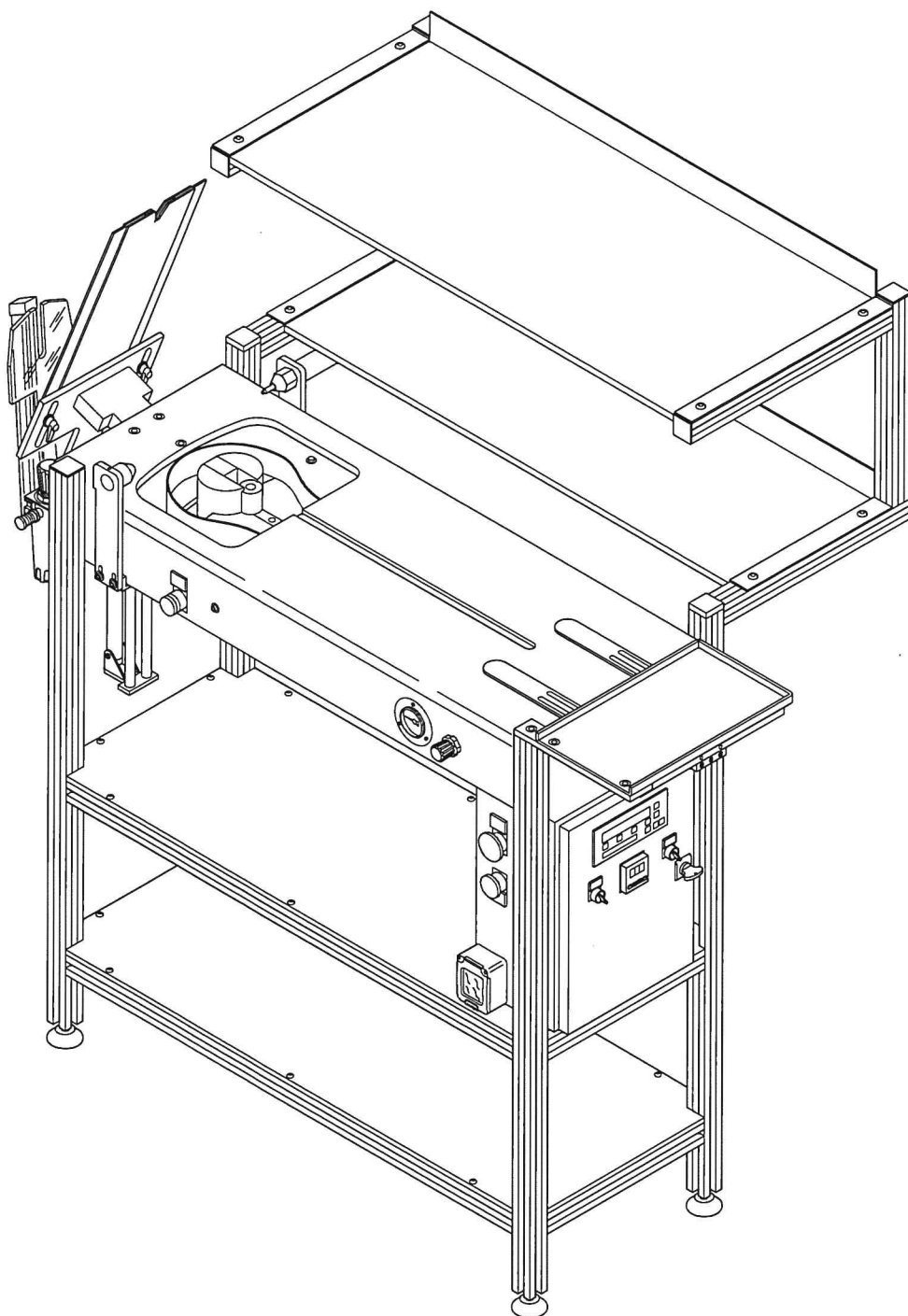


# **SHIRT FOLDING MACHINE**

## **mod. MPC**



### **Instructions for use and maintenance**



**MAICA** **Macchine Automatismi Industriali Camicerie Abbigliamento**





**Macchine Automatismi Industriali Camicerie Abbigliamento**

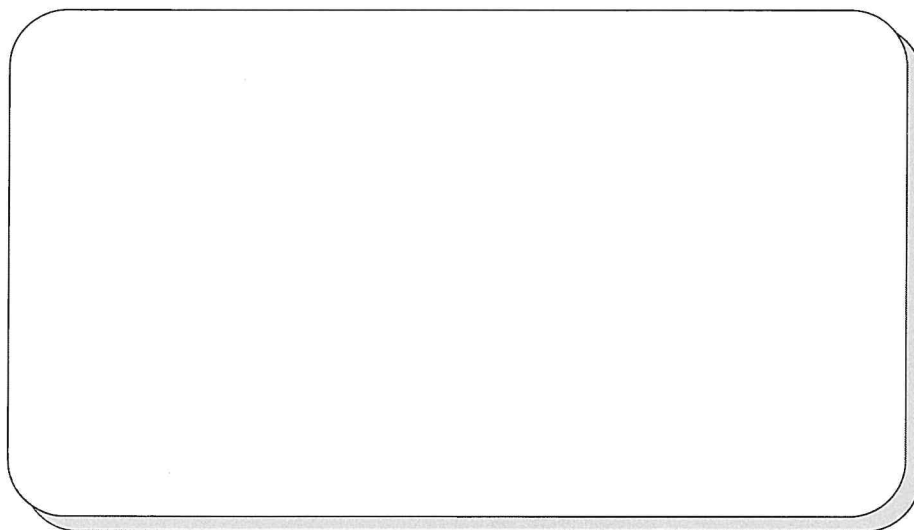
Via Casale, 23 - 24060 Torre de' Roveri (Bergamo) - ITALY

Telefono (+39) 35 580040 - Telefax (+39) 35 580920

web: [www.maicaitalia.com](http://www.maicaitalia.com)

e-mail: [info.maicaitalia@maicaitalia.com](mailto:info.maicaitalia@maicaitalia.com)

AUTHORIZED AREA DEALER FOR ASSISTANCE



# EEC CONFORMITY DECLARATION

The **Shirt Folding Machine mod. MPC**, as described in this manual, complies with the standards set down by the following EEC Directives :

<b>UNI EN 292-1</b>	Machine safety. Essential principles.
<b>UNI EN 292-2</b>	Machine safety. Essential principles.
<b>UNI EN 294</b>	Machine safety. Safety distances for arms.
<b>UNI EN 349</b>	Machine safety. Minimum crushing distances.
<b>UNI EN 418</b>	Machine safety. Emergency stop devices.
<b>pr EN 563</b>	Machine safety. Contact surface temperatures. Ergonomic data.
<b>pr EN 574</b>	Machine safety. Two-hand control devices.
<b>pr EN 953</b>	Machine safety. Guard design and construction.
<b>pr EN 1088</b>	Machine safety. Interlocking devices with or without guard locking.
<b>EN 60204-1</b>	Electrical devices on industrial machines. Part 1: general standards.
<b>EN 60529</b>	Levels of protection guaranteed by guards (IP code).

Manufacturer:  
**M.A.I.C.A.** S.r.l.



# 01 - GENERALITIES

## CHARACTERISTICS AND FIELD OF APPLICATION

The new mod. MPC Shirt Folding Machine folds shirts perfectly-ready to be packaged.

An important feature is that the bottom part of the shirt can be folded and automatically inserted inside the shirt itself, which eliminates the need for traditional pins.

Shirts of different sizes (from 38 to 45) can be folded without the need for adjustments, thanks to a device that automatically adjusts to the collar size.

While the shirt is being folded, the shirt collar is also ironed.


The shirt holder board rises vertically before tilting to prevent the collar from getting deformed.

The machine is equipped with a PLC control system.

Output is about 150 to 200 items per hour.

## ADVISED USE

The mod. MPC Shirt Folding Machine is **to be used solely** for folding shirts. The manufacturer cannot be held liable for any damage to persons or property arising from the incorrect use of this machine or any use differing from the instructions indicated in this manual.

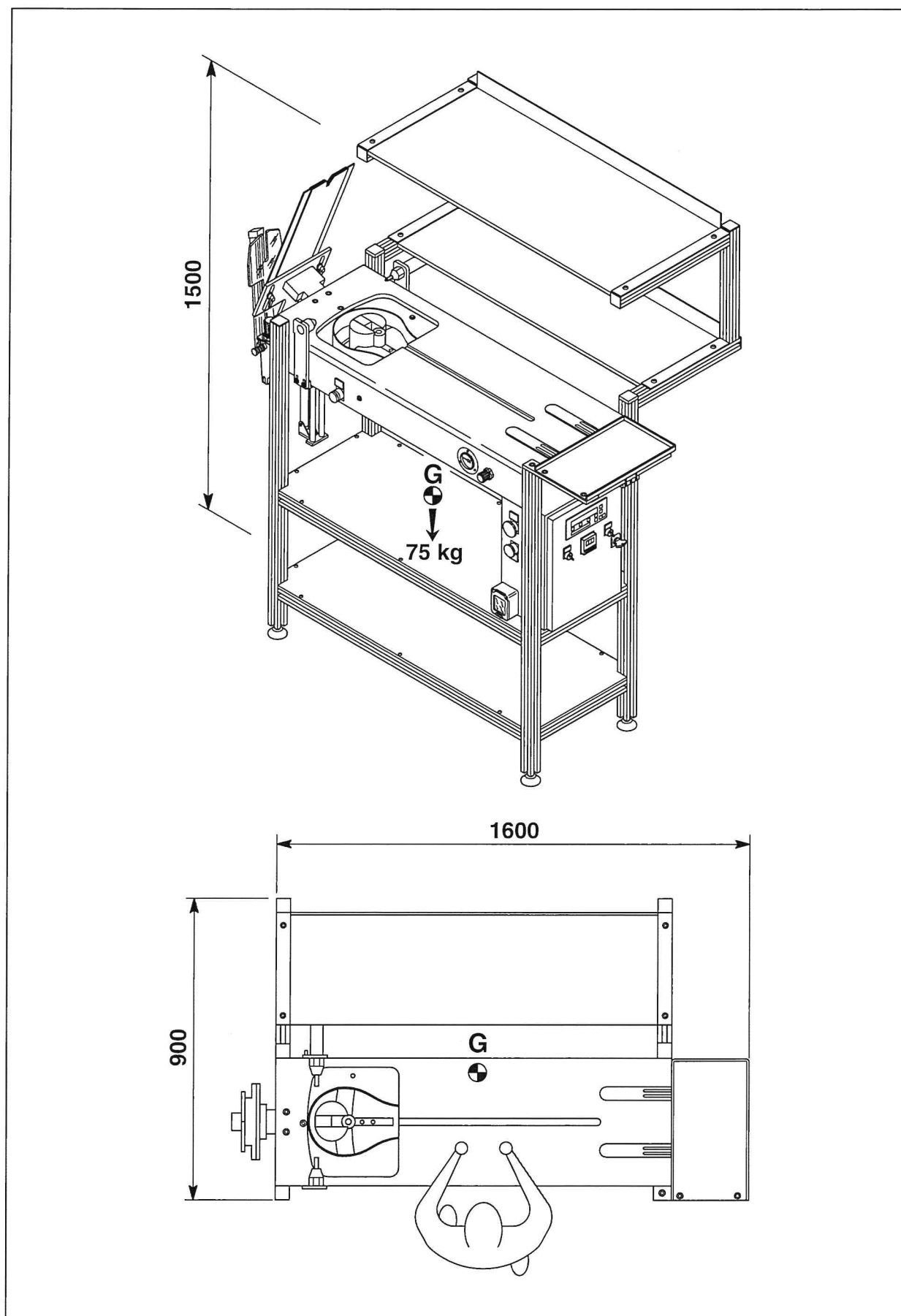
The  symbol indicates there exists a risk or danger for the health of the operator and, therefore, much care must be taken at this point.

