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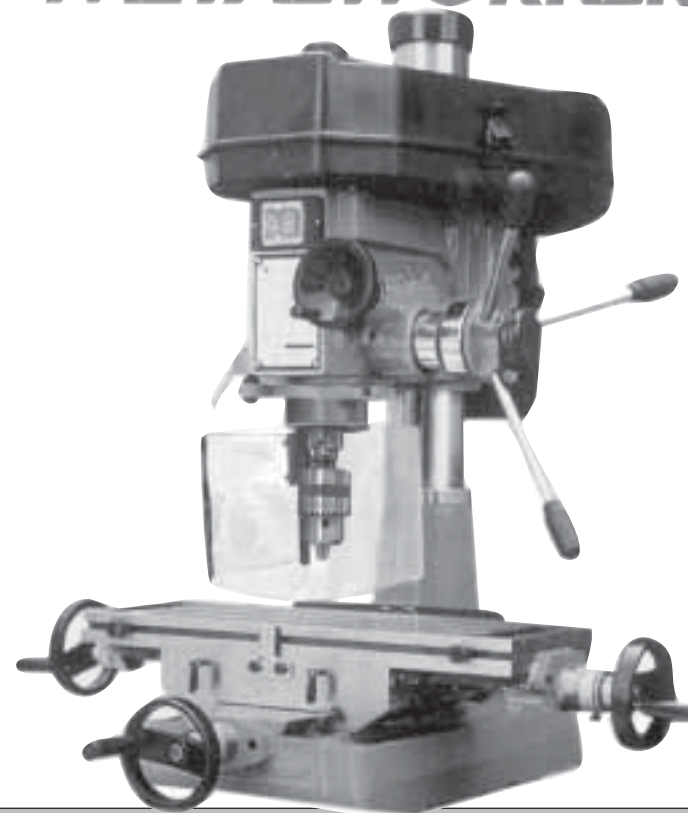
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All sizes for car & commercial use.



Clarke®

METALWORKER



MILLING/DRILLING MACHINE

MODEL No. CMD1225C

Part No. 6500302

OPERATING AND MAINTENANCE
INSTRUCTIONS



Clarke INTERNATIONAL

For spare parts and servicing, please contact your nearest dealer, or Clarke International on

020 - 8988 - 7400

e-mail: Parts@clarkeinternational.com e-mail: Service@clarkeinternational.com

Clarke[®] INTERNATIONAL

This is an important document and should be retained

DECLARATION OF CONFORMITY



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

- 93/68 EEC
- 98/37 EC
- 89/336 EC

Description: Milling/Drilling Machine

Model No: CMD 1225C

Serial (Batch) No: See Machines Data Plate

Signed: 

Clarke[®] INTERNATIONAL
Hemnal Street, Epping, Essex CM18 4LG

Item	Part No	Description	Qty
137	CC1225137	Bolt	2
138	CC1225138	Protection Board	1
139	CC1225139	Screw	2
140	CC1225140	Protection Board Strip	1
141	CC1225141	Base	1
142	CC1225142	Screw	1
143	CC1225143	Guide Screw Nut	1
144	CC1225144	Guide Screw	2
145	CC1225145	Ball Bearing	1
146	CC1225146	Guide Screw Support	1
147	CC1225147	Oil Cup	1
148	CC1225148	Pin	2
149	CC1225149	Screw	2
150	CC1225150	Graduation Plate	1
151	CC1225151	Screw	1
152	CC1225152	Pin	1
153	CC1225153	Dial Clutch	1
154	CC1225154	Hand Wheel	1
155	CC1225155	Slip Saddle	1
156	CC1225156	Steel Ball	2
157	CC1225157	Lock Handle	2
158	CC1225158	Bolt	2
159	CC1225159	Centre Stop	1
160	CC1225160	Gib Strip Screw	2
161	CC1225161	Screw	2
162	CC1225162	Gib Strip	1
163	CC1225163	Screw	1
164	CC1225164	Left Flange	1
165	CC1225165	Guide Screw Nut	1
166	CC1225166	Guide Screw	1
167	CC1225167	Table	1
168	CC1225168	Ladder Nut	2
169	CC1225169	Stop	2
170	CC1225170	Screw	2
171	CC1225171	Oil Cup	2
172	CC1225172	Drill Chuck	1
173	CC1225173	Face Milling Cutter	1
175	CC1225175	Offset Wrench	1
176a	CC1225176a	Allen Key 4mm	1
176b	CC1225176b	Allen Key 5mm	1
176c	CC1225176c	Allen Key 6mm	1
178	CC1225178	MT2 to MT3 Sleeve	1
180	CC1225180	Angle Vice	1



Before proceeding with the installation, check contents and advise the Clarke dealer where the machine was purchased, immediately of any damage and or shortages.

Contents

1. Milling Machine.
2. Operating & Instruction Manual.
3. Angle Vice.
4. Hand Wheels X 3.
5. 17 / 18mm Ring Spanner.
6. 16mm Drill Chuck & Chuck Key.
7. Column Lid.
8. 63mm Face Milling Cutter.
9. Small Hand Wheel.
10. Drift.
11. Handle Rod X 3.
12. Handle Knobs X 3.
13. Allen Keys, 1 X 4mm, 1 X 5mm & 1 X 6mm.
14. Draw Bolt.
15. MT3 to MT2 Sleeve.



Please read these instructions carefully before operating the tool

Thank you for purchasing this **CLARKE** Milling/Drilling Machine. Before using the device, please read this manual thoroughly and carefully follow all instructions given. This is for your own safety and that of others around you, and is also to help you achieve a long and trouble free service from your new machine.

CLARKE GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not affect your statutory rights.

PARTS & SERVICE TEL: 020 8988 7400

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com

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. Always consult the machines data plate.

