

**RECORD MACHINE DETAILS**

MODEL

SERIAL No.

DATE OF PURCHASE

VOLTAGE

PHASE

CYCLES

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**DISTRIBUTOR**

**H330M**

VARIABLE SPEED  
HORIZONTAL BANDSAW

**HANDBOOK  
BO10379**

**A.L.T. Saws & Spares Ltd**

**Startrite Machine Specialist**

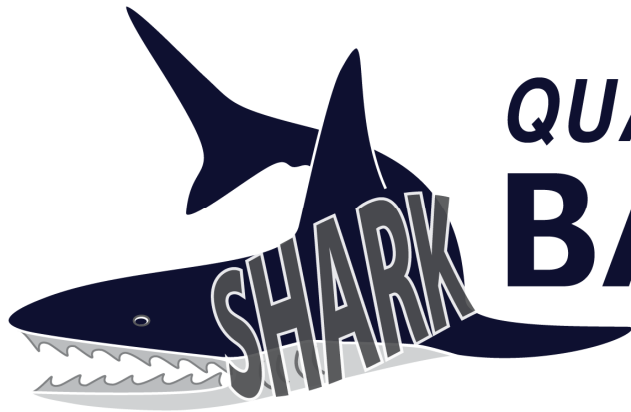
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**QUALITY  
BANDSAW  
BLADES**

**TO SUIT THE H330MV MODEL**

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## CONTENTS

SECTION 659	-	SPECIFICATIONS
SECTION 666	-	HEALTH & SAFETY
SECTION 673	-	INSTALLATION
SECTION 680	-	MAINTENANCE
SECTION 687	-	OPERATING INSTRUCTIONS
SECTION 701	-	ELECTRICAL DIAGRAMS
SECTION 708	-	PARTS LISTS & ILLUSTRATIONS

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## SPECIFICATIONS

SECTION 659

Model H330M	- Variable Speed, Manual, Horizontal Bandsawing Machine.
Cutting capacity at 90 degrees	- 330mm, 13" Dia. 457mm x 152mm, 18" x 6"
Blade speeds	- 16.5 - 93 m/min. 54 - 305 ft/min.
Bandwheel diameter	- 404mm, 16"
Saw blade size	- 3810mm x 32mm x 1.1mm 150" x 1.25" x 0.042"
Motor	- 1.5kW., 2.0h.p., 1425r.p.m.
Electrical supply	- 220/240 volt 3 phase 50Hz. 380/415 volt 3 phase 50Hz.
Gross weight	- 440kg, 968lbs.
Total height	- 1170mm, 46"
Total width	- 1930mm, 76"
Total depth	- 665mm, 26 1/4"
Including Stock Stop Attachment And Infeed Roller Stock Table	- 1300mm, 51 1/4" 2030mm, 80"

NOTE: All dimensions are approximate.

NOTE: ILLUSTRATIONS MAY VARY IN DETAIL ACCORDING TO MODEL.

NOTES:

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Ensure that you fully understand this instruction manual and have received sufficient training in the use of this machine and the particular safety precautions to be observed.

Persons under the age of 18 years should not operate this machine, except under supervision during a course of training.

BEFORE OPERATING THIS MACHINE ENSURE THAT:

All guards and fences are securely fitted and correctly set in accordance with the current Regulations.

Tooling is of correct type, securely fastened, sharp and direction of rotation is appropriate.

Correct spindle speed and feed is selected (for the cutter equipment).

Loose clothing is either removed or fastened and jewellery removed.

Suitable jigs and push sticks are available for use where appropriate.

The working area is clean and unobstructed.

Extraction equipment is switched on, properly adjusted and working efficiently.

Suitable protective equipment is available, e.g. goggles, ear defenders and dust mask.

WHEN SETTING, CLEANING AND MAINTAINING THIS MACHINE:

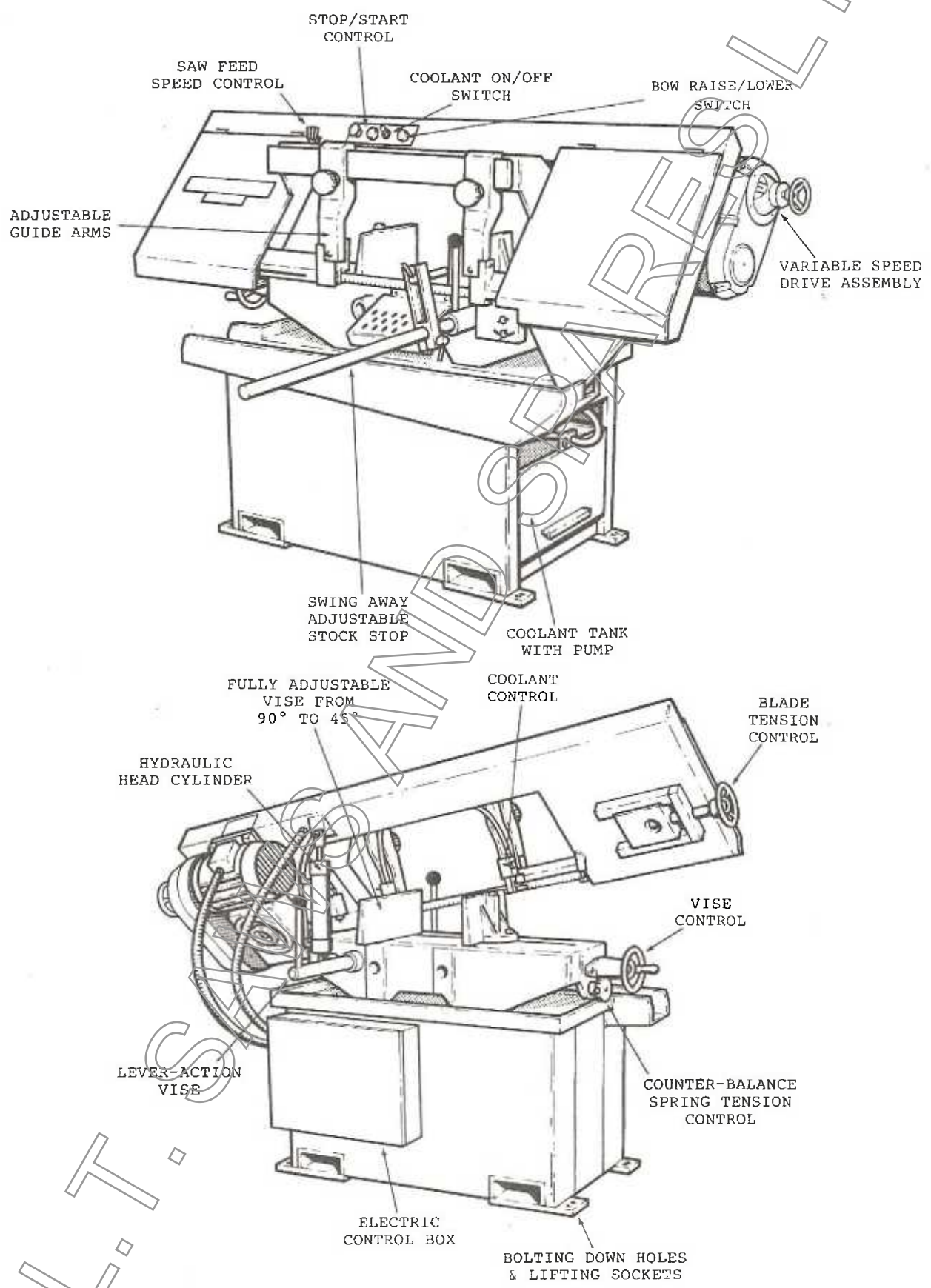
Ensure all moving parts of the machine are stationary before setting, cleaning or making any adjustments.

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

The electrical equipment must be installed and used in accordance with the instructions contained in this manual. Regular inspection and safety tests must be undertaken by a competent person. Ensure all power sources are isolated before any maintenance work commences.

**INSTALLATION**

**SECTION 673**



**INSTALLATION.**

To transport machine to site, use fork lift truck with forks placed in the slots provided in the base of the machine.

**IMPORTANT: DO NOT LIFT THE MACHINE USING A SLING AROUND MACHINE HEAD.**

Site the machine with adequate working space around it for ease of use. Avoid siting the machine in a cramped corner where operation may prove difficult, or near a gangway where a long workpiece may cause an obstruction. The whole working area should be well illuminated and the floor around the machine provided with a level and non slip surface.

The cabinet base is provided with four bolting down holes to accept 12mm (1/2") diameter bolts (not supplied). Before bolting the machine down, ensure the machine stands firm and level.

Remove the anti-rust protective coating where applied, and in particular from the working elements of the machine.

Remove the bracket clamping the head of the machine to the bed. This bracket is fitted to avoid damage during transit and is not required for the operation of the machine.

Fill coolant tank with approximately 8.25 U.S. gallons (32 litres) of a good grade of soluble oil diluted about 10 to 1.

**IMPORTANT : DO NOT LET PUMP RUN DRY, OR DAMAGE MAY RESULT.**



## ELECTRICAL INSTALLATION

**IMPORTANT:** Check that the electricity supply is suitable for the machine, see machine rating label.

At all times ensure that the machine is isolated from the mains supply before making any electrical connections or adjustments.

At rear of machine, unlock and open door of electrical control box and pass supply leads through hole in underside of control box.

For three phase supply, connect supply leads to terminals L1, L2 & L3 of terminal block and earth lead to earth terminal.

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

A three phase motor may run in either direction, therefore, raise bandwheel covers and check that bandwheels run in an anti-clockwise direction. If necessary, interchange any two supply leads to reverse rotation.

With all connections made, replace control box cover.

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

## CONVERSION FOR ALTERNATIVE VOLTAGE (3 PHASE SUPPLY)

240 volt machines will operate on 220/240 volt 3 phase supply.

415 volt machines will operate on 380/415 volt 3 phase supply.

Machines supplied for use on 415 volt 3 phase supply may be adapted to run on 240 volt 3 phase supply and vice-versa.

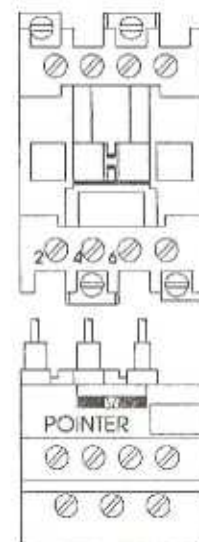
To effect conversion, it is necessary to:-

- i) Replace motor overload unit with one of a suitable rating.
- ii) Change the transformer terminal connections.
- iii) Change motor terminal connections.

- i) Inside electrical control box, identify contactor and overload unit. Make a note of the numbered wires leading to the terminals of the overload unit and slacken terminal screws 2, 4 and 6 to remove overload unit. Fit alternative overload unit of suitable ampereage rating according to supply voltage (see chart below). Reconnect wires to replacement overload unit as before and set pointer at side of overload unit to indicate full load amps of motor.



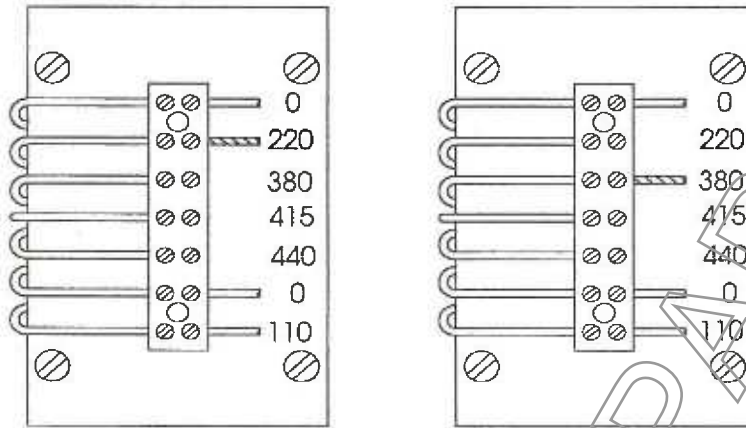
OVERLOAD UNIT  
FITTED



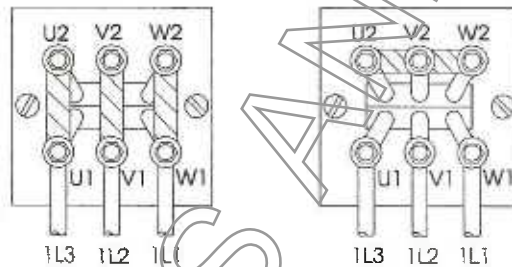
OVERLOAD UNIT  
DETACHED

**SECTION 673**

- i) Inside electrical control box, identify transformer and change wire to suit supply voltage as shown.



- ii) Remove motor terminal box cover from main drive motor. Change the motor terminal linkage to suit appropriate supply voltage as shown and replace cover.



CONNECTIONS FOR  
220V 3PH SUPPLY

CONNECTIONS FOR  
415V 3PH SUPPLY

**GENERAL**

Check blade tension frequently and adjust as necessary.  
Clean out coolant tray frequently.

**WEEKLY MAINTENANCE**

Check level of coolant in coolant tank. If necessary top up with a good grade of soluble oil diluted about 10 to 1.  
Top up oil through filler hole on vise control housing.  
Clean and lubricate all miscellaneous moving parts.

**MONTHLY MAINTENANCE**

Apply grease to both ends of pivot head shaft.  
Check blade guide assemblies for wear.  
Check level of hydraulic cylinder and top up as necessary.

