METAL CUTTING BAND SAW
MODEL BS-106G

Assembly & Operating manual

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INTRODUCTION

This operation instruction manual conforms to the requirements of European Standard 2006/42/EC Machine Directives and subsequent amendments.
In the light of this， special attention has been given to safety aspects and accident prevention in the work-place for each stage in the machine's "life". Information which could be of particular assistance to the operator has been high lighted.
The "Operating instructions" are an integral part of the machine and should be consulted before, during and after the start up of machine and whenever else required.
The content of these instructions should always be carefully observed.
The observance of the above is the only way to achieve the two fundamental aims of this manual:

- Optimization of machine performance
- Prevent damage to the machine and injury to the operator

CAUTION: BEFORE INSTALLING THE MACHINE, READ THE OPERATING INSTRUCIONS CAREFULLY

1. ACCIDENT PREVENTION AND SAFETY INSTRUCTION

This machine has been designed to comply with national and community accident-prevention regulations, improper use and / or tampering with the safety devices will relieve the manufacturer of all responsibility.

1.1 Advice for the operator

A. Check that the voltage indicated on the machine motor is the same as the line voltage.
B. Check the efficiency of your electric supply and grounding system; connect the power cable of machine to the socket and the ground lead (yellow-green) to the grounding system.
C. When the saw frame is in suspended mode (or raised), the blade must not move.
D. Only the blade section used for cutting must be kept unprotected. To remove guards operate on the adjustable head.
E. It is forbidden to use the machine without its shields.
F. Always disconnect the machine from the power socket before blade change or carrying out any maintenance job, even in the case of abnormal machine operation.
G. Always wear suitable eye protection.
H. Never put your hands or arms into the cutting area while the machine is operating.
I. Do not shift the machine while it is cutting.
J. Do not wear loose clothing like: shirts with sleeves that are too long, gloves that are too big, bracelets, chains or any other objects that could get caught in the machine during operation. Tie back long hair.
K. Keep the area free of equipment, tools, or any other objects.
L. Perform only one operation at a time. Never have several objects in your hands at the same time.
M. Keep your hands as clean as possible.
N. All internal operations, maintenance or repairs, must be performed in a well-lit area or where is sufficient light from extra sources so as to avoid the risk of even slight accidents.

1.2 The electric equipments according to European Standard “2006/42/EC” which some integrating modifications.

A. The electric equipment ensures protection against electric shock as a result of direct contact.
B. The active parts of this equipment are housed in a box to which access is limited by screws that can only be removed with special tools; the parts are fed with alternating current as low voltage (24V). The equipment is protected against splashes of water and dust.
C. Protection of the system against short circuits is ensured by means of rapid fuses and grounding; in the event of a motor overload, protection is provided by a thermal probe.
D. In the event of a power cut, the specific start-up button must be reset.
E. The machine has been tested in conformity with European Standard.

1.3 Emergencies according to European Standard “2006/42/EC”.

In the event of incorrect operation of danger conditions, the machine may be stopped immediately by pressing the red emergency button.

The casual or voluntary removal of the blade cover of the flywheels causes the stepping-in of a interlock switch that automatically stops all machine functions.

Note: resetting of machine operation after each emergency stop require specific restart button.

2. DESCRIPTION OF MACHINE

2.1 Description of machine and its components

The band sawing machine produced by us has a sturdy frame made from welded and painted sheet-steel. The upper surface is designed to allow the complete draining away of the cutting fluid. The band holding bow is made of cast-iron and has generous dimensions，providing the cutting unit with the necessary strength and precision. The vice unit is made of cast-iron and clamps the material to be cut securely. The bar-stop device allows the length required to be preset and a constant level of performance for repeated cuts. The blade-holding bow is firmly attached to a reduction unit built onto the motor and to the base by means of a joint which allows 60° rotation to the right. This joint also allows the cutting movement to advance manually or by falling.

The coolant pump is fitted to the machine base. The main switch is located on the front panel. The choice of one of the two motor rotation speeds and therefore cutting speed is carried out by the main switch. The front panel is also fitted with an emergency stop button and a START button. The control lever， fitted with an ergonomic hand-grip and activation button with safety release action, reduces fatigue during operation to a minimum. The blade is protected by a guard with interlock which covers the upper area and the hand wheels and by two adjustable lower guards which protect the operator from ejected shavings and coolant. The machine is supplied with a set of service spanners.

