REGULATING UNIT

Type : PMR-06

GENERAL MANUAL
USE AND MAINTENANCE

ORDER : **S.N. :**

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FOREWORD

IMPORTANT

BEFORE INSTALLING, SETTING UP AND OPERATING THE REGULATING UNIT, THE CUSTOMER MUST CAREFULLY READ THIS MANUAL AND CAREFULLY FOLLOW THE INSTRUCTIONS IT CONTAINS IN ORDER TO ENSURE THE REGULATING UNIT IS USED SAFELY AND CORRECTLY. ALL OPERATORS AND/OR MAINTENANCE PERSONNEL MUST KNOW THIS MANUAL TO ENABLE THEM TO WORK SAFELY ON THE REGULATING UNIT.

SUMMARY

SUMMARY OF THE FIGURES

SUMMARY OF TABLES

A. REGULATIONS AND GENERAL WARNING NOTES

A.1 READING ASSISTANCE NOTES

Meanings of notes used in this manual:

ATTENTION

Note of particular interest for the safety of the people running and maintaining the regulating unit.

WARNING

Note of particular interest concerning the safety of the regulating unit.

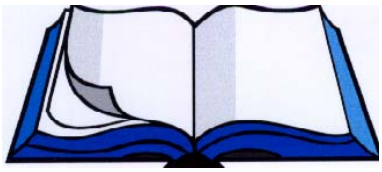
NOTE

A request for the reader's attention referred to the subsequent paragraph.

A.2 HOW THE MANUAL IS ORGANIZED

This regulating unit was designed, built and tested by expert technicians. The high quality materials used to build the regulating unit make it operationally highly reliable.

For further, more detailed information or in regard to problems, please contact the following address:



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This manual observes the organizational rules and requirements of Directive 98/37/CE, duly amended, being the Directive of the Council of the European Community of June 14, 1989, concerning the reconciliation of the laws of member states regarding machines, also known as the «Machine Directive», and also all the other Directives and Regulations referred to in the said Machine Directive, inspired by criteria which, in addition to illustrating the technical characteristics of the machine and its use, maintenance and troubleshooting methods, also clearly indicate the following:

All the protection measures adopted on the regulating unit, fully integrating design safety planning and construction safety.

All protection measures to be adopted to meet those risks that cannot be completely eliminated.

All indications for the training of personnel using the regulating unit, while indicating where it is necessary to provide for individual safety protection devices.

The manual is divided up into sections. Each section deals with a specific subject in which every aspect of safety is considered and clearly highlighted in the text.

A.3 USE CRITERIA

HABASIT requests the Customer to fully read this manual on delivery of the regulating unit it accompanies, and always before attempting any action on the regulating unit. This manual is arranged to supply all the instructions, indications and warnings the user may need in order to know the equipment, understand its operating principles, and to be adequately informed to ensure safe use.

In addition to the instructions in this manual, we would ask users to observe any specific current laws.

This manual must be considered as an essential part of the equipment. It contents must be made known to the entrusted maintenance persons and users.

The purpose is to provide all the information required for good, correct use of the equipment.

The manual must be kept throughout the equipment's life and must be updated in the event of modifications aimed at improving the regulating unit's performance.

The manual must be available to qualified personnel.

Consultation of this manual is facilitated by the general index on the first page, which makes it possible to immediately find the subject of interest.

If the subject dealt with is particularly important it is highlighted with references to the type of technical personnel required to intervene.

All updates HABASIT considers necessary to improve the quality of the regulating unit will be communicated by way of sending of further specific documentation or a new manual to replace the previous one.

If the equipment is sold to another customer, the manual must accompany it and the new customer must be notified to HABASIT for any future modifications and updates.

A copy of this manual, delivered with the equipment, is meant for the maintenance operators, who shall read and keep it near the equipment, and consult it before undertaking any action on the equipment.

A.4 GUARANTEE CONDITIONS

A.4.1 GUARANTEE TERMS AND VALIDITY

The manufacturer guarantees the product against any faults either in materials or in workmanship, for 2 (two) years from the date of installation of the product at the buyer's premises. In this case, the manufacturer shall limit itself to replacing or repairing any part or parts returned to the manufacturer, which was/were found to be faulty.
Furthermore, the manufacturer, may, at its discretion, replace or repair any part or parts, returned by the buyer, which, subject to the manufacturer's confirmation, are found to be faulty.
The following shall be charged to the buyer and/or its customer: transport costs and other handling costs of parts returned to the manufacturer.
The manufacturer shall have the sole right to decide if such parts shall be repaired or replaced.
In no other case shall the manufacturer be responsible for collateral or incidental damage.
The guarantee does not apply to systems that were repaired by third parties NOT authorized by the manufacturer.
Spare parts supplied by the manufacturer must be used. Any deviation from this rule will mean the guarantee will not apply.

A.4.2 WHEN THE GUARANTEE CAN BE VOIDED

The manufacturer's guarantee for the equipment may be annulled as a result of improper intervention or repairs.
The manufacturer's guarantee for the equipment may be annulled as a result of the use of improper materials or materials not supplied by the manufacturer.
The instructions in this manual must be observed to prevent the guarantee cover from being voided.

IMPORTANT

HABASIT CANNOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY IMPROPER, INCORRECT AND UNREASONABLE USE OF THE REGULATING UNIT.

A.5 VISUAL SIGNS

ATTENTION

Visual signs – indicator notices – are applied to the regulating unit. A knowledge of their meaning helps ensure that safety regulations are observed to prevent accidents and assure good operation.

All people approaching the regulating unit must have a clear understanding of the symbol and its meaning. Non observance may cause accidents entailing damage to personnel and to the regulating unit.

A.5.1 SIGNS

The signs affixed to the regulating unit are shown below. Such signs enable staff operating or working on the regulating unit to know about and so prevent the dangers and risks of not observing the principal safety rules.

TABLE 1 - DANGER SIGNS

	**Attention: DANGER OF ELECTRIC SHOCKS** Indicates the personnel involved that, if the described operation is not performed while observing safety regulations, there is a risk of suffering an electric shock.

TABLE 2 - PRESCRIPTIVE SIGNS

	**GENERAL obligation** An obligation to carry out the operation as described and in accordance with safety rules so as avoid risks and accidents. This is usually accompanied by notices explaining the obligation.

TABLE 3 - TERMS AND DEFINITIONS

TERM	*DEFINITION*
PROTECTION DEVICES	Safety measures involving the use of specific technical means called protection devices (guards, safety devices) to protect persons from dangers that cannot be reasonably eliminated or sufficiently reduced in the design of the machine.
GUARD	A part of the machine specifically used to provide protection by the use of a physical barrier. Depending on how it is made, a guard may be called a cowling, cover, screen, door or fence etc. **Note 1** - A guard may act: - alone; in this case it is effective only when closed - associated with a locking device with or without locking the guard; in this case protection is assured whatever the position of the guard. **Note 2** - "Closed" means, in the case of a fixed guard, "kept in position".
FIXED GUARD	Guard kept in position (i.e. closed), by means of a fastening (screws, bolts etc.) that make its removal/opening impossible without the use of tools.
MOBILE GUARD	Guard that is generally mechanically connected to the frame of the machine or to nearby fixed element (by means for example of hinges or guides), and that can be opened without the use of tools.
INTERLOCKED MOBILE GUARD	Guard associated with an interlock device so that: The machine's dangerous functions "protected" by the guard cannot be carried out unless the guard has been closed If the guard is opened during the unfolding of the machine's dangerous functions, a stop command is given. The closure of the guard permits execution of the machine's dangerous functions "protected" by the guard but it does not control the start up.

TERM	*DEFINITION*
SAFETY DEVICE	(No guard) that eliminates or reduces the risk, either alone or in association with a guard.
INTERLOCK DEVICE (INTERBLOCK)	A mechanical or electrical or other kind of device whose aim is to prevent elements of the machine from functioning under specified conditions (generally until the guard is closed).
PROTECTION STRUCTURE	A physical obstacle such as a guard or part of the machine, that limits the movement of the body and/or one of its parts. The safety distances have been determined on the basis of the requisites at point 4.1.1 of the standard EN294.
SAFETY DISTANCE	The minimum distance a protective structure must be positioned with respect to a dangerous area. The safety distances have been determined on the basis of the requisites at point 4.1.1 of the standard EN294.
INDIVIDUAL PROTECTION DEVICE	Safety devices such as gloves, shoes, helmet, visor, earplugs etc. aimed at protecting parts of the body.
CONTROL CIRCUIT	A circuit used to control the working of the machine and protect the power circuits.
CONTROL DEVICE	A device inserted into a control circuit and used to control the working of the machine (e.g. position sensors, manual control switches, relays and electromagnetic valves).

A.6 SAFETY WARNINGS

When using industrial machines and systems, one should be aware that moving mechanical parts (linear or rotary movement), high voltage electrical parts, and any parts at high temperature, etc, can cause serious damage to persons and materials.

In designing and building the regulating unit, the Manufacturer focused special attention on safety in order to supply a SAFE regulating unit and, therefore, the Manufacturer has provided protective and safety devices considered necessary according to the Risk Analysis carried out by expert personnel. People in charge of system safety must make sure that the following essential safety regulations are observed:

	Do not run the regulating unit with the fixed and mobile protective devices dismantled or disabled.
	Do not run the regulating unit with the fixed and mobile protective devices dismantled or disabled. It is forbidden to switch off safety devices installed on the regulating unit or create by-pass systems to limit switches or micro-switches.
	Operations with reduced safety devices must be carried out strictly observing the instructions in the relevant descriptions, and must be performed by specialized technicians aware of the risk, under the direct supervision of the company person responsible for safety. Active protective devices must be restored as soon as possible, limiting this high risk status to the minimum.

OF 	Cleaning and maintenance operations must be performed with the electrical and pneumatic cutout devices switched OFF. To this end, the regulating unit is provided with emergency push buttons which shut down the system. It is good practice to use them as safety lock-outs to avoid accidental starting during inspections or mechanical jobs.
	Clean covers and control panel with soft, dry cloths lightly dampened in detergent; do not use solvents as they could damage the surfaces.
	Do not modify the regulating unit or its parts. Otherwise, the manufacturer shall not hold itself responsible for damage to persons and materials. Request any modifications/customizing directly from the manufacturer.

A.7 REMAINING RISKS

The use of equipment following the instructions in this manual involves no remaining risks.
The user is responsible for taking care during transportation and movement of the equipment so as to avoid bumps or bumping into and crushing persons in the area of these operations.

Ensure during equipping and maintenance operations that the stages in the chapters of the manual are scrupulously adhered to and have these operations carried out only by suitably prepared and qualified persons.

A.8 QUALIFICATIONS OF PERSONNEL

Each task must be assigned to a person trained in the work to be carried out and trained in correct usage as well as fully aware of any remaining risks and dangers in that work. Personnel must not carry out work outside their area of competence, knowledge and responsibility.

TABLE 4 - QUALIFICATIONS

	**FIRST LEVEL MACHINE CONTROL OPERATOR** Indicates non qualified personnel i.e. without specific competencies and able only to carry out simple tasks, including in practice running the machine with the use of the controls on the push-button panel and loading and unloading materials used during production. Furthermore, this operator can work with the machine while the machine's protective devices are enabled, to carry out simple, ordinary jobs for adjusting, starting or re-starting production following enforced downtime.
	**MECHANICAL MAINTENANCE PERSON** A qualified technician able to run the machine under normal conditions, to intervene on mechanical parts to make all adjustments as well as the necessary mechanical maintenance and repair jobs, also with the protective devices disabled.
	**ELECTRICAL MAINTENANCE PERSON** A qualified technician able to run the machine under normal conditions, and also with the protective devices disabled; s/he is entrusted with all electrical jobs involving adjustment, maintenance and repairs. This operator is able to work while the interior of the cabinets and the connector blocks are electrically live.

	QUALIFIED TECHNICIAN A person who is by training, experience, education and knowledge of accident prevention regulations and procedures able to perceive and avoid possible dangers and who is authorized by the plant's safety officer to carry out all necessary mechanical and electrical intervention.
	SPECIALIZED SUPERVISOR An expert, specialized technician provided by the Manufacturer to carry out complex operations in particular situations, installation, first start-up, instruction of the Customer’s personnel, as well as overhauls of and modifications to the machine.

A.9 REFERENCES AND STANDARDS

A.9.1 APPLICABLE EU DIRECTIVES

EU Directive N° 98/37 of 23.07.98 known as the "Machines directive".
EU Directive N° 60/ 204 known as the ”Low-tension directive”.
EU Directive N° 89/336 for the convergence of Member State law on electromagnetic compatibility.

Application of the above directives is formalized through the signing of the MANUFACTURER'S DECLARATION OF CONFORMITY drawn up once the inspection test has been carried out at the place of installation.

This regulating unit has been constructed in a country that is part of the European Community and therefore meets the safety requirements of EEC directive 98/37/CE, in force from July 23, 1998.

This conformity is certified and the regulating unit bears the CE mark of compliance (see figure page B 3).

A.9.2 EU DIRECTIVES CONCERNING SAFETY IN THE WORKPLACE

EU Directive N° 89/391 concerning the improvement of the safety and health of workers during work, in addition to the following particular directives: EEC N° 89/654 and N° 89/655.
EU Directive N° 77/576 and N° 79/640 concerning safety signs in the workplace.

A.9.3 EU DIRECTIVES CONCERNING PERSONAL PROTECTION

EU Directive N° 89/686 concerning the use of personal protection devices.

A.9.4 EU DIRECTIVES CONCERNING ENVIRONMENTAL PROTECTION

EU Directive N° 75/442 on the disposal of waste.
EU Directive N° 78/319 concerning disposal of toxic and harmful waste.

B. TECHNICAL SPECIFICATIONS

B.1 PURPOSE OF THE REGULATING UNIT

The regulating unit PMR-06 has been specifically designed to control the joining process in the HABASIT fabrication presses using **Thermofix** and **Flexproof** method.

The **Thermofix** process includes all the flat belts and other Habasit conveyor belts with right-angled or oblique-angled joins.
The **Flexproof** process includes most of the Food and Standard conveyor belts from Habasit as well as the thermoplastic transmission belts.

Further details about these processes can be obtained at:

For the **Thermofix** process (see technical manual Thermofix)
For the **Flexproof** process (see technical manual Flexproof)

NOTE

By connecting to the company's IT net H/Net it is possible to access current valid process data.

The regulating unit PMR-06 has been developed exclusively for the applications described herein. No other or inappropriate applications are permitted.

ATTENTION

ANY USE OF THE REGULATING UNIT OTHER THAN FOR WHICH IT WAS DESIGNED MAY BE IMPROPER USE AND RESULT IN NOT BEING SAFE FROM THE POINTS OF VIEW OF THE OPERATOR, MAINTENANCE WORKER AND OF THE REGULATING UNIT ITSELF.
HABASIT SHALL NOT BE HELD LIABLE FOR THE CONSEQUENCES OF ANY BREACHES OF THESE RULES.

B.1.1 IDENTIFICACION DATA OF THE EQUIPMENT

A plate fitted to the structure of the regulating unit indicates the device's identification data. These data are shown in the following figure.

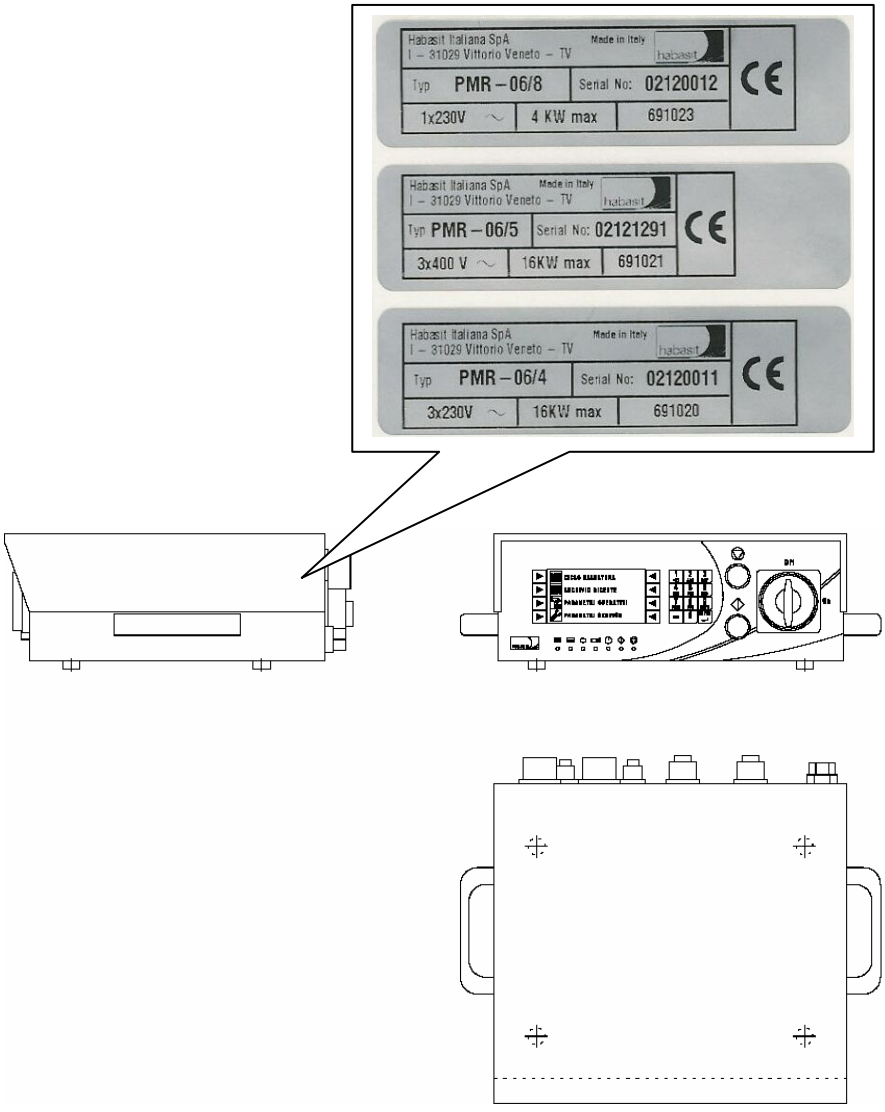

FIGURE 1 - MACHINE IDENTIFICATION PLATE

B.2 TECHNICAL SPECIFICATIONS

TABLE 5 - DIMENSIONS AND CONSUMPTION

Characteristics	PMR-06
Electrical data	3x400V - 3x230V - 1x230V
Output	32A - 32A - 16A
Dimensions (width x height x depth)	497 x 160 x 413 (mm) 19.57 x 6.30 x 16.25 (inch)
Weight	16,5 kg / 36,4 lbs

TABLE 6 - TABLE OF OUTPUTS MANAGED AS PUMP AND COMPRESSOR THROUGH THE ELECTRICAL OUTPUTS

	Tension [V]	Max. current [A]
Water recirculation pump	1 x 230V	2
Compressor	1 x 230V	7

B.3 EQUIPMENT AND ACCESSORIES PROVIDED

The regulating unit is supplied with an electrical supply cable without plug.

B.3.1 OPTIONALS

Pos.	Description	MU	Quantity	ASSEMBLY CODE	PART CODE
	COOLING UNIT PMC-04	N°	1	691010	
	COOLING UNIT PMC-06	N°	1	691060	
	LIGHT TOWER WITH CABLE AND CONNECTOR	N°	1		
	CABLE CONNECTION PAIR REGULATOR PMR-04/PMR-06 AND OUTLET PM.	N°	1	691011	
	MOBILE COOLING UNIT PM-4/7 230V	N°		691016	
	MOBILE MINI COMPRESSOR PM-4/7 230V	N°		691017	
	PMR-06 OUTPUT ADAPTOR	N°	1		IN040301
	CONNECTION ADAPTOR DIRECTLY TO PMR-06 (only for 230V)	N°	1		N-26964

B.4 ORDERING ACCESSORIES/SPARE PARTS

IMPORTANT

To order accessories or spare parts, please do the following:

Mention the name of the regulating unit.
Mention the position of the part.
Mention the description of the part.
Mention the technical code.

When making your request, briefly illustrate the causes of failure of the part being ordered, and provide all information which may be useful for understanding the malfunction; this will make it possible to pinpoint any shortcomings or incorrect procedures which may have caused the damage.

When ordering spare parts, we recommend using the fax and not just placing your order by phone.

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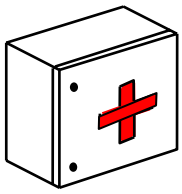
The parts marked P and N are available at the headquarters of Habasit Reinach, Switzerland.

C. INSTALLATION

C.1 PREPARATION OF WORKING AREA

ATTENTION

The regulating unit must be placed on a floor or support of suitable size that is able to take the weight and bulk of the equipment.
The machinery must be placed in a room with sufficient lighting, avoiding dazzling and stroboscopic effects. Personnel entrusted to control the regulating unit must be able to work under normal light conditions (usually provided by neon lights fitted on the ceiling). If the lighting is not adequate, the customer must provide additional lighting. Since the equipment's panel has back lighting but does not have its own lighting system in the (rear) non-operational areas.
The work area must be well ventilated and have an air cycling and emission system compliant with the law of the country of installation, such as to ensure the operator is working under the proper working conditions.
The free space around the regulating unit must be sufficient for work and maintenance operations and permit access to the panel according to its position.
The customer must provide the required electrical power as indicated in B2 Technical specifications.
Ensure that there is a properly stocked first aid box on site nearby.



ATTENTION

The main switch of the electrical panel must be in its “OFF” position when the regulating unit is being connected up.

C.2 PACKING AND HANDLING

ATTENTION

The movement of the packaging and machinery should be carried out by authorized operators.
Suitable equipment must be used to move the regulating unit, with adequate strength to deal with its weight and bulk.
The equipment must be completely disconnected before it is transported,
There are two handles at the side for lifting the equipment.
Never use the electrical cables connected to the equipment to lift it.
When unpacking, check that no small parts remain in the case, and carefully check the general conditions.
Packing materials (wood, nails, plastic, barrier bags, etc.) can be sources of danger and should be placed in collection points, especially if polluted or non-biodegradable.
Concerning disposal of packing materials, the user must observe the current laws of the country of installation.

IMPORTANT

REPORT ANY DAMAGE NOTED ON THE REGULATING UNIT AT DELIVERY TO THE CARRIER AND SUPPLIER.

ATTENTION

ALL HANDLING OPERATIONS OF THE REGULATING UNIT MUST BE PERFORMED SLOWLY WITHOUT ANY SUDDEN MOVEMENTS, TO AVOID TO DAMAGE PERSONS AND MATERIALS.

C.3 FITTING AND INSTALLATION

C.3.1 PRELIMINARY CHECK

Carry out a visual check on the regulating unit's appearance and on any accompanying equipment to see if there are signs of damage or breakage that may have occurred in transit. If such damage and/or failures are noted, contact HABASIT immediately. We advise you to also produce photographic evidence of the damage.

C.3.2 POSITIONING

IMPORTANT

Check there are no dangers in the environment such as water, damp or their consequences.
Make sure there is sufficient operational space for working on the regulating unit.
Position the equipment so that it is stable.
Check visually to make sure that no rags, work tools, etc. remain on the regulating unit.

C.3.3 ELECTRICAL AND UTILITIES CONNECTION

ATTENTION

Ensure all the plant providing the equipment corresponds with its own specifications.
Ensure the main switch is set at “OFF”.
Connect the cables to the hot-pressing device and the PMC-XX cooling unit.
Plug in to provide power to the equipment.

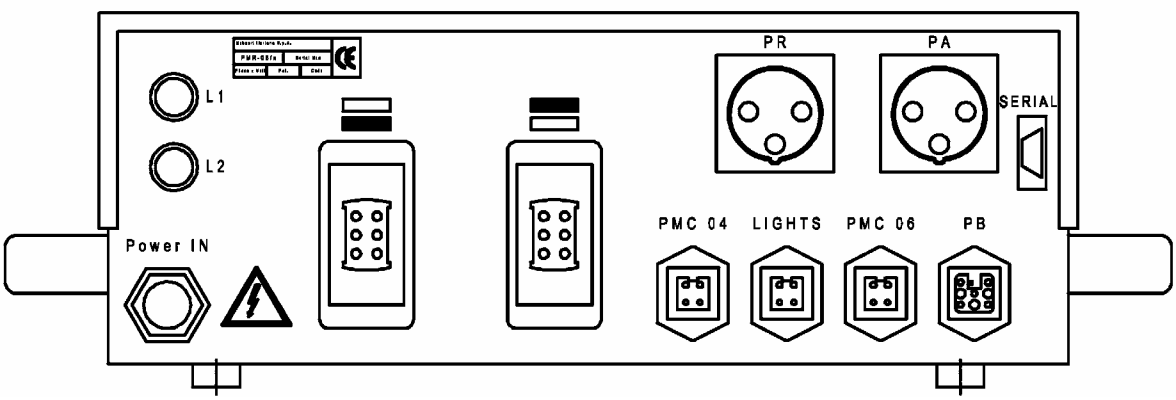


FIGURE 2 - CONNECTION TO ELECTRICAL SUPPLY AND UTILITIES

C.4 EQUIPMENT DISASSEMBLY

Regulating unit dismantling operations must be performed by:

Technicians of HABASIT Assistance Service.
Technicians authorized by HABASIT, with experience of:
Installation/disassembly of machinery.
Installation/ disassembly of the electrical, pneumatic and hydraulic plant, consulting the corresponding diagrams.

