TIMATIC

D-A/A-M Series

Rapid extractors

DSCN2165

installation, use and maintenance handbook

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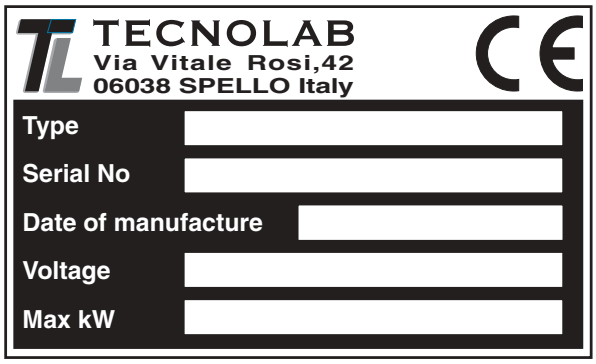
TABLE OF CONTENTS

1 - SUMMARY OF DATA MARKING

• Look at the serial number plate on the machine for all technical data.

• Verify the model of the machine and the voltage before operating.

• In the event of any queries, immediately contact the manufacturer or the supplier.



2 - WARNINGS

2.1 MEANING OF SYMBOLS

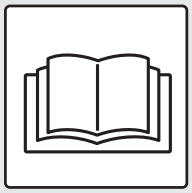
• The symbols shown can be found on the machine or in this instruction manual.

• Read carefully and understand the meaning before continuing operation.

General hazard. This symbol is always accompanied by an explanation of the hazard.

Attention! Important note.

These operations must be carried out by at least two people.



Refer to the instructions manual.

2.2 GENERAL WARNINGS

- The present instructions manual is intended for the following personnel:
  - Transport, handling and unpacking personnel
  - Personnel responsible for preparing the utilities and the installation site
  - Installers
  - Personnel responsible for using the machine for production purposes
  - Maintenance personnel

- Knowledge and the application of safety regulations are the essential requirements for correct and risk-free installation, use and maintenance.

- The personnel installing or using the equipment must be qualified and must thus have the technical know-how necessary for correctly interpreting the safety regulations and use procedures referred to in the present manual.

- Do not carry out any operations or maneouvers unless you are absolutely certain of their effect. If you have any doubts, contact the technical servicing department nearest you or contact the manufacturer directly.
- The manufacturer is released from all responsibility for damages to the machine or property in the following cases:
  - incorrect use
  - employment of unqualified personnel
  - incorrect assembly and installation
  - defective utilities
  - unauthorized modifications or intervention on the machine
  - use of non-original spare parts
  - inobservance of the regulations indicated in this manual
  - exceptional events.
- The instructions manual indicates the manufacturer's envisioned use.
- The instructions manual must be kept with the utmost care and must always be available for reference. If necessary, make copies of the pages to be used directly at the machine. The manual must last at least as long as the machine itself.
- While the instructions contained in the manual are detailed, it is nevertheless essential to gain a certain amount of knowledge concerning the work process in order to achieve maximum performance.
- TECNOLAB reserves the right to make any modifications it deems fit, without any obligation for advance notice or for replacement.

2.3 WARNINGS FOR TRANSPORT AND HANDLING

- This symbol placed on each package item indicates the weight of each item.
  Always check to be sure that the equipment and machinery used for shipping and handling are adequate.

2.4 WARNINGS FOR INSTALLATION

The installation must be performed by qualified personnel.
Do not use Adaptor plugs or extenders for the electrical connection.

It is possible that highly flammable solvents (alcohol etc.) may be used during the extraction process. For this reason, no stoves or any type of flame or burning tools should be allowed in the area. Smoking must also be forbidden, and proper signboards should be displayed.

2.5 WARNINGS TO RESPONSIBLE PERSONNEL

Attention!
Never activate the piston when the extraction chamber is still open, otherwise the solvent could be expelled by pressure.

- the machine has been designed exclusively for the use envisioned in the chapter "MANUFACTURER'S ENVISIONED USE "
- the machine can be used only by qualified operators who have read and understood the rules and the instructions quoted in this instruction manual.
- the machine must be used exclusively as described in the instruction manual.
- during operation, 230 volts are present in the machine; careless access to these parts or the non-compliance with the safety rules can be dangerous to persons and the machine itself.

2.6 WARNINGS FOR MAINTENANCE

- Disconnect the machine from the mains before carrying out any operations.
- To clean painted parts, do not use solvent or alcohol since they could damage or opacify the paint.
- To clean the computer display, use only a dry cloth designed specifically to clean monitors.

3 - DESCRIPTION OF THE SYSTEM

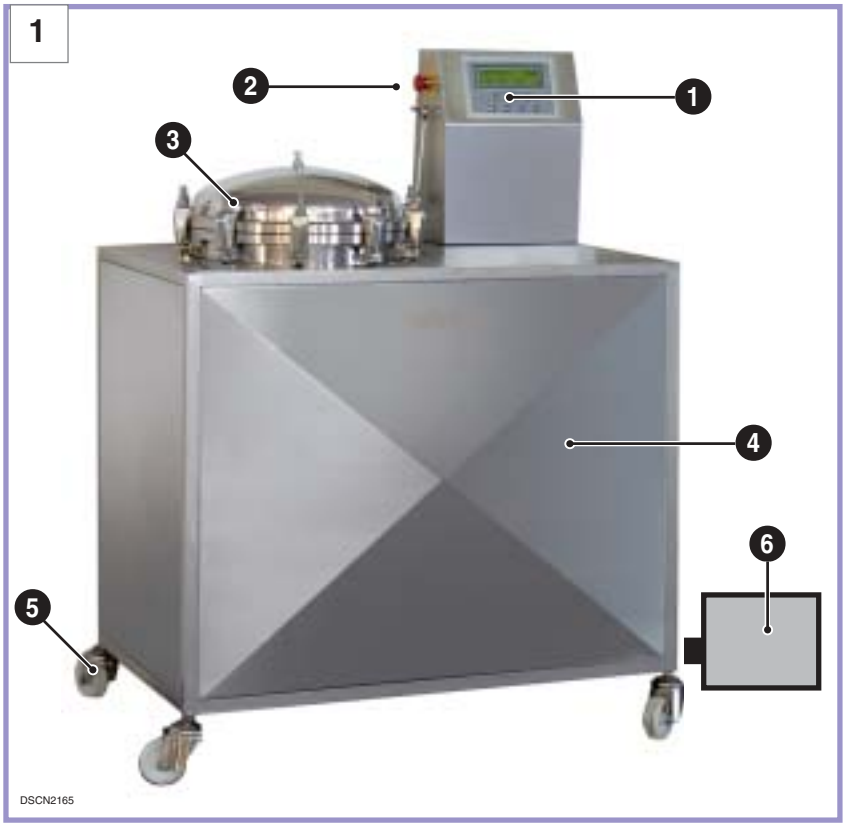
The extraction process of active substances from vegetal substances is performed by means of a solvent (water, alcohol in different concentrations, hexane or glycerine etc.).
The product to be worked is a vegetable or parts of it, from which the substance will be extracted.
The solvent is an added substance.
The final product is a solvent containing active substances.

