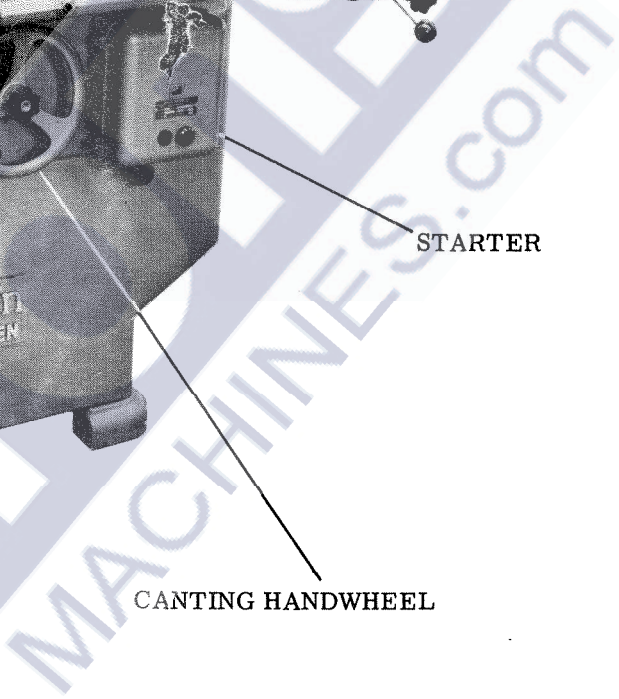


The diagram illustrates the experimental setup. A subject is seated at a table, looking at a video screen. A video camera is positioned above the screen. A target is placed on the table. A horizontal arrow indicates the direction of movement from the starting point to the target. A vertical arrow indicates the direction of movement from the starting point to the video screen. A horizontal arrow indicates the direction of movement from the video screen to the target. A vertical arrow indicates the direction of movement from the video screen to the video camera.



Diameter of saw	14"	350mm
Diameter of saw spindle	1" standard	25.4mm
Optional diameter saw spindle	1.1/8" or 1 1/4"	28.5 or 31.7. mm
Optional diameter saw spindle (metric only)	-	25 or 30mm
Maximum depth of cut	4.7/8"	125mm
Maximum depth of cut with saw at 45°	3.3/8"	85mm
Maximum ripped to right of saw		
With fence bars in central position	37"	940mm
With fence bars offset to right of table	53"	1345mm
Maximum width of dado or groove with extension arbor	1"	50mm
Table in front of saw with maximum cut	18 1/4"	465mm
Table in front of saw with 1" (25mm) deep cut	22 1/4"	565mm
Size of table	38" x 50"	965 x 1270mm
Height of table	34"	865mm
Speed of saw spindle	3,500rpm	3,500rpm
Horsepower of Motor - 3phase	5	5
1phase	3	3
Approximate net weight	780 lb	350 kg
Approximate gross weight	1060 lb	480 kg
Approximate shipping dimensions	46cu. ft.	1.3m ³

Installation

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

When the machine is cased for export the extension tables, rip fence, fence bars and motor are removed and packed individually. Remove and re-assemble as shown in Fig.1.

Wiring Details

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

Points to note when connecting to power supply:-

Check that the voltage, phase and frequency correspond to those on the motor plate, so the correct coils and heaters are fitted to the starter.

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.

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.

Connect the line leads to the appropriate terminals. See Fig. 2, for 3 phase and phase supply.

Check all connections are sound.

Check the rotation of the motor for the correct direction. If this is incorrect reverse any two line lead connections for 3 phase supply.

Voltage	Phase	HP	S.W.G. Tinned Copper Wire	Fuse Rating Amps
0	3	5	18	45
0/420	3	5	22	24
0	3	5	23	20
0	3	$7\frac{1}{2}$	17	65
0/420	3	$7\frac{1}{2}$	19	38
0	3	$7\frac{1}{2}$	22	24
0/220	1	5	14	102
0/250	1	5	15	78

Lubrication

It is advisable to keep all bright parts covered with a thin film of oil to prevent rusting. See Fig.4.

TYPE OF OIL RECOMMENDED
TYPE OF GREASE

POWER EM 125
SHELL ALVANIA 3

Foundation

The clearances required for this machine are shown in Fig.3.

Mounting Sawblades

To mount a sawblade the undermentioned procedure should be followed:-

Check the machine is isolated electrically before starting to fit sawblade.

Swing sawguard to top position.

Remove aluminium table insert and raise saw arbor to its highest position.

Remove the arbor nut (left hand thread) and front saw flange. To facilitate the removal of the arbor nut, insert hexagon wrench into end of saw arbor.

Select the blade which is required depending on the type of work which is to be done.

Check the blade is free from all dirt, gum or sawdust especially where it will be gripped by the flanges. Mount the blade into arbor. Check the front saw flange is clean and then fit into saw arbor. The saw teeth should point towards the front of the machine.

Note: If the flanges and the saw are not clean the saw will run out of true, causing vibration and indifferent sawing.

6. Lock the saw securely in position with the arbor nut (left hand thread). To tighten arbor nut hold spindle in position with hexagon wrench in the end of the saw arbor.

7. Replace table insert and position sawguard depending on the thickness of timber to be worked.

To Change Saw Arbor

The saw spindle is designed to take an extension arbor 1", 1.1/8" or 1 1/4" for use with cutterblocks.

1. Remove saw guard and table insert for easier access to the saw arbor.
2. Loosen arbor nut (left hand thread) when holding spindle in position with hexagon wrench placed in the end of saw arbor.
3. Remove front saw flange and saw.
4. Remove saw arbor with the use of the special spanner provided.
5. To replace the required arbor, reverse the above procedure.

Rise and Fall Controls

The saw arbor rises and falls a total travel of $3\frac{3}{4}$ " (95mm). The travel of the saw is pre-set before despatch from the works. The rise and fall is controlled by the conveniently placed handwheel "A" in Fig. 5.

Rise and fall is through a wormwheel which in turn drives a sprocket on a chain quadrant. To lock these in any position, lock plastic handwheel "B".

Canting Controls

The saw cants 45° to the right with positive stops at 90° and 45° which are accurately set before despatch from the works. The motion is through a wormwheel and racked quadrant and is controlled by the conveniently placed handwheel "C" in Fig. 5. The angle of cant is shown on the graduated scale "D".

To lock the saw at any angle, lock handwheel "E".

All adjustments listed have been carefully set and checked and the whole machine thoroughly tested before despatch from the works. During the first weeks of operation and at regular intervals thereafter, certain items such as belt tension should be checked carefully. When adjustments are necessary proceed in accordance with the relative instructions given.

