

RECORD MACHINE DETAILS

MODEL
SERIAL No.
DATE of PURCHASE
VOLTAGE
PHASE
CYCLES

QUOTE THIS INFORMATION
WHEN REQUESTING SERVICE
OR SPARES.

DISTRIBUTOR

This Bandsaw is engineered to a high standard of construction and performance. Attention to maintenance and service will be repaid by many years' trouble-free operating.

STARTRITE®

Model 352

(DUAL SPEED)

BANDSAWING MACHINES

HANDBOOK

7E

A.L.T. Saws & Spares Ltd

Startrite Machine Specialist

Unit 15, Pier Road Industrial Estate

Gillingham

Kent

ME7 1RZ

Tel/Fax: 01634 850833

www.altsawsandspares.co.uk



QUALITY
BANDSAW
BLADES

TO SUIT THE 352 MODEL

ORDER LINE- 01634 850833

A.L.T. SAWS & SPARES LTD

Unit 15, Pier Road Industrial Estate

Gillingham

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A.L.T. SAWS AND SPARES LTD



PART NUMBER STRG – UPPER – £82.50+vat
 PART NUMBER STRG – LOWER – £79.50+vat

These precision roller guides are manufactured in the UK specifically for the older Startrite models 301 – 351 – 352, refer to the chart below for all models and recommended blade widths.

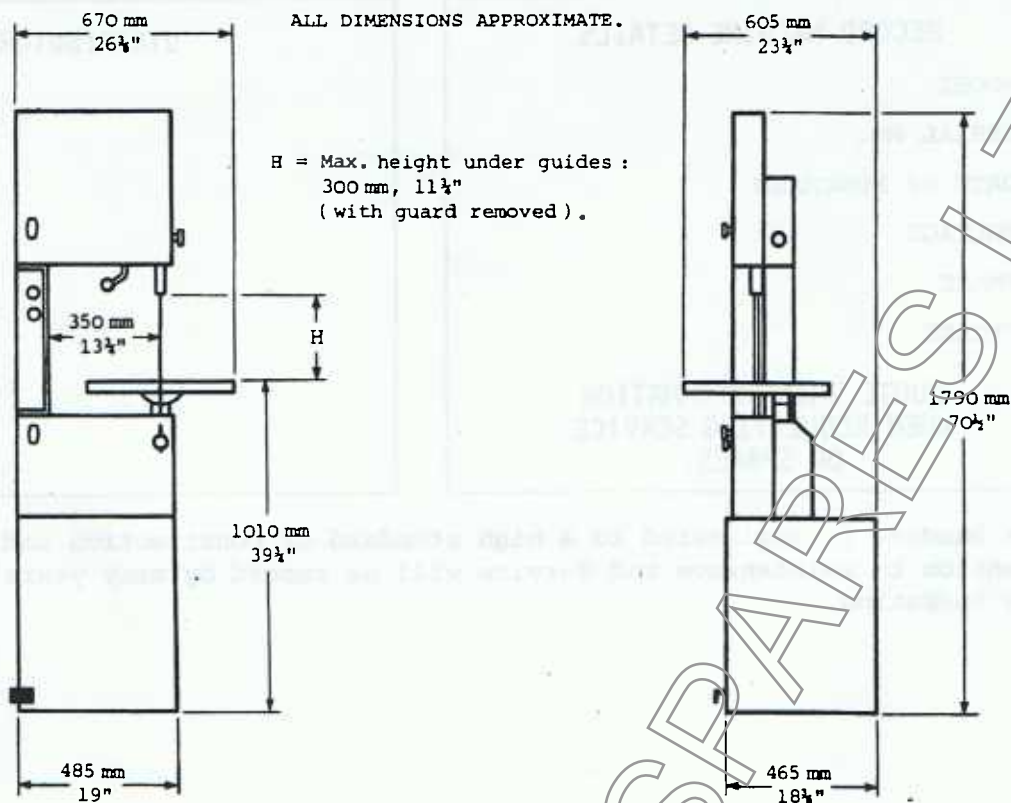
There is NO drilling, filing or any modification required unlike many cheap after market guides currently on the market.

Manufactured in steel and aluminium, these guides will make a very good saw even better, they give superb blade control have low heat generation to the blade and produce no sparks.

Both side support rollers and thrust roller are adjusted by a cam system giving precision setting longer, and allows full contact to the blade, this eliminates any blade twist, cutting contours will particularly appreciate the blade control.

Although available as upper and lower guide assemblies some customers may only wish to change the upper set as this takes on 80% of the work.

STARTRITE MODEL	STRG – UPPER RECOMMENDED BLADE WIDTH		STRG – LOWER RECOMMENDED BLADE WIDTH	
	MAX	MIN	MAX	MIN
301,301E,301S	5/8"	1/4"	1/2"	1/4"
351,351E,351SE,351S	3/4"	1/4"	1/2"	1/4"
352,352S	3/4"	1/4"	1/2"	1/4"
RS1 (Sold Under The Record Power Range)	5/8"	1/4"	1/2"	1/4"
RS2 (Sold Under The Record Power Range)	3/4"	1/4"	1/2"	1/4"



FOUNDATION PLAN FOR MODEL 352 BANDSAWING MACHINE.

SPECIFICATIONS :

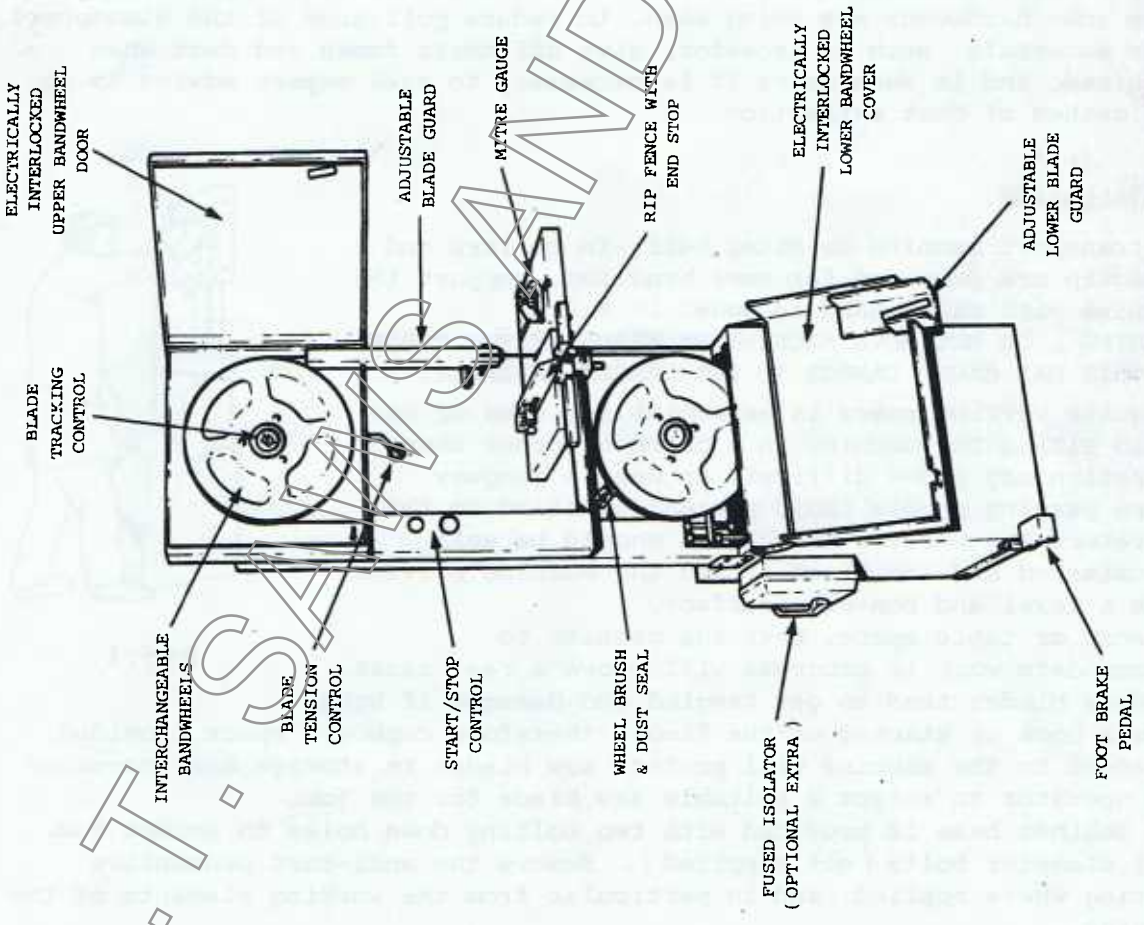
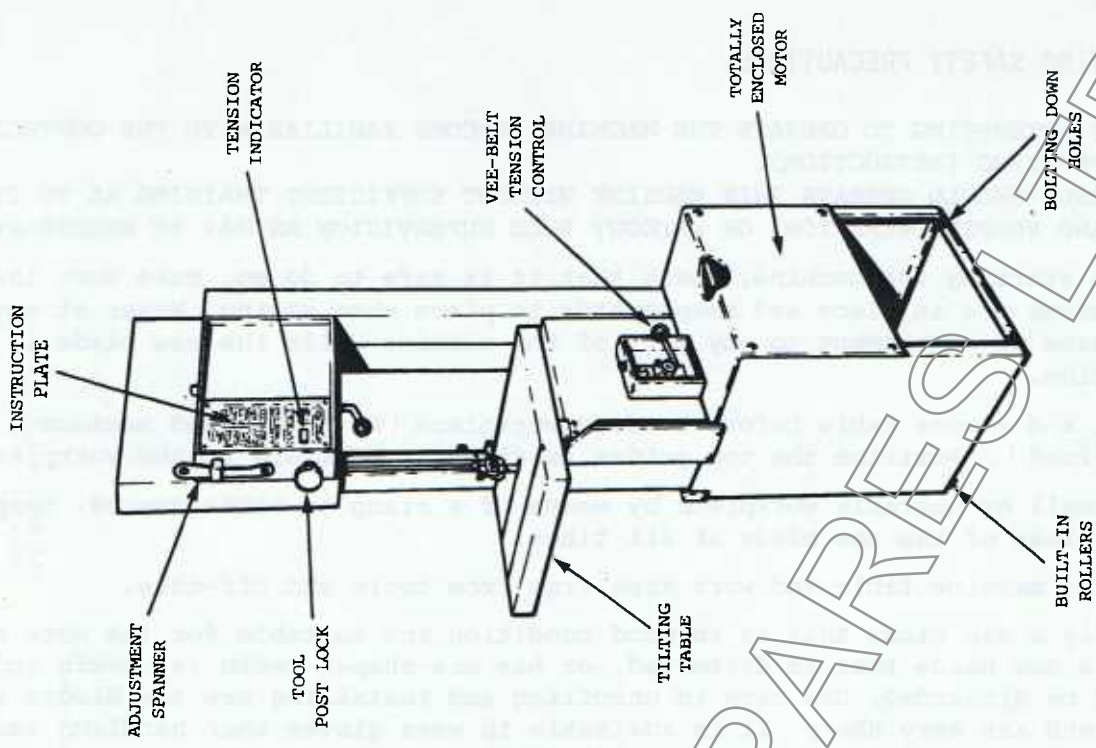
Model 352	- Dual Speed Bandsawing Machine
Wheel Diameter	- 355 mm, 14"
Motor	- 0.75 kW., 1 h.p., 2850 r.p.m.
Electric Supply	- 220/240 Volt 1 Phase 50Hz. - 380/440 Volt 3 Phase 50Hz.
Blade Length	- 2845 mm, 112"
Max. Blade Width	- 20 mm, 3/4"
Max. Distributed Static Table Load	- 27 kg., 60 lbs.
Gross Weight	- 118 kg., 260 lbs.

