STARTRITE

INSTRUCTION MANUAL

352S

DUAL SPEED VERTICAL BANDSAW

IMPORTANT
READ THE INSTRUCTIONS CAREFULLY BEFORE USING THIS PRODUCT

ISSUE 5
CLSC

QUALITY BANDSAW BLADES

TO SUIT THE 352S MODEL

ORDER LINE- 01634 850833

A.L.T. SAWS & SPARES LTD

Unit 15, Pier Road Industrial Estate

Gillingham

Kent

ME7 1RZ

www.altsawsandspares.com

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"

CONTENTS

GENERAL ARRANGEMENT

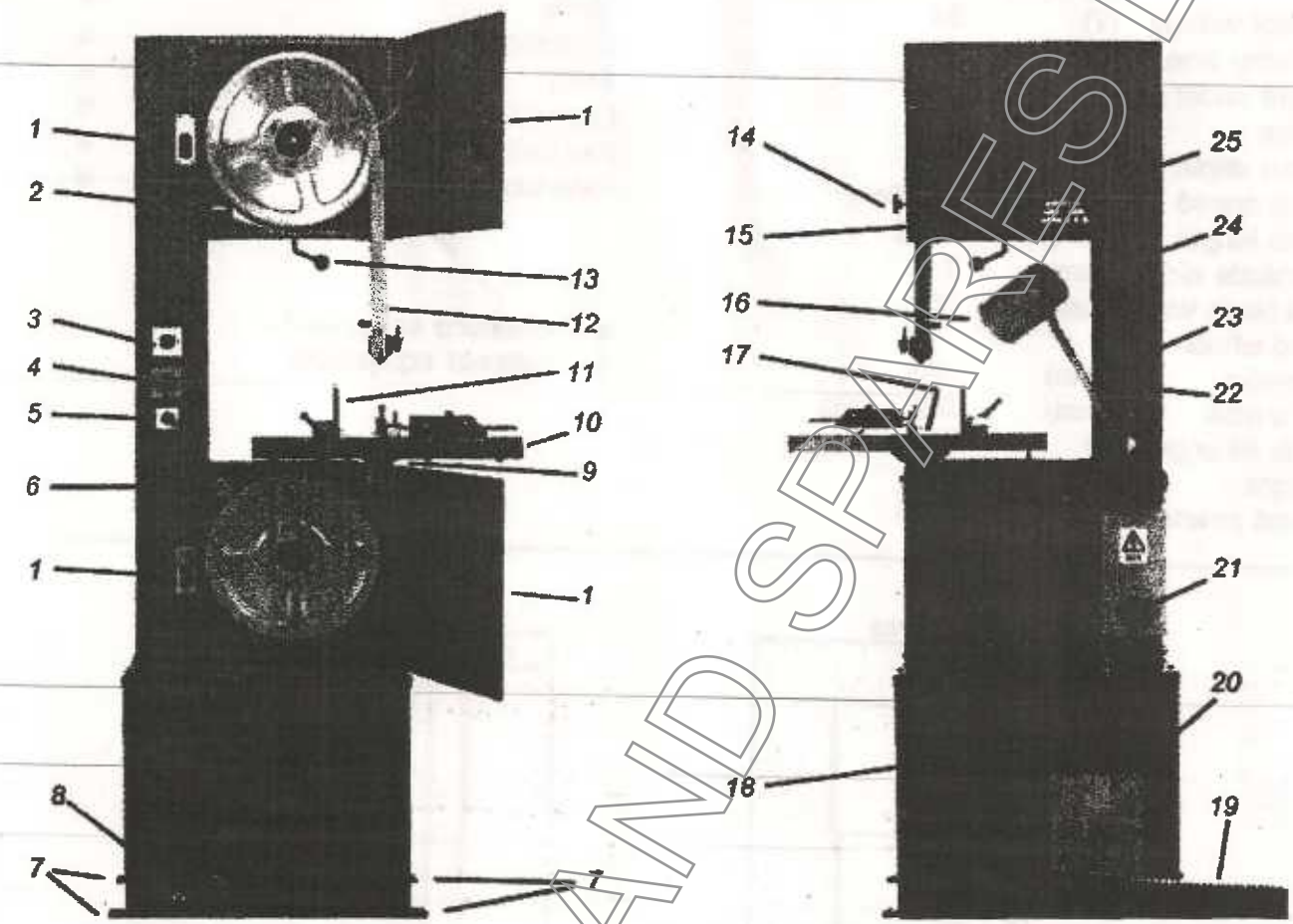
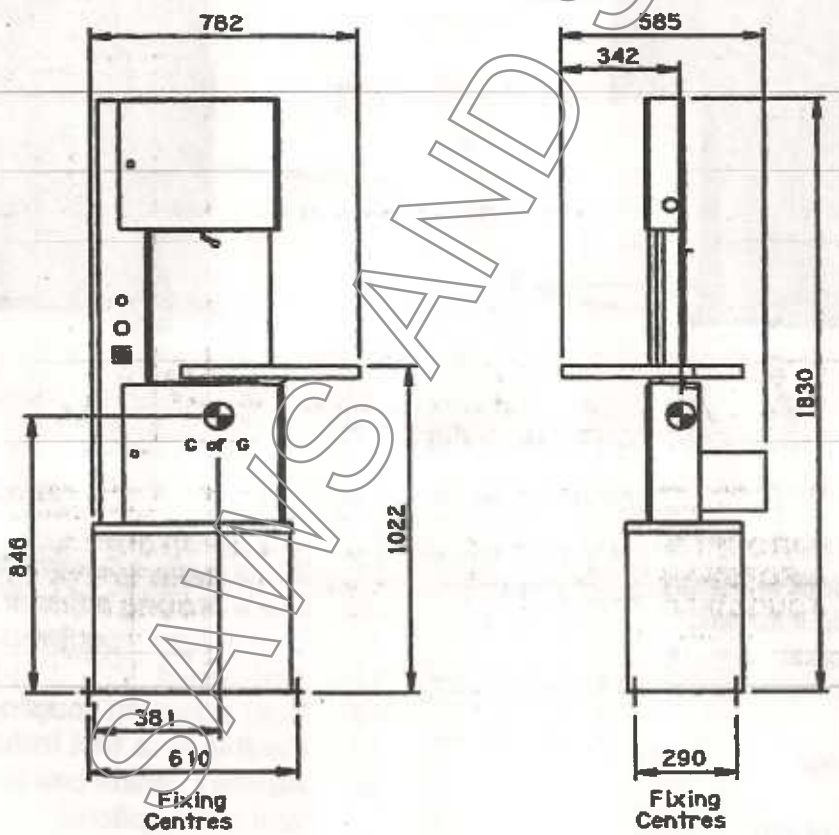


Fig 1

Key

1 Bandwheel door lock with integral safety interlock
2 Tension indicator
3 Start control
4 Stop control
5 Speed selector
6 Blade brush
7 Fixing holes (4 off)
8 Palm/kick switch
9 Lower blade guard
10 Table
11 Rip fence
12 Upper blade guard
13 Blade tension adjuster
14 Blade guide Adjustment lock
15 Blade tracking adjuster
16 Low voltage work lamp (optional)
17 Table insert
18 Dust extraction coupling
19 Flexible hose (not included)
20 Auxiliary control box (only fitted with some options)
21 Lockable isolator
22 Key switch
23 Low voltage work lamp socket (fitted with optional work lamp)
24 Tool holder
25 Rating/serial number label

SPECIFICATION			STANDARD/OPTIONAL EQUIPMENT	
Electrical Supply	1 phase	220 - 240V 50Hz/6.4 A	Reversible rip fence	●
	3 phase	380 - 415V 50Hz/3.6 A	Depth stop	●
Motor Power	3 phase	1.0/1.2 kW	Mitre fence	●
	1 phase	0.55/0.75 kW	Circle cutting attachment	●
Control voltage	(V)	24	Blade	●
Stopping time	(secs)	<10	Operating manual	●
Height under guides	(mm)	300	Tools	●
Throat depth	(mm)	350	Low voltage work lamp	o
Blade speed	(m/min)	420/860	Key switch	●
Blade length	(mm)	2845	Palm/kick switch	●
Min blade width	(mm)	3		
Max blade width	(mm)	20		
Band wheel diameter	(mm)	355	● standard equipment o optional equipment	
Table size	(mm)	520 x 520		
Table tilt angle	(°)	45		
Weight	(kg)	105		
Sound power*	(dbA)	< 96		



All dimensions are in mm and are approximate.
Due to the policy of continuous product improvement specification may change without notice.

* The power levels quoted are emission levels and are not necessarily working levels. Whilst there is a correlation between emission levels and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the work force include the duration of exposure, the characteristics of the work room, and other sources of noise. Also permissable exposure levels can vary from country to country. However, this information will enable the user of the machine to make a better evaluation of the hazard and risk.

HEALTH AND SAFETY ADVICE~

Ensure that you have read the contents of this operating manual, and that you have received sufficient training to enable the safe adjustment, use and maintenance of this machine before using it.

Inexperienced users and those under the age of **18** years should not operate this machine unless supervised by an experienced operator.

For safe operation of this machine ensure that:

The blade is suitable for the work to be undertaken and that it is sharp and moving in the correct direction.

The correct blade speed is selected.

loose items of clothing or jewellery are fastened or preferably removed.

Fences are adjusted correctly and secured, and that push sticks are available.

The working area is clean and unobstructed.

Dust extraction equipment is working efficiently and that it is operating.

Suitable protective clothing such as goggles and ear defenders are available and worn if necessary.

The machine is kept clean and maintained in accordance with the maintenance instructions.

When adjusting, cleaning or maintaining this machine ensure that all moving parts are stationary and that the electrical supply is disconnected.

Report immediately to your supervisor any machine malfunction or operator hazard. **DO NOT** attempt to repair the machine unless competent to do so.

The electrical supply must be connected in accordance with the installation instructions. It is recommended that regular insulation and earth continuity /Impedance tests are undertaken. As the test requirements and frequency of such tests may depend on the laws of the country in which the machine is being used, it is recommended that the user consult a qualified electrician.

If in doubt about the safe use of this machine contact **A.L.T. Saws & Spares Ltd CUSTOMER SERVICES** (the address and telephone number are given on the front page of this manual) or the organisation from which the machine was purchased for advice and the availability of training.

