

INSTRUCTION MANUAL

BS-10S

**Swivel Head Metal Cutting Band Saw (415V)
400 x 230mm (W x H) Rectangle**



B019



WARNING

1. Read and understand the entire instruction manual before operating machine.
2. Always wear approved safety glasses / face shields while using this machine.
3. Make certain the machine is properly grounded.
4. Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do not wear gloves.
5. Keep the floor around the machine clean and free of scrap material, oil and grease.
6. Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
7. Do not over reach, Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
8. Make all machine adjustments or maintenance with the machine unplugged from the power source.
9. Use the right tool. Don't force a tool or attachment to do a job which it was not designed for.
10. Replace warning labels if they become obscured or removed.
11. Make certain the motor switch is in the off position before connecting the machine to the power supply.
12. Give your work undivided attention. Looking around, carrying on a conversation, and "horse - play" are careless acts that can result in serious injury.
13. Keep visitors a safe distance from the work area.
14. Use recommended accessories ; improper accessories may be hazardous.
15. Make a habit of checking to see that keys and adjusting wrenches are removed before turning on the machine.
16. Always keep hands and fingers away from the blade when the machine is running.
17. Never hold the material with the saw in the horizontal position. Always use the vise and clamp it securely.
18. Read and understand warnings posted on the machine.
19. Keep the belt guard and wheel covers in place and in working order.
20. Always provide adequate support for long and heavy material.
21. Use a sharp blade and keep machine clean for best and safest performance.
22. Failure to comply with all of these warnings may cause serious injury.

Important Notice For CE.

About the safety of optional accessories.

There are two optional safety accessories. Please read in detail from this clause about the safety use of these devices as following.

1. Optional positive mode interlock for pulley cover : If the cutting speed need to be changed very often, you must choose this option.
2. Optional handle operated power disconnection device : If your machine is equipped with this option, please disconnect power through this device for some situation. Otherwise, disconnect power according to the instruction in the clause of operation.

Environment Requirements for Installation.

1. Be sure to provide sufficient light for operation according to the codes or regulations published for local area. If you do not get the information about lighting, a light intensity of 300 Lux is the least value to be supplied.
2. The place where machine install must be flat and big enough for the operation.

Noise Level

1. The noise level of this machine is about 75 db(A) during operation.
2. While taking provisions for the risk of noise, the noise level of working environment should be taken into consideration also.

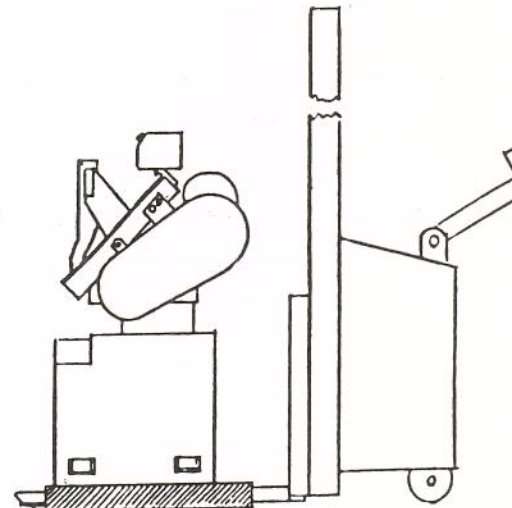
Handling & Transportation of Machine

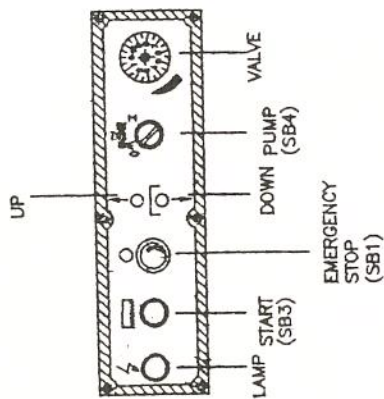
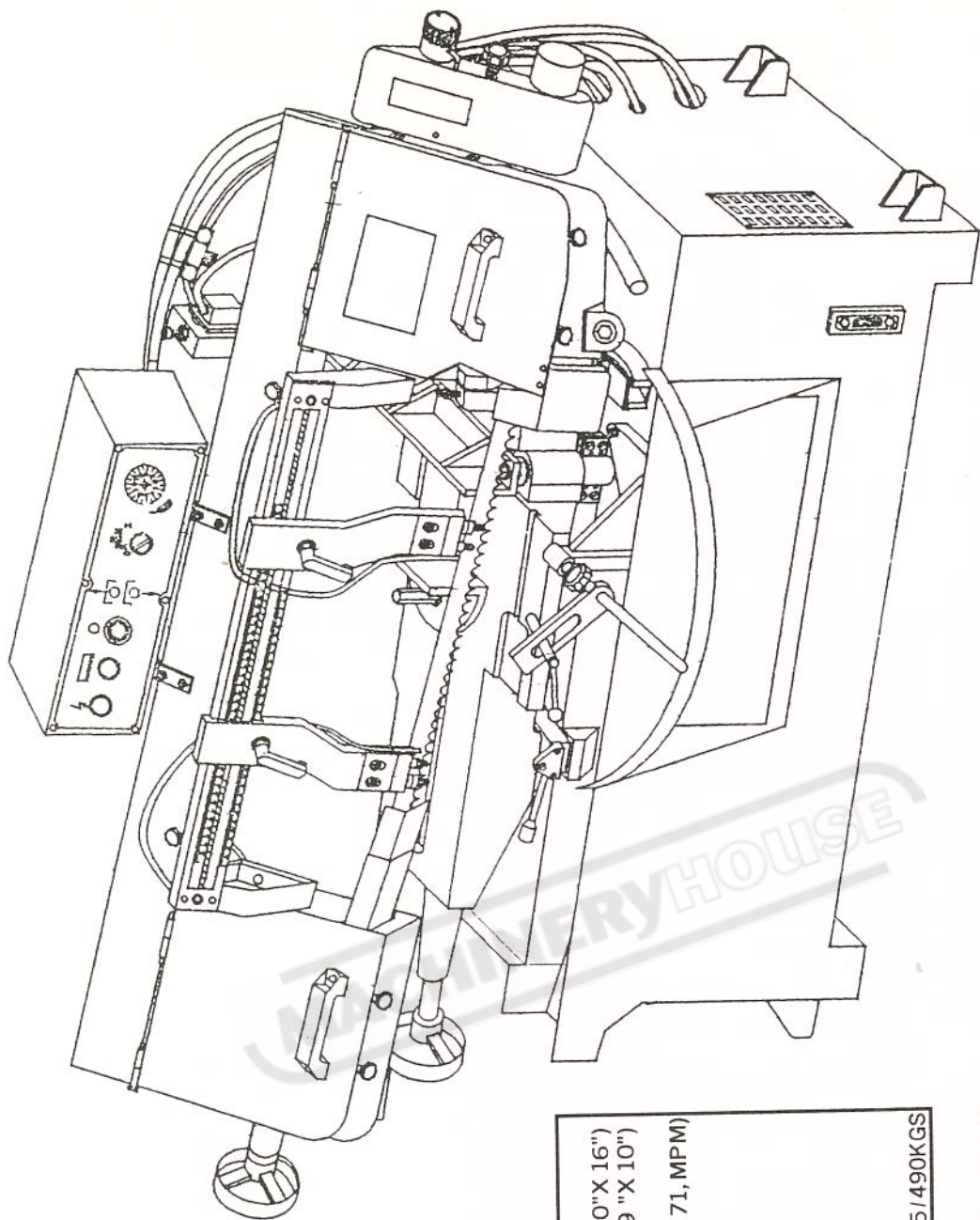
1. The total weight of this machine must be ensured before handling.
2. This machine can not be handled without help of lifting tools.

Transportation Methods

⚠ WARNING

1. Always keep balance of the machine in transportation. Watch the gravity !
2. Drive forklift slowly and carefully.





SPECIFICATIONS

CAPACITY	ROUND (250MM) RECTANGLE 90°: 250MM X 400MM (10" X 16") RECTANGLE 45°: 225MM X 250MM (9" X 10")				
BLADE SPEEDS	25-75MPM (82-259FPM) OR (25,40,51,71,MPM)				
BLADE SIZE	27M X 0.9MM X 3300MM				
MOTOR SIZE	50HZ 2HP 1430RPM 3PHASE				
MACHINE	L: 1730MM W: 760MM H: 1200MM (68" X 30" X 47")				
WEIGHT	250SSA: 485KGS/550KGS 250S: 425/490KGS				

INSTALLATION DIAGRAM

Supply: 3 x 380V 50Hz	Supply: 3 x 220V 50Hz	Supply: 1 x 220V 50Hz
4x1.25mm ² + PE	4x1.25mm ² + PE	4x2 mm ² + PE
Recommended fuse 10.0 A gL type	Recommended fuse 10.0 A gL type	Recommended fuse 10.0 A gL type

(3x380V, 1.125kW) and (3x220V, 1.125kW)

3~ 50Hz (RECOMM) 380V/220V 10A

QS (option)

