

# INSTRUCTION HANDBOOK

# Minigraf 4



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\*This machine is equipped with a frontal safety guard as standard equipment to comply with CE regulations for the EUROPEAN MARKET.  
It can be supplied for other markets on request for and additional charge.

## 1. GENERAL INFORMATION

### 1.1 PRODUCER

The firm Alfamacchine can boast more than 10 years of experience in the construction of Woodworking Machines. It has acquired technological know-how, developed during years of research in strict touch with manufacturing departments and international commercialization. We offer the best warranty that anyone can grant to its customers.

TEL 39-0543-482711

FAX 39-0543-480770

### 1.2 ASSISTANCE CENTERS

ALFAMACCHINE is represented in North & South America by a and prepared sales organization. Contact us directly for the name & number of your closest distributor. For every need regarding Use, Maintenance or Request of Spare Parts, the Customer should call their distributor.



### 1.3 CERTIFICATION

The machine is produced in conformity to the pertinent European Community Norms in force at the moment of its introduction on the market.

### 1.4 WARRANTY

ALFAMACCHINE's products are constructed to have a long life and are tested one by one.

If, in spite of this, if there is any damages or malfunctions, the replacement of defective parts is warranted (counting from the date written on the sales invoice) for a period of:

- 24 months for mechanical components
- 12 months for pneumatic part

The driver blade is tested for about 1.000.000 working cycles.

The Warranty does not include the sending of technical staff.

Warranty repairs will be performed at ALFAMACCHINE plants and the freight of shipment will be entirely charged to the Customer.

Warranty does not cover damages caused by an inappropriate use of the machine or not corresponding to the instructions described in this handbook.

The warranty is voided in case of unauthorized modifications or because of accidental damages or tampering performed by unauthorized personnel.

The warranty is also voided if you use v-nails different from the original ALFAMACCHINE ones.

To take advantage of warranty services it is necessary, at the moment you receive your machine, to fill out the warranty card and send it back as soon as possible to ALFAMACCHINE.

The warranty will be valid only after the ALFAMACCHINE receives & records your warranty card.

### 1.5 PRE-ARRANGEMENTS CHARGED TO THE CUSTOMER

It is the customer's duty, on times agreed with the producer, to execute what is indicated in our documentation.

Things normally charged to the customer:

- Premises predisposition, included building works
- Pneumatic supplying of compressed air (see the paragraph 4.5)

### 1.6 HANDBOOK STRUCTURE

The customer must pay extreme attention to the information reported in this handbook, because the proper Pre-Arrangement, Installation and Use of the Machine, constitute the basis of a correct customer-distributor relationship.

#### 1.6.1 Object and contents

The goal of this handbook is to provide to the customer all necessary information so that He would be able to run it in complete autonomy and safety. The handbook contains information concerning the technical aspects, machine working and standby, maintenance, spare parts and safety. Before making any operation on the machine, the qualified technicians and operators must carefully read these instructions. In case of doubt about the correct interpretation of these instructions, ask your distributor to explain it to you.

#### 1.6.2 Utilizers

This handbook is made both for operators and technicians authorized to use or repair the machine.

The operators can not execute operations reserved to the qualified technicians.







The producer does not answer to damages derived from not-observing this prohibition.

#### 1.6.3 Preservation

The instruction handbook must be kept very close to the machine, in a special container protected from liquids and whatever could compromise its legibility

## Minigraf 4

### 1.6.4 Symbols utilized

 P...	DANGER	It indicates a danger with a mortal risk for the operator
 A...	WARNING	It indicates a warning or a note about key functions or useful information. Pay the maximum attention to the paragraph marked with this symbol.
 O...	OBSERVATION	It is requested to take a measurement data, to check a signal,....
 I...	INQUIRY	The user is requested to check the proper positioning of any element of the machine, before operating a certain command
 C...	EXAMINATION	It's necessary to consult the handbook before performing a certain operation
 R...	ADJUSTMENT	In case of a strange working and/or anomalies, can be requested a certain mechanical adjustment and/or electrical setting

## 2. MACHINE DESCRIPTION

### 2.1 WORKING PRINCIPLE

The frame assembling machine Minigraf 4 has been realized for the production of medium or large sized frames.

The machine is equipped with a V-nail driver mounted on a movable carriage which can be pneumatically controlled by the operator.

The frame assembling machine Minigraf 4 can use special "Pulling Power" V-nails which draw the corners very tight together.

### 2.2 MAIN COMPONENTS

The main components of the machine are:

- Frontal clamping device to have perfect junctions.
- Adjustable tilting fences.
- Magnetic pressure pads of several types to provide the proper clamping of any profile
- Soft moulding clamp device that adjusts the pressure during the several working phases.
- Dual function foot pedal for separate control of clamping and nail insertion
- Pneumatic opening of the V-nail magazine for very quick reloading
- Nail heads sizes 7, 10 and 15 mm.

### 2.3 MACHINE STRUCTURE

The direction the machine will move while working is listed below:

- X AXIS  
Movement of the horizontal clamp
- Y AXIS  
Movement of the vertical clamp

Picture 2.1 A - Movement directions



### 2.4 DIMENSIONS

The overall dimensions are reported on table 2.9-A

### 2.5 SURROUNDING CONDITIONS

The machine does not need special surrounding conditions. It has to be installed inside an industrial building, lit, aired and with a compact and flat floor. The admitted temperatures go from 5° to 40° C, with an humidity not higher than 50% at 40° C or 90% at 20° C.

### 2.6 LIGHTING

Premises lighting must be conformed to the norms in force in that Country where the machine is installed. It has to guarantee clear visibility and can't create dangerous light reflections.

### 2.7 VIBRATIONS

In standard conditions conformed to the indication of machine proper utilization, the vibrations do not create dangerous conditions. The average quadratic weighed level, according to the acceleration frequency to which arms are exposed does not exceed 2,5 m/s<sup>2</sup>.

### 2.8 NOISE EMISSIONS

The machine is designed and projected for reducing the noise emission level to its source. In standard working conditions the Machine noise power level is:

Acoustic Continuous Equivalent weighed pression A	<70dB
Acoustic Istantaneous weighed pression	<130dB

The noise levels indicated are emission levels and do not represent operating levels. In spite of an existing relationship between emission levels and exposure ones, this can not be used in a reliable way to define if further precautions are necessary. The factors determining the exposure level to which the working force is subjected, include exposure length, working premises characteristics and other noise sources (number of machines, closed area, etc...). Furthermore the allowed exposure levels could change according to several different Countries. At any rate, the information provided, will allow the Machine Operator to achieve a better evaluation of the danger and risks they are submitted to.



The indicated noise levels are emission ones measured in standard conditions of use. In case of any machine modification, the above mentioned levels could be changed and should be tested on the same machine.

## 2.9 TECHNICAL DATA

We have listed below the Machine data and technical characteristics to which you can make reference for any eventual contact with your distributor for Technical Assistance.

**TABLE 2.9.A - Technical data**

Frames thickness	min.-max. mm 6-70
Frames width	min.-max. mm 10-90
V-nail magazine capacity	n. 220
V-nail size	mm 7-10-15
V-nails size on request	mm 3-5-12
Pneumatic supplying	BAR 4-6
Weight	ca. kg 36
Height of working bench	mm 130
Overall dimensions	mm 350x550x320

## 2.10 STANDARD EQUIPMENT

The equipment listed below are the standard parts.

### 2.10.1 Standard accessories

Once you have removed the packaging, please check the presence of following accessories:).

- N.1 nail head mm. 7
- N.1 nail head mm.10
- N.1 nail head mm.15
- N.1 L shaped pressure pad
- N.1 Rounding pressure pad
- N.1 Allen Wrench 5mm
- N.1 Brass rod magnet

### 2.10.2 Upgrading and implementing of mechanical parts

The machine has been designed following a modular criterion, therefore the existing equipment can be further upgraded with additional accessories that will not alter its basic structure.

Technical upgrades on the machine model, if any, will be such that they can be installed at any time without requiring any substantial modifications to the machine structure.

### 2.10.3 Optional accessories

- Floor stand
- Wooden working bench extension
- Metallic working bench extension
- Special fences for octagons
- Special fences for hexagons
- Round and square pressure pads in rubber
- V-nails claw heads size 3-5-12 mm.
- Double mechanical pressure pad
- Triple mechanical pressure pad

### 2.10.4 Customized optional accessories

Thanks to its versatility this machine can be 'custom-made' to meet our users requirements. With additional accessories, you can make frame assembling easier. ex: special fences for peculiar moulding shapes, special clamps to ensure the mouldings are locked properly during V-nail firing, and so on. These can be special made for you at your local machine shop.

## 2.11 ELECTROMAGNETIC AMBIENT

The Machine is designed to operate properly in an industrial electromagnetic ambient without altering it being an exclusively pneumatic machine.

### 3. SAFETY

#### 3.1 GENERAL WARNINGS

The operator must read paying the maximum attention to the information written in this Handbook, expressively about proper precautions for Safety listed in this chapter. It is advisable for the operator to follow the warnings listed here below:

- Keep the machine and the working premises clean & ordered
- Provide appropriate containers to stock the pieces you are going to work with.
- Use the Machine only in normal psycho physical condition
- Wear adequate clothing to avoid obstacles and/or dangerous entanglements to/from the machine
- Wear the individual protection gears described in the instructions handbook
- Do not remove or alter the warning plates and adhesive signs
- Do not remove or elude the Machine Safety Systems
- Keep the fingers away from the working area
- Disconnect the air pressure supply during any maintenance intervention
- Keep the feet separated from the pedal during the Machine maintenance

#### 3.2 SCHEDULED USE

The Machine is designed and built to assemble junctions of frames.

