ARTEZEN
DOUGH HANDLING

AUTOMATIC DIVIDER-ROUNDER

MODEL SYNCRO

USE AND MAINTENANCE MANUAL

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

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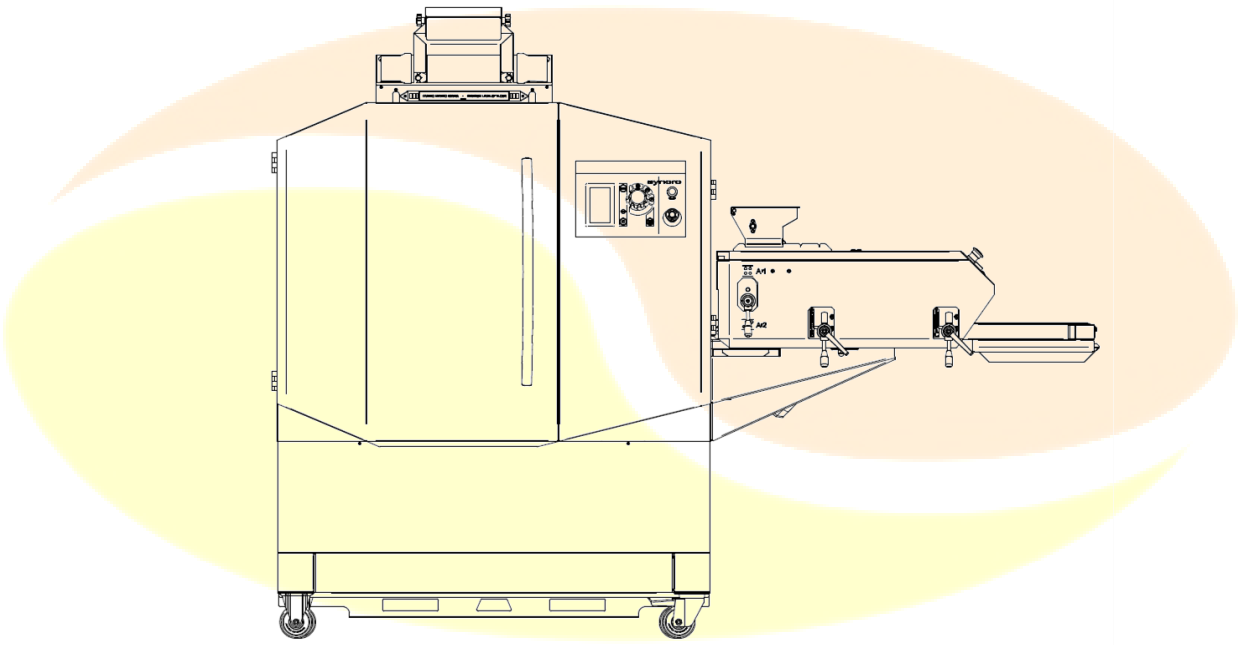

Read this manual carefully before installing and using the machine

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TABLE OF CONTENTS

ANNEXES

- LIST OF SPARE PARTS AND RELATED REFERENCE EXPLODED DRAWINGS
- WIRING DIAGRAMS and OIL-HYDRAULIC DIAGRAM

INDEX OF FIGURES

INDEX OF TABLES

EC DECLARATION OF CONFORMITY

ARTEZEN **S.R.L.**
Via Lago di Tovel, 14 36015 Schio - (VICENZA)– I (VAT number IT 03967970249)
through its legal representative, Mr Dino Gasparotto,

HEREBY DECLARES

that the machine **2-ROW ROUNDER - DIVIDER**

Serial number **……**

Model ☐ **SYNCRO** ☐ **SYNCRO M** ☐ **SYNCRO E** ☐ **SYNCRO EM**

Version ☐ **120** ☐ **160** ☐ **Special**

Equipped with the following optional item:

☐ Flour handling in the side pockets of the hopper,

whose function is to obtain portions of even weight from a dough mass previously prepared by mixing ingredients typical of the food sector, such as flour, water, yeast, salt, etc. and then to round the dough portions to obtain final products that are typical of the baking and/or pastry industry,

complies with the applicable provisions set out in:

- Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, which amended Directive 95/16/EC

- Directive 2014/30/UE of the European Parliament and of the Council of 26 February 2016 on harmonized approximation of the laws of the Member States relating to electromagnetic compatibility"

- Regulation (EC) No.1935/2004 of the European Parliament and of the Council of 27 October 2004 on materials and articles intended to come into contract with foodstuffs, repealing directives 80/590/EEC and 89/109/EEC

- Regulation (EU) No. 10/2011 of the Commission of 14 January 2011, on plastic materials and articles intended to come into contact with foodstuffs

The machine's technical file was prepared by Mr Francesco Tagliapietra, in his capacity as Mechanical Engineer, and employee of the company making this declaration

Schio,……

Dino Gasparotto (Legal Representative)

1 INTRODUCTION

1.1 FOREWORD

This instruction manual is intended to be consulted by anyone who is in any way responsible for or authorised to use and/or operate the machine. It is also intended for employers, managers, and supervisors of the company using the machine, who must carefully read and understand every part of this manual so as to use it as a valid support in fulfilling part of the obligations imposed on them by the current laws and regulations on health and safety in the workplace.

The employer of the personnel authorised to use the machine, the managers and the supervisors must guarantee the operators adequate information and training, as well as practical experience (such training and information must be simple and understandable for those involved) concerning the correct and safe use of the machine and the generic and specific risks involved in the workplace and/or in carrying out specific tasks.

The manual is divided into different sections, which can be generally summarised as:

Instructions for handling, transport and maintenance

This section is dealt with in the first few paragraphs of Chapter 3, and is intended for the operators in charge of handling, transporting, installing and starting-up the machine. Its purpose is to provide any significant information required to correctly carry out such operations, with the exclusion of those that are already part of the cultural background of an expert, and/or professionally skilled and/or specialized technician.

Instructions for using and carrying out the routine maintenance on the machine in a safe manner

This part, dealt with in Chapter2 and in part of Chapters3,4 and5, is intended for the employer of machine operators, for the managers and supervisors of the user company, and for the operators.

In addition to the instructions for the correct use of the machine, it also includes the instructions to follow for the maintenance, cleaning and testing operations which, due to their simplicity and the very limited danger involved, do not require particular experience or professional background and can be performed by the operator.

Instructions for extraordinary maintenance

This part, dealt with in the remainder of the Chapters4 and5, is intended for the employer of machine operators, for the managers and supervisors of the user company, and for the operators as well as for the specialized personnel in charge of carrying out routine and/or extraordinary maintenance on the machine. It also contains some important instructions on safety that must be followed for maintenance, adjustment and testing operations which, due to their complexity and/or dangerousness require the intervention of specialized, expert, professionally trained personnel who are in possession of all the technical and regulatory information for perfectly and safely performing the work.

Given the necessary specific experience that the personnel assigned to this type of intervention must possess, all the instructions of a technical nature that are not instrumental to performing the work safely and which - due to their professional profile - such personnel must be aware of, have been omitted for obvious reasons.

Instructions for de-commissioning or dismantling

This part is covered in Chapter 76.

References made to certain chapters or paragraphs must also be understood as references to all related sub-paragraphs; where, for example, par. 5.3 is mentioned, the reference must be understood as extended to all paragraphs from5.3.1 to5.3.9.

Before carrying out any operation on/with the machine (installation, adjustment, use, repair, etc.) **carefully read** the general and specific instructions in this manual and understand their purposes and meanings in relation to the correct operation of the machine, its correct maintenance, and gain an adequate knowledge of the safety devices it is equipped with and the potential residual risks its use implies.

Keep this manual and all other attached publications in a safe place, which is known to those assigned to its use and maintenance. Keep it in a dry place and protected from atmospheric agents that over time may cause it to deteriorate (for example, in an opaque plastic bag); it is recommended that a copy be kept near the machine where operators can consult it quickly.

In case of loss or deterioration, ask Artezen S.r.l. to send a new copy, clearly specifying all the identification data of the machine (year of manufacture, model, serial number, etc.).

This manual reflects the current state-of-the-art at the time the machine was put on the market or at its commissioning, and cannot be considered inadequate only because the model was successively updated in keeping with new experiences and new technical developments.

The manufacturer cannot be held responsible for the suitability of the installation site and the support services therein, although important indications for a correct installation are provided in this manual. The company reserves the right to make updates to the machine and this manual without any obligation to update any machines and/or manuals previously produced.

ATTENTION

Upon receiving the machine, remove the packaging (see par. 3.2), and immediately check that it is equipped with all the devices, in particular the safety devices, illustrated inthis manual, and that it complies with the indications on the purchasing order and/or in the order confirmation.

This manual is an integral part of the machine and must accompany it if it is moved or transferred for any reason whatsoever, even free of charge.

Par. 2.1indicates the intended use of the machine with details on permitted and prohibited uses.

1.2 GENERAL INSTRUCTIONS AND WARNINGS

Artezen S.r.l. declines any and all responsibility for injury to people or animals or damage to property caused by the failure to observe the instructions, indications, recommendations, etc. contained in this manual and, in particular, the following:

- Do not tamper with the guards and safety devices the machine is equipped with;
- **Do not remove** the guards and **do not disable** the safety devices provided with the machine, unless this is really necessary; in this case, the machine must be stopped and the electrical power supply must be disconnected until all the guards and safety devices have been correctly reassembled/reactivated and subject to the adoption of measures aimed at reducing insofar as possible all the potential risks that might arise;
- **Reassemble** the guards and **reactivate** the safety devices as soon as the reasons that made their temporary removal / deactivation necessary have been resolved;
- **Do not use** the machine for uses and/or with loads other than those indicated by the manufacturer;
- **Carry out** daily checks of the safety devices, including the level and conditions of the processing fluid (oil), and the overall condition of the machine;
- **Carry out** a scrupulous daily cleaning of the machine and its parts
- Apply the **necessary measures and caution** in performing the daily work routine including adjustment, cleaning, maintenance, etc. so that the machine or its parts are not activated by others, not even accidentally
- **Observe** the European Directives and Italian laws on workplaces, in particular (but not limited to) those on safety warning signs, food hygiene, health and safety in the workplace, personal protective equipment, and environmental protection;
- **Respect the limits of the permitted climatic and use conditions**: maximum relative ambient humidity 90%; ambient temperature min. 15 °C; max. 40 °C; altitude above sea level 1000 m maximum. The temperature of the oil in the hydraulic system should not be below + 15 °C.
- **The employer must** provide operators with adequate information and instruction, as well as practical training on the correct and safe use of the machine.
- **The operator must only wear tight fitting clothes**, with no loose parts. They must never wear jackets, open shirts, etc. or jewellery (rings, bracelets, necklaces, etc.); any long hair must be tied up (for example, under a cap); work clothing must be adequate for maintaining the hygienic conditions of the food that is handled/processed.
- **Do not allow visitors, minors, or anyone who is not expressly authorised to enter the room where the machine is used, or even approach the machine;**
- where the machine is connected to other machinery or incorporated into a more complex system, the manufacturer of said system resulting from the above connections or incorporation must analyse and evaluate every further or greater risk deriving from such operation; take adequate measures to eliminate them or reduce them as much as possible; comply with the requirements established by any pertinent Laws, Directives, Standards, Regulations, etc. (definitely including Directive 2006/42/EC) and declare the complianec of the system/unit with the provisions of the same
- Should it be necessary to replace parts of the machine, **only use original spare parts** by requesting them to Artezen S.r.l.; in case of use of non-original spare parts, the manufacturer will consider itself exempt of any and all liability for injury to persons or animals and damage to property that may occur as a result
- **Any arbitrary modification** made to the machine **relieves the manufacturer of any and all responsibilities for injuries to persons, animals, and damage to property** that may occur as a result.

1.3 MAIN CASES IN WHICH THE COMPANY DECLINES ANY AND ALL LIABILITY

Artezen S.r.l. declines any and all liability for injury to persons or animals and damage to property, as well as missed production that may result directly or indirectly from:

- **using the machine in a way that does not conform** to the intended use, or in ways other than those described herein
- **installation not in compliance** with the procedures illustrated in this manual
- **use of the machine by personnel who are not sufficiently instructed**, or where applicable, not adequately trained in its correct use and safety measures
- **using energy** sources that are inadequate or, in any case, **different** from those indicated in this manual and/or in the attached documentation (ex. wiring diagrams)
- **lack of or inadequate maintenance**, or maintenance not carried out according to the indication provided herein;
- **partial compliance or failure to comply with the instructions** in this manual
- **arbitrary modification** of the original features and equipment of the machine without having received prior formal authorization from the manufacturer

- **combining/incorporating** the machine with/into parts and/or equipment, applied or not to the same, **not provided, contemplated or authorised** by Artezen S.r.l.; in this case the EC marking placed on the machine by the manufacturer loses all its validity
- **incorporation** of the machine or its parts into a complex system in case such operation gives rise to new or greater risks compared to the machine as it was supplied
- **non-compliance with the laws and regulations in force** in the country where the machine is being used.
- **extraordinary events and force majeure** not ascribable to Artezen S.r.l.

1.4 TERMINOLOGY

To improve understanding of manual, the following terms are used:

OPERATOR: person responsible for using the machine or its parts.

ROUNDER-DIVIDER: the subject of this manual

USE: each operation that can be reasonably correlated with the machine during its lifetime in relation to its intended use; in this manual, the term must be interpreted according to the context of the topic being presented (ex.: production, maintenance, cleaning, etc.).

CLIENT: natural or legal person who purchased the machine from Artezen S.r.l.

USER: natural or legal person who actually uses the machine, in particular for production purposes

ARTEZEN, MANUFACTURER, CONSTRUCTOR, MANUFACTURING COMPANY of the machine:
Artezen S.r.l. Via Lago di Tovel,14 36015 Schio (VICENZA) - I

PPE : personal protective equipment (e.g. gloves, shoes, goggles, etc.)

DOUGH: a shapeless, homogeneous, and malleable mass obtained through the mixing of food ingredients typical of this sector (flour, water, yeast, salt, etc.), previously prepared or purchased by the user and destined to be portioned by the divider

HOPPER: open container, with a truncated-rectangular shape, placed on the top of the machine intended to contain the dough and placed in communication with the machine head. A tilt-adjustable mirror is installed at its top.

AOPD : Safety light curtain, installed on the sides of the hopper.

HEAD: assembly consisting of different components intended to pick-up part of the dough contained in the hopper, dividing it into pieces of dough destined for the weight chamber.
STAR DOSING DEVICE: Pair of removable star-shaped profiles, with 3 or 4 lobes, suitable for dividing the dough into more or less uniform portions.

WEIGHT CHAMBER: compartment that can be opened for cleaning, consisting of a removable piston, equipped with a horizontal reciprocating movement, to subject the dough to a compression suitable for filling the cavities obtained in the dividing drum.

DIVIDING DRUM: Hollow cylinder with a profile featuring 4 pairs of grooves arranged radially and at 90° from each other. The travel of the pistons contained here is adjustable to offer a filling volume adequate to the required dividing weight.
DOUGH REMOVING ROLLERS: removable unit, consisting of a pair of rotating rollers designed to ensure the release of the portions of dough contained in the grooves of the dividing drum to direct them inside the rounding cups.
PIECES: portion of dough made by the machine, the volume of which is determined by the dividing drum.
ROUNDING CUPS: polygonal shaped compartment, assembled in sequence with other cups and all connected by a pair of metal chains, suitable for receiving the pieces of dough and subsequently processing them for the rounding phase.
ROUNDER: Flat element in continuous orbital rotation, fixed above the rounding cups, which moves the pieces in order to round off their shape.

ALIGNMENT ROLLERS Pair of rollers with planetary rotary movement, covered in non-stick material, arranged in the unloading area of the rounded pieces, designed to release the pieces from the rounding cups and at the same time prevent them from rolling onto the transfer belt.
TRANSFER BELT Outfeed belt suitable for transferring the rounded pieces towards the outside of the machine or unloading them into the moulder.
MOULDER Group external to the machine but physically connected to it, whose purpose is to generate a spinning action through the combined operation of a pair of compression and winding belts (present exclusively in the 'SYNCRO M' and 'SYNCRO EM' versions).
ROUNDED PIECES: Dough pieces that have been given a rounded shape.
CRUSHED PIECES: Dough pieces that were first rounded and then compressed, obtaining the flat circular shape (typical of “hamburger” buns)
ELONGATED PIECES Dough pieces that were first rounded and then elongated, obtaining a cylindrical shape (typical of “HotDog” buns)

ROUTINE MAINTENANCE: operations to keep the machine efficient and in good working conditions, which do not require special training or specific professionalism, and which can be carried out by unskilled personnel, as long as the instructions in this manual are respected.

SPECIAL/EXTRAORDINARY MAINTENANCE: operations to keep the machine efficient and in good working conditions, which require preparation and/or professional skills and/or specific skills in relation to the intervention to be carried out; they can and must be carried out only by specialised and professionally (where provided for by the laws in force) trained personnel, familiar with the technical notions and legal concepts for carrying out state-of-the-art works in safe conditions.

HAZARDOUS AREA: area within and/or in the vicinity of the machinery where the presence of an exposed person represents a risk for the safety and health of that person.

EXPOSED PERSON, any person wholly or partially within a hazardous area.

ATTENTION: communications of primary importance for the safety and health of people; in some cases the importance is more strongly highlighted by the presence of the symbol

IMPORTANT: important messages concerning the use and care of the machine**;** in some cases the importance is more strongly highlighted by the presence of the symbol

1.5 VALIDITY OF THE CE MARKING AND OF THE EC DECLARATION OF CONFORMITY

In this manual, all references and/or indications relating to:
- CE Marking,
- EC declaration(s) of conformity,
- declaration(s) of incorporation of partly completed machinery,
- directives and regulations issued by institutional bodies of the European Union (Parliament, Council, Commission, etc.) and relative transposing acts of the EU Member States,
- harmonized European laws (EN),

are to be considered valid exclusively for the machines destined to be placed on the European Union market or for which the conformity to Laws, Directives, etc. issued by the European Union were expressly requested by the client and formally accepted by Artezen S.r.l.
For all the machines not destined to the European Community market, with the exception of the above, such references and indications are to be considered totally lacking in meaning and value.

2 MACHINE FEATURES

2.1 DESCRIPTION AND INTENDED USE

The 2-row divider and rounder model Syncro is intended to be used for dividing the dough consisting of food ingredients such as flour, water, salt, yeast, into equivalent pieces, arranging them on 2 rows, then rounding the product before it is deposited onto the exit belt; this machine was therefore conceived for the production of bakery and pastry products. The version equipped with the final loaf moulder (Version “SYNCRO M” and “SYNCRO EM”) is also able to subject the dough to a final crushing for obtaining products such as Hamburger buns and/or, as an alternative, to elongation of the dough ball to obtain the Hotdog bun.

Only professional use of the machine is allowed in places where access to the public, visitors, minors, and unauthorised people, etc. is prohibited, with the exception of fairs and/or demonstrations and, in any case, with the prior adoption of suitable provisions to protect the people present from any danger.

It is prohibited to use the machine for operations and / or with products other than those specified

It is prohibited to use the machine if all the connections to the utilities of the installation site have not been correctly carried out, as illustrated in this manual.

It is prohibited to use the machine in spaces characterized by:
● risk of fire and / or explosion or in any case of major accidents, and in the vicinity of open flames,
● high humidity and / or wet conditions ● excess of water vapour ● excess of oily vapours
● excess of dust ● presence of corrosive substances and / or gases ● adverse climatic conditions

It is prohibited to use the machine under vibration conditions (not caused by the machine) or after abnormal shocks

It is forbidden to use the machine in marine environments (on-board vessels, offshore oil rigs, etc.)

For safety, health and warranty reasons **it is prohibited to use the machine for products and / or materials and / or in ways** other than those illustrated in this manual **or, in any case, for operations not relevant to its intended use. Any other use** that is different from the declared one **is considered incorrect, not in compliance and not intended by the manufacturer and, as such, potentially hazardous for the safety and health of exposed people, as well as of animals and property**.

The basic components of the machine are (seeFigure 1):

ref. 1. load-bearing structure (base)

ref. 2 hopper for containing the dough to be portioned; on its two sides (left and right), it is equipped with flour containers (pockets) necessary for the correct processing of the dough inside the machine. A tilt-adjustable mirror is installed at its top. The safety light curtain is located on the two sides.

ref. 3 head unit for pre-dosing the dough; by means of a pair of star-shaped dosing devices, the dough is conveyed vertically downwards into a compression chamber equipped with a piston - operated by an oil-hydraulic system - that pushes the dough towards the diving drum unit ref. 4.

ref. 4 dividing drum unit, for determining the volume of the dough pieces to be produced. The dividing unit consists of a cylindrical element (dividing drum) equipped with radial grooves (pockets), the depth of which is variable and can be determined by adjusting the position of the same number of mobile pistons sliding inside the aforementioned pockets. The adjustment of the volume of the pockets is motorized. The dividing drum rotates continuously around its central axis; this movement generates the repetitive alignment of the filling pockets with respect to the piston of the dough compression chamber; the pockets are thus filled during this processing phase. When the rotation of the drum exposes the pockets downwards, an ejection cam moves the pistons of the pockets also downwards, thus ejecting the dough.

ref. 5 dough-releasing rollers, removable Consisting of a unit that can be easily removed from the work area, which, by continuously rotating in the opposite direction, helps the pieces of dough ejected from the dividing drum to move between these two rollers, in order to facilitate the filling of the rounding cups ref. 6.

ref. 6. rounding cups unit. Consisting of a certain number of plastic blocks internally hollowed with a polygonal geometric shape, whose depth is adjustable by means of internally sliding moulds; they are connected to each other by a pair of chains which guarantees their alternating movement, in order to carry the pieces of dough towards the rounding area ref. 7, and then towards the outfeed area ref. 9

ref. 7 rounder

ref. 8 control panel

ref. 9 transfer/outfeed belt

ref. 10 loaf moulder, present exclusively in the “SYNCRO M” and “SYNCRO EM” versions. It is equipped with two parallel moulding belts arranged horizontally at an adjustable distance, which allow processing the rounded pieces of dough in order to crush them (to obtain products such as hamburger buns) or to elongate them (to obtain products such as hot dog buns). This version is equipped with an additional flour duster ref. 11 located on the top of the loaf moulder.

ref. 11 flour dispensing device (flour duster)

ref. 12 box containing the power electrical panel

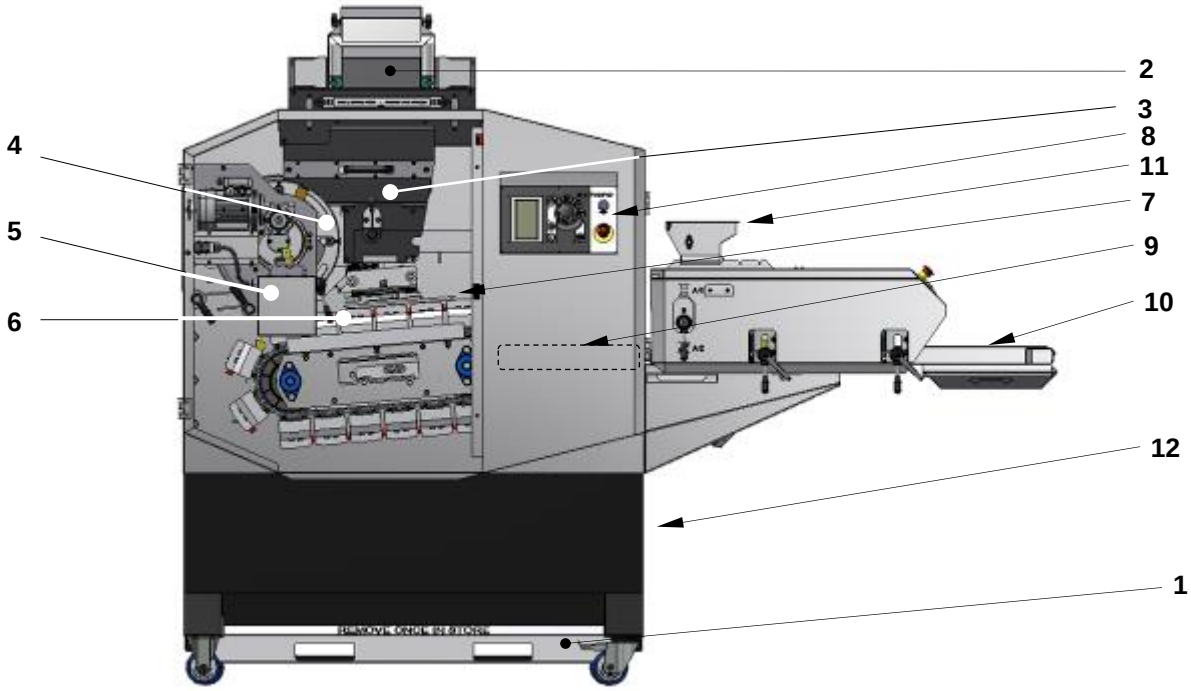


Figure 1 - Main parts of the machine

2.2 MODELS, VERSIONS AND CHARACTERISTICS OF THE MACHINE

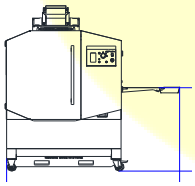
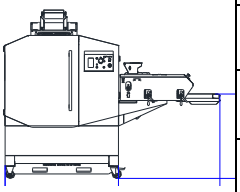
Model		Output	Pieces min ÷ max	No. of rows	Installed power (400V-50Hz) (see Note)	Weight (with wooden cage)
		pcs/h	gr	-	kW	kg
	Syncro 120	1500 ÷ 3500	30 ÷ 120	2	1.2	640 (740)
	Syncro 120 E					650 (770)
	Syncro 160		60 ÷ 160			640 (740)
	Syncro 160 E					650 (770)
	Syncro 120 M	1500 ÷ 3500	30 ÷ 120	2	1.9	770 (870)
	Syncro 120 EM					720 (840)
	Syncro 160 M		60 ÷ 160			770 (870)
	Syncro 160 EM					720 (840)

Table 1 - Characteristics of the machine according to the different configurations

Note. The versions marked with “M” indicate that the machine is equipped with a loaf moulder installed in the outfeed area of the processed product.

Note. The power values indicated in Table 1 are to be considered purely indicative; for detailed information consult the attached wiring diagram, which is the only document to refer to for electrical data and information.

Substantial differences between the “SYNCRO”/”SYNCRO M” and “SYNCRO E”/”SYNCRO EM” versions				
Model		**Technical performances and internal working components**	**Base frame**	**Main body of the machine**
	Syncro 120/160	Equivalent	Black painted steel	AISI 304 and AISI 430 stainless steel single body featuring a polygonal design for containing internal working components
	Syncro E 120/160		Grey painted steel	Almost squared design, made using individual elements in grey painted steel, supported by a single vertical aluminium plate

Table 2 - Substantial differences between the ”SYNCRO” and “SYNCRO E” versions

2.2.1 PRODUCTS THAT CAN BE OBTAINED, ACCORDING TO THE VERSION

The constructive versions of the “SYNCRO” and “SYNCRO E” series differ in the appearance of the external design of the machine body; moreover, the moulder shown in Figure 1 ref. 10 allows obtaining additional processing after the rounding of the dough, as shown in Table 3.

