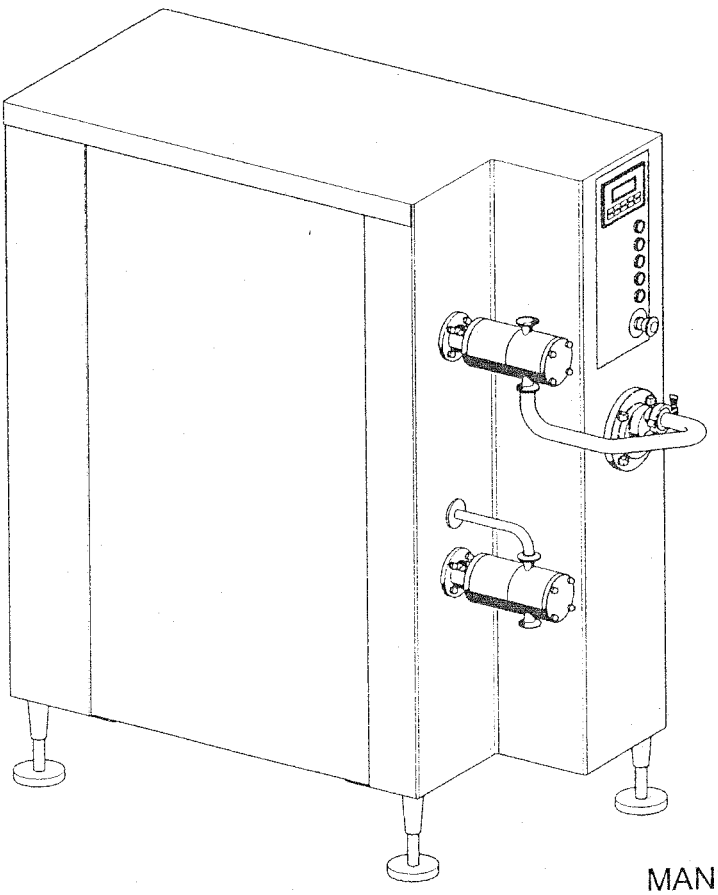
Gram Equipment
Sidam

INSTRUCTION MANUAL
SPARE PARTS

FREEZER GIF 600



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Gram Equipment
Sidam

EU certificate of conformity

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Customer: **GRAM / CHARLES WAIT PROCESS PLANT LTD**

Sidam Order No: **02/660197**

hereby certifies that:

Machine: **GIF 600**
mark

8.62.0023 **2002**
type, serial number, production year

conforms to the provisions of:

- Council Directive No. 73/23/EEC of 19th February 1973 with later alterations.
- Council Directive No. 89/336/EEC of 3rd May 1989 with later alterations.
- Council Directive of 14 June 1989 with later alterations on the approximation of the laws of the Member States relating to machinery (89/392/EEC) with special reference to Annex I on "Essential safety and health requirements relating to the design and construction of machinery".
- Council Directive No. 89/109/ECC of 25th January 1992.

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In conformity with this document the above mentioned machine has been CE-marked.

7-00-001-GB

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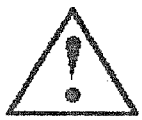
1. INTRODUCTION

1.1 SAFETY INSTRUCTIONS



WARNING: Do not operate or service your Sidam equipment or machine before having read these safety rules.

1.1.1 USER'S RESPONSIBILITY

The basic rules of safety set forth in this secton are intended as a guide for the safe operation of Sidam equipment or machines.
This general safety information, along with explicit service, maintenance and operational materials for each specific machine, make up the complete instruction manual.
All personnel, who will operate, service or be involved with this equipment in any way, should become totally familiar with this information prior to start-up.
It is the Buyer's responsibility to make certain that these procedures are followed and, should any major deviation or change in use from the original specifications be required, appropriate procedures should be established for the continued safe operation of the machine.
It is strongly recommended to contact Sidam to make certain the machine can be converted to the new use in a reasonably safe manner.
If the machine is not purchased directly at Sidam or its representative, it is the responsibility of the purchaser to ensure that the machine is according to the valid safety regulations.
It is strongly recommended that the purchaser contacts Sidam to safeguard that the machine can be operated in a reasonably safe manner.

1.1.2 SAFETY FIRST

The equipment from Sidam is designed and manufactured with due consideration and care for generally accepted safety standards.
However, the proper and safe performance of this equipment depends upon using sound and prudent operating, maintenance and servicing procedures under properly trained supervision. For your protection, and the protection of others, learn and always follow the safety rules outlined in this chapter.
Form safe working habits by reading the rules and abiding by them.
Keep this booklet handy and review it from time to time to refresh your understanding of the rules.

1.1.3 IMPORTANCE OF THE MANUAL

Personnel who work on the machine for production, cleaning, maintenance or repair, must be familiar with this manual either about instructions, or about risks and safety rules.
In particular operator must know the meaning of the safety labels placed on the machine.
For this reason the manual should be alweays available for the operators.
Personnel authorized to maintenance or repair must be informed about the existence of this manual and they must have a look at it before beginning operations.
Because the manual is subject to damages on account of use, we suggest to keep a copy in a safe and sheltered place. In any case is always possible to ask Sidam for a new copy.

1.1.4 SAFETY SIGNS

The machine has some safety signs: see the related section for their meaning.
Operators must know the meaning of these several signs before beginning operations.
Signals must be checked every day for making sure that no one is damaged or came off, or illegible anyway.
In this case this adhesive tally has to be replaced with a new one.

1.1.5 OPERATIVE ZONE

An operating zone should be established around all machines.
A brightly painted guard rail or warning stripe can be used to define the zone.
The distance from machine surface to the limit from the operative zone should be at least 2 metres.
Only operators or other authorised personnel should be within the operating zone when machine control circuits are energised or the machine is running.
No tools or other equipment should be kept within the operating zone.

1.1.6 INSTALLATION

Power sources such as electric and air should be installed by trained and authorised personnel only.
Make sure a power disconnector on/off for the power sources is installed on the machine.
The disconnector must be of a type that can be locked in the power off position and the key must be removed.
Installation must comply with all applicable codes and standards, including those established by the Directorate of Labour Inspection of the country in question.

1.1.7 INSPECTIONS

Before starting the machine

- Be absolutely positive all guards and safety devices are installed and operative.
- Make certain that all personnel are clear of the machine.
- Remove from the operating zone any materials, tools or other foreign objects that could cause injury to personnel or damage the machine.
- Make certain that the machine is in operating condition.
- Make certain all indication lights, horns, pressure gauges or other safety devices or indicators are in working order.

In operation

- Do not operate this machine until you read and understand the operating instructions and become thoroughly familiar with the machine and its controls.
- Never operate a machine while a safety device or guard is removed or disconnected.
- Always wear any required safety/hygienic equipment, such as glasses, hats, shoes, ear protection or any required safety equipment.
- Do not start the machine until all other personnel in the area have been warned and have moved outside the operating zone.
- Remove any tools or other foreign objects from the operating zone before starting.
- Absolutely do not have loose clothing, neckties, necklaces or unrestrained long hair near an operating machine.
- Do not wear rings, watches, bracelets or other jewellery near an operating machine.
- Keep the operating zone free of obstacles that could cause a person to trip or fall towards an operating machine.
- Never sit or stand on anything that may cause you to fall against the machine.
- "Horseplay" around a machine at any time is dangerous and prohibited.
- Know the emergency stop procedure for the machine.
- Never operate the machine above specified speeds, pressures or temperatures.
- Keep alert and observe indicator lights and warnings that are displayed on the machine.
- Never leave the machine unattended while in operation.
- Do not operate faulty or damaged equipment. Make certain proper service and maintenance procedures have been performed.
- Avoid placing fingers, hands, or any parts of your body into the machine or near moving parts when control circuits are energised.

After Shut-down

- Make certain all air and electric power is turned off.

1.1.8 WORKING POSITIONS

Machine is equipped with safety protections in accordance with the European laws in force and it has some devices which stop it if some anomaly happen.
However below general instructions must be observed by operators in working positions:

- Use non-skid footwear.
- Keep the floor clean.
- Do not have unrestrained hair or loose clothes.
- In case a procedural error occurs, never remove wasted/damaged products from the machine, before the control voltage is disconnected.
- Never clean the machine unless the control voltage is disconnected.
- The manual should always be available to the personnel.

1.1.9 SERVICE AND MAINTENANCE

- Do not service a machine until you are thoroughly qualified and familiar with the tasks to be performed.
- Never operate any controls while other persons are performing maintenance on the machine.
- Do not by-pass a safety device.
- Always use the proper tool for the job.
- Never open covers that house electrical components when power is on.
- Only perform maintenance on a machine in motion when properly trained and required to do so. When directed to make adjustments on machines in motion, extreme care must be taken.
- All air and pressure must be relieved before performing maintenance or loosening connection on any pressurised system.
- Air and electrical power are to be turned off unless they are absolutely required for the specific servicing being performed.
- Replace fuses only when electrical power is off (locked out).
- Do not enter a confined space without first checking for toxic fumes and providing standby personnel on the site.

1.1.10 CLEANING

Manual cleaning procedures

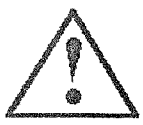
- Do not use toxic and/or flammable solvents to clean a machine.
- Turn off air and electrical power (lock out) prior to cleaning a machine, unless otherwise specified in the equipment manual.
- Keep electrical panel covers closed when washing a machine.
- Always clean up spills around machine as soon as possible.
- Never attempt to clean a machine while it is operating.

Cleaning-in-place (C.I.P.) procedures

- Make certain that all connections in the cleaning circuit are tight to avoid contact with hot water or cleaning solutions.
- When the cleaning cycle is controlled from a remote or automated control centre, establish fail-safe procedures to avoid automatic start-up while servicing equipment in the circuit.
- On equipment which includes manways, make certain covers are closed, latched and nobody is left behind prior to starting the cleaning cycle.

1.1.11 ELECTRIC SYSTEM

- All electrical/electronic maintenance and service should be performed by trained and authorised electricians only.
- Always assume that power is on and treat all conditions as live. This practice assures a cautious approach which may prevent an accident or injury.
- To remove the load from circuit or equipment, open disconnecter or breaker and lock in open position.
- Make certain that the circuit is open by using the proper test equipment.
- **NOTE:** Test equipment must be checked at regular intervals.
- Capacitors must be given time to discharge, otherwise it should be done manually with care.
- There may be circumstances where "trouble-shooting" on live equipment may be required. Under such conditions, special précautions must be taken as follows:
- Make certain your tools and body are clear of the ground.
- Extra safety measures should be taken in damp areas.
- Be alert and avoid any outside distractions.
- Before applying power to any equipment, make certain that all personnel are clear of the machine.
- Control panel doors should be open only when checking out the electrical equipment or doing electrical connections.
- All electrical apparatus must be properly grounded and overload protected.
- All electrical connections should be protected by confining them within a sealed junction box.

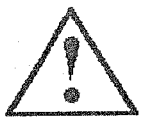


WARNING: Do not disconnect the motors (pumps) connected to inverters before 10 min. have passed since machine shut down.

1.1.12 HYDRAULIC SYSTEM

- Never operate a hydraulic system unless covers, safety devices and indicators are operating and in place.
- Never operate a hydraulic system above the pressure specified.
- Hydraulic fluid should never be allowed to collect on floors or equipment outside foreseen drip-trays.
- Skin contact with hydraulic fluid should be avoided. Always wear proper protective clothing when handling hydraulic fluid.
- Never loosen any hydraulic connection when the system is under pressure.
- Never operate a machine that has leaks in the hydraulic system.
- A hydraulic system retains the power to complete its intended motion even after the power is off. Care is required to avoid injury.

1.1.13 PNEUMATIC SYSTEM



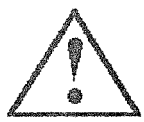
WARNING: We require our customers to supply air at a dew point of max 2°C to avoid condensation, cause of unproper functioning, rust and so on, especially when the air is used in delicate electronic systems as the measurers of course air for freezer.
If this is not available, the customer should install an air dryer.

- Never operate an air system unless covers, safety devices and controls are operating and in place.
- Air operated mechanical devices may operate unexpected from a remote control signal.
- If an air supply system exceeds design limits, connections could come apart and move around uncontrolled.
- Never loosen any pneumatic connection when the system is under pressure.
- Discharge and air leaks should never be allowed above product area due to oil mist.
- A pneumatic system retains the power to complete its intended motion even after the power is off. Care is required to avoid injury.

1.1.14 FREEZING SYSTEM

- Maintenance and service of the refrigeration system must be performed by trained and authorised service personnel only.
- Never valve off a vessel filled with liquid refrigerant, unless it is protected with a properly sized valve. Never expose refrigerant vessels, drums, or bottles to excessive heat.
- Develop an "emergency procedures plan" and arrange for rehearsals and training of personnel.
- Make sure fire extinguishers are in operating condition and that sufficient numbers are available in the right places.
- Always wear a gas mask when making repairs in an area where a leak might occur.

1.1.15 SAFETY OF GIF FREEZERS



WARNING: The cladding plates must be mounted when operating the freezer and should never be dismounted while the freezer is working.

Sidam's GIF freezers are manufactured in accordance with internationally recognised safety measures.
They havew been designed with the operator and maintenance personnel in mind.
However, as with all production equipment, it has to be used in accordance with basic safety precautions.
Sidam urges that all production personnel carefully consider the following precautions during normal operation of the plant:

- Never open the lateral and posterior operator control panel nor the main electrical panel unless the power has been turned off.
- Never operate the machine if panels or doors are open or misplaced.
- Never modify the plant nor any of its electrical functions and never secure any electrical interlock device to function in any manner other than its designed function.
- Always manouvre the dasher and its blades with the utmost care and precaution - the dasher blades are extremely sharp! - when assembling, transporting or installing.

1.1.16 RISKS DURING FUNCTIONING

RISKS	HOW TO AVOID ACCIDENTS	IF AN ACCIDENT HAS HAPPENED
The metal components and the tubing get very cold during the production and very hot when cleaning the freezer. There's the risk of frostbites and burns.	These parts should never be touched when freezer is working.	In both cases of burns and frostbites, pour immediately much water on the affected parts. Summon a doctor.
Pay attention when opening the cooling installation valves because leaks might occur.	The valves must often be checked to avoid leaks. Leakages must be immediately reported to the person responsible for cooling installation.	If the refrigerant is leaking, the area must be evacuated. The operator responsible for the cooling installations must be summoned. Further information is available in the "General Safety Instructions" section.

1.1.17 RISKS DURING CLEANING

RISKS	HOW TO AVOID ACCIDENTS	IF AN ACCIDENT HAS HAPPENED
The personnel could get hurt when trying to reach the freezer open bottom.	Be careful when carrying out the cleaning underneath the freezer. The main switch must be off when working below the machine.	Summon a doctor in case a person has been seriously injured.
Pay attention when opening the valves as leaks might occur.	The valves must be frequently checked to avoid leaks. Leakages must be immediately reported to the person responsible for the cooling installations.	If a refrigerant leak has happened, evacuate the area. The operator responsible for the cooling installations must be summoned. For further information about the refrigerants, see what explained in the "General Safety Instructions" chapter.
When carrying out a C.I.P. cleaning, very corrosive cleaning materials are usually employed.	Be careful when working with cleaning materials. Use gloves and other safety garments.	Should any part of the body get in contact with the cleaning material, rinse liberally with water.
The control panel and other electrical components must not be flushed. Water and cleaning materials might damage the electrical installation. People could be exposed to danger if the the electrical installation was damaged.	Be careful during the cleaning of the freezer.	The mains voltage must be disconnected. Summon a qualified electrician.

1.1.18 SAFETY SIGNS

Safety signs to be stuck onto a Sidam freezer, are shown below.
A safety sign must be replaced by a new one when:

1) it has come off;
2) it is worn;
3) it is loose;
4) it is illegible in any way;

The surface has to be dry and clean when sticking a new sign onto the machine.
When re-ordering new signs please state the article number placed in the bottom right-hand corner of the sign.

1.1.19 SAFETY SIGNS POSITION

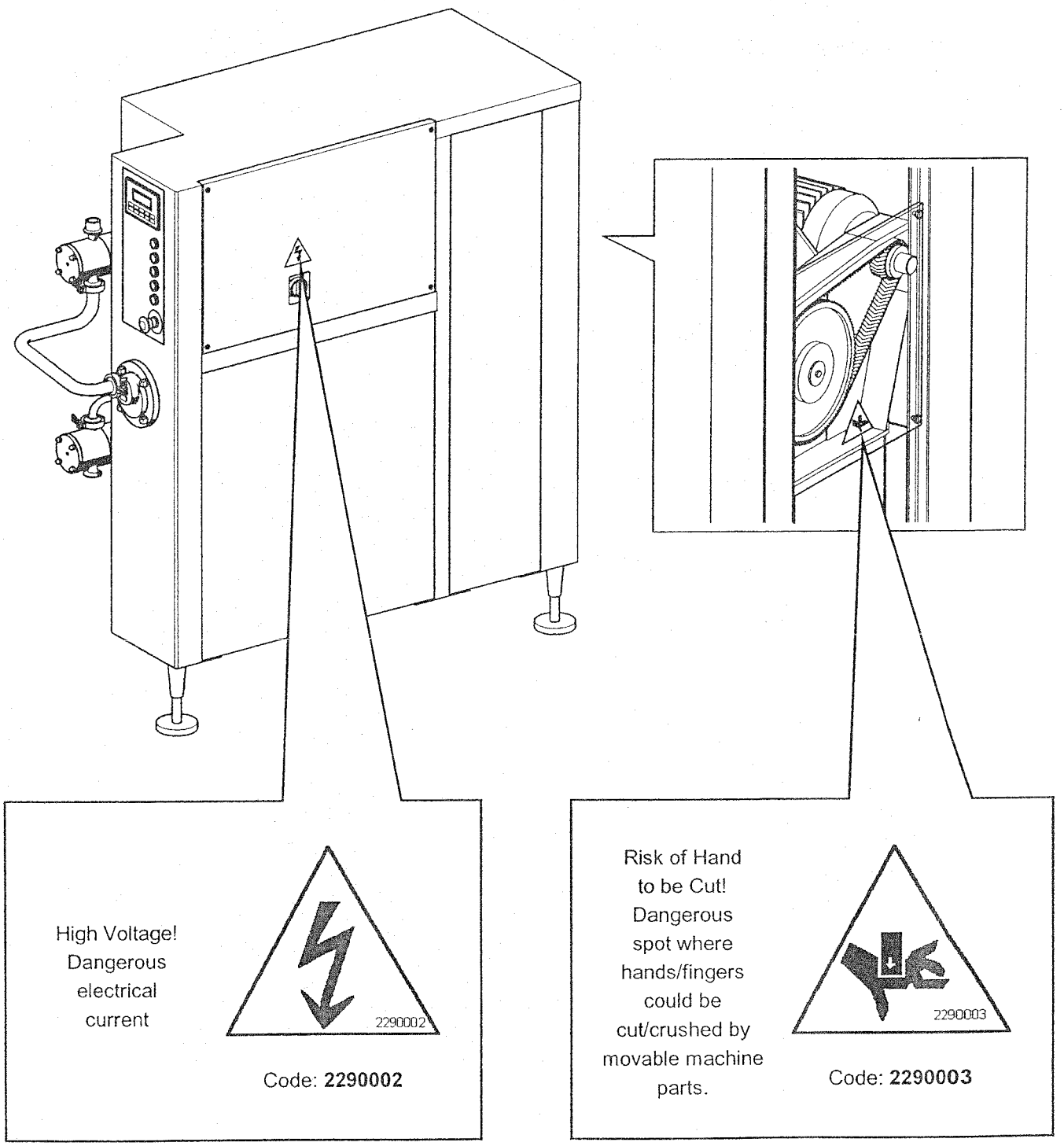


Fig. 1-1 – Safety signs position

1.2 MANUAL

1.2.1 INFORMATION ABOUT THE MANUAL

We hope that the information included in this manual can help You.
It aims to give an explanation about the right and safe use of Your machine and are based on data as well as on our best up-to-date knowledge.
Read carefully what is written on this manual, included the recommendations and suggestments, as well as the sale and guarantee conditions.
Sidam has edited this manual with the maximum care, trying to make it as complete and clear as possible. However, should any point be incomplete or unclear, please contact us without hesitation.

1.2.2 MANUAL IMPORTANCE

This instruction manual has been conceived to help You install correctly, set-up, use and maintain Your machine.
Special importance has been afforded to the operators safety, describing in detail the protection devices and the procedures for a safe use of the machine.
We ask You to consider this manual as an actual part of the machine, in order to obtain the best performances.
We suggest in particolar to:

- Keep the manual for the whole life of the product;
- Make sure that any possible revision is included in the text;
- Make this manual be easily available for consultation by the various operators (if necessary, make a copy of the needed parts);
- Deliver the manual to any other new user or step-owner of the machine.

1.2.3 BASIC WARNINGS

- Figures and drawings have to be intended only as generic references and are not necessarily thorough in every detail.
- Dimensions and characteristics reported in this manual are not binding and they could be modified without notice.
- No part of this manual can be reproduced or transmitted to outside parties without written consent by SIDAM S.r.l..

1.2.4 CONSULTATION

Structure

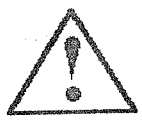
The manual is divided in three sections:

1) Installation, use and maintenance instructions, as well as those about the risk zones signalings and safety rules.
2) Spare parts catalogue.
3) Information about complex commercial components installed on the machine (the description of the commercial components installed on the machine is available in the supplied cd-rom, attached to this manual).

Warning notes

In addition to parts enhanced to give special prominence to characteristics or technical infotmation, the following notes are very important:

- Safety notes, that refer to possible dangers for the operators and to the rules to minimize the risks, introduced by the signal:



- Warning notes, that refer to operations to be done or avoided for a good functioning of the machine, introduced by the signal:

1.2.5 CONSERVATION

We advise Yuo to keep this manual with the maximum care for the whole life of the machine.
Some useful suggestions for a perfect conservation are:

- Shelter the manual against humidity and heat;
- Use the manual correctly, not to damage, neither wholly nor partly, its content;
- Do not remove of tear for any reason parts of the manual;
- Make a copy of the parts needed for consultation by the various operators;
- Do not overwrite for any reason parts of the manual, unless in case of late revisions by SIDAM S.r.l.

2. TECHNICAL DATA AND IDENTIFICATION

2.1 IDENTIFICATION DATA

A tally stuck on the machine reports the data which unequivocally identify your plant or equipment. These data are the following:

1) type and model;
2) order number;
3) power supply;
4) year of construction.

COSTRUTTORE MANUFACTURER
FABRICANT BAUER

Sidam

INDIRIZZO ADDRESS ADRESSE ADRESSE:
VIA FABIO FILZI 37
20032 CORMANO (MI) - ITALY

MACCHINA EQUIPMENT MACHINE MACHINE	FREEZER GIF 600
MATRICOLA SERIAL NUMBER MATRICULE REGISTRIENNUMMER	
ALIMENTAZIONE POWER SUPPLY ALIMENTATION SPEISUNG	
ANNO YEAR ANNÉE JAHR	

In case you contact Sidam for information or spare parts concerning this machine, inform us these data in order to get everything you require as soon as possible and error-free.

The voltage of your machine is properly marked. Be certain that your power supply is the same before carrying out the installation.

2.2 TECHNICAL DATA

Performance		
Capacity (ice cream at 100% overrun; standard mix with 36% of solid part and inlet temperature +4 °C; outlet temperature up to –6 °C)	120-600 lt/h	
Freezing circuit		
Freezing capacity (condensation at 15 bar)	14 kW	
Refrigerant	R404A	
Quantity of refrigerant	3,5 kg	
Consumptions	400 V / 50 Hz	230 V / 60 Hz
Compressor	10 kW – 16 A	10 kW – 35 A
Dasher motor	7,5 kW – 15 A – 4 poles	5,5 kW – 22 A – 6 poles
Pumps motor	2 x 0,75 kW – 1,5 A	2 x 0,75 kW – 3,3 A
Condensing water (tower water, 27 °C) – Condenser pressure drop	3,5 m^3/h – 1,2 bar	
Condensing water (town water, 18 °C) – Condenser pressure drop	1 m^3/h - 0.3 bar	
Air (ice cream at 100% overrun)	Max 400 lt/h	
Required air pressure	Min. 5 bar	
Dimensions		
Height	1600 ± 40 mm (1850 mm stand)	
Length	1450 mm (1800 mm stand)	
Width	600 mm (800 mm stand)	
Weight		
Gross weight	~ 750 kg	
Net weight	~ 560 kg	
Connections		
Mix inlet	1 ½" clamp	
Ice cream outlet	1 ½" clamp	
Air inlet	8 mm	
Condensing water inlet	1" gas	
Condensing water oulet	1" gas	

2.3 OVERALL DIMENSIONS

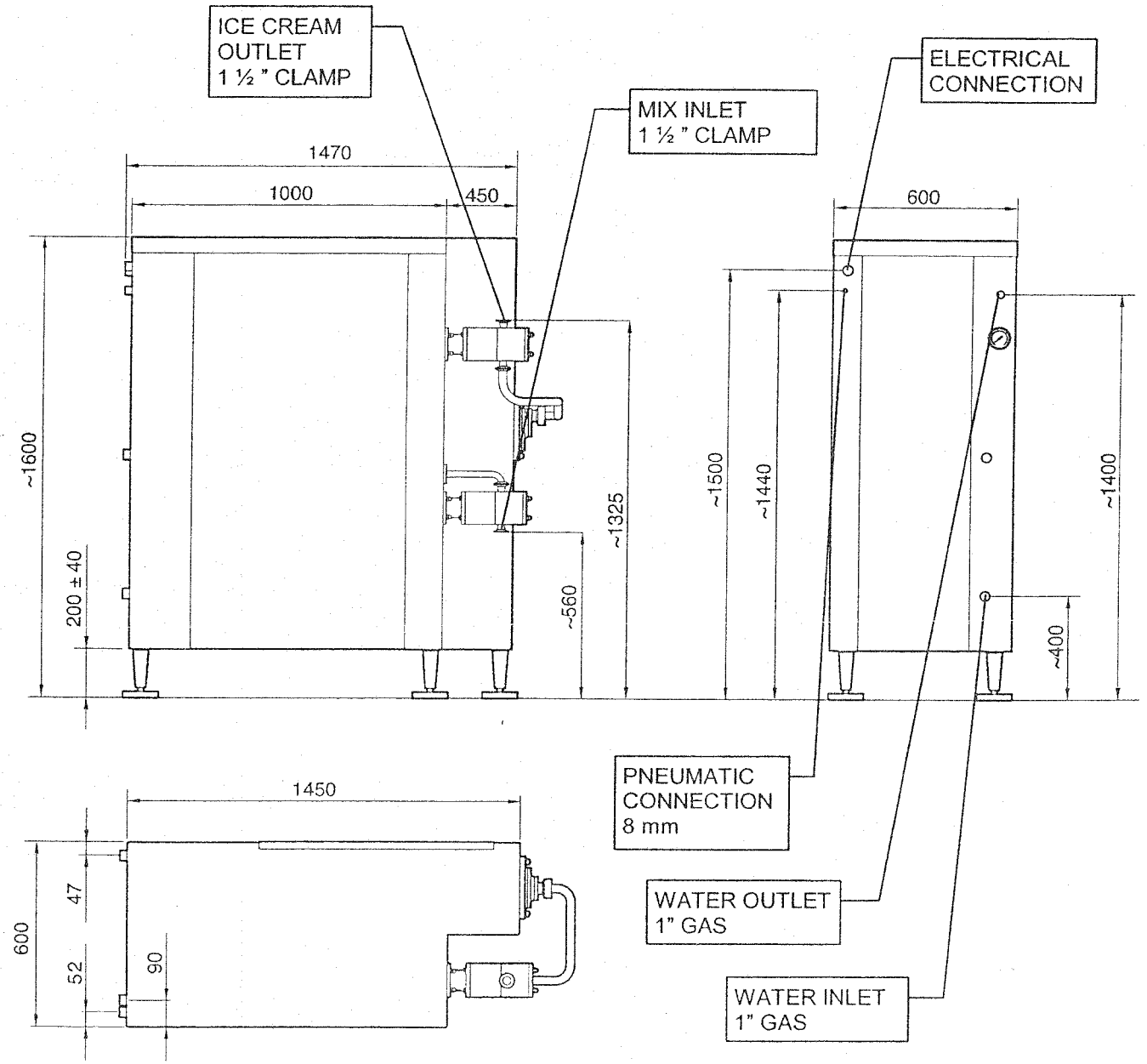


Fig. 2-1 – Overall dimensions

2.4 WORK ENVIRONMENTAL LIMITS

The machine is quilified to work within the following environmental limits:
Temperature: from 4°C to 40°C;
Humidity: from 20% to 80%;
Height from the sea level: up to 1000 m.

NOTE: Our company declines any responsibility for damages deriving from not following the warnings above.

2.5 COMPLIANCE

The machine has been built according to the international standards and to the hygienic-sanitary rules regarding food machines.
In particolar, SIDAM abuts, through the Declaration of Conformity supplied together with the machine, that the productive unit has been projected and built according to what is indicated in the Directive 89/392/CE (Machines Directive) and complying with the rules mentioned above concerning it.

2.6 SOUNDING EMISSION LEVEL

During production, the level of sounding emission results to be inferior to 85 dB (A).
The measure of that value has been surveyed following the instructions in the directive EN 98/37/CE (1 meter off the machine and 1,60 m above the ground) and employing the methodology foreseen by the standard UNI EN ISO 11202.

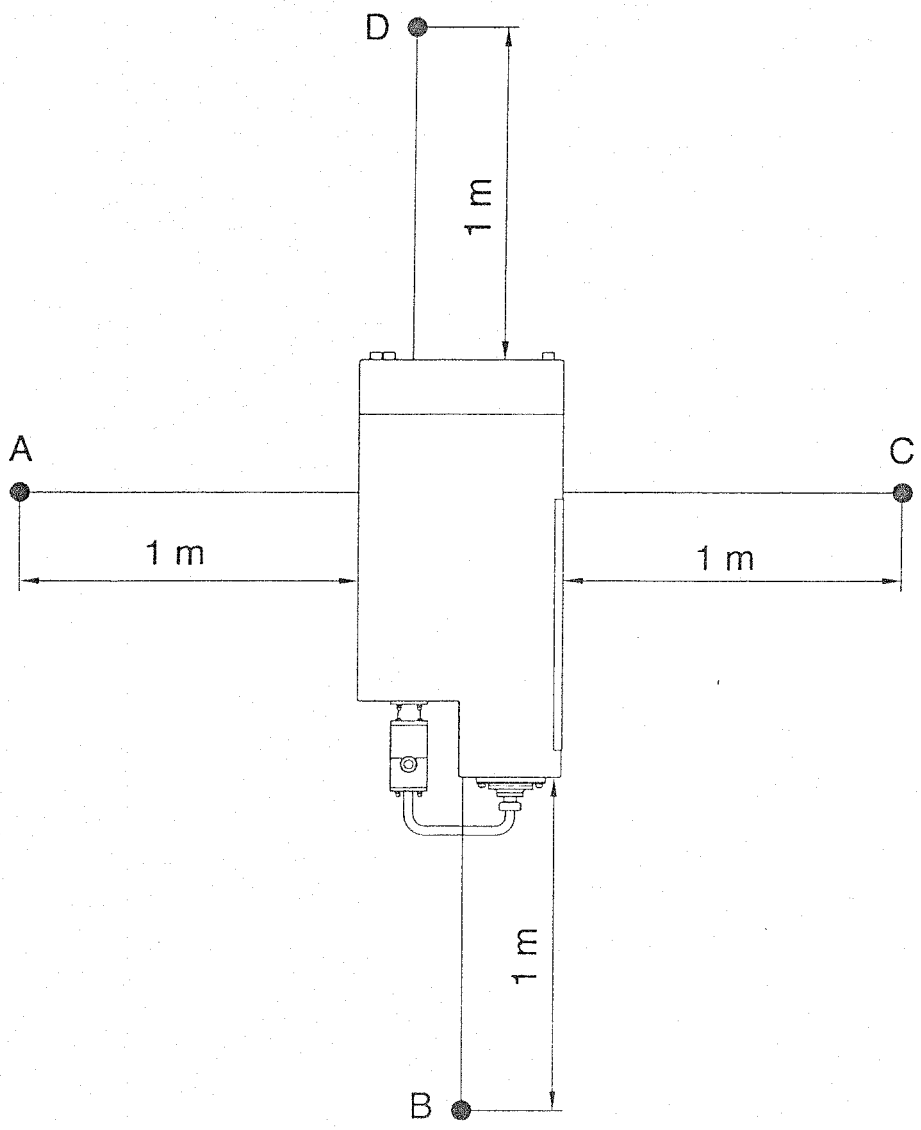


Fig. 2-2 – Sounding emission level

3. DESCRIPTION OF THE MACHINE

3.1 GENERAL DESCRIPTION

The machine tasks are: to mix sanitary air up with the ice cream mixture supplied to the machine to reach the desired volume increase; to cool down the resulting mixture added with air in order to obtain the viscous product which we call ice cream; to supply the sufficient pressure to convey the ice cream to the use, making it flow through an adequate pipe.

The GIF continuous freezers serie has been projected with a phylosophy horiented to the maximum ease.

Keeping tight to the ice cream production basis, the GIF freezers are able to deliver a stiff, dry and smooth product fit for packing, or a soft and flowable one to be dosed in moulds.

A modular design allows complete access to all the components of these freezers.

- The cabinet is wholly made with stainless steel with legs adjustable in height. The panels are easily removable to permit complete access to all the mechanical, electrical and freezing components.
- All the parts in contact with the product are made with materials compatible with food, normally with stainless steel. This composition hinders the contamination, assuring years of correct functioning without maintenance problems.

To carry out the functions above, the machine comprises inside:

- A pump (Fig. 3-1 pos. 2) that receives the mixture from the maturing vats and sends it towards the freezing cylinder (Fig. 3-2 pos. 4), adding sanitary (Fig. 3-2 pos. 3) air.
- A set of filters (Fig. 3-1 pos. 1) that allow to obtain sanitary air from the compressed air mains.
- A freezing cylinder (Fig. 3-2 pos. 4), with whipping shaft, scraping blades and lip seal, within which the air is uniformly scattered in the mixture and the product obtained this way is cooled down until it becomes pasty. The whipping shaft is operated by a motor (Fig. 3-2 pos. 5) with belt transmission (Fig. 3-2 pos. 7).
- A freezing installation (Fig. 3-2 pos. 6) connected to the outer wall of the freezing cylinder to supply the necessary cooling.
- Electrical and pneumatic installation controlling all the functions of the machine kitted with an operator panel with display that allows to read and modify the functioning conditions and to get an explanation of the alarm signs.

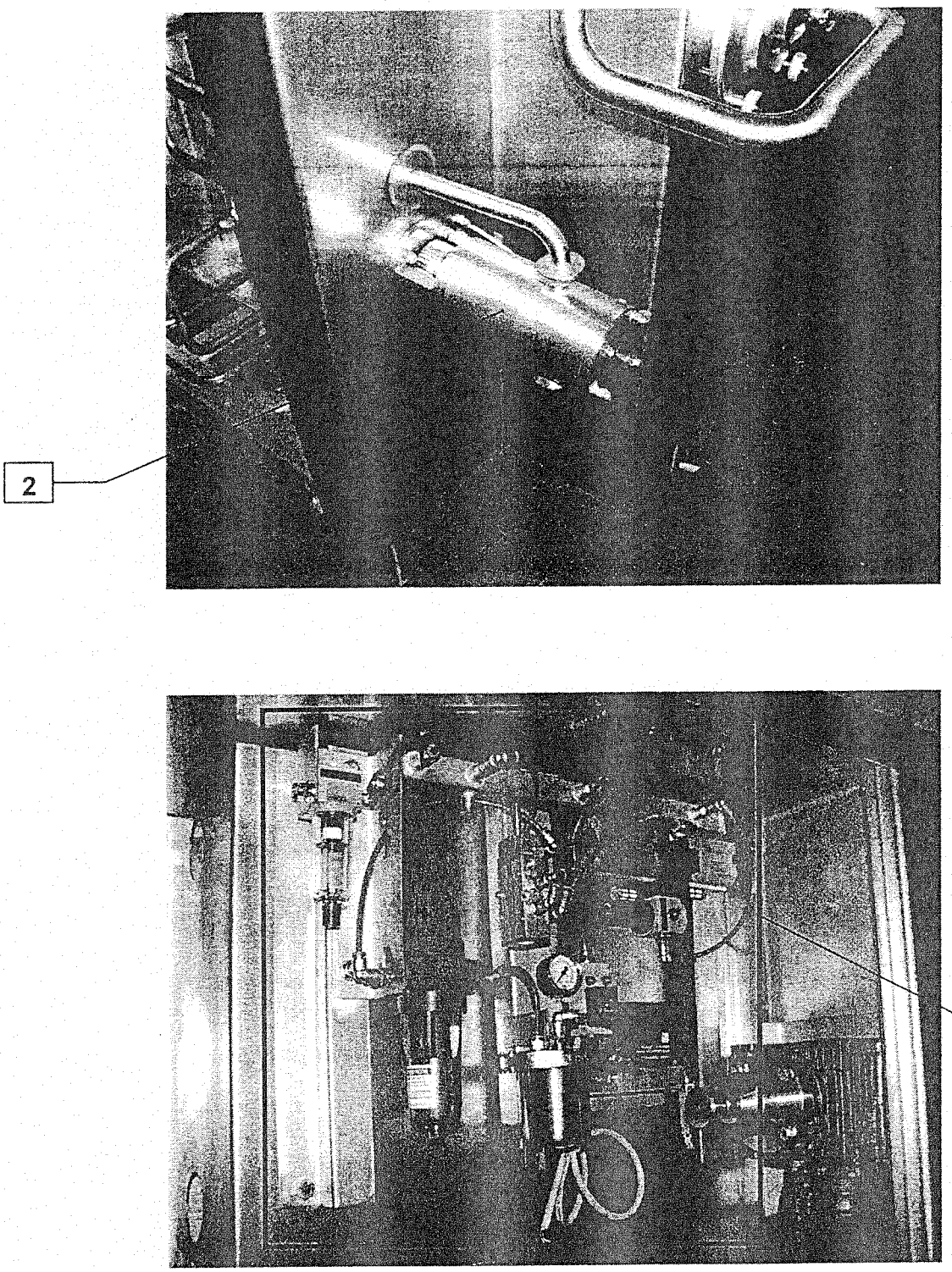


Fig. 3-1 – General description

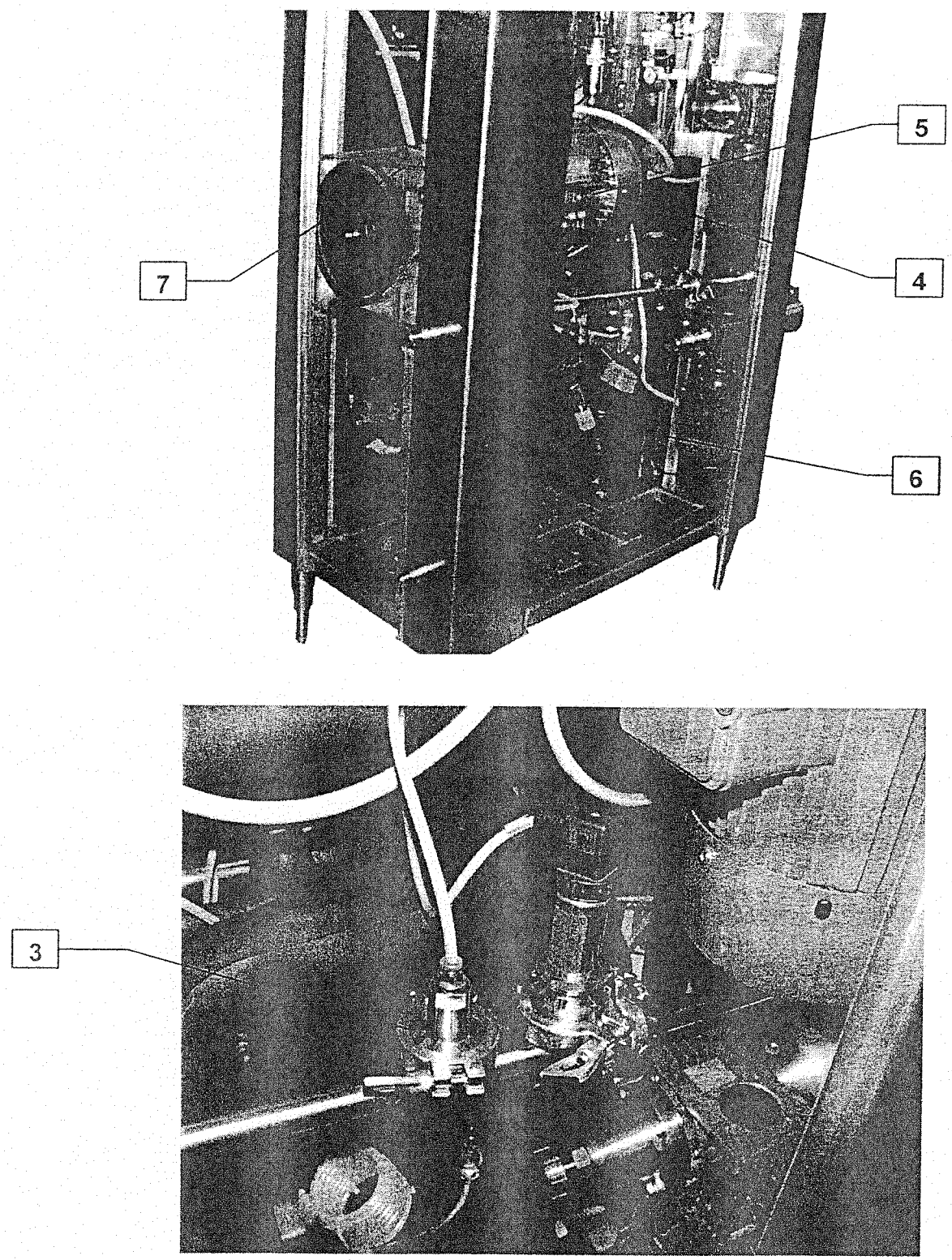


Fig. 3-2 – General description

3.2 FREEZING CYLINDER

The freezing cylinder (Fig. 3-3 pos. 1) placed in the machine, provides to batch the mixture supplied by the costumer with sanitary air introduced in the machine, and to freeze the whole new mixture to obtain a type of ice cream coming out of the pump (Fig. 3-3 pos. 2) that complies with the temperature and viscosity values required.
It is positioned horizontally inside the machine: it is made by a thick layer chrome plated pipe with interspace and by a whipping shaft.
A freezing gas is made flow through the cylinder interspace, during the production, to lower the ice cream temperature down to the required value.
Apart from improving the level of batching of mixture and sanitary air, the whipping shaft, working with eccentric rotation, provides to hinder the ice cream bunching over the cylinder walls thanks to scraping blades.
To guarantee a good long-lasting functioning of the machine, it is necessary to pay much attention to the assembly and to the sharpening conditions of the scraping blades. Pay extreme attention also not to damage the chrome plated wall inside the cylinder.