The machine is projected for manual use only (under operator control).

#### 3.3 INADVISABLE USE

The machine can not be used for:

- For uses different from those listed in 3.2 paragraph
- In an explosive or aggressive atmosphere, where there is a high density of dust or oily substances suspended in the air
- In a flammable atmosphere
- Outside in all weather severity
- For working materials not suitable with the machines characteristics

#### 3.4 DANGEROUS AREAS

The area of frames assembly is defined as the “working area”

The dangerous areas of machine, include the movable parts and surrounding zones

Figure 3.4.A- Working area and dangerous zones



#### 3.5 PROTECTION DEVICES

The machine is equipped with adequate protections for persons exposed to the risks of using this machine, taking into consideration the working parts (driver blade, horizontal clamp, vertical clamp).

#### 3.6 STOP FUNCTIONS

The machine stop functions are the following:

- Fast clutch fitting stop (Category 0).
- Foot pedal Stop (Category 1).

##### STOP CATEGORY 0

It is obtained disconnecting the fast clutch fitting from feed system (uncontrolled stop).

##### STOP CATEGORY 1

Controlled stop obtained by lifting the foot from the pneumatic pedal that does not allow the v-nails to drive.

#### 3.7 SAFE WORKING PROCEDURES



The machine is projected and realized to eliminate any risk connected with its use. The user s requested to achieve an adequate training to be instructed by their local distributor .

The other risks related with using the machine are:

- Finger crushing in the vertical clamp working area
- Finger crushing in the frontal clamp working area

It is necessary to follow carefully the following instructions:

- 1 Keep the fingers away from frontal and vertical clamp working areas
- 2 Disconnect the air pressure during any maintenance interventions
- 3 Keep the foot away from the pedal during machine repairs

### 3.8 RESIDUAL RISKS

During the normal working cycle and while performing maintenance, the operators are exposed to several residual risks that, because of the operations own nature, can not be totally eliminated.

- Risk of finger crushing in the working areas of the vertical and frontal clamps

### 3.9 PLATES

The warning plates carrying out safety functions can not be removed, covered or damaged.

To view the plates or adhesive signs location, consult the Fig.10.2-D

Table 3.8 A- Types of plates



Plate concerning the machines characteristics



Adhesive sign concerning the fingers crushing area



Adhesive sign concerning the behaviour to be kept during the working cycle



Adhesive sign concerning the behaviour to be kept during the working cycle

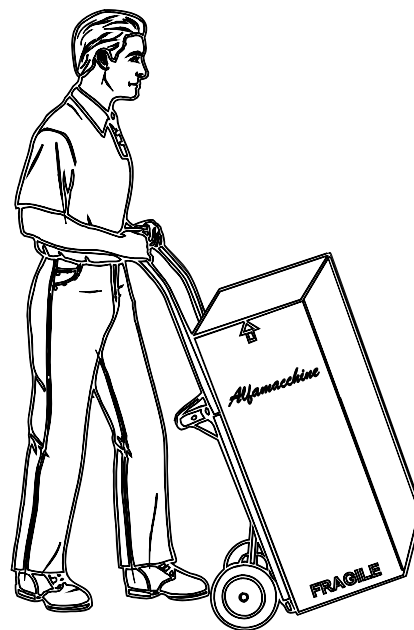
## 4. INSTALLATION

### 4.1 SHIPPING AND HANDLING

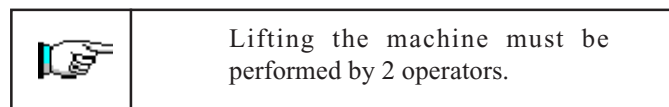
The shipment must be performed by a professionally qualified staff. The machine has to be shipped in a safe way to avoid any damage to its parts.

- All the protections and guard devices must be properly closed and locked.
- The machine has to be shipped like positioned for installation.
- Before shipping it is necessary to lubricate the parts that are not painted to avoid their detriment.
- According to the type of shipment, it is necessary to protect the machine from any jarring impact or stress

Figure 4.1A – machine handling indications



Machine total weight: about 36 Kilos



Any damage of the machine caused during its shipment or handling is not covered under warranty. Repairs or replacements of damaged parts are charged to the customer.

### 4.2 STORAGE

In case of long inactivity, the machine must be stored with the proper precautions concerning storage place and times.

- Store the machine indoors
- Protect the machine from jarring impacts and stresses
- Protect the machine from humidity and high temperatures
- Store the machine away from corrosive materials
- Lubricate the parts which are not painted



### 4.3 PRELIMINARY ARRANGEMENTS

In order to install the machine it is necessary to prepare a working area adequate to the machines dimensions. To fulfill the characteristics of precision and steadiness, the bench frame assembling machines must be positioned on a solid and level table able to sustain the weight of the machine.

### 4.4 UNPACKING

The machine, bench version, is shipped & packed in an appropriate carton and protected by polystyrene parts. Remove the external packing and save it for a future use. Check for any casual shipping damage and report it immediately. Shipping damages or any other defects must be reported to *Allamacchine* within and not later than 3 days from the receipt of the machine.

### 4.5 CONNECTIONS

To avoid any problems during the setup of the machine, we suggest you follow the instructions listed here below.

#### 4.5.1 Pneumatic connection

The machine uses compressed air and is controlled by a dual action foot pedal.

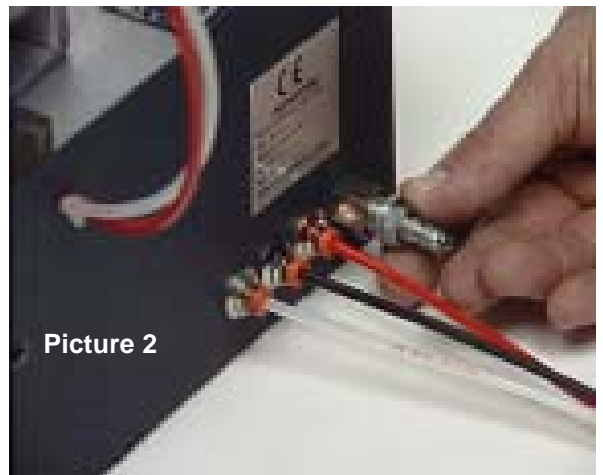
The 3 pipes for compressed air connected with the pedal must be inserted into the 3 fittings located on machines right side in the following sequence (fig. 2-3):

Upper connection	Red pipe into the red fitting (external side)
Center connection	Black pipe into the black fitting (center fitting)
Lower connection	Transparent pipe into the 3 <sup>rd</sup> fitting (user side)

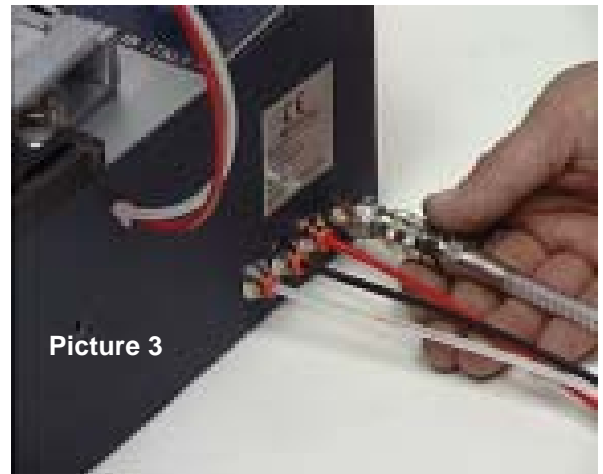
Use the supplied fast clutch fitting to connect the machine to the air compressor system. You could use also another fitting suitable with your pneumatic system (see fig. 2).



Picture. 1



Picture 2




Picture 3



It is advisable to install a filter/ lubricator on the air compressed system to provide clean and lubricated air. Use only silicone lubricating oil for pneumatic systems. The use of inadequate oil could damage the valves.

Once you have connected the machine with the pneumatic system, check the proper operation of the foot pedal in the following ways:

- The foot pedal pressed half way down activates the horizontal and vertical clamp
- The foot pedal pressed full down activates the V-nail driver

	<p>Check the foot pedal operation when the V-nail magazine is closed. The foot pedal control is deactivated when the V-nail magazine is opened.</p>
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#### 4.6 PRELIMINARY CONTROLS

The Machines setup should be performed by a technician appointed from the customer. Before the starting to use the machine , it is necessary to execute certain verifications and checks to prevent mistakes or accidents during setup.