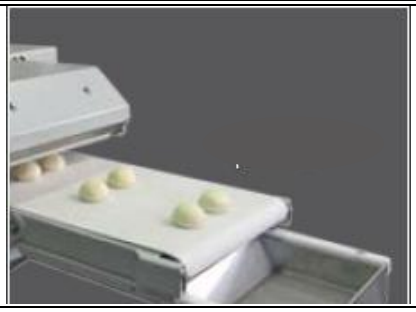
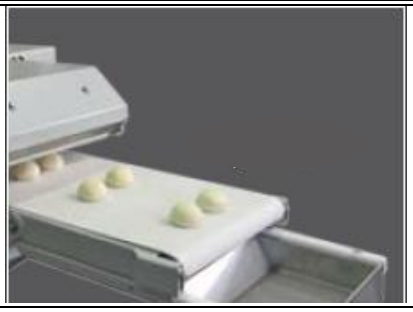
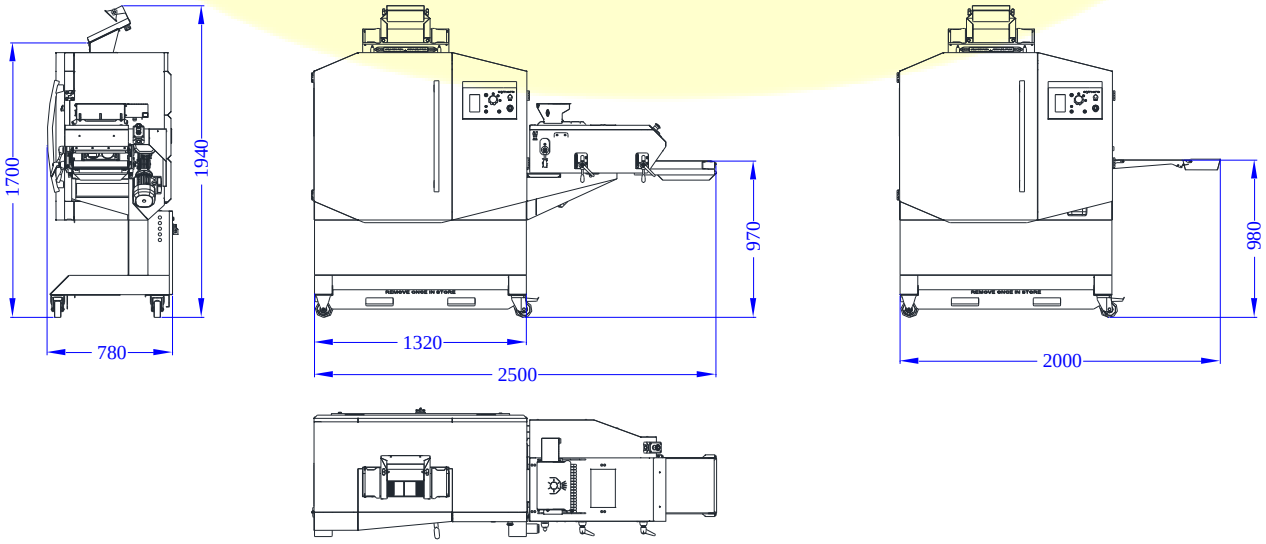
PRODUCT	SYNCRO and SYNCRO E	SYNCRO M and SYNCRO EM
BALLS		
SMALL LOAVES (HOT DOG BUN)		
CRUSHED DOUGH (HAMBURGER BUN)		

Table 3 - Products that can be obtained



SYNCRO M / SYNCRO EM SYNCRO /SYNCRO E

Figure 2 - Machine overall dimensions for the “SYNCRO M” and “SYNCRO” versions

Note. The overall dimensions of the two versions, SYNCRO EM and SYNCRO E, correspond exactly to those of the SYNCRO M and SYNCRO versions in Figure 2

Basic technical data of the oil-hydraulic unit		
Maximum working pressure	bar	90
Tank capacity	litres	10
Oil		NILS, “MIZAR 46”

Table 4 - Technical data of the oil-hydraulic unit

2.3 MAIN SWITCH

Each machine is equipped with a main switch shown in Figure 3; it can be locked with a padlock to the O - OFF position.

Figure 3 - Main power switch

2.4 CONTROL PANEL

Both the “SYNCRO” and “SYNCRO E” are equipped with their own control panel; the push-buttons are arranged differently, but the functions of each push-button are exactly the same. In addition to the push-button panel, the control panel has a luminous display ref. 11 and a rotary control for selecting the options available on the “I-DRIVE” screen ref. 9. Finally, only the versions equipped with loaf moulder are fitted with an additional control panel Figure 5 that features only the STOP and EMERGENCY STOP controls and is located after the loaf moulder.

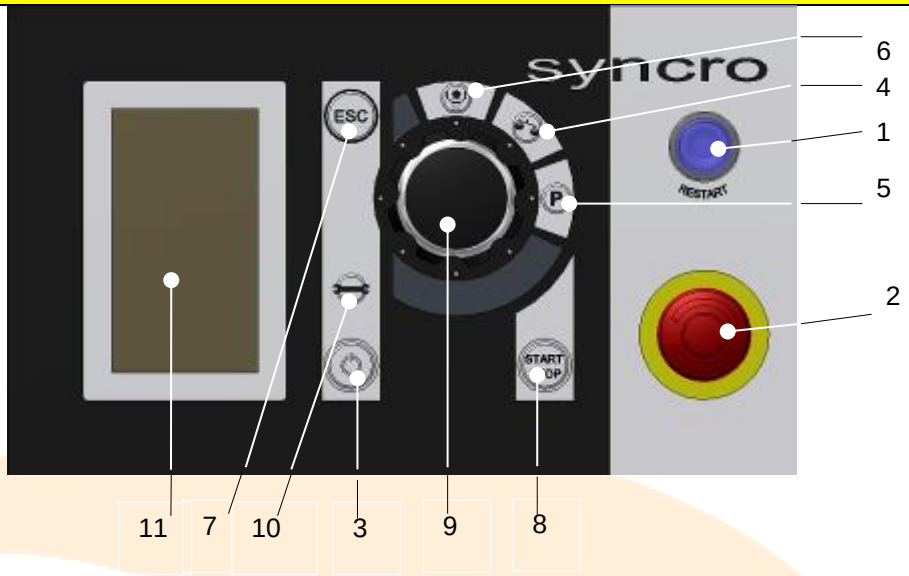
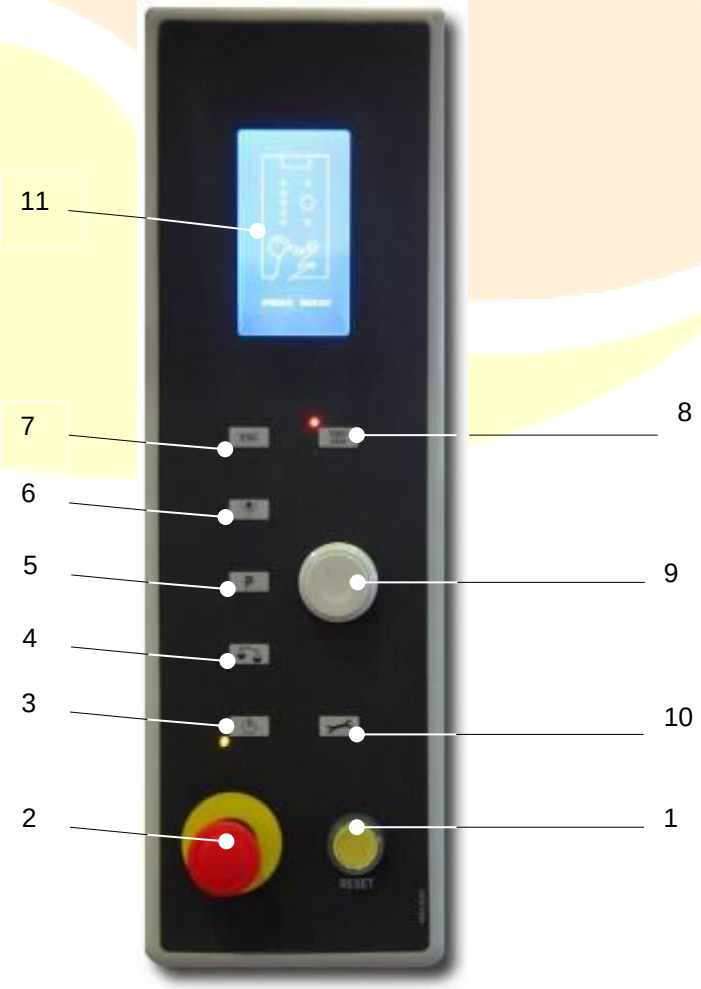
VERSION	CONTROL PANEL
“SYNCRO”	
“SYNCRO E”	

Figure 4 - Control panel

1. The **“RESET"** push-button allows restoring the normal conditions of the machine and therefore activating the START function, at the first start-up of the machine or after a normal emergency stop.
2. Red mushroom-head **EMERGENCY STOP** push-button: stops all machine functions immediately as

soon as it is pressed; to release it, rotate its ring clockwise until it is mechanically unlocked;
3. Control panel **"ON/OFF"** push-button:
4. **"DOUGH WEIGHT CORRECTION"** push-button: allows correcting, during processing, any discrepancy in the weight of the divided dough compared to the set one;
5. **"RECIPE PARAMETERS"** push-button: allows accessing the software page in which the recipe (or program) parameters currently in use are listed, so that they may be modified if necessary. It is a double function button; in fact, in protected operating mode, it disables the access to the recipe parameters and allows modifying only the output of the machine (Par. 4.10 – Parameter19);
6. **"FLOUR DUSTER"** push-button: allows changing the amount of flour released on the drum during dividing;
7. **"ESC"** push-button: allows exiting the menu screens, returning to the previous one;
8. **"START / STOP"** push-button: allows starting/stopping the current processing;
9. **"I-DRIVE"** : when rotated, it allows selecting the items and icons present on the screen. Confirm the selection by pressing the same knob;
10. **"SERVICE"** push-button: allows accessing the service menu
11. Luminous display

2.4.1 SECONDARY STOP CONTROL PANEL

The machine secondary stop control panel Figure 5 is located in the unloading area of the processed product. It is installed exclusively in the "SYNCRO M" and "SYNCRO EM" versions as the working position of the operator for these machines is particularly distant from the main control panel; the presence of this secondary control panel thus improves the ergonomics when stopping the machine. It consists of a STOP only control, ref. 12, and of an additional EMERGENCY STOP control, ref. 2

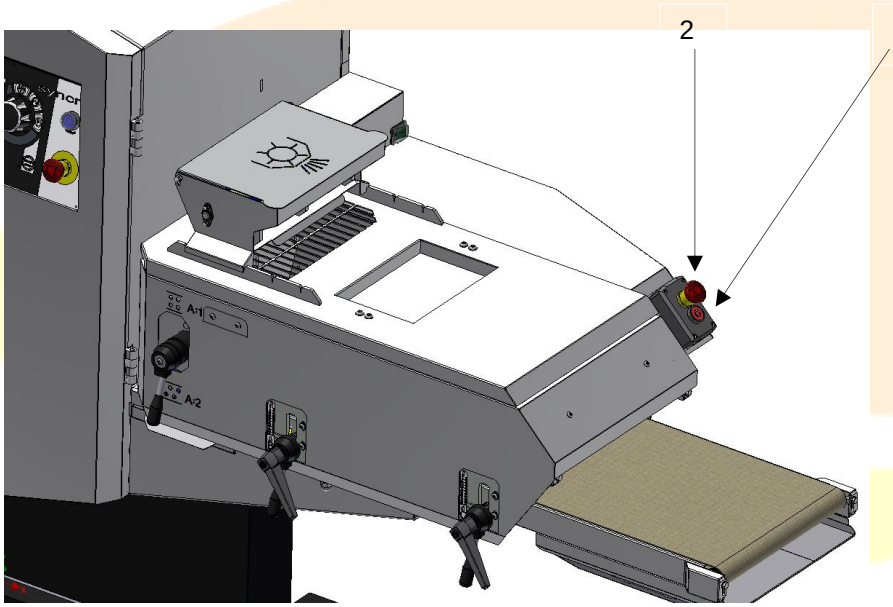


Figure 5 - Secondary stop control panel

2.5 IDENTIFICATION PLATE

The license plate, shown in Figure 6, which bears the indelible CE marking, the manufacturer's information, the serial number, the year of construction, weight, and electrical data, is fixed to the machine with rivets in the position shown in the same figure.

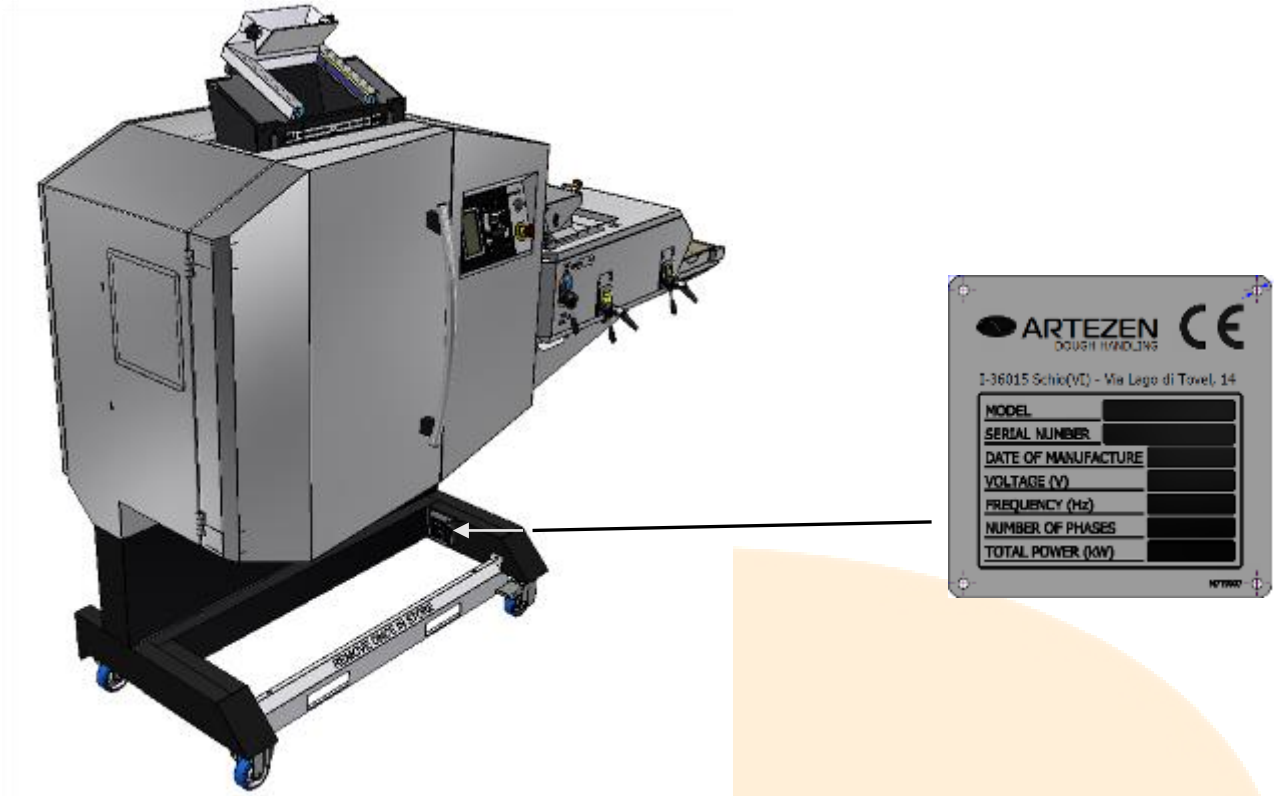


Figure 6 – Identification plate and its position

3 INSTALLATION AND USE

3.1 INSTALLATION ROOM REQUIREMENTS

The place where the machine will be kept and/or used must conform to the current laws in force and ensure adequate protection from impacts, damage, deterioration and atmospheric agents. The dimensions and characteristics of the access points must allow the easy and safe passage of the machine without people or the machine itself being put at risk. The characteristics of the flooring, load-bearing structures and walls must comply with the laws and regulations in force, also in consideration of the total load to be withstood and the relative safety coefficients; they must be easy to clean, disinfect and disinfest. The floor must be flat, not sloping, compact, without holes and roughness. The electrical system and the equipotential protection system (earth) of the site must conform to the laws and standard currently in force, and must be constructed, maintained and, if required by law, verified by authorized and professionally qualified technicians accredited to issue the relative declarations of conformity. The upstream power supply panel must have suitable protection devices against overloads, short-circuit, phase-phase, phase-neutral (if applicable), and phase-earth malfunctions.

3.2 TRANSPORT, HANDLING AND POSITIONING

Depending on the destination and the contractual agreements, the machine is sent wrapped with protective plastic material, or (in the case of sea freight) in a “barrier bag” and closed in a wooden crate firmly blocked to the base of the same.

The load is blocked on the surface of the means of transport with crossbars and/or wooden blocks suitably positioned to prevent it from moving during transport; the load must also be tied from 2/3 of the total height of the wooden crate upward to points on the means of transport that are sufficiently resistant to prevent it from overturning.

For handling the load packed in the wooden crate, use a forklift truck with a capacity adequate for the mass (see par. 2.2,Table 1); insert the forks inside the lower wooden crossbars and as close as possible to them, so as to prevent unwanted movement to the sides; the forks of the forklift must protrude by **at least 200 mm from the other side**

Figure 7 - Pallet lifting with access for the forklift forks

The pallet lifting area is accessible by the forks from the special opening on the sides of the pallet Figure 7.

Remove the sides of the crate (just unscrew the boards, paying attention to the protruding nails) and free the machine from the wrapping (stretch plastic film or barrier bag). Separate the materials by type (plastic, wood, etc.) and take them to dedicated places, accessible only to authorized persons, pending disposal by specialized companies, which must take place in compliance with any laws in force on the subject (also the wooden base must be treated in the same way once the machine has been removed from it).

In Italy and other States, especially within the European Union, waste disposal according to precise rules and respect for the environment are obligations unequivocally established by the applicable legislation.

Make sure that the machine is intact in every part; in case of doubt, contact the manufacturer.

With reference to Figure 8, to release the machine from the wooden base on which it is blocked proceed as follows:

- wear abrasion-resistant gloves, helmet, shoes with reinforced toe and anti-puncture outsole
- use a forklift to stabilize the machine in its resting position on the transport pallet: the forks of the forklift must be inserted into the rectangular slots placed both on the front of the machine and on the rear. Make sure that the forks of the truck protrude on the opposite side by at least 200 mm from the machine profile
- Unscrew the nuts at the top of the threaded rods visible in Figure 8 ref. A and B, then take out the threaded rods. A 19 mm hex wrench is sufficient to unscrew the threaded nut. If the threaded rod rotates around itself while loosening the nut during unscrewing, which would make any attempt to remove the threaded nut vain, just use a pair of pliers to stop it from rotating.
- Next, unscrew the threaded nut locking the machine to the pallet, located on the rear side Figure 8 ref. C, then pull out the threaded rod. A 19 mm hex wrench is sufficient to unscrew the threaded nut. If the threaded rod rotates around itself while loosening the nut during unscrewing, which would make any attempt to remove the threaded nut vain, just use a pair of pliers to stop it from rotating.

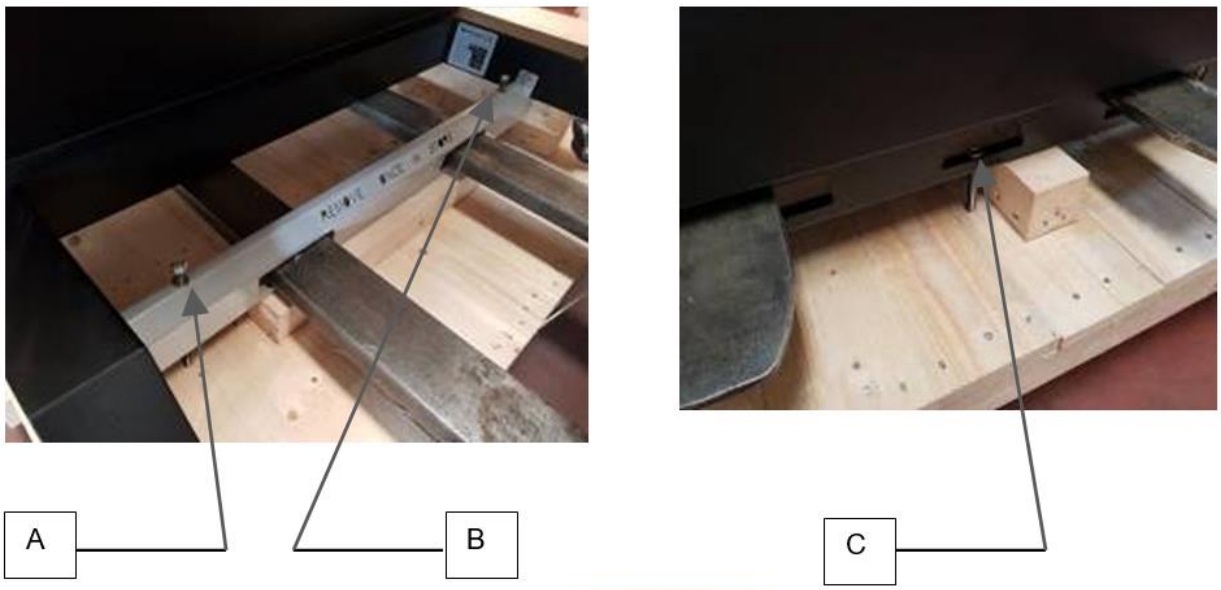


Figure 8 - Fixing the machine to the pallet

To remove the machine from the support pallet, after having inserted the forklift arms (forks) in the appropriate slots (making sure that they protrude from the rear side of the machine by at least 200 mm), lift the machine by about 150 mm, then move the machine and place it slowly on the supporting floor. See also Figure 9.

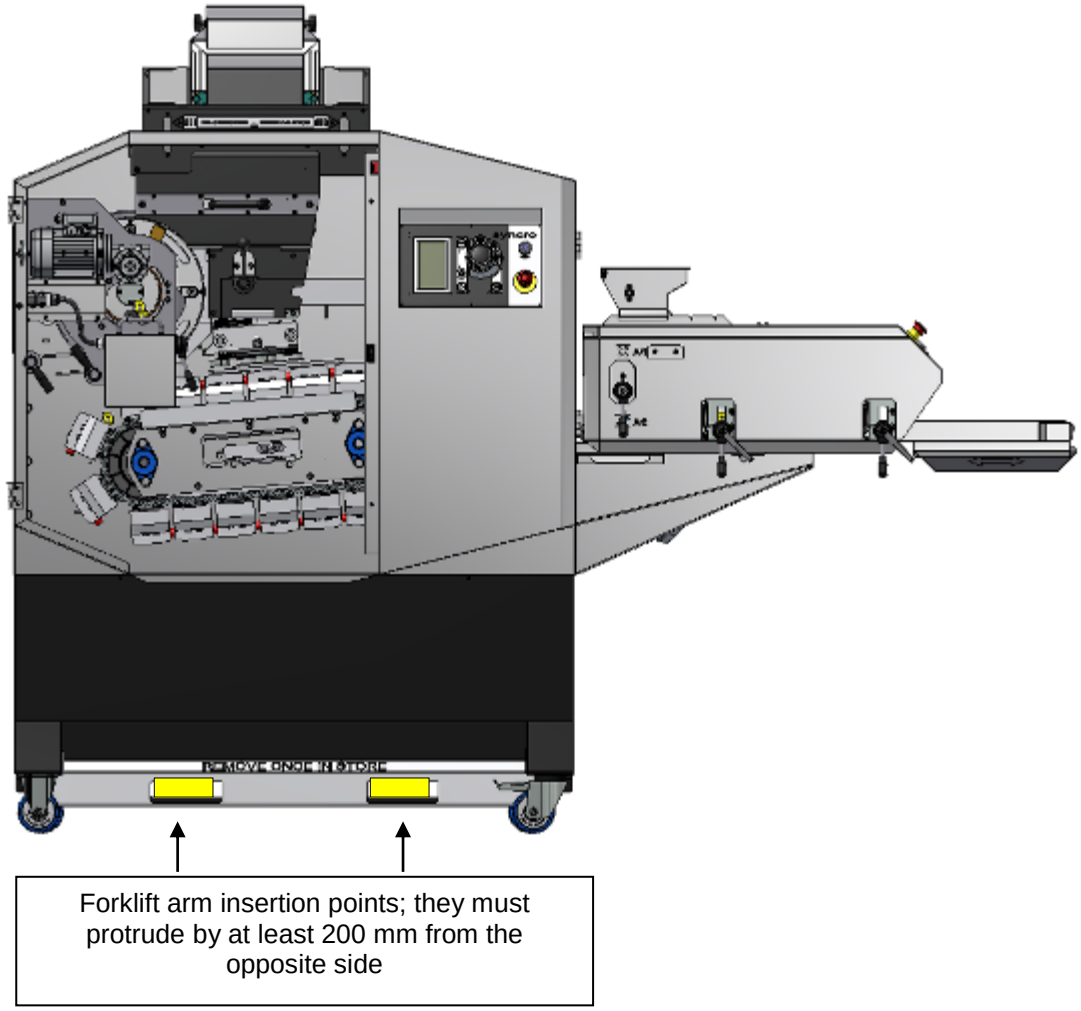


Figure 9 - Lifting and handling the machine with a forklift truck

ATTENTION

Never use lifting systems and/or devices other than those illustrated in this manual.

When handling and/or transporting the machine, take every possible precaution in order to prevent, or reduce as much as possible, the occurrence of risks to persons, animals, or property.

3.3 ELECTRICAL CONNECTION

Any electrical operation concerning the machine and / or the work site must be carried out by specialized and expert technicians, familiar with the technical and regulatory notions to perform the work in a workmanlike manner and in safe conditions, according to the laws in force; they must issue any declaration of conformity required by the law.

Upon delivery of the machine, and in any case before proceeding with the electrical connection, **make sure that the line voltage corresponds to the one declared by the manufacturer** on the plate (par. 2.5) and on the wiring diagram.

The machine is supplied with an electric cable with a 5-pole 16 A plug (L1 + L2 + L3 + N + PE).

The site's electrical system must have suitable characteristics for maximum load absorption For the connection, the user must provide a socket in compliance with the laws and regulations in force and powered with conductors of adequate cross-section on the basis of the data given in this manual and in the wiring diagram.

Use the appropriate earthing system, whose efficiency must be periodically checked; do not connect to gas or water pipes or other generic metal parts. Keep the power cord away from hot and / or moving parts; it must not obstruct the passage of people, animals, things. The plug must be easily accessible and clearly visible from any position in which the operator may be, even for a short time.

