

ClarkeTM WOODWORKER MORTISING MACHINE

Model No. CBM 2

Part No. 6500010



**OPERATING & MAINTENANCE
INSTRUCTIONS**



Thank you for selecting this CLARKE CBM2 Mortising Machine.

Before operating the machine, please read this leaflet thoroughly and follow the instructions carefully. In doing so you will ensure the safety of yourself and that of others around you, and you can look forward to the machine giving you long and satisfactory service.

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 effect your statutory rights.

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SAFETY PRECAUTIONS

GENERAL SAFETY RULES FOR OPERATING MACHINERY

WARNING:

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. READ and BECOME FAMILIAR with the entire operating manual. Learn the machines' applications and limitations as well as the specific potential hazards peculiar to it.
2. 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.
3. 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.

4. CHECK for DAMAGE. Before using the machine, any damaged part, such as a guard etc., 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.
5. DISCONNECT the MACHINE from the power supply before servicing and when changing accessories such as blades, etc.
6. KEEP GUARDS in place and in working order.
7. ALWAYS WEAR SAFETY GOGGLES, manufactured to the latest European Safety Standards. Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses do not have impact resistant lenses, they are NOT safety glasses.
8. KEEP WORK AREA CLEAN. Cluttered areas and benches invite accidents.
9. ALWAYS WEAR EAR PROTECTORS/DEFENDERS.
10. DON'T FORCE the Machine. It will do a better and safer job at the rate for which it was designed.
11. REMOVE ADJUSTING KEYS AND WRENCHES. Form the habit of checking to see that keys and adjusting wrenches are removed from the machine before switching on.
12. DRUGS, ALCOHOL, MEDICATION. Do not operate machine while under the influence of drugs, alcohol or any medication.
13. USE RECOMMENDED ACCESSORIES. The use of improper accessories could be hazardous.
14. NEVER LEAVE MACHINE RUNNING UNATTENDED. Turn power OFF. Do not leave machine until it comes to a complete stop.
15. ALWAYS REMOVE PLUG from electrical outlet when adjusting, changing parts, or working on machine.
16. AVOID DANGEROUS ENVIRONMENT. Don't use power machines in damp or wet locations or expose them to rain. Keep your work area well illuminated. DO NOT USE in explosive atmosphere (around paint, flammable liquids etc.).
17. KEEP CHILDREN AWAY. All visitors should be kept a safe distance from the work area, especially whilst operating the unit.
18. MAINTAIN MACHINE IN TOP CONDITION. Keep tools sharp and clean for the best and safest performance. Follow maintenance instructions.
19. DON'T OVERREACH. Keep your proper footing and balance at all times. For best footing, wear rubber soled footwear. Keep floor clear of oil, scrap wood, etc.
20. WEAR PROPER APPAREL. Loose clothing or jewellery may get caught in moving parts. Wear protective hair covering to contain long hair.
21. NEVER STAND ON THE MACHINE. Serious injury could occur if the machine is tipped or if a cutting tool is accidentally contacted. Do not store materials above or near a machine, such that it is necessary to stand on the machine to reach them.

22. **HANDLE WITH EXTREME CARE** Whenever transporting or installing machinery, and always use a lifting tool wherever possible.
23. **AVOID ACCIDENTAL STARTING.** Ensure the switch is OFF before plugging in to mains.
24. **BE AWARE** that accidents are caused by carelessness due to familiarity. **ALWAYS** concentrate on the job in hand, no matter how trivial it may seem.

