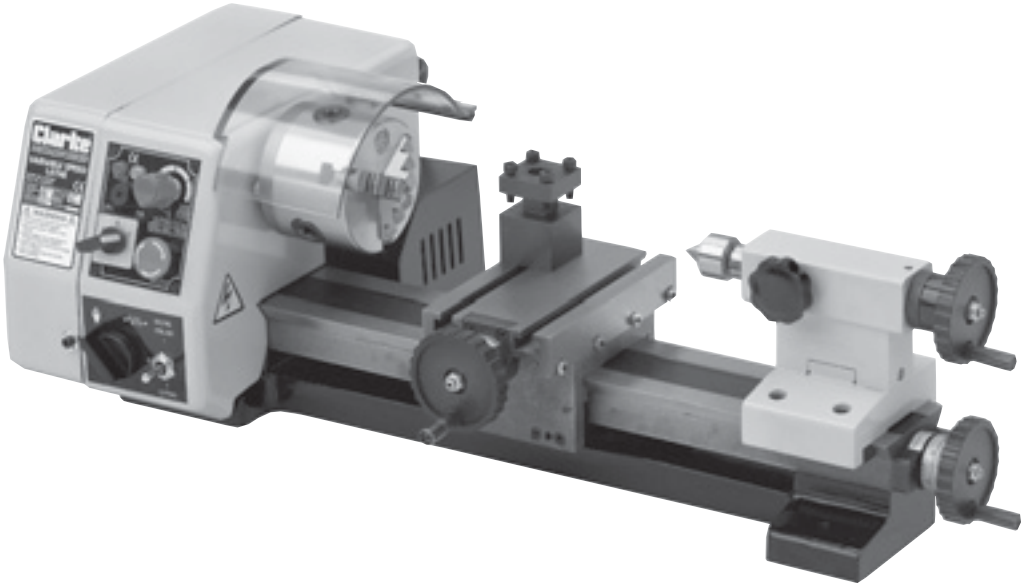
Clarke®

METALWORKER



250mm (10 inch)
VARIABLE SPEED METAL LATHE

Model No. CL250M

Part No. 7610740

OPERATING & MAINTENANCE INSTRUCTIONS

CE

SPECIFICATIONS

Motor	230VAC, 50Hz, 1 Phase
Power Rating	150Watts
Current Rating	5Amps
Distance Between Dead Centres	250mm (10")
Centre Height	70mm
Max. Work Diameter	140mm
Spindle Bore	9mm
Spindle Taper	No.2 Morse Taper
Tailstock Taper	No.1 Morse Taper
Cross Slide Travel	60mm
Spindle Speeds	100 to 2,000 RPM (± 10%)
Overall Dimensions	630x280x210mm
Weight (unpacked)	23kg
Screw Threads - Metric	0.5 - 1.25mm pitch in 5 steps

Please note that the details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

DECLARATION OF CONFORMITY

We declare that this product complies with the following standards/directives:

- **98/37/EC**
- **98/336/EEC**
- **EN 292-2**

Description: **METAL CUTTING LATHE**
Model No: **CL250M**
Serial (Batch) No: **See Product Date Plate**

Signed: _____

Clarke INTERNATIONAL
Hemnall Street, Epping, Essex CM16 4LG

DOC No. HO75/27 Clarke International is a trading style of Clarke International Limited

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INTRODUCTION

Thank you for purchasing this CLARKE 250mm Metal Lathe.

The compact rugged construction and screw cutting capabilities, makes the CL250M ideal for model makers etc.

The Machine is capable of turning up to a maximum diameter of 140mm and an overall length of 250mm.

A full range of accessories is available from your Clarke dealer, so that the machine is capable of Milling, producing short tapers, and metric threads, both left and right hand. (see `Accessories' for details).

Before attempting to operate this machine, please read this instruction manual thoroughly and follow all directions carefully. By doing so you will ensure the safety of both yourself and others around you, and at the same time you should look forward to long and trouble free service from your Clarke Metal Lathe.

This product is guaranteed against faults in manufacture for 12 months from date of purchase. Please keep your receipt as it will be required as proof of purchase.

This guarantee is invalid if the product has been found to have been abused or tampered with in any way, or not used for the purpose for which it was intended. The reason for return must be clearly stated.

This guarantee does not affect your statutory rights.

IMPORTANT

This manual is intended to instruct the user on the operations peculiar to the CL250M lathe ONLY. Although some reference is made, and advice given, regarding various metal turning techniques, it should not be regarded as a general tutorial on the subject.

It is assumed that the user has some knowledge of machinery of this type, and is familiar with metal turning. If this is not the case, we strongly advise that you enrol in a course at a local education centre where possible, or seek advice from a qualified person.

GENERAL SAFETY PRECAUTIONS FOR OPERATING MACHINERY

CAUTION

As with all machinery, there are certain hazards involved with their operation and use. Exercising respect and caution will considerably lessen the risk of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator or damage to machinery may result.

1. KNOW YOUR MACHINE. Read the manual carefully. Learn the machines applications and limitations, as well as the specific potential hazards peculiar to it.
2. KEEP GUARDS IN PLACE and in working order.
3. EARTH ALL MACHINES. If the machine is equipped with three-pin plug, it should be plugged into a three-pin electrical socket. Never remove the earth pin.
4. REMOVE ALL ADJUSTING KEYS AND WRENCHES. Form the habit of checking to ensure that keys, wrenches and tools, are removed from the machine.
5. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
6. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use machinery in damp or wet locations, or expose them to rain. Keep work area well lit.
7. MAKE WORKSHOP CHILDPROOF - with padlocks, master switches or by removing starter keys.
8. KEEP CHILDREN AND VISITORS AWAY. All children and visitors should be kept a safe distance from work area
9. DON'T FORCE THE MACHINE. It will do the job better and safer, at the rate for which it was designed.
10. USE THE RIGHT TOOL. Don't force a tool or attachment to do a job for which it was not designed.
11. WEAR PROPER APPAREL. Loose clothing, gloves, neckties, rings, bracelets, or other jewellery may get caught in moving parts. Nonslip footwear is recommended. Long hair should be contained.
12. USE SAFETY GLASSES. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
13. DON'T OVERREACH. Keep proper footing and balance at all times.
14. MAINTAIN TOOLS IN TOP CONDITION. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
15. ALWAYS DISCONNECT THE MACHINE before servicing or changing accessories.
16. AVOID ACCIDENTAL STARTING. Switch Machine OFF before plugging in.
17. CHECK FOR DAMAGE. If any part of the machine, (eg. A cover or guard) is damaged, it should be carefully inspected to ensure that it can perform its intended function correctly. If in doubt, the part should be renewed. Damage to moving parts or major components should be Inspected by a qualified technician before operating the machine. Contact your local dealer for advice.