Item	Part No	Description	Qty
91	CC1225091	Bolt	2
92	CC1225092	Graduation Plate	1
93	CC1225093	Screw	1
94	CC1225094	Screw	1
95	CC1225095	Small Handle Wheel	1
96	CC1225096	Nut	1
97	CC1225097	Graduation Plate	1
98	CC1225098	Washer	1
99	CC1225099	Feed Base	1
100	CC1225100	Nut	1
101	CC1225101	Washer	1
102	CC1225102	Ball Bearing	1
103	CC1225103	Retaining Ring	1
104	CC1225104	Bolt	1
105	CC1225105	Washer	1
106	CC1225106	Hexagon Nut	1
107	CC1225107	Spindle Sleeve	1
108	CC1225108	Drift	1
109	CC1225109	Ball Bearing	1
110	CC1225110	Spindle	1
111	CC1225111	Ball Bearing	1
112	CC1225112	Micro Switch Base	1
113	CC1225113	Screw	4
114	CC1225114	Nut	2
115	CC1225115	Micro Switch	1
116	CC1225116	Screw	2
117	CC1225117	Screw	4
118	CC1225118	Link	1
119	CC1225119	Nut	1
120	CC1225120	Screw	2
121	CC1225121	Fixed Link	1
122	CC1225122	Screw	2
123	CC1225123	Shaft	1
124	CC1225124	Sleeve	1
125	CC1225125	Protecting Cover	1
126	CC1225126	Protecting Plate	1
127	CC1225127	Guide Screw	1
128	CC1225128	Screw	1
129	CC1225129	Column Lid	1
130	CC1225130	Screw	1
131	CC1225131	Link	2
132	CC1225132	Column	2
133	CC1225133	Ladder Rack	1
134	CC1225134	Bolt	4
135	CC1225135	Washer	4
136	CC1225136	Protection Board Strip	1

Item	Part No	Description	Qty
45	CC1225045	Nut	2
46	CC1225046	Locking Screw	1
47	CC1225047	Head Box	1
48	CC1225048	Head Body Fixing Bolt	2
49	CC1225049	Worm	1
50	CC1225050	Gear	1
51	CC1225051	Shaft	1
52	CC1225052	Bracket	1
53	CC1225053	Screw	3
54	CC1225054	Head Handle	1
55	CC1225055	Screw	1
56	CC1225056	Grip	1
57	CC1225057	Screw	2
58	CC1225058	Switch	1
59	CC1225059	Screw	2
60	CC1225060	Electric Box	1
61	CC1225061	Knob.	1
62	CC1225062	Washer	1
63	CC1225063	Washer	1
64	CC1225064	Spring Cap	1
65	CC1225065	Spindle Return Spring	1
66	CC1225066	Cross Recess Round Head Screw	4
67	CC1225067	Rivet	4
68	CC1225068	Key	1
69	CC1225069	Pin	1
70	CC1225070	Screw	1
71	CC1225071	Nut	1
72	CC1225072	Spindle Lock lever	1
73	CC1225073	Fixed Collar	1
74	CC1225074	Name Plate	1
75	CC1225075	Screw	4
76	CC1225076	Fixed Collar	1
77	CC1225077	Screw	1
78	CC1225078	Gear Shaft	1
79	CC1225079	Key	1
80	CC1225080	Feed Casting	1
81	CC1225081	Turbine	1
82	CC1225082	Spring	1
83	CC1225083	Handle Body	1
84	CC1225084	Handle Rod	3
85	CC1225085	Handle Ball	3
86	CC1225086	Feed Knob	1
87	CC1225087	Feed Shaft	1
88	CC1225088	Ball Bearing	1
89	CC1225089	Separating Ring	1
90	CC1225090	End Lid	1

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Specifications

Model :	CMD1225C
Part No :	6500302
Voltage :	230vac
Motor :	750W (1400rpm)
Fuse Rating :	13amp
Weight :	167Kg
Operating Temperature :	0°-40°
Noise :	80 dB (A)
Max Drill Capacity :	25mm
End Mill Capacity :	13mm
Face Mill Capacity :	63mm
Spindle Taper :	MT3
Table Effective Size :	585mm x 190mm
Table Cross Travel :	145mm
Table Longitudinal Travel :	370mm
Throat :	202mm
Dimensions LxWxH :	940 x 900 x 940mm
Spindle Speeds : 100, 170, 200, 250, 280, 360, 600, 700, 950, 1290, 1590, & 2150	

Accessories

Qty

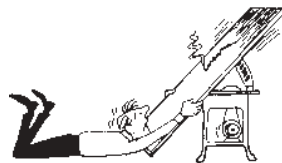
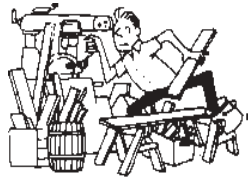
Drill Arbor	MT.3-B18	1
Drill Chuck	16mm	1
Face Milling Cutter	63mm	1
Offset Wrench	17 ~ 18mm	1
Allen Key	4,5, & 6mm	1 each
Drift		1
Angle Vice		1
MT3 - MT2 taper Sleeve		1

