PINHEIRO

AMA2-410/414

MULTI-BLADE

RIP SAW

INSTRUCTION MANUAL

Auburn

MACHINERY, INC.

PREFACE

This manual is devoted chiefly to the machine's user, and contains a large number of elements which we believe to be very helpful in dealing with and using the *MULTI-BLADE* **(AMA2).**

This *MULTI-BLADE* is to be used for the purposes for which it has been designed. Any other purpose which is not defined in this manual is entirely against the regulations governing the validity of the warranty. The manufacturer shall not be held responsible for any damage resulting from its inappropriate use. Thc risk caused by its misuse shall be solely and exclusively the responsibility of the customer.

We recommend that you read the instructions very carefully before attempting to operate the machine; we shal not be held responsible for any damage and operational problems resulting from not following the operating instructions.

We reserve the right to modify the diagrams and indications of these operating instructions, as well as to include technical modifications whenever the need arises for improvements to the machine. The manufacturer shall not be held responsible for any damage resulting from modifications to the machine which have been performed by unauthorised personnel.

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INTRODUCTION TO THE MANUAL

The present manual has been designed to instruct you and your employees as to how the machine is to work appropriately. It shall help you get your company to obtain maximum results in the fields of long-term safety, production and performance of your machine. It is important to remember that a machine, no matter how well it has been designed, shall perform just as well only if a person responsible for its operation treats it correctly.

In order to get quality performance out of the machine, it is crucial that the operators and maintenance technicians fully understand all the machine's operating systems as well as how these interact.

1. Get complete training from the technicians at *Auburn Machinery, Inc*;
2. Make sure the machine and the area surrounding it are well cleaned;
3. Lubricate the machine at the stipulated intervals;
4. Keep precise lubrication and maintenance records;
5. Keep the machine well repaired using only quality parts from *Auburn Machinery, Inc*;
6. Keep all blades and tools sharp and properly balanced;
7. Store the machine properly.

If these basic guidelines are regularly observed, this machine's performance shall increase significantly. It is the intention of the manufacturer Máquinas Pinheiro, Lda, and that of the distributor, *Auburn Machinery, Inc.(**AMI**)*, that this machine serve your company with the maximum output for which it has been designed.

Before using the machine, please read the present manual thoroughly and carefully, and follow the indications explained herein; then, test the machine using every adjustment possibility without requiring any tools. At the end, you may operate the machine as described. Do not hesitate to contact our services at any time, should you have any doubts or if you require any assistance.

We are there to serve each and every one of our dear customers!

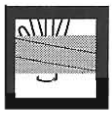
EXPLANATION OF THE SYMBOLS

Information

Be very careful

Danger of getting your hands cut

Danger of getting your hands crushed



Be careful – risk of parts or particles getting hurled

Shock hazard

Wear protective glasses

Wear ear protectors

Wear a Mask

Installing and Mounting

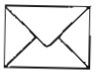
Maintenance Instructions

Repair Instructions

Technical Consultation

Telephone Link

Contact by Mail



Observe the stipulated period of time

Pinheiro Warranty

The Pinheiro machinery company through ***AMI*** warrants that any part or product thereof that is manufactured by Pinheiro, which under normal operating conditions in the plant of the original purchaser thereof. Proves defective in material or workmanship within 12 months or 2000 hours of operating time, whichever comes first, from the date of shipment from ***AMI*** , to the purchaser, will be replaced free or charge, f.o.b. ***AMI***, provided that purchaser properly sends to ***AMI***, notice of the defect and establishes that the products have been properly installed, maintained and operated within the limits of rated and normal usage. All component parts and material not manufactured by Pinheiro shall be guaranteed by the manufacturers of all such purchased component parts and material.

Pinheiro's obligation (as determined by an inspection by Pinheiro through ***AMI***) under this warranty is limited to and shall be fully discharged by repairing any defective part, or supplying without charge, f.o.b. Its works, a similar part to replace any which within the above stated time from date of shipment is shown to have been defective as to material or workmanship. Pinheiro and ***AMI*** shall have the option of requiring the return of these defective materials, transportation prepaid, to establish the warranty claim.

Pinheiro or ***AMI*** shall in no event be held liable for damages or delay caused by the defective material, and no allowance will be given by Pinheiro or ***AMI*** for repairs or alterations unless made pursuant to its written consent and approval. Pinheiro or the distributor shall not be held responsible for work done, apparatus furnished or repairs made by unauthorized persons unless specifically agreed to and authorized in writing .

Except as stated above, there are no warranties, express or implied, including the warranties of merchantability and fitness for a particular purpose. Pinheiro acknowledges that purchaser's sole and exclusive remedy against company shall be for the repair or replacement of defective parts as provided for herein and the warranty as stated above is in lieu of any other warranty or remedy. In no event, be it due to a breach of performance of the goods sold hereunder, shall the seller be obligated or liable to purchaser in any manner for consequential or incidental damages, including, but not limited to, lost profits, plant downtime or suits by third parties.

1- MANUFACTURER:

Máquinas Pinheiro, Lda
✉ Head Office and Factory
Rua D. Pedro V - Apartado (P.O. Box) 1
4785 – Trofa
Portugal

☎ 252 416813
Fax: 252 416675
E-mail: pinheiro@pinheiro.pt

2- MACHINE REFERENCES

Designation: ***MULTI-BLADE***
Model: **AMA2 – 410A**
Machine no.: **623**
Year Manufactured: **2001**

3- FEATURES OF THE MACHINE

TECHNICAL SPECIFICATIONS		AMA2-410	AMA2-410A	AMA2-414	AMA2-414A
Max. cutting height	mm	95	95	140	140
Max. Dist. between disks = max. cutting width	mm	450	450	430	430
Max. Dist. between disks as aligner	mm	----	35-450	----	35-345 70-400
Max. width of the lumber	mm	1000	1000	1000	1000
Dist. from the centre of the conveyor belt to the column	mm	580	580	580	580
Depth of cut min.: -Intermittent feed -Continuous feed	mm 	 500 500	 500 500	 500 500	 500 500
Feed speed	m/min	7- 40	7- 40	7- 40	7- 40
Cutterblock speed with a saw of Ø 250/350	r.p.m	3200	3200	----	----
Cutterblock speed with a saw of Ø 350/450	r.p.m	----	----	2700	2700
Max. disk diameter	mm	350	350	450	450
Min. disk diameter	mm	250	250	250	250
Diameter of the disk sleeve	mm	70	70	70	70
Block diameter	mm	55	55	55	55
Diam. of the disk separation rings	mm	120	120	120	120
Width of the feed belt	mm	450	450	450	450
Table diameter	mm	2000x1000	2000x1000	1950x1000	1950x1000
Power of the main motor: min. - max.	KW CV	22 – 75 30 – 100	22 - 75 30 - 100	22 - 75 30 - 100	22 - 75 30 - 100
Power of the feed motor	KW CV	3 4	3 4	3 4	3 4
Net weight	kg	3700	3800	3700	3800
Gross weight	kg	4000	4100	4000	4100
Shipping package	m	2,2x2,2x2,2	2,2x2,2x2,2	2,2x2,2x2,2	2,2x2,2x2,2

Subject to technical alterations

The *MULTI-BLADE* is a machine which uses circular saws as its tools, for the multiple cutting of pieces of lumber or their by-products.

Circular saws are applied in a sleeve, which, in turn, in a horizontal block. The pieces to be sawed are fed into the machine using a feed belt.

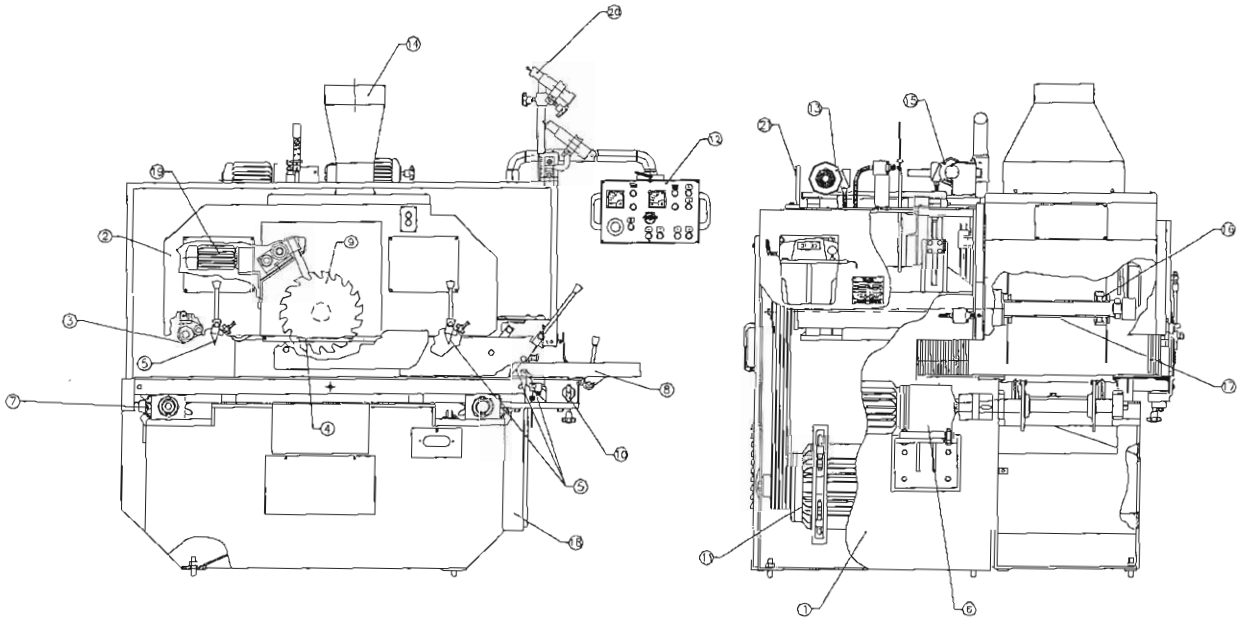


Figure No.1

1- FUNCTIONS

1.1- Base: (Pos.1)

This is the machine's base itself.

1.2 – Feed Housing for supporting the pressure rolls: (Pos.2)

This is the part where the pressing rollers and the pressure plate for the lumber operate. Another function of this part is the vacuuming bell

1.3 - Pressing rollers: (Pos.3)

These are rollers located before and after the block and which press the pieces to be sawed down against the feed belt, in order to accompany the movement of the latter.