MACHINE LABELS

The labels on this machine should never be removed or covered over. Replacement labels and details of where to fit them can be obtained from **A.L.T. Saws & Spares Ltd CUSTOMER SERVICES**

HANDLING, TRANSPORTATION AND FIXING

Damage caused by incorrect handling, transportation or installation may invalidate the guarantee. Consequently if in doubt about the safe handling or installation of the machine obtain the services of a competent technician or contact **A.L.T. Saws & Spares Ltd** or contact the organization from which the machine was purchased.

When transporting this machine do not strap across the table or over the top of the machine (see fig 2a and 2b). Always locate retaining straps over the lower wheel box beneath the table (see fig 2c).

Fig 2a

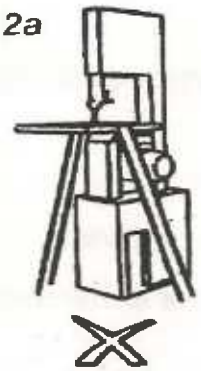


Fig 2b

Fig 2c

To minimize the risk of damage it is recommended that the machine be transported with the table detached. The table is fixed to the machine by means of a locating stud and retaining nut (see fig 3). As the table mounting stud and cradle are factory set it is only necessary to position the table over the mounting stud and secure it by tightening the retaining nut using the spanner provided.

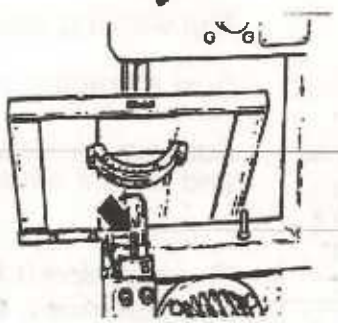


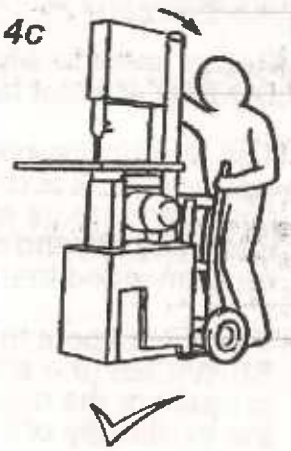
Fig 3

When moving and positioning this machine do not hold the table and drag it, always hold the spine or lower wheel box (see fig 4a and 4b). If moving long distances, position the machine on a trolley before moving (see fig 4c). The machine should not be located in a confined space.

Fig 4a

Fig 4b

Fig 4c



Ensure that the working area is adequately lit. A cabinet located nearby is useful for the safe and secure storage of tools, blades and accessories.

The machine should be located on a solid surface that is level and fixed using four bolts (not supplied). Four mounting holes are provided in the base for this purpose. Ensure that the anti, corrosive coating is removed from the table and other working parts before use.

CONNECTION OF THE ELECTRICAL SUPPLY

Before connecting the electrical supply ensure that it is the correct voltage, phase and frequency, and that it has sufficient capacity for the machine. The relevant information can be found on the rating plate located on the rear of the machine (see fig 1).

THREE PHASE SUPPLY

Remove the screw retaining the electrical control housing. Remove the housing cover by removing the retaining screws. Pass the supply lead through the cable gland located on the lower end of the housing. Connect the supply leads to terminals L1, L2 and L3 on the isolator. Connect the protective earth lead (yellow/green) to the earth terminal (E). Connect the neutral wire to terminal N if required (see fig 5).

Before proceeding further check the direction of motion of the machine. This should be done without the blade fitted to prevent damage in the event of the direction of motion being incorrect. The lower bandwheel should rotate in a clockwise direction. If it does not interchange two of the supply leads. The use of 1.5mm^2 cable and fuses rated at 10 A is recommended.

SINGLE PHASE SUPPLY

Remove the screw retaining the electrical control housing. Pass the supply lead through the cable gland located on the lower end of the housing. Connect the live (brown) lead to terminal L3 on the isolator. Connect the neutral (blue) wire to terminal L1. Connect the protective earth lead (yellow/green) to the earth terminal (E) (see fig 5). The use of 1.5mm^2 cable and fuses rated at 15 A is recommended.

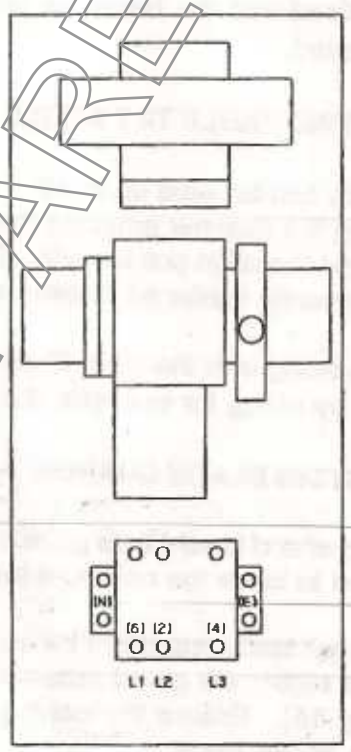


Fig 5

IT IS IMPORTANT THAT THE MACHINE IS EFFECTIVELY EARTHED.

If in doubt about the connection of the electrical supply consult a qualified electrician.

CONNECTION TO A DUST EXTRACTION SYSTEM

The machine is fitted with an integral dust extraction outlet located inside the base. This can be accessed through the opening at the rear of the base (see fig 1). Use only 110mm diameter flexible hose, part no. BO7083 (not supplied), and a suitable retaining clip, part no. BO7316 (not supplied). To ensure effective extraction the flexible hose must be securely fixed to the outlet and be free from obstructions. Connect the other end of the flexible hose to the inlet of a suitable dust extraction system.

For effective extraction the recommended air flow speed is 20 to 25 m/s. For the purposes of specifying a dust extraction system the presure drop at the dust extraction outlet of a properly maintained machine is 390 Pa at 20 m/s and 610 Pa at 25 m/s. The use of DUST EXTRACTION SYSTEMS is recommended. For further information on the use of dust extraction equipment contact A.L.T. Saws & Spares Ltd or the organisation from which the machine was purchased

BLADE SPEED SELECTION

The machine has two speeds. The speed selector switch is located below the stop control on the front of the machine (see fig 1). Low speed can be selected by switching the speed selector switch to 1, and the high speed selected by switching the speed selector switch to 2 (see fig 6).

Fig 6

It is advised that the blade be allowed to stop before changing the blade speed.

ADJUSTING TABLE TILT ANGLE

The table can be tilted up to 45°. To tilt the table slacken the trunnion nut using the spanner provided (see fig 7). Tilt the table to the desired angle and the align pointer with protractor scale. Ensure the trunnion nut is securely tightened before using the machine.

Fig 7

When sawing with the table tilted ensure the work is adequately supported by using, for example, the rip fence or mitre gauge supplied.

ADJUSTING BLADE GUARDS

The upper and lower blade guards are fully adjustable. They should be adjusted to leave the minimum amount of blade exposed.

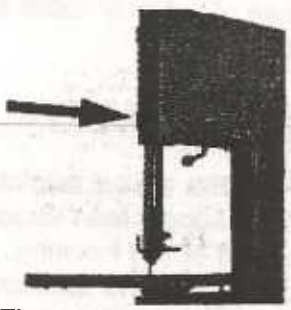


Fig 8a

The upper blade guard can be adjusted by slackening the locking handle and sliding the guard assembly up or down to the desired position (see fig 8a). Ensure the locking handle is securely tightened before sawing commences.

The lower blade guard can be adjusted when the table is tilted by releasing the retaining nut and adjusting to the required position (see fig 8b). Ensure the locking nut is securely tightened before sawing commences.

Fig 8b

ACTUATION OF BANDWHEEL DOOR INTERLOCKS

Both bandwheel doors are interlocked to ensure optimum safety. When either bandwheel door lock is unlocked by rotating the key anticlockwise the electrical supply to the machine is disconnected and the machine will stop in less than 10 seconds (see fig 9). The machine cannot be started with either bandwheel door open and will not restart if the bandwheel door is closed or locked. To restart after activating the bandwheel door interlocks close and lock the doors then press the start control located on the front of the machine (see fig 1).

Fig 9

The interlocks require no adjustment or maintenance. Under no circumstances attempt to override the safety interlocks.

ADJUSTING THE BANDWHEEL BRUSH

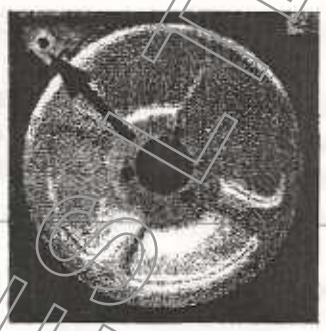


Fig 10

For effective sawing it is important to ensure the lower bandwheel is kept free from dust and waste material. A bandwheel brush located near the top of the lower bandwheel is provided for this purpose. To adjust slacken the retaining nut and slide the brush toward the bandwheel whilst applying light pressure (appriximately 1 kg) then securely tighten the retaining nut (see fig 10). Prior to operating the machine ensure that all fasteners are securely tightened. Replace the brush when the length of the bristles is less than 8 mm.

REPLACING THE TABLE INSERT

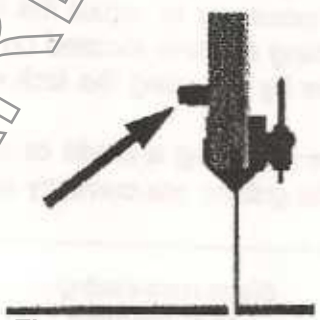


Fig 11a

A plastic insert is fitted in the table (see fig 1) to ensure that the blade is not damaged should contact be made. When replacing the insert ensure that the slot is aligned with the slot in the table and that the top surface of the insert is flush with the table surface.

FITTING THE BLADE

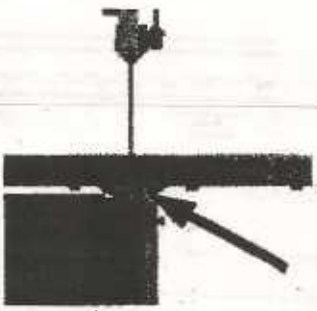


Fig 11b

To remove the blade open both bandwheel doors, remove the upper guard by slackening the retaining screw (see fig 11a), remove the lower blade guard by slackening the retaining nut (see fig 11b), and remove the fence rail by slackening the two retaining screws located beneath the front edge of the table (see fig 11c).