**YEARLY MAINTENANCE :**

Drain coolant tank. Clean tank and pump. Refill with approximately 8.25 U.S. gallons (32 litres) of clean coolant diluted about 10 to 1.

NOTE: The gearbox is grease sealed for life and should not require further maintenance.

APPROVED LUBRICANTS	
GENERAL LUBRICATION	ESSO Esstic 50 Oil GULF Service 51 Oil MOBIL Vactra or D.T.E. Heavy Medium Oil TEXACO Ursa p20 Oil
GREASE POINTS	ESSO Beacon 3 Grease GULF Gulfcrown No.3 Grease MOBIL Mobilplex 48 Grease TEXACO Regal Starfak Premium 3 Grease
HYDRAULIC CYLINDER	ESSO Nuto H44 Oil GULF Harmony 43AW Oil MOBIL D.T.E. 24 Oil TEXACO Rando HDA or HD32 Oil

**BLADE TENSIONING/FITTING A NEW BLADE.**

To remove saw blade, slacken off blade tension by means of blade tensioning knob. Raise bandwheel covers and remove blade guards and slide saw blade out of guides to remove from machine.

Select a saw blade suitable for the work in hand (see Section on Sawing Practice). Place saw blade over bandwheels with teeth facing towards pivot and insert saw blade carefully into guide assemblies.

Check that back edge of saw blade is against flanges of bandwheels before tensioning blade.

To obtain correct blade tension, turn blade tensioning knob until collar allows setting slip to become engaged.

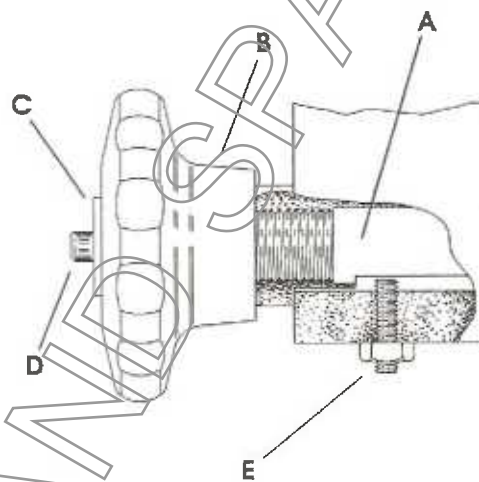
NOTE: Check blade tension periodically as the saw blade may stretch.

**CHECKING & RE-CALIBRATING HEAD WEIGHT (SAW FEED PRESSURE)**

Raise head and close 'Feed Speed' control valve. Turn control knob 'B' anti-clockwise until it is against retaining washer 'C'. Lower head to within a few inches of the machine bed and close 'Feed Speed' control valve.

Place spring-balance scales over blade tension handle. Hold spring-balance scales and open 'Feed Speed' control valve. A head weight reading of 32 lbs. (14.5 kg.) should be obtained.

If the head weight is incorrect, raise head, remove set screw and locking nut 'E' and proceed as follows:-



For HEAVIER head weight turn control knob 'B' anti-clockwise which will turn threaded shaft 'A' anti-clockwise and increase the head weight.

For LIGHTER head weight place a socket wrench into socket cap screw 'D' and turn clockwise to turn threaded shaft 'A' and decrease the head weight.

Re-check head weight as before. If it is now correct, screw in set screw 'E' making sure it just locates into keyway in shaft and lock in place.

When correctly set the control knob 'B' should give a working range of approximately 4 lbs. (1.8 kg.) MINIMUM - 32 lbs. (14.5 kg.) MAXIMUM. When no further adjustment of the spring is possible it should be replaced.

**TRACKING THE SAW BLADE**

The twisting of the saw blade as it passes through the blade guides sets up an effect which causes the saw blade to run-off the bandwheels. This is counteracted by inclining both bandwheels inwards towards each other, this inclining of the bandwheels to align the saw blade is known as 'tracking'. When the machine is tracking correctly the back of the saw blade should run .010"/.030" clear of the bandwheel flanges. All machines are correctly tracked before leaving the factory and should not require further adjustment. If however, the tracking is disturbed, proceed as follows (refer to parts list):-

At front of machine, remove blade guards, and inboard and outboard guide assemblies and over arms as complete units.

NOTE: Do not disturb the setting of the blade guides relative to the over arms.

Place saw blade on bandwheels with edge of saw blade 1/8" clear of bandwheel flange. Run machine at lowest speed for a few minutes, and then check the position of the saw blade on the bandwheel.

If the saw blade has moved up hard against the flanges of the bandwheel, this will produce undue wear on the bandwheel flange, and burr the edge of the saw blade. To overcome this the bandwheel must be inclined to a lesser degree. At rear of machine, slacken off both locking screws and locking nut on jacking screw. Turn jacking screw clockwise until bandwheel moves slightly.

If the saw blade has moved towards the rear edge of the bandwheel the saw blade will tend to run-off the bandwheel. To overcome this the bandwheel must be inclined more. Slacken off both locking screws and locking nut on jacking screw. Turn jacking screw anti-clockwise until bandwheel moves slightly.

After completing the adjustments, place the saw blade 1/8" clear of flange and run machine for a few minutes. Check the position of the saw blade and if it is still not correct carry out adjustments again. With saw blade tracking correctly, fully tighten locking nut and locking screws. Replace over arms and guide assemblies complete, and blade guards.

If the setting of the blade guide assemblies have been disturbed, proceed as follows:-  
Slacken off socket hd. cap screws and lower guide assemblies until round carbide pad just touches the top edge of the blade. Check that there is a clearance between the guide inserts and the blade, of .003". This can be adjusted by means of the 'wedgelok' socket hd. cap screw.

NOTE: If the gearbox is disturbed or replaced for any reason it may be necessary to track the drive bandwheel.

Slacken off gearbox securing screws and adjust either inboard or outboard jacking screws as required and tighten securing screws. However, unless the gearbox has been disturbed it should not be necessary to alter this setting under normal circumstances.

### DISMANTLING THE HYDRAULIC CYLINDER

If the head fails to stay up when the control valve is closed it is possible the 'U' ring or non-return valve assembly may need replacing.

To dismantle cylinder, proceed as follows (refer to parts list):-

Remove both securing screws, slacken off nuts on stud elbows, disconnect both hydraulic pipes and empty cylinder of oil.

Unscrew cylinder cap and pull out complete inner assembly. Remove piston nut by unscrewing anti-clockwise. With piston nut removed, check 'U' ring for wear and check that steel ball seats cleanly and replace parts where necessary.

Replace complete inner assembly into cylinder body, re-connect hydraulic pipes and tighten coupling nuts.

Fill cylinder with oil and pump piston a few times to remove any air from the system, then top up with oil to within 1/4" from the top of cylinder body. Replace cylinder cap and secure to machine using securing screws.

**SETTING VICE JAWS**

Set fixed vice jaw to required angle by means of the graduated scale, making sure that the workpiece clears the right hand guide assembly.

**CLAMPING PROCEDURE**

The moving vice jaw has a lever actuated cam and a quick release mechanism. An adjustable workpiece stop is supplied for repetition sawing which is automatically swung clear when the clamp lever is operated.

In order to clamp the workpiece, the moving vice jaw should be brought up to approximately 3mm from the work surface. The cam actuating lever is then pushed down, clamping the workpiece. This can be done from either side of the machine. Clamping pressure is released by pulling the lever up.

The quick release mechanism for the vice jaw is operated using the vice handknob.

The vice will act normally when operated using the handknob alone. In order to release the mechanism, the handknob should be rotated anti-clockwise through one half turn, which will then allow the vice to be moved by hand. To re-engage the leadscrew, the handknob must then be rotated clockwise. If the leadscrew is not engaged, the lever actuated cam will not function.

NOTE: There should be a nominal gap of 3mm between the handwheel and housing when the cam lever is swung down to stop position, to avoid causing the lever action vice to lock up before the workpiece is clamped.

**BLADE GUIDES**

For straight (90°) cutting, the right-hand guide assembly should be set as close as possible to the workpiece, but for angled cutting it may be found necessary to move the guide assembly to the right to enable the full capacity of the machine to be used.

The left-hand guide assembly should be set with the head raised so that the guide assembly just clears the moving vice jaw.

**SPEED SELECTION**

The 'Sawing Guide Chart' (see Sawing Practice) gives a guide as to the speed required for different materials. Variation of saw speed is through a stepless drive, controlled by means of a hand-knob situated at the rear end of the drive unit.

**SAW FEED PRESSURE**

The saw feed pressure (or head weight) is controlled by means of the counter-balance spring tension control knob. The head weight is factory set on maximum. To reduce weight, raise head and turn knob clockwise. Feed speed is controlled by the hydraulic control valve. 'Sawing Controls' (see Sawing Practice) gives a guide as to the use of these controls.

**CUTTING**

Before starting the machine, check it is safe to do so. Make sure that all necessary adjustments have been completed and all guards are in position and secure. At end of cut the machine will automatically stop. To re-start machine, close feed pressure valve, lift up machine head to required height, start machine and re-set feed pressure valve. The coolant automatically starts when the machine is started.

## SAWING PRACTICE

## BLADE SELECTION.

There are many types of saw blades available and each is superior in some way for specific applications. Selection of the correct blade for the job is a positive first step in achieving economic cut-off production, for no machine tool can function more efficiently than its cutting tool will allow and the bandsawing machine is no exception to this rule. No one saw blade will cope with all jobs satisfactorily, in fact in some cases an ill chosen blade will virtually not saw at all. The objective of this section of the handbook is to present all the information necessary to select the correct saw blade for the job.

To fully describe any saw blade it is necessary to know not only its size, but its material composition and tooth form. The cost of each type varies considerably and selection should be made according to duty as the lowest cost saw blade is not necessarily the more economic while the use of the more expensive types is often not justifiable.

**HARD BACK** saw blades are made from high quality carbon steel and have a specially strengthened back edge.

Hard Back general purpose saw blades cost less than other types of blades and are usually most readily available in a wide range of styles. They are suitable for short-run work in sawing and medium carbon steels where there is no surface scale present and many non-ferrous alloys. They are suitable for sawing structural sections and thin wall tubes, also where blade breakage is a problem due to the machine being used for general jobbing and sawing, particularly by more than one operator. Hard Back blades perform very well on most extruded aluminium alloys and their high flex life makes them a good choice for this type of work. It is recommended that saw blades that have been used for sawing steel should not be used for non-ferrous materials. In particular, use a new blade to saw aluminium and keep it for this work. When the teeth are no longer keen enough to saw non-ferrous materials cleanly, the saw blade may finish its working life on sawing steel. Hard Back saw blades are easily re-weldable but in normal circumstances this is not an economic proposition as when the saw blade breaks the teeth are becoming dull and the limited life remaining does not warrant the cost of welding.

**M2 QUALITY H.S.S. BI-METAL** saw blades permit high speed sawing with low breakage and low production costs. The bi-metal blade has all the resilience of a basically chrome vanadium alloy steel structure, electron beam welded to a quality high speed cutting edge, giving high speed steel performance and a tough flexible backing. The high speed section of the blade ends short of the gullet reducing shatter if a blade should snap on a really awkward cut. Built-in breakage resistance and tough enough to give a really fast and accurate cut, time after time makes the use of bi-metal blades advantageous to all bandsaw operators. Re-welding these blades is possible on standard welding units.

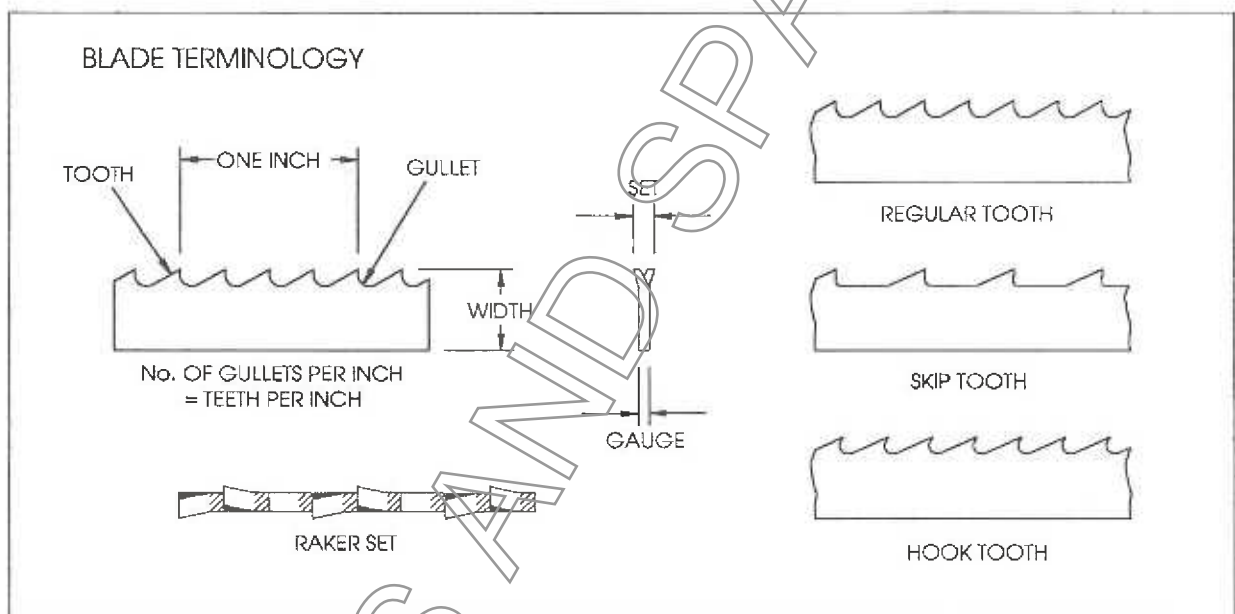
**M42 COBALT H.S.S. BI-METAL** saw blades offer all the advantages of the M2 quality bi-metal blade and has, in addition, a higher quality, higher performance, high speed steel for the cutting edge. The use of M42 Cobalt H.S.S. material for the cutting edge offers a balanced combination of superior hardness and toughness, making this blade ahead in performance on the most difficult or abrasive materials. The use of this type of blade is not restricted to the cutting of difficult materials, but can also be used on the more easily machined materials where greatly improved blade life can be expected. Heat treated to give high tooth hardness to resist abrasion, this blade has been specially developed for use on austenitic nickel chrome steels, nimonics, inconel, cobalt and nickel based alloys, heat resisting alloys and the space age exotic materials. Re-welding these blades is as for M2 blades.

