



# DM - DM/V

## HOLLOW CHISEL MORTISER

INSTRUCTION MANUAL No.3005



# **DM - DM/V**

## **HOLLOW CHISEL MORTISER**

MACHINE No.	
TEST No.	
YEAR OF MANUFACTURE	

## **MANUFACTURERS E.C. DECLARATION OF CONFORMITY**

The following machine has undergone "Conformity Assessment" and has undergone Self Assessment in accordance with:-

Schedule IV of the Supply of Machinery (Safety) Regulations 1992  
and Amendment No. 2063

### **COMPANY**

Wadkin Ultracare Limited  
Franks Road  
Hilltop Industrial Park  
Bardon  
Leicestershire  
LE67 1TT

### **RESPONSIBLE PERSON**

Mr J P Smith (Director)

### **MACHINE DESCRIPTION**

TYPE Hollow Chisel Mortiser

MODEL DM/V

### **DIRECTIVES COMPLIED WITH**

Supply of Machinery (Safety) Regulations 1992  
Amendment No. 2063 1994  
Draught Proposal CEN/TC 142  
ISO 9001 Part 1

**SIGNED ON BEHALF OF WADKIN  
ULTRACARE LTD.**



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## HEALTH & SAFETY

### SAFETY OF WOODWORKING MACHINES

Woodworking machines can be dangerous if improperly used. The wide range of work of which they are capable, requires adequate safeguarding arrangements against possible hazards.

Many injuries to machinists are caused by carelessness or failure to use the guards provided or to adjust them correctly.

Wadkin plc supply machinery designed for maximum safety which they believe, as a result of thorough testing, minimizes the risks inevitable in their use. It is the users responsibility to see that the following rules are complied with to ensure safety at work:

- 1) The operation of the machine should conform to the requirements of the UK Woodworking Machines Regulations 1974. All guards should be used and adjusted correctly.
- 2) Safe methods of working only should be adopted as given in BS.6854 Part 1, "Safeguarding Woodworking Machines" (UK only) and subsequent parts for specific machines (obtainable from Her Majesty's Stationery Office) and as advised by Wadkin plc.
- 3) Only personnel trained in the safe use of a machine should operate it.
- 4) Before making adjustments or clearing chips, etc., electrically isolate machine and ensure all movements have ceased.
- 5) All tools and cutters must be securely fixed and the correct speed selected.

Safety is our watchword, but the user must comply with the above rules in his own interest. We would be pleased to advise on the safe use of our products.

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## **SAFETY INSTRUCTIONS**

Carefully read instruction manual with particular reference to the following instructions:-

- a) Slings, ie, safe lifting limits for slings, etc.
- b) Installation and foundation, ie, safe working area of machine, bolt positions, etc.
- c) Wiring details, ie, connection of machine to mains supply, fuse details, etc.
- d) Machine controls and operating instructions.

Ensure tooling is of the correct type for use with the machine and cutters are securely fixed in position.

Select correct spindle speed and feed rate relevant to the tooling being used.

Set all guards correctly and ensure they are securely fixed in accordance with the current regulations.

Use suitable jigs, fixtures and feeding devices etc., (push stick, etc.,) where appropriate.

Refer to BS.6854, Part 1, "Safeguarding Woodworking Machines" UK market and subsequent parts for specific machines for safe working practices.

### **During Machining**

Wear suitable protective equipment, where necessary, eg, goggles, ear defenders and dust mask.

Ensure all moving parts of the machine are stationary before setting, cleaning or making any adjustments.

Report immediately to a person in authority any machine malfunction or operator hazard. Do not attempt to repair the machine unless authorised to do so.

Ensure machine is electrically isolated before any maintenance/cleaning work commences.

## **NOISE LEVELS**

This machine, under certain conditions, will emit noise levels in excess of 85dB(a).

Noise levels will be affected by the environment in which the machine operates the timber being machined, tooling, machine setting and dust extraction.

Further information available from Wadkin on request.

As a manufacturer it is Wadkin's policy to reduce the noise level as far as it is practicable.

## **PREFACE**

### **IMPORTANT**

**IT IS OUR POLICY AND THAT OF OUR SUPPLIERS TO CONSTANTLY REVIEW THE DESIGN AND CAPACITY OF OUR PRODUCTS. WITH THIS IN MIND WE WOULD REMIND OUR CUSTOMERS THAT WHILE THE DIMENSIONS AND PERFORMANCE DATA CONTAINED HEREIN ARE CURRENT AT THE TIME OF GOING TO PRESS, IT IS POSSIBLE THAT DUE TO THE INCORPORATION OF THE LATEST DEVELOPMENTS TO ENHANCE PERFORMANCE, DIMENSIONS AND SUPPLIERS MAY VARY FROM THOSE ILLUSTRATED**

**THIS MANUAL IS WRITTEN AS A GENERAL GUIDE. A TYPICAL MACHINE IS SHOWN TO ILLUSTRATE THE MAIN FEATURES.**

**Failure to comply with instructions in this book may invalidate the guarantee**

**BE CAREFUL  
THIS MACHINE CAN BE DANGEROUS  
IF IMPROPERLY USED**

Always use guards.  
Keep clear until rotation has ceased.  
Always operate as instructed  
and in accordance with good practice.  
Read instruction manual before installing,  
operating or maintaining machine.

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## IMPORTANT

### SAFETY PROCEDURES AND CONSIDERATIONS

To ensure safe working conditions, persons operating and assisting with the operation of this machine must ensure that they read and fully understand the instructions given within this manual and have received sufficient training in the use of the machine and the safety aspects to be observed.

**Note:-** Persons under the age of 18 years must not operate the machine except during a course of training under the supervision of a trained operator.

#### A) POINTS TO NOTE BEFORE OPERATING OR ASSISTING WITH THE OPERATION OF THE MACHINE

- 1) You have read and understood the operation and safety aspects of the machine and have been checked out by a qualified supervisor.
- 2) The machine is supplied with full safeguarding. The machine shall not be operated unless the safeguardings are in position and functional.
- 3) Cutters/blades are the correct type, suitable for the machine and working conditions, rotate in the correct direction of cut, are sharp and correctly fitted.
- 4) Correct spindle and speeds are selected for the cutter equipment and working conditions.
- 5) Loose clothing is either removed or securely fastened back and jewellery removed.
- 6) Adequate working space and lighting is provided.
- 7) All dust extraction equipment is switched on, properly adjusted and working adequately.
- 8) The machine is securely installed (refer to installation section within this manual).
- 9) The machine should only be used for cutting wood or materials with physical and technological characteristics similar to wood, and for which the chip or particle removal process is similar.





## **B) DURING MACHINING:-**

- 1) Wear suitable protective clothing e.g., approved eye protection, ear defenders and dust mask. Gloves shall be worn when handling sharp edged saws.
- 2) Stop the machine using the emergency stop or at the mains isolator before making adjustments, cleaning or carrying out maintenance.
- 3) Keep the floor area around the machine clean and free from wood refuse. Do not allow the floor around the machine to become slippery.
- 4) Stop the machine and report immediately to a person in authority any actual or potential malfunction or operator hazard. Do not attempt to repair or rectify the machine unless qualified and authorised to do so.
- 5) The operator must not leave the machine running whilst unattended.
- 6) Never by pass interlocks.
- 7) A push stick or handled push block must be used to feed the trailing end of a workpiece past the cutting head.
- 8) When ripping never stand directly behind the material.

## **WARNING:-**

Failure to observe correct operating procedures prior to and during operation of this machine can result in severe injury.

**DO NOT** attempt to operate the machine while under the influence of anything that reduces your alertness.

## Specification

Largest chisel which can be used in softwood.	1"square	25.4mm
Largest chisel which can be used in hardwood.	¾"square	19mm
Timber capacity of machine with 4"(101.6mm) chisel.	10"deep	8"wide.
	254mm	x 203mm
Timber capacity of machine with 6½"(165mm) chisel.	7½"deep x 8"wide.	
	190.5mm	x 203mm
Size of table.	22" x 6",	558.8mm x 152.5mm
Longitudinal movement of table.	19"	482mm
Lateral movement of table.	4"	101.6mm
Speed of spindle.	3,000rpm	(50 cycles)
	3,600rpm	(60 cycles)
Horsepower of motor.	3 phase.	2
	1 phase.	1
Approx. floor area.	2'-10"x5'2"	863.6mm x 1574.8mm
Height of work table.	27½"	705mm
Approx. net weight.	672 lb.	303 kg.
Approx. gross weight.	840 lb.	380 kg.
Shipping dimensions.	44 cu.ft.	1.25cu.m.

## INSTALLATION

Remove protective coating from all bright parts by applying a cloth soaked in paraffin, turpentine or other solvent.

When the machine is cased for export the handwheels are removed and packed individually. Remove and re-assemble as shown in fig. 1.

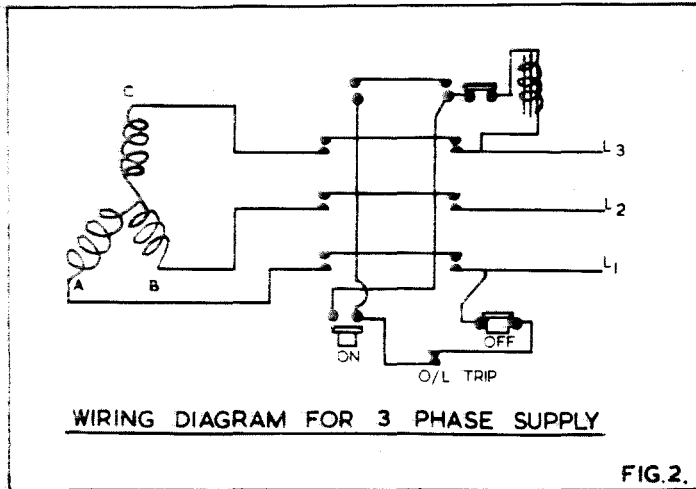


FIG. 2.

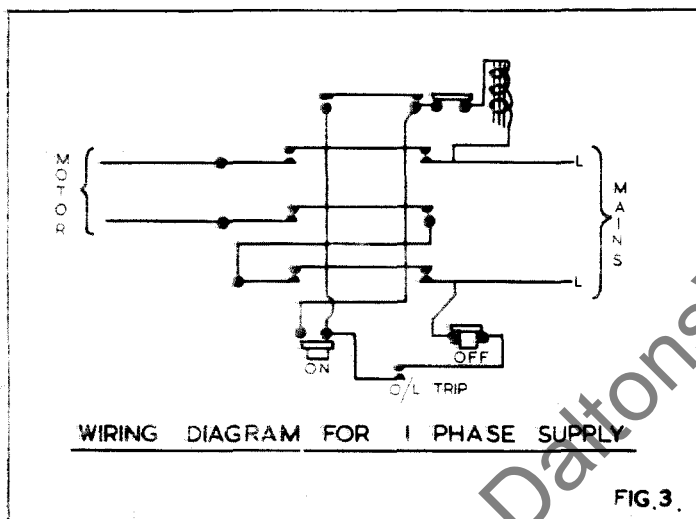


FIG. 3.

## WIRING DETAILS

The motor and control gear have been wired in before despatch, all that is required is to connect the power supply to the starter or isolator when fitted.

Points to note when connecting to the power supply :-

1. Check that the voltage, phase and frequency correspond to those on the motor plate, also the correct coils and heaters are fitted to the starter.
2. It is important that the correct size of cable is used to give the correct voltage at the starter. Too light a cable will give a voltage drop at the starter and may damage the motor.
3. Check the main line fuses are of the correct capacity. See list below.
4. Connect the line leads to the appropriate terminals. See fig. 2 for 3 phase supply and fig. 3 for 1 phase supply.
5. Check all connections are sound.
6. Check the rotation of the motor for the correct direction. If this is incorrect, reverse any two of the line lead connections for 3 phase supply.