Belt Tension

The drive is by 3 vee belts from a 5HP motor. To tension the belts loosen the four hexagon head bolts "A" in Fig. 6. Move motor until required tension is reached, then re-lock the hexagon head bolts "A".

How to Adjust Guard and Riving Knife

The riving knife complete with the sawguard rises and falls with the saw. The riving knife should be brought to within $\frac{1}{4}$ " (6mm) of the saw at the closest point. To adjust the riving knife to this position, loosen the two hexagon nuts "A" in Fig. 7 and position riving knife where required, then re-lock in position.

The guard should then be adjusted to protect as much of the saw as possible by loosening the handwheel "B" and positioning the guard where required. When set re-lock handwheel "B".

Setting Table in Line with Saw

The table grooves are accurately set before despatch but should the table be disturbed in transit or for any other reason the undermentioned procedure should be followed to set the table grooves parallel to the saw:-

Loosen the 3/8" whit nuts securing the table to the main frame.

With the saw fitted to arbor, select a tooth and position straight stop rod of mitre fence so that it just touches the saw as shown in Fig. 8.

Slide mitre fence to rear position of the saw, swing tooth of saw which was used in item 2. Check whether the stop rod touches the tooth by the same amount. Should the rod be out of align with the saw, position table until correct.

The correct position of the saw in relation to the table insert slot is 1" (25mm) from the right hand side. This will ensure clearance on the table insert when the saw is canted, then set tighten all screws.

To check this alignment cut several pieces of wood using the mitre fence to see there is no back cut as the stock is passed through the sawblade.

Rip Fence Controls

The rip fence slides on two round bars at the front and rear of the table. The fence is provided with rapid and micro adjustment, also an effective lock.

For rapid adjustment the undermentioned procedure should be followed:-

Lift handle "F" in Fig. 5 and disengage the pinion from the front racked fence bar by turning handwheel "G" out of the fence front bracket.

Position fence where required and depress lever "F" to lock fence in position.

For micro adjustment the pinion should be engaged in the front racked fence bar i. e. handwheel "G" pushed into the fence front bracket.

Fence Alignment

To check the fence alignment the undermentioned procedure should be followed:-

Position the rip fence near to the edge of the mitre fence slot that is furthest away from the saw and lock in position.

In this position the distance from the fence to the mitre fence slot should be approximately 1/32" (.8mm) more at the rear of the table than at the front of the table, i. e. 1/32" (.8mm) lead off.

If the fence is incorrectly aligned, loosen the two hexagon head bolts "H" in Fig. 5, and re-align as above. When set tighten all bolts.

It should be noted that the locking action of the fence is in three stages. The first stage, which is made possible by a spring loaded plunger, and ensures that the fence is always lined up, as set, to the saw before the final locking. The second stage, locks the fence back bracket in position and the final stage, locks the front bracket securely in position.

Should the locking action of the fence be incorrect, the fence connecting rod nut "I" could be adjusted. Turning nut "I" in a clockwise direction increases the locking power at the rear lock and in an anticlockwise direction reduces the locking power. The correct locking procedure for the fence is as described above.

Changing Fence Bars

The maximum rip to the right of the saw with the fence bars in the central position is 37" (940mm) and with the fence bars offset to the right of the table is 53" (1345mm).

To change to the fence bars as required the following procedure should be followed:-

Slide fence off end of fence bars and remove socket head capscrews from each bar complete with spacing washers.

Move bars along to required position and refit with spacing washers and socket head capscrews.

3. Set fence bars in highest position parallel to the table top and secure with socket head capscrews. This ensures that the fence does not foul table top.

4. Re-fit fence on fence bars.

Note:- Fence bars are graduated correctly when set to the right of the saw.

Setting Saw to Riving Knife

It is most important that the saw and the riving knife are in line. To re-set after the spindle has been disturbed the undermentioned procedure should be followed:-

1. Loosen the hexagon head adjuster bolt "A" in Fig. 10 and tap spindle where required, taking care not to damage the threads on the spindle end. Place a steel rule along both sides of the riving knife to check whether the saw is central.
2. When set re-tighten the hexagon head bolt "A".
3. To check this setting feed a short piece of timber from the rear, along both sides of the riving knife. If the riving knife is incorrectly set the blade will cut unequal shoulders as shown in Fig. 9A and when correctly set equal shoulders as shown in Fig. 9B.

How to Replace Spindle Bearings

To replace the spindle bearings the undermentioned procedure should be followed:-

1. Remove saw, sawguard complete with riving knife and table.
 2. Release the tension on the belts as previously described and remove belts.
- Now working from the pulley end of the spindle:-
3. Remove the 1" fine thread nut (right hand thread) "B" in Fig. 10, remove spindle pulley "C" which is keyed to the spindle.
 4. Remove the hexagon head bolt "A" securing the remaining spindle assembly in the housing, tap out assembly from the pulley end. Care should be taken not to damage the threads on spindle end.
 5. To remove the bearings remove the woodruff key then loosen the two $\frac{1}{4}$ " whit socket head grubscrews "D", remove the spindle locking collar.
 6. The bearings and spindle distance piece can now be driven from the spindle.

The bearings should now be replaced as the arrangement in Fig. 10. Care should be taken not to pre-load the bearings, i.e. the spindle distance piece should be just free between the two bearings

When the locking collar has been replaced and the assembly is ready to be replaced in the spindle housing, a socket head grub screw should be inserted in the spindle trapping collar "E". This will assist in lining up the $\frac{3}{8}$ " whit x 1" long hexagon head bolt "A" on assembly.

To re-assemble the spindle assembly into the spindle housing:-

1. Line up socket head grub screw with the hole in the spindle housing and tap in spindle assembly.
2. Remove socket head grub screw and replace hexagon head bolt "A".
3. Replace riving knife and set saw central to riving knife as previously described.
4. Replace the pulley and belts then re-tension belts. The table can now be replaced.
5. Before locking table in position ensure the mitre fence slot is parallel to the saw as previously described. When set tighten all bolts.

Mitre Fence

The mitre fence slides in tee slots and can be positioned on either side of the saw. When used it can be moved over the table edge so increasing the capacity which can be crosscut to 28" (711mm). The tee slots should be kept as clean as possible.

Use of Mitre Fence Stop Rods

Accurate repetitive cutting can be made using the stop rods.

The stop rods are held in the fence by the thumbscrews "J" in Fig. 5 and the stop rods

knife $\frac{1}{4}$ " (6mm) behind the saw at the rear. These adjustments are previously described.

Use a push stick as Fig. 17 as much as practicable when feeding timber to avoid accident.

When changing equipment always isolate the machine electrically.

