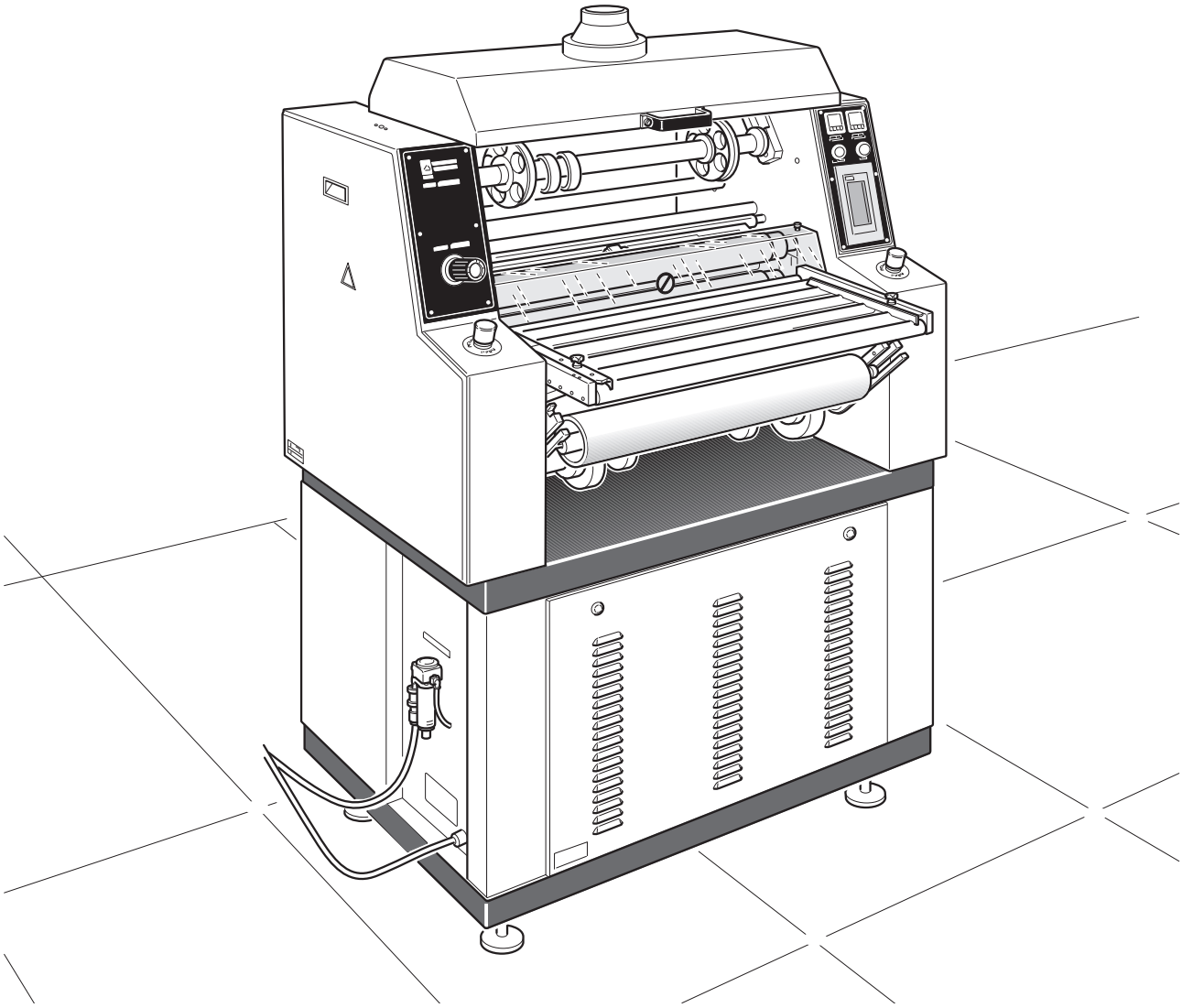
ELECTRONIC MATERIALS
CIRCUIT BOARD TECHNOLOGIES

ROHM AND HAAS

MANUAL LAMINATOR

3024

OPERATING AND SERVICE MANUAL



http://electronicmaterials.rohmhaas.com

Ed. Apr 2008

NOTICE

THIS INSTRUCTION MANUAL SHOULD BE READ CAREFULLY BEFORE INSTALLING, OPERATING OR PERFORMING MAINTENANCE ON THE MACHINE.

THE INFORMATION CONTAINED HEREIN IS CORRECT ACCORDING TO OUR KNOWLEDGE. ROHM AND HAAS, HOWEVER, IS NOT RESPONSIBLE FOR EVENTUAL INACCURACIES HERE DESCRIBED.

THE USER IS RESPONSIBLE FOR THE SAFE INSTALLATION AND OPERATION OF THE MACHINE.

WARRANTY (1/2)

The Equipment is made in accordance with EEC Directives and is subject to strict controls during production testing.

Rohm and Haas Italia SrL ("Seller") warrants to the entity identified on the purchase order to which this warranty is attached or referenced ("Buyer") that the equipment manufactured by Seller and delivered to Buyer (the "Equipment") will be free from defects in materials and workmanship for a period of twelve (12) months from the installation date, but not exceeding a period of fourteen (14) months from the shipping date.
In the event of a breach of the foregoing warranty during the warranty period, Seller will provide the following remedies:

- **During the first six (6) months from the installation date**, Seller will repair or replace any machine components ("Parts") with defective material and/or workmanship and will bear the cost of in-warranty technical services.
- **From the date that is six (6) months from installation date until twelve (12) months from the installation date**, Seller will repair or replace any Parts with defective material and/or workmanship. However, during that period, labour charges for technical services will be on Buyer's account.
- Seller warrants that all replaced or repaired Parts are free from defects in materials and workmanship for a period of six (6) months from the shipping date.

There is no warranty on any accessories or consumables.

In the event of any breach of Seller's warranty, Buyer must provide prompt written notification to the Seller describing with particularity the claimed breach. Seller will provide instructions related to the return of the defective Parts for repairing.

Neither Parts nor Equipment claimed to be defective can be returned without the prior written consent of Seller.

This warranty is valid only when the Equipment is installed in accordance with Seller's specifications.
This warranty will not reimburse or cover any damage resulting from adaptations or adjustments which may be made to the Equipment/Parts without the prior written consent of Seller.
This warranty will not cover any damage resulting from neglect or misuse, including, but not limited to, failure to use the Machine for its normal purpose or in accordance with Seller's instructions.

<u>This warranty DOES NOT reimburse/cover:</u>

- Technical engineer's costs for travel, lodging and meals while servicing any Equipment under warranty.
- Transportation costs for the Parts from the Buyer to the service point and their subsequent return and other costs and risks of transportation relating directly or indirectly to this warranty.

This warranty DOES NOT reimburse/cover any damage resulting from:

a) Improper installation or use of software in violation of any intellectual property rights; or
b) Accidents, lightning, water, fire, improper ventilation or any other cause beyond Seller's control; or
c) Defects of the system into which this Equipment is incorporated

This warranty will not apply if the type or serial number on the product has been altered, deleted, removed or made illegible.

WARRANTY (2/2)

Seller only will be liable for repairing and/or replacing defective Parts and for repairing any Equipment failure in accordance with the above mentioned conditions.

THE WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER STATUTORY, EXPRESS OR IMPLIED, AND, IN PARTICULAR, THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

In no event shall the Seller be liable for any consequential damages based upon breach of warranty, breach of contract, negligence, strict liability or any other legal theory.
Seller's liability will never exceed reimbursement of the purchase cost of the Equipment.

If you need assistance, whether or not under warranty period, please contact a Rohm and Haas Company authorized Service Centre, or Rohm and Haas Company or any of its affiliates directly as shown at

http://www.rohmhaas.com/locations.html.

SPECIAL RECOMMENDATIONS FOR THE OPERATOR

- The terms: right, left, upper, lower, etc. used in this manual to describe and locate the machine components and parts always refer to the correct position of the operator when inserting the panels during standard operation.

- Before starting to work on the machine, the operator must be completely familiar with this manual, the technical specifications of the machine and its controls.

- It is also advisable for the operator to attend a training period on how to use the machine.

- The mechanical parts and the electric components are located inside the machine and are protected by panels entirely closed by screws plus safety microswitches or interlocked switches.

- Before removing the safety protections to have access to the internal parts, make sure that the main power switch of the machine is in "**OFF**" Ⓞ position, so that there is no power into the machine when the operator works.

- During the installation, it is essential to provide a building line main switch and a ground system fully complying with industrial accident prevention regulations.

- Any control or periodic maintenance operations which require the removal of safety protections are to be intended as effected under the full responsibility of the User and therefore should be carried out only by authorized and skilled persons.

- **Rohm and Haas will not be responsible for accidents or damages to persons or things, when such fundamental safety rules are not complied with.**

- **Anyway such rules, together with all rules concerned with the installation of the machine and with electrical connections, are an integral part of the industrial accident prevention regulations of any single Country.**

- **Never carry out improvised or hurried repairs which might compromise good machine operation.**

- **SHOULD ANY DOUBT ARAISE ALWAYS ASK SKILLED ROHM AND HAAS PERSONNEL FOR INTERVENTION.**

- **Periodically check the efficiency of the safety devices and protections and make sure that they are operating.**

- **ANY ERRONEOUS INTERVENTION BY THE USER WILL IMPLY NO LIABILITY WHATSOEVER ON ROHM AND HAAS, AND THE USER SHALL BE FULLY LIABLE TOWARDS THE COMPETENT AUTHORITIES FOR ACCIDENT PREVENTION.**

DESCRIPTION OF THE SYMBOLS

Many accidents are caused by insufficient knowlegde of the safety regulations or failure to apply these instructions when running or servicing a machine.
To prevent accidents, it is essential to read, understand and comply with all the precautions and warnings contained in this manual and those reported on the safety plates fixed to the machine.
The following symbols have been used to identify the safety messages printed in this manual:

DANGER

This symbol is used to identify safety messages when these draw the operator's attention to situations of danger.

WARNING

This symbol is used to identify safety messages when these draw the operator's attention to situations of danger which, if ignored, could cause slight or moderate injuries or damages.
The message can be also used for dangers which can cause damages to the machine.

NOTE

This symbol is used to identify precautions the operator must take in order to avoid operations that could reduce the life of the machine, or to identify important information for the operator.

IMPORTANT

For clear information some of the illustrations in the manual show the machine without safety guards.

NEVER USE THE MACHINE WITHOUT SAFETY GUARDS.

GENERAL INDEX

INTRODUCTION

OPERATIONS

Manual realized by ***DUESSE service s.r.l.*** for ***Rohm and Haas Company***
Duesse Service srl - Samarate (VA) - Tel. 0331 / 22.09.13
Li 3024 - 08/xxxx

GENERAL INDEX

MAINTENANCE

SPARE PARTS

ELECTRIC DRAWINGS

OPTIONS

1.1 TECHNICAL FEATURES

GENERAL SPECIFICATIONS

- Max overall dimensions ("**ML**" version) (see fig. 01a)
  - Width ..... 1090 mm ..... 42.9"
  - Length ..... 822 mm ..... 32.4"
  - Height (min. ÷ max.) ..... 1760 ÷ 1845 mm ..... 69.3"÷72.7"
  - Maximum height with hood lifted ..... 1870 ÷ 1955 mm ..... 73.6"÷77.0"

- Max overall dimensions ("**SA**" version) (see fig. 01b)
  - Width ..... 1090 mm ..... 42.9"
  - Length ..... 1200 mm ..... xxx"
  - Height (min. ÷ max.) ..... 1760 ÷ 1845 mm ..... 69.3"÷72.7"
  - Maximum height with motor-driven roller conveyor lifted . 1990 ÷ 2075 mm ..... 78.3"÷81.7"

- Dimensions valid for all versions
  - Working height (min. ÷ max.) ..... 1025 ÷ 1110 mm ..... 40.4"÷43.7"
  - Transport speed adjustable (from ÷ to) ..... 0,3 ÷ 3 m/min ... 1.0÷10 ft./min
  - Tube diameter (exhaust) ..... 100 mm ..... 4.0"

PROCESSABLE PANEL DIMENSIONS

- Width (min ÷ max.) ..... 200 ÷ 640 mm ..... 7.9 ÷ 25.2"
- Dry-film width (min ÷ max.) ..... 200 ÷ 610 mm ..... 7.9 ÷ 24.0"
- Length (min ÷ max.) ..... 200 mm ÷ illimitata / 7.9 ÷ unlimited
- Thickness (min ÷ max.)
  - "**ML**" version ..... (**) 0,1 ÷ 12,7 mm ... 0.004"÷ 0.500"
  - "**SA**" and "**OC**" version ..... (**) 0,1 ÷ 6,4 mm ..... 0.004"÷ 0.25"

ELECTRICAL FEATURES

- Power type ..... single-phase 50/60 Hz + earth
- Power consumption ..... 2,4 kVA
- Nominal voltage ..... 230 V$^{\pm 7\%}$
- Building line main switch ..... I= 16A

PNEUMATIC FEATURES

- Operating pressure (min. ÷ max.) ..... 3 ÷ 6 kg/cm^2 / 42.7 ÷ 85.3 psi
- Consumption ..... 2 Nl/cycle ..... 0.07 cfm

AMBIENT FEATURES

- Ambient humidity ..... max 50%
- Ambient temperature (min. ÷ max.) ..... 15 ÷ 26 °C

Gross weight ..... 350 kg ..... 727 lbs

Net weight

- Version "**ML**" ..... 210 kg ..... 463 lbs
- Version "**SA**" and "**OC**" ..... 240 kg ..... 529 lbs

** It is possible to supply the machine to work bigger thicknesses at the Customer request.

“ML” version

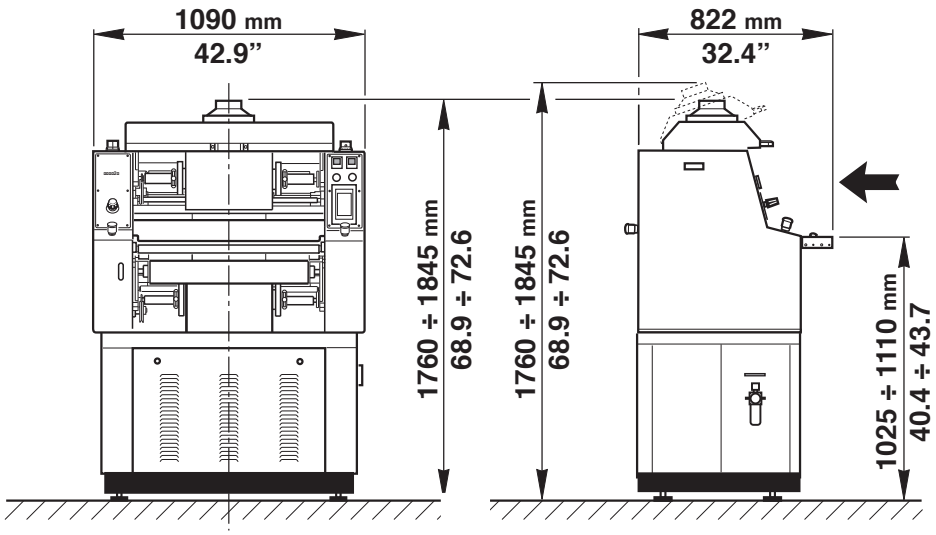


Fig. 01a

OVERALL DIMENSIONS

“SA” version

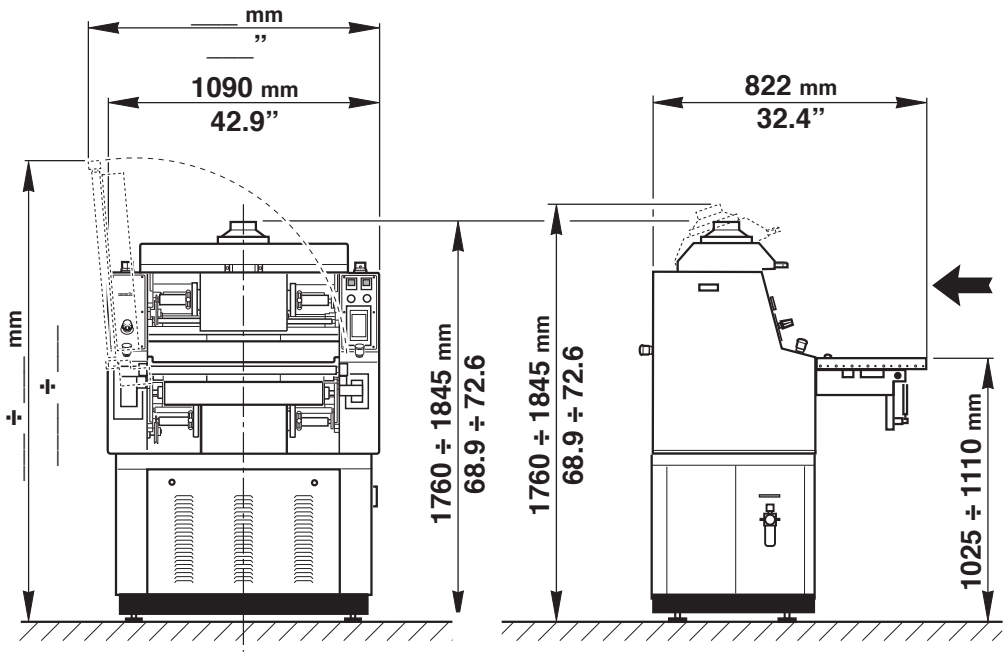


Fig. 01b

Note: Allow 500 mm (19.68”) on each side where the operator must work

1.2 - GENERAL DESCRIPTION

- The Laminator mod. 3024 has been designed and built to use all types of Photoresist Dry Film.
  It can be used to laminate the Dry Film with rigid or flexible materials on one or both sides of the printed circuit.

- The combination of pressure (of the lamination rollers) and heat action (with heating elements inside the rollers) allows the lamination of Dry Film on both rigid and flexible materials with a maximum width of 635mm and a thickness between 0.1mm a 5.0mm.

- The performance of the machine depends on many operational variables such as:
  - the size of the board,
  - the characteristics of the Dry Film,
  - the board feeding system
  - etc.

1.3 - CHARACTERISTICS (fig. 02 - 03)

- The 3024 operation is entirely managed by a PLC, which in addition to managing the machine also diagnoses anomalies that are highlighted by the “ALARMS” (4) warning lights on the control panel and displayed on the digital display set on the control panel (see fig. 07).

- Both the laminating rollers (18) are motor driven and heated from inside by two glow plugs (19). The temperature is detected directly on the surface of the rollers by accurate copper roller thermocouples. The temperature is managed by two digital indication thermo-regulators (posit. 1 and 2 figure 07).

- The transport speed of the boards to be laminated can be set from the touch screen keyboard to between 0.3 and 3 m/min, depending on the processing requirements.

- **In the “ML” version** (manual laminator) (fig.02), the infeed roller conveyor (5), not motor driven, is foldable and removable to facilitate the loading of the Dry Film reels and give an easy access to the lamination rollers.

- Two manually positioned centring guides (6) are located on the infeed roller conveyor (5) for the correct feeding of the boards to the lamination rollers.

- **In the “SA” version** (semi-automatic laminator) (fig.03), the infeed roller conveyor (23) is motor driven and fitted with an automatic centring device (24) for the correct positioning of the boards to be laminated in the centre of the lamination rollers. This roller conveyor can be manually folded back to facilitate the loading of the Dry Film reels and an easy access to the lamination rollers.

- **For all the machine configurations**, a hood (16) can be supplied on request complete with a fan (17) for the aspiration of the fumes from the Dry Film during the lamination.
  An outlet pipe must be connected to this hood as described in paragraph 1.5.F.

Fig. 02

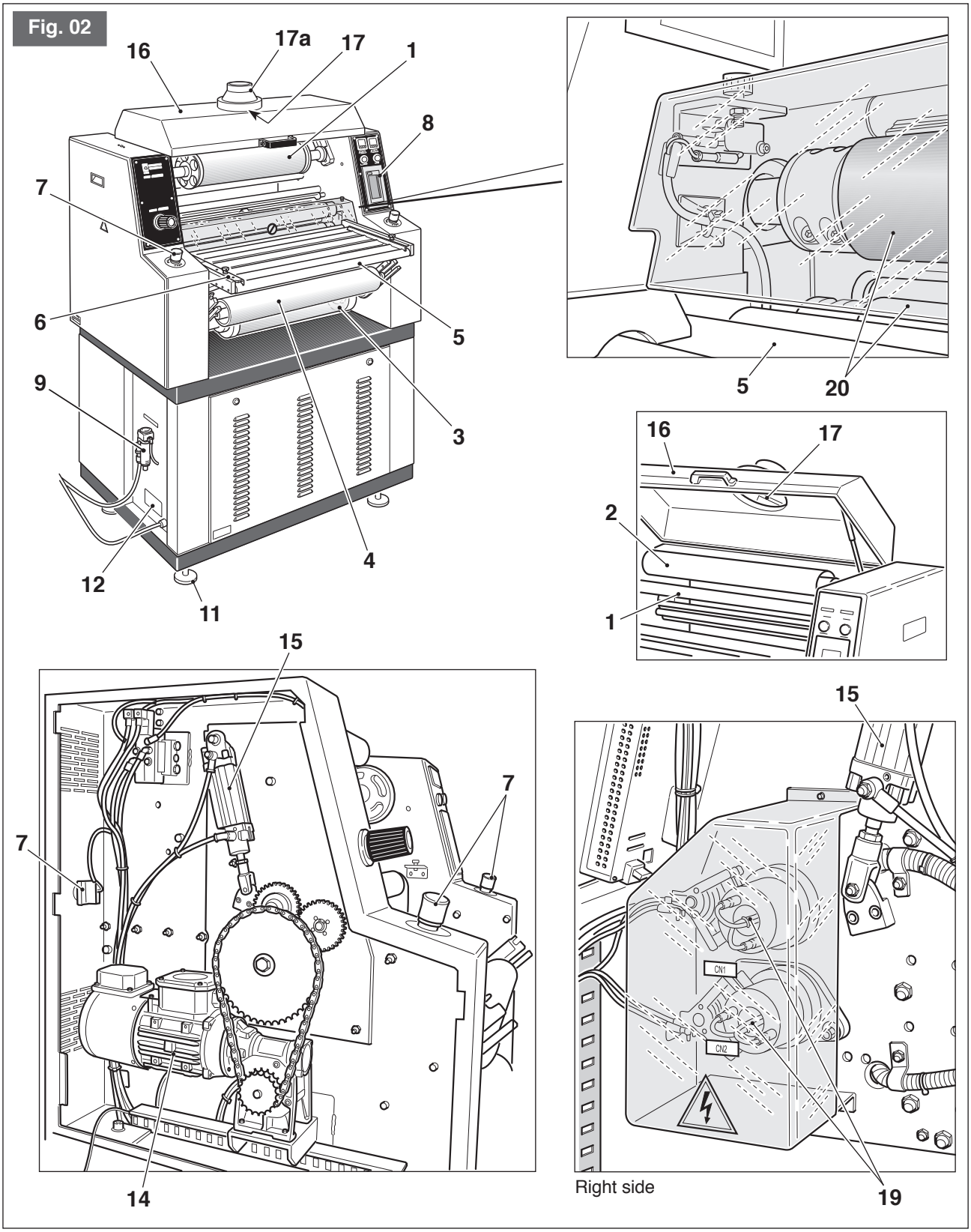


Fig. 02 - GENERAL MACHINE DESCRIPTION - **"ML" Version**

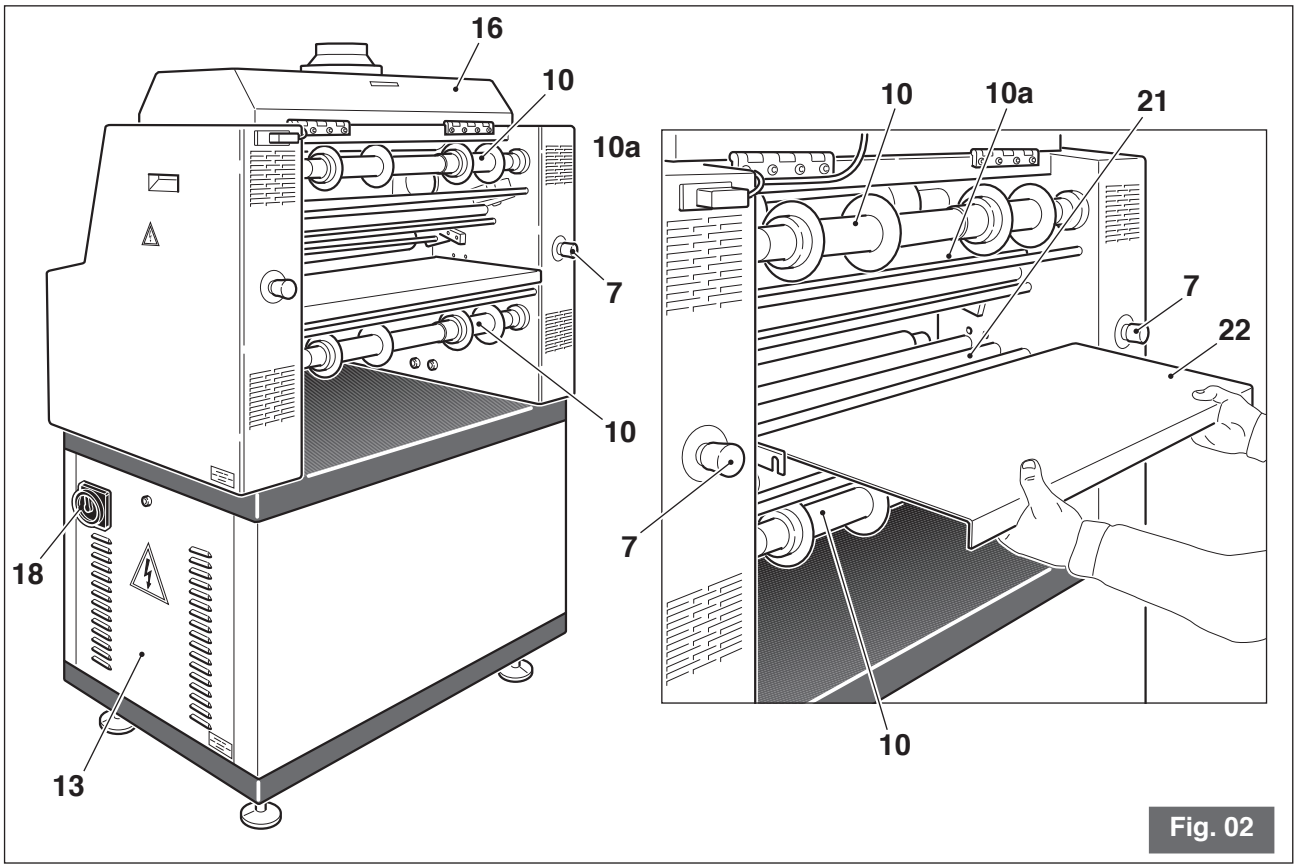
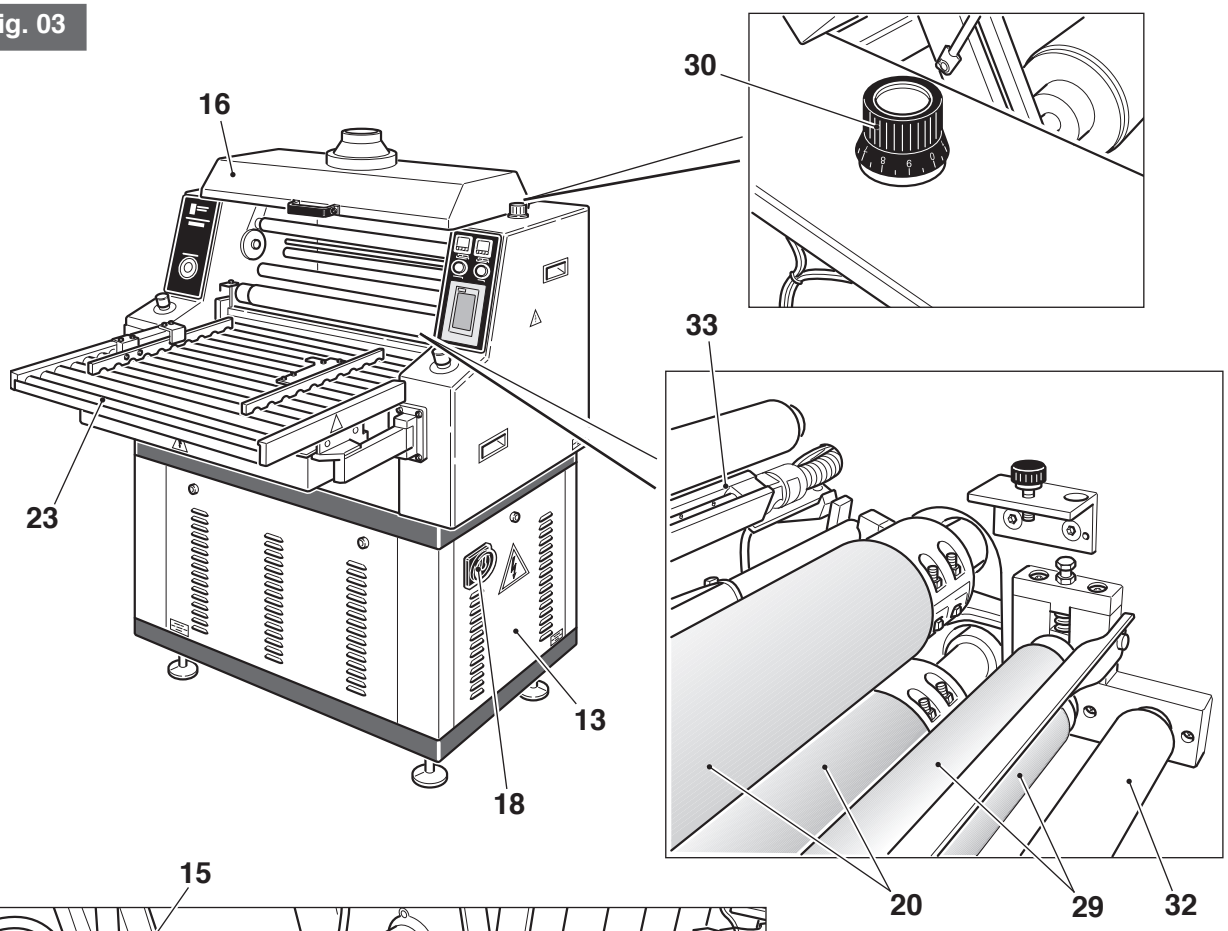