FOR BEST RESULTS USE STARTRITE 'SUPAFLEX' BLADES.

WHEN ORDERING PARTS, PLEASE STATE :-

1. Quantity required.
2. Part No. (where applicable) and description.
Specify power supply for electrical components.
3. Machine Model and Serial No.

We reserve the right to change design and specification without notice.
Startrite Machine Tool Co. Ltd., Waterside Works, Gads Hill,
Gillingham, Kent, ME7 2SF, England.



GENERAL LAYOUT OF MODEL 352 BANDSAWING MACHINE.

OPERATING SAFETY PRECAUTIONS.

BEFORE ATTEMPTING TO OPERATE THE MACHINE, BECOME FAMILIAR WITH THE CONTROLS AND OPERATING INSTRUCTIONS.

NO PERSON SHOULD OPERATE THIS MACHINE WITHOUT SUFFICIENT TRAINING AS TO ITS SAFE AND PROPER OPERATION, OR WITHOUT SUCH SUPERVISION AS MAY BE NECESSARY.

Before starting the machine, check that it is safe to do so. Make sure that all guards are in place and keep guards in place when sawing. Never at any time make an adjustment to any part of the machine while the saw blade is in motion.

Adjust and secure table before loading workpiece (Do not exceed maximum table load). Position the top guides as close as possible to the workpiece.

Hold small or unstable workpiece by means of a clamp or other device. Keep hands clear of the saw blade at all times.

Keep the machine table and work area free from tools and off-cuts.

Use only a saw blade that is in good condition and suitable for the work in hand. A saw blade that is distorted, or has mis-shaped teeth is unsafe and should be discarded. Use care in uncoiling and installing new saw blades as the teeth are very sharp. It is advisable to wear gloves when handling saw blades. Do not leave saw blades on the floor.

Always stop the machine before leaving it unattended. Where there is a risk of personal injury due to unauthorised use, the machine should be made immobilised by means of a Lockable Isolator (Optional Extra) during the operators absence.

Dust Extraction Equipment (Optional Extra) should be used, particularly when some hardwoods are being sawn, to reduce pollution of the atmosphere. Some materials, such as asbestos, give off toxic fumes and dust when machined, and in such cases it is necessary to seek expert advice as to the method of dust extraction.

INSTALLATION.

To transport machine to site, built-in rollers and a handgrip are provided for easy handling, support the machine with other hand as shown in Fig.1.

WARNING : DO NOT MOVE MACHINE BY MEANS OF THE TABLE AS THIS MAY CAUSE DAMAGE TO THE CRADLE ASSEMBLY.

Adequate working space is essential for ease of use. Avoid siting the machine in a cramped corner where operation may prove difficult or near a gangway where passing people could present a hazard to the operator. The whole working area should be well illuminated and the floor around the machine provided with a level and non-slip surface.

A bench or table space, near the machine to accommodate work in progress will prove a real asset.

Bandsaw blades tend to get tangled and damaged if hung from a hook or stacked on the floor, therefore cupboard space provided adjacent to the machine will protect saw blades in storage and encourage the operator to select a suitable saw blade for the job.

The cabinet base is provided with two bolting down holes to accept 8 mm ($\frac{3}{16}$ ") diameter bolts (not supplied). Remove the anti-rust protective coating where applied, and in particular from the working elements of the machine.

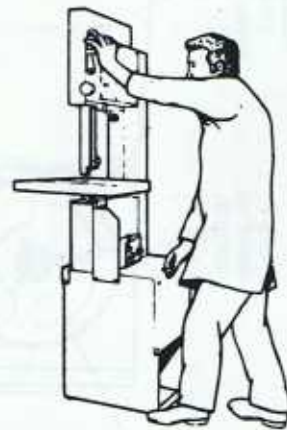


Fig.1.

CONNECTION TO THE ELECTRICITY SUPPLY.

IMPORTANT : Check that the supply voltage is suitable for operation of the machine. (Voltage stamped on Instruction Plate at rear of machine).

Link supply leads to fused isolator on machine, if fitted (optional extra).

If the machine is not equipped with a fused isolator, proceed as follows :-

Remove rear cover from cabinet base, by means of four screws (A), see Fig.2. Remove terminal cover, two screws (B), see Fig.3. Pass supply leads through grommet in cabinet base.

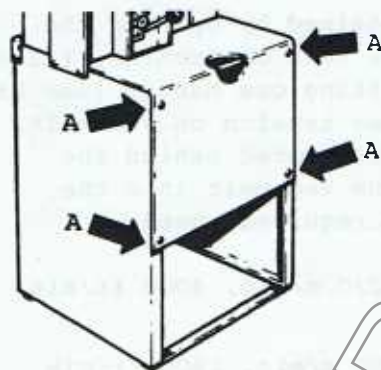


Fig.2.

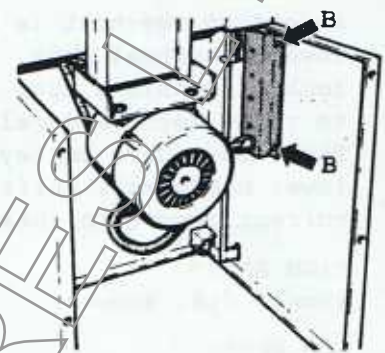


Fig.3.

THREE PHASE :

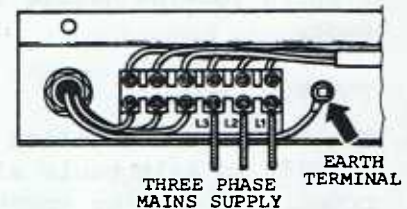
The machine will operate on 380 - 440 volt three phase 50Hz. supply.

Link supply leads to terminals L1, L2 and L3 (see Fig.4).

Check motor rotation, saw blade must pass downward through the table. If necessary, interchange supply leads L1 and L3 to reverse motor rotation. Connect the earth lead (yellow/green) to earth terminal.

Recommended cable size : 1.5 mm^2

Fuse rating : 10 amp



THREE PHASE MAINS SUPPLY
EARTH TERMINAL

Fig.4.

