

1.0 GENERAL INFORMATION

The firm LGF will not be responsible for eventual damages caused by a wrong use of the machine deriving from:

- use for functions which are not described in this hand-book;
- working of material, different from aluminium;
- bad or wrong maintenance;
- repairs which are not described in this hand-book;
- use of the machine in explosive places.

This machine was designed and built exclusively for working aluminium; those who make a wrong use of it, working other materials, do it at their risk. Therefore the firm LGF declines all civil and penal responsibility.

For any necessity or direction, apply to the nearest concessionaire or to the builders:

Nearest Dealer:

Manufacturer:

LGF s.n.c.
Via Togliatti, 81
47040-VILLA VERUCCHIO -ITALY
Tel.0541/677315 - Fax.0541/678752

MACHINE'S CONFORMITY

Conformity declaration

The firm L. G. F. s.n.c.
Via Togliatti, 81
47040 - VILLA VERUCCHIO - ITALY
Tel. 0541/677315 - Fax. 0541/678752

declares on its own responsibility that the TRACER copying router with matriculation number.....which this declaration refers to, is in conformity with the security requisites provided in the CEE directives 89/392, 91/368, 93/44, 73/23, 93/68-89/336, 93/68, and it was built respecting the following regulations: EN 292-1, EN 292-2, EN 60204-1, EN 294, 349, EN 418.

Date

02.01.1997

L. G. F. s.n.c

Signature
Canuti Luciano

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1.1 INTRODUCTION

This operation and maintenance hand-book concerns the following model of machine: TRACER copying router.

1.2 MACHINE'S IDENTIFICATION

The machine is identified through the wording on the metal plate (Fig.1) set on the base of the machine.

1.3 SANDING OF CORRESPONDANCE

For any advice or explanation concerning the machine, please apply to LGF or to the nearest dealer, supplying with:

- model of the machine;
- matriculation number;
- voltage and frequency,
- purchasing date;
- name of the dealer where the machine has been purchased;
- information about the working to carry out;
- number of employment hours;
- number of duty hours.

For a correct identification of the information concerning the machine, please supply with the data reported on the plate (Fig.1) which is set on the junction-box and describes the data of the electric installation.

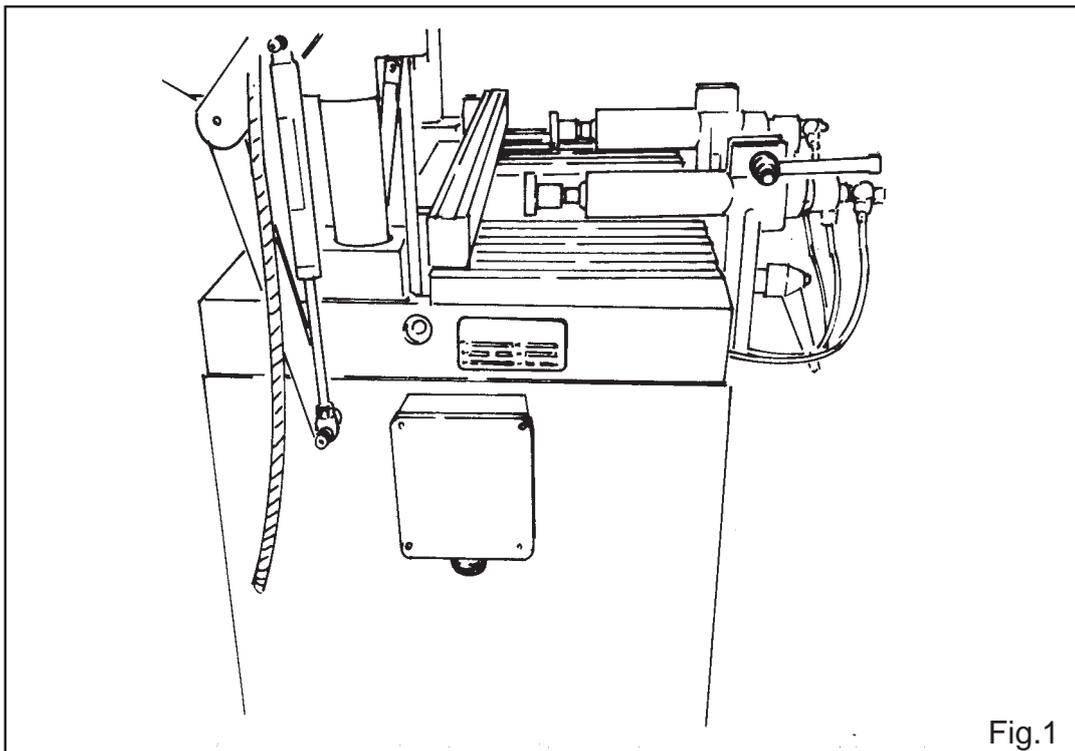
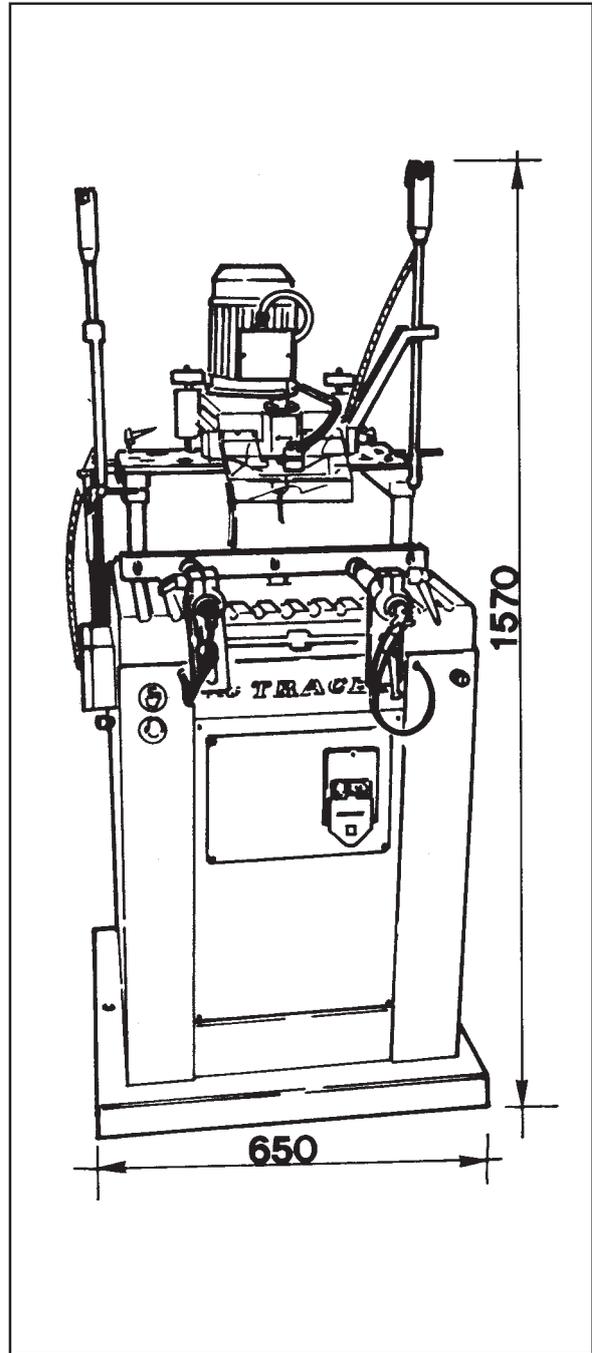
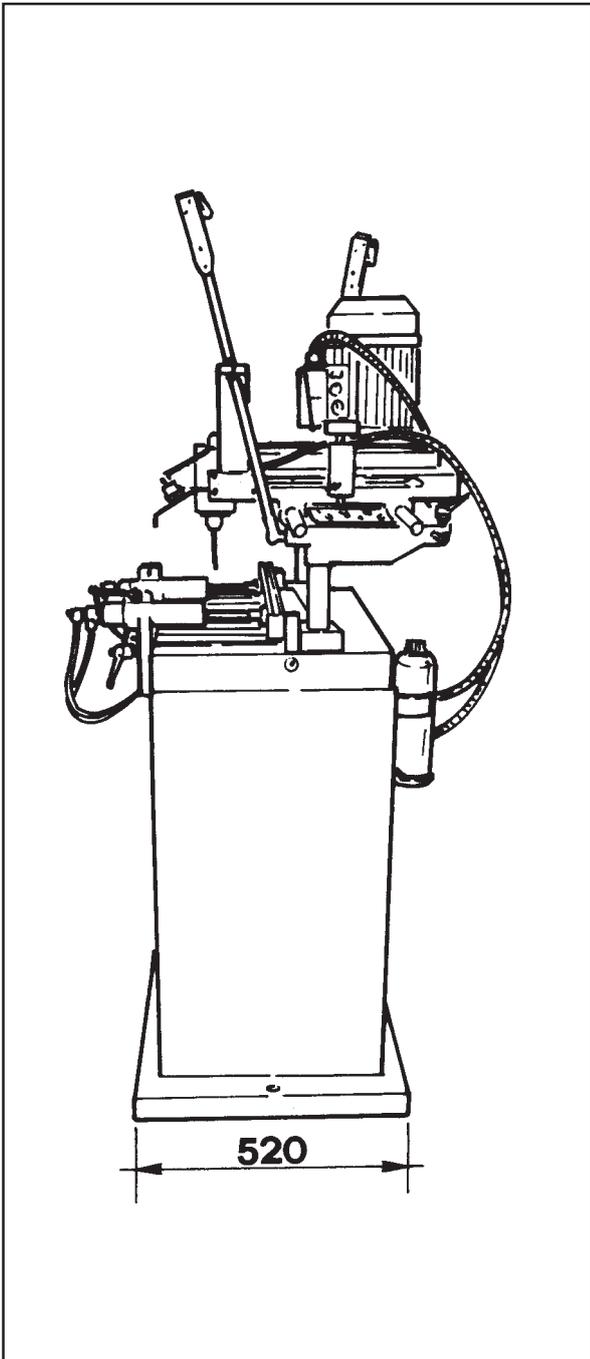