VOLTAGE.	PHASE	HP	SWG TINNED COPPER WIRE	AMPS
220	3	2	23	20
380/420	3	2	27	12
550	3	2	29	10
200/250	1	1	19	38

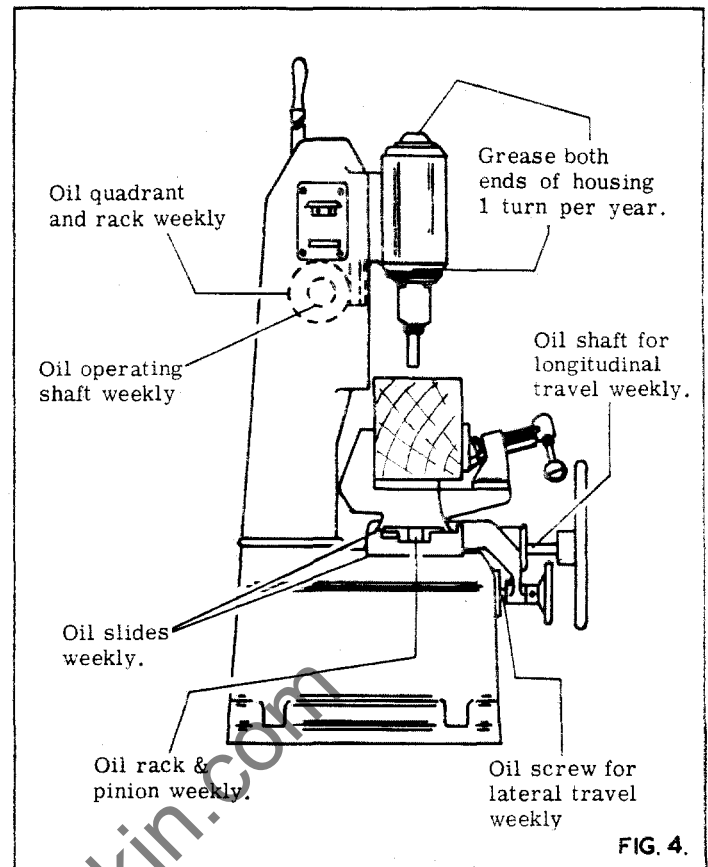


FIG. 4.

## LUBRICATION

It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting.

TYPE OF OIL RECOMMENDED POWER EM 125  
TYPE OF GREASE RECOMMENDED SHELL ALVANIA 3.

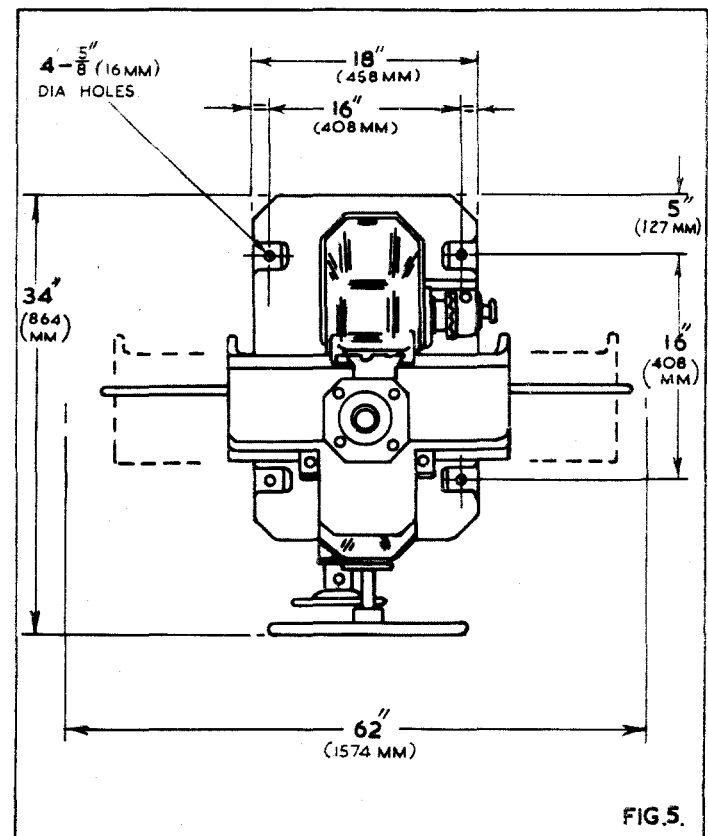
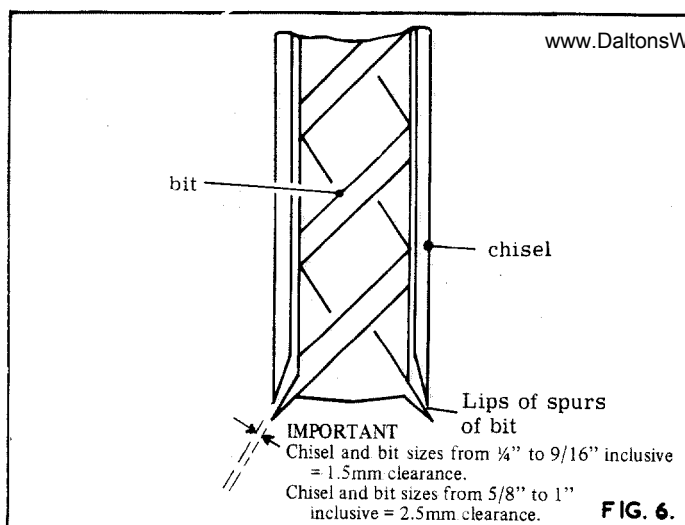


FIG. 5.

## FOUNDATION

See fig. 5 for bolt positions and clearances required. When installing the machine level the table by packing under the base

Foundation bolts are not supplied with the machine except by special order.



**MORTISING, HOW TO SET CHISEL**

The lips or spurs of the bit should not be allowed to touch the cutting edge of the chisel but should be set as shown in fig. 6, so that the bit cuts before the chisel.

The bit is held in the machine spindle by means of the hollow set screw "A", in fig 7. The bore of the spindle is  $\frac{1}{2}$ " (12.7 mm) and the machine is supplied with bushes so that all sizes of bits can be fit up to the maximum size required for 1" (25.4 mm) square chisel.

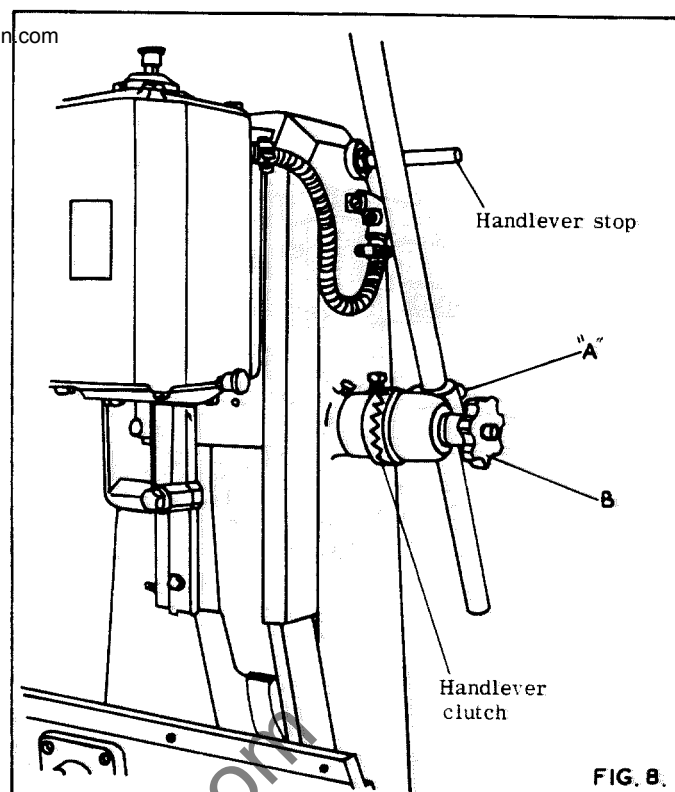
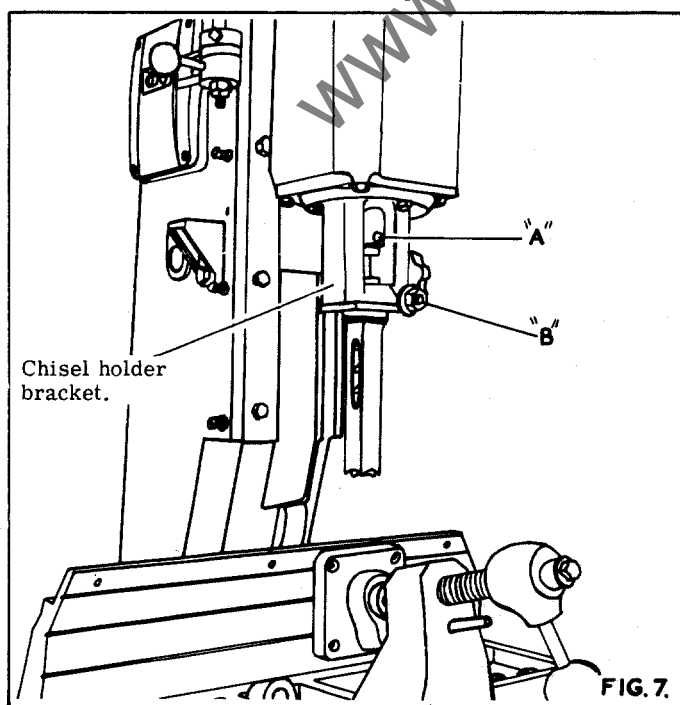
The chisel is held in a special bracket below the machine spindle and is locked in position by means of the hexagon nut "B", in fig 7. The bore of the bracket is  $1 \frac{3}{8}$ " (35 mm) and a set of bushes is supplied so that all sizes of chisel can be used up to a maximum size of 1" (25.4 mm) square.

To set the chisel correctly, select the bush required and fit bush to chisel, push the chisel complete with bush into the chisel holder bracket until the shoulder comes into contact with the chisel bracket. The chisel should also be positioned square to the rear of the table. When correctly positioned lock securely in position by means of the hexagon nut "B".

Position the bit so that the lips protrude below the chisel points, see fig. 6, and lock the bit tightly in position. Care should be taken to ensure that the bit is securely locked so that it cannot be forced against the cutting edge of the chisel resulting in a fractured tool.

Do not jerk the tool into the work but give steady pressure. Withdraw the tool occasionally from the work to allow the bit to clear itself of chips.

The maximum chisel which can be used in soft wood is 1" square (25.4 mm) and  $\frac{3}{4}$ " (19 mm) square in hardwood.



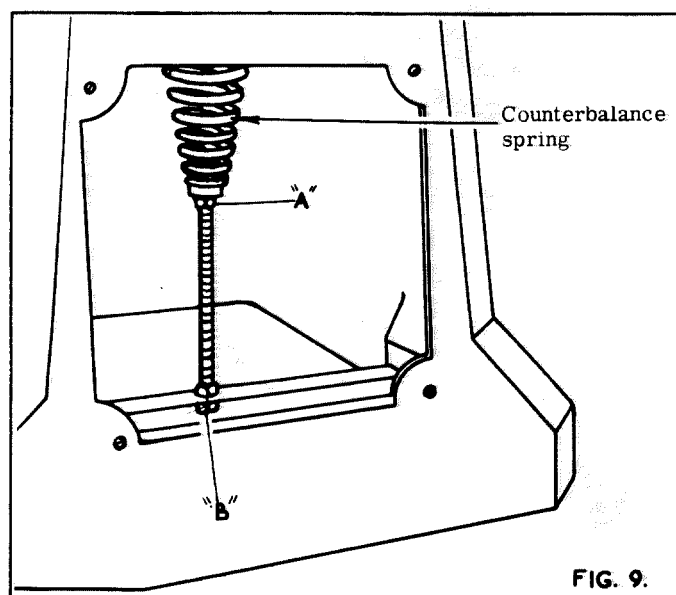
**FIG. 8.**

#### **HANDLEVER**

The handlever to the right of the machine is used to control the movement of the head. The handlever is provided with dual adjustment. Firstly to obtain the correct leverage the square head bolt "A" in fig 8, should be loosened and the lever adjusted through the boss until the correct leverage is obtained. When set relock bolt "A".

Secondly unnecessary movement of the head after the chisel has cleared the work can be eliminated by releasing the plastic handwheel "B" and adjusting the clutch to the required position. Finally secure the clutch by tightening handwheel "B".

A stop is provided to the handlever which allows the handlever to return to one position only. This in turn restricts the movement of the head depending on the positioning of the clutch.



**FIG. 9.**

#### **COUNTERBALANCE.**

The mortising head is counterbalanced by means of a spring connected by a chain to a cam on the handlever shaft. The tension of this spring is set for normal counterbalancing at the works but may be reduced or increased by adjusting nut "B" shown in fig. 9. The lock nut "A" should be secured when desired tension has been given.