18. DO NOT STAND ON THE MACHINE. Serious injury could occur if the machine is tipped over. Do not store materials above or near the machine such that it is necessary to stand on the machine to get to them.
19. NEVER operate a machine when under the influence of alcohol, drugs or medication.
20. ALWAYS ENSURE THAT ADEQUATE LIGHTING is available. A minimum intensity of 300 lux should be provided. Ensure that lighting is placed so that you will not be working in your own shadow.

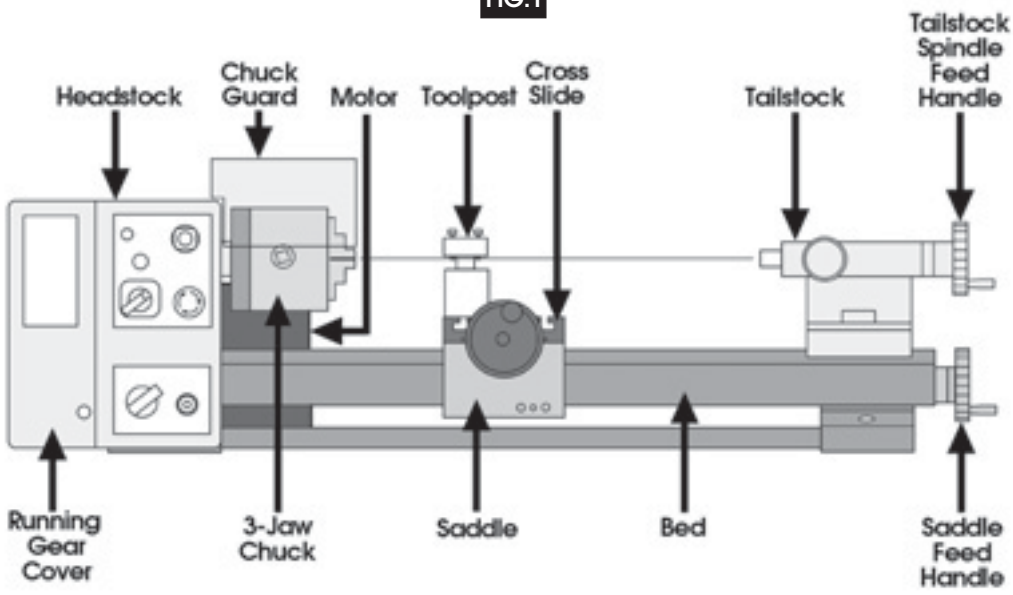
ADDITIONAL SAFETY RULES FOR METAL LATHES

WARNING:
THIS MACHINE MUST NOT BE MODIFIED OR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS DESIGNED.

1. **IMPORTANT**: You should not operate this machine unless you are thoroughly familiar with metal turning lathes and turning techniques. If there is any doubt whatsoever, you should consult a qualified person.
2. Do not operate the machine until it is completely assembled, and this entire manual, has been read and understood.
3. Ensure the proper electrical regulations are followed, and that the machine is properly earthed.
4. Before operating this machine:
   a. Ensure all chuck keys, spanners and wrenches are removed from the machine.
   b. Examine the setup carefully, ensuring that nothing could possibly interfere with the rotating workpiece.
   c. Ensure the tool post is secure and the cutting tool is adjusted to the correct height.
   d. Ensure your clothing is properly adjusted.
   e. Ensure the workpiece is properly secured.
5. Make all adjustments with the power OFF.
6. ALWAYS cut at correct speed for the size and type of material being worked. (Refer to a suitable Turning Manual for cutting speeds)
7. NEVER leave the lathe unattended whilst it is running.
8. When you have finished with machine, always remove and store the cutting tools.
9. If coolant is used, **On no account** must it be allowed to enter the electrical system.

FEATURES

FIG.1



THE HEADSTOCK

The motor drives the Spindle via an internal tooth type belt. Spindle speed is variable, and is regulated by the Speed Control Knob.

The spindle, is provided with an internal No.2 Morse taper to accommodate a centre for use with a drive dog assembly when turning between centres.(See `Accessories')

The Chuck Guard, is an essential component and must always be lowered into place when using the lathe. A microswitch prevents the lathe from operating should the Guard be raised.

The 3-Jaw, Self Centering Chuck is mounted on the Spindle Flange Adapter. To remove the chuck, simply remove the three securing nuts to the rear of the flange adapter allowing it to be pulled free together with the three mounting bolts.

The spindle flange adapter is bolted to the spindle flange with 3 Hex. socket head screws, and should be removed when the Centre is used.

THE RUNNING GEAR

The Running Gear, is protected by a cover, which may be hinged back by unscrewing the single securing screw.

A gear train,transmits drive to the Leadscrew via a clutch. The clutch is operated by the Power Drive Control Knob, When the knob is turned clockwise, drive is transmitted to the leadscrew and therefore the saddle, providing a power feed for screw cutting or general turning operations.

The rotational speed of the lead screw, and hence the rate of feed of the cutting tool, is determined by the gear configuration.

A Metric thread cutting kit, comprising a number of gear wheels, is available from your Clarke dealer (see Accessories). A chart, on the headstock, indicates the gear configuration for various thread sizes. The procedure for changing the gears is given in the literature accompanying the Thread Cutting Kit.

THE TAILSTOCK

The Tailstock may be moved along the bed to any desired position and is secured in position by the two hex socket head bolts at its base. The Tailstock Spindle has an internal No.1 Morse taper for use with a Revolving Centre, a Wood turning centre or Drill Chuck.....all available from your Clarke dealer. (See Accessories).

THE SADDLE

The Saddle carries the Cross Slide on to which the tool post is mounted. The saddle, and therefore the tool, may be driven by the Leadscrew, in a forward or reverse direction.

The position of the tool is effected by turning the cross-slide feed handle, which moves it across the lathe, or the Saddle Feed Handle which moves it longitudinally.

The tool post carries hex socket head screws which are used to secure a cutting tool.

The tool post is rotated by slackening the Hex socket head bolt on its top, sufficient for the post to be lifted slightly and then turned to the desired position.

ALWAYS ensure the post, and hence the tool, is secured by screwing down the bolt firmly before attempting to cut.

THE MOTOR

It is not recommended that you dis-assemble the motor. Brushes may be replaced as described under 'Maintenance'. For all other servicing and repairs, please contact your Clarke dealer.

The motor is fitted with a Thermal Overload. Should the motor overheat for any reason, the overload will intervene, shutting off the machine. Allow at least 5 minutes for the motor to cool before proceeding.