Fig.1

OVERALL DIMENSIONS



CONTROL BOARD:

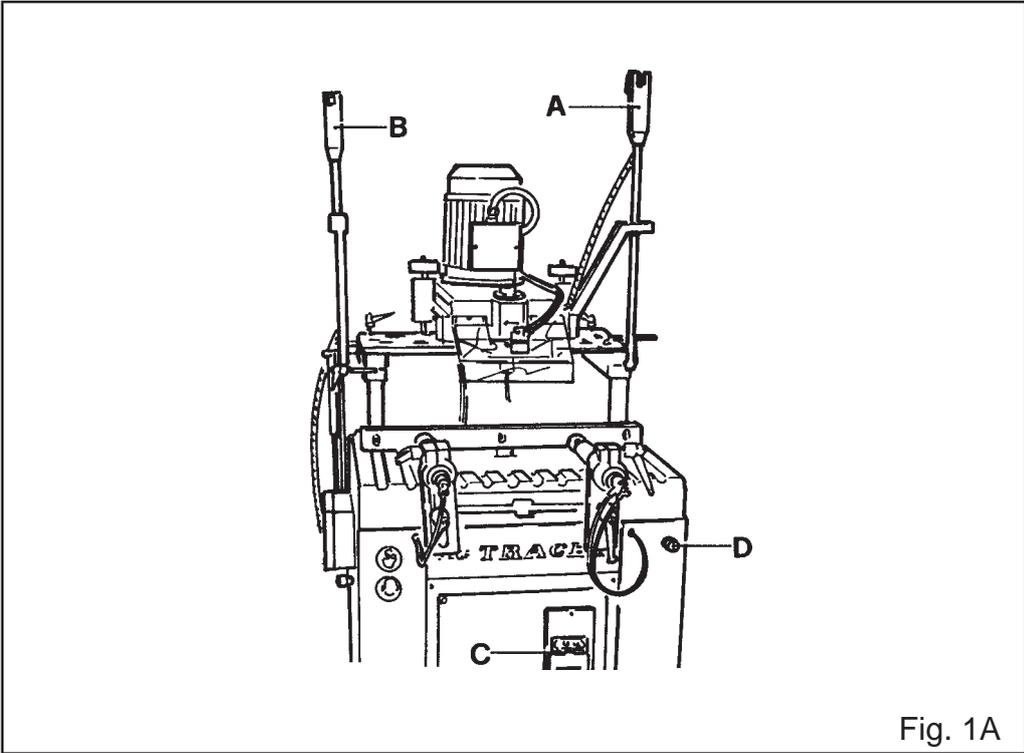


Fig. 1A

- A (Fig. 1A) = Knob
- B (Fig. 1A) = Knob
- C (Fig. 1A) = Overload Protection
- D (Fig. 1A) = Clamping Off / On Selector

1.4 TECHNICAL DATA

N°1 motor 1,5 HP (1,12Kw)	
Spindle revolutions 14.000 / min.	
Vertical traverse.....	110 mm
Longthwise traver.....	220 mm
Cross adjustment.....	115 mm
Overall dimensions.....	650X520X1560 mm
Weig.....	118 Kg.

STANDARD EQUIPMENT

Profile stops
N. 2 copy templates
N. 2 pneumatic tracer points
N. 2 pneumatic clamps
Cylindric tools.....of Ø4 mm a Ø 10 mm L. 80 a 1 tagliente mat. HSS
Automatic coding system
Service spanners

OPTIONALS

Single phase motor
Two speeds motor
Material supports with rollers

1.5 NOISE LEVEL

Acoustic emission of the TRACER copying router according to norms EN27560

(Lp) Level of the machine's medium sonorous pressure	(Ln) Level of the machine's normalized acoustic power	(Lpi) Sonorous level in the operator's normal position	(Lmax) Maximum sonorous working level on the prescribed	WORKING CONDITIONS
dB(A)	dB(A)	dB(A)	dB(A)	
74,8	89,6	****	76,7	IDLING
100,2	115,0	102,4	107,2	WORKING

L min.: Minimum sonorous working level: 69,2 dBA

L.o: Noise level range: 35,0 dBA

Lep.D: Daily personal exposure level: 97,0 dBA

LGF TRACER

SONOROUS EMISSION

Carrying out many activities together with the use of the machine can sometimes involve physical uneasiness and weariness. For example, being engaged with extra-working activities which require sonorous exposures involves higher risks and a lower health's defence.

Working conditions like for example, the loudness of the working environment play an important role for the health and personal comfort.

Some factors which influence the real exposure level are:

- the period of exposure
- the adjacent working machines
- the type and characteristics of the buildings

Moreover, noise emission can be contained by:

- reducing the number of the machine's revolutions,
- a low advancing,
- a correct fastening of the price,
- a good condition of the tools.
- ad above all, using the appropriate acoustic protections.

A protracted exposure over 85 dB (A) could cause health troubles.

In any case, it is advisable to employ some appropriate protection systems (ex: casings, plugs)

1.6 SAFETY WARNINGS

While drawing up this hand-book, we considered all the necessary functions for a correct maintenance of the machine, getting the best use of it.

Therefore read carefully through these directions before starting up the machine.

This machine was built to offer the highest possible safety together with the best performances.

The greatest security is in your hands. It must be kept in mind that the use of every kind of machine-tool involves some risks.

PERSONAL SAFETY

- 1) The operator must have reached the legal age, according to the law, and must not be lacking knowledge of manufactures of aluminium machines.
- 2) Experience teaches that there are several objects which could cause you accidents:
take off rings, watches and eventual bracelets; fasten the sleeves round your wrists, buttoning them accurately; take off neckties which, hanging down could get entangled in the most disparate places, put up your hair with proper accessories (caps, rubber bands).
- 3) Always make use of glasses or protective screens for your eyes.
- 4) Always make use of working gloves.
- 5) Always make use of antiaccident shoes.

MACHINE'S SAFETY

- 1) Pay the utmost attention before starting any work.
- 2) Never start the machine without checking that all the protection covering cutters, betts, ecc. are properly set up.
- 3) Work only with all appropriate protections at their place and in perfect efficiency.
- 4) Make sure that the tools are perfectly balanced, sharp and accurately keyed and tight; never make use of bigger tools than the ones indicated in the technical characteristics.
- 5) Never employ cracked, warped cutters.
- 6) The machine must be overhauled by specialized staff, acquainted with safety regulations.
- 7) The machine must not be left unguarded when working. Shutters and protections must be disassembled strictly when the machine is stalled and not working.
- 8) All shutters and protections provided with keys must be closed and the key is to be kept by responsible staff in suitable places.
- 9) Never employ benzine, solvents or other inflammables for the cleaning. Make use of commercial solvents which are not inflammable or toxic.
- 10) The building firm declines all responsibility for the inobservance of these regulations.

N.B. All disassembly and repair operations must be carried out exclusively by authorized and qualified staff. Moreover, it is to be recommended not to carry out reparations or others which are not written in this hand-book.

1.7 MAINTENANCE SECURITY

Maintenance must be carried out by qualified staff. The various operations for the ordinary and extra ordinary maintenance are indicated in the last pages of this hand-book.

It is compulsory to switch off the general electrical equipment, when it is necessary to regulate the machine or to disassemble any protection, pointing out such operation through a clear visible plaquard.

An important security factor is the cleaning of the machine, of the working tables, of the floor and the surrounding places.

It is very useful to read carefully through this hand-book before starting the machine:

in this way you will realize that the machine has been concerned to offer the best performances together with the highest security.

Encumbering and mobile objects, which could come into contact with the moving organs, are very dangerous.

A certain risk factor, which is eliminable with a good technique and with a constant attention by your side, exists in every work.

Before starting the machine, make sure that there are no other people carrying at maintenance operations.

1.8 OTHER RISKS

In spite of the adopted security directions, some other risks could remain.

- Electrical cabinet. The grid-feeding voltage persists, so pay attention every time you enter it.
- The high speed revolving tools, in spite of precautions like the polycarbonate guard, could be projected, if wrongly shutted.

So pay attention while shutting the tool.

2.0 MACHINE'S INSTALLATION

Your copying router mod. TRACER will be delivered by one of your authorized carriers or directly by the dealer. Verify the conformity of your goods and their good repair.

2.1 MACHINE'S UNLOADING

Before unloading the machine, free it from all those parts which, for transport or packing exigencies are put on it.

Therefore the machine's unloading from the transporting vehicle can be effected in the following way:

- 1) The machine is equipped with a special frame which raises it from the ground. Therefore it can be easily lifted by an elevator, inserting the forks under the pedestal and balancing the weight, which is totally of 120 Kg. (Fig.2A)

2.2 PLACEMENT

Choose the most favourable position, according to the length of the pieces to work at, to the connections of the electric and compressed air installations, to an easy maintenance.

Verify the solidity of the floor surface (preferably of a material that cannot be deformed, like cement) so that the frame can find a regular support.

Insert the 4 antivibration feet (which are included with the machine the accessory package) in the special holes on the base of the machine.

For levelling, screw or unscrew the feet (Fig.2).

N.B. The machine is greased and oiled for transport. Therefore, take the grease off the working tables and the protections accurately.