2.2 Intended and unsuitable uses of machine

The band sawing machine has been designed and built to cut bars, structural steel and ferrous metal pipes in accordance with the instructions contained in this manual. Therefore, the cutting of other materials is not permitted: if the above recommendations are not observed，the machine could be damaged and the health and safety of the operator put at risk. Cutting is not permitted, if the bar has not been first locked in the vice.

3. MAIN TECHNICAL DATA

Under no circumstances should the following data be altered, this is in order to protect the correct functioning of the machine and to avoid creating safety risks for the operator.

Motor		Three-phase or single-phase
Motor Power		0.75/1.1 kw
Motor revolutions (two speeds)		700 / 1400 rpm
Electric pump		0.045 kw
Capacity	Circular @90°	220mm
	Rectangular @90°	250 x 155 mm
	Circular @60°	100 mm
	Rectangular @60°	80 x 95 mm
	Circular @45°	160 mm
	Rectangular @45°	160 x 110 mm
Blade size (length × width × thick)		2450×27×0.9 mm
Cutting speed		32 / 66 rpm
Cutting angle		60°/ 45°right
Piece locking vice: max opening		250 mm
Coolant tank capacity		liters 3
Net weight / gross weight		254 / 287 kg

4. HANDLING AND TARANSPORTATION

For safe handling and transportation use a lift truck for movement indoors. Keep the machine in its normal position and avoid turning it upside down. If the machine is fastened to the pedestal, stability will be greatly reduced and therefore all the necessary measures should be taken to stop the machine from tipping over.

All handing and transportation operations should be carried out by trained staff.

5. MACHINE INSTALLATION

5.1 Machine check

The machine should be checked to make sure that it has not been damaged during transportation and handing. If the machine appears to have been damaged, contact us immediately. Fit all the supplied accessories onto the machine such as #104 bar stop and #142 roller arm.

5.2 Fastening of the machine

The machine will be able to operate in keeping with the technical parameters supplied by us, if it is positioned correctly and fastened securely to the bench or the factory floor so that vibrations are minimal during operation.

5.3 Saw blade assembly

Remove the #37 bow guard by unscrewing #38 screws and #1 hand wheel. Fit the band by inserting it first between the bearings of the blade guide heads and then on the two pulleys, tighten the blade slightly by means of #1 hand wheel and install #37

bow guard. Check that the saw blade is fitted with the correct direction of teeth. Make sure that the saw blade type (dimensions 2450×27×0.9 mm) and its teeth pith are suited to the material to be cut.

5.4 Electrical connection to the mains

Install a differential thermo magnetic switch with characteristics suited to the mains.

Make sure that the power supply voltage corresponds to the voltage on the motor plate. Connect the cable to the power supply line observing the color codes of the individual wires, pay particular attention to the earth wire. Connect the machine, make sure that the rotation of circular blade is in the direction shown by the arrow on the guard.

5.5 Cutting coolant

For the cooling of the circular blade， fill the tank with emulsible oil obtained from a mixture of water and AGIP ULEX 260 EP oil with a percentage of 5-7%

6. MACHINE START UP AND OPERATION

6.1 OPERATION

Checks to carry out before each cut

A Tension the saw blade by rotating #1 hand wheel to the end of stroke (mechanic stop). Remember at the end of the operation to loosen the hand wheel to avoid the slackening of the band.

B Check that the hand indicates the required cutting angle (vice scale).

C Make sure that the bow and the vice are locked by means of #136 lock handle

D With the motor off, lower the bow and check that at the end of stroke, the band does not touch the counter-vice. If the band does touch, adjust #57.2 bolt located on the bow.

E Make sure that the piece to be cut is properly secured in the vice.

F Make sure that the cooling liquid is circulating in the machine.

It is strictly forbidden to use the machine without cutting fluid

G When starting the motor, make sure that the band rotates in the direction of the arrow

H To obtain maximum cutting accuracy， the unit must be located the nearest possible to the work piece. Clamp the work piece with the vice. Release #13 blade guide arm with # 17 clamping lever and move it near the vice jaw so that it doesn’t touch it during the cutting operation, then secure it again. When carrying out this operation, make sure that the blade guide does not come out of the bow guard leaving a part of the blade exposed.

