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SASSO®

Flying Flat

MANUAL STRUCTURE

The operator manual of the **"Flying Flat"** machine is structured as follows:

DESCRIPTION

This section contains a brief description of the machine with reference to the processes it is designed for.

LIFTING

This section highlights the connecting spots on the machine for lifting.

PLACEMENT

This section illustrates the operations to be performed after having placed the machine, to obtain the final setup.

CONNECTIONS

This section displays the following connecting points: electric energy – water – compressed air

DEFINITION OF THE DANGEROUS AREA

This section defines the areas that are deemed hazardous during the normal machine operation.
These areas must only be accessed when the machine is stationary.

WARNINGS

This section contains useful instructions for preventing dangerous situations for the operator.

TOOL ASSEMBLY

This section illustrates the operations to be performed for a correct tool assembly.

INSTRUCTIONS FOR USE

This section contains the instructions required for a proper use of the machine.

GREASING

This section displays the spots that require periodical lubrication.

MAINTENANCE

This section describes the ordinary maintenance operations to be carried out by the user.

FIRST START-UP

This section contains the instructions required for the first machine start-up.

DIAGRAMS

Contains: wiring diagram
pneumatic diagram

GENERAL DESCRIPTION

GENERAL DESCRIPTION

The “Flying Flat” machine is designed and realised for vertical smoothing, polishing, and chamfering of linear edges on marbles, granites and stones.

The mechanical structure of the machine is provided with the following operating heads:

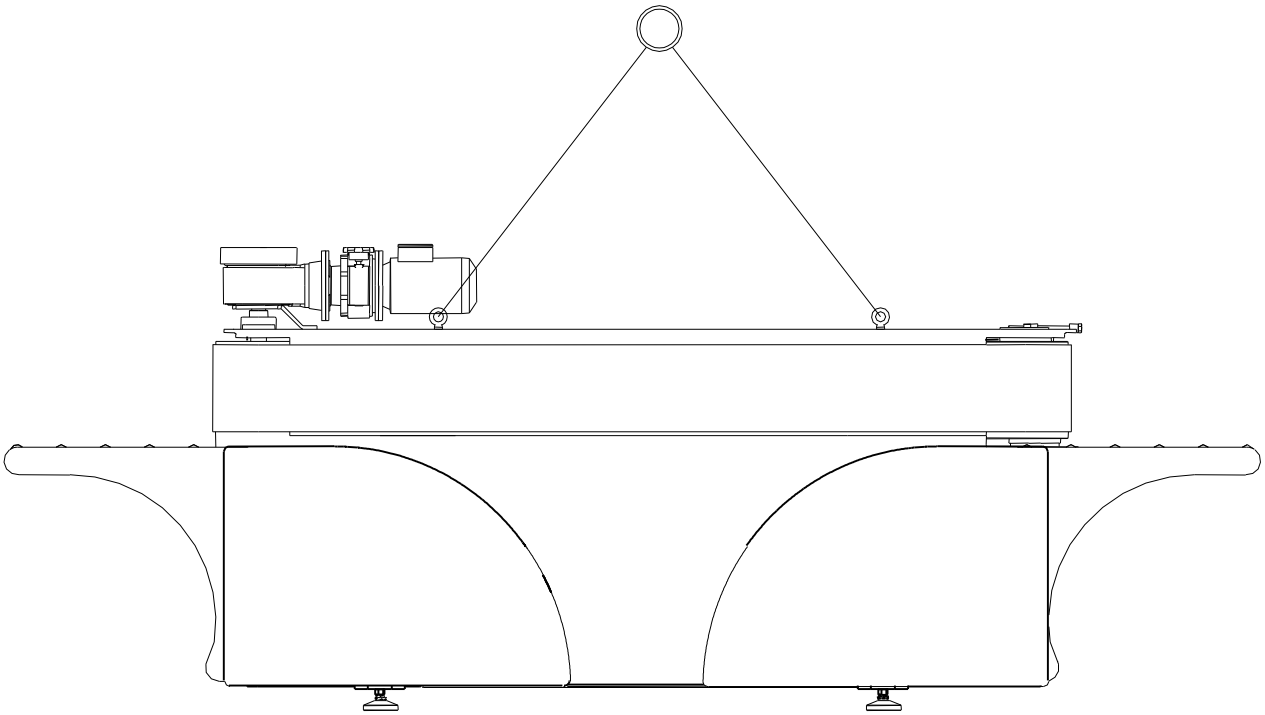
NO. 1 MULTIFUNCTION SPINDLE (drip)
provided with height and depth adjustment and angular position at 0°, 45° and 90°.

NO. 1 POLISHING UNIT
no. 5 spindles provided with pneumatic pressure adjustment.

NO. 1 CHAMFERING UNIT
no. 2/4 spindles provided with pneumatic pressure adjustment

LIFTING

LIFTING

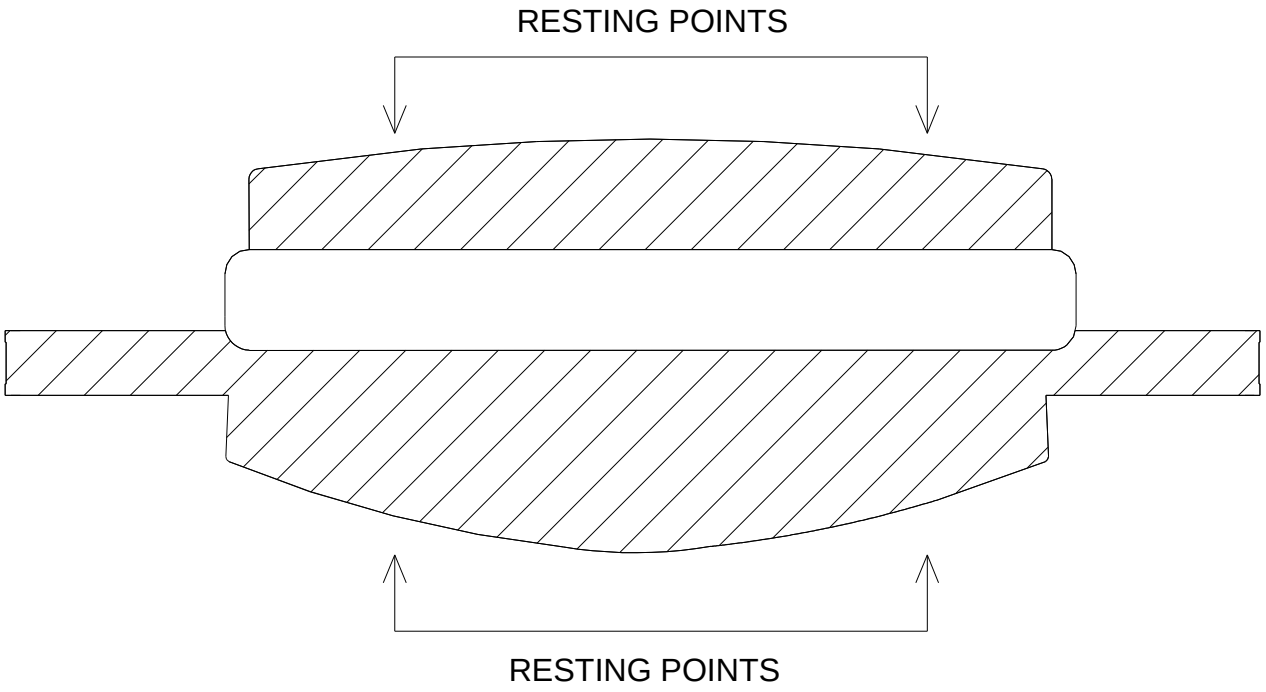


The figure shows the lifting spots of the machine "FF" for a safe and balanced lifting.

Always use the special lifting spots to lift the machine.

PLACEMENT

PLACEMENT

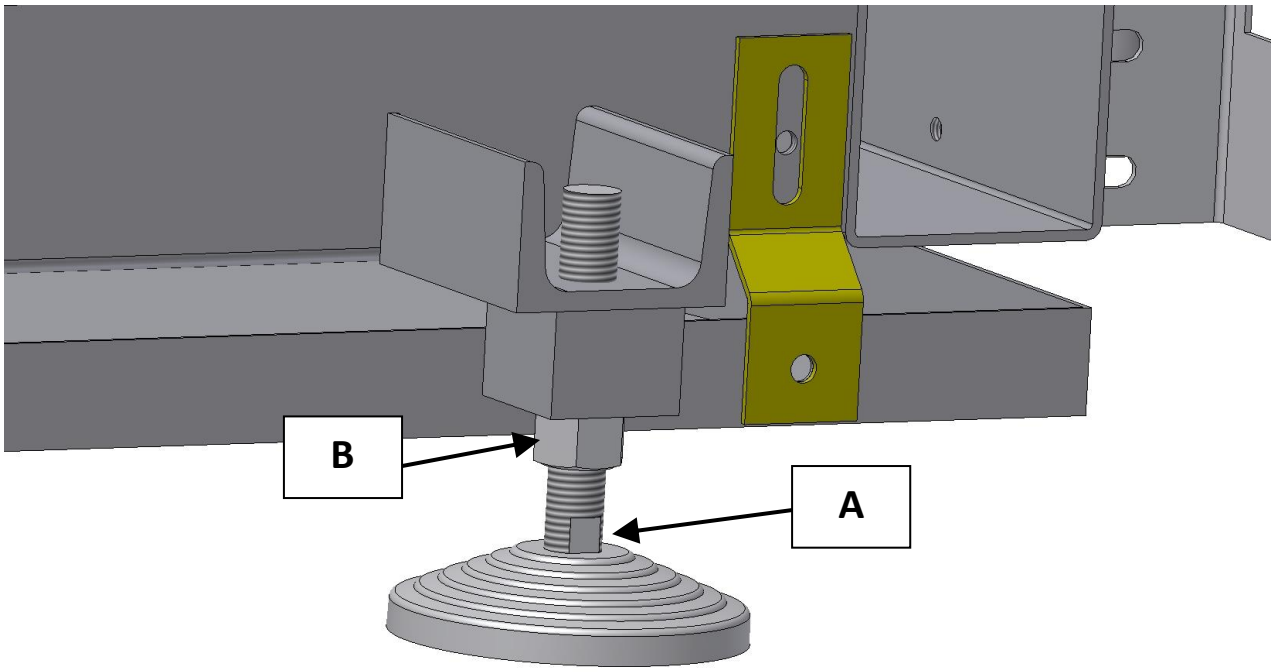


The figure shows the position of the resting points of the machine "FF".

