RECORD MACHINE DETAILS	DISTRIBUTOR
MODEL	
SERIAL No.	
DATE OF PURCHASE	
VOLTAGE	
PHASE	
Hz	
QUOTE THIS INFORMATION WHEN REQUESTING SERVICE OR SPARES.	

HANDBOOK
BO10384

HB225M 5 SPEED
HB250M & HB330
VARIABLE SPEED

HB SERIES

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

ISSUE 4 10-12-93 RF11154

QUALITY BANDSAW BLADES

TO SUIT THE HB225M / HB250M / HB330M MODELS

ORDER LINE- 01634 850833

A.L.T. SAWS & SPARES LTD

Unit 15, Pier Road Industrial Estate

Gillingham

Kent

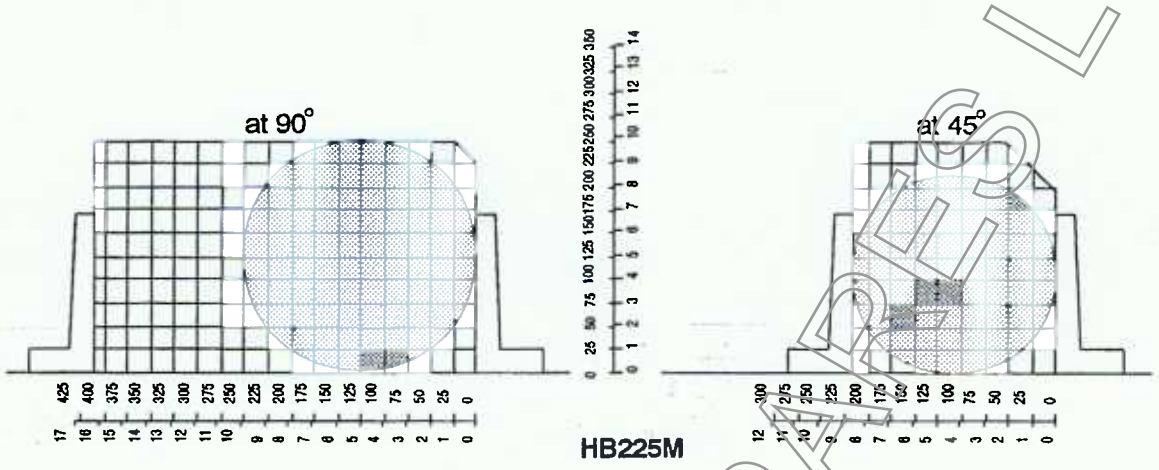
ME7 1RZ

www.altsawsandspares.co.uk

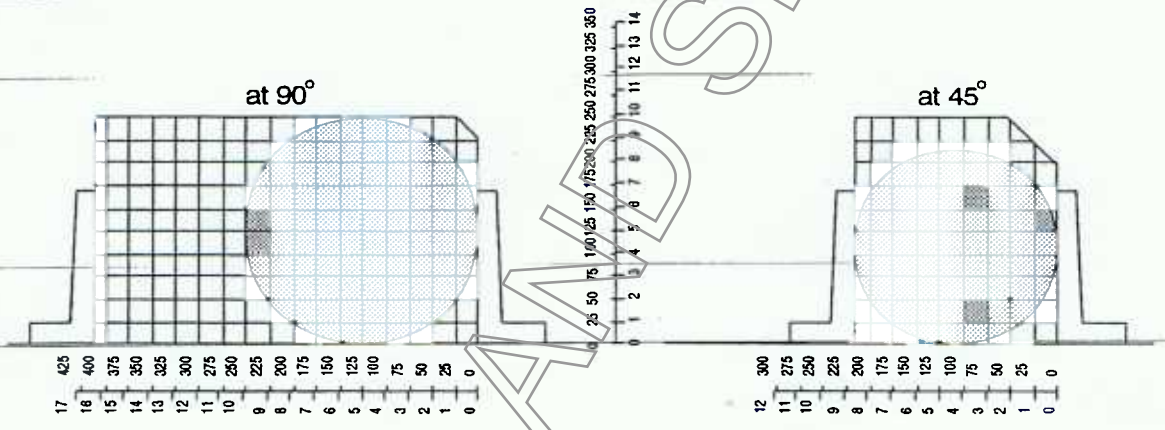
CONTENTS

MODEL NUMBER		HB225M	HB250M	HB330M
Drive Motor 3Ph	kw hp	1.5 2.0	1.5 2.0	1.5 2.0
Coolant Motor 3Ph	watt hp	7 0.09	7 0.09	7 0.09
Blade Speed Range	m/min ft/min	15-24-38-61-92 50-80-125-200 -300	13 to 92 43 to 300	15 to 102 50 to 330
Blade Size SUPAFLEX Blades	mm ins	3632 x 25 x 0.9 143 x 1 x 0.035 CARBON BI-METAL M2 BI-METAL M42	3632 x 25 x 0.9 143 x 1 x 0.035 CARBON BI-METAL M2 BI-METAL M42	3810 x 32 x 1.1 150 x 1.25 x 0.043 CARBON BI-METAL M2 BI-METAL M42
Bed Height Total Height Total Width Total Length	mm (ins) mm (ins) mm (ins) mm (ins)	707 (28) 1177 (47) 628 (25) 1611 (64)	707 (28) 1177 (47) 628 (25) 1751 (70)	707 (28) 1227 (49) 628 (25) 1751 (70)
Net Weight	kg (lbs)	355 (788)	355 (788)	360 (800)
Coolant Tank Capacity Reccomended Coolant STARCOOL 209		30l $6^1/_2$imp.gal. Available in 1l or 5l containers		
Electrical Supply (Examine rating plate to establish required electrical supply).		220 - 240 volts / 3 phase / 50Hz or 380 - 415 volts / 3 phase / 50Hz or 208 - 230 volts / 3 phase / 60Hz or 440 - 480 volts / 3 phase / 60Hz or 575 volts / 3 phase / 60Hz		

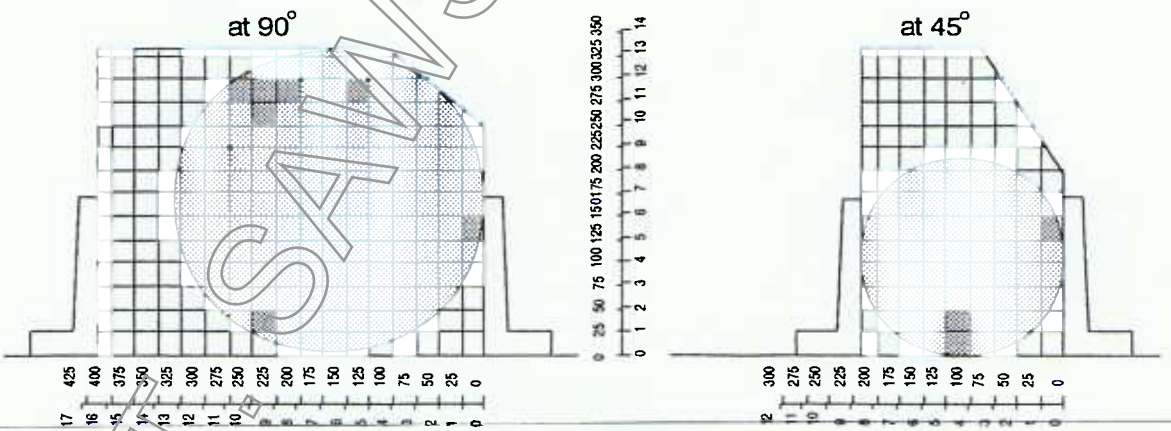
CUTTING CAPACITIES FOR HB SERIES MANUAL HORIZONTAL BANDSAWS



HB225M

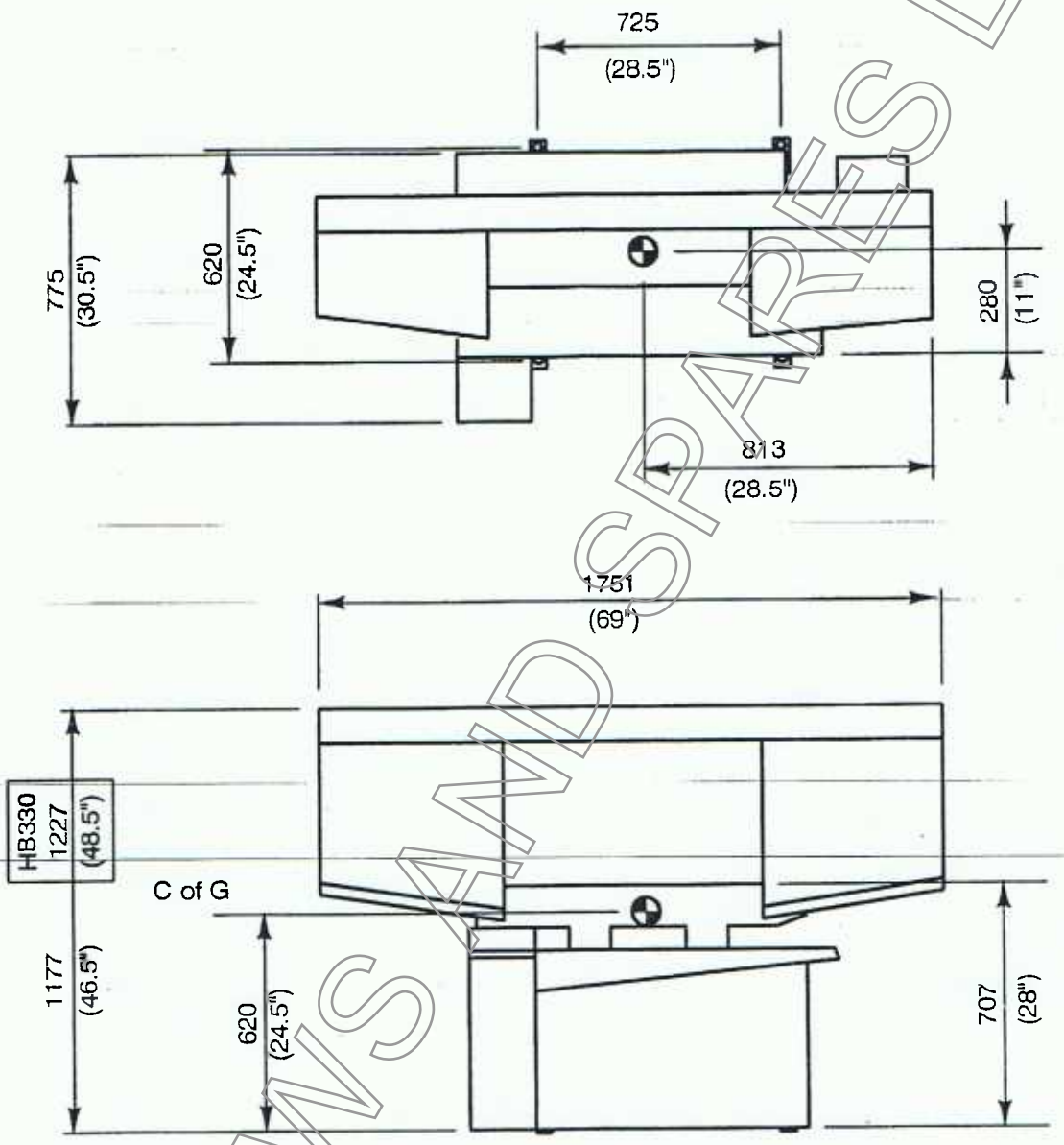


HB250M



HB330M

SPECIFICATION/FOUNDATION PLAN



NOTE: ALL DIMENSIONS ARE APPROXIMATE

Ensure that you fully understand this instruction manual and have recieved 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.

If the operator is likely to be subjected to noise levels greater than specified in the Noise At Work Regulation 1989, then a Noise Test Record Sheet will be included in this manual.

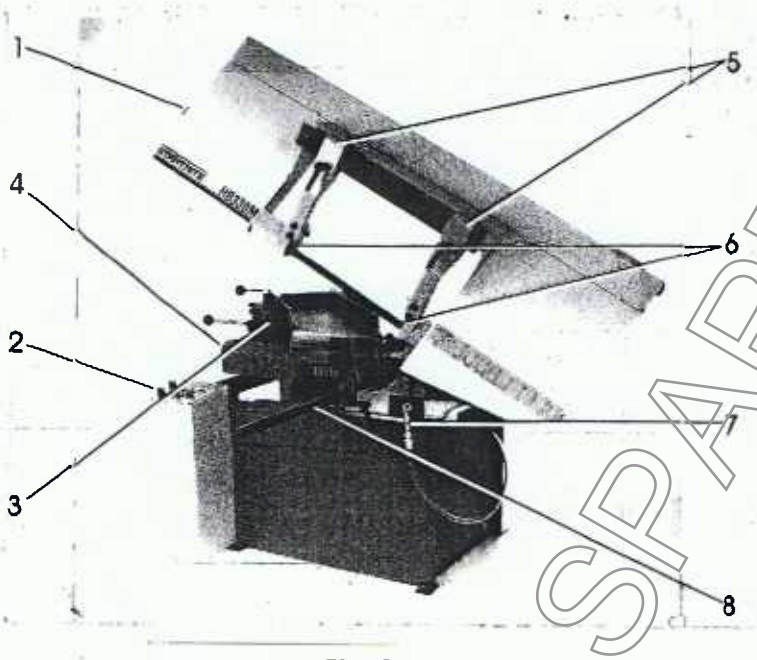
NOISE TEST RECORD SHEET

This information is provided in accordance with The Health & Safety Executive Noise At Work Regulations 1989

MODEL	HB225M	HB250M/HB330M
MOUNTING CONDITION	Free standing on concrete floor	Free standing on concrete floor
BACKGROUND READING dB(A)	61	61
BLADE SPEED m/min (ft/min)	61 (200)	27.5 (90)
CUTTING (MATERIAL) Mild Steel (Dia. 60mm)	75	76

Fig. 1

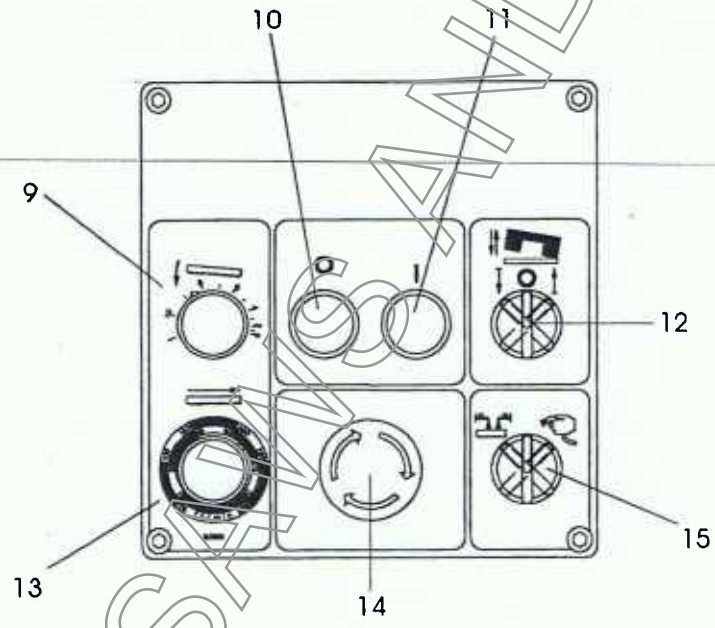
MAXIMUM dB(A) NOISE LEVEL READINGS ARE TAKEN WITHIN 1 METRE OF THE MACHINE & AT A HEIGHT OF 1.5 METRES.



KEY

1. Blade Tension Control
2. Electrical Control Panel
3. Quick Release Vice
4. Counter-Balance Spring Tension Control
5. Adjustable Guide Arms
6. Coolant Nozzles
7. Flushing Nozzle
8. Swing Away Assembly

Fig. 2



9. Feed Speed Control
10. Stop Button
11. Start Button
12. Bow Raise/Lower Control
13. Blade Speed Control (variable speed machines only)
14. Emergency Stop Button
15. Coolant Control

Fig. 3

GENERAL LAYOUT OF HB SERIES SEMI-AUTOMATIC HORIZONTAL BANDSAWS
NOTE: DETAILS MAY VARY ACCORDING TO MODEL.

SECTION 720

INSTALLATION.

Ensure that the following are supplied with your machine.

MODEL	HB250SA	HB330SA
13 & 17mm Combination Spanner	Yes	Yes
17 & 19mm Combination Spanner	Yes	Yes
22 & 24mm Combination Spanner	Yes	Yes
Key x 2 (Electrical Box)	Yes	Yes
Adjustable Bar Stop	Yes	Yes
Operating Manual	Yes	Yes

To transport the machine use fork lift truck with the forks placed as close as possible to wooden transport blocks.