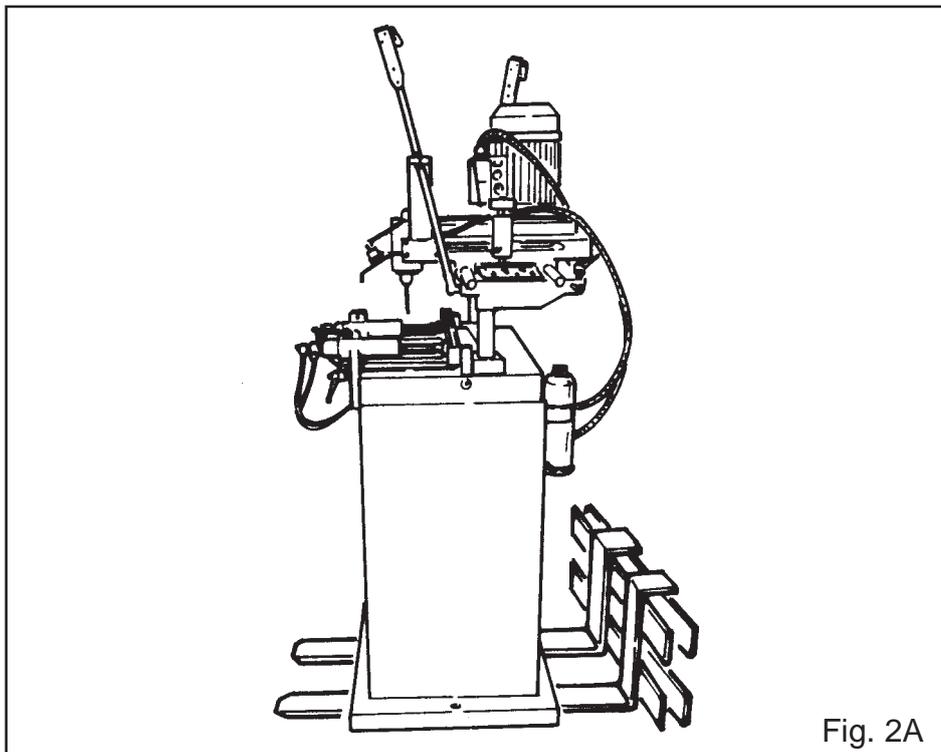
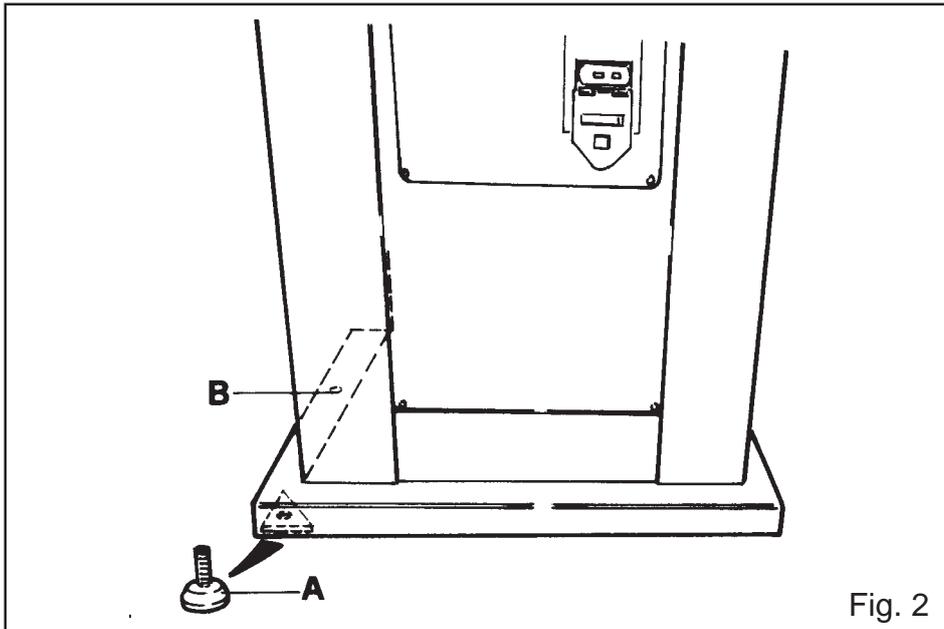
2.3 WHAT TO DO IF THE MACHINE IS DAMAGED?

- 1) Of course, the carrier is covered by an insurance, which will fairly refund you the damage.
- 2) After questioning the damage, you will have to communicate it within two days by registered letter to the carrier and the dealer.
- 3) Make to the manufacturer a request for eventual pieces to substitute as well, which will be forwarded to you by cash on delivery. The invoice of such pieces, together with eventual assembly expenses, must be reimbursed by the insurance company.

Attention: the goods travel at the customer's exclusive risk.

2.4 MACHINE'S LEVELLING

Level the machine, checking that it has been perfectly placed horizontally and transversally, using a spirit-level placed on the working table. Eventual level adjustments are carried out by operating on the thrattle-valves (Fig.2). Then fasten the machine at the floor by means of two expansion plugs inserted in the special holes which are on the pedestal (Fig. 2a). to find them, open the back shutter.



2.5 ELECTRICAL AND GROUNDING CONNECTIONS

The electrical connection and the necessary inspections must always be carried out by a specialized electrician according to norms EN 60204-1. Make sure that the electrician installation in the factory is able to support the power of the machine and check that the grid system's voltage corresponds to that of the machine.

Note: the best working condition for the machine is providing with the same voltage reported on the plate in Fig.1.

Yet it can also adopt itself to higher or lower working voltages in a range of endurance of +/- 5% (ex: a machine with working voltage $V=380$ has a range of endurance which runs from 360 to 400 volts).

Out of this range, provide for the adjustment of the feeding voltage.

Read the value of the total absorbed current (Amp) on the identification plate of the machine.

Consult the following table to use the right wire section and to install on the top of the machine "DELAYED INTERVENTION FUSES".

Absorbed Ampere	Wire Section	Delayed Fuses
from 3 to 6	2,5 mm	10A AM
from 6 to 10	2,5 mm	10A AM
from 10 to 14	4,0 mm	16A AM

Insulate electrically the machine and connect the 3 electric wires (phases) to terminals **L1, L2, L3** in figure 3. Connect the yellow-green wire (ground) to terminal PE or marked by the symbol and the neutral wire, if required, to terminal N.

Fasten wire-press P accurately (Fig.3); check that the tools revolve in the right direction, starting the machine as described forward.

If the spindle turns in the wrong direction, it is necessary to:

- Take the voltage off the grid,
 - Invert two phases,
 - Control the revolving direction again.
- (The spindle must turn to the right).