R S T

FU

Limit of equipment

220V: $\frac{5 \sim 8}{6.5}$ A

380V: $\frac{2.8 \sim 4.2}{4.2}$ A

550V: $\frac{1.6 \sim 2.6}{2.4}$ A

M1 3~ 1.125kW 380V 0.2A 1020 rpm

U₁ V₁ W₁

M2 3~ 0.1kW 380V 0.22A 2850 rpm

U₂ V₂ W₂

M3 3~ 0.2kW 380V 0.44A 1420 rpm

U₃ V₃ W₃

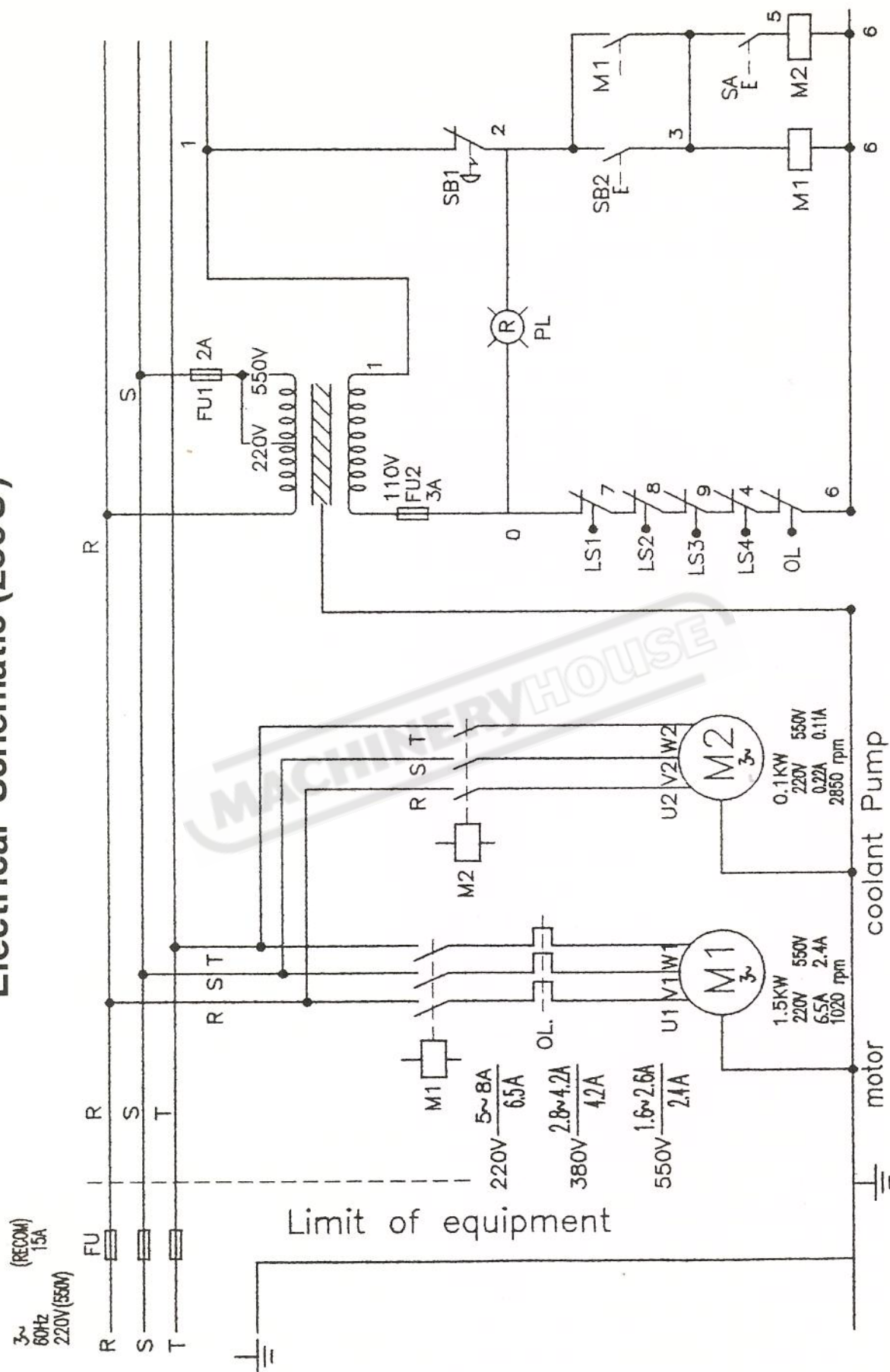
Oil Pump

coolant Pump

Main Motor

PE 1.25mm²

Electrical Schematic (250S)



SCHEDULE OF ELECTRICAL EQUIPMENT**METAL BAND SAW****TYPE UE - 250 S**

Item designation	Description and function	Technical data	Quantity	Remarks
FU1	AC Fuse to Transformer	AC 600V 30mm 2A	1	UL 198G
FU2			1	CSA C22.2 NO. 59.2
M1	Contactors	Spla Ri = 660V Rt = 25A AC 3 220V 2.2kw 380V 4.0kw Coil = 110V	1	IEC 158-1 BS 5424-1 VDE 0660 JIS 8325
M2			1	
OL	Over - Load (Relays)	(1.6~8A) Ui = 660V Ith * 10A	1	1 EC 292
			1	VDE 0660 JIS 8325 BS 5424-1
TC	Transformer	AC/Output 220V~550V Output 110V	1	IEC 76-5 EN 60742 IP 2X
LS1	Saft - Door Limit - Switch	AC 500V 5A	1	IEC 947
LS2			1	EN 60947 IP 67
LS3	Cut-Limit Switch	AC 125V 10A 250V 10A	1	UL E 100182
LS4	Cut-Limit Switch	AC 600V 10A 125, 250V 0.1A 600VDC	1	UL 66C7 IP 54
SB1	Emergence - Stop	AC 600V 10A	1	
SB2	Start -on Pump -(0-1) Select-switch	AC 250V 10A 380V 7.5A	1	IEC 144
SA			1	IP 65
TB	Cassete Terminal Block	AC 600V 15A	19	UL 9987 IP 2X
PL	Direct Supply	22 AC 24V 1.2W	1	IEC 144 IP 65

SCHEDULE OF ELECTRICAL EQUIPMENT**METAL BAND SAW
TYPE UE - 250 SSA**

Item designation	Description and function	Technical data	Quantity	Remarks
QS (option)	Main Power (Door Lock) Switch	AC 500V/50HZ 3P 16A		IEC 408 IP 54
FU1 FU2	AC Fuse to Transformer	AC 600V 30mm 2A	1	CSA C22. 2 NO. 59.2
M1 M2 M3	Contactors	3 Pla Ri = AC 660V Rt = 25A AC3 220V 2.2kw 380V 4.0kw Coil = 24 V		IEC 158-1 VDE 0660 BS 5424-1 JIS 8325
OL	Over - Load (Relays)	4.5~6.5A 4.5A Ui = AC600v I th = 10A		
R1 R2	Contactors -Relay	Coil=AC 24V 2C (ab) AC 250V 5A 1.2VA DC 125V 5A 0.9W		IEC 292 UL CSA
TC	Transformer	AC/Input 220V, 380V, 415V, 440V Output Hi = 220V LO = 24V		IEC 76-5 EN 60742 IEC 1P-2
TB	Cassette Terminal =Block	AC 600V MAX. 15A		UL E 121562
LS1	Soft-Door Limit -Switch	AC 15.2A MAX. 400V INO + INC		IEC 947-5-1 EN 60947 -5-1 IP 67
LS3 LS2	Up-Stop Limit Switch Motor -Stop Limit -Switch (Up-Start)	AC 125V 10A 250V 10A DC 115V 4A		UL E 100182
HL1 HL2	Pilot-Lamps-AC Power Lamp	AC 24V 1.5W 22 ϕ		
SB1 SB2 SB3 SB4	Emergency -Stop Main-Motor Start Down - Push -Button Up - Push -Button	AC 250V 10A MAX. 600V 22 ϕ 1 NO + 1 NC 2 NO + 2 NC		
SA1	Pump - Switch	AC 250V 10A MAX. 600V 380V 7.5A 22 ϕ 1 NO + 1 NC		
LINE	Control-Line	0.75m ² MAX. 300V (30/0.18) - 7A Ambient Temp (35°C ~60°C)		CNS 679 JIS C3307
CABLE	PVC Cable - Wire	1.0m ² * 4C 10A Ambient Temp (35°C ~60°C) MAX. 600V		
M1	Main - Motor	AC 380V 3 ~ 2HP 1.5KW 4.5A 1420 rpm		
M2	Coolant - Pump	AC 380V 3 ~ 1/8 HP 0.1KW 0.22A 2850 rpm		
M3	Oil - Pump	AC 380 3 ~ 1/4 HP 0.2KW 0.44A 1420 rpm		

ELECTRICAL CONNECTION/DISCONNECTION.

FOR 3 PHASE.

1. **Electrical connection :**

- a. A cable with four wires is equipped to connect your machine into the 3 phase power supply. **Please connect your machine into the power supply with hand-operated disconnecting device**, which is in compliance with subclause 5.3 of EN 60204, such as no fuse breaker or plug/socket combination, if your machine is not equipped with this optional device on the door of control box
- b. For the protection of control device, we recommend the operator to supply **a fuse with appropriate current rating**, and the total length between fuse and connection terminal shall not exceed 1.5 m.
- c. The power supply system is *TN system*.
- d. The **exact power source voltage, frequency, and number of phase** shall be checked according to the installation diagram and circuit diagram.
- e. **The correct direction of saw blade should be checked after connecting.**

2. **Electrical disconnection :**

- a. The disconnection is carried out by hand-operated disconnecting device, which is on the door of control box as an option or connected before the power source.
- b. Be sure to disconnect this machine from power source, when you want to stop the job, maintenance, and adjustment.