Saw Maintenance

Efficient operation of a circular saw depends on true running of the saw spindle and the collars being perfectly square on the faces with the axis of the spindle, it must be run at the correct peripheral speed to ensure straight cutting.

The Bursgreen Circular Saw Bench embodies all these requirements and provided the sawblade is maintained in a sharp condition with the teeth correctly sharpened and set, efficient service will be given.

Before putting a new saw to use, it is essential that it is "ranged down" on the teeth, to ensure each tooth is cutting and to maintain true running.

Ranging

Ranging down should be done on a new saw or any saw after the fourth or fifth re-sharpening.

To range down a saw, feed a square edged abrasive block, in wooden holder, as shown in Fig. 18 lightly against the sawteeth whilst running. The saw should then be removed and the tops of the teeth filed to remove the ranging marks on the points.

Saw Sharpening

Do not run a saw when blunt, remove and re-sharpen. To re-sharpen by hand, hold the saw rigid in a vice as shown in Fig. 19 then proceed to sharpen the saw.

With rip saw teeth, chisel edges and square faces are required, see Fig. 20. Sharpen by giving each tooth an equal number of strokes with a flat faced saw file with rounded edges. At the same time file the gullet, taking care to keep the gullet well rounded.

With a crosscut saw, points are needed with back and front levels as Fig. 21.

In the course of repeated filing the teeth lose the original shape and the gullets shallow. To restore the shape of each tooth, essential for satisfactory performance, it is necessary to grind the saw on a saw sharpening machine. These machines are usually of the automatic type and feed each tooth giving equal spacing or pitch.

Setting

The amount of set on the teeth should be sufficient to give clearance to the body of the saw, so that there is freedom from friction between saw and timber. It is generally accepted that the teeth are "spring set" i.e. the tips of alternate teeth are bent to the right and left as shown in Fig. 22. For good sawing the amount of set on each side of the saw must be identical otherwise the saw will run to one side. To check the set, cut into a piece of wood a few inches when a small even triangle should be seen as in Fig. 23.

The exact amount of set each side varies with the timber being cut, usually $\cdot 010$ " to $\cdot 015$ " ($\cdot 3$ mm to $\cdot 4$ mm).

For clean cutting, just sufficient should be allowed to prevent bending and heating. More set is required for wet, woolly timber, than for dry, close grained timber and the amount of set is greater for crosscutting saws than those for ripping.

Machine Setting

We can supply a small machine for efficiently setting the teeth as illustrated in Fig. 24 and will deal with saws 8" to 36" (202mm to 910mm) diameter. The micrometer dial indicates accurate reading of the amount of set in thousandths of an inch.

held together by the two clamps "K" to adjust the bars by the clamps loosen the wingnuts "L".

See Fig. 11 for several positions in which the stop rods can be used.

Note:- Do not use rods on the same side of the saw as the cut, since they will be in the path of the cut thus damage can be done to the saw if contact is made.

How to Fit Wobble Saw

To fit wobble saw the undermentioned procedure should be followed:-

- Remove table insert, riving knife complete with guard and front saw flange, keep these in a dry safe place.
- Change saw arbor if necessary, as previously described.
- Fit wobble saw to saw spindle as shown in Fig. 12 and secure by means of the spindle locknut.
- All that is now required is to set the saw to wobble to give the size of slot which is required to be cut.
- To adjust saw loosen nut "A" and move saw complete with large collars to required position. When set re-lock nut "A".

Maximum diameter of saw which can be used is 8" (203mm)

Table insert ref. No. C-1044/59 should be used when wobble saw is fitted.

After the job has been completed with the wobble saw replace saw arbor as required.

How to Fit Dado Head

A dado head is made up of two outside saws and five inner cutters. Various combinations of saws and cutters can be used to cut grooves from 1/8" to 1" (3mm to 25mm) wide. Inner cutters are heavily swaged and must be arranged so that the heavy portion falls in the gullets of the outside saws, as shown in Fig. 13A.

Fig. 13B shows how the saws and cutters overlap "A" being the saw and "B" being the inside cutter.

A 1/4" (6mm) groove is cut by using the two outside saws fitting the ground teeth directly opposite as shown in Fig. 13C, in order to allow clearance for the slight set of the saw teeth.

The dado head is secured to the saw spindle by means of the front saw flange as shown in Fig. 14. To fit dado head remove the table insert, riving knife complete with awguard, front saw flange. Change saw arbor if required as previously described.

Fit the outer saws and required inner cutters on the spindle then the front saw flange and secure with spindle locknut

The table insert ref. No. C-1044/58, should be used when dado head is fitted.

After the job has been completed with the dado head replace saw arbor as required.

How to Fit a Moulding Cutterblock

The cutterblock is 4.7/8" dia x 15/16" wide (124mm x 24mm) and takes 5/32" (4mm) and 1/4" (6mm) thick cutters. The cutterblock is secured to the spindle by means of the front saw flange and the spindle locknut as shown in Fig. 15. The procedure when fitting the cutterblock is identical to that when fitting the wobble saw and dado set.

The table insert ref. No. C-1044/58 should be used when the cutterblock is fitted.

When using the cutterblock it is necessary to face the fence with wood facing the approximate sizes for such a facing as shown in Fig. 16 to span the knives so that only the required amount of knives are exposed when making a moulding.