ADDITIONAL SAFETY INSTRUCTIONS for MORTISING MACHINES

1. **DO NOT USE** until unit is completely assembled and installed according to these instructions.
2. **IF YOU ARE NOT** thoroughly familiar with the operation of mortising machines, obtain advice from a qualified person.
3. **ENSURE** the machine is secured to a workbench to prevent it from tipping over during operation.
4. **NEVER TURN MORTISING MACHINE ON** before clearing the table of all objects (tools, scrap pieces, etc.).
5. **ALWAYS KEEP** hands, fingers and hair away from the rotating bit.
6. **DO NOT ATTEMPT** to mortise materials that do not have a flat surface, unless a suitable support is used.
7. **ALWAYS** use 'Hold Down' to prevent the work from lifting when withdrawing the chisel.
8. **ALWAYS SUPPORT** workpiece securely against fence to prevent rotation.
9. **ENSURE** the drill bit is sharp, undamaged and properly secured in the chuck before use.
10. **ENSURE** the chuck key is removed before starting.
11. **NEVER START** the Machine with the drill bit or chisel pressed against the workpiece.
12. **NEVER PERFORM LAYOUT, assembly or set-up work** on the Machine with the cutting tool rotating.
13. **ALWAYS ADJUST DEPTH STOP** to avoid drilling into the table.
14. **ALWAYS STOP** the machine before removing scrap pieces from the table.
15. **SHUT OFF POWER,** remove the drill bit and chisel and clean the table before leaving the machine.
16. **DO NOT WEAR** gloves, neckties or loose fitting clothing. Long hair should be contained.
17. **NEVER OPERATE** the Machine if any part is damaged or broken.
18. **NEVER PLACE YOUR FINGERS** in a position where the drill or cutting tool could contact them if the workpiece should shift unexpectedly.
19. **ALWAYS DISCONNECT** the machine from the electrical supply before changing the chisel and bit, and before any cleaning or maintenance.

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 coloured cord to plug terminal marked with a letter "L" or coloured RED.

Connect BLUE coloured 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-rewirable) 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.

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

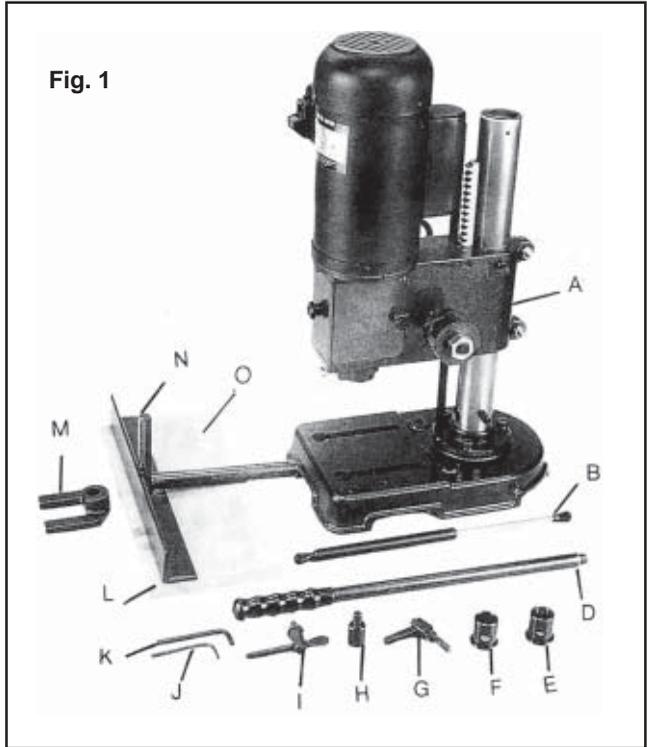
UNPACKING

Unpack the shipping carton, and lay out the components so that they can be clearly identified. Check them off as follows:

- A. Morticing Machine
- B. Hydraulic Cylinder
- D. Handle
- E. 3/4" Chisel Bush
- F. 5/8" Chisel Bush
- G. Fence Locking Handle
- I. Chuck Key
- J. Allen Key - 4mm
- K. Allen Key - 5mm
- L. Table
- M. Hold Down
- N. Fence
- O. Screw (2 off)

Not Shown

- 1. 13mm Mortice Chisel set.
- 2. 1/2" Chuck (Fitted)



ASSEMBLY.

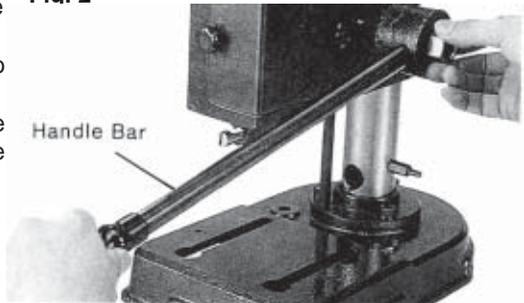


WARNING: For your own safety, do not connect the Mortising Machine to a power source until it is fully assembled, and you have read and understood all safety and operational instructions.

CAUTION: Do not allow brake fluids, gasoline, penetrating oils, etc., to come in contact with plastic parts. These solutions contain chemicals that can damage and/or destroy plastics.