1.4 - Pressure plate: (Pos.4)

This plate is made of material containing phenol (it may also be made of wood) for pressing the pieces down in the area where the circular saws are located. It is found between the pressing rollers under the block.

1.5 - Anti-kickback fingers: (Pos.5)

The function of all of these is to prevent pieces from kicking back or the particles from getting hurled back.

The main function of the short upper fingers is to prevent pieces from kicking back; thus, the reason why they are fingers for preventing the kick-back of pieces.

The main function of the longer fingers is to prevent particles from the piece to be sawed from getting hurled back; thus, the reason why they are fingers for preventing the kick-back of particles.

1.6 - Motorised feed reducer: (Pos.6)

Motor for activating the feed belt.

- It stops automatically when the main door is opened.
- It starts only when the block motor is working.
- It stops automatically when there is a shortage of oil in the lubricating pump.
- It is controlled by the potentiometer (Pos.7 in Fig. 2) and by the electronic frequency variator so as to bring about the variation in the feed speed.

1.7 - Feed belt: (Pos.7)

Set of connections linked by two chains, which feed the pieces to be sawed.

1.8 - Guide fence: (Pos.8)

The function of the guide fence is to guide the lumber along the table during production.

1.9 - Circular saws: (Pos.9)

These are the tools used by this machine. They cut the lumber.

1.10 - Disassembly rod of the sleeve: (Pos.10)

Rod on the feed table to disassemble and assemble the circular saws sleeve.

1.11 – Saw motor: (Pos.11)

This is the main motor, which activates the block and the circular saws.

1.12 – Control table: (Pos.12)

The table where the machine's electrical controls are located (ver detailed image in Fig.2).

1.13 – Fly-wheel for raising the block: (Pos.13)

Height adjustment is necessary for using circular saws of different diameters and for their replacement.

1.14 – Suction joint: (Pos.14)

Joint for linking up to the suction system, which is applied to the feed housing for supporting the pressure rolls.

1.15 - Motorized reducer for adjusting the height of the Feed Housing: (Pos.15)

This motorized reducer is controlled at the control table by two buttons, one for raising and the other for lowering the Feed Housing, and thus adjust the force applied by the rollers on the table.

- It stops as it is at the end of the feed Pos.14 in Fig. 2 when the Feed Housing is lowered.
- It stops as it is at the end of the feed Pos.15 in Fig. 2 when the Feed Housing is raised.

1.16 – Separating rings: (Pos.16)

These carry out the separation of the circular saws (when the machie has no moveable disk).

For multiple cutting, the width of these rings defines the width of the pieces that are sawed.

1.17 - Block: (Pos.17)

It is on the block that the sleeve is applied with the circular saws.

1.18 – Electrical panel: (Pos.18)

Panel where most of the electrical components are located (General switch, contac fuses, relays, transformer, etc.).

At the door of the electrical panel there is a general switch which only allows the door to open when the panel is off. This switch cuts off power to the entire machine; all that remains is the instruments for barring current from entering, which are protected by a transparent safety plate.

1.19 - Motorized Reducer for the Moveable Disk: (Pos.19) (only with the moveable disk option).

This motorized reducer is controlled at the control table by two buttons (Pos.17 and 18 in Fig.2): one for moving the disk to the left and the other to the right, thus adjusting the cutting width of the lumber.

1.20 – Laser Beams (Pos.20)

In machines having a moveable disk (optional) two laser beams are mounted: one indicating the cut performed by the fixed disk; the other moving together with the moveable disk, to indicate the cut it's going to perform.

1.21 – Arbor Scale: (Pos.21)

This scale varies with the height of the block and indicates the diameter of the disks which are mounted in the machine.

2- **FUNCTIONS OF THE ELECTRICAL COMPONENTS.** (See fig. 2)

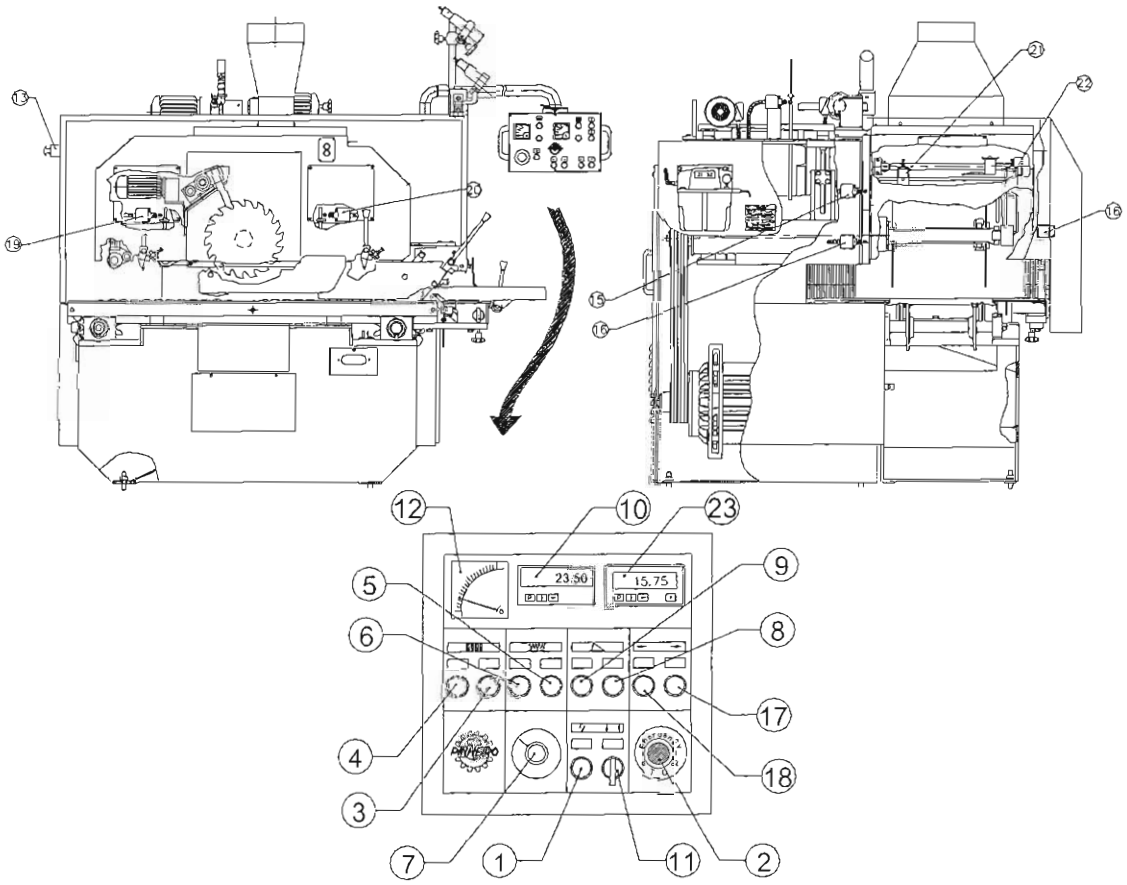


Figure 2

2.1 - Machine Turned On: (Pos.1)

When this light is on, it shows that the machine is turned on and ready to be operated.

2.2 - Emergency Stop: (Pos.2)

This button allows one to cause the machine to stop immediately.

2.3 - Button for starting the main motor: (Pos.3)

When switching on this button, the circular saws operate.

2.4 - Button for stopping the motor controlling the saws:(Pos.4)

It shuts off the motor that activates the circular saws.

2.5 - Button for activating the feed motor:(Pos.5)

This button sets the feed belt in motion.

2.6 - Button for stopping the feed motor:(Pos.6)

This button stops the movement of the feed belt.

2.7 - Potentiometer for adjusting feed speed:(Pos.7)

Allows for continuous regulation of the feed speed from 7 to 40m/sec.

2.8 – Rotating button for the 1/0 (on/off) position:(Pos.8)

In order to open the main door, it is necessary to turn this button to position 1 and wait the pre-established amount of time. It also shuts off the block motor and only allows it to operate once again after returning to position 0.

2.9 - Red or Orange Signal.(Pos.9)

When lit, it indicates that the block motor has stopped and he main door can now open.

2.10 - Feed speed indicators.(Pos.10)

Shows the value of this speed in meters per second.

2.11 - Rotating button for positioning the Feed Housing of the pressure rolls. (Pos.11*)

When turning the button towards the top, the Feed Housing goes up, and when turning it down, it is lowered.

2.12 – Amp. meter: (Pos.12)

Shows us consumption of the block motors, in amperes.

2.13 - Emergency stop. (Pos.13)

This button allows one to bring the machine to an immediate halt.

2.14 - Safety stoppage of the path when lowering the feed housing: (Pos.14)

It shuts off the motorised reducer of the movement of the feed housing at the lower limit of its path.

2.15 - Safety stoppage of the path when raising the Feed Housing: (Pos.15)

It shuts off the motorised reducer of the movement of the Feed Housing at the upper limit of its path.

2.16 – Safety switch: (Pos.16)

Switch with a delayed opening, which lets the door open only after the block has stopped completely and automatically shuts off the entire machine.

It does not allow the main door to open when there is no electricity, except using the unblocking key.

MACHINES WITH OPTION MOVEABLE DISK

The components listed below exist only on those models having a moveable disk:

AMA2-410/A and AMA2-414/A

2.17 - Button for approaching the moveable disk to the fixed one. (Pos.17*)

It reduces the lumber's cutting width, and approaches the cutting disks.

2.18 - Button for moving the moveable disk away from the fixed one. (Pos. 18*)

It increases the lumber's cutting width, and keeps the cutting disks away.

2.19 - Safety stoppage of the moveable disk's path. (Pos.19)

It allows for movement of the moveable disk along the block as long as the lumber leaves the saw, thus allowing the moveable saw to be moved once again.

2.20 - Safety stoppage of the moveable disk's path. (Pos.20)

It stops the movement of the moveable disk along the block right before it starts to saw.
thus keeping it from being forced laterally against the lumber.

2.21 - Safety stoppage of the maximum opening limit of the moveable disk's path. (Pos.19)

It keeps the opening from occurring beyond the opening limit. It shuts off the motorized reducer of the moveable disk's movement.

2.22 - Safety stoppage of the moveable disk's path. (Pos.15)

It keeps the disks from coming closer together than the minimum limit. It shuts off the motor-reducer of the moveable disk's movement.

(*) On machines equipped with a Roller Table at the entrance - MRL3 - commands for Pos.11, 17 and 18 are applicable at the table – See chapter XI.