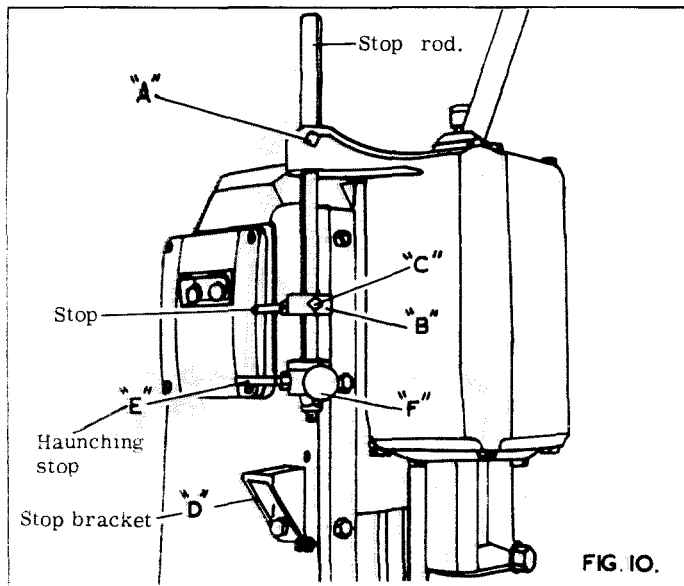


FIG. 10.

#### DEPTH STOP.

A stop to control the travel of the head is fitted to the left hand side of the head stock. Also incorporated on the stop bar is a haunching stop. The stop bar is locked in the headstock by means of the square head bolt "A" in fig 10. The sliding collar "B" is locked on the stop bar by the square head bolt "C". The stop on the collar hits against the stop bracket "D". This stop controls the depth of the mortise.

The swivelling stop "E" has two positions one where it strikes on the stop bracket "D" and one where it clears the stop bracket and allows the stop on the sliding collar to strike the stop bracket. The swivelling stop is adjusted by the handle "F". Thus the swivelling stop also controls the stroke of the head allowing haunched mortisers to be cut.

Stop rods are provided on the table to control the length of the mortise.

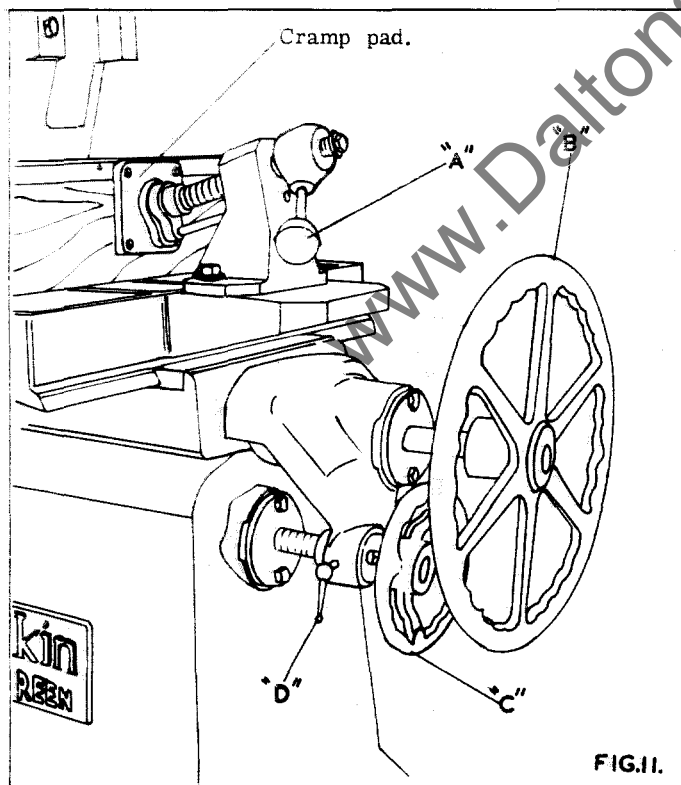


FIG. 11.

#### WORK CRAMP.

The work cramp has 3 positions on the machine table allowing a maximum width of timber of 8" (203 mm) between the cramp face and the rear of the table.

The cramp is controlled by the lever "A" in fig. 11.

The cramp face is drilled to receive a wooden pad to prevent possible marking of the workpiece.

#### TABLE CONTROLS.

The table has both longitudinal and lateral movements. The longitudinal movement is controlled by means of handwheel "B" in fig. 11. and has a maximum movement of 19" (482 mm). The table has positive stops in the side which can be set to control the length of mortise to be cut.

The lateral movement is controlled by means of the handwheel "C" and has a maximum movement of 4" (101.6 mm). The table can be locked in position laterally by means of the ball lever screw "D".

#### BORING

The maximum diameter of boring bit is 2" (50.8mm) dia and the maximum diameter of all shanks is  $\frac{1}{2}$ " (12.7 mm)

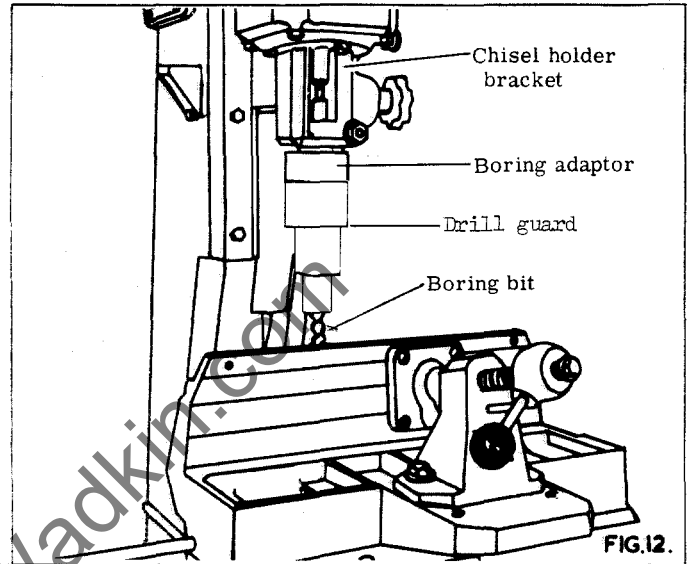


FIG. 12.

\* NOTE :- Always use Drill guard when boring.

This method is used for quick conversion. The adaptor consists of an inner spindle whose shank fits into the machine spindle. This spindle runs through a bearing in a housing and is secured in the chisel holder bracket. The adaptor is fitted to the machine in an identical manner to that of a chisel and is shown in position in fig 12. Care should be taken to ensure that the adaptor is securely in position, both in the chisel holder bracket and machine spindle before use.

The spindle of the adaptor is bored  $\frac{1}{2}$ " dia and accepts the standard chisel bushes as supplied with the machine.

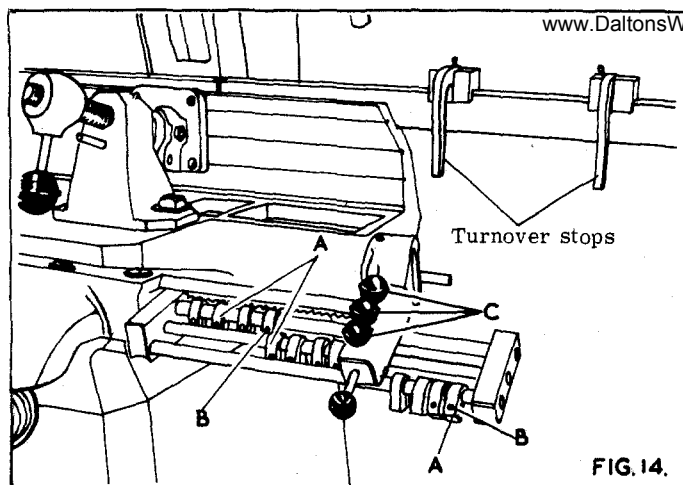


FIG. 14.

#### SETTING OUT ATTACHMENT & TURRET STOP (EXTRA)

The machine can be supplied with a setting out attachment and turret stop for rapid and accurate mortising or boring on short or long runs, as shown in Fig. 14.

The setting out attachment consists of steel angle stop bars fitted to the rear of the mortiser table on either or both sides of the table. A number of adjustable turnover stops are fitted to these stop bars and are adjustable throughout the full length by means of a ball lever screw.

The turret stop consists of short circular stop bars extended out to the right and are attached to the intermediate cross slide. Each of the three stop bars are fitted with four adjustable collars "A", which can be locked in any position, by means of the hexagon head bolt "B". The necessary spanner is provided. Three spring loaded stops "C" attached to the end of the table locate against the adjustable collars "A".

The turnover stops on either or both sides of the table are set to position the mortise in relation to the end of the timber whilst the spring loaded stop "C" and adjustable collars "A" control the length of the mortise to be cut.

Thus the combination of these two sets of stop bars permits a wide choice of accurately dimensioned and located mortises to be cut and haunched without need for slow and laborious marking out.

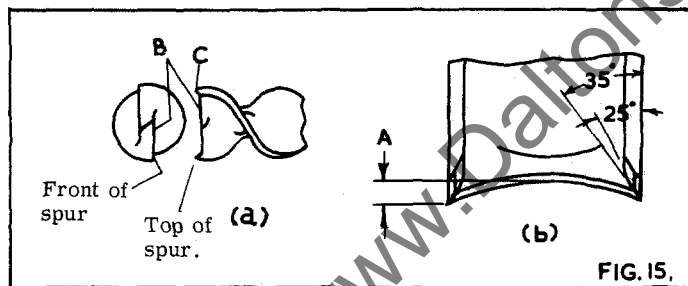


FIG. 15.

#### SHARPENING SQUARE CHISELS AND BITS

This chisel must be sharpened on the inside only and the cutting edges should be shaped to give a curve, as shown in fig. 15 (b) and maintained in shape as new. The bevels of the cutting edges must meet exactly at the corners. The depth "A" i.e. the distance from the corner point to the curve at the centre should be about one-eighth the diameter of the size of the chisel. The cutting edges must be as short as possible and fitted to an angle of about  $35^\circ$ , as shown in fig. 15 (b). The angle behind the cutting edge must then taper off at an angle of  $25^\circ$ . It is recommended that the special tool which can be supplied should be used to ensure the correct angle on all four cutting edges of the chisel.

It is most important that the outside of the chisel is never filed as this will reduce the size of the mortise and tend to bind in the timber.

The bit is sharpened by filing above the cutting edges "B", keeping the file at an angle of  $15^\circ$ . They must be kept in a straight line with the inside points extending past the centre as shown. Sharpen the spurs "C" on the top and front only never on the outside. Keep them in line with the cutting edges "B".

When a bit has been worn away by frequent resharpening replace it by a new one. Using a short bit may lead to the chisel being split at the cutting edges. Use a file of very fine grade for sharpening both chisels and bits.

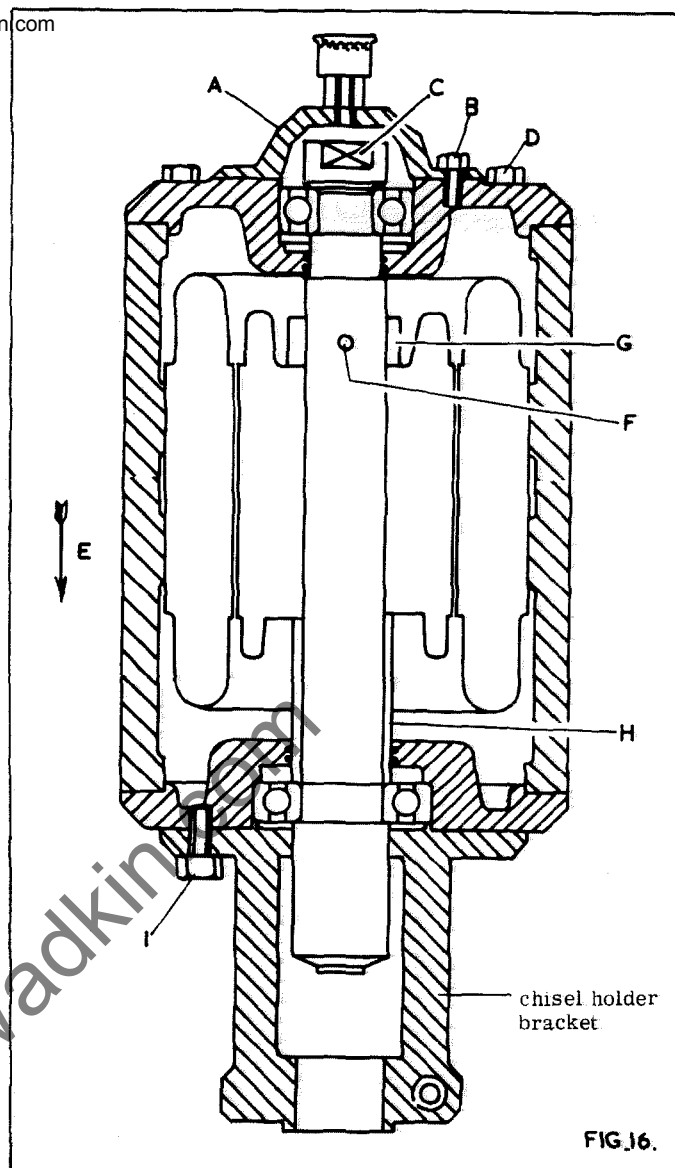


FIG. 16.

