

# **MAXI 180** **GHIDINI**

## *User's and Maintenance Manual*



**ENGLISH**



<i>Manufacturer</i>	GHIDINI BENVENUTO s.r.l.
<i>Product</i>	Steam boiler <b>MAXI 180</b>
<i>Certification</i>	

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## 1 INTRODUCTION

The present user's and maintenance manual refers to the steam boiler "Maxi 180".

It is possible to receive the latest release from our Technical Commercial Department or by visiting our website [www.ghidini-gb.it](http://www.ghidini-gb.it).

The present user's and maintenance manual contains important information for the operator's health safeguard and safety.

This manual has to be read and kept carefully, in order to be always at the operator's disposal in case of need.

Ghidini s.r.l. cannot be held liable for any damage to things or injury to persons caused by improper use of the machine in contrast with these instructions.

Any possible modifications effected on the components of the machine or its different use without prior written authorization by Ghidini s.r.l., relieve the latter of injury to persons and / or damages to things, voiding any warranty bindings, as well.

## 2 GENERAL DESCRIPTION

The steam boiler Maxi 180 is an equipment producing steam. For its operation, the machine has to be connected to an external power and water supply. This machine is composed of three separate steam boilers, granting a more versatile and cost-effective use, featuring as well a control and an automatic water feeding device.

Thanks to its frontal control panel, the boiler results to be very user-friendly and efficient.

## 3 MACHINE IDENTIFICATION

A tag placed on the cover of the electrical header indicates the type, serial number, year of construction, voltage and the supply pressure.

## 4 TECHNICAL FEATURES

TECHNICAL FEATURES											
Power supply	380/400V – 3ph – 50 Hz										
Boiler capacity	53,5 L + 53,5 L + 53,5 L										
Steam pressure	4,5 or 7 bar										
Pump motor power	1 Hp – 0,75 Kw										
Sound intensity level	< 70 dB(A)										
Working temperature	+ 5 ÷ + 80 °C										
Working humidity	90 % max.										
Storing temperature	- 20 ÷ + 50 °C										
Net dimension	950 x 1160 x 1670 mm.										
Net weight	315 Kg										
Overall dimensions (packaging included)	1240 x 1550 x 1900 mm										
Gross weight (packaging included)	405 Kg										
Boiler heater**	25 ÷ 60 Kw										
Kw	25 18 + 7*	28 18 + 10*	30 15 + 15*	30 20 + 10*	33 18 + 15*	36 18 + 18*	38 20 + 18*	42 21 + 21*	50 25 + 25*	60 30 + 30*	
Kcal/h	21500	24000	25800	25800	28400	31000	32700	36120	43030	51640	
Kgh	33 ÷ 35	37 ÷ 39	40 ÷ 42	40 ÷ 42	44 ÷ 46	48 ÷ 50	51 ÷ 53	55 ÷ 57	66 ÷ 70	80 ÷ 92	

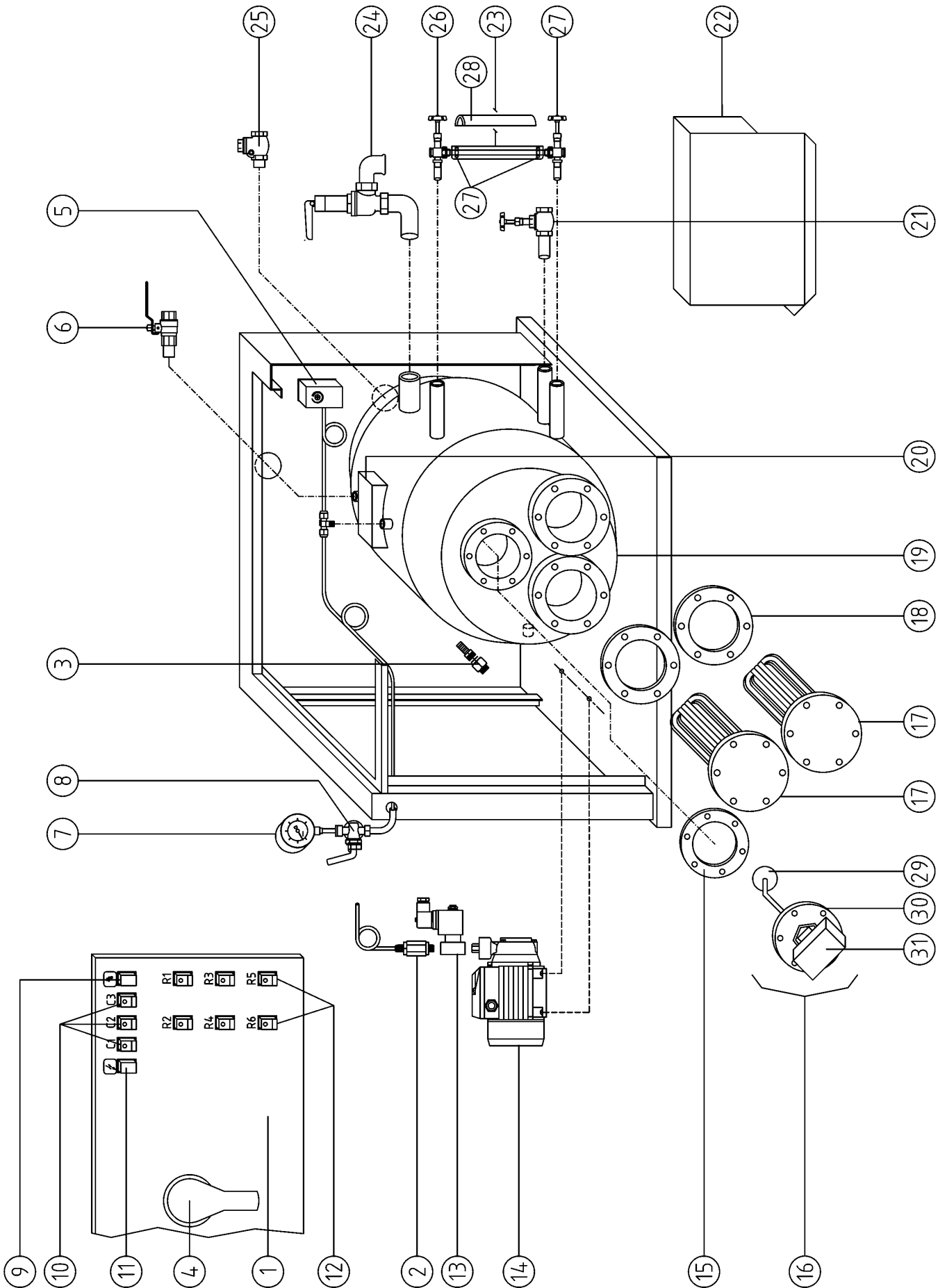
\*\* : Values regarding each single boiler.

