

Wadkin

INSTRUCTION MANUAL

Heavy Duty Spindle Moulder

Type BER 3

No. B505

HEAVY DUTY SPINDLE MOULDER

TYPE BER 3

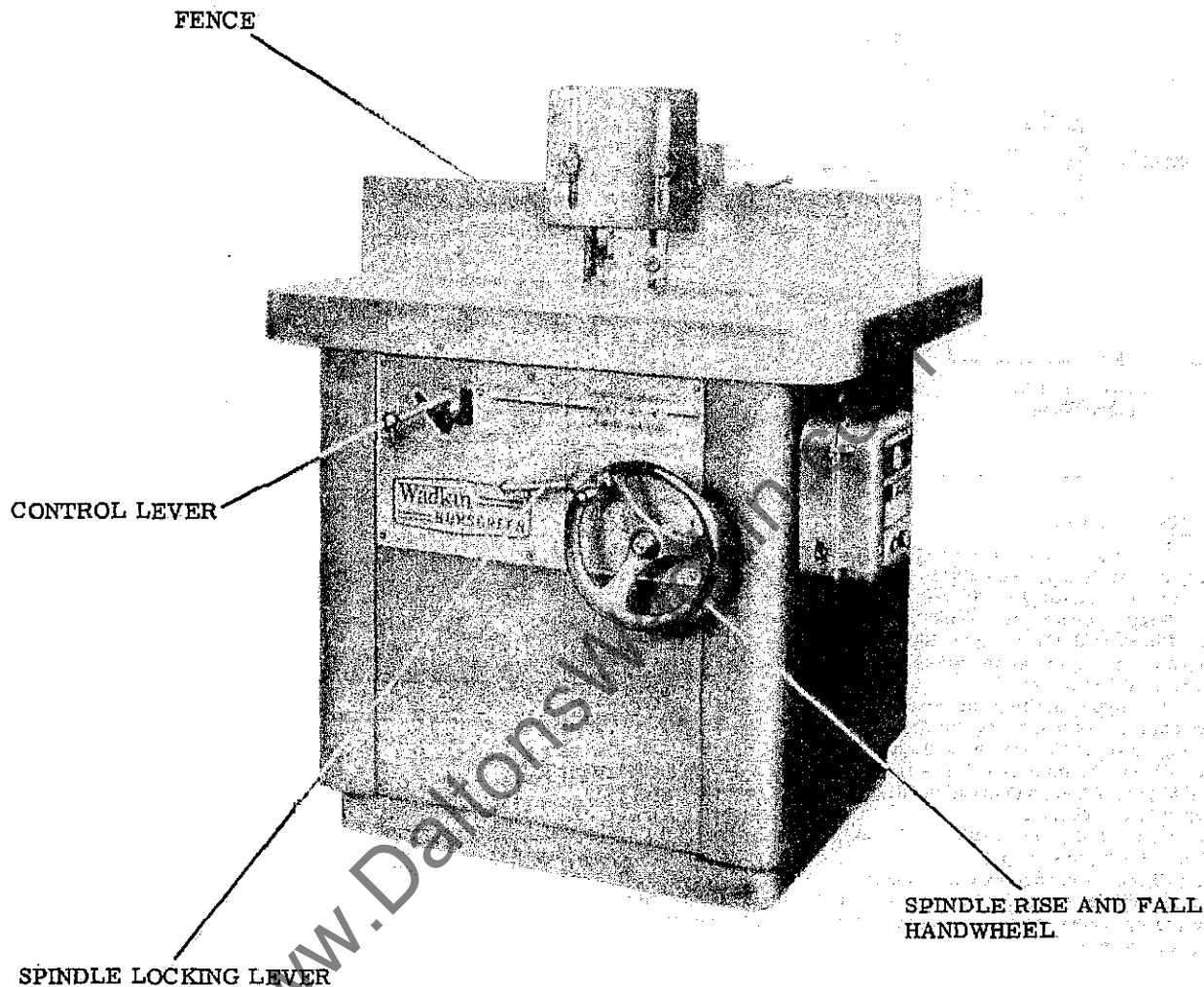


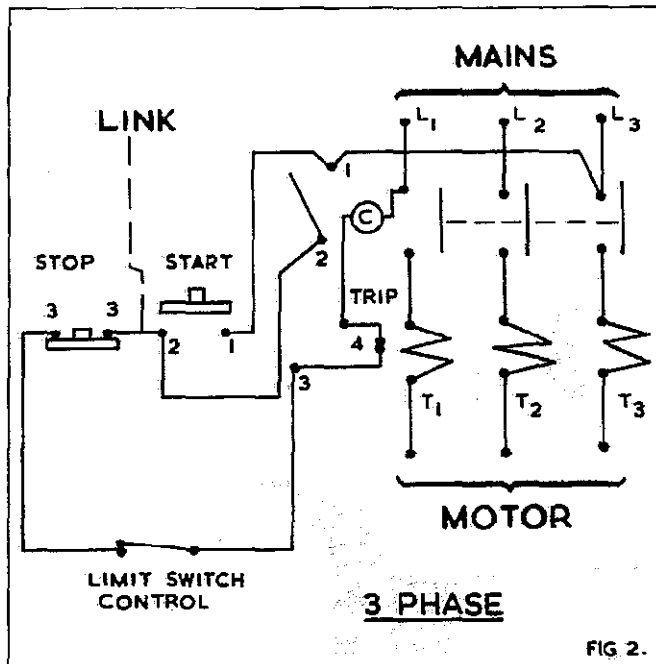
FIG. 1.

SPECIFICATION

| | | |
|---|--|---------------------|
| Diameter of top piece | 1 $\frac{1}{4}$ " | - |
| Optional diameters of top piece | 1" and 30mm | 30mm |
| Size of table | 36" x 32" | 915 x 815mm |
| Speed of spindle | 2, 800, 4, 500, 5, 600 and 8, 000rpm. | |
| Rise and fall of spindle | 6" | 150mm |
| Table height | 33" | 840mm |
| Three circular tableplates giving openings of | 3 $\frac{1}{4}$ ", 4 $\frac{3}{4}$ ", 7", 9" | 80, 120, 175, 230mm |
| Size of fence plates | 6" x 16" | 150 x 400mm |
| HP of motor | 5 $\frac{1}{2}$ (7 $\frac{1}{2}$ optional) | |
| Speed of motor, 50 cycles | 3, 000 rpm | |
| Speed of motor, 60 cycles | 3, 600 rpm | |
| Floor space | 36" x 36" | 915 x 915mm |
| Approx. net weight | 780 lb | 350 kg |
| Approx. gross weight | 1, 000 lb | 450 kg |
| Approx. shipping dimensions | 46 cu. ft. | 1, 30m. 3 |

2. INSTALLATION

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



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 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. When an isolator is fitted, the fuses are of the correct capacity as received.
4. Connect the line leads to the appropriate terminals. See Fig. 2 for 3 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 | H.P. | S.W.G. Tinned Copper Wire | Fuse Rating Amps |
|---------|-------|------|---------------------------|------------------|
| 220 | 3 | 5½ | 18 | 45 |
| 380/420 | 3 | 5½ | 22 | 24 |
| 550 | 3 | 5½ | 23 | 20 |
| 220 | 3 | 7½ | 17 | 65 |
| 380/420 | 3 | 7½ | 18 | 38 |
| 500 | 3 | 7½ | 22 | 24 |

LUBRICATION

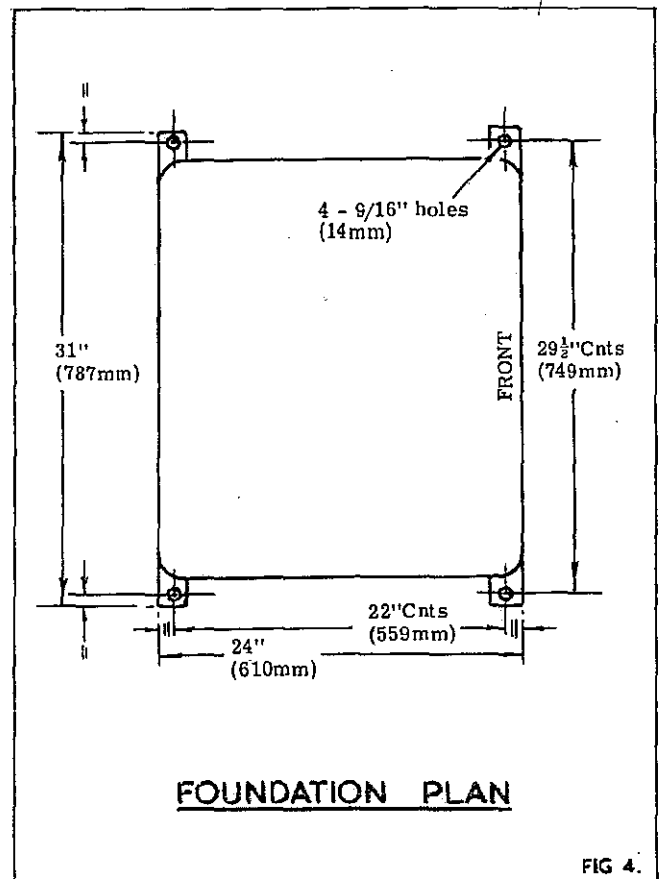
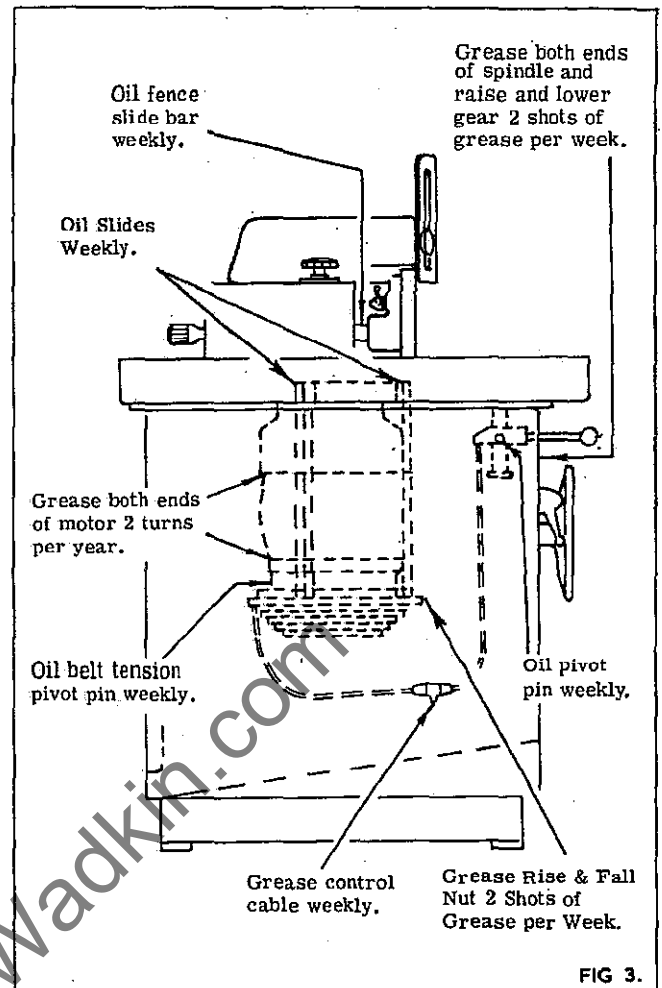
It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting.

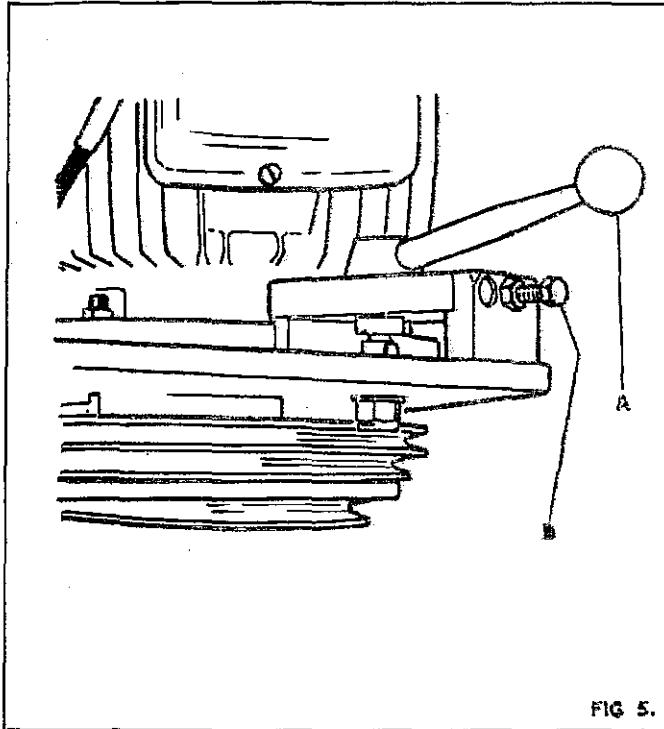
| | |
|--|-----------------------------------|
| TYPE OF OIL RECOMMENDED | POWER EM 125 |
| TYPE OF GREASE RECOMMENDED | SHELL ALVANIA 3 |
| TYPE OF GREASE RECOMMENDED FOR BRAKE CABLE | CASTROLEASE BRAKE CABLE LUBRICANT |

FOUNDATION

See Fig. 4. for bolt positions and clearances required. When installing the machine, level the table by packing under the feet.

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



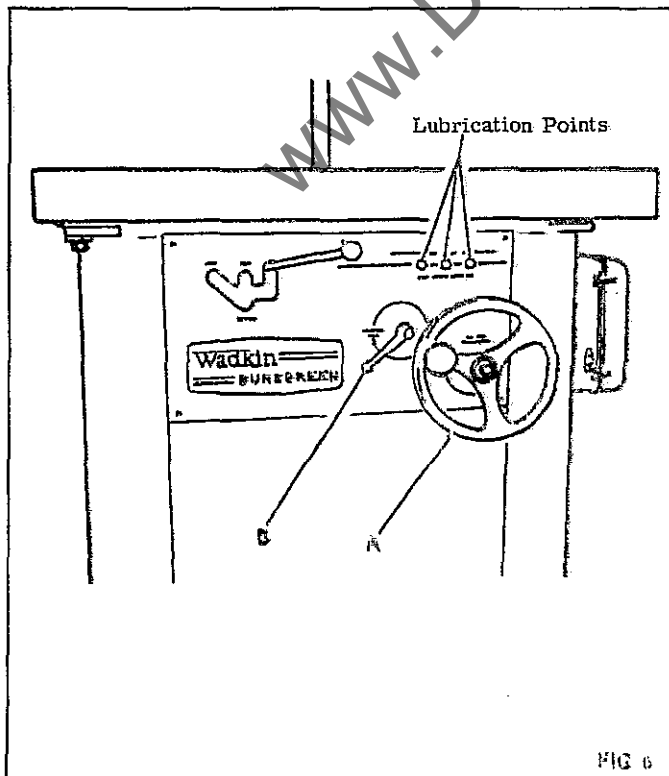


BELT TENSION

The machine is driven by an Alpha section vee belt from a 5½HP (Std), 7½HP (Optional extra) flange mounted motor.

To change the spindle speed ensure that the control lever is in the "Free" position. Unlock the motor and release the belt tension by turning the hand lever "A" in Fig.5 anticlockwise. Re-position the belt to give the required speed in accordance with the speed indicator plate fixed above the access door at the rear of the machine. Turn the hand lever "A" clockwise to automatically retension the belt and lock the motor.

The degree of belt tension is pre-set in our works but adjustment may be necessary within the life of the machine. To increase the tension, turn the screw "B" in Fig.5 clockwise, to decrease tension turn in opposite direction. Any adjustment should be made gradually until the required belt tension is reached.



RAISE AND LOWER OF SPINDLE

The spindle rise and fall is by means of the handwheel "A" in Fig.6 and operates through spiral gears giving maximum travel of 6" (152mm).

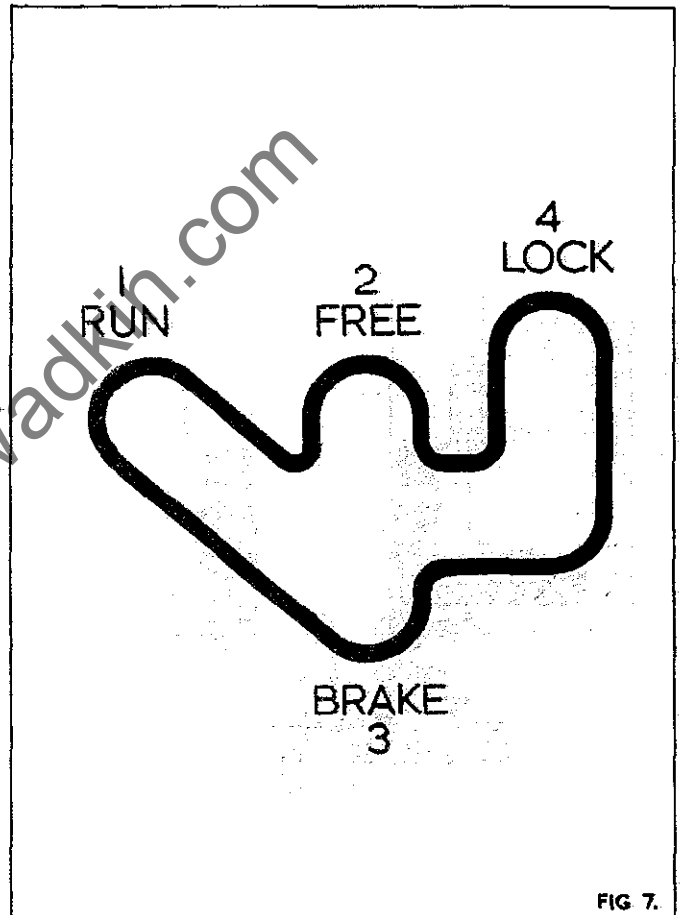
The spindle assembly can be locked at any height by means of the locking lever "B".