3- DESCRIPTION OF THE MACHINE MODELS

3.1- *MULTI-BLADE RIP SAW*- AMA2

As continuation for previous models of MULTI-BLADEs from *Auburn Machinery*, the model designated as **AMA2** means that this new family of ***MULTI-BLADEs*** is designed in such a way as to comply with the criteria for the Directive on Machines (89/392/CEE).

The present instruction manual is only valid for the following models:

- AMA2-410 (*MULTI-BLADE*)
- AMA2-410/A (*MULTI-BLADE* with a moveable disk)
- AMA2-410/2A (*MULTI-BLADE* with two moveable disk)
- AMA2-414 (*MULTI-BLADE*)
- AMA2-414/A (*MULTI-BLADE* with a moveable disk)

There is also a series of mean-capacity MULTI-BLADEs:

- AMA2-310 (*MULTI-BLADE*)
- AMA2-310/A (*MULTI-BLADE* with a moveable disk)
- AMA2-314 (*MULTI-BLADE*)
- AMA2-314/A (*MULTI-BLADE* with a moveable disk)

And a model of lesser capacity:

- AMA2-208 (*MULTI-BLADE*)

4 – FUNCTIONAL FEATURES OF THE *MULTI-BLADE*

This machine can be used as:

• *MULTI-BLADE*

Use various circular saws separated using separation rings mounted on a sleeve.

One or more laser beams may be supplied as an option so as to show position and direction of one or more saws, as well as various sleeve with their respective washers, in order to make tool changing easier.

• Aligner

(Optional optimising system)

MULTI-BLADE equiped with a moveable disk so as to function as a precision aligner which allows one to optimize the full use of the lumber.

It uses two circular saws: one fixed and the other moveable using a pedal.

A system of laser beams may be supplied as an option in order to indicate the position of the saws. This system is made up of a fixed laser beam corresponding to the fixed saw and a moveable laser

The **AMA2-410** and **AMA2-410/A** can use circular saws having diameters ranging from 250mm up to 350mm.

The **AMA2-314** and **AMA2-314/A** can use circular saws having diameters ranging from 300mm up to 450mm.

Never apply saws having different diameters for simultaneous use.

1- SUCTION SYSTEM

This MULTI-BLADE can work only if it is hooked up to an appropriate suction system; otherwise, the accumulation of dust and/or residues resulting from its operation brings about greater wear and less performance on the part of the machine, and it can also give rise to work-related illnesses of the type:

- Granulomatous
- Dermatitis (*)
- Asthma (*)
- Conjunctivitis (*)

(*) In the case of exotic wood

Procedure

A connection shall be made at the issue point using a flexible tube, whose diameter should be 200mm or 250mm (See Fig. 3). At the same time, it should allow for a suction capacity of 2900 m³/h and a speed of some 25 to 30 m/sec.

One must also bear in mind that the suction system and the respective system of tubes should be dimensioned and its installation is to be monitored by specialized technicians

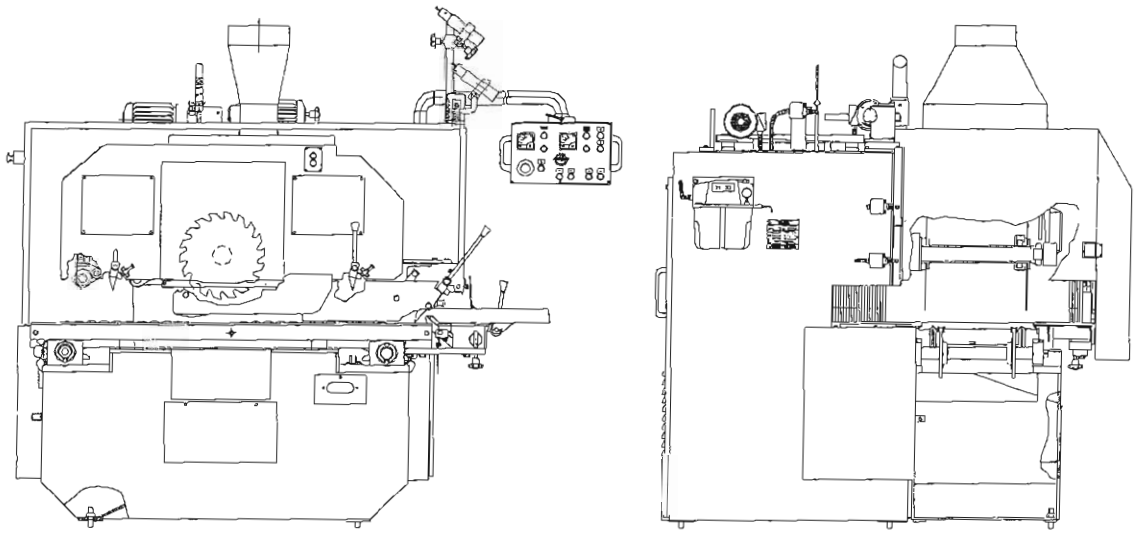


Figure n.°3

	AMA2-410	AMA2-414
OUTLETE DIAMETER	250 mm	200 mm


1- GENERAL SAFETY WARNINGS

The *MULTI-BLADE* (AMA2) has been designed and developed according to the most modern techniques, so as to ensure safer operation. In any event, its use can be dangerous and it should be used, repaired and handled only by authorised well-informed and adequately trained personnel; this is why it is indispensable that the indications contained in the present manual, as well as the norms in force, be complied with. In any case, the local safety rules and regulations for accident prevention should be applied in these operations.

Generally speaking, the following should be kept in mind:

1.1 - The owner of the machine shall pledge to use it only when he is sure that it has been tested and when he has concluded that it is in adequate condition in terms of safety.

1.2 - Repairs shall be carried out solely by the manufacturer - *Auburn Machinery, Inc.* – or by specialized personnel authorized for that very same purpose.

1.3 - When unpacking and installing the machine, cranes or hoists of sufficient loading capacity should be used relative to the weight of the machine; thus shall one be able to prevent falls which could give rise to dangerous situations and/or major repairs.

1.4 - The user shall pledge to eliminate and/or immediately report damage or changes to the machine which may impair safety.

1.5 - The machine should be used only for the foreseen purposes; in the event of misuse or abuse, effective safety shall not be ensured.

1.6 - The manufacturer shall not be held responsible for for damage originating from the misuse of the machine; such responsibilities shall be at the expense of the owner.

1.7 - All protection systems should be periodically tested according to the provisions in force.

1.8 - The safety devices which have been disassembled so that maintenence or repair work can be carried out shall have to be re-assembled before the machine resumes operation.

1.9 - Perform all maintenance and repair work only after the machine is at a standstill and turned off.

1.10 - Keep in mind all warnings which have been placed on the machine.

1.11 - Do not open doors or covers until the machine is totally at a standstill.

1.12 - Do not modify the safety devices or put them out of order.

1.13 - Only spare parts from *Auburn Machinery* are to be used. We shall not be held responsible for damage which may occur as a result of using other brands and/or replacements carried out by unauthorized personnel.

1.14 - At best, make sure that the workplace is always clean and free of any obstacles.

1.15 - Use/Wear individual protection devices that are appropriate to the type of work, such as: gloves, protective goggles, etc.

1.16 - Suitable clothing is very important; do not wear very loose clothing, long hair, watches and bracelets, as these may eventually cause accidents. For this same reason, the hair must be covered, and suitable clothing should be worn.

1.17 - The saws and the shred removal system are to be kept clean and in perfect working order, in order to prevent overheating and the risk of fire due to the accumulation of material and the resulting friction with the circular saws.

2- SAFETY WITH THE MACHINE

2.1 - Adjust and equip the machine only when it is completely shut off.

2.2 – Before operating the machine, all protective coverings are to be placed in their respective places.

2.3 - Do not put your hands in dangerous areas (where moveable parts are present).

2.4 - Before leaving the machine, disconnect the tension on the general circuit breaker.

2.5 - Never attempt to work pieces whose size is exceed the machine's maximum capacities.

2.6 - There is a security interlock switch for keeping the door closed. Do not attempt to adjust the open time. If this time is less than 25 seconds, please contact *Auburn Machinery, Inc.* or your local representative.

2.7 - The allowed noise emission depends on the national standards in force in the country of the machine's owner.

Noise in the workplace caused by the MULTI-BLADE – AMA2:

- value of the weighted equivalent continuous sound level A; LA_{eq} = 91.6 dB(A)
- value of the weighted level A of sound power; L_{wa} = 102.9 dB(A)

Because of the sound level emitted by the machine, we recommend that you wear ear protectors whenever the machine is working.

3 – ELECTRICAL SAFETY

Whenever you need to work on the machine's electrical installation, you should keep in mind the safety standards which we shall now briefly describe as follows:

3.1 - Before starting any type of maintenance work, the electric current of the parts that are subject to a flow of electricity should be switched off. (The plug is to be removed from the outlet.)

3.2 - Work on any electrical part should be carried out only by specialized electricians.

3.3 - After each setup and/or repair of electric parts, you should verify all the protection systems used, before restarting the machine.

3.4 - The operator should not disassemble and/or put out of service any signal transmitters or any other electrical devices belonging to the safety systems.

4 – SAFETY WITH TOOLS

4.1 - The tools have sharp edges which could cause injuries even when the machine is not in operation. This is why circular saws have to be handled with care and you should wear work gloves when readying the machine.

4.2 - Use only circular saws whose dimensions are within the limits that are set for the machine and according to the specific type of work to be carried out.

4.3 - Re-tighten and test the firm setting of the tools, as well as their fastening systems.

4.4 - Do not use cracked or deformed tools.

4.5 - Do not use tools that have already been put aside and which no longer afford minimum safety during their use.

4.6 - Do not use tools whose features are not for their intended purposes or for that specific type of machine.

4.7 - Before changing your tools, disconnect the power from the control.

4.8 - Before placing the tools, clean the "support instruments" and their contact surfaces, as well as the intermediate rings, if any.

4.9 - Make sure the nuts are tightened before restarting work.

4.10 - Before starting the machine, check to make sure the block rotates freely. The block or the circular saws subject to friction, generally due to contact with the pressure plate, heat up and quickly become damaged.

4.11 - After every intervention and/or repair performed on the machine and before restarting the machine, all protection devices that have been removed are to be duly placed back on and tested.

1 - PACKAGING

Our machines are packaged according to the packaging regulations under standards ISO 3394 and DIN 55402 following the main rules for the safety both of the machine and of the people handling it; any and all symbols appearing on the box or palette (as the case may be) shall have to be strictly observed and the warnings complied with.