- 1. Screw the Handle (D) into the hole on the pinion shaft. (see fig.2)
- 2. Use the handle to raise the head to the top of its' travel, and hold in place.
- 3. Secure the Hydraulic Cylinder to its' two fittings by pushing on the spherical housings until they click into place. One fitting is located on the column and one on the side of the head. The head will now be held in position, (see fig 3).
- 4. You may now want to reposition the handle. To do this see "Raising and lowering the Head" on page 9.

Fig. 2



- Assemble the Table to the base using the two screws provided.
- Insert the bar of the Fence assembly through the hole in the column and secure with the 'Fence Locking Handle'.
- Assemble the 'Hold Down' on the vertical post of the fence assembly, and secure with the set screw, using the Allen Key provided. (see fig. 4)

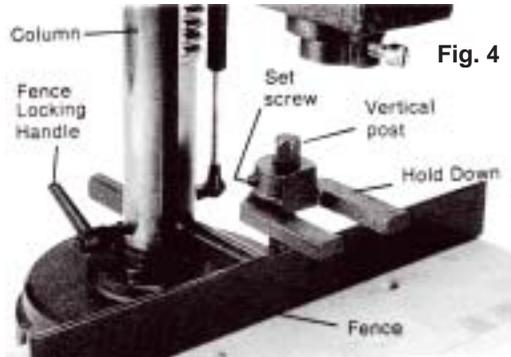


Fig. 4

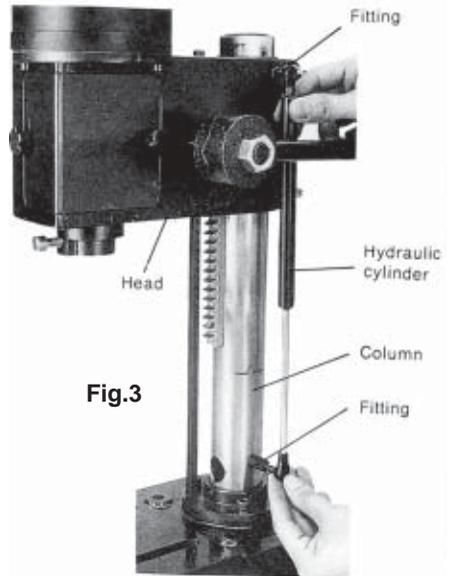


Fig. 3

CHISEL AND BIT



WARNING: Make sure switch is in OFF position and power cable is unplugged before performing checks, adjustments, or setup procedures.

- Loosen the two cover securing knobs on the head and remove the cover, to expose the chuck. Ensure the chuck is firmly secured to the spindle, by holding the spindle with an appropriate spanner using the flats adjacent to the top edge of the chuck, and screwing the chuck on tightly.
- NOTE: There are two different size chisel bushes provided. Determine which size fits the chisel to be used, and store the other one in a safe place for future use. Insert the chisel bush up through the hole in the head, ensuring the round hole in the side of the bush faces the front of the machine. The chisel securing screw, on the front of the head, must pass through this hole to secure the chisel. Screw in the screw a few turns, to temporarily hold the bush in position.

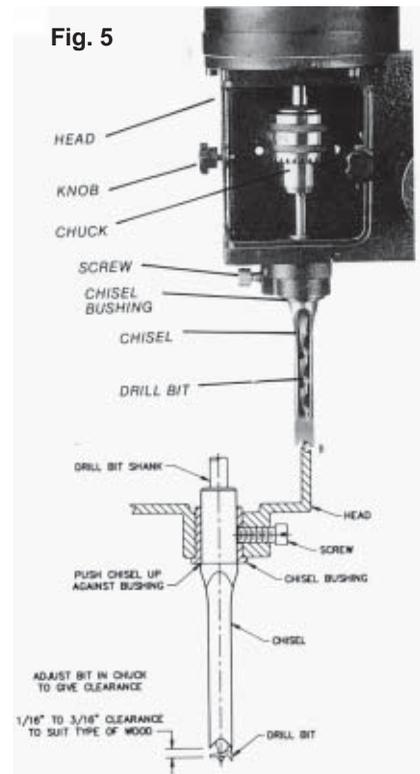


Fig. 5

NOTE: The screw should not become tight at this point. If it does, loosen it and retry, making certain that the round hole in the side of the bush is lined up with the screw.