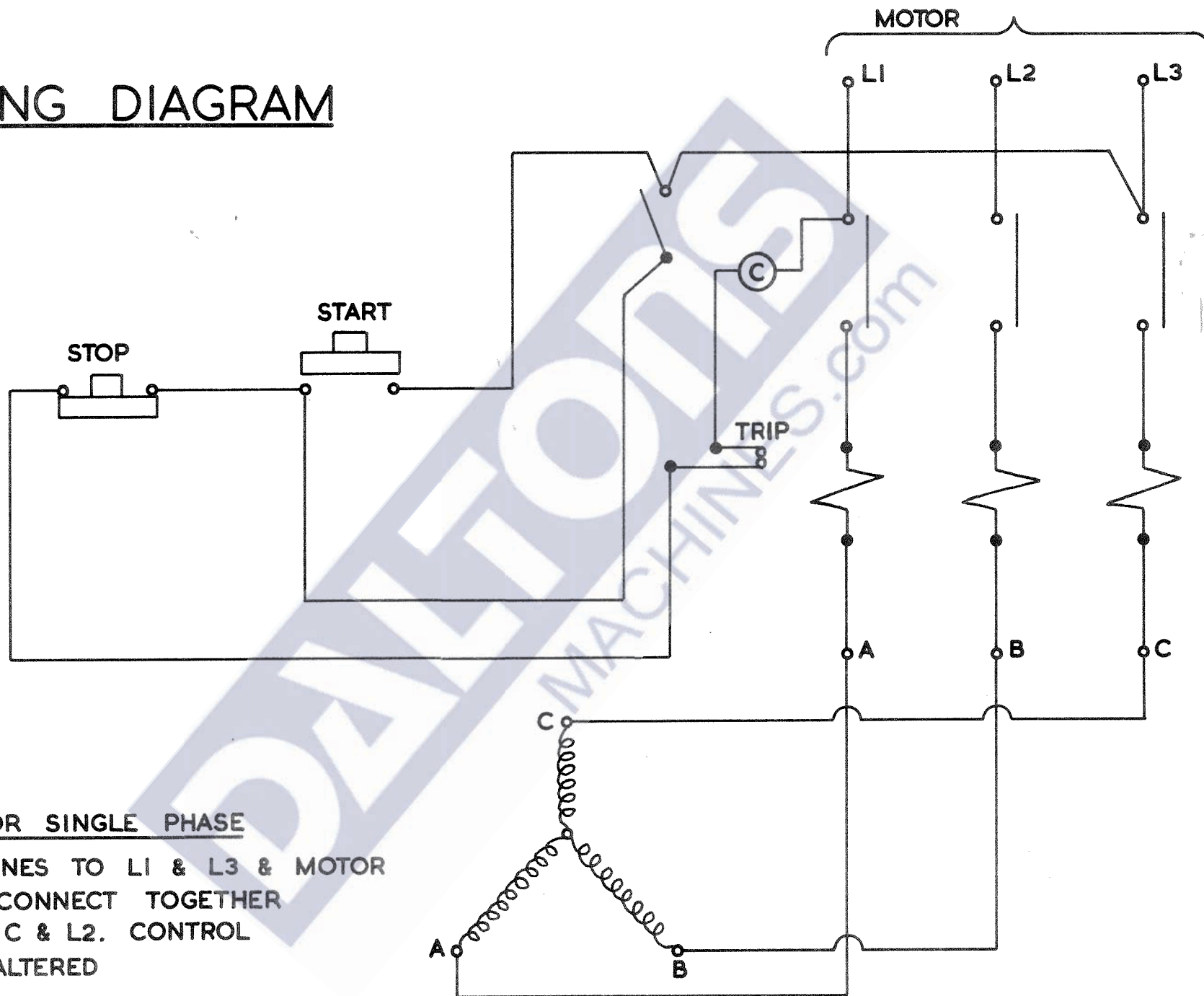
The facing is secured to the fence with wood screws through holes provided.

Before securing the knives always ensure that the slots and knives are free from sawdust and dirt.

Safety Precautions

Always adjust the guard to protect as much of the saw as possible and fit the riving

WIRING DIAGRAM



FOR SINGLE PHASE

CONNECT LINES TO L1 & L3 & MOTOR
TO A & B. CONNECT TOGETHER
TERMINALS C & L2. CONTROL
WIRING UNALTERED

FIG. 2

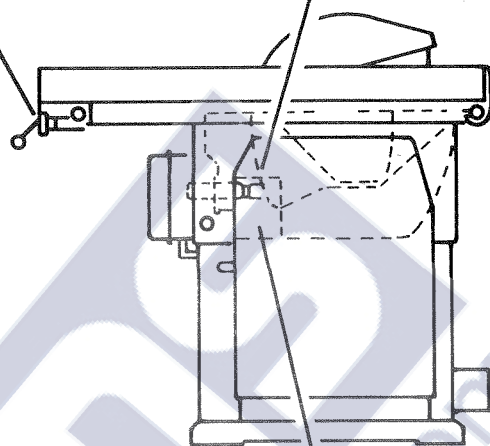
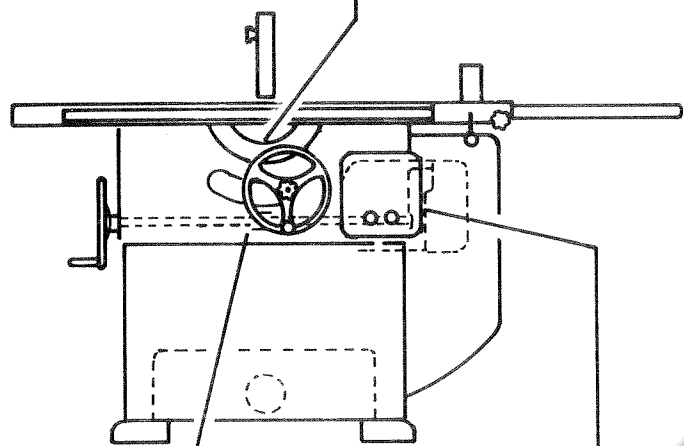