At the first placement, adjust the rests as shown in the next figure.

This operation MUST be carried out with the machine placed in electric emergency status.

PLACEMENT



Check that the machine is on a level surface by placing a mason's level in several points of the bench surface, both in the feeding and in the transversal direction.

To level the machine, turn the adjustment screws **A** checking the rest evenness.
Then, lock the check nuts **B**.

The machine requires no special foundation works.

This operation MUST be carried out with the machine placed in electric emergency status.

FLYING FLAT ROLLING WAYS ALIGNMENT

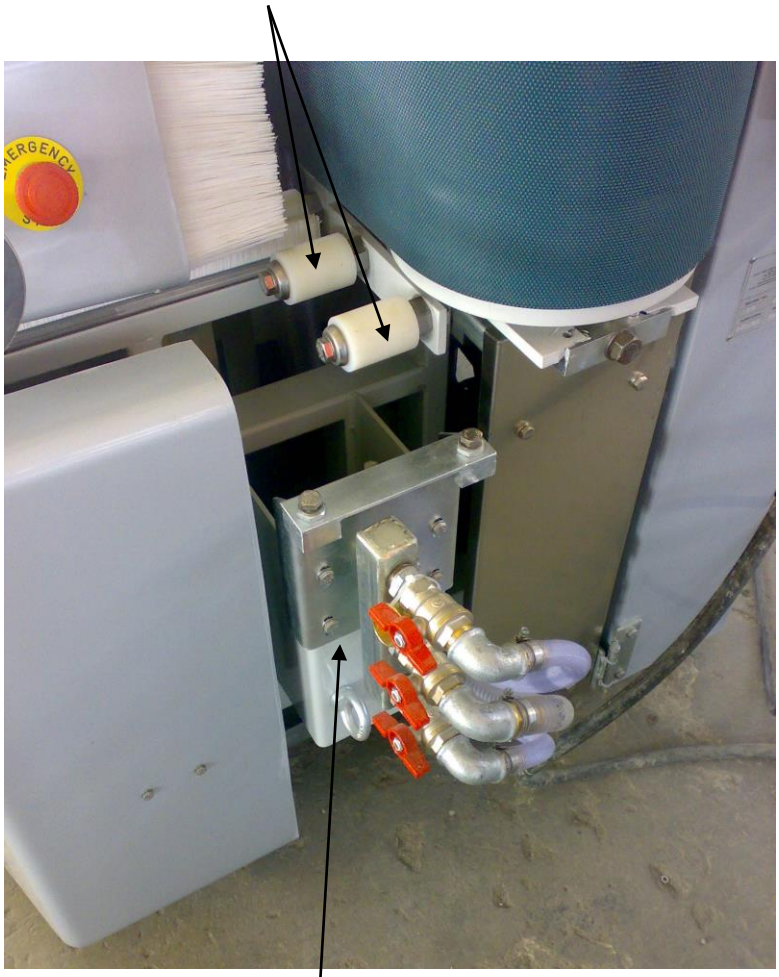
Flying flat (piece exit side)

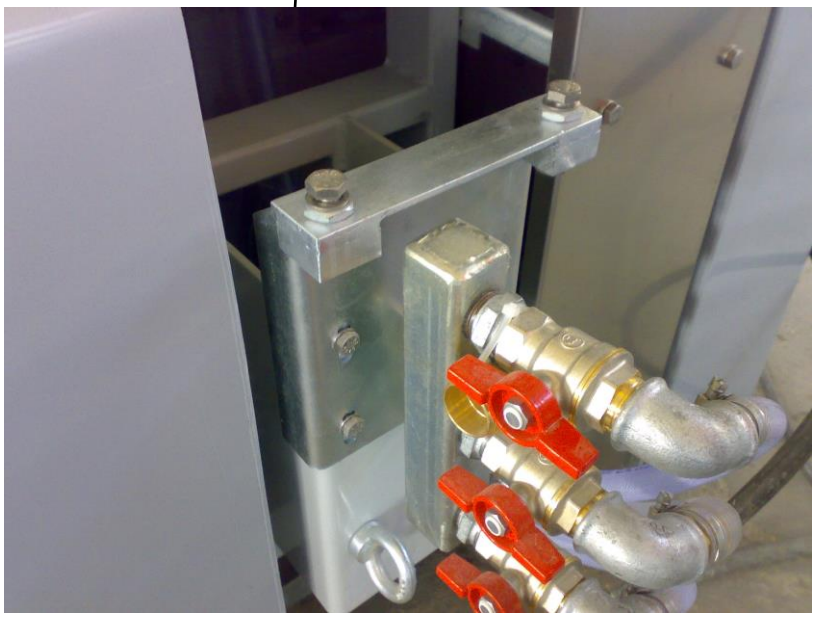
Machine’s inside rolling way (white rollers) that have to be aligned with the entry and exit white rolling ways.

n°4 regulation point for the rolling way alignment.

Flying flat (piece enter side)

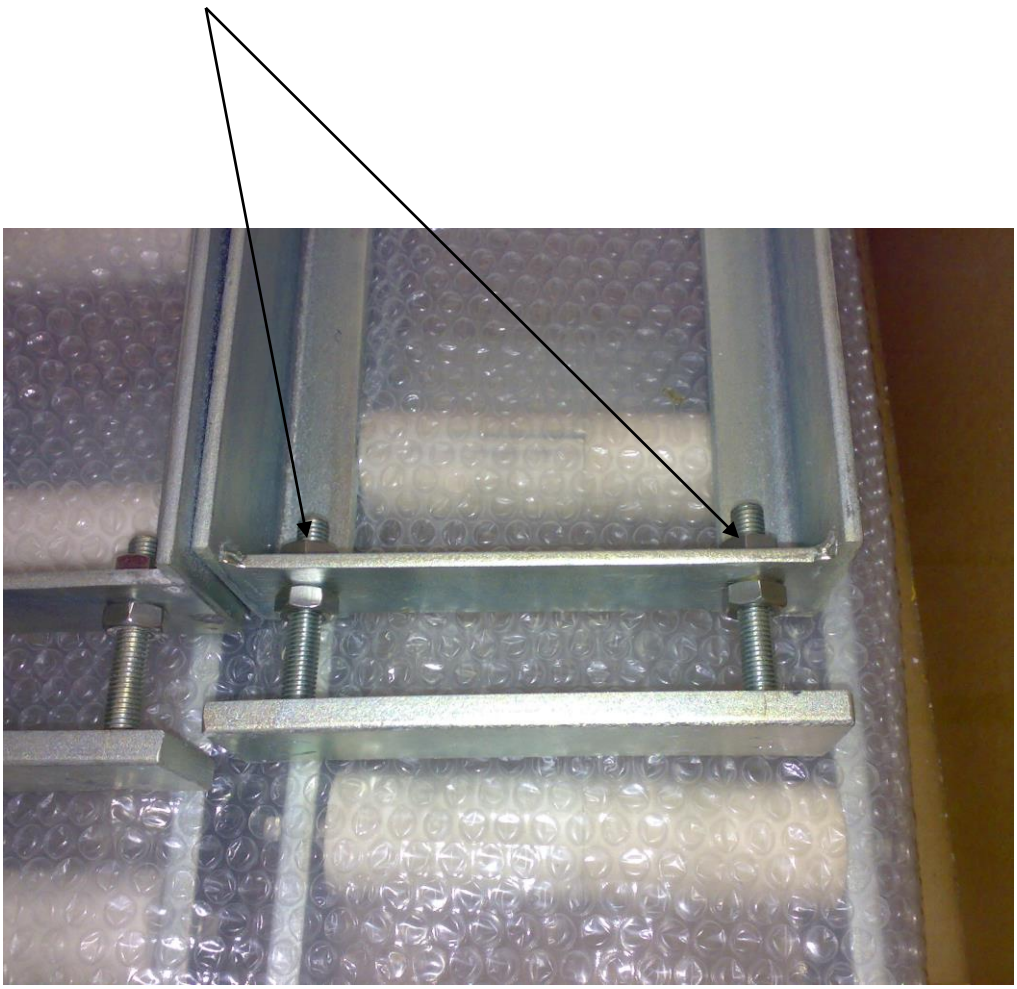
Machine’s inside rolling way (white rollers) that have to be aligned with the entry and exit white rolling ways.





n°4 regulation point for the rolling way alignment

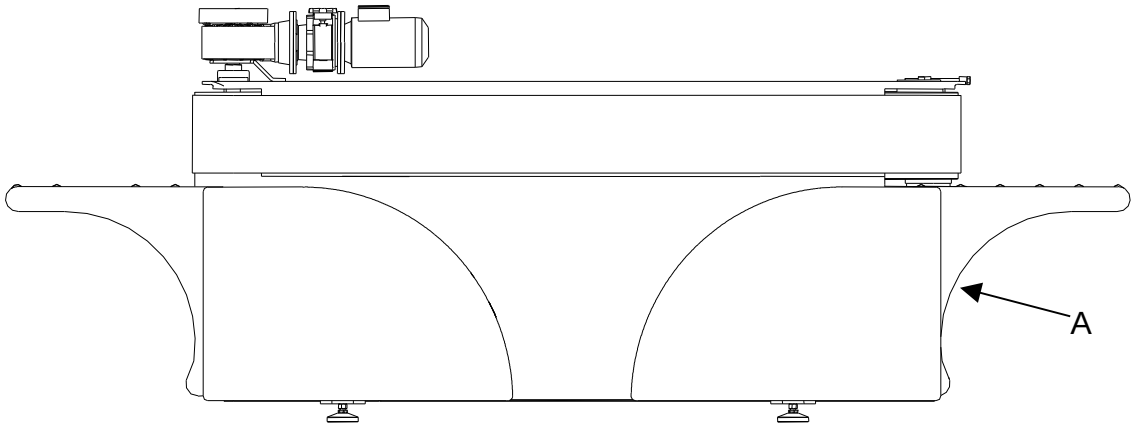
Detail of the rolling way footh you have to adjust to obtain the right alignement with the machine's internal white rolling way (you have one footh on the entry rollybg way and one footh on the exit rolling way).