3. Insert the bit into the chisel, and insert chisel and bit up through the bush.
NOTE: The opening in the side of the chisel should always be to the right or left, never to the front or rear. The opening allows chips to escape during operation.
4. Push the chisel up as far as possible into the head, and nip up the screw to temporarily hold it in this position. You can lower the drill bit gently, and allow it to rest on the base whilst carrying out this operation.
5. Push the drill bit up through chisel, and into the opened jaws of the chuck, as far as it will go, then back off approx. 1/16", and secure the drill bit in this position, by tightening the jaws using the chuck key provided.
6. Loosen the chisel securing screw and lower the chisel until it contacts the end of the drill bit, then raise it 1/16", and secure it in this position by tightening the securing screw, ensuring the opening on the side of the chisel is on one side, not facing the front.

NOTE: The chisel should be adjusted so that flat portion of the drill bit is at least 1/16" from the bottom of the chisel. For certain types of wood, it may be necessary to increase this distance up to a maximum of 3/16". This ensures having proper clearance between the cutting lips of the bit and the points of the chisel.

INSTALLATION

IMPORTANT:

Before using the Machine, ensure it is bolted down to a firm and stable workbench to prevent it from tipping during operation. Two holes are supplied in the centre of the base for this purpose.

CONTROLS AND ADJUSTMENTS



WARNING: Make sure the switch is in the OFF position and power cable is unplugged before performing checks, adjustments, or setup procedures.

The ON-OFF switch is located on the motor and has operating positions clearly marked. Push switch up to turn tool ON and down to turn it OFF. The switch has a Switch Key that, when removed, allows the switch to be locked in OFF position. To activate locking feature, push the switch to OFF and pull Switch Key out of the switch.

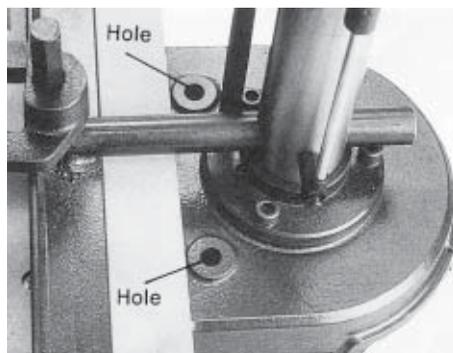
RAISING AND LOWERING THE HEAD

A handle is provided to raise and lower the head. This handle may be adjusted for maximum leverage and comfort during operation. To do this loosen the large hex nut located on the pinion shaft, just enough to allow interlocking teeth to pass one another. Reposition the handle to the desired location, and re-tighten the hex nut.

ADJUSTING FENCE

The fence can be moved in or out, by loosening the locking handle on the column, sliding the fence to the desired position and re-tightening the locking handle.

Fig. 6



ADJUSTING HOLD DOWN

The purpose of the hold down is to prevent the workpiece from lifting as the chisel is raised up, out of the hole. The hold down should be adjusted so it just touches the top of the workpiece and allows the workpiece to slide left or right. The hold down can be turned upside down to accommodate thicker workpieces. To adjust the hold down, loosen the set screw (A) with the Allen key provided, position the hold down, and re-tighten set screw (A).

ADJUSTING DEPTH STOP ROD

A depth stop rod is provided to limit the depth of the chisel cut. To adjust the depth stop rod, loosen the set screw (B) and lower the head until the bottom of the chisel is at the desired depth. Lower the depth stop rod until it contacts base and re-tighten screw (B, Fig. 7).

Fig 7

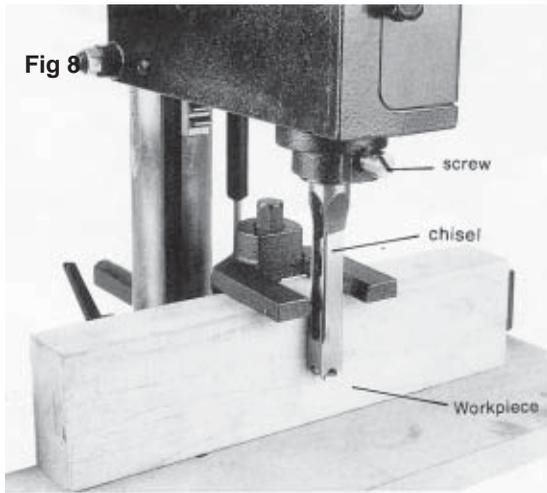
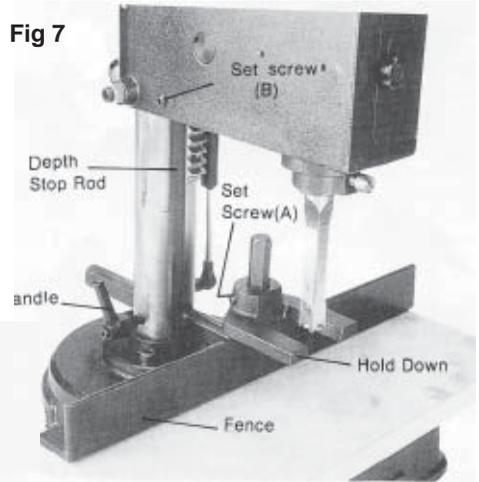