6.2 CUTTING OPERATION

A. Before cutting, check that the inclination is the one required. In order to correct or change the inclination, place #136 bench lever in position you expect and after

correction, move it back to the lock position.

B. Clamp the material to be cut with #82 hand wheel after having positioned the clamp near the piece to be cut. Lower #86 vice lever. Change selector switch in M position. Turn the main switch to “1” position or “2” position you like, take hold of #7 handle located at the end of head lever and press the button. The blade will now start turning, position the blade carefully on the piece to be cut. Then increase the pressure in order to accelerate the cutting operation without using excessive force.

C. With selector switch in CSO position。Turn the main switch to the position required. After having started the unit by pressing the START push button, the blade starts to rotate. The down stroke of the bow can be adjusted by means of the appropriate regulator. Position the blade carefully on the piece to be cut. Then increase the pressure with the regulator in order to accelerate the cutting operation without using excessive force.

D. To make a series of cuts, position the bar stop in correspondence of the size required. Fix it into position by using #106.

E. To replace the band, carry out the same operations used to assemble the band (chapter 5.3).

We strongly discourage the use of blades with ruined or insufficiently sharp cutting edges

6.3 SPECIAL SAFETY CHECKS

A. Before using the machine, check carefully that the safety devices are in good working order, that the mobile parts are not blocked, that no parts are damaged and that all the components are installed correctly and are functioning properly.

B. Before operating the machine, make sure that the screws of the guards and other protective devices are adequately secured, especially the screws of bow guard.

C. Check that the safety micro switches and the emergency button are functioning correctly.

D. Make sure that the mobile guard does not leave uncovered an angle of more than 5° in order to prevent fingers from entering.

E. Pay attention to environmental conditions. Don’t expose the machine to rain, don’t use it in damp environments, position the machine on a clean dry floor that has no oil or grease stains.

F. Before using the machine, the operator should make sure that all tools and service spanners used for maintenance or adjustment have been removed.

6.4 MEASURES TO PREVENT RESIDUAL RISKS

A. The removal of guards and tampering with the safety devices is strictly forbidden.

B. Gloves should always be worn.

C. Standard work clothing should be used and kept closed and should not have flapping parts.

D. The machine should not be cleaned with liquids under pressure.

E. In the event of fire, extinguishers should not be used unless they are the powder type. The electric power supply to the machine should always be disconnected in these circumstances.

F. Do not insert foreign bodies into the motor cover and not supply the machine with voltage by tampering with the safety micro switches or main switch.
G. Take the necessary precautions to avoid the machine being started by other people during loading, adjustment, piece changing or cleaning.

7. MAINTENANCE AND REPAIRS

7.1 GENERAL SAFETY MEASURES

A. Lock main switch. Use the padlock in the event of machine failure or replacement of the band. The padlock key should be entrusted to a responsible person.
B. Before carrying out any work on electrical equipment, remove the power supply plug from the control pane (disconnect voltage).
C. Only use cables to supply power, which have a cross-section suited to the power of the machine.
D. Authorized personnel should only carry out repairs. Only spare parts made by the original manufacturer should be used, otherwise these could cause damage or injury.

7.2 DESCRIPTION OF ROUTINE MAINTENANCE

A. Adjustment of the blade guide bearings

Loosen #20 bolts, rotate #19 Hex. cap bolt, so that the blade guide bushings vertically position the blade in axis. Tighten #20 bolts until the blade secured. The front blade guides must be positioned the nearest possible to the piece to be cut. Check every 3 months the existing tolerance between the blade guides, making sure that it does not exceed the blade thickness of one tenth of a millimeter, so as to avoid inexactnesses in the cut squaring. Periodically check with mounted blade that the blade guide bearings rotate freely.

B. Lubrication of mobile parts of piece locking vice

Remove #93 jaw, withdraw #92 vice completely by lowering #86 lever. Clean and grease the mobile parts of #98 counter-vice and 92 vice. If the vice slid difficult, adjust #89 bolt. Lubricate the band guide devices regularly.

C. Cleaning of the coolant tank

The coolant tank can be cleaned by simply removing #148 bolts. Empty the coolant from the tank and collect the coolant in a container for future disposal. Clean away the shavings and the metallic powder, taking care not to scatter this over the machine especially around the motor and the box containing the electrical equipment. Fill the tank with the amount and liquid stated earlier.