COLOUR CODE :

LIVE (L)	- BROWN
NEUTRAL (N)	- BLUE
EARTH (E)	- YELLOW/GREEN

SINGLE PHASE :

The machine will operate on 220 - 240 volt single phase 50Hz. supply.

Temporary connection (ie. for demonstrations) may be made to a 13 amp ring main circuit by wiring the supply leads to a fused plug as shown in Fig.5, taking care to protect the cable from mechanical damage.

Link live supply lead to terminal L1, and neutral supply lead to terminal N (see Fig.6). Connect the earth lead (yellow/green) to earth terminal.

Recommended cable size : 1.5 mm^2

Fuse rating : 13 - 15 amp

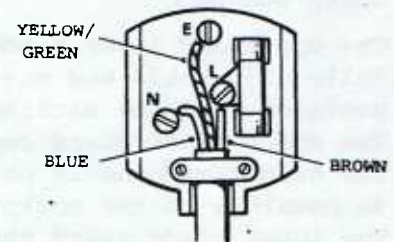
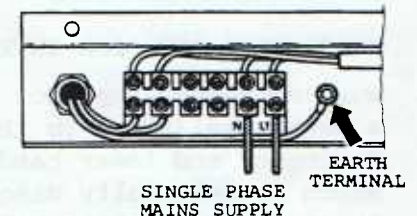


Fig.5.



SINGLE PHASE MAINS SUPPLY
EARTH TERMINAL

Fig.6.

IMPORTANT : IN ALL CASES THE MACHINE MUST BE EFFECTIVELY EARTHED.

The service of a competent electrical engineer must be obtained if there is doubt on any point regarding electrical installation.

MACHINE CONTROLS.

BLADE SPEED :

Select blade speed to suit job, see Chart on page 11, or Instruction Plate at rear of machine.

Access to vee-belt is obtained by opening the lower bandwheel door. At rear of machine, release locking handle & turn lifting cam handle (see Fig.7) to raise motor and release tension on vee-belt. The twin-groove pulley is located behind the lower bandwheel, shift the vee-belt into the correct groove to obtain required speed:-

HIGH SPEED
(Small dia. groove) - 1220 m/min, 4000 ft/min

LOW SPEED
(Large dia. groove) - 550 m/min, 1800 ft/min

With vee-belt placed in groove, re-tension vee-belt by turning back lifting cam handle. Tighten locking handle & close lower bandwheel door.

TABLE :

The table can be tilted to any angle up to 45°. To tilt table slacken off trunnion nut using spanner provided (see Fig.8). Tilt table and align pointer with protractor scale for required angle and tighten trunnion nut. The machine is fitted with a setting stud, make sure the table rests firmly against the stud when re-setting the table to zero.

BLADE GUARDS :

The upper and lower blade guards are fully adjustable and must be kept in position when the machine is in use. The upper blade guard can be adjusted for height and should be set as close as possible to the workpiece. The lower blade guard can be set to give complete under table protection at all angles of table tilt (see Fig.9).

FOOT BRAKE AND DOOR INTERLOCK :

When depressed the foot brake immediately disconnects the motor and applies a mechanical brake to the lower bandwheel. The upper and lower bandwheel doors are fitted with an electrical interlock which automatically disconnects the motor when either door is opened. It may be found necessary to make adjustments to the foot brake linkage or door interlocks occasionally, see pages 8 & 9 for instructions.

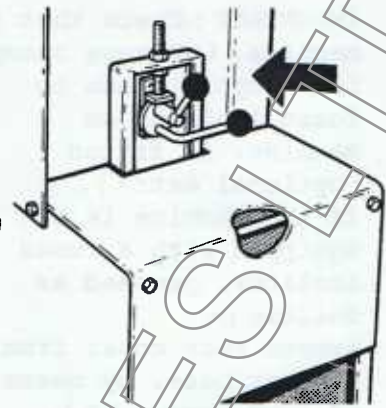


Fig.7.

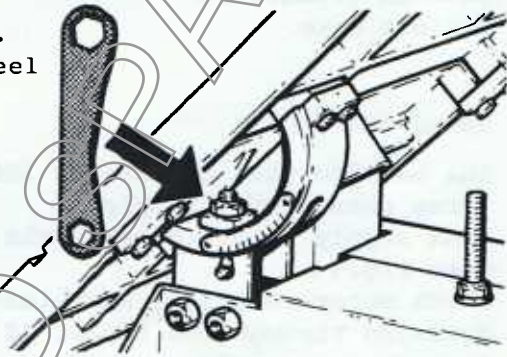


Fig.8.

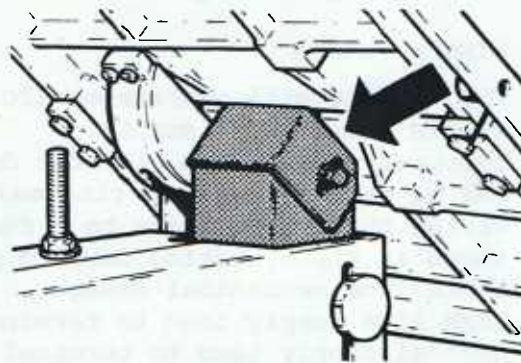


Fig.9.

SETTING UP THE MACHINE/FITTING A NEW SAW BLADE.

Select a saw blade suitable for the work in hand, see Chart on page 11, or Instruction Plate at rear of machine.

Open both bandwheel doors, remove upper blade guard and release table latch. Lower the top bandwheel by turning the blade tension control handle (see Fig.13) clockwise and remove saw blade.

Place selected saw blade over both bandwheels with the teeth facing forward and downward through the table (see Fig.10). Apply only sufficient blade tension to remove the slack. It is important that both the top and bottom guides are set back clear of the saw blade so that it is not deflected and follows a true path between the bandwheels. Rotate the bandwheels by hand and at the same time operate the blade tracking control (see Fig.11) so that the saw blade runs approximately central on the bandwheels, see Fig.12.

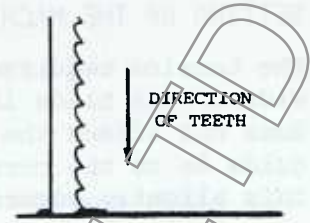


Fig.10.

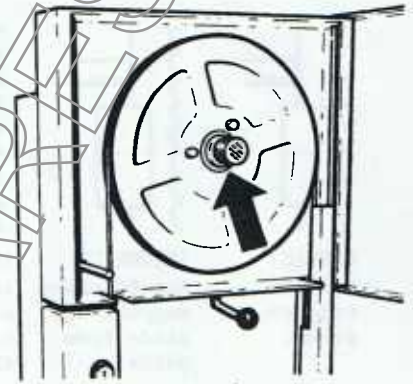
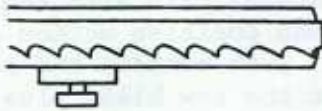
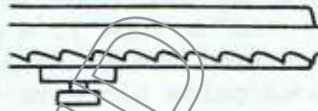


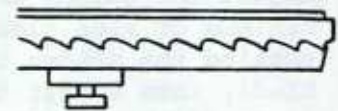
Fig.11.



TRACKING CORRECT
Blade runs approximately central on bandwheel.



TRACKING INCORRECT
Blade runs toward front edge of bandwheel.



TRACKING INCORRECT
Blade runs toward back edge of bandwheel.

Fig.12.

BLADE WIDTH	6 mm, ¼"	12 mm, ½"	20 mm, ¾"
BLADE TYPE	TENSION GUIDE		
METAL CUTTING	LOW	MED	HIGH
WOOD CUTTING, SCALLOPED, KNIFE EDGE	LOW	LOW - MED	MED - HIGH

When the saw blade is tracking in a satisfactory manner, apply the appropriate blade tension, see Chart above, or Instruction Plate at rear of machine for correct tension required. Turn the blade tension control handle until the appropriate figure appears in the 'window' (see Fig.13).

EXAMPLE: 12 mm (½") wide Metal Cutting Blade = MED

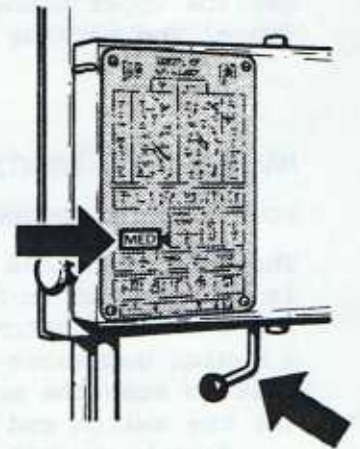


Fig.13.

SETTING UP THE MACHINE/FITTING A NEW SAW BLADE (CONTINUED).

The tension required varies between types of saw blades and also blade widths. The blade length, provided that it is acceptable to the machine, does not affect the indicated tension. The indicator will give a fair guide as to the correct tension required, but it may be necessary to vary this slightly according to circumstances.

It is important that the guides are set to offer maximum support to the saw blade without deflection, and to permit maximum engagement with the flanks of the saw blade without snagging the set of the teeth, see Fig.14.