Site the machine with adequate working space for ease of use.

The machine stand is provided with four feet which can be used for fixing the machine. These accept 12mm ($^1/_2$") diameter bolts (not supplied). Before fixing the machine down, ensure the machine is located on a firm, level surface.

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

Remove the transit bracket clamping the bow 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 25 litres (5 gallons) of a good grade of soluble oil diluted about 10 parts water to 1 part oil.

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

ELECTRICAL INSTALLATION (REFER TO RELEVANT DIAGRAM, SECTION 742)

Check that the electrical 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.

Unlock and open door of electrical control box and pass supply leads through cable gland located in rear of control box.

For three phase supply, connect supply leads to terminals LI, L2 & L3 of the isolator and earth lead to 'E' (earth) terminal. If a neutral supply is standard, then the neutral should be connected to 'N' (neutral) terminal. (N.B. this has no electrical bearing on the machine and is supplied only as a convenient connector).

IN ALL CASES THE MACHINE MUST BE EFFECTIVELY EARTHED.

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

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

GENERAL

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

WEEKLY MAINTENANCE

Check level of coolant in coolant tank. If necessary top up with a good grade of soluble oil in accordance with manufacturer's instructions.
Clean and lubricate all miscellaneous moving parts.
Ceck level of hydraulic fluid and top up if necessary.

MONTHLY MAINTENANCE

Apply grease to both ends of pivot head shaft.
Check blade guide assemblies for wear.
Check level of hydraulic fluid and top up as necessary.
Check condition and tension of vee belt and replace or adjust as necessary (5 speed machines only).

YEARLY MAINTENANCE

Drain coolant tank. Clean tank and pump. Refill with approximately 30 litres ($6^1/_2$ gallons) of clean coolant.

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

APPROVED LUBRICANTS	
GENERAL LUBRICATION	SHELL Tellus 68 GULF Service 51 Oil MOBIL Vactra or D.T.E. Heavy Medium Oil TEXACO Ursa p20 Oil
GREASE POINTS	SHELL R2 All Purpose Grease GULF Gulfcrown No.3 Grease MOBIL Mobilplex 48 Grease TEXACO Regal Starfak Premium 3 Grease
HYDRAULIC SYSTEM	SHELL T37 Oil GULF Harmony 43AW Oil MOBIL D.T.E. 24 Oil TEXACO Rando HDA or HD32 Oil

FITTING A BLADE.

To remove saw blade, slacken off blade tension by means of blade tensioning handle (see Fig. 4).
Raise bandwheel covers and remove blade guards and slide saw blade out of guides to remove from machine. 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.

Fig. 4

BLADE TENSIONING

To obtain correct blade tension, turn blade tensioning knob until collar allows setting slip to become engaged (see Fig. 5). Check blade tension periodically as the saw blade may stretch.

Fig. 5

CHECKING & SETTING SAW FEED PRESSURE

Raise head and close 'Feed' 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' 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 14.5 kg (32 lbs) should be obtained. If the head weight requires adjustment, raise head, remove set screw and locking nut 'E' and proceed as follows:-

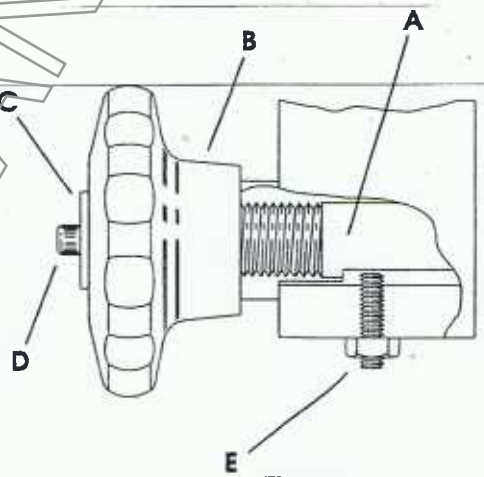


Fig. 6

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 1.8 kg (4 lbs) MINIMUM - 14.5 kg (32 lbs) MAXIMUM. When no further adjustment of the spring is possible it should be replaced.

COOLANT PUMP MAINTENANCE

With the exception of occasionally removing swarf from the pump impellor, no maintenance is required. In order to clean the pump, proceed as follows:-

Disconnect pump from mains supply.

Remove plastic screen at front of pump, then remove three indicated in Fig. 7 screws indicated and take off pump head.

IMPORTANT : DO NOT REMOVE ANY OTHER SCREWS WHICH MAY BE EXPOSED.

Clean out any swarf or chips which may have clogged the impeller, taking care to avoid the painted surface. Turn the impeller by hand to make sure it is free.

Re-connect the pump to the mains supply to make sure the impeller turns freely. If it does, disconnect pump from mains supply and replace pump head, three screws and plastic screen. Re-connect pump to mains supply. If the pump does not then run freely, it should be replaced.

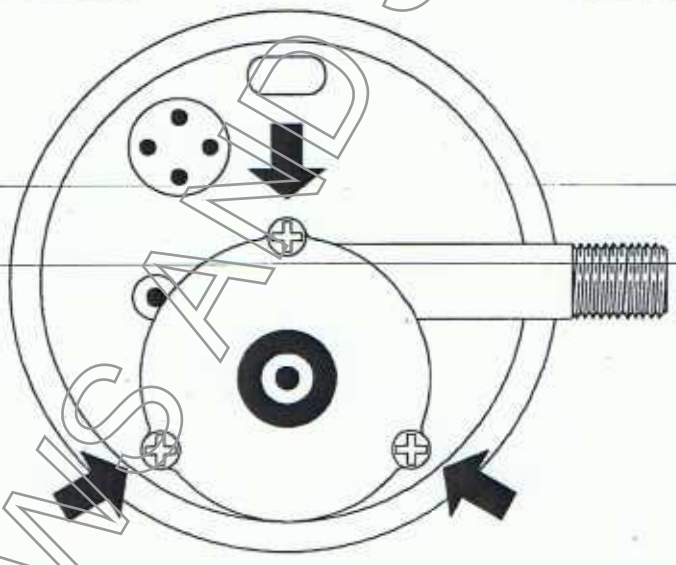


Fig. 7
NOTE: REMOVE ARROWED SCREWS ONLY

SETTING

Before making any adjustments to the machine ensure that the bow is raised in order to prevent risk of damage.

Fig. 8

BLADE GUIDE ARMS

These should be set as close as possible to the workpiece but positioned so as to clear the vice jaws as the bow is lowered. Adjustment is made by loosening the clamping handles located at the top of the blade guide arms (see Fig. 8) and sliding them along the guide bar. When correctly positioned retighten the clamping handles.

VICE JAWS

To adjust the position of the fixed vice jaw, loosen the retaining bolts and adjust to the required angle. The angle is indicated by means of a graduated scale fitted to the vice jaw. When positioned correctly retighten the retaining bolt (see Fig. 9). To clamp the workpiece in the vice, release the vice jaw by raising the vice jaw clamping lever and slide it forward until the face of the vice jaw is touching the workpiece. Lower the vice jaw clamping lever fully (see Fig. 10) to lock the vice jaw to the machine bed. Rotate the workpiece clamping lever fully clockwise (see Fig. 11) to clamp the workpiece in the vice. The clamping pressures are predetermined. To release the workpiece rotate the workpiece clamping lever anticlockwise.

Fig. 9

Fig. 10

BLADE SPEED

Variable Speed Machines Only:

Before cutting select the appropriate blade speed by rotating the blade speed adjustment knob located on the control panel (see Fig. 3) the scale is calibrated in ft/min and m/min to increase the blade speed rotate the knob clockwise. To decrease speed rotate the knob anticlockwise. The blade speed is set in accordance with the guide located on the right hand bandwheel cover of the machine.

5 Speed Machines Only:

Select appropriate blade speed by swinging aside the belt guard, pushing the motor towards the spring and placing the vee belt in the appropriate pulley grooves (see speed plate on machine). Replace belt guard (See Fig. 12) after completing the speed change.

Fig. 11

FEED SPEED

Before cutting, select the appropriate saw feed speed by rotating the feed speed adjustment knob located on the control panel (see Fig. 3). To increase the feed speed rotate the knob anticlockwise. To decrease the feed speed rotate the knob clockwise. As a guide, the saw feed speed should be set so that the bow descends at the same speed that the material is being removed. Further, the speed should be adjusted so as to prevent damage to the blade when it first contacts the workpiece, or whilst cutting workpieces that have abrupt changes in section or thin sections.

Fig. 12

FEED PRESSURE (HEAD WEIGHT)

The saw feed pressure is controlled by means of the counter balance spring tension control knob located on the left hand end of the machine bed (see Fig. 2). The saw feed pressure is set to the maximum on assembly. To reduce the feed pressure turn the control knob clockwise. As a guide sawfeed pressure should be increased as the material machineability decreases.

CUTTING

Before cutting commences ensure that all necessary adjustments have been made, all guards are in position, the workpiece is firmly clamped in the vice and that the sawblade is clear of the workpiece. The bow can be lowered by pressing the 'bow lower' button (see Fig. 3). When it reaches the desired position, release the button and the bow will cease descending. The bow will descend at the feed speed selected.

Fig. 13

To commence sawing press either the 'on' button on the control panel (see Fig. 3), or the 'on' button at the rear of the machine. The blade will move at the speed set and the bow will descend at the rate set. When the cut is complete the blade will stop automatically.

To repeat the cut, lift the bow until the blade is clear of the workpiece. There is no need to adjust the feed speed to do this, a separate non-return valve will prevent the bow from descending until either of the 'on' buttons are pressed.

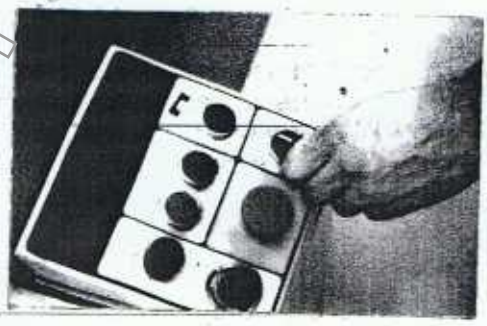


Fig. 14

The coolant will be automatically turned on when the 'on' button is pressed and off when the cut is complete. The rate of flow can be adjusted by moving the flow adjusting lever fitted to the blade guides (see Fig. 13). To turn the coolant off, select the '0' position on the coolant selector switch (see Fig. 14). A flushing nozzle is fitted as standard. This can be used when the machine is cutting by depressing the operating valve fitted to the nozzle (see Fig. 15). When the machine is not cutting it can be used by selecting the 'flush' position at the coolant selector switch and depressing the operating valve fitted to the nozzle.

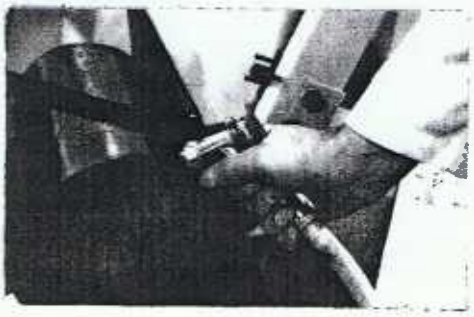


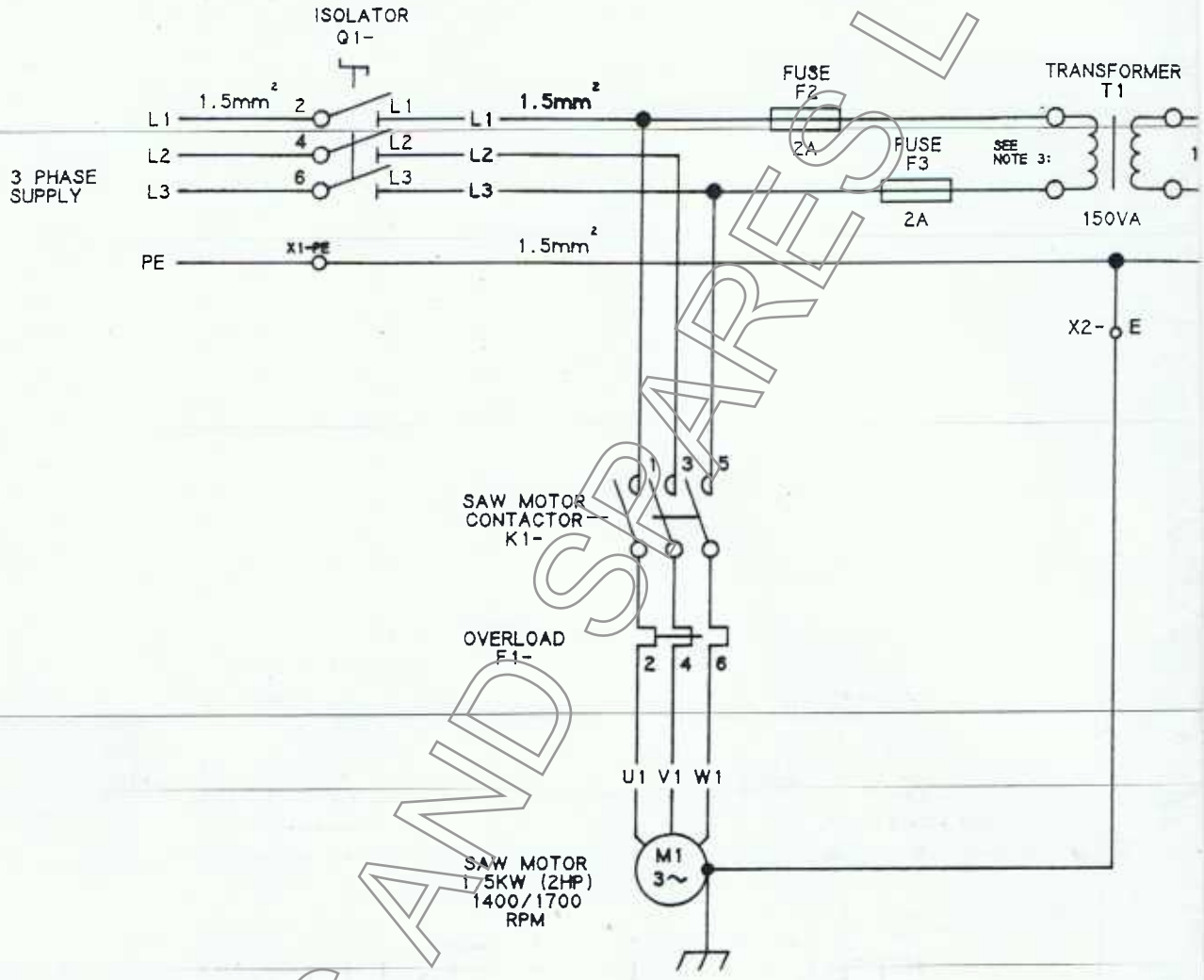
Fig. 15

When cutting is complete the isolator, fitted to the electrical box, should be switched to the off position (see Fig. 3) and all swarf removed from the swarf tray.

In the event of an emergency the 'Emergency Stop' button, fitted to the control panel or to the rear of the machine, should be pressed.
To recommence sawing, the emergency stop button must first be released by rotating clockwise and then the 'on' button will function as normal. When stopped during cutting the descent of the bow will automatically cease. This will prevent damage to blade and workpiece. Should the power fail, the machine will stop sawing. On the reconnection of power, the machine will not recommence sawing until an 'on' button is pressed. When the power has failed during cutting, the descent of the bow will automatically cease. This will prevent damage to blade and workpiece.

FAULT	PROBABLE CAUSE	SUGGESTED REMEDY
Sawblade will not cut.	1) Drive motor running in wrong direction. 2) Blade teeth facing in wrong direction. 3) Material too hard for type blade being used.	1) Swap any two supply leads. 2) Refit sawblade. 3) Fit suitable sawblade.
Blade vibrates in cut.	1) Workpiece not properly seated or securely held. 2) Guides set too close. 3) Blade speed too fast. 4) Blade pitch too coarse. 5) Insufficient blade tension.	1) Reseat and tighten vice properly. 2) Reset guides. 3) Select suitable speed. 4) Select suitable blade. 5) Check and retension blade.
Premature blade breakage.	1) Excessive feed pressure. 2) Unsuitable blade speed and/or blade selection. 3) Incorrect blade tension and/or tracking. 4) Feed speed too fast. 5) Worn or incorrectly set guides. 6) Blade joint improperly welded and annealed. 7) Workpiece not firmly clamped in vice jaws. 8) Blade overheating. 9) Chips and swarf building up on bandwheels.	1) Lighten feed pressure. 2) Check blade and speed, replace and/or reset. 3) Check tension and tracking and adjust as necessary. 4) Select suitable speed. 5) Reset guides and replace if necessary. 6) Split weld and rejoin. 7) Reclamp workpiece. 8) Check coolant flow and increase. 9) Clean bandwheels and check blade brushes, replace if necessary.
Teeth torn from blade.	1) Excessive feed pressure. 2) Blade speed too slow. 3) Blade pitch too fine. 4) Blade pitch too coarse. 5) Feed speed incorrectly set. 6) Workpiece not securely clamped in vice jaws.	1) Lighten feed pressure. 2) Select suitable speed. 3) Select suitable blade. 4) Select suitable blade. 5) Check and reset feed speed. 6) Reclamp workpiece.
Crooked cuts.	1) Excsessive feed pressure. 2) Incorrect blade tension. 3) Blade speed too slow. 4) Incorrect feed speed. 5) Worn or incorrectly set guides. 6) Blade teeth dull or pitch too fine. 7) Workpiece not securely clamped in vice jaws.	1) Select suitable feed pressure. 2) Retension blade. 3) Select suitable speed. 4) Select suitable feed speed. 5) Reset guides and replace if necessary. 6) Check and replace blade. 7) Reclamp workpiece.

