant numbers given above; and there is no rule about the choice. If the values selected give impossible numbers of teeth, try other values of X and Y and continue so doing until a practicable result is obtained.

Setting up gear train (27 t.p.i.)

1. Remove gear from headstock spindle.
2. Loosen swingframe (quadrant) locking nut located between swing frame and end of bed. Swing quadrant until 120T idler gear is out of mesh with gear on gearbox shaft.
3. Loosen idler gear stud nut located on inside of quadrant, slide 120T idler gear away from headstock spindle.
4. Select the proper gear for headstock spindle position (i.e. 28T as example). Place gear in position on spindle and secure in place.
5. Slide 120T idler gear up until properly meshed with gear on headstock spindle and secure in place. For correct mesh; place piece of heavy wrapping paper (·005 in. thick) between teeth of meshing gears, tighten gears in position and remove paper.
6. Check gear in position on gearbox spindle. For obtaining 27 t.p.i. it should be 35T gear.
7. Swing quadrant so 120T idler gear is in proper mesh with gear on gearbox shaft. Tighten in place.
8. Set gearbox levers properly, as shown on the data plate (left hand to C, right hand to B) and position tumbler to cut 36 t.p.i.
9. Check gear set-up by cutting 27 t.p.i. on scrap stock.
   In the case of 27 t.p.i. $= \frac{3 \times 18 \times 4}{10 \times 27} = \frac{28}{35} = \frac{\text{Driver}}{\text{Driven}}$

13"

	LEVERS		THREADS PER INCH SLIDING FEEDS IN INCHES- SURFACING ½ SLIDING								
	D	B	112	104	96	92	88	80	76	72	64
			·0025	·0025	·003	·003	·003	·0035	·0035	·004	·0045
	C	B	56	52	48	46	44	40	38	36	32
			·005	·005	·006	·006	·006	·007	·007	·008	·009
	D	A	28	26	24	23	22	20	19	18	16
			·010	·011	·012	·012	·013	·014	·015	·016	·017
	C	A	14	13	12	$11\frac{1}{2}$	11	10	$9\frac{1}{2}$	9	8
			·020	·021	·023	·024	·025	·027	·029	·031	·034
WHEN USING 42T DRIVER GEAR	C	A	7	$6\frac{1}{2}$	6	$5\frac{3}{4}$	$5\frac{1}{2}$	5	$4\frac{3}{4}$	$4\frac{1}{2}$	4
			·039	·042	·045	·048	·050	·055	·058	·061	·068

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Metric Thread Cutting

Compounding of the quadrant idler gear is necessary for cutting all 21 available metric threads. For this machine replace the 120T idler with a compound 127T and 120T idlers on the quadrant.

1. Loosen quadrant locking nut located between quadrant and end of bed. Swing quadrant until 120T gear is out of mesh with gear on feedbox shaft.

2. Loosen idler gear stud nut located on inside of quadrant. Slide 120T gear away from gear on headstock shaft. Select proper gear for headstock shaft from chart, place gear in position and tighten knurled nut.

3. Remove 120T idler gear from brass sleeve. Place 127T gear on brass sleeve followed by 120T gear. Slide sleeve with compound 127T/120T gears on idler gear stud; be sure 127T gear is next to quadrant.

M/M Pitch	DRIVER (Top)	DRIVEN (Bottom)	LEVER L.H.	POS. R.H.	TUMBLER
0.25*	21T	35T	D	B	3
0.35*	21T	30T	D	B	6
0.5	42T	35T	D	B	3
0.6	42T	35T	D	B	6
0.7	42T	30T	D	B	6
0.75	42T	35T	D	B	9
0.9	27T	30T	C	B	6
1.0	42T	35T	C	B	3
1.25†	42T	42T	C	B	9
1.5	42T	35T	C	B	9
1.75	42T	30T	C	B	9
2.0	42T	35T	D	A	3
2.5†	42T	42T	D	A	9
0.3	42T	35T	D	A	9
3.5	42T	30T	D	A	9
4.0	42T	35T	C	A	3
4.5	27T	30T	C	A	9
5.0†	42T	42T	C	A	9
5.5	33T	30T	C	A	9
6.0	42T	35T	C	A	9
7.0	42T	30T	C	A	9

NOTE:

† For these threads an extra 42T gear is required.

* For these threads a spacer No. M1-565 ($\frac{1}{2}''$ wide x $\frac{7}{8}''$ Bore) is required in place of 21T gear at bottom position.

4. Slide 127T/120T gear up until 127T gear meshes with selected gear in position on headstock shaft. For correct mesh, place strip of heavy wrapping paper (·005 in. thick) between teeth of meshing gears. Paper should fit tight between gears. Lock gear stud in place and remove paper.

5. Place 21T gear in position on feedbox shaft next to feedbox. This gear is used as spacer only.

6. Select proper gear for this shaft position from chart. It will be 30T, 35T or 42T only. Place gear in position next to 21T gear spacer. Tighten in place.

7. Swing quadrant until 120T gear meshes with outer gear on feedbox shaft. Check gear mesh (step 4) and tighten quadrant locking nut.

8. Position feedbox levers as shown in chart. Check gear setup by cutting thread on scrap stock.

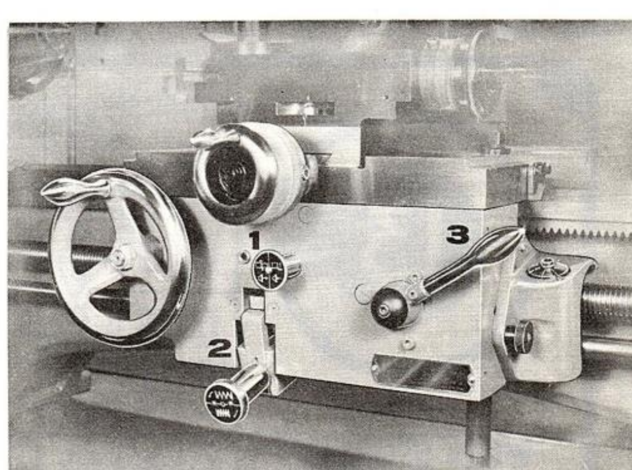
NOTE:

When cutting metric threads, THE THREADING DIAL CANNOT BE USED. Close half-nut for first cut, then reverse lathe to return carriage for each succeeding pass until thread is completed.

APRON

Longitudinal and cross-feeds are selected by means of a plunger (1) shown in the illustration. Longitudinal feeds are obtained with the plunger fully extended; cross-feeds with the plunger fully depressed. A central or neutral position is also provided which is selected when neither longitudinal nor cross-feed is required.

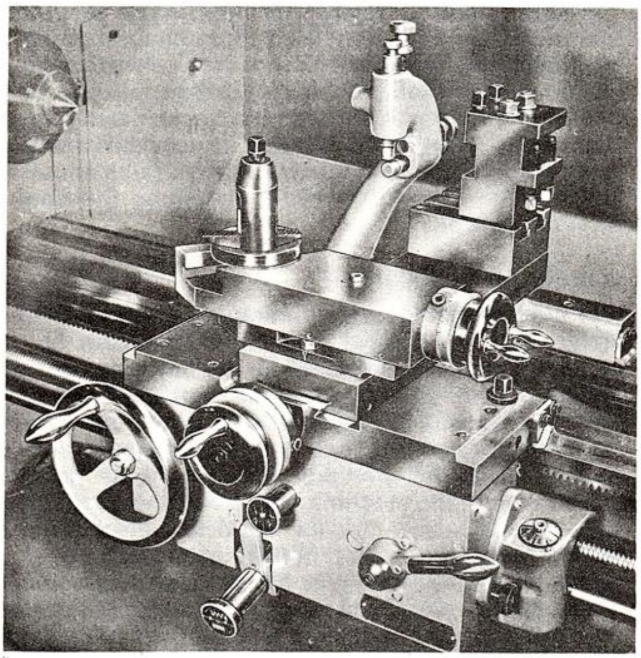
The feeds are engaged by lever (2) which incorporates a safety device to prevent overloading. This mechanism is pre-set at the Works to trip out at 400 lb end pressure. It should give long, trouble-free service.



SADDLE AND SLIDES

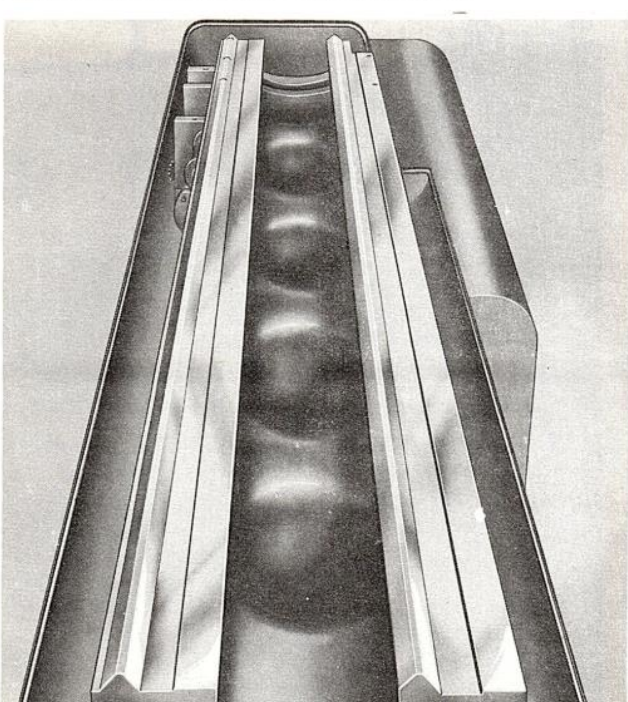
The saddle is of American winged type. It is secured to the bed by means of adjustable keep strips at front and rear and can be locked in any position on the bed by means of a locking clamp. The cross slide is graduated radially 90°-0-90° each side for accurate setting of the compound slide. Large diameter micrometer dials are graduated in 0·001 in. divisions on both the slides.

An American pillar-type toolpost is fitted as standard, intended for tools up to $\frac{9}{16}$ in. × $1\frac{1}{8}$ in.



The Bed

All lathe beds are induction hardened and ground on working surfaces. To remove the detachable gap-piece on gap bed machines, simply unscrew the four cap-head screws. No dowels are fitted.

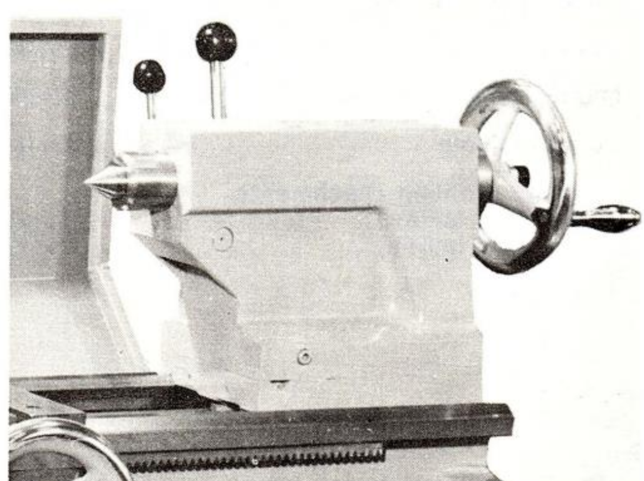


When refitting the gap-piece, first clean off the block and locating faces most thoroughly. Then fit the gap-piece in position and locate the four screws (two vertically from the top, two horizontally). Now bring up the saddle to give an approximate alignment and tighten the screws lightly. If the mating faces are properly clean the gap-piece may now be aligned exactly by a few taps in the required direction using a hide-faced mallet. Finally tighten the retaining screws securely.

The lathe bed should be cleaned down as often as possible to keep it free from chips. Use a brush for all cleaning; do not use an airblast which can drive chips under the sliding surfaces and may, also, blow away the protective oil film from working surfaces. After cleaning down, the bed should be coated with Shell Tellus Oil 33 to prevent formation of rust.

TAILSTOCK

The barrel is graduated in inch divisions and induction-hardened in the morse taper bore and on the outside diameter. All standard tang drills are driven by the tang and eject at zero graduation. A tool-height indicator line is marked on the front face of the nose chamfer to assist in setting tools to correct centre height when a workpiece is set up between centres. There are two parts to the tailstock body casting; the base proper, which slides along the bedways, and the tailstock body which may be moved laterally on the base. This movement or 'setting over' allows shallow tapers to be turned without need for a special taper attachment; maximum set over is $\frac{1}{4}$ in. each side of the centre line, a graduated scale is marked on the rear face of the tailstock casting. The tailstock is set over by first releasing the bedway clamping lever and then adjusting the two set-over screws fitted in the base (one at each side) for this purpose.



THE TWO SPRING-LOADED SHOULDER BOLTS HOLDING THE BASE TO THE BODY DO NOT REQUIRE SLACKENING AT ANY TIME.

Quick lever clamping is employed to lock the tailstock in position on the bedways. The tailstock barrel is locked at the required setting by a lever-operated clamp.

ACCESSORIES

A comprehensive range of accessories is available for the Clausing-Colchester lathe, specifically designed for the machine and engineered for robust service and reliability.
A brief list of these is given below and more detailed information on certain items is given in subsequent pages. All accessories listed can be fitted to the machine after it has left the Works.

Description	*Code*
3-jaw Universal scroll chuck—$7\frac{1}{2}$ in.	13-201
4-jaw Independent chuck—10 in.	13-202
18 in. Faceplate (gap bed lathes only)	13-203
Coolant system	13-208
Reversing switch	13-212
Steady rest	13-210
One-position carriage stop	13-214
Five-position carriage stop	13-216
Rear toolpost	13-217
Chuck backplate	13-218
Telescopic taper attachment	13-213
High-speed threading unit	13-227
Rotating centre	13-215
Hex bed turret	13-651
Micro carriage stop	13-2000
Turret toolpost	13-$4\frac{1}{2}$-S
Hydraulic profiling attachments	
(13 in x 24 in lathes)	13-230
(13 in x 36 in lathes)	13-231

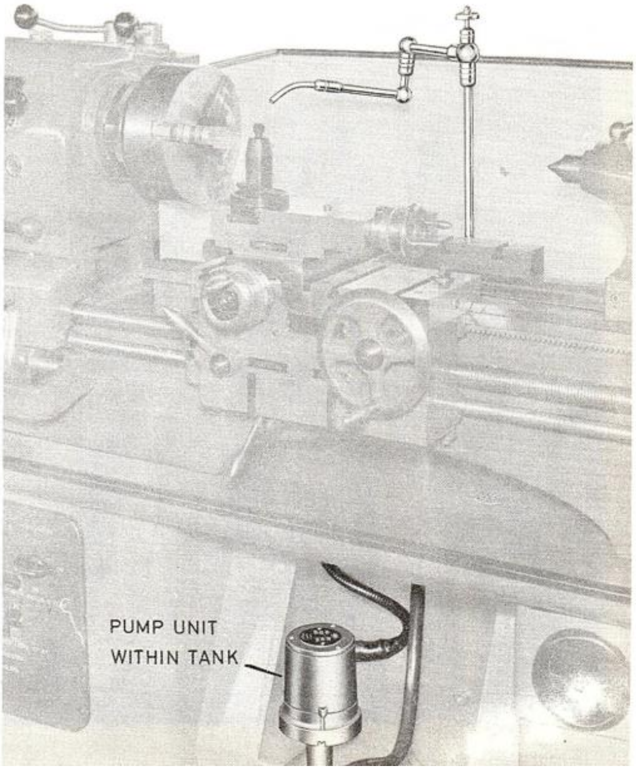
COOLANT SYSTEM

The cabinet base has a built-in storage tank with a pump fitting position already provided. A pipe in the centre of the tray returns coolant to the tank and a gauze strainer is fitted to the pipe at tray level to prevent swarf and chips from entering the sump.

The jointed piping supplied with this unit is fully universal and will feed coolant to any required position. Supply of coolant is easily controlled by a ball-type shut-off valve. The whole system has been designed to eliminate the leaks usually inherent in other coolant systems. Capacity of the unit is $5\frac{1}{2}$ gallons. An electric pump of robust and reliable design is available and is wired into the main electrical panel at the main switch (see Wiring Diagram). The pump motor should never be run if the coolant sump is dry. The sump should be cleaned at frequent intervals and refilled with fresh coolant. Precautions should be taken when refilling to avoid splashing the coolant over the pump.

Soluble oil emulsions

For most work a soluble oil emulsion will be chosen, since this will almost always be adequate for the work in hand, and preferred by the machine operator. When screwing with a die-head, tapping, or reaming, some extra coolant applied locally may be required. If much work of this type is contemplated, it may be better to use an emulsion of an extreme pressure soluble oil in the machine tank. A good quality oil of this type will give results equal to neat cutting oil whilst retaining the cleanliness of soluble oil.
Good quality soluble oils should always be chosen and mixed in accordance with the suppliers' recommendations. The following grades have been tested and used in our own works with complete satisfaction:-
Shell Dromus Oil B—conventional milky soluble oil mixed with water in the ratio 25/30: 1.
Shell Dromus Oil D—translucent soluble oil mixed with water in the ratio 40: 1.
Shell Dromus Oil 908—extreme pressure oil mixed with water in the ratio 10/15: 1.

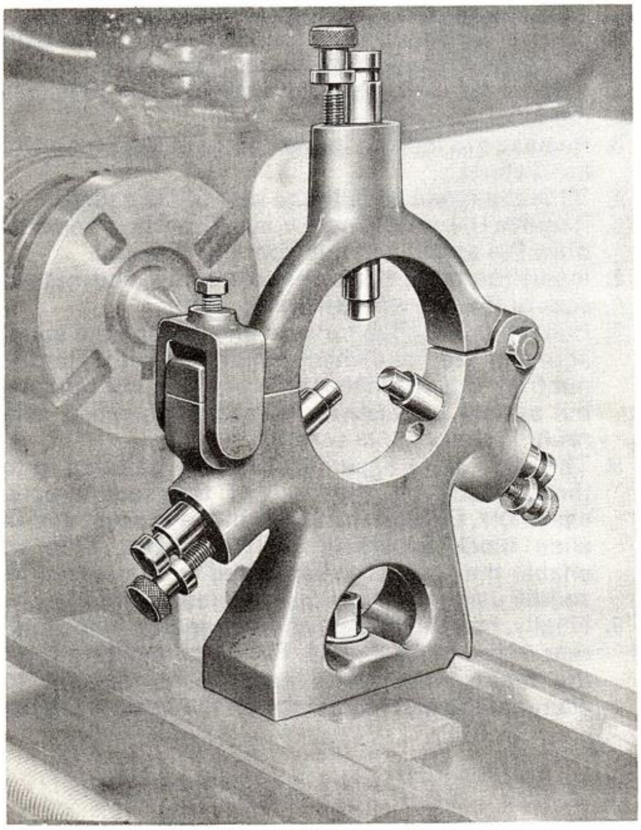


Soluble oils and machine maintenance

No soluble oil emulsion, however good, can completely prevent rust without help from the operator. The machine should therefore be cleaned down regularly and bright parts wiped over with machine oil. It should never be left, especially over weekends or holidays, with wet swarf on the bed or slides. When the work in hand requires the saddle or tailstock to be clamped in one position for long periods it is advisable to spread a little machine oil on the bed beforehand to ensure a film of oil between the surfaces.
The tank should be emptied, cleaned out and refilled with fresh soluble oil at regular intervals.

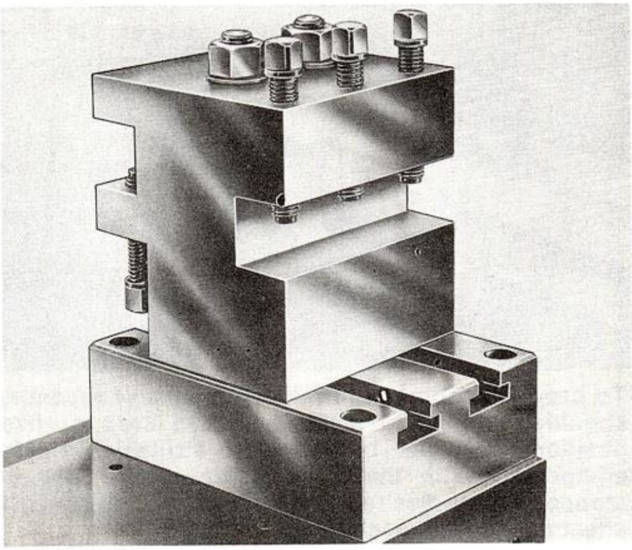
STEADY REST

Of extremely rigid design, this attachment is very easily opened and set. Three adjustable fingers are provided, and the maximum capacity is 4 in. bar diameter.
Inserts are of sintered bronze and quickly replaced, being a press fit into the ends of the fingers.
The whole attachment is readily attached to the bed by a clamp bolt, and can be removed very rapidly when not required for use.



REAR TOOLPOST

As an aid to production, a rear toolpost is available for fitting direct to the cross slide, which is drilled and tapped ready to receive it,
Two tool positions are provided so the tool may be fitted either in conventional manner, or in the inverted position.
Using this tool post (with the tool fitted in conventional manner) left hand threads can be easily cut.
Supplied complete with all necessary fixing screws, the only fitting required is the physical bolting of base pad tc cross slide. Tee slots are provided in the base pad so that the toolpost may be adjusted in position on the base. Maximum tool depths that can be accommodated in either position are $\frac{5}{8}$ in.
Standard wrenches and Allen keys supplied with the machine will fit all the nuts and screws in this assembly.

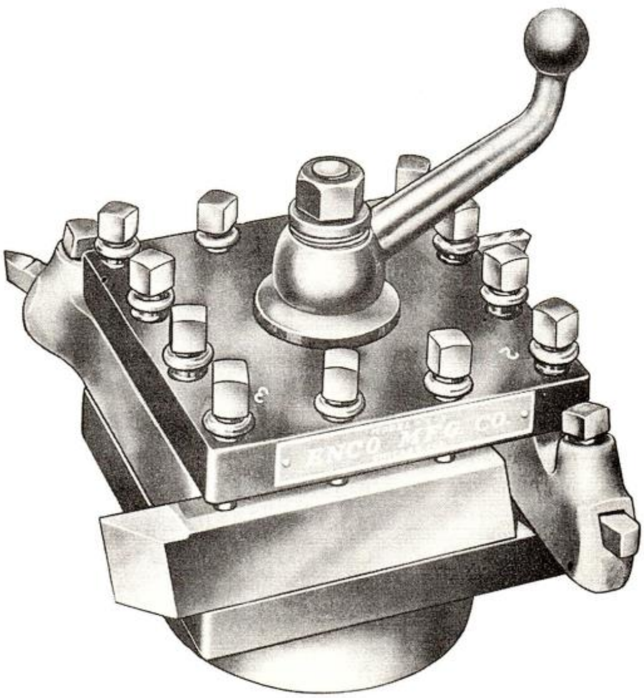


SQUARE TURRET TOOLPOST

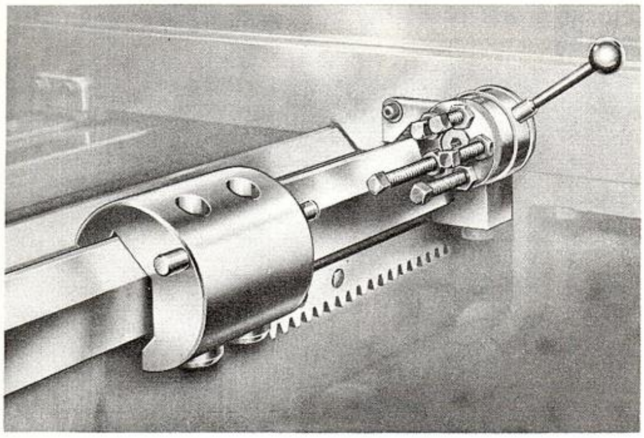
To index the toolpost into any of four operating positions, the central hand lever is moved in an anticlockwise direction until distinct detents are felt. This indicates that the plunger mechanism has released the locating plunger and the indexing mechanism is engaged. When the central hand lever is returned in a clockwise direction the turret will index into the next position. A further short movement of the lever in the same direction will lock turret block to topslide.