Each of the types of saw blade are available in various tooth forms and tooth pitches. Here again, selection is required to obtain the right blade to achieve optimum sawing performance. Metal cutting blades are generally manufactured in three basic tooth forms. Namely:-

REGULAR TOOTH  
SKIP TOOTH  
HOOK TOOTH.

Terminology varies among saw blade manufacturers and these may be otherwise referred to as:-

PRECISION TOOTH  
BUTTRESS TOOTH  
CLAW TOOTH  
respectively.

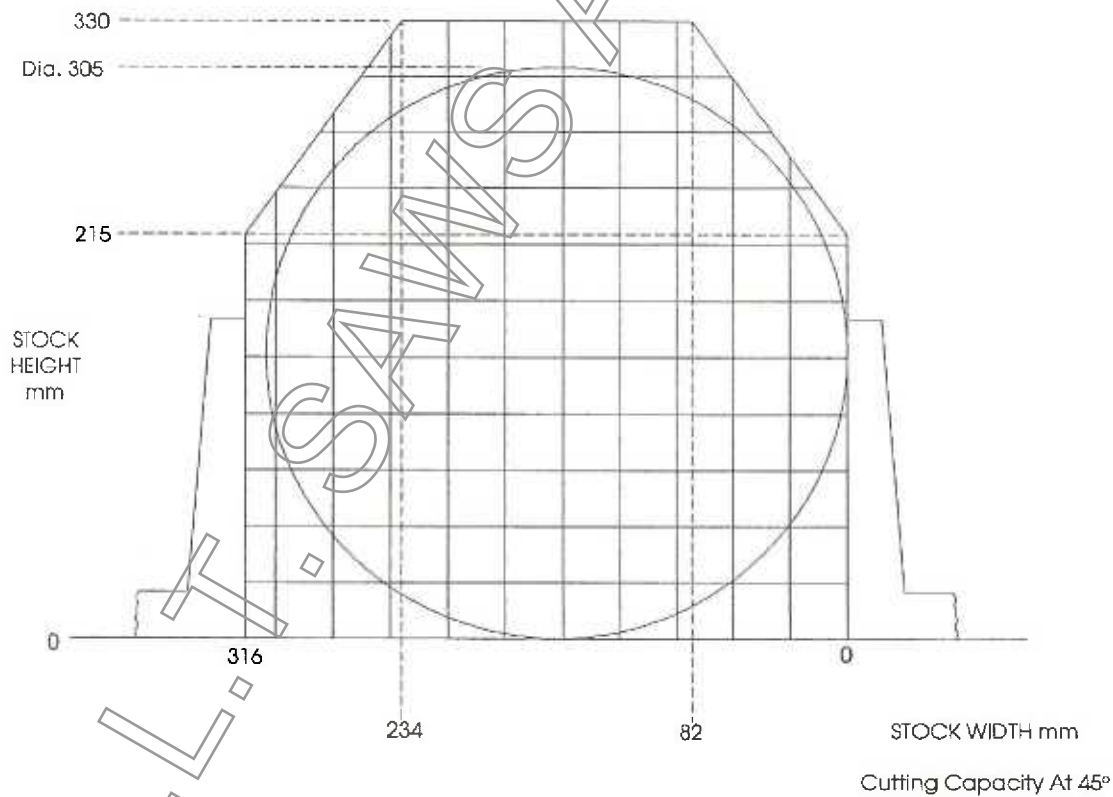
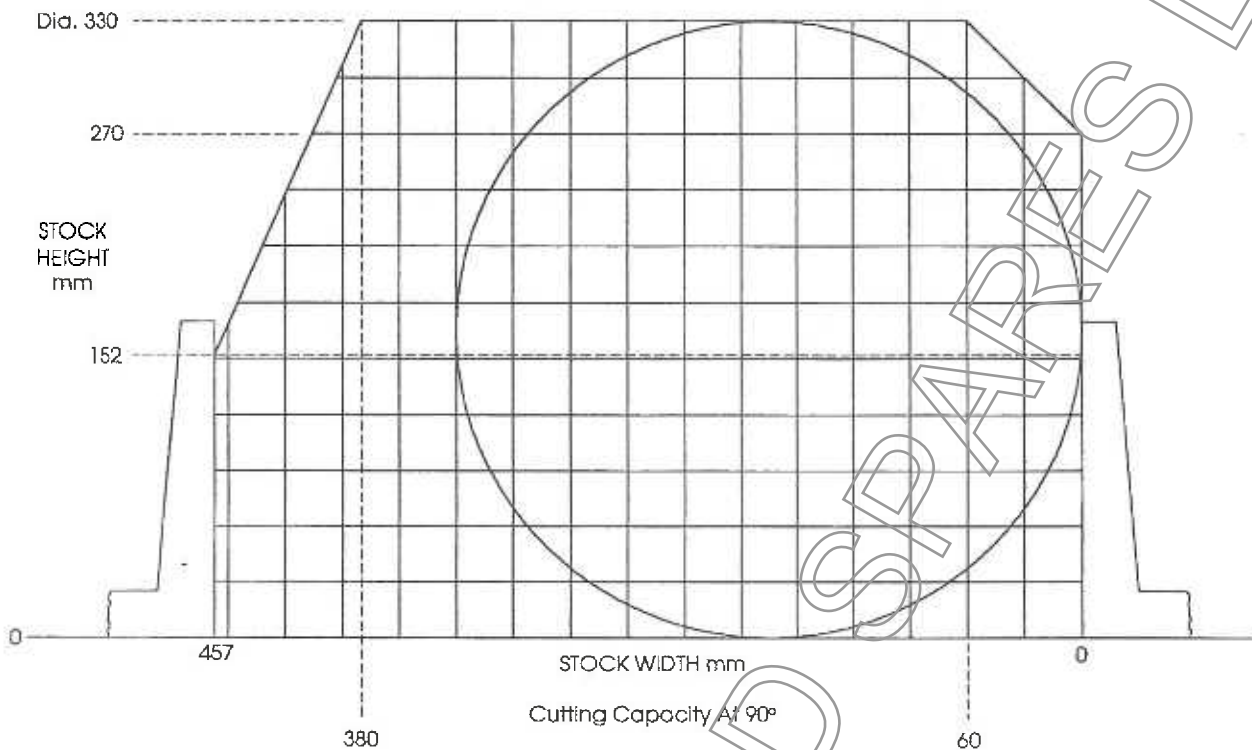


As a general guide to selecting an appropriate tooth pitch, use ten to six teeth per inch on sawing solid sections up to one inch wide; eight to six teeth per inch on sections one to three inches wide; six to four teeth per inch on sections three to six inches wide; and three to two teeth per inch on sections over six inches wide. Steel tubes and structural sections sometimes present a problem as the actual length of the saw cut alters considerably due to changes in section. In these cases use a saw blade which allows two or three teeth in engagement at the thinnest section.

The working life of a saw blade can be extended by using only a light feed pressure during its first few minutes of sawing. Care must be taken when running in a new saw blade on work hardening materials as any tendency for the teeth to rub will rapidly burnish the cut and make further sawing impossible.



SECTION 687



**SAWING GUIDE.**

The Sawing Guide Charts are intended as a guide only. Speeds shown are for cutting 3" to 6" material. When cutting material smaller than 3" increase blade speed 25%. When cutting material larger than 6" reduce blade speed 25%.

In general, blade speeds listed should not be exceeded. However, it is a serious mistake to use blade speeds which are too low, particularly with finer pitch saw blades, unless feed pressure is reduced also. This can cause overloading of the teeth and inaccurate cuts or blade breakage.

BLADE TYPE SELECTION CHART

MATERIALS	VOLUME	BLADE TYPE
EASY TO SAW: Low Carbon Steel Cold Rolled Steel Carbon Steel Structural Steel Pipe Free Machining Sulphurized Steel Cast Iron Some Non-Ferrous Metals	Light	Carbon Steel
	Semi-Production	Carbon Steel Premium Quality
	Production	Carbon Steel Premium Quality Bi-Metal
MODERATE TO SAW: High Carbon & Tool Steels 400 Series Stainless Steel Alloy Steels (Annealed)	Light	Carbon Steel
	Semi-Production	Carbon Steel Premium Quality
	Production	Premium Quality Bi-Metal
DIFFICULT TO SAW: 300 Series Stainless Steel Air Hardening Die Steels Alloy Steels (Heat Treated) Nickel Alloys & Exotic Space Age Nickel Based Non-Ferrous Metals	Light	Premium Quality
	Semi-Production	Premium Quality Bi-Metal
	Production Bi-Metal	Premium Quality

SAWING GUIDE CHART

MATERIAL	BLADE SPEED F.P.M.	MATERIAL	BLADE SPEED F.P.M.
Carbon Steel 1008-1035 1040-1095	300 200	Chrome Vanadium Steel 6117-6120 6145-6152	200 200
Free Machine Steels 1108-1132 1212-1213 1137-1151	300 300 300	Silicon Steel 9255-9260 9261-9262	200 200
Manganese Steel 1320-1345	200	High Speed Tool Steel T1, T2, T4, T5, T6, T8 T15 M1, M2, M3 M4, M10, M15, M42, M43	125 80 125 80
Nickel Steel 2317 2330-2345 2512-2517	300 200 200	Die Steels A2 D2*, D3* D7* 01, 02, 06 * Normally cut dry.	200 125 80 200
Nickel Chrome Steel 3115-3130 3135-3150 3310-3315	300 300 200	Carbon Tool Steel W-1	200
Molybdenum Steel 4017-4042 4047-4068	300 200	Hot Work Steel H-12, H-21, H-22, H-25	200
Chrome Moly Steel 4130-4140 4142-4150	300 200	Shock Resisting Tool Steel S-1 S-2, S-5	200 125
Nickel Chrome Moly Steel 4317-4340 8615-8645 8715-8750 9437-9445 9747-9763 9840-9850	200 200 200 200 200 200	Special Purpose Tool Steel L-6, L-7	200
Nickel Moly Steel 4608-4640 4812-4820	200 200	Stainless Steel 201, 202, 302 304, 321, 347 303, 303F, 440F, 443 308, 310, 314-317, 330 410, 420, 420F, 440A, B, C 416, 430F 430, 446 17-4PH, 17-7PH	125 125 125 80 125 200 80 80
Chrome Steel 5045, 5046 5120-5135 5140-5160 50100-52100	300 300 200 200		

NOTE: SAWING GUIDE FOR MATERIALS USING BI-METAL SAW BLADES

SAWING GUIDE CHART							
MATERIAL	BLADE SPEED F.P.M.	MATERIAL	BLADE SPEED F.P.M.				
<b>COPPER BASE ALLOYS</b> Aluminium Bronze 70-90 BHN 190-220 BHN Phosphor Bronze 5%-8% 60-100 BHN 180-210 BHN Manganese Bronze 90-120 BHN Silicon Bronze 70-100 BHN 180-210 BHN Beryllium Copper - 25 100-120 BHN 220-250 BHN 310-340 BHN	300 200 300 200 300 300 200 300 200 300 200 125	<b>NICKEL BASE ALLOYS (CONT.)</b> K. R. Monel Inconel Inconel X Hastelloy A 210-260 BHN Hastelloy B 230-270 BHN Hastelloy C 185-250 BHN	80 80 125 80 80				
				<b>NICKEL BASE ALLOYS</b> Monel 125-200 BHN R. Monel 145-180 BHN K. Monel 100-210 BHN	125 125 80	<b>TITANIUM ALLOYS</b> Msf 6al-4V 310-360 BHN RC 130 B 290-330 BHN Ti-140A 300-330 BHN T 150A 325-350 BHN 99% Pure Titanium 270-315 BHN	125 125 80 80 80

NOTE: SAWING GUIDE FOR MATERIALS USING BI-METAL SAW BLADES

ALT. SANS

**SAWING CONTROLS.****FEED PRESSURE:**

Required to move saw frame and remove chips.

Should be set 'HEAVIER' on materials with low machinability rating and 'LIGHTER' on materials that are more easily machined. Excessive feed pressure leads to premature blade breakage and/or crooked cuts. Insufficient feed pressure dulls the saw blade as it tends to rub rather than cut. Increases in feed pressure normally require corresponding increases in blade speed especially in less hard materials.

**FEED SPEED:**

Controls the rate at which the saw frame moves.

The speed should be set so that the saw frame moves only as fast as the material is being removed. The speed should be set slow enough to approach the workpiece without damaging the saw blade upon contact with the workpiece. Can be set to control the sawing with precision, especially while cutting thinner portions of light tubing or structurals and helps to avoid plunging. If the speed is too slow the chip load will be less than optimum.

