1.0 GENERAL INFORMATION

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; who make a wrong use of it, working other materials, do it at its own risk. Therefore the firm LGF declines all civil and penal responsibility.

For any necessity or direction, apply to the nearest dealer or to the manufacturer:

Nearest Dealer:

Manufacturer:

LGF s.n.c.
Via Togliatti, 81
47827-VILLA VERUCCHIO - ITALY
Tel.0541/677315 - Fax.0541/678752
internet web site: www.lgf.it
e-mail:info@lgf.it

MACHINE'S CONFORMITY

Conformity declaration

The firm L. G. F. s.n.c.
Via Togliatti, 81
47827 - VILLA VERUCCHIO - ITALY
Tel. 0541/677315 - Fax. 0541/678752

declares on its own responsibility that the LOLA end milling machine 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, EN 349, EN 418.

Date

02.01.1999

L. G. F. s.n.c

Signature

Canuti Luciano

INDICE

INDICE

1.1 INTRODUCTION

This operation and maintenance hand-book concerns the following model of machine: LOLA end milling machine.

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 SENDING 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.

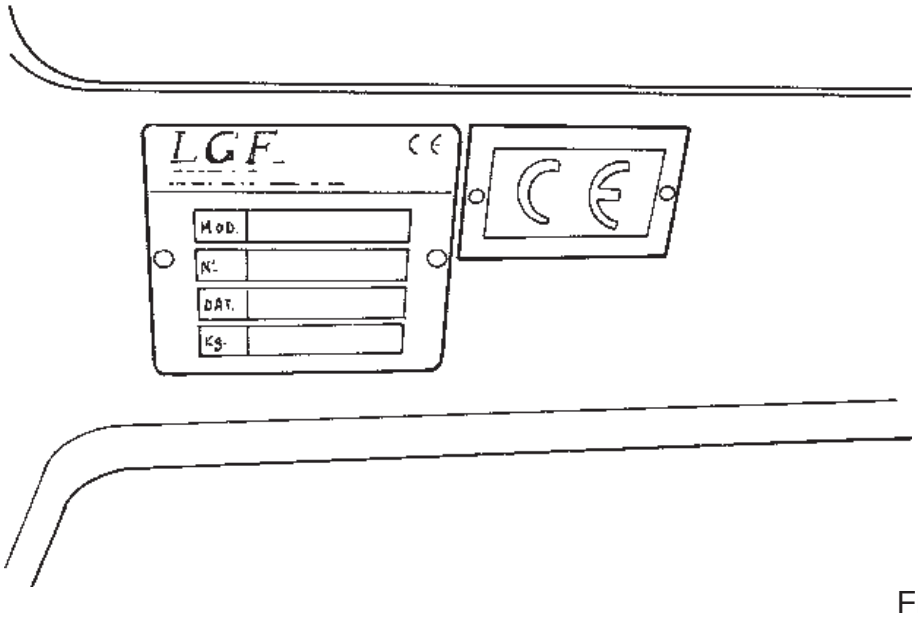
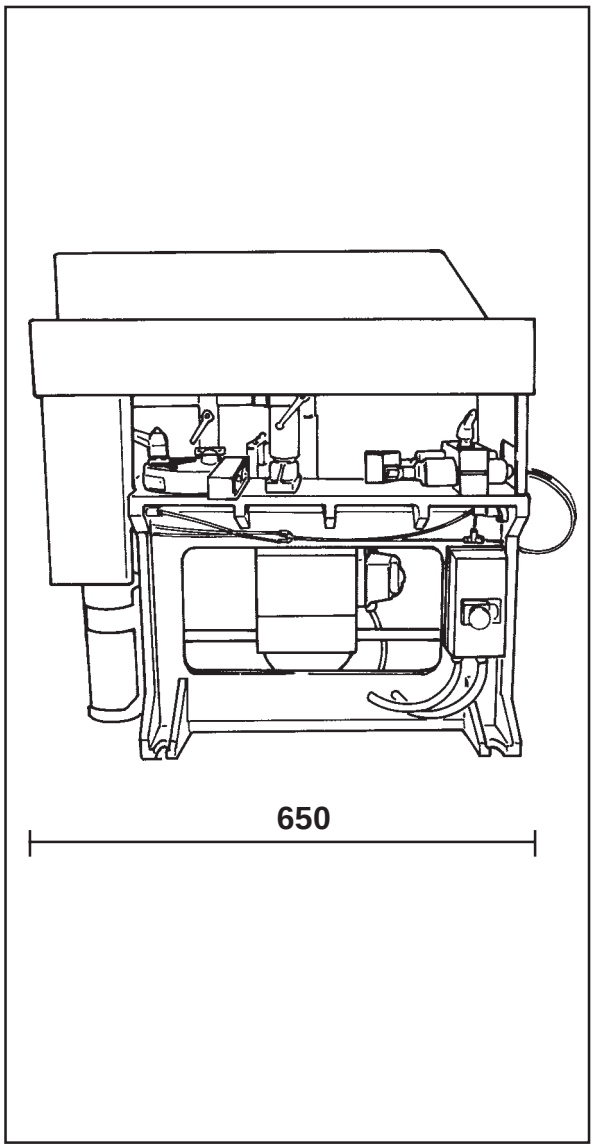
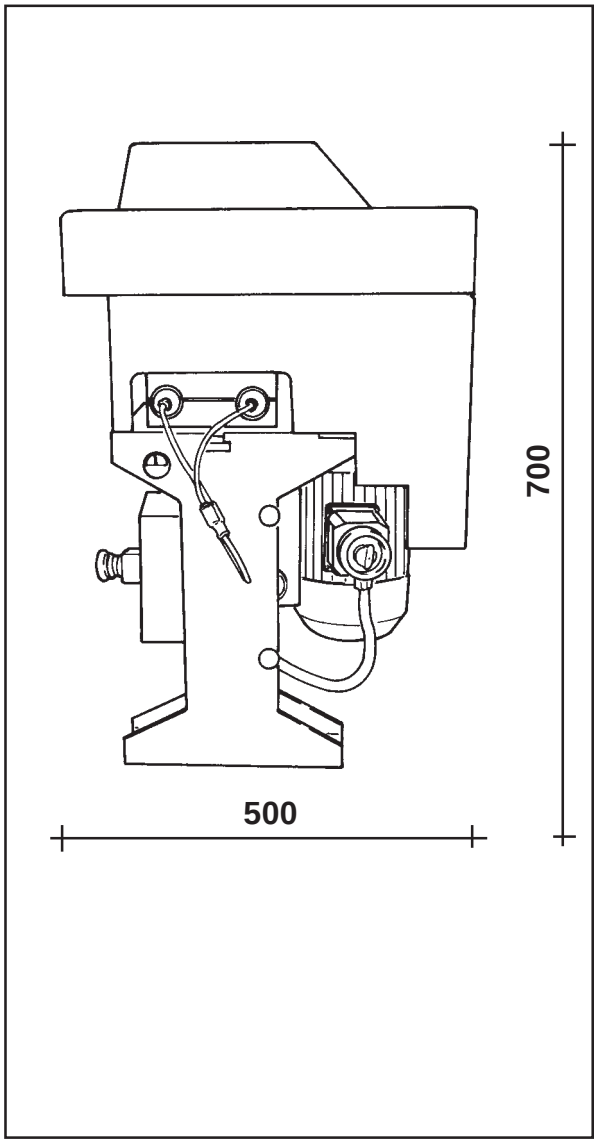