\* : Double heater and possibility of reduced power running.

**WARNING:** The machine must not be supplied with different voltages and pressures than those indicated on the table.

# 5 MACHINE COMPONENTS

The following are the main components for each single boiler:



Pos.	ARTICLE	DESPRIPTION	Pos.	ARTICLE	DESPRIPTION
1		Front control panel	16	49A001	Complete automatic level control
2	38W001	Non return valve		49A002	Complete automatic level control
3	36E006	Hose holder 3/8" M - Ø12	17	•	Boiler heater 6 ÷ 30 Kw
4	43A065	Handle of the disconnecting switch	18	244237	Heater gasket
5	45G001	Pressure switch 0 ÷ 4,5 bar	19	200074	Boiler with PED cert.
	45G014	Pressure switch 0 ÷ 7 bar	20	264378	PED-tag
6	37A003	Cock 1/2"	21	37B001	Boiler exhaust valve
7	35A002	Pressure gauge 0 ÷ 10 bar	22	173461	Heater cover
	35A003	Pressure gauge 0 ÷ 14 bar	23	52G002	Level glass
8	37E001	Pressure gauge cock 1/4"	24	38S016	Safety valve 1" - 4,5 bar
9	43A016	Warning light for boiler heater		38S018	Safety valve 1" – 7 bar
10	43A034	Boiler switches	25	38F003	Level valve Clapet 1/2"
11	43A036	Warning light indicating presence of tension	26	37C001	Couple of level cocks
12	43A034	Heater switches	27	244243	Level glass gasket
13	39B015	Complete solenoid valve 24V 50/60Hz	28	244217	Level glass cover
14	42B024	Pump PQ81 230/400V – 50Hz – 3Ph	29	49G001	Floating ball
	42B023	Pump PQ81 230/400V – 60Hz – 3Ph	30	183270	Flange for level control
15	244236	Level control gasket	31	43D014	Level micro-switch
• : See following chart				43D013	Level micro-switch

ARTICLE	DESPRIPTION	ARTICLE	DESPRIPTION
215168	Heater 230/400V - 16,5Kw - INOX	212071	Heater 230/400V - 19,5Kw
213424	Heater 230/400V - 10Kw - INOX	212070	Heater 230/400V - 16,5Kw
215163	Heater 230/400V - 30Kw - INOX	212069	Heater 230/400V - 13,5Kw
215167	Heater 230/400V - 13,5Kw - INOX	212068	Heater 230/400V - 10,5Kw
215166	Heater 230/400V - 21Kw - INOX	215164	Heater 230/400V - 12Kw
215165	Heater 230/400V - 27Kw - INOX	212067	Heater 230/400V - 9,3Kw
212075	Heater 230/400V - 27Kw	212066	Heater 230/400V - 7,5Kw
212072	Heater 230/400V - 21Kw	212065	Heater 230/400V - 6Kw

## 6 MACHINE UNPACKING AND INSTALLATION

**ATTENTION:** The unit must be installed, opened and repaired by fully qualified technicians only.

### 6.1 UNPACKING

Find the most suitable place – sheltered and dry – where to put the machine, then remove the packaging. Make sure that the machine has not been damaged during the transport and the storage.