3. **Grounding.**

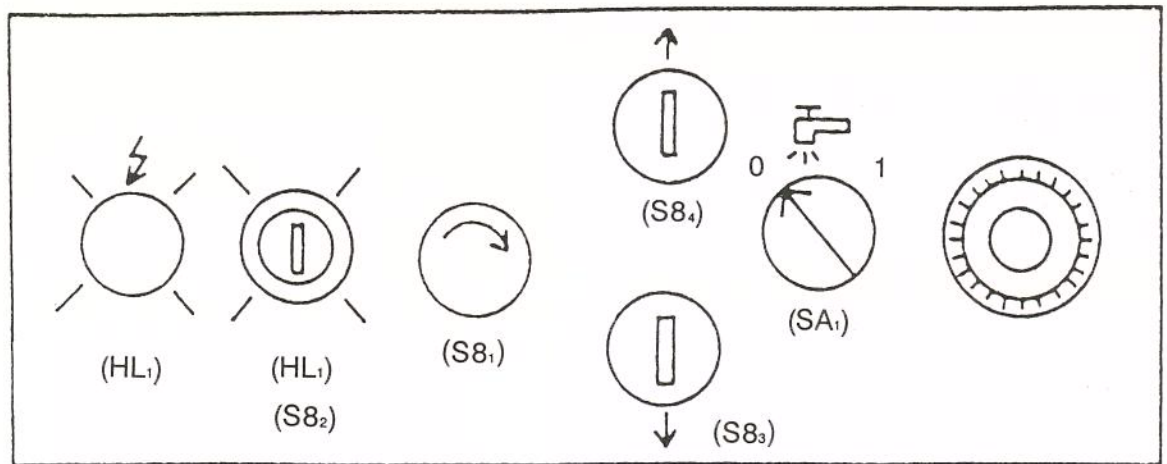
The grounding of this model is carried out by **connecting the yellow/green terminal of supply cable** to the grounding terminal of power source. Be sure to ground your machine before connecting machine to power source in any situation.

WARNING !

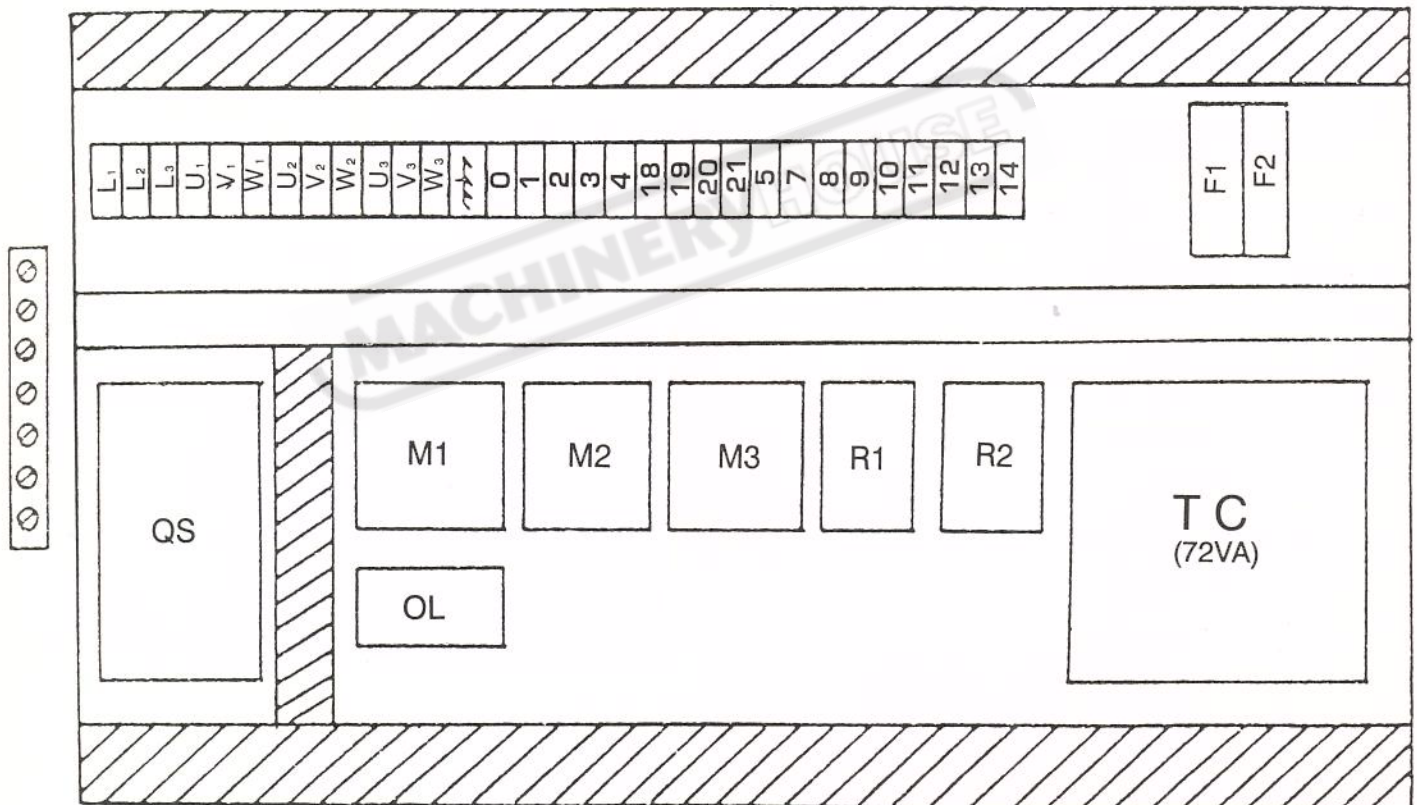
Do not disconnect grounding terminal before disconnecting power source.

FOR SINGLE PHASE.

1. If the power cable is not equipped with plug, please connect and disconnect your machine with power according to the same instruction of three phase. Otherwise, Please follow the following instruction (2~4).
2. The connection, disconnection, and grounding is carried out **through the plug**, equipped on the machine. For the safety reason, **Do not change this plug into any other type in any situation.**
3. For the protection of control device, we recommend the operator to supply **a fuse with appropriate current rating**, and the total length between fuse and connection terminal shall not exceed 1.5 m.
4. The **exact power source voltage, frequency, and number of phase** shall be checked according to the installation diagram and circuit diagram.



Layout of operating switches panel
MODEL:UE-250SSA



Layout of electric Control Box.

Electrical Connections

WARNING

All electrical connections must be done by a qualified electrician! Failure to comply may result in serious injury !

WARNING

Disconnect machine from the power source before changing any voltage components ! Failure to comply may cause serious injury !

- **Main Motor** - follow diagram inside junction box cover.
- **Coolant Pump** - Remove access panel on right side of saw, remove junction box cover on pump, and follow diagram inside junction box cover. See Fig. 1
- **Control Transformer** - Open electrical panel on rear of base and switch primary wire on transformer from 230V to 460V.

Machine must always be correctly grounded.

Note: The power cord end will have to be changed to one that is rated 460V when changing voltage.

Controls - Figure 2 & 3

- Power Indicator Light (A)** - lit whenever machine is running.
- Start Button (B)** - depress to start bandsaw.
- Emergency Stop Button (C)** - depress to immediately stop all machine functions.
- Coolant Switch (D)** - Turn arrow to "I" to turn on flow of coolant. Turn arrow to "O" to stop flow of coolant.
- Cutting Pressure Control (E)** - turn clockwise to decrease cutting pressure. Turn counter-clockwise to increase cutting pressure.
- Hydraulic On-Off Valve (F)** - turns hydraulic cylinder on and off.
- Arm Lift Up Button (G)** - Depress to lift the saw arm up.
- Arm Descend Button (H)** - Depress to send the saw arm down.

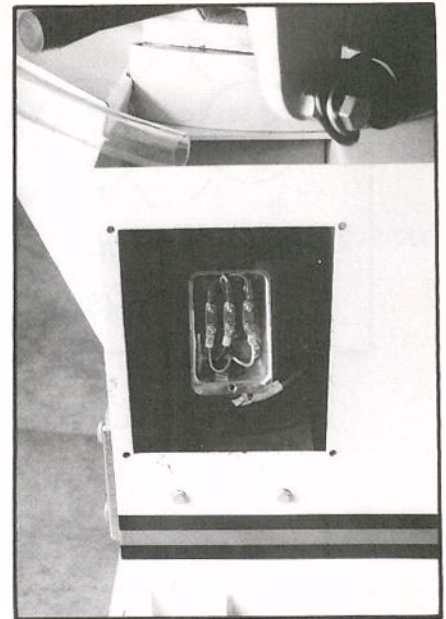


Fig. 1

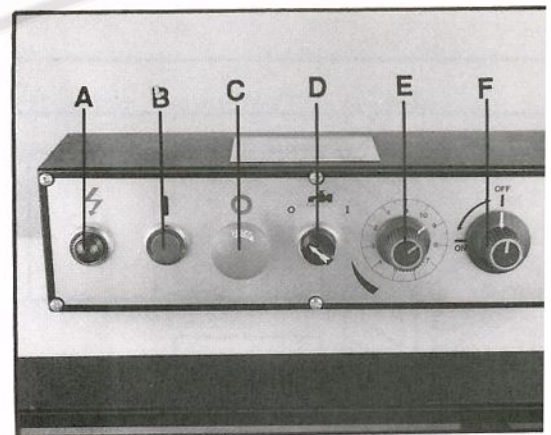


Fig. 2

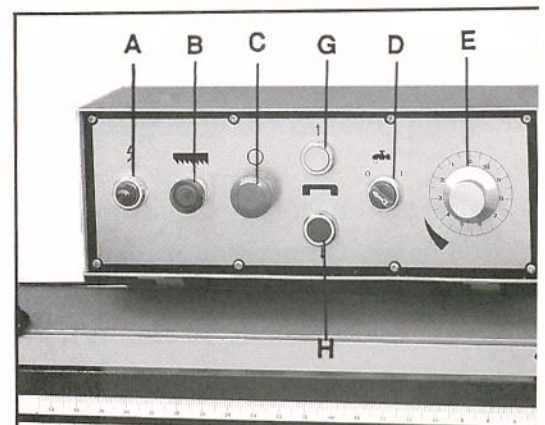


Fig. 3

Prior to Operation

1. Check blade tooth direction matches diagram on blade guides.
2. Check to see that blade is properly seated on wheels after applying correct tension (approximately 25,000 lbs.).
3. Set blade holder guides for approximately .003" to .005" clearance between the guides and blade.
4. Check for slight clearance between back up rollers and back of blade.
5. Position blade guides as close to work piece as possible.
6. Select proper speed and feed rate for material being cut.
7. Material to be cut must be securely held in vise.
8. Check to see that coolant level is adequate and turn on coolant pump if material to be cut requires it. Machine should be filled with four gallons of the proper coolant mixture. Follow the directions on the product makers label and fill the coolant tank through the chip tray area.
9. Do not start cut on a sharp edge.
10. Keep machine lubricated. See "Lubrication" section.