ATTENTION

BEFORE CARRYING OUT ANY KIND OF WORK ON THE REGULATING UNIT IT IS ESSENTIAL TO ENSURE THAT THE SYSTEMS (ELECTRICAL, PNEUMATIC AND WATER) ARE DISCONNECTED FROM ENERGY SUPPLIES, THAT PNEUMATIC AND WATER IS PROPERLY DEPRESSURISED AND THAT THERE IS NO REMAINING POTENTIAL ENERGY IN THE MOVING PARTS.

Disconnect the electrical circuit.
Proceed with mechanical dismantling.

If the regulating unit has to be stored for a certain time, prepare it as indicated in the next section, but if it has to be handled immediately, refer to the appropriate section.

C.5 STORAGE

IMPORTANT

The regulating unit must be stored in a dry room free from seepage of liquids.

NOTE

Never, on any account, store the regulating unit out of doors! As a general rule, observe the following environmental conditions.

TABLE 7 - STORAGE CONDITIONS

	ENVIRONMENTAL CONDITIONS FOR STORAGE
Min/Max ambient temperature of storage	In the range of +5 °C to +40 °C
Relative humidity of place of storage	In the range of 50% to 70%

If the regulating unit, its accessories and spares have to remain in storage for a prolonged period, they must be protected from dust and damp.

We recommend the following:

Clean the regulating unit in general.
Apply PROTECTIVE SILICONE OIL to **un**-painted or **un**-treated parts.
Cover the regulating unit with a sheet to protect it from dust.
Before being oiled or greased for good preservation, some parts can, if necessary, be cleaned with a specific, rust-proofing detergent.

C.6 DISPOSAL

IMPORTANT

The regulating unit PMR-06 is built with different types of material. When they have reached the end of their useful life, such materials must be disposed of at specialized centers, according to the prescriptions of the laws in force in the country of destination.

ATTENTION

The materials and substances making up the regulating unit MUST be eliminated according to the Laws/Regulations on disposal of individual waste in force in the country where the regulating unit is installed.

IN ANY EVENT, NO COMPONENT OF THE REGULATING UNIT MUST BE LEFT IN THE ENVIRONMENT.
CONTACT AN AUTHORIZED COMPANY TO CARRY OUT THIS TYPE OF OPERATION.

D. OPERATION

D.1 GENERAL WARNINGS

The operator and/or maintenance technician must use the equipment in the manner described in this manual and must avoid creating situations that could cause danger to persons who may come into contact with the equipment or things connected to it.

IMPORTANT

THE INFORMATION DEVICES (SIGNS) AND SAFETY NOTICES MUST BE KEPT CLEAN AND LEGIBLE.

ATTENTION

DO NOT IN ANY WAY ALTER THE EQUIPMENT'S SAFETY SYSTEM.

ATTENTION

IT IS ABSOLUTELY FORBIDDEN TO REMOVE THE PROTECTIVE DEVICES INSTALLED ON THE REGULATING UNIT.

ATTENTION

CARRYING OUT CLEANING AND MAINTENANCE JOBS WHILE THE SYSTEMS ARE LIVE IS ABSOLUTELY FORBIDDEN.

ATTENTION

DO NOT REMOVE THE GUARDS WHICH REQUIRE TOOLS FOR THEIR REMOVAL.

D.2 GUARDS INSTALLED

The regulating unit has the following protection devices:

Guards.

The GUARDS are classified as:

Fixed guards.

IMPORTANT

The regulating unit has been designed and built in conformity with European EN and IEC safety standards.

All the potentially harmful or dangerous electrical parts have been rendered inaccessible to the operator. Guards, covers and electric safety devices have been installed for this purpose.
The production head must ensure that these protection devices are not removed.

ATTENTION

READ THE ACCIDENT PREVENTION SIGNS WITH CARE, DO NOT COVER THEM FOR ANY REASON AND REPLACE THEM IMMEDIATELY IF THEY GET DAMAGED.

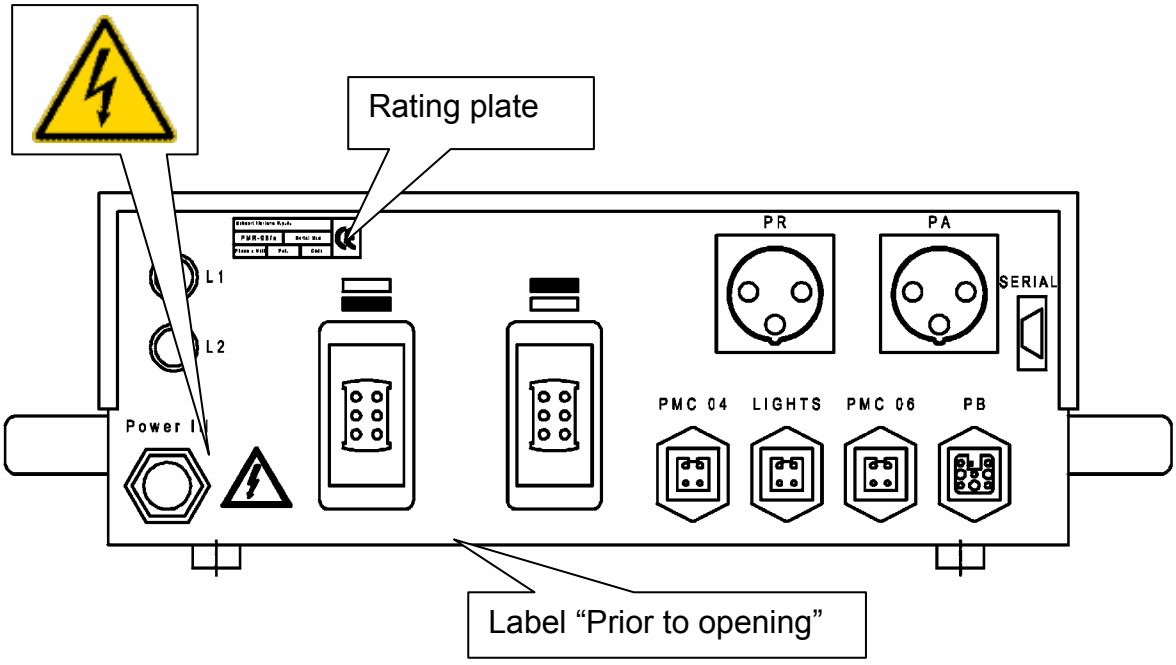


FIGURE 3 - PMR-06 LOCATION OF SIGNS

D.3 EQUIPMENT PARTS IDENTIFICATION

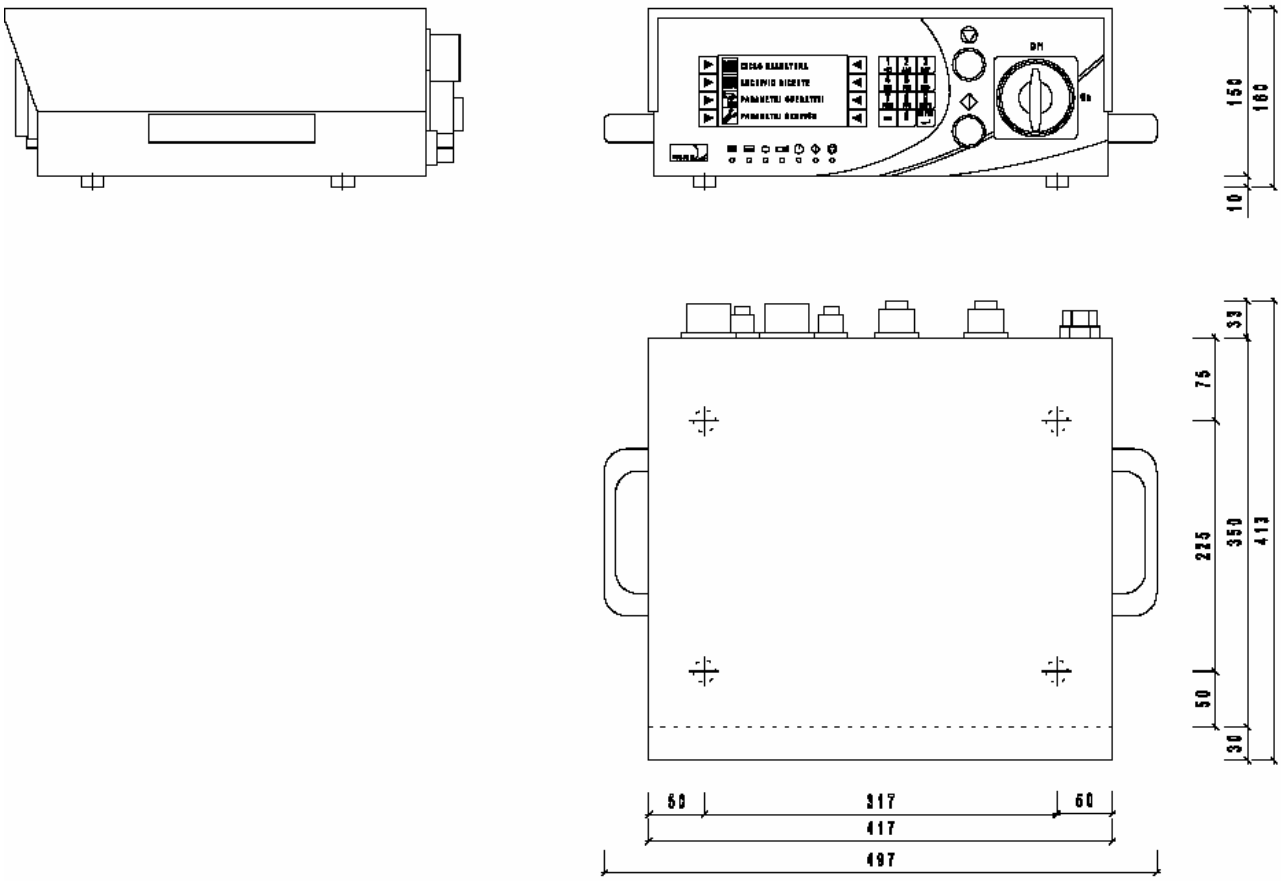


FIGURE 4 - VIEW OF PMR-06

D.3.1 EQUIPMENT FUNCTION

The PMR-06 equipment manages the work cycle by a process control system with an operator interface in the form of:

- a data display screen
- a selection keyboard on the sides of the screen
- an alphanumeric keyboard for entering data and values into the regulating unit

On the front there are lights that indicate current operations in progress.

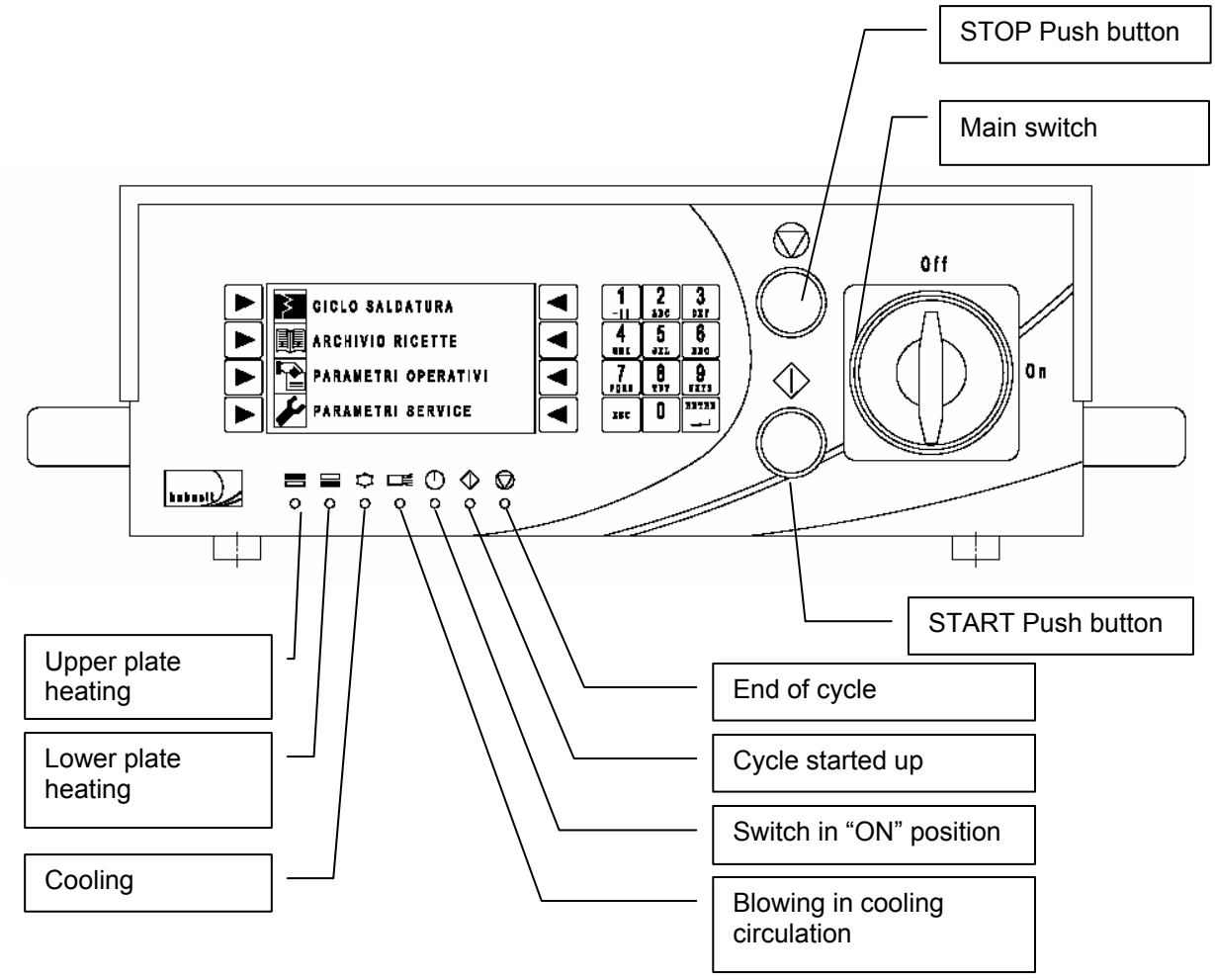
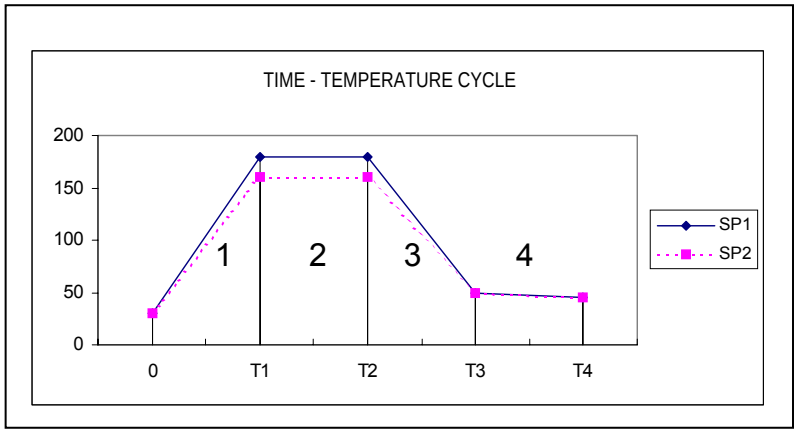


FIGURE 5 - FRONT VIEW OF THE PMR-06

D.3.2 OPERATION MODES DESCRIPTION

The PMR-06 joining presses regulating unit is capable of managing the hot joining process for conveyor belts and tapes.
The working cycle involves four stages (see diagram)



- heating up the two plates to the set temperature.
- maintenance of joining temperature of material for a set time.
- automatic cooling up to set temperature.
- removal of remaining water from tubes with a jet of compressed air.

ATTENTION

The tube clearing with compressed air is compulsory and the default period is 1 minute. During this stage it is not possible to stop the cycle except by using the main switch.

THE DATA TO ENTER TO BE ABLE TO JOIN THE BELT OR TAPE ARE THE FOLLOWING:

- Upper plate temperature
- Lower plate temperature
- Welding time (length of time at the two set temperatures)
- Cushion inflation pressure

When the data have been entered, the cycle can be started with the START button. The regulating unit will automatically handle all the stages and stop at the end of the process.

D.3.2.1 SETTING OF JOINING DATA

The joining data can be entered in two ways:

Manually from the screen page “joining cycle” using the function keys and number keyboard, activating the individual fields and entering the data.
Recalling a job program from the archive.

See E Screen pages menu for editing.

Joining data archives management
The PMR-06 regulating unit has two archives for memorizing joining data relating to the tapes and belts.

The Habasit Archive: this is the official Habasit products archive with joining data taken from officially released Joining Data Sheets.
Local archive: this is an archive available to the user to be able to memorize personal joining data sheets.

WARNING:

The operator can change both these archives when he enters his password.

D.3.2.2 AUTOMATIC/MANUAL OPERATION MODES

The PMR-06 press regulating unit can function in either of two modes: automatic and manual.

Automatic mode:

This mode only functions in combination with the PMC-06 cooling unit.
For the connections to the PMR-06 and to the press see F.1 Connections.
In automatic mode the cushion pressure can be set on the display and is managed automatically by the PMC-06 unit.

Manual Mode:

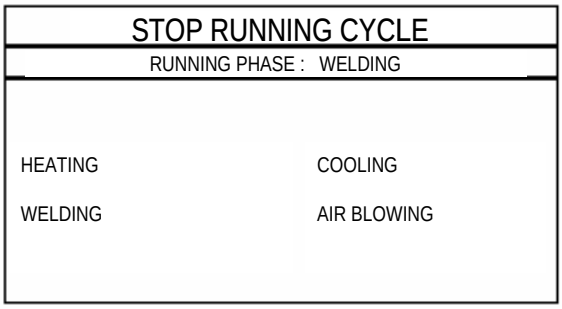
The following can be used in this mode:
The PMC-04 cooling unit
External water recirculation pump
See F.1 Connections on how to connect the units to the press and to the PMR-06 regulating unit.

D.3.2.3 STOP CURRENT CYCLE

The joining cycle can be stopped by pressing the STOP button.
On pressing the button:

- The cycle stops
- The light tower lights flash
- The START and STOP LEDs on the front panel flash.
- The cushion pressure is maintained.

The operator is shown a screen menu where he can make selections with the function keys on the side:



The restart stage can be selected with the side function keys.
When selected the selection is highlighted; press the START button to restart cycle.

ATTENTION

A second press on the STOP button during the temporary stop of the current cycle cancels the cycle and returns the regulating unit to stand-by, with the accompanying risk of damaging the belt/tape in the press.

ATTENTION

If the STOP occurs during welding for the set time and the temperature falls below the 3°C threshold relative to the set point, a cycle restart in the phase means the counting of the welding time is reset.

ATTENTION

It is not possible in manual mode to select the tube water removal stage as this is controlled by the PMC-04 or, if an external water recirculation pump is being use, it has to be carried out manually.

These phases are the following:

- Heating
- Welding
- Cooling
- Air blowing

ATTENTION

In automatic mode it is not possible to stop the regulating unit during the Air Blowing stage. The length of this phase can only be changed by altering the corresponding parameter.
(Parameter T_AIR Section E.2 Table parameter pg. E-37)

D.3.2.4 HOW TO SET THE FUNCTIONING MODE

To set mode change the “Functioning Mode” setting as indicated in E.1.3.12.1 Operating parameters-Password-Utility parameters.

	Automatic	Manual
PMC-06	X	
PMC-04		X
External cooling pump		X
External compressor		X

Availability of power supply on sockets according to main electrical supply.
All sockets and signal lamp are located in the back panel.

Main electrical supply	Cooling pump socket	Air compressor socket	Signal lamp
3x400V+N	YES	YES	ON
3x400V	NO	NO	OFF
3x230V	YES	YES	ON
1x230V	YES	YES	ON

D.3.2.5 MANUAL USE OF THE PMC-04

When the PMC-04 is connected to the PMR-06 regulating unit, the joining cycle is managed as follows:
the PMR-06 regulating unit will manage the heating and thermosetting stages for the time set.
When the time set has run out the cooling and compressed air blow stages pass to the PMC-04 unit. The duration of the two stages is determined by the settings of the two timers.
At the end of the air blowing stage it is necessary to press the STOP button on the PMR-06 regulating unit to end the cycle and return to stand by.

ATTENTION

Pressing of STOP button during cooling phase or air blowing phase, using the cooling unit PMC-04, cause an immediate stop of cycle and the change to the STAND-BY status.

HINT: In case cycle has been stopped during cooling phase, provide to remove water from press circuit by starting a cycle with following parameters:

Upper temperature:	65°C
Lower temperature:	65°C
Welding time:	5 sec.

Start cycle and wait till it stops itself, after air blowing phase.
Alternatively, clean water circuit manually with compressed air.

D.3.2.6 MANUAL USE OF THE EXTERNAL COOLING PUMP

The joining cycle is managed as follows:
the PMR-06 regulating unit will manage the heating and thermosetting stages for the time set.
When the time set has run out, the PMR-06 regulating unit will activate the rear electrical outlet the cooling pump is connected to get to **the cooling set point temperature.**
The removal of remaining water from tubes is carried out with a jet of compressed air.

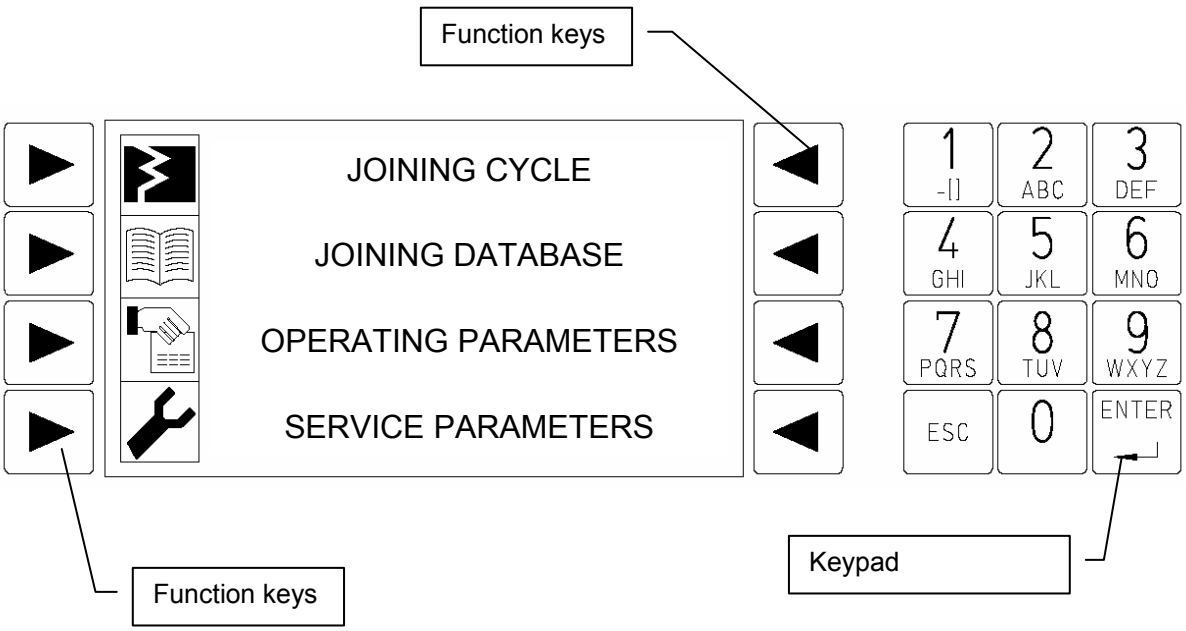
D.4 TECHNICAL ASSISTANCE

Our experts will be available for you to consult on the use of the equipment. If you have any technical queries regarding the working and the status of the regulating unit, contact the manufacturer at the address indicated in this manual.