The machine is equipped with a shirt collar ironing unit, which usually reaches temperatures near 70°C. Exercise extreme caution when near those parts.

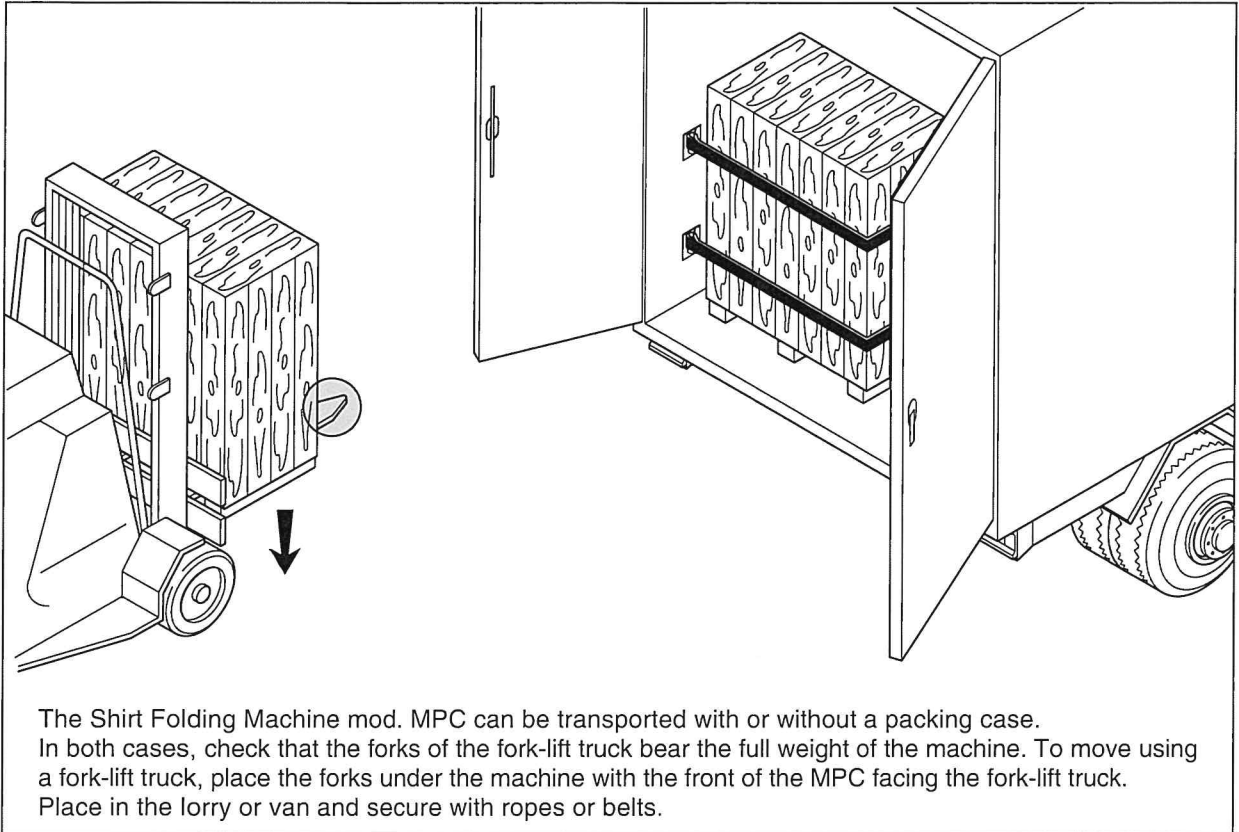
Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work.

The machine **must not be** exposed to the weather (rain, sun, etc).

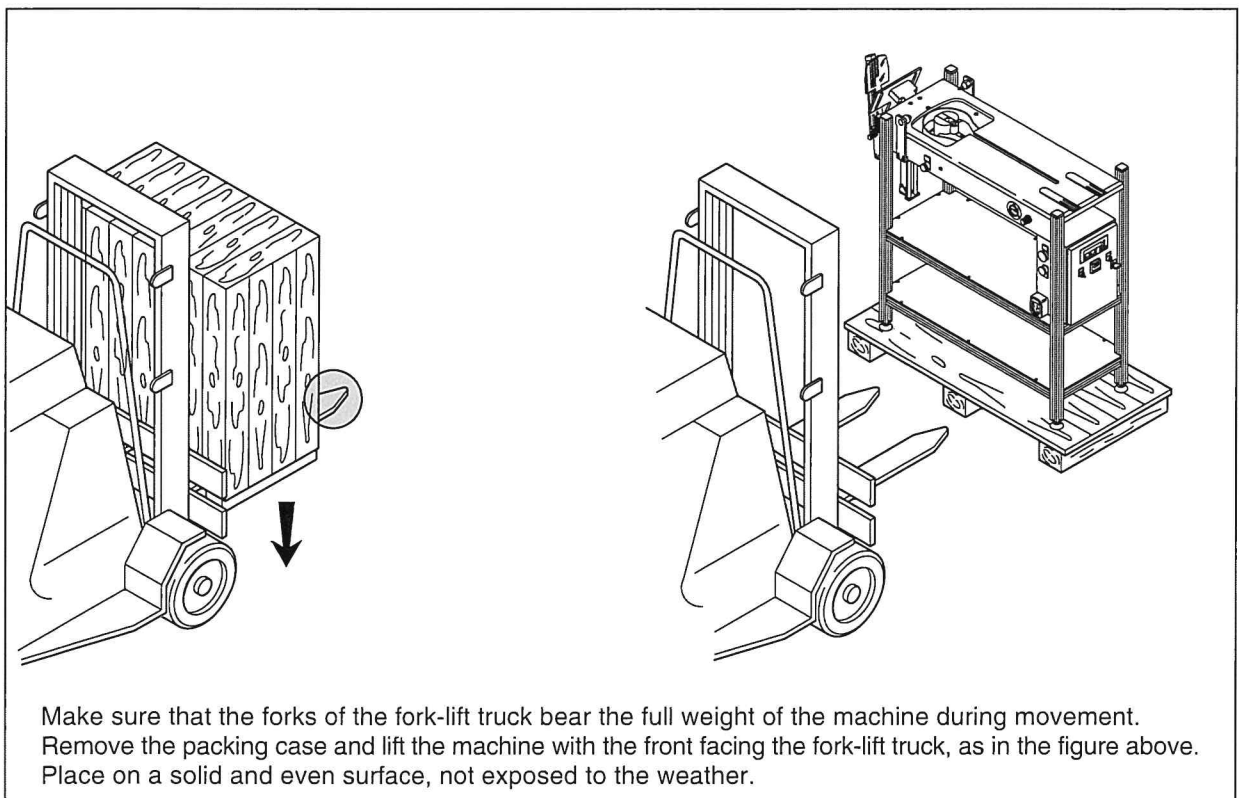
## O2 - SHIRT FOLDING MACHINE mod. MPC TECHNICAL DATA



## 03 - LIFTING AND TRANSPORTATION



## 04 - LOADING AND UNLOADING



## 05 - INSTALLATION

**ATTENTION:** This machine must only be installed by specialized personnel.

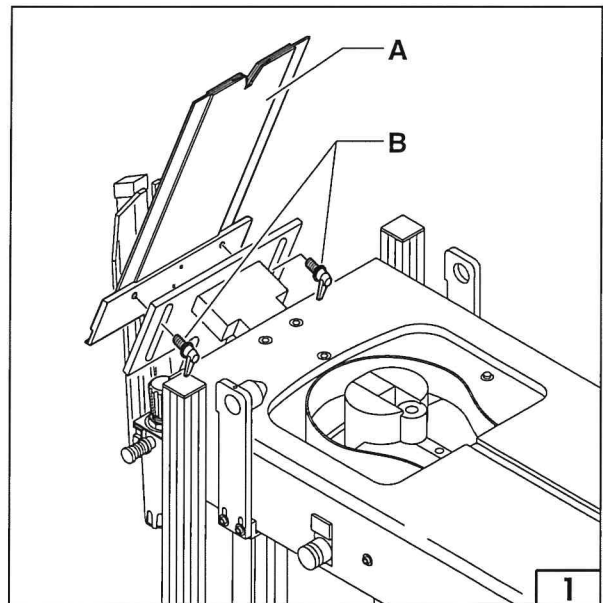
The manufacturer cannot be held liable for any damage to persons or to property arising from incorrect installation not in accordance with these instructions and connection to a mains supply that does not meet the necessary requirements.



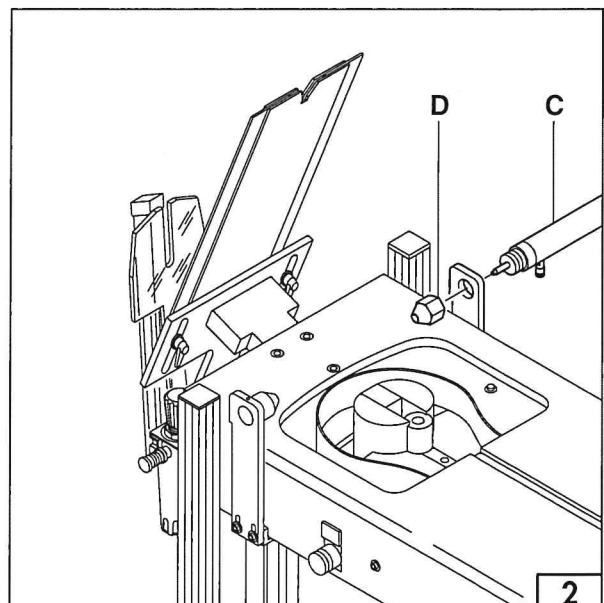
If the machine is installed on a suspended surface, check that the surface can withstand the weight of the machine. This machine must not be installed in areas where there are explosive or inflammable materials and substances.

For ease of transport, the machine is delivered with the following parts disassembled:

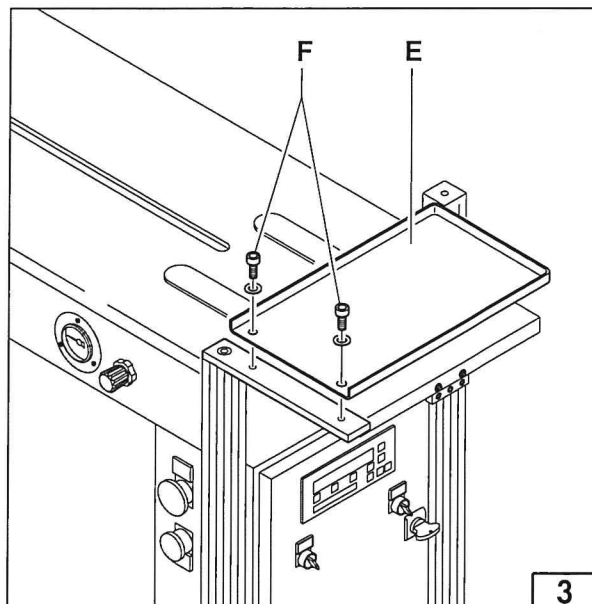
- Shirt holder board "A" (fig. 1). Assemble using the two knobs "B".