Release the blade tension by rotating the blade tension adjuster (see fig 1). Carefully lift the blade from the upper and lower bandwheels and slide it through the table slot and from under the fixed guard attached to the spine.

When replacing the blade position it centrally on the bandwheels ensuring it is not snagging on the fixed guard attached to the spine or the table slot. Also ensure it is positioned between the upper and lower blade guides.

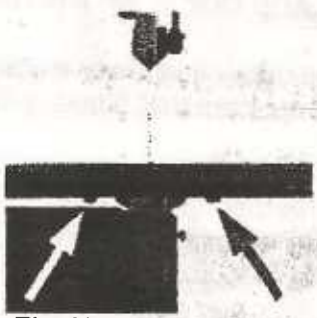


Fig 11c

Whilst tensioning the blade it may be necessary to adjust the blade tracking to ensure the blade runs centrally on the bandwheels. Adjustment of tracking and tension is described below.

Having adjusted the blade tracking and tension replace the upper and lower guards and fence rail ensuring that all retaining screws are securely fastened. To ensure optimum cutting performance and blade life the rip fence should be aligned with the table slot by adjusting the position of the fence rail.

BLADE TENSION ADJUSTMENT

Fig 12

Blade tension is adjusted by rotating the blade tension adjuster (see fig 1). Rotate the adjuster clockwise to increase blade tension and anti clockwise to decrease blade tension (see fig 12).

BLADE TENSION INDICATION

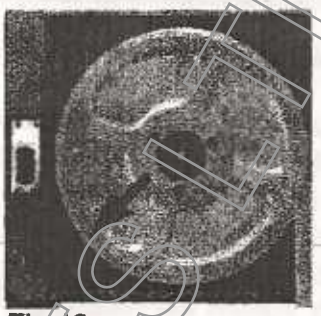


Fig 13

Blade tension is shown by the blade tension indicator (see fig 13). The correct tension is dependent on the blade, material being sawn and the material thickness. More information is given in the section on blade selection later in this handbook (see table 2).

BLADE TRACKING

It is important that the blade runs centrally on the bandwheels (see fig 14). To ensure this it may be necessary to adjust the blade tracking. This is done by releasing the lock nut securing the tracking adjuster located on the rear of the machine. When correctly adjusted secure the adjuster by fastening the lock nut.

After replacing a blade or adjusting the tracking it is important to ensure the upper and lower blade guides are correctly set. The adjustment of these is described below.

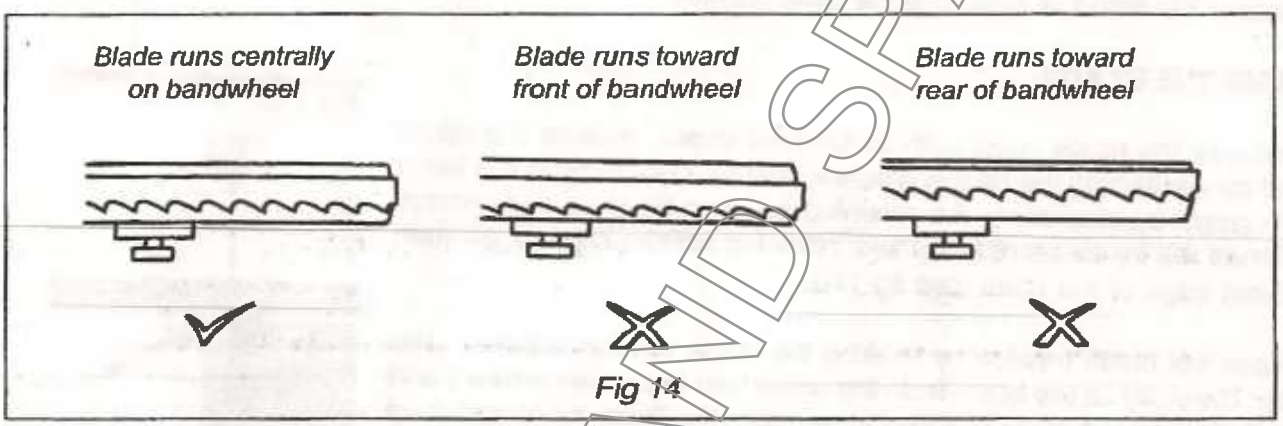


Fig 14

BLADE GUIDE ADJUSTMENT

The upper and lower blade guide system incorporates lateral guidance and back edge support. It is important that blade guides are set to provide the maximum support for the blade (see fig 15).

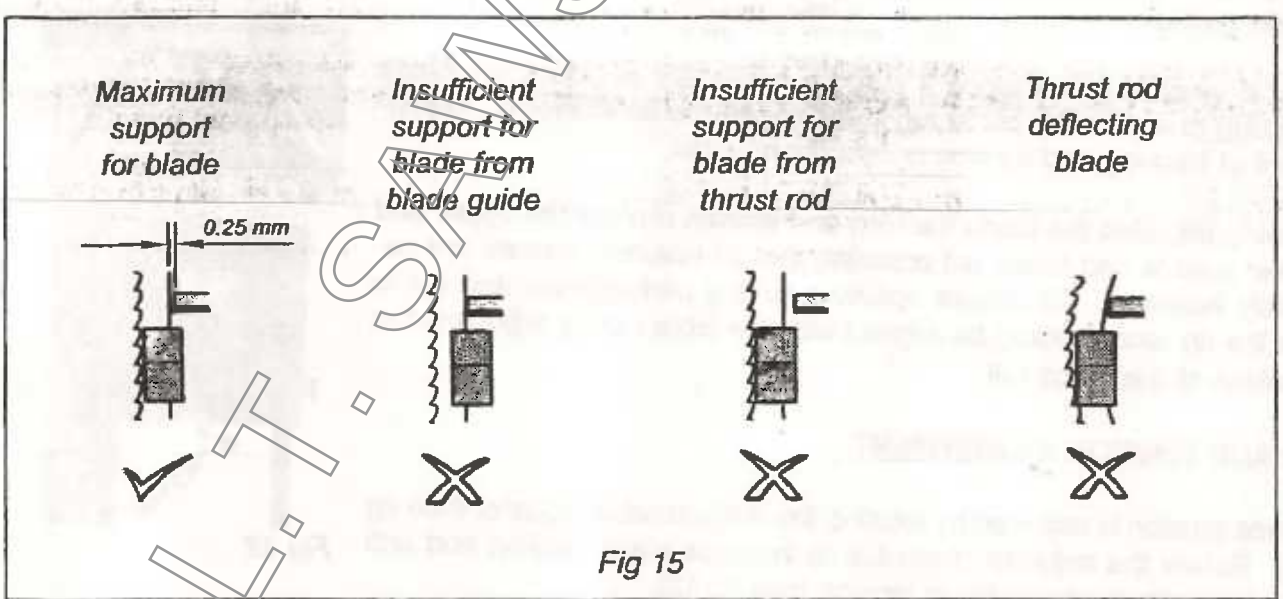


Fig 15

The lateral guides are adjusted by loosening the retaining nuts and positioning them so that they just clear the gullet of the blade teeth and there is a gap of between 0.05mm and 0.10mm between the blade and the guide. The carbide tipped thrust support is adjusted by loosening the retaining screw and positioning the carbide tip to provide a gap of 0.25mm between the back edge of the blade and the end of the thrust support (see fig 16).

The height of the upper blade guide is fully adjustable. It should be adjusted to leave the minimum amount of blade exposed. The upper blade guide can be adjusted by slackening the locking handle and sliding the guide assembly up or down to the desired position (see fig 8a). Ensure the locking handle is securely tightened before sawing commences. After adjustment ensure that all retaining screws and nuts are securely tightened before operating the machine.

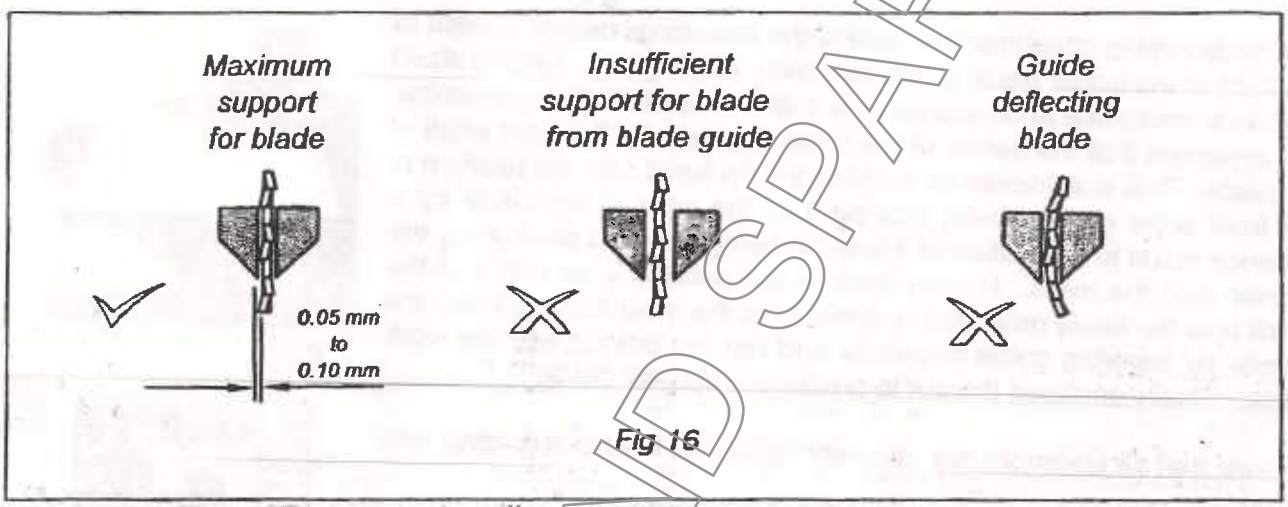


Fig 16

ADJUSTMENT OF RIP FENCE

A reversible dual height rip fence is provided to enable safe and accurate sawing of all thicknesses of material.

The fence assembly can be located on either side of the blade by slackening the fence retaining screw and relocating the fence assembly on the fence guide rail (see fig 17). Ensure the fence retaining screw is securely fastened before sawing.