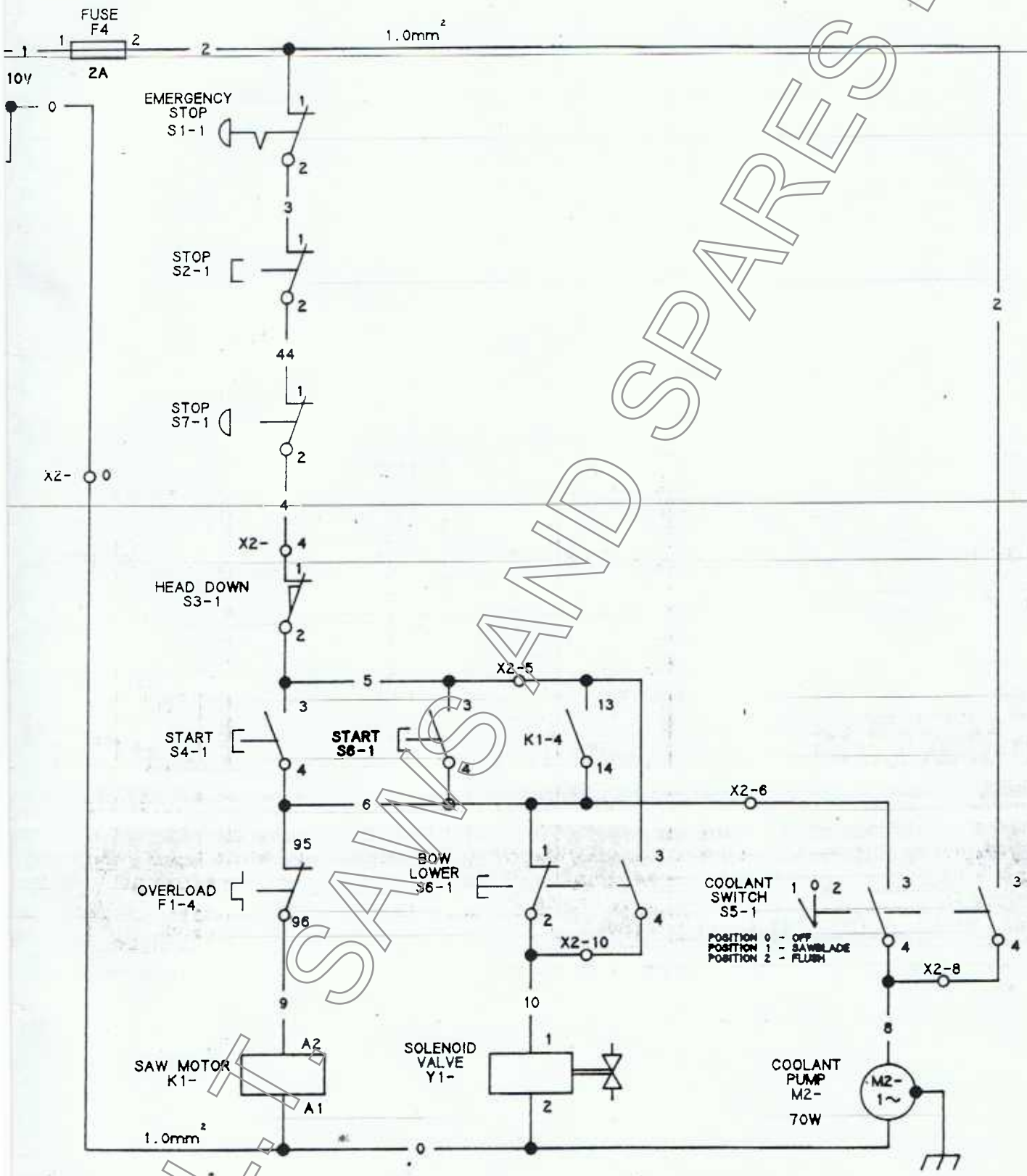
FAULT	PROBABLE CAUSE	SUGGESTED REMEDY
Blade teeth dull rapidly.	1) Blade overheating. 2) Blade speed too fast. 3) Feed speed too slow. 4) Blade pitch too coarse. 5) Feed pressure too light. 6) Material too hard for type of sawblade being used.	1) Check coolant flow and increase. 2) Select suitable speed. 3) Select suitable speed. 4) Select blade with suitable pitch. 5) Increase feed pressure. 6) Fit suitable sawblade.
Sawblade back damaged.	1) Material too hard for type of sawblade being used. 2) Tracking incorrect. 3) Carbide insert missing from one guide assembly.	1) Fit suitable sawblade. 2) Check and set tracking. 3) Check inserts and replace.
Sawblade stalls in cut.	1) Excessive feed pressure. 2) Feed speed too fast. 3) Incorrect belt tension and/or worn belt or pulleys. 4) Incorrect blade speed and/or blade selection.	1) Reduce pressure. 2) Select suitable feed speed. 3) Check and replace belt and pulleys as necessary, re-tension. 4) Check blade type and replace as necessary, reset blade speed.
Head bounces during cut.	1) Blade joint improperly welded and annealed. 2) Teeth missing from sawblade. 3) Feed pressure too light. 4) Bandwheels or pulleys loose.	1) Split weld and re-join. 2) Replace sawblade. 3) Select suitable feed pressure. 4) Check and re-tighten bandwheels and/or pulleys.
Cutting time increases.	1) Blade teeth have become dull. 2) Feed pressure too light. 3) Incorrect blade speed.	1) Replace and/or re-sharpen blade. 2) Select suitable feed pressure. 3) Select suitable blade



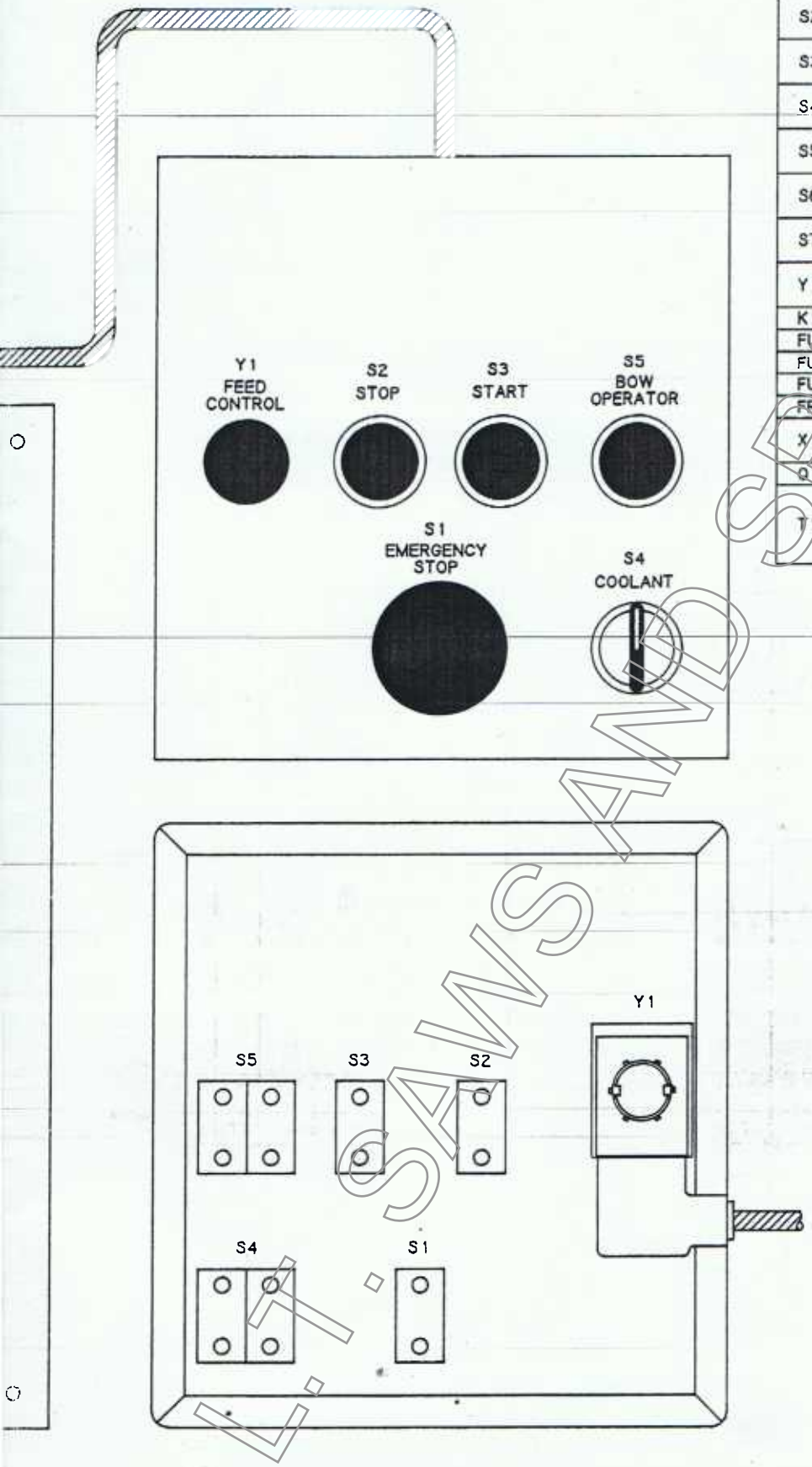
NOTE 1: CONTROL TRANSFORMER INPUT CONNECTED TO SUIT SUPPLY VOLTAGE

THREE PHASE SUPPLY			OVERLOAD SETTING
VOLTS	Hz	RECC FUSE	F1
220-240	50	10 AMP	5.0
208-230	60	10 AMP	4.8
380-415	50	6 AMP	2.9
440-480	60	6 AMP	2.8
575	60	6 AMP	2.0