Fig.1

OVERALL DIMENSIONS





CONTROL BOARD:

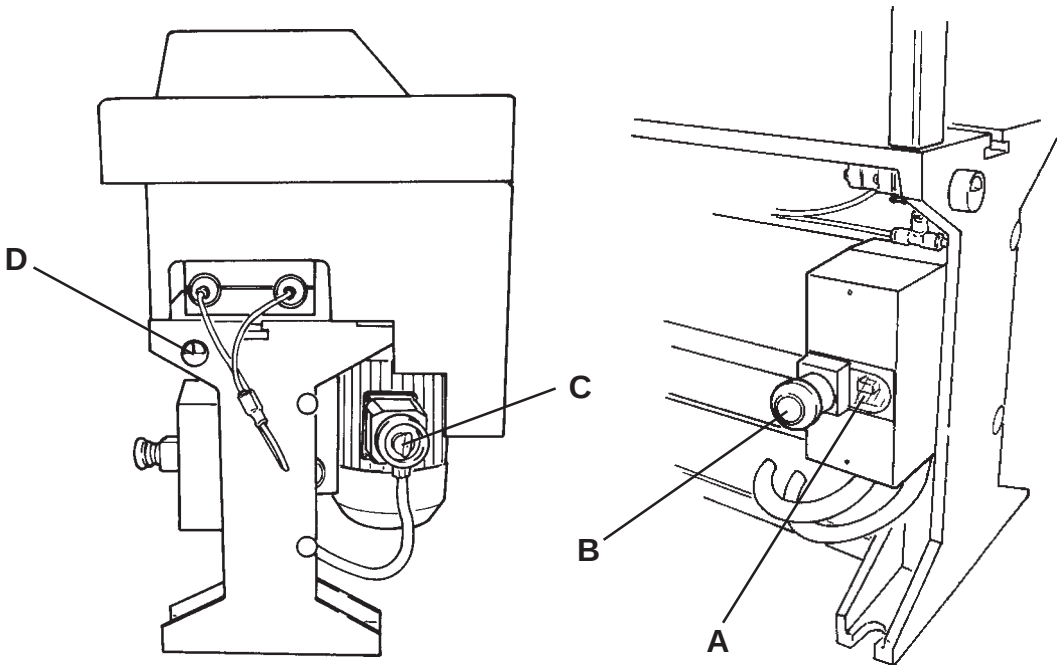


Fig. 1A

A (Fig. 1A) = Start switch - ON
B (Fig. 1A) = Emergency switch - OFF
C (Fig. 1A) = Knob for starting the motor
D (Fig. 1A) = Clamping OFF/ON selector

1.4 TECHNICAL DATA

Three-phase motor 1,5 HP 2800 r.p.m.
Cutter block spindle ..... Ø32 mm
Sliding horizontal stroke ..... 340 mm
Max diametre of the cutters ..... 140 mm
Min. working pressure ..... 7 bar
Overall dimensions 650x500x700mm
Weight ..... 60 Kg.

STANDARD EQUIPMENT
Quick change of the cutter block
Full protection guard
Turret stop for presetting 6 cutting depths
Cutter block holder
Pneumatic clamping
Spray mist lubrification
Service spanners

OPTIONAL
Cutter block spindle upon request
Single phase motor
Fence tilting 45° - 90° - 45°
Adjustable fence for cleaning of P.V.C. corners
Air filter
Air gun
Frame (overall dimensions: 550x400x540 mm)

1.5 NOISE LEVEL

ACOUSTIC EMISSION OF THE LOLA END MILLING MACHINE ACCORDING TO NORMS UNI 7712 - ISO 7960

(Lp) Level of the machine's medium sonorous pressure	(Ln) Level of the machine's normalized acustic power	(Lpi) Sonorous level in the operator's normal position	(Lmax) Maximum sonorous working level on the prescribe	WORKING CONDITIONS
dB(A)	dB(A)	dB(A)	dB(A)	
		****		IDLING WORKING

L min.: Minimum sonorous working level: 48,6 dBA
L.o : Noise level range: 34,6 dBA
Lep.D : Daily personal exposure level: 79,0 dBA

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 plays 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 piece,
- a good condition of the tools.
- and , 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).
   Make use of suitable footwear which antiaccident regulations in all countries of the world prescribe and recommend.
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 controlling that all the protection coverings of cutters, belts, 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, sharped and accurately keyed and tight; never make use of bigger tools than the ones indicated in the technical data.
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 it is 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 manufacturing firm declines all responsability for the inobservance of these regulations.

N.B. All disassembly and repairing operations must be carried out exclusively by authorized and qualified staff.
Moreover, it is to be racommended 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 adjust the machine or to disassemble any protection, pointing out such operation through a clearly 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 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.

- Due to high R.P.M. of the tools, althougth precautions (like the polycarbonate guard) are adopted, those could be rejected if wrongly fitted therefore pay attention while fitting the tools.

2.0 MACHINE'S INSTALLATION

Your end milling machine mod. LOLA will be delivered by one of your authorized carriers or directly by the dealers. 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 exigences are put on it.
Therefore the machine's unloading from the transporting vehicle can be effected in the following way:
The machine is equipped with a special base 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 (60Kos). (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 eletric 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 solid support.
Insert the 4 antivibration feet (which are included with the machine) in the special holes on the frame 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 damages.
2) After questioning the damages, 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 perfecty 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 A (Fig.2).
Then fasten the machine at the floor by means of two expansion plugs inserted in the convenable holes B(Fig.2) located on the lateral side, of the frame.