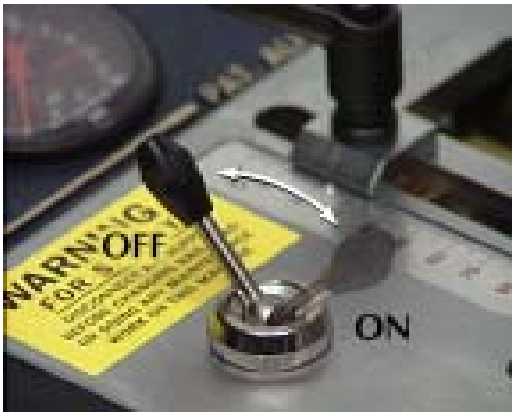
- Verify that the machine has not been damaged during the assembly steps.
- Verify with extreme care, the pipes integrity

#### 4.7 MACHINE ARRANGEMENT

##### 4.7.1 V-Nails magazine loading

To load the V-nail magazine proceed as follows:

- Move the clawpusher backwards by flipping the special lever located on the right side of the machine. This will give you access to the V-nail magazine (see fig. 4).
- Insert one or more V-nails strips into the magazine, taking care that the glue side faces up and that they are loaded with the V of the V-nails pointing in the direction indicated in the figures 5 and 6. Check that the V-nail size is suitable with the type of claw head mounted.
- Move the claw pusher forward by flipping the control lever (see fig.4)



Picture 4



Picture 5



Picture 6

##### 4.7.2 V-nail guide head replacement to change V-nails size

The V-nail guide head must be changed each time you use V-nails of different sizes.

Proceed as follows to replace it:

- Loosen the locking screw of the V-nail guide head using a 5 mm Allen wrench. (The screw is on the opposite side from the V-nails magazine(See fig. 7)
- Remove the V-nail guide head (Claw head)
- Move the claw pusher backwards by flipping the special lever located on the right side of the machine. This will give you access to the V-nail magazine (see fig. 4).
- Remove all the V-nails that are still in the magazine (using the proper brass magnet, if necessary).
- Insert the new V-nail strip(of desired height) into the magazine
- Move the claw pusher forwards by flipping the control lever (see figure 4).
- Insert the new size V-nail guide head to match the V-nails to be used (see fig. 6).
- Tighten the locking screw of the V-nail guide head (see fig.5).

### 4.8 ADJUSTMENTS

The machine was completely tested and checked at ALFAMACCHINE before its shipment, the operator has to perform only the following adjustments:

#### 4.8.1 Setting stops for V-nails positioning

The Minigraf 4 is equipped with a movable driver assembly that is shifted to the different the V-nail inserting positions. The limit stops which are located on the machine's working bench, determine the V-nails insertion points.

The positioning of these stops can be changed by means of the handles placed on each stop (fig. 11-12).

The correct measurement of each position is easily set by means of a measurement gauge that refers to the distance between each position and the vertex.

The operator can shift the driver assembly by pressing the special lever located on the right side of the working bench (fig. 13-14).

The Minigraf 4 is produced in versions at 2 or 3 positions (respectively 2P and 3P).

The inserting positions are marked as X and Z in the 2P version; X, Y and Z in the 3P one.



Pic 7



Pic. 8



Pic. 9



Pic. 10



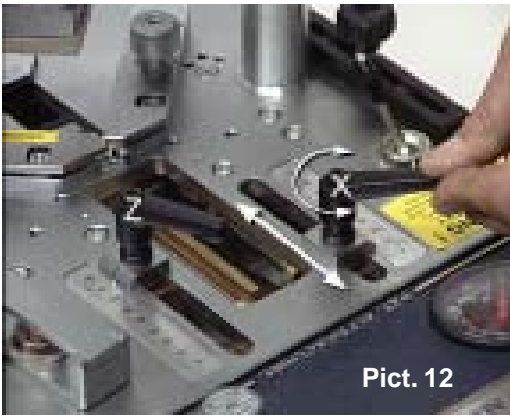
**TAKE CARE:** In the 3P machine it is recommended that you use the X and Z as extreme positions and Y always as the middle one.



**ATTENTION:** When the machine is not working, the driver assembly is positioned in the X position: to change it, it is necessary to shift the driver assembly to the next positions (Y or Z).

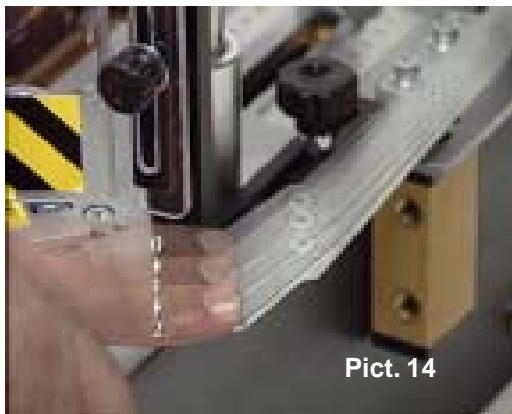
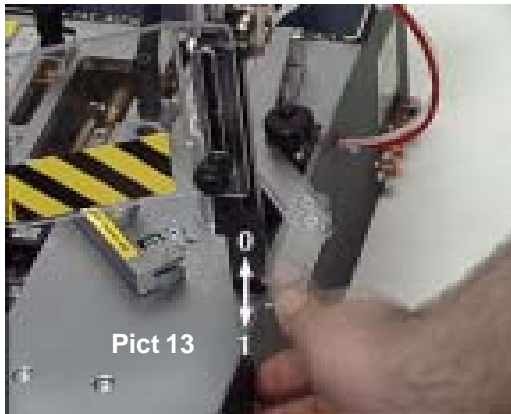


Picture 11



**4.8.2b Vertical clamp height adjustment**

- Loosen the handle which is located on the side of the clamp (see fig. 16) and adjust the pressure pad height over the frame until it is between 5 - 8 mm above the moulding. This will help prevent any accidental crushing of your fingers.
- Tighten the handle once you have reached the proper position
- Lower the vertical clamp by pressing half way down on the foot pedal to verify that the mouldings to be assembled are properly clamped
- Press all the way down on the foot pedal to insert the V-nail.



**4.8.2 Vertical clamp adjustment**

The vertical clamp can be adjusted in height and position. Proceed as follows to adjust them:

**4.8.2a Vertical clamp position adjustment**

- Position the mouldings to be assembled on the working bench
- Select the pressure pad suitable with the profile of the moulding to be assembled and put it on the vertical bar
- Loosen the handle (see fig.15), this will allow the clamp to shift forward or backward so it puts the pressure pad directly over with V-nail inserting point.
- Tighten the handle once you have reached the proper position

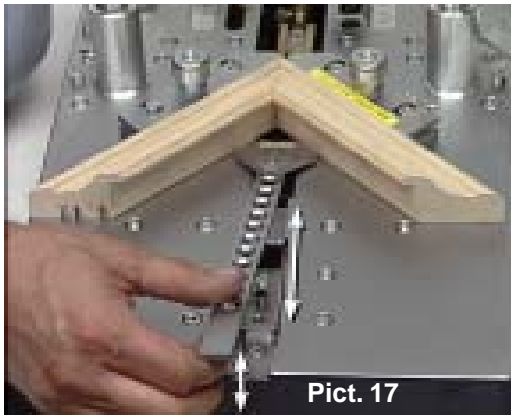
**4.8.3 Frontal clamp adjustment**

The Frontal Clamp (horizontal clamp) has a series of holes in the flat bar (see fig.17).

Lift the bar upwards to move it forwards and backwards. To lock the bar it is sufficient to insert it onto the peg located in the middle of the guide channel.

Proceed as follows to position the frontal Clamp correctly:

1. Remove the bar from the peg (lifting it up by about 10-15 mm) and move it forward until it touches the moulding (see fig.18);
2. Lower the bar into the channel & onto the peg.



Pict. 17



In case of continued use without needing to remove the frontal clamp from its position, it is possible to fix it to the peg using the proper screw. During machine transport, it is advisable to fix the bar using the supplied knob.

#### 4.8.4 Fence adjustment

The machine is equipped with a special fence composed of 2 different parts.

Each fence side is equipped with a knob that allows it to tilt the moulding supports.

Furthermore, if the moulding rolls forward or backwards as the front clamps engages, you can adjust the tilting fence to compensate for the defect (fig.18).

In addition to 90 degree frames, the Minigraf 4 can also be used for 6-sided (120 degrees) or 8-sided frames (135 degrees), by properly positioning the fence (fig. 19-20).

Proceed as follows to modify the position of fence supports:

- use a 5 mm Allen wrench and remove the outside screw;
- loosen the inside screw slightly and position the fence into the tapped holes located on the working bench.

The proper positioning of the fence can be obtained by using a special square, which is included with your machine. Care must be taken to ensure that the 120° or 135° angle is perfectly centered on the internal vertex of the V-nail head.



Pict 18



Pict. 19



Pict. 20

#### 4.8.4 Working pressure adjustment

The working pressure must be adjusted to the hardness of the mouldings to be assembled.

The pressure regulation allows you to change the clamping pressure of mouldings to be assembled. Too high of a working pressure can cause a poor assembly (especially on small-size frames) and the possibility of crushing the moulding. Too low of a working pressure can cause an incomplete insertion of V-nail into the frame.

The working pressure is adjusted by means of the regulator on the panel near the pressure gauge (see fig. 21).