FOUNDATION PLAN

clean and oil quadrants
weekly

oil cam face
weekly

oil rise and fall
slides weekly



grease both ends of motors
2 turns per year

oil canting worm
weekly

check grease in gear-
box every six months

FIG 4

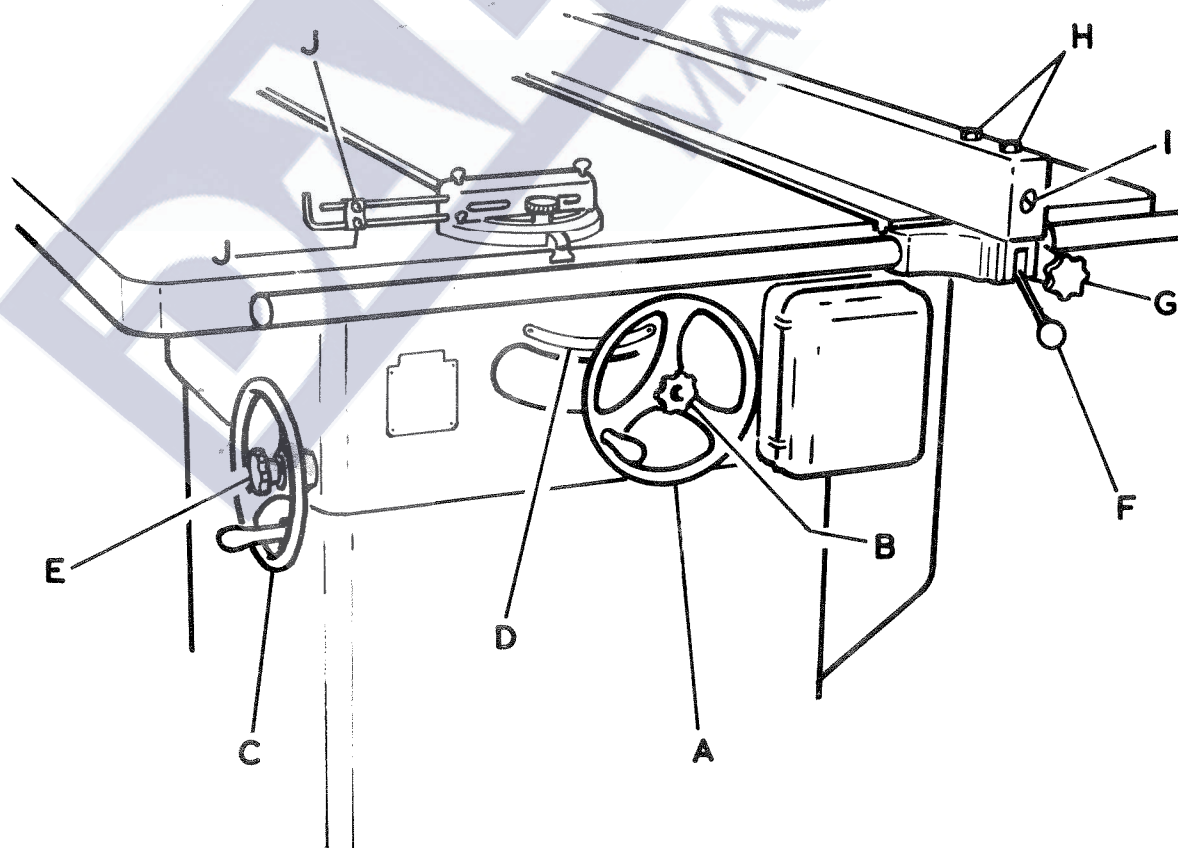


FIG 5

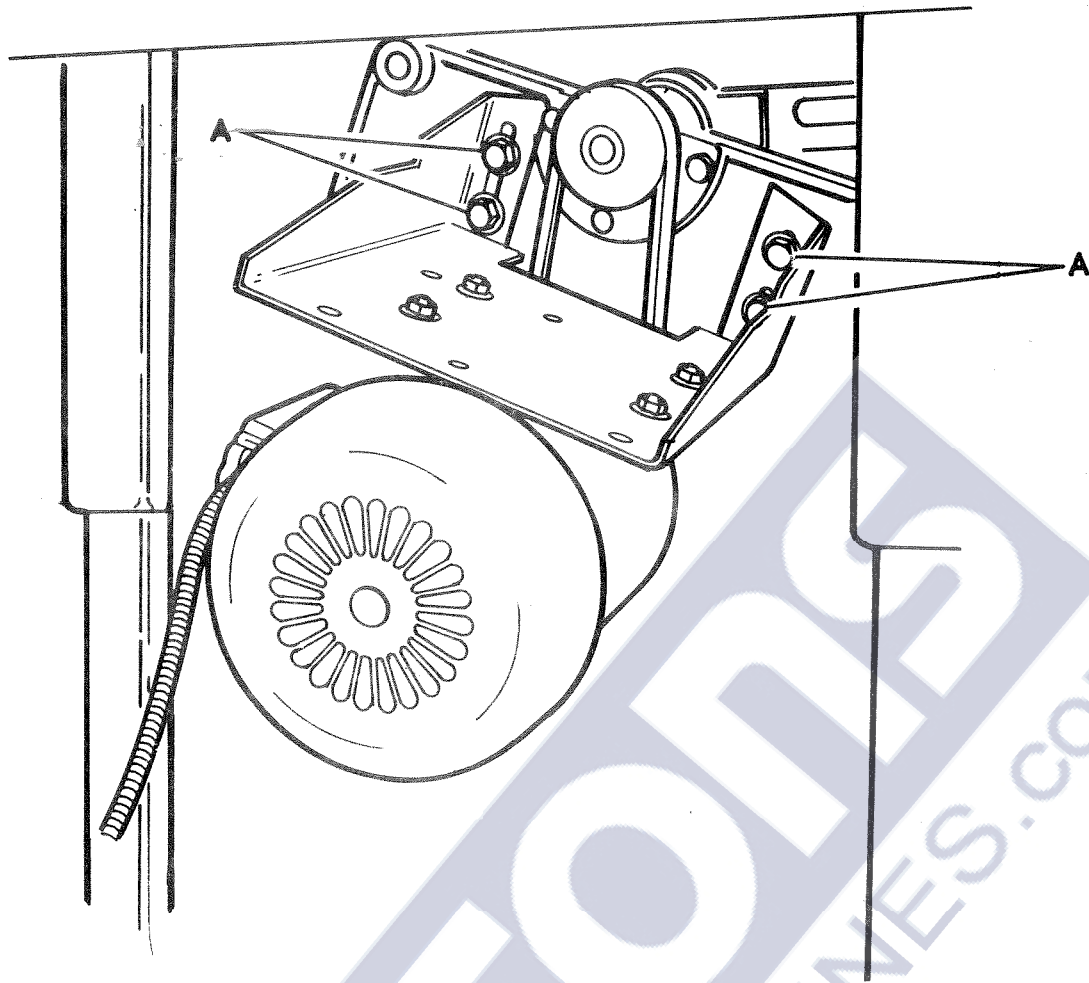


FIG 6

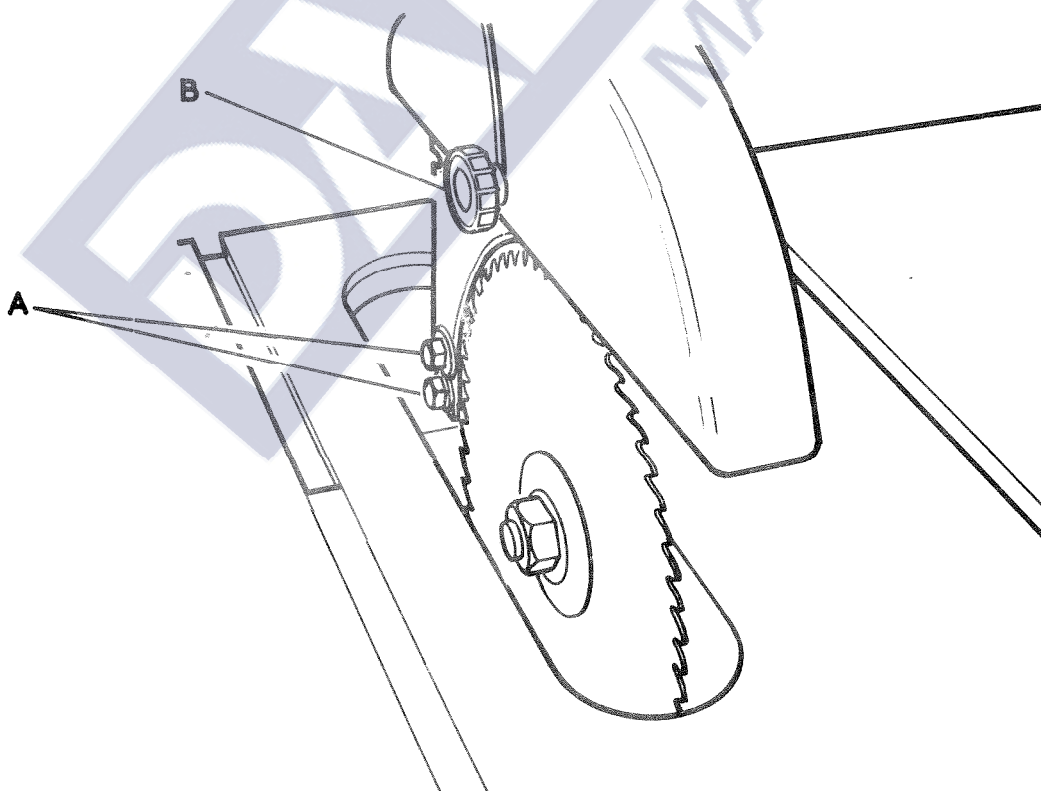


FIG 7

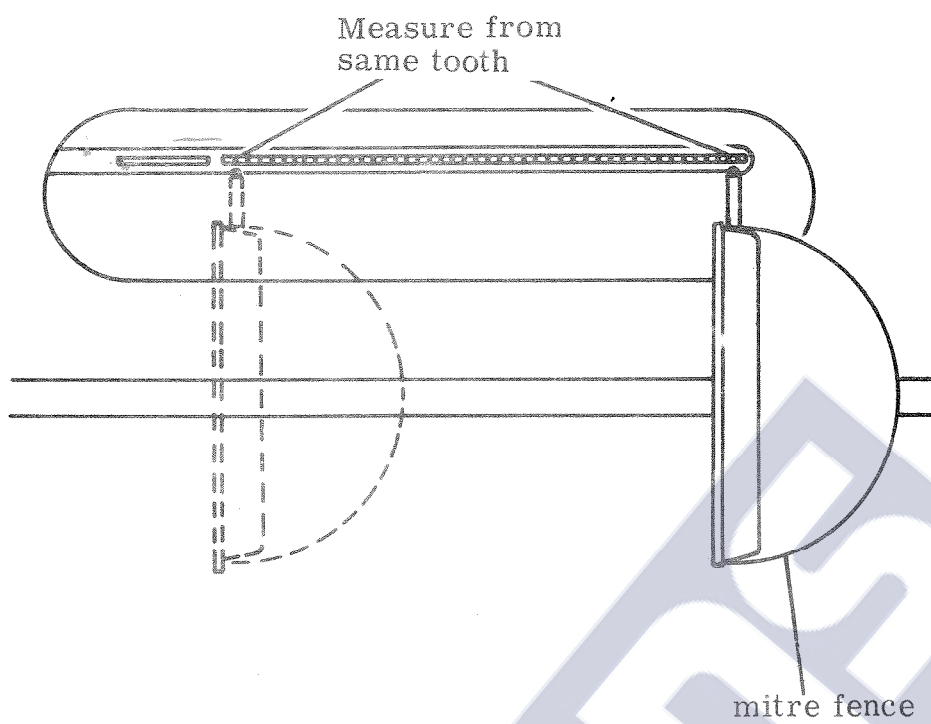