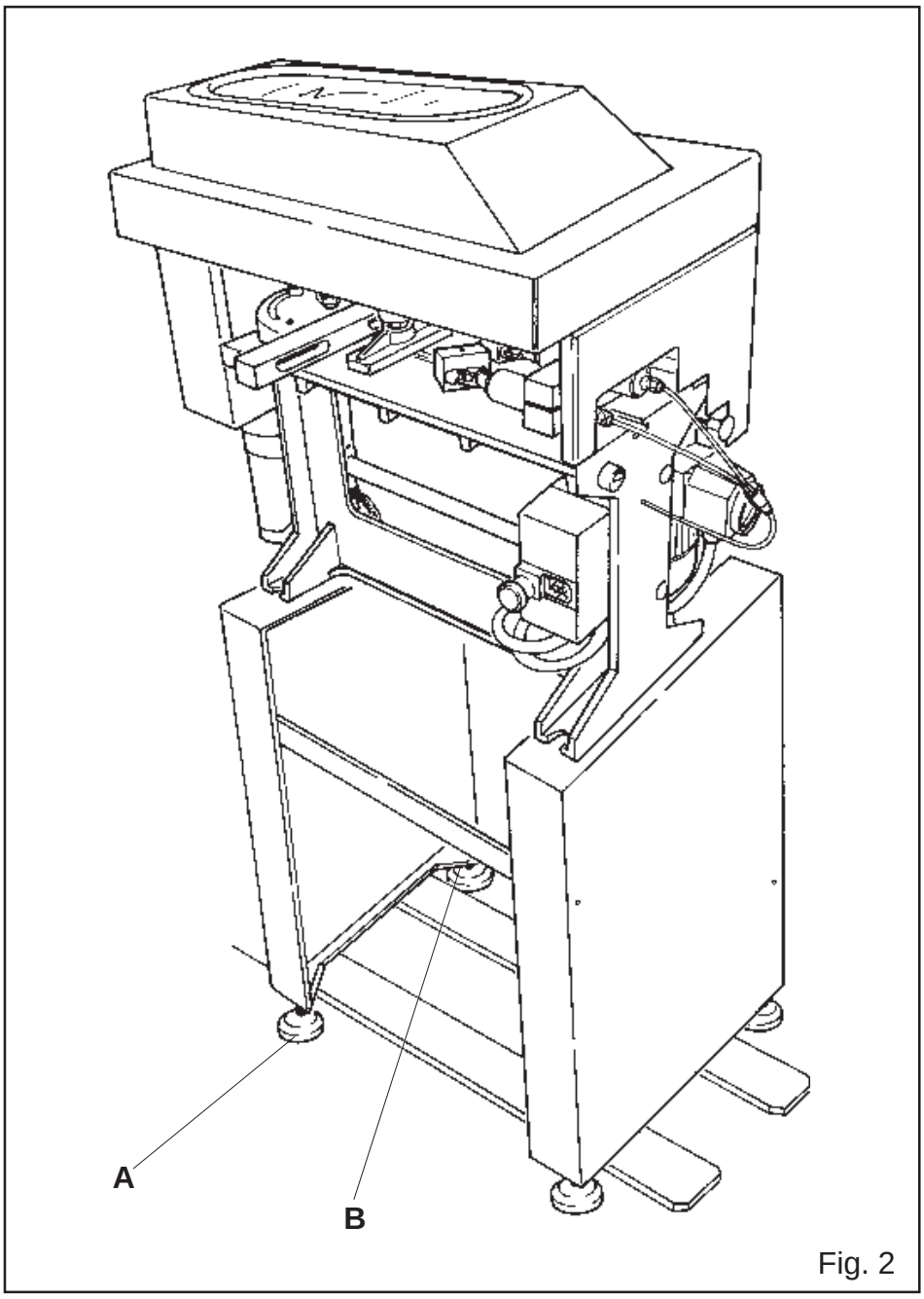


Fig. 2

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 electrical installation in the factory is able to support the power of the machine and control that the main supply 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 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

Check thet the yools 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 to turn clock- wise).

2.6 ASSEMBLY OF PARTS DISASSEMBLED FOR TRANSPORT EXIGENCES

For packing and transport exigences, some parts are disassembled before being dispatched.

2.7 PNEUMATIC CONNECTION

(For machines equipped with pneumatic pressure).

The pneumatic connection is effected by engaging in connection A (Fig.3) a flexible pipe (Ø mm.8)

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

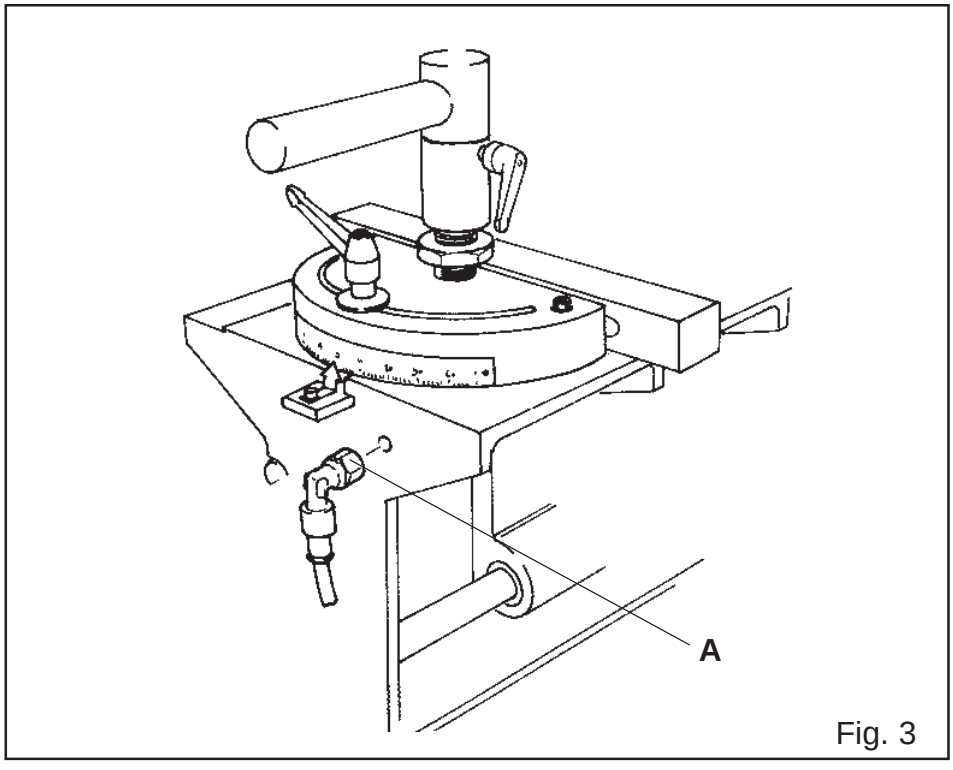


Fig. 3

3.0 USE AND ADJUSTMENTS

3.1 MACHINE STARTING

- Press the black push-button A (Fig.4) of the magneto thermic.
- Press the lever B (Fig.4) simultaneously for the starting of the motor and the cutter's lubrication.

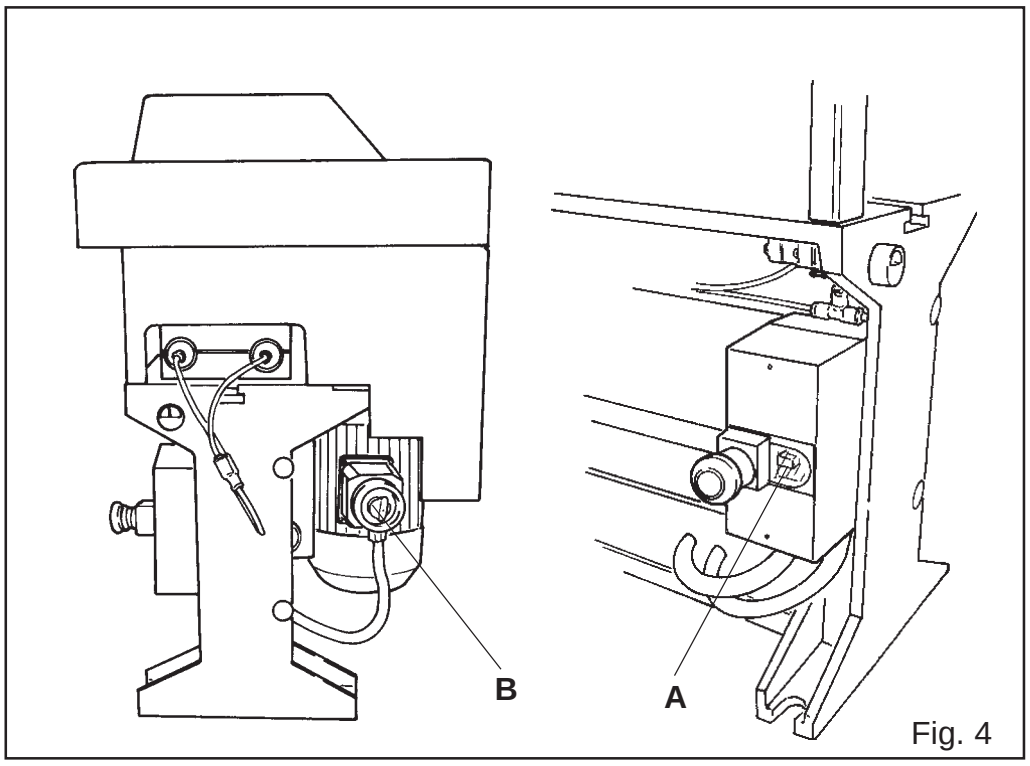


Fig. 4

3.2 PROFILE'S BLOCKING

To execute the profile's blocking, operate on special selector A (Fig.5) which starts the vertical clamp B (Fig.5) and the horizontal clamp C (Fig.5), which block the profile.