Please note : your external rolling way footh may be a little bith different from this one showed here but the adjusting system is always the same.

WIRINGS

WIRING CONNECTION



Place a three-polar differential switch with minimum capacity of 63 Ampere in the proximity of the machine.

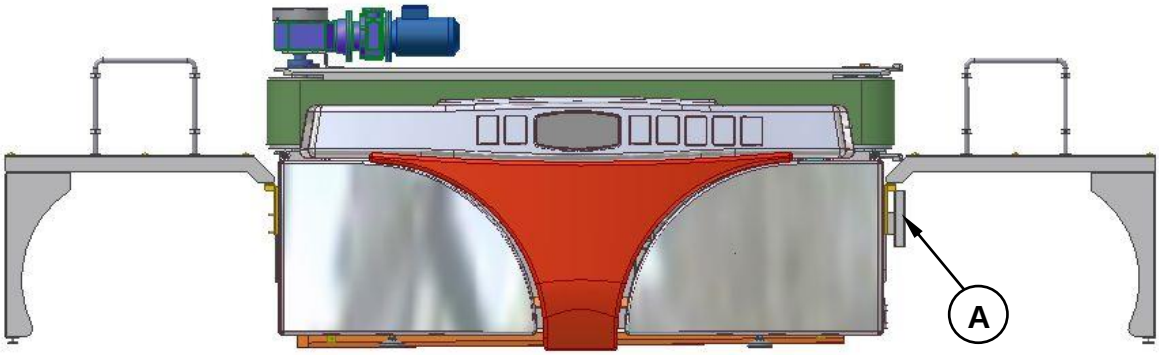
Connect the electric energy drawn by the above switch using a self-extinguishing cable with a section of 4 x 10 mm2.

Insert the cable into the electric board through passage A and connect it to the special terminals.

Connect the ground cable to the ground terminal of the electric board.

Start the belt and check the power supply polarity. If the belt does not turn in the correct direction (from the inlet to the outlet of the machine where the motor change gear is placed), reverse the central pole with one of the side ones and repeat the check.

WATER CONNECTION



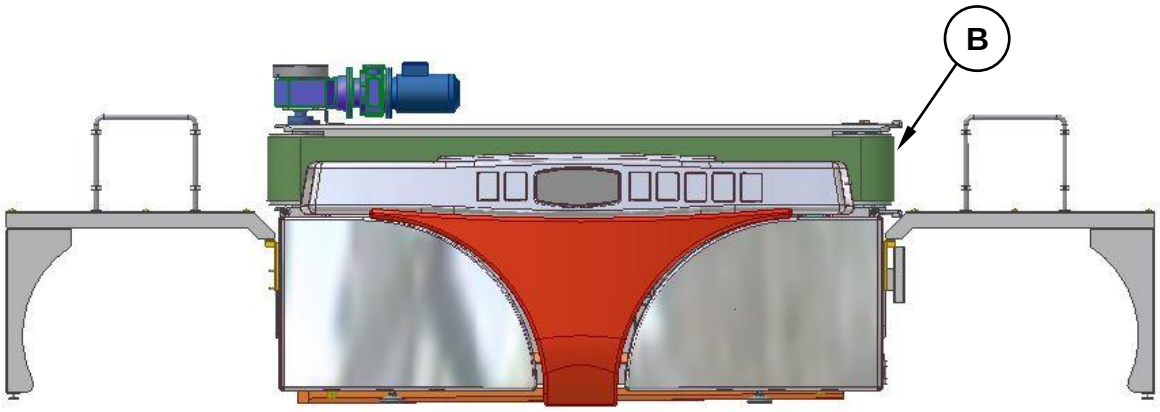
Connect the water supply to the point indicated with A preferably using a stiff piping with a section of 1".

We recommend placing a closing cock between the power supply socket and the machine.

Be sure that the water flow is approx of 70÷80 lt/min at pressure of 3÷4 bar.

This operation MUST be carried out with the machine placed in electric emergency status.

COMPRESSED AIR CONNECTION



Connect the compressed air supply to the point indicated with **B** using a normal 1/4" or larger pipe.

We recommend placing a closing cock between the power supply socket and the machine.

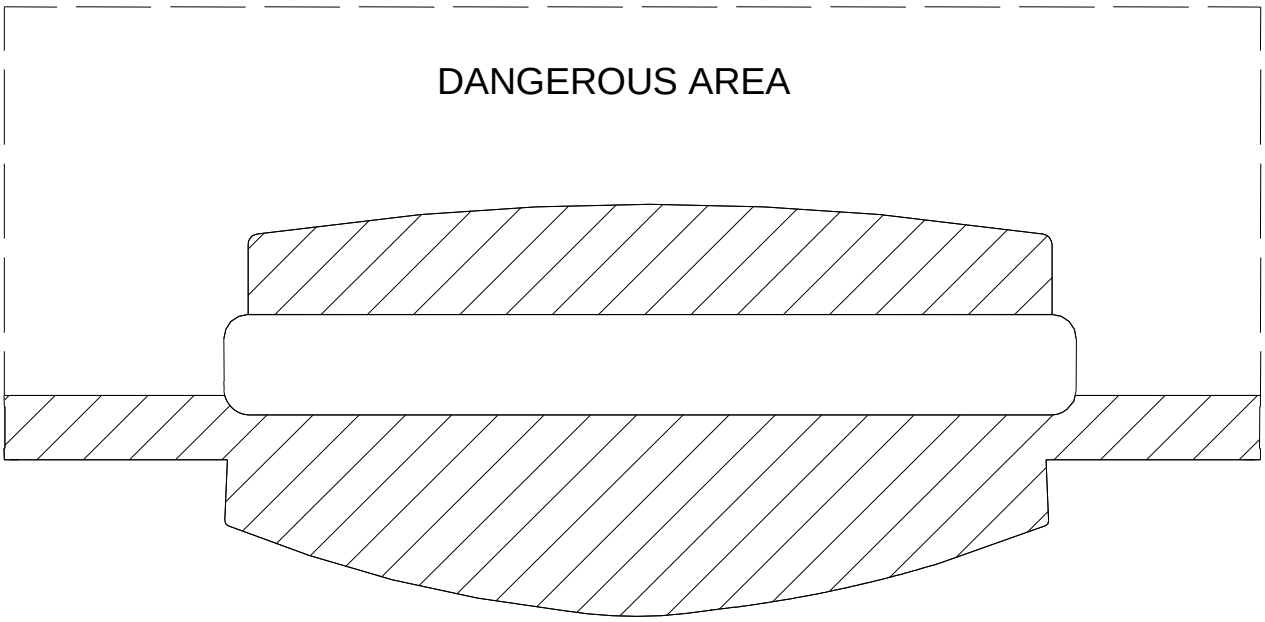
We recommend using clean and de-humidified air into the machine to prevent damages to the inside pneumatic components.

DEFINITION

OF THE

DANGEROUS ZONE

DEFINITION OF THE DANGEROUS AREA



The "Flying Flat" is designed and constructed so as to make the operator's area very safe.

All of the material loading and unloading operations, settings and drives are carried out in the machine front, where there is no hazard for the operator.

However, the electric board maintenance requires accessing the rear area, which is a dangerous area.

Such maintenance, which cannot be carried out while the machine is running, requires the machine stop.

Even though there is no danger in staying in the dangerous area when the machine is stationary, the machine should be placed in emergency before accessing said area.

WARNINGS

WARNINGS

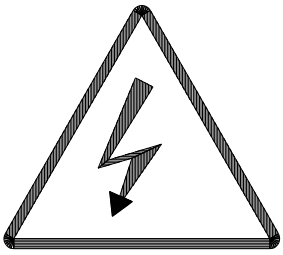
1) It’s absolutely forbidden to go in dangerous area (back of the machine) without stopping the machine and setting it in state of emergency.

2) It's absolutely forbidden to take off the fixed covers from the machine, without stopping the machine and setting it in state of emergency.

3) It's absolutely forbidden to take off the moveable covers from the machine without stopping the machine and setting it in state of emergency.

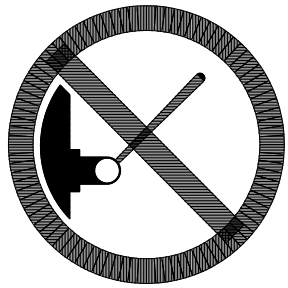
4) It's absolutely forbidden to go in dangerous area during the operation of "reset position" that the machine automatically does every time it starts its work.

5) It's absolutely forbidden to try to change diamond tools or abrasives during the working of the machine.



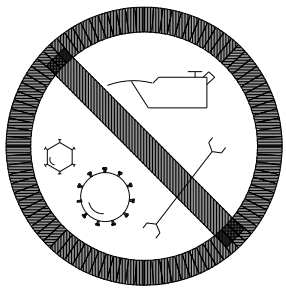
PERICOLO 380 VOLT

The distress signal showed on the left side is normally affixed on the door of the electric panel.
The door of the electric panel is furnished with a mechanism block-door, which doesn't allow the opening of the door without stopping the machine.
We yet recommend to disconnect the electric power before opening the door.



NON ESEGUIRE LAVORI
SENZA AVER PRIMA
TOLTA LA CORRENTE

The signal showed on the left side forbids to make any operation in any zone of the machine before disconnecting electric power so that any actuation on the machine, even if accidental, doesn't create dangerous conditions.



VIETATO OPERARE
SU ORGANI IN MOTO

The signal showed on the left side forbids to make any operation (setting, lubrication, repairing etc…) on any moving part, even if to make this operation it is not necessary to go in the dangerous area.

NOISE

INFORMATION RELATING TO NOISE PRODUCED IN NORMAL OPERATING CONDITIONS AND RISKS RELATING TO USE OF

MACHINE TOOL

MODEL "FLYING FLAT"

1) – GENERAL TECHNICAL DETAILS:

The "FLYING FLAT" vertical polishing machines consist of a steel-structure bed resting on the floor and which supports the conveyor belt and operating heads.

The operating heads can be roughly divided into diamond tool carrying heads and abrasive tool carrying heads.

The noise source consists of the diamond tools (disks and grinding wheels), designed to remove material for piece shaping, meaning for the creation of channels (eg. drips)

For further technical details, see the "OPERATOR'S AND MAINTENANCE MANUAL"

2) - MACHINE SOUND POWER LEVEL

The machine was designed to reduce the noise level at the source.