Whilst the rise and fall movement of the spindle provides an immediate adjustment of the cutter height, further adjustment outside the range of this can be affected by re-positioning the collars on the work spindle.

ADJUSTMENT OF BRAKE

The brake on the machine is pre-set before leaving the factory but, should the brake require adjustment due to normal wear, the undermentioned procedure should be followed:-

To adjust for wear, the hexagon locknuts on the end of the brake pull rod should be loosened off and adjusted gradually until the correct brake adjustment is obtained. The locknuts should then be re-tightened.



BURSGREEN CONTROL GATE

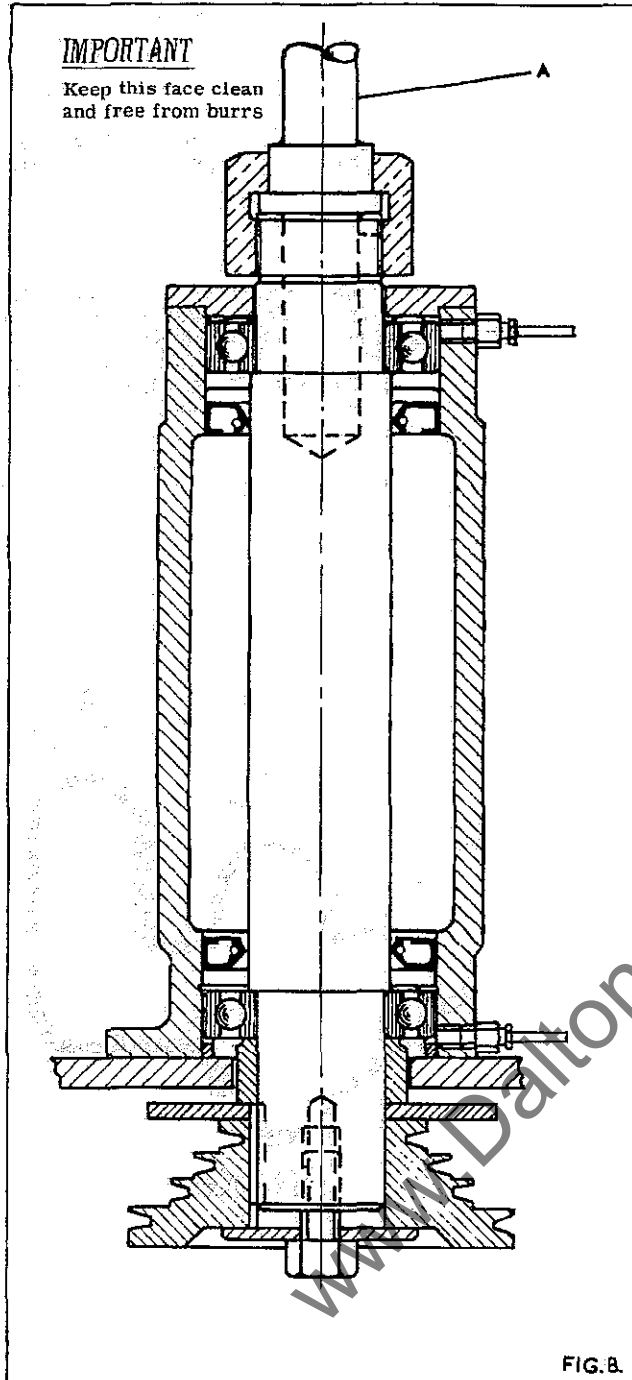
The control gate is clearly shown in Fig. 7 and has four positions.

Position 1. "Run". The lever must be in this position before the motor will start.

Position 2. "Free". The lever must be in this position at all times when the machine is idle or being set up. Although the work spindle is quite free to rotate by hand for cutter setting, an automatic cut-out switch ensures that the motor cannot be accidentally started.

Position 3. "Brake". Movement of the lever from the "Run" to this "Brake" position automatically switches off the motor and light pressure on the lever operates an efficient spindle brake.

Position 4. "Lock". When the lever is in this position the motor is automatically cut-out and the main spindle is firmly locked to facilitate removing or re-fitting of the work spindle and cutter equipment. The lock is effected by a spring loaded plunger which engages in any of four positions. It may be necessary to rotate the spindle slowly by hand to ensure that the plunger is fully engaged in one of these positions.



WORK SPINDLE INSTALLATION

The three removable table rings give table openings of 9", 7", 4 $\frac{1}{4}$ " and 3 $\frac{1}{4}$ " dia (229, 178, 121 and 83mm). The required table opening should be selected before proceeding to fit the work spindle.

To insert the work spindle the undermentioned procedure should be followed:-

Insert the work spindle "A" in Fig. 8 into the main spindle through the table opening selected. Great care should be taken to ensure that the work and main spindle seatings are completely free from all burrs, dirt and rust. A thin film of oil should be placed on the work spindle seatings before inserting. Align the peg in the work spindle with the slot in the main spindle and press spindle onto seating.

Move control lever to "Lock" position as previously described and screw spindle locknut securely to the main spindle, firmly locking the work spindle in position.

To remove the work spindle reverse the above procedure.

Important

Always ensure at all times that the work spindle is securely held by the spindle locknut before starting the machine.

FENCE ADJUSTMENT

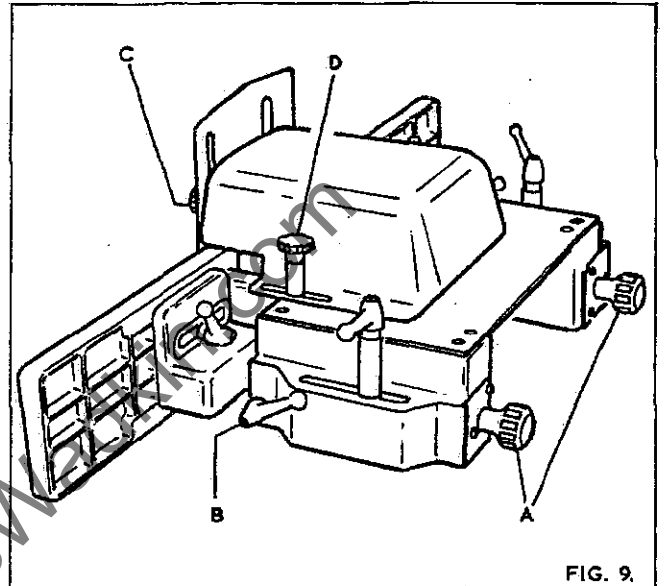
Each fence plate can be independently adjusted by means of the plastic handwheels "A" in Fig. 9. The fence plates can be set to the desired position and locked by the adjustable handles "B". The front fence plates can also be adjusted lengthwise.

The fence plates should be locked both ways at all times when the machine is in use.

The fence is fitted with a safety guard and a "shaw" guard can also be fitted if required.

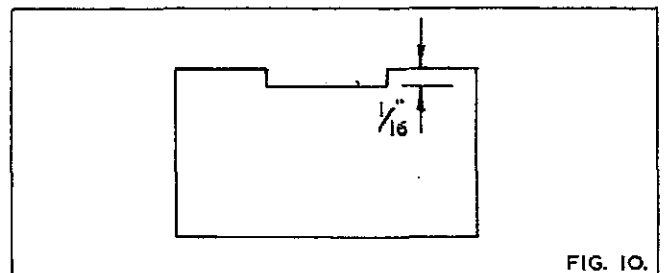
The safety guard is adjustable depending on the section of timber being worked. This guard is shown in position in Fig. 9. To adjust the guard for various sections of timber, unscrew the plastic handwheels "C", set to required position and relock.

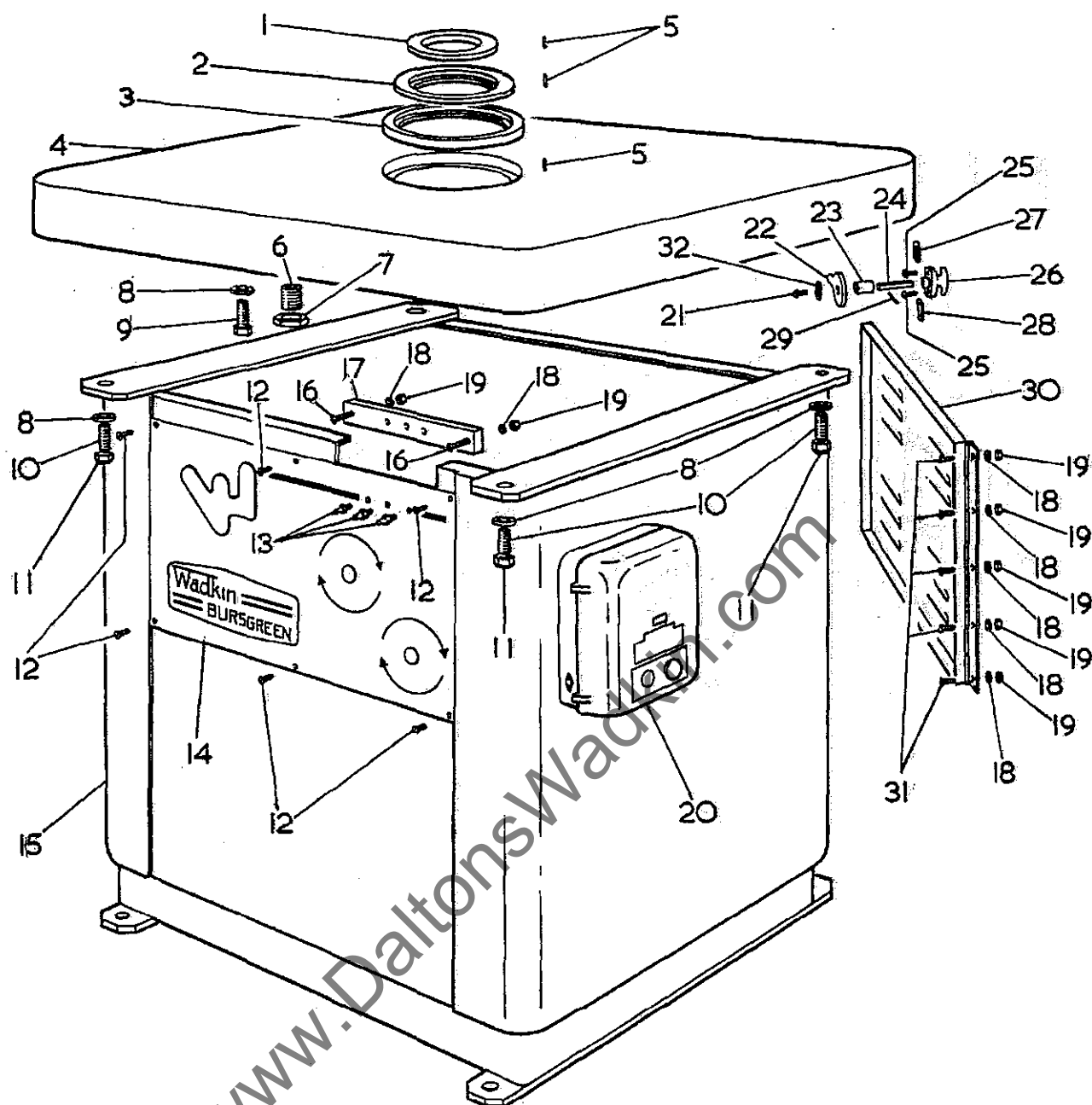
To adjust the safety guard in relation to the fence plates loosen the plastic handwheels "D", position the safety guard and relock.



GENERAL HINTS

1. Always select the correct speed for the cutter equipment being used. Wadkin/Bursgreen cutterblocks are normally stamped with the maximum permissible speed, but this may need to be reduced dependent on shape and general condition of cutters being used.
2. Use sharp cutters which should be reasonably well balanced.
3. Ensure the cutters are tight on the blocks before starting machine. Use spanners provided and never fit a piece of piping to obtain greater leverage. This will strain the nuts and bolts and ultimately make them unsafe.
4. Never pack the cutters with sandpaper. This is most dangerous as the grit collapses when the cutter is working, and the cutter works loose. For packing use one thickness only of brown paper.
5. Keep nuts and bolts clean and keep oil on the threads.
6. Never run the cutter equipment at higher than the recommended speed.
7. Always use the guards available to ensure maximum protection.
8. Make good robust jigs and ensure that the parts are located securely on the jig.
9. When changing cutter equipment always ensure the machine control lever is in the "Free" or "Lock" position. If in doubt isolate the machine electrically.
10. Always notch cutters for french spindles as shown in Fig. 10 for the spindle locking bolt to locate the cutter.



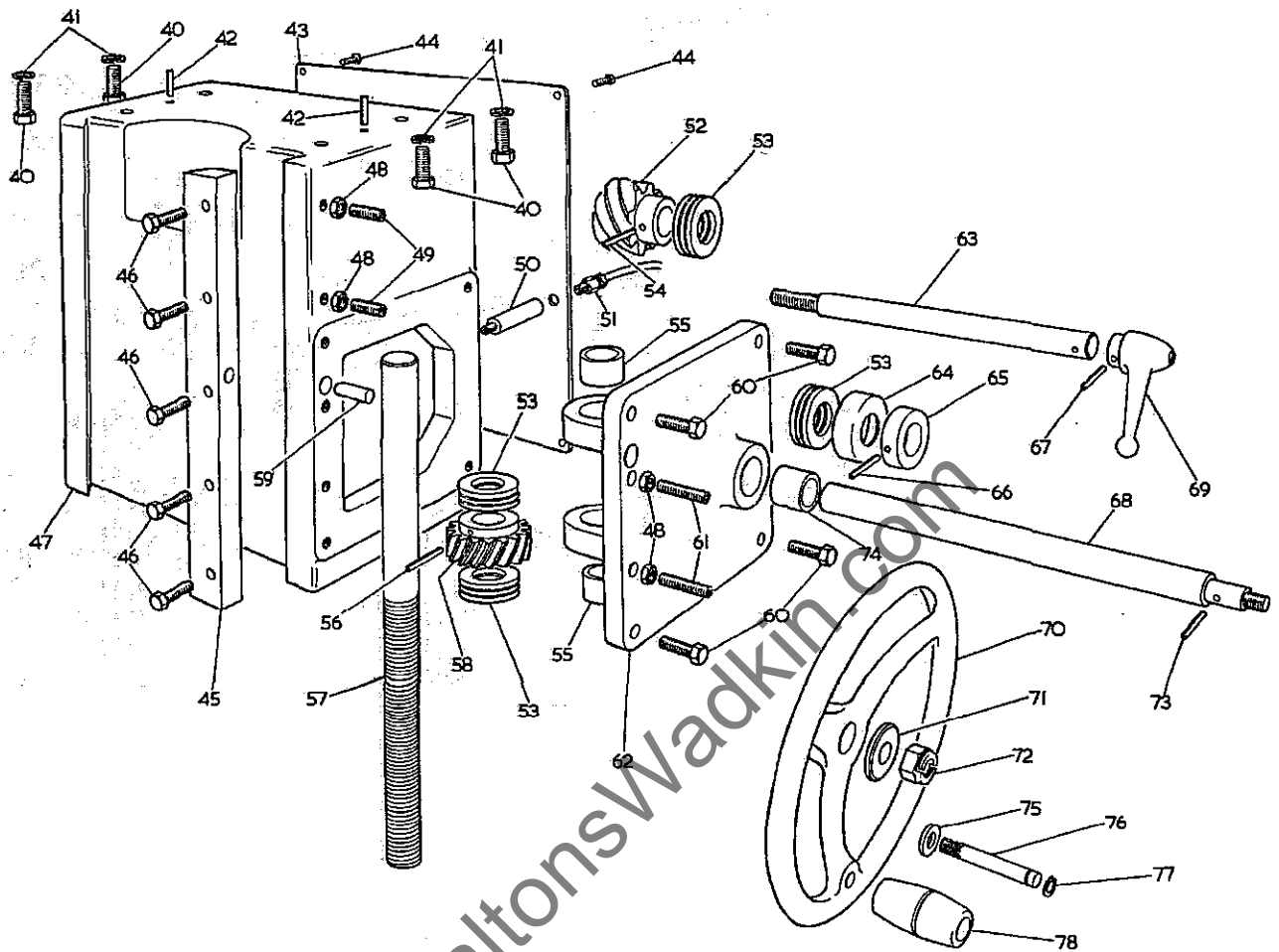


MAIN FRAME ASSEMBLY

| Ref.No | Part No. | No. Off | Description | Ref.No | Part No. | No. Off | Description |
|--------|------------|---------|---|--------|-----------|---------|---|
| 1 | B-1057/24 | 1 | Small table ring | 17 | B-1057/85 | 1 | Grease nipple backing plate |
| 2 | B-1057/25 | 1 | Medium table ring | 18 | | 7 | $\frac{1}{4}$ " washer |
| 3 | B-1057/26 | 1 | Large table ring | 19 | | 7 | $\frac{1}{4}$ " whit nut |
| 4 | E-1057/2 | 1 | Main table | 20 | ZT3 | 1 | Brooks starter |
| 5 | | 3 | $\frac{1}{8}$ " dia x $\frac{1}{2}$ " long groverlok spring dowel | 21 | | 1 | $\frac{3}{16}$ " B.S.F. x $\frac{1}{4}$ " long round head screw |
| 6 | A-1057/49 | 1 | Table adjuster | 22 | | 1 | Latch for rear door |
| 7 | A-1057/148 | 1 | 1" simplex nut | 23 | | 1 | Distance collar for rear door handle |
| 8 | | 4 | $\frac{1}{8}$ " washer | 24 | T-44-11E | 1 | Spindle for handle |
| 9 | | 1 | $\frac{1}{2}$ " whit x $2\frac{1}{2}$ " long hexagon head bolt | 25 | | 2 | $\frac{3}{16}$ " whit x $\frac{5}{16}$ " long round head screw |
| 10 | | 3 | $\frac{1}{2}$ " whit x 2" long stud | 26 | T-44A RE | 1 | Handle for rear door |
| 11 | | 3 | $\frac{1}{2}$ " whit aerotight nut | 27 | | 1 | Washer for handle on rear door |
| 12 | | 6 | $\frac{1}{4}$ " whit x $\frac{1}{2}$ " long round head screw | 28 | | 1 | Bump washer for handle on rear door |
| 13 | | 3 | $\frac{1}{8}$ " gas grease nipple | 29 | | 1 | $\frac{1}{8}$ " dia x $\frac{1}{4}$ " long groverlok dowel |
| 14 | C-1057/76 | 1 | Control plate | 30 | C-1057/47 | 1 | Rear door for base |
| 15 | E-1057/45 | 1 | Sheet steel base | 31 | | 5 | $\frac{1}{4}$ " whit x $\frac{1}{2}$ " long round head screw |
| 16 | | 2 | $\frac{1}{4}$ " whit x 1" long countersunk screw | 32 | | 1 | $\frac{3}{16}$ " B.S.F. washer |