Fig 17

To reverse the fence slacken the fence assembly retaining screw to remove the fence assembly from the fence guide rail (see fig 17) then remove the fence rail retainers to separate the fence clamp and fence body. After reversing the fence body securely tighten the fence rail retainers before repositioning the fence assembly on the fence guide rail (see fig 18). Ensure that all retaining screws are securely fastened before sawing.

Fig 18

USING THE DEPTH STOP

The depth stop can be used in conjunction with the rip fence to assist in the production of tenons. The depth stop is attached to the rear edge of the table by passing the fixing screw through the slot and retainer, then fastening the retaining screw. The position of the stop is adjusted by slackening the locking screw located in the top of the retainer (see fig 19). Ensure that all screws are securely tightened before use.

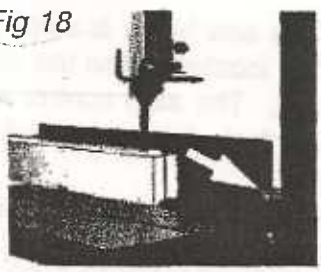


Fig 19

USING THE MITRE GAUGE

The mitre gauge is used to produce simple or compound angle cuts. After setting the angle of cut by slackening the locking screw located the mitre gauge in the slot in the table. When cutting ensure the work piece is securely held onto the face of the mitre gauge. Compound angles can be cut by tilting the table (see fig 20).

Ensure that all screws are securely tightened before use.

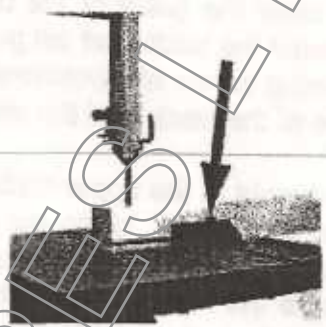


Fig 20

USING THE CIRCLE CUTTING ATTACHMENT

The circle cutting attachment is fixed to the mounting bracket located to the right of the upper blade guide assembly (see fig 21). Having sized the blank workpiece to be square and a little oversize, mark the centre. It is important that the centre of the circle is level with the front edge of the blade. This is achieved by marking the rip fence with the position of the front edge of the blade, moving it to the right of the blade by a distance equal to the radius of the circle being cut, and positioning the pointer over the mark. Having made a cut parallel to one side of the blank until the blade reaches the circle, stop the machine and lower the pointer by lowering guide assembly and tap the pointer into the work piece. Finally continue the cut to produce a circular blank.

Fig 21

Ensure that all fasteners are securely tightened before operating machine.

STARTING AND SAWING

Ensure that all guards are correctly adjusted and securely fixed, and that the fence is correctly positioned and secure.

The blade is set in motion by pressing the start control marked "I" located on the front of the machine (see fig 22).

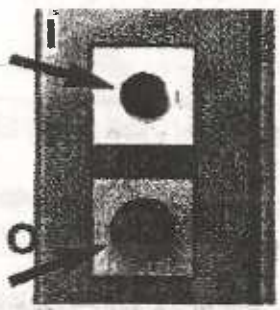


Fig 22

Feed the work piece with even and moderate pressure. If the feed pressure is too great cutting will be inaccurate and the blade will wear prematurely.

To avoid contact with the blade use a push stick to guide work past the blade.

STOPPING

The saw blade is stopped by depressing the red stop control marked "O" located below the start control on the front of the machine (see fig 22). The stop control latches preventing the machine from being re-started. Prior to restarting rotate the stop control clockwise to release.

The blade can also be stopped by actuating the palm/kick switch (see fig 23).

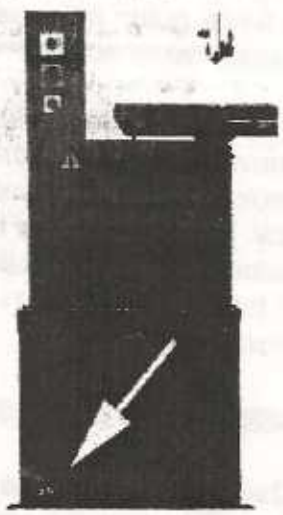


Fig 23

SETTING AND OPERATING INSTRUCTIONS (Continued)

PREVENTATIVE UNAUTHORISED USE

To prevent unauthorised use or to provide security whilst undertaking maintenance, a lockable isolator is fitted to the control housing (see fig.1). The electrical supply is disconnected by rotating the control clockwise to the "O" position (see fig.24). Security can be provided by padlocking the control in the off position (padlock not supplied). The electrical supply is reconnected by removing the padlock (if fitted) and rotating the control anticlockwise to the "I" position. The blade will not move until the start control marked "I" is depressed.

Actuation of the key switch located above the control housing (see fig.1) disconnects the supply and ensures security and prevents unauthorised use (see fig.25).

Fig 24

Fig 25

MAINTENANCE

The frequency of maintenance is dependant on the frequency of use and the nature of the work undertaken. It is recommended that the following maintenance schedule is undertaken at least monthly to ensure free operation. Ensure that the electrical supply is disconnected from the machine and that it has come to rest before undertaking any maintenance.

Remove swarf, chips and dust from bandwheel tyres. Check for wear and Replace bandwheels if necessary.

Adjust bandwheel brush to ensure effective bandwheel cleaning.

Clean dust from inside of bandwheel boxes and ensure dust extraction Ducting is free from obstructions.

Clean and check upper and lower guide assemblies for correct clearance And alignment. Replace if worn.

Clean and lubricate adjusting screws with light machine oil.

Bandwheel hubs are mounted on sealed pre lubricated maintenance free bearings.

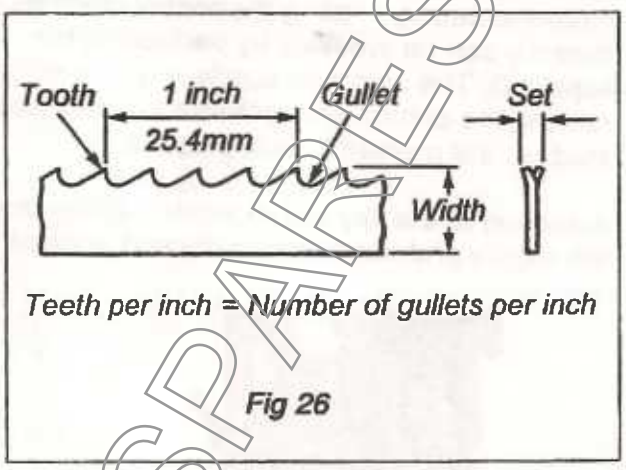
For genuine spare parts and service from fully trained engineers, contact **A.L.T. Saws & Spares Ltd** or the organisation who supplied the machine. We can also supply blades for any application.

BLADE, SPEED AND TENSION SELECTION

An understanding of the design and application of the various types of saw blades is important to enable the most effective use of your bandsaw.

SELECTION OF TOOTH PITCH

The selection of the best tooth pitch (see fig 26) is necessary for the optimum cutting performance. As the tooth pitch becomes finer a blade will have more teeth. Correct tooth pitch is primarily dependent on two factors: material thickness and material hardness. For a given material thickness a finer tooth pitch should be selected as material hardness increases. However, when the tooth pitch is too small for a given hardness the tooth loading will be insufficient to enable penetration and cutting and the teeth will rapidly lose their sharpness. A smaller tooth pitch should also decrease as material thickness decreases. The accompanying blade selection chart (table 1) gives guidance on the tooth pitch that should give the best results when cutting a variety of material types and thicknesses.



Teeth per inch = Number of gullets per inch

Fig 26

SELECTION OF TOOTH FORM

There are three most commonly specified tooth forms: regular tooth, skip tooth and hook tooth. Each will provide further improvement in cutting efficiency depending on the material being cut (see fig's 27a, 27b and 27c). The blade selection chart (table 1) includes recommendations on the choice of suitable tooth forms.

Regular Tooth Blades (fig 27a)

These are the most commonly used blades for wood and metal cutting. The zero front rake and rounded gullets provide robust teeth with good shock resistance that are capable of good work penetration that will provide a good finish when used to cut most medium hardness materials. There is tendency to clog when used with soft or ductile materials. Standard pitches are 6, 8, 10, 14, 18 and 24 teeth per inch.

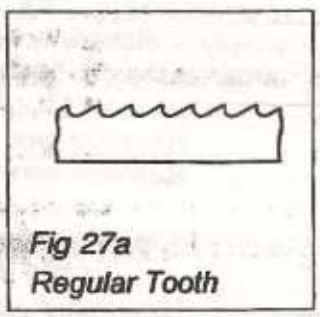


Fig 27a
Regular Tooth

Skip Tooth Blades (fig 27b)

The tooth form is similar to the regular tooth form but alternate teeth are omitted. This allows greater gullet capacity without significantly affecting blade strength. These blades are suited for use with soft alloys or when making deep cuts in hard or wet wood, or man made materials that contain abrasive bonding agents (e.g. chipboard). For such applications best results can usually be achieved by selecting the low cutting speed. Standard pitches are 3, 4 and 6 teeth per inch.

Fig 27b
Skip Tooth

Hook Tooth Blades (fig 27c)

Compared to the regular tooth form the hook tooth has a positive front rake which provides greater work penetration capability. This makes such blades suitable for use when cutting harder materials. In addition the coarse pitch and large gullets associated with this tooth form make it suitable for suitable for sawing deep sections. Use with abrasive materials is not recommended. Standard pitches are 2, 3, 4 and 6 teeth per inch.

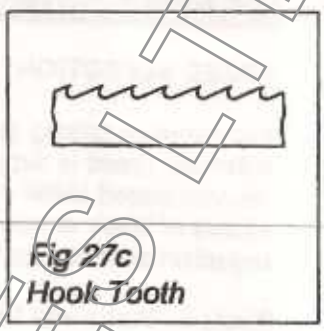


Fig 27c
Hook Tooth

Other less commonly used blade forms are knife edge, scalloped edge and wavy edge (see fig's 28a, 28b and 28c).

Knife Edge Blades

This type of blade is suited for use when cutting soft materials such as woven fabrics, sponge, rubber and corrugated cardboard. Very little swarf or dust is produced.

Fig 28a
Knife Edge

Scallop and Wavy Edge Blades

Where the material being cut is fibrous or difficult to sever scallop or wavy edge blades provide better cutting performance. Examples of such materials are cork, filter material and felt. Very little swarf or dust is produced.