IMPORTANT: the profile has always to be blocked by both of the clamps.

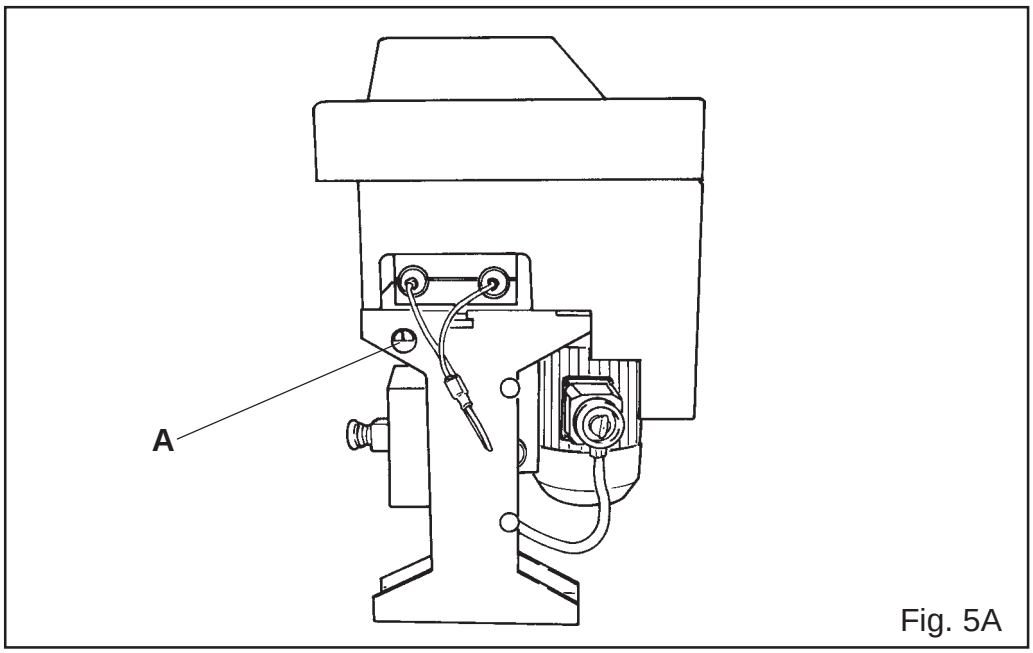


Fig. 5A

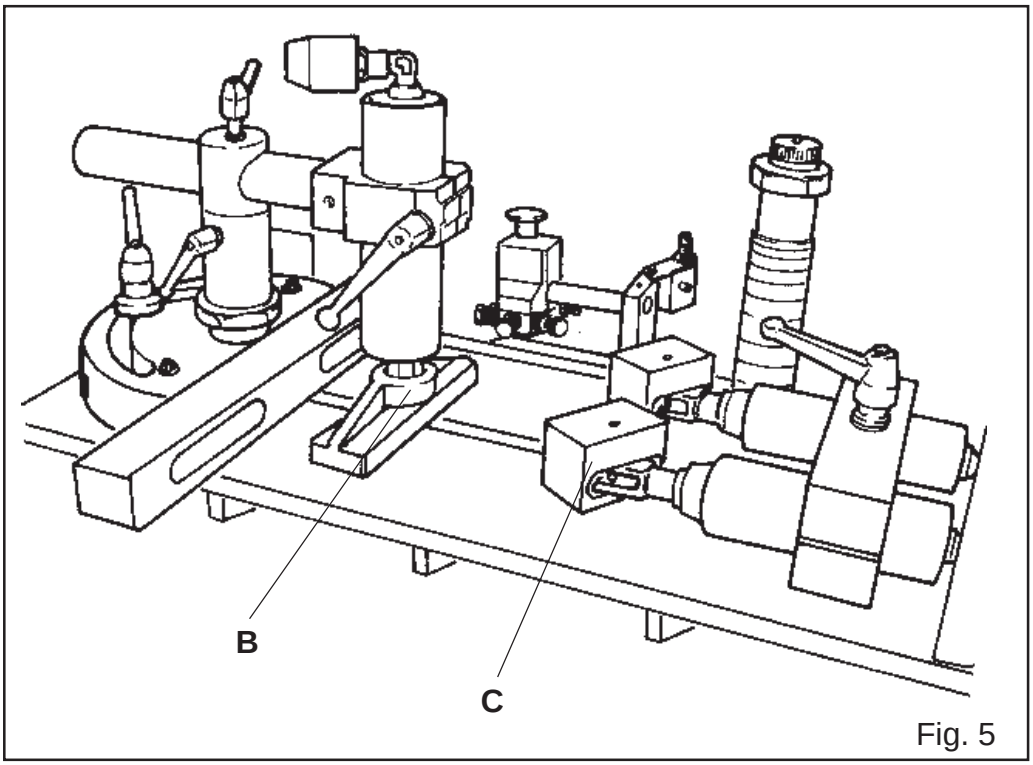


Fig. 5

3.3 ADJUSTMENT OF THE DEPTH'S STOP

The machine is equipped with 6 depth's stops A (Fig.6), which are fixed on the special turning support B (Fig.6).
To turn stops A (Fig.6), operate as follows:
- Lift up knob C (Fig.6) which blocks the turning support B (Fig.6)
- Place stop A (Fig.6) before the profile
- Pull down knob C (Fig.6) to block the turning support B (Fig.6)

To adjust stop A (Fig.6), operate as follows:
- Loosen nut E (Fig.6)
- Screw or unscrew stop's nut A (Fig.6) until the right milling depth of the profile
- Tighten nut E (Fig.6)

For a better placement of stop A (Fig.6) before profile, operate as follows:
- Loosen screw F (Fig.6) blocking support G (Fig.6)
- Move support G (Fig.6) forward or backward until stop A (Fig.6)is perfectly before profile
- Block screw F (Fig.6).