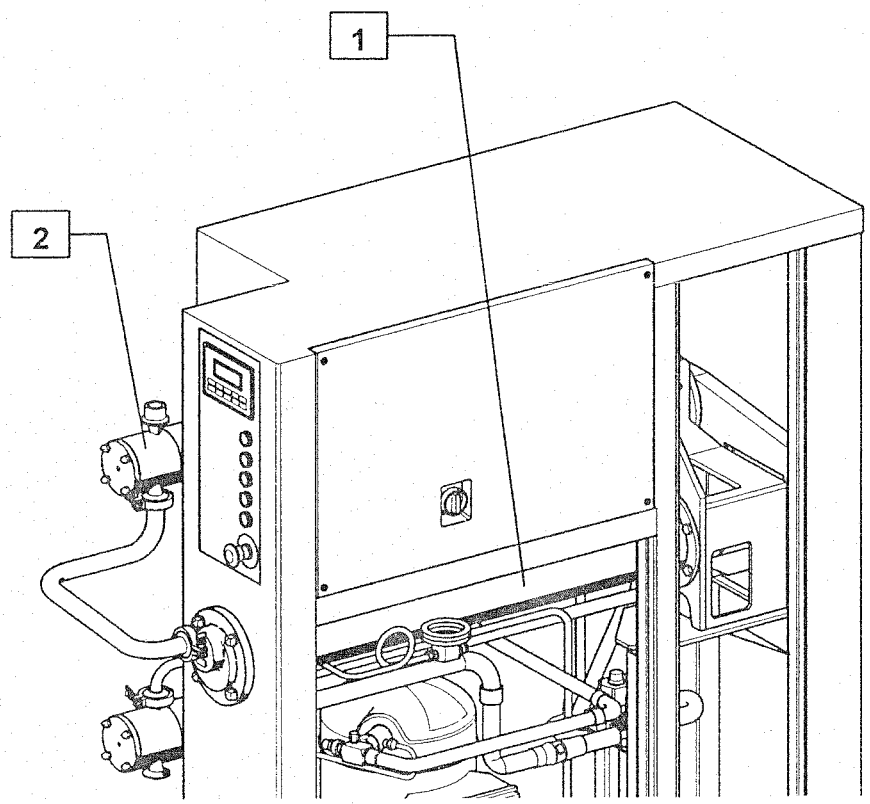


Fig. 3-3 – Freezing cylinder

3.3 PUMPS

The machine is equipped with two pumps.
The first one (Fig. 3-4 pos. 1) introduces the mixture supplied by the costumer into the freezing cylinder, whereas the second one (Fig. 3-4 pos. 2) sends ice cream to the freezing cylinder of the working machine through the feeding pipe (not supplied).
The pumps are operated by ratiomotors (Fig. 3-4 pos. 3), each of which is controlled by an inverter (permitting this way the automatic speed control).
The pumps are kitted with a pneumatic drive by-pass that allows a clear crossing of the cleaning solution during the CIP washing and the zero setting of the pressure inside the cylinder when turning the machine off.

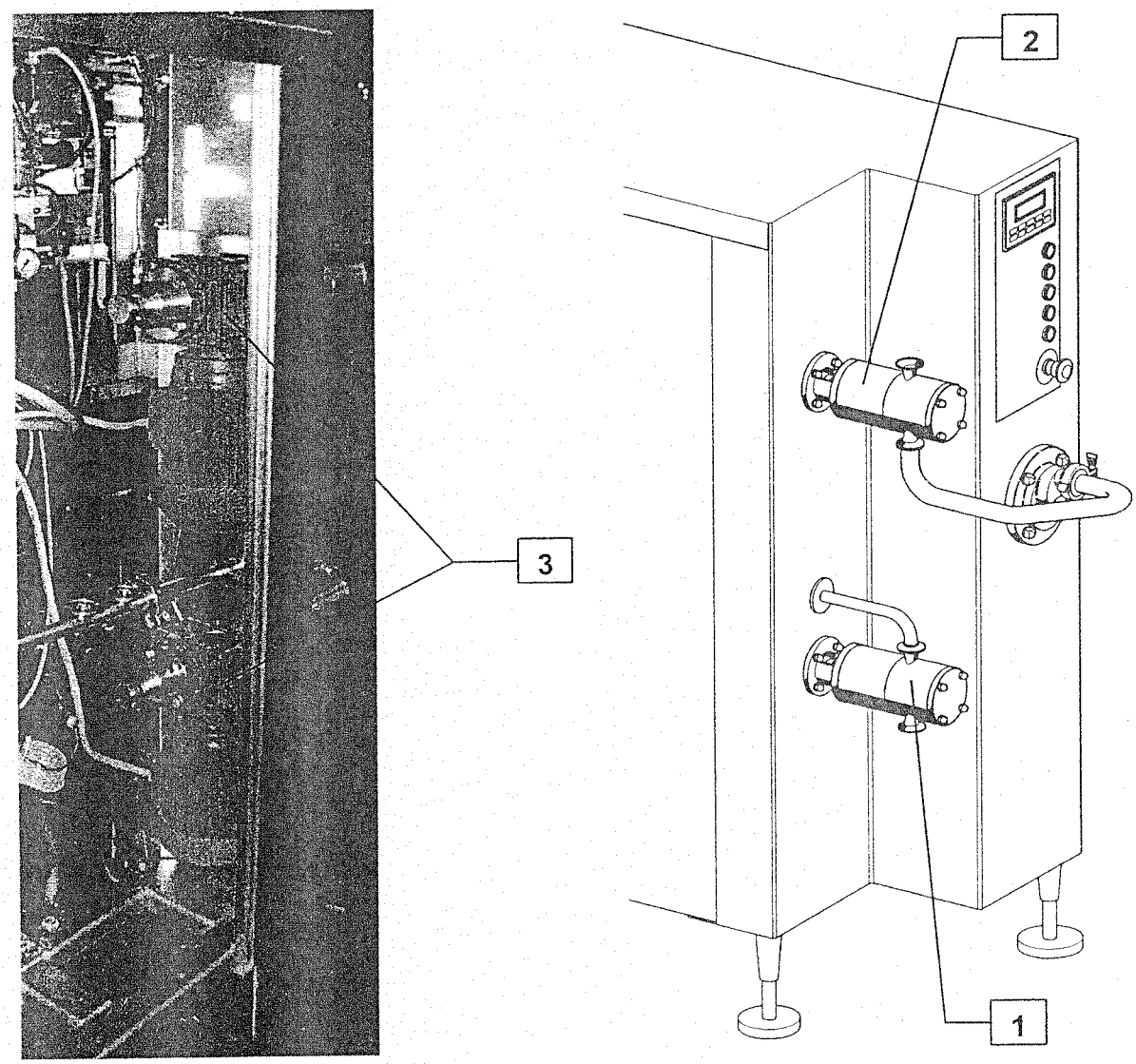


Fig. 3-4 – Pumps

3.4 PNEUMATIC INSTALLATION

The compressed air supplied to the machine (the machine doesn't include an air compressor) passes through a 1° filter (Fig. 3-5 pos. 1), a pressure multiplier (Fig. 3-5 pos. 2) to obtain the fit pressure to introduce air into the mixture, a 2° filtering set (Fig. 3-5 pos. 3) that carries out a separating-the-oil straining and an activated charcoals filtering to remove any oil steam and bad smells.

Eventually, before being introduced into the mix, the air flows through a sterilizing microporous filter (Fig. 3-5 pos. 4) specifically dimensioned to stop particles with typical bacteria dimensions.

The air is introduced into the duct through a flow adjusting valve (Fig. 3-5 pos. 5) that adjusts the quantity of air to mix according to the freezer capacity.

The pneumatic installation comprises also a pressure pickup (Fig. 3-5 pos. 6), which supplies an alarm when the mains compressed air pressure is too low, and the solenoid valve operating the by-passes of the CIP washing pumps.

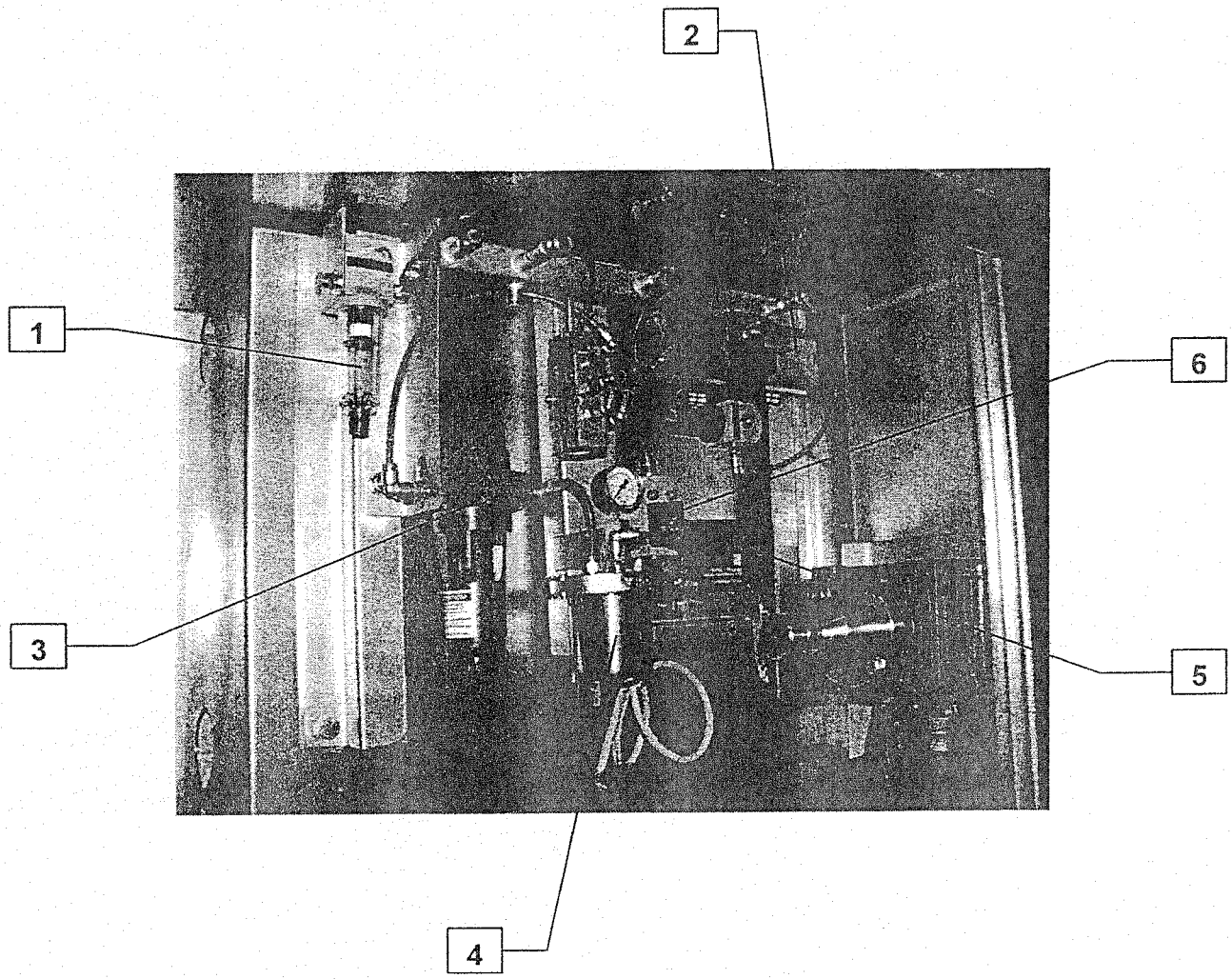


Fig. 3-5 – Pneumatic installation

3.5 FREEZING CYLINDER

It is composed of a frosting cylinder (Fig. 3-6 pos. 1) (evaporator), a rotatory Copeland Scroll (Fig. 3-6 pos. 2) compressor, a high efficiency condenser, the thermostatic valve and various minor fittings.
All these components are specifically foreseen and dimensioned for the low temperature functioning with R404A refrigerant gas. The cooling function is executed through gas compression: therefore, the compressor pumps the gas into the condenser where it is cooled and liquefied; the liquid gas obtained this way passes through the thermostatic valve and vaporizes in the frosting cylinder (Fig. 3-6 pos. 1) (turning back to the gaseous state) just to reach then the compressor and start the cycle again.
The vaporization of the gas in the frosting cylinder subtracts heat from the ice cream mixture, which cools down; this heat is then eliminated in the condenser yielding it to the cooling water, which gets warmed this way.
On the condenser water circuit is mounted a pressure adjusting valve that keeps the condensation pressure constant, whatever the water temperature value is.

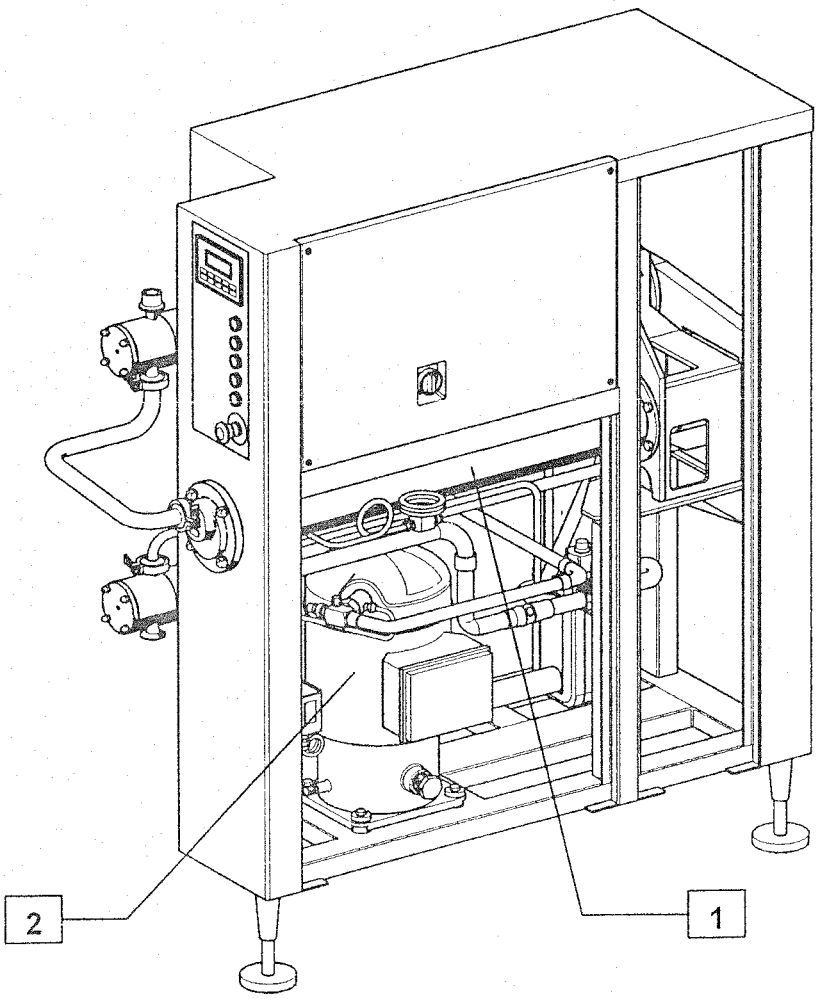


Fig. 3-6 – Freezing installation

3.6 ELECTRICAL INSTALLATION

It is made of an operator panel (Fig. 3-7 pos. 1) and the electrical board (Fig. 3-7 pos. 2) which lies in the right side of the machine.
On the operator panel it is possibile to: activate or deactivate all the machine functions; carry out all the functioning adjustments; check the anomalies indications.
In the electrical box (Fig. 3-7 pos. 2) placed in the right side of the machine, are positioned all the control and power equipments and on the outer side is the general switch (Fig. 3-7 pos. 3).

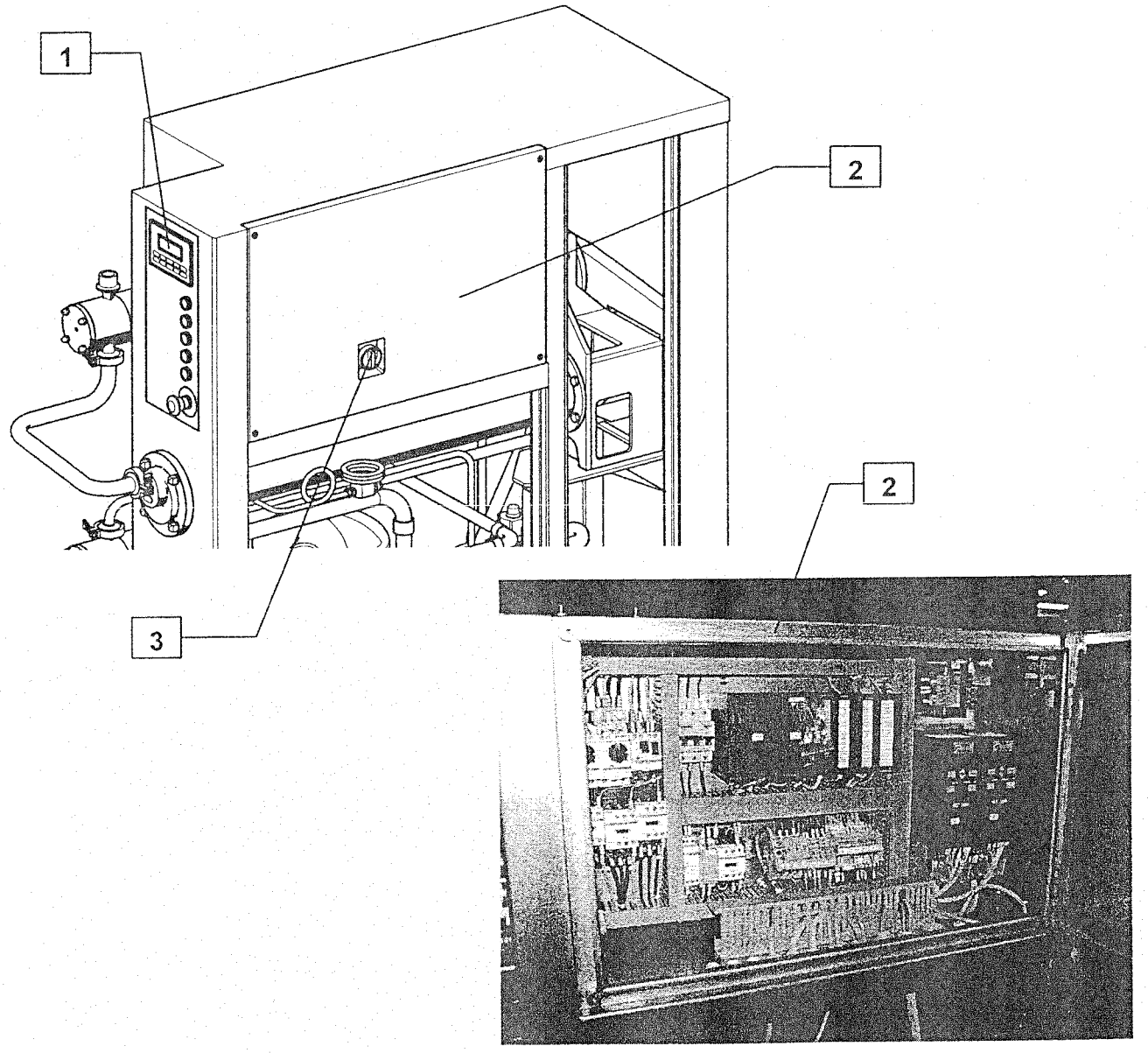


Fig. 3-7 – Electrical installation

3.7 CONTROL PANEL

The control panel described hereby allows to control and check all the functions of the machine, that is:
Through luminous push-button it is possible to operate the GIF 600 devices.
They light up if the corresponding device is on, they blink quickly if the device cannot work or is in alarm mode.
The corresponding alarms are displayed on the operator panel too.

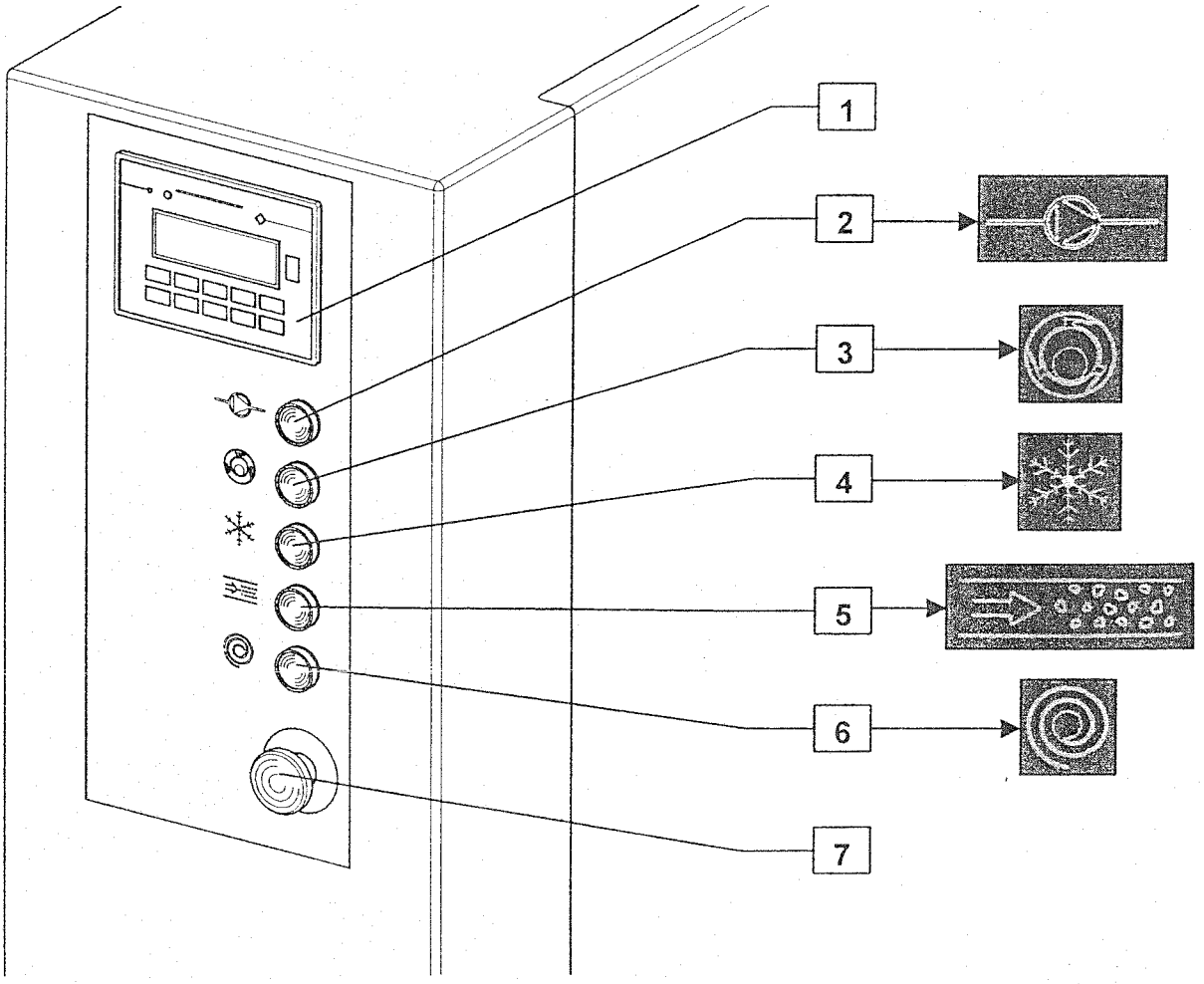


Fig. 3-8 – Control panel

Ref.	Description
1	OPERATOR PANEL
2	PUMPS ON/OFF
3	CYLINDER ON/OFF
4	COMPRESSOR ON/OFF
5	AIR (OVER-RUN) ON/OFF
6	CIP ON/OFF
7	EMERGENCY PUSH-BUTTON

3.8 OPERATOR PANEL

Through the operator panel it is possible to change the main variables of the GIF 600 functioning.
The **Mix flow-rate**, in l/h. Changing this value, the speed of the inlet pump varies consequently.
The ***overrun***, in %. Changing this value, the flow of the air introduced into the mix varies consequently.
The **viscosity**, in %. Changing this value, the cylinder motor absorption is controlled, to keep the desired viscosity.
The **pressure**, in bar, of the ice cream inside the freezer.
It is also possible to change the recipes. Every recipe will recall a set of stored values. 25 recipes are available.

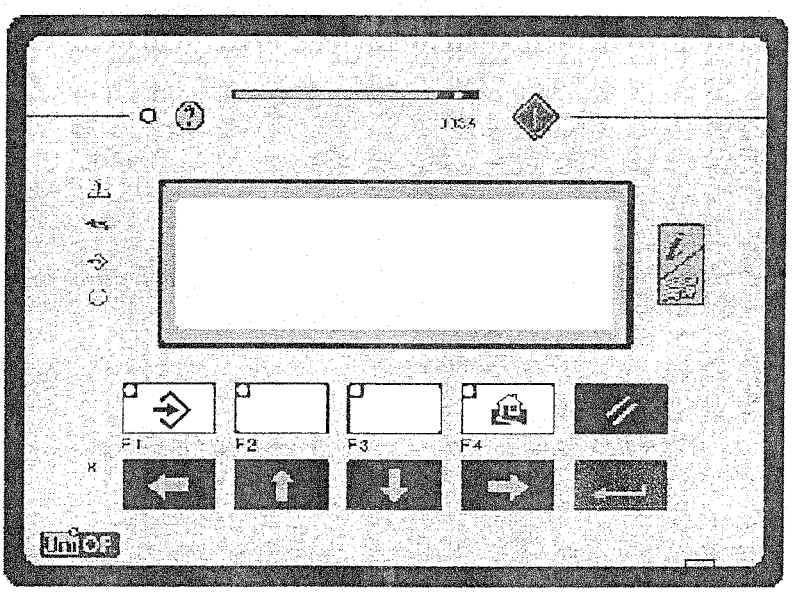
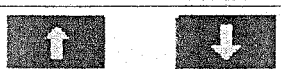


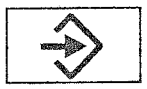
Fig. 3-9 – Operator panel

Using the operator panel:

Key	Description
	THEY ARE USED TO SCROLL THE PAGES IN SEQUENCE
	THEY ARE USED TO SCROLL THE PAGES VERTICALLY
	BY PUSHING THIS KEY, IT GOES BACK TO PAGE 1
	BY THIS KEY IT IS POSSIBLE TO ENTER OR EXIT THE ALARMS PAGE (IF ANY ALARM IS PRESENT)

Parameters modification:

The following keys are used:

Key	Description
	BY PUSHING THIS KEY THE INSERT MODE IS ACTIVATED; THE DATUM TO EDIT STARTS TO BLINK
	IT INCREASES THE PARAMETER VALUE: BY KEEPING IT PUSHED DOWN, THE VALUE INCREASES MORE QUICKLY
	DECREASES THE PARAMETER VALUE: BY KEEPING IT PUSHED DOWN, THE VALUE DECREASES MORE QUICKLY
	IT CONFIRMS THE MODIFICATION OF THE INSERTED VALUE
	IT ESCAPES THE PARAMETER EDITING

3.8.1 PAGE SEQUENCE (PAGE 1 – MAIN ONE)

In this page the main functioning parameters are displayed.
In this page it is not possible to change any parameter.

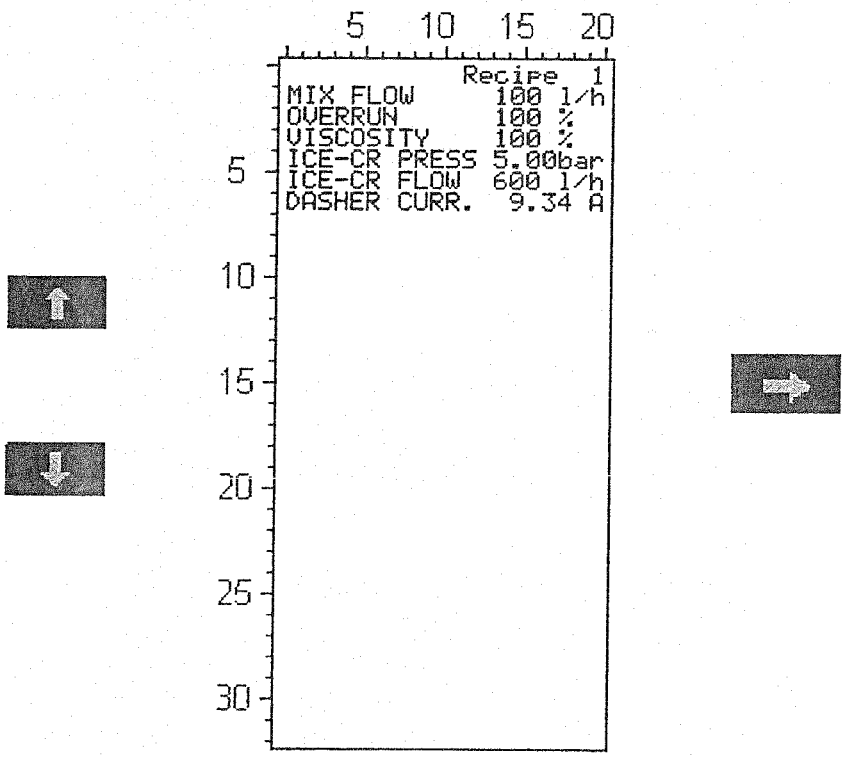


Fig. 3-10 – Page sequence (Page 1 – Main one)

3.8.2 PAGE SEQUENCE (PAGE 2 – MIX FLOW)

In this page it is possible to change the mix flow.
"Act" refers to the value currently employed by the machine; by pushing ↵ the edited value will become the current one.

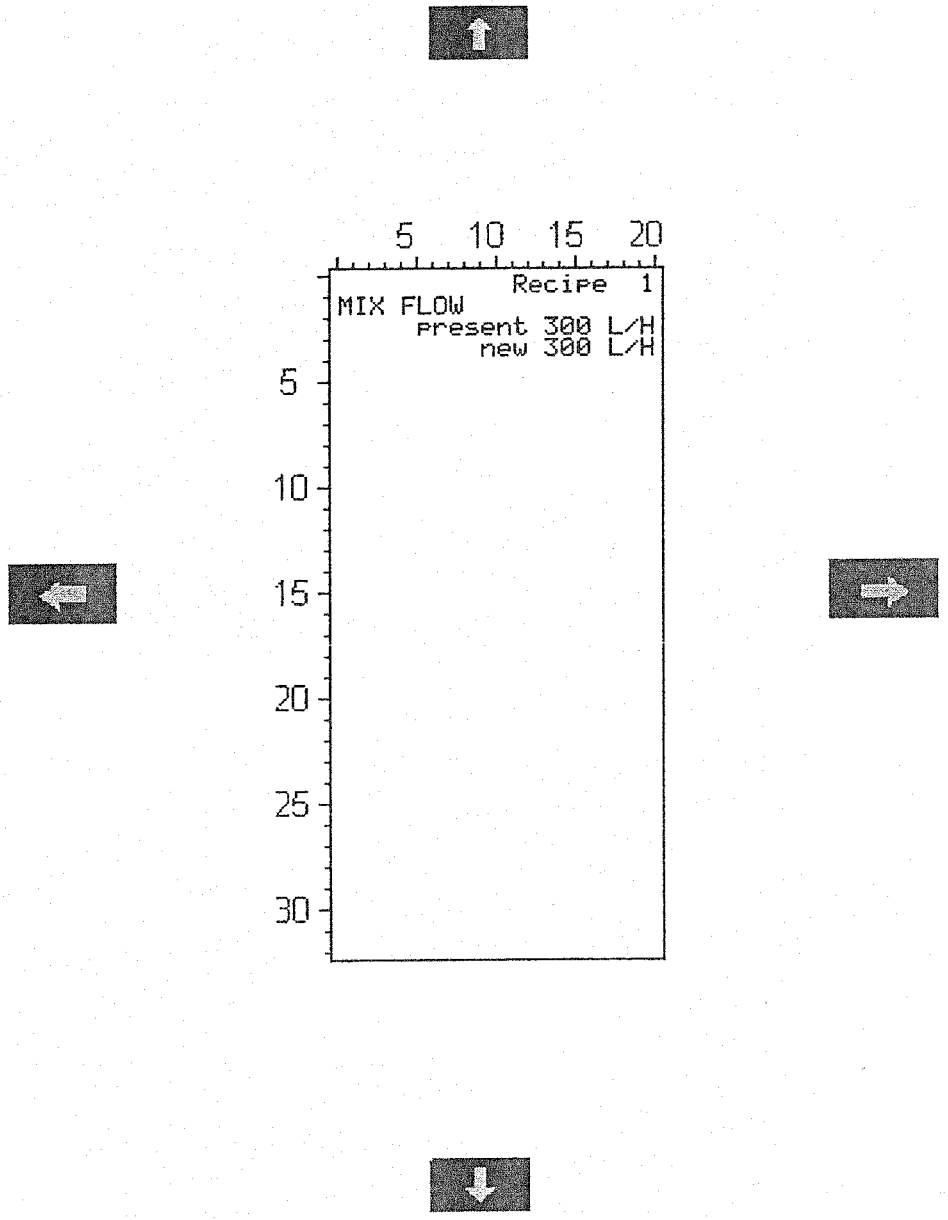


Fig. 3-11 – Page sequence (Page 2 – Mix flow)

3.8.3 PAGE SEQUENCE (PAGE 3 – OVERRUN)

In this page it is possibile to change the overrun value.
"Act" refers to the value currently used by the machine; by pushing ↵ the edited value will become the current one.
It is also possibile to display the flow of the air set in l/h and the reading of the air flow pickup.

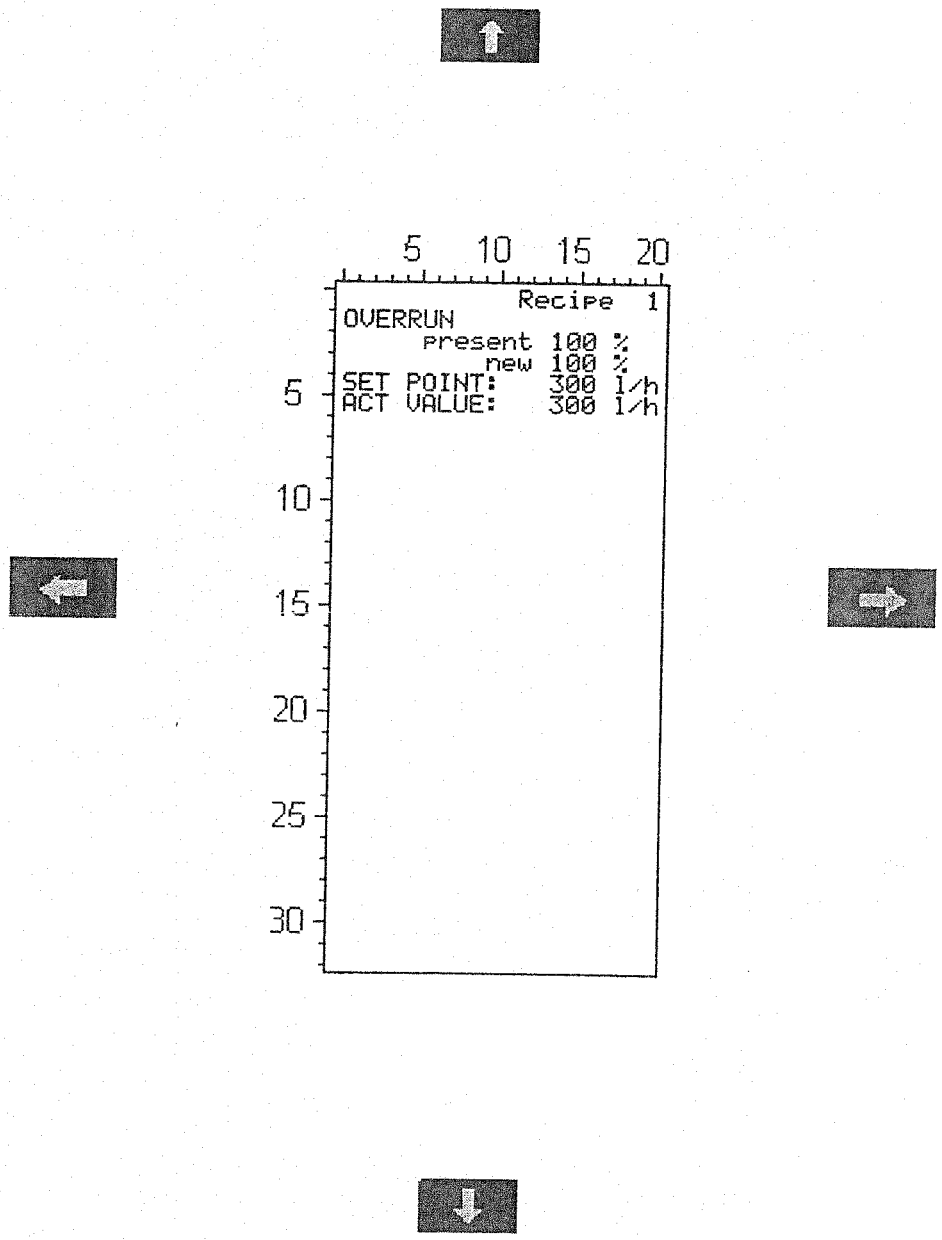


Fig. 3-12 – Page sequence (Page 3 – Overrun)

3.8.4 PAGE SEQUENCE (PAGE 4 – VISCOSITY)

In this page it is possibile to change the viscosity value.
"Act" refers to the value currently employed by the machine; by pushing ↵ the edited value will become the current one.
It is also possibile to display:

- The current absorbed by the cylinder motor;
- The adjustment activation threshold.

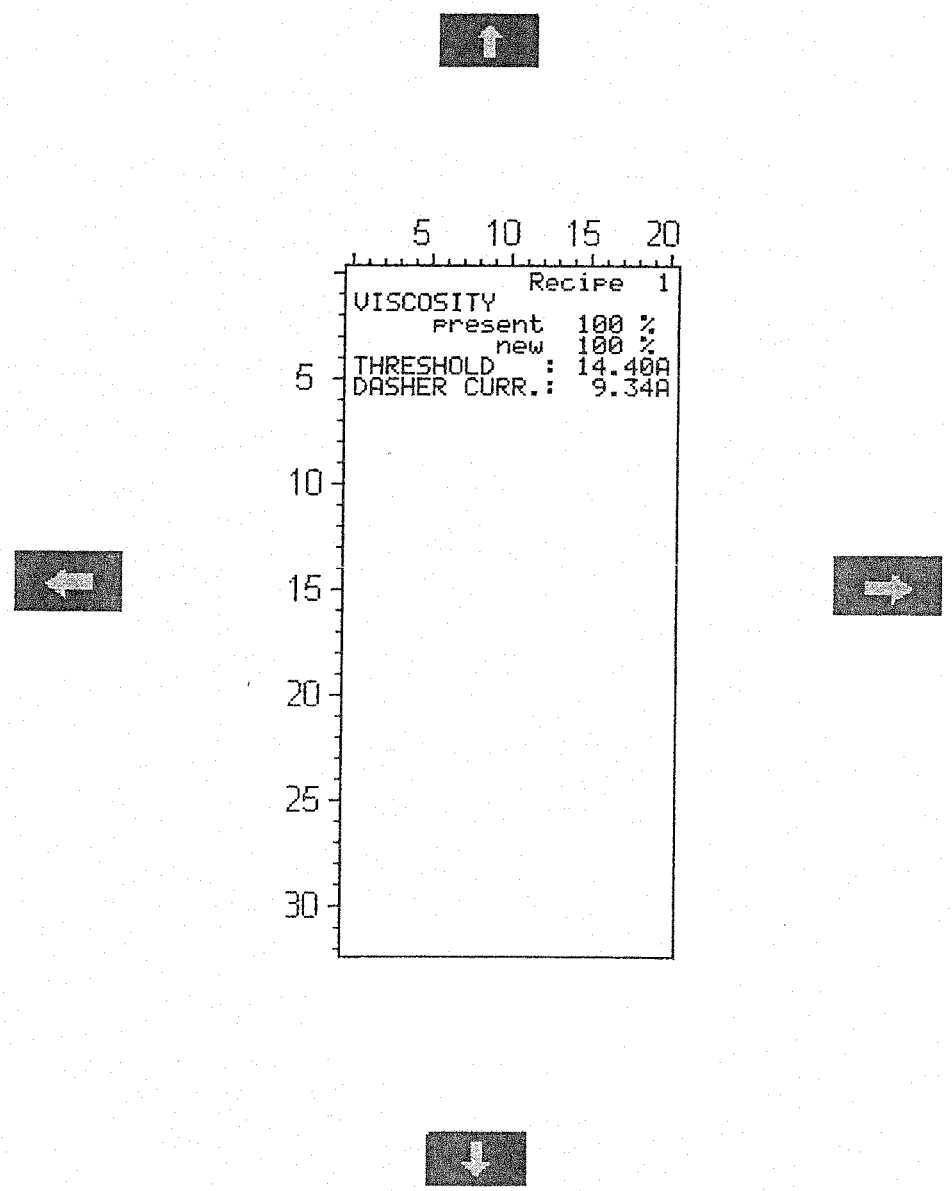


Fig. 3-13 – Page sequence (Page 4 – Viscosity)

3.8.5 PAGE SEQUENCE (PAGE 5 – ICE CREAM PRESSURE)

In this page it is possible to change the value of the ice cream pressure inside the freezer.
"Act" refers to the value currently used by the machine; bu pushing ↵ the edited value will become the current one.
It is also possibile to display the reading of the pressure pickup.