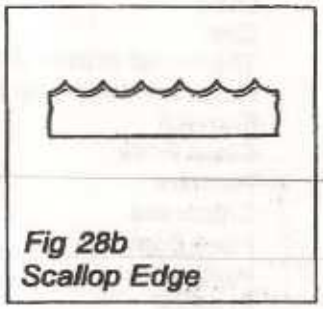


Fig 28b
Scallop Edge

SELECTION OF TOOTH SET

Tooth set is the angling of the saw blade teeth which results in them protruding either side of the main body of the saw blade. Tooth set provides a cut that is wider than the width of the blade body. This clearance enables the blade to be manoeuvred in the work piece. There are three commonly used tooth set patterns. Recommended set is given for a variety of material types and thicknesses in table 1.

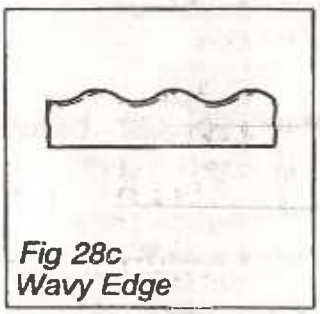


Fig 28c
Wavy Edge

Standard Set

Teeth are set alternately to the left and to the right of the blade body. This pattern is particularly suitable for cutting soft materials and wood.

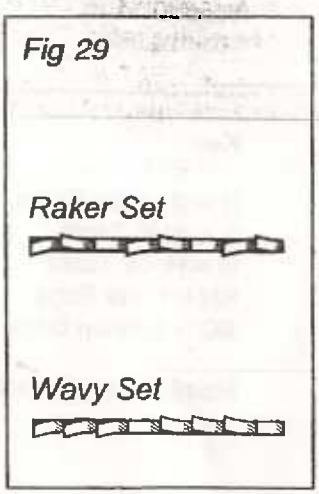


Fig 29

Raker Set (fig 29)

Teeth are set with one tooth set to the right, one to the left followed by one unset tooth. This pattern is widely preferred and is considered suitable for contour sawing.

Wavy Set (fig 29)

Groups of teeth are alternatively set to the right and then to the left. As relatively few teeth are cutting on the kerf side of the blade there is a tendency for blades to jam when cutting abrasive materials.

BLADE, SPEED AND TENSION SELECTION (Continued)

SPEED SELECTION

For optimum cutting performance it is important to select the correct blade speed. The optimum speed is dependant on material and material thickness. Table 1 shows the recommended blade speed for a variety of commonly used materials. If in doubt about any aspect of blade or speed selection contact **A.L.T. Saws & Spares Ltd** or the organisation that supplied the machine, for assistance.

Table 1 Blade and Speed Selection Chart

Material	Speed	Material Thickness, t (mm)			
		T<6	6<t<12	12<t<25	t>25
Aluminium extrusion	Low	18R	10R	8R	6S
Aluminium diecast	Low	18R			
Brass (Soft)	Low	18R	14R	8R	6R
Copper (Soft)	Low	18R	14R	6R	3S
Lead	Low	18R	14R	10R	6R
Zinc	Low	14R	10R	6H	
Thermoset Plastic (Bakelite)	Low	14R	10R	6R	3S
Resin bonded comp (Tufnol)	Low	14R	10R	6H	
Formica	High	18R			
Glass Fibre	Low	18R	14R	10R	6H
Perspex	High	14R	10R		
Chipboard	High		6S	3S	3S
Fibre Board	High	18R	14R		
Hardboard	High	10R			
Plywood	High	10R	8R	6S	3S
Strawboard	High	14R	10R		
Cork	High	14R	6S	4S	4S
Leather	High	14R			
Rubber	Low	10R	8R	6R	
Cardboard – Corrugated	High	SC	SC	SC	SC
Paper – Sheet	High	10R	6H		
	Low			10R	6H
Paper – Tissue	High	SC	SC	SC	SC
Papier Mache	High	KN	10R		
Wood – Log	Low				3S
Wood – Soft	High	6S	6S	4S	4S
Wood – Hard	High	6S	3S	3S	3S
Wood – Wet	Low				3S

Key

R = Regular Tooth
S = Skip Tooth
H = Hook Tooth
KN = Knife Edge
SC = Scallop Edge

Number denote teeth per inch

BLADE, SPEED AND TENSION SELECTION (continued)

TENSION SELECTION

It is important that the blade is correctly tensioned to ensure optimum cutting performance and cutting accuracy. Table 2 below provides guidance on the appropriate tension for a variety of blade types and sizes.

Table 2 Blade Tension Guide

Blade Type	Blade Width (mm)		
	6	12	20
Metal Cutting	Low	Med	High
Scalloped/Knife Edge	Low	Low/Med	Med/High

BANDSAWING PRACTICE

Having selected an appropriate blade for the particular thickness and type of material to be sawn, it is essential that the saw blade is allowed to cut freely by not applying too much pressure. The need for excessive pressure is likely to be a result of the incorrect blade selection or a worn blade and will result in inaccurate cutting and possibly blade breakage.

When contouring the width of the blade limits the minimum radius that can be cut. If the blade is too wide for the cutting radius the blade will twist and possibly jam or break. The smaller the radius the narrower the blade has to be. Table 3 provides guidance on the minimum radius to be cut with the most commonly used blade widths. Regularly examine the blade for excessive damage or cracking as a result of fatigue. If such damage is present replace the blade.

It is important to use a sharp blade. Dull teeth result in increased feed pressure producing a poor quality finish and an inaccurate cut.

Table 3 Minimum Cutting Radius

Blade Width (mm)	3	6	10	12	16	20
Minimum Radius (mm)	10	25	40	60	100	135

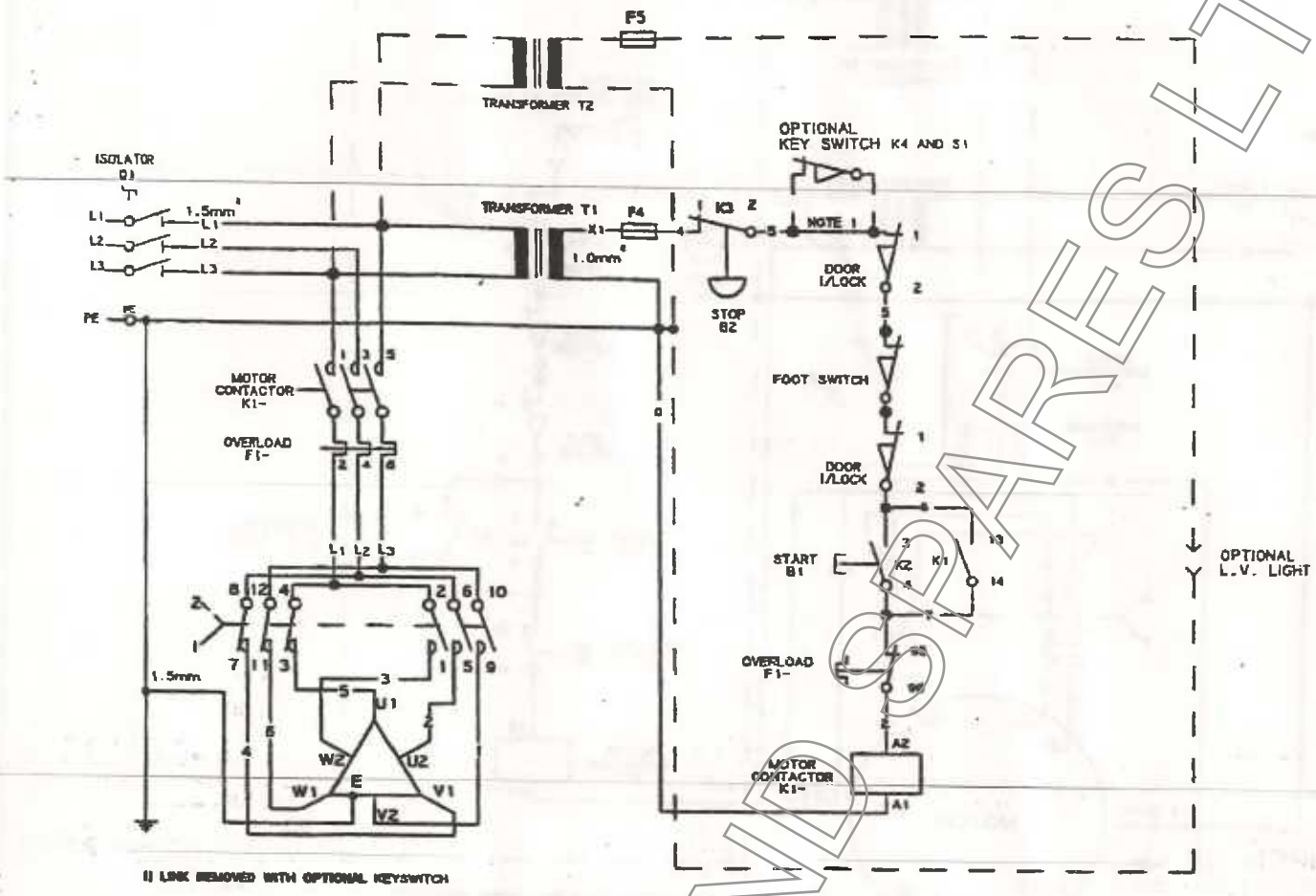
In situations such as cutting scrolls it may not be possible to complete a cut. This requires the blade to be reversed out of the cut. Care is necessary to minimise damage to the work and blade. When removing large pieces of material it is advisable to make the shorter cut last to avoid having to reverse out of the longer cut.

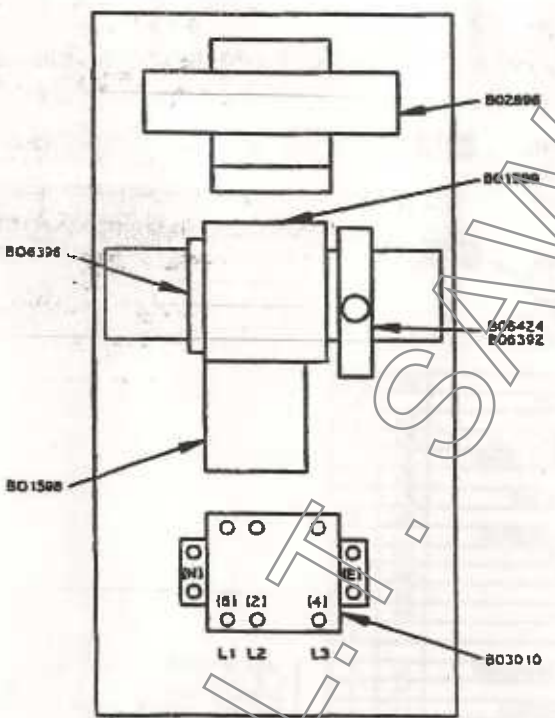
When cutting aluminium or zinc alloys it may be necessary to apply lubricant such as paraffin or wax to prevent clogging of the blade.