3.4 PRELIMINARY CHECK

Some machine parts must be removed to be cleaned and must be put back in place once the sanitizing operations have been completed. With reference to Figure 10,

- Open the front doors;
- Remove the front cover of the head (Pos. 1) by sliding the bridge handle in the direction of the arrow;
- Open the bottom door (Pos. 2) by turning the locking lever in the direction indicated by the arrow and tilt the door downward;
- Check the presence and correct installation of:
    - The brush (Pos. 3);
    - The two star dosing devices (Pos. 4);
    - The 6 dough accompanying rollers (Pos. 5);
    - The dough compression piston and relative locking pin (pos. 6);
    - Removable dough removing roller unit (in this case, failure to install the roller unit would generate an alarm situation and the inability to start processing; the display would show the image here below). In any case, check that the unit is correctly fitted in its seat in a stable manner and locked in position by means of the locking lever.

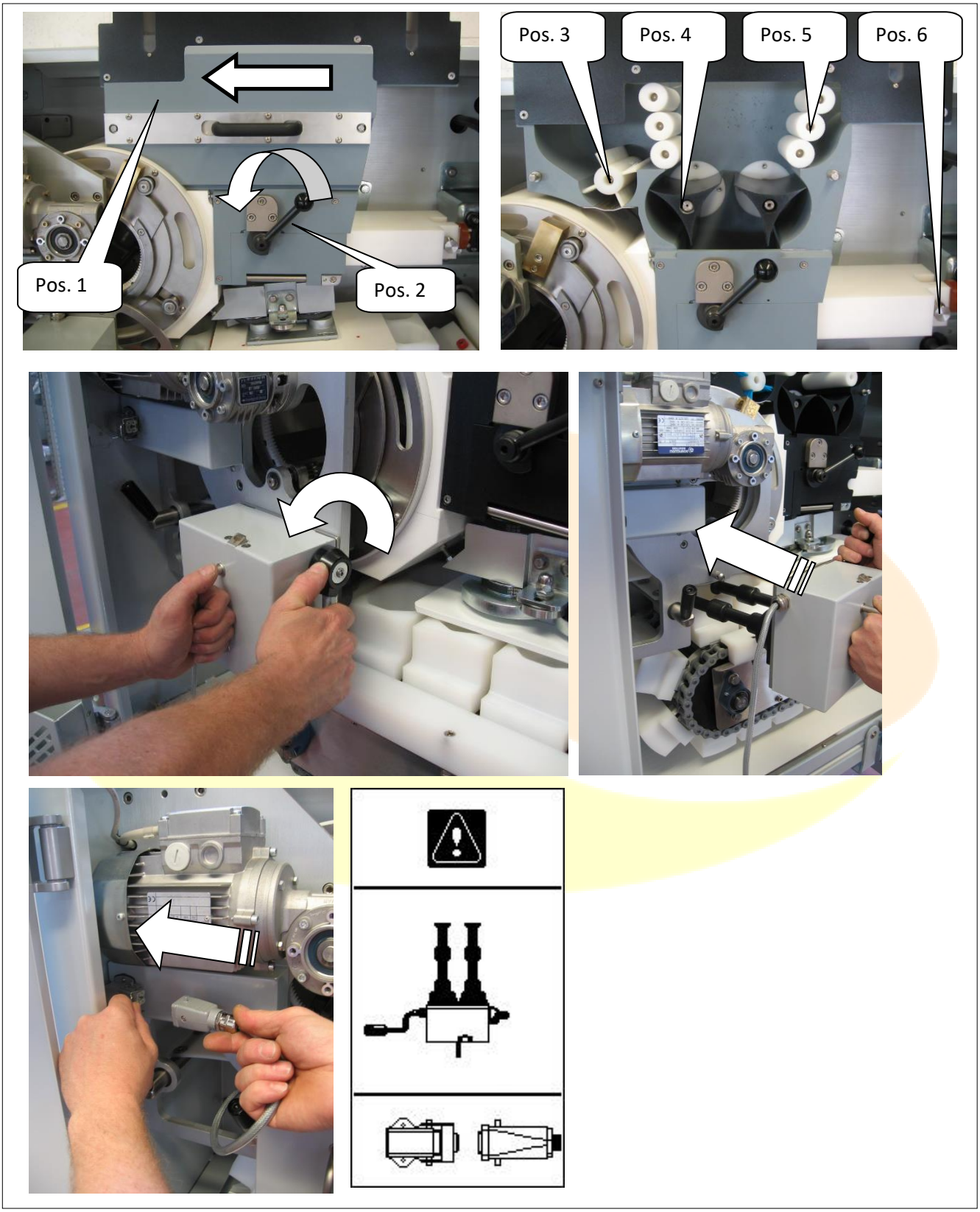


Figure 10 - Verification of extractable parts

3.5 FIRST START UP AND VERIFICATION OF THE CORRECT ROTATION DIRECTION OF THE MOTORS

When starting a new machine for the first time a with three-phase power supply, it is necessary to check the correct rotation direction of the motors. For this purpose, the machine is equipped with a device for monitoring the phasing of the electrical power supply so that, if the phases are inverted during the electrical connection, the control panel display will show the image in Figure 11 as soon as the machine is switched on. This would indicate the need to intervene on the electrical connection plug to invert the electrical phases. To turn on the machine, turn the main switch to **O –ON** Figure 3 and press the ON / OFF button on the control panel for a few seconds Figure 4 ref. 3. If the display does not show the aforementioned image when it is switched on, it is not necessary to reverse the electrical connection phases.

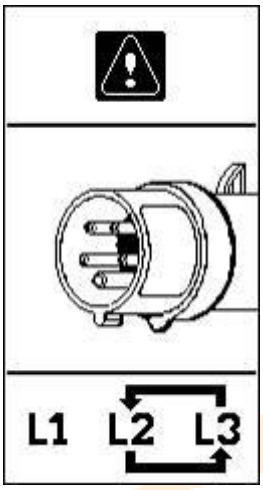


Figure 11 - Inverted phasing of the electrical power supply

3.6 PHASING INVERSION

If the situation illustrated in par. occurs, it will be necessary to switch the position of two phase conductors inside the plug at the end of the power cable provided with the machine; the operation must be carried out by a 3.5**specialized and expert electrician** (special / extraordinary maintenance).
With reference to Figure 12, separate the cap from the terminal block, disconnect two phase conductors and swap the connection terminals. Finally, join and close the cover and terminal block.

ATTENTION! Do not switch a phase conductor with the neutral conductor (identified by the blue colour) or with the earth conductor (identified by the yellow-green colour).

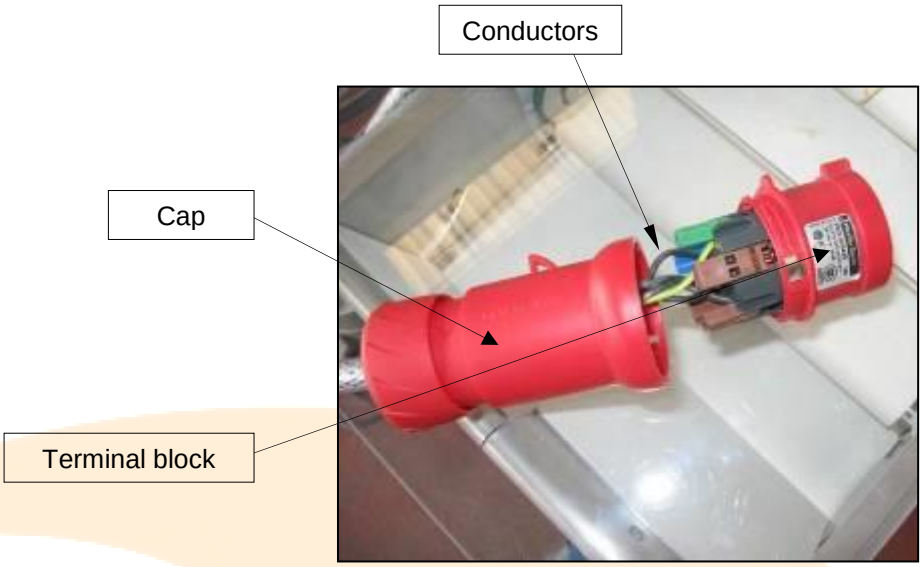


Figure 12 - Phasing verification

3.7 OPERATION AND USE

The machine may be used only by authorized personnel, who are expert in using machinery for making bread and/or pastry dough and, in any case, who have been adequately instructed and trained on the correct and safe use of the machine, as well as informed about the residual risks that are typical of this machine and on the procedures to adopt to eliminate or further reduce them (for this purpose, see par. 5.3)**.**
The machine is intended to be used exclusively by professionals and by expert operators.
The machine must be used by one operator at a time.
The instructions in this manual are sufficient and adequate; however, upon request and on condition that an agreement has been reached, the manufacturer may provide, at their own premises or at the client/user's premises, the instruction or training necessary for the correct and safe use of the machine. In any case, it is the responsibility of the individual user to identify and assign qualified persons to operate the machine and adequately inform, instruct, and train them.

ATTENTION! It is prohibited for anyone who does not have the qualifications indicated in this manual, to carry out operations on and/or with the machine.

In compliance with the current laws on health and safety in the workplace, the employer must put in place adequate activities to **inform, instruct and train authorized personnel** on the use of the machine, and **implement suitable operating procedures** to reduce as much as possible the exposure of people to the residual risks typical of the machine (see par. 5.2 and par. 5.3).
Artezen declines any and all liability for injury to persons or animals and damage to property caused, directly or indirectly, by the failure to comply with the indications contained in this manual.

3.7.1 GENERAL INFORMATION FOR STANDARD USE

Before starting standard operation, keep the following important information in mind:

1. **At the beginning of each working day and / or shift** check that the guards, whether fixed (blocked with screws, wrenches, etc.) or interlocked and removable (associated with safety devices) or other safety devices as illustrated in par. 5.2.2, are intact, well locked (fixed guards) and the safety devices are efficient, by following the instructions in par. 5.2.3. In particular, refer to the image in **Figure 13** to identify the interlocked movable guards fitted on the machine.

Rif. 1 Main front door
Ref. 2 Secondary front door (only for "SYNCRO" and "SYNCRO M"
Ref. 3 Loaf moulder sliding top cover (only for "SYNCRO M" and "SYNCRO EM")
Ref. 4 Safety light curtain for hopper access

Ref. 5 Rear cover
Ref. 6 Mobile safety bar (only for “SYNCRO” and “SYNCRO E”)

Each “emergency” interruption of the work causes the immediate stop of the work in progress and the automatic electrical disconnection of the power supply to each device or electric motor. The only component that features a timed stop is the oil-hydraulic control unit for operating the dough compression piston Figure 10 Pos. 6 placed at the base of the dough infeed head, for which access to the inside of the hopper causes the oil-hydraulic unit to shut down at the end of the work cycle. All this is controlled by an electronic safety unit to ensure the operation is carried out safely.
When standard conditions are restored, that is following the closing of the doors, the resetting of the emergency push-button, or other, it will be necessary to restore the power supply connection to each device or electric motor. In such a situation, the display will show the image in Figure 14 .
Next, press the RESET button Figure 4 ref. 1 and the following images should be displayed: this step indicates that the machine is ready to work and that the emergency situation that generated the immediate stop of the processing has been resolved, so the machine is in safe conditions.

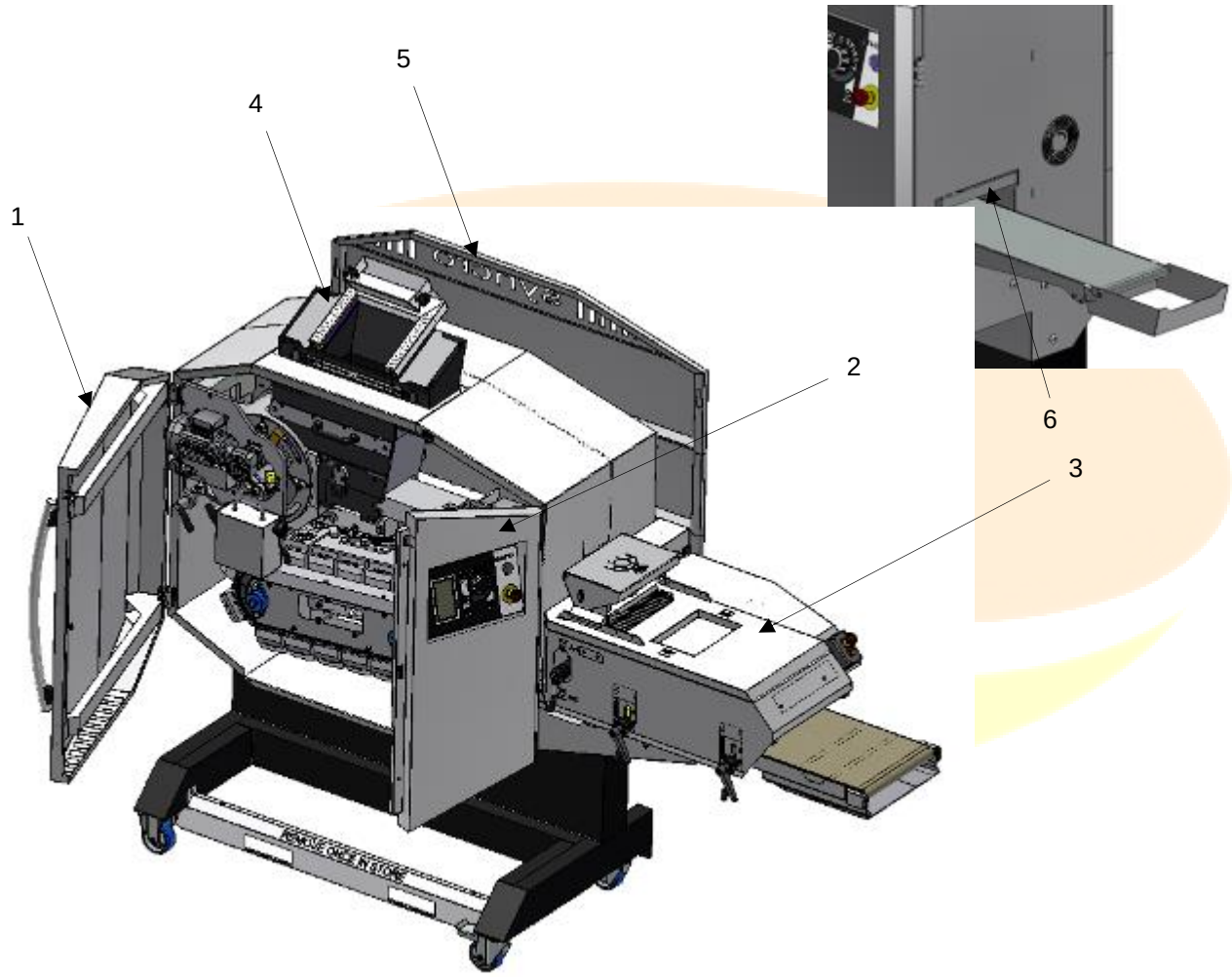


Figure 13 - Interlocked mobile guards and AOPD device

1. To load the flour into the two pockets located on the two sides of the loading hopper, as well as into the flour tank installed on the loaf moulder, in the case of machines equipped with a loaf moulder, **do not pour it in quickly, but** a little at a time **slowly and carefully** trying to generate as little dust as possible and thus limit, in case of inhalation, the risks to the health of people who are nearby (lacrimation, asthma, rhinitis, etc.). For the same reasons, avoid spreading flour carelessly by hand on the pieces of dough leaving the machine.
2. Load the dough into the hopper, introduce small quantities at a time, in order to **limit the risk of musculoskeletal injuries (ergonomic risk)**. **Insofar as possible, avoid making anomalous movements and hold your bust erect.** With regard to this, the relatively small load capacity of the hopper - combined with the fact that the access to the hopper is protected by a light curtain (which allows the dough to be loaded without first having to open an interlocked guard placed at the top of the machine) - allow loading the dough frequently, without obliging the operator to exert excessive efforts or to carry out ergonomically complex operations.

3. For routine use of the machine (standard production), no specific PPE is required, unless the need arises following the assessment of the risks for the health and safety of workers carried out by the employer. If, for example, despite the indications in point1, flour is spread carelessly over the dough, a cloud of flour may be created with the above-mentioned consequential risks of inhalation; in this case, without prejudice to the fact that similar behaviours are prohibited, **the operator will have to wear at least a mask to protect their respiratory airways** (with a filtering capacity adequate for the granulometry of the dust, as indicated in the flour technical specifications or, in any case, to be defined or measured under the employer's responsibility), and ensure that no one is in the vicinity. It is the responsibility of the employer to identify other potential PPE to be worn (for example, because they are indicated in technical specifications of the products used, or to guarantee the hygiene of the food).
4. For cleaning operations, always wear the PPE indicated in par. 4.4.
5. **IMPORTANT! Check often that the cooling fans of the exchanger - installed in the rear section of the machine - rotate regularly while the machine is operating; the fan is visible from the outside and does not require the disassembly of any guards.**
6. **Do not salvage residues of dough and/or flour** deposited on parts of the machine or, even worse, on the floor; they could contaminate the food with consequential risks for the health of consumers.
7. To execute a standard shut down, use the STOP control identified with ref. 8 in Figure 4 e ref. 12 Figure 5.
8. When the emergency stop push-button ref. 2 Figure 4 and ref. 2 Figure 5 is pressed, the machine stops very quickly (fractions of a second) and the power to the actuators is cut off. To restart the machine, first reset the emergency push-button and then press the “RESET” button ref. 1 Figure 4. **The emergency push-button should be used only if absolutely necessary.** 10.The same result can be obtained by activating a safety device (interlocked guard, etc.).
9. **To shut down the machine** in standard conditions **do not use the emergency push-button or the safety devices**; instead use the STOP control**,** identified with ref. 8 in Figure 4 of par. 2.4 and ref. 12 of Figure 5, to ensure the efficiency of the safety systems for as long as possible.
10. **At the end of each working day, clean the machine thoroughly** following the instructions in par. 4.4. If for some reason this is not done (this must never become a routine!), at the beginning of the next working day start up the machine for a few minutes before loading new dough into the hopper to allow the residue of the previous production to be expelled from the inner parts of the machine; in any case, similar situations are to be avoided because the longer the dough residue remains on the part, the more difficult it is to remove, eventually leading to build-up so difficult to remove that it may cause damage and abrasions. It is important **clean the heat exchanger** using the methods and frequency indicated in par.4.4.4 .
11. The adjustment devices must be accessed only by trained persons; the employer is responsible for designating them and informing the other workers that they must contact them if needed.

3.7.2 TURNING ON THE MACHINE

To turn on the machine:
- connect the power cable to a suitable electrical socket
- turn the main switch to Figure 3 **I - ON**
- press and hold the ON / OFF button on the control panel for a few seconds Figure 4 ref. 3: the luminous display should light up, showing the image Figure 14
- Press the RESET button Figure 4 ref. 1 to access the list of programs (recipes) already stored

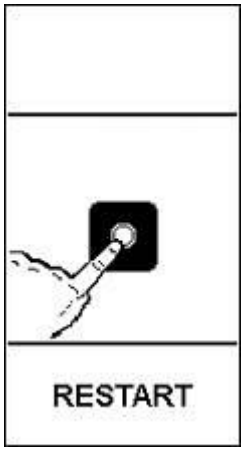


Figure 14 - Luminous display when the RESET button is turned on

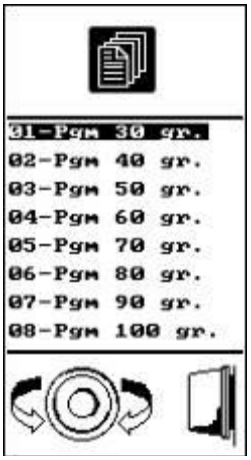


Figure 15 - Program list (recipes)

3.7.3 HOW TO USE THE MACHINE - PREPARATION OF PROCESSING

- Place the freshly kneaded dough on a rack , possibly on revolving wheels. For convenience, before placing the dough on the table, dust the surface of the rack with a thin layer of flour to prevent it from sticking to the surface of the table.
- Divide the dough (mash) into elongated rough pieces weighing about 7 ÷ 9 kg, taking care to keep them away from each other to prevent them from sticking together.
- Move the rack with the dough to be processed in front of the machine, before the loading hopper.
- Prepare another rack on which clean baking trays are stacked one on top of the other, in order to facilitate lifting and moving them once they have been filled with the processed dough.
- Prepare the loading rack near the baking trays that have already been prepared to facilitate loading the trays onto the loading rack without forcing the operator to make unnecessary movements.
- Load the two flour dusters (pockets) placed on the sides of the loading hopper with flour Figure 16 , ref 1 and 2.
- For the “SYNCRO M” and “SYNCRO EM” versions only: add flour to the flour duster of the loaf moulder Figure 17 .

Figure 16 - Loading the flour in the two pockets on the sides of the hopper

Figure 17 - Loaf moulder flour duster

	NOTE! It is essential to make sure that with each new mix and, even more so, at the beginning of each working day, both pockets ref. 1 and ref. 2 in Figure 16 are filled with fresh flour; if not, the dough may stick to the walls of the head and to its internal components, which may cause the machine to malfunction and the deterioration of the quality of the finished product!
	NOTE! A good organization of work before processing allows speeding up the production process without tiring the operator unnecessarily.

3.7.4 TURNING ON THE AUTOMATIC FLOUR MOVEMENT MECHANISM IN THE SIDE POCKETS OF THE HOPPER - IF PRESENT

Flour absorbs the humidity present in the surrounding environment. For this reason, in certain work environments and with certain types of flour that contain humidity at the time of their packaging and distribution, it is very likely that such flour sticks to the side of the containers. It goes without saying that this risk does not affect the reliability of the machine, but failure to dust flour during the processing may make it difficult to achieve the desired rounding quality. For this reason, a hopper can be supplied with independent mechanism inside the two side pockets, which keeps the flour moving during machine operation. With reference to Figure 18 , ref. A shows the two lids of the two flour pockets. If the lids are raised, the hopper's protective light curtain is interrupted, which causes the dividing cycle to stop together with the movement of the flour. Ref. B shows the device that generates the movement of the flour, consisting of a rotary element with an eccentric pin that periodically moves a metal mesh immersed in the flour. Reference C, on the other hand, shows the position of the ON / OFF switch that turns the device on and off.

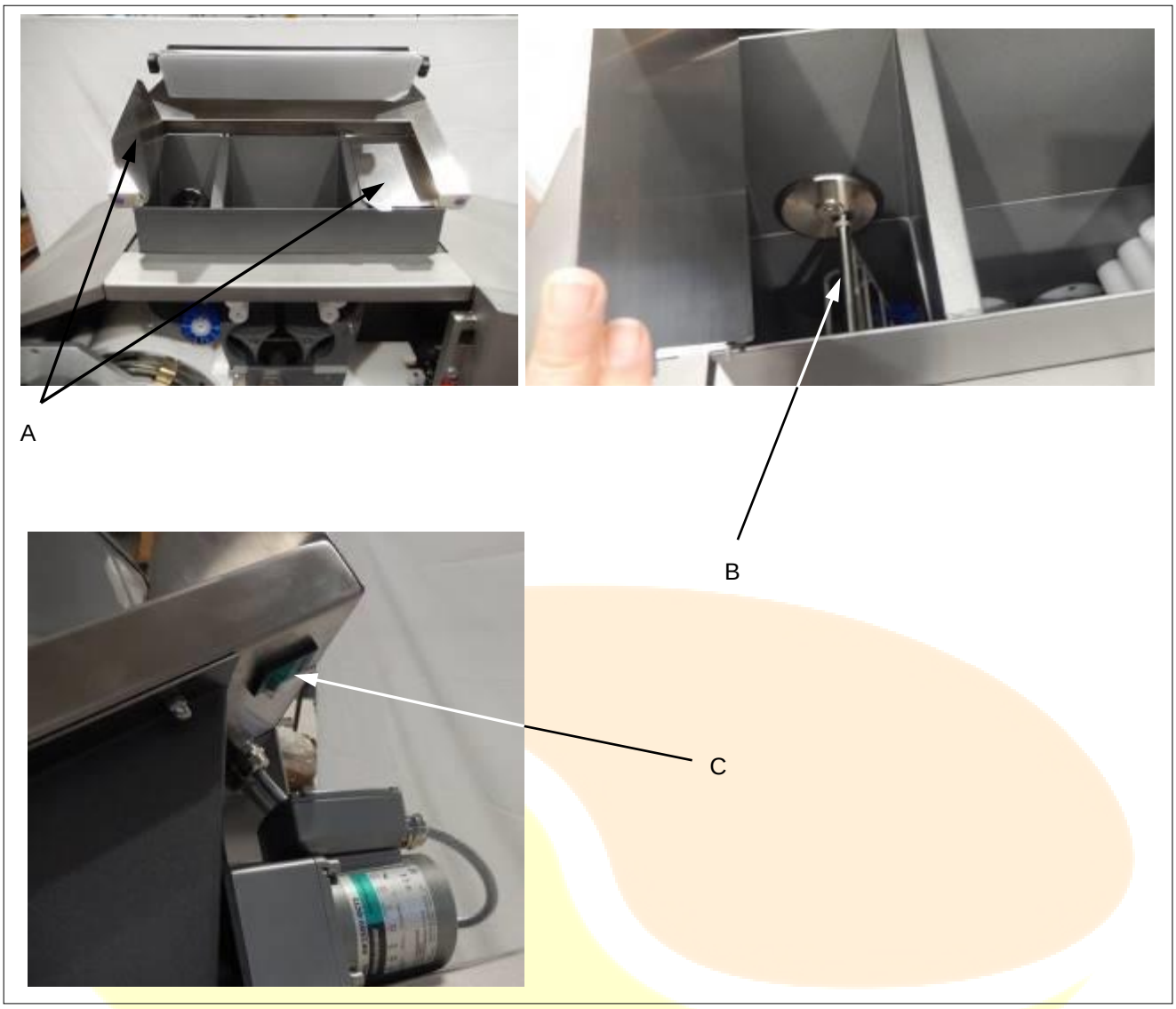


Figure 18 - Hopper flour moving mechanism

3.7.5 FOR “SYNCRO M” AND “SYNCRO EM” ONLY: ADJUSTMENT OF THE LOAF MOULDER

The “SYNCRO M” and “SYNCRO EM” versions are fitted with an additional loaf moulder Figure 19 . The adjustment of this unit is carried out manually using the following controls:
Ref. 1 Dough alignment adjustment lever. By turning it to position A:1, the product rows come out aligned, whereas in position A:2 they are misaligned: this function allows completing the processing by obtaining elongated loaves (fingers) without letting them stick together in the central area.
Ref.2 Lever for adjusting the distance between the two loaf moulding belts (rear part). When it is rotated clockwise it lowers; when it is rotated anticlockwise it rises. A graduated millimetre scale provides an indication of the position;
Ref. 3 Blocking lever for lever ref. 2;
Ref. 4 Lever for adjusting the distance between the two loaf moulding belts (front part). When it is rotated clockwise it lowers; when it is rotated anticlockwise it rises. A graduated millimetre scale provides an indication of the position;
Ref. 5 Blocking lever for lever ref. 4;

With reference to the 3 images in Figure 20 , image A, B, C. Flour duster, equipped with closing lid image B ref. 1, independent "START / STOP" push-button image D, and flour choke image C. The aforementioned flour duster can be placed in 3 distinct positions by housing it in the grooves provided on its support as shown in image A.