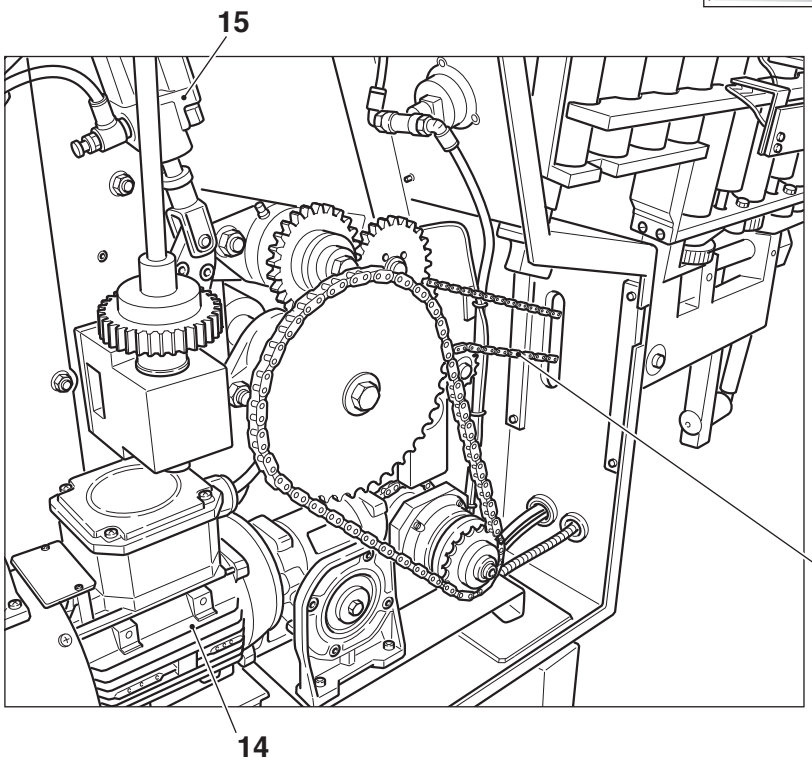
Fig. 02 - GENERAL MACHINE DESCRIPTION - **"ML" Version**

Legend ("ML" Version)

1 - Dry-film upper reel
2 - Upper polyethylene collection roller
3 - Dry-film lower reel
4 - Lower polyethylene collection roller
5 - Infeed roller conveyor - not motor driven (foldable and/or removable)
6 - Board centring guide
7 - Emergency stop pushbutton
8 - Control panel
9 - Compressed air adjustment unit
10 - Lateral cutting units (optional)
10a - Dry Film lateral cutting positioning guidelines (optional)
11 - Support feet
12 - Machine identification plate
13 - Electric panel
14 - Roller drive gear motor
15 - Lamination roller opening/closing pneumatic cylinder
16 - Air aspiration hood (optional)
17 - Air suction fan (optional)
17a - Fumes outlet pipe connection joint
18 - Master switch
19 - Heating elements
20 - Lower and upper lamination rollers
21 - Outfeed roller conveyor
22 - Outfeed surface for thin boards (optional)

Fig. 03



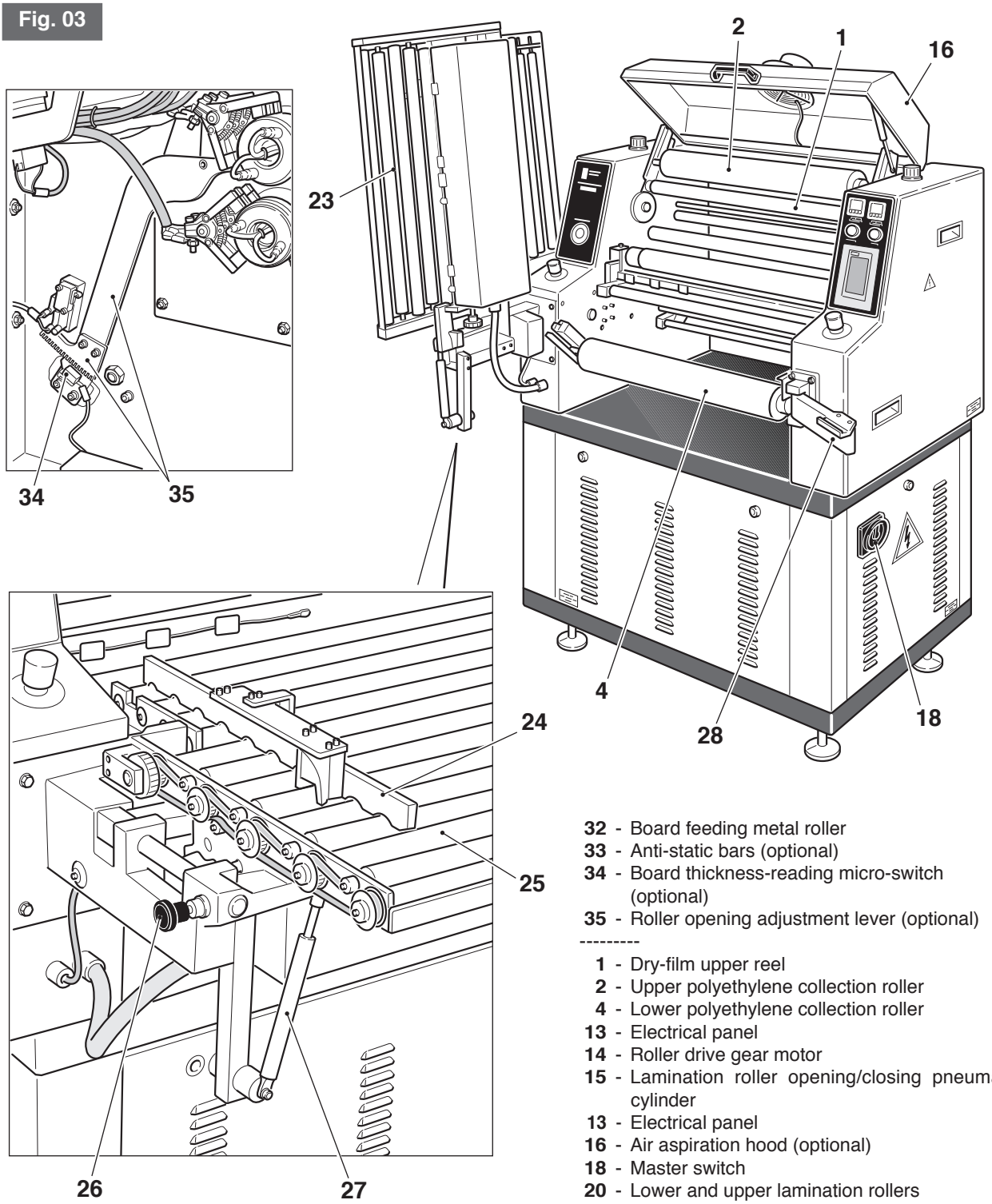


Legend ("SA" Version)

- **23** - Foldable motor driven roller conveyor
- **24** - Motor driven board centring device
- **25** - Infeed roller conveyor rollers
- **26** - Roller conveyor folding lock pin
- **27** - Infeed roller conveyor closing gas spring
- **28** - Foldable roller conveyor support
- **29** - Board feeding motor driven rubber-covered rollers
- **30** - Lamination rollers opening adjustment handle
- **31** - Infeed roller conveyor drive chain

Fig. 03 - GENERAL MACHINE DESCRIPTION - **"SA" Version**

Fig. 03



32 - Board feeding metal roller
33 - Anti-static bars (optional)
34 - Board thickness-reading micro-switch (optional)
35 - Roller opening adjustment lever (optional)

---

1 - Dry-film upper reel
2 - Upper polyethylene collection roller
4 - Lower polyethylene collection roller
13 - Electrical panel
14 - Roller drive gear motor
15 - Lamination roller opening/closing pneumatic cylinder
13 - Electrical panel
16 - Air aspiration hood (optional)
18 - Master switch
20 - Lower and upper lamination rollers

Fig. 03 - GENERAL MACHINE DESCRIPTION - **"SA" Version**

- An automatic device (36) for detecting the thickness of the board to be laminated can be supplied on request, allowing the safe processing of boards up to 12.7 mm thick.
  This device preserves the integrity of the laminating rollers and avoids damaging their rubber surfaces.

- To laminate material on reels, a “Roll to Roll” module can be supplied on request allowing the unwinding of the reel upstream of the machine and the automatic rewinding in outfeed from the laminator.

- Refer to the following paragraphs for the technical specifications and functionality of Laminator mod. 3024.

NOTE

The machine is equipped with safety devices in compliance with the safety regulations in force.

1.4 MACHINE IDENTIFICATION

(picture 1)

- The serial number and identification data of the machine are punched on a plate (12) fixed to the side of the electric panel (underneath the compressed air connection unit).

NOTE

Always indicate the serial number of the machine when requesting technical servicing or when ordering spare parts.

1.4.A - Check at reception.

- After removing the packing, make sure that the machine has not been damaged during transport.
- Check for damages to the machine structure and for crushed, torn or broken electrical cables.

NOTE

Should damages to the machine or its accessories be discovered, immediately inform in writing our Technical Service Department or the Area Agent (no later than 8 days after reception date).

1.5 - PRELIMINARY CHECKS AND INSTALLATION

1.5.A - Installation

- The machine, either installed alone or in line, must be positioned in strict compliance with the indications in the Table "OVERALL DIMENSIONS" which give the minimum space required by the operator to carry out correctly each work sequence and/or servicing operation.
- The machine is equipped with a power cable without plug, and it is set to operate with voltages 50/60 Hz mono-phase plus earth (as reported in the TECHNICAL FEATURES table).
- It is possible to supply other voltages when ordering, by previous agreement.

WARNING

Before connecting the power supply, make sure that the characteristics of the electrical power supply comply with the values on the identification plate of the machine (pos. 12 - picture 01).

NOTE

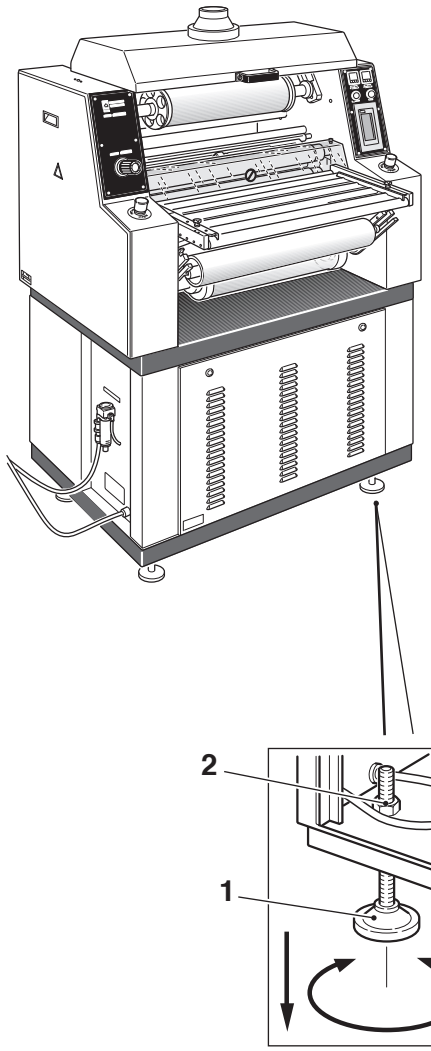
For the electrical wall connection, the power supply line must be equipped with a switch as indicated in the chapter "Technical Features", and the cable section must be adequate for such current value.
Voltage variations must not exceed ±7% of the rated value.

1.5.B - Machine positioning and leveling (picture 04)

Place the machine in its established place, adjust its height and level the conveyor height by means of the support feet (1) as follows:

1- Loosen the nuts (2) of all support feet of the unit.
2- Turn the feet to adjust the height of the machine and level the conveyor height.
3- Once completed the operation, lock the feet in place by tightening the nuts (2).

Fig. 04



Picture 04 - MACHINE POSITIONING

1.5.C - Electrical connection

- Before connecting the machine directly to the mains electricity supply, make sure that the mains are:
  - fitted with a cut-out switch of at least 16A, like a motor protector;
  - correctly earthed;
- Also make sure that the mains cable section can carry the current required.

ATTENTION

The voltage variations must not exceed ± 7% from the nominal value.

1.5.D - Pneumatic connection (picture 05)

The coupling for pneumatic connection to the factory compressed air supply is placed externally at the bottom of the left side (see picture 03).
Connect the built-in ON/OFF valve (1) to the compressed air supply line, bearing in mind that the operating pressure of the machine is indicated in the chapter "Technical features".

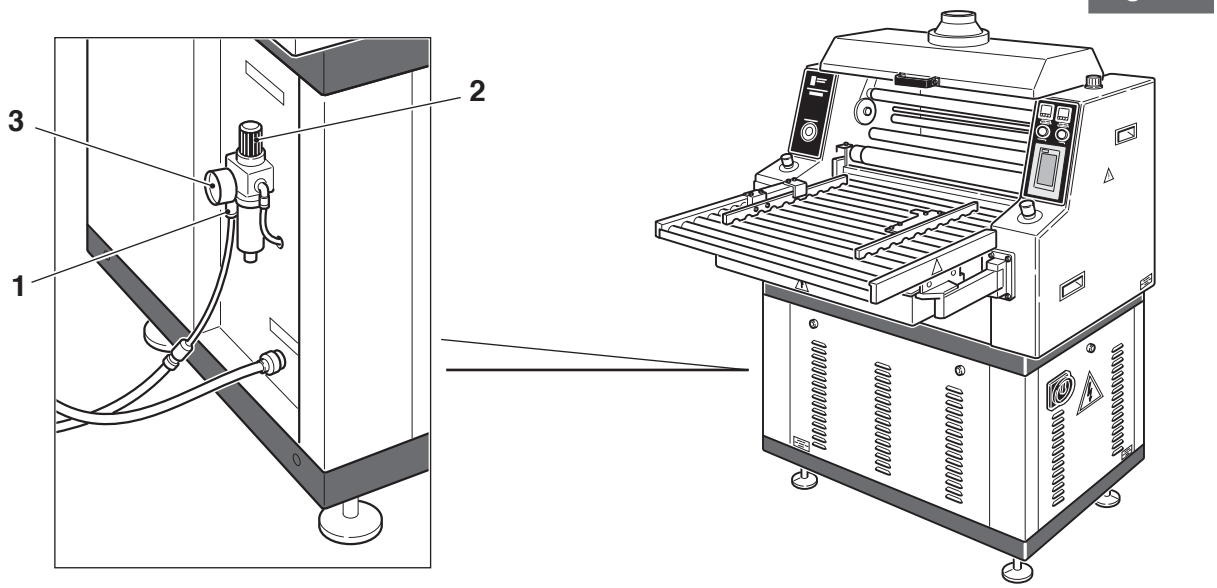
NOTE

- *A pipe with a minimum inner diameter of 8 mm and external diameter of 6 mm is required for the connection.*
- *The machine is supplied with the operating pressure already set by the pressure regulator (2), therefore no further adjustments are required before starting the machine.*
  However, we recommend to check the value on the manometer (3) to prevent pressure from dropping below 4 atm.

WARNING

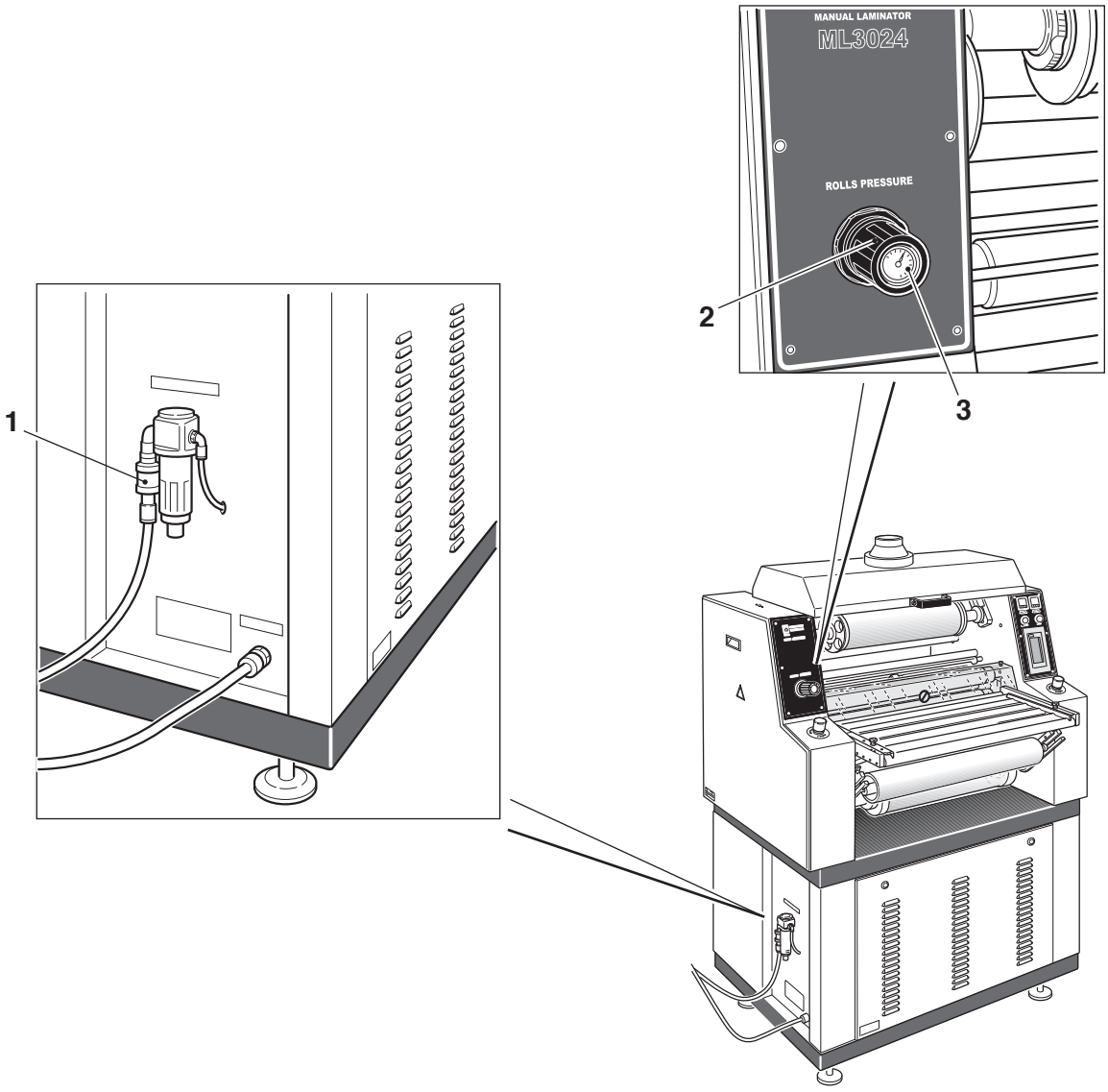
The pneumatic system of this Laminator has been designed and built with dry components, therefore lubricated air must not be used.

Fig. 05a



Picture 05a - PNEUMATIC CONNECTION - **"SA" Version**

Fig. 05b



Picture 05b - PNEUMATIC CONNECTION - **"ML" Version**

1.5.E - Electrical connection of the aspiration hood (fig. 06)

The fume aspiration hood (1) can be supplied on request.
For the electrical connection of the fan (2) insert the plug (3) in the socket (4) located in the rear of the machine.

1.5.F - Aspiration hood exhaust pipe connection (fig. 06)

When the fume aspiration hood (1) is present, connect an outlet pipe for discharging the fumes outside the working environment to the connection joint (5).
The laminator can be supplied with a flexible pipe (6) diameter 100mm (5 m long) and two pipe clamps (7) to connect the hood (1) to the centralised aspiration system.

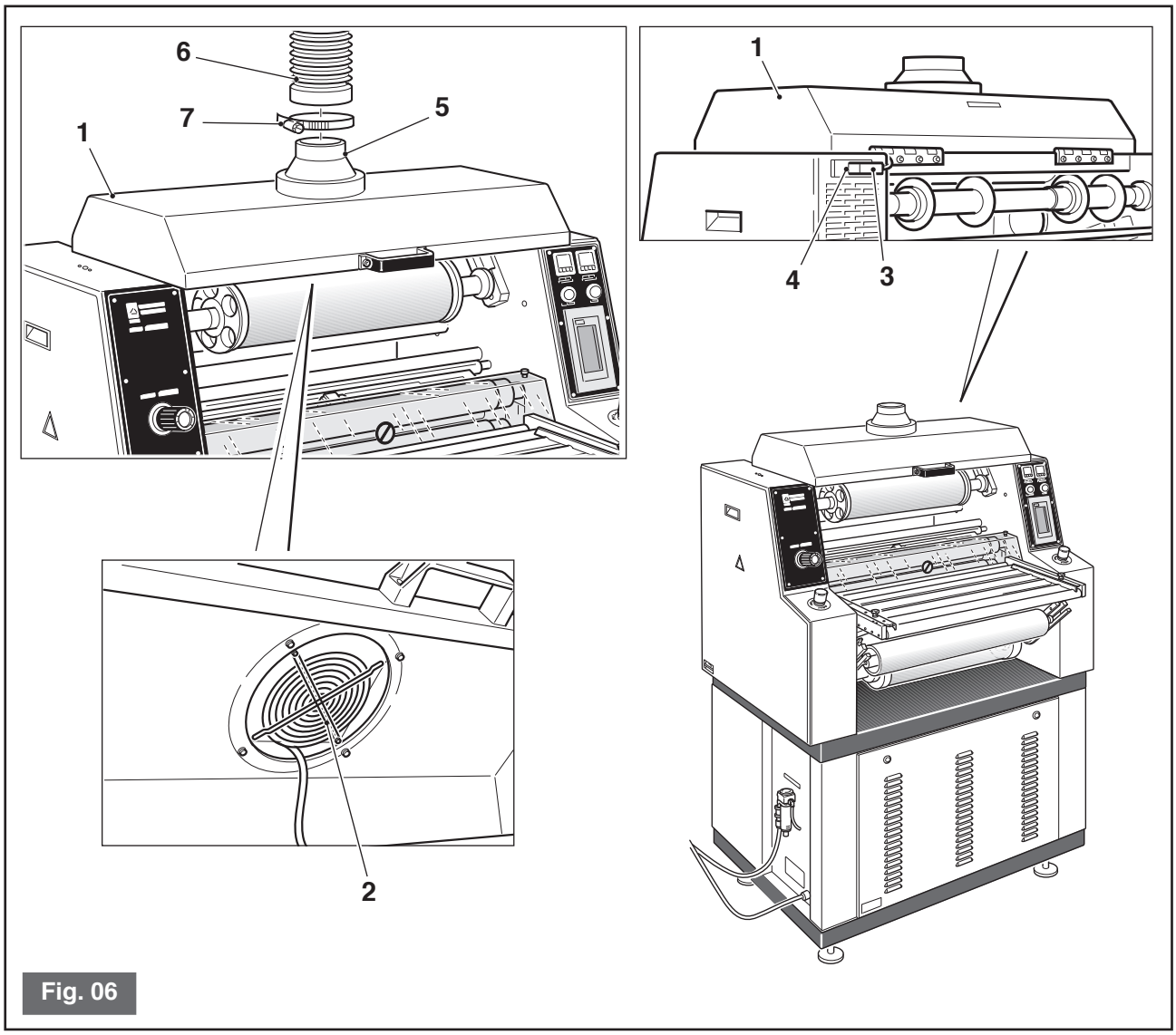


Fig. 06

Fig. 06 - CONNECTION OF FUME ASPIRATION PIPE AND HOOD

2.1 - CONTROL PANEL (fig. 07)

This paragraph contains the instructions for the correct use of the controls and instruments on the machine control panel.

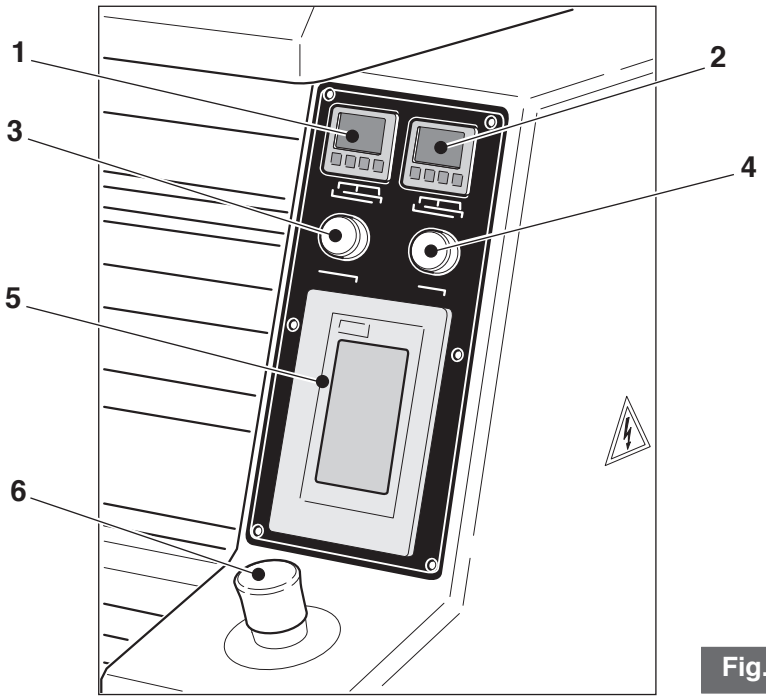


Fig. 07

LEGEND

1 - "UPPER ROLLER TEMPERATURE CONTROL" Digital heat regulator

2 - "LOWER ROLLER TEMPERATURE CONTROL" Digital heat regulator

3 - "POWER ON" White warning light

4 - "ALARMS" Red warning light

5 - **Display**
The display shows every fault that could occur during machine operation, providing the operator with all the updated details. The machine functions can be set or modified by following the instructions on the display.
The self diagnosis, performed by the PLC, is shown on the display with a series of messages described in paragraph 6.1.