**BLADE SPEED:**

Controls how quickly the material is being removed.

Should be set fast enough to stop teeth becoming overloaded. If the speed is set too fast the chip load will be less than optimum and/or the saw blade may dull prematurely. Increases in blade speed require corresponding increases in feed pressure especially in less hard materials.

**CHIP LOAD:**

Careful observation of the chip load is very important when sawing. Chips should be curled. Excessively tight curling indicates too much feed pressure, and a lack of any curl indicates feed pressure is too light. Chips that are blue in color indicate blade speed is too fast and/or too much feed pressure leading to premature blade breakage.

**COMMON SAWING PROBLEMS.****SAW BLADE WILL NOT CUT:**

Drive motor running in wrong direction, bandwheels should run in an anti-clockwise direction. Blade teeth facing in wrong direction, teeth must point in direction of blade travel. Material far too hard for type of saw blade being used.

**BLADE VIBRATES IN CUT:**

Workpiece not properly seated or securely held.  
Guides set too close on small diameter workpieces.  
Blade speed too fast and/or blade pitch too coarse.  
Insufficient blade tension.

**PREMATURE BLADE BREAKAGE :**

Excessive feed pressure.  
Incorrect blade speed and/or incorrect blade selection.  
Incorrect blade tension and/or incorrect tracking.  
Feed speed too fast.  
Worn or incorrectly set guides.  
Blade joint improperly welded and annealed.  
Workpiece not firmly clamped in vise jaws.  
Cut-off piece binding between blade and stock stop.  
Blade overheating due to cutting without coolant.  
Chips and swarf building up on bandwheels.

**TEETH TORN FROM BLADE:**

Excessive feed pressure.  
 Blade speed too slow.  
 Gullets of teeth overloading, blade pitch too fine.  
 Blade pitch too coarse.  
 Feed speed incorrectly set.  
 Workpiece not firmly clamped in vise jaws.  
 Workpiece too wide, where possible cut rectangular pieces up on side.

**CROOKED CUTS:**

Excessive feed pressure.  
 Incorrect blade tension.  
 Blade speed too slow.  
 Feed speed incorrectly set.  
 Guides not controlling blade, check wear, adjustment and positioning.  
 Blade teeth dull or of too fine pitch.  
 Vise jaws not set square to saw blade.  
 Bandwheel flanges worn causing loss of set to one side of saw teeth.

**BLADE TEETH DULL RAPIDLY :**

Blade overheating due to cutting without coolant.  
 Blade speed too fast.  
 Feed speed too slow.  
 Blade pitch too coarse.  
 Feed pressure too light.  
 Material too hard for type of saw blade being used.

**SAWBLADE BACK DAMAGED:**

Material too hard for type of saw blade being used.  
 Tracking incorrect, blade set too hard against bandwheel flanges. Carbide back-up insert missing from one guide assembly.

**SAW BLADE STALLS IN CUT:**

Excessive feed pressure.  
 Feed speed too fast.  
 Incorrect belt tension and/or worn belt or worn pulleys. Incorrect blade speed and/or incorrect blade selection.

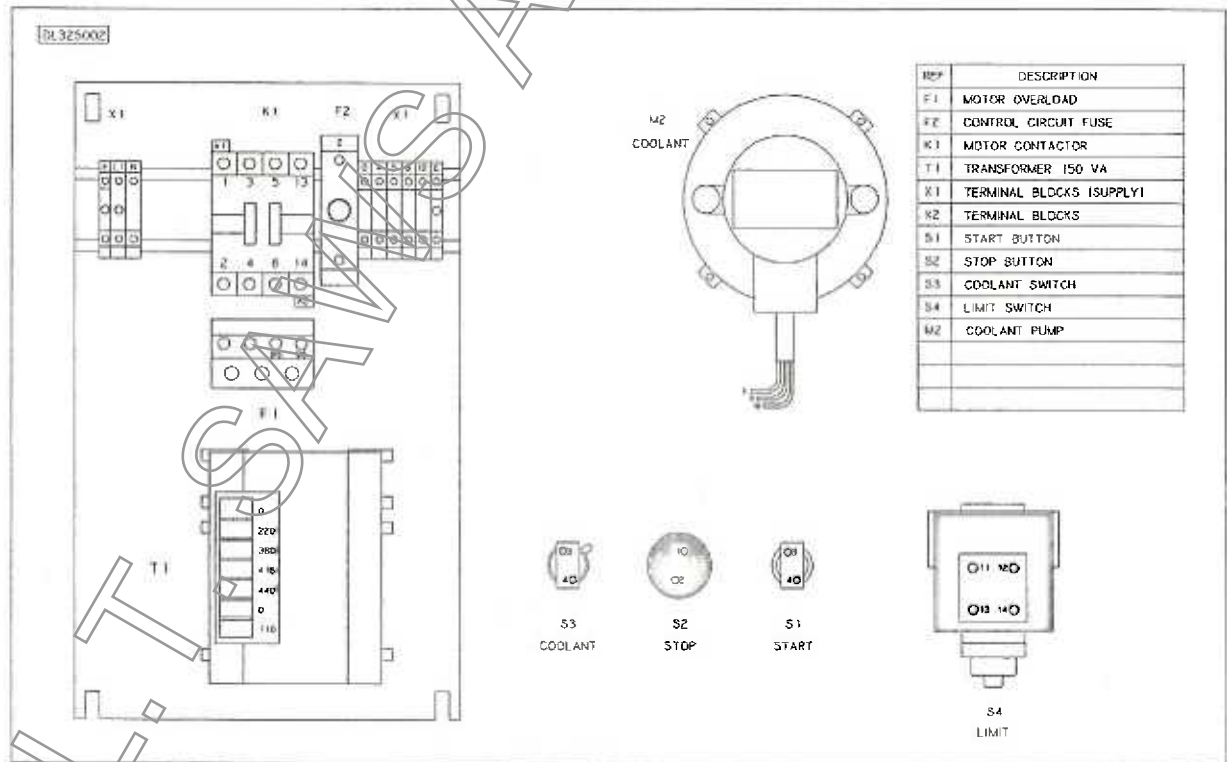
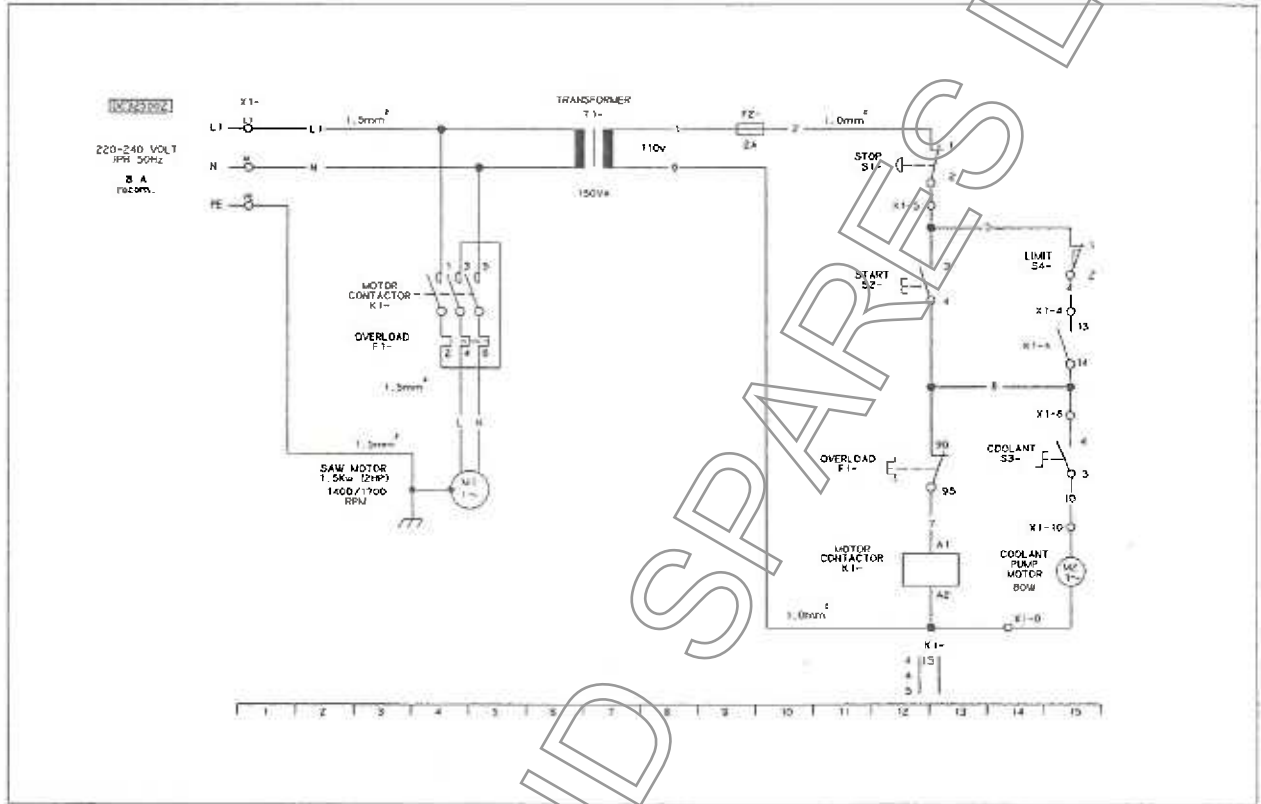
**HEAD BOUNCES DURING CUT :**

Blade joint improperly welded and annealed.  
 Teeth missing from saw blade.  
 Feed pressure set too light.  
 Bandwheels or pulleys loose.

**CUTTING TIME INCREASES :**

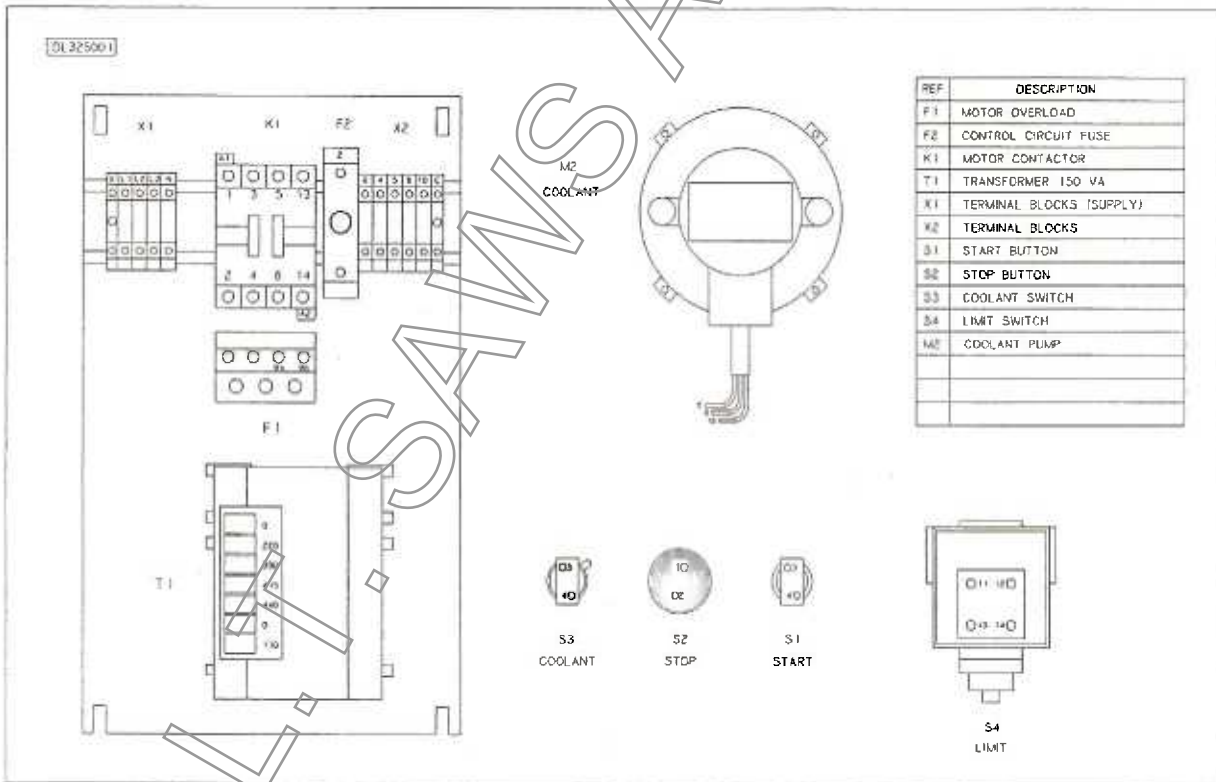
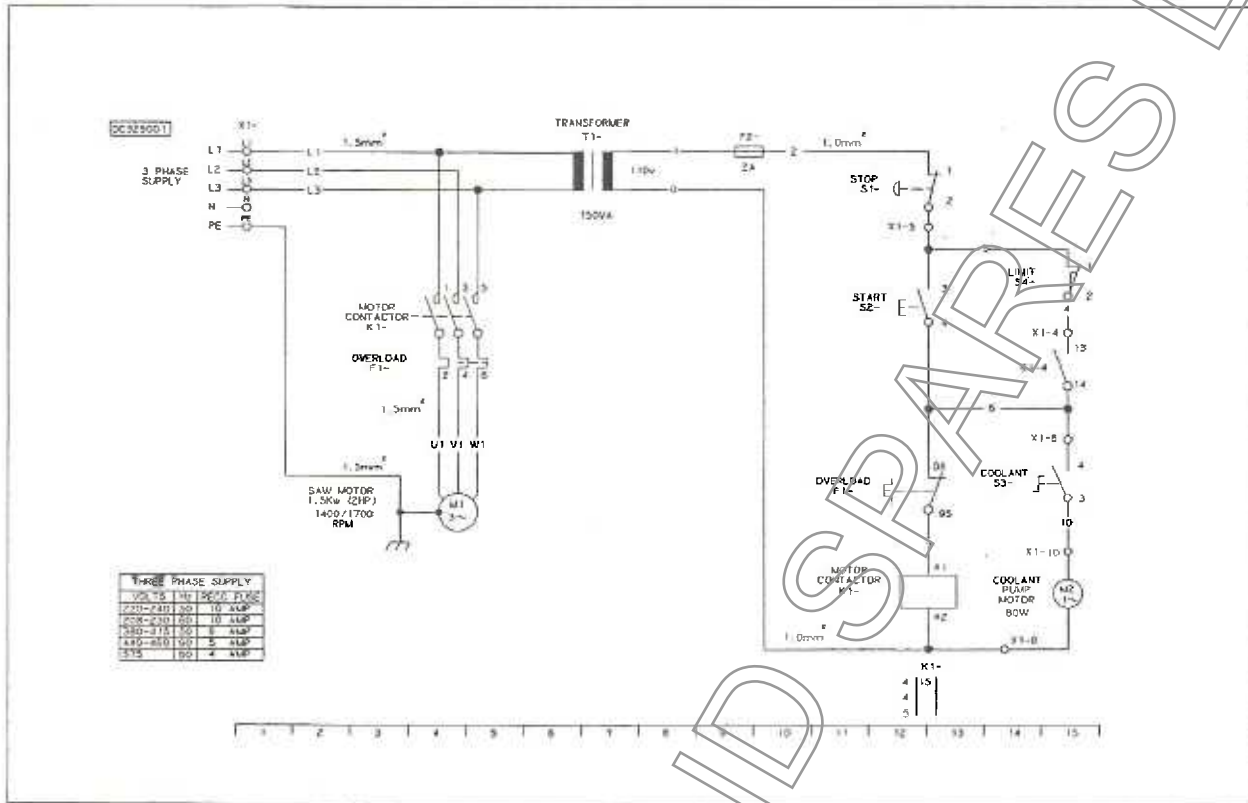
Blade teeth have become dull.  
 Feed pressure set too light.  
 Incorrect blade speed.