Using the retracting plunger method of indexing, the turret block remains close on its bottom face whilst being indexed, which effectively prevents entry of chips between the locating faces. The turret block can also be swung into any position without use of the indexing mechanism.

The turret block will accommodate up to four tools or toolholders having a height up to $\frac{3}{4}$ in.

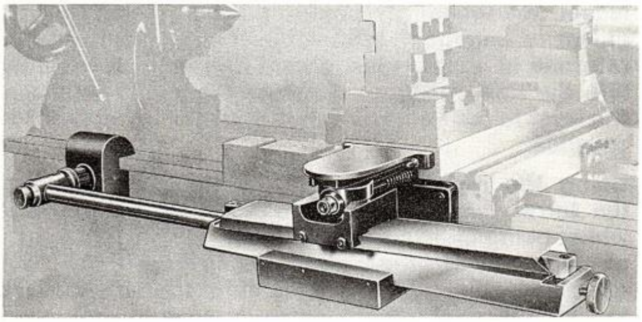


BED STOPS



To provide accurate and reliable means of repeating shoulder lengths, a single-type bed stop or five-position turret type bed stop are available as extra equipment. With these units, the saddle may be stopped in any desired position without detrimental effect on the feed mechanism.
A micro carriage stop is also available, for clamping on the front of the bedway. Micrometer control is graduated in 0·001 divisions. Hardened stop locks securely in any position.

TELESCOPIC TAPER TURNER



This attachment can be used for producing tapers up to 10° in either direction.
It can be mounted directly onto the rear of the saddle without any modification other than the fitting of a new saddle screw and nut which is supplied with the unit.
The swivel slide is graduated in $\frac{1}{4}°$ of arc and in $\frac{1}{8}$ in. taper per foot and great sensitivity of control is obtained when setting a taper by the use of the micro adjustment screw.
The cross slide handwheel is always used to control the tool and the base slide can be adjusted along the bed so that the taper may be cut in any position.
The attachment will deal with a length of 10 in. of taper at any one setting.
After attaching to the machine, all that is required to prepare the taper turner for use is the clamping of the connecting rod in the anchor bracket by means of the Caphead Allen screw
The fitting of this attachment in no way detracts from the use of the machine as a normal centre lathe. Change over can be accomplished simply by loosening the connecting rod clamping screw and traversing the saddle towards the headstock to disengage the connecting rod from the clamp. Then remove the anchor bracket from the bed so that there is no obstruction to foul the connecting rod. By replacing the bracket and engaging the connecting rod, the taper turner is rapidly reset for use.
Great care should be taken when re-adjusting or altering the fit of the base slide in the taper turner bracket, as any slackness will result in incorrect tapers.
To fit the taper turner:

1. The saddle and cross slide are ready drilled to receive the attachment, the necessary holes being drilled and tapped during manufacture.
2. Clean down the rear end of the saddle to receive the taper turner bracket.
3. Release the locknut in the centre of the cross slide handwheel.
4. Slide the cross slide to the rear of the saddle.
5. Remove the saddle screw nut fixing bolt and withdraw the screw and nut from the rear end.
6. Insert the taper turner saddle screw and nut and secure the nut with the fixing bolt.
7. Pull the cross slide forward and engage the saddle screw in the handwheel pinion. (NOTE: The lock nut from the original saddle screw is not replaced, but should be retained in case it is needed when refitting the original screw.)
8. The slide block assembly can now be fitted to the thrust block on the rear of the saddle screw assembly. Engage the slides in the bracket and the slide block assembly on the slides. This will enable the bracket to be bolted to the rear of the saddle using the pre-tapped holes provided.
9. Finally, bolt the bottom slide extension piece to the rear of the bottom slide. Fit the connecting rod to the taper turner slide and the connecting rod clamp to the machined face on the back of the bed.

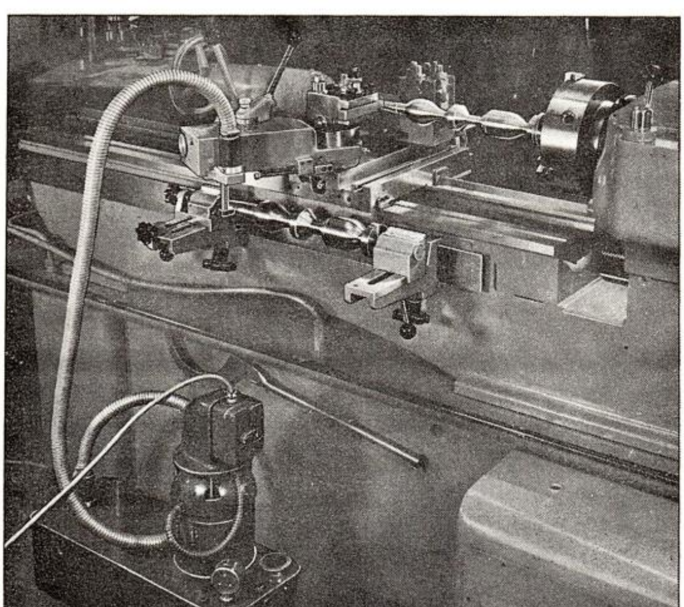
HYDRAULIC PROFILER

COLCHESTER SERIES '300' HYDRAULIC PROFILING UNIT

Designed to permit faster and more accurate profiling, this unit can be fitted at any time to Colchester lathes without modification or alteration of the machine. The standard equipment unit comprises four basic sub-units; profile slide, tool box, the rear beam and tail-stock units (suitable for round or flat masters or models) and a free-standing hydraulic power unit complete with a set of hoses. Two further units are available as additional equipment; a turret stop assembly and a facing beam; both of which are described subsequently.

Profile slide

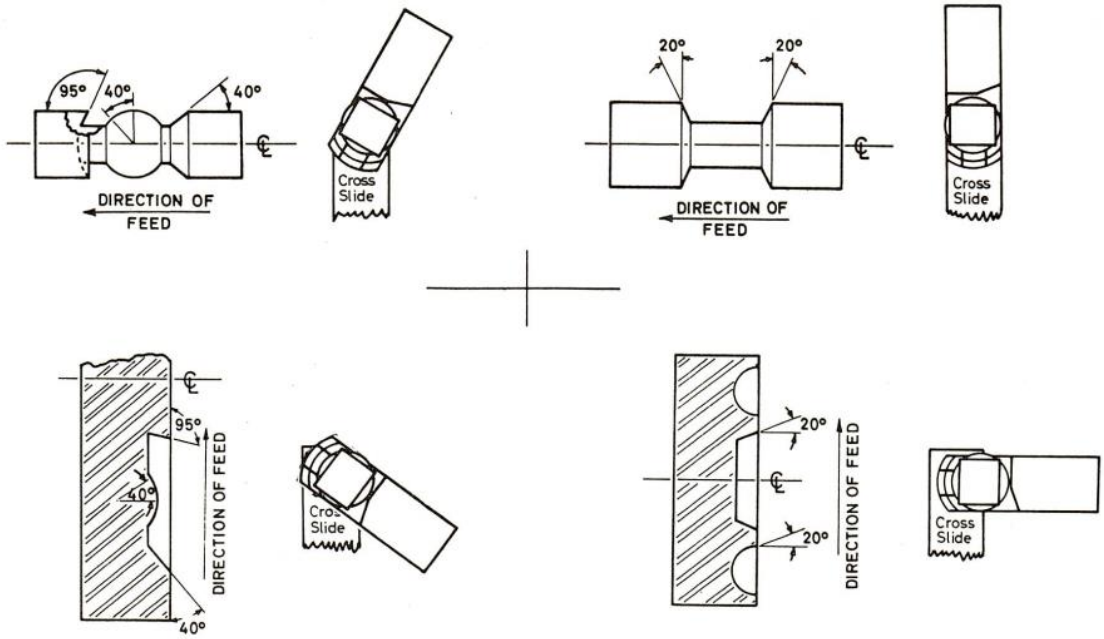
Mounted directly on the rear of the lathe cross slide, this is an integral unit comprising the operating cylinder, cartridge-type servo valve, stylus lever mechanism and a swivelling Colchester Multi-type toolpost complete with one turning tool holder.
The complete unit can be fitted in four alternative positions; at 90°, 60°, 30° or parallel to the centre-line of the lathe. Maximum and minimum profiling angles obtainable for each of these positions are shown on the installation drawing overleaf. A copying accuracy of $\pm$ 0·0005 in. (0·01 mm) can be achieved; the change in copy diameter at 90° is $5\frac{1}{2}$ in. (140 mm) and at 60° is 5 in. (127 mm).



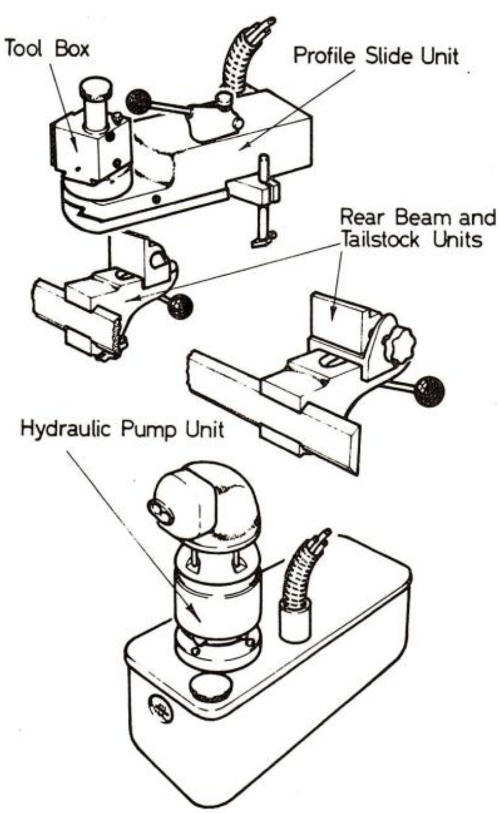
The main control valve is a self-contained cartridge unit secured into the profile slide casting. The stylus is mounted on the lower end of the stylus lever shaft which is retained in the outer end of the stylus lever. Height and angle of the stylus in relation to the model master is easily adjusted by hand after releasing the clamp bolt. A combined ON/OFF lever and forward feed-velocity control is mounted on top of the slide assembly. The ram has a stroke of 3 in. (76 mm) and maximum approach/retraction speed of 110 in. (279 mm) per minute. The low stylus pressure of only 6 oz. (17 g) permits soft masters or models to be used, if necessary.

Toolbox

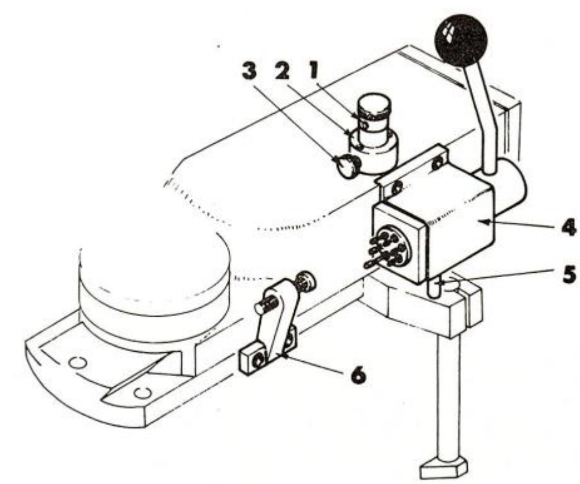
A swivelling Colchester Multi-type toolpost allows all tooling to be pre-set and enables all such tool changes to be made rapidly without the necessity for re-setting the slide assembly. Sufficient height adjustment is provided to permit the tool to be set up for forward or reverse cutting. Tools are carried in interchangeable toolholders; and when each tool has once been set to centre height it may be removed and replaced any number of times without alteration of the setting.
The toolbox is fitted on a base plate located at the front of the profile slide unit and can be mounted at four alternative positions, governed by the angle of the slide unit to the centre line of the machine. An adjusting handwheel is fitted which, through spiral gearing, provides micrometer control of the depth of cut up to $\frac{1}{2}$ in. (13 mm) movement of the tool box along the base slide. Three alternative sizes of toolbox base slides are available, dependent upon the size of the machine to which the unit is fitted.



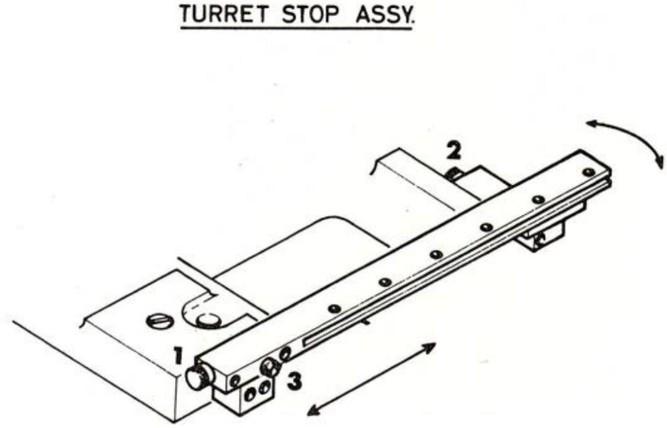
SLIDE POSITION CHART



HYDRAULIC PROFILING UNIT



TURRET STOP ASSY.



FACING BEAM ASSY.

Rear beam assembly

The dovetail-section beam is fitted directly on the rear face of the lathe bed to provide a rigid datum surface for carrying the model (or master) parallel to the centre-line of the machine.
Two beam-brackets slide on the beam to provide the locating surface for two tailstock-type model carriers which can accommodate either round master profiles or flat templates. Both brackets are mounted and locked on the beam by means of knurled handwheels. The tailstock centre of the model carrier at the headstock end is spring-loaded, that at the tail-end is adjustable by a knurled handwheel to give up to $2\frac{1}{2}$ in. (64 mm) of travel. Both model carriers are adjustable laterally relative to the machine centre-line and are locked by means of locking handles. Each tailstock housing is suitably drilled and tapped for attachment of flat profiling templates; short templates may be bolted on the tail-end housing only, longer templates should be supported at both housings. When the template is produced for support at both housings, the clamp-bolt holes should be made slightly elongated to permit small transverse adjustments.

Hydraulic power unit

This is a free-standing, combined tank and pump unit; designed to fit neatly at the back of the lathe. The motor unit is flange-mounted vertically upon the cover of the hydraulic tank. The electric pump works on $\frac{1}{2}$ h.p. producing a working pressure of 300 lb/sq. in. A pressure gauge is fitted on all units. The pump and oil filters can be removed easily for inspection or servicing. Connection of the pump unit to the profile slide assembly is by means of three plastic hoses (two of large bore, one of small bore) all of which are sheathed in a single flexible conduit.

ITEMS AVAILABLE AS EXTRA EQUIPMENT

Facing beam

To enable the profile slide unit to be used at 30° and parallel to the centre line of the machine, a facing beam is required. This consists of a slotted beam, or template carrier, which is mounted across the end of the saddle in the position shown in the sketch opposite. The template is fixed within the longitudinal slot and secured by the setscrews fitted along the edge of the beam. Final adjustment of the template position is made by setting the whole assembly over by means of the two micrometer adjusting screws (1 and 2). Screw No. 1 provides adjustment in a transverse plane whilst No. 2 varies the angle of the beam relative to the centre line of the machine. A pair of thumb-screws (3) are provided for locking the facing beam in the required position.

Turret stop assembly

The turret stop provides a highly effective means of turning a workpiece having widely varying diameters. The stop screws may be set to give up to five roughing cuts whilst the sixth station is set to allow the stylus to traverse the full template form.
Operation of the profile slide is by means of the control lever fitted to the rear face of the turret stop unit and movement of the lever to the left (towards the profile slide) brings the next turret stop screw round to the contact position and advances the unit. Movement of the lever to the right, or away from the profile slide, retracts the slide unit.

Mounting of turret stop

To convert the standard profile assembly to a turret stop unit, the pin retaining the feed control dial (1) is removed and the ON/OFF (retraction) lever assembly is then removed complete. A replacement keep is provided in the conversion kit; and this one must be fitted in place of the cam beneath the lever housing. Use the same two securing screws, however. The dial nut should then be re-fitted and pinned in position. The knurled lock-screw from the old lever assembly should be fitted to the new keep, as shown in the sketch. The side cover plate should next be removed and in its place the turret stop assembly is fitted, using the same four fixing screws. Now with the turret stop control lever in the retracted position, insert a spring dowel pin (5) through the underside of the hole in the stylus lever until it projects through the base of the turret stop assembly by approximately $\frac{3}{8}$ in. (10 mm.). The adjustable stop bracket (6) can now be fitted to the holes which are pre-drilled and tapped in the baseplate, using the screws provided in the conversion kit.

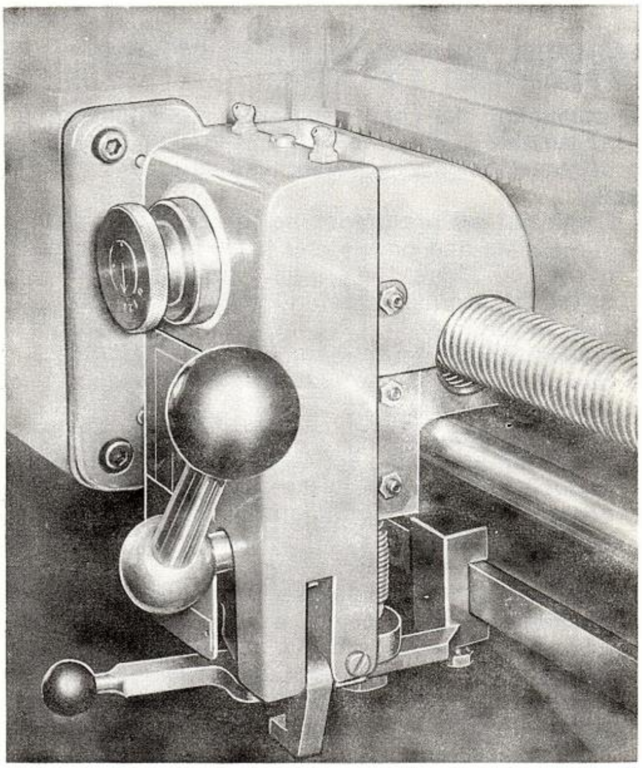
ASSEMBLING HYDRAULIC PROFILING ATTACHMENT TO LATHE

By consulting the chart shown in the sketches, the most suitable position for the profile slide assembly to produce the required work may be readily ascertained.

1. Clean out the pre-tapped holes at the rear of the cross slide and on the machined face at the rear of the bed. Mount the profile slide unit on the rear of the lathe cross slide and secure it in position with the four $\frac{5}{16}$ in. UNC screws provided (three screws fitted from the top, one from underneath).
2. Mount the rear beam unit on the machined face at the back of the lathe bed and secure in position using the socket cap screws provided. Before finally tightening the screws ensure that the beam is positioned parallel to the bedways; this can be accomplished by mounting a dial indicator on the rear of the saddle and with the gauge anvil running along the top edge of the beam.
3. The free-standing pump and tank unit should be positioned at the back of the lathe, toward the tail-end. After inserting the hydraulic hoses into the flexible sheathing, connect up between the units. Take care to match the marks on the tank connections with similar markings on the profile slide unit. This applies only to the two hoses of equal diameter, the third (smaller) hose can be fitted only in one position. Clamp the flexible sheathing at both the pump unit and profile slide ends.
4. Fill the hydraulic tank with Shell Tellus 33 oil to the level shown on the oil-sight glass. Before use, the hydraulic system must be bled of all air and provision is made on the top and rear face of the profile slide unit for this. With the motor connected up switch on the pump, check that the control lever is at the OFF or retracted position, then partially unscrew the rear bleed plug. When all air and bubbly oil has been expelled through the bleed plug, screw it up tight. Set the control lever now in the ON or contact position and repeat the procedure to expel all air through the top bleeder plug.

Introduction

This attachment is designed to replace the existing screwcutting mechanism of the lathe. It is secured to the right hand side of the lathe apron by socket head screws and accurately positioned by dowels.
The attachment contains its own half-nut mechanism and obviates any possibility of the thread being picked up incorrectly. A threading dial is eliminated; the operator merely presses on the handle and the half-nut will engage at the correct point to pick up all American and English threads, including fractional threads per inch.
Once fully engaged, the half-nut is locked positively in mesh with the lead screw and always at precisely the same depth of engagement until disengaged automatically or manually.
When the knock-off lever encounters the stop which is fitted to the lathe bed, the half-nut is disengaged automatically, safely and with great accuracy.
As engagement of the half-nut is controlled and release is automatic, threads can safely be cut at high spindle speeds, the only limiting factors being considerations of tool life and the speed at which the carriage can be picked up without undue strain on the lathe mechanism.



Setting and Operation

The setting dial can be pulled out and turned to four different positions, the settings being as follows:
0—"Safe". Impossible to engage half-nut with lead screw
1—Odd-quarter threads per inch (e.g. $4\frac{3}{4}$)
2—Odd-half threads per inch (e.g. $4\frac{1}{2}$)
4—Whole numbers of threads per inch (e.g. 8 or 13)
Move the knock-off control to the "Screwcut" position and set the adjustable stop to engage the knock-off lever so the half-nut is disengaged at approximately the required position. Now, with the tool clear of the work and the lathe running, engage the half-nut and allow the knock-off to operate. Fine adjustment may then be made by using the compound slide.

Threads may be cut either by feeding the tool straight in or by using the top slide at half the thread angle. When using the latter method, however, allowance must be made for the fact that the tool will have moved forward by half the pitch when the thread is completed.
The tool may be allowed to form its own annular groove at the end of the cut, but should be withdrawn without delay to avoid rubbing.
It is important that the lead screw be clean and free from swarf for high speed screw cutting.

