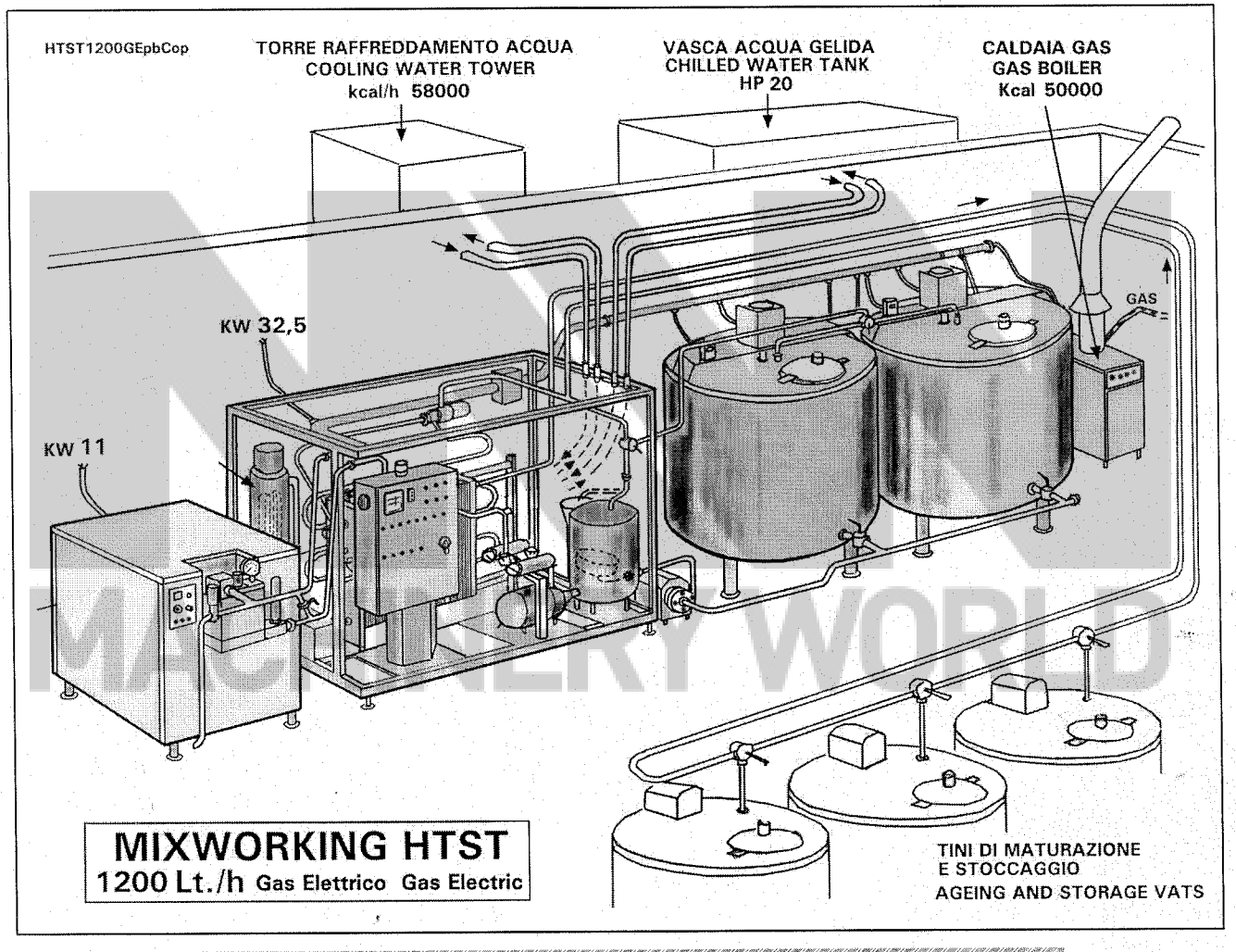
INSTRUCTION FOR INSTALLATION, USAGE AND MAINTENANCE



MIXWORKING HTST 1200
Electric (Pb) – Gas

1999 EDITION

technogel spa
Grassobbio (BG) ITALIA

Obtainable from
ALFRED & CO. LTD.
6 Beresford Avenue,
Wembley, Middx.
HA0 1WD
Telephone: 0181-903 9021
Facsimile: 0181-900 2472

0208 9039021

- Introduction

We should like to thank you for purchasing our product. To ensure troublefree operation of your machine, please read this **Instruction Manual** carefully.

The descriptions and illustrations contained in the manual are not binding. **Technogel** reserves the right to make any changes the company considers necessary to the components of the machine at any time in order to fulfil constructional or commercial requirements.

⇒ Who should carry out the work

Please take note of the symbols which appear at the side of each operation required for installation, use and maintenance:

 = **Technician**

 = **User**

Where the symbol of the Technician is given (either an electrician, a plumber or a mechanic) this means that the work which must be carried out can be done exclusively by these people. If the operations are carried out by the user **this could prove dangerous and must be avoided at all costs.**



⇒ Installation and machine start-up

Installation and initial start-up must be carried out by a **technogel** technician or by a technician **authorized** by **technogel.**

Technogel spa DECLINES ALL RESPONSIBILITY FOR INSTALLATION AND START-UP CARRIED OUT BY UNAUTHORIZED PEOPLE.

⇒Machine identification

Each machine is fitted with a plate with:

- ⇒ **Type of machine**
- ⇒ **Serial number**
- ⇒ **Year of production**
- ⇒ **Voltage, hertz and maximum absorption in Amps**
- ⇒ **Power supply**
- ⇒ **Type of gas and quantity (where a gas boiler is supplied)**

The plate is applied to the back of the machine on the outside.

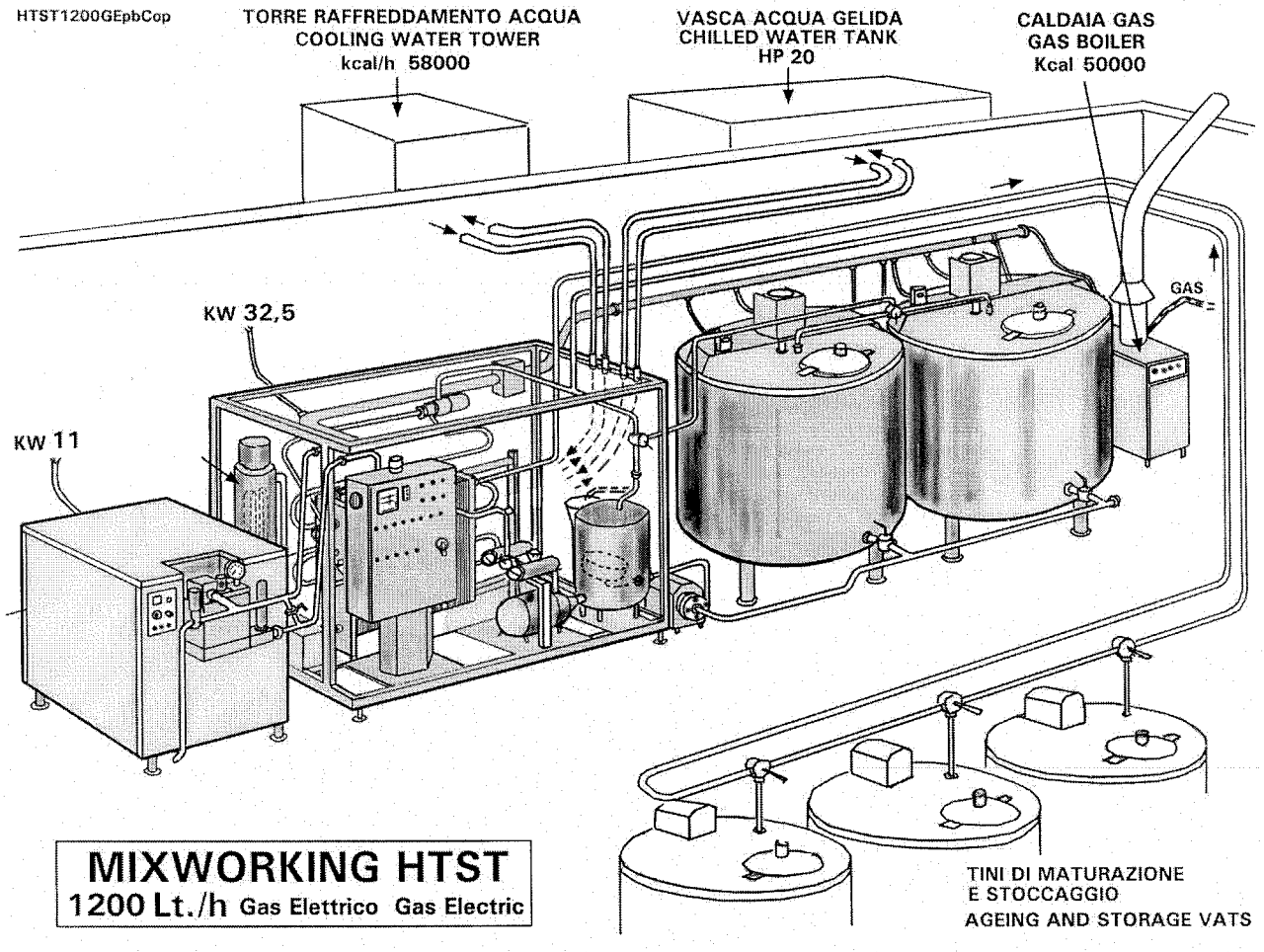
Here below is the serial plate of this machine:



When ordering spare parts and requesting technical assistance, please supply the information given on the serial plate:

• **MACHINE TYPE**	
• **SERIAL NUMBER**	
• **VOLTAGE / Hertz**	

⇒ Overall dimensions and weight of the installation



⇒ Maximum overall dimensions (including space required for maintenance)

Width = 7000 mm
Depth = 2000 mm
Height = 2000 mm

⇒ Maximum weight of the installation during operation with full load:

4800 Kg = 600/m2 (maximum capacity of floor)

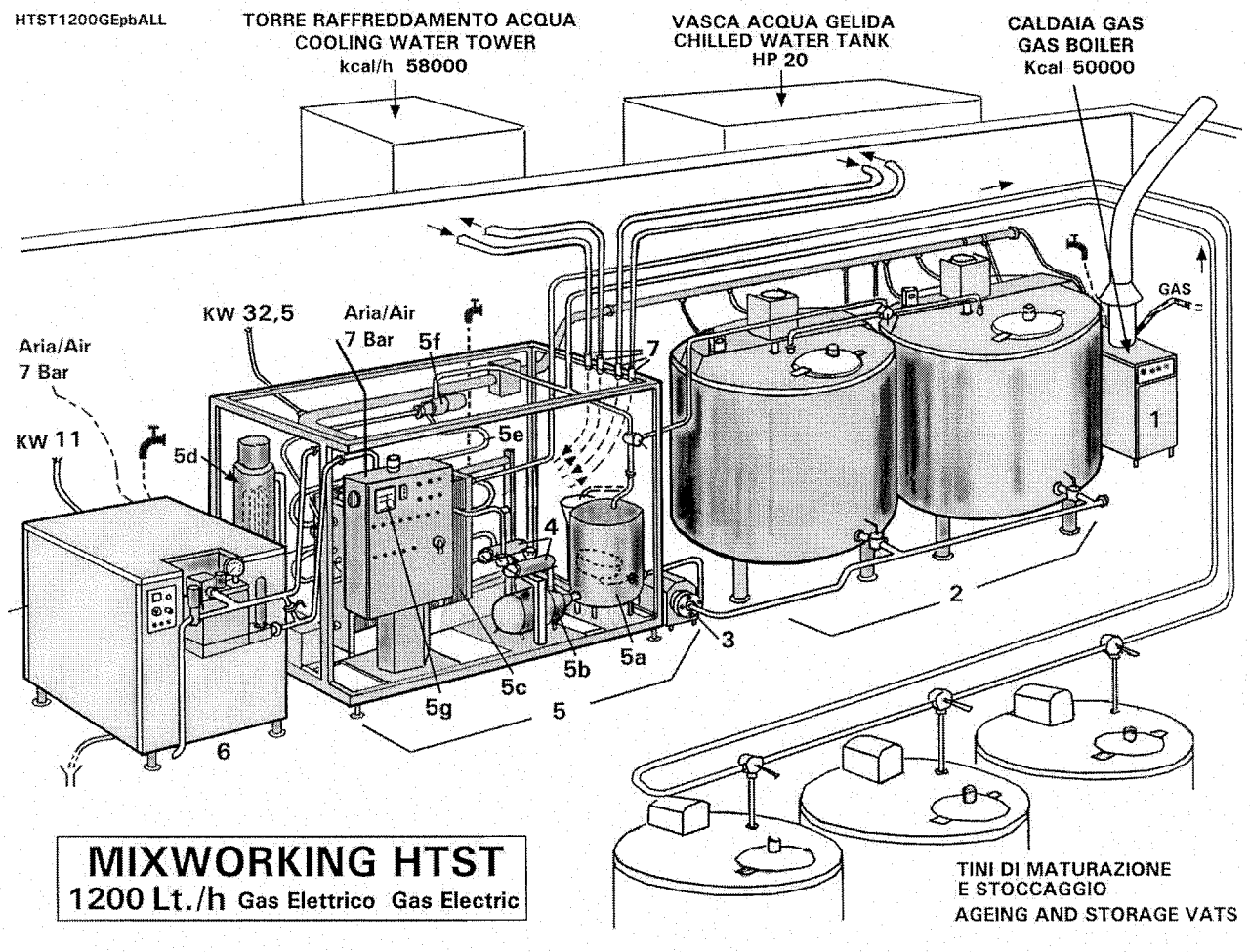
Position the installation and make sure that it is level and that the adjustable feet of each piece of equipment rest perfectly on the floor. If the floor is very uneven, place shims under the legs which do not rest firmly on the floor.

TECHNOGEL SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY INCORRECT POSITIONING OR BY THE COLLAPSE OF FLOORS OR STRUCTURES WHICH ARE INADEQUATE AND ARE UNABLE TO SUPPORT THE WEIGHT OF THE INSTALLATION

CAUTION !!!

For EU countries, regulations state that Gas Boilers of over 30,000 Kcal. cannot be installed indoors. The boiler supplied with the installation produces 50,000 Kcal per hour and must therefore be positioned in a specially created room outside in compliance with regulations

⇒ Plant layout with connections



Pos.	Description	Electricity supply	Compressed air	Steam	GPL or methane	Water supply
1	50,000 Kcal gas boiler with 2.5 HP water pump				X	X
2	1200 litre preheaters complete with 3 HP mixers – 1400 rpms each					
3	0.75 HP centrifugal pump					
4	2-filter filtering unit					
5	HTST module 1200 litre cycle: 55-75-85-60-32-4° consisting of: 5a constant level bath 5b 1.5 Kw centrifugal pump 5c Plate heat exchanger in Aisi 316 5d- Electric water heater with 0.37 kW pump 5e- 20 second pause element 5f- Pneumatic diversion valve 5g- Heat regulator/ recorder	32.5 KW	7 bar			X
6	1200 litre 1-stage homogenizer – max. pressure 250 bar	11 KW	7 bar			X

At point 7, connect the tower water and chilled water (see plate). Fit spherical taps on both inlet and outlet to intercept water when not required. The piping for the chilled water must be insulated to avoid dripping caused by condensation.



- Gas connection

Whether the boiler is close to the installation or in a special room (it must not be more than 5 metres away) gas consumption is as given in the table below:

	MIXWORKING HTST 600	MIXWORKING HTST 1200	MIXWORKING HTST 2000
METHANE GAS consumption **8400 kcal/kg Ncm**	4	6	
LPG GAS consumption **kcal/kg KG.**	2.5	5	

The figures for hourly consumption given above refer to gas with certain performance levels. If the gas used does not give this performance the figures may vary.

Before connecting the gas supply, make sure the boiler is designed for use with the type of gas available.

- **LPG (LIQUID PROPANE GAS)** - If the boiler operates on LPG it must have a pressure reducer to maintain the gas pressure at 350 mm water column (pressure which can be measured on the gauge located on the gas pipe before it enters the boiler). When the boiler is in operation the pressure must not drop below 300 mm.

- **METHANE GAS (NATURAL GAS)** – If the boiler operates on methane gas, the pressure reading on the gauge must be at least 80 mm water column when the boiler is in operation.

If the pressure is lower, the boiler's performance will be reduced with a consequent increase in heating times.

WARNING – DANGER

If the boiler is not suitable for the gas available DO NOT CONNECT IT. Use of a different gas means it is necessary to change the nozzles on the burner and regulate the gas injection valve.

Replacement of the nozzles and the different regulation must be carried out by a TECHNOGEL technician or by a qualified technician approved and authorized by TECHNOGEL.

Connection of the boiler and the gas supply must be carried out with piping which is in compliance with regulations established by law.

Check carefully to make sure there are no gas leaks. It is advisable, and in some countries compulsory, to install a gas leak detector with an acoustic alarm.

TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE DERIVING FROM INTERVENTION OR TAMPERING BY UNAUTHORIZED OR UNQUALIFIED PERSONS ATTEMPTING TO MODIFY AND/OR REGULATE THE GAS BOILER.



⇒ Electricity connection

The installation requires two separate electricity connections: one for the HTST Module (which will supply the electric current to the preheaters and the Gas boiler, the other for the homogenizer.

Install an appropriate wall switch for each of the two connections. We strongly recommend installation of a differential circuit-breaker. Please see Table **A** for data on power and absorption.

Check that the power supply is as indicated on the machine plate located on the control panel of the HTST Module and in this manual on page 3.

The cables to connect the two machines have 4 wires; the **yellow/green** wire is the earth and the others are the phases.

TABLE – **A** –

MIXWORKING 1200 HTST	220 V 50 HZ	220 V 60 HZ	380 V 50 HZ	415 V 50 HZ
HTST Module total power **KW.**	**32.5**	**32.5**	**32.5**	**32.5**
Maximum absorption **A.**	**90**	**90**	**55**	**52**
Cables – n° of wires and cross-section mm2	**4x35 mm²**	**4x35 mm²**	**4x16 mm²**	**4x16 mm²**
Total power of homogenizer **KW.**	**11**	**11**	**11**	**11**
Maximum absorption **A**	**40**	**40**	**40**	**40**
Cables – N° of wires and cross-section mm2	**4 x 10 mm²**	**4 x 10 mm²**	**4 x 10 mm²**	**4 x 10 mm²**

The total power (maximum absorption) of the whole installation is 43.5 KW.

The power supply in steady condition is 33 KW.

In view of the fact that the external electrical installation must be carried out by an approved firm, please note that the efficiency of the electrical installation must be carefully check with special regard to the earthing and safety systems.

TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY PROBLEMS ARISING FROM INCORRECT INSTALLATION OR FAULTS IN THE POWER SUPPLY.

- The following checks must be carried out before startup:

- **Direction of rotation of the homogenizer**
- **Direction of rotation of the HTST Module pumps**
- **Direction of rotation of the preheater and centrifugal pump stirrers**
- **Direction of rotation of the boiler pump**



⇒ Pneumatic connection

Connect as indicated on page 5 (homogenizer and HTST module), filtered compressed and possibly de-humidified air **with minimum** pressure of **7 bar.**

Maximum air consumption is 30 litres per minute.



⇒ Water supply connection

Connect the water supply where indicated on page 5 with the symbol of a tap. Minimum pressure must be 1.5 bar.

- **Water point 1** – supply to gas boiler for the water circuit: fit a ½" tap – continuous feed – consumption is negligible.
- **Water point 5** – HTST Module supply for washing the installation and to feed the electric water heater: fit a ¾" tap - daily consumption is approx. 1000 litres.
- **Water point 6** – Homogenizer supply for cooling of pumping pistons: fit a ½" tap – continuous feed - consumsption = 100 litres per hour.



⇒ Mains or tower water supply connection to the HTST module

Connect to point 7 on page 5 (see tower water inlet and outlet indication), the mains or tower water supply for cooling of the plate type heat exchanger **(5c).**

Fit 1" cutoff taps so the water can be turned on or off as required.

- **Mains water supply:**

If mains water is used to cool the plate type heat exchanger, make sure that the **minimum pressure** is **2 bar** and the hourly consumption, depending on the temperature of the water supplied, can vary between **2500 and 3500 litres per hour.** The outlet piping must be connected to a drain.

- **Tower water:**

If tower water is used to cool the plate type heat exchanger, make sure that the **minimum pressure** is **2.5 bar** and the **maximum temperature** of the water must be **29°C** while the quantity of water is **7000 litres per hour.**



⇒ Connection of chilled water

Connect to point 7 on page 5 (see chilled water inlet and outlet indication), the chilled water supply for cooling of the plate type heat exchanger **(5c).**

The chilled water must reach the installation at a maximum temperature of 2°C. If the water is warmer than this the mixture emerging from the installation will be 4°C warmer than foreseen.

Fit 1" cutoff taps so the water can be turned on or off as required.

The chilled water bath must produce **35000 kcal per hour** (20 HP compressor) and must be equipped with a pump which will circulate **10000 litres** per hour of water at a minimum pressure of **2.5 bar.**

The piping to the HTST module and returning from the chilled water bath must have a minimum diameter of **1 ¼"** and must be insulated to avoid dripping caused by condensation.

ACCEPTABLE AND UNACCEPTABLE USE

The HTST 12000 TECHNOGEL installation is designed solely for pasteurization of ice-cream mixtures.