See notes on 'Simple Turning', for how to start and stop the lathe.

MOTOR OVERLOAD

Should the motor be overloaded for any reason,a trip will operate, thereby shutting down the motor, indicated by the warning light on the front panel, illuminating. Switch OFF according to the instructions given in this handbook, and switch ON again to continue working. To prevent a reoccurrance, reduce feed rate, or depth of cut so as to lower the load on the motor.

UNPACKING & PREPARING FOR USE

On receipt, carefully unpack the lathe. Inspect to ensure that no damage was suffered in transit and all parts are accounted for. Should any damage be apparent, or parts are missing, please contact your Clarke dealer immediately.

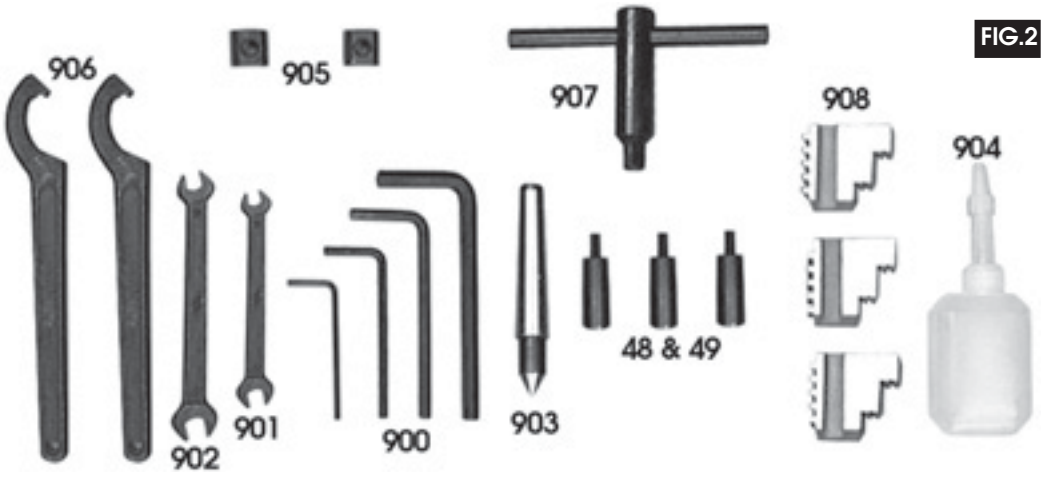


FIG.2

The following loose items are to be found in the packing case...Item numbers are those shown in the parts list on page 21

900. 4 x Hex. Keys. 2, 3, 4 & 6mm	**906. 2 x 'C' Spanners**
901. Double Open Ended Spanner 5.5x7mm	**907. 1 x Chuck Key.**
902. Double Open Ended Spanner 8x10mm	**908. 3 x External Jaws (for 3-Jaw Chuck).**
903. 1 x Centre MT1.	**48 & 49. 3 x Handles**
904. 1x Plastic Oil Container.	***Not Shown***
905. 2 x'T' Nuts	**1 x Spare Fuse - 2amp, glass type.**

With assistance, considering the weight of the machine, raise it on to a good solid surface or workbench. Proceed to remove all traces of preservative with paraffin or good quality solvent, and lightly oil all machined surfaces.

Screw the handles (48 & 49) to the rims of the manual feed handwheels, tightly.

Saddle, and cross-slide adjustments are all factory set to ensure smooth movement in both directions. If however the adjustments have been upset during transit, indicated by stiff or erratic movement, refer to 'Settings and Adjustments' for the methods of adjustment.

All hex. keys and spanners necessary to carry out various adjustments are supplied, together with a chuck key for the 3-Jaw chuck and a spare 2 Amp fuse. The fuse holder is located on the main control panel.

This Lathe MUST be mounted and secured to a firm foundation as described under 'Mounting the Lathe' in order to provide maximum stability and safety,

The three external jaws for the 3-Jaw self centering chuck, extend the capacity of the chuck, and are discussed in greater detail on page 16.

INSTALLATION

CAUTION!

DO NOT ATTEMPT TO USE THE MACHINE UNTIL INSTALLATION IS COMPLETED, AND ALL PRELIMINARY CHECKS HAVE BEEN MADE IN ACCORDANCE WITH THIS MANUAL.

A. ELECTRICAL CONNECTIONS

Connect the mains lead to a standard, 230 Volt (50Hz) electrical supply through an approved 13 amp BS 1363 plug, or a suitably fused isolator switch.

WARNING! THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in the mains lead are coloured in accordance with the following code:

Green & Yellow	-	Earth
Blue	-	Neutral
Brown	-	Live

As the colours of the flexible lead of this appliance may not correspond with the coloured markings identifying terminals in your plug proceed as follows:

- Connect GREEN & YELLOW coloured cord to plug terminal marked with a letter "E" or Earth symbol " ⏚ "or coloured GREEN or GREEN & YELLOW.
- Connect BROWN cord to plug terminal marked with a letter "L" or coloured RED.
- Connect BLUE cord to plug terminal marked with a letter "N" or coloured BLACK.

If this appliance is fitted with a plug which is moulded onto the electric cable (i.e. non-wirable) please note:

1. The plug must be thrown away if it is cut from the electric cable. There is a danger of electric shock if it is subsequently inserted into a socket outlet.
2. Never use the plug without the fuse cover fitted.
3. Should you wish to replace a detachable fuse carrier, ensure that the correct replacement is used (as indicated by marking or colour code).
4. Replacement fuse covers can be obtained from your local dealer or most electrical stockists.
5. **The fuse in the plug must be replaced with one of the same rating (5 amps)** and this replacement must be ASTA approved to BS1362.

B. MOUNTING THE LATHE

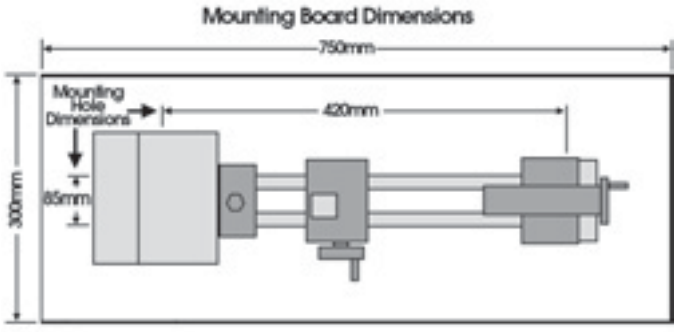
The lathe should be mounted on a strong, heavy workbench, of sufficient height so that you do not need to bend your back to perform normal operations. Take the necessary precautions when moving the lathe considering its' weight. **Assistance will be required.**

Ensure the location is adequately lit and that you will not be working in your own shadow.