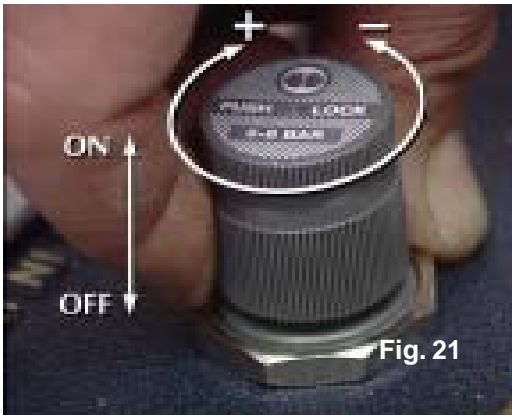
Proceed as follows to adjust the working pressure:

1. pull up on the regulator cap by about 3-4 mm to unlock it
2. turn it clockwise to increase the pressure and counter-clockwise to decrease it.
3. push the regulator cap back down, to lock it into position

The suggested pressures are:

<b>Soft woods</b>	<b>(samba,.....)</b>	<b>1.5 - 2.0 Bar</b>
<b>Medium</b>	<b>(ramin,.....)</b>	<b>2.0 - 3.0 Bar</b>
<b>Very hard woods</b>	<b>(oak)</b>	<b>3.0 - 5.0 Bar</b>

The above listed values apply to 7 and 10 mm high V-nails. Increase the pressure by 10 % for 15 mm high V-nails. When stacking 2 or more V-nails, increase the working pressure by about 10-15 %.




Proceed as follows to adjust the protection shield:

1. loosen the 2 knobs on both sides of the protection and raise or lower it until it is about 6-8 mm from the top of the moulding.
2. tighten the knobs to lock the protection shield.

*You can purchase the guard as an option for your machine.*

Even if the protective shield is properly adjusted, it is necessary to respect the following instructions:


- 3 keep your fingers away from the frontal and vertical clamp working area
- 4 disconnect the pressure supply during any maintenance intervention
- 5 keep the foot separated from the pedal while adjusting the machine

	Opening the guard deactivates the foot pedal
--	--

#### 4.9 Items to check before using the machine

Once the machine has been properly installed check that:

- The magazine is loaded with the type of nails suitable with the moulding to be assembled
- The claw head matches up with the chosen V-nail size
- The limit stops of the driver assembly are positioned in the selected points and properly locked (see chapter 4.8.1)
- The pressure pad is placed on the magnetic support
- The vertical and frontal clamps are properly positioned

	In order to improve the clamping of large moulding sizes or very hard material we recommend you use a multiple clamping device (double/triple mechanic or double hydraulic clamps)
--	--

- The working pressure is adequate to the wood hardness
- The limit stops are properly set (see chapter 4.8.3)
- The protective shield is properly positioned (see chapter 4.8.6)

## 5. FUNCTIONING

### 5.1 OPERATORS

The machine has been projected to be used by only one operator.

The staff assigned to operate the machine, must be in possession (or acquire through an adequate training) the requirements indicated below. In addition they must have knowledge of this handbook and of every information concerning safety:

- General and technical culture sufficient to comprehend the handbook contents and understand the drawings and schemes
- Knowledge of main sanitary, technological and anti-accidental norms
- Overall knowledge of the line and plant where the machine is installed
- Specific experience in assembling frames
- To know how to operate the individual protections devices and how to stop the machine in case of an emergency

The Maintenance people, in addition to the above mentioned characteristics, must be in possession of an adequate technical education.

### 5.2 FUNCTIONING DESCRIPTION

The Minigraf 4 is a 3 position machine. This machine has been realized for small and medium size production runs. The machine has only one possible operating mode:

- Manual functioning using the pneumatic foot pedal and the pneumatic lever which controls the movement of the driver assembly.

Pressing the pneumatic foot pedal half way down causes the clamping of the mouldings.

Pressing the pneumatic foot pedal full down causes it to drive a v-nail.

The control lever permits the movement of V-nail driver assembly

- Pressing the lever half way down causes the driver assembly to move from the 1<sup>st</sup> to the 2<sup>nd</sup> inserting position; pressing it all the way down causes it to shift to the 3<sup>rd</sup> inserting position.

To assemble a corner, operate as follows:

1. Set the insertion position handles (see chapter 4.9.1)
2. Position the moulding to be assembled on the working bench
3. Adjust the vertical clamp height and positioning ( see chapter 4.9.2)
4. Adjust the frontal clamp position (see chapter 4.9.3)
5. Check & adjust the clamp pressure according to the hardness of the material to be assembled(see chapter 4.9.5)

6. Press half way down on the foot pedal and verify the proper positioning and clamping of the mouldings
7. Press the foot pedal full down to insert the V-nail (if the mouldings profile needs 2 or more V-nails stacked in the same position, release the foot pedal halfway and then press it again to insert the 2<sup>nd</sup> V-nail and so on)
8. Release the pedal halfway
9. Press the lateral lever halfway to position the V-nail ejection group in the next inserting point
10. Press the foot pedal full down to insert the V-nail (see step 7)
11. Release the pedal halfway
12. Press the lateral lever all the way down so the driver assembly shifts to the last insertion point
13. Press the foot pedal full down to insert the V-nail (see step 7)
14. Release the foot pedal completely to release the vertical and the frontal clamps.

### 5.3 TIPS FOR PERFECT JUNCTIONS

#### a) V-nail types

In order to allow the machine to make excellent quality junctions using different materials, it has been necessary to manufacture different V-nails types for different uses (see attachment D).

V-nails can be classified in three different groups:

for soft woods and soft plastic	Suggested V-nail code	SW
for medium woods	Suggested V-nail code	MW
for hard woods	Suggested V-nail code	HW

#### b) Assembling positions

It is advisable to operate as follows in order to achieve the best results in terms of junction quality:

Never drive V-nails near the junction vertex. The minimum recommended distance from the external vertex is at least 10 mm.

When you want to make the junction using only one V-nail, the most suitable position is in the middle of the moulding (see fig. 23)

In case you want to insert 2 or more V-nails into each junction, we recommend you to insert the most external one 1/3 from the external vertex and the most internal one 1/4 from the internal vertex.

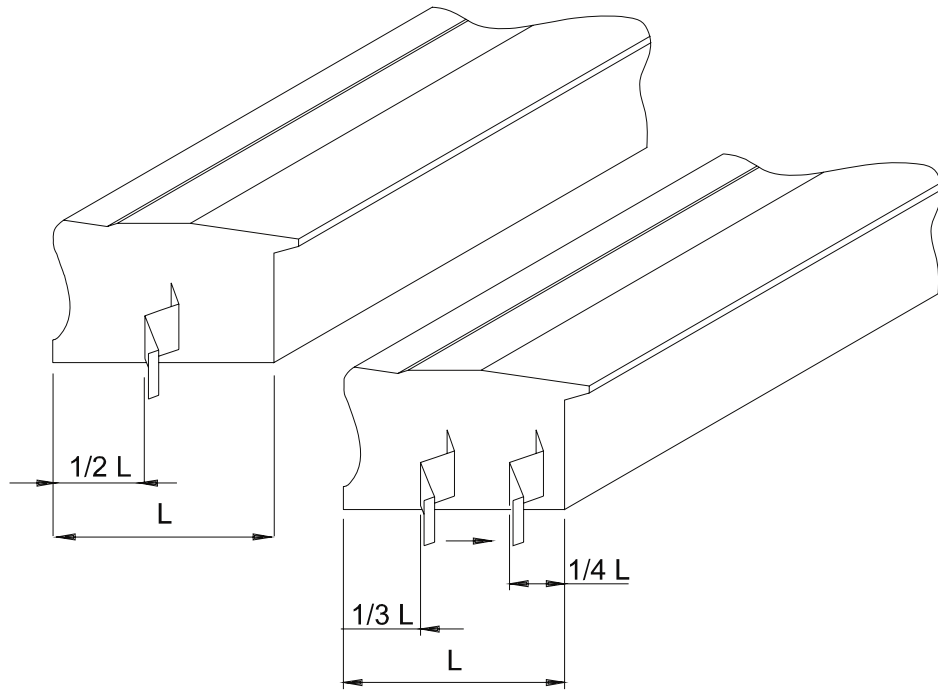


figure 23

#### 5.4 MACHINE STOP

The machine can only work by pressing the pneumatic foot pedal; to stop it is enough to lift the foot from the pedal. It is also possible to disconnect the fast clutch fitting from the compressed air.

#### 5.5 MACHINE REINSTATEMENT

The machine reinstatement is performed by pressing the pneumatic foot pedal.

#### 5.6 PUTTING OUT OF SERVICE

In case on long inactivity periods it is necessary to disconnect the fast clutch fitting from the pneumatic system.



## 6. MAINTENANCE

### 6.1 STATE OF MAINTENANCE

The maintenance operations must be performed with the machine in the conditions described at the “state of the machine” in the tables 6.6.A and 6.7.A

### 6.2 MACHINE ISOLATION

Before performing any type of maintenance or repair, it is necessary to isolate the machine from the following supplying sources:

- 1) Disconnect the fast clutch fitting from the pneumatic system.

Once you have finished the maintenance intervention & before reconnecting the pneumatic supply, make sure that any & all components and any pneumatic connections are properly reinstalled.

### 6.3 SPECIAL PRECAUTIONS

During the maintenance or repair operations is suggested to proceed as follows:

- Before starting any operation place a sign “machine under maintenance” in a highly visible position
- Do not use solvents or flammable materials
- Do not step on the machine parts, because they have not been manufactured to sustain the weight of people.
- Once all the operations are finished, reinstall the protections or shields you removed or opened

### 6.4 CLEANING

The machine structure is simple and robust therefore the mechanical parts do not require any special maintenance. It is advisable to follow the rules listed below:

- Regularly remove glue or other residues from the V-nail head and from the upper part of the driver blade;
- Always keep the V-nail magazine clean
- Remove any residue from the V-nail guide “L” shaped support.

Do not use water to clean the machine, otherwise the metal parts may rust.