6 - Emergency pushbutton

Fig.07- CONTROL PANEL

- ***UPPER ROLLER AND LOWER ROLLER TEMPERATURE CONTROL***
  (posit. 1 and 2 - fig. 07)
  The two digital heat regulators detect and manage the surface temperature of the two lamination rollers
  A section in the appendix provides a complete explanation on the configuration and settings of the parameters necessary for operation (the latter are set during the final setting up of the machine).

- ***"POWER ON" white warning light***
  (posit. 3 - fig. 07)
  The warning light on indicates that the master switch is in the **I** position, the machine is on and therefore ready to run.

- ***"ALARMS" red warning light (posit. 4 - fig. 07)***
  When alight, this warning light indicates an alarm present.
  In this case the alarm cause must be cleared before continuing to work.

  The complete list of alarms can be found in section 4.

2.2 - MAIN SWITCH

(Fig. 08)

- **Main switch.**
  To start the machine, it must be turned to **ON** (I) the main switch (1), in clockwise versus.

⚠ DANGER

Before making any maintenance operation, makesure that the main switch is OFF (O) .

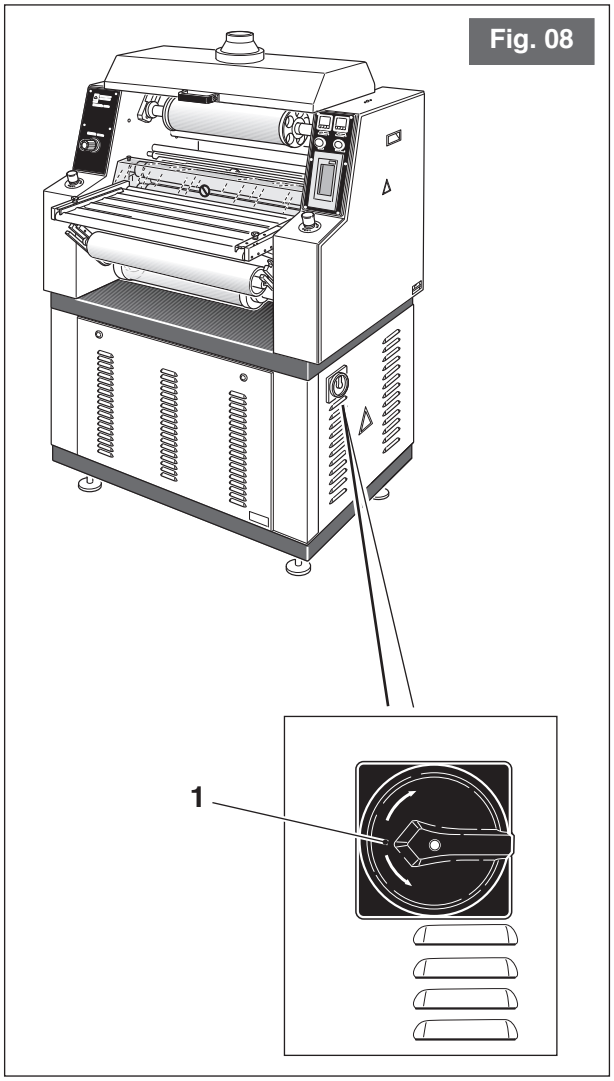


Fig. 08 - MASTER SWITCH

3.1 - MACHINE PREPARATION

After having correctly completed the machine installation operations as described in the preceding pages, load the Dry Film reels into the machine proceeding as follows:

- Remove or lift the infeed roller conveyor (1) to facilitate the reel loading operations.

Only for machines with motor driven roller conveyor (2) (fig.10)

If the machine is fitted with a motor driven roller conveyor (2) proceed as follows (figure 10):

- Lift the aspiration hood (3).
- Pull out the roller conveyor release pin (3a) and completely lift the roller conveyor (2) until it couples again with the pin (3a).

DANGER

Make sure that the roller conveyor is completely lifted and hooked onto the locking pin (3) before releasing it.

- Remove the upper (4) and lower (5) polyethylene recovery rollers.
- Remove the reel-holder rollers (6) and place the Dry Film reels on them.
- Put the reels (6) in the machine, centring them on the machine centre line.
- Route the film following the diagram shown on the left shoulder of the machine and illustrated in figures 11 and 12.
- Adjust the lateral cutter units, if present, using the micrometric guidelines for correct positioning.
- Return the infeed roller conveyor to the horizontal position.

Only for machines with motor driven roller conveyor (2)

If the machine is fitted with a motor driven roller conveyor (2) proceed as follows (figure 10):

- Turn the roller conveyor support arm (7) towards the front part of the machine.
- Pull outwards the roller conveyor release pin (3a) and completely lower the roller conveyor (2) until it couples again with the pin (3a).

WARNING

Make sure that the roller conveyor is correctly supported on the support arm (7).

Fig. 09

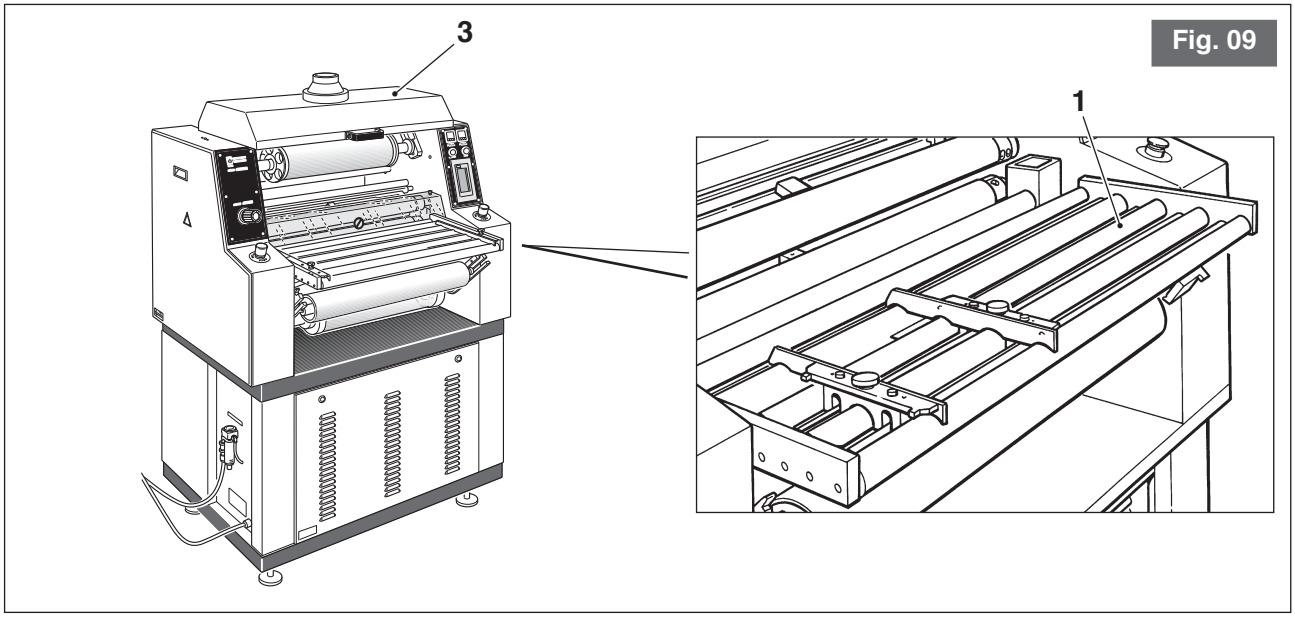


Fig. 09 - MACHINE START-UP

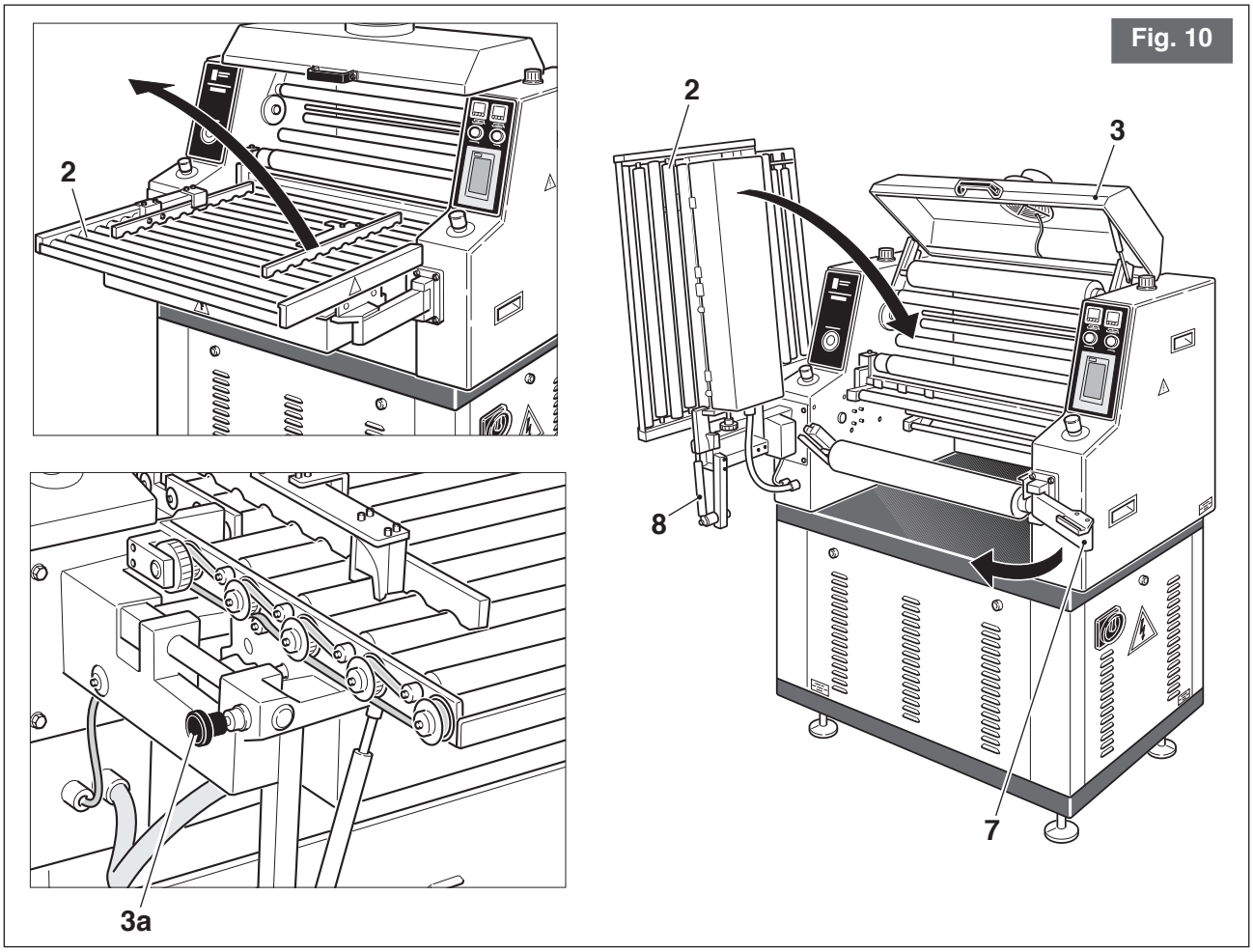


Fig. 10 - MACHINE START-UP – MOTOR DRIVEN ROLLER CONVEYOR

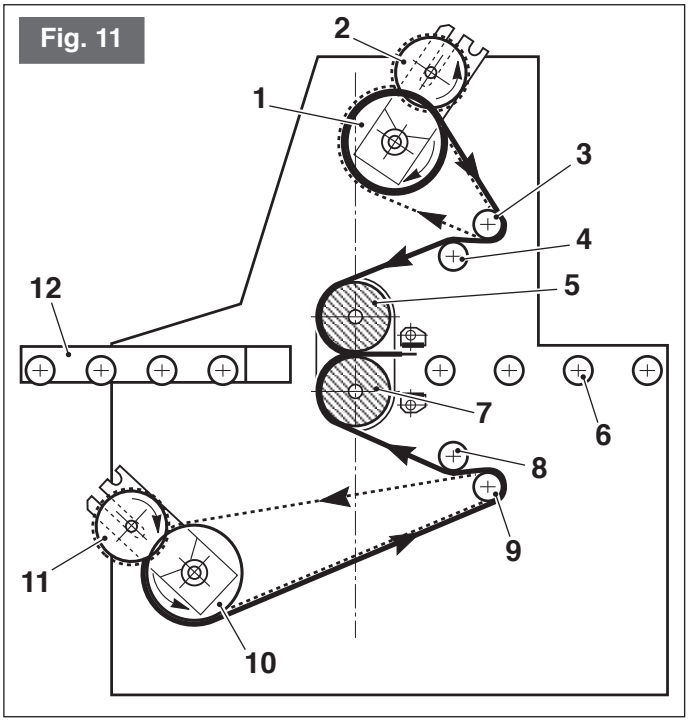
The gas spring (8) facilitates the roller conveyor closing operation but it cannot support its weight. Support the roller conveyor during the opening and closing operations.

- Power up the machine and proceed as shown in the flow-chart.

3.2 - DRY-FILM ROUTE DIAGRAM

The diagrams below illustrate the correct routing of the Dry film and polyethylene.

Fig. 11



LEGEND

- **1** - Dry-Film upper reel
- **2** - Upper polyethylene collection roller
- **3** - Upper polyethylene separation roller
- **4** - Idler roller
- **5** - Upper lamination roller
- **6** - Outfeed roller
- **7** - Lower lamination roller
- **8** - Lower polyethylene separation roller
- **9** - Idler roller
- **10** - Dry-film lower reel
- **11** - Lower polyethylene collection roller
- **12** - Infeed roller conveyor
- **13** - Lateral cutting collection upper roller
- **14** - Lateral cutting collection lower roller
- **15** - Lateral cutting unit

Fig. 11 - DRY-FILM AND POLYETHYLENE ROUTE

Fig. 12

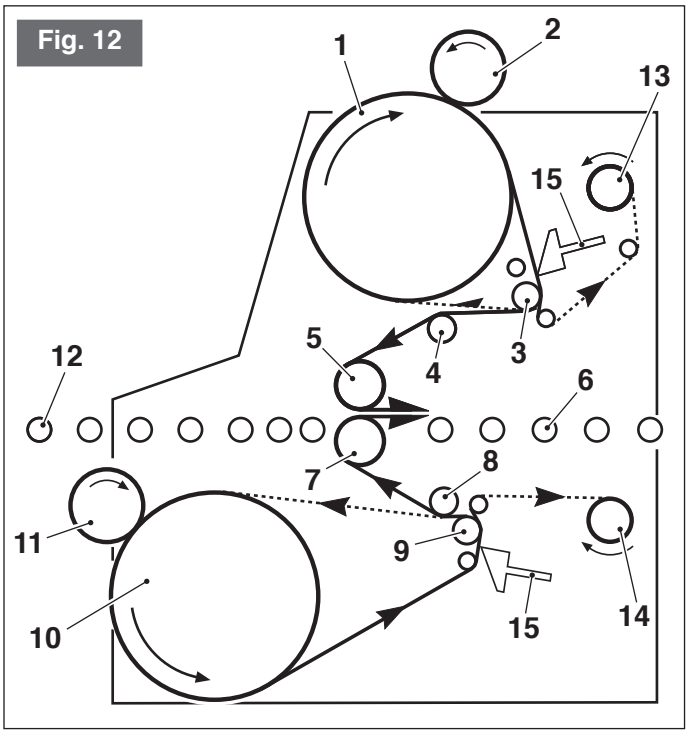


Fig. 12 - DRY-FILM AND POLYETHYLENE ROUTE WITH LATERAL CUTTING

3.3 - STARTING UP THE MACHINE

After powering up the machine, adjust the board infeed centring guides according to the size of the boards.

Based on the processing requirements, from the display set the processing parameters as shown on the flow-chart.

To set the correct temperature of the lamination rollers, adjust the heat regulators as described in the following paragraph.

Wait until the temperature of the lamination rollers (3) stabilises on the pre-set set point value.

At this point the machine is ready to run.

NOTE

When laminating very thin boards it is advisable to position the board outfeed surface (P) (optional) on the outfeed roller conveyor (S) (fig. 13).

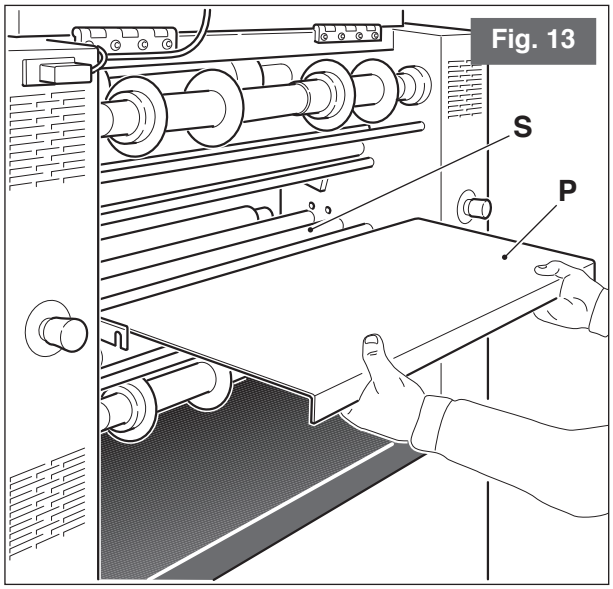


Fig. 13 - SURFACE FOR THIN BOARDS

3.4 - SETTING /PROGRAMMING OF HEAT REGULATORS (Fig. 10)

- This paragraph describes how to operate on the heat regulators that manage the lamination roller temperature.
- The instrument used is a microprocessor digital temperature regulator with functions for self-learning of the machine variables.
- Programming is done with three keys (, and) located on the front.

When the machine is turned on, the instrument displays the temperature detected on the lamination roller surfaces and the set temperature (fig. 14).

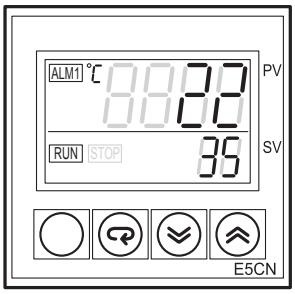


Fig. 14

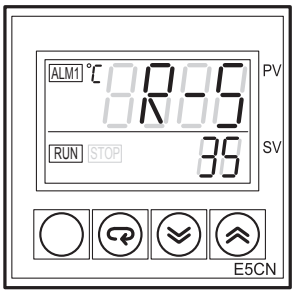
Detected temperature

Set temperature

To modify the set temperature use keys and

When the key ⟲ is pressed the instrument switches on, enabling the heat regulation function.
The display visualises in this way:

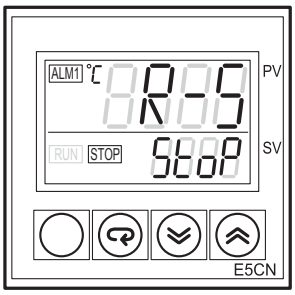
Fig. 15



Set temperature

To disable the instrument, press key ⟱ .
In this condition the lamination rollers do not heat up.

Fig. 16



Set temperature

To reactivate the instrument, press the key ⟰ .

3.5 - RECOMMENDATIONS FOR USE

- **The width of the film must be chosen based on the width of the plates to be laminated, but by using devices with a lateral size that is greater or less (optional) larger reels can also be used.**
- **When feeding the boards on the infeed roller conveyor, keep the boards at a distance of about 10 mm from each other to allow a correct cutting of the film in outfeed.**
- **The height of the upper brush for eliminating the dust must be adjusted according to the thickness of the board to be laminated (use the two special knobs to adjust the height).**
- **The board centering guides located on the infeed roller conveyor must be adjusted according to the width of the boards to ensure their smooth feeding.**
- **The lamination must always take place in the centre part of the rollers to avoid the formation of folds and an inconsistent pressure of the rollers.**
- **The thermal action on the rollers can be disabled by positioning the heat regulator to "Stop" (see figure 16).**

3.6 - CALIBRATING THE “BAUMER” FHDK-07P6901 PHOTOCELLS

To calibrate the photocells proceed as follows:

- Press pushbutton (1) for 4sec. (LEDs flash).
- Place a white sheet 5mm away (minimum reading distance) and briefly press the pushbutton (1).
- Place a white sheet 5mm further away than the normal reading conditions (maximum reading distance) and briefly press the pushbutton (1).
- On completion check the exact working efficiency:
  - both LEDs “OFF” - the photocell does not detect any object

  - both LEDs “ON” - the photocell detects the presence of the object

5.1 PLC INPUT/OUTPUT LIST

PLC INPUT

I_00 - Emergency push buttons line
I_01 - Safety guard microswitches line
I_02 - Signal from inverter
I_03 - Rolls protection grup microswitch
I_04 - Thickness detection photocell (optional)
I_05 -
I_06 - Machine type selection #1
I_07 - Machine type selection #2

I_16 - Roller and centering unit lifted microswitch (optional)
I_17 - Panel detecting photocell (optional)
I_18 - Centering unit barrier photocells (optional)
I_19 - Left & right centering unit slowing down photocells (optional)
I_20 - Left & right centering unit breaking photocells (optional)
I_21 - Sensor for centering unit control open (optional)
I_22 - Sensor for centering unit control closed (optional)
I_23 - Overtravel microswitch for opening / closing centering unit (optional)

PLC OUTPUT

O_32 - Alarm lamp
O_33 - Set-Up contactor
O_34 - Rolls closing EV
O_35 - Rolls pressure EV
O_36 - Enable forward for conveyor motor
O_37 - Enable backward for conveyor motor
O_38 - Enable for centering unit motor (optional)
O_39 - Command for centering unit direction OFF=Closing ON=Opening (Optional)
O_40 - Command for lateral cutting motors (Optional)
O_41 - Command fot lamination rolls clutch (Optional)
O_42 -
O_43 -
O_44 -
O_45 -
O_46 -
O_47 -

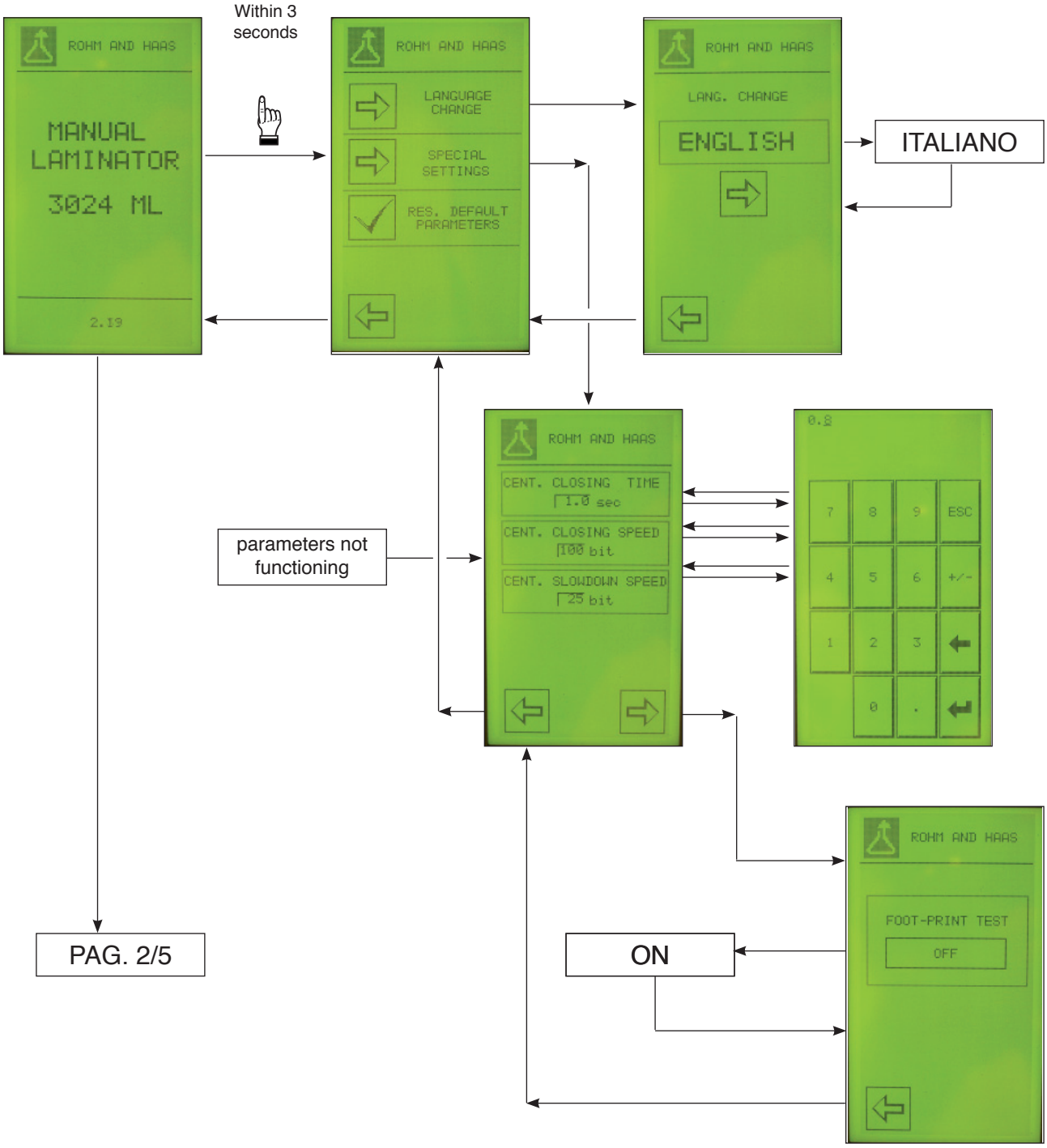
6.1 ALARMS LIST

ALLARM cod. -11- ---------- EMERGENCY-STOP PRESSED	The machine has been stopped by one of the emergency pushbuttons.
ALLARM cod. -12- ---------- SAFETY GUARDS OPEN	The machine has stopped and does not restart because one or more lateral safety guards have been opened (SM1A-SM1B).
ALLARM cod. -13- ---------- INVERTER MALFUNCTIONING	The machine has stopped and does not restart because the inverter signals that there is a voltage overload on the transport motor.
ALLARM cod. -14- ---------- ROLLS PROTECTION REMOVED	The machine has stopped and does not restart because the roller safety guard has been removed (FC3).
ALLARM cod. -15- ---------- ROLLER / CENT.UNIT LIFTED	The machine has stopped and does not restart because the roller conveyor/centring device is not in the work position (only SA/OC versions).

ALLARM cod. -16- ---------- CENTERING UNIT IN OVERTRAVEL	The machine has stopped and does not restart because during the centring device opening/closing the relative overrun has been interested (FC23A - FC23B) (only SA/OC versions).
ALLARM cod. -19- ---------- LOW LEVEL PLC BATTERY	See manual 302FB PAG. IIf-1
ALLARM cod. -21- ---------- CENTERING OPENING MAX. TIME	The machine has stopped because during opening sensor SI21 is not reached within the maximum time (only SA/OC versions).
ALLARM cod. -22- ---------- CENTERING CLOSING MAX. TIME	The machine has stopped because during closing sensor SI22 is not reached within the maximum time (only SA/OC versions).