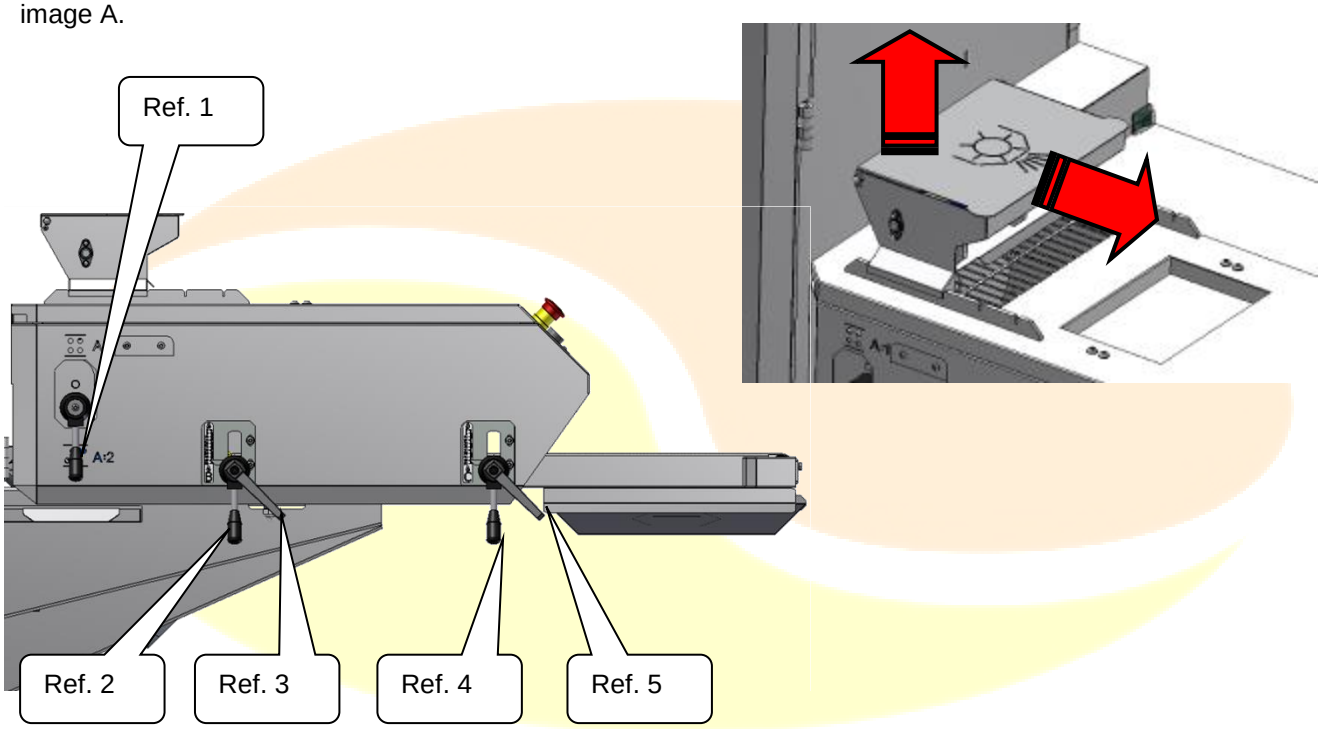


Figure 19 - Loaf moulder adjusting unit

	NOTE! In addition to adjusting the distance between the two moulding belts, the correct adjustment of levers 2 and 4 together allow managing also their inclination, which is sometimes useful for improving the quality of the processing. Usually, the inclination between the two must provide for a 5 or 8 mm lowering of the extreme outfeed area with respect to the infeed area on the left.

Figure 20 - Loaf moulder flour duster

3.7.6 TYPE OF PRODUCT THAT CAN BE PROCESSED

The ingredients of the dough must be those typical for the production of baked goods, therefore:

- 100% soft wheat flour or blends with maximum quantities of 50% rye flour. Alternatively, rice flour or gluten-free flour mixtures with limitations regarding the final consistency. Wholemeal wheat flour with bran;
- Drinking water, in a quantity such as to guarantee a relatively soft dough (indicatively, for wheat flour, the percentage of water must be around 56/62% of the weight of the flour);
- Yeast;
- Up to 5% oil, lard, vegetable margarines;
- Sugar, eggs;
- Nuts without husk;
- Raisins, candied fruit;
- Potato starch, small pieces of vegetables.

The dough must be homogeneous, with a smooth surface finish, not proofed: we recommend dividing and rounding immediately after the end of the kneading phase, before proofing starts. The dough should appear and have a consistency like the one shown in Figure21 .

Table 5 gives an idea of the ideal consistency of the dough for correct processing.

Figure21 - Typical workable dough

WORKABILITY	DESCRIPTION OF THE DOUGH	DOUGH IMAGE
	Dough that is not smooth and uniform, to be worked further and refined with a mixer	
	Dough that is too dry externally, due to a resting phase that was too long in an environment with hot and dry air. To be processed again for a few moments in the mixer with the addition of very little water to restore the humidity.	
	Dough that has proofed excessively. Dough that is impossible to process.	
	Very soft dough, with very high elasticity, such as for example the dough used for pastry products obtained using a planetary mixer. To be avoided.	

Table 5 - Type of workable dough and limitations

3.8 STARTING OF PROCESSING

3.8.1 STARTING A PRE-DEFINED PROCESSING

- Use “I-DRIVE” par. 2.4ref. 9, to scroll through the list of programs among those visible on the display: as shown in the image in par.3.7.2 Figure 15 where, for example, the program "01-Pgm 30 gr” is highlighted
- Press “I-DRIVE” par. 2.4 ref. 9 to select the highlighted program.
- The display will show the “X” image in Figure 22 , and the machine will wait for the START button to be pressed par. 2.4ref. 8 to start the automatic adjustment set-up according to the selected program. In the same “X” image, based on the selected program and the stored data, the display also shows the manual setting of the machine's loaf moulder (only for the “SYNCRO M” and “SYNCRO EM” versions - as illustrated in par. 3.7.5 in Figure 19 as regards lever ref. 1, lever ref. 2 blocked by lever ref. 3, lever 4 blocked by lever 5).
- By pressing the "START" button2.4 ref. 8 the machine starts the automatic set-up with all the internal adjustments necessary to carry out the selected program, while the display will show the image "Y" in Figure 22 ;
- After a few seconds, depending on the selected program, the display will show the “Z” image in Figure 22 , indicating that the machine is ready to start working. The display also shows the loading hopper, as a reminder that it is necessary to insert the dough into the hopper in order to start processing.
- By pressing the "START" button again2.4 ref. 8, the machine will start working and the display will show the “W” image in Figure 22 with the central circular icon on the display in rotary simulation, to indicate that the machine is working. Also in this case, the display will show the manual adjustments to be made on the loaf moulder (A, B, C), if installed on the machine.
- Take some dough from the rack as illustrated in par. 3.7.3and introduce it vertically into the loading hopper, making sure that the top section of the mash does not protrude from the hopper. If the display shows the image in Figure 23 , it means that the dough protrudes from the hopper and it is therefore necessary to lower the level, removing some of it.

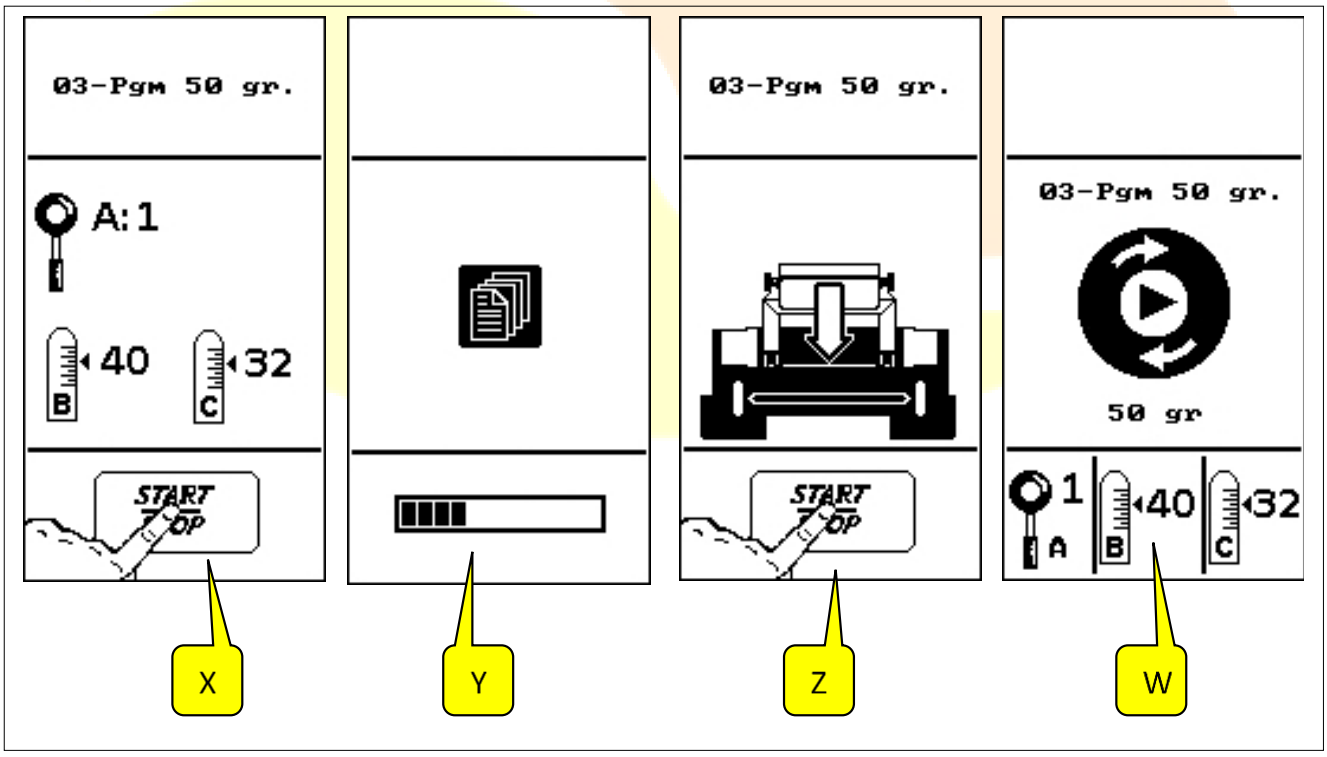


Figure 22 - Starting of processing

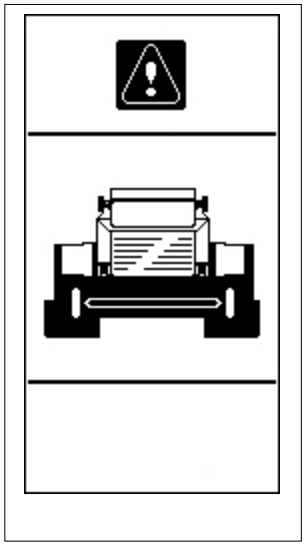


Figure 23 - Safety light curtains interrupted

3.8.2 CORRECTION OF PROCESSING BASED ON PRODUCTION NEEDS

The first characteristic to check, and possibly modify, is the selected weight with respect to the required one. It is advisable to weigh the first 4 products after processing, and by comparing the resulting weight with the set one, define a correction, expressed in grams of dough, to be added ("+" sign) or removed ("-" sign).
Press the “DOUGH WEIGHT CORRECTION” push-button 2.4 ref. 4:the display will show the image in Figure 24.
Rotate “I-DRIVE” par. 2.4ref. 9 clockwise to increase the weight, and anticlockwise to decrease the weight: in the meantime, the display will show the grams of dough that will be added or removed from the current value.
Press “I-DRIVE” par. 2.4ref. 9) to confirm the correction and thus start the adjustment.
Check the weight of the dough again after about 7 ÷ 8 work cycles (rows of product) before performing a second adjustment, if needed.

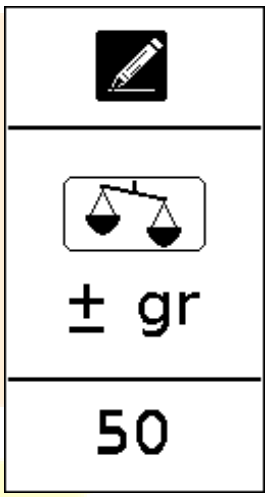


Figure 24 - Dough piece weight correction

NOTE!
The dough weight correction is to be considered in this phase as the adjustment of a value (weight) already defined in the recipe (or program); therefore the system will allow this correction within certain defined limits. If, on the other hand, it is necessary to change the weight significantly, it will be necessary to unload the dough being processed from the machine, as per par. 3.11 and load or create a new recipe, par. 3.8.1 and 3.8.5

The first characteristic to check, and possibly adjust is the quantity of flour to be added at each production cycle. Flour is important for the correct processing of the dough: if it is insufficient compared to the consistency of the dough, the latter may not be dropped off correctly onto the rounding system, as it will stick in areas outside the normal flow of the work cycle. Conversely, if the flour is excessive, the ball will not be completely closed during rounding. To correct the quantity of flour, even during standard operation while the machine is producing, press the button par. 2.4 ref. 6 e the display will show the image in Figure 25.
Rotate “I-DRIVE” par. 2.4ref. 9 clockwise to increase the quantity of flour, and anticlockwise to decrease it: in the meantime, the display will show the quantity of flour that will be dusted on the dough being processed on a scale ranging from 0 to 20.
Press “I-DRIVE” par. 2.4ref. 9) to confirm the correction and thus start the adjustment.
Check the quality of the dough surface again after about 7 ÷ 8 work cycles (rows of product) before performing a second adjustment, if needed.

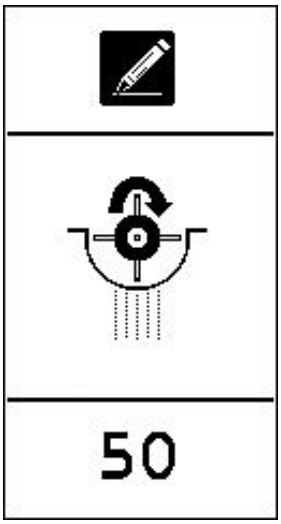


Figure 25 - Flour quantity correction

Any other working parameter, instead, can be modified by accessing the recipe data and pressing "P" = RECIPE PARAMETERS par. 2.4 ref. 5: the display will show the image in Figure 26: the explanation of each function, represented by an icon, can be found in Table 6.

The functions of the table, highlighted in grey, CANNOT be changed after loading the recipe (or program) and the display identifies them with the symbol "🔒", while they can be modified in the recipe creation mode as per par. 3.8.5.

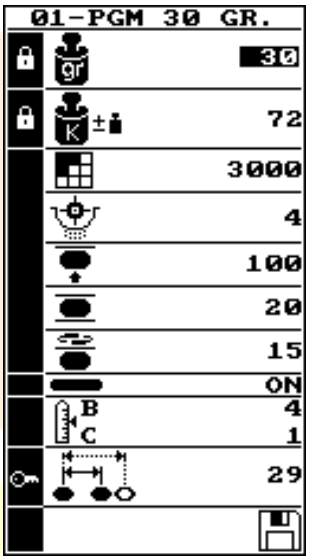


Figure 26 - Recipe parameters

	NOTE! Parameters marked with "🔒" cannot be edited during the current working section, but will be only after starting the emptying of the machine as illustrated in par. 3.11.
	NOTE! The parameter marked with "🔑" can be modified after having entered the USER FOR RECIPE MANAGEMENT password indicated in par. 0.

3.8.3 RECIPE SAVING PASSWORD

The list of recipes (programs) stored in the machine are protected by a password that is defined by parameter # 17 in Table 12 , illustrated in par.4.10: in this way, it is possible to change the password to protect its content.

RECIPE PASSWORD GENERATED BY THE MANUFACTURER WHEN THE MACHINE IS SHIPPED			

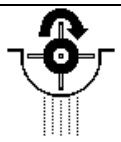
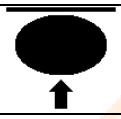
	DESCRIPTION	FUNCTION
	Recipe name	It is a text field in which it is possible to enter an alphanumeric description to represent the name of the work recipe (or program). Up to 12 characters can be used.
	**Weight** (20÷ 140 g) (Syncro 120) (60÷170 g) (Syncro 160)	It is the fundamental parameter according to which every other parameter must then be configured during the creation of a new recipe. When a new recipe is created, to facilitate programming, all the other parameters available in the list will be generated according to internal calculation algorithms.
	**Weight correction coefficient** (60÷120)	Allows adjusting the weight according to the consistency of the dough. (E.g .: different behaviour of the dough as a result of different ambient temperatures, proofing). It is connected to the dough weight correction function (Par. 3.8.2); therefore, by correcting the weight of the divided dough, the value of the weight correction coefficient will change.
	**Output** (1500÷3500 pcs/h)	It allows modifying the output of the machine, that is its working speed. As the weight increases, it is recommended to reduce this value to allow the machine to process the dough correctly both in terms of rounding quality and in terms of weight accuracy.
	**Flour dusting** (0÷20)	Allows changing the amount of flour on the diving drum during the dividing phase.
	**Rounding pressure** (0÷178°)	In the rounder, this parameter determines the pressure with which the divided dough is pushed against the rounding plate.
	**Rounding optimisation** (0÷178°)	Allows optimizing the shaping of the dough. This parameter may be disabled, and thus this row may be 'blank'.
	**Rounding speed** (0÷100%)	Allows modifying the dough rounding speed.
	**Loaf moulding** (ON÷OFF)	Only in the “SYNCRO M” and 'SYNCRO EM' version, this parameter defines the type of final processing of the dough, determining the crushing of the ball for the production of, for example, HAMBURGER buns or vice versa, its elongation for the production of HOT-DOG buns.
	**B**	Positioning height of the elongated or crushed product top infeed belt (see par. 3.7.5).
	**C**	Positioning height of the elongated or crushed product outfeed belt (see par. 3.7.5).
	**Distance of rows on outfeed belt**	Feeding of the product unloading belt produced between two successive rows of balls, determining their distance.

Table 6 - Recipe parameters

The parameters of the recipe being processed can be changed by selecting the parameter to be modified by turning "I-DRIVE" par. 2.4ref. 9 until the parameter concerned is highlighted among those available for modification (see in Figure 27 for example the weight = 30 grams has been selected but it cannot be changed in this situation because it is marked with " "). Next, press ”I-DRIVE“ to select the desired function, then rotate " I-DRIVE "clockwise (to increase its value) or anticlockwise (to reduce its value); finally press "I -DRIVE” to confirm the operation: only at the end of this last pressure on “I-DRIVE” will the system acquire the modification and apply it to processing. To check the results of the modification, wait approximately 7 ÷ 8 complete work cycles.

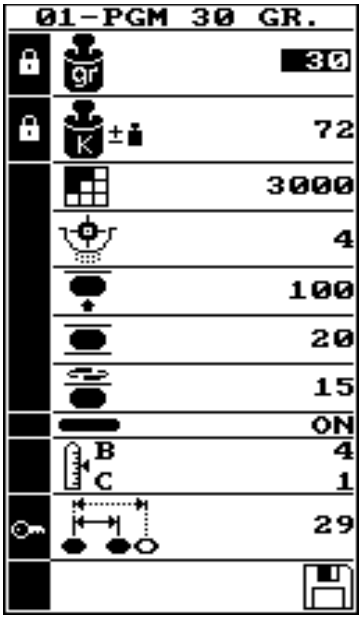


Figure 27 - Recipe parameters

	NOTE! The acquisition of the modification by the work system will take place only after the selected parameter has been modified and the modification has been confirmed by pressing “I-DRIVE”.
	NOTE! In this case, the modification of the working weight can be made EXCLUSIVELY by correcting the value through the "DOUGH WEIGHT CORRECTION" function, as illustrated in par. 3.8.2: in this correction mode, the extent of the change is limited to the weight adjustment correction. If an important modification of the dividing weight is required, it will be necessary to create or modify another work recipe, as illustrated in par. 3.8.1 and 3.8.5.

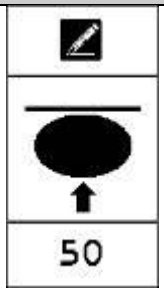
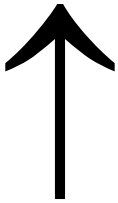
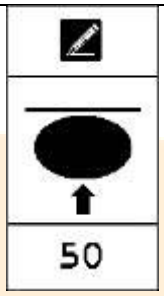
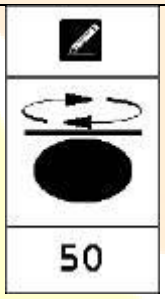
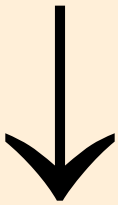
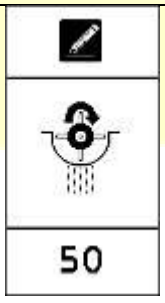
EXPLANATORY TABLE FOR THE CORRECTION OF THE WORK PARAMETERS ON THE BASIS OF THE RESULTS OF THE OBTAINED PRODUCT		
OBTAINED RESULT	**PARAMETER TO BE CORRECTED**	**CORRECTION DIRECTION**
		
		
		
		
		

Table 7 - Explanatory table for the correction of work parameters

3.8.4 PROCESSING SAVING METHOD TO GUARANTEE REPEATABILITY

From the screen of the previous paragraph, press "ESC"2.4 ref. 7 to exit the modification management screen of the current recipe. When exiting the recipe editing mode, the display will show the image in Figure 28 , and it will be possible to save / delete the changes made. Turn “I-DRIVE” to select “Y = YES” to save the changes, or “N = NO” to exit the recipe modification mode without saving the changes. If changes need to be saved, enter the USER FOR RECIPE MANAGEMENT password, as illustrated in 3.8.3.

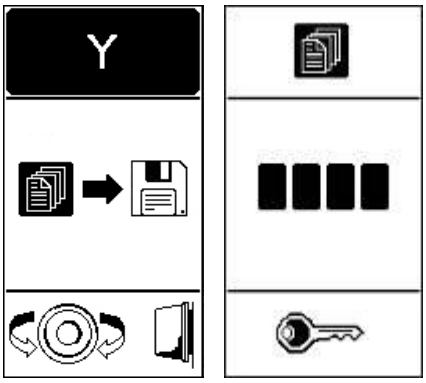


Figure 28 - Saving recipes

	NOTE! The “N” option does not delete the changes made, but rather allows the previously changed temporary parameters to be kept active until the next recipe change or machine shut-down.
	NOTE! If you enter the save screen that requires a password by mistake, it is possible to exit, without saving, by pressing "ESC" on the control panel.
	NOTE! The recipe saving password can be changed (see Par.4.10 – Parameter #17)

The password code must be entered by selecting one of the available digits, then confirming the selection by pressing “I-DRIVE” and so on for the following digits.

3.8.5 CREATING AND SAVING A NEW RECIPE (OR PROGRAM)

To edit an existing recipe, select a recipe from the proposed list as illustrated in par. 3.8.1and confirm the selection by pressing "I-DRIVE"2.4 ref. 9: this recipe or program will be overwritten by the newly created one.
At this point, by pressing "P" on the control panel2.4 ref. 5, it will be possible to access to the parameters screen of the selected recipe as in Figure 26 .
These parameters can all be modified as long as the selected recipe is not loaded using the "START / STOP" button 2.4 ref. 8.
After selecting the recipe (or program) without loading (or starting) the program itself, the display will show Figure 29 ref. "A": only in this context is it possible to select each parameter of the recipe and edit it, even those that were protected from editing as illustrated in par.3.8.2, and which were marked by the symbol "🔒"!
If the "START / STOP" 2.4button ref. 8 is pressed, the display will show Figure 29 ref. "B" (while loading the recipe) at the end of which ref. "C" will be shown, followed by "D" and "E" (during work or when processing stops): in this last situation it will NOT be possible to edit some of the available parameters, as indicated in par. 3.8.2.
In short:

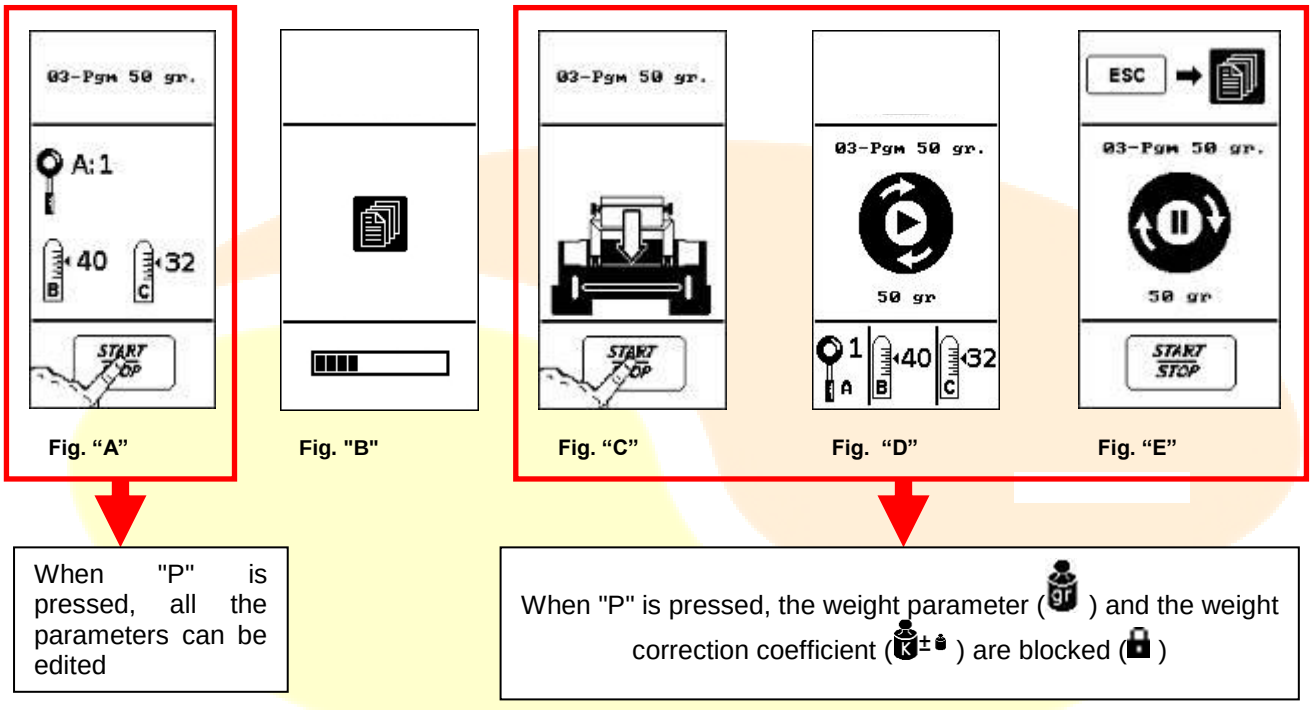


Figure 29 - Creating a new work recipe

Press the "P" RECIPE PARAMETERS 2.4 button ref. 5: the display will show the image in Figure 30: as you can see, no parameter shows the symbol " ".