INSTRUCTIONS FOR FITTING NEW HALF NUT

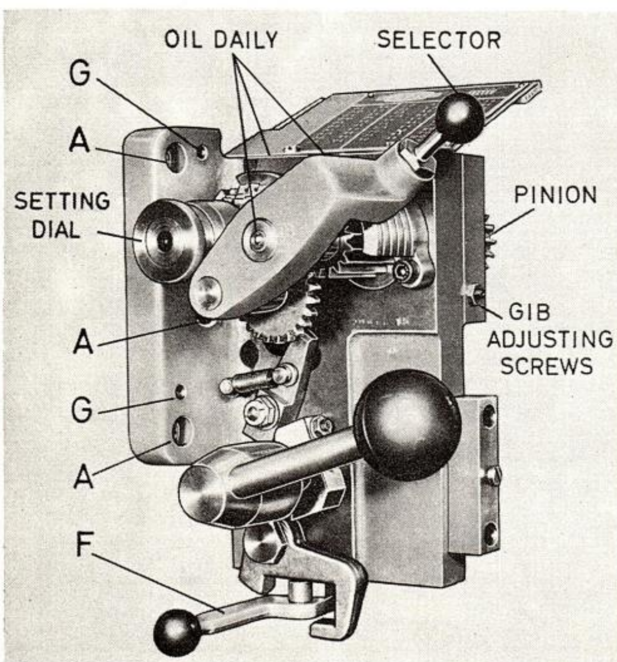
Access to the screws securing the half nut is through two holes in the main casting of the attachment.
IT IS IMPORTANT to check that synchronisation of the nut and pinion is correct and, if necessary, adjustment must be made as detailed in the Maintenance section.

Mounting Instructions

1. Remove covers from the High Speed Threading unit.
2. Remove threading dial from carriage apron.
3. Loosen steady adjusting nut (B) and slide steady (C) up slightly.
4. Fit threader over lead screw, near the tailstock end of the lathe and hold in place. Engage threader half nut (E).
5. Move carriage back until it contacts face of threader. Attach threader to apron with three mounting bolts (A). Tighten bolts just enough to hold while aligning threader.
6. Ensure half nut is fully engaged with lead screw by applying gentle pressure upwards (taking care not to deflect leadscrew). Tighten bolts (A).
7. Position Steady (C) so that it just clears lead screw (.003 in. maximum); tighten steady adjusting nut (B).
8. On 17 in. lathes only, adjust lower steady (located next to apron) to bear lightly on underside of leadscrew.
9. Position stop bar (H) below knock-off lever (F) (about $\frac{1}{8}$ in. clearance) and parallel to feed rod. Locate mounting holes on lathe beddrill and tap $\frac{1}{4}$ in. UNC for mounting screws.
10. Attach stop bar to bed using flat head machine screws and spacers provided.
11. **Note:** When knock-off lever (F) is in "screwcut" position (i.e. knob moved to left) the knock-off lever should engage the stop (K) by approximately $\frac{5}{16}$ in. and when in the "lock" position (i.e. moved to right) it must be clear of the stop. Make any adjustment necessary by altering length of knock off lever or stop bar spacers.
12. Check the correct fitting of the threading unit as follows:—
    Set the stop to engage the knock-off lever with the tool clear of the work. With the lathe running at about 300 r.p.m. and set to cut say 12 T.P.I., engage the nut, as described under "engaging the half-nut" and allow the knock-off to operate. It will be seen that the initial action of the knock-off mechanism is to rotate the locking lever clockwise and release the selector pin.
    Immediately the selector pin is released it should fly out of the dial slot and the nut should disengage from the leadscrew.
    If this action is sluggish it must be corrected by altering the position of the attachment on the apron in such a way to ensure that the nut is fully engaged and bearing against the front of the leadscrew (i.e. move the attachment away from the operator).

It is important to note that the half-nut has been designed so that it is thrown clear of the leadscrew immediately the slide pin is released. If the attachment is fitted incorrectly and the nut is pressing against the back of the leadscrew (i.e. tending to bend the leadscrew towards the operator) the servo action will not operate and the release mechanism is liable to act sluggishly.
This fault can be easily discovered by observing the slide pin when the knock-off mechanism operates with an increased load applied to the carriage by applying slight hand pressure to the traversing hand wheel. If the slide pin flies out of the dial slot **immediately** it is released the action is satisfactory, but if there is a slight pause the servo action is not operating and the nut is being forced out of engagement with the leadscrew by the safety device incorporated in the attachment.

13. After any necessary adjustments have been made, and repeated trials show that the attachment is working satisfactorily, drill dowel holes in lathe apron through holes "G" in threader, ream to dowel size and fit dowels.
14. Replace the covers and the attachment is ready for operation.



Engaging the Half-Nut

With the lathe running at required speed, hold down the handle with a steady pressure. Engagement will not be possible until the right moment, which is indicated by a movement of the handle. At this moment the handle should be depressed fully and released. If the half-nut is not properly locked in engagement, the handle will fly back and the procedure should be repeated.

The handle must be held down firmly and steadily until the half-nut engages; it should not be depressed intermittently or engagement will be delayed.
The handle *must* be released on engagement.
Before screw cutting, it is recommended that the operator carry out a few runs with the tool clear of the work to get the "feel" of the mechanism.

Manual Release

If it is required to cut a thread without using the automatic knock-off, the half-nut can be disengaged manually.

Safety Lock

If it is required to advance the carriage beyond the stop, this may be done without interfering with the setting, by moving the knock-off control to the "lock" position. It will then be retained in a position which will allow the stop to be by-passed, at the same time locking the attachment so that it will not be possible to engage the half-nut until the knock-off control is returned to the "screw cut" position.

Left Hand Threads

Left hand threads should be cut by reversing the lathe and inverting the tool. The lead screw can then be set to run in the normal direction of rotation and the automatic knock-off can be used. If a screw-on chuck is used, care must be taken, of course, to ensure that it does not unscrew while running.

Lubrication

Medium lubricating oil, not grease, should be used at the points indicated.
The double ball bearing on the pinion shaft is packed with grease and will not require attention.

Maintenance

Adjustment for wear in the half-nut slide is by three socket head screws with lock nuts operating on a gib on the right hand side of the attachment. It is essential, however, that this slide works freely over the full range of its travel.
Initially the attachment will either be fitted by a trained service engineer, or will be supplied with the mounting bracket drilled to correspond with existing locations on the lathe apron, but the following points should be noted:

1. When the half-nut mechanism is locked in engagement, the half-nut should be deeply meshed and the steady set to prevent the lead screw distorting upwards.
2. The half-nut should not bow the lead screw horizontally, a slight deflection away from the attachment is acceptable, but there must be no deflection towards the attachment.
3. With the cover of the attachment removed, it will be seen that a pin enters one of the slots in the control disc when the half-nut is engaged. With back lash taken up, this pin should be approximately central in the slot, with a slight bias towards the side of the slot nearest the mounting flange of the attachment. On no account must it bear against the side of the slot.

Should this fault develop through wear, it may be corrected by re-synchronizing the pinion as follows. Withdraw the pinion from the shaft after removing the retaining screw. The pinion is located on the driving collar by a pin which will engage any one of a series of holes arranged to give a vernier action. By moving the pinion round one hole at a time, the best position can easily be found by trial and error. A second pin, fitted to the reverse side of the pinion, may be used to give a further set of positions if necessary.

No other adjustment should be attempted without consulting the suppliers and the serial number of the attachment must always be quoted in case of difficulty or when ordering replacements.

CLAUSING—Colchester

PARTS SECTION

IMPORTANT:

WHEN ORDERING

1. Quote component Order Number, which is given on the illustration, for all component parts required.

2. Give component description in full, from schedule opposite each drawing.

   Note:- Those component Order Numbers printed on the drawing in small type are for standard items which can generally be purchased locally; e.g. nuts, bolts, screws and washers etc.

3. Always quote Lathe Serial Number in all orders or technical enquiries. This number is stamped on the bed at the tailstock end.

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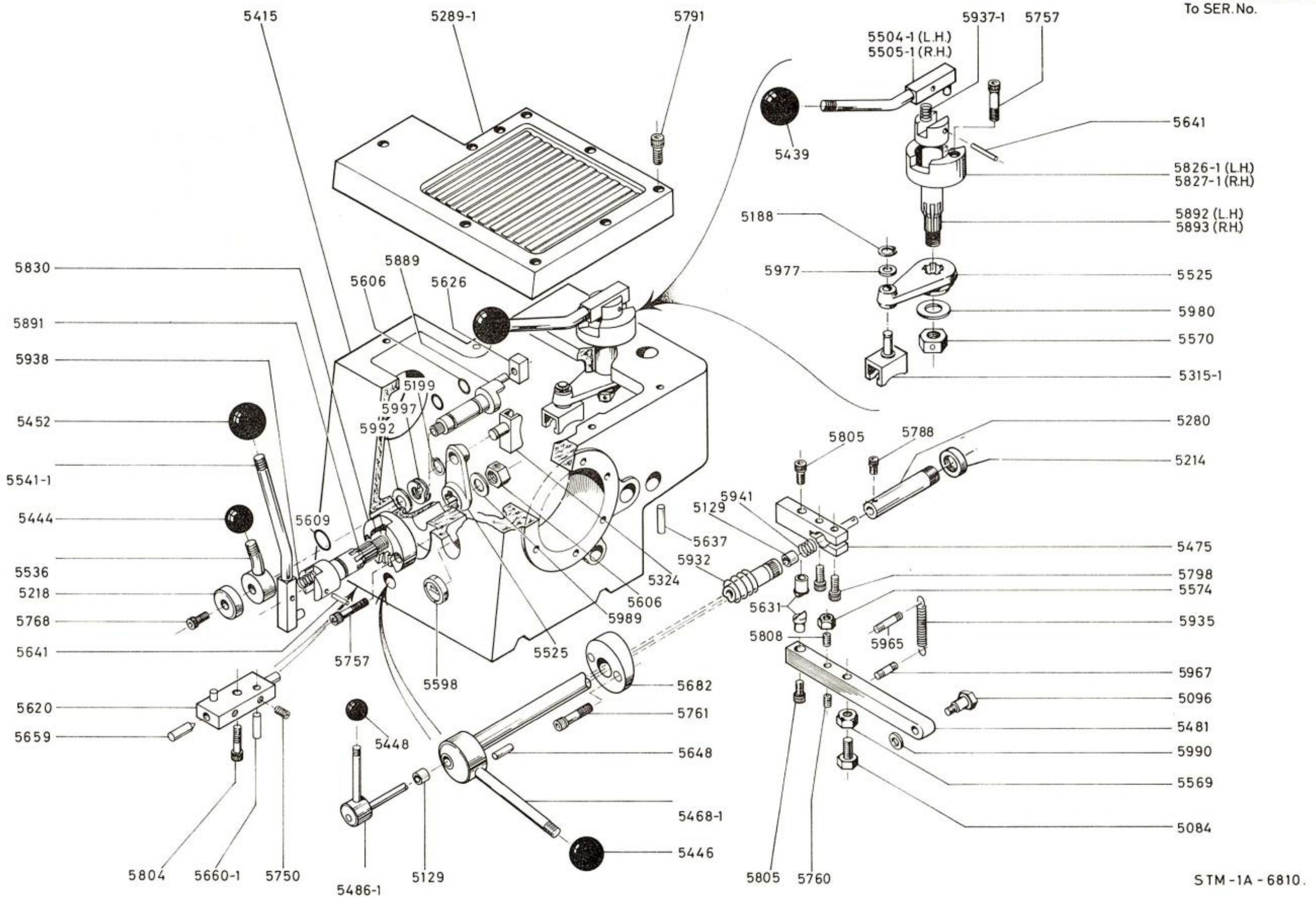
To SER. No.



STM-1A-6810.

HEADSTOCK : castings & levers

Ref. Drg. STM-1A-6810

HEADSTOCK - CASTINGS & LEVERS

Order No.		Description
5084		Switch Actuating Bolt
5096		Pivot Bolt
5129		Reverse Switch Lever Bushes (2)
5131		Selector Locating Bush
5188	*	Shifting Fork Circlip (2) 11-736
5199	*	Sliding Sleeve Fork Circlip 11-736
5214		Reverse Switch Coupling Collar
5218		Reverse Gear Shifting Lever Collar
5280		Reverse Switch Coupling
5289-1		Headstock Cover
5315-1		Gear Shifting Forks (2)
5324		Sliding Sleeve Fork
5415		Headstock Casting
5439	*	Gear Shift Lever Knobs (2) 18-830
5444	*	Reverse Gear Lever Knob 18-835
5446	*	Operating Lever Knob 18-833
5448	*	Reverse Switch Lever Knob 18-840
5452	*	Sleeve Shifting Lever Knob 18-830
5468-1		Operating Lever Assembly
5475		Brake Operating Lever
5481		Switch Operating Lever
5486-1		Reverse Switch Lever Assembly
5502-1		Gear Shifting Lever, L.H.
5503-1		Gear Shifting Lever, R.H.
5504-1		Gear Shifting Lever, L.H(Chrome)
5505-1		Gear Shifting Lever R/H(Chrome)
5525		Internal Gear Levers (3)
5536		Reverse Gear Shifting Lever
5541-1		Sliding Sleeve Shifting Lever
5569	*	Switch Actuating Bolt Locknut 20-637
5570	*	Lever Retaining Nuts (3) 22-663
5574	*	Lever Stop Locknut 20-635
5598	*	Oil-Level Sight 80-873
5606	*	Operating Shaft O-Rings (2) 27-846
5609	*	Sleeve Lever O-Ring 26-848
5620	*	Set-Over Pad
5626		Reverse Gear Shifting Pad
5631		Locking Pawls (2)
5637		Headstock/Bed Locating Pin
5641		Selector Lever Swivel Pin
5645	*	Lever Locking Pin 24-539
5655-1	*	Lever Stop 24-525
5659		Set-Over Pins (2)
5660	*	Pad Locating Pin 14-131
5682		Op. Lever Assy. Plate
5693	*	Drain Plug 88-070
5695		Oil Filler Plug
5750	*	Pin Adjusting Screws (2) 73-522
5756	*	Gear Selector Sec Screw (6) 45-208
5760	*	Lockscrew for Lever Stop Screw 59-352
5761	*	Op. Lever Assy. Plate Sec Screw (2) 46-214
5768	*	Reverse Gear Lever Retaining Screw 46-212
5788	*	Switch Coupling Screw 72-495
5791	*	Headstock Cover Screws (9) 46-217
5798	*	Brake Operating Lever Screws (2) 46-214
5804	*	Pad Securing Screw 47-227
5805	*	Locking Pawl Screws (2) 45-203
5808	*	Lever Stop Screw 59-355
5826-1		Driving Shaft Gear Selector, L.H.
5827-1		Driving Shaft Gear Selector R.H.
5830		Gear Selector
5889		Reverse Gear Shifting Shaft
5891		Sliding Sleeve Shifting Lever Shaft
5892		Gear Shifting Lever Shaft L/H
5893		Gear Shifting Lever Shaft R/H
5932		Operating Lever Spring
5935	*	Switch Lever Return Spring 82-817
5937-1	*	Gear Selector Springs (2) 82-830
5938	*	Sliding Sleeve Shifting Lever Shaft Spring 83-830
5941	*	Switch Rod Spring 82-813
5965		Return Spring Stud, Long
5967		Return Spring Stud, Short
5977	*	Gear Lever Washer 85-695 (2)
5980	*	Internal Shift Lever Washers (2) 85-696
5986	*	Leather Washer 86-118
5987	*	Sliding Sleeve Shifting Lever Fork Washer 85-695
5989	*	Sliding Sleeve Shifting Lever Shaft Washer 85-696
5990		Switch Lever Washer
5992	*	Reverse Gear Shift Shaft Washer 85-698
5997	*	Reverse Gear Shift Shaft Spring Washer 84-718

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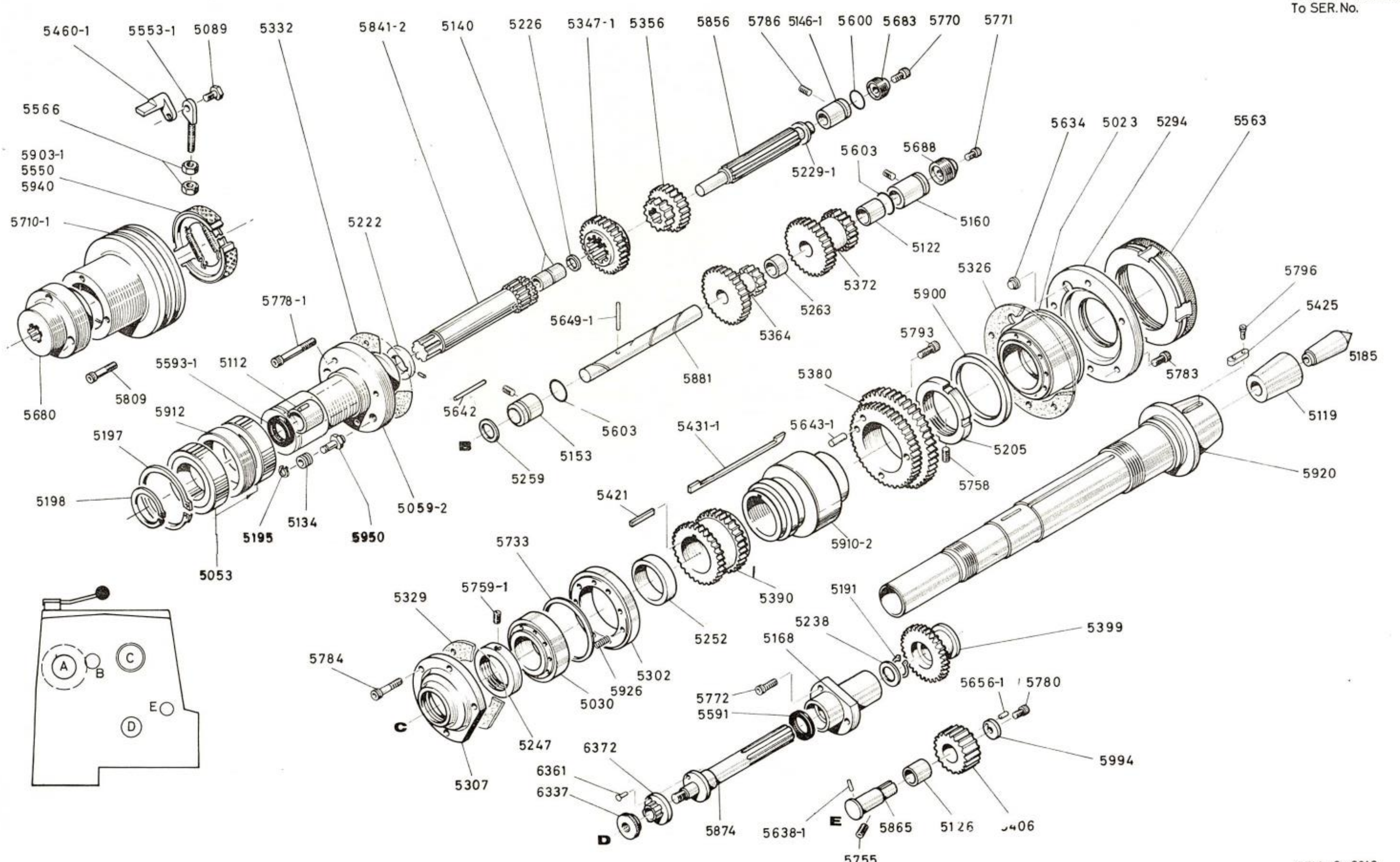


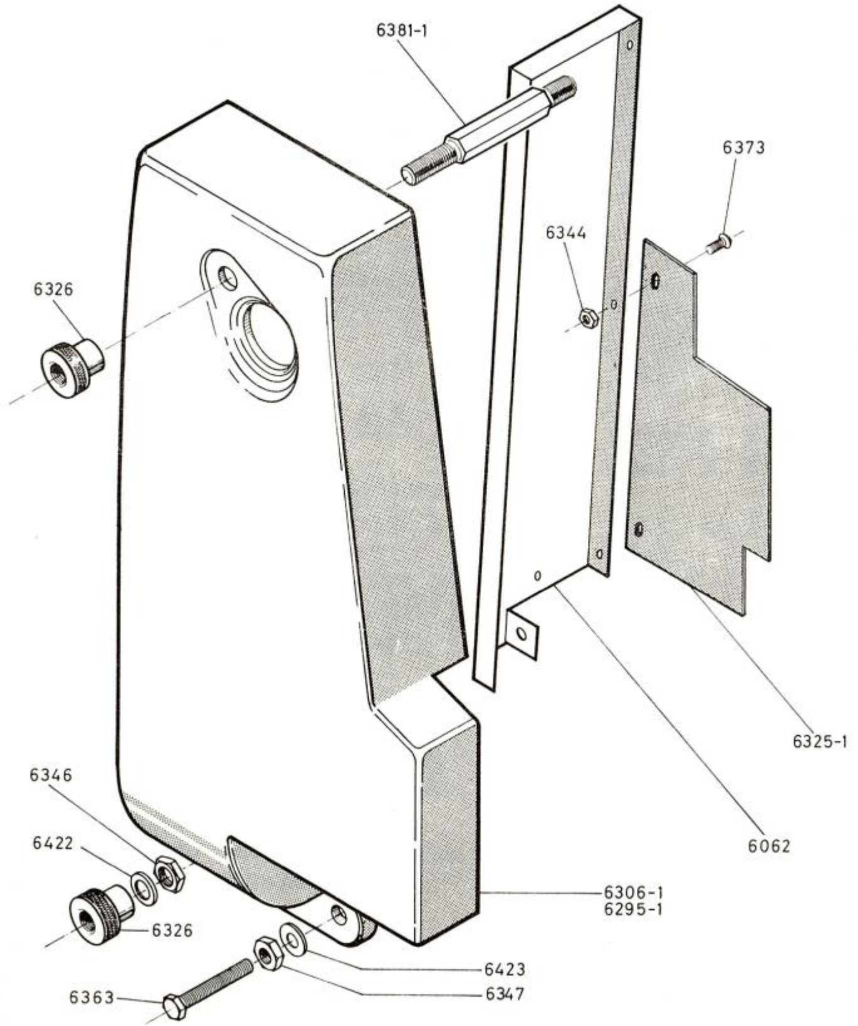
STM-2-6810

HEADSTOCK: gears & shafts

Ref. Drg. STM-2-6810

HEADSTOCK: Gears & Shafts

Order No.	Description
5023 *	Front roller bearing (GAMET)
5030 *	Back roller bearing (GAMET)
5053 *	Pulley bearings 02-896 (2)
5059-2	Flanged bearing
5089	Expanding-lever bolt
5112	Flanged bearing bush (2)
5119	Centre bush
5122	Second shaft 28/40T gear bush
5126	Inter-reverse gear bush
5134	Brake shoe flanged bush
5140	Clutch driving shaft bush
5146-1	Driving shaft bush
5153	Second shaft bush (L.H.)
5160	Second shaft bush (R.H.)
5168	Reverse shaft flanged bush
5185	Centre, No. 3 morse
5191 *	Reverse shaft circlip 11-749
5195 *	Brake shoe flanged bush clip 11-845
5197 *	Pulley brg. ret. clip (large) 12-770
5198 *	Pulley brg. ret. clip (small) 11-859
5205	Front bearing adjusting collar
5222	Clutch driving shaft thrust collar
5226	Driving shaft thrust collar
5229-1	Drive shaft bush collar
5238	Reverse shaft collar
5247	Screwed collar on spindle
5252	Back bearing spacer collar
5259	Second shaft bush spacer collar
5263	Second shaft gear spacer collar
5294	Front bearing outside cover
5302	Back bearing inside cover
5307	Back bearing outside cover
5326	Front bearing cover gasket
5329	Back brg. outside cover gasket
5332	Flanged bearing gasket
5347-1	Driving shaft gear, 30T
5356	Driving shaft gear, 14/42T
5364	Second shaft gear, 13/30T
5372	Second shaft gear 20/28T
5380	Double gear on spindle, 44/51T
5390	Reverse gear on spindle, 30/30T
5399	Reverse shaft gear, 30T
5406	Inter-reverse shaft gear, 20T
5421 *	Spindle reverse gear driving key 17-009
5425	Spindle nose key
5431-1	Sliding sleeve key
5460-1	Brake shoe expanding lever
5550 *	Brake linings c/w rivets (Ferodo 4")
5553-1	Expanding lever link
5563	Spindle nose draw nut
5566 *	Brake adjusting locknuts (2) 20-637
5591 *	Reverse shaft oil seal 79-865
5593-1*	E/Clutch flanged brg. oilseal 79-062
5600 *	Driving shaft bush O-ring 27-858
5603 *	Second shaft bush O-ring 27-858
5634	Front bearing peg
5638-1*	Inter-reverse shaft locating pin 24-539
5642	Flanged bearing pin (2) 14-613
5643-1*	Double gear locating pin 14-686
5649-1*	Second shaft gear pin 14-652
5656-1*	Inter-reverse gear stop washer pin 24-520
5680	Driving plate
5683-1	Driving shaft bush screwed plug
5688	Second shaft bush screwed plug
5710-1	Driving pulley (twin vee)
5733	Back bearing thrust ring
5755 *	Inter-reverse shaft locating screw 59-355
5758 *	Front bearing adjusting collar lock-screw 60-361
5759-1*	Spindle screwed collar lock-screw 53-303
5771 *	Screwed plug retaining screw 47-226
5772 *	Stop washer retaining screws (2) 46-212
5778-1*	Flanged bearing securing screws (3) 47-229
5780 *	Reverse shaft flanged bearing screws (2) 46-212
5782 *	Back bearing inside cover screws (3) 46-219
5783 *	Front bearing cover screws (3) 46-213
5784 *	Back bearing outside cover screws (3) 46-213
5786 *	Driving shaft bush screw 67-419
5786-1*	Bush securing screws (2) 67-419
5793 *	Double gear securing screws (3) 47-229
5796 *	Nose key securing screws (2)45-201
5809 *	Driving plate sec. screw (3) 47-229
5841-2	Clutch driving shaft
5856	Driving shaft
5865	Inter-reverse shaft
5874	Reverse shaft
5881	Second shaft
5900	Front bearing shield
5903-1*	Brake shoes c/w linings 09-997
5910-2	Sliding sleeve
5912	Bearing spacer
5920	Main spindle
5926 *	Back bearing pressure springs (15) 82-812
5940 *	Brake shoe springs (2) 82-815
5950	Brake shoe fixing stud
5994	Inter-reverse gear stop washer
6337	Reverse shaft knurled nut
6361	Shear-pin
6372	Shear-pin sleeve