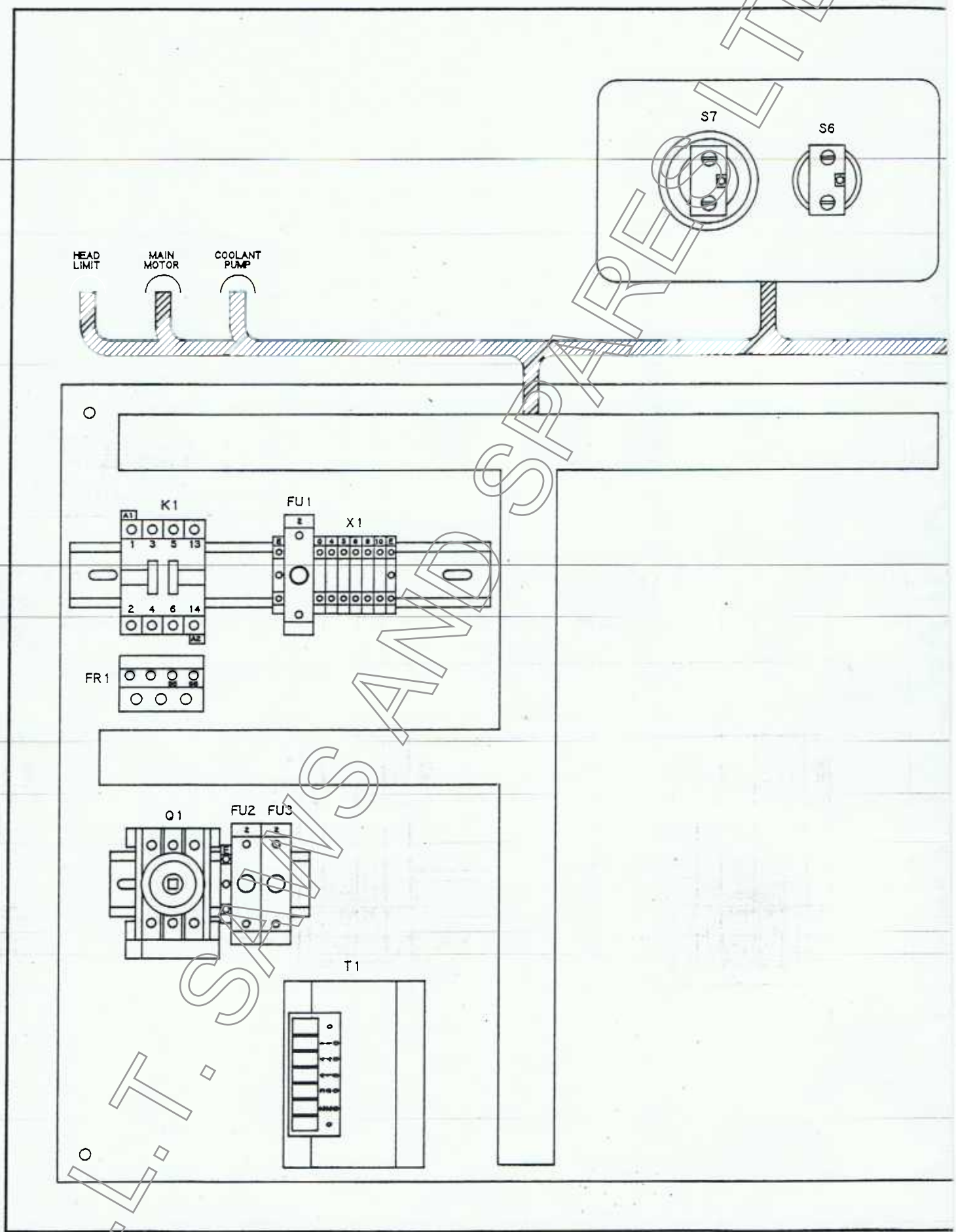
CIRCUIT DIAGRAM FOR HB225M/5S

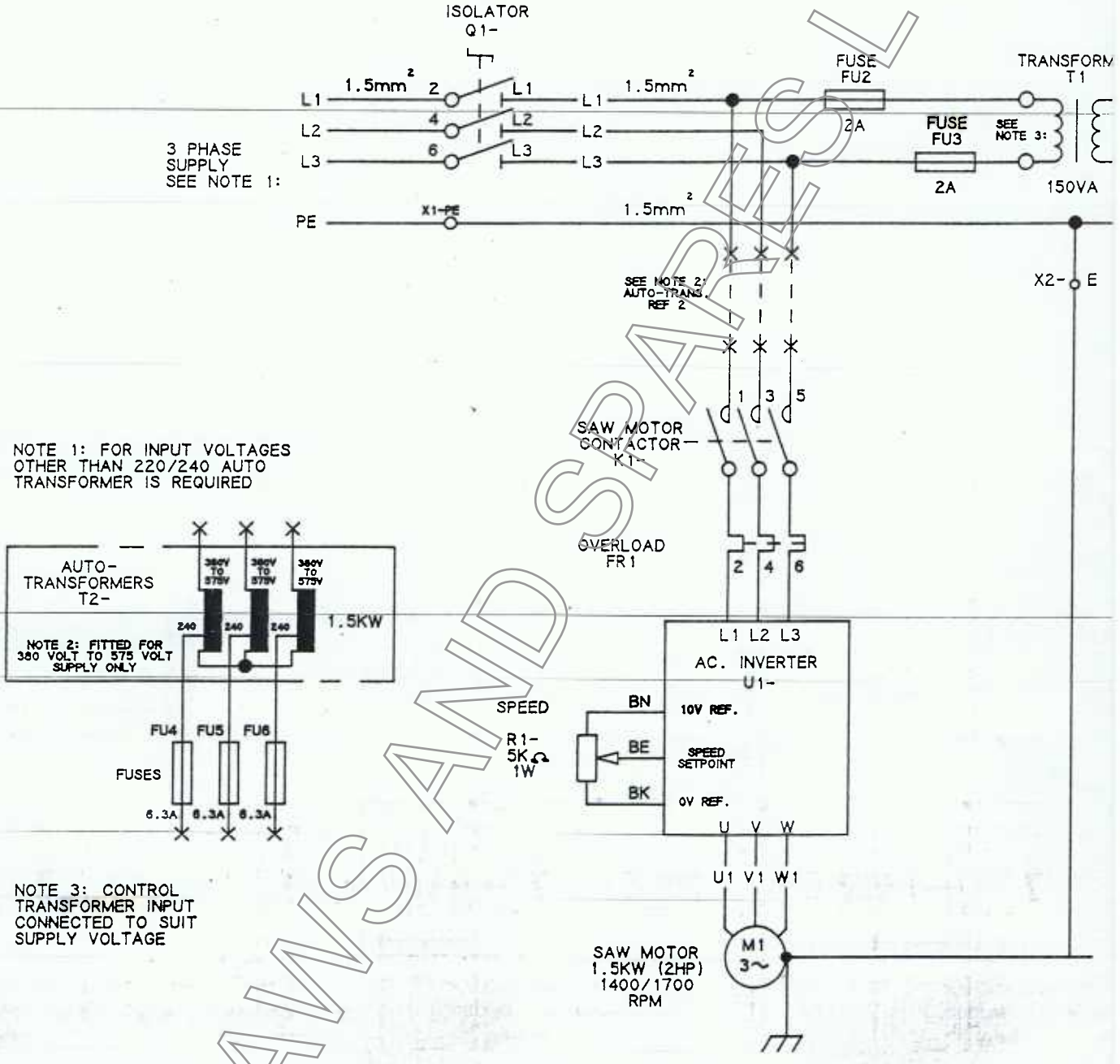


ITEM	PART No.	DESCRIPTION	No.OFF
S1	B01187	STAY PUT STOP BUTTON	1
	B01181	CONTACTOR:	1
S2	B01382	STOP BUTTON:	1
	B01181	CONTACTOR:	1
S3	B01172	START BUTTON:	1
	B01180	CONTACTOR:	1
S4	B01174	COOLANT SWITCH:	1
	B01182	CONTACTOR:	1
S5	B01269	INCH BUTTON:	1
	B01183	CONTACTOR:	1
S6	B01172	START BUTTON:	1
	B01180	CONTACTOR:	1
S7	B01173	STOP BUTTON:	1
	B01181	CONTACTOR:	1
Y1	9181	CONTROL KNOB	1
	B01208	COIL:	1
K1	B01158	CONTACTOR:	1
FU1	B06392	TERMINAL BLOCK FUSED	1
FU2	B06392	TERMINAL BLOCK FUSED	1
FU3	B06392	TERMINAL BLOCK FUSED	1
FR1	B01161	OVERLOAD	1
X1	B06396	TERMINAL BLOCK EARTHED	3
	B06394	TERMINAL BLOCK STANDARD	6
Q1	B01316	ISOLATOR SWITCH: ASEA	1
T1	B01273	TRANSFORMER: HOME MARKET	1
	B01282	TRANSFORMER: C.S.A. ONLY	1