WIRING & LOCATION DIAGRAMS FOR H330 1 PHASE MACHINES



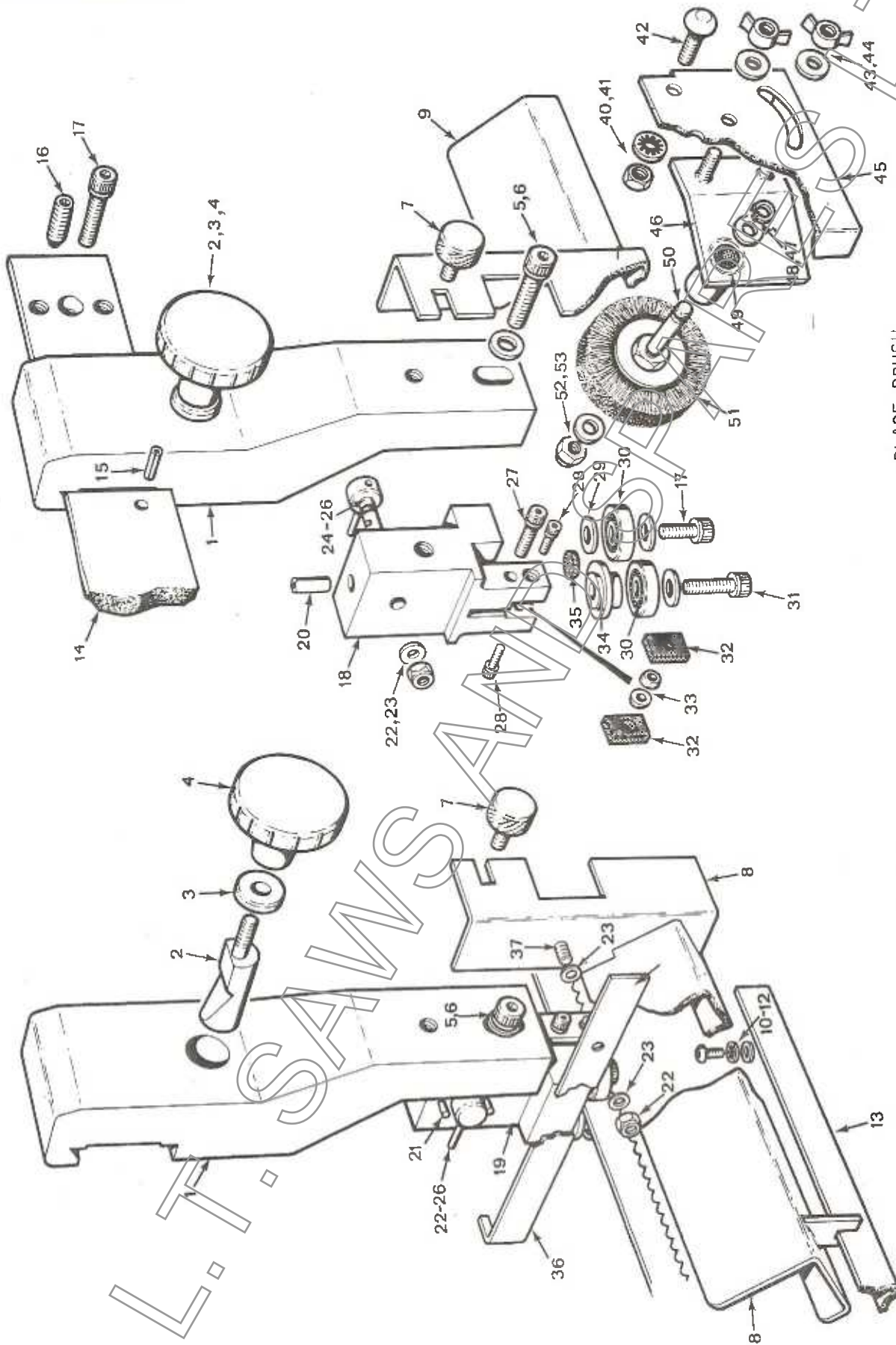
**SECTION 701**

**WIRING & LOCATION DIAGRAMS FOR H330 3 PHASE MACHINES**





BLADE GUIDES & GUARDS & BLADE BRUSH	-	Page 2
BANDWHEEL	-	Page 4
TENSIONING & TRACKING ASSEMBLY	-	Page 4
LEVER ACTION VICE	-	Page 6
HYDRAULIC CYLINDER	-	Page 8
HEAD PIVOT & HEAD DOWN LIMIT SWITCH ASSEMBLY	-	Page 10
COOLANT SYSTEM	-	Page 12
HEAD WIEGHT SPRING ADJUSTMENT ASSEMBLY	-	Page 14
STOCK STOP ASSEMBLY	-	Page 16
<b>OPTIONAL EXTRAS</b>		
INFED ROLLER STOCK TABLE	-	Page 18
DISCHARGE TRAY	-	Page 18
STOCK STAND	-	Page 20
WELDER GRINDER UNIT	-	Page 20
FLUSHING HOSE	-	Page 21
SET OF CASTERS	-	Page 21
SWARF RAKE	-	Page 21



BLADE BRUSH

BLADE GUIDES & GUARDS

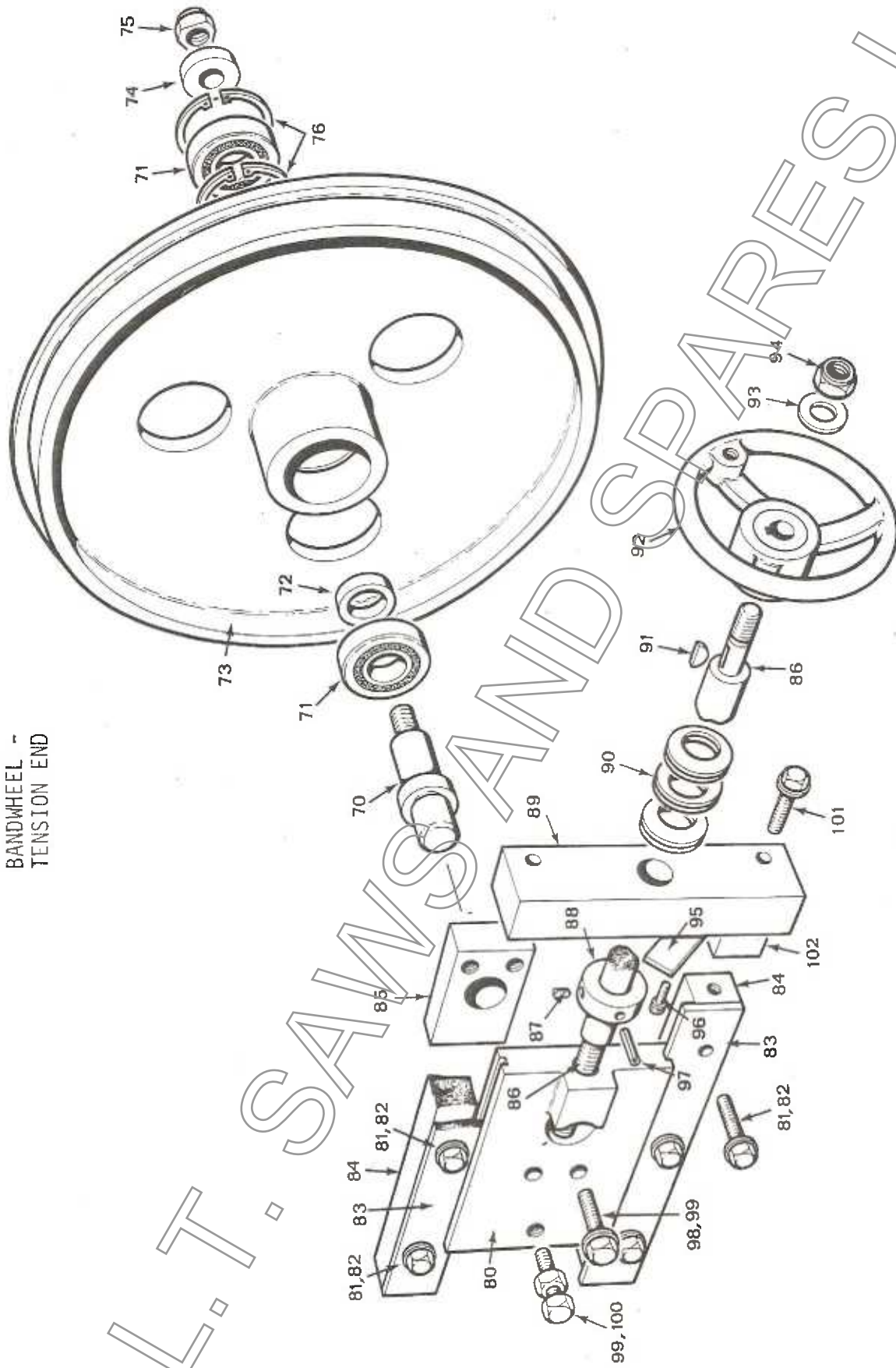
**A.L.T. SAWS & SPARES LTD**  
 (Startrite Machine Specialist)  
 Unit 15 Pier Road Industrial Estate  
 Gillingham  
 Kent

ME7 1RZ  
 Tel/Fax: 01634 850833  
 www.altssawsandspares.co.uk

A.L.T. SAWS LTD

## BLADE GUIDES &amp; GUARDS &amp; BLADE BRUSH

ITEM	PART No.	DESCRIPTION	No. OFF
1	9381	Guide Arm	2
2	3743	Locking Pad	2
3	4537	Washer	2
4	5130	Handknob	2
5	BO5578	Soc. Hd. Cap Screw I	2
6	BO5921	Std. Washer I	2
7	6638	Thumb Screw	2
8	SM2203	Outboard Blade Guard	1
9	SM2204	Inboard Blade Guard	1
10	BO5452	Soc. Dome Hd. Screw	2
11	BO5936	Shakeproof Washer	2
12	BO5915	Std. Washer	2
13	6370	Blade Guard Slide	1
14	9383	Guide Rail	1
15	BO5356	Spring Dowel	2
16	BO5215	Soc. Set Screw	8
17	BO5086	Soc. Hd. Cap Screw	6
18	9386	Inboard Guide Body	1
19	9385	Outboard Guide Body	1
20	6400	Coolant Connector	2
21	BO5345	Spring Dowel	4
22	BO5773	Self Locking Nut	4
23	BO5913	Std. Washer	6
24	BO5348	Spring Dowel	2
25	6650	Coolant Nozzle	2
26	BO2252	O' Ring	4
27	BO5069	Soc. Hd. Cap Screw Wedgelok	2
28	BO5046	Soc. Hd. Cap Screw	4
29	BO5919	Std. Washer	6
30	BO2025	Deep Groove Ball-Bearing	4
31	BO5087	Soc. Hd. Cap Screw	2
32	6393	Blade Guide Insert	4
33	6394	Conical Nut	4
34	9387	Spacer	2
35	6068	Round Carbide Pad	2
36	7908	Coolant Tap Lever	2
37	BO5554	Hex. Hd. Screw	2
40	BO5715	Full Nut	2
41	BO5935	Shakeproof washer	2
42	BO5620	Coach bolt	2
43	BO5785	Wing nut	2
44	BO5917	Std. washer	2
45	6396	Blade brush guard	1
46	SM1228	Brush bracket	1
47	BO6019	Circlip external	1
48	BO5774	Std. washer	1
49	BO2301	Compo bush No.SN005	2
50	6399	Blade brush pivot	1
51	BO2565	Blade brush	1
52	BO5916	Std. washer	1
53	BO5774	Self locking nut	1