END GUARDS

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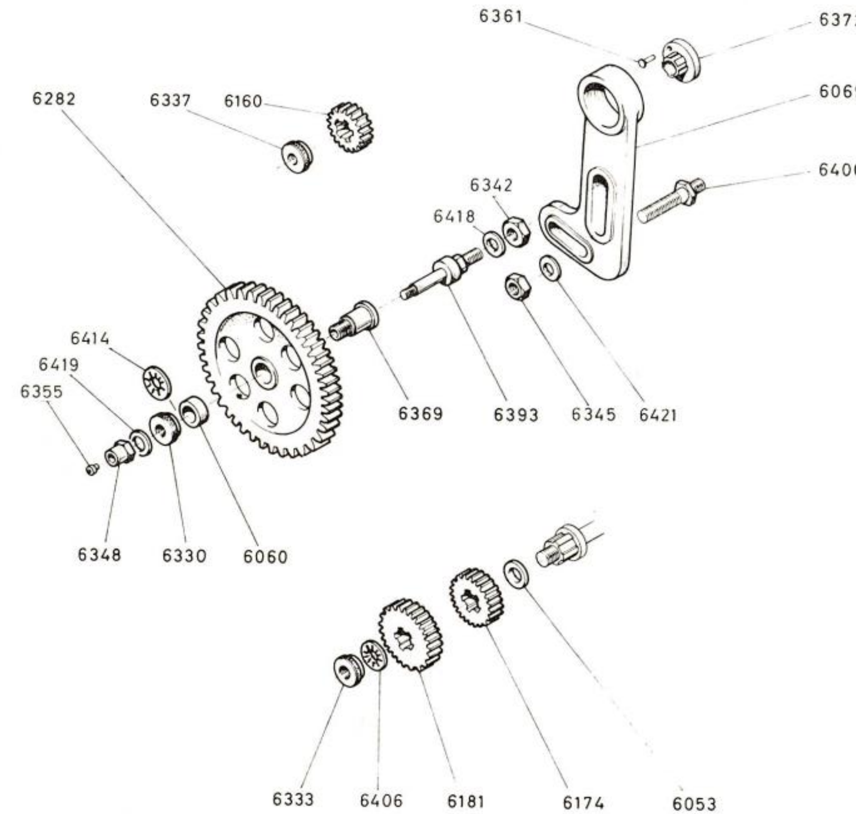

STM-4-6810

SWING FRAME : standard

Ref. Drg. STM-4-6810

END GUARDS, SWINGFRAME - STANDARD

Order No.		Description
6053		Change-gear alignment collars (set of 4)
6060		Change-gear sleeve spacer collar
6062		Headstock back cover
6069		Swing frame
6160		Change-gear, 21T/16P
6174		Change-gear, 35T/16P
6181		Change-gear, 42T/16P
6282		Change-gear, 120T/16P
6295-1		Belt and change-gear guard. Non gearbox model
6306-1		Belt and change-gear guard - gearbox model
6325		Inner belt guard
6326		Change-gear guard knurled nut
6330		Change-gear sleeve knurled nut
6333		Gearbox driving shaft knurled nut
6337		Reverse shaft knurled nut
6342	*	Change-gear sleeve stud locknut 20-624
6344	*	Guard plate/cabinet sec. screw nut. (2) 20-632
6345	*	Swing frame locking nuts (2) 20-624
6346	*	Belt and change-gear guard stud nut (4) 21-659

Order No.		Description
6347	*	Belt and change-gear guard screw nut (2) 21-658
6348		Oiler retaining nut, c/w oiler
6355	*	Change-gear stud oiler 23-124
6361		Shearpin
6363	*	Belt and change-gear guard screw (2) 73-608
6369		Change-gear sleeve
6372		Shearpin sleeve
6373	*	Back cover/plate sec. screw (2) 73-606
6381-1		Guard stud (hex.)
6385-1		Guard stud (round)
6393		Change-gear stud
6400		Swing frame fixing stud
6406	*	Gearbox driving shaft fan disc washer 86-029
6414	*	Change-gear sleeve fan disc washer 86-030
6418	*	Change-gear stud washer 85-695
6419	*	Oiler retaining nut washer 85-692
6421	*	Swing frame fixing stud washers (2) 85-695
6422	*	Belt and change-gear guard stud washer (4) 85-692
6423	*	Belt and change-gear guard screw washer (2) 85-691

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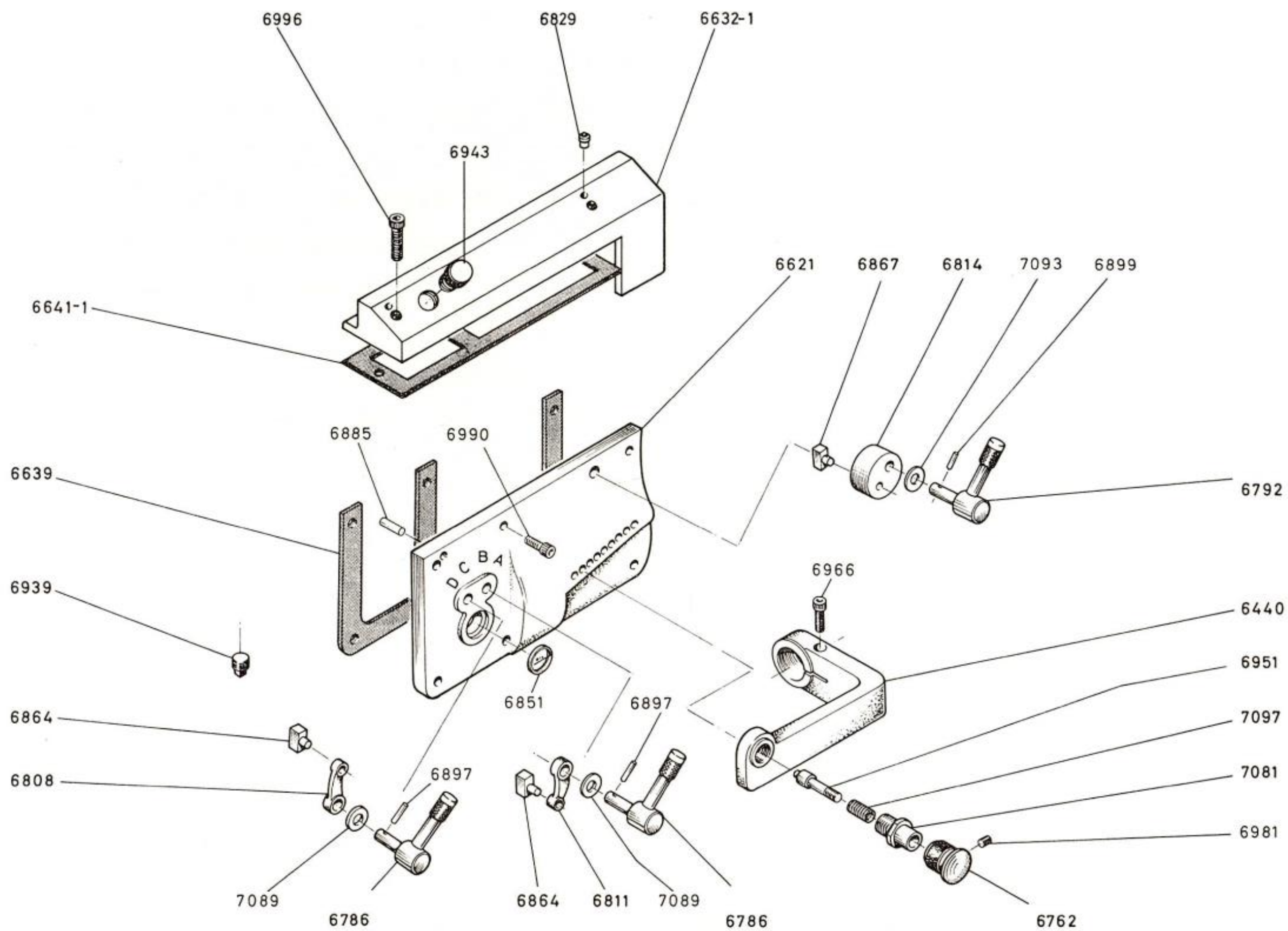


STM-10A-6810

GEARBOX (Standard) : covers & levers

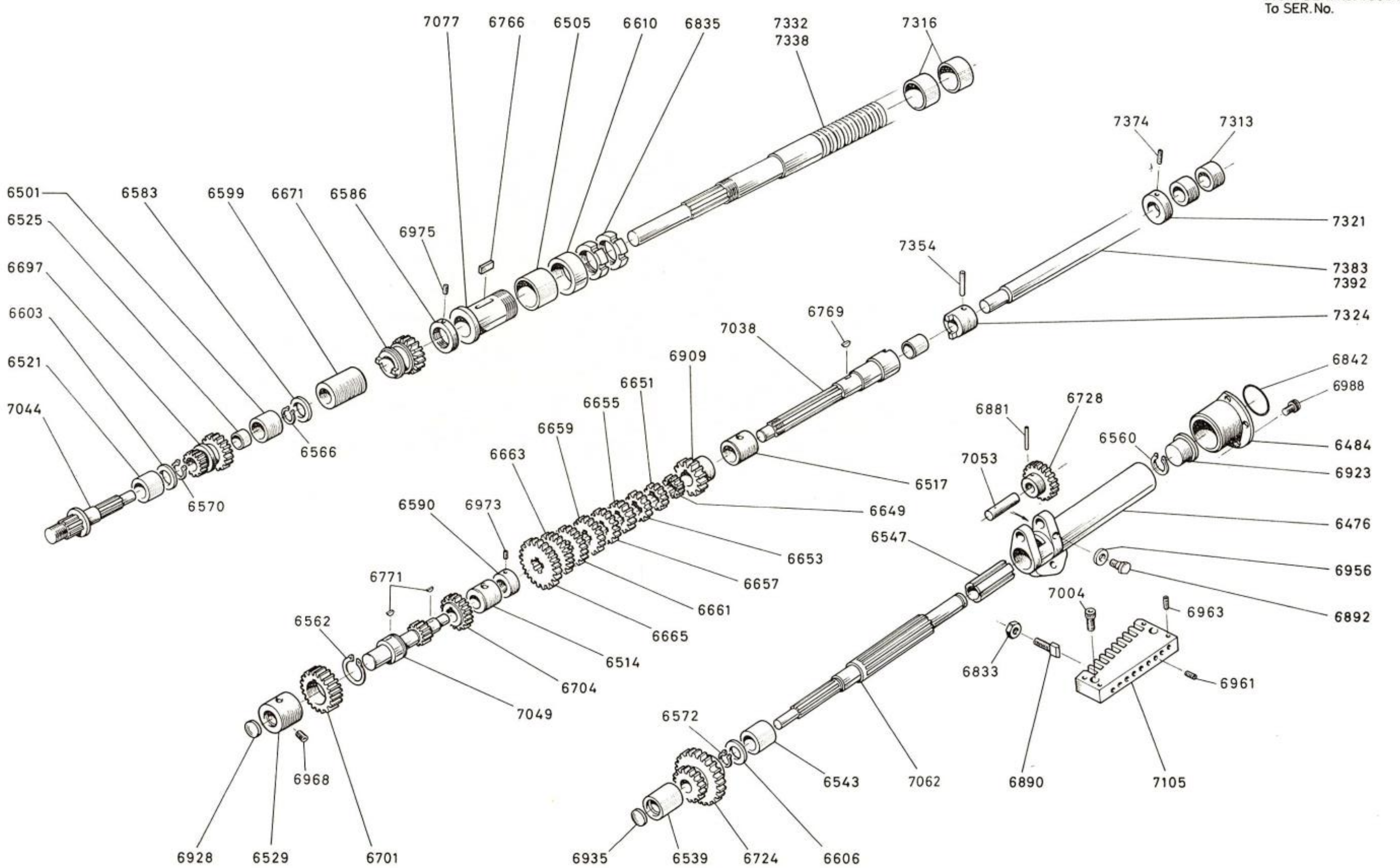
Ref. Drg. STM-10A-6810

GEARBOX (STANDARD): Covers & Levers

Order No.		Description
6440		Tumbler Shifting Arm
6621		Front Cover
6632-1		Top Cover
6639		Front Cover Gasket
6641-1		Top Cover Gasket
6762		Tumbler Handle
6786		Gear Selecting Lever (2)
6792		Leadscrew Gear Selecting Lever (2)
6808		Gear Shifting Lever, L.H.
6811		Gear Shifting Lever, R.H.
6814		Leadscrew Gear Shifting Lever
6829	*	Oiler Nipples (2) 23-124
6851	*	Oilsight Glass 80-873
6864		Gear Shifter Pad, L.H. & R.H.
6867		Leadscrew Gear Shifter Pad

Order No.		Description
6885	*	Front Cover Locating Pins (2) 24-544
6897	*	Gear Shifting Lever Pins (2) 24-543
6899	*	Leadscrew Gear Shifting Lever Pin 24-545
6939		Drain Plug
6943		Filler Plug
6951		Tumbler Handle Plunger
6966	*	Tumbler Arm Locking Screw 48-242
6981	*	Tumbler Handle Locking Screw 58-343
6990	*	Front Cover Screws (6) 47-225
6996	*	Top Cover Screws (2) 47-225
7081		Tumbler Handle Socket
7089	*	Selecting Lever Disc Springs (2) 84-725
7093	*	Leadscrew Lever Disc Spring 84-725
7097		Tumbler Handle Spring

From SER. No. 46634
To SER. No.



STM - P8DA-6512/1

GEARBOX : Dominion gears & shafts

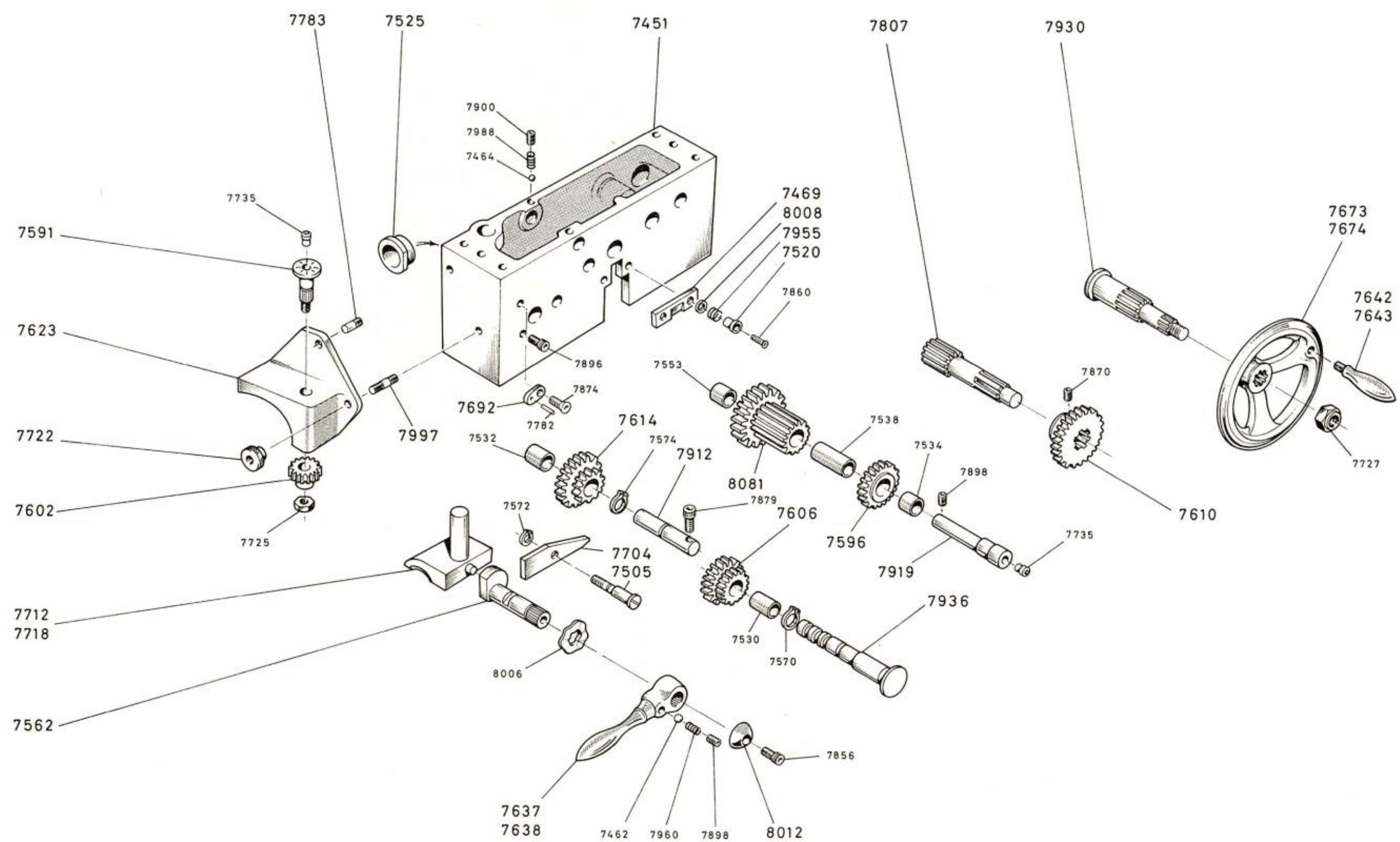
Ref. Drg. STM-P8DA-6512/1

GEARBOX: Dominion Gears & Shafts

Order No.		Description
6476		Tumbler Bearing
6484		Tumbler Bearing Flanged Bush
6501		Leadscrew Bush, L.H.
6505		Leadscrew Bush, R.H.
6514		Coneshaft Bush, L.H.
6517		Coneshaft Bush, R.H.
6521		Driving Shaft Bush, L.H.
6525		Driving Shaft Bush, R.H.
6529		Intershaft Bush
6539		Tumbler Shaft Bush, L.H.
6543		Tumbler Shaft Bush, Centre
6547		Tumbler Shaft Bush, R.H.
6560	*	Tumbler Shaft Retaining Clip 11-745
6562	*	Intershaft Gear Retaining Clip 11-754
6566	*	Leadscrew Retaining Clip 11-745
6571	*	Driving Shaft Retaining Clip 13-794
6572	*	Tumbler Shaft Retaining Clip 11-743
6583		Leadscrew Retaining Collar
6586		Leadscrew Screwed Collar
6590		Coneshaft Screwed Collar
6599		Leadscrew Spacer Collar
6603		Driving Shaft Spacer Collar
6606		Tumbler Shaft Spacer Collar
6610		Leadscrew Thrust Collar
6649		Coneshaft Gear, 16T
6651		Coneshaft Gear, 18T
6653		Coneshaft Gear, 19T

Order No.		Description
6655		Coneshaft Gear, 20T
6657		Coneshaft Gear, 22T
6659		Coneshaft Gear, 23T
6661		Coneshaft Gear, 24T
6663		Coneshaft Gear, 26T
6665		Coneshaft Gear, 28T
6671		Leadscrew Gear, 24T
6697		Driving Shaft Gear, 16/24T
6701		Intershaft Gear, 32T
6704		Intershaft Gear, 24T
6724		Tumbler Shaft Gear, 24/42T
6728		Tumbler Gear, 27T
6766		Leadscrew Key
6769	*	Coneshaft Key 17-001
6771	*	Intershaft Keys (2) 17-001
6833	*	Tumbler Locating Pin Nut 20-621
6835		Leadscrew Locknuts (2)
6842	*	Tumbler Bearing Bush O-Ring 26-852
6881	*	Tumbler Gear Driving Pin 24-543
6890		Tumbler Locating Pin
6892		Tumbler Roller Pin
6909		Coneshaft Pinion, 24T
6923		Tumbler Bearing Plug
6928		Intershaft Bush Core-Plug
6935		Tumbler Shaft Bush Core-Plug
6956		Tumbler Roller
6961	*	Locating Strip Adjusting Screws (9) 60-365
6963	*	Locating Strip Jacking Screws (4) 58-342

Order No.		Description
6968	*	Bush Locking Screws (3) 60-365
6973	*	Coneshaft Collar Locking Screw 58-345
6975	*	Leadscrew Collar Locking Screw 59-350
6988	*	Tumbler Bearing Bush Screws (3) 45-203
7004	*	Locating Strip Securing Screws (2) 47-225
7038		Coneshaft, C/W Bush
7044		Driving Shaft
7049		Intershaft, 14T
7053		Tumbler Gear Shaft
7062		Tumbler Shaft 15T
7077		Leadscrew Thrust Screw
7105		Tumbler Location Strip
7313	*	Feedshaft Tail-End Bushes (2) 10-923
7316		Leadscrew Tail-End Bushes (2) 10-940
7321		Feedshaft Tail-End Collar
7324		Feedshaft Coupling
7332		Leadscrew, 24 in.
7338		Leadscrew, 36 in.
7354	*	Feedshaft Coupling Pin 14-659
7374	*	Feedshaft Tail-End Collar Screw 59-350
7383		Feedshaft, 24 in.
7392		Feedshaft, 36 in.