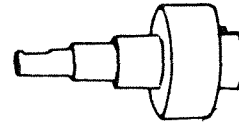
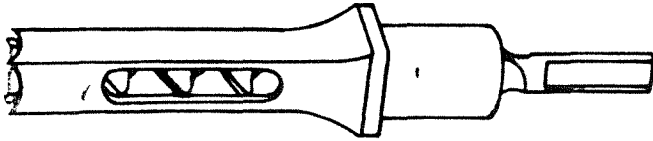
#### HOW TO CHANGE BEARINGS

To remove the spindle from the machine, so that the bearings can be renewed the undermentioned procedure should be followed:-

1. Isolate the machine electrically.
2. Remove the top dust cap "A" in fig. 16 by removing the two hexagon head bolts "B".
3. Remove locknut "C" (right hand thread) from the top of the machine spindle.
4. Remove the 4 hexagon head bolts "D", securing the top bearing housing to the motor carcass.
5. Remove the 4 hexagon head bolts, securing the bottom bearing housing to the motor carcass. Care should be taken to support the machine spindle when removing bolts. The complete spindle assembly can now be removed in the direction of arrow "E". Care should also be taken not to damage the threads on the spindle end.
6. The top bearing housing can now be removed from the motor carcass and the bearing removed and replaced by the new bearing.
7. The spindle assembly which has been removed can now be dismantled on a bench.
8. Remove the taper pin "F" securing the collar "G" to the spindle.
9. Remove the rotor from the spindle and the rotor key. Slide off the distance piece "H".
10. Remove the 3 hexagon head bolts "I" securing the chisel holder bracket to the bottom bearing housing.
11. Drive spindle from the bottom bearing housing in the direction of arrow "E". The bearing may come out with the spindle or remain in the bearing housing, but in either case can be readily removed.

To re-assemble the head unit reverse the above procedure taking care to ensure that no dirt or grit enters the bearings.

Before running the machine after the bearings have been renewed always ensure they have been greased.

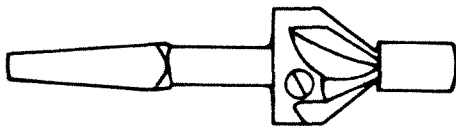


### HOLLOW MORTISE CHISELS AND BITS

The standard sizes of tools which can be supplied to order are as listed below:-

To cut square	$\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"
Length of chisel blade.	4"	4"	4"	$6\frac{1}{2}$ "	$6\frac{1}{2}$ "	$6\frac{1}{2}$ "	$6\frac{1}{2}$ "
Dia of bit shank							
Dia of chisel shank							

The adaptor illustrated above is to convert the machine quickly to accept boring bits up to 2" (50 mm) dia, with  $\frac{1}{2}$ " dia shanks. This is desirable but not essential equipment for boring operations.



### SHARPENERS FOR HOLLOW MORTISE CHISELS

The tool illustrated above, has been produced to enable mortise chisels to be kept correctly sharpened. It is for use in an ordinary Joiners brace and is mounted centrally with the axis of the chisel by means of a pilot which fits the bore of the chisel. This ensures that all four cutting edges are sharpened to the correct angle. The corners only require finishing off sharp with a file. The sharpeners are available in three sizes with interchangeable loose pilots for each size to suit different chisels.

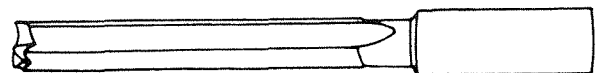
No. 1 Set.	$\frac{1}{4}$ " to $\frac{3}{8}$ " chisel with 3 pilots
No. 2. Set	$\frac{3}{8}$ " to $1\frac{1}{16}$ " chisel with 5 pilots.
No. 3. Set	$\frac{3}{4}$ " to 1" chisel with 3 pilots.

Also available are sharpeners as shown above but with fixed pilots, the range of these are  $\frac{1}{4}$ " to 1" rising in increments of  $\frac{1}{16}$ ".



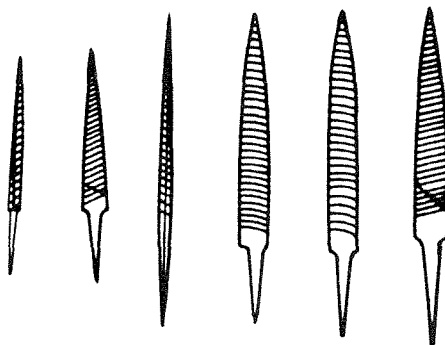
Jennings bits:- These are available in the sizes shown below they all have  $\frac{1}{2}$ " dia shank, 2" (50 mm) long

$\frac{1}{4}$ ",  $\frac{5}{16}$ ",  $\frac{3}{8}$ ",  $\frac{7}{16}$ ",  $\frac{1}{2}$ ",  $\frac{9}{16}$ ",  $\frac{5}{8}$ ",  $\frac{11}{16}$ ",  $\frac{3}{4}$ ",  $\frac{13}{16}$ ",  $\frac{7}{8}$ ",  $\frac{15}{16}$ ", 1", 1.1/8", 1.1/4", 1.3/8", 1.1/2", 1.5/8", 1.3/4", 1.7/8", 2"



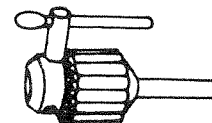
Three wing boring and slotting bits:- all bits have  $\frac{1}{2}$ " dia shanks.

$\frac{1}{8}$ ",  $\frac{3}{16}$ ",  $\frac{1}{4}$ ",  $\frac{5}{16}$ ",  $\frac{3}{8}$ ",  $\frac{7}{16}$ ",  $\frac{1}{2}$ ",  $\frac{9}{16}$ ",  $\frac{5}{8}$ ",  $\frac{11}{16}$ ",  $\frac{3}{4}$ ",  $\frac{13}{16}$ ",  $\frac{7}{8}$ ",  $\frac{15}{16}$ ", 1".

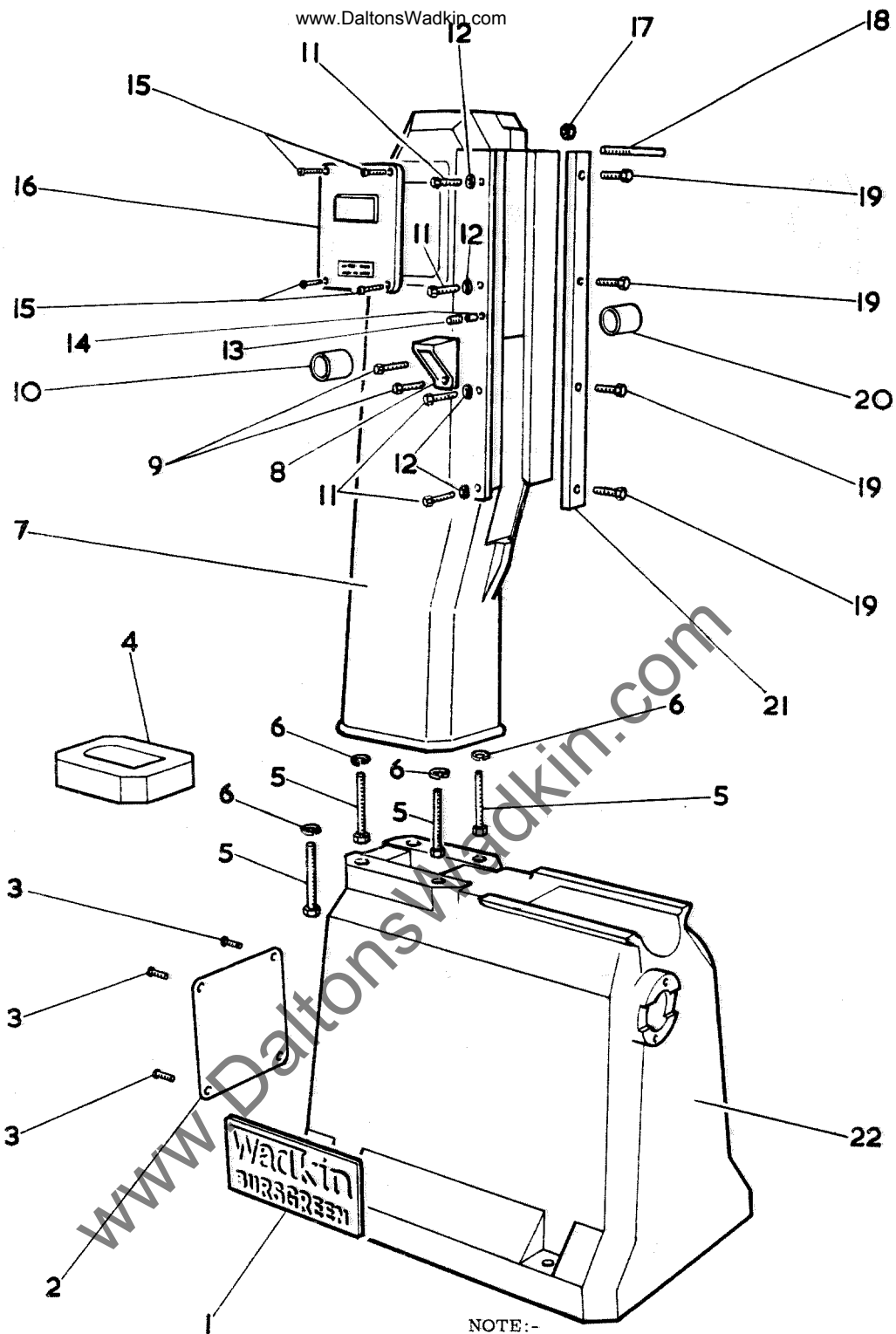


### FILES FOR MORTISE CHISELS AND BITS

This set of special files are recommended for sharpening the square chisel and bits. They are of very fine grade and shaped to efficiently sharpen the corners of chisels after use of the sharpeners, illustrated above.



A three jaw drill chuck of  $\frac{1}{2}$ " (12.7 mm) capacity as illustrated above, can be supplied for use with this machine. A special dustcap for boring has to be used in conjunction with the chuck unless the special boring adaptor is fitted.



## TRUNK ASSEMBLY

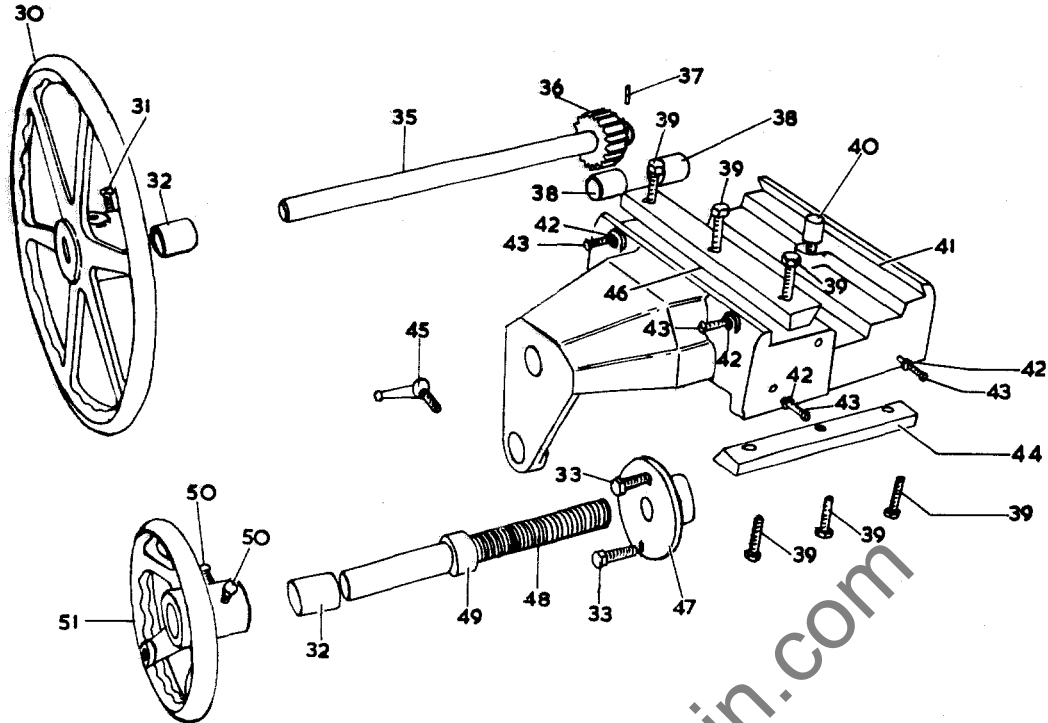
NOTE:-

When ordering replacement parts quote part no. and serial number of the machine.