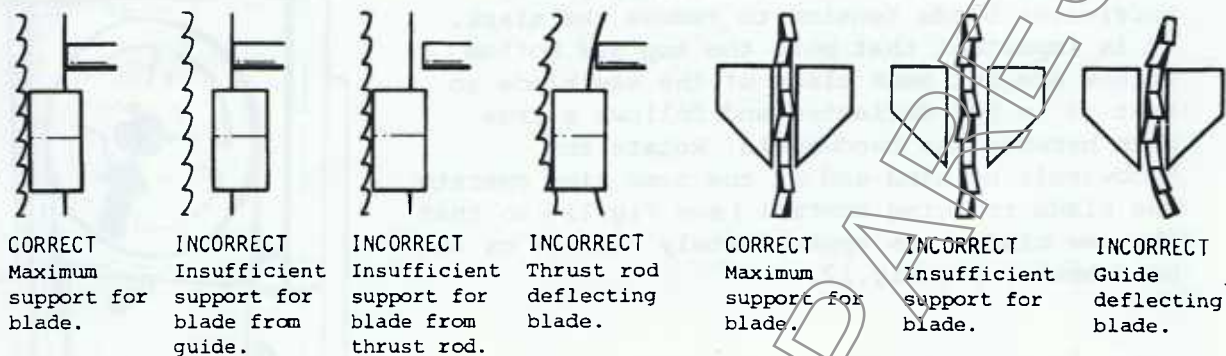


Fig.14.

Adjust the guides to support the saw blade in its natural path with the minimum of side clearance (.002" to .004"). A quick and positive method of setting the guides is to position one guide block to just contact the saw blade, then adjust the second guide block to contact the saw blade plus a piece of (single thickness) newspaper.

Set the thrust rod to support the back edge of the saw blade when finger pressure is applied to the blade teeth. There should be a small gap (.010" approximately) between the saw blade and the thrust rod.

After adjusting the top and bottom guides, rotate the bandwheels by hand to ensure that the saw blade runs free and that all the adjustments have been correctly carried out.

Replace upper blade guard, secure table latch and close both bandwheel doors. The machine is now ready to operate.

MACHINE ADJUSTMENTS.

FOOT BRAKE & BANDWHEEL DOOR INTERLOCKS :

The foot brake and bandwheel door interlock mechanism is illustrated in Figs.15 & 16.

The switch actuator (Item 1) tilts on a pivot pin (Item 2) which depresses the cut-out button on the starter unit to stop the motor when :-

- The switch rod (Item 5) moves downward due to the foot brake being operated.
- The switch pin (Item 3) moving forward when either bandwheel door is opened.

If the motor does not stop under these conditions or cannot be started when the doors are fully closed adjustment to the linkage is required as follows :-

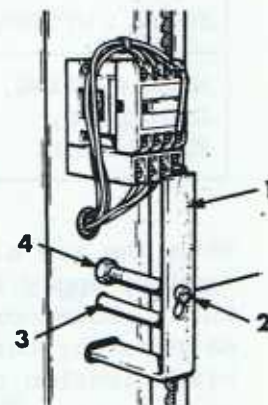


Fig.15.

MACHINE ADJUSTMENTS (CONTINUED).

1. FOOT BRAKE NOT OPERATING.

Remove saw blade and the lower bandwheel. Remove brake shoe (Item 8) and examine the brake lining for wear. Replace shoe if required. Re-position the brake shoe to seat firmly on the brake drum (inner face of vee-belt pulley) when the brake pedal is depressed half way down.

NOTE: The braking pressure applied is determined by the amount of compression of the larger spring (Item 9) which transfers the brake pedal action to the brake shoe.

The amount of compression can be varied by adjusting the threaded collar (Item 10) on top of the spring, but the spring must never be allowed to close up solid when the brake pedal is fully depressed. The collar beneath the spring is factory set and should not be adjusted.

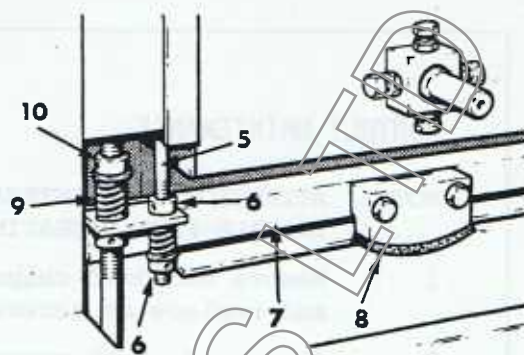


Fig.16.

2. MOTOR DOES NOT CUT OUT WHEN FOOT BRAKE PEDAL IS DEPRESSED.

Carry out Check No.1.

Open the lower bandwheel door and adjust the two screwed collars (Item 6) so that the switch rod (Item 5) hangs freely. Carefully adjust the top collar down to the brake lever (Item 7) so that the collar just takes the weight of the rod. Adjust the bottom collar to give about 3 mm ($\frac{1}{8}$ ") of spring compression. Correct setting will cause the motor to cut out before the brake pedal is depressed half way down.

3. MACHINE CAN BE STARTED WHEN EITHER BANDWHEEL DOOR IS OPEN.

Carry out Checks Nos.1 & 2.

Isolate the machine from the electricity supply. Remove push button cover at front of machine (one screw accessible in lower left hand corner of top bandwheel compartment, and one screw at lower end of cover). With both bandwheel doors closed, slacken the locking nut (Item 4) and screw the pivot pin (Item 2) inwards so that the switch actuator (Item 1) bears lightly on the red button of the starter unit. Tighten locking nut and replace the push button cover.

FOOT BRAKE & BANDWHEEL DOOR INTERLOCKS :

4. MACHINE WILL NOT START.

Check electricity supply. If motor cuts out when in use, the machine is being overloaded. The starter will re-set in a few minutes and the machine can then be started.

Otherwise carry out Check No.3.

BLADE GUIDES :

It is important that the blade guides are set correctly to enable the operator to obtain the best results from the saw blade. Incorrectly set blade guides can shorten the life of a saw blade by dulling the teeth, damaging the set set of the teeth, and may cause the blade to twist or break. For Instructions on adjusting or setting up the blade guides, see Setting Up The Machine / Fitting a New Saw Blade on page 8.

MONTHLY MAINTENANCE.

NOTE : ATTENTION TO MAINTENANCE WILL BE REPAID BY MANY YEARS' TROUBLE-FREE OPERATING.

- 1 - Remove embedded chips from bandwheel tyres, check for wear and replace as necessary. Adjust wheel brush as required.
- 2 - Clean and check upper and lower blade guide assemblies. Replace worn parts as required. Check guide settings, and adjust if necessary (see page 8).
- 3 - Check condition of vee-belt, and replace when necessary.
- 4 - Check condition of brake shoe and replace when necessary (see Machine Adjustments).
- 5 - Check that bandwheel door interlocks and foot brake linkage operates correctly, and adjust as necessary (see Machine Adjustments).

Clean and lubricate working parts as required.

The bandwheels are mounted on sealed-for-life bearings and do not require further lubrication.

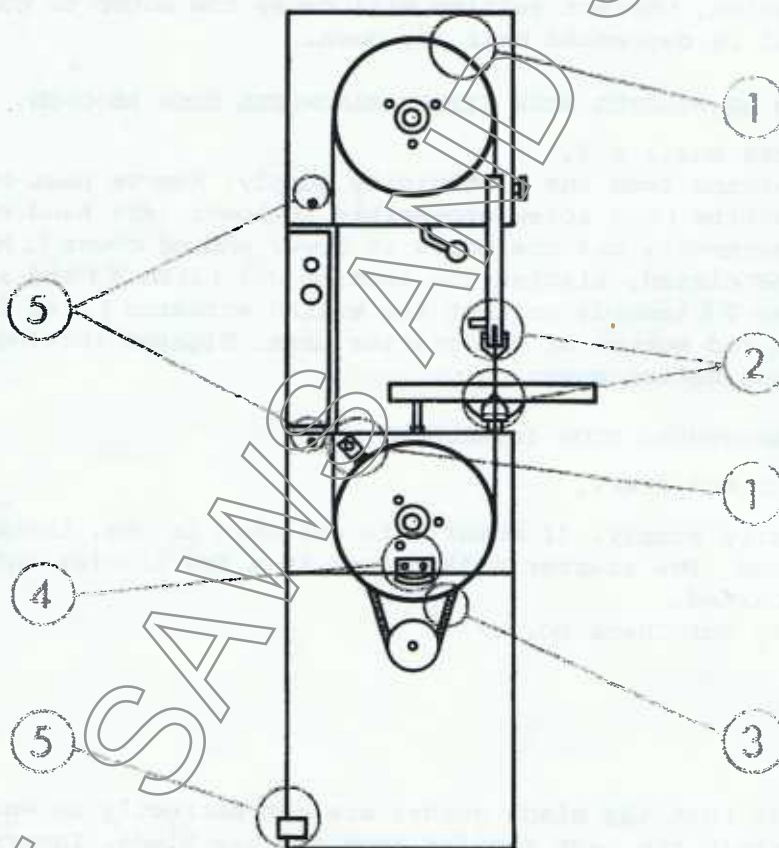
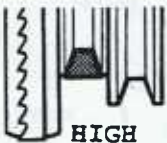
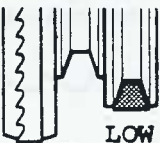


Fig.17 : Maintenance Points.