STU - P14 - 6512

APRON : Standard

Ref. Drg. STU-P14-6512

APRON: (Gap-Bed)

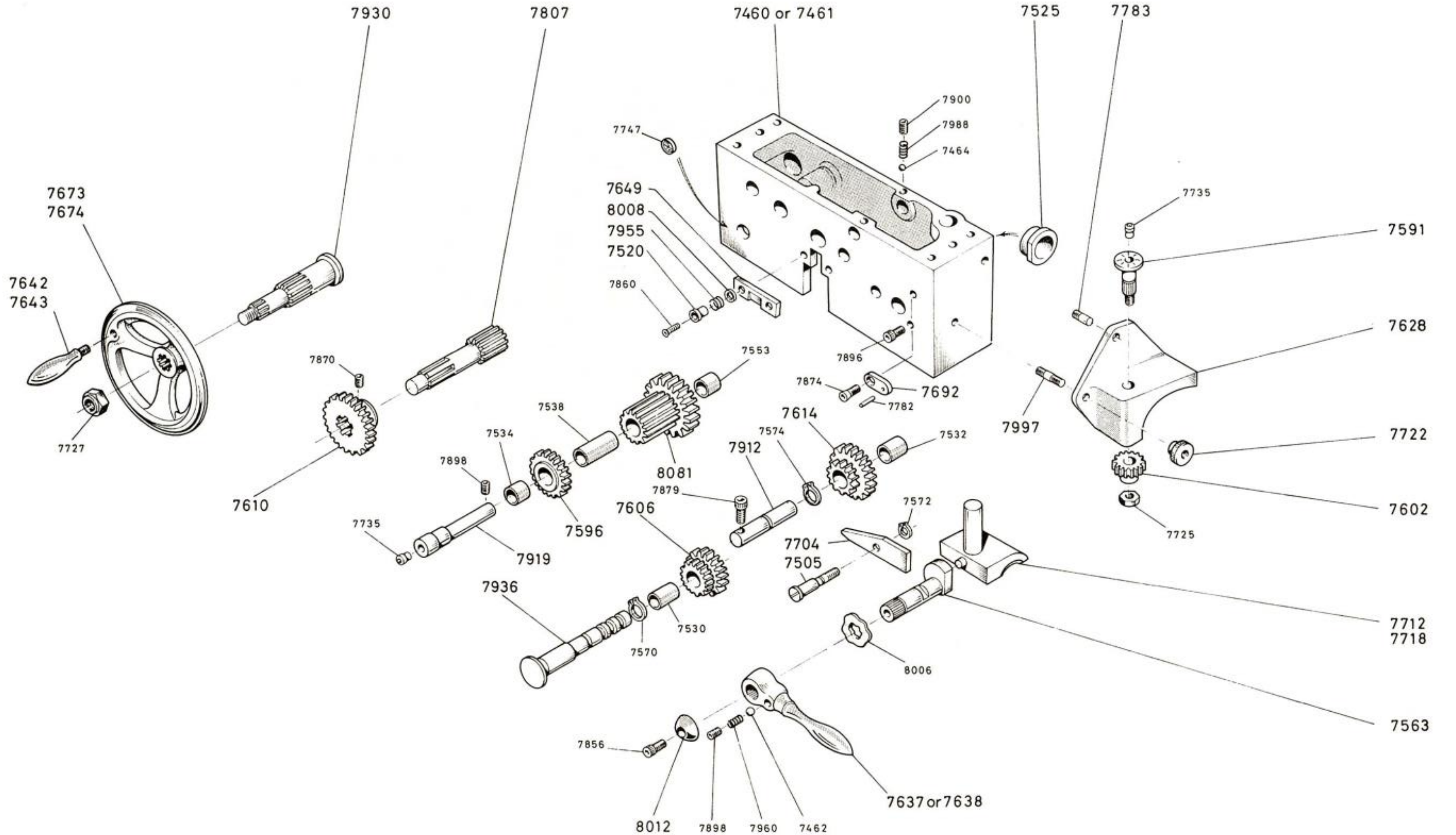
Order No.	Description
7451	Apron Casting
7469	Wormbox Latch Bar
7505	Interlock Lever Pivot Bolt
7520	Wormbox Latch Bar Bush
7525	Leadscrew Flanged Bush
7562	Leadscrew Nut Eccentric
7591	Indicator Dial
7596	Idler Gear, 33T
7602	Dial Indicator Gear, 24T
7606	Feed Selector Gear, 25/32T
7610	Sliding Gear, 42T
7614	Surfacing Gear, 22/38T
7623	Dial Indicator Guard
7637	Leadscrew Nut Handle
7638	Leadscrew Nut Handle (Chromed)
7642	Apron Handwheel Handle
7643	Apron Handwheel Handle (Chromed)
7673	Apron Handwheel C/W Handle
7674	Apron Handwheel (Chromed)
7692	Half-Nut Handle Stop Key
7704	Interlock Lever

Order No.	Description
7712	Leadscrew Half-Nut (Standard)
7718	Leadscrew Half-Nut (Metric)
7722	Dial Indicator Knurled Nut
7783	Dial Indicator Guard Locating Pin
7807	Rack Pinion, 12T
7912	Surfacing Gear Shaft
7919	Wormwheel & Pinion Shaft
7930	Handwheel Racking Shaft 13T
7936	Feed Selector Shaft
7997	Dial Indicator Guard Stud
8008	Latch Bar Damper Washers (2)
8012	Half-Nut Handle Domed Washer
8081	Wormwheel & Pinion, 33/25T

STANDARD ITEMS

Order No.	Description	
7462	Half-Nut Handle Locating Ball	01-788
7464	Feed Selector Shaft Locating Ball	01-788
7530	Feed Selector Gear Bush	10-957
7532	Surfacing Gear Bush	10-957
7534	Idler Gear Bush	10-964
7538	25T Pinion Bush	10-958
7553	Apron Wormwheel Bush	10-991
7570	Feed Selector Gear Retaining Clip	13-784
7572	Interlock Lever Retaining Clip	11-778
7574	Surfacing Gear Retaining Clip	13-784
7725	Dial Indicator Gear Retaining Nut	21-659
7727	Apron Handwheel Retaining Nut	21-673
7735	Oiler Nipples (2)	23-124
7782	Handle Stop Key Locating Pin	24-043
7856	Half-Nut Handle Retaining Screw	46-212
7860	Latch Bar Securing Screws (2)	53-305
7870	Sliding Gear Securing Screw	60-362
7874	Handle Stop Key Securing Screw	53-303
7879	Gear Shaft Securing Screw	45-204
7896	Half-Nut Handle Stop Screw	46-212
7898	Half-Nut Handle Spring Tension Screw	60-362
7900	Selector Shaft Spring Tension Screw	60-364
7960	Half-Nut Handle Spring	82-797
7988	Feed Shaft Spring	82-078
8006	Half-Nut Cam Crinkle Washer	86-735

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1.



STU - P14D - 6512

APRON : Straight bed

Ref. Drg. STU-P14D-6512

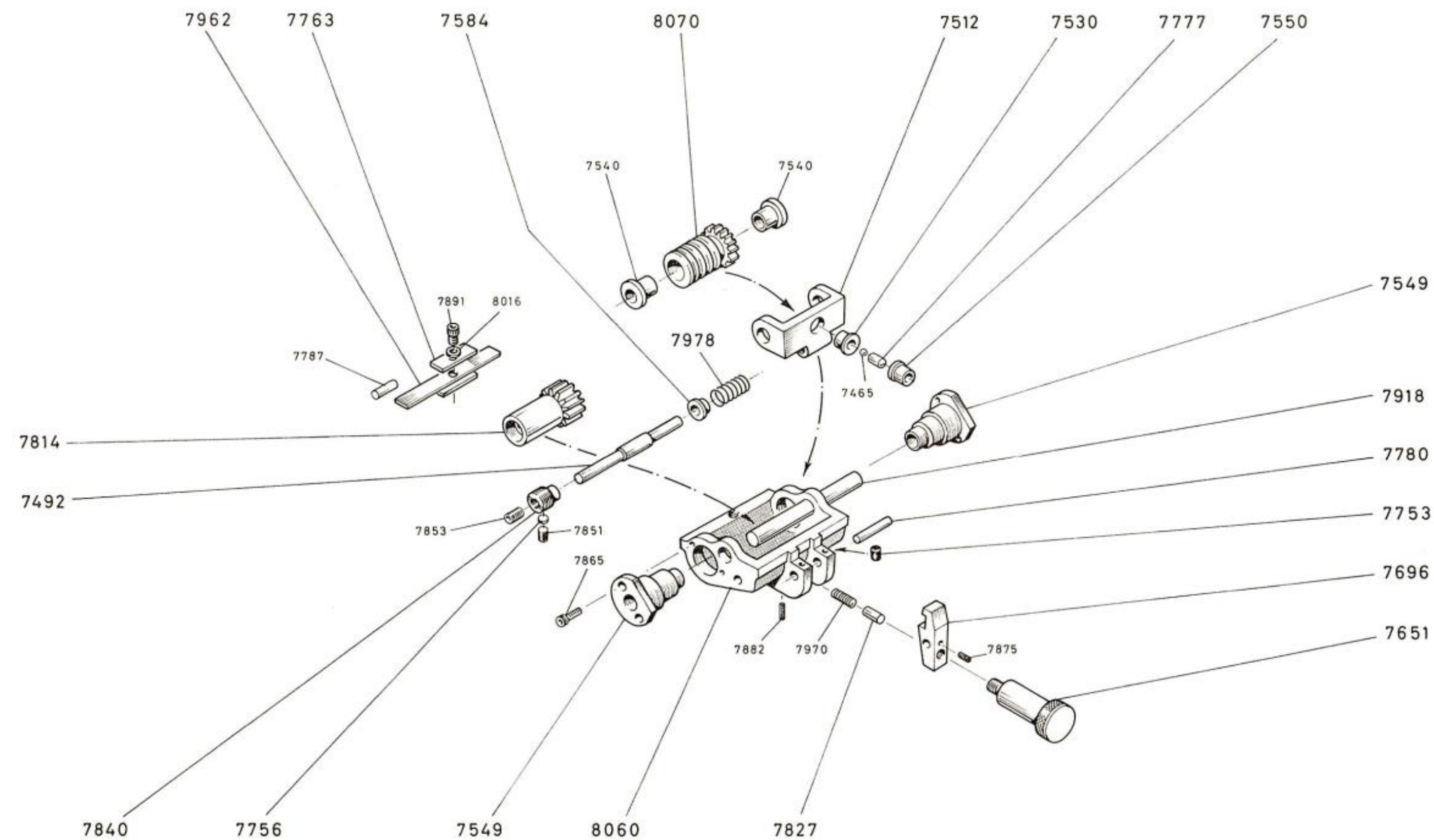
APRON: Straight Bed

No.	Order No.			Order No.		
Apron Casting	7704	Interlock Lever		7538	25T Pinion Bush	10-958
Apron Casting (Clausing Only)	7712	Leadscrew Half-Nut (Standard)		7553	Apron Wormwheel Bush	10-991
Wormbox Latch Bar	7718	Leadscrew Half-Nut (Metric)		7570	Feed Selector Gear Retaining Clip	13-784
Interlock Lever Pivot Bolt	7722	*Dial Indicator Guard Knurled Nut		7572	Interlock Lever Retaining Clip	11-778
Latch Bar Bush	7783	*Dial Indicator Guard Locating Pin		7574	Surfacing Gear Retaining Clip	13-784
Flanged Bush	7807	Rack Pinion, 12T		7725	*Dial Indicator Gear Retaining Nut	21-659
Leadscrew Nut Eccentric Cam	7912	Surfacing Gear Shaft		7727	Apron Handwheel Retaining Nut	21-673
*Indicator Dial	7919	Wormwheel & Pinion Shaft		7735	Oiler Nipple	23-124
Idler Gear, 33T	7930	Handwheel Racking Shaft, 13T		7747	Oilsight (Clausing Only)	80-871
*Dial Indicator Gear, 24T	7936	Feed Selector Shaft		7782	Handle Stop-Key Locating Pin	24-043
Feed Selector Gear, 25/32T	7997	*Dial Indicator Guard Stud		7856	Half-Nut Handle Retaining Screw	46-212
Sliding Gear, 42T	8008	Latch Bar Damper Washers (2)		7860	Latch Bar Securing Screws (2)	53-305
Surfacing Gear, 22/38T	8012	Half-Nut Handle Domed Washer		7870	Sliding Gear Securing Screw	60-362
*Dial Indicator Guard	8081	Wormwheel & Pinion, 33/25T		7874	Handle Stop-Key Securing Screw	53-303
Leadscrew Half-Nut Handle				7879	Surfacing Gear Shaft Securing Screw	45-204
Leadscrew Half-Nut Handle (Chromed)	STANDARD ITEMS			7896	Half-Nut Handle Stop Screw	46-212
Apron Handwheel Handle	7462	Half-Nut Handle Locating Ball	01-788	7898	Handle Spring Tension Screw	60-362
Apron Handwheel Handle (Chromed)	7464	Feed Selector Shaft Locating Ball	01-788	7900	Selector Shaft Spring Tension Screw	60-364
Apron Handwheel C/W Handle	7530	Feed Selector Gear Bush	10-957	7960	Leadscrew Half-Nut Handle Spring	82-797
Apron Handwheel (Chromed)	7532	Surfacing Gear Bush	10-957	7988	Feed Selector Shaft Spring	82-078
Half-Nut Handle Stop Key	7534	Idler Gear Bush	10-964	8006	Half-Nut Cam Crinkle Washer	86-735

* NOT on Continental lathes having metric gearbox

For wormbox details: Refer to STU-P15-6512 (Standard)
Refer to STU-P15D-6512 (Clausing)

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1.



STU-P15D-6512

APRON WORMBOX - extra

Ref. Drg. STU-P15D-6512

APRON WORMBOX: Extra

CLAUSING LATHES ONLY

Order No.	Description
7512	Wormbox Bracket
7530	Feed Selector Gear Bush
7549	Wormbox Support Bushes (2)
7550	Knock-off Pin Bush
7584	Pressure Spring Collars (2)
7651	Wormbox Handle (Chromed)
7696	Wormbox Latch
7753	Wormbox Damping Pads (2)
7756	Pressure Adjusting Screw Pads (2)
7763	Leaf Spring Packing Piece
7777	Knock-off Pin
7780	Wormbox Latch Pin
7814	Wormbox Pinion
7827	Latch Return Plunger
7840	Knock-off Pressure Adjusting Screws (2)
7918	Worm & Pinion Shaft
7942	Spring Support Shaft

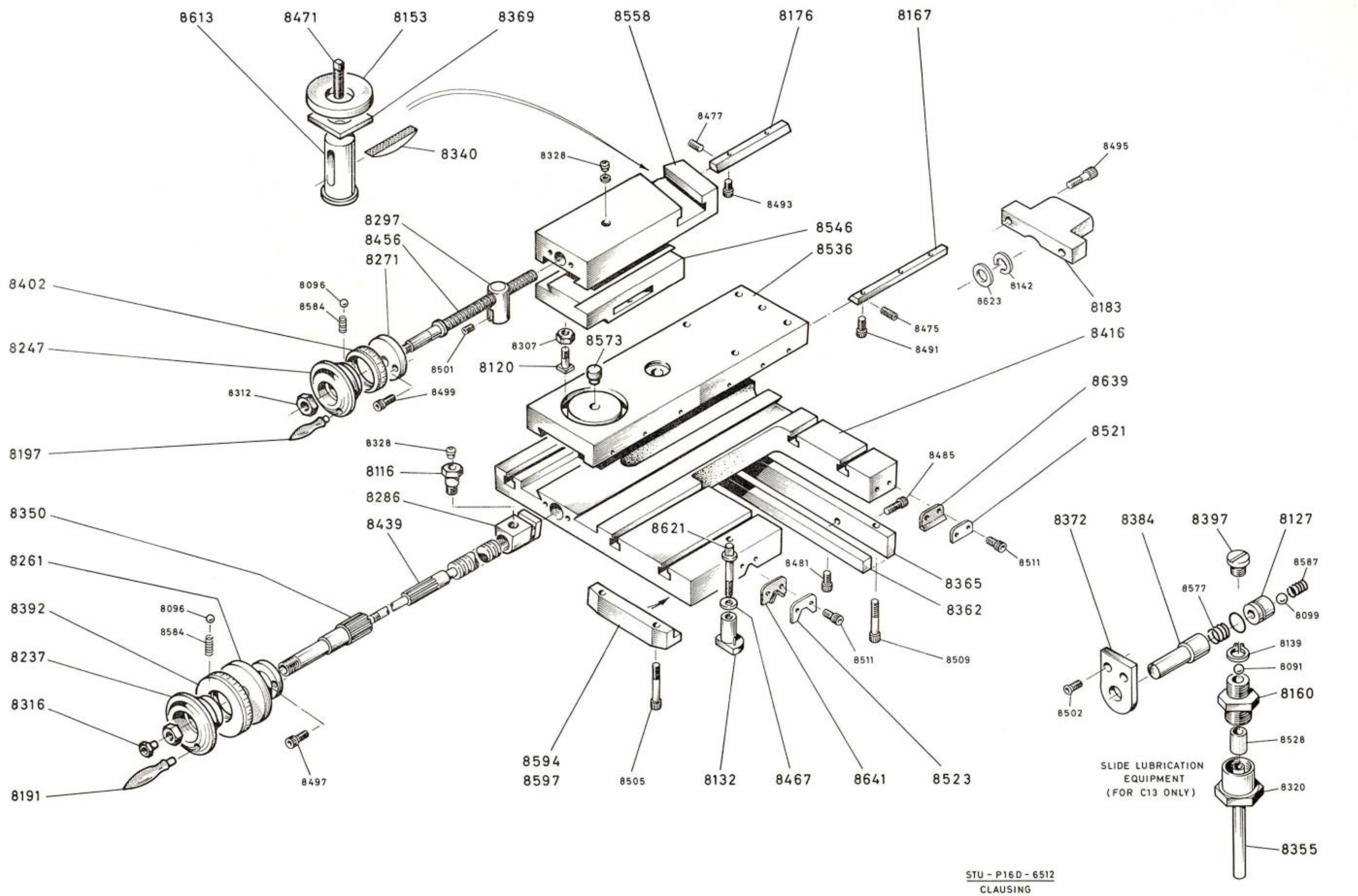
Order No.	Description
7962	Leaf Spring
7978	Knock-off Pressure Springs (2)
8060	Wormbox Casting
8070	Worm & Pinion

STANDARD ITEMS

7465	Wormbox Knock-off Ball	01-789
7540	Worm & Pinion Bushes (2)	10-909
7787	Wormbox Rest Pins (2)	24-543
7851	Adjusting Screw Locking Screws (2)	58-342
7853	Spring Support Shaft Lock Screws (2)	68-428
7865	Wormbox Bush Securing Screws (4)	45-203
7875	Latch Securing Screw	59-350
7882	Worm & Pinion Shaft Securing Screw	58-347
7891	Leaf Spring Securing Screw	45-203
7970	Handle Plunger Spring	82-824
8016	Leaf Spring Screw Washer	86-738

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1.

FROM SER. No. 48868
TO SER. No. 67632



SADDLE & SLIDES : gap bed

Ref. Drg. STU-P16D-6512

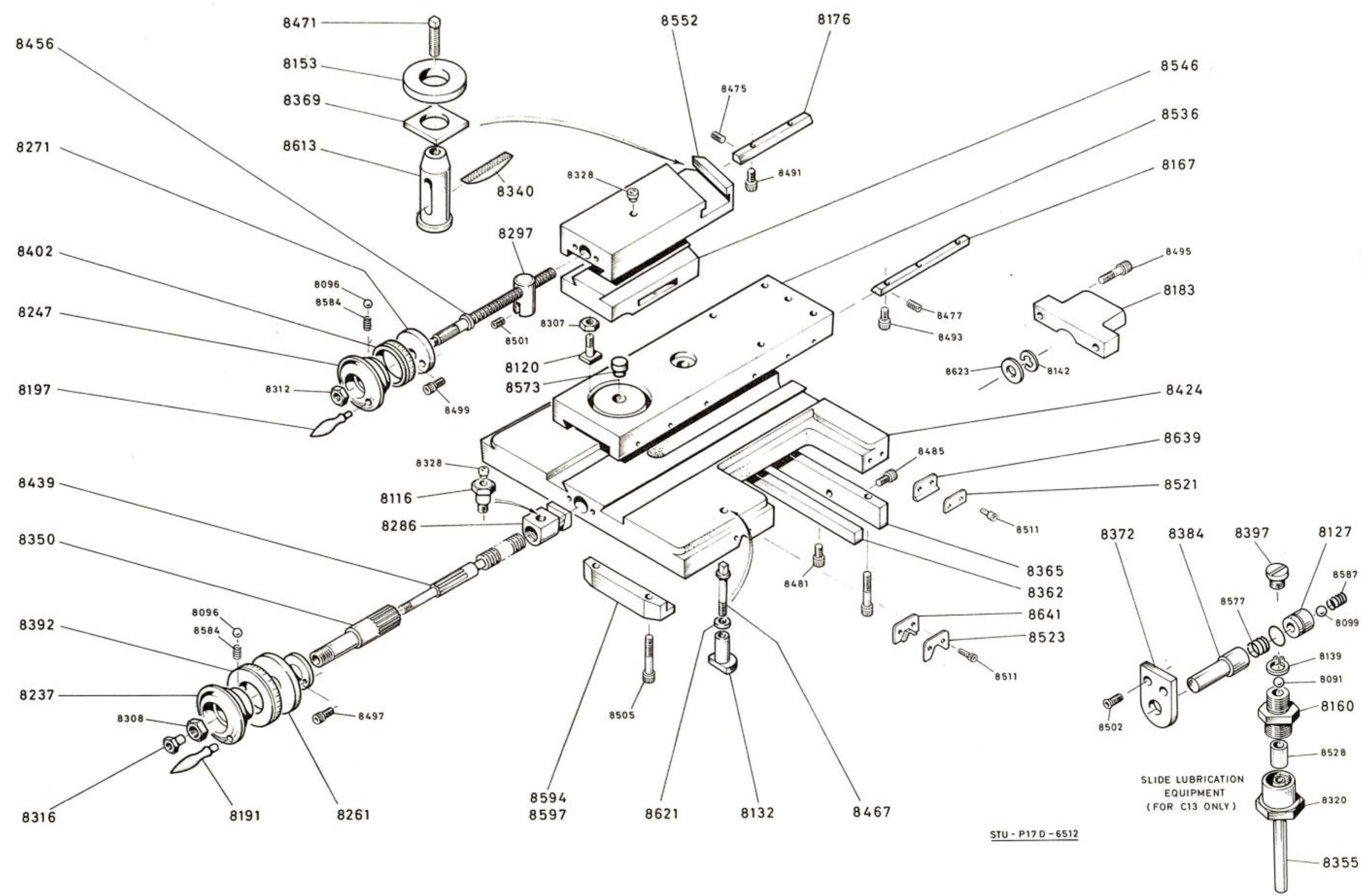
SADDLE & SLIDES: Gap-Bed Lathes

Order No.	Description
8116	Saddle Screw Nut Fixing Bolt
8120	Swivel Slide Clamp Bolts C/W Nuts (2)
8127	Lubricating Valve Bush
8132	Saddle Locking Clamp C/W Pins
8153	Toolholder Collar
8160	Lubricating Union Connector
8167	Cross-Slide Gibs (2)
8176	Top-slide Gib
8183	Cross-Slide Screw Guard
8191	Cross-Slide Handwheel Handle (Chromed)
8197	Top-Slide Handwheel Handles (Chromed) (2)
8237	Cross-Slide Handwheel, Complete
8247	Top-Slide Handwheel, Complete
8261	Cross-Slide Screw Keep (Chromed)
8271	Top-Slide Screw Keep (Chromed)
8286	Cross-Slide Nut Assembly
8297	Top-Slide Screw Nut
8316	Cross-Slide Screw Retaining Nut
8340	Toolholder Swivel-Piece
8350	Cross-slide Screw Pinion
8355	Lubricating Stand-Pipe
8362	Saddle Rear Strip Adjusting Plate
8365	Saddle Rear Strip Fixed Plate
8369	Toolholder Clamp Plate
8372	Lubricating Plunger Plate
8379	Oil Filler Plug
8384	Lubricating Plunger
8392	Cross-Slide Index Ring
8402	Top-Slide Index Ring
8416	Saddle Casting
8439	Cross-Slide Screw & Nut Assembly
8456	Top-Slide Screw & Nut Assembly
8467	Saddle Locking Screw
8471	Toolholder Tool Screw
8521	Bedway Wiper Shields, Flat (2)
8523	Bedway Wiper Shields, Vee (2)
8536	Cross-Slide C/W Gib
8546	Swivel Slide (Angular)
8558	Top-Slide (Angular) C/W Gib
8573	Swivel Slide Spigot
8594	Saddle Front Strip (A-Bed)
8597	Saddle Front Strip (B-Bed)
8613	Toolholder C/W Toolscrew
8621	Saddle Locking Screw Washer
8639	Bedway Wipers Flat (2)
8641	Bedway Wipers Vee (2)