Adjusting Vise Square to the Blade

1. **Disconnect the machine from the power source.**
2. Place a machinist's square on the table against the blade and the vise. The square should lie along the entire length of the vise and blade without a gap.
3. If adjustment is necessary, loosen bolts holding the vise and adjust vise so square lines up properly. Tighten bolts.
4. Connect machine to the power source.

Adjusting the Variable Speed

To adjust the cutting speed, Please refer to Fig. 4 (B) is the speeds' director (from 25M - 75M). And turning (A) handle knob to your desired speed. (Note: Adjustment must be done during the machine running.)

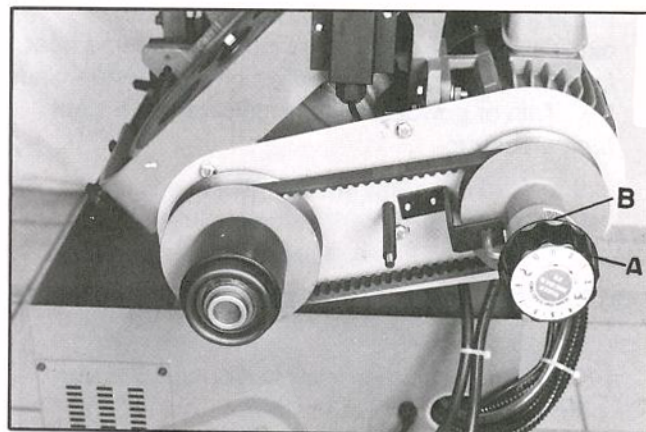


Fig. 4

Automatic Shut-Off Adjustment

The motor should shut off immediately after the blade has cut through the material and just before the head comes to rest on the horizontal stop bolt. If the machine continues to run after the work piece has been fully cut, locate and adjust the micro switch mounting plate down. If the machine shuts off before the work piece has been completely cut, move the micro switch mounting plate up.

Adjusting Feed Rate

Rate of feed is adjusted by turning the cutting pressure control knob on the control panel. Rate of feed is important to bandsaw performance; excessive pressure may break the blade or stall the saw. Insufficient pressure rapidly dulls the blade.

Material chips or shavings are the best indicator of proper speed and pressure. The ideal chip is thin, tightly curled, and warm to the touch. Chips that range from golden brown to black indicate excessive force. Blue chips indicate extreme heat from too high a band speed which will shorten blade life. Thin or powdered chips indicate insufficient feed pressure.

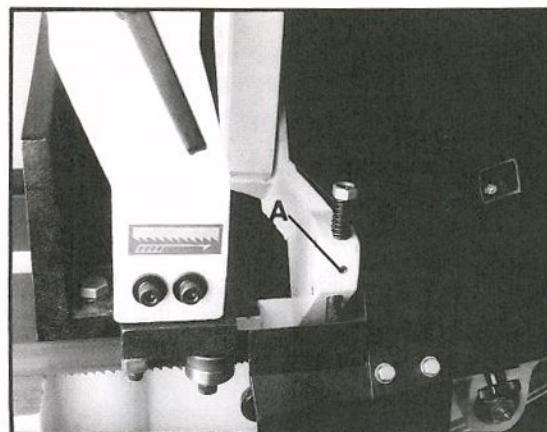


Fig. 5

Changing Blades

WARNING

Disconnect machine from the power source before making any adjustments or repairs! Failure to comply may result in serious injury!

1. Disconnect machine from power source.
2. Raise saw arm approximately 6". Hold saw arm in place by closing cutting pressure control valve.
3. Open both wheel covers and clean chips out of both wheel housings. Loosen two lock knobs below the control panel and remove upper blade guard.
4. Loosen set screw (A, Fig. 5) and lower the blade cleaning brush,
5. Release blade tension by turning blade tensioning handwheel (A, Fig. 6) counter-clockwise until blade is free.
6. Loosen lock knob (A, Fig. 7) and slide left blade guide arm (B, Fig. 7) to the right as far as possible.

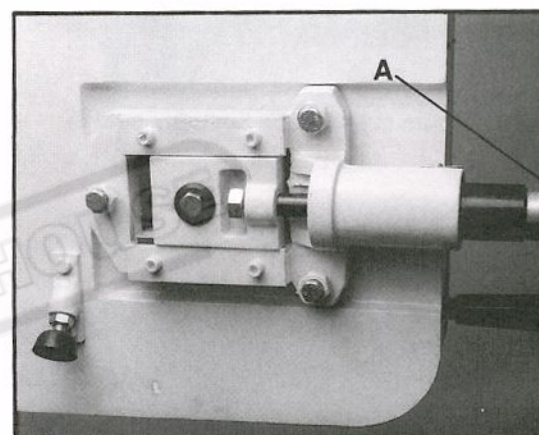


Fig. 6

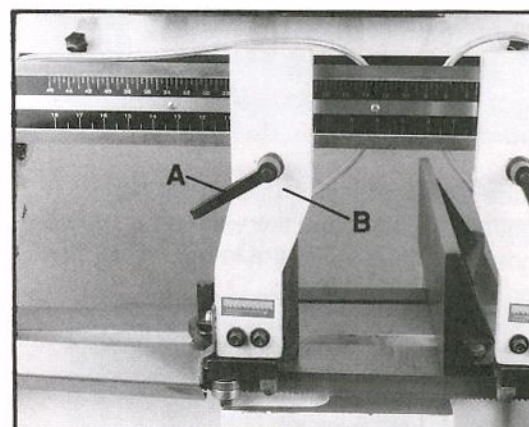


Fig. 7

7. Remove old blade from both wheels and out of each blade guide. **⚠ Caution:** Even dull blades are sharp to the skin! Use extra caution handling bandsaw blades!
 8. Install new blade making sure teeth are pointed downward in the proper cutting direction. If necessary, turn blade inside out.
 9. Position blade on band wheels and tighten just enough to hold blade on wheels. Make sure back of blade rests lightly against the wheel flange of both wheels. Twist blade slightly to allow it to slip into guides.
 10. Tension blade to approximately 25,000 lbs. of blade tension, as indicated on the blade tension indicator found on the tension wheel shaft housing.
 11. Raise wire brush and tighten set screw to hold brush in place.
 12. Close all covers and guards and fasten securely. Connect machine to power and run freely for approximately two minutes.
 13. Turn power off and re-check blade tension and wire brush adjustment. If further adjustment is necessary, disconnect saw from power source, make adjustments, and re-connect to power.
1. **Disconnect machine from the power source.**
 2. Raise saw arm to its highest position and close cutting pressure control valve to hold saw arm in place.
 3. Locate tracking adjustment plate on the back side of the driven blade wheel.
 4. Loosen the three bolts (A, Fig. 8) located on the top of the tracking nuts.
 5. Tracking adjustment is accomplished by either loosening or tightening three adjusting nuts (B, Fig. 8).
 6. Tracking is set properly when the back of the blade lightly touches the wheel flange. **Note:** over-tracking (allowing blade back to rub hard against wheel flange) will damage the blade wheels and blade.
 7. Tighten locking bolts (A, Fig. 8) once proper tracking is completed.

Blade Tracking Adjustment

Blade tracking has been set at the factory and should require no adjustment. If a tracking problem occurs, adjust the machine as follows:

⚠ WARNING

Tracking adjustment is done with the wheel covers open to observe the blade. Use extreme caution so as not to come into contact with the blade!

Since tracking can only be adjusted while machine is running, it is suggested that this adjustment be accomplished by qualified personnel that are familiar with this type of adjustment and the dangers associated with it.

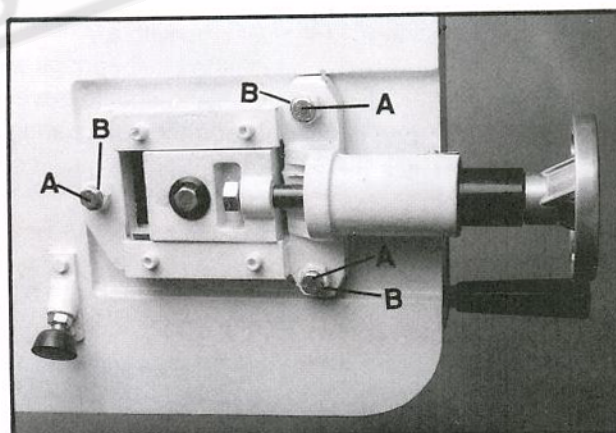


Fig. 8

Thrust Roller Adjustment

1. Disconnect machine from the power source.
2. Loosen two hex socket cap screws (A, Fig. 9).
3. Move guide seat (B, Fig. 9) up or down until a clearance of .003" to .005" between back of blade and thrust roller is obtained.
4. Tighten two hex socket cap screws (A, Fig. 9).
5. Repeat for other blade guide assembly.
6. Connect machine to power source.