BANDWHEEL -  
TENSION END

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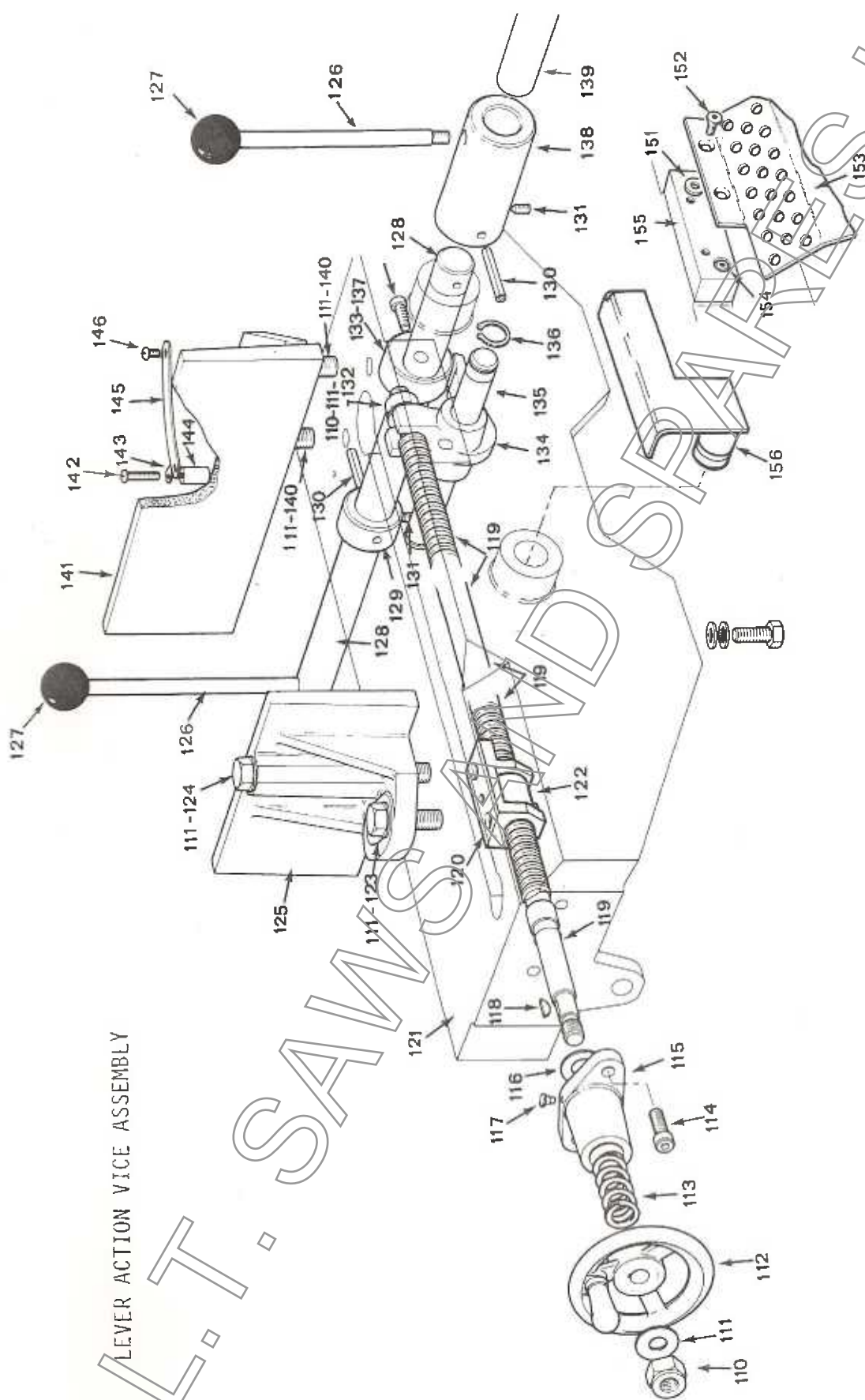
TENSIONING & TRACKING

**BANDWHEEL - TENSION END**

ITEM	PART No.	DESCRIPTION	No. OFF.
70	5985	Spigot	1
71	BO2006	Ball bearing	2
72	6047	Bearing spacer	1
73	9371	Bandwheel (Tension end)	1
74	6048	Washer	1
75	BO5755	Self-locking nut	1
76	BO6041	Circlip internal	2

**TENSIONING & TRACKING ASSEMBLY**

80	5979	Tension guide plate	1
81	BO5566	Hex. hd. screw	6
82	BO5917	Std. washer	8
83	5986	Guide gib	2
84	5987	Guide block	2
85	5984	Tracking block	1
86	5989/A	Tension spindle	1
87	BO5186	Soc. set screw	1
88	5990	Collar	1
89	5988	Spindle plate	1
90	BO2243	Disc spring	6
91	BO6460	Woodruff key	1
92	6679	Handwheel	1
93	BO5922	Std. washer	1
94	BO5777	Self-locking nut	1
95	6098	Tension gauge	1
96	BO5061	Soc. hd. cap screw	1
97	BO5358	Spring dowel	1
98	BO5919	Std. washer	2
99	BO5574	Hex. hd. screw	3
100	BO5716	Hex. nut	1
101	BO5569	Hex. hd. screw	2
102	6961	Spacer	2



LEVER ACTION VICE ASSEMBLY

SUPPORT BLOCK AND  
FEED OFF PLATE

A.L.T. SAM'S LTD

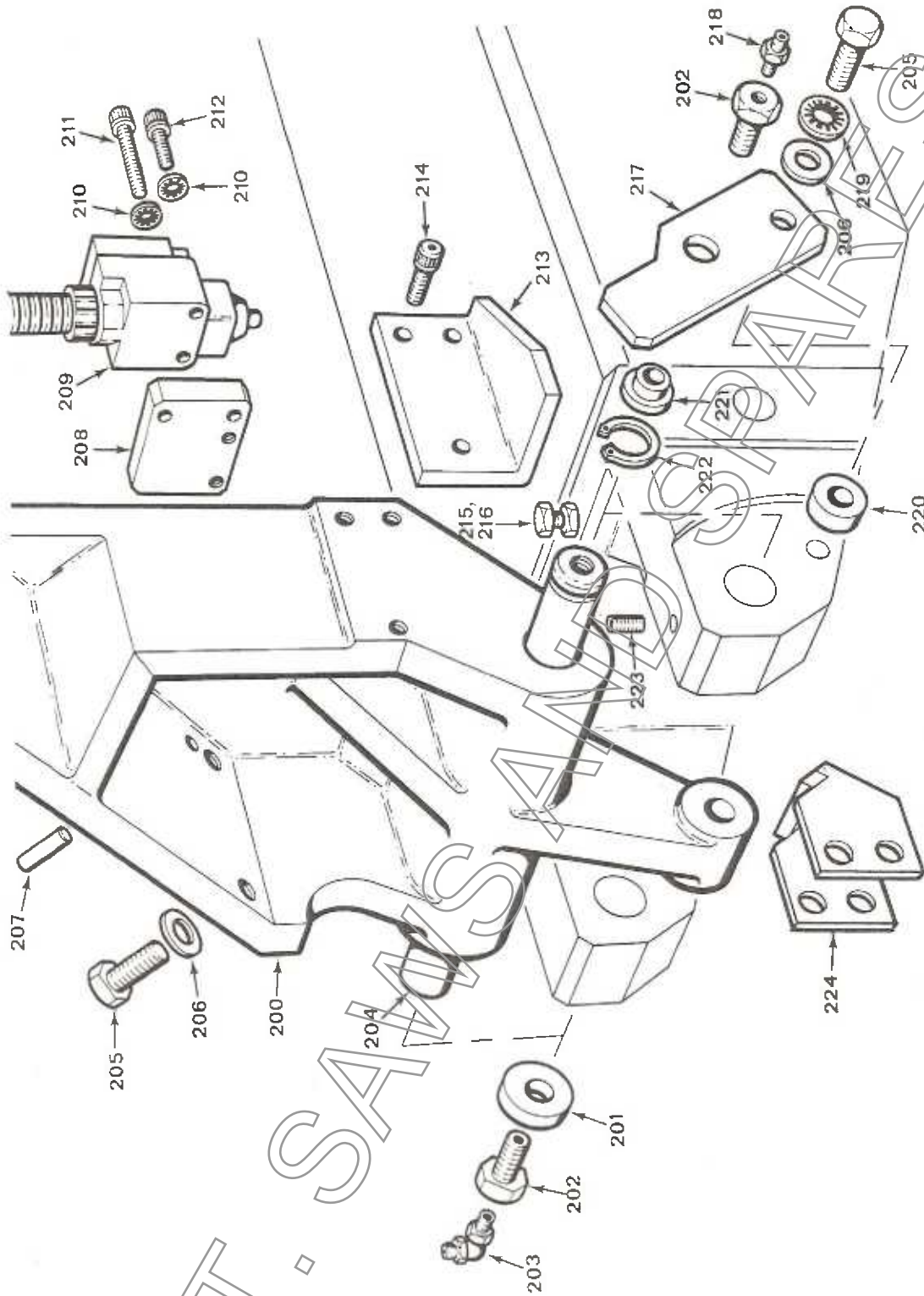
## LEVER ACTION VICE

ITEM	PART No.	DESCRIPTION	No.OFF
110	BO5777	Self Locking Nut	2
111	BO5922	Std. Washer	6
112	5966	Handwheel	1
113	BO2232	Spring Flexo	1
114	BO5578	Soc. Hd. Cap Screw	2
115	5978	Vice Spindle Housing	1
116	BO5923	Std. Washer	1
117	BO2486	Oiler	1
118	BO6460	Woodruff Key	1
119	8118	Vice Spindle	1
120	SM2017/A	Housing	1
121	SM2230	Bed Assenbly	1
122	SM2016	Vice Nut Kit	1
123	BO5585	Hex. Hd. Screw	2
124	BO5618	Hex. Hd. Screw	1
125	9394	Moving Vice Jaw	1
126	8119	Locking Handle	2
127	BO2556	Ball Knob	2
128	8115	Cam Shaft	1
129	8124	Cam Shaft Collar	1
130	BO5366	Sel Lock Pin	2
131	BO5196	Soc. Set Screw Dog Point	2
132	BO2068	Thrust Washer	1
133	8116	Cam	1
134	SM2321	Cam Follower	1
135	8122	Cam Follower Shaft	1
136	BO6010	Circlip Ext.	2
137	8120	Key	1
138	8117	Sleeve	1
139	8123	Work Stop Shaft	1
140	BO5612	Hex. Hd. Screw	1
141	9396	Fixed Vice Jaw	1
142	BO5419	Rd. Hd. Screw-Slotted (Brass)	1
143	2812	Pointer	1
144	5959/A	Pillar	1
145	5916	Indicator Segment	1
146	BO5417	Rd. Hd. Screw Recessed	2
147	BO5921	Std. Washer	4
148	BO5946	Shakeproof Washer	4
149	BO5578	Hex. Hd. Screw	4
150	BO5069	Soc. Hd. Cap Screw	1
151	BO5920	Std. Washer	2
152	BO5271	Soc. C'sk. Hd. Screw	2
153	6413	Feed Off Plate	1
154	BO5095	Soc. Hd. Cap Screw	2
155	6362/B	Support Block	1
156	SM2264	Material Support	1
NOT ILLUSTRATED: Parts hidden in main illustration by cam & cam follower.			
	BO2194	Spring Flexo	1
	BO5566	Hex. Hd. Screw	2
	BO5753	Lock Nut	2

## HYDRAULIC CYLINDER

ITEM	PART No.	DESCRIPTION	No.OFF
170	5980	Cylinder Cap	1
171	BO2279	'O' Ring	1
172	6024	Piston Rod	1
173	BO5755	Hex. Locknut	3
174	BO5921	Std. Washer	4
175	BO5946	Shakeproof Washer I	1
176	BO5717	Hex. Nut	1
177	BO5095	Soc. Hd. Cap Screw	1
178	BO2037	Rose Bearing	1
179	BO5264	Soc. C'sk. Hd. Screw	2
180	SM1206	Cylinder Body	1
181	BO2103	Hardened Steel Ball	1
182	5826	Compression Spring	1
183	BO2274	'U' Ring	1
184	6288	Piston Nut	1
185	BO2036	Rose Bearing	1
186	BO5098	Soc. Hd. Cap Screw	1
187	9384	Cylinder Spacer	1
188	BO2421	Stud Elbow	2
189	6287	Piston	1
190	7882	Control Knob	1
191	BO6300	Bung	1
192	BO2418	Female Stud Elbow	1
193	5564	Female Adaptor	1
194	BO2466	Control Valve,	1
195	BO2423	Male Stud Elbow	1
196	9433	Spacer	1