STANDARD ITEMS

8091	Lubricating Connector Ball	01-787
8096	Index Ring Pressure Balls (6)	01-788
8099	Lubricating Valve Ball	01-789
8139	Lubricating Connector Ball Clip	13-786
8142	Cross-Slide Screw Washer Circlip	11-737
8307	Swivel Slide Clamping-Bolt Nuts (2)	20-621
8308	Cross-Slide Handwheel Retaining Nut	21-654
8312	Top-Slide Handwheel Retaining Nut	21-651
8320	Lubricating Union Nut	29-011
8327	Lubricating Valve Bush Oil-Ring	27-192
8328	Oiler Nipples (9)	23-124
8475	Cross-Slide Gib Adjusting Screws (4)	58-345
8477	Top-Slide Gib Adjusting Screws (6)	58-345
8481	Saddle Rear Strip Adjusting Screws (4)	46-214
8485	Saddle Rear Strip Lock Screws (2)	46-213
8491	Cross-Slide Gib Securing Screws (4)	45-201
8493	Top-Slide Gib Securing Screws (6)	45-201
8495	Cross-Slide Screw Guard Screws (2)	46-216
8497	Cross-Slide Keep Securing Screws (2)	45-206
8499	Top-Slide Keep Securing Screws (2)	45-203
8501	Top-Slide Nut Securing Screw	60-363
8502	Plunger Plate Securing Screws (2)	53-303
8505	Saddle Front Strip Securing Screws (2)	46-218
8509	Saddle Rear Strip Securing Screws (2)	47-229
8511	Bed Wiper Securing Screws (8)	45-202
8528	Lubricating Union Sleeve	29-024
8577	Lubricating Plunger Spring	82-839
8584	Index Rings Springs (6)	82-795
8587	Lubricating Valve Spring	82-795
8623	Cross-Slide Screw Washer	85-734

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1.



SADDLE & SLIDES : straight bed

Ref. Drg. STU-P17D-6512

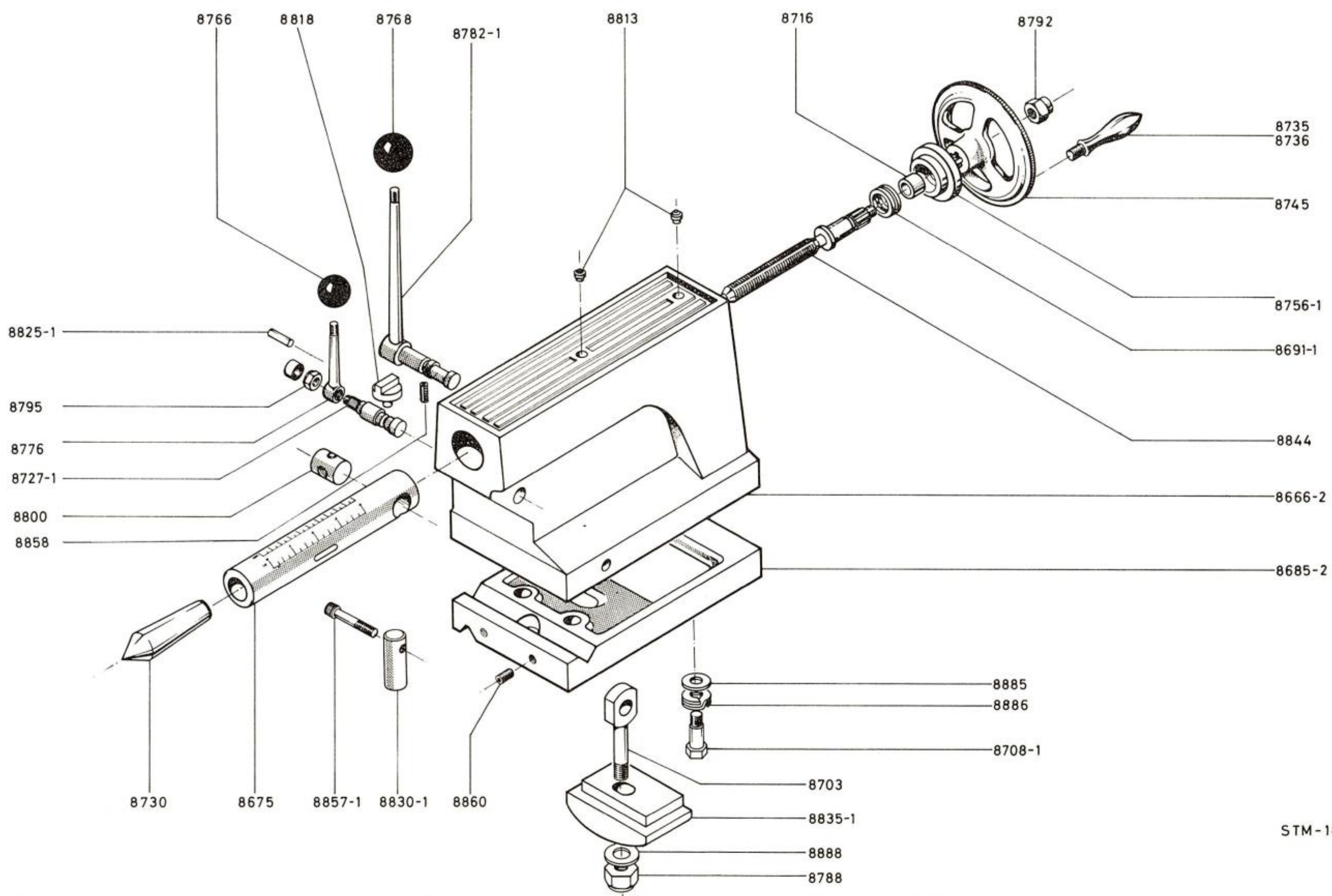
SADDLE & SLIDES: Straight Bed Lathes

Order No.	Description
8116	Saddle Screw Nut Fixing Bolt
8120	Swivel Slide Clamping Bolt & Nut
8127	Lubricating Valve Bush
8132	Saddle Locking Clamp C/W Pins
8153	Toolholder Collar
8160	Lubricating Union
8167	Cross-Slide Gibs (2)
8176	Top-Slide Gib
8183	Cross-Slide Screw Guard
8191	Cross-Slide Handwheel Handle (Chromed)
8197	Top-Slide Handwheel Handles (Chromed) (2)
8237	Cross-Slide Handwheel C/W Handle
8247	Top-Slide Handwheel C/W Handles
8261	Cross-Slide Screw Keep (Chromed)
8271	Top-Slide Screw Keep (Chromed)
8286	Cross-Slide Nut Assembly
8297	Top-Slide Screw Nut
8316	Cross-Slide Screw Retaining Nut
8340	Toolholder Swivel Piece
8350	Cross-Slide Screw Pinion
8355	Lubricating Stand-Pipe
8362	Saddle Rear Strip Adjusting Plate
8365	Saddle Rear Strip Fixed Plate
8369	Toolholder Clamp Plate
8372	Lubricating Plunger Plate
8379	Oil Filler Plug
8384	Lubricating Plunger
8392	Cross-Slide Index Ring
8402	Top-Slide Index Ring
8425	Saddle Casting
8439	Cross-Slide Screw & Nut
8456	Top-Slide Screw & Nut
8467	Saddle Locking Screw
8471	Toolholder Tool Screw
8521	Bedway Wiper Shield, Flat (2)
8523	Bedway Wiper Shield, Vee (2)
8536	Cross-Slide Assembly
8546	Swivel Slide Assembly (Angular)
8558	Top-Slide Assembly (Angular)

Order No.	Description	
8573	Swivel Slide Spigot	
8594	Saddle Front Strip (A-Bed)	
8597	Saddle Front Strip (B-Bed)	
8613	Toolholder & Toolscrew	
8621	Saddle Lock-Screw Washer	
8639	Bedway Wipers, Flat (2)	
8641	Bedway Wipers, Vee (2)	
STANDARD ITEMS		
8091	Lubricating Connector Ball	01-787
8096	Index Ring Pressure Balls (6)	01-788
8099	Lubricating Valve Ball	01-789
8139	Lubricating Connector Ball Clip	13-786
8142	Cross-Slide Screw Washer Clip	11-737
8307	Swivel Slide Clamp Bolt Nuts (2)	20-621
8308	Cross-Slide Handwheel Nut	21-654
8312	Top-Slide Handwheel Nut	21-651
8320	Lubricating Union Nut	29-011
8327	Lubricating Valve Bush Oil-Ring	27-192
8328	Oiler-Nipples (9)	23-124
8475	Cross-Slide Gib Adjusting Screws (4)	58-345
8477	Top-Slide Gib Adjusting Screws (6)	58-345
8481	Saddle Rear Strip Adjusting Screws (4)	46-214
8485	Saddle Rear Strip Lock Screws (2)	46-213
8491	Cross-Slide Gib Securing Screws (4)	45-201
8493	Top-Slide Gib Securing Screws (6)	45-201
8495	Screw Guard Securing Screws (2)	46-216
8497	Cross-Slide Keep Screws (2)	45-206
8499	Top-Slide Keep Screws (2)	45-203
8501	Top-Slide Screw-Nut Screw	60-363
8502	Plunger Plate Screws (2)	53-303
8505	Saddle FrontSStrip Securing Screws (2)	46-218
8509	Saddle Rear Strip Securing Screws (2)	47-229
8511	Bed Wiper Securing Screws (8)	45-202
8528	Lubricating Union Sleeve	29-024
8577	Lubricating Plunger Spring	82-839
8584	Index Ring Springs (6)	82-795
8587	Lubricating Valve Spring	82-838
8623	Cross-Slide Screw Washer	85-734

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1.

From SER.No.66840
To SER.No.



STM-18A-6810

TAILSTOCK

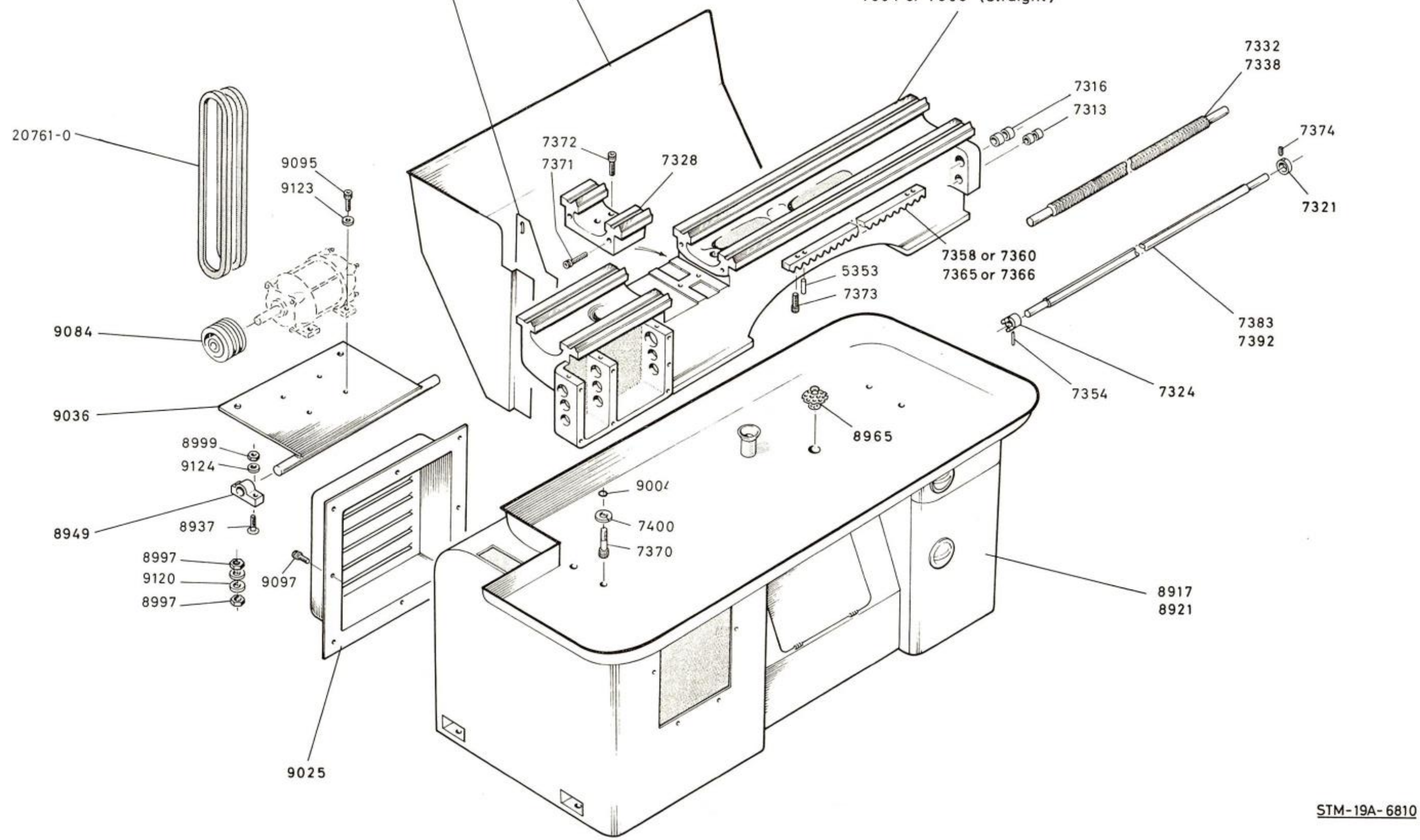
Ref. Drg. STM-18A-6810

TAILSTOCK

Order No.	Description
8666-2	Tailstock Main Casting
8675	Tailstock Barrel
8685-2	Tailstock Base
8691-1*	Barrel Screw Thrust Bearing 04-905
8703	Clamping Eye-Bolt
8708-1	Base Retaining Bolts (2)
8716	Tailstock Keep Bush
8727-1	Barrel Clamp Cam
8730	No. 3 Morse Centre
8736	Handwheel Handle
8745	Handwheel Assembly
8756-1	Tailstock Screw Keep
8766 *	Barrel Clamp Lever Knob 18-838
8768 *	Tailstock Clamp Lever Knob 18-836
8776	Barrel Clamp Lever
8782-1	Tailstock Clamp Lever Assembly
8788 *	Clamp-Plate Retaining Nut 21-675

Order No.	Description
8792 *	Handwheel Retaining Nut 21-687
8795 *	Barrel Clamp Lever Nut 22-696
8800	Barrel Screw Nut
8813 *	Oiler Nipples (2) 23-124
8818	Barrel Clamp Pad
8825-1*	Clamp Lever Stop Pin 24-384
8830-1	Tailstock Set-Over Pins (2)
8835-1	Tailstock Clamp Plate
8844	Barrel Screw
8857-1*	Set-Over Screws (2) 47-231
8858 *	Tailstock Clamping Lever Stop Screw 73-531
8859 *	Tailstock Barrel Screw Sec Screw (2) 58-343
8860 *	Set-Over Pin Retaining Screw (2) 59-354
8885 *	Base Bolt Plain Washers (2) 85-695
8886 *	Base Bolt Spring Washers(2) 84-716
8888 *	Clamp Plate Ret Nut Washer 85-742

From SER. No. 66840
To SER. No.



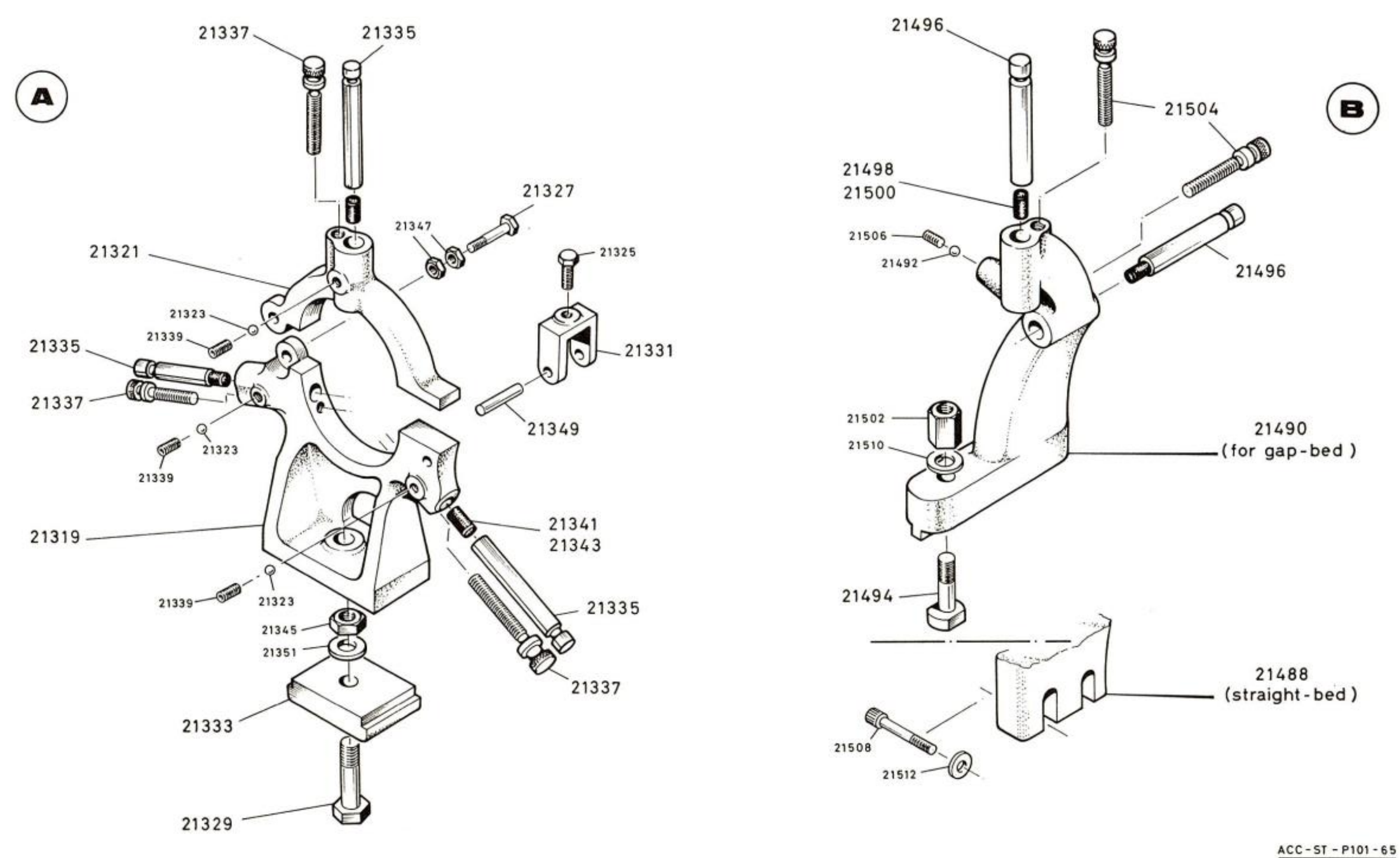
STM-19A-6810

CABINET, BED & TRANSMISSION

Ref. Drg. STM-19A-6810

CABINET, BED & TRANSMISSION

Order No.		Description	Order No.		Description
7302		.Bed (Gap-Type) 24"	7383		Feedshaft 24"
7304		Bed (Straight) 24"	7391		Feedshaft 36"
7306		Bed (Gap-Bed) 36"	7400		Bedscrew Spring Washers (6) 84-706
7308		Bed (Straight-Bed) 36"	8917		Cabinet Base Assembly 24"
7313	*	Feedshaft Tail-End Bushes (2) 10-923	8921		Cabinet Base Assembly 36"
7316	*	Leadscrew Tail-End Bushes (2) 10-936	8937		Bracket Securing Bolts (2) 88-055
		(or 10-940 - 1 off)	8949		Motor Platform Bracket
7321		Feedshaft Tail-End Collar	8965		Coolant Drain Filter
7324		Feedshaft Coupling	8970-1		Back Splash Guard Assembly 24"
7328		Gap-Piece	8971-1		Back Splash Guard Assembly 36"
7332		Leadscrew, 24 in.	8972-1		Splash Guard Fixed-Plate
7338		Leadscrew, 36 in.	8997	*	Platform Adjusting Nuts (4) 20-639
7353	*	Rack Locating Pins (3) 24-539	8999	*	Bracket Bolt Nuts (2) 22-698
7354	*	Shaft-Coupling Securing Pin 14-659	9004	*	Bed Bolt Oil-Rings (6) 27-060
7358		Rack (A-Bed)	9025		Louvre Plate, Boxed
7360		Rack (B-Bed)	9036		Motor Platforms (2-Speed)
7365		Rack (A-Bed) 36"	9084		Motor Pulley
7366		Rack (B-Bed) 36"	9095	*	Motor Securing Screws (4) 47-229
7370	*	Bed Securing Screws (6) 50-260	9097	*	Cover Plate Screws (7) 45-202
7371	*	Gap-Piece Screws (Horizontal) (2) 48-246	9120	*	Platform Adjusting Nut Washers (4) 85-695
7372	*	Gap-Piece Screws (Vertical) (2) 48-242	9123	*	Motor Securing Screw Washers (4) 85-692
7373	*	Rack Securing Screws (2) 45-201	9124	*	Bracket Bolt Washers (2) 84-704
7374	*	Feedshaft Collar Lock Screw 59-350	20761-0		Vee Belts A82.