3.1 GENERAL VIEW

1 Control panel
2 emergency pushbutton
3 Extraction chamber
4 Holding frame made of stainless steel
5 Wheels
6 Solvent container (not supplied)

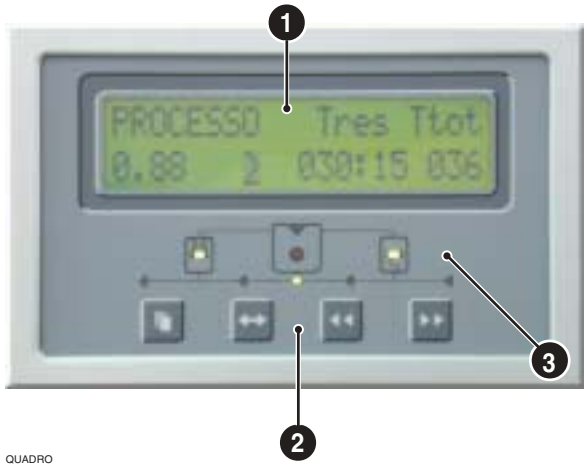
The extraction of substances of interest from plant materials is made by using a solvent which can be stored in a separate external container - 6 - This is connected to the machine by a flexible hose. The container is not included as standard equipment.

1



3.2 CONTROL PANEL

2



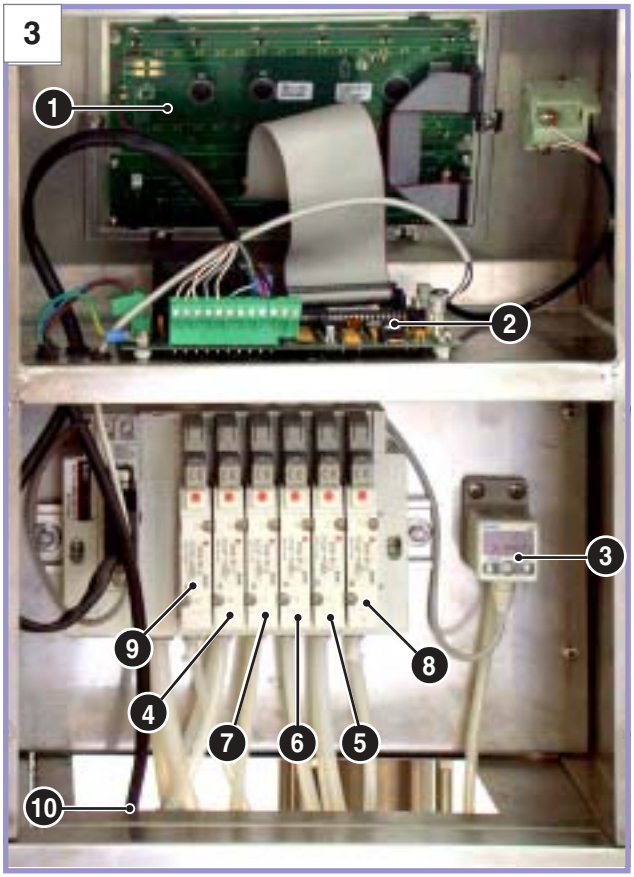
1 Display
2 function pushbuttons
3 Cycle signal lights

3.3 INTERNAL VIEW OF THE CONTROL PANEL

1 Panel card
2 Electronic card
3 Pressure switch
4 Air to discharge solenoid valve
5 Product discharge solenoid valve
6 Air discharge solenoid valve
7 Percolation solenoid valve
8 Active piston solenoid valve
9 Product entry pump solenoid valve
10 Power cable

The inside of the electrical section is accessible from the back of panel. Access is by removing the relevant panel. Please refer to the Electrical safety information!

3



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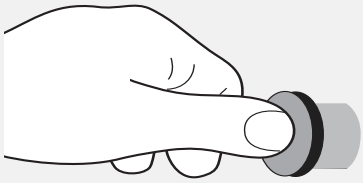
3.4 EMERGENCY PUSHBUTTON

4

- Press the pushbutton to stop the machine
- the pushbutton remains locked in a lowered position

Locked

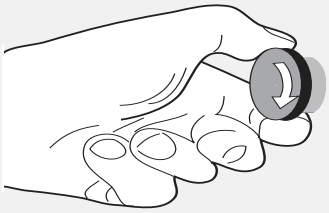


TV2104-0200

After having removed the cause of the block, restart the machine by releasing pushbutton.

Release

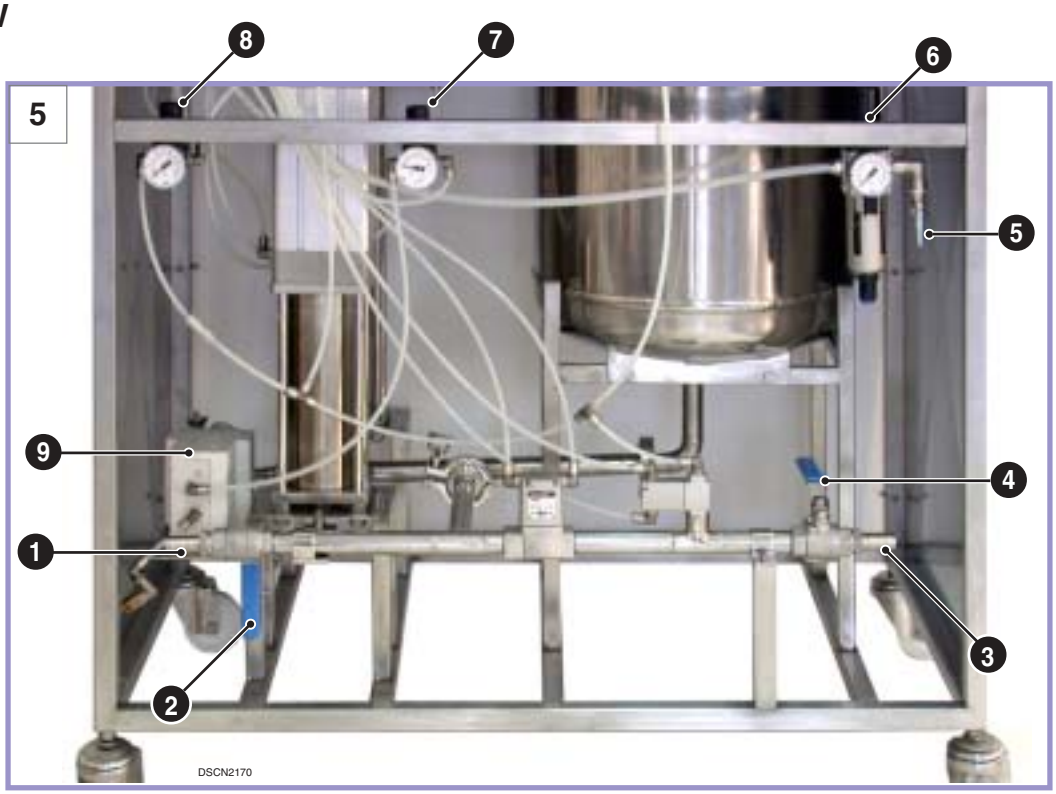
TV2104-0210



- Rotate the ring under the pushbutton to release it
- The pushbutton is released
- Working of the machine is restored.