D. Checking of bench lever functioning

Check rotation release-locking lever is working properly regularly. In the event of the lever not locking correctly, loosen #137 grub screw, tighten #138 nut and fasten #137 grub screw again. Make sure that with the bench lever in right position, #117 rotating arm which supports the bow can rotate freely.

8. INFORMATION REGARDING ENVIRONMENTAL NOISE

An environmental noise test carried out on the band saw machine, identical to the machine to which these operation instructions refer, has given the following results:

ACOUSTIC RADIATION PRESSURE

1. L_{Aeq}=83,2 dB (A)
2. L_{Aeq}=90.6 dB (the maximum acceptable value is 140dB).
3. The level of background noise has no influence = 48.5-54.2 dB (A).

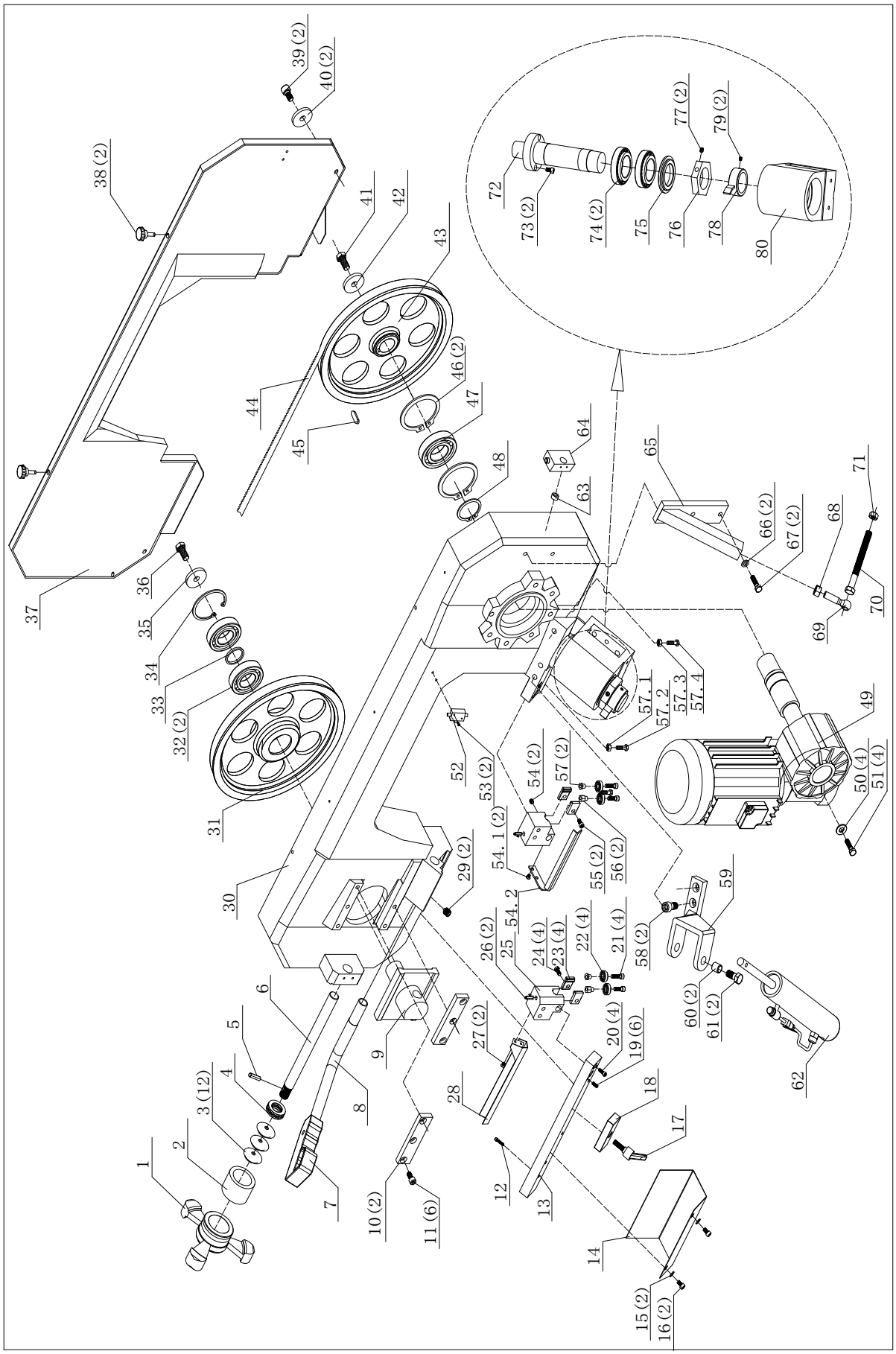
9. PART LIST

Item	Description	Qty	Item	Description	Qty
1	Vice handwheel	1	42	Washer	1
2	Bush	1	43	Drive flywheel	1
3	Spring 40x20.5x2	12	44	Blade	1
4	Lead screw AXK2035	1	45	Pin 10X20	1
5	Pin 8X35	1	46	Coolar 40	2
6	Tension shaft	1	47	Bearing 608-2Z	1
7	Microswitch	1	48	Coolar 25	1
8	Knob rod	1	49	Motor and gear box	1
9	Slide	1	50	Washer 10	4
10	Gib	2	51	Bolt M10X25	4
11	Bolt M8X16	6	52	Pipe fitting seat	2
12	Bolt M6X10	1	53	Bolt M4X25	2
13	Blade guide arm	1	54	Hex.cap bolt M8X10	2
14	Blade guard	1	54.1	Head screw M6X10	2
15	Washer 6	2	54.2	Back blade-guide guard	1
16	Bolt M6X10	2	55	Bolt M8X10	2
17	Clamping lever	1	56	Blade guide eccentric bush	2
18	Press block	1	57	Blade guide eccentric bush	2
19	Hex.cap bolt M6X30	2	57.1	Nut M8	1
20	Bolt M8X25	4	57.2	Bolt M8X30	1
21	Bolt M6X30	4	57.3	Nut M8	1
22	Bearing 608-2Z	4	57.4	Bolt M8x25	1
23	Blade guide block	4	58	Bolt M10X20	2
24	Bolt M8X14	4	59	Hydraulic cylinder fix seat(1)	1
25	Back adjust seat	1	60	Bush	2
26	Pipe fitting	2	61	Bolt M12X25	2
27	Hex. Socket cap screw M5X8	2	62	Hydraulic cylinder	1