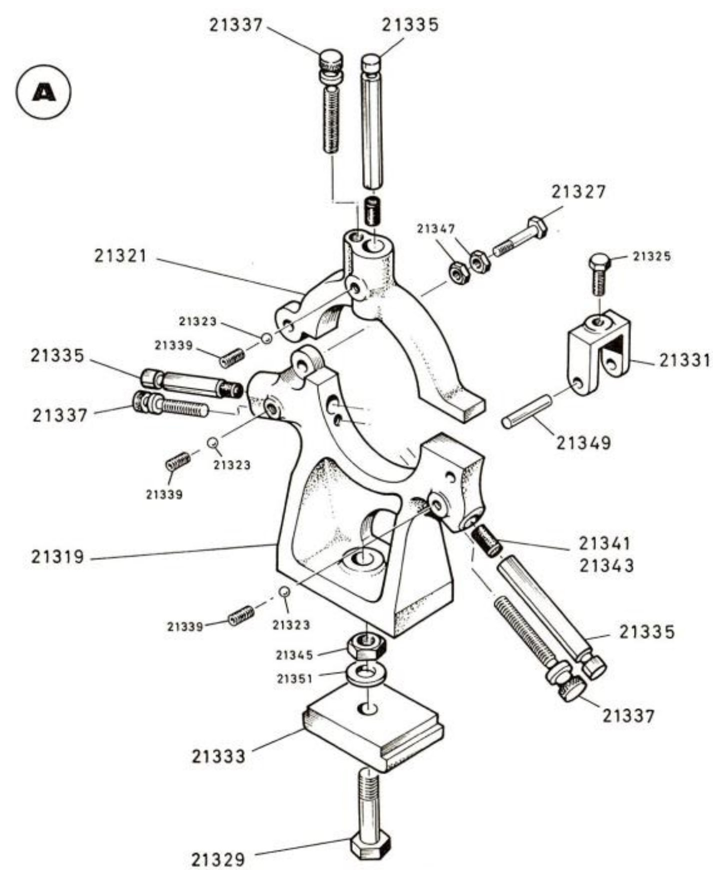


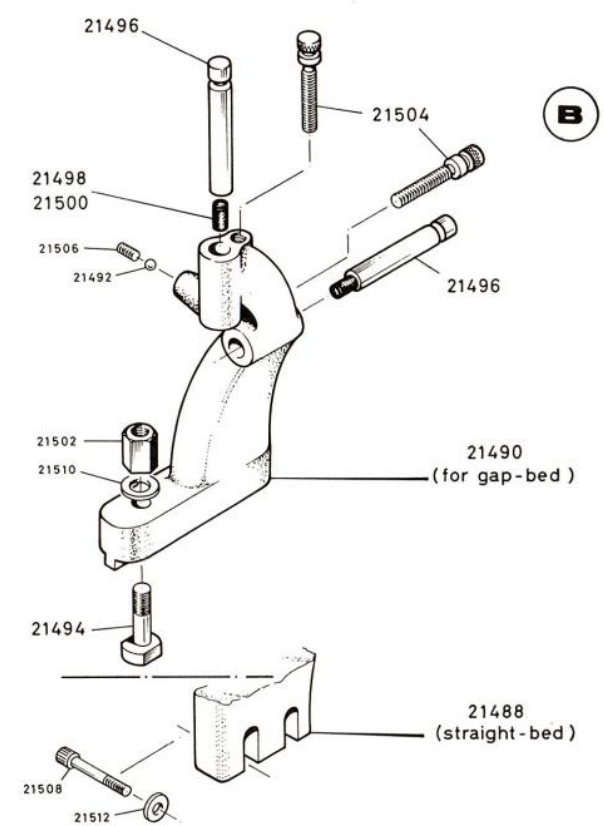
STEADIES (steady rests)

Ref. Drg. STM-19A-6810

CABINET, BED & TRANSMISSION

Order No.		Description	Order No.		Description
7302		.Bed (Gap-Type) 24"	7383		Feedshaft 24"
7304		Bed (Straight) 24"	7391		Feedshaft 36"
7306		Bed (Gap-Bed) 36"	7400		Bedscrew Spring Washers (6) 84-706
7308		Bed (Straight-Bed) 36"	8917		Cabinet Base Assembly 24"
7313	*	Feedshaft Tail-End Bushes (2) 10-923	8921		Cabinet Base Assembly 36"
7316	*	Leadscrew Tail-End Bushes (2) 10-936 (or 10-940 - 1 off)	8937		Bracket Securing Bolts (2) 88-055
			8949		Motor Platform Bracket
7321		Feedshaft Tail-End Collar	8965		Coolant Drain Filter
7324		Feedshaft Coupling	8970-1		Back Splash Guard Assembly 24"
7328		Gap-Piece	8971-1		Back Splash Guard Assembly 36"
7332		Leadscrew, 24 in.	8972-1		Splash Guard Fixed-Plate
7338		Leadscrew, 36 in.	8997	*	Platform Adjusting Nuts (4) 20-639
7353	*	Rack Locating Pins (3) 24-539	8999	*	Bracket Bolt Nuts (2) 22-698
7354	*	Shaft-Coupling Securing Pin 14-659	9004	*	Bed Bolt Oil-Rings (6) 27-060
7358		Rack (A-Bed)	9025		Louvre Plate, Boxed
7360		Rack (B-Bed)	9036		Motor Platforms (2-Speed)
7365		Rack (A-Bed) 36"	9084		Motor Pulley
7366		Rack (B-Bed) 36"	9095	*	Motor Securing Screws (4) 47-229
7370	*	Bed Securing Screws (6) 50-260	9097	*	Cover Plate Screws (7) 45-202
7371	*	Gap-Piece Screws (Horizontal) (2) 48-246	9120	*	Platform Adjusting Nut Washers (4) 85-695
7372	*	Gap-Piece Screws (Vertical) (2) 48-242	9123	*	Motor Securing Screw Washers (4) 85-692
7373	*	Rack Securing Screws (2) 45-201	9124	*	Bracket Bolt Washers (2) 84-704
7374	*	Feedshaft Collar Lock Screw 59-350	20761-0		Vee Belts A82.





ACC-ST-P101-65

STEADIES (steady rests)

Ref. Drg. ACC-ST-P101-65

STEADIES (Steady Rests)

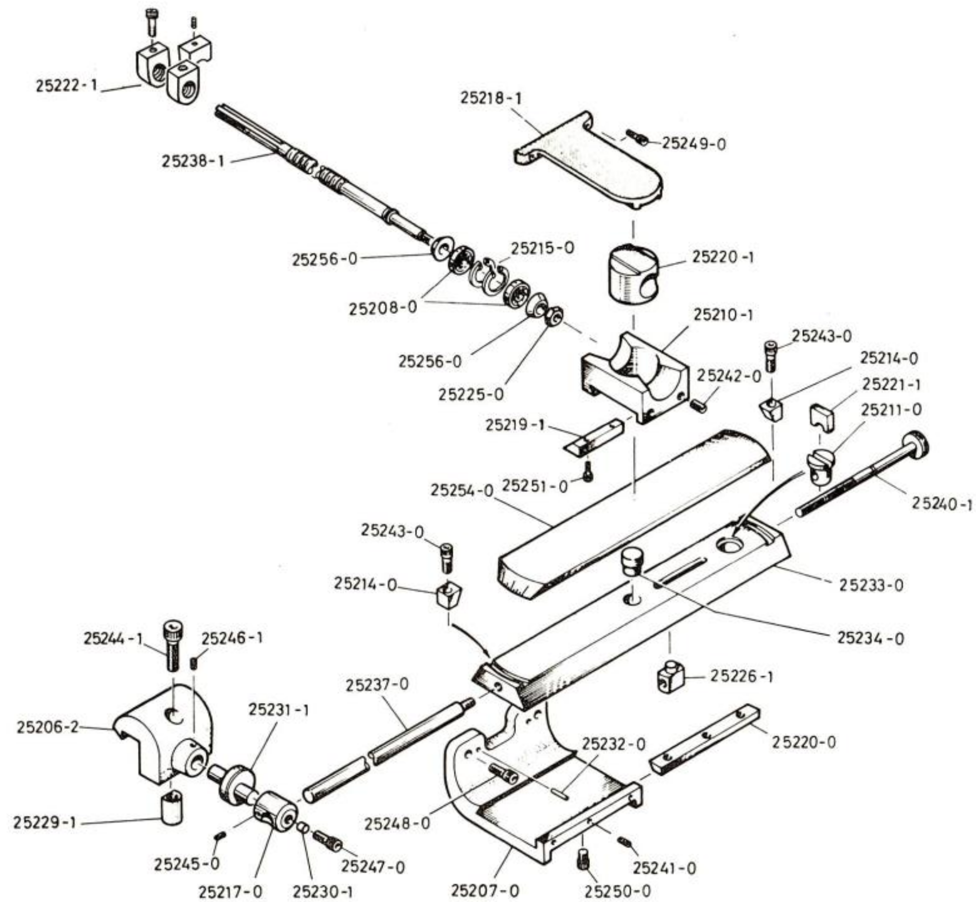
A - STATIONARY STEADY

Order No.	Description	
21319	Steady Base Casting	
21321	Steady Top Casting	
21327	Pivot Bolt	
21329	Clamp Plate Bolt	
21331	Clamp Fork	
21333	Steady Clamp Plate	
21335	Steady Fingers (3)	
21337	Finger Adjusting Screws (3)	
21341	Finger Inserts, Plastic (3)	
21343	Finger Inserts, Bronze (3)	
21349	Clamp Fork Hinge Pin	
STANDARD ITEMS		
21323	Finger Locking Balls (3)	01-793
21325	Clamp Fork Bolt	08-112
21339	Finger Locking Screws (3)	60-363
21345	Clamp Plate Bolt Nut	20-614

B - TRAVELLING STEADY

Order No.	Description	
21347	Pivot Bolt Locknuts (2)	20-637
21351	Clamp Plate Bolt Washer	85-695
21488	Steady Casting (Straight)	
21490	Steady Casting (Gap)	
21494	Steady Securing Bolt	
21496	Steady Fingers (2)	
21498	Finger Inserts, Plastic (2)	
21500	Finger Inserts, Bronze (2)	
21504	Finger Adjusting Screws (2)	
STANDARD ITEMS		
21492	Finger Locking Balls (2)	01-793
21502	Steady Securing Bolt Nut	20-612
21506	Finger Locking Screws (2)	60-365
21508	Steady Securing Screws (2)	49-253
21510	Securing Bolt Washer	85-695
21512	Securing Screw Washers (2)	85-694

SPECIFICATIONS OF STANDARD ITEMS ARE GIVEN IN APPENDIX 1



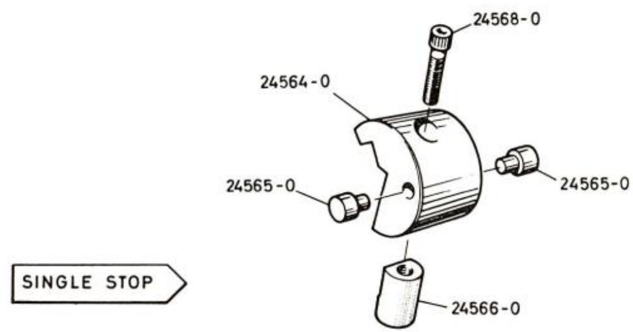
STM-104A-6810

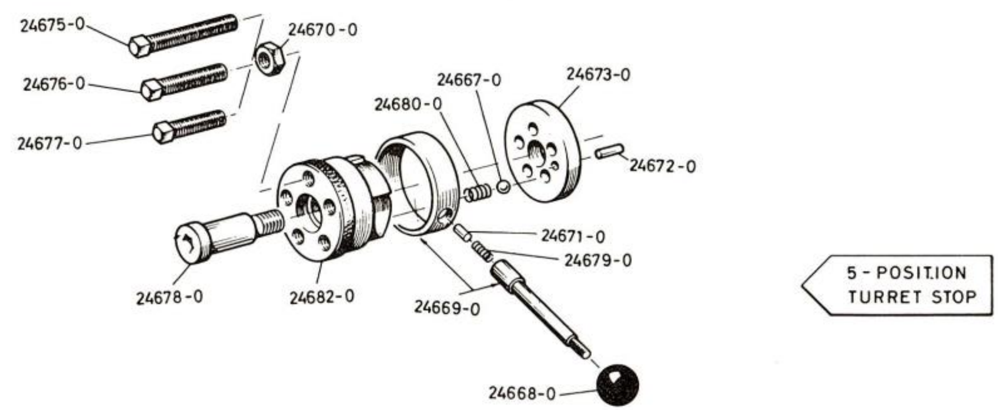
TELESCOPIC TAPER TURNING ATTACHMENT

Ref. Drg. STM-104A-6810

TELESCOPIC TAPER TURNING ATTACHMENT

Order No.		Description	Order No.		Description
25206-2		Anchor Bracket	25232-0	*	Bracket Locating Pins 24-542
25207-0		Taper-Turner Bracket	25233-0		Fixed Plate
25208-0	*	Cross-Slide Screw Bearings 02-872	25234-0		Swivel-Slide Pivot
25210-1		Slide Block	25237-0		Connecting-Rod
25211-0		Adjusting Screw Keep Bush	25239-2		Cross-Slide C/W Nut
25214-0		Swivel-Slide Clamps (2)	25240-1		Swivel Slide Adjusting Screw
25215-0	*	Bearing Retaining Clips 12-766	25241-0	*	Bracket-Gib Adjusting Screws 58-345
25217-0		Anchor Bracket Extension	25242-0	*	Slide-Block Gib Adjusting Screws 58-343
25218-1		Cross-Slide Extension	25243-0	*	Swivel-Slide Clamping Screws 46-213
25219-1		Slide-Block Gib	25244-1	*	Anchor Bracket Locking Screw 48-242
25220-0		Bracket Gib	25245-0	*	Bracket Extension Locking Screw 59-350
25220-1		Bearing Housing	25246-1	*	Eccentric-Pin Locking Screw 60-361
25221-1		Adjusting Screw Keep	25247-0	*	Connecting-Rod Locking Screw 48-237
25222-1		Saddle Screw Nut (Standard)	25248-0	*	Bracket Securing Screws 46-214
25225-0	*	Thrust Bearing Adjusting Nut 21-660	25249-0	*	Extension Securing Screws 46-216
25226-1		Swivel Slide Adjusting Screw Nut	25250-0	*	Bracket-Gib Securing Screws 45-202
25229-1		Anchor Bracket Clamp Piece	25251-0	*	Slide-Block Gib Securing Screws 45-202
25230-1		Connecting-Rod Clamp Pad	25254-0		Swivel Slide
25231-1		Eccentric Pin	25256-0		Bearing Thrust Washers





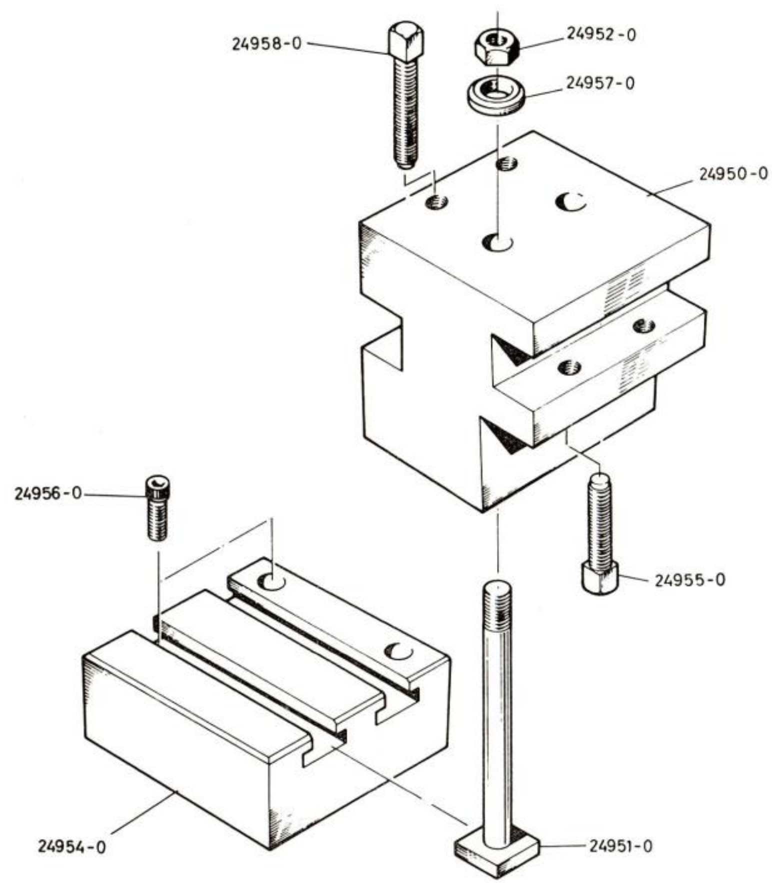
STM-105A-65/1

BED STOPS

Ref. Drg. STM-105A-65/1

BEDSTOPS

Order No.		Description	Order No.		Description
24564-0		Body, Single Type	24672-0	*	Turret-Plate Locating Pin 24-541
24565-0		Stop Pads (2)	24673-0		Turret Plate
24566-0		Clamping Piece	24675-0		Stop Screw, Long
24568-0	*	Locking Screw 48-247	24676-0		Stop Screw, Medium
24667-0	*	Turret Locating Ball 01-788	24677-0		Stop Screw, Short
24668-0	*	Ratchet-Lever Knob 18-840	24678-0		Turret Spindle
24669-0		Ratchet Lever & Ring Assembly	24679-0		Ratchet Lever Spring
24670-0	*	Stop Screw Locknuts 20-636	24680-0		Turret Locating-Ball Spring
24671-0		Ratchet Locating Pin	24682-0		5-Position Turret



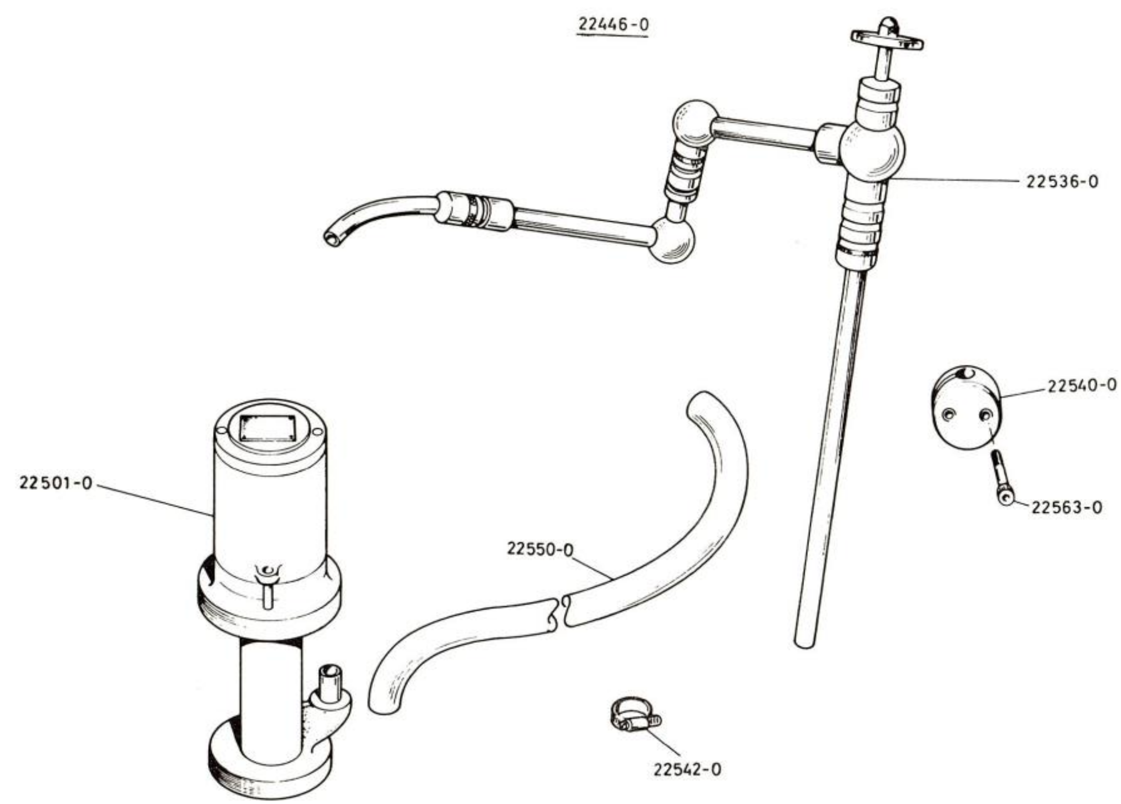
STM-103-65/1

REAR TOOLPOST

Ref. Drg. STM-103-65/1

REAR TOOLPOST

Order No.		Description
24950-0		Toolpost block
24951-0		Toolpost clamping bolts (2)
24952-0	*	Clamping-bolt nuts (2) 21-661
24954-0		Base plate
24955-0		Tool screw (2) bottom
24956-0	*	Base-plate securing screws (4) 47-228
24957-0	*	Clamping-bolt washers (2) 85-694
24958-0		Tool screws (2) top