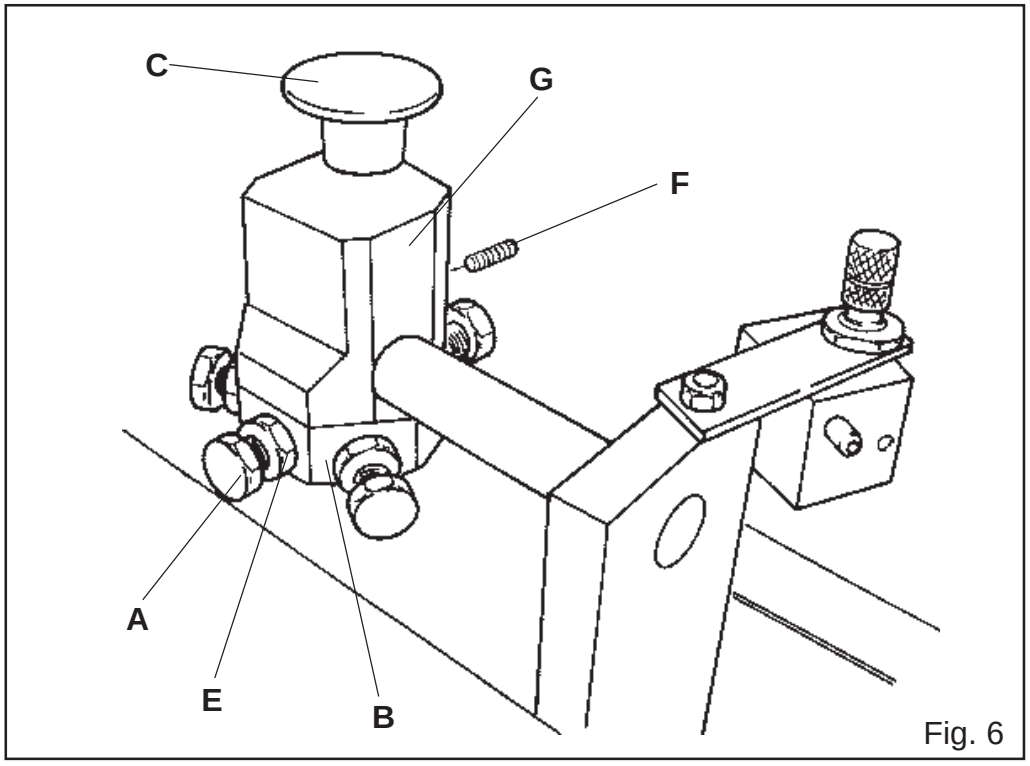


Fig. 6

3.4 CUTTER GROUP'S ADJUSTMENT

Cutters A (Fig.7) and their space sleeves B (Fig.7) are assembled on the special cutter block C (Fig.7) is equipped with the machine .
To adjust the height of the cutter group, operate as follows:

- Loosen nut D (Fig.7) turning it in clockwise direction
- Turn nut E (Fig.7) in clockwise direction to pull down the whole cutter group or in anti-clockwise direction to lift it up
- Block nut D (Fig.7) turning it in anti-clockwise direction.

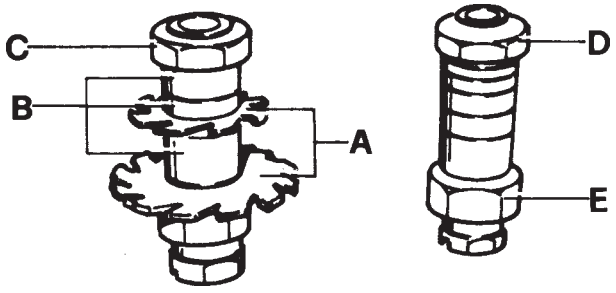


Fig. 7

3.5 ADJUSTMENT OF BLOCKING PISTONS

The machine is equipped with one vertical clamp A (Fig.8) and two horizontals clamps G (Fig.8).

ADJUSTMENT OF THE HORIZONTALS CLAMPS G (Fig.8)
For the horizontal adjustment of the clamps, operate as follows:
- Loosen release lever H (Fig.8)
- Move clamp G (Fig.8) forward or backward to draw stirrup L (Fig.8) near to profile as much as possible
- Block release lever H (Fig.8)

ADJUSTMENT OF THE VERTICAL CLAMP A (Fig.8)
For the horizontal adjustment of the clamp, operate as follows:
- Loosen release lever D (Fig.8)
- Move support F (Fig.8) forward or backward to draw stirrup M (Fig.8) near to profile as much as possible
- Block relase lever D (Fig.8).

For the vertical adjustment of the clamp, operate as follows:
- Loosen release lever C (Fig.8) of support B (Fig.8) for piston A (Fig.8)
- Lift up or pull down piston A (Fig.8) to draw stirrup M (Fig.8) near to profile as much as possible.
- Block release lever C (Fig.8)

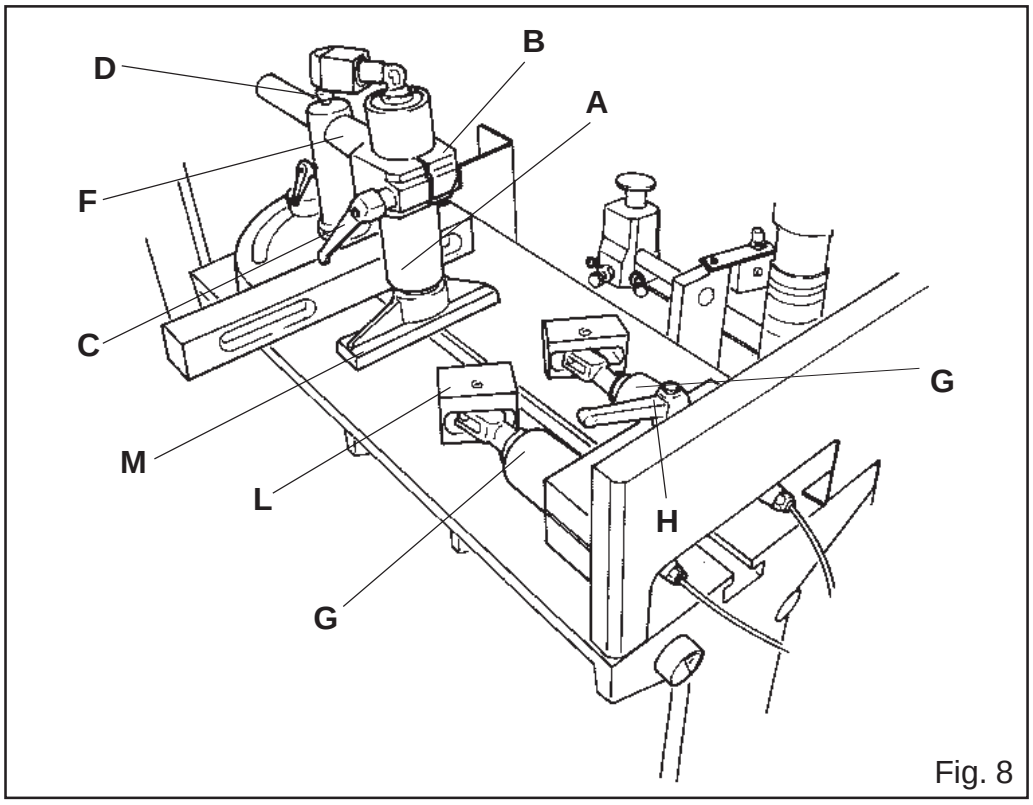


Fig. 8

3.6 ADJUSTMENT IN CASE OF END MILLING BY VARIABLE TILTING

The machine is equipped to end mill profile at 90°. Moreover it can also effect end milling operations till 45° left and 45° right.
To carry out end milling operations with variable tilting, operate as follows:

- Loosen release lever A (Fig.9) blocking graduated vernier B (Fig.9) equipped with a metric ruler L (Fig.9)
- Unscrew by means of spanner C (Fig.9) the special nut D (Fig.9) placed at the head external of the tapared scraping cutter F (Fig.9)
- Unscrew by spanner E (Fig.9) the special nut G (Fig.9) placed on the lower part of pivot H (Fig.9)
- Turn the graduated vernier B (Fig.10) till the expected angle, and block it by release lever A (Fig.9)
- Place profile
- Loosen release lever A (Fig.10) of the horizontal clamp B (Fig.10)
- Place the horizontal clamp B (Fig.10) bending it until it's perfectly aligned with profile
- Block release lever A (Fig.10) of the horizontal clamp
- Loosen release lever C (Fig.10) of the support for the vertical clamp D (Fig.10)
- Lift up or pull down the vertical clamp E (Fig.10) to draw it as near as possible to profile

To go back to the position of end milling at 90°, carry out the inverse operations.