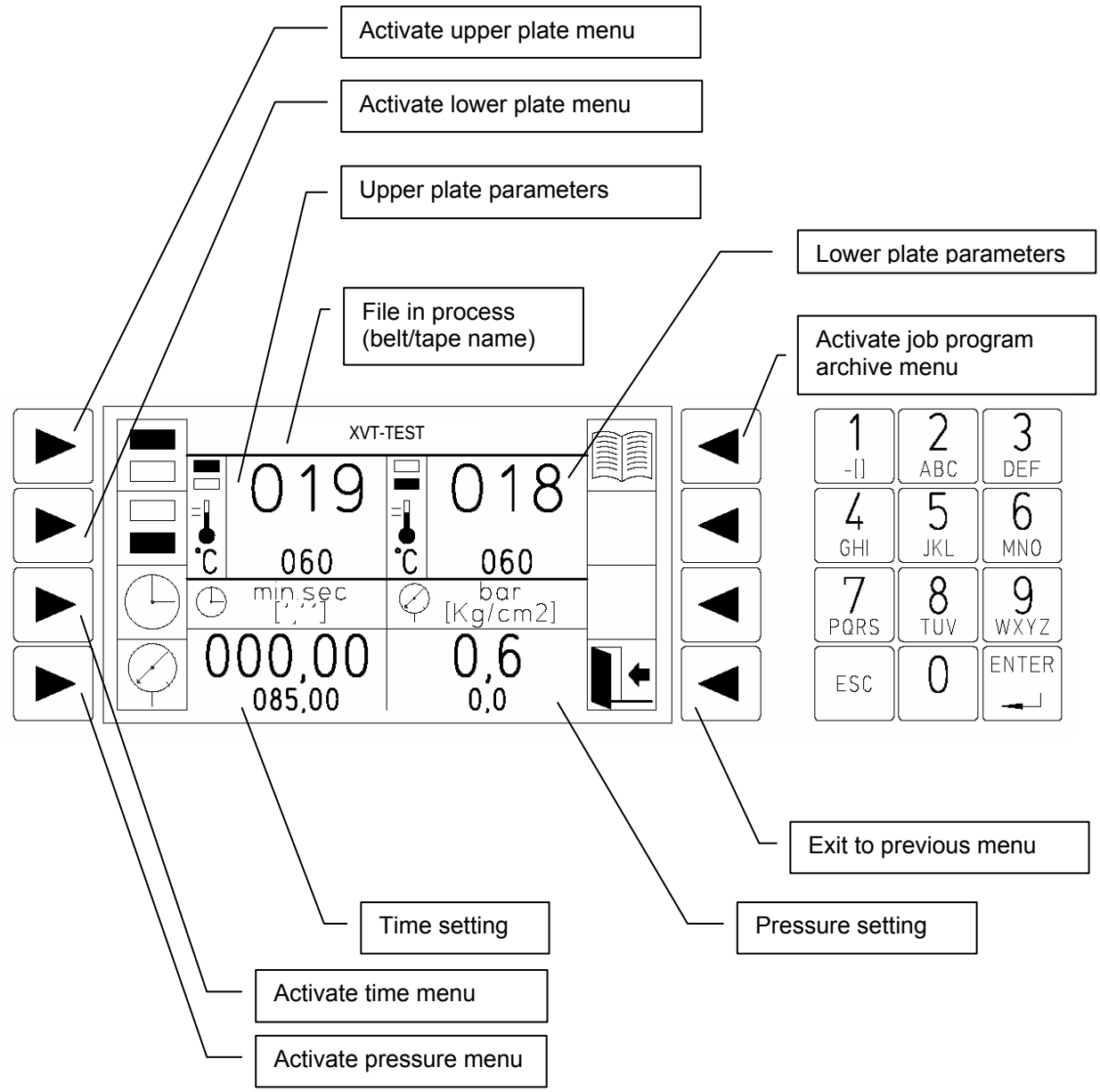
E. SCREEN PAGES MENU

E.1 MAIN MENU

All the function pages can be accessed from this menu.
It works through the activation of commands represented by icons and strings using the function keys at the side of the display.
The number keyboard can be used to enter ► ◄ numbers and/or strings in the open fields

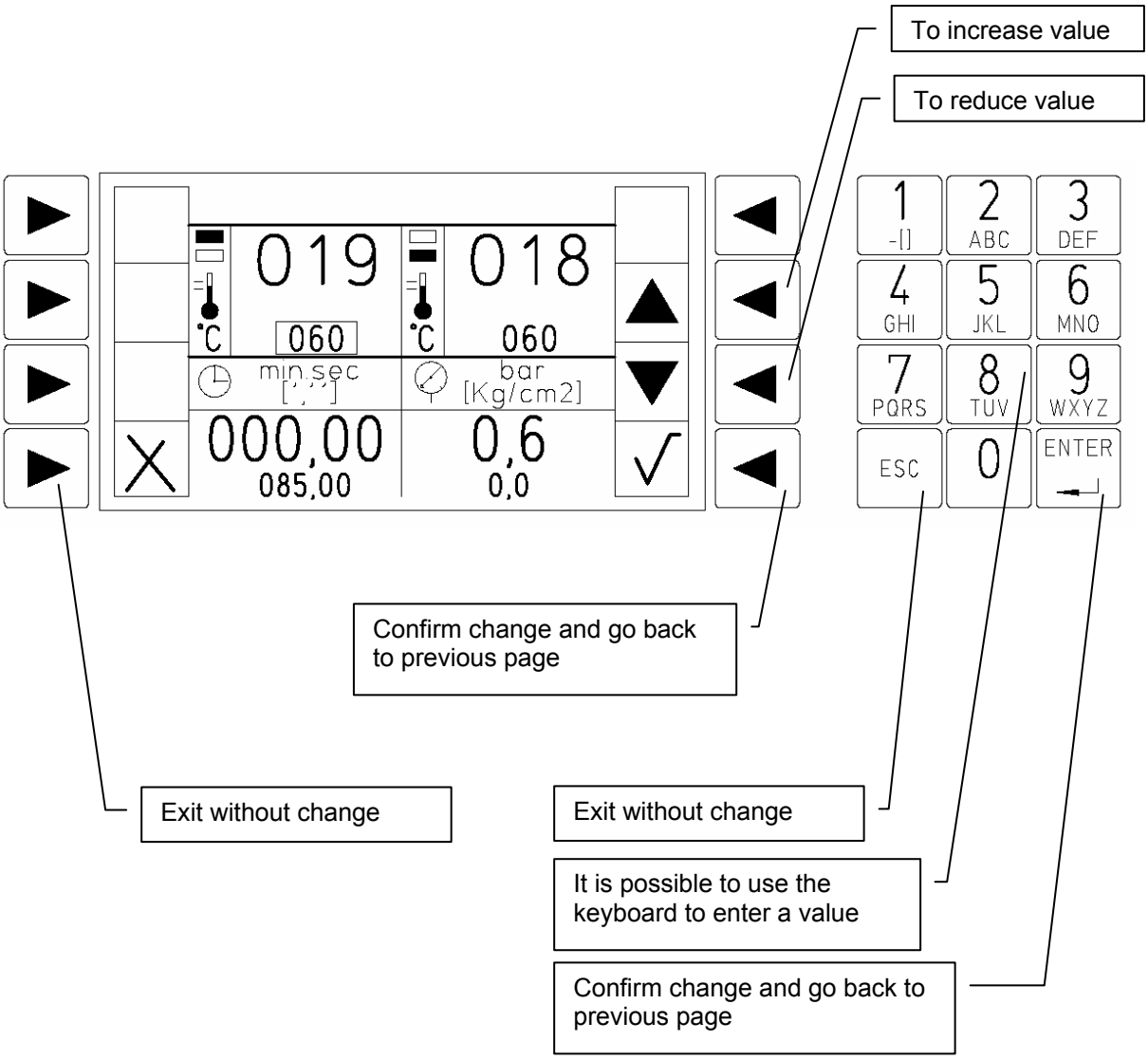


E.1.1 JOINING CYCLE



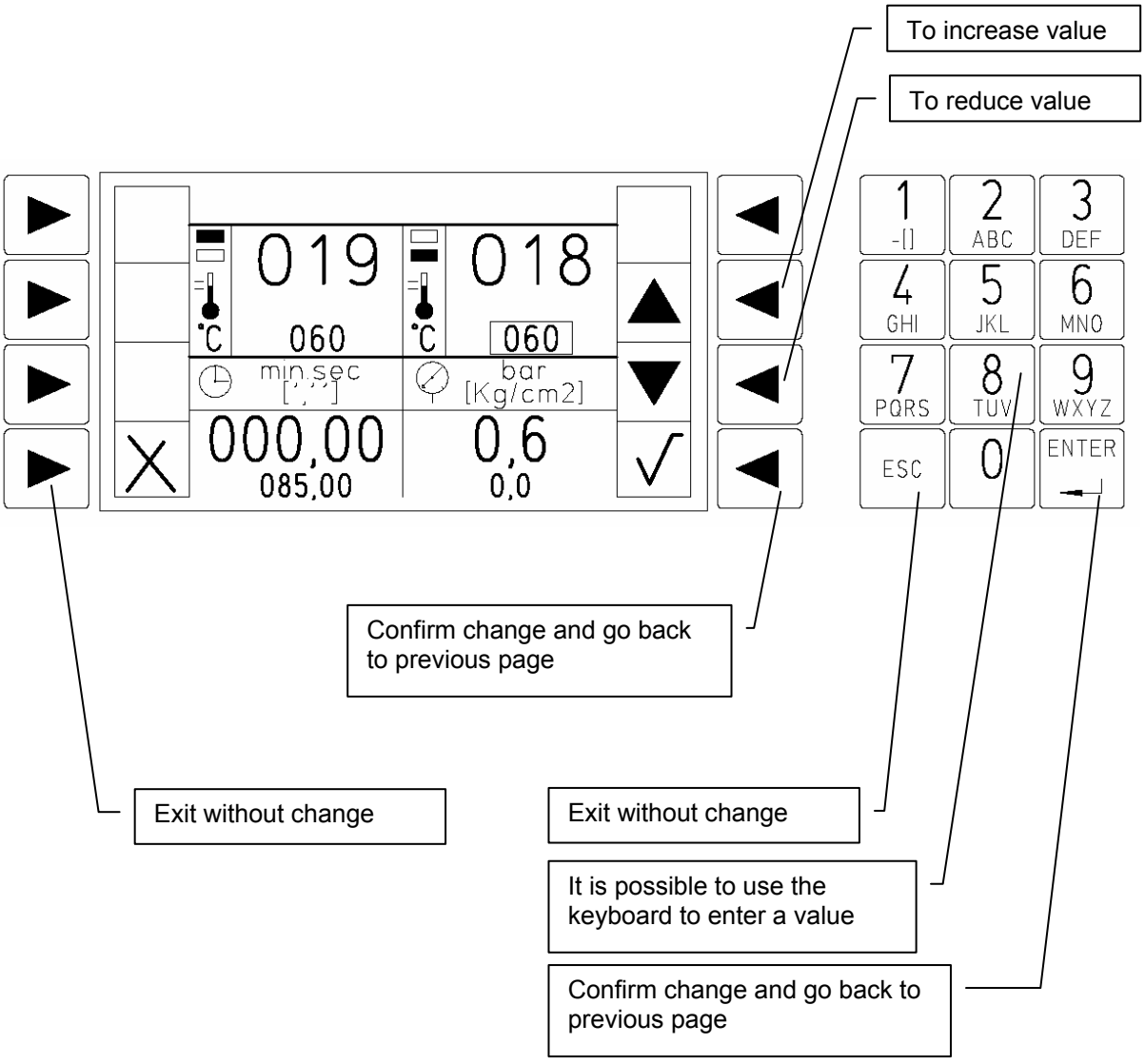
E.1.1.7 JOINING CYCLE-UPPER PLATE

Joining cycle
- **Upper plate**
- Lower plate
- Times
- Pressure



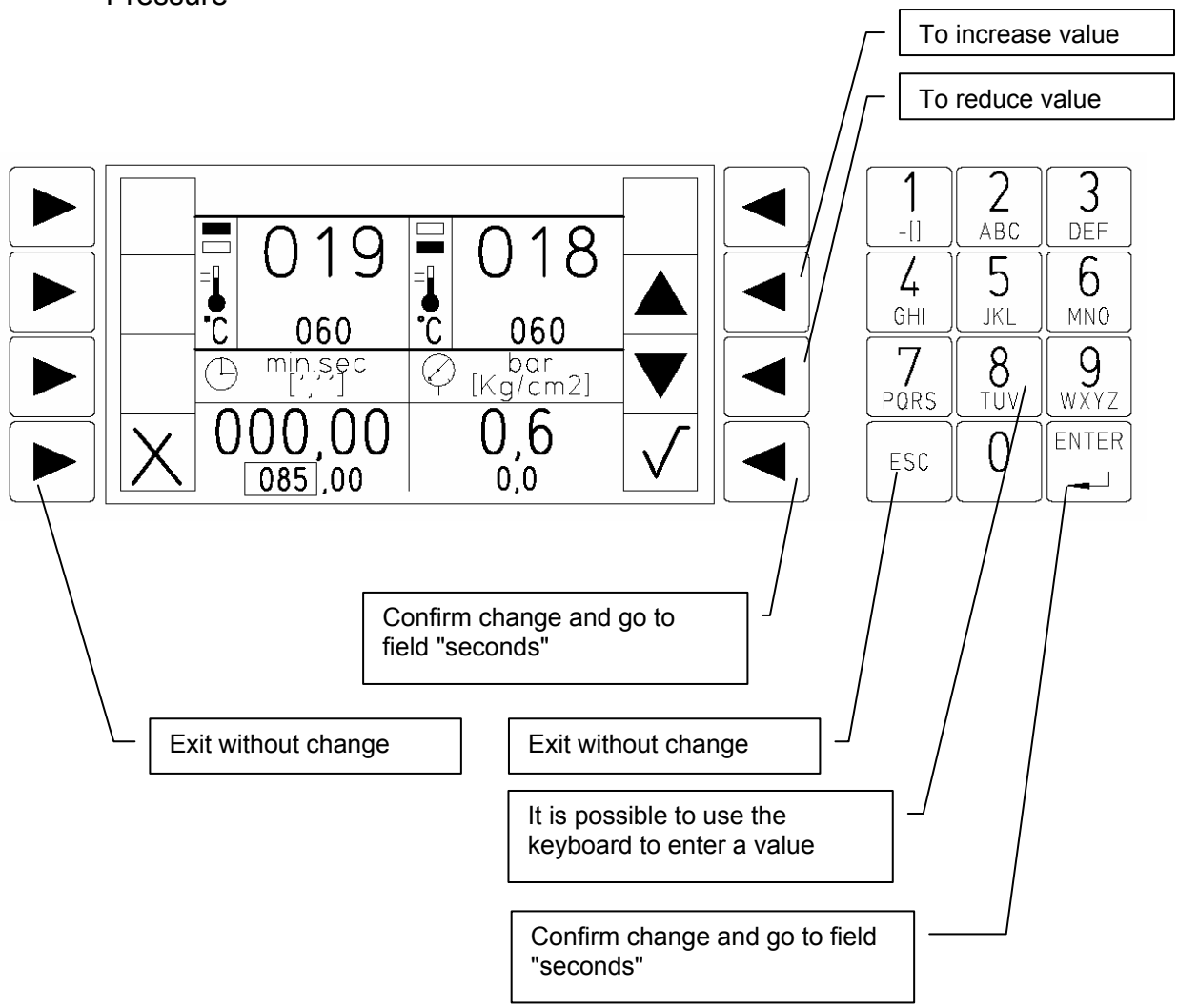
E.1.1.8 JOINING CYCLE-LOWER PLATE

Joining cycle
- Upper plate
- **Lower plate**
- Times
- Pressure



E.1.1.9 JOINING CYCLE-TIMES

Joining cycle
- Upper plate
- Lower plate
- **Times**
- Pressure



Welding time:

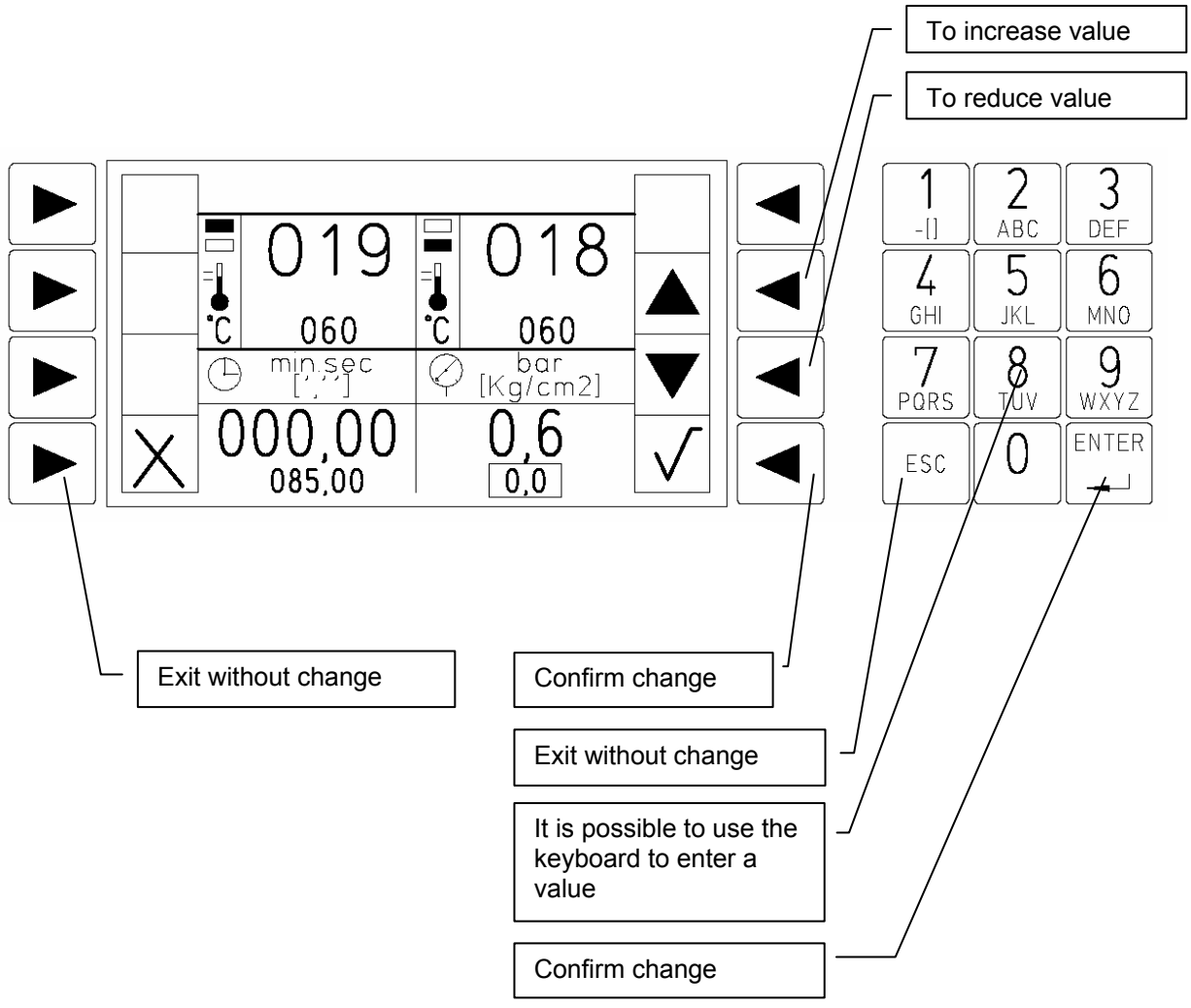
There are 2 fields: minutes.seconds [000.00]

The correct entering sequence is as follows:

- Enter minutes
- Confirm and pass automatically to the seconds field
- Enter seconds
- Confirm and exit input mask

E.1.1.10 JOINING CYCLE-PRESSURE

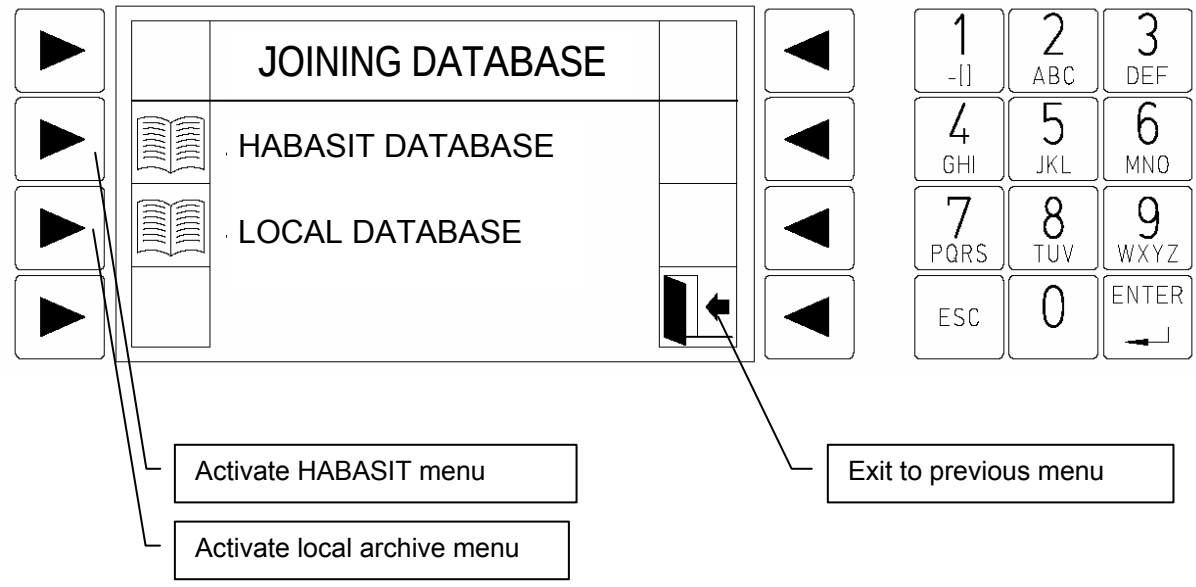
Joining cycle
- Upper plate
- Lower plate
- Times
- **Pressure**



E.1.2 JOB PROGRAMMES

Job programs Archive

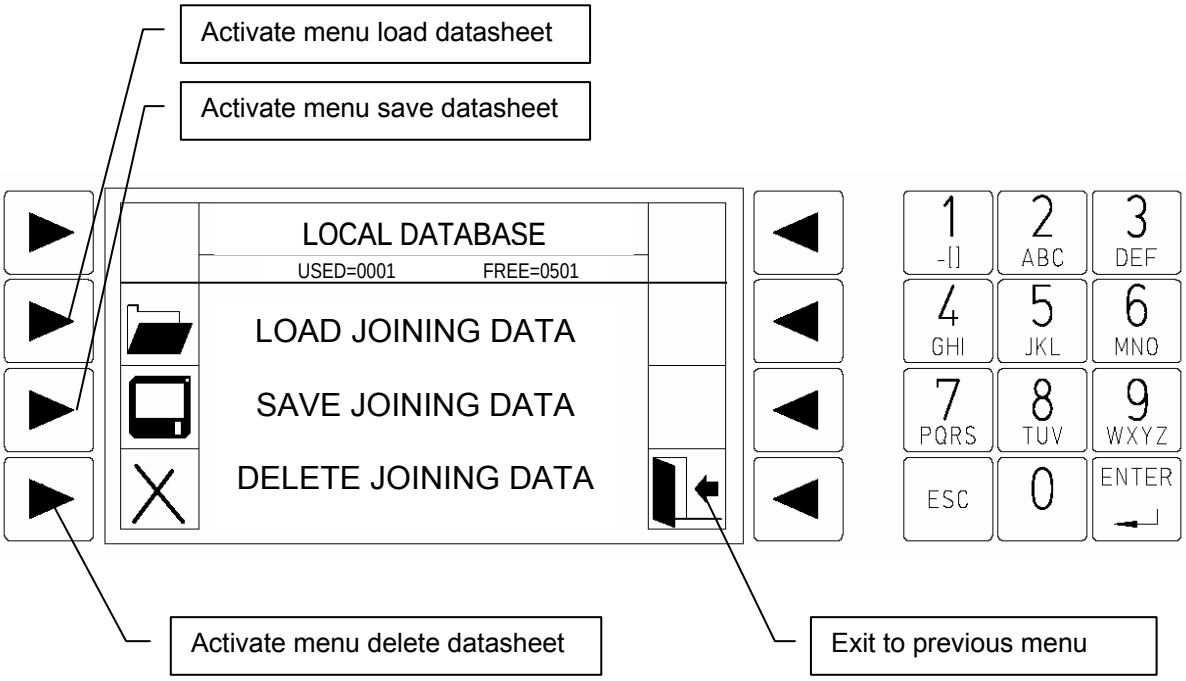
- Habasit
  - Habasit Archives
    - Load Sheet
    - Save Sheet
    - Delete sheet
- Local
  - Local files
    - Load sheet
    - Save sheet
    - Cancel Sheet



THE HABASIT ARCHIVE: Official joining data sheets for the HABASIT GROUP
LOCAL ARCHIVE: Archive available to the user for saving customized joining sheets