NOTE :-

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

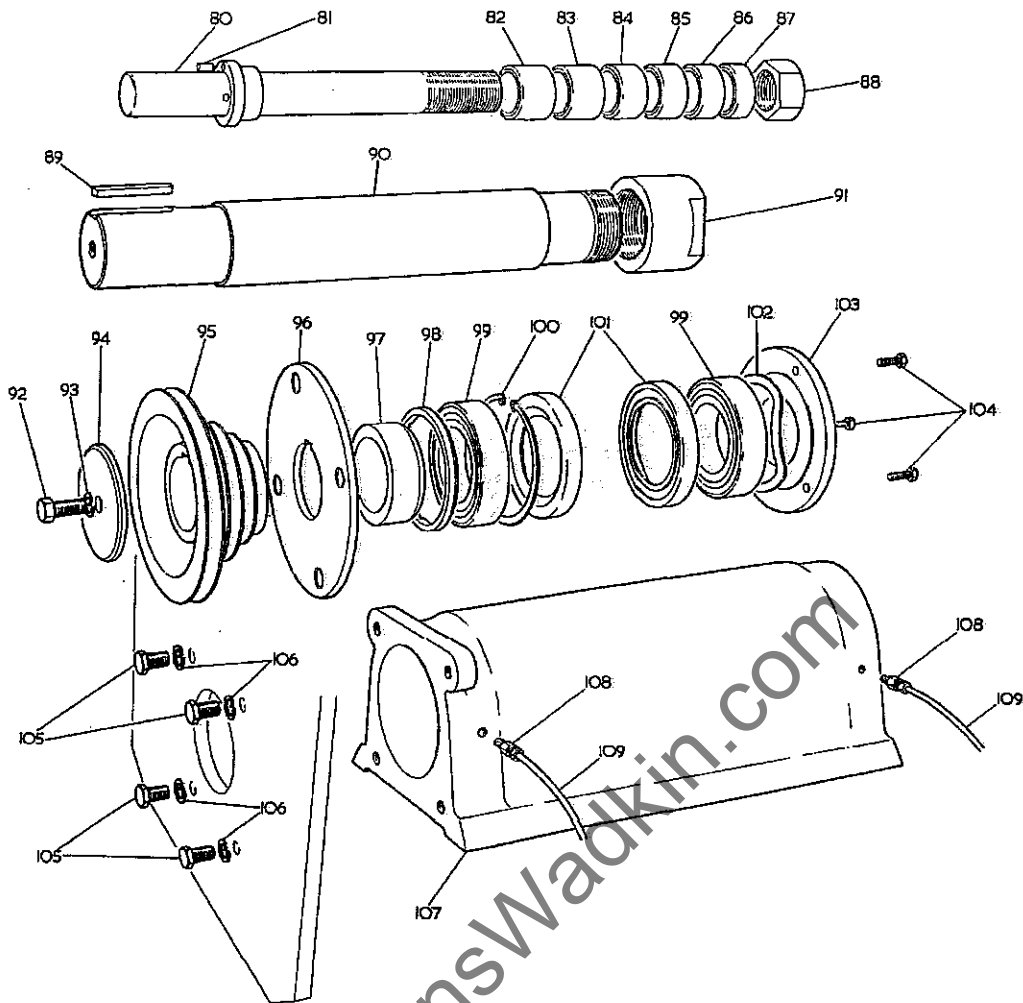


RISE & FALL ASSEMBLY

| Ref.No | Part No. | No.Off | Description | Ref.No | Part No. | No.Off | Description |
|--------|------------|--------|--|--------|------------|--------|--|
| 40 | | 4 | 5/8" whit x 1 1/2" long hexagon head bolts | 60 | | 4 | 3/8" whit x 1" long hexagon head bolt |
| 41 | | 4 | 5/8" spring washers | 61 | | 2 | 3/8" whit x 2" long socket head grubscrew |
| 42 | | 2 | 1/4" dia x 1" long groverlok spring dowel | 62 | C-1057/4 | 1 | Rise and fall bracket |
| 43 | A-1057/48 | 1 | Gearbox cover | 63 | A-1057/36 | 1 | Slide locking shaft |
| 44 | | 4 | 3/16" whit x 3/8" long round head screw | 64 | A-1057/41 | 1 | Rise and fall bearing cover |
| 45 | B-1057/43 | 1 | Spindle slide gib strip | 65 | A-1057/39 | 1 | Collar for handwheel shaft |
| 46 | | 5 | 3/8" whit x 1 1/2" long hexagon head bolt | 66 | | 1 | 3/16" dia x 2" long groverlok spring dowel |
| 47 | D-1057/1 | 1 | Rise and fall slide | 67 | | 1 | 3/16" dia x 7/8" long groverlok spring dowel |
| 48 | | 4 | 3/8" whit locknut | 68 | A-1057/37 | 1 | Rise and fall handwheel shaft |
| 49 | | 2 | 3/8" whit x 1 1/2" long socket head grubscrew | 69 | | 1 | Adjustable handle 1/2" female plain |
| 50 | A-1031/62 | 1 | Grease tube | 70 | C-1044/56 | 1 | Rise and fall handwheel |
| 51 | S65/2 | 1 | Straight connector (brass) | 71 | A-1056/75 | 1 | Washer for rise and fall nut |
| 52 | A-1033/204 | 1 | Spiral rise and fall pinion | 72 | | 1 | 1/2" whit aerotight nut |
| 53 | SKF 08 | 4 | Thrust bearing | 73 | | 1 | 3/16" dia x 1.3/8" long groverlok spring dowel |
| 54 | | 1 | 3/16" dia x 1 1/2" long groverlok spring dowel | 74 | | 1 | 1" i/d x 1 1/4" o/d x 1 1/4" long oilite bush |
| 55 | | 2 | 1" i/d x 1 1/4" o/d x 3/4" long oilite bush | 75 | | 1 | Collar for Rise and fall handle spindle |
| 56 | | 1 | 3/16" dia x 1 1/4" long groverlok spring dowel | 76 | A-1057/158 | 1 | Rise and fall handle spindle |
| 57 | A-1057/35 | 1 | Rise and fall screw | 77 | 5100/37 | 1 | Circlip for handle spindle |
| 58 | A-1033/205 | 1 | Spiral rise and fall gear | 78 | A-1057/157 | 1 | Rise and fall plastic handle |
| 59 | A-1057/38 | 1 | Rise and fall slide locking bot | | | | |

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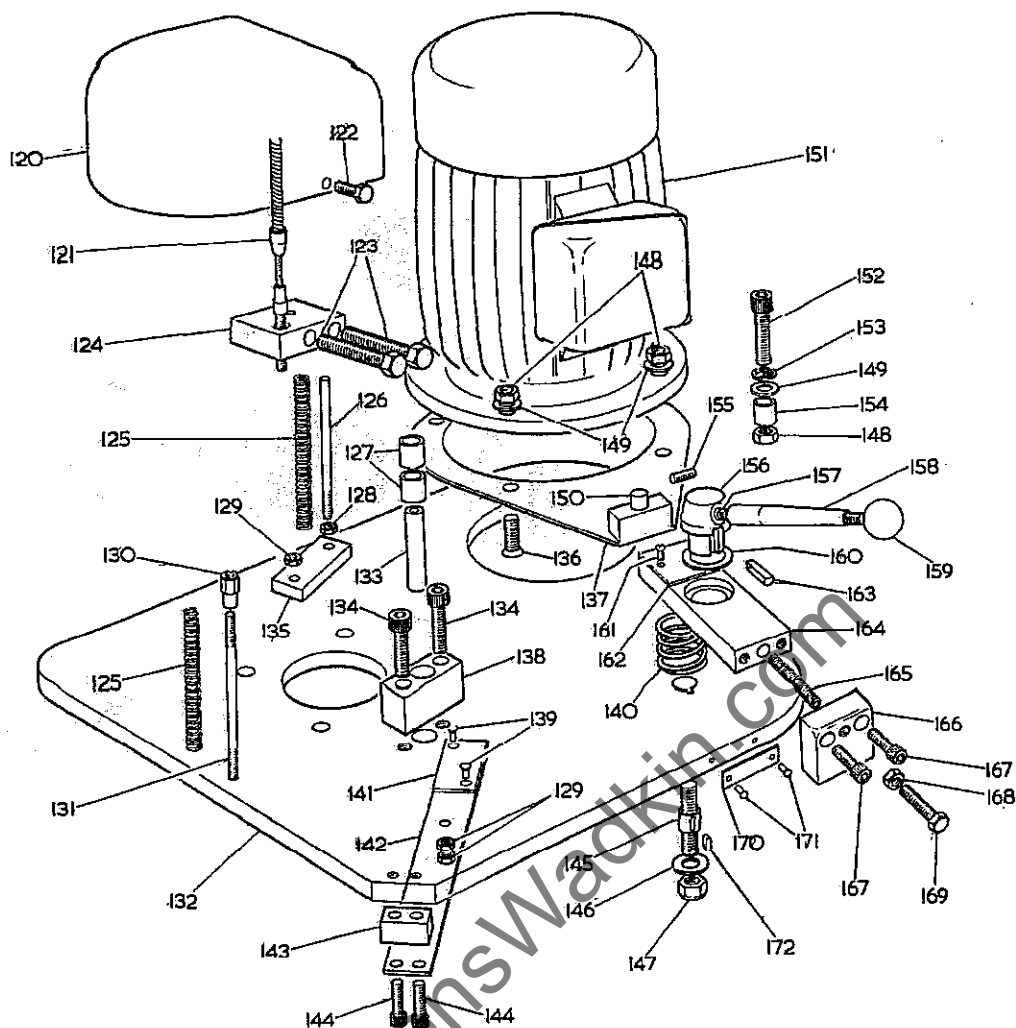


SPINDLE HOUSING ASSEMBLY

| Ref.No. | Part No. | No.Off | Description | Ref.No. | Part No. | No.Off | Description |
|---------|------------|--------|--|------------|-------------|--|---|
| 80 | B-1057/54 | 1 | 1 1/4" dia work spindle | A-1057/140 | 1 | 1" bore x 1 1/2" long spacing collar (Extra) | |
| | B-1057/112 | 1 | 1" dia work spindle (Extra) | A-1057/139 | 1 | 30mm bore x 1 1/2" long spacing collar (Extra) | |
| | B-1057/88 | 1 | 30mm work spindle (Extra) | 88 | A-1046/32 | 1 | 1 1/4" spindle nut |
| 81 | | 1 | 5/16" dia x 7/8" long dowel | | | 1 | 1" BSF spindle nut |
| 82 | A-1057/138 | 1 | 1 1/4" bore x 2" long spacing collar | A-1046/63 | 1 | 30mm spindle nut | |
| | A-1057/140 | 1 | 1" bore x 2" long spacing collar (Extra) | 89 | A-1057/150 | 1 | Key for main spindle shaft |
| | A-1057/139 | 1 | 30mm bore x 2" long spacing collar (Extra) | 90 | C-1057/27 | 1 | Main spindle |
| 83 | A-1057/138 | 1 | 1 1/4" bore x 1 1/2" long spacing collar | 91 | B-1057/31 | 1 | Main spindle nut |
| | A-1057/140 | 1 | 1" bore x 1 1/2" long spacing collar (Extra) | 92 | | 1 | 1 1/4" whit x 1 1/4" long hexagon head bolt |
| | A-1057/139 | 1 | 30mm bore x 1 1/2" long spacing collar (Extra) | 93 | | 1 | 1/2" spring washer |
| 84 | A-1057/138 | 1 | 1 1/4" bore x 1 1/4" long spacing collar | 94 | A-1057/40 | 1 | Pulley locking washer |
| | A-1057/140 | 1 | 1" bore x 1 1/4" long spacing collar (Extra) | 95 | C-1057/52 | 1 | Spindle Pulley |
| | A-1057/139 | 1 | 30mm bore x 1 1/4" long spacing collar (Extra) | 96 | B-1057/33 | 1 | Brake disc |
| 85 | A-1057/138 | 1 | 1 1/4" bore x 1" long spacing collar | 97 | A-1057/30 | 1 | Bearing spacer |
| | A-1057/140 | 1 | 1" bore x 1" long spacing collar (Extra) | 98 | C-1057/30 | 1 | Bearing spacer |
| | A-1057/139 | 1 | 30mm bore x 1" long spacing collar (Extra) | 99 | SKF 6211 | 2 | Bearing |
| 86 | A-1057/138 | 1 | 1 1/4" bore x 3/4" long spacing collar | 100 | | 1 | 100mm Internal circlip |
| | A-1057/140 | 1 | 1" bore x 3/4" long spacing collar (Extra) | 101 | W39425551R4 | 2 | Oil seal |
| | A-1057/139 | 1 | 30mm bore x 3/4" long spacing collar (Extra) | 102 | EPL 68 | 1 | Bump washer |
| 87 | A-1057/138 | 1 | 1 1/4" bore x 1/2" long spacing collar | 103 | B-1057/23 | 1 | Dust cap |
| | | | | 104 | | 3 | 5/16" whit x 3/4" long hexagon head bolt |
| | | | | 105 | | 4 | 1/2" whit x 1" long hexagon head bolt |
| | | | | 106 | | 4 | 1/2" BSF spring washer |
| | | | | 107 | D-1057/3 | 1 | Spindle housing |
| | | | | 108 | S65/2 | 2 | Straight connector |
| | | | | 109 | | 2 | 3/16" dia nylon pipe |