The surveys were done in application of the law EN ISO 4871-1995, EN ISO 11200-1995, EN ISO 11202-1995, D.lgs 277/91 (workers protection against the noise) Legge 447/95.

The machine tool generates the following amounts of noise:

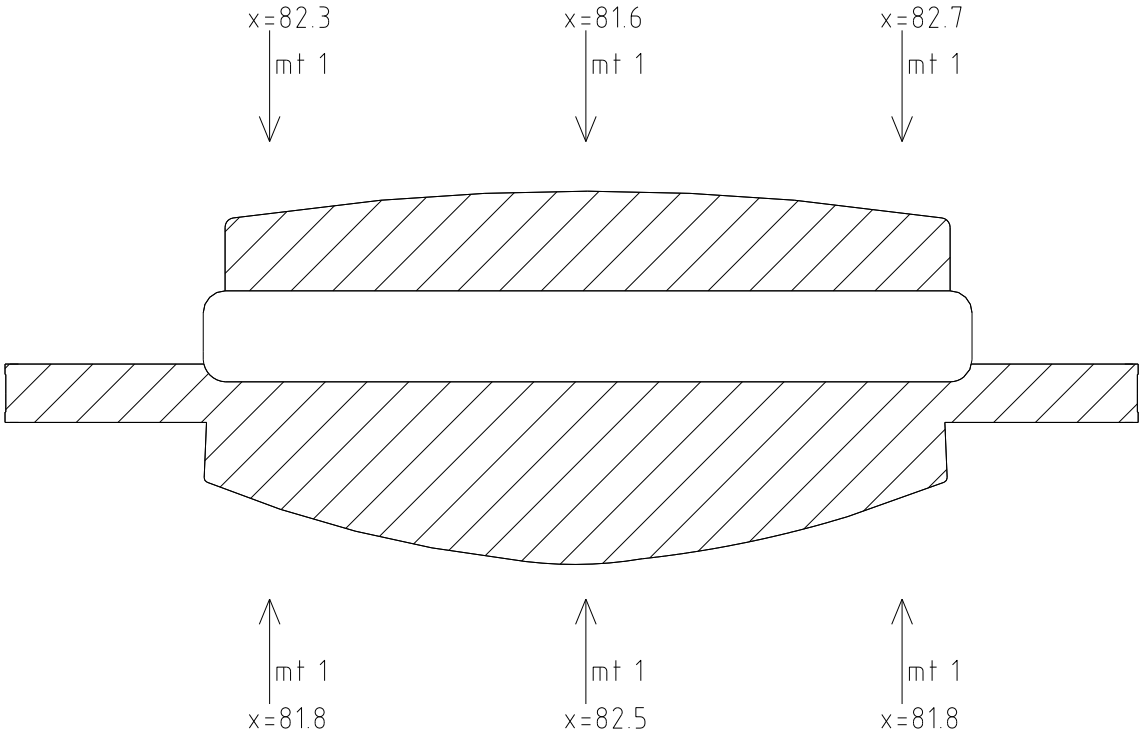
MACHINE OPERATING WITHOUT WORKPIECES

Piece in feed area	=	81.0 dB(A)
Piece out feed area	=	82.5 dB(A)

MACHINE OPERATING WITH WORKPIECES

The figures shown refer to the machine during complete work phase and have been read at the various points indicated in the illustration, at an average distance of 1 m from the noise source.

REAR PART OF MACHINE



FRONT PART OF MACHINE

For the surveys done the noise pressure maximum instantaneous value "C" was <130 dBA

Machine operating with workpiece:

decibel	Front workstation area =	db(A) 85.4
decibel	Rear workstation area =	db(A) 83.3

The noise value surveyed can be different from the operating levels because others noise sources can exist.

This documentation cannot be used to ascertain in the proper way the needing of noise protection systems to add.

3) -AMOUNT OF NOISE ABSORBED IN RELATION TO EXPOSURE TIME

CALCULATION OF EQUIVALENT NOISE LEVEL (Eql)

	Front workstation area		Rear workstation area	
Time in minutes	db(A)	**Leq**	db(A)	**Leq**
60,0	85,5	**76,5**	83,3	**74,3**
120,0	85,5	**79,5**	83,3	**77,3**
180,0	85,5	**81,2**	83,3	**79,0**
240,0	85,5	**82,5**	83,3	**80,3**
300,0	85,5	**83,5**	83,3	**81,3**
360,0	85,5	**84,3**	83,3	**82,1**
420,0	85,5	**84,9**	83,3	**82,7**
480,0	85,5	**85,5**	83,3	**83,3**

4) - AIRBORNE NOISE LEVEL PRODUCED BY MACHINE pursuant to Presidential Decree 459/96 para. 1.7.4. letter f, annex 1

The level of weighted equivalent continuous sound pressure (A) read at the two operator workstations is the following:

1 Material in feed position = 85.4
2 Material out feed position = 83.3

The showed noise values are emission value and they can't represent necessarily safe operating levels.
Notwithstanding there is a connexion between emission levels and exposure levels, this can't be used to decide if further precautions are needed.
The factors that determine the exposition levels of the operators include the exposition time the area characteristics and the others noise sources (for example the number of the machines and the adjacent process).
In any case, with those informations the operator would be able to decide the level of the warning and the risk

TECHNOLOGIES USED TO ABATE MACHINE NOISE

The noise produced by the machine and associated with the use of diamond tools for making channels and for shaping materials, as well as the noise made by abrasive tools, because of the need to replace and regulate such tools, can only be abated by enclosing the relevant units.

Noise produced by hydraulic movements or mechanical resonance is abated by means of sound-dampening insulation.

In working conditions in conformity with the corrects use info, the vibrations don't create dangerous situations

USING
THE
MACHINE

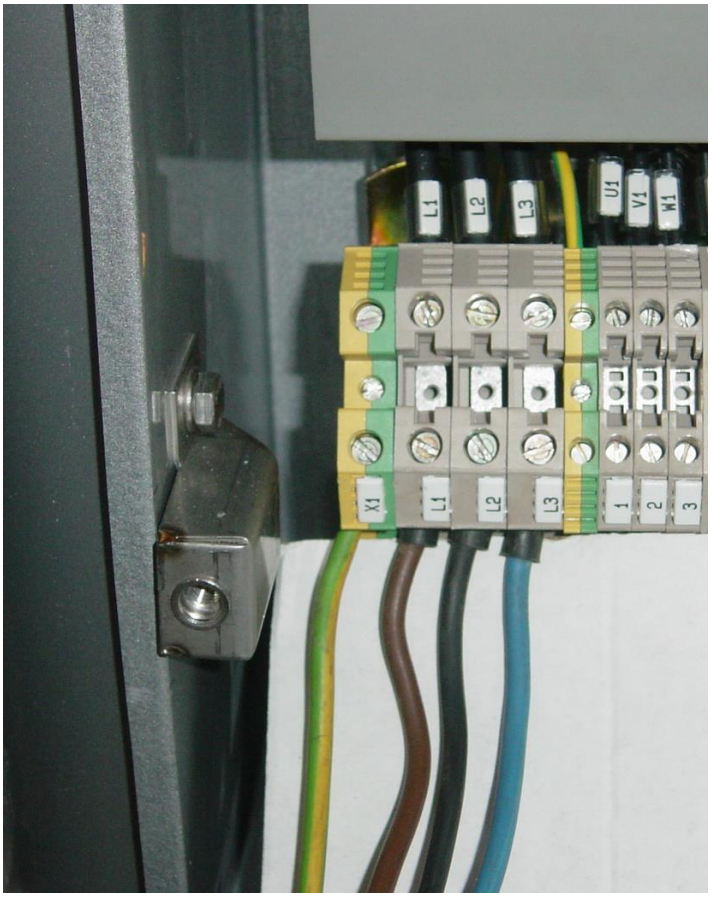
FIRST START UP

After having checked that the machine is level and that all of the rest screws are tightened, you can start up the machine.

Ensure that the machine is supplied with compressed air at least 5 bar and that all safety limit stops are closed, of it will not be possible to perform any operation.

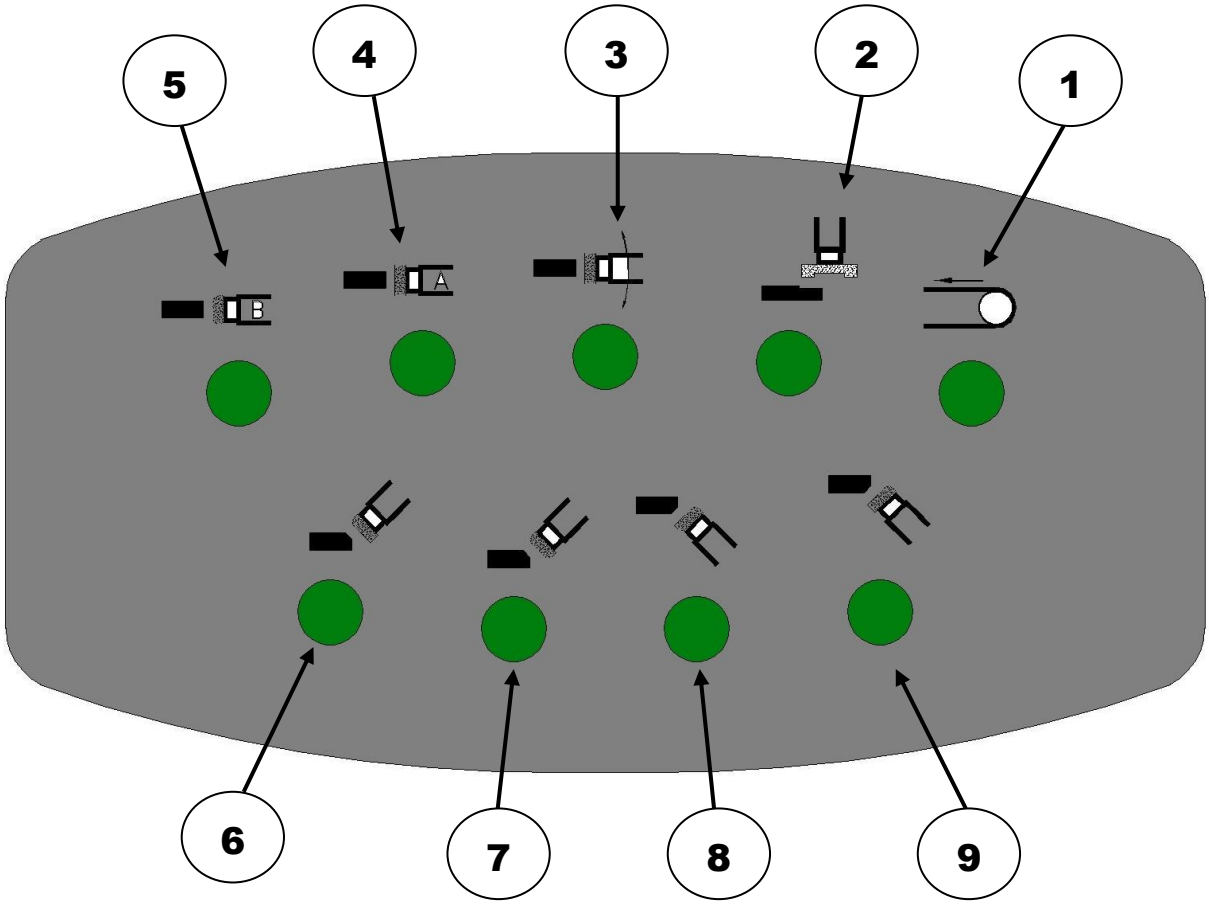
The safety limit stops indicate the opening of the operating member protection panels.