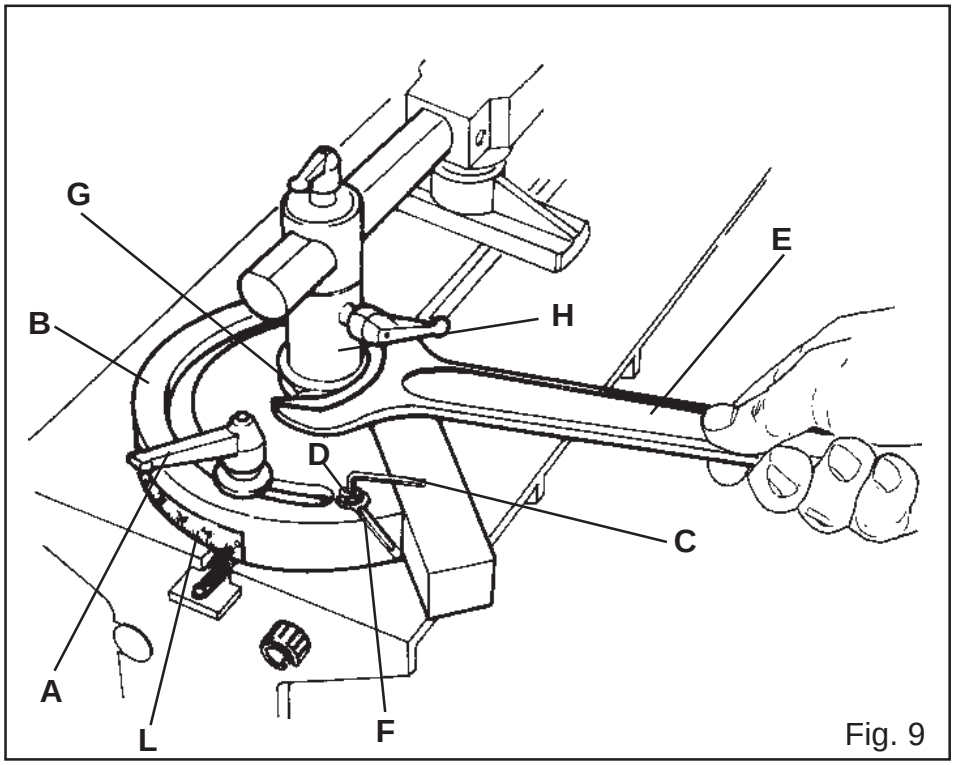


Fig. 9

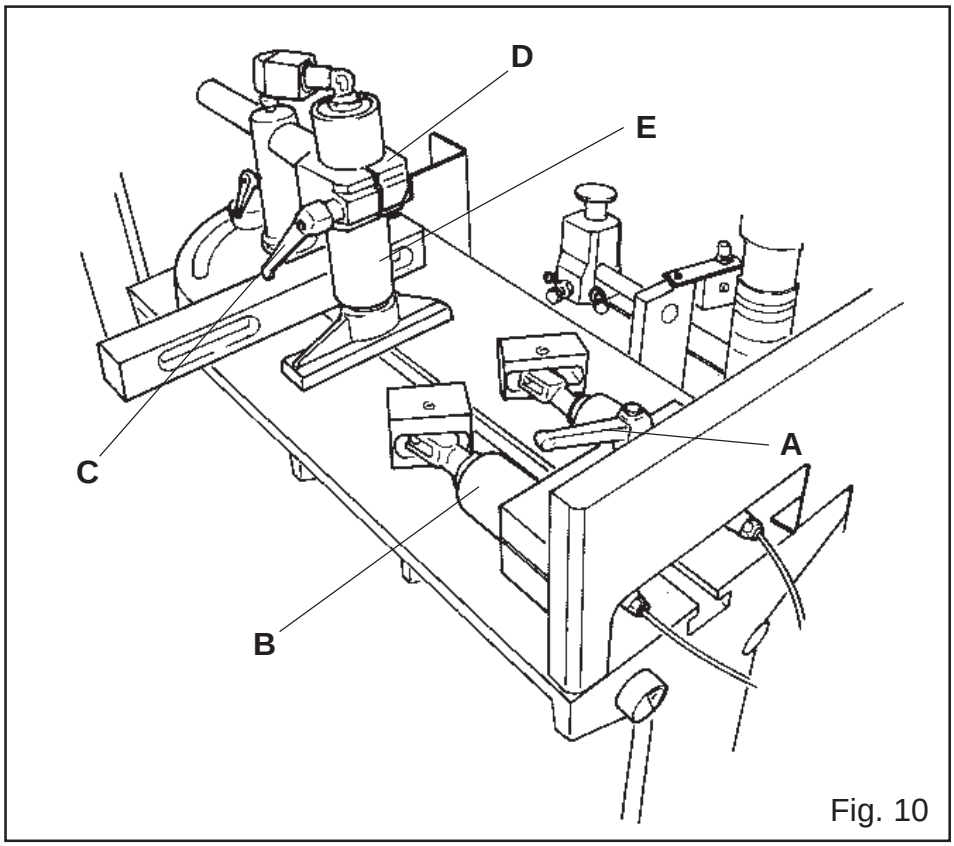


Fig. 10

3.7 PROTECTION FOR THE CUTTER GROUP

The machine is equipped with a carter B (Fig.11) for the protection of cutter group, which prevents the operator's hands from entering the cutter group. In its rest position the mobile carter B (Fig.11) fully protect the cuteer group.