NOTE :-

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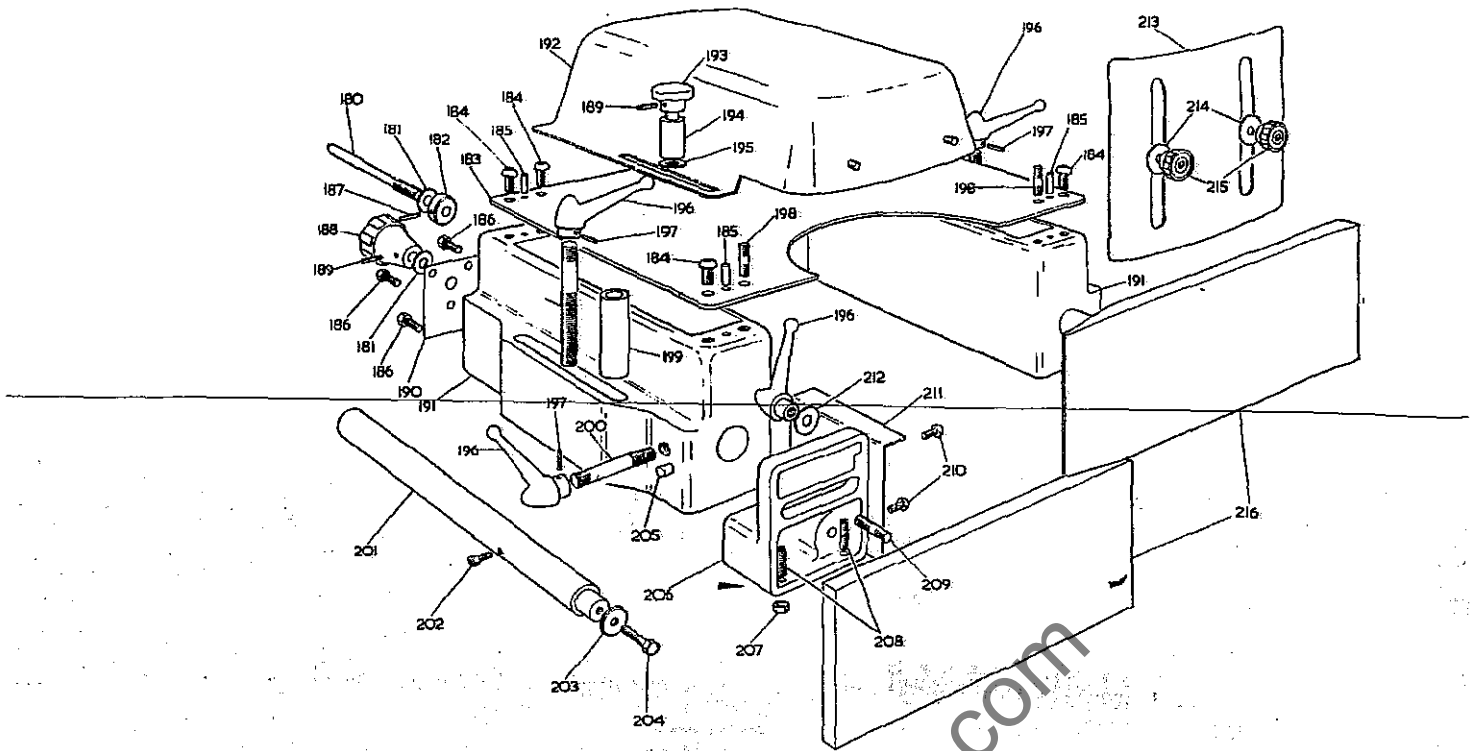


MOTOR MOUNTING ASSEMBLY

| Ref.No | Part No. | No. Off | Description | Ref.No | Part No. | No. Off | Description |
|--------|------------|---------|---|--------|------------|---------|---|
| 120 | C-1057/134 | 1 | Motor cover | 147 | | 1 | $\frac{1}{2}$ " whit aerotight nut |
| 121 | B-1046/75 | 1 | Cable assembly | 148 | | 5 | $\frac{3}{8}$ " whit nut |
| 122 | | 2 | $\frac{5}{16}$ " whit x $\frac{3}{8}$ " long round head screw | 149 | | 5 | $\frac{3}{8}$ " washer |
| 123 | | 2 | $\frac{3}{8}$ " whit x $2\frac{1}{4}$ " long hexagon head bolt | 150 | A-1057/154 | 1 | Motor tension dowel |
| 124 | A-1057/13 | 1 | Cable support plate | 151 | | 1 | Brook motor, 5.5HP, 3,000rpm flange mounted, frame size D-112M |
| 125 | A-1045/136 | 2 | Cable return spring | | | 1 | Brook motor, 7.5HP, 3,000rpm flange mounted, frame size D-132S |
| 126 | A-1057/14 | 1 | Brake spring guide | 152 | | 1 | $\frac{3}{8}$ " whit x 2" long socket head capscrew |
| 127 | | 2 | $\frac{1}{4}$ " bore x $\frac{5}{8}$ " o/d x $\frac{3}{4}$ " long oilite bush | 153 | | 1 | $\frac{3}{8}$ " spring washer |
| 128 | | 1 | $\frac{1}{4}$ " whit locknut | 154 | A-1057/42 | 1 | Motor pivot bush |
| 129 | | 3 | $\frac{1}{4}$ " B. S. F. locknut | 155 | | 1 | $\frac{3}{8}$ " whit x $\frac{1}{2}$ " long socket head grubscrew |
| 130 | A-1057/9 | 1 | Brake locknut | 156 | A-1057/22 | 1 | Clamp nut |
| 131 | A-1057/18 | 1 | Brake control rod | 157 | | 1 | $\frac{3}{8}$ " whit x 1" long socket head grubscrew |
| 132 | C-1057/28 | 1 | Rise and fall plate | 158 | B-1027/26 | 1 | Motor locking handle |
| 133 | A-1057/11 | 1 | Spindle locking pin | 159 | | 1 | $\frac{3}{8}$ " whit x $1\frac{1}{4}$ " dia plastic ball |
| 134 | | 2 | $\frac{3}{8}$ " whit x 1" long socket head capscrew | 160 | A-1057/51 | 1 | Washer for motor clamp |
| 135 | A-1057/12 | 1 | Cable anchor plate | 161 | | 2 | $\frac{3}{16}$ " whit x $\frac{3}{8}$ " long round head screw |
| 136 | | 4 | $\frac{3}{8}$ " whit x $1\frac{1}{4}$ " long socket head countersunk screw | 162 | A-1057/151 | 1 | Cover for motor tension clamp |
| 137 | B-1057/82 | 1 | Motor tension plate | 163 | A-1057/21 | 1 | Motor tension peg |
| 138 | A-1057/10 | 1 | Locking pin location block | 164 | A-1057/19 | 1 | Motor clamp |
| 139 | | 2 | $\frac{3}{16}$ " x $\frac{3}{8}$ " long countersunk copper rivot | 165 | A-1057/58 | 1 | Motor tension spring |
| 140 | A-1033/194 | 1 | Motor tension release spring | 166 | A-1057/5 | 1 | Motor clamp heel |
| 141 | A-1057/16 | 1 | Brake pad | 167 | | 2 | $\frac{5}{16}$ " whit x $\frac{3}{4}$ " long socket head capscrew |
| 142 | A-1057/15 | 1 | Brake plate | 168 | | 1 | $\frac{5}{16}$ " whit nut |
| 143 | A-1057/17 | 1 | Brake plate heel | 169 | | 1 | $\frac{5}{16}$ " whit x $1\frac{1}{4}$ " long hexagon head bolt |
| 144 | | 2 | $\frac{3}{8}$ " whit x $1\frac{1}{4}$ " long socket head capscrew | 170 | A-1057/86 | 1 | Belt tension instruction plate |
| 145 | A-1057/20 | 1 | Motor clamp stud | 171 | | 2 | $\frac{1}{8}$ " rivet |
| 146 | | 1 | $\frac{1}{2}$ " washer | 172 | | 1 | $\frac{3}{16}$ " x $\frac{5}{8}$ " long key |

NOTE :-

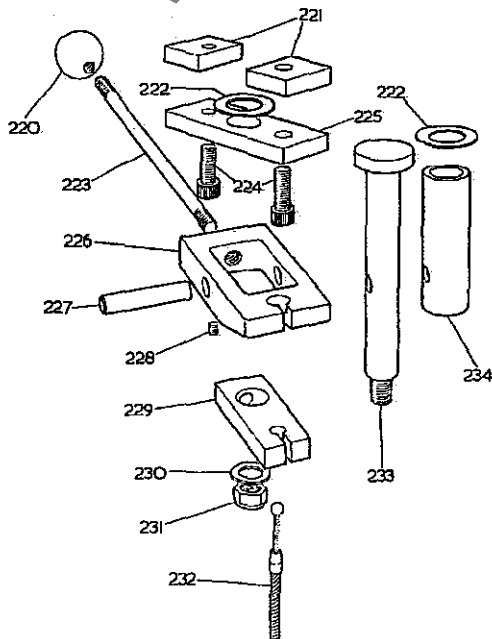
When ordering replacement parts quote part no. and serial number of the machine.



FENCE ASSEMBLY

| Ref. No. | Part No. | No. Off | Description |
|----------|------------|---------|--|
| 180 | A-1057/97 | 2 | Fence adjusting screw |
| 181 | | 4 | 1/4" brass washer |
| 182 | A-1057/67 | 2 | Collar for fence adjustment screw |
| 183 | C-1057/182 | 1 | Fence tie plate |
| 184 | | 6 | 3/8" whit x 1/2" long socket head button screw |
| 185 | | 4 | 1/2" dia x 1/4" long fluted dowel |
| 186 | | 6 | 1/2" whit x 1/2" long hexagon head bolt |
| 187 | | 2 | 3/16" dia x 1 1/4" long groverlok spring dowel |
| 188 | | 2 | 2" dia plastic handwheel 3/8" plain bore |
| 189 | | 4 | 3/16" dia x 1" long groverlok spring dowel |
| 190 | B-1057/94 | 2 | Pressure pads |
| 191 | D-1057/91 | 1 | Right hand fence body |
| | | 1 | Left hand fence body |
| 192 | D-1057/92 | 1 | Fence cover |
| 193 | B-S-209 | 2 | 2, 1/8" dia plastic handwheel 3/8" plain bore |
| 194 | A-1057/149 | 2 | Fence cover locking post |
| 195 | | 2 | 3/8" washer |
| 196 | | 6 | Adjustable handle 1/2" whit bore |
| 197 | | 4 | 3/16" dia x 1/2" long groverlok spring dowel |
| 198 | | 2 | 3/8" whit x 1" long stud |

| Ref. No. | Part No. | No. Off | Description |
|----------|------------|---------|--|
| 199 | A-1046/28 | 2 | Spacer |
| 200 | | 2 | 1/2" whit x 1 1/4" long stud |
| 201 | B-1057/98 | 2 | Slide Bar |
| 202 | | 2 | 1/2" whit x 1/2" long socket head capscrew |
| 203 | A-1792/67 | 2 | Washer for fence slide bar |
| 204 | | 2 | 3/8" whit x 1/2" long hexagon head bolt |
| 205 | | 2 | 3/8" dia x 5/16" long brass bot |
| 206 | C-1057/89 | 1 | Right hand fence plate bracket |
| | | 1 | Left hand fence plate bracket |
| 207 | | 4 | 3/8" whit nut |
| 208 | | 4 | 3/8" whit x 1 1/4" long brass grubscrew |
| 209 | | 2 | 1/2" whit x 1 1/4" long stud |
| 210 | | 6 | 1/2" whit x 1/2" long socket head button screw |
| 211 | B-1057/104 | 2 | Chip deflector |
| 212 | | 2 | 1/2" washer |
| 213 | B-1057/95 | 1 | Front guard |
| 214 | | 2 | 5/16" washer |
| 215 | | 2 | 1 1/4" dia plastic handwheel 5/16" whit |
| 216 | C-1057/101 | 2 | Fence plate |



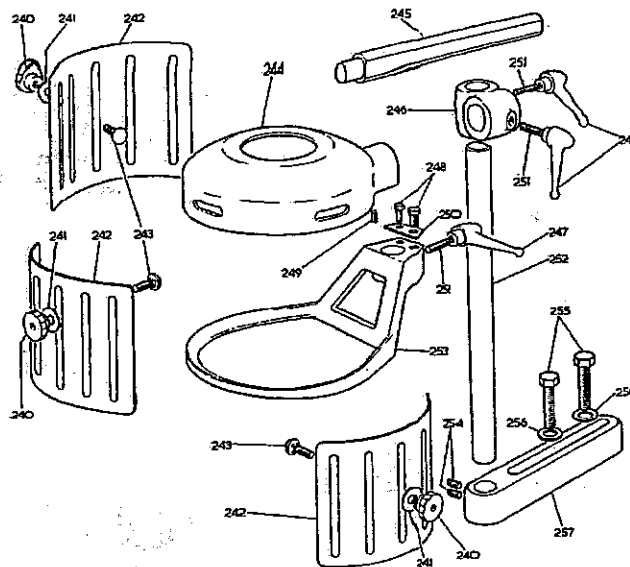
CONTROL LEVER ASSEMBLY

| Ref. No. | Part No. | No. Off | Description |
|----------|------------|---------|--|
| 220 | | 1 | 1 1/4" dia plastic ball 1/2" whit |
| 221 | A-1057/79 | 2 | Brake packing piece |
| 222 | A-1057/127 | 2 | Washer for brake pivot |
| 223 | A-1057/95 | 1 | Control handle |
| 224 | | 2 | 3/8" whit x 1 1/4" long socket head capscrew |
| 225 | A-1057/78 | 1 | Swivel pin anchor plate |
| 226 | A-1057/8 | 1 | Yoke for brake |
| 227 | A-1057/9 | 1 | Brake pivot pin |
| 228 | | 1 | 1/2" whit x 3/8" long socket head grubscrew |
| 229 | A-1057/7 | 1 | Brake anchor plate |
| 230 | | 1 | 1/2" washer |
| 231 | | 1 | 1/2" whit aerotight nut |
| 232 | B-1046/76 | 1 | Cable |
| 233 | A-1057/6 | 1 | Brake swivel pin |
| 234 | A-1055/77 | 1 | Swivel pin sleeve |

NOTE :-

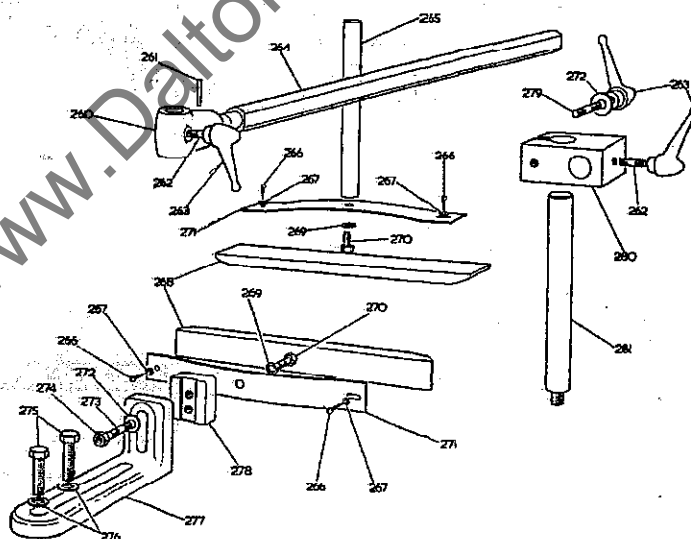
When ordering replacement parts quote part no. and serial number of the machine.

10.



RING FENCE & RING GUARD ASSEMBLY EXTRA

| Ref.No. | Part No. | No. Off | Description | Ref.No. | Part No. | No. Off | Description |
|---------|------------|---------|--|---------|------------|---------|---|
| 240 | A-1029/59 | 3 | Knurled knob for ring guard | 249 | | 1 | 3/8" whit x 1/2" long socket head grubscrew |
| 241 | | 3 | 3/8" washer | 250 | A-1057/145 | 1 | Ring fence trapping plate |
| 242 | B-1057/137 | 3 | Ring guard flap | 251 | | 3 | 3/8" whit x 1 1/2" long stud |
| 243 | | 3 | 3/8" whit x 3/4" long coach bolt | 252 | A-1057/125 | 1 | Post for ring fence |
| 244 | C-1057/122 | 1 | Ring guard | 253 | C-1057/121 | 1 | Ring fence |
| 245 | A-1057/126 | 1 | Post for ring guard | 254 | | 2 | 3/8" whit x 5/8" long socket head grubscrew |
| 246 | D-1792/114 | 1 | 1" x 1" filboe | 255 | | 2 | 3/8" whit x 2 1/4" long hexagon head bolt |
| 247 | | 3 | Adjustable handle 3/8" whit | 256 | | 2 | 1/2" washer |
| 248 | | 2 | 5/16" whit x 1/2" long hexagon head bolt | 257 | B-1057/123 | 1 | Foot for ring fence and guard |