LOCATION DIAGRAM
FOR HB225M/5S

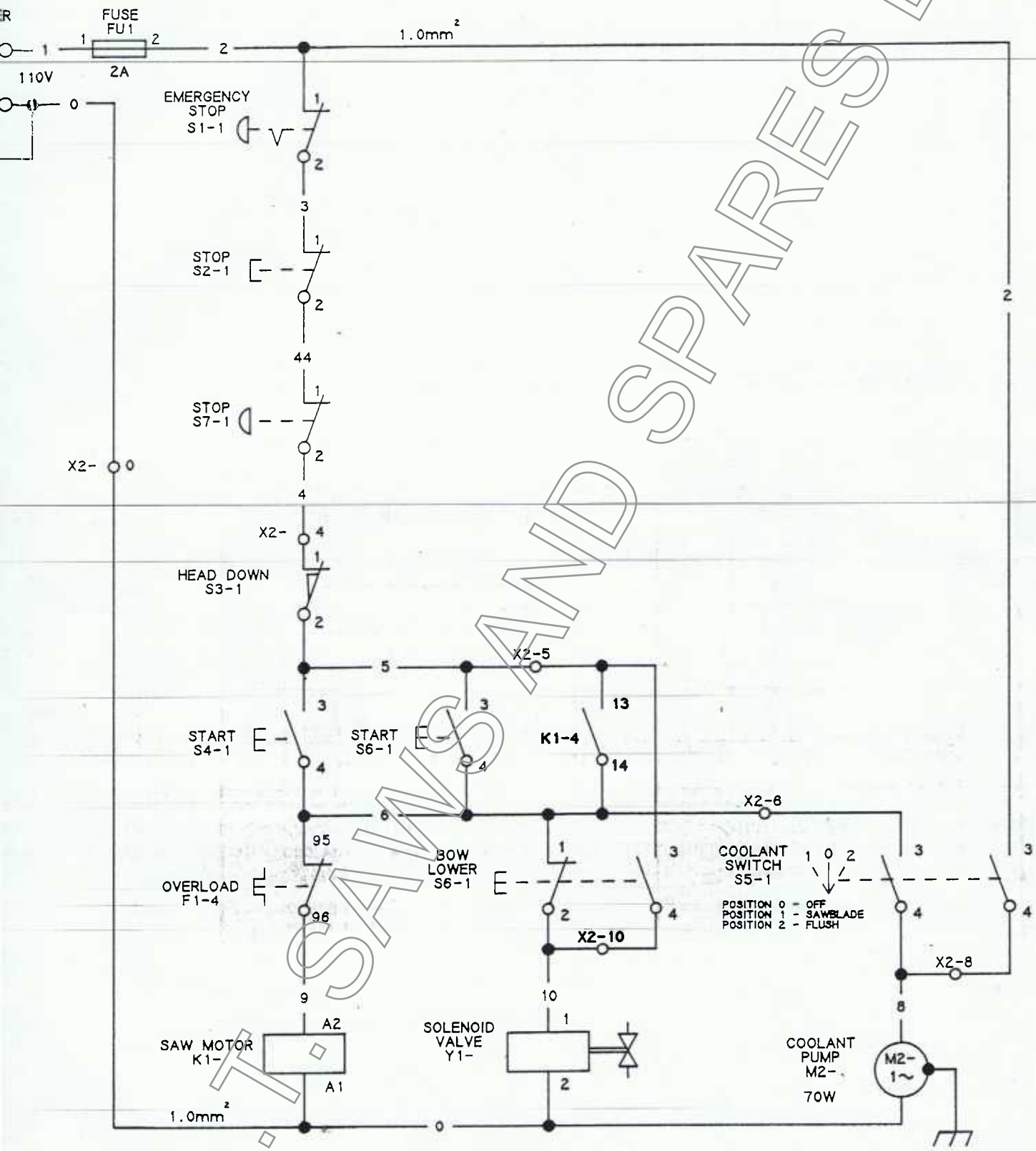


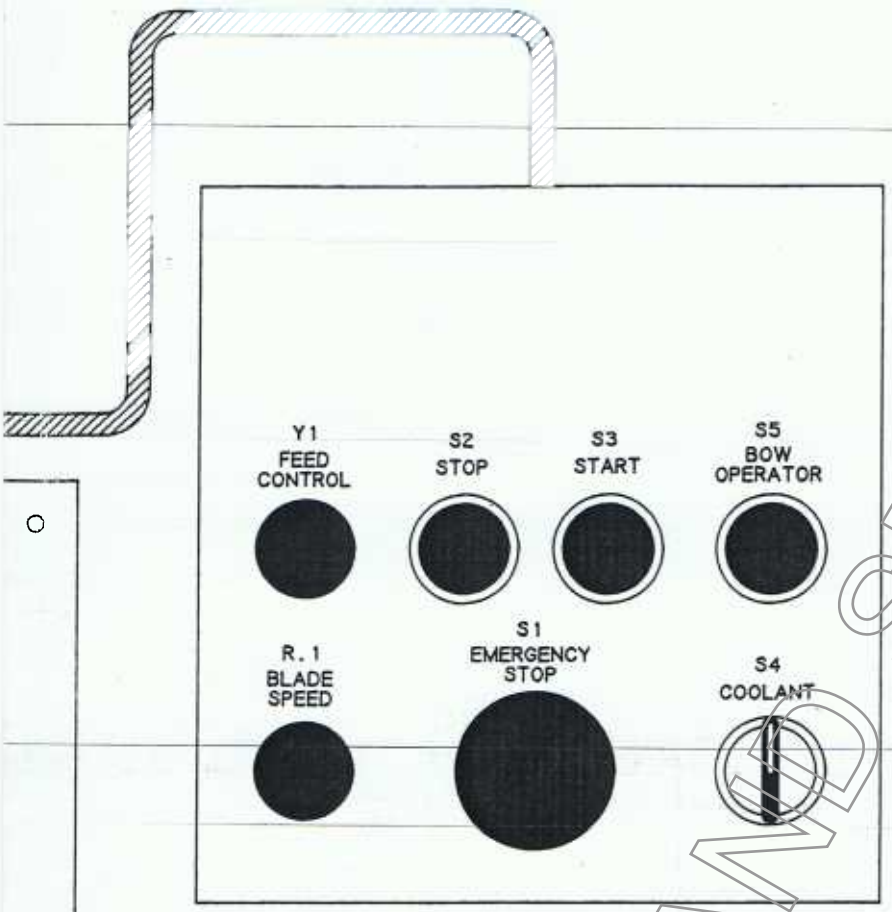


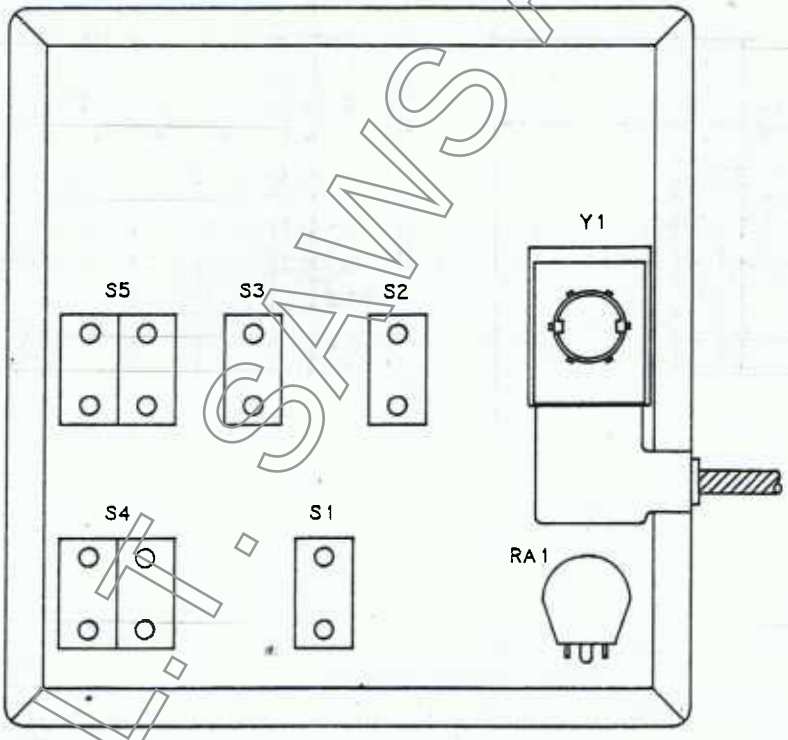
NOTE 1: FOR INPUT VOLTAGES OTHER THAN 220/240 AUTO TRANSFORMER IS REQUIRED

NOTE 3: CONTROL TRANSFORMER INPUT CONNECTED TO SUIT SUPPLY VOLTAGE

CIRCUIT DIAGRAM FOR HB250M HB330M

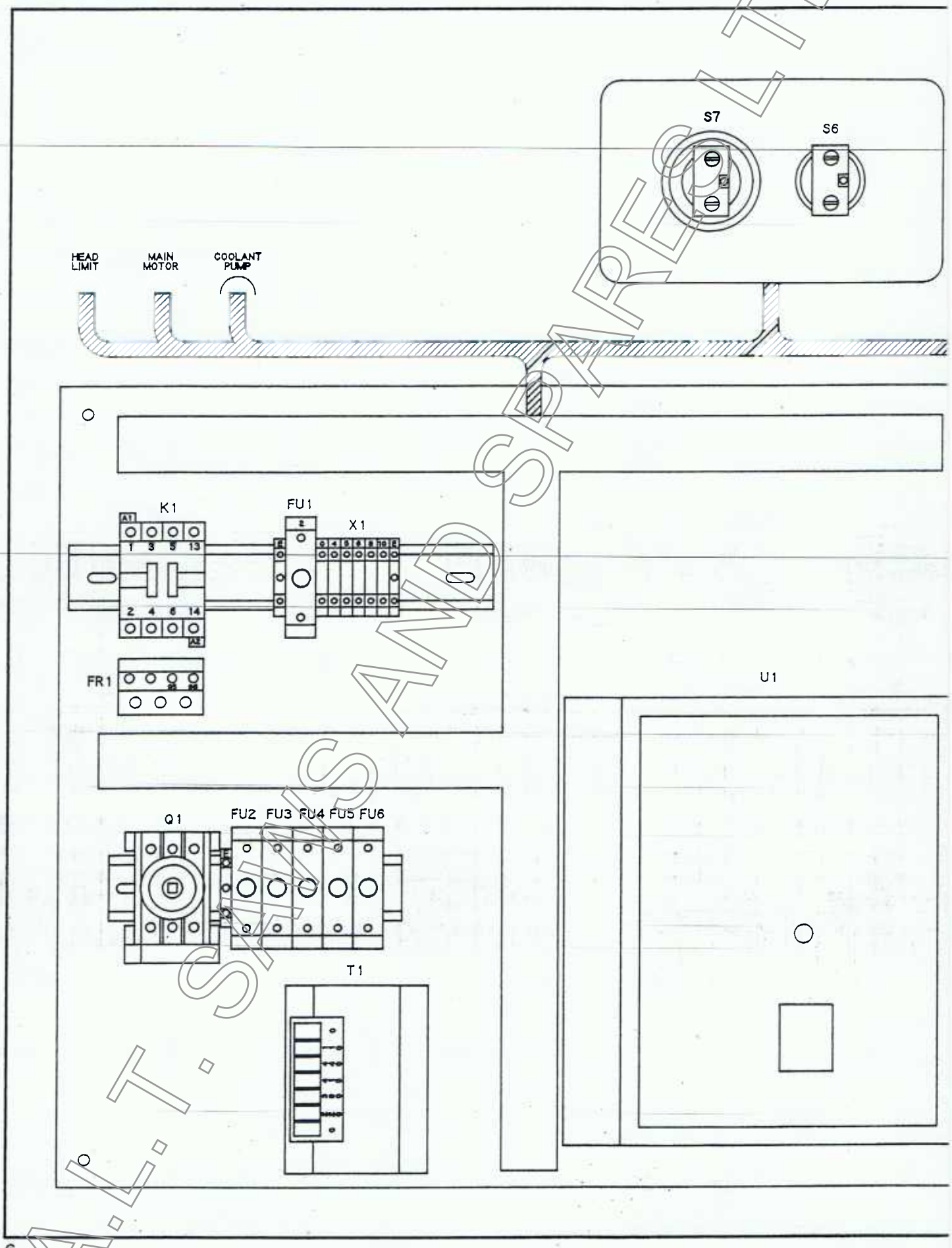




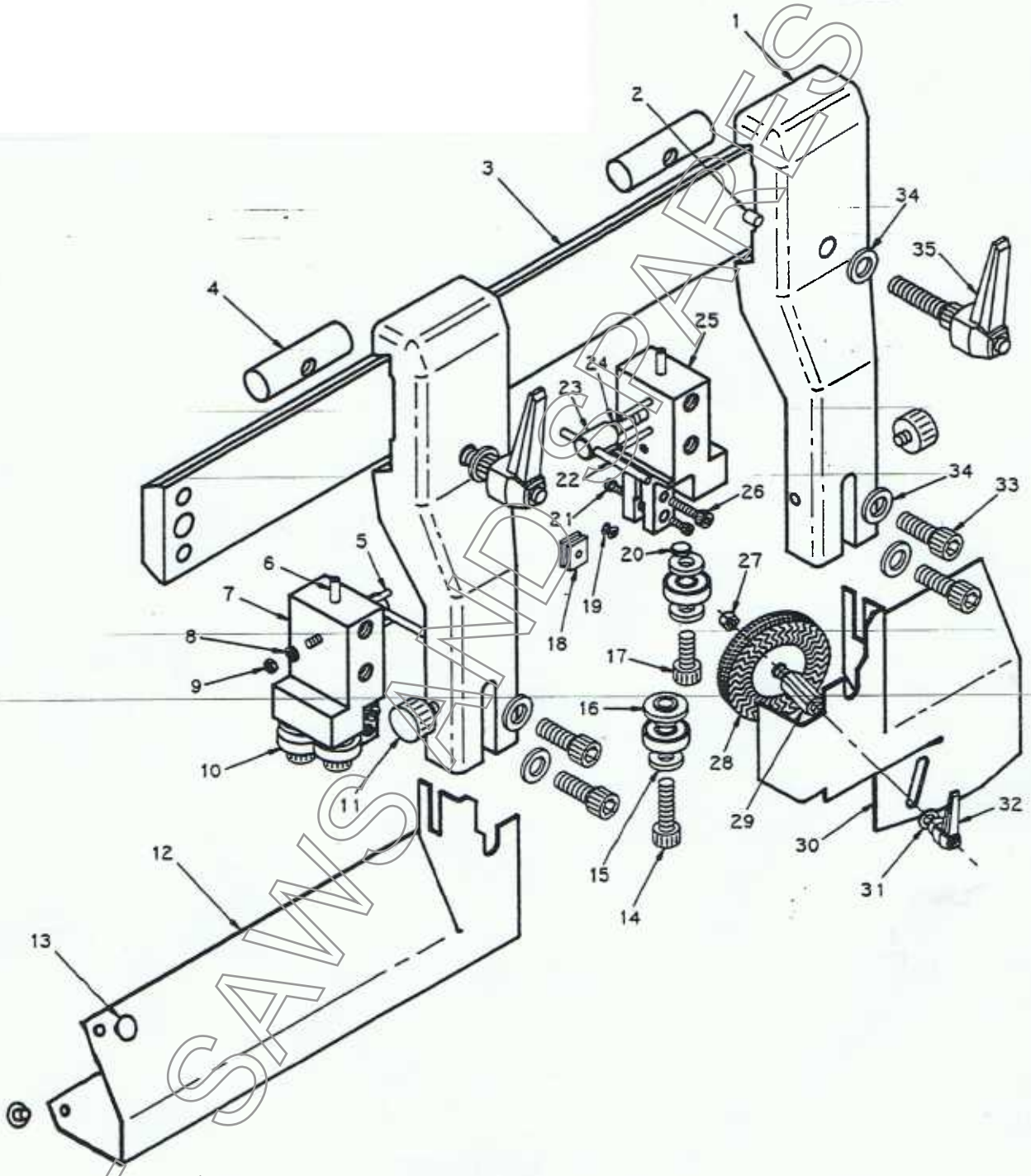


ITEM	PART No.	DESCRIPTION	No.OFF
S1	B01187	STAY PUT STOP BUTTON	1
	B01181	CONTACTOR:	1
S2	B01382	STOP BUTTON:	1
	B01181	CONTACTOR:	1
S3	B01172	START BUTTON	1
	B01180	CONTACTOR:	1
S4	B01174	COOLANT SWITCH:	1
	B01182	CONTACTOR:	1
S5	B01269	INCH BUTTON:	1
	B01183	CONTACTOR:	1
S6	B01172	START BUTTON:	1
	B01180	CONTACTOR:	1
S7	B01173	STOP BUTTON:	1
	B01181	CONTACTOR:	1
RA1	9181	CONTROL KNOB	1
	B01364	POTENTIOMETER	1
Y1	9181	CONTROL KNOB	1
	B01208	COIL:	1
K1	B01158	CONTACTOR:	1
FU1 TO FU6	B06392	TERMINAL BLOCKS FUSED	6
FR1	B01161	OVERLOAD:	1
	B06396	TERMINAL BLOCK EARTHED	3
X1	B06394	TERMINAL BLOCK STANDARD	6
Q1	B01316	ISOLATOR SWITCH:	1
T1	B01273	TRANSFORMER: HOME MARKET	1
	B01282	TRANSFORMER: C.S.A. ONLY	1
U1	B06230	INVERTER:	1

LOCATION DIAGRAM
FOR HB250M/HB330M

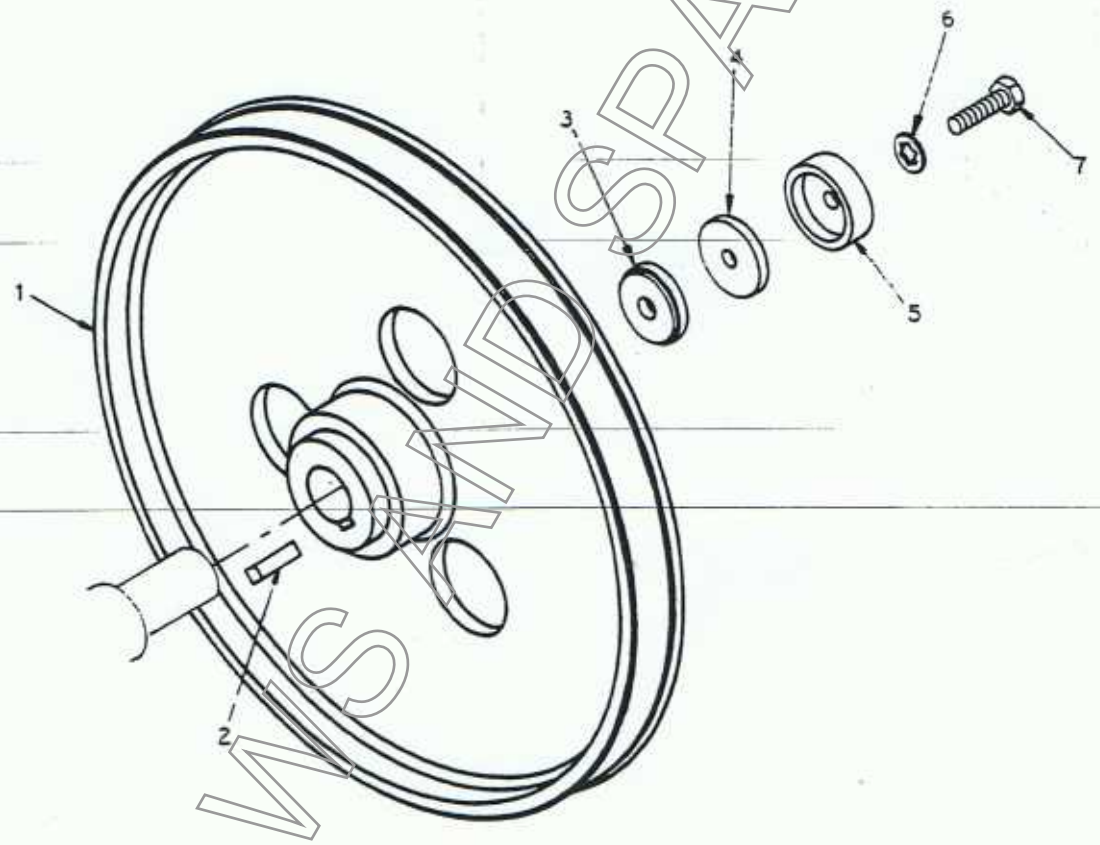


SECTION 746



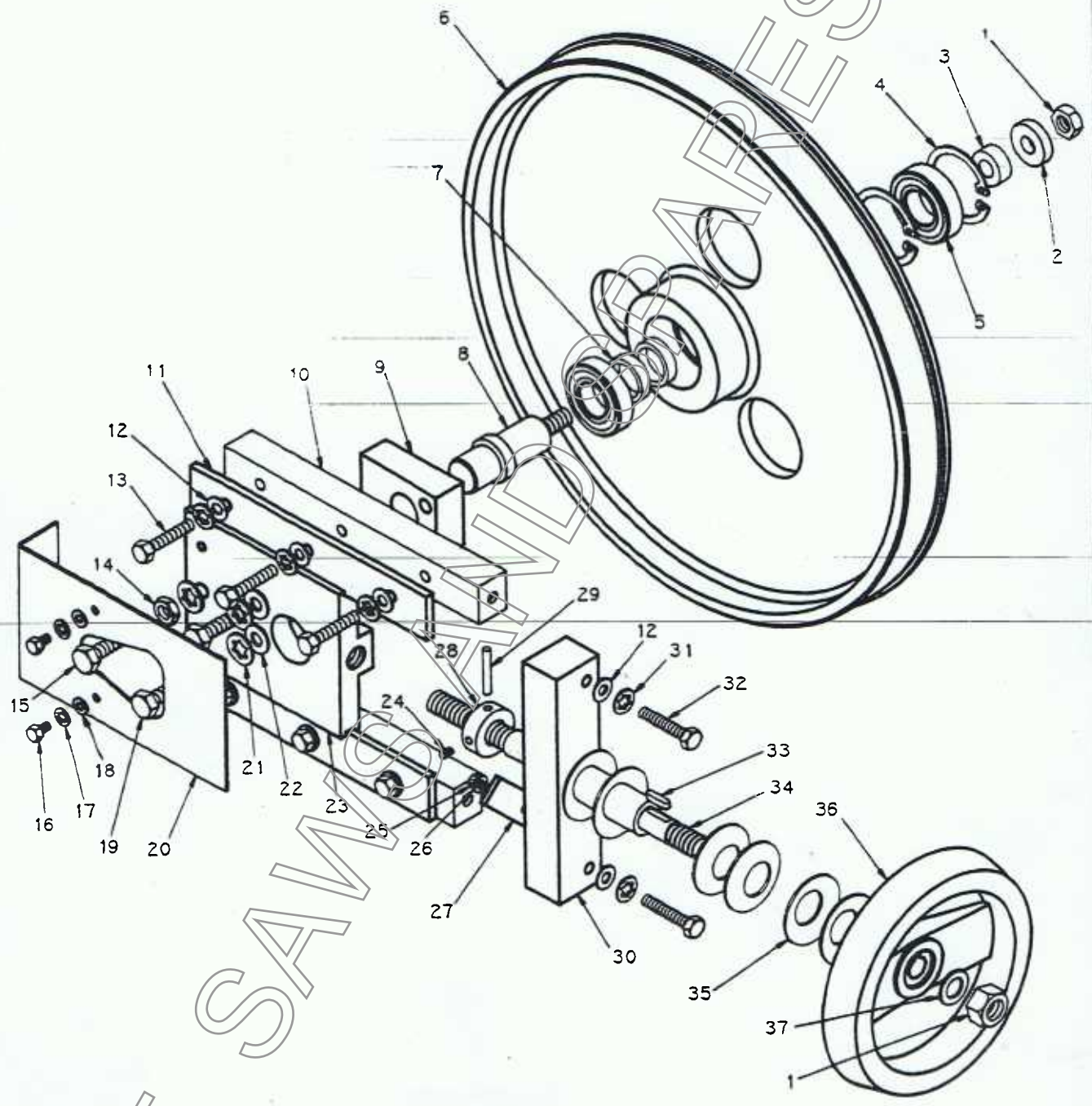
BLADE GUIDES, GUARDS AND BLADE BRUSH

ITEM	PART No.	DESCRIPTION	No. OFF
1	9776	Guide Arm HB330 Only	2
	9777	Guide Arm HB225/HB250	2
2	BO5356	Sel Loc	1
3	9703	Guide Rail	1
4	9702	Guide Arm Lock BAR	2
5	BO5341	Sel Loc	4
6	6400	Connector	2
7	9705	Guide Body L.H.	1
8	BO5913	Washer	2
9	BO5773	Binx Nut	2
10	BO2025	Bearing:	4
11	6638	Thumb Screw	2
12	SM2597	L.H. Blade Guard	1
13	BO6305	Rubber Plug:	2
14	BO5087	Cap Screw	2
15	BO5919	Washer	6
16	6062	Spacer Roller - HB225/HB250	2
	9387	Spacer Roller - HB330 Only	2
17	BO5086	Cap Screw	2
18	6393	Blade Guide Insert	4
19	6394	Conical Nut	4
20	6068	Round Carbide Pad	2
21	BO5046	Cap Screw	4
22	9351	Pivot Pin	2
23	9540	Coolant Nozzle	2
24	BO2252	'O' Ring:	4
25	9706	Guide Body R.H.	1
26	BO5070	Cap Screw	2
27	BO5774	Binx Nut	1
28	BO2565	Brush	1
29	9744	Blade Brush Pivot	1
30	SM2596	R.H. Blade Guide	1
31	BO5916	Washer	1
32	BO2617	Handle:	1
33	BO5092	Cap Screw	4
34	BO5921	Washer	8
35	BO2619	Handle:	2



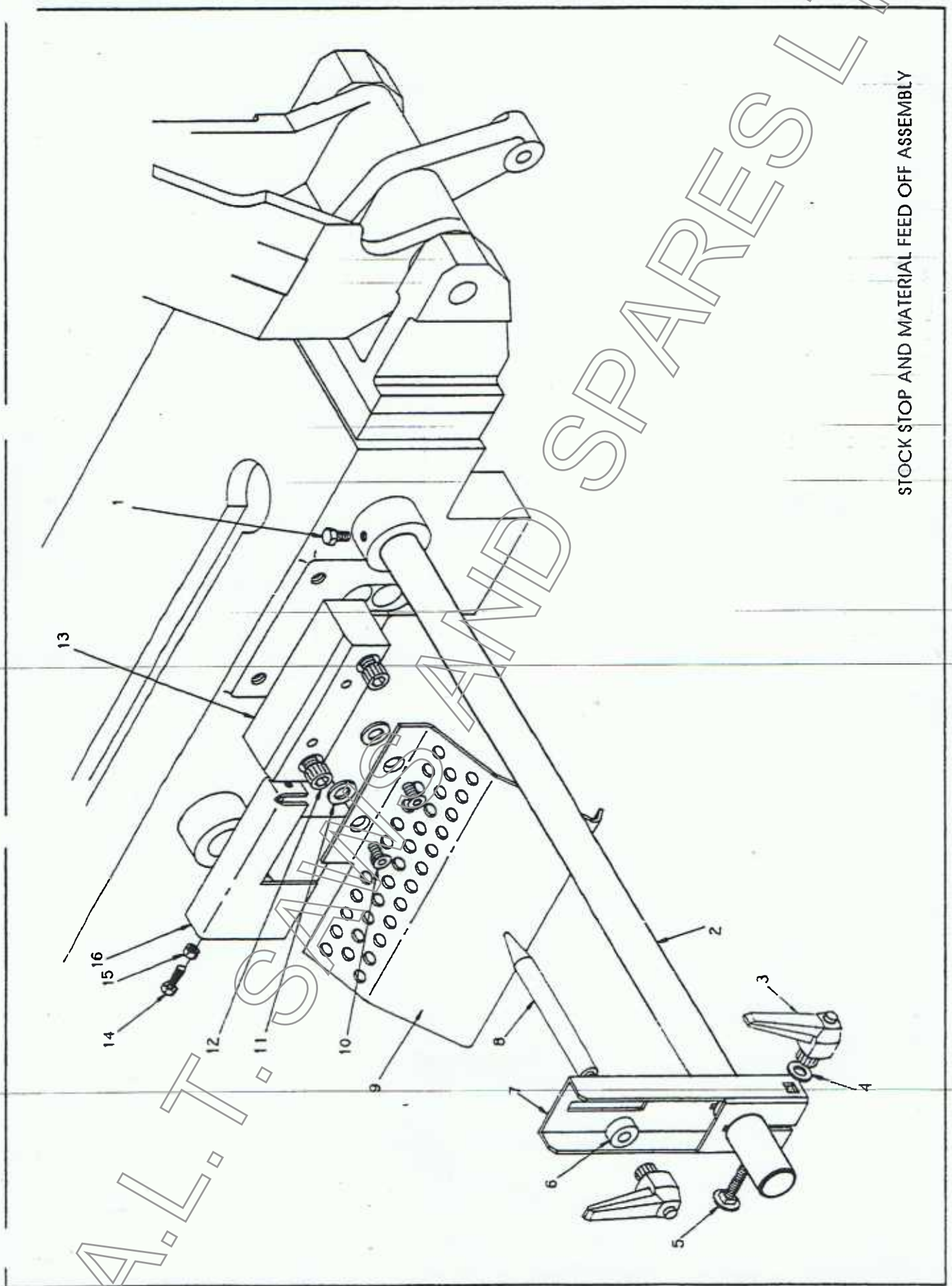
BANDWHEEL - DRIVE END

ITEM	PART No.	DESCRIPTION	No.OFF
1	5961/A	Drive Bandwheel - HB225/HB250	1
	9370	Drive Bandwheel - HB330	1
2	5962	Key	1
3	4333	washer - 5 Speed Machines Only	1
4	9678	Bandwheel Retaining Washer - HB250 Only	1
5	9679	Bandwheel Retaining Washer - HB330 Only	1
6	BO5946	Washer - HB225 Only	1
	BO5945	Washer - HB250/HB330	1
7	BO5579	Hex Screw - HB225 Only	1
	BO5575	Hex Screw - HB250/HB330	1