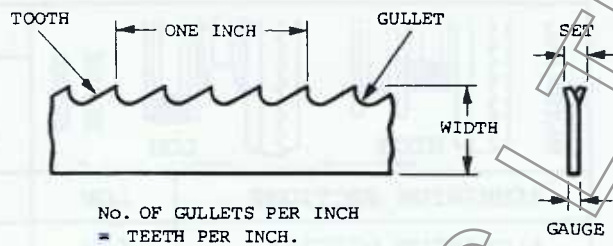
SAW AND SPEED SELECTION CHART.

MATERIAL	 HIGH  LOW BLADE SPEED	MATERIAL THICKNESS			
		UNDER 6 mm, ¼"	6 mm, ¼" TO 12 mm, ½"	12 mm, ½" TO 25 mm, 1"	OVER 25 mm, 1"
ALUMINIUM SECTIONS	LOW	18R	10R	8R	6S
ALUMINIUM DIECAST	LOW	18R			
BAKELITE	LOW	14R	10R	6R	3S
BONE	LOW	10R	8R	6R	3S
BRASS - SOFT	LOW	18R	14R	8R	6R
CARDBOARD CORRUGATED	HIGH	SC	SC	SC	SC
CHIPBOARD	HIGH		6S	3S	3S
COPPER - SOFT	LOW	18R	14R	6R	3S
CORK	HIGH	14R	5W	4W	4W
FIBRE BOARD	HIGH	18R	14R		
FORMICA	HIGH	18R			
GLASS FIBRE	LOW	18R	14R	10R	6H
HARDBOARD	HIGH	10R			
LEAD	LOW	18R	14R	10R	6R
LEATHER	HIGH	14R			
LINEN	HIGH	KN	KN	SC	SC
PAPER - SHEET	HIGH LOW	10R	6H	10R	6H
PAPER - TISSUE	HIGH	SC	SC	SC	
PAPER MACHE	HIGH	KN	10R		
PERSPEX	HIGH LOW	14R	10R	6R	3S
PLYWOOD	HIGH	10R	8R	6S	3S
RUBBER	LOW	10R	8R	6R	
STRAWBOARD	HIGH LOW	14R	10R	8S	6S
TUFNOL	LOW	14R	10R	6H	
WOOD - LOG	LOW				3S
WOOD - SOFT	HIGH	5W	5W	5W	5W
WOOD - HARD	HIGH	6S	3S	3S	3S
WOOD - WET	LOW				3S
ZINC	LOW	14R	10R	6H	

R = REGULAR TOOTH (METAL CUTTING) S = SKIP TOOTH (METAL CUTTING)
 H = HOOK TOOTH (METAL CUTTING) W = WOOD CUTTING KN = KNIFE EDGE
 SC = SCALLOPED EDGE NUMBERS DENOTE TEETH PER INCH

BANDSAW BLADES.

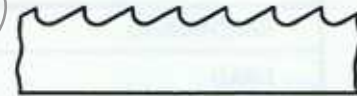
An understanding of the design and application of the various types of saw blades obtainable is essential if the bandsawing technique is to be fully exploited. Selection of the most suitable saw blade for the job is very important as a poor choice can lead to much wasted time and money.



TOOTH PITCH is important if optimum blade performance is to be obtained. Tooth pitch is determined mainly on the basis of material thickness and to some extent on material hardness. For a given material thickness, a tough or abrasive material will require more teeth in engagement than a soft ductile one. Too many teeth in engagement will decrease the tooth loading to the point where the teeth cannot penetrate the material and so skid across the cutting face.

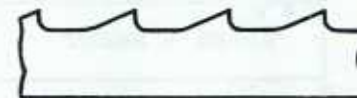
TOOTH FORM refers to the profile of the tooth. The two most popular styles are regular tooth and skip tooth as shown in the illustrations.

REGULAR TOOTH is the standard style for most wood and metal cutting saw blades. The zero front rake and well rounded gullets present a robust tooth with good shock resistance and work penetration properties. It will produce accurate fine finish work in most medium hard materials but tend to clog when used on soft or ductile alloys. Standard pitches are 6, 8, 10, 14, 18, 24 & 32 teeth per inch for metal cutting.



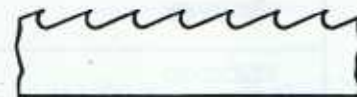
REGULAR TOOTH

SKIP TOOTH form is similar to the regular tooth form but alternate teeth are omitted, a design which allows greater gullet capacity without unduly weakening the body of the blade. Providing the thickness of the material permits, a skip tooth saw blade will give best performance on aluminium and soft alloys. Skip tooth metal cutting blades prove superior to woodcutting blades for sawing deep cuts in hard or wet wood, wood backed laminates and man-made wood products which contain an abrasive bonding agent. For these particular applications, best results will usually be obtained by running the machine on the lower speed. Standard pitches are 3, 4 & 6 teeth per inch.



SKIP TOOTH

HOOK TOOTH form has positive front rake which considerably assists work penetration and hence produces faster cutting times on harder materials. The coarse pitch and large gullets associated with this type of saw blade make it particularly suitable for sawing deep sections. However, it is not recommended for use on abrasive materials. Standard pitches are 2, 3, 4 & 6 teeth per inch.



HOOK TOOTH

BANDSAW BLADES (CONTINUED).

TOOTH SET is the angling of the saw blade teeth so that the tips protrude beyond the body of the saw blade. The width of the saw cut produced provides the working clearance necessary for the body of the saw blade and permits some degree of steering to negotiate curves.

STANDARD SET teeth are set alternately to the left and to the right, a style which is popular for cutting soft materials and wood.

RAKER SET saw blades have one tooth set to the left and one tooth set to the right, followed by one unset tooth. This style of set is widely used and is to be preferred for contour sawing.

WAVY SET saw blades have the teeth alternately set to the left and right in groups or waves. With this formation of tooth set, relatively few teeth are cutting at the side of the kerf and therefore there is some tendency for the saw blade to jam when sawing abrasive materials.

SAW GAUGE is the actual thickness of the body of the saw blade. Some manufacturers produce special gauge saw blades for specific purposes, but generally saw blades up to and including $\frac{1}{2}$ " wide are .025" thick, $\frac{3}{8}$ " & $\frac{3}{4}$ " wide are .032" thick.

Knife edge bands are suitable for cutting soft materials such as woven fabrics, sponge, rubber, and corrugated cardboard. Where the nature of the material is fibrous and difficult to sever, wavy or scalloped edge blades are better as the teeth provide a more positive cutting action. Typical applications are cutting cork, filter elements and felt etc. Because these bands separate the material, no dust or swarf is produced and a smooth finish is usually obtained.

Sometimes even though the machine appears to be in good working condition, the saw blade persists in wandering from the true path of the cut. This is usually due to the workpiece being forced into the saw blade at a greater pace than the saw blade can cope with, or the teeth of the blade are not evenly sharpened and set. Repeat the cut using less feed pressure. If this does not cure the trouble, replace the saw blade.



RAKER SET



WAVY SET



KNIFE EDGE BAND



SCALLOPED EDGE BAND



WAVY EDGE BAND

BANDSAW BLADES (CONTINUED).

NOTE : Metal cutting saw blades cannot be resharpened, but the teeth of wood cutting saw blades may be dressed by the following method :-

The saw blade should be sharpened square across and without hook, i.e. the front face of the hook square to the flank of the saw blade. The stroke of the file should be one smooth movement using the whole cutting length of the file and maintaining even pressure from start to finish. Mark the starting point for easy identification and proceed around the saw blade using one stroke per tooth. Should one stroke not be sufficient to produce a sharp tooth, go around the saw blade a second time in preference to repeated strokes to each tooth at one setting. It is important to maintain the correct size and shape of each tooth to avoid weakening the saw blade by forming a sharp corner in the gullet.

It is essential to use a genuine bandsaw file which has three sides and well rounded corners, the normal small file not being suitable. The purchase of a saw vice will prove a real asset as the long jaws permit about 18" or so of the saw blade to be sharpened at one setting.

A saw blade should be re-sharpened as soon as the teeth lose their fine point. Dull teeth tear the fibres of the wood instead of severing them cleanly and the increased feed pressure thus required produces a ragged inaccurate cut and considerably shortens the life of the saw blade.

The saw blade must be in reasonable condition to warrant re-sharpening. A saw blade that shows signs of fatigue, i.e. cracks at the gullets of the teeth, or one that has come into contact with a nail will not usually justify any further effort being expended on it and is best discarded.

Usually it is not necessary to re-set the teeth of the blade as the initial set will last for several sharpenings. The correct amount of set is about .005" each side and adjacent teeth are set in opposite directions. It is important that the saw blade be sharpened after it has been set.