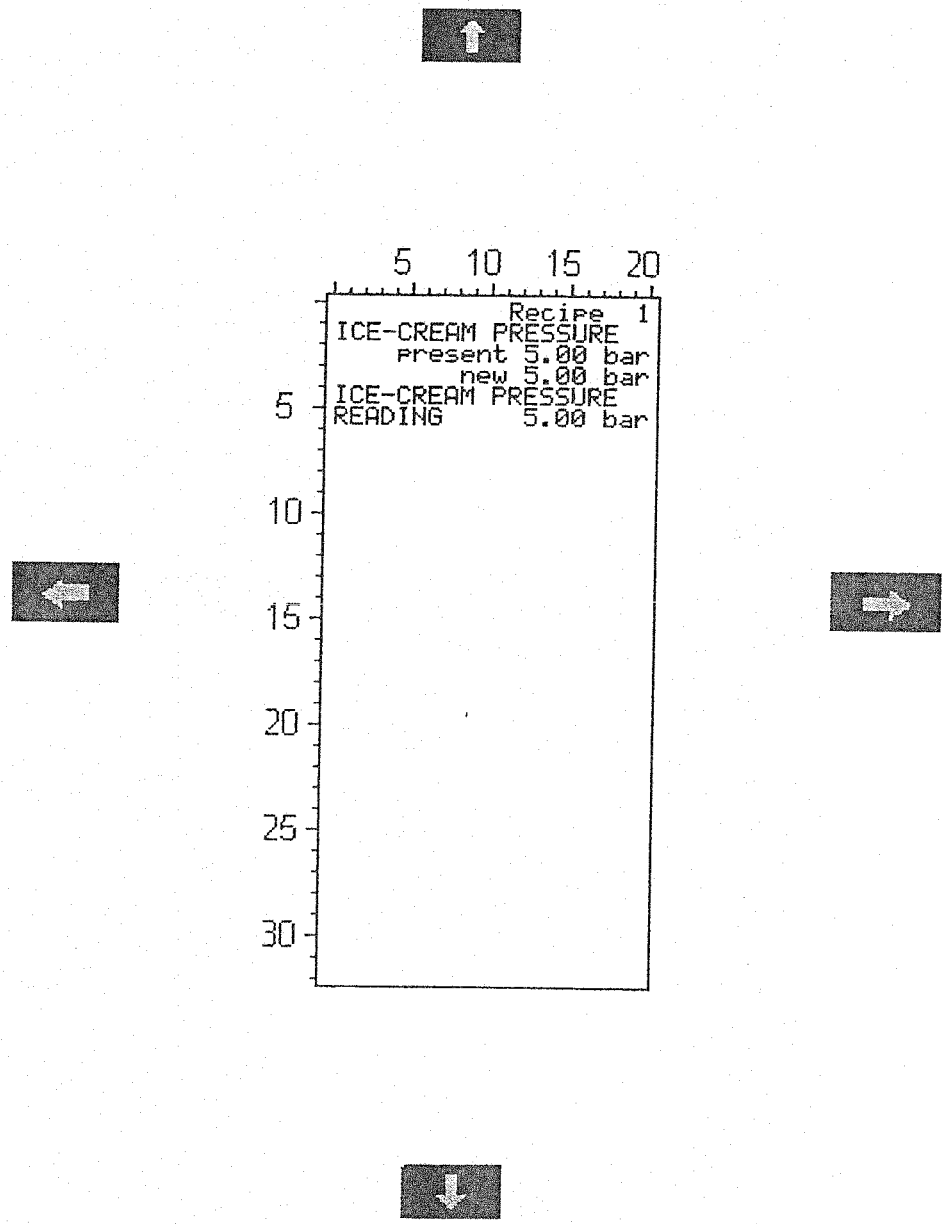


Fig. 3-14 – Page sequence (Page 5 – Ice cream pressure)

3.8.6 PAGE SEQUENCE (PAGE 6 – RECIPE CHANGE AND LANGUAGE CHANGE)

In this page the work recipe is selected.
"Act" is the recipe currently at work on the machine. Setting up a new recipe, the values stored before will be recalled.
By pushing F2, the operator panel language will turn to English; by pushing F3, it goes back to the former language (see example).

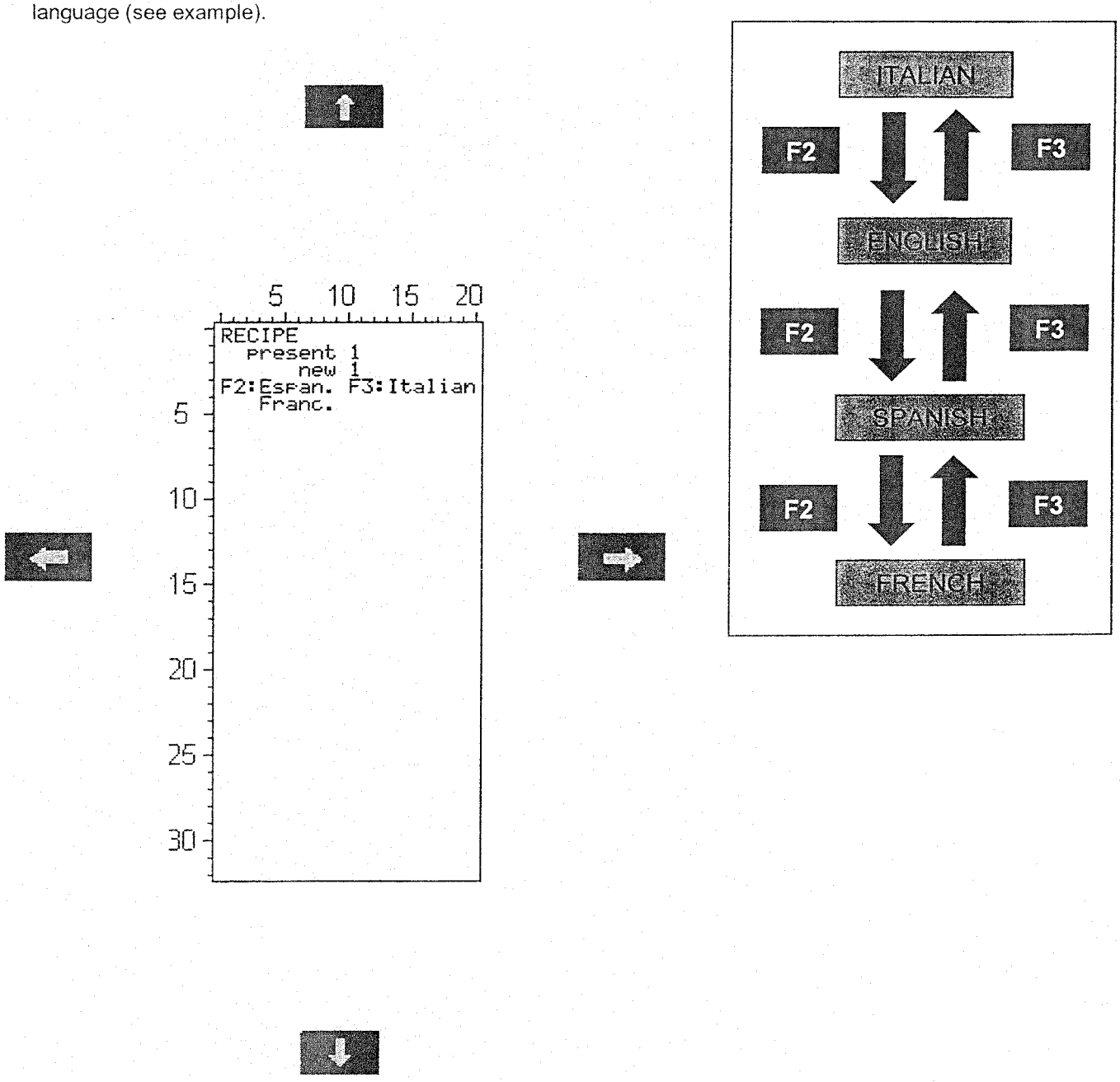
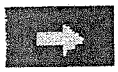


Fig. 3-15 – Page sequence (Page 6 – Recipe change and language change)

3.8.7 PAGE SEQUENCE (PAGE 7 – CIP)

In this page the maximum washing time is set.
To move from the hours field to the minutes one, push:



It is also possible to display the time elapsed from the CIP function activation.

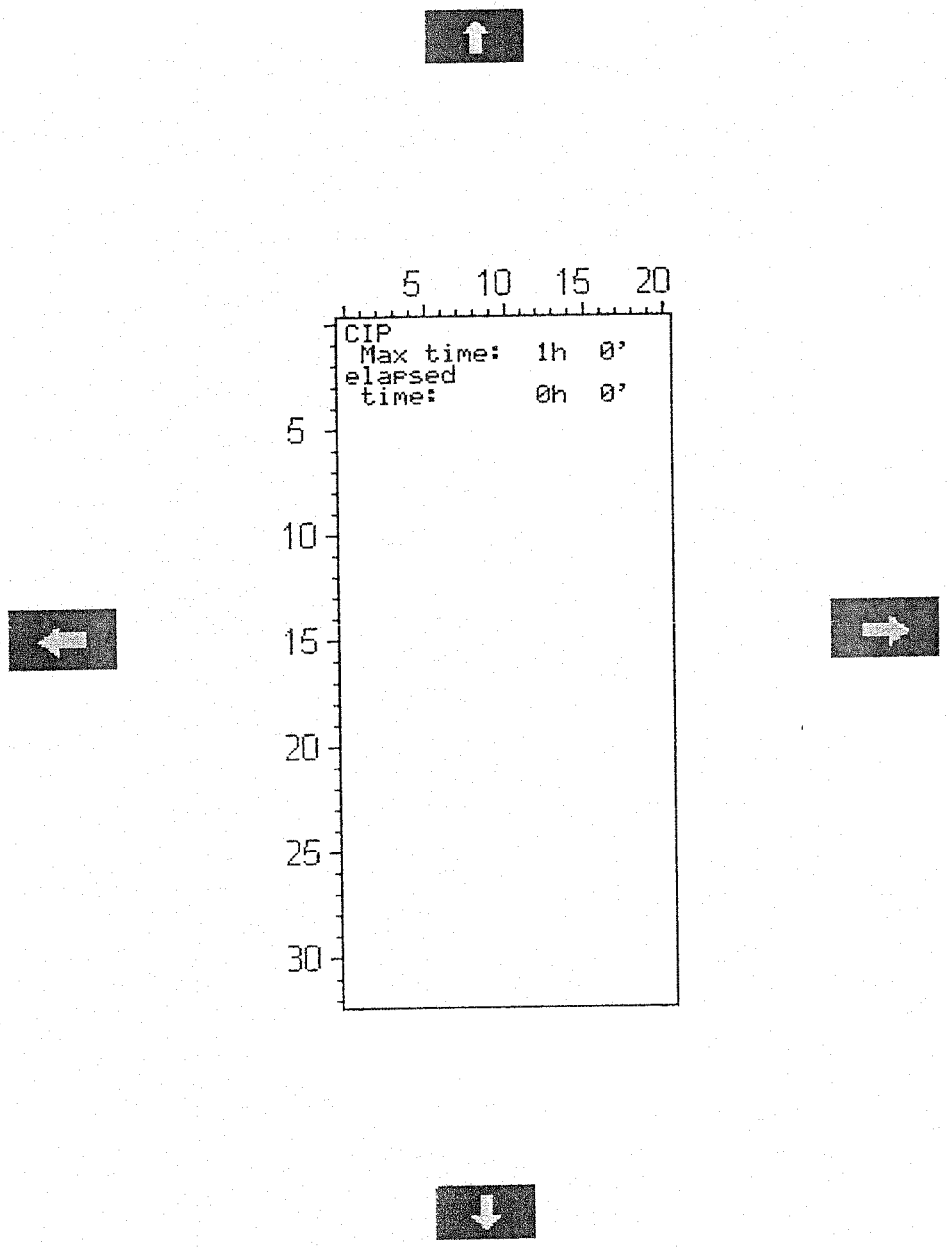


Fig. 3-16 – Page sequence (Page 7 – Cip)

3.8.8 PAGE SEQUENCE (PAGE 8 – OVERRUN ADJUSTMENT)

In this page it is possible to set a k-factor to adjust a possibile inaccuracy of the set overrun value.
Es.:
set overrun value: 100
Through a measurement it is found that the real overrun value is 95.
Once inserted the real value, by pushing F2, an adjusting (k)factor is calcuated.
It is also possibile to display the set overrun value in l/h, as well as the surveyed one.
By pushing the F3 key, the adjustment is escaped and the value fixed is K=1.

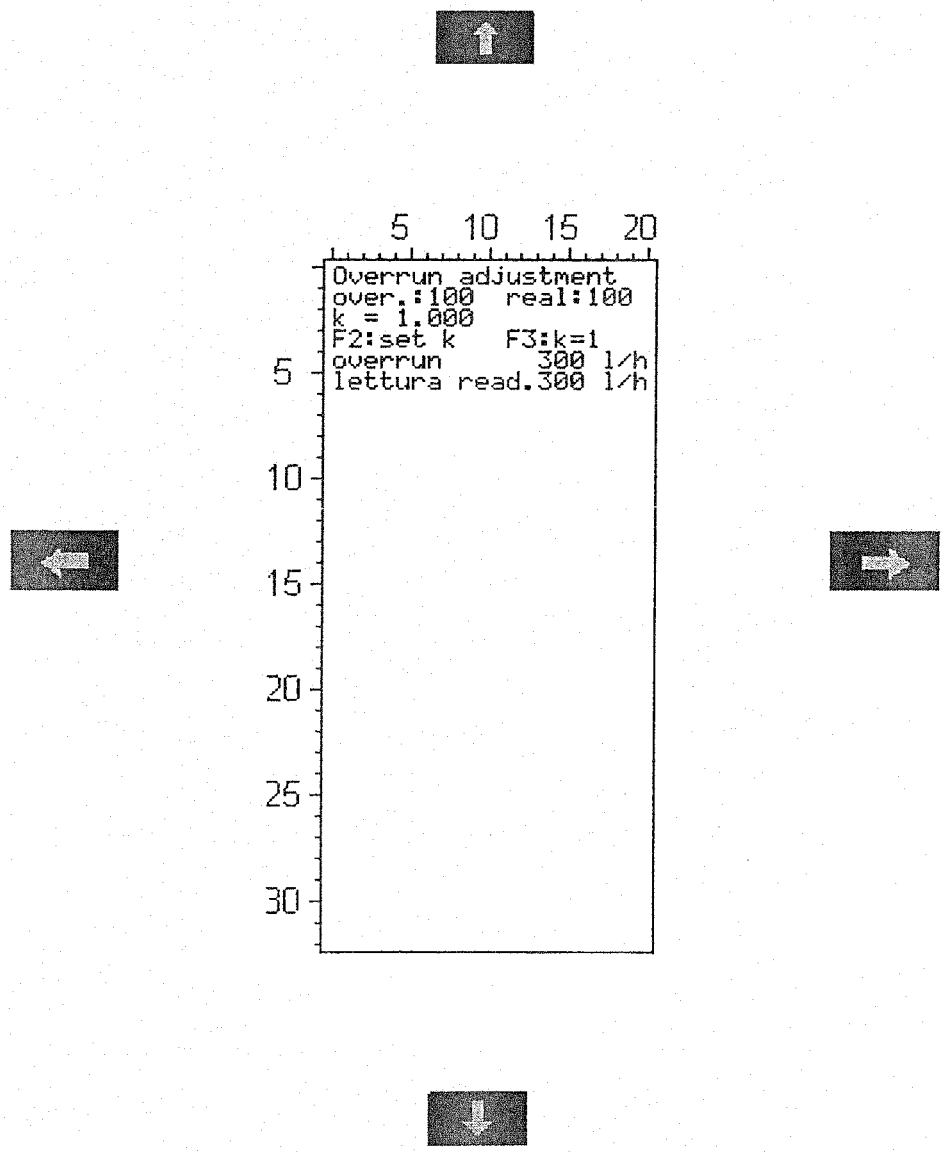


Fig. 3-17 – Page sequence (Page 8 – Overrun adjustment)

3.8.9 PAGE SEQUENCE (PAGE 9 – PUMPS RATIO)

In this page it is possible to set the ratio between the mix pump r.p.m. and the ice cream outlet pump r.p.m.

NOTE: This page, not operating now, is destined to future applications.

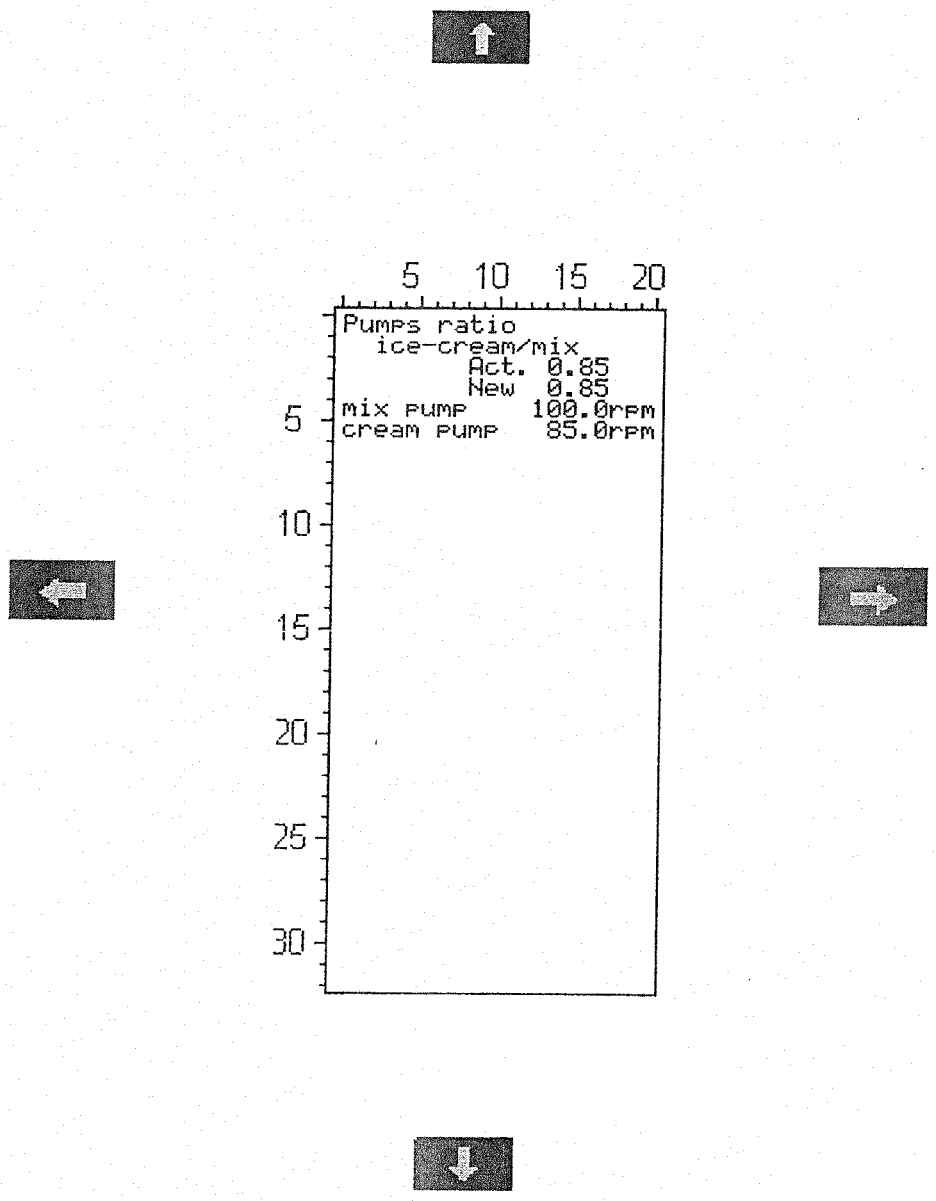


Fig. 3-18 – Page sequence (Page 9 – Pumps ratio)

3.9 ALARMS

If an alarm occurs, the display switches to the alarm page showing which alarm is on; a red lamp lights up on the OP and, if the alarm regards one of the five devices linked to the bright push-buttons, the light of the button starts to blink quickly.
The operator has to confirm the alarm by pushing the ↵ key.

The red light will flash if the alarm still needs confirmation by the operator.
It will not blink if the alarm has been confirmed even though still present.

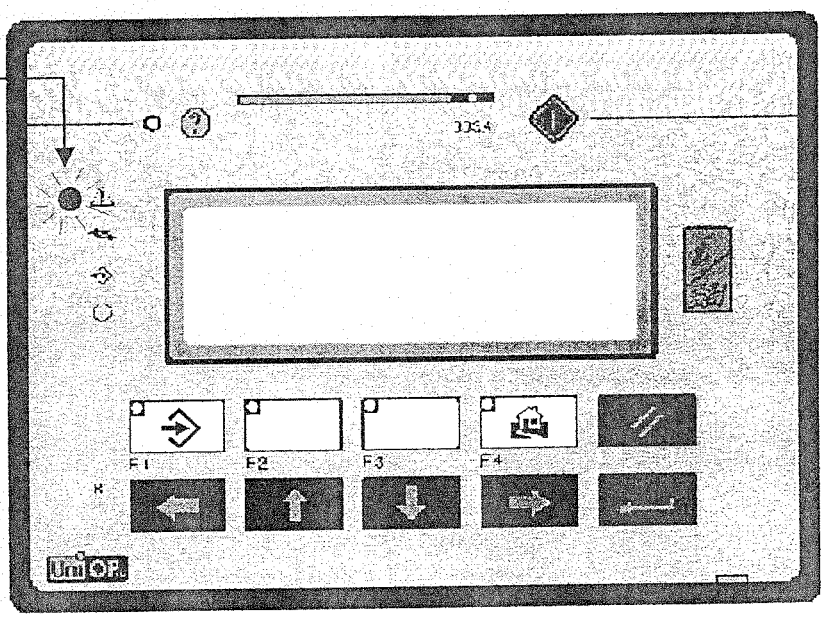


Fig. 3-19 – Alarms

Alarms list:

1. Cylinder thermic protection
2. Compressor thermic protection
3. Inverter thermic protection
4. Inlet pump overcurrent
5. Outlet pump overcurrent
6. Air pressure
7. Refrigerant fluid pressure
8. Compressor protection
9. Inverter in alarm
10. Emergency
11. Air flow pickup
12. Cylinder motor overcurrent
13. Ice cream pressure pickup

Alarms description:

Cylinder motor thermic protection:
The dasher motor thermic protection has tripped; check the motor and the transmission to the dasher.

Compressor thermic pressure:
The compressor thermic protection has tripped. Check the compressor.

Inverter thermic protection:
The inverters thermic protection has tripped. Check both the pumps inverters.

Inlet pump overcurrent:
An exceeding absorption of current by the mix pump motor has been noted; check motor and pump.

Outlet pump overcurrent:
An exceeding absorption of current by the ice cream pump motor has been noted; check motor and pump.

Air pressure:
A < 4 bar pressure is being detected in the compressed air supply circuit.

Refrigerant fluid pressure:
A too high of too low pressure value is being detected in the freezing circuit.

Compressor protection:
The compressor electronic protection or the stages control relay has tripped. Check that the supply stages be correctly connected (luminous light on the stages control relay (2B1) is on). Check the compressor.

Inverter in alarm:
One of the two inverters has gone into alarm mode; check the pumps inverters.

Emergency:
The Emergency button has been pushed.

Air flow pickup:
An anomaly of the air flow sensor is being detected; check the sensor wiring harness and the device inlet air pressure.

Cylinder motor overcurrent:
A current consumption more than 10% over the motor nominal consumption is being detected.
This alarm stops the compressor to decrease the load to the dasher motor. The problem could be deriving from a too low ice cream flow keeping the pressure in the cylinder too high.

Ice cream pressure pickup:
An anomaly of the ice cream pressure pickup is being detected; check the sensor and its wiring harness.

3.10 WORK STATIONS

For the functioning of the GIF freezer it takes:

- 1 operator for the startingup, adjustment and general control during production.

Every other operator must keep at a safety distance avoiding to hinder the normal work operations being performed.

4. INSTALLATION

4.1 PACKING

The machine is fixed with wooden blocks.
The spare parts box is placed on a pallet beside the machine and is fastened with adhesive tape.
Possible extra-equipments are also placed below or aside the freezer and are secured with adhesive tape.

4.2 LIFTING

The freezer must be positioned on a pallet with the weight equally distributed.
The pallet that contains the freezer must be lifted in one of the following ways:

1. by fork truck;
2. by crane on which a fork is installed;
3. by crane and slings around the pallet.

4.3 DELIVERY CHECKS AND UNPACKING

Upon receipt of the freezer, inspect for any visible damages that may have been caused during transportation.
Please pay careful attention to the packaging and look out for damage clues, because any external damage could mean that the container was subjected to violent blows or jolts that would have probably damaged the contents inside, being that invisible from the outside.
Any damage ascertained after inspection will have to be reported to the delivery company as well as to the insurance company.
During the assembly and before the shipment, all the fixing elements (screws, bolts, rings, nuts) have been carefully tighened and tested, but the continuous vibrations present during shipment can cause their loosening.
After receiving the machine and before its startingup, we suggest that a technician checks carefully their tightening.
We suggest to carry out this operation also during the maintenance periodic control of the installation, to avoid expansive downtimes and repairs.

4.4 REQUIRED SPACE

The required space for the installation of the freezer must be such to allow the carrying out of all the use and maintenance operations with absolute safety.
Make sure, therefore, that a free room of at least 0.7 m is by the sides and on the rear part of the machine, whereas on the work front side the free space must be at least of 1.5 m.

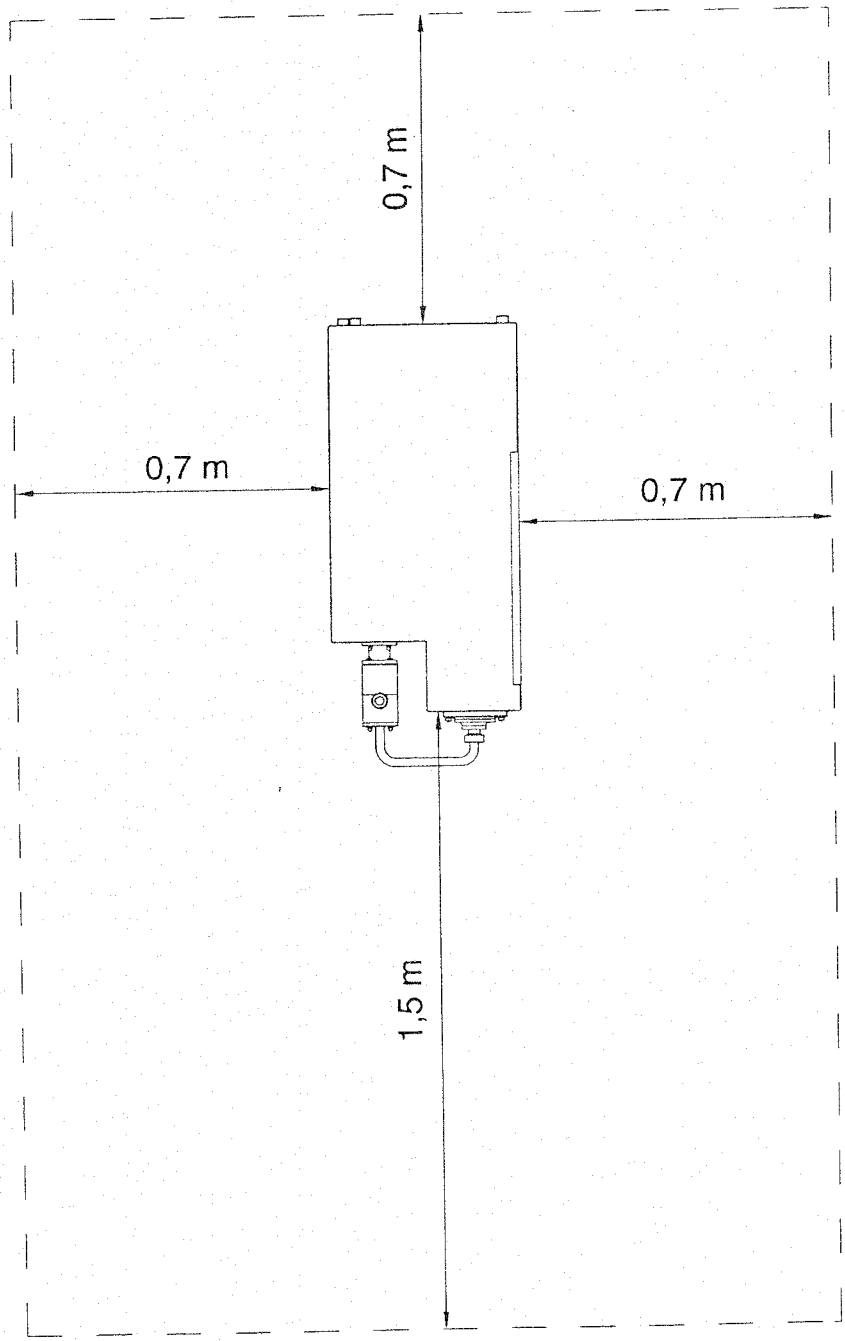


Fig. 4-1 – Required space

4.5 POSITIONING AND INSTALLATION

1. Remove carefully the package, and bring the freezer to the destined area, leaving it on its wooden base (see drawing below). Lift it up with adequate frames fit for its weight and taking care not to damage it.
2. Screw the levelling feet taking care to position the proper anti-slide pads on the feet resting point. Lean the machine on the pads and adjust the height from the ground to about 200 mm (8").
3. Level the freezer both longitudinally and transversely by means of its adjustable feet **providing a slight gradient backwards in order to let the washing waters flow and be drained.**
4. Mount the cartridge for the sterilizing filtration inside the corresponding steel container paying attention not to affect them nullifying their sterility conditions.

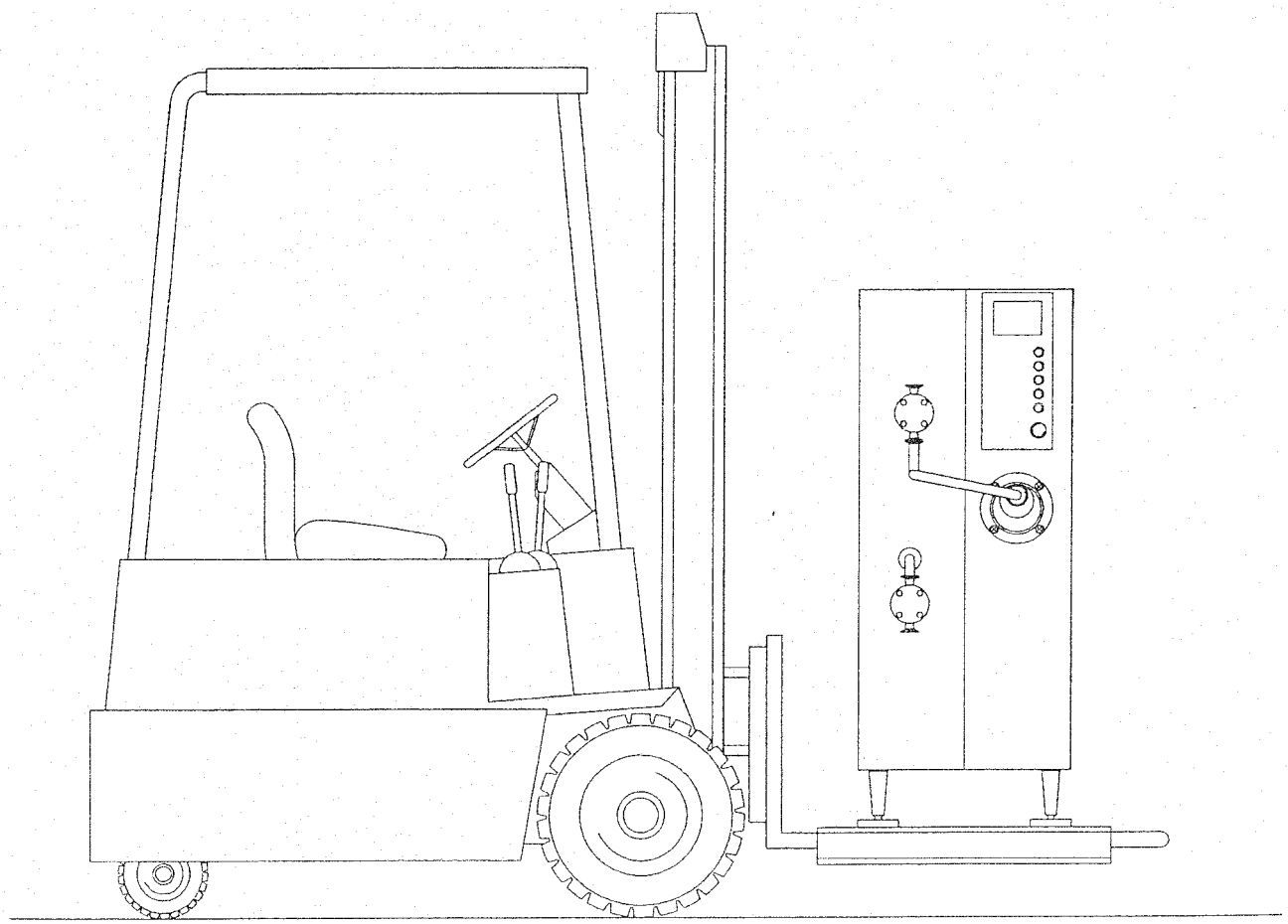


Fig. 4-2 – Positioning and installation

4.6 CONNECTIONS

4.6.1 COOLING WATER CONNECTION

Carry out the connection of the cooling water complying with the rules foreseen in the country where the freezer is installed.
The connection must be carried out by skilled technicians aware of the relative standard mentioned above.
Connect the mains water sending to the attachment positioned on the lower part of the machine (Fig. 4-3 pos. 1) and the return to that placed on the upper part (Fig. 4-3 pos. 2).
During the connecting procedure, prearrange the installation of proper intercepting valves (Fig. 4-3 pos. 3) for the following water isolation of the machine during maintenance procedures.
It is also advisable to prearrange a second valve (Fig. 4-3 pos. 4) next to the lower connection in order to allow a possibile drainage of the water container inside the freezer.
The pipeline diameter must be fit for the flow-rate required by the machine and must not be lower than that of the machine connections in any way (1" gas).
Before executing the connections, make sure that the pipelines are clear of sediments or dirt particles.
Also make sure that the mains water doesn't carry particles that could reduce the thermic exchange capacity of the cooling circuit. If it wasn't like this, install a filter upline before the supply in order to reduce the harmful particles entering the machine.
Between the two main fittings there is a third one (Fig. 4-3 pos. 5) to be used during the washing operations of the cooling circuit.
The machine is equipped with a pressure adjusting valve (Fig. 4-3 pos. 6) that adjusts the flow-rate of the water to the cooling circuit in an inversely proportional ratio to its temperature.
The cooling water temperature can therefore be supplied at different values without affecting the correct cooling.

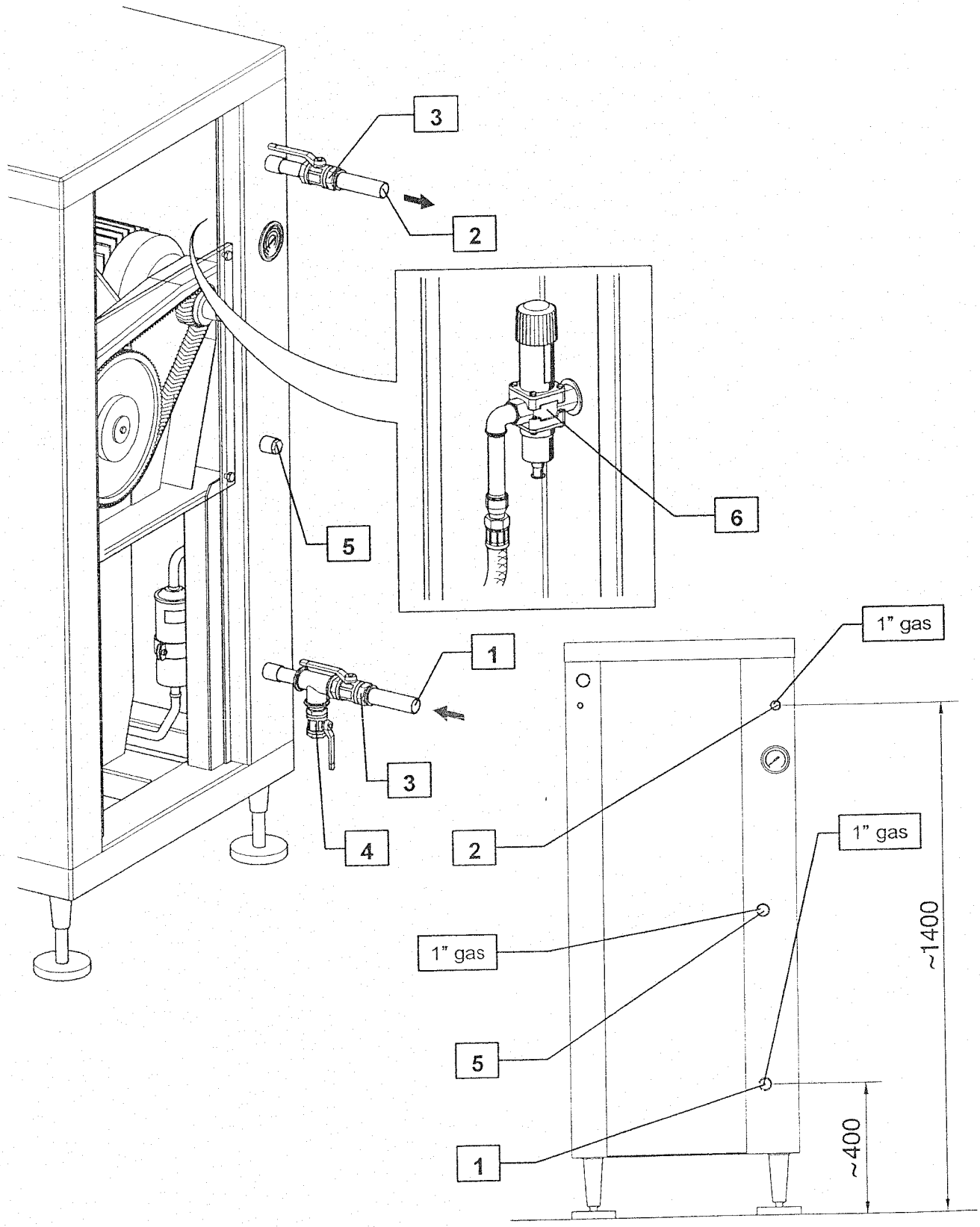


Fig. 4-3 – Cooling water connection

4.6.2 MIXTURE INLET AND ICE CREAM OUTLET CONNECTION

Carry out the connection of the mixtrure sending pipeline (supply on costumer charge) to the lower attachment (Fig. 4-4 pos. 1) of the inlet pump (Fig. 4-4 pos. 2).
During the connection mentioned above, prearrange the machine for the installation of a proper valve system for the simultaneous connection with the CIP washing pipeline.
The installation of such valve system allows to reduce to the minimum the downtimes between production and washing up, and viceversa.
The pipeline diameter must be proportional to the flow-rate required by the machine and must not be in any way lower than that of the machine attachments (1 ½" clamp).
Before carrying out the connections, make sure that the pipelines are clear of sediments or dirt particles that could pollute the product or damage the machine units.

NOTE: Make sure that the mixture supply vats are at a higher level than that of the connection with the freezer, or check that they have been equipped with a proper sending pump to guarantee the sufficient head on the inlet pump (Fig. 4-4 pos. 2).

For the right functioning of the machine and the guarantee of an optimum ice cream quality, it is necessary to check that there are no infiltrations in the mixture sending pipeline.
Connect the ice cream outlet pump (Fig. 4-4 pos. 3) with a stiff pipeline, which must be as short as possibile and whose diameter must be proportional to the machine capacity and must not be in any way lower than that of the attachment (1 ½" clamp).

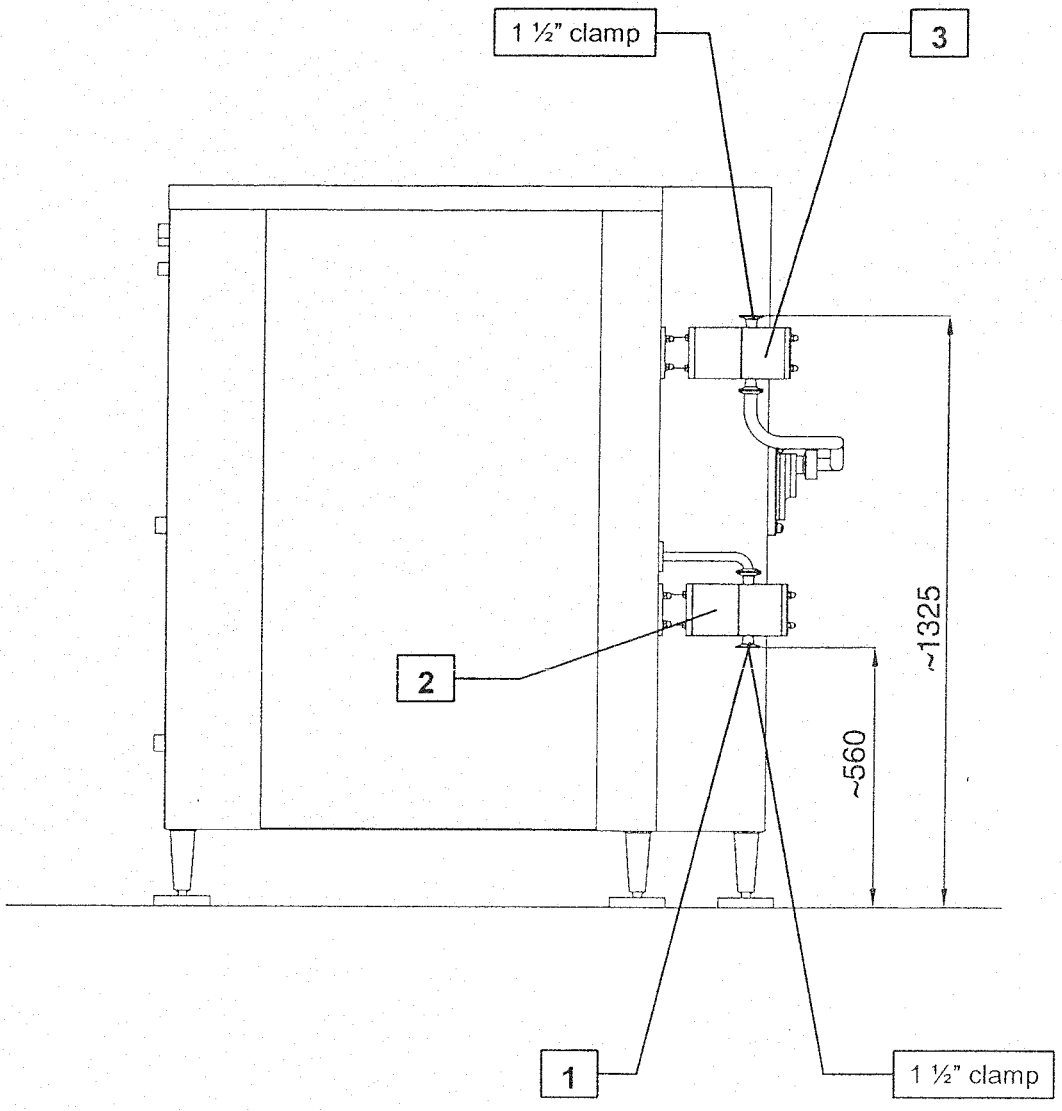


Fig. 4-4 – Ice cream inlet and outlet connection

4.6.3 COMPRESSED AIR CONNECTION

Carry out the pneumatic connection following eagerly the standard effective in the country where the machine is installed.
The connection must be done by skilled technicians aware of the relative standard described above. Proceed executing the connection of the supply pipeline (Fig. 4-5 pos. 1) with the compressed air coupling (Fig. 4-5 pos. 2) present on the rear part of the machine.
During the connection procedure, prearrange the machine for the installation of a proper intercepting valve and, if needed, of a drying/filtering set.
The supply pressure must be at least 5 bar. It is also advisable to carry out the connection thanks to a "quick" connection device for the possible physical detachment of the compressed air circuit with the machine.