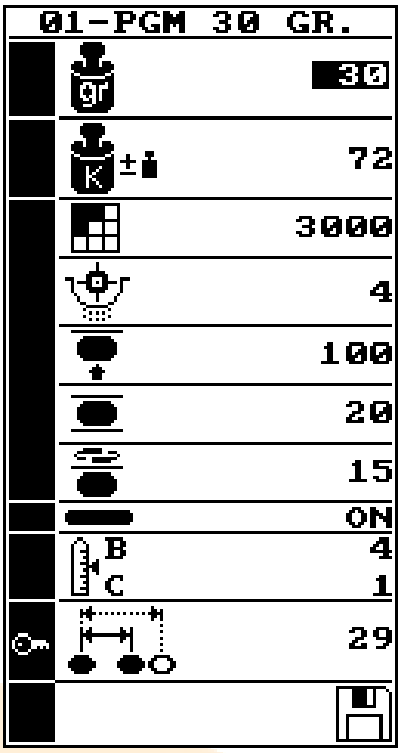


Figure 30 - Recipe parameters

- Turn anticlockwise I-DRIVE2.4 ref. 9 to select the top line which corresponds to the description - or name - of the recipe or program: a screen with alphanumeric characters will open.

  To overwrite the text, use the symbol " " on which the mobile cursor must move by turning " I-DRIVE "; then, select the symbol several times until the entire line is deleted. Next, select the various characters until you complete the description. Up to 12 characters can be used to complete the description. At the end, to exit the alphanumeric characters screen and return to the one in the image shown to the side, select the icon " " using "I-DRIVE" and confirm the selection by pressing the same control.
- Use "I-DRIVE" to select the fundamental parameter of the recipe, that is the required dividing weight, exactly like the image above: a subsequent screen will open and show the symbol " ". Use "I-DRIVE" to select the required dividing weight, then confirm by pressing the same control, thus going back to the initial screen: all the parameters of the recipe will be automatically configured in such a way as to facilitate subsequent verification during production as well as any adjustment.
- Use "I-DRIVE" to select the "OUTPUT" parameter " " to set the working speed of the machine. Generally speaking, if the machine is used by a single operator, the speed must be set to no more than 3200 pcs / h for up to 60 grams of dough; for up to 90 grams of dough the speed will be no more than 3000 pcs / h; for up to 110 grams of dough it will be no more than 2500 pcs / h, and for the maximum dough weight, the speed will be set to about 2200 pcs / h.
- Use "I-DRIVE" to select the "FLOUR" parameter " " to set the amount of flour dusting during processing. This value will depend very much on the consistency and humidity of the dough. NEVER set this value to "0" because it means completely stopping flour dusting. It should be set to around 4 ÷ 5 for relatively thick and dry pasta, and its value should be increased up to around 10 ÷ 12 for very soft and moist dough.
- Use "I-DRIVE" to select in succession the "ROUNDING PRESSURE", "ROUNDING OPTIMIZATION", "ROUNDING SPEED" parameters by adjusting their value, according to the result that will be obtained on the processed product, visible at the start of processing.
- Use "I-DRIVE" to select the " " or " " parameter to set elongation of the ball or, alternatively, the crushing of the same. This parameter is present only in the "SYNCRO M" and "SYNCRO EM" versions equipped with the final loaf moulder, and it sets the speed with which the upper moulding belt is started.
- Use "I-DRIVE" to select the " " and " " parameter to set the size of the desired product which will be obtained by manually adjusting the loaf moulder. These two parameters do not change the execution of the process, but will only show the value on the display when the recipe is loaded, as indicated in Figure 29 ref. "A" and "D", so that the operator can properly adjust the loaf moulder as illustrated in par. 3.7.5.

- Use "I-DRIVE" to select the "  " parameter to set distance between two subsequent rows of product. This recipe parameter is especially important to ensure a correct production process, as it allows correctly unloading the dough balls onto the loaf moulder (if present). This parameter must be adjusted so as to make sure that the outfeed belt stops as soon as the row of balls is transferred onto the loaf moulder, regardless of their weight. If not, the dough may be difficult to handle and cause clogging in the transfer area. For this reason, when accessing this parameter, the USER FOR RECIPE MANAGEMENT password will be required, exactly as illustrated in par. 0. Normally this parameter does NOT require editing with respect to the manufacturer's settings.
- All the remaining parameters may be edited after the start of processing, based on the type of dough and the type of processing required, exactly as illustrated in par. 3.8.2.
- At the end, save any change by turning “I-DRIVE” to icon “  ”, then enter the USER PASSWORD FOR RECIPE MANAGEMENT, exactly as illustrated in par. 0.

3.9 TEMPORARY STOP DURING PROCESSING

During work, it is possible to temporarily stop the processing, usually to replace the tray, or to move the tray rack, or to prepare new dough. In this case, the selected program will remain active waiting to resume processing. To temporarily stop processing, the following procedures are possible:

- Press the "START/STOP" button on the control panel Figure 4 ref. 8,
- Press the "STOP" button on the small panel at the end of the loaf moulder (only for “SYNCRO M” and “SYNCRO EM”), as indicated in paragraph Figure 5 ref. 12, holding it down for at least 1 second.

The display will show the image to the side
Press the "START/STOP" push-button on the control panel 2.4 ref. 8 to resume processing

Figure 31 - Temporary stop

	NOTE! If the temporary stop needs to be carried out repeatedly during processing to allow the operator to collect an excess processed product, it means that the output set in the recipe is too high in relation to the capacity of the product collection. Therefore, the value should be reduced as indicated in paragraph3.8.2 , in order to guarantee production continuity, which allows reducing processing waste, thus reducing the final scrap.
	NOTE! The temporary stop takes place at the end of the work cycle, so it may be necessary to wait a moment before the machine actually stops.
	NOTE! The temporary stop also occurs automatically 2 minutes after the machine has been working without any dough being processed.

3.10 EMERGENCY PROCESSING STOP

Any time a safety device cuts in, processing immediately stops and therefore also the work cycle. The devices that cause the processing to stop in emergency mode are:

- The activation of the “EMERGENCY STOP” red mushroom-head push-button par. Figure 4ref. 2 and the equivalent installed on the loaf moulder as shown in par. Figure 5 ref. 2;
- The opening of at least one of the internal access doors Figure 13 ref. 1, 2, 5;
- The opening of the sensor-fitted safety door at dough outfeed, on the loaf moulder Figure 13 ref. 3, in the case of “SYNCRO M” and “SYNCRO EM” versions;
- The activation of the sensor-fitted safety bar Figure 13 ref. 6, in the case of “SYNCRO” and “SYNCRO E” versions;

To resume processing after the intervention of an emergency stop protection, it is necessary to restore the action that caused the machine to stop, so respectively;

- Turn the red knurled ring of the emergency button clockwise until it is released;
- Close the internal access doors;.
- Close the sensor-fitted safety guard at dough outfeed on the moulder;
- Release the sensor-fitted safety bar so that it reaches its resting position;

Then, press the ALARM RESET button on the main control panel. 2.4 ref. 1, as indicated in Figure 4.

	**NOTE!** When the machine stops in emergency mode, it stops immediately, cutting off the power to the moving components: this procedure therefore requires the program to be loaded again, after an automated unloading cycle of any dough present in the various work stations of the machine has been carried out, which will produce a significant waste of dough. THEREFORE, AVOID STOPPING THE MACHINE IN THIS MODE FOR REASONS OTHER THAN EMERGENCY SITUATIONS, in order to prevent unnecessary impediments and problems in the production flow.

3.11 EMPTYING THE MACHINE

Emptying is necessary in the following cases:

- If the work program needs changing;
- If the need arises to remove any dough still present in the machine at the end of the working day.

Emptying must be carried out at the end of the temporary stop of processing, as illustrated in par. 3.9: the display will show the top image
in Figure 32; press ESC par 2.4ref. 7 to start the emptying cycle at the end of which the display will show the list of selectable recipes, as at the start of the work phase.
During the entire emptying phase, the display will show a screen that simulates the emptying of the machine (see the centre image in Figure 32).

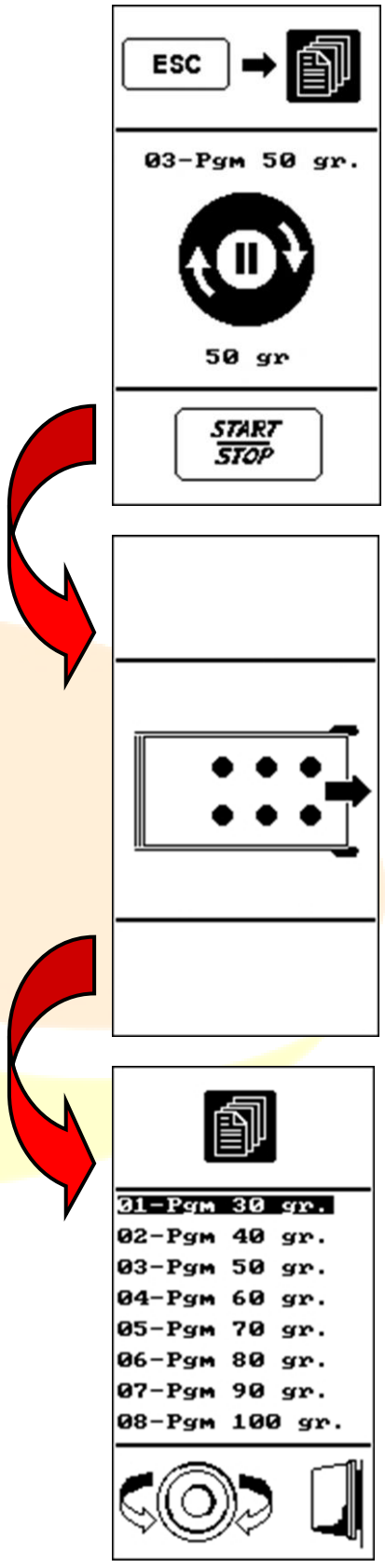


Figure 32 - Emptying

3.12 CLEANING THE MACHINE AFTER PROCESSING

At the end of each working day, the machine must be thoroughly cleaned, as illustrated in par. 4.4

	**NOTE!** At the beginning of the working day, it is recommended to start the machine for a couple of minutes before introducing new dough into the hopper so that the scrap from the previous day can be expelled from the internal working areas of the machine. Then remove the dough and flour scraps collected in the various areas of the machine as illustrated inpar. 4.4.8.

3.13 STAND BY MODE

At the end of the working day, after having cleaned the machine as recommended in par.4.4 , turn off the machine by pressing the ON / OFF button on the control panel for a few seconds (until the luminous display goes off)Figure 4 ref. 3.

3.14 GENERAL SHUT-DOWN AND DISCONNECTION FROM THE MAINS

If thorough cleaning of the machine and of the floor underneath the machine is required, a general shut-down is needed. Proceed as follows:

- Turn off the machine as illustrated in paragraph 3.13;
- Disconnect the machine from the power supply by turning to “0” the main switch located on the electrical box shown in par. 2.3;
- Disconnect the power from the electrical panel that connects to the power supply network, by means of the general wall switch connected to the power socket;
- Disconnect the power plug from the electrical system.

3.14.1 POSSIBLE METHODS FOR STOPPING AND RESTARTING THE MACHINE

The machine can be stopped in the following ways, or due to one of the following factors

1) Figure 4**Standard manual stop:** STOP shown in Figure 4 with ref. 8 or Figure 5 ref. 12;
2) **Manual emergency stop:** by pressing the emergency push-button indicated in Figure 4, ref. 2 or Figure 5 ref. 12;
3) **Automatic emergency stop:** when an interlocked guard is opened (e.g. access doors inside the machine compartment,Figure 13 ref. 1, 2, 5, or the cover of the loaf moulder Figure 13 ref. 3 is opened, or following the activation of the mobile safety barFigure 13 ref. 6);
4) **Standard automatic stop:** when the machine has been working for two minutes without any dough, it automatically stops.

In the above cases, proceed as follows to restart the machine:

1. Activate the START control as illustrated in par. 3.8.1
2. In sequence: reset the emergency push-button, press the RESET button Figure 4 ref. 1, then resume processing as illustrated in par. 3.8.1
3. In sequence: eliminate the cause of the stoppage (closing the door, closing the cover of the loaf moulder, releasing the mobile safety bar), press the RESET button Figure 4 ref. 1, then restart processing as illustrated in par. 3.8.1.
4. Activate the START control as illustrated in par. 3.8.1
5. Stoppage of the two star dosing devices and of the six rollers accompanying the dough, highlighted in Figure 10 ref. 4 and 5, placed under the hopper, following the interruption of the light curtain

3.15 INSTRUCTION AND TRAINING OF MACHINE OPERATORS

As repeatedly reiterated in this manual, the employer must provide the employees with adequate information and training, including practical training, on the correct and safe use of the machine (the information must be presented in a simple and clear enough fashion for the designated operators to understand).
In the following outline, there is a minimal list of topics on which information, instruction and training for personnel must be based; for further clarity, the following definitions are provided:

information: transfer of news, knowledge, etc., without testing

instruction: transfer of news, knowledge, etc., on specific topics, with testing of the knowledge and understanding of the topics presented, but without testing the practical application of concepts

training: transfer of information, knowledge etc. with the practical demonstration of the same general and specific topics, and with testing of the knowledge and understanding gained through the application of practical cases

Topic	Information	Instruction	Training	Chap. / Par.
Dangers that characterize the machine and related risks.	X			5.2.1
Safety equipment on the machine			X	5.2.2
Methods for checking the efficiency and integrity of the safety equipment			X	5.2.3
Limits and intended use of the machine Permitted and prohibited uses	X			1.5-2.1 -3.7
Handling of the machine	X		X	3.2
Assembly and installation	X		X	3
Use of controls		X	X	2.4-3.9
Stopping and restarting the machine	X	X		3.9-3.10 -3.14.1
Potential problems and relative solutions Diagnostic signals - Alarms	X			4.8
Loading the dough into the hopper			X	3.7.3-3.7.6
Maintenance operations	X	X	X	4
Machine cleaning		X	X	4.4
Use of PPE		X	X	3-4 -5.3 -5.4
Residual risks and measures to adopt to minimize them	X	X		From5.3.1 to 5.3.9, 5.4
Noise emitted by the machine	X			5.3.9
Risks linked to ergonomic factors	X			3.7.1-5.3.5
Risks related to flour dust	X			3.7.1-5.3.3
Risks related to lack of hygiene	X			5.3.4
Safety signs	X	X		5.4

3.16 QUICK GUIDE TO USING THE CONTROL PANEL

In order to offer a quick consultation of the manual for the purpose of a quick acquisition of the technical notions necessary for using the control panel and its functions, the various operating functions of the controls are illustrated here below. It is understood that this support is intended for quick consultation only after having carefully read par. 2.4relating to the control panel and chapter3 relating to starting the machine and all its functions.

Turning on

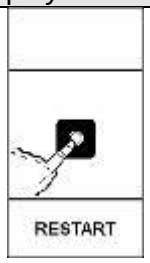
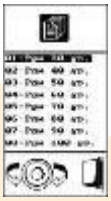
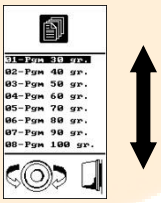
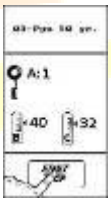
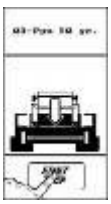
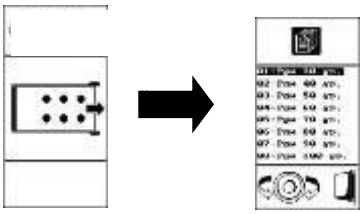
Description	Device	Displayed screen
Turn on the machine by briefly pressing the “ON / OFF” button: the display shows the RESET screen		

Table 8 - Quick guide

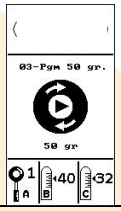
Starting

Description	Device	Displayed screen
Press the "RESET" button as indicated: the recipe list screen is displayed		
Select the recipe by turning “I-DRIVE” par. “Pgm 30 gr”		
Confirm the selection by pressing "I-DRIVE": the display shows the recording screen "A", "B" and "C" for versions “SYNCRO M” and “SYNCRO EM”		
Press “START”: the display shows the recipe loading phase		
At the end of the recipe loading phase, the display instructs to load the dough and press “START” to start processing.		

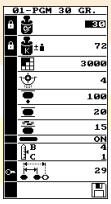
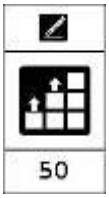
Stand-by stop

Description	Device	Displayed screen
When “START/STOP” is pressed during the work cycle, the machine stops. To restart, press "START / STOP" again		
Press “ESC” to automatically unload the product; at the end, the recipe list screen is shown again.		

Restarting

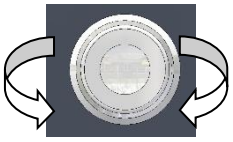
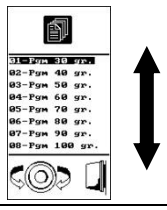
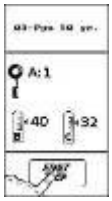
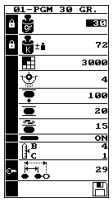
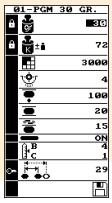
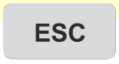
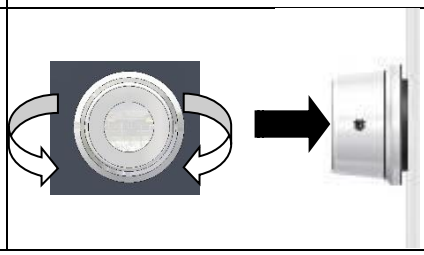
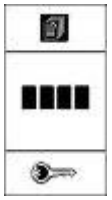
Description	Device	Displayed screen
To restart, press "START / STOP" again		

Processing correction

Description	Device	Displayed screen
When "P" is pressed, the display shows the parameters of the loaded recipe.		
Select the parameter to be modified by turning “I-DRIVE” and confirm by pressing it. Modify the value and confirm the value by pressing "I-DRIVE"		

Creating and saving a new processing

Description	Device	Displayed screen
Press the "RESET" button as indicated: the recipe list screen is displayed		

Select the recipe by turning “I-DRIVE” par. “Pgm 30 gr”		
Confirm the selection by pressing "I-DRIVE": the display shows the recording screen "A", "B" and "C" for versions “SYNCRO” and “SYNCRO EM”		
Press the “P” key		
Select the dividing weight " gr " and turn“ I-DRIVE ”until the required dividing weight is set (for example 50 grams).		
Confirm the selected weight and, if necessary, modify the other parameters, including the description.		
Once the values have been modified, to exit and save the parameters, press " " or “ ESC ”on the display.	 	
Entering the USER PASSWORD FOR RECIPE MANAGEMENT, par. 3.8.3.		

4 MAINTENANCE

4.1 FOREWORD

Unless otherwise specified, each intervention explained here can be considered as routine maintenance; any other maintenance intervention must, instead, be considered special/extraordinary maintenance (for the definitions of routine maintenance and special/extraordinary maintenance see par. 1.4); in case of doubt, contact Artezen S.r.l.

ATTENTION!

Unless otherwise specified, **every maintenance and cleaning intervention can be carried out only after having**:

- **worn the PPE** specified from time to time in the paragraphs of this chapter
- **pressed the stop and emergency push-buttons** ref. 2 in Figure 4
- **turned the main switch to O - OFF**, (see par. 2.3); lock it with a padlock to O - OFF
- **pulled the plug from the socket** (the plug should remain visible so that anyone can verify the absence of electrical power) to prevent the machine or its parts from being started by thirds.
- waited for the time it takes for the residual voltage in the inverter to be discharged so as to prevent electrocution (for more details see par. 4.5, par. 5.2 and par. 5.3.7).

Where it is necessary to remove a guard or disable a safety device, take every possible precaution to prevent others from being exposed to consequential risks (for example, enclose the work area with white-red chains and display warning signs for the risks involved with the work in progress)**; every guard must be put back in place and secured with all the necessary fixtures and every safety device must be reactivated** as soon as the reasons for their temporary removal / deactivation no longer exist.

Anyone failing to follow these instructions and/or using the machine inappropriately or in a non-conforming manner, who should be the direct or indirect cause of injury to persons or animals or damage to property, must assume full responsibility for such negligence.

4.2 ROUTINE MAINTENANCE AND CHECKS

Before beginning, activate the safety measures indicated in par. 4.1.

- At the end of the day or shift, **clean the machine** thoroughly (par. 4.4).
- At the beginning of each working day or shift **make sure that the guards and safety devices are intact and efficient**, by carrying out the checks illustrated in par. 5.2.3.

4.3 OIL-HYDRAULIC CIRCUIT

4.3.1 TOPPING UP AND/OR REPLACING THE OIL IN THE TANK OF THE OIL-HYDRAULIC UNIT

Before beginning, activate the safety measures indicated in par. 4.1, and read the safety data sheet of the oil and meticulously observe its indications.

Wear waterproof oil-resistant gloves, footwear with reinforced toes and non-slip outsoles, full goggles or visor, helmet and any other PPE indicated in the data sheet of the oil.

The oil level in the tank of the oil-hydraulic unit must be checked at least once every two months.

The check must be carried out with the machine strictly disconnected from the power supply network; the disconnected plug must remain clearly visible. Remove the rear crankcase Figure 13 ref. 5; the oil-hydraulic unit is in the rear left section of the machine;

The tank features a filler capFigure 33 ref. 1: insert a (clean) graduated rod until it touches the bottom of the tank, keeping it vertical; the oil level is correct if it is between 20 mm and 30 mm from the upper edge of the tank.

If necessary, pour oil through the hole ref. 1 until the correct level in the tank is reached; use a clean funnel, possibly with a filter (it is important to prevent impurities, dirt or other from entering the tank); at the end of the operation, tighten the cap ref. 1. The oil to be used is the one indicated inTable 9 (it is also possible to use oil of a different brand, provided that it has the same characteristics as the one indicated below).

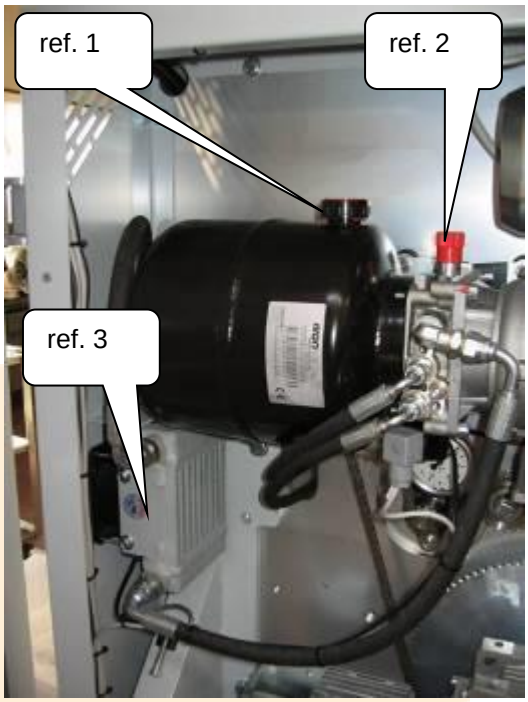


Figure 33 - Topping up system oil

MANUFACTURER	NILS SpA Via Stazione, 30 39014 Postal (Bz) www.nils.eu
Product name	“MIZAR 46”
Use	NSF H1 certified product suitable for oil-hydraulic systems especially for those used in the food sector. Mizar 46 meets the needs of HLP hydraulic fluids according to the DIN 51524 / T2 specification.
VISCOSITY AT 40 °C (DIN 51562)	46 mm2/s
FLASH POINT (ISO 2592)	> 200 °C
POUR POINT (ISO 3016)	-15 °C
CORROSION ON COPPER (DIN 51759)	1
CORROSION ON STEEL (DIN 51355)	0-A
FZG TEST (A/8.3/90) (DIN 51534)	11
DIN SPECIFICATIONS	DIN 51524/T2 HLP 46

Table 9 - Oil specifications for the oil-hydraulic unit

IMPORTANT! If the tank needs to be topped up frequently, check that there are no oil leaks; in case of leaks, immediately contact Artezen or the nearest authorized service centre.

The oil in the tank must be replaced completely every 8000 hours of work and at least once every 4 years.
To empty the oil tank, use a suction pump and access through the cap ref. 1.

IMPORTANT! Used oil must not be dispersed in the environment; it must be disposed of in compliance with the environmental protection laws in force.

4.3.2 REPLACEMENT OF FLEXIBLE HOSES (extraordinary/special / maintenance)

Before beginning, activate the safety measures indicated in par. 4.1, and read the safety data sheet of the oil used in the oil-hydraulic circuit and meticulously observe the indications provided.
Wear waterproof oil-resistant gloves, footwear with reinforced toes and non-slip outsoles, full goggles or visor, helmet and any other PPE indicated in the data sheet of the oil.
Given the sensitivity of the operation, both for the safety of people and for the efficiency of the machine, the replacement of the flexible hoses must be carried out only and exclusively by a **technician specialized in mechanical assembly and oil hydraulic systems** on board the machine.
All hoses must be replaced with identical new hoses **at least every 2 years**, unless a visual inspection requires an earlier replacement (for example, due to the presence of noticeable abrasions on the outside of the pipes).
The machine is equipped with two types of flexible hoses:
- 3/8 '' EN853 SAE100R1AT hose, 180 bar, 18 MPa, 2610 psi
- 1/4 '' EN853 SAE100R1AT hose, 180 bar, 18 MPa, 2610 psi.

To order spare hoses complete with end connections, refer to the spare parts list attached with relative illustrations; specific and detailed instructions for assembly will also be provided with the hoses.

4.4 ROUTINE CLEANING OPERATIONS

Unless otherwise indicated, cleaning operations can be carried out by the operator who uses the machine routinely (standard production activity) provided they have been previously informed on the risk involved and to which they may be exposed, as well as instructed and trained to carry out the work correctly and safely, in particular regarding the precautions to be taken to minimise said risks as much as possible.
Ensure that the machine is in perfect hygienic conditions: clean it carefully at the end of every day and/or every shift or, if the product requires it, even every time there is a production change.
Before beginning, activate the safety measures indicated in par. 4.1.
A thorough and accurate cleaning must be performed every time the machine is not in operation for more than eight consecutive hours to prevent the occurrence of biological risks due to mould, bacteria, etc.
Before cleaning the machine it is necessary to remove all the dough, as illustrated in par. 3.11 and par. 4.4.
Wear a protective mask against the inhalation of dust (the filtering capacity must be in keeping with the granulometry of the flour dust) **and full protection goggles**; **ventilate the room during operations and for at least 15 minutes after their completion**. Check that no one is in the vicinity.
Use a suction device with a thin tube to remove every part of the flour dust build-up and any dough scraps, lumps, etc.; if necessary, try to remove more stubborn residues with a plastic spatula and/or a brush with medium-consistency synthetic bristles. Before using the suction device and **only if strictly necessary** , use short bursts of compressed air to loosen the residues from hard-to-reach areas.
Use a rag that has been soaked in drinking water (but not dripping) to clean every surface that comes into contact with food products, even indirectly (for example, the inside of the hopper, the outside of the dividing unit, etc.). Finally, dry each part thoroughly with a clean cloth.
Clean the rest of the machine by wiping it down with a clean, dry cloth to eliminate residual dust that may have deposited; eliminate any dirty spots with a cloth slightly dampened with drinking water.
Never use high-pressure water or steam sprays and/or jets or other sprays/jets.
Do not use aggressive products, detergents, or other products to avoid damaging the surfaces (in particular the Teflon coating of the inner surfaces of the hopper), but only and exclusively clean cloths dampened with drinking water.
Carry out a complete cleaning of the machine at the end of each working day and before any prolonged stop (more than eight hours); at each production change, if the new product requires it.