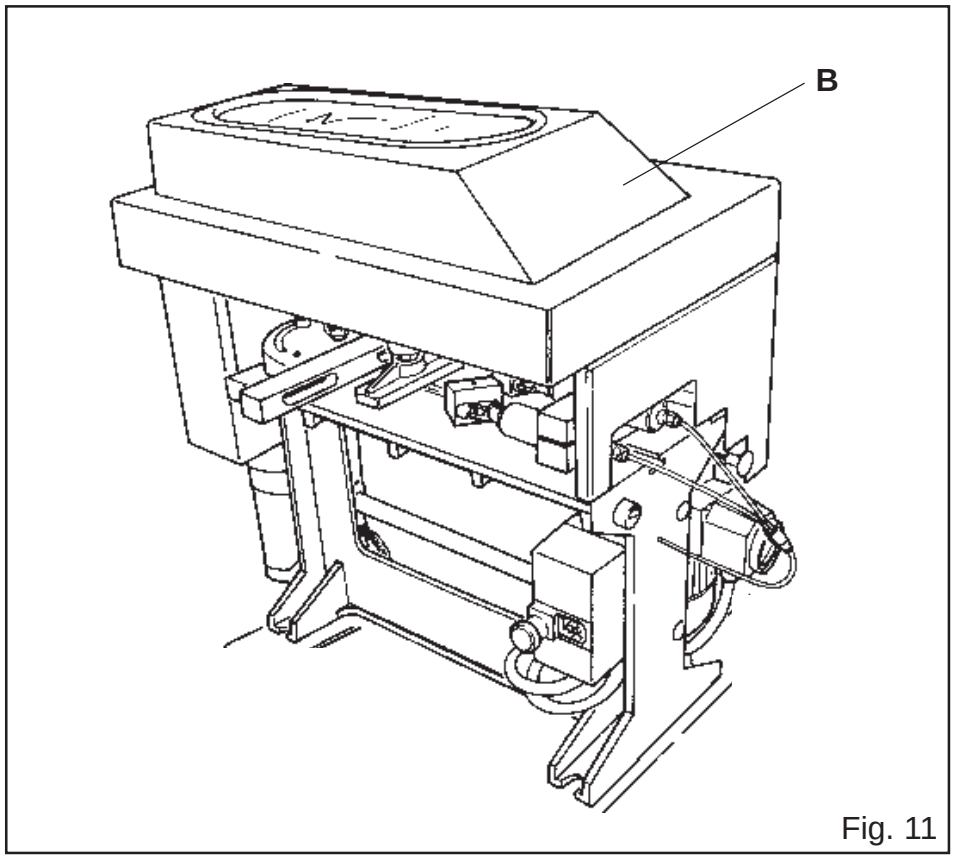


Fig. 11

3.8 EXECUTION OF END MILLING

After placing the to be end milled angle, operate as follows:

- Lean the profile on the special depth's stop D (Fig.12)
- Block the profile on the working table by means of clamps A and B (Fig.12) operating on selector C (Fig.12).
- Press the black push-button E (Fig.12) of the magneto thermic F (Fig.12), turn the switch on the motor to start it.
- Grasp lever G (Fig.12) for the advancing of the cutter group, pushing it forward to start the end milling.
- Release the brake of clamps A and B (Fig.12) operating on selector C (Fig.12) to take off the worked profile.
- Clean the working table for the following end milling.

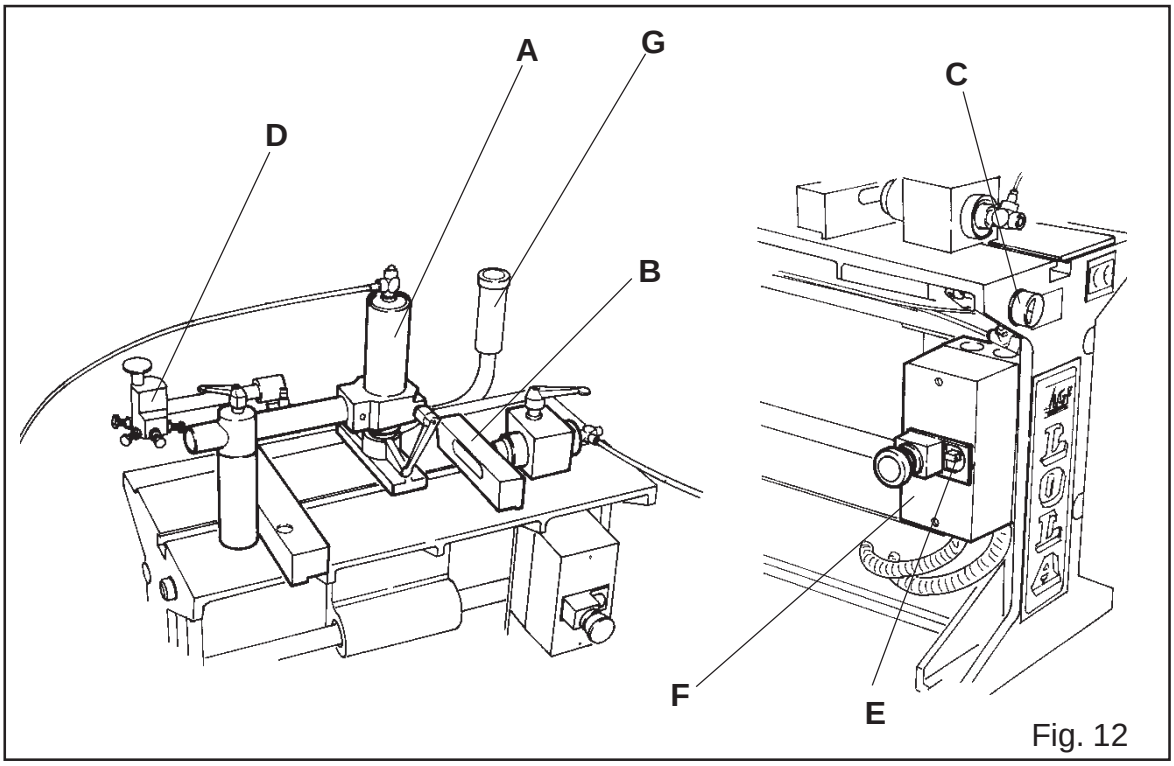


Fig. 12

3.9 DESCRIPTION OF COOLING SYSTEM

The machine, while working, is equipped with a cooling system pressing lever which comes into function when you close the clamps through selector A (Fig.13).
The nebulizer B (Fig.13) allows to lubricate the cutters.
The coolant is put in the propeer tank.
Periodically control (every 24 working hours) thet the coolant is at the right level.
(Use exclusively lubrificant).