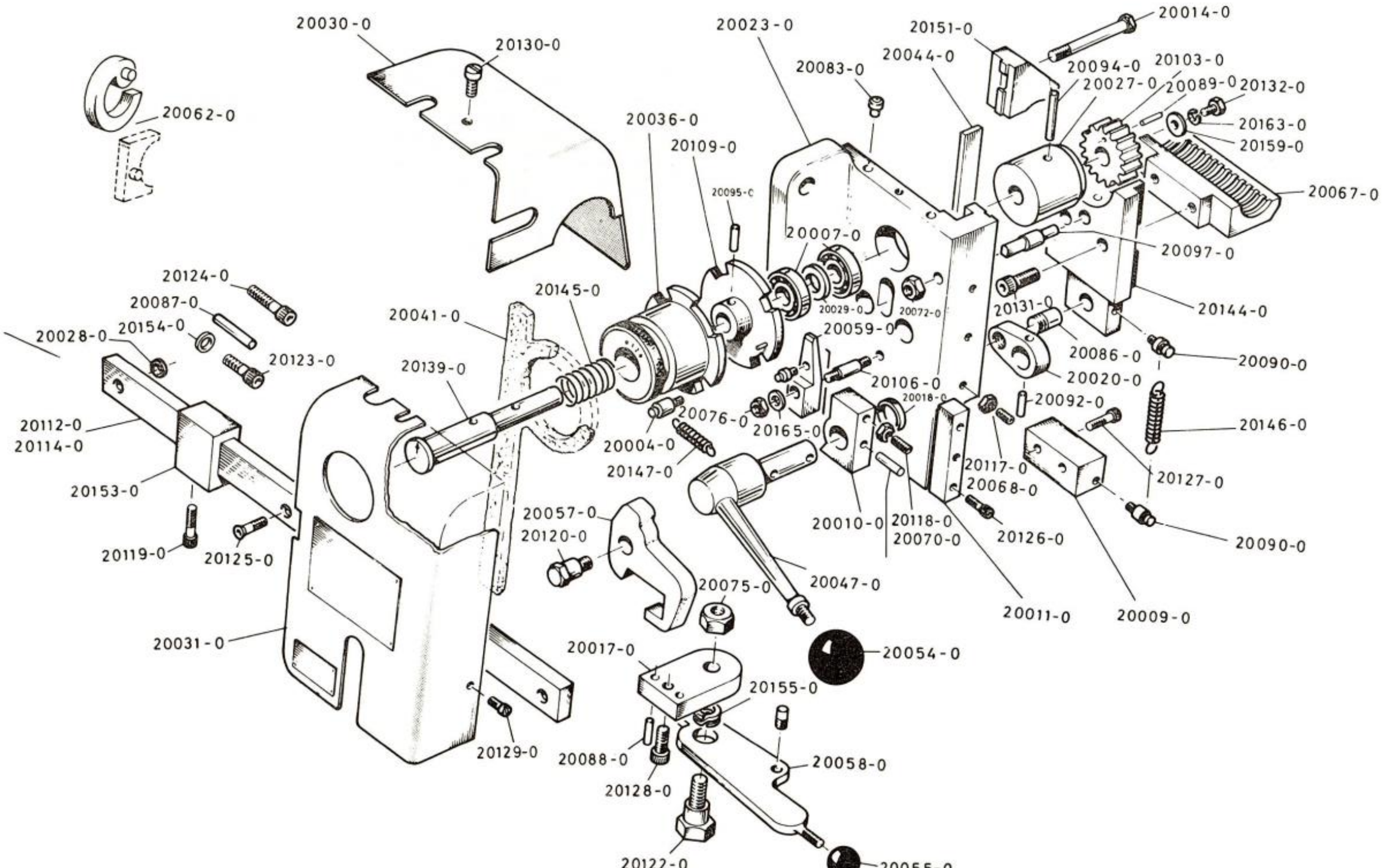
STM-110-65/1

COOLANT UNIT

Ref. Drg. STM-110-65/1

COOLANT UNIT

Order No.	Description
22446-0	Coolant unit c/w fittings (state electric supply)
22501-0	Coolant pump (state details on existing pump)
22536-0	Feedpipe assembly, c/w bracket
22540-0	Feedpipe bracket
22542-0	Hose clips (2)
22550-0	Flexible hose
22563-0 *	Pipe-bracket screws (2) 45-206



STM-111-65/1

RAPID THREADER : English

Ref. Drg. STM-111-65/1

RAPID THREADER: ENGLISH

Order No.		Description
20004-0		Locking-lever spring anchor
20007-0	*	Dial shaft bearings (2) 02-890
20009-0		Spring anchor-block
20010-0		Handle-shaft block
20011-0		Cover spacing-block
20014-0		Top steady bolt
20017-0		Knock-off lever bracket
20018-0	*	Handle-shaft bush 10-006
20020-0		Handle-shaft cam
20023-0		Threader main casting
20027-0		Pinion driving collar
20028-0		Stop-bar spacers
20029-0		Dial-shaft bearing spacer
20030-0		Back cover
20031-0		Front cover
20036-0		Setting dial assembly
20041-0		Cover gasket (felt)
20044-0		Slide gib
20047-0		Handle
20054-0		Handle knob
20055-0		Knock-off lever knob
20057-0		Dis-engaging lever
20058-0		Knock-off lever & pin
20059-0		Locking-lever & pin
20062-0		Half-nut lever lock (C-type) for lathe
20067-0		Half-nut (threader unit)
20068-0	*	Nuts for gib adjusting screws 22-690
20070-0	*	Nut for locking-lever adjusting screw 22-690
20072-0	*	Nut for top-steady screw 22-689
20075-0	*	Knock-off lever securing nut 22-691
20076-0	*	Locking-lever securing nut 22-689
20083-0	*	Oiler nipples 23-124
20086-0		Slide driving pin
20087-0	*	Attachment location pin 14-131
20088-0		Lever-bracket locating pins
20089-0	*	Pinion locating pin 24-046
20090-0		Main spring retaining pins (2)
20091-0	*	Shaft-block securing pin 24-543
20092-0	*	Shaft-cam securing pin 24-543
20094-0	*	Pinion driving-collar pin 25-608
20095-0	*	Dial plate securing pin 24-543
20097-0		Selector pin
20103-0		Pinion
20106-0		Locking-lever pivot
20109-0		Dial plate
20112-0		Stop bar (26 in.)
20114-0		Stop bar (46 in.)
20117-0	*	Slide-gib adjusting screws (3) 73-195
20118-0	*	Locking-lever adjusting screw 73-473
20119-0	*	Adjusting-stop locking screw 73-489
20120-0		Dis-engaging lever pivot screw
20122-0		Knock-off lever pivot screw
20123-0	*	Attachment securing screw (short) 47-227
20124-0	*	Attachment securing screws (long) 47-228
20125-0	*	Stop-bar securing screws 73-520
20126-0	*	Spacing-block securing screws 46-214
20127-0	*	Anchor-block securing screws 73-197
20128-0	*	Bracket securing screw 73-199
20129-0	*	Front-cover securing screws 73-472
20130-0	*	Back cover securing screws 73-472
20131-0	*	Half-nut securing screws (2) 73-196
20132-0	*	Pinion securing screw 73-198
20139-0		Dial shaft
20144-0		Slide
20145-0		Dial spring
20146-0		Main spring
20147-0		Locking-lever spring
20151-0		Top steady
20153-0		Adjusting stop
20154-0	*	Securing screw washer 85-692
20155-0	*	Knock-off lever spring-washer 84-714
20159-0	*	Pinion securing screw washer 85-720
20163-0	*	Pinion screw spring washer 84-701
20165-0	*	Locking-lever securing nut washer 85-691

SPECIFICATION OF STANDARD PARTS

Ref. No.	
01-786	Ball, steel 5/32" dia.
01-787	Ball, steel 3/16" dia.
01-788	Ball, steel 1/4" dia.
01-789	Ball, steel 5/16" dia.
01-790	Ball, steel 3/8" dia.
01-792	Ball, steel 5/8" dia.
01-793	Ball, Ph/b. 1/4" dia.
02-032	Bearing, Hoffman XLS, 2.1/4" dia.
02-061	Bearing, Hoffman XLS, 2" dia.
02-872	Bearing, Hoffman A10, 10 mm x 28 mm.
02-890	Bearing, Hoffman S5-V3-0
02-896	Bearing, FIFNIR DN 110 or FAG 60102Z
03-892	Bearing, roller, 17mm x 40 mm x 13 mm KGS taper KE 30203
03-896	Bearing, roller, 25 mm x 52 mm x 16 mm KGS taper KE 30205
04-884	Bearing, thrust Hoffman W 1.1/8"
04-905	Bearing, thrust Hoffman W.S.P. 5/8"
08-052	Bolt, Hex. head 5/16" UNC x 1.1/4" long
08-112	Bolt, Hex head 5/8" UNC x 1.1/4" long
10-006	Bush, 5/8" O.D. 1/2" I.D. C.T. 51 x 5/8" long
10-007	Bush, 5/8" O.D. 1/2" I.D. C.T. 51 x 7/8" long
10-009	Bush, B.S. 71 x 1.1/2" long
10-011	Bush, 15/16" O.D. 3/4" I.D. C.T. 30 x 1.3/16" long
10-012	Bush, 15/16" O.D. 3/4" I.D. C.T. 30 x 3/4" long
10-013	Bush, 15/16" O.D. 3/4" I.D. C.T. 30 x 1" long
10-909	Bush, 13/16" O.D. 9/16" I.D. F.C.T. 211 x 5/8" long
10-913	Bush, 3/4" O.D. 5/8" I.D. C.T. 174 x 5/8" long
10-914	Bush, 3/4" O.D. 5/8" I.D. C.T. 174 x 3/4" long
10-916	Bush, 7/8" O.D. 5/8" I.D. C.T. 56 x 3/4" long
10-920	Bush, 1" O.D. 3/4" I.D. C.T. 18 x 5/8" long
10-923	Bush, 1" O.D. 3/4" I.D. C.T. 18 x 3/4" long
10-940	Bush, 1.3/8" O.D. 1.1/8" I.D. B.S. 68 x 1.3/4" long
10-957	Bush, 11/16" O.D. 9/16" I.D. C.T. 40 x 7/8" long
10-958	Bush, 11/16" O.D. 9/16" I.D. C.T. 40 x 1.1/4" long
10-964	Bush, 3/4" O.D. 5/8" I.D. F.C.T. 29 x 9/16" long
10-991	Bush, oilite C.T. 40 x 1/2" long
11-731	Circlip, external, 3/8" dia. Anderton type 1500 E.303
11-736	Circlip, external, 1/2" dia. Anderton type 1400
11-737	Circlip, external, 1/2" dia. Anderton type 1500 E.396
11-743	Circlip, external, 5/8" dia. Anderton type 1400
11-745	Circlip, external, 3/4" dia. Anderton type 1400
11-749	Circlip, external, 7/8" dia. Anderton type 1400
11-753	Circlip, external, 1" dia. Anderton type 1400
11-754	Circlip, external, 1.1/8" dia. Anderton type 1400
11-778	Circlip, external, 5/16" dia. Anderton type 1500 E.250
11-845	Circlip, external, 3/16" dia. Anderton type 1500 E.125X
11-859	Circlip, external, 50 mm Anderton type 1400 364
12-766	Circlip, internal, 28 mm (1.102) Anderton type 1300
12-767	Circlip, internal, 40 mm (1.574) Anderton type 1300
12-770	Circlip, internal, 80 mm (3.150) Anderton type 1300
12-773	Circlip, internal, 3.464 dia. Anderton type 1300

Ref. No.	
13-784	Circlip, special,Anderton 1500 E.468 'E' type
13-786	Circlip, special,Anderton type 1200 size 8 int.
13-794	Circlip, special, Salter No. 5101/66 ext.
14-103	Spring dowel, 1/8" dia. x 1/2" long
14-104	Spring dowel, 1/8" dia. x 3/4" long
14-131	Spring dowel, 1/4" dia. x 1" long
14-613	Spring dowel, 3/32" dia. x 1/2" long
14-643	Spring Dowel 5/32" dia. x 1" long
14-644	Spring dowel 5/32" dia. x 1.1/8" long
14-652	Spring dowel, 3/16" dia. x 1" long
14-659	Spring dowel, 7/32" dia. x 1" long
14-644	Spring dowel, 1/4" dia. x 3/4" long
14-668	Spring dowel, 1/4" dia. x 1.1/4" long
14-686	Spring dowel, 5/16" dia x 1.3/4" long
16-842	Handle, black, 3/8" bore x 3" long
17-001	Key, No.3 Woodruff BS 404
17-002	Key, No.9 Woodruff BS 606
17-009	Key, 1/4" x 1/4" x 1.1/4" long, round end BS 46
18-145	Knob, 1.1/4" dia. x 3/4" UNC red
18-830	Knob, 1.1/2" dia. x 7/16" UNC black
18-833	Knob, 1.1/2" dia. x 5/16" UNC red
18-835	Knob, 1.1/4" dia. x 7/16" UNC black
18-836	Knob, 1.1/4" x 3/8" UNC black
18-837	Knob, 1.1/4" x 3/8" UNC cream
18-838	Knob, 1" x 3/8" UNC black
18-840	Knob, 3/4" x 1/4" UNC black
20-612	Nut, 3/8" UNC deep
20-614	Nut, 1/2" UNC deep
20-621	Nut, 5/16" UNC std.
20-622	Nut, 3/8" UNC std.
20-624	Nut, 1/2" UNC std.
20-635	Nut, 1/4" UNC thin
20-636	Nut, 5/16" UNC thin
20-637	Nut, 3/8" UNC thin
20-639	Nut, 1/2" UNC thin
20-652	Nut, 3/8" UNF thin
21-651	Locknut, 7/16" UNF
21-654	Locknut, 5/8" UNF
21-659	Nut, 5/16" UNC std. (Simmonds Aero)
21-660	Nut, 3/8" UNC std. (Simmonds Aero)
21-661	Nut, 7/16" UNC std. (Simmonds Aero)
21-673	Nut, 1/2" UNF thin 'T' (Simmonds type NT/D166)
21-675	Nut, 5/8" UNF thin (Simmonds type NT)
21-685	Nut, 5/8" UNC thin 'T' (Simmonds NT/N206)
21-687	Locknut, 1/2" UNF Philidas c/w cap
22-663	Nut, 1/2" UNC Wedglok
22-689	Nut, 1/4" BSW stiff
22-690	Nut, 2 BA thin
22-691	Nut, 3/8" BSF thin
22-696	Nut, 3/8" UNF Philidas type JUFP/1 c/w plastic cap 495
23-124	Oilcup, 1/4" dia. Springwell
23-826	Nipple, grease, 1/4" BSF
23-827	Oiler, 1/4" dia. Garland diaphram

Ref. No.

24-043	Mills pin, 1/8" dia. x 3/8" long G.P.3
24-046	Mills pin, 1/8" dia. x 3/4" long G.P.3
24-384	Mills pin, 5/16" dia. x 1.3/8" long G.P.4
24-525	Mills pin, 1/8" dia. x 9/16" long G.P.3
24-533	Mills pin, 5/32" dia. x 3/4" long G.P.3.
24-534	Mills pin, 5/32" dia x 1" long G.P.3
24-535	Mills pin, 5/32" dia x 1.1/4" long G.P.3
24-536	Mills pin, 3/16" dia x 1/2" long G.P.1
24-539	Mills pin, 3/16" dia. x 1/2" long G.P.3
24-541	Mills pin, 3/16" dia. x 5/8" long G.P.3.
24-542	Mills pin, 3/16" dia. x 3/4" long G.P.3
24-543	Mills pin, 3/16" dia. x 7/8" long G.P.3
24-544	Mills pin 3/16" dia. x 1" long G.P.3
24-545	Mills pin, 3/16" dia. x 1.1/4" long G.P.3
24-546	Mills pin 3/16" dia x 1.1/2" long G.P.3
24-563	Mills pin, 1/4" dia x 1.1/4" long G.P.3
24-620	Mills pin, 3/16" dia. x 15/16" long G.P.1
25-608	Taper pin, 5/32" x 1.1/2" long
25-629	Dowel pin 3/16" dia. x 5/8" long BS 1804 Grade 11
26-848	Oil ring, 11/16" dia. x .103 thick Pioneer PO/08706810
26-851	Oil ring, 1" dia. x .139 thick Pioneer PO/12510013
26-852	Oil ring, 1.1/2" dia. x .139 thick Pioneer PO/17515013
27-060	Oil ring, 1/2" I.D. B4/1115
27-148	Oil ring, Dowty list 5 MK 26 pp 49
27-192	Oil ring, Dowty MK 7 list 1 pp 49c
27-846	Oil ring, 5/8" O.D. x 424 I.D. x .070 thick Pioneer PO/06204310
27-855	Oil ring, Pioneer PO/23720021
27-858	Oil ring, POS/2506/MP/658
28-905	Rivet, 1/8" dia. x 7/16" long copper countersunk head
29-011	Union nut, Benton & Stone 'ENOTS' B-1731-D
29-024	Tubing sleeve, Benton & Stone 'ENOTS' Z-403
45-201	Cap screw, 10 x 24 T.P.I. x 3/8" long
45-202	Cap screw, 10 x 24 T.P.I. x 1/2" long
45-203	Cap screw, 10 x 24 T.P.I. x 5/8" long
45-204	Cap screw, 10 x 24 T.P.I. x 3/4" long
45-205	Cap screw, 10 x 24 T.P.I. x 7/8" long
45-206	Cap screw, 10 x 24 T.P.I. x 1" long
45-207	Cap screw, 10 x 24 T.P.I. x 1.1/4" long
45-208	Cap screw, 10 x 24 T.P.I. x 1.1/2" long
46-211	Cap screw, 1/4" UNC x 3/8" long
46-212	Cap screw, 1/4" UNC x 1/2" long
46-213	Cap screw, 1/4" UNC x 5/8" long
46-214	Cap screw, 1/4" UNC x 3/4" long
46-215	Cap screw, 1/4" UNC x 7/8" long
46-216	Cap screw, 1/4" UNC x 1" long
46-217	Cap screw, 1/4" UNC x 1.1/4" long
46-218	Cap screw, 1/4" UNC x 1.1/2" long
46-219	Cap screw, 1/4" UNC x 1.3/4" long
47-223	Cap screw, 5/16" UNC x 1/2" long
47-225	Cap screw, 5/16" UNC x 3/4" long
47-226	Cap screw, 5/16" UNC x 7/8" long
47-227	Cap screw, 5/16" UNC x 1" long
47-228	Cap screw, 5/16" UNC x 1.1/4" long
47-229	Cap screw, 5/16" UNC x 1.1/2" long

Ref No.

48-237	Cap screw, 3/8" UNC x 5/8" long
48-240	Cap screw, 3/8" UNC x 1" long
48-242	Cap screw, 3/8" UNC x 1.1/2" long
48-246	Cap screw, 3/8" UNC x 2.1/2" long
48-249	Cap screw, 3/8" UNC x 4" long
49-253	Cap screw, 7/16" UNC x 2" long
50-260	Cap screw, 1/2" UNC x 1.1/2" long
53-300	Countersunk screw, 10 x 24 T.P.I. x 1/4" long
53-303	Countersunk screw, 10 x 24 T.P.I. x 1/2"
53-305	Countersunk screw, 10 x 24 T.P.I. x 3/4" long
55-318	Countersunk screw, 5/16" UNC x 3/4" long
55-319	Countersunk screw, 5/16" UNC x 1" long
58-342	Cup point screw, 10 x 24 T.P.I. x 3/16" long
58-343	Cup Point screw, 10 x 24 T.P.I. x 1/4" long
58-345	Cup point screw, 10 x 24 T.P.I. x 3/8" long
58-347	Cup point screw, 10 x 24 T.P.I. x 1/2" long
59-350	Cup point screw, 1/4" UNC x 1/4" long
59-351	Cup point screw, 1/4" UNC x 5/16" long
59-352	Cup point screw, 1/4" UNC x 3/8" long
59-354	Cup point screw, 1/4" UNC x 1/2" long
59-355	Cup point screw, 1/4" UNC x 5/8" long
60-361	Cup point screw 5/16" UNC x 5/16" long
60-362	Cup point screw, 5/16" UNC x 3/8" long
60-363	Cup point screw, 5/16" UNC x 7/16" long
60-364	Cup point screw, 5/16" UNC x 1/2" long
60-365	Cup point screw, 5/16" UNC x 5/8" long
60-366	Cup point screw, 5/16" UNC x 3/4" long
61-376	Cup point screw, 3/8" UNC x 1.1/2" long
63-385	Cup point screw, 1/2" UNC x 5/8" long
64-391	Cup point screw, 5/8" UNC x 5/8" long
67-419	1/2 Dog screw, 1/4" UNC x 3/8" long
68-428	1/2 Dog screw, 5/16" UNC x 5/16" long
68-430	1/2 Dog screw, 5/16" UNC x 7/16" long
72-495	Cap screw, 3 BA x 3/4" long
73-194	Set screw, 5/16" BSW x 1.1/4" long hex head
73-195	Set screw, 2 BA x 1/2" long, Hollow socket
73-196	1/4" BSW x 5/8" long S.H.C.S.
73-197	1/4" BSW x 7/8" long S.H.C.S.
73-198	Set screw, 2BA x 1/2" long hex head
73-199	1/4" BSW x 1/2" long S.H.C.S.
73-472	Cheese head screw, 2 BA x 1/4" long
73-473	Socket set screw, 2 BA x 1" long oval point
73-489	1/4" BSF x 3/8" long S.H.C.S.
73-520	Flat head screw, 1/4" UNC x 1" long
73-531	Socket set screw, 1/4" UNC x 1/2" long full dog Wedglok
73-534	Countersunk head screw, 5/16" UNF x 3/4" long socket
73-545	Cap screw, 8 x 32 x 3/4" long socket head.
79-062	Oilseal, Weston W.16211237.R.
79-181	Oilseal, Weston W.B. 16911037.R.21
79-865	Oilseal, 11/16" I.D. x 1.5/8" O.D. 5/16" wide W.16210641 R4

Ref. No.	
80-871	Oilsight, 1.1/4" O.D. Tecalemit IC.4610
80-873	Oilsight, 1.1/2" Tecalemit IC 4612
81-159	Key, 3/16" A/F Allen Hexagon
81-160	Key, 5/32" A/F Allen Hexagon
82-063	Spring, Flexo. 163208
82-078	Spring, 707-0028 0.237 dia. x 1.1/8" free length
82-105	Spring, Flexo 82504 1/4" dia. x 5/32" x 1/2" F.L. 6.1/2" coils
82-132	Spring, 707-0034 1.1/64" dia. x 1" free length
82-795	Spring, 707-0021, 1/4" dia. O.D. x 1/2" free length
82-797	Spring, 1/4" O.D. x 5/8" free length
82-803	Spring, Flexo 103210
82-807	Spring, Flexo 223412
82-812	Spring, 707-0014 .180 dia. x 21/32" free length
82-813	Spring, Flexo 143008
82-815	Spring. 707-0015 5/16" dia x 1.7/8" O.A.
82-817	Spring, 707-0016 1/2" dia. x 2.3/16" free length
82-823	Spring, Flexo 62704
82-830	Spring, Flexo 123306
82-838	Spring, Flexo 112807
82-839	Spring, Flexo 112908
82-840	Spring, Flexo 62703
82-846	Spring, Flexo 93114
84-701	Washer, 3/16" dia. bore single coil locking
84-704	Washer, 3/8" dia. bore single coil locking
84-706	Washer, 1/2" dia. bore single coil locking
84-714	Washer, 3/8" dia. bore double coil locking
84-716	Washer, 1/2" dia. bore double coil locking
84-718	Washer, 5/8" dia. bore double coil locking
84-725	Washer, Schnorr disc spring Type K.6201
85-691	Washer, 1/4" dia. bore standard
85-692	Washer, 5/16" dia. bore standard
85-693	Washer, 3/8" dia. bore standard
85-694	Washer, 7/16" dia. bore standard
85-695	Washer, 1/2" dia. bore x 1" O.D. x .092"W. standard
85-696	Washer, 1/2" dia. bore x 1" O.D. x .062"W. standard
85-698	Washer, 5/8" dia. bore standard
85-699	Washer, 3/4" dia. bore standard
85-720	Washer, 2 BA standard plain
85-742	Washer, 5/8" I.D. x 1.3/8" O.D. 15 SWG BS 3410 table 4 std.
86-029	Washer, 3/4" internal fan disc.
86-030	Washer, 7/8" internal fan disc
86-118	Washer, 1.1/4" O.D. x 7/8" I.D. x 1/8" SKT leather
86-119	Washer, 1/2" I.D. fan disc.
86-735	Washer, Beryllium copper washer ref. LSE 8596
86-738	Washer, 1/4" shakeproof
86-740	Washer, Dobo No.105
88-070	Drain plug 3/4" BSP Tecalemit 4377/6