The packaging material does not require any special precautions for its disposal, for it is not dangerous or polluting at all. Please refer to the local regulations for its disposal.

### 6.2 MACHINE INSTALLATION

The machine has not to be anchored to the floor, except for installations on moving means.

For a correct use and operation, as well as for an easy maintenance, leave enough free space around the machine.

Do not place the machine in dangerous and/or explosive/inflammable places.

### 6.3 ELECTRICAL WIRING

The electrical wiring must be carried out as indicated in the drawing. Check that the supply voltage and the frequency correspond to those indicated on the rating plate. The dimensions of the supply cable must suit the machine absorption and comply to the current regulations. It is advisable to install a switch with fuses or a thermal circuit breaker. Put the cables in the relevant cable passage holes, then tighten. Connect the cable to the terminals of the feeder line on the control panel, as shown on the drawing of the present manual

### 6.4 WATER FEEDING AND BOILER EXHAUST

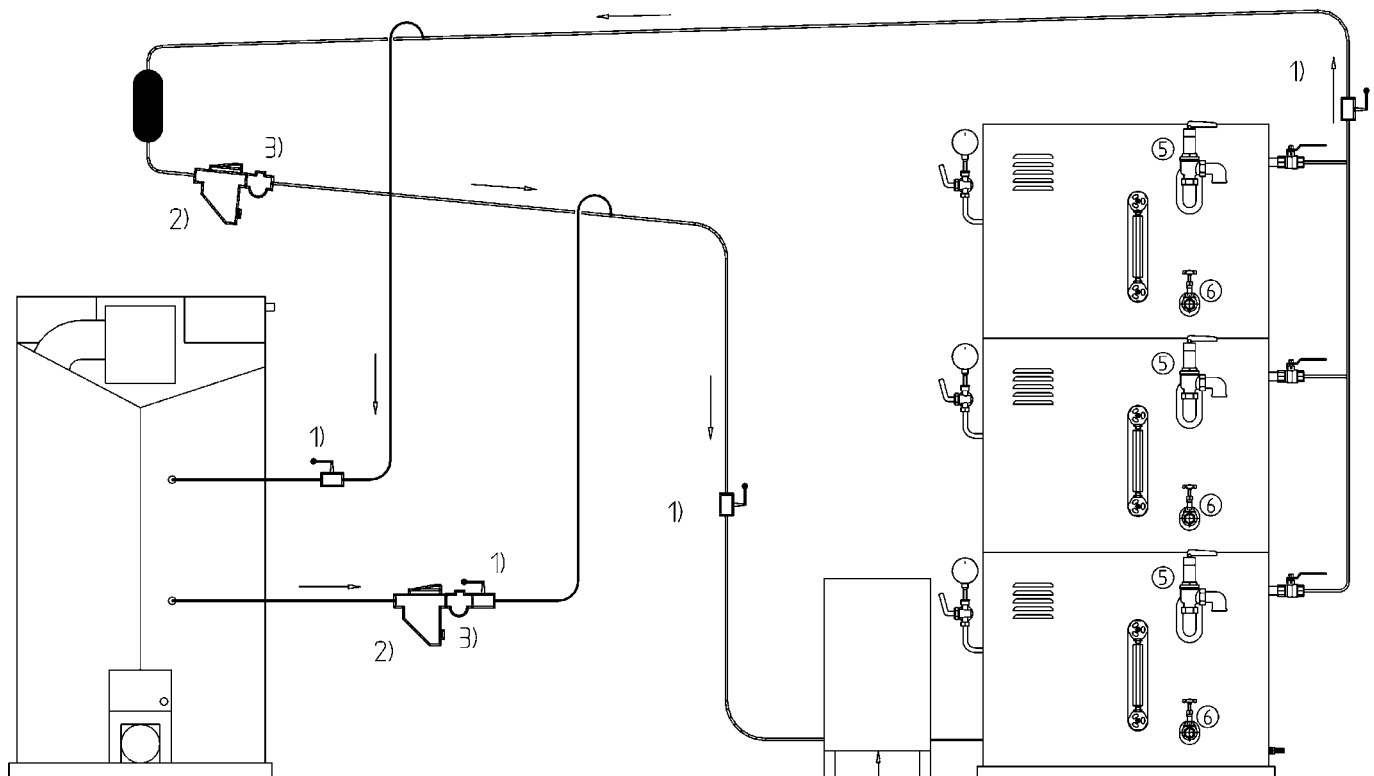
Connect the water pipe to the hose holder Ø12 of the machine. Install an on-off valve, as well as a filter on the water feeding pipe, which has to be closed every evening, in order to avoid water eddies in the boiler. Connect the exhaust valve of the boiler (thread G 1/2") to the drain.

## 6.5 STEAM SUPPLY CONNECTION

Connect a pipe of G 1/2" to the top part of the steam outlet of the central unit and put an on-off valve close to the machine. Connect a pipe (threading G 1/2") with an internal diameter of at least 15 mm to the steam inlet of the machine. For the condensation return, provide a pipe with exactly the same features of the steam pipe, and install an on-off valve close to the machine, followed by a non-return valve. For the connection to the check valve use a pipe with an internal diameter of at least 10 mm. The steam network pressure must be of max. 4,5 or 7 bar.