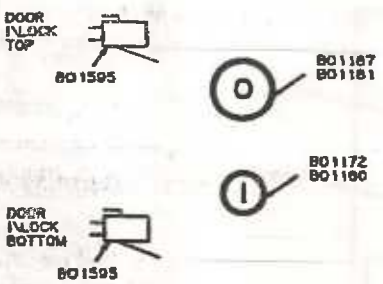
COMMON SAWING PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
Blade wanders from true line	Excessive feed pressure	Reduce feed pressure
	Dull teeth or pitch too fine	Replace blade
	Blade guides not set correctly or worn	Adjust or replace upper and lower guides
	Blade tracking incorrectly	Adjust tracking
	Loss of set to one side of blade	Investigate cause and replace
Premature blade breakage	Worn blade	Replace blade
	Joint incorrectly welded or annealed	Replace blade
	Blade too wide for curved cut	Fit narrower blade
	Bandwheels worn	Change bandwheels
	Tooth pitch too fine	Fit blade with coarser pitch
Blade bows in deep cut	Excessive feed pressure	Reduce feed pressure
	Dull teeth or pitch too fine	Fit new blade or blade with coarser pitch
	Insufficient blade tension	Increase blade tension
	Blade too narrow for depth of cut	Fit wider blade
	Blade running out of line at start of cut	Restart cut
Teeth dull rapidly	Insufficient feed pressure	Increase feed pressure
	Guide inserts interfering on teeth	Adjust guides
	Blade speed too fast	Select low blade speed
	Blade pitch too fine	Fit blade with coarser pitch
Teeth break from blade	Excessive feed pressure	Reduce feed pressure
	Tooth gulleys clogging	Use lubricant or change tooth form
	Blade speed too fast	Select low speed
	Tooth pitch too coarse	Fit blade with finer tooth pitch
	Material welding to teeth	Use lubricant
Blade twisting	Excessive feed pressure	Reduce feed pressure
	Blade guide interfering with teeth	Adjust blade guides
	Blade too wide for radius of cut	Fit narrower blade
	Insufficient blade tension	Reduce tension
	Incorrect tracking	Adjust tracking
	Loss of set to one side of blade	Investigate cause and rectify
Blade vibrates	Workpiece not secured or properly seated	Secure or clear obstruction
	Blade speed too fast	Select low speed
	Tooth pitch too coarse	Fit blade with finer pitch
	Insufficient blade tension	Increase blade tension
	Blade not adequately supported by thrust pad	Adjust thrust pad

WIRING AND LOCATION DIAGRAM - 352S (3 PHASE MODEL)







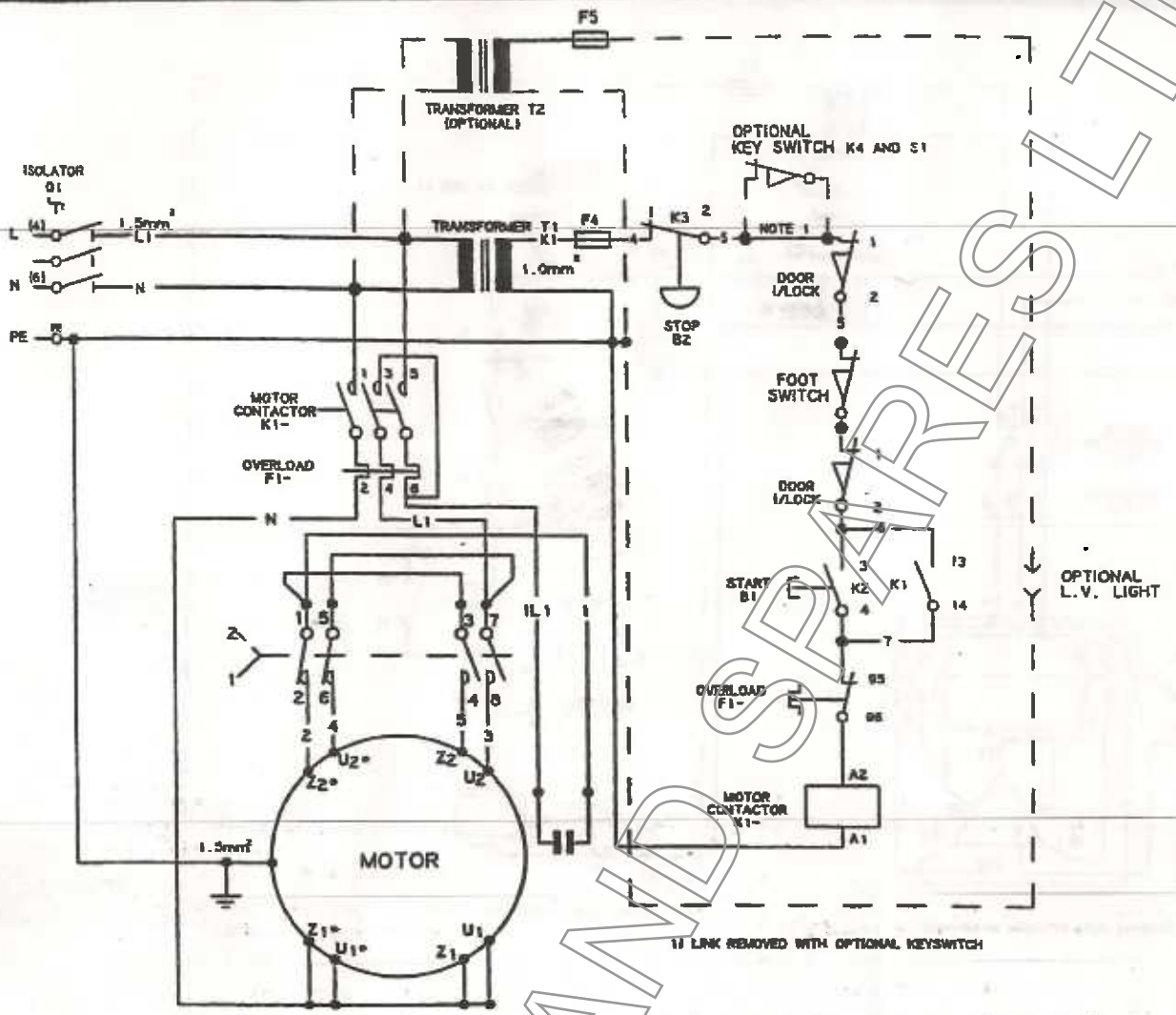
PART No	DESCRIPTION	REF	QTY
B06396	EARTH TERMINAL BLOCK		1
B06424	2 AMP FUSE	F_4	1
B06392	FUSE HOLDER DIN MOUNTING	F_4	1
B02898	24 VOLT OUTPUT TRANSFORMER	T_1	1
B01599	CONTACTOR 24V	K_1	1
B01598	MOTOR THERMAL OVERLOAD	F_1	1
B03010	ISOLATOR	Q_1	1
B01595	DOOR INTERLOCK MICROSWITCH		2
B01187	STAY-ON STOP BUTTON	S_2	1
B01181	N/C CONTACT BLOCK	K_3	1
B01172	START BUTTON	S_1	1
B01180	N/O CONTACT BLOCK	K_2	1
B02660	FOOT SWITCH		1
B01572	24 VOLT OUTPUT TRANSFORMER	T_2	1
B06424	2 AMP FUSE	F_5	1
B06392	FUSE HOLDER DIN MOUNTING	F_5	1
B01383	KEY SWITCH	S_1	1
B01180	N/O CONTACT BLOCK	K_4	1

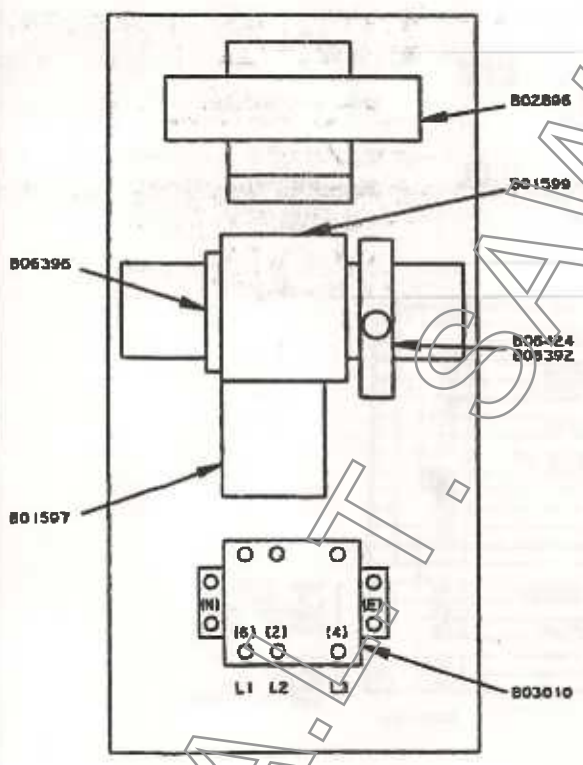
} WITH OPTIONAL L.V. LIGHT COMPLETE UNIT PART NO. SM2960

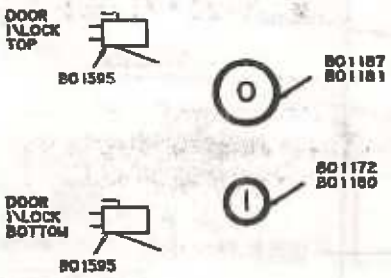
} WITH OPTIONAL KEY SWITCH COMPLETE UNIT PART NO. SM2263

352S-3ph

WIRING AND LOCATION DIAGRAM - 352S (1 PHASE MODEL)