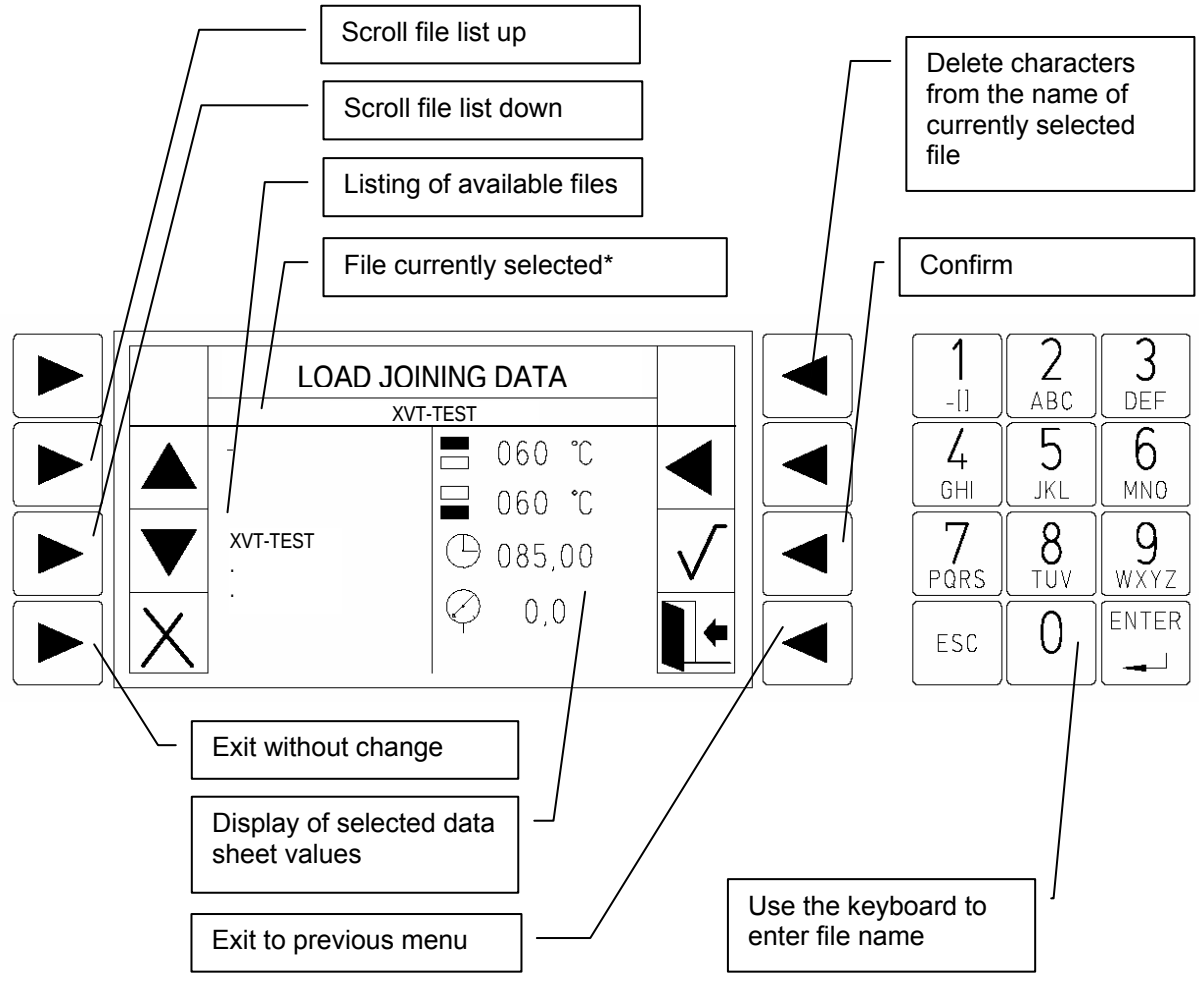
E.1.2.11 JOB PROGRAMMES-LOCAL ARCHIVE-LOCAL

Job programs Archive
└**Local**
└**Local files**
├Load sheet
├Save sheet
└Cancel Sheet



E.1.2.11.1 -LOCAL ARCHIVE-LOCAL-LOAD SHEET

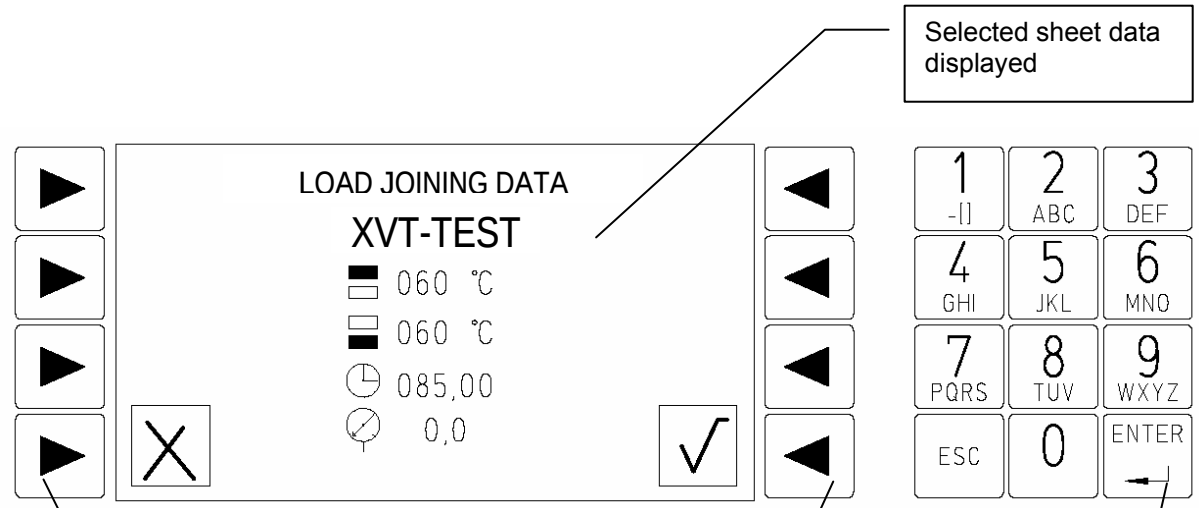
Job programs Archive
└Local
└Local files
├Load sheet
├Save sheet
└Cancel Sheet



File currently selected*:
The characters present can be deleted and the name of the belt you wish to search can be entered. If there is partial entering of text the pointer goes to the first corresponding field in the alphabetical list of belts starting with that name.

E.1.2.11.1.1 -LOCAL ARCHIVE-LOCAL-LOAD SHEET

Job programs Archive
└Local
└Local files
├Load sheet
├Save sheet
└Cancel sheet



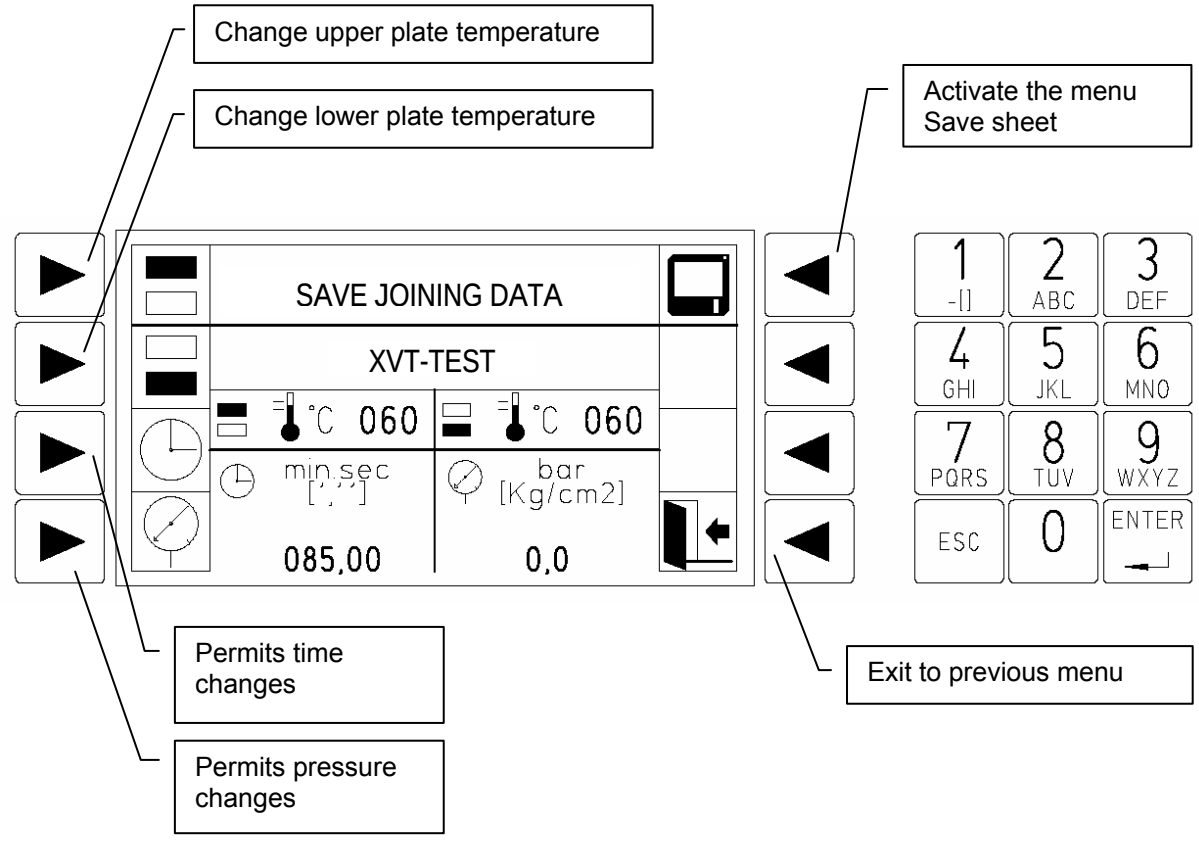
Exit without change

Confirm selection. After the OK the regulating unit automatically passes to the joining page, loading the joining data in the fields.

Confirm selection. After the OK the regulating unit automatically passes to the joining page, loading the joining data in the fields.

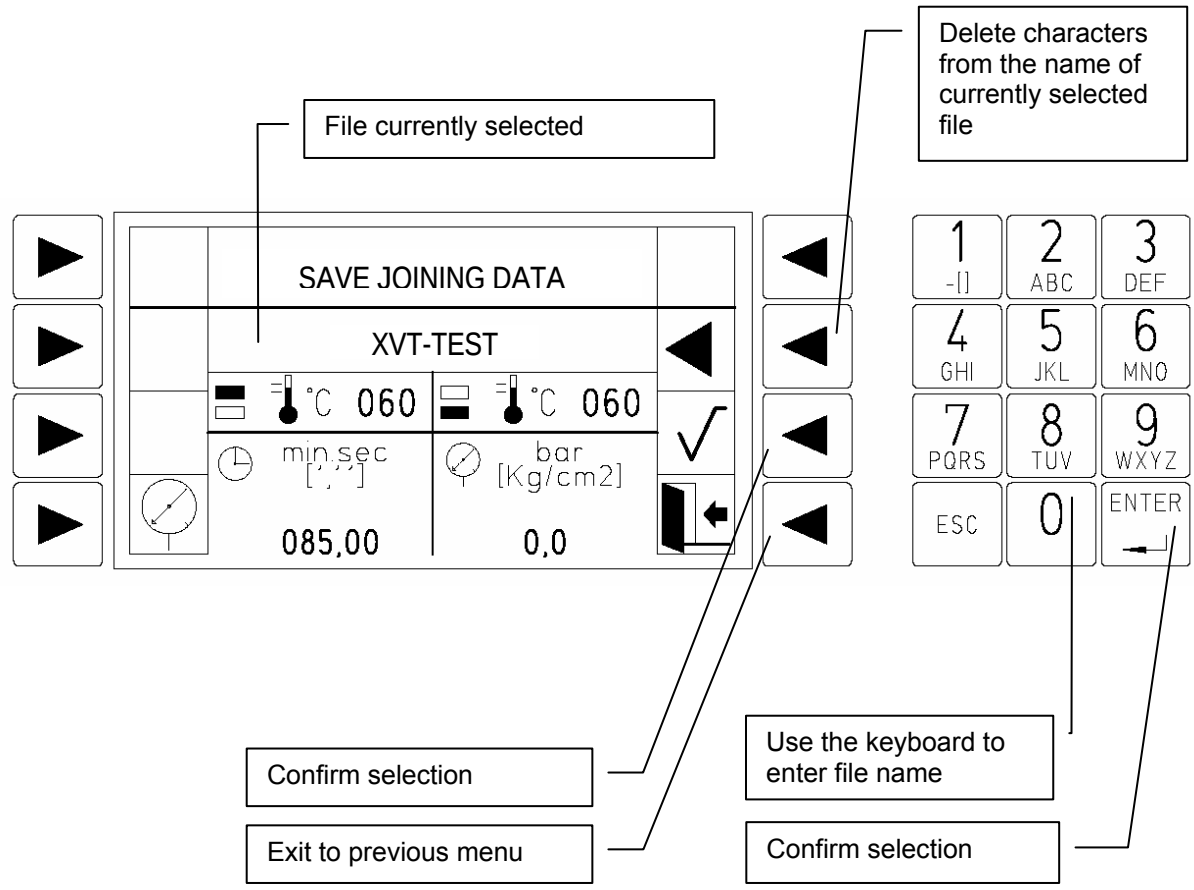
E.1.2.11.2 -LOCAL ARCHIVE-LOCAL-SAVE SHEET

Job programs Archive
└Local
└Local files
├Load sheet
├**Save sheet**
└Cancel sheet



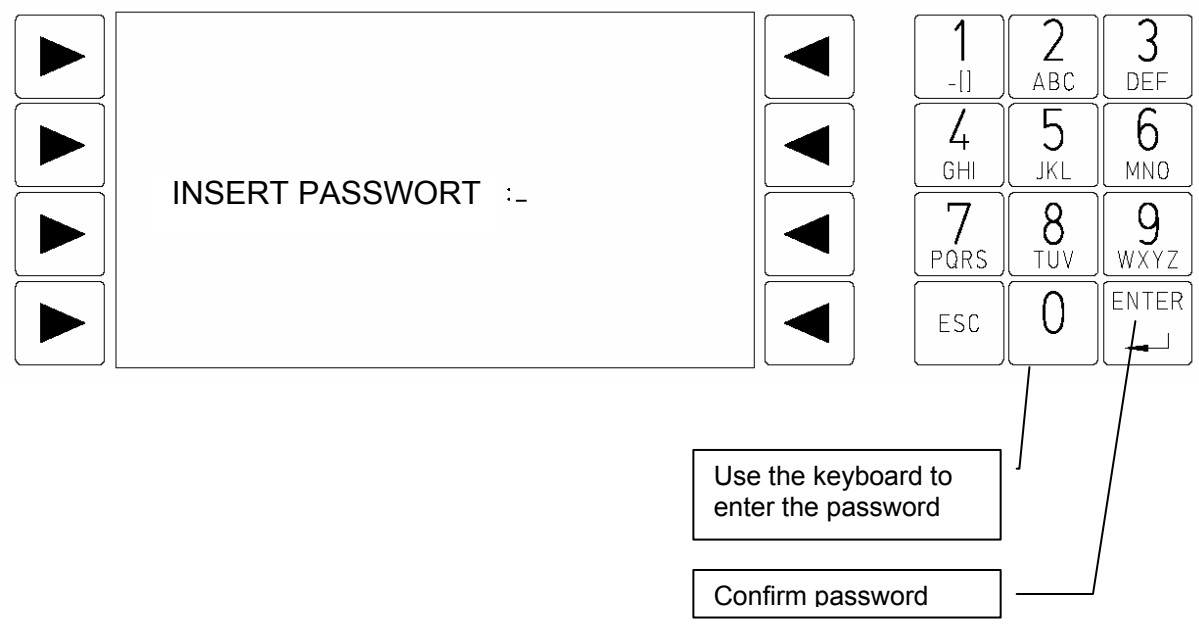
E.1.2.11.2.1 -LOCAL ARCHIVE-LOCAL-SAVE SHEET-SAVE SHEET

Job programs Archive
└**Local**
└**Local files**
├Load card
├**Save card – Save card**
└Cancel card



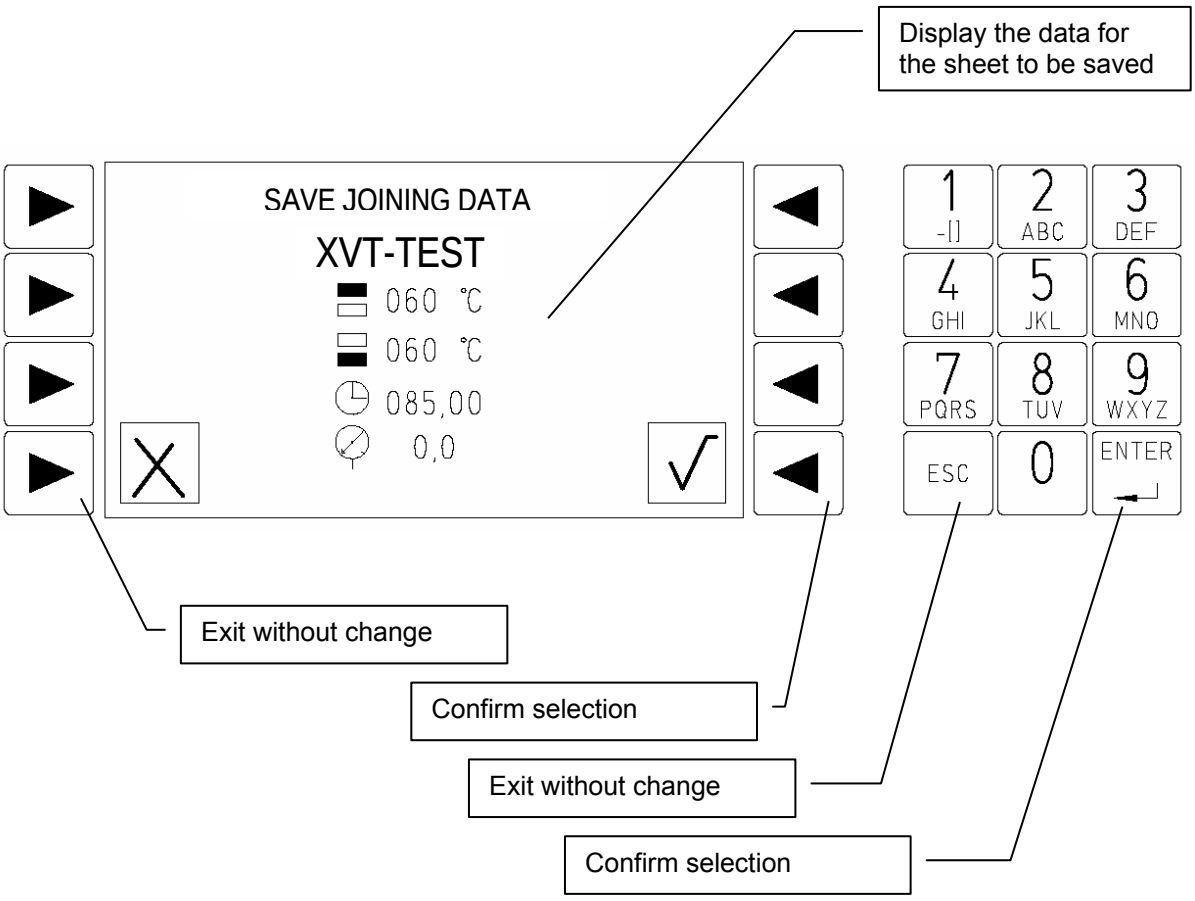
E.1.2.11.2.1.1 -LOCAL ARCHIVE-LOCAL-SAVE SHEET-SAVE SHEET-PASSWORD

Job programs Archive
└Local
└Local files
├Load sheet
├**Save sheet – Save sheet – Password**
└Cancel sheet



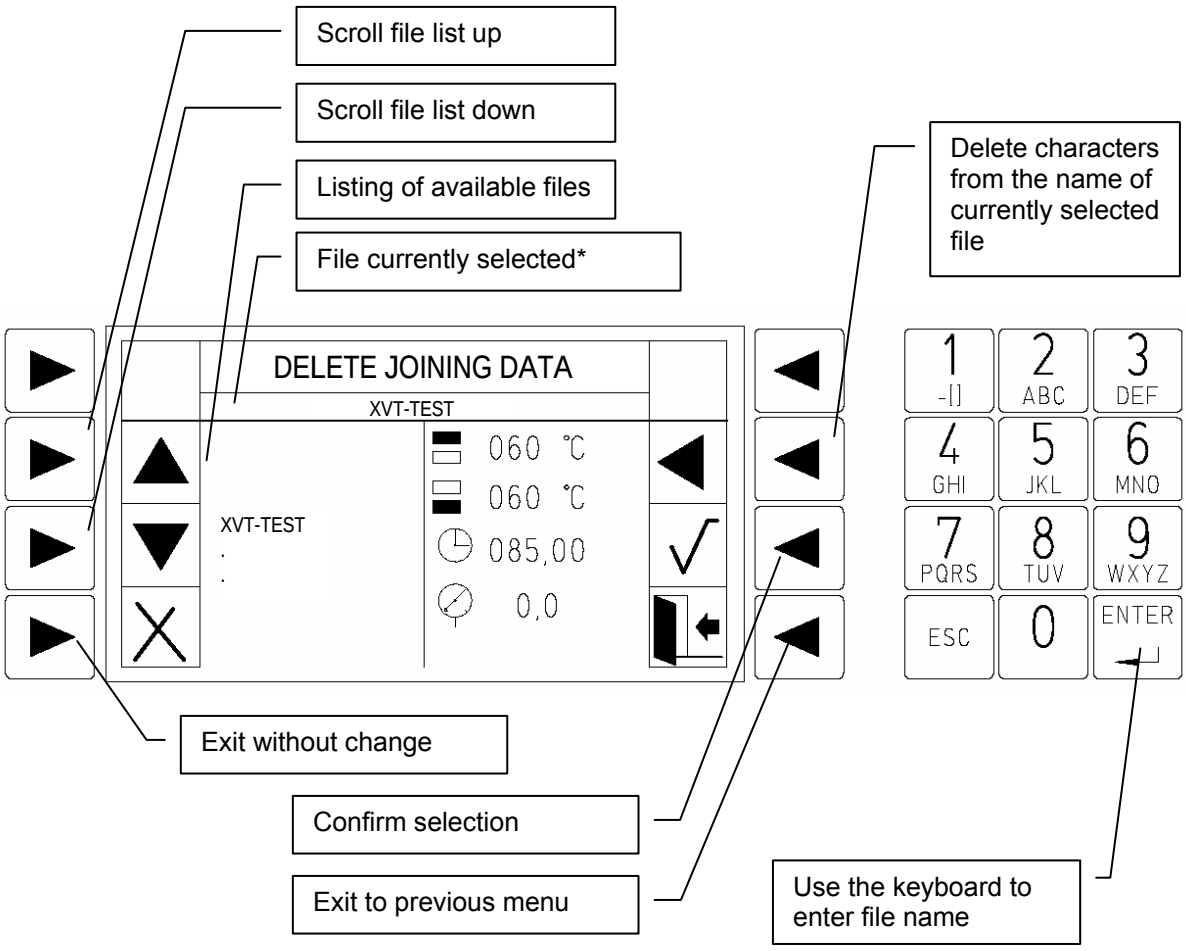
-LOCAL ARCHIVE-LOCAL-SAVE SHEET-SAVE SHEET-PASSWORD-SAVE SHEET

Job programs Archive
└**Local**
└**Local files**
├Load sheet
├**Save sheet – Save sheet – Password – Save sheet**
└Cancel sheet



E.1.2.11.3 -LOCAL ARCHIVE-LOCAL-DELETE SHEET

Job programs Archive
└Local
└Local files
├Load sheet
├Save sheet
└Cancel sheet

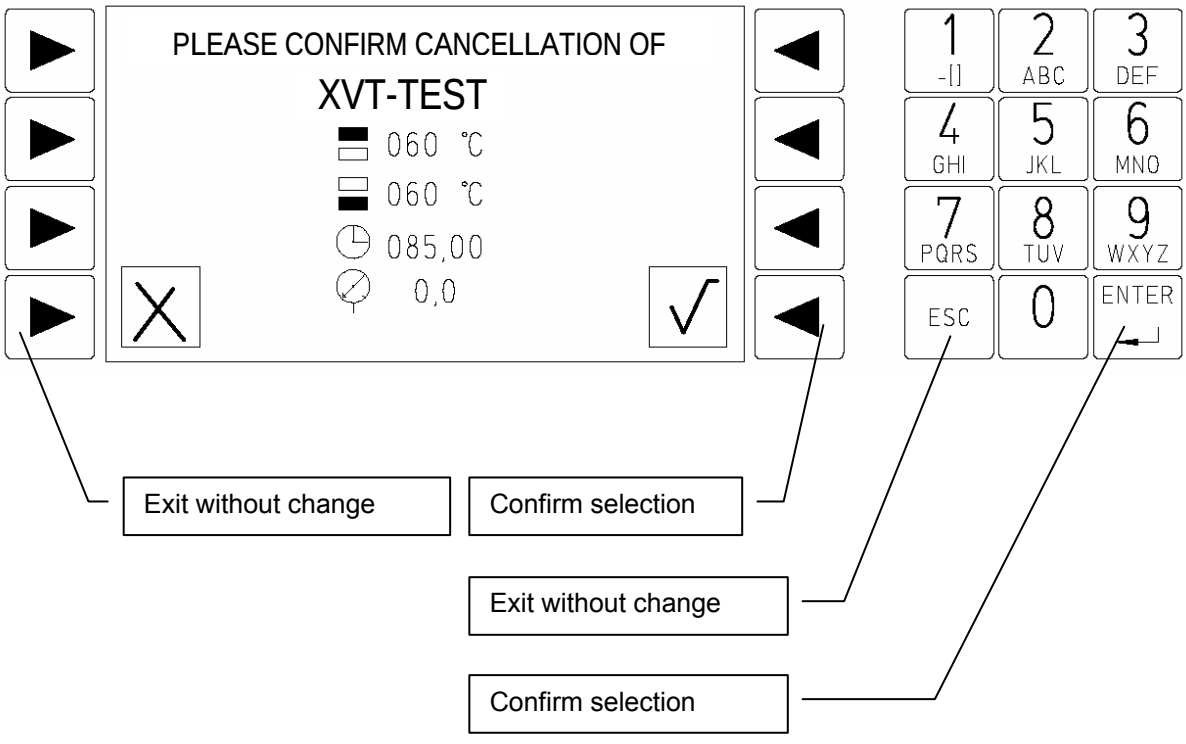


File currently selected*:

The characters present can be deleted and the name of the belt you wish to search can be entered. If there is partial entering of text the pointer goes to the first corresponding field in the alphabetical list of belts starting with that name.