Do not bend the pipes at right angles, but at least with a 50 mm radius. Make sure that the pipes have an even incline, especially the one for the condensation return.

Do not use traps, fittings or gate valves with a smaller diameter than the pipe, itself. The piping must not exceed 2.5 meters. The hole of the condensation return of the machine has to be at least 150 mm higher than the water level inside the boiler.



- 1) Saracinesca - Gate valve  
Vanne - Absperrventil
- 2) Scaricatore di condensa - Condensate discharger  
Déchargeur condensation - Kondensatabscheider
- 3) Valvola di ritegno - Check valve  
Clapet de retenue - Rückschlagventil

Vasca recupero condense cod. Z24C00  
Condensate recovery tank cod. Z24C00  
Bac de récupération condensation cod. Z24C00  
Kondensatrücklaufbehälter cod. Z24C00

**ATTENTION:** After having carried out all the electrical connections, make sure that pipes and cables are protected against any possible hits and are suitably fixed and isolated.

## 7 INSTUCTIONS FOR USE

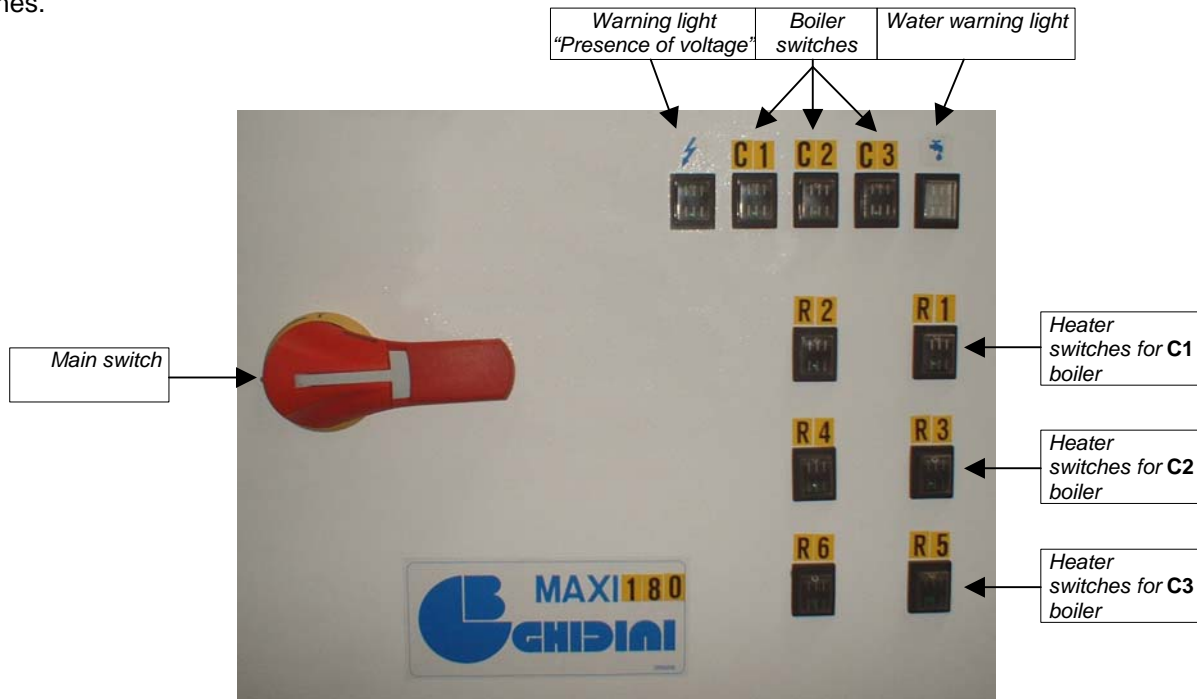
### 7.1 PUTTING INTO OPERATION

- The whole unit can be used, opened and repaired by qualified technicians only.
- It is forbidden to use the machine if flooded by liquids or in particularly aggressive or explosive/inflammable places.
- Do not ignore the dangers for the operator's health and follow the hygienic and safety regulations.
- Use always suitable pipes for the working pressure.
- Check that the electrical wiring is carried out correctly according to the current regulations, and that the fuse blocks are closed and complete of fuses.
- Check that control and safety devices of the boiler (pressure gauge, pressure switch and safety valve) are intact.
- Check that the boiler exhaust valves are correctly closed.
- Check that the direction of the motor rotation correct.

7.2 USE (for each single boiler)

- Open the on-off valve on the water feeding pipe.
- Turn on the main switch of the steam generator.
- On the control panel, the warning light signalling the presence of tension will switch on.
- Turn on the boiler switches you wish to operate (C1-C2-C3).
- The warning light of the water feeding device will switch on automatically (the water starts pouring into the boiler).
- Once the water has reached the required level (see also visual indicator), the relevant warning light switches off automatically.
- Turn on the heaters of the relevant operating boilers by means of the boiler heater switches (R1-R2-R3).
- After a few minutes the boiler reaches the working pressure of 4,5 or 7 bar (check the pressure on the pressure gauge) and the relevant warning light switches off automatically.
- The boiler is now ready to supply steam.