Ref. No.	Part No.	No. Off	Description	Ref. No.	Part No.	No. Off	Description
1	B-SK-1096	1	Nameplate	11		4	M10 x 30 long hex head bolt
2	B-1014/87	1	Backplate for base	12		4	M10 Nut
3		4	M8 x 10 long round head screw	13		1	M10 x 12 long socket set screw
4	B-1014/86	1	Trunk packing piece (Special)	14	A-1014/82	1	Brass bot for head
5		4	M16 x 50 long hexagon head bolt	15		4	M6 x 20 long cheese head screw
		4	M16 x 100 long hexagon head bolt (Special when packing piece is fitted)	16	44ADS/FO A.T.3	1	M.E.M. Starter (3 phase, 50 cycles)
6		4	16 spring washer			1	Brook Starter (3 phase, and 1 phase, 60 cycles)
7	D-1014M/2	1	Trunk		82ADS/FO	1	MEM starter (1 phase, 50 cycles)
8	A-1014/101	1	Stop bracket	17		1	M16 nut
9		2	M10 x 25 long hexagon head bolt	18	A-1014M/28	1	Handlever stop
10		1	1" i/d x 1 1/4" o/d x 1 1/2" long oilite bush	19		4	M10 x 40 long hexagon head bolt
				20		1	1 1/2" i/d x 1 1/4" o/d x 2" long oilite
				21	B-1014/31	1	Adjusting strip for trunk
				22	E-1014/1	1	Base



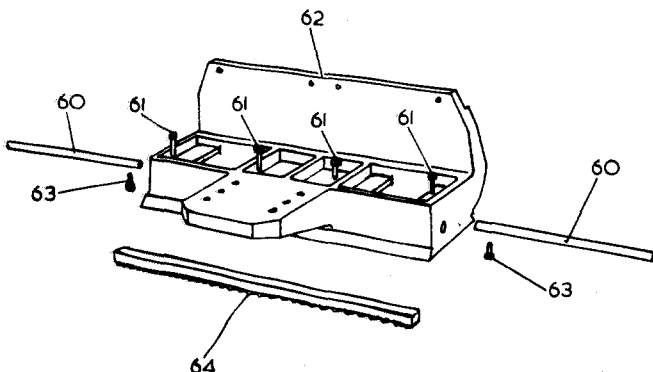
8.



### INTERMEDIATE SLIDE ASSEMBLY

Ref. No.	Part No.	No. Off	Description	Ref. No.	Part No.	No. Off	Description
30	B-1014M/18	1	15" dia handwheel	41	C-1014M/200	1	Intermediate slide for table
31		2	M10 x 20 long dog point screw	42		4	M6 locknut
32		2	1" i/d x 1 1/2" o/d x 1 1/2" long oilite bush	43		4	M6 x 30 long hex head bolt
33		2	M10 x 25 long hexagon head bolt	44	A-1014/37A	1	Vee strip for lateral slide
35	A-1014/24	1	Shaft for longitudinal travel	45	B-S-1-B	1	3/8" whit ball lever screw
36	A-1014/41	1	Pinion for longitudinal travel	46	A-1014/37B	1	Vee strip for longitudinal slide
37		1	No. 3 taper pin	47	A-1014/13	1	Nut for cross travel
38		2	1" i/d x 1 1/2" o/d x 3/4" long oilite bush	48	A-1014/25	1	Shaft for lateral travel
39		6	M10 x 30 long hexagon head bolt	49	A-1014/40	1	Collar for lateral shaft
40	A-1014M/39	1	Table stop peg	50		2	M10 x 20 long dog point screw
				51	B-1014M/17	1	7" dia dished handwheel

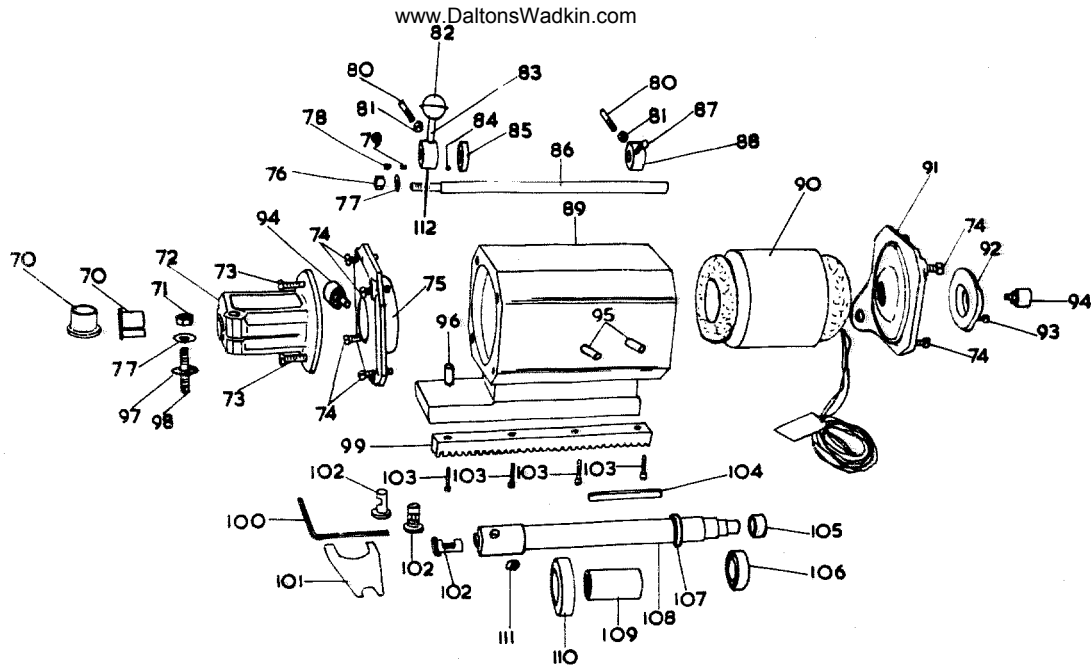
### TABLE ASSEMBLY



Ref. No.	Part No.	No. Off	Description
60	A-1014/38	2	Longitudinal stop rod
61		4	M10 x 50 long hexagon head bolt
62	D-1014M/4	1	Sliding Table
63		2	M10 x 20 long hexagon head bolt
64	B-1014M/33	1	Rack for table

#### NOTE:-

When ordering replacement parts quote part no. and serial number of the machine.



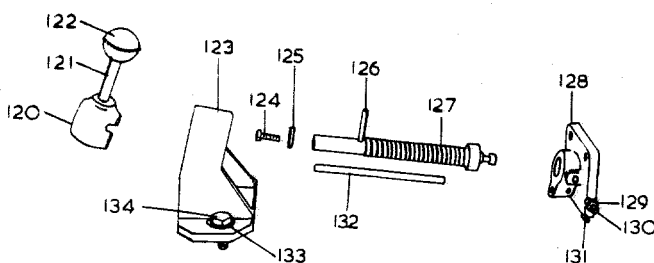
## HEAD ASSEMBLY

Ref. No.	Part No.	No. Off	Description	Ref. No.	Part No.	No. Off	Description
70	A-1014/42	2	Bush for chisel holder (1-13/16" bore 1 - 1.13/16" bore) (Special for Canadian machines 1-5/8" bore. 1 - 3/4" bore, 1 - 1.1/8" bore)	91	C-1014M/95	1	Top endplate and stop carrier
71		1	M12 nut	92	A-1014/9	1	Dust cap
72	C-1014M/6	1	Chisel Holder	93		2	M6 x 20 long hexagon head bolt
73		3	M10 x 25 long hexagon head bolt	94		2	1/8" gas kingfisher grease stautier
74		8	M10 x 30 long hexagon head bolt	95	A-1014/83	2	Stator retaining pip screw
75	B-1014M/7	1	Bottom endplate	96		1	8 x 30 long fluted dowel
76		1	M12 aerotight nut	97		1	3/8" B.S.F. Washer
77		2	12 washer	98		1	M12 x 60 long stud
78		1	M10 x 10 long hollow set screw	99	B-1014/32	1	Rack for motor
79	A-1014/97	1	Haunch stop location spring	100		1	1/4" A/F equal arm hexagon wrench
80	A-1014M/170	2	Stop pin	101	A-1014/57	1	Key for Bushes
81		2	M10 locknut	102	A-1014M/181	3	Adaptor bushes for augers (1-3/16" bore, 1 - 1/4" bore, 1-3/8" bore) Special for Canadian machines
82		1	1" dia plastic ball M10	103		4	1-3/16" bore, 1 - 1/4" bore, 1-19/64" bore)
83	A-1014M/103	1	Handle for haunch stop collar	104		1	M6 x 30 long socket cap screw
84		1	S.K.F. 5/16" dia steel ball	105	A-1014/62	1	5/16" wide x 4 1/2" long key
85	A-1014M/98	1	Haunch stop location collar	106	L.S. 9	1	Nut for spindle
86	A-1014M/102	1	Column for stops	107	A-1014/30	1	Hoffmann bearing
87		2	M10 x 20 long hex head bolt	108	B-1014/23	1	Rotor locking collar
88	A-1014M/99	1	Adjustable stop collar	109	A-1014/64	1	Spindle
89	C-1014M/5	1	Motor Carcase	110	L.S. 12	1	Distance piece for spindle
90		1	Brook rotor and stator unit, frame 22/13, 2H.P., 3,000 r.p.m. (3 phase, 50 cycles)	111		1	Hoffman bearing
		1	Brook rotor and stator unit, frame 22/18 2H.P. 3,600 r.p.m. (3 phase, 60 cycles)	112	A-1014M/104	1	1/4" gas x 1/2" long hollow set screw
		1	Brook rotor and stator unit, frame 22/18 1 H.P. 3000 r.p.m. (1 phase 50 cycles)				Haunch stop collar
		1	Brook rotor and stator unit, frame 22/18, 1 H.P. 3,600 r.p.m. (1 phase 60 cycles)				

NOTE:-

When ordering replacement parts quote  
part no. and serial number of the machine.