2 - SHIPPING

The machine is delivered fully bound and/or fasten. Any damage sustain during delivery shall have to be reported to those responsible for the delivery, or to its local representative immediately after unloading.

3 - UNLOADING

When unwrapping the machine, the first thing that you should do is check to see whether there was any damage sustained during its transport, and also whether all the accessories, both those that are supplied with the machine and those that have been ordered as extras, are included.
You should also keep in mind those elements mentioned in the previous point regarding care that needs to be taken, which are a complement to this point.

4 - TRANSPORT *(See Fig. no. 4)*

When transporting the machine, be careful not to bump it against anything and make sure it does not oscillate very much. Transport the fixed machine on a wooden pallet.
The machine can be transported on the ground using rollers placed underneath it, so that this way it can be moved to the place where it is to be installed.

When lifting the machine using a crande or a fork-lift truck (figure no. 4), look for the points on the machine which are the most stable, as shown in the figure.

We do not recommend using chains to secure the machine, as their use could cause damage to the machine's plating or paint job.Steel cables should be used on those parts where the cables come in contact with the machine's structure. Protect using pieces of felt or cardboard.

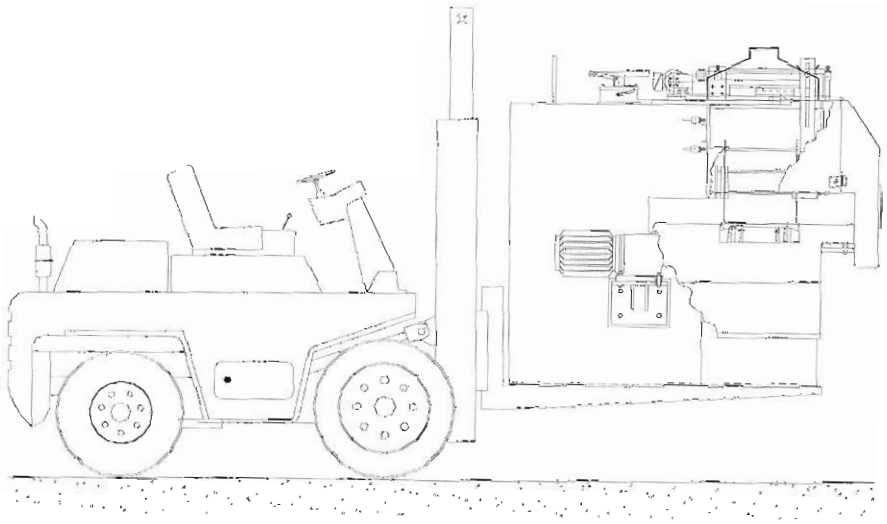


Figure No. 4

The useful length of the forks on a fork-lift truck should be at least 2000 mm.

1- INSTALLING THE MACHINE *(See Fig. No. 5)*

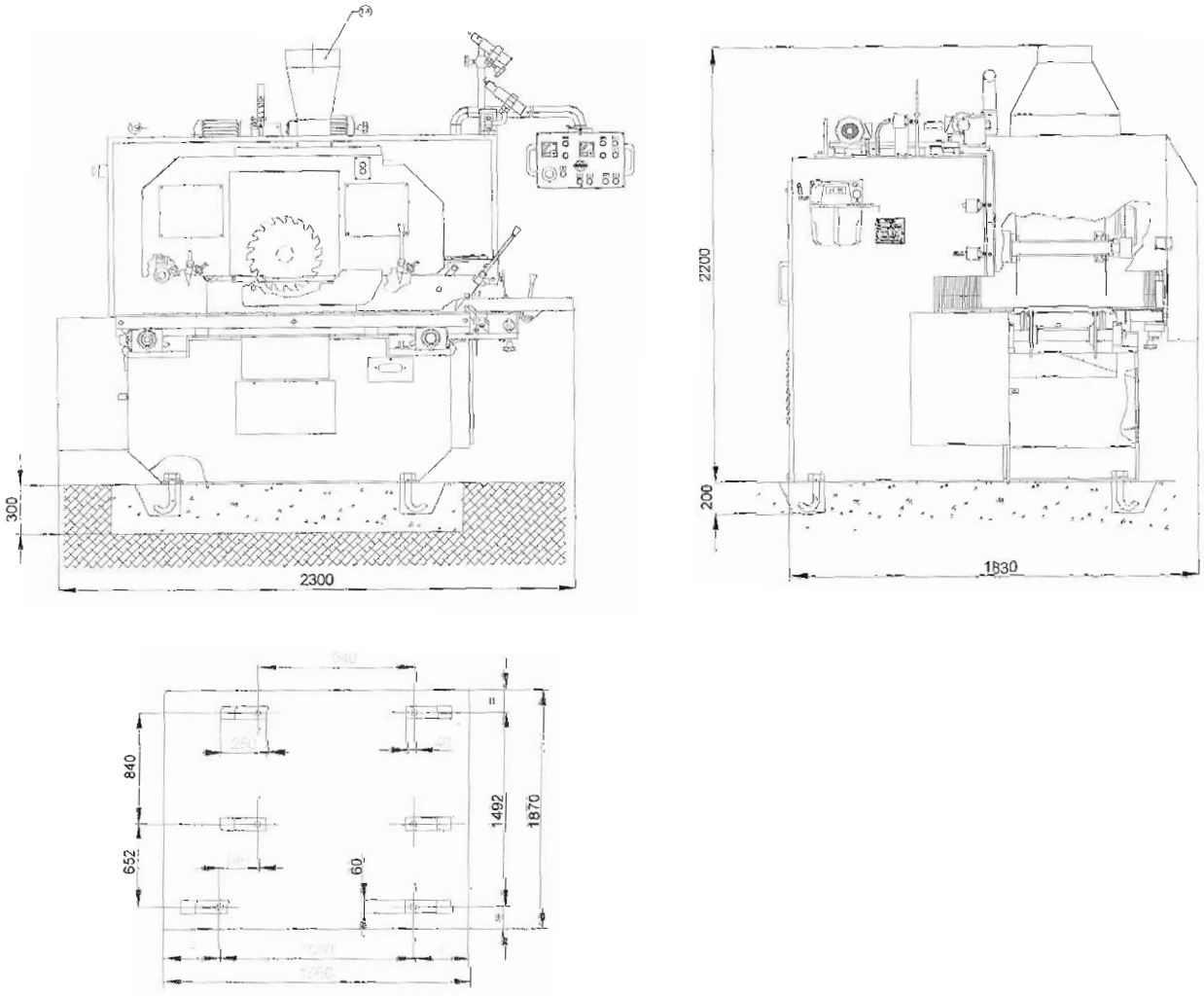
In order to ensure that the MULTI-BLADE operates in the best conditions possible, it needs to be placed on a well-leveled base, preferably made of concrete.

If you prefer, you can secure the machine to the ground using the holes found in its base as well as the stone-bolts provided (with M20 screw thread), as shown in figure no. 5.

The machine's elaborate surfaces are protected with a lubricating grease so as to protect it against the effects of oxidation and corrosion. Those same surfaces shall require cleaning after the machine has been secured. The machines that are packaged for maritime transport are protected with an anti-corrosion liquid which should be removed using petroleum and never with petrol/gasoline. Be especially careful so that the solvent does not come in contact with the paint, as it will damage it.

The plan referring to the machine's bases and dimensions can be seen in fig. 5. The machine should be installed some 800mm away from the wall so that the motor can be get sufficient ventilation and to make maintenance and repair work easier.

PLAN REFERRING TO BASES AND DIMENSIONS



Figur No. 5


2 – ELECTRICAL INSTALLATION

Before installing the machine in the place where it will be operating, you should check to see if there is a suitable electric current to feed the machine.

The MULTI-BLADE is delivered with the electrical installation fully assembled. The electrical connexion to the mains should be carried out by a qualified electrician and according to the outline shown in Annex A at the end of the present manual. We recommend that the fuses as well as the connection of the machine to the ground be checked so as to ensure the safety of those operating the machine. When testing the *MULTI-BLADE*, check to see that the direction the block is rotating in is correct. In case the block is rotating in the direction that is opposite that which is indicated, all that is needed is a change in two of the phases of the current (among themselves).

The correct rotation direction is shown in the pressing roller support, near the saws.

The motors are protected against overloads by a circuit breaker with thermal relays. These have been carefully regulated at our factory for normal current intensity of the motors; hence, under no circumstances should they be altered.

Connection to the Mains

The owner shall make the connection to the mains, and shall comply with the standards in force. (We recommend the use of *2,5 mm^2 x 3 + "Ground" cables, at least).

*This value can be changed as a function of the machine (Number of Motors and Power), according to the electrical diagram.

3 – START *(See Fig. No. 6)*

After firmly adjusting the machine according to the plan referring to the bases and dimensions, carry out everything according to the instructions in the present manual and make the electrical connection. The machine is then ready to start operating. To that end, you should:

1st - Check to see if the Pos.1 lamp is on.

2nd - Activate the block motor by pressing the appropriate button (Pos 2)

3rd - Activate the feed motor by pressing the appropriate button (Pos 3)

It is possible to switch on the feed motor only after the block motor is on. This safety factor prevents the pieces from being fed against the block and circular saws when these are stopped.

Before working with the machine for the first time, it is suitable that the machine be made to operate for a few minutes without anything passing through it. Check to see if the machine is lubricated and the lubrication pump associated with the feed chain links is working correctly. All bearings have been lubricated at the factory; hence, they are well lubricated for the period indicated on the lubrication chart.

Note: The machines equipped with a Roller Table at the entrance - MRL3 - the controls with positions 6, 7 and 8 of fig.6 apply to the roller table

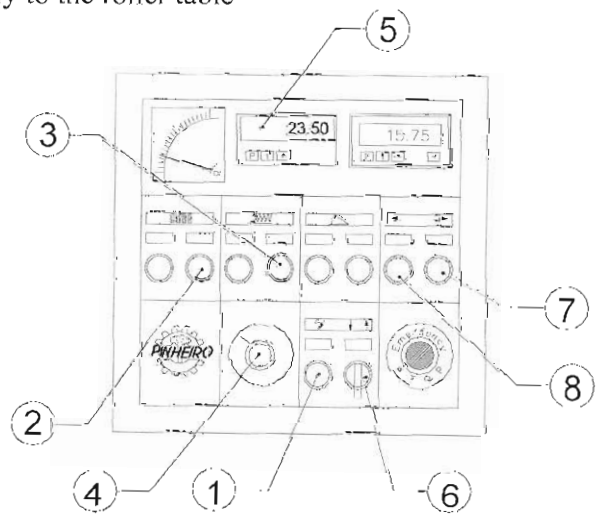


Figure No. 6

Before turning on the saw motor, check to see if the block height is correct. This procedure:

- prevents the saws from touching the feed belt. (This would be a dangerous situation because the belt and the circular saws could get destroyed, thus hurling metal particles.)
- keeps them from being too high (because the lumber would not be thoroughly sawed; thus, the wooden pieces could be made useless).