**WARNING:** It is advisable switch on both heater units at the same time, in order to reach the working pressure of 4,5 or 7 bar more quickly. Once this working pressure has been reached, you can switch off one of the two switches.



8 TROUBLESHOOTING AND SOLVING

The following diagnostic table indicates the main irregularities which can occur, the probable causes and their possible solutions.

In case of doubts and/or of problems which can't be solved, do not attempt to disassemble parts of the machine for the troubleshooting, but contact our Technical Department or the Ghidini-reseller, instead.

DIAGNOSTIC TABLE		
PROBLEMS	POSSIBLE CAUSES	SOLUTIONS
<b>The machine doesn't work:</b>	The main switch is turned off	<i>Turn the main switch on</i>
	The thermal circuit breaker is disconnected	<i>Connect the thermal circuit breaker</i>
<b>The water warning light is switched on and the pump keeps on running:</b>	No water pours into the boiler	<i>Check that the water tap is open</i>
		<i>Check if the water network is under pressure .</i>
		<i>Make sure that the water filter is not dirty.</i>
<b>The warning light of the heaters keeps to be switched on and the boiler doesn't reach the working pressure:</b>	Leak on the boiler exhaust	<i>Control if the exhaust valve is tightly closed.</i>
	Heaters are burnt or covered by lime	<i>Check the heaters</i>

**ATTENTION:** if the safety valve turns on, switch the boiler immediately off and contact a qualified technician. Do not stop up the breather and do not underestimate the problem, as there could be a risk of explosion.

## 9 PRECAUTIONS

Read carefully the instructions and the risks related to the use of a steam boiler. The operator has to know its working functions and must clearly understand its dangers with the help of the manual.

### **Main electrical supply**

Prior to carrying out any inspection or service on the steam boiler, it is necessary to disconnect it from the main electrical supply. Make sure, that nobody can reconnect it during the technical service.

Every installed electrical or electronic equipment must be earthed.

### **Inflammability**

Adopt all the necessary precautions to avoid any direct contact of the machine with hot materials or flames. Put fire extinguishers near the machine for an immediate intervention in event of fire.

### **Pressure / Steam**

Before each intervention, switch the boilers first off, let the pipes cool down and check that there are no residual pressures in any branch of the pneumatic/hydraulic circuit, as they could cause steam or product spurts, in case of disassembly of fittings or other components.

### **Noise**

The machine's noise level is not very high, as it remains under 70dB (A).

## 10 HAZARDOUS USE

The conformity verification according to the essential safety rules and to the provisions of the machine directive has already been carried out by filling out the specially provided checking lists, included in the technical file.

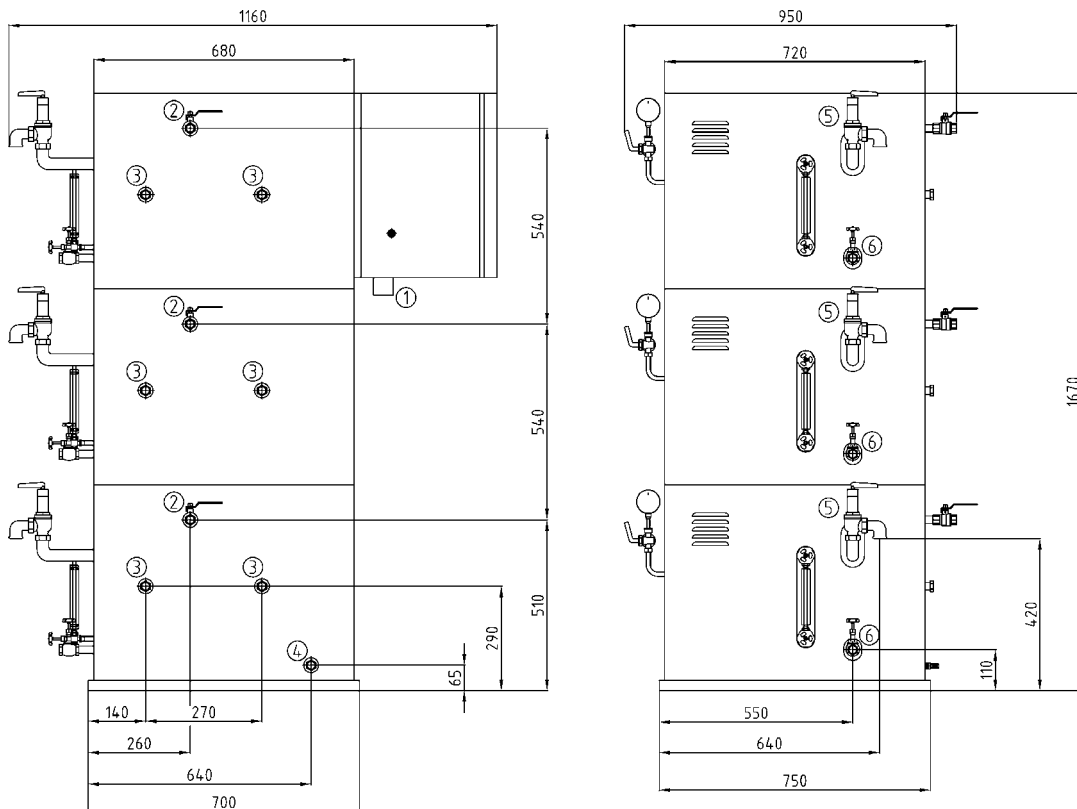
The checking lists are of two kinds:

- List of dangers (drawn from EN 1050 referring to EN 292)
- Application of the main safety features (Machine Directive– appendix. 1, part 1)

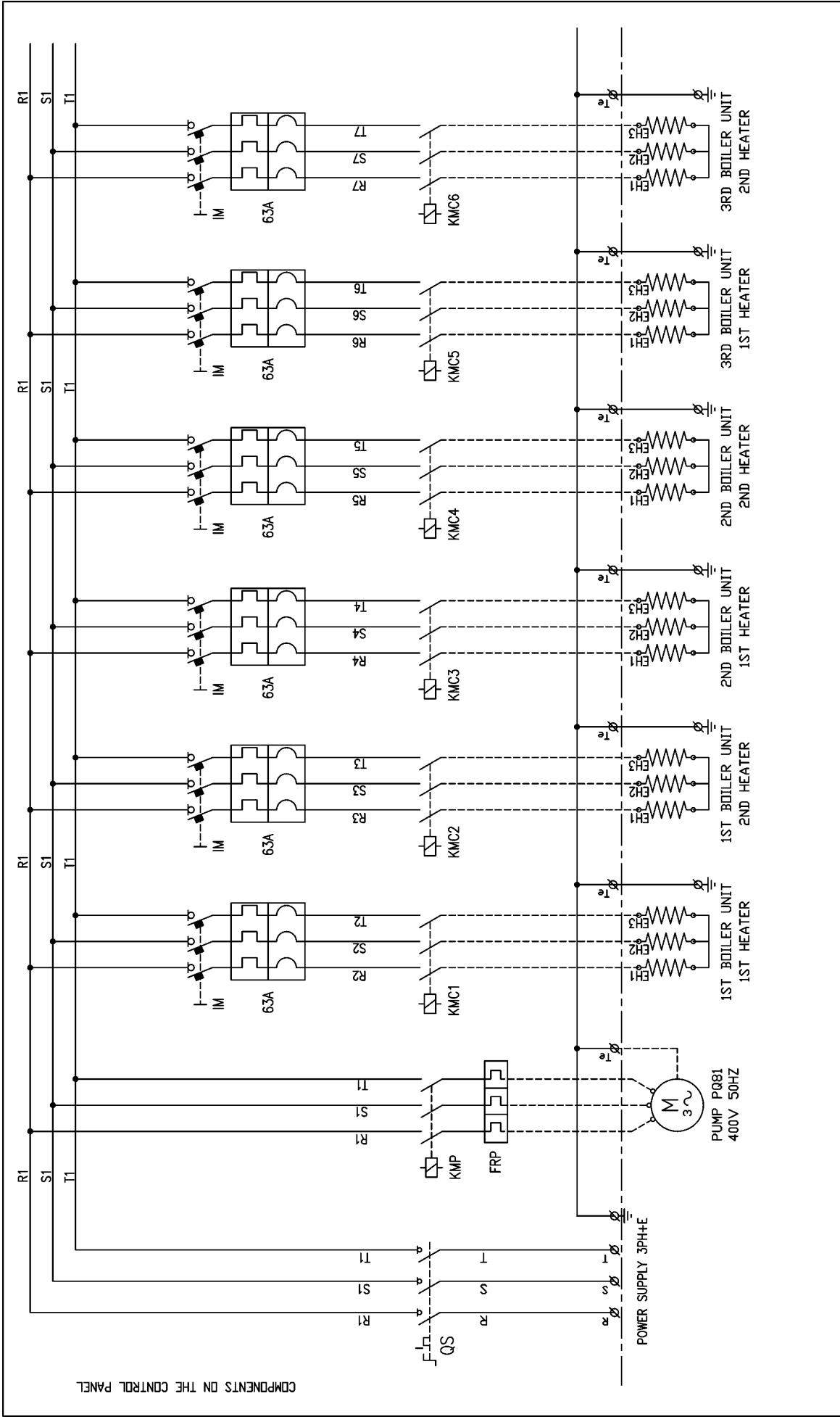
**The dangers described in the following have not been completely removed, but they have been deemed to be acceptable:**

- During the maintenance operation there could be some steam or spotting product jets at low pressure, (maintenance operation must therefore be carried out by using suitable protection devices)
- A protection against direct and indirect contacts with the steam must be provided for by the user.