Welding units and brazing units are available for repairing saw blades, or making blades from bulk coil and details of these units will be sent upon request.

BANDSAWING PRACTICE.

Having selected the best saw blade for the job, the most important rule to follow is to allow the saw blade to cut freely. Forcing the workpiece into the saw blade produces a ragged inaccurate cut and considerably reduces the working life of the saw blade.

For contour sawing the width of the saw blade must be chosen with regard to the smallest radius to be sawn, thus a small radius will demand the use of a narrow saw blade. The beam strength and permissible tension decreases rapidly for narrow saw blades and it therefore follows that narrow saw blades are particularly sensitive to excessive stress which will cause stretching and premature breakage through fatigue at high speed. Saw blades which fail through abuse of this kind are useless and must be discarded although the teeth may still be in good condition. It is impossible to be precise as to the smallest radius any given saw blade will cut as so much depends on job conditions and the skill of the operator, but the Chart on page 15 (and the Instruction Plate at the rear of the machine) offers a basic guide on this point.

BANDSAWING PRACTICE (CONTINUED).

BLADE WIDTH SELECTION CHART							
BLADE WIDTH		3 mm, $\frac{1}{8}$ "	6 mm, $\frac{1}{4}$ "	10 mm, $\frac{3}{8}$ "	12 mm, $\frac{1}{2}$ "	15 mm, $\frac{5}{8}$ "	20 mm, $\frac{3}{4}$ "
MINIMUM CURVE RADIUS	mm	8	25	38	62	100	136
	ins	$\frac{5}{16}$	1	$1\frac{1}{2}$	$2\frac{1}{2}$	4	$5\frac{3}{8}$

Several drilled holes at strategic points around the contour may be necessary to negotiate small radii or cut to a sharp corner. Experiment may show that it is advantageous to use a wood cutting blade with increased set when sawing small radii as the increased width of kerf allows the blade more freedom to follow a tight curve. It should be kept in mind, however, that the greater the set the more power is required to make the cut, and hence due care must be exercised to avoid working the saw blade beyond its limit.

It is often found that when cutting a scroll or similar shape the forward cut cannot be completed and the workpiece must be backed off the saw. Care is necessary here to ensure that the wood is backed out gently, and turned at the same time so that the kerf is always in line with the saw. When removing large pieces of waste material, make the shorter end first to avoid backing out of the longer cut.

Three dimensional shapes are easily produced on the bandsaw. A suitable block of square or rectangular section is prepared with the front and side profiles marked out on adjacent faces. Make all the necessary cuts on one face and carefully replace the waste pieces in position. Turn the block on its side and cut out the second profile. With some jobs of this nature it may prove useful to tape the waste pieces in position to retain the block profile for ease of handling.

Light metals must always be sawn with a metal cutting saw blade running at the low speed. Some aluminium or zinc alloys tend to clog the blade teeth but an occasional application of lubricant in the form of paraffin or wax should solve this problem.

Very little difficulty will be experienced in cutting solid plastic materials although some have an abrasive nature which tends to shorten the effective life of the saw blade.

Heat generated by sawing friction cause thermoplastic materials to become sticky and there is a marked tendency for the saw blade teeth to be clogged by swarf, particularly when blunt or fine pitch saw blades are used. The tendency to clog can be reduced by lubricating the saw blade with water or wax.

Some materials, the thermosetting phenolics in particular, give off a toxic airborne dust and in order to avoid possible risk to health, advice on dust extraction should be obtained.

COMMON SAWING PROBLEMS.

BLADE WANDERS FROM TRUE LINE :

Excessive feed pressure.
Blade teeth dull or of too fine pitch.
Guide inserts not controlling blade through wear or incorrect adjustment.
Blade tracking incorrect.
Loss of set to one side of saw teeth.

PREMATURE BLADE BREAKAGE :

Excessive feed pressure, and/or too much blade tension.
Worn or incorrectly set guides.
Joint improperly welded and annealed.
Blade too wide for curved cut.
Bandwheels worn.
Blade teeth of too fine pitch.

BLADE BOWS IN DEEP CUT :

Excessive feed pressure.
Blade teeth dull or of too fine pitch.
Insufficient blade tension, and/or blade too narrow for depth of cut.
Blade running off at start of cut.

BLADE TEETH DULL RAPIDLY :

Insufficient feed pressure.
Guide inserts snagging set of teeth.
Blade speed too fast, and/or blade pitch too fine.
Hard spots in material.

TEETH TORN FROM BLADE :

Excessive feed pressure.
Gullets of teeth loading.
Blade speed too fast, and/or blade pitch too coarse.
Material pressure welding to teeth.

BLADE DEVELOPING TWIST :

Excessive feed pressure.
Guide inserts snagging blade.
Blade too wide for radius of cut.
Excessive blade tension.
Blade not tracking correctly.
Loss of set to one side of saw teeth.

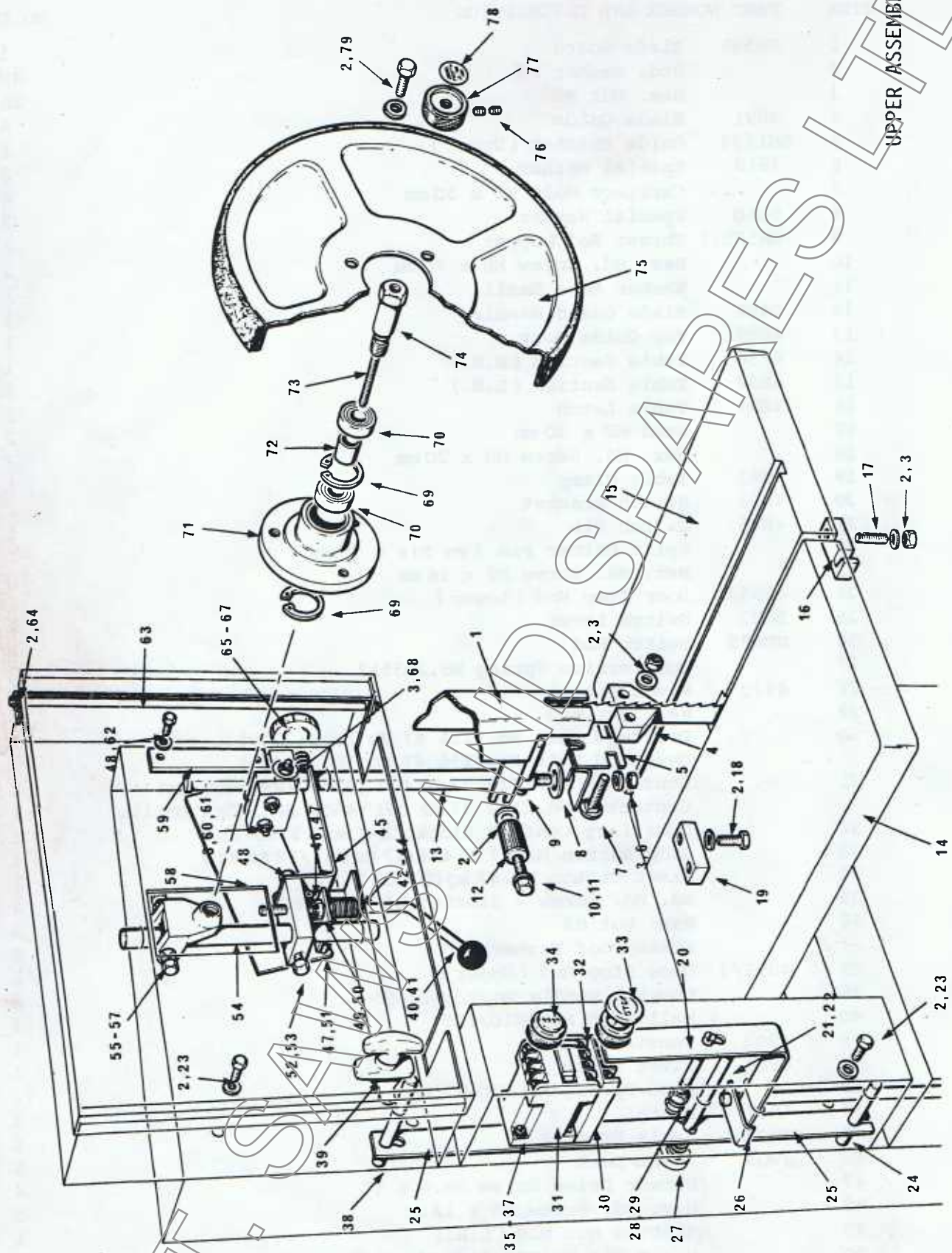
BLADE VIBRATES IN CUT :

Workpiece not properly seated or securely held.
Blade speed too fast, and/or blade pitch too coarse.
Insufficient blade tension.
Blade not backed up by guide thrust pads.