6.2 FLOW DIAGRAM

"ML" version

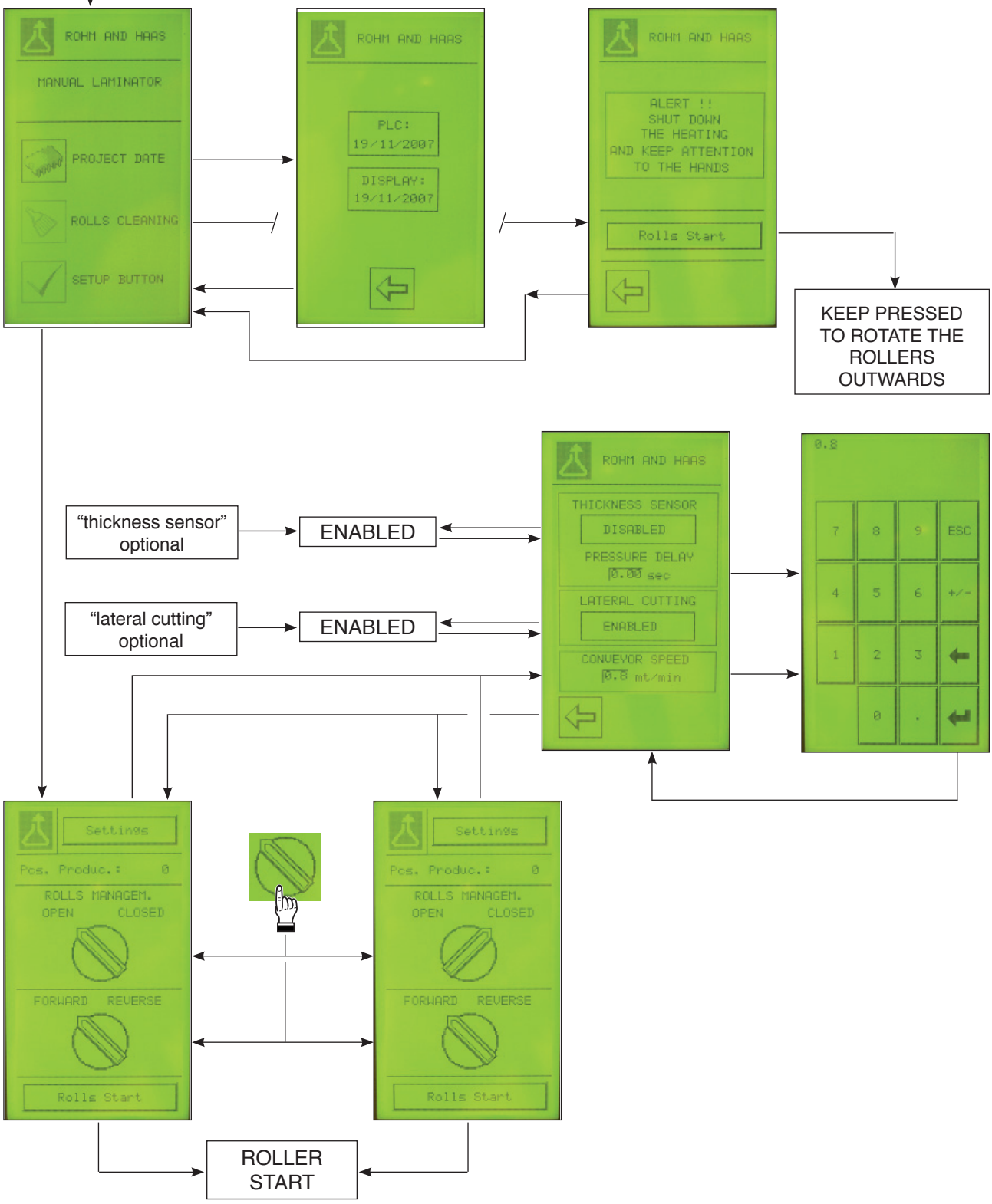


6.2 FLOW DIAGRAM

"ML" version

PAG. 1/5

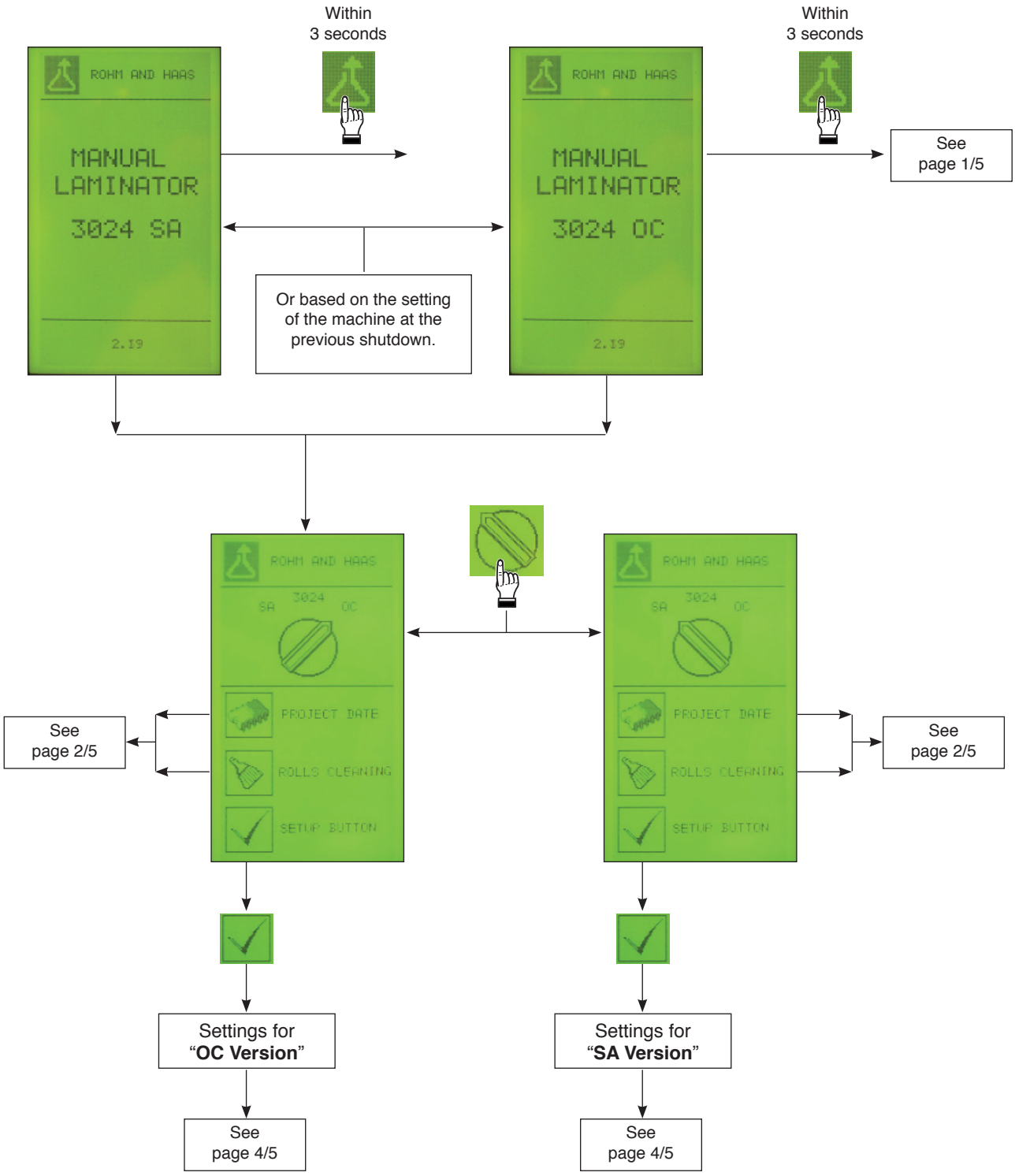
PAG. 2/5



6.3 FLOW DIAGRAM

"SA" - "OC" versions

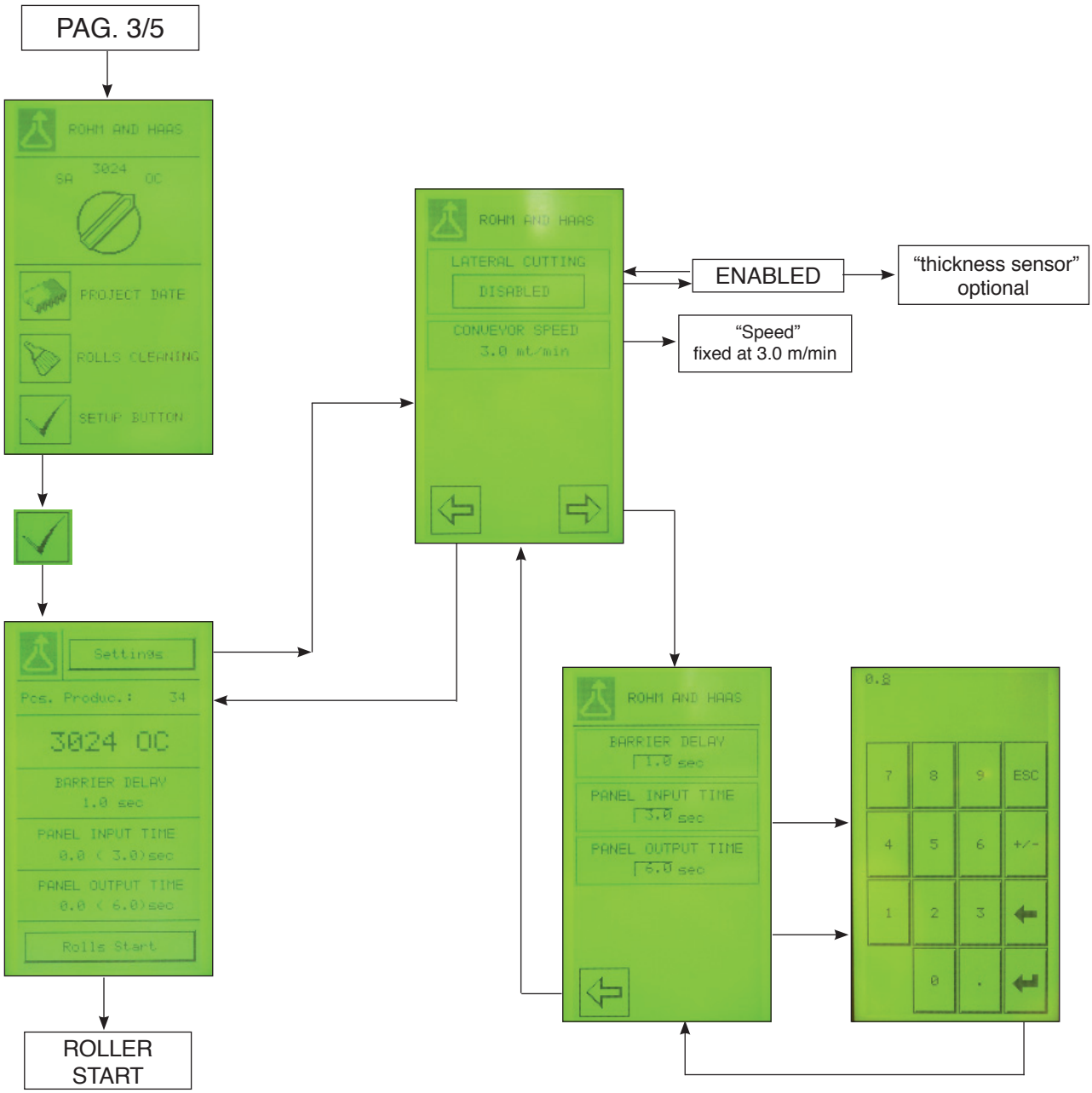
PAG. 3/5



6.4 FLOW DIAGRAM

"OC" version

PAG. 4/5



BARRIER DELAY

Time that elapses from when the centring device photocells "FT18a/b/c" detect the board presence to the closing of the centring device.
The centring device opens when the photocell "FT17" detects the board presence.

BOARD INFEED TIME

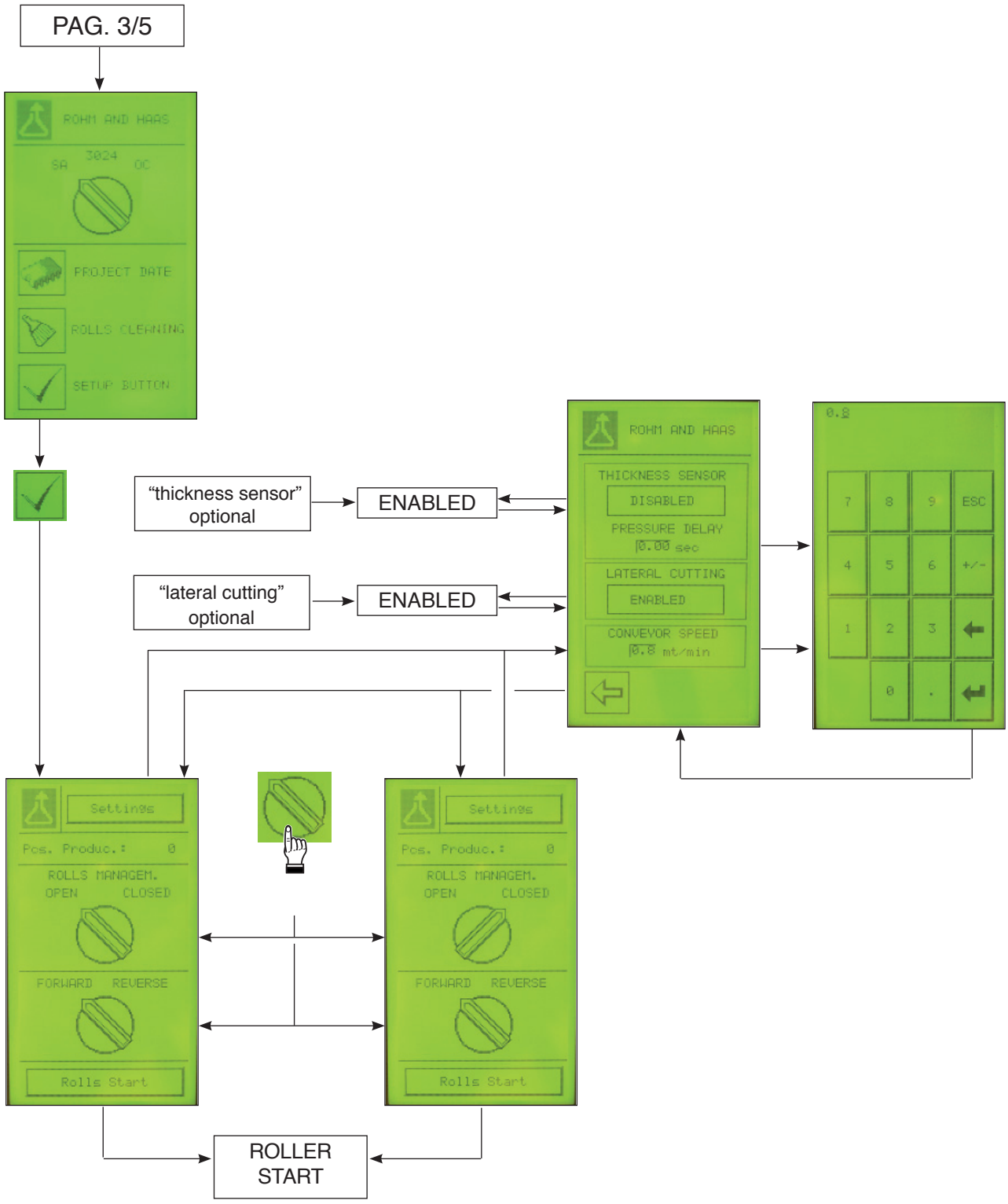
Time that elapses from when the photocell "FT17" detects the board presence to the start of the lamination rollers rotation.

BOARD OUTFEED TIME

Time that elapses from when the photocell "FT17" is freed from the board to the stop of the lamination roller rotation.

6.5 FLOW DIAGRAM

"SA" version



THIS PAGE INTENTIONALLY LEFT BLANK

7.1 - INSPECTIONS AND MAINTENANCE

7.1.A - General information

- Particular attention to the maintenance instructions inthis section will guarantee long life and satisfactoryoperation of the machine.
- Maintenance operations, adjustments and/ orreplacements should only be carried out by specializedpersonnel.

WARNING

If any of the machine components become faultyor operate in an irregular way, FIRST OF ALLCHECK that the machine itself has been used instrict compliance with the instructions given inthe previous sections.
Repairs must be carried out immediately, as soonas the failures occur to avoid the worsening of thesituation and damaging other parts.

7.1.B - Checks during the work

- During the normal work cycle all the operations are managed by a programmable logic controller (PLC), located on the electrical panel, that warns that an alarm has been triggered through the “ALARMS” warning light and through a message on the display.

7.1.C - Routine maintenance

- The machine has been designed and built to requirevery little maintenance.
- The electrical cabinet has been designed and built incompliance with the strictest safety regulations andaccording to the international instructions.

7.2 - REPLACEMENT OF THE ROLLER ELEMENTS (Fig. 17)

a- Remove the cover (1) from the right shoulder.
b- Remove the transparent safety guard (2) of the rotary connector (3).
c- Disconnect, by extracting the faston (4), the conductors of the elements (5).
d- Proceed with the extraction of the elements by carefully pulling them towards you, using the conductors.

NOTE

If the extraction is problematic or if the wires break, completely remove the roller as described in paragraph "7.3".

e- Once the element has been removed insert the new one, positioning it correctly in the roller.
f- Then restore the electrical connections, making sure that during the replacement operations no breakages, excessive folds or conductor or insulation failures have occurred.

ATTENTION

In this case replace the damaged part before making the connections.

g- Correctly reposition the transparent safety guard (2) of the rotary connector (3) and close the cover (1) removed at the start.

NOTE

To facilitate the replacement of the rollers or element it is advisable to lubricate the part to be coupled in roller with silicone grease or any product capable of resisting temperatures in excess of 200°C before assembly.

ATTENTION

- ***Make sure that the rotary connectors or brushes are not moved from their positions. If they are, realign them as described in paragraph "7.4".***
- ***Before starting the machine check that the lamination rollers turn freely.***

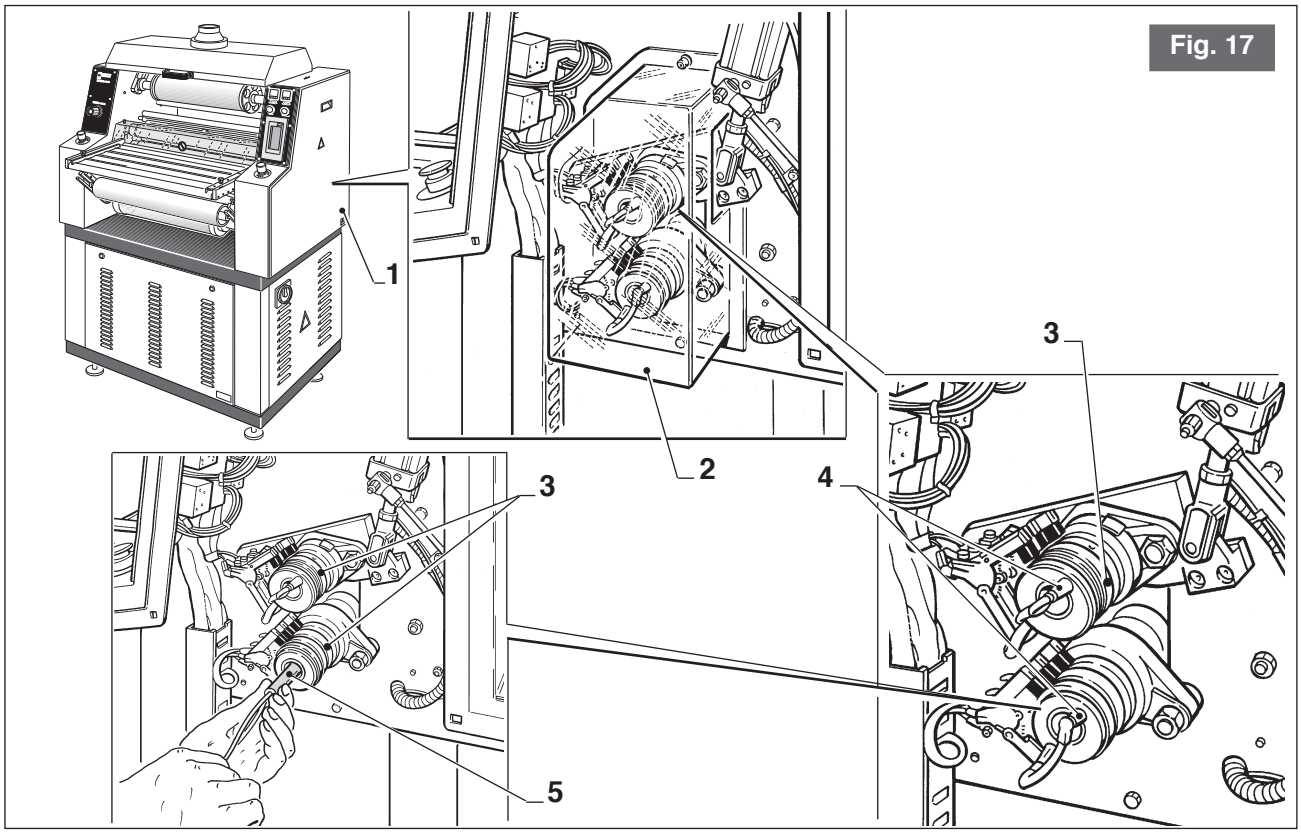


Fig. 17 - REPLACEMENT OF ELEMENTS IN LAMINATION ROLLERS

7.3 - REPLACEMENT OF LAMINATION ROLLERS (Fig. 18 - 19)

⚠ DANGER
Only perform this operation with the machine completely cooled down

a- Remove the elements as described in the previous paragraph (7.2).
b- Loosen and then remove on both sides the screws (1) that block the roller (2) to the hubs of the shaft (4).
c- Remove the blocking clasps (3).
d- Lift the extractable roller (2) from the hubs of the shaft.
e- Fix the new rollers, reposition all the clasps then tighten the screws (1).
f- When the operation is terminated, correctly re-mount the elements and perform all necessary checks as described in paragraph “7.2”.

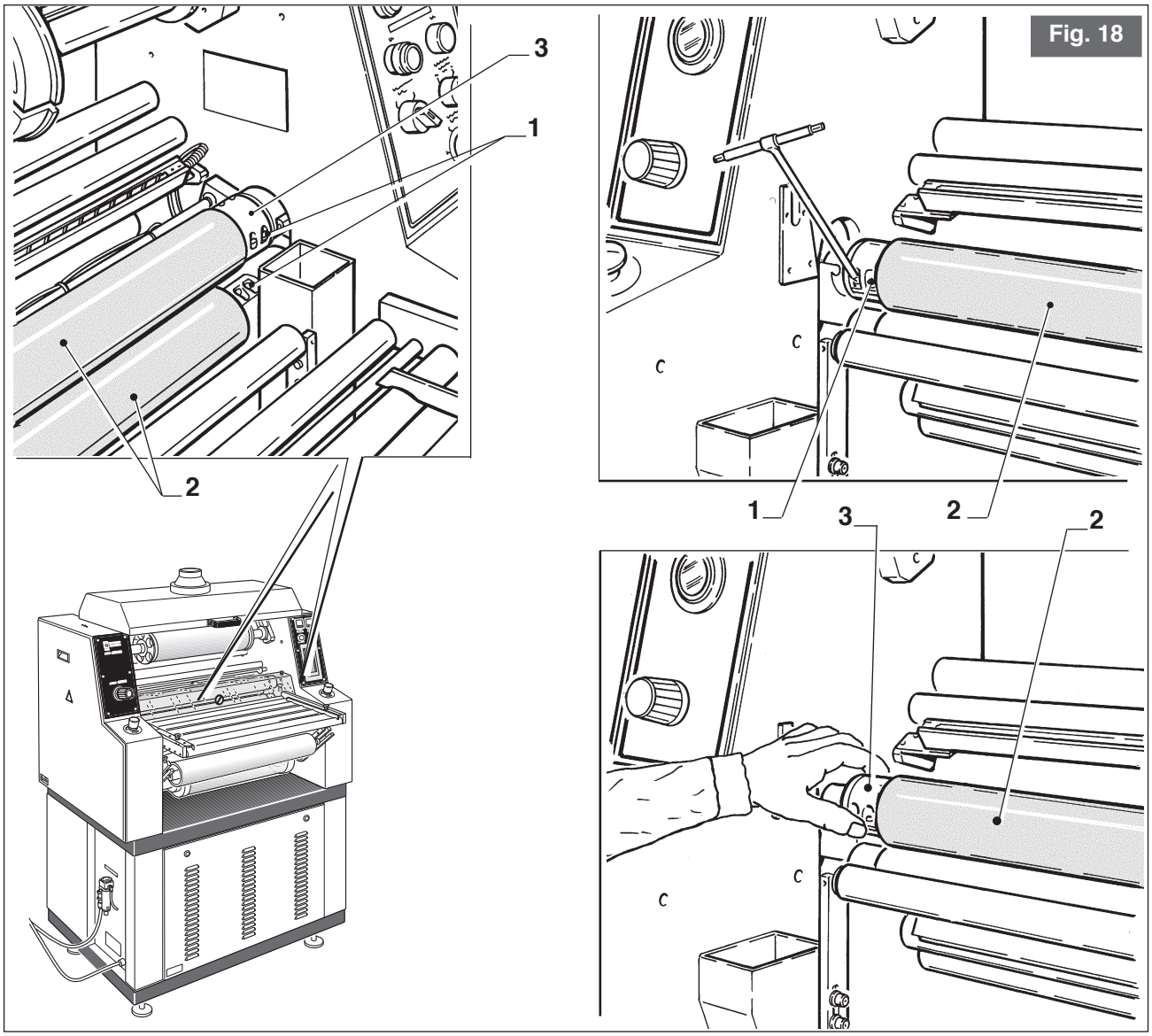


Fig. 18 - REPLACEMENT OF LAMINATION ROLLERS

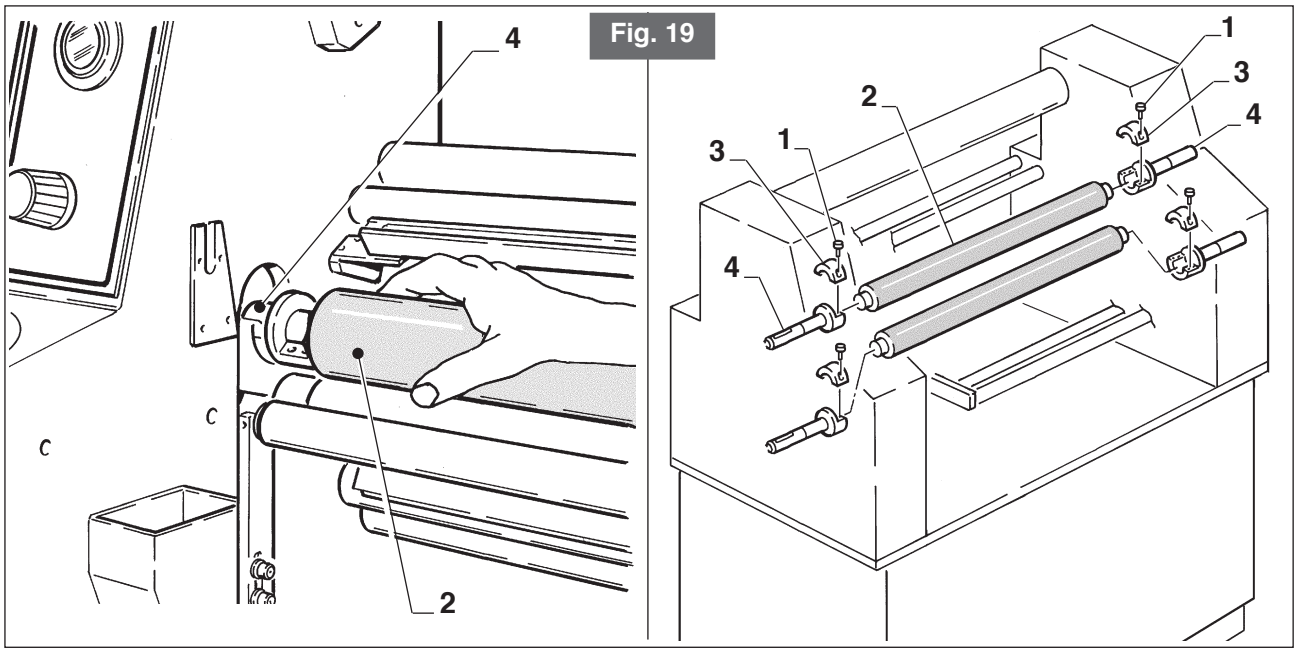


Fig. 19 - REPLACEMENT OF LAMINATION ROLLERS

7.4 - ALIGNMENT OF BRUSHES OF ROTARY CONNECTORS (Fig. 20)

- The correct position of the rotary connectors (1) when cold is:
  - half of their width straddling the copper ring (2),
  - the other half towards the outer part of the machine.