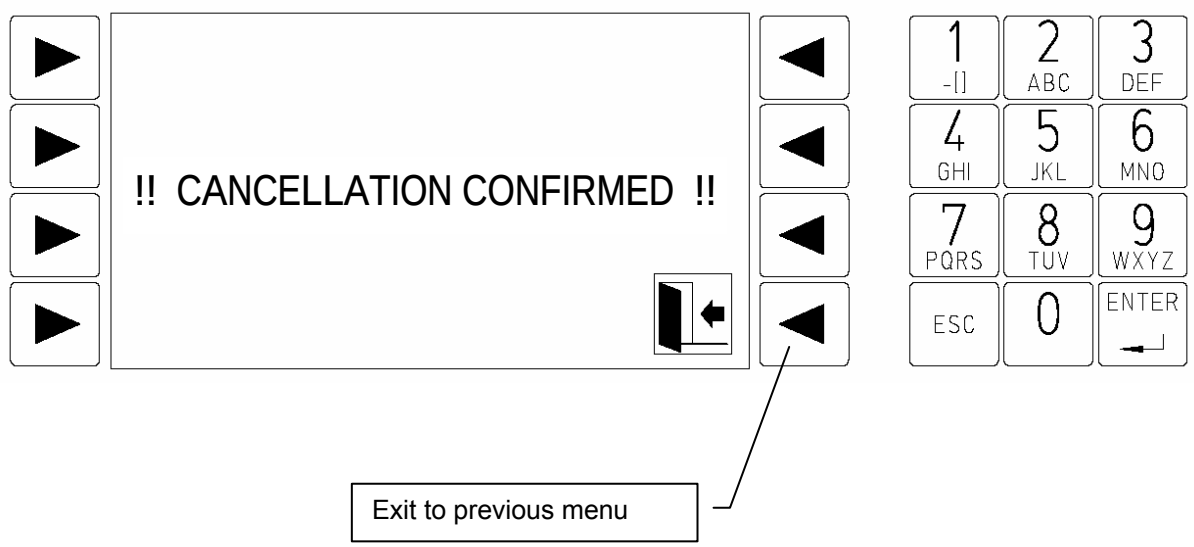
E.1.2.11.3.1 -LOCAL ARCHIVE-LOCAL-DELETE SHEET-OK

Job programs Archive
└Local
└Local files
├Load sheet
├Save sheet
└Cancel sheet – Confirm



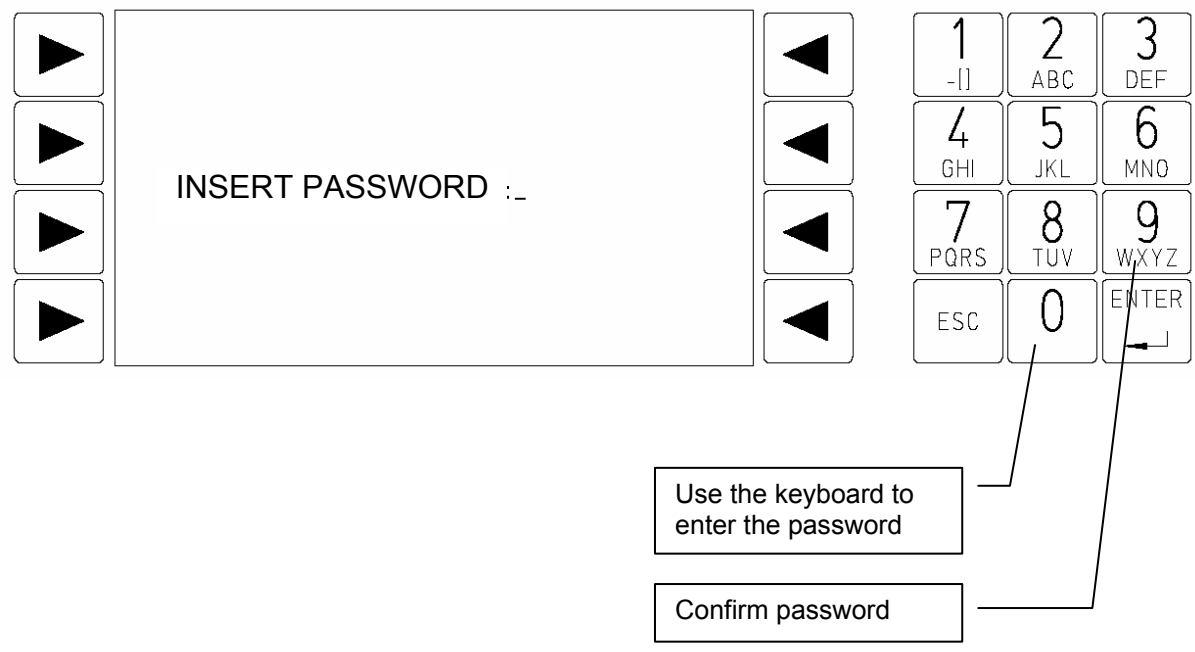
E.1.2.11.3.1.1 JOB PROGRAMMES-LOCAL ARCHIVE-LOCAL-DELETE SHEET

Job programs Archive
└Local
└Local files
├Load sheet
├Save sheet
└Cancel sheet – Confirm – Confirmed



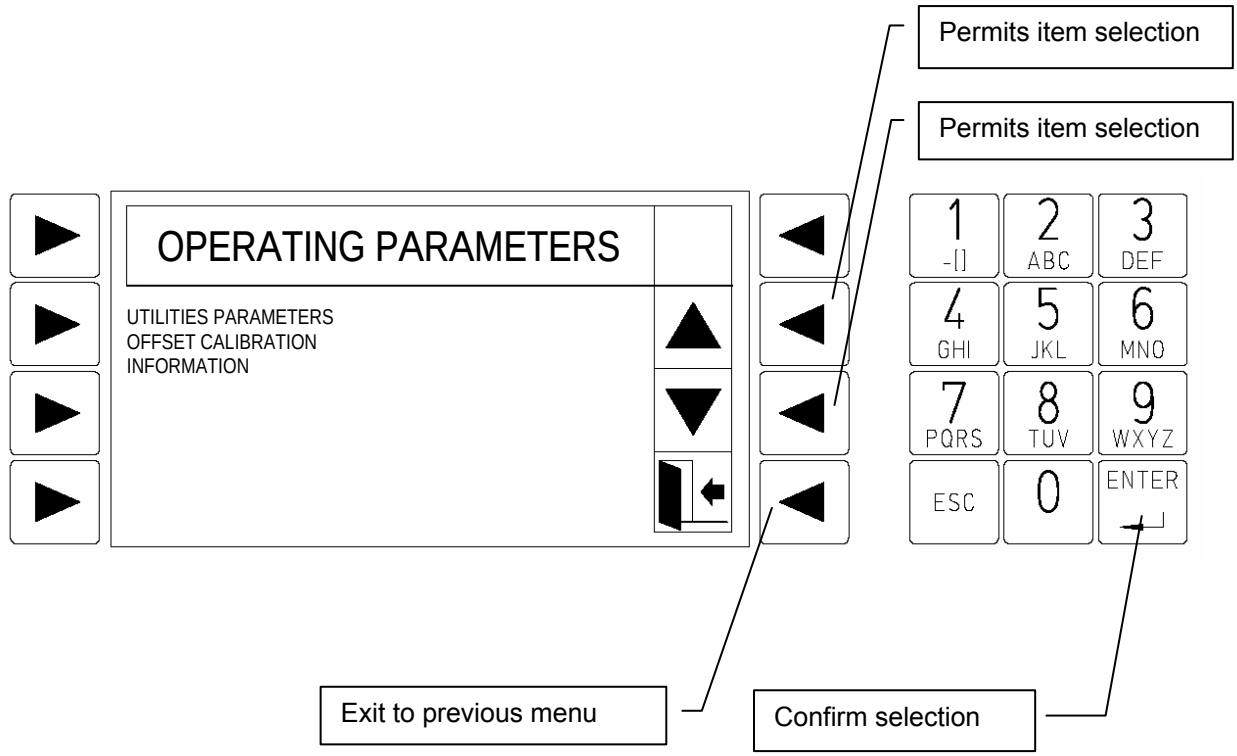
E.1.3 OPERATING PARAMETERS

Operating parameters
- Password
  - Utility parameters
    - Language
    - Temperature
    - Working mode



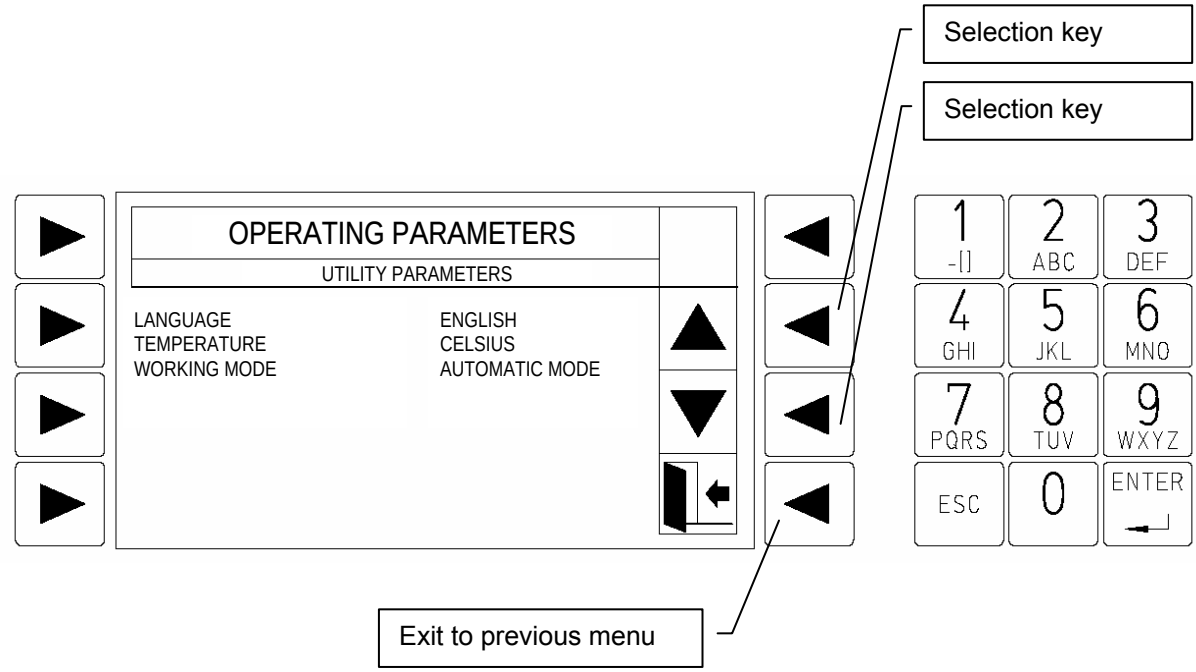
E.1.3.12 OPERATING PARAMETERS-PASSWORD

Operating parameters
└**Password**
└Utility parameters
├Language
├Temperature
└Working mode



E.1.3.12.1 OPERATING PARAMETERS-PASSWORD-UTILITY PARAMETERS

Operating parameters
- **Password**
  - **Utility parameters**
    - Language
    - Temperature
    - Working mode
  - Offset calibration
    - Offset calibration (temperature and pressure)
  - Information

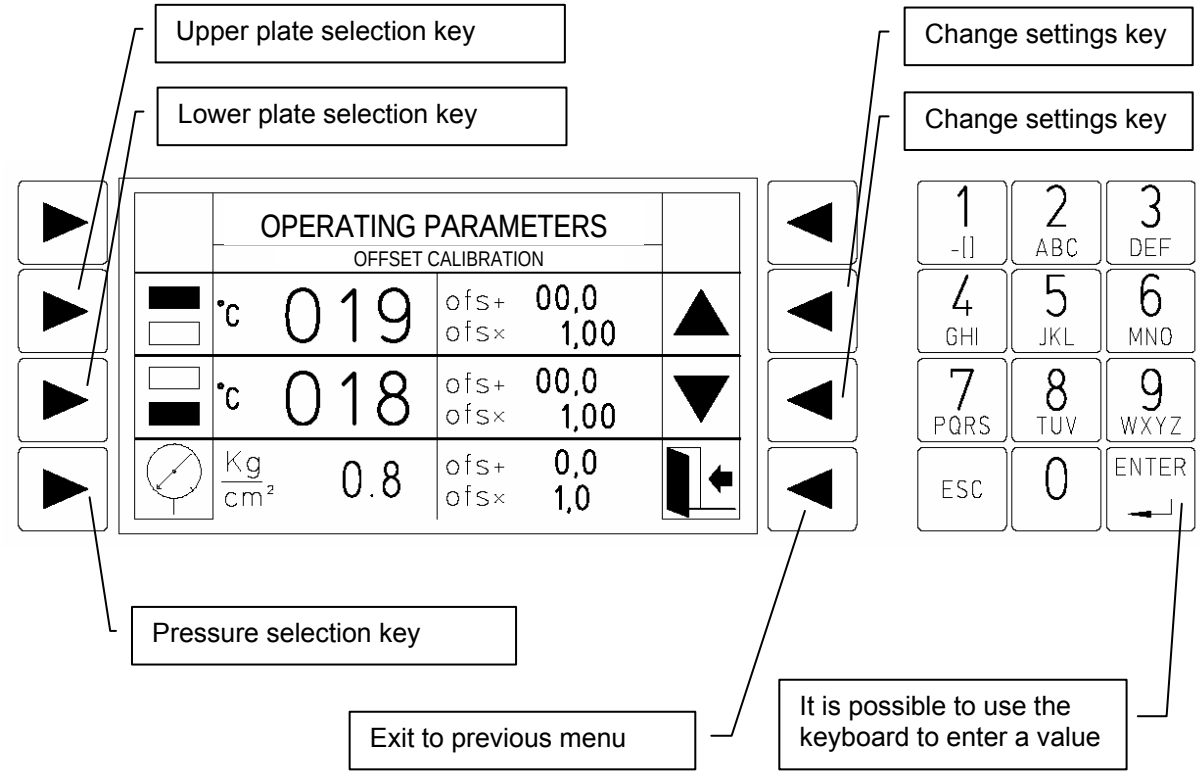


To use the following menu proceed as follows:

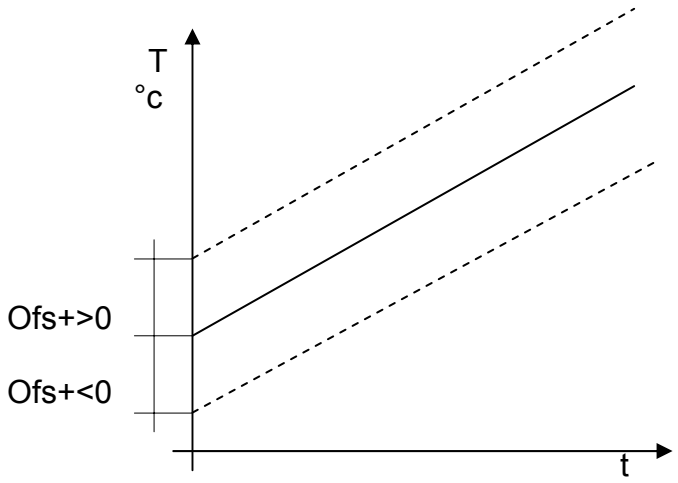
- Select the desired item using the keys on the left hand column
- Press ENTER to confirm selection
- The field on the right corresponding to the selected item will be highlighted
- Use the selection keys to make the changes
- Press ENTER to confirm selection

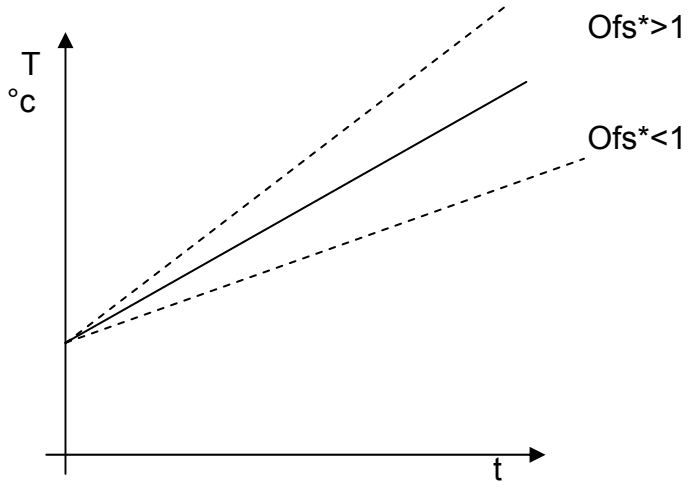
E.1.3.12.2 PASSWORD-OFFSET CALIBRATION

Operating parameters
- **Password**
  - Utility parameters
    - Language
    - Temperature
    - Working mode
  - **Offset calibration**
    - Offset calibration (temperature and pressure)
  - Information



Ofs+ : Moves the temperature curve up or down.
Ofs* : Increases or decreases temperature curve steepness



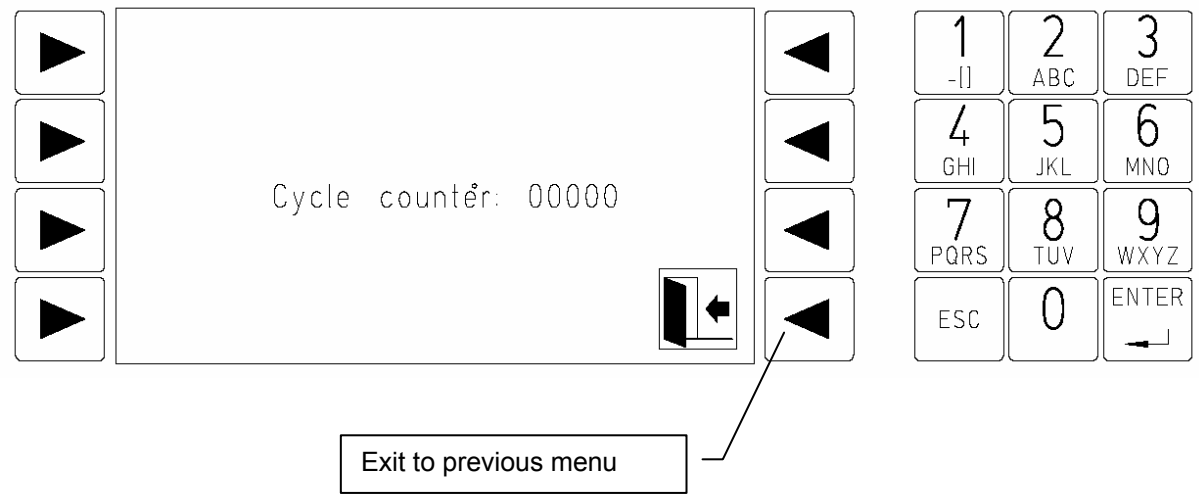


The temperature approximately follows the function T= (* x t) + Ofs+ .
Use these indications to obtain the desired temperature range gradient.

Where:
t = probe reading value
T = displayed temperature

E.1.3.12.3 OPERATING PARAMETERS-PASSWORD-INFORMATION

Operating parameters
- **Password**
  - Utility parameters
    - Language
    - Temperature
    - Working mode
  - Offset calibration
    - Offset calibration (temperature and pressure)
  - **Information**



Displays joining cycles executed by the regulating unit.

E.1.4 MAINTENANCE PARAMETERS

ATTENTION

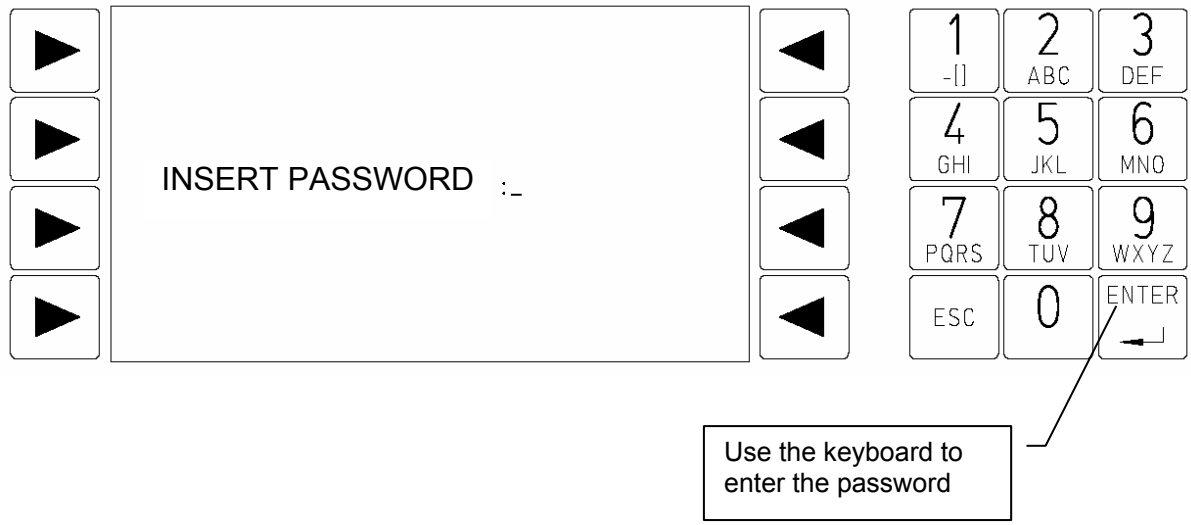
This section presents the settings for the operation of the PMR-06 regulating unit.

Access to and changes of these data are only granted to specialized and properly prepared personnel.

Any erroneous change may jeopardize the proper operation or damage the PMR-06 and the whole system (PMR-06, hot pressing device, PMC-04, PMC-06).

Maintenance Parameters

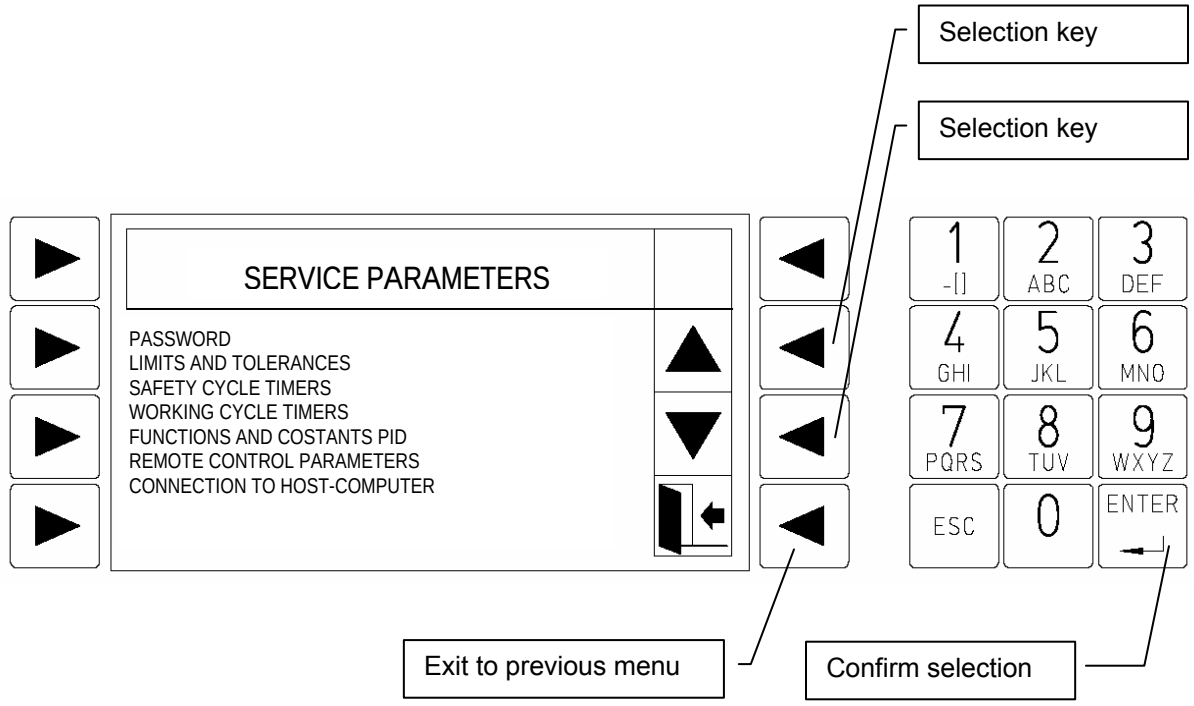
- Password
  - Operator password
  - Limits and tolerances
  - Security times
  - Operation times
  - PID Constants and functions
  - Remote control parameters
  - Remote control connection



Enter the **Service Password** to access the **Service** area data.