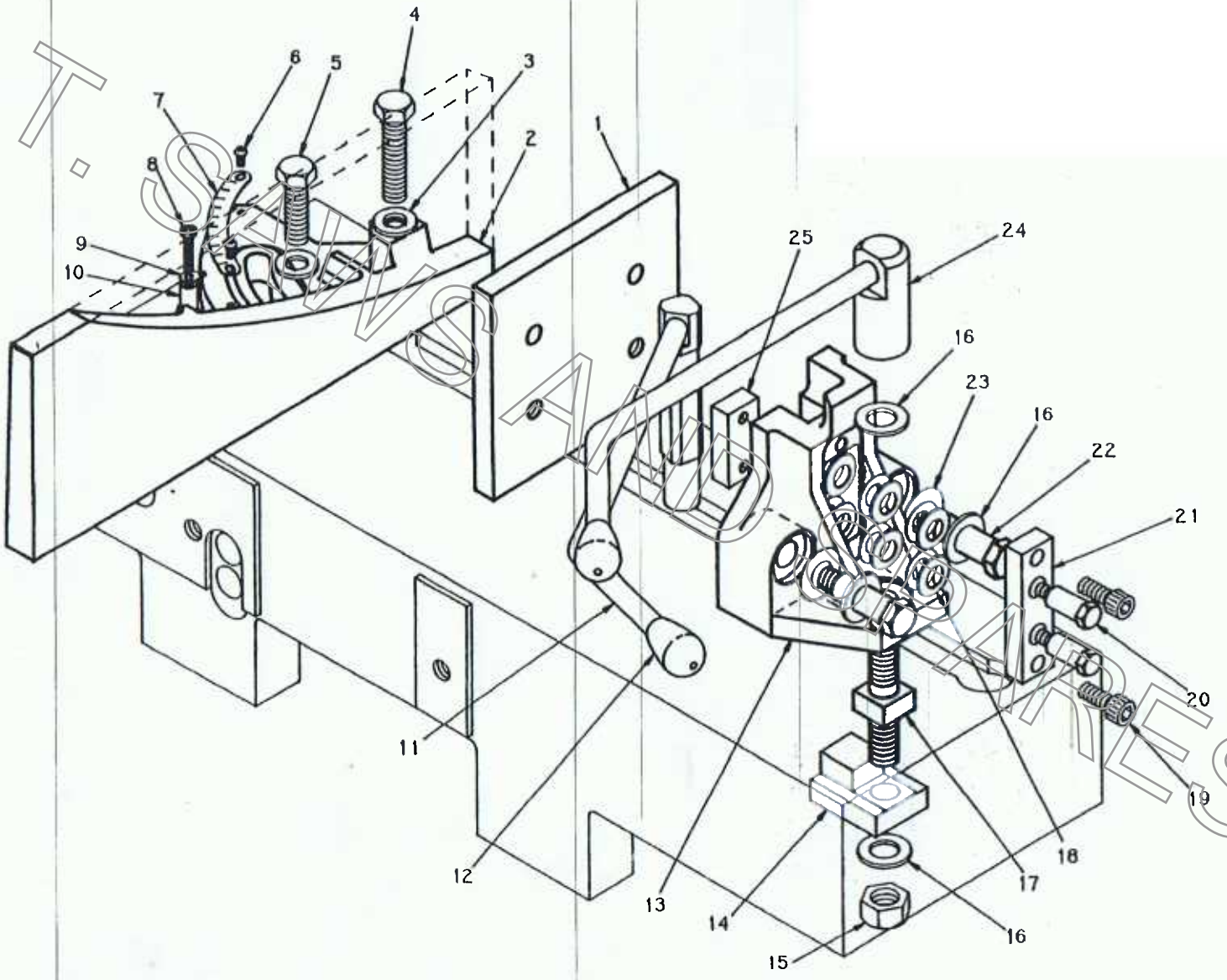
TENSIONING AND TRACKING

ITEM	PART No.	DESCRIPTION	No.OFF
1	BO5774	Binx Nut	2
2	6048	Washer	1
3	5993	Sleeve - HB330 only	1
4	BO6041	Internal Circlip	2
5	BO2006	Bearing	2
6	5961/B	Tension Bandwheel - HB225/HB250	1
	9371	Tension Bandwheel - HB330	1
7	6047	Bearing Spacer - HB225/HB250	1
	6047	Bearing spacer - HB330	2
8	5985	Spigot	1
9	5984	Tracking Block	1
10	9822	Guide Block	2
11	5986	Guide Gib	2
12	BO5017	Washer	8
13	BO5566	Hex Screw	6
14	BO5754	Lock Nut	1
15	BO5574	Hex Screw	1
16	BO5067	Hex Screw	2
17	BO5943	Washer	2
18	BO5915	Washer	2
19	BO5575	Hex Screw	2
20	8388	Guide Tension Plate	1
21	BO5945	Washer	3
22	BO5919	Washer	2
23	5979	Tension Guide Plate	1
24	BO5186	Set Screw	1
25	BO5061	Cap Screw	1
26	BO5913	Washer	1
27	6098	Tension Gauge	1
28	5990	Tension Collar	1
29	BO5358	Sel Loc	1
30	5988	Spindle Plate	1
31	BO5944	Washer	8
32	BO5567	Hex Screw	2
33	1148	Key	1
34	5989/A	Tension Spindle	1
35	BO2243	Discspring	6
36	9768	2 Spoke Handwheel	1
37	BO5922	Washer	1



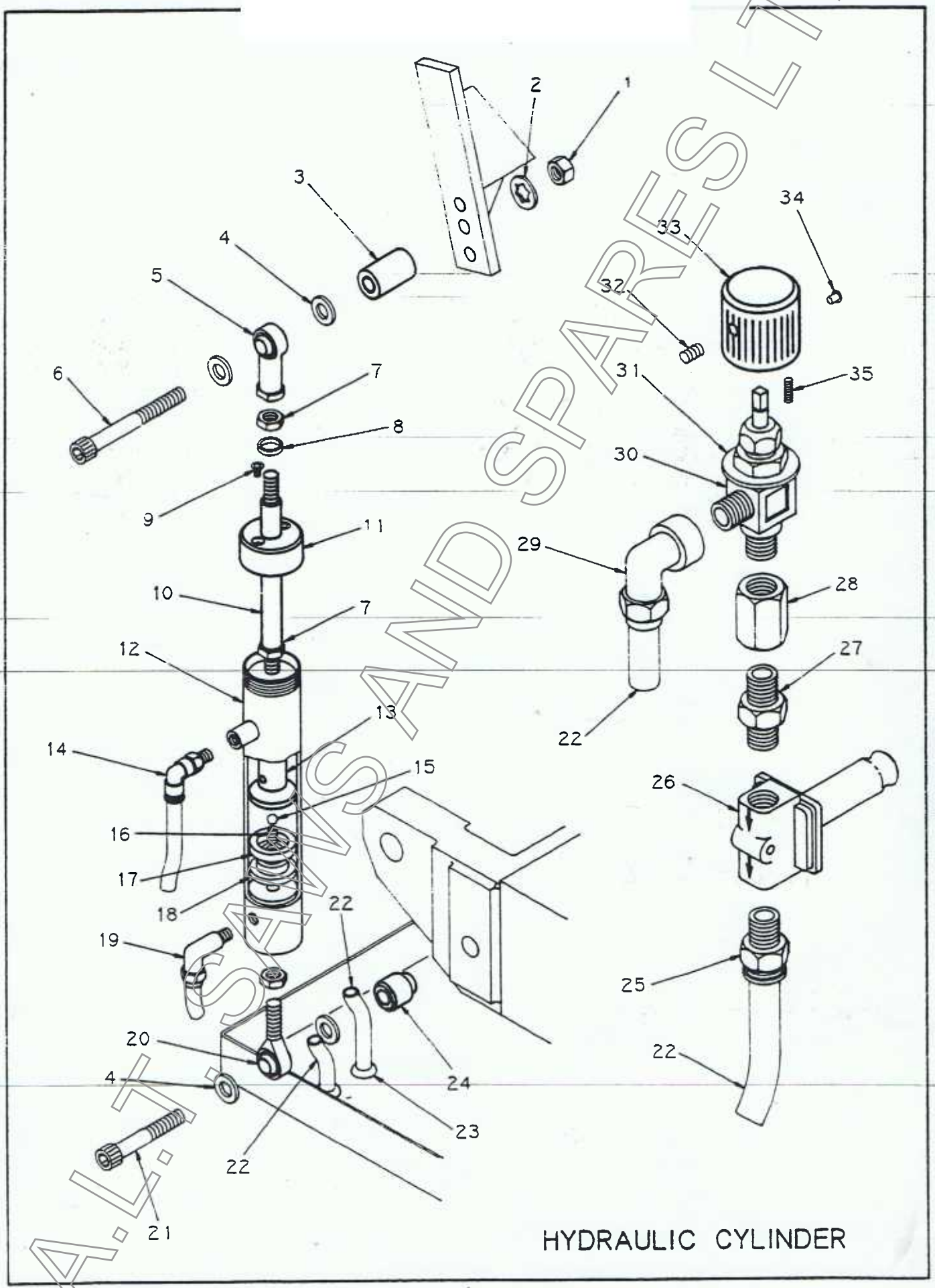
STOCK STOP AND MATERIAL FEED OFF ASSEMBLY

ITEM	PART No.	DESCRIPTION	No. OFF
1	BO5562	Hex Screw	1
2	6392/A	Work Stop Shaft	1
3	BO2554	Adjusting Handle	2
4	BO5919	Washer	
5	BO5628	Coach Bolt	1
6	6313	Spacer	1
7	SM1367	Bar Stop Welded Assembly	1
8	6419	Stop Bar	1
9	6413	Feed Plate	1
10	BO5270	Countersunk Screw	2
11	BO5921	Washer	2
12	BO5095	Cap Screw	2
13	6362/B	Support Block	1
	HB330 ONLY		
14	BO5555	Hex Screw	1
15	BO5714	Full Nut	1
16	SM2264	Material Support	1



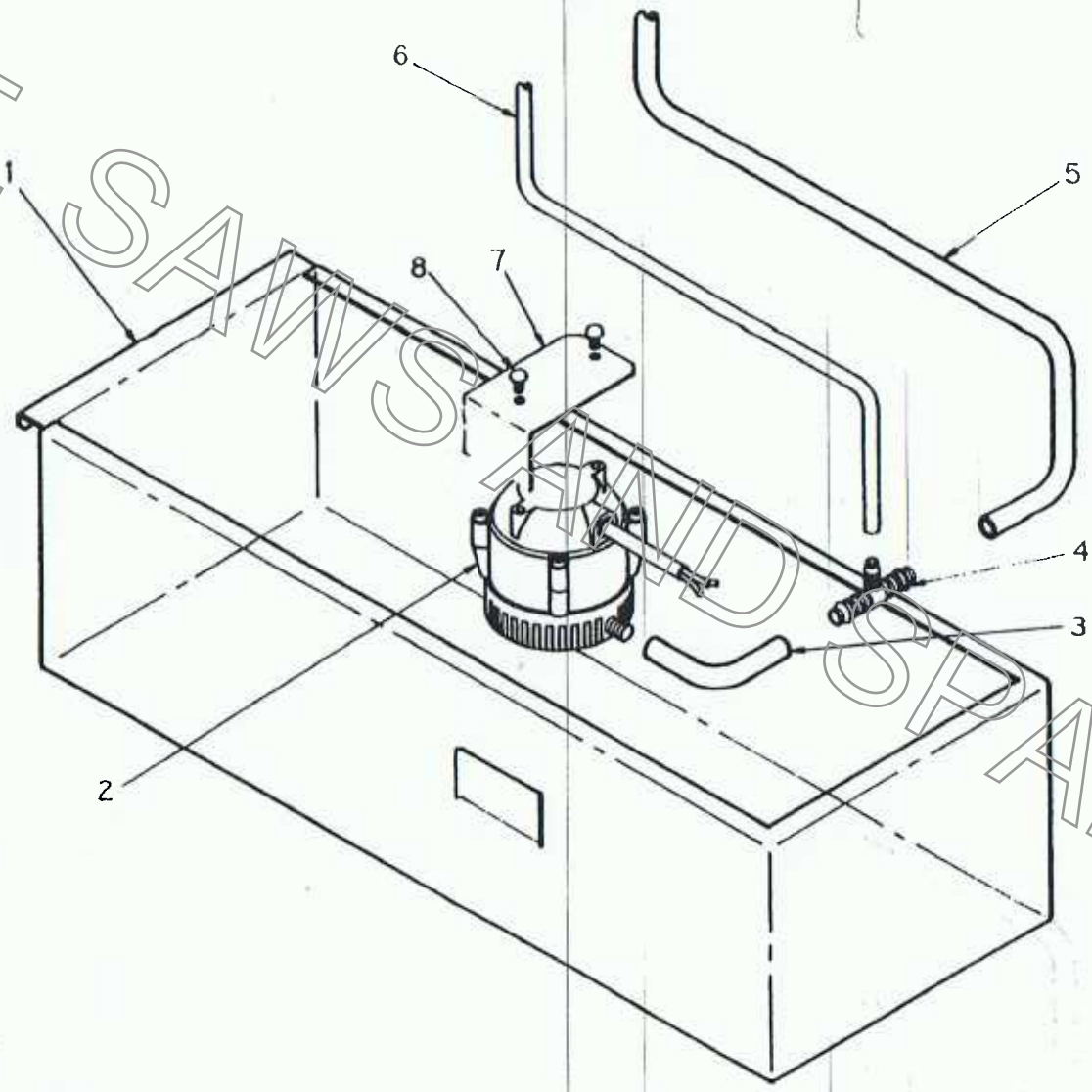
VICE ASSEMBLY

ITEM	PART No.	DESCRIPTION	No.OFF
1	9817	Vice Jaw - Quick Release Vice	1
2	9713	Vice Jaw - Fixed	1
3	BO5922	Washer	2
4	BO5587	Hex Screw	1
5	BO5585	Hex Screw	1
6	BO5415	Phillips Screw	2
7	5916	Indicator Segment	1
8	BO5399	Phillips Screw	1
9	2812	Pointer	1
10	5959/A	Pillar	1
11	SM2680	Vice Actuator Assy.	1
12	BO2618	Handle:	2
13	9818	Vice Body	1
14	9814	Tenon Block	1
15	BO7039	Bin Nut	1
16	BO5923	Washer	4
17	9813	Clamp Stud	1
18	BO2245	Discspring:	12
19	BO5086	Cap Screw	2
20	9853	Guide Bar	2
21	9816	Fixing Plate	1
22	9812	Guide Pin, Vice Jaw	2
23	BO7040	Wave Spring Washer	2
24	SM2681	Vice Clamp Assy.	1
25	9619	Reaction Block	1



HYDRAULIC CYLINDER

ITEM	PART No.	DESCRIPTION	No OFF
1	BO5717	Full Nut	1
2	BO5946	Washer	1
3	9545	Cylinder Spacer To - HB225/HB250	1
	9433	Hydraulic Cylinder Spacer Upper - HB330 Only	1
4	BO5921	Washer	4
5	BO2037	Rod End:	1
6	BO5098	Cap Screw - HB330 Only	1
	BO5097	Cap Screw HB225/HB250	1
7	BO5755	Locknut	3
8	BO2279	'O' Ring:	1
9	BO5264	Countersunk Screw	2
10	6024	Piston Rod	1
11	5890	Cylinder Cap - Manual	1
12	SM1206	Cylinder - Welded Assembly	1
13	6287	Piston	1
14	BO2496	Quick Release Elbow	1
15	BO2103	Steel Ball:	1
16	5826	Compression Spring	1
17	BO2274	'U' Ring:	1
18	6288	Piston Nut	1
19	BO2421	Male Stud Elbow	1
20	BO2036	Rod End:	1
21	BO5097	Cap Screw	1
22	BO6384	Black Tube	1.9
23	BO6308	Grommet	2
24	9384	Spacer - Cylinder	1
25	BO2497	Quick Release Straight	1
26	BO1213	Valve Body:	1
27	BO2412	Male Stud	1
28	BO2495	Adaptor	1
29	BO2418	Female Stud Elbow	1
30	BO2466	Control Valve:	1
31	BO5922	Washer	1
32	BO5186	Set Screw	1
33	9581	Control Knob	1
34	BO5870	Drive Screw	1
35	BO5220	Set Screw	1