FIG 8



FIG 9

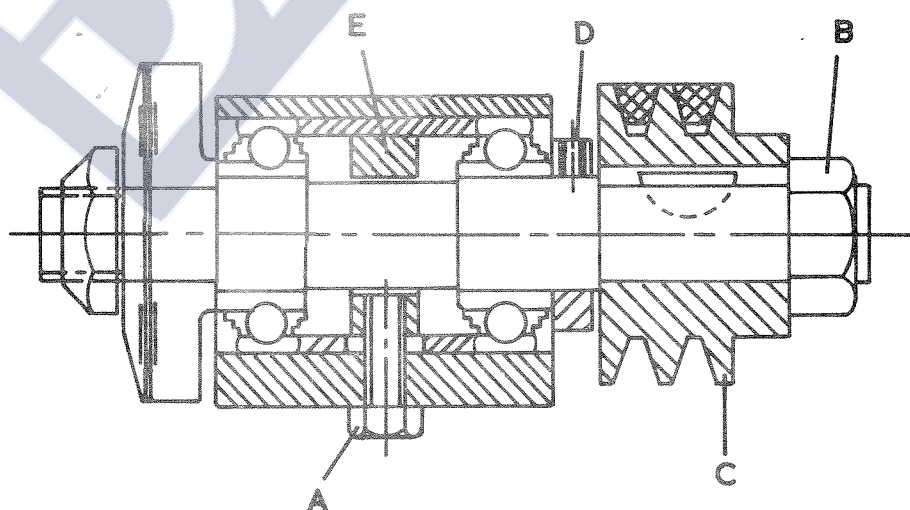


FIG 10

Mitre Fence

Stop rods.

Mitre fence

Stop rods.

Stop rod.

Mitre Fence

FIG 11

Special fingerplate
No. C-1044/59

Wobble saw

Saw spindle

FIG 12

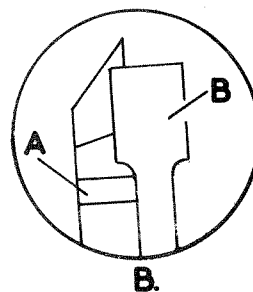
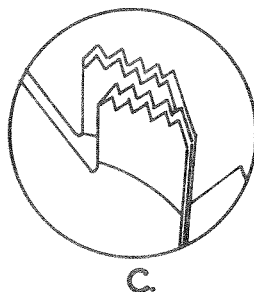
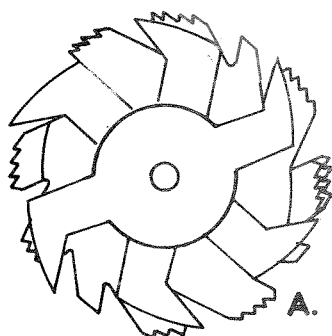
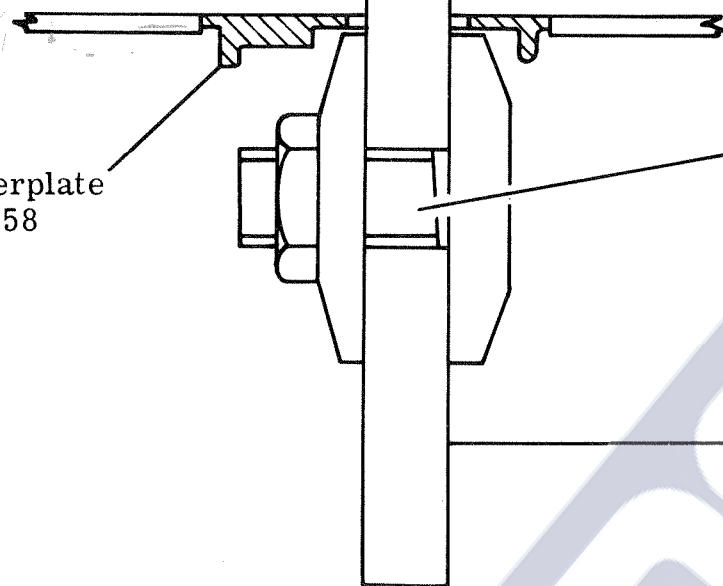