UPPER ASSEMBLY

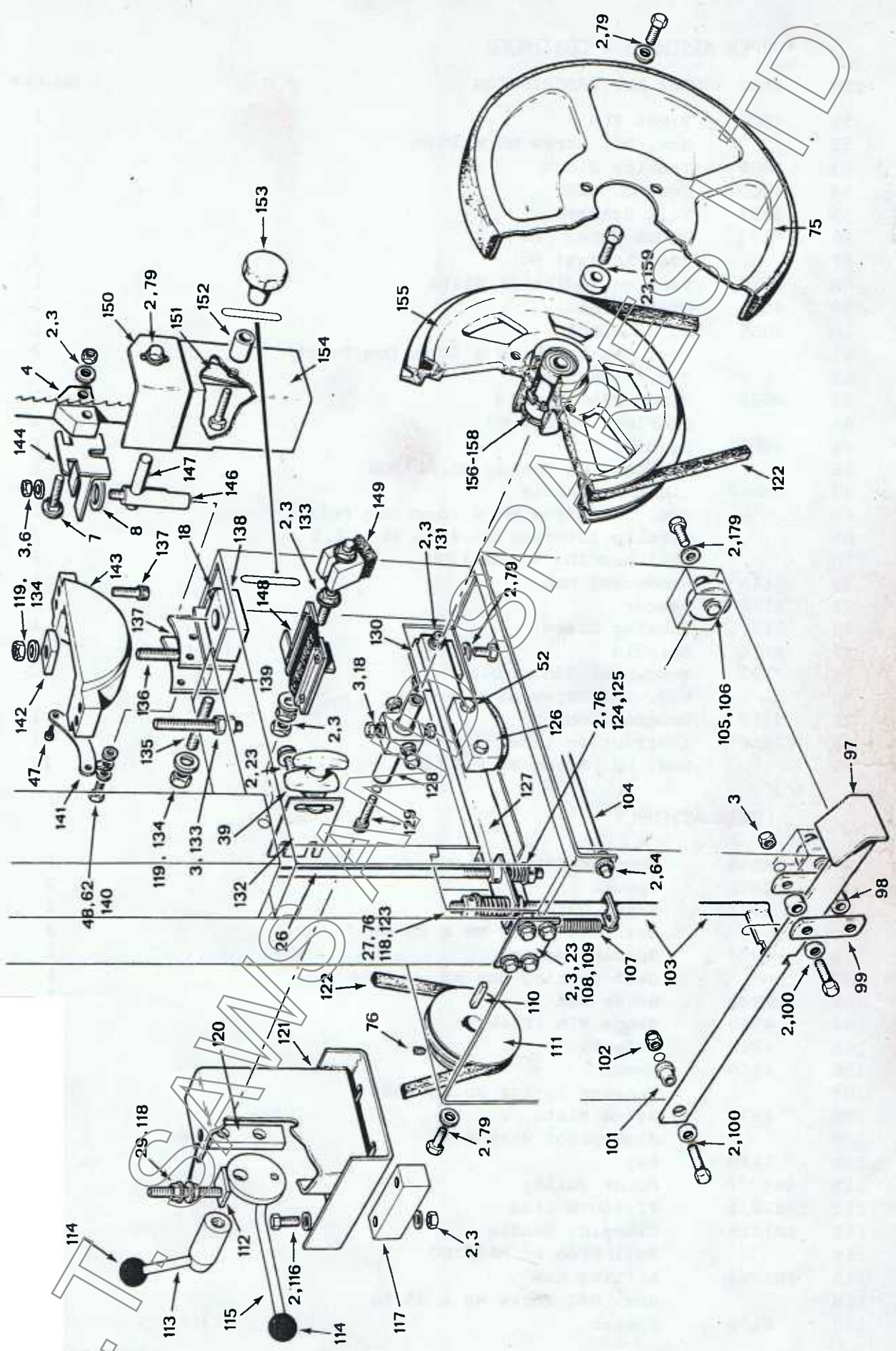
ITEM	PART NUMBER AND DESCRIPTION		No. OFF
1	SM586	Blade Guard	1
2		Std. Washer	48
3		Hex. Nut	26
4	4891	Blade Guide	4
5	SM1434	Guide Bracket (Upper)	1
6	4919	Special Washer	2
7		Carriage Bolt	4
8	5060	Special Washer	2
9	SM585/1	Thrust Rod (Upper)	1
10		Hex. Hd. Screw	2
11		Washer	1
12	5496	Blade Guard Handle	1
13	4889	Top Guide Post	1
14	4836	Table Section (R.H.)	1
15	4837	Table Section (L.H.)	1
16	4894	Table Latch	1
17		Stud	2
18		Hex. Hd. Screw	7
19	4893	Table Clamp	1
20	4996	Switch Bracket	1
21	4975	Switch Pin	1
22		Split Cotter Pin	1
23		Hex. Hd. Screw	10
24	4895/1	Door Stop Rod (Lower)	1
25	5022	Switch Lever	1
26	SM839	Switch Rod	1
27		Compression Spring	2
28	4979	Pivot Pin	1
29		Hex. Nut	3
30		Overload Unit	1
		Overload Unit	1
31		Contactora	1
		Contactora	1
32		Auxiliary Contact Block	1
33		Stop Button	1
34		Start Button	1
35		Rd. Hd. Screw - Slotted	2
36		Hex. Nut	2
37		Shakeproof Washer	4
38	4895/2	Door Stop Rod (Upper)	1
39		Locking Handle	2
40		Ball Knob	1
41	4902	Tension Screw	1
42	4904	Pivot Plate	1
43		Disc Spring	22
44	4907	Plate	1
45	4903	Angle Bracket	1
46	4905	Pivot Bush	1
47		Hammer Drive Screw	4
48		Hex. Hd. Screw	5
49		Slotted Nut	1
50		Mills Pin	1

(CONTINUED)



UPPER ASSEMBLY

A.L.T.



UPPER ASSEMBLY - CONTINUED

ITEM	PART NUMBER AND DESCRIPTION		No. OFF
51	4906	Pivot Pin	1
52		Hex. Hd. Screw	3
53	4899	Tension Block	1
54	4900	Tension Rod	1
55	5681	Tilt Bracket	1
56	5682	Pivot Screw	2
57		Hex. Locknut	2
58	4918	Tension Indicator Plate	1
59	4861	Clamp Plate	1
60	4859	Guide Block	1
61		Soc. Set Screw	2
62		Std. Washer	4
63	4922	Hinge Pin (Upper)	1
64		Starlock Washer	4
65	4988	Special Nut	1
66		Compression Spring	1
67	SM862	Clamping Handle	1
68		Soc. Set Screw	2
69		Circlip Internal	2
70		Ball Bearing	2
71	5115	Bandwheel Hub	1
72	5116	Spacer	1
73	5117	Jacking Screw	1
74	5114	Spindle	1
75	2473	Bandwheel	2
76		Soc. Set Screw	7
77	5118	Control Knob	1
78	2466	Instruction Label	1
79		Hex. Hd. Screw	14

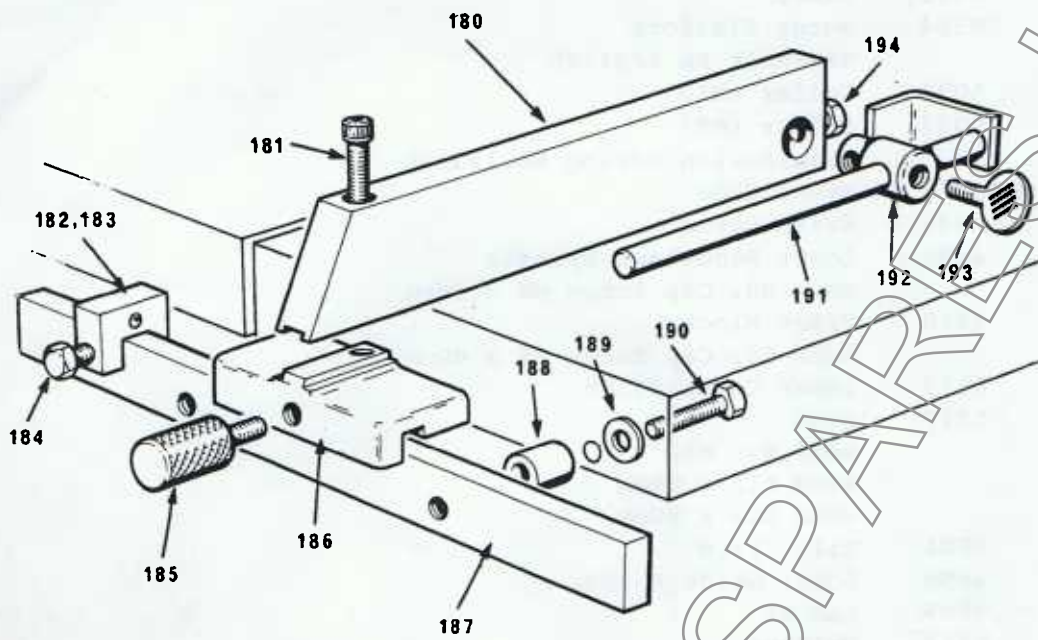
LOWER ASSEMBLY

97	SM844	Foot Brake Lever	1
98	4876	Spacer	2
99	4997	Brake Guide Plate	2
100		Hex. Hd. Screw	3
101	4984	Spacing Washer	1
102		Self Locking Nut	1
103	SM840	Brake Rod	1
104	4980	Hinge Pin (Lower)	1
105	4868	Axle Pin	2
106	4869	Wheel	2
107		Tension Spring	1
108	4873	Stand Plate	1
109		Shakeproof Washer	4
110	1149	Key	1
111	4840/2	Motor Pulley	1
112	SM838/1	Platform Stud	1
113	SM1219	Clamping Handle	1
114		Ball Knob	1
115	SM1763	Lifting Cam	1
116		Hex. Hd. Screw	4
117	8176	Spacer	2