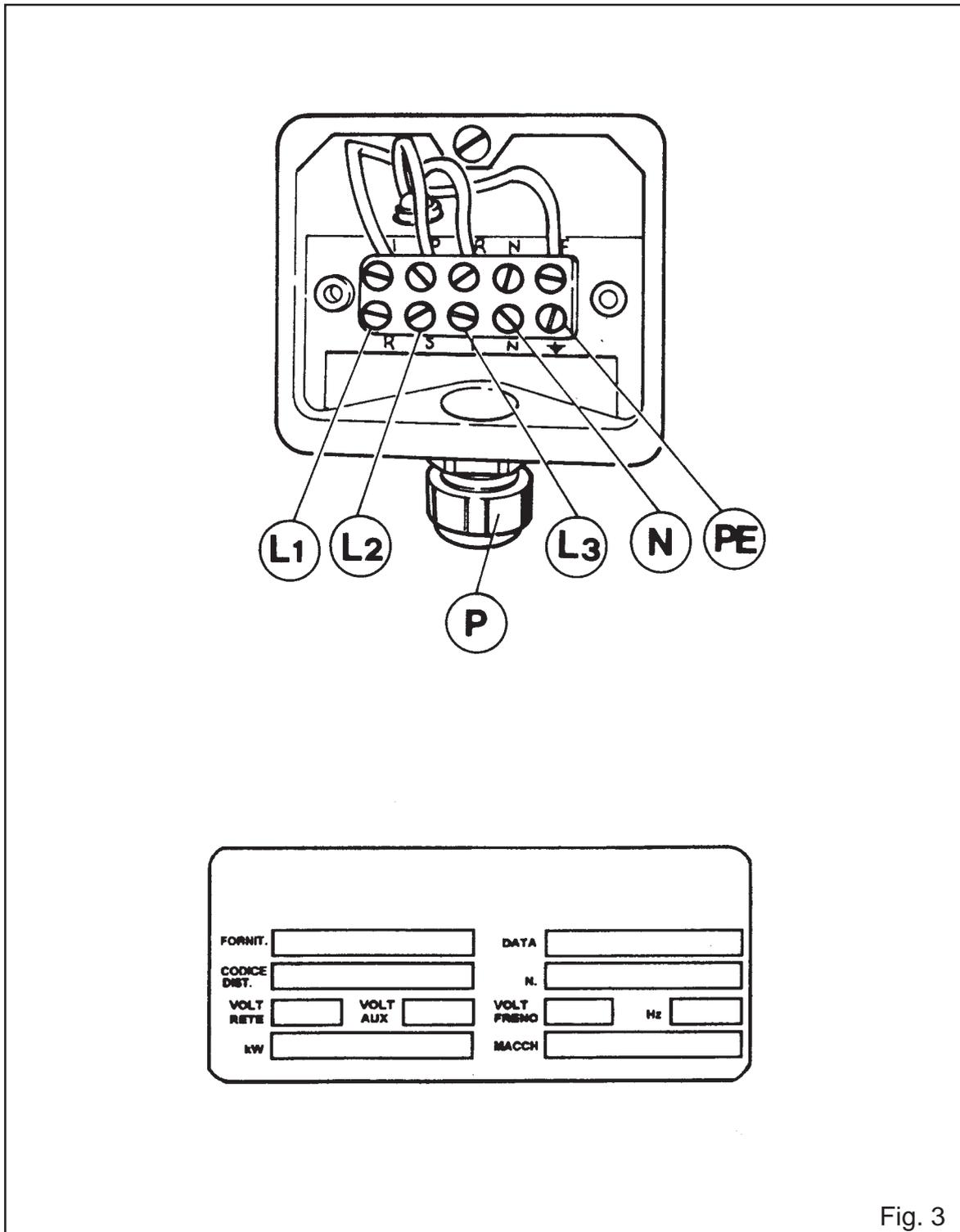


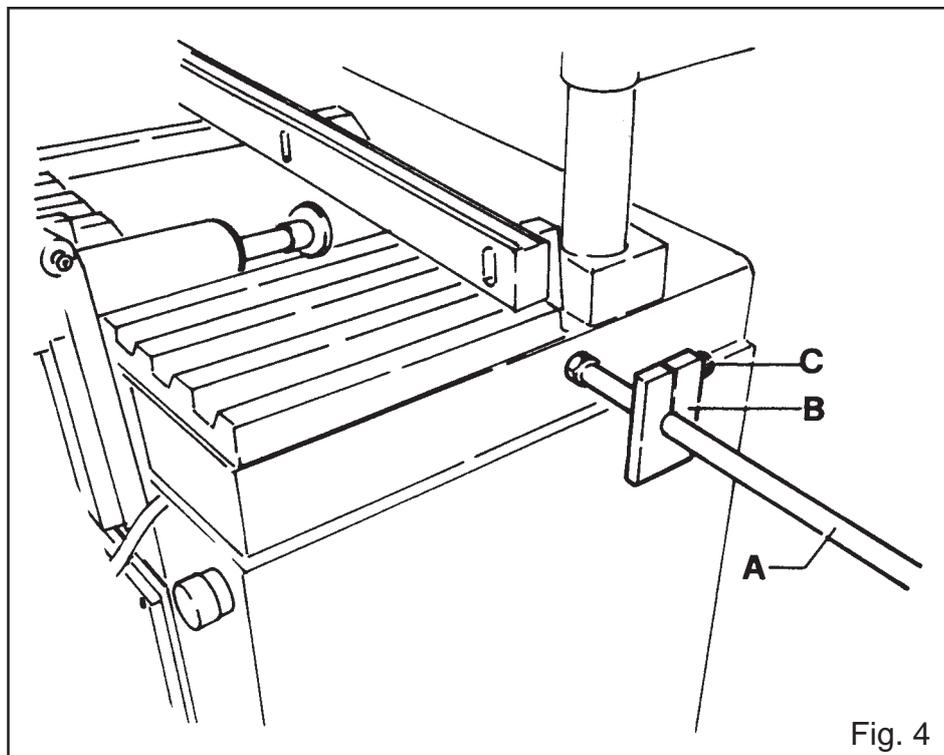
Fig. 3

2.6 ASSEMBLY OF DISASSEMBLED PARTS FOR TRANSPORT EXIGENCES

For packing and transport exigences, some parts are disassembled.

2.7 STOP'S ASSEMBLY

Screw stop supporting rod A (Fig.4) in its proper seat on the pedestal.
Then insert stop B (Fig.4) in the supporting rod.
Tighten screw C (Fig.4) when the stop has been adjusted on the expected measure.

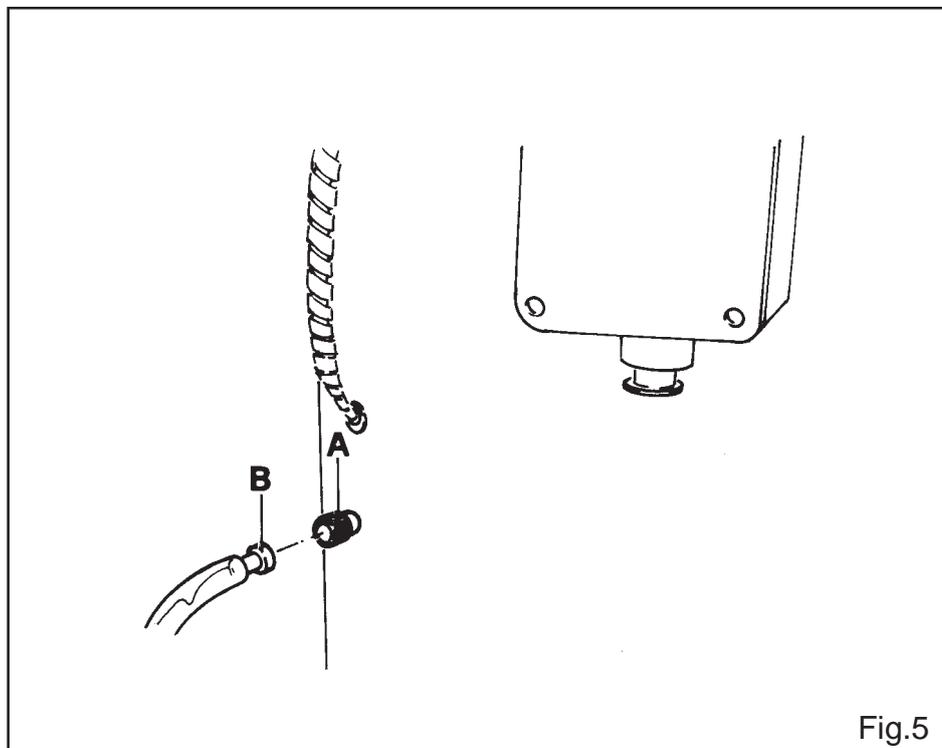


2.8 PNEUMATIC CONNECTION

(For machines equipped with pneumatic pressure)

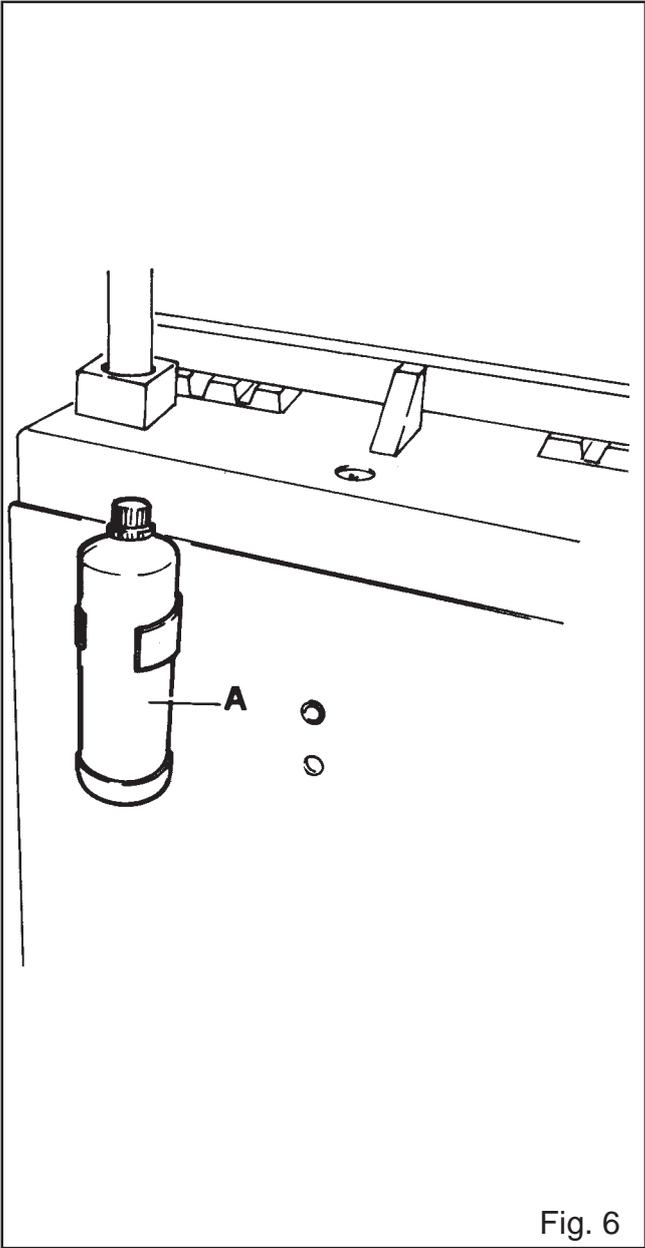
The pneumatic connection is effected by engaging in connection A (Fig.5) the corresponding pneumatic union B (fig. 5) fixed to the workshop's pneumatic installation.

N.B. The air pressure of the machine has to be 6/7 ATM.



2.9 COOLING SYSTEM

- Insert lubricating oil for milling in the suitable tank A (Fig.6).



3.0 USE AND ADJUSTMENTS

3.1 MACHINE'S STARTING

- Press the black push button A (fig.7) of the magneto thermic.
- Grasp levers B and C (fig.7) pressing levers D and F(fig. 7) for the spindle's starting and the tool's lubrication.