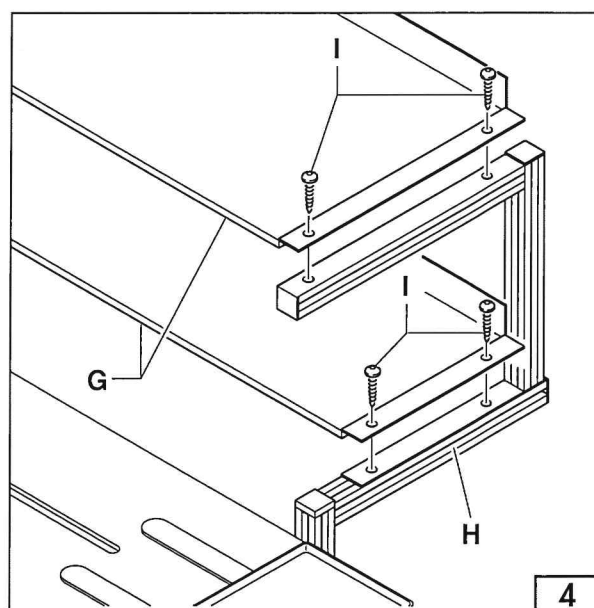
- Side cylinder "C" (fig. 2) for automatic folding operation. Assemble using nut "D".



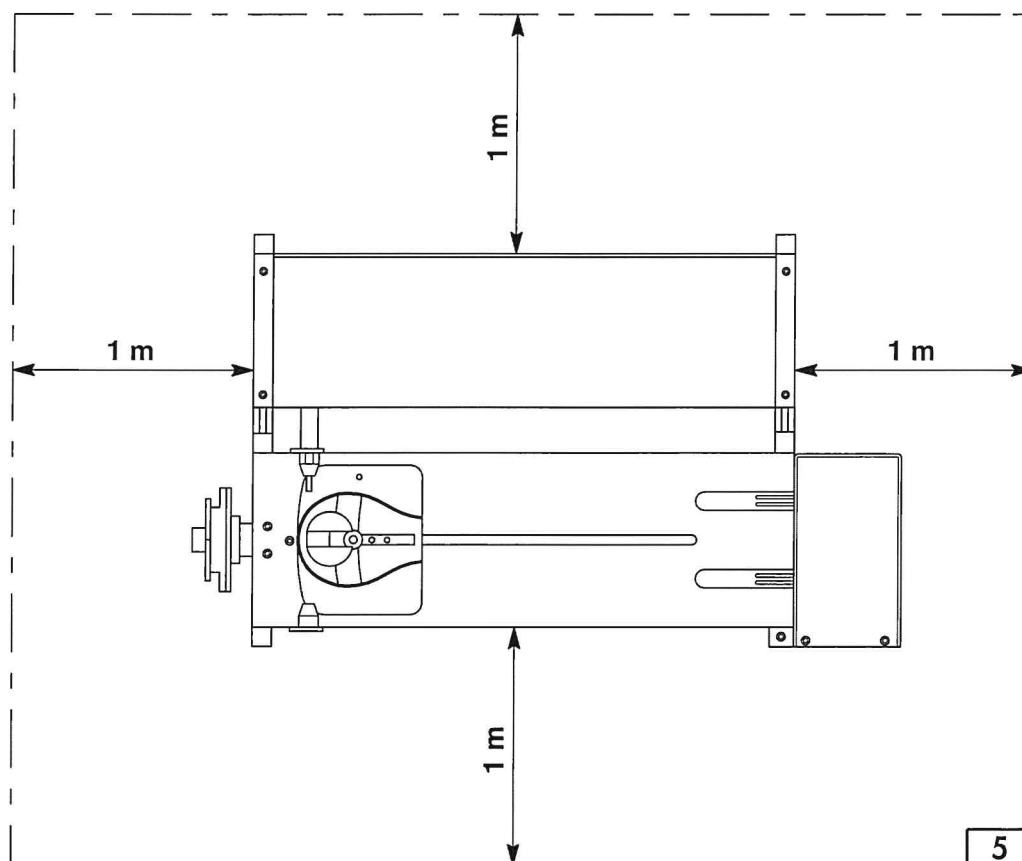
- Iron rest "E" (fig. 3). Attach with screws "F".



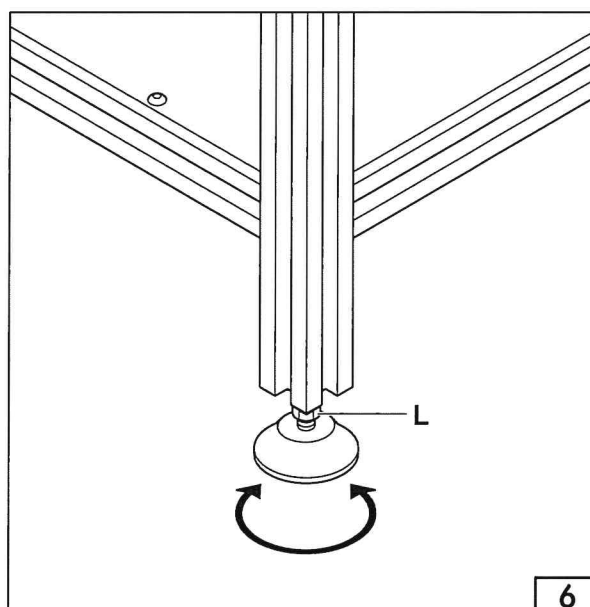
- Shelves "G" (fig. 4). Fasten frame "H" to the base and fasten the shelves with screws "I".



- Make sure that the distances shown in figure 5 below are respected as these are necessary for the maintenance and operation of the machine.



- The machine must be placed on a solid and even surface. Turn the nuts "L" (fig. 6) on the leveling feet to adjust the height.

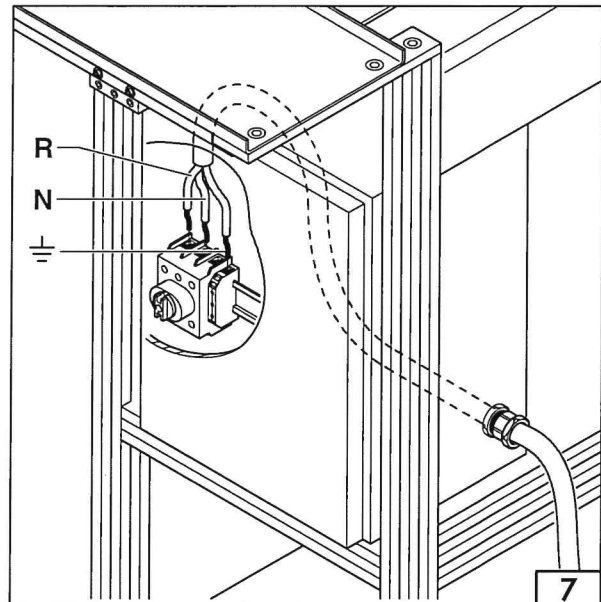


## ELECTRICAL CONNECTIONS

The machine is usually delivered with the power cable wired inside the electrical panel. Therefore, all that needs to be done is to connect it to a 220V-50Hz single-phase power outlet.

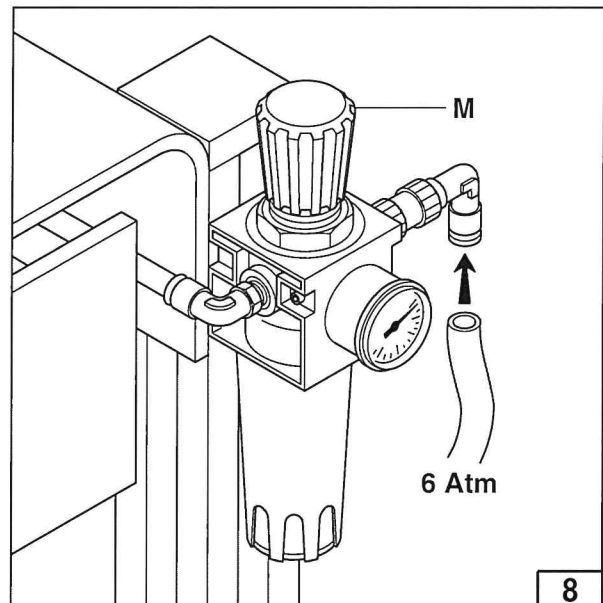
If this is not the case, proceed as follows:

- Open the electrical panel with the key.
- Pass the power cable through the core hitch on the machine.
- Connect phases "R" and "N" and the earth  $\perp$  to the corresponding terminals of the main switch (fig. 7).
- Before installation, check the efficiency of the earthing system to which the machine is connected.
- The power consumption is 0,4 Kw.

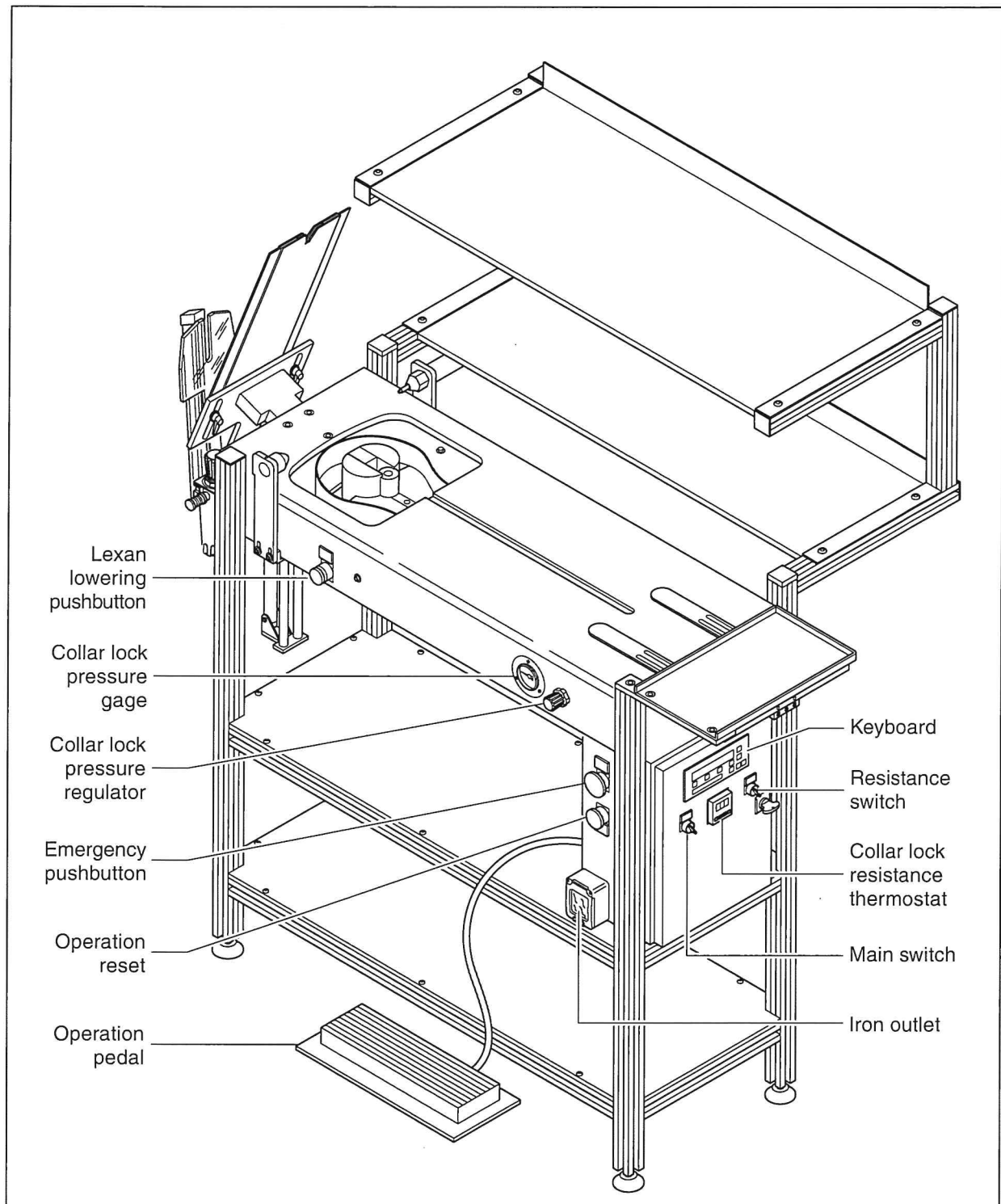


## PNEUMATIC CONNECTION

- Connect the machine to the compressed air outlet and make sure that the air flow is sufficient to allow for operation with a constant rate of pressure of 6 Atm.
- Calibrate pressure regulator "M" at between 6 Atm (fig. 8).