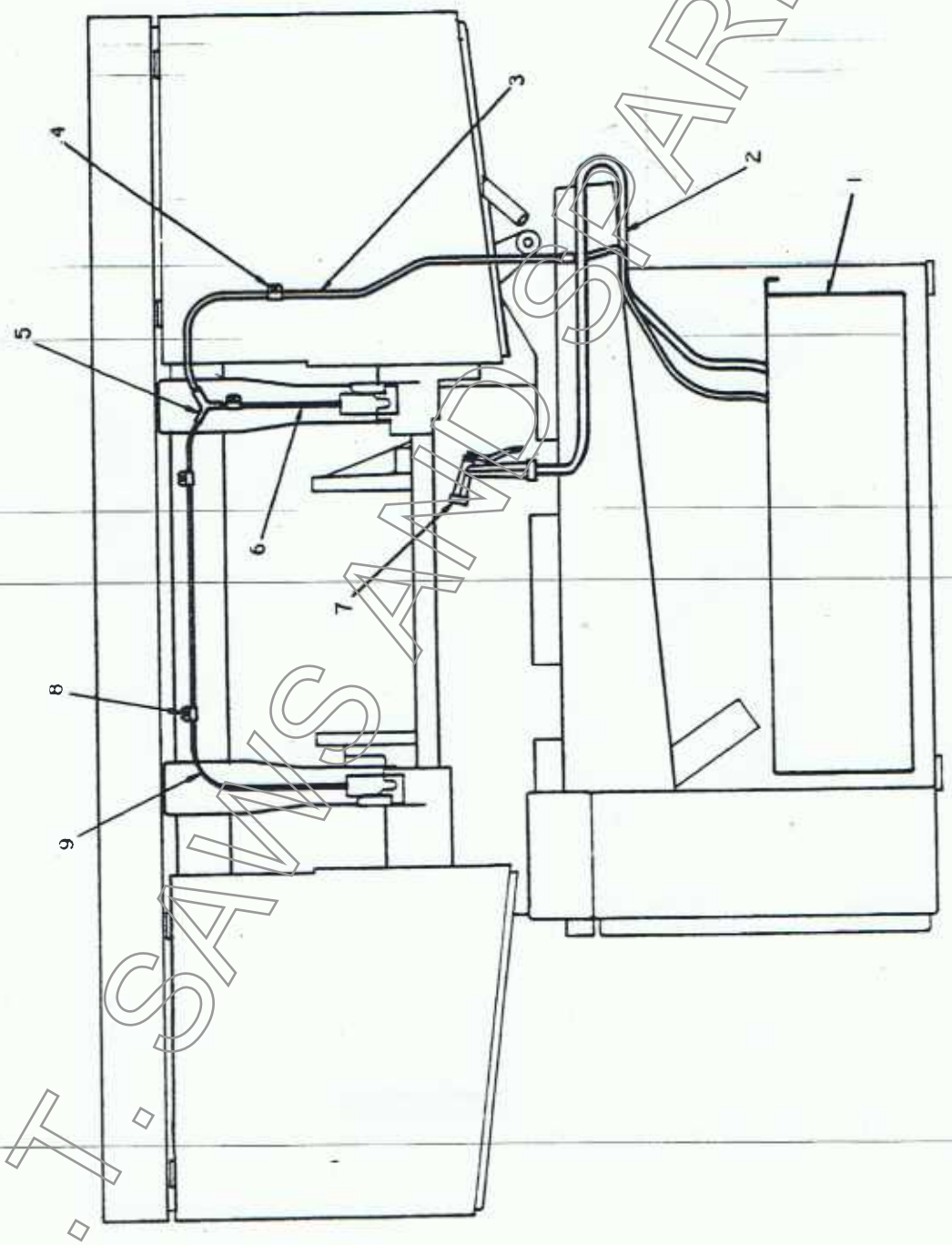


COOLANT TANK

COOLANT TANK

SECTION 754

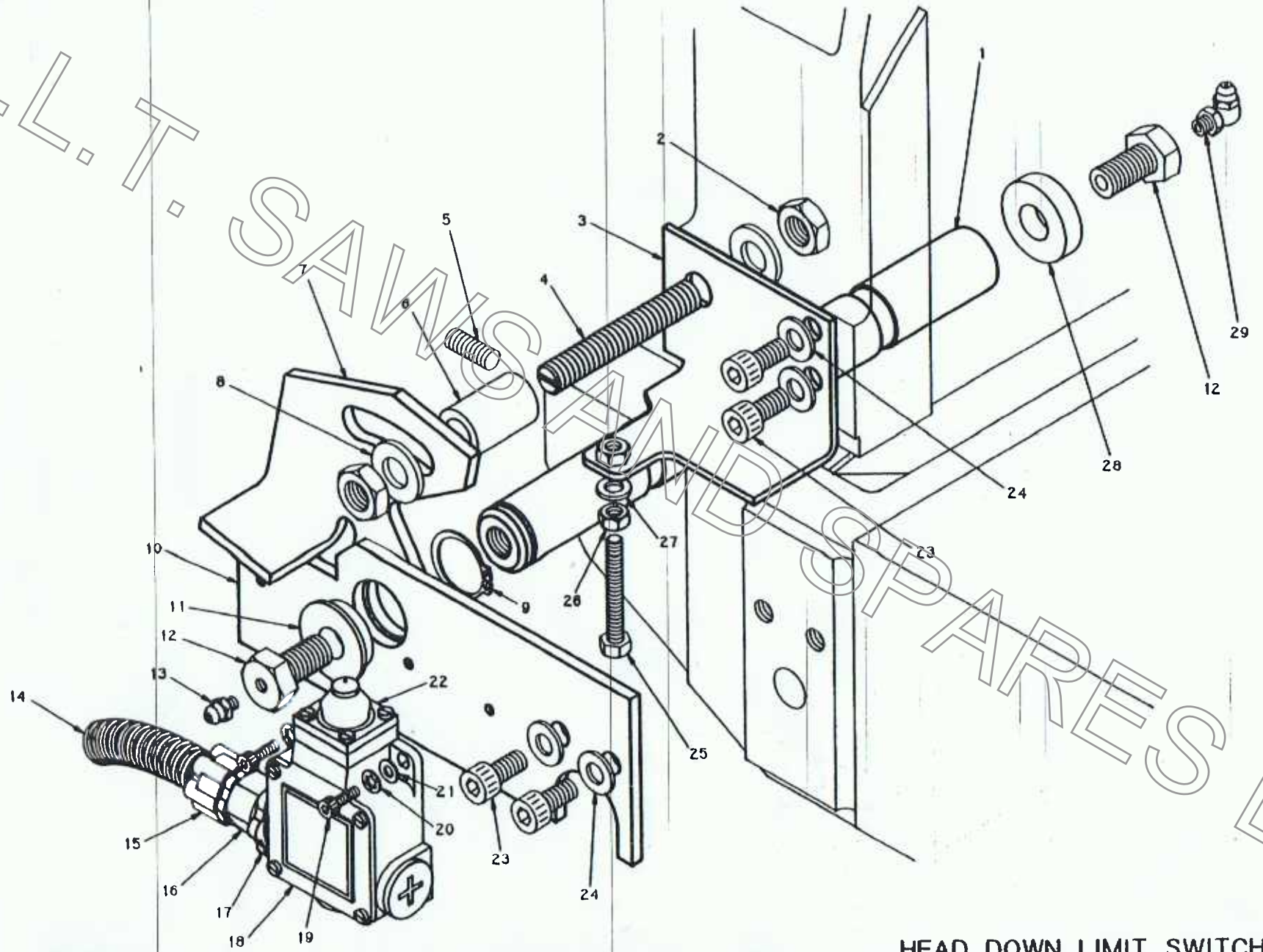
ITEM	PART No.	DESCRIPTION	No.OFF
1	SM2327	Coolant Tank	1
2	BO2464	Pump	1
3	BO6379	Clear Tube	0.08
4	BO2490	T Adaptor	1
5	BO6379	Clear Tube	2.14
6	BO6378	Clear Tube	1.83
7	6505	Pump Bracket	1
8	BO5858	Self Tap	2



COOLANT LAYOUT

COOLANT LAYOUT

ITEM	PART No.	DESCRIPTION	No OFF
1	SM2327	Coolant Tank	1
2	BO6379	Clear Tube	2.14
3	BO6378	Clear Tube	1.83
4	BO6401	Tube Clip	5
5	BO2488	'Y' Stem	1
6	BO6377	Clear Tube	0.36
7	BO2487	Coolant Nozzle	1
8	BO5452	Domed Screw	5
9	BO6377	Clear Tube	0.81

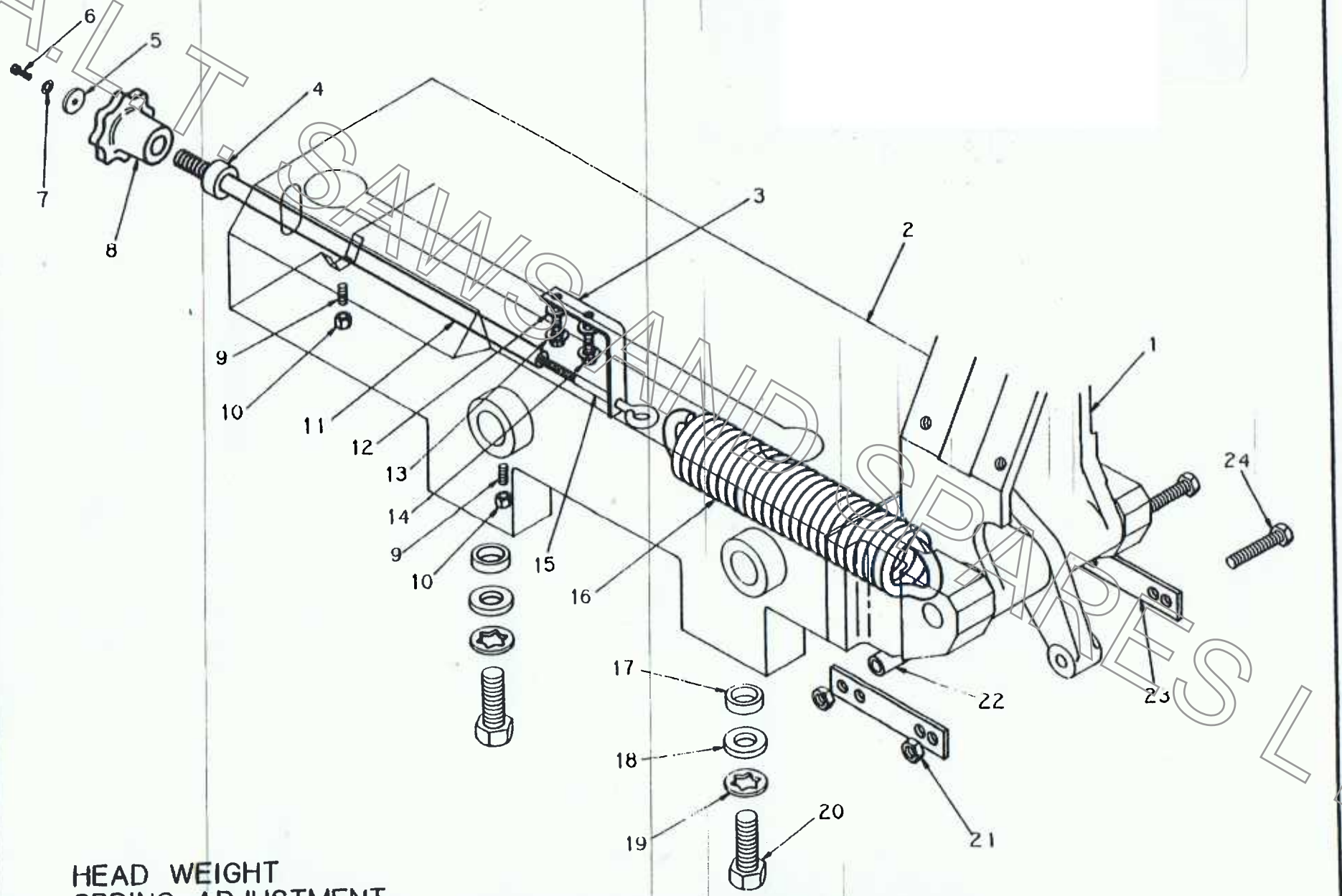


HEAD DOWN LIMIT SWITCH

HEAD DOWN LIMIT SWITCH

SECTION 756

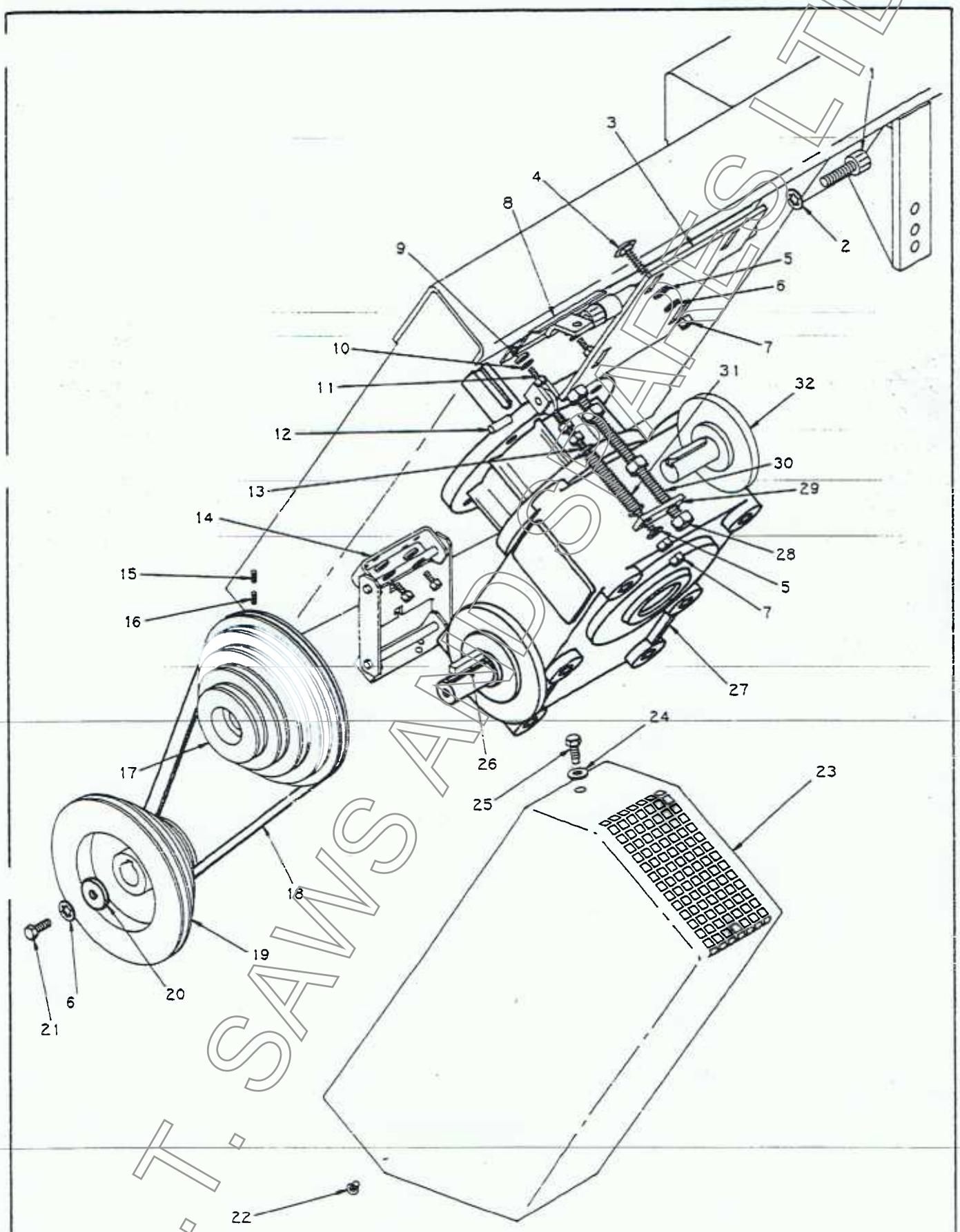
ITEM	PART No.	DESCRIPTION	No.OFF
1	5983	Pivot	1
2	BO5755	Locknut	2
3	SM2586	Head Down Bracket	1
4	6359	Studding	1
5	BO5203	Set Screw	1
6	9583	Locking Spacer	1
7	9586	Switch Actuating Plate	1
8	BO5921	Washer	2
9	BO6010	External Circlip	1
10	9584	Switch Mounting Bracket	1
11	9585	Bush	1
12	5998	Pivot Screw	2
13	BO2479	Nipple	1
14	BO6369	Conduit	1.05
15	BO6051	Adaptor	1
16	BO6083	Reducing Bush:	1
17	BO5762	Locknut No.	1
18	BO1154	Limit Switch	1
19	BO5046	Cap Screw	2
20	BO5941	Washer	2
21	BO5911	Washer	2
22	BO1147	Plunger Head:	1
23	BO5073	Cap Scew	4
24	BO5917	Washer	4
25	BO5559	Hex Screw	1
26	BO5752	Locknut	1
27	BO5915	Washer	1
28	6048	Washer	1
29	BO2485	90 Degrees Nipple:	1