FIG 13

Special fingerplate
No. C-1044/58

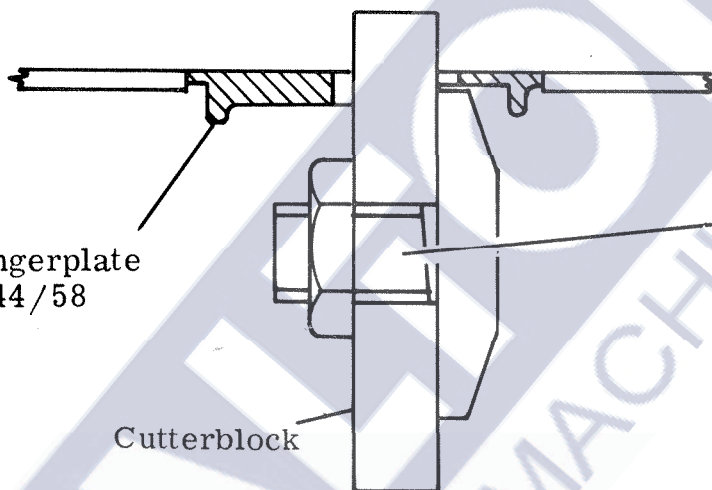


Saw spindle

Dado set

FIG 14

Special fingerplate
No. C-1044/58



Saw spindle

Cutterblock

FIG 15

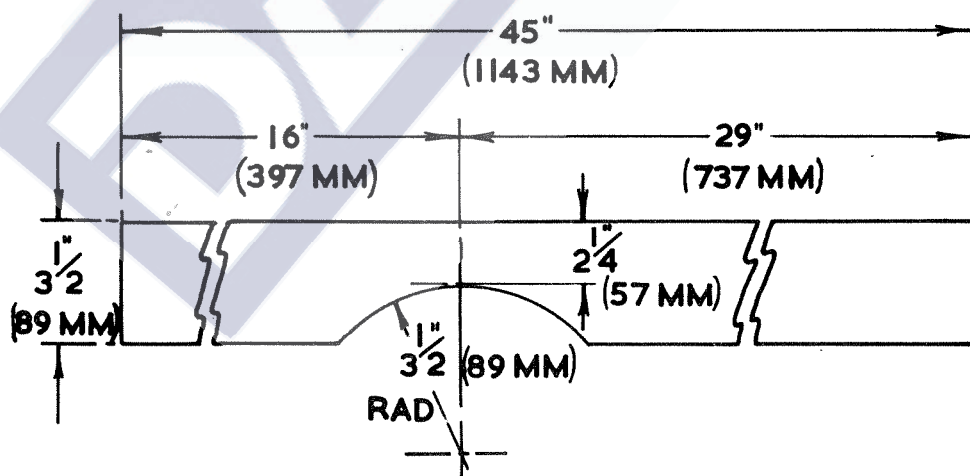


FIG 16



FIG 17

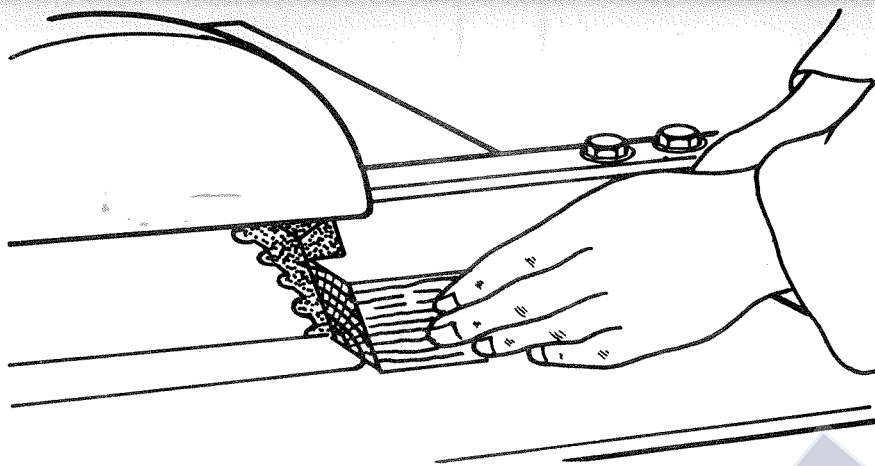


FIG 18

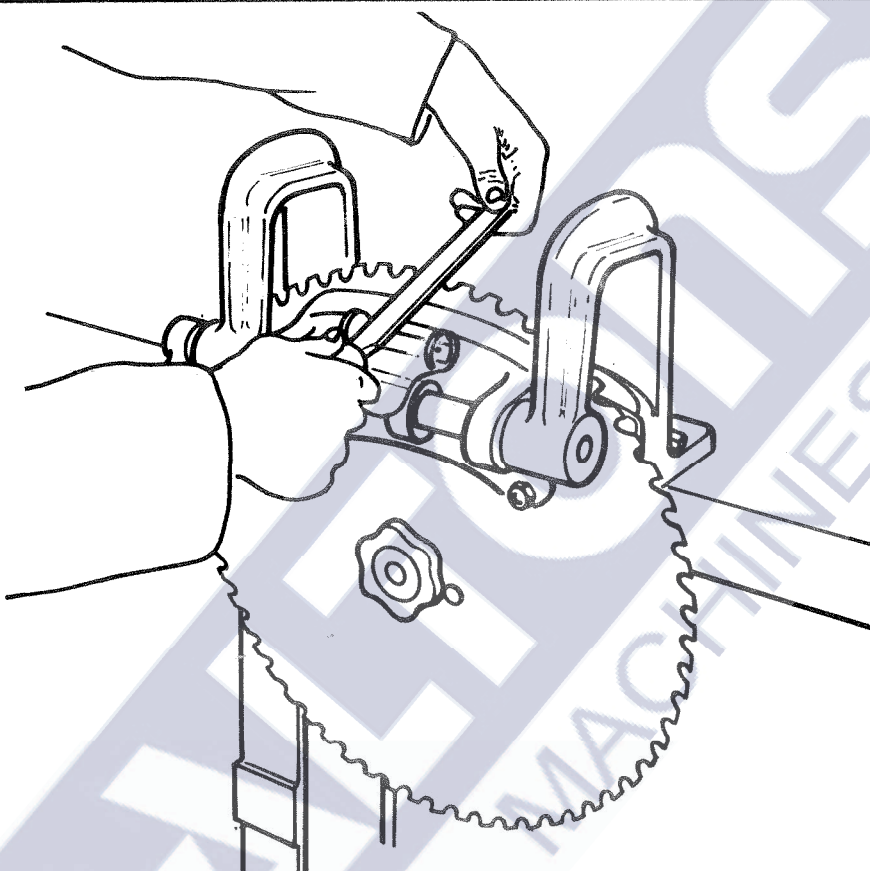


FIG 19



FIG 20

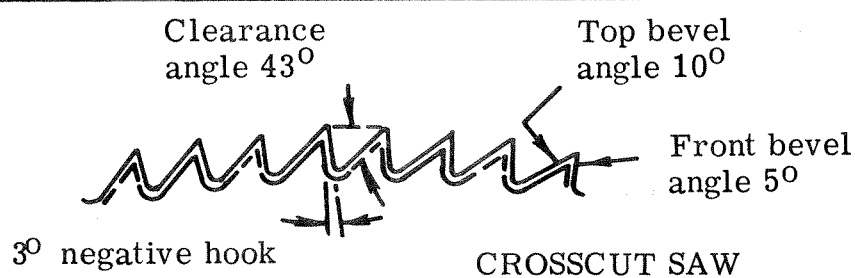
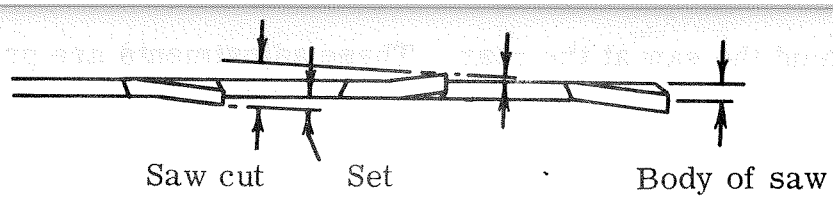


FIG 21



Amount of tooth set
over shown shaded.