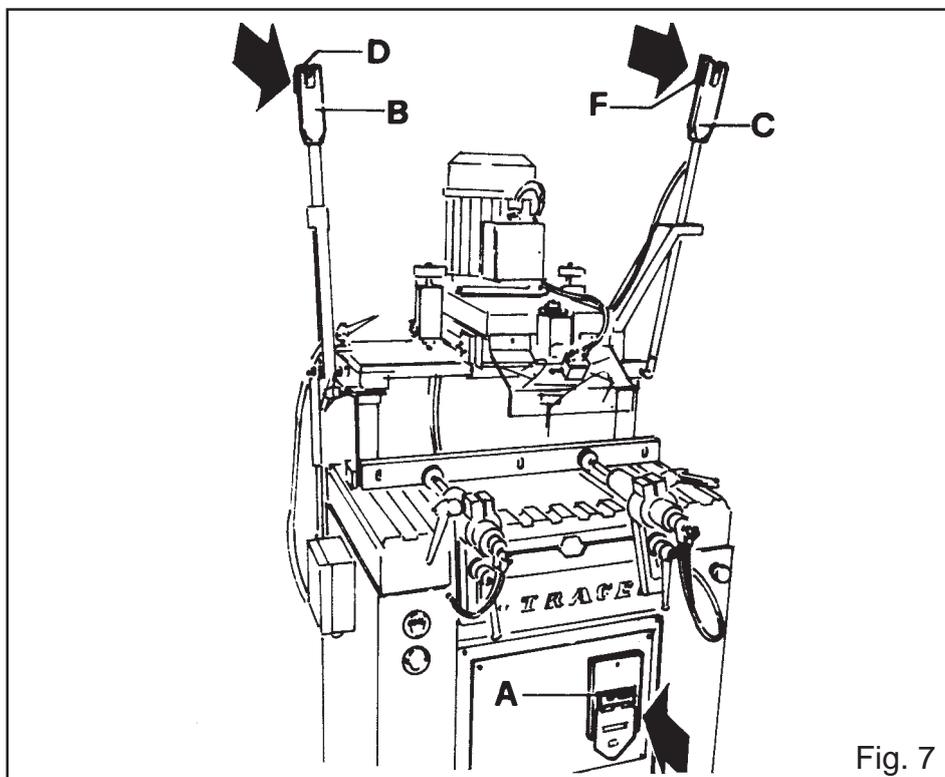


Fig. 7

3.2 ADJUSTMENT OF STOP'S LENGTH FOR PROFILE WORKING.

To obtain mass produced manufactures, it is advisable to regulate stop B (fig. 10) placed on rod A (fig.8) set on both sides (right/left) of the machine.

Such adjustament is effected by loosening screw C (fig.8) revolving the stop till the height of the working table, then carry at the measuring on the piece until it reaches the chosen one.

Then lean the stop to the profile, blocking it by means of screw C (fig.8).

Should the stop not be necessary, loosen screw C (fig.8) and revolve the stop until it disappears under the working table.

It is advisable to block it again so to avoid any loss.

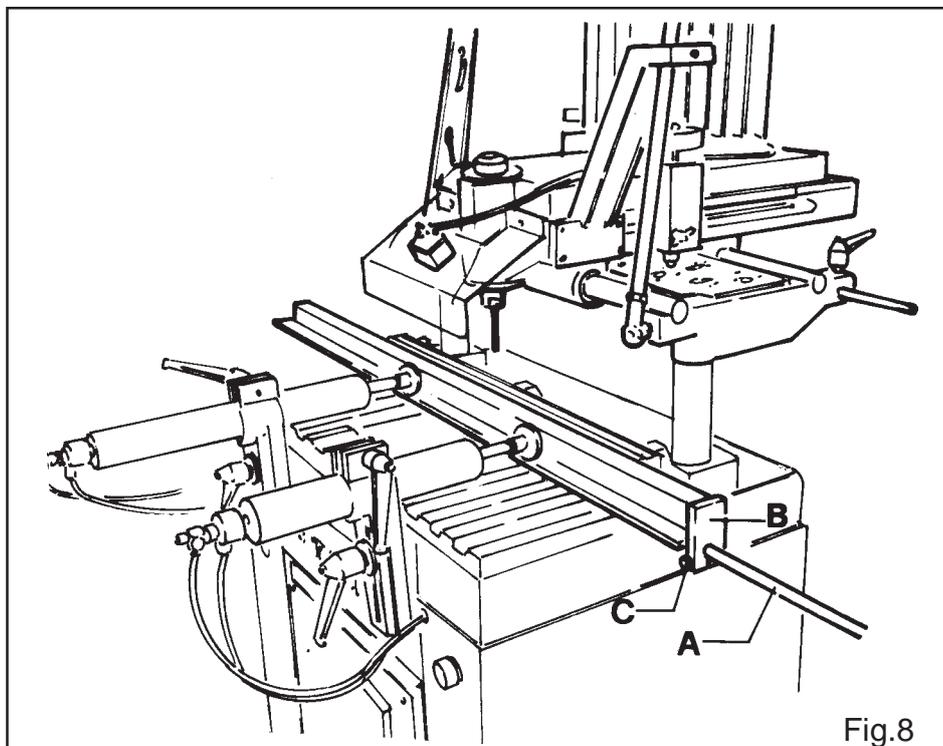


Fig.8

3.3 ADJUSTMENT OF CLAMPS

The clamps have to be adjusted in connection with the profile to mill, operating as follows:

in case of a reduced section profile, loose handle A (fig.9) and draw the piston nearer to the profile.

Then lock handle A (fig.9).

Should the profile have a larger section, loose handle A (fig.9) removing the piston towards the outside of the machine until the profil can be blocked.

Then block release lever A (fig.9)

For the vertical adjustment loose handle B (fig.9) lifting up or pulling down piston's rest C (fig.9) till the expected position.

Then lock handle B (fig.9).

N.B. The machine is equipped with short traversal (6mm) pneumatic clamps, as provided in the regulations, to avoid crushing; therefore make sure that, during the placement of the clamps, the plugs skim the profile, when opened.

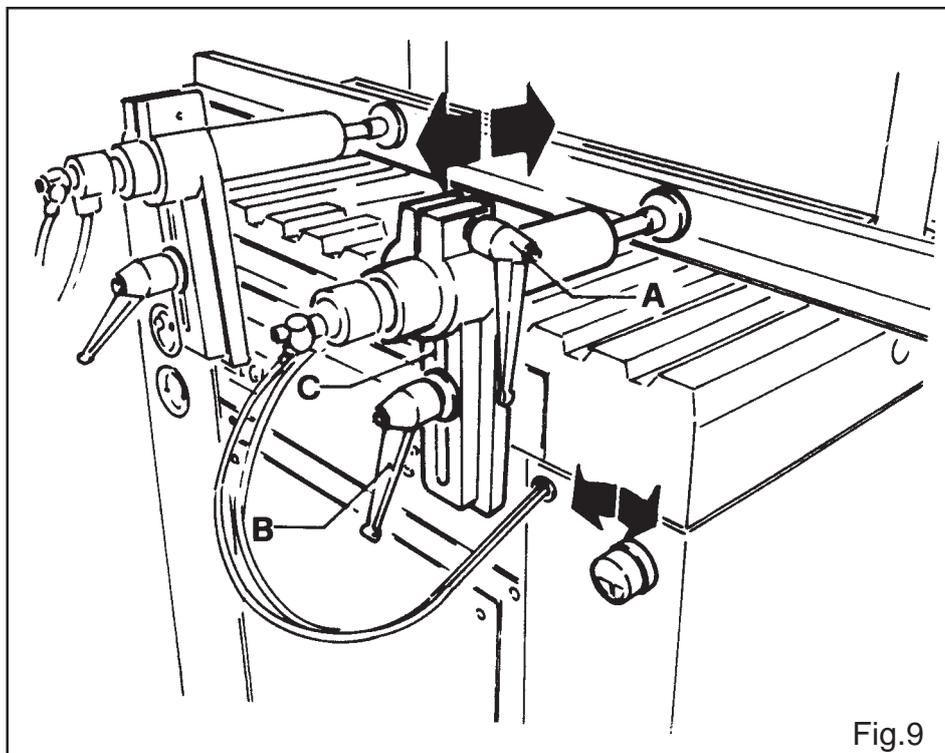


Fig.9

3.4 ADJUSTMENT OF VERTICAL DEPTH'S STOP

For the adjustment of the vertical stop, giving the copying router's working depth in the section, loose handle B (fig.10); grasp the motion and vertical head's down stroke levers to place the head a bit further from the profile.

Then pull down the head until the tool reaches the chosen depth. Release the motion lever and, with your free hand, lean stop A (fig.10) on working table C (fig.10).

Then block handle B (fig.10).

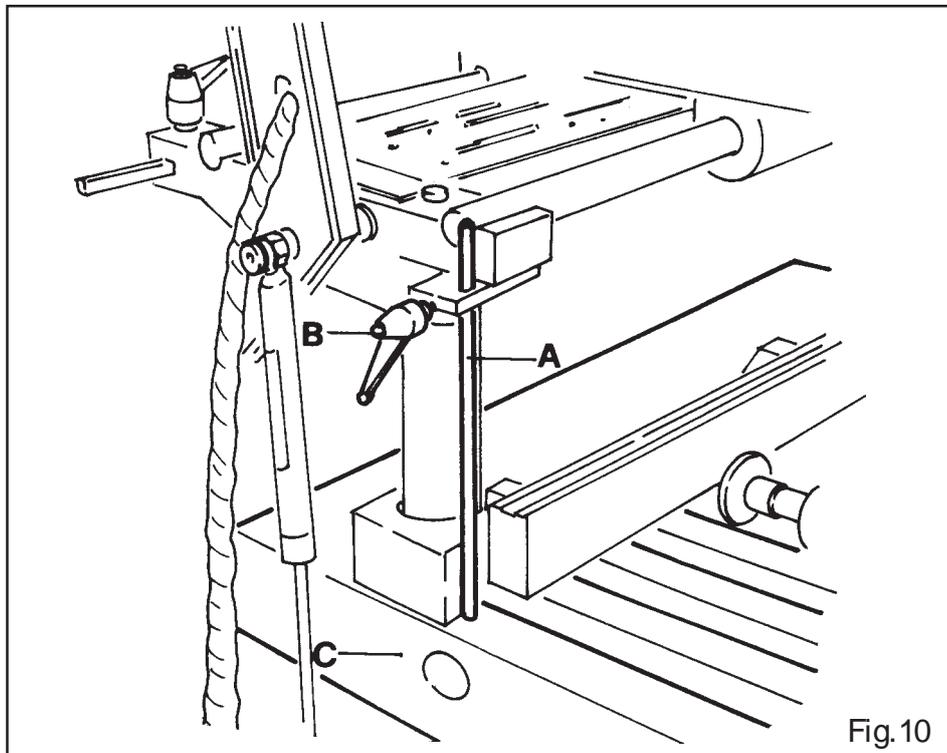


Fig.10

3.5 DESCRIPTION OF VERTICAL HEAD'S LEVERS

The vertical head has two types of movement:

- 1) Uppering / lowering, obtainable by operating on lever A (fig.11)
- 2) Traslation obtainable by operating on lever B (fig.11)

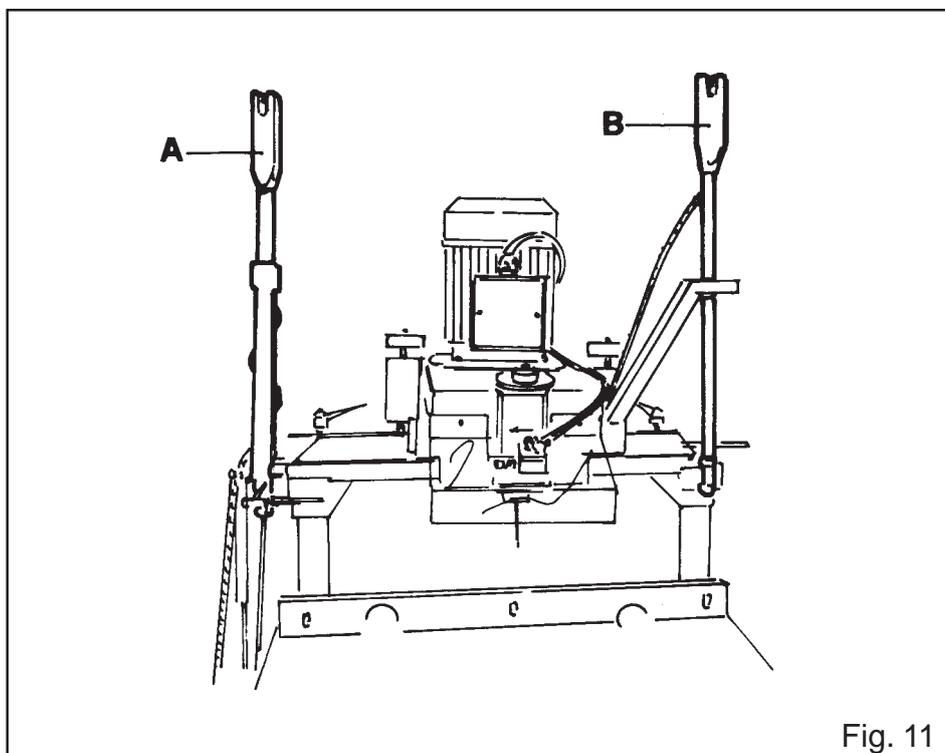


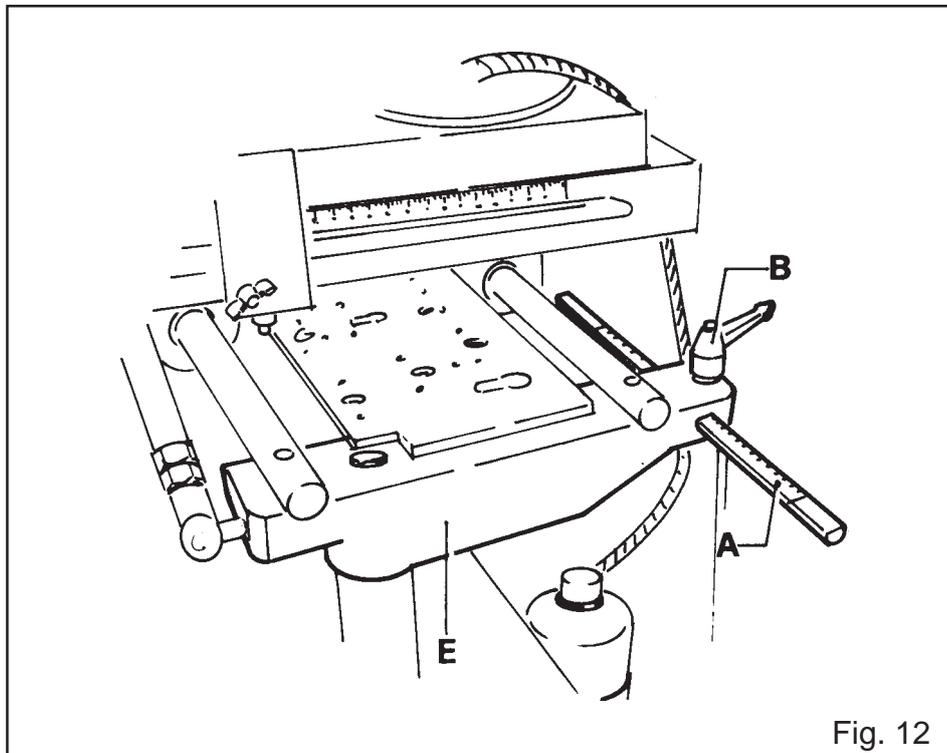
Fig. 11

3.6 VERTICAL HEAD'S LENGTHWISE STOPS (RIGHT/LEFT)

For the adjustment of the lengthwise stops, which define the length of the milling on the profile, loose handle B (fig.12)

Then operate on rod A (fig.12), equipped with a metric ruler. The measure appearing just on the outside of rest E (fig.12) will be the expected one, also considering the measure set on the opposite stop.

Finally block handle B (fig.12) (right/left).



3.7 VERTICAL HEAD'S CROSS STOPS

For the cross adjustment, regulating the tool's traverse on the profile, loosen throttle A (fig.13), then move stop B making it run together with the motor stand head so that the internal plate, blocking stop B (fig.13), is correctly leant on cross C (fig.13).

Move till the expected measure, which can be read on the outside of the stop. This measure is the distance between profile guide D (fig.13) and the tool centre.

By such operation you can obtain the minimum distance between the profile guide and the starting point of the milling to carry at.

For placing the hinder stop, defining the width of the milling, lean the hinder stop with the plate on the cross, stopping the motor stand head against the fore stop.

Read the value on the metric ruler, move forward the motor stand head making the hinder stop run till the reading of the chosen measure. Finally block the throttle.

Ex. if the width of the hole has to be 16 mm, move 16 mm, deducting the tool's diameter, you're working with.

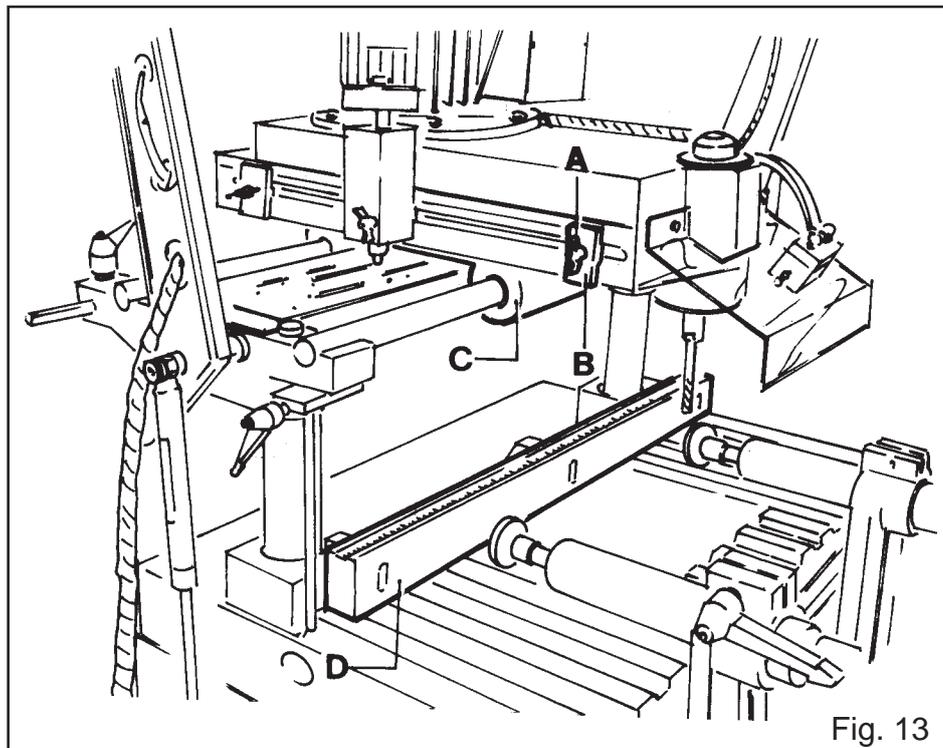


Fig. 13

3.8 ADJUSTMENT OF VERTICAL HEAD'S TRACER POINT

For the adjustment of the tracer points, which is necessary for placing the tool on the right point of the profile, operate in the following way: Loosen throttle C (fig.14), then operate on lever D (fig.14) to place it forward or backward until it reaches the expected point.