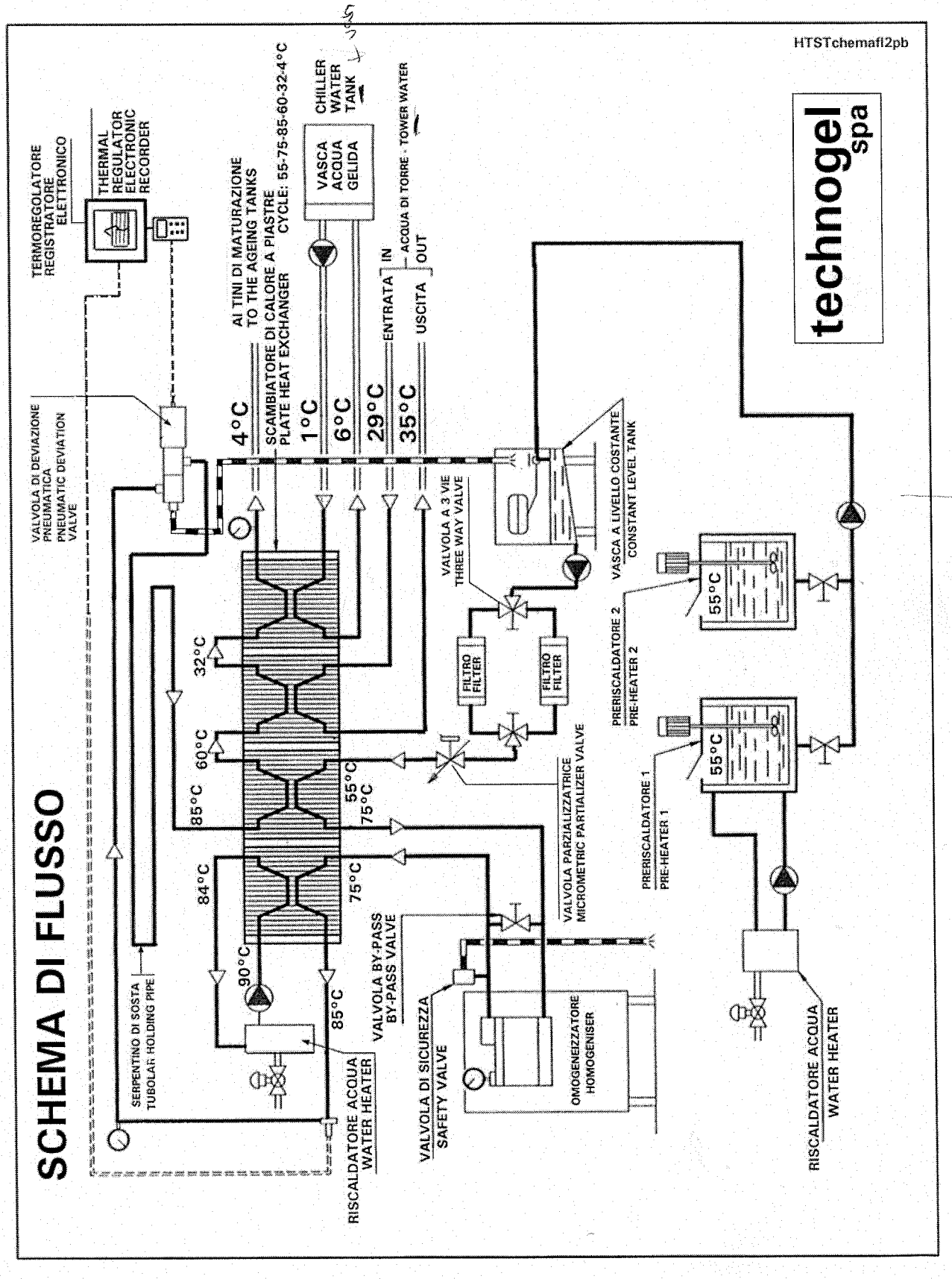
The quantity and pressure of the water supplies (mains or tower supply and chilled water) and the relative operating temperatures given in this manual must be complied with to ensure correct operation of the installation

Any fault or failure in the water supplies can distort the temperature of the cycle and may jeopardize pasteurization of the product.

TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY IMPROPER USAGE OF THE INSTALLATION OR BY THE INSTALLATION BEING USED FOR PRODUCTS OTHER THAN ICE-CREAM MIXTURES.

THE COMPANY DECLINES RESPONSIBILITY FOR FAILURE IN THE SUPPLIES TO THE INSTALLATION PROVIDED BY THE CUSTOMER WHICH MAY CAUSE INCORRECT PASTEURIZATION.

⇒ FLOW DIAGRAM



⇒ GENERAL CONTROL PANEL

⇒ "MODULE HTST" SWITCHES AND CONTROLS

H11	FLASHING LIGHT WARNING OF LOW TEMPERATURE
HA1	ACOUSTIC ALARM FOR LOW TEMPERATURE
RT1	PASTEURIZATION TEMPERATURE RECORDER
PT1	PASTEURIZATION TEMPERATURE REGULATOR
H14	BLUE LIGHT FOR AUTOMATIC FLOW
H10	GREEN LIGHT FOR NORMAL FLOW
H15	YELLOW LIGHT FOR DIVERTED FLOW
SA9	3-POSITION SELECTOR: AUTOMATIC – NORMAL – DIVERTED
LL	WHITE LIGHT FOR POWER ON
LBT	RED LIGHT MOTOR HEATING BLOCK
P1/H12	LUMINOUS YELLOW BUTTON FOR ALARM OFF
H13	SAFETY THERMOSTAT RED LIGHT
SA1/H1	ICE-CREAM PUMP 1 ON/OFF SELECTOR (5b)
SA2/H2	HOT WATER PUMP ON/OFF SELECTOR
SA8/H8	ELECTRIC ELEMENTS ON/OFF SELECTOR
SBO1/HL00	START (RESET)
SB00	EMERGENCY STOP BUTTON

⇒ PREHEATERS AND BOILER CONTROL SWITCHES

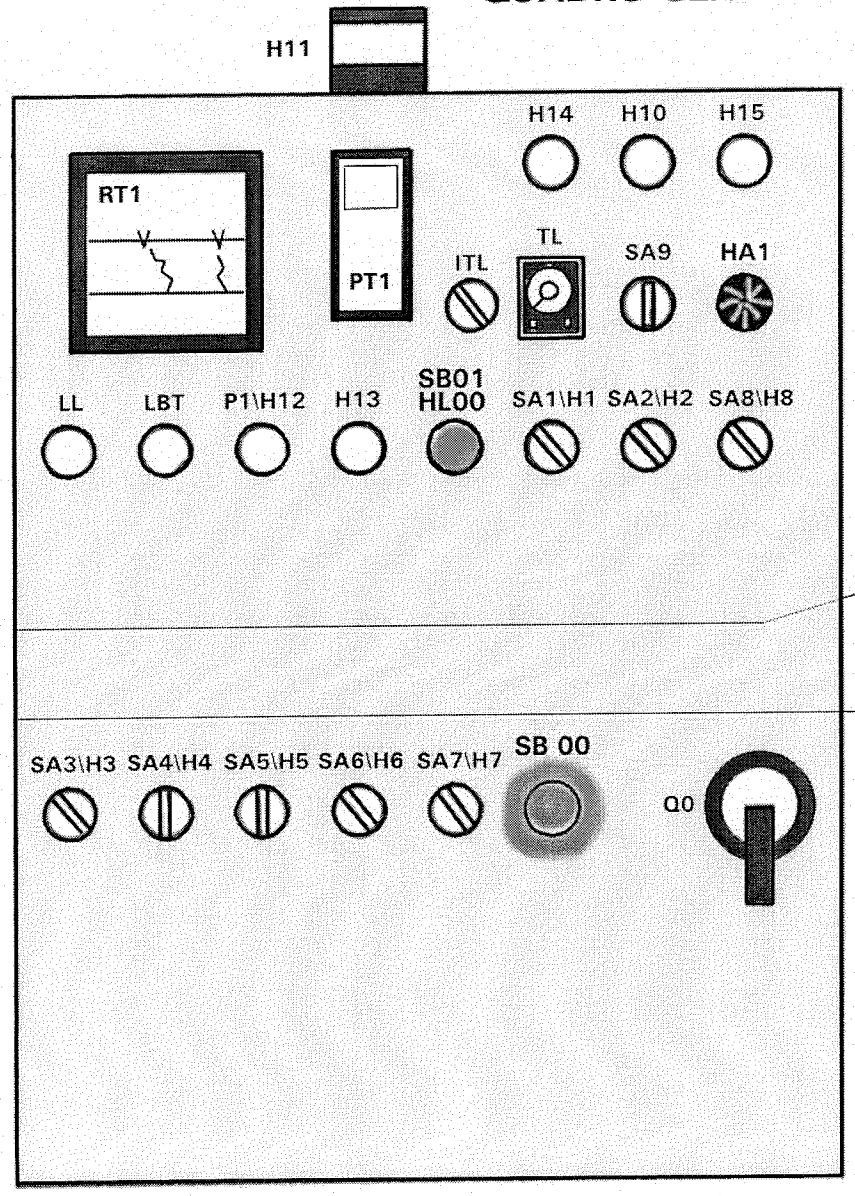
SA3/H3	ICE-CREAM PUMP 2 ON/OFF SELECTOR (3 page 5)
SA4/H4	BOILER SELECTOR 1: AUTOMATIC – STOP – STIRRING ONLY
SA5/H6	BOILER SELECTOR 2: AUTOMATIC – STOP – STIRRING ONLY
SA6/H6	BOILER PUMP ON/OFF SELECTOR (1 page 5)
SA7/H7	BOILER ON/OFF SELECTOR (1 page 5)

⇒ WASHING CONTROLS

TL	LENGTH OF WASH TIMER
ITL	WASHING PUMP STARTUP SELECTOR

QO	DOOR LOCK GENERAL ISOLATOR

QUADRO GENERALE DI CONTROLLO E COMANDO



INTERRUTTORI E CONTROLLI "MODULO HTST"

H11 = ALLARME LAMPEGGIANTE BASSA TEMPERATURA
HA1 = ALLARME ACUSTICO BASSA TEMPERATURA
RT1 = REGISTRATORE TEMPERATURE PASTORIZZAZIONE
PT1 = TERMOREGOLATORE TEMPERATURA PASTORIZZAZIONE
H14 = LAMPADA BLU FLUSSO AUTOMATICO
H10 = LAMPADA VERDE FLUSSO NORMALE
H15 = LAMPADA GIALLA FLUSSO DEVIATO
SA9 = SELETTORE A 3 POSIZIONI:
AUTOMATICO - NORMALE - DEVIATO
LL = LAMPADA BIANCA PRESENZA TENSIONE
LBT = LAMPADA ROSSA BLOCCO TERMICO MOTORI
P1\H12 = PULSANTE LUMINOSO GIALLO TACITO ALLARME
H13 = LAMPADA ROSSA TERMOSTATO SICUREZZA
SA1\H1 = SELETTORE OFF/ON POMPA ICE CREAM 1 (5b)
SA2\H2 = SELETTORE OFF/ON POMPA ACQUA CALDA
SA8\H8 = SELETTORE OFF/ON RESISTENZE ELETTRICHE
SB01/HL00 = START (RIARMO ACCENSIONE)
SB00 = PULSANTE STOP/EMERGENZA

INTERRUTTORI COMANDO "PRERISCALDATORI E CALDAIA"

SA3\H3 = SELETTORE OFF/ON POMPA ICE CREAM 2 (3 Pag. 5)
SA4\H4 = SELETTORE BOLLITORE 1:
AUTOMATICO - STOP - SOLO AGITAZIONE
SA5\H5 = SELETTORE BOLLITORE 2:
AUTOMATICO - STOP - SOLO AGITAZIONE
SA6\H6 = SELETTORE OFF/ON POMPA CALDAIA (1 Pag. 5)
SA7\H7 = SELETTORE OFF/ON CALDAIA (1 Pag. 5)

COMANDI LAVAGGIO

TL = TEMPORIZZATORE DURATA LAVAGGIO
ITL = SELETTORE AVVIAMENTO POMPA LAVAGGIO

Q0 = SEZIONATORE GENERALE BLOCCO PORTA

⇒ Operation of preheaters with direction or rotation control and heat regulator setting

- **Checking direction of rotation of stirrer motors 1 and 2**

Turn controls **SA4** and **SA5** on the control panel (see page 11) to the right and make sure that stirrers **1** and **2** turn **clockwise**.

- **Checking direction of rotation of ice-cream pump 4**

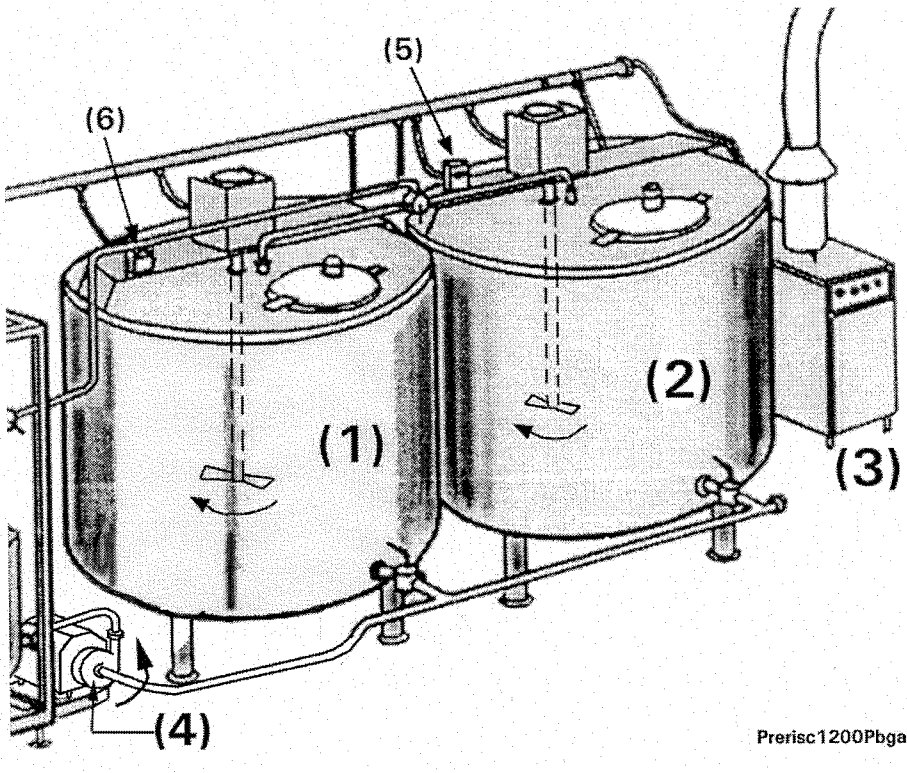
Turn control **SA3** on the control panel (see page 11) to the right and make sure that ice-cream pump **4** rotates **anti-clockwise**.

CAUTION: if there is no liquid in the installation, **do not operate the pump** or operate it on impulse mode to check the direction of rotation. This could damage the pump's stuffing box.

- **Checking direction of rotation of the hot water pump of boiler 3**

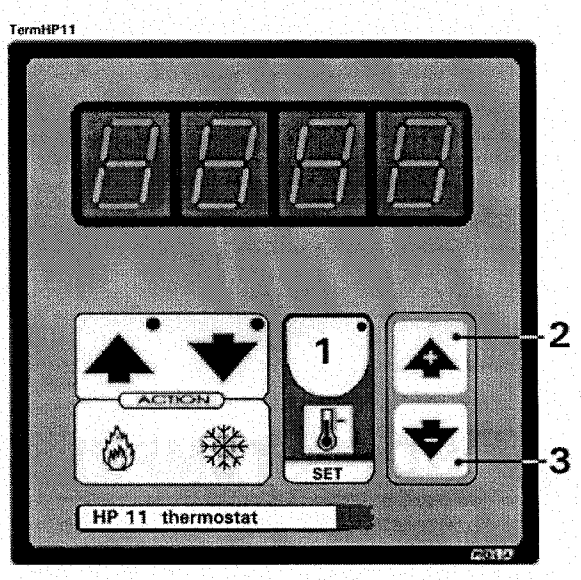
Turn control **SA6** on the control panel (see page 11) to the right and check the direction of rotation of the hot water pump for boiler **3**.

CAUTION: if there is no liquid in the installation, **do not operate the pump** or operate it on impulse mode to check the direction of rotation. This could damage the pump's stuffing box.



Check the setting of the heat regulators **5** and **6** is **55° C.** If the setting is not correct follow the instructions on the next pages to adjust it.

⇒ How to adjust the boiler heat regulators ref. 5 and 6 page 12



To set or check the heating temperature:

First operation: **Display temperature**	Second operation: **Increase or decrease the temperature (if necessary)**	Third operation: **Confirm regulation**
Press **1 SET**	Press pushbutton **2** (+) to increase the value Press pushbutton **3** (-) to decrease the value	Press the **1 SET** pushbutton for one second.

Please note that the instrument is preset with differential at **+2°C** therefore if the heating temperature must be **+55°C,** the value to be set is **+54°C.** When adjusted to **54**, the instrument will stop heating **1°C** after **54**, i.e. at **55°C.**

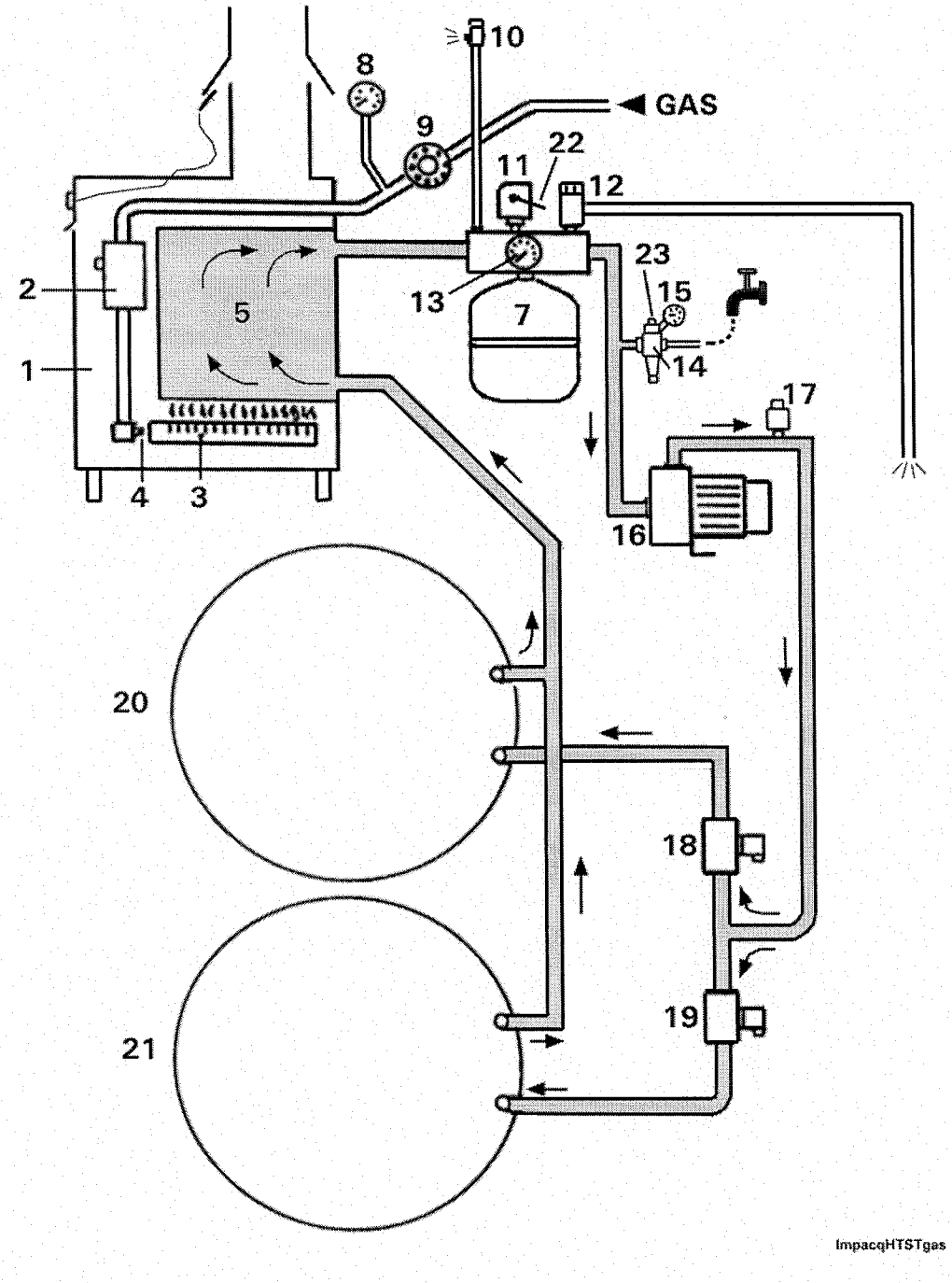
To check if the differential set is **2°C:**

First operation: **Display COST**	Second operation: Display **diff**	Third operation: Change or check the value (if necessary)	Fourth operation: Confirm regulation
Press simultaneously + and - **(2 and 3)**	Press **1 SET** until **diff** is displayed	Press **2** to increase and **3** to decrease	Press **1 SET** once to confirm and again **1 SET** for one second to exit

If the temperature indicated on the display does not correspond to that of the mixture heated, to correct it follow the instructions below:

Display **COST** (see above)	Press **1 SET** until **Ad.tE** is displayed	If the temperature of the mixture is more than 2° higher than the temp. Displayed, press key **2** (+) and display **2**	Press **1 SET** once to confirm and again **1 SET** for one second to exit

⇒ Hot water circuit for preheaters with gas boiler



HOT WATER CIRCUIT COMPONENTS WITH GAS BOILER (page 15)

Pos.	Name of component	Code
1	50000 kcal gas boiler	
2	Gas injection valve	
3	3-flue gas burner	
4	Gas injection nozzle	
5	Boiler body made of cast iron	
7	18 litre expansion vessel	
8	Gas pressure gauge on entry to boiler	
9	Gas pressure reducer	
10	Manual air vent valve	
11	Water circuit safety pressure switch	
12	Water circuit safety vent valve	
13	Water temperature and pressure gauge	
14	Automatic feed water valve	
15	Gauge indicating pressure of water in circuit	
16	Hot water circulation centrifugal pump	
17	Automatic air valve	
18	Solenoid valve for water in first boiler	
19	Solenoid valve for water in 2nd boiler	
20	First boiler	
21	Second boiler	
22	Lever to reset pressure switch 11	
23	Screw regulating pressure of water supply	



⇒Filling of hot water circuit (see page 15)

Before starting the boiler the water circuit must be filled with water. Allow (cold) water to flow in from the automatic feed water valve **14** and with the help of regulation screw **23** make sure that the pressure indicated on gauge **15** is not more than **1 bar.**.

To help air to go out of the circuit, open air valve **10** manually and keep open until water flows out without any air.

Make sure there are no leaks in the pipes and connections and then start pump **16** from cold, inserting both the circuits turning controls **SA4** and **SA5** (see page 11) to the left (**heating + stirring**). **Do not start the boiler.**

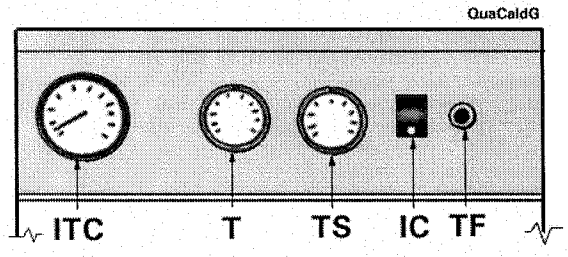
The air will come out of manual valve **10** and automatic valve **17**. Make sure that all the air has come out (if the air does not come out, this means the water is not circulating properly and consequently heating will not be carried out correctly).

Check the pressure once again on gauge **15** to make sure it does not exceed **1 bar** and the installation is ready for use.