General Safety Precautions



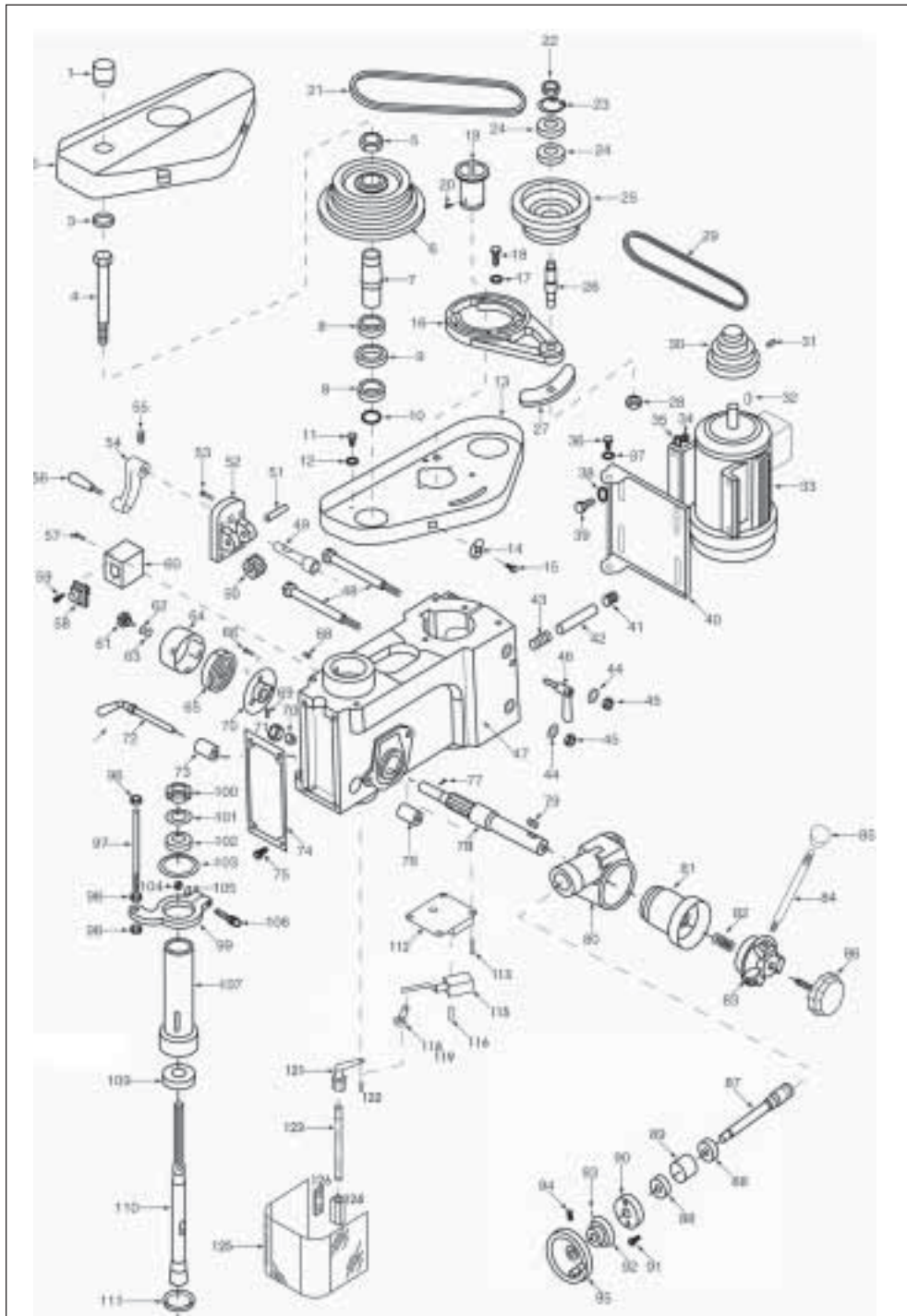
As with all machinery, there are certain hazards involved with their operation and use. Exercising respect and caution will considerably lessen the risk of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator or damage to property, may result.

1. **ALWAYS** Learn the machines' applications, limitations and the specific potential hazards peculiar to it. Read and become familiar with the entire operating manual.
2. **ALWAYS** use a face or dust mask if operation is particularly dusty.
3. **ALWAYS** check for damage. Before using the machine, any damaged part, should be checked to ensure that it will operate properly, and perform its intended function. Check for alignment of moving parts, breakage of parts, mountings, and any other condition that may affect the machines' operation. Any damage should be properly repaired or the part replaced. If in doubt, **DO NOT** use the machine. Consult your local dealer.
4. **ALWAYS** disconnect the tool/machine from the power supply before servicing and when changing accessories.
5. **ALWAYS** wear safety goggles, manufactured to the latest European Safety Standards. Everyday eyeglasses do not have impact resistant lenses, they are not safety glasses.
6. **ALWAYS** keep work area clean. Cluttered areas and benches invite accidents.
7. **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.
8. **ALWAYS** keep children away. All visitors should be kept a safe distance from the work area, especially whilst operating the machine.
9. **ALWAYS** maintain machine in top condition. Keep tools/machines clean for the best and safest performance. Follow maintenance instructions.
10. **ALWAYS** handle with extreme care do not carry the tool/machine by its' electric cable, or yank the cable to disconnect it from the power supply .
11. **ALWAYS** ensure the switch is off before plugging in to mains. Avoid accidental starting.
12. **ALWAYS** concentrate on the job in hand, no matter how trivial it may seem. Be aware that accidents are caused by carelessness due to familiarity.
13. **ALWAYS** keep your proper footing and balance at all times, don't overreach. For best footing, wear rubber soled footwear. Keep floor clear of oil, scrap wood, etc.



Parts List

Item	Part No	Description	Qty
1	CC1225001	Protective Cap	1
2	CC1225002	Upper Cover	1
3	CC1225003	Link	1
4	CC1225004	Draw Bolt	1
5	CC1225005	Nut	1
6	CC1225006	Spindle Pulley	1
7	CC1225007	Spindle Sleeve	1
8	CC1225008	Ball Bearing	2
9	CC1225009	Separating Ring	1
10	CC1225010	'O' Ring	1
11	CC1225011	Bolt	1
12	CC1225012	Washer	1
13	CC1225013	Lower Cover	1
14	CC1225014	Catch	2
15	CC1225015	Lock	1
16	CC1225016	Pulley Support	1
17	CC1225017	Washer	1
18	CC1225018	Bolt	1
19	CC1225019	Link	1
20	CC1225020	Bolt	1
21	CC1225021	V-Belt	1
22	CC1225022	Nut	1
23	CC1225023	Retaining Ring	1
24	CC1225024	Ball Bearing	2
25	CC1225025	Middle Pulley	1
26	CC1225026	Middle Pulley Shaft	1
27	CC1225027	Washer	1
28	CC1225028	Nut	1
29	CC1225029	V-Belt	1
30	CC1225030	Motor Pulley	1
31	CC1225031	Screw	1
32	CC1225032	Key	1
33	CC1225033	Motor	1
34	CC1225034	Hexagon Nut	4
35	CC1225035	Washer	4
36	CC1225036	Nut	2
37	CC1225037	Washer	2
38	CC1225038	Washer	2
39	CC1225039	Hexagon Head Screw	4
40	CC1225040	Motor Mount	1
41	CC1225041	Balata Collar	1
42	CC1225042	Tension Pin	1
43	CC1225043	Spring	1
44	CC1225044	Washer	2