The first thing to check is that the electric energy phases are correct; simply start a spindle: if the spindle rotates in the proper direction, that is in counter clock sense watching it from the side of the abrasive, the connection is correct; if not, if the spindle is stationary or rotates in the opposite direction, disconnect the power supply and exchange one of the two power supply cables L1/L3 with the central one L2.



Try again and check that the rotating direction is correct.

FLYING FLAT KEYBOARD



The Flying Flat keyboard keys have the following functions (from right to left):

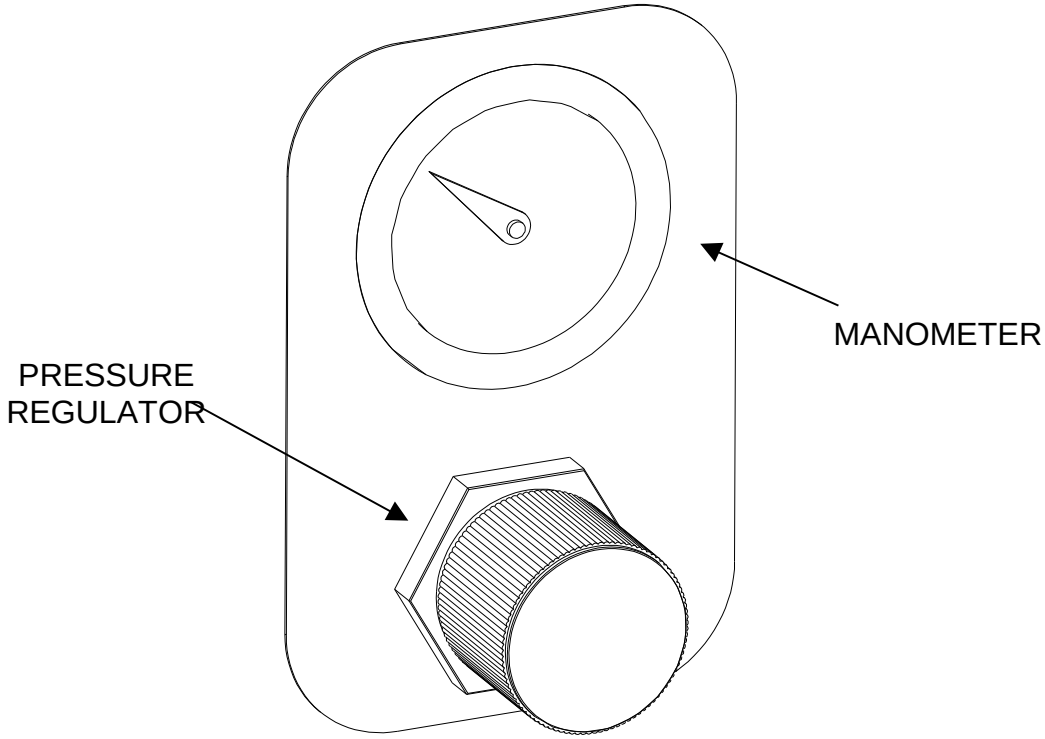
1. belt feeding
2. drip/calibrator drive
3. Brandeggio System
4. 3 smoothing head drive (A)
5. 2 polishing head drive (B)
6. 1st lower chamfering drive
7. 2nd lower chamfering drive (optional)
8. 1st upper chamfering drive
9. 2nd upper chamfering drive (optional)

START UP PROCEDURE

Below are the operations required for an immediate start up of the machine and for the operations it is designed for:

1. Checking and calibrating the working pressures.
2. Tool assembly.
3. Presser bar adjustment.
4. Belt feeding speed adjustment
5. Starting the process with Brandeggio
6. Multifunction spindle use

1 – CHECKING AND CALIBRATING THE WORKING PRESSURES



Each spindles, either for polishing flat edges or for chamfering, is provided with a separate working pressure adjustment.

Pressure must be adjusted by the regulator based on the type of abrasive and material, as well as on the feeding speed, which in any case should be set at approx. 4 bar.

Chamfering spindles must be set according to the desired chamfering width.

For example: high pressure = wide chamfering; low pressure = narrow chamfering.

In order to exclude each chamfering spindle, pressure must be set to 0 bar.

N.B. Ensure that the back pressure gauge placed inside the electric board reads a pressure of 2 bar.

2 - TOOL ASSEMBLY

To assemble the abrasives on the single heads, refer to the abrasive replacement procedure.

Below a list of abrasives recommended for processing marble-stone and granite:

- marble-stone:

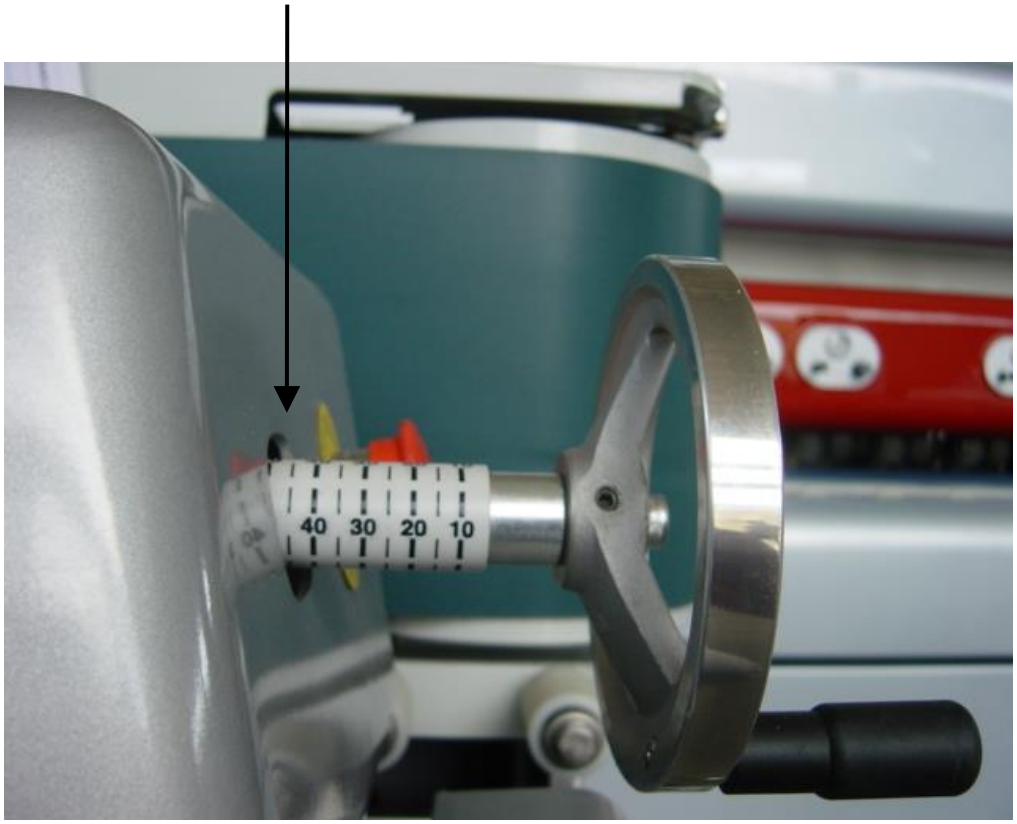
head 1	head 2	head 3	head 4	head 5
320	400	600	800	lux

- granite:

head 1	head 2	head 3	head 4	head 5
220	320	400	600	lux

3 - PRESSER BAR ADJUSTMENT

Material thickness



The first operation to be carried out before starting to machine the parts is the adjustment of the presser bar according to the part thickness.

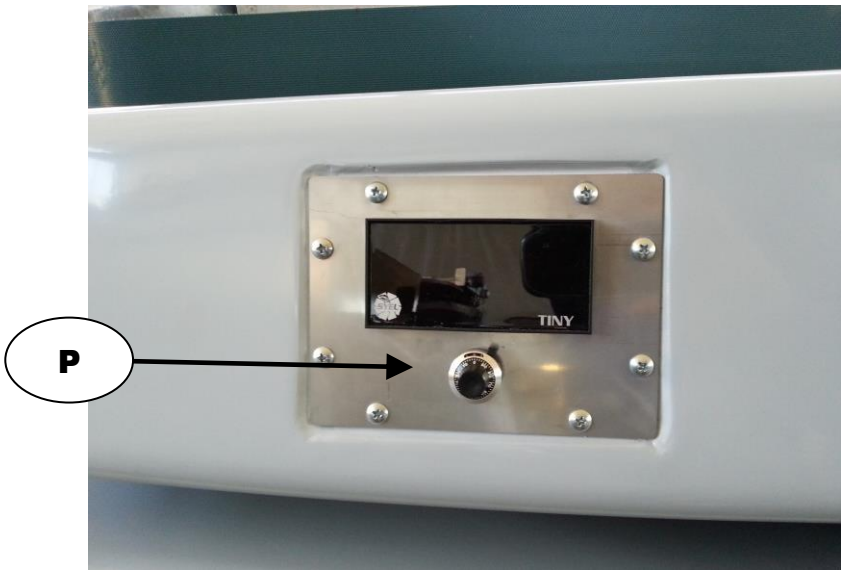
The flywheel on whose shaft there is the bar position indicator is located next to the presser-holder bar, where there are also the pneumatic controls.