During operation of the boiler, the water supply tap indicated with the black symbol in the diagram on page 14 must always remain open.

⇒ How to turn on the gas BOILER Mixworking 1200 HTST (50,000 kcal)

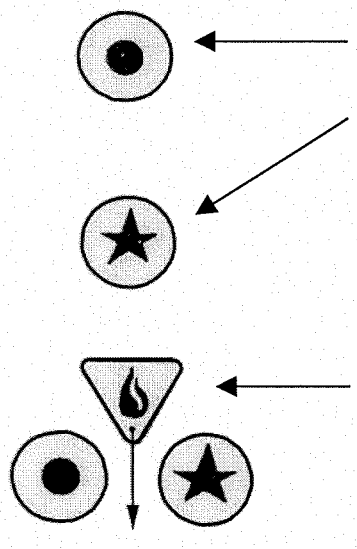
The first time:	Then:



ITC - boiler temperature indicator
T - boiler thermostat
TS - boiler safety thermostat
IC - boiler switch
TF - boiler fumes thermostat

HOW TO TURN ON THE BOILER

A) from the MIXWORKING control panel (page 20 or 21) turn on the boiler switch
B) on the boiler control panel switch on **IC**
C) use the pushbuttons of the gas valve as described below:



this button turns off the boiler

pushbutton to turn on **pilot light :**
hold down for 10 seconds until gas reaches the burner

then press harder to get the spark

hold down until the pilot light remains on, then release

press the triangular switch with the flame symbol from the top downwards

if the boiler has the go-ahead from the thermostats, the burner will now light

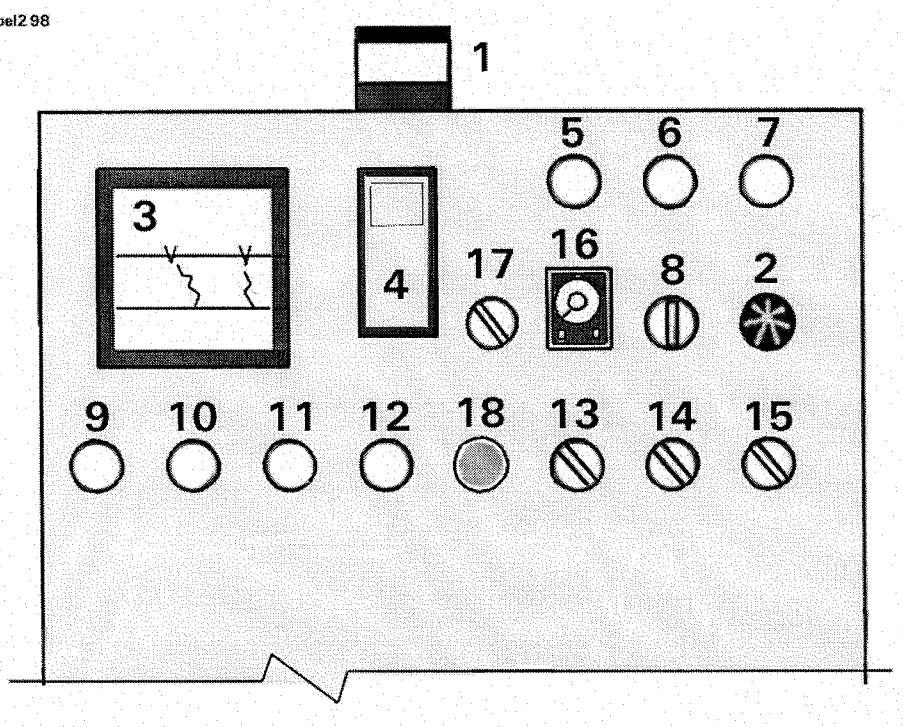
To turn off the boiler, disconnect the boiler switch **IC** and press the pushbutton (**0**) which turns off the light and closes the gas valve (see above).

If the **TF** thermostat intervenes, this means that the temperature of the fumes is too high probably because the flue is probably not correctly made. To reset thermostat **TF**, after the flue has been re-made, unscrew the protective cap and press the pushbutton underneath.

TECHNOGEL spa DECLINES ALL RESPONSIBILITY FOR DAMAGE CAUSED BY UNSUITABLE FLUES OR BY LACK OF AIR IN SMALL ROOMS WHICH ARE NOT ADEQUATELY VENTILATED.

⇒ Operation of the HTST Module

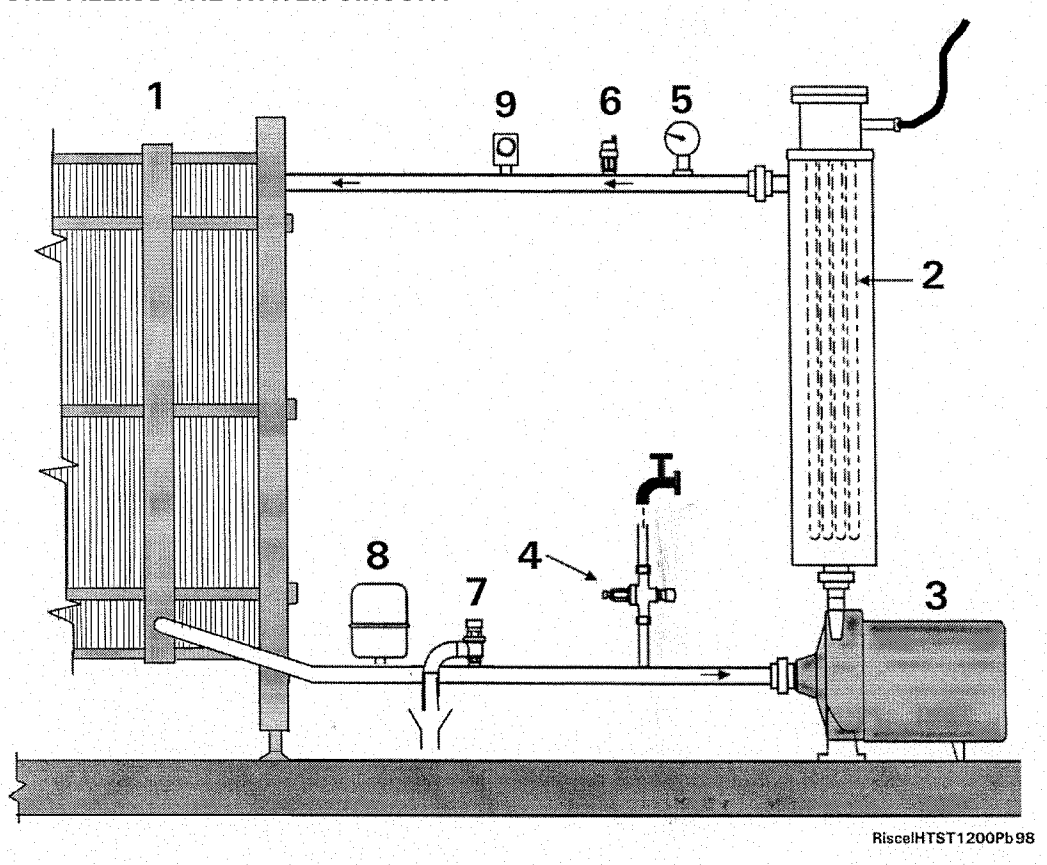
QuaHTSTPbel2 98



Component	Function
1- Luminous warning	Flashes when temperature is low
2 – Acoustic alarm	Sounds when temperature is low – disconnect by pressing pushbutton 11
3 – Recording of pasteurization temperature	Records temperature of pasteurization on paper ribbon – can be disconnected
4 – Heat regulator	Sets pasteurization temperature + another 3 temperatures as desired (for washing) – displays temperature while installation is in operation
5 – Blue light	Warning light indicating "automatic flow in operation"
6 – Green light	Warning light indicating "normal flow in operation"
7 – Yellow light	Warning light indicating "diverted flow in operation"
8 – 3-position selector	To the left = Automatic cycle In centre = Normal cycle To the right = Diverted cycle
9 White light	Electricity on
10 – Red light	Warning light indicating motor overloading and heat block
11 – Yellow	Acoustic alarm OFF button
12 – Red light	Warning light for safety thermostat intervention
13 – ON-OFF selector	Starts and stops ice-cream pump
14 – ON-OFF selector	Starts and stops hot water pump
15 – ON-OFF selector	Starts and stops electric heating elements
16 – Washing timer	For use when washing the installation – Acts as timer for the ice-cream pump only when the installation starts up with selector 17
17 – ON-OFF selector	Starts the ice-cream pump for washing purposes- the pump only stops with timer 16 – to restart, turn OFF and then ON
18 – White button	Starts installation (reset)

⇒ Filling the HTST hot water circuit

CAUTION: DO NOT START THE HTST ELECTRIC HEATING ELEMENTS (2) NOR THE HOT WATER PUMP BEFORE FILLING THE WATER CIRCUIT.



To fill the hot water circuit, proceed as follows:

Open the mains water supply tap (black symbol) and allow water to flow into the circuit. After a few seconds air will start to come out of the air valve **6** (the air already in the circuit must be emptied completely otherwise the pump **3** will not be able to circulate the water). When the pressure in the circuit has stabilized, the pressure gauge **5** will indicate **1 bar.**

Check that there are no water leaks from the various pipe unions. To help empty the air, start pump **3** from the control panel with switch **14** (see page 17) for **30 seconds** and then stop it.

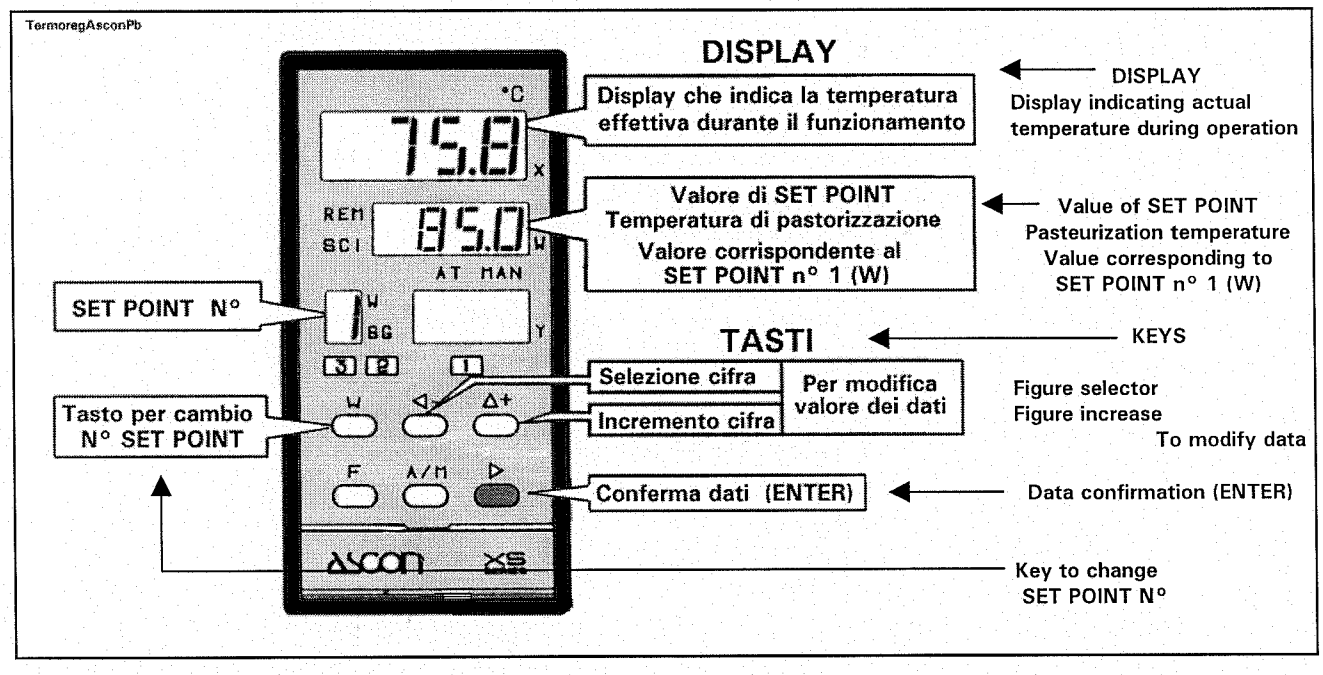
If pressure is lower, use automatic filling valve **4** and, tightening it, take the pressure to **1 bar.** If pressure is higher, do the reverse.

IMPORTANT NOTES:

- **During operation of the installation, the water tap must always be open.**
- **During operation the pressure of gauge 5 must never exceed 3 bar. If it does, excess pressure will be released from safety valve 7.**
- **Before starting the installation, always check that the water tap is open and that the pressure on pressure gauge 5 is 1 bar.**
- **Adjustment of the pressure in the circuit must always be carried out when the installation is cold.**

TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY INCORRECT START-UP BY UNAUTHORIZED PERSONNEL

⇒ Checking the setting of the heat regulator (4 page 18)



Checking of the setting of the pasteurization temperature should be carried out at the initial start-up:

- **Press key W (key to change SET POINT N°) until "SP1" appears on the SET POINT display.**
- **Press "ENTER" and "SP1" will then read "85.0". If it does not give a reading of 85, please see the section entitled "HOW TO CHANGE THE TEMPERATURE" on page 20.**

PASTEURIZATION TEMPERATURE MUST BE 85°C

Using key **W** (key to change **SET POINT N°**) it is possible to set **4** different values of **SET POINT** of which **1** is the pasteurization value and the others can be different temperatures for use when heating the various liquids used for washing (Soda, Acid, etc.).

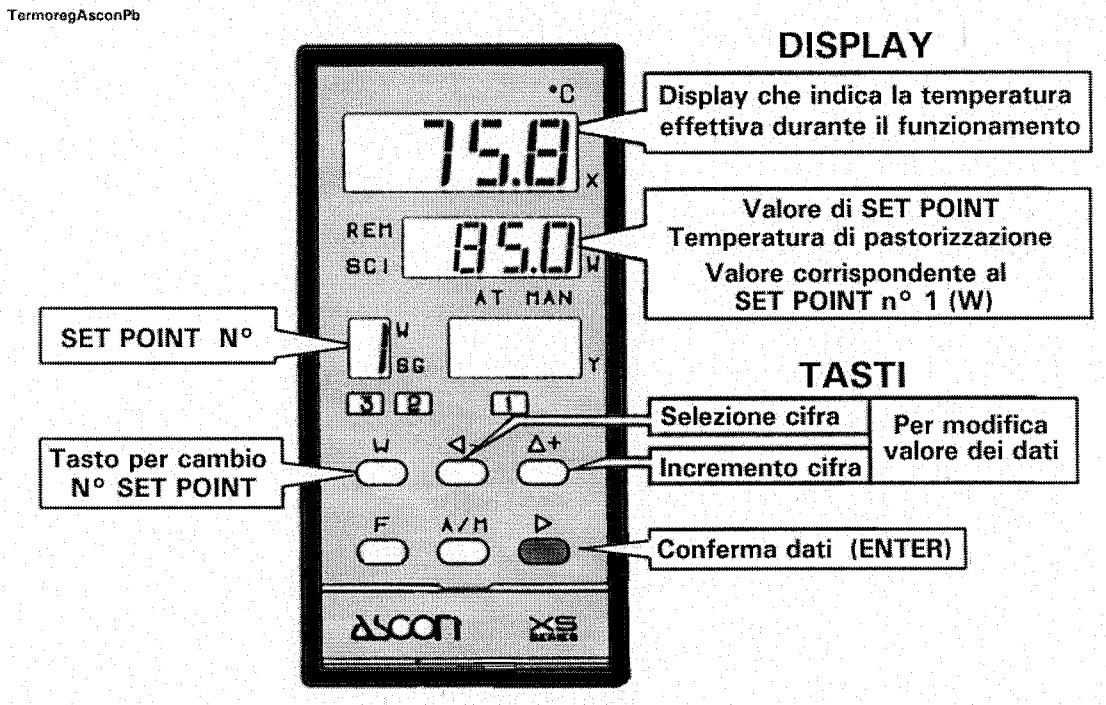
For convenience and when following the washing procedure described on page , the instrument already has another three temperatures in its memory. They are as follows:

- **"SP 2" = 40°**
- **"SP 3" = 60°**
- **"SP 4" = 70°**

Therefore:

- to pasteurize, set the heat regulator **"SP 1"** by pressing **W** and then **"ENTER" (85°)**
- to wash, depending on the cycle required, set **"SP 2"**, **"SP 3"** or **"SP 4"**

⇒ How to change the temperature of the heat regulator

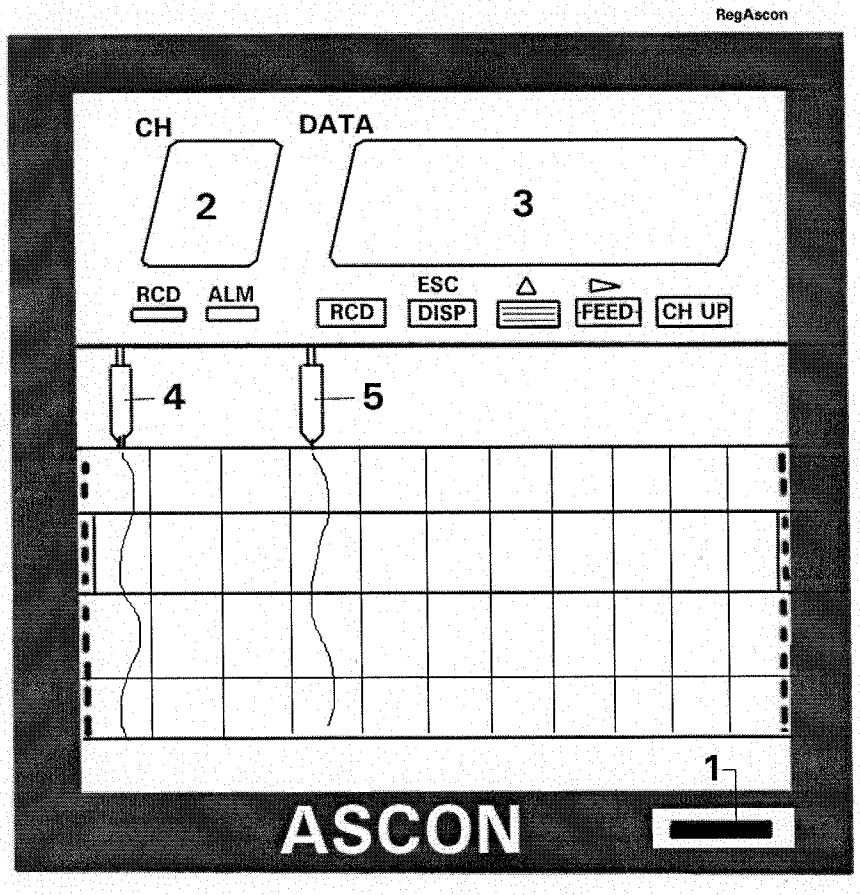


To change the preset temperature of the heat regulator, follow the instructions below:

- **Modification of the "Pasteurization temperature" (set in programme SP1)**

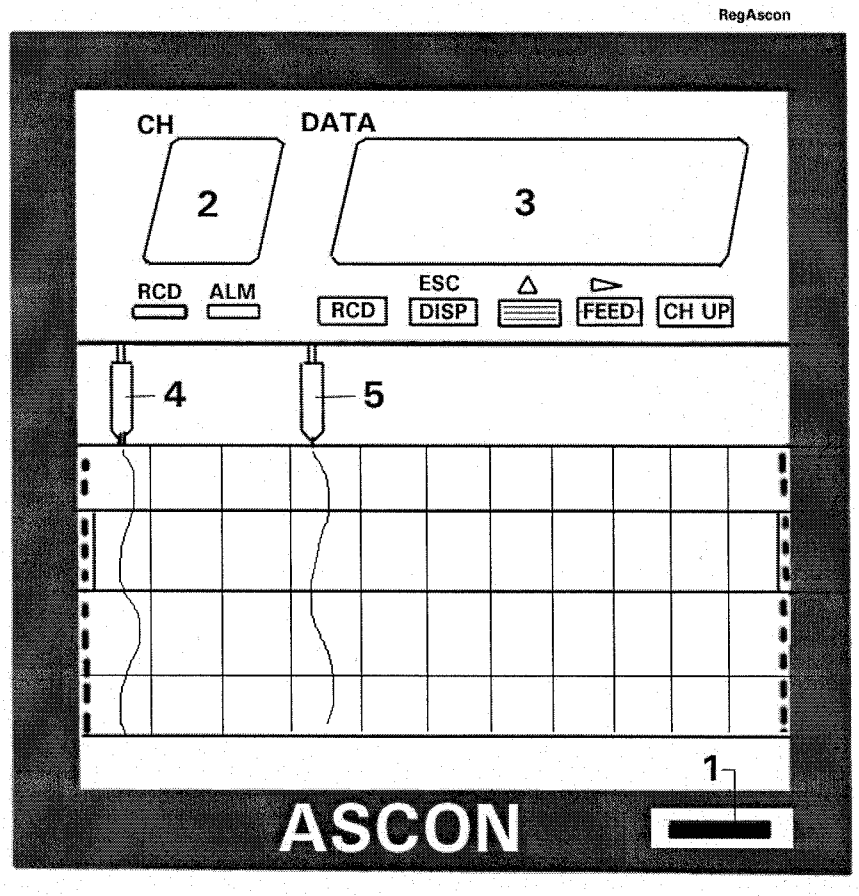
- Press button "**F**" until "**Par..**" appears
- Press "**ENTER**" then "**F**" until "**SP1**" appears with the corresponding figure above on the display
- Using "**Figure Selector** ◁ — " and "**Figure increase** △ + " change the value
- Press "**ENTER**" and wait 10 seconds until the new number is memorized.