Unsuitable lubricants may cause valve seal problems (seals may become too large) and consequent Valve jamming.

### 6.6 ORDINARY MAINTENANCE

The following operations must be executed at the times indicated below. Not observing the following instructions exonerate the Producer from any responsibility regarding the warranty.

The operations described below, even if simple, must be executed by qualified personnel.

The ordinary scheduled maintenance includes overhauls, checks and interventions that will help prevent stops and breakdowns.

- Lubrication state of the machine
- Wear and tear parts state



Before performing any cleaning intervention, the operator must disconnect the pneumatic system..

### 6.5 LUBRICATION

Preferably CASTROL MAGNA GC 32 or equivalent oil  
Furthermore, we recommend you lubricate the driver blade every 200 working hours.

## Minigraf 4

Table 6.6.A - Ordinary Maintenance

Maintenance	Description	Machine state
V-nail driver blade	Replacement every 1.000.000 V-nails shot	Isolation for maintenance
Movable parts lubrication	Lubricate the driver blade every 200 working hours	Isolation for maintenance
V-nail claw heads	Replacement every 5.000.000 V-nails shot	Isolation for maintenance
“L” shaped supports (V-nail guide)	Replacement every 5.000.000 V-nails shot	Isolation for maintenance

### 6.7 EXTRAORDINARY MAINTENANCE

Listed below are the operations that need the intervention of ALFAMACCHINE , your distributors Technical Assistance (see the paragraph 1.2) or by qualified staff authorized by the Producer

The extraordinary maintenance includes interventions to be performed in exceptional cases:

- Breakage
- Revisions

TAB. 6.7 A

MAINTENANCE	DESCRIPTION	MACHINE STATE
Valves and Reducers	Suggested replacement every 6/8 million of V-nails shot	Isolation for maintenance
Frontal and vertical clamp gaskets	Replacement in case of air leaks	Isolation for maintenance

## 7. DIAGNOSTIC

### 7.1 SAFETY WARNINGS

The interventions must be performed by personnel properly trained and must take all precautions in order to avoid accidental starts.

### 7.2 TROUBLESHOOTING

TABLE 7.2 - A

TROUBLE	POSSIBLE CAUSE	REMEDY
Pressing the foot pedal the V-nail ejection is irregular	Insufficient working pressure	Check that the minimum value indicated from the main regulator is higher than 3 Bar
Pressing the foot pedal the V-nail ejection is irregular	V-nails placed wrong in the magazine	- Check that the V-nails glue side faces up - Check that V-nails V vertex is pointing toward machine's external side -Defective nails- replace them
Pressing the foot pedal the V-nail ejection is irregular	Guide channels damaged or jammed	- Check that the guide channels are not dirty or jammed
Pressing the foot pedal the V-nail ejection is irregular	Claw pusher has insufficient thrust	Check that the pressure on the claw pusher cylinder is at least 2 Bar. If necessary, increase it by 10%. Check that the number engraved on the v-nail claw head matches up to the V-nails size
Pressing the foot pedal the V-nail ejection is irregular	Claw head not suitable with V-nails size	- Replace the V-nails - Use shorter sticks of V-nails
Pressing the foot pedal the V-nail ejection is irregular	Faulty V-nails	Check that the air pressure coming out from the compressor is at least 3 Bars.
Pressing the foot pedal the V-nail ejection is irregular	Insufficient working pressure	Close the magazine by means of the special lever
Pressing the foot pedal the V-nail ejection is irregular	Opened V-nail magazine	- Replace the foot pedal valve
Pressing the foot pedal the V-nail ejection is irregular	Faulty valves	- Replace the control valves
Pressing the foot pedal for several times the machine's working that was correct at the beginning becomes irregular later	Jammed valves because of surplus of oil or condensation	-Remove the surplus of oil and condensation from the valves by disconnecting one by one the control pipes -making the oil/water come out with the air
Pressing the foot pedal the working pressure indicated on the regulator deeply decreases	Faulty pressure regulator	-Replace the regulator
Pressing the foot pedal the working pressure indicated on the regulator deeply decreases	Feeding pipe too long or of inadequate diameter	Replace the piping with a new one of bigger diameter

<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
Pressing the foot pedal the machine works properly, but once the pedal is released you can note a certain delay in re-positioning of driver blade and/or vertical clamp cylinders	Faulty or jammed valves	<ul style="list-style-type: none"> <li>- Remove the surplus of oil and/or condensation</li> <li>- Replace the foot pedal valve</li> <li>- Replace the faulty control valves</li> </ul>
Wishing to insert several V-nails one upon the other in the same point, they do not stack properly or tilt during their insertion	Unsuitable V-nails	Replace the V-nails with suitable ones <ul style="list-style-type: none"> <li>- Check and in possibly replace the vertical and frontal clamping positions</li> </ul>
Wishing to insert several V-nails one upon the other in the same point, they do not stack properly or tilt during their insertion	Poor frames clamping (the frame moves during the V-nail insertion)	<ul style="list-style-type: none"> <li>- Increase the pressure by using the regulator</li> <li>- Replace the pressure pad with the proper one</li> </ul>
Wishing to insert several V-nails one upon the other in the same point, they do not stack properly or tilt during their insertion	Worn driver blade	Replace the driver blade
Wishing to insert several V-nails one upon the other in the same point, they do not stack properly or tilt during their insertion	Jammed driver blade	Clean the driver blades upper part removing any material jamming the upper profile

### 7.3 REQUEST OF ASSISTANCE

For any information regarding Use, Maintenance, Installation, etc.. we remain at your disposal. The Customer can send a detailed fax describing the problems encountered. For eventual explanations we suggest you use this handbook and the instructions listed in the paragraph 1.2. as a reference.

**E\_Mail: [info@alfamacchine.com](mailto:info@alfamacchine.com)**  
**FAX: +39 0543 480770**  
**via Dell'Artigiano, 12 - 47100 Forlì - Italy**

## 8. SPARE PARTS

### 8.1 SPARE PARTS LIST

Even though the machine has been submitted to several tests and functional checks, we have listed below the components that we suggest you to have to guarantee the minimum possible downtime.

TABLE 8.1 - A

<b>COMPONENT</b>
<ul style="list-style-type: none"> <li>• V-NAIL DRIVER BLADE</li> <li>• V-NAIL CLAW HEADS</li> <li>• “L”SHAPED SUPPORT (V-NAIL GUIDE)</li> <li>• VALVES-REDUCERS-REGULATORS</li> <li>• VERTICAL AND HORIZONTAL CLAMPING GASKETS</li> </ul>

### 8.2 SPARE PARTS ORDERING

We remind you that only a qualified technician can repair the machine.

Thus, we suggest the intervention of ALFAMACCHINE's or your local distributor's Center of Technical Assistance, which is disposable with qualified staff, proper equipment and tools, and with original spare parts.

To order the above listed spare parts, send by fax or letter with the following data:

- Model of the Machine
- Code of exploded parts drawing
- Reference number of spare part or group indicated on the mechanic drawing
- Code number of single or group spare part

## 9 DEMOLITION

### 9.1 DEMOLITION

In the act of demolition it is necessary to separate the parts in plastic material from components. Depending upon the Norms in the country you live in, you might have to separate it.

Concerning the machine's metallic mass, it is enough to subdivide the steel parts and those of other metals or alloys, for a proper recycling by smelting.

## 10. ATTACHMENTS

### 10.1 DECLARATIONS

You can find attached here the following declarations

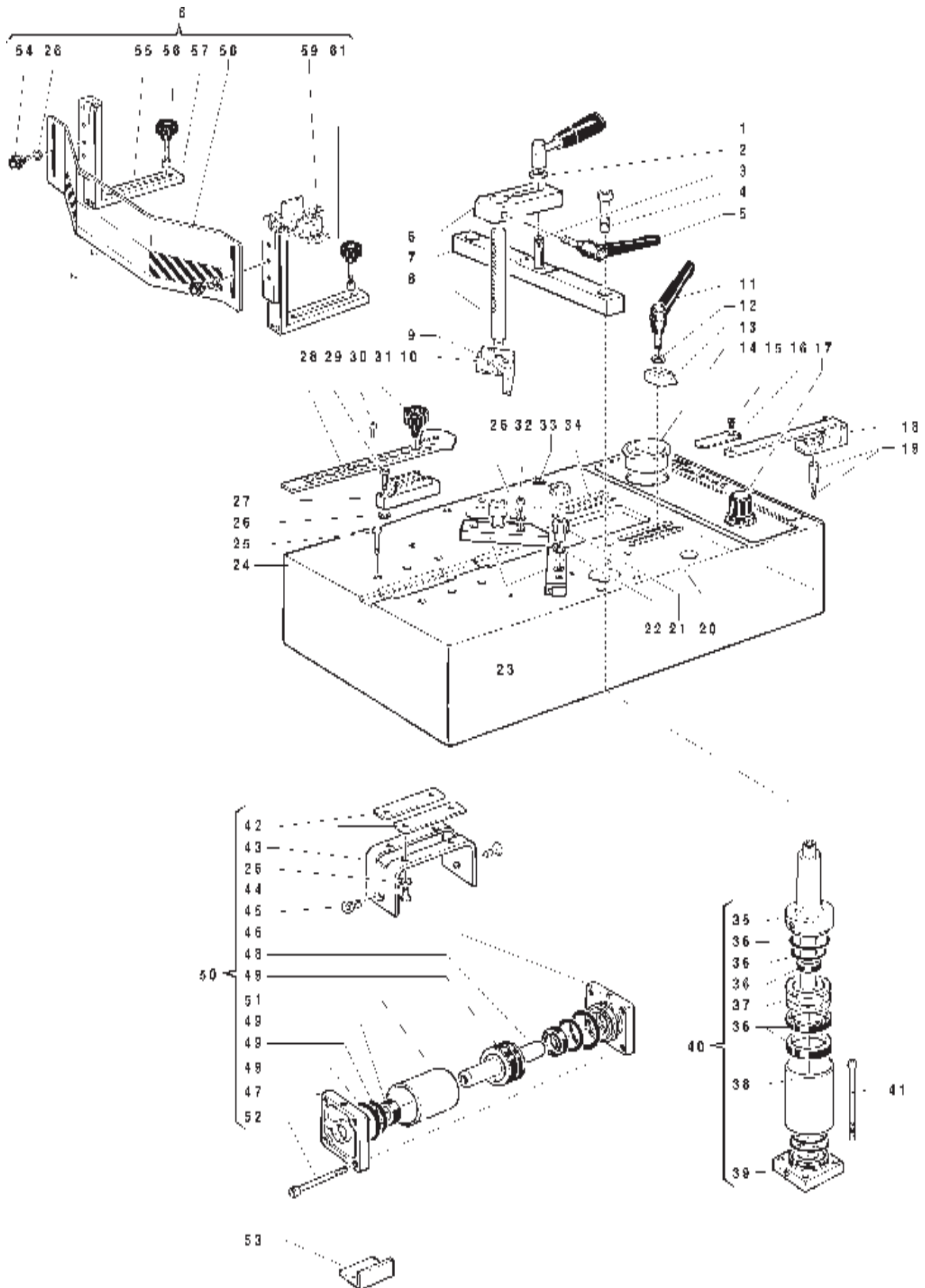
- Declaration of conformity to the Norm 89/392/CEE