We strongly recommend that the machine is bolted firmly to a strong workbench using the 3, M5 tapped holes provided,

Drill three, 8mm clearance holes in a worktop, at the dimensions shown in Fig.3. and with appropriate length bolts, or screws, with flat washers, (not supplied) proceed to secure the lathe to the worktop.

FIG.3

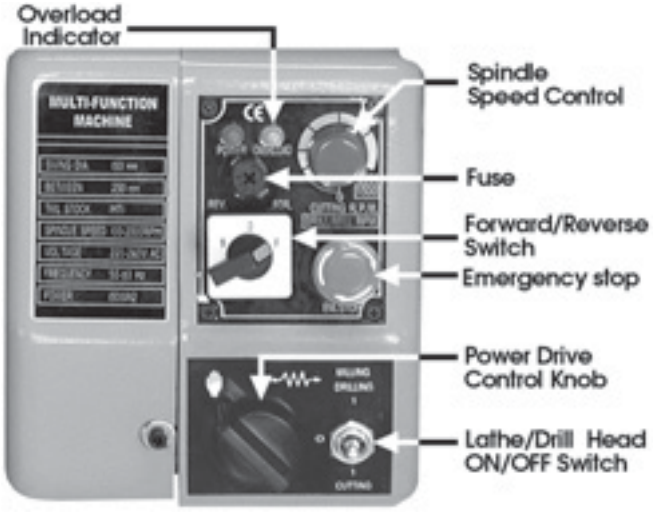


Alternatively, if you do not wish for a permanent installation, you may secure the lathe to a plywood board with a minimum thickness of 16mm (5/8") and a minimum recommended dimension of 750 x 300mm, the mounting holes being centralised on the board.
When the lathe is in use, the board MUST be clamped to a workbench using 'G' clamps.

STARTING & STOPPING PROCEDURE

A. DURING INSTALLATION - INITIAL START (ref. FIG.4)

FIG.4



1. Taking all precautions previously stated, ensure the controls on the front panel are set as follows:

a. Turn the 'Emergency Stop so that it springs out.

b. Turn the 'Forward/OFF/Reverse' switch to Forward or Reverse.

c. Turn the 'Power Drive' control knob, which drives the Leadscrew, to the 'HAND' position.....NO Drive.

IMPORTANT: This should ALWAYS be a deliberate,conscious action.

d. Turn the 'Spindle Speed Control' knob fully anticlockwise until it clicks into the OFF position.

e. Turn the Lathe/Drill/Mill Head switch to 'Cutting'for Lathe operation, 'Milling/ Drilling' for Milling/Drilling operations.

2. Ensure the toolpost is well away from the chuck,..... turn the 'Feed' handles (Saddle and/or Cross Slide), anticlockwise until it is well clear, then, ensure the Chuck Guard is fully in the DOWN position.

NOTE: The Chuck Guard is fitted with a microswitch, which will prevent the machine from operating until it is in the 'down' position.

3. Ensure all tools or loose parts are removed, then plug in to the mains supply. The lamp on the panel should illuminate.
4. Turn the 'Spindle Speed Control' knob slowly clockwise. A click will be heard but the spindle will not rotate until the knob is turned clockwise a little further. Speed will increase progressively the further the knob is turned.
5. Run for a total of 5 minutes, during which time gradually increase spindle speed to its maximum. Run for at at least 2 minutes at this speed before stopping the machine and disconnecting from the mains supply.

   Check that all components are still secure and working freely and correctly. Check also to ensure the mountings are secure.

B. STARTING UNDER NORMAL CONDITIONS **(ref. FIG. 4)**

1. Mount the workpiece ensuring it is perfectly secure and, **importantly**, can rotate fully without obstruction.
2. Taking all necessary precautions previously stated, proceed to start the machine as described in Section. A above.

NOTE: If Auto feed is required, then turn and hold the Power Drive switch fully clockwise, until the clutch engages. To disconnect the drive.....turn the switch ANTIclockwise.

C. SWITCHING THE MACHINE OFF

The simplest method to turn the machine OFF, is to hit the 'Emergency' Stop. Alternatively turn the Forward/OFF/Reverse switch to OFF, or turn the Spindle Speed Control knob fully anticlockwise until it clicks in the OFF position.

Whichever method is used, OR if the machine should stop for any other reason....power failure, or if the Thermal Overload intervenes, it will be necessary to restart by turning the Spindle Speed Control knob fully anticklockwise until it clicks OFF, then clockwise again to start.

CAUTION:

ALWAYS turn the machine OFF at both the Variable Speed Control and the Forward/Off/ Reverse switch BEFORE attempting to change any settings or make any adjustments.

OPERATION

A. SIMPLE TURNING

Before starting the machine, as described above, it is imperative that the setup for the type of work to be carried out is **fully checked**.

The following notes are guidelines as to how to set up the lathe in order to carry out a simple turning operation.

ALWAYS plan your work. Have drawings or a plan on hand together with any measuring instruments you may require, such as micrometers/verniers/calipers etc.

Mount the work, either in the chuck or on a faceplate, (available as an accessory), and if necessary, use the tailstock centre for additional support (If the work cannot be adequately secured by the chuck, or if it is a long piece, or of small diameter).

If a tailstock centre is used, the workpiece should be 'centred', using a centre drill, and the centre mark lubricated before locating in the tailstock centre.

Additionally, 'Steadies' may be used which are available from your Clarke Dealer.

If the Tailstock is not to be used, move it out of the way by slackening the two securing screws, sliding it to the end of the bed then nipping up the two screws.

Select a cutting tool that will produce the desired cut....roughing, finishing, parting, boring etc., and mount it in the Tool Post, with as little overhang as possible, securing it using two hex socket head screws in the manner shown in FIG. 5.

(Ideally, the overhang should be approx. 10 mm but not more than 15mm for a straight tool).

It is IMPORTANT to ensure that the tip of the cutting tool is on the centre line of the work, or very slightly below it. On no account should it be above the centre line.

Where necessary shims should be used beneath the tool in order to achieve the correct height, or, minor adjustments, (up to 1mm), may be made by tilting the tool using the segment... i.e, slacken securing screws, then screw down on the rear screw to move the tip upwards, or front screw to move it downwards, remembering to tighten fully before rechecking.

DO NOT use for adjustments greater than 1mm, otherwise the tools' cutting angles, in relation to the workpiece, will be altered with resulting consequences.