14. **ALWAYS** wear proper apparel. Loose clothing or jewellery may get caught in moving parts. Wear protective hair covering to contain long hair.
15. **ALWAYS** use recommended accessories, the use of improper accessories could be hazardous.
16. **ALWAYS** remove plug from electrical outlet when adjusting, changing parts, or working on the machine.
17. **NEVER** operate machine while under the influence of drugs, alcohol or any medication.
18. **NEVER** leave machine running unattended. turn power off. Do not leave the machine until it comes to a complete stop.
19. **NEVER** force the machine, it will do a better and safer job at the rate for which it was designed.
20. **NEVER** use power tools in damp or wet locations or expose them to rain. Keep your work area well illuminated.
21. **DO NOT** use in explosive atmosphere (around paint, flammable liquids etc). Avoid dangerous environment.



Additional Precautions For Power Tools

1. **ALWAYS use** the appropriate cutter for the material being cut.
2. **ALWAYS** ensure the cutter is secured fully before use.
3. **ALWAYS** switch the machine OFF immediately the task is completed.
4. **ALWAYS** ensure safety guards etc are in place and working correctly, if not **DO NOT** use the machine until rectified.
5. **DO NOT** use the machine if the electric cable, plug or motor is in poor condition.
6. **DO NOT** allow the ventilation slots in the machine to become blocked.
7. **DO NOT** touch the cutter immediately after use, allow time for it to cool.
8. **NEVER** leave chuck keys in situ, **Always** remove and store safely when finished tightening or loosening the chuck.
9. **NEVER** change from high to low speed and vice versa whilst the machine is still running, always ensure the machine has come to a complete stop before doing so.
10. **NEVER** change from forward to reverse and vice versa whilst the machine is still running, always ensure the machine has come to a full stop before doing so.
11. **NEVER** leave machine running unattended, **ALWAYS** ensure the m/c is switched off and come to a complete stop before leaving it.
12. **AVOID** accidental starting, by switching m/c off and isolating from the main electrical supply by removing the plug from the socket.

Additionally, please keep these instructions in a safe place for future reference.

Electrical Connections

This product is provided with a standard 13 amp, 230 volt (50Hz), BS 1363 plug, for connection to a standard, domestic electrical supply. Should the plug need changing at any time, ensure that a plug of identical specification is used.

WARNING ! THIS APPLIANCE MUST BE EARTHED

This machine must be wired up in accordance with the following colour code:



- Connect the BLUE coloured cord to the plug terminal marked "N"
- Connect the BROWN coloured cord to the plug terminal marked "L"
- Connect the GREEN/YELLOW coloured cord to the plug terminal marked "E"

If this appliance is fitted with a plug which is moulded on to the electric cable (i.e. non-rewireable) 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.



Fuse Rating

The fuse in the plug must be replaced with one of the same rating (**13 amps**) and this replacement must be approved to BS1362.

If in doubt, consult a qualified electrician. Do not attempt any electrical repairs yourself.

Cable Extension

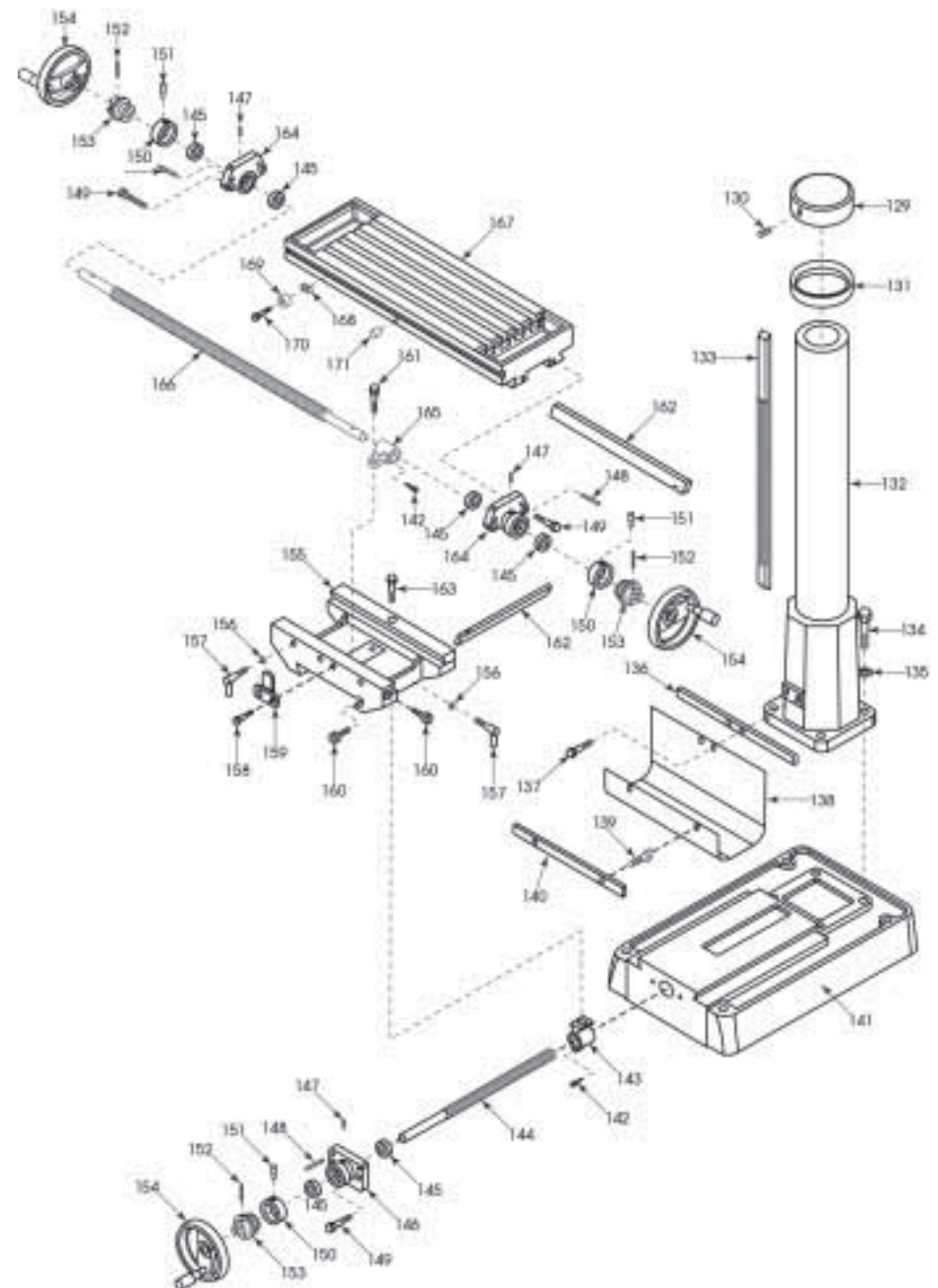
Always use an approved cable extension suitable for the power rating of this tool (see specifications), the conductor size should also be at least the same size as that on the machine, or larger. When using a cable reel, always unwind the cable completely.