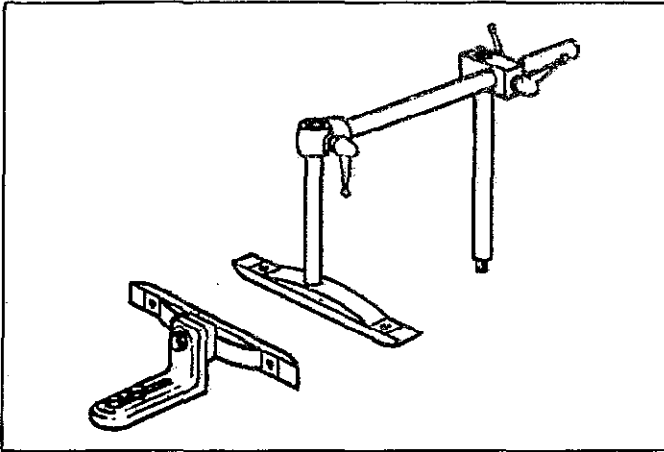


SHAW GUARD ASSEMBLY EXTRA

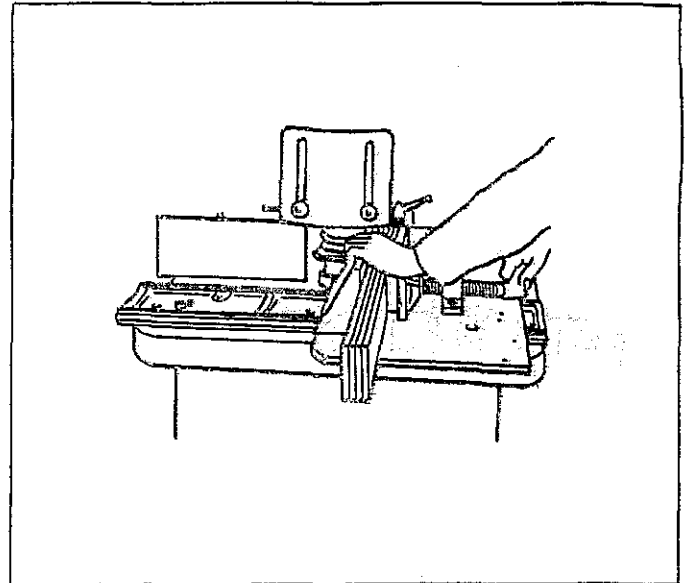
NOTE :-

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 |
|---------|------------|----------|---|---------|------------|---------|---|
| 260 | D-1792/17 | 1 | Tee Filboe | 271 | B-1057/132 | 2 | Shaw guard spring. |
| 261 | | 1 | No.3 Taper pin | 272 | | 2 | 3/8" washer |
| 262 | | 2 | 3/8" whit x 1 1/2" long brass stud | 273 | | 1 | 3/8" whit x 1 1/2" long stud |
| 263 | | 3 | Adjustable handle 3/8" whit bore | 274 | | 1 | 3/8" whit nut |
| 264 | A-1057/142 | 1 | Horizontal shaft for shaw guard | 275 | | 2 | 1/2" whit x 1 1/4" long hexagon head bolt |
| 265 | A-1057/144 | 1 | Vertical shaft for top shaw guard | 276 | | 2 | 1/2" washer |
| 266 | | 4 | 3/8" long No. 8 black japanned round head woodscrew | 277 | B-1057/124 | 1 | Front shaw guard bracket |
| 267 | | 4 | 3/16" washer | 278 | A-1057/131 | 1 | Front shaw guard slide |
| 268 | B-1057/133 | 2 | Shaw guard shoe | 279 | | 1 | 3/8" whit x 2" long stud |
| 269 | | 2 | 3/8" Spring washer | 280 | B-1057/153 | 1 | 1" x 1" split filboe |
| 270 | | 2 | 3/8" whit x 1/4" long hexagon head bolt | 281 | A-1057/143 | 1 | Pillar for shaw guard |



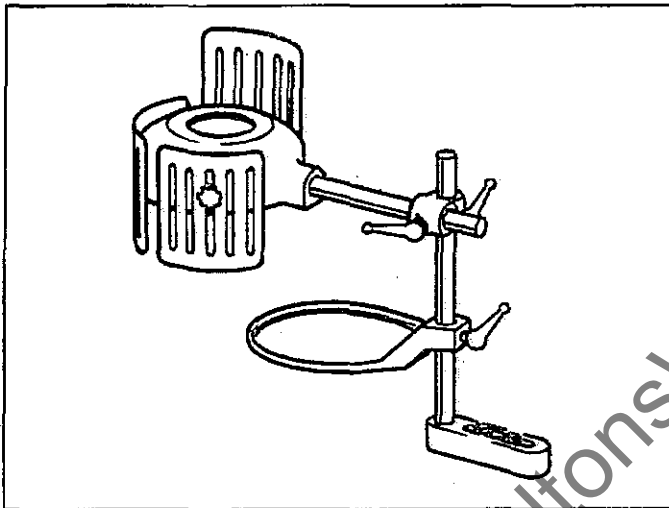
SHAW GUARD :- This guard provides top and side pressure and ensures safety in operation for use with the standard fence or as effectively with the ring fence for curved work.



CORNER LOCKING ATTACHMENT TYPE E. F.

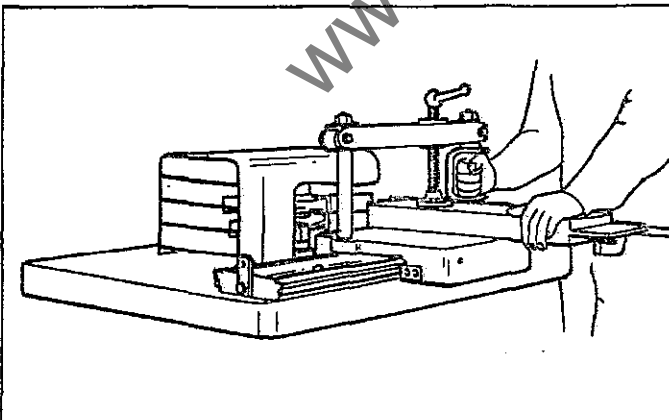
This attachment is capable of dealing with work up to 6" in depth and of any desired pitch. Any number of boards up to 6" in thickness can be clamped together and machined at the one operation. The attachment consists of a sliding table mounted on a slide frame secured to the main table of the machine. This table is provided with fence and clamp for securing the work and slides past the cutters by hand.

The ordinary spindle moulder fence is used as a stop for placing the boards in position. We can supply a special top piece $1\frac{1}{4}$ " diameter with suitable key and each cutter is arranged with a keyway so that the cutters are staggered around the spindle to give an even cut.



SAFETY GUARD AND RING FENCE

The safety guard has adjustable flaps which completely cover the cutter equipment. This is used in conjunction with the ring fence which is for use on all types of curved work.

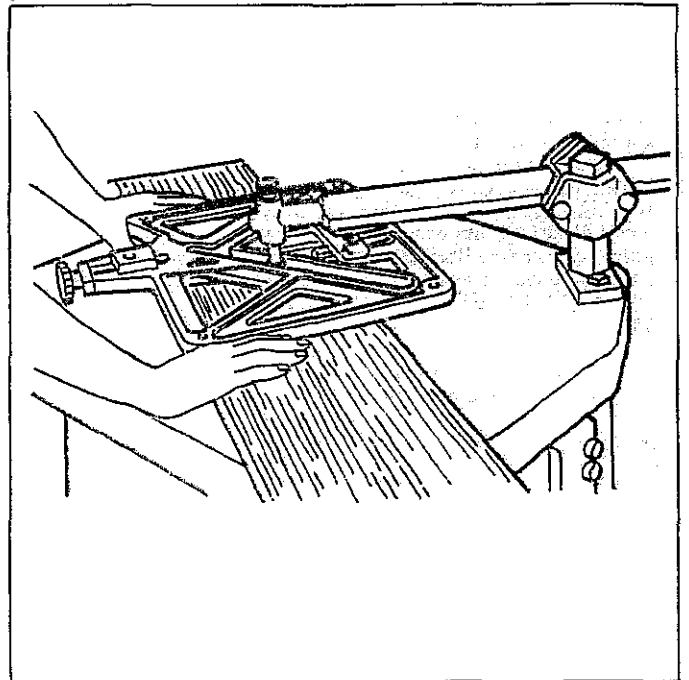


TENONING ATTACHMENT TYPE E. G.

This is an efficient and inexpensive method of tenoning on a spindle moulder. The attachment will cut single or double tenons up to 5" long, 11" wide; it will scribe either single or double at the same operation; it will cut angular tenons; it can be used for half lapping.

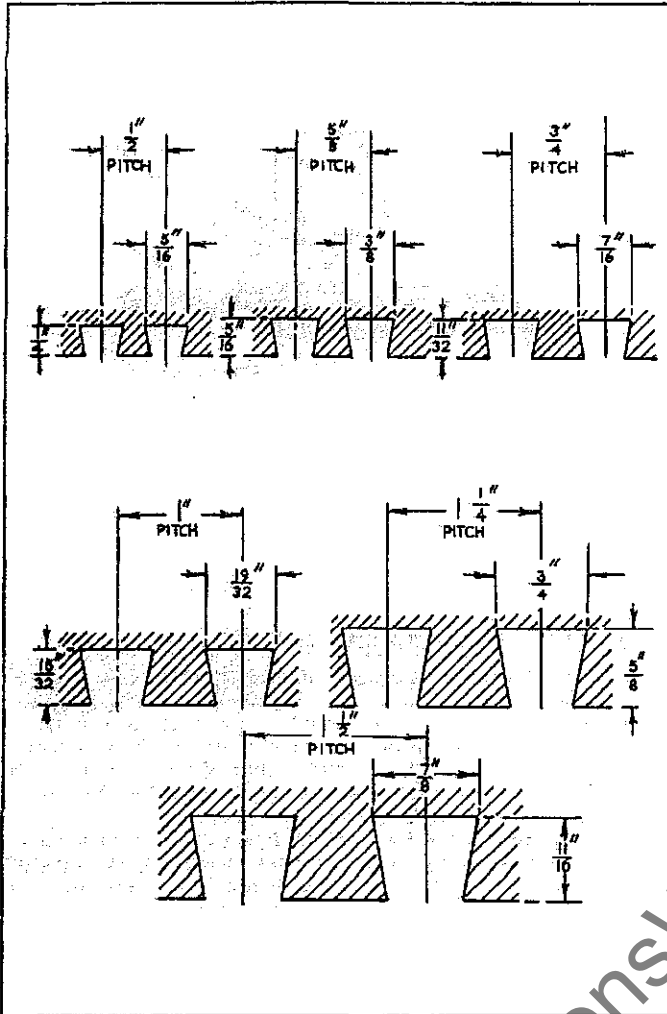
Shoulders of tenons are left dead square and no hand work is required on the tenons when they come off the machine.

The attachment is provided with stops to ensure exact length between shoulders. No setting out is required.



STAIR HOUSING ATTACHMENT :- This attachment consists of template guide roller, arm and pillar.

This attachment can be fitted in a few minutes. The roller guide which controls the cut, is rigidly carried on a solid steel arm from a pillar and centred with the spindle. The template is secured to stair string by means of a hand nut. The template is reversible to produce a pair of strings right and left hand without resetting. Marking out is practically eliminated and a complete pair of strings can be cut in less time than is normally taken in marking out.

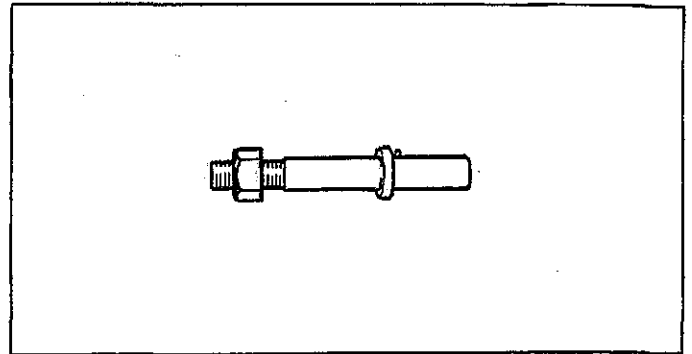
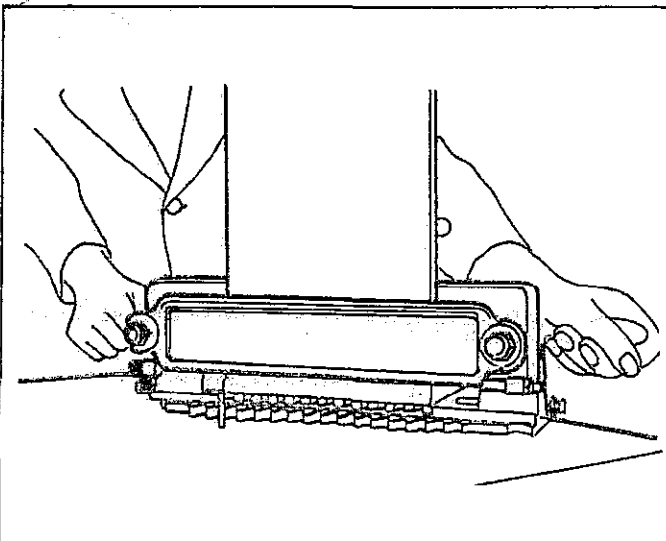
SPINDLES & ADAPTORS

DOVETAIL ATTACHMENT TYPE E.E. :- For board up to 12" (305mm) wide supplied complete with comb plate, collet adaptor and 3/8" dia (9mm) H. type collet

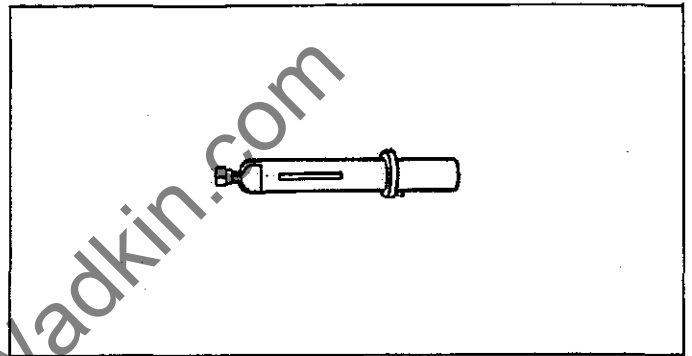
This attachment is a very simple efficient device for dovetailing two boards at right angles to each other. They are clamped in position and suitable stops are provided for setting. Both the dovetail and the pin are produced at the same operation, and the pin is rounded so that no hand work is necessary.

Guide plates and bits are available for the following pitches $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ " and $1\frac{1}{2}$ " (13mm, 16mm, 19mm, 25mm, 32mm and 38mm)

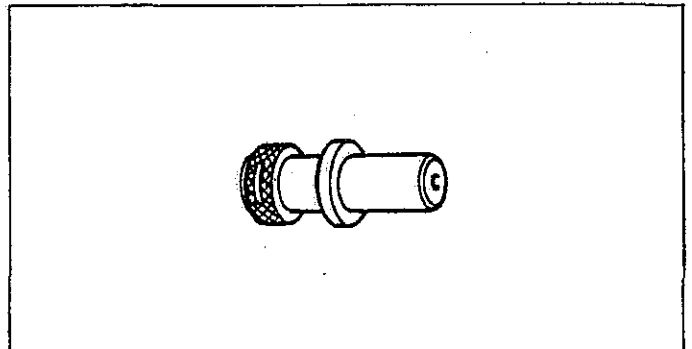
Note:- When ordering spare dovetail bits, please specify pitch size not the diameter of the bit.



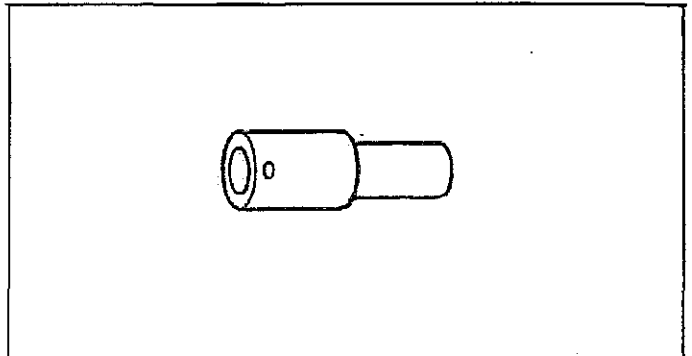
STANDARD LOOSE SPINDLES :- 1" or $1\frac{1}{4}$ " dia (25mm and 30mm) available. These are for carrying standard bore cutterblocks, slotted collars, grooving saws, etc. The spindle threads are right hand, and all spindles are supplied with locknut and a set of making up collars.



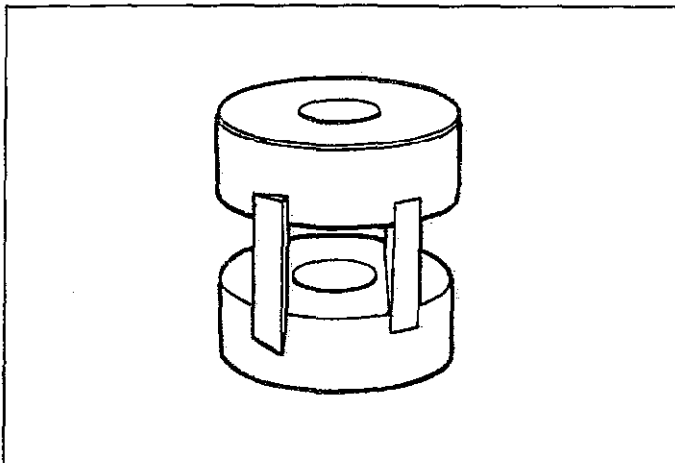
SLOTTED FRENCH SPINDLE:- For carrying one $\frac{1}{4}$ " (6mm) thick cutter only, which is secured by a hardened steel set screw. Maximum recommended speed :- 4,500rpm



COLLET TYPE ROUTER ADAPTOR :- This adaptor is supplied complete with $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{9}{16}$ " (9mm, 13mm, and 14mm) "H" type collets. It enables standard router cutters to be used.



ADAPTOR FOR STAIR HOUSING ATTACHMENT :- Special adaptor having a $\frac{5}{8}$ " bore (15mm) to accept both "Z" type and clothes peg type cutter.