⇒ Operation of temperature recorder (3 page 18)



Reference	Function
Key **1**	**Positioned behind the instrument door. When pressed, the recorder turns on. Press again to turn off.**
Display **2**	**Indicates the registration channels (1 and 2) alternately with a light**
Display **3**	**The light comes on to indicate:** **- the temperature of channel 1 or 2** **- the date or time**
Pen **4 green**	**Writes the cold temperature of the mixture on output on a roll of paper**
Pen **5 red**	**Writes the pasteurization temperature on a roll of paper**
RCD indicator	**Lights up when the recorder is in operation**
ALM indicator	**The light comes on and flashes as an alarm signal**
RCD key	**Press this key to start recording**
DISP key	**Press to get channel temperature-date-time alternately on display 3**
FEED key	**Gives fast advance of the paper for the time the key is held down**

⇒ Operation of temperature recorder (3 page 18)

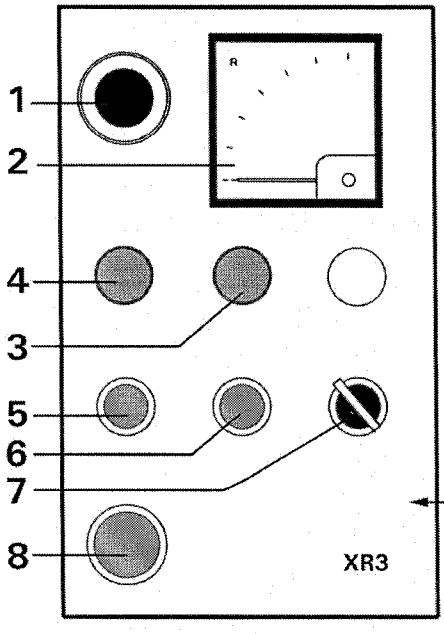


Reference	Function
Key **1**	**Positioned behind the instrument door. When pressed, the recorder turns on. Press again to turn off.**
Display **2**	**Indicates the registration channels (1 and 2) alternately with a light**
Display **3**	**The light comes on to indicate:** **- the temperature of channel 1 or 2** **- the date or time**
Pen **4 green**	**Writes the cold temperature of the mixture on output on a roll of paper**
Pen **5 red**	**Writes the pasteurization temperature on a roll of paper**
RCD indicator	**Lights up when the recorder is in operation**
ALM indicator	**The light comes on and flashes as an alarm signal**
RCD key	**Press this key to start recording**
DISP key	**Press to get channel temperature-date-time alternately on display 3**
FEED key	**Gives fast advance of the paper for the time the key is held down**

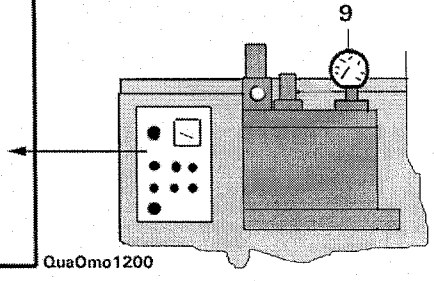
⇒ Startup of Homogenizer 1st stage panel H page 25, with control of direction of rotation



1) EMERGENCY STOP BUTTON
2) AMPEROMETER
3) WARNING LIGHT INDICATING "INTERVENTION OF PROTECTION"
4) MACHINE RESET BUTTON
5) MACHINE STOP BUTTON
6) MACHINE START BUTTON
7) "ON-OFF" SELECTOR HOMOGENIZATION PRESSURE
8) HOMOGENIZATION PRESSURE REGULATOR
9) HOMOGENIZATION PRESSURE GAUGE



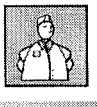
1 - PULSANTE PER ARRESTO DI EMERGENZA
2 - AMPEROMETRO
3 - SPIA SEGNALAZIONE " INTERVENTO PROTEZIONI"
4 - PULSANTE DI RESET MACCHINA
5 - PULSANTE ARRESTO MACCHINA
6 - PULSANTE DI AVVIO MACCHINA
7 - SELETTORE "ON-OFF" PRESSIONE DI OMOGENEIZZAZIONE
8 - REGOLATORE PRESSIONE DI OMOGENEIZZAZIONE
9 - MANOMETRO PRESSIONE DI OMOGENEIZZAZIONE



QuaOmo1200

- To check the direction of rotation, follow the instructions below:

A) Always check, before starting the Homogenizer, that knob 8 is completely unscrewed (turn anti-clockwise until it blocks) and that the tap supplying water to the machine is open.
B) Dismantle the left hand panel and press Reset button 4.
C) Press button 6 " Machine Start" button and then immediately after button 5 "Machine Stop".
D) The direction of rotation is indicated on the large pulley and it must be clockwise.
E) If it is not clockwise, invert any two of the three phases on the mains cable.



⇒ Operation of the Homogenizer:

A) As above.
B) Press "Reset" button 4.
C) Press button 6 "Machine Start", wait 5 minutes for the machine to start pumping and the air to come out of the head.
D) Turn selector 7 to ON.
E) Turn knob 8 slowly and the pressure gauge 9 will then indicate the desired homogenization pressure.

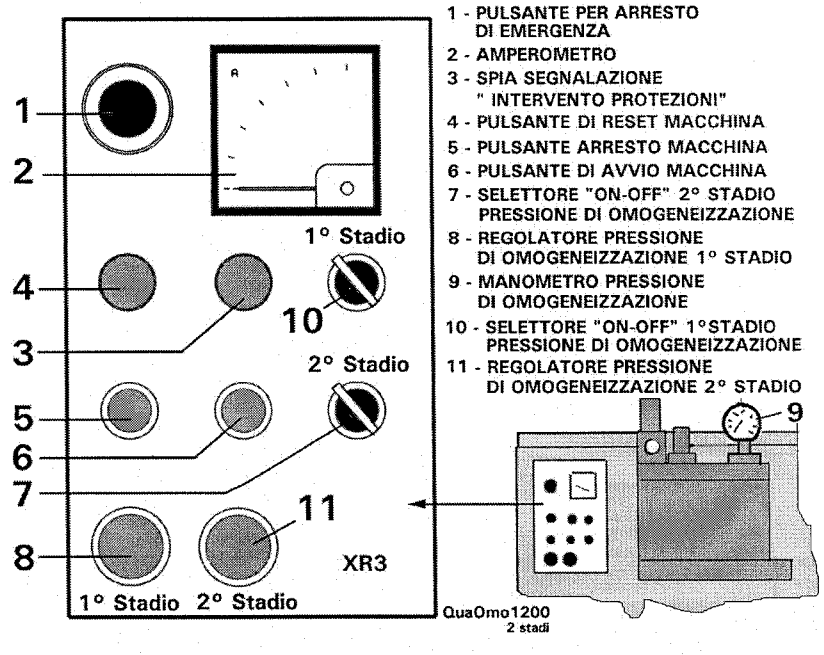
Maximum operating pressure is 230 bar.

- To stop the machine:

A) First relieve pressure by turning knob 8.
B) Turn selector 7 to OFF and press button 5 "Machine Stop".
C) Press "Reset" button 4.

⇒ Startup of Homogenizer 2nd stage panel H page 25, with control of direction of rotation

1) EMERGENCY STOP BUTTON
2) AMPEROMETER
3) WARNING LIGHT INDICATING "INTERVENTION OF PROTECTION"
4) MACHINE RESET BUTTON
5) MACHINE STOP BUTTON
6) MACHINE START BUTTON
7) "ON-OFF" SELECTOR – 2nd stage HOMOGENIZATION PRESSURE
8) HOMOGENIZATION PRESSURE REGULATOR 1st stage
9) HOMOGENIZATION PRESSURE GAUGE
10) ON-OFF" SELECTOR 1ST STAGE HOMOGENIZATION PRESSURE
11) PRESSURE REGULATOR FOR HOMOGENIZATION 2ND STAGE



1 - PULSANTE PER ARRESTO DI EMERGENZA
2 - AMPEROMETRO
3 - SPIA SEGNALAZIONE " INTERVENTO PROTEZIONI"
4 - PULSANTE DI RESET MACCHINA
5 - PULSANTE ARRESTO MACCHINA
6 - PULSANTE DI AVVIO MACCHINA
7 - SELETTORE "ON-OFF" 2° STADIO PRESSIONE DI OMOGENEIZZAZIONE
8 - REGOLATORE PRESSIONE DI OMOGENEIZZAZIONE 1° STADIO
9 - MANOMETRO PRESSIONE DI OMOGENEIZZAZIONE
10 - SELETTORE "ON-OFF" 1°STADIO PRESSIONE DI OMOGENEIZZAZIONE
11 - REGOLATORE PRESSIONE DI OMOGENEIZZAZIONE 2° STADIO

- To check the direction of rotation, follow the instructions below:

A) Always check, before starting the Homogenizer, that knobs 8 and 11 are completely unscrewed (turn anti-clockwise until they block) and that the tap supplying water to the machine is open.
B) Dismantle the left hand panel and press Reset button 4.
C) Press button 6 " Machine Start" button and then immediately after button 5 "Machine Stop".
D) The direction of rotation is indicated on the large pulley and it must be clockwise.
E) If it is not clockwise, invert any two of the three phases on the mains cable.

⇒ Operation of the Homogenizer:

A) As above.
B) Press "Reset" button 4.
C) Press button 6 "Machine Start", wait 5 minutes for the machine to start pumping and the air to come out of the head.
D) Turn selector 7 to ON. (stage 2)
E) Turn knob 11 slowly until pressure gauge 9 indicates 40 bar (maximum 50 bar)
F) Turn selector 10 to ON. (stage 1)
G) Turn knob 8 slowly until pressure gauge 9 indicates the total homogenization pressure required.

Maximum operating pressure is 230 bar.

- To stop the machine:

A) First relieve pressure by turning knobs 8 and 11.
B) Turn selectors 7 and 10 to OFF and press button 5 "Machine Stop".
C) Press "Reset" button 4.

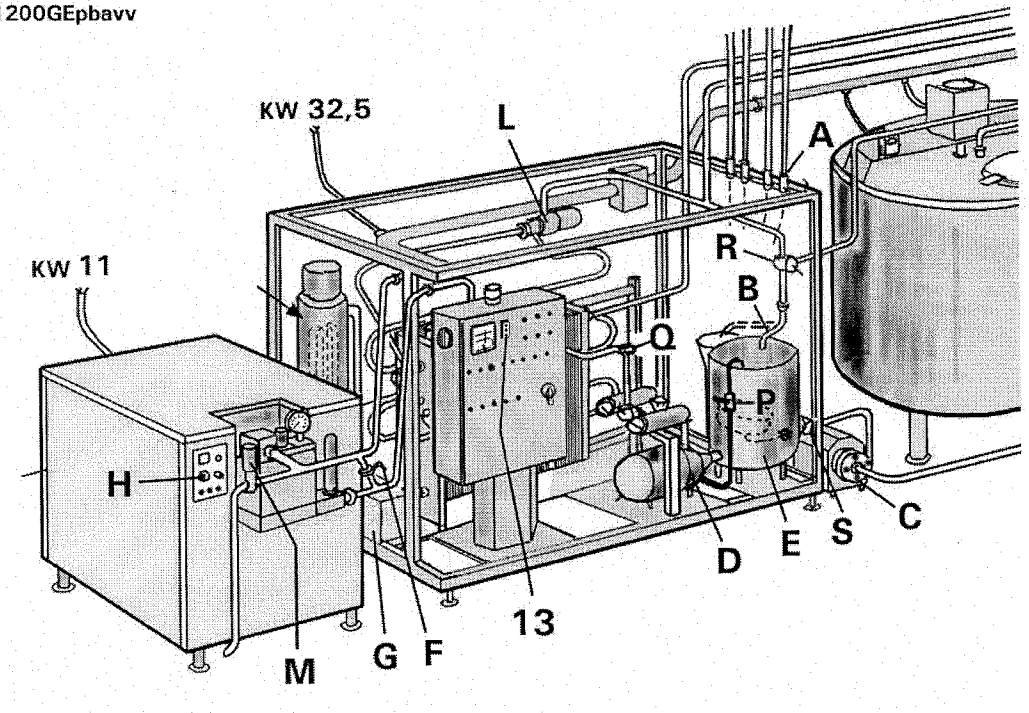
STARTUP PROCEDURE: TURNING ON OF UTILITIES

UTILITY	FIRST OPERATION	CHECK	SECOND OPERATION
Mains or tower water supply	Turn on tower and tower pump	Check that the water circulates freely and there are no leaks	Turn off taps A for delivery and return
Chilled water	Turn on chilled water tank. Turn on chilled water pump.	Check that the chilled water is 1°C. Make sure the water circulates freely and there are no leaks.	Turn off taps A for delivery and return.
Preheating Gas boiler	Fill hot water circuit	Check that the water circulates freely and there are no leaks.	Turn on the boiler using switch SA7 on the control panel (page 12).

STARTUP OF PREHEATING OF MIXTURE IN THE BOILERS:

CHECK	FIRST OPERATION	SECOND OPERATION
Set or check the setting of the boiler heat regulators; required temperature 55°C (for instructions on how to set, see page 14).	Pour the liquids (water or milk) into the first boiler and start the heating with boiler switch 1 SA4 to the left "heating + stirring"; see page 12.	Add the solids and when the mixture reaches 40°C, the fats. When the mixture reaches 55°C, check that the heating stops and the temperature on the display (55°) corresponds to that of the mixture. If it doesn't, see page 13 for instructions on how to regulate it. After opening the boiler tap, start pump C (see below) with switch SA3 on page 12.

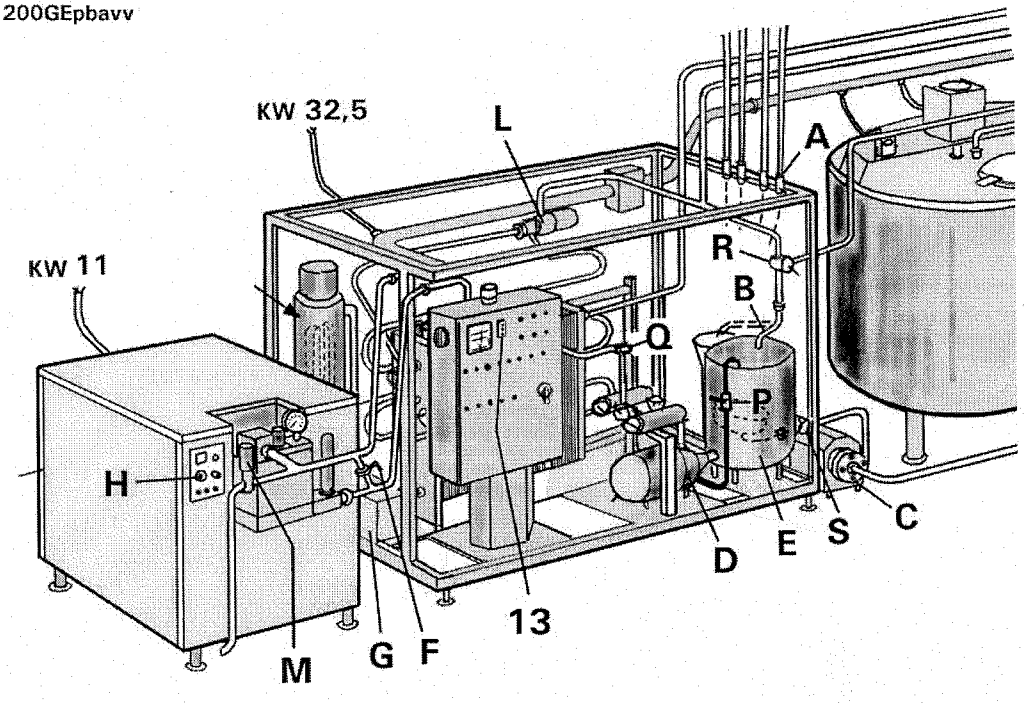
HTST1200GEpbavv



STARTUP OF MODULE HTST: PLATE HEATING (to be carried out only for initial startup)

1) Check the setting of the pasteurization temperature, 85°C on heat regulator 13. See page 20	2) Move terminal pipe B over the discharge cone by turning the appropriate tap.	3) Check that the bypass tap F is closed.
4) Start hot water pump G (switch 14 page 18 and the heating elements (switch 15 page 18).	5) Start ice-cream pump D (switch 13 – to the right page 18).	6) Turn switch 8 to DIVERTED flow position (page 18).

HTST1200GEpbavv



7) After turning on the homogenizer water tap, start the homogenizer from panel H (see above). For adjustments please see pages 23 or 24.	8) Drain fluid from terminal pipe B When the fluid becomes mixture, move the terminal tube in the bath at constant level E.	9) Wait for the mixture circulating in DIVERTED flow to reach the set temperature of 85°C.

- **While the HTST module is heating up in DIVERTED cycle, pour in the liquids and start heating the second boiler.**

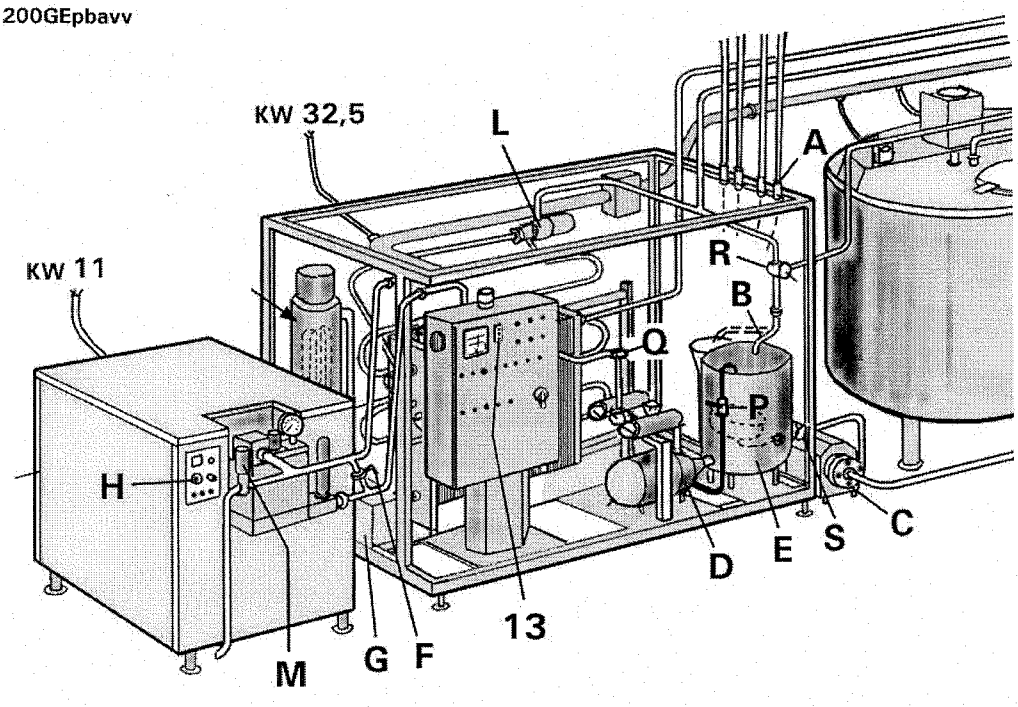
10) Start the temperature recorder by pressing key RCD; see page 22.	11) When the temperature reaches 85°C, turn on water taps A (tower and chilled) and turn switch 8 from the DIVERTED position to AUTOMATIC.	12) The mixture will start to flow through the heat exchanger, the off cycle piping and after pasteurization it will cool and then emerge to go to the maturation vats at a temp. of approx. 4°C.

- **While the HTST Module is in operation, the second boiler will reach a temperature of 55°C and when the first boiler has been emptied, it is sufficient to turn off the tap and open the one for the second boiler so that production can continue without stopping.**

DURING PRODUCTION:

1) Check the operating temperature of the installation constantly: pasteurization graph 85°C – gauges – temperature of product emerging 4°C.	2) Check the correct operation of the homogenizer: the pressure must be constant (the hand on the gauge must remain steady, without any oscillation). 3)	3) Production must be continuous between one boiler and the other without any stops whatsoever.
4) Check constantly that the constant level bath is fed and does not empty.	5) Check the preheating boiler	6) Check the chilled water bath: the temperature of the water must stabilize and be kept constant.

HTST1200GEpbavv



END OF PRODUCTION:

1) When the constant level bath starts to empty, relieve pressure to the homogenizer immediately by unscrewing knob 8 in the 1st stage or knobs 8 and 11 in the 2nd stage (see pages 22 or 23); with the homogenizer still operating, stop pump C.	2) When the bath is empty, allow mains water to flow in by opening the appropriate tap P and partly close valve Q to compensate load.	3) Turn off the water taps A and turn switch 8 from AUTOMATIC to NORMAL. Stop the heating elements and the hot water pump G.
4) Turn off the tap on the last maturation vat. The mixture mixed with water will return to the installation to finish up in the constant level bath.	5) Turn the terminal tube B from the constant level bath towards the drainage cone. Turn on tap F and stop the homogenizer.	6) Stop ice-cream pump D and start WASHING of the installation.

Washing of the installation must be carried out immediately after termination of production. This process must not be delayed for any reason whatsoever.

TECHNOGEL SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE DERIVING FROM DELAYS IN CARRYING OUT THE WASHING PROCESS AND/OR FROM FAILURE TO COMPLY WITH WASHING INSTRUCTIONS GIVEN IN THE USE AND INSTRUCTIONS MANUAL

⇒ Trouble-shooting

PROBLEM	CAUSE	REMEDY	NOTES
Preheating section: Preheating temperature is too high (55°C) in the boilers.	Fault in performance of the gas boiler The circuit's solenoid valve does not open. The gas boiler pump is not operating. The safety pressure switch on the water circuit has been activated	Check the water circuit as described on page 15, draining the air thoroughly. Check that solenoid valve 18 or 19 is energized. Reset pressure switch (11 with lever 22, see page 15) and check that the water supply (14 page 15) is 1 bar.	 *Pressure in the water circuit when cold must be maximum 1 bar* *The temperature of the boiler must be 80°C..*
Pasteurization section: The pasteurization temperature in the HTST exceeds 90°C.	Preheating temperature is excessive (e.g. 65°C instead of 55°C).	Set the heat regulator for the boilers at 55°C. See page 14.	 *Do not turn up the preheating temperature arbitrarily.*
During production, the temperature of the product constantly decreases.	The magneto thermal device has been activated on the hot water pump. Dirt on the plates in the heat exchanger owing to inadequate washing or the chemical and physical characteristics of the product being processed.	Check the magneto thermal device on the hot water pump. Carry out a complete washing cycle. Check whether the formula of the product being pasteurized is possibly incorrect.	 *Each product pasteurized has a dirt factor which in the long term can block the plates of the heat exchanger. After 8 constant pasteurization cycles, we recommend washing the installation.*
The installation pasteurizes without use of the homogenizer and pasteurization temperature is not reached.	Excessive load of product.	Reduce load with partialization tap Q, page 25.	 *Excessive loading means it is impossible to reach pasteurization temperature.*
The alarm system intervenes.	Temperature of pasteurization not reached. The mixture arriving at the HTST is not 55°C.	Check that the SET POINT of the heat regulator is 85°. Check that the temperature of the mixture in arrival is 55°C.	

The alarm system comes on although the pasteurization temperature is correct.	The heat regulator probe could be broken.	Check and replace if necessary.	
The cooling temperature is not reached.	Load or temperature of water supply is not correct. Excessive product load for the homogenizer to operate.	Check the cooling and chilled water tower. Reduce the load using the partialization tap Q page 25.	 