3.5 REAR VIEW

5



1 Solvent or water for washing entry pipe
2 Solvent or water for washing entry tap
3 Final solution discharge
4 Discharge tap
5 Compressed air attachment
6 Entry air pressure regulator
7 Air pressure regulator for suction pump speed (4 bar)
8 Discharge air pressure regulator (0.5 bar)
9 Suction pump solvent

3.6 EXTRACTION CHAMBER

The extraction chamber works by pressure, max. 8 Bar. A breather **S** is envisioned in the upper part for the release of air.

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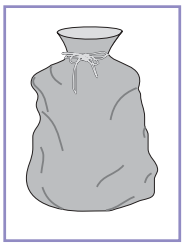
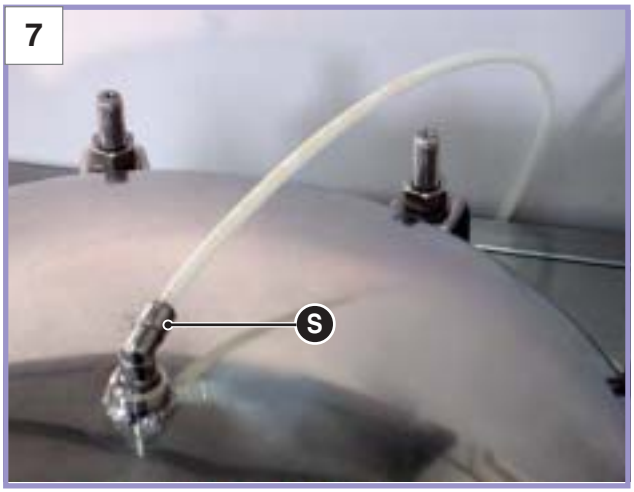
3.7 FILTERING BAG



he supplied filtering bag must be filled with the vegetal materials from which the active principles will be extracted. After having filled the bag, it must be closed properly and introduced in the extraction chamber.
The bag can be used several times, provided that it is washed carefully after use.
You can use bags with different filtering degrees (100 or 50 micron).

7



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3.8 ACCESS TO THE EXTRACTION CHAMBER

The extraction chamber works under pressure and therefore the chamber cover **A** is blocked with a series of special clamps **B** that are blocked using a special supplied spanner **C.**

Before starting the machine always check that the clamps are tightly blocked.

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The opening of the chamber must be done manually (Diagram 7)
Always verify the disposition and the integrity of the seal **G** before closing the cover A

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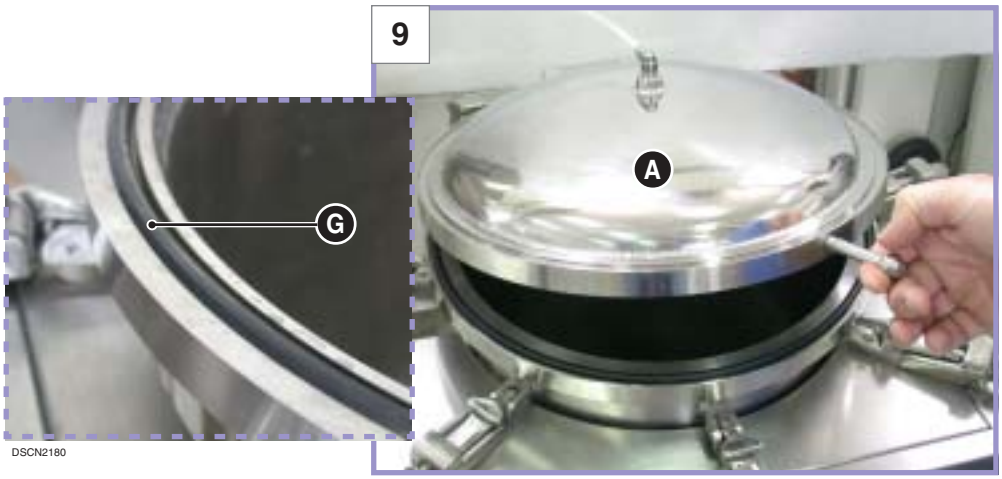

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At the bottom the chamber, there is a removable filter **F** for a possible waste collection.

The solvent comes in through the hole **H** under pressure.

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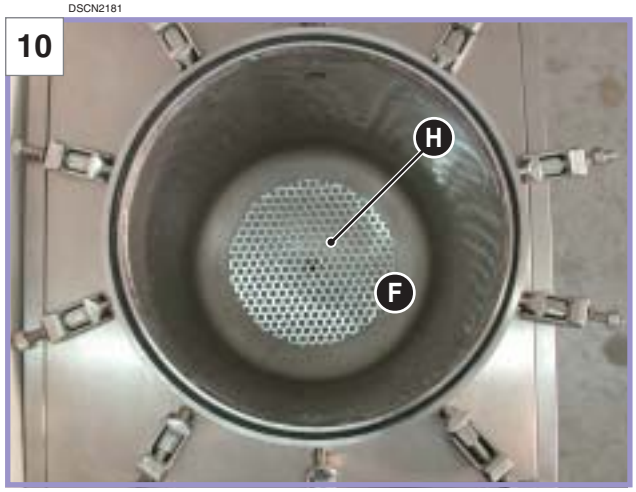