28	Front blade-guide guard	1	63	Washer	1
29	Bolt M10X10	2	64	Magnetic switch	1
30	Bow	1	65	Fix seat for spring	1
31	Idle wheel	1	66	Washer 8	2
32	Bearing 627-2Z	2	67	Bolt	2
33	Bearing bushing	1	68	Nut M10	1
34	Coolar 72	1	69	Eyebolt M12X50	1
35	Washer	1	70	Bolt M10X120	1
36	Bolt M12X25	1	71	Nut M12	1
37	Blade cover	1	72	Rotor	1
38	Knob bolt M6X12	2	73	Bolt M6X20	2
39	Bolt M6X10	2	74	Bearing 32008	2
40	Washer 6	2	75	Dustproof cover	1
41	Bolt M10X25	1	76	Nut	1

PART LIST

Item	Description	Qty	Item	Description	Qty
77	Bolt M8X10	2	116	Nut M8	1
78	Stop block	1	117	Rotating arm	1
79	Bolt M6X8	2	118	Bolt M10X30	4
80	Fix seat for rotor	1	119	Column pin 8X30	2
81	Bolt M8X25	1	120	Eyebolt M12X50	1
82	Hand wheel Φ150XΦ18	1	121	Spring	1
83	Tighten bolt M6X10	1	122	Leptospira	1
84	End housing	1	123	Control box	1
85	Lead screw AXK3047	1	124	Control box support bracket	1
86	Vice lever	1	125	Bolt M8X20	2
87	Grease cup 6	1	126	Pillow block	1
88	Tighten block	1	127	Bolt M5X16	2
89	Bolt M8X10	2	128	Vice scale	1
90	Lead screw	1	129	Pointer	1
91	Spring	1	130	Fix seat	1
92	Upper vice	1	131	Washer	4
93	Vice plate	1	132	Bolt M10X25	4
94	Bolt M8X20	2	133	Ring 3.55 x 288	1
95	Bolt M8X25	3	134	Bolt M6X10	1
96	Nut 8	3	135	Link axis	1
97	Wedge plate	1	136	Bench lever	1
98	Below vice	1	137	Nut	1
99	Support plate	1	138	Grub screw	1
100	Bolt M8X16	4	139	Handle globe M10X32	1
101	Washer 8	4	140	Shaft	1
102	Nut M8	2	141	Coolant and chip tray	1
103	Shaft stop	1	142	Roll arm assembly	1
104	Bar stop	1	143	Bolt M58X20	4
105	Knob M8X16	2	144	Washer 8	4
106	Stop block	1	145	Feed support	1
107	Nut M16	1	146	Nut	4
108	Vice plate	1	147	Bolt M6X12	2
109	Vice plate	1	148	Washer 6	2
110	Bolt M8X20	5	149	Pump	1
111	Bolt M6X20	4	150	Plate	1
112	Hydraulic cylinder fix seat(2)	1	151	Base	1
113	Fixing rod	1	152	Washer 10	4
114	Washer 10	2	153	Bolt M10X20	4
115	Bolt M8X40	1			