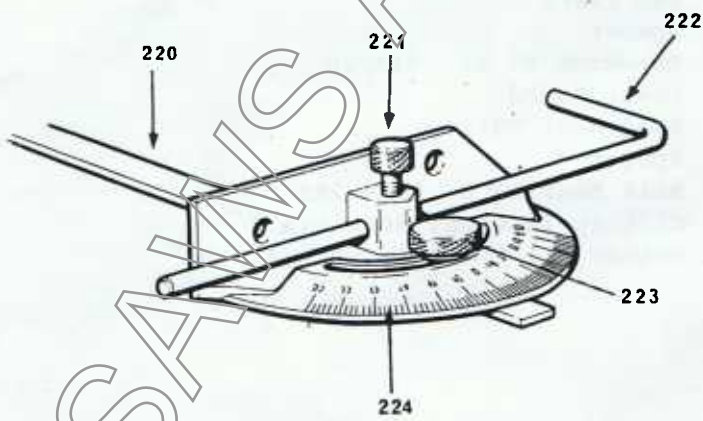
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LOWER ASSEMBLY - CONTINUED

ITEM	PART NUMBER AND DESCRIPTION	No. OFF
118	Std. Washer	3
119	Std. Washer	4
120	4965 Clamp	1
121	SM584 Motor Platform	1
122	Vee-Belt	1
123	5071 Collar	1
124	5072 Collar	1
125	Compression Spring	1
126	SM843/1 Brake Shoe	1
127	SM841 Brake Lever	1
128	4896 Lower Bandwheel Spindle	1
129	Soc. Hd. Cap Screw	1
130	4870 Pivot Block	1
131	Soc. Hd. Cap Screw	1
132	5113 Lower Cover Catch	1
133	5717 Stud	2
134	Hex. Nut	3
135	Stud	2
136	Stud	1
137	4884 Tilt Plate	2
138	4890 Lower Guide Holder	1
139	4885 Spacer	1
140	2812 Pointer	1
141	4921 Protractor Plate	1
142	4911 Table Clamp	1
143	4838 Table Bracket	1
144	SM829/2 Guide Bracket (Lower)	1
145	Soc. Hd. Cap Screw	4
146	4888 Lower Guide Post	1
147	SM585/2 Thrust Rod (Lower)	1
148	SM940 Superseal Assembly	1
149	2270 Wheel Brush	1
150	5059 Guard Plate	1
151	4871 Nut Plate	1
152	4917 Spacer	1
153	Handknob	1
154	5058 Lower Guard	1
155	5121 Bandwheel Pulley	1
156	4920 Spacer	1
157	Ball Bearing	2
158	Circlip Internal	2
159	4919 Washer	1



RIP FENCE



MITRE GAUGE

RIP FENCE - ASSEMBLY No.SM855

ITEM	PART NUMBER AND DESCRIPTION	NO. OFF
180	5027 Fence Bar	1
181	Soc. Hd. Cap Screw	1
182	5080 Fence Stop	2
183	Hammer Drive Screw	2
184	Hex. Hd. Screw	2
185	5031 Hand Screw	1
186	5026 Fence Bracket	1
187	4916 Fence Rail	1
188	4917 Spacer	2
189	Std. Washer	2
190	Hex. Hd. Screw	2
191	SM856 Back Stop	1
192	5030 Pin	1
193	Wing Screw	1
194	Hex. Hd. Screw	1

MITRE GAUGE - ASSEMBLY No.SP153

220	211 Guide Strip	1
221	126 Thumb Screw	1
222	212 End Stop	1
223	6234 Thumb Screw	1
224	Protractor	1

OPTIONAL EXTRAS & ACCESSORIES

250	'Cyclair' Extractor Unit - 1 Phase 'Cyclair' Extractor Unit - 3 Phase	
251	SM1040 Extraction Collection Chute (rubber connecting sleeve and elbow not shown), enables Extractor Unit to be coupled directly to machine (see overleaf).	
252	Model BSO.25 Welder & Grinder Unit, for joining blades up to 1" wide from bulk coil stocks. Complete with motorised grinder, cropper and annealing controls.	

NOT ILLUSTRATED :

Fused Isolator

Isolator, lock with 2 keys

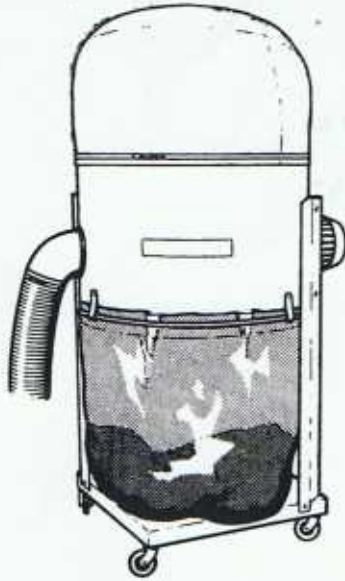
Key operated switch

240 volt lighting

Low volt lighting (24 volt)

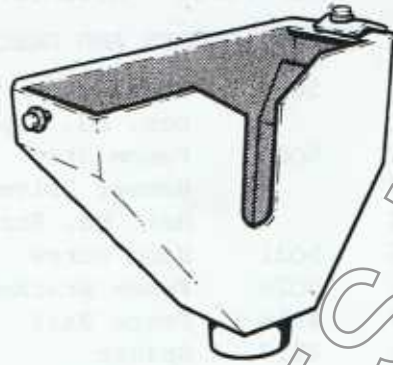
Starrite Supaflex bandsaw blades joined ready for use, 88" long. (Also available in 100' coils).

Wood & Metal cutting saw blades available in various pitches :-
 $\frac{1}{8}$ " , $\frac{3}{16}$ " , $\frac{1}{4}$ " , $\frac{3}{8}$ " , $\frac{1}{2}$ " & $\frac{5}{8}$ " wide.



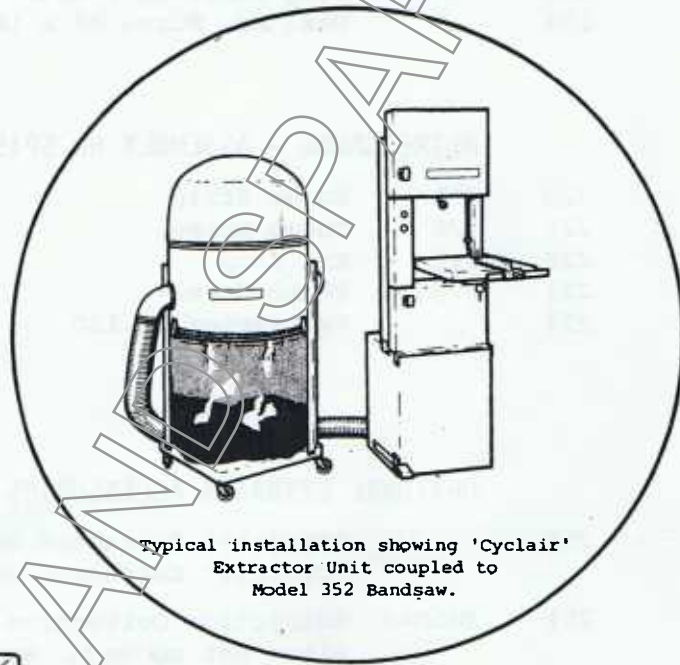
250

'CYCLAIR'
EXTRACTOR UNIT

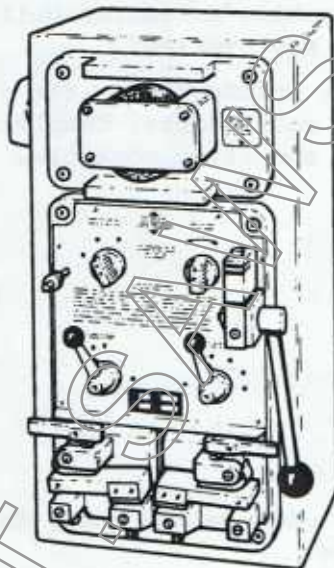


251

EXTRACTION
COLLECTION CHUTE



Typical installation showing 'Cyclair'
Extractor Unit coupled to
Model 352 Bandsaw.



252

MODEL BSO.25
WELDER & GRINDER UNIT