4 - TECHNICAL FEATURES

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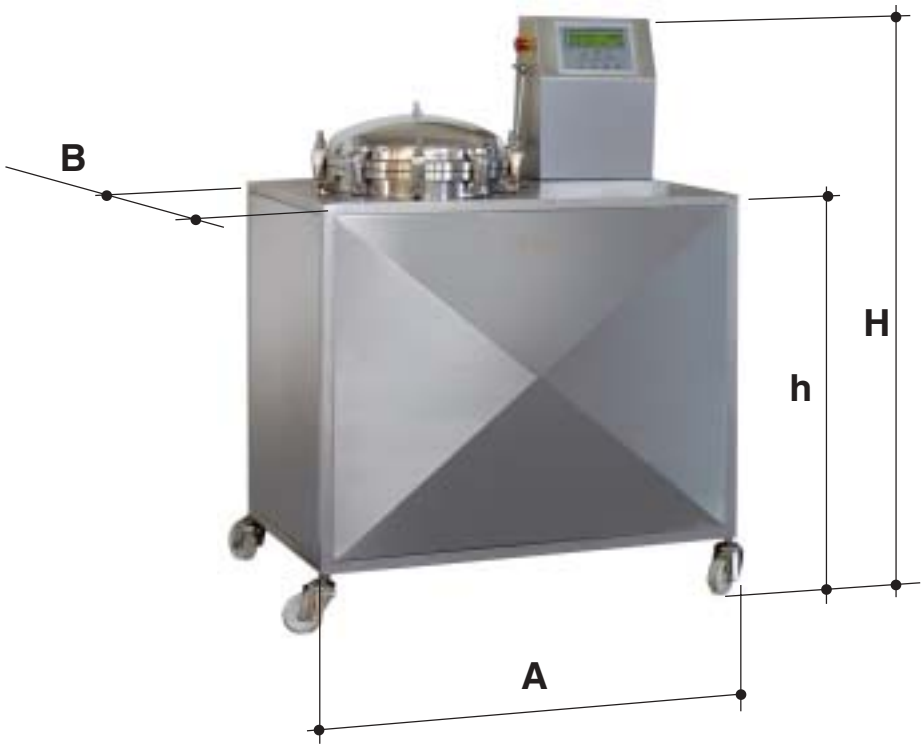

MODELS		TIMATIC DA/AM								
		1	2	5	10	20	30	50	100	200
Total capacity on empty	(litres)	1,20	2,40	6,00	12,00	24,00	36,00	56,00	120,00	240,00
Air pressure	(bar)	3 ÷ 7								
Voltage / frequency		230 - 50/60Hz								
Max. absorbed power	(W)	500								
Sizes (mm)	A	650	650	800	800	1000	1000	1000	1150	1300
	B	400	400	450	450	600	600	600	750	900
	h	-	-	800	800	920	920	920	920	920
	H	600	600	1200	1200	1320	1320	1320	1320	1320

5 - HANDLING AND UNPACKING

The machine is usually supplied in a wooden packaging with a pallet base **P.**

Verify immediately the integrity of the packaging on receiving the machine.

If you find some visible damages on the outer part, inform immediately the courier about this and reserve to give further information after the unpacking.

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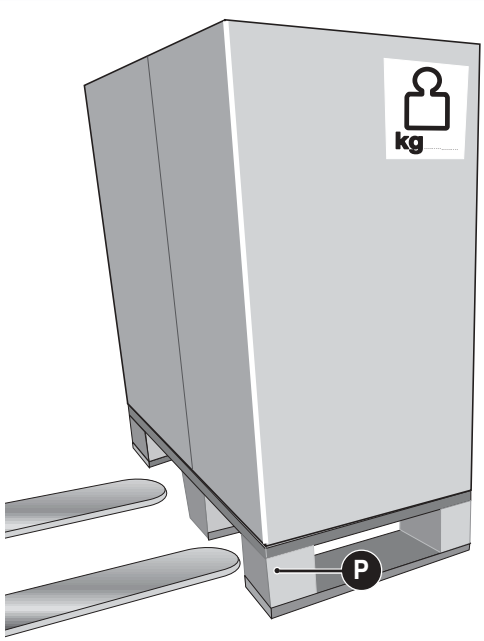

5.1 HANDLING

The packed machine must be handled only by means of a forklift truck or transpallet.

Verify that the handling means are suited to the dimensions and volume of the packaging.

- Detect the dimensions checking the sign placed on the outer part of the packaging.

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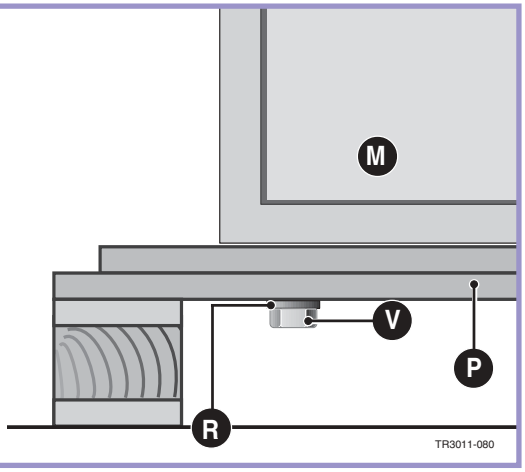

5.2 UNPACKING

Before unpacking the machine, bring it as near as possible to the installation place.

Remove the four sides and eliminate immediately the dangerous material: tables, screw, nails, plastic bags etc.

6 - INSTALLATION

Qualified personnel must carry out installation.

6.1 PLACE OF INSTALLATION

Climatic conditions of the environment

Temperature	min	5 °C
	max	40 °C
Humidity	max	90% UR.

The machine can also treat food products and cosmetics but the machine must be installed in a clean environment, at a distance from currents of air and heat sources.

As alcohol could be used in the extraction process no stoves, any type of flame or apparatus that can cause a fire must be present in the environment.

Smoking is also prohibited so warning signs must be placed in the environment.

- Verify that all 4 wheels rest on the floor.

Once hydraulic and electrical connections have been carried out block the two wheels that are equipped with a wheel-blocking device.

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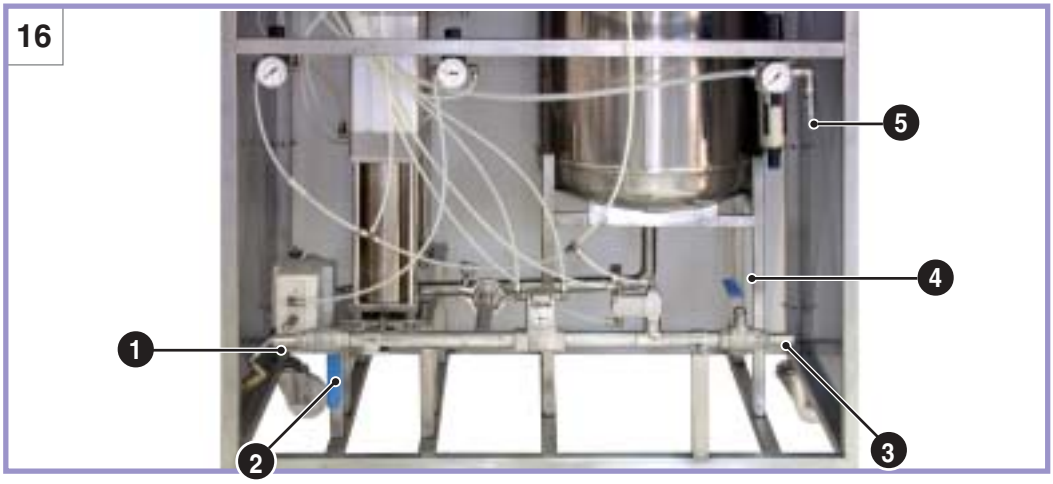
6.2 HYDRAULIC CONNECTION TO THE SOLVENT CONTAINER

The solvent container used in the process must have a capacity at least 20% higher than that requested for the process (see chapter 4).
Even if only a minimum part of the solvent was missing, air would remain in the extraction chamber and this would impede the triggering of the process.