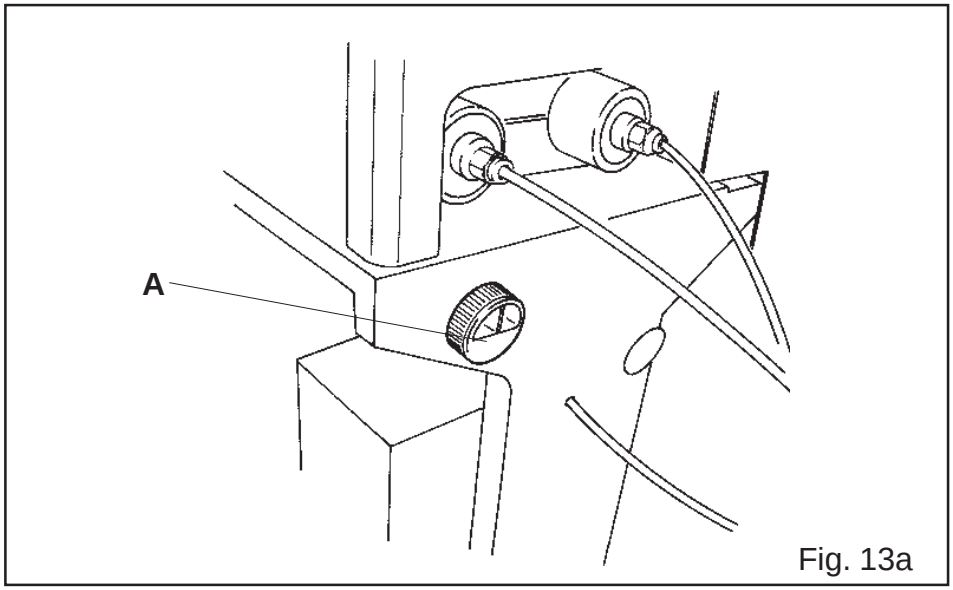


Fig. 13a

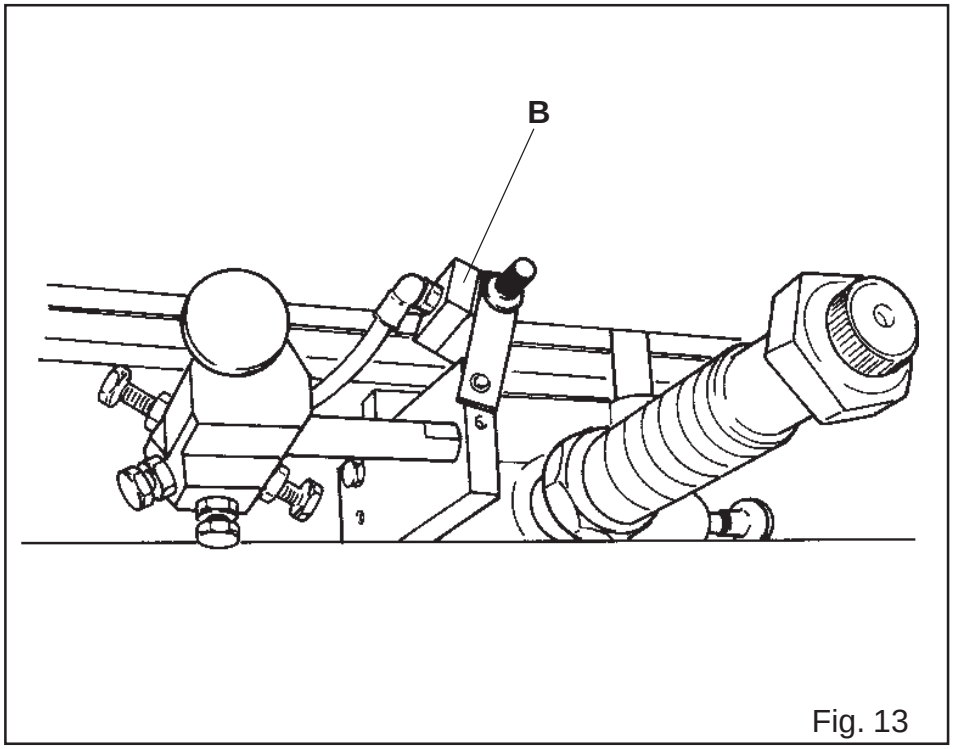


Fig. 13

3.10 CUTTER GROUP'S CHANGE

In case you have to replace the cutter group, operate as follows:

- Check that there is no voltage in the machine.
- Press button A (Fig.14)untill pin B go inside the special hole situated on shaft C (Fig.14) spindle holder D (Fig.14) blocking it.
- Insert the special hjexagonal spanner E in nut F (Fig.14) blocking spindle D (Fig.14), turning it in anti clockwise direction in order to loosen the nut.
- Take off nut F (Fig.14) blocking the cutter group
- Take off the cutter block spindle D (Fig.14) lifting it.
- Insert the new cutter block spindle blocking it through the appropriate nut F (Fig.14) using spanner E (Fig.14).

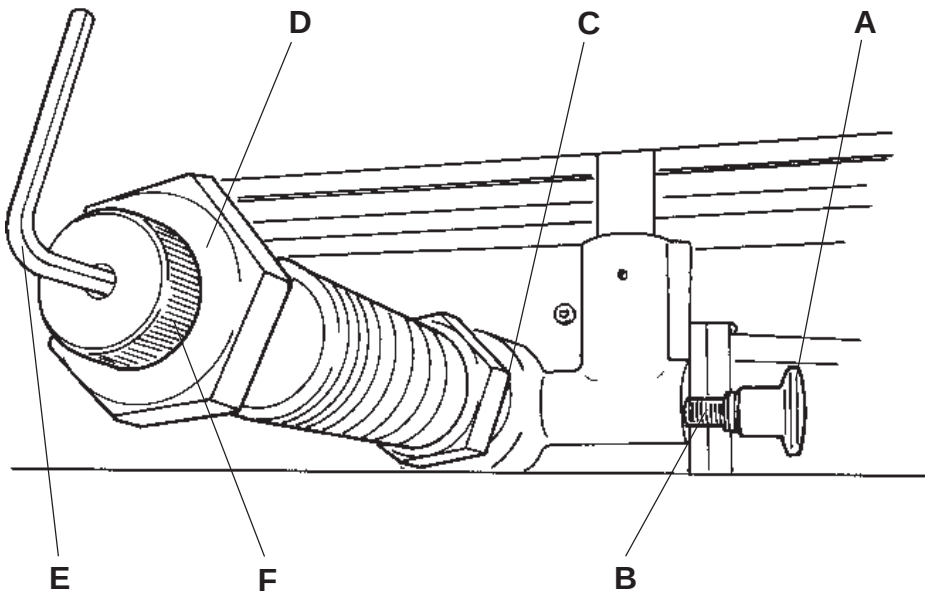


Fig.14

4.0 MAINTENANCE CARD

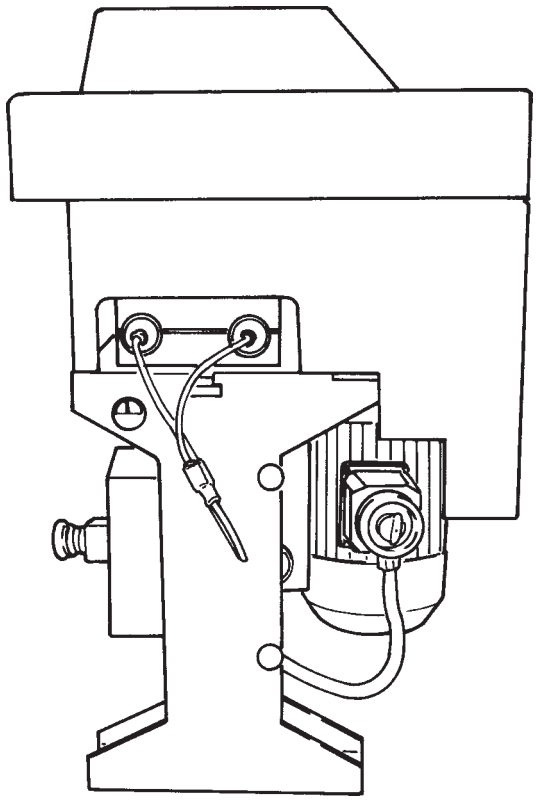
Control periodically the oil level.

Clean periodically (every 15/20 days) the slide guides and keep them lubricated with grease or oil, to avoid that the guide scraping for the protection of the slide sleeve bearing runs on some zones of the guides without lubrification or, worse, on some part of the sliding guide scraping and would allow the dirth to enter the sleeve bearing, compromising the slidinf of them.

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



LOLA

INSTRUCTIONS FOR MAINTENANCE AND USE