The rotation movement of the circular saws in relation to the feeding movement of the pieces to be sawed has to correspond to that which is indicated in Fig.7.

Before inserting the pieces into the machine, so as to get them sawed, make sure the height of the FEED HOUSING for supporting the pressers is appropriate for the thickness of the pieces.

- If the system of pressing rollers is too high, the pieces might not be fed properly and the anti-kick-back devices might not work properly, possibly resulting in a dangerous situation.
- If the system of pressing rollers is too low, it will be more difficult to insert the pieces into the machine, which will then be subject to unnecessary strain and wear and tear. This situation is dangerous for the operator and can cause serious damage to the machine.

4 – ADJUSTING THE HEIGHT OF THE ARBOR *(See Fig. 8)*

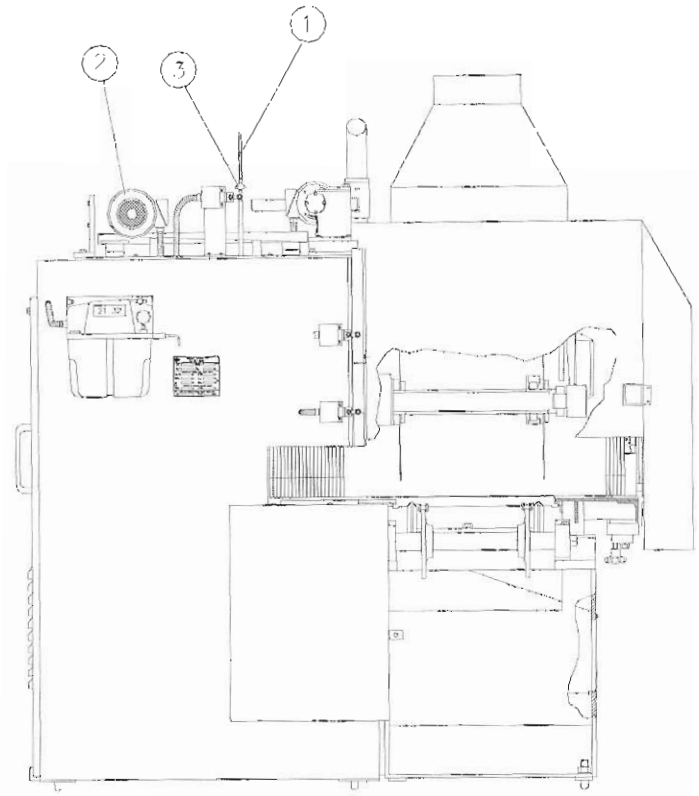


Figure No. 8

The height of the block corresponds to the diameter of the circular saws being used. For each diameter, the block needs to be positioned at the corresponding height.

Never attempt to adjust the height of the block for the sawing disks with the machine running. You run the risk of getting the saw teeth to come in contact with the belt, thus making them useless.

Do not forget to tighten the fastening handle Pos.3 (Fig.8)

In order to adjust the height of the block, loosen the fastening handle Pos.3 and only then turn the fly-wheel Pos.2 in Fig.8.

- To raise the block, turn the fly-wheel Pos.2 clockwise.
- To lower the block, turn the fly-wheel Pos.2 counterclockwise.

After adjusting the height, retighten the safety handle Pos.3.

There is also a graduated scale Pos.1, where you can see, at any time, at what height the block is, thus making its adjustment easier.

The circular saws should be placed out of the way of the belt in the cavity area, some 3 mm away. This position is achieved by adjusting the block.

When the height is properly adjusted and the pieces are not thoroughly sawed, do not attempt to lower the block further, as this may result in an accident, or the circular saws and the belt may become ruined. This situation occurs when the rails along which the feed belt or the slides or the guides forming the cavity on the belt for the saws are worn-out. We recommend that you contact *Auburn Machinery, Inc.*

5 – REPLACING THE CIRCULAR SAWS *(See Fig. No. 9)*

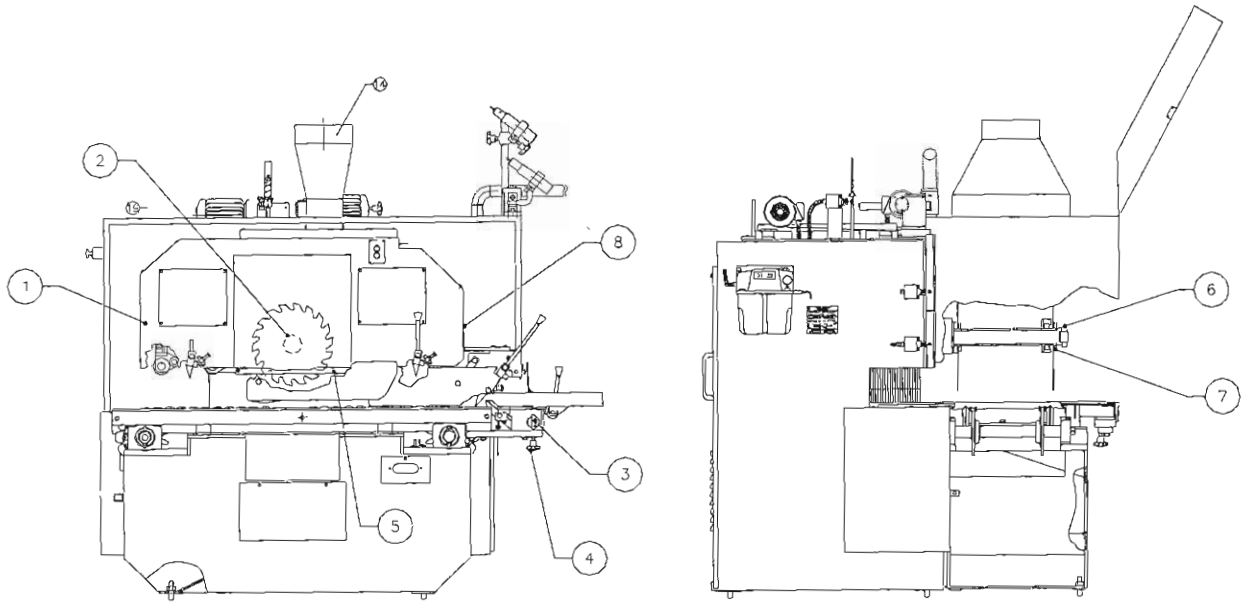


Figure No. 9

These machines can use circular saws of different diameters; however, circular saws of different diameters must never be applied simultaneously.

Diameters that are allowed for each one of the models:

Model	Minimum diameter	Maximum diameter
AMA2-410 / 410 A	250mm	350mm
AMA2-414 / 414 A	300mm	450mm

The only circular saws that are allowed to be used are those which are manufactured in accordance with standard EN847-1:1997.

1 - Lower the FEED HOUSING for supporting the pressure until the rollers almost touch the belt Pos.2

2 - Raise the block until the lower part of the circular saws are above the pressure plate Pos.5

3 - Loosen the nut on the block Pos.7. Two wrenches need to be used: one for the nut; the other for securing the block.

4 - Prepare the rod for disassembling the sleeve Pos.3. For this, loosen the bolt Pos.4, pull it out and turn the existing fastener on the end of the rod in order to make the insertion of the sleeve easier.

5 - Remove the sleeve Pos.2 with the circular saws and place it on the rod for disassembling the sleeve (which was prepared according to the instructions given in the previous point)

6 - Fit the fastener into the slit of the sleeve, push the rod in, so that it presses against the sleeve, and tighten the bolt Pos.4.

7 - Loosen the nut from the sleeve Pos.6.

8 - Replace the disks.

9 - Tighten the nut of the sleeve.

10 - Place the sleeve in the block.

11 - Mount the safety ring.

12 - Tighten the nut of the block for securing the sleeve.

13 – Place the rod for disassembling the sleeve at the initial position and tighten the bolt Pos.4

The circular saws have sharp edges which make them dangerous for people handling them (ex. when changing and sharpening blades).

We recommend that the user wear gloves during the handling phase of circular saws.

6 – REPLACING THE PRESSURE PLATE *(SEE FIG. 10)*

1 - Lower the feed housing for supporting the pressure until the rollers almost touch the belt.

2 - Raise the block until the lower part of the circular saws are above the pressure plate.

3 - Loosen the nuts Pos.3 and remove the bar Pos.2 (Fig. 10).

4 - Remove the pressure plate Pos. 1 by causing it to slide out and insert that which will be used.

5 - Put back the bar Pos. 3 and tighten the screws Pos. 2.

6 - Close the door and turn on the block motor.

7 - Open the grooves on the pressure plate. With the block motor running, raise the feed housing for supporting the pressure rolls to the maximum position.

8 - Once again, lower the Feed Housing to the previous position.

9 - Switch off the machine by pressing one of the emergency stop buttons.

10 - Adjust the height of the block to the work position corresponding to the circular saws which you are using.

11 - Turn on the block motor.

12 - Totally open the grooves on the pressure plate. With the block motor running, raise the feed housing for supporting the pressure rolls to the maximum position. This time, in relation to point no. 7 above, the block is already at the work position (lower) and, thus, it is possible to totally open the grooves.

If the grooves on the pressure plate are not totally opened, there is the risk (with the block stopped) of raising the Feed Housing, thus forcing the pressure plate against the circular saws.

In order to saw pieces that have different widths, the position of the circular saws needs to be changed in the sleeve and, thus, open new grooves in the pressure plate.
The same pressure plate is not to be used for many different arrangements of the sleeve, as the grooves lower its resistance.