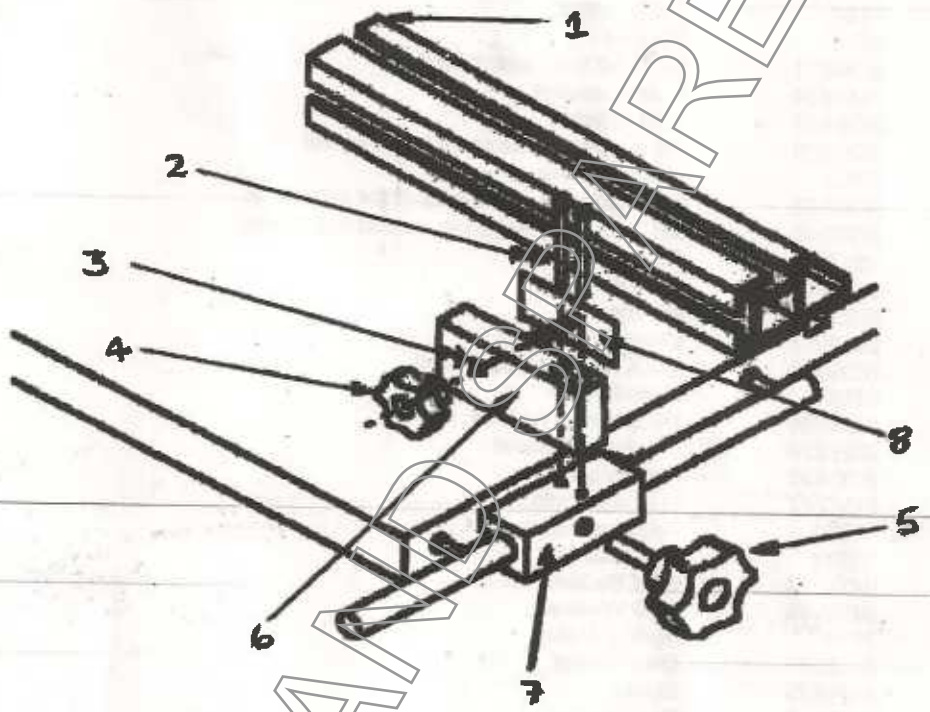


PART No	DESCRIPTION	REF	QTY	
B06396	EARTH TERMINAL BLOCK		1	
B06424	2 AMP FUSE	F4	1	
B06392	FUSE HOLDER DIN MOUNTING	F4	1	
B02896	24 VOLT OUTPUT TRANSFORMER	T1	1	
B01599	CONTACTOR 24V	K1	1	
B01597	MOTOR THERMAL OVERLOAD	F1	1	
B03010	ISOLATOR	Q1	1	
B01595	DOOR INTERLOCK MICROSWITCH		2	
B01187	STAY-IN STOP BUTTON	BZ	1	
B01181	N/C CONTACT BLOCK	K3	1	
B01172	START BUTTON	B1	1	
B01180	N/O CONTACT BLOCK	K2	1	
B02860	FOOT SWITCH		1	
B01572	24 VOLT C[illegible] TRANSFORMER	T2	1	WITH OPTIONAL L.V. LIGHT COMPLETE UNIT PART NO. SM2960
B06424	2 AMP FUSE	F5	1	
B06392	FUSE HOLDER DIN MOUNTING	F5	1	
B01383	KEY SWITCH	S1	1	WITH OPTIONAL KEY SWITCH COMPLETE UNIT PART NO. SM2263
B01180	N/O CONTACT BLOCK	K4	1	

352S-1ph

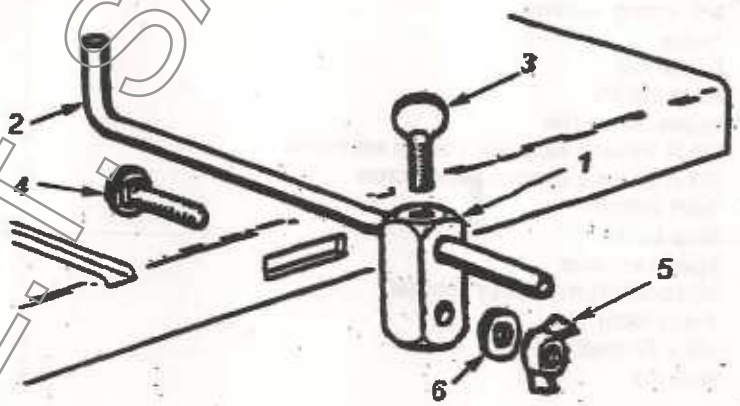
RIP FENCE ASSEMBLY SM4027

Item	Part No	Description	Qty
1	7338/D	Rip fence	1
2	PC00138	Cap Screw	2
3	4919	Washer	1
4	BO2545	Handwheel	1
5	BO2551	Handknob	1
6	10840	Fence block	1
7	10842	Fence support	1
8	SM1795	Clamp plate assembly	1



DEPTH STOP ASSEMBLY SM1436

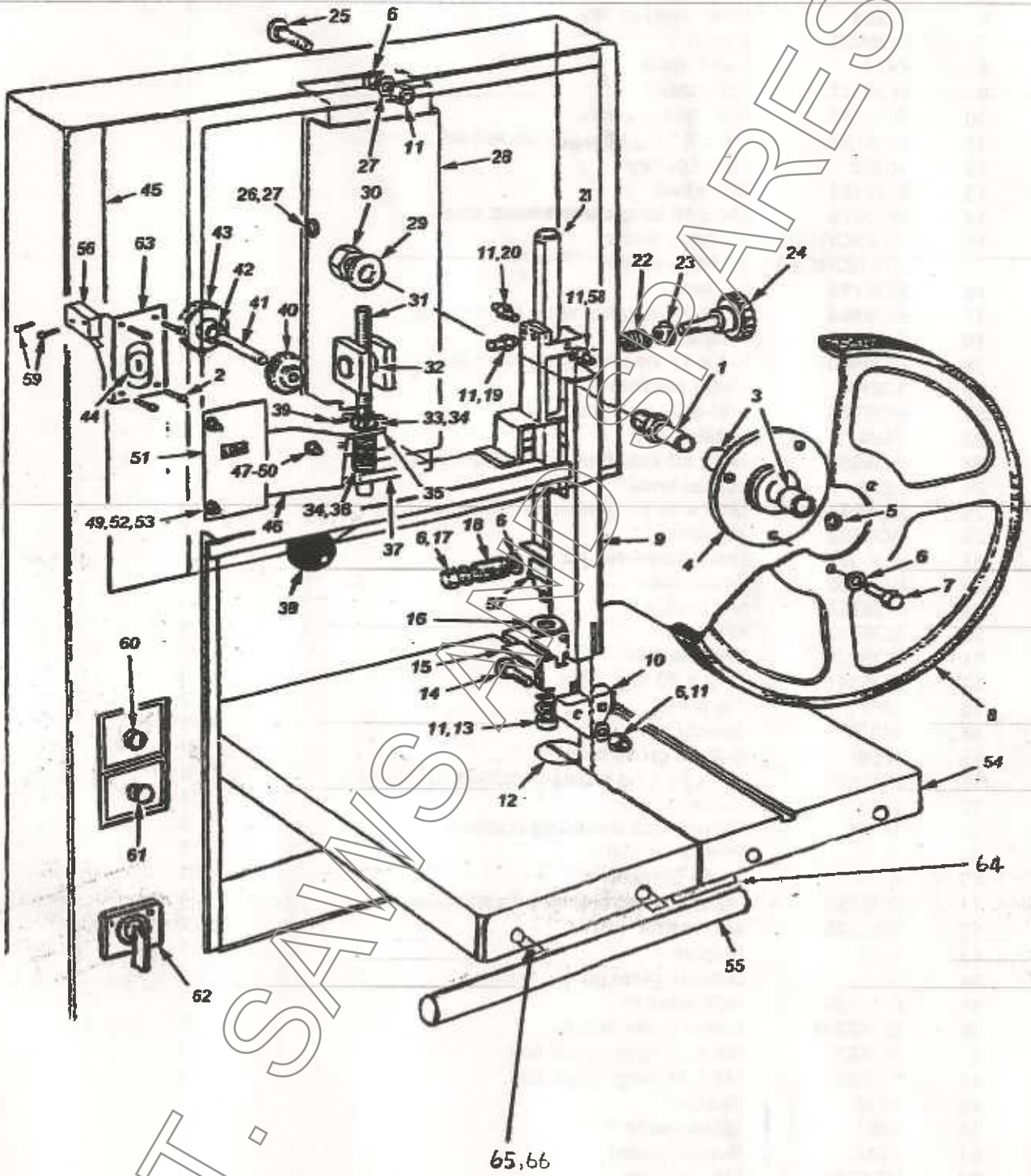
Item	Part No.	Description	Quantity
1	6747	Clamping block	1
2	6749	Back stop rod	1
3	BO5826	wing screw	1
4	BO5621	coach bolt	1
5	BO5785	wing nut	1
6	BO5917	washer	1