To carry out such adjustment correctly, the tracer points have to remain with slider E (fig.14) inside the shape of pass on template F (fig.14) of the chosen work to be done. Finally block throttle C (fig.14). The tracer points are two, one for the right template, one for the left template. The operations for the adjustment of the two tracer points are similar. A metric ruler is set where the tracer points run, so that, for carrying out subsequent operations with the same placement, it is sufficient to bring back the tracer point on the previously registered position, avoiding to repeat the operation.

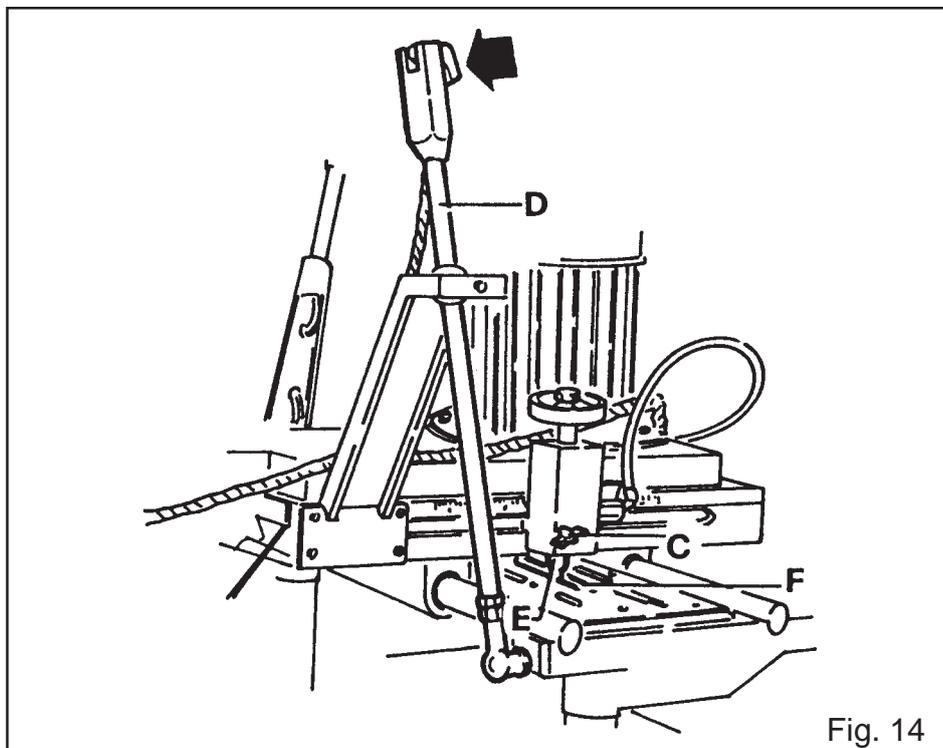


Fig. 14

3.9 DESCRIPTION OF TRACER POINTS

- A) (fig.15) = Selector (A = rest position; B = slider 8 position; C = slider 5 position)
 - B) (fig.15) = Tracer point
 - C) (fig.15) = Handle
 - D) (fig.15) = Double diameter slider
 - E) (fig.15) = Stop for handing the selection
- Optional pneumatic tracer point.

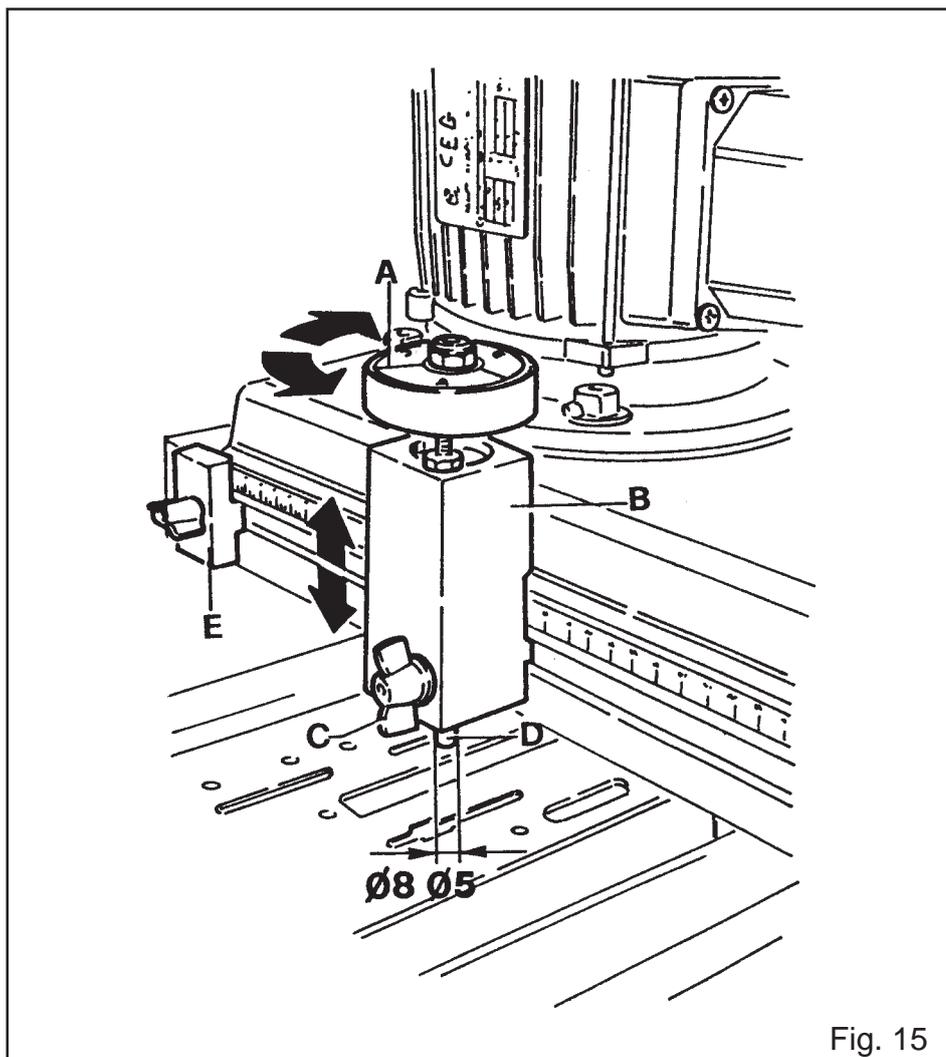


Fig. 15

3.10 DESCRIPTION OF COOLING SYSTEM

The machine, while working, is equipped with a cooling system, pressing levers A and B (fig.16) placed on handles C and D (fig.16) contemporaneously, the cooling system for the spindle and the starting of the engine starts to work.

Such levers allow the nebulizer F(fig.16) to lubricate the tool and the profile's corresponding section to work at.

The coolant is put in the proper tank E (fig.16), previously described.

Check periodically (every 24 working hours) that the coolant is at the right level. (Use exclusively lubricant).

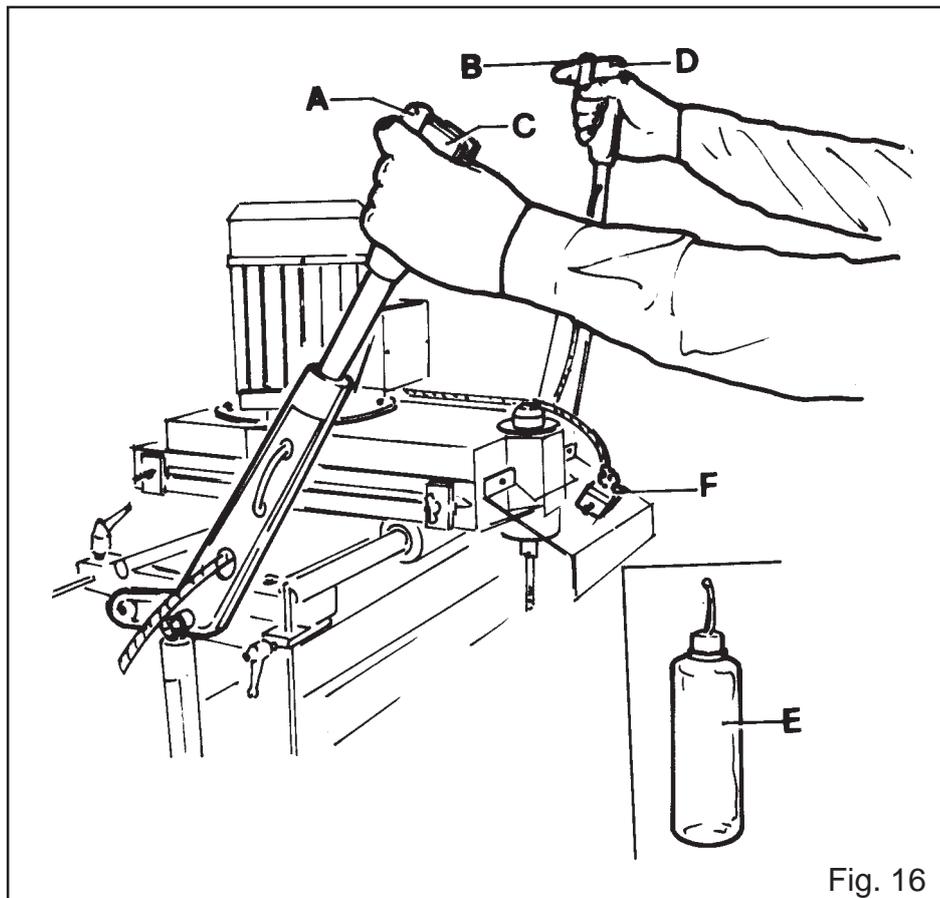


Fig. 16

3.11 TOOL'S ASSEMBLY

For the tool's assembly, operate with the two service spanners B and C (fig.17).