IMPORTANT:

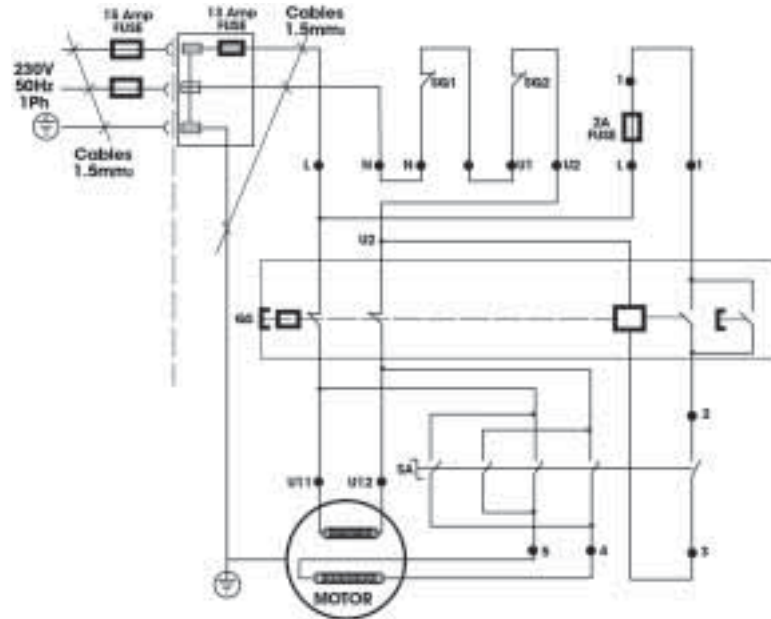
If a cable extension is needed, it is essential to comply with the following data.

Voltage	Extension length	Cable section
230v	Up to 20m	2.5mm ²
230v	From 20 to 50m	4mm ²

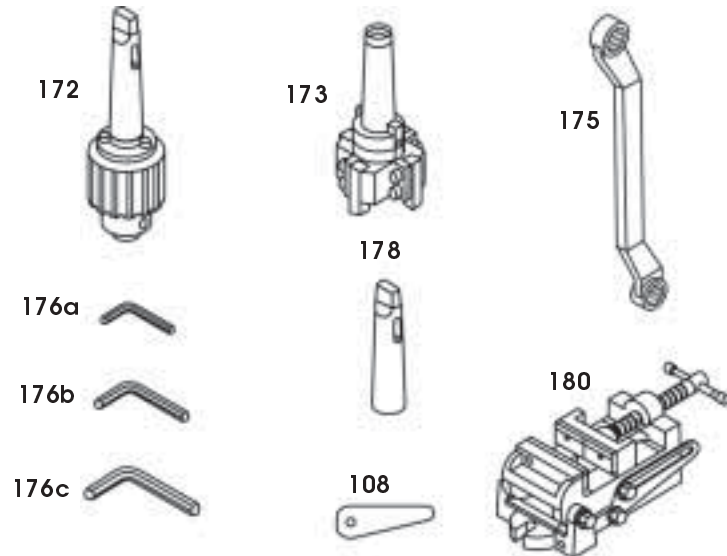
Parts Diagram



Schematic 230v single phase



Accessories



A wide range of tools and accessories are available from your nearest CLARKE dealer, for further information, contact your nearest dealer, or telephone CLARKE International Sales department on 01992 565300.

Installation (Figures in brackets refer to Parts list)

IMPORTANT: Careful consideration is required when choosing the location for the machine, special attention should be paid to the operation, i.e. the X & Y axis, electric powerpoint etc, also the workbench where the machine is to be installed should be firm flat and level. Avoid installing in direct sunshine, damp or very dusty location.

Your new machine is delivered assembled in a wooden case and bolted onto a board using four bolts. all accessories are packed inside the case in a wooden box.