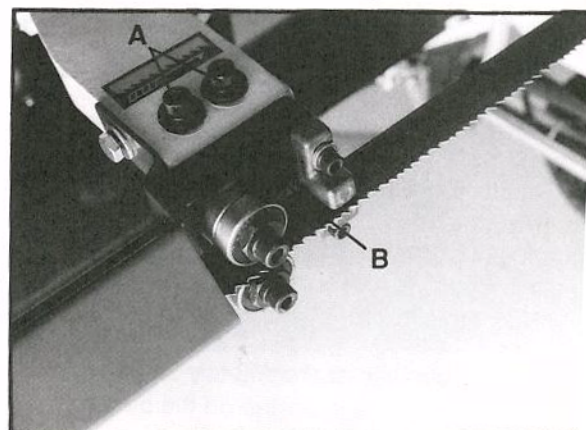


Fig. 9

Guide Roller Adjustment

1. Disconnect machine from the power source.
2. Loosen blade guides (A, Fig. 10) by loosening screws (B, Fig. 10). Slide blade guides away from blade.
3. Loosen locking screws (C, Fig. 10) by using a hex wrench.
4. Adjust the eccentric bushings with a combination wrench until the ball bearings are snug to the blade. Note: blade should travel freely up and down between the ball bearings. Do not pinch the blade.
5. Tighten locking screws (C, Fig. 10).
6. Slide blade guides back into contact with blade and tighten screws (B, Fig. 10).
7. Connect machine to the power source.

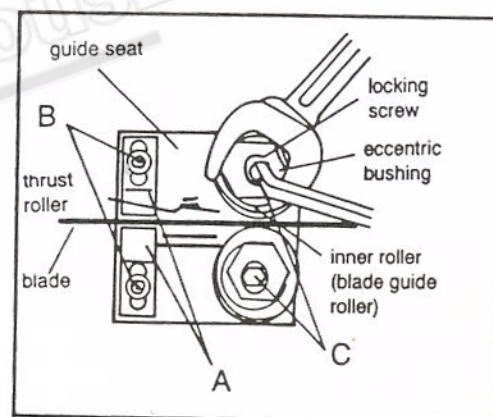


Fig. 10

Bow Weight Adjustment

Bow weight is one of the most important adjustments of the saw. If the bow weight is not set properly, one can expect poor performance, crooked cuts, tooth stripping, stalling, and the blade popping off the blade wheels. The hydraulic feed rate unit will not compensate for improper bow weight. Bow weight has been set at the factory and should not need any adjustment. If adjustment is necessary:

1. **Disconnect the machine from the power source.**
2. Turn hydraulic valve to on (F, Fig. 2)
3. Turn cutting pressure control valve (E, Fig. 2) counter-clockwise until it stops.
4. Place one end of a fish-type scale under the blade tension handle and lift the saw with the other end. Scale should indicate approximately 15 lbs.
5. Adjust tension to approximately 15 lbs. by turning the adjustable C-bolt found at the end of the coil spring on the rear of the bandsaw. See Figure 11.
6. Connect the machine to the power source.

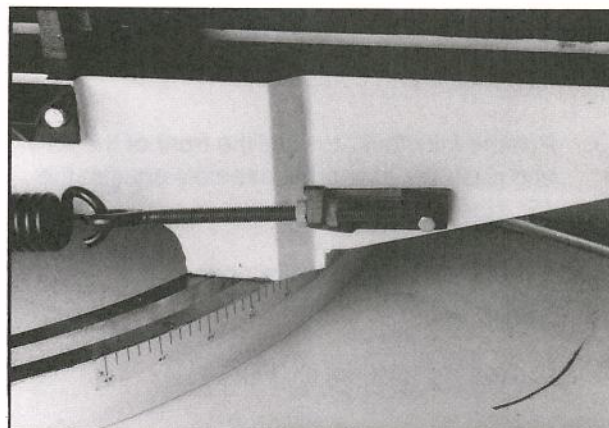


Fig. 11

Angle Adjustment

To swivel the saw arm up to a 45° angle:

1. **Disconnect the machine from the power source.**
2. Pull the handle (A, Fig. 12) toward the front of the saw.
3. Rotate the upper assembly to the desired angle.
4. Push the handle back toward the rear of the saw to lock the upper assembly.

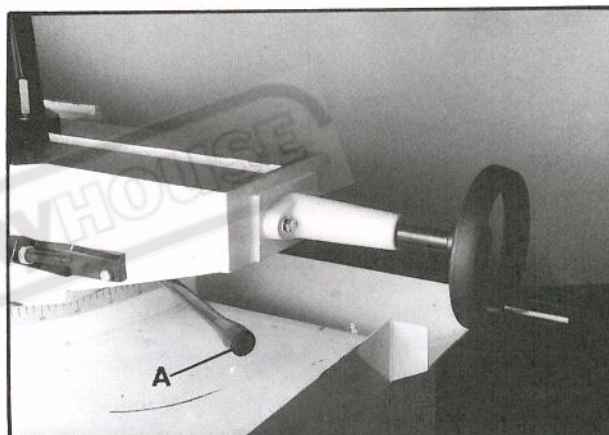


Fig. 12

To adjust the 90° stop:

1. **Disconnect the machine from the power source.**
2. Lower saw arm completely.
3. Pull the lock lever toward the front of the saw and pull the saw arm assembly against the 90° stop.
4. Place a 90° square on the blade and the fixed vise jaw.
5. Loosen the lock nut (A, Fig. 13).
6. Adjust the hex cap screw (B, Fig. 13) until the blade is at a 90° angle to the fixed vise jaw.
7. Tighten the lock nut (A, Fig. 13)

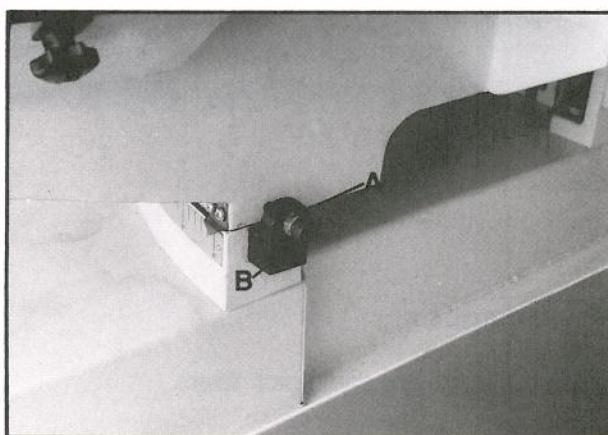


Fig. 13

To adjust the 45° stop:

1. **Disconnect the machine from the power source.**
2. Lower saw arm completely:
3. Pull the lock lever toward the front of the saw and push the saw arm assembly against the 45° stop.
4. Place a 45° angle square on the blade and the fixed vise jaw.
5. Loosen the lock nut (A, Fig. 14).
6. Adjust the hex cap screw (B, Fig. 14) until the blade is at a 90° angle to the fixed vise jaw.
7. Tighten the lock nut (A, Fig. 14)

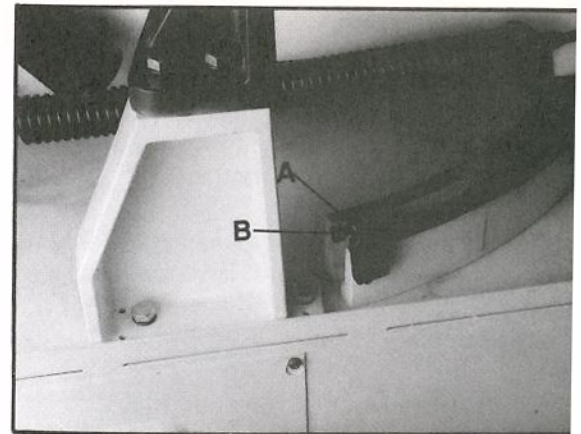


Fig. 14

Vise Adjustment

To position the moveable vise jaw:

1. Turn vise handwheel (A, Fig. 15) 1/2 turn counter-clockwise.
2. Move vise (B, Fig. 15) to desired location by sliding along bed.

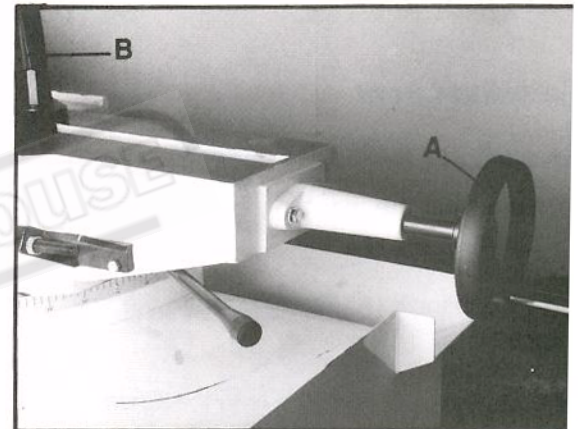


Fig. 15

To adjust the vise for angle cutting:

1. Loosen bolts (A, Fig. 16) and move vise jaw to desired angle.
2. Tighten bolts.

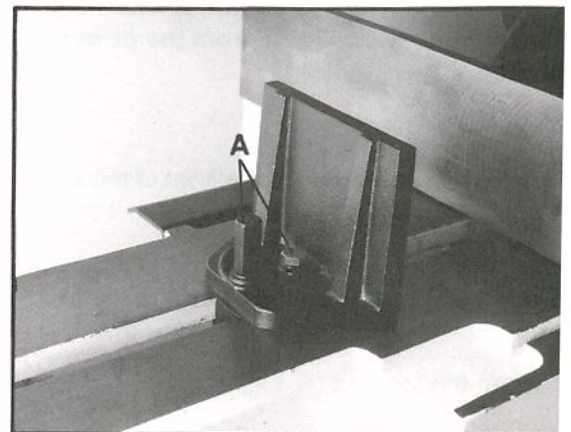


Fig. 16

Maintenance

Keep the band saw and motor clean.