## 11 OVERALL DIMENSIONS AND DRAWINGS



- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Electrical Supply Inlet Gland</li> <li>2. Steam Supply Outlet</li> <li>3. Condense Return ½”</li> </ol> | <ol style="list-style-type: none"> <li>4. Boiler water supply inlet to pump</li> <li>5. Boiler Safety Valve</li> <li>6. Boiler blowdown drain valve</li> </ol> |
|---|--|

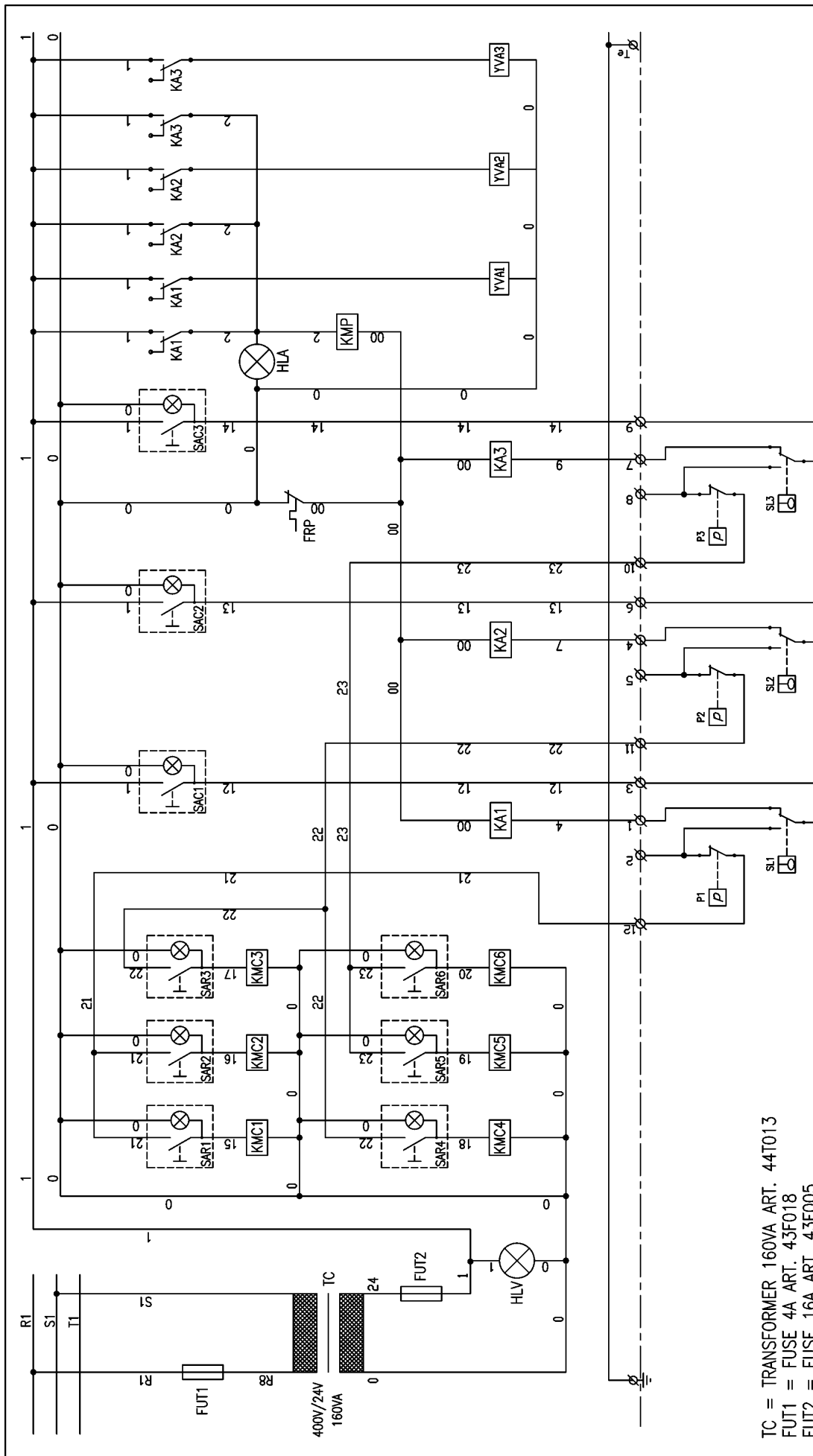


COMPONENTS ON THE CONTROL PANEL

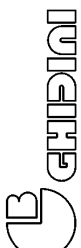
- QS = MAIN DISCONNECTING SWITCH ART. 43A059
- KMP = PUMP CONNECTOR ART. 44A007
- FRP = THERMAL RELAY ART. 44C009
- IM = THERMAL MAGNETIC/CIRCUIT BREAKER ART. 43A006
- KMC1-6 = HEATER CONTACTOR ART. 44A004
- PQ81 = THREE PHASE PUMP ART. 42B024