- Dismantle the front panel **F** releasing the screws that fix it from the inside.
- Connect a suction pipe to the attachment **A** on the pump (diagram 15) and tighten it using a tube holding band.

15



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6.3 CONNECTION TO THE WATER NETWORK

The water from the network can be used to wash the hydraulic system and the extraction chamber.
Upstream from the machine, that is at the limits of pipe **T** a stop-tap must be installed.

- Verify that tap **2** is closed.
- Connect pipe **T** to the stop-tap placed upstream and to attachment 1 fixing it securely with a band **F**.

Pipe T must be for use with food products and be able to support the network pressure.

6.4 PRODUCT DISCHARGE CONNECTION

At the end of the extraction cycle, the product obtained must be discharged into a collecting container. This container must be connected to the machine through pipe **G**.
Pipe G must be suitable for use with food products.

- Connect pipe **G** to attachment **3** tightening it with a pipe holding band **F**.

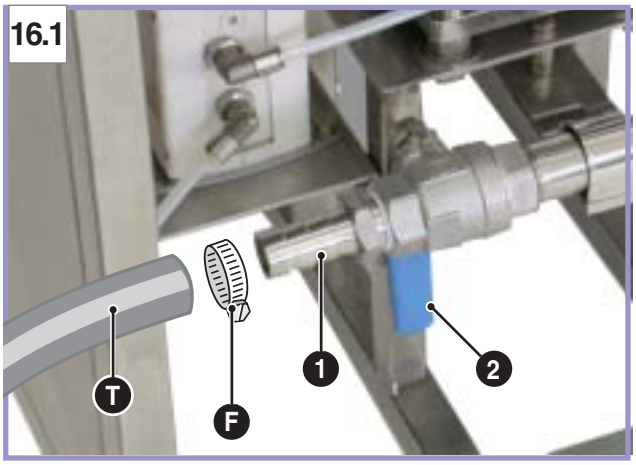
ATTENTION!
Pipe G must also be tightly anchored to the collecting container; the emptying phase, in fact, the air pressure is used in alternating ways can cause the disconnection of the tube itself.

6.5 COMPRESSED AIR CONNECTION

The tube for the compressed air feed must be connected to the attachment **5** using an adequate pipe. A stop-tap must be installed upstream from the machine.

6.6 ELECTRICAL CONNECTION

The electrical connection is carried out simply by connecting the plug to the network socket.
Before connecting the machine to the electrical network control that the voltage corresponds with that on the data plate. The electrical network must be equipped with a suitable earth.



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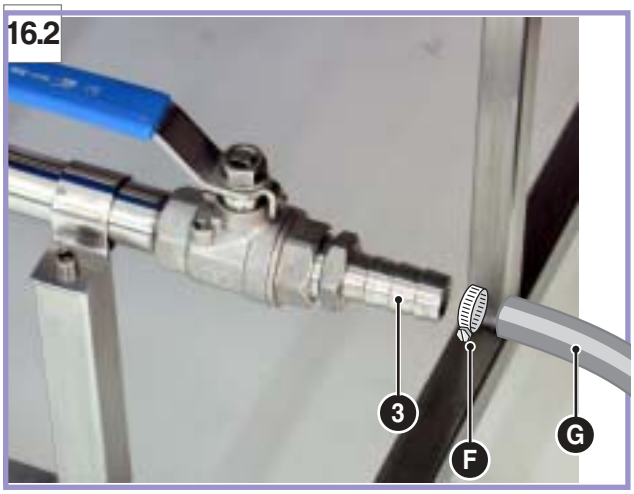

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7 - MANUFACTURERS ENVISIONED USE

Envisioned use.

The machine has been designed solely for the extraction of active substances from vegetable materials by means of a solvent.

Envisioned users.

- pharmaceutical, homoeopathic and herbal sector.
- cosmetic and dietary sector.
- food sector.
- research laboratories.
- liqueur production.

Personnel requirements.

The machine must be used by qualified personnel who have seen, read and understood the rules and the instructions shown in this manual.

Dangerous zones.

The dangerous zones are the following:

- All the internal areas with moving parts and those using high voltage. All these areas are protected by covers or safety devices. Careless use or access to the parts while in operation can cause serious accidents, injury or even death.

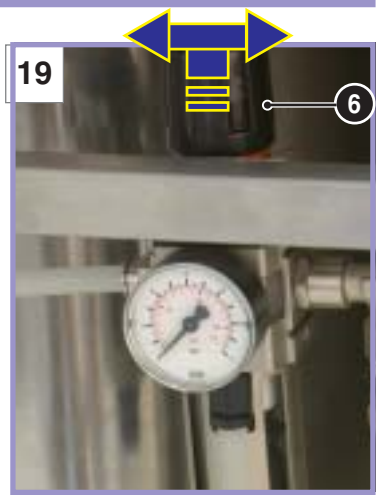
Residual risks.

There are no residual risks except for those described and arising from the dangerous zones.

Attention!
If the piston is activated when the extraction chamber is still opened the solvent will be sprayed out by pressure and this can be dangerous for people and equipment.

8.1 FIRST START UP

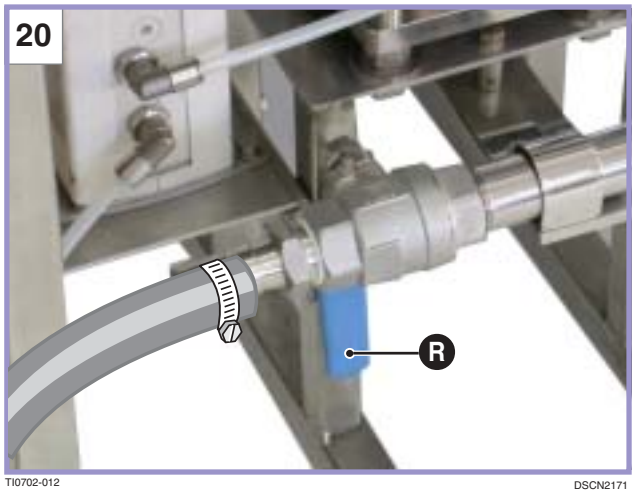
- Open the tap upstream from the machine and check there are no leaks.
- Adjust the air pressure between 5.5 and 6.0 bar, using regulator 6.
- Check that tap R for water entry is closed.
- Open the water tap upstream from the machine and check there are no leaks.
- Check that the discharge pipe L is open and that the pipe G is tightly fastened both to the attachment and to the collecting container.
- Check that the plug is attached to the electrical network; the display is switched on and the machine is ready for use.