PROBLEM	CAUSE	REMEDY	NOTES
Homogenization section:			
The flow of product reduces constantly and then stops.	The homogenizer is not pumping because the suction or delivery valves are dirty.	Relieve pressure from the homogenizer, open bypass F page 25 and partialize with tap Q page 25. Stop pasteurization and carry out a washing cycle immediately. Try using water to see whether the homogenizer is clean and operating, otherwise dismantle the head of the homogenizer and clean the valves.	*When the flow of product diminishes (even if it doesn't stop completely) this means that the suction or delivery valves are either dirty or worn.* *To dismantle and replace, read instructions in the homogenizer manual.*
Product flow is regular but the homogenization pressure drops below zero.	The homogenizer gauge is broken. The homogenization head does not move or is worn.	Follow the instructions given above and check the gauge. If the gauge is not faulty, dismantle the homogenization head and check either for lack of oil or the state of wear and tear on the impact head and counter head. Replace if necessary.	*When the product load does not decrease but increases and the pressure gauge of the homogenizer drops below zero pressure, this means the homogenizer head is not working properly or is worn.*
The homogenizer pumps but the product drains off in the piston well or on the floor.	The mechanical safety valve on the head of the homogenizer is broken owing to water hammering of the product caused by incorrect adjustment of homogenization pressure or by the presence of air (froth) in the product being homogenized.	Stop everything and carry out a washing cycle. Replace the broken washer on the safety valve. See specific paragraph in the Homogenizer instructions.	*Never start the homogenizer with homogenization pressure on. The preheated product in the boilers must be totally without froth or air. Check in the constant level bath that the product is completely liquid.*

The safety valve M page 25 located on the delivery piping of the homogenizer leaks product onto the floor.	The tap on the piping taking the product to the vats is closed. Heat exchanger plates are dirty with consequent increase in the delivery pressure and therefore activation of the safety valve which relieves excess pressure.	Check the taps to the vats. Carry out a complete washing cycle and try to find the cause of the blockage then restart.	*The heat exchanger may block owing to excessively high temperature of the chilled water: if instead of using water at 1°C or 2°C you use glycol water at –5°C, the mixture, during the final cooling stage, cools too much and therefore viscosity increases and raises the passage pressure which triggers off the safety valve.*
When the washing stage starts, safety valve M page 24 leaks washing water on the floor.	The washing was certainly not carried out immediately afterwards but after some time had elapsed or even the next day.	When this problem occurs, the entire heat exchanger has to be dismantled and all the plates cleaned one by one.	*See section on the "plate heat exchanger".*

Please note the symbols indicated under the "NOTES" section. The "remedies" must be carried out exclusively by the people indicated. If the Technician symbol is given, the User must not carry out the work as he could injure himself.

TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY THE USER AS A RESULT OF TECHNICAL WORK CARRIED OUT BY HIM AND NOT COMING WITHIN HIS COMPETENCE.

THE COMPANY ALSO DISCLAIMS ALL RESPONSIBILITY FOR DAMAGE CAUSED BY WORK CARRIED OUT BY PERSONNEL NOT QUALIFIED TO GIVE TECHNICAL ASSISTANCE.

If you are unable to solve your technical problem, call TECHNOGEL's TECHNICAL SERVICE.



⇒ Procedure for washing the installation

Please note that washing must be carried out immediately after use. It should be carried out without interrupting continuity of operation, i.e. without stopping the installation when processing of the product has terminated.

OPERATION	HOW TO DO IT	PARAMETERS	NOTES
FIRST RINSE	Allow clean water to flow into the constant level bath. Turn off the mains water taps (normal and chilled). When the water reaches 40°C, position the terminal tube B in the direction of the drain.	Set 10 minutes on the washing timer on the control panel (pos. 16 page 18). Set the heat regulator at 40°C (SET POINT "SP2") see page 20. Start the hot water pump and the heating elements. Start the ice-cream pump with switch 17 page 18. Turn switch 8 to the NORMAL cycle.	*The water must be eliminated as waste and the effective duration of rinsing will depend on the conditions of the drainage water. In theory, it terminates when the water runs clear. In practice it is better to allow it to circulate for at least 3 minutes after reaching the temperature of 40°C.*
ALKALINE WASH CAUSTIC SODA (NaOH) in 2% solution.	If the constant level bath is full, there are 100 litres of water plus the contents of the heat exchanger, 60 litres, i.e. total 160 litres. The maximum quantity of soda to be poured into the constant level bath is 3.2 kg. If the soda is in powder form, mix first with a small amount of water. Turn terminal tube B over the constant level bath.	Set the heat regulator at 70°C (SET POINT "SP4"). Set the timer to 15 mins. Leave all controls in the same position as above. Once the circulation time set has elapsed, turn terminal tube B in the direction of the drain and empty until the constant level bath is almost empty.	*Generally speaking the duration of the alkaline wash is linked to the processing time of the product.* *It is a good idea to allow the water to circulate for at least 10 minutes.*
INTERMEDIATE RINSE	Turn on the tab and allow water to flow into the constant level bath. Allow water to enter for the whole of the set time and let it drain away.	Set the heat regulator at 60°C (SET POINT "SP3"). Set the timer to 15 minutes.	*The water must be eliminated as waste and the duration of the rinse will depend on the condition of the water drained away. In theory it will terminate when the water is clear. In practice it is a good idea to allow it to circulate for at least 3 minutes after it has reached the temperature of 70°C.*
ACID WASH Nitric acid (HNO3) in 1% solution	Taking into account the information given above, i.e. the total quantity of water is 160 litres, pour 1.6 kg max. of nitric acid into the constant level bath full of water. Turn the terminal tube B towards the constant level bath.	Set the heat regulator at 65°C. Set the time to 15 mins.	*Recycling time must start from the moment when the water reaches 65°C.* *Once the time has elapsed, drain away and start immediately to feed water to the constant level bath for the final rinse.*
FINAL RINSE	Continue allowing water to enter and draining away at the end of the circuit.	Temperature: natural water temp. Therefore turn off the hot water pump and heating elements. Set the timer on 10 mins.	Once the time set has elapsed, stop everything: ice-cream pump, homogenizer and turn off the current to the control panel by turning the main lever.

N.B. During the various stages of the washing process, the by-pass tap F page 25 of the homogenizer must remain open – the homogenizer must be stopped and is only started for a maximum time of 10 seconds each minute (if it operates continually it could be damaged because of the acids used) – the partialization valve Q must be open for maximum passage so that the water reaches maximum speed.

DO NOT USE CHLORINE FOR WASHING THE INSTALLATION UNDER ANY CIRCUMSTANCES AS IT COULD CORRODE THE INTERNAL CIRCUITS

WASHING THE BOILERS:

In installations where tap R is mounted (page 24 and the piping which takes washing water to the boilers, it is possible to wash the boilers using the same water as the HTST Module.

Before starting washing the boilers, make sure that the lids are closed and locked.

The washing procedure is the same yet again:

FIRST RINSE	When the 10 minutes for HTST rinsing has elapsed, turn tap R so that the water goes first to the first boiler and then to the second. Continue pouring water into the constant level bath and draining it off, pumping it with pump C page 25, using tap S page 25. Rinse each boiler for 10 mins. (one at a time). If the two boilers are rinsed together the water speed is not sufficient for thorough washing.
ALKALINE WASH	When the 15 minutes for the HTST alkaline wash has elapsed, instead of draining it away, use the same solution and turning the taps as described above, wash first one boiler then the other. Allow 15 minutes each for circulation at 70°C. To return the solution to the constant level bath, keep tap S in the open and not the drainage position. After washing the two boilers, put tap S in the drainage position and empty completely.
INTERMEDIATE RINSE	Follow the instructions given above
ACID WASH	Follow the instructions for the alkaline bath but with times and temperatures for the acid bath. After washing the two boilers, put tap S into the drainage position and empty completely.
FINAL RINSE	Follow the instructions given above but with natural water temperature and drain off from tap S.



⇒ Maintenance

The installation does not require special periodic maintenance as daily checking of the correct operation of each component is sufficient.

It is, however, necessary to take a number of simple precautions to ensure there are no unexpected break-downs or faults in operation

Generally speaking, please note the following:

- **It is vital for washing to be carried out immediately after each cycle of operation (8 pasteurizations) or at the end of each day's production.**
- **It is indispensable in sanitizing the installation to comply with the minimum indications given for the washing procedure both with regard to the order and the duration of the different stages and the cleaning products which must be used.**
- **Daily checking of the state of the connections and relative seals must be carried out especially on the piping through which the product passes. If there are any signs of cracking, drying out or damage, do not hesitate to replace it.**
- **It is advisable to carry out checks at least once a month on the state of the parts subject to wear and tear.**

In particular we recommend as follows:

- **Follow the schedule for maintenance and control of the Homogenizer scrupulously using the specific manual for the machine.**

We also suggest carrying out bacteriological testing periodically to make sure that operation of the installation is in compliance with regulations and that the washing procedures used prevent all forms of biological contamination.

Customers should please note:

- **The maturation vats which contain the pasteurized product must be washed and sanitized so as not to jeopardize the pasteurization process.**

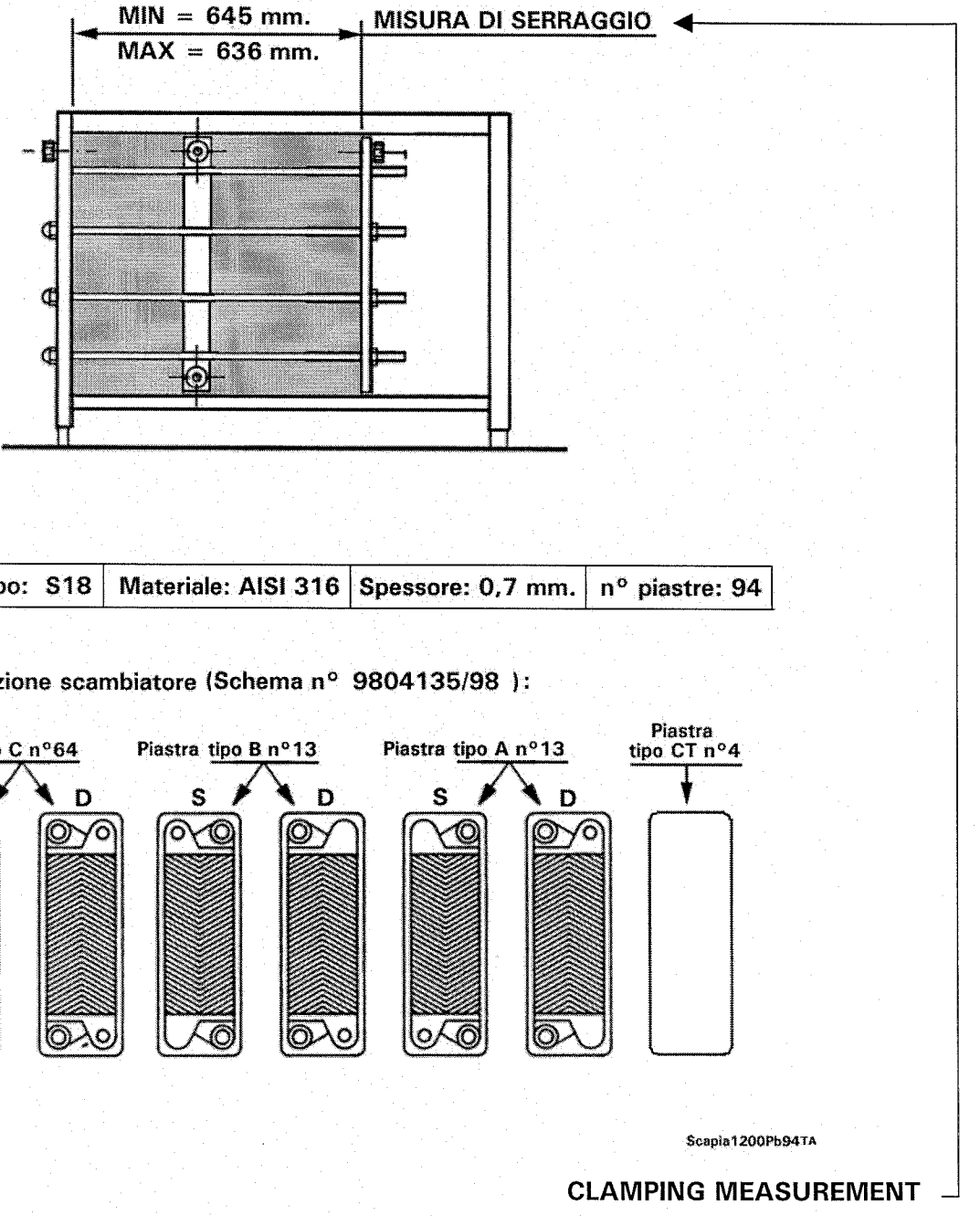
TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY BACTERIOLOGICAL CONTAMINATION OF THE PASTEURIZED PRODUCT WHICH MAY OCCUR OWING TO INADEQUATE WASHING.

FURTHERMORE, THE COMPANY DISCLAIMS ALL RESPONSIBILITY FOR ANY DAMAGE CAUSED TO THE INTERNAL CIRCUITS (HTST HEAT EXCHANGER PLATES) CAUSED BY THE ARBITRARY USE OF CHLORINE IN THE WASHING PROCESS.

⇒ Plate type heat exchanger Model SP 18 Pb – 1200 litres

- Technical characteristics of the heat exchanger:

Scambiatore tipo SP18 Pb- 1200 litri



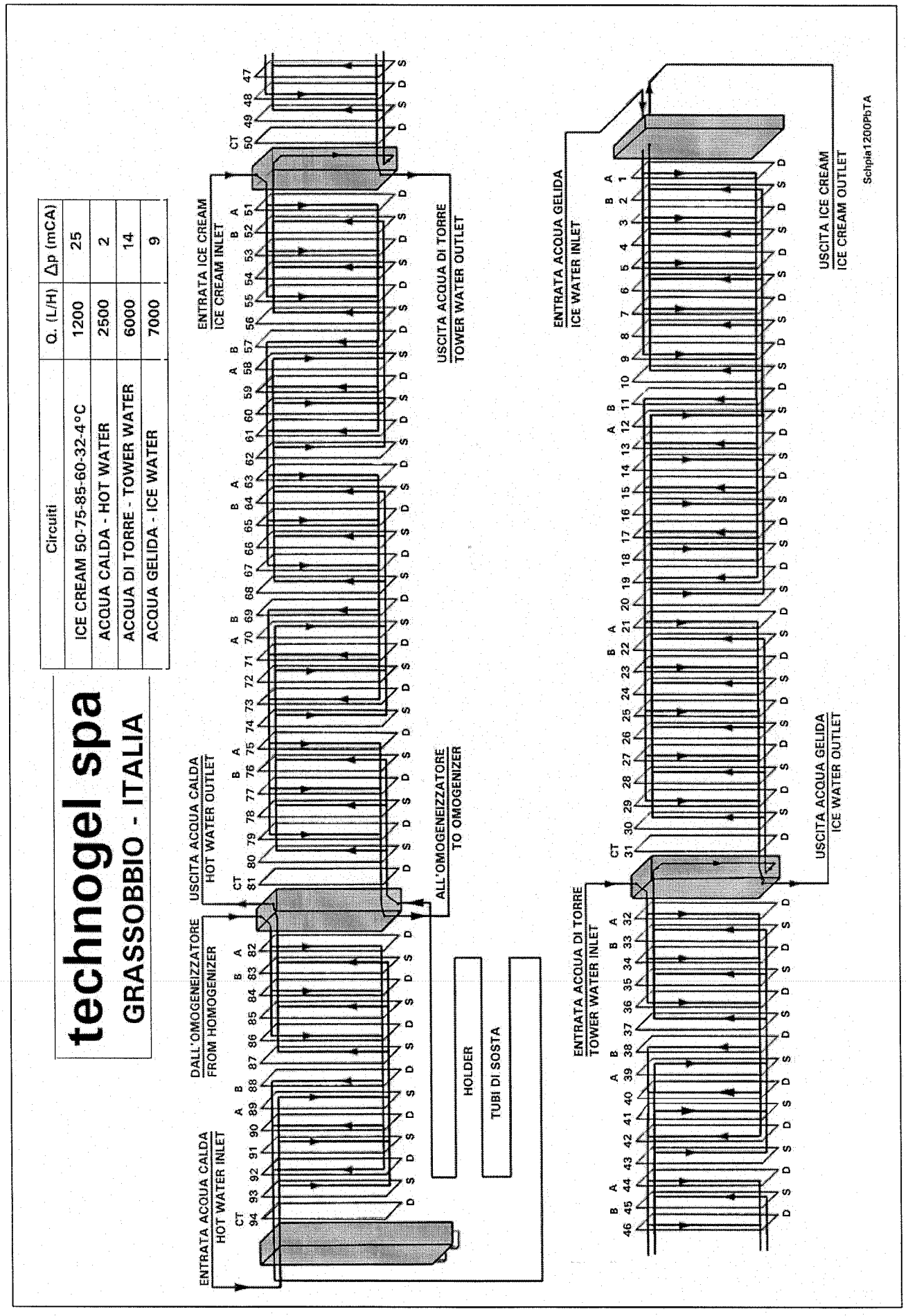
Piastra tipo: S18	Materiale: AISI 316	Spessore: 0,7 mm.	n° piastre: 94

Composizione scambiatore (Schema n° 9804135/98):

Plate type: S18	Material: AISI 316	Thickness: 0.7 mm	No. of plates: 94

Heat exchanger composition (Dwg. N° 9804135/98): Plate type C n°64 Plate type B n° 13 Plate type A n° 13 Plate type CT n° 4

Plates type: A – B – C – CT. Direction of assembly D = right S = left


technogel spa
GRASSOBBIO - ITALIA
Circuiti | Q. (L/H) | Δp (mCA)
ICE CREAM 50-75-85-60-32-4°C | 1200 | 25
ACQUA CALDA - HOT WATER | 2500 | 2
ACQUA DI TORRE - TOWER WATER | 6000 | 14
ACQUA GELIDA - ICE WATER | 7000 | 9
ENTRATA ACQUA CALDA
HOT WATER INLET
DALL'OMOGENEIZZATORE
FROM HOMOGENIZER
USCITA ACQUA CALDA
HOT WATER OUTLET
ALL'OMOGENEIZZATORE
TO OMOGENIZER
HOLDER
TUBI DI SOSTA
ENTRATA ICE CREAM
ICE CREAM INLET
USCITA ACQUA DI TORRE
TOWER WATER OUTLET
ENTRATA ACQUA GELIDA
ICE WATER INLET
ENTRATA ACQUA DI TORRE
TOWER WATER INLET
USCITA ICE CREAM
ICE CREAM OUTLET
USCITA ACQUA GELIDA
ICE WATER OUTLET
Schpia1200PbTA



⇒ Ordinary Maintenance of Plate Type Heat Exchanger:

THE HEAT EXCHANGER MUST NEVER BE LIFTED USING THE CONNECTORS OR PLATE PACK

Generally speaking the heat exchanger requires no special maintenance but if it is necessary to check the equipment, follow the instructions below:

The equipment must only be opened when completely cold, **never when hot**, as the seals could detach from the plates.

1. Gradually remove the tie-rods unscrewing them alternately on one side then on the other (normally the 4 tie-rods located on the sides must be removed first). **Never force or bend the plates, when removing them from their seats as this could damage their suspension profiles.**
2. Remove the plates from the bottom part and lift them lengthways (towards the front leg) taking them out of the seat of the bottom bar. Rotate 45° from the bottom upwards. All the plates are normally marked on the top with a progressive number which indicates the precise sequence for assembly. **During assembly, therefore take special care to ensure that the sequence of numbers is followed correctly.**
3. To reassemble the heat exchanger, follow the instructions given above in reverse order. When closing the equipment, proceed progressively and uniformly as indicated in position 1.

   CAUTION: the four nuts located on the corners must be screwed up last. **When closing the equipment never exceed the limits indicated on the heat exchanger plate and on page 34 and above all never exceed "maximum closure".**
   If during re-assembly, however, although "maximum closure" has been reached there are leaks of fluid from the plate pack, contact the Technical Service before carrying out any further operations.

- Special Maintenance:

This consists basically in replacing all the seals. It is necessary when the equipment leaks fluid despite the fact that it is perfectly closed.

1. Open the heat exchanger as described above.
2. Remove the plates and seals.
3. Remove the residual grease from the plates using solvent or acetone to prepare the surface for the application of new seals.

CAUTION: Do not use solvents and/or solutions containing CHLORINE

1. Place the seal on the plate making sure it tallies correctly.
2. As you proceed, pile the plates one on top of the other so that the weight applied gives correct adhesion.
3. Once all the seals have been replaced, the plates must be re-assembled on the equipment following the progressive numbers marked on each plate. If the equipment has more than one section, refer to the diagram on page 35. If during re-assembly there are any problems, please contact the Technical Service.
4. Before closing the equipment up it is advisable to check whether assembly of the plates has been carried out correctly by checking the progressive numbers and comparing with the diagram. **CAUTION: Plate n° 1 is normally placed against the FIXED PLATE (main column which goes down to the floor).**
5. Tighten the screws on the heat exchanger as indicated in point 3 (Ordinary Maintenance) to obtain **"MINIMUM CLOSURE".**

⇒ Cleaning the tower water and chilled water circuits of the plate type heat exchanger



At the end of the season or during the season if the heat exchange deteriorates, it is advisable to clean the tower water and chilled water circuits of the plate type heat exchanger. They may be clogged up with lime deposit or algae formed over a period of time with the circulating water.

To do this, disconnect the chilled or tower water piping and contact a firm specialized in water treatment. Have them circulate a specific solution of water and **inhibited** acid to clean the circuits of the heat exchanger.

The circuits which must be cleaned are the tower water and chilled water circuits and these have nothing to do with the ice-cream mixture washing circuit which is normally cleaned every day.

CAUTION: use of acids which are unsuitable and/or not inhibited could cause perforation of the plates of the heat exchanger.