- This alignment means that once the roller has dilated due to the heat, it has better contact and greater safety during working conditions.

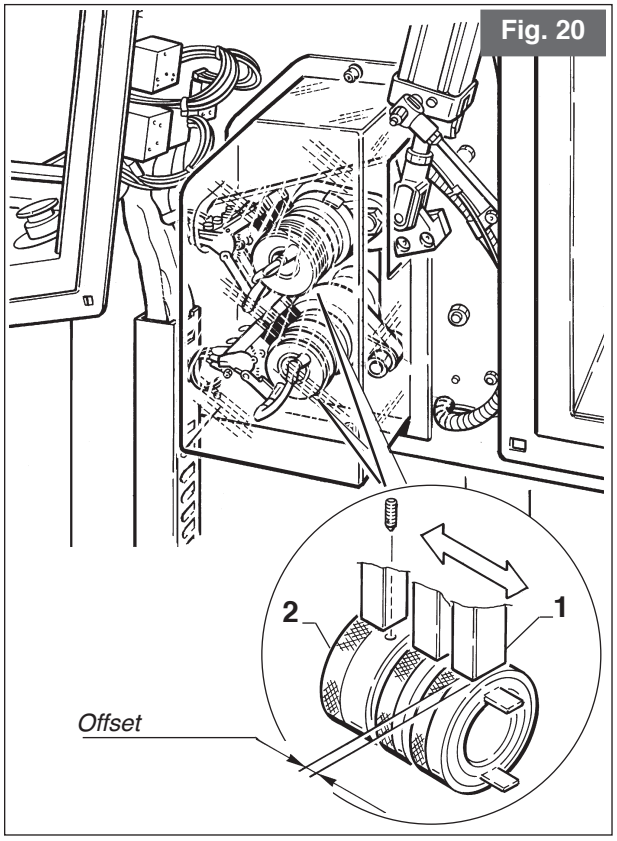


Fig. 20 - BRUSH ALIGNMENT

**BEFORE PROCEEDING ANY FURTHER MAINTENANCE OPERATION,
SWITCH OFF THE MACHINE AND WAIT FOR ALL PARTS
IN TEMPERATURE TO BE COMPLETELY COLD.**

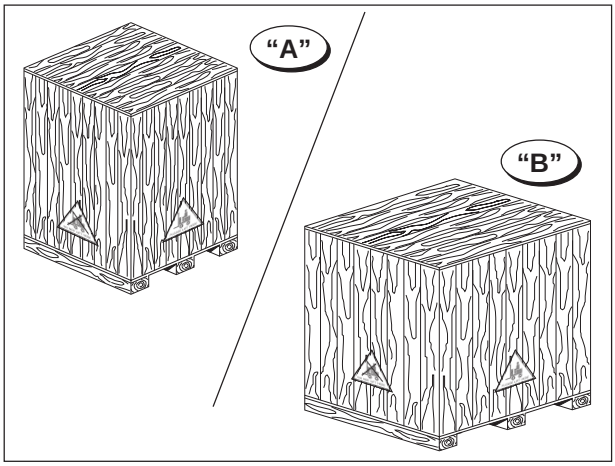
3024	Periodic maintenance recommended:					
	During work	Daily max. 8 hours	Weekly max. 40 hours	Monthly max. 160 hours	Half-yearly max. 1000 hours	Yearly max. 2000 hours
Cleaning of lamination rolls *(alcohol)*	●					
Replacement of lateral cutting blades (optional)	●					
—						
Control and, if necessary, clean of thermocouple pin				●		
Control and, if necessary, lining of the brushes on therotating connector of lamination rolls				●		
Cleaning of antistatic bars (optional) *(soft bristle brush soaked in alcohol)*				●		
Control of condensate drainage system				●		
General cleaning of the machine (aluminium rolls, etc.)				●		
Lubrication of conveyors *(light oil)*					●	
Check up on the efficiency and wear of contactors and relays						●
–						
–						

Fig. 21 - PERIODIC MAINTENANCE TABLE

THIS PAGE INTENTIONALLY LEFT BLANK

-- PACKING AND SHIPPING

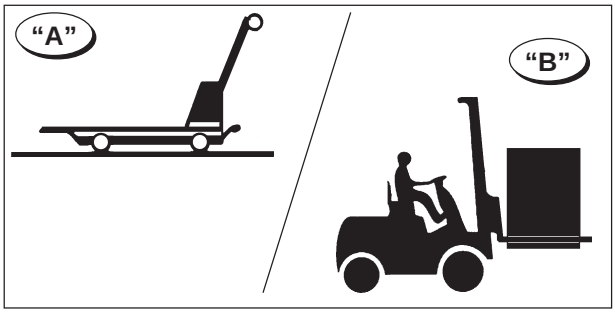
The machine is normally shipped in wooden crates, specially sized to suit the equipment in question.
The wooden crates are basically of two types (as illustrated in the figure below).
The first type (**"A"**) has a square base while the other (**"B"**) is more rectangular in shape.



TYPES OF PACKING CRATE

-- LIFTING THE CRATE

The crate must be handled with extreme care in order to prevent damage to the machine inside.
It can be lifted by using a:
A- Transpallet;
B- Lift truck.



SUITABLE LIFTING MEANS

NOTE

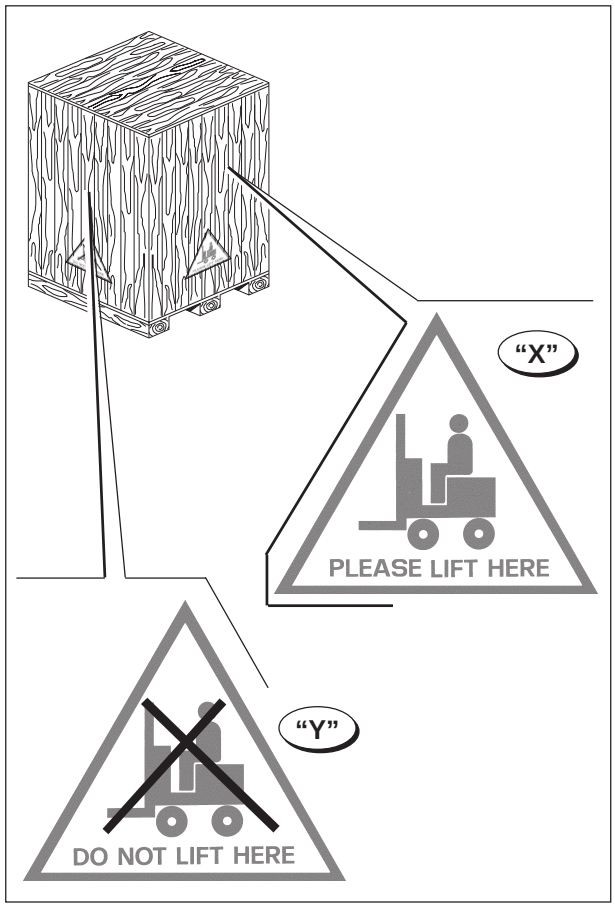
In both cases, always check that the utilized lifting means and accessories (ropes, chains, lifting forks, etc.) are sized according to the overall weight of the crate as stamped on the same.

The machine weight is also indicated on the relative page of this instruction manual where all the technical characteristics are listed.

ATTENTION

The crate lifting and handling operations must only be carried out by specialized personnel authorized to use the above mentioned equipment.

Check the data plates and/or indications on the crate before it is lifted.
There are indications on the sides (**"X"** and **"Y"**) marking the places where the lifting forks should be inserted.



INDICATIONS ON THE CRATE

ATTENTION

- ***Never stand near the machine while it is being lifted.***
- ***ROHM AND HAAS declines all responsibility for any damage to persons or property caused by failure to comply with the instructions given in this manual and specified by the current Safety Provisions concerning lifting and handling of materials inside and outside factories.***

-- LIFTING THE MACHINE

After having placed the crate in the position where the machine is to be installed, unpack the contents with extreme care.

ATTENTION

Should the Customer note any defects, deformation or damage caused by transport on the crate and/or machine, he should immediately inform the haulage contractor of the matter both by phone (if the contractor is no longer present) and by Registered Letter with return receipt attached. ROHM AND HAAS should also be notified in merit.

The machine must only be lifted by transpallet or lift truck, after having checked that the chosen lifting means is suited to the weight of the machine itself (see the indications on the technical characteristics page of this manual).
Check that the lift forks correctly hold the bottom of the machine before it is lifted and that the machine weight is adequately balanced.

DANGER

Never stand near the machine while it is being lifted.

ATTENTION

- ***The machine lifting and handling operations must only be carried out by specialized personnel authorized to use the above mentioned equipment.***
- ***ROHM AND HAAS declines all responsibility for any damage to persons or property caused by failure to comply with the instructions given in this manual and specified by the current Safety Provisions concerning lifting and handling of materials inside and outside factories.***

-- DEMOLISHING THE MACHINE

Proceed in the following way if the machine must be demolished for any reason (owing to age, if it can no longer be repaired, etc.):

- Disconnect the machine by carrying out the operations described in the "**operations**" and "**maintenance**" sections of this publication in reverse.
- Dismantle all possible parts of the machine (casing, lamps, guards, handles, chains, motors, etc.), dividing them according to their different nature (eg.: pipes, rubber components, lubricants, solvents, lacquering products, aluminium, ferrous material, copper, glass, etc.).
- Before the machine is scrapped, inform the authorities in charge of these matters in writing, in compliance with the provisions in force in the individual countries.
- After having received authorization from the above mentioned organizations, dispose of the components as prescribed by the current standards in merit.

ATTENTION

Any irregularity committed by the Customer before, during or after dismantling and scrapping the machine components, or in interpreting and applying the current provisions in force, shall be the exclusive responsibility of the Customer himself.

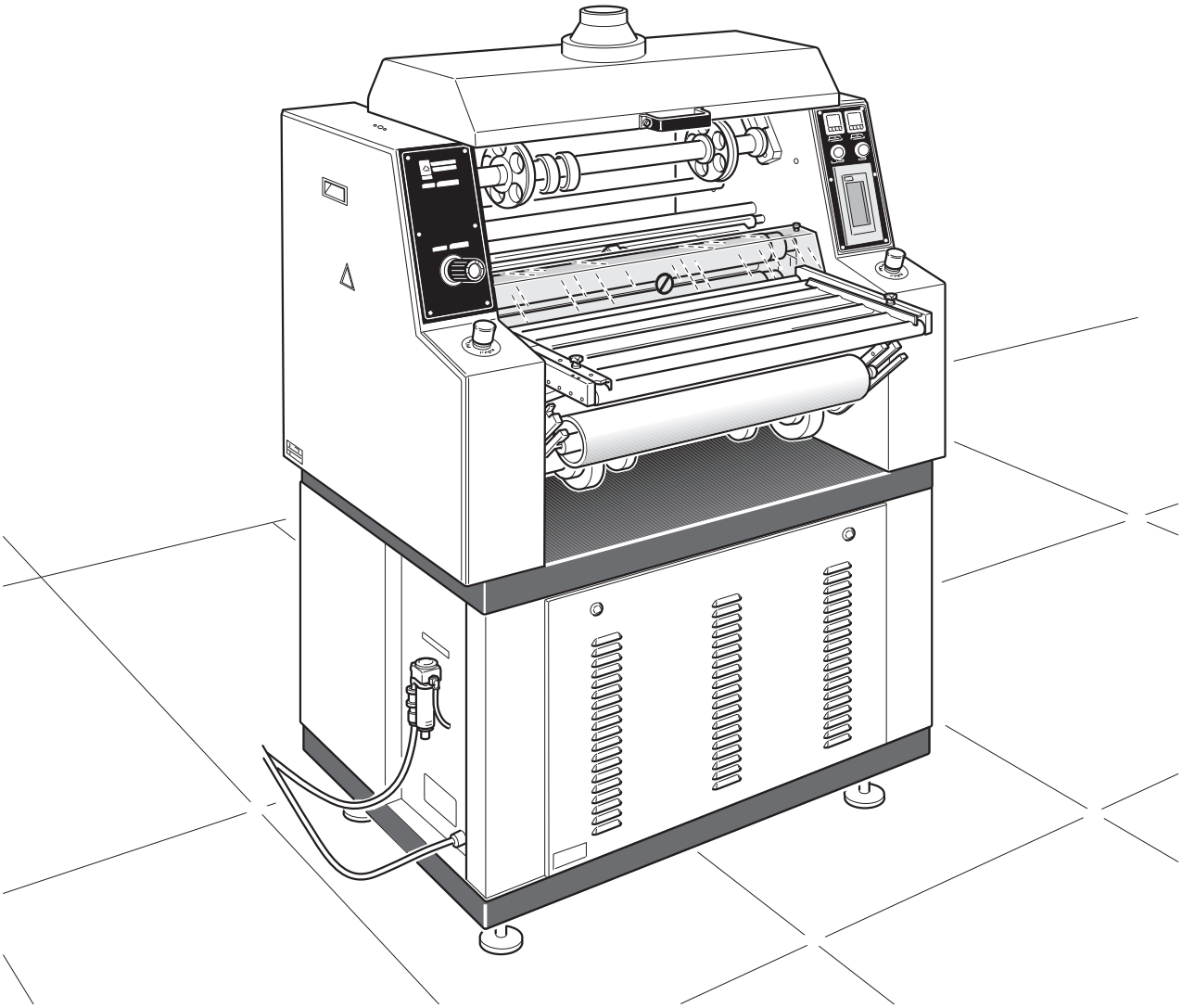
ELECTRONIC MATERIALS
CIRCUIT BOARD TECHNOLOGIES

ROHM AND HAAS

MANUAL LAMINATOR

3024

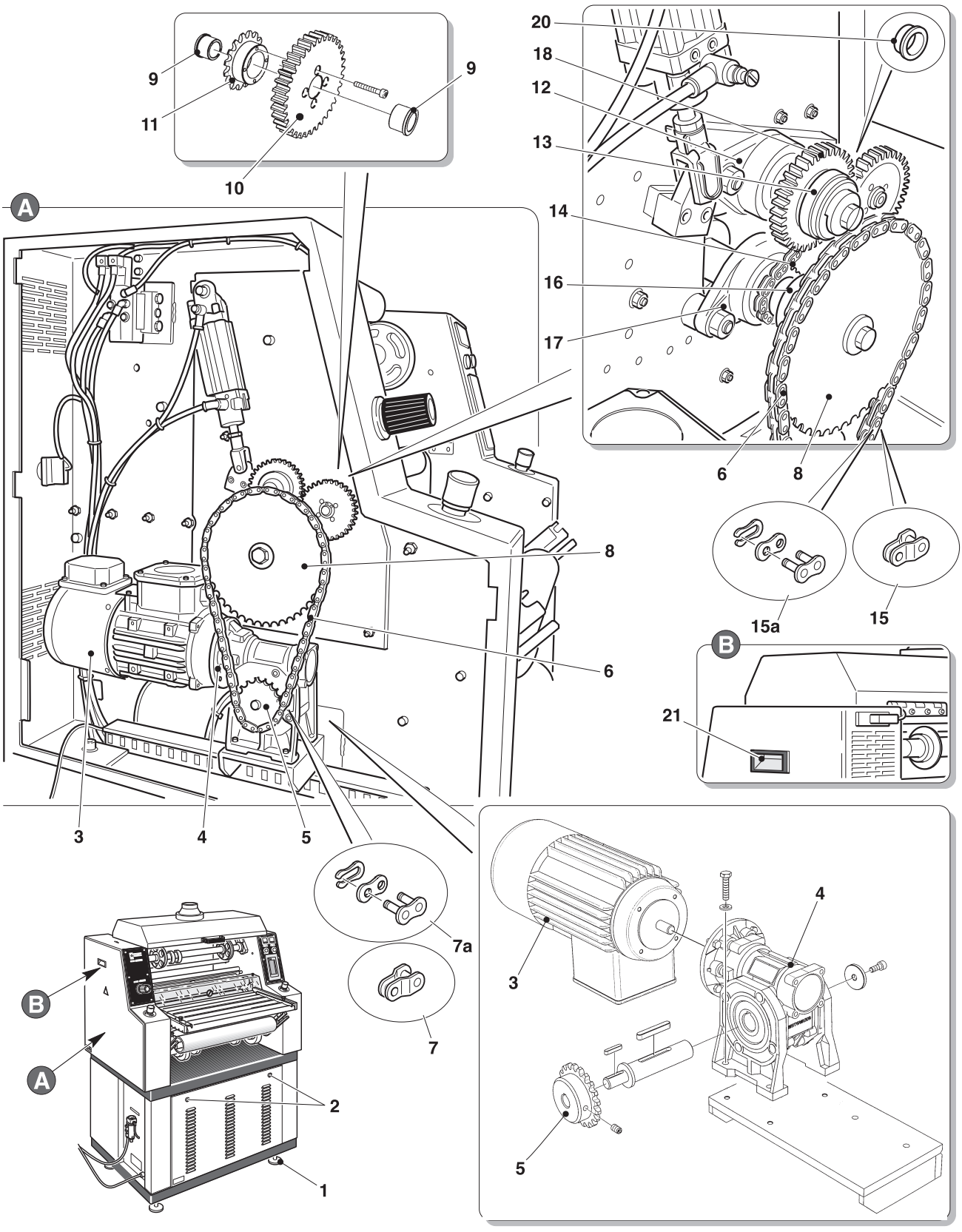
SPARE PARTS CATALOGUE



Ed. Apr 2008

INDEX
INDICE

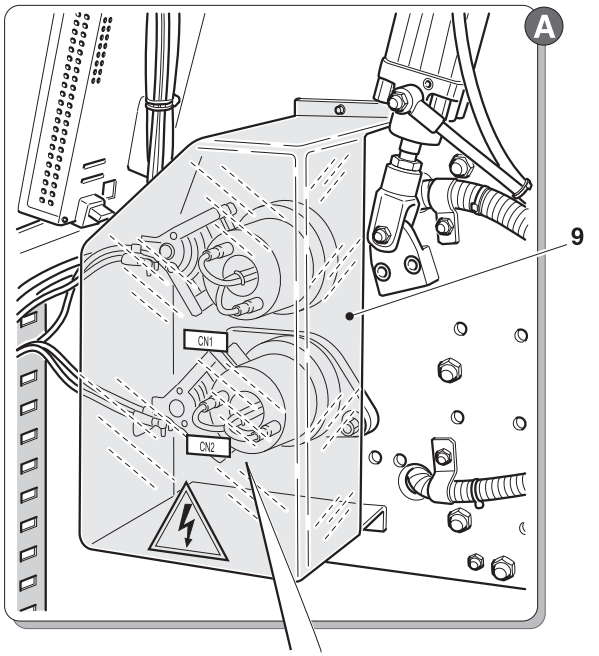
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10332217	1	01	ANTI-SKID FEET MARBETT 172/638502	PIEDINO ANTISCIVOLO MARBETT 172/638502	
10053177	1	02	LOCK 440F	SERRATURA 440F	
10309075	1	03	MOTOR TKE QS63Mc4 B14+EXT FAN COOLED	MOTORE EL. TKE QS63Mc4 B14+SERVOVENT.	
10309078	1	04	GEARBOX SW040 PAS R=1:60 PAM63 B14	RID.SPAGGIARI SW040 PAS R=1:60 PAM63 B14	
10332218	1	05	MOTOR SPROCKET Z=20 P=3/8 DRW.063100038	PIGNONE MOTORE Z=20 P=3/8 DIS.063100038	
10332189	1	06	CHAIN 3/8"-7/32" L=0,695 MT	CATENA 3/8"-7/32" L=0,695 MT	
10053071	1	07	HALF LINK FOR CHAIN 3/8 X 7/32	MAGLIA GIUNZIONE CATENA 3/8 X 7/32	
10053072	1	07a	JOINT FOR CHAIN 3/8 X 7/32	GIUNTO PER CATENA 3/8 X 7/32	
10061277	1	08	SPROCKET Z=52 P=3/8" 0403.00.004	CORONA DENT.Z=52 P=3/8" 0403.00.004	
10056494	1	09	BUSHING FLANGED TYPE GLISSA 12/16/18/10/2	BOCCOLA FLANGIATA GLISSA 12/16/18/10/2	
10332239	1	10	GEAR WHEEL Z=16 P=8 DRW.012800006	RUOTA DENTATA Z=16 P=8 DIS.012800006	
10053149	1	11	SPROCKET Z16 8X3(UPPER) 0128.00.005	PIGNONE SUP. Z 16 8X3 0128.00.005	
10332177	1	12	UPPER ROLL SUPPORT DRW. 014200034	SUPPORTO RULLO SUPERIORE DIS.014200034	
10332207	1	13	CLUTCH ROBA 0/100.110 20 DIN6885-1 B4	FRIZIONE ROBA 0/100.110 20 DIN6885-1 B4	
10053193	1	14	CHAIN 8X3 L=0,296 MT	CATENA 8X3 L=0,296 MT	
10055695	1	15	HALF LINK FOR CHAIN 8X3	MAGLIA DI GIUNZIONE X CATENA 8X3	
10309006	1	15a	JOINT FOR SIMPLE CHAIN 8X3 DIN8187	GIUNTO X CATENA SEMPLICE 8X3 DIN8187	
10053148	1	16	SPROCKET Z16 8X3(LOWER) 0128.00.004	PIGNONE Z16 8X3 0128.00.004	
10053108	1	17	LOWER ROLL SUPPORT DRW.10080/A	SUPPORTO RULLO INFERIORE DIS.10080/A	
	1	18	GEAR WHEEL DRW.012800018	RUOTA DENTATA DIS.012800018	
10053201	1	20	BUSHING DRW.0128.00.012	BOCCOLA X PIASTRA DIS.0128.00.012	
10332210	1	21	HANDLE SOUTHCO P1-30-103-11	RULLO LAMINAZIONE 0175.00.007/E 60 SH	

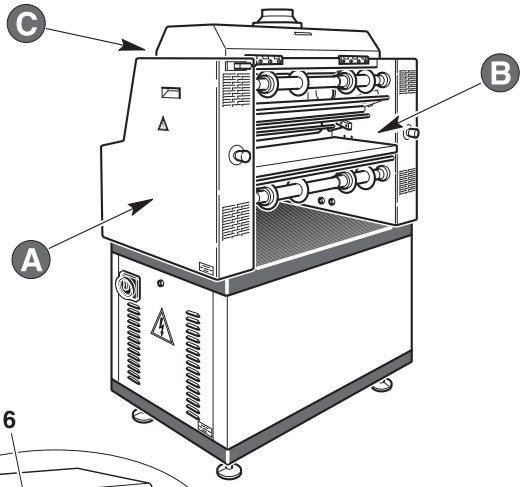


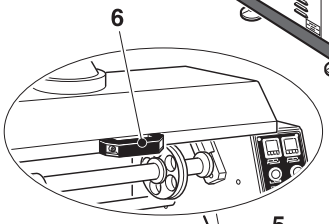
COMPONENTI MECCANICI - LATO SINISTRO
MECHANICAL COMPONENTS - LEFT SIDE

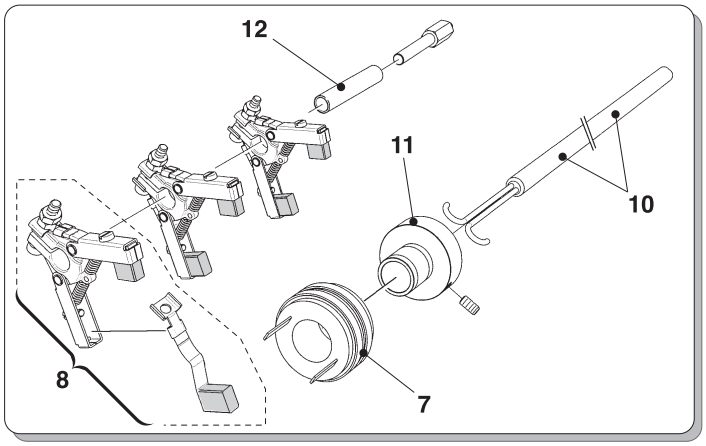
TAB. 1
Rev. A

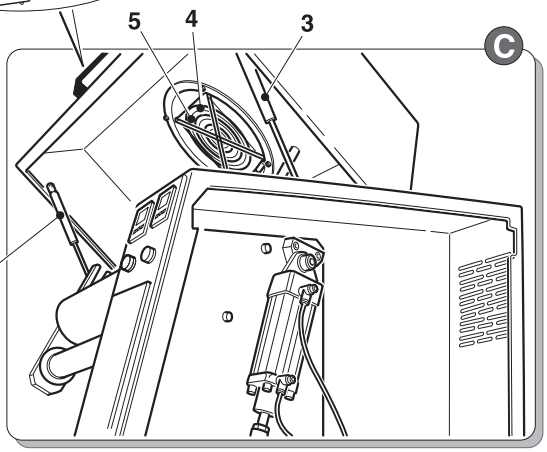
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10332209	2	01	THIN PCB PLATE DRW. 063100008	PIASTRA PER SOTTILI DIS.063100008	
10054466	2	02	BALL BEARING SKF 625-2Z	CUSCINETTO A SFERE SKF 625-2Z	
10332212	2	03	GAS SPRING STABILUS COD. 082414	MOLLA A GAS STABILUS COD. 082414	
10332208	2	04	FINGER GUARD PAPST COD. LZ25	GRIGLIA SALVADITA PAPST COD. LZ25	
10332178	2	05	FAN PAPST COD. 5656-S	VENTOLA PAPST COD. 5656-S	
10055683	2	06	HANDLE M443/150N.CH “ELESA”	MANIGLIA M443/150N.CH “ELESA”	
10053366	2	07	COLLECTOR 50-2-6	COLLETTORE ROTANTE 50-2-6	
10053364	2	08	ASSY BRUSH-HOLDER LAMPAR	ASSY PORTASPAZZOLA LAMPAR	
10053220	2	09	CONTACT BRUSH PROTECTION DRW.012800019	PROTEZIONE SPAZZOLE DIS.012800019	
10053248	2	10	HEATER ELEMENT 1000W 220V D.14X710	RESISTENZA 1000W 220V D.14X710	
10053367	2	11	BUSH FOR COLLECTOR DRW.10063	BUSSOLA PORTA COLLETTORE DIS.10063	
10053125	2	12	INSULATION TUBE DELLITE DRW.0141.00.002	TUBETTO ISOL. DELLITE DIS.0141.00.002	