**PLAIN SLOTTED COLLARS :-**

For 1" (25mm) dia. work spindle :- 2½" (64mm) dia with ¼" (6mm) wide slots

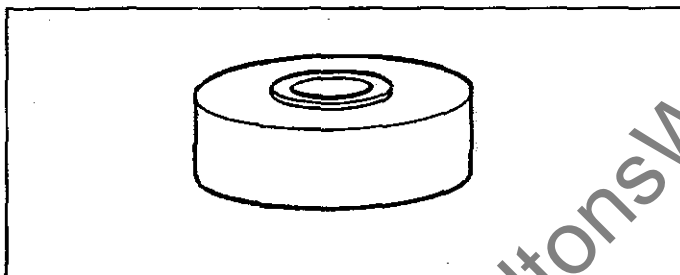
Minimum cutting circle :- 3" (76mm)

For 1½" (30mm) dia work spindle :- 3" (76mm) dia with ¼" (6mm) wide slots

Minimum cutting circle :- 3.5/8" (92mm)

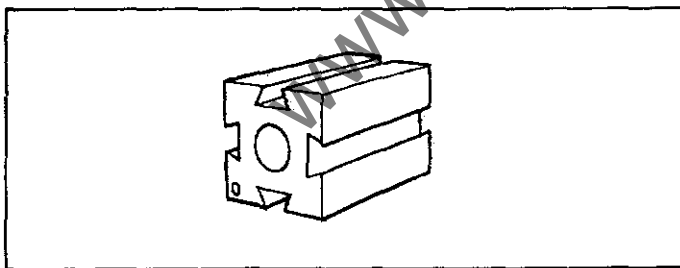
Slotted collar cutters have many advantages, they have a good cutting angle, a comparatively small cutting circle and are easy to shape, maintain and re-grind and also inexpensive. The maximum cutter projection should not exceed 5/8" (16mm) to ensure maximum strength and support

2½" (64mm) dia x 1" (25mm) bore or 3.3/8" (86mm) dia x 1¼" (30mm) bore ball bearing type slotted collars also available.

**BALL BEARING GUIDES :-** Available in two sizes for 3½" and 4" cutterblocks (89mm and 101mm)

3½" (89mm) dia x 1" (25mm) bore

4. 1/8" (104mm) dia x 1" (25mm) bore

**SQUARE CUTTERBLOCKS :-** These cutterblocks are used for long runs, cutters working in pairs. Two or more may be mounted on a single block to build up a mould.

For 1" dia (25mm) work spindle:-

2½" (64mm) square x 3" (76mm) long complete with 4 - ½" whit (13mm) dovetail cutter bolts, nuts and washers.

Maximum recommended speed :- 4,500rpm

For 1½" dia (30mm) work spindle:-

3½" (89mm) square x 3" (76mm) long complete with 4 - 5/8" whit dovetail cutter bolts, nuts and washers.

Maximum recommended speed :- 4,500rpm

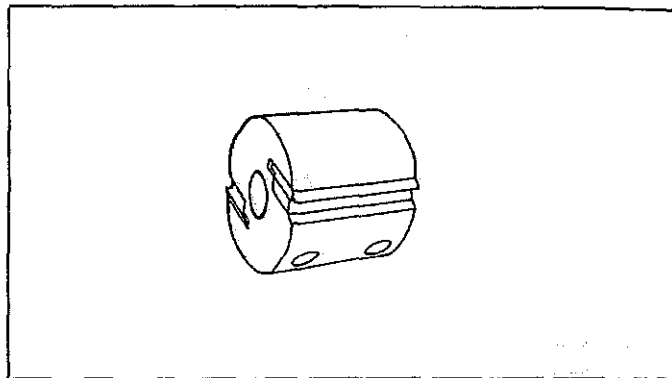
3½" (89mm) square x 4" (102mm) long complete with 4-5/8" whit dovetail cutter bolts, nuts and washers

Maximum recommended speed :- 4,500rpm

3½" (89mm) square x 5" (127mm) long complete with 4 - 5/8" whit dovetail cutter bolts, nuts and washers

3½" (89mm) square x 6" (152mm) long complete with 4 - 5/8" whit dovetail cutter bolts, nuts and washers

Maximum recommended speed :- 4,500rpm

**CIRCULAR CUTTERBLOCKS :-** These cutterblocks have wedge type clamping for safety. They are smooth running and used for facing or shallow rebates etc.

For 1" dia (25mm) work spindle:-

3½" (89mm) diameter circular cutterblock, 3" (76mm) long or 2" (50mm) long.

Maximum recommended speed:- 7,000rpm

For 1½" dia (30mm) work spindle:-

4" (102mm) diameter circular cutterblock 3" (76mm) long

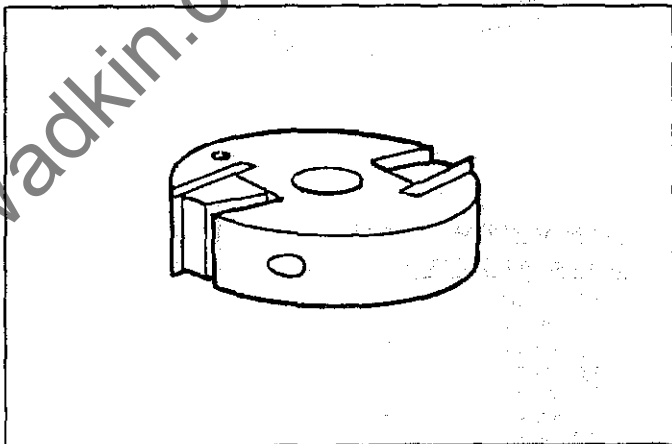
Maximum recommended speed :- 7,000rpm

4½" (108mm) diameter circular cutterblock 4" (102mm) long

Maximum recommended speed :- 6,000rpm

4½" (108mm) diameter circular cutterblock 6" (152mm) long

Maximum recommended speed :- 4,500rpm

**TWO KNIFE WEDGE TYPE MOULDING CUTTERBLOCK**

These cutterblocks are designed to take from 5/32" (4mm) to ¼" (6mm) thick cutters this permits tungsten carbide tipped cutters to be used when necessary.

The cutters can be used for mouldings requiring up to ½" (13mm) cutter projection when using ¼" thick cutters
4" (102mm) dia x 15/16" (24mm) thick x 1" (25mm) bore Part No QR60

This block uses 5/32" (4mm) thick cutters only.

4. 7/8" (124mm) dia x 15/16" (24mm) thick x 1" (25mm) bore. Part No. QR 11/B

4. 7/8" (124mm) dia x 15/16" (24mm) thick x 1¼" (30mm) bore. Part No. QR 1/B

4. 7/8" (124mm) dia x 1¼" (32mm) thick x 1¼" (30mm) bore. Part No. QR 2

4. 7/8" (124mm) dia x 1¼" (32mm) thick x 1¼" (30mm) bore. Part No. QR 10

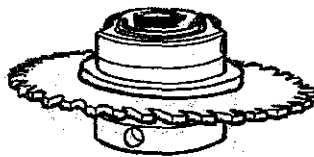
4. 7/8" (124mm) dia x 2" (50mm) thick x 1¼" (30mm) bore. Part No. QR3

4. 7/8" (124mm) dia x 2" (50mm) thick x 1¼" (30mm) bore. 4 Knife Part No. QR66

5. 3/8" (137mm) dia x 15/16" (24mm) thick x 1¼" (32mm) bore Part No. QR 4

4. 7/8" (124mm) dia x 2" (51mm) thick x 1¼" (32mm) bore, with top and bottom bevels. Part No. QR 57

8" (203mm) dia x 15/16" (24mm) thick x 1¼" (32mm) bore. Part No. QR 16

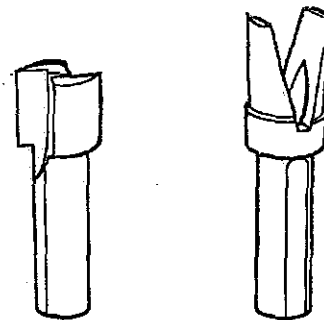
**WOBBLE SAW :-**

These saws are used where varied widths of grooving are called for, and where quantities are small. They are not recommended for quantity production or where precision accuracy or the highest standard of finish is required.

6" (151mm) diameter for grooves $\frac{1}{8}$ " to $\frac{3}{4}$ " (3mm to 19mm)

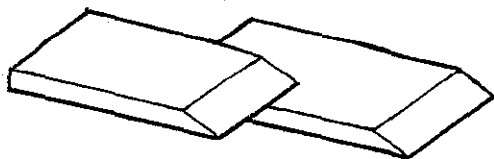
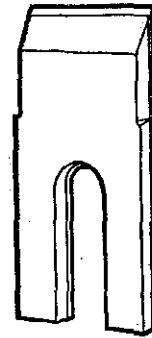
For use on 1" and $1\frac{1}{4}$ " dia (25mm and 30mm) spindles

Maximum recommended speed 4,500rpm.

**CUTTERS FOR STAIR HOUSING ATTACHMENT:-**

Z Type and Clothes peg type $\frac{5}{8}$ " dia shank.

These cutters are designed to give a slightly undercut trench and perfectly uniform wedge space. All have $\frac{5}{8}$ " dia shank.

CUTTERS.**CUTTERS FOR SQUARE CUTTERBLOCKS****&
SLOTTED COLLARS****CUTTERS FOR QR BLOCKS****VZ Cutters $\frac{5}{32}$ " thick**

| | |
|-------------------------|-----|
| $\frac{3}{4}$ " on cut | VZ |
| 1" on cut | VZ1 |
| $1\frac{1}{4}$ " on cut | VZ2 |
| $1\frac{1}{2}$ " on cut | VZ3 |
| $1\frac{3}{4}$ " on cut | VZ4 |
| 2" on cut | VZ5 |
| $2\frac{1}{2}$ " on cut | VZ6 |

T.C. Tipped

| |
|-------|
| VZ/T |
| VZ1/T |
| VZ2/T |
| VZ3/T |
| VZ5/7 |

 $\frac{1}{4}$ " Thick

| | |
|-------------------------|------|
| $\frac{3}{4}$ " on cut | VZ20 |
| 1" on cut | VZ21 |
| $1\frac{1}{4}$ " on cut | VZ22 |
| $1\frac{1}{2}$ " on cut | VZ23 |
| $1\frac{3}{4}$ " on cut | VZ24 |
| 2" on cut | VZ25 |
| $2\frac{1}{4}$ " on cut | VZ26 |
| $2\frac{1}{2}$ " on cut | VZ27 |

T.C. Tipped

| |
|--------|
| VZ21/T |
| VZ22/T |
| VZ23/T |

Rebate & Square Irons

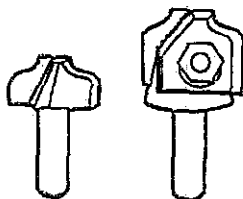
For $2\frac{1}{2}$ " square cutterblock :-

Rebate Irons**Part Nos.**

| On Cut | R. H. | L. H. |
|------------------|-------|-------|
| $\frac{1}{2}$ " | VQ1 | VQ2 |
| $\frac{5}{8}$ " | VQ3 | VQ4 |
| $\frac{3}{4}$ " | VQ5 | VQ6 |
| $\frac{7}{8}$ " | VQ7 | VQ8 |
| 1" | VQ9 | VQ10 |
| $1\frac{1}{4}$ " | VQ11 | VQ12 |

Square Irons

| On Cut | Part Nos. |
|------------------|-----------|
| $1\frac{1}{2}$ " | VQ13 |
| $1\frac{3}{4}$ " | VQ14 |
| 2" | VQ15 |
| $2\frac{1}{4}$ " | VQ16 |
| $2\frac{1}{2}$ " | VQ17 |
| 3" | VQ18 |

Router Cutters:

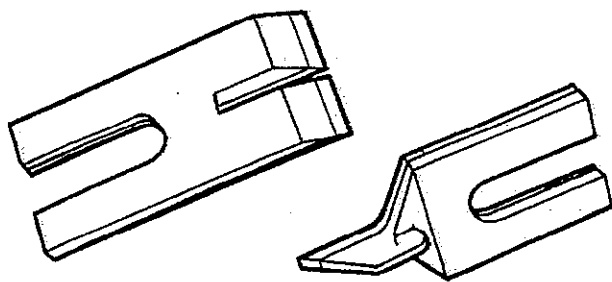
For $3\frac{1}{2}$ " square cutterblock :-

Rebate Irons**Part Nos.**

| On Cut | R. H. | L. H. |
|------------------|-------|-------|
| $\frac{1}{2}$ " | TB1 | TB2 |
| $\frac{5}{8}$ " | TB3 | TB4 |
| $\frac{3}{4}$ " | TB5 | TB6 |
| $\frac{7}{8}$ " | TB7 | TB8 |
| 1" | TB9 | TB10 |
| $1\frac{1}{4}$ " | TB11 | TB12 |
| $1\frac{1}{2}$ " | TB13 | TB13a |

Square Irons

| On Cut | Part Nos. |
|------------------|-----------|
| $1\frac{3}{4}$ " | TB14 |
| 2" | TB15 |
| $2\frac{1}{4}$ " | TB16 |
| $2\frac{1}{2}$ " | TB17 |
| $2\frac{3}{4}$ " | TB18 |
| 3" | TB19 |

**Tonguing and Grooving Irons**For 2½" square cutterblock :-
Part No.

| Size | Tonguing Cutter | Grooving Cutter |
|-------|-----------------|-----------------|
| 1/8" | VS1 | VR1 |
| 3/16" | VS2 | VR2 |
| ¼" | VS3 | VR3 |
| 5/16" | VS4 | VR4 |
| 3/8" | VS5 | VR5 |

For 3½" square cutterblock :-
Part No.

| Tonguing Cutter | Grooving Cutter |
|-----------------|-----------------|
| TV | TX |
| TV1 | TX1 |
| TV2 | TX2 |
| TV3 | TX3 |
| TV4 | TX4 |

Scotia CuttersFor 2½" sq.
cutterblockFor 3½" sq.
cutterblockFor 2½" dia.
Slotted
CollarsFor 3" dia
Slotted
Collars

Dim A.

Part No.

Part No.

Part No.

Part No.

¼"

BTJ1

TJ1

BTL1

TL1

3/8"

BTJ2

TJ2

BTL2

TL2

½"

BTJ3

TJ3

BTL3

TL3

5/8"

BTJ4

TJ4

BTL4

TL4

¾"

BTJ5

TJ5

BTL5

TL5

7/8"

BTJ6

TJ6

BTL6

TL6

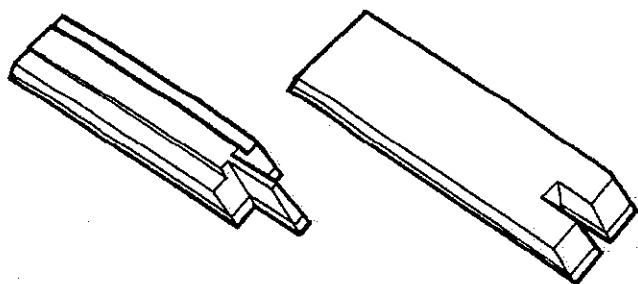
1"

BTJ7

TJ7

BTL7

TL7

For 2½" dia slotted collars :-
Part No.

| Size | Tonguing Cutter | Grooving Cutter |
|-------|-----------------|-----------------|
| 3/16" | BVL1 | BVJ1 |
| ¼" | BVL2 | BVJ2 |
| 5/16" | BVL3 | BVJ3 |
| 3/8" | BVL4 | BVJ4 |

For 3" dia. slotted collars:-
Part No.

| Tonguing Cutter | Grooving Cutter |
|-----------------|-----------------|
| VL1 | VJ1 |
| VL2 | VJ2 |
| VL3 | VJ3 |
| VL4 | VJ4 |

Beading CuttersFor 2½" sq.
cutterblockFor 3½" sq.
cutterblockFor 2½" dia
Slotted
CollarsFor 3" dia
Slotted
Collars

Dim. A

Part No.

Part No.

Part No.

Part No.

¼"

BTN1

TN1

BTP1

TP1

3/8"

BTN2

TN2

BTP2

TP2

½"

BTN3

TN3

BTP3

TP3

5/8"

BTN4

TN4

BTP4

TP4

¾"

BTN5

TN5

BTP5

TP5

7/8"

BTN6

TN6

BTP6

TP6

1"

BTN7

TN7

BTP7

TP7

1.1/8"

BTN8

TN8

BTP8

TP8

1½"

BTN9

TN9

BTP9

TP9

1.3/8"

BTN10

TN10

BTP10

TP10

1½"

BTN11

TN11

BTP11

TP11

Ovolo Cutters

For 2½" Square Cutterblock

| Dim A. | Part No. |
|--------|----------|
| ¼" | BTF1 |
| 3/8" | BTF2 |
| ½" | BTF3 |
| 5/8" | BTF4 |
| ¾" | BTF5 |
| 7/8" | BTF6 |
| 1" | BTF7 |

For 3½" Square Cutterblock

| Part No. |
|----------|
| TF1 |
| TF2 |
| TF3 |
| TF4 |
| TF5 |
| TF6 |
| TF7 |

For 2½" dia. Slotted Cutterblock

For 2½" dia. Slotted Collars

| Dim A. | Part No. |
|--------|----------|
| ¼" | BTH1 |
| 3/8" | BTH2 |
| ½" | BTH3 |
| 5/8" | BTH4 |
| ¾" | BTH5 |
| 7/8" | BTH6 |
| 1" | BTH7 |

For 3" dia. Slotted Collars

| Part No. |
|----------|
| TH1 |
| TH2 |
| TH3 |
| TH4 |
| TH5 |
| TH6 |
| TH7 |

Sash CuttersFor 2½" sq.
cutterblockFor 3½" sq.
cutterblockFor 2½" dia
Slotted
CollarsFor 3" dia
Slotted
Collars

Dim A.