HEAD WEIGHT
SPRING ADJUSTMENT

HEAD WEIGHT SPRING ADJUSTMENT

ITEM	PART No.	DESCRIPTION	No.OFF
1	SM2413	Bow Mount Assembly	1
2	SM2415	Machine Bed Assembly HB225/250	1
	SM2417	Machine Bed Assembly HB330	1
3	9547	Spring Support Bracket	1
4	5958	Distance piece	1
5	6403	Washer	1
6	BO5061	Cap Screw	1
7	BO5942	Washer	1
8	6402	Handknob	1
9	BO5204	Set Screw	2
10	BO5715	Full Nut	2
11	5957/A	Spring Rod	1
12	BO5917	Washer	2
13	BO5944	Washer	2
14	BO5073	Cap Screw	2
15	9463	Hook Bolt	1
16	5955	Extension Spring HB225/250	1
	10005	Extension Spring HB330	1
17	BO2126	Nylite Seal:	4
18	BO5921	Washer	4
19	BO5946	Washer	4
20	BO5578	Hex Screw	4
21	BO5755	Locknut	2
22	6070	Distance piece	1
23	6069	Plate	2
24	BO5582	Hex Screw	2



5 SPEED PULLEY DRIVE

5 SPEED PULLEY DRIVE

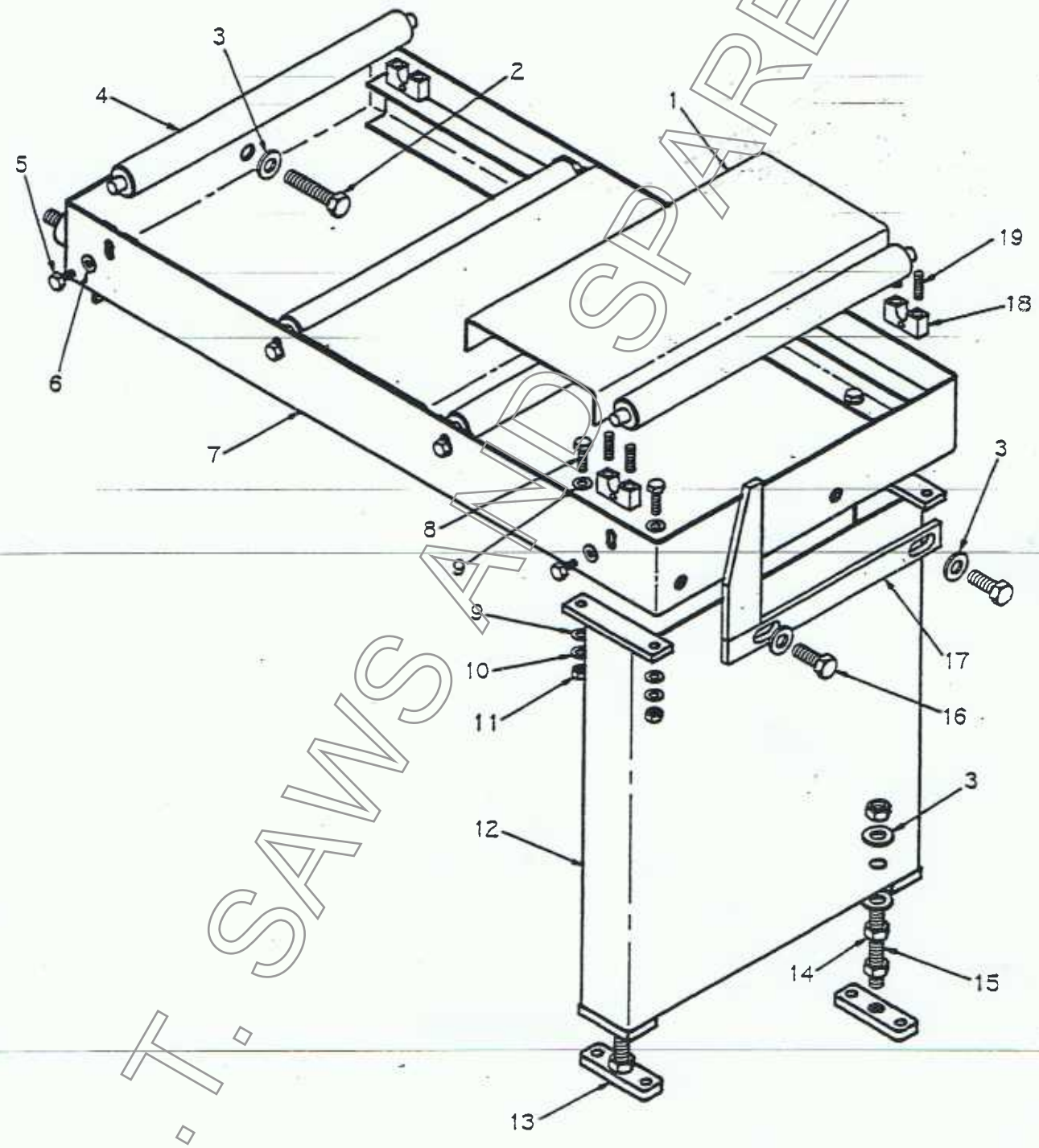
SECTION 760

ITEM	PART No.	DESCRIPTION	No.OFF
1	BO5087	Cap Screw	2
2	BO5945	Washer	2
3	SM2592	Motor Platform	1
4	BO5620	Coach Bolt	4
5	BO5917	Washer	7
6	BO5944	Washer	5
7	BO5715	Full Nut	8
8	SM1657	Belt Cover Plate Assembly	1
9	BO5915	Washer	4
10	BO5943	Washer	4
11	BO5552	Hex Screw	4
12	BO5893	Dowel	1
13	SM1202	Motor Platform Stud	1
14	SM1218	Belt Cover Hinge	1
15	BO5189	Set Screw	1
16	BO5190	Set Screw	1
17	6328	Motor Pulley - 50Hz Models	1
	6326/A	Motor Pulley - 60Hz Models	1
18	BO2152	'V' Belt:	1
19	6323	Gearbox Pulley - 50Hz models	1
	6327	Gearbox Pulley - 60Hz Models	1
20	4238	Washer	1
21	BO5562	Hex Screw	1
22	BO5452	Domed Screw	2
23	SM1217	Belt Cover Assembly	1
24	BO5953	Fibre Washer	1
25	7787	Retained Screw	1
26	5952	Key	1
27	BO1460	Gearbox Assembly	1
28	BO5717	Full Nut	3
29	6429	Motor Tension Link	1
30	6430	Studding - Motor	1
31	BO2223	Spring:	1
32		Motor - Voltage Dependant	1

VARIABLE SPEED DRIVE

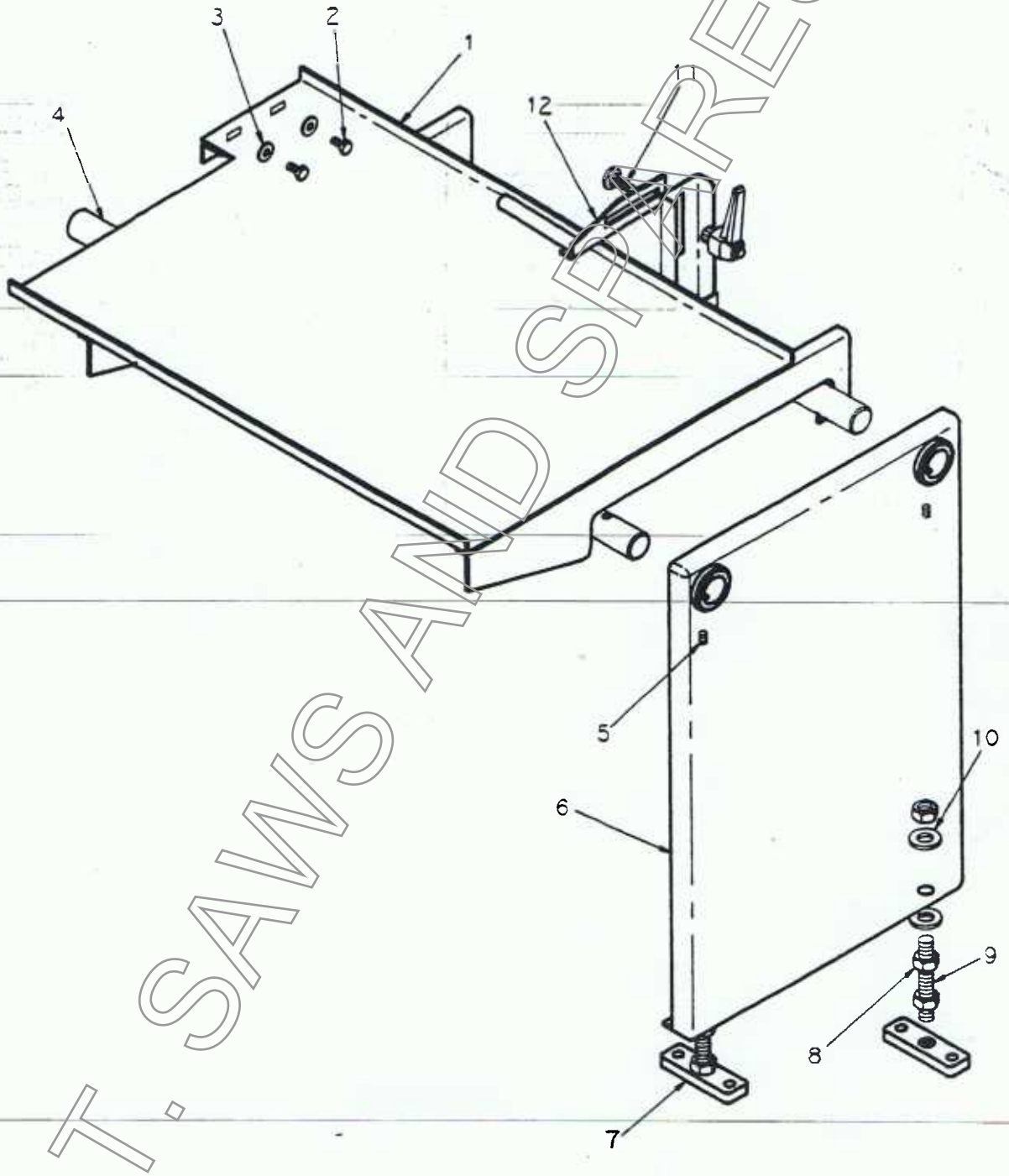
	BO1474	Worm Geared Motor - Not Illustrated

SECTION 795



INFEED ROLLER TABLE

ITEM	PART No.	DESCRIPTION	No. OFF
1	9867	Support Plate	3
2	BO5587	Hex Screw	2
3	BO5922	Washer	8
4	9868	Roller	4
5	BO5562	Hex Scew	8
6	BO5918	Washer	8
7	SM2677	Conveyer Chassis	1
8	BO5574	Hex Screw	4
9	BO2133	Nylite Seal:	8
10	BO5919	Washer	4
11	BO5716	Full Nut	4
12	SM2678	Leg Assembly	1
13	4681	Foot	2
14	BO5718	Full Nut	6
15	4682	Stud	2
16	BO5584	Hex Screw	2
17	SM1232	Stop Bracket - conveyer	1
18	4387	Plumber Block	8
19	BO5214	Set Screw	16

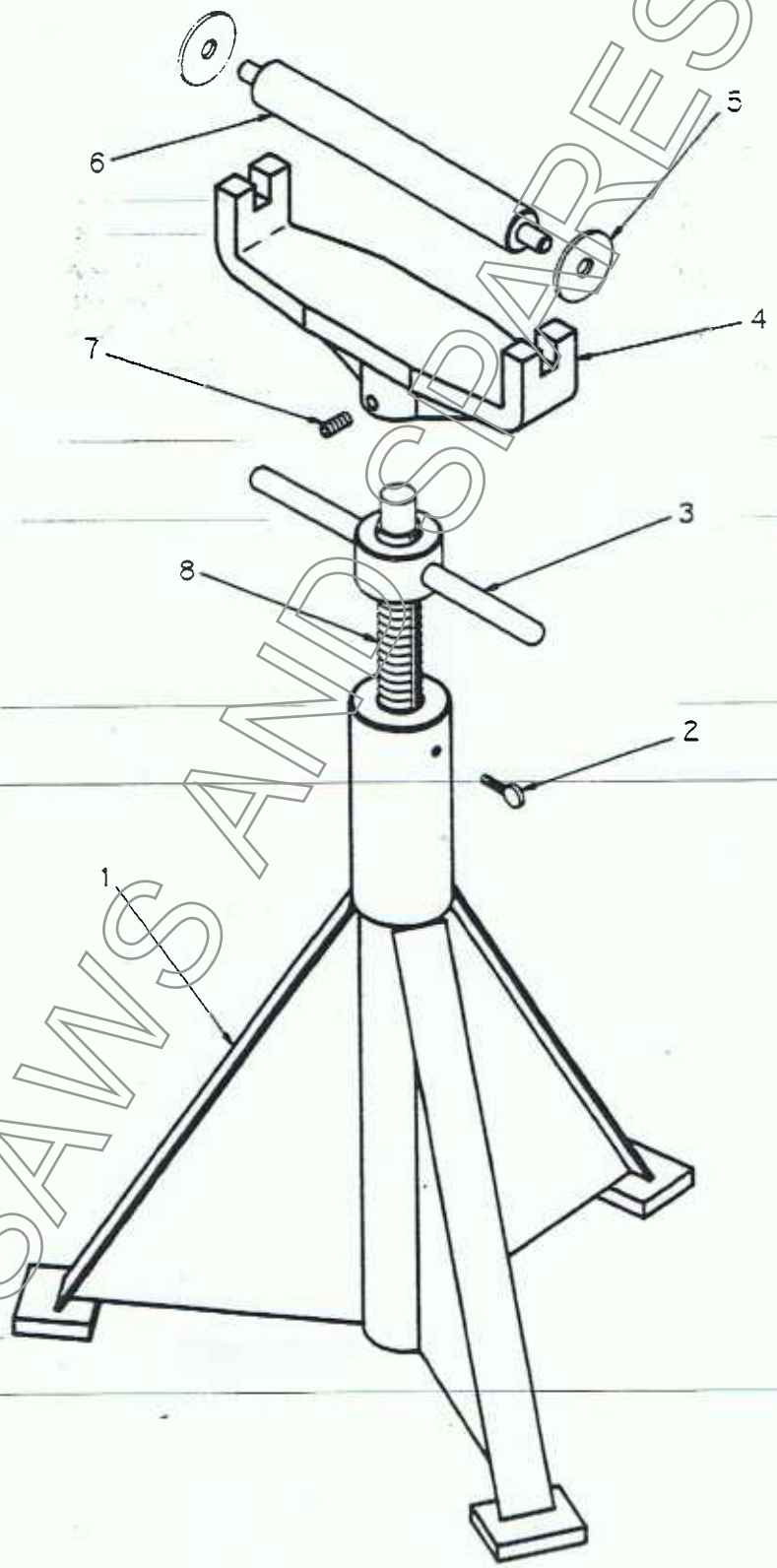


DISCHARGE TRAY

DISCHARGE TRAY

SECTION 795

ITEM	PART No.	DESCRIPTION	No. OFF
1	SM1294/A	Discharge tray	1
2	BO5560	Hex Screw	2
3	BO5917	Washer	2
4	6453	Support Shaft L.H.	1
5	BO5200	Set Screw	2
6	SM1293/A	Support Leg	1
7	4681	Foot	2
8	BO5718	Full Nut	6
9	4682	Stud	2
10	BO5922	Washer	4
11	BO5625	Coach Bolt	1
12	SM1295	Welded Stop Bracket	1



STOCK STAND

STOCK STOP AND SWING AWAY ASSEMBLY

SECTION 95

ITEM	PART No.	DESCRIPTION	No. OFF
1	9793	Collar	2
2	BO5199	Set Screw	2
3	SM2599	Stop Bracket Assembly	1
4	BO5271	CounterSunk Screw	2
5	BO5554	Hex Screw	1
6	BO5916	Washer	1
7	SM2621	Adjusting Rod Assembly	1
8	BO2187	Spring:	1
9	BO5754	Locknut	4
10	SM2598	Pivot Stop Assembly	1
11	BO2478	Nipple	1
12	9750	Shaft (swing away)	1
13	BO5366	Sel Loc	1
14	BO5195	Set Screw	1
15	8117	Sleeve	2
16	BO5582	Hex Screw	1
17	8123	Work Stop Shaft	1
18	6419	Stop Bar	1
19	SM1367	Bar Stop Welded Assembly	1
20	6313	Spacer	1
21	BO2554	Adjusting Handle:	2
22	BO5919	Washer	1
23	BO5628	Coach Bolt	1
24	BO5560	Hex Screw	1