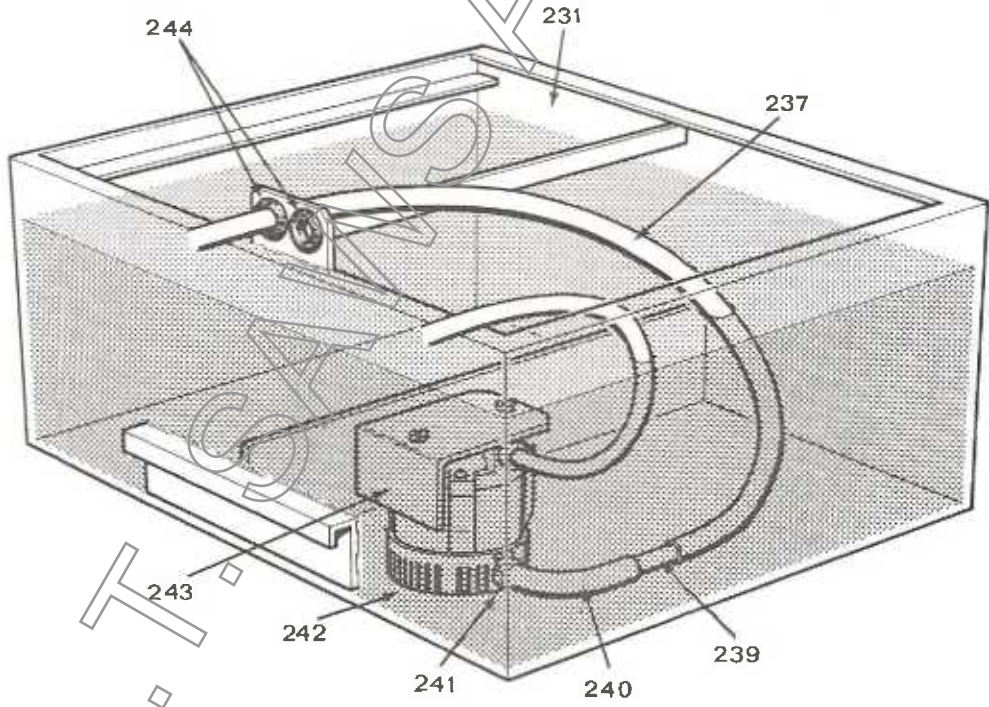
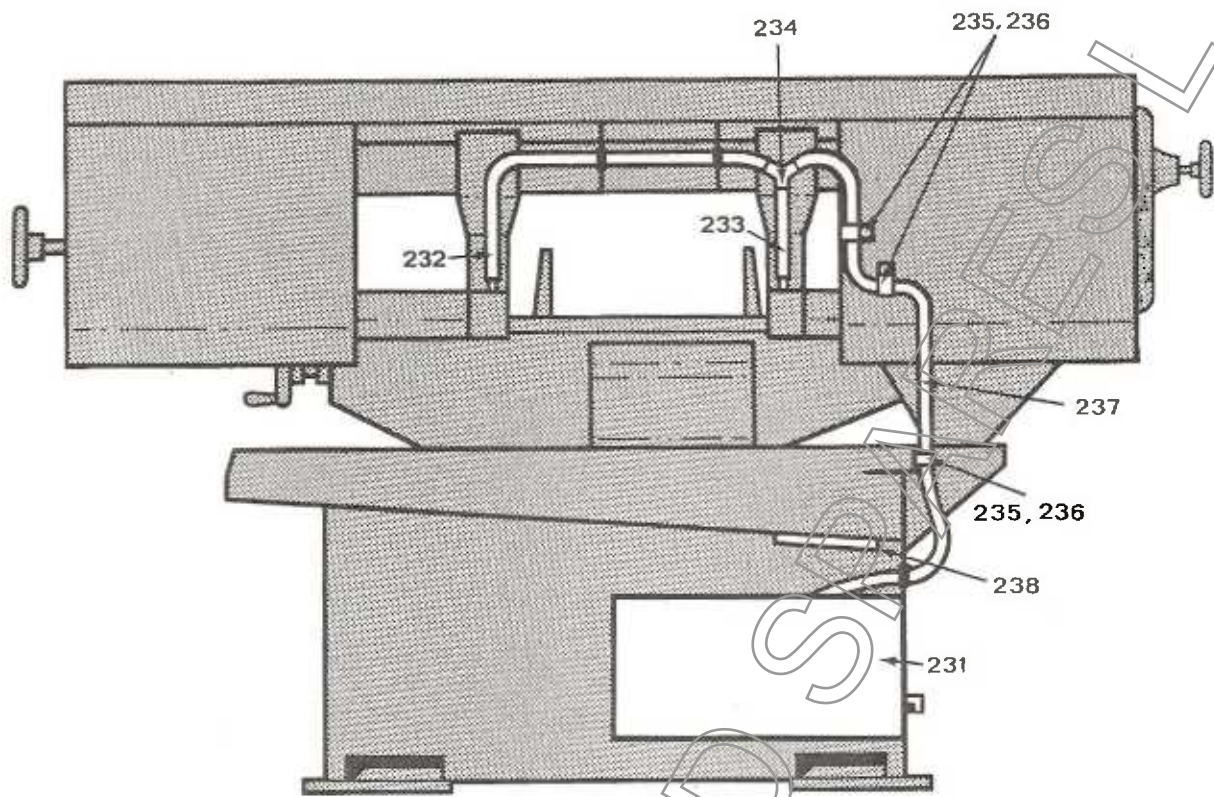




HEAD PIVOT & HEAD DOWN LIMIT SWITCH

## HEAD PIVOT &amp; HEAD DOWN LIMIT SWITCH ASSEMBLY

ITEM	PART No.	DESCRIPTION	No.OFF
200	SM2320	Bow Mounting Casting	1
201	6048	Washer	1
202	5998	Pivot Screw	2
203	BO2485	Grease Nipple	1
204	5983	Pivot	1
205	BO5578	Hex. Hd. Screw	7
206	BO5921	Std. Washer	7
207	BO5890	Std. Dowel	2
208	6361	Switch Mounting Plate	1
209	BO1154	Limit Switch No.	
	BO1147		1
210	BO5942	Shakeproof Washer	4
211	BO5064	Soc. Hd. Cap Screw	2
212	BO5062	Soc. Hd. Cap Screw	2
213	5994/B	Stop Bracket	1
214	BO5203	Soc. Hd. Cap Screw	2
215	BO5563	Hex. Hd. Screw	1
216	BO5715	Hex. Nut	1
217	6358	Stop Plate	1
218	BO2479	Grease Nipple	1
219	BO5946	Shakeproof Washer	1
220	5993	Sleeve	1
221	5992	Bush	1
222	BO6010	Circlip External	1
223	BO5203	Soc. Set Screw	1
224	SM2265	Adaptor Block	1



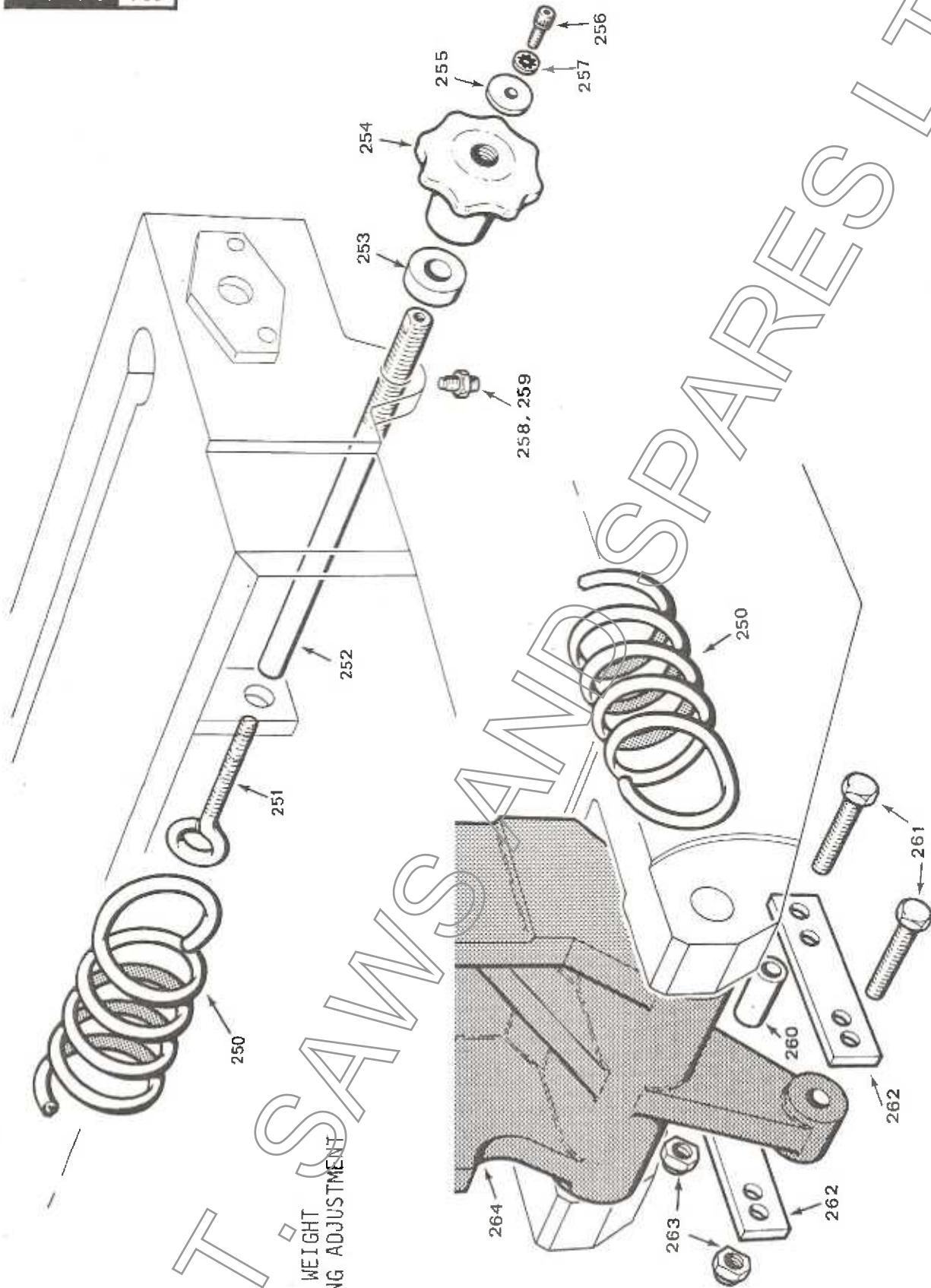
COOLANT ASSEMBLY

**COOLANT SYSTEM**

ITEM	PART No.	DESCRIPTION	No.OFF
231	SM1187	Coolant Tank	1
232	BO6377	Clear Flexible plastic Tube	1
233	BO6377	Clear Flexible plastic Tube	1
234	BO2488	'Y' Stem Adaptor I	1
235	BO5452	Soc. Dome Hd. Screw	3
236	BO6401	Tubing Clip	3
237	BO6378	Clear Flexible Plastic Tube	1
238	6080	Coolant Filter	1
239	BO2489	Stem Adaptor No.GRS 12 - 8	1
240	BO6379	Clear Flexible Plastic Tube	1
241	BO6416	Pipe Clip	1
242	BO2464	Coolant Pump	1
243	6505	Pump Bracket	1
244	BO6319	Grommet	2

NOTE : Coolant control valves are part of the guide assemblies, see section on Guides/ Bandwheel Mountings for Part Nos.

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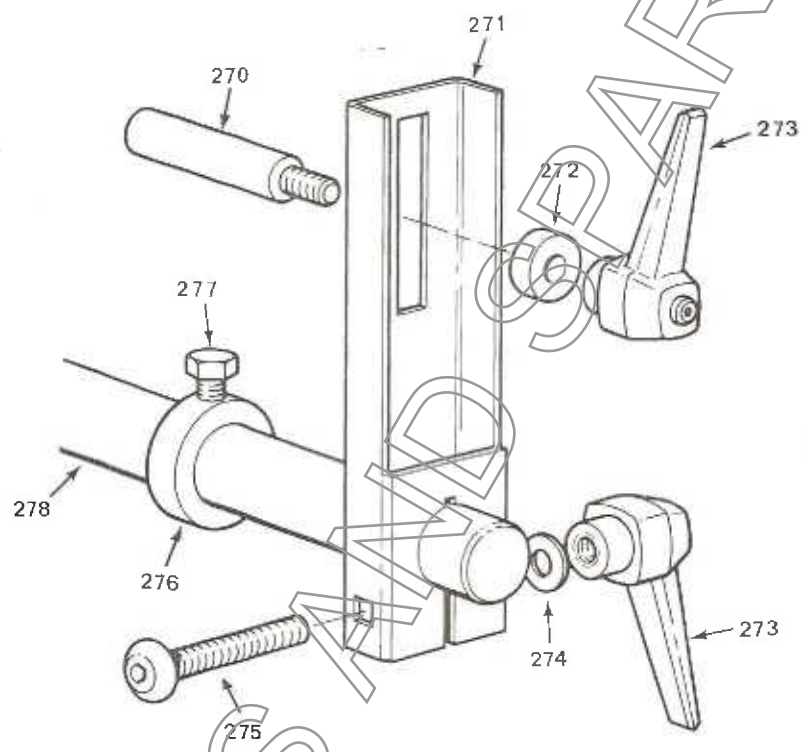
HEAD WEIGHT  
SPRING ADJUSTMENT