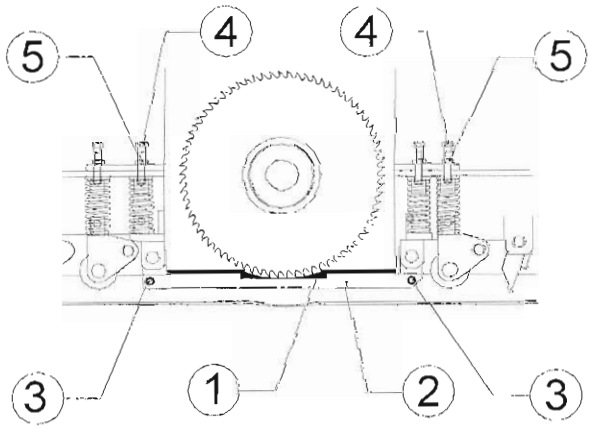


Figure No.10

7 - ADJUSTING THE HEIGHT OF THE FEED HOUSING FOR SUPPORTING THE PRESSERS.

(See Fig. no. 6 and no. 9)

The height of the feed housing for supporting the pressure rolls is as a function of the thickness of the pieces; the adjustment is made at pos.6 of fig. no. 6 (or at pos.3 and 4 of fig. no. 13).

The height of the feed housing shown on the scale Pos no. 8 Fig. no. 9 should correspond to the thickness of the pieces to be sawed; the rollers should remain around 3 to 5 mm below the level of the lumber to be worked.

Never adjust the height of the Feed Housing for supporting the pressure rolls when there are pieces inside the machine and when the block is rotating. If the piece is stuck, stop the block motor and only then should you adjust the height of the Feed Housing.

- If the pressure system is too high, the pieces might not be properly fed and the anti-kick-back devices might not operate properly, either, thus resulting in a dangerous situation.

If the roller system is too low, it will be more difficult to insert the pieces into the machine, and the latter will be subject to unnecessary strain and wear and tear. This situation is dangerous to the operator and can cause serious damage to the machine.

Adjusting the force of the pressure rollers

The pressure rollers and the pressure plates are assembled on the feed housing support by means of jointed supports and are forced against the lumber using springs or pneumatic cylinders.

On the pneumatic presser rollers the force applied on the lumber is adjusted by means of the change in air pressure in the cylinders.

On the presser rollers with springs the force applied on the lumber is adjusted by the compression of the springs (see fig.10). The longer the springs, the more pressure they apply on the lumber.

To adjust the compression of these springs, you should: (ver Fig.10)

1 - Loosen the fastening nuts Pos.5.

2 - Adjust the compression caused by the springs on the screws Pos.4.

3 - Tighten the fastening nuts Pos.5.

8 – ADJUSTING THE PARALLEL *(See Fig. no. 11)*

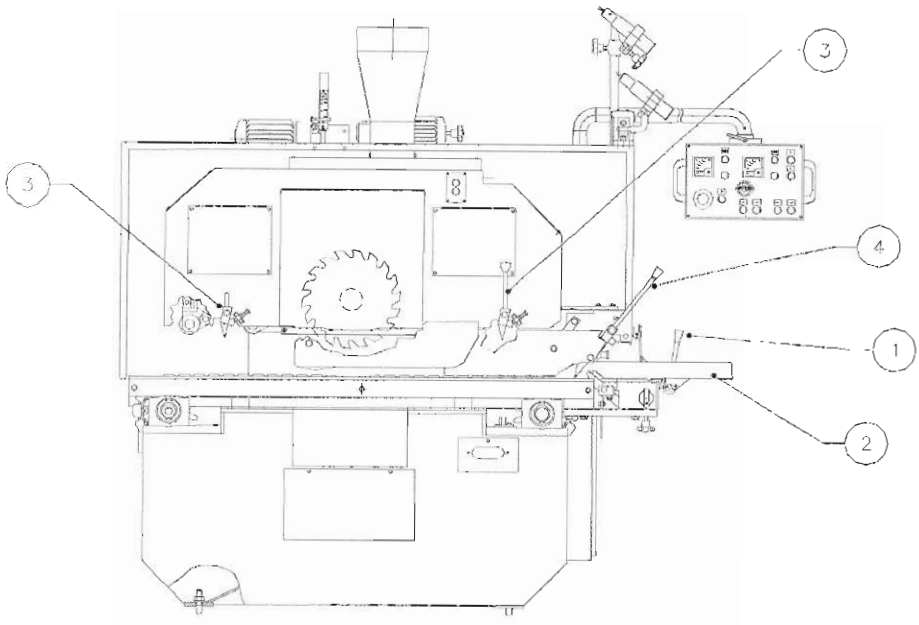


Figure no.11

1 - Turn the handle Pos.1 forward (the parallel will be loosened).

2 - Move the parallel Pos.2 sideways to the desired position; a reading can be taken of the scale located underneath the parallel. The ZERO of this scale corresponds to the position for the circular saw to the right.

3 - Turn the handle Pos.1 backward, (you should press hard) so as to secure the parallel.

- **Multiple sawing of pieces that are not lined up**

The parallel is not used in this situation; it should be totally moved to the right (out of order).

- **Multiple sawing of pieces that are lined up but without finished surfaces.**

The parallel should be placed 1 to 2 mm to the right of the 1st disk which will be used for sawing. This way, this disk shall carry out the finishing of the surface on the right side of the piece. If the piece is bent too far, the distance needs to be increased.

The orientation of the cutting line can also be shown by means of the laser beam.

– **Multiple sawing of pieces that are lined up and with one finished surface.**

The parallel should be positioned tothe right of the 1st disk with the required distance for measuring the final pieces. If you wish to saw a piece into strips with different measurements, place the parallel at the appropriate distance from the saw so that the strip of wood ends up with the desired measurement.

9 – ADJUSTING THE FEED SPEED *(See Fig. no. 6)*

The feed speed is infinitely variable, from 7 to 40 m/min; the adjustment is performed on the potentiometer Pos.4 and and it can be seen on the indicator Pos.5 (see fig. no. 6).

The maximum feed speed which one can adjust to is limited by:

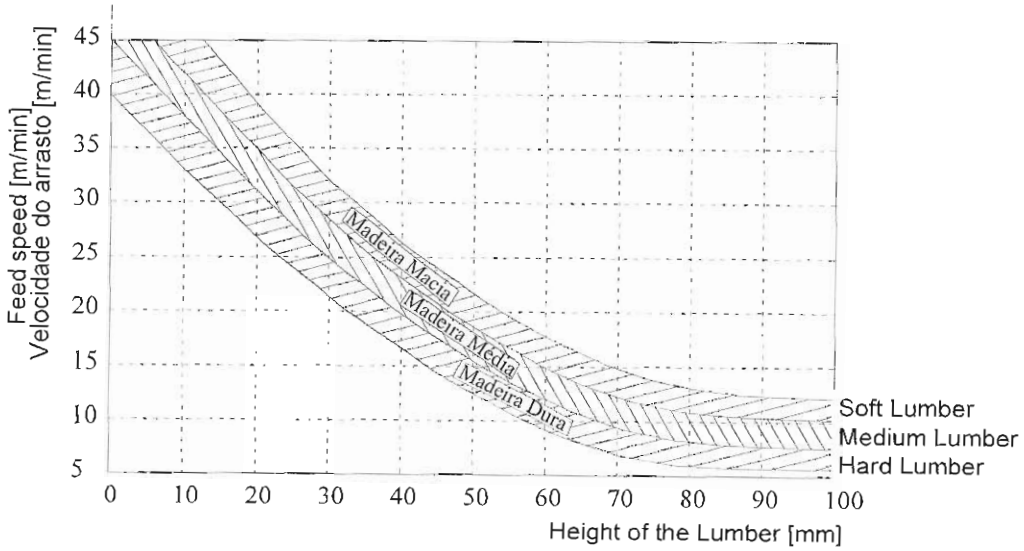
- Desired finishing.
- Power of the block motor.
- Number of saws to be used.
- Thickness of the pieces.
- Type and state of the sharpness how the saws.

The finishing of the sawed surface is reduced with an increase in feed speed; the correct speed for the desired finishing depends on the saws that are being used. Those saws of smaller diameter improve the finishing because they have less lateral vibration.

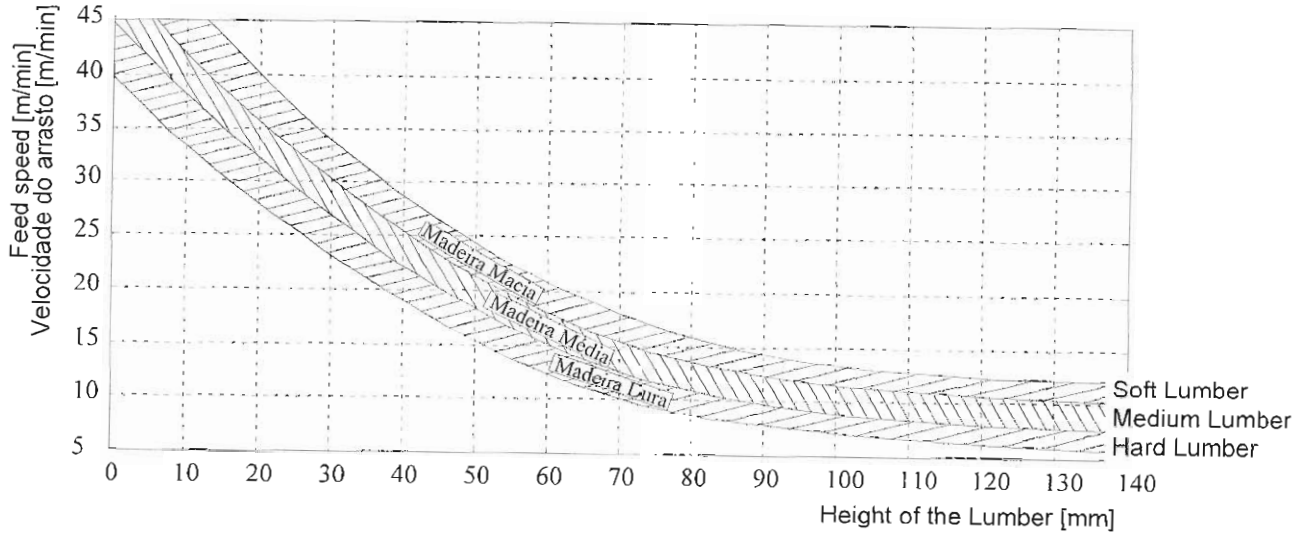
We advise you to consult your supplier of circular saws.