Fig 8

ADJUSTING CHISEL PARALLEL TO WORKPIECE

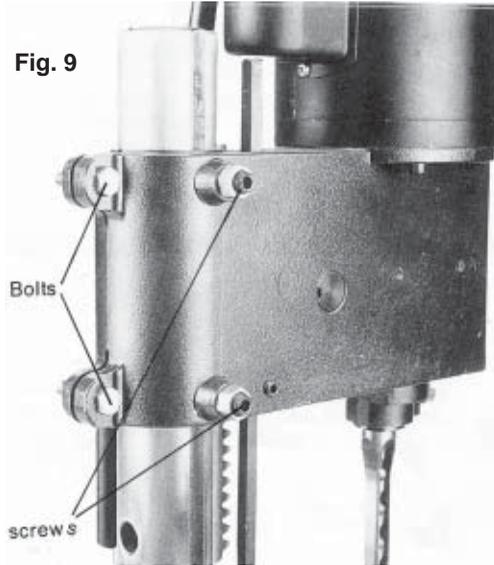
The chisel can be adjusted parallel to the workpiece by loosening the securing screw and rotating the chisel until the back surface of the chisel is flat against the workpiece. Then re-tighten the screw.

ADJUSTING SLIDING FIT BETWEEN HEAD AND COLUMN (Ref fig. 9)

Two bolts are provided on the rear of the head, to ensure a good sliding fit between head and column when the head is raised and lowered. Adjustment is made by loosening or tightening these two bolts. NOTE: Correct adjustment is when a good snug sliding fit is obtained without any side movement between the head and column. The adjustment should not be too tight that it restricts the sliding movement, or too loose that it affects accuracy. There are also two set screws, located on the side of the head, which can be adjusted. These two screws keep the head and column in good alignment. If there is excessive movement in this area:

1. Loosen the lock nut, securing the set screw.
2. Screw the set screw in, until movement is eliminated.
3. Secure the set screw in this position by re-tightening the lock nut, whilst holding the set screw to prevent it from turning.

Fig. 9



OPERATION

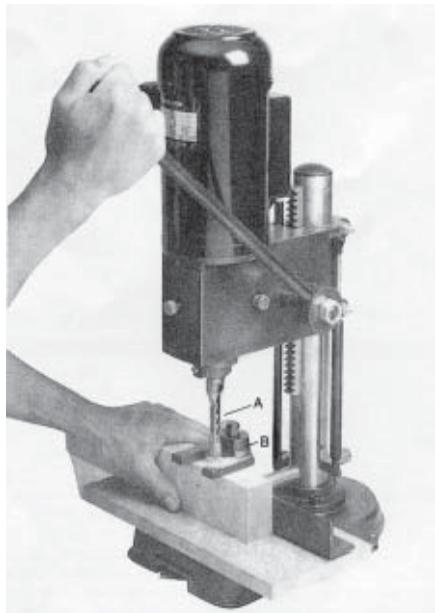
1. Position the motor assembly at a suitable height on the column according to the depth of the workpiece.
2. Set the machine fence to suit the position of the mortise on the workpiece. Make sure the fence and chisel are square to each other, and tighten in place.
3. Set the depth stop to the required depth of cut.
4. Lower the Hold Down (B, Fig. 10), so that it rests gently on the surface of the workpiece, but not so tight as it prevents the workpiece from moving, and lock into position. When working on long workpieces, support the timber along its length.
5. Clamp the workpiece firmly against the fence, switch on the machine, and feed the chisel and bit steadily into the workpiece by pulling down on the operating handle.

NOTES: We recommend that you check the position, and depth of cut, on a piece of scrap before cutting your workpiece.