Part No.

Part No.

Part No.

Part No.

1.3/8"

BTR1

TR1

BTT1

TT1

1.5/8"

BTR2

TR2

BTT2

TT2

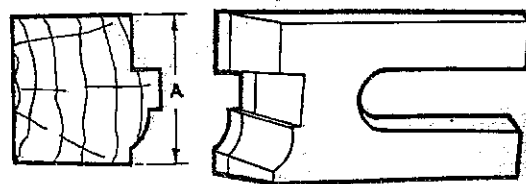
1.7/8"

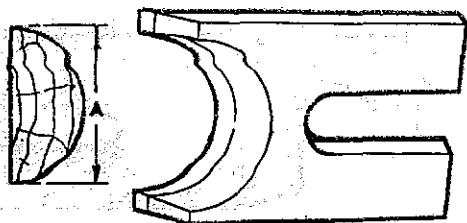
BTR3

TR3

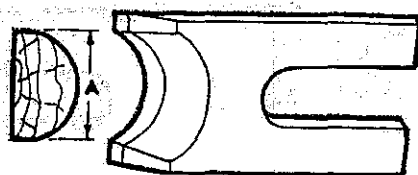
BTT3

TT3

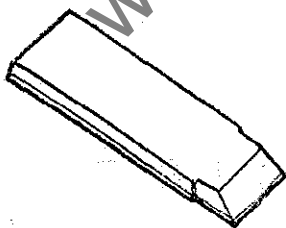


**Full Nosing Cutters**

| | For 2½" sq. cutterblock | For 3½" sq. cutterblock | For 2½" dia Slotted Collars | For 3" dia Slotted Collars |
|--------|----------------------------|----------------------------|-----------------------------------|----------------------------------|
| Dim A | Part No. | Part No. | Part No. | Part No. |
| ½" | BVF1 | VF1 | BVH1 | VH1 |
| 5/8" | BVF2 | VF2 | BVH2 | VH2 |
| ¾" | BVF3 | VF3 | BVH3 | VH3 |
| 7/8" | BVF4 | VF4 | BVH4 | VH4 |
| 1" | BVF5 | VF5 | BVH5 | VH5 |
| 1.1/8" | BVF6a | VF6a | BVH6a | VH6a |
| 1¼" | BVF6 | VF6 | BVH6 | VH6 |
| 1½" | BVF7 | VF7 | BVH7 | VH7 |
| 1¾" | BVF8 | VF8 | BVH8 | VH8 |
| 2" | BVF9 | VF9 | BVH9 | VH9 |

**Shallow Nosing Cutters**

| | For 3½" sq. cutterblock | For 3" dia Slotted Collars |
|-------|----------------------------|----------------------------------|
| Dim A | Part No. | Part No. |
| ½" | VB1 | VD1 |
| 5/8" | VB2 | VD2 |
| ¾" | VB3 | VD3 |
| 7/8" | VB4 | VD4 |
| 1" | VB5 | VD5 |
| 1¼" | VB6 | VD6 |
| 1½" | VB7 | VD7 |
| 1¾" | VB8 | VD8 |
| 2" | VB9 | VD9 |

**Square Edge Cutters**

| On Cut | For 2½" dia Slotted Collars | For 3" dia Slotted Collars |
|--------|-----------------------------------|----------------------------------|
| ¾" | BVN1 | VN1 |
| 1" | BVN2 | VN2 |
| 1¼" | BVN3 | VN3 |
| 1½" | BVN4 | VN4 |
| 1¾" | BVN5 | VN5 |
| 2" | BVN6 | VN6 |
| 2¼" | BVN7 | VN7 |
| 2½" | BVN8 | VN8 |
| 2¾" | BVN9 | VN9 |
| 3" | BVN10 | VN10 |

CUTTERS AND CUTTER STEELS FOR SPINDLE MOULDERS

Special grades of steel are used for making cutters for different duties and applications on the spindle moulder. The following is a rough guide.

Highspeed steel on iron :- is used for long life and for cutting hard woods. High speed steel is brittle and is usually welded to a softer steel back for all types of unsupported irons. These are used on square cutterblocks, slotted collars and some thin knife moulding cutterblocks. A large range of irons for the square cutterblock and slotted collars are readily available in this steel.

Solid high speed steel :- is more brittle and is only used where the cutters are supported very close up to the cutting edge e.g. a thin knife on the circular cutterblock, or where a strong section can be used such as a milled to pattern slotted collar cutter.

Alloy steel on iron :- is less expensive than high speed steel on iron, and is more ductile. Alloy steel is not as hard and will not stand up to heavy cutting or hard woods as well as high speed steel. A large range of irons for the square cutterblock and slotted collars are readily available in this steel.

Solid alloy steel :- is normally supplied in bar form in the soft condition for cutting up by the customer. It is easily hardened and tempered and is normally used for french spindle work up to 6,000 rpm where cutters are held by a locking screw in spindle, locking direct on to the side of the cutter.

All the above types can be supplied in bar form, micrometer ground to precision limits. The alloy and alloy on iron 3/16" (5mm) x ¾" (20mm) up to ¼" (6mm) x 3" (76mm) in the soft condition and the solid high speed steel 5/32" (4mm) x 1½" (38mm) and 5/32" (4mm) x 2" (50mm) and high speed steel on iron ¼" (6mm) x 1¼" (32mm) and ¼" (6mm) x 1½" (38mm) in the head treated condition. These latter bars cannot be cut with a tool and the blanks should be ordered to correct grinding lengths unless the user has suitable grinding wheel equipment for cutting to length himself.

All the above cutters can be ground on the usual standard grinding equipment.

Tungsten carbide tips :- These are specially made for use on hardwoods, woods with high silica content also plywoods and hardboards where High Speed Steel will not stand up to the abrasive action. It is much more expensive but gives very much longer life. A limited range of these cutters for slotted collars and square cutterblocks are available. Special shapes can be supplied to order.

N.B. Special diamond impregnated grinding wheels and diamond hand caps are essential for shaping and servicing Tungsten Carbide Tipped Tools. These are available but expensive for the small user for whom we can offer a cutter grinding service if required.

SHAPING CUTTERS

When shaping cutters for any mould on any type of cutterhead or slotted collars it is important that the correct allowance is made to the depth of form cutter.

Fig. 10 shows the projections of the cutter to produce a simple rebate. For example using the 3½" square cutterblock, to produce a 1" (25mm) deep rebate the cutter must have a depth of form of 1.3/16" (30mm) this being due to the angle at which the cutter strikes the work on the line "AA". When a shaped mould is required to be cut it is necessary to plot out the form of the cutter; this is shown in fig. 11.

It is important when selecting blanks from which to make the cutter that they have the minimum necessary overhang. Also a blank as near the shape and width as possible should be selected so that there will be less waste and less change of overheating cutters when grinding.

The minimum cutting circle is fixed to give the necessary clearance for the bolt head when working with straight irons only.

The cutting angle which is normally 35° is shown at "B", in fig. 10 and the cutting and the cutting angle at "C" this angle varies with the size of the cutterblock and the depth of the mould

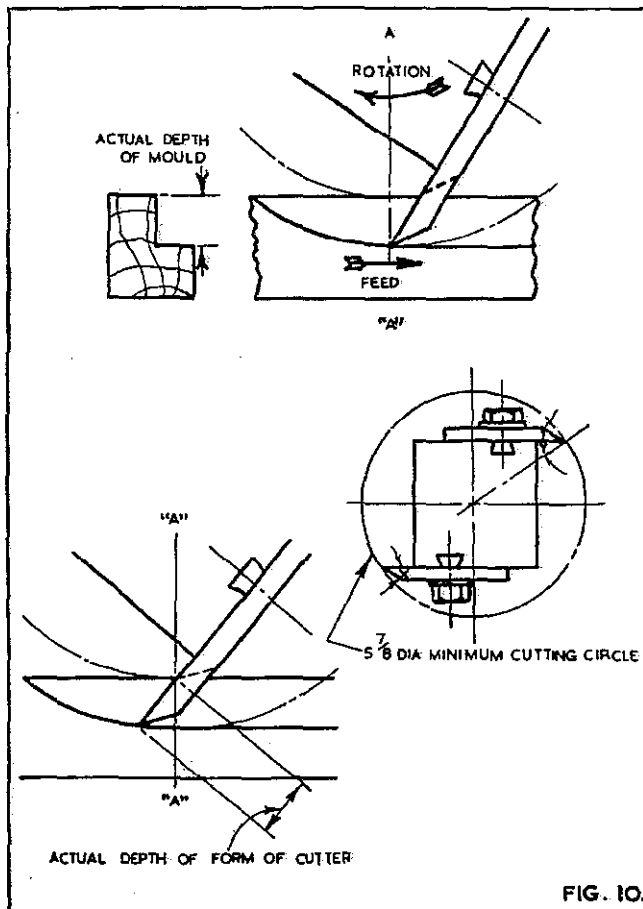


FIG. 10.

To obtain the correct cutter form for a shaped mould, without using the moulder's rule, it is necessary to plot this out as shown.

First the square block and cutter at minimum cutting circle are drawn out at "Y" in fig. 11. The radius of the minimum cutting circle is drawn around to the centre line and divided up by the lines A, B, C, D and E, into either $1/16"$ (2mm) or $1/8"$ (3mm) according to the size and intricacy of the shape, these lines are then struck round from the centre line radially to the face of the cutter.

At "X" the lines A1, B1, C1, D1, and E1 are carried across as shown, also at "W" the mould is produced exactly as at "Z" and divided up the same, the lines 1, 2, 3, 4 and 5 which are from the points where lines A, B, C, etc. intersect the edge of the mould, are then drawn across to "X" thus E1 is cut by 1; D1 by 2, etc. The points of intersection are joined as shown thus giving the correct projected form of the cutter.

This takes up considerable time to do for each shape of cutters required, and can be very much reduced by using the moulder's rule as shown in fig. 12. This is a graph on which the form can be plotted and automatically gives the necessary allowance on the depth of form.

When the mould is to be a standard, a template should be made to the projected form to which the cutters can be shaped when the job repeats. This will ensure uniformity on all future runs.

MOULDERS RULE

A permanent moulder's rule can be made by the customer in sheet brass and aluminium and will then be handy for use in the workshop.

To plot the form of a cutter by use of the moulder's rule it is necessary to draw the full size shape of the mould on tracing paper and rule $1/8"$ (3mm) squares as shown in fig. 12a. This is then placed alongside the moulder's rule and projected across, this will give a series of dots which must be joined to give the form of the cutter. The cutter blank chosen must be wide enough to give at least $1/8"$ (3mm) overlap beyond the edge of the mould. The depth of form of the cutter for the same mould varies slightly when used on a $3\frac{1}{2}"$ (89mm) or $2\frac{1}{2}"$ (64mm) square cutter block due to the different cutting diameters. Moulder's rules are required for each size of square block. The cutters are not interchangeable from one size of cutter block to another if a really accurate mould is required.

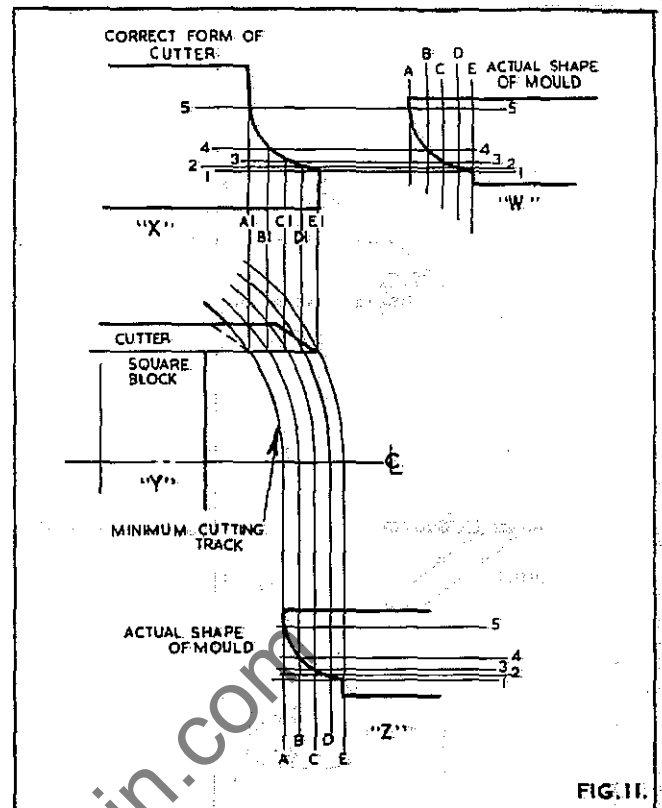


FIG. 11.

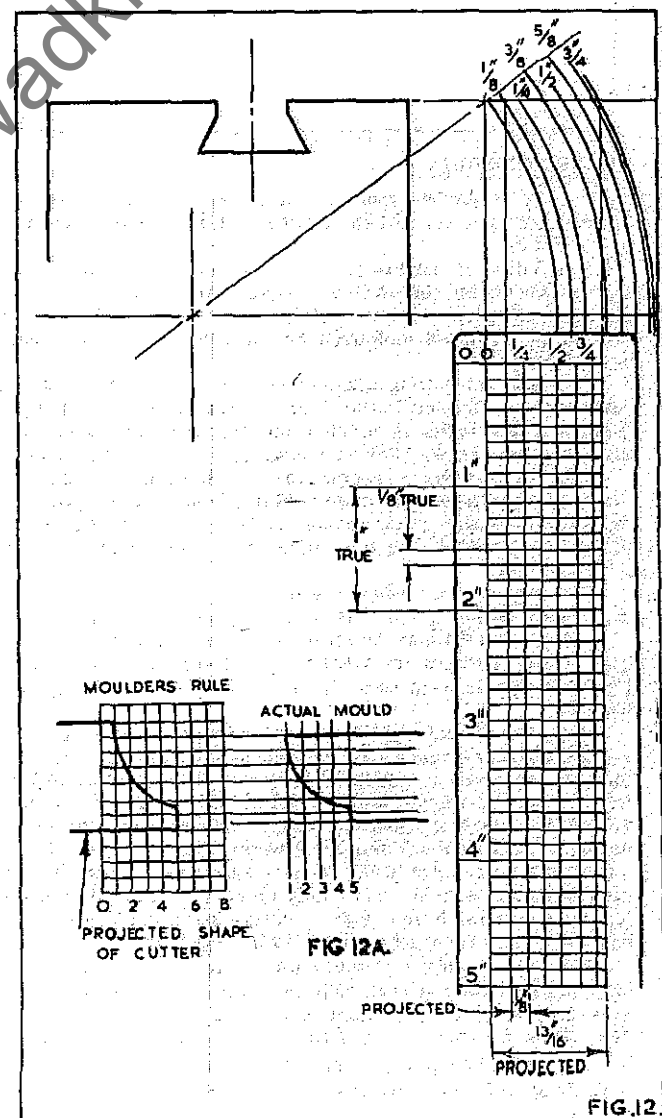
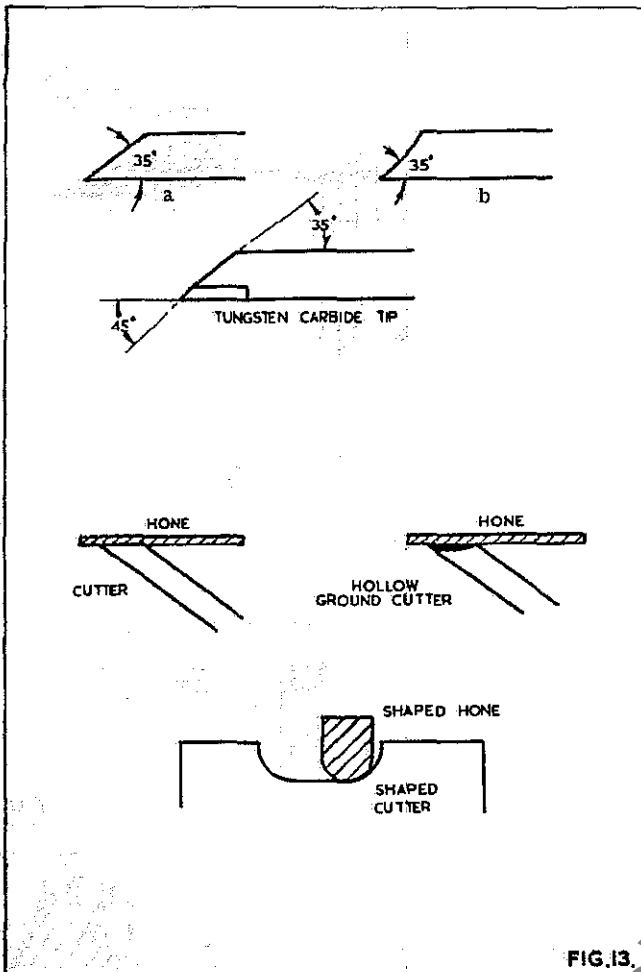


FIG. 12.

18.



CUTTER GRINDING

Cutter should be ground carefully avoiding any overheating as this will crack or soften cutters so that they will not stand up to the work.

A solution of soluble oil and water should be handy and the cutters should be held in this occasionally to cool them. This solution will also prevent rusting. Cutters should never be allowed to become discoloured during grinding, as this indicates overheating.