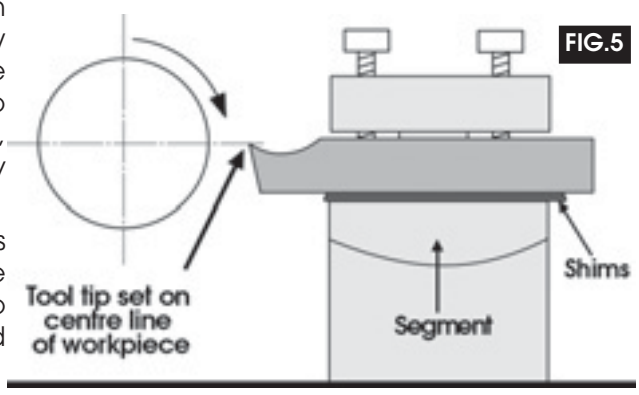
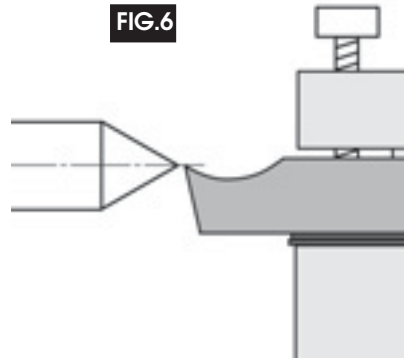


FIG.5

To check to ensure the tip is at the correct height, position the tool so that the tip is almost touching the point of the tailstock centre. They should coincide. If necessary make adjustments using shims, grind down the cutting tool tip or select another tool.

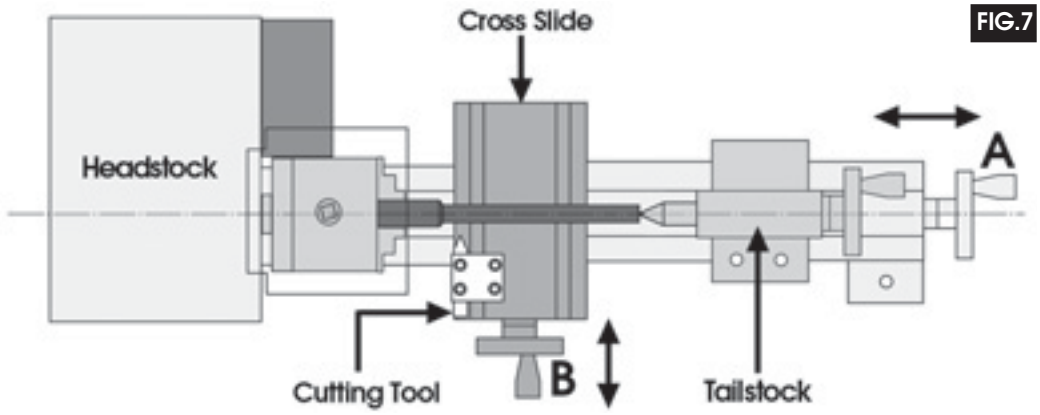
FIG.6



Mark the surface of the work at the point where the cut is to end, i.e. the shoulder, using a scriber or similar means, and move the saddle so that the cutting tool is directly opposite the mark, then wind in the cross-slide so that the tool touches the surface of the work.

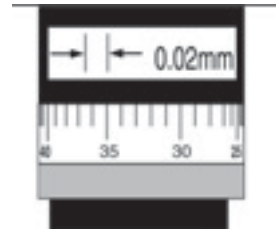
Whilst carrying out these manouvres, rotate the chuck by hand to ensure that nothing will come into contact with it when turning takes place, i.e. there is adequate clearance between the saddle, cross-slide, tool post or cutting tool, and the chuck.
It may be necessary to adjust the position of the cross slide or reposition the work in the chuck to guarantee that there is adequate clearance.

FIG.7



When satisfied retract the cutting tool, by turning the Cross Sllide Feed Handle `B', and wind the Saddle away from the Headstock using the Saddle Feed Handle `A', then wind the cutting tool up to the work, somewhere along the length to be cut, whilst rotating the work by hand, using the chuck.

FIG.8



Continue to advance the cutting tool slowly, until it just touches the surface. Record this position by zeroing the scale on the cross-slide, i.e. turn the moveable scale until the zero marks coincide, (see diagram opposite).
Once zeroed, retract the cross-slide one complete turn, then move the saddle until the tool is a short distance from the right hand edge of the work.
Wind in the cross-slide again one full turn until the zero marks again coincide.

IMPORTANT: If you go past the zero marks, back off again at least one half of a turn, then slowly bring the marks back together.

Whenever you use the scale, as an indicator, to advance the cross-slide or saddle, ALWAYS use this procedure to align the marks. This is to take into account backlash and other clearances in the gearing and slides etc.

Continue to turn the handle an amount equivalent to your desired depth of cut.

NOTE: We recommend that for rough cutting, you do not exceed 0.010" as your depth of cut.

The setup is now complete to begin your cutting operation, but before starting, check the position of:

a. Power Drive Knob. Ensure it is in the Hand position for manual feed.

b. Forward/OFF/Reverse knob is set to 'Forward'.

c. The Chuck Guard.....ensure it is fully down

Switch the machine ON as described under 'Starting Procedure' and slowly feed the cutting tool into the work using the Saddle (Manual) Feed Handle.
Proceed until you reach the previously marked line on the work, then retract the tool one or two complete turns on the Cross-Slide feed handle.
Wind the saddle back to the begining then wind the tool the same number of turns 'IN', plus the depth of desired cut, and proceed to cut once more.

NOTE: This describes the procedure for general, rough cutting. For other types of cuts - finishing, cutting shoulders etc., you should consult a suitable handbook.

B. SIMPLE TURNING WITH POWER FEED

The same basic setup is used as described above.

The rotational speed of the leadscrew, and hence the rate of feed of the tool, is dependant upon the gear configuration of the gear train. This is factory set for general turning operations. Kits are available from your CLARKE dealer for screw cutting.

1. Taking all precautions previously mentioned, position the cutting tool a short distance to the right of the workpiece with the appropriate depth of cut set on the cross-slide.
2. Select 'Forward' on the Forward/OFF/Reverse switch on the main control panel. Release the Emergency Stop and switch 'ON' the Spindle Speed Control knob. Turn the knob to achieve your desired spindle speed
3. Turn the Power Drive Control knob hard clockwise, and hold until the clutch engages.

IMPORTANT: Once the drive is engaged, your left hand should always be free in order to hit the emergency stop should it become necessary.

4. Carefully observe the movement of the tool and as it approaches the mark on the surface, denoting the end of cut, turn the Power Drive Control knob anticlockwise to disengage the clutch. If a degree of accuracy is required, it is recommended that you finish the cut by turning the chuck by hand.