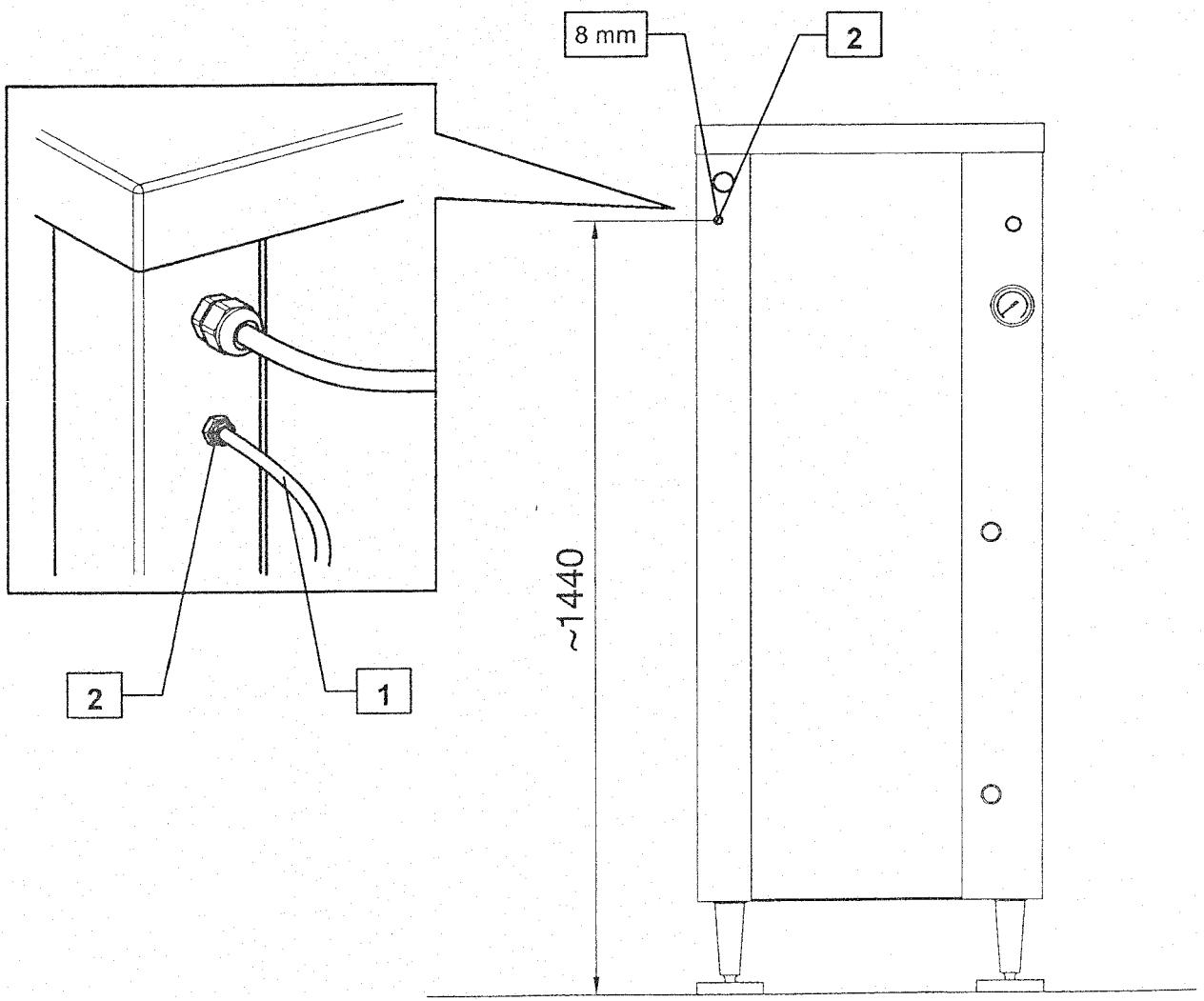


Fig. 4-5 – Compressed air connection

4.6.4 ELECTRICAL CONNECTION

Carry out the electrical connection following earnestly the standard in force in the country where the machine is being installed.
The connection must be carried out by skilled technicians aware of the relative standard described above.
Connect the machine with the factory mains supply by means of a proper disconnecting switch.
The voltage and frequency at which the machine is connected must correspond to those appearing on the techincal data card.
Execute an adequate ground connection complying with the safety rules in force.
In case the connecting cable supplied (Fig. 4-6 pos. 1) was not long enough to reach the connecting point, **DO NOT ABSOLUTELY USE** current extensions, yet replace the whole cable with an adequate one.
Whenever the display showed the message "Compressor protection" on first ignition and no part of the machine was working, it would take correcting the rotation sense of the stages exchanging one another the positions of two of the three wires of the freezer supply cable in the distribution board of the factory to which the machine is connected. Acting like this, the right sense of rotation of all the machine motors is assured.

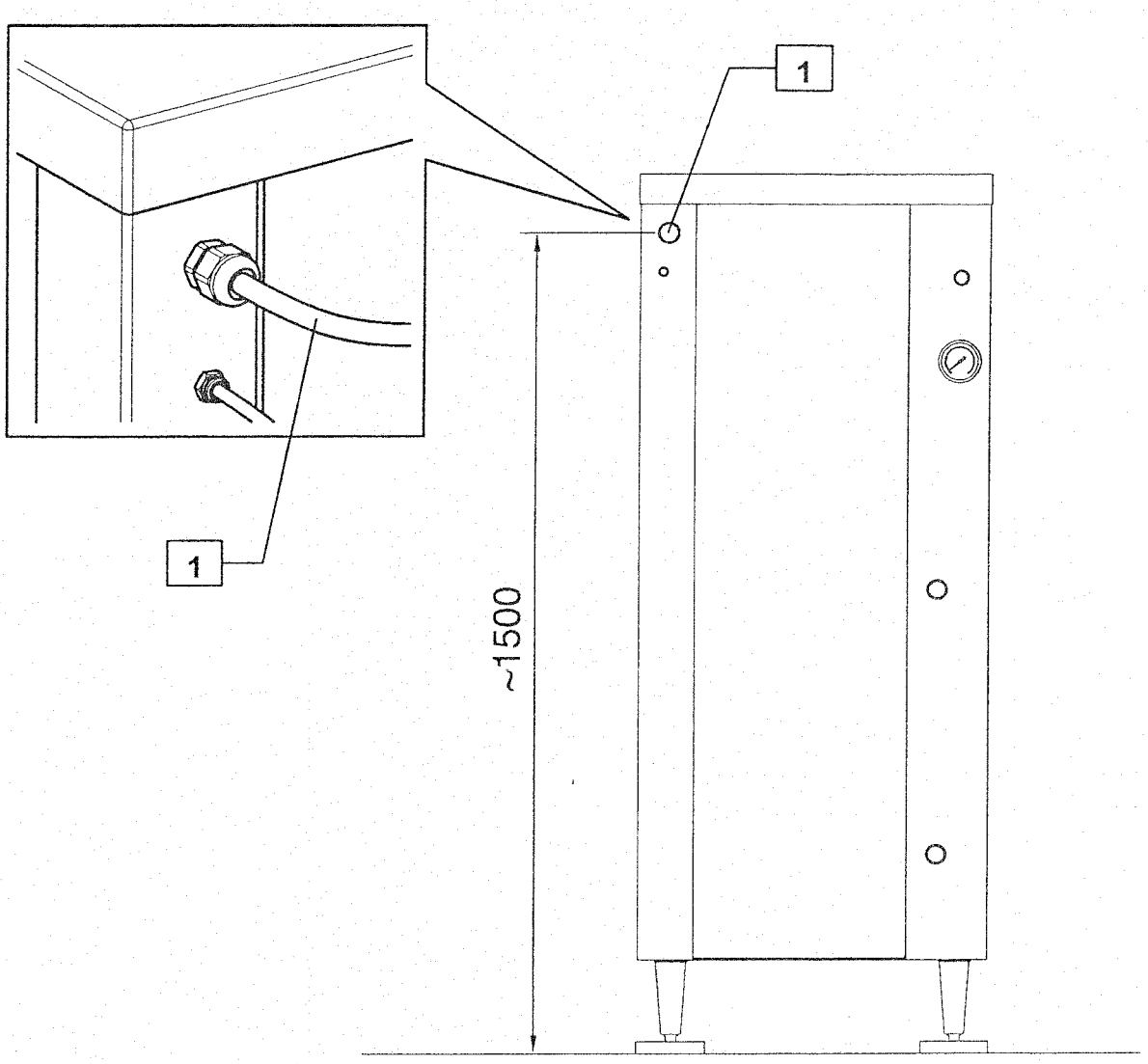


Fig. 4-6 – Electrical connection

4.7 END OF INSTALLATION CHECK

Some checks must be done at the end of the installation procedure, before going on with the settingup operations:

a) Supply the machine with mains water opening the valves prearranged on the sending and on the return. Check that the sending pressure is not that reported on the technical characteristics. Check that there are no leaks in both stiff and flexible pipelines and in the connection points between them and the machine. Command the freezing installation startingup to check the correct functioning of the pneumatic valve. This latter, indeed, will allow the water to flow freely inside the cooling circuit until the return connection outlet.

b) Discharge the condensate from the compressed air circuit. Supply the machine with compressed air opening the intercepting valve prearranged for that. Check that the sending pressure corresponds to that indicated on table "Techincal characteristics". Check that no leaks are present in the pipelines and in the connection points between them and the machine.

c) Make sure that the voltage and the electric supply frequency of the machine correspond to the values indicated on the technical data card. Give tension to the machine closing the proper disconnecting switch installed upline the machine. Supply the machine turning the disconnecting switch (Fig. 4-7 pos. 1) mounted on the electrical board (Fig. 4-7 pos. 2). Check that the display (Fig. 4-7 pos. 3) lights up.

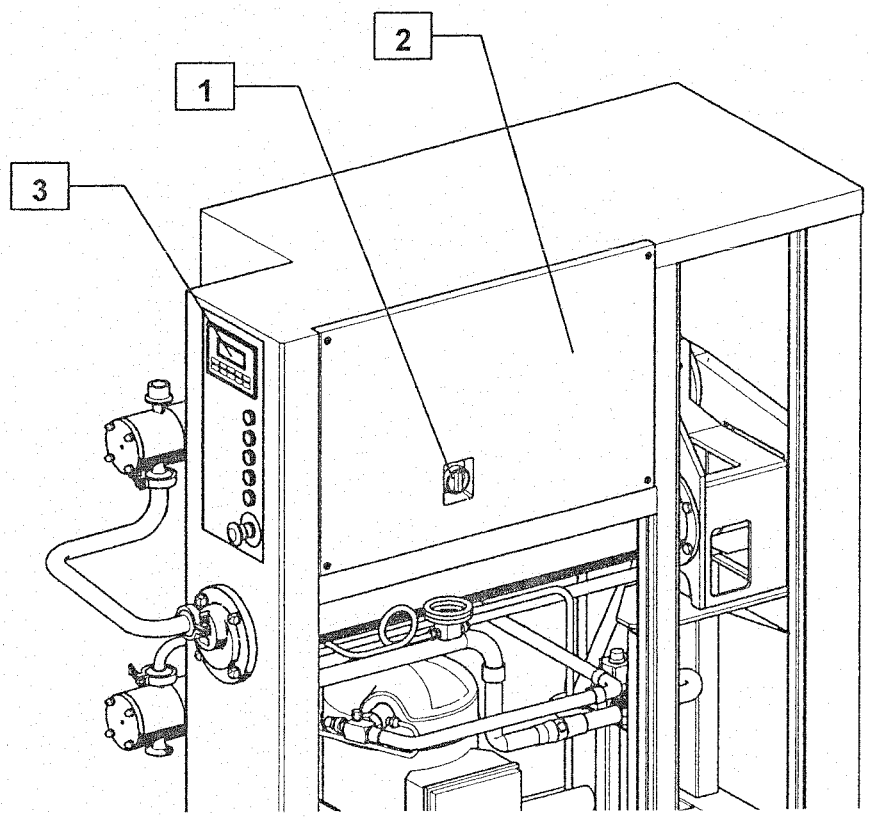


Fig. 4-7 – End of installation check

5. FUNCTIONING

5.1 PRELIMINARY CONTROLS

Before starting the production operations it is necessary to carry out some checks which aim to censure a safe and correct functioning of the machine:

a) Check that the machine is perfectly leveled and with a slight backwards gradient; if needed, use the proper levelling feet to get the desired adjustment.
b) Check that the general switch is turned on "1".
c) Check that the cooling water and compressed air intercepting valves are open.
d) Check that the mixture supply vat is correctly connected to the machine and contains enough quantity of product to start the production; make sure that the intercepting valve is open.
e) Check that the CIP washing device (if present) is correctly connected to the machine and that the intercepting valve is closed.
f) Check that the emergency switch is not pushed down: should it be otherwise, turn it in clockwise direction to unlock it.
g) Check that the sumps (if any) removed during installation procedure have been mounted rightly back in their places.

5.1.1 OPERATIONS TO CARRY OUT AT FIRST START-UP

After a long period of inactivity or at first start-up, it is necessary to carry out a washing up of all the parts that will get in contact with the product before starting the production.
To execute correctly such operations, consult the chapter "Washing up and Maintenance".

5.2 START-UP

- Switch the machine on turning the main switch (Fig. 6-1 pos. 1) on the control panel.
- The OP display (Fig. 6-1 pos. 2) lights up.
- Check on the display that no alarm is present (in case an alarm related to a unit controlled by push button is on, the corresponding button blinks quickly).
- Command the filling up of the circuit with the mix using the CIP push button (Fig. 6-1 pos. 3).
- As soon as the product exit from the second pump is noted, push the CIP button again (Fig. 6-1 pos. 3) to switch it off.
- The complete start-up is obtained by pushing the following buttons in sequence:
  1) Pumps (Fig. 6-1 pos. 4); during start-up, the inlet pump (mix) will reach the planned speed. The outlet pump (ice cream) will keep a very low speed until the pressure inside the cylinder reaches 1 bar. At that moment, the pressure adjusting system will take the control over the outlet pump to bring and keep the pressure at the planned value. During the beginning stage, and until the system reaches the right running, the outlet ice cream flow-rate will be small.
  2) Cylinder (Fig. 6-1 pos. 5);
  3) Compressor (Fig. 6-1 pos. 6);
  4) Over-run Air (Fig. 6-1 pos. 7).
- During start-up procedure, some push-buttons might be blinking slowly, pointing out the controlled group planned delay, until the operative condition is reached.

5.3 PRODUCTION CHANGE

Should it be necessary to work with different ice cream flavours during production, proceed as described below:

a) Organize the daily production in order to produce first clear color ice cream and then the progressively darker ones.
b) Prearrange the defferent supplies simultaneously connected to the machine and intercept each one with a valve.
c) If the production and the connections are organized as described before, it is possible to turn from one production to another just exchanging the supply mixtures to the machine opening or closing the corresponding valves without interrupting the freezer functioning.

If, due to logistic or organizative reasons, it was not possibile to procede as formerly described, and so it were necessary a higher time to carry out the mixture change, the freezer should be shut-off proceeding as described below:

a) Stop the air introducton into the ice cream by pushing the button (Fig. 6-1 pos.7).
b) Stop the freezing compressor by pushing the proper button (Fig. 6-1 pos. 6).
c) Stop the whipping shaft pushing the button (Fig. 6-1 pos. 5).
d) Stop the pumps pushing the button (Fig. 6-1 pos. 4); this way, the inlet pump (mix) will immediately stop, whereas the outlet pump (ice cream), will go on working (the button pilot light is blinking) until the pressure inside the cylinder has lowered below 0.3 bar. Acting like this, the cylinder is not kept under pressure with pumps off.
e) Disconnect the mix supply to the freezer from the vat containing the mixture whose production is being interrupted and connect it to the container with the new mixture (darker) which is going to be produced.

To start again:

f) Insert in the OP the new recipe and confirm by ↵.
g) Start the whipping shaft up by pushing the button (Fig. 6-1 pos. 5).
h) Start the freezing compressor up by pushing the button (Fig. 6-1 pos. 6).
i) Start the pumps up by pushing the button (Fig. 6-1 pos. 4); during start-up procedure, the inlet pump (mix) will reach the planned speed. The outlet pump (ice cream) will keep a very low speed until the pressure inside the cylinder reaches 1 bar. At this point, the pressure adjusting system will take the control over the outlet pump to bring and keep the pressure at the planned value. During the first stage, and until the system reaches the right running, the outlet ice cream flow-rate will be small.
j) Start the air installation up by pushing the button (Fig. 6-1 pos. 7).
k) Wait for the mixture outlet.
l) Wait some minutes for the production to settle and, if necessary, adjust the overrun, the viscosity, the flow or the pressure of the ice cream in the frosting cylinder through the OP.

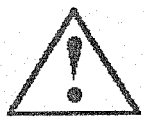
5.4 END OF PRODUCTION

a) Stop the air introduction by pushing the button (Fig. 6-1 pos. 7).
b) Stop the freezing compressor by pushing the button (Fig. 6-1 pos. 6).
c) Stop the pumps by pushing the button (Fig. 6-1 pos. 4).
d) Stop the whipping shaft by pushing the button (Fig. 6-1 pos. 5) waiting for the remaining ice cream to get out of the cylinder

5.4.1 CIP WASHING UP

A) Connect the pump inlet and the ice cream outlet to the pipelines for the CIP washing up.
B) Start the washing up operating the CIP pumps of the lab washing installation (not included in the GIF 600 supply) and operating the freezer CIP cycle with the button (Fig. 6-1 pos. 3).
C) IMPORTANT: the agent solutions used by the CIP, if left inside the machine, could damage the metal parts and the gaskets, so carry out a complete cold water rinsing of the machine at the end of the washing operations.
D) Rotate the general switch on the electrical board to "0" (zero).
E) Close the compressed air supply and the cooling water valves.

For further intormation about the washing up see chapter "CIP washing up" in this manual.



WARNING: Do not carry out CIP washing up without activating the CIP cycle with push button (Fig. 6-1 pos. 3): the washing flow would be inadequate.

5.4.2 MANUAL WASHING UP

In case a CIP washing installation was not available, proceed as described below:

A1) Shut the machine off following the operations as from "a" to "d" in paragraph 5.4.

B1) Close the mixture supply valve and open the hot water supply valve (if prearranged). The water maximum temperature must be 60 ÷ 65°C.

C1) Operate the whipping shaft through the push button (Fig. 6-1 pos. 5).

D1) Operate the pumps through the push button (Fig. 6-1 pos. 4).

E1) Let the hot water circulate until complete removal of the coarsest sediments. Once this condition has been reached (the sediments removal span must last as short as possible), stop the whipping shaft and the pump pushing the buttons (Fig. 6-1 pos. 5,6).

F1) Turn the machine off rotating the general switch (Fig. 6-1 pos. 1).

G1) Disassemble the dasher as described in chapter "Dasher assembly and disassembly".

H1) Wash accurately all the components sinking them into a solution containing the right detergent, in the percentage suggested by the supplying company.

I1) Rinse with much running water.

L1) Mount the removed parts back exactly in the same position they had before. Special attention must be paid to the blades positioning (the sharp side must be facing the cylinder).

M1) Make the inlet pump suck a sterilant solution contained in a tank placed at proper height until complete sanification is gotten.

N1) At the end of the sanification, drain the solution and rinse it all using clean cold water.

O1) Now the freezer is ready to start the production again.

5.5 EMERGENCY STOP

The emergency stop is controlled by pushing the red mushroom-shaped button (Fig. 6-1 pos. 8) placed on the OP. The machine immediately stops: use this command only in case of real sudden needs of machine stops, when there is the risk of injuring people or machines. Do not use as machine stop at the end of the production.
Before starting the production again, make sure there are the conditions to do it.
At restart of an emergency condition, the dasher motor will not immediately operate (blinking button), the compressor will work for 20 sec. with the hot gas valve open in order to avoid or remove any ice coat on the cylinder walls. At the 20 sec. expiry, the dasher will automatically start.

6. ADJUSTMENTS

6.1 VISUALIZATIONS

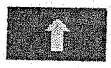
It is possibile to visualize on the OP display (Fig. 6-1 pos. 2) values needed to adjust correctly:

- the mix flow;
- overrun;
- viscosity;
- ice cream pressure;
- recipes.

6.2 MIX FLOW

To carry out the mix flow adjustment according to one's own requirements it is enough to go to the OP at page 2 "Mix flow".

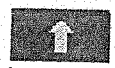
Push the button  to activate the insert mode. The datum to modify starts blinking.

Through the indicators  modify the blinking value next to the word "New".
Once the desired value has been reached, push ↵ to make the edited value become the current one.

6.3 OVERRUN

To carry out the overrun adjustment according to one's own needs it just takes going to the OP at page 3 "Overrun".

Push the button  to activate the insert mode. The datum to modify starts blinking.

Through the indicators  edit the blinking value next to the word "New".
Once the desired value has been achieved, push ↵ to make the modified value become the current one.

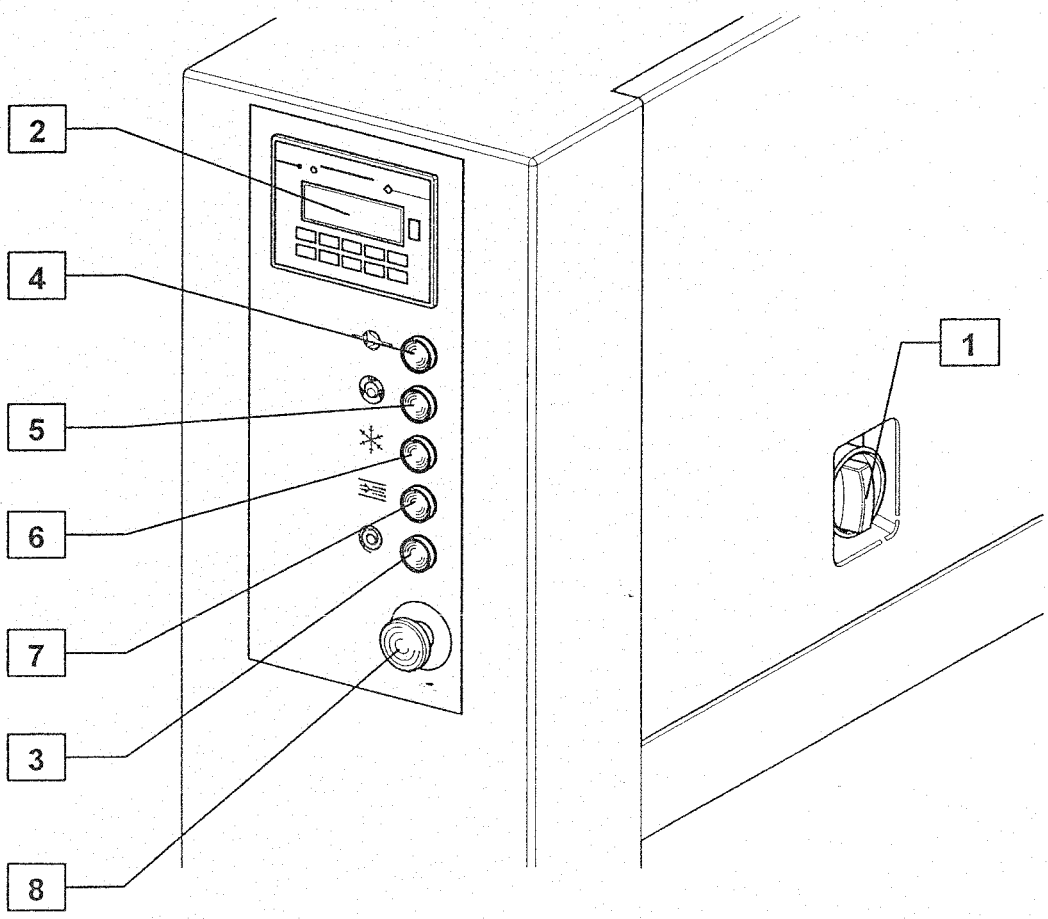


Fig. 6-1 – Adjustments

6.4 VISCOSITY

In order to obtain an ice crem with the desired viscosity, the freezing installation is prearranged for a partial blow-by of the cylinder hot gas (evaporator).
The control system is shown below.

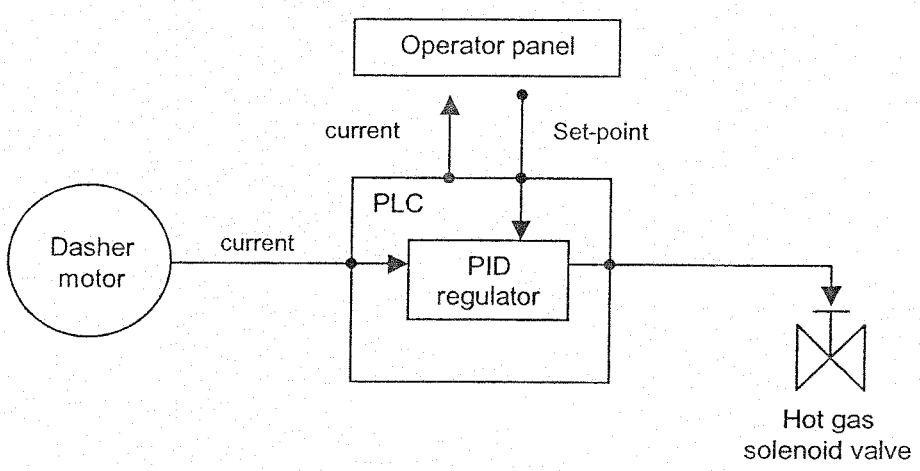


Fig. 6-2 – Viscosity

The current absorption by the dasher motor increases as the ice cream viscosity does.
The current is measured through an A/V converter, whose outlet is brought to the PLC. The PLC is charged to transfer the datum to the OP (see start page and viscosity page) and to elaborate it inside a PID regulator.
The desired viscosity value, is introduced into the OP (set-point) and transferred to the PLC.
The PID regulator, comparing the current data and the set-point, generates an impulsive outlet that controls the hot gas valve in order to keep the ice cream viscosity within the desired parameters.

Push the button  to activate the insert mode. The datum to modify starts blinking.

Through the indicators  edit the blinking value aside the word "New".
Once the desired value has been reached, push ↵ to make the edited value become the current one.

6.5 ICE CREAM PRESSURE

If, due to particolar needs like a reduced viscosity at a low flow, the ice cream pressure should be reduced, it would take going to the OP at page 5 "Ice cream pressure".

Push the button  to activate the insert mode. The datum to modify starts blinking.

Through the indicators  edit the blinking value next to the word "New".
Once the desired value has been reached, push ↵ to make the edited value become the current one..

6.6 RECIPES

To carry out the recipe selection according to one's own needs, it just takes going to the OP at page 6 "Recipe change and language change".

Push the button  to activate the insert mode. The datum to modify starts blinking.

Through the indicators  edit the blinking value next to the word "New".
Once the desired value has been reached, push ↵ to make the edited value become the current one.

By pushing the F2 key, the language on the OP will become english; by pushing the F3 key, it will turn back to italian (see paragraph 3.8.6).

7. CLEANING AND MAINTENANCE

To guarantee a high quality level of the product and a good machine functioning, it takes carrying out regular cleaning and washing operations.
Such operations must start with a hot water pre-washing to remove the coarsest dirt, followed by a basic washing for the remaining fats and by an acid washing for the calcareous incrustations.
At the end, it is advisable to execute a general una disinfection to eliminate the bacteria and a cold water rinsing.
The washing frequency must be checked experimentally according to the work conditions and to the used products.

WARNING: Choose the detergents minding their employ ease and the use safety for the operators and for the materials with which the machine is made.
As an example, we show in the following pages a list of the suggested detergents available in many world's countries.

WARNING: The following instructions just aim to give the operator a general guide to carry out the washing operations. The operator then, depending on his experience and by means of proper equipment will evaluate the right procedure to follow.
Sidam does not recognize any responsibility for damages that can derive from ineffective washings or sanifications of the machine.

7.1 CIP WASHING

It is possible to carry out a washing up of the freezer by using the C.I.P. system.
The C.I.P. is a method to wash the machine without disassembling all the parts that have come into contact with the mix.
The C.I.P. cleaning is recommended as it provides a better cleaning than the hand one and reduces the damages to the polished surfaces and wearing parts.
To carry out the C.I.P. washing:

1) Connect the C.I.P. sending pipeline to the mix inlet (Fig. 7-1 pos. 1) and the ice cream offload line (Fig. 7-1 pos. 2) to the blow-by tank return one.
2) Rinse thoroughly with water to remove as much of mix as possible. The water used should be cold at first, then heated up to 32 °C (90 °F) or 38 °C (100 °F) to melt the ice cream in the freezer.
3) Prepare a solution with water and detergent in a proper container (see also paragraph 7.2). It is of main importance not to use agent detergents, as they could damage the cylinder hard chrome plating. Make sure that the detergent has melt out before making the solution circulate. Use a minimum of 250 liters (65 gallons) of solution.
4) Make sure the time set on the "CIP" page is correct (see page "CIP cycle duration set-up" paragraph 3.8.7.
5) Push the C.I.P. button.
6) Let the solution circulate, starting from 38 °C (100 °F) and rinsing it up to 60 °C (140 °F), in order to heat gradually up the freezer parts.
7) After having circulated the cleaning solution, rinse thouroughly, first with hot water and then with each time warmer water. Use the same C.I.P. pump for rinsing. It is important that all the celaning solution gets removed.
8) Turn the pump off, cut the water out and disconnect the inlet and outlet lines.

The mix sending and the freezer should be sanitized just before the production stage.
After the sanitation, do not disassemble the machine parts to avoid contamination.

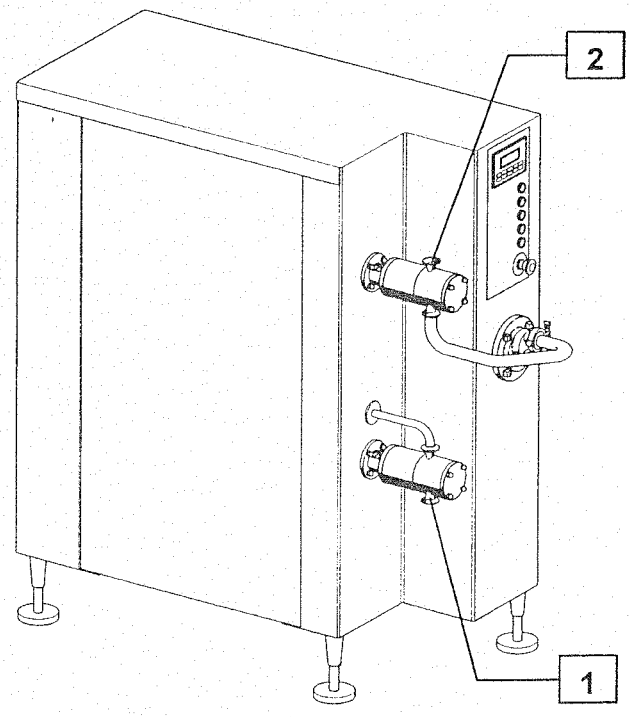


Fig. 7-1 – CIP washing

7.1.1 OUTER WASHING PROGRAM

The washing up of the outer parts of the machine must begin with a hot water pre-washing (max. 50°C) to remove the coarsest dirt, followed by a cleaning washing which is let operate for about 10 minutes.
Rinse it all with water and proceed with a following acid descaling washing which is let operate for at least 15-20 minutes.
Eventually, rinse with water again, carry out a general disinfection and a further rinsing with cold water.

Suggested detergent:

Detergent Washing:
Frothing alkaline detergent or gel with high fats emulsifying power.
Concentration between 2 ÷ 10% depending on the dirt and on the water hardness.

Descaling Washing:
Acid descaling agent with low viscosity containing a mixture of dampening and emulsifying agents.
Concentration between 2 ÷ 3%.

Disinfectant Washing:
Disinfectant diluted with water.
Concentration between 1 ÷ 1,2%.

WARNING: Do not use high pressure water jets.

WARNING: The liquid offloads have to be treated according to the standard in force in the country where the machine is installed.

7.2 RECOMMENDED DETERGENTS

SIDAM will not be responsible for Your use of detergents.
Refer to the manufacturer who can inform about correct use, removal, etc..
The detergent used must be fit for the blow-by cleaning and must be chosen according to the water hardness and local conditions.
The following table reports the detergents suggested by Henkel-Ecolab.
These detergents have been tested and used by various european Companies in the ice cream industry.
SIDAM recommends the use of these detergents or of other brands correspondent products.

DETERGENT	DESCRIPTION	CONC. (%)	TEMP. (°C)	TIME (MIN.)
P3-mip LF	Alkaline cleaner with surfactants	1.0-2.0	60-80	10-40
P3-tresolin ST	Neutral cleaner	0.5-2.0	20-50	10-30
P3-steril	Cleaner with disinfecting qualities	0.5-2.0	20-50	10-30
P3-horolith CIP (P3-horolith MSW)	Acid cleaner with surfactants	0.5-1.5	60-80	10-30

7.3 STANDARD MAINTENANCE

Daily maintenance

At the end of the day, it is necessary to clean and sanitize the machine in accordance with what is reported in the cleaning section.

Weekly maintenance

1) Extract and check the dasher (see relative paragraph) at least weeekly (make sure You are using the proper supplied tool not to scratch the cylinder chrome plate)
2) Inspect the chrome in the tube. The tube should be smooth and bright. If there are any rough areas, marks or evidence of deterioration of the plating, find the problems and correct it.
3) Check blades. Inspect the scraper blades weekly of after every 40 operating hours. More frequent inspection is needed if the product are sherbets or low fat mixes. Worn or rough blades will eventually gauge the chrome plating in the freezing tube. It is a good practice to keep a complete set of spare blades and to change them regularly.
4) Replace the seals in the pumps and dasher shafts. It may be necessary to replace these seals more frequently than once a week if the freezer is in continuous operation. The life expectancy of the O-rings is 100 hours.

Monthly maintenance

1) Check the stretch of the frosting cylinder shaft handling belt. The belt must not be too stretched. If the belt has been stretched or is worn, replace it with en equivalent one.
2) Rotating the corresponding stretching screws (Fig. 7-2 pos. 1), stretch the belt to an extent that the flexion is about 6mm applying a 10 kg force.

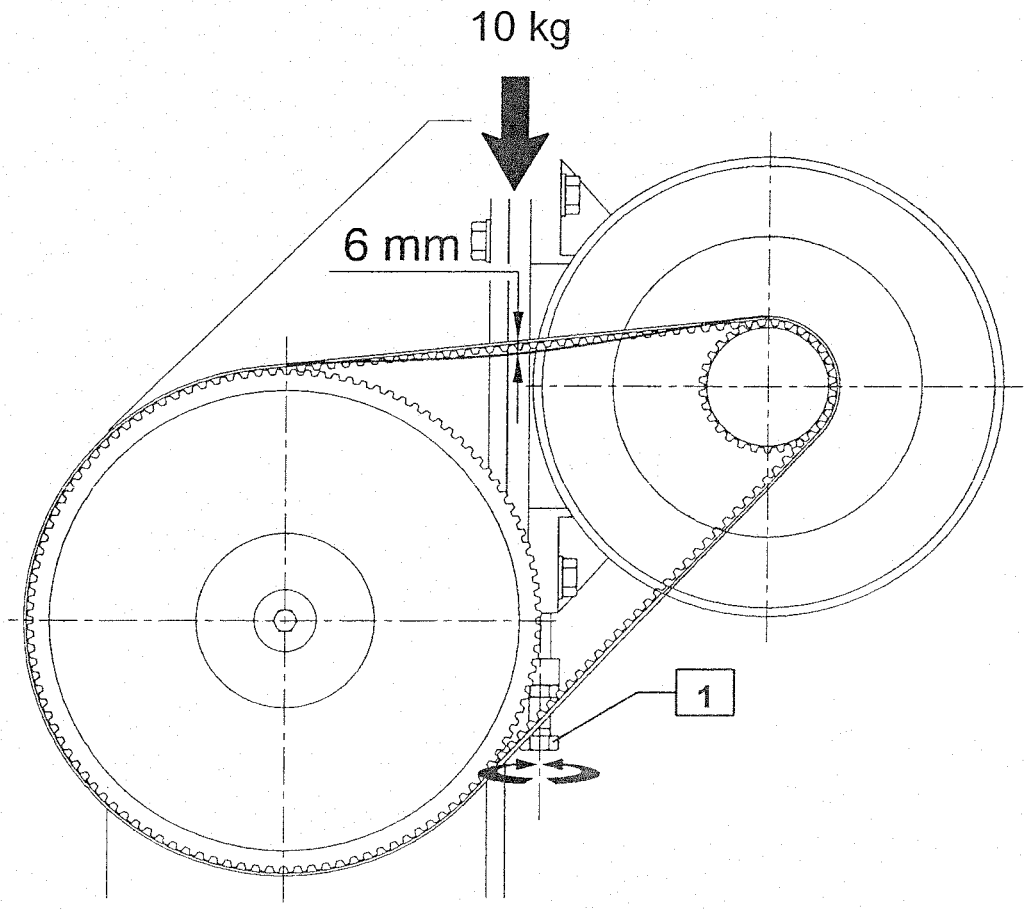


Fig. 7-2 – Standard maintenance

Plate condenser maintenance

TYPES OF WATER

The water can be classified as:
Mains water. Usually optimal, but it is not used in the condensers due to its high cost.
It is instead used for the reinstatement in the evaporation towers.
Town water. It usually has a low biologic content, but the concentration of corrosive or encrusting salts can be very high. The solid particles content can be very high too.
A pre-treatment may be needed.
Tower water. The water circulates in an open circuit between the condenser and the evaporation tower.
The water is normally 15-20 °C hotter than the town water in the same area. The salt content can be 10 times higher than the reinstatement water one, which is usually mains water.
In areas with polluted water, this can recollect dust and corrosive gasses.

PLATE CONDENSER CLOGGING

The clogging causes two main effects:
Increases the load losses;
Decreases the thermic exchange.
Some substances cause only the first effect, some others just the second one; others cause both.

LOAD LOSSES INCREASE

Particles in water, fibres, leaves and wood pieces coming from the evaporation tower can clog the exchanger entry.
The load loss grows, even though this does not affect directly the exchanger thermic yield, yet indirectly due to the flow variation.
Usually, particles like sand pass through the exchanger if their diameter is lower than about 1 mm.

PREVENTION AND WASHING

There are basically two methods to prevent the load losses increase:

Countercurrent flow:
The flow in the exchanger is inverted.
This method is acceptable if the water does not contain too thin particles that can nest inside the exchanger. The GIF 600 is fit for countercurrent washing.

Filter:
A filter with an 0.5-1.5 mm link width is installed in the circuit of the evaporation tower, better before the pump, which has to be guarded too.
The link width depends on the water quality.
A very narrow link is not necessarily the best solution: even though this would keep the exchanger clean, the problem would simply be transferred to the filter, which would need frequent openings and cleanings.
On the other hand, a too wide link would transfer the trouble to the exchanger.
Therefore, if the filter is easy to be inspected and the condenser is supposed to operate many hours a day, it is advisable to use a narrow link; if the condenser can stay in stand-by for long periods and the filter is not easy to be inspected, rather use a larger link. Anyway, it is always better to use a link as narrow as possible.

INCRUSTATION ON THE EXCHANGE SURFACE

It happens when the exchanger interior surface is gradually coated with a limestone layer.
The thermic yield gets worse but the load loss is not affected by that, at least at the beginning.
The various types of cloggings due to the evaporation towers open circuit can be classified as follows.

Viscous products:

Oils and greases can enter the circulation and lay on the exchanger surface.

Limestone:

Some inorganic salts have an inverted solubility curve, that is the solubility in water decreases as the temperature increases.
Therefore, when the colder water gets in touch with the condenser surface, these salts lay on the surface.
Some salts, like the anhydrite (CaSO4), are very difficult to melt, whereas others, like the calcium carbonate (CaCO3) are easily melted with an acid solution.

Seaweeds:

During some periods of the year, mainly in summer, the water can include seaweeds.
If the seaweeds have big dimensions, they can be stopped by the filter, otherwise they can reach the exchanger.
Apart from the yield decrease, the seaweeds deposit can act to start corrosion.
If the evaporation tower is not treated with a seaweed-killer, the tower open frame eases the seaweeds proliferation; the seaweeds cannot develop in a closed circuit, as they need light to grow.

Mushrooms and bacteria:

Differently from the seaweeds, they can develop everywhere and cannot be stopped by filters, so it is impossible to stop their growth if the conditions are favorable for them.
Some bacteria can be fed with sulfate present in the water, turning them into sulphuric acid, which causes corrosion.
Others absorb iron, melted or in oxid shape, forming a viscous film.
Some others absorb compounds of azote and phosphorus, forming a slush upon the exchanger surface.
As the condenser is the hottest point in the system, its surface is a proper place for the bacteria to nest.
The water can seem normal if inspected, even though it contains a bacteria load, and that makes this kind of clogging very hard to locate.
The mushrooms produce an effect similar to the bacteria, but they are usually harder to eliminate.

Sand deposits, etc.:

Sand, dust, etc. can lay by the exchanger entry, but usually at very low speed of water.

PREVENTION AND CLEANING

The water treatment is a complex topic, specially the biological contamination control. Some products are toxic, and so they are subjected to regulations and controls by the law, all of this makes necessary the consultation of a specialist in water treatment.

Cleaning liquids can be corrosive or dangerous anyway.

Therefore, it is better to use commercial products instead of chemical basic products.

The commercial products very often contain inhibitors to prevent or reduce the corrosion, apart from mixtures of different compounds to attack a wide range of microorganisms.

They are also kitted with proper instructions, safety precautions and sometimes warranty.

CONDENSER WASHING

For the cleaning/washing of the cooling water circuit proceed as follows:

a) Shut the cooling water intercepting valves off (Fig. 7-2 pos. 1 and 2).
b) Remove the closing hexagon plugs (Fig. 7-2 pos. 3 and 4).
c) Link the sending scales-removing tube to the connection (Fig. 7-2 pos. 3) and the return tube to the connection (Fig. 7-2 pos. 4) using a proper equipment with close circuit washing pump.
d) Proceed with the cooling water circuit washing: first feed with detergents fit for removing the fat remaining parts, then with organic acids compatible with copper (formic, citric, acetic acid, etc.).
e) Eventually, rinse it all with cold water and reset the circuit closing the inlet and the outlet with the proper plugs (Fig. 7-2 pos. 3 and 4).