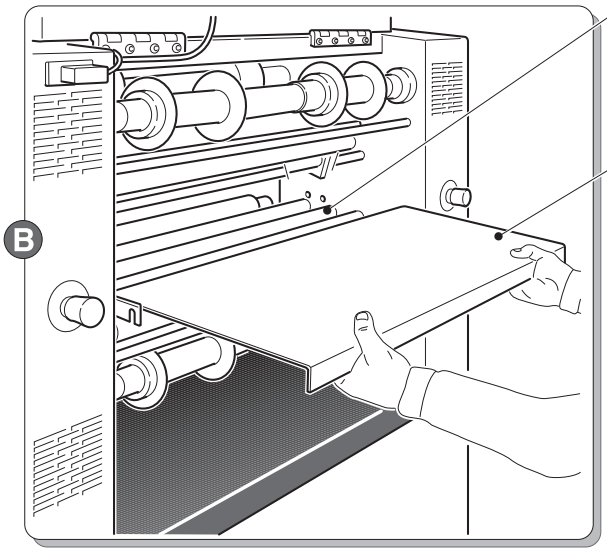








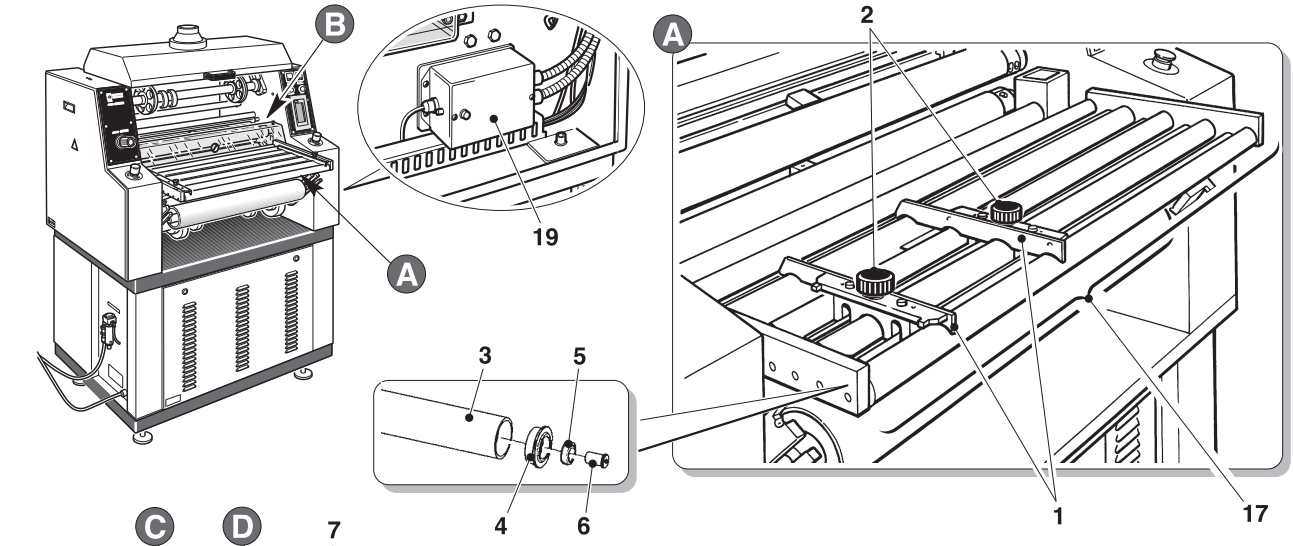


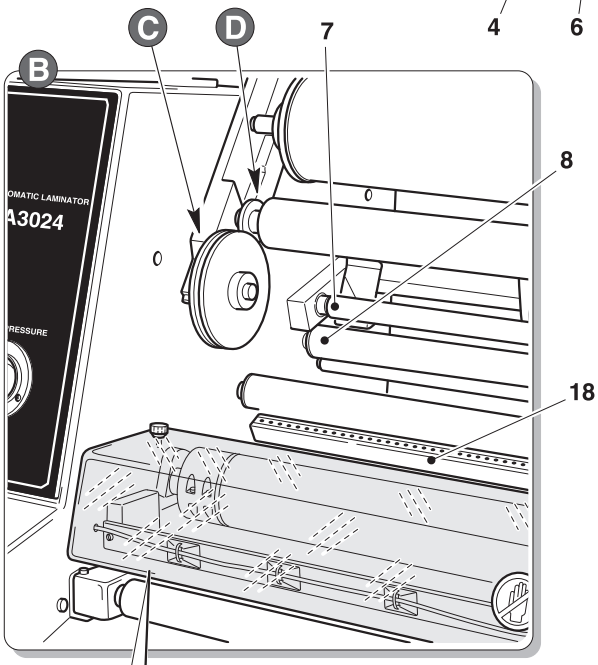


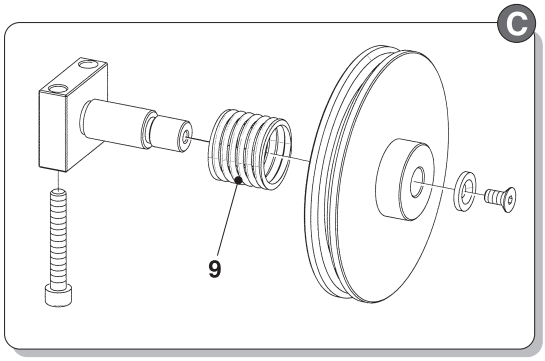
COMPONENTI MECCANICI - LATO DESTRO
MECHANICAL COMPONENTS - RIGHT SIDE

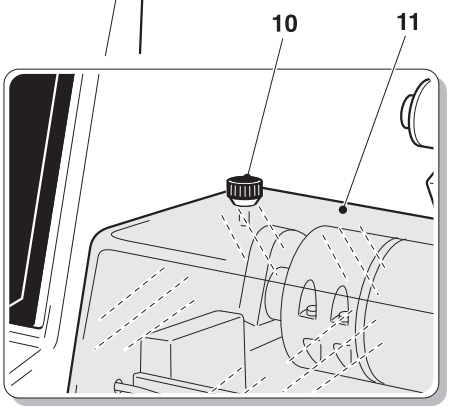
TAB. 2
Rev. A

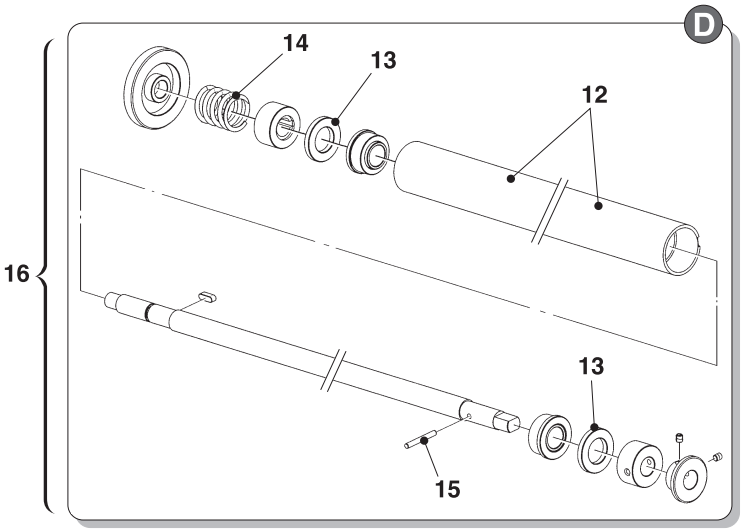
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10061389	3	01	GUIDE PLATE DRW.0401.00.003	GUIDASCHEDE DIS.0401.00.003	
10332219	3	02	FASTENING KNOB DRW. 063200001	POMOLO DI BLOCCAGGIO DIS. 063200001	
10053155	3	03	ALUMINIUM ROLL D. 30 10076	RULLO ALLUMINIO D.30 10076	
10053093	3	04	BUSHING - 10069/A	BUSSOLA - 10069/A	
10053165	3	05	BEARING ADR 8-16-5 628/8	CUSCINETTO ADR 8-16-5 628/8	
10053167	3	06	PIN 10058	PERNO 10058	
10054425	3	07	BEARING 608/2Z D.8X22X7	CUSCINETTO 608/2Z D.8X22X7	
10053232	3	08	BEARING SKF 61802 15-24-5	CUSCINETTO SKF 61802 15-24-5	
10332213	3	09	COMPRESSION SPRING CIMA CO-204	MOLLA COMPRESSIONE CIMA CO-204	
10332211	3	10	ELESA KNOB TYPE B193/15 P M5X16	MANOPOLA ELESA TIPO B193/15 P M5X16	
10332222	3	11	LEXAN PROTECTION DRW. 063100009	RIPARO IN LEXAN DIS. 063100009	
10332237	3	11	LEXAN PROTECTION DRW. 063100037	RIPARO IN LEXAN DIS. 063100037	
10053099	3	12	ALUMINIUM ROLL D.41 10093	RULLO D.41 10093	
10053098	3	13	BRAKE DRW. 10099	FERODO 10099	
10084659	3	14	SPRING CLUTCH DRW 10096	MOLLA PER FRIZIONE DIS. 10096	
10225806	3	15	CYLINDRICAL PIN UNI1707 m6 D. 4 X 32	SPINA CILINDRICA UNI1707 m6 D.4 X 32	
10061612	3	16	SUPPLY ROLL MANDREL ASSY DRW. 095-0-0571	RULLO CON FRIZIONE COMPLETO 095-0-0571	
10332238	3	17	ASSY REMOV.INPUT ROLLS DRW.125.0.0632	RULLIERA INGRESSO ESTR. DIS. 125.0.0632	
10053123	3	18	ANTISTATIC BAR MEB-629 CODE 0385507230	BARRA ANT. MEB-629 COD.0385507230	
10053124	3	19	POWER SUPPLY FOR ANTISTATIC BARS	ALIMENTATORE X BARRE ANT.C2 220V/50	







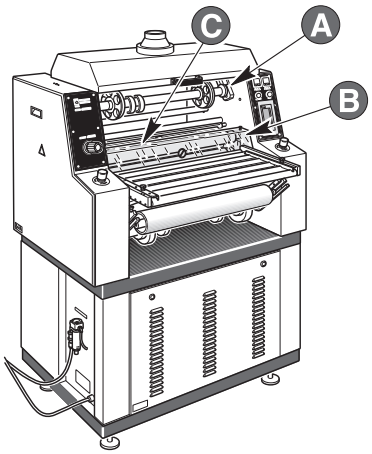


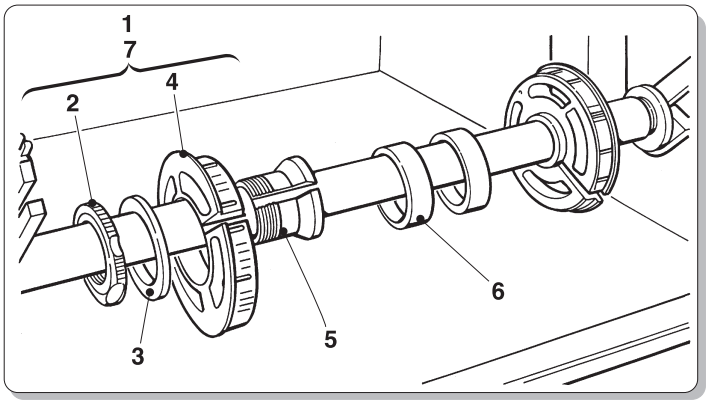


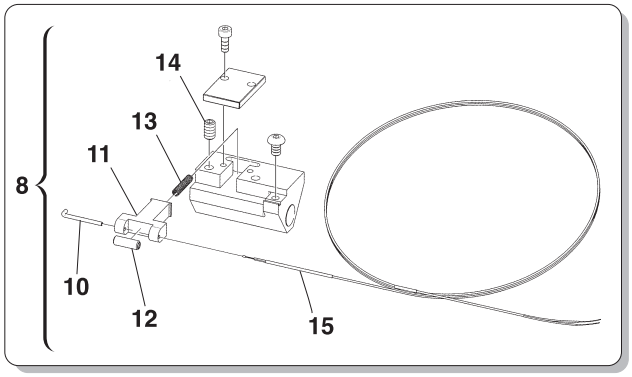
RULLIERA ENTRATA - RULLI
INPUT ROLLER - ROLLS

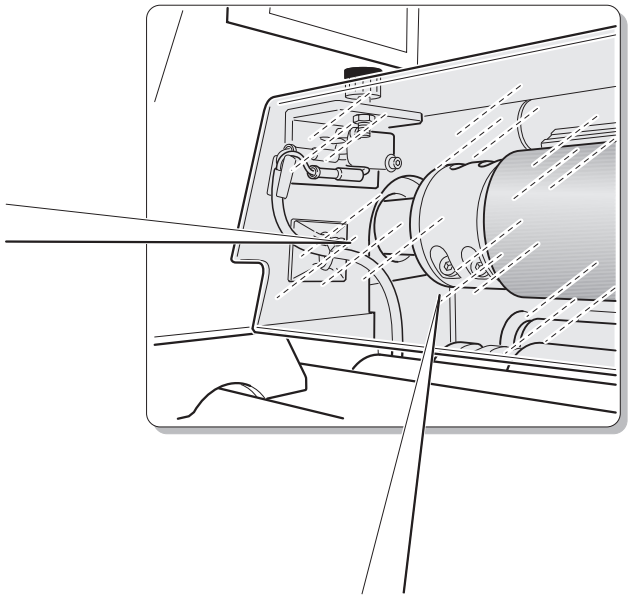
TAB. 3
Rev. A

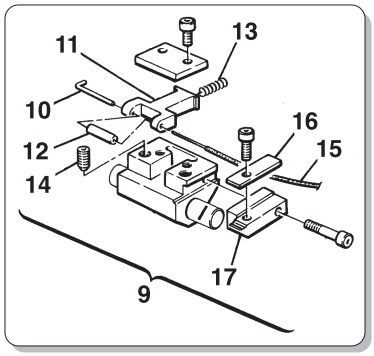
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10053073	4	01	EXPANSION CORE CHUCK ASSY 3” 0210	MANDRINO X BOBINA DRY FILM 3” ASSY 0210	
10053074	4	01	CHUCK CORE FOR 6” DRY FILM COIL 0211	MANDRINO X BOBINA DRY FILM 6” ASSY 0211	
10053075	4	02	• THREADED NUT	• GHIERA FILETTATA X MANDRINO BOBINA	
10053076	4	03	• CONIC RING FOR DRY FILM COIL CHUCK	• ANELLO CONICO X MANDRINO BOBINA DRY	
10053079	4	04	• EXPANSION RING 6” FOR DRY FILM COIL	• ANELLO ESPANSIONE 6” X MANDRINO	
10053078	4	05	• THREADED BUSHING FOR DRY FILM COIL	• BUSSOLA FILETTATA X MANDRINO BOBINA	
10053077	4	06	• EXPANSION RING 3” FOR DRY FILM COIL	• ANELLO ESPANSIONE 3” X MANDRINO	
10068025	4	07	CORE CHUCK ASSEMBLY 3” P/N 240-0092	MANDRINO 3” WM P/N 240-0092	opzionale - optional
10332708	4	08	ROLLING TERMOCOUPLE ASSY DRW.125.0.0635	ASSY TERMOCOPPIA ROTANTE DIS. 125.0.0635	New mod. - mod. nuovo
10053113	4	09	ROLLING THERMOCOUPLE ASSY FOR 360N	TERMOCOPPIA A RULLINO ASSY 05500187	Old mod. / Mod. preced.
10053118	4	10	• THERMOCOUPLE SHAFT 0187.01.002	• PERNINO X TERMOCOPPIA 0187.01.002-A	
10053116	4	11	• ROLLER SUPPORT 0187.01.003	• SUPPORTO RULLO 0187.01.003	
10053115	4	12	• COPPER ROLLER 0187.00.001	• RULLO RAME 0187.00.001-A	
10061476	4	13	• SPRING “CIMA” CO 1964	• MOLLA “CIMA” CO 1964	
10054536	4	14	• SCREW M6X10	• VITE S.T.E.I. M6X10	
10053114	4	15	• THERMOCOUPLE PROBE LENGTH 2,20 MT	• SONDA X TERMOC.LUN.2,20MT 018700008	
10053121	4	16	• PLATE 0187.00.007	• PIASTRINA 0187.00.007	
10053122	4	17	• SUPPORT 0187.00.006	• SUPPORTO 0187.00.006	
10332070	4	18	ASSY LOW.RUB.ROLL 60SH STR. 0633.0.A.04	ASS RULLO GOM.INF.60SH DRI. 0633.0.A.04	
10332184	4	18	ASSY LOW.RUB.ROLL 75SH STR.0633.0.A.06	ASS RULLO GOM.INF.75SH DRI.0633.0.A.06	
10332185	4	18	ASSY UPP.RUB.ROLL 60SH TAP. 0633.0.A.03	ASS.RULLO GOM.SUP.60SH CON. 0633.0.A.03	
10332186	4	18	ASSY UPP.RUB.ROLL 60SH STR.0633.0.A.09	ASS RULLO GOM.SUP.60SH DRI.0633.0.A.09	
10332187	4	18	ASSY UPP.RUB.ROLL 75SH TAP.0633.0.A.05	ASS RULLO GOM.SUP.75SH CON.0633.0.A.05	
10332188	4	18	ASSY UPP.RUB.ROLL 75SH STR.0633.0.A.10	ASS RULLO GOM.SUP.75SH DRI.0633.0.A.10	
10053062	4	19	• STRAIGHT ROLL 60SH+HUB DRW.0633.0.A.12	• RULLO DRITTO 60SH+MOZZI DIS.0633.0.A.12	
10225452	4	19	• CONICAL ROLL 60SH+HUB DRW.0633.0.A.11	• RULLO CONICO 60SH+MOZZI DIS.0633.0.A.11	
10240465	4	19	• STRAIGHT ROLL 75SH+HUB DRW.0633.0.A.14	• RULLO DRITTO 75SH+MOZZI DIS.0633.0.A.14	
10240466	4	19	• CONIC ROLL 75SH+HUB DRW.0633.0.A.13	• RULLO CONICO 75∞SH+MOZZI DIS.0633.0.A.13	
10053090	4	20	• RIGHT TOP & BOT END SHAFT DRW 014200091	• PERNO DX SUP.-INF.X RULLO 014200091	
10053084	4	21	• LEFT TOP END SHAFT DRW. 0142.00.093	• PERNO SX SUP. X RULLO EST.014200093	
10053090	4	22	• RIGHT TOP & BOT END SHAFT DRW 014200091	• PERNO DX SUP.-INF.X RULLO 014200091	

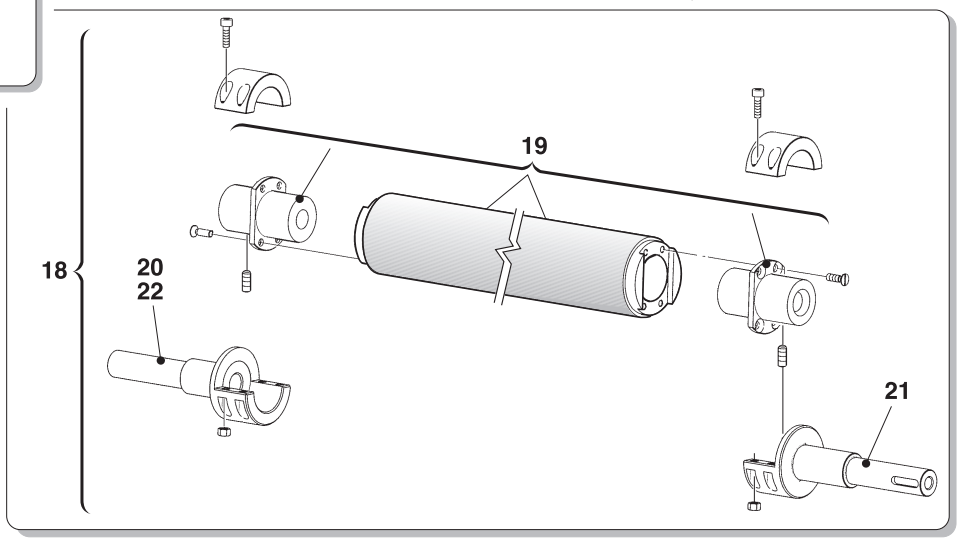




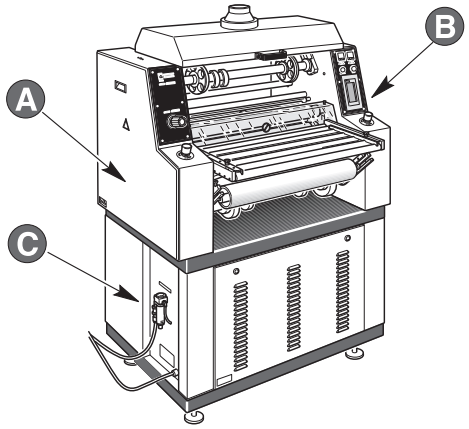


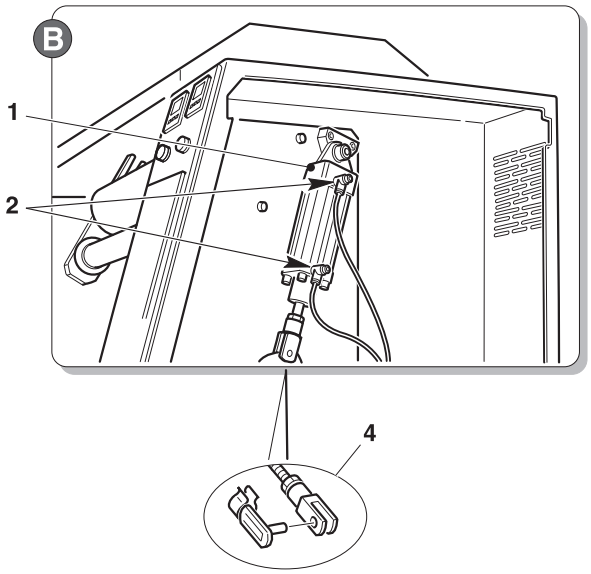


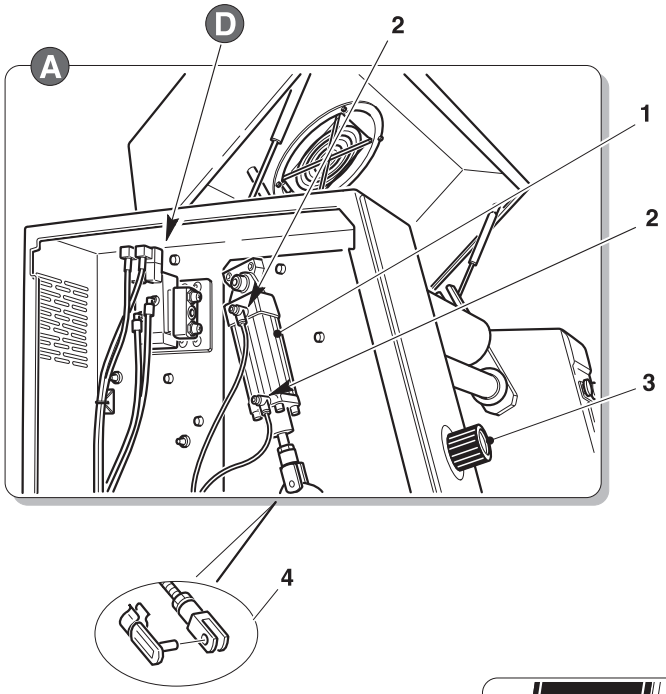


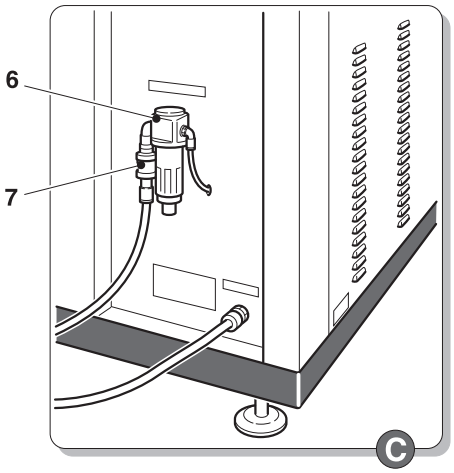


CODICE	TAB.	POS.			
PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10332201	5	01	CYLINDER PNEUMAX COD.1319.32.50.01	CILINDRO PNEUMAX COD. 1319.32.50.51	
10332220	5	02	AIR FLOW REGULATOR 1/8" 4/6-COD.290618P	REG. DI FLUSSO 1/8" 4/6 COD.290618P	
10332221	5	03	PRESSURE GAUGE PNEUMAX COD.17129B_C	RID.PRESSIONE PNEUMAX COD. 17129B_C	
10332205	5	04	CYLINDER FORK PNEUMAX COD.1320.32.13-1F	FORCELLA PNEUMAX COD. 1320.32.13-1F	
10332204	5	06	FILTER PNEUMAX COD. 17101B.B.P.	FILTRO PNEUMAX COD. 17101B.B.C.	
10053545	5	07	SLIDE VALVE PNEUMAX 1/4" CODE 50414	VALVOLA A MANICOTTO PNEUMAX COD.50414	
10061058	5	09	CONNECTOR OMAL CB2BR1X130 CABLE 3 Mt	CONNETTORE OMAL CB2BR1X130 CAVO 3 Mt	
10332203	5	11	• ELECTROVALVE COD.2435.52.00.36.02	• ELETTROVALVOLA COD.2435.52.00.36.02	
10061119	5	14	MANOMETER WITH FLANGE 1/8"	MANOMETRO CON FLANGIA M3B-40-0/10	
10308812	5	15	FILTER+PRESSURE REDUCER COD.17104B.B.C.P	FILTRO+RIDUT. TG.1 1/4" COD.17104B.B.C.P.	