Lubrication

All ball bearings are permanently lubricated and sealed. They require no further lubrication.

The gear box lubricant should be changed after the first 50 hours of operation. Change lubricant from then on every 250 hours of operation.

To check level of gear box lubricant, place saw arm in down position and allow a few minutes to pass so that oil drains down. Check level in sight glass on side of gear casing. Correct level is the dot in the middle of sight glass.

To change gear box lubricant:

1. Disconnect machine from the power source.
2. Open drain plug and allow lubricant to drain completely. Drain plug may be found on lower rear of gear case. Remove drain plug with a hex wrench.
3. Replace drain plug.
4. Remove filler cap (A, Fig. 17) and fill gear box with 50 weight gear oil until level reaches dot in middle of sight glass.
5. Replace filler cap.
6. Connect machine to the power source.

Use a light machine oil to lubricate all other moving parts as needed.

A detailed explanation on blade selection and blade problems and their solutions can be found in the enclosed "Guide to Band Sawing" published by American Saw and Manufacturing Company. Used by permission.

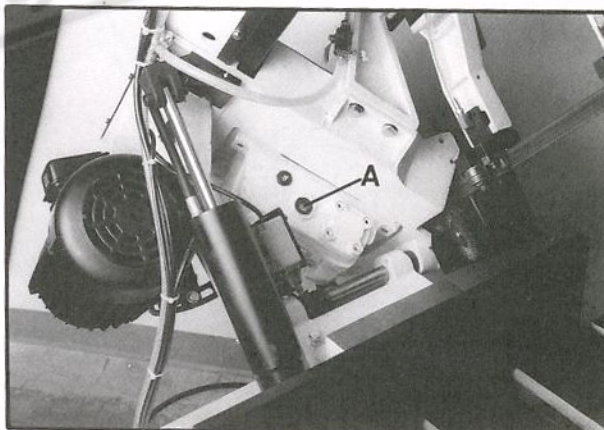


Fig. 17

Hydraulic System

It is simple structure of hydraulic system. The blade arm will be not going down if (A) magnetic valve having the sediment. So you must open (A) to clean the sediment away from the filtering net. (B) is oil gauge, (C) is oil inlet. The oil number is mobil 1405 or hydran LG10. (Model: UE -250SSA)

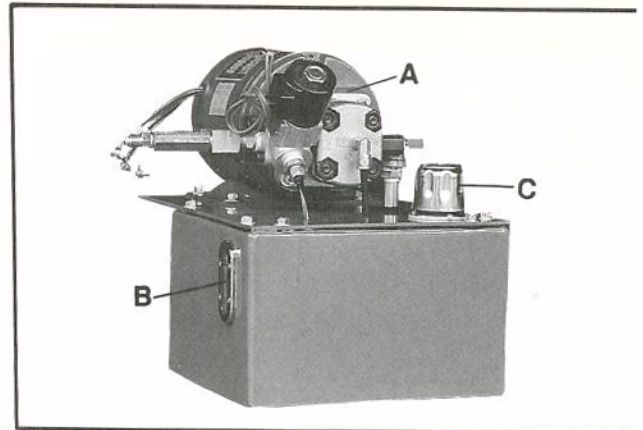


Fig. 18

Blade Arm Up - Down Adjustment

According to the working piece's size to adjust (B) micro switch.

The process is following : Firstly, to rise the arm to your desired position by hand to push button "UP" then loose (A) set screw, And move (B) micro switch to the fixed point. Finally reset (A).

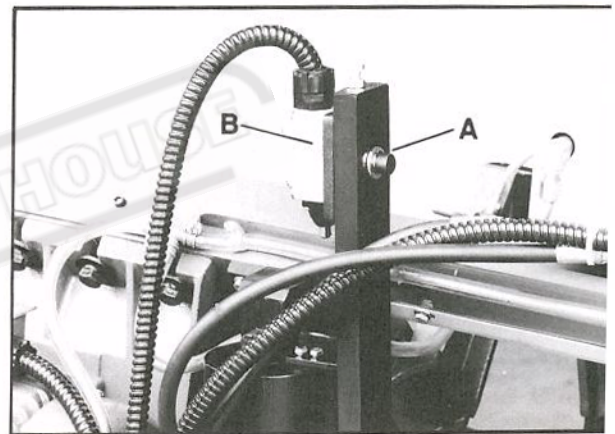
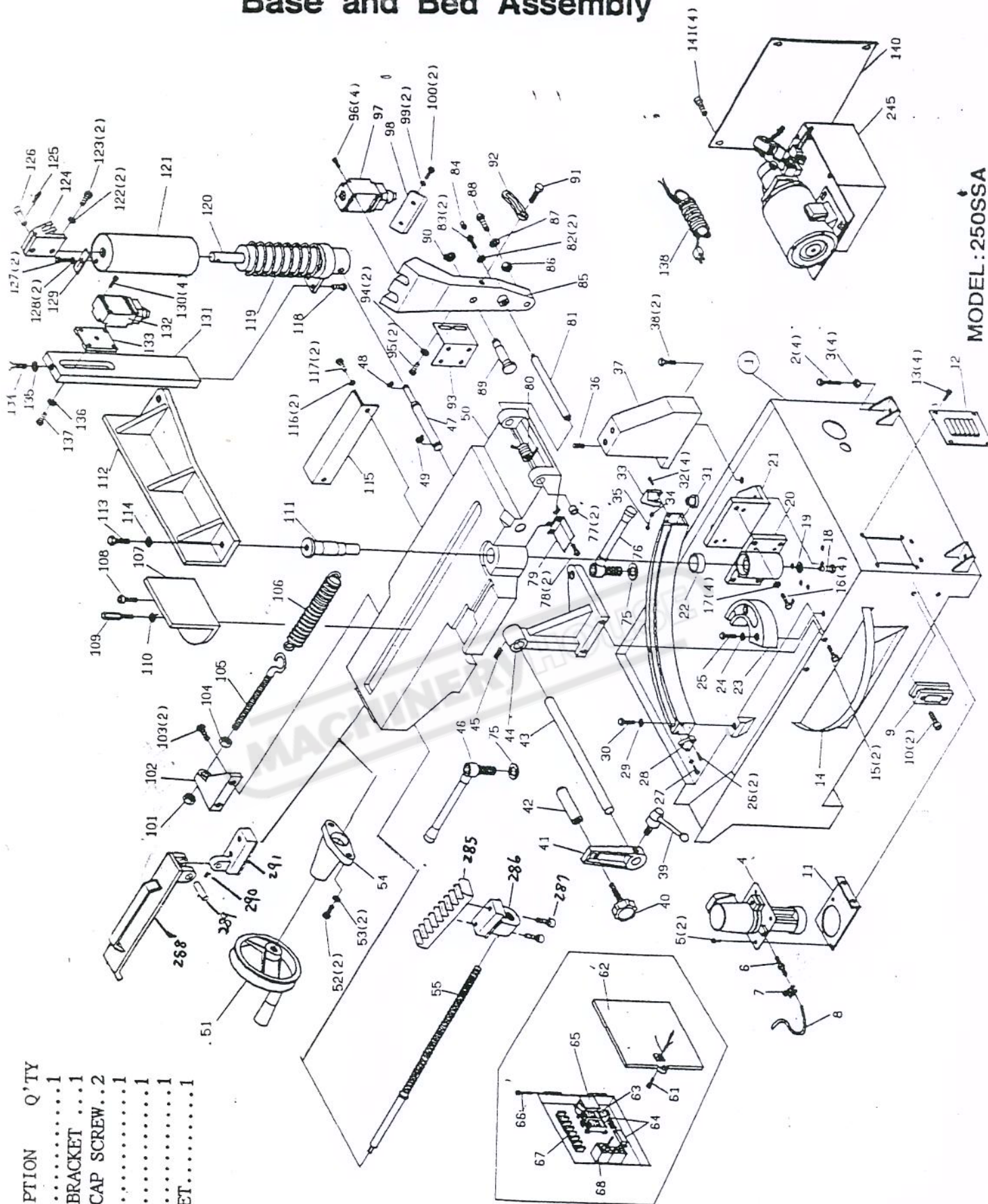