The bar must be fixed at the position corresponding to the thickness to be machined.

4 – BELT SPEED ADJUSTMENT

Start the belt by the relative key (1) on the keyboard and set the feeding speed with the speed potentiometer (P) at the following values (you can read the speed value in cm/min on the TINY display):

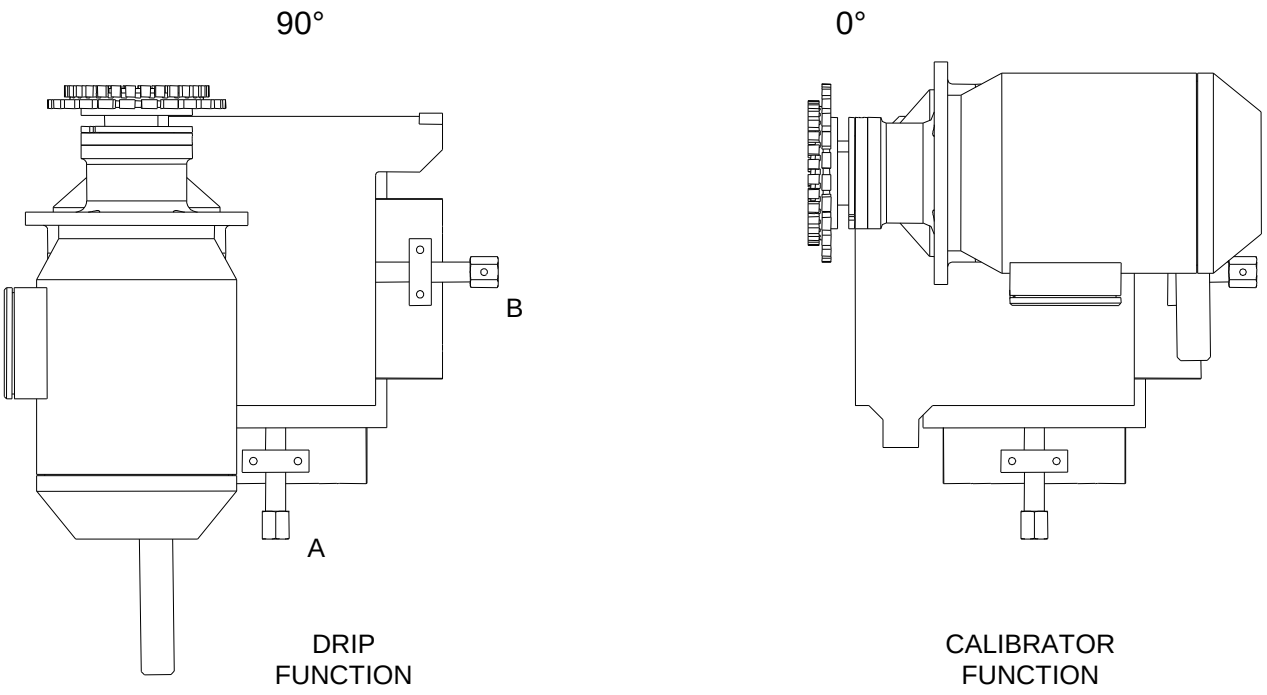
- for marble ÷ stone: 60÷70 cm/min.
- for granite: 40÷50 cm/min.



5 - Starting the process with brandeggio

Start all of the polishing head motors, including the chamfering, and start the Brandeggio function (Key 3 on the keyboard).
The Brandeggio function consists in the angular oscillation of the spindles on the working surface. This movement allows the abrasive to work tangentially to the edge, thereby optimising its smoothing and polishing properties.

6 - MULTIFUNCTION SPINDLE USE



The figure shows the multifunction spindle position.

To use the spindle in the **calibrator** function, fix it in the horizontal position.

To use the spindle in the **drip** function, fix it in the vertical position.

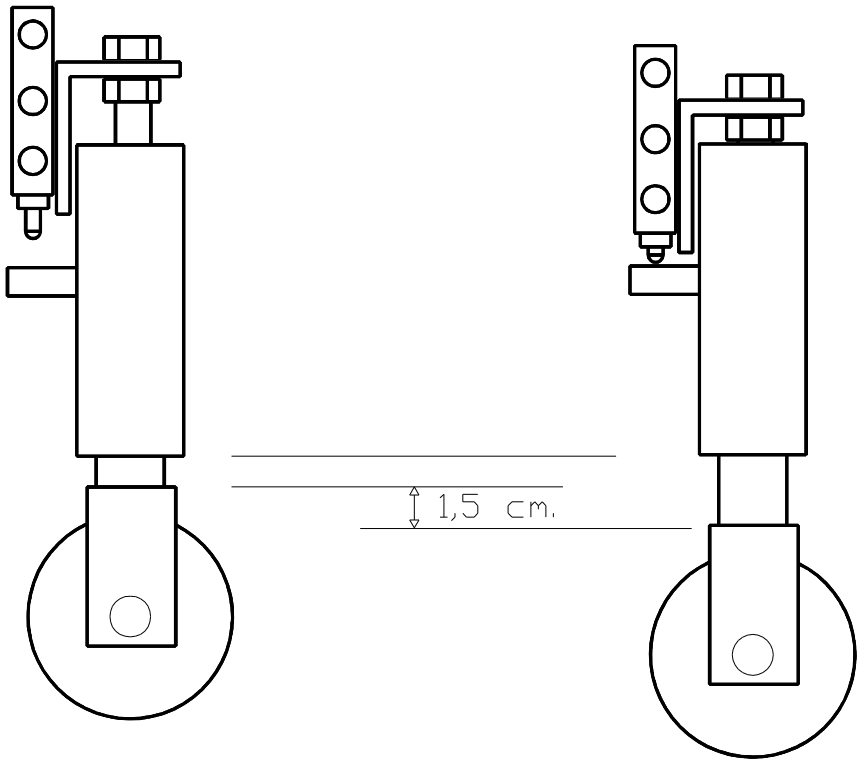
It should be noted that in the horizontal position, raw profiles can be generated by replacing the disc with a shaped grinder, for example: tore, half tore, OG profile, etc.

Based on the function to be used, the spindle is positioned by linear movements by adjusting screws **A** and **B** placed on the support surface of the machine front side, where the operator usually stands.

However, the cutting depth should be set according to the specific tool wear.

This operation MUST be carried out with the machine placed in electric emergency status.

IRREGULAR SPINDLE TRIPPING



The presser bar must be adjusted so that the roller press on the material and retract into their guide by about 1.5 cm (max 2 cm.) as shown in the figure.

If one or more spindle fail to trip, check that the roller stroke is sufficient to actuate the valve.

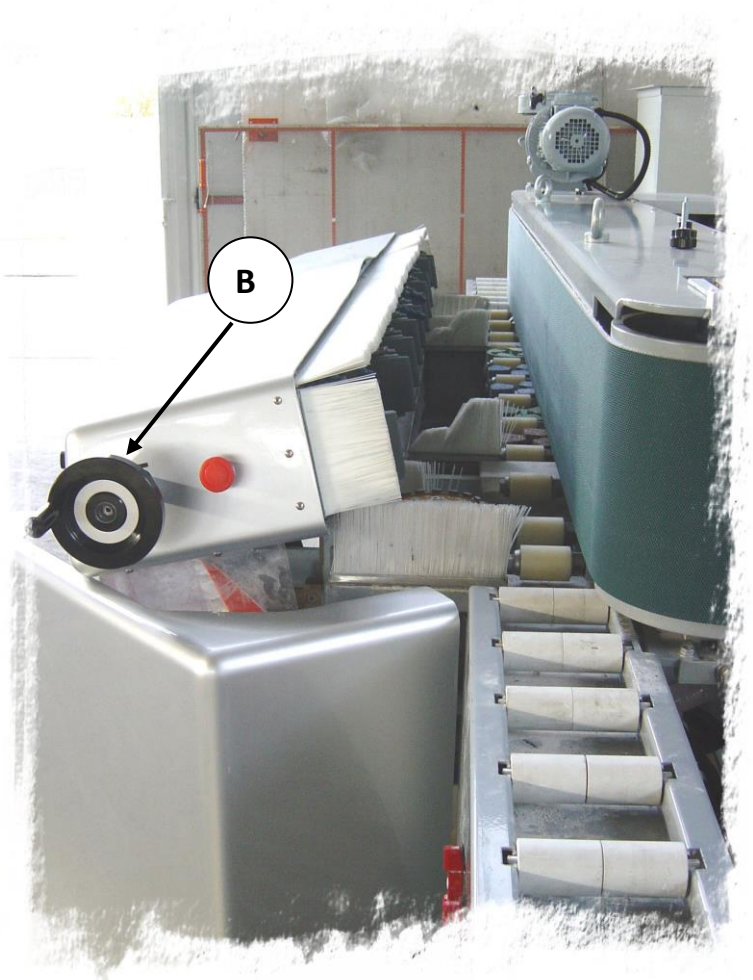
Periodically clean and lubricate the stainless steel stem of the roller in order to prevent the growth of dust and dirt that could impair the sliding.