NOTE: If you require a shoulder with perfectly clean corners,then you need to use an appropriately shaped tool.

5. Retract the tool one or two complete turns on the cross-slide feed, then wind the saddle so that the tool is at the start point once again. Advance the tool the same number of turns, plus the depth of cut, and when ready, turn the Power Drive Control knob clockwise to engage the clutch again and procede to take another cut.

MAINTENANCE

For maximum performance, it is essential that the lathe is properly maintained.

BEFORE USE

Always inspect before use. Any damage should be repaired and maladjustments rectified. Damage to machined surfaces should be repaired with an oil stone. Test by hand to ensure smooth operation of all parts before use.

AFTER USE

Remove all swarf from the machine and thoroughly clean all surfaces. If coolant has been used, ensure it has been completely dried off.
All machined surfaces should be lightly oiled.
Always remove cutting tools, and store in a safe place.

PERIODICALLY

Unscrew the cross slide as far as possible, and when the adjuster thread has become disengaged, gently tap off the slide, taking care to retain the jib strip (refer to cross slide adjustmentrs - page 17). Thoroughly clean, then oil the machined surfaces. Re assemble ensuring the jib strip is correctly inserted and adjusted where necessary.

MOTOR BRUSHES

The Motor brushes may be changed by unscrewing the caps, visible at the top and bottom of the motor. The caps are accessible once the motor cover, secured by two screws, is removed.

3 - JAW CHUCK - EXTERNAL JAW CONVERSION

FIG.9

To change the jaws, insert the chuck key and open the jaws to their fullest extent. It will then be possible to remove each jaw in turn.

Replace them with the external jaws, noting the following.

The thread segments of the jaws are progressively `stepped' as shown in FIG 9. They are also numbered 1 to 3. This is to take into account the lead of the screwthread within the chuck. It is therefore necessary to assemble the jaws in the correct order.

Arrange them as shown in the FIG.9, and assemble in the same order, clockwise in the slots in the chuck, turning the chuck key as you insert them. Close the jaws fully and check to ensure they all meet at the centre. If a jaw is out, open the jaws fully, and retain pressure on the jaw in question whist turning the chuck key, until it snaps down into position. Re-check to ensure all jaws meet at the centre

SETTINGS AND ADJUSTMENTS

Occasionally, it may be necessary to readjust various components in order to maintain optimum performance. The adjustments that may be performed are as follows:

A. CROSS-SLIDE AND SADDLE ADJUSTMENTS

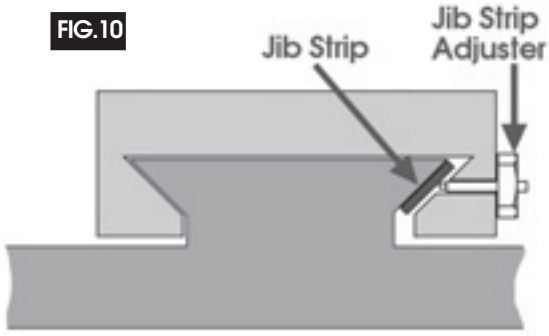
The Cross-Slide and Saddle are mounted on dovetail slides,illustrated in FIG. 10. Between the sloping surfaces on one side of the dovetail, a 'jib strip' is inserted, which may be tightened against the dovetail under the influence of adjuster, or 'jib' screws.

The jib screws are to be found on the right hand side of the Cross-Slide, and at the rear of the Saddle. In time, wear will occur on the mating surfaces resulting in a 'sloppiness' of action.

To adjust the jib strip, to account for wear and ensure the slide moves evenly and smoothly, proceed as follows:

1. Slacken off all lock nuts and screw inthe jib screws evenly, i.e. use the same torque for each screw. The slide should be held firmly. Test by trying to turn the handle, but do not force it.
2. Screw out each jib screw by one quarter of a turn ONLY, and nip up the lock nuts
3. Test again, by turning the handle. The movement should be even and smooth along its complete length.
4. If the movement is too slack, screw all adjusters 'in' by one eighth of a turn, and re-try. Similarly, if the movement is too stiff, screw 'out' the adjusters by one eighth of a turn until the correct adjustment is attained.
5 Tighten all lock nuts taking care to ensure you do not move the jib screws whilst doing so.

FIG.10



6. When completed, retract the cross-slide fully and apply oil to all mating surfaces and the feed screw thread, then wind the slide back to its normal position. Similarly, apply a light film of oil to the bed at the mating sufaces with the Saddle.

B. FEED HANDLES

The Cross Slide and Saddle feed should run smoothly, and the scale must rotate with the handle.

If any stiffness occurs, it is probably the result of swarf lodging between the mating surfaces. Undo the securing hex socket head screw securing the handle. Remove the handle, which is keyed on the shaft, then pull off the collar with the scale taking great care to retain the small wire spring which sits in a groove beneath the collar and the key.

Clean the assembly and reassemble in reverse order. It will be necessary to hold the spring plate in place with a small screwdriver, or similar tool, and pushing down on it to allow the collar to be correctly located on to the shaft.

ACCESSORIES

A range of accessories is available from your Clarke dealer which extends the versatility of your machine. A sample of these is as follows:

1. Independant 4-Jaw Chuck 80mm dia. ....

P/No. 7610721

P/No. 7610742

2. Face Plate - 115mm dia.....

P/No. 7610746

3. Moving Steady .....

P/No. 7610745

4. Fixed Steady .....

P/No. 7610754

5. Tailstock Drilling Chuck MT1.....

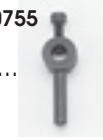
P/No. 7610753

6. Headstock Centre (MT1).....

P/No. 7610747

7. Thread Cutting Kit - Metric.....

P/No. 7610755



8. Lathe Dog and Rolling Centre.....

P/No. 7610756

.....

P/No. 7610752

9. Wood Cutting Toolpost w/wood Headstock Centre.....

P/No. 7610751

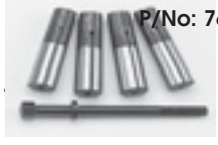
10. Compound Slide.....