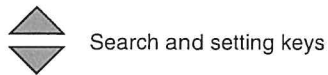


## 06 - MACHINE CONTROLS





## TD 200 KEYBOARD FUNCTIONS AND SETTINGS



Search and setting keys



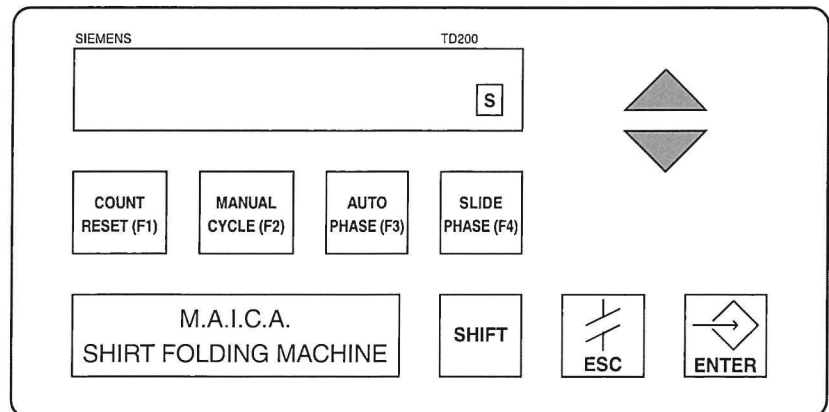
Acceptance key



Menu key

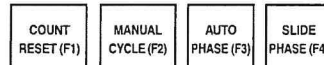


Change function key



### CONTROL FUNCTION KEYS





To activate a function press the key corresponding to the function.  
To deactivate a function press the key corresponding to the function.



### SETTINGS USING THE KEYBOARD

- 1 - Lexan blade return time.
- 2 - Collar stretching time.
- 3 - Shirt rise time.
- 4 - Side cylinder holder slide forward time.
- 5 - Side cylinder return time.
- 6 - Lexan holder cylinder rise time.

To change the values on the keyboard proceed as follows:

- Press keys  and position the cursor on the value to be changed.
- Press key  and change the desired value using keys .
- After changing the value, press key .

### SPECIAL OPERATIONS CONTROL

For the special functions proceed as follows:

to activate a function, press the key corresponding to the desired operation; to deactivate it press the key again.  
The display shows the operation on or off.

- 1 - Key F1 shirt count reset
- 2 - Key F2 manual cycle control
- 3 - Key F3 automatic or pedal shirt rise control
- 4 - Key F4 rear slide forward or slide lock control

### ON-BOARD ALARMS

- 1 - Emergency activated
- 2 - Limit switch I0.2 missing
- 3 - Limit switch I0.3 missing
- 4 - Limit switch I0.4 missing

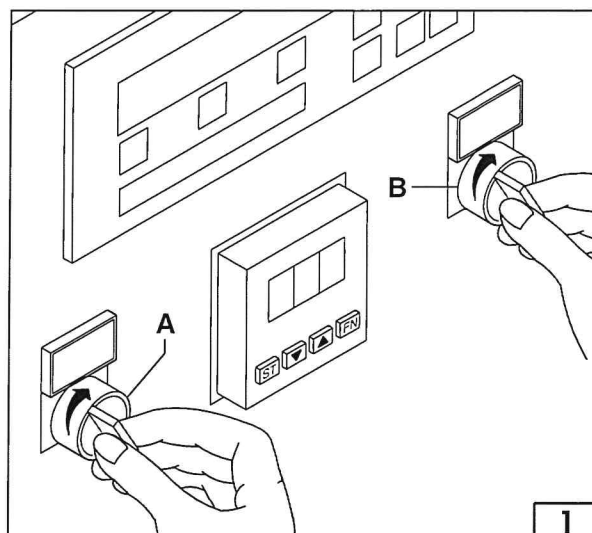
### DISPLAY

- 1 - Folded shirts

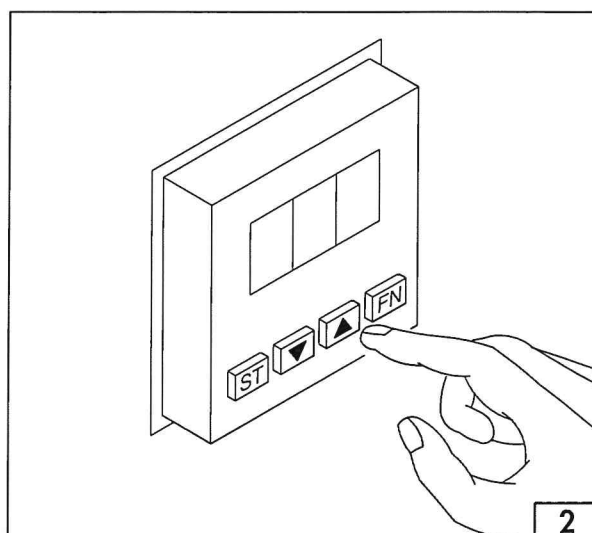
## 07 - OPERATION

### START-UP

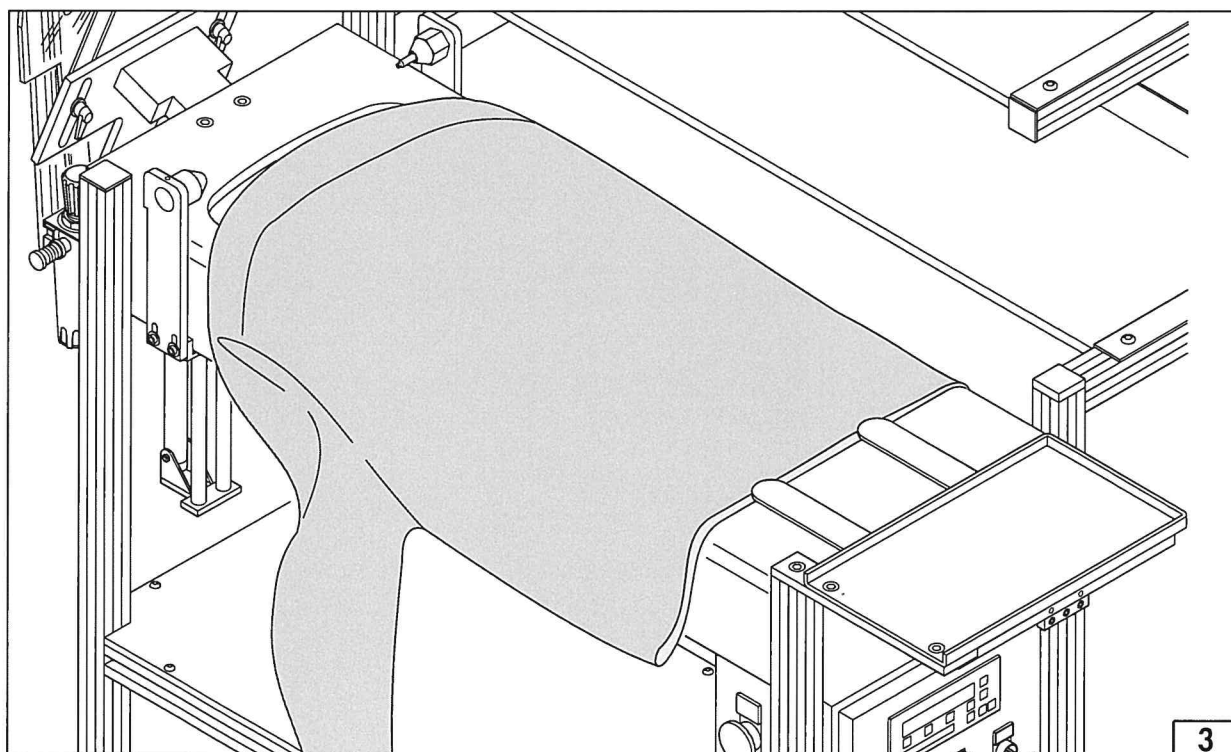
- Turn on the main switch by turning switch "A" (fig. 1) to the right.
- Turn on the resistances by turning switch "B" (fig. 1) to the right.



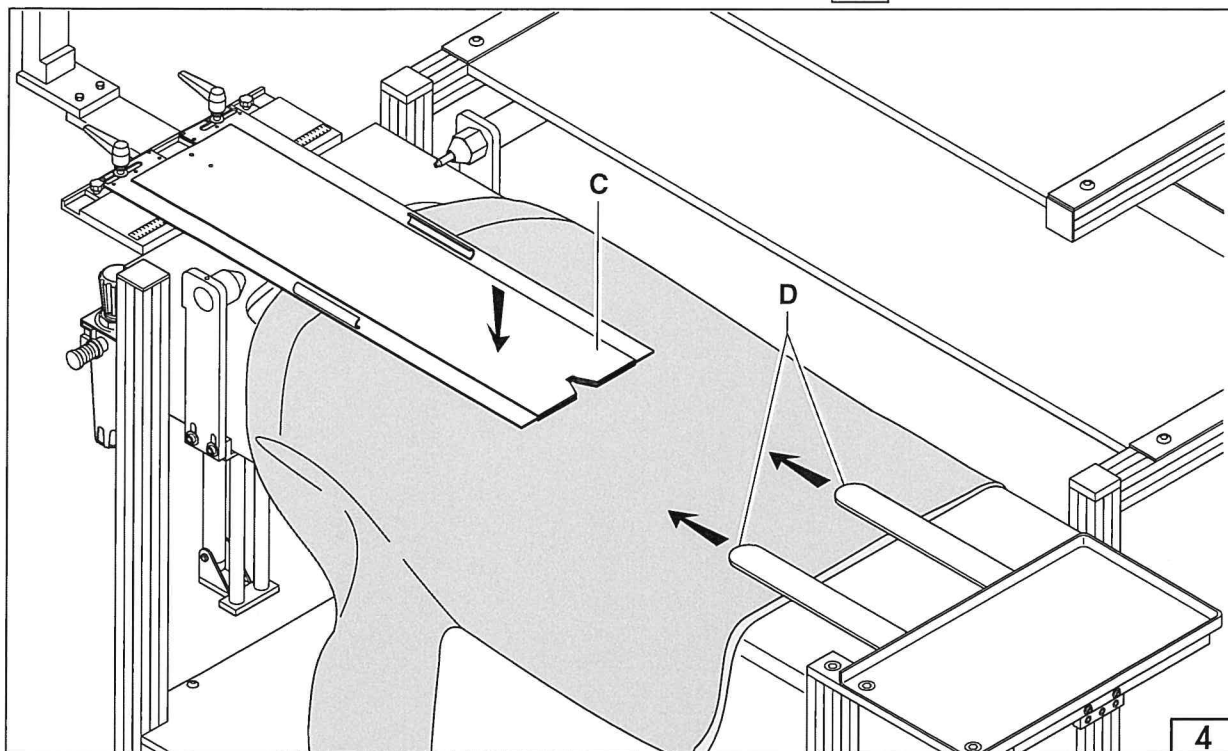
- Check that the preset temperature is correct for the particular use. To regulate the temperature (50-60°C) press the keys ▲ ▼ (fig. 2).
- Wait until the preset temperature is reached on the thermostat.