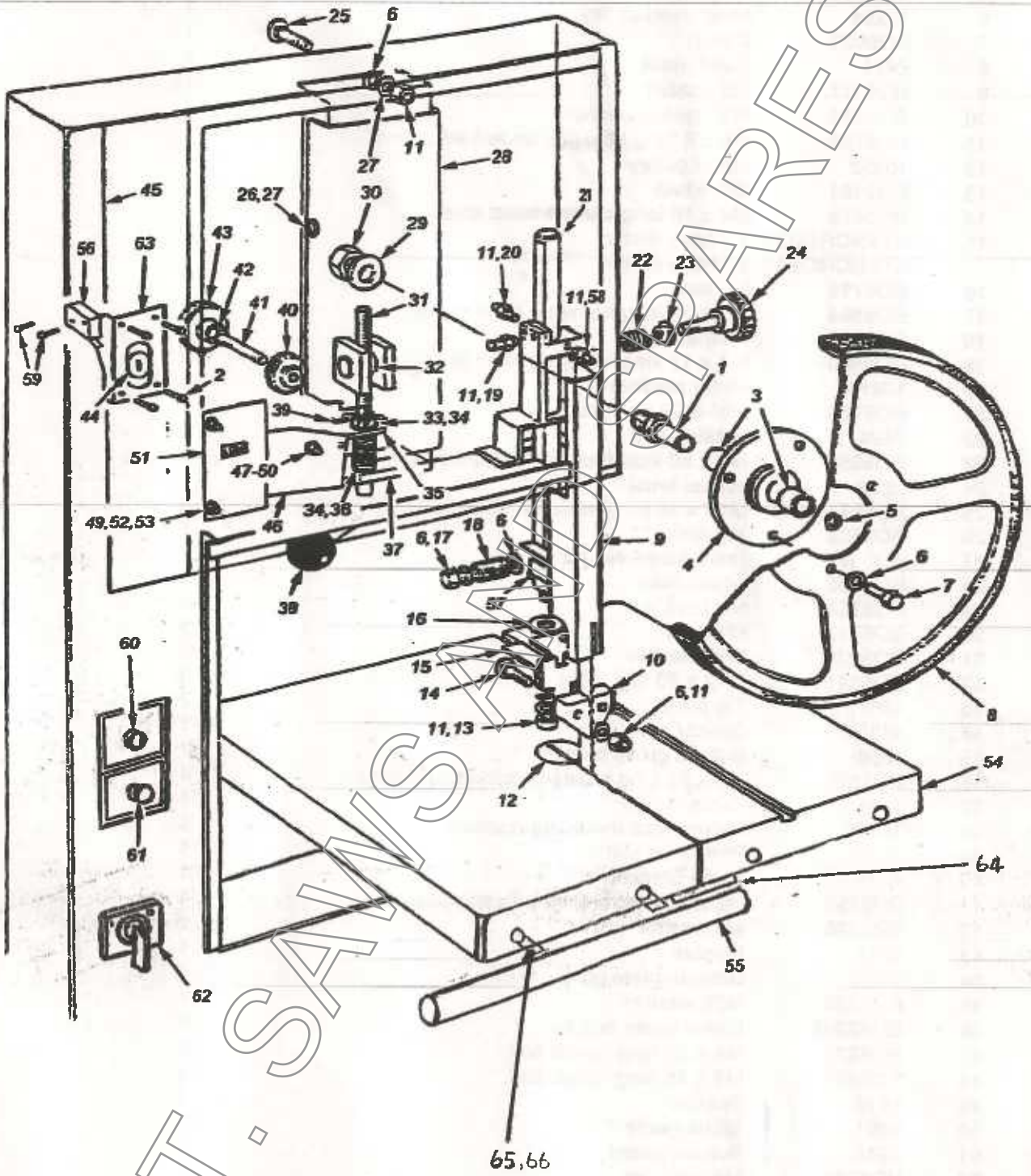
UPPER BANDWHEEL BOX, BLADE GUIDE, GUARD AND TABLE

Item	Part No	Description	Qty
1	10162	Bandwheel Hub Spindle	1
2	BO5476	cheese head screw	4
3	BO2047	bearing	2
4	10163	Bandwheel Hub	1
5	BO6003	External Circlip	1
6	BO5917	Washer	23
7	BO5560	hexagon head screw	7
8	2473	Bandwheel	1
9	SM2853	Upper blade guard	1
10	4891	Blade guide	2
11	BO5715	Nut	13
12	6756	Table Insert	1
13	4919	Washer	1
14	BO5621	coach bolt	2
15	SM1434	Guide bracket	1
16	BO5923	Washer	1
17	BO5566	hexagon head screw	1
18	5496	Guard retainer	1
19	BO5208	hexagon socket set screw	2
20	BO5210	hexagon socket set screw	1
21	10237	Top guide post	1
22	BO2208	Spring	1
23	BO5792	Insert	1
24	BO2557	Clamping handle	1
25	BO5620	coach bolt	4
26	6705	Pivot Pin	1
27	BO5930	Locking washer	2
28	SM1676	Tracking channel	1
29	BO5922	Washer	1
30	BO5777	self locking nut	1
31	10372	Tension Screw	1
32	10371	Trunnion Nut	1
33	BO5733	Slotted Nut	1
34	BO5919	Washer	3
35	7834	Spring Plate	1
36	BO2241	Disc Spring	22
37	SM1675	Guide	1
38	BO2530	Ball Knob	1
39	BO5370	Locking Pin	1
40	6706	Tracking lock knob	1
41	5352/B	Stud	1
42	BO5753	Lock Nut	1
43	BO2545	Hand knob	1
44	BO2562	Key lock	1
45	SM2860	Upper door	1
46	7354	Tension indicator plate	1
47	BO7782	Pivot bush	1
48	BO5547	hexagon head screw	1
49	BO5913	Washer	3
50	BO5773	lock nut	2
51	7878	Tension plate	1
52	BO5713	Nut	2
53	BO5929	Spring washer	2
54	SM2958	Table	1
55	10841	Fence rail	1
56	BO1595	Microswitch	1
57	SM585/A	Upper thrust rod	1
58	BO5203	hexagon socket set screw	1
59	BO5473	cheese head screw	2
60	PC00013	Start button	1
61	PC00015	Stop button	1
62	BO2975	Speed selector	1
63	10256	Microswitch mounting bracket	1
64	10843	Table latch	1
65	PC00066	stud	2
66	BO5731	Binx nut	2

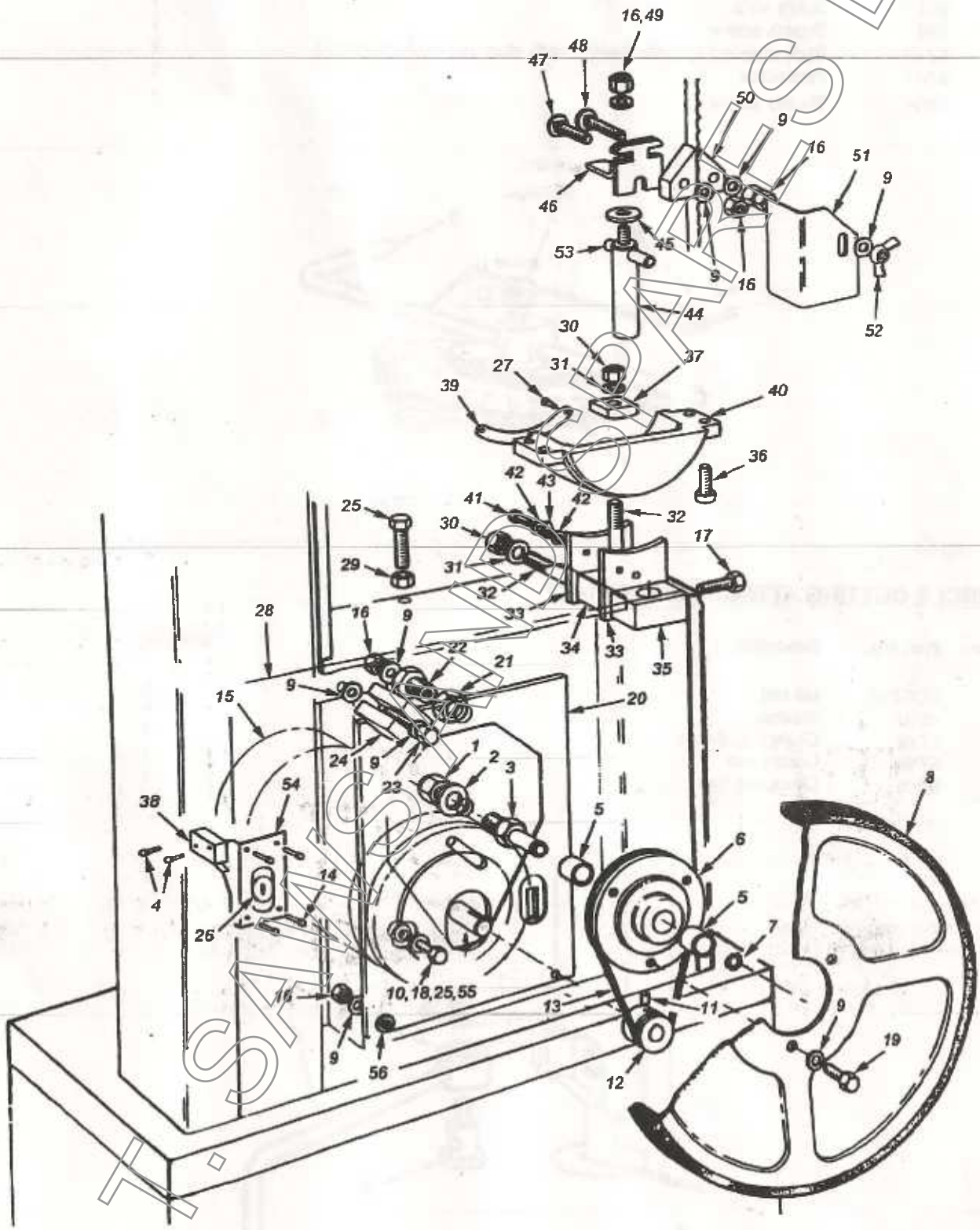
UPPER BANDWHEEL BOX, BLADE GUIDE AND GUARD, AND TABLE



UPPER BANDWHEEL BOX, BLADE GUIDE AND GUARD, AND TABLE

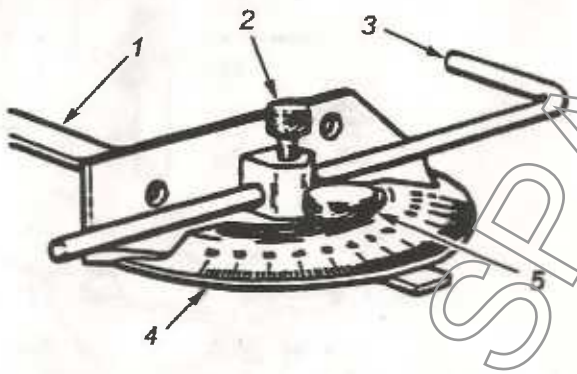


LOWER BANDWHEEL BOX, BLADE GUIDE AND GUARD, AND MOTOR MOUNTING



MITRE GAUGE ASSEMBLY SM1432

Item	Part No.	Description	Quantity
1	211	Guide strip	1
2	126	Thumb screw	1
3	6749	Back stop rod (supplied with depth stop assembly SM1436)	1
4	9791	Protractor	1
5	6234	Thumb screw	1



CIRCLE CUTTING ATTACHMENT SM1437

Item	Part No.	Description	Quantity
1	BO5715	nut	1
2	4919	Washer	1
3	6746	Clamping sleeve	1
4	6744	Centre rod	1
5	6745	Clamping bolt	1