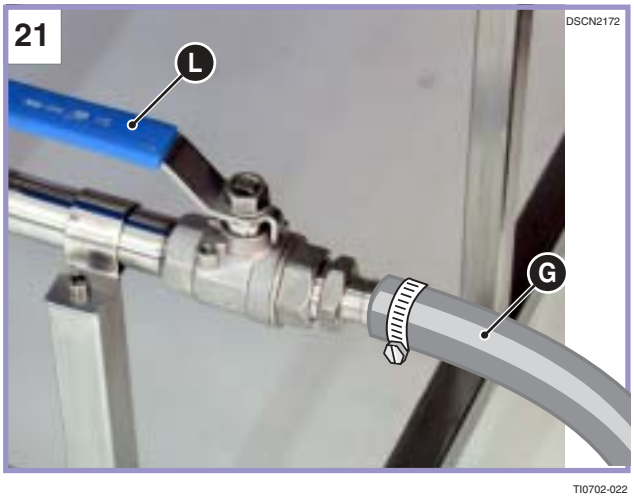


The pressure on manometer 7 must not exceed 4 bar (the pressure can be adjusted only when the pump is functioning).

The pressure on manometer 8 must not exceed 0.5 bar (the pressure can be adjusted only during the product discharge phase).

ATTENTION!
Check that the emergency button is unblocked otherwise it is not possible to carry out any operations.





8.2 CARRYING OUT OF A TEST CYCLE

- A test cycle must be performed to verify the full functionality of the machine. Use only water from the mains supply for this test cycle.

a) Fill the solvent container with water. The quantity of the water must be at least 20% more than the machines capacity (see technical data).
b) Check that the cover of the extraction chamber is tightly fixed (see paragraph 3.5).

N.B: For this test cycle, plant material will not be used .
Perform a short test cycle taking into account the information on the following pages 16 - 21

8.3 SELECTION OF EXTRACTION CHAMBER (Applies to all models that have double extraction chambers))

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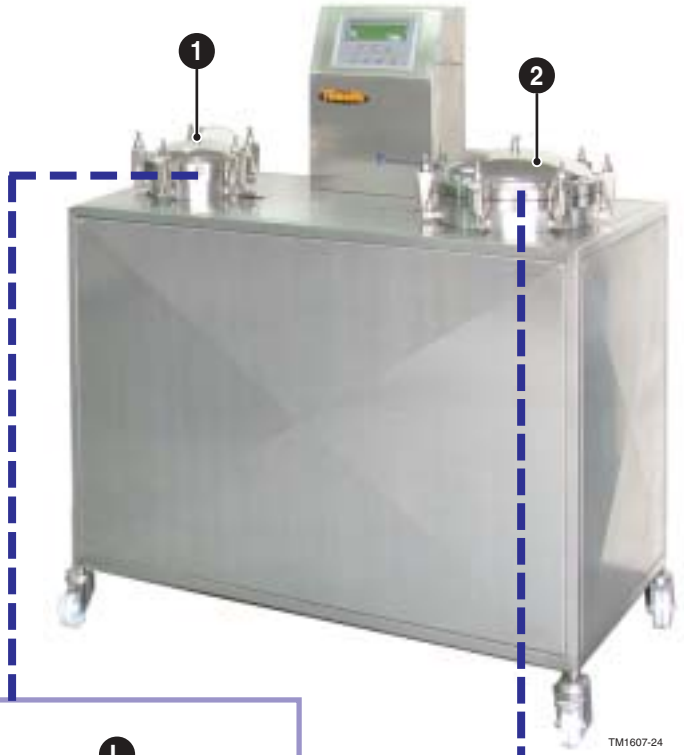
1 Extraction chamber No 1
2 Extraction chamber No 2
3 Switch for control of valves and pistons
4 Switch for control of percolating valves

Before initiating a process cycle you must select the correct extraction chamber

To select extraction chember No 1
- Close tap **R** and open tap **L** (refer to fig.23)
- Move switch **3** to position “1”
- Move switch **4** to position “1”

To select extraction chember No 2
- Open tap **R**and close tap **L** (fig.23)
- Move switch **3** to position “2”
- Move switch **4** to position “2”



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TM1607-22
TM1607-23

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TM1607-20

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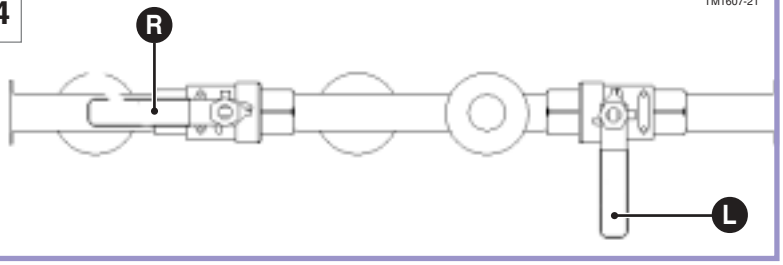

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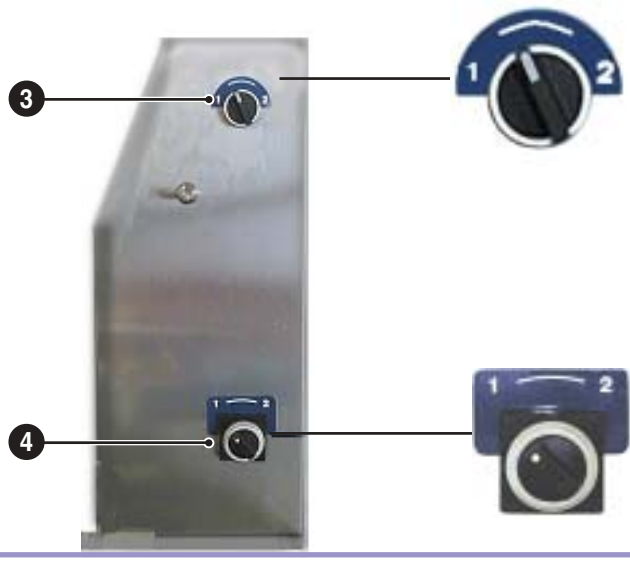