CHANGE IN FEED SPEED WITH THE HEIGHT OF THE LUMBER

AMA2-410



AMA2-414



The value of the speed as indicated on the graphs is valid only if the saws are in good condition and if the power of the main motor is enough for the number of saws applied on the block; otherwise, the feed speed should be lower than the value obtained from the graph.

In order to check if the power is enough, the following calculation rule can be used:

Rule for calculating the power of the main motor:

The power of the main motor is calculated by taking into account the height of the lumber to be sawed and the number of cuts to be made.

For every cm of the height of the lumber to be cut, 1 hp (0,75 kW) is needed for the main motor, which is then multiplied by the number of cuts.

Example:

To cut a plank 70 mm (7 cm) high with 5 cuts (five circular saws).

Height = 7 cm

No. of saws = 5

Power = 7 x 5 = 35 cv.

Only with over 35 hp can we work without limitations at the speed which was calculated on the graph.

If the power of the main motor is lower than this value, you will have to reduce either the feed speed or the no. of circular saws.

The power needed for cutting should not exceed the power of the block motor.

Check on the ammeter *(fig. no. 2 – pos.12)* **whether the power consumption of the main motor does not exceed the nominal current.**

10 – ANTI-KICKBACK FINGERS *(See Fig. no. 11)*

If, for some reason, it is necessary to causa a piece that is stuck inside the machine to back up, you should:

1 - Stop the machine by pressing the emergency stop button.

2 - Check to see if the block and the feed belt are actually stopped.

3 - Raise the feed housing for supporting the pressure rolls some 20 mm. The rollers no longer press down on the piece and the anti-kick-back fingers stop working (they are raised up higher than the piece).

4 - Lift the anti-kickback fingers by pushing the handles Pos.3 and Pos.4 in Fig. no. 11.

5 - The piece is released and can be removed.

6 - Allow the fingers to return to their normal position.

7 - Readjust the Feed Housing to the work height.

11 – OPENING THE MAIN DOOR. *(See Fig.12)*

Opening the main door is possible only when the orange (or yellow) signal light Pos.9 in Fig. no. 2 is on; this means that the motors are turned off and the circular saws are stopped.

The rotation speed of the block motor is around 3000 R.P.M. (3200 R.P.M. for the AMA2-310 and 2700 for the AMA2-314); this is why stoppage time due to inertia is about 20 s. In order to prevent the risk of access to the area where the saws are located during this stoppage period, there is a safety blockage switch which only allows the door to be opened after 25 s.

In the event of a power cut (for example, at the time of a general break of electric current), the safety switch will not allow the door to be opened, thus preventing anyone from getting access to the saws during the time between the power cut and the time the saws stop.

If necessary, open the main door during the power cut (ex. for changing circular saws, cleaning or maintenance), it is possible to unblock the safety switch in Fig. No. 12 with a key which is supplied for this purpose.

The key for unblocking the safety switch should be kept by the person in charge of maintenance. Under no circumstances should it remain in or near the machine or with an operator.

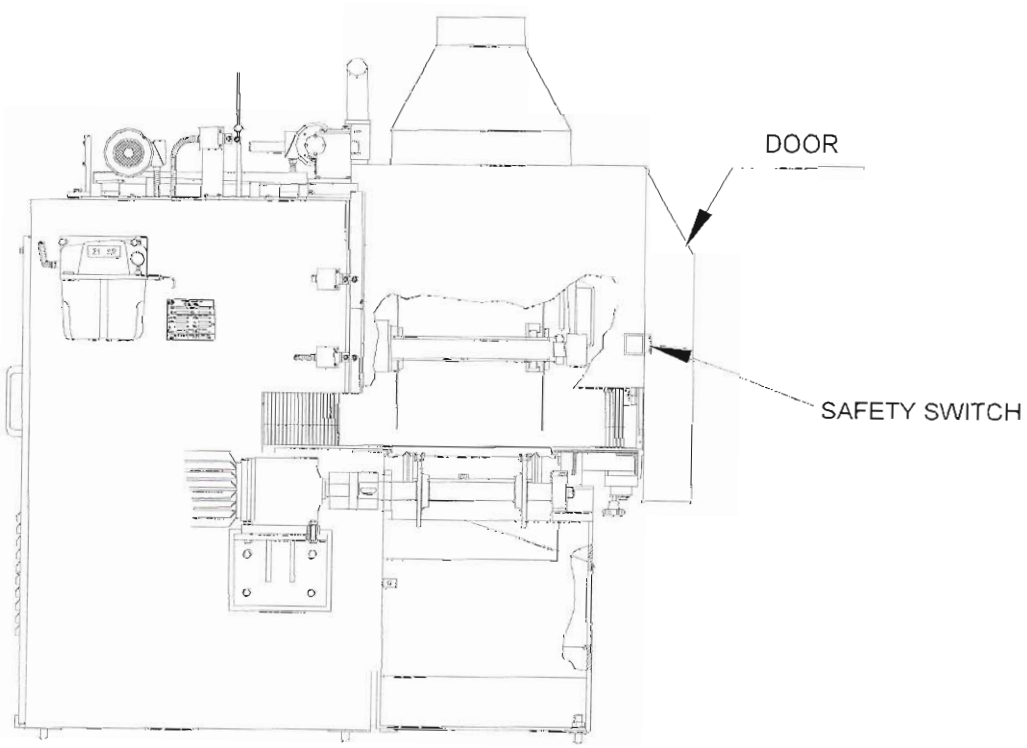


Figure No. 12

When the AMA2 works as an aligner (AMA2-410/A and AMA2-414/A) it is usually assembled with the MRL3 roller table. With this option, the Feed Housing controls and those of the moveable disk move to the MRL3 control panel as can be seen in figure 13.

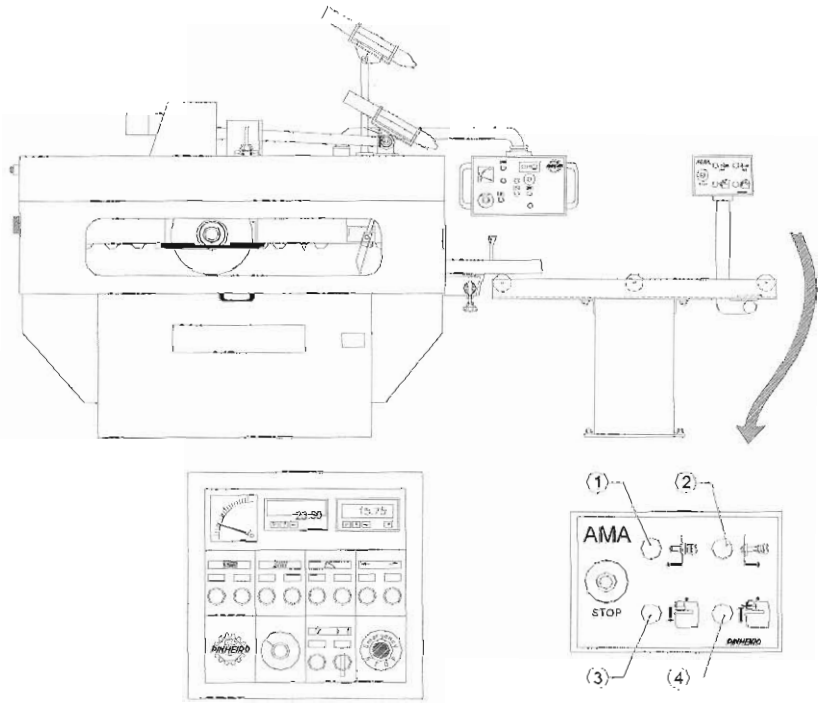


Figure no. 13

FUNCTIONS OF THE MRL3 CONTROL PANEL:

Pos. 1- Button for separating the moveable disk from the fixed disk. It increases the width of the lumber and separates the cutting disks.

Pos. 2- Button for bringing the moveable disk and the fixed disk closer together. It reduces the width of the lumber and draws the cutting disks near.

Pos. 3 – Button for raising the Feed Housing of the pressure rolls. When forced down, the Feed Housing of the presser rollers goes down.

Pos. 4 - Button for lowering the Feed Housing of the pressure rolls. When forced down, the Feed Housing of the pressure rollers goes up.

The Roller Table makes the operator's job easier, thus allowing for a positioning of the aligned lumber (using the laser beam) before this lumber enters the machine.

The machines at *Auburn Machinery* have been studied and built in such a way as to minimize the user's work load. In order to achieve maximum output and durability, however, the following must be kept in mind:

1- CLEANING AND LUBRICATING

Wood-working machines are constantly subject to dust and sometimes resin resulting from the work activity itself. This dust accumulates successively, thus giving rise to trouble of a dangerous kind. Therefore, the machine should undergo a thorough cleaning weekly, by looking closely at the moveable parts as well as those parts which require special attention because of their function. Next, carefully lubricate the machine. In order to make operations easier, we draw your attention to the lubrication chart shown in fig.14 and which indicates the major points to lubricate as well as the procedure.

The block bearings are the most important points, which is why it is important to insert small quantities of grease in them. Too much grease gives rise to high temperatures and resulting wear.

It is wrong to lubricate only on rare occasions and in abundance.

When the machine leaves our factory, every part is lubricated; the electrical installation should also be periodically cleaned using dry compressed air and the connections are to be lubricated with vaseline. When carrying out this type of service, however, do not forget to switch off the circuit breaker or even remove the fuses.

The motors should be disassembled and cleaned every two years; on those occasions, the bearings should be replaced, if necessary.

Among the accessories, there is a pressure pump for consistent grease and one for lubricating the bearings. Before applying the grease, clean the lubricators properly so that no dirt can go in.

The machine should be cleaned weekly: all wood shreds, especially in the areas where precision assemblages, safety or electrical parts are in operation.

The anti-kick-back fingers should be cleaned at least once a week, as resin or dirt can keep them from working properly. If these fingers are not working, the use of the machine shall constitute a hazard for the operator or for whoever is standing near it.

2 – REPLACING THE BEARINGS

It is suitable not to forget that the bearings are replacement parts which are calculated by the manufacturer for a given number of work hours. Therefore, they should be replaced whenever necessary; this is a job for which you need to turn to specialized personnel.

The reference of the bearings that are applied to the machine is indicated on the set diagrams so that new bearings may be purchased well in advance.

3- BELTS

The belts should be periodically checked for wear, as well as the tension to which they are subjected. They need to be kept clean as much as possible. To this end, you may use warm water and ordinary detergent for dissolving oil.