The rate of penetration of the chisel must be fast enough to prevent burning at the tip of the bit, but not so fast as to cause the machine to slow or stall. With experience you will find suitable feed rates to suit various types of timber.

You may encounter smoke from the bit or material once the chisel has engaged the material. The smoke created is a natural operating occurrence

Fig. 10



in hollow chisel mortising and is caused by material chip friction and the resins in the stock being burned off. Bluing of the chisel after initial use is not indicative of a dull chisel, but a combination of friction and resin buildup on the cutting faces of the chisel.

A dull chisel can be detected by the amount of excess force required to complete a cut.

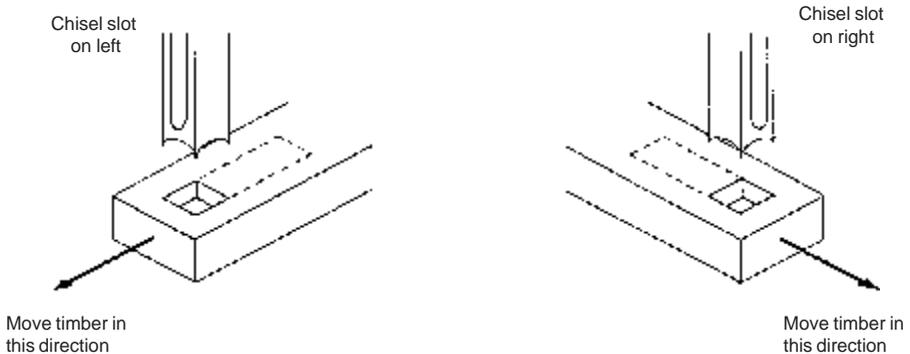
After the first cut, the workpiece must be moved along in the correct direction relative to the slot in the chisel, to allow chips to clear freely. Move the workpiece so that the chisel slot is releasing chips into the already cut part of the mortise (see fig. 11). Do not have the slot against the blind end of the mortise, as the chips will not be able to clear from the chisel. This will cause overheating and possible breakage to the chisel or bit.

When cutting deep mortises, make the cut in several stages of approximately 25mm each, to allow chips to clear.

When performing a through mortise, a piece of wood should be placed between the workpiece and the table. This prevents the wood from splintering when breaking through the bottom of the mortise and also prevents damage to the table.

Always switch the mortising machine off after use. Never leave the machine running unattended.

Fig. 11



MAINTENANCE



WARNING: For your own safety, turn OFF power and disconnect tool from power source before performing any maintenance.

Periodically clean dust accumulation from the machine. Apply a light coat of paste wax to the base surface. This will help keep it clean and rust free.

All of the ball bearings are packed with grease at the factory and require no further lubrication.

A light machine or penetrating oil should be used to periodically lubricate necessary points. Open the cover and apply a light coat of oil on drill bit shaft where it passes through the chisel, but not on its cutting edge. Also oil rack and pinion gear teeth, column, and pinion shaft.

SHARPENING THE DRILL BIT & CHISEL

For best performance the chisel and bit need to be kept sharp. Blunt cutting edges will give untidy and inaccurate mortises, and can cause overheating and breaking of the chisel and bit.

Sharpen the bit by using a small smooth file, following the original shape of the bit. File the inside edge of the spur, the sides of the brad point, and the cutting edge inwards towards the flutes of the bit to restore sharpness. Do not file the outside edge of the spur as this will affect the diameter of the bit.

Fig. 12

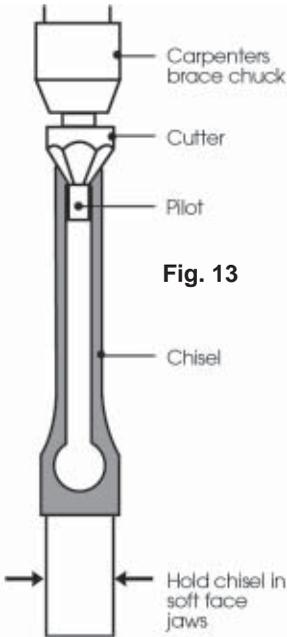
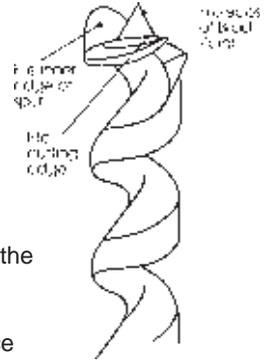
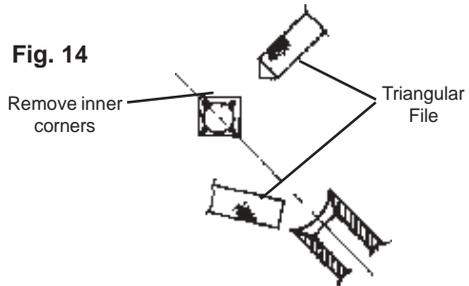