REPLACING

THE

ABRASIVES

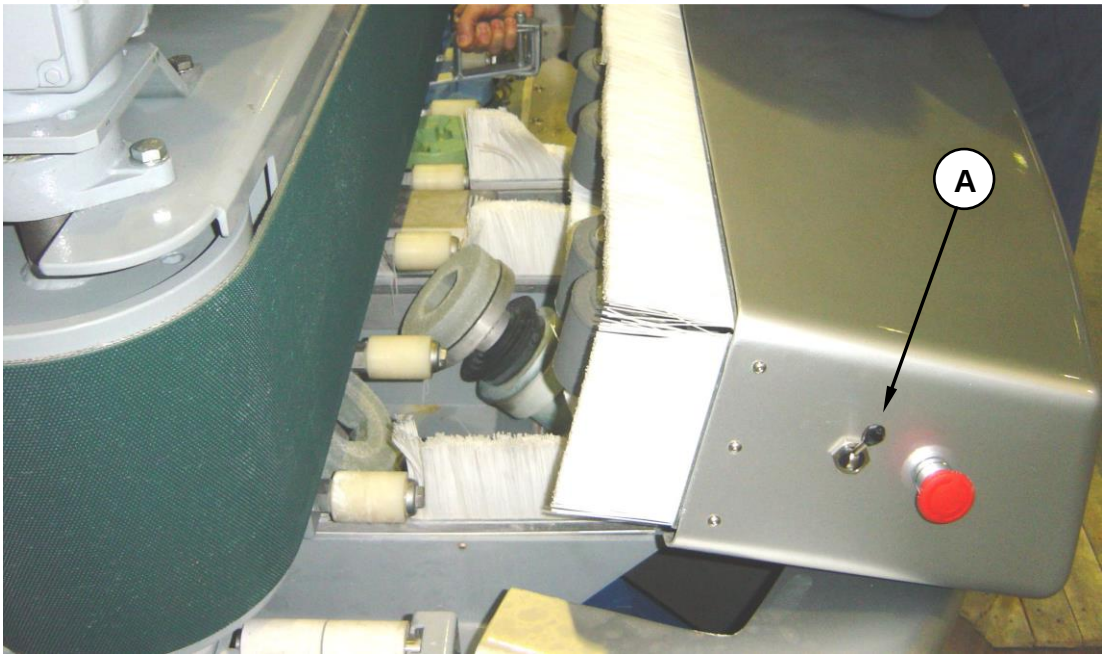
REPLACING THE ABRASIVES



For an easier replacement of the tools used for chamfering or roughing, since this replacement will be done frequently, the machine is designed so as to open the entire support by a quick connection method, to safely and conveniently perform the replacement.

To open the presser bar it's necessary to turn on the "**A**" switch.

Important: If there is a piece in the machine, before opening the bar unscrew the flywheel **B** to free the presser bar



This operation MUST be carried out with the machine placed in electric emergency status.

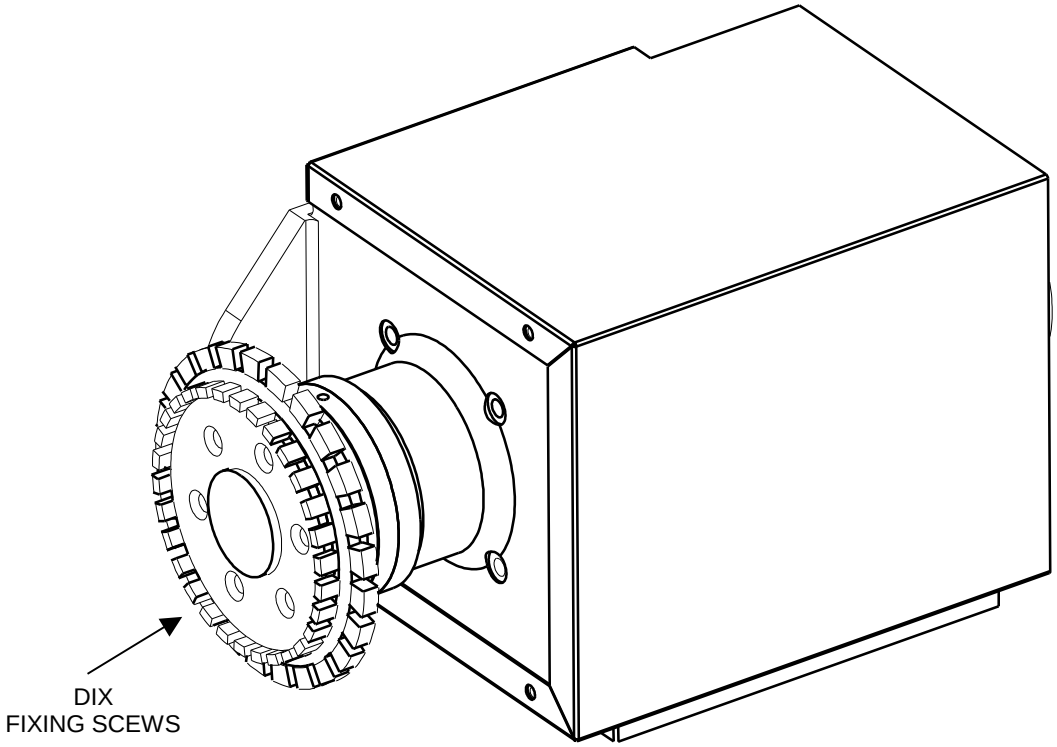
REPLACING THE ABRASIVES

The machine is supplied with the tools required for replacing the abrasive tools.

Since the tool coupling is of the quick helical type, simply turn the abrasive slightly using the special pliers supplied (see figure) and hold the abrasive-holder grinding cup by the special wrench supplied to release them.

This operation MUST be carried out with the machine placed in electric emergency status.

REPLACING THE DRIP DISC



To replace the drip disc, proceed as follows:

1) Make sure that the machine power is off or that the machine is in emergency status
2) Loosen the 6 disc fixing screws
3) Remove the disc to replace and insert the new disc on the driving shaft
4) Tighten the 6 disc fixing screws again
5) Replace the motor at the desired distance
6) After closing the safety cases, repower and test the machine

This operation MUST be carried out with the machine placed in electric emergency status.

GREASING

PRESSER BAR GREASING

The presser roller bar is provided with a horizontal movement system driven by a flywheel.

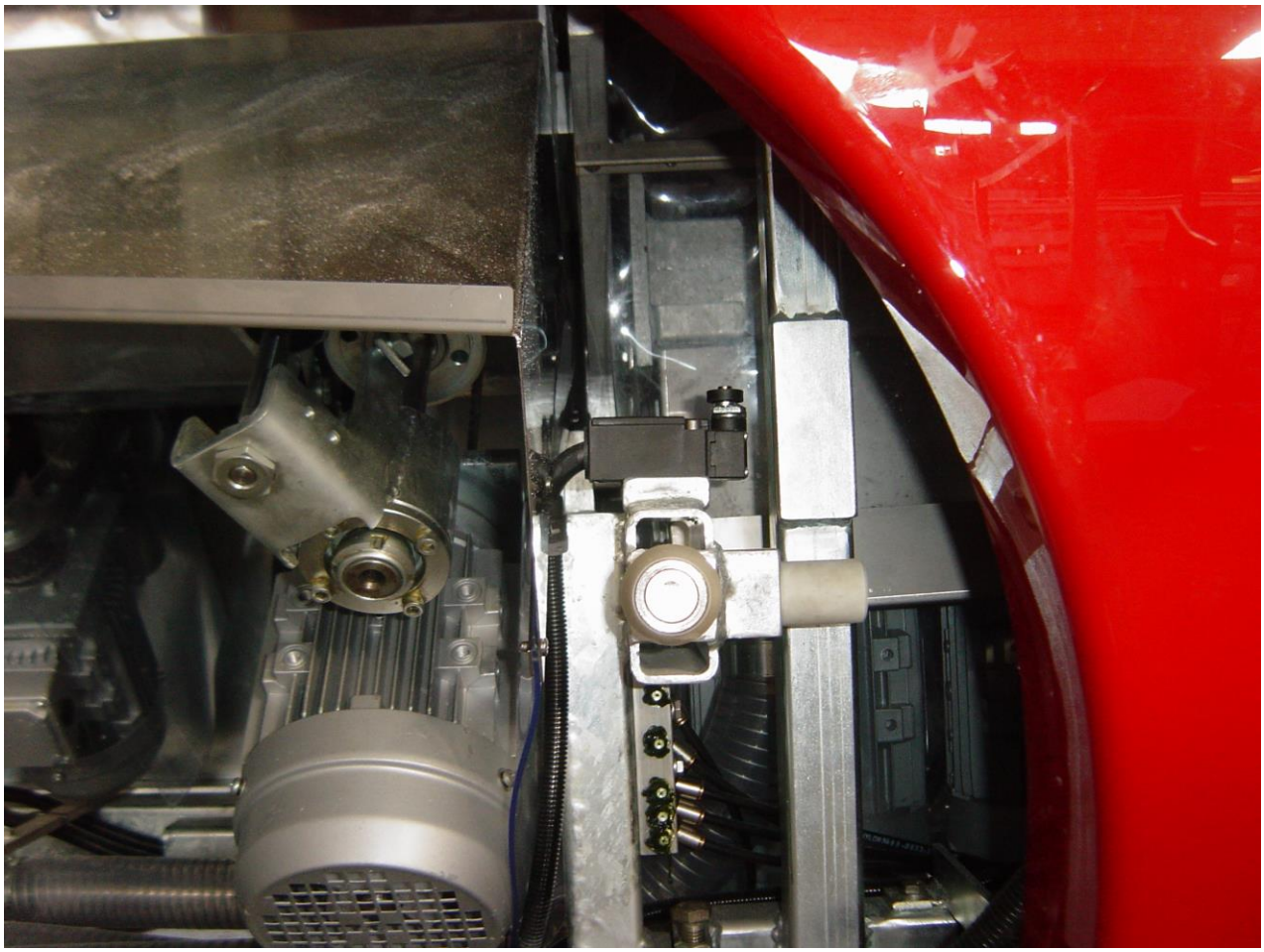
The system requires periodical greasing to maintain the same levels of horizontal sliding.

Use IP ATHESIA GREASE EP2 or equivalent.

It is absolutely forbidden to grease the presser-holder bar if the power supply has not been disconnected or the machine has not been placed in emergency.

SPINDLE GREASING

The heads of chamfering spindles must be periodically greased as the heads of the edge spindles.