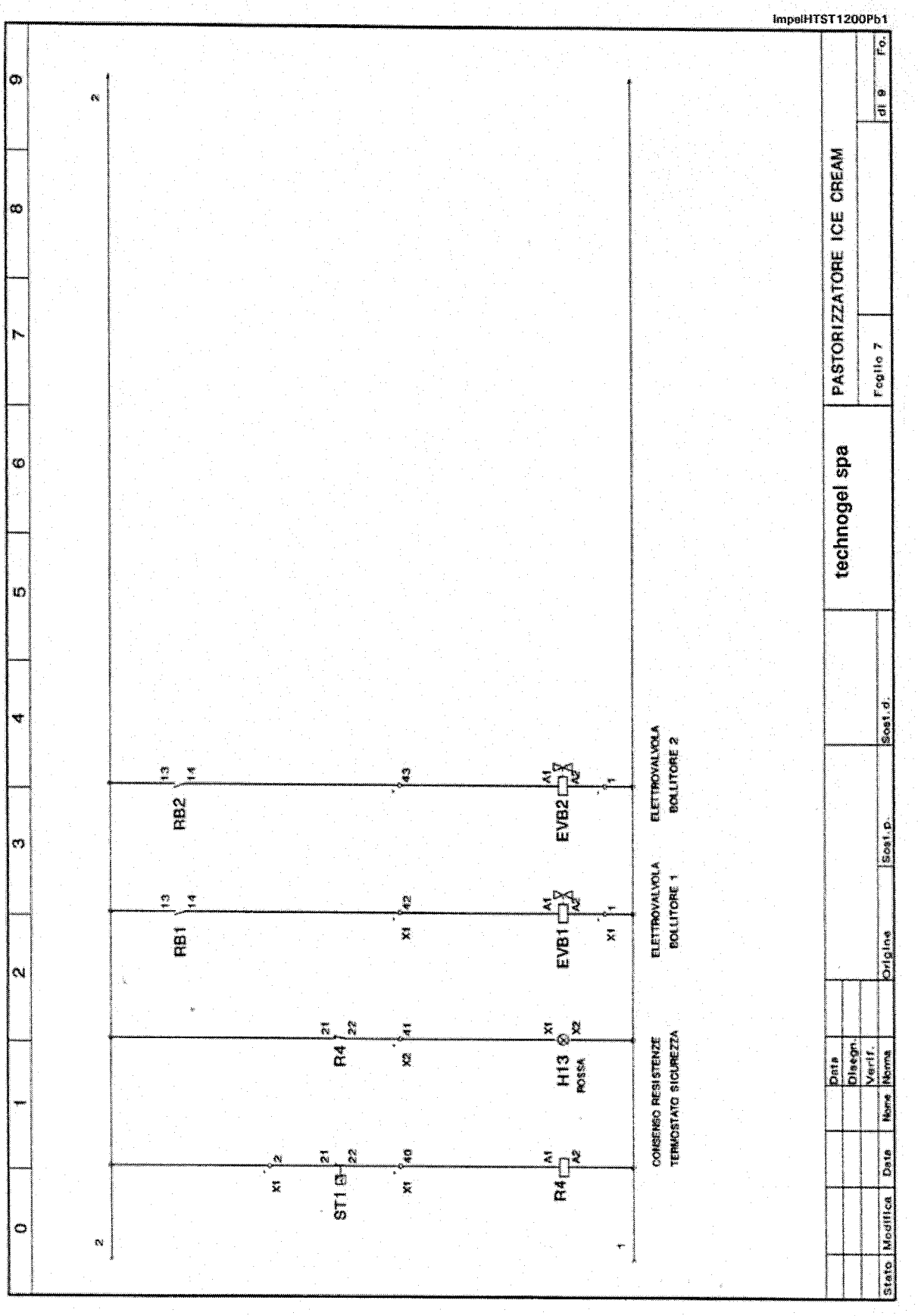
TECHNOGEL spa SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY UNSUITABLE ACIDS BEING USED FOR WASHING THE TOWER AND CHILLED WATER CIRCUITS.

TAKE GREAT CARE IN HANDLING ACIDS. PROTECT THE HANDS WITH WATERPROOF GLOVES AND THE EYES WITH PROTECTIVE GOGGLES.

.....

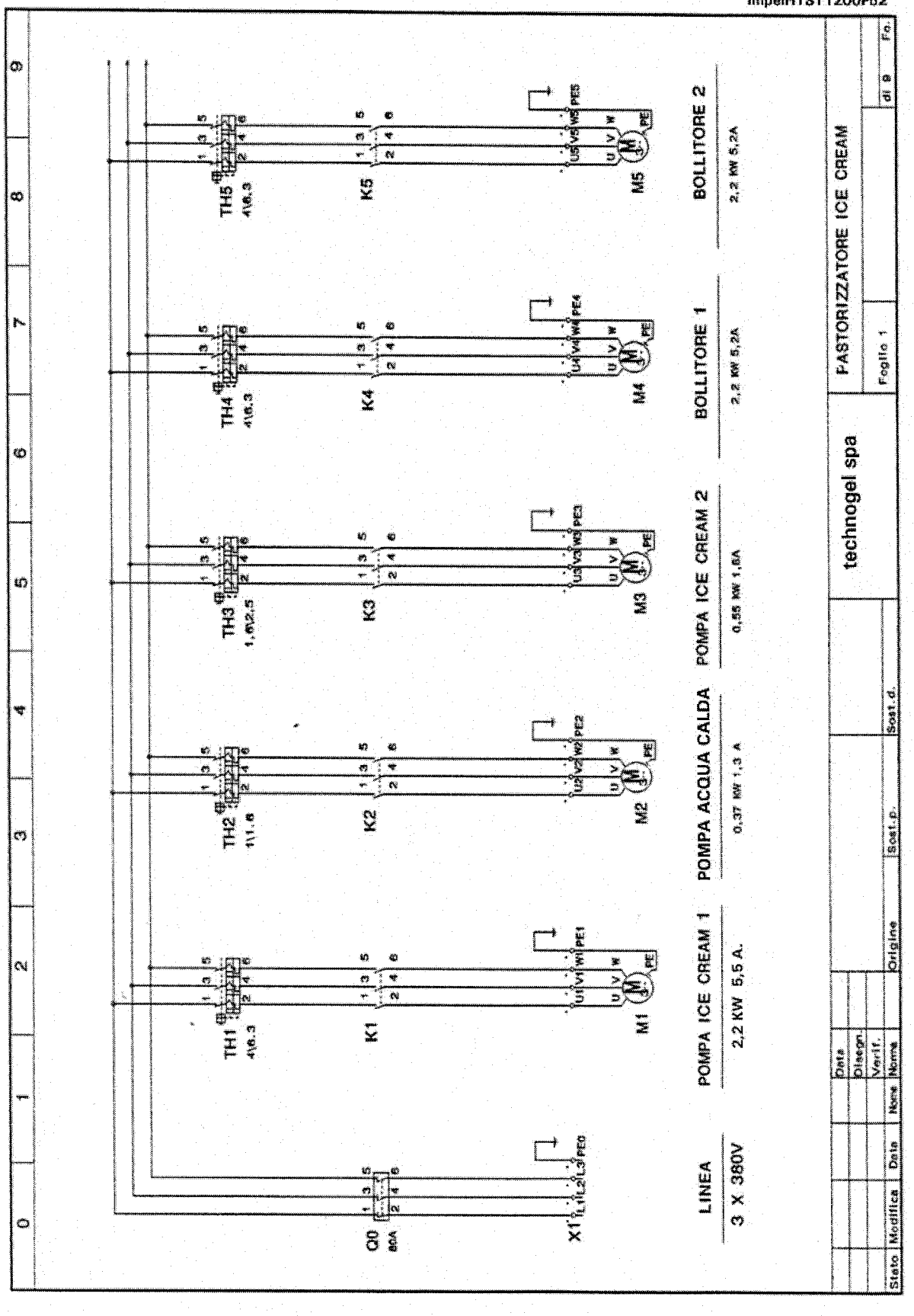
When ordering spare parts, please supply the installation's serial number (see page 3) and state the type of heat exchanger and the number of the diagram indicated on page 34.

- HTST 1200 Pb Electrical Diagram (ELECTRIC – GAS)



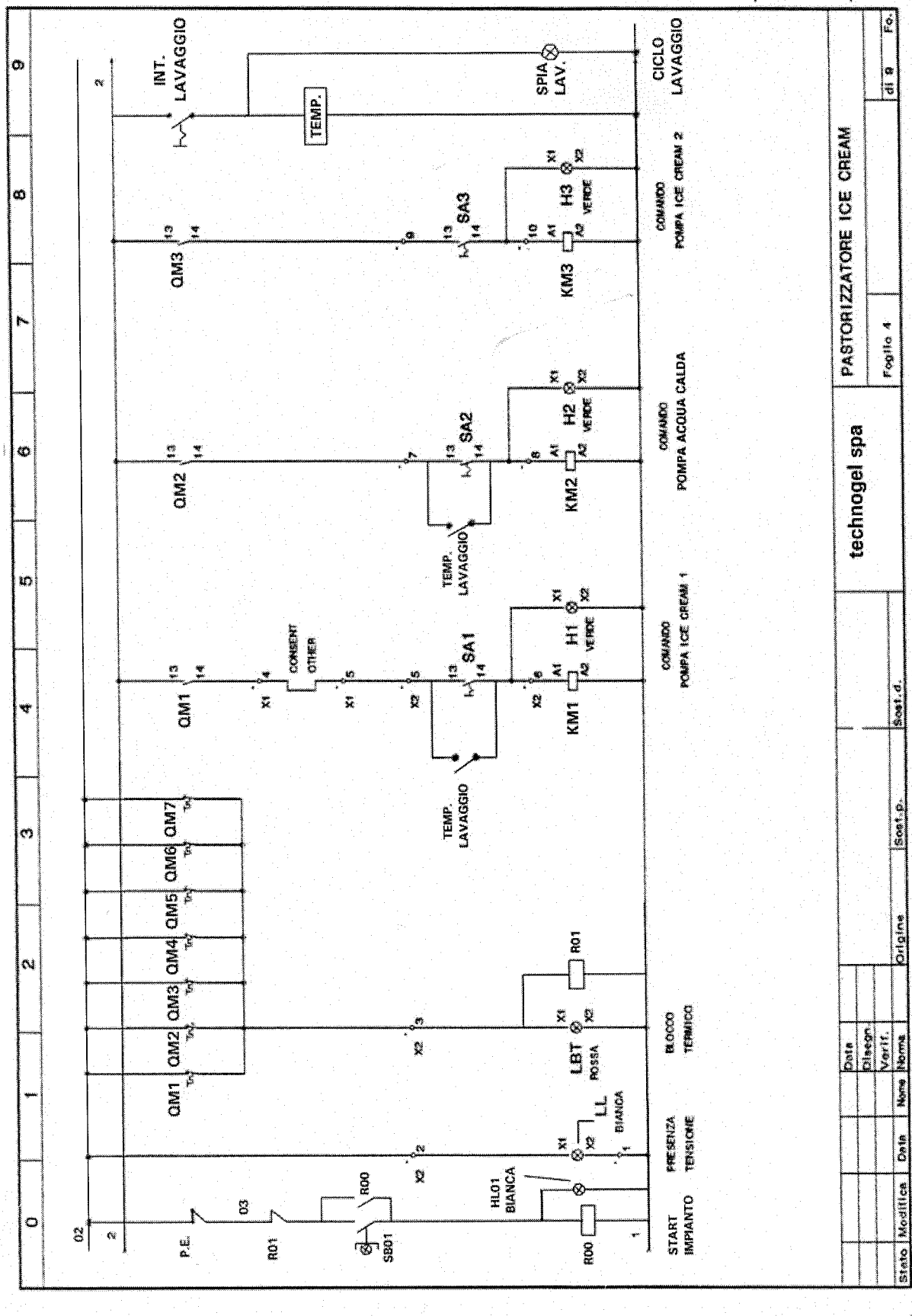
SAFETY THERMOSTAT ELEMENT GO-AHEAD	BOILER 1 ELECTROVALVE	BOILER 2 ELECTROVALVE

ImpelHTST1200Pb2



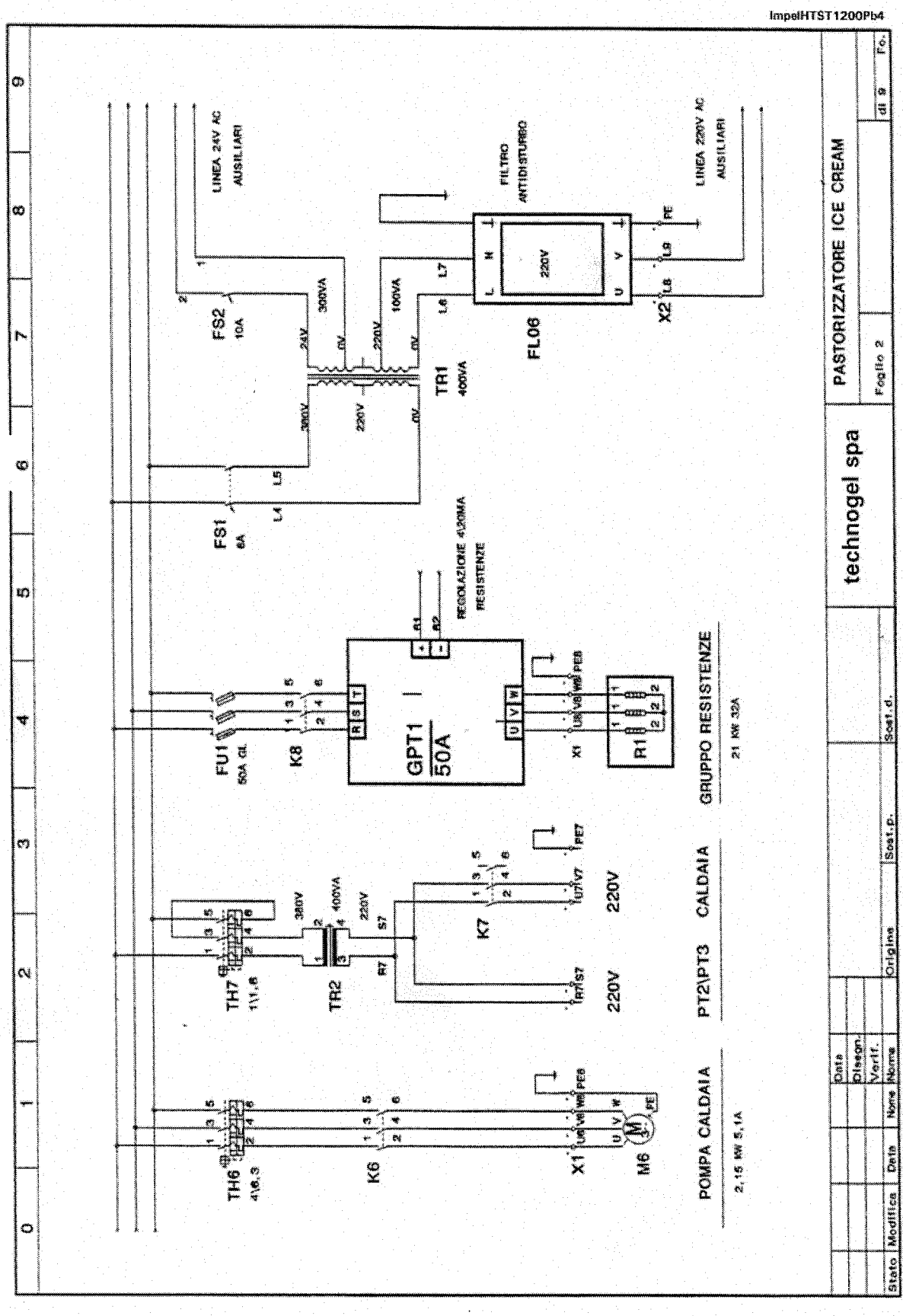
LINE	ICE-CREAM PUMP 1	HOT WATER PUMP	ICE CREAM PUMP 2	BOILER 1	BOILER 2

ImpelHTST1200pbTa6



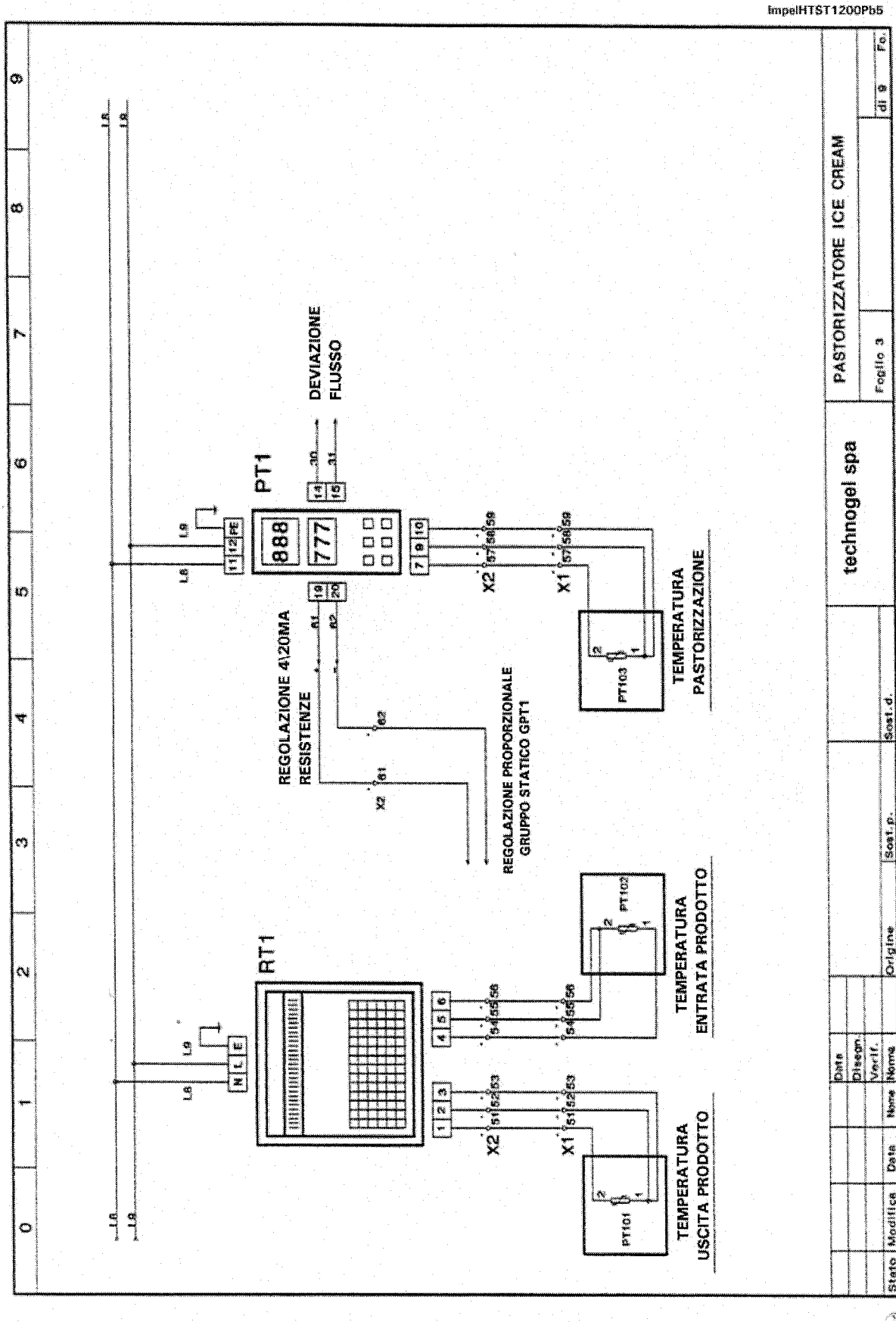
INSTALLATION START	POWER ON	THERMAL BLOCK	ICE-CREAM PUMP 1 CONTROL	HOT WATER PUMP CONTROL	ICE-CREAM PUMP 2 CONTROL