Fig. 19

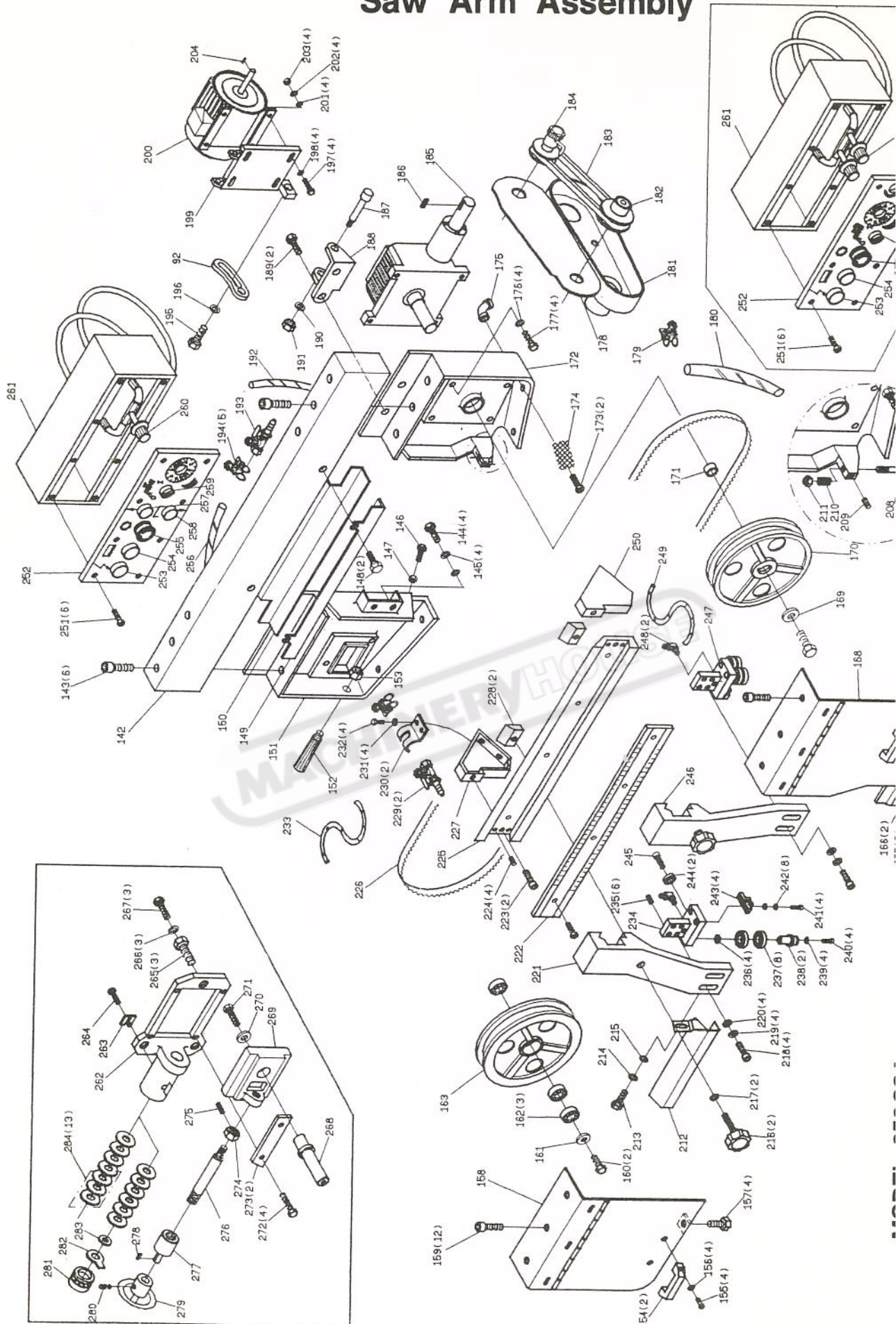
Base and Bed Assembly



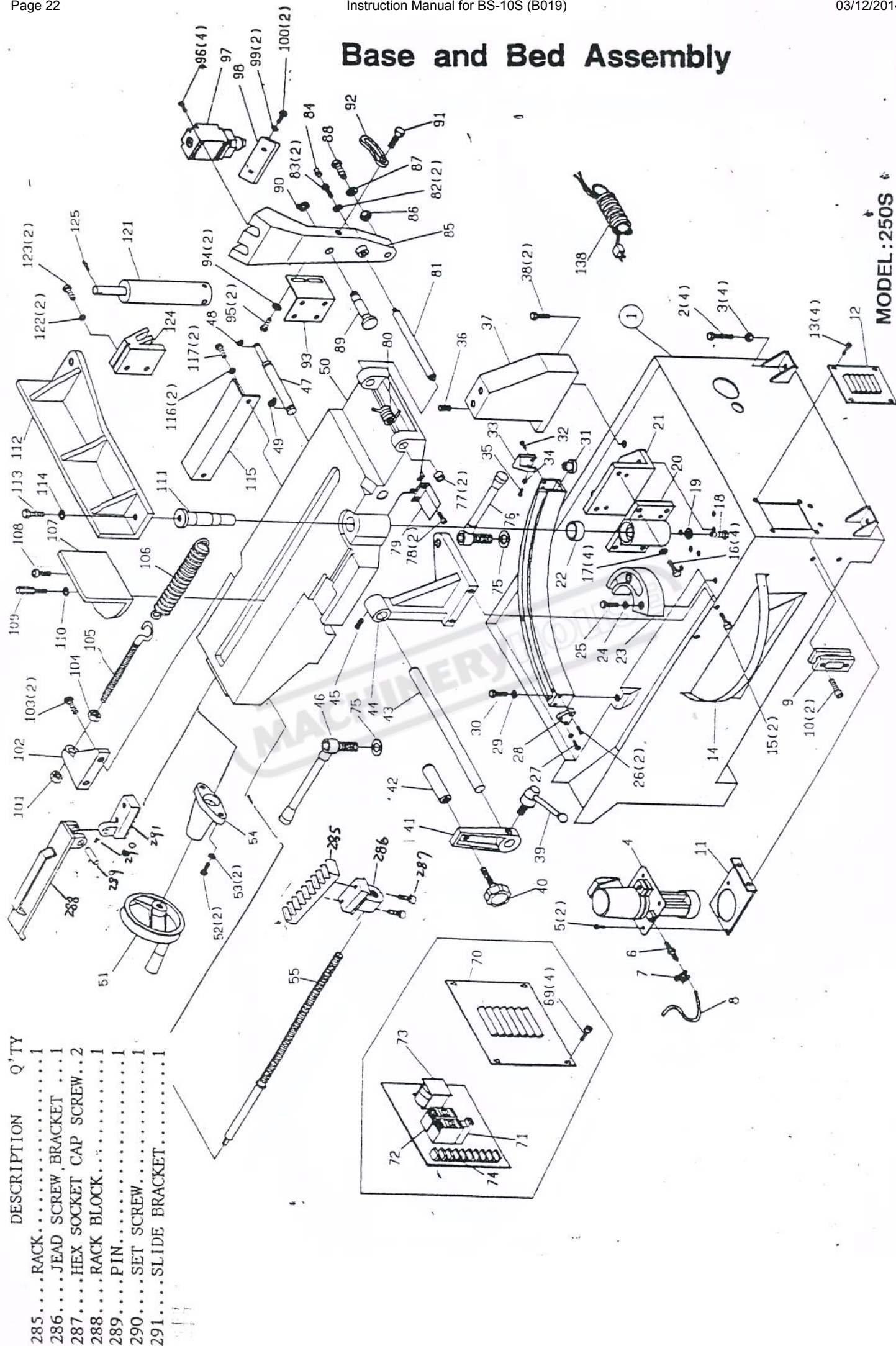
NEW PARTS:

DESCRIPTION	Q'TY
285.....RACK.....	1
286.....JEAR SCREW BRACKET ...	1
287.....HEX SOCKET CAP SCREW..	2
288.....RACK BLOCK.....	1
289.....PIN.....	1
290.....SET SCREW.....	1
291.....SLIDE BRACKET.....	1

Saw Arm Assembly



Base and Bed Assembly



DESCRIPTION	Q'TY
285....RACK.....	1
286....JEAD SCREW BRACKET ...	1
287....HEX SOCKET CAP SCREW..	2
288....RACK BLOCK.....	1
289....PIN.....	1
290....SET SCREW.....	1
291....SLIDE BRACKET.....	1