4- LASER BEAM

Any repairs may be carried out only by the laser manufacturer or by authorized personnel.

It is forbidden to replace the laser with another type. Class 3A laser according to EN 60825-1:1997.

Do not use additional optical devices for protection or to change the features of the light beam.

Do not look directly at the beam.

5 - LUBRICATION *(See Fig. no. 14)*

The lubrication plan that comes with the present manual illustrates the lubrication points, the type of grease or oil and the recommended frequency for lubricating each point.

This lubrication program has been designed for the complete machine. If you do not have a moveable disk, disregard points 7, 8 and 9.

Adequate lubrication is a simple task and shall help eliminate premature wear of the components to be lubricated. Be careful not to put too much grease on the bearings, as too much grease can cause damage

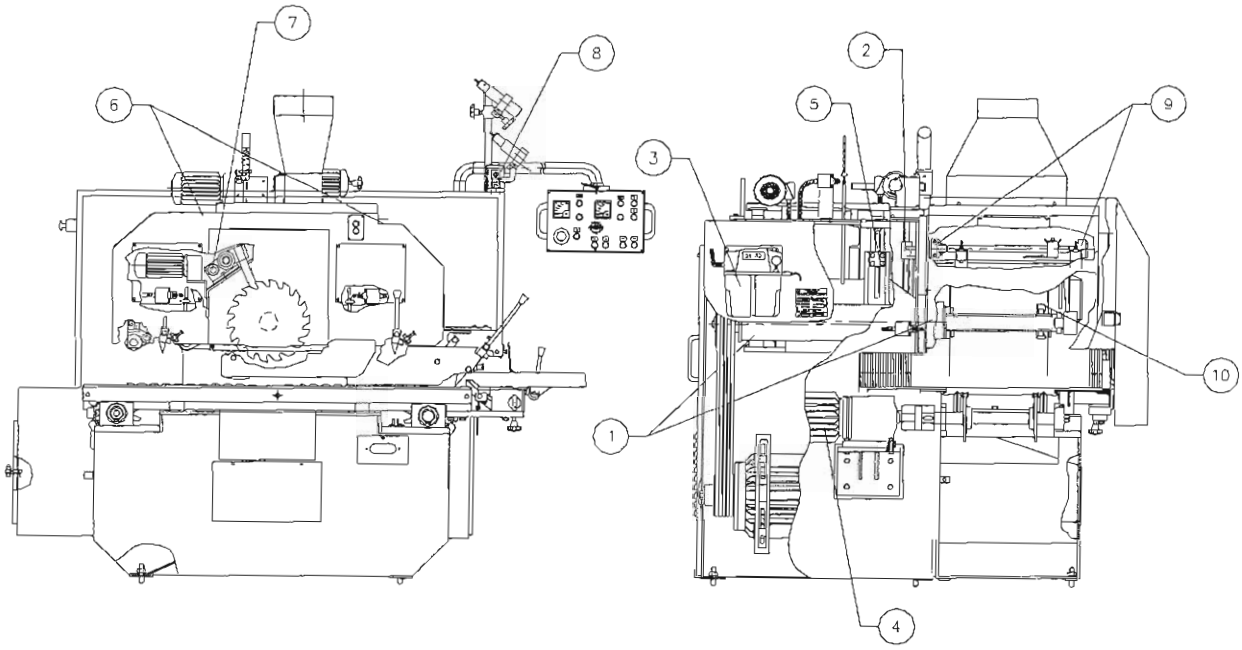


Figure No. 14

LUBRICATION CHART

(See Fig. no. 14)

Pos.	Points to lubricate	Period	Remarks	Lubricant
1	Block bearings	Monthly	Pump twice	Alvania grease R3 (Shell)
2	Feed Housing nut and bolt	Daily	Fill cup	Tona T 68 (68)
3	Lubrication pump	Daily	Fill the tank	Tona T 68 (oil)
4	Feed reducing box	Monthly Anually	Check level Change oil	Omala oil 220 (oil)
5	Bolt for raising the arbor	Weekly	Apply directly	Tona T 68 (oil)
6	Feed Housing sliders	Daily	Fill cup	Tona T 68 (68)
7	Bolt for the moveable disk and the laser beam	Daily	Apply directly	Tona T 68 (oil)
8	Laser beam and moveable disk chains	Daily	Apply directly	Tona T 68 (oil)
9	Bearings of the moveable disk bolt	Monthly	Pump twice	Alvania grease R3 (Shell)
10	Bearings of the sleeve of the moveable disk	Monthly	Pump twice	Alvania grease R3 (Shell)

* **NOTE:** At the outlet there is a filter (Fig. 15) which needs cleaning monthly.

When oil is lacking, the machine stops and the red light on the pump goes on.

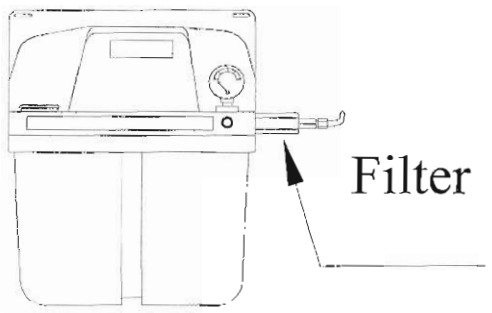


Fig. no. 15

Pos 1, 9 and 10 is a lubricant for consistent grease; do not use oil. Position 2 and 6 are lubricants for the oil entrance; do not use consistent grease.

6 - REPLACEMENT PARTS

When replacement parts are necessary, for re-conditioning and repairs, please keep the following procedure in mind.

1. Apply only "*Pinheiro*" original parts.
2. Do not turn to handymen or badly trained personnel for reapirs or even maintenance.
3. As much in advance as possible, order the necessary parts from *Auburn Machinery*, with the following indications:
   - Machine Model:_____
   - Model Year:_____
   - Machine no.:_____
   - Description of the Part:_____
   - Pos./Diagram No.:_____
   - Quantity:_____
   - How Urgent?:_____
   - Address/Destination:_____

1 – PRECAUTIONS TO BEAR IN MIND:

1 - Always work with good-quality circular saws that are well sharpened and balanced.

2 - Whenever you disassemble the sleeve, clean it and the block carefully. When assembling it, make sure the nut is properly tightened.

3 - Inspect the machine at those times stipulated by us. (see Chap.XII)

4 - Never use lumber that has been used in other jobs [hence, lumber that is dirty (nails, sand, etc.)], as this can cause damage both to the tools and to the machine, and since they can constitute a potential hazard to the user.

5 - Do not use other materials which are not wood. The use of other materials can be detrimental to the life of the machine and can also constitute a hazard for the user.

6 - Do not use pieces of lumber that are too bent, as they can be a hazard to the user and can damage the machine.

7 - Never use circular saws that are not intended for this machine or for the type of work that will be carried out.

8 - Be especially careful, when the machine is in operation, not to bring your hands too close to the danger area and to tools therein.

9 - Always observe the warnings found on the machine.

10 - **Do not** put your life at risk; follow the instructions.

11 - **Do not** work in dangerous situations.

12 - **Do not** use lubricants other than those types that are recommended by us, or equivalent.

A machine that well taken care of will last longer.

ANALYZING THE RISKS / SOLUTIONS IN THE MULTI-BLADE

RISK	AREA	SOLUTION	DESCRIPTION
Kick-back of pieces or particles 	Entrance to the machine	There are 4 sets of anti-kick-back fingers. Two of them close the entrance to the machine completely. Check daily to see that they are working properly.	When pieces are sawed, they can get into certain positions in relation to the circular saws that give rise to these pieces' or particles' being kicked back.
Crushing 	Entrance to the machine	The entrance to the machine is protected with a set of protective fingers for the hands.	Access to the feed belt and the vertical movement of the Feed Housing can constitute a risk of getting crushed.
Kick-back of particles 	Left side of the machine	There is a door which completely covers the left side of the machine. The machine cannot work when this door is open.	The lateral areas are also subject to the kick-back of particles.
Hand injuries 	Circular saws	Wear aappropriate gloves.	Circular saws have sharp edges; therefore, handling them can causa hand injuries.
Crushing 	Machine outlet	The machine outlet is protected by two sets of overlapped protective strips.	Access to the feed belt and the vertical movement of the Feed Housing can constitute a risk of getting crushed.

RISK	AREA	SOLUTION	DESCRIPTION
Crushing 	Trapezoidal belts	Access door fastened with screws. This door should be opened by authorised technicians only. Never work with the machine if this door is not in place.	Whenever it is necessary to change belts or to carry out any maintenance work within the main structure, be careful To switch off the main circuit breaker on the door of the electrical panel and keep the key.
Dust/Waste Granulomatosis 	Dust extraction hoods	There are two 200-mm dust extraction hoods for hooking up to the suction system.	It is imperious that the hook-up to the suction network be carried out in accordance with that which is laid down in the chapter on "SUCTION".
Untimely start or access to the block 	Block	There is a switch on the door leading to the block, which switches the machine off when it is opened. The switch should never be de-activated.	The untimely start of the block motor is especially dangerous when changing tools or during any work in the area of the block.

No.	Problem	Possible cause	Solution
1.	- Badly finished pieces	- Worn-out circular saws - The type of circular saws is inappropriate.	- Sharpen or replace the tools - Consult circular saw manufacturer
2.	- The machine won't start	- The plug is not connected to the mains - The main door is open or not properly closed - Power failure	- Connect the plug to the mains - Close the main door
3.	- The machine makes a strange noise	- Feed speed is too high - Circular saws are too worn-out	- Reduce feed speed - Replace circular saws
4.	- Pieces are inserted with difficulty	- The Feed Housing for supporting the pressure rolls is incorrectly height-adjusted (too low)	- Correctly adjust the height of the Feed Housing
5.	- The pieces are fed with difficulty	- The Feed Housing for supporting the pressers is incorrectly height-adjusted (too high)	- Correctly adjust the height of the Feed Housing
6.	- The pieces do not come out thoroughly sawed	- The block is incorrectly height-adjusted (too high)	- Correctly adjust the height of the block
7.	- The machine vibrates in a strange way	- Circular saws are not balanced (ex. damaged) - Dirt between the sleeve and the block - Unbalanced block, motor, sleeve or pulleys.	- Replace the circular saws - Remove the sleeve and clean it as well as the block - Contact *Auburn Machinery Inc.* for technical assistance.
8.	- The feed motor does not work	- Lubrication pump needs oil	- Fill the container

Electrical Drawings Etc.