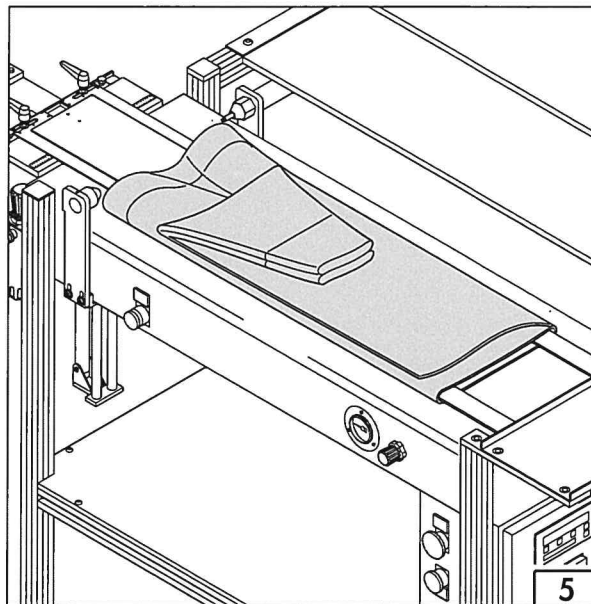
- Position the shirt and insert the collar into the ironing unit (fig. 3).
- Press the pedal to adjust the ironing unit to the shirt collar and iron the collar.




- Press the pedal again to lower shirt holder board "C" (fig. 4) and to move blades "D" forward. The latter determine the width of the shirt (if "SLIDE YES" has been set with key SLIDE  
PHASE (F4) ).



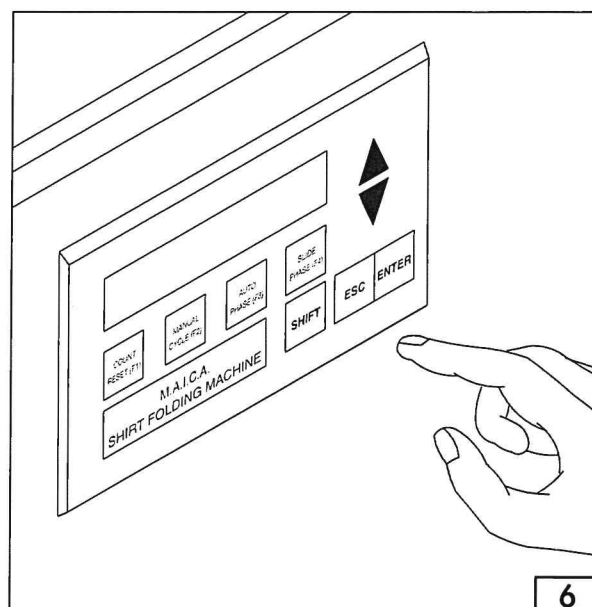
- Fold the shirt by hand (fig. 5).




At this point one of 2 different processing cycles take place, depending on the initial setting chosen using key  .

MAN YES = Manual fold operation

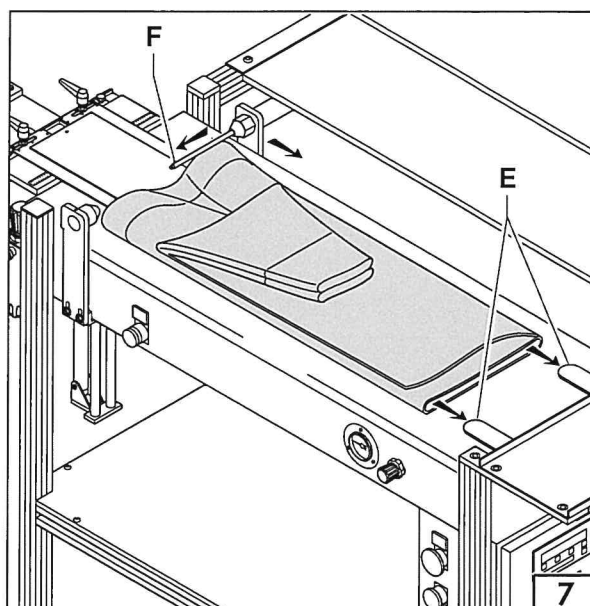
MAN NO = Automatic fold operation



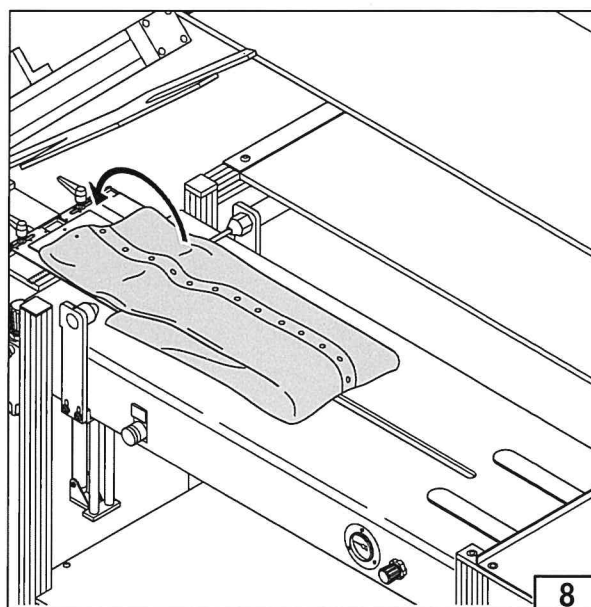
## AUTOMATIC FOLD OPERATION

- Press the pedal to return the shirt width blades "E" (if "SLIDE YES" has been set with key  ).

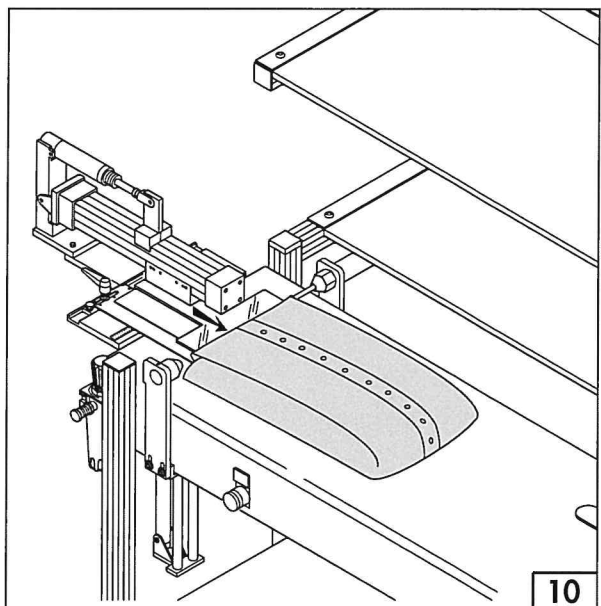
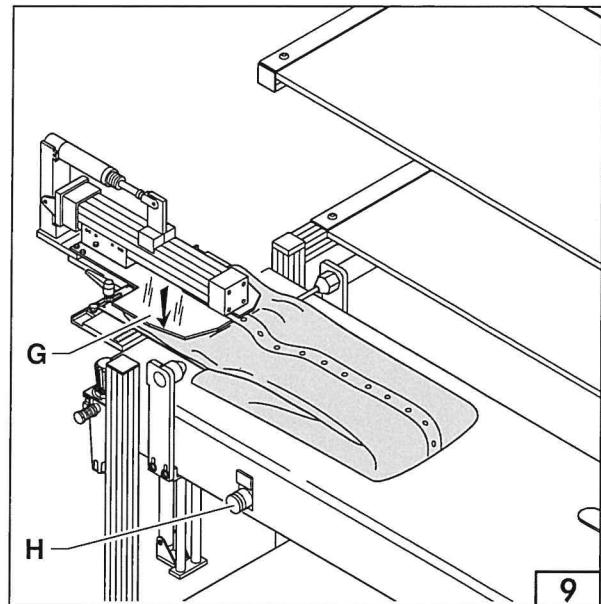
Side cylinder "F" and the cylinder holder carriage for automatic folding move forward (fig. 7).




- Fold the shirt on the board again so that it goes over the cylinder rod for automatic folding (fig. 8).



- Press the pedal or pushbutton “H” (at the operator’s discretion) to lower blade “G” (fig. 9), which inserts the fabric inside the shirt (fig. 10);

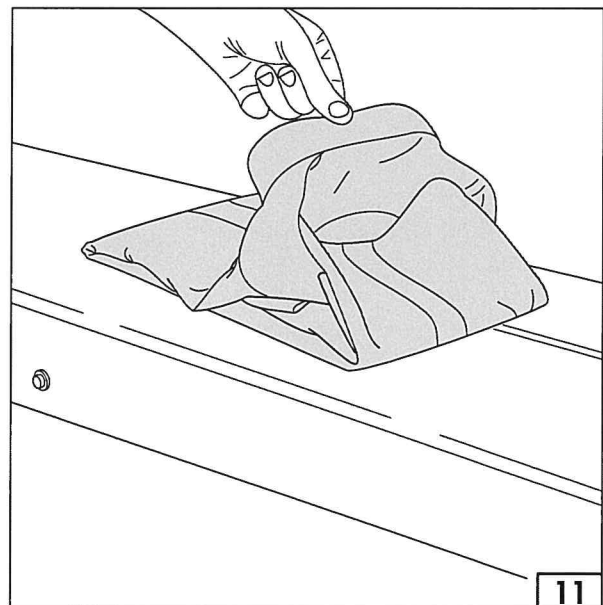


- After inserting the fabric, the blade comes out; the board rises vertically and then tilts to allow the folded shirt to be removed (if “AUTO YES” has been set with key  ).

If desired, “AUTO NO” may be set so that when the blade comes out, the board stays down to allow for pinning or adjusting the shirt, for example.