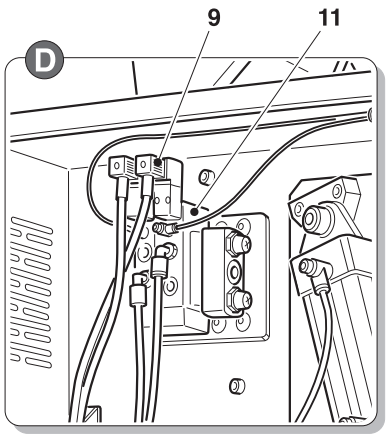


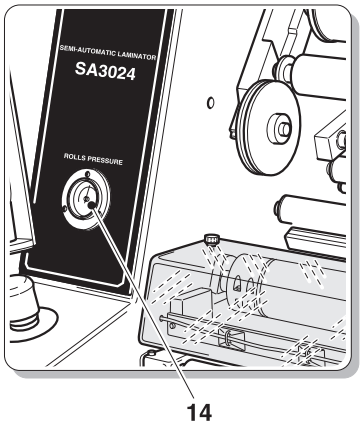


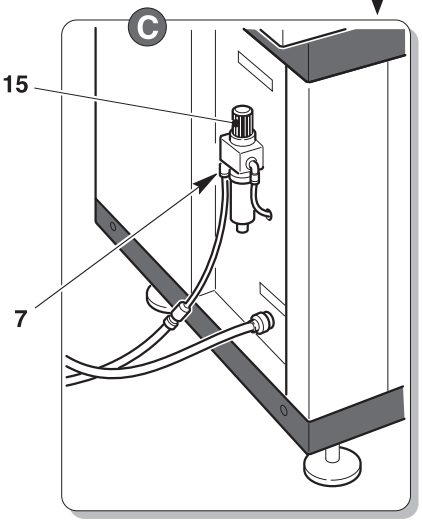




solo versione "SA"
only "SA" version



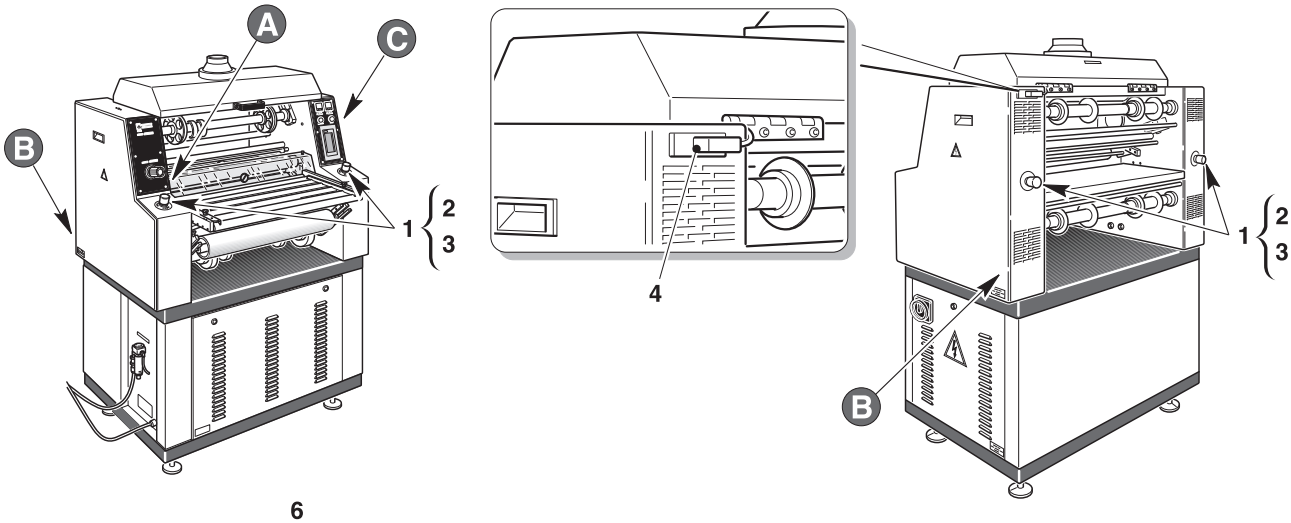


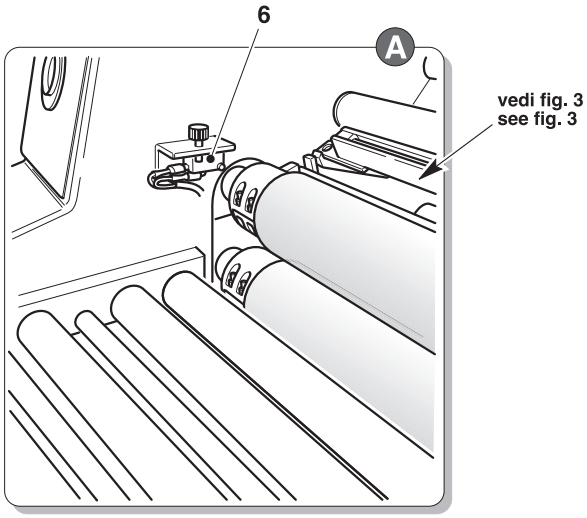


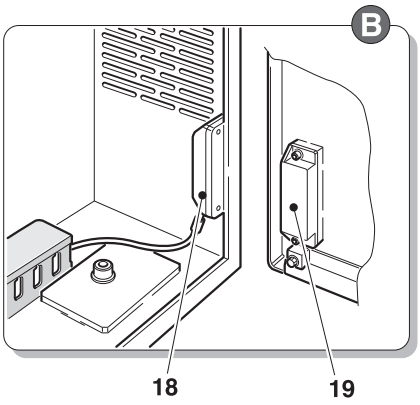
CONPONENTI PNEUMATICI
PNEUMATIC COMPONENTS

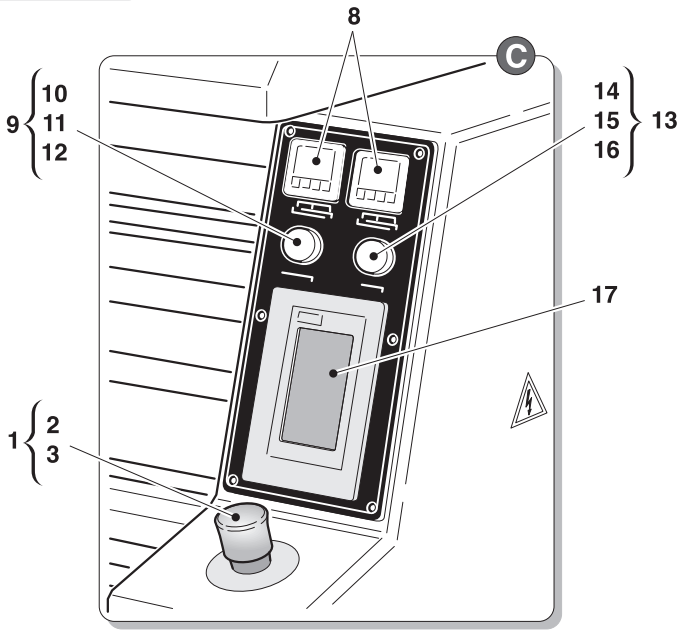
TAB. 5
Rev. A

CODICE	TAB.	POS.			
PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10298830	6	01	EMERG. PUSH BUTTON M22-PV (ASSY)	PULS. EMERG. AD AGGANCIO M22-PV (ASS)	
10299211	6	02	EMERG. PUSH BUTTON M22-PV	PULS. EMERG. AD AGGANCIO M22-PV	
10288271	6	03	FRONTAL FIXING ADAPTOR M22-A	ADATTATORE DI FISSAGGIO M22-A	
10288920	6	03	NC CONTACT M22-CK01	CONTATTO NC M22-CK01	
	6	04	SECURITY SOCKET TC 5300	PRESA DI SICUREZZA TC 5300	
10054143	6	06	MICROSWITCH V165 1 A5	FINECORSA V165 1 A5	
10236373	6	08	THERMOREGULATOR E5CN Q2MT-500 100-240AC	TERMOREGOLATORE E5CN Q2MT-500 100-240AC	
10290722	6	09	WHITE PILOT LAMP M22-L-W (ASSY)	LAMP. SPIA BIANCA M22-L-W (ASS.)	
10288640	6	10	WHITE PILOT LAMP M22-L-W	LAMPADA SPIA BIANCA M22-L-W	
10288271	6	11	FRONTAL FIXING ADAPTOR M22-A	ADATTATORE DI FISSAGGIO M22-A	
10288273	6	12	WHITE LED 18-30V AC/DC M22-CLED-W	LED BIANCO M22-CLED-W	
10290721	6	13	ORANGE PILOT LAMP M22-L-R (ASSY)	LAMP. SPIA ARANCIO M22-L-R (ASS.)	
10288691	6	14	ORANGE PILOT LAMP M22-L-R	LAMPADA SPIA ARANCIO M22-L-R	
10288271	6	15	FRONTAL FIXING ADAPTOR M22-A	ADATTATORE DI FISSAGGIO M22-A	
10288274	6	16	RED LED 18-30V AC/DC M22-CLED-R	LED ROSSO M22-CLED-R	
10224175	6	17	DISPLAY TOUCH SCREEN VT155W	DISPLAY TOUCH SCREEN VT155W	
10244946	6	18	SAFETY MAGNETIC SENSOR BNS 33 11ZG 3MT	SENSORE MAGN. DI SICUR. BNS 33 11ZG 3MT	
10244945	6	19	MAGNET FOR SENSOR BPS 33	MAGNETE PER SENSORE BPS 33	

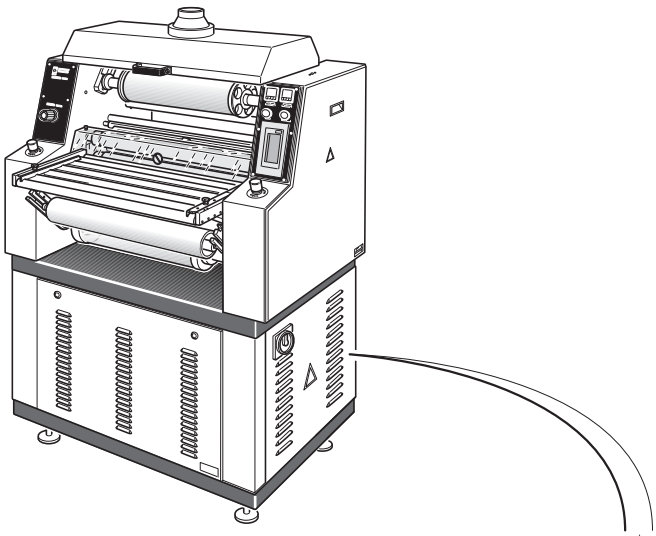


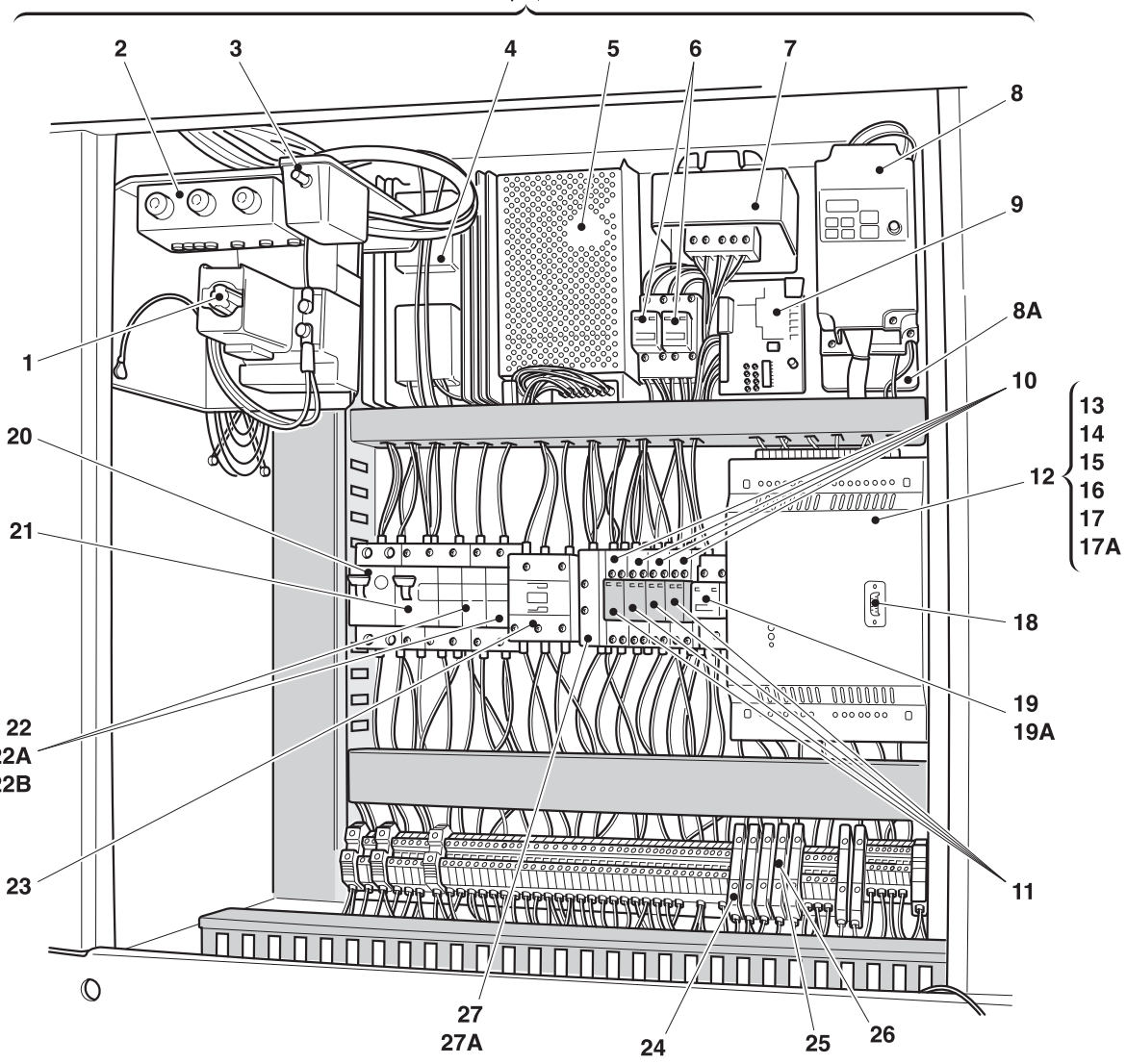






CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10324079	7	01	3P POWER SWITCH FOR PANEL P3 (ASSY)	SEZ. 3P DA PANNELLO P3 (ASS)	
10060875	7	02	3PH OK LIGTH INDICATOR 105-DTL 500	SEGNALATORE TRIFASE 105-DTL 500	
10060539	7	03	3 PH MICROSWITCH 114-FCT-03	FINECORSA TRIPOLARE (3NC) DA PORTELLO 11	
10053414	7	04	SOLID STATE RELAY 230V50A RM1A23D50	RELE' STATICO 230V 50A RM1A23D50	
10302905	7	05	SWITCHING POWER SUPPLY 24v 4,5A	ALIMENTATORE SWITCHING 24v 4,5A	
10053418	7	06	2 CONTACT BASE RELAY 94.82	ZOCCOLO X RELE E TIMER 94.82	
10053419	7	06	2 CONTACT RELAY MY2-US-SV 24VDC	RELE' 2 CONTATTI 55-32 24VDC	
10224484	7	07	1PH SAFETY TRASFORMER 230/12V 100VA	TRASFORMATORE 1F DI SICUR. 230/12V 100VA	
10060673	7	08	SINGLE/THREEPHASES INV CIMR-J7AZ20P40	INVERTER CIMR-J7AZ20P40 (3G3JV-A2004)	
10060674	7	08A	EMC FILTER 3G3JV-PFI1010E FOR INVERTER	FILTRO EMC 3G3JV-PFI1010E PER INVERTER	
10224087	7	09	CENTERING CONTROL DC DRIVER LAM-8A	AZIONAMENTO DC PER CENTRATORE LAM-8A	
10061008	7	10	2 CONTACTS BASE RELAY 95.75 SMA	ZOCCOLO PER RELE' A 2 CONTATTI 95.75	
10060870	7	11	2 CONTACTS RELAY 40.52 24VDC G2R-2	RELE' 2 CONTATTI 40.52 24VDC / G2R-2	
10302871	7	12	PLC PCD1 SERIE FOR 3024 (ASSY)	PLC SERIE PCD1 CONFIGURATO X 3024 (ASS)	
10060757	7	13	PLC: CPU PCD1.M130	PLC: MODULO CPU MAX 64 I/O PCD1.M130	
10060739	7	14	PLC: RS232 SERIAL INTERFACE PCD7.F120	PLC: INTERFACCIA SER. RS232 PCD7.F120	
10060730	7	15	PLC: DIG. INPUT MODULE PCD2.E110	PLC: MOD. 8 INGRESSI DIGITALI PCD2.E110	
10060743	7	16	PLC: 16 DIGITAL OUTPUTS MODULE PCD2.A465	PLC: 16 DIGITAL OUTPUTS MODULE PCD2.A465	
10060733	7	17	PLC: ANALOG OUTPUT MOD 4-OUT PCD2.W400	PLC: MOD 4 USCITE ANALOGICHE PCD2.W400	
10297786	7	17A	PROGRAMS MEMORY FLASH EPROM	MEMORIA PER PROGRAMMI FLASH	
10053418	7	19	2 CONTACT BASE RELAY 94.82	ZOCCOLO X RELE E TIMER 94.82	
10053419	7	19	2 CONTACT RELAY MY2-US-SV 24VDC	RELE' 2 CONTATTI 55-32 24VDC	
10298828	7	20	1P+N AUTOM. SWITCH PKN4-16/1N/C/003-A	INTERR. AUTOM. 1P+N PKN4-16/1N/C/003-A	
10306578	7	21	1P+N AUTOMATIC SWITCH I=2A	INTERR. AUTOM. MOD.1P+N I=4A	
10060552	7	22	CERAMIC FUSE 10,3X38 MM I=6,3A FF	FUSIBILE IN CERAMICA 10,3X38 MM I= 6,3A	
10288624	7	22	2P FUSE HOLDER Z-SH/2	PORTAFUSIBILE BIPOLARE Z-SH/2	
10298827	7	23	3P+1NO CONTACTOR DIL M9-10 (RDC24)	CONTATTORE 3P+1NO DIL M9-10 (RDC 24)	
10053529	7	24	GLASS FUSE 5X20MM I=0,8A M	FUSIBILE IN VETRO 5X20MM I=0,8A M	
10053800	7	25	GLASS FUSE 5X20MM I=1A M	FUSIBILE IN VETRO 5X20MM I=1A M	
10060561	7	26	GLASS FUSE 5X20 MM I= 2A M	FUSIBILE IN VETRO 5X20 MM I= 2A M	
10303030	7	27	FORCED GUIDE RELAY 2NA+2NC 24VDC	RELE' A GUIDA FORZATA 2NA+2NC 24VDC	
10303063	7	27A	4 POLE BASE FOR FORCED GUIDE RELAY	ZOCCOLO PER RELE' GUIDA FORZATA 4	

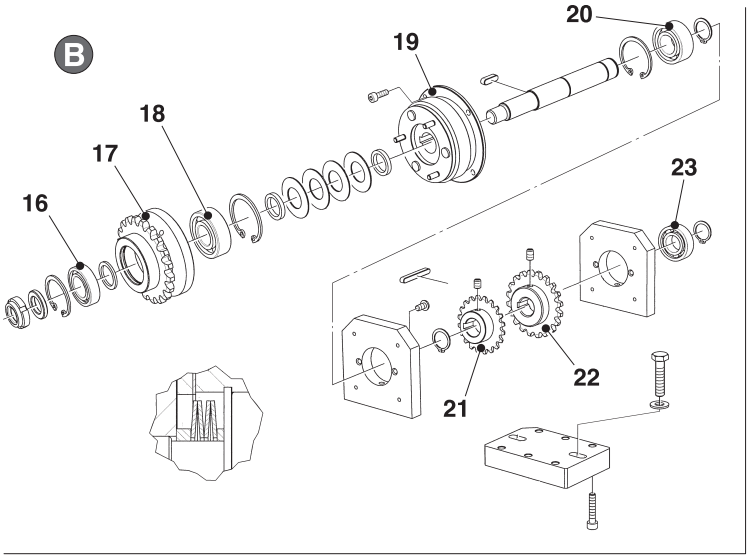


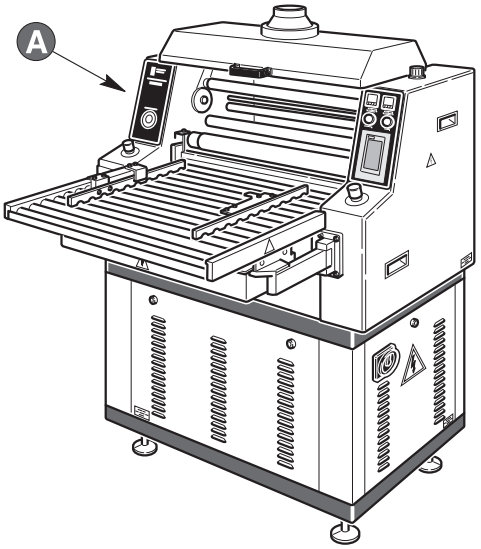


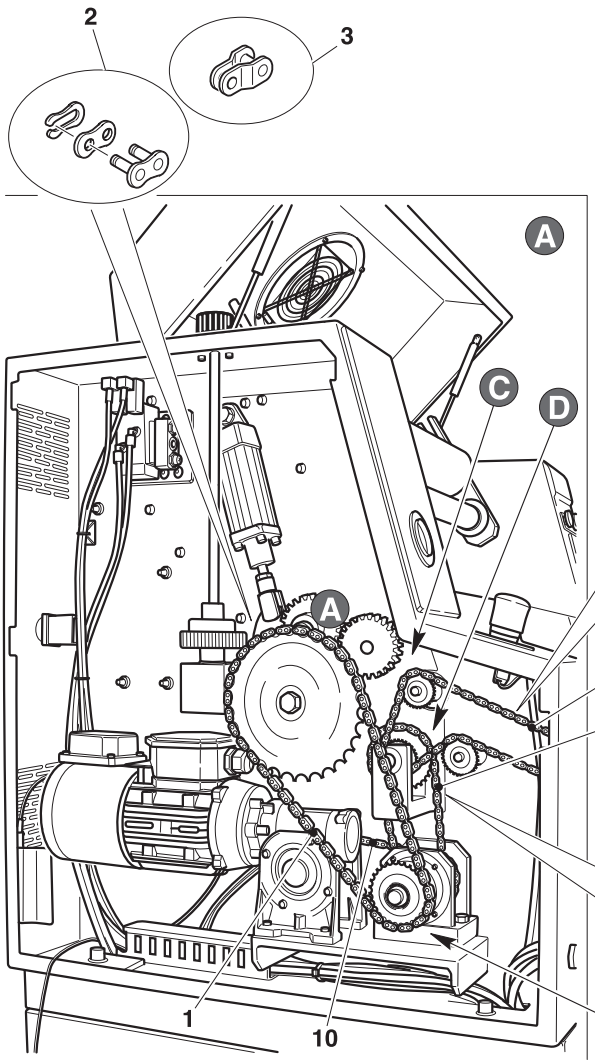
COMPONENTI ELETTRICI QUADRO
ELECTRICAL CABINET COMPONENTS

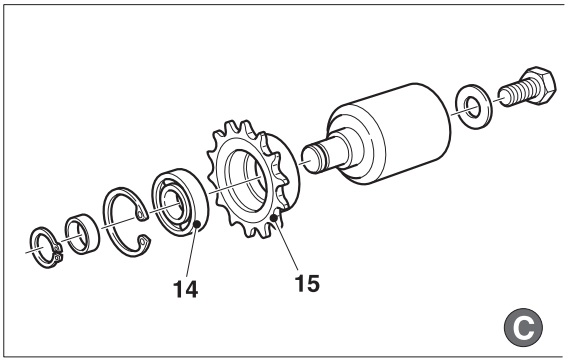
TAB. 7
Rev. A

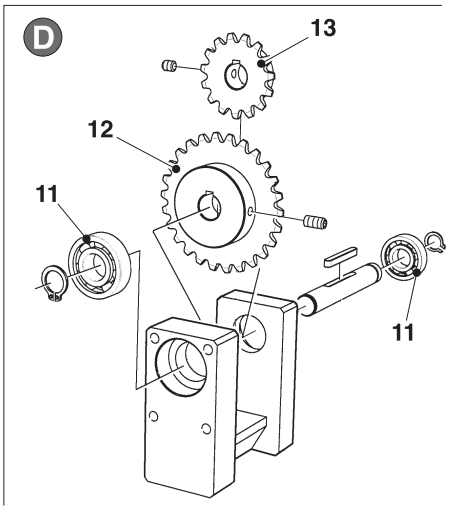
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10332180	8	01	CHAIN 3/8”-7/32” L=0,790 MT	CATENA 3/8”-7/32” L=0,790 MT	
10053072	8	02	JOINT FOR CHAIN 3/8 X 7/32	GIUNTO PER CATENA 3/8 X 7/32	
10053071	8	03	HALF LINK FOR CHAIN 3/8 X 7/32	MAGLIA GIUNZIONE CATENA 3/8 X 7/32	
10332301	8	04	CHAIN 8X3 L=0,440 MT	CATENA 8X3 L=0,440 MT	
10309006	8	05	JOINT FOR SIMPLE CHAIN 8X3 DIN8187	GIUNTO X CATENA SEMPLICE 8X3 DIN8187	
10055695	8	06	HALF LINK FOR CHAIN 8X3	MAGLIA DI GIUNZIONE X CATENA 8X3	
10332302	8	07	CATENA 8X3 L=0,760 MT	CATENA 8X3 L=0,760 MT	
10332179	8	10	CHAIN 3/8”-7/32” L=0,428 MT	CATENA 3/8”-7/32” L=0,428 MT	
	8	11	BEARING SKF 6000 2RS	CUSCINETTO SKF 6000 2RS	
	8	12	PINION Z26 DRW. 063100043 P=8	PIGNONE RINVIO Z26 DIS. 063100043 P=8	
	8	13	REDUCTION PINION Z15 P=8 DRW. 063100033	PIGNONE RIDUTTORE Z15 P=8 DIS. 063100033	
	8	14	BEARING SKF 61900 2RS	CUSCINETTO SKF 61900 2RS	
	8	15	TENSIONER PINION Z15 P=8 DRW. 063100035	PIGNONE GALOPPINO Z15 P=8 DIS. 063100035	
	8	16	BEARING SKF 61902 2RS	CUSCINETTO SKF 61902 2RS	
	8	17	SHAFT WITH SPROCKET DRW. 063100041	MOZZO CON CORONA DIS. 063100041	
	8	18	BEARING SKF 6202 2RS	CUSCINETTO SKF 6202 2RS	
10055867	8	19	CLUTCH KEB 06.03.110 24VDC HOLE 17	FRIZIONE KEB 06.03.110 24VDC FORO17	
	8	20	BEARING SKF 63003 2RS	CUSCINETTO SKF 63003 2RS	
	8	21	CLUTCH GROUP PINION DRW. 063100047	PIGNONE GRUPPO FRIZIONE DIS. 063100047	
	8	22	CLUTCH GROUP PINION DRW. 063100042	PIGNONE GRUPPO FRIZIONE DIS. 063100042	
	8	23	BEARING SKF 6003 2RS	CUSCINETTO SKF 6003 2RS	







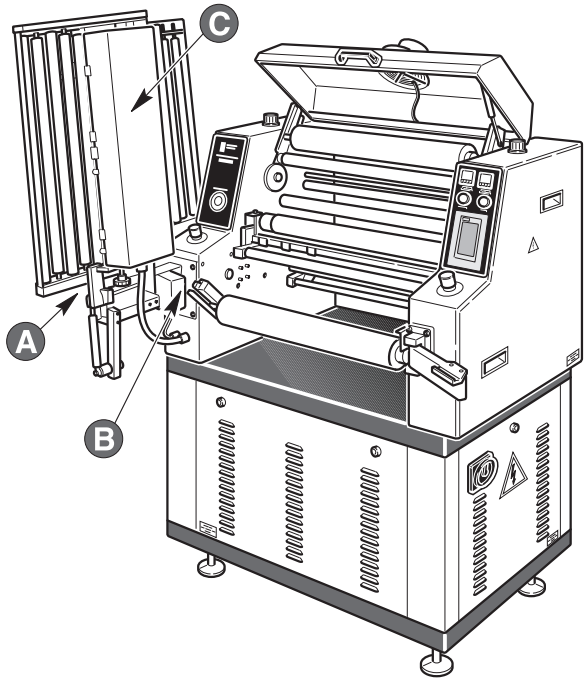


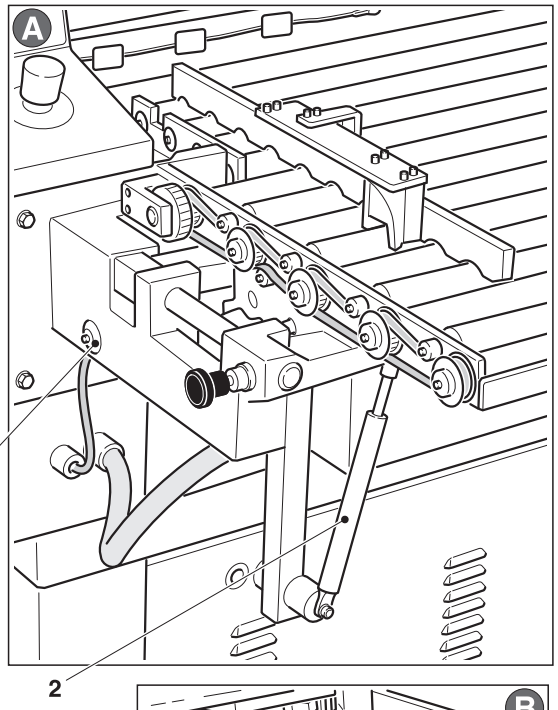


MOTORIZZAZIONE RULLIERA
ROLLER CONVEYOR

TAB. 8
Rev. A

CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10053317	9	01	BEARING LAT CUT 6201/2RS	CUSCINETTO SKF 6201/2RS	
10053672	9	02	SPRING 094714	MOLLA A GAS 094714	
	9	03	GEAR WHEEL DRW. 028200006	RUOTA DENTATA DIS. 028200006	
	9	04	PINION DRW. 028200004	PIGNONE DIS. 028200004	
	9	05	GEAR WHEEL DRW. 028200005	RUOTA DENTATA DIS. 028200005	
10054427	9	06	BEARING BOX KH 2030 D.20-28-30	ASTUCCIO A SFERE KH 2030 D.20-28-30	
10053287	9	07	GEAR MOTOR MINIMOTOR 3557 K 012CS	MOTORID.MINIMOTOR 3557 K 012CS	
	9	08	GEAR DRW. 018600011	INGRANAGGIO DIS. 018600011	