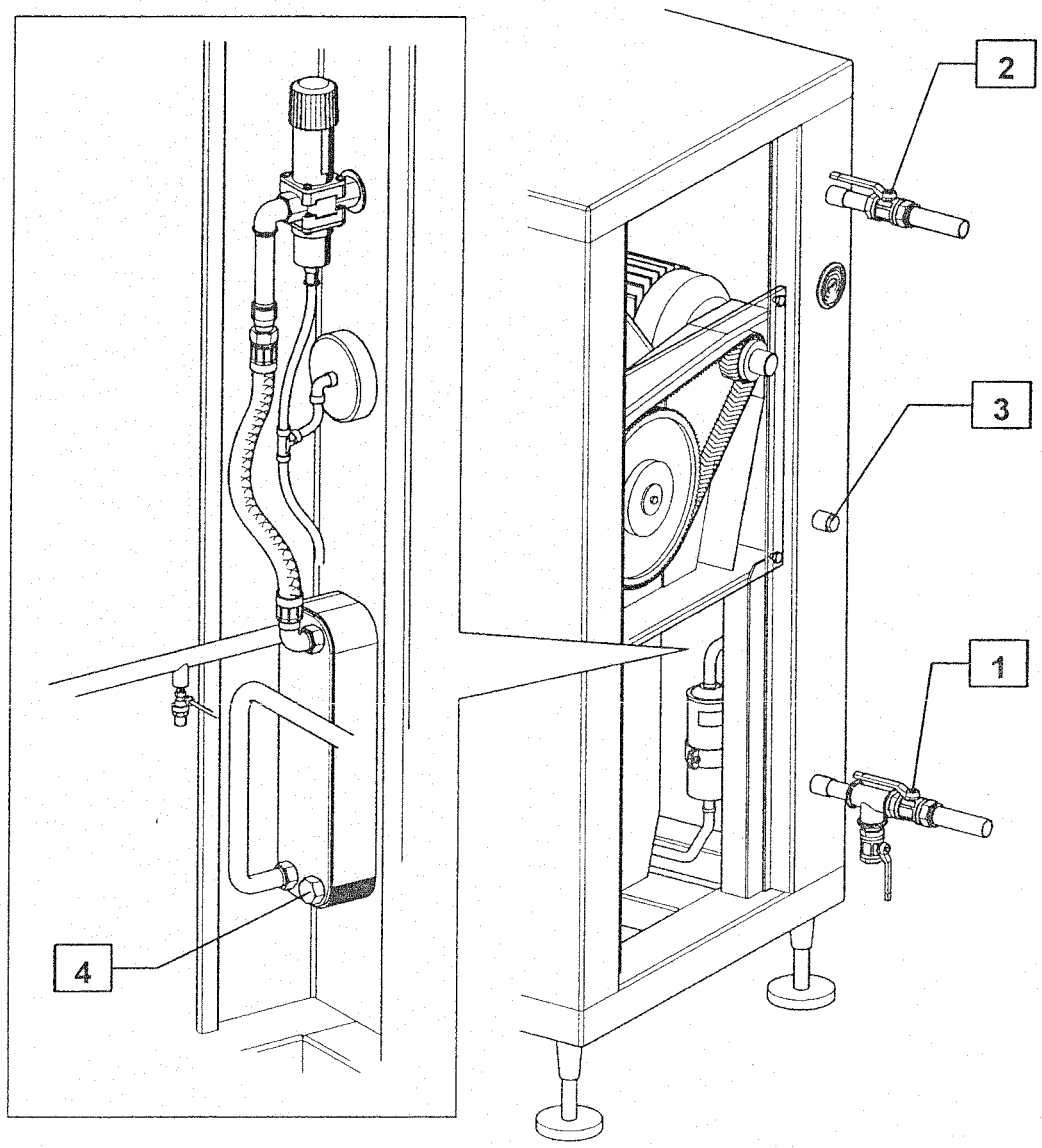


Fig. 7-3 – Condenser washing

7.4 PUMPS ASSEMBLY-DISASSEMBLY

NOTE: The SIDAM pumps are designed with very low tolerances and high degrees of engineering efficiency. During assembly, never force the mating parts.

Pump disassembly

1) Loosen the nut (Fig. 7-4 pos. 3) and screw three turns out the backlash adjusting handwheel (Fig. 7-4 pos. 2).
2) Remove the 4 fixing screws (Fig. 7-4 pos. 1) of the pump on the freezer.
3) Remove the pump and place it on an easy prearranged work plan.

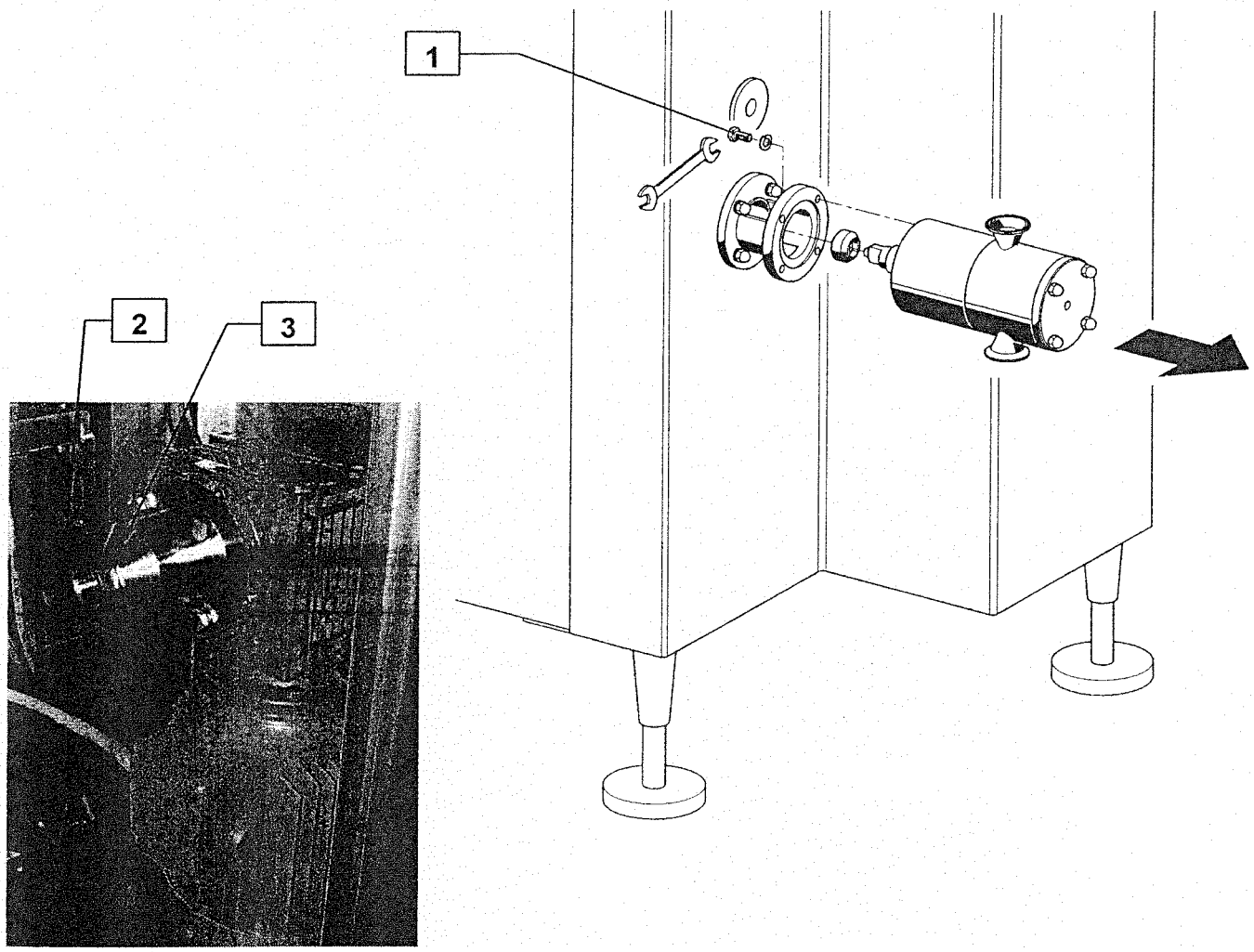


Fig. 7-4 – Pumps assembly-disassembly

4) Screw out the 4 nuts (Fig. 7-5 pos. 1), remove the washers (Fig. 7-5 pos. 2) and slide the lid off (Fig. 7-5 pos. 3).

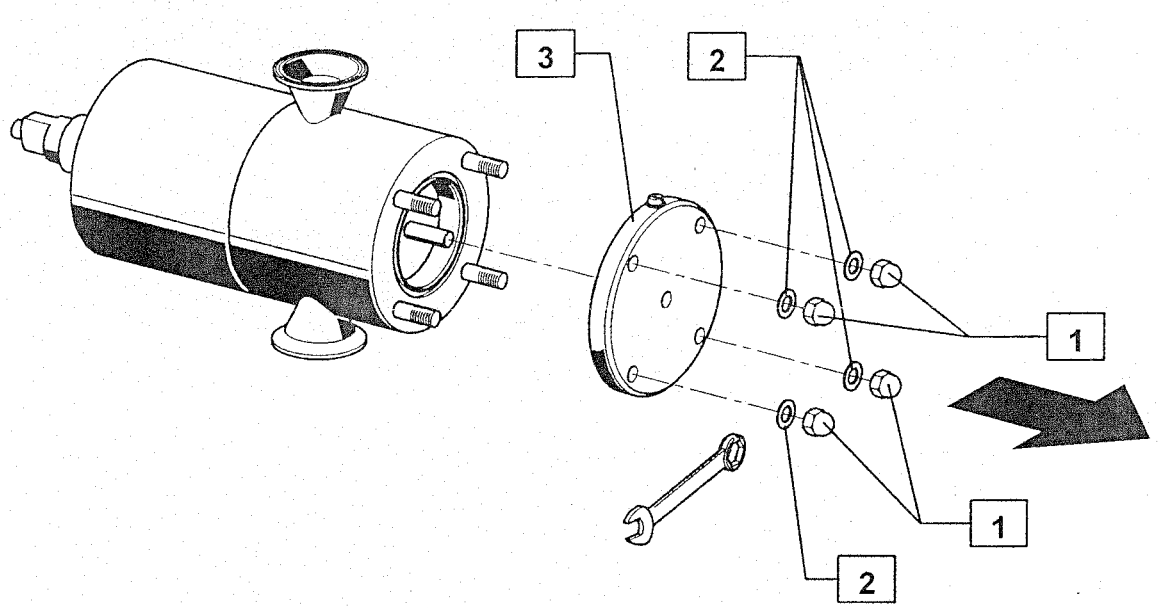


Fig. 7-5 – Pumps assembly-disassembly

5) Using a plastic/wooden hammer (Fig. 7-6 pos. 1) as indicated by the drawing, remove the pump body (Fig. 7-6 pos. 2) from the base (Fig. 7-6 pos. 3).

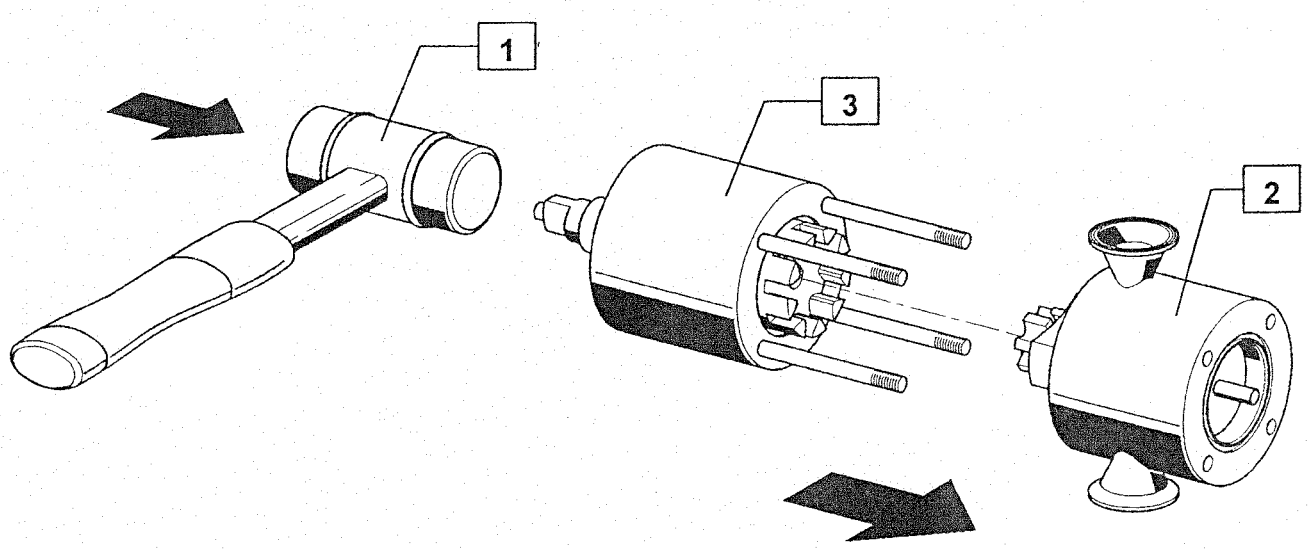


Fig. 7-6 – Pumps assembly-disassembly

6) Disassemble the various sets (Fig. 7-7 pos. 1-2-3) controlling their efficiency and wear.
7) Replace the O-ring gaskets (Fig. 7-7 pos. 4).

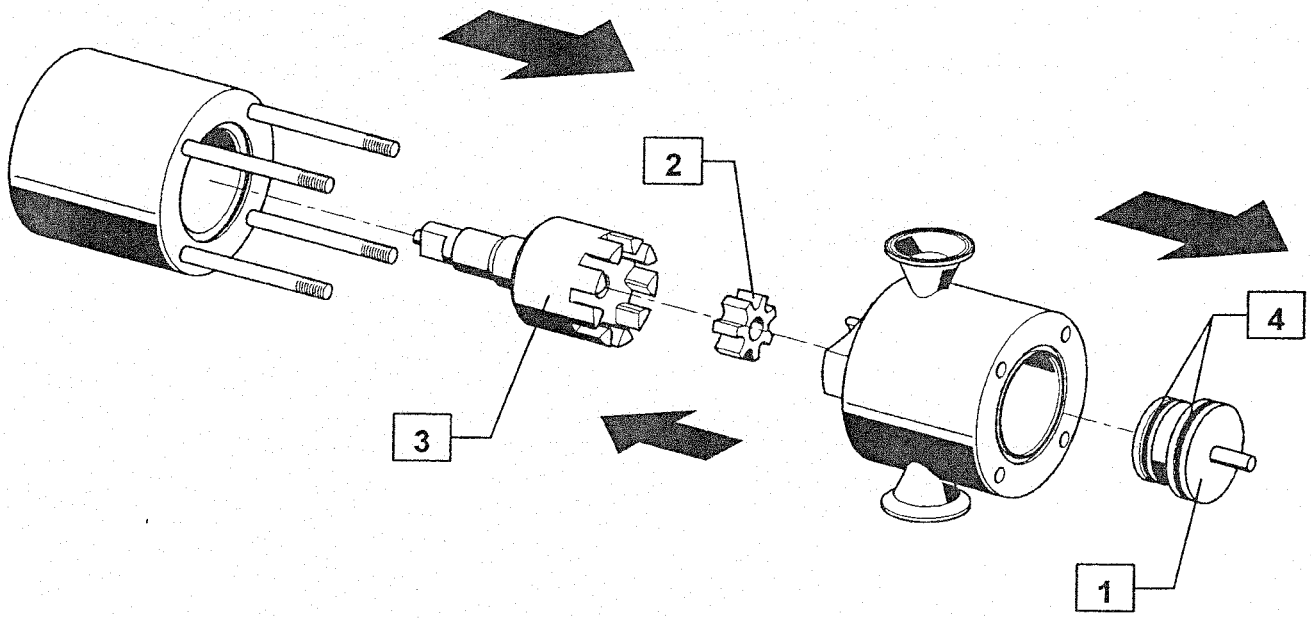


Fig. 7-7 – Pumps assembly-disassembly

Pump assembly

8) Eventually, mount it all back following backwards the operations as above.
9) Pay attention to the pumps, which must be installed on the machine rests with the "0" pointers facing the frosting cylinder as shown in the drawing (see Fig. 7-8) (Mix pump pointer up, ice cream pump pointer down).

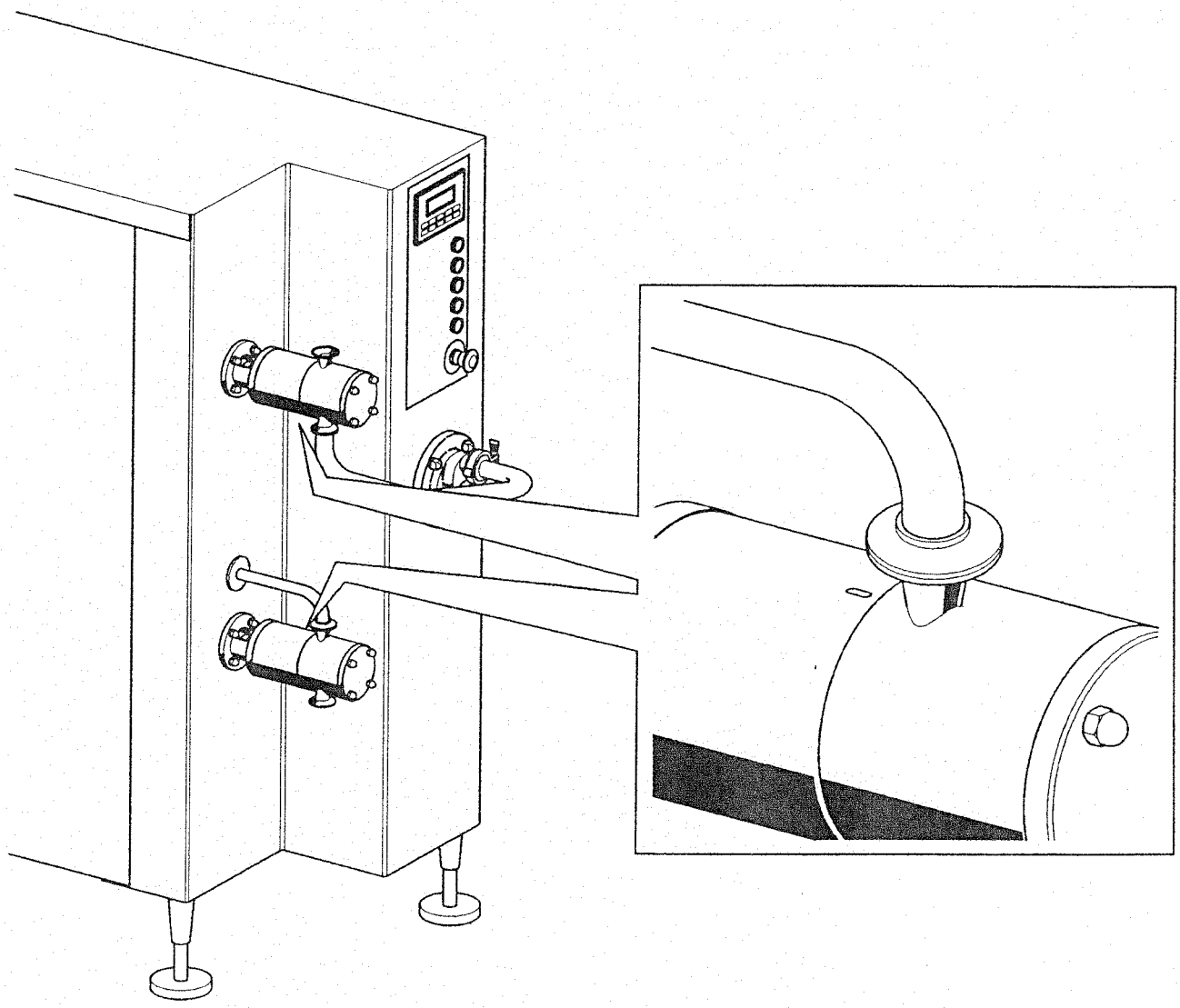


Fig. 7-8 – Pumps assembly-disassembly

10) At the end of the assembly of the pump, adjust the rotor axial slack proceeding as described below:
- Rotate manually in clockwise sense the handwheel (Fig. 7-9 pos. 1) up to the end of the run and tighten hard manually.
- Loosen rotating in counterclockwise sense up to one notch on the handwheel (Fig. 7-9 pos. 2) to provide some slack.
- Tighten with a fork-wrench the counter-nut (Fig. 7-9 pos. 3) on the handwheel thread taking care not to let the handwheel rotate.

NOTE: Carry out this operation at the beginning of every productive season.

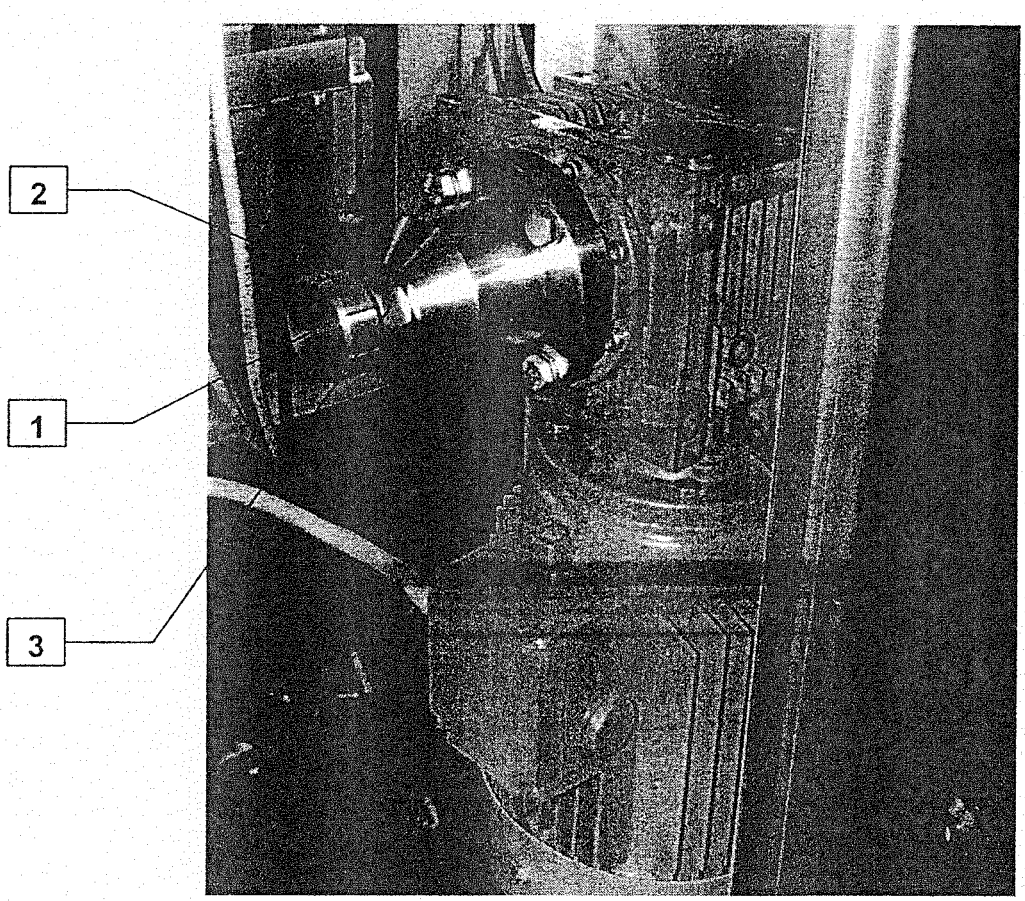


Fig. 7-9 – Pumps assembly-disassembly

7.5 DASHER ASSEMBLY-DISASSEMBLY

WARNING: wear anti-slide resisting gloves and always use the cleat when removing, disassembling, assembling, transporting or installing the dasher. The blades have a sharp edge which can come out to be dangerous if not handles with precaution.

Dasher disassembly

1) Screw out the flange (Fig. 7-10 pos. 2) locking screws (Fig. 7-10 pos. 1).
2) Extract the flange (Fig. 7-10 pos. 2) or the whipper (Fig. 7-10 pos. 3).

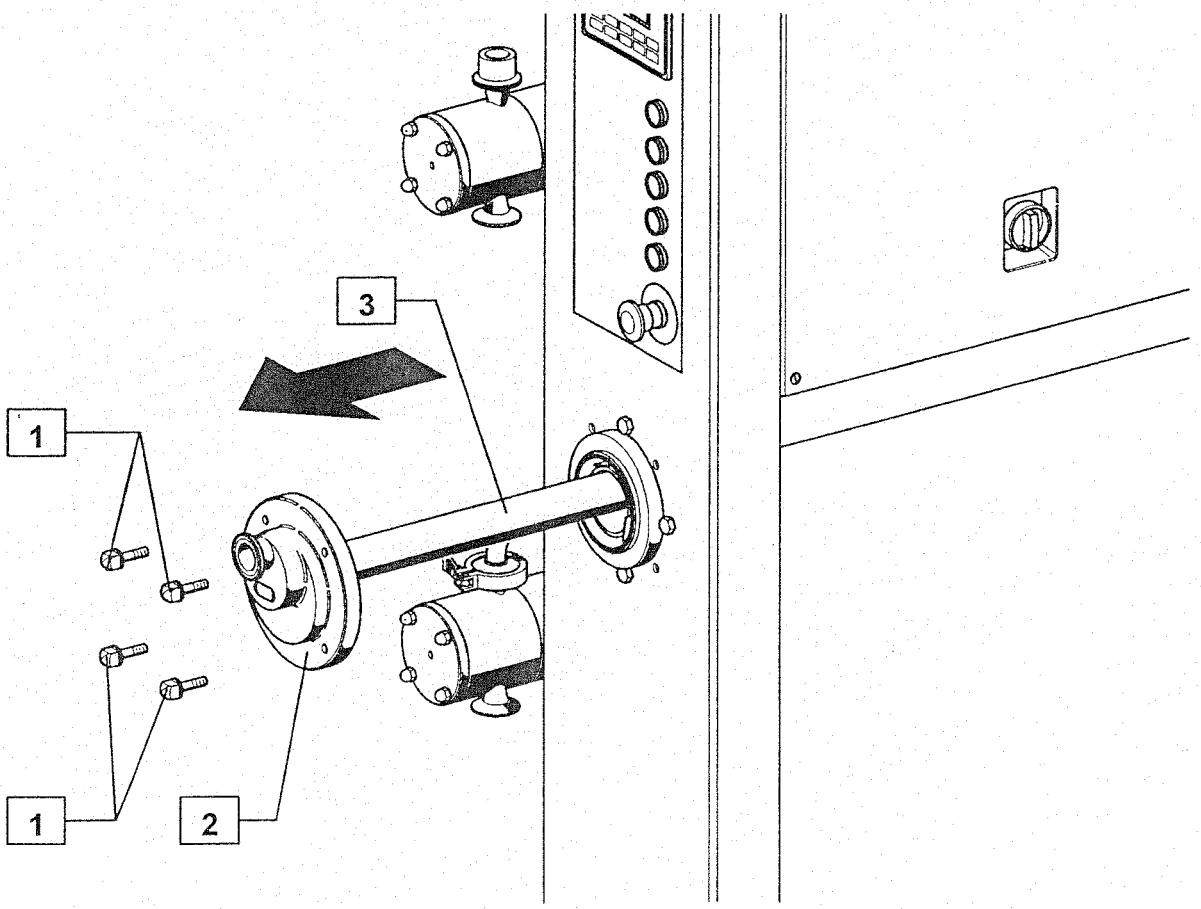


Fig. 7-10 – Dasher disassembly

3) Insert the cleat (Fig. 7-11 pos. 1) in the dasher keeping this latter slightly lifted (Fig. 7-11 pos. 2).

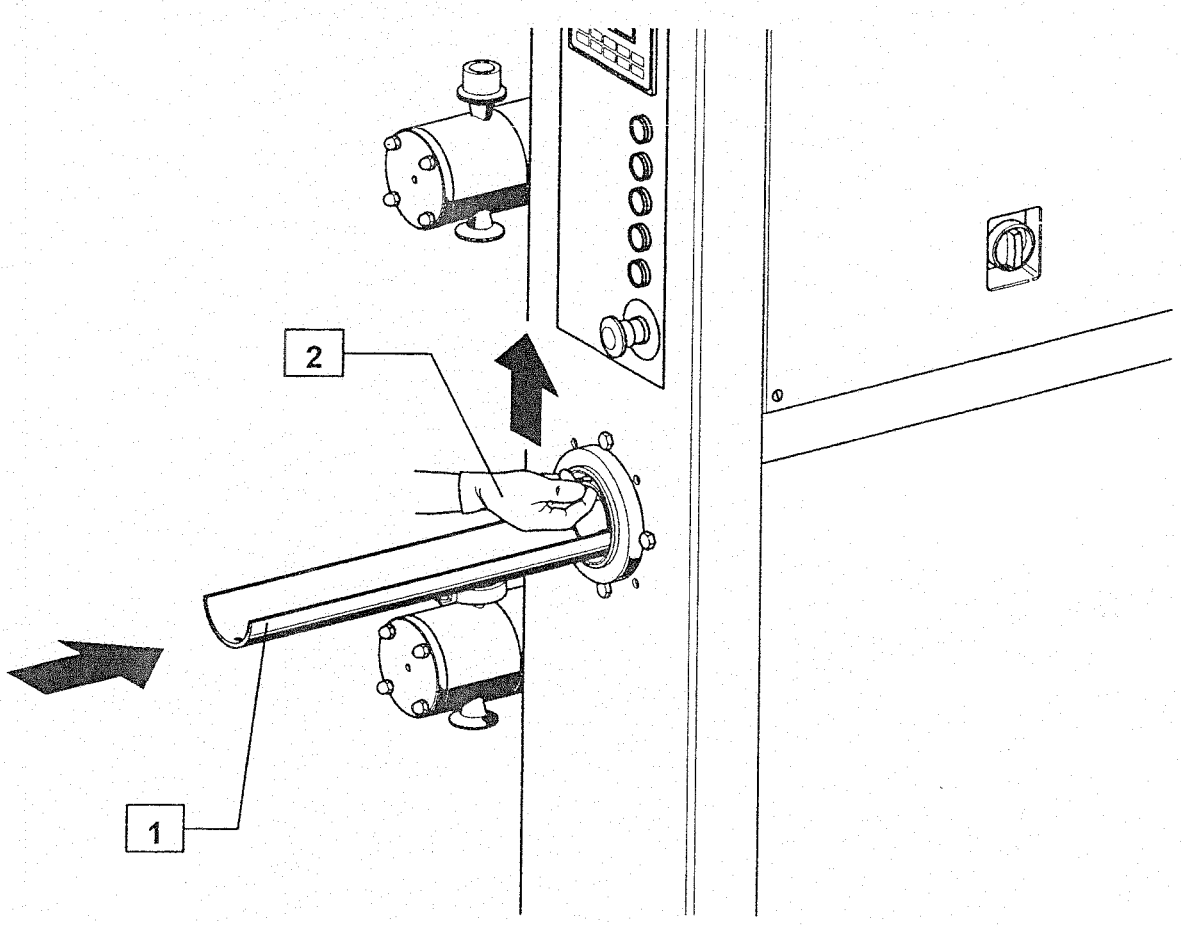


Fig. 7-11 – Dasher disassembly

4) Extract the dasher (Fig. 7-12 pos. 1) from the cooling cylinder using the proper cleat (Fig. 7-12 pos. 2) and the extracting tool (Fig. 7-12 pos. 3).

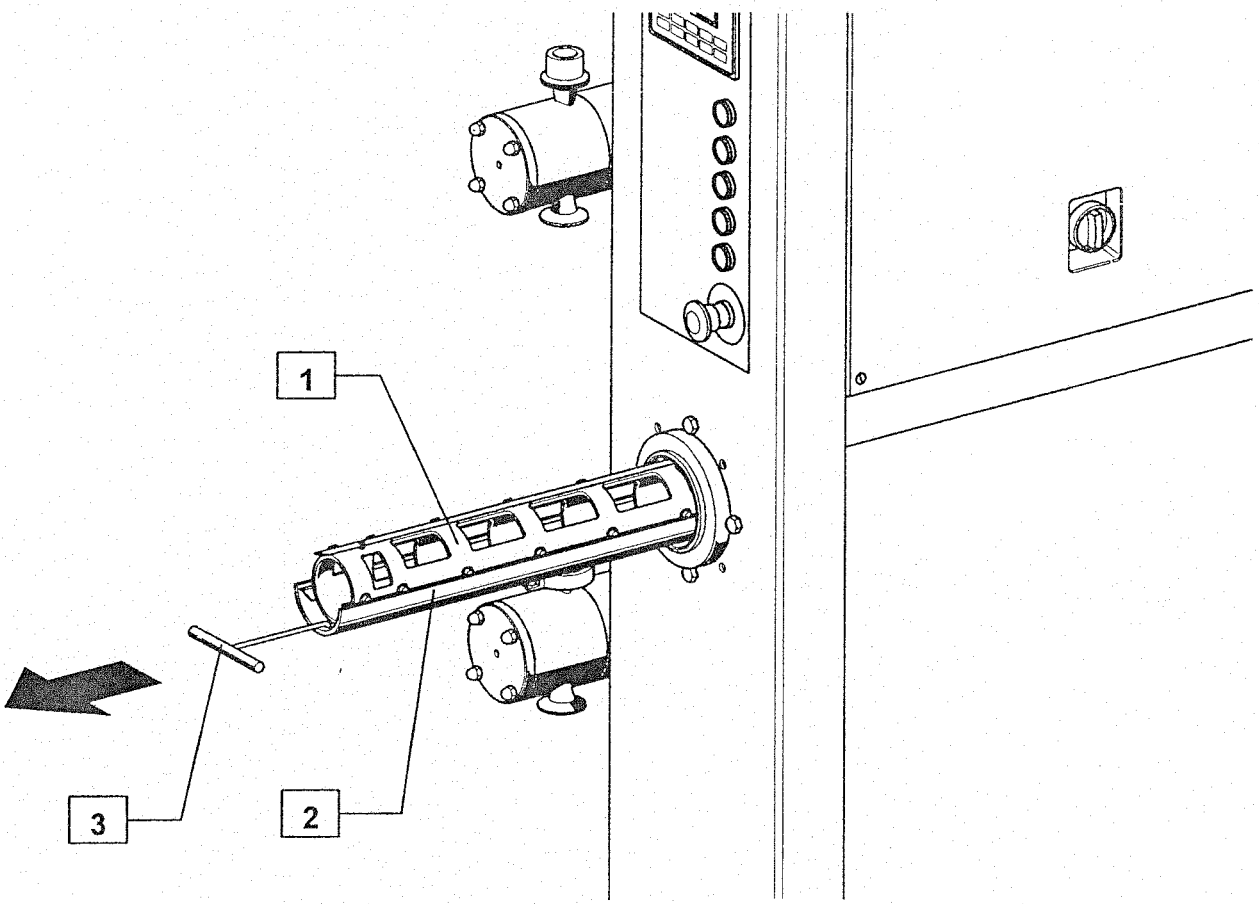


Fig. 7-12 – Dasher disassembly

5) Remove the shaft (Fig. 7-13 pos. 1) from the flange (Fig. 7-13 pos. 2) replacing the O-ring gasket (Fig. 7-13 pos. 3) and the brasses (Fig. 7-13 pos. 4 e 5).

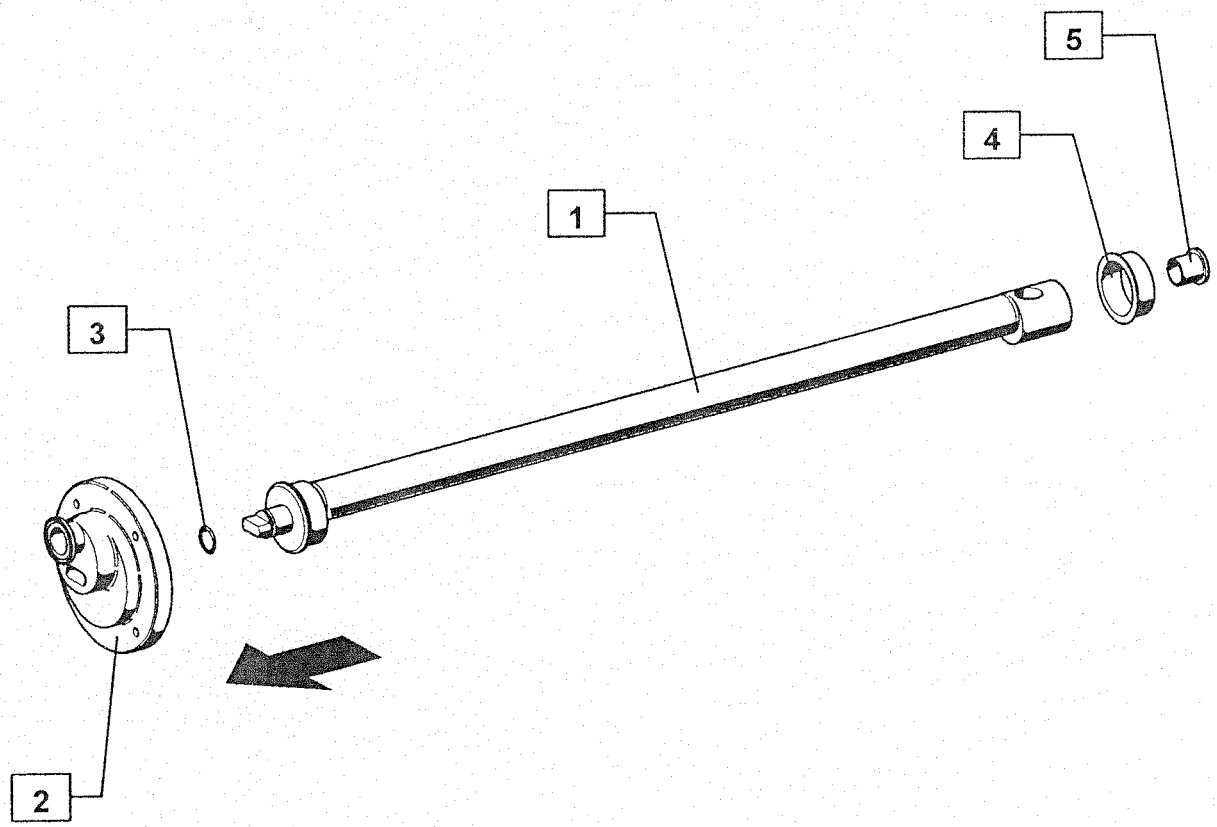


Fig. 7-13 – Dasher disassembly

6) Lay the dasher (still on the cleat) on a fit work plan and remove the blades.
7) Remove and replace the gasket (Fig. 7-14 pos. 1) positioned on the rear part of the dasher (Fig. 7-14 pos. 2) taking care not to squash or cut it. It is a good habit to lubricate the gasket with some vaseline.

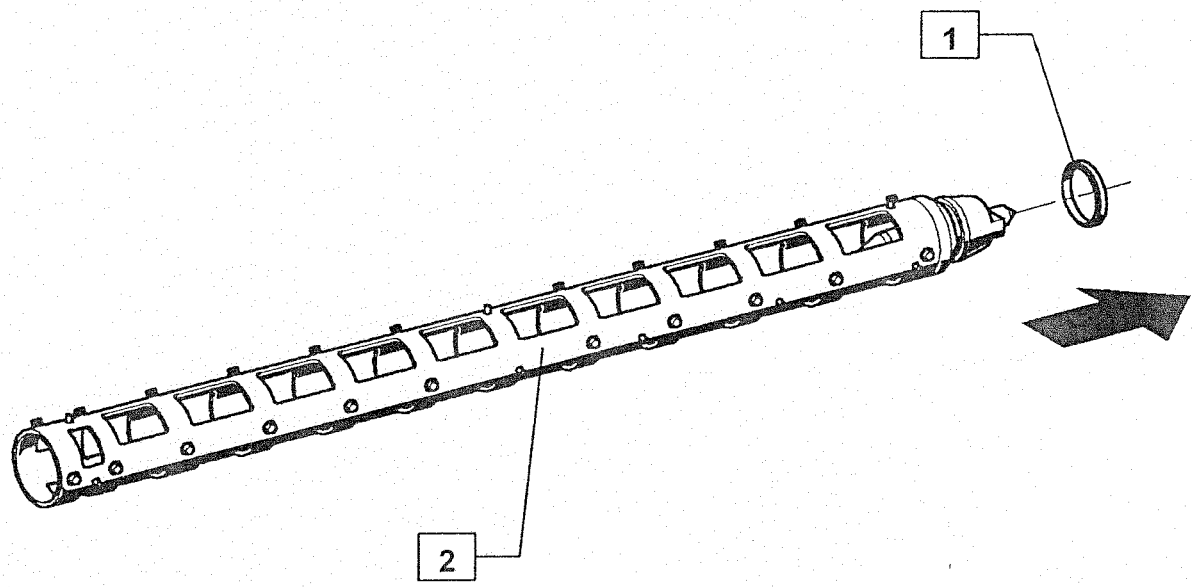


Fig. 7-14 – Dasher disassembly

Dasher assembly

1) Mount the blades (Fig. 7-15 pos. 1) back on the dasher and insert this latter back inside the cooling cylinder using the cleat (Fig. 7-15 pos. 2) and the extracting tool (Fig. 7-15 pos. 3).