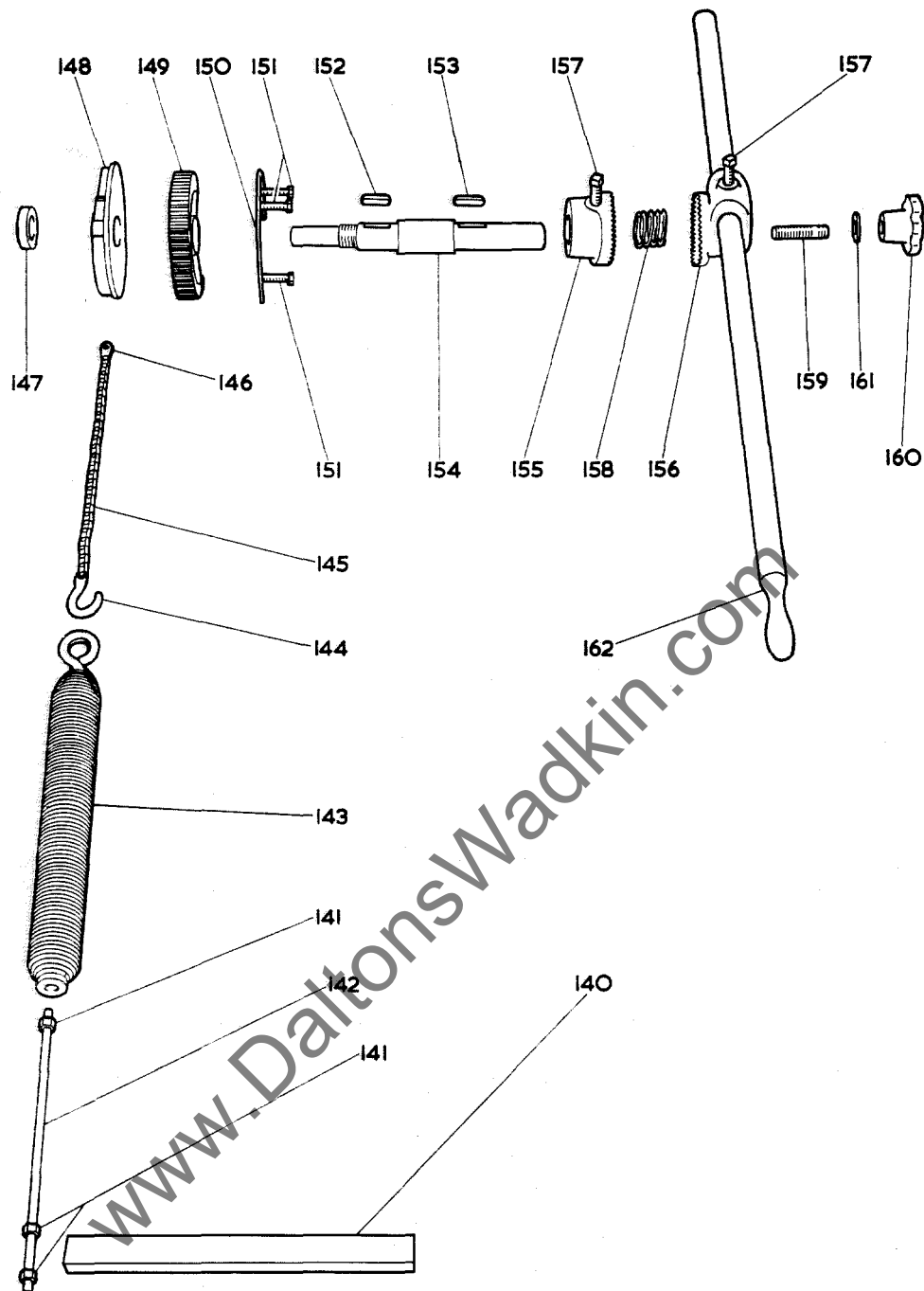
## CLAMP ASSEMBLY



Ref. No.	Part No.	No. Off	Description
120	A-1014M/19	1	Boss for clamp screw lever
121	A-1014M/36	1	Lever for clamp
122	Patt No. 28	1	1 1/4" dia plastic ball M12
123	B-1014/10	1	Clamping screw bracket
124		1	M10 x 20 long hexagon head bolt
125	A-1014/72	1	Limit washer for clamp screw
126		1	5/16" dia x 2" long fluted dowel (Flutes central)
127	A-1014M/34	1	Clamp screw
128	B-1014M/11	1	Clamp plate
129		1	M10 nut
130	A-1014M/65	1	Dogpoint screw for clamp
131		1	M10 x 20 long hollow set screw
132	A-1014/35	1	Clamp guide rod
133		2	12 washer
134		2	M12 x 30 long hexagon head bolt

NOTE:-

When ordering replacement parts quote  
part no. and serial number of the machine.



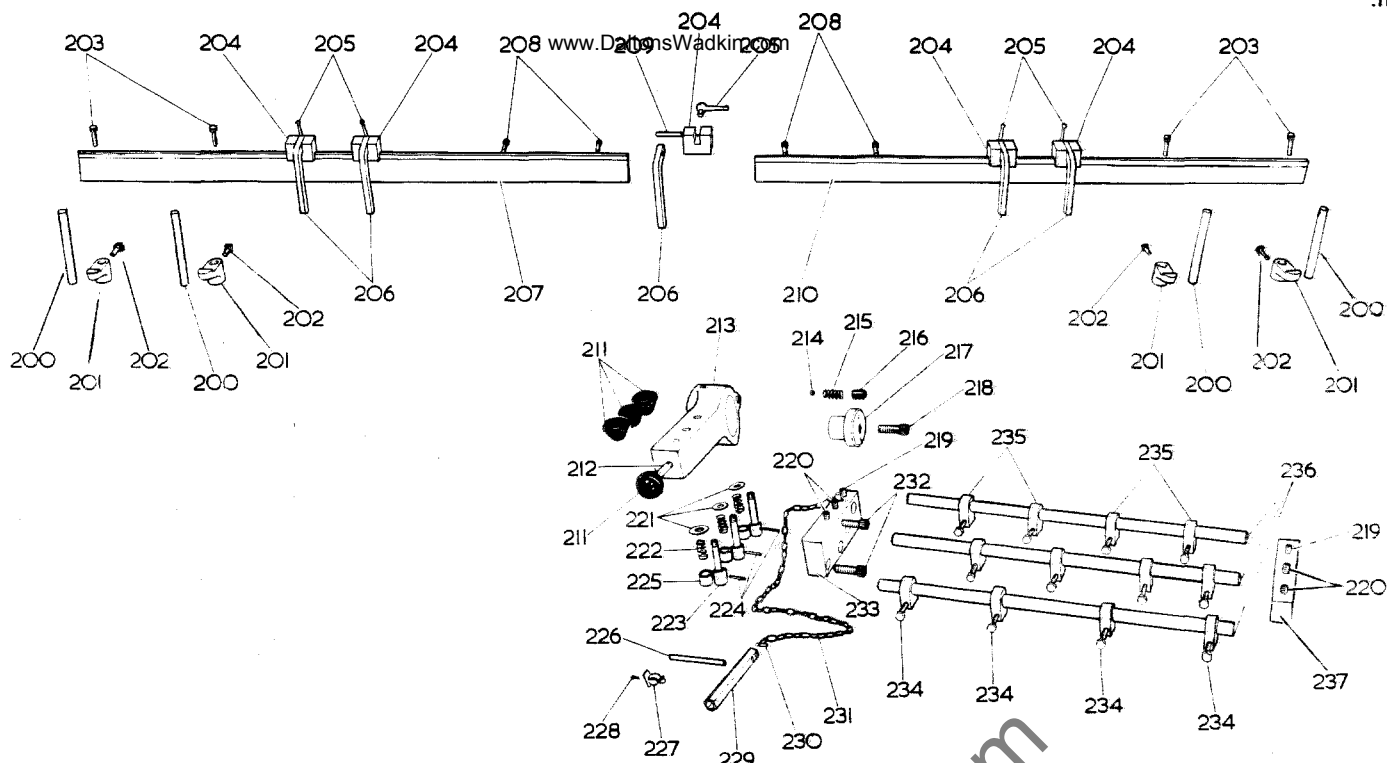
## HANDLEVER SHAFT ASSEMBLY

NOTE:-

When ordering replacement parts quote part no. and serial number of the machine.

Ref. No.	Part No.	No. off	Description
140	B-1014/58	1	Suspension bar
141		3	M10 whit nut
142	A-1014M/92	1	Suspension adjustment rod
143	B-1014M/46	1	Balance Spring
144	A-1014/45	1	Hook for chain
145		26	110044 chain
		rivets	
146	A-1014M/44	1	Link screw for chain
147	A-1024/44	1	Spindle locknut
148	C-1014M/15	1	Cam for counterbalance chain
149	B-1014M/14	1	Quadrant for head
150	B-1014/16	1	Quadrant plate
151		3	M8 x 12 long hexagon head bolts

Ref No.	Part No.	No. Off	Description
152		1	3/8" wide x 1 1/2" long key
153		1	3/8" wide x 1 3/4" long key
154	B-1014M/26	1	Handlever shaft
155	B-1014M/21	1	Inside clutch
156	B-1014M/22	1	Outside clutch
157		2	M12 x 30 long hexagon head bolt
158	A-1014/47	1	Spring for clutch
159		1	M16 x 90 long stud
160	Patt. no. 14	1	3"dia. plastic handwheel, M16T.R.T.
161		1	16 washer
162	B-1061/66	1	Handlever



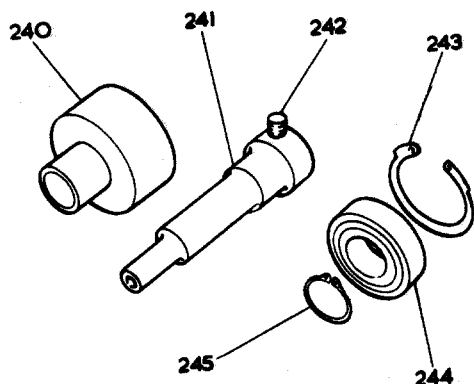
## SETTING OUT ATTACHMENT & TURRET STOP EXTRA

### NOTE:-

When ordering replacement parts quote part number and serial number of the machine.

REF. NO.	Part No.	No. Off	Description	Ref. No.	Part No.	No. Off	Description
200	A-1014M/117	4	Support Bar bracket	218		1	M16 whit x 35 long socket cap screw
201	B-1014M/20	4	Support brackets	219		1	M8 x 12 long hollow set screw
202		4	M10 x 20 long square head bolt	220		4	M8 x 20 long hollow set screw
203		4	M10 x 20 long socket cap screw	221		3	10 washer
204	A-1027/83	6	Turn over stop holder	222	A-1014/118	3	Spring for table stop plunger
205	B-S-1B	6	3/8" whit ball lever screw	223	A-1014M/108	3	Plungers for stop
206	B-1014M/106	6	Turn over stop	224		3	3 dia. x 20 long groverlok spring dowel
207	B-1014/107	1	Left hand stop bar for setting out attachment	225		3	10 I/D x 16 O/D x 20 long oilite bush
208		4	M8 x 25 long socket cap screw	226	A-1014/114	1	Handle for box spanner
209		6	8 dia. x 50 long hardened ground dowel	227		1	Terry's clip size No. 80/0
210	B-1014/107	1	Right hand stop bar for setting out attachment	228		1	1/8" fluted dowel
211		4	1" dia. x M10 spherical plastic knob	229	A-1014/115	1	Box spanner for stops
212	A-1014M/103	1	Handle for stop bracket	230	A-1014/116	1	Pin for box spanner chain
213	B-1014M/96	1	Plunger stop bracket	231		2	18" long Oval link chain
214		1	SKF 3/8" dia. steel ball	232		1	M10 x 30 long socket cap screw
215	A-1810/74	1	Location spring for plunger stop bracket	233	B-1014M/105	1	Stop bar and plate
216		1	M12 x 12 long hollow set screw	234	A-1014M/111	12	M6 x 25 long hexagon head bolt
217	A-1014M/109	1	Pivot pin for stop bracket	235	A-1014/110	3	Stopblock
				236	A-1014M/112	1	Stop bar tie plate
				237			

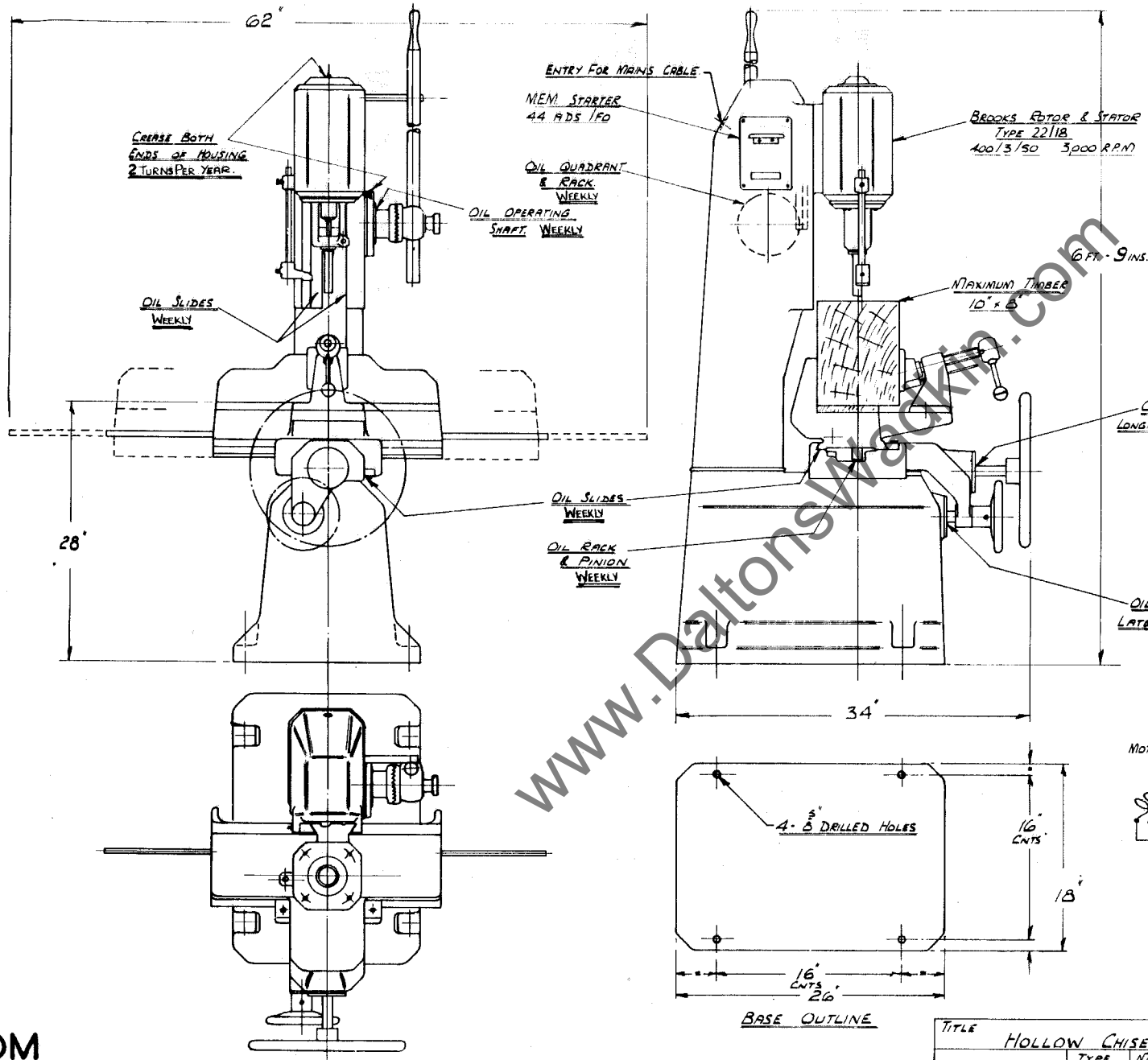
## QUICK CHANGE BORING ADAPTOR (EXTRA)