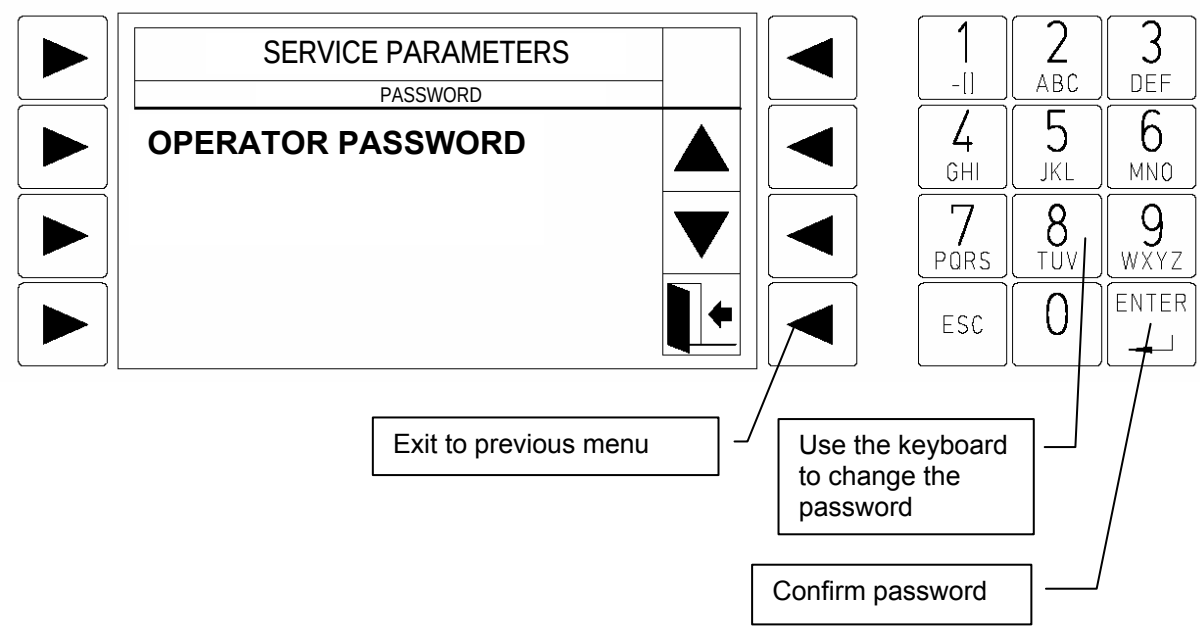
E.1.4.13 MAINTENANCE PARAMETERS-PASSWORD

Maintenance Parameters
└Password
- ├Operator password
- ├Limits and tolerances
- ├Security times
- ├Operation times
- ├PID Constants and functions
- ├Remote control parameters
- └Remote control connection



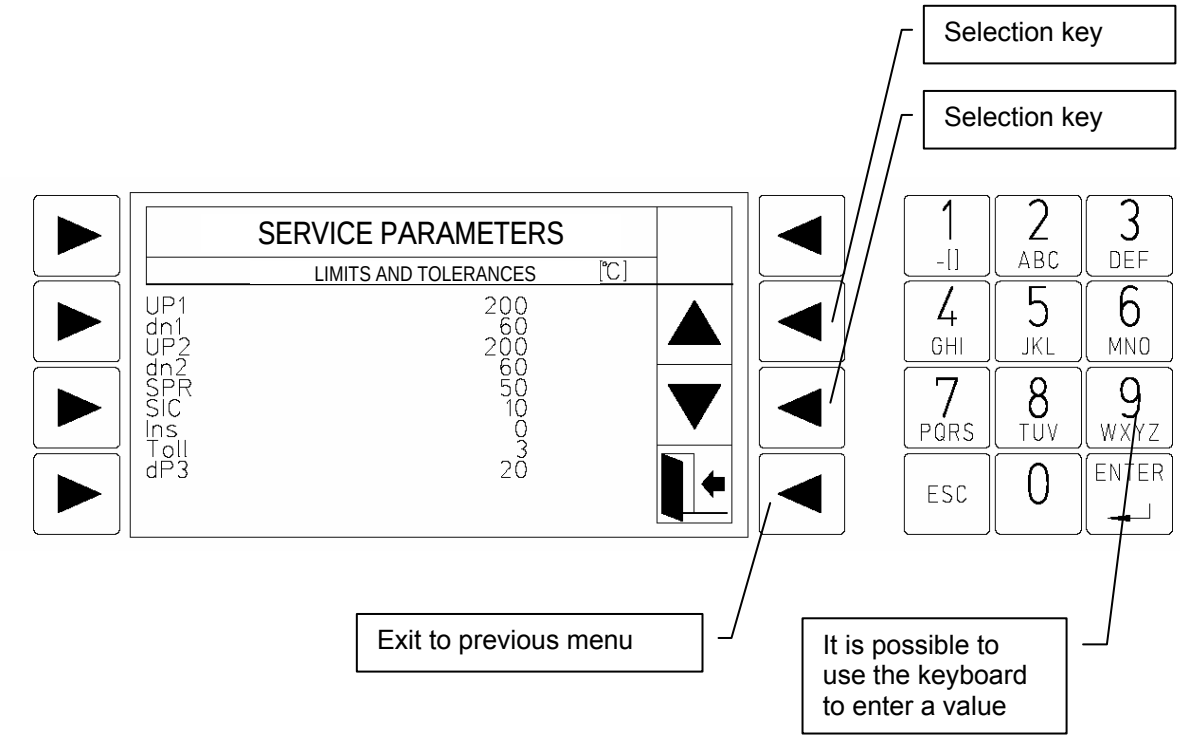
E.1.4.13.1 MAINTENANCE PARAMETERS-PASSWORD-OPERATOR PASSWORD

Maintenance Parameters
└**Password**
- **Operator password**
- Limits and tolerances
- Security times
- Operation times
- PID Constants and functions
- Remote control parameters
- Remote control connection



E.1.4.13.2 PASSWORD-LIMITS AND TOLERANCES

Maintenance Parameters
└Password
- ├Operator password
- ├**Limits and tolerances**
- ├Security times
- ├Operation times
- ├PID Constants and functions
- ├Remote control parameters
- └Remote control connection

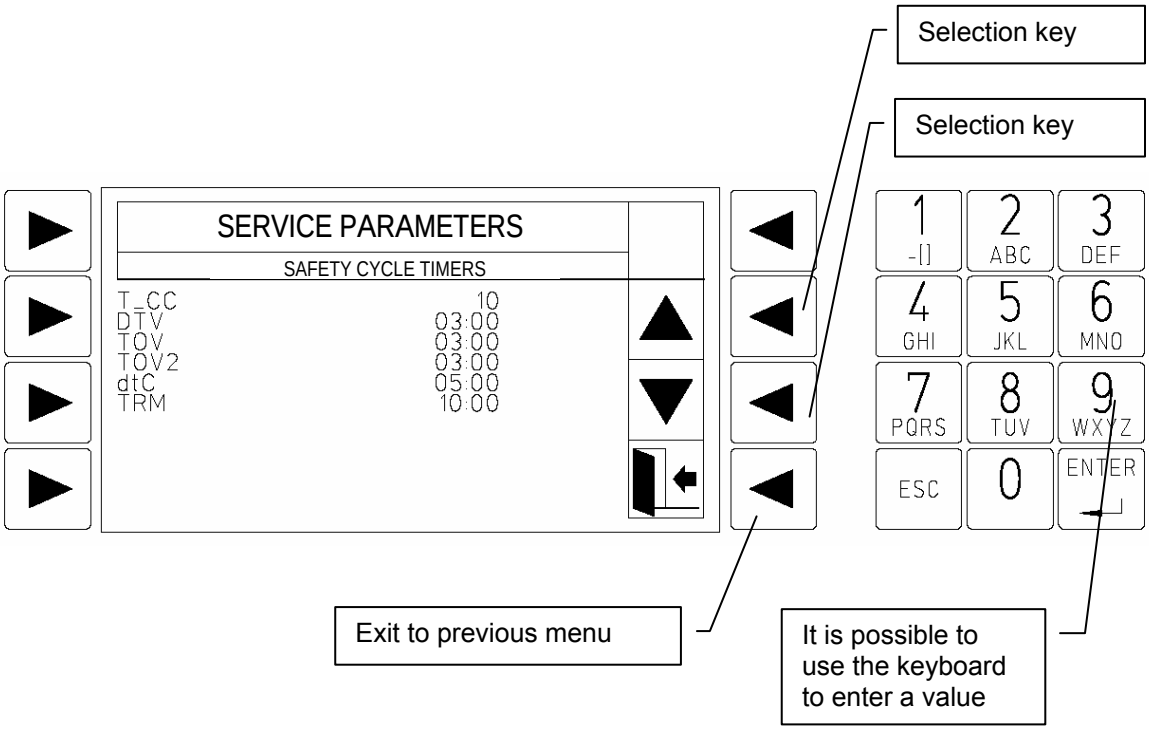


To use the following menu proceed as follows:

- Select the desired item using the keys on the left hand column
- Press ENTER to confirm the selection
- The field on the right corresponding to the selected item will be highlighted
- Use the selection keys to make the changes
- -Press ENTER to confirm

E.1.4.13.3 MAINTENANCE PARAMETERS--PASSWORD-SAFETY TIMES

Maintenance Parameters
└Password
- ├Operator password
- ├Limits and tolerances
- ├**Security times**
- ├Operation times
- ├PID Constants and functions
- ├Remote control parameters
- └Remote control connection

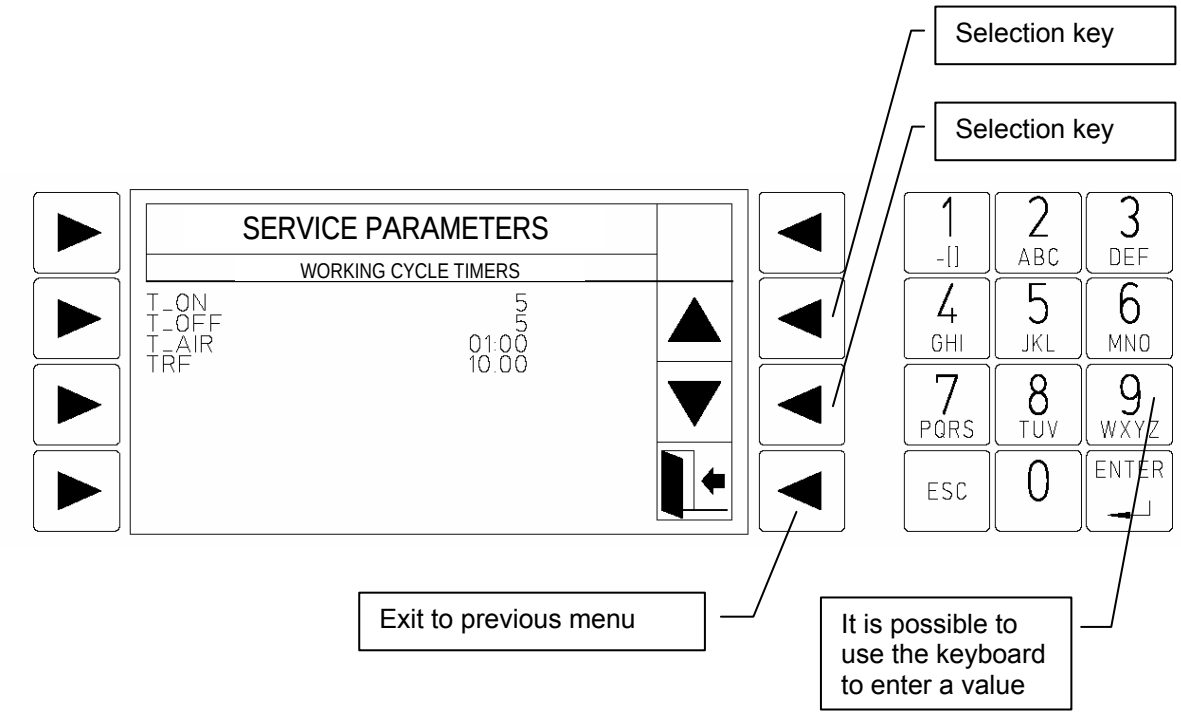


To use the following menu proceed as follows:

- Select the desired item using the keys on the left hand column
- Press ENTER to confirm the selection
- The field on the right corresponding to the selected item will be highlighted
- Use the selection keys to make the changes
- Press ENTER to confirm

E.1.4.13.4 MAINTENANCE PARAMETERS-PASSWORD-OPERATION TIMES

Maintenance Parameters
└Password
- ├Operator password
- ├Limits and tolerances
- ├Security times
- ├**Operation times**
- ├PID Constants and functions
- ├Remote control parameters
- └Remote control connection

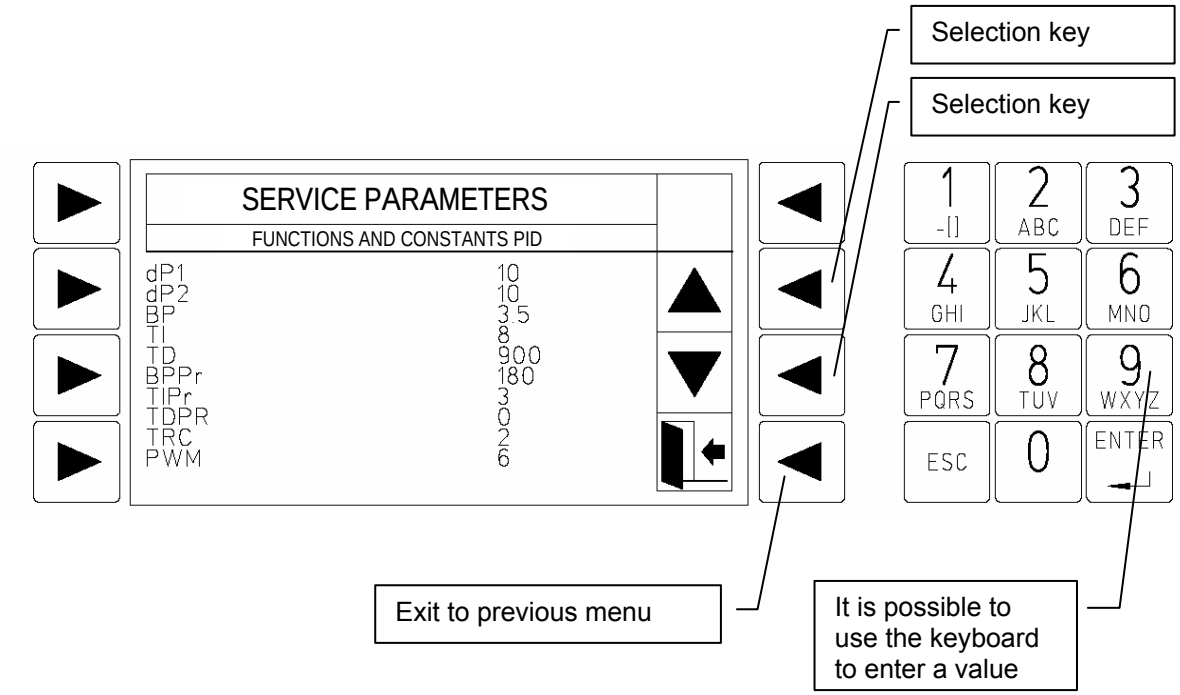


To use the following menu proceed as follows:

- Select the desired item using the keys on the left hand column
- Press ENTER to confirm the selection
- The field on the right corresponding to the selected item will be highlighted
- Use the selection keys to make the changes
- Press ENTER to confirm

E.1.4.13.5 MAINTENANCE PARAMETERS-PASSWORD-CONSTANTS AND FUNCTIONS PID

Maintenance Parameters
- **Password**
  - Operator password
  - Limits and tolerances
  - Security times
  - Operation times
  - **PID Constants and functions**
  - Remote control parameters
  - Remote control connection

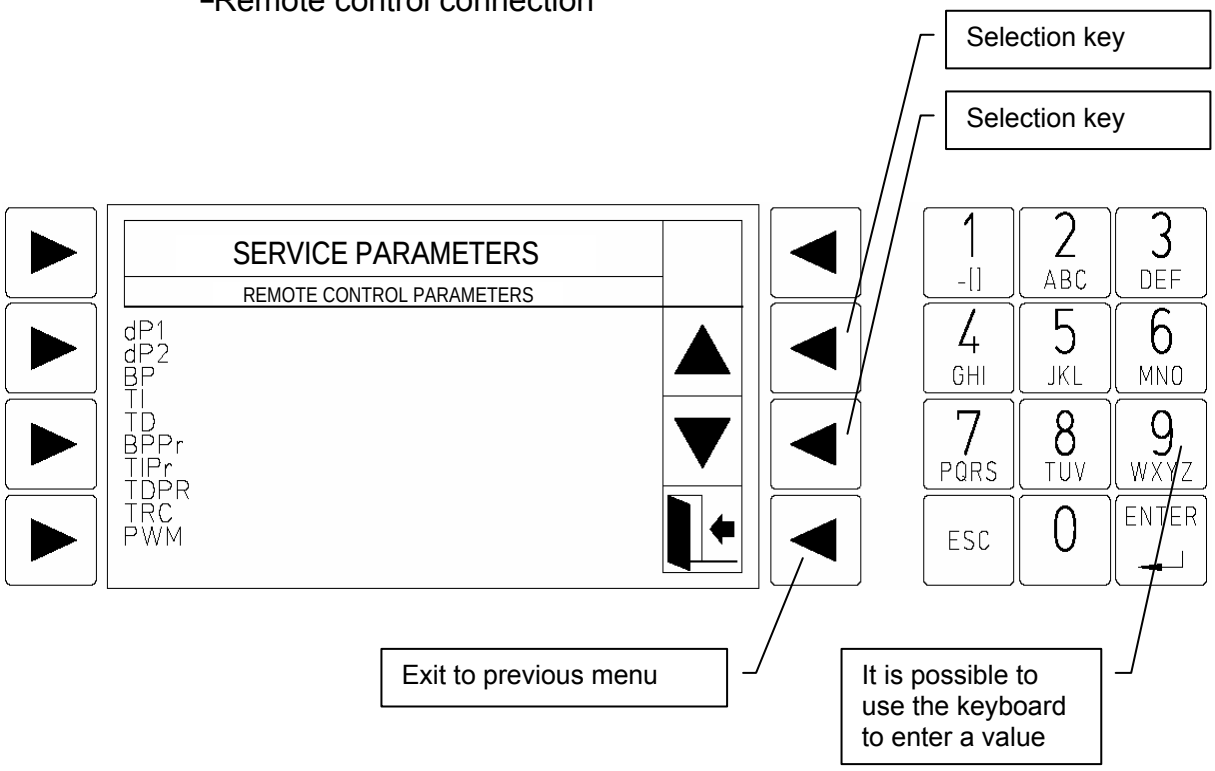


To use the following menu proceed as follows:

- Select the desired item using the keys on the left hand column
- Press ENTER to confirm the selection
- The field on the right corresponding to the selected item will be highlighted
- Use the selection keys to make the changes
- Press ENTER to confirm

E.1.4.13.6 MAINTENANCE PARAMETERS-PASSWORD-REMOTE CONTROL PARAMETERS

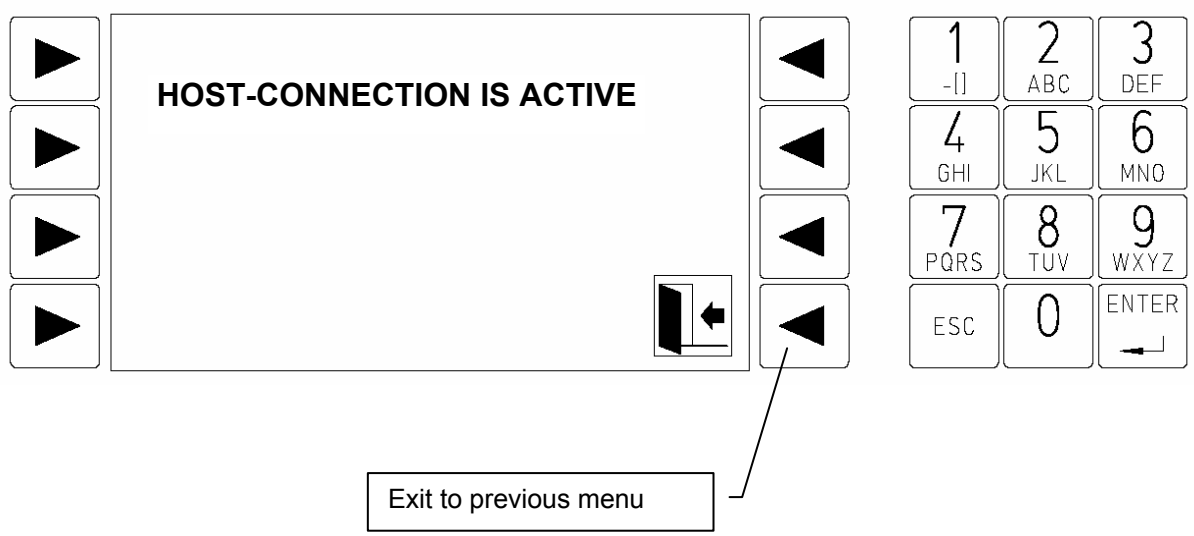
Maintenance Parameters
└**Password**
- ├Operator password
- ├Limits and tolerances
- ├Security times
- ├Operation times
- ├PID Constants and functions
- ├**Remote control parameters**
- └Remote control connection



To use the following menu proceed as follows:
-Select the desired item using the keys on the left-hand column
-Press ENTER to confirm the selection
-The field on the right corresponding to the selected item will be highlighted
-Use the selection keys to make the changes
-Press ENTER to confirm

E.1.4.13.7 MAINTENANCE PARAMETERS-PASSWORD-REMOTE CONTROL CONNECTION

Maintenance Parameters
- **Password**
  - Operator password
  - Limits and tolerances
  - Security times
  - Operation times
  - PID Constants and functions
  - Remote control parameters
  - **Remote control connection**



E.2 PARAMETER TABLES

The working parameters and their corresponding data are listed.

TABLE 8 - LIMITS AND TOLERANCES

LIMITS and TOLERANCES [°C]					
Code ID	***Default***	***Adjustment field***	***Unit of measurement [Resolution]***	***Display mode***	***Parameter type and description***
UP1	**200**	from **100** to **230**	°C [1]	0	Maximum Temperature Set-Point limit for upper plate
dn1	**60**	from **Spr+10 to 100**	°C [1]	0	Minimum Temperature Set-Point limit for upper plate
UP2	**200**	from **100** to **230**	°C [1]	0	Maximum Temperature Set-Point limit for lower plate
dn2	**60**	from **Spr+10** to **100**	°C [1]	0	Minimum Temperature Set-Point limit for lower plate
SPR	**50**	from **20** to **70**		0	Set-point cooling temperature to stop cooling
SIC	**10**	from **10** to **90**	% UP1/UP2 - 1	0	Overheating alarm limit (% of Maximum Set-Point limit for plates)
Ins	**0**	from **0** to **2**	(1=0.5 °C) – 1	0.00	Insensitivity window (+/- relative to Set-Point)
Tol.	**3**	from **0** to **2**	°C [1]	0	Tolerance window (+/- with respect to Set-Point)
dP3	**20**	from **0** to **40**	% Set-SP1 [1]	0	Pressure tolerance window (+/- with respect to Set-point)

TABLE 9 - SECURITY TIMES

SECURITY TIMES					
T_CC	**10.00**	from **01.00** to **19.59**	min. sec [1 s]	0	Time for thermocouple short circuit alarm: if the system fails to reach the SPR cooling set point temperature within this time the system goes into alarm mode.
DTV	**03:00**	from **0** to **300**	sec [1 s]	0	Minimum time within which a 10°C temperature change can occur. If the 10°C is exceeded in a shorter time the system is out of control and triggers an alarm.
TOV	**03:00**	from **01.00** to **19.59**	min. sec [1 s]	0	Maximum time for plate temperatures outside the tolerance window TOL. Alarm triggered if this time exceeded.
TOV2	**03:00**	from **01.00** to **19.59**	min. sec [1 s]	0	Maximum time to reach pressure Set-Point SET-SP1 (within tolerance window dP3)
dtC	**05:00**	from **00:00** to **59:59**	min. sec [1 s]	0	Maximum time within which a change of +10 °C can take place in plate temperatures. If this does not happen an alarm is triggered.
TRM	**10:00**	from **01.00** to **479.59**	min. sec [1 s]	0	Maximum time to reach cooling set-Point, SPR

TABLE 10 - OPERATION TIMES

OPERATION TIMES					
T_ON	**5**	from **0** to **5**	0.5 sec	0	Minimum time joining plate resistors relay ON
T_OFF	**5**	from **0** to **5**	0.5 sec	0	Minimum time joining plate resistors relay OFF.
T_AIR	**01:00**	from **0.00** to **03.00**	min. sec [1 s]	0	Time for Air blow drying
TRF	**10.00**	from **01.00** to **19.59**	min. sec [1 s]	0	Forced cooling time for thermocouple short circuit alarm

TABLE 11 - PID FUNCTIONS AND CONSTANTS

PID FUNCTION and CONSTANTS					
dP1	**10**	from **0** to **90**	% Set-SP2/3 [1]	0	Proportional Band (+) PID
dP2	**10**	from **0** to **90**	% Set-SP2/3 [1]	0	Proportional Band (-) PID
BP	**3.5**	from **0** to **999**	Sec [1]	0	Proportional constant
TI	**8**	from **0** to **999**	Sec [1]	0	Integration constant
TD	**900**	from **0** to **99**	Sec [1]	0	Derivative constant
BPPr	**180**		Sec [1]		Proportional Band as % with respect to cushion pressure regulation
TIPr	**3**		Sec [1]		Integration time constant for cushion pressure regulation.
TDPr	**0**		Sec [1]		Derivative time constant for cushion pressure regulation
TRC	**2**		Sec [1]		PID function recalculation time
PWM	**6**		Sec [1]		Remaining PWM period

TABLE 12 - REMOTE CONTROL PARAMETERS

REMOTE CONTROL PARAMETERS					
ADD	**1**	from **0** to **32**	Numbers	0	Regulating unit address
BAUDS	**9600**	from 2400 to be set	Number - standard	0	Baud Rate

TABLE 13 - PASSWORD

PASSWORD					
PSWO	**1234**	from **0** to **9999**	Numbers	*****	Operator password
PSWC	****	Unchangeable			Operator password

TABLE 14 - USER PARAMETERS

USER PARAMETERS					
SET-SP2	**50**	from **dn1** to **UP1**	°C [1]	0	Temp. Set-Point Upper plate
SET-SP3	**50**	from **dn2** to **UP2**	°C [1]	0	Temp. Set-Point Lower plate
T-CYCLE	**000.00**	from **000.00** to 479.59	min. sec [1 s]	000.00	Preset welding time
SET-SP1	**0**	from **0** to **3.9**	bar – 0.1	0.00	Press Welding Pressure

TABLE 15 - UTILITIY PARAMETERS

UTILITY PARAMETERS					
TRAD	**English**	ITALIANO FRANCAIS ESPAÑOL ENGLISH DEUTSCH		STRING	Select your language
UNIT	**°C**	°C / °F		0	Temperature measure unit
REG	**AUT**	MAN AUT		STRING	Selection for MANUAL

F. CONNECTIONS

F.1 CONNECTIONS

Below are indicated the connections between the PMR-06 unit, the PMC-06 and a hot pressing device.