PART LIST

PART NO.	DESCRIPTION	SIZE NO.	Q'TY	PART NO.	DESCRIPTION	SIZE NO.
1	BASE		1	71	FUSE BLOCK	
2	HEX CAP BOLT	M12X70	4	72	MAGNETIC SWITCH(1PH/3PH)	
3	HEX NUT	M12	4	73	TRANSFORMER(1PH/3PH)	
4	COOLANT PUMP (1PH/3PH)		1	74	TERMINAL STRIP	
5	PAN HEAD SCREW	M6X16	2	75	WASHER	M16
6	HOSE FITTING		1	76	ADJUSTABLE HANDLE	
7	HOSE CLAMP		1	77	NEEDLE BEARING	
8	HOSE		1	78	HEX CAP SCREW	M6X12
9	COLLANT GAUGE		1	79	GUIDE PLATE	
10	HEX CAP BOLT	M10X30	2	80	TORSION SPRING	
11	COOLANT PUMP BRACKET		1	81	PIVOT SHAFT	
12	PANEL COVER		1	82	WASHER	M12
13	HEX SOCKET CAP BOLT	M6X8	4	83	BOLT W/ZERK FITTING	
14	TURN PLATE		1	84	BRASS FITTING	
15	HEX CAP BOLT	M8X16	2	85	PIVOT BRACKET	
16	HEX CAP BOLT	M12X30	4	86	NUT	M12
17	WASHER	M12	4	87	WASHER	M12
18	HEX CAP BOLT	M8X16	1	88	HEX CAP BOLT	M12X40
19	WASHER		1	89	TORSION SPRING SHAFT	
20	TURNING SLIDE BRACKET		1	90	C-RING	S-22
21	CENTER FIXED BRACKET		1	91	HEX CAP BOLT	M8X25
22	THRUST BEARING		1	92	MOTOR TILT PLATE	
23	TURNING SLIDE		1	93	LIMIT SWITCH PLATE	
24	WASHER	M10	1	94	WASHER	M8
25	HEX CAP BOLT	M10X40	1	95	HEX CAP BOLT	M8X10
26	HEX SOCKET CAP SCREW	M6X20	2	96	HEX CAP SCREW	M6X12
27	HEX SOCKET CAP SCREW	M6X20	1	97	LIMIT SWITCH	
28	BRACKET		1	98	PLATE	
29	WASHER	M10	1	99	WASHER	M12
30	HEX CAP BOLT	M10X40	1	100	HEX CAP BOLT	M12X50
31	SLIDE		1	101	HEX NUT	1/2"
32	HEX SOCKET CAP SCREW	M6X20	4	102	SPRING BRACKET	
33	BRACKET		1	103	HEX CAP BOLT	M8X30
34	HEX NUT	M10	1	104	HEX NUT	1/2"
35	HEX SOCKET CAP SCREW	M10X25	1	105	ADJUSTABLE C-BOLT	
36	SET SCREW	M8X16	1	106	SPRING	
37	BRACKET		1	107	WISE JAW - LEFT	
38	HEX CAP BOLT	M12X35	2	108	HEX CAP BOLT	M12X35
39	LOCK HANDLE		1	109	LOCK KNOB	
40	LOCK KNOB		1	110	LOCK WASHER	M12
41	STOP BRACKET		1	111	CUTTER PIN	
42	WORK STOP		1	112	FIXED VISE JAW	
43	STOP ROD		1	113	HEX CAP BOLT	M12X40
44	SUPPORT		1	114	LOCK WASHER	M12
45	SET SCREW	M8X10	1	115	SPRING COVER	
46	ADJUSTABLE HANDLE		1	116	LOCK WASHER	M10
47	CYLINDER PIN		1	117	HEX CAP BOLT	
48	C-RING	S-20	1	118	HEX SOCKET CAP SCREW	M8X30
49	C-RING	S-25	2	119	SPRING	
50	BED		1	120	HYDRAULIC CYLINDER ASSEMBLY	
51	HAND WHEEL ASSEMBLY		1	121	SPRING COVER	
52	HEX CAP BOLT	M8X30	2	122	LOCK WASHER	M10
53	LOCK WASHER	M8	2	123	HEX CAP BOLT	M10X30
54	LEAD SCREW SEAT		1	124	HYDRAULIC MOUNTING PLATE-TOP	
55	LEAD SCREW		1	125	CUTTER PIN	
56	LEAD SCREW BRACKET		1	126	CYLINDER PIN -TOP	
57	ACME NUT		1	127	HEX CAP SCREW	M6X12
58	BUTTON		1	128	LOCK WASHER	M6
59	RETAINER		2	129	METAL SHEET,SMALL	
60	PAN HEAD SCREW	M5X8	1	130	HEX CAP SCREW	M6X12
61	HEX SOCKET CAP BOLT	M6X8	4	131	ROD OF MICRO SWITCH FOR LENGTH	
62	ELECTRIC CABINET BOX		1	132	LIMIT SWITCH	
63	MAGNETIL SWITCH		1	133	LIMIT SWITCH PLATE	
64	FUSE		1	134	HEX CAP SCREW	M8X50
65	TRANSFORMERS		1	135	HEX NUT	M8
66	PIN		2	136	WASHER	M10
67	TERMINAL STRIP		1	137	HEX , HEAD SCREW	M10X25
68	GENERAL SWITCH		1	138	POWER CORD(1PH/3PH)	
69	HEX SOCKET CAP BOLT	M6X8	4	139	HYDRAULIC PUMPSET	
70	ELECTRICAL PANEL COVER		1	140	DOOR	

PART LIST

PART NO.	DESCRIPTION	SIZE NO.	Q'TY	PART NO.	DESCRIPTION	SIZE NO.	Q'TY
141	HEX SOCKET CAP BOLT	M6X8	4	214	LOCK WASHER	M8	1
142	COLUMN		1	215	WASHER	M8	1
143	HEX SOCKET CAP SCREW	M12X20	6	216	KNOB		2
144	HEX CAP BOLT	M12X30	4	217	WASHER	M10	2
145	LOCK WASHER	M12	4	218	HEX SOCKET CAP SCREW	M8X40	4
146	HEX CAP BOLT	M12X60	1	219	LOCK WASHER	M8	4
147	HEX NUT	M12	1	220	WASHER	M8	4
148	LOCK KNOB		2	221	ADJUSTABLE BRACKET		1
149	BLADE GUARD		1	222	SCALE		1
150	BLADE GUARD -DOWN		1	223	HEX SOCKET CAP SCREW	M10X25	2
151	WHEEL BOX -LEFT		1	224	SET SCREW	M8X10	4
152	HANDLE		1	225	SLIDE		1
153	HEX NUT	M12	1	226	BLADE(LOCAL PURCHASE)		1
154	HANDLE		2	227	BLADE BRACKET -LEFT		1
155	PAN HEAD SCREW	M6X16	4	228	CLAMP		2
156	WASHER	M6	4	229	ADJUSTING VLAVE		2
157	LOCK KNOB		4	230	CLAMP		1
158	BLADE WHEEL COVER -LEFT		1	231	LOCK WASHER	M6	4
159	HEX SOCKET CAP SCREW	M6X8	12	232	HEX CAP BOLT	M6X12	4
160	HEX CAP BOLT	M12X25	2	233	HOSE		1
161	WASHER	M12	1	234	GUIDE BRACKET -LEFT		1
162	BALL BEARING		3	235	HEX SOCKET CAP SCREW	M8X16	6
163	IDLER WHEEL		1	236	WASHER	M8	4
164	HEX CAP BOLT	M6X12	2	237	BALL BEARING		8
165	LOCK WASHER	M6	2	238	ECCENTRIC SLEEVE		2
166	WASHER	M6	2	239	LOCK WASHER	M8	4
167	WIRE BRUSH GUARD		1	240	HEX SOCKET CAP SCREW	M8X45	4
168	BLADE WHEEL COVER -RIGHT		1	241	HEX SOCKET CAP SCREW	M6X30	4
169	WASHER		1	242	WASHER	M6	8
170	DRIVE WHEEL		1	243	BLADE GUIDE		4
171	BUSHING		1	244	BALL BEARING		2
172	BLADE WHEEL BOX -RIGHT		1	245	HEX SOCKET CAP SCREW	M8X20	1
173	PAN HEAD SCREW	M5X10	2	246	ADJUSTABLE BRACKET -RIGHT		1
174	FILTER SCREEN		1	247	GUIDE BRACKET -RIGHT		1
175	CONNECTOR		1	248	CONNECTOR		2
176	LOCK WASHER	M12	4	249	HOSE		1
177	HEX CAP BOLT	M12X35	4	250	BLADE BRACKET -RIGHT		1
178	PULLEY COVER PLATE		1	251	PAN HEAD SCREW	M5X10	6
179	HOSE CLAMP		1	252	CONTROL PANEL		1
180	HOSE		1	253	POWER INDICATOR LIGHT		1
181	PULLEY COVER		1	254	START SWITCH		1
182	GEAR BOX PULLEY		1	255	STOP SWITCH		1
183	V-BELT		1	256	HOSE		1
184	MOTOR PULLEY		1	257	UP SWITCH		1
185	GEAR BOX ASSEMBLY		1	258	DOWN SWITCH		1
186	KEY	7MM	1	259	PUMP SWITCH		1
187	SUPPORT SHAFT		1	260	FEED CONTROL-HYDRAULIC ON/OFF VALVE		1
188	MOTOR MOUNT BRACKET		1	261	CONTROL BOX		1
189	HEX CAP BOLT	M12X30	2	262	SLIDE BRACKET		1
190	WASHER	M12	1	263	INDICATOR SCALE		1
191	HEX NUT	M12	1	264	PAN HEAD SCREW	M5X10	2
192	HOSE		1	265	HEX CAP SCREW		3
193	CONNECTING TUBE		1	266	LOCK WASHER		3
194	HOSE CLAMP		5	267	SCREW ASSEMBLY		3
195	SCREW		1	268	WHEEL SHAFT		1
196	WASHER	M8	1	269	SLIDE		1
197	HEX CAP BOLT	M8X45	4	270	WASHER	M12	1
198	WASHER	M8	4	271	HEX SOCKET CAP SCREW	M8X25	1
199	MOTOR MOUNT PLATE		1	272	HEX SOCKET CAP SCREW	M8X25	4
200	MOTOR		1	273	GIB		2
201	WASHER	M8	4	274	HEX NUT	M12	1
202	LOCK WASHER	M8	4	275	SET SCREW	M6X8	1
203	HEX NUT	M8	4	276	TENSION SHAFT		1
204	KEY	7MM	1	277	EXTENSION BAR		1
205	HEX CAP BOLT	M6X10	1	278	KEY	5MM	1
206	WASHER	M6	1	279	HANDWHEEL		1
207	WIRE BRUSH		1	280	SET SCREW	M8X10	1
208	WIRE BRUSH ROD		1	281	THRUST BEARING		1
209	SET SCREW	M6X8	1	282	TENSION INDICATOR		1
210	SPRING		1	283	FLAT STEEL WASHER		1
211	HEX NUT	M10	2	284	LOCK WASHER	M22	13
212	BLADE GUARD		1				
213	HEX CAP BOLT	M8X16	1				