Ref No.	Part No.	No. Off	Description
240	A-1014/89	1	Boring attachment steel bearing housing
241	A-1014/88	1	Boring attachment extension spindle
242		1	1/4" gas x 1/2" long hollow set screw
243		1	62mm internal circlip
244	88506	1	SKF "Sealed for life" bearing
245		1	30mm external circlip

### NOTE:-

When ordering replacement parts quote part no. and serial number of the machine.

SPECIFICATION.

LARGEST CHISEL USED IN SOFT WOOD	= 1" SQUARE
LARGEST CHISEL USED IN HARDWOOD	= 3/4" SQUARE
SIZE OF TABLE	= 22" x 6"
CAPACITY OF TABLE	= 10" DEEP x 8" WIDE
HEIGHT TO TABLE	= 28"
LATERAL MOVEMENT OF TABLE	= 4"
LONGITUDINAL	= 19"
SPEED OF CHISEL SPINDLE	= 3,000 R.P.M.
HORSE POWER OF MOTOR	= 2 HP
GROSS WEIGHT	= 840 LBS.
NETT	= 672 LBS.
CASE SIZE	= 5'3" x 2'6" x 5'3"
CUBIC CAPACITY	= 43 CUFT.

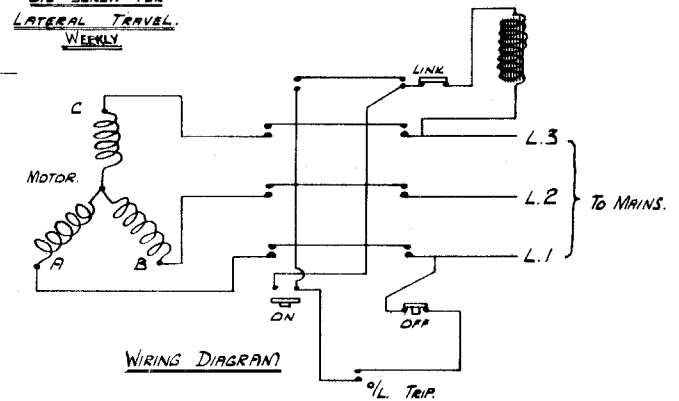
NOTE

OIL ALL MOVING PARTS WEEKLY  
 TYPE OF OIL ..... POWER EN 125  
 " " GREASE ..... SHELL ALVANIA 3

WHEN INSTALLING LEVEL TABLES BY  
 PACKING UNDER BASE

BEARINGS:-

1-LS 9 (HOFFMANN) 1-RLS 7 (S.K.F.) } OR EQUIVALENT  
 1-LS 12 ( " ) 1-RLS 10 ( " ) }



DM

TITLE HOLLOW CHISEL MORTISING M/C					BURSGREEN (DURHAM) LTD., FENCE HOUSES, CO. DURHAM.	
OUTLINE - DRG	TYPE DM	MOD" NOTES	QUANT PER M/C	DATE 10-11-52	DRG No.	
		ORDER No.	SCALE 1:8	DRAWN BY J.H.R.	C-10/4/FD.	

Chisels to be sharpened should be secured in vice and sharpened as follows:-

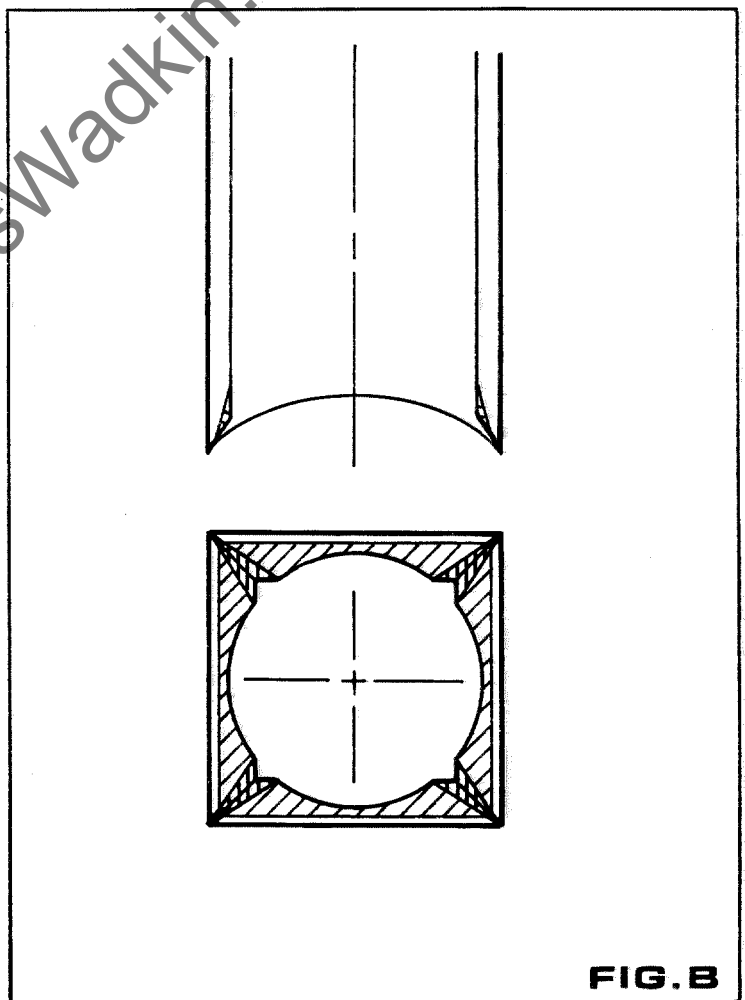
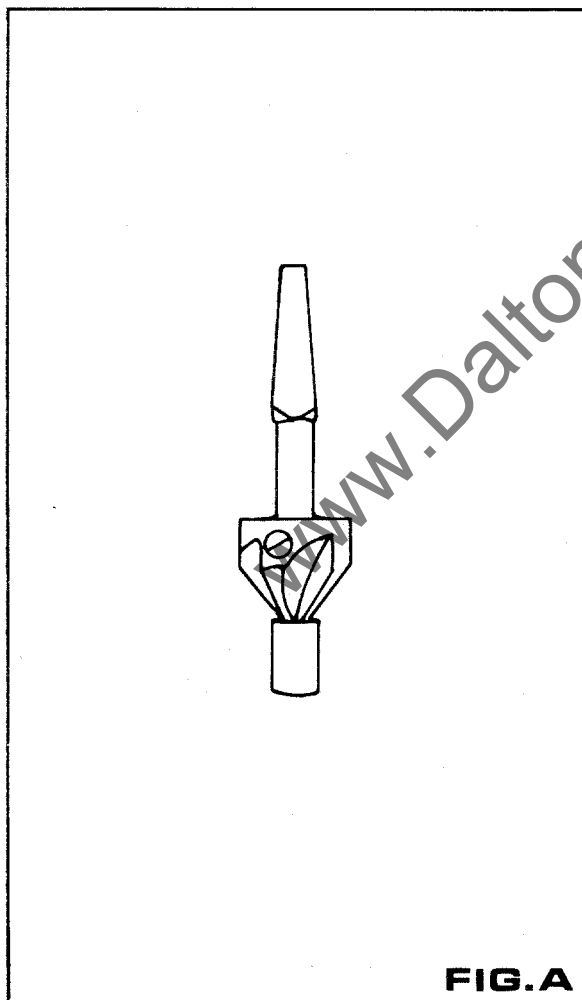
A sharpening tool FIG - A - has been produced to enable mortise chisels to be kept correctly sharpened. It is for use in an ordinary joiners brace and is maintained central with the axis of the chisel by means of a pilot which fits the bore of the chisel. This ensures that all four cutting edges are sharpened to the correct angle.

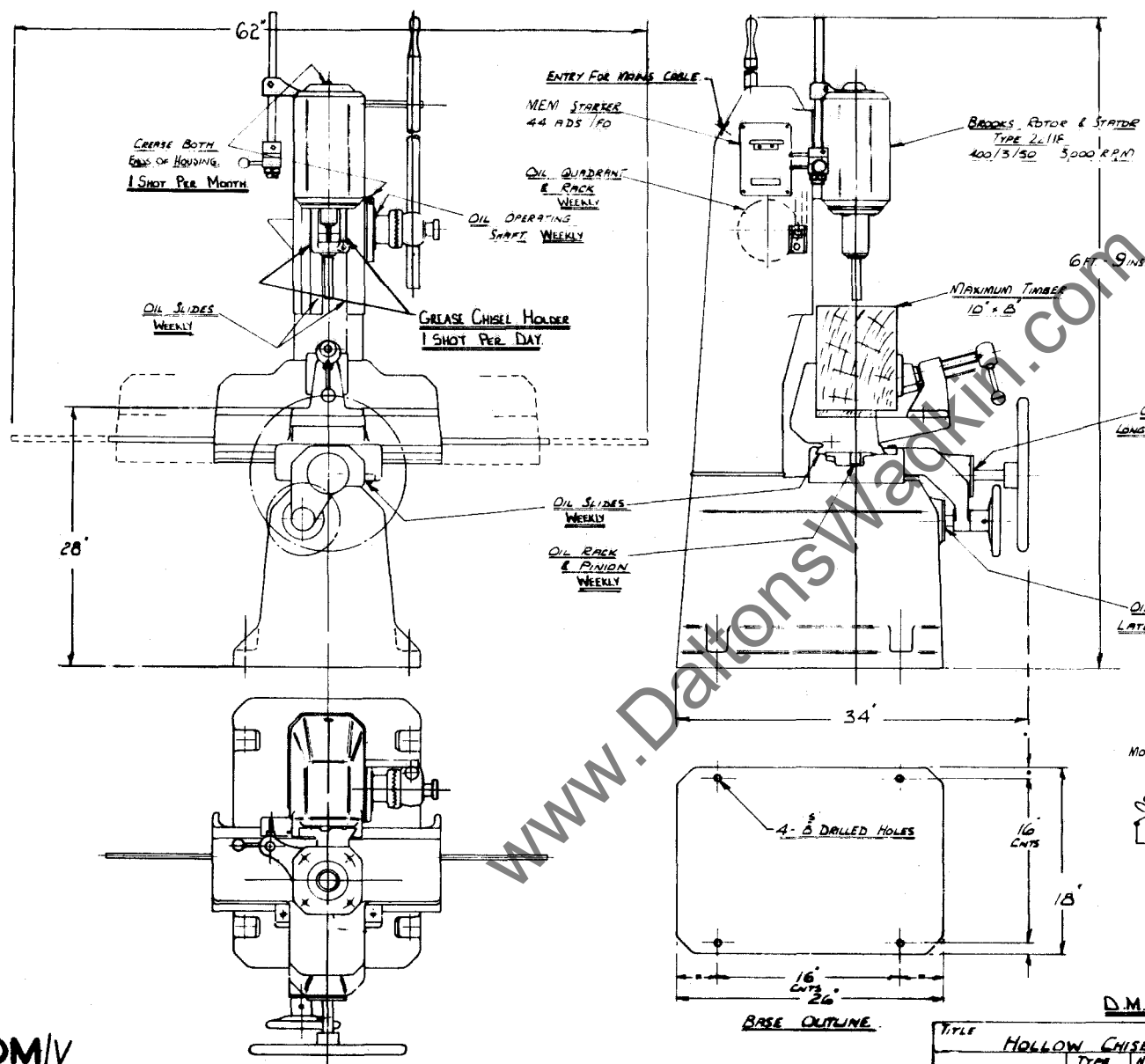
After using sharpening tool the shaded sections of the chisel as shown in FIG - B - may be filed back to ensure better penetration of the wood. NOTE:- It is most important that the outside of the chisel is never filed as this will reduce the mortise size and tend to bind in the timber.