WASHING CYCLE



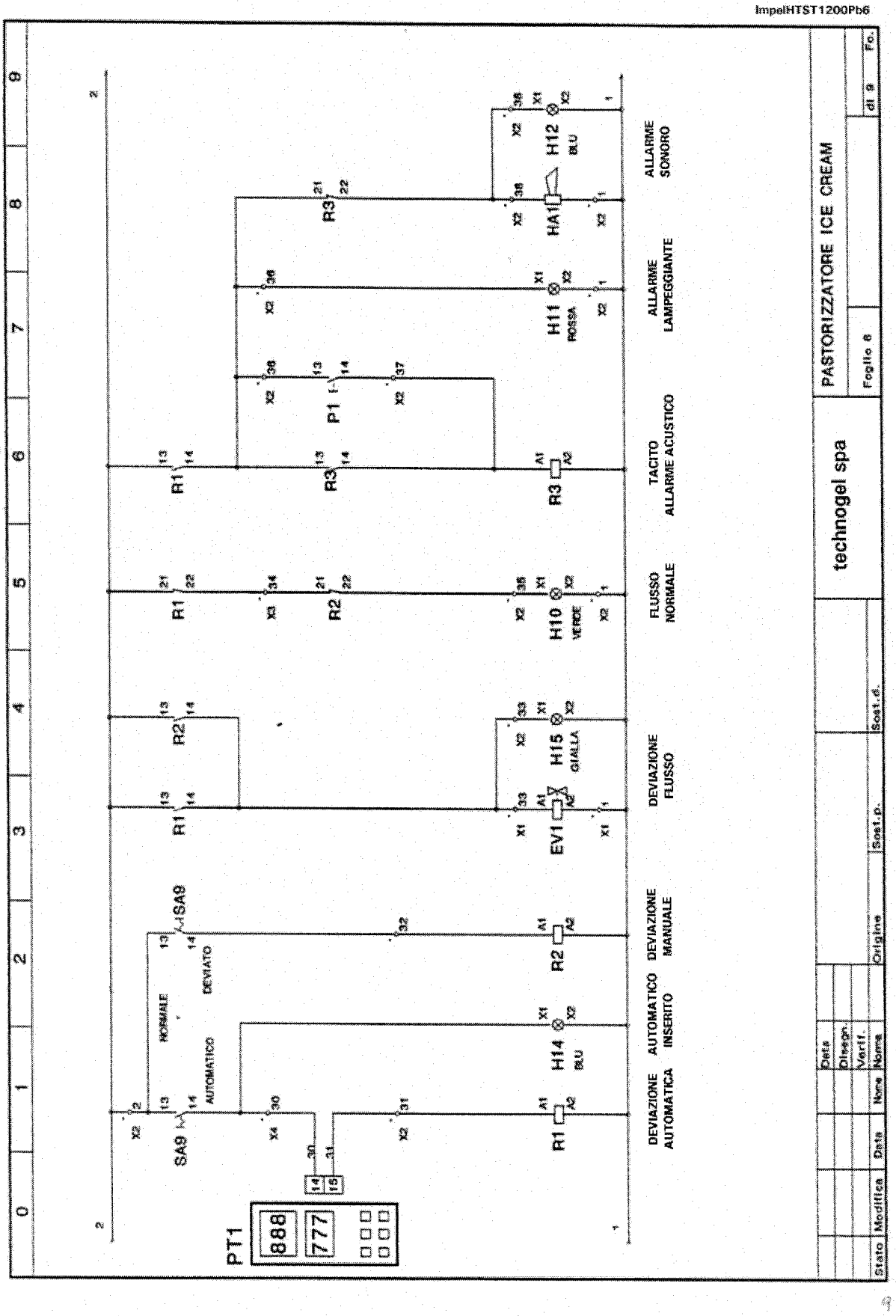
BOILER PUMP	BOILER	ELEMENTS UNIT	ADJUSTMENT OF ELEMENTS	ANTI-DISTURBANCE FILTER

ImpelHTST1200Pb5



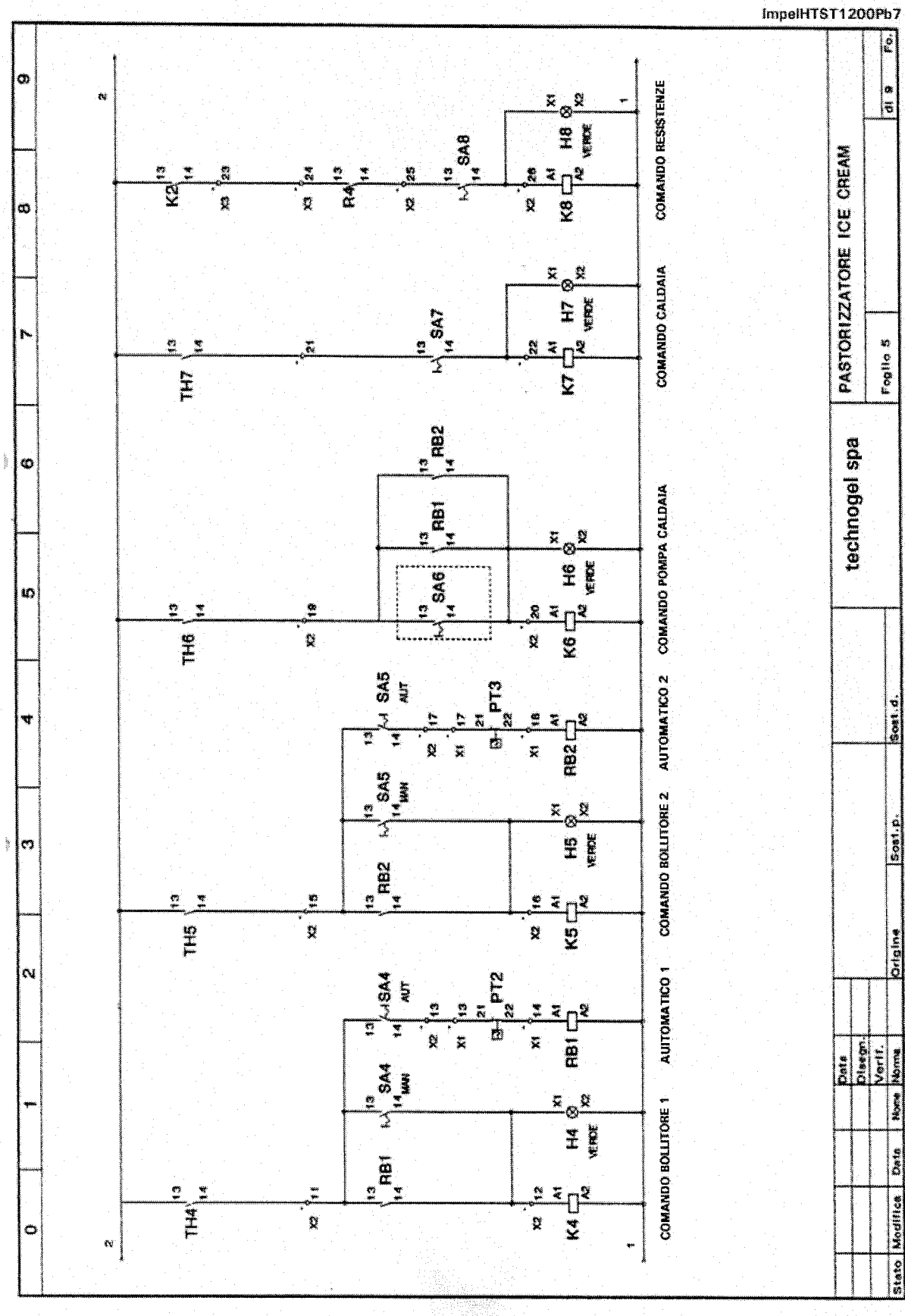
TEMPERATURE OF PRODUCT ON OUTPUT	TEMPERATURE OF PRODUCT ON INPUT	PASTEURIZATION ON TEMPERATURE	DIVERSION FLOW	ADJUSTMENT 4|20MA ELEMENTS	PROPORTIONAL ADJUSTMENT STATIC UNIT GPT1

ImpelHTST1200Pb6



AUTOMATIC DIVERSION	AUTOMATIC ON	MANUAL DIVERSION	FLOW DIVERSION	NORMAL FLOW	ACOUSTIC ALARM OFF	FLASHING ALARM	ACOUSTIC ALARM

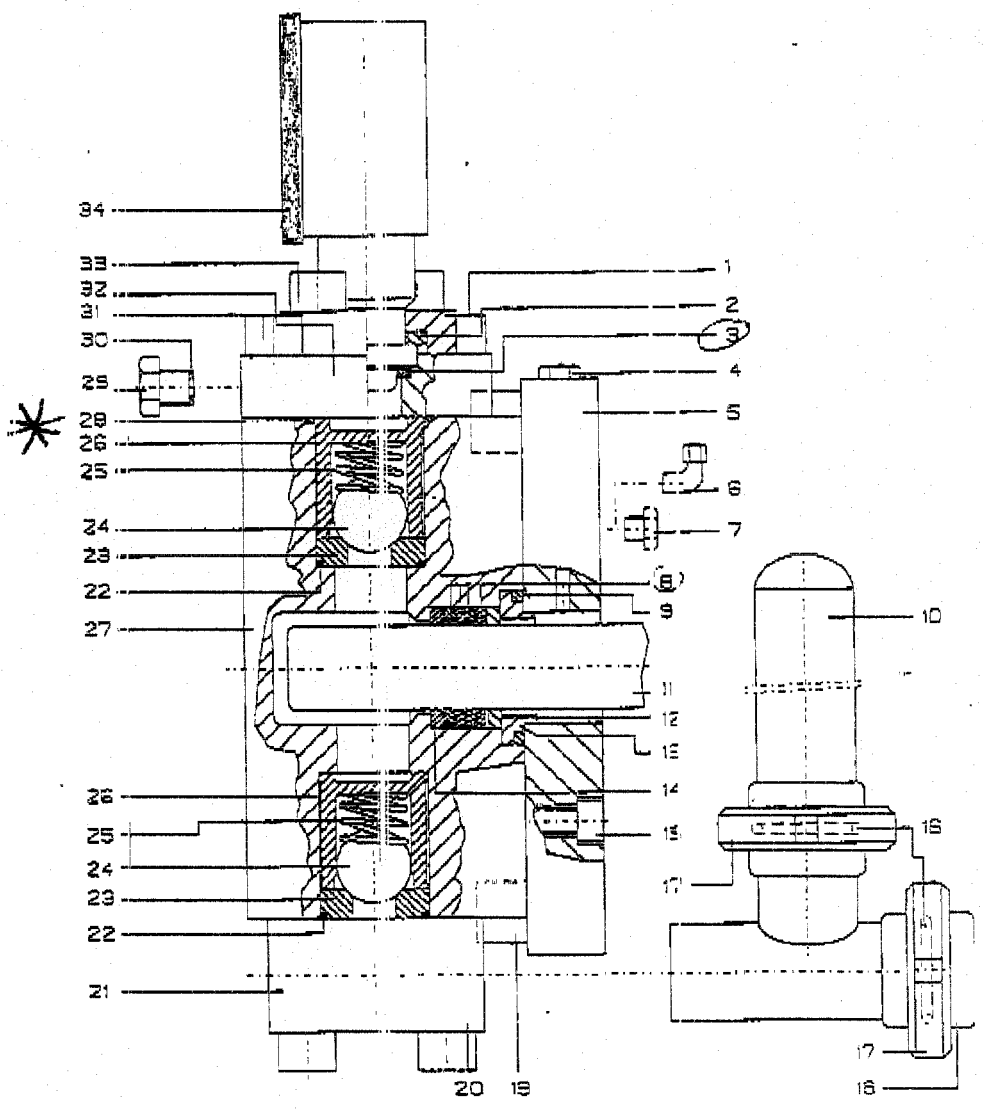
ImpelHTST1200Pb7



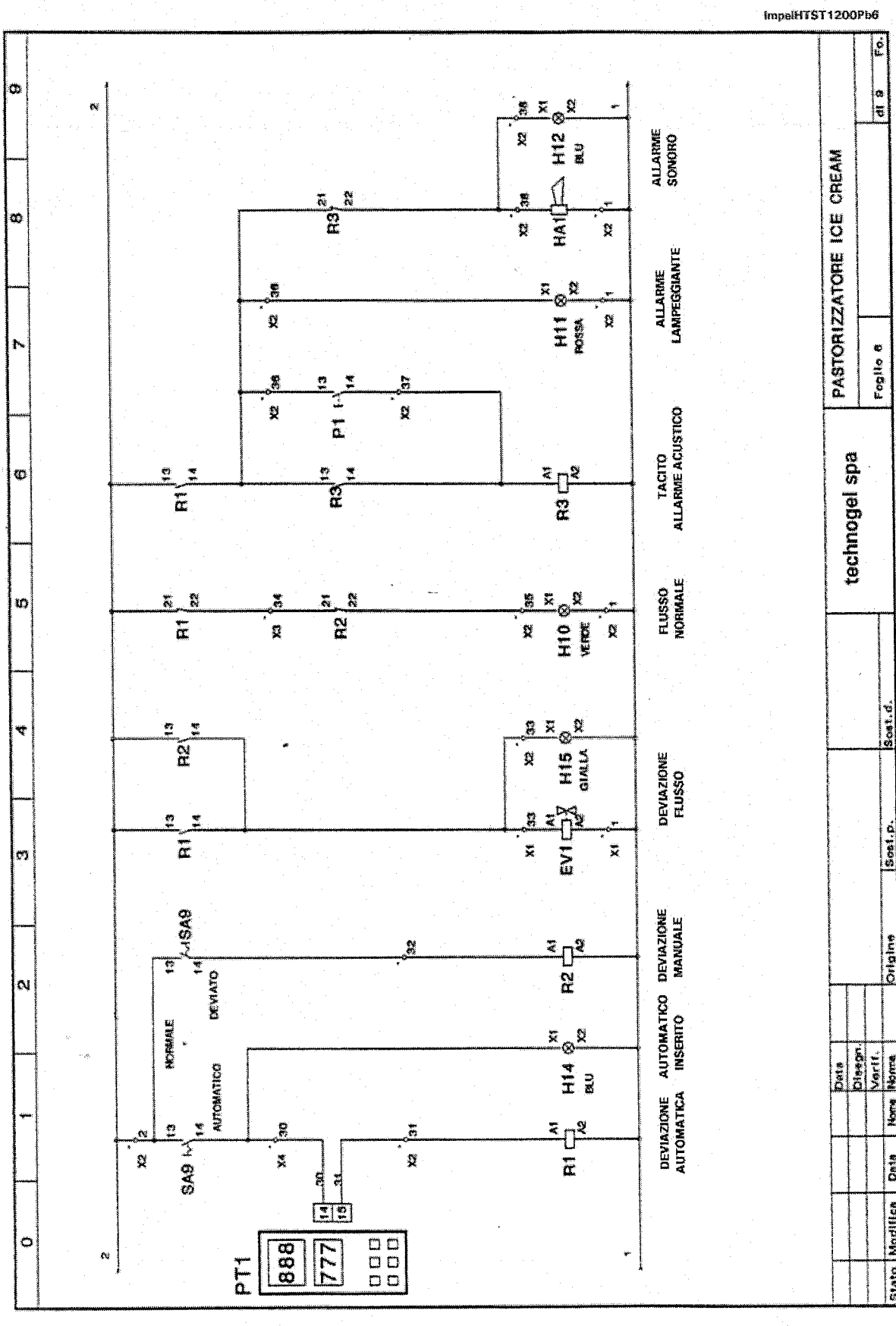
BOILER 1 CONTROL	AUTOMATIC 1	BOILER 2 CONTROL	AUTOMATIC 2	HOT WATER PUMP CONTROL	BOILER CONTROL	ELEMENT CONTROL

COMPRESSION HEAD

Table 16



Tav. 3540T.VR

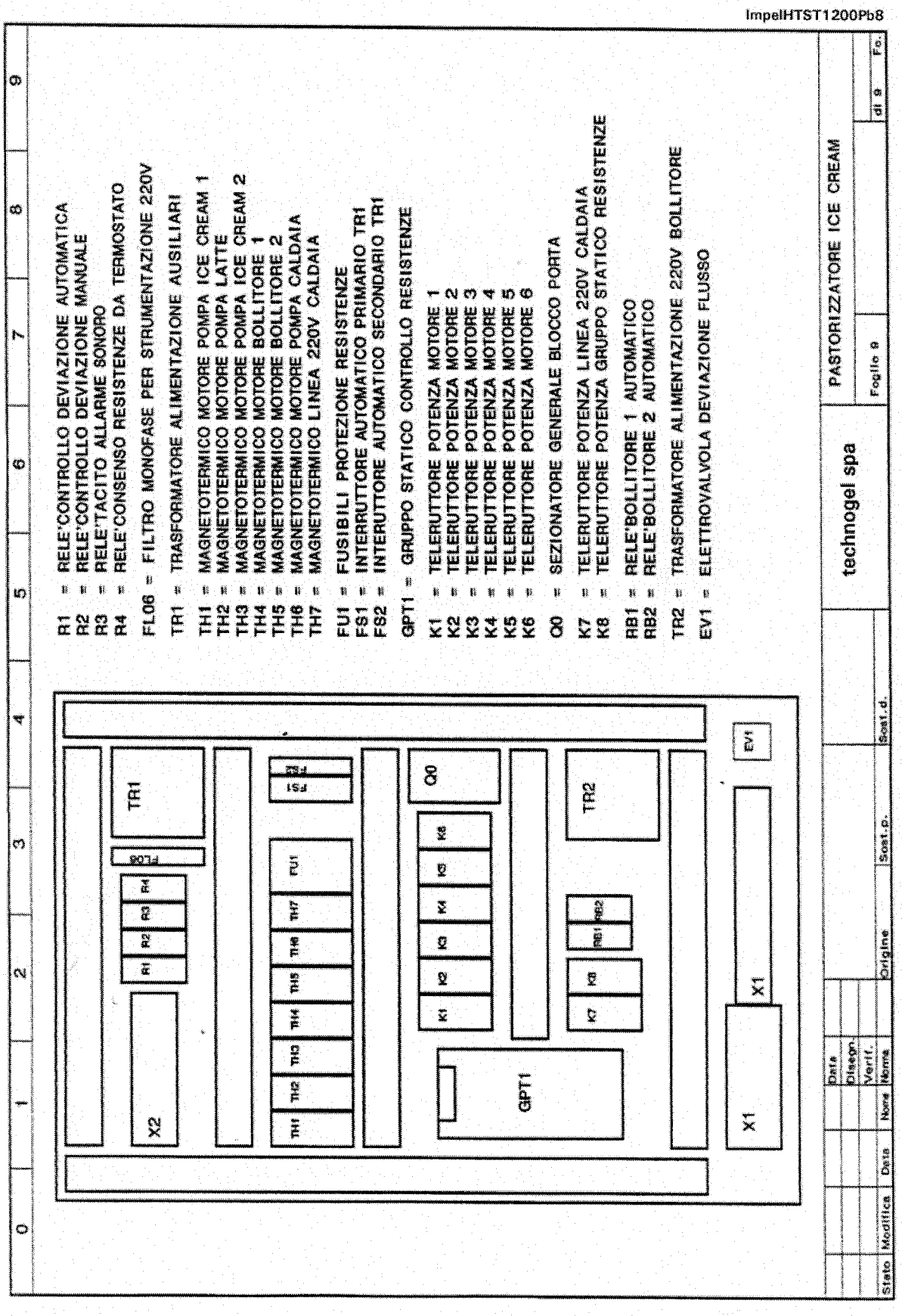


AUTOMATIC DIVERSION	AUTOMATIC ON	MANUAL DIVERSION	FLOW DIVERSION	NORMAL FLOW	ACOUSTIC ALARM OFF	FLASHING ALARM	ACOUSTIC ALARM

- Page 46

Pos.	Component
R1	AUTOMATIC DIVERSION CONTROL RELAY
R2	MANUAL DIVERSION CONTROL RELAY
R3	ACOUSTIC ALARM OFF RELAY
R4	ELEMENT RELAY GO-AHEAD FROM THERMOSTAT
FL06	SINGLE PHASE FILTER FOR 220V INSTRUMENTS
TR1	AUXILIARY SUPPLY TRANSFORMER
TH1	ICE-CREAM PUMP 1 MOTOR MAGNETOTHERMIC
TH2	MILK PUMP MOTOR MAGNETOTHERMIC
TH3	ICE-CREAM PUMP 2 MAGNETOTHERMIC MOTOR
TH4	BOILER 1 MOTOR MAGNETOTHERMIC
TH5	BOILER 2 MOTOR MAGNETOTHERMIC
TH6	BOILER PUMP MOTOR MAGNETOTHERMIC
TH7	BOILER LINE MAGNETOTHERMIC 220V
FU1	ELEMENT PROTECTION FUSES
FS1	PRIMARY CIRCUIT-BREAKER TR1
FS2	SECONDARY CIRCUIT-BREAKER TR1
GPT1	ELEMENT CONTROL STATIC UNIT
K1	REMOTE CONTROL SWITCH MOTOR POWER 1
K2	REMOTE CONTROL SWITCH MOTOR POWER 2
K3	REMOTE CONTROL SWITCH MOTOR POWER 3
K4	REMOTE CONTROL SWITCH MOTOR POWER 4
K5	REMOTE CONTROL SWITCH MOTOR POWER 5
K6	REMOTE CONTROL SWITCH MOTOR POWER 6
QO	DOOR LOCK GENERAL ISOLATING SWITCH
K7	220 V LINE POWER REMOTE CONTROL SWITCH FOR BOILER
K8	ELEMENT STATIC UNIT REMOTE CONTROL POWER SWITCH
RB1	BOILER 1 RELAY AUTOMATIC
RB2	BOILER 2 RELAY AUTOMATIC
TR2	220 V POWER SUPPLY FOR BOILER
EV1	FLOW DIVERSION ELECTROVALVE

ImpelHTST1200Pb8



- GENERAL CONTROL PANEL page 48

⇒ "MODULE HTST" SWITCHES AND CONTROLS

H11	FLASHING LIGHT WARNING OF LOW TEMPERATURE
HA1	ACOUSTIC ALARM FOR LOW TEMPERATURE
RT1	PASTEURIZATION TEMPERATURE RECORDER
PT1	PASTEURIZATION TEMPERATURE REGULATOR
H14	BLUE LIGHT FOR AUTOMATIC FLOW
H10	GREEN LIGHT FOR NORMAL FLOW
H15	YELLOW LIGHT FOR DIVERTED FLOW
SA9	3-POSITION SELECTOR: AUTOMATIC – NORMAL – DIVERTED
LL	WHITE LIGHT FOR POWER ON
LBT	RED LIGHT MOTOR HEATING BLOCK
P1/H12	LUMINOUS YELLOW BUTTON FOR ALARM OFF
H13	SAFETY THERMOSTAT RED LIGHT
SA1/H1	ICE-CREAM PUMP 1 ON/OFF SELECTOR (5b)
SA2/H2	HOT WATER PUMP ON/OFF SELECTOR
SA8/H8	ELECTRIC ELEMENTS ON/OFF SELECTOR
SBO1/HL00	START (RESET)
SB00	EMERGENCY STOP BUTTON

⇒ PREHEATERS AND BOILER CONTROL SWITCHES

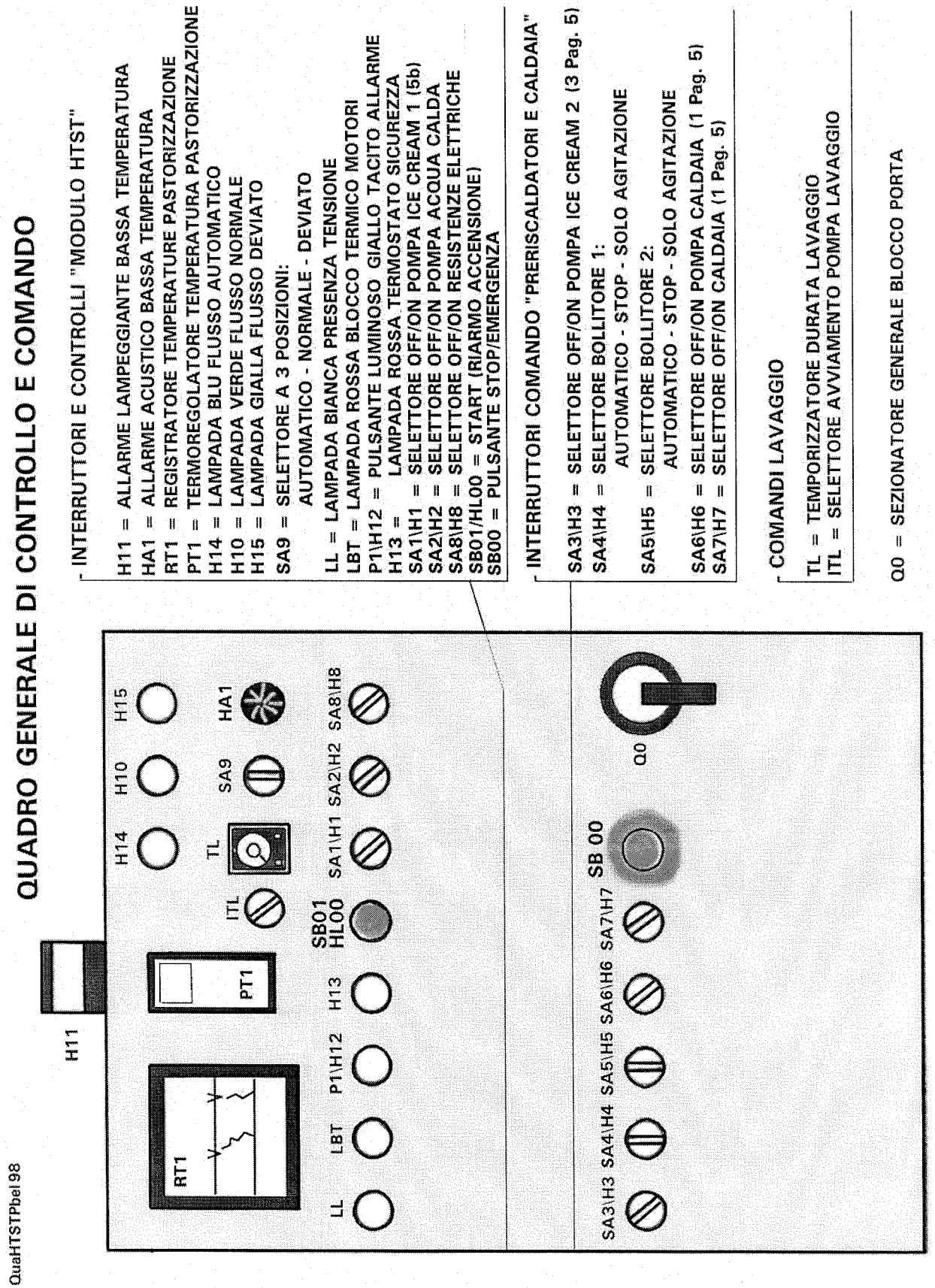
SA3/H3	ICE-CREAM PUMP 2 ON/OFF SELECTOR (3 page 5)
SA4/H4	BOILER SELECTOR 1: AUTOMATIC – STOP – STIRRING ONLY
SA5/H6	BOILER SELECTOR 2: AUTOMATIC – STOP – STIRRING ONLY
SA6/H6	BOILER PUMP ON/OFF SELECTOR (1 page 5)
SA7/H7	BOILER ON/OFF SELECTOR (1 page 5)