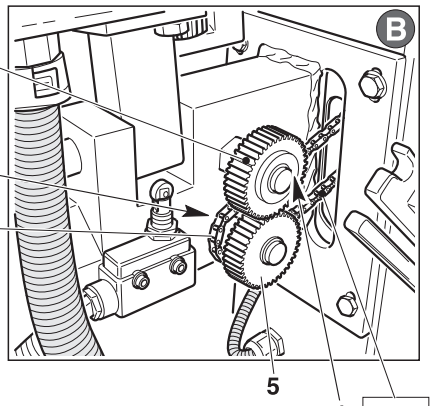
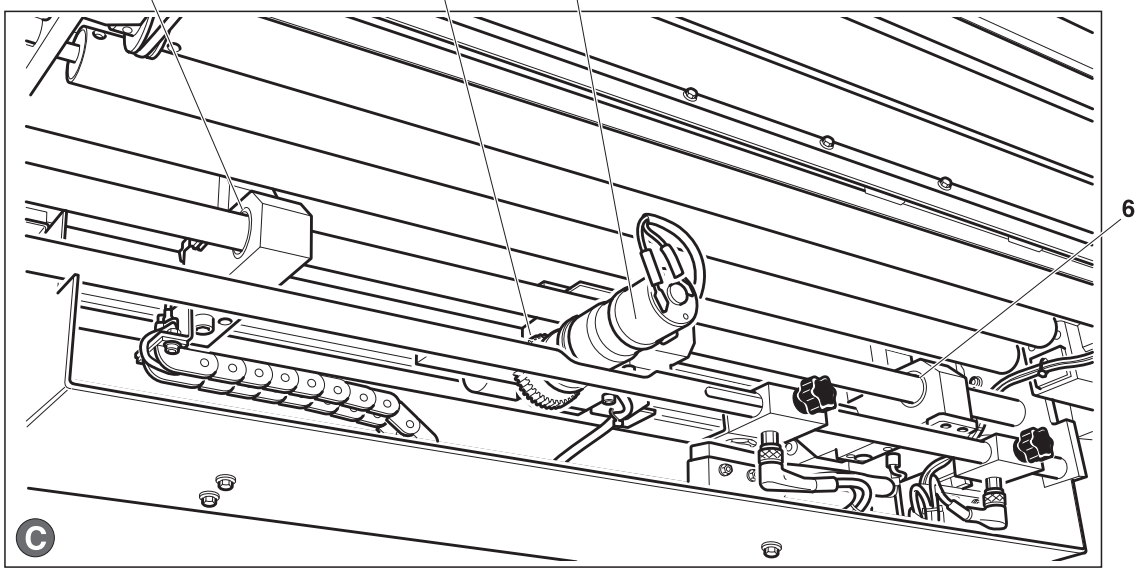
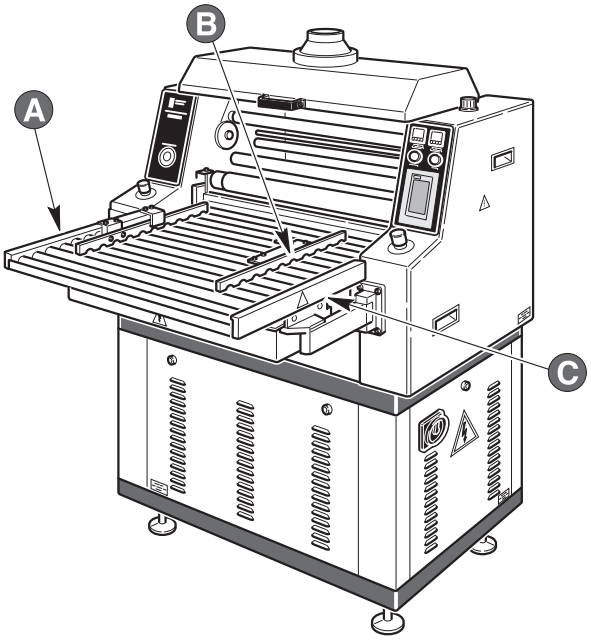


Fig. 8



CODICE	TAB.	POS.			
PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
	10	01	TOOTHED WHEEL Z50 DRW. 028400005	ROUTA DENTATA Z50 DIS. 028400005	
10055991	10	02	IDLE PIN D.16MM INA KR 16 PP	PERNO FOLLE D.16MM INA KR 16 PP	
10055872	10	03	TOOTHED BELT 364XL037 182 TEETH	CINGHIA DENTATA 364XL037 182 DENTI	
10055880	10	04	PULLEY 0284.00.020	PULEGGIA 0284.00.020	
10332176	10	05	LEFT PLATE GUIDE DRW. 064200004	SPALLETTA GUIDASCHEDA SX DIS.064200004	
10332175	10	06	RIGHT PLATE GUIDE DRW. 064200005	SPALLETTA GUIDASCHEDE DX DIS. 064200005	
	10	07	ROLL DRW. 028400031	RULLO DIS. 028400031	
10332202	10	08	BEARING SKF 608-2RS	CUSCINETTO SKF 608-2RS	
	10	09	PULLEY DRW. 028400022	PULEGGIA DIS. 028400022	
10061259	10	10	ROUND BELT TYPE PU-S D.5 SV.303	CINGHIA TONDA PU-S D.5 SV.303	
	10	11	ROLL DRW. 028400019	RULLO DIS. 028400019	
	10	12	PULLEY DRW. 028400033	PULEGGIA DIS. 028400033	
	10	13	ROLL DRW. 028400017	RULLO DIS. 028400017	
	10	14	DOUBLE PULLEY DRW. 028401023	PULEGGIA DOPPIA DIS. 028401023	
	10	15	ROLL DRW. 028400018	RULLO DIS. 028400018	
10332310	10	16	SPRING CYLINDER GN35122	PISTONCINO A MOLLA GN35122	
10075748	10	18	FLAT BELT HAB1SIT F1 10X912	CINGHIA PIANA HABASIT F1 10X912	



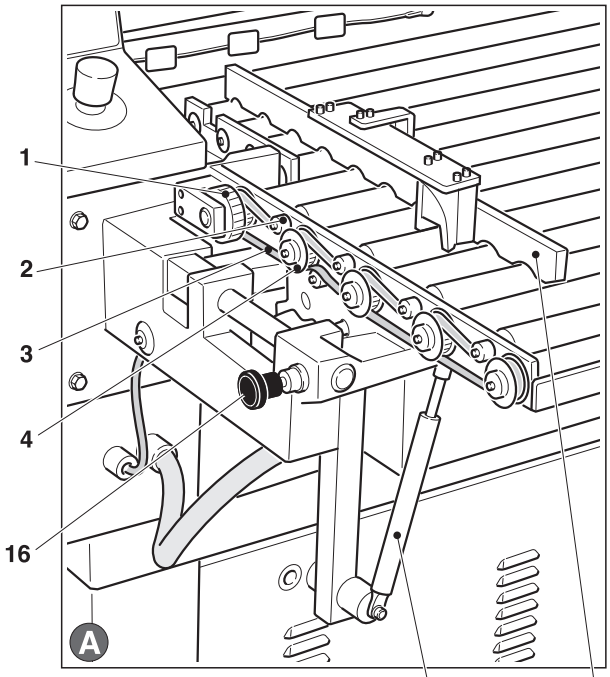
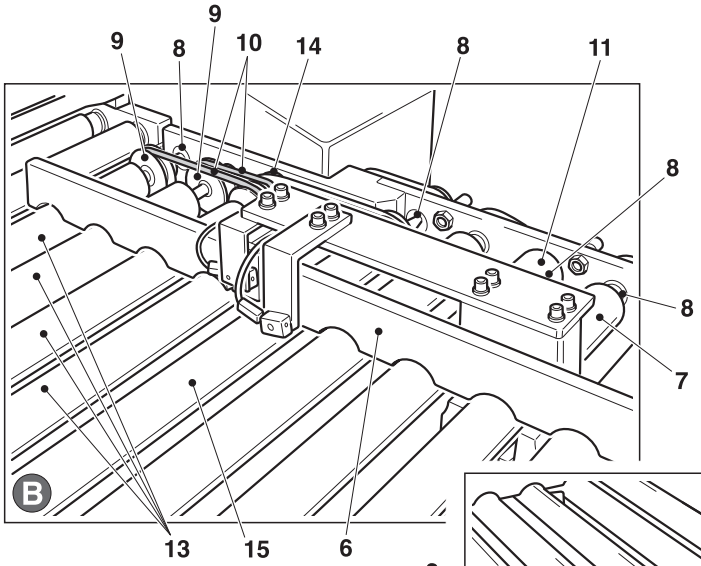
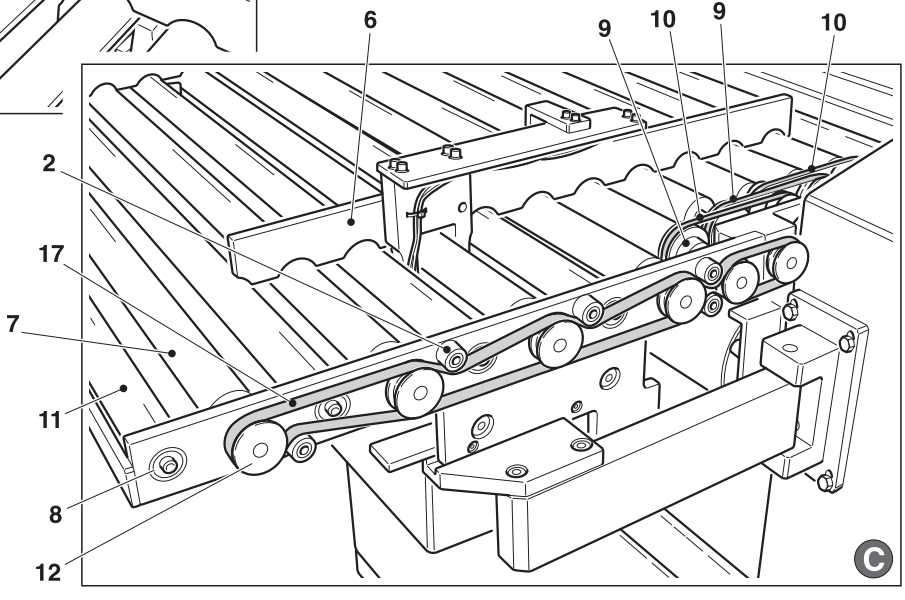
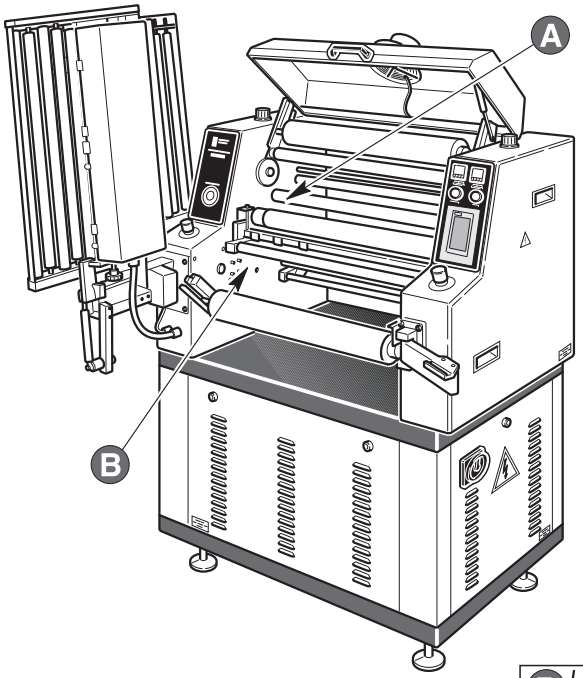


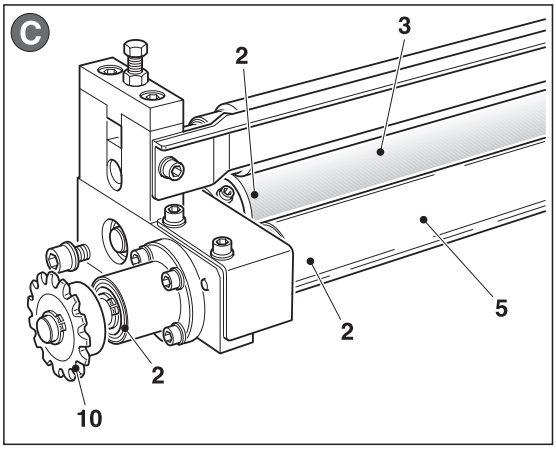
Fig. 9

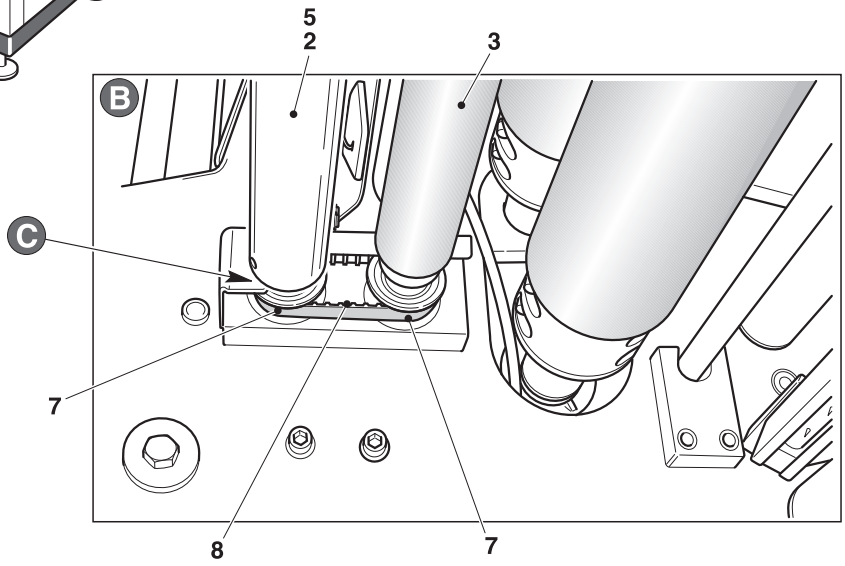


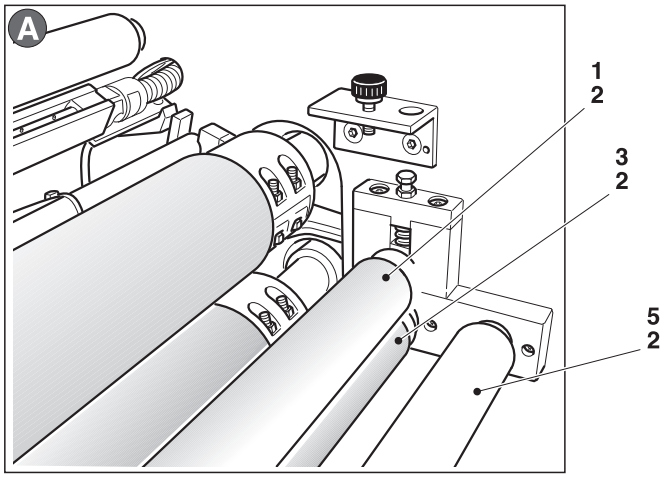


CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
	11	01	TOP ROLL DRW. 063100018	RULLO INTRODUTTORE SUP. DIS. 063100018	
	11	02	BEARING SKF 61900-2RS	CUSCINETTO SKF 61900-2RS	
	11	03	LOWER ROLL DRW. 063100017	RULLO INTRODUTTORE INF. DIS. 063100017	
	11	05	FRONT ROLL DRW. 063100016	RULLO INTRODUTTORE ANT. DIS. 063100016	
	11	07	PULLEY DRW. 063100013	PULEGGIA DIS. 063100013	
10332309	11	08	TOOTHED BELT XL037-70 L=178	CINGHIA DENTATA XL037-70L=178	
	11	10	ROLL SPROCKET DRW. 063100028	PIGNONE RULLI INTRODUTTORI DIS. 063100028	

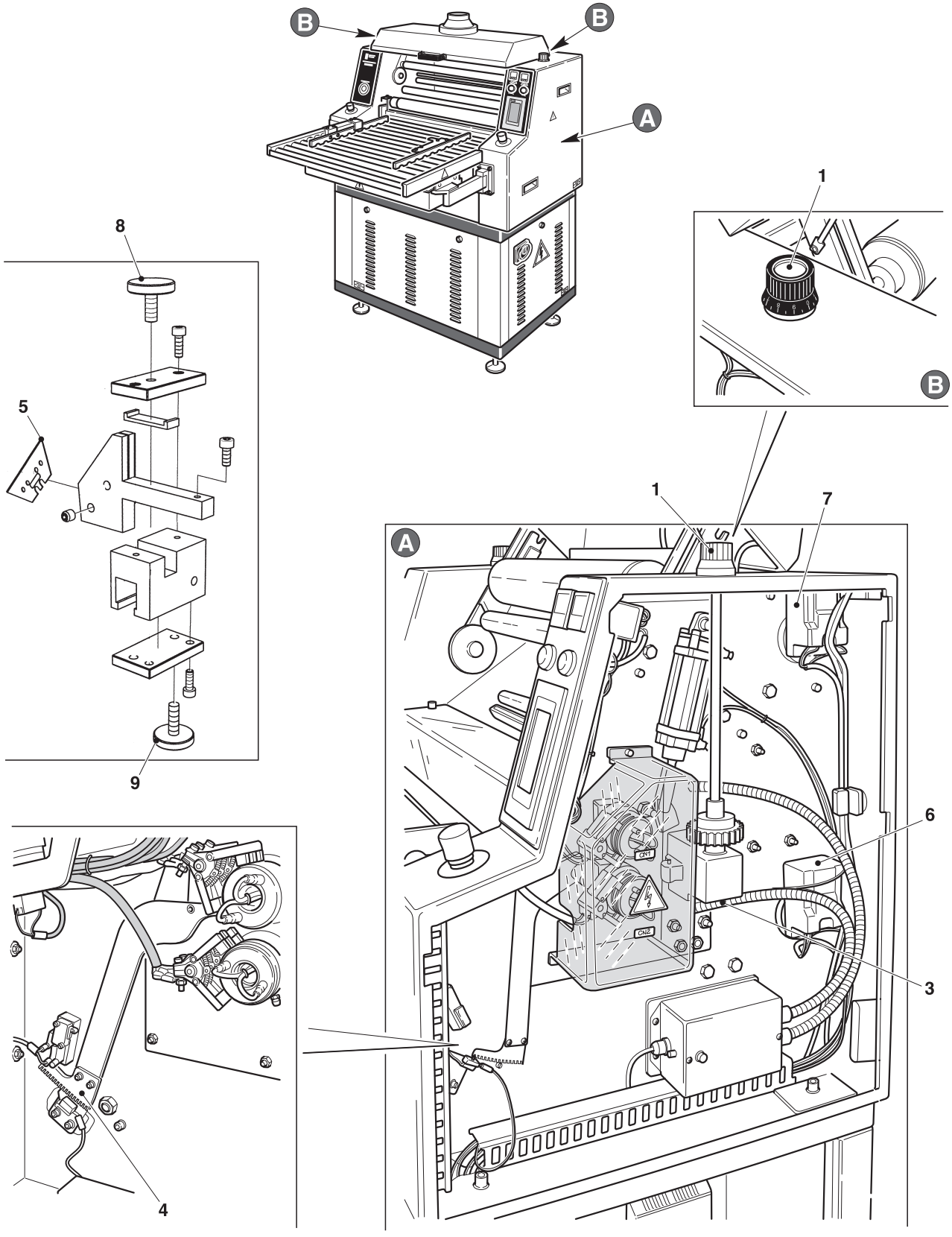








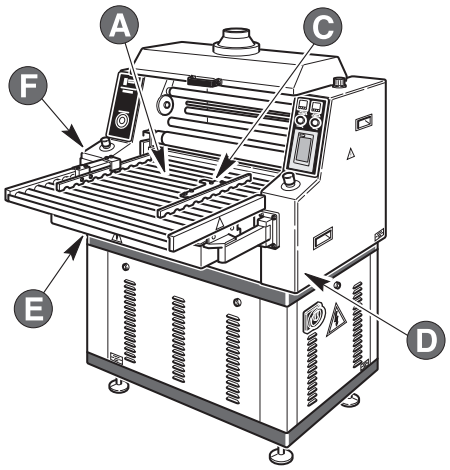
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
	12	01	KNOB COD. 30546	MANOPOLA COD. 30546	
10332311	12	03	CONTACT PIN DRW. 062000004	PUNTALE DIS. 062000004	
	12	04	MOVEMENT SENSOR PLATE DRW. 063300008	LAMIERA SENSORE MOVIMENTO DIS. 063300008	
10053318	12	05	BLADE FOR LATERAL CUTTING	LAMA RICAMBIO COLTELLI STANLEY	
10076003	12	06	LOWER GEARMOTOR FOR LATERAL CUTTING	MOTOR.MR330 45RPM H12 220/50 MR ORARIO	
10076001	12	07	UPPER GEARMOTOR FOR LATERAL CUTTING	MOTOR.MR330 45RPM H12 220/50 M3 ANTIOR.	
10055015	12	08	KNURLED HEAD SCREW UNI6048 M6X16	VITE A TESTA ZIGRINATA UNI6048 M6X16	
10055011	12	09	KNURLED HEAD SCREW M6X20	VITE A TESTA ZIGRINATA M6X20	

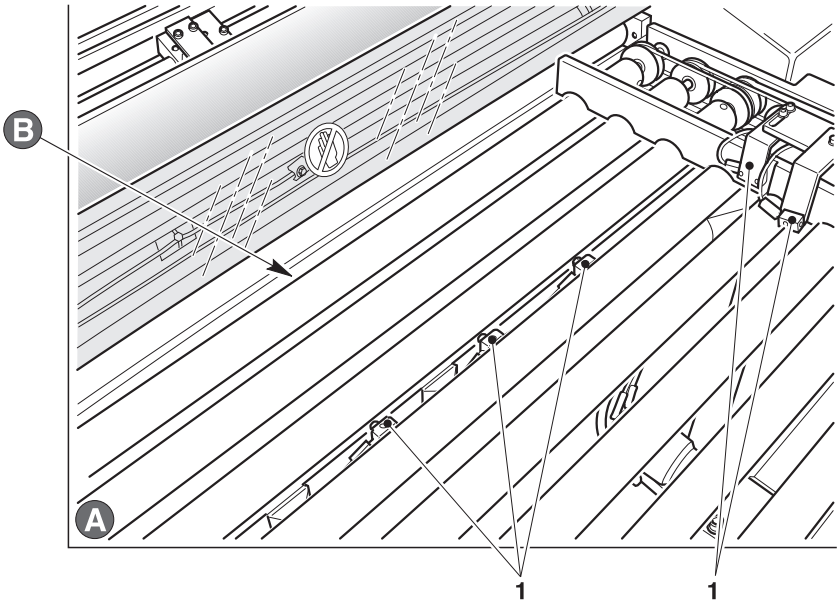


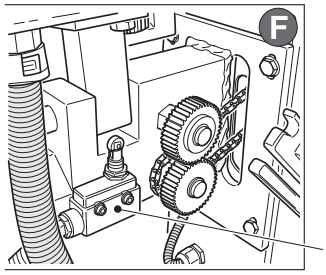
CONTROLLO SPESSORE - TAGLIO LATERALE
THICKNESS CHECK - LATERAL CUTTING

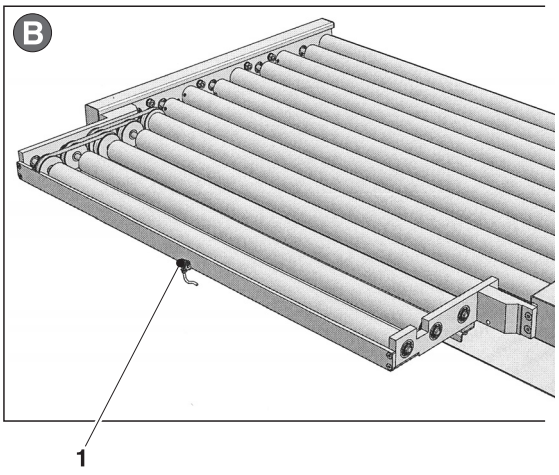
TAB. 12
Rev. A

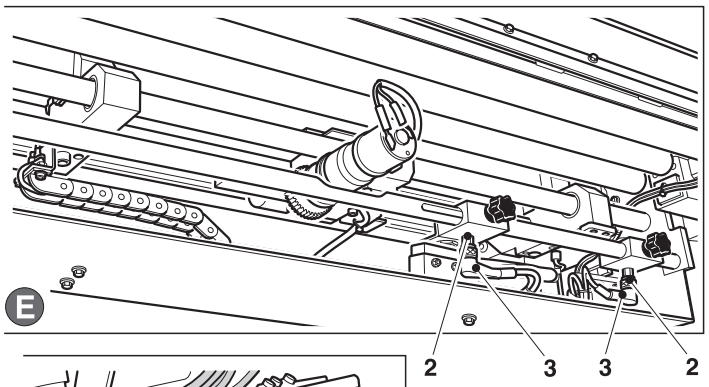
CODICE PART NUMBER	TAB.	POS.	DESCRIPTION	DESCRIZIONE	NOTE
10316791	13	01	PHOTOCELL MINOS FHDK	FOTOC. SERIE MINOS REFLEX FHDK	
10317054	13	02	PROXIMITY SWITCH D. 12 MM E2A (CONN)	SENSORE DI PROSS. D.12MM E2A (CONN)	
10055925	13	03	CONNECTOR FOR PROX./PHOTOCELL T7P502	CONN.X PROX / FOTOCELLULA T7P502	
10054143	13	04	MICROSWITCH V165 1 A5	FINECORSA V165 1 A5	
10053801	13	05	MICROSWITCH Z15 GQ22	FINECORSA Z15 GQ22	

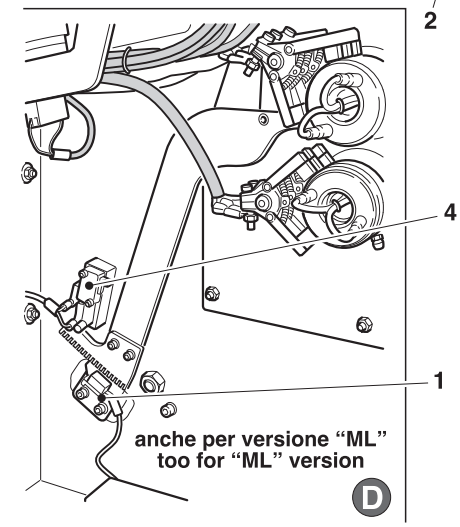


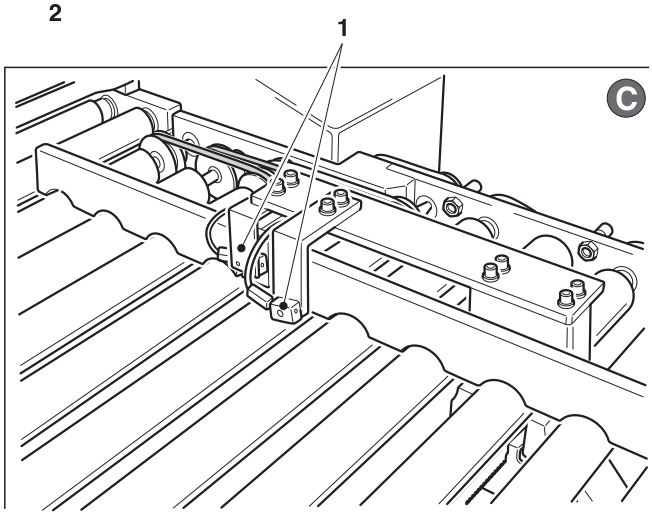












For additional information or service
contact your local Rohm & Haas office

UNITED STATES

Marlborough, MA
Tel: 800.832.6200
Fax: 508.485.9113

JAPAN

Tokyo
Tel: +81.3.5213.2910
Fax: +81.3.5213.2911

ASIA

Hong Kong
Tel: +852.2680.6888
Fax: +852.2680.6333

EUROPE

Paris, France
Tel: +33.1.40.02.54.00
Fax: +33.1.40.02.54.07

Castronno, Italy
Tel: +39.0332.896311
Fax: +39.0332.896398

www.rohmhaas.com

Ed. Gen 2007