Sharpeners are available in three sizes with interchangeable loose pilots for each size, to suit different chisels as follows:-

No. 1 SET	$\frac{1}{4}$ " to $\frac{3}{8}$ " chisel with 3 pilots.
No. 2 SET	$\frac{3}{8}$ " to $\frac{11}{16}$ " chisel with 5 pilots.
No. 3 SET	$\frac{3}{4}$ " to 1" chisel with 3 pilots.

Also available are sharpeners as shown above but with fixed pilots, the range of these are  $\frac{1}{4}$ " to 1" rising in increments of  $\frac{1}{16}$ ".



SPECIFICATION.

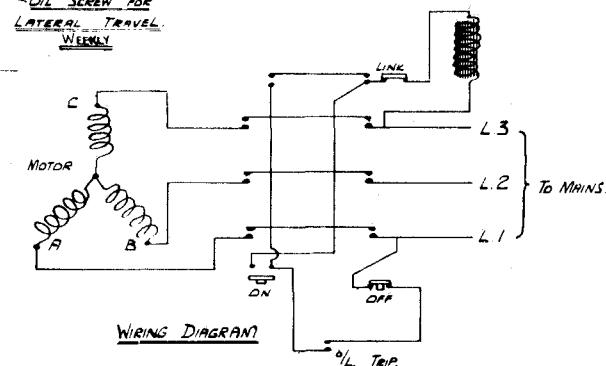
LARGEST CHISEL USED IN SOFT WOOD	1" SQUARE
LARGEST CHISEL USED IN HARDWOOD	3/4" SQUARE
SIZE OF TABLE	28" x 6"
CAPACITY OF TABLE	10" DEEP x 8" WIDE
HEIGHT TO TABLE	28"
LATERAL MOVEMENT OF TABLE	4"
LONGITUDINAL	15"
SPEED OF CHISEL SPINDLE	3,000 RPM
HORSE POWER OF MOTOR	2 HP
GROSS WEIGHT	840 LBS
NETT	672 LBS
CASE SIZE	5'3" x 2'6" x 5'3"
CUBIC CAPACITY	43 CU FT

NOTE

OIL ALL MOVING PARTS WEEKLY  
 TYPE OF OIL POWER EN 125  
 " GREASE SHELL ALVARIA 3  
 WHEN INSTALLING LEVEL TABLES BY  
 PACKING UNDER BASE

BEARINGS

- 1 SKF TAPER ROLLER BEARINGS 30205
- 1 SKF TAPER ROLLER BEARINGS 30307
- 1 FBC BALL BEARING 6205 FF



D.M. VIBRO

TITLE HOLLOW CHISEL MORTISING M/C				BURSGREEN (DURNAM) LTD. FENCE HOUSES, CO. DURHAM.	
OUTLINE DRG	TYPE DM/V	NOTES NONE	QUANT PER M/C 1	DATE 10-4-52	DRG No. C-1014/V/10
		ORDER NO.	SCALE 1:1	DRAWN BY J.H.R.	

DM/V

## DM/V HOLLOW CHISEL MORTISER WITH VIBRATORY HEAD

The mortising head consists of a built-in 1.5kw(2hp) motor which gives direct drive to the chisel unit. The motor is controlled by start and stop push buttons with no-volt and overload releases. Mounted in precision vee slideways the head unit is raised and lowered by means of a handlever through rack and pinion gearing in conjunction with a spring loaded cam which gives constant balance throughout the stroke. The handlever is adjustable for both angle and length to suit the application and operator.

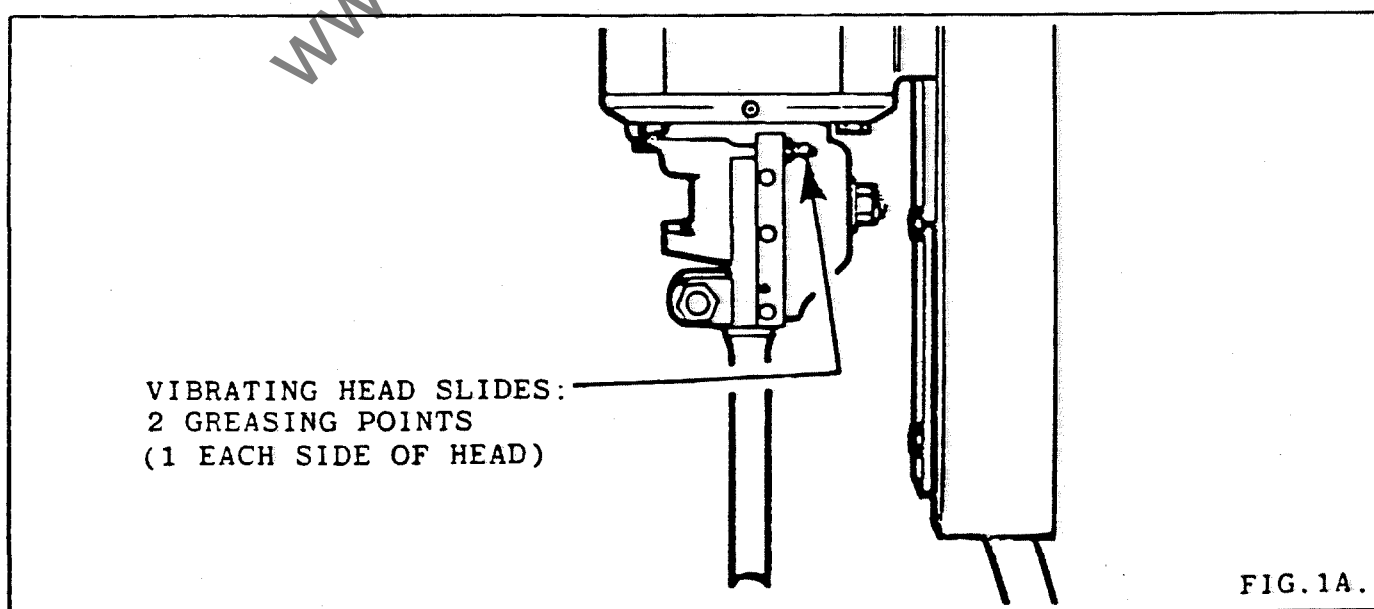
The head spindle, fitted with taper roller bearings which run in dust proof housings, is also fitted with a face cam at the lower end of the spindle. The chisel holder bracket consists of a precision vee slide secured to the lower end plate. A movable chisel holder is fitted which carries a cam follower. When load is applied to the chisel, the cam follower engages with the face cam and imparts a vertical vibration of approximately 100 cycles per second to the hollow chisel. The cam follower automatically disengages when the load is withdrawn from the handlever. The head unit will accept chisels up to 25mm sq. (1 in.sq.) which can be securely held in position by a split locking device.

An adjustable stop bar is fitted to regulate the depth of mortise and to enable haunching operations to be performed.

**IMPORTANT:-** The vibrating motion reduces the effort required to produce a mortise to one-third of that normally required on a conventional Hollow Chisel. It is not designed to enable working with blunt chisels. The use of blunt chisels not only loses the benefit of the vibrating action but also puts undue stress on the bearing and cam faces reducing the working life of the vibrating parts. It is therefore essential that chisels are kept sharp. (see instructions, page 12 of DM Instruction Manual to gain full benefit.)

### LUBRICATION.

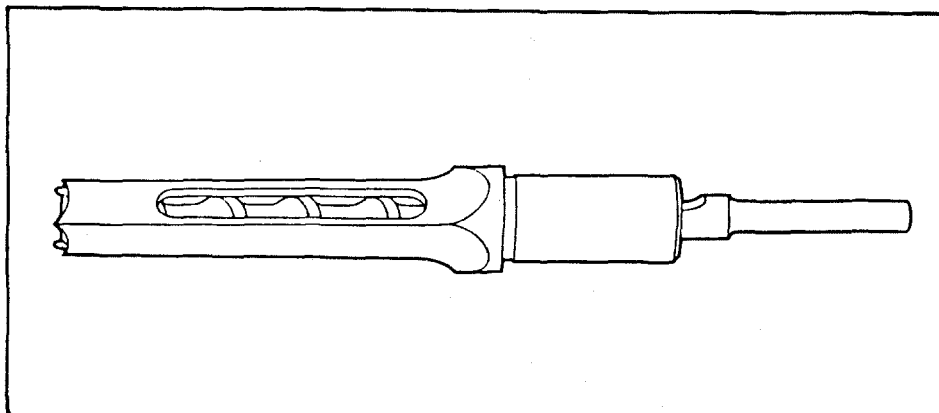
Grease vibrating head slides - 1 Shot per day  
(2 greasings points at rear of vibrating head, FIG.1A). For complete machine lubrication, see page 2 of DM Instruction Manual.





Application	APPROVED LUBRICANTS					
	Castrol	B.P.	Shell	Esso	Texaco/Caltex	Wadkin
Worm Boxes	ZN220	Energol CS320	Vitrea 320	Spartan EP220	Regal Oil 320	L2
General Lubrication	Magna 68	Energol HP68	Vitrea 68	Nuray	Ursa Oil P68	L4
Pneumatic Lubricators	Hyspin AWS32	Energol HL32	Tellus 37	Nuto H32	Rando Oil HD32	
Grease	Spheerol AP3	Energol L53	Alvania R3	Beacon 3	Regal Starfak Premium 3	L6
Brake Cables	Brake Cable grease	Energol L21M	Alvania R3	Esso Multi-purpose grease		

# HOLLOW SQUARE MORTICE CHISELS AND BITS



The Hollow Square Mortice Chisel is a carefully manufactured tool accurately ground to size and bored to receive a wood boring bit of special design. It has windows to allow instant ejection of wood chips and is sharpened at its cutting edge to ensure smooth cutting of the sides of the Mortice. The principle of operation of the chisel is that the bit cuts a hole just ahead of the chisel, the chisel finally taking out the corners and squaring the hole. Several passes quickly result in a cleanly cut mortice to the depth previously set on the depth setting attachment.

Wadkin can supply Chisels and Bits to suit most makes of morticing machines.

It is impossible to emphasise too strongly the correct setting, together with firm fixing in the machine of both chisel and bit. Should the bit be incorrectly set or slip up the chisel when in use, the side lips of the bit will rub on the chisel cutting edges resulting in the burning and spoiling of the bit and final breakage of the chisel.

## **Advice on correct use of Hollow Square Chisels and Bits**

**Correct setting of the bit in the Mortice Chisel is absolutely vital to the successful cutting of the tool and to ensure long life.**

Place the chisel into its socket in the attachment. Put a coin about 1/16" thick between the face of the socket and the shoulder of the chisel to prevent the chisel being pushed fully home, tighten down on the screw to hold the chisel in place. Now fit the bit into the drill chuck and push it as far as possible into the chisel and secure. Slacken off the screw holding the chisel, remove the coin, push the chisel fully home, again tightening down the screw.

This setting will allow sufficient clearance for the bit to run smoothly in the chisel and begin to cut just ahead of the chisel.

### **Care in Use**

Always ensure correct clearance between the chisel and bit. Check that chisel and bit are firmly held since in use should the bit move up the chisel the side lips will rub on the chisel causing burning of the bit and finally breakage of the chisel. Protect the chisel against accidental damage and place a piece of scrap wood underneath the timber when cutting through mortices. Place the bit back in its box or rack when not in use. Keep the bit and chisel sharp and use only the correct tools when sharpening. Never grind a chisel. Maintain its correct shape always. Never use the chisel beyond its effective depth. In resinous timbers make sure that chips are clearing.

Chisels in sizes 1/4" & 5/16" have a maximum effective mortice depth of 1 3/4".  
Chisels in sizes 3/8", 7/16", 1/2" & 9/16" have a maximum effective mortice depth of 3".  
Chisels in sizes 5/8" (long) & 1/2" (long) have a maximum effective mortice depth of 4".  
Chisels in sizes 3/8" upwards have a maximum effective mortice depth of 5 3/8".