4.4.1 CLEANING THE HOPPER

Before beginning, activate the safety measures indicated in par. 4.1.
Wear abrasion-resistant gloves, shoes with reinforced toe and non-slip outsole, and protective goggles.
To clean the hopper, the operator must use simple but adequate tools, such as rods fitted with brushes at the end, scrapers, cloths, etc., which allow reaching all areas of the hopper without effort, while standing on the elevated platform. without having to extend beyond the parapet, or weighing on the safety devices (sensitive ring, spacer ring). These tools must be made of a material that is sufficiently hard and rigid to remove residues and encrustations, but not such as to streak, scratch, etc. the surfaces (special care must be taken in the case of Teflon-coated hoppers); use a sponge dampened with clean drinking water to soften any dry and / or difficult to remove residues in advance.
In any case, it is absolutely prohibited to lean on the edge of the hopper to avoid damaging the safety systems and compromising their correct operation, which would entail a high risk for the operator's safety. In case of damage, do not use the machine, unplug it from the mains, and contact Artezen or the supplier for spare parts or necessary interventions.

4.4.2 CLEANING THE ROUNDING CUPS UNIT

The rounding cups unit consists of:

- The cup conveyor Figure 1 ref. 6;

- The oscillating rounding plate Figure 1 ref. 7.

To ensure the cleaning of these parts, it is sufficient to start a load-less cycle (that is without dough) every day (for example in the morning) for just 2 ÷ 3 minutes: any dry dough will be collected by the waste collection drawer and / or from the product outfeed belt. At the end, switch off the machine.

4.4.3 CLEANING THE DIVIDING DRUM

Before beginning, activate the safety measures indicated in par. 4.1. Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles.

The dividing drum is a very important component for the machine because it determines the correct portioning and separation of the dough. It is visible in Figure 1 ref. 4 and inFigure 34 . Use a suction device to vacuum the flour build-up and any dough that may have deposited inside the cavity of the dividing drum at least once a week, as shown in the figure.

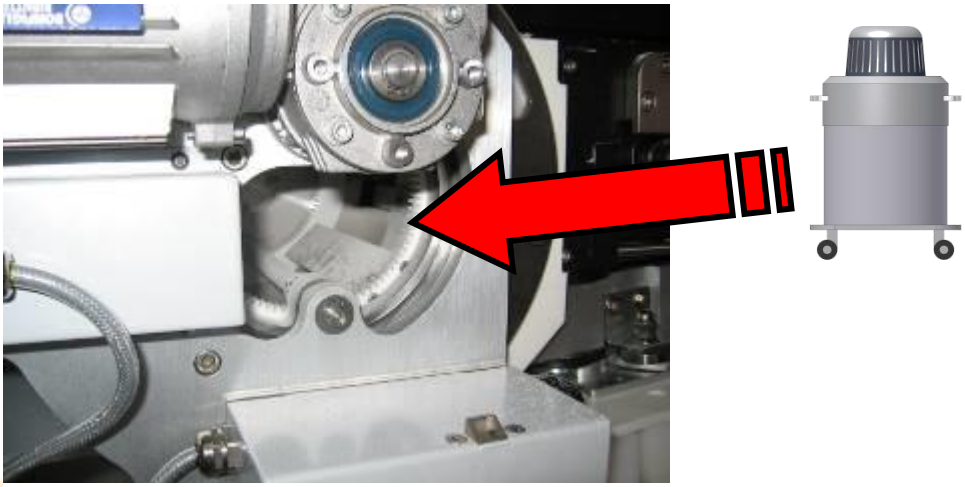


Figure 34 - Cleaning the dividing drum

Figure 35 - Cleaning the heat exchanger

4.4.4 CLEANING THE HEAT EXCHANGER

Before beginning, activate the safety measures indicated in par. 4.1. Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles.

At least once a week, clean the heat exchanger located at the rear of the machine with a brush or, even better, with compressed air, as shown in the image in Figure 35 .

4.4.5 CLEANING THE DOUGH REMOVING ROLLERS AND THE SCRAPERS OF THE DIVIDING DRUM

Before beginning, activate the safety measures indicated in par. 4.1. Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles.

The dividing drum is kept clean externally by a pair of scrapers, accessible after removing the dough removing roller unitFigure 1 ref. 5 following the operations illustrated in the first three images belowFigure 36 . Then, carefully clean the Teflon-coated cylinders of the dough removing roller unit and remove the dough build-up present in the scrapers of the dividing drum (last two images). To clean the Teflon-coated cylinders of the dough removing roller unit, use the brush supplied and a clean cloth. The use of abrasive or sharp elements that may compromise the non-stick surface treatment IS PROHIBITED. For scrapers, on the other hand, it is sufficient to activate the rotation levers as shown in the images.

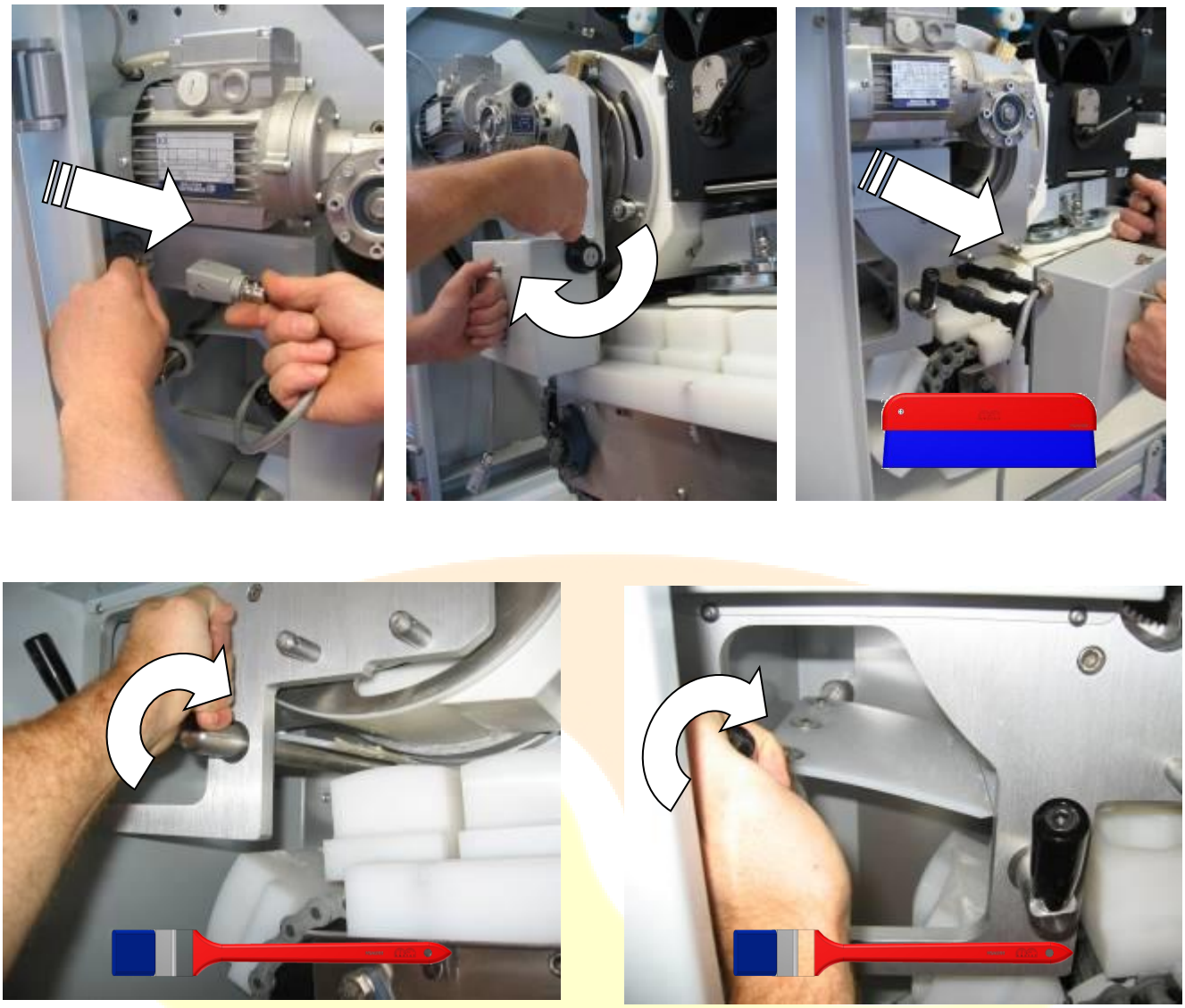


Figure 36 - Cleaning the dough removing rollers and drum scraper

4.4.6 CLEANING THE INSIDE OF THE HEAD

Before beginning, activate the safety measures indicated in par. 4.1. Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles.

At the end of each working day, it is necessary to clean the internal surfaces of the head to remove all residual dough, which may otherwise compromise the quality of the subsequent processing. Proceed as follows:

- Stop the machine and disconnect it from the mains power supply, by unplugging it from the mains socket;
- Open the front access doors;
- Look at the images in Figure 37 here below. Remove the cover from the head unit (Pos. 1) by means of the sliding handle, as shown in the figure. The internal parts of the head unit will be accessible. At this point, it will be possible to extract the two “star dosing devices” for cleaning (Pos. 4), the six dough accompanying rollers (Pos. 5), and the brush of the flour duster (Pos. 3). All these items can be removed without the use of tools, thus facilitating the daily cleaning of the machine. At the end of the cleaning operation, carefully put them back in the appropriate compartments, then close the access cover. The cover should be handled carefully to avoid damaging it during storage;
- Open the cover (Pos. 2) of the "dough compression piston" by turning the lever connected to it: in this situation, the plastic piston will also be accessible, which can also be completely disassembled to clean it thoroughly. The dough compression piston is kept in place by a connection pin (pos. 6), which must be slid it out to extract the piston. Extracting the plastic piston also allows thoroughly cleaning the inside of the “dough compression chamber” (that is the chamber inside which the “dough compression piston” runs). To put back the piston, insert it inside the chamber, slide it horizontally to the right, insert the pin after aligning the through hole of the plastic piston with the connection hole on the part fixed to the hydraulic cylinder. Next, close the cover.

- Finally, close the access door.

	NOTE! Never forget any type of foreign material inside the dough compression chamber!

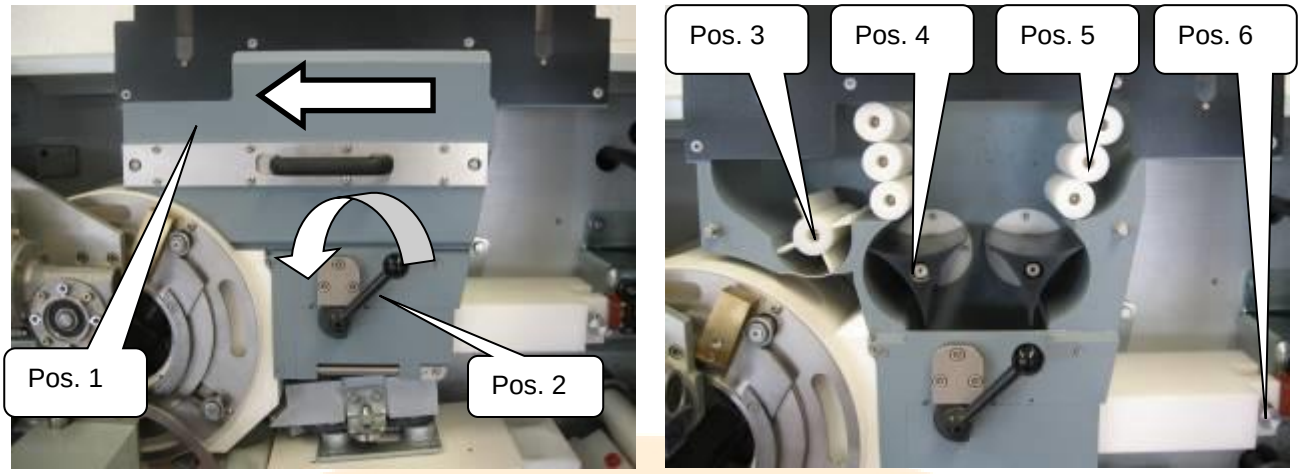


Figure 37 - Cleaning the head

4.4.7 CLEANING THE BELTS

Before beginning, activate the safety measures indicated in par. 4.1. Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles.

Start the machine without load (for up 10 minutes) and clean the belts using a brush with medium-consistency synthetic bristles.

IMPORTANT! Do not use the following items to clean the belts:

- **knives, scrapers, etc.:** they may cause serious damage to the belts.
- **metal abrasive pads**; they may release metal fragments on the belts with possible (and probable!) contamination of the product that will be placed there
- **chemical products** (detergents, soaps, etc.)

If the belts have worn, frayed, or cut surfaces, replace them immediately to prevent them from ripping during production, but above all to guarantee the hygiene of the product being processed

4.4.8 CLEANING THE COLLECTION DRAWERS AND THE LOWER AREA WHERE DUST AND RESIDUES ARE COLLECTED

Before beginning, activate the safety measures indicated in par. 4.1.
Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask.

With reference to the images inFigure 38 , at the end of each working day:
- extract the concave drawer ref. A, located under the output belt and clean it well
- extract, empty and clean the internal drawer ref. B.
- Open the front door and completely remove all flour and dough residues produced during the processing.

Both drawers can be washed with warm drinking water; before reassembling them, make sure they are perfectly dry. Do not start the machine unless the drawers ref. 1 and ref. 2 have been fully inserted. The lower collection area ref. C can be cleaned using a brush with soft bristles to move the residues towards the front edge, from where they can be placed in a concave container which, if necessary, can be that of ref. A, which is suitable for this type of use.

Figure 38 - Collection of flour and dough residues

4.4.9 CLEANING THE BELT SCRAPERS (ONLY FOR “SYNCRO M” AND “SYNCRO EM”.

Before beginning, activate the safety measures indicated in par. 4.1.

Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask.

With reference to Figure 39:

- The scraper ref. 1 for the lower belt of the loaf moulder consists of an aluminium support and a harmonic stainless steel profile. Check its integrity and brush the scraping edge to remove residual dough which, when dried, may damage the scraper itself and the moulding belt.
- The scraper ref. 2 for the top belt of the loaf moulder consists of an aluminium support and a harmonic stainless steel profile. Check its integrity and brush the scraping edge to remove residual dough which, when dried, may damage the scraper itself and the moulding belt.

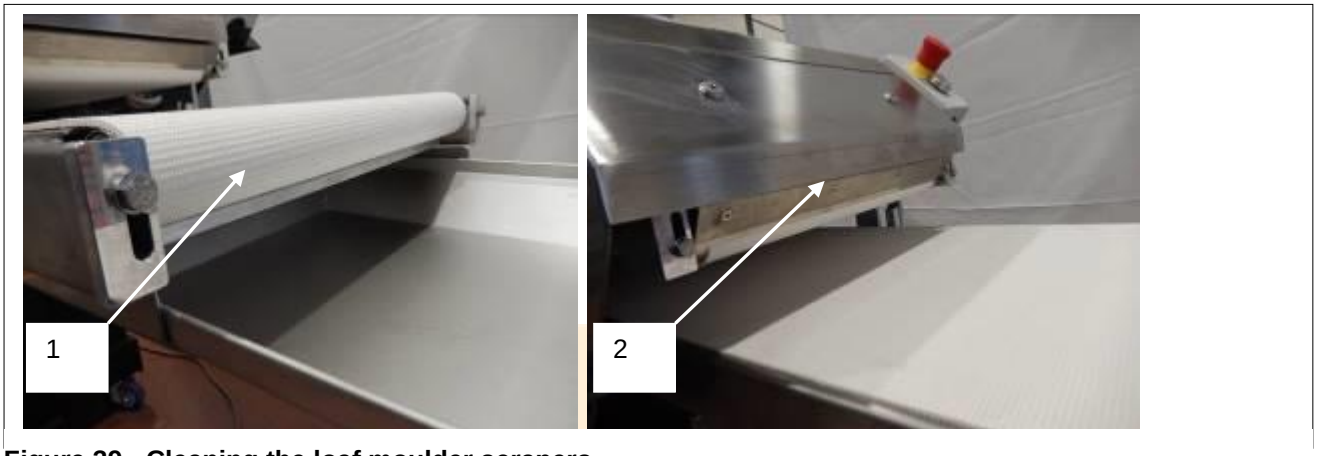


Figure 39 - Cleaning the loaf moulder scrapers

4.4.10 CLEANING THE FLOUR DUSTER

Before beginning, activate the safety measures indicated in par. 4.1.

Wear abrasion-resistant gloves, shoes with reinforced toe, dust-proof face mask, and protective goggles. The flour duster must be emptied if the flour is damp or if the device is not used for a long time; for disassembly / assembly procedures, see par. 3.7.5.

Figure 40 - Cleaning the flour duster

The flour duster, present only in the “SYNCRO M” and “SYNCRO EM” versions, is equipped with an openable lid for adding flour. This accessory can be lifted from its seat and can be overturned on a basin to empty it completely.

IMPORTANT! When emptying and replacing the flour, carry out all the necessary procedures to avoid the dispersion of flour dust, such as for example vacuuming the flour contained in the tray when turning it over; if the vacuum cleaner is not available, turn over the tray slowly, to prevent the formation of dust.

IMPORTANT! Do not leave foreign objects inside the flour duster as it may be seriously damaged once started again.

4.5 ELECTRICAL MAINTENANCE

Given the high risk and seriousness of the damage that may occur in case of an accident, **every operation** even if simple (e.g. replacing a fuse), which directly or indirectly affects the electrical equipment of the machine, **must only be carried out by specialized technicians** (**special / extraordinary maintenance**) **expressly appointed** with technical and regulatory knowledge to carry out the work in a workmanlike manner and in safe conditions; they must first read and fully understand the contents of this manual.

The same can be said for the replacement of safety microswitches for the protection of interlocked safety guards: this operation also requires skills and mechanical knowledge to carry out the necessary checks and any adjustments.

WARNING FOR MACHINES EQUIPPED WITH INVERTER

After having disconnected and reset the electrical power supply of the inverter, residual electrical voltage remains that may be very dangerous for personal safety in case of contact with live components; par. 5.3.7 provides further details on the subject and information on the precautions to be observed in order not to be exposed to the related electrical risk.

4.6 SPARE PARTS

To order spare parts, contact the dealer where the machine was purchased, providing a brief description of the part and / or its use; always mention the machine's serial number.

4.7 PROLONGED STOPPAGE OR EXCLUSION FROM SERVICE

In case of extended shut-down or exclusion from service, disconnect the machine from the electrical power supply.

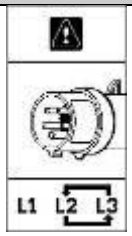
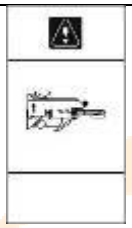
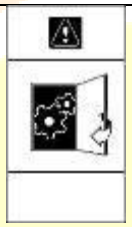
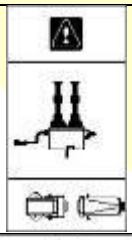
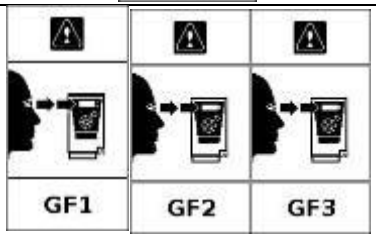
Carefully clean every part of the machine and then cover it with waterproof sheets to protect it from atmospheric agents, dust, insects, rodents, etc. Prevent it from being subjected to shocks, tampering, damage, etc.

When recommissioned, a careful inspection is necessary to check the integrity and completeness of the machine, as if it were the first time it was being started up.

4.8 DIAGNOSTIC SIGNALS - ALARMS

The alarm tables are illustrated here below. Consult Table 10 dedicated to the explanation of the graphic alarms, which are usually easy to resolve, for example by closing an interlocked door, or releasing the EMERGENCY STOP push-button. Also consult the

Table 11 dedicated to the explanation of the alarms that are usually more difficult to resolve, which are coded with a number, in order to facilitate their communication and identification by the technician on site, who may be in contact with a manufacturer's technician for remote assistance.

IMAGE ON THE DISPLAY	DESCRIPTION OF THE PROBLEM	SOLUTION
	Incorrect power supply phases	• Check that the plug has not been moved to a socket other than the one normally used for connection: if necessary, return the plug to its original position; • Check that the connection cable is intact and free from cuts and abrasions: if necessary, completely replace the power cable, with an equivalent type, with the same insulation class and cross-section.
	Dough outfeed guard open or triggered.	• Close the guard; • Check the mobility of the guard up to the correct working position; • Check that the limit switch that reads the position of the guard is in good working order. • Check wire 702 in terminal block "M6", input in "A1" "I12"
	At least one of the internal machine's access doors is open	• Close all doors. • Check that the limit switch that reads the position of the guard is in good working order. • Check that the coupling of the safety limit switch to the safety device is correct; • Check wire 605 in terminal block "M6", input in "A1" "I5"
	Dough removing rollers not electrically connected.	• Par. 4.4.5; • Check the contacts of the the electrical system connector.
	Emergency stop push-button pressed.	• Par. 3.10; • Check the internal efficiency of the push-button's contacts; • Check wire 603 in terminal block "M6", input in "A1" "I3"
	Alarm in one of the frequency converters marked with "GF1", "GF2", "GF3" inside the electrical box.	• Missing one power supply phase "T"; • Fuse "F1" interrupted - replace it; • Fuse "F4" interrupted - replace it; • Turn off the machine, open the rear electrical box, then restart the machine: when the problem reoccurs, check the type of alarm on the display of the alarmed device by reading the alphanumeric code. For GF1, consult the following website: http://www.global-download.schneider-electric.com/852575A6007E5FD3/all/FF63D5B6E2EEF644852576B1006F011E For all other GF2, GF3, etc. go to:http://www.global-download.schneider-

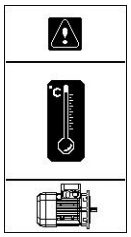
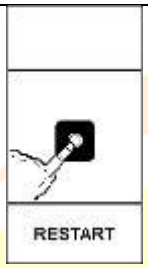
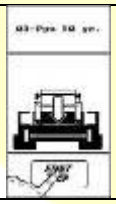
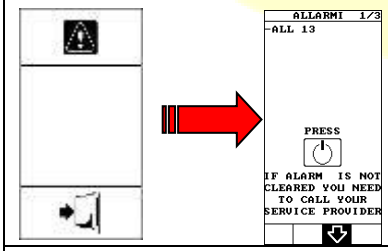
		electric.com/852575A6007E5FD3/all/15A86EB010BB2446852576540069E2F8
	Motor control gear overheating. One of the electric motors the machine is equipped with cannot complete its work cycle, because of excessive driving torque absorption.	• Turn off the machine, open the rear electrical box, set to “MANUAL” the resetting of all the protection circuit breakers marked with "QT1", "QT2", "QT3", "QT4", "QT5", "QT7", " QT8, then restart the machine: when the problem reoccurs, check which of the aforementioned circuit breakers has triggered and then analyse the respective motor. Then establish and solve the problem that impedes the movement; • Also verify that the power supply voltage of the machine is not less than that required in the specifications (see Par. 3.3).
	Blank display	• Missing power supply phase “S”; • Fuse “F1” interrupted - replace it.
	Display waiting to RESET cannot be reset	• Missing “NEUTRAL” connection to the power supply network; • Contacts “R1 ”÷ 214 interrupted; • No input on wire 601; • Missing “R” phase in the power supply network; • Fuse “F1 interrupted - replace it; • Ask the manufacturer for the “IO0500” instruction to start they analysis for the solution to the problem.
	Hopper alarm display cannot be reset.	• Missing “R” phase in the power supply network; • Fuse “F1 interrupted - replace it; • Broken “SL1” safety light curtain - replace them.
	• Functional alarm in progress. • Press “I-DRIVE”	• Turn off the machine and wait a few minutes before turning it on again. If the alarm appears again, contact the HR manager.  • Read the displayed alarm number (for example "ALARM No. 13")
The following page lists the coded alarms and their meaning.		

Table 10 - Graphic alarm list and possible solution

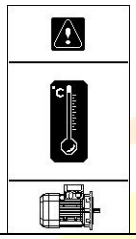
	**ATTENTION!** The identification of a possible alarm, as well as the ability of a technician to solve the problem, entails that the technician in question possesses the electrical and oil-hydraulic diagram of the machine, as well as the specific professionalism of someone who is able to interpret a functional, electrical or oil-hydraulic diagram: therefore, any person not qualified to perform this type of check, and unable to do so, is excluded from this analysis.

On the front door to access the inside of the machine, the list of coded alarms of
Table 11 is shown in concise format, as they are discussed in more detail in the following table.