### 10.2 SCHEMES

You can find attached here the following schemes:

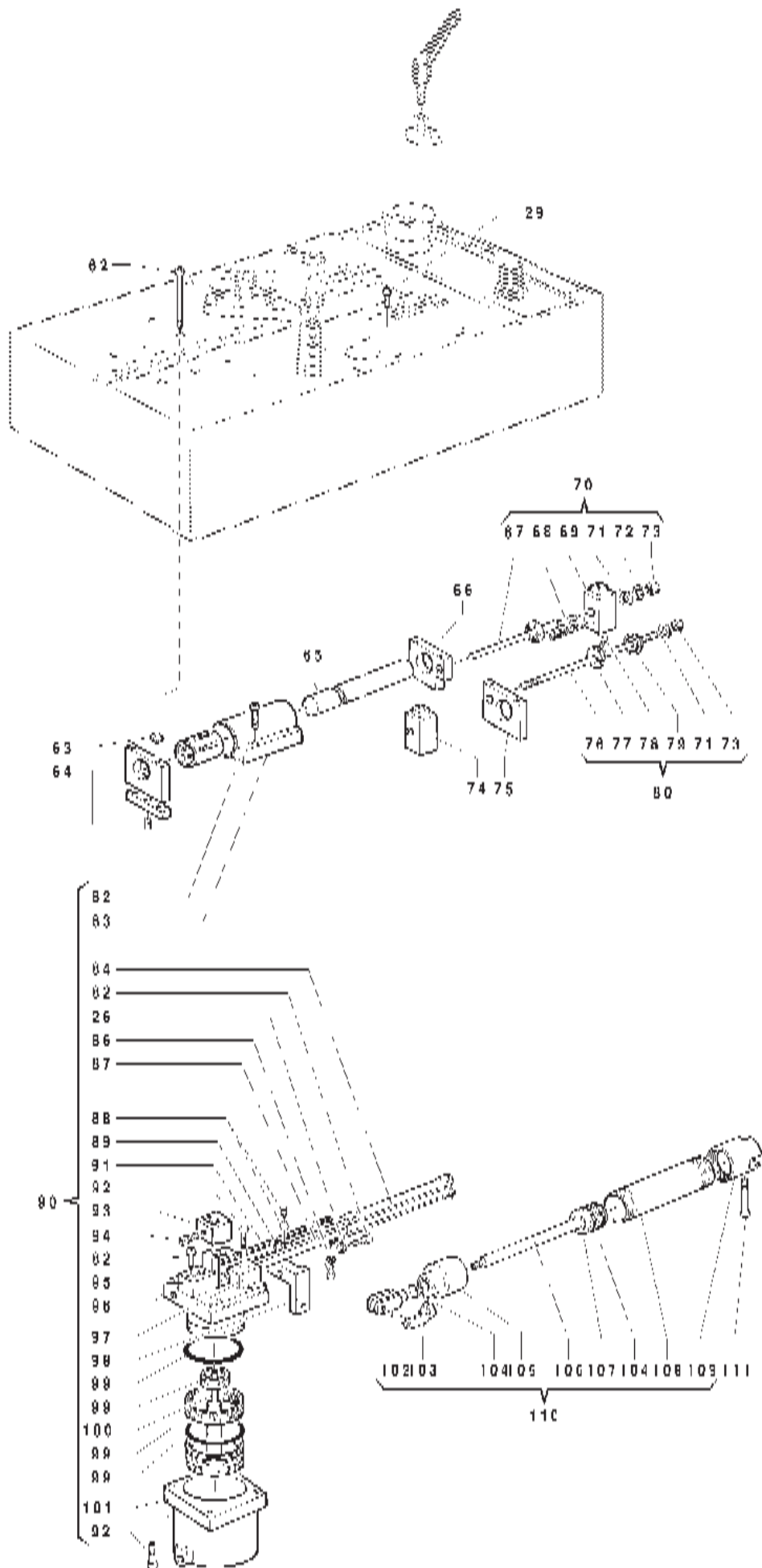
- (A) Mechanic Schemes
- (B) Pneumatic Scheme
- (C) Plates location
- (D) Sharpening Table

**SCHEMES A - Mechanic Schemes (2 positions) (cod. DWG n° 004.2.083 rev.1/01-1997)**



**Ref. Description**

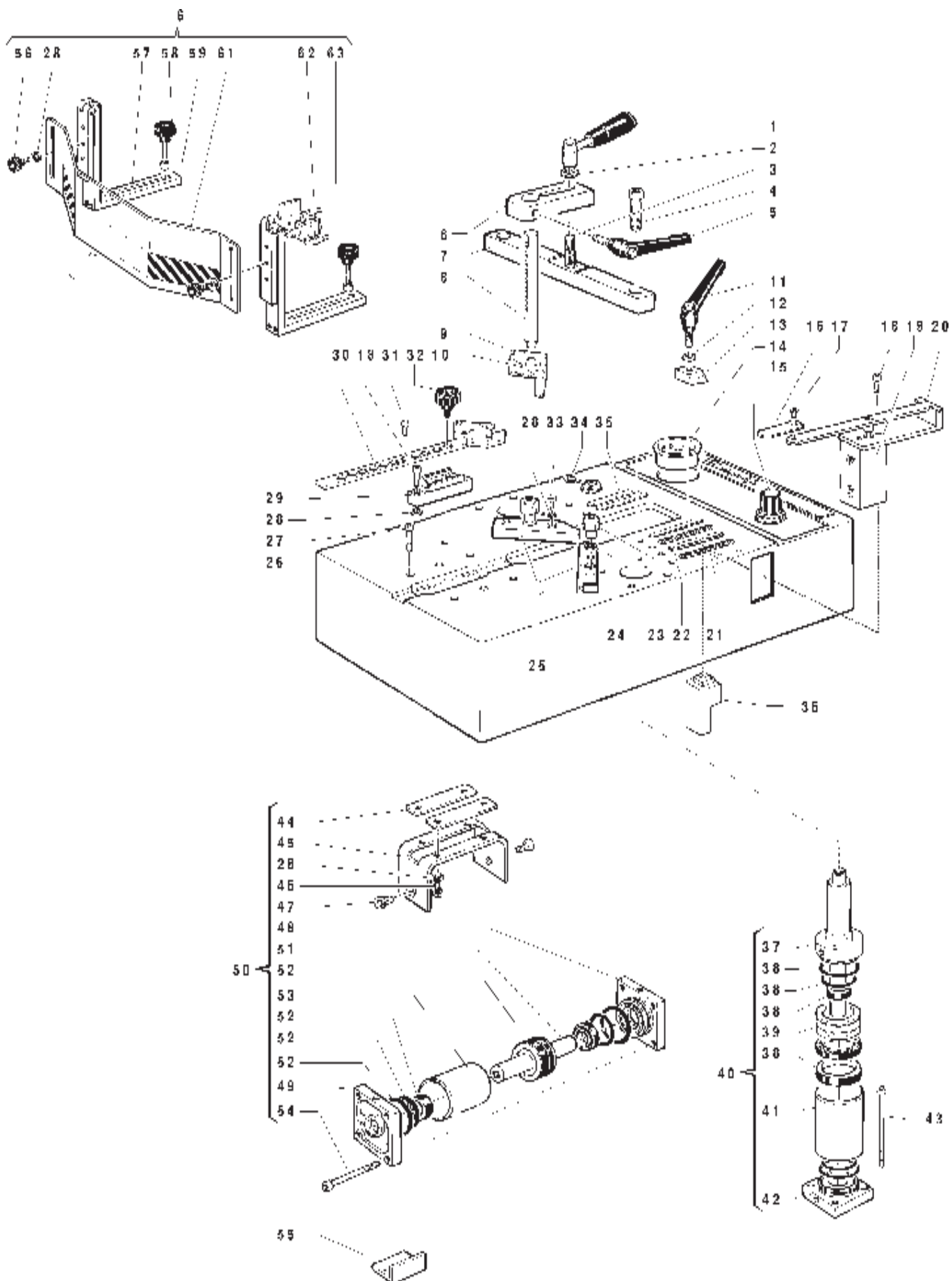
1	Handle	59	Valve
2	Washer	60	Protection unit
3	Headless screw	61	Support
4	Screw		
5	Handle		
6	Support		
7	Support		
8	Rod		
9	Pressure plate		
10	Screw		
11	Handle		
12	Washer		
13	Index		
14	Pressure gauge		
15	Screw		
16	Extension		
17	Pressure regulator		
18	Lever		
19	STG valve pushbutton		
20	Right inch rule		
21	Knob		
22	Washer		
23	Complete connecting plate		
24	Main frame		
25	Screw		
26	Washer		
27	Support		
28	Blocking clamp		
29	Screw		
30	Screw		
31	Knob		
32	Screw		
33	Lever-valve		
34	Left inch rule		
35	Head		
36	Gasket kit		
37	Piston		
38	Cylinder		
39	Bottom		
40	Complete cylinder		
41	Screw		
42	Slide		
43	Support		
44	Screw		
45	Screw		
46	Head		
47	Head		
48	Piston		
49	Gasket kit		
50	Complete cylinder		
51	Cylinder		
52	Screw		
53	Bracket		
54	Knob		
55	Support		
56	Knob		
57	Spacer		
58	Protection		