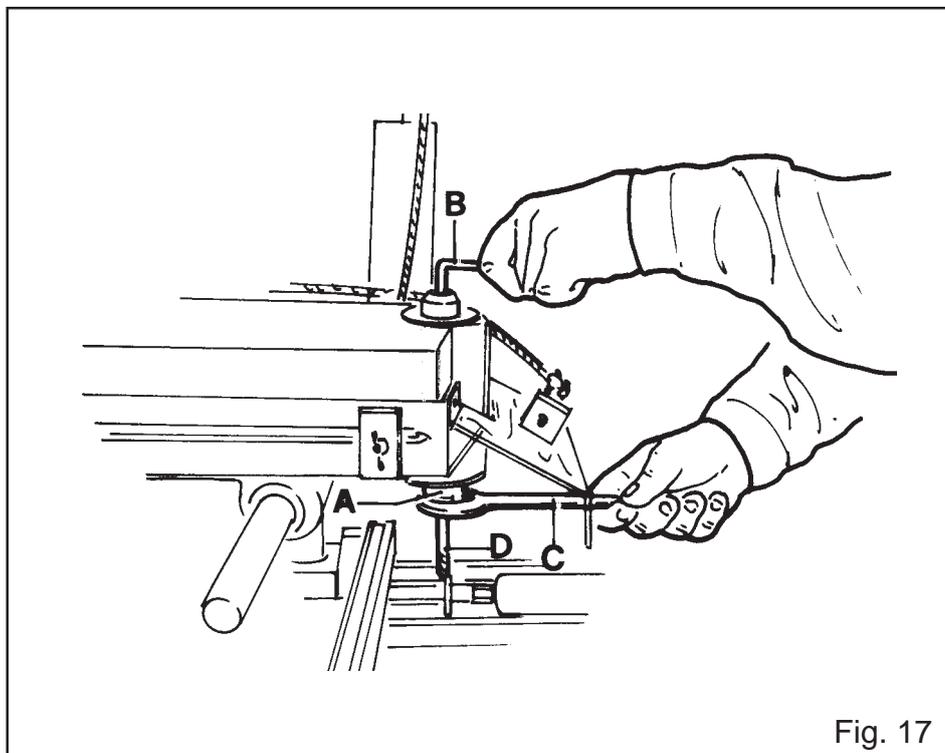
Insert spanner B (fig.17) in the proper cavity over the spindle.

Put spanner C (fig.17) in the proper convenable skey set of the spindle, then take a fast hold of spanner B (fig.17).

Loose pliers A (fig.17) revolving spanner C (fig.17) to the right.

Insert tool D (fig.17) in pliers A (fig.17). To block the bit , turn spanner C (fig.17) to the left.

Make sure that the tools are sharpened and in good conditions.



3.12 BELT'S ADJUSTMENT

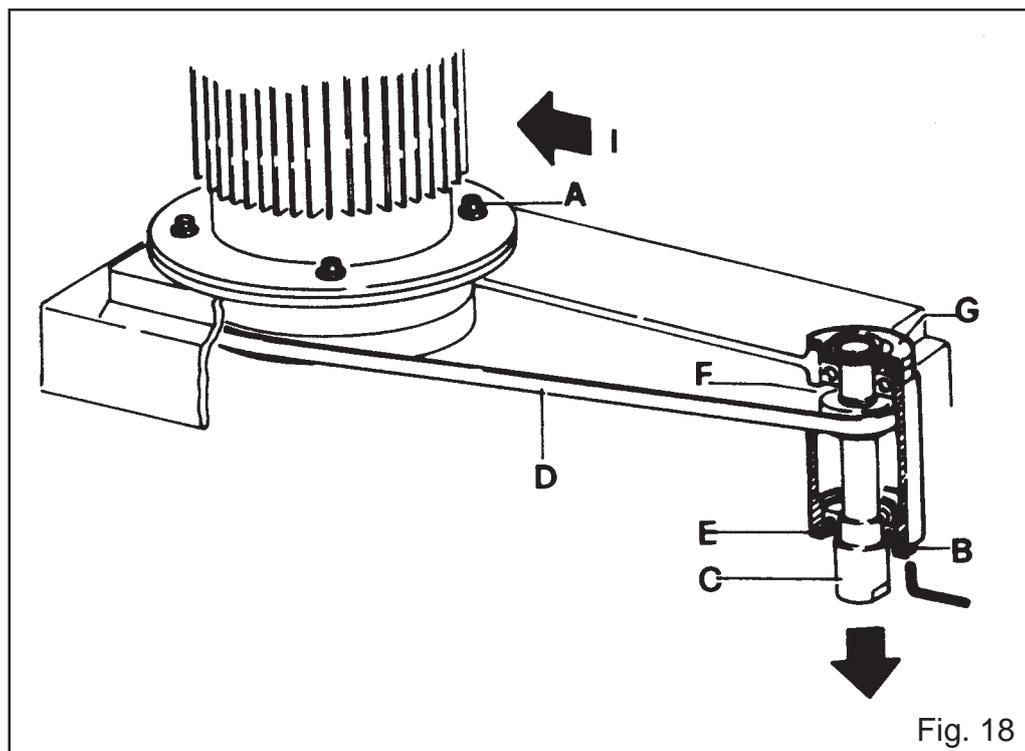
After about 100 working hours, it is useful to provide for the tension of the driving belt which is carried out by loosening the four screws A (fig.18) for blocking the motor.

Then push the motor in the arrow's direction I (fig.18).

Finally fasten screws A (fig.18) again, taking a fast hold of the motor.

3.13 BELT'S CHANGE

- 1) In case of breakage or wear, loosen motor blocking screws A (fig.18).
- 2) Take off cover E (fig.18) removing screws B (fig.18).
- 3) Take off cover G (fig.18).
- 4) Partially draw out spindle C (fig.18) by means of light mallet blows on the upper part until it descends and frees belt D (fig.18) so that it can come out from opening F (fig.18).
- 5) To assemble the new belt, carry out the opposite operation, making sure that the belt (type MEGADYNE) is properly set.



4.0 MAINTENANCE CARD

Check every morning the tank in case of condensate deposit (fig.19) (to let the condensate come out, press the push button placed under the tank). Control periodically the oil level in tank E (fig.19).

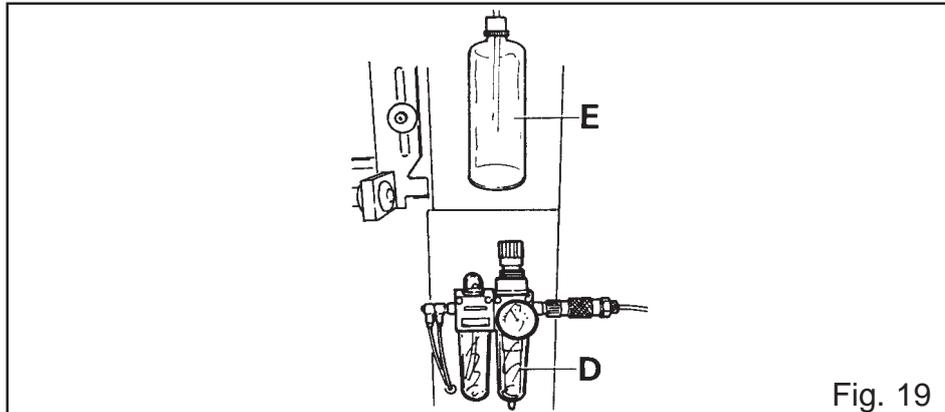


Fig. 19

Clean periodically (every 15/20 days) the slide guides and keep them lubricated, with oil or grease , to avoid that the guide scraping for the protection of the slide sleeve bearing runs on some zones of the guides wich are not lubricated, or worse, with some part of the sliding guide with dried lubricant.

This would spoil the guide scraping and would allow the dirt to enter the sleeve bearing, compromising their sliding .

Should the machine not start, control the fuses inside electric case ,verifying if the calibration of the magneto thermic is correct (disassembling the plastic protection of the magneto thermic, you enter the adjustment ring nut sideways the two push buttons Off-On. Make it turning until it reaches the expected value, wich is set on the motor plate Ex: HP 1,5 - Kw 1,1 - Volt 380 A = 2,9. So turn the ring nut till 2,9).

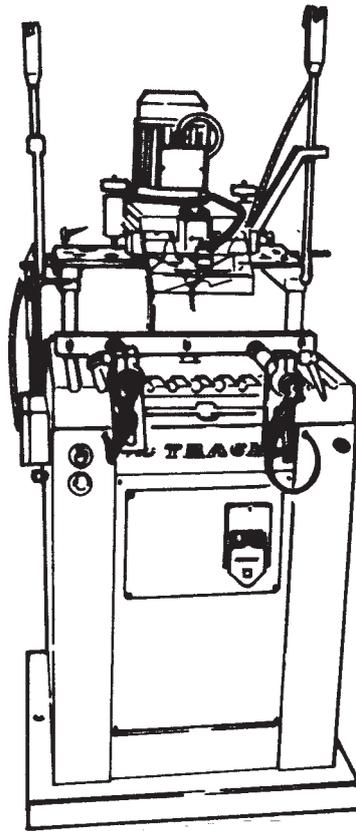
The starting of the motors is given by 1 pressure gauge, situated inside the electric board; if they does not get a sufficient quantity of pressure, the machine doesn't work; therefore provide for the pressure to be 6/7 ATM.

4.1 ELECTRICAL AND PNEUMATIC SCHEMES

PNEUMATIC INSTALLATION:

Control the oil level and, if necessary, supply with the following oils:

AGIP, OSO15
ROL OIL, LR10
ESSO, NUTO H15
MOBIL, ALMO 525



TRACER

INSTRUCTIONS FOR MAINTENANCE
AND USE

LGF TRACER