10. DRAWING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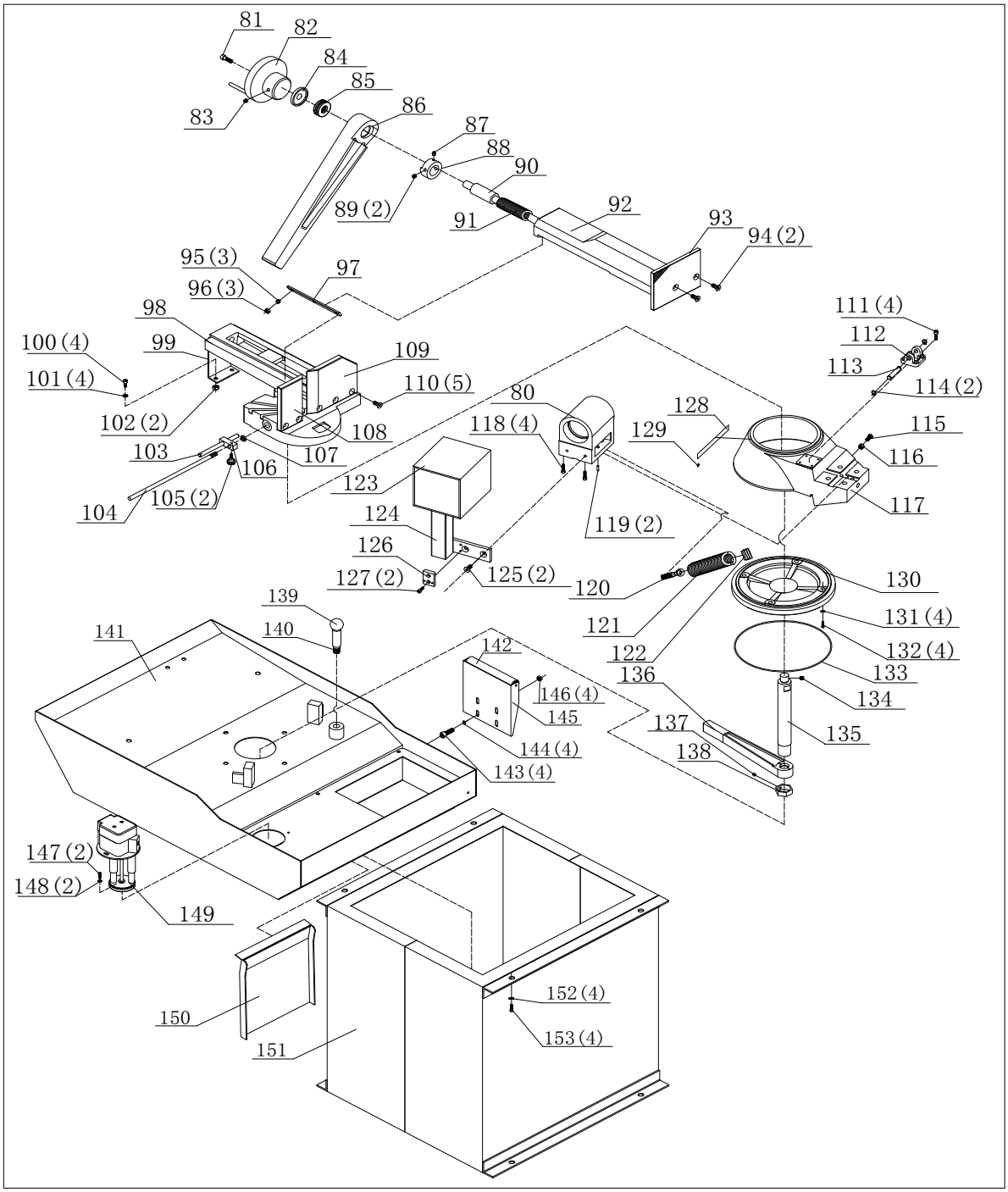
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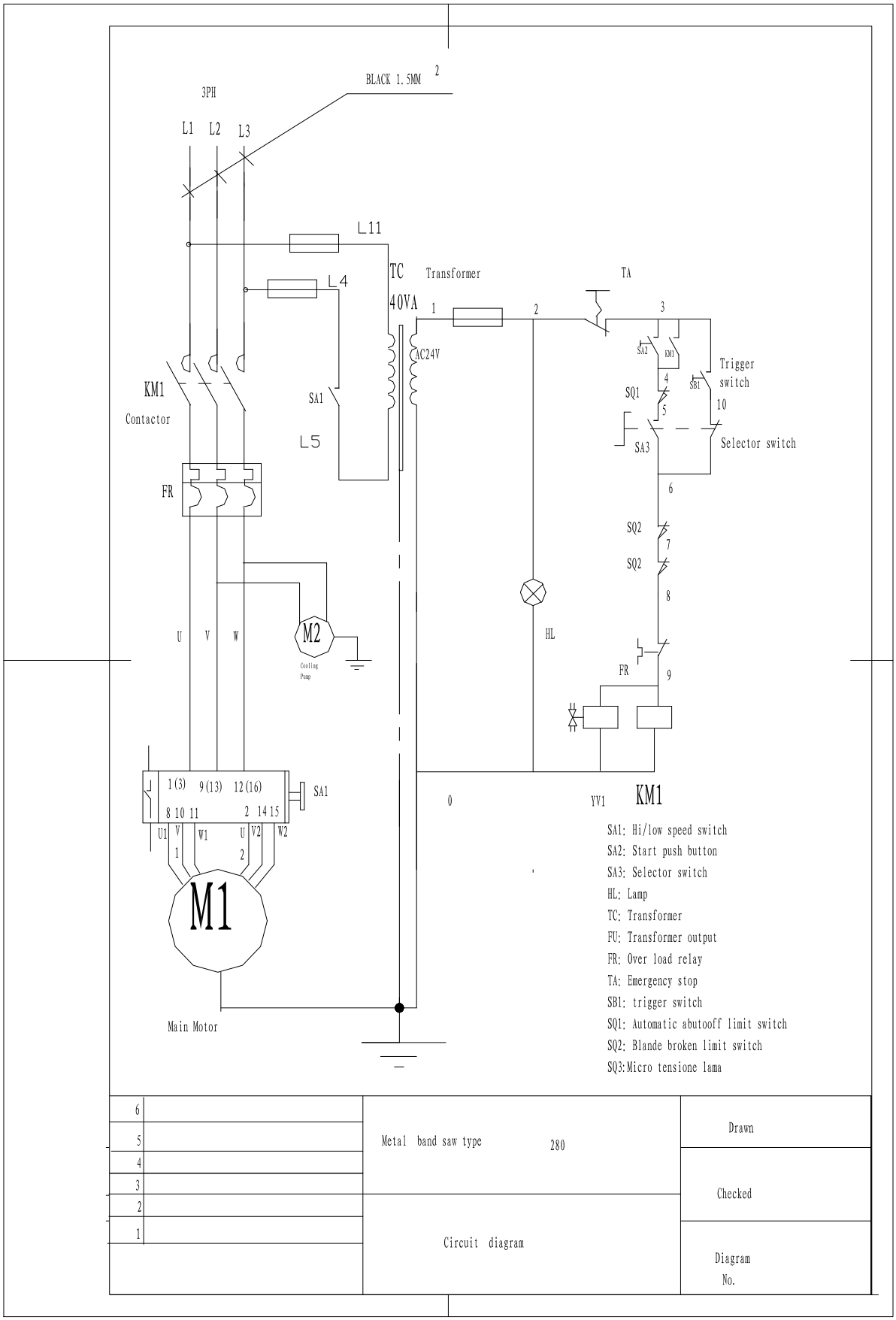

Note: This manual is only for your reference. Owning to the continuous improvement, changes may be made at any time with no obligation on the part of machine. And please note the local voltage for operating machine