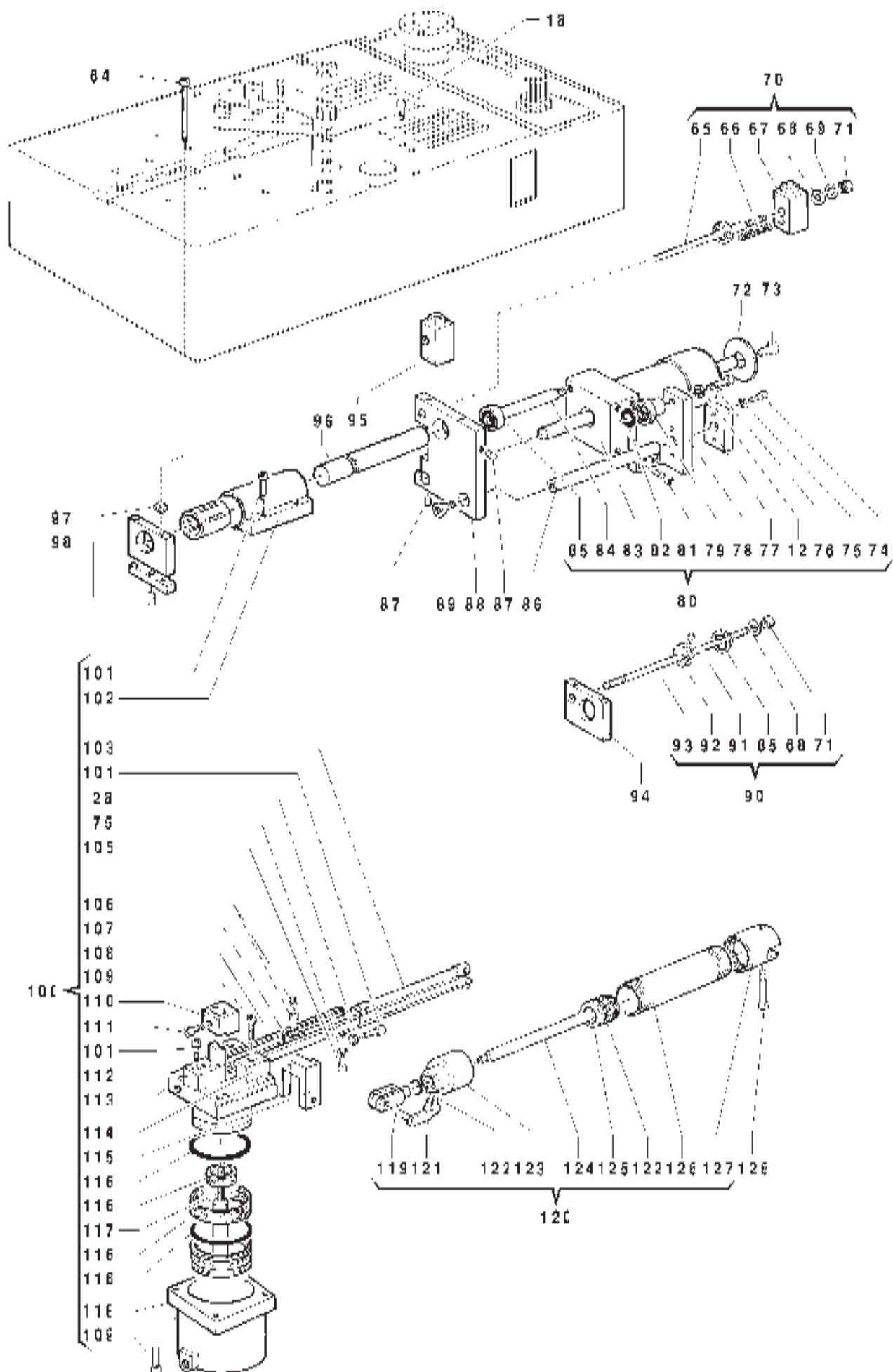


62	Screw	118	Plate
63	Spacer	119	Support
64	Support	120	Complete hydraulic blocking
64	Support	121	Slide
64	Headless screw	122	Headless screw
65	Slide	123	Screw
66	Support	124	Extension
67	Bushing	125	Washer
67	Bushing	126	Extension
67	Pin		
68	Spring		
69	Block		
70	Complete limit stop		
71	Washer		
72	Grower		
73	Nut		
74	Block		
75	Support		
76	Stud		
77	Spacer		
78	Screw		
79	Limit stop		
80	Complete limit stop		
82	Screw		
83	Complete support		
84	Complete cylinder		
86	Washer		
87	Screw		
88	Complete pin		
89	Stapples pusher		
90	Complete head		
91	Staples box		
92	Screw		
93	Head H7		
93	Head H10		
93	Head H15		
94	Screw		
95	L block		
96	Head		
97	Block		
98	Bracket		
99	Gasket kit		
100	Piston and driver blade		
101	Cylinder		
102	Head		
103	Pin with clip		
104	Gasket		
105	Head		
106	Rod		
107	Piston		
108	Cylinder		
109	Bottom		
110	Complete cylinder		
111	Screw		
112	Hose		
113	Raccord		
114	Screw		
115	Complete cylinder		
116	Handle		
117	Handle		