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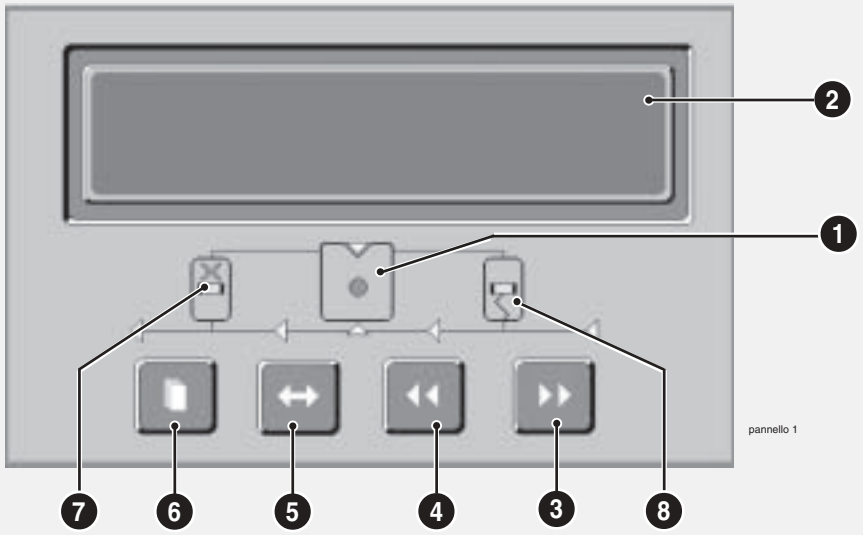
9 - CONTROL PANEL

9.1 DESCRIPTION OF THE CONTROL PANEL

All the operation functions of the machine are set in the keyboard and are shown in the display placed on the front panel.



1 Extraction tray symbol
2 Display
3 Pushbutton >> (+) with ENTER function
4 Pushbutton << (-)
5 Operation pushbutton <~>
6 Change page pushbutton
7 Active piston symbol
8 Passive piston symbol

9.1.1 PUSHBUTTON FUNCTIONS

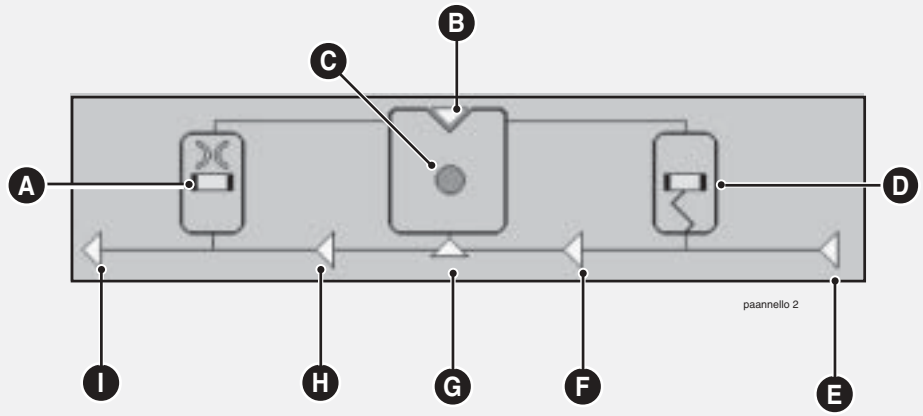
Page change

Selected value decrease

Selected value increase
Data confirmation

Activates the cursor display (small flashing square). Press it again to move it on the data to be modified.

9.1.2 SIGNAL LIGHTS



A) Piston under compression
B) Vacuum valve
C) Alarm signal
D) Piston under compression
E) Auxiliary outlet
F) Solvent under compression
G) Opened percolation valve
H) Solvent under compression
I) Emptying in progress

9.2 DESCRIPTION of PAGES

9.2.1 FILLING PAGE

To fill the extraction chamber with liquid.

PRG01: programme number
6.86 : extraction chamber pressure
OFF : state of the cycle
300 : time pause during the filling cycle (time necessary to allow penetration of the liquid, variable on the basis of the material being treated).
120 : pump functioning time for filling (variable in function of the tank size)

PRIMING			PRG01
6.86	OFF	300	120

9.2.2 EMPTYING PAGE

To empty the extraction chamber

This operation can be started by setting “ON” under the relative heading.

DISCHARGE	OFF
0:15	

9.2.3 WASHING PAGE

To wash the extraction chamber and the pipes.

Setting ON under the Filling heading it is possible to automatically fill the extraction chamber. When you notice liquid escaping from the discharge tap 4 (diagram 5) set OFF under the same heading and start the automatic washing cycle by setting ON in the special field.

To end the washing cycle set OFF under the relative heading.

PRIMING	CLEANING
OFF	OFF

9.2.4 PROCESS PAGE

Allows to monitor the progress of the process and to put it into pause if necessary.
This page is visible only when the machine is under pressure.

PROCESS		Trem	Ttot
7.85	▮ “	149:58	150

Editing the field.

The black rectangle indicates the cycle in the compression phase.
Trem is the residue time for the end of the cycle.
Ttot is the total cycle time.

9.4 DEFINING WORK PARAMETERS

To visualise the page of work value definitions hold the two keys down at the same time for a few seconds until the following page appears:

9.4.1 TIME DEFINITION PAGE

For the definition of process times.

TP1 : Compression time
TP0 : Decompression time
Ttot : Total process time
CL : Number of cycles
01 : Programme number (1...50)
OK : Confirm inserted data

Press  will appear

TP1	TP0	Ttot	CL	OK
5:00	5:00	150	15	01

9.4.2 PAGE FOR THE DEFINING OF MINIMUM AND MAXIMUM WORK PRESSURES AND EMPTYING TIMES

The parameters defined in this page will remain the same for all programmes.

For definition of the pressure.
Pmin : process minimum pressure
Pmax : process maximum pressure
Tsv : emptying time
(define a time needed for emptying)
OK : Confirm inserted data
(attendere bip di conferma)

Pmin	Pmax	Tsv	OK
7.00	9.00	0:15	run

The indication under the writing OK (run - res) also allows to carry out a total reset of the treatment cycle.

9.5 CYCLE DESCRIPTION

An extraction cycle is characterised by the factors A - B - C - D that follow.

A) Filling time (time necessary to completely fill the extraction chamber with liquid) that is made up of two times:
1) pump functioning time
2) pause time to allow the penetration of the liquid into the vegetable substances (solid matrix)

B) Cycle time = time made up from two phases: pressurising and depressurising.
Pressurising time (minutes)
Depressurising time with the percolation phase (minutes)

C) Number of cycles: 1 indicates the number of times that the cycle is repeated (TP1 value + TP0 value)

D) D) Emptying time: time in which air is introduced to facilitate emptying and at the same time the wringing of the vegetable substances.
It is possible to repeat the wringing cycle of the solid residue several times.

9.6 PROGRAMME DEFINITION

Visualise the page of work value definitions and press the buttons at the same time for a few seconds until the following page appears:

Time settings

TP1	TP0	Ttot	CL	OK
5.00	5.00	150	15	01

Until the cursor is positioned under **OK**

Select a number where you wish to memorise the programme. It is possible to select and personalise 50 different programmes.