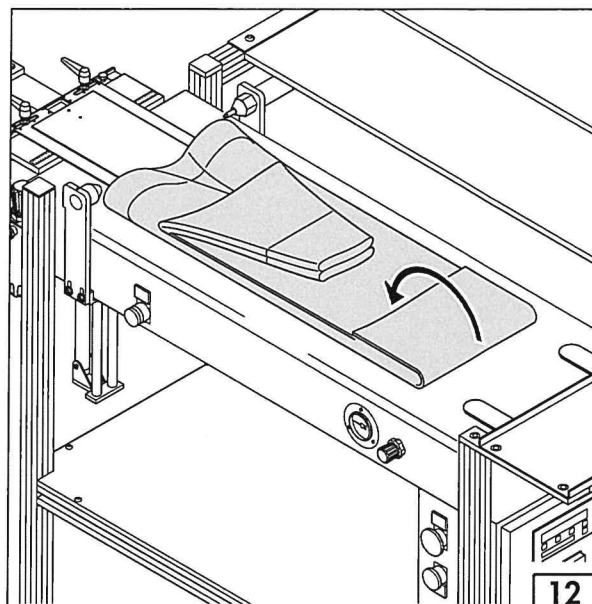
When the operation is finished, press the pedal and remove the folded shirt.

The final result is shown in figure 11.



## MANUAL FOLDING OPERATION

- Fold the bottom of the shirt (fig. 12).
- Fold the shirt again and pin it.
- Press the pedal again to raise the board and tilt it so that the shirt can be removed.



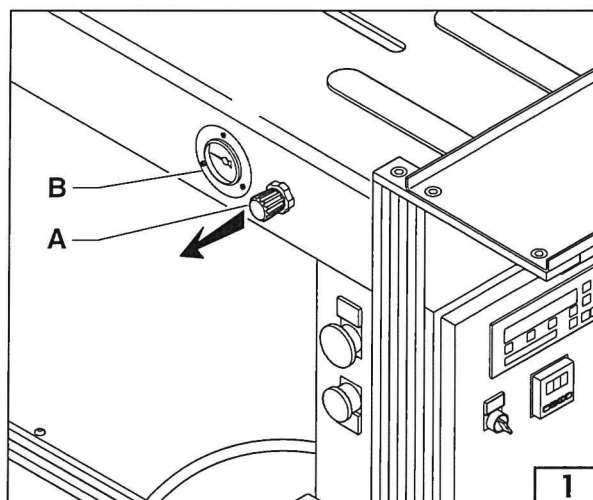
## 08 - ADJUSTMENTS



Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work. The operations described below must only be carried out by specialized personnel.

### REGULATING COLLAR LOCK PRESSURE

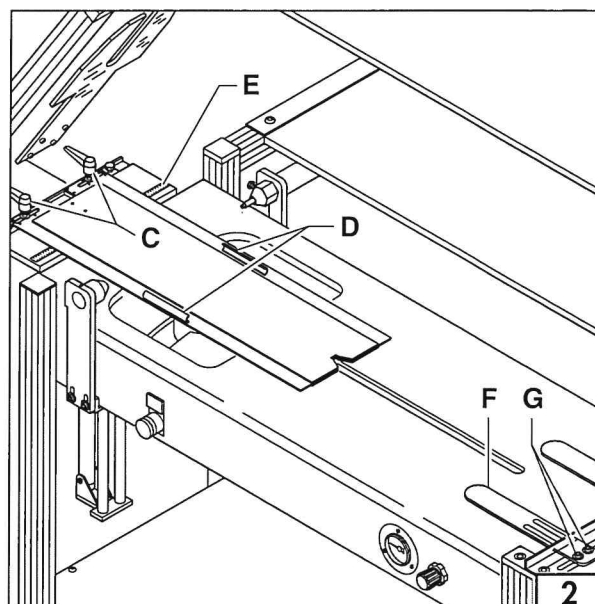
- Increase or decrease the amount of collar lock pressure, by pulling regulator "A" (fig. 1) outwards and turning it in the desired direction. The pressure value is shown on pressure gage "B" (fig. 1).



### ADJUSTING FINISHED SHIRT WIDTH

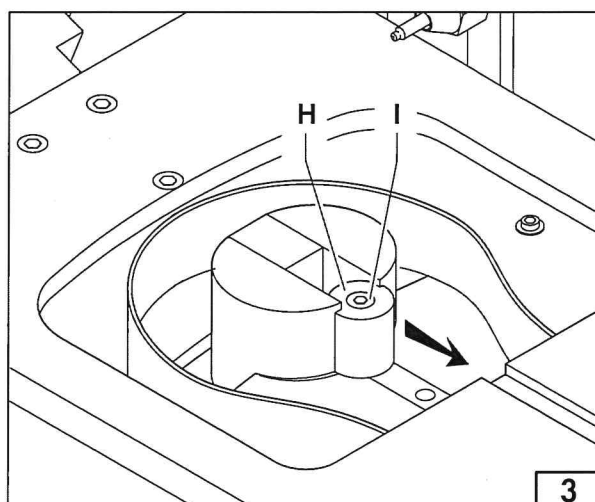
If different size packages are used, perform the following operations (fig. 2) to set a different shirt width:

- Loosen the two upper knobs "C".
- Adjust the two blades "D" to the desired width, using graduated scale "E".
- Adjust blades "F" to the desired finished width using screws "G".



### ADJUSTING THE SHIRT COLLAR

For a more or less elongated collar shape, adjust the position of pin "H" by removing screw "I", moving the pin to a new hole and screwing it in place (fig. 3).



## 09 - MAINTENANCE



Always disconnect the machine from the mains supply, the compressed air supply and wait for the ironing parts to cool down before undertaking any adjustment, replacement or maintenance work. The operations described below must only be carried out by specialized personnel.

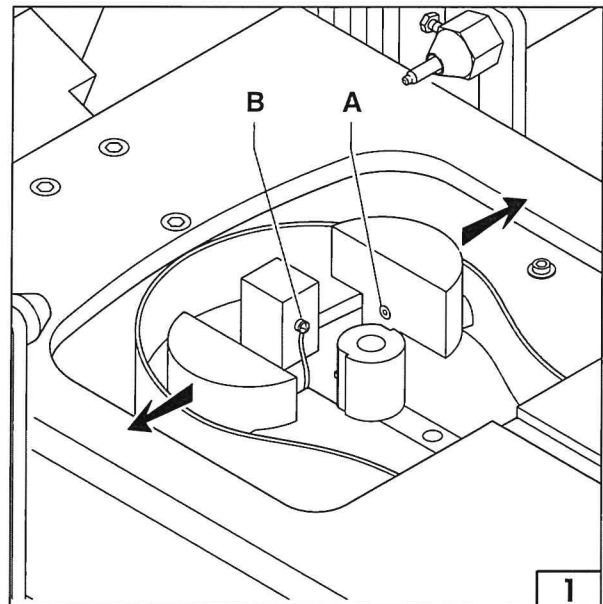
The Shirt Folding Machine mod. MPC does not require any special maintenance during use thanks to its rational design. We recommend following all instructions in this manual very carefully to keep this machine in good and reliable working condition.

### REPLACING COLLAR LOCK RESISTANCES

If the collar lock unit does not heat up and the collar is not ironed properly, check that the resistances are working properly, and if necessary, replace them as follows (fig. 1):

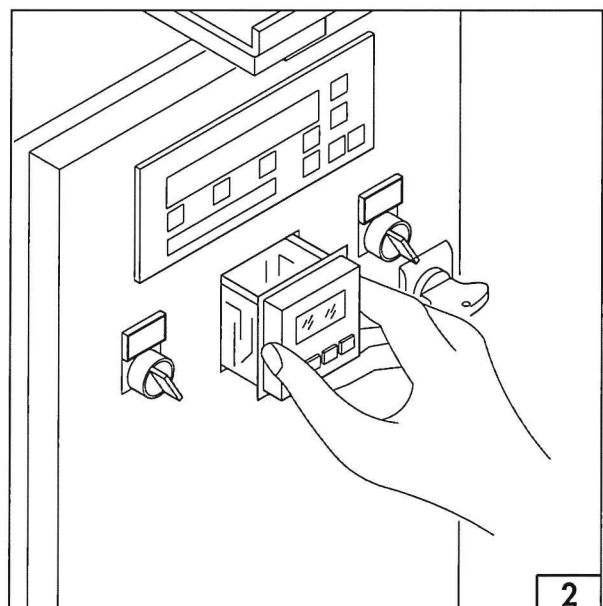
- Manually move the motor lock sections apart.
- Disconnect the cable connecting the faulty resistance from the terminal.
- Loosen the corresponding screw "A" on the sections and take out the resistance.
- Insert a new resistance and repeat the operations in reverse order.

On the center section, it may be necessary to disconnect thermal sensor "B".



### THERMOSTAT REPLACEMENT

- Remove the faulty thermostat as shown in fig. 2 and insert a new thermostat.



### DEMOLITION

In case of machine demolition, separate the different materials making up the machine so that they can be shipped to designated collection sites for re-cycling.



## 09 - MALFUNCTIONS, CAUSES AND REMEDIES

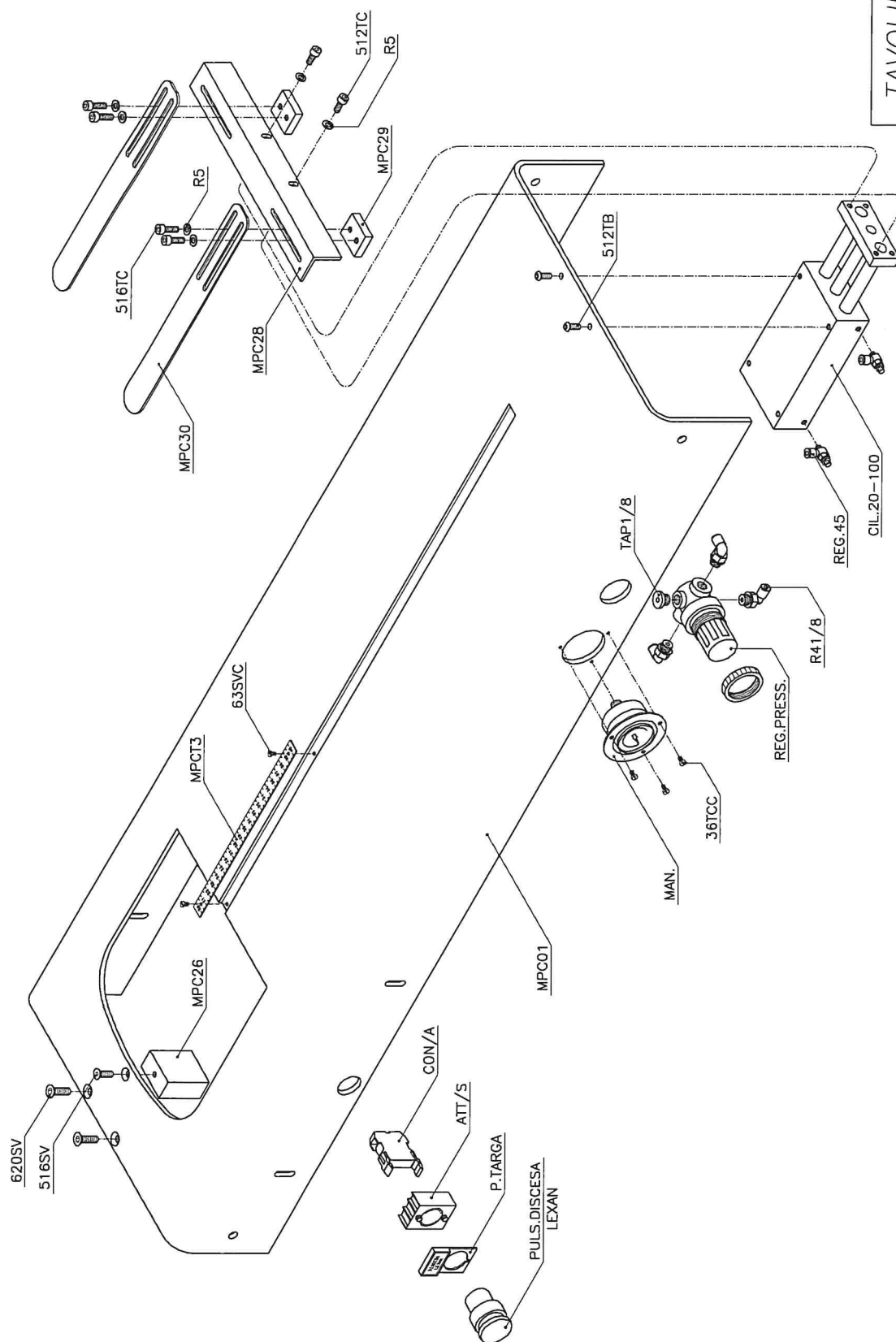
MALFUNCTION	CAUSE	REMEDY
<b>Machine does not start</b>	Emergency activated	Deactivate emergency
	Main switch not on	Turn the switch to the right or check that the main switch inside the electrical panel is in position I.
	PLC not working	Check that the PLC inside the electrical panel is on.
	Faulty fuses	Check that the fuses inside the electrical panel are good.
	Lack of pressure	Check the pneumatic system pressure
	Limit switches I 0.2 (blade low) and I 0.4 (folding cylinder at rest) not working or in wrong position	Check that the limit switches are working properly. Adjust their position so that the corresponding LED lights up when the cylinder is at the end of the run. Check that the signal arrives at the PLC.
<b>The shirt holder board does not go down completely</b>	Limit switch I 0.3 (blade high) not working properly or in wrong position	Check that the limit switches are working properly. Adjust their position so that the corresponding LED lights up when the cylinder is at the end of the run. Check that the signal arrives at the PLC.
<b>Collar lock unit does not heat up</b>	Burned out resistance	Replace (see page 18). Check that current reaches the terminal and that there is continuity in the resistances.
	Faulty thermostat	Replace (see page 18).
	Faulty thermal sensor	Check and/or replace
	Faulty remote control switch	Check with tester and/or replace.
<b>Shirt collar not ironed properly</b>	Temperature too low	Increase temperature (see page 12).
	Collar lock pressure too low	Regulate the collar lock unit pressure (see page 17).