ALARMS

	DEVICE	DESCRIPTION		INSTRUCTIONS
01	KMG		Main power line contactor faulty	IO0501
02	GF2		Alarm for drum inverter	IO0502
03	GF3		Alarm for moulding plate frequency converter	IO0503
04	QTx		Circuit breakers triggered	IO0504
05	S1		Rounding cam sensor faulty or broken	IO0505
06	S8.1		Zero position weight cam position sensor faulty or broken	IO0506
07	S3		Large pocket sensor faulty or broken	IO0507
08	S4		Small pocket sensor faulty or broken	IO0508
09	S5		Star dosing device sensor faulty or broken	IO0509
10	S6		Dough feeding sensor faulty or broken	IO0510
11	GF1 A1		CANopen lack of connection	IO0511
12	GF1		Alarm for brush-less drive	IO0512
13	A1 A2		Lack of connection between monitor and main control board	IO0513
14	S7.1		Zero position drum sensor faulty or broken	IO0514
15	S7		Drum position sensor faulty or broken	IO0515
16	S8		Weight cam position sensor faulty or broken	IO0516
17			Incorrect recipe parameters	IO0517
18	ET1		Safety control unit faulty	IO0518
19	Y1		Compression piston solenoid valve faulty	IO0519
20	KV1		Star dosing device contactor faulty	IO0520
21	KV2		Drum flour duster contactor faulty	IO0521
22	KV3		Belt moving contactor faulty	IO0522
23	KM4		Oil-hydraulic pump contactor faulty	IO0523
24	KM5.1		Weight increase cam contactor faulty	IO0524
25	KM5.2		Weight decrease cam contactor faulty	IO0525
26	KM7		Loaf moulder station lower belt contactor faulty	IO0526
27	KM8.1		Loaf moulder station 1st speed upper belt contactor faulty	IO0527
28	KM8.2		Loaf moulder station 2nd speed belt contactor faulty	IO0528
29			Drum mechanic block	IO0529
30			Weight cam mechanic block	IO0530

Table 11- Coded alarm list and possible solution

ALARM No.	CAUSE OF THE PROBLEM	SOLUTIONS
ALARM 2	“GF2” in alarm mode	Turn off the machine, open the rear electrical box, then restart the machine: when the problem reoccurs, check the type of alarm on the display of the alarmed device by reading the alphanumeric code. The updated alarm list can be downloaded at: https://www.se.com/ww/en/product-range/2253-altivar-12/?parent-subcategory-id=2905Se “GF2” è spento, ○ Check the fuses in “F4” and replace them if necessary; ○ Check the fuses in “F1” and replace them if necessary
ALARM 3	“GF3” in alarm mode	Turn off the machine, open the rear electrical box, then restart the machine: when the problem reoccurs, check the type of alarm on the display of the alarmed device by reading the alphanumeric code. The updated alarm list can be downloaded at: https://www.se.com/ww/en/product-range/2253-altivar-12/?parent-subcategory-id=2905Se “GF3” è spento, ○ Check the fuses in “F4” and replace them if necessary; ○ Check the fuses in “F1” and replace them if necessary
ALARM 4 	"QT1", "QT2", "QT3", "QT4", "QT5", "QT7", "QT8" circuit breaker triggered	○ Check the triggered circuit breaker, and on the basis of this, check the efficiency of the corresponding motor and any problems in the movement of the device mechanically connected to it
ALARM 5	Proximity sensor “S1” not reading– Rounding cam	○ Sensor “S1” broken- replace it; ○ Sensor "S1" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S1" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the cam; ○ Check the connection present in board “A1” to wire number “701” of terminal board “M7”; ○ Board “A1” may be faulty; ○ The "GF1" device may be faulty: check the alarm on the "GF1" display; ○ If "GF1" is off, move the wire "+ L1" in terminal block "M14" from terminal “70” to terminal "69" with the wire "+24"
ALARM 6	Proximity sensor “S8.1” not reading– Weight selection cam (counter zero setting)	○ Sensor “S8.1” broken - replace it; ○ Sensor "S8.1" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S8.1" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the cam; ○ In manual work mode (par. 4.11) select page “I” and press “START” for 10 seconds: the display must show a moving numbering at the top. Select the “L” page and check that the numbering is moving: if this is not the case, the “M5” motor is blocked - check for any obstruction to the movement; ○ Check the connection present in board “A1” to wire number “518” of terminal board “M5”; ○ Board “A1” may be faulty;
ALARM 7	Proximity sensor “S3” not reading– Large rounding cup	○ Sensor “S3” broken - replace it; ○ Sensor "S3" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S3" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the reading references; ○ In manual work mode (par.4.11), select page “H” and press “START” for 10 seconds: the cup conveyor (Figure 1 ref. 6) must be moving; if not, the “M3” motor is blocked - check for any obstruction to the movement;

		○ Check the connection present in board “A1” to wire number “703” of terminal board “M7”; ○ Board “A1” may be faulty;
ALARM 8	Proximity sensor “S4” not reading– Small rounding cup	○ Sensor “S4” broken - replace it; ○ Sensor "S4" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S4" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the reading references; ○ In manual work mode (par. 6.2.7), select page “H” and press “START” for 10 seconds: the cup conveyor (Figure 1 ref. 6) must be moving; if not, the “M3” motor is blocked - check for any obstruction to the movement; ○ Check the connection present in board “A1” to wire number “704” of terminal board “M7”; ○ Board “A1” may be faulty;
ALARM 9	○ Proximity sensor “S5” not reading– Star dosing devices stopped; ○ "KV1" not working - probable breakage.	○ Sensor “S5” broken - replace it; ○ Sensor "S5" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S5" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from one of the 3 vertexes of the stopping cam near sensor “S5”; ○ In manual work mode (par. 4.11) select page “B” and press “START” for 10 seconds: the two star dosing devices installed inside the head (Figure 37 Pos. must be moving: if this is not the case, the “M1” motor is blocked - check for any obstruction to the movement; ○ Check the connection present in board “A1” to wire number “705” of terminal board “M7”; ○ Board “A1” may be faulty; ○ Check that the cam placed near “S5” is well fixed on the rotation axis, and if necessary lock it in position. During the work cycle, the star dosing units must stop with the lower vertex vertical with respect to its own work axis; ○ Replace “KV1”.
ALARM 10	Proximity sensor “S6” not reading– The dough compression piston has reached the end of its travel	○ Sensor “S6” broken - replace it; ○ Sensor "S6" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S" unscrewed from its seat - Screw it back up to a distance of 0.1 ÷ 0.3 mm from the internal profile of the dough compression chamber. ○ Failed insertion of dough compression piston (Figure 37 Pos. 6) in its working seat - Check the presence of the piston; check that the metal pin connecting the piston is inserted all the way in its seat; check that the plastic piston can slide along its entire travel distance, up to the cylindrical dividing drum placed on the left end; ○ Hydraulic piston drive unit off or unable to function; no oil in the tank; clogged oil suction filter. ○ Check the connection present in board “A1” to wire number “706” of terminal board “M7”; ○ Board “A1” may be faulty;
ALARM 11	No CANopen connection between "GF1" and "A1"	○ Possible incorrect earthing of the machine - check the earthing of the power supply system; ○ Check the connection to the terminal block "M11" in board A1, and to “U1” in "GF1"; ○ Board “A1” may be faulty; ○ “GF1” may be faulty; ○ Remove the earthing filter installed next to "GF1" visible thanks to a metal screw with the symbol  next to it
ALARM 12	“GF1” in alarm mode	○ Check the fuses in “F4” and replace them if necessary Turn off the machine, open the rear electrical box, then restart the

		machine: when the problem reoccurs, check the type of alarm on the display of the alarmed device by reading the alphanumeric code. If the display in “GF1” shows “d.S.”: ○ Check the fuses in “F4” and replace them if necessary; ○ Check the fuses in “F1” and replace them if necessary
ALARM 13	No communication between "A1" and "A2"	○ Board “A1” may be faulty; ○ Board “A2” may be faulty; ○ Check the connection to the terminal block "M10" of A1, and to terminal“M4” of "A2"
ALARM 14	Proximity sensor “S7.1” not reading– Dividing drum zero setting	○ Sensor “S7.1” broken - replace it; ○ Sensor "S7.1" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S7.1" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the cam; ○ The support bracket has come off or is displaced; ○ In manual work mode (par. 4.11) select page “D” and press “START” for 30 seconds: the display must show a moving numbering up to 720 and then should reset. If the numbering does not change, the “MU2” motor is blocked - check for any obstruction to the movement. Also check that “GF2” is working and that the display is showing a number; ○ Check the connection present in board “A1” to wire number “513” of terminal board “M4”; ○ Board “A1” may be faulty; ○ If “GF2” is off, check the fuses in “F4” and replace them if necessary.
ALARM 15	Proximity sensor “S7” not reading– Dividing drum position connector	○ Sensor “S7” broken - replace it; ○ Sensor "S7" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S7" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the cam; ○ The support bracket has come off or is displaced; ○ In manual work mode (par. 4.11) select page “D” and press “START” for 30 seconds: the display must show a moving numbering up to 720 and then should reset. If the numbering does not change, the “MU2” motor is blocked - check for any obstruction to the movement. Also check that “GF2” is working “rDY”. ○ Check the connection present in board “A1” to wire number “511” of terminal board “M4”; ○ Board “A1” may be faulty; ○ If “GF2” is off, check the fuses in “F4” and replace them if necessary
ALARM 16	Proximity sensor “S8” not reading- Weight setting cam position counter	○ Sensor “S8” broken - replace it; ○ Sensor "S8" disconnected from the connector - unscrew and re-tighten the connecting ring nut; ○ Sensor "S8" unscrewed from its seat - Screw it back up to a distance of 0.5 ÷ 1 mm from the cam; ○ In manual work mode (par. 4.11) select page “I” and press “START” for 10 seconds: the display must show a moving numbering at the top. Select the “L” page and check that the numbering is moving: if this is not the case, the “M5” motor is blocked - check for any obstruction to the movement; ○ Check the connection present in board “A1” to wire number “516” of terminal board “M5”; ○ Check that the cam placed near “S8” is well fixed on the rotation axis, and if necessary lock it in position. ○ Board “A1” may be faulty;
ALARM 17	Rounding cycle too long.	○ Reduce machine’s output  ;

		○ Slightly reduce the rounding pressure  ; ○ Slightly reduce the rounding optimization  .
ALARM 18	Safety control unit “ET1” in alarm mode	○ Check the efficiency of “ET1” - Replace it
ALARM 19	Faulty “Y1” solenoid valve	○ Check the efficiency of the connection to “Y1”; ○ Check the connection present in board “A1” to wire number “901” of terminal board “M13”; ○ Solenoid valve connector to valve on hydraulic power unit disconnected.
ALARM 20	Faulty “KV1” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 21	Faulty “KV2” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 22	Faulty “KV3” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 23	Faulty “KM4” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 24	Faulty “KM5.1” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 25	Faulty “KM5.2” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 26	Faulty “KM7” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 27	Faulty “KM8.1” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 28	Faulty “KM8.2” contactor	○ Check connections; ○ Check efficiency and replace it if necessary;
ALARM 29	Mechanical block in dividing drum	○ In manual work mode (par. 4.11) select page “D” and press “START” for 30 seconds: the display must show a moving numbering up to 720 and then should reset. If the numbering does not change, the “MU2” motor is blocked - check for any obstruction to the movement. Also check that “GF2” is working “rDY”. ○ Check the connection present in board “A1” to wire number “511” of terminal board “M4”; ○ Board “A1” may be faulty; ○ If “GF2” is off, check the fuses in “F4” and replace them if necessary; ○ Check the efficiency of “S7” and “S7.1”.
ALARM 30	Mechanical block in dividing weight adjustment cam	○ In manual work mode (par. 4.11) select page “I” and press “START” for 10 seconds: the display must show a moving numbering at the top. Select the “L” page and check that the numbering is moving: if this is not the case, the “M5” motor is blocked - check for any obstruction to the movement; ○ Check the connection present in board “A1” to wire number “516” of terminal board “M5”; ○ Check that the cam placed near “S8” is well fixed on the rotation axis, and if necessary lock it in position. ○ Board “A1” may be faulty; ○ Check the efficiency of “S8” and “S8.1”.

Table 11- Coded alarm list and possible solution

4.9 BYPASSING THE MAIN DOOR LIMIT SWITCH

The coded magnetic sensor for detecting the closure of the main door of the machine, installed on the front of the machine itself, is a SAFETY device fitted on the machine. Therefore, under standard use conditions during production, cleaning as well as routine maintenance, it must be possible to start the machine only with the aforementioned door closed: if this condition is not guaranteed, switch off the machine and contact the maintenance staff.

The technical by-pass of the aforementioned sensor must be carried out by technical personnel qualified to carry out maintenance work, installation and extraordinary maintenance. Once said operations have been completed, and before restarting the machine, the efficiency of the limit switch must be guaranteed to restart the machine only with the main door in working position.

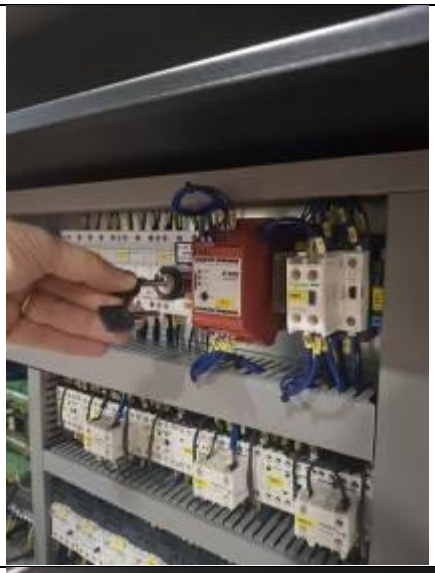
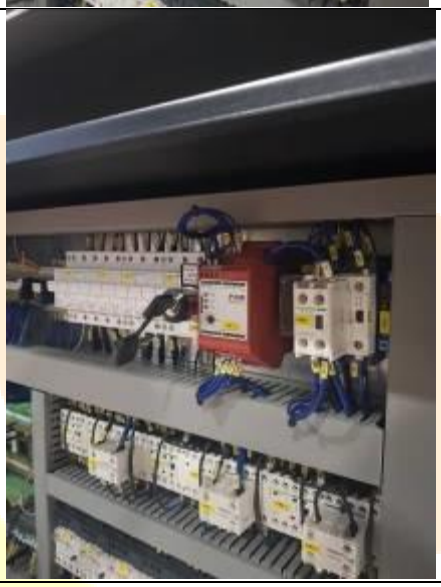
The coded sensor that detects the closing position of the main door enabling the machine to start, is made up of a base element, installed on the right door, and an enabling element installed on the left door: the machine can be restarted only if the enabling element is recognized by the coded element and their combination is coded, which means that it cannot be bypassed by common ferromagnetic elements such as permanent magnets or metal parts in general. A coloured LED is installed on the base element to indicate its operating status:

- Green: enabled
- Red: not enabled

A flashing LED indicates an enabling error: if such condition occurs, contact the technical service.

In case of extraordinary technical maintenance, it may be necessary to check and verify operation inside of the machine, with the main front door open.
The safety system can be by-passed only and EXCLUSIVELY by technical personnel authorized to carry out extraordinary maintenance operations.
Any operation not included in the extraordinary maintenance of the machine does not justify by-passing the aforementioned sensor. The technician who may have deactivated the limit switch for extraordinary operations must ensure that it is reset before leaving the equipment to be run by the user; the efficiency of the same must also be verified.

The by-pass selector of the coded magnetic sensor of the front door is installed inside the electrical box: it is equipped with two identical keys, which must be kept by the technical staff assigned to the installation room.	

In the position shown in the figure to the side, the door sensor is enabled and the machine can be started safely, as starting is only allowed with the front door closed: in this position, the key can be removed from the selector in order to be kept by the technical staff assigned to the installation room.	
To disable the front door sensor, turn the key clockwise: in this position, the key CANNOT be removed from the selector	

4.10 INTERNAL SET-UP PARAMETERS

Table 12 Shows the internal set-up parameters: these are useful for the first installation or during maintenance operations carried out by specialized technicians. To access the internal parameters, press ESC on the control panel in Figure 4 ref. 7, then within 5 seconds, press SERVICE on the control panel par. Figure 4 ref.10. A specific password will be requested:

Enter **2 5 1 1** using the I-DRIVE knob Figure 4 ref. 9 to scroll the digits to be entered, then confirm by pressing I-DRIVE again.

Parameter 17 allows modifying the recipe storage password.

REF.	VALUES		DESCRIPTION
PAR.1	---	Language selection	Set language
PAR.2	0°		Drum rotation reset offset correction
PAR.3	35°		Angular-position of drum to start flour duster
PAR.4	55° (Syncro 120) 50° (Syncro 160)		Angular-position of drum to start compressing dough (for output exceeding 2250 pcs / h)
PAR.5	65° (Syncro 120) 65° (Syncro 160)		Angular-position of drum to start compressing dough (for output below 2250 pcs / h)

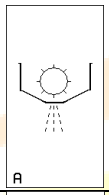
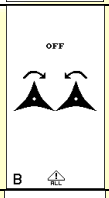
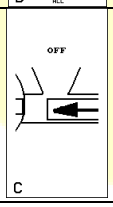
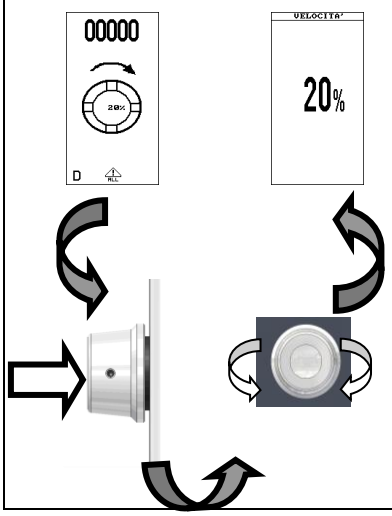
PAR.6	22°		Angular-position of drum to stop compressing dough
PAR.7	52		Machine output correction factor
PAR.8	100%		Set% max speed of rounding cam to position "Q0"
PAR.9	100%		Set% max speed of rounding cam to position "Q1"
PAR.10	2%		Set% max speed of rounding cam to position "Q2"
PAR.11	66 (Syncro 120) 110 (Syncro 160)		Maximum dough weight limit for small pocket
PAR.12	5 (Syncro M) 7 (Syncro)		Number of cycles of pocket conveyor unit for unloading products
PAR.13	14		Loaf moulder timer stop for unloading products
PAR.14	7		Inertia correction of weight cam positioning
PAR.15	5.0		Oil-hydraulic unit safety stop timer with hopper open
PAR.16	OFF = standard ON = maintenance		START mode
PAR.17	0111 or 0511		Password to save programs (recipes)
PAR.18	ON= Syncro M OFF = Syncro		Set presence of loaf moulder
PAR.19	ON = ”P” Activated OFF = ”P” Not activated		Set activation of “P” key function
PAR.20	0.35÷0.55 (0.41)		Set stop position of large cup conveyor
PAR.21	0.10÷0.20 (0.11)		Set stop position of small cup conveyor
PAR.22	1÷25 26÷50 1÷50		Set list of selectable programs
PAR.23	0.12		Set start position of product alignment rollers
PAR.24	0.60		Set start position of transfer belt
PAR.25	0.06		Set stop position of product alignment rollers at outfeed for small pocket
PAR.26	0.08		Set stop position of product alignment rollers at outfeed for large pocket
PAR.27	OFF = Q2 not displayed (STD) ON = Q2 displayed		Set parameter “Q2” display in work recipe
PAR.28	OFF= ° ON= %		Set parameters "Q1" and "Q2" display in ° angular (OFF) or% (ON)
PAR.29	5		Set number of buzzer cycles to indicate there is no dough inside the hopper
PAR.30	99		Set max weight enabling buzzer for missing dough in hopper
PAR.31	----		Set customer’s logo

Table 12 - Internal set-up parameters

4.11 STARTING IN MANUAL MODE

All maintenance operations can be facilitated by the possibility of starting each single movement independently without starting the complete automatic cycle. For example, it is possible to start only the lower loaf moulder to thoroughly clean the moulding belts or to detect and identify abnormal noise generated by the operation of this unit.
The manual movements are accessed via the main menu of the program list, by pressing the "ESC" key Figure 4 ref. 7 then, within 5 seconds, press "I-DRIVE" Figure 4 ref. 9, select the “MANUAL” icon as highlighted in the image in Figure 41; finally press “I-DRIVE to confirm the selection.
Each single movement can be started in manual mode by selecting the page relating to the movement to be started, and pressing the "START / STOP" button Figure 4 ref. 8 to initiate this movement.
Table 13 shows the list of operations that can be manually started.

Figure 41 - Starting in manual mode

IMAGE ON THE DISPLAY	DESCRIPTION
	Starting the flour duster (Figure 10 Pos. 3);
	Starting the star dosing devices, near the hopper (Figure 10 Pos. 4);
	Forward movement of the dough compression piston (Figure 10 Pos. 6);
	Starting the dividing drum (Figure 1 Pos. 4). A numerical value is shown at the top of the display which increases when the corresponding device is rotated. Pressing “I-DRIVE” also shows the next screen in which it is possible to select a different movement speed after confirming the selection by pressing the same knob;

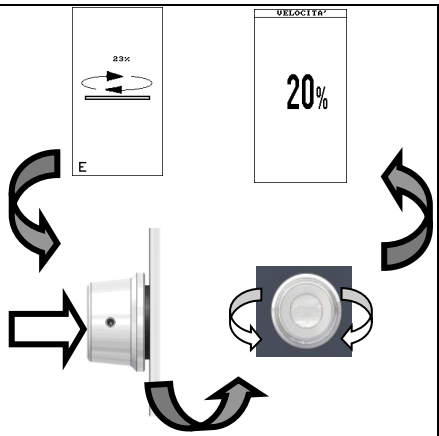
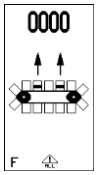
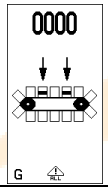
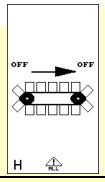
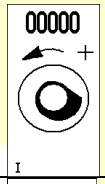
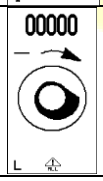
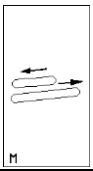
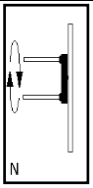
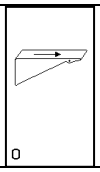
	Starting the rounding plate (Figure 1 Pos. 7). A numerical value is shown at the top of the display which increases when the corresponding device is rotated. Pressing “I-DRIVE” also shows the next screen in which it is possible to select a different movement speed after confirming the selection by pressing the same knob;
	Lifting moulds inside the cup conveyor (Figure 1 Pos. 6) (the movement is automatically stopped when the maximum position - 180 - is reached). A numerical value is shown at the top of the display which represents the position reached.
	Lowering moulds inside the cup conveyor (Figure 1 Pos. 6) (the movement is automatically stopped when the minimum position - 0 - is reached). A numerical value is shown at the top of the display which represents the position reached.
	Forward movement of the cup conveyor Figure 1(Pos. 6)
	Weight cam rotation in the direction of weight increase. A numerical value is shown at the top of the display that resets when the value 2700, which represents the position reached, is reached.
	Weight cam rotation in the direction of weight decrease. A numerical value is shown at the top of the display which represents the position reached.
	Bottom loaf moulder forward movement (for Syncro M versions only) (Figure 1 Pos. 10).
	Rotation of dough alignment rollers
	Forward movement of transfer belt

Table 13 - Starting in manual mode

5 SAFETY

5.1 FOREWORD

The considerations in this chapter are based on the assumption that:

- the conditions and the intended use of the machine, provided for and specified in this manual, are well known to the client and/or user and to every operator using the machine
- the workers were adequately informed, instructed and, if necessary, trained on the existing risks in the workplace in compliance with the current laws, among other things.
- access to the work environment is not allowed to unauthorized persons, visitors, and minors.

5.2 SAFETY DEVICES AND RESIDUAL RISKS

Information concerning the dangers inherent to this machine, the relative risks, and the measures adopted to eliminate or minimise them are provided herein; if a risk has not been eliminated, information is provided concerning the residual risk and potential measures to be taken by the user to limit the extent of said risks even further

5.2.1 HAZARDS THAT CHARACTERISE THIS MACHINE

With reference toFigure 42 , the machine is characterized by the following hazards:

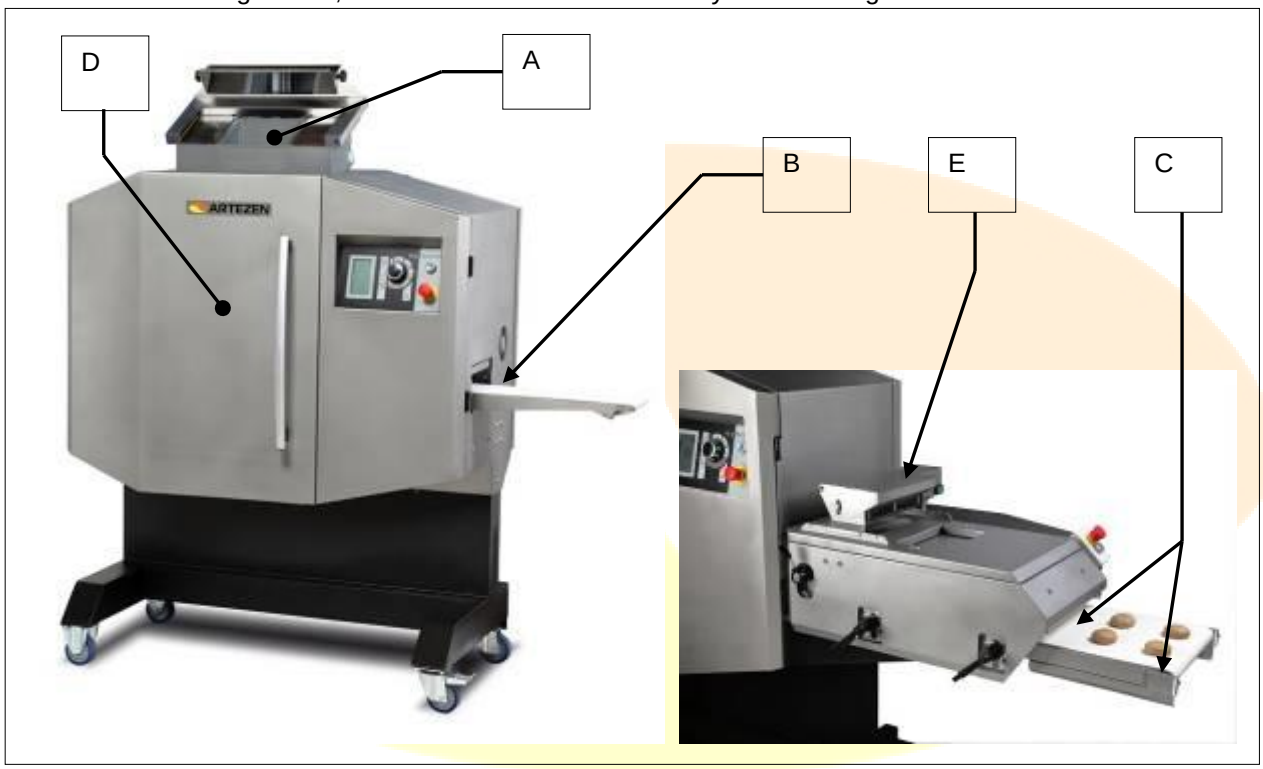


Figure 42 - Areas characterised by mechanical hazards

mechanical hazards:

A. **Shearing, crushing, cutting:** between the dough dividing components, while passing through the hopper

B. **Locking and entanglement, crushing, impact, contusion:** between the moving components (access to the dividing mechanism) passing through the product outfeed opening

C. **Gripping and dragging:** outfeed belts **,** areas of confluence between belts and cylinders

D. **Crushing, shearing, grabbing and dragging, impact, severe contusion:** motion transmission parts and other internal moving parts

E. **Gripping and entanglement** : internal volume of the flour duster

The machine is also characterized by the following hazards:

electrical hazards;

F. **electrocution**: by contact with live parts V ≥ 50V AC (ex. inside the electrical panel, the motor terminal boxes, etc., due to contact with the internal parts of the inverter, or with parts powered by this without waiting for the total discharge of the residual voltage inside it)

due to oil-hydraulic pressure

G. Being splashed or sprayed with fluids under pressure (oil) **or severe contusion due to whiplash** if a component breaks or a hose suddenly breaks loose, etc.

due to dust inhalation

H. damage to the respiratory tract (rhinitis, lacrimation, asthma, etc.) caused by the inhalation of flour dust and/or other ingredients (for example, in case of flour being loaded into the flour duster without taking the due precautionary measures)

related to hygiene

I. damage to people's health by contact with mould, rotting substances, etc., penetration of insects, rodents, etc.

J. alterations of the food product (ex. contamination by growth of microorganisms or by foreign matter)

linked to non-compliance with ergonomic principles

K. lesions/injuries due to incorrect posture or manual handling of excessive and/or awkward loads (loading into the hopper excessively heavy amounts of dough or dough that is difficult to handle, etc.)

The relative risks were eliminated or minimised as much as possible by adopting the safety measures and devices illustrated in this manual (in particular in this chapter) and can be further reduced if the user conforms to the described measures.