Fig. 13

Use a mortice chisel cutter with the correct size pilot to sharpen the chisel. Two or three turns of the cutter in a carpenters hand brace should be enough to sharpen the chisel. Use a small triangular smooth file to relieve the inner corners of the chisel, and remove any burrs from the outside of the chisel with a fine oilstone. Chisels and bits will need replacing when they become badly worn and difficult to sharpen.

Fig. 14



SPECIFICATIONS

Motor	230VAC 50Hz 1Ph	
Power Rating		370 Watts
Speed		2800RPM
Current Rating		2.5Amps
Fuse Rating		5 Amps
Chuck Capacity		3/8"
Chisel Capacity		5/8", 3/4" Shank Dia.
'Hold Down' Capacity		4.25"
Head Travel (Chisel installed)		4.75"
Fence Size		1.56"x13.75"
Base Size		5.88"x13.50"
Overall Dimensions		30.24"Hx13.75"Wx13.38"D
Net Weight		44.8lbs

PARTS LIST

Item	Description	Qty	Part No.	Item	Description	Qty	Part No.
1	Base	1	FMHM120S01	25	Hydraulic Cylinder	1	FMHM120S25
2	Spring Washer M8	3	FMHM120S02	26	Left Adj. Gear	1	FMHM120S26
3	Screw M8x20	3	FMHM120S03	27	Spring Pin	1	FMHM120S27
4	Column	1	FMHM120S04	28	Hex. Nut M16	1	FMHM120S28
5	Set Screw M8x10	2	FMHM120S05	29	Right Adj. Gear	1	FMHM120S29
6	Head	1	FMHM120S06	30	Upper Sph Hd Fitting	1	FMHM120S30
7	Depth Stop Rod	1	FMHM120S07	31	Handle	1	FMHM120S31
8	Motor	1	FMHM120S08	32	Handle Grip	1	FMHM120S32
9	Rack	1	FMHM120S09	33	Screw M5x16	3	FMHM120S33
10	Screw M6x12	2	FMHM120S10	35	Chuck	1	FMHM120S35
11	Hex. Nut M8	2	FMHM120S11	36	Chisel & Bit 13mm	1	FMHM120S36
12	Hex. Screw M8	2	FMHM120S12	37	Bush (5/8" & 3/4")	2	FMHM120S37
13	Table	1	FMHM120S13	38	Cap	1	FMHM120S38
14	Fence	1	FMHM120S14	39	Flat Hd Screw M6x20	2	FMHM120S39
15	Hold Down	1	FMHM120S15	40	Chuck Cover	1	FMHM120S40
16	Fence Lock. Handle	1	FMHM120S16	41	Knob	2	FMHM120S41
17	Brass Screw M8x25	1	FMHM120S17	42	Switch Base	1	FMHM120S42
18	Set Screw M6x6	1	FMHM120S18	43	Switch Cover	1	FMHM120S43
19	Pinion Shaft	1	FMHM120S19	44	Switch	1	FMHM120S44
20	Key 5x5x14	1	FMHM120S20	45	Brass Pin	2	FMHM120S45
21	Collar	1	FMHM120S21	46	Spring	2	FMHM120S46
22	Gear	1	FMHM120S22	47	Set Screw M10x20	2	FMHM120S47
23	Lower Sph. Hd Fitting	1	FMHM120S23	48	Hex. Nut	2	FMHM120S48
24	Cylinder Head	2	FMHM120S24	49	Screw	2	FMHM120S49

ACCESSORIES

In addition to the 13mm (1/2") Hardened Steel, Hollow Mortise Chisel supplied with your machine, the following sizes are available from your CLARKE dealer.

	Mortise Size	Bit Shank Size	Part No.
1.	6mm (1/4")	5mm	6500025
2.	9mm (3/8")	6mm	6500026

PARTS DIAGRAM