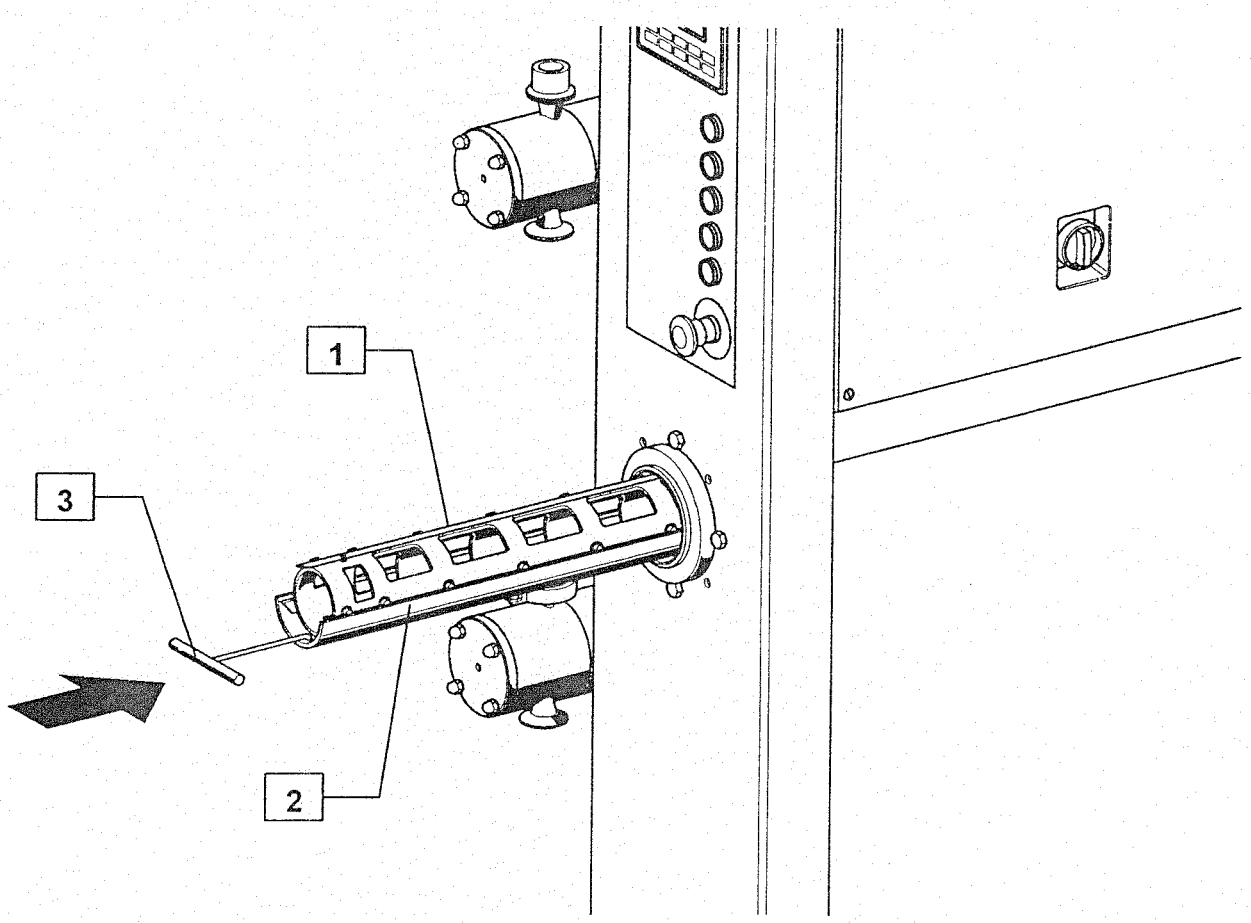


Fig. 7-15 – Dasher assembly

2) After having isterted the dasher, rotate it up to perfect coupling with the rear motor drive (Fig. 7-16 pos. 1).

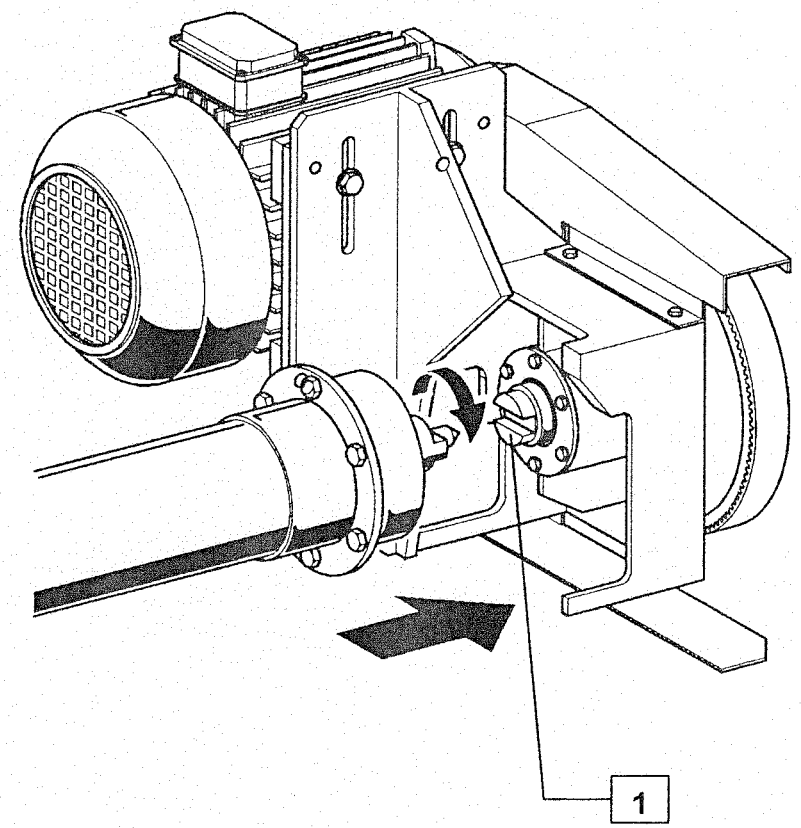


Fig. 7-16 – Dasher assembly

3) Eventually, with the dasher positioned, extract the cleat (Fig. 7-17 pos. 1) keeping the dasher in position slightly lifted.

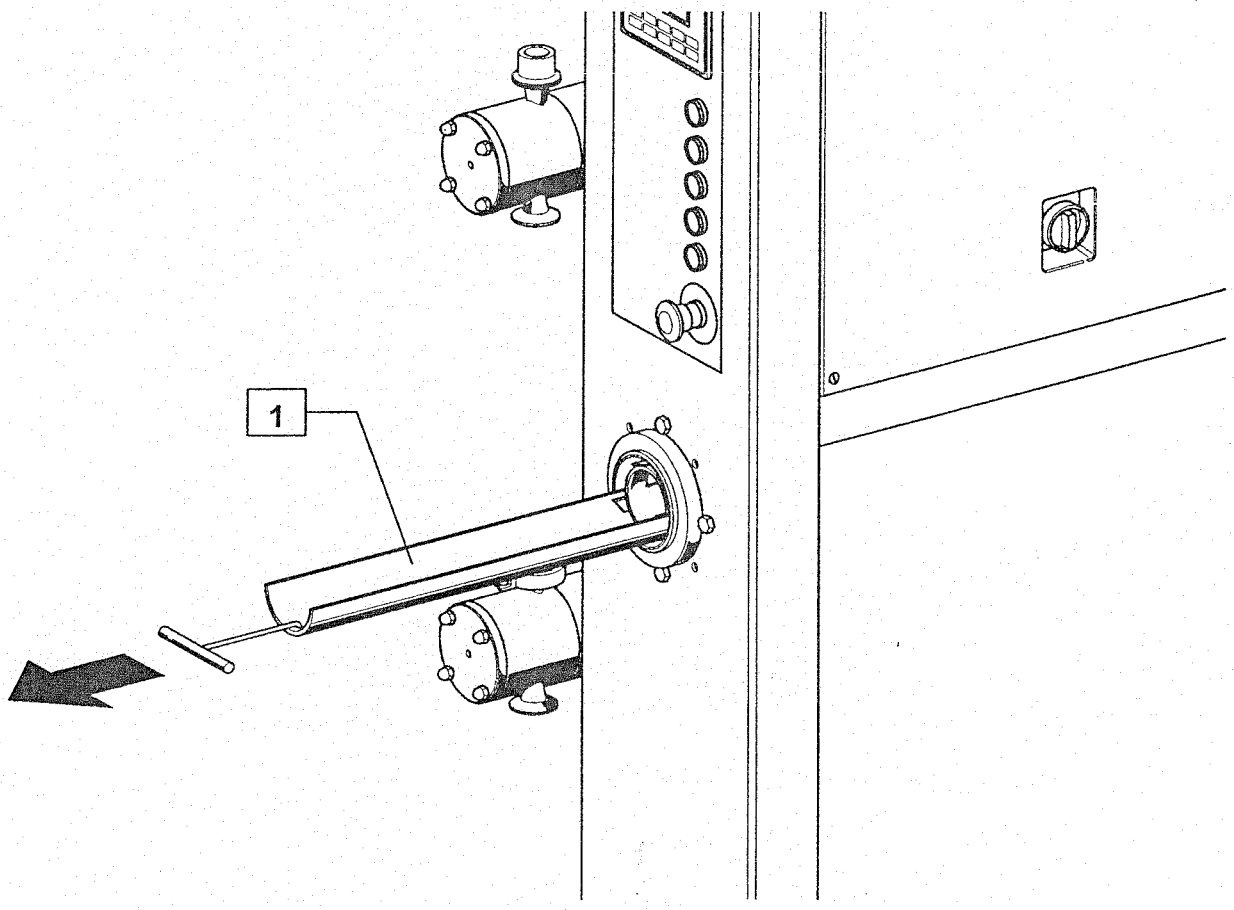


Fig. 7-17 – Dasher assembly

4) Before close the dasher back with the propro flange, make sure the blades are placed inside the cylinder as shown in the picture below (vedi Fig. 7-18).

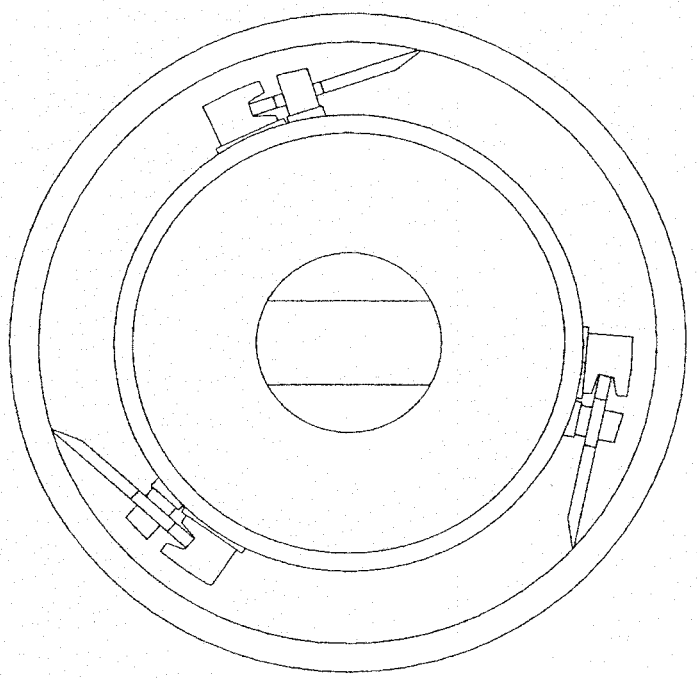


Fig. 7-18 – Dasher assembly

7.6 BLADES MAINTENANCE (FIG. 7-20)

Since the blades scrape the cooling cylinder, the edge gets worn, and featheredge is formed.
A blade is in good conditions when the transversal profile is as shown in the drawing.
A blade is not in fine conditions when the edge width in the area leaning onto the cylinder surface is more than 0,5 mm or when the wear has caused the forming of featheredge.
We recommend to replace the worn-out blades with original spare ones and not to reset the correct profile in a handicraft way.
To renew the worn-out blades, turn to a specialized workshop that make the job with machines and equipment fit for an accurate working without deforming the piece.

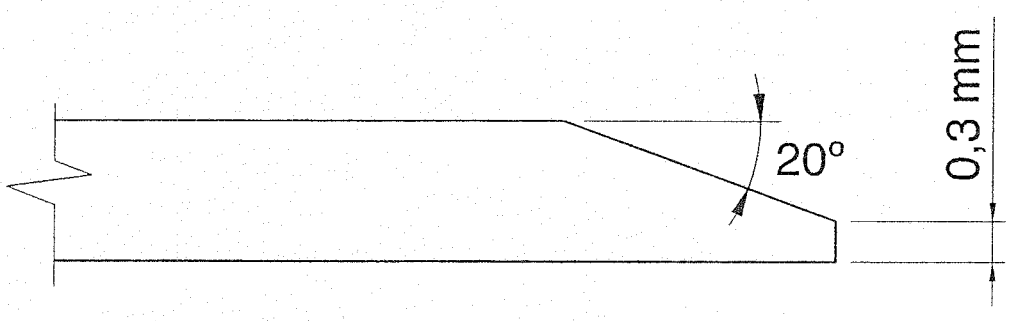


Fig. 7-20 – Blades maintenance

NOTE: A blade can be sharpened up to a minimum width of 27 mm. A too narrow blade does not get correctly in touch with the wall and will not scrape in an efficient way. Replace the blade if the total width is less than 27 mm.

8. TROUBLE SHOOTING

Causes of an imperfect functioning could be:

1) **Machine does not ignite**
   - The general switch is in position "0" or troubled. Rotate to position "1" or replace.

2) **Supply air pressure not included in the required values range.**
   - Check if the machine is supplied with compressed air at the required pressure.
   - Check that no pressure drops are in the pneumatic installation.
   - Check that the pressure adjusting switch is not badly adjusted or damaged.

3) **The pumps stop or do not ignite**
   - Troubled control push-button. Replace it.
   - Inverter overcurrent protection. Wait 20 seconds and re-activate the pump.
   - Inverter is broken of in emergency state. Disconnect the general switch and turn it back on after some minutes.

4) **The whipping shaft stops or does not ignite**
   - Thermic protection tripped. Reset the thermic protection.
   - Troubled control push-button. Replace it.
   - Troubled motor. Repair or replace it.

5) **The freezing compressor does not ignite**
   - Thermic protection tripped. Reset.
   - Troubled control push-button. Replace it.

6) **Condensation pressure off the allowed range**
   - The calibration value in the factory is 15 bar (Fig. 8-1 pos. 1). Check that the pointer of the condensation manometer is inside the green area of the scale. If it was not like this, check that all the cocks on the line that brings water to the freezer are open and that the water reaches regularly the machine. Check the water temperature (it should be > 5, < 31°C) and, if necessary, adjust the pressure adjusting valve (Fig. 8-1 pos. 2) acting with the handwheel (Fig. 8-1 pos. 3) placed on the top of the valve to bring the pressure to 15 bar.

NOTE: The freezing installation is accurately calibrated during the factory test. Therefore, we recommend not to adjust it. However, if the adjustment was necessary, turn to a refrigeration-wise technician, expert in low temperature industrial installations.

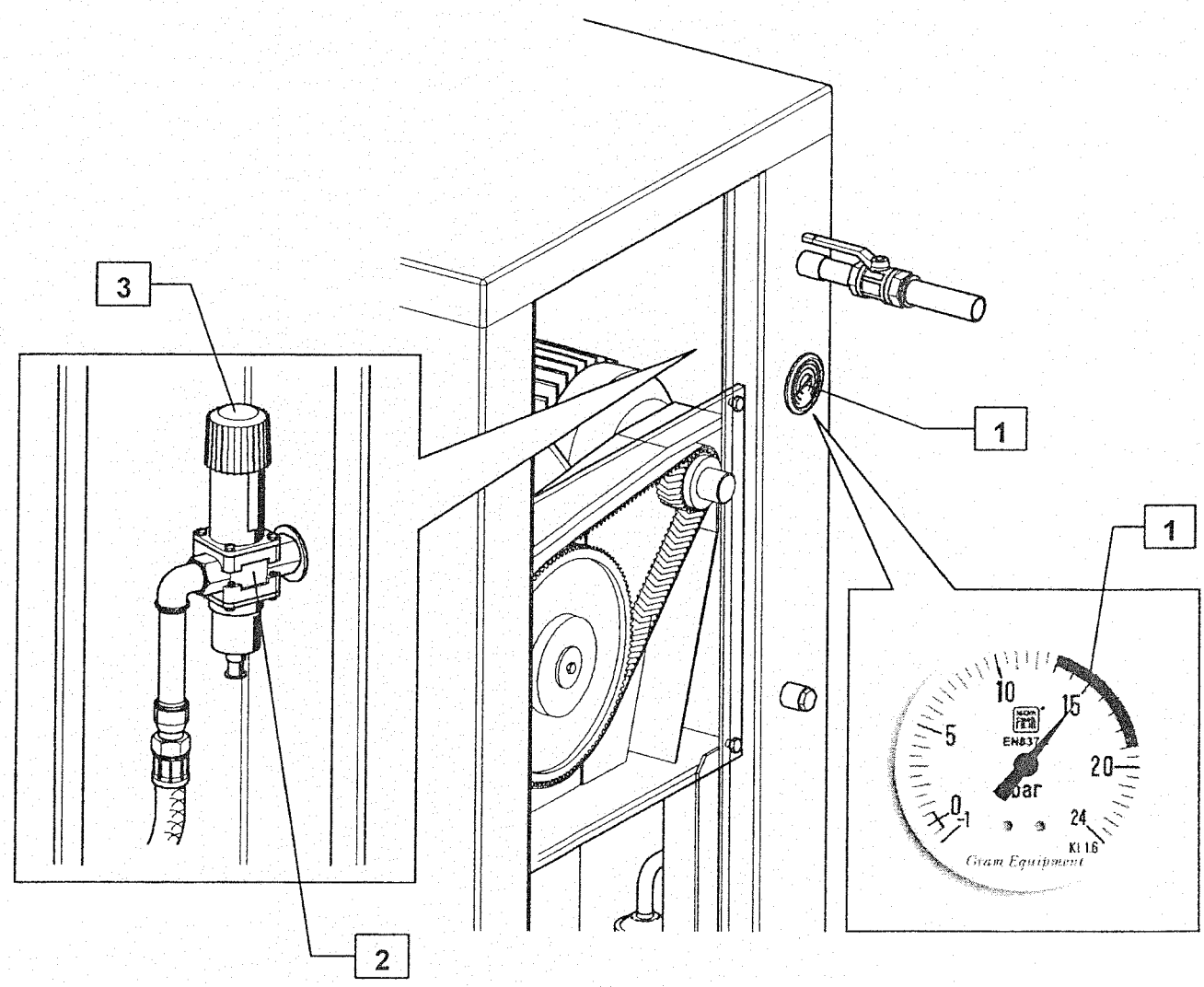


Fig. 8-1 – Trouble shooting

8.1 OVERLOAD PILOT LIGHTS

If a drive stops, the corresponding pilot light on the control panel switch on and the freezer must be inspected to find the source of such a stop.
When the compressor stops, it is also necessary to check the gas pressure switch and the electronic protection: they could have the contacts open or could be broken down.
Such operations must be done before acting on the wiring plant.

WARNING: Be very careful to the wiring diagram when working at the electric plant.

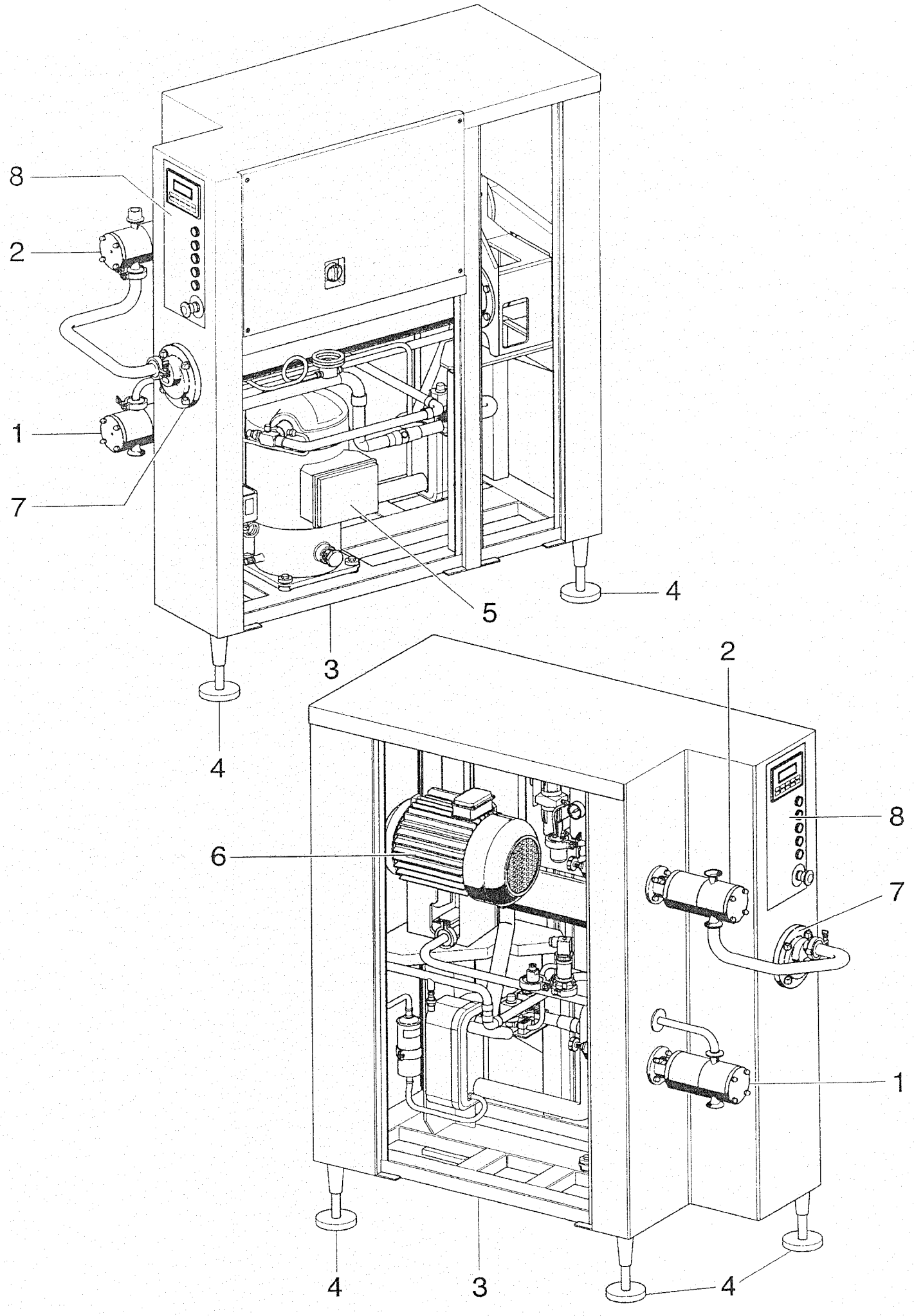
9. SCHEMES AND SPARE PARTS

9.1 LIST OF SCHEMES

N. PROG.	CODE	DESCRIPTION	ENCLOSED N°
1		WIRING DIAGRAM	1
2		PNEUMATIC DIAGRAM	2

9.2 ASSEMBLY DRAWINGS

N. PROG.	CODE	DESCRIPTION	N. ATTACHED SHEETS
1	T08620100	GENERAL ASSEMBLY	1
2	T08620200	DASHER GROUP	1
3	T08620300	PUMPS	1
4	T08620400	FREEZING SYSTEM	1
5	T08620500	PNEUMATIC SYSTEM	1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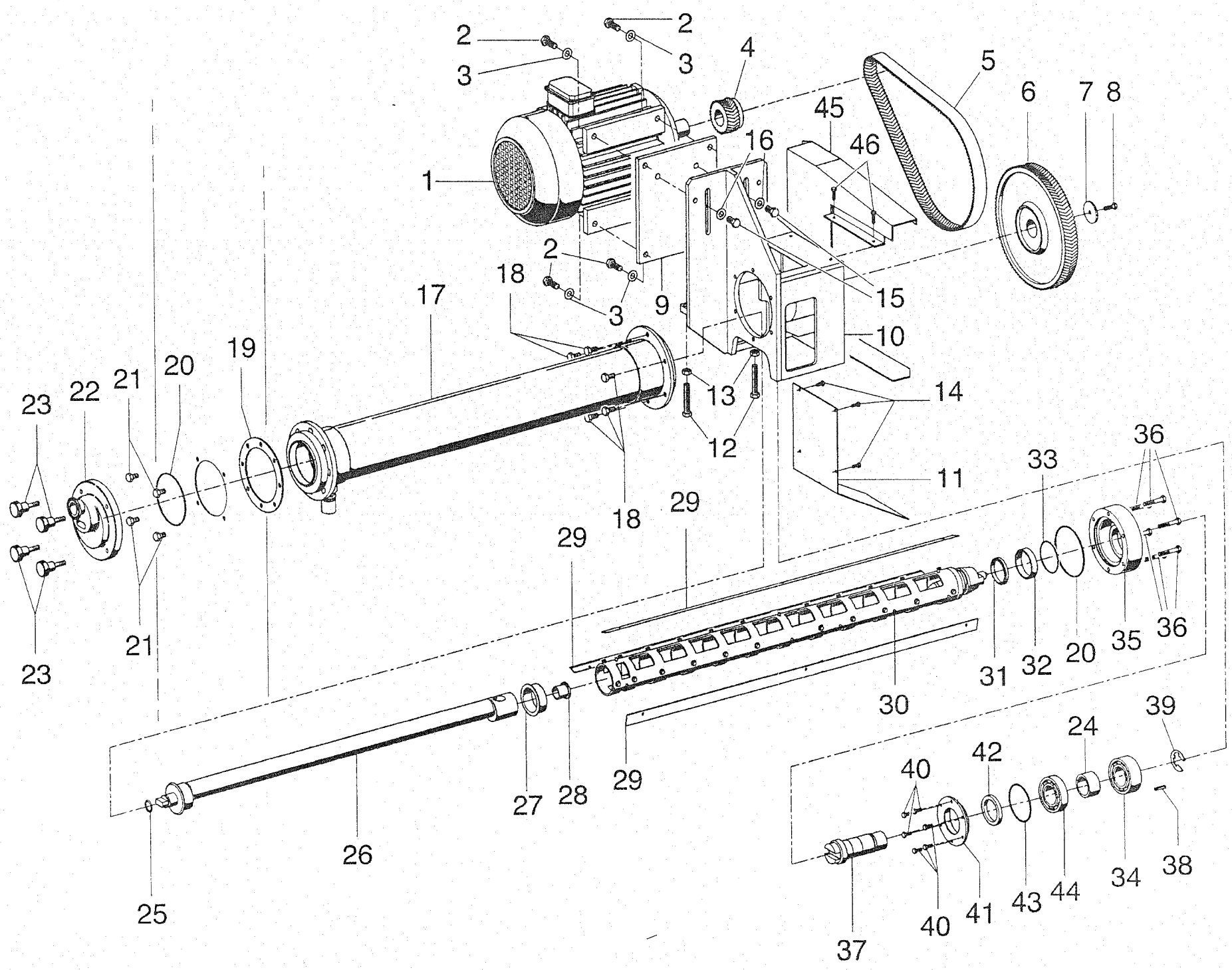
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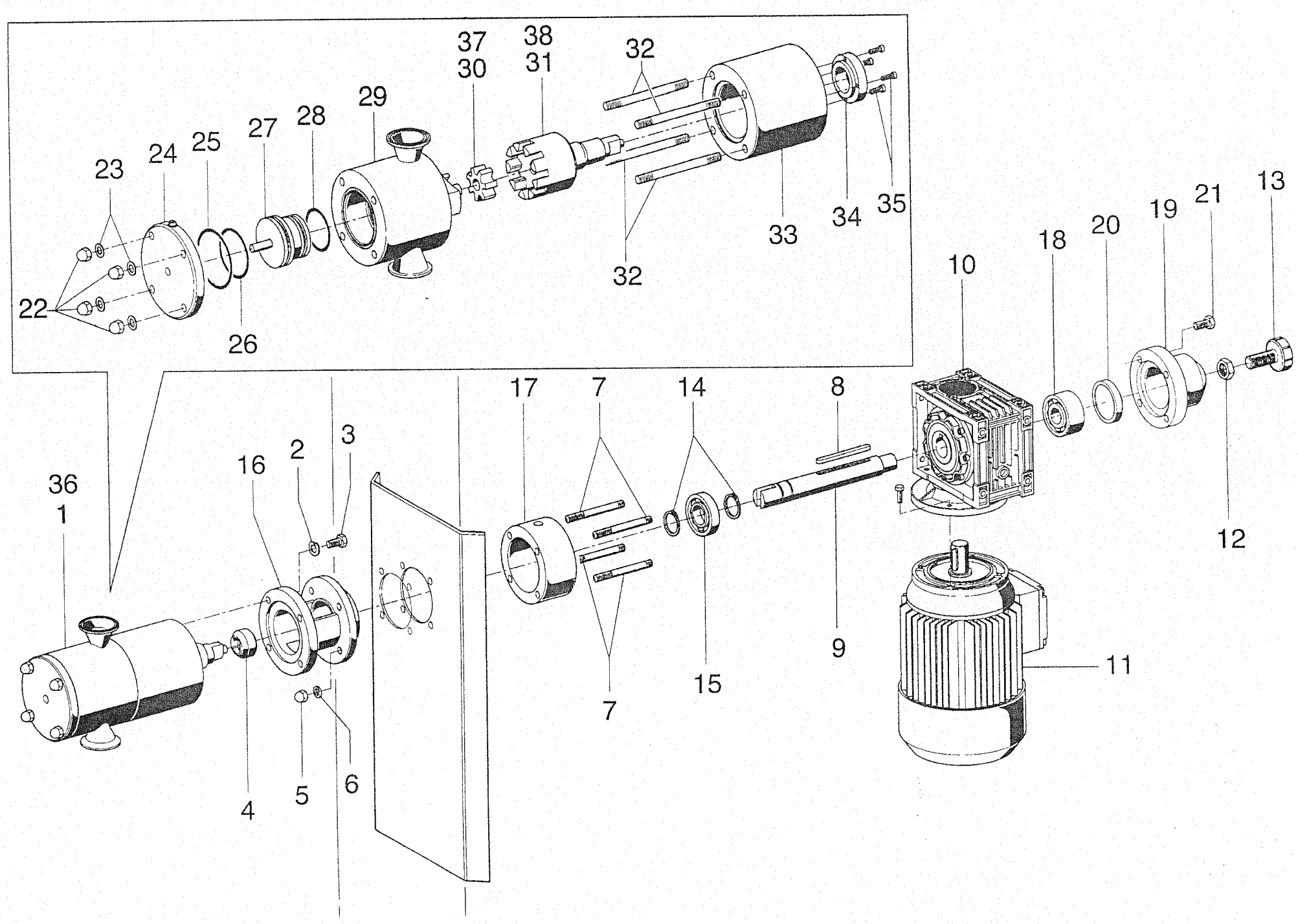
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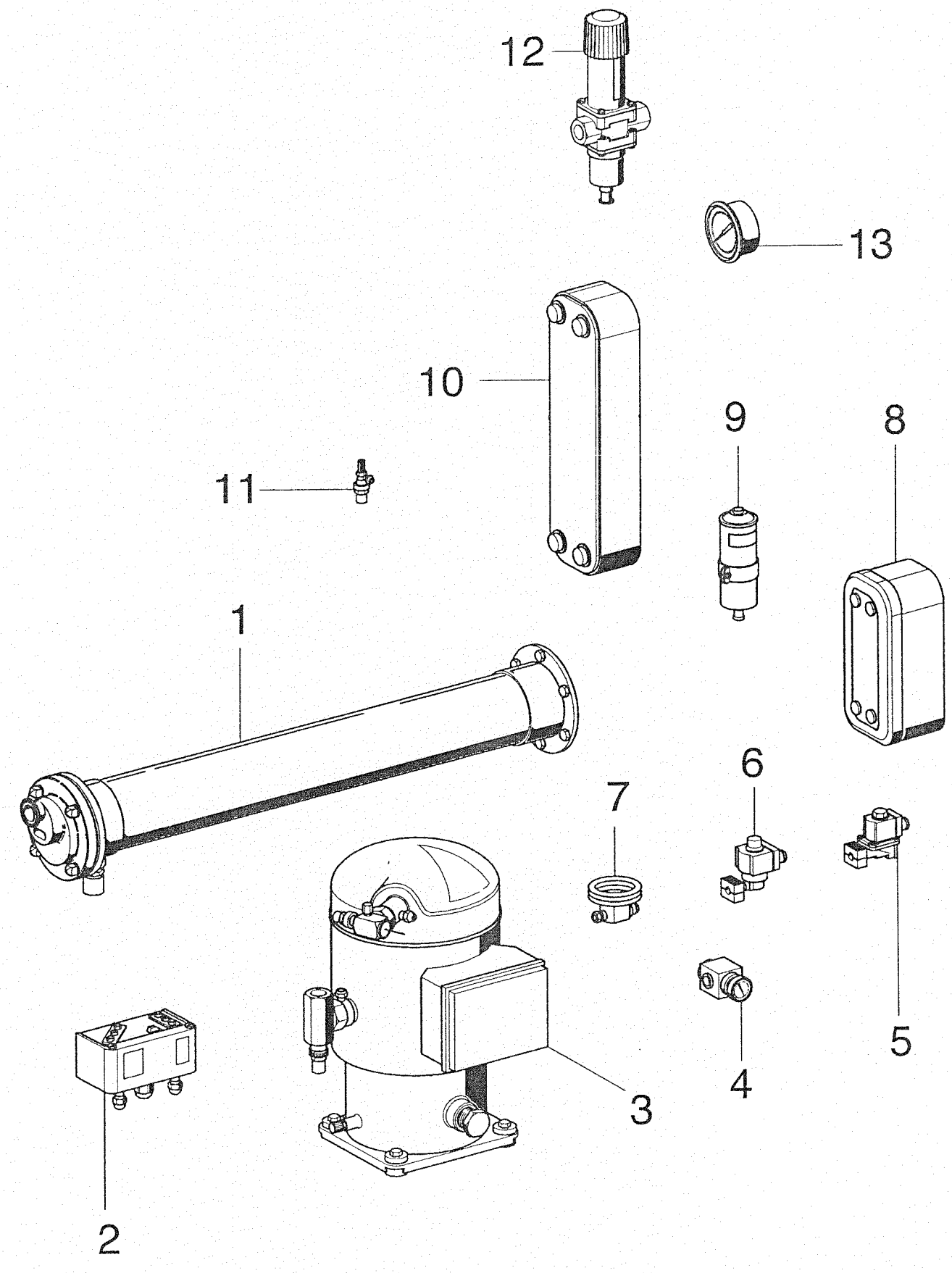
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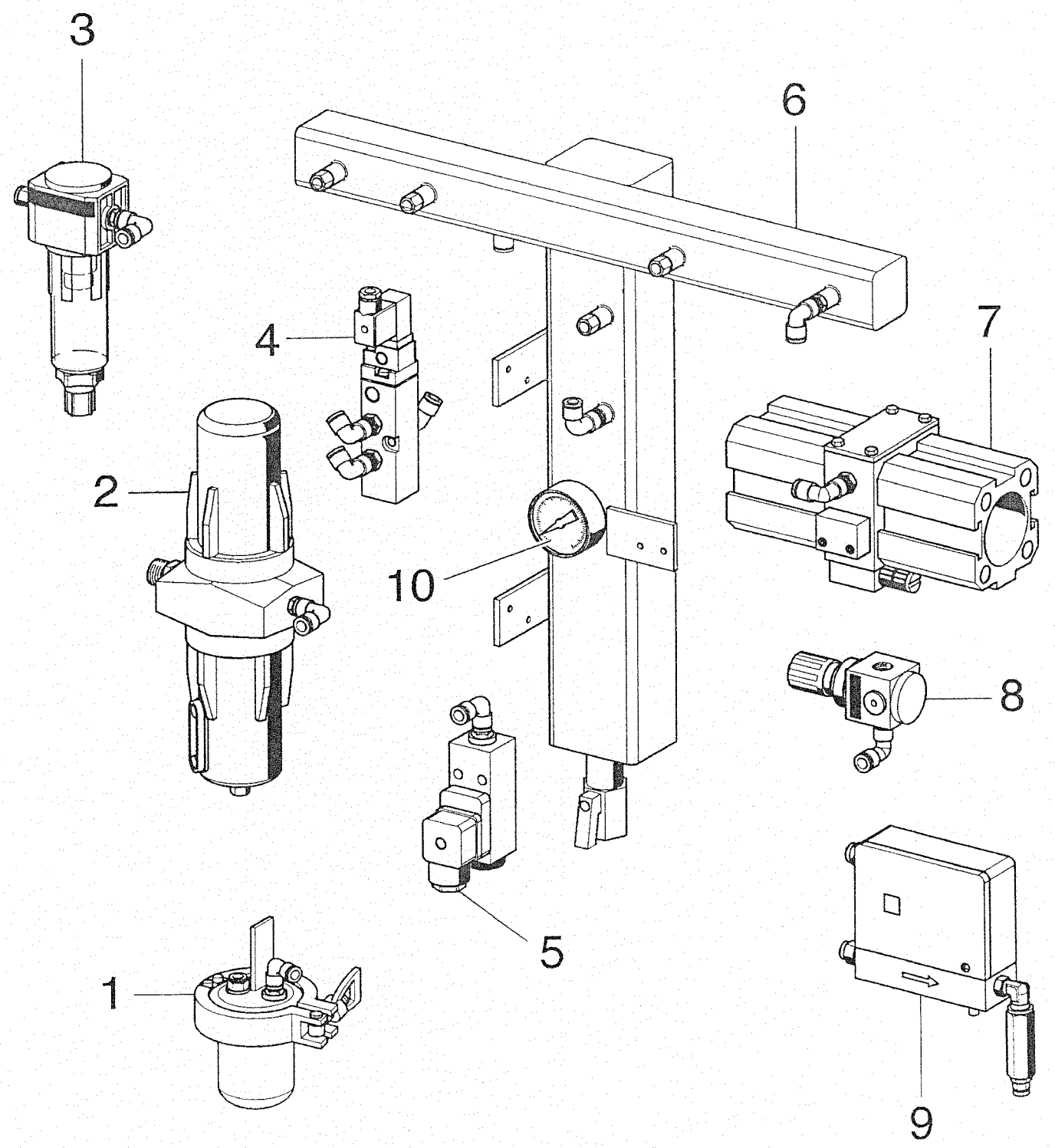
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9.3 EQUIPPED SPARE PARTS

CODE	DESCRIPTION	QUANTITY
4170001	CLAMP 1" ½	2
2180037	CLAMP GASKET 1" ½	4
1130070	ECCENTRIC BACK BUSH	1
1130071	ECCENTRIC FRONT BUSH	1
2164462	OR 4462 CYLINDER LID	2
1130073	DASHER SEAL WEAR BUSH	1
2163275	OR 3275 FOR CYLINDER HEAD	1
2141063	SEAL GASKETS DASHER DEM 63	2
4170338	STUB PIPE CLAMP 1" ½	2
4170710	RUBBER HOLDER CLAMP 1" ½	2

10. GUARANTEE AND SERVICE

10.1 GUARANTEE CONDITIONS

Sidam guarantees the regular working of all machines sold as new for the term of twelve months from the delivery date, provided that the Buyer discloses the working defects within 8 days from their discovery.
The term of twelve months above mentioned must be considered on the shift of work.
Such a guarantee will entitle the Buyer to free replacement - in the shortest possible time - of those parts which should prove to be faulty because of bad material or bad workmanship.
Our guarantee is to be so interpreted that we deliver, free of charge, replacement parts or repairs parts which within the period stipulated, due to faulty constructions, second rate materials, or bad workmanship, prove unfit for use.
All charges in connection with our fitter's intervention are at the Purchaser's account. Freight, duty, etc. For replacement parts are not included in our guarantee and must be paid by the Customer.
The parts replaced are our property and must be returned by the Purchaser, freight paid, if required by Sidam.
No free replacement will be made for those pieces rended defective through lack of skill of workers, through deterioration caused by lack of lubrication through normal wear and tear, through irrational use of the machines or through wrong assembly in case the latter is not carried out by Sidam.
We shall not be responsible and shall not pay compensation for stoppage of the plant, loss of profit, or loss of any other kind.
The Buyer who defaults in his payments loses his right to any guarantee.
The sale of motors, separately or together with the machines, does not imply in any way Sidam's responsibility.
Wiring and electrical equipment are always excluded from the guarantee.

10.2 SPARE PARTS ORDERING PROCEDURE

Change a component in a favourable moment it means to maintain the plant working in best conditions and at the same time to avoid worst damages.

You can follows three kinds of orders:

A.- REQUEST OF MECHANICAL OR COMMERCIAL SPARE PARTS WHICH ARE BROKEN OR WORN.

PROCEDURE A

- IDENTIFY IF IT IS POSSIBLE THE PART BROKEN OR WORN ON THE PLANT.
- IDENTIFY TO WHICH PART OF THE MACHINE THE PIECE BROKEN OR WORN BELONGS.
- WHEN YOU HAVE IDENTIFY THE GROUP YOU HAVE TO FULL FILL THE FORM AS FOLLOWS:

B.- REQUEST OF MECHANICAL OR COMMERCIAL SPARE PARTS MORE WORN.

PROCEDURE B

- IDENTIFY THE PARTS WHICH ARE MORE WORN.
- IDENTIFY TO WHICH PART OF THE MACHINE THE PIECE BROKEN OR WORN BELONGS USING YOUR INSTRUCTION MANUAL.
- WHEN YOU HAVE IDENTIFY THE GROUP YOU HAVE TO FULL FILL THE FORM AS FOLLOWS:

PROCEDURE A/B

SPARE PARTS REQUEST FORM

Please photocopy this form, fulfil it and sent by mail or fax to:

Spett.le
SIDAM S.r.l.
Via Fabio Filzi 37
20032 CORMANO (MI)
ITALY

Tel. ++39-2-61554.1 (r.a.)
Fax. ++39-2-61.50.926
E-Mail: lubia@sidam.it
Internet: www.sidam.it

Customer.....Tel.....Fax.....

City.....Country.....

Machine model.....

Serial no.....

Group no.	Position	Description	Q.ty
T86201000	1	MIX DELIVERY PUMP	1

Best Regards,

(Stamp and Signature)

PROCEDURE A/B

SPARE PARTS REQUEST FORM

Please photocopy this form, fulfil it and sent by mail or fax to:

Spett.le
SIDAM S.r.l.
Via Fabio Filzi 37
20032 CORMANO (MI)
ITALY

Tel. ++39-2-61554.1 (r.a.)
Fax. ++39-2-61.50.926
E-Mail: lubia@sidam.it
Internet: www.sidam.it

Customer.....Tel.....Fax.....

City.....Country.....

Machine model.....

Serial no.....