**SCHEMES A - Mechanic Schemes (3 positions) (cod.n° 004.3.083 rev.1/01-1997)**

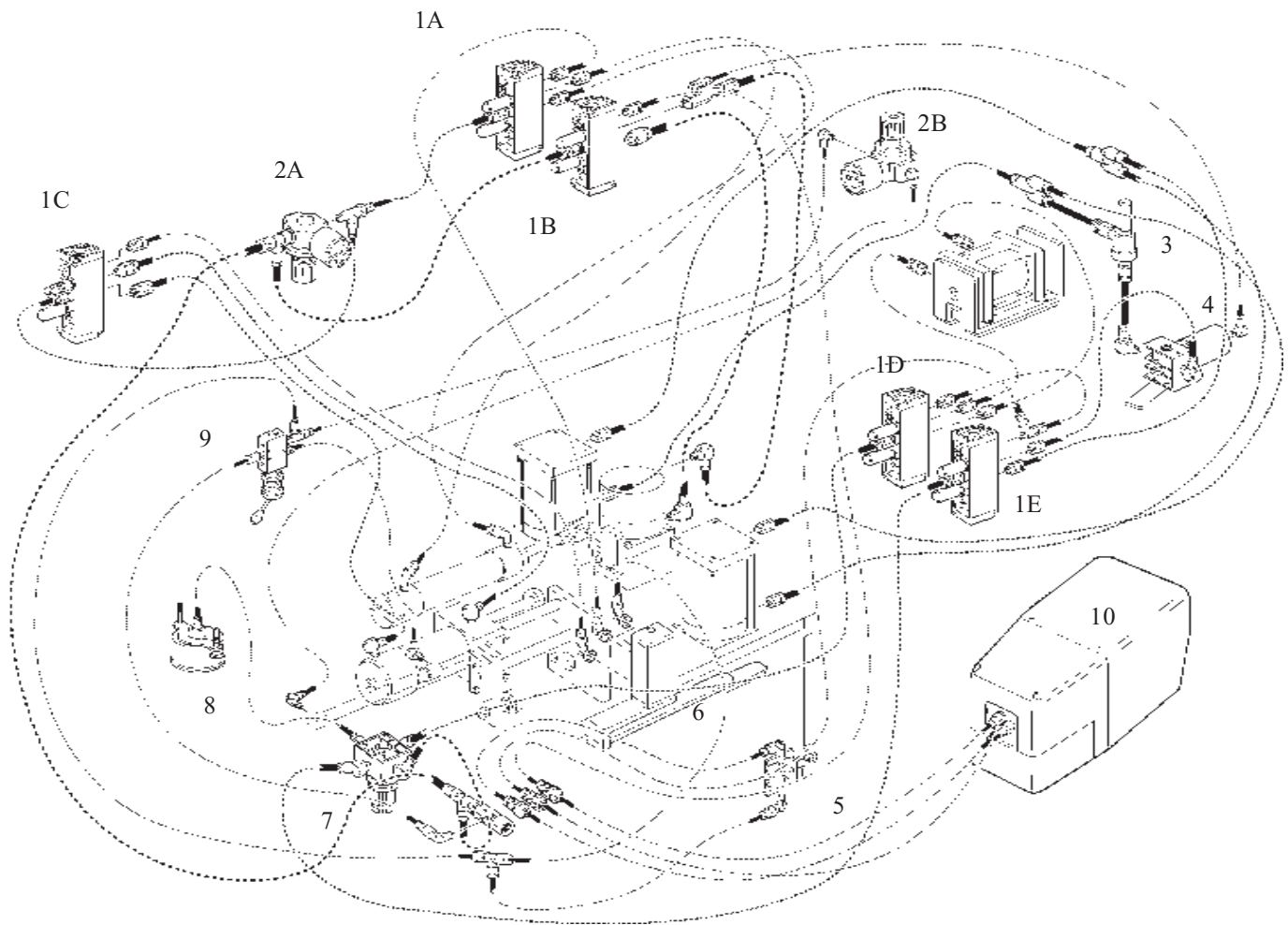


<b>Ref.</b>	<b>Description</b>	
1	Handle	59 Spacer
2	Washer	60 Protection unit
3	Headless screw	61 Protection
4	Screw	62 Valve
5	Handle	63 Support
6	Support	
7	Support	
8	Rod	
9	Pressure plate	
10	Screw	
11	Handle	
12	Washer	
13	Index	
14	Pressure gauge	
15	Pressure regulator	
16	Extension	
17	Screw	
18	Screw	
19	Valve	
20	Lever	
21	Inch rule "Z" axis	
22	Inch rule "Y" axis	
23	Knob	
24	Washer	
25	Complete connecting plate	
26	Main frame	
27	Screw	
28	Washer	
29	Support	
30	Blocking clamp	
31	Screw	
32	Knob	
33	Screw	
34	Lever-valve	
35	Inch rule "X" axis	
36	Block	
37	Head	
38	Gasket kit	
39	Piston	
40	Complete cylinder	
41	Cylinder	
42	Bottom	
43	Screw	
44	Slide	
45	Support	
46	Screw	
47	Screw	
48	Head	
49	Head	
50	Complete cylinder	
51	Piston	
52	Gasket kit	
53	Cylinder	
54	Screw	
55	Bracket	
56	Knob	
57	Support	
58	Knob	



64	Screw	120	Complete cylinder
65	Bushing	121	Pin with clip
65	Bushing	122	Gasket kit
65	Stud	123	Head
66	Spring	124	Rod
67	Block	125	Piston
68	Washer	126	Cylinder
69	Grower	127	Bottom
70	Complete limit stop	128	Screw
71	Nut	129	Hose
72	Washer	130	Complete hydraulic blocking
73	Screw	131	Raccord
74	Screw	132	Screw
75	Washer	133	Complete cylinder
76	Screw	134	Handle
77	Spacer	135	Handle
78	Support	136	Plate
79	Bushing	137	Support
80	Complete cylinder 3'' position	138	Slide
81	Screw	139	Headless screw
82	Gasket	140	Screw
83	Head	141	Extension
84	Rod	142	Washer
85	Bushing	143	Extension
86	Rod		
87	Headless screw		
88	Support		
89	Screw		
90	Complete limit stop		
91	Screw		
92	Spacer		
93	Stud		
94	Support		
95	Block		
96	Slide		
97	Spacer		
98	Support		
98	Support		
98	Headless screw		
100	Complete head		
101	Screw		
102	Support		
103	Complete cylinder		
105	Screw		
106	Complete pin		
107	Stapples pusher		
108	Staples box		
109	Screw		
110	Head H7		
110	Head H10		
110	Head H15		
111	Screw		
112	Block "L"		
113	Head		
114	Block		
115	Support		
116	Gasket kit		
117	Piston and driver blade		
118	Cylinder		
119	Head		

**SCHEMES B - Pneumatic Scheme (3 positions)**



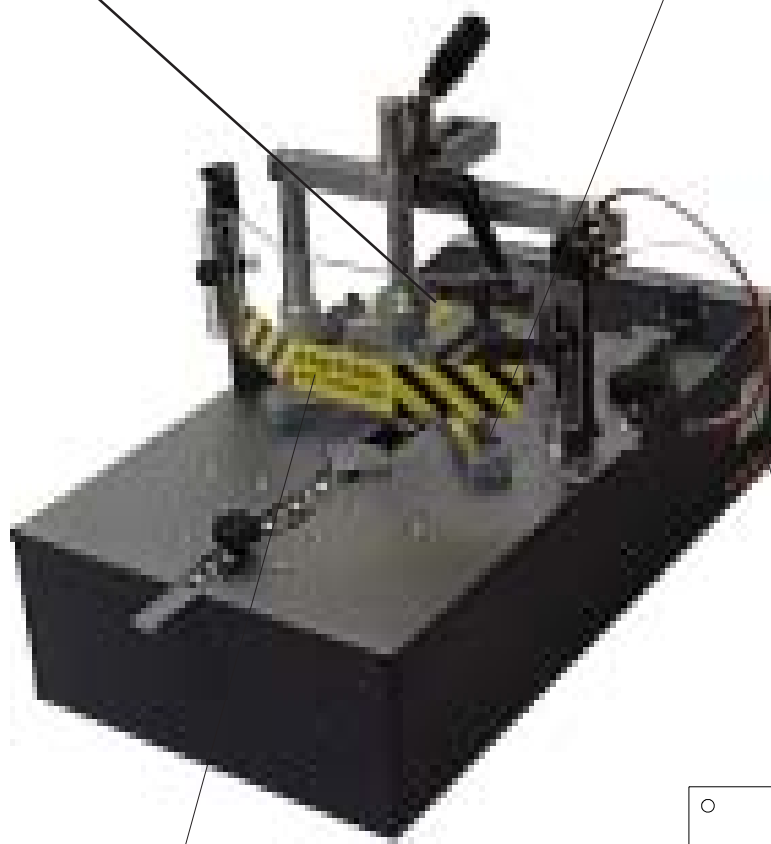
Ref. Description

1A	Valve 858/2.52.1.6 (or 2411520016)
1B	Valve 858/2.52.1.6 (or 2411520016)
1C	Valve 858/2.52.1.6 (or 2411520016)
1D	Valve 858/2.52.1.6 (or 2411520016)
1E	Valve 858/2.52.1.6 (or 2411520016)
2A	Pressure Regulator
2B	Pressure Regulator
3	Exhaust valve
4	Soft Clamp (BIT 02)
5	Microvalve
6	Valve 0ALF 104
7	Pressure Regulator
8	Pressure Regulator
9	Lever-Valve
10	Pneumatic foot pedal

**SCHEMES C - Plates location**

**CAUTION!**  
**FOR YOUR SECURITY**  
DISCONNECT THE AIR  
SUPPLY BEFORE REPLACING  
THE V-NAIL CLAW HEAD OR  
ANY MAINTENANCE OPERATION

**CAUTION: KEEP THE FINGERS AWAY**



○ **CE** ○  
*Alfamacchine*  
Via dell'Artigiano, 12 Forlì ITALY  
Tipo Alpha 1 M  
Anno di costruzione 1998  
Matricola 3164  
Peso 50 Kg.  
○ ○

**CAUTION:**  
**KEEP FINGERS AWAY**

## SCHEMES D - Sharpening Table

	SOFT WOOD			HARD WOOD		
	A	B	C	D	E	F
<i>Height</i> mm	Very soft wood	Soft wood	Averaged soft wood	Averaged hard wood	Hard wood	Very hard wood
<b>H 3* mm</b>	◇	◇	◇	MW	MW	MW
<b>H 5* mm</b>	MW	MW	MW	MW	MW	MW
<b>H 7 mm</b>	SW	SW	MW	MW	HW	HW
<b>H 10 mm</b>	SW	SW	MW	MW	HW	HW
<b>H 12 mm</b>	SW	SW	MW	HW	HW	HW
<b>H 15 mm</b>	SW	SW	MW	HW	HW	HW

SW Suitable for soft wood such as: Thailand and Asian South-East wood, Cedar, Pine, Bass, Banak, Obeche, Poplar  
Other materials: Cellular, Polystyrene, Vertical Grain MDF

SW Suitable for soft wood such as: Thailand and Asian South-East wood, Cedar, Pine, Bass, Banak, Obeche, Poplar  
Other materials: Vertical Grain MDF

MW Suitable for soft wood such as: Cedar, Cherry, Oak, Ramin, Poplar, Maple, Pine  
Other materials: Vertical grain MDF, Polystyrene, PVC

HW Suitable for soft wood such as: Oak, Ash, Hickory, Pecan, Maple, Cherry, Ramin  
Other materials: Horizontal grain MDF



In order to stack 2 or more V-nails per junction, use V-nails coded **MW** or lower.