## 11 - SPARE PART SHEETS

For prompt part identification, the following data must be provided:

1. Machine model and serial number
2. Spare part code
3. Sheet in which the spare part is shown

**Example:** SHIRT FOLDING MACHINE mod. MPC    Serial No. ....    Code MPC 30    Table 1



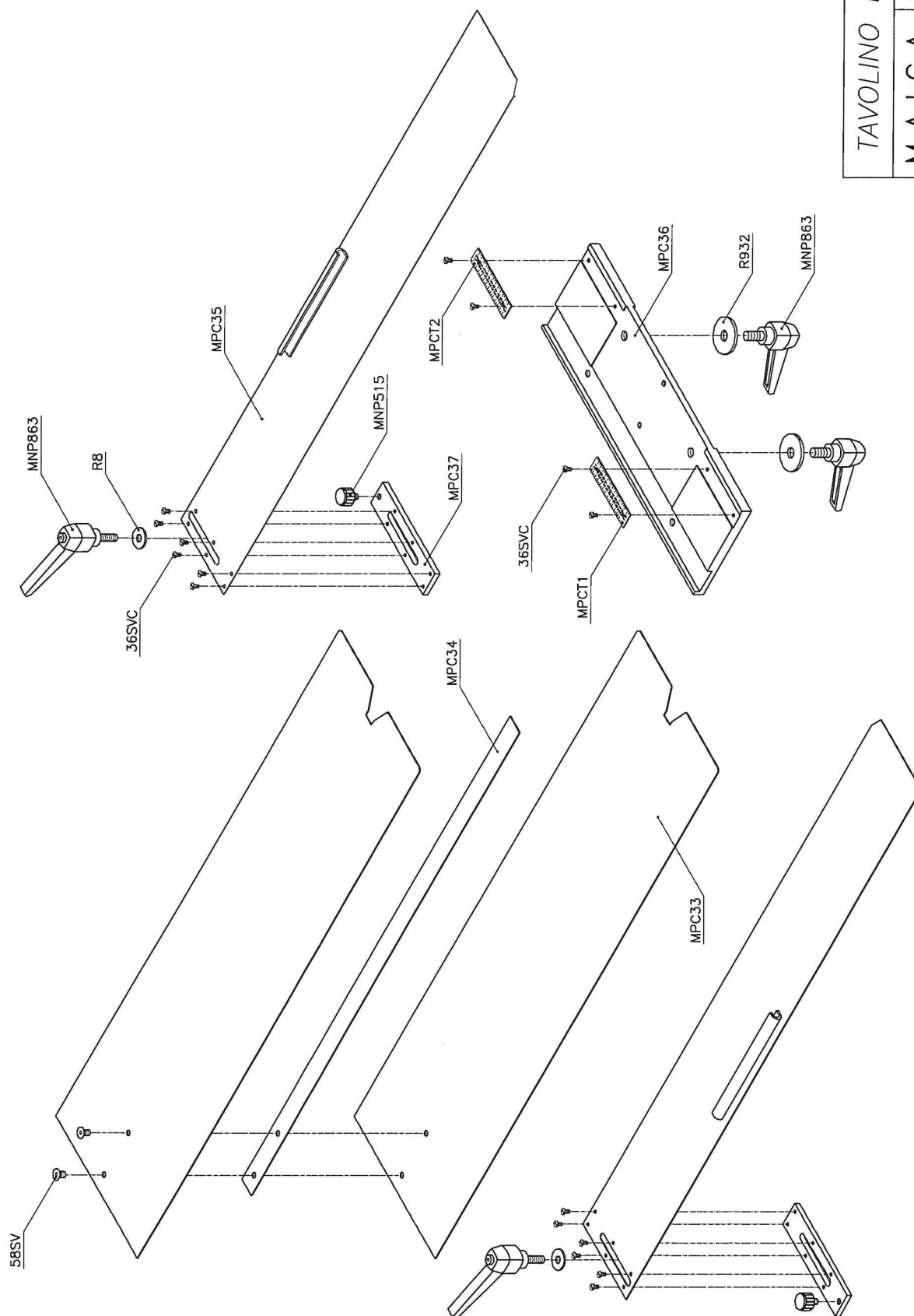
TAVOLINO MPC

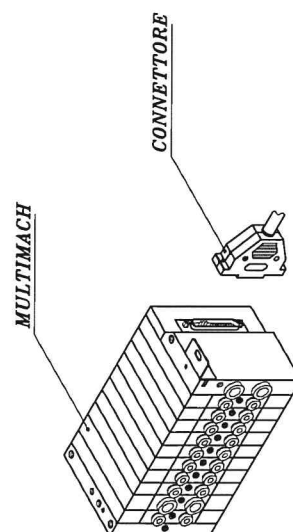
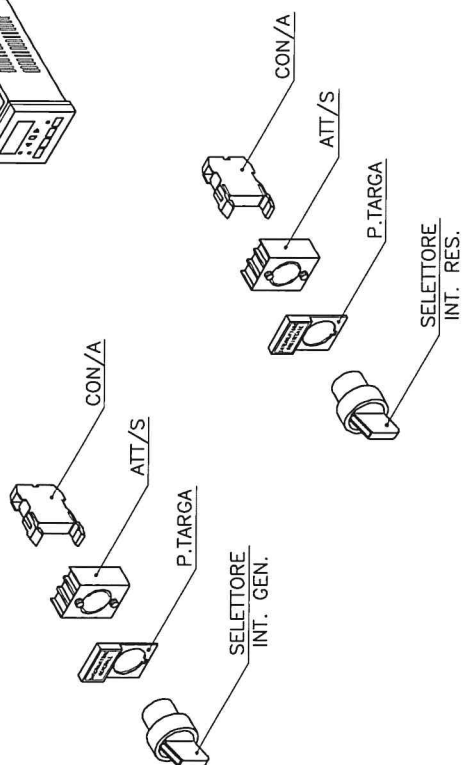
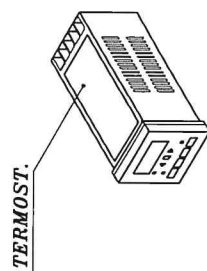
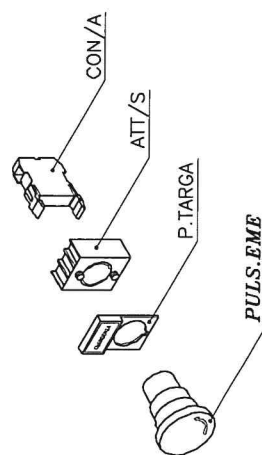
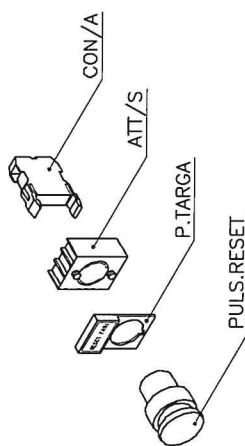
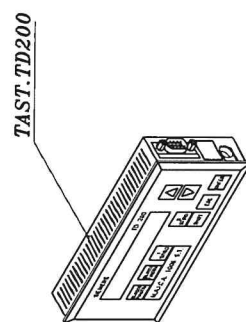
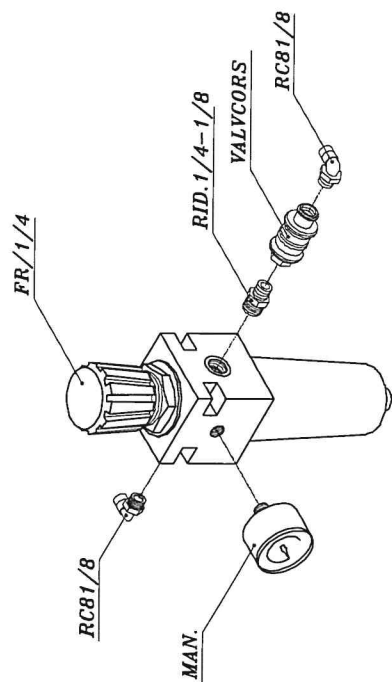
M.A.I.C.A.