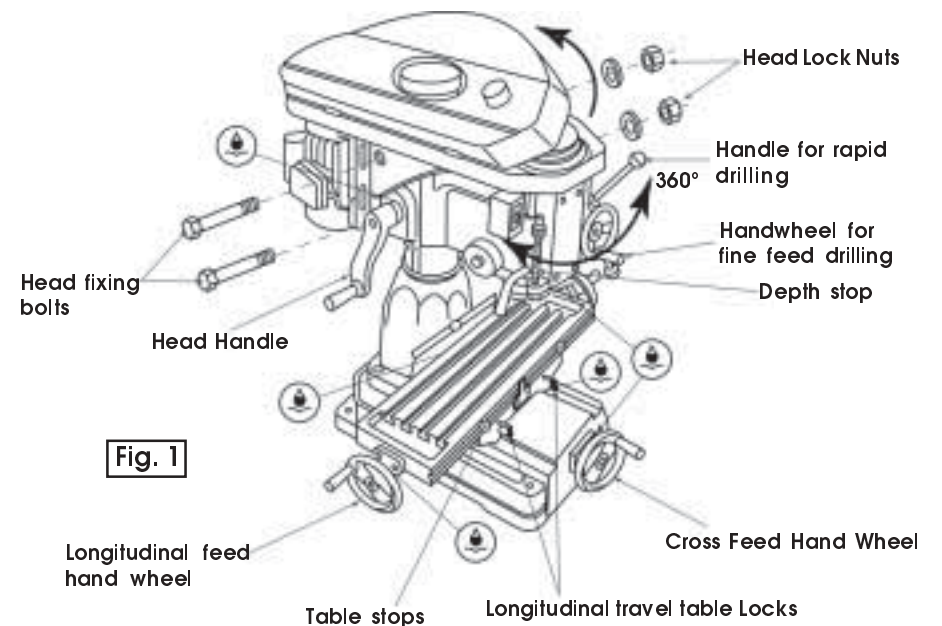
To remove the machine from the case, it is necessary to dismantle the case first. Once dismantled ensure all nails etc are removed, safely dispose of the case materials unless you intend to move the machine at a later date, in that case, store safely away.

Given the machines weight, a suitable hoist etc will be required to lift the machine into position.

Before lifting, you must ensure that you have given explicit instructions, including who gives the command to lift etc. Also before lifting, place the machine as near as possible to the location where the machine is to be sited.

NOTE: when lifting, take care as the machine is top heavy.

1. Unbolt the machine from the board, and carefully lift into position,
2. Before drilling the bench, ensure full longitudinal travel is possible, also ensure the head can be rotated through 360° without fouling etc, anything less could impair the maximum use of the machine.
3. Once satisfied, drill four corresponding holes with the ones in the machine base, and bolt machine securely onto the workbench, using suitable nuts bolts and washers, (not supplied).



4. Loosen the two nuts and bolts (45 & 48), turn the head handle (54/56), clockwise to raise the head, remove the wooden transport bracket, retighten nuts and bolts.
5. Your machine has been coated with rust protection to protect it in shipping, all traces of this must be removed before attempting to use the machine. Commercial degreaser, kerosene or similar solvent may be used to remove this protection, care must be taken to avoid getting solvent into the motor and electrical parts i.e. switches etc, also observe the cleaner manufactures instructions.
6. After cleaning, lightly coat all bright (non painted) surfaces, with a light machine oil, lightly lubricate all moving parts, i.e. handwheel threads etc (Fig. 1).
7. Before using the machine for the first time, check all functions: refer to Fig.1.
 - a. Turn the cross feed hand wheel clockwise to move the table inwards, and anticlockwise to move the table outwards. Tighten the cross feed table lock (157) **DO NOT OVERTIGHTEN**, attempt to turn the hand wheel, the table should not move.
 - b. Turn the longitudinal hand wheel clockwise to move table to the left, and anticlockwise to move it to the right. Tighten the two longitudinal locks (157) **DO NOT OVERTIGHTEN**, attempt to turn the hand wheel, the table should not move.
 - c. Loosen the head locknuts and turn the head hand wheel clockwise to raise the head and anticlockwise to lower it. tighten the locknuts.

The Head may be rotated 360°, adjust to the desired angle, then tighten the locknuts.

- d. Loosen spindle lock (72), by turning anticlockwise, loosen the feed knob (86) by turning clockwise, pull handle for rapid speed drilling (84 & 85), spindle should travel downwards, push handle in opposite direction, spindle should return back up.
- e. Tighten the feed knob by turning anticlockwise, turn the fine feed hand wheel clockwise, the spindle should travel downwards, turn handle in opposite direction the spindle should return back up. Tighten the spindle lock and attempt to turn the hand wheel, the spindle should not move.

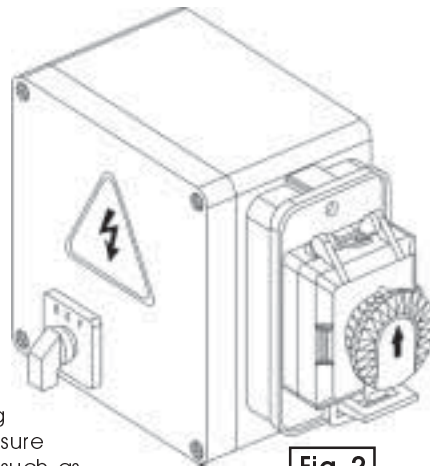


Fig. 2

IMPORTANT: before plugging in and switching

ON, ensure all items such as chuck keys and drifts etc are removed and stored safely.

Ensure the work area is clean and tidy before switching the machine on. Plug the machine into the electric supply, ensuring the correct supply is available, and switch the power ON.

The ON/OFF switch is located on the left hand side of the machine, this switch box also incorporates the forward/reverse switch (Fig. 2). Before switching ON, select either forward or reverse, it is important to switch the machine OFF and wait for it stop rotating before changing direction.



Fig. 3

strip adjusting screw for the axis that requires adjusting, at the same time slowly turn the handwheel for the same, the correct adjustment is reached when a slight resistance is felt on the handwheel.

If necessary repeat the above procedure for the other axis.