Denominazione Description		MAXI 180 POWER SUPPLY 3F+T 50/60 Hz THREE PHASE PUMP	
3	Data	02/03/07	
2	Dis. A.G.		
1	Cod.	SEGT2A00	
1	Appr.		
Titolo Descriz.		SCHEMA ELETTRICO ELECTRICAL WIRING	
Dis. NG Dwg.		SEGT2A00	
Foglio		1/2	
Segue		2/2	
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- TC = TRANSFORMER 160VA ART. 44T013
- FUT1 = FUSE 4A ART. 43F018
- FUT2 = FUSE 16A ART. 43F005
- FUT 1-2 = FUSE HOLDER ART. 43F017
- HLV - HLA = HEATER SWITCHES ART. 43A036
- SAR1-6 = BOILER SWITCHES ART. 43A034
- KMC1-3 = PUMP CONTROL CONTACTOR ART. 44B010
- YVA1-3 = WATER INTAKE SOLENOID VALVE ART. 39B015
- P1-3 = PRESSURE SWITCHES ART. 45G014
- SL1-3 = WATER LEVEL PROBE AT. 49A001

Denominazione Description		MAXI 180 POWER SUPPLY 3F+T 50/60 Hz	
THREE PHASE PUMP		Data	02/03/07
		Dis. A.G.	
		Cod.	SEGT2A00
Modifiche Changes	Data	Dis. NG Dwg.	SEGT2A00
	Dis. NG Dwg.	Foglio Sheet	2/2
 S. Giuliano Milanese			
Titolo Descriz.		SCHEMA ELETTRICO ELECTRICAL WIRING	

## 12 MAINTENANCE PROCEDURES

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In case of irregularities or malfunctioning, please contact the service technician for the relevant checks.

**Periodically, it is necessary to carry out the following operations:**

OPERATIONS	Working hours
Empty the boiler (*)	8
Clean the water filter	150
Clean boiler and heater	1500
Check the automatic level control	500

(\*): Empty the boiler when it reaches a pressure of 1 bar, in order to remove every possible lime residue and dirt. When the machine is switched off, open gradually the exhaust valve of the boiler. We recommend to carry out this operation before the machine starts working and not in the evening at the end of the work, because the new water, streaming into the boiler, is high in oxygen and increases therefore the corrosion process inside the drum.

This machine does not require special equipment for check and/or maintenance operations. It is however advisable to use suitable tools and personal protections in compliance with the Italian law by decree 626/94, which have to be in good conditions (Presidential Decree 547/55), in order to avoid any damages to persons or machine components.

**Make sure that the power, pneumatic and hydraulic supply are disconnected prior to any maintenance service.**

## 13 DISPOSAL

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During the maintenance on the machine, or in case of its scrapping, please dispose carefully and correctly of any polluting components, according to the local regulations. In case of scrapping, the identification rating plate and any other document have to be destroyed.

## 14 HOW TO ORDER SPARE PARTS

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Upon the spare parts request, please quote always:

Machine type, serial number, quantity of the requested spare parts, article number (these data can be read on the rating plate or supplied by the technical information of the machine and by the user's and maintenance manual).

For electrical components with a different voltage and frequency than V 230-380 50 Hz (data available on the rating plate of the faulty component), specify the right voltage and frequency after having mentioned the article number.

The technical data, the descriptions and pictures included in this manual are not binding.

The manufacturer reserves the right to make any necessary modification without notice or having to up-date the present manual.

ARTICLE	DESCRIPTION
Z24C00	Stainless steel condensation recovery tank 160 Ltrs (option)

## 15 HANDLING AND TRANSPORT

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Before its shipment, the machine is carefully packed in a wooden cage. During the shipment and storing of the machine, pay particular attention to the upside indication on the packaging (wooden cage). Upon receipt, please check that the packing is intact and store the machine in a dry place.

## 16 WARRANTY

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All Ghidini products are guaranteed for a maximum period of 12 months from delivery date as far as material and construction defects are concerned.

**The warranty is extended as follows:**

In case of malfunction of the equipment, please contact your Ghidini reseller, specifying the noticed defect, type, serial number and furthermore the operating conditions of the machine. After having received the equipment or component and after an accurate analysis, Ghidini reserve the right, whether to repair or to replace the product. If the machine is still under guarantee, the Ghidini reseller will carry out the service or replacement at Ghidini's charge.

In case the returned goods are not defective, Ghidini reserve the right to charge the customer with the met expenses (shipment, etc.).

The present warranty will be declared void, if the machine has been damaged due to improper use, negligence, normal wear, chemical corrosion, installation not according to the provided instructions and to the manufacturer's warnings.

Any modification, tampering and alteration on the machine or its components, carried out without prior written authorization by Ghidini, relieve the latter of any responsibility and annuls any warranty obligation.

The components subject to normal wear and the perishable ones are not under warranty, as well as everything which has not been previously explicitly indicated, or damages or expenses arising from defects of the same product.

The validity conditions of the guarantee provided by Ghidini are considered implicitly accepted upon purchase of the machine. Any possible changes to or derogations from the present guarantee are only valid prior written authorization by Ghidini.