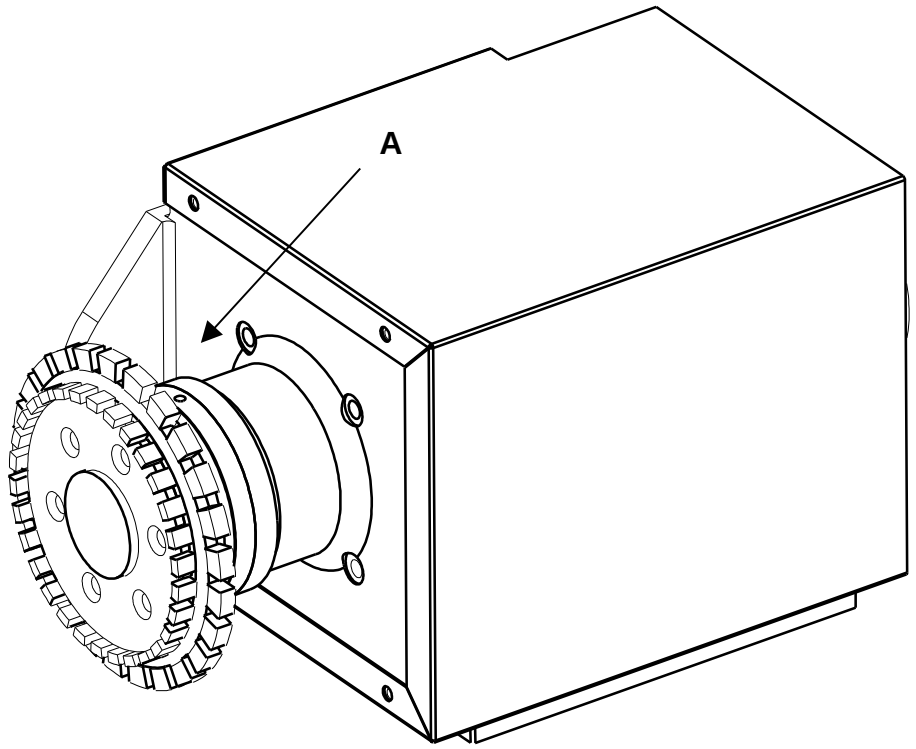


The spindle push units are greased by the greasers placed outside, in the central part of the chamfering openable support

Use IP ATHESIA GREASE EP2 or equivalent.

It is absolutely forbidden to grease the spindles if the power supply has not been disconnected or the machine has not been placed in emergency.

DRIP MOTOR GREASING



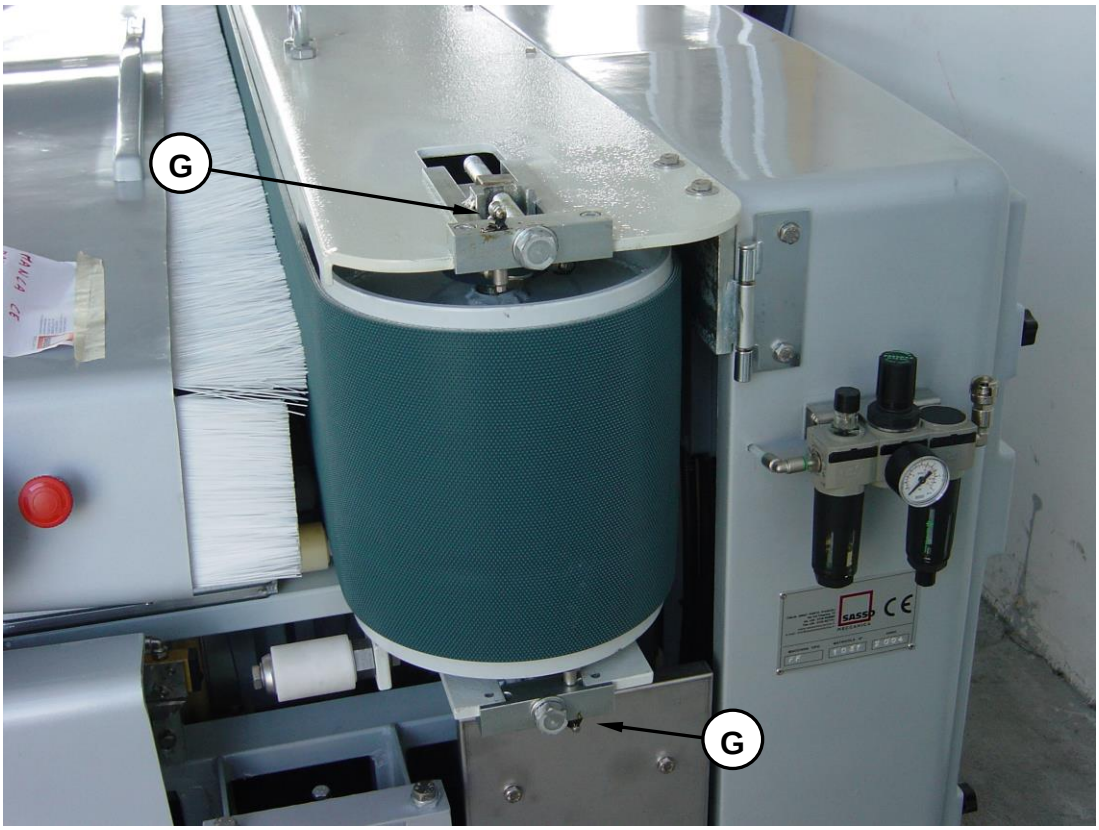
The drip motor must be periodically greased.

Perform the operation using the supplied tool and acting on greaser **A**

Use IP ATHESIA GREASE EP2 or equivalent.

It is absolutely forbidden to grease the spindles if the power supply has not been disconnected or the machine has not been placed in emergency.

BELT BEARING GREASING

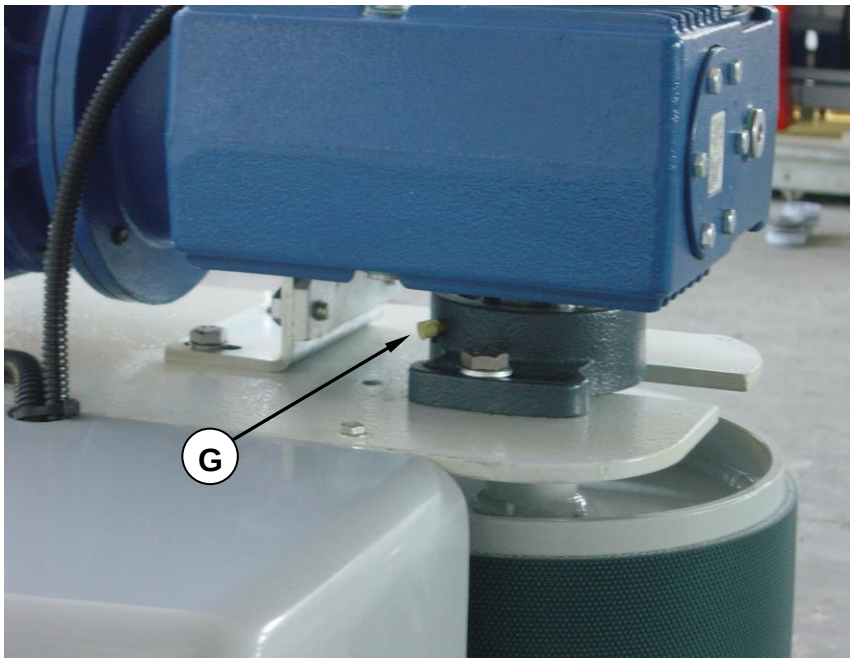


The belt bearings require periodical greasing.

The return roller greasers can be reached as shown in the figure above, whereas since the pulling roller bearings cannot be reached, they are returned outside, as shown in the figure below.

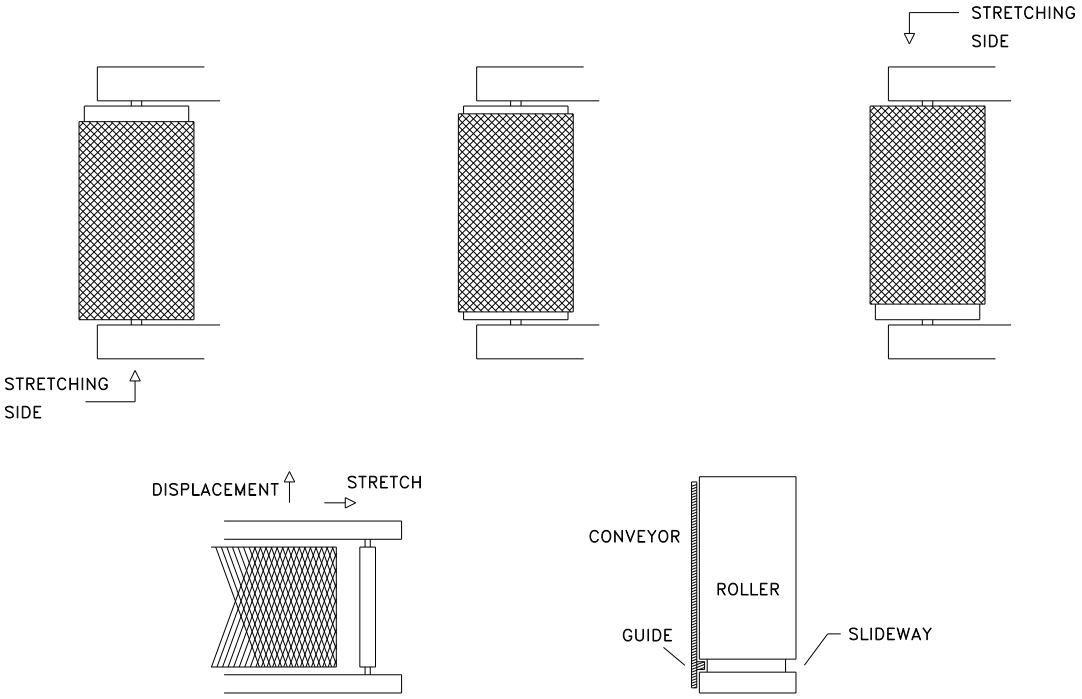
Use IP ATHESIA GREASE EP2 or equivalent.

It is absolutely forbidden to grease the spindles if the power supply has not been disconnected or the machine has not been placed in emergency.



MANTEINANCE

BELT ADJUSTMENT



The belt must always be properly tensioned and it must not move as it is driven.

If the belt tends to move, proceed immediately as follows:

a) remove the material being machined
b) let the belt operate loadless for two full revolutions
3) if the movement continues, stretch the belt on the side it moves, as shown in the figure, tightening the adjustment screw

This adjustment must be gradual, tightening by 1/4 turn at a time and waiting a complete belt revolution before tightening again.

Always check that the belt guide is perfectly inserted into the roller.

WARNING: Perform this operation letting the belt turn loadless.

PLAN