Group no.	Position	Description	Q.ty

Best Regards,

(Stamp and Signature)

11. ENCLOSED

1 WIRING DIAGRAM
2 PNEUMATIC DIAGRAM

LISTA FOGLI \ INDEX

Foglio / Sheet	Descrizione / Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9	Foglio / Sheet	Descrizione / Description	Revisione \ Revision 0 1 2 3 4 5 6 7 8 9
1	INDICE / INDEX.				
2	ALIMENTAZIONE / INCOMING SUPPLY				
3	MOTORI / MOTORS				
4	MOTORI / MOTORS				
5	MOTORI / MOTORS				
6	ALIMENTAZIONE 230V / INCOMING SUPPLY 230V				
7	DISPONIBILE / AVAILABLE				
8	CIRCUITO EMERGENZA / EMERGENCY CIRCUIT				
9	CIRCUITO AUSILIARIO / AUXILIARY CIRCUIT				
10	CONFIGURAZIONE PLC / PLC CONFIGURATION				
11	INGRESSI PLC CPU / INPUT CPU				
12	INGRESSI PLC CPU / INPUT CPU				
13	USCITE PLC CPU / CPU PLC OUTPUT				
14	USCITE PLC CPU / CPU PLC OUTPUT				
15	INGRESSI ANALOGICI PLC / ANALOGIC PLC INPUT				
16	INGRESSI ANALOGICI PLC / ANALOGIC PLC INPUT				
17	USCITE ANALOGICHE PLC / ANALOGIC PLC OUTPUT				
18	LEGENDA / ITEM DESIGNATION				
19	LEGENDA / ITEM DESIGNATION				
20	LEGENDA / ITEM DESIGNATION				

Note :

U= 3X400V+PE 50HZ
In MAX= 46 A
P MAX= 19 KW
CONTROL VOLTAGE = 24VDC

DRAW.N. 9.07.62.1198x02
DATE 06-03-2002
N. FILE 907621198x02.DWG

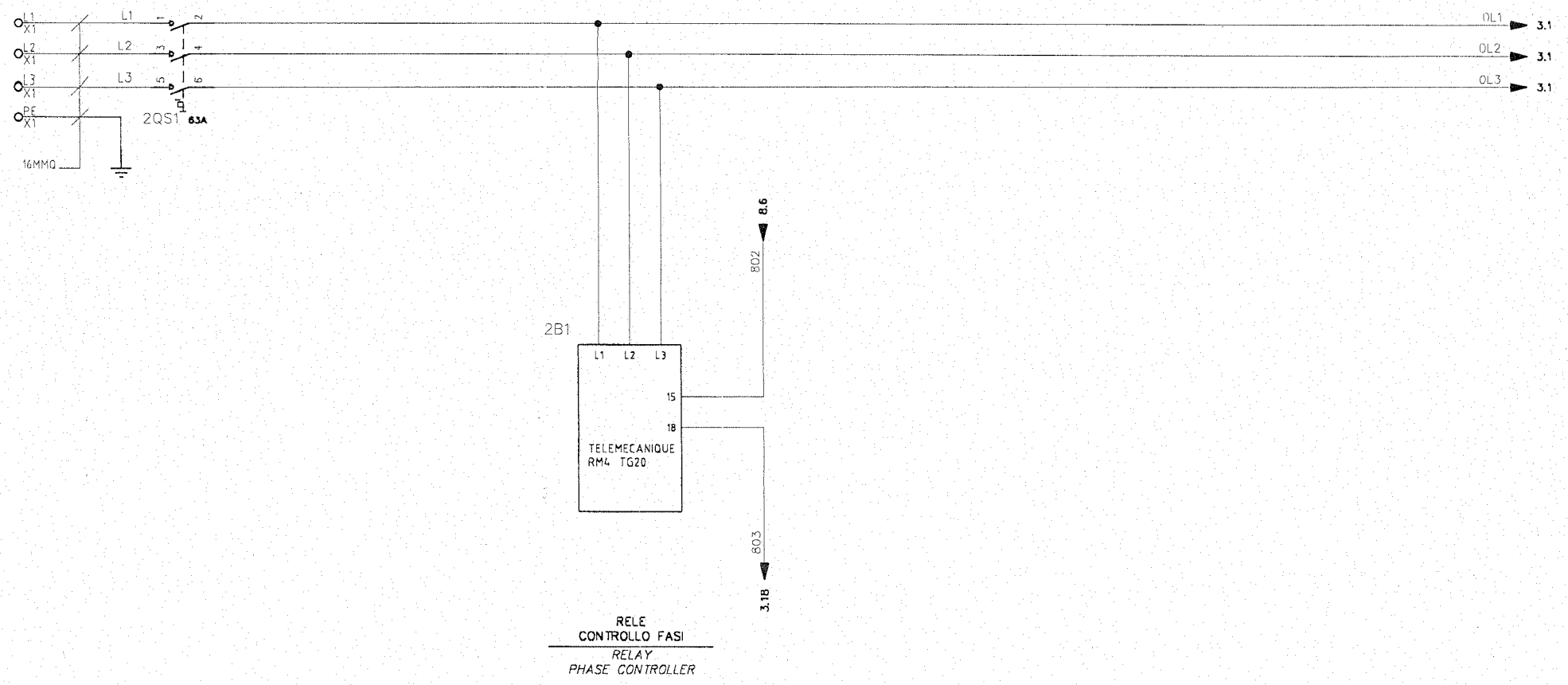
PROJECT: FREEZER 600 L/H
DENOMINATION: INDICE / *INDEX.*

ORDER

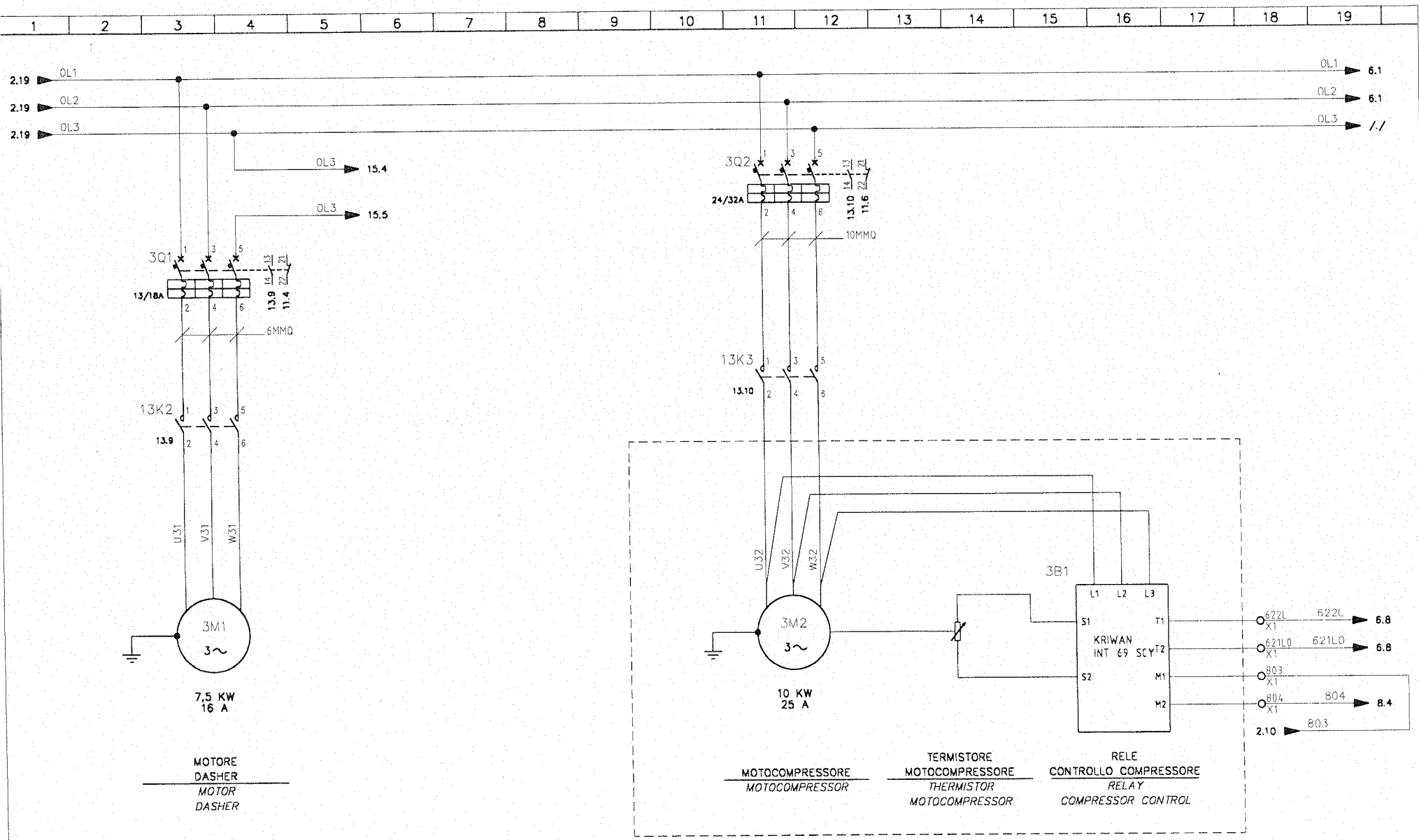
EXECUTOR: GRITTINI PAOLO

SIDAM s.r.l.
Via F.Filzi, 37
Cormano MI ITALY

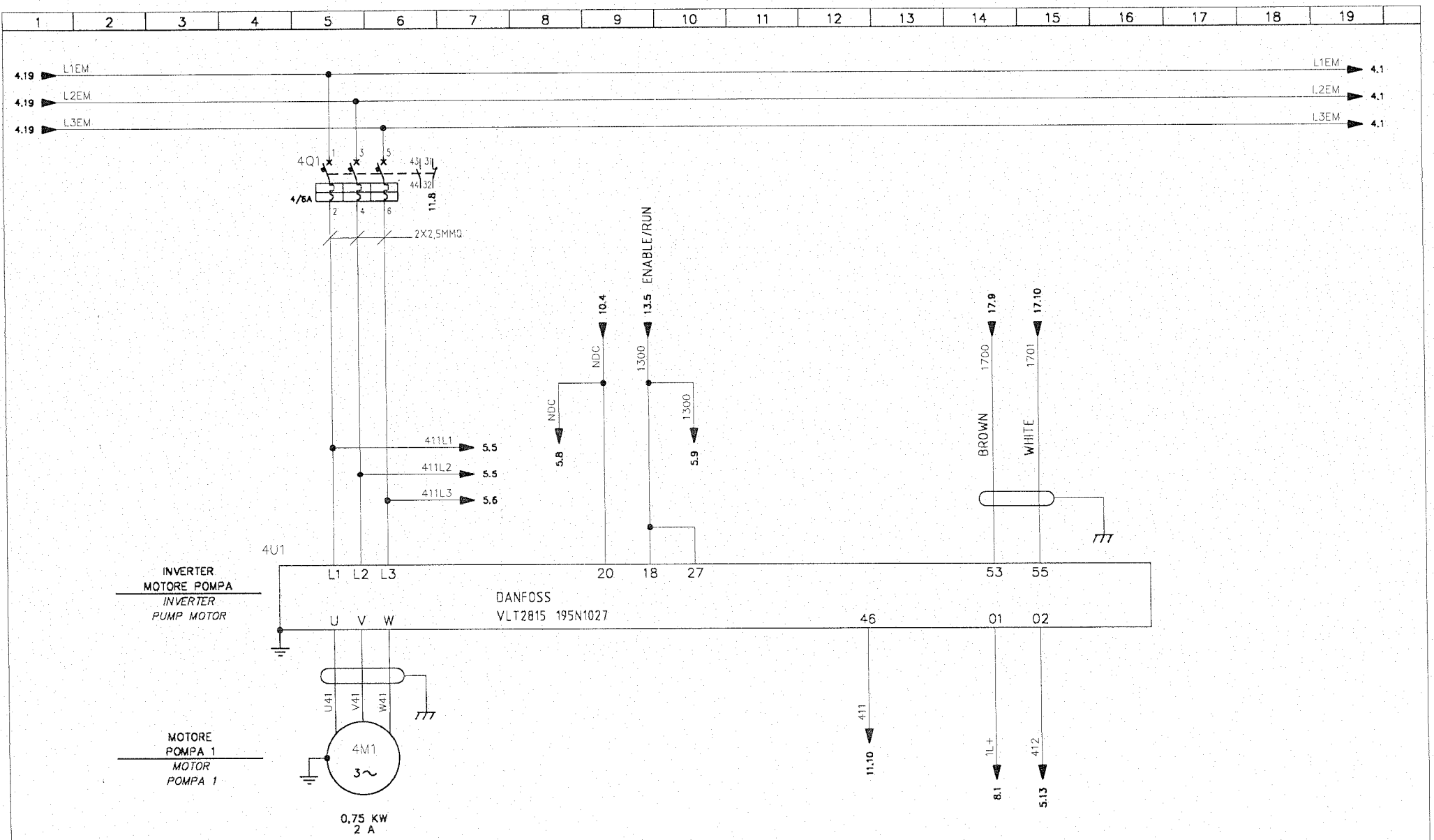
SHEET: 1
TOT.: 20
NEXT: 2



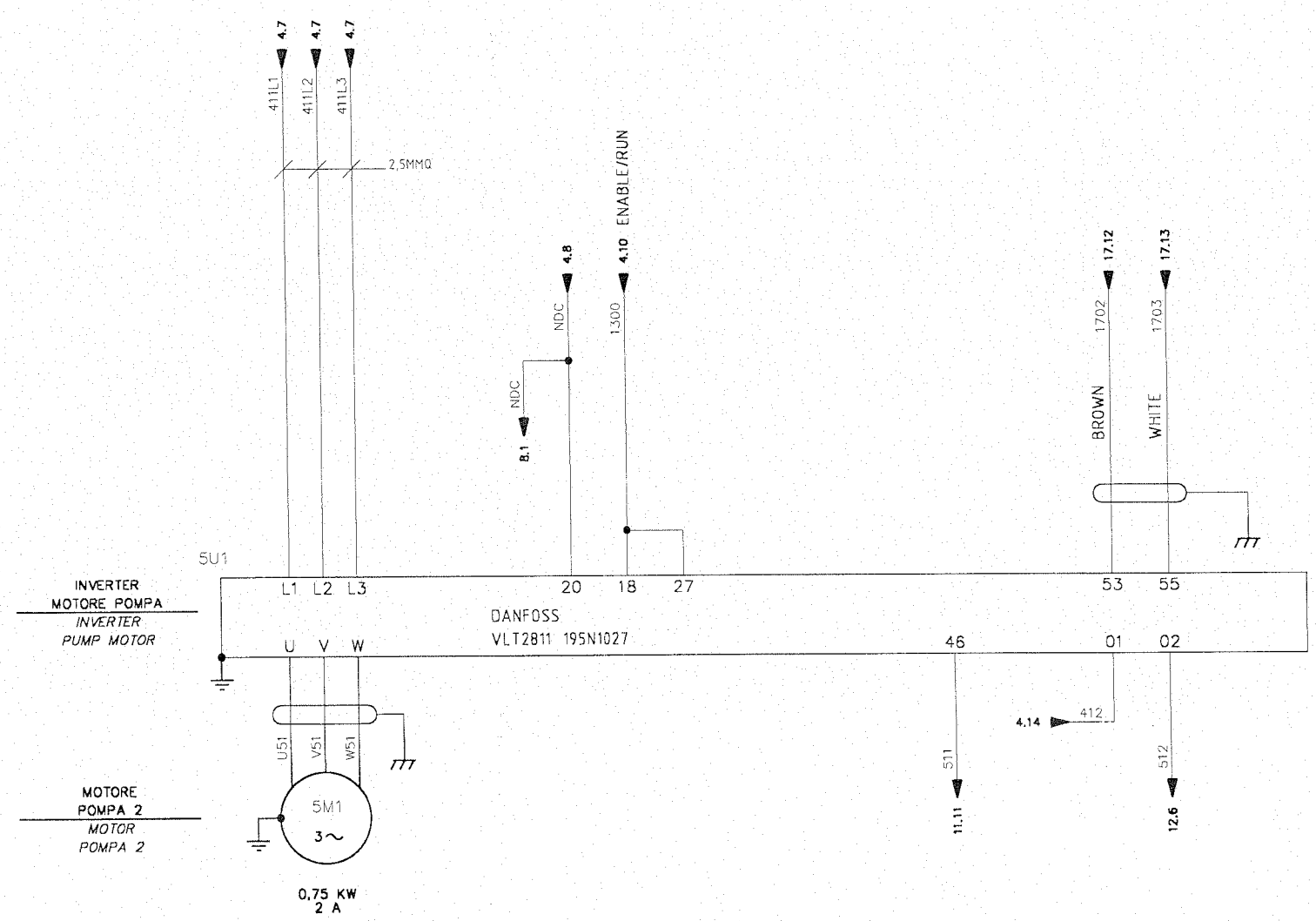
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION ALIMENTAZIONE / *INCOMING SUPPLY*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 2 TOT. 20 NEXT 3



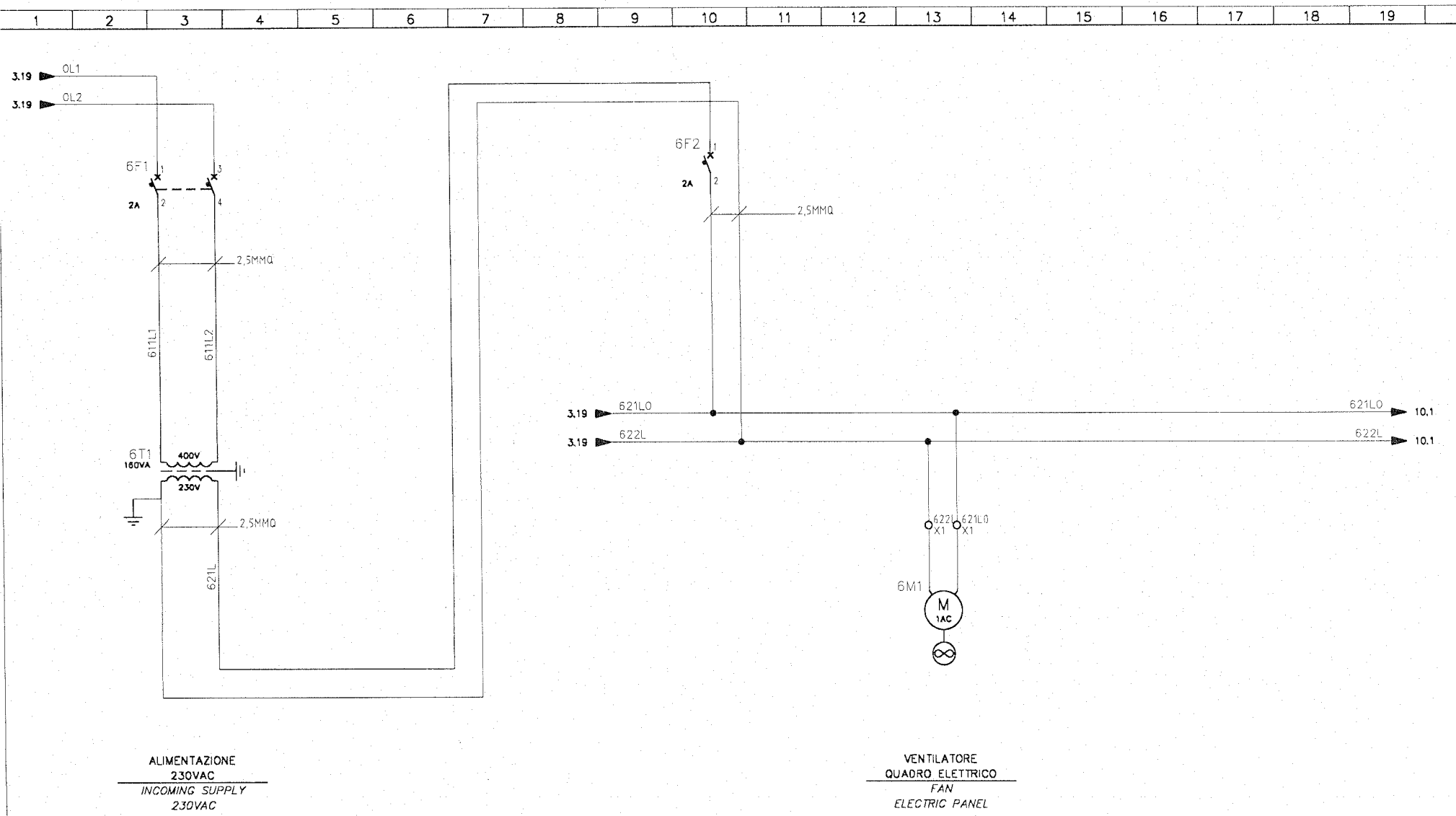
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION MOTORI / MOTORS	ORDER	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 3 TOT. 20 NEXT 4
			EXECUTOR GRITTINI PAOLO		



U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION MOTORI / *MOTORS*	ORDER	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 4 TOT. 20 NEXT 5
			EXECUTOR GRITTINI PAOLO		



U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION MOTORI / *MOTORS*	ORDER	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 5 TOT. 20 NEXT 6
			EXECUTOR GRITTINI PAOLO		



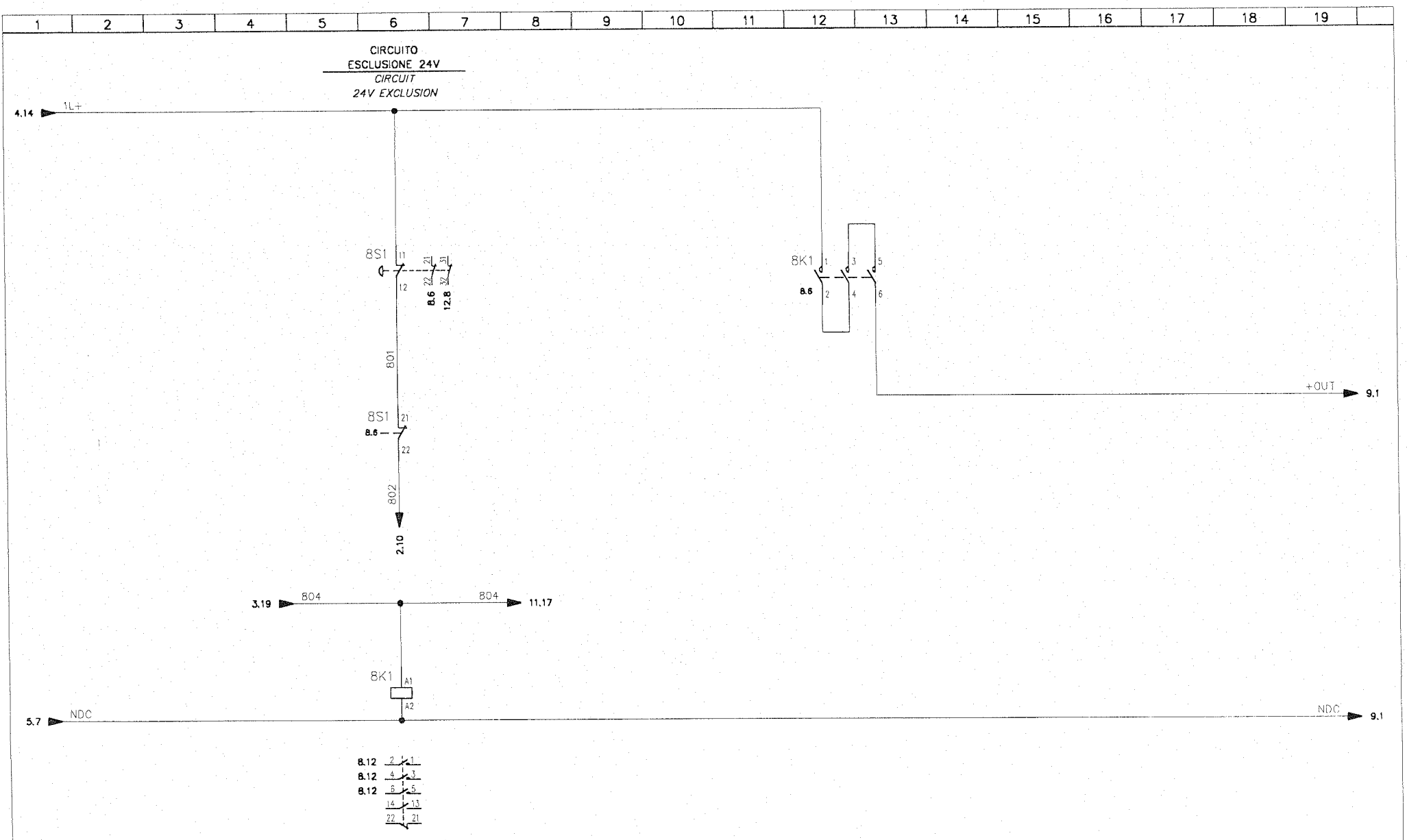
ALIMENTAZIONE
230VAC
INCOMING SUPPLY
230VAC

VENTILATORE
QUADRO ELETTRICO
FAN
ELECTRIC PANEL

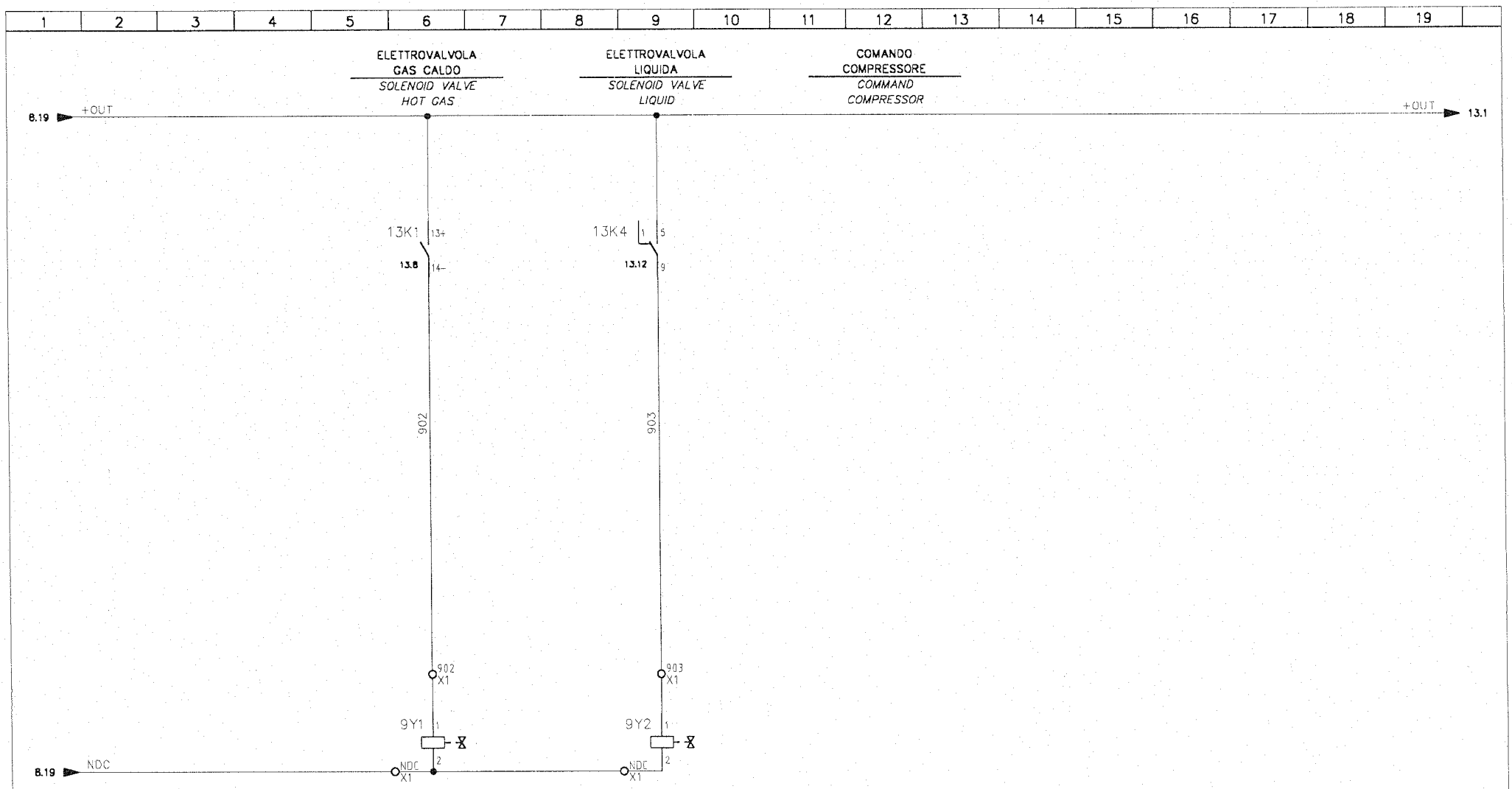
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION ALIMENTAZIONE 230V *INCOMING SUPPLY 230V*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 6 TOT. 20 NEXT 7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

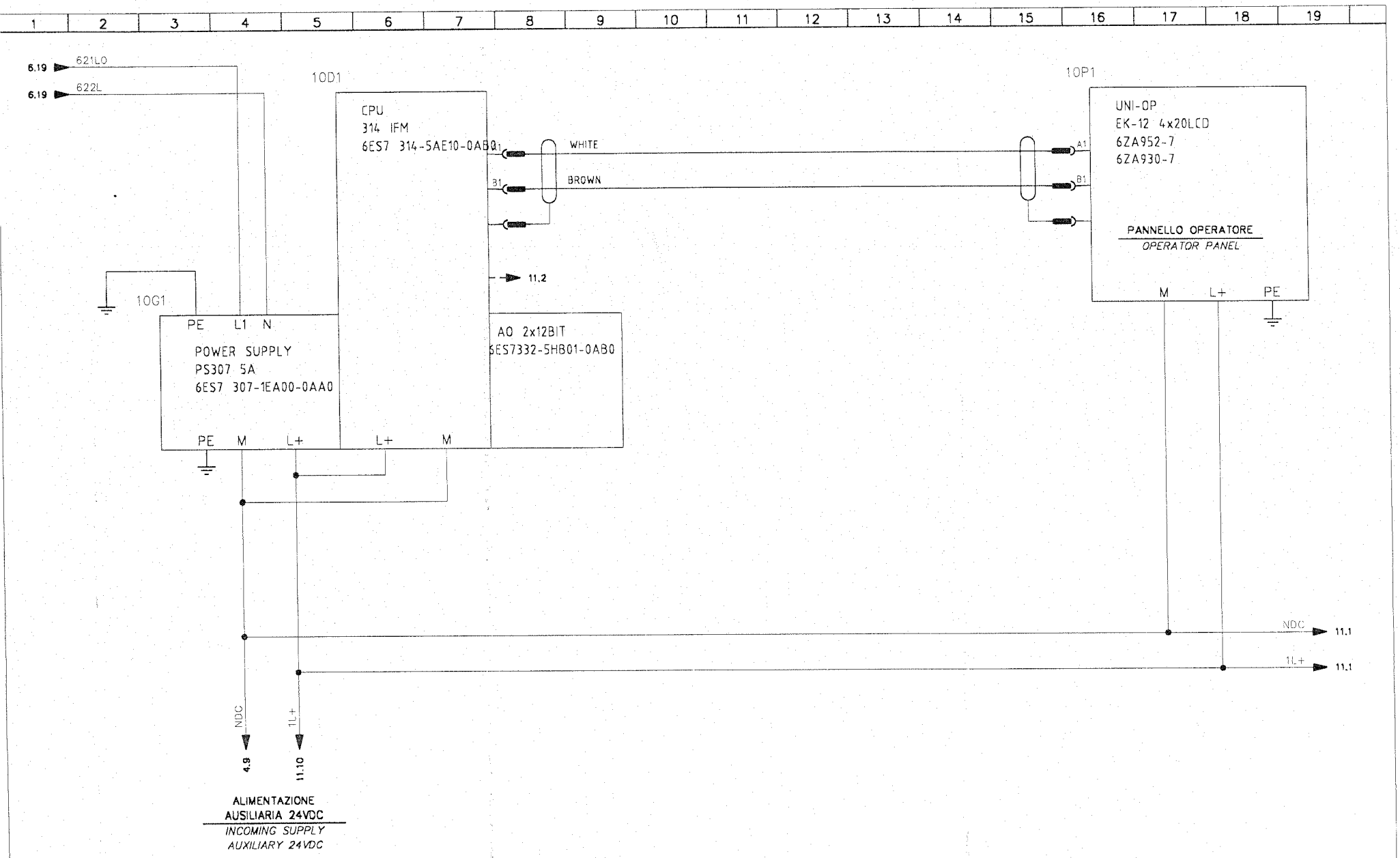
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION DISPONIBILE / *AVAILABLE*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 7 TOT. 20 NEXT 8



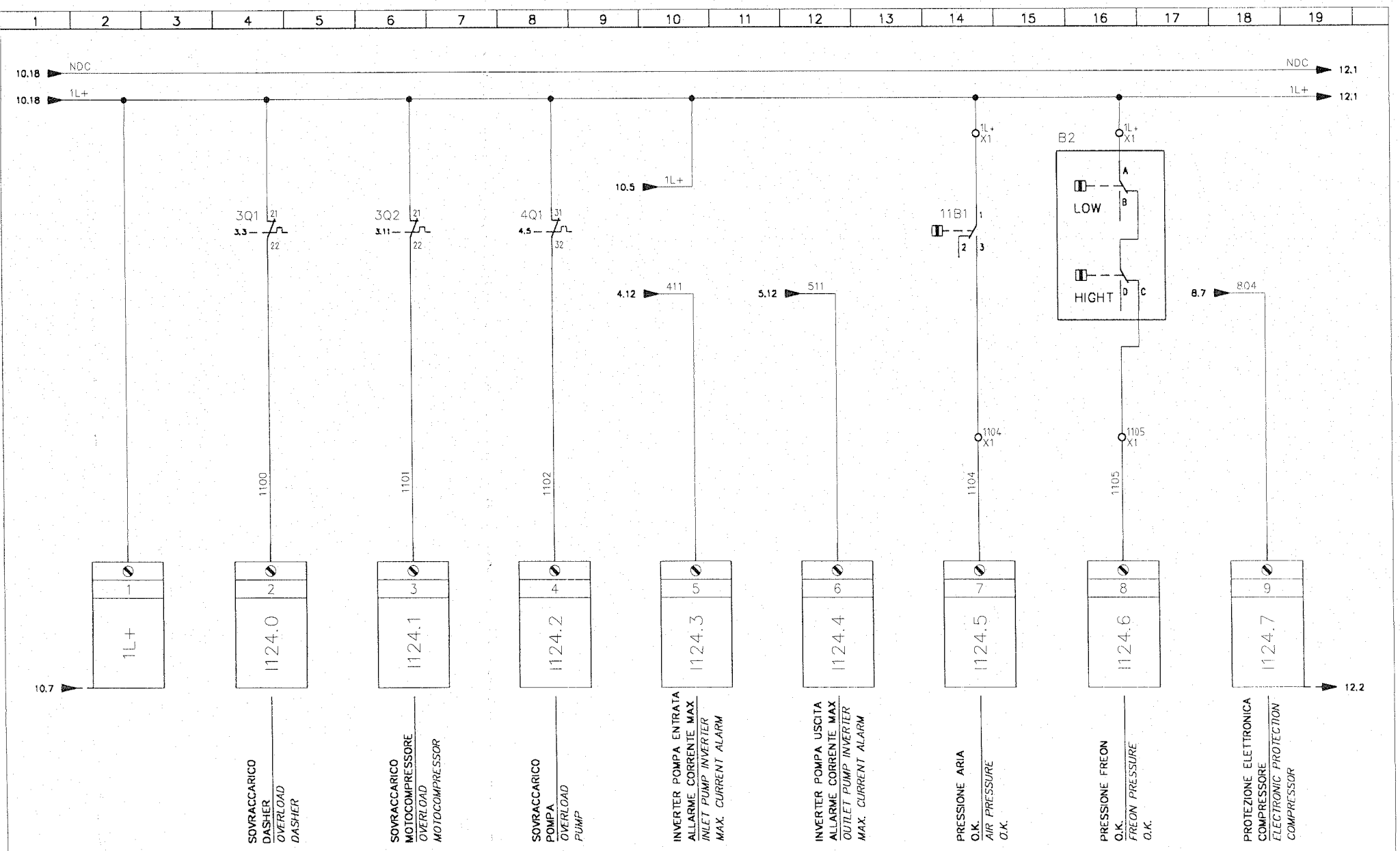
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02	PROJECT FREEZER 600 L/H	ORDER	SIDAM s.r.l.	SHEET 8
	DATE 06-03-2002	DENOMINATION CIRCUITO EMERGENZA *EMERGENCY CIRCUIT*	EXECUTOR GRITTINI PAOLO	Via F.Filzi, 37 Cormano MI ITALY	TOT. 20 / NEXT 9
	N. FILE 907621198x02.DWG				



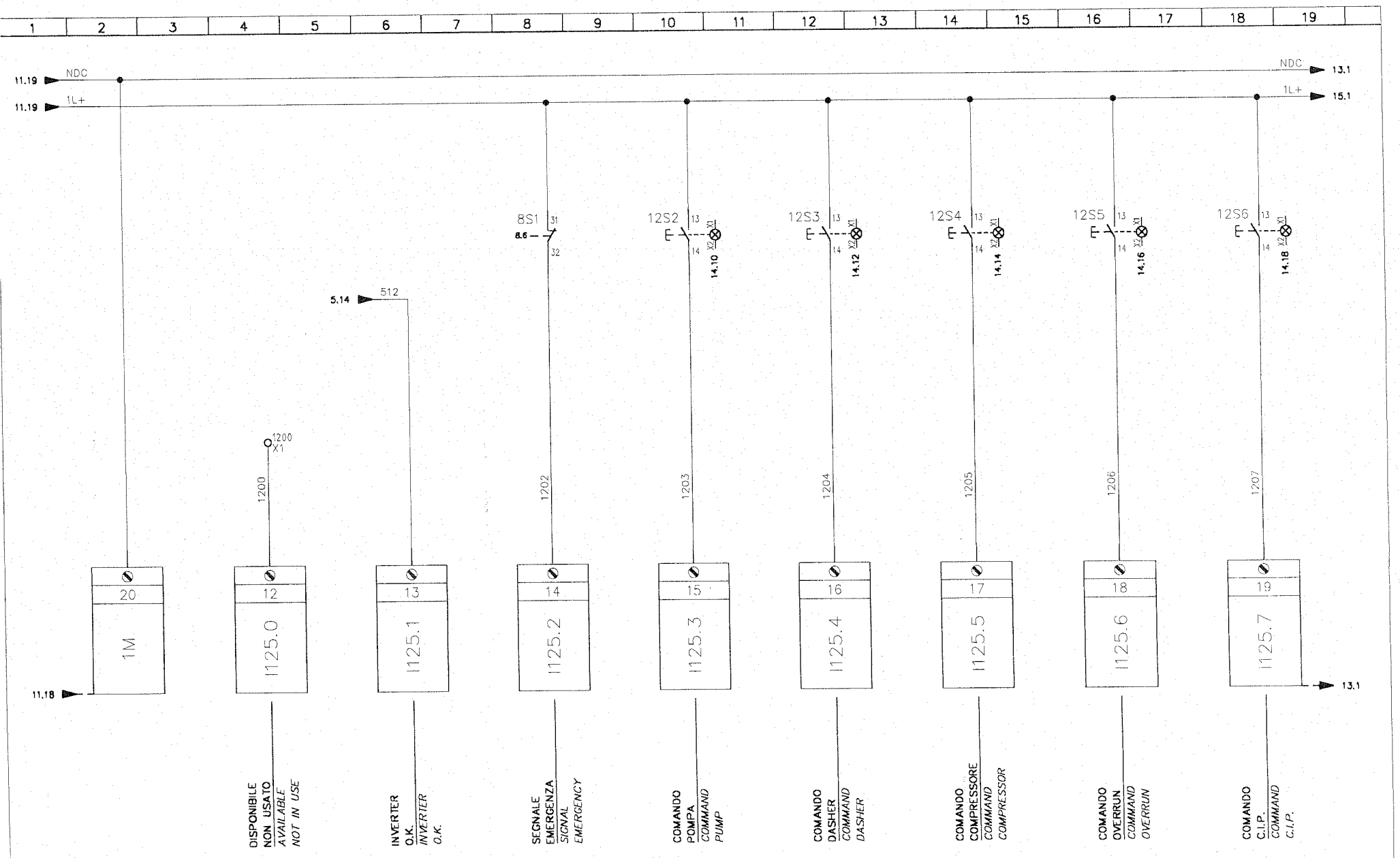
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02	PROJECT FREEZER 600 L/H	ORDER	SIDAM s.r.l.	SHEET 9
	DATE 06-03-2002	DENOMINATION CIRCUITO AUSILIARIO / *AUXILIARY CIRCUIT*	EXECUTOR GRITTINI PAOLO	Via F.Filzi, 37 Cormano MI ITALY	TOT. 20 / NEXT 10
	N. FILE 907621198x02.DWG				



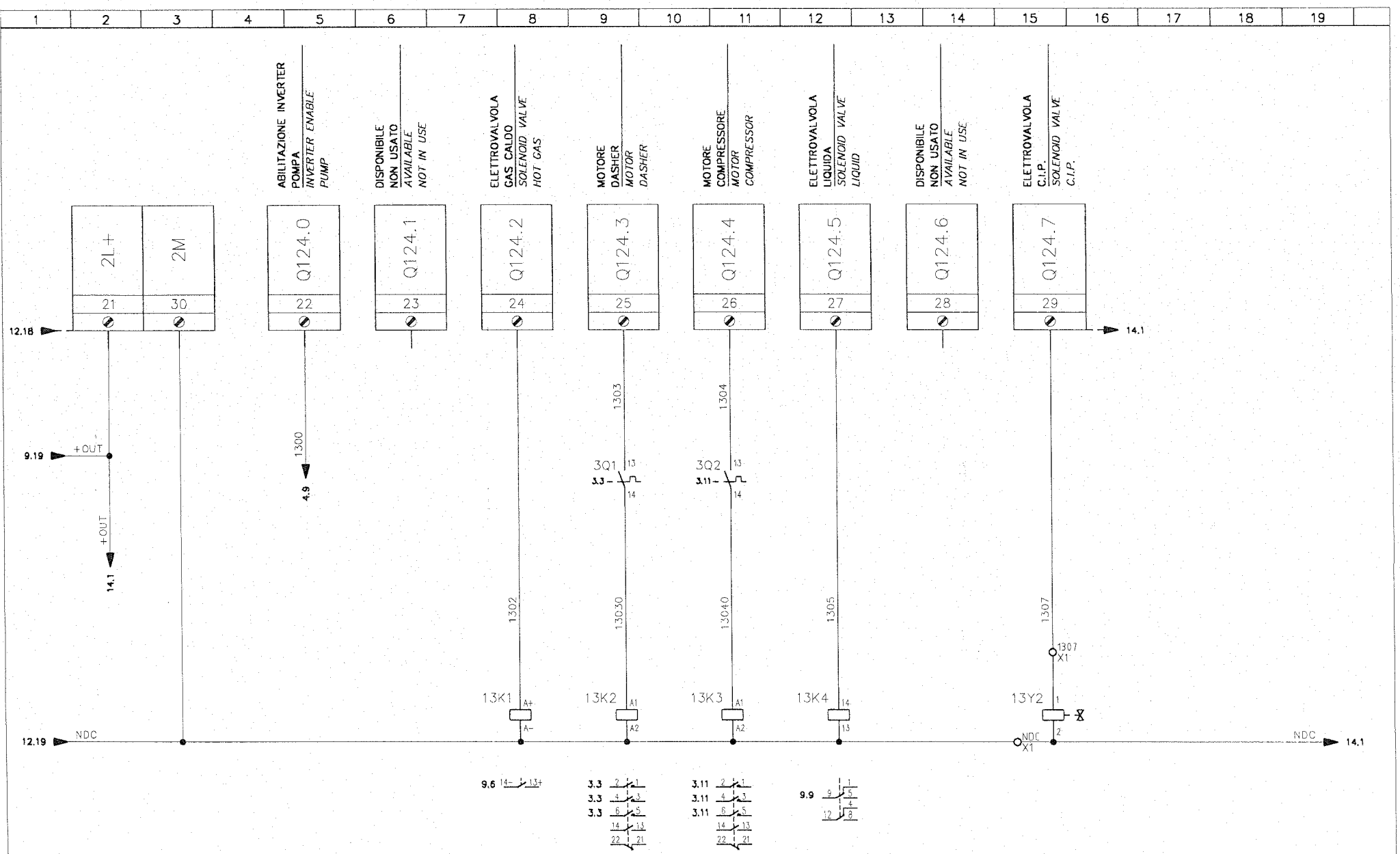
U~ 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION CONFIGURAZIONE PLC / *PLC CONFIGURATION*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 10 TOT. 20 NEXT 11