F.1.1 CONNECTIONS PMR-06/PMC-04/PRESS PM-XX04

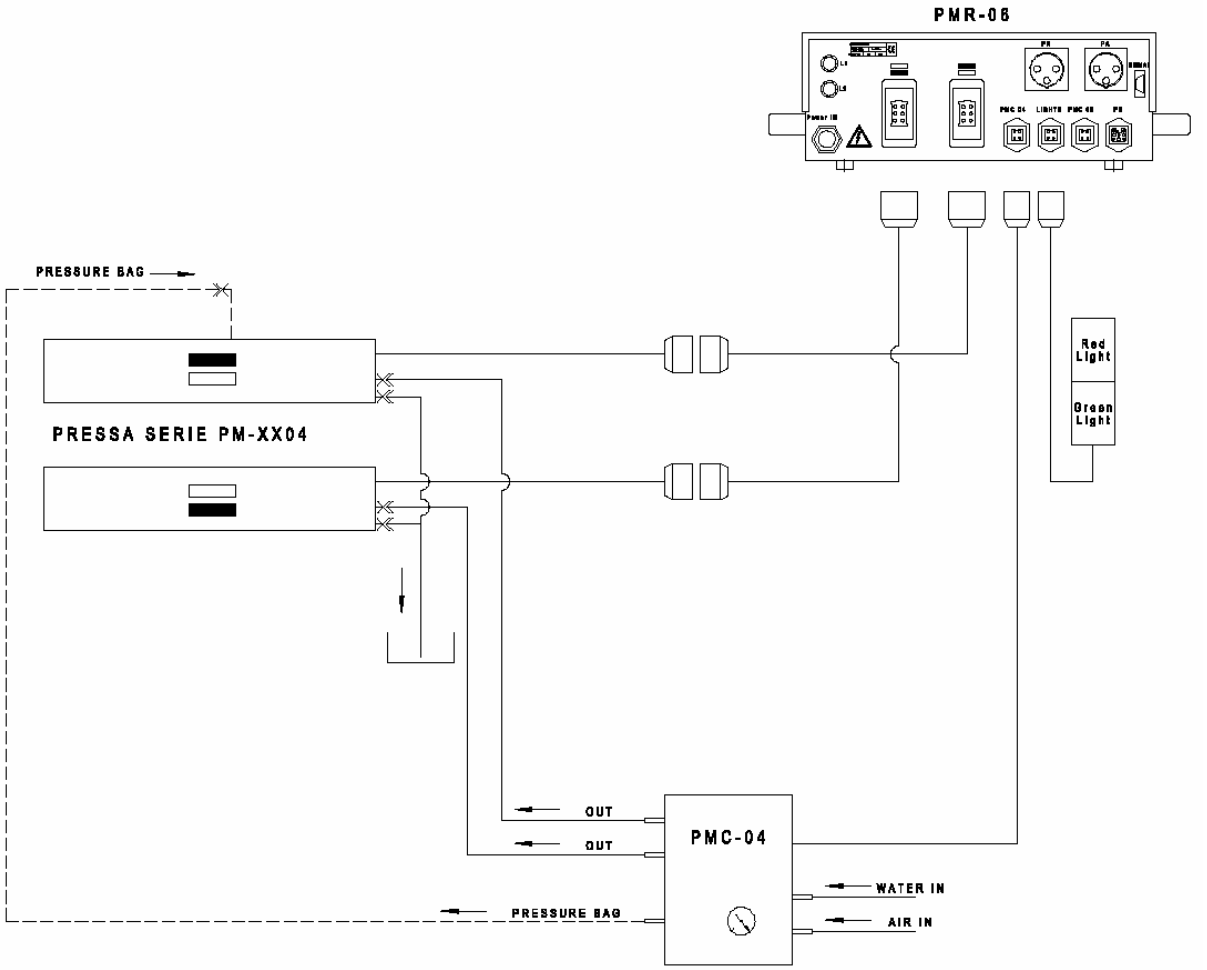


FIGURE 6 - CONNECTIONS PMR-06/PMC-04/PRESS PM-XX04

F.1.2 CONNECTIONS PMR-06/PMC-04/PRESS PM-XX06

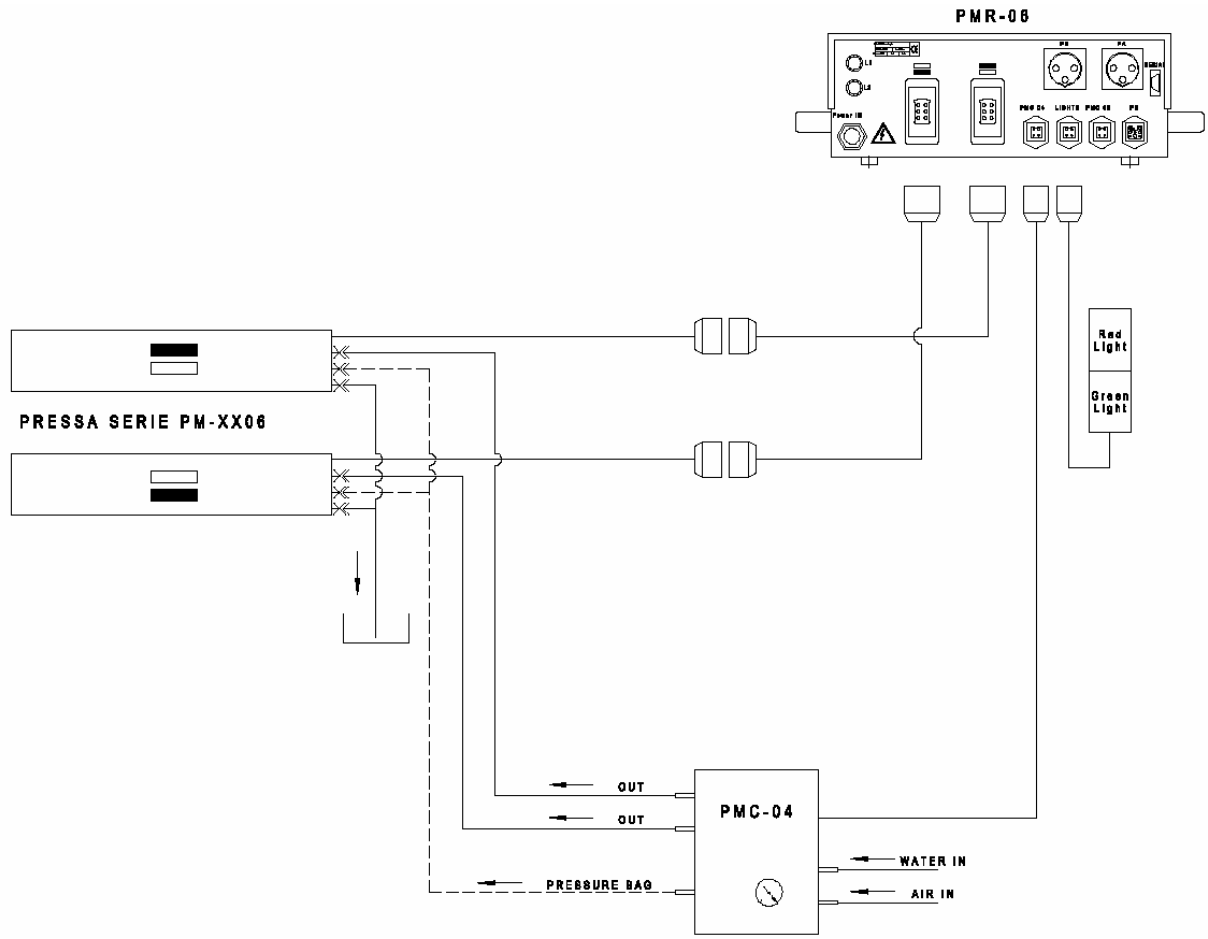


FIGURE 7 - CONNECTIONS PMR-06/PMC-04/PRESS PM-XX06

F.1.3 CONNECTIONS PMR-06/PMC-06/PRESS PM-XX04

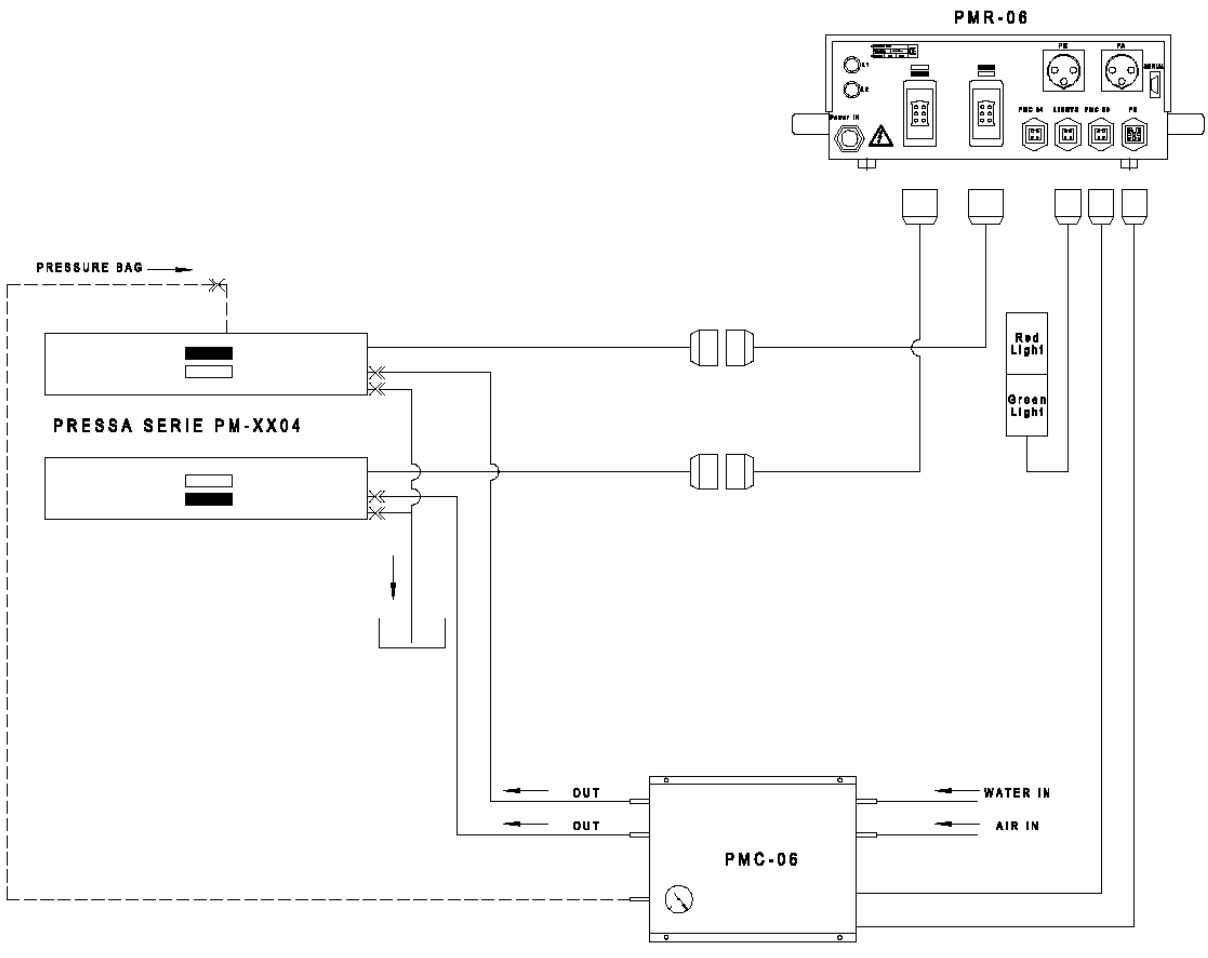


FIGURE 8 - CONNECTIONS PMR-06/PMC-06/PRESS PM-XX04

F.1.4 CONNECTIONS PMR-06/PMC-06/PRESS PM-XX06

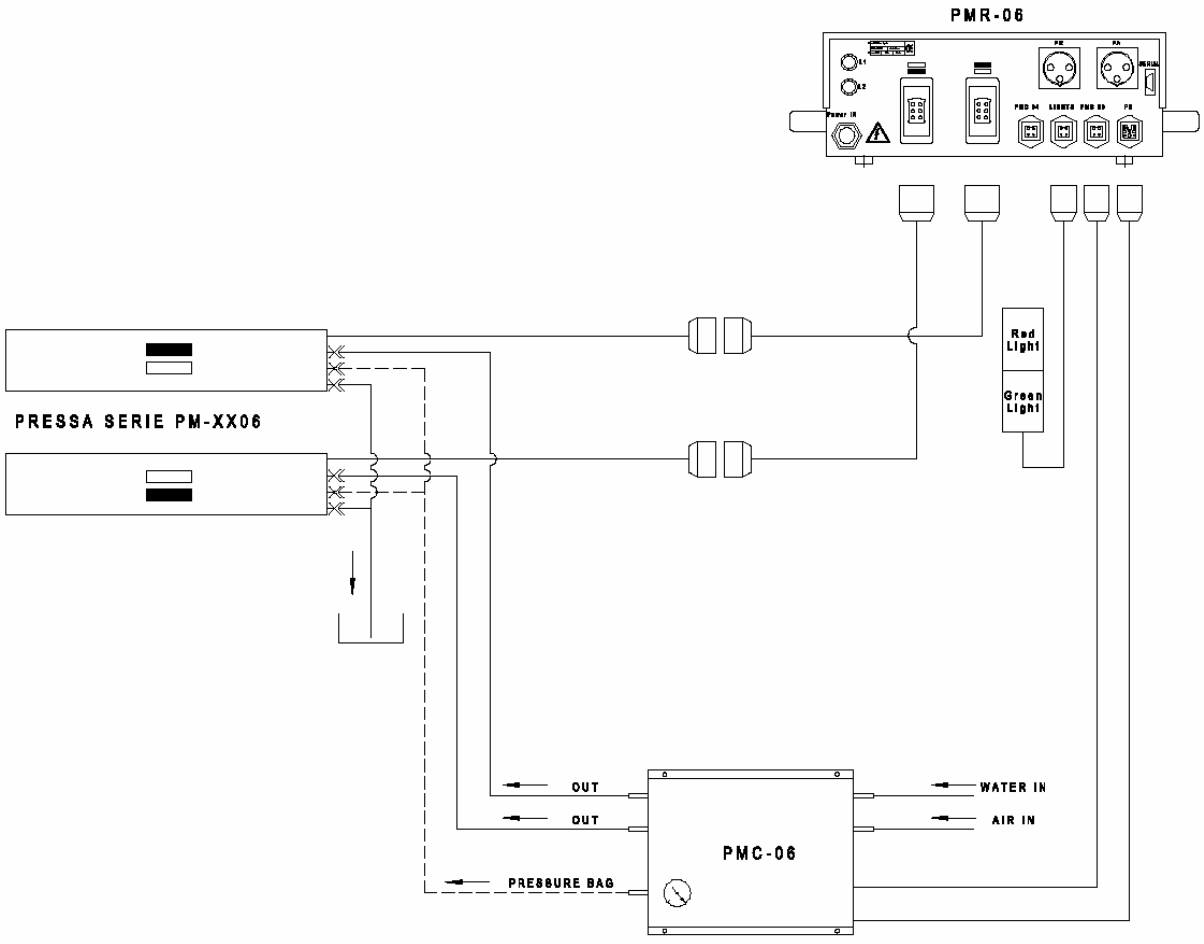


FIGURE 9 - CONNECTIONS PMR-06/PMC-06/PRESS PM-XX06

F.1.5 CONNECTIONS FOR MOBILE USE PMR-06/PRESS PM-XX04

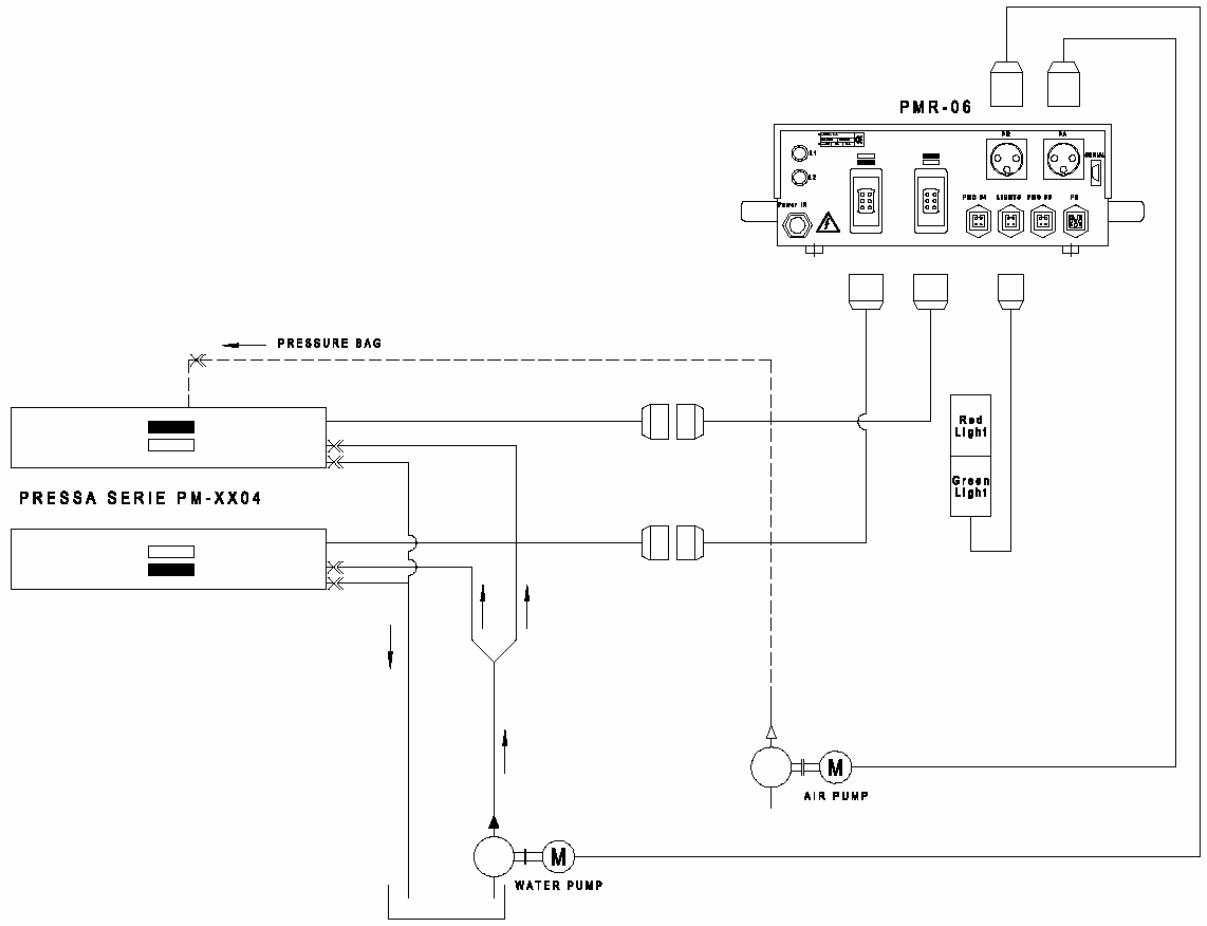


FIGURE 10 - CONNECTIONS FOR MOBILE USE PMR-06/PRESS PM-XX04

F.1.6 CONNECTIONS FOR MOBILE USE PMR-06/PRESS PM-XX06

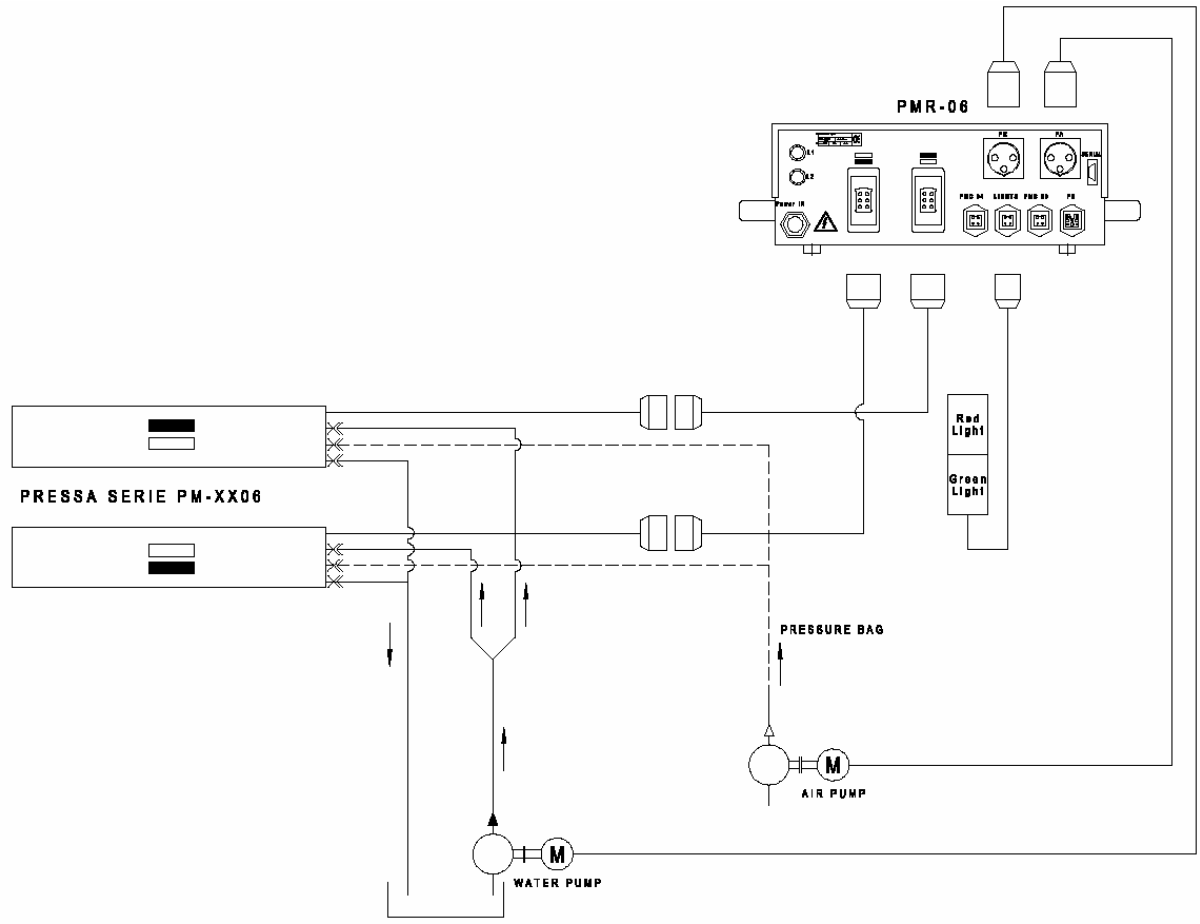


FIGURE 11 - CONNECTIONS FOR MOBILE USE PMR-06/PRESS PM-XX06

F.2 GENERAL REMARKS

ATTENTION

Refer to the manuals of the press and the equipment connected to the system and make sure you carry out all the operations required for the safe use of the whole system.

Check the working procedures for the belt/tape, check technical guidelines of the joining method and the individual Joining Data Sheet of the product.
Ensure the press is properly prepared in accordance with the specific manual's instructions.
Ensure the equipment is correctly connected and set up in accordance with this manual.
Turn the main switch to “ON”.
Load the job program with the settings for the product to be joined or set the settings manually.
Push the green START joining cycle button.
Wait until the end of the process.
Push the red End of Process button.
The equipment is now ready for the next work cycle.

ATTENTION

Refer to the manuals of the press and the equipment connected to the system and make sure you carry out all the operations required for the safe use of the whole system.

F.3 TECHNICAL ASSISTANCE

Our experts will be available for you to consult on the use of the equipment. If you have any technical queries regarding the operation and the status of the regulating unit, contact the manufacturer at the address indicated in this manual.

F.4 TROUBLESHOOTING

ATTENTION

Maintenance, repairs and replacement operations for electrical components must be carried out by an ELECTRICAL MAINTENANCE TECHNICIAN or a QUALIFIED TECHNICIAN able to perform the works in accordance with safety regulations.