A.L.T. SAWS AND SPARES LTD

**HEAD WEIGHT SPRING ADJUSTMENT ASSEMBLY**

ITEM	PART No.	DESCRIPTION	No.OFF
250	5955	Extension Spring	1
251	6071	Hook Bolt	1
252	5957/A	Spring Rod	1
253	5958	Distance Piece	1
254	6402	Handknob	1
255	6403	Washer	1
256	BO5061	Soc. Hd. Cap Screw	1
257	BO5929	Shakeproof Washer	1
258	BO5204	Soc. Set Screw	1
259	BO5715	Hex. Nut	1
260	6070	Distance Piece	1
261	BO5582	Hex. Hd. Screw I	2
262	6069	Plate	2
263	BO5776	Self Locking Nut I	2

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STOCK STOP

AL.T. S.A.V.S. SERRAVALLES LTD

**STOCK STOP**

ITEM	PART No.	DESCRIPTION	No. OFF
270	6419	Stop Bar	1
271	SM1367	Bar Stop Bracket	1
272	6313	Spacer	1
273	BO2554	Adjustable Handle	2
274	BO5919	Std. Washer	1
275	BO5628	Coach Bolt	1
276	6626/A	Bar Stop Collar	1
277	BO5571	Hex. Hd. Screw	1
278	8123	Work Stop Shaft	1

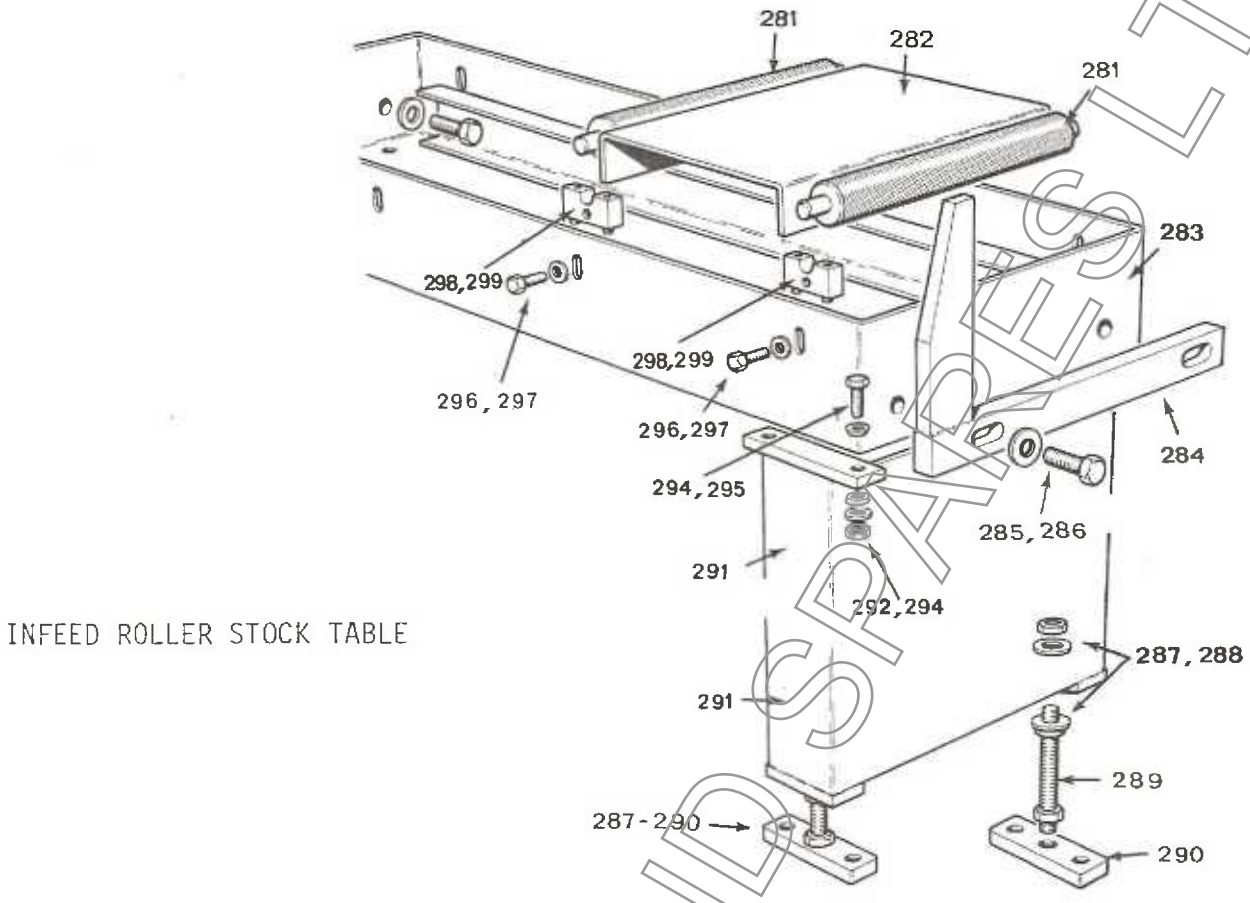
**STOCK STOP ASSEMBLY - SPARES KIT**

This Spares Kit consists of Items 270 to 275 inclusive.

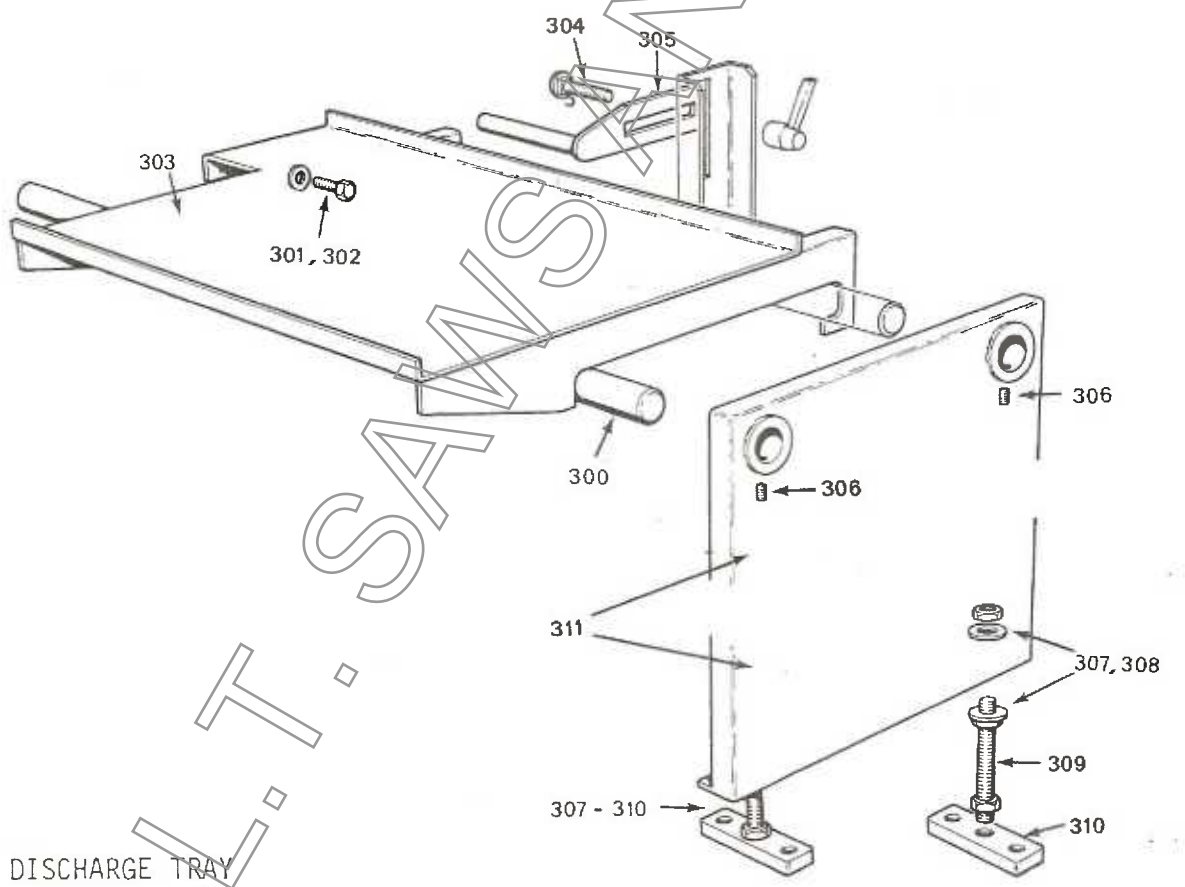
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SECTION 708



INFEED ROLLER STOCK TABLE



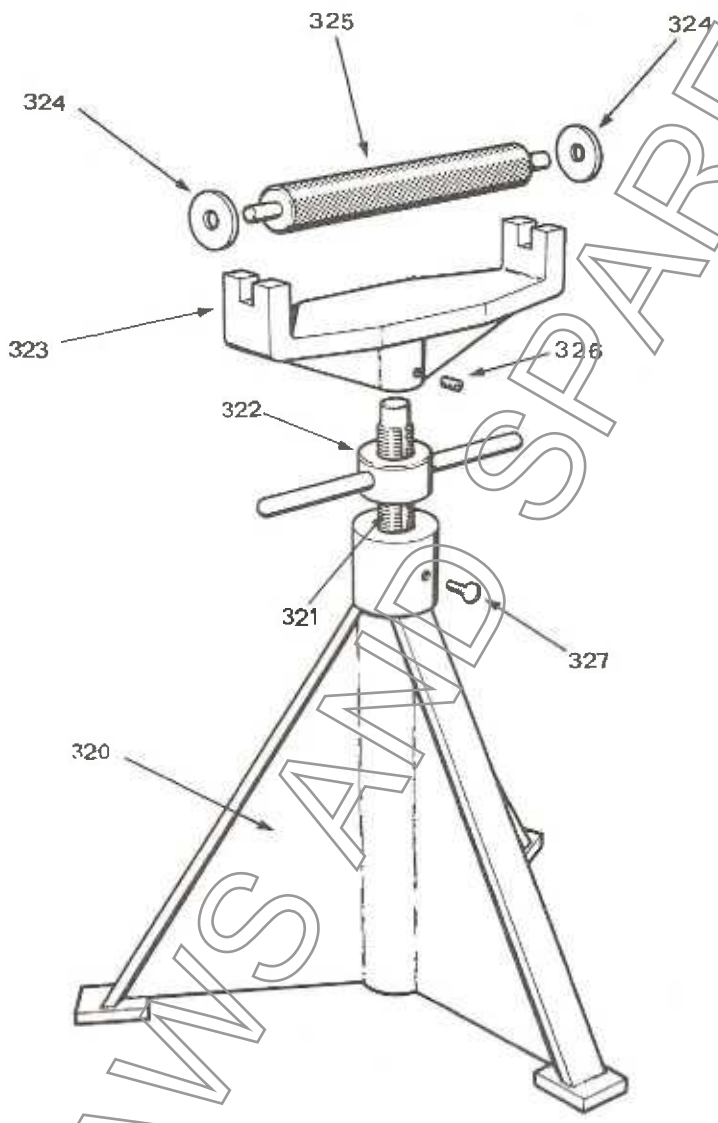
DISCHARGE TRAY

## INFEED ROLLER STOCK TABLE (OPTIONAL EXTRA)

ITEM	PART No.	DESCRIPTION	No. OFF
281	4389	Roller	4
282	4497	Support Plate	3
283	SM1363/A	Conveyor Chassis	1
284	SM1232	Stop Bracket	1
285	BO5584	Hex. Hd. Screw	2
286	BO5922	Std. Washer	8
287	BO5718	Hex. Nut	6
288	BO5587	Hex. Hd. Screw	2
289	4682	Stud	2
290	4681	Foot	2
291	SM1364/A	Support Leg	1
292	BO5716	Hex. Nut	4
293	BO5919	Std. Washer	4
294	BO2133	Nylite Sealing Washer	8
295	BO5574	Hex. Hd. Screw	4
296	BO5562	Hex. Hd. Screw	8
297	BO5918	Std. Washer	8
298	4387	Plummer Block	8
299	BO5214	Soc. Set Screw	16

## DISCHARGE TRAY (OPTIONAL EXTRA)

300	6453	Support Shaft	1
301	BO5560	Hex. Hd. Screw	2
302	BO5917	Std. Washer	2
303	SM1294/A	Discharge Tray	1
304	BO5625	Coach Bolt	1
305	SM1295	Stop Bracket	1
306	BO5200	Soc. Set Screw	2
307	BO5718	Hex. Nut	6
308	BO5922	Std. Washer	4
309	4682	Stud	2
310	4681	Foot	2
311	SM1293/A	Support Leg	1



STOCK STAND

**STOCK STAND (OPTIONAL EXTRA)**

ITEM	PART No.	DESCRIPTION	No. OFF
320	SM560	Stand	1
321	3869	Jacking screw	1
322	SM557	Adjuster	1
323	3867	Roller Bracket	1
324	6553	Stop Plate	2
325	3866	Roller	1
326	BO5176	Socket Set Screw	1
327	BO5825	Thumb Screw	1

**WELDER GRINDER UNIT (OPTIONAL EXTRA)**

Model BS.1 (Not Illustrated)

**FLUSHING HOSE (OPTIONAL EXTRA)**

SM1269 Flushing Hose (Not Illustrated)

**SET OF CASTORS (OPTIONAL EXTRA)**

SM1281 Castors (Not Illustrated)

**SWARF RAKE (OPTIONAL EXTRA)**

SM1379 Swarf Rake (Not Illustrated)