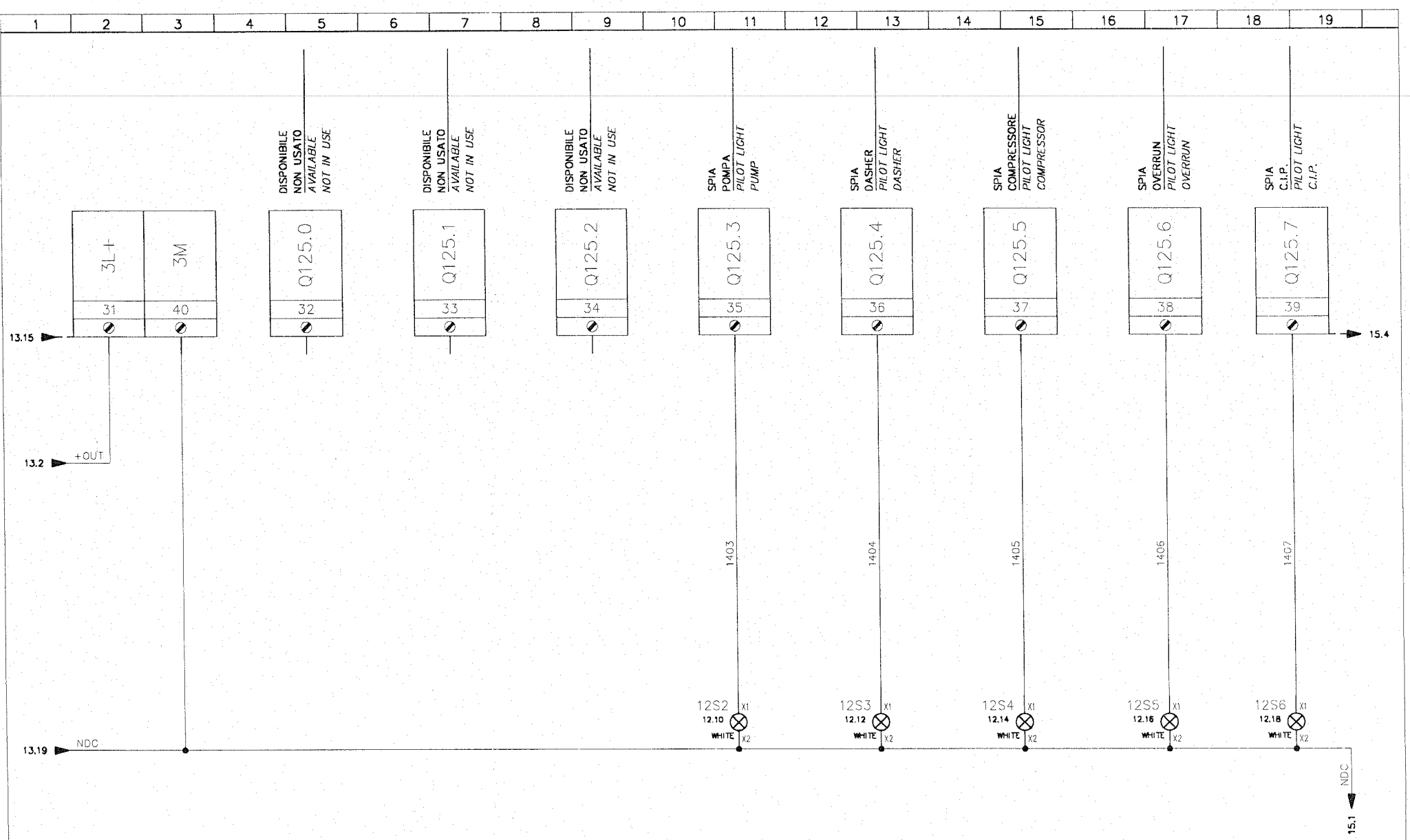
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02	PROJECT FREEZER 600 L/H	ORDER	SIDAM s.r.l.	SHEET 11
	DATE 06-03-2002	DENOMINATION INGRESSI PLC CPU / *INPUT CPU*	EXECUTOR GRITTINI PAOLO	Via F.Filzi, 37 Cormano MI ITALY	TOT. 20 / NEXT 12
	N. FILE 907621198x02.DWG				



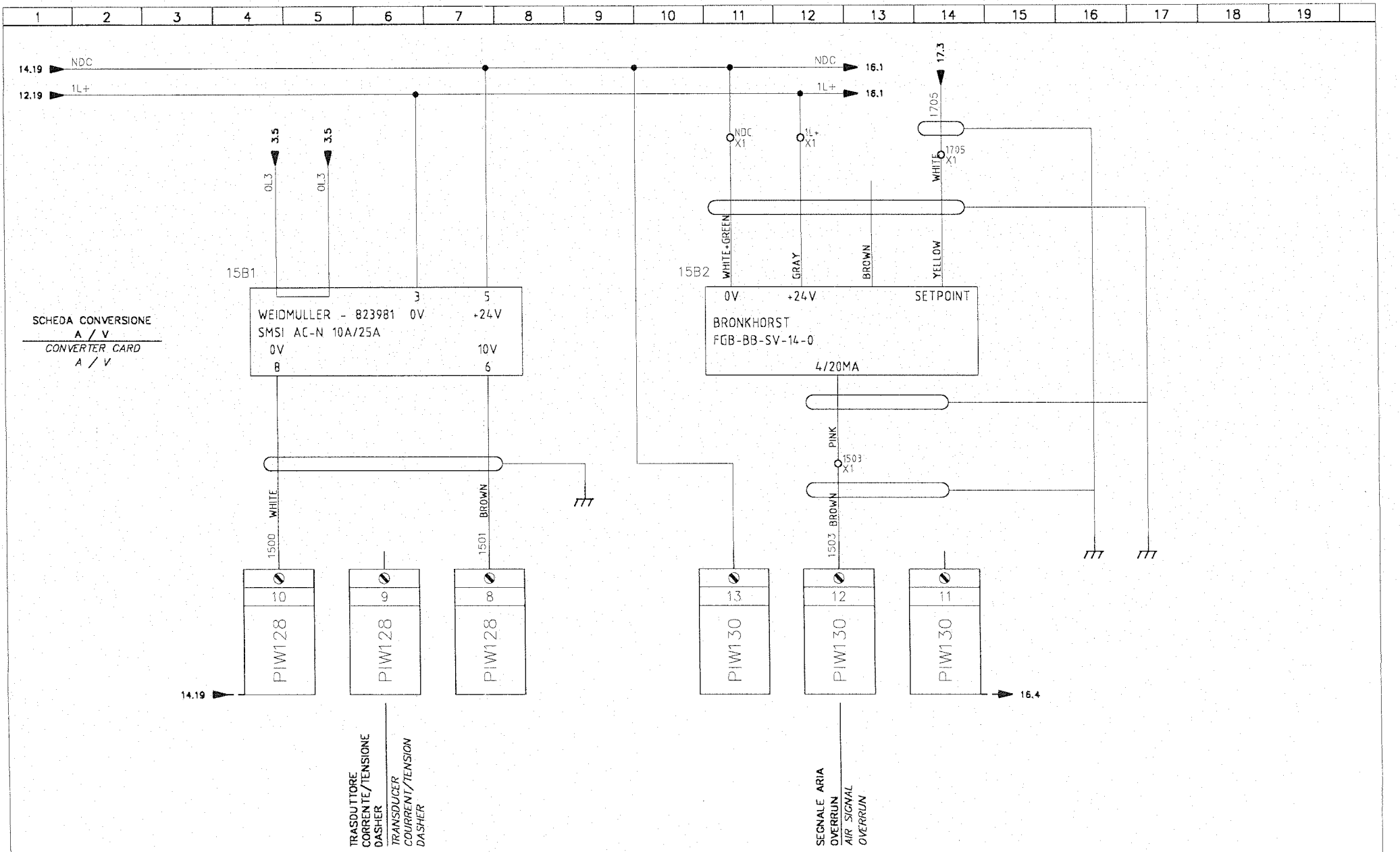
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02	PROJECT FREEZER 600 L/H	ORDER	SIDAM s.r.l.	SHEET 12
	DATE 06-03-2002	DENOMINATION INGRESSI PLC CPU *INPUT CPU*	EXECUTOR GRITTINI PAOLO	Via F.Filzi, 37 Cormano MI ITALY	TOT. 20 / NEXT 13
	N. FILE 907621198x02.DWG				



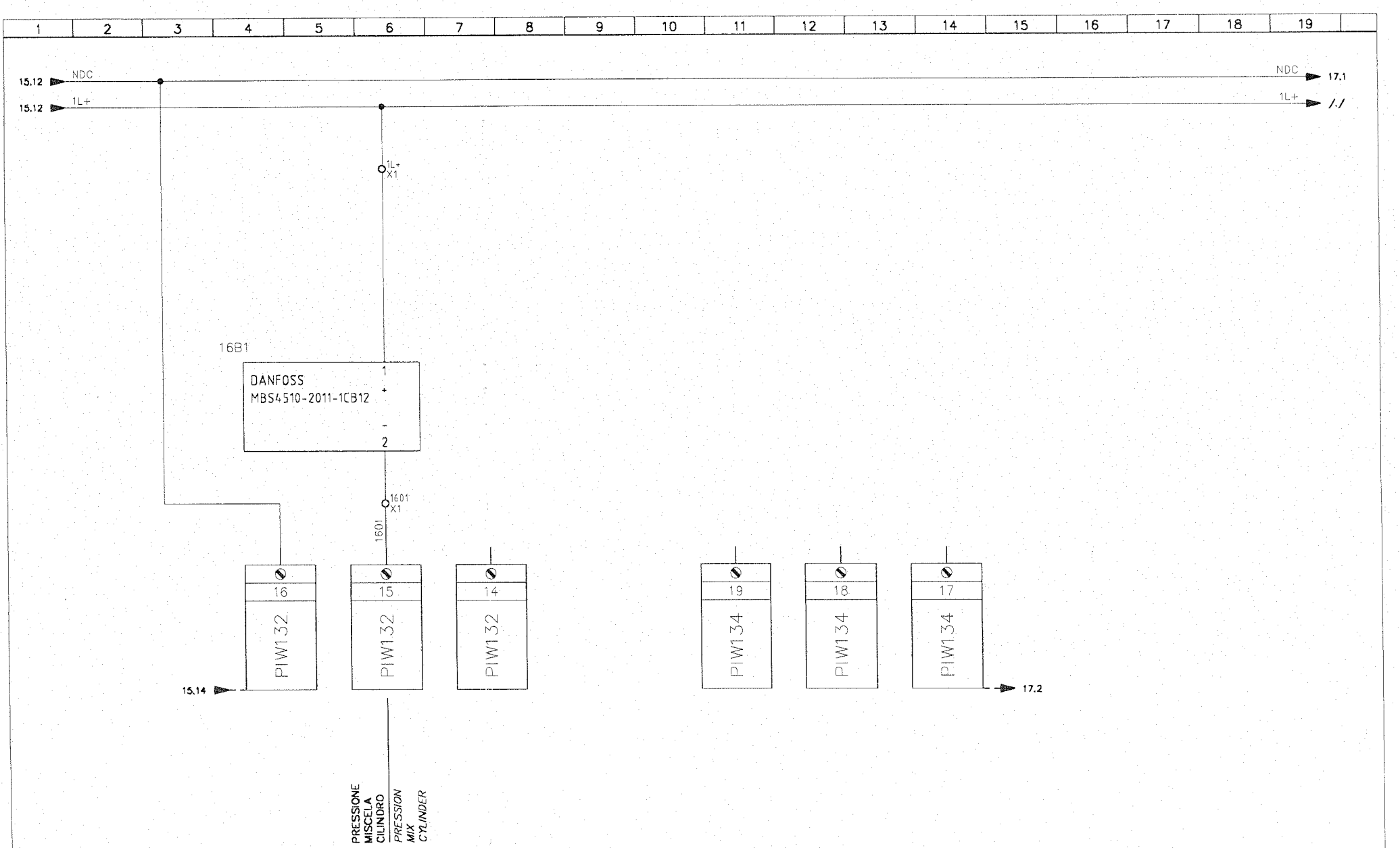
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02	PROJECT FREEZER 600 L/H	ORDER	SIDAM s.r.l.	SHEET 13
	DATE 06-03-2002	DENOMINATION USCITE PLC CPU / *CPU PLC OUTPUT*	EXECUTOR GRITTINI PAOLO	Via F.Filzi, 37 Cormano MI ITALY	TOT. 20 / NEXT 14
	N. FILE 907621198x02.DWG				



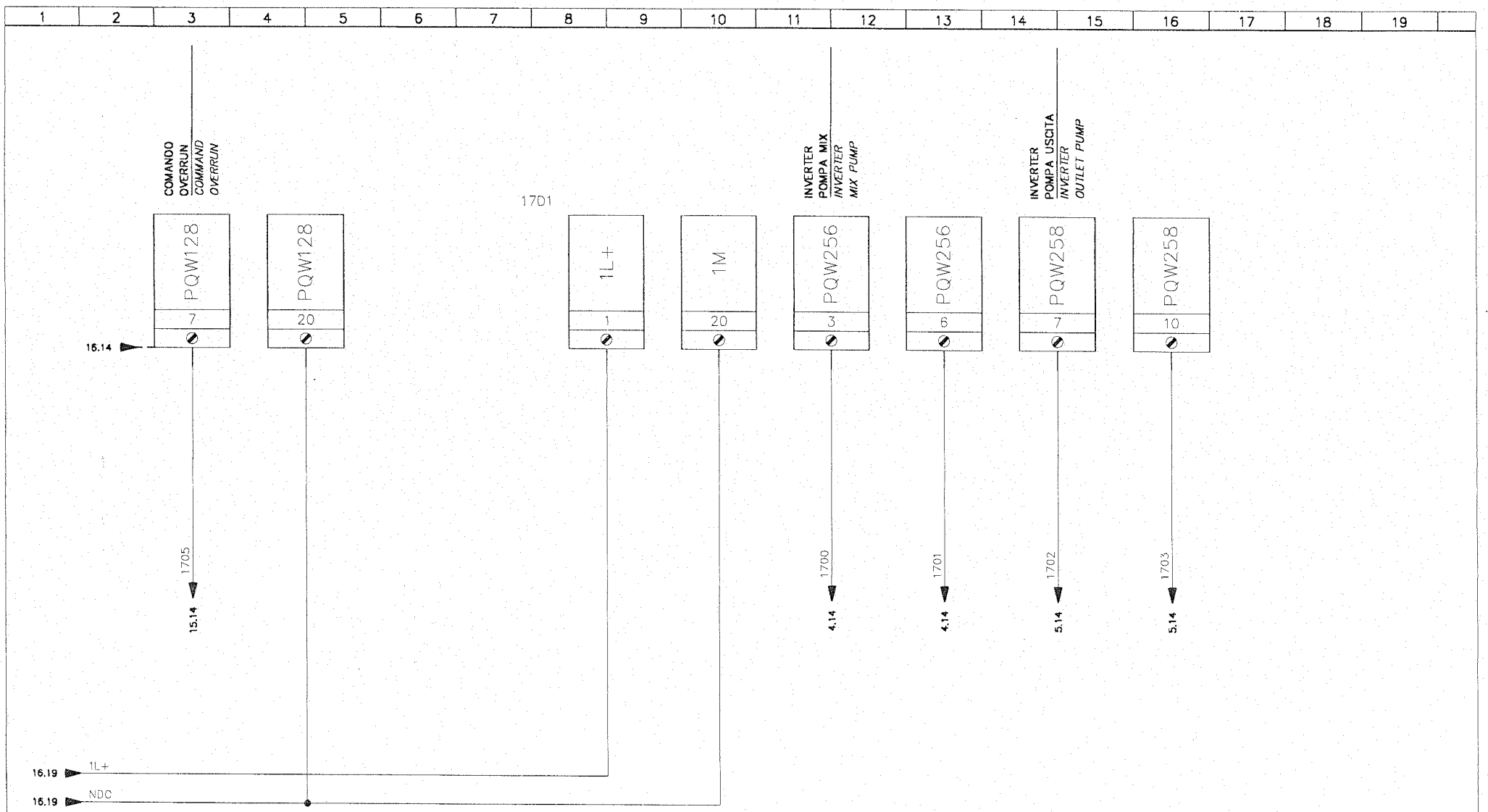
U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION USCITE PLC CPU / *CPU PLC OUTPUT*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 14 TOT. 20 NEXT 15



U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION INGRESSI ANALOGICI PLC / *ANALOGIC PLC INPUT*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 15 TOT. 20 NEXT 16



U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION INGRESSI ANALOGICI PLC *ANALOGIC PLC INPUT*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 16 TOT. 20 NEXT 17



U= 3X400V+PE 50HZ In MAX= 46 A P MAX= 19 KW CONTROL VOLTAGE = 24VDC	DRAW.N. 9.07.62.1198x02 DATE 06-03-2002 N. FILE 907621198x02.DWG	PROJECT FREEZER 600 L/H DENOMINATION USCITE ANALOGICHE PLC / *ANALOGIC PLC OUTPUT*	ORDER EXECUTOR GRITTINI PAOLO	SIDAM s.r.l. Via F.Filzi, 37 Cormano MI ITALY	SHEET 17 TOT. 20 NEXT 18

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

ITEM	DESCRIPTION	CODE	COSTRUCTOR	DRAW
10D1	CPU S7-314 IFM	6ES7314-5AE10-0AB0	SIEMENS	10
10D1	RAIL480MM	6ES7390-1AE80-0AA0	SIEMENS	10
10D1	40POLES S7 CONNECTOR	6ES7392-1AM00-0AA0	SIEMENS	10
10D1	40POLES S7 CONNECTOR	6ES7392-1AM00-0AA0	SIEMENS	10
10D1	FEPROM 32KBYTE MEMORY-CARD	6ES7951-0KE00-0AA0	SIEMENS	10
10D1	BATTERY 3,6V 850mAh CPU 313...318	6ES7971-1AA00-0AA0	SIEMENS	10
10D1	PROFIBUS CONNECTOR	6ES7972-0BB40-0XA0	SIEMENS	10
10G1	POWER SUPPLY PS307-1E 5A	6ES7307-1EA00-0AA0	SIEMENS	10
10P1	PROFIBUS CONNECTOR	6ES7972-0BB40-0XA0	SIEMENS	10
10P1	MPI CARD FOR OPERATOR PANEL	6ZA937-7	UNI-OP	10
10P1	MESSAGE-DISPLAY/AFFICHAGE/ANZEIGE/VISUALIZADOR	6ZA952-7	UNI-OP	10
11B1	PRESSURE-SWITCH/PRESSOST/DRUCKWATC./PRESSOSTATO	PEV1/4-B 10773	FESTO	11
12S2	WHITE LED	ZALVB1	TELEMECANIQUE	12
12S2	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AW313	TELEMECANIQUE	12
12S2	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	12
12S2	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE101	TELEMECANIQUE	12
12S3	WHITE LED	ZALVB1	TELEMECANIQUE	12
12S3	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AW313	TELEMECANIQUE	12
12S3	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	12
12S3	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE101	TELEMECANIQUE	12
12S4	WHITE LED	ZALVB1	TELEMECANIQUE	12
12S4	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AW313	TELEMECANIQUE	12
12S4	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	12
12S4	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE101	TELEMECANIQUE	12
12S5	WHITE LED	ZALVB1	TELEMECANIQUE	12
12S5	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AW313	TELEMECANIQUE	12
12S5	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	12
12S5	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE101	TELEMECANIQUE	12

U= 3X400V+PE 50HZ
In MAX= 46 A
P MAX= 19 KW
CONTROL VOLTAGE = 24VDC

DRAW.N. 9.07.62.1198x02
DATE 06-03-2002
N. FILE 907621198x02.DWG

PROJECT: FREEZER 600 L/H
DENOMINATION: LEGENDA
ITEM DESIGNATION

ORDER

EXECUTOR: GRITTINI PAOLO

SIDAM s.r.l.
Via F.Filzi, 37
Cormano MI ITALY

SHEET 18
TOT. 20
NEXT 19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

ITEM	DESCRIPTION	CODE	COSTRUCTOR	DRAW
12S6	WHITE LED	ZALVB1	TELEMECANIQUE	12
12S6	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AW313	TELEMECANIQUE	12
12S6	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	12
12S6	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE101	TELEMECANIQUE	12
13K1	RELE/RELAIS/RELE	1001	EUROTEK	13
13K2	CONTACTOR/CONTACTEUR/SCHUETZ/CONTACTOR/CONTATTORE	LC1D18BL	TELEMECANIQUE	13
13K3	CONTACTOR/CONTACTEUR/SCHUETZ/CONTACTOR/CONTATTORE	LC1D25BL	TELEMECANIQUE	13
13K4	RELAY/RELAIS/RELE	MY2IN-24VDC	OMRON	13
13K4	SOCKET/SOCLE/SOCKEL/ZOCALO/ZOCCOLO	PYF08A-N	OMRON	13
13Y2	SOLENOID.VALVE/VANNE/MAGNETVENTIL/BOBINA/ELETTROV.	MSFG-24VDC-4527	FESTO	13
15B1	AMPEROMETER-CONVERTER-CARD/FICHE/SCHEDA	823981	WEIDMULLER	15
15B2	MASS-FLOW-REGULATOR/REGOLATORE-MASSICO	FGB-BB-SV-14-0	BRONKHORST	15
16B1	PRESSURE-SWITCH/PRESSOST/DRUCKWATC./PRESSOSTATO	MBS4510-2011-1CB12	DANFOSS	16
17D1	ANALOGIC OUT SM332	6ES7332-5HB01-0AB0	SIEMENS	17
17D1	20 POLES S7 CONNECTOR	6ES7392-1AJ00-0AA0	SIEMENS	17
2B1	RELE/RELAIS/RELE	RM4 TG20	TELEMECANIQUE	2
2QS1	ACTUATOR/PLASTRON/ANTRIEB/MANIGLIA	194 L-H6EG-175	ALLEN-BRADLEY	2
2QS1	PROTECTION/PROTECTION/SCHUTZ/PROTEZIONE	194E-A40-C3	ALLEN-BRADLEY	2
2QS1	LOADSWITCH/SECTIONATEUE/LASTSCHALTER/SEZIONATORE	194E-A63-1753	ALLEN-BRADLEY	2
3B1	MOTOR.PROTECTION./MOTORSHUTZ/PROTEZIONE-MOTORE	INT 69 SCY	KRIWAN	3
3Q1	CONTACT/KONTAKTE/CONTACT/CONTATTO	GV-AE11	TELEMECANIQUE	3
3Q1	OVERLOAD-RELAY/DISJ.MOT./LEISTUNG./RELE SOBRECARGA	GV2P20	TELEMECANIQUE	3
3Q2	CONTACT/KONTAKTE/CONTACT/CONTATTO	GV-AE11	TELEMECANIQUE	3
3Q2	OVERLOAD-RELAY/DISJ.MOT./LEISTUNG./RELE SOBRECARGA	GV2P32	TELEMECANIQUE	3
4Q1	CONTACT/KONTAKTE/CONTACT/CONTATTO	GV-AE11	TELEMECANIQUE	4
4Q1	OVERLOAD-RELAY/DISJ.MOT./LEISTUNG./RELE SOBRECARGA	GV2ME10	TELEMECANIQUE	4
4U1	INVERTER/FREQUENZREGLER	VLT 2811-195N1027	DANFOSS	4
5U1	INVERTER/FREQUENZREGLER	VLT 2811-195N1027	DANFOSS	5

U= 3X400V+PE 50HZ
In MAX= 46 A
P MAX= 19 KW
CONTROL VOLTAGE = 24VDC

DRAW.N. 9.07.62.1198x02
DATE 06-03-2002
N. FILE 907621198x02.DWG

PROJECT FREEZER 600 L/H
DENOMINATION LEGENDA
ITEM DESIGNATION

ORDER

SIDAM s.r.l.
Via F.Filzi, 37
Cormano MI ITALY

EXECUTOR
GRITTINI PAOLO

SHEET 19
TOT. 20
NEXT 20

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

ITEM	DESCRIPTION	CODE	COSTRUCTOR	DRAW
6F1	CIRC.BREAKER/DISJONCT./LEISTUNGSSHALT./AUTOMATICO	C60N-2P-2A-24264	MAGRINI	6
6F2	CIRC.BREAKER/DISJONCT./LEISTUNGSSHALT./AUTOMATICO	C60N-1P-2A-24236	MAGRINI	6
6M1	VENTILATOR/VENTILATEUR/LUFTER/VENTILATORE	70546297	CROUZET	6
6M1	FILTER/FILTRO	80MM	CROUZET	6
6M1	FILTER/FILTRO	80MM	CROUZET	6
6T1	TRANSFORMER/TRANSFORMATEUR/TRANSFORMATOR	42153	LEGRAND	6
8K1	CONTACTOR/CONTACTEUR/SCHUETZ/CONTACTOR/CONTATTORE	LC1D09BL	TELEMECANIQUE	8
8S1	PUSHBUTTON/BOUTON/DRUCK/PULSADOR/PULSANTE	ZB5-AT4	TELEMECANIQUE	8
8S1	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZB5-AZ009	TELEMECANIQUE	8
8S1	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE102	TELEMECANIQUE	8
8S1	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE102	TELEMECANIQUE	8
8S1	CONTACT/KONTAKTE/CONTACT/CONTATTO	ZBE102	TELEMECANIQUE	8
9Y1	SOLENOID.VALVE/VANNE/MAGNETVENTIL/BOBINA/ELETTROV.	018Z6964	DANFOSS	9
9Y2	SOLENOID.VALVE/VANNE/MAGNETVENTIL/BOBINA/ELETTROV.	018Z6857	DANFOSS	9
B2	PRESSURE-SWITCH/PRESSOST/DRUCKWATC./PRESSOSTATO	KP15	DANFOSS	11

U= 3X400V+PE 50HZ
In MAX= 46 A
P MAX= 19 KW
CONTROL VOLTAGE = 24VDC

DRAW.N. 9.07.62.1198x02
DATE 06-03-2002
N. FILE 907621198x02.DWG

PROJECT FREEZER 600 L/H
DENOMINATION LEGENDA
ITEM DESIGNATION

ORDER

EXECUTOR GRITTINI PAOLO

SIDAM s.r.l.
Via F.Filzi, 37
Cormano MI ITALY

SHEET 20
TOT. 20
NEXT /

Display readout

Fr
The frequency converter shows the present output frequency in Hertz [Hz].

Io
The frequency converter shows the present output current in Amps [A].

Uo
The frequency converter shows the present output voltage in Volt [V].

Ud
The frequency converter shows the intermediate circuit voltage in Volt [V].

Po
The frequency converter shows the calculated output in kilowatt [kW].

notrun
This message is shown if an attempt is made to change a parameter value while the motor is running. Stop the motor to change the parameter value.

LCP
This message is shown if an LCP2 control unit is fitted and the [QUICK MENU] or [CHANGE DATA] key is activated. If an LCP2 control unit is fitted you can only change parameters with that.

Ha
The frequency converter shows the present Hand mode reference frequency in Herz (Hz).

Warnings/alarm messages

A warning or an alarm will appear in the display as a numerical code **Err. xx**. A warning will be shown on the display until the fault has been corrected, while an alarm will continue to flash until the [STOP/RESET] key is activated.
The table shows the various warnings and alarms, and whether the fault locks the frequency converter. After a *Trip locked* the mains supply is cut off and the fault is corrected. The mains supply is reconnected and the frequency converter is reset. The frequency converter is now ready. A *Trip* can be reset manually in three ways:

1. Via the operating key [STOP/RESET].
2. Via a digital input.
3. Via serial communication.

It is also possible to choose an automatic reset in parameter 405 *Reset function*. When a cross appears in both warning and alarm, this can mean that a warning comes before an alarm. It can also mean that it is possible for the user to programme whether a warning or an alarm will appear for a given fault. For example, this is possible in parameter 128 *Motor thermal protection*. After a trip the motor will coast, and alarm and warning will blink on the frequency converter, but if the fault disappears only the alarm will blink. After a reset the frequency converter will be ready to start operation again.

No.	Description	Warning	Alarm	Trip locked
2	Live zero error (LIVE ZERO ERROR)	X	X	X
4	Mains phase loss (MAINS PHASE LOSS)	X	X	X
5	Voltage warning high (DC LINK VOLTAGE HIGH)	X		
6	Voltage warning low (DC LINK VOLTAGE LOW)	X		
7	Overvoltage (DC LINK OVERVOL T)	X	X	X
8	Undervoltage (DC LINK UNDERVOL T)	X	X	X
9	Inverter overload (INVERTER TIME)	X	X	
10	Motor overloaded (MOTOR, TIME)	X	X	
11	Motor thermistor (MOTOR THERMISTOR)	X	X	
12	Current limit (CURRENT LIMIT)	X	X	
13	Overcurrent (OVERCURRENT)	X	X	X
14	Earth fault (EARTH FAULT)		X	X
15	Switch mode fault (SWITCH MODE FAULT)		X	X
16	Short-circuit (CURR. SHORT CIRCUIT)		X	X
17	Serial communication timeout (STD BUS TIMEOUT)	X	X	
18	HPFB bus timeout (HPFB TIMEOUT)	X	X	
33	Out of frequency range (OUT FREQ RNG/ROT LIM)	X		
34	HPFB communication fault (PROFIBUS OPT. FAULT)	X	X	
35	Inrush fault (INRUSH FAULT)		X	X
36	Overtemperature (OVERTEMPERA TURE)	X	X	
37-45	Internal fault (INTERNAL FAULT)		X	X
50	AMT not possible		X	
51	AMT fault re. nameplate data (AMT TYPE.DATA FAULT)		X	
54	AMT wrong motor (AMT WRONG MOTOR)		X	
55	AMT timeout (AMT TIMEOUT)		X	
56	AMT warning during AMT (AMT WARN. DURING AMT)		X	
99	Locked (LOCKED)	X		

LED indication	
Warning	yellow
Alarm	red
Trip locked	yellow and red

WARNING/ALARM 2: Live zero fault
The voltage or current signal on terminal 53 or 60 is below 50% of the preset value in parameter 309 or 315 *Terminal, min. scaling.*

WARNING/ALARM 4: Mains phase fault
No phase on mains supply side. Check the supply voltage to the frequency converter. This fault is only active in 3-phase mains supply. The alarm can also occur when the load is pulsing. In this instance the pulses must be dampened, e.g. using an inertia disc.

WARNING 5: Voltage warning high
If the intermediate circuit voltage (UDC) is higher than *Voltage warning high* the frequency converter will give a warning and the motor will continue to run unchanged. If the UDC remains above the voltage warning limit, the inverter will trip after a set time. The time depends on the device, and is set at 5 - 10 sec. Note: The frequency converter will trip with an alarm 7 (overvoltage). A voltage warning can occur when the connected mains voltage is too high. Check whether the supply voltage is suitable for the frequency converter, see *Technical data.* A voltage warning can also occur if the motor frequency is reduced too quickly due to ramp down time being too short.

WARNING 6: Voltage warning low
If the intermediate circuit voltage (UDC) is lower than *Voltage warning low* the frequency converter will give a warning and the motor will continue to run unchanged. If the UDC remains below the voltage warning limit, the inverter will trip after a set time. The time depends on the device, and is set at 2 - 25 sec. Note: The frequency converter will trip with an alarm 5 (undervoltage). A voltage warning can occur

when the connected mains voltage is too low. Check whether the supply voltage is suitable for the frequency converter, see *Technical data*. When the frequency converter is switched off a brief warning 6 (and warning 8) appears.

WARNING/ALARM 7: Overvoltage
If the intermediate voltage (UDC) goes over the inverter's *Overvoltage limit* the inverter will be switched off until the UDC has once more fallen below the overvoltage limit. If the UDC remains above the overvoltag limit the inverter will trip after a set time. The time depends on the device, and is set at 5 - 10 sec. An overvoltage in the UDC can occur when the motor frequency is reduced too quickly due to ramp down time being too short. Note: *Voltage warning high* (warning 5) will thus also be able to generate an alarm 7.

WARNING/ALARM 8: Undervoltage
If the intermediate circuit voltage (UDC) is lower than the inverter's *Undervoltage limit* the inverter will be switched off until the UDC once more goes above the undervoltage limit. If the UDC remains under the *undervoltage limit*, the inverter will trip after a set time. The time depends on the device, and is set at 2 - 15 sec. An undervoltage can occur when the connected mains voltage is too low. Check whether the supply voltage is suitable for the frequency converter, see *Technical data*. When the frequency converter is switched off a warning 8 (and warning 6) is displayed briefly. Note: *Voltage warning low* (warning 6) will thus also be able to generate an alarm 8.

WARNING/ALARM 9: Inverter overload
Electronic thermal inverter protection indicates that the frequency converter is close to tripping due to overloading (output current too high for too long). The counter for electronic thermal inverter protection gives a warning at 98% and trips at 100% accompanied by an alarm. The frequency converter cannot be reset until the counter drops below 90%. This fault arises because the frequency converter has been overloaded for too long.

WARNING/ALARM 10: Motor overloaded
According to the electronic thermal inverter protection the motor is too hot. In parameter 128 the user can select whether the VLT frequency converter should emit a warning or an alarm when the counter reaches 100%. This fault is due to the motor being overloaded by more than 100% for too long. Check that motor parameters 102–106 are set correctly.

WARNING/ALARM 11: Motor thermistor
The motor is too hot or the thermistor/thermistor connection has been disconnected. In parameter 128 *Thermal motor protection* the user can select whether the frequency transformer emits a warning or an alarm. Check that the PTC thermistor is correctly connected between terminals 18, 19, 27 or 29 (digital input) and terminal 50 (+ 10 V supply).

WARNING/ALARM 12: Current limit
The output current is greater than the value in parameter 221 *Current Limit* $_{LIM}$, and the frequency converter will trip after a set time, selected in parameter 409 *Trip delay overcurrent*.

WARNING/ALARM 13: Overcurrent
The inverter's peak current limit (approx. 200% of rated output current) has been exceeded. The warning will last approx. 1-2 sec, and the frequency converter will then trip and emit an alarm. Switch off the frequency converter and check whether the motor shaft can be turned, and whether the size of the motor is suitable for the frequency converter.

ALARM 14: Earth fault
There is a discharge from the output phases to earth, either in the cable between the frequency converter and the motor, or in the motor. Turn off the frequency converter and remove the earth fault.

ALARM 15: Switch mode fault
Fault in switch mode power supply (internal supply). Contact your Danfoss supplier.

ALARM: 16: Short-circuit
There is a short-circuit on the motor terminals or in the motor. Disconnect the mains supply to the frequency converter and remove the short-circuit.

WARNING/ALARM 17: Serial communication timeout
There is no serial communication to the frequency converter. The warning will only be active when 514 *Bus timeout function* is set to a value other than OFF. If parameter 514 *Bus timeout function* is set to *Stop and trip* [5], it will first give a warning and then ramp down and trip out accompanied by an alarm. Parameter 513 *Bus timeout* can if required be increased

WARNING/ALARM 18: HPFB bus timeout
There is no serial communication to the frequency converter's communication option card. This warning will only be active when parameter 804 *Bus timeout function* is set to a value other than OFF. If parameter 804 *Bus timeout function* is set to *Stop and trip*, it will first give a warning and then ramp down and trip

out accompanied by an alarm. Parameter 803 *Bus timeout* can if required be increased.

WARNING 33: Out of frequency range
This warning is active if the output frequency has reached *Output frequency low limit* (parameter 201) or *Output frequency high limit* (parameter 202). If the VLT frequency converter is in *Process regulation, closed loop* (parameter 100) the warning will be active in the display. If the VLT frequency converter is in another mode than *Process regulation, closed loop*, bit 008000 *Out of frequency range* in extended status word will be active, but there will not be a warning in the display.

WARNING/ALARM 34: HPFB communication fault
Communication fault only occurs in Fieldbus versions. Regarding alarmtype, please see parameter 953 in fieldbus literature.

ALARM 35: Inrush fault
This alarm occurs when the frequency converter has been connected to the mains supply too many times within 1 minute.

WARNING/ALARM 36: Overtemperature
If the temperature inside the power module rises above 75 - 85 °C (depending on the device) the frequency converter will emit a warning, and the motor will continue to run unchanged. If the temperature continues to rise, the switch frequency is reduced automatically. See *Temperature-dependent switching frequency*.
If the temperature inside the power module rises above 92 - 100 °C (depending on the unit) the frequency converter will cut out. The temperature fault cannot be reset until the temperature has dropped to below 70 °C. The tolerance is ± 5 °C. The temperature can be caused by the following:
- The ambient temperature too high.
- Motor cable too long.
- Too high mains voltage.

ALARM 37-45: Internal fault
If one of these failures occurs, please contact Danfoss.

Alarm 37, internal fault number 0: Communication fault between control card and BMC.

Alarm 38, internal fault number 1: Flash EEPROM fault on control card.

Alarm 39, internal fault number 2: RAM fault on control card

Alarm 40, internal fault number 3: Calibration constant in EEPROM.

Alarm 41, internal fault number 4: Data values in EEPROM.

Alarm 42, internal fault number 5: Fault in motor parameter database.

Alarm 43, internal fault number 6: General power card fault.

Alarm 44, internal fault number 7: Minimum software version of control card or BMC

Alarm 45, internal fault number 8: I/O fault (digital input/output, relay or analog input/output)

NB!:
When restarting after an alarm 38-45, the VLT frequency converter will display an alarm 37. In parameter 615 the actual alarm code can be read.

ALARM 50: AMT not possible
One of the following three possibilities can occur:
- The calculated R_S value falls outside permitted limits.
- The motor current in at least one of the motor phases is too low.
- The motor in use is probably too small for AMT calculations to be performed.

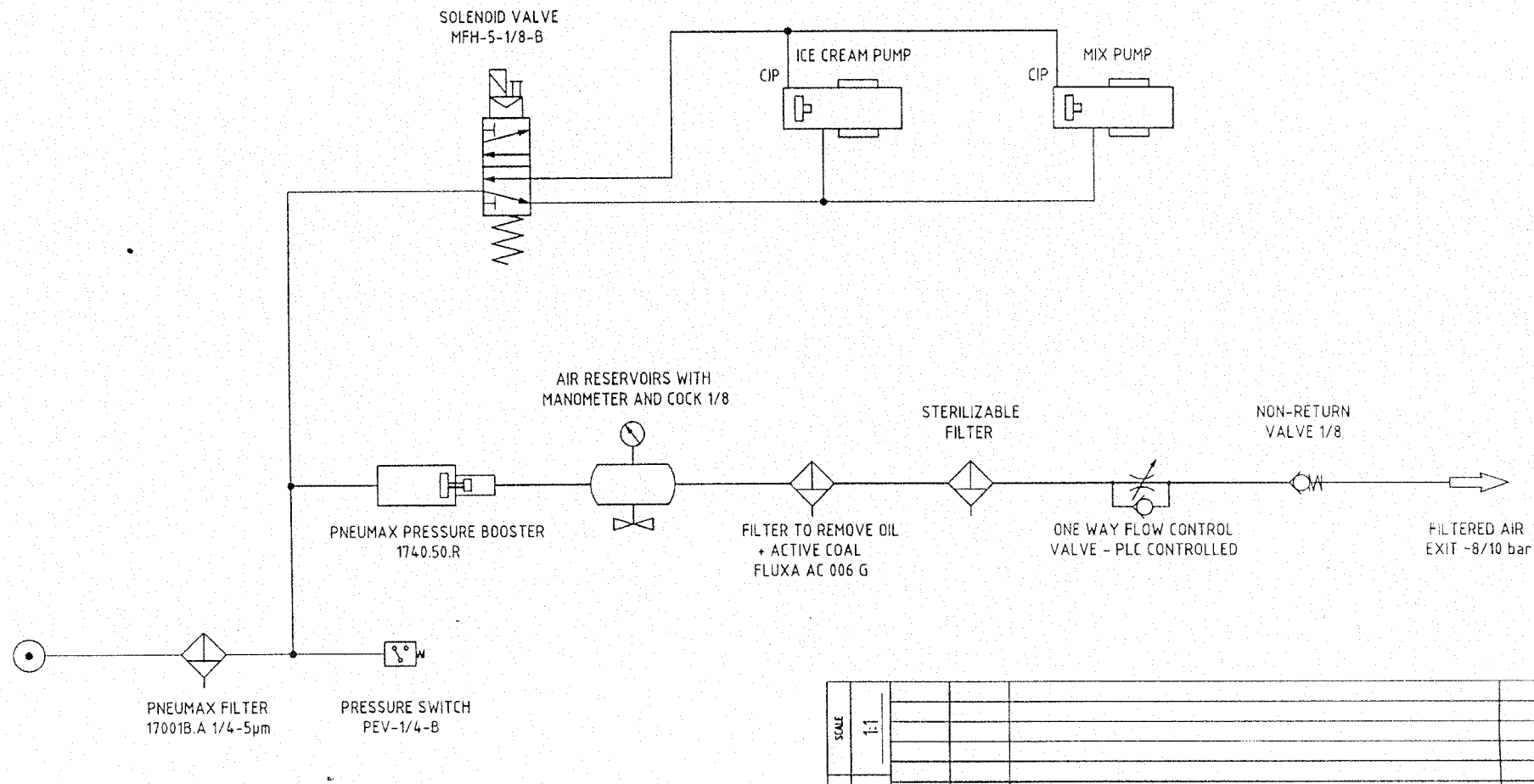
ALARM 51: AMT Fault regarding nameplate data
There is inconsistency between the registered motor data. Check the motor data for the relevant setup.

ALARM 54: AMT incorrect motor
AMT cannot be performed on the motor being used.

ALARM 55: AMT timeout
Calculations are taking too long, possibly due to noise on the motor cables.

ALARM 56: AMT warning during AMT
A frequency converter warning is given while AMT is being performed.

WARNING 99: Locked
See parameter 18.



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