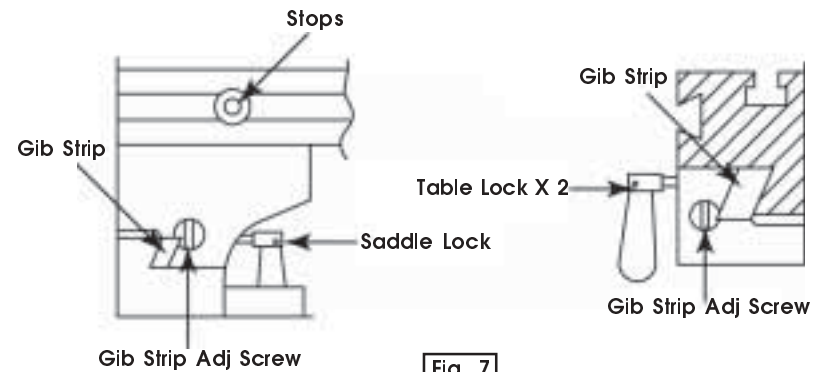


Fig. 7

CROSS FEED (X AXIS)

LONGITUDINAL FEED (Y AXIS)

Fault Finding

FAULT	CAUSE	REMEDY
1. Machine does not run.	Fuse blown. Faulty switch.	Replace Fuse. Replace Switch.
2. Motor overheats.	Incorrect voltage. Feed speed too fast. Faulty motor.	Adjust to Correct Voltage. Reduce Feed Speed. Replace Motor.
3. Spindle gets hot.	Insufficient lubrication. Spindle bearing too tight. Running high speed for long periods. V Belt too tight.	Fill with grease. Adjust or replace bearing. Switch OFF and allow to cool down. Adjust V belt tension.
4. Spindle stops whilst cutting.	Loose V belt. Motor burnt out. Cutting too deep.	Adjust V belt tension. Replace motor. Reduce depth of cut.
5. Micro feed not smooth.	Clutch loose. Worm & worm shaft worn	Adjust tension. Replace

Chuck Guard

NEVER operate the machine without first ensuring that the chuck guard is in place and is functioning correctly, when guard is opened, the machine stops automatically. To position the chuck guard where it gives maximum protection from flying swarf etc, loosen the two knurled thumb screws, shown in Fig. 6, raise or lower the guard to required position.

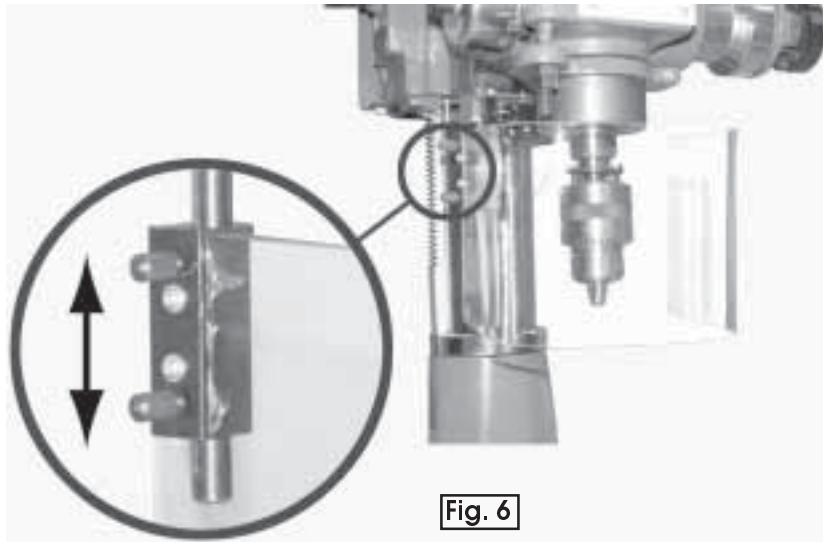


Fig. 6

Maintenance (Figures in brackets refer to Parts list)

The amount of maintenance depends on the amount of use the machine gets, however it is important to carry out routine maintenance to prevent premature wear and shortening the life of the machine.

1. Inspect and clean all non painted surfaces, lubricate using a light machine oil, **Do Not** over lubricate, oil can be applied to the worktable and column etc, using a soft oil soaked cloth.
2. Inspect and clean all moving parts, Lubricate using machine oil, check for smooth operation.
3. Inspect the machine for signs of wear or damage, any faults should be rectified before continuing.
4. Check all bolts etc are tight, i.e. the bolts (134) securing the column (132) to the base (141) etc.
5. With use, play may develop in the cross and longitudinal slides, this can be adjusted out as follows.
Before making any adjustments, clean all friction surfaces, it is necessary to move the table and cross slide to both extremes to carry out the cleaning process correctly. When finished cleaning, re-lubricate using a light machine oil.
6. Return both the table and cross slide to their central positions.
7. Adjust Gib strip screws, (160) (see Fig. 7). Using suitable screwdriver, slowly turn the gib

To switch the machine ON, press the switch cover (fig. 3) in, slide in direction of arrow and lift up, this will expose the ON/OFF buttons. Push the ON button, (green button 'I'). **DO NOT** close the cover as this will switch the machine OFF again.

NOTE : in case of emergency, close the switch cover quickly, the cover will latch down and the motor will be switched OFF. To switch OFF normally, press the OFF button, (red button 'O'), always close cover to prevent accidental starting. always allow the motor to reach full speed before attempting to start machining, check that there is no adverse vibration or noises etc. If any are apparent, switch the machine OFF and disconnect from the main supply by turning OFF the power and removing the plug from the socket. Rectify any faults before attempting to turn the machine back ON again.

Once any problems are rectified and the machine is running smoothly, the machine is now ready for use.

Operating Instructions (Figures in brackets refer to Parts list)

NOTE: these instructions are not a definitive tutorial. they are to be used for guide purposes only and are not intended to teach you all there is to know about milling and drilling.

Always keep the work area clean and tidy. especially in the close proximity of the machine. Plan your work carefully before starting.

- Secure work piece onto the worktable, using the appropriate method, e.g. 'T' bolts and clamps not supplied) or vice etc.
- Insert the cutter to be used into the chuck (not supplied) or directly into the spindle etc and ensuring it is tightly secured. Only use good quality cutters with the correct form and sharpness etc.
- Ensure the chuck guard is in place and securely fixed.
- For added accuracy, if for instance you are only using the cross feed when cutting, ensure all other axis are locked, (vertical and horizontal).
- Select the correct cutting speed for the size of cutter and material being machined.