TAV. 1

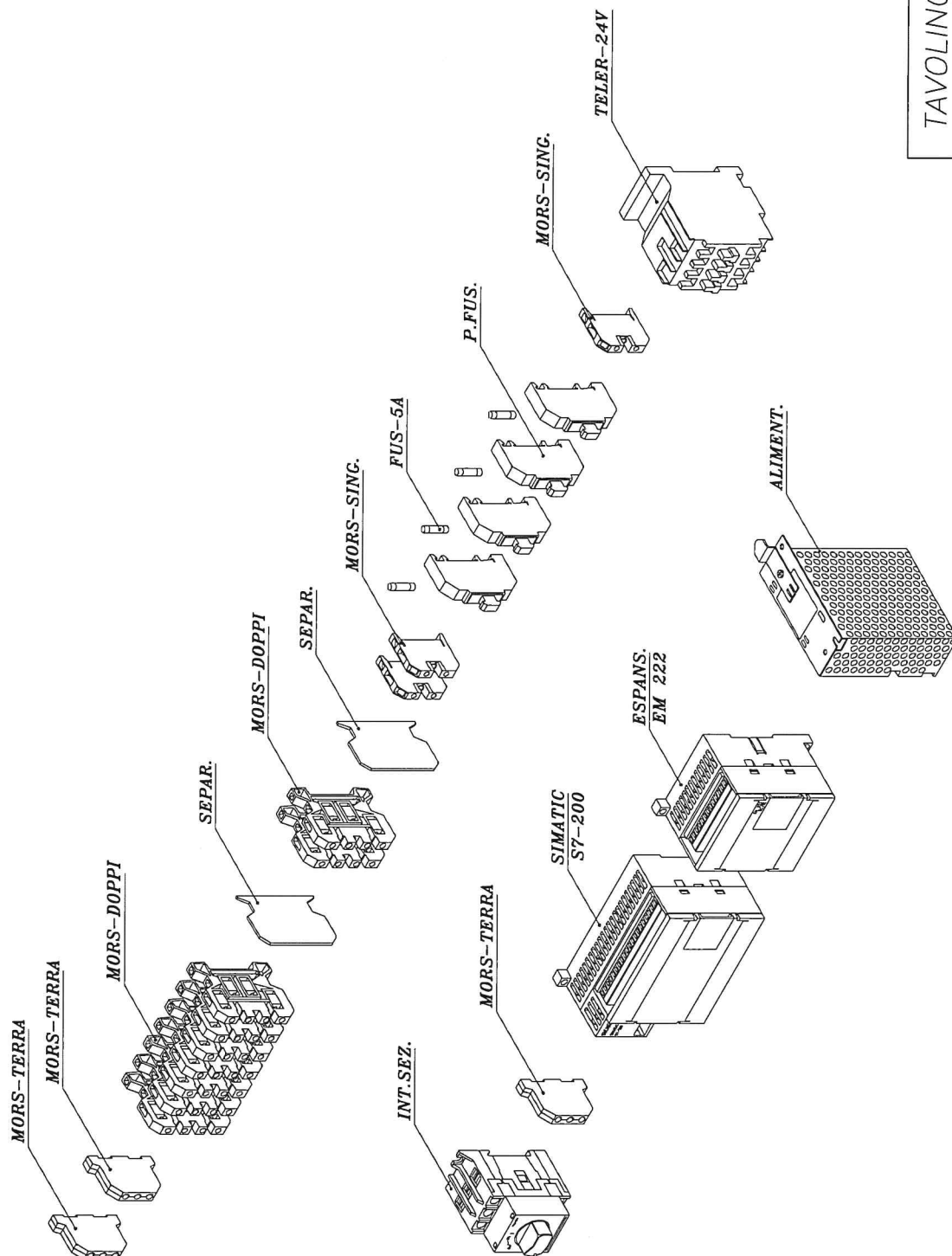








TAVOLINO MPC	M.A.I.C.A.
M.A.I.C.A.	TAV. 5

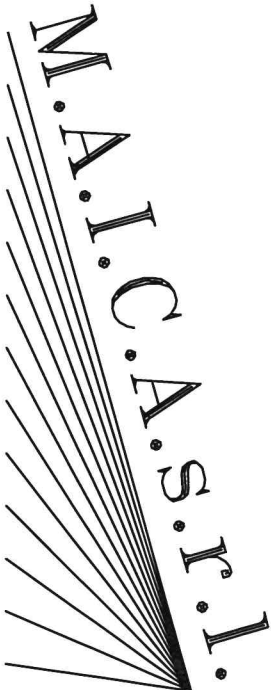


TAVOLINO MPC	
M.A.I.C.A.	TAV. 6

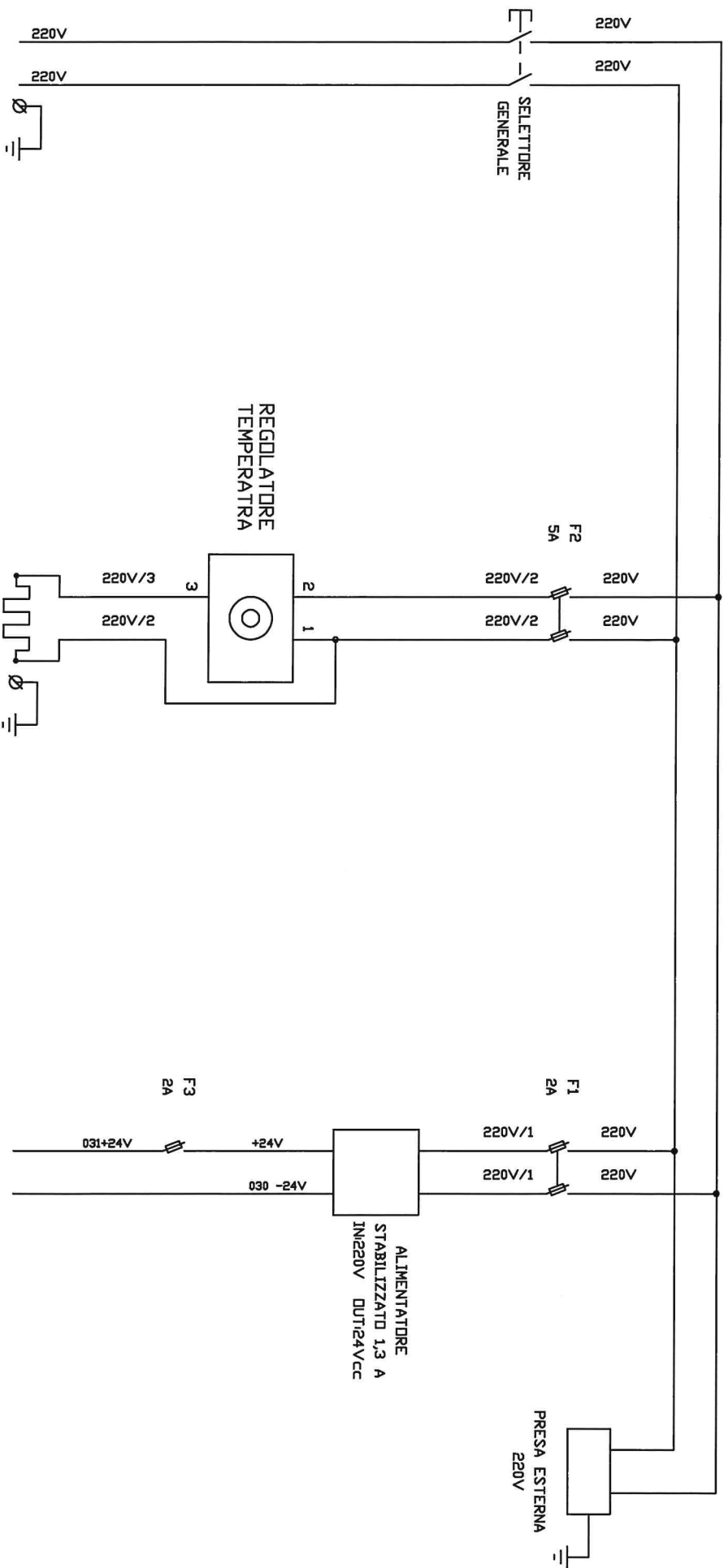


MPC  
PIEGA CAMICIE

ECO



REV.	DATA	NOTE	DATA	2016	M.A.I.C.A. s.r.l.	CLIENTE	DESCRIZIONE	FOGLIO N.	N. FOGLI
0			NOTE		MACCHINE AUTOMATISMI INDUSTRIALI		MPC.PIEGA CAMICIE	1	
			COMPT.		CAMICERIE ABBIGLIAMENTO				
			APPR.		Via Casale, 23 - 24060 Torre de Roveri (BG)				



ALIMENTAZIONE  
220 50HZ

500W 220V  
RESISTENZA TESTINA

REV.	DATA	NOME	DATA	2016	M.A.I.C.A. s.r.l.	CLIENTE	DESCRIZIONE	Foglio N.	N. Fogli
0					MACHINE AUTOMATISMI INDUSTRIALI		MPC,PIEGA CAMICIE	2	
					CAMICERIE ABBIGLIAMENTO				
					CONTR.				
					APPR.				
					Via Casale, 23 - 24060 Torre de Roveri (BG)				

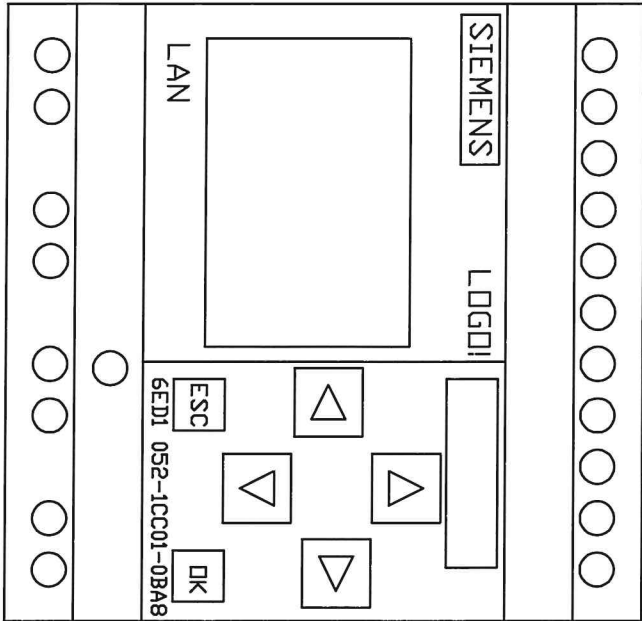
[illegible]

[illegible]

[illegible]

[illegible]

# PROGRAMMATORE M.P.C.



## CONTROLLO FASI DA PROGRAMMATORE

<input type="button" value="◀"/>	PULSANTE CONTROLLO DISCESA SLITTA AUTO O MANUALE	PREMERE E TENERE PREMUTO IL TASTO	<input type="button" value="ESC"/>	PREMERE IL TASTO	<input type="button" value="▶"/>
<input type="button" value="▶"/>	PULSANTE CONTROLLO TIRA COLLO SUBITO O DOPO	PREMERE E TENERE PREMUTO IL TASTO	<input type="button" value="ESC"/>	PREMERE IL TASTO	<input type="button" value="▶"/>
<input type="button" value="▶"/>	PULSANTE CONTROLLO FASE PIEGA MANUALE O AUTOMATICA	PREMERE E TENERE PREMUTO IL TASTO	<input type="button" value="ESC"/>	PREMERE IL TASTO	<input type="button" value="▶"/>
<input type="button" value="▶"/>	PULSANTE RESET CONTEGGIO	PREMERE E TENERE PREMUTO IL TASTO	<input type="button" value="ESC"/>	PREMERE IL TASTO	<input type="button" value="▶"/>

## MODIFICA VALORI

PER POTER CAMBIARE I PARAMETRI POSIZIONARSI TRAMITE I PULSANTI   SULLA PAGINA DEL PARAMETRO DA MODIFICARE PREMERE IL PULSANTE

IL PARAMETRO VERRA' EVIDENZIATO POI PREMERE IL PULSANTE  CON I PULSANTI   PORTARSI SUL VALORE DA MODIFICARE

CON I PULSANTI   MODIFICARE IL VALORE PREMERE IL PULSANTE  PER CONFERMARE , IL PARAMETRO VERRA' EVIDENZIATO

PREMERE IL PULSANTE  PER USCIRE

ALLARMI VISUALIZZATI MANCA FC I2 FINECORSO CILINDRO PIEGA A RIPOSO