P/No. 7610750

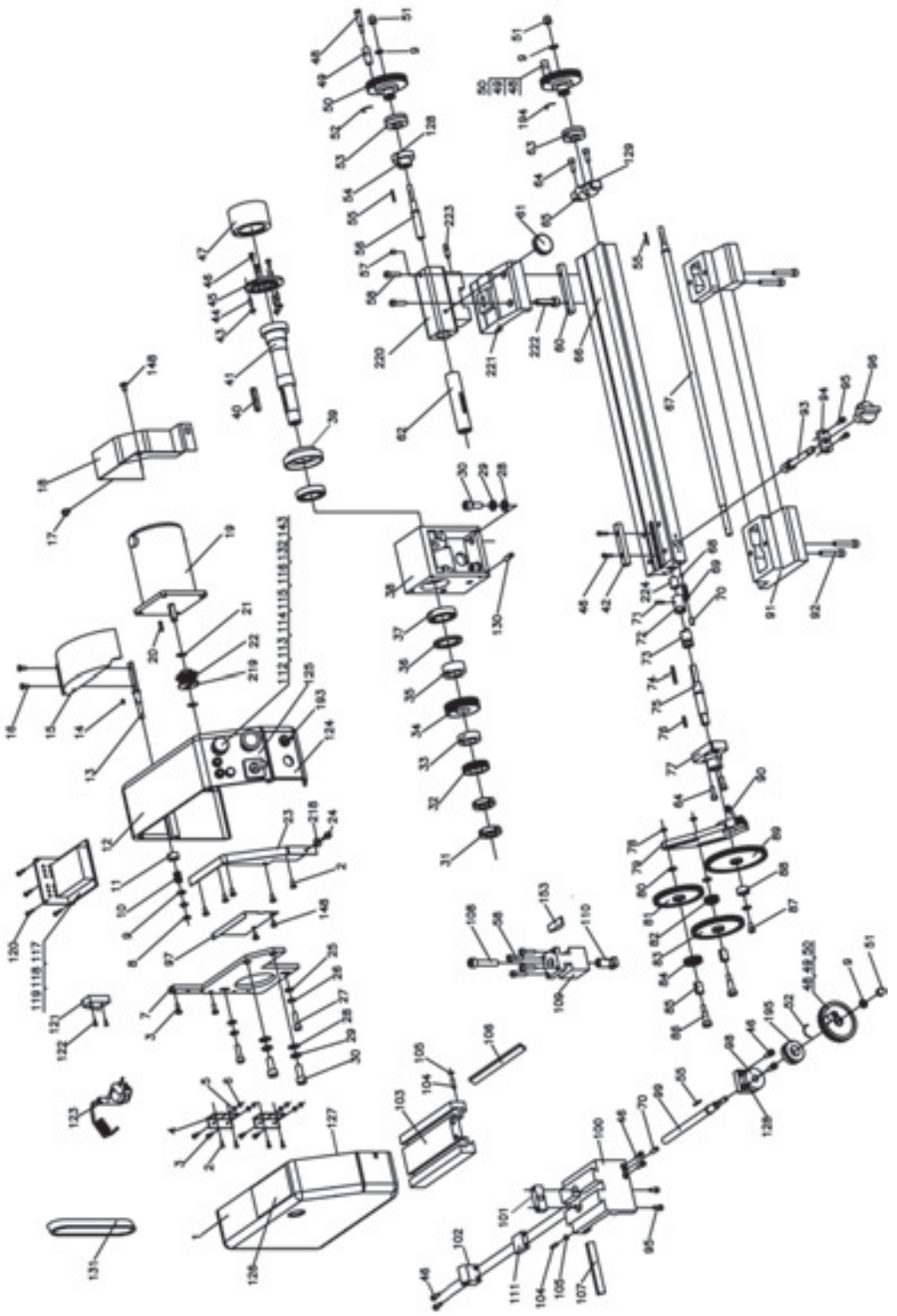
11. Vertical Slide.....

P/No: 7610749

12. Mill Chuck Set.....



SPARE PARTS DIAGRAM



SPARE PARTS LIST

No:	Description	Qty	Part No:
1	Running Gear Cover	1	SG250M001
2	Cap Screw M4*8	9	SG250M002
3	Cap Screw M4*12	6	SG250M003
4	Hinge	2	SG250M004
5	Washer	4	SG250M005
6	Nut M4	4	SG250M006
7	Cantilever	1	SG250M007
8	Nut M6	2	SG250M008
9	Washer	4	SG250M009
10	Compression Spring	1	SG250M010
11	Spacing Ring	1	SG250M011
12	Spindle Housing Cover	1	SG250M012
13	Shaft	1	SG250M013
14	Key 3*6	1	SG250M014
15	Chuck Guard	1	SG250M015
16	Cap Screw M4*8	2	SG250M016
17	Cap Screw M5*8	1	SG250M017
18	Rear Splash Guard	1	SG250M018
19	Motor	1	SG250M019
20	Key 3*16	1	SG250M020
21	Check Ring	2	SG250M021
22	Timing Pulley	1	SG250M022
23	Support Plate	1	SG250M023
24	Screw M4*8	1	SG250M024
25	Washer	2	SG250M025
26	Spring Washer	2	SG250M026
27	Screw M6*20	2	SG250M027
28	Washer	6	SG250M028
29	Spring Washer	6	SG250M029
30	Screw M8*20	6	SG250M030
31	Round Nut M18*1.5	2	SG250M031
32	Spindle Gear	1	SG250M032
33	Spacing Ring	1	SG250M033
34	Spindle Timing Pulley	1	SG250M034
35	Spacing Ring	1	SG250M035
36	Oil Seal Support	1	SG250M036
37	Bearing 30205	2	SG250M037
38	Spindle Housing	1	SG250M038
39	Front Oil Seal (ring)	1	SG250M039

No:	Description	Qty	Part No:
40	Key 6*36	1	SG250M040
41	Spindle	1	SG250M041
42	Key	1	SG250M042
43	Nut M6	3	SG250M043
44	Screw M6*25	3	SG250M044
45	Chuck Flange	1	SG250M045
46	Round Cap Screw M4*12	11	SG250M046
47	80mm 3-jaw Chuck	1	SG250M047
48	Handle Screw	3	SG250M048
49	Handle	3	SG250M049
50	Handwheel	3	SG250M050
51	Cap Nut M6	3	SG250M051
52	Spring Steel	3	SG250M052
53	Indicator Ring	1	SG250M053
54	Screw Base	1	SG250M054
55	Key 2*10	3	SG250M55
56	Tailstock Screw	1	SG250M056
57	Screw M5*8	1	SG250M057
58	Screw M5*20	6	SG250M058
60	Wedge	1	SG250M060
61	Lock Handle	1	SG250M061
62	Tailstock Quill	1	SG250M062
63	Indicator Ring	1	SG250M063
64	Screw M5*14	4	SG250M064
65	Screw Bracket	1	SG250M065
66	Bed Rail	1	SG250M066
67	Leadscrew	1	SG250M067
68	Steel Ball	1	SG250M068
69	Compression Spring	1	SG250M069
70	Screw M6*10	2	SG250M070
71	Pin 3*14	1	SG250M071
72	Clutch Bracket	1	SG250M072
73	Clutch	1	SG250M073
74	Key 3*22	1	SG250M074
75	Shaft	1	SG250M075
76	Key 3*14	1	SG250M076
77	Gear Shaft Bracket	1	SG250M077
78	Nut M5	2	SG250M078
79	Support Plate	1	SG250M079