⇒ WASHING CONTROLS

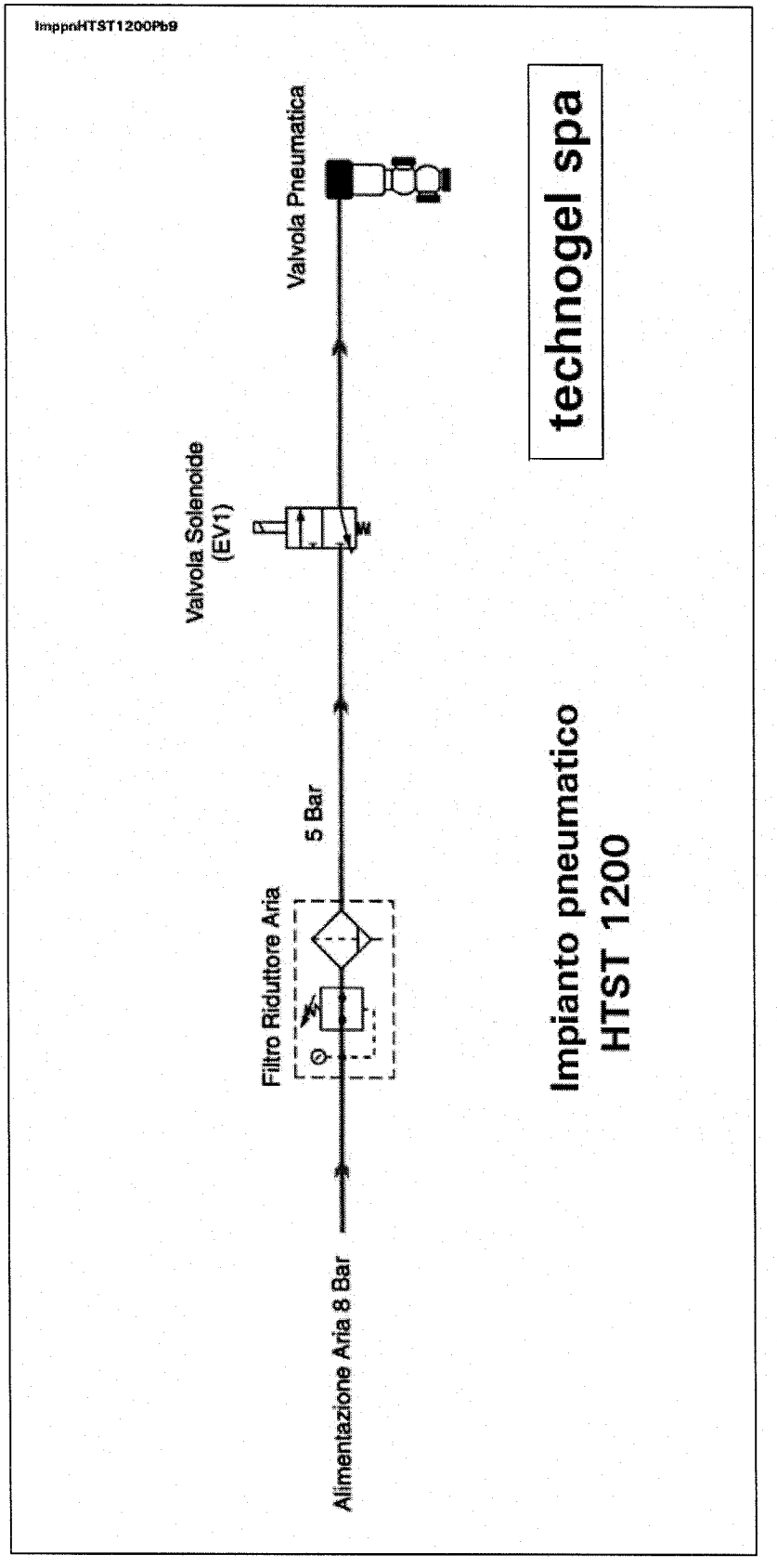
TL	LENGTH OF WASH TIMER
ITL	WASHING PUMP STARTUP SELECTOR

QO	DOOR LOCK GENERAL ISOLATOR

MAIN CONTROL SWITCHBOARD

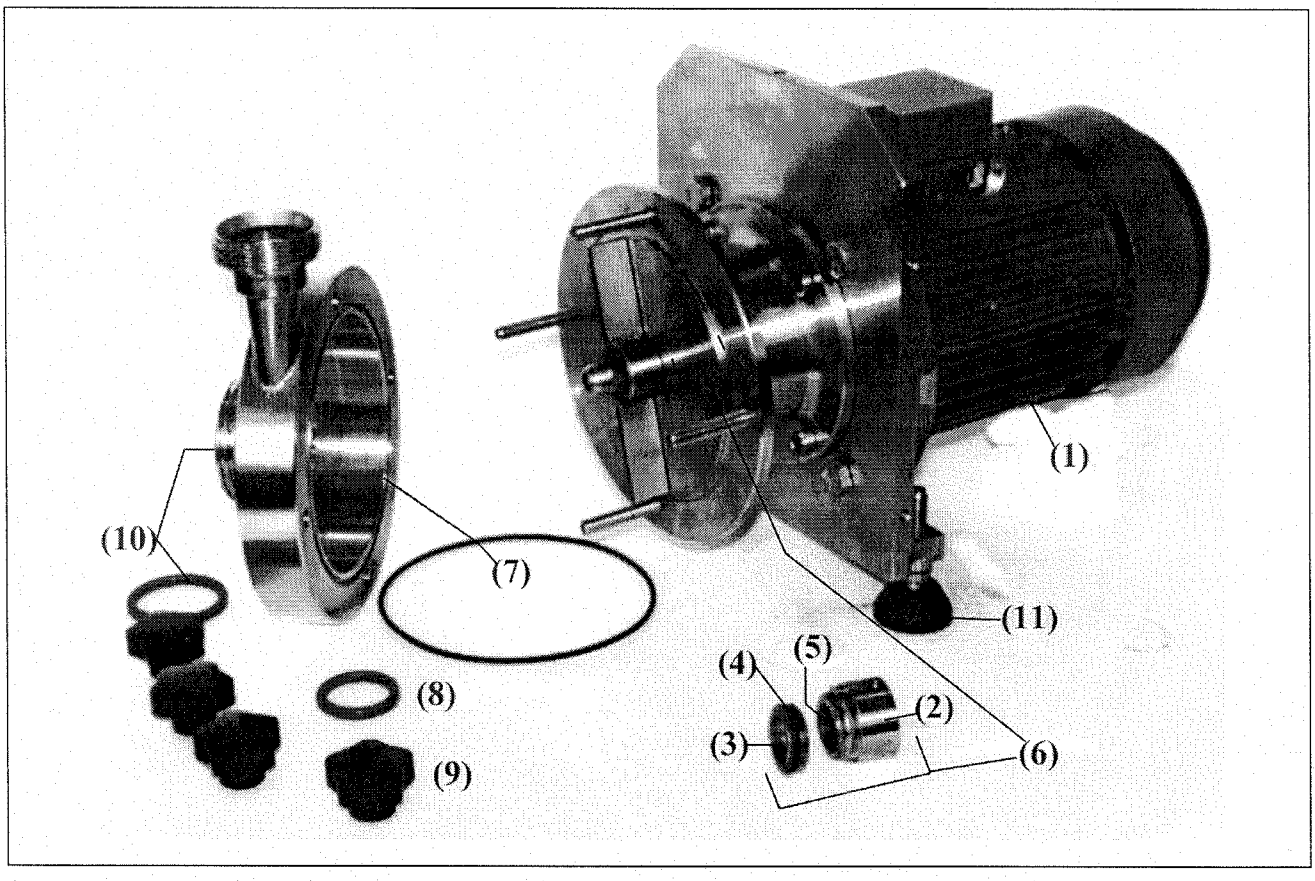


⇒ Pneumatic system



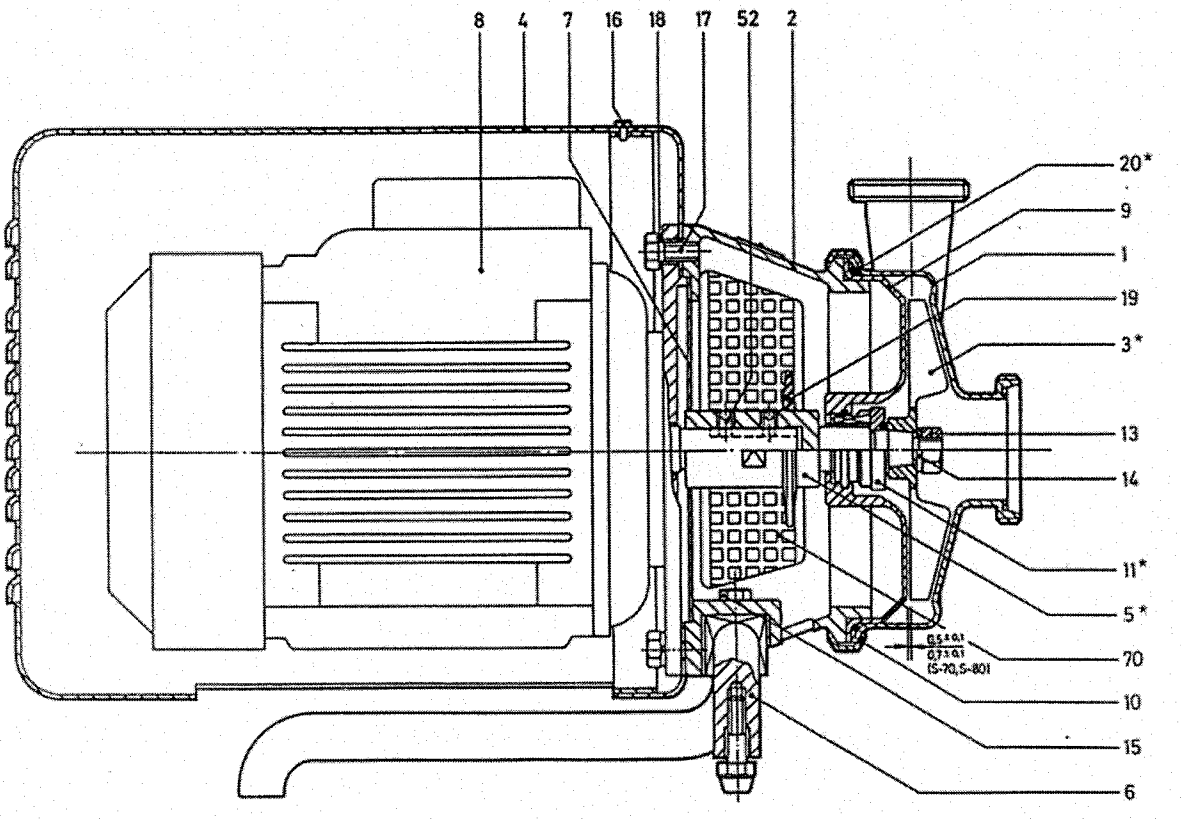
AIR SUPPLY 8 BAR	AIR REDUCER FILTER	SOLENOID VALVE	PNEUMATIC VALVE

⇒ Pump unit (pos. C page 25)



Pos.	Component name	Code
1	0.75 HP motor 1400 rpm V.220/240-380/415 50HZ V.220/380 60HZ	MO-0008 DFA-0029/6
2	Pump stuffing box rotating part	MW-0172
3	Stuffing box fixed part	MW-0080
4	OR fixed part	AV-00125
5	OR rotating part	AV-00124
6	Complete stuffing box	MW-00166
7	Pump cover OR	T1-0081
8	DN25 delivery pipe seal	TM-0006
9	Pump cover closure wheel	DE-0020
10	DN40 inlet seal	R-013.40
11	Foot for pump	BA-0002

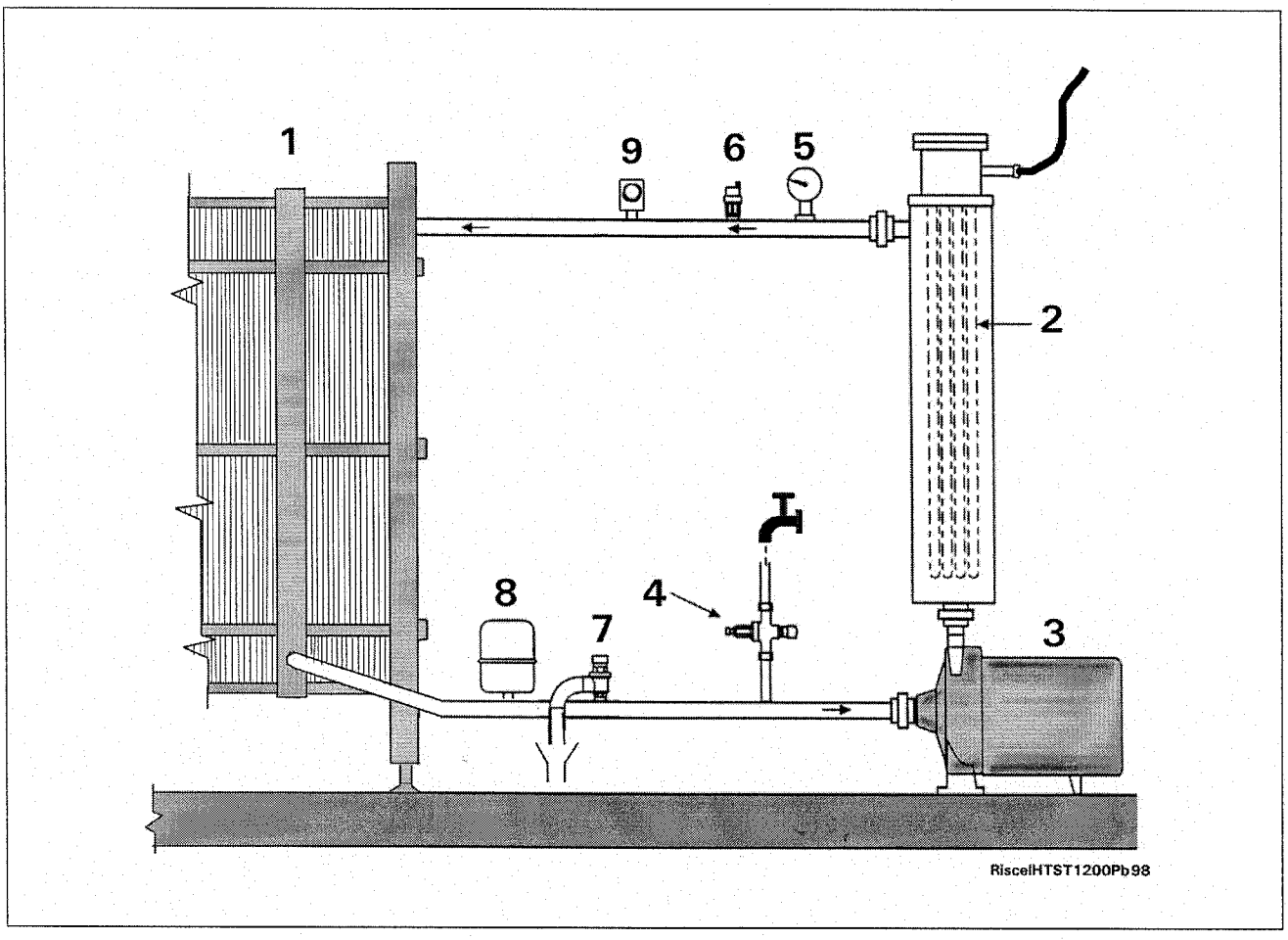
⇒ HTST pump unit type S-28CMR (pos. D page 25)



Important pieces:

- **N° 3 – open impeller**
- **N° 5 - shaft**
- **N° 8 – 2.2 KW motor 2900 rpm**
- **N° 11 – mechanical seal complete with CIV (graphite – stainless steel – viton)**
- **N° 20 – body (shield seal)**

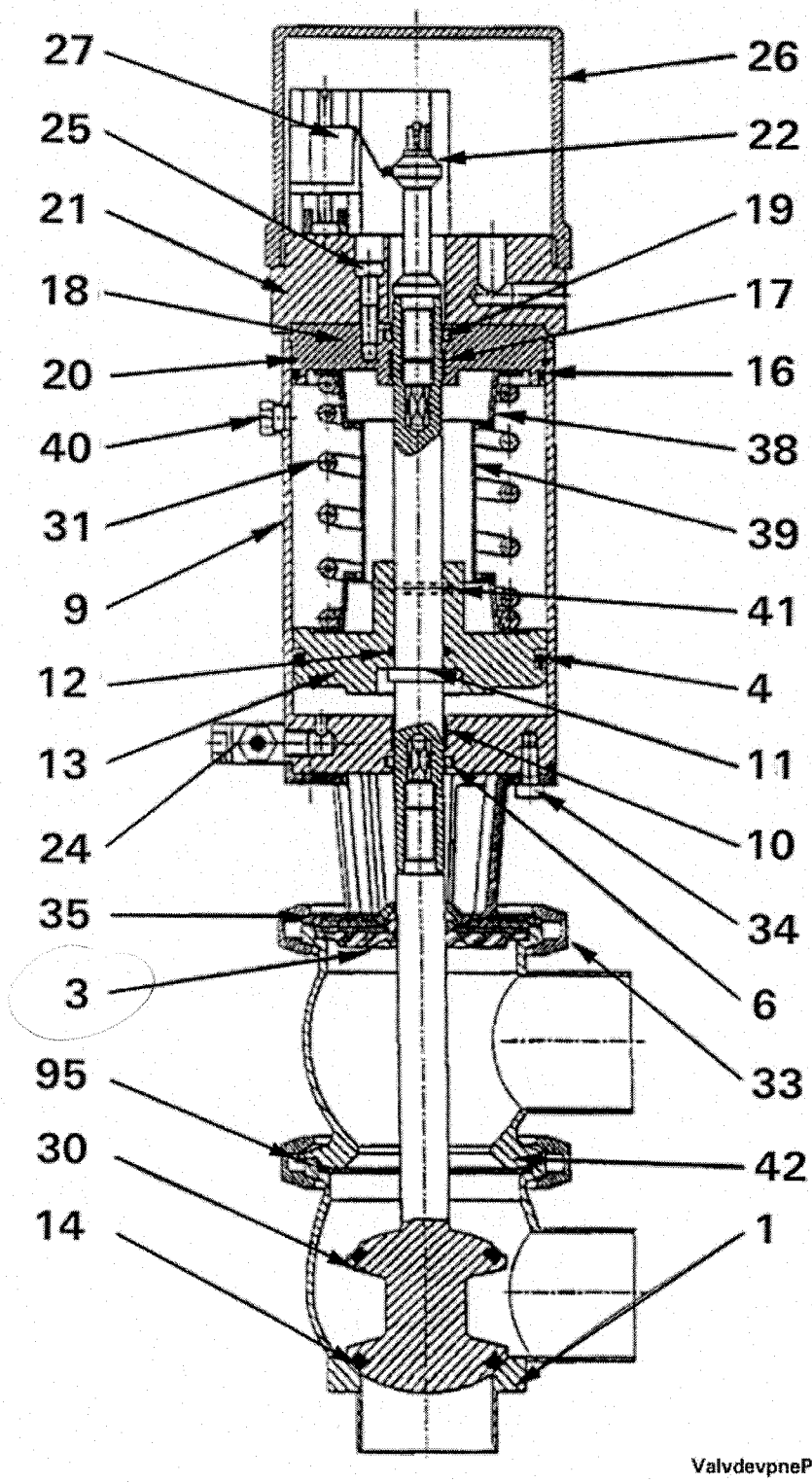
⇒Electric water heater



- 2 – Electric heating element 20 KW – Pb 504/97
- 3 - Calpeda pump NM1/A 0.37 KW
- 4 - Water feeder
- 5 - Circuit pressure gauge
- 6 - Air vent valve
- 7 - Safety valve
- 8 - Expansion tank

⇒ Pb pneumatic diversion valve Type PB LL

VALVOLA DI DEVIAZIONE PNEUMATICA
tipo PB LL



Pos.	No. of pcs.	Name of component	Code
1	1	Bottom body	
2	1	Shutter	
3	1	Vulcanized cap	
4	1	O ring	
6	1	"UM" ring	
9	1	Cylinder	
10	1	Bushing	
11	1	Pin	
12	1	O-ring	
13	1	Piston	
14	2	O-ring	
16	1	O-ring	
17	1	Bushing	
18	1	Wire plug	
19	1	"UM" ring	
20	1	Flexible ring	
21	1	Cap base	
22	1	Microswitch activator	
24	1	Air connector	
25	4	TCE screw	
26	1	Calotta	
27	2	Microswitch	
30	1	Doppio otturatore	
31	1	Molla	
33	1	Morsetto	
34	4	Vite T.C.E.	
35	1	Pezzo assemblaggio	
38	2	Finecorsa molla	
39	1	Distanziale molla	
40	1	Tappo	
41	1	Spina di fermo	
42	1	Corpo superiore	
45	1	Barriera di vapore	
47	4	Anello di tenuta "OR"	
55	1	Anello di tenuta "OR"	
95	1	Guarnizione piana	
167	1	Anello di tenuta "OR"	
168	1	Bronzina	