The correct cutting angle of 35° for most cutters should be maintained as this gives the correct strength to the cutting edge. When hollow grinding is carried out, the angle of the cutting edge, should be kept as near 35° as possible, see fig. 13(a) and (b).

Hollow grinding is recommended wherever possible, as a keen cutting edge is more easily obtained when hand lapping. When lapping or stoning a flat ground cutter, a good edge is more difficult to obtain due to the tendency to rock the stone and leave a convex face.

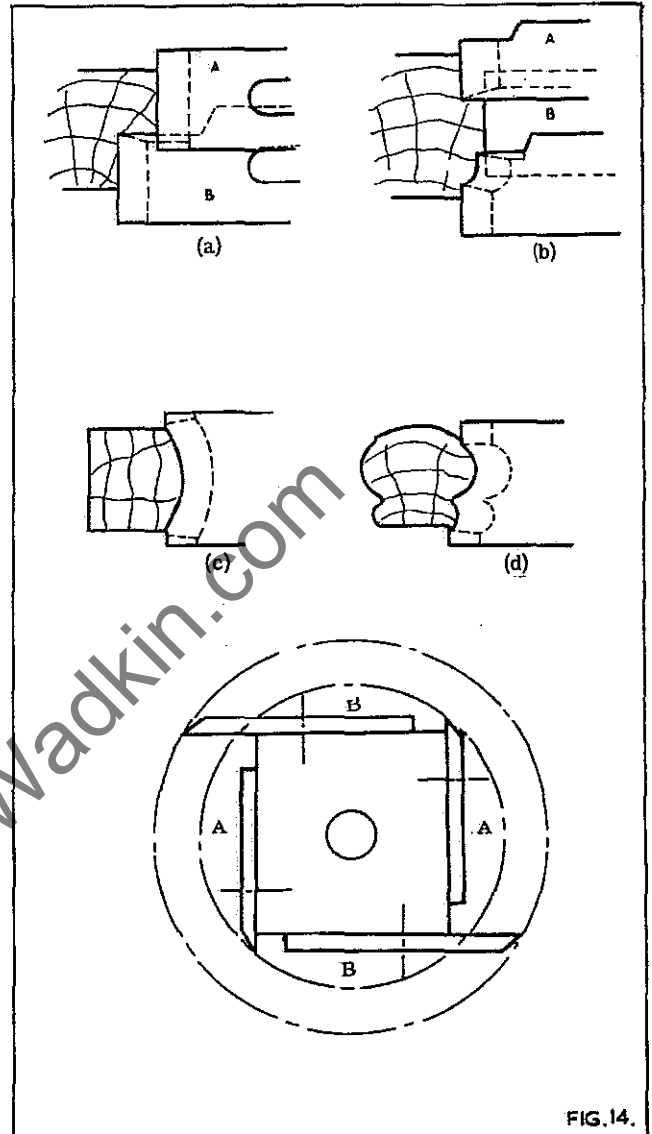
Good open grain wheels should be used and should not be allowed to become glazed, as this will cause excessive heat.

About 12" (304mm) diameter wheels used down to 10" (254mm) give the best radius for a hollow grind and an economic life. 8" (204mm) wheels used down to 6" (153mm) leave the grind too hollow.

Tungsten carbide tipped cutters should be purchased the shape required and re-ground only as necessary. In this case cutters should be relieved at 35° on the steel position and the tips finished with a diamond impregnated wheel at 45° as shown, using only very light cuts to prevent cracking. The diamond wheel should not be allowed to touch the steel backing as this clogs the wheel and causes excessive heat. Where available a copious flow of coolant should be used. They may be honed with a Diamond hand lap, as the cutter becomes dull, until a re-grind is necessary. A thin oil lubricant should be used on the hand lap.

All cutter blanks sent out by us are ground only and if used as chippers or rebate cutters require honing with a 142 carborundum slip stone to produce a razor sharp edge before commencing to cut. This will ensure a good finish on the wood and an easy feed. Dull cutters give a poor, rough and plucked out finish, and make it difficult to feed the job past the cutters. Honing should be done

by a reciprocating or rotary motion on the cutter, using a little paraffin to give "Bite" to the stone. The honing stone is a much finer grit than the grinding wheel and leaves a sharp keen edge. A number of honing stones of different shapes, e.g. round sticks or square sticks will be found helpful in honing shaped cutters.



TYPICAL CUTTER LAYOUTS

In all cases where possible when using square cutterblocks it is advisable to break up the cut over two or more pairs of cutters, this has many advantages as is shown in the examples shown in fig. 14.

Fig. 14 (a) **SIMPLE REBATE**. By using two pair of cutters there is very little grinding to be done, only side relief on the cutters "B" to give a good clean cut and prevent burning. Cutters are mounted on all sides of the block. This also spreads the cut over the four sides of the block and gives a smoother action.

Fig. 14 (b) **SASH MOULD**. This is best worked with three pairs of cutters as it enables correct side relief to be obtained on all cuts. It also allows the same cutters to be used with varying widths of mould as they can easily be adjusted sideways.

Fig. 14 (c) and (d) **HAND RAIL MOULD**. This is broken up into three separate operations. At fig. 14 (c) the top is worked first so that the timber runs on a flat face. This cut is done by only one pair of cutters. At fig. 14 (d) the sides are worked in two operations, one pair of cutters doing all the side work.

By breaking the moulds up as illustrated, it is possible to use the same cutters for many moulds thus reducing the total quantity of cutters required, it makes grinding of side relief a simple operation and enables the exact shape to be obtained by adjusting pairs of cutters across each other. It is essential to have each pair of cutters balanced for smooth vibrationless of the machine.

TYPICAL SET UPS

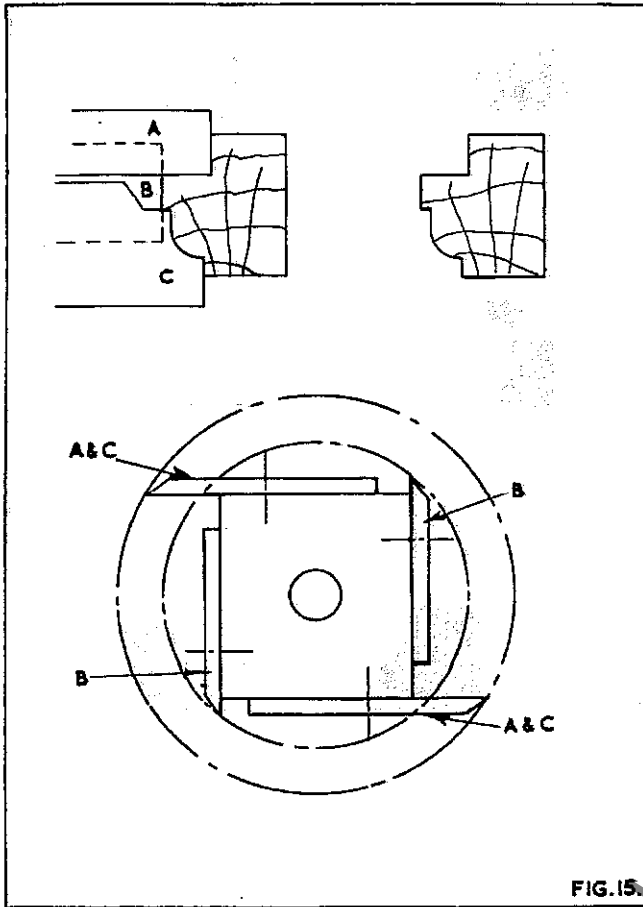


FIG. 15.

FRAMING ON SQUARE BLOCK FIG. 15

Equipment required :- $1\frac{1}{4}$ " (30mm) diameter loose screwed spindle, square cutterblock three pairs of cutters, straight fence and shaw guard. The cutters will have to be shaped to suit the moulded portion, allowing for angle by using the moulder's rule. Each pair of cutters must be balanced to prevent vibration, then accurately set up on the square block, so that all are cutting.

The cutterblock is then mounted on the spindle, fences set correctly in line, top and side spring pressures set to hold work firmly to the fences, adjustable.

Spindle speed :- 4,500 rpm.

Note :- Cutters are always used in pairs to maintain balance.

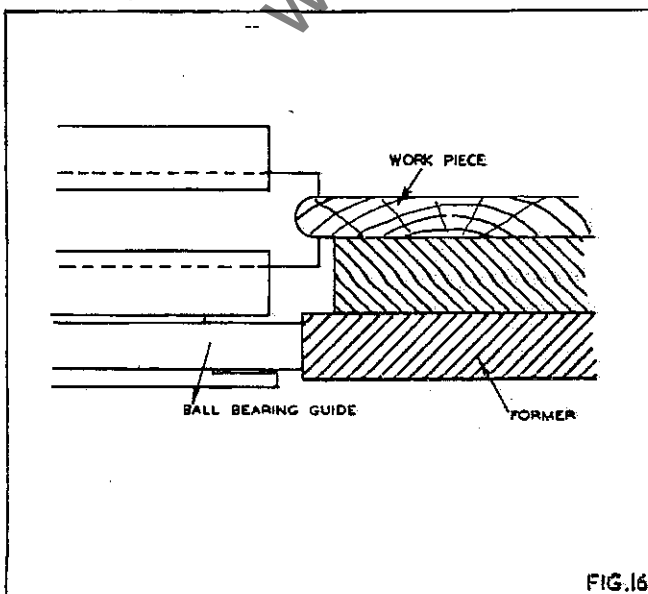


FIG. 16.

SHAPED PANEL ON SLOTTED COLLARS FIG. 16

Equipment required :- 1 " (25mm) diameter loose screwed spindle one pair of slotted (one being the ball bearing type) one pair nosing cutters and safety guard with flaps. The cutters are set up in the collars keeping minimum track in line with the bottom ball bearing slotted collar. The collars are mounted on a 1 " (25mm) diameter loose top piece. The work piece is held by spikes to master former which is below the work.

The safety guard is set to cover the cutters and top piece. The former is passed across the guide. The cutters are completely shielded from the operator's hand by the work.

Spindle speed :- 7,000 rpm.

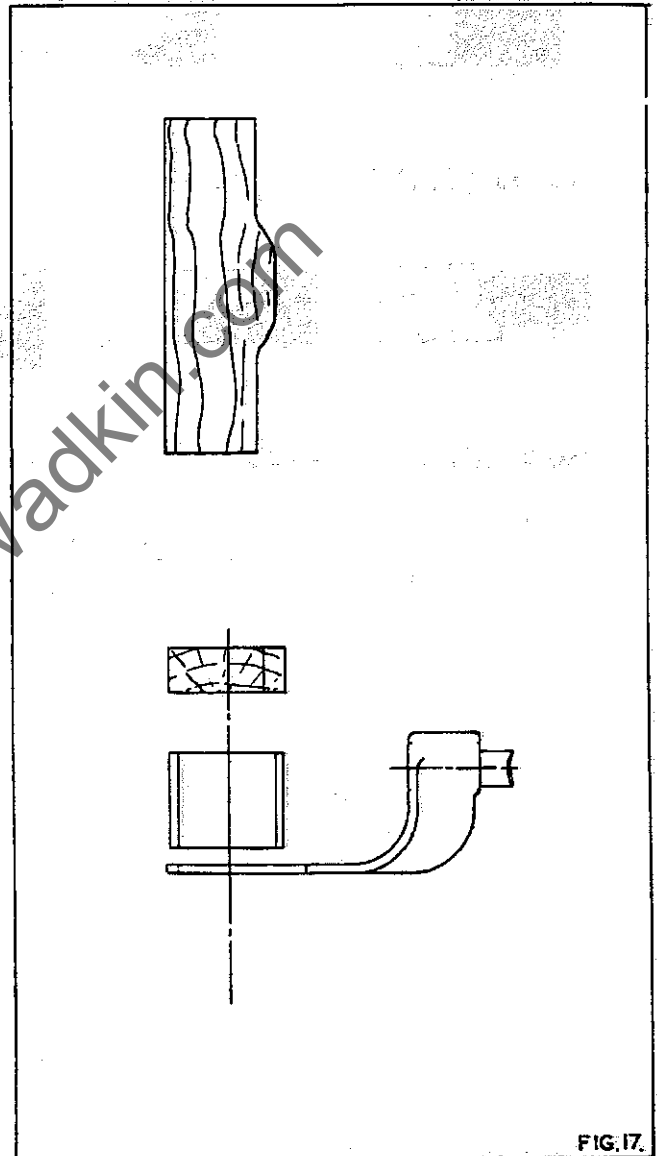


FIG. 17.

CIRCULAR CUTTERBLOCK WORK FIG. 17

Equipment required :- $1\frac{1}{4}$ " (30mm) diameter loose top piece, 3 " (76mm) deep circular cutterblock, ring fence and safety guard with flaps.

The cutterblock is mounted on the $1\frac{1}{4}$ " (30mm) diameter loose top piece and set so that cuttertrack is in line with the ring fence as shown in Fig. 17. The guard is then set to cover up block and top piece leaving only sufficient room for work to pass underneath. Work is to be mounted on a shaped fixture which is held up to the ring fence. Contact must always be at the same point on the ring fence to ensure even depth of cut. This is essential due to the shape of the ring.

The circular block gives a good smooth cut and finish to work. Spindle speed :- 7,000 rpm.

A FULL RANGE OF SOLID PROFILE CUTTERS CAN BE PROFITABLY USED.



No. 2 1 1/4" Square edge cutter (1 1/4" bore)



No. 8 3/16" Tonguing Cutter (1 1/4" bore)



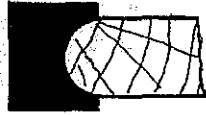
No. 9 3/16" Grooving Cutter (1 1/4" bore)



No. 13 Reversible Glue Joint (1 1/4" bore)



No. 19 5/16" Rad. Ovolo Cutter (1 1/4" bore)



No. 22 3/4" dia. Nosing Cutter (1 1/4" bore)



No. 23 7/8" dia. Nosing Cutter (1 1/4" bore)



No. 24 1" dia. Nosing Cutter (1 1/4" bore)



No. 31 1/2" Rad. Cutter (1 1/4" bore)



No. 36 3/8" Rad. Ogee Cutter (1 1/4" bore)



No. 42 45° Angle Cutter (1 1/4" bore)



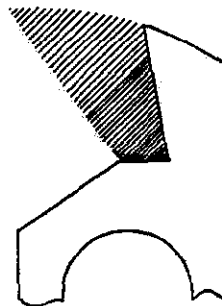
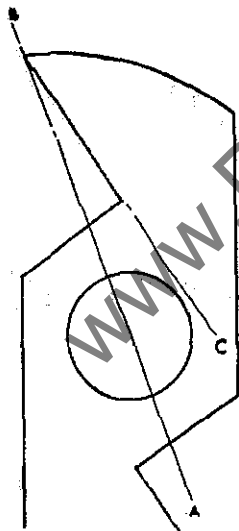
No. 43 30° Angle Cutter (1 1/4" bore)



No. 51 Table edge Cutter (1 1/4" bore)

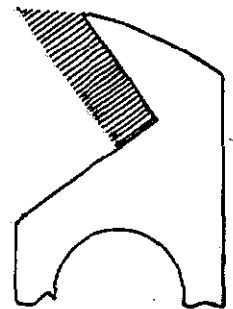
INSTRUCTION FOR REGRINDING PROFILE CUTTERS

FIG. 1.



CORRECT

FIG. 2.



WRONG

FIG. 3.

There are two methods of grinding these cutters:

1. With precision tool grinder.

This method involves grinding the cutter on an arbor between centres. The machine should be set to grind the face of the cutter so that angle ABC, in Fig. 1 is the same after grinding as it was originally.

2. With hand or bench grinder.

Before regrinding the cutters by this method ensure that the check chart supplied with the cutters is to hand. To check the angle of the cutters, place the new ground face, i.e. line BC, in Fig. 1, against that of the check chart and when the angle is correct the bore of the cutter should correspond to that of the check chart. This ensures that the correct angle is maintained at all time.

NOTES

1. A slight variation in the angle ABC, in Fig. 1 on opposite wings of the cutter is not too important, but for the best results avoid having the point "B" in Fig. 1 or its opposite on a different radius. This would cause one cutting edge to do all the cutting and would make the cutter out of balance and cause vibration.

2. When making single cuts with more than one cutter in the set up always **STAGGER** the cutting edges rather than line them up. Doing this improves the quality of the work and reduces vibration and chatter. Staggered cutters require less power than "in line" cutters.

3. Cutters must always be ground in the root of the tooth, as shown in Fig. 2 never as in Fig. 3. Otherwise the cutters will drag or fail to cut the complete shape. Failure in observing this point results in weakening the tooth form and shortening the usable life of the cutter.

4. REGRINDING SERVICE

We offer precision regrinding service and the charges are moderate and the service prompt.

RETURN THE CUTTERS TO:

BURSGREEN (DURHAM) LIMITED,
FENCE HOUSES,
BOUGHTON LE SPRING,
CO. DURHAM
ENGLAND

CAUTION

We do not recommend these cutters to be used on anything but short runs of plywood or resin bonded wood substitutes, because resinous glues used in making plywood etc. are extremely hard and abrasive. This causes the cutters to overheat and soften if not of the Tungsten Carbide Tipped variety. Write for prices of special tipped cutters for such materials.