Cont:

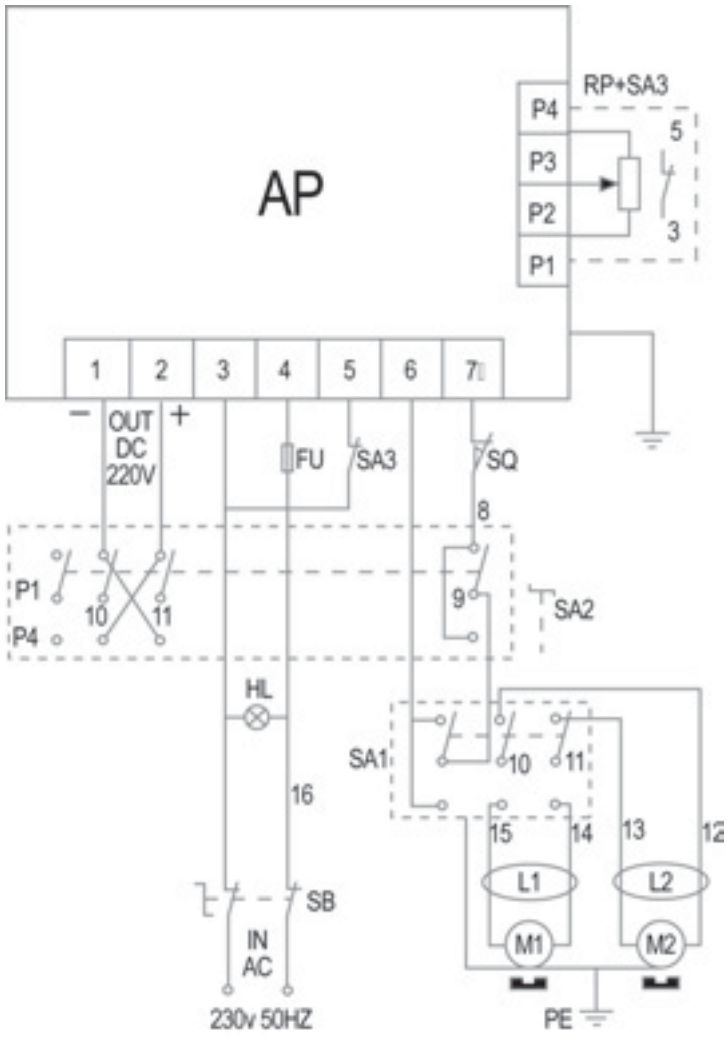
No:	Description	Qty	Part No:
80	Washer	3	SG250M080
81	Change Gear Z=72	1	SG250M081
82	Change Gear Z=19	1	SG250M082
83	Change Gear Z=76	1	SG250M083
84	Change Gear Z=24	1	SG250M084
85	Gear Sleeve	2	SG250M085
86	Gear Shaft	2	SG250M086
87	Screw M5*8	1	SG250M087
88	Spacing Ring	1	SG250M088
89	Change Gear Z=90	1	SG250M089
90	Screw M5*25	1	SG250M090
91	Bed Base	1	SG250M091
92	Screw M6*35	4	SG250M092
93	Shaft	1	SG250M093
94	Bracket	1	SG250M094
95	Screw M4*10	4	SG250M095
96	Power Drive Control Knob	1	SG250M096
97	Screw M5*12	1	SG250M097
98	Leadscrew Bracket	1	SG250M098
99	Cross Slide Screw	1	SG250M099
100	Saddle	1	SG250M100
101	Cross Slide Nut	1	SG250M101
102	Leadscrew Nut	1	SG250M102
103	Cross Slide	1	SG250M103
104	Screw M4*16	7	SG250M104
105	Nut M4	7	SG250M105
106	Cross Slide Wedge	1	SG250M106
107	Gib Strip	1	SG250M107
108	Screw M8*40		SG250M108
109	Tool Rest	1	SG250M119
110	Tool Rest Shaft	1	SG250M110
111	Connecting Block	1	SG250M111
112	Potentiometer+Knob	1	SG250M112
113	Emergency Stop Switch	1	SG250M113
114	Forward/Off/Reverse Sw.	1	SG250M114
115	Green Lamp	2	SG250M115
116	Fuse Box	1	SG250M116
117	PC Board	1	SG250M117
118	Connector	1	SG250M118

No:	Description	Qty	Part No:
119	PC Board Box	1	SG250M119
120	Screw	4	SG250M120
121	Micro Switch	1	SG250M121
122	Screw	2	SG250M122
123	Power Cord With Plug	1	SG250M123
124	Label	1	SG250M124
125	Switch Label	1	SG250M125
126	Change Gear Label	1	SG250M126
127	Main Label	1	SG250M127
128	Scale Label (I)	2	SG250M128
129	Scale Label (Ii)	1	SG250M129
130	Screw M5*12	4	SG250M130
131	Timing Belt	1	SG250M131
132	Change Switch	1	SG250M132
143	Yellow Lamp	1	SG250M143
148	Spacing Ring	3	SG250M148
153	Block Of Tool Rest	1	SG250M153
194	Spring	1	SG250M194
195	Dial	1	SG250M195
218	Washer	1	SG250M218
219	Plate	1	SG250M219
220	Tailstock Body	1	SG250M220
221	Base Of Tailstock	1	SG250M221
222	Screw M8*35	1	SG250M222
223	Long Screw	1	SG250M223
224	Cover For Bearing	1	SG250M224

Loose Items

900	Hex Wrench Set 2,3,4,6mm	1	SG250M900
901	Double End Spanner 5.5*7	1	SG250M901
902	Double End Spanner 8x10	1	SG250M902
903	Center MT1	1	SG250M903
904	Oil Can	1	SG250M904
905	T-Nut	2	SG250M905
906	`C' Spanner	2	SG250M906
907	3 Jaw Chuck Key 80mm	1	SG250M907
908	External Jaw Set	1	SG250M908
NOT SHOWN			
Fuse	2A	1	SG250M909

WIRING DIAGRAM



SPARE PARTS & SERVICE

For Spare Parts and Service, please contact your nearest dealer, or CLARKE International, on one of the following numbers.

PARTS & SERVICE TEL: 020 8988 7400

PARTS & SERVICE FAX: 020 8558 3622

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com