TABLE 16 - TROUBLESHOOTING

FAULT	REMEDY
No air	Check there is air in the supply line.
No current	Check if the main switch is in the ON position.
Indicator light L1 on rear panel off.	Magnetothermal safety switch IMT1 tripped at auxiliary sockets (see wiring diagram). Check the equipment is connected to the power sockets and reset the switch as described in the manual. In the version with a 3x400V supply without neutral the indicator light L1 stays off and the two auxiliary sockets are unusable. (See wiring diagram 3x400V)
Indicator light L2 on rear panel off.	Safety fuse FU2 blown. Follow the manual's replacement procedure.
Display off	Fuses FU1 and/or FU3 blown; electronic card faulty or broken. Replace fuses or order a new electronic card.
Magnetothermal switch tripped - Fuses broken	Reset the magnetothermal switch IMT1 and/or replace fuses FU1, FU2, FU3. Disconnect the equipment from the mains electricity supply. Unscrew the 6 side screws and remove the top cover. Identify the components concerned (magnetothermal switch and fuse box) with the help of the photographs. Reset the switch or change the broken fuses. Close the cover and tighten the screws.

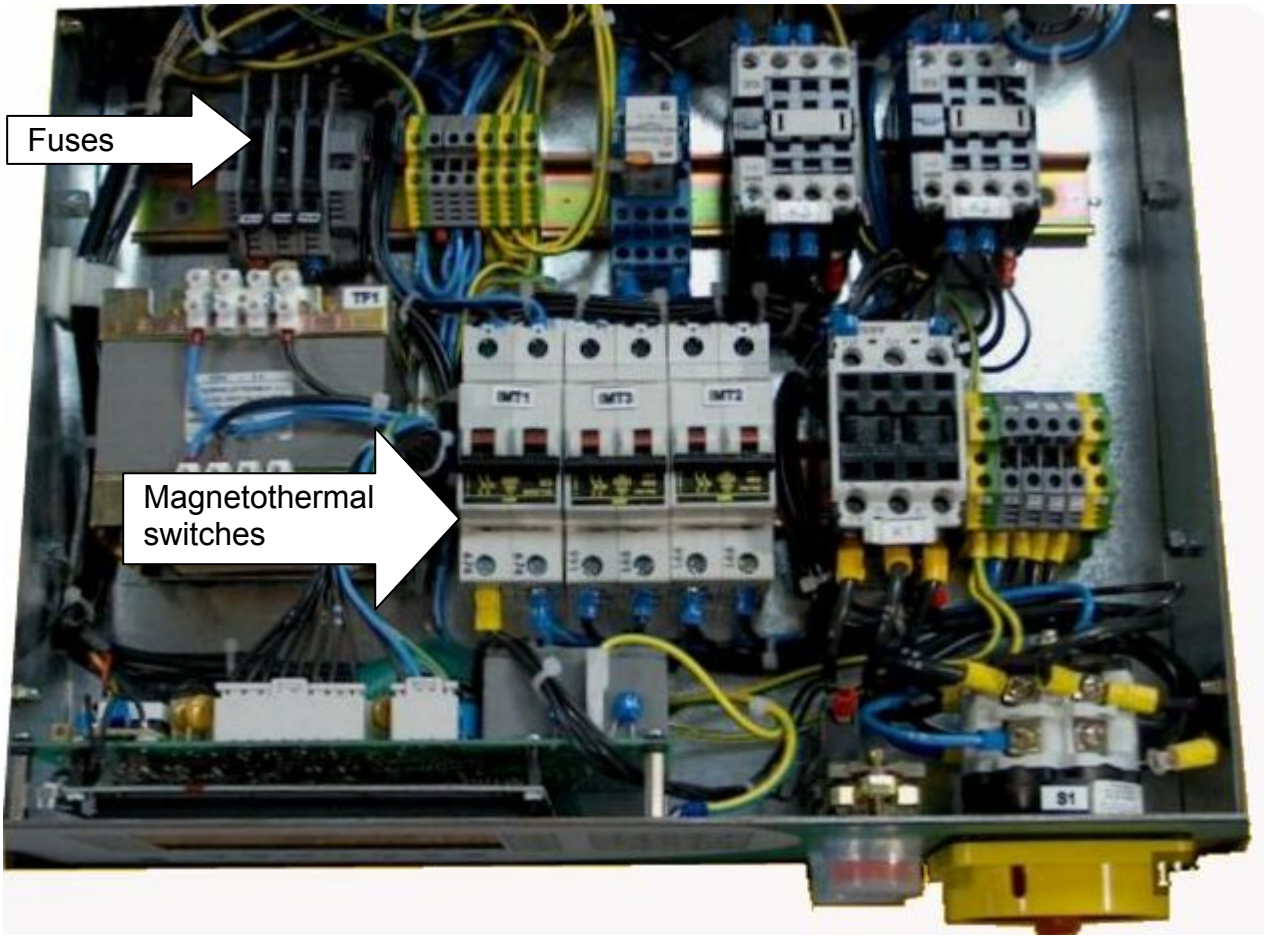


FIGURE 12 - FUSE AND MAGNETOTHERMAL SWITCH POSITIONS

Fuses Table:

Code	Type
FU1	6x32mm ceramic T 1A 250V
FU2	6x32mm ceramic T 1A 250V
FU3	6x32mm ceramic T 1.6 A 250V

F.5 TABLE OF ALARMS

Below a list of alarm codes and their causes

TABLE 17 - TABLE OF ALARMS

Alarm code	Display	Type of alarm current	Action on current cycle	Alarm meaning	Buzzer	Lights	Led Start/Stop
1	Alarm code 01 (UP)	**Temperature sensor for upper plate not responding**	Automatic cooling goes into effect for the time set in parameter **TRF**; at the end of the time the tube cleaning operation goes into effect automatically.	Failure to receive a reading signal from the temperature sensor. Check connections at terminal block connecting the wires to the control box. Check wires are not damaged. If necessary replace the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
2	Alarm code 02 (down)	**Lower plate temperature sensor not responding**	Automatic cooling goes into effect for the time set in parameter **TRF**; at the end of the time the tube cleaning operation goes into effect automatically.	Failure to receive a reading signal from the temperature sensor. Check connections at terminal block connecting the wires to the control box. Check wires are not damaged. If necessary replace the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
3	Alarm code 03 (UP)	**Short circuited upper plate temperature sensor**	After the time set by **TCC**, the system activates the same procedure as with Type 1 alarm.	Temperature sensor short circuit. Check wires are not damaged and the connections. Replace temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
4	Alarm code 04 (down)	**Short circuited lower plate temperature sensor**	After the time set by **TCC**, the system activates the same procedure as with Type 2 alarm.	Temperature sensor short circuit. Check wires are not damaged and the connections. Replace temperature sensor.			

Alarm code	Display	Type of alarm current	Action on current cycle	Alarm meaning	Buzzer	Lights	Led Start/Stop
5	Alarm code 05 (UP)	**Upper plate temperature outside tolerance window of the Set-Point**	If the temperature falls below the plate Set-Point to the extent of the TOL parameter, the welding timer is stopped and the Time-Out setting **TOV is activated;** if at the end of this time the temperature is still outside the tolerance, the system triggers a Type 1 alarm. If, on the other hand, the temperature exceeds the plate Set-Point by a value equal to TOL, the regulating unit does NOT stop the welding timer: the temperature value either comes within or rises above the maximum limit fixed with the parameter **Sic**. In this situation the regulating unit activates a Type 1alarm.	This alarm can occur during the welding stage. The causes could be broken resistors (temperature drop); sticking of remote switches contacts (temperature rises); broken temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
6	Alarm code 06 (down)	**Temperature Lower plate out of tolerance window Set-Point**	If the temperature falls below the plate Set-Point to the extent of the TOL parameter, the welding timer is stopped and the Time-Out setting **TOV is activated;** if at the end of this time the temperature is still outside the tolerance, the system triggers a Type 1 alarm. If, on the other hand, the temperature exceeds the plate Set-Point by a value equal to TOL, the regulating unit does NOT stop the welding timer: the temperature value either comes within or rises above the maximum limit fixed with the parameter **Sic**. In this situation the regulating unit activates a Type 1 alarm.	This alarm can occur during the welding stage. The causes could be broken resistors (temperature drop); sticking of remote switches contacts (temperature rises); broken temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
7	Alarm code 07	**Air pressure outside tolerance window of Set-Point**	If the system remains outside the tolerance window for pressure with respect to the pressure Set-Point, set by the parameter **dP3+/-**, for a time set in the parameter**TOV2**, the regulating unit will activate the Type 1 alarm procedure.	This alarm occurs when there is a change in the cushion air pressure that exceeds the tolerance window with respect to the set point, for a pre-determined time. Check there are no air leaks in the tubes or cushion. Check the connection between the control box cable and the proportional solenoid valve.	Flashing light	Flashing red light	Alternating ON/OFF

Alarm code	Display	Type of alarm current	Action on current cycle	Alarm meaning	Buzzer	Lights	Led Start/Stop
8	Alarm code 08	**The air pressure fails to reach the tolerance window Set Point in the start cycle stage.**	If the pressure fails to reach the tolerance window limit **dP3+/-**, within the set time **TOV2**, the system returns to STANDBY, the general meter goes off and the air pressure signal for the cushion is reset to zero.	This alarm happens when, in the start cycle, the cushion fails to reach the set pressure. Check there are no air leaks in the tubes or cushion. Check the connection between the control box cable and the proportional solenoid valve.	Flashing light	Flashing red light	Alternating ON/OFF
9	Alarm code 09	**Cooling failure (no water, broken solenoid or, in manual mode, no pump connection)**	If there is a failure to reach the cooling Set-Point (set by the parameter **SPR**) after the time set by the parameter **TRM**, the system goes into STANDBY and the master counter is switched off. In this phase of the cycle, a temperature "change speed" analysis is made and if it exceeds a setting set with the parameter **DTV**, it activates the Type 1 alarm procedure.	This alarm occurs during the cooling phase and signals the failure of water to circulate in the tubing. Check the tubing connections, the presence of water in the system as well as in the solenoid or external pump. If cooling does not take place quickly there is a risk to damage the joint.	Flashing light	Flashing red light	Alternating ON/OFF
10	Alarm code 10	**Overheating with respect to the upper and/or lower plate set point.**	If the temperature rises above that set by the parameter Sic (a % of set-point figure) the system activates the type 1 alarm procedure.	This alarm indicates uncontrolled rise in temperature of the two plates.	Flashing light	Flashing red light	Alternating ON/OFF
11	Alarm code 11 (UP)	**Short-circuited or uncalibrated temperature sensor or failure of upper plate resistors.**	The system has monitored **TOO SLOW A CHANGE** in the temperature. The minimum time within which there MUST be a change of at least +10 °C in the plate temperature has to be evaluated, otherwise the system signals a temperature sensor short circuit alarm. The system carried out sample measurements of the temperature with a CONSTANT TIME determined by the parameter **dtC**. If at the end of the time the change is LESS THAN 10 °C, the alarm is triggered.	This alarm indicates the temperature change in the rising stage is too slow. Check the resistors and the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF

Alarm code	Display	Type of alarm current	Action on current cycle	Alarm meaning	Buzzer	Lights	Led Start/Stop
12	Alarm code 12 (down)	**Short-circuited or uncalibrated temperature sensor or failure of upper plate resistors.**	The system has monitored **TOO SLOW A CHANGE** in the temperature. The minimum time within which there MUST be a change of at least +10 °C in the plate temperature has to be evaluated, otherwise the system signals a temperature sensor short circuit alarm. The system carried out sample measurements of the temperature with a CONSTANT TIME determined by the parameter **dtC**. If at the end of the time the change is LESS THAN 10 °C, a type 1 is activated.	This alarm indicates the temperature change in the rising stage is too slow. Check the resistors and the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
13	Alarm code 13 (down)	**Short-circuited or uncalibrated temperature sensor or failure of lower plate resistors.**	The system has monitored **TOO FAST A CHANGE** in the temperature. The minimum time within which there MUST NOT be a change of more than +/- 10 °C in the heating plate temperature has to be evaluated, otherwise the system triggers an alarm. The system carries out sample measurements of the temperature and when it has reached 10 °C, the time taken is compared with that set with the parameter **DTV**. If the time taken for the change is LESS than that programmed, an alarm is displayed.	This alarm indicates that the temperature change during the rising stage is too fast. Check the remote switches' contacts are not stuck and check also the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF
14	Alarm code 14 (UP)	**Short-circuited or uncalibrated temperature sensor or failure of upper plate resistors' contactors.**	The system has monitored **TOO FAST A CHANGE** in the temperature. The minimum time within which there MUST NOT be a change of more than +/- 10 °C in the heating plate temperature has to be evaluated, otherwise the system triggers an alarm. The system carries out sample measurements of the temperature and when it has reached 10 °C, the time taken is compared with that set with the parameter **DTV**. If the time taken for the change is LESS than that programmed, an alarm is displayed.	This alarm indicates that the temperature change during the rising stage is too fast. Check the remote switches' contacts are not stuck and check also the temperature sensor.	Flashing light	Flashing red light	Alternating ON/OFF

G. GLOSSARY

Terms	Description
PMR-XX	Equipment for the regulation and control of the temperature rise of the hot-pressing device while managing the device's electrical circuitry. The suffix XX means that a range of different units may be used (PMR-04, PMR-305 etc.) as long as they are compatible with the type of press used.
PMC-XX	Control unit to cool a hot-pressing device and maintain the compressed air circuit management. The suffix XX means that various units can be used (PMC-04, PMC) provided they are compatible with the type of regulating unit used.
Thermofix	Belt joining process (see technical manual Thermofix)
Flexproof	Belt joining process (see technical manual Flexproof)

H. PMC-06

H.1 PURPOSE OF THE DEVICE

The PMC-06 cooling unit works only in combination with the PMR-06 regulation unit and enables the flow of cooling air and liquid (water) to the hot pressing device to be controlled.

The cooling unit PMC-06 has been developed exclusively for the applications described herein. No other or inappropriate applications are permitted.

ATTENTION

ANY USE OF THE REGULATING UNIT OTHER THAN FOR WHICH IT WAS DESIGNED MAY BE IMPROPER USE AND RESULT IN NOT BEING SAFE FROM THE POINTS OF VIEW OF THE OPERATOR, MAINTENANCE WORKER AND OF THE REGULATING UNIT ITSELF.
HABASIT SHALL NOT BE HELD LIABLE FOR THE CONSEQUENCES OF ANY BREACHES OF THESE RULES.

H.2 IDENTIFICATION DATA OF THE EQUIPMENT

A label fitted to the cover of the device indicates the identification data. These data are shown in the following figure.

FIGURE 13 - IDENTIFICATION LABEL PMC-06

H.3 TECHNICAL SPECIFICATIONS

TABLE 18 - DIMENSIONS AND CONSUMPTION PMC-06

Characteristics	PMC-06
Dimensions (width x height x depth)	265 x 222,5 x 134 (mm) *10.43 x 8.75 x 5.3 (inch)*
Weight	approx. 3 kg / *6.60 lbs*
Connections dimension	¼"

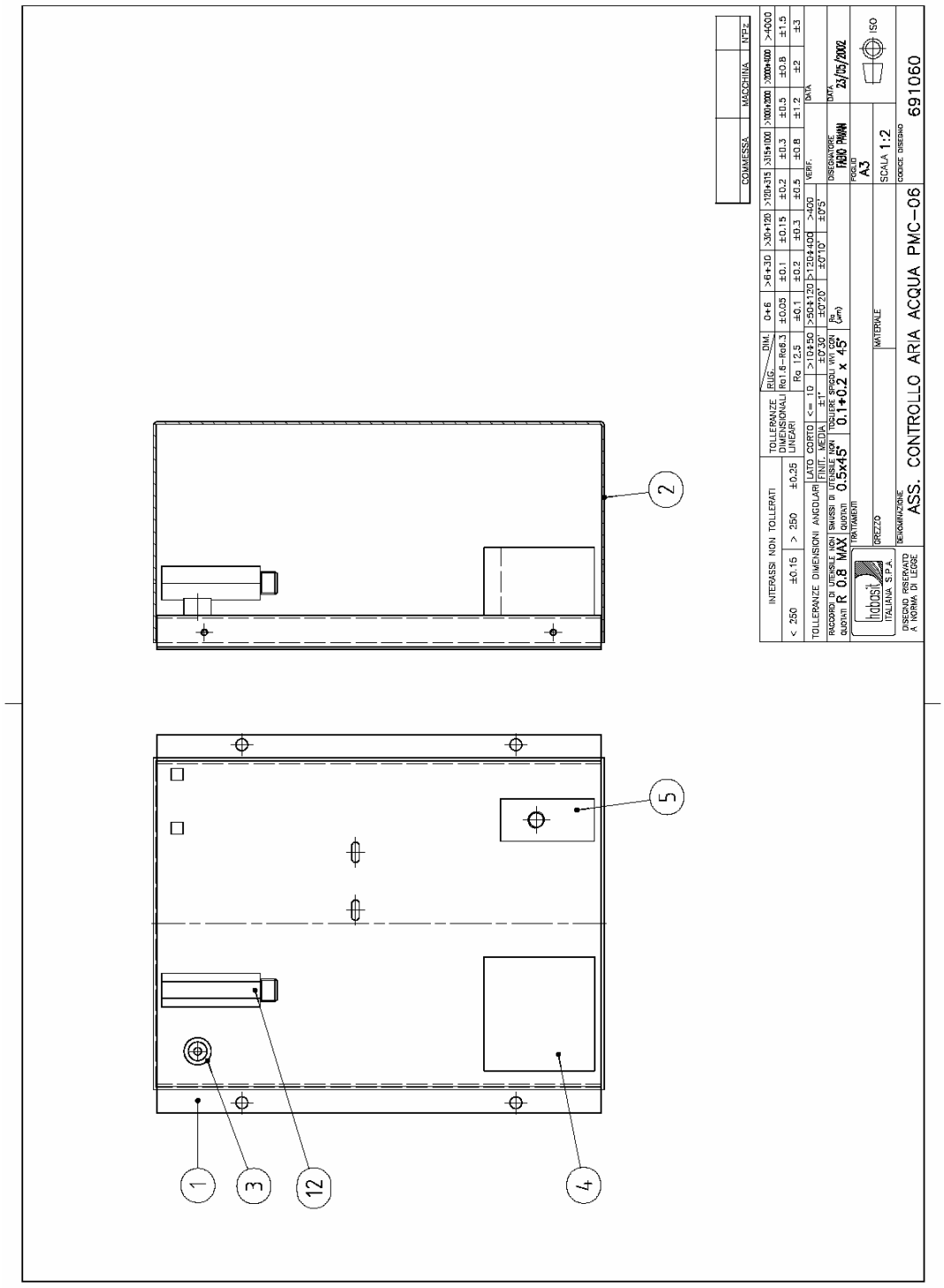


FIGURE 14 - MECHANICAL DRAWING PMC-06

	691060	**Air-water control PMC-06**		
Pos.	Code	Description	M.U.	Q.ty
1	ID000392	BASE	N°	1
2	ID000393	COVER	N°	1
3	ID000391	SPACER De16 Di11 L10	N°	1
4	ID000390	WATER DISTRIBUTOR	N°	1
5	ID000389	AIR DISTRIBUTOR	N°	1
12	ID000394	EXTENSION 1/4` MF L58	N°	1

H.3.1 SIGNS

The signs affixed to the device are shown below.
Such signs enable staff operating or working with the machine to know about and so prevent the dangers and risks if not observing the principal safety rules.

FIGURE 15 - SIGNS PMC-06

H.3.2 CONNECTIONS

For connections see the specifications for the PMR-06 regulating unit.

FIGURE 16 - IN/OUT INDICATIONS PMC-06

H.3.3 WATER/PNEUMATIC LAY-OUT

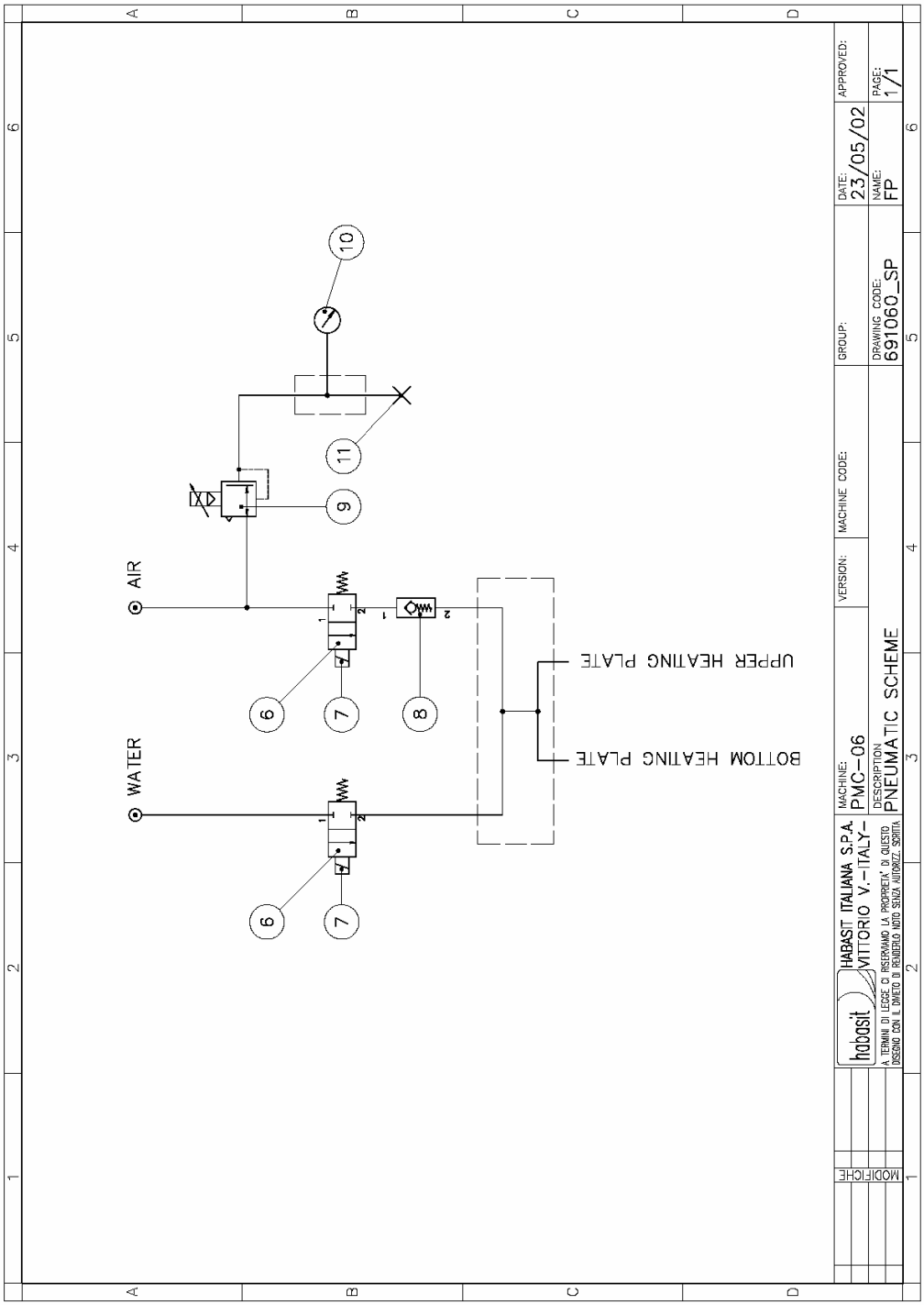


FIGURE 17 - WATER/PNEUMATIC LAYOUT PMC-06

	691060	**Air-water control PMC-06**		
Pos.	Code	Description	M.U.	Q.ty
6	IN020629	PM146 YV Solenoid valve 1/4"	N°	2
7	IN020549	ZB09 220/230V 50/60Hz COIL	N°	2
8	IN020380	SINGLE-ACTING VALVE F.F. VNR 1/4" FFV VITON	N°	1
9	IN020970	MPPES-3-1/8-6-010 proportioning valve code187352 FESTO	N°	1
10	IN020890	MAP-40-4-1/8-EN Manometer Code 162842 FESTO	N°	1
11	IN020407	HOSE-END FITTING 6x1/4` Code 1,13234	N°	1

Habasit Italiana S.p.A.
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Regulating Unit PMR-06

Author: S.D.T. / KM
Edition: 12/2005
Replaces: 05/2005

Appendix

Product liability, application considerations

If the proper selection and application of Habasit products are not recommended by an authorized Habasit sales specialist, the selection and application of Habasit products, including the related area of product safety, are the responsibility of the customer.
All indications / information are recommendations and believed to be reliable, but no representations, guarantees, or warranties of any kind are made as to their accuracy or suitability for particular applications. The data provided herein are based on laboratory work with small-scale test equipment, running at standard conditions, and do not necessarily match product performance in industrial use. New knowledge and experiences can lead to modifications and changes within a short time without prior notice.

BECAUSE CONDITIONS OF USE ARE OUTSIDE OF HABASIT'S AND ITS AFFILIATED COMPANIES CONTROL, WE CANNOT ASSUME ANY LIABILITY CONCERNING THE SUITABILITY AND PROCESS ABILITY OF THE PRODUCTS MENTIONED HEREIN. THIS ALSO APPLIES TO PROCESS RESULTS / OUTPUT / MANUFACTURING GOODS AS WELL AS TO POSSIBLE DEFECTS, DAMAGES, CONSEQUENTIAL DAMAGES, AND FURTHER-REACHING CONSEQUENCES.