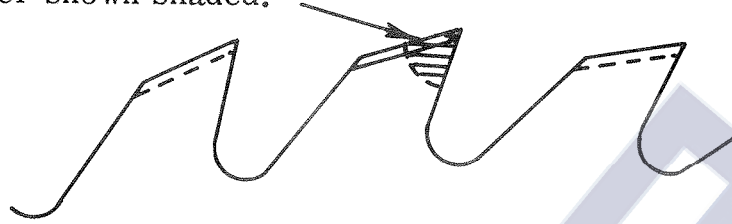


FIG 22

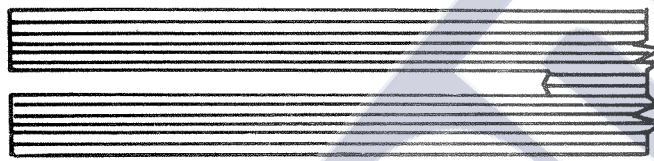


FIG 23

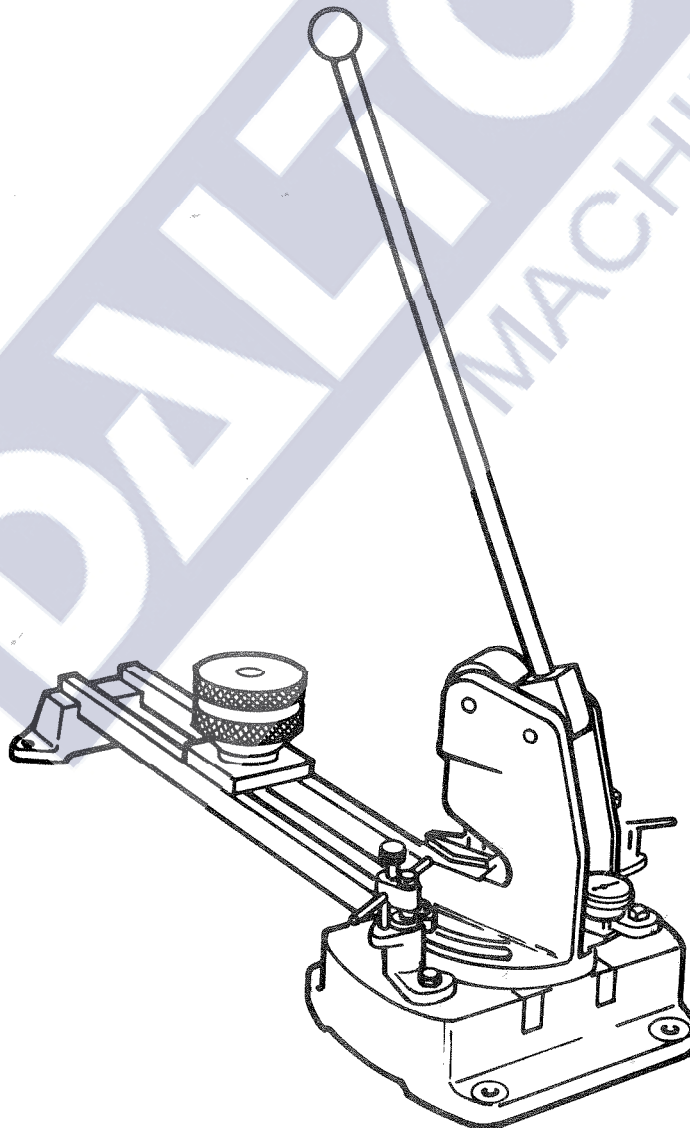


FIG 24

Hand Setting

Where the number of saws does not warrant a machine being installed, the saws are set by hand using a tool as shown in Fig. 25. This tool is provided with six notches to take saws 8 to 14 gauge thick.

For this process of setting, the saw should be securely clamped in a vice.

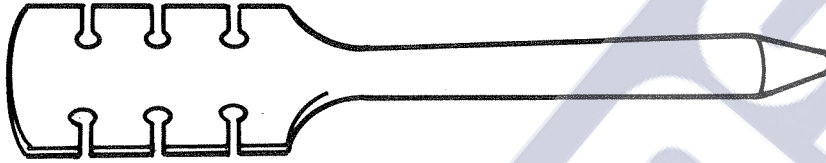


FIG 25