Press  The cursor will position itself under TP1 (compression time)

 Set desired compression time (minutes)

Press   Set the desired time (seconds)

 Move the cursor under TPO (decompression time)

 Set the desired time for depressurisation (minutes)

Press   Select the desired time (seconds)

 Move the cursor under CL (cycles)

 Select the number of cycles

---

The **Ttot** time will be visualised in automatic on the basis of the compression time plus that of decompression multiplied by the number of set cycles.
Ttot = (TP1+TP0)xCL

 Move the cursor under OK to confirm the data

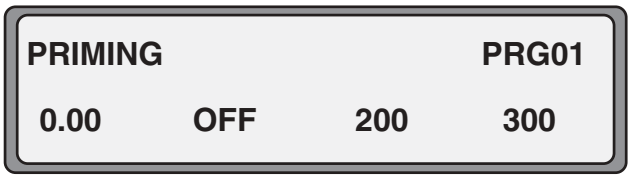
 (wait for a bip for confirmation)

 Exit from the work value definition page by holding the two buttons pressed at the same time for a few seconds.

9.7 START OF THE EXTRACTION CYCLE

Position the cursor on the programme number

Select the programme.



Press 

Set the filling time

Move the cursor into the pause field

Set the pause time

Press 

Move the cursor onto OFF

Start the cycle 

On reaching the set pressure, signalled by an acoustic signal, on the filling page, the writing OK will appear where OFF was written and the extractor will position itself in standby.

Move the cursor onto the **OK** position

Press 

Will appear > > > >

Press 

and then 

to start the extraction cycle

CYCLE END PAGE

The end of the extraction cycle is indicated by an acoustic signal

Turn the page 

Will appear > > > >

Position the cursor on **OFF**

Confirm the start of emptying

During the emptying phase a flow of air is introduced into the extraction chamber to facilitate the exit of the product. Emptying time can be repeated several times by reconfirming **OFF**.

10 - TROUBLESHOOTING

Using the various alarm signals the computer supplies the main part of the indications on possible inconveniences. However, some problems could be out of the logic control of the computer.
Take note of the following indications.

FAULT	POSSIBLE CAUSE	REMEDY
The extractor doesn't switch on	1. Fuse burned 2. Plug not connected	1. Replace with another of the same Value 2. Check 3. Contact service assistance
The product doesn't load	1. Air missing 2. Pump doesn't work 3. Pump regulation manometer altered	1. Check the connection of the pipes and the compressor. 2. Check 3. Check 4. Contact service assistance
The tank doesn't pressurise	1. Lack of air 2. Leakage from the pipes 3. Tank closing seal ruined 4. Process minimum pressure (Pmin) set too high	1. Check the connection of the pipes and the compressor 2. Check for eventual leaks 3. Check and eventually replace 4. Control the pressure definition page 5. Contact service assistance
The product doesn't discharge	1. Lack of air 2 Pump regulation manometer altered 3. Solenoid valve for discharge air introduction into the cylinder does not open 4. Discharge solenoid valve doesn't open 5. Emptying time (Tsv) too low	1. Check the connection of the pipes and compressor 2. Check 3. Check 4. Check 5. Control the pressure definition page 6. Contact service assistance
Not possible to insert values	1. Emergency button pressed	1. Check 2. Contact service assistance

11- ALARM DESCRIPTION

In presence of an alarm a specific page is automatically visualised and an intermittent acoustic signal is activated. The red LED “C” on the front flashes.

This page will be visualised when the pressure (during the compression phase) exceeds defined **Pmax** (maximum pressure).
The active compression piston automatically returns to its position of rest. To restart the work cycle, reduce pressure inside the tank by opening the special tap 1 (diagram 5) and discharging a certain quantity of product until obtaining a pressure that is less than the defined **Pmax**.

Confirm by pressing **OK>>>>>>>>>>**

This page will be visualised when the pressure (during the compression phase) is less than the defined Pmin (minimum pressure). At this point the machine will start an automatic top-up phase that will be signalled with OK if the phase is completed.

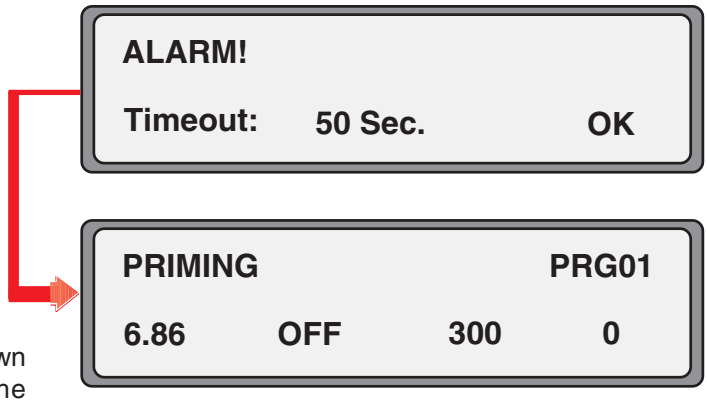
Confirm by pressing **OK>>>>>>>>>>**

If the top-up phase is not completed in the automatic mode you can start a new phase by moving the cursor onto the field

And pressing the but

This page will be visualised when the pressure is too high with the piston in the **UP** position.
The reference value is the defined **Pmin**.
To restart the work cycle, reduce the pressure inside the tank by discharging from the special tap **1** (diagram 5) the quantity of product necessary until the visualisation of the **OK** signal.

Alarm "Timeout" during the Priming operation.



This information - ALARM! "Timeout" - will be shown if the extraction chamber does not reach the minimum value of the set pressure (Pmin) during the automatic Priming phase.

In the first instance, verify that this time have been set correctly (long enough) and check for any possible pressure leaks.

It is now possible to start a new priming phase by confirming with the cursor in the OK field. The Priming page will now be shown. Move the cursor to OFF and confirm. A further priming cycle will now be intiated with a time the same as the additional timeout time (50 Seconds). If necessary, these steps can be repeated until the minumum pressure is exceeded.

This alarm will be shown when the emergency pushbutton have been operated.

In this case the process time will be frozen to the actual position already reached and the process will automatically re-start as soon as the pushbutton is released.

Qualified personnel must carry out maintenance

12.1 WASHING

Carry out one or more washing cycles, using water or a solvent adept for removing any product residue that could be present in the extraction chamber and in the pipes.

The washing cycle is carried out automatically: The start and finish of the washing cycle are determined by the operator.

To carry out washing of the extraction chamber and the pipes:

By setting ON under the REMPLISSAGE heading, it is possible to automatically fill the extraction chamber.

When you notice water for washing coming out of the tap 4 (diagram 5), you can set OFF under the same heading and start the automatic washing by setting ON under the special heading.

To end the washing cycle, set OFF under the relative heading.

13 - DISMANTLING - SCRAPPING

For the dismantling of the machine, it is necessary to act as follows:

- disconnect the machine from the voltage
- disassemble the machine and dismantle it following the assembly and installation instructions
- separate the components according to their type: electric material, plastic material, metallic material, stainless steel, engines etc.

Personnel requirements: skilled worker with mechanical, electrical and environmental qualification.