SPINDLE SPEEDS			
A-1	100	B-4	600
B-1	170	C-3	700
A-2	200	C-4	950
A-3	250	D-2	1290
C-1	280	D-3	1590
B-2	360	D-4	2150

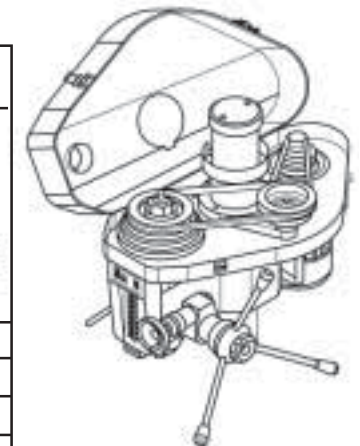


Fig. 4

A good rule of thumb is, the smaller the hole or depth of cut, and the softer the material to be machined etc, the faster the speed. To adjust the speed proceed as follows. 12 Speeds are possible, (see Fig. 4)

1. Turn the machine OFF and isolate from the main supply to prevent accidental starting.
2. Loosen screw (130) and remove the pillar cap (129), store safely.
3. Raise the milling head until the pillar (132) is flush with the top cover (2).
4. Open the belt drive cover by releasing the two catches (14), and lift open the cover. (safety switch should operate to prevent accidental starting).
5. Loosen the locking screw (46), pull the motor (33) inwards to slacken the 'V' belt (29), remove the belt and store safely.
6. 'V' belt (21) can now be repositioned to desired location.
7. Refit 'V' belt (29), refer to table Fig. 4 for correct position.
8. Tension 'V' belts by pushing motor outwards, if necessary, a screwdriver or similar can be used as a lever between the head box (47), and the motor mount (40).

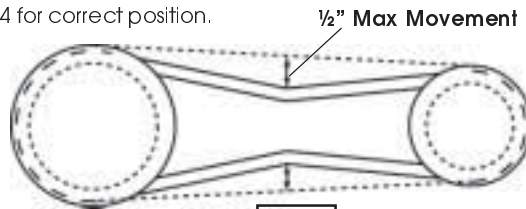


Fig. 5

DO NOT apply excessive pressure. See Fig. 5 for correct adjustment.

9. Close the top cover and secure with latches. Ensure the cutter is not making contact with the work piece, turn the machine ON.
 - Slowly bring the cutter into contact with the work piece and start machining.
 - **DO NOT** attempt to make too bigger cuts than the cutter and machine are capable of, it is much better and safer to make several small passes.
 - Always use an appropriate cutting/cooling fluid whilst machining, which can be applied with a small brush etc, **NOT FINGERS**.
 - **DO NOT** allow swarf to build up in the cutting area. Stop the machine and remove using a suitable implement, (brush etc).
 - When finished turn the machine OFF, return the cutter to the uppermost position and allow it to come to a complete stop before attempting to remove the work piece or tool etc. Also to prevent accidental starting, isolate the machine from the power supply by turning off at the wall socket and removing the plug from the socket.
 - Always finish by cleaning the machine down and storing all tools etc away safely.

There are two possibilities when drilling, course and fine feed.

To use the course feed, loosen the feed knob (86) and operate by pulling the handle (84 & 85) at the desired rate.

For fine feed, tighten the feed knob, and operate the fine feed wheel (95) at the desired rate.

IMPORTANT When milling, **ONLY** the fine feed option may be used.

CHUCK & OR MILLING CUTTER REMOVAL/REPLACEMENT

1. Ensure the machine is switched OFF and isolated from the main electric supply.
2. Open the top cover as for speed changing.
3. Hold the chuck/cutter firmly using industrial work gloves or similar.
4. Loosen and unscrew the draw bolt (4) approx two full turns.
5. Firmly strike the top of the draw bolt with a soft faced mallet, (**NOT Hammer**). The Chuck/cutter should drop slightly, holding the chuck/cutter with one hand unscrew fully the draw bolt with the other hand and remove the chuck/cutter.

Fit replacement in reverse order.

To fit MT3 -MT2 drill sleeve, the draw bolt must be removed completely and stored safely.

Fit arbor by inserting the taper shank into the spindle, turn the arbor whilst doing so to locate the drive key into the slot.

To remove it when finished, lower the spindle by either operating the course drilling handles or by turning the fine feed handwheel to lower the spindle and expose the drift slots.

Turn the spindle etc to locate the slots in the spindle and arbor.

Insert the drift (108) into the slot, again apply a firm but swift blow to the drift, using a hammer.

Using suitable hand protection, catch the arbor as it falls, remove the drift and store safely.

SPINDLE RETURN SPRING

It shouldn't normally be necessary to make adjustments to the return spring pressure, in the event it does become necessary **EXTREME CAUTION** should be observed.

To carry out this adjustment proceed as follows:

1. Ensure the spindle is as high as it will go, lock in position with the spindle locking lever (72)
2. Loosen the Knob (61) three or four full turns, **DO NOT** remove completely.
3. Firmly grip the spring cap (64), preferably wearing heavy duty work gloves, carefully take up the tension by turning very slightly anticlockwise, pull the cap away from the mill head to disengage the locating pawls, **DO NOT** let go as the spring will unwind at speed and force causing damage and or personal injury.
4. Turn the cap anticlockwise to increase the spring tension, when the required tension is reached, push the cap back towards the head and relocate the pawls.
5. Whilst continuing to hold the cap in position, tighten the knob (61).
6. Test the action of the spindle return, and repeat the above if more tension is required.

NOTE: Check periodically the knob (61) is always tight, if it does become loose during normal use, carefully remove the knob, taking care not to allow the spring cap to move, apply thread lock to the knob thread and refit to machine.