5.2.2 SAFETY EQUIPMENT INSTALLED IN THE MACHINE

1. **AOPD on top of the hopper.** It consists of two opposed elements, on the left and right sides of the hopper, whose length is equal to the depth of the hopper itself. One of the two elements (emitter)Figure 43 ref. A emits a series of beams that are14 mm apart from each other; the second element (receiver)Figure 43 ref. B receives the beams emitted by the first element and verifies the receipt of all the emitted beams.

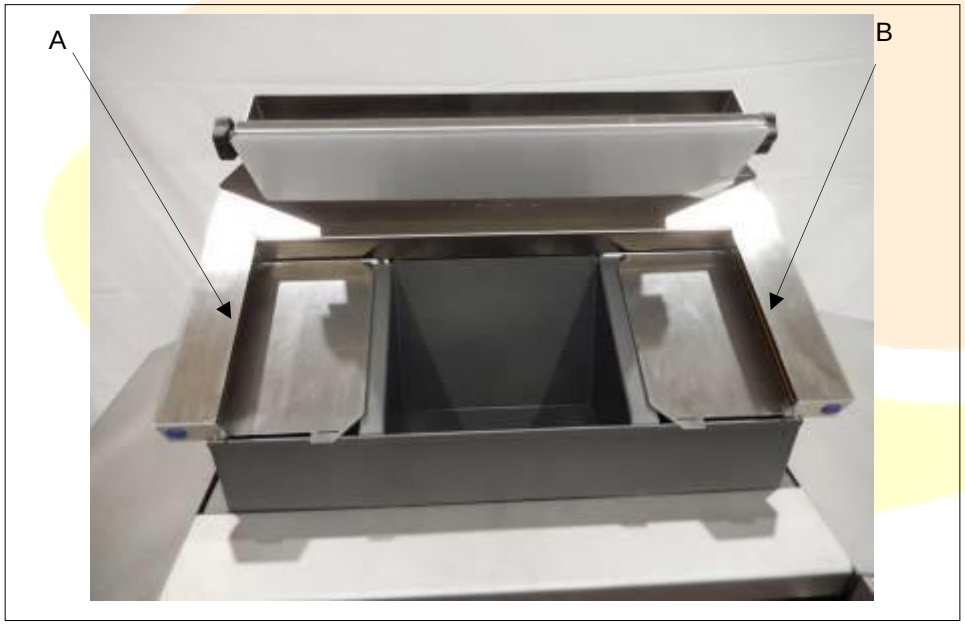


Figure 43 - Hopper light curtain

The light curtain is positioned in such a way as to also cover the area of the two side pockets of the hopper that contain the flour, which guarantees the safety of the machine even when the two lids are open. The light curtain is fixed to the hopper body by means of screws, and protected by suitable stainless steel guards. The possible interruption of even just one of the beams emitted by the light curtain causes the immediate stop of the star dosing devices and of the six dough accompanying rollers located inside the head, right under the hopper Figure 37 pos. 4 and 5 respectively. The dough compression piston Figure 37 Pos. 6 will remain in its rest position and only if it has already started its compression cycle, will it stop the work cycle and remain blocked upon completion: this procedure was necessary to avoid the production of pieces of incomplete weight which would be the result of the immediate stop of the compression piston when the light curtain is interrupted. This would significantly increase the quantity of non-conforming pieces and also increase the fragments of dough that would build-up anywhere inside the machine. During the entire interruption of the beam generated by the light curtain, the display will show the image in figure Figure 23 and the dividing operation will in fact be interrupted, even if the whole work cycle that follows it, will continue its course to avoid mechanical mistreatment on the already broken pieces and in the rounding and unloading and loaf moulding phase. To resume processing, it is sufficient to leave the area covered by the aforementioned light curtain free. It must be said that normally, during standard use of the machine, the interruption of the beam generated by the light curtain occurs within a fraction of a second, that is the time of falling by gravity of a new portion of dough feeding the hopper.

2. **Front door associated with a mechanical safety microswitch (for “SYNCRO E” and “SYNCRO EM”) or with a coded magnetic sensor (for “SYNCRO” and “SYNCRO M”).** Figure 13 ref. 1 and 2 to access the

inside of the machine body where the dough dividing and rounding process takes place. It is an interlocked door, which can be opened to the left as it is hinged to the machine body on its left side. The internal components move inside it. This is a sturdy and rigid door, equipped with a solid handle for easy opening. If the door is opened by more than 2 mm while the machine is running, the safety system commands the emergency stop of the machine, which takes place in a very short time (fraction of a second) . To restart the working components, it is first necessary to completely close the door, then press the RESET button indicated with ref. 1 in Figure 5 . In the case of “SYNCRO” and “SYNCRO M”, the door is double, one on the left hinged on its left side, and the other on the right, hinged on its right side. “SYNCRO E” and “SYNCRO EM”, instead, feature a single door opening to the left.

3. **Rear door associated with a mechanical safety microswitch: Figure 13** ref. 5. It allows accessing the rear part of the machine body which contains the part of the machine suitable for generating the movements of the components dedicated to processing the dough (which take place in the front part accessible from the front door). In the rear area there are several gearmotors, proximity sensors, movement transmission devices, which do not come into contact with the food product, but which must be cleaned from time to time to remove the layer of flour dust that can settle, especially if a lot of flour is used during dough processing. In both construction versions, a key safety microswitch stops the machine immediately if the key (fixed to the door) is removed from the limit switch (fixed to the body of the machine). To restart the working components, it is first necessary to completely close the door, then press the RESET button indicated with ref. 1 in Figure 5 . The opening of the door causes the machine to stop in emergency mode when the maximum distance on its upper edge between the door and the machine body is 4 mm.

4. **Mobile sliding guard applied to the loaf moulder:** Figure 13 ref. 3, only for “SYNCRO M” and “SYNCRO EM”. It allows accessing the upper area of the loaf moulder, which is useful for example to remove irregular portions of dough that may have built-up during the working day. It consists of a horizontal surface that slides horizontally on guides and supports the flour duster. It is associated with a key safety microswitch which immediately stops the machine when it is opened by more than 2 mm. To restart the working components, it is first necessary to completely close the door, then press the RESET button indicated with ref. 1 inFigure 5 .

5. **Mobile safety bar at dough outfeed (only for “SYNCRO” e “SYNCRO E”):** Figure 13 ref. 6. It consists of a bar, pivoted at its base so that it can rotate in the event of pressure in both directions on the output axis of the dough. It is associated with a mechanical limit switch. It is installed at the outlet of the product unloading belt and it immediately stops the machine in emergency mode even if a slight pressure is exerted such as to generate a small rotation around its fulcrum. In addition to this safety bar, there are some moving parts dedicated to the correct unloading of the dough onto the transfer belt. To restart the working components, it is first necessary to release said mobile bar so that it immediately returns to its resting position; then press the RESET button indicated with ref. 1 in Figure 5 . The emergency stop of the machine takes place at a pressure of 5 N (approx 0.5 kgf) generating a horizontal displacement of the bar of 5 mm.

6. **Emergency stop push-button**; indicated with ref. 2 in Figure 5 and ref. 2 in Figure 5. When pressed, it stops any moving part and cuts off the power supply to all the components that may otherwise be dangerous. Once pressed, it is mechanically held in such condition and can only be reset with a voluntary action. To restart the machine, first reset the push-button, then restore standard operating conditions by pressing the "RESET" button indicated as ref. 1 in Figure 5.

7. **Fixed guards:** these are guards held in place by elements that cannot be removed or opened, except by using a tool (wrenches for screws, keys for locks, etc.) as an alternative to the mobile interlocked guards illustrated in points 2, 3 and 4; they inhibit access to most of the movable working and motion transmission parts. In practical terms, the internal components of the machine are segregated by fixed guards, which are associated with interlocked removable guards and/or the safety devices illustrated in the previous points. The electric box is also a fixed guard

ATTENTION!

It is prohibited to remove the guards and/or deactivate safety devices unless for real and unavoidable reasons, provided that measures aimed at eliminating or minimising correlated risks have been adopted, and that express authorisation of the employer, manager, supervisor, etc. has been obtained. **Put back the guards and lock them in place** using all the required means and **re-activate the safety devices** as soon as the reasons for their removal / deactivation have ceased. Anyone who does not comply with the instructions above will be held fully liable for any and all direct or indirect injury to persons or animals and damage to property that may occur.

5.2.3 CHECKING THE EFFICIENCY OF SAFETY DEVICES

At the beginning of the day and/or shift, check the efficiency and condition of the safety devices illustrated in par. 5.2.2:

1. **Check the efficiency of the light curtain installed on the hopper** Carry out the test without dough in the

hopper. The test is simple, easy and safe to perform thanks to the mirror installed on the upper edge of the hopper, useful when checking the level of dough inside the machine, facilitating its loading without the aid of ladders. Thanks to such mirror, this test performed without dough allows having a full view of the movement of the star dosing devices without having to access from the top using ladders. If, while the machine is running, a hand is interposed between the two opposing elements constituting the light curtain for a depth of 1 cm from the upper edge of the hopper, the rotation of the two star dosing devices and of the six rollers for accompanying the dough, Figure 10respectively pos. 4 and 5 is stopped - if moving - or is kept stationary if the star dosing devices were already stationary when the light curtain was interrupted; they will be kept in this condition for as long as the hand (or any other element) remains between the two opposite elements making up the light curtain. **If case of a negative outcome, do not use the machine and ask for the intervention of a specialised technician expert in electrical systems on-board machines.**

2. **Checking the efficiency ofof the microswitch or coded magnetic sensor associated with the front door.** Refer to **Figure 13** ref. 1. Carry out the test when the hopper is empty (no dough) If the door is opened by more than 2 mm while the machine is running, the machine must stop immediately. Close the door and press start: the machine does not start. Press the RESET button indicated as ref. 1 in Figure 4 and press start: the machine should now start. This is also used to verify the efficiency of the RESET function. **If case of a negative outcome, do not use the machine and ask for the intervention of a specialised technician expert in electrical systems on-board machines.**
3. **Checking the efficiency of the microswitch associated with the rear door.** Refer to **Figure 13** ref. 5. Carry out the test when the hopper is empty (no dough) If the door is opened by more than 4 mm from its upper edge while the machine is running, the machine must stop immediately. Close the door and press start: the machine does not start. Press the RESET button indicated as ref. 1 in Figure 4 and press start: the machine should now start. This is also used to verify the efficiency of the RESET function. **If case of a negative outcome, do not use the machine and ask for the intervention of a specialised technician expert in electrical systems on-board machines.**
4. **Checking the efficiency of the microswitch associated with the mobile sliding guard placed on the loaf moulder.** Refer to **Figure 13** ref. 3. By sliding the aforementioned movable guard to the right, the machine must stop when it opens by 2 mm. Close the sliding mobile guards and start: the machine does not start: Press the RESET button indicated as ref. 1 in Figure 4 and press start: the machine should now start. This is also used to verify the efficiency of the RESET function. **If case of a negative outcome, do not use the machine and ask for the intervention of a specialised technician expert in electrical systems on-board machines.**
5. **Checking the efficiency of the mobile safety bar at dough outfeed (only for "SYNCRO" e "SYNCRO E").** Refer to **Figure 13** ref. 6. While the machine is running without dough, apply a slight pressure of 50 N (approx 0.5 kgf) in the horizontal direction towards the bar, such as to slightly rotate the aforementioned bar by moving it by 5 mm: the machine must stop. Release the bar and press start: the machine does not start: Press the RESET button indicated as ref. 1 in Figure 4 and press start: the machine should now start. This is also used to verify the efficiency of the RESET function. **If case of a negative outcome, do not use the machine and ask for the intervention of a specialised technician expert in electrical systems on-board machines.**
6. **Fixed guards.** Visually check that they are in their place, in good condition (without cracks, noticeable dents, etc.) and locked with all the fixing means provided (screws, key systems, etc.). **In case of a negative outcome, do not use the machine and request the intervention of a technician specialised in electrical equipment installed on board the machine;** if necessary, contact the manufacturer.
7. **Checking the emergency stop push-button.** Carry out the test when the hopper is empty (no dough) Start the machine and press the emergency push-button while the components are moving: the machine must stop very quickly (in under 0.35 seconds) and the push-button must be mechanically held in position. Reset the push-button and press start: no part should start moving. Press the RESET button indicated as ref. 1 in Figure 4 and press start: the machine should now start. This is also used to verify the efficiency of the RESET function. **In case of a negative outcome, do not use the machine and request the intervention of a technician specialised in electrical equipment installed on board the machine.**

5.3 RESIDUAL RISKS

To minimise as much as possible the residual risks illustrated in the following sub-paragraphs, the information, specific instructions, and training of the operators are of vital importance **It is the responsibility of the employer to provide the operators with adequate information concerning the residual risks that using the machine implies, as well as to provide the instruction and training on its safe use, on the precautions to be taken and the behaviours to be avoided.**

5.3.1 RESIDUAL MECHANICAL RISKS

Shearing, crushing, cutting: between the dough dividing components, while passing through the hopper.
The hopper with light curtain meets the requirements of the harmonized standard EN 12042: 2020; however, a residual risk persists for the safety of exposed persons because the top of the hopper remains completely open and, even if the access through the opening generates the immediate stop of the two star dosing devices and of

the rollers accompanying the dough, this takes place in 0.18 seconds: a time that is considered acceptable to guarantee the safety of the operator. In addition to the risk generated by the movement of the star dosing units, there is also the risk generated by the reciprocating horizontal movement of the dough compression piston. This risk only exists during its travel towards the dividing drum, lasting approximately 0.4 seconds. For technical reasons, if the light barrier is interrupted while the piston has already started its forward travel, said piston completes its travel until it reaches the rest position and remains there until the light curtain is free. However, the machine feature two hatches visible inFigure 37 ref. 1 and 2 for accessing from the front inside the hopper and head, which can be removed from the respective working position through the front door, therefore in a safe condition as the opening of the door causes the emergency stop of the machine. For this reason it is believed that there should be no foreseeable reasons for accessing the inside of the hopper from above with an arm, both during the processing of the dough and during cleaning. Only the user can further reduce the risk and even eliminate it, by carefully observing the indications provided in this manual, which we briefly summarize here in order of priority: clean the inside of the hopper exclusively while the machine is off and disconnected from the power supply

Risk of crushing, impact, contusion only for the “SYNCRO” and “SYNCRO E” versions, in the event that an attempt is made to reach internal parts of the machine through the opening necessary for the unloading of the processed product. In this case it must be said that the transfer belt runs outwards, therefore in the opposite direction compared to the inward approaching action of a possible voluntary action of the operator. Inside the structure, a pair of alignment rollers work in intermittent planetary rotation, to guarantee the correct release of the dough portions processed by the rounder and drop them correctly on the unloading belt: for this reason, thanks to the action of the alignment rollers, there are no foreseeable reasons for which the operator should access the inside of the machine from the unloading opening, as the rollers themselves avoid the irregular dropping of the portions of dough processed onto the outfeed belt.

Hooking and entangling, crushing, impact, contusion only for the “SYNCRO” EM “SYNCRO E” versions, in the event that an attempt is made to reach internal parts of the machine through the opening necessary for the unloading of the processed product. If the operator complies with the recommendations in this manual, in particular the prohibition to remove the guards unless it is absolutely necessary, and the mandatory obligation to reassemble them and fasten them using all the required fasteners as soon as the reasons requiring their removal cease to exist, the risk is actually almost null, since the fixed guards on the machine, including the one covering the outfeed belt, meet the requirements of EN ISO13857:2008.

5.3.2 RESIDUAL RISKS DUE TO OIL-HYDRAULIC PRESSURE

The oil-hydraulic pressure may give rise to residual risks of explosion of the components, detachment of hoses, etc. with the consequential ejection of fluid under pressure, the projection of pieces, whiplash of the hoses, etc. only in case of the temporary absence of the fixed guards of the machine, which, if present, are instead capable of withstanding the impact of pieces and fluids and, above all, if the instructions given in the manual are not followed (see par. 4.3).
Check frequently for oil leaks in the circuit; if a leak/s is/are found, do not use the machine and ask for the intervention of a specialised technician expert in on-board hydraulic systems as soon as possible. Special care must be taken when checking the condition of the flexible hoses; replace them according to the planned maintenance schedule or if their condition is not satisfactory (par. 4.3.2).

5.3.3 RESIDUAL RISKS DUE TO DUST INHALATION

If the machine has a flour duster (“SYNCRO M” or “SYNCRO EM”), such device is placed on the sliding mobile guard located on the loaf moulder: such device must be used to distribute the flour onto the products rather than do it by hand; in this way, in fact, the generation of dust in the ambient air is reduced considerably, making it almost negligible.
When loading the flour into the flour duster, **do not pour it in quickly, but** a little at a time **slowly and carefully** trying to generate as little dust as possible and thus limit, in case of inhalation, the risks for the health of exposed persons who are nearby (lacrimation, asthma, rhinitis, etc.).
If flour is spread on the products by hand, avoid making abrupt movements for the same reasons mentioned above.
Similarly, when loading the flour into the two side pockets of the hopper, use a scoop that is wide enough o cover the depth of the pocket, tilting it slightly until the flour slides inside the pocket, without generating dust.

5.3.4 RESIDUAL RISKS DUE TO LACK OF HYGIENE

The risk may exist only if daily cleaning of the machine is not done correctly according to the instructions provided in this manual, in particular in par. 4.4and relative sub-paragraphs.
The less efficient the cleaning, the higher the risk will be
If it is necessary to replace parts of the machine intended to come into contract with the food product, it is absolutely necessary to procure them from the manufacturer Artezen S.r.l. or from a retailer authorised by the same, who will provide the relative declaration guaranteeing that the part requested is suitable for contact with foods, in conformity with the pertinent laws in force, especially in the European Union

5.3.5 RESIDUAL RISKS DUE TO BREACH OF ERGONOMIC PRINCIPLES

Only the user can further reduce the risk and even eliminate it by carefully following the instructions provided in this manual, and in particular in par. 3.7.1, which we briefly summarize here in order of priority:

1) prepare some elongated dough pieces weighing about 8-10 kg and place them in front of the machine ready to be inserted vertically into the hopper.
2) Adjust the mirror with which the hopper is equipped as best as possible, in order to see the inside of the hopper and in this case, the residual dough contained in the hopper, without having to use ladders or other lifting elements to see inside the hopper compartment.

5.3.6 RESIDUAL HEALTH RISKS DUE TO CONTACT WITH OIL

The risk may be posed by two conditions:

1. The risk could possibly exist only in case of contact of the oil with the skin (redness, irritation, eczema, etc.), for example during topping up operationsFigure 33 ref. 1. **To minimize the risk,** before opening the product container **carefully read the relative safety data sheet and comply with the indications and warnings, in particular with regard to the PPE to be worn (waterproof oil-resistant gloves and integral goggles or visor, as a minimum)** . If, during the assessment of health risks in the workplace, it should be verified that contact with a specific product may, even if only theoretically, imply a health risk for a worker, it is the employer's responsibility to exempt the worker from tasks that imply potential contact (even if only slightly probable) with such product. **When replacing or topping up the oil in the system, use the same product, as per the technical data sheet and model illustrated in par. 4.3.1, or use an equivalent product in terms of technical characteristics and use.**
2. A further risk may be posed by leakages from the oil-hydraulic cylinder that operates the dough compression piston Figure 10Pos. 6 positioned above the transfer belt of the processed product. The risk is however limited as the pipes of the hydraulic circuit are not in motion because the hydraulic cylinder is stationary and supported in a stable manner in its position, which means that the pipes have a long life span. What is more, the oil for operating the system, supplied by the manufacturer, is NSF H1 certified, which means that it is suitable for accidental contact with the product intended for human consumption. To further reduce this risk, please follow the instructions in chap.4.3.2 to prevent any oil leaks from the pipes, by carrying out their scheduled replacement.

5.3.7 RESIDUAL ELECTRICAL RISKS

On the panel that closes the electrical cabinet and any other casing containing parts subject to voltage ≥ 24 V , a special danger warning sign is affixed (see par. 5.4). The risk is linked mostly to potential accidental contact (impossible under normal conditions) with live parts during maintenance interventions; as often repeated, **it is compulsory to open the main switch** , turning it to O - OFF, and to **disconnect the plug from the power supply socket before carrying out any intervention.**

The disconnected plug must be clearly visible so that anyone can verify the absence of electrical power in the machine.

WARNING

After having disconnected and reset the electrical power supply of the inverter, residual electrical voltage remains inside it, which may be very dangerous for personal safety in case of contact with live components The display and the LEDs present on the inverter remain on until the DC BUS voltage (hence the relative condensers) falls below 60 VDC, after which they turn off to signal that the residual tension should be below dangerous levels.

ATTENTION!

In any case, once the electrical power supply has been cut off and reset, before touching (and even more so, before intervening on) parts of the inverter, terminals of the same and parts electrically connected to them, it is necessary to:

- wait at least 10 minutes after the inverter's display and LEDs have turned off

- use suitable instruments to check that there is no electrical current in the clamps of the motor controlled by the inverter.

It is worth repeating that **all the interventions of an electrical nature must be carried out exclusively by expert and professionally qualified personnel,** capable of carrying out the work to the highest standards and with technical and regulatory knowledge to carry out such tasks correctly and safely.

5.3.8 RISK OF POLLUTING THE ENVIRONMENT (GROUND

The risk is very remote and could only occur in the presence of significant oil spills on the floor.

To reduce the risk, it is essential to frequently check that there are no oil leaks from the oil-hydraulic circuit and, if there are, eliminate them by replacing the affected component (s); in the meantime, drain all the oil from the control unit (par. 4.3.1) and refrain from using the machine.

Any oil spills on the ground must be contained and eliminated immediately with absorbent pads, rags, etc.; all the material contaminated by the oil must be disposed of in conformity with the environmental protection laws in force

5.3.9 INFORMATION ON THE NOISE LEVEL OF THE MACHINE

Figure **44** illustrates the location of the points where the phonometric testing took place,whereas Table **14** shows the LAeq (A-weighted Equivalent Sound Level) values measured for a machine model “SYNCRO M”.

The measurements were taken using an Amprobe SM-10 sound level meter, compliant with IEC651 type 2, ANSI S1.4 Type 2, JISC 1502.
The maximum error of the measurements can be estimated in 2 dB [A].
Conditions of measurement (in compliance with the provisions of harmonised standard EN 12042:2020, Annex A):
- machine running while empty at the maximum operating speed
- microphone positioned at 1.6 m from the ground and at 1000 mm from the machine
- distance of the microphone from the external profile of the machine:
  1000 mm for points 1-2-3-4
  300 mm for points 5-6
- presence of a background noise characterized by LAeq = 35.3 dB [A]
- duration of each measurement: > 30 seconds (approx.60 seconds)

The LAeq A-weighted Equivalent Sound Level can be reasonably considered less than 70 dB[A] for all the dividers presented in this manual in the light of the values measured for the above-mentioned machine and in consideration of the strong similarities that characterise the different versions of the machine

Measurement point	LAeq (dBA)
1	66.5
2	67.0
3	69.8
4	65.5
5	68.6
6	66.2

Table 14 - Phonometric recording

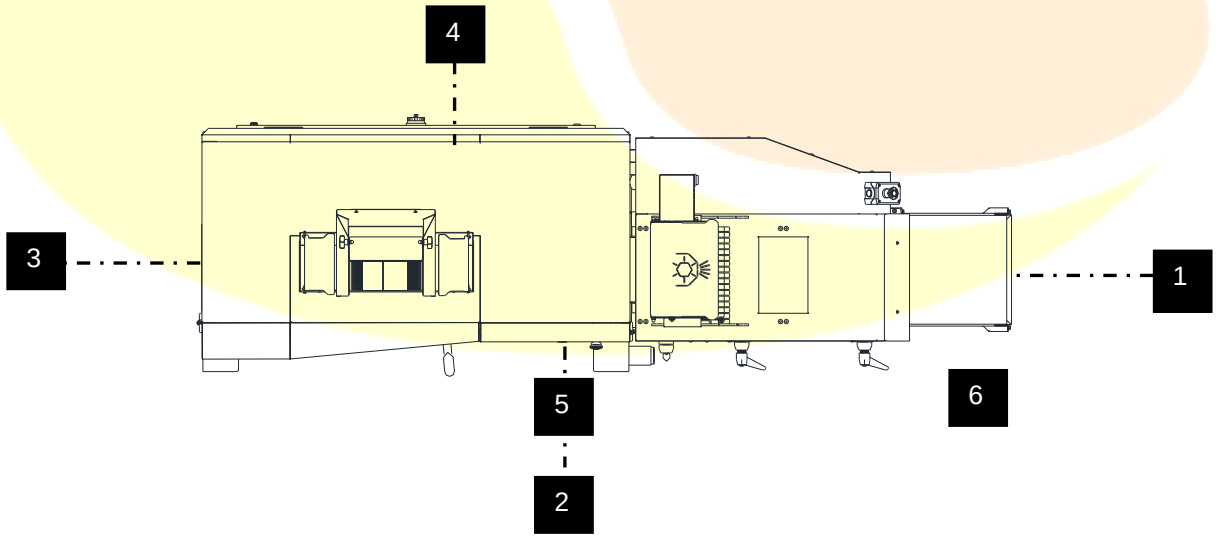


Figure 44 - Points of phonometric recording

5.4 SAFETY SIGNS

The following safety signs are affixed onto the machine.

	Danger of electrocution (shock) *on the outside of each enclosure with electrical parts at > 24 V*
	ATTENTION! Danger of gripping, dragging, crushing of hand; *on the interlocked door of the weight chamber, on the fixed side guards, on the panel screwed to the top section of the outfeed belt guard*
	ATTENTION! Hand shearing hazard *on the outside of the hopper on two opposite sides of the hopper*
	ATTENTION! Moving parts. Danger of gripping, dragging, crushing, abrasion; *on the fixed side guards, on the panel screwed to the top part of the outfeed belt guard*
	It is prohibited to remove the guards and/or disable the safety devices; *on the interlocked door of the weight chamber, on the fixed side guards, on the panel screwed to the top section of the outfeed belt guard*
	It is prohibited to clean, lubricate, etc. the components of the machine while they are moving; *on the interlocked door of the weight chamber, on the fixed side guards, on the panel screwed to the top section of the outfeed belt guard*

Check that the images and colours of the signs are in perfect condition; as soon as any sign of deterioration is found, replace them immediately.

6 DISMANTLING

Should the owner decide to proceed with the dismantling of the machine, the various components must be separated by type of material and disposed of in conformity with the laws and regulations in force; indications concerning materials that constitute the most relevant parts of the machine are given below.

Stainless steel: load bearing structure and electrical box (if requested by the client); fixed guards screwed on and with key; hopper; external casing of the weight chamber; load bearing structure for the output belt; dividing head.

Painted steel: load bearing frame and electrical box (if requested by the customer)

Teflon-coated stainless steel: hopper (optional), double belt divider

Plastic, rubber: belts; divider and dividing unit piston; dough ejection blocks; flexible hoses

Miscellaneous materials: motors (copper windings); electrical, electronic, and oil-hydraulic components

Drain the oil from the oil-hydraulic unit tank; used oil must be disposed of in compliance with the environmental protection laws in force.

For the disposal of the different materials, it is best to contact companies specialised